

# Yale®

## HOISTS

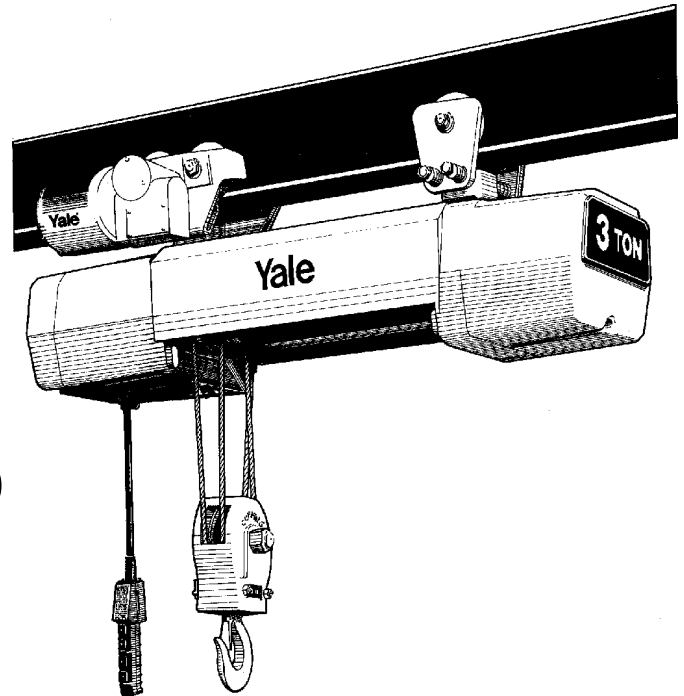
# OPERATING & MAINTENANCE INSTRUCTIONS WITH PARTS LIST

**Publication Part No. LEW-3-680**

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## LEW-3 Series

### Electric Wire Rope Hoists and Trolleys



#### IMPORTANT - CAUTION

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

 **WARNING**

The equipment shown in this manual is intended for industrial use only and should not be used to lift, support, or otherwise transport people or to suspend unattended loads over people.

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## SECTION I - INTRODUCTION

### 1-1. GENERAL INFORMATION.

1-2. This manual provides necessary and proper information for persons engaged in the operation, maintenance, and installation of this Yale LEW-3 Hoist and Trolley. Any person operating or maintaining this hoist must be familiar with the information contained herein. Adherence to the precautions, procedures and maintenance practices described herein should ensure long and satisfactory use of your hoist with minimum danger to life, limb and property. Major overhaul efforts are not within the scope of this manual; such repairs should be made at an approved service center or by us. If any operating or maintenance information herein seems inadequate for your particular problem, please call or write our service engineers. We solicit your suggestions for improvements to this manual.

1-3. All persons concerned with the installation operation, inspection, and maintenance of this hoist are urged to read American National Standard ANSI B30.16. That standard contains important rules (some mandatory and some of an advisory nature) designed primarily to prevent or minimize injury and otherwise protect life, limb and property. You should especially be aware of the mandatory rules pertaining to inspection requirements and the advisability of maintaining written, dated, and signed inspection reports and records.

### 1-4. GENERAL USAGE INFORMATION.

1-5. This hoist is intended for general industrial use in the lifting and transporting of freely suspended material loads within its rated capacity. Prior to installation and operation, we caution the user to review his application for abnormal environmental or handling conditions and to observe the applicable recommendations as follows:

#### 1-6. Adverse Environmental Conditions

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

#### 1-7. 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.

#### 1-8. Lifting of Guided Loads

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

### 1-9. HOIST CONSTRUCTION.

1-10. This Yale Hoist incorporates a steel drum and center frame with malleable and ductile iron castings in load bearing areas. For non-load bearing areas, a strong, lightweight, die cast aluminum alloy is used. This combination results in a hoist that has high strength at a minimum weight.

1-11. A strain cable is built into the pushbutton cable and is securely anchored to the pushbutton station and the hoist housing. The pushbutton station may be used to pull the hoist when mounted on a free moving trolley. However, it is recommended that a hand geared or motorized trolley be used when the pulling effort required to move the hoist exceeds 100 pounds or when the application requires frequent horizontal movement of the hoist.

1-12. Automatic limit switches are built into the hoist to protect it against damage resulting from overtravel in either direction. When these switches are properly maintained and adjusted, the operator need not be overly concerned about damaging the hoist due to exceeding the functional travel limits of the hoist. The operator should bear in mind, however, that the limit switches are safety devices, and routine or constant use of them to stop hoist travel must be avoided.

### 1-13. CLUTCH DATA.

1-14. This hoist is equipped with a factory calibrated torque limiting device (load equalizer assembly, 36, Figure 7-4). The load equalizer clutch assembly will permit operation of hoist within its rated load capacity limits but will prevent lifting of excessive overloads. If the load to be lifted exceeds the lifting capability of the load equalizer clutch assembly, the hoist motor will continue to run while slipping the load equalizer assembly. This condition will cause overheating of the load equalizer assembly and should be avoided. If this condition occurs, release the "Up" button immediately and reduce the load to within the rated capacity of the hoist. The load equalizer assembly is not to be adjusted or interchanged with other models. To do so voids warranty and may create an unsafe condition.

### 1-15. BASIC HOIST DATA.

1-16. The operator should be aware of the capabilities and capacity of his hoist. He must refrain from overloading. Overloading not only can cause damage to the hoist, but presents serious threats to persons around the hoist. The following basic hoist data is related to general model numbers.

Table 1. Basic Hoist Data

Model Number	Rated Load (Lbs)	Lift Speed At Rated Load (Ft. Per Min.)	Motor HP
LEW 1-22**28S2	2000	28	2
LEW 2-22**14S2	4000	14	2
LEW 2-22**21S2	4000	21	3
LEW 3-22**10S4	6000	10	2
LEW 3-22**14S4	6000	14	3

LEW Model	1 Capacity	— Lift (Ft)	** Suspension	28 Lifting Speed (FPM)	S2 Reeving
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1 = 2000 Lbs.	15 = 15 ft.	LG = Lug	S2 = 2 Part
2 = 4000 Lbs.	22 = 22 ft.	PT = Plain	Single
3 = 6000 Lbs.	25 = 25 ft.	GT = Geared	S4 = 4 Part
	30 = 30 ft.	MT = Motorized	Single
	35 = 35 ft.		D2 = 2 Part
	44 = 44 ft.		Double
	70 = 70 ft.		Cross Mount
			P2 = Part
			Double
			Parallel Mount

## SECTION II - PREPARATION FOR USE

### 2-1. INSPECTION PRIOR TO INITIAL USE.

2-2. Any new or repaired hoist, as well as the working area, shall be carefully inspected prior to initial installation and use. The inspection shall be made by or under the direction of a person familiar with hoist operations and industrial safety standards.

2-3. The following inspection criteria are recommended prior to initial installation and use. Additional inspection items should be added to satisfy local usage and safety requirements. All inspections of any kind should be logged or recorded, dated, signed, and filed for reference.

- Ensure that the facility power supply is adequate to furnish voltage while the hoist is lifting load within 10 percent of that specified for the hoist. Also, that the facility power is properly fused to protect the hoist from power surges.
- Ensure that no live part of the electrical system, either facility or hoist, will be exposed to accidental contact under normal operating conditions.
- Ensure that the hoist is effectively grounded and that the circuit supplying power to the hoist is equipped with a suitable overcurrent device and disconnecting means. If in doubt, reference National Electrical Code ANSI C 1.
- Ensure that the supporting structures are strong enough to carry the intended loads. The supporting structure shall have a safe load rating at least equal to that of the hoist. The supporting structure must be rigid and not subject to weakening due to repeated stresses from the hoist.
- Ensure that there is adequate working space to permit hoist operation in the hanging position only. Normal operation should not require pulling or tugging around corners or obstructions. Also, there must be adequate space to permit the operator and other persons to stand clear of the load and adjacent structures.
- Watch out for makeshift or compromising practices either during installation or subsequent operation of the hoist. Sometimes the "temporary" fix remains until an accident occurs.
- Perform both the daily and the periodic inspections specified herein on a repaired hoist prior to initial use. Perform the daily inspections specified herein on a new hoist prior to initial use.

### 2-4. INSTALLATION.

2-5. Secure the hoist to a suitable supporting structure through mounting holes provided in the suspension (8, Figure 7-5A, or 8, Figure 7-5B). **IMPORTANT:** Use Yale<sup>®</sup> Lift-Tech supplied load pins to assure proper hoist mounting. If substitutions are necessary, use 3/4 inch diameter S.A.E. Grade 5 bolts. On trolley mounted hoists, the trolley should be properly mounted to allow for clearance between trolley wheels and beam flange to avoid binding. The beam should be free of any obstructions, dirt, or grease, providing a free and level plane of movement. See Figures 2-1, 2-2, and 2-3.

#### NOTE

All trolley mounted hoists must be mounted with the drum parallel to the beam. This will keep the load point under the centerline of the beam and will minimize off center loading problems.

### 2-6. OIL LEVEL.

2-7. This hoist has an oil filled transmission. For shipping purposes, a non-vented fill plug was installed at the factory. A vented plug (39, Figure 7-4) is located in an envelope attached to the hoist. The vented plug must be installed in place of the non-vented shipping plug before the hoist can be operated. In addition, the transmission oil level should be checked prior to placing hoist in operation. To check oil level, remove level plug (42). Observe if oil is even with or above bottom of tapped hole. If not, add oil as specified on lubrication schedule, Figure 4-7.

#### ⚠ CAUTION

REPLACE OIL ONLY WITH THAT SPECIFIED IN THIS MANUAL. This lubricant has additives for optimum resistance to chemical change due to heat, and for smooth clutching action of the load brake. The hoist warranty is void if unapproved oil is used.

### 2-8. LOAD HOOK DIRECTION (PHASING).

2-9. Connect hoist to electrical power source as follows:

#### NOTE

**This hoist must be connected to a 3 phase power supply. The hoists are dual voltage (230/460V) and wired for 460V unless otherwise specified.**

If hoists are to be connected to 230V power supply, proceed with steps a., b., and c. If hoists are to be connected to 460V supply, proceed with step c.

- Remove the electrical cover (2, Figure 7-1.)
- Note that each dual-voltage hoist has a terminal block with two parallel rows of terminals adjacent to the center barrier and designated according to voltage. Convert voltage by simply transferring the leads adjacent to the center barrier across the barrier to the corresponding terminal. See appropriate wiring diagram in Section VI. Do not move any other wires or make any other changes to the electrical circuit. Replace electrical cover.
- After ascertaining that voltages of the power source and the hoist are the same, make only temporary connections at the power source for THREE PHASE models. Push the "UP" button and observe the direction of the load block. If the hook raises, the phasing is correct and permanent connections may be made at the power source. If the hook lowers, release the button immediately, since the limit switches will not operate to prevent hoist overtravel. To correct the load hook direction (phasing), reverse any two wires (except the green ground wire) at the power source only. **DO NOT CHANGE CONNECTIONS AT ANY OTHER LOCATION.**

2-10. After electrical connections are completed, secure all protective covers over exposed wiring. Test the hoist operation as specified below prior to release for use.

## 2-11. TESTING.

2-12. Before placing hoist in operation, check for proper limit switch operation as follows:

- Carefully raise the unloaded load block to upper limit and observe if it stops automatically at the maximum level. (See note in paragraph 2-13.) Do not allow load block to run into hoist drum - or possible damage may result to hoist. If load block does not stop at desired level, see paragraph 4-1 for limit switch adjustment.
- Carefully lower the unloaded load block to lower limit and observe if it stops automatically at the maximum level. (See note in paragraph 2-13.) This should occur when 1½ wraps of wire rope are left on the drum. If load block does not stop at desired level, see paragraph 4-1 for limit switch adjustment.

2-13. After limit switch testing is complete DISCONNECT HOIST FROM POWER SUPPLY and replace brake cover and control cover. Secure all protective covers over exposed wiring. Reestablish power and continue testing hoist as specified below prior to release for use.

### NOTE

The upper and lower limit switches are factory set to provide the maximum allowable hook travel and should not be adjusted to increase this travel. They can, however, be adjusted to automatically stop the hoist at points within these maximum limits (see paragraph 4-1 for adjustment procedure).

2-14. Wire rope life can be extended by a short breaking in period before the hoist is put into service. During this breaking-in period, a small amount of twist may show up in the rope. This twist should be removed as described below. This break-in can be done at the time of hoist testing:

- Attach a light load to the hook and run the hoist through its full lift stroke for a few lifting and lowering cycles. Check for hook & lift. The hook should not drift more than one inch.
- If brake operation is normal with a light load, repeat the above procedure with approximately one-half rated load, again running the hoist through its full lift stroke for a few cycles. Check again for hook drift.
- If brake operation is normal with one-half rated load, attach rated load to the hook and continue the breakin procedure. The hoist shall operate smoothly and the brake should prevent hook drift in excess of one inch at rated load. See paragraph 4-5 if motor brake adjustment is required.
- Set the load on the floor. Disconnect the dead end of the wire rope by removing the dead end anchor screw (18, Figure 7-5A or 7-5B). Allow the dead end to rotate, in order to remove all twist from the rope. Reconnect the dead end and be sure to replace and tighten the anchor screw.

## 2-15. TROLLEY MOUNTING.

2-16. The Yale Trolleys can be mounted on standard "I" beams. The trolleys will mount on 6" through 18" depth "I" beams. This is accomplished by properly locating the spacer washers as shown in Tables 2-1, 2-2, and 2-3. Washers should be equally spaced on each side of the hoist suspension so that a clearance of about 3/32" (.094") is obtained between the beam and each wheel flange. Tables 2-1, 2-2, and 2-3 provide an approximate guide to washer placement. Be sure to use the proper Table, based on hoist capacity (tons) and trolley type.

## NOTE

Beam manufacturing tolerances allow wide variations from handbook flange widths. The particular beam on which your hoist is to be installed should be measured and the trolley spacer washers adjusted as required to achieve a 3/32" clearance. Two thicknesses of washers are provided. This allows fine adjusting to achieve the required spacing.

