

Operating, Maintenance & Parts Manual

YJLMT Series



Model Numbers

YJLMT0232

YJLMT0516

YJLMT0532

YJLMT1016

YJLMT1032

YJLMT2016

YJLMT4008

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

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

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

Should you have any questions regarding this product, please call Yale Hoists at **(866) 805-2962. Made in U.S.A.**

Before using the hoist, fill in the information below:

Model No. _____

Serial No. _____

Purchase Date _____

Yale[®]

HOISTS

414 Broadway Avenue
P.O. Box 769

Muskegon, Michigan USA

Tel: 866.805.2962 • **Fax:** 800.742.9270

www.yalehoists.net

UNPACKING

The electric chain hoist and motorized trolley are fully assembled. If possible, lift the unit out of the box by hoisting it up by the trolley. Do not pull it up by the hoist motor and housing. Damage could result.

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.

SAFETY PRECAUTIONS

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

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

WARNING

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

1. **NOT** operate a damaged, malfunctioning or unusually performing hoist.
2. **NOT** operate the hoist until you have thoroughly read and understood the manufacturer's Operating and Maintenance Instructions or Manuals.
3. **NOT** operate a hoist 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 hoist.
5. **NOT** use hoist with twisted, kinked, damaged, or worn load chain.
6. **NOT** use the hoist to lift, support, or transport people.
7. **NOT** lift loads over people.
8. **NOT** operate a hoist unless all persons are and remain clear of the supported load.
9. **NOT** operate unless load is centered under hoist.
10. **NOT** attempt to lengthen the load chain or repair damaged load chain.
11. Protect the hoist's load chain from weld splatter or other damaging contaminants.
12. **NOT** operate hoist when it is restricted from forming a straight line from hook to hook in the direction of loading.
13. **NOT** use load chain as a sling, or wrap chain around load.
14. **NOT** apply the load to the tip of the hook or to the hook latch.
15. **NOT** apply load unless load chain is properly seated in the chain sprocket(s).
16. **NOT** apply load if bearing prevents equal loading on all load supporting chains.
17. **NOT** operate beyond the limits of the load chain travel.
18. **NOT** leave load supported by the hoist unattended unless specific precautions have been taken.
19. **NOT** allow the load chain or hook to be used as an electrical or welding ground.

20. **NOT** allow the load chain or hook to be touched by a live welding electrode.
21. **NOT** remove or obscure the warnings on the hoist.
22. **NOT** operate a hoist on which the safety placards or decals are missing or illegible.
23. **NOT** operate a hoist unless it has been securely attached to a suitable support.
24. **NOT** operate a hoist unless load slings or other approved single attachments are properly sized and seated in the hook saddle.
25. Take up slack carefully - make sure load is balanced and load holding action is secure before continuing.
26. Shut down a hoist that malfunctions or performs unusually and report such malfunction.
27. Make sure hoist limit switches function properly.
28. Warn personnel of an approaching load.

CAUTION

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

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

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HOIST SPECIFICATIONS

Yale YJLMT hoist models are essential tools in material handling. They provide quick and precise lifting with the added versatility of a motorized trolley. The hoists are available in various lifting speeds and capacities up to 2 tons. The motorized trolley is available in a range of speeds, from 18 fpm to 150 fpm (35 fpm standard), and negotiates curves down to 4 feet in radius. The operator single handedly controls the position of the unit and the lifting of loads with an ergonomically designed pushbutton station. For more precise control, 3-phase units are also available with 2-speed motors. YJLMT hoist and trolley units are available for a number of 1-phase and 3-phase voltages. The control circuitry is of a low voltage-24V is standard, 115V is optional.

The hoist has an oil filled gearbox equipped with alloy steel gears for smooth and durable operation. An overload clutch protects the unit from damaging overloads. Adjustable upper and lower limit switches regulate the load travel, and a chain-stop on the slack end of the chain serves as an extra measure of safety. A magnetic disc brake delivers sure stopping and secure holding of the load. The chain and hooks on a Yale hoist are specifically made for the demands of hoist applications. Safety latches are standard on the hooks.

The trolley rolls on heat-treated, cast iron wheels with sealed ball bearings. The worm driven transmission provides even starting and stopping. YJLMT units can be adjusted to fit beam flange widths in the range of 3.33 to 7 inches, and as an option can be made to fit up to a 9 inch width.

Yale electric chain hoists with motorized trolleys are designed and tested (fully assembled) in accordance with the American Society of Mechanical Engineers Code B30.16, "Safety Standard for Overhead Hoists." Made in U.S.A.

WARNING

Failure to comply with Safety Precautions outlined throughout this manual can result in serious injuries or death. Before using this hoist, each operator should become thoroughly familiar with all warnings, instructions and recommendations in this manual.

APPLICATION INFORMATION

GENERAL INFORMATION

This manual provides information for the safe operation, installation, and maintenance of Yale YJLMT models. Any person operating or maintaining this hoist must be familiar with the information contained herein. Adherence to the precautions, procedures, and maintenance practices described in this manual should ensure long reliable operation.

This hoist is intended for general industrial use for lifting and transporting freely suspended material loads within its rated capacity. Yale Hoists cannot be responsible for applications other than those for which Yale equipment is recommended. 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:

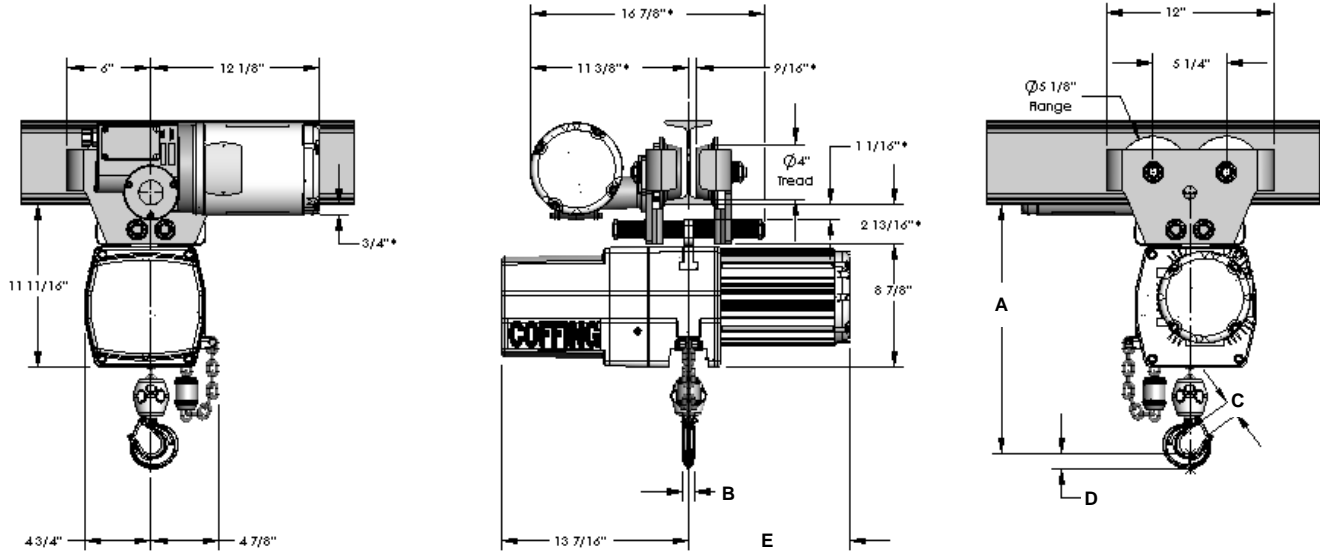
ADVERSE ENVIRONMENTAL CONDITIONS

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

LIFTING OF HAZARDOUS LOADS

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

Figure 1 - Specifications and Dimensions



NOTE: All dimensions are inches. Dimensions marked * are based on S6 x 12.5 beam. Headroom dimension A includes 2 inch clearance.

Table 1 — Hoist Specifications

Model	Capacity Capacity (lbs)	Lifting Speed (fpm)	Hoist HP**	Dimensions				Dimension "E" **		
				A	B	C	D	1-Phase	1-Speed 3-Phase	2-Speed 3-Phase
YJLMT0232	250	32	1/4	17 ¹⁵ / ₁₆	7/8	1	1 ¹ / ₁₆	10 ¹¹ / ₁₆	10 ¹¹ / ₁₆	11 ⁹ / ₁₆
YJLMT0516	500	16	1/2	17 ¹⁵ / ₁₆	7/8	1	1 ¹ / ₁₆	10 ¹¹ / ₁₆	10 ¹¹ / ₁₆	11 ⁹ / ₁₆
YJLMT0532	500	32	1/2	17 ¹⁵ / ₁₆	7/8	1	1 ¹ / ₁₆	10 ¹¹ / ₁₆	10 ¹¹ / ₁₆	11 ⁹ / ₁₆
YJLMT1016	1000	16	1/2	17 ¹⁵ / ₁₆	7/8	1	1 ¹ / ₁₆	10 ¹¹ / ₁₆	10 ¹¹ / ₁₆	11 ⁹ / ₁₆
YJLMT1032	1000	32	1	17 ¹⁵ / ₁₆	7/8	1	1 ¹ / ₁₆	10 ¹¹ / ₁₆	10 ¹¹ / ₁₆	11 ⁹ / ₁₆
YJLMT2016	2000	16	1	17 ¹⁵ / ₁₆	7/8	1	1 ¹ / ₁₆	10 ¹¹ / ₁₆	10 ¹¹ / ₁₆	11 ⁹ / ₁₆
YJLMT4008	4000	8	1	20 ⁵ / ₈	15/16	1 1/8	1 1/4	10 ¹¹ / ₁₆	10 ¹¹ / ₁₆	11 ⁹ / ₁₆

Table 2 — Motorized Trolley Specifications

Model	Trolley HP**	Dimension "F" **		
		1-Phase	1-Speed 3-Phase	2-Speed 3-Phase
All Models (except below)	1/4	10 ³ / ₈	9 ³ / ₈	11 ³ / ₈
YJLMT4008 with 100 or 150 fpm Trolley	1/2	10 ³ / ₈	9 ³ / ₈	11 ⁷ / ₈

Standard Trolley Speed: 35 fpm; **Optional Speeds:** 18, 24, 50, 75, 100 or 150 fpm (The slow speed for 2-speed trolleys is 1/3 of the top speed; i.e., 75 fpm trolley has a slow speed of 25 fpm).

Beam Width Adjustment Range: 3.33 to 7 inches standard, up to 9 inches optional (As an option, trolleys are also available to work with patented track).

**Note: Hoist and trolley horsepower can vary from what is listed, which can also affect dimensions "E" and "F". Refer to the motor nameplates on the hoist and trolley for specific information on the supplied motors.

SAFETY INFORMATION

For safe use of the electric chain hoist and motorized trolley, adherence to the following precautions is imperative. All persons concerned with the installation, operation, inspection and maintenance of the hoist and trolley are urged to read the American Society of Mechanical Engineers (ASME) Safety Code B30.16, "Overhead Hoists (Underhung)."

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. Before installing the hoist and trolley unit, be sure that the beam and the supporting structure have adequate strength for the capacity of the hoist. If in doubt, consult a qualified structural engineer.
3. Open-ended beams must have end stops to prevent the trolley from running off the beam. In the event of a collision, the stops should only contact the side plate bumpers.
4. The hoist and trolley must be adequately grounded. The power and ground connections are made at the trolley motor junction box (green wire is ground), or if supplied, the trolley control box.
5. Make certain that the power source conforms to the requirements of your equipment.
6. Three-phase power connections must be made such that the hoist runs in the correct direction when pushing the "UP" or "DOWN" buttons (See ELECTRICAL CONNECTIONS, page 6).
7. Power must be supplied to the unit in a manner that will ensure that power cables, if used, do not develop kinks or come in harms way. Do not allow cables to come in contact with oil, grease, hot surfaces or chemicals.
8. The hoist and trolley are designed for vertical lifting only. Loads should be located directly under the hoist. Side loading can damage the unit as well as endanger life and limb.
9. Do not lift loads in excess of the rated capacity.
10. Do not use the hoist and trolley to lift and transport people or to move loads over people. Stand clear when lifting a load and be sure that all personnel are clear and aware before moving a load in their area.
11. The operator should have a clear view of the load anytime it is moving and should be sure that the load does not contact any obstructions. Never leave a suspended load unattended.
12. Always allow the trolley to coast to a stop in the direction of travel before reversing its direction. Reversing or "plugging" to stop the trolley causes overheating of the trolley motor and causes the load to sway.
13. Inspect the unit daily before operating the hoist.
14. Cluttered areas and benches invite accidents.
15. The operator should not engage in any practice which will divert his attention while operating the hoist.
16. Do not attempt to operate hoist beyond normal maximum lift range.
17. Do not operate hoist with twisted or damaged chain.

18. Do not operate a damaged or malfunctioning hoist until necessary adjustments or repairs have been made.
19. Always remove load before making repairs.
20. Do not remove or obscure capacity or warning decals.

WARNING

Always disconnect power source before working on or near a hoist or its connected load. If the power disconnect point is out of sight, lock it in the open position and tag to prevent unexpected application of power.

INSTALLATION

1. Before installing the hoist and trolley, review and adhere to the following precautions.
 - a. Be sure that the beam and the supporting structure have adequate strength for the capacity of the hoist. If in doubt, consult a qualified structural engineer.
 - b. Provide proper branch circuit protection for the hoist as recommended in the National Electrical Code.
 - c. The power supply voltage should be within plus or minus 10% of the voltage for which the unit is wired. **Refer to the hoist and trolley motor nameplates for information on the full load amperage.** It is critical to use adequate sized power cables, especially with 1-phase hoists (See **Table 4, page 14**). Be sure dual voltage hoists are connected or wired to correspond with your power supply (See ELECTRICAL CONNECTIONS, page 6).
 - d. The installation area must provide operating conditions for the operator including sufficient room for the operator and other personnel to stand clear of the load at all times.
 - e. For installations where the slack chain hanging from the unit may be objectionable or hazardous, the use of a chain container is recommended. See CHAIN CONTAINER, pages 6 & 7.

INITIAL LUBRICATION

Lubricate the trolley wheel gears with NLGI-2 or heavier grease. Hoists are shipped with the load chain prelubricated. If necessary, apply SAE 90 gear oil.

TROLLEY MOUNTING TO BEAM

Refer to Figure 11.

1. Yale YJLMT models are designed to fit beam flange widths in the range of 3.00 to 7" as a standard. Wider beams up to 9" and patented track beams can be fit with optional load pins and/or wheels. Be sure that the flange width of the runway beam is within the adjustment range.

The unit is shipped assembled with the trolley set for a flange width of 3.33" unless otherwise specified when ordering. If adjustment is required, place the hoist and trolley unit onto a worktable and follow the steps below. Be sure that power is not connected to the unit.

- a. Adjusting to a particular beam size is accomplished by locating the thick (.135") and thin (.075") washers as shown (See Figure 11, page 16). Begin by removing the load pin nuts on the plain side of the trolley (1 1/8" wrench

or socket required). If necessary a pry bar can be used between the load pins to prevent the pins from turning with the nuts. Slide the washers off the load pins, keeping the washers for each load pin stacked separately. Slide the side plate off of the load pins. Remove the remaining washers on the plain side of the trolley and stack them separately for each load pin.

- b. Carefully pull the trolley transmission with the attached side plate assembly away from the suspension lug. Be careful not to pull on the tie cable. Remove the exposed washers on the two load pins and stack them separately for each load pin. Lay the assembly upside down to where the load pin nuts can be accessed. Remove the two elastic stop nuts with a 1¹/₁₆" wrench and a vise grip to hold the pins.
 - c. From Figure 11 determine how many spacer washers of each thickness are required on the outside of the side plates (Locations B) and on the inside of the side plates (Locations A) for each load pin. The chart is an approximate guide. Flange widths will vary, so it is important to measure the beam flange to be sure of its width. Slight changes to the recommended washer distribution may be required. When the trolley is set correctly, the distance between the wheel flanges will exceed the beam flange width by 1/4" to 7/16" (See Figure 11).
 - d. Reassemble with the correct placement of spacer washers. Be sure to put the load pins, washers and nuts on the transmission side plate first. At this point, do not tighten the load pin nuts on the plain side plate. Be sure that all four "Locations A" have an equal number of thick and thin washers (See Figure 11). Once together, the width adjustment must be double-checked before tightening the nuts completely in the following steps.
2. **For mounting to a beam that is not open ended**, leave off the outside washers on the plain side plate and turn the two nuts onto the load pins just enough to prevent the side plate from falling off. Slide the plain side plate out enough to allow the wheels to clear the beam flange. Carefully position the hoist and trolley unit to where the wheels are over the flange and pull the side plates together. Ensure that the plates do not separate as you remove the load pin nuts on the plain side plate, replace the outside spacer washers, and reinstall the nuts. Tighten the load pin nuts to **100 ft-lbs**. A pry bar may be used between the load pins to prevent them from turning as the nuts are tightened.
3. **For mounting to an open-ended beam with rail stops**, first tighten the load pin nuts to **100 ft-lbs**. If necessary, use a pry bar between the load pins to prevent the pins from rotating as the nuts are tightened. With the rail stop removed at the end of the beam, position the hoist and trolley so that the trolley can slide onto the beam. Reinstall the rail stop on the end of the beam.

WARNING

Always disconnect power source before working on or near a hoist or its connected load. If the power disconnect point is out of sight, lock it in the open position and tag to prevent unexpected application of power.

ELECTRICAL CONNECTIONS

Refer to Figures 11 & 12A-12F.

1. Disconnect and lock out power before making connections.
2. Ensure that the hoist and trolley are built and wired for the intended voltage. Single-phase units have dual-voltage motors and components designed for use on 115V or 230V when wired correctly. Similarly, 1-speed hoist/1-speed trolley units made for 230/460V must be wired for intended voltage. Refer to the wiring diagram that is supplied with the unit. Figures 12A - 12F are diagrams for standard units.
3. Single-phase units (115/230V) are shipped wired for 115V unless otherwise specified. Dual voltage 230/460V units are wired for 460V as a standard. Units that have a 2-speed hoist and/or 2-speed trolley are for one voltage only, as can be found on the nameplate of the 2-speed motor. Make voltage conversions on 115/230V or 230/460V models as follows:
 - a. Remove the electrical cover on the hoist. Rewire per the "Motor and Brake Connections" on the wiring diagram.
 - b. Connect the transformer lead, "H2" or "H4", to the trolley contactor according to the voltage. Be sure to insulate the terminal on the spare transformer lead.
 - c. Access the trolley motor connections by removing the splice plate (See Figure 11). Disconnect the existing splice connections and rewire per the splice connection chart on the wiring diagram.
4. The power connection is made at the trolley motor junction box, or, if provided, a trolley control box. If connecting to the junction box, remove and discard the plug to allow the power cord to enter, and remove the splice plate to make the power connections. Be sure to make the ground connection.
5. Turn on the power. On 3-phase models, push the "UP" button and observe the direction of travel of the load block. If it raises, the phasing is correct and permanent connections may be made at the power source. If the load block lowers when the "UP" button is pushed, release the button immediately since the limit switches will not operate to protect the hoist from over-travel. Reverse any two wires (except the green ground wire) at the power source to correct the load hook direction (phasing). Do not change connections in the hoist or pushbutton assembly.
6. Before placing the hoist into operation, check the limit switch adjustment. See LIMIT SWITCH ADJUSTMENT, page 10.

CHAIN CONTAINER (Optional Accessory)

Refer to Table 3.

For installations where the slack chain hanging from the hoist may be objectionable or hazardous, the use of a chain container is recommended.

CAUTION

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

Available chain containers include the standard containers designed for lifts of up to 50 ft on single-chained hoists and 25 ft on double-chained hoists. For longer lifts, the JLC927-4 container is available. For applications where a fabric bag is preferred, the JLC927-20F, JLC927-40F and the JLC927-70F are all options.

Instructions are provided with each of these chain containers and must be adhered to closely to ensure a proper installation. To install the long lift chain container or a fabric chain container, you must follow instruction sheets provided with the chain container. The following instructions are for the standard metal chain containers only.

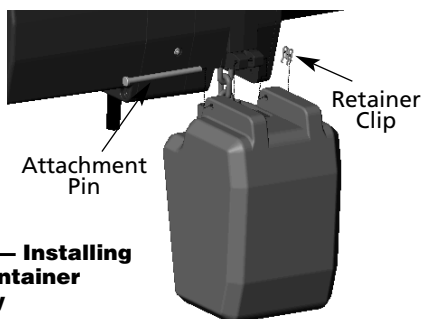


Figure 2 — Installing Chain Container Assembly

Installation of Standard Chain Container (JLC927-1)

Refer to Figure 2.

1. Remove retaining clip and attachment pin and let the slack chain hang free.
2. Run load hook down to its lowest position. Place the slack end of chain in chain container. Do not remove the chain stop.
3. Place chain container flush against housing with chain stripper between top lugs. Insert long attachment pin and replace retaining clip.

CAUTION

Do not allow load to come in contact with the chain container. If this situation exists reset the “UP” limit switch so that the hook block stops below the chain container (See LIMIT SWITCH ADJUSTMENT, page 10).

Table 3 - Optional Chain Containers

Chain Container Model	Recommended for Use With: Hoist Capacity	Maximum Lift (ft)	Container Material	Dimensions in Inches		
				Width	Length	Depth
JLC927-1	1 Ton & Under 2 Ton	20 10	Molded Container	6 ⁷ / ₈	6 ¹ / ₂	10 ¹ / ₂
JLC927-2	1 Ton & Under 2 Ton	35 17	Molded Container	6 ¹ / ₂	6 ¹ / ₂	16
JLC927-3	1 Ton & Under 2 Ton	50 25	Molded Container	6 ¹ / ₂	6 ¹ / ₂	20 ¹ / ₄
JLC927-4	1 Ton & Under 2 Ton	143 71	Steel or Molded Container	*	*	*
JLC927-20F	1 Ton & Under 2 Ton	20 10	Open Weave Vinyl Coated Polyester	7 ¹ / ₂	7 ¹ / ₂	10
JLC927-40F	1 Ton & Under 2 Ton	40 20	Open Weave Vinyl Coated Polyester	7 ¹ / ₂	7 ¹ / ₂	16
JLC927-70F	1 Ton & Under 2 Ton	70 35	Open Weave Vinyl Coated Polyester	7 ¹ / ₂	7 ¹ / ₂	20

* Dimensions depend on length of lift. Contact Factory.

4. Feed the remainder of chain into container by operating hoist in the “UP” direction to the top limit. This will permit the chain to pile freely and prevent the chain from kinking, which may occur if the chain is placed in the container by hand.

OPERATION

OVERLOAD LIMITING PROTECTION

This hoist 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 hoist is being operated. If the load being lifted exceeds the lifting capability of the overload clutch, the hoist motor will continue to run, causing overheating of both the clutch and hoist motor. This condition should be avoided by immediately releasing the “UP” button and reducing the load to within the rated capacity of the hoist. See GEARING, page 12, 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 hoist from damaging overloads, it will not ensure that a load is within the rated capacity of the hoist.

SAFE OPERATION

This hoist and trolley unit is designed for safe operation within the limits of its rated capacity. Using the control station, the operator has full control in one hand – positioning the hoist with the “LEFT” and “RIGHT” trolley buttons and lifting or lowering a load with the “UP” and “DOWN” hoist buttons. To ensure safe operation, the following guidelines must be observed.

1. Above all, always use common sense when operating the hoist and trolley. Refer to all of the safety guidelines listed in the General Safety Information section of this manual and to ASME B30.16 Safety Code for Overhead Hoists.