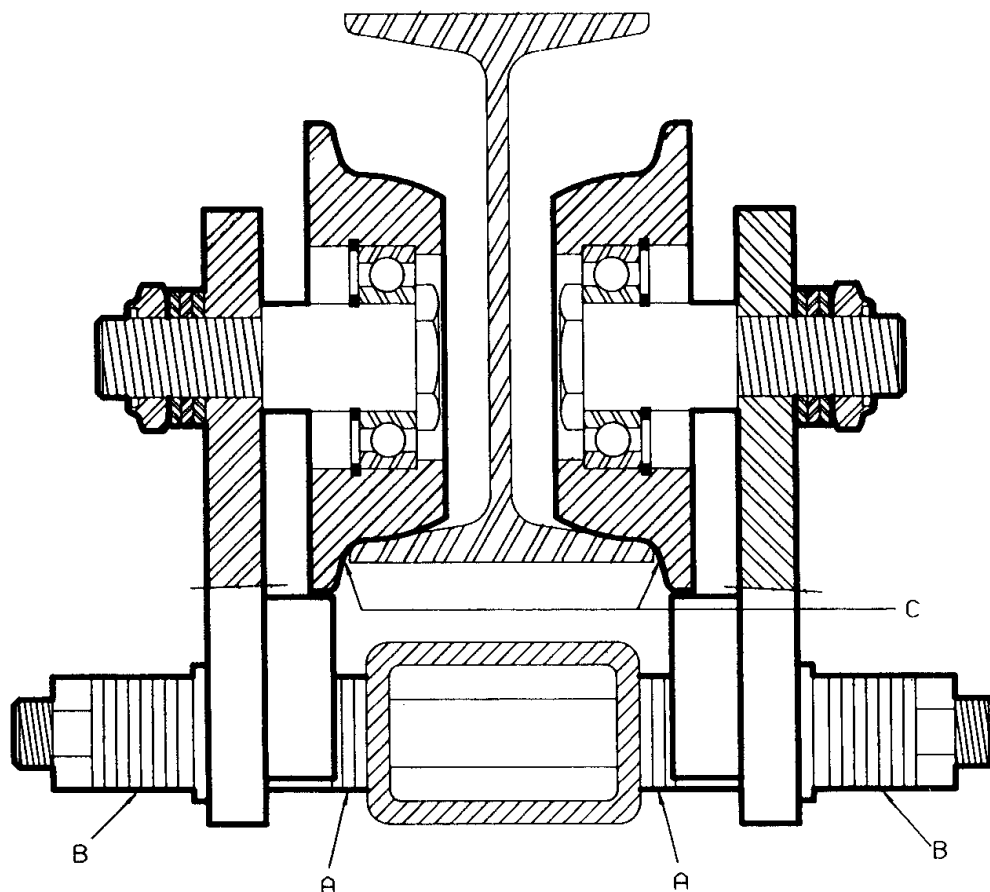
Trolleys can be mounted on beam radii as small as 4 feet. Slightly increased spacing may be required when the trolley is mounted on curved beams to maintain freedom of movement.

2-17. The load pin nuts for the trolleys require a tightening torque of 100 ft. lbs. Refer to Figures 2-1, 2-2, and 2-3 for nut identification.

## CAUTION

Make sure all supporting structures are strong enough to hold the full rated load of the trolley with a generous factor of safety.

# **LEW-3 Hoists on Yale® Trolleys** **1-Ton and 2-Ton Hoist, Four-Wheel Trolley**



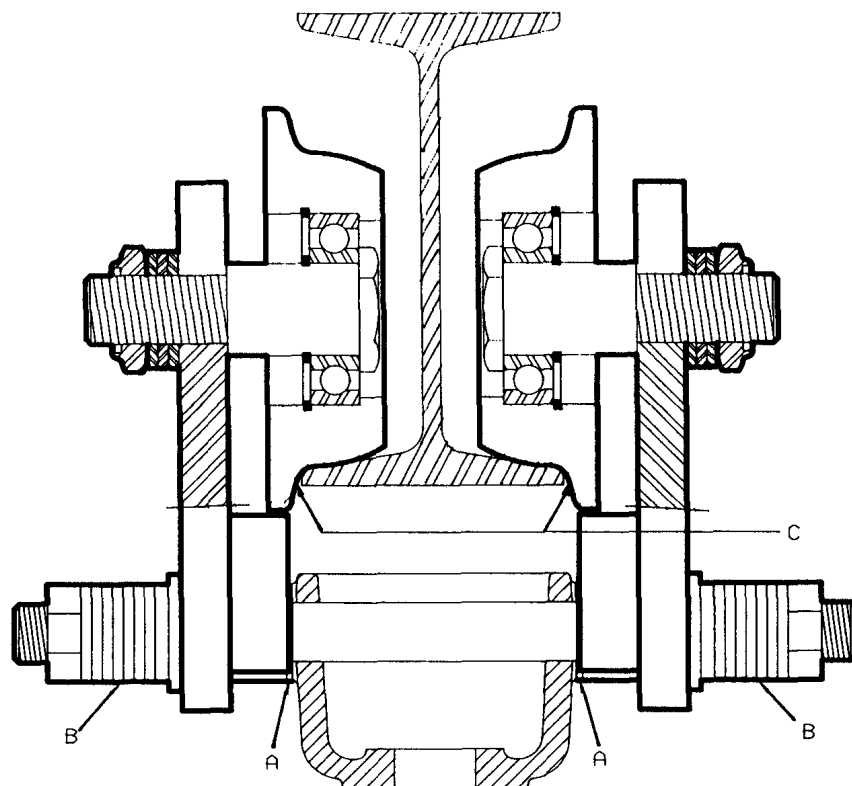
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**Figure 2-1**

**Table 2-1.**

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

### 3-Ton Hoist, Four-Wheel Trolley



14017

Figure 2-2

Table 2-2.

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

# 1-Ton, 2-Ton or 3-Ton Hoist, Two-Wheel Trolley

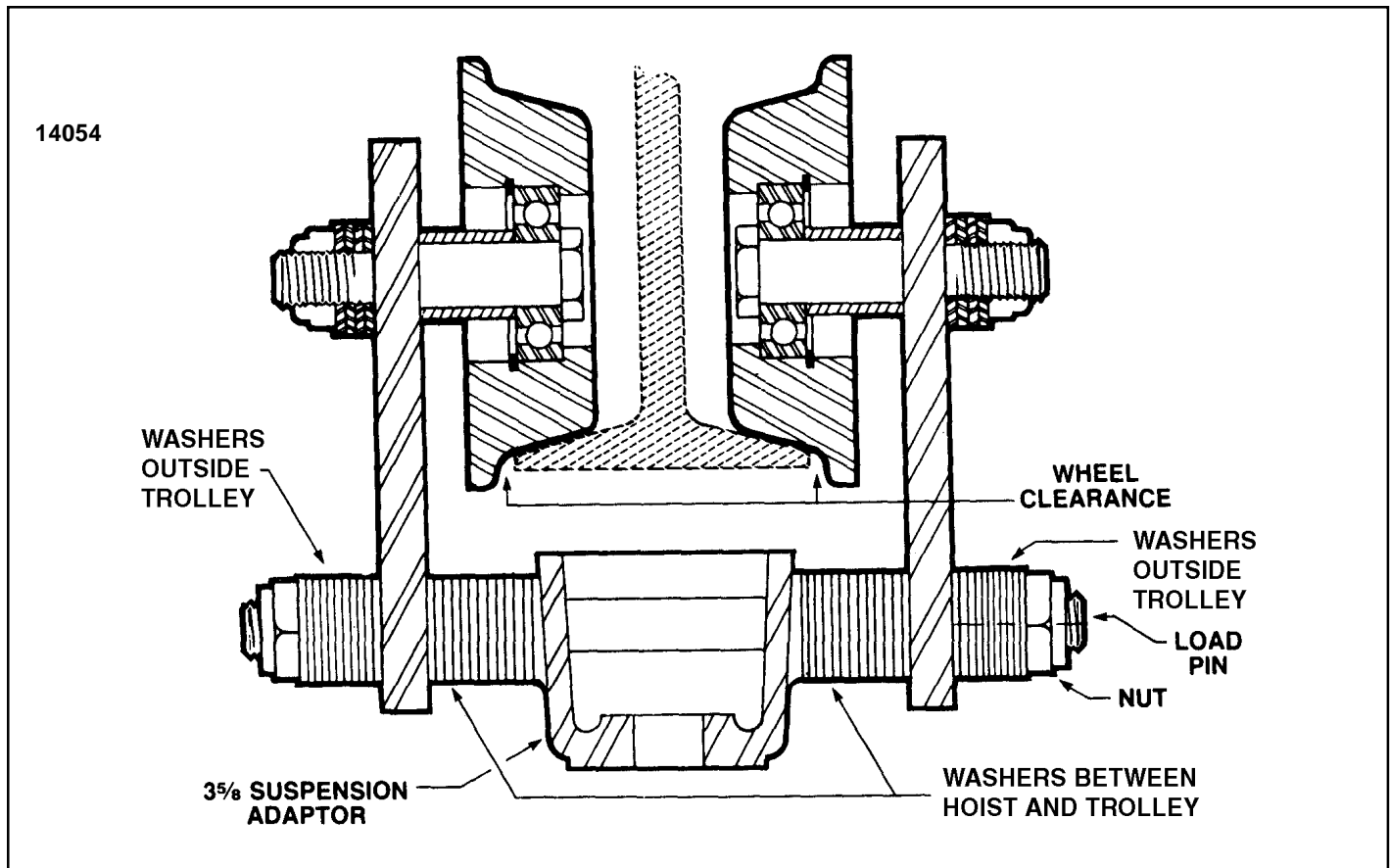


Figure 2-3

Table 2-3.

		"I" Beam Size					
		6"	8"	10"	12"	15"	18"
Washers Between Hoist & Trolley	Thick	4	7	10	8	11	11
	Thin	4	3	2	8	6	9
Washers Outside Trolley	Thick	7	4	1	3	0	0
	Thin	6	7	8	2	4	1

## SECTION III - OPERATION

### 3-1. SAFETY CONSIDERATIONS.

3-2. This hoist is designed for proper operation within the limits of its rated capacity. The hoist has features designed to minimize the potential for injury due to the failure of the hoist itself. This hoist is intended for use in the vertical lifting of freely suspended material loads. Applications involving the lifting of guided loads, such as dumbwaiters and non-riding elevators require additional safety devices. Before using this hoist in such applications, consult the local, state and federal codes.

Here are some additional pointers which should be followed in order to ensure proper operation.

- a. Do not overload the hoist. This hoist is equipped with a torque limiting device (load equalizer assembly, 36, Figure 7-4). This device will prevent lifting of damaging overloads but this feature is not intended to invite, condone or grant permission to lift loads greater than the rated capacity of the hoist, see Table 1.
- b. Do not make side pulls with the hoist. Trolley mounted hoists should always be positioned directly over the load before lifting.
- c. Operate the hoist only in a hanging position with adequate support. Make sure that the load does not contact any obstructions.
- d. Before raising a load, always check to see that it is held securely in the hook or sling chains, etc. Raise the load only until the wire rope is taut and then double check the rigging before continuing to raise the load. Never use the hoist wire rope in sling fashion around the load.
- e. Make sure that the slings and other rigging have sufficient capacity to support the load, and are in good condition.
- f. **DO NOT STAND OR WALK BENEATH A LOAD.** Do not move the load in such a manner as to endanger personnel.

- g. Never leave a suspended load unattended.
- h. Do not lower the load into areas where visibility is obscured unless someone else is guiding the operation.
- i. Use common sense at all times when operating a hoist.
- j. **DO NOT USE THE HOIST TO LIFT, TRANSPORT, OR OTHERWISE SUPPORT PEOPLE.**

### NOTE

The information herein is directed to the proper use, care and maintenance of the LEW-3 Hoist and does not comprise a handbook on the broad subject of rigging. Rigging can be defined as the process of lifting and moving heavy loads using hoists and other mechanical equipment. Skill acquired through specialized experience and study is essential to safe rigging operations. For rigging information, we recommend consulting a standard textbook on the subject.

### 3-3. OPERATION.

3-4. The hoist should be operated by qualified personnel only. Be sure to perform the daily inspections specified herein prior to first use each day. Pay particular attention to the limit switch operation, the brakes, and rope travel onto the drum. Avoid excessive inching and quick reversals as these can cause overheating, accelerated brake wear, and unnecessary stresses. Do not routinely move the hook so as to actuate the limit switches, as these are safety devices only. Avoid swinging the load or hook if the hoist is mounted on a trolley. Do not operate the hoist if it is functioning improperly, has been inadvertently overloaded, or is in obvious need of repair. Always affix a warning or "Out-of-Order" tag to the control station and disconnect hoist from power supply until the proper inspection-repair has been made.

## SECTION IV - MAINTENANCE, REPAIR AND LUBRICATION

### 4-1. LIMIT SWITCH ADJUSTMENT.

4-2. Limit switches are provided to protect the hoist against damage resulting from over-travel or to allow setting the hoist travel within a prescribed travel range. For easy identification and association with the proper travel the upper and lower limit switch adjusting nuts (2 and 3, Figure 4-1) are colored red and green respectively. The increment of adjustment is as follows: One complete revolution (ten slots) of either nut is equivalent to approximately 7-3/4" of hook travel on the 1 & 2 Ton hoist or approximately 3-7/8" of hook travel on the 3-Ton hoist. One slot is equivalent to approximately 3/4" of hook travel on the 1 & 2-Ton hoist or approximately 3/8" on the 3-Ton. Movement of the limit switch nuts toward or away from each other increases or decreases the hook travel respectively. Care should be exercised when adjusting either limit of travel.

### ⚠ CAUTION

If the wires running to the limit switches are disconnected for any purpose, refer to applicable wiring diagram (Section VI of this manual) for proper location of wires.

#### 4-3. Adjust Upper Limit (Red Nut) as follows:

- Carefully raise the load block to a point where the top of it is three inches or more from the hoist drum (or to the limit desired in the particular application, allowing the minimum of three inches).

### NOTE

In special installations, this limit may be closer than three inches but special care must be taken when setting it.

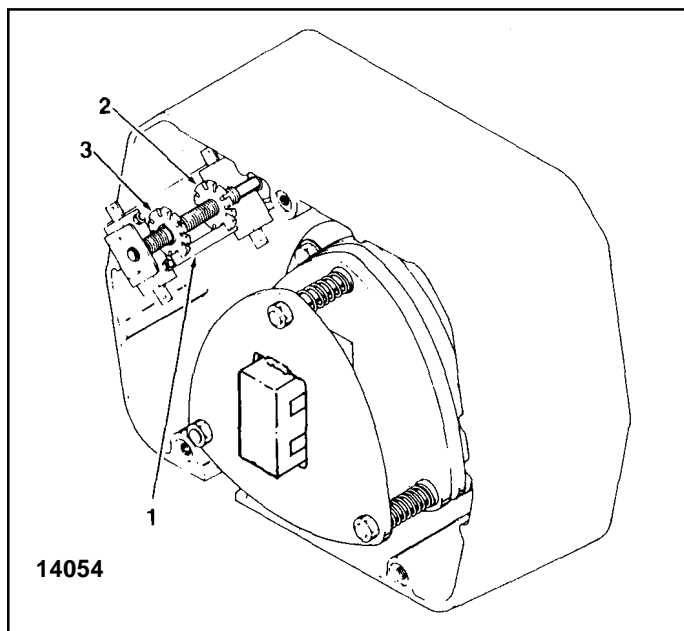


Figure 4-1 Limit Switch Adjustment

- Turn the slotted red nut (2) towards its limit switch until the limit switch -clicks-\* then turn two SLOTS further. Release the spring guide plate and be sure it slips back into the slots in the colored limit switch nuts. Do not disturb the other slotted nut if it has been set previously.
- Replace brake cover and connect hoist to power supply.
- Verify the limit switch setting by first lowering the load block and then carefully inching it back toward the hoist until the switch is actuated.

#### 4-4. Adjust Lower Limit (Green Nut) as follows:

- Carefully lower the load block to a point where there is a minimum of 1½ wraps of wire rope left on the drum (or to the limit desired in the particular application, allowing the minimum 1½ wraps).
- DISCONNECT HOIST FROM POWER SUPPLY and remove the brake cover (1, Figure 7-1).
- With a screwdriver, pry the spring guide plate (1, Figure 4-1) out of the slots in the colored limit switch nuts (2 & 3).
- Turn the slotted green nut (3) towards its limit switch until the limit switch "clicks",\* then turn two SLOTS further. Release the spring guide plate and be sure it slips back into the slots in the colored limit switch nuts. Do not disturb the other slotted nut if it has been set previously.
- Replace brake cover and connect hoist to power supply.
- Verify the limit switch setting by first raising the load block and then carefully inching it back toward the lower setting point until the switch is actuated.

\*If difficulty is encountered in detecting the "click" of the limit switch, a continuity testing device should be used to determine the point at which the switch breaks the control circuit.

### 4-5. MOTOR BRAKE ADJUSTMENT.

4-6. The criteria for the correct brake adjustment is its performance. Properly adjusted, the brake will release promptly when energized; is capable of both smoothly stopping and securely holding the rated capacity of the hoist. If the hoist develops either undesirable over-travel after the push-button is released (this condition is most noticeable in the lowering direction) or hesitates to lift the load promptly when the push-button is depressed (this condition is most noticeable in the hoisting direction) the brake should be adjusted. If adjustment of the motor brake does not correct the hesitation, the load equalizer assembly may require replacement. See Section V.

#### 4-7. To Adjust Brake, proceed as follows:

- Remove any load and DISCONNECT THE HOIST FROM POWER SUPPLY.
- Remove brake cover (1, Figure 7-1).
- Check the gap between brake armature (A, Figure 4-2) and field (B). The correct gap is 0.015 inch. Adjustment should not be necessary until gap reaches 0.050 inch unless brake chatter is experienced. See Section V.
- Adjust gap by adjusting the three lock nuts (F) and checking with a feeler gauge to be sure gap is the same on both ends of the solenoid.

- DISCONNECT HOIST FROM POWER SUPPLY and remove the brake cover (1, Figure 7-1).
- With a screwdriver, pry the spring guide plate (1, Figure 4-1) out of the slots in the colored limit switch nuts (2 and 3).

## CAUTION

Be sure the bottom of the armature plate does not bear against the brake adapter (H). As wear occurs and adjustments are made the built in clearance will be reduced. When this clearance is gone REPLACE BRAKE DISCS.

- e. Adjustment is now complete and the brake properly set. Replace the brake cover, reconnect the power supply, and check brake operation per paragraph 2-14. If brake operates improperly, see troubleshooting, Section V.

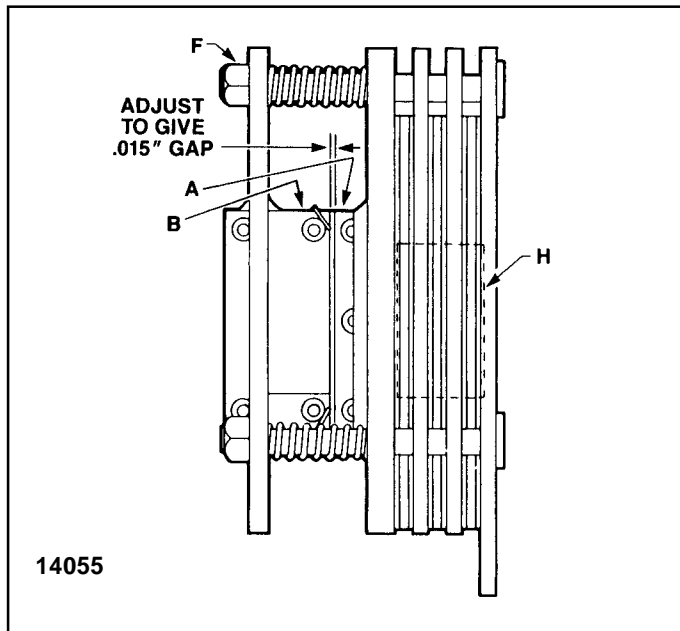


Figure 4-2 Motor Brake Adjustment

- h. Slide the sleeve fitting of the rope out of the drum socket. Remove and discard the old rope.
- i. Place paper on floor to protect the new wire rope from dirt and grit. Stretch the new wire rope out on the paper with the sleeve fitting end toward the hoist. Relieve any twist in the new rope.
- j. Insert the new rope's sleeve fitting into the drum socket, making sure the fitting is properly seated.

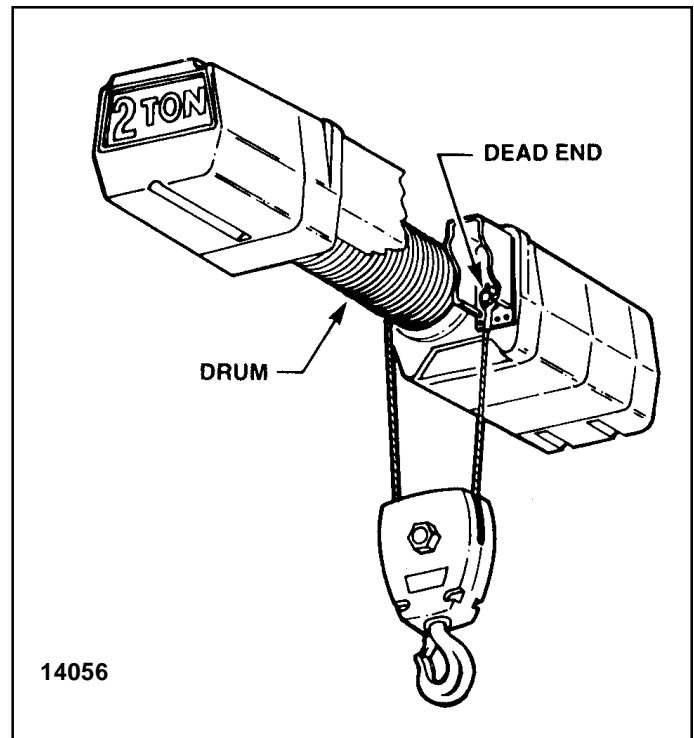


Figure 4-3A Wire Rope Reeving (1 & 2-Ton, S2 Models)

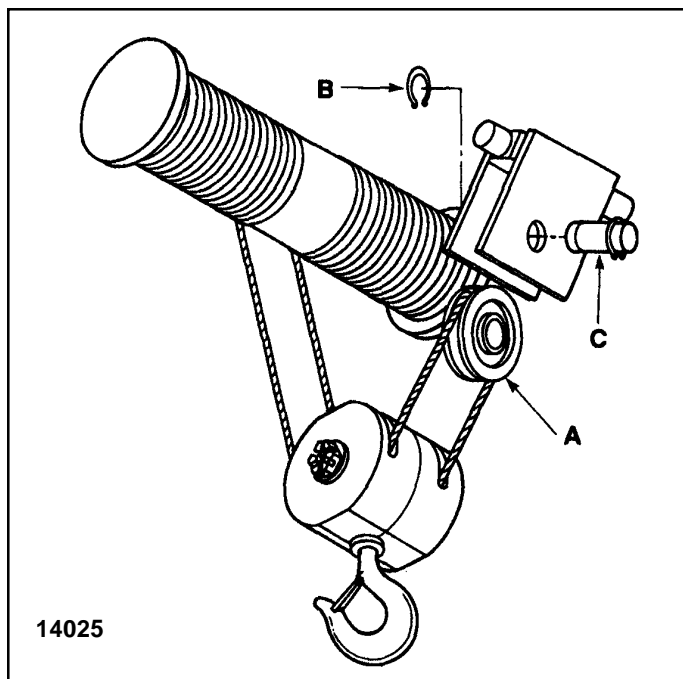
### 4.8. REPLACEMENT OF WIRE ROPE.

4-9. 1 & 2-TON HOISTS, S2 MODELS: Refer to Figure 4-3A for parts identification and proper cable reeving.

- a. Push "Down" button and run old rope out until stopped by lower limit switch.
- b. Disassemble the load block by removing the two bolts (11, Figure 7-9A) and the large nut (4) on the grease fitting side. Clean and inspect the block, hook, sheave, bearings, and pin for wear, damage, etc. Replace parts as necessary. Do not reassemble the load block at this point.
- c. DISCONNECT HOIST FROM POWER SUPPLY and remove brake cover (1, Figure 7-1).
- d. With a screwdriver, push the spring guide plate (1, Fig. 4-1) out of the slots in the plastic limit switch nuts. Turn the green slotted nut (3) back to about the center of the screw thread. DO NOT DISCONNECT THE WIRES FROM THE LIMIT SWITCHES.
- e. With the brake cover off, reconnect the hoist to power supply. Be sure the green ground wire is properly grounded.
- f. Carefully jog the "Down" button until all old rope is run off and the drum socket opening is accessible.
- g. Disconnect old rope dead end by removing the dead end anchor screw (18, Figure 7-5A). This requires a 5/16" alien wrench. Lift the eye fitting of the old rope off the anchor pin.
- h. Push the "Up" button until about half of the new rope is wound onto the drum. Apply slight tension to the rope with a gloved hand to wind rope evenly on the drum.
- i. Attach the dead end by placing the new rope's eye fitting over the anchor pin. Be sure to replace and tighten the dead end anchor screw, since it serves to prevent the dead end fitting from working itself off the anchor pin.
- m. Reassemble the load block onto the new wire rope. See Figure 7-9A for aid in reassembly. Refer to Figure 4-3A to make sure that the rope is reeved correctly.
- n. Adjust the limit switches per paragraph 4-1.
- o. Test the hoist & break-in the wire rope per paragraph 2-14.

#### 4-10. 1 & 2 TON HOISTS, D2 & P2 MODELS:

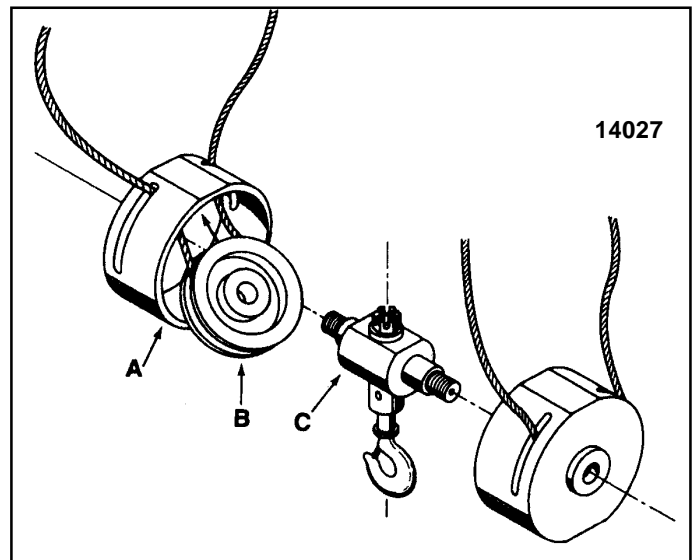
Refer to Figure 4-3B for parts identification and proper rope reeving.



**Figure 4-3B. Wire Rope Reeving  
(1 & 2 Ton, P2 and D2 Models)**

1. Push "DOWN" button and run old rope out until stopped by lower limit switch.
2. Disassemble the load block by removing the spring pins (53, Figure 7-9C) and the slotted nuts (51, Figure 7-9C). The block covers (52, Figure 7-9C) will still be captured by the rope. Clean and inspect the hook, sheaves, bearings and yoke for wear, damage, etc. Replace parts as necessary. Do not reassemble the load block yet.
3. DISCONNECT POWER from the hoist and remove the short end cover.
4. With a screwdriver, push the spring guide plate (1, Figure 4-1) out of the slots in the plastic limit switch nuts. Turn the green slotted nut (3) back to about the center of the threaded screw. DO NOT DISCONNECT THE WIRES FROM THE LIMIT SWITCHES.
5. With the end cover off, connect hoist to power supply. Be sure the green wire is grounded.
6. Carefully jog the "DOWN" button until all the old rope is run off and the drum socket openings are accessible.
7. DISCONNECT POWER from the hoist.
8. Remove the equalizer sheave. (A) Figure 4-3 by removing one retaining ring (B) and the sheave pin (C). Clean and inspect these parts.
9. Slide the sleeve fittings out of the drum sockets, and out of the block covers. Remove and discard the old rope.
10. Place paper on the floor to protect the new rope from dirt and grit. Stretch the new rope out in one length and relieve any twist. Then double the rope by bringing the two sleeve fittings together.