2. Use the "LEFT" and "RIGHT" buttons to position the unit over the load. The load should be directly under the hoist before attaching the load hook. The hoist and trolley are designed for vertical lifting only. Never lift a load that is off center with the hoist.
3. Before raising a load, always check to see that it is held securely in the saddle of the hook. Never allow a load to be applied at the tip of the hook. Raise the load only until the load chain is taut and then double check the rigging before continuing to raise the load.
4. Stand clear of the load at all times. Before moving the load along the runway beam, ensure that all personnel are clear of the runway path and are aware of your intentions.
5. With the load suspended, push the "LEFT" or "RIGHT" button to move the load in the desired direction. Avoid letting the load swing excessively while moving the trolley. Always allow the trolley to coast to a stop before reversing its direction. Sudden reversal of the trolley motor causes it to overheat and the load will begin to sway.
6. The operator should have a clear view of the load anytime it is moving and should be sure that the load does not contact any obstructions. Never leave a suspended load unattended.
7. Do not run the trolley into beam end stops or other trolleys on the beam.
8. Never use the hoist and trolley to transport people or to move loads over people.
9. Do not overload the hoist.
10. Do not make side pulls with the hoist.
11. Do not "sling" the load hook and chain around the load. Use an approved sling.
12. **Be sure there are no twists in the load chain** as it travels into the hoist housing. This condition should be constantly checked on double-chained hoists because it is possible for the load block to be "capsized" or turned over one or more times.
13. Do not operate if direction of hook travel is not the same as indicated on button being pushed.
14. Do not operate unless hook travel limit devices function. Test without load each shift.
15. Do not operate if chain is not seated properly in sprockets or sheave grooves.
16. Do not operate a damaged or malfunctioning hoist or trolley.

⚠ WARNING

Do not use hoist to lift, support or otherwise transport people.

MAINTENANCE

INSPECTIONS

A planned inspection routine should be established for this hoist based upon frequency of use, severity of use, and environmental conditions (Reference ASME Standard B30.16). Some inspections should be made frequently (daily to monthly) and others periodically (monthly to yearly). It is strongly recommended that an Inspection and Maintenance Check List and an Inspector's Report, similar to those shown in Figures

13A and 13B, 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 hoist's capability may have been impaired.

LOWERING WITHOUT POWER

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

1. DISCONNECT HOIST FROM POWER SUPPLY AND REMOVE ELECTRICAL COVER.

⚠ WARNING

Do not allow screw driver blades to touch rotating friction disc "C".

⚠ CAUTION

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

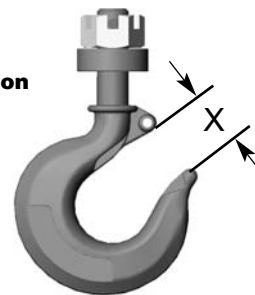
2. Refer to Figure 6. Open disc brake manually by using two screwdriver blades, one on each side of the brake at a point close to the brake spring posts. Apply pressure to the underside of the armature plate (points "X") to close the solenoid and release the brake.
3. Use several quick releases instead of holding brake open continuously. Do not exceed normal lowering speed.

HOOKS

Refer to Figure 3.

1. Inspect the load hook once daily for cracking, extreme wear or spreading. Replace the hook if it is showing any of these signs. If the throat opening is spread wider than the maximum permissible 15% increase listed here, the hook has been overstressed and must be replaced. Any hook that is bent or twisted more than 10 degrees from the plane of an unbent hook must also be replaced. Material wear in the saddle of the hook should not exceed 10% of the original thickness.

Figure 3 — Hook Inspection



Hoist Capacity	"T" Dimension	"X" Dimension*
	Minimum Thickness	Bottom Hook

1 Ton & Under	31/32"	1 ⁷ / ₃₂ "
2 Ton	1 ⁵ / ₃₂ "	1 ¹¹ / ₃₂ "

(*) Maximum permissible throat opening of hook.

- Inspect to see that the hook latch performs the function of closing off the hook throat opening in a secure manner when a load is attached. Also, inspect the hook's threaded connections for stripping or other damage. The retaining pin should be intact.
- Load 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.

CHAIN

Chain is to be kept clean and lubricated (See LUBRICATION, page 11). Visually check chain every time hoist is used. Hoist must not be operated when chain is twisted or kinked. An important part of hoist maintenance is chain inspection. Check individual links and check for chain elongation.

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

CAUTION

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

- 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 HOIST

Refer to Figure 4 & 5.

- Run hook up to its top limit.
- DISCONNECT HOIST FROM POWER SUPPLY and remove the electrical cover.

WARNING

Always disconnect power source before working on or near a hoist or its connected load. If the power disconnect point is out of sight, lock it in the open position and tag to prevent unexpected application of power.

- Using a screwdriver, pry the spring guide plate out of the slots in the limit switch nuts (See Figure 4). Turn the gold nut back to about the center of the threaded screw. Do not disconnect the wires from the limit switches.
- Remove the load block assembly from the old chain. On double-chained hoists detach the chain from the chain support and pull it through the load block assembly.
- Make a "C" shaped chain link by grinding through the end link on the load end of the old chain.

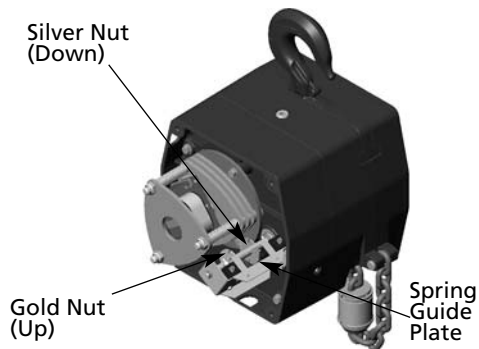


Figure 4 — Limit Switch Adjustment for Chain Replacement

- 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 screw and the chain support (double-chained only) without any twist in the chain.



Figure 5 — Chain Replacement Diagram

- With the electrical cover off, connect the hoist to the power supply. Be sure that the green ground wire is properly grounded, (See ELECTRICAL CONNECTIONS, page 6).
- Carefully jog the "UP" button and run the joined pieces of chain into the hoist until about 15" of the new chain comes out the other side.
- DISCONNECT HOIST FROM POWER SUPPLY.
- 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 side of the hoist by removing the dead-end screw and washers (note placement of washers).
- Attach the chain stop to the slack end of the new chain by capturing the 12th link with the two stop halves positioned with their tapered ends pointing towards the hoist. 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 side of the hoist using the dead-end screw and washers. With factory supplied hardware there should be six washers between the hoist and chain link and two washers between the chain link and screw head. DO NOT allow twists in the chain.
- Adjust the lower limit switch (See ADJUSTING LOWER LIMIT, page 10).

13. Attach the bottom block on single-chained hoists using a new load block pin (See Figure 28). On double-chained hoists, 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 28). **Be sure there are no twists in the chain.**
14. Adjust the upper limit switch (See ADJUSTING UPPER LIMIT, page 10).

CHAIN REPLACEMENT WITH NO CHAIN IN HOIST

Refer to Figures 5 and 6.

1. DISCONNECT HOIST FROM POWER SUPPLY. Remove the hoist and trolley from the beam (follow reverse of INSTALLATION, page 5).
2. Remove the trolley from the suspension lug.
3. Remove the electrical cover, panel plate and electric motor brake.
4. Detach the chain stripper from the bottom of the hoist.
5. Insert the new chain between the load sheave and the chain guide. Feed the chain into the hoist by manually turning the brake hub. Allow about 15" of chain below the hoist on the slack end (See Figure 6). Be sure the welds of the upstanding links are out away from the load sheave and the proper orientation is observed for attachment of the slack end. Also be sure the load hook assembly (if already attached to the chain) is toward the center of the hoist or to your right looking from the transmission end.

CAUTION

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

4. Reinstall the chain stripper (with the chain anchor on double-chained hoists) observing proper chain alignment and avoiding any twist in the chain
5. Replace the electric motor brake, panel plate and electrical cover. Be careful not to pinch any of the wiring.
6. Reattach the lug and trolley
7. Follow steps 11 through 14 in the previous section, CHAIN REPLACEMENT WITH CHAIN IN HOIST, to complete the chain replacement procedure. Reinstall the unit as described in INSTALLATION, page 5.

LIMIT SWITCH ADJUSTMENT

IMPORTANT: Before placing hoist in operation, check the limit switch adjustment. Limit switches are provided to protect the hoist against damage resulting from overtravel or to allow setting the hook travel within the factory-set limits of travel. The standard limit switch is designed for lifts of 50 ft or less on single-chained hoists and 25 ft or less on the 2 ton, double-chained models. The long lift limit switch allows for the maximum amount of lift, which is 134 ft on 1/2 ton and under models, 143 ft on the 1 ton models, and 71 ft on the 2 ton models.

The upper and lower limit switch adjusting nuts are color-coded gold and silver respectively. Each limit nut has 10 slots for fine adjustment, and the increment of adjustment is such that one slot is equivalent to approximately one link of chain travel with the standard limit switch (about 3 links with the long lift limit switch). Movement of the limit switch nuts toward or away from each other increases or decreases the hook travel respectively.

ADJUSTING UPPER LIMIT (GOLD NUT)

Refer to Figure 4.

1. Suspend the hoist. For single chain models raise the load block until there is a minimum clearance of 2" from the hoist housing and the top of the block. Double chain models require a minimum clearance of 1" from the chain support to the top of the load block.
2. DISCONNECT HOIST 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)

Refer to Figure 4.

1. Suspend the hoist. Carefully lower the load block to a point where the slack-end loop of the chain hangs down 6" or more from the hoist housing (or the limit desired in any particular application allowing the minimum 6"). There should be a minimum clearance of 1½" between the chain stop and the bottom of the hoist.
2. DISCONNECT HOIST 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 hoist to the power supply. Be sure the green ground wire is properly grounded (See ELECTRICAL CONNECTIONS, page 6).
2. Check load hook direction (See ELECTRICAL CONNECTIONS 4, page 6).
3. Carefully raise load block to upper limit and observe if it stops automatically at desired level. Do not allow load block to run into hoist housing — this will damage the hoist. Maintain a minimum clearance of 2" from the hoist housing and the top of the load block on single-chained models and 1" from the chain support to the top of the load block on double-chained models.
4. Carefully lower load block to lower limit and observe if it stops automatically at the desired level. Do not allow slack chain, if attached to the dead-end screw, to become taut against hoist housing. This will damage the hoist. There should be a minimum clearance of 1½" between the chain stop and the bottom of the hoist.
5. If upper and lower limits operate satisfactorily, hoist is ready for use. If they are not as desired, repeat adjustment.

CAUTION

If the wires running to the limit switches are ever disconnected for any purpose, be sure to replace wires in accordance with the correct wiring diagram (See Figures 12A - 12F).

HOIST 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 hoist. If the hoist develops either undesirable over-travel after the pushbutton is released (this condition is most noticeable in the lowering direction) or hesitates to lift the load promptly when the pushbutton is depressed (this condition is most noticeable in the hoisting direction), the brake should be adjusted.

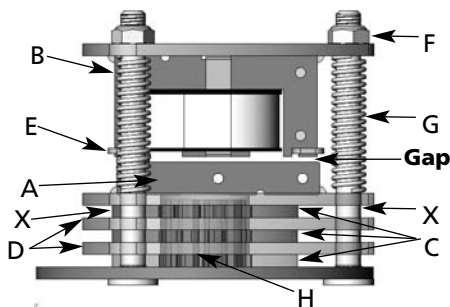


Figure 6 — Brake Assembly

WARNING

Always disconnect power source before working on or near a hoist or its connected load. If the power disconnect point is out of sight, lock it in the open position and tag to prevent unexpected application of power.

BRAKE ADJUSTMENT

Refer to Figure 6.

1. DISCONNECT HOIST FROM POWER SUPPLY and remove the electrical cover.
2. With reference to Figure 6, 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".

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".

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 hoist brake action.

LUBRICATION

Refer to Figure 14.

Proper lubrication is necessary for a long and relatively trouble-free hoist operation. Refer to the following and Figure 14 for lubrication points, type of lubricant, and frequency of lubrication.

Load Chain

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

Gearing

The gear case of this hoist is filled at assembly with approximately 1½ pints of SAE 90 EP gear oil. Check oil level by removing the oil level check plug from the side of the hoist. With the hoist hanging level, gear oil should be even with the hole. Change oil periodically depending on the severity of the application and the environmental conditions (at least every 200 hours of run time).

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 SAE 30 gear oil around the edge of the bearing.

Idler Sheave Bearing (Bushing) - 2 Ton Models

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

HOIST REPAIRS

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

NOTE: If you do not have an experienced mechanic/electrician to do your repair work, we recommend that you send your hoist to an approved service center for repairs. Use authorized repair parts only. The following repair instructions will help you in understanding repair procedures, when related to the Repair Parts List starting on page 26. For clarity these are broken down into areas.

⚠ WARNING

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

ELECTRICAL PARTS AND BRAKE

1. Refer to the correct wiring diagram for your hoist. Standard wiring for units without extra electrical options are shown in Figures 12A - 12F. In the case of standard units with a 1-speed hoist and 1-speed trolley, all the controls are located inside the hoist cover. Any hoist/trolley combinations with a two-speed motor require a control box on the trolley to house the trolley controls.

The contactors, terminal blocks and end clamps are mounted on DIN rail (See Figure 8). Remove the blocks and clamps by prying their “feet” with a small screwdriver. **DO NOT SLIDE THE END CLAMPS.** Reversing contactors can be slid off the rail, but they are attached to the rail by snapping. Where the contactor fits the rail, one side has springs or pads that apply pressure against one edge of the rail. By pressing against that side at the base of the contactor, you can snap the part on or pull it off using a rotating action (the contactor pivots about the other edge of the rail). Some components, such as a two-speed relay, may attach using a spring loaded retaining clip at their base.

When replacing contactors, orient them so that the numbering on the screw clamps corresponds with the wiring diagram. Reversing contactors consist of an “UP” contactor and a “DOWN” contactor. Note that single-phase contactors have a small jumper joining the 3 and 5 screw clamps on the “DOWN” contactor (See Figure 12A). Always be sure that all the clamps are tightened. Loose clamps will limit the power flow to the hoist.

**Figure 7 -
Electrical
Panel
Removed**

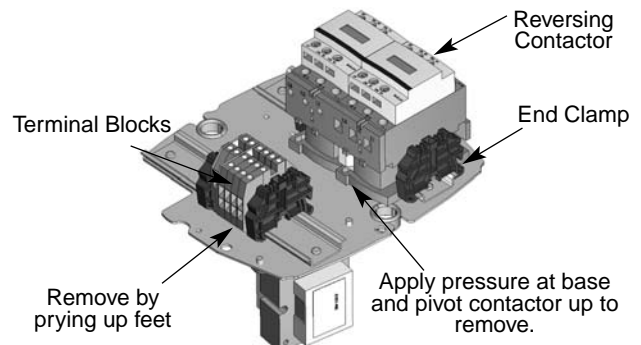
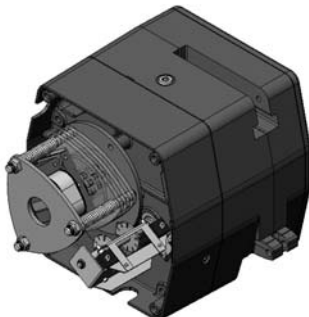


Figure 8 - Hoist Electrical Panel

2. Remove the electrical panel by removing the stand-off screws (See Figures 19 & 20). The limit switch and brake are now accessible as shown in Figure 7.
3. Remove the transformer bolted to the back of the panel plate if it requires replacement.
4. Refer to Figure 18 to disassemble the brake. See BRAKE ADJUSTMENT on page 11 to properly set the brake.
5. Refer to Figures 25 and 26 to disassemble the limit switch. See LIMIT SWITCH ADJUSTMENT on page 10 to properly set the upper and lower limits of travel.
6. Refer to Figures 22 - 24 for repairs on the pushbutton station. Also refer to the wiring diagram inside the electrical cover or Figures 12A - 12F, pages 18-21 for wiring instructions.

HOIST MOTOR

Refer to Figures 15 - 17.

The hoist motor is located on the opposite end to that of the electrical parts, but the two are tied together with electrical leads running through the housing.

1. If it is necessary to replace or repair the motor, **DISCONNECT THE HOIST 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 19 and 20).
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 12A - 12F.

GEARING

Refer to Figures 15 and 27.

DISCONNECT HOIST FROM POWER SUPPLY. Remove the hoist and trolley from the beam (follow reverse of INSTALLATION, page 5). Disassemble the trolley from the hoist.

1. Remove electrical cover.
2. Remove electrical panel.
3. Remove brake assembly and limit switch assembly.
4. Drain oil from transmission.

CAUTION

Do not disassemble or readjust the clutch, or replace it with a clutch assembly from another hoist. 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.

5. Remove four screws attaching gear box cover to gear housing and remove gear box cover. Limit switch drive shaft will come along with the cover.

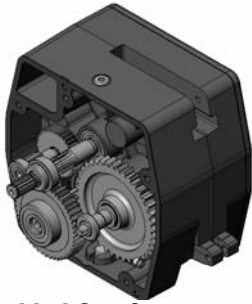


Figure 9 - Assembled Gearing

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.
7. Reassemble in reverse order of disassembly making sure gasket is in place and in good condition. Coat gasket with Permatex® or other gasket cement. Extreme care should be taken to avoid damage to oil seals.
8. Check all wire terminals to be sure they are properly seated and in accordance with wiring diagram. Check brake adjustment and limit switch settings. Follow INSTALLATION, page 5 to reinstall the unit.

SUSPENSION

Refer to Figures 15, 28 and 29.

The sheave housing and the gear housing must be separated to remove the lug suspension, chain guides and plates, and chain support (2-ton models); and to inspect the load sheave.

1. DISCONNECT HOIST FROM POWER SUPPLY.
Disassemble the trolley from the suspension lug.
2. Lay the hoist on its side and remove the four screws holding the sheave and gear housings together. Refer to CHAIN REPLACEMENT WITH NO CHAIN IN HOIST for more information on working on this section of the hoist. Carefully pull the motor and sheave housing assembly from the hoist. Turn the two hoist sections at right angles. Be careful not to damage any motor leads, which run from the motor to the other side of the hoist.
3. The lug assembly is easily removed once the housings are pulled apart. It should be inspected for any deficiencies in the lug, lug nut or retaining pin. The load sheave, chain guides and plates, chain support (2-ton models) and bearing should be inspected at this point. Replacement of the load sheave requires disassembly of the gearbox (see GEARING, page 12).



Figure 10A - Suspension for 1-Ton



Figure 10B - Suspension for 2-Ton

4. Replace parts as necessary, including any associated hardware. Refer to CHAIN REPLACEMENT WITH NO CHAIN IN HOIST, page 10 for reassembly. When reassembled, check that the travel limit switches are set correctly (see LIMIT SWITCH ADJUSTMENT, page 10).

TROLLEY MAINTENANCE

No routine maintenance of the trolley is required other than wheel gear lubrication. The trolley should be inspected for damage, loose parts, and excessive wheel wear at the same time as the hoist inspections.

CAUTION

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

TROLLEY LUBRICATION

TROLLEY WHEEL GEARS

Lubricate the trolley wheel gears at the periodic inspections with an NLGI #2 or heavier grease.

TROLLEY TRANSMISSION

Periodic lubrication is not necessary. If the gearbox is opened for repair, repack with an NLGI #1 grease.

TROLLEY WHEEL BEARINGS

Trolley wheel bearings are prelubricated and sealed. Bearings must be replaced if problems are indicated.

OPTIONAL TROLLEY BRAKE

Refer to Figure 31. Units that are supplied with an optional trolley brake utilize a trolley transmission that allows the brake assembly to be mounted opposite the trolley motor. The brake must be maintained similarly to the hoist brake (see HOIST BRAKE, page 11). The gap between the brake armature and the field is factory set to 0.015". Do not allow the gap to exceed 0.040".

TROLLEY INSPECTION

At regularly scheduled hoist inspections, ensure that the following conditions, as well as any other unsafe conditions, do not exist.

1. Loose fasteners, such as the load pin and wheel nuts.
2. Damaged electrical cables or wires.
3. Loose or corroded terminals and other electrical connections.
4. Excessive wear of wheel tread and flange.
5. Excessive wear of wheel gears and output pinion.
6. Cracks, excessive wear or other damage that may decrease the strength of the suspension lug.

TROLLEY REPAIRS

If you do not have an experienced mechanic/electrician to do your repair work, we recommend that you send your hoist to an approved service center for repairs. Use authorized repair parts only. The following are instructions for minor repairs that may not require a service center.

ELECTRICAL PARTS

The trolley motor controls include a reversing contactor, and, in the case of 2-speed motors, a speed control relay. These components are located under the hoist electrical cover or in a separate trolley control box (See Figures 19 and 21). See ELECTRICAL PARTS AND BRAKE, page 12, for more information on replacing electrical parts.

TROLLEY MOTOR

1. If it is necessary to replace or repair the motor, DISCONNECT THE UNIT FROM THE POWER SUPPLY, and remove the splice plate on the trolley junction box.
2. Disconnect the motor leads from the tie cable. Be sure that all the wires retain their markings.
3. Remove the four motor mounting bolts and pull the motor away from the trolley transmission.
4. Inspect the motor shaft and all the bearings, replace as necessary.
5. Install the new or repaired motor according to the wiring diagram intended for your unit (See Figures 12A - 12F for standard diagrams).