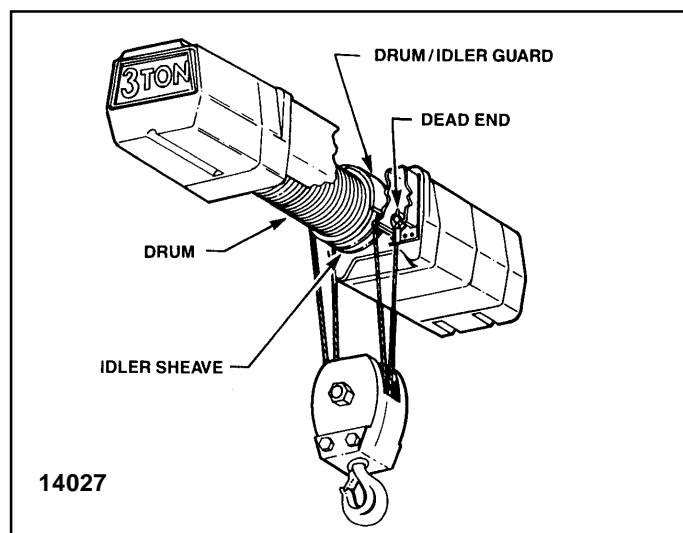
11. Pass each sleeve fitting through the rope openings in the block covers only. The block should remain disassembled at this point.
12. Insert each sleeve fitting into the drum sockets, making sure the fittings are properly seated.
13. Push the "UP" button until a few wraps of rope are wound onto the drum. Apply slight tension to the ropes with gloved hands to wind the rope evenly on the drum..
14. Place the looped end over the equalizer sheave pin and retaining ring.
15. At this point, only the block covers will be hanging from the two loops of rope.



**Figure 4-4. Assembly of Load Block D2 & P2 Models**

16. Refer to Figure 4-4 for assembly of load block. Pull a loop of rope to the inside of the block cover (A), and place a sheave (B) in this loop. Angle the top of the sheave into the cover, while keeping the rope seated in the sheave groove. The sheave will now drop to the inside wall of the cover. Place the sheave and cover, as one unit, over the yoke (C), and hand tighten the slotted nut. Repeat for the other side. Tighten both slotted nuts and install the spring pins. Refer to Figure 4-3B or 4-3C to make sure that the rope is reeved correctly.
  17. Adjust the limit switches per paragraph 4-1.
  18. Lubricate the wire rope per paragraph 4-23a. Test the hoist and break-in the wire rope per paragraph 2-14.
- 4-11. 3-TON HOISTS: Refer to Figure 4-3D for parts identification and proper cable reeving.
- a. Push "Down" button and run old rope out until stopped by lower limit switch.
  - b. Disassemble the load block by removing the two bolts (7, Figure 7-9B) and the large nut (9). Clean and inspect the block, hook, sheaves, bearing and pin for wear, damage, etc. Replace parts as necessary. Do not reassemble the load block at this point.
  - c. DISCONNECT HOIST FROM POWER SUPPLY and remove brake cover (1, Figure 7-1).
  - d. With a screwdriver, push the spring guide plate (1, Fig. 4-1) out of the slots in the plastic limit switch nuts. Turn the green slotted nut (3) back to about the center of the screw thread. DO NOT DISCONNECT THE WIRES FROM THE LIMIT SWITCHES.

- e. With the brake cover off, reconnect the hoist to power supply. Be sure the green ground wire is properly grounded.
- f. Carefully jog the "Down" button until all old rope is run off and the drum socket opening is accessible.
- g. Remove the center-section covers (22 and 23, Figure 7-1), Remove the drum/idler guard (6, Figure 7-5B). Disconnect old rope dead end by removing the dead end anchor screw (18, Figure 7-5B). This requires a Y, " alien wrench. Lift the eye fitting of the old rope off the anchor pin
- h. Slide the sleeve fitting of the rope out of the drum socket. Remove and discard the old rope.
- i. Place paper on floor to protect the new wire rope from dirt and grit. Stretch the new wire rope out on the paper with the sleeve fitting end toward the hoist. Relieve any twist in the new rope.
- j. Insert the new rope's sleeve fitting into the drum socket, making sure the fitting is properly seated.
- k. Push the "Up" button until about half of the new rope is wound onto the drum. Apply slight tension to the rope with a gloved hand to wind rope evenly on the drum.
- l. Pass the eye fitting of the new rope over the idler sheave and attach the dead end by placing the eye fitting over the anchor pin. This should form two loops of rope hanging from the hoist. Be sure to replace and tighten the dead end anchor screw, since it serves to prevent the dead end fitting from working itself off the anchor pin.
- m. Reassemble the load block onto the new wire rope. See Figure 7-9B for aid in reassembly. Refer to Figure 4-3D to make sure that the rope is reeved correctly. Replace the drum/idler guard, making sure that the rope is properly seated in the idler sheave, and that the idler sheave rotates freely. Replace the center-section covers.
- n. Adjust the limit switches per paragraph 4-1.
- o. Test the hoist & break-in the wire rope per paragraph 2-14. Lubricate the wire rope per paragraph 4-23a.



**Figure 4-3D. Wire Rope Reeving - 3-Ton, S4 Models**

### ⚠ CAUTION

Do not repair, shorten or substitute other wire rope. Use correct wire rope assembly specified in this manual.

## 4-12. INSPECTIONS.

4-13. A planned inspection routine should be established for this hoist based upon frequency of use, severity of use, and environmental conditions. (Reference American National Standard ANSI B30.16.) Some inspections should be made frequently (daily to monthly) and others periodically (monthly to yearly). It is strongly recommended that an Inspection and Maintenance Check List and an Inspector's Report similar to those shown in Figures 4-5 and 4-6 be used and filed for reference. All inspections should be made by, or under the direction of, a designated inspector. Special inspections should be made following any significant repairs or any operating occurrence leading one to suspect that the hoist's capabilities may have been impaired.

## 4-14. FREQUENT INSPECTIONS.

4-15. Perform the following inspections daily prior to initial use of the hoist.

### ⚠ CAUTION

Any unsafe condition disclosed by the inspection shall be corrected before operation of the hoist is resumed. Adjustments and repairs shall be done only by designated personnel.

- a. Check the operating controls for proper operation.
- b. Check the limit switches for proper operation.
- c. Check the brakes for proper operation.
- d. Inspect the hook for deformations, chemical damage, or cracks. Hooks damaged from chemicals, deformation or cracks or having throat openings greater than that listed in Figure 4-4 must be replaced.

## NOTE

Any hook that is twisted more than 10 degrees from the plane of the unbent hook or has throat openings in excess of that listed in Figure 4-4 indicates abuse or overloading of the hoist. Other load bearing components should be inspected accordingly.

- e. Check that the hook swivels freely.
- f. Check hook latch to see that latch performs function of closing off the hook throat in a secure manner when load is attached.
- g. Check wire rope for wear, twist, distortion or improper dead-ending.

## 4-16. PERIODIC INSPECTIONS.

4-17. It is recommended that the following inspections be performed at one to 12 month intervals. 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, semiannually or annually based on his monthly experience.

- a. Perform all the frequent inspections listed in para. 4-14.
- b. Check nuts, bolts, rivets, and other hardware for looseness, stripped or damaged threads, and corrosion.
- c. Check sheave and drum for distortion, cracks, and excessive wear.
- d. Check housings and load block for cracks (resulting from collision, dropping, etc.) and abnormal openings between housing sections (resulting from overloading).
- e. Check for worn, corroded, cracked or distorted parts such as pins, bearings, bushings, shafts (including splines), couplings and gears.
- f. Check disc brake for glazing, contamination or excessive wear.
- g. Check load brake function. See Figure 4-8.
- h. Make a thorough inspection of the wire rope at least once each month and keep a written, dated and signed report of rope condition on file. Any deterioration, resulting in appreciable loss of original strength, such as described below, shall be carefully noted and determination made as to whether further use of the rope would constitute a safety hazard.
  - (1) Reduction of rope diameter below nominal due to loss of core support, internal or external corrosion or wear of outside wires.
  - (2) A number of broken outside wires and the degree of distribution or concentration of such broken wires.
  - (3) Worn outside wires.
  - (4) Sections of rope which are normally hidden during inspection or maintenance procedures, such as parts passing over sheaves, should be given close inspection as these are points most Subject to deterioration.
  - (5) Corroded or broken wires at end connections.

No precise rules can be given for determination of exact time for replacement of wire rope, since many variable factors are involved. Safety in this respect depends largely upon the use of good judgment by an appointed or designated person in evaluating remaining strength in the used rope after allowance for deterioration disclosed by inspection. Safety of rope operation depends upon this remaining strength. Conditions such as the following should be sufficient reason for questioning rope safety and consideration of replacement.

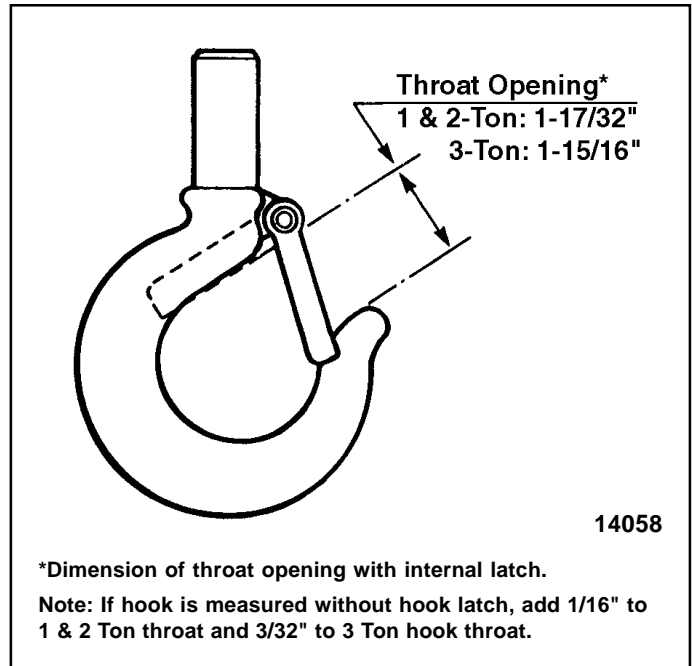
- (1) Twelve randomly distributed broken wires in one rope lay, or four broken wires in one strand in one rope lay.
- (2) Wear of one-third of the original diameter of outside individual wires.
- (3) Kinking, crushing, birdcaging or any other damage resulting in distortion of the rope structure.
- (4) Evidence of any heat damage from any cause.
- (5) Reductions from nominal 5/16 inch diameter to 19/64 inch.

## ⚠ CAUTION

Use only wire rope supplied by our company since replacement rope must be the same size, grade and construction as the original rope.

A rope which has been idle for a period of a month or more due to shutdown or storage of the hoist, shall be given a thorough inspection before it is placed in service.

- i. Check wire rope end fastenings. When two wires are broken adjacent at the end fastenings, the rope should be replaced.



**Figure 4-4. Hook Throat Opening**

- j. Inspect hook for cracking, checking, extreme wear and spreading. Replace hooks showing these signs. Use dye penetrant, magnetic particle or other suitable crack detecting method. If the throat opening is spread wider than that listed in Figure 4-4, the hook has been overstressed and must be replaced.
- k. Inspect hook connections for cracks, bending, stripped threads, and other damage.
- l. Inspect limit switches for signs of looseness or deterioration. Ensure that they are securely mounted and that electrical connections are tight.
- m. Inspect all wiring and terminals for fraying and defective insulation. Check connections for tightness. Inspect crimp and insulation on terminal blocks.
- n. Inspect the supporting structure for continued ability to carry the rated loads.
- o. Inspect all nameplates, decals, and warning labels for security of attachment and legibility.

## 4-18. INSPECTION OF HOIST NOT IN REGULAR USE.

4-19. If a hoist has been idle for one month or more, but not more than six months, perform the inspections listed in paragraph 4-14 prior to use. If the hoist has been idle more than six months, perform the inspections listed in paragraph 4-16.

#### 4-20. CLEANING.

4-21. The external surfaces of the hoist should be periodically wiped to remove deposits of dust, oily residue and other foreign material which tend to insulate the hoist from natural dissipation of heat. Be sure that capacity plate (10, Figure 7-1) and warning labels (24, Figure 7-8A; 24, Figure 7-8B; 24, Figure 7-8C; 24, Figure 7-8D; and 24, Figure 7-8E) are clean and legible from the operator's position. Keep wire rope, drum and load block clean at all times. Build up of foreign material or substances in these areas can bind, wear or otherwise restrict the wire rope and other moving parts. During periodic inspection and with hoist disconnected from its power supply, remove the control cover (2, Figure 7-1) and brake cover (1) and remove dust build up caused by electrical arcing and brake wear.

### CAUTION

If cleaning solvents are used, provide adequate ventilation and be sure that fumes or vapors are safely dissipated before energizing the hoist. Wear protective clothing and avoid prolonged contact with solvent.

- e. **BOTTOM BLOCK SHEAVE BUSHING.** Apply "Yale" No. H-7610 gear lubricant, or equivalent, through grease fitting in sheave pin (5, Figure 7-9A or 14, Figure 7-9B). In general, the sheave bushing should be lubricated every 6 months under severe operating conditions, every 12 months under normal operating conditions or every 200 hours of motor on time.
- f. **TROLLEY.** Check grease level in gear case (motorized trolley only). Lubricate trolley wheel gears with a good commercial grade of lithium base grease during inspection or more frequently as required. The recommended grade grease for both the gear case and wheel gears is NLGI grade 2EP.

#### 4-22. LUBRICATION.

4-23. Proper lubrication is necessary for a long and relatively trouble-free hoist operation. Refer to the following and to Figure 4-7, Recommended Lubrication Schedule, for lubrication points, type of lubricant and frequency of lubrication.

- a. **WIRE ROPE.** Lubrication of the wire rope is important. The action within the rope as it moves over the drum or around the sheave is for the strands to slide one against the other. Lubrication will reduce this friction and prevent the entrance of moisture which can cause corrosion. Frequent light applications of lubricant is better than infrequent heavy applications. For unusual conditions or a contaminated or dirty atmosphere, consult us for a recommendation. Use heavy motor oil or wire rope lubricant.
- b. **GEARING.** The transmission of this hoist is lubricated by the continuous oil bath method. The lubricant is specially formulated for optimum gear lubrication and load brake-load equalizer clutch performance. See Lubrication Schedule, Figure 4-7. Substitutions are not recommended as they might cause load brake "chatter" and/or failure. The oil level must be maintained at the level plug for proper load brake-load equalizer clutch cooling. The frequency of which the transmission oil must be changed will depend on the type of hoisting service the hoist is subjected to and should coincide with periodic preventive maintenance inspections. In general, the transmission oils should be changed every 6 months under severe operating conditions, every 12 months under normal operating conditions or every 200 hours of motor on time operating service. The fill plug (39, Figure 7-4), level plug (42) and drain plug (41) are located on the side and bottom of the transmission cover (32) and transmission housing (31).
- c. **LIMIT SWITCH SHAFT.** The threaded limit switch shaft (9, Figure 7-6) should be given a light coat of H-7577 gear lubricant to prevent rust.
- d. **LOAD HOOK BEARING.** Invert the load block and allow a few drops of oil to run down the hook on and into the swivel bearing. Use SAE 20-30 gear oil.

## INSPECTION & MAINTENANCE CHECK LIST ELECTRIC POWERED OVERHEAD WIRE ROPE HOIST

TYPE OF HOIST \_\_\_\_\_ CAPACITY (TONS) \_\_\_\_\_  
LOCATION \_\_\_\_\_ ORIGINAL INSTALLATION DATE \_\_\_\_\_  
MANUFACTURER \_\_\_\_\_ MANUFACTURER'S SERIAL NUMBER \_\_\_\_\_

Item	Frequency of Inspection			Possible Deficiencies	OK	Action Required
	Frequent		Periodic			
	Daily	Monthly	1-12 Mo.			
Operating Controls	•	•	•	Any deficiency causing improper operation		
Limit Switches	•	•	•	Any deficiency causing improper operation Pitting or detetrioration		
Disc (Motor) Brake	•	•	•	Slippage or excessive wear Glazing, containnation of excessive wear		
Load Brake (Mechanical)			•	Failure to support load with disc brake open (see Figure 4-8)		
Hooks	•	•	•	Excessive throat opening, bent or twisted more than 10 degrees, damaged hook latch, wear, chemical damage, worn hook bearing Cracks (use dye penetrant, magnetic particle or other suitable detection method)		
Suspension Lug			•	Cracks, excessive wear or other damage which might impair the strength of the lug Cracks (use dye penetrant, magnetic particle or other suitable detection method)		
Wire Rope	•	•	•	Inadequate lubrication, wear, twist, distortion, improper dead-ending, deposits of foreign substance Deterioration or wear resulting in appreciable loss of original strength		
Suspension Lug Connections			•	Cracks, bending, stripped threads, damaged suspension studs		
Pins, Bearings, Bushings, Shafts, Couplings, Gears			•	Excessive wear, corrosion, cracks, distortion		
Nuts, Bolts, Rivets			•	Looseness, stripped and damaged threads, corrosion		
Sheave, Drum			•	Distortion, cracks and excessive wear Build up of foreign substances		
Housing, Load Block			•	Cracks, distortion, excessive wear, Internal build up of foreign substances		
Wiring and Terminals			•	Fraying, defective insulation		
Contact Block, Magnetic Hoist Control Switch, Other Electrical Appartus			•	Loose connections, burned or pitted contacts		
Supporting Structure and Trolley (if used)			•	Damage or wear which restricts ability to support imposed loads		
Nameplates, Decals Warning Labels			•	Missing, damaged or illegible		
Transmission Lubricant			•	Low Level, Requires Changing		
Note: Refer to Maintenance and Inspection Sections of the Hoist Maintenance Manual for further details.						

### FREQUENCY OF INSPECTION:

- Frequent - Indicates items requiring inspection daily to monthly. Daily inspections may be performed by the operator if properly designated.
- Periodic - Indicates items requiring inspection monthly to yearly. Inspections to be performed by or under the direction of a properly designated person. The exact period of inspection will depend on frequency and type of usage. Determination of this period will be based on the user's experience. It is recommended that the user begin with a monthly inspection and extend the periods to quarterly, semiannually or annually based on his monthly experience.

**Figure 4-5. Recommended Inspection and Maintenance Check List**

**Note:** This inspection and maintenance check list is in accordance with our interpretation of the requirements of Safety Standard for Overhead Hoists ANSI B30.16. It is, however, the ultimate responsibility of the employer/user to interpret and adhere to the applicable requirements of this safety standard.

INSPECTOR'S REPORT	
Item	Remarks (List Deficiencies and Recommended Action)
Inspector's Signature	Date Inspected
	Approved By
	Date

Figure 4-6 Recommended Inspector's Report

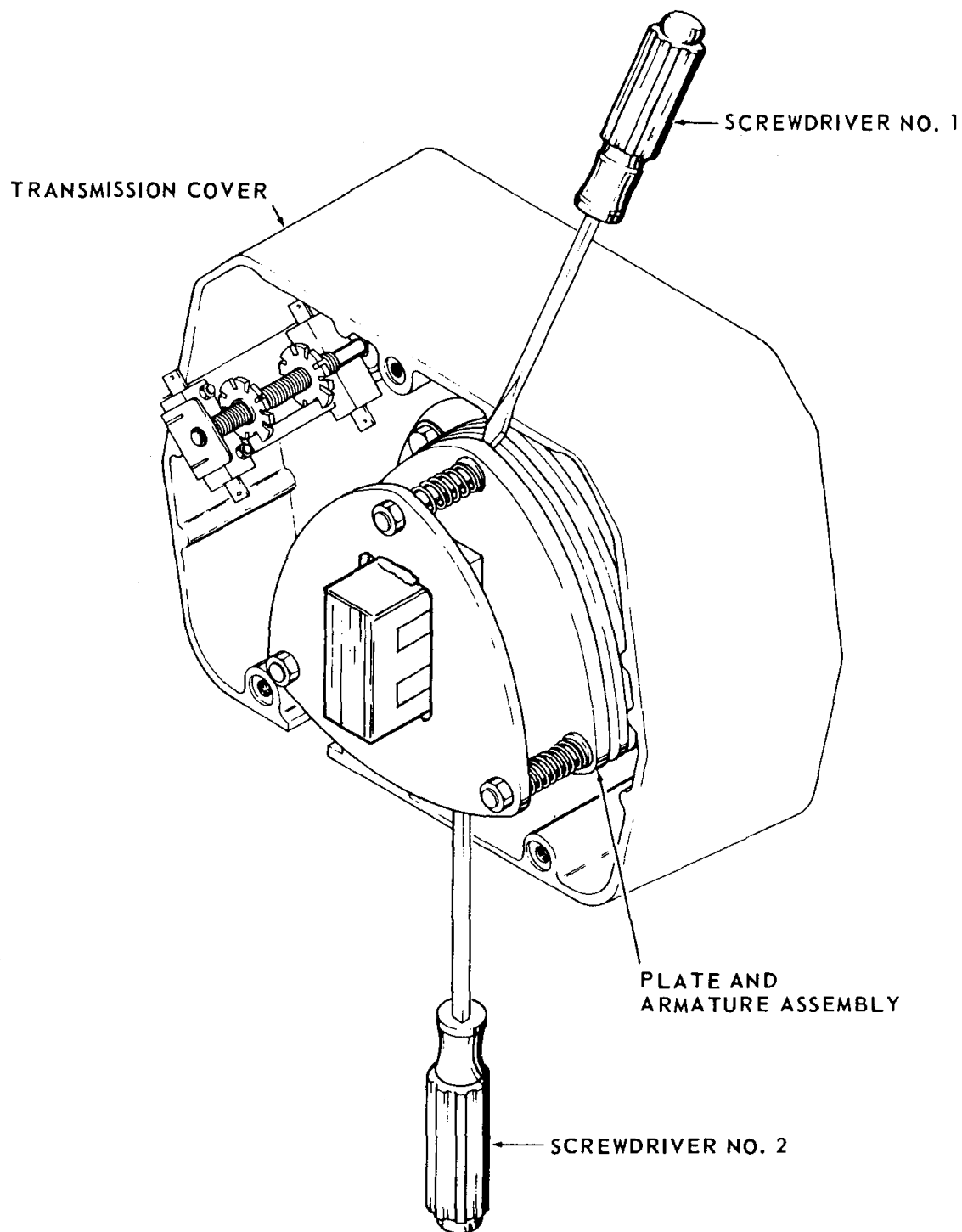
**RECOMMENDED LUBRICATION SCHEDULE\***  
**MODEL LEW-3 ELECTRIC POWERED WIRE ROPE HOISTS**

Figure And Index No.	Component	Type of Lubricant	Type of Service and Frequency of Lubrication		
			Heavy	Normal	Infrequent
11, Figure 7-5A 11, Figure 7-5B 10, Figure 7-5C 55, Figure 7-5D	Wire Rope	Heavy Motor oil or wire rope lubricant	Weekly	Monthly	Monthly
38, Figure 7-4	Hoist Gearing	"Yale" No. H-7813 transmission oil, (Kit no. 14J11)	At periodic inspection (see Figure 4-5. paragraph 4-22.b)		
9, Figure 7-6 7, Figure 7-6A	Limit Switch Shaft	"Yale" No. H-7577 Gear lubricant  Alternate - multi-purpose lithium base bearing grease	Monthly	Yearly	Yearly
12, Figure 7-9A 5, Figure 7-9B 47, Figure 7-9C	Load Hook Bearing	SAE 20 - 30 Gear Oil	Weekly	Monthly	Yearly
7, Figure 7-9A 45, Figure 7-9C	Bottom Block Sheave Bushing	"Yale" No. H-7610 gear lubricant  Alternate - multi-purpose lithium base bearing grease	At periodic inspection (see Figure 4-5, paragraph 4-22.e)		

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

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

Figure 4-7. Recommended Lubrication Schedule



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**Figure 4-8. Load Brake Function Check**

To check function of Load Brake, proceed as follows: Attach a light load to hoist and lift load several inches. DISCONNECT HOIST FROM POWER SUPPLY and remove brake cover (1, Figure 7-1). Referring to illustration above and Figure 7-7, place screwdrivers No. 1 and No. 2 behind the plate and armature assembly and prepare to pry against transmission cover. Do not allow either screwdriver to contact the brake disc (7, Figure 7-7A or 7-7B). Carefully pry open motor-brake (close solenoid gap) and observe action of load. If the load descends, the load brake is malfunctioning and must be repaired.

## SECTION V - TROUBLESHOOTING

### 5-1. General

5-2. Use the following table as an aid to troubleshoot your hoist. If you do not have an experienced machinist-electrician to do your repair work, we recommend that you send your hoist to an approved service center for repairs.

TROUBLE	REMEDY
---------	--------

#### Hook Fails to Stop at End of Travel

<ol style="list-style-type: none"><li>1. Motor brake needs adjustment</li><li>2. Limit switches not operating</li><li>3. Plastic limit switch nuts not moving on shaft</li><li>4. Magnetic reversing switch malfunction</li><li>5. Three phase reversal</li></ol>	<ol style="list-style-type: none"><li>1. See paragraph 4-5.</li><li>2. Check adjustment. See paragraph 4-1. Check connections against wiring diagram. Tighten loose connections or replace.</li><li>3. Check for stripped threads or bent nut guide.</li><li>4. Remove control cover and check reversing switch.</li><li>5. Reverse any two wires (except the green ground wire) at the power source.</li></ol>
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#### Hoist Does Not Respond to Pushbutton

<ol style="list-style-type: none"><li>1. Power failure in supply lines</li><li>2. Wrong voltage or frequency</li><li>3. Improper connections in hoist or pushbutton station</li><li>4. Motor brake does not release</li><li>5. Faulty magnetic hoist control switch</li></ol>	<ol style="list-style-type: none"><li>1. Check circuit breakers, switches, and connections in power supply lines.</li><li>2. Check voltage and frequency of power supply against the rating on the nameplate of the hoist.</li><li>3. Check all connections at line connectors and on terminal block. Check terminal block on dual-voltage hoists for proper voltage connections.</li><li>4. Check connections to the solenoid coil. Check for open or short circuit. Check for proper adjustment. See paragraph 4-5. Check for burned out coil.</li><li>5. Check coils for open or short circuit. Check all connections in control circuit. Check for burned contacts. Replace as needed.</li></ol>
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#### Hook Does Not Stop Promptly

<ol style="list-style-type: none"><li>1. Hoist Overloaded</li><li>2. Motor brake not holding</li></ol>	<ol style="list-style-type: none"><li>1. Reduce load to within rated capacity of hoist.</li><li>2. Check motor brake adjustment (see paragraph 4-5) and load brake (Figure 4-2).</li></ol>
--	--

#### Hook Moves in Wrong Direction

<ol style="list-style-type: none"><li>1. Three-phase reversal</li><li>2. Improper connections</li></ol>	<ol style="list-style-type: none"><li>1. Reverse any two wires (except the green ground wire) at the power source (see paragraph 2-8).</li><li>2. Check all connections against Wiring Diagram.</li></ol>
---	---

#### Hoist Hesitates to Lift When Energized

<ol style="list-style-type: none"><li>1. Hoist overloaded</li><li>2. Motor brake requires adjustment</li><li>3. Worn load equalizer clutch</li><li>4. Low voltage</li></ol>	<ol style="list-style-type: none"><li>1. Reduce load within rated capacity of hoist.</li><li>2. Check motor brake adjustment. See paragraph 4-5.</li><li>3. Replace clutch.</li><li>4. Check voltage, see paragraph 2-3A.</li></ol>
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#### Motor Brake "Noise" or Chatter

<ol style="list-style-type: none"><li>1. Needs adjustment</li><li>2. Broken shading coil element</li></ol>	<ol style="list-style-type: none"><li>1. Adjust per paragraph 4-5.</li><li>2. Replace shading coil element.</li></ol>
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TROUBLE	REMEDY
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#### Hook Raises But Will Not Lower

<ol style="list-style-type: none"> <li>1. Down circuit open</li> <li>2. Broken conductor in pushbutton cable</li> <li>3. Faulty magnetic hoist control switch</li> </ol>	<ol style="list-style-type: none"> <li>1. Check circuit for loose connections. Check "Down" limit switch for malfunction.</li> <li>2. Check each conductor in the cable. If one is broken, replace entire cable.</li> <li>3. Check coils for open or short circuit. Check all connections in control circuit. Check for burned contacts. Replace as needed.</li> </ol>
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#### Hook Raises But Will Not Lower When Motor is Operating