WARNING

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

TROLLEY WHEELS

Worn wheels should be replaced with new assemblies. Remove the locknut from the wheel shaft and remove the assembly. Replace with a new assembly, which includes a new locknut. Be sure to replace the washers and tighten nuts to **100 ft-lbs.**

POWER CORD PRECAUTIONS WITH 1-PHASE HOISTS

Electric hoists require a sufficient power supply. It is especially important with single-phase voltage to ensure that the conductors running to the hoist from the power source are adequate in size to handle the power requirements of the hoist. Inadequate **power cables** and **branch circuits** will cause low voltage, high amperage, damage to the hoist, 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 4 - Recommended Conductor Sizes for 1-Phase Hoists

HP	Voltage (1-Phase)	Maximum Length of Power Cord in Feet			
		14 AWG	12 AWG	10 AWG	8 AWG
1/4	115V	75	120	190	300
	230V	350	560	900	
1/2	115V	40	60	100	150
	230V	200	330	520	810
1	115V	0	30	50	75
	230V	120	190	310	490

Spacer Washer Location

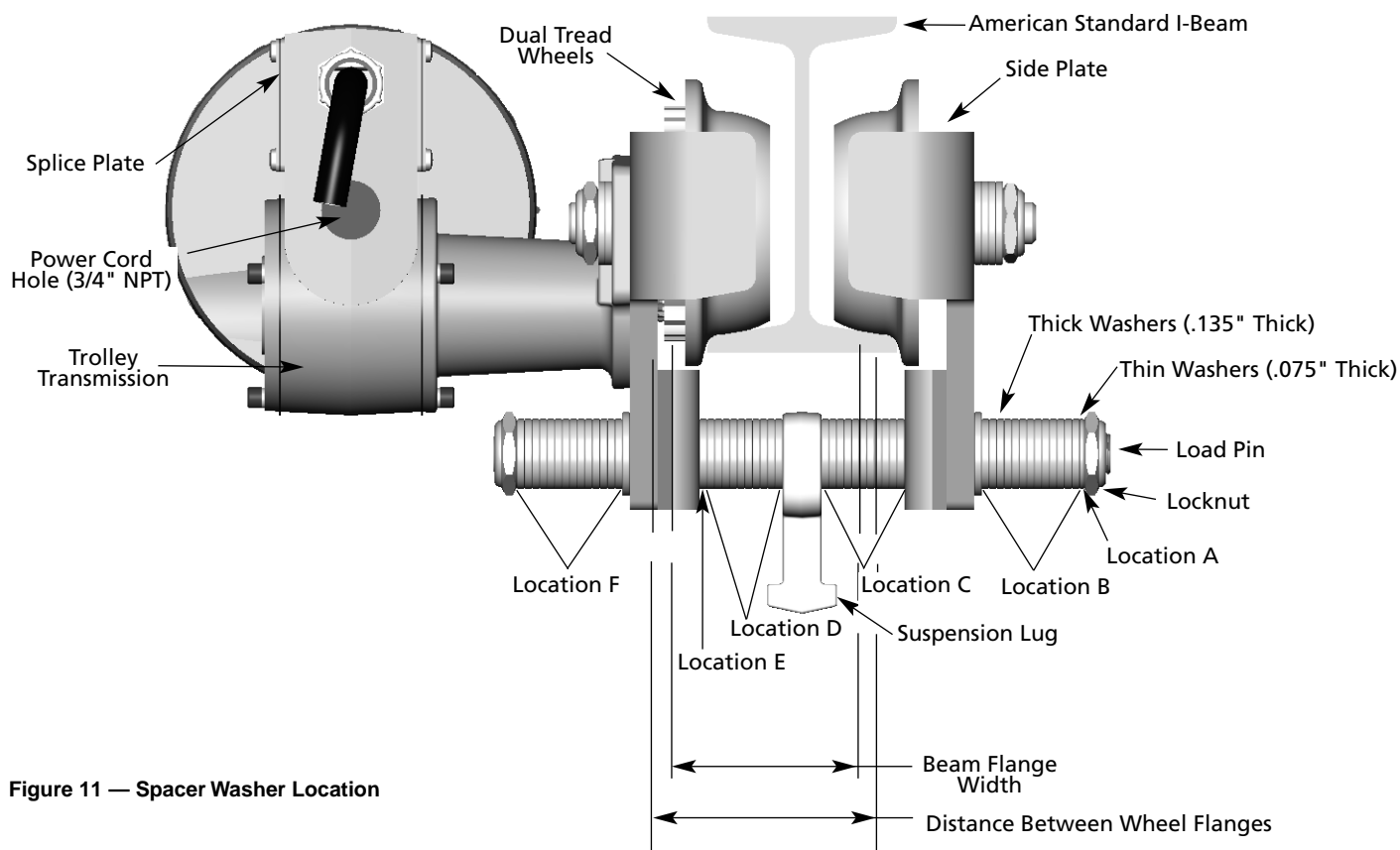


Figure 11 — Spacer Washer Location

Table 5 - American Standard I-Beam (Tapered Flange)

STANDARD BEAM Size & Weight	Flange Width	Location A H4210 (Thin)	Location B H4209 (Thick)	Location C H4209 (Thick)	Location D H4209 (Thick)	Location E H4210 (Thin)	Location F H4209 (Thick)
6" x 12.5#	3.332	1	13	11	11	0	14
6" x 17.3#	3.565	0	13	12	11	1	13
7" x 15.3#	3.662	0	12	12	12	1	13
7" x 20.0#	3.860	1	11	13	13	0	12
8" x 18.4#	4.001	1	11	14	13	0	11
8" x 23.0#	4.171	1	10	14	14	0	11
10" x 25.4#	4.661	0	9	16	15	1	9
10" x 35.0#	4.944	1	7	17	17	0	8
12" x 31.8#	5.000	1	7	17	17	0	8
12" x 35.0#	5.078	1	7	18	17	0	7
12" x 40.8#	5.252	1	6	18	18	0	7
12" x 50.0#	5.477	0	6	19	18	1	6
15" x 42.9#	5.501	1	5	19	19	0	6
15" x 50.0#	5.640	1	5	20	19	0	5
18" x 54.7#	6.001	0	4	21	20	1	4
18" x 70.0#	6.251	0	3	22	21	1	3
20" x 66.0#	6.255	0	3	22	21	1	3
24" x 80.0#	7.000	1	0	25	24	0	0

Table 6 — Wide Flange Beam (Flat Flange)

WIDE FLANGE BEAM Size & Weight	Flange Width	Location A H4210 (Thin)	Location B H4209 (Thick)	Location C H4209 (Thick)	Location D H4209 (Thick)	Location E H4210 (Thin)	Location F H4209 (Thick)
5" x 16.0#, 14" x 22.0#	5.000	0	7	17	17	1	8
5" x 19.0#	5.030	1	7	18	17	0	7
6" x 9.0#, 8" x 10.0#	3.940	0	11	13	13	1	12
6" x 12.0#, 8" x 13.0#	4.000	1	11	14	13	0	11
6" x 15.0#	5.990	1	3	21	21	0	4
6" x 16.0#, 12" x 22.0#	4.030	0	11	14	13	1	11
6" x 20.0#	6.020	1	3	21	21	0	4
6" x 25.0#	6.080	0	3	21	21	1	4
8" x 15.0#	4.015	0	11	14	13	1	11
8" x 18.0#	5.250	0	6	18	18	1	7
8" x 21.0#	5.270	0	6	18	18	1	7
8" x 24.0#	6.495	1	1	23	23	0	2
8" x 28.0#	6.535	1	1	23	23	0	2
10" x 12.0#	3.960	1	11	14	13	0	11
10" x 15.0#	4.000	1	11	14	13	0	11
10" x 17.0#	4.010	0	11	14	13	1	11
10" x 19.0#	4.020	0	11	14	13	1	11
10" x 22.0#	5.750	1	4	20	20	0	5
10" x 26.0#	5.770	0	4	20	20	1	5
10" x 30.0#	5.810	0	4	20	20	1	5
12" x 14.0#	3.970	1	11	14	13	0	11
12" x 16.0#	3.990	1	11	14	13	0	11
12" x 19.0#	4.005	1	11	14	13	0	11
12" x 26.0#	6.490	0	2	23	22	1	2
12" x 30.0#	6.520	1	1	23	23	0	2
12" x 35.0#	6.560	1	1	23	23	0	2
14" x 26.0#	5.025	1	7	18	17	0	7
14" x 30.0#	6.730	0	1	24	23	1	1
14" x 34.0#	6.745	0	1	24	23	1	1
14" x 38.0#	6.770	1	0	24	24	0	1
16" x 26.0#	5.500	0	5	19	19	1	6
16" x 31.0#	5.525	0	5	19	19	1	6
16" x 36.0#	6.985	0	0	25	24	1	0
16" x 40.0#	6.995	0	0	25	24	1	0
18" x 35.0#	6.000	1	3	21	21	0	4
18" x 40.0#	6.015	1	3	21	21	0	4
18" x 46.0#	6.060	0	3	21	21	1	4
21" x 44.0#	6.500	1	1	23	23	0	2
21" x 50.0#	6.530	1	1	23	23	0	2
21" x 57.0#	6.555	1	1	23	23	0	2
24" x 55.0#	7.005	0	0	25	24	1	0

WIRING DIAGRAMS

The following are standard wiring diagrams. Units that have special electrical features will have different diagrams. Specific diagrams are included with each hoist. If necessary, note the model and serial number stamped into the sheave housing of the hoist and consult the factory for the correct diagram.

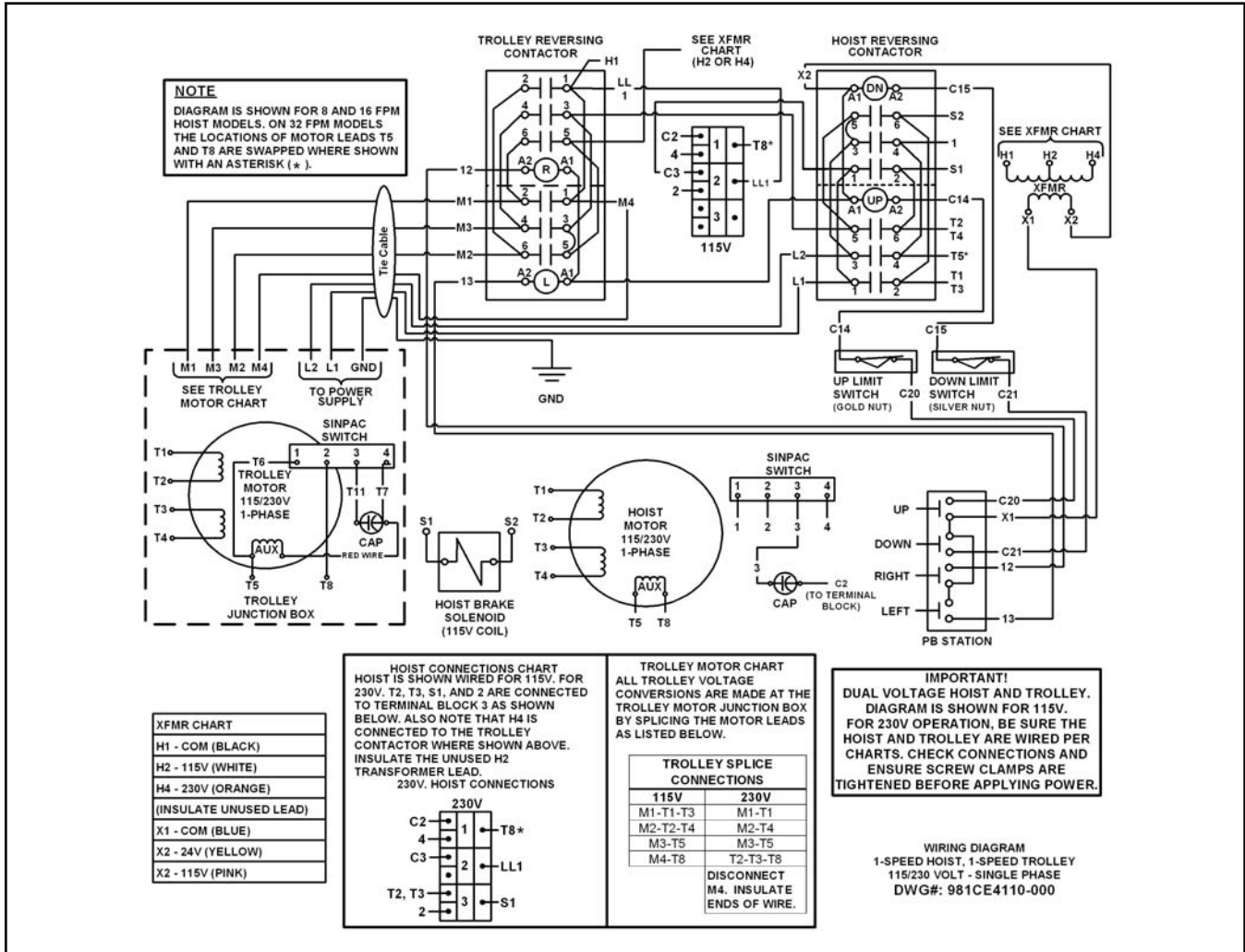


Figure 12A — Wiring Diagram for 1-Speed, 115/230V - 1 Phase Models

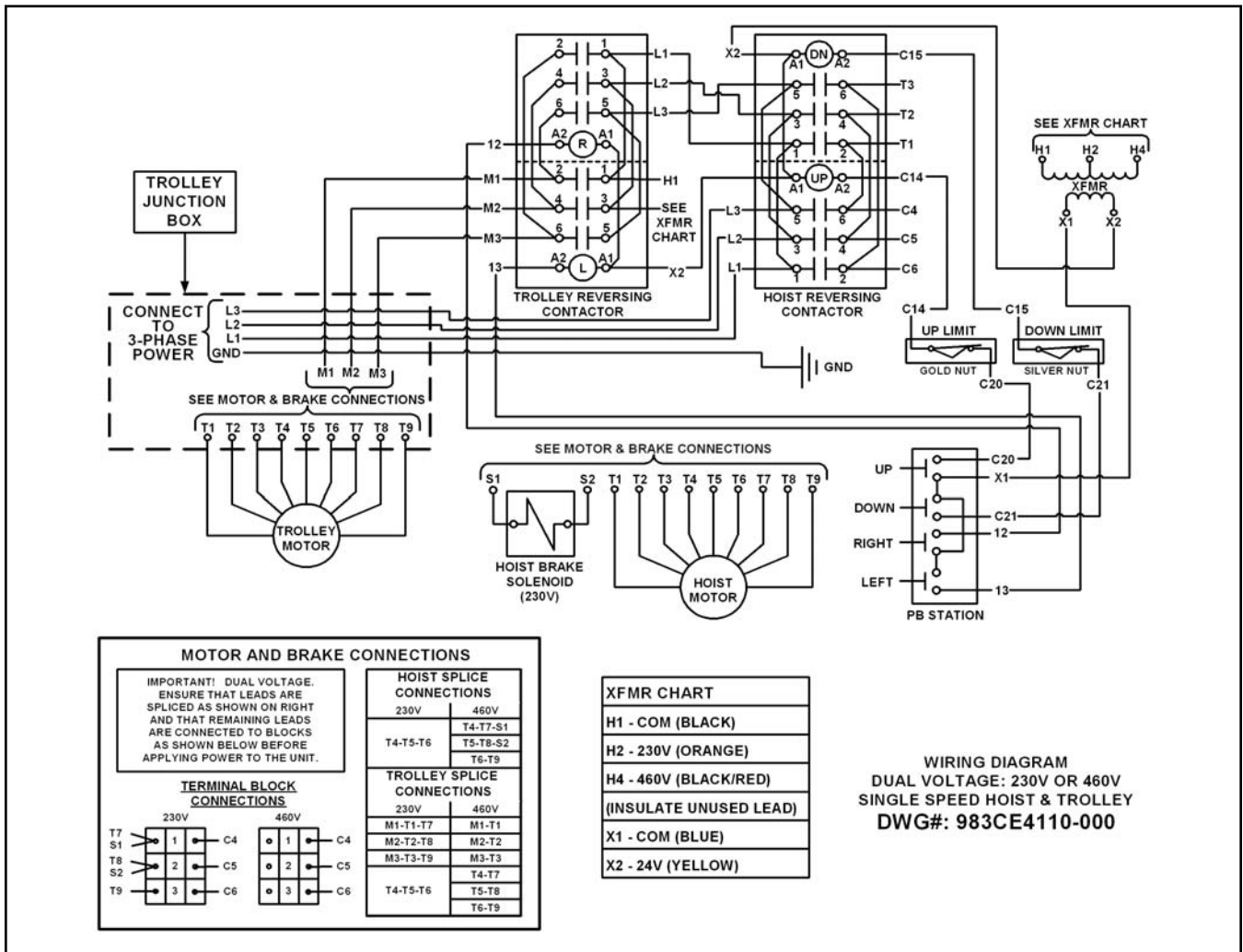


Figure 12B — Wiring Diagram for 1-Speed, 230/460V - 3 Phase - 60HZ Models

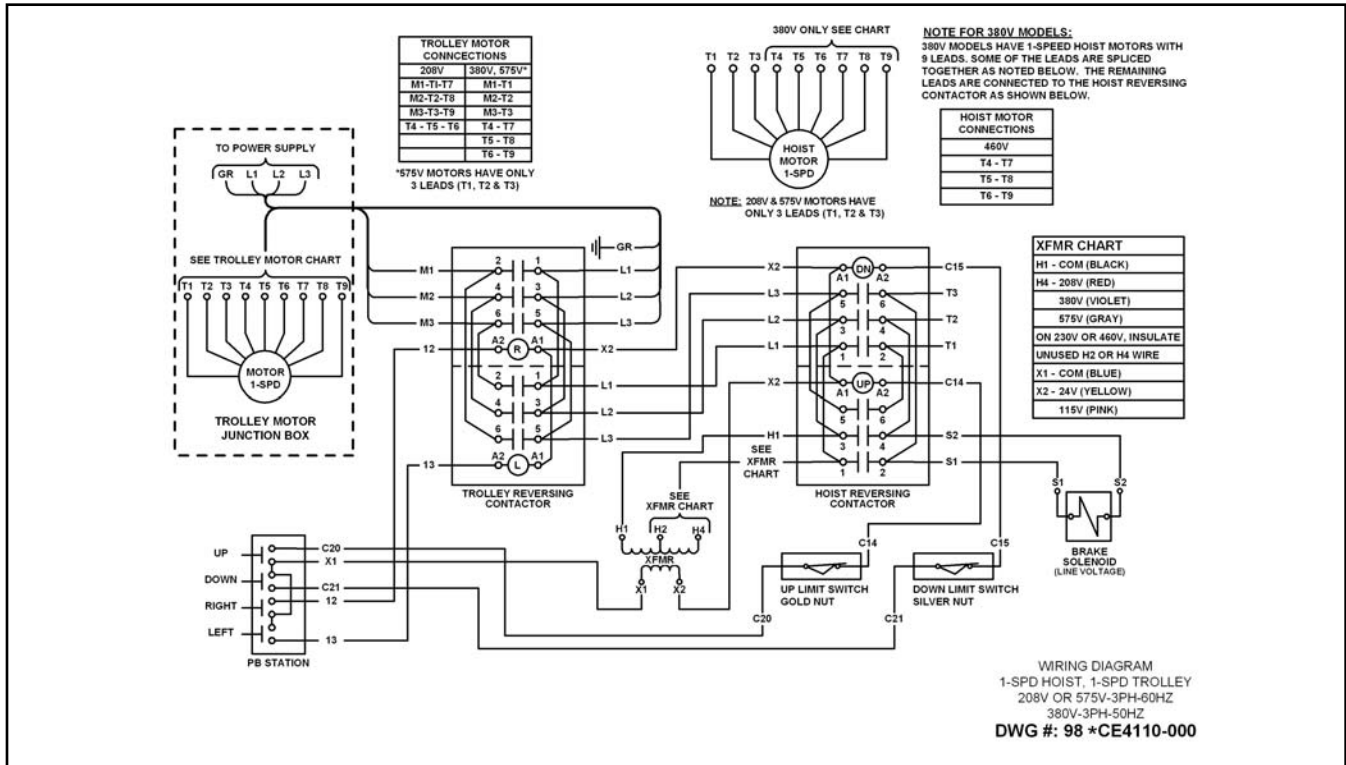


Figure 12C — Wiring Diagram for 1-Speed Hoist, 1-Speed Trolley, 3 Phase Models

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

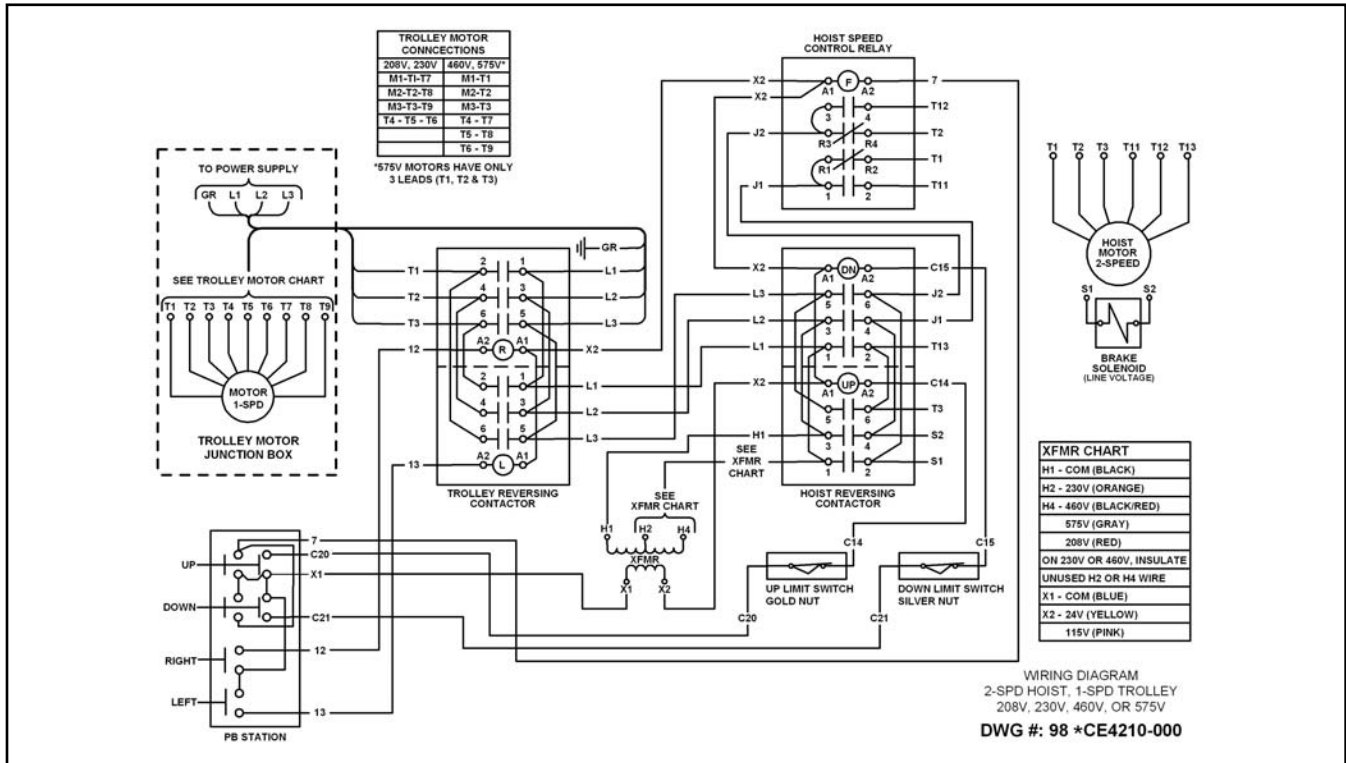


Figure 12D — Wiring Diagram for 2-Speed Hoist, 1-Speed Trolley, 3 Phase Models

* Factory supplied wiring diagrams will have numbers beginning with 983 for 230 or 460V, 985 for 575V, 987 for 208V and 988 for 380V.

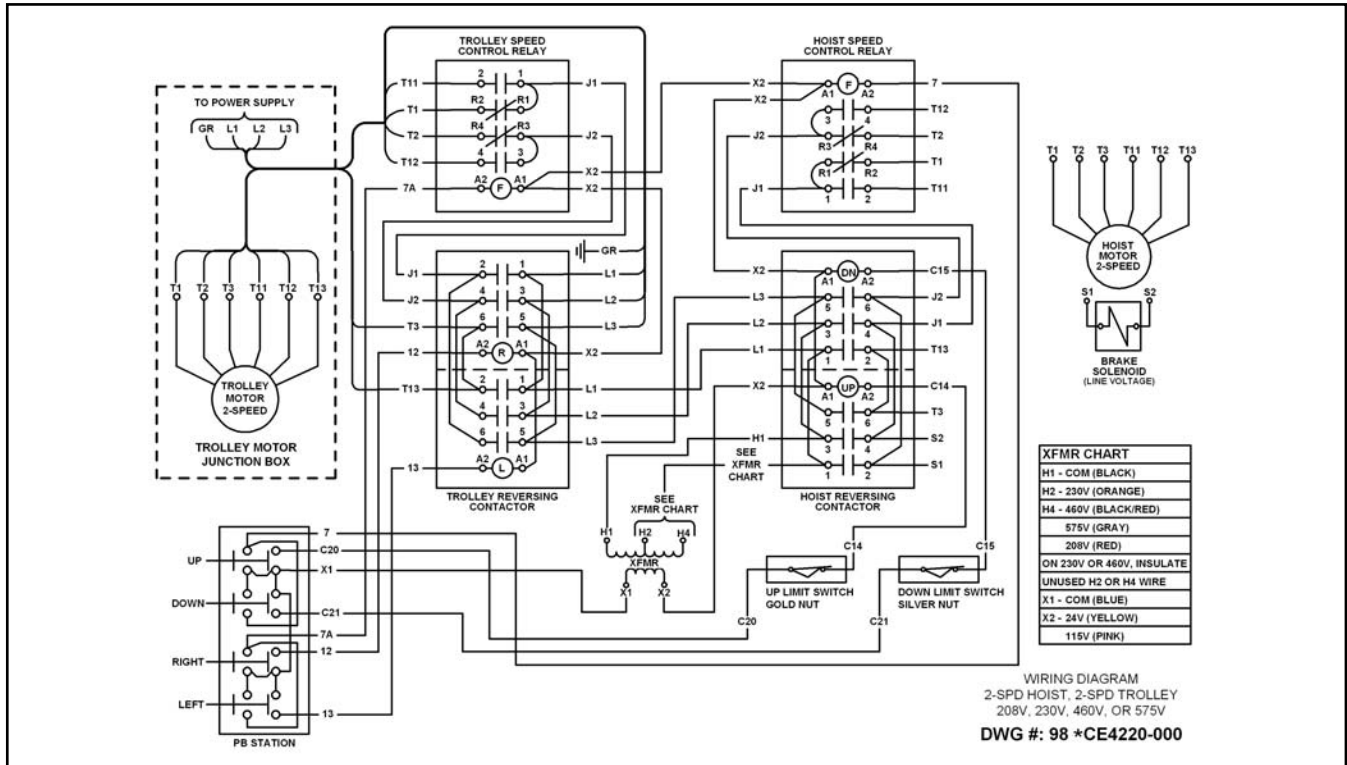


Figure 12E — Wiring Diagram for 2-Speed Hoist, 2-Speed Trolley Models

* Factory supplied wiring diagrams will have numbers beginning with 983 for 230 or 460V, 985 for 575V, 987 for 208V and 988 for 380V.