Consult Factory Or Authorized Yale Lift-Tech Warranty Repair Station.
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#### Hook Lowers But Will Not Raise

<ol style="list-style-type: none"> <li>1. Hoist overloaded</li> <li>2. Low voltage</li> <li>3. "UP" circuit open</li> <li>4. Broken conductor in pushbutton cable</li> <li>5. Faulty magnetic hoist control switch</li> <li>6. Worn load equalizer clutch</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce load to within rated capacity.</li> <li>2. Determine cause of low voltage and bring up to within plus or minus 10% voltage specified on hoist. Line voltage should be measured while hoist is lifting load.</li> <li>3. Check circuit for loose connections. Check "UP" limit switch for malfunction.</li> <li>4. Check each conductor in the cable. If one is broken, replace entire cable.</li> <li>5. Check coils for open or short circuit. Check all connections in control circuit. Check for burned contacts. Replace as needed.</li> <li>6. Replace clutch.</li> </ol>
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#### Lack of Proper Lifting Speed

<ol style="list-style-type: none"> <li>1. Hoist Overloaded</li> <li>2. Motor brake is dragging</li> <li>3. Low voltage</li> <li>4. Load equalizer clutch intermittently slipping</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce load to within rated capacity of hoist.</li> <li>2. Check for proper brake adjustment or other defects. See paragraph 4-5.</li> <li>3. Bring up voltage to plus or minus 10% of voltage specified on hoist. Line voltage should be measured while hoist is lifting load.</li> <li>4. Replace clutch.</li> </ol>
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#### Load Brake "Noise" (Erratic tapping sounds or squeals)

<ol style="list-style-type: none"> <li>1. Need transmission oil change or improper lubricant has been used</li> <li>2. Load brake malfunctioning</li> </ol>	<ol style="list-style-type: none"> <li>1. Change transmission oil. See figure 4-7. <b>Note:</b> Hoist Warranty is void if unapproved oil is used.</li> <li>2. Check load brake operation. See paragraph 4-8.</li> </ol>
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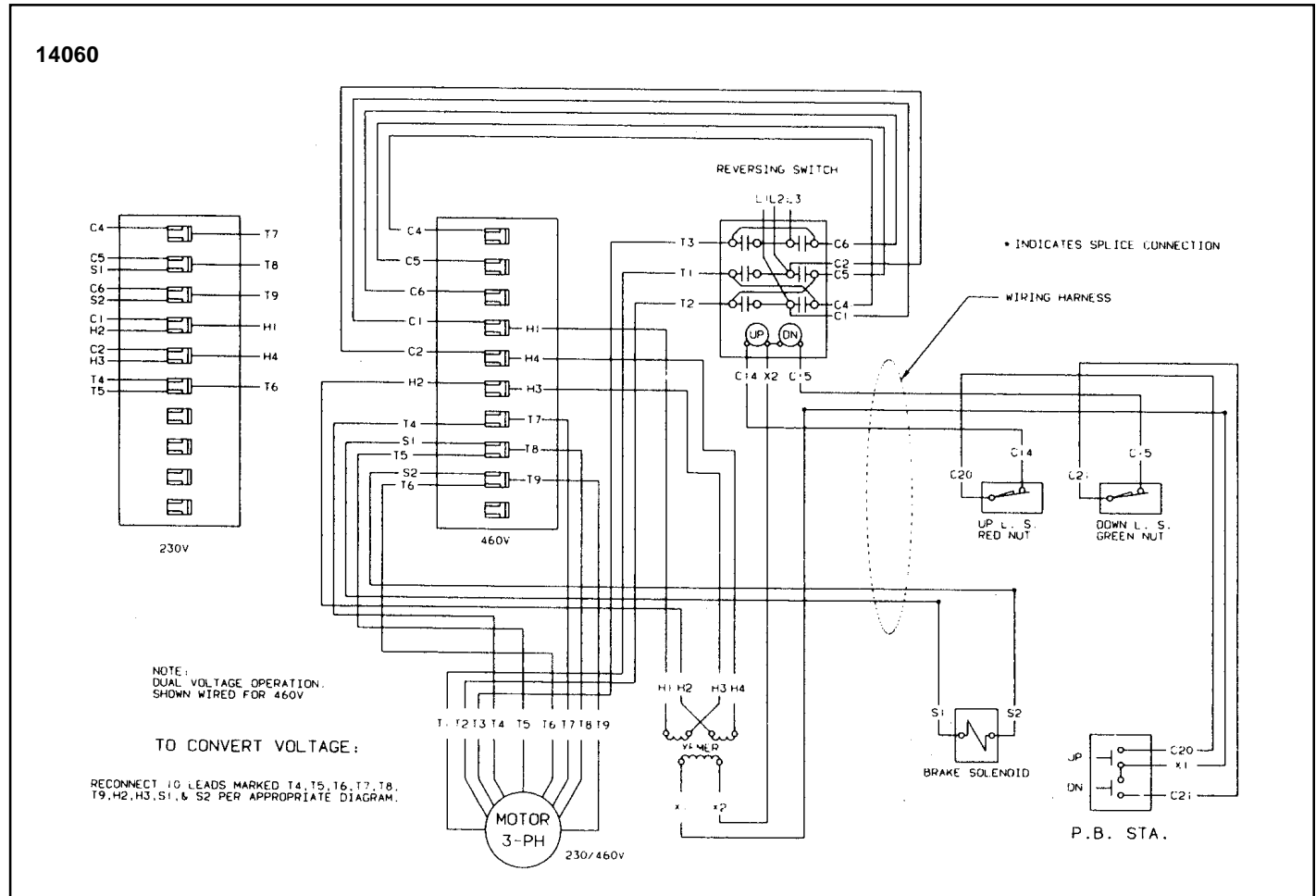
#### Excessive Wire Rope Wear

<ol style="list-style-type: none"> <li>1. Lack of lubrication</li> <li>2. Excessive side loading</li> <li>3. Worn sheaves</li> </ol>	<ol style="list-style-type: none"> <li>1. Lubricate wire rope.</li> <li>2. Reduce side loading to allow wire rope to wind smoothly on drum.</li> <li>3. Check for worn or corrugated sheaves in bottom block or idler sheave in hoist. Replace as needed.</li> </ol>
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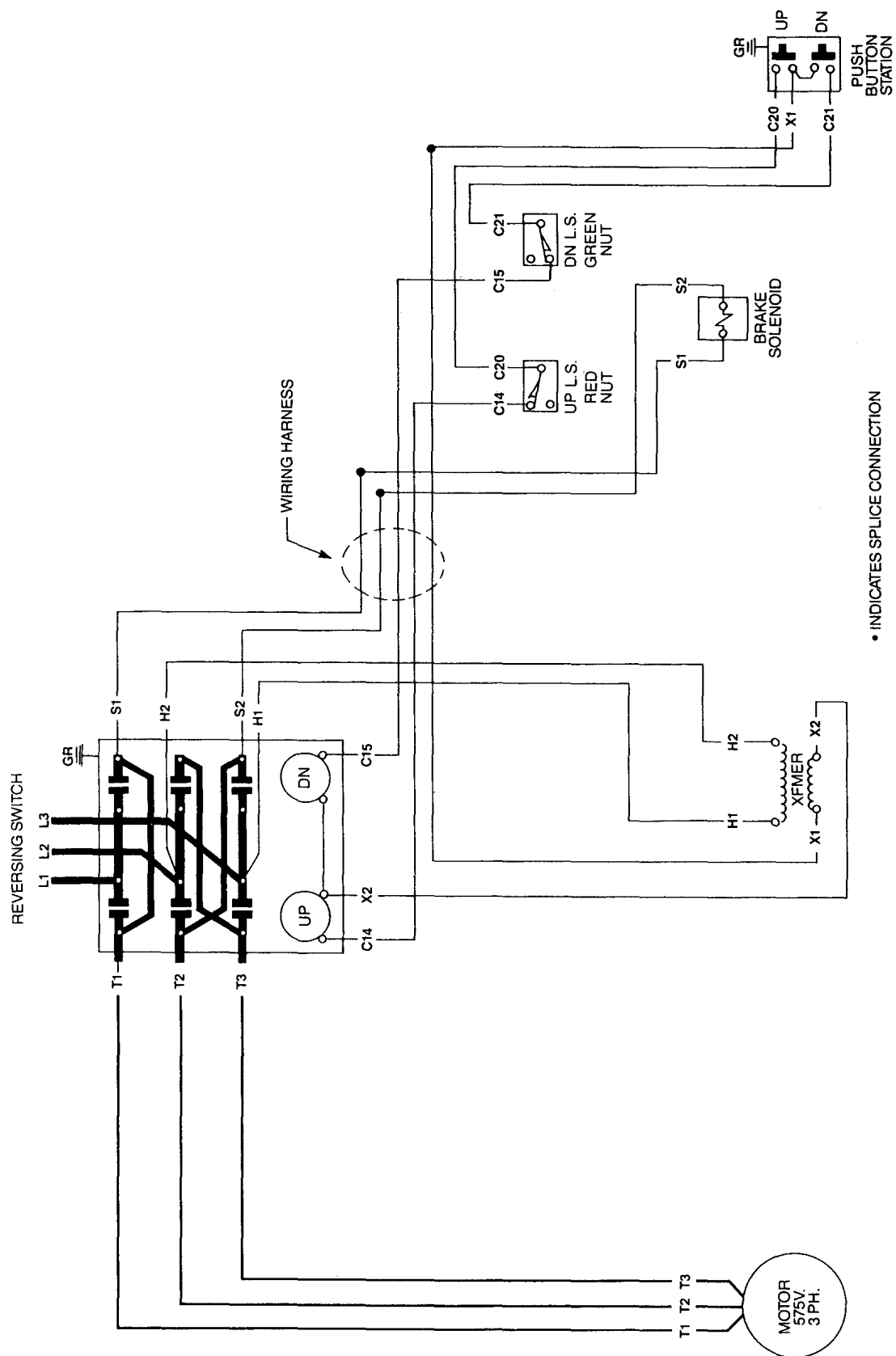
## SECTION VI - WIRING DIAGRAMS

### 6-1. General

6-2. The wiring diagrams are designed to assist you in identifying electrical malfunctions of your hoist or motorized trolley.

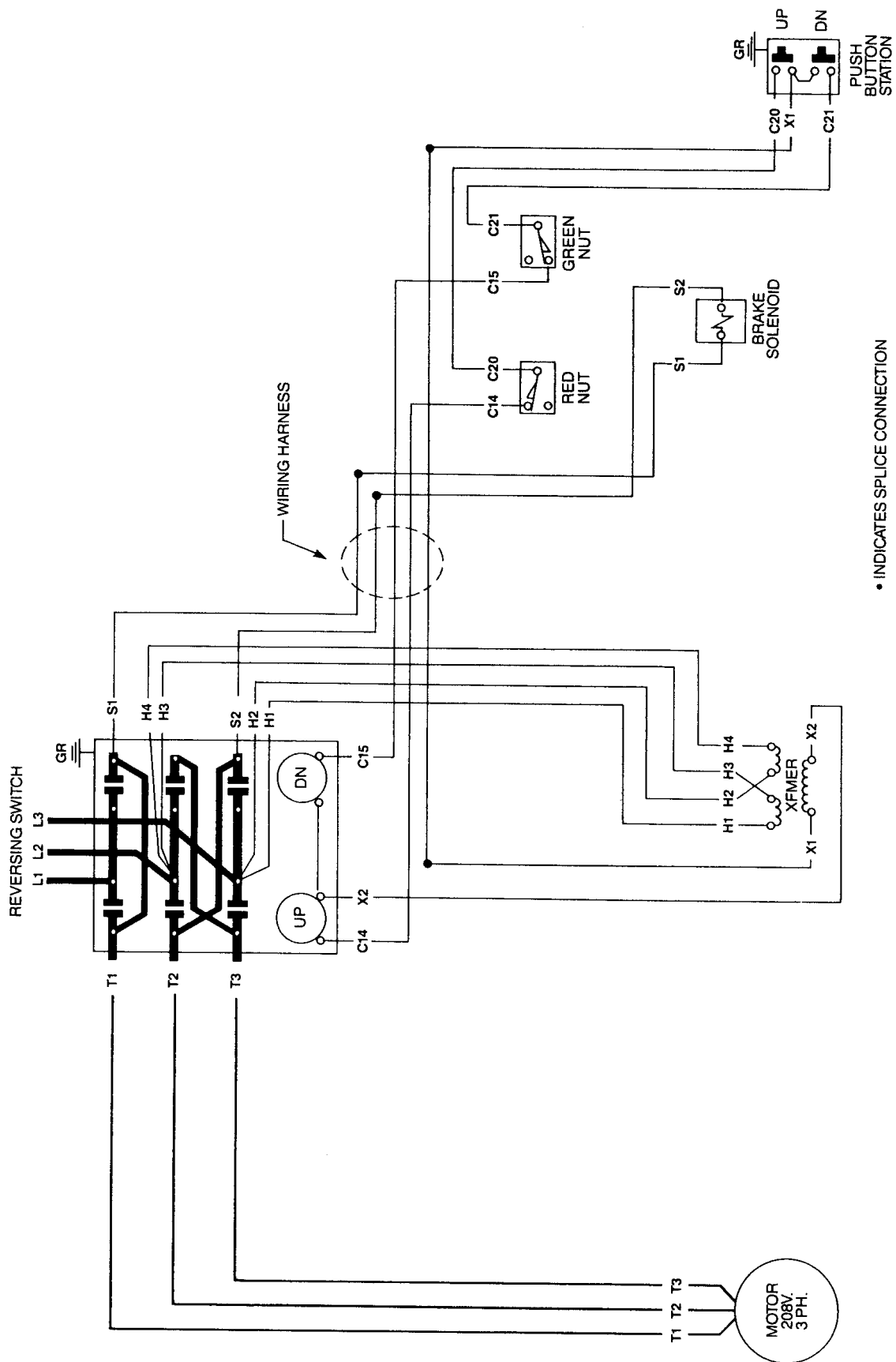


**Figure 6-1. Wiring Diagram  
230/460V, 3 Phase, Single Speed Hoist  
983EC44C**



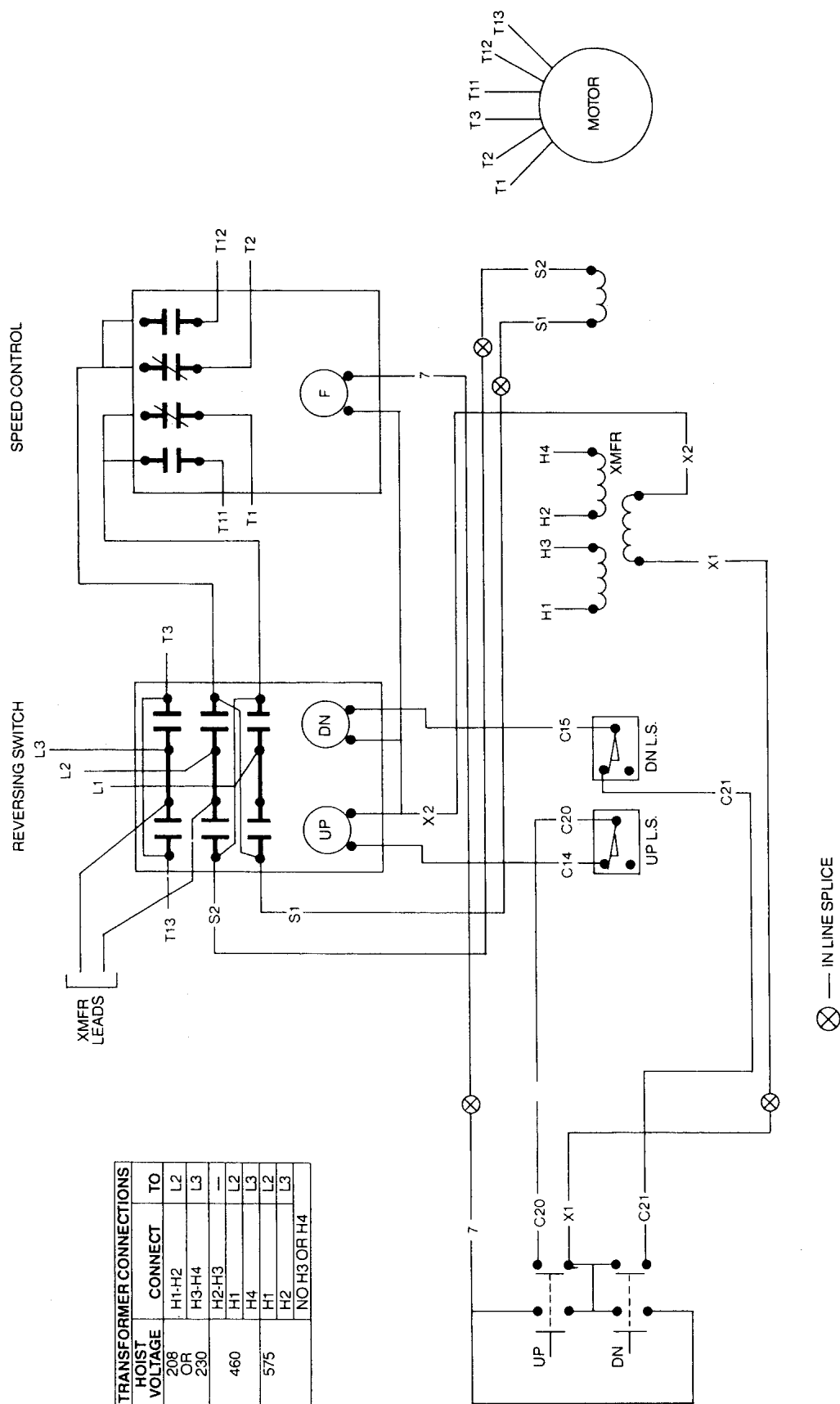
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Figure 6-2. Wiring Diagram  
575V, 3 Phase, Single Speed Hoist  
983EC45

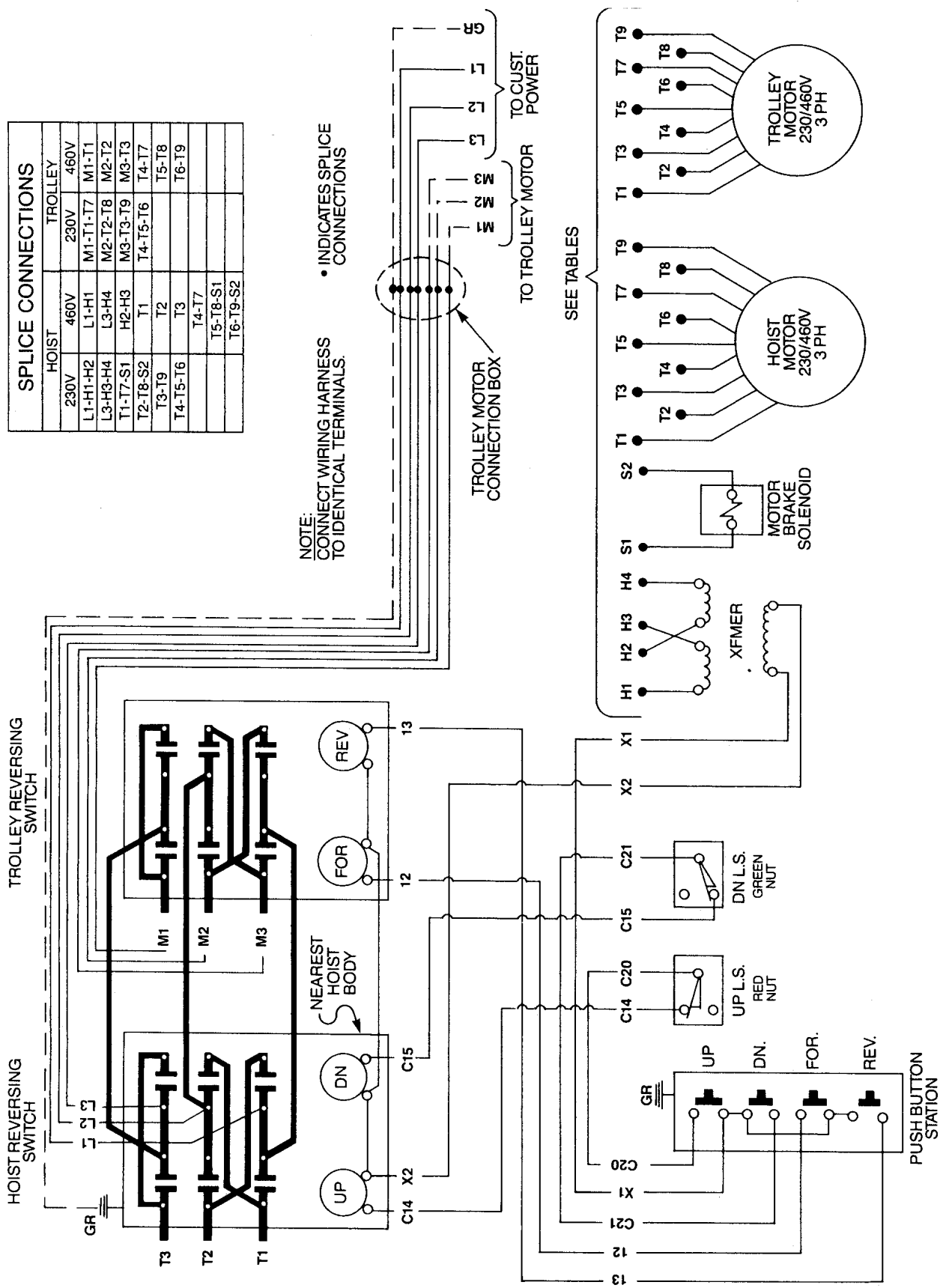


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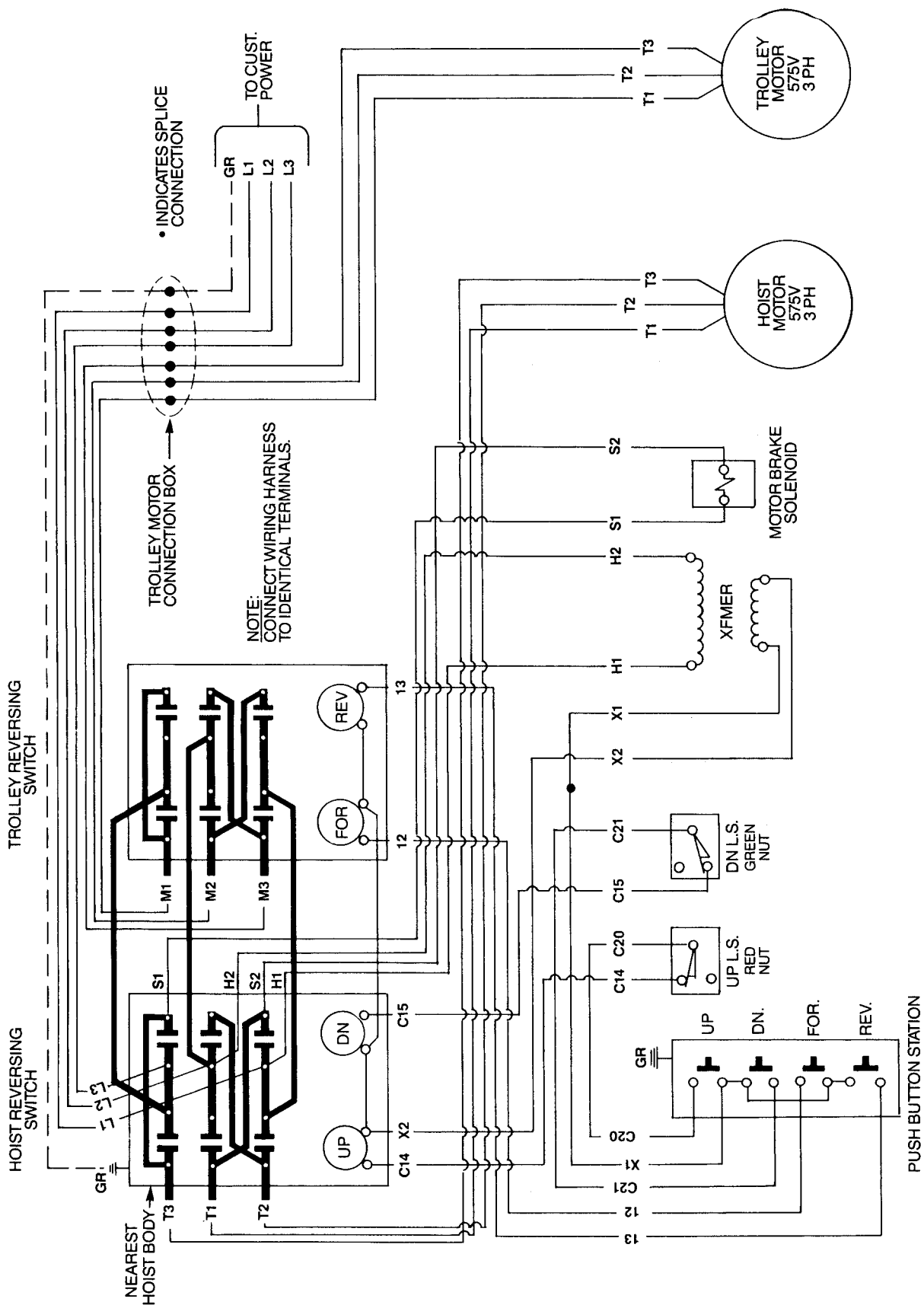
Figure 6-3. Wiring Diagram  
208V, 3 Phase, Single Speed Hoist  
983EC48