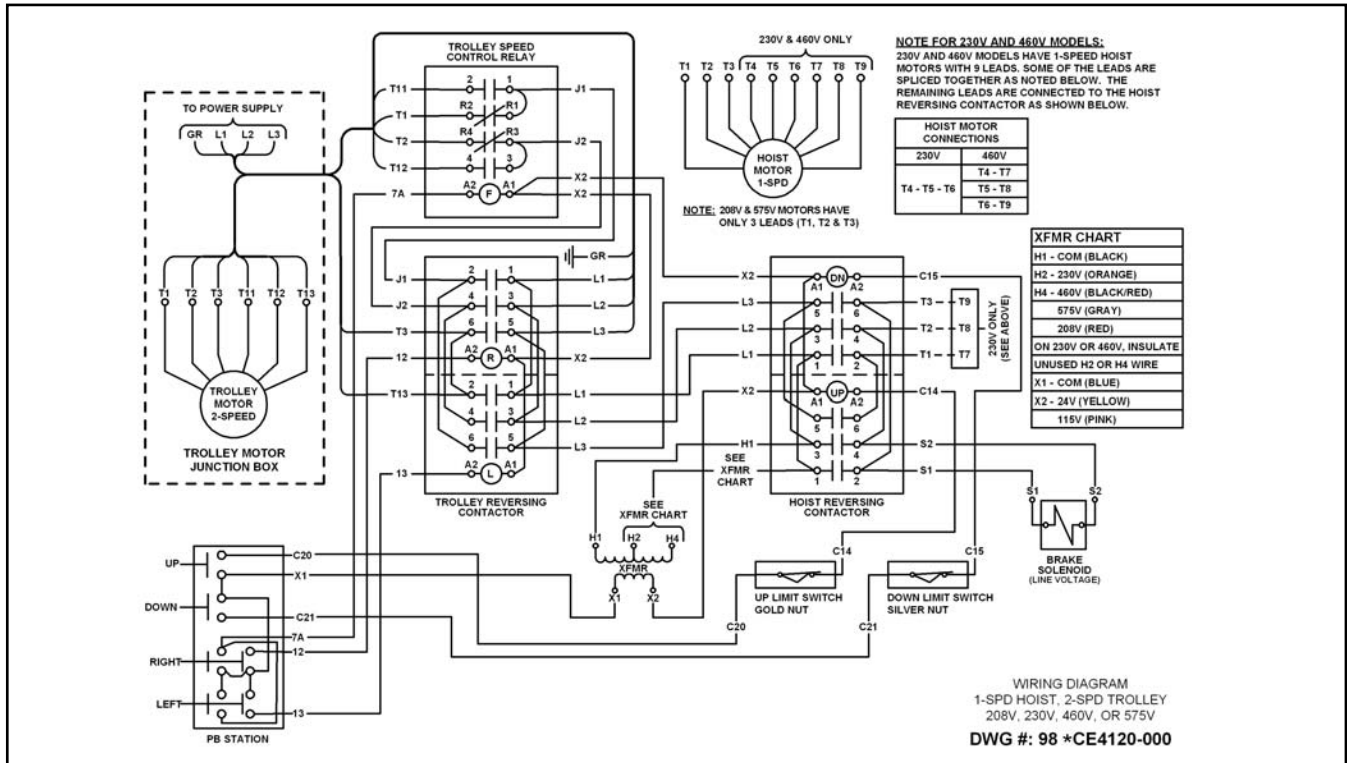


Figure 12F — Wiring Diagram for 1-Speed Hoist, 2-Speed Trolley Models

* Factory supplied wiring diagrams will have numbers beginning with 983 for 230 or 460V, 985 for 575V, 987 for 208V and 988 for 380V.

HOIST TROUBLE SHOOTING

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



WARNING

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

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

— Probable Cause —

— Remedy —

Hook fails to stop at end of travel	
<ol style="list-style-type: none"> 1. Limit switch not operating 2. Brass limit switch nuts not moving on shaft 3. Hoist reversing contactor malfunctioning 	<ol style="list-style-type: none"> 1. Check adjustment (See LIMIT SWITCH ADJUSTMENT, page 10). Check connections against wiring diagram. Tighten loose connections or replace. 2. Check for stripped threads or bent nut guide. 3. Remove electrical cover and check reversing contactor.
Hoist does not respond to pushbutton	
<ol style="list-style-type: none"> 1. Power failure in supply lines 2. Wrong voltage or frequency 3. Improper connections in hoist or pushbutton station 4. Brake does not release 5. Faulty hoist reversing contactor 	<ol style="list-style-type: none"> 1. Check circuit breakers, switches and connections in power supply lines. 2. Check voltage and frequency of power supply against the rating on the nameplate of the motor. 3. Check all connections at line connectors and on terminal block. Check terminal block on dual voltage hoists for proper voltage connections. 4. Check connections to the solenoid coil. Check for open or short circuit. Check for proper adjustment (See BRAKE ADJUSTMENT, page 11). 5. Check coils for open or short circuit. Check all connections in control circuit. Check for burned contacts. Replace as needed.
Hook does not stop promptly	
<ol style="list-style-type: none"> 1. Hoist overloaded 2. Brake not holding 	<ol style="list-style-type: none"> 1. Reduce load to within rated capacity of hoist. 2. Check brake adjustment (See BRAKE ADJUSTMENT, page 11). It may be necessary to replace discs.
Hook moves in wrong direction	
<ol style="list-style-type: none"> 1. Three phase reversal 2. Improper connections 	<ol style="list-style-type: none"> 1. Reverse any two wires (except the ground wire) at the power source (See ELECTRICAL CONNECTIONS, page 6). 2. Check all connections against wiring diagram.
Hoist hesitates to lift when energized	
<ol style="list-style-type: none"> 1. Hoist overloaded 2. Motor brake requires adjustment 3. Worn overload limiting clutch 4. Low voltage 5. Faulty SINPAC® starting switch or start capacitor (single phase hoists only) 	<ol style="list-style-type: none"> 1. Reduce load within rated capacity of hoist. 2. Check motor brake adjustment (See BRAKE ADJUSTMENT, page 11). 3. Replace clutch. 4. 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 hoist reversing contactor while lifting a load. 5. Replace faulty component.
Hook raises but will not lower	
<ol style="list-style-type: none"> 1. "DOWN" circuit open 2. Broken conductor in pushbutton cable 3. Faulty hoist reversing contactor 4. Loose screw clamps 	<ol style="list-style-type: none"> 1. Check circuit for loose connections. Check "DOWN" limit switch for malfunction. 2. Check each conductor in the cable. If one is broken, replace entire cable. 3. Check coils for open or short circuit. Check all connections in control circuit. Check for burned contacts. Replace as needed. 4. Ensure that screw clamps are tightened on the terminal blocks and reversing contactor.
Hook lowers but will not raise	
<ol style="list-style-type: none"> 1. Hoist overloaded 2. Low voltage 3. "UP" circuit open 4. Broken conductor in pushbutton cable 5. Faulty hoist reversing contactor 6. Faulty capacitor (single phase hoist only) 7. Worn overload limiting clutch 8. Loose screw clamps 	<ol style="list-style-type: none"> 1. Reduce load to within rated capacity of hoist. 2. 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 hoist reversing contactor while lifting a load. 3. Check circuit for loose connections. Check "UP" limit switch for malfunction. 4. Check each conductor in the cable. If one is broken, replace entire cable. 5. Check coils for open or short circuit, check all connections in control circuit. Check for burned contacts. Replace as needed. 6. Check starting capacitor on motor. Replace if necessary. 7. Replace overload clutch assembly. 8. Ensure that screw clamps are tightened on the terminal blocks and reversing contactor.
Motor overheats	
<ol style="list-style-type: none"> 1. Excessive load 2. Low voltage 3. Extreme external heating 4. Frequent starting or reversing 5. Brake dragging 	<ol style="list-style-type: none"> 1. Reduce load to within rated capacity of hoist. 2. 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 hoist reversing contactor while lifting a load. 3. As the ambient temperature rises towards the 130°F limitation of the unit, frequency of the hoist operation must be limited to avoid overheating of the motor. See ADVERSE ENVIRONMENTAL CONDITIONS, page 3. 4. Excessive inching, jogging or reversing should be avoided since this type of operation will drastically shorten the life of motor, contactor and brake. 5. Check brake adjustment (See BRAKE ADJUSTMENT, page 11).

HOIST TROUBLE SHOOTING CONTINUED

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

— Probable Cause —

— Remedy —

Lack of proper lifting speed	
<ol style="list-style-type: none"> 1. Hoist overloaded 2. Brake dragging 3. Low voltage 4. Overload limiting clutch intermittently slipping 	<ol style="list-style-type: none"> 1. Reduce load to within rated capacity of hoist. 2. Check for proper brake adjustment or other defects. 3. Ensure that the voltage at the reversing contactor is within $\pm 10\%$ of the nominal voltage while lifting a load. 4. Replace overload clutch assembly.
Motor brake noise or chatter (while starting hoist)	
<ol style="list-style-type: none"> 1. Brake needs adjustment 2. Low voltage 	<ol style="list-style-type: none"> 1. See BRAKE ADJUSTMENT, page 11. 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 hoist is running)	
<ol style="list-style-type: none"> 1. Brake needs adjustment 2. Broken shading coil on brake frame 	<ol style="list-style-type: none"> 1. See BRAKE ADJUSTMENT, page 11. 2. Replace shading coil or complete brake frame assembly.

TROLLEY TROUBLE SHOOTING

— Probable Cause —

— Remedy —

Trolley does not operate	
<ol style="list-style-type: none"> 1. No voltage at trolley 2. Open control circuit 3. Wrong voltage or frequency 4. Low voltage 5. Excessive load 6. Faulty SINPAC[®] starting switch or start capacitor (single phase trolleys only) 	<ol style="list-style-type: none"> 1. Mainline or branch circuit switch open; branch line fuse blown or circuit breaker tripped. Close, replace or re-set. Check for grounded or open connections in supply lines or current collectors. 2. Open or shorted windings in transformer or reversing contactor; control station switch contacts not making contact; loose connection or broken wire circuit. Check continuity and repair or replace defective parts. 3. Check voltage and frequency of power supply against the rating on the nameplate of the motor. 4. Ensure that the voltage at the trolley contactor does not drop below 10% of the nominal voltage. 5. Reduce load to within rated capacity of unit. 6. Replace faulty component.
Trolley operates in one direction only	
<ol style="list-style-type: none"> 1. Open control circuit 	<ol style="list-style-type: none"> 1. Open or shorted windings in transformer or reversing contactor; control station switch contacts not making contact; loose connection or broken wire in circuit. Check continuity and repair or replace defective parts.
Trolley operates sluggishly	
<ol style="list-style-type: none"> 1. Excessive load 2. Low voltage 3. Worn or dirty rails 	<ol style="list-style-type: none"> 1. Reduce load to within rated capacity of hoist. 2. Ensure that the voltage at the trolley contactor does not drop below 10% of the nominal voltage. 3. Clean rails, inspect for worn spots.
Motor overheats	
<ol style="list-style-type: none"> 1. Excessive load 2. Low voltage 3. Extreme external heating 4. Frequent starting or reversing 	<ol style="list-style-type: none"> 1. Reduce load to within rated capacity of hoist. 2. Ensure that the voltage at the trolley contactor does not drop below 10% of the nominal voltage. 3. As the ambient temperature rises towards the 130°F limitation of the unit, frequency of trolley operation must be limited to avoid overheating of motor. See ADVERSE ENVIRONMENTAL CONDITIONS, page 3. 4. Excessive inching, jogging or plugging should be avoided since this type of operation will drastically shorten the life of motor and contactor. Always allow the trolley to coast to a stop before reversing its direction.

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

Type of Hoist _____
 Location _____
 Manufacturer _____

Capacity (Tons) _____
 Original Installation Date _____
 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 2. Switch sticks or does not open circuit when tripped.		
Motor Brake	*	*	*	1. Slippage or excessive drift 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. Cracks (use dye penetrant, magnetic or other suitable detection method)		
Suspension Lug	*	*	*	Cracks, excessive wear or other damage which may impair the strength of the lug. Cracks (use dye penetrant, magnetic particle or other suitable detection method)		
Chain	*	*	*	Inadequate lubrication, excessive wear or stretch, cracked, damaged or twisted links, corrosion or foreign substance		
Hook and Suspension Lug Connections			*	Cracks, bending, stripped threads		
Pins, Bearings, Bushings Shafts, Couplings, Chain Guides			*	Excessive wear, corrosion, cracks, distortion		
Nuts, Bolts, Screws			*	Looseness, stripped and damaged threads, corrosion		
Load Sheaves			*	Distortion, cracks, and excessive wear. Build-up of foreign substances		
Housings, Load Block			*	Cracks, distortion. Excessive wear, internal build-up of foreign substances		
Wiring and Terminals			*	Fraying, defective insulation		
Contact Block, Reversing Contactors, other Electrical Apparatus & Terminals			*	Loose connections, burned or pitted contacts		
Supporting Structure and Trolley			*	Damage or wear which restricts ability to support imposed loads		
Nameplates, Decals, Warning Labels			*	Missing, damaged or illegible		
Gear Oil			*	Low level or needs changing		

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

FREQUENCY OF INSPECTION

Frequent — Indicates items requiring inspection daily to monthly. Daily inspections may be performed by the operator if properly designated.

Periodic — Indicates items requiring inspection monthly to yearly. Inspections to be performed by or under the direction of a properly designated 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 13A — 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 Signature	Date Inspected	Approved by	Date

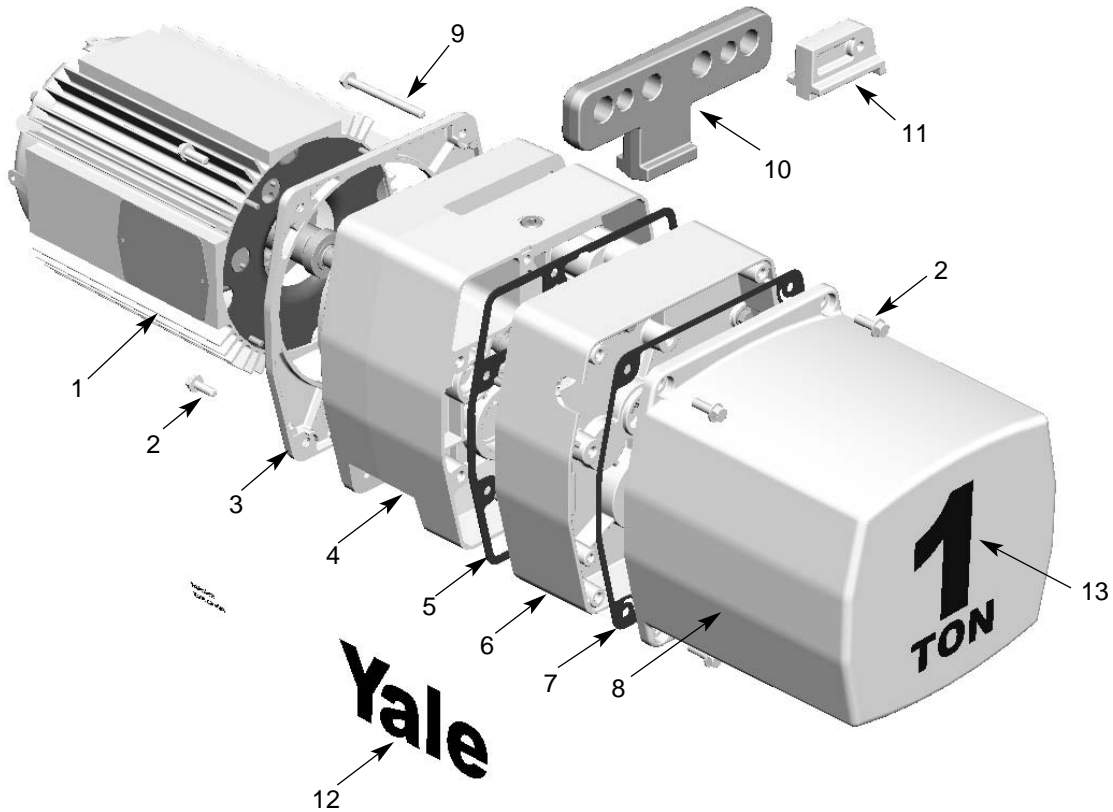
Figure 13B — Recommended Inspector's Report

RECOMMENDED LUBRICATION SCHEDULE* YALE ELECTRIC POWERED CHAIN HOIST					
PAGE AND REFERENCE NO.	COMPONENT	TYPE OF LUBRICANT	TYPE OF SERVICE AND FREQUENCY OF LUBRICATION		
			HEAVY	NORMAL	INFREQUENT
Pages 40 & 41 Ref. No. 18	Load Chain	SAE 90 gear oil	Daily	Weekly	Monthly
Page 40 & 41	Gearing	SAE 90 Extreme Pressure (EP) gear oil	At periodic inspection (see Figure 13A)		
Page 38 & 39 Ref. No. 9 & 7	Limit Switch Shaft	multi-purpose oil or general purpose spray	Monthly	Yearly	Yearly
Pages 42 & 43 Ref. No. 38, 50	Load Hook Bearing	SAE 30 gear oil	Weekly	Monthly	Yearly
Pages 42 & 43 Ref. No. 44	Idler Sheave Bearing (Bushing) Assembly	Multipurpose lithium base bearing grease	At periodic inspection (see Figure 13A)		

NOTE: All bearings except hook and idler sheave bearings are prelubricated and sealed.
 (*) This lubrication schedule is based on a hoist operating in normal environment conditions. Hoists operating in adverse atmospheres containing excessive heat, corrosive fumes or vapors, abrasive dust, etc., should be lubricated more frequently.

Figure 14 — Recommended Lubrication Schedule

Figure 15 - Basic Hoist

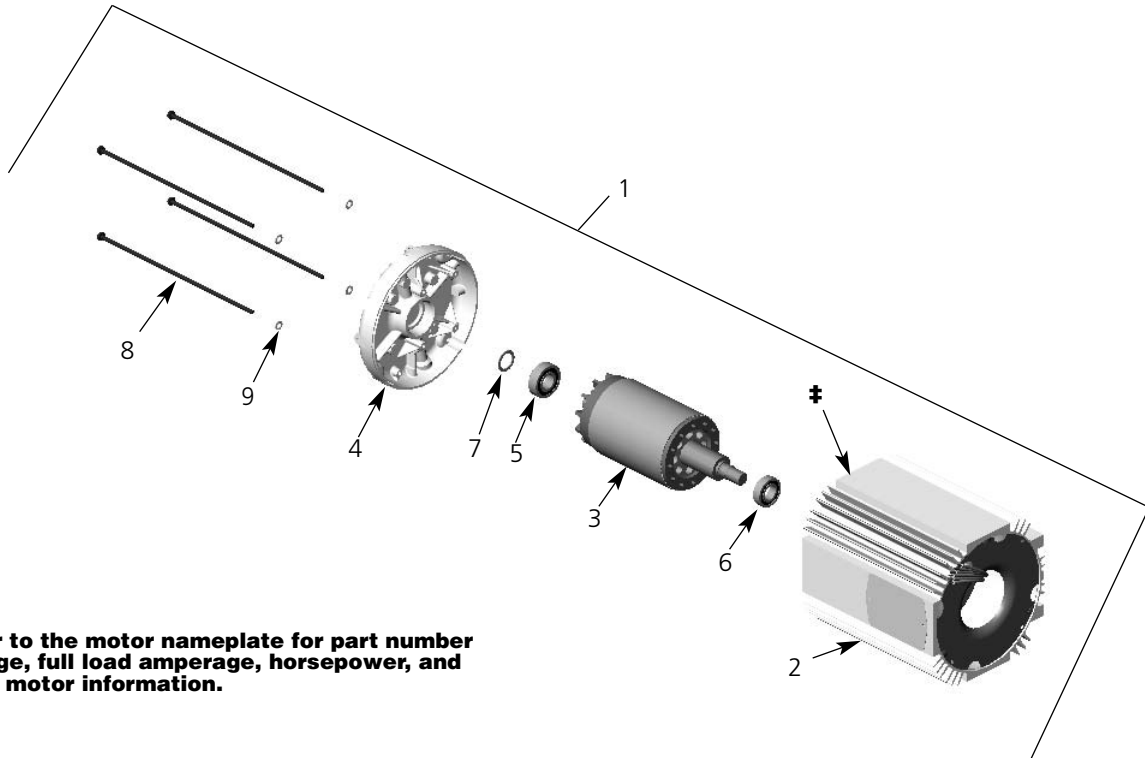


Parts List for Basic Hoist

Ref No.	Description	Part No.	Qty	Ref No.	Description	Part No.	Qty
1	Motor (See Figures 16 & 17)	—	1	△	Nylon Cover		
2	Cover Screw	H2976P	7		†1/8 ton	08790W	1
3	Trim Cover	JM37	1		†1/4 ton	08791W	1
4	Transmission Housing	JM3533	1		†1/2 ton	08792W	1
5	Transmission Case Gasket	JM560	1		†1 ton	08793W	1
6	Transmission Cover	JM34	1		†2 ton	08794W	1
7	Electrical Cover Gasket	JM563	1	△	Suspension Lug		
8	Electrical Cover	JM36	1		Cross Mounted (Standard)	JM50C	1
9	Hook Retainer Screw	H2709P	1		Parallel Mounted	50JM1	1
10	Suspension Lug Assembly	JM50C	1				
11	Lug Retainer	JM285	1				
12	Yale Decal	YJL677	2				
13	Capacity Decal						
	1/8 ton	JLC675K-01	1				
	1/4 ton	JLC675K-02	1				
	1/2 ton	JLC675K-05	1				
	1 ton	JLC675K-10	1				
	2 ton	JLC675K-20	1				

(△) Not Shown

Figure 16 - Hoist Motor, 1-Speed, 1-Phase



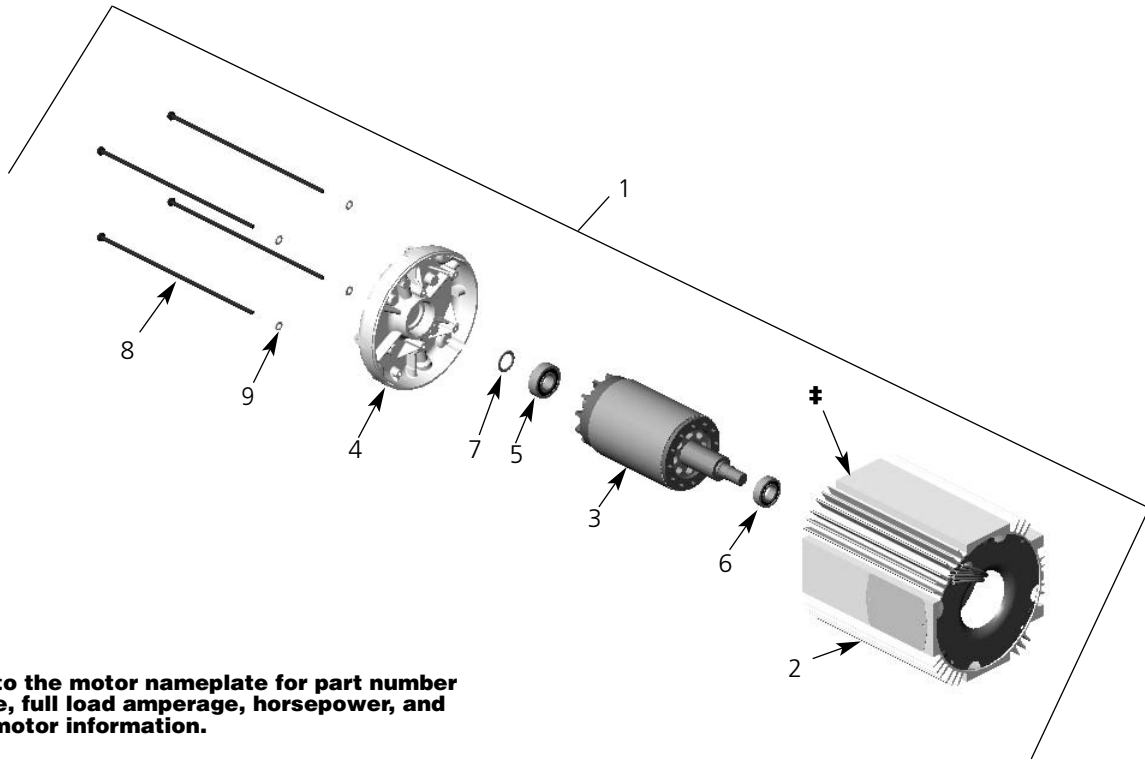
(#) Refer to the motor nameplate for part number, voltage, full load amperage, horsepower, and other motor information.

Parts List for Hoist Motor, 1-Speed, 1-Phase

Ref No.	Description	Part No.	Qty	Ref No.	Description	Part No.	Qty
1	Hoist Motor			5	Rear Bearing	500K3	1
	1/4 hp, 115/230V-1Ph	861JX11	1	6	Front Bearing	732012C	1
	1/2 hp, 115/230V-1Ph	861JX12	1	7	Shim Washer	JL4301-01	1
	1 hp, 115/230V-1Ph	861JX14	1	8	Thru Bolt	HA3100A56	4
2	Stator Assembly	*	1	9	#10 Spring Lockwasher	H4082P	4
3	Rotor Assembly	*	1				
4	End Shield	35EP3100D15	1				

* Not available as an individual part.

Figure 17 - Hoist Motor, 3-Phase

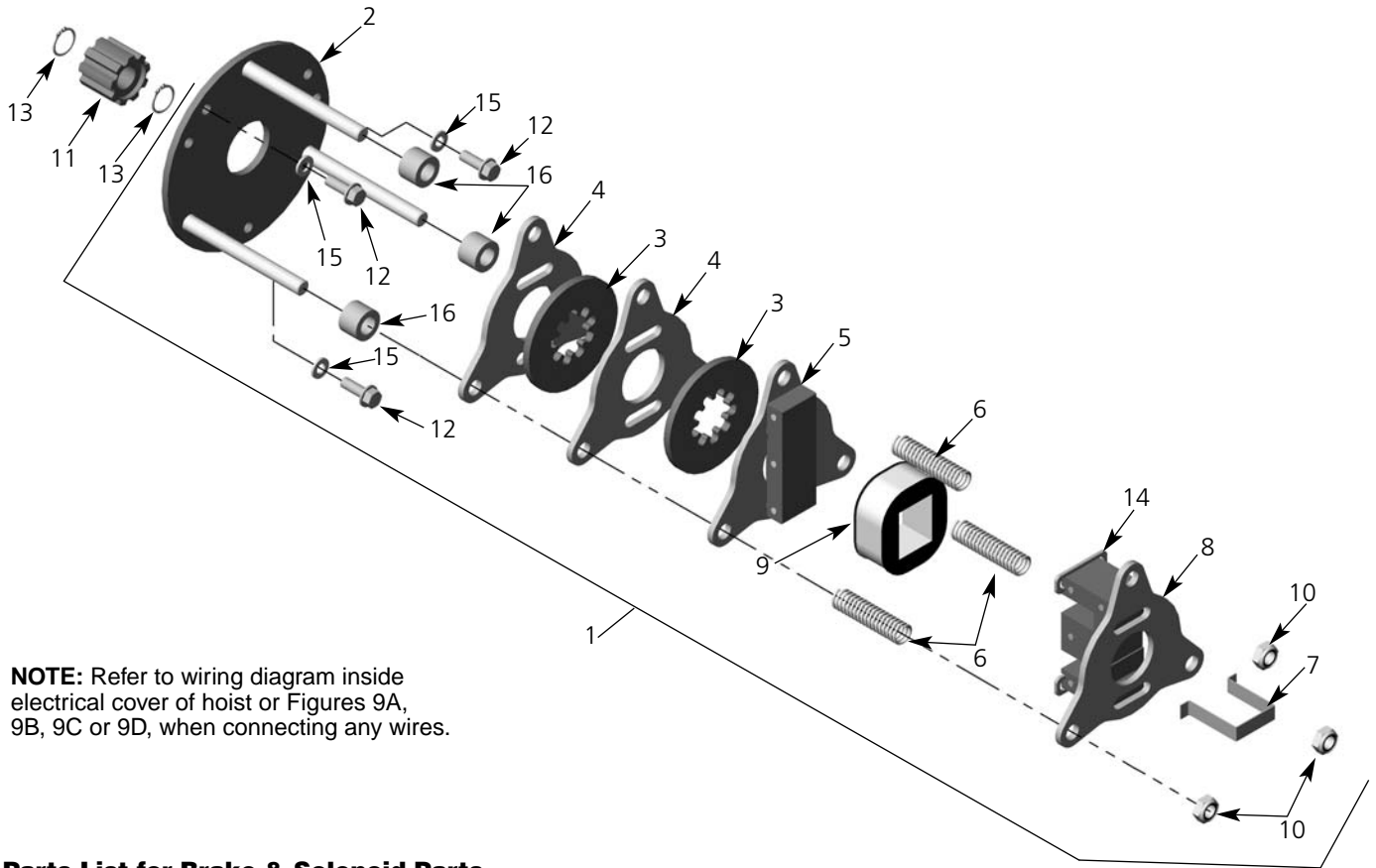


(#) Refer to the motor nameplate for part number, voltage, full load amperage, horsepower, and other motor information.

Ref No.	Description	Part No.	Qty	Ref No.	Description	Part No.	Qty
1	Hoist Motor (1-Speed)				1 hp, 575V-3Ph-60Hz	873JX12	1
	1/4 hp, 230/460V-3Ph-60Hz	863JX1	1		1/4 hp, 208V-3Ph-60Hz	873JX13	1
	1/2 hp, 230/460V-3Ph-60Hz	863JX2	1		1/2 hp, 208V-3Ph-60Hz	873JX14	1
	1 hp, 230/460V-3Ph-60Hz	863JX4	1		1 hp, 208V-3Ph-60Hz	873JX16	1
	1/4 hp, 575V-3Ph-60Hz	863JX5	1	2	Stator Assembly	*	1
	1/2 hp, 575V-3Ph-60Hz	863JX6	1	3	Rotor Assembly	*	1
	1 hp, 575V-3Ph-60Hz	863JX8	1	4	End Shield	35EP3100D15	1
	1/4 hp, 208V-3Ph-60Hz	863JX9	1	5	Rear Bearing	500K3	1
	1/2 hp, 208V-3Ph-60Hz	863JX10	1	6	Front Bearing	732012C	1
	1 hp, 208V-3Ph-60Hz	863JX12	1	7	Shim Washer	JL4301-01	1
	Hoist Motor (2-Speed)			8	Thru Bolt (1-Speed)	HA3100A56	4
	1/4 hp, 230V-3Ph-60Hz	873JX1	1		Thru Bolt (2-Speed)	HA3100A71	4
	1/2 hp, 230V-3Ph-60Hz	873JX2	1	9	#10 Spring Lockwasher	H4082P	4
	1 hp, 230V-3Ph-60Hz	873JX4	1				
	1/4 hp, 460V-3Ph-60Hz	873JX5	1				
	1/2 hp, 460V-3Ph-60Hz	873JX6	1				
	1 hp, 460V-3Ph-60Hz	873JX8	1				
	1/4 hp, 575V-3Ph-60Hz	873JX9	1				
	1/2 hp, 575V-3Ph-60Hz	873JX10	1				

* Not available as an individual part.

Figure 18 - Brake & Solenoid Parts



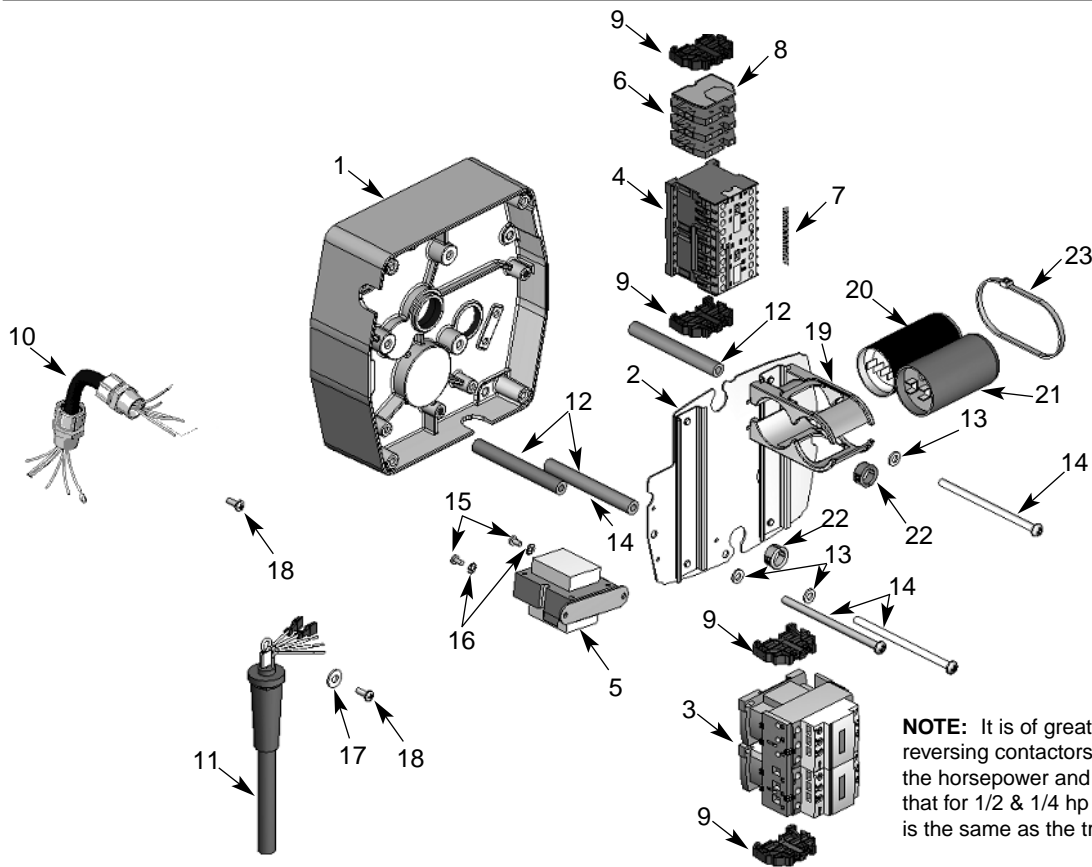
NOTE: Refer to wiring diagram inside electrical cover of hoist or Figures 9A, 9B, 9C or 9D, when connecting any wires.

Parts List for Brake & Solenoid Parts

Ref No.	Description	Part No.	Qty	Ref No.	Description	Part No.	Qty
1	Disc Brake Assembly*			9	Brake Coil*		
	1 hp, 115 Volt	854JM1	1		115V*	853JL1	1
	1/4 & 1/2 hp, 115 Volt	854JM12	1		230V*	853JL2	1
	1 hp, 230 Volt	854JM2	1		460V	853JL3	1
	1/4 & 1/2 hp, 230 Volt	854JM22	1		575V	853JL4	1
	1 hp, 460 Volt	854JM3	1		208V	853JL5	1
	1/4 & 1/2 hp, 460 Volt	854JM32	1	10	Locknut	H3978	3
	1 hp, 575 Volt	854JM4	1	11	Adapter	JM142	1
	1/4 & 1/2 hp, 575 Volt	854JM42	1	12	Screw	H2976P	3
	1 hp, 208 Volt	854JM5	1	13	Retaining Ring	H5501	2
	1/4 & 1/2 hp, 208 Volt	854JM52	1	14	Shading Coil	860J1	2
2	Plate & Stud Assembly	859JG1	1		Shading Coil Adhesive	H7812	1
3	Brake Disc			15	Lockwasher	H4134	3
	1/4 & 1/2 hp	581J1A	2	16	Spacer for 1/4 & 1/2 hp	141J2	3
	1 hp	581J1A	3				
4	Brake Plate	JF291	2				
5	Plate & Armature Assembly	JF858	1				
6	Spring	344J6	3				
7	Retainer	JF710	1				
8	Plate & Frame Assembly	JF857	1				

* **Dual-voltage 115/230V models use 115V Brake Assembly and Coil.**
Dual-voltage 230/460V models use 230V Brake Assembly and Coil.

Figure 19 - Electrical Parts 1-Speed Hoist with 1-Speed Trolley Models



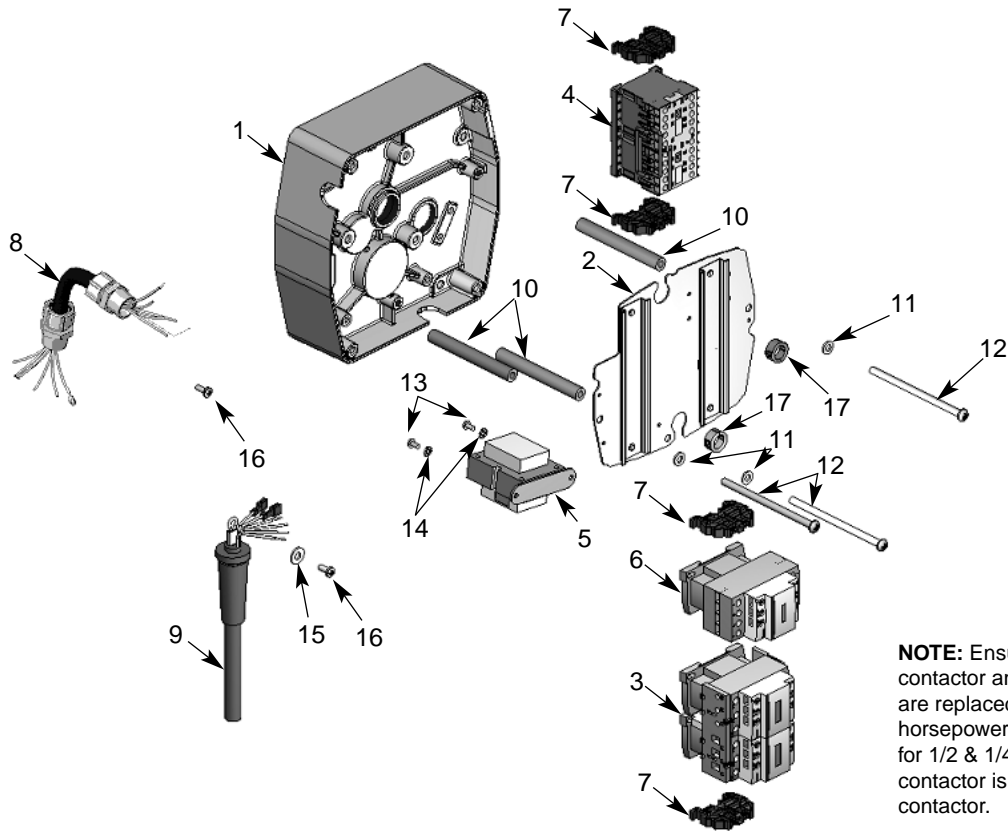
NOTE: It is of great importance that the hoist reversing contactors are replaced according to the horsepower and voltage of the hoist. Note that for 1/2 & 1/4 hp hoists, the hoist contactor is the same as the trolley contactor.

Parts List for Electrical Parts, 1-Speed, 1-Speed

Ref No.	Description	Part No.	Qty	Ref No.	Description	Part No.	Qty
1	Gear Box Cover	JM34	1	7	Marking Strip	909J11	1
2	Panel Plate	257JM200	1	8	End Plate		
3	Hoist Reversing Contactor*			8	115/230V, 1-Phase	909J12	1
	1/2 hp & 1/4 hp:			9	3-Phase	909J15	1
	24V Coil	28860	1	9	End Clamp	909J13	4
	115V Coil	24799	1	10	Tie Cable Assembly		
	1 hp, 115/230V-1 Phase:				115/230V-1 Phase	955JG48-1	1
	24V Coil	24791	1		3-Phase	955JG48	1
	115V Coil	28905	1	11	PB & Cable Assembly	—	1
	1 hp, 3-Phase:				(See Figures 22 - 24)		
	24V Coil	25943	1	12	Panel Standoff	200J4	3
	115V Coil	24729	1	13	1/4" Internal-tooth Lockwasher	H4134	3
4	Trolley Reversing Contactor*			14	1/4-20UNC X 4" Screw	H1027P	3
	24V Coil	28860	1	15	8-32UNC X 5/16" Screw	H2751	2
	115V Coil	24799	1	16	#8 External-tooth Lockwasher	H4158	2
5	Transformer*			17	1/4" Flatwasher	H4002P	1
	Pri.: 115/230V, Sec.: 24V	821J412	1	18	10-24UNC X 1/2" Screw	H2970	2
	Pri.: 115/230V, Sec.: 115V	821J411	1	19†	Can Mounting Bracket	JM811	2
	Pri.: 230/460V, Sec.: 24V	821J432	1	20†	SINPAC® Starting Switch	839J3	1
	Pri.: 230/460V, Sec.: 115V	821J431	1	21†	Capacitor	JL810-4	1
	Pri.: 575V, Sec.: 24V	821J452	1	22	Grommet	H9086	2
	Pri.: 575V, Sec.: 115V	821J451	1	23	Tie Strap	H9087	1
	Pri.: 208V, Sec.: 24V	821J472	1				
	Pri.: 208V, Sec.: 115V	821J471	1				
6	Terminal Block						
	115/230V, 1-Phase	909J10	3				
	3-Phase	909J14	3				

* **Coil voltage of the contactor and the secondary voltage of the transformer must be the same. This is referred to as the control voltage. Standard units are supplied with 24V Control.**
 † **Single Phase Only.**

Figure 20 - Electrical Parts 2-Speed Hoist, 1-Speed Trolley



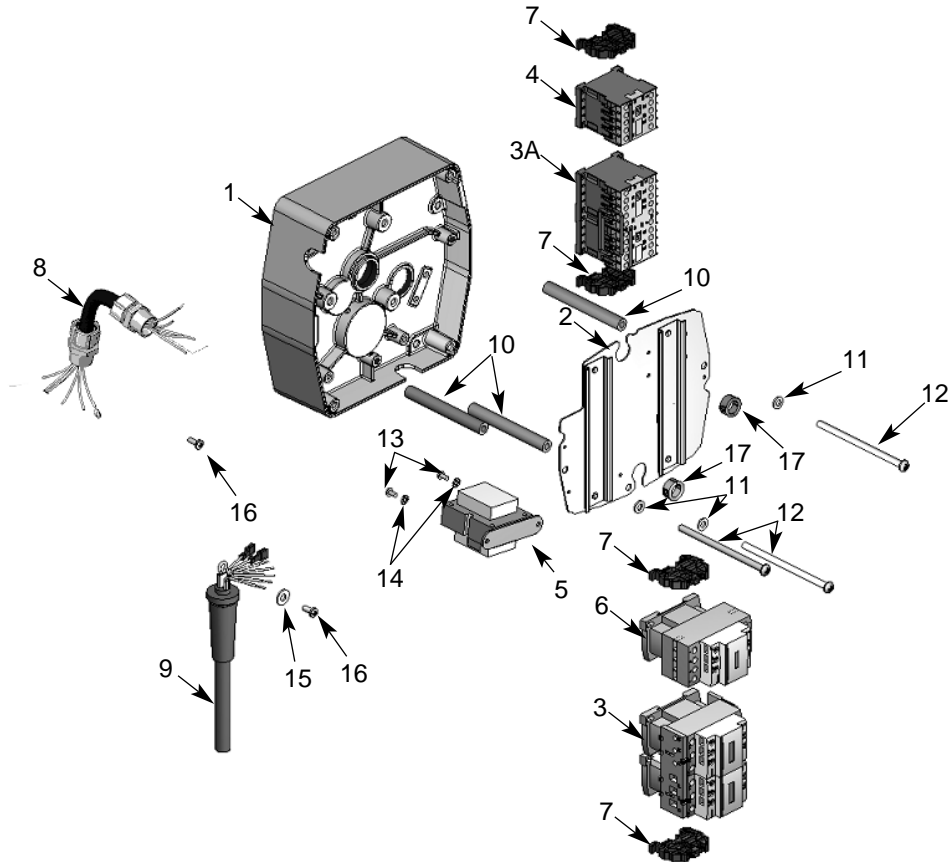
NOTE: Ensure that hoist reversing contactor and speed control relay are replaced according to the horsepower of the hoist. Note that for 1/2 & 1/4 hp hoists, the hoist contactor is the same as the trolley contactor.