**Figure 6-4. Wiring Diagram  
230, 460, 575 & 208V, 3 Phase, Two Speed Hoist  
983EC141**

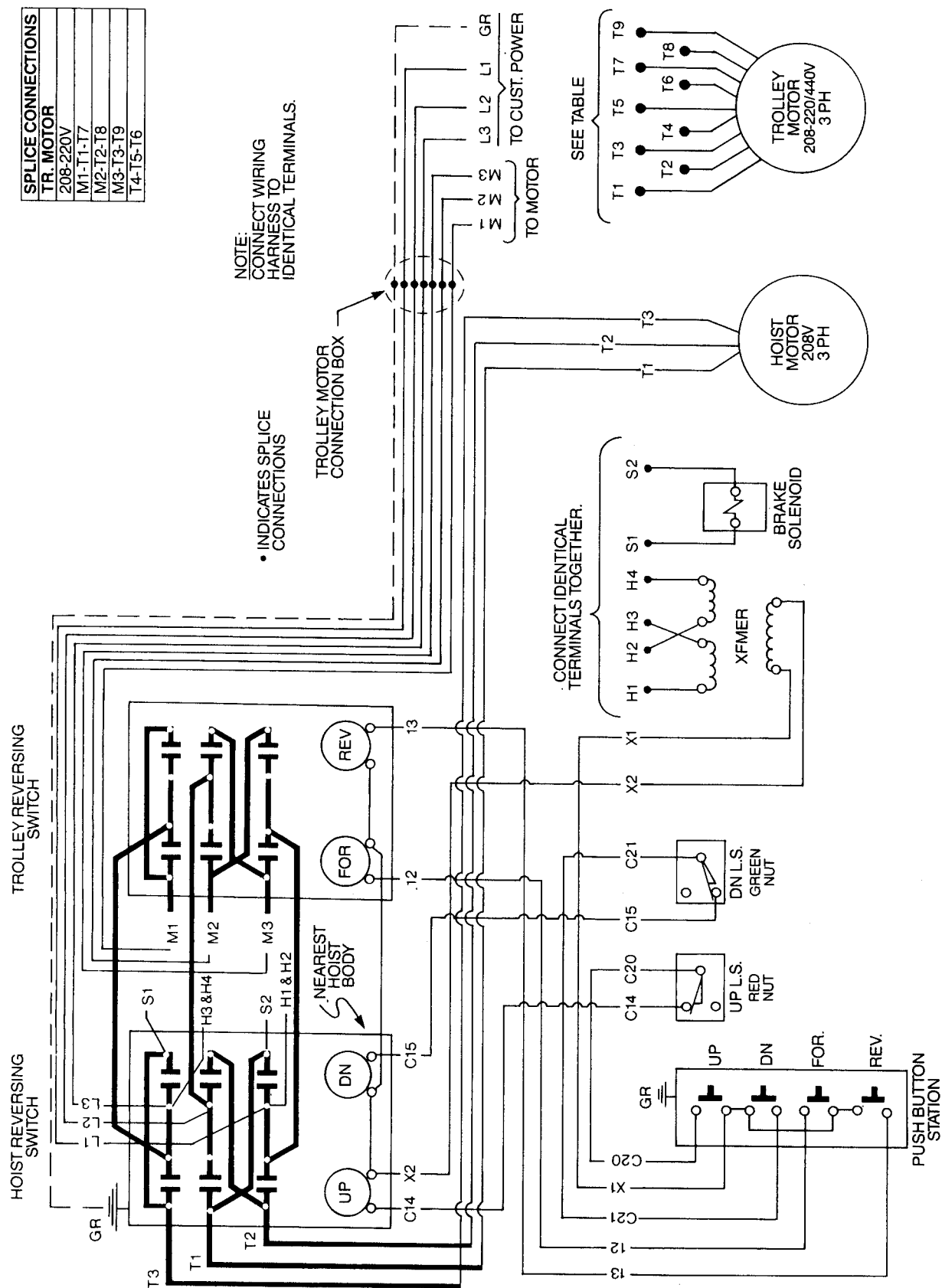


**Figure 6-5. Wiring Diagram**  
**230/460V, 3 Phase, Single Speed Hoist & Single Speed Trolley**  
**983ECMT1**



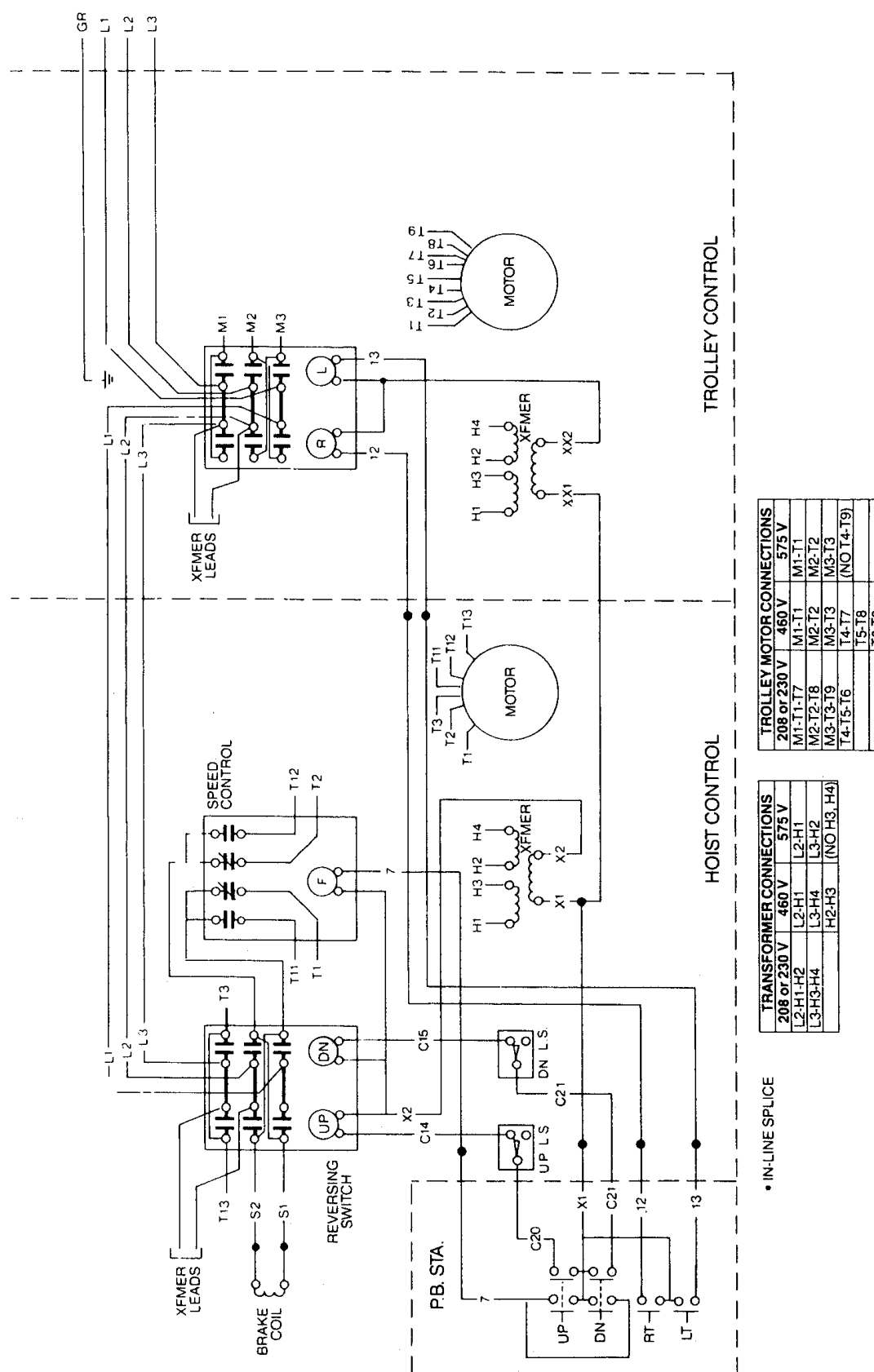
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**Figure 6-6. Wiring Diagram**  
**575V, 3 Phase, Single Speed Hoist & Single Speed Trolley**  
**983ECMT2**



14066

Figure 6-7. Wiring Diagram  
208V, 3 Phase, Single Speed Hoist & Single Speed Trolley  
983ECMT27



TROLLEY MOTOR CONNECTIONS			
208 or 230 V	460 V	575 V	
M1-T1-T7	M1-T1	M1-T1	
M2-T2-T8	M2-T2	M2-T2	
M3-T3-T9	M3-T3	M3-T3	
T4-T5-T6	T4-T7 (NO T4-T9)		
	T5-T8		
	T6-T9		

TRANSFORMER CONNECTIONS			
208 or 230 V	460 V	575 V	
L2-H1-H2	L2-H1	L2-H1	
L3-H3-H4	L3-H4	L3-H2	
	H2-H3	(NO H3, H4)	

• IN-LINE SPLICE

Figure 6-8. Wiring Diagram  
230, 460, 575 & 208V, 3 Phase, Two Speed Hoist & Single Speed Trolley  
983ECMT268

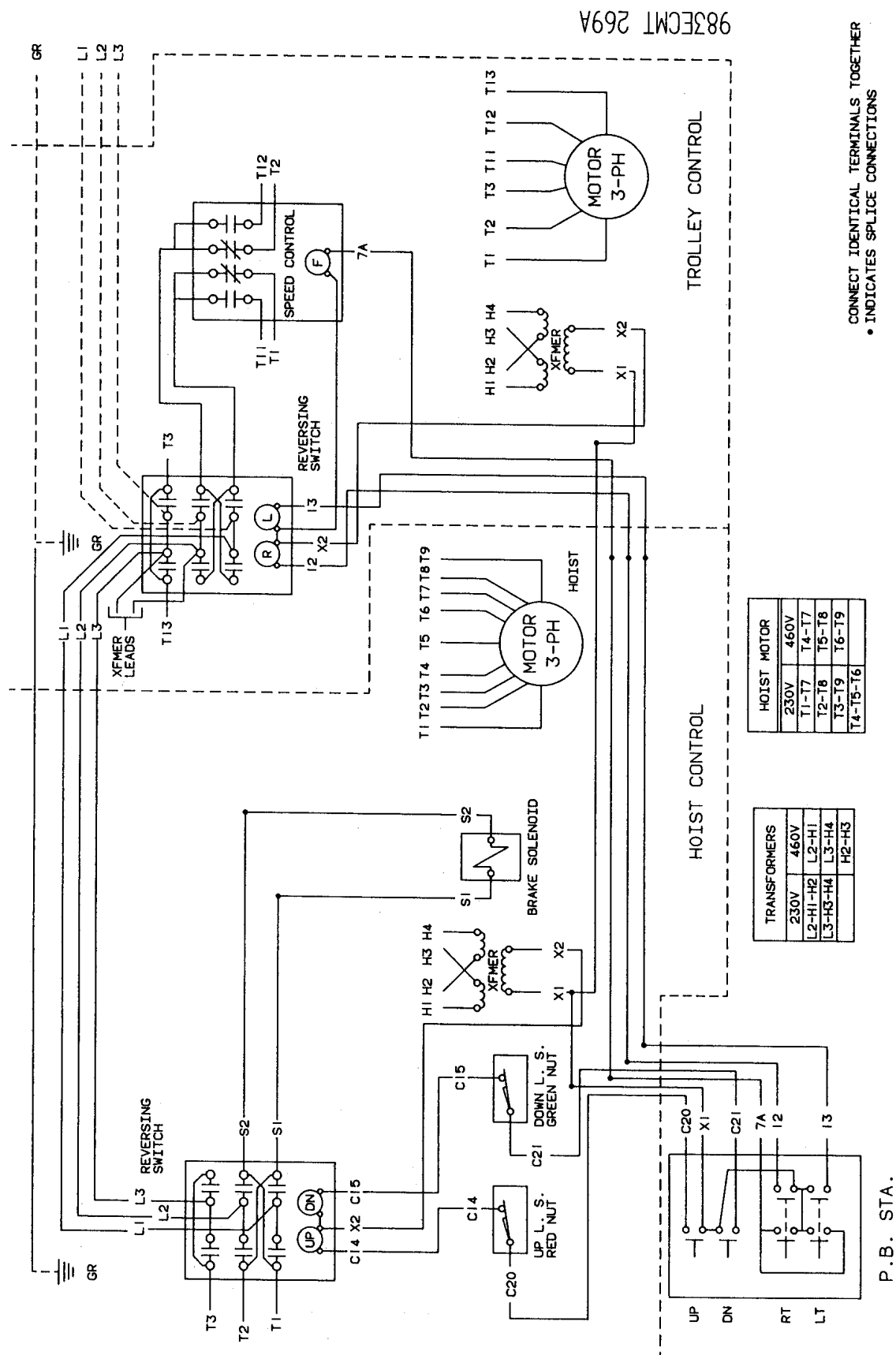
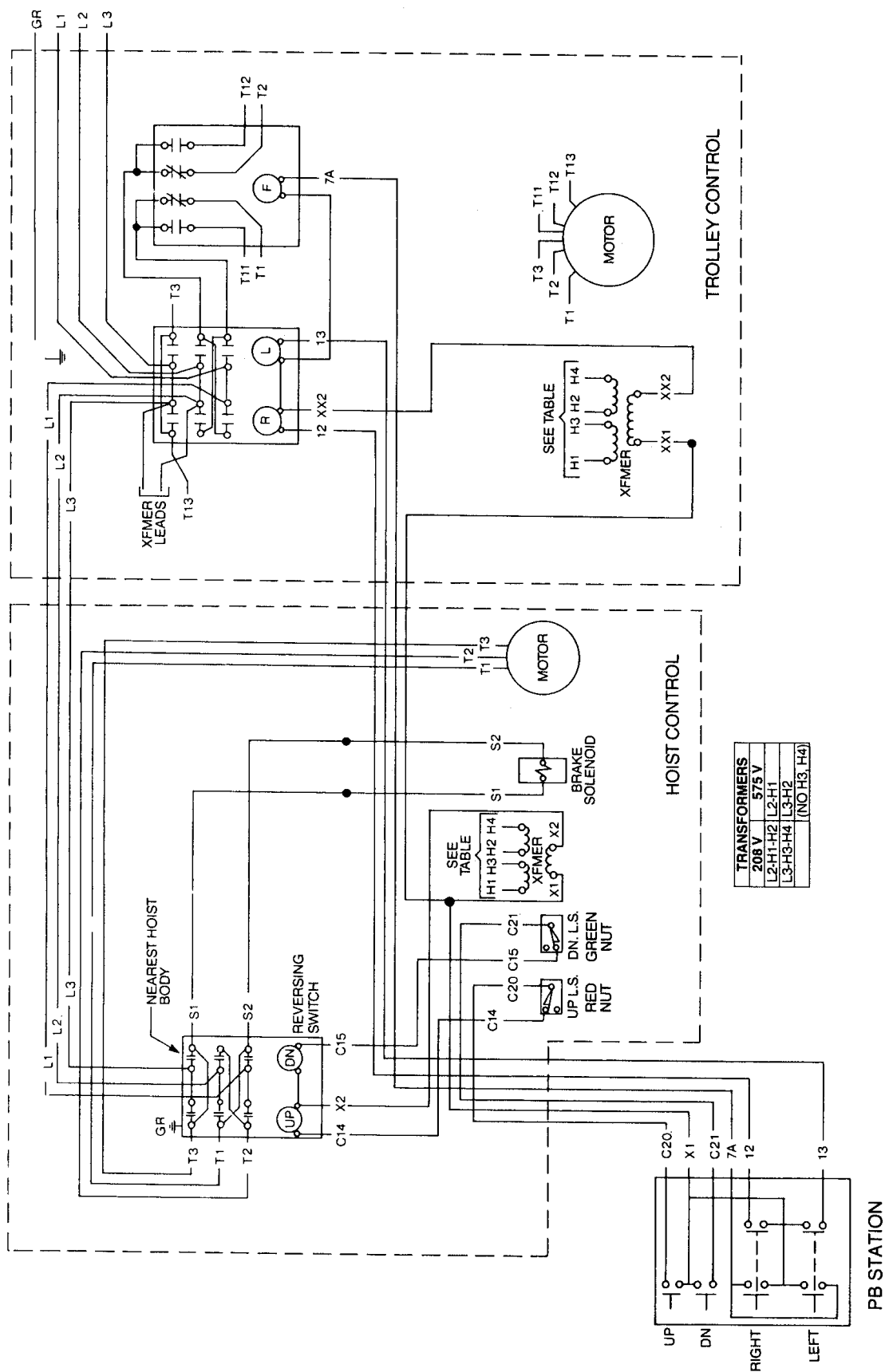