Parts List for Electrical Parts, 2-Speed Hoist, 1-Speed Trolley

Ref No.	Description	Part No.	Qty	Ref No.	Description	Part No.	Qty
1	Gear Box Cover	JM34	1	7	End Clamp	909J13	4
2	Panel Plate	257JM200	1	8	Tie Cable Assembly		
3	Hoist Reversing Contactor*				3-Phase	955JG48	1
	1/2 hp & 1/4 hp, 24V Coil	28860	1	9	PB & Cable Assembly	—	1
	1/2 hp & 1/4 hp, 115V Coil	24799	1		(See Figures 22 - 24)		
	1 hp, 24V Coil	25943	1	10	Panel Standoff	200J4	3
	1 hp, 115V Coil	24729	1	11	1/4" Internal-tooth Lockwasher	H4134	3
4	Trolley Reversing Contactor*			12	1/4-20UNC X 4" Screw	H1027P	3
	24V Coil	28860	1	13	8-32UNC X 5/16" Screw	H2751	2
	115V Coil	24799	1	14	#8 External-tooth Lockwasher	H4158	2
5	Transformer*			15	1/4" Flatwasher	H4002P	1
	Pri.: 230/460V, Sec.: 24V	821J432	1	16	10-24UNC X 1/2" Screw	H2970	2
	Pri.: 230/460V, Sec.: 115V	821J431	1	17	Grommet	H9086	2
	Pri.: 575V, Sec.: 24V	821J452	1				
	Pri.: 575V, Sec.: 115V	821J451	1				
	Pri.: 208V, Sec.: 24V	821J472	1				
	Pri.: 208V, Sec.: 115V	821J471	1				
6	Hoist Speed Control Relay						
	1/2 hp & under, 24V Coil	28878	1				
	1/2 hp & under, 115V Coil	28870	1				
	1 hp, 24V Coil	28885	1				
	1 hp, 115V Coil	28879	1				

*** Coil voltage of the contactor and the secondary voltage of the transformer must be the same. This is referred to as the control voltage. Standard units are supplied with 24V Control.**

Figure 21 - Electrical Parts 2-Speed Hoist, 2-Speed Trolley



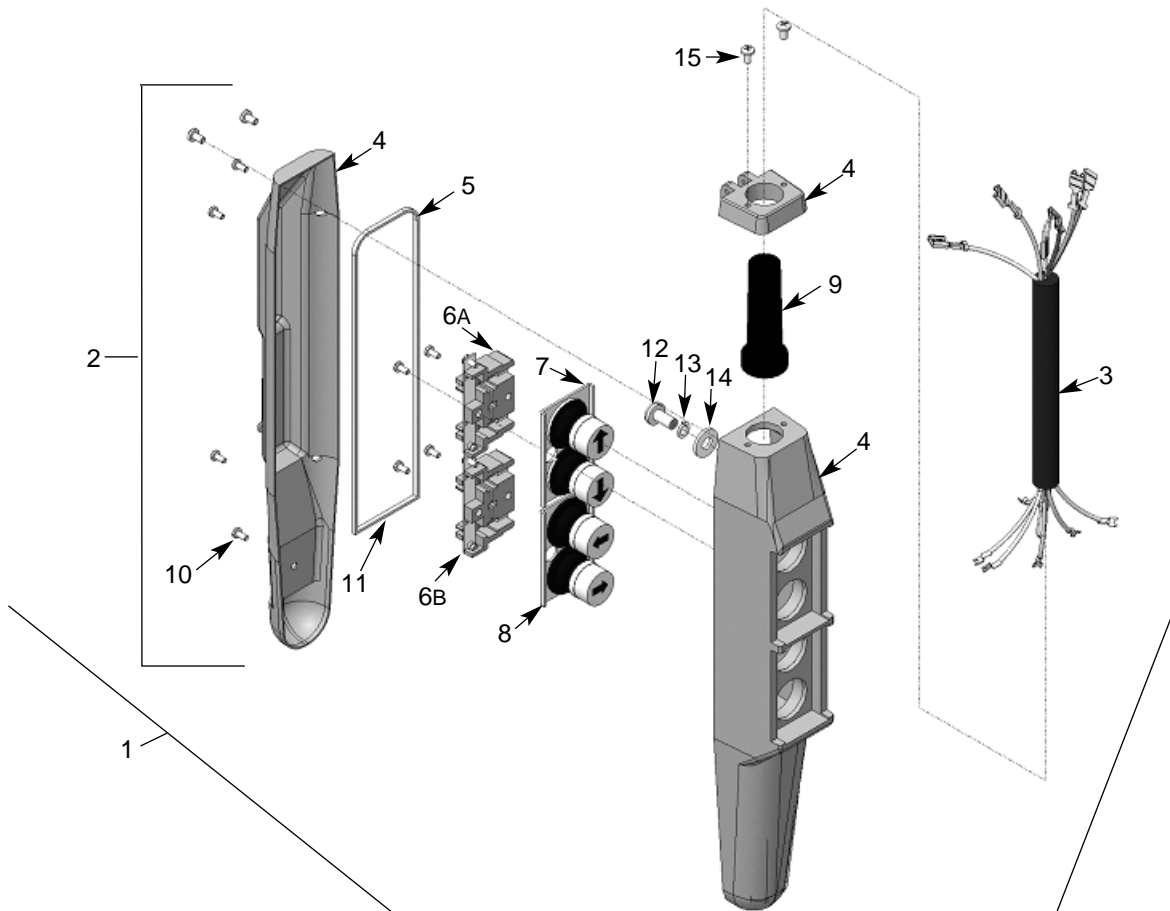
Parts List for Electrical Parts, 2-Speed Hoist, 2-Speed Trolley

Ref No.	Description	Part No.	Qty	Ref No.	Description	Part No.	Qty
1	Gear Box Cover	JM34	1	6	Hoist Speed Control Relay		
2	Panel Plate	257JM200	1		1/2 hp & under, 24V Coil	28878	1
3	Hoist Reversing Contactor*				1/2 hp & under, 115V Coil	28870	1
	1/2 hp & 1/4 hp, 24V Coil	28860	1		1 hp, 24V Coil	28885	1
	1/2 hp & 1/4 hp, 115V Coil	24799	1		1 hp, 115V Coil	28879	1
	1 hp, 24V Coil	25943	1	7	End Clamp	909J13	4
	1 hp, 115V Coil	24729	1	8	Tie Cable Assembly	955JM48-2	1
3A	Trolley Reversing Contactor*			9	PB & Cable Assembly (See Figures 22 - 24)	—	1
	24V Coil	28860	1	10	Panel Standoff	200J4	3
	115V Coil	24799	1	11	1/4" Internal-tooth Lockwasher	H4134	3
4	Trolley Speed Control Relay*			12	1/4-20UNC X 4" Screw	H1027P	3
	24V Coil	28878	1	13	8-32UNC X 5/16" Screw	H2751	2
	115V Coil	28870	1	14	#8 External-tooth Lockwasher	H4158	2
5	Transformer*			15	1/4" Flatwasher	H4002P	1
	Pri.: 230/460V, Sec.: 24V	821J432	1	16	10-24UNC X 1/2" Screw	H2970	2
	Pri.: 230/460V, Sec.: 115V	821J431	1	17	Grommet	H9086	2
	Pri.: 575V, Sec.: 24V	821J452	1				
	Pri.: 575V, Sec.: 115V	821J451	1				
	Pri.: 208V, Sec.: 24V	821J472	1				
	Pri.: 208V, Sec.: 115V	821J471	1				

* 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 24V Control.

△ Not Shown.

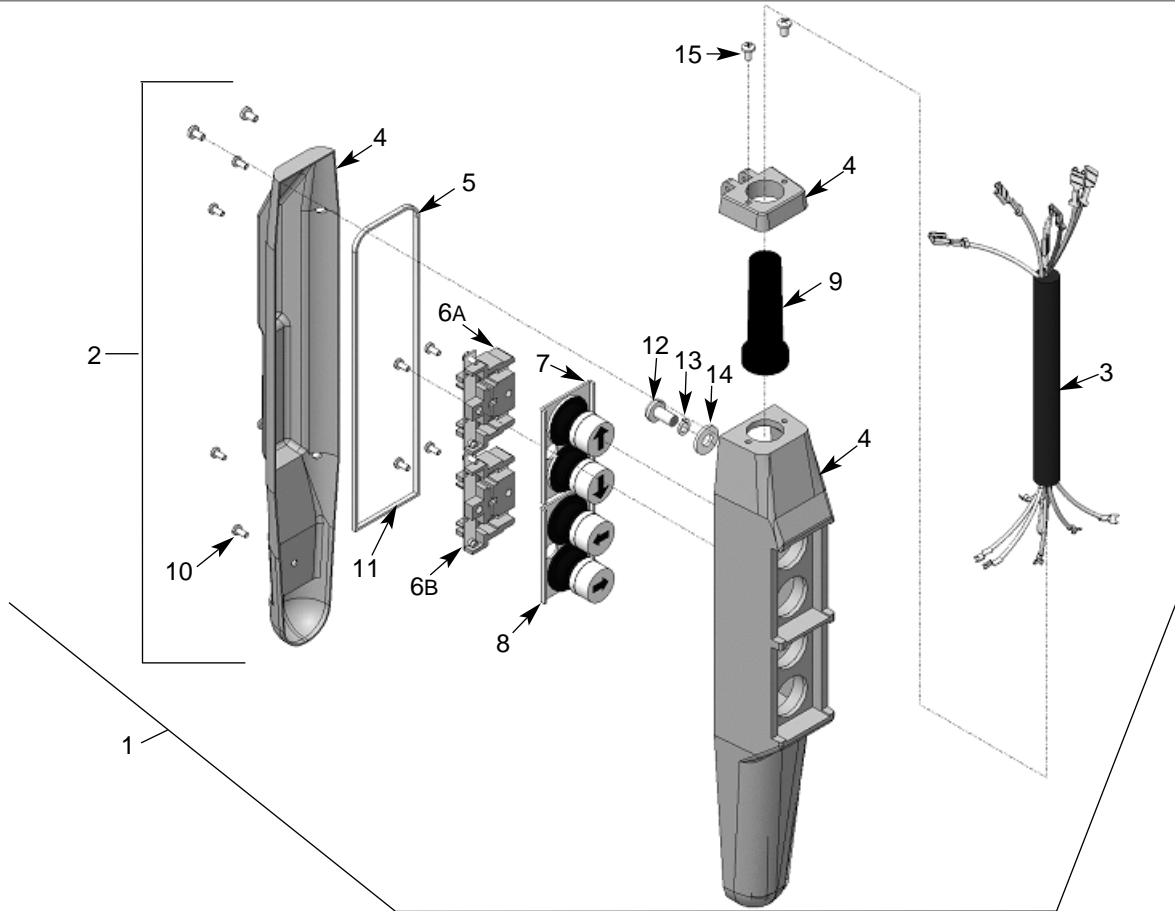
Figure 22 - Pushbutton Station 1-Speed Hoist, 1-Speed Trolley



Parts List for Pushbutton Station 1-Speed Hoist, 1-Speed Trolley

Ref No.	Description	Part No.	Qty	Ref No.	Description	Part No.	Qty
1	Pushbutton Station and Cable Assembly			6A	Contact Assembly		
	10' Lift, 6' Cable Length	PB4110-6	1		(Includes item 7)	36987	1
	15' Lift, 11' Cable Length	PB4110-11	1	6B	Contact Assembly		
	20' Lift, 16' Cable Length	PB4110-16	1		(Includes item 8)	70971	1
	Special (Specify Length)	PB4110-S#	1	7	Button Assembly (Hoist)	36988	1
2	Pushbutton Assembly	70954	1	8	Button Assembly (Trolley)	36906	1
3	Pushbutton Cable Assembly			9	Grommet	70966	1
	10' Lift, 6' Cable Length	PBC4110-6	1	*	Hardware Kit		
	15' Lift, 11' Cable Length	PBC4110-11	1		(Includes Items 10-15)	70967	1
	20' Lift, 16' Cable Length	PBC4110-16	1	△	Warning Tag	687K3W	1
	Special (Specify Length)	PBC4110-S#	1	(#)	Equal to cable length in feet.		
4	Enclosure	70961	1		Standard Lengths are 6', 11', 16', 18', 21' and 31'.		
5	Gasket	70963	1		When ordering specify length, ie., PB4110-16 for pushbutton with 16' cable length.		
				(△)	Not Shown		

Figure 23A - Pushbutton Station 2-Speed Hoist, 1-Speed Trolley



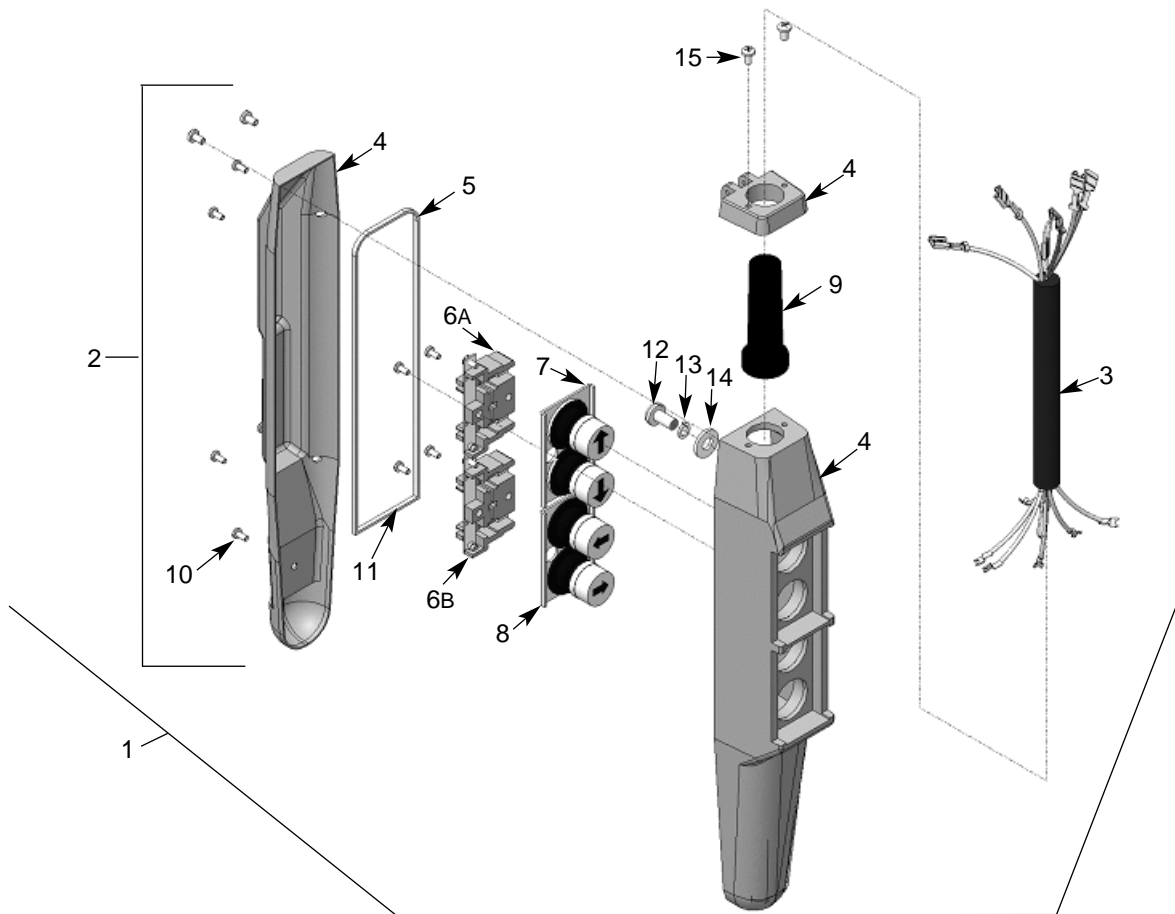
Parts List for Pushbutton Station 2-Speed, 1-Speed

Ref No.	Description	Part No.	Qty	Ref No.	Description	Part No.	Qty
1	Pushbutton Station and Cable Assembly			6B	Trolley Contact Assembly, 1-Speed		
	10' Lift, 6' Cable Length	PB4210-6	1		(Includes item 8)	70971	1
	15' Lift, 11' Cable Length	PB4210-11	1	7	Hoist Button Assembly,		
	20' Lift, 16' Cable Length	PB4210-16	1		2-Speed	36869	1
	Special (Specify Length)	PB4210-S#	1	8	Trolley Button Assembly,		
2	Pushbutton Assembly	70953	1		1-Speed	36906	1
3	Pushbutton Cable Assembly			9	Grommet	70966	1
	10' Lift, 6' Cable Length	PBC4210-6	1	*	Hardware Kit		
	15' Lift, 11' Cable Length	PBC4210-11	1		(Includes Items 10-15)	70967	1
	20' Lift, 16' Cable Length	PBC4210-16	1	△	Warning Tag	687K3W	1
	Special (Specify Length)	PBC4210-S#	1				
4	Enclosure	70961	1				
5	Gasket	70963	1				
6A	Hoist Contact Assembly, 2-Speed						
	(Includes item 7)	70964	1				

(#) Equal to cable length in feet.
Standard Lengths are 6', 11', 16', 18', 21' and 31'.
When ordering specify length, ie., PB4210-16 for pushbutton with 16' cable length.

(△) Not Shown

**Figure 23B - Pushbutton Station
1-Speed Hoist, 2-Speed Trolley**



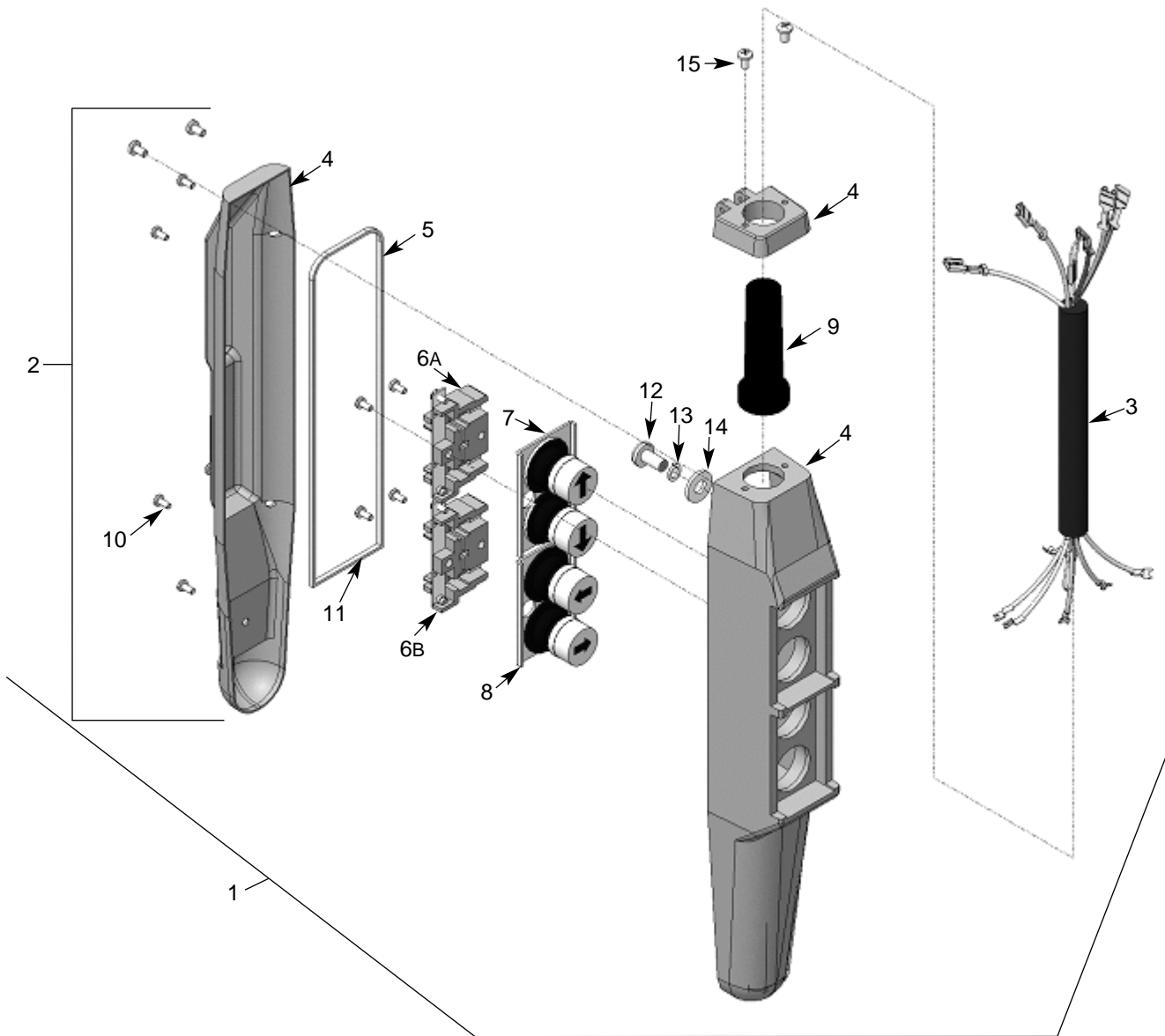
Parts List for Pushbutton Station 1-Speed, 2-Speed

Ref No.	Description	Part No.	Qty	Ref No.	Description	Part No.	Qty
1	Pushbutton Station and Cable Assembly			6B	Trolley Contact Assembly, 2-Speed		
	10' Lift, 6' Cable Length	PB4120-6	1		(Includes item 8)	70972	1
	15' Lift, 11' Cable Length	PB4120-11	1	7	Hoist Button Assembly,		
	20' Lift, 16' Cable Length	PB4120-16	1		1-Speed	36988	1
	Special (Specify Length)	PB4120-S#	1	8	Trolley Button Assembly,		
2	Pushbutton Assembly	70955	1		2-Speed	70959	1
3	Pushbutton Cable Assembly			9	Grommet	70966	1
	10' Lift, 6' Cable Length	PBC4120-6	1	*	Hardware Kit		
	15' Lift, 11' Cable Length	PBC4120-11	1		(Includes Items 10-15)	70967	1
	20' Lift, 16' Cable Length	PBC4120-16	1	△	Warning Tag	687K3W	1
	Special (Specify Length)	PBC4120-S#	1				
4	Enclosure	70961	1				
5	Gasket	70963	1				
6A	Hoist Contact Assembly, 1-Speed						
	(Includes item 7)	36987	1				

(#) Equal to cable length in feet. Standard Lengths are 6', 11', 16', 18', 21' and 31'. When ordering specify length, ie., PB4120-16 for pushbutton with 16' cable length.

(△) Not Shown

Figure 24 - Pushbutton Station 2-Speed Hoist, 2-Speed Trolley



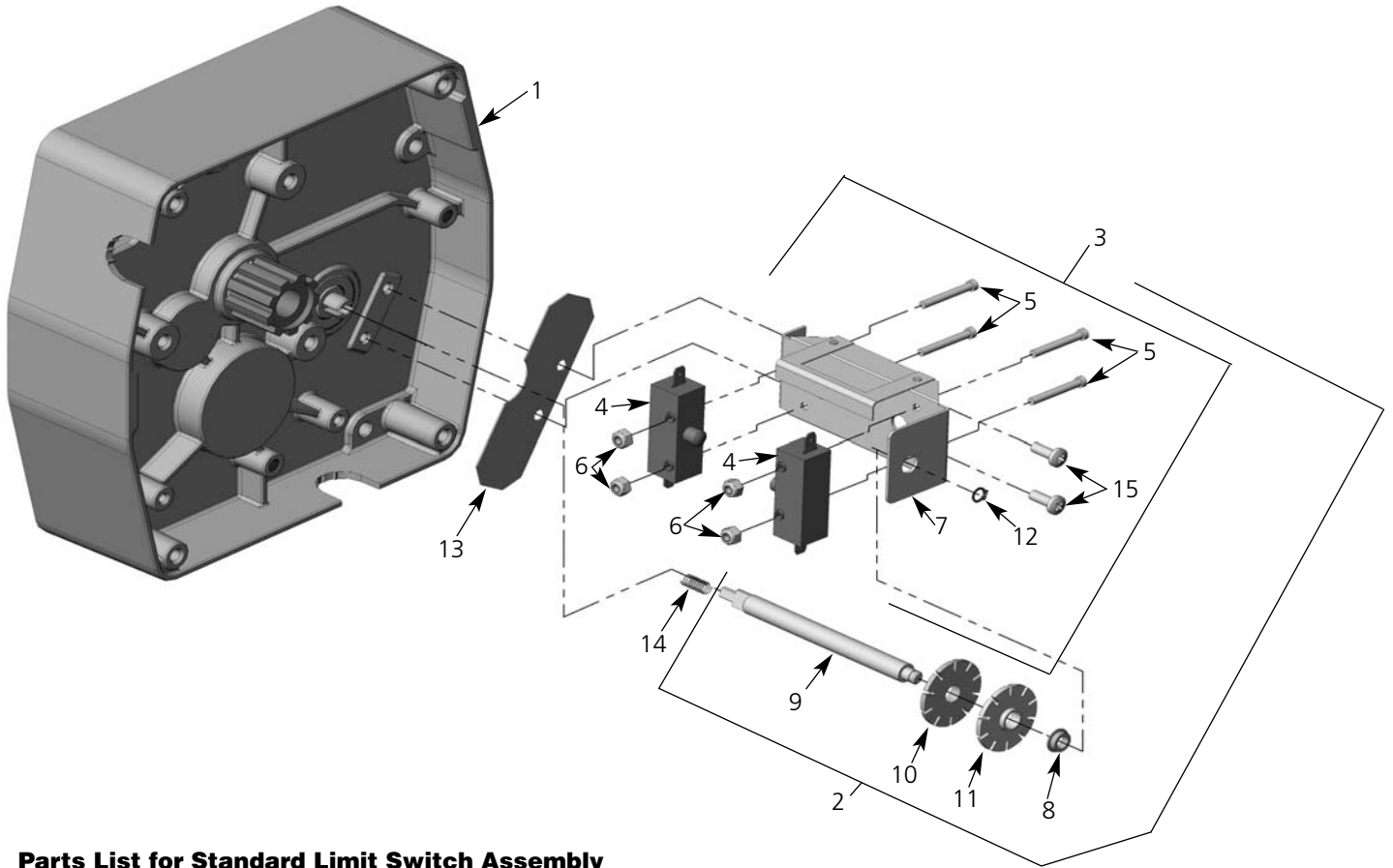
Parts List for Pushbutton Station 2-Speed Hoist, 2-Speed Trolley

Ref. No.	Description	Part No.	Qty
1	Pushbutton Station and Cable Assembly		
	10' Lift, 6' Cable Length	PB4220-6	1
	15' Lift, 11' Cable Length	PB4220-11	1
	20' Lift, 16' Cable Length	PB4220-16	1
	Special (Specify Length)	PB4220-S#	1
2	Pushbutton Assembly	70958	1
3	Pushbutton Cable Assembly		
	10' Lift, 6' Cable Length	PBC4220-6	1
	15' Lift, 11' Cable Length	PBC4220-11	1
	20' Lift, 16' Cable Length	PBC4220-16	1
	Special (Specify Length)	PBC4220-S#	1
4	Enclosure	70961	1
5	Gasket	70963	1
6A	Contact Assembly (Hoist)	70964	1
	(Includes Item 7)		
6B	Contact Assembly (Trolley)	70972	1
	(Includes Item 8)		
7	Button Assembly 2-Speed (Hoist)	36869	1
8	Button Assembly 2-Speed (Trolley)	70959	1
9	Grommet	70966	1
*	Hardware Kit	70967	1
	(Includes Items 10-15)		
△	Warning Tag	687K3W	1

**(#) Equal to cable length in feet.
Standard Lengths are 6', 11', 16', 18', 21' and 31'.
When ordering specify length, ie., PB4220-16 for
pushbutton with 16' cable length.**

(△) Not Shown

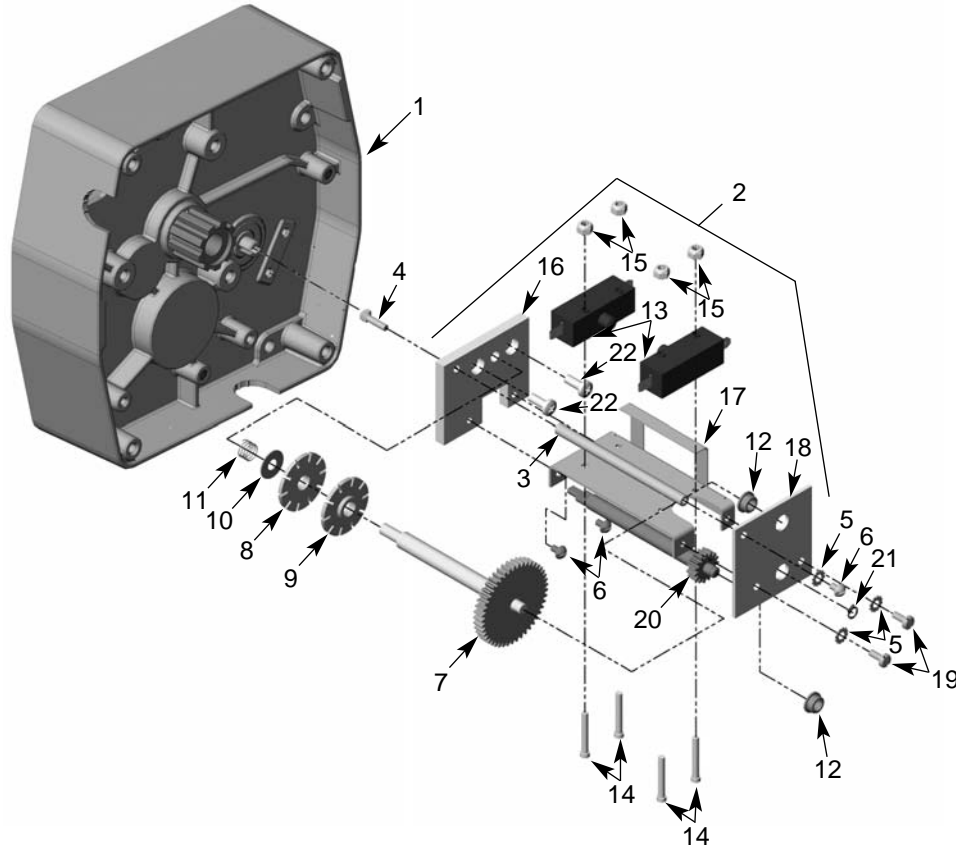
Figure 25 - Standard Limit Switch Assembly



Parts List for Standard Limit Switch Assembly

Ref No.	Description	Part No.	Qty	Ref No.	Description	Part No.	Qty
1	Transmission Cover	JM34	1	8	Bushing	JF531-4	1
2	Limit Switch Assembly (Includes Items 4-12)	918JG4	1	9	Limit Switch Shaft	JF117-3S	1
3	Limit Switch Bracket Assembly (Includes Items 4-8)	918JG3	1	10	Limit Switch Nut (silver)	SK6000-63Z	1
4	Switch	815J1	2	11	Limit Switch Nut (gold)	SK6000-63W	1
5	6-32UNC X 1" Screw	H1402P	4	12	Retaining Ring	H5520	1
6	6-32UNC Elastic Locknut	H3944	4	13	Insulator	JM754	1
7	Limit Switch Bracket (Includes Item 8)	JF900-3	1	14	Spring	JF343-3	1
				15	10-24UNC X 1/2" Screw	H2970	2

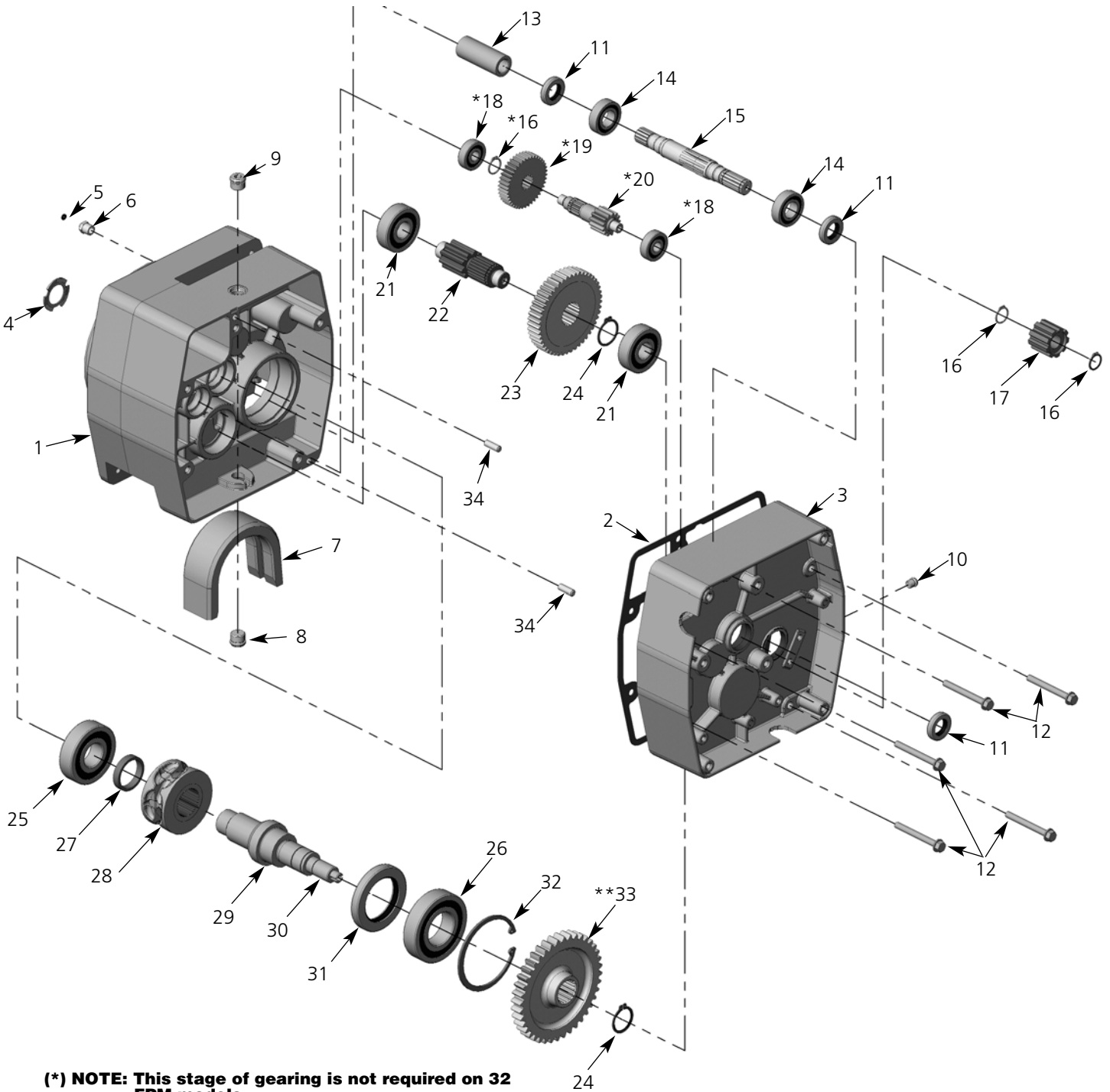
Figure 26 - Long Lift Limit Switch Assembly



Parts List for Long Lift Limit Switch Assembly

Ref No.	Description	Part No.	Qty	Ref No.	Description	Part No.	Qty
1	Transmission Cover	JM34	1	13	Switch	815J1	2
2	Limit Switch Assembly (Includes Items 3-21)	944JG6	1	14	6-32UNC X 1" Screw	H1402P	4
3	Post	110J14	1	15	6-32UNC Elastic Locknut	H3944	4
4	8-32UNC X 1/2" Screw	H1210	1	16	Mounting Plate	129J1	1
5	#8 External-tooth Lockwasher	H4158	3	17	Frame and Guide Assembly	258JG7	1
6	8-32UNC X 1/4" Screw	854823	3	18	End Plate	258J8	1
7	Limit Switch Shaft & Gear	117JG2	1	19	8-32UNC X 3/8" Screw	H2741P	2
8	Limit Switch Nut (gold)	SK6000-63W	1	20	Drive Pinion	427J1	1
9	Limit Switch Nut (silver)	SK6000-63Z	1	21	Retaining Ring	H5520	1
10	Thrust Washer	255K16	1	22	10-24UNC X 3/8" Screw	H2981P	2
11	Spring	PB287	1				
12	Bushing	JF531-4	2				

Figure 27 - Gearbox



(*) NOTE: This stage of gearing is not required on 32 FPM models.

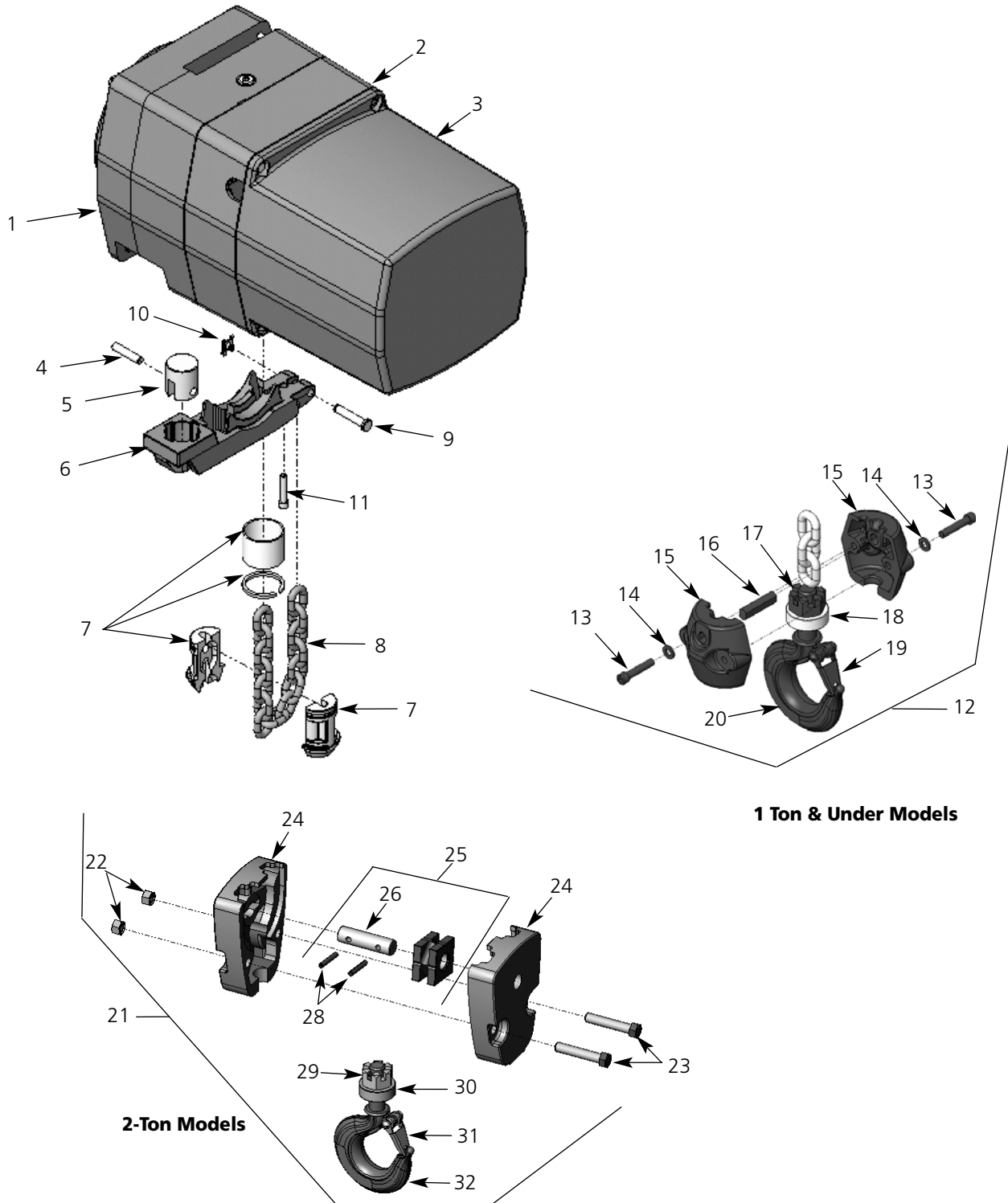
() NOTE: Orient output gear (33) with long boss towards transmission cover (3).**

Parts List for Gearbox

Ref. No.	Description	Part No.	Qty
1	Sheave Housing	JM3533	1
2	Transmission Gasket	JM560	1
3	Transmission Cover (Includes Oil Seals)	JM34	1
4	Spring Washer	360J1	1
5	O-ring	H5605	1
6	Pressure Relief Fitting	SK1912-21W	1
7	Chain Guide	JM273	1
8	Oil Plug - Drain	H6297	1
9	Oil Plug - Fill	H6296	1
10	Oil Plug - Level	H6295	1
11	Oil Seal	561K2	3
12	Screw, HWH Self-threading	H2693P	5
13	Motor Coupling	JM107	1
14	Bearing	500K33	2
15	Input Pinion 8 & 16 fpm	JL400B	1
	32 fpm	JL400-1	1
16	Retaining Ring	H5501	3
17	Brake Adapter	JM142	1
18	Bearing for 8 & 16 fpm	500K34	2
19	High Speed Pinion for 8 & 16 fpm	JL426	1
20	Intermediate Pinion 1/4 & 1/2 ton, 16 fpm	JL402A	1
	1 & 2 ton	JL403A	1
21	Bearing	500K39	2
22	Output Pinion	JL401	1
23	Overload Clutch Assembly 1/8 ton, 32 fpm	591JG22	1
	1/4 ton, 16 fpm	591JG25	1
	1/4 ton, 32 fpm	591JG22	1
	1/2 ton, 16 fpm	591JG16	1
	1/2 ton, 32 fpm	591JG21	1
	1 & 2 ton	591JG17	1
24	Retaining Ring	H5503	2
25	Bearing	500K28	1
26	Bearing	P003255	1
27	Spacer - Load Sheave	JM127	1
28	Load Sheave-9/32" Chain	JF16-3	1
29	Load Sheave Shaft	JM132	1
30	Stub Shaft - Limit Switch Drive	JM140	1
31	Oil Seal	011612800	1
32	Retaining Ring	H5598	1
33	Output Gear	JL421	1
34	Dowel Pin	H5382	2
*	Gear Oil	H7642	1½ pt

* Not Shown

Figure 28 - Chaining Parts

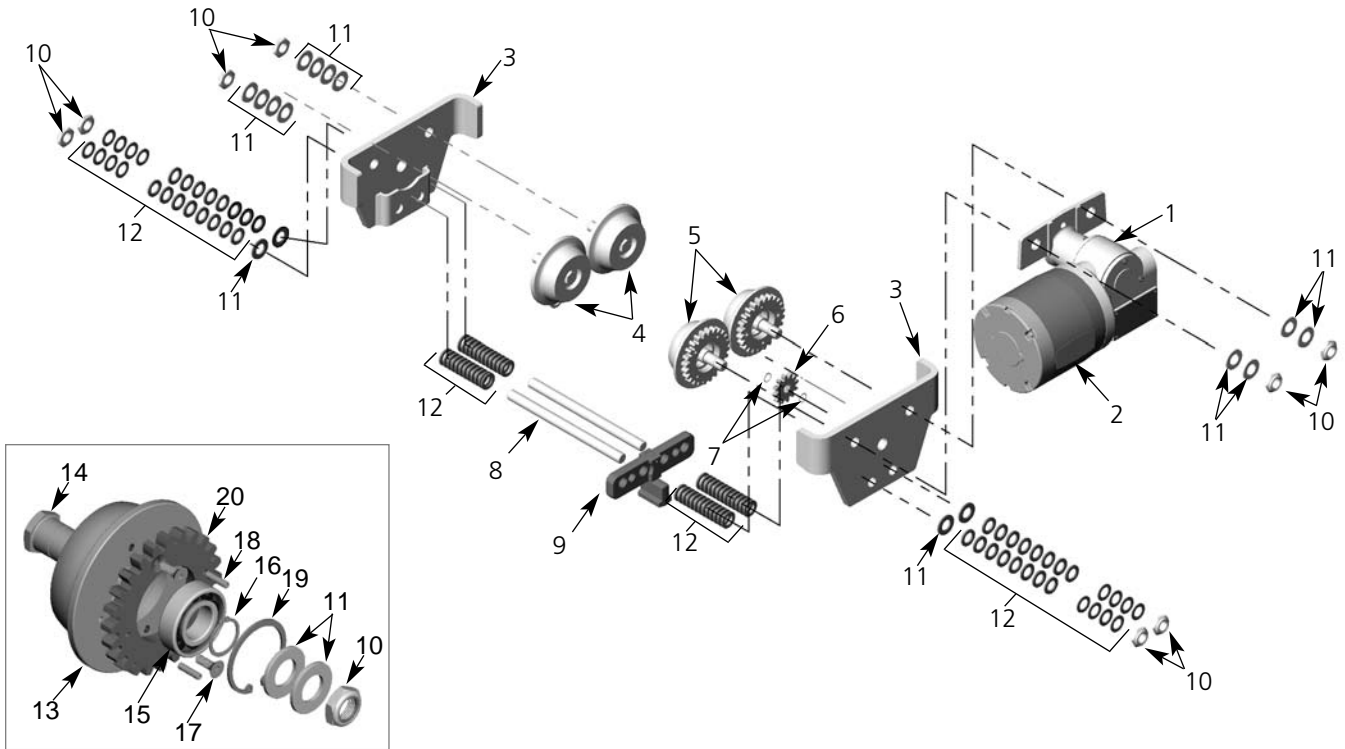


Parts List for Chaining Parts

Ref No.	Description	Part No.	Qty	Ref No.	Description	Part No.	Qty
1	Housing	JM3533	1	23	Load Block Screw	H2403P	2
2	Transmission Cover	JM34	1	24	Load Block Frame	JF30-1	2
3	Electrical Cover	JM36	1	25	Sheave Shaft Assembly	JF917-1	1
4	Anchor Pin (2 Ton Only)	JM111	1	26	Sheave Shaft	JF122-1	1
5	Anchor (2 Ton Only)	JM109	1	27	Sheave & Bearing Assembly	JF916	1
6	Chain Stripper	JM254	1	28	Roll Pin	H5234	2
7	Chain Stop Kit	75JG6K	1	29	3/8-24 Hex Locknut	H3991P	1
	(Kits include halves, sleeve and retaining ring)			30	Bearing	JF511	1
8	Load Chain	JL19-1	•	31	Latch Kit	4X1305	1
9	Attachment Pin	JM18-1	1	32	Bottom Hook Assembly		
10	Retaining Clip	H5597	1		with Latch for 2 Ton	3KG1W	1
11	1/4-20UNC x 1¼"						
	Socket Head Cap Screw	S49-77	1				
12	Bottom Block Assembly						
	1 ton & Under	913JG3AS	1				
13	1/4-20UNC x 1¼"	S49-77	2				
	Socket Head Cap Screw						
14	1/4" Internal-tooth						
	Lockwasher	H4134	2				
15	Load Block Frame	30J14	2				
16	Load Block Pin	18J8	1				
17	Slotted Hex Nut	H3986P	1				
18	Bearing	JF510	1				
19	Latch Kit	4X1304	1				
20	Bottom Hook Assembly						
	with Latch for 1 Ton & Under	3JG20S	1				
21	Bottom Block Assembly						
	2 Ton	JF914-6	1				
22	3/8-24 Hex Locknut	H3964P	2				

*** 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.**

Figure 29 - Standard Trolley General Assembly



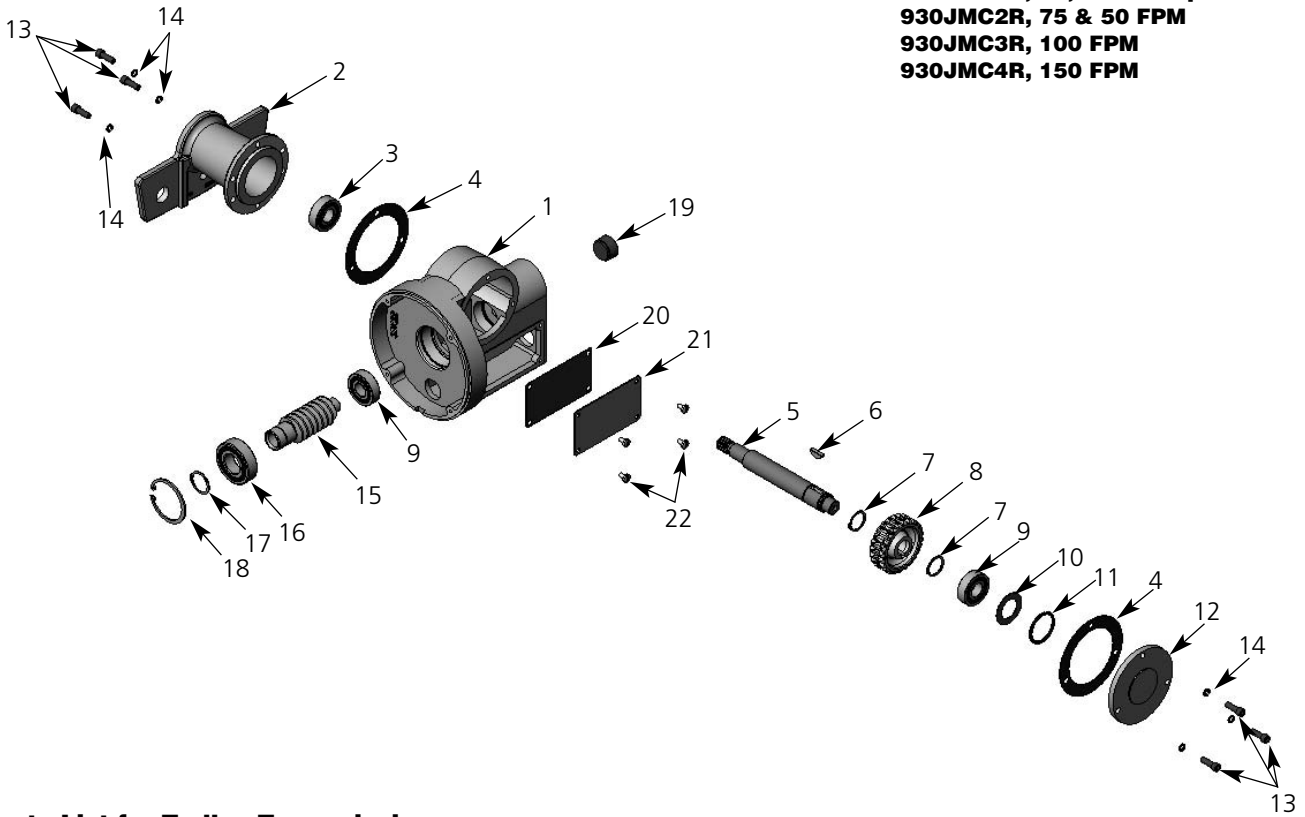
Parts List for Standard Trolley General Assembly

Ref No.	Description	Part No.	Qty	Ref No.	Description	Part No.	Qty
1	Trolley Transmission Assembly (See Figures 30 - 31)	—	1	11	13/16" Flatwasher (.125" thick)	H4211	16
2	Motor, 1/4 hp, 230/460V (See Figures 32 - 33)	—	1	12	3/4" Flatwasher (.075" thick)	H4210	#
3	Side Plate	5K101	2		3/4" Flatwasher (.135" thick)	H4209	#
4	Plain Wheel Assembly	45JG1PH	2	13	Wheel	45J1G	1
5	Geared Wheel Assembly	45JG1G-1	2	14	Wheel Axle	102K11	1
6	Output Pinion	420K1	1	15	Bearing	JF504-2	1
7	Retaining Ring	H5501	2	16	Retaining Ring	H5549	1
8	Load Pin	103K30-2	2	17	Screw	H2165	2
9	Suspension Lug Assembly	JM50C	1	18	Spring Pin 3/16 x 3/4	H5331	2
10	3/4-16UNF Elastic Stop Nut	H3945	8	19	Retaining Ring	SK2658-6W	1
				20	Gear	420K2	1

(#) See Figure 3, page 6 for quantities and locations.

Figure 30 - Trolley Transmission

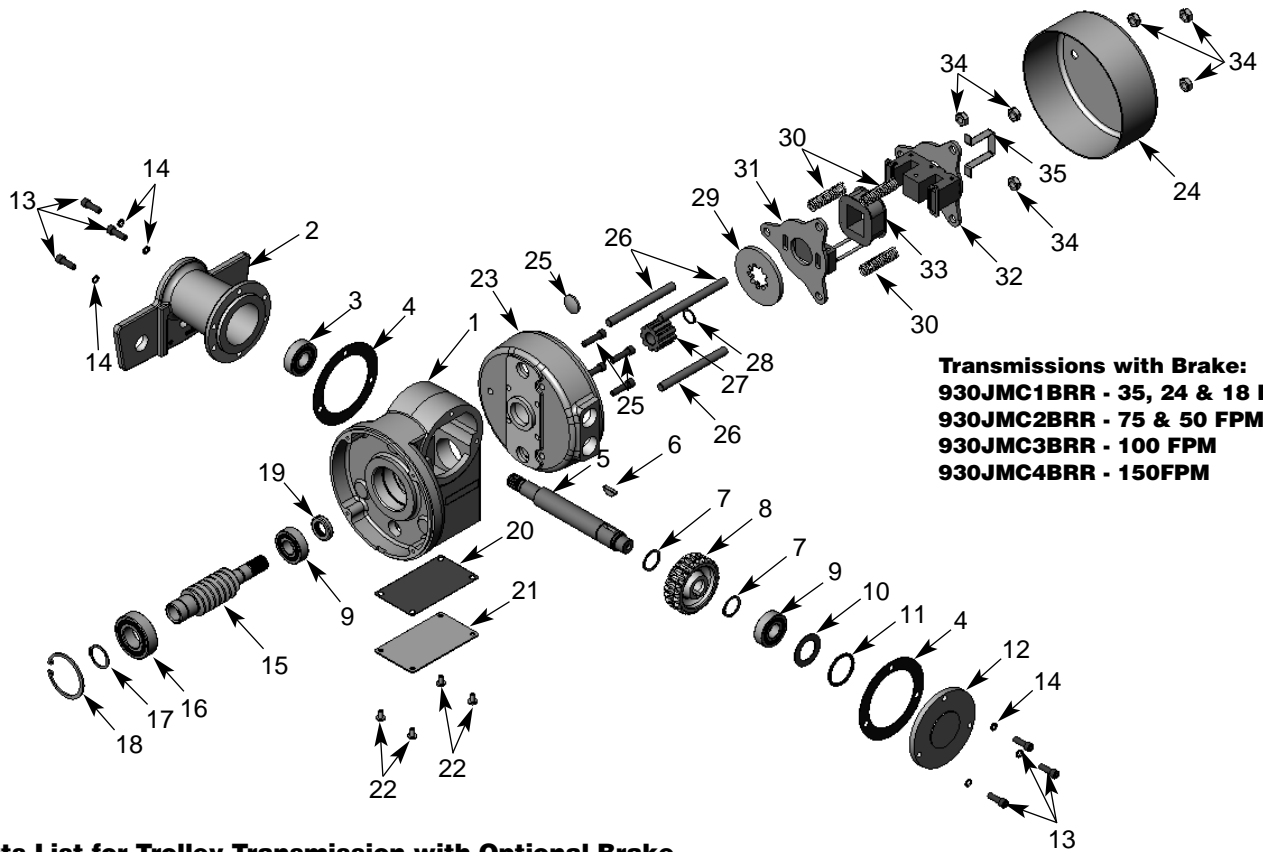
Standard Transmissions:
930JMC1R, 35, 24 & 18 fpm
930JMC2R, 75 & 50 FPM
930JMC3R, 100 FPM
930JMC4R, 150 FPM



Parts List for Trolley Transmission

Ref No.	Description	Part No.	Qty	Ref No.	Description	Part No.	Qty
1	Gear Housing	39K22	1	13	1/4-20UNC x 3/4" Socket		
2	Housing Adapter	38K60B	1		Head Screw	H2215	6
3	Bearing	500K3	1	14	1/4" Spring Lockwasher	H4084P	3
4	Gasket	560K2	2	15	Worm		
5	Output Shaft	100K21	1		35, 24 & 18 FPM	485K21	1
6	Woodruff Key	S23-15	1		75 & 50 FPM	485K22	1
7	External Retaining Ring	H5527	2		100 FPM	485K23	1
8	Worm Gear				150 FPM	485K24	1
	35, 24 & 18 FPM	487K4	1	16	Bearing	JF504-2	1
	75 & 50 FPM	487K3	1	17	External Retaining Ring	H5549	1
	100 FPM	487K2	1	18	Internal Retaining Ring	SK2658-6W	1
	150 FPM	487K1	1	19	Plug	S25-13	1
9	Bearing	500K7	2	20	Gasket	560K3	2
10	Shim Washer	202K1	1	21	Splice Plate	295K1	2
11	O-ring	H5609	1	22	#10-24UNC x 3/8" Slotted		
12	End cap	32K3	1		Head Screw	H1009P	8

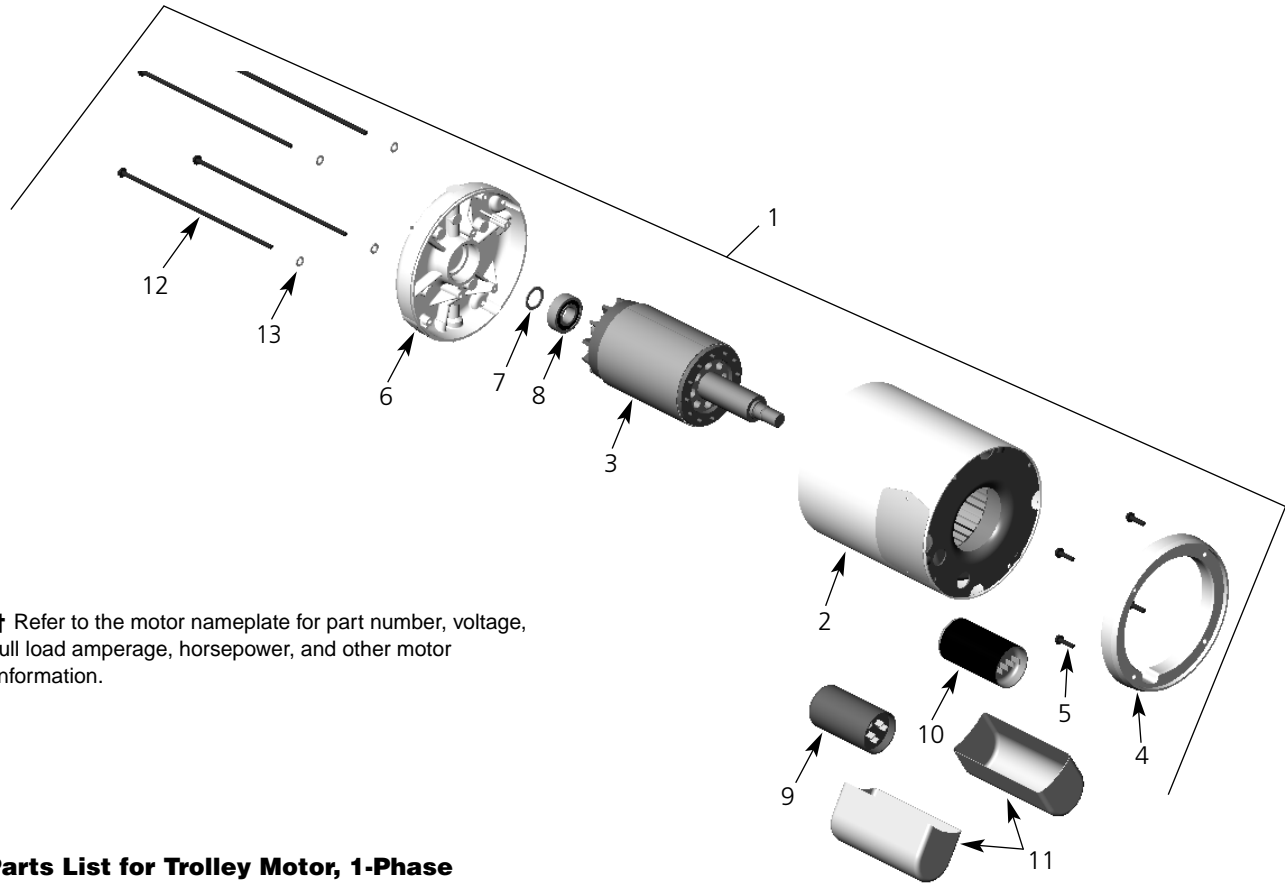
Figure 31 - Trolley Transmission with Optional Brake



Parts List for Trolley Transmission with Optional Brake

Ref No.	Description	Part No.	Qty	Ref No.	Description	Part No.	Qty
1	Gear Housing	39K23	1	18	Internal Retaining Ring	SK2658-6W	1
2	Housing Adapter	38K60B	1	19	Oil Seal	561K2	1
3	Bearing	500K3	1	20	Gasket	560K3	2
4	Gasket	560K2	2	21	Splice Plate	295K1	2
5	Output Shaft	100K12	1	22	#10-24NC x 3/8" Slotted Head Screw	H1009P	8
6	Woodruff Key	S23-15	1	23	Brake Housing	37J11	1
7	External Retaining Ring	H5527	2	24	Brake Cover	36J10	1
8	Worm Gear			25	Socket Head Screw	S49-12	4
	35, 24 & 18 FPM	487K4	1	26	Stud	141J12	3
	75 & 50 FPM	487K3	1	27	Brake Adapter	JL142	1
	100 FPM	487K2	1	28	Retaining Ring	H5501	1
	150 FPM	487K1	1	29	Brake Disc	581J1A	1
9	Bearing	500K7	2	30	Spring	344J6	3
10	Shim Washer	202K1	1	31	Plate & Armature	JF858	1
11	O-ring	H5609	1	32	Plate & "E" Frame	JF857	1
12	End Cap	32K3	1	33	Brake Coil		
13	1/4-20UNC x 3/4" Socket Head Screw	H2215	6		115V	JF853-1	1
14	1/4" Spring Lockwasher	H4084P	3		230V	JF853-2	1
15	Worm				460V	JF853-3	1
	35, 24 & 18 FPM	485K25	1		575V	JF853-4	1
	75 & 50 FPM	485K26	1		208V	JF853-5	1
	100 FPM	485K27	1	34	Nut	H3978	3
	150 FPM	485K28	1	35	Retainer	JF710	1
16	Bearing	JF504-2	1				
17	External Retaining Ring	H5549	1				

Figure 32 - Trolley Motor, 1-Phase



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

Parts List for Trolley Motor, 1-Phase

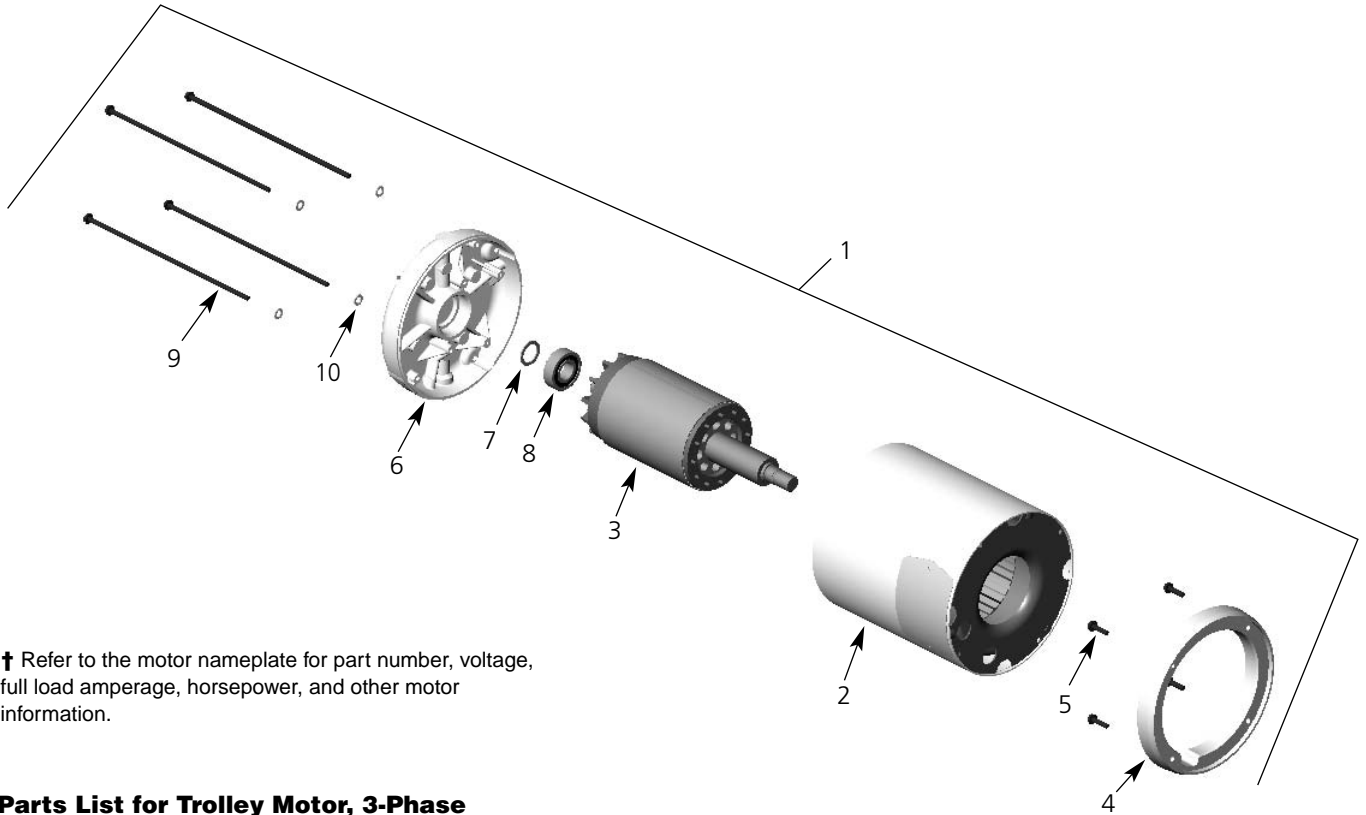
Ref No.	Description	Part No.	Qty	Ref No.	Description	Part No.	Qty
1	Trolley Motor			10	SINPAC® Starting Switch	839J3	1
	1/4 hp, 115/230V-1Ph-60Hz	861JL11M	1	11	Capacitor/Start Switch Cover	35CB4802A02SP	2
	1/2 hp, 115/230V-1Ph-60Hz	861JL12M	1	12	Thru Bolt	HA3100A80	4
2	Stator Assembly	*	1	13	#10 Spring Lockwasher	H4082P	4
3	Rotor Assembly	*	1	△	Capacitor/Start Switch		
4	Adapter Ring	*	1		Cover Insulator	NS2501A01	2
5	10-32NF x 7/8" Mounting Bolts	*	4	△	Cover Screw	H2981P	4
6	End Shield	35EP3100A04	1				
7	Shim Washer	†	1				
8	Rear Bearing	500K3	1				
9	Capacitor	JL810-4	1				

△ **Not Shown**

* **Not available as an individual part. Complete motor must be purchased.**

† **Contact Factory.**

Figure 33 - Trolley Motor, 3-Phase



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

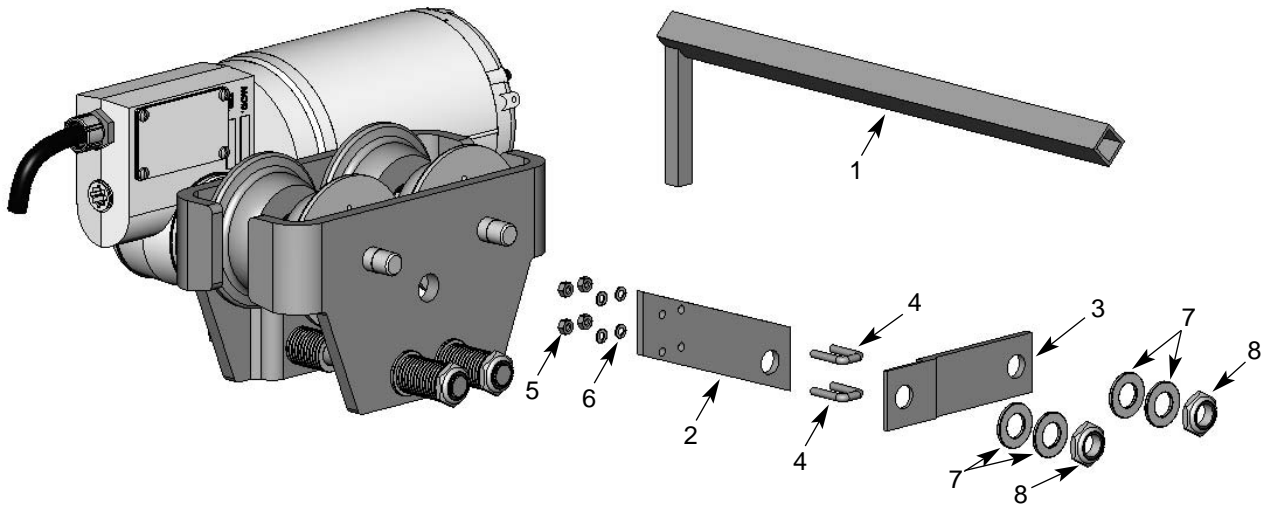
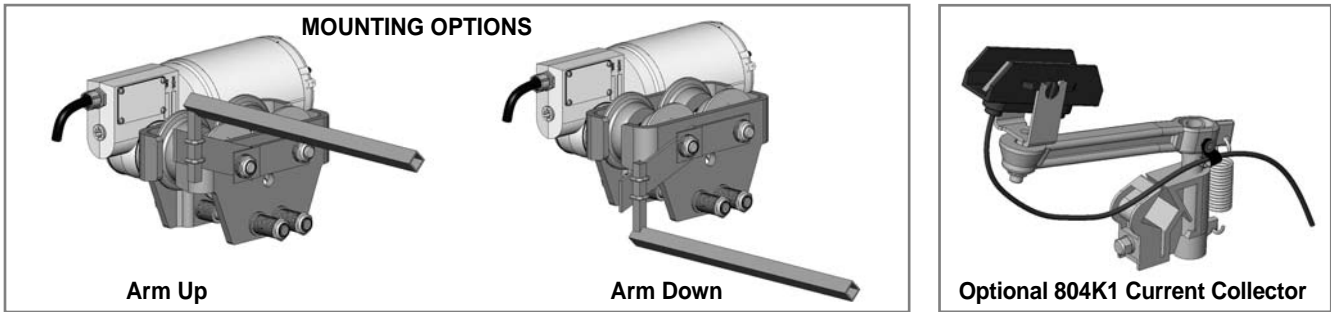
Parts List for Trolley Motor, 3-Phase

Ref No.	Description	Part No.	Qty	Ref No.	Description	Part No.	Qty
1	Trolley Motor, 1-Speed			4	Adapter Ring	*	1
	1/4 hp, 208-230/460V-3Ph-60Hz	863JL1M	1	5	10-32NF x 7/8" Mounting Bolts	*	4
	1/2 hp, 208-230/460V-3Ph-60Hz	863JL2M	1	6	End Shield	35EP3100A04	1
	1/4 hp, 575V-3Ph-60Hz	863JL5M	1	7	Shim Washer	†	1
	1/2 hp, 575V-3Ph-60Hz	863JL6M	1	8	Rear Bearing	500K3	1
	Trolley Motor, 2-Speed			9	Thru Bolt, 1-Speed	HA3100A80	4
	1/4 hp, 208-230V-3Ph-60Hz	873JL1M	1		Thru Bolt, 2-Speed		
	1/2 hp, 208-230V-3Ph-60Hz	873JL2M	1		1/4 hp	HA3100A80	4
	1/4 hp, 460V-3Ph-60Hz	873JL5M	1		1/2 hp	HA3100A37	4
	1/2 hp, 460V-3Ph-60Hz	873JL6M	1	10	#10 Spring Lockwasher	H4082P	4
	1/4 hp, 575V-3Ph-60Hz	873JL9M	1				
	1/2 hp, 575V-3Ph-60Hz	873JL10M	1				
2	Stator Assembly	*	1				
3	Rotor Assembly	*	1				

* **Not available as an individual part. Complete motor must be purchased.**

† **Contact Factory.**

Figure 34 - Optional Mounting Arm

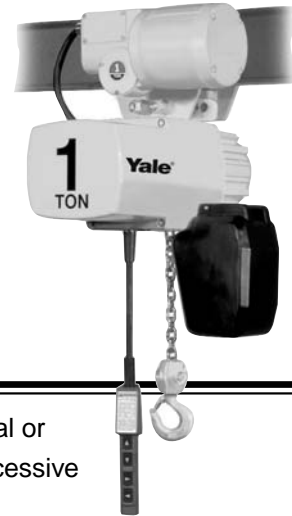


Parts List for Optional Mounting Arm

Ref. No.	Description	Part No.	Qty
1	Mounting Arm	803KG8	1
2	Mounting Plate	802K1	1
3	Brace Plate	802K12	1
4	Shackle	806K1	2
5	1/4-20UNC Nut	H3561P	4
6	1/4" Lockwasher	H4062P	4
7	3/4" Flatwasher	H4211	4
8	3/4-16UNF Elastic Stop Nut	H3945	2

Note: Arm may be used for mounting current collectors or as a festooning tow arm or similar applications.

Yale® WARRANTY



Every hoist is thoroughly inspected and performance tested prior to shipment from the factory. If any properly installed, maintained and operated hoist as outlined in the applicable accompanying Yale Hoists manual develops a performance problem due to defective materials or workmanship as verified by Yale Hoists, repair or replacement of the hoist will be made to the original purchaser without charge and the hoist 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-Yale repair parts. **EXCEPT AS STATED HEREIN, YALE HOISTS MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.**

WARNING

Overloading and Improper Use Can Result In Injury

To Avoid Injury:

- Do not exceed working load limit, load rating, or capacity.
- Do not use to lift people or loads over people.
- Use only alloy chain and attachments for overhead lifting.
- Read and follow all instructions.

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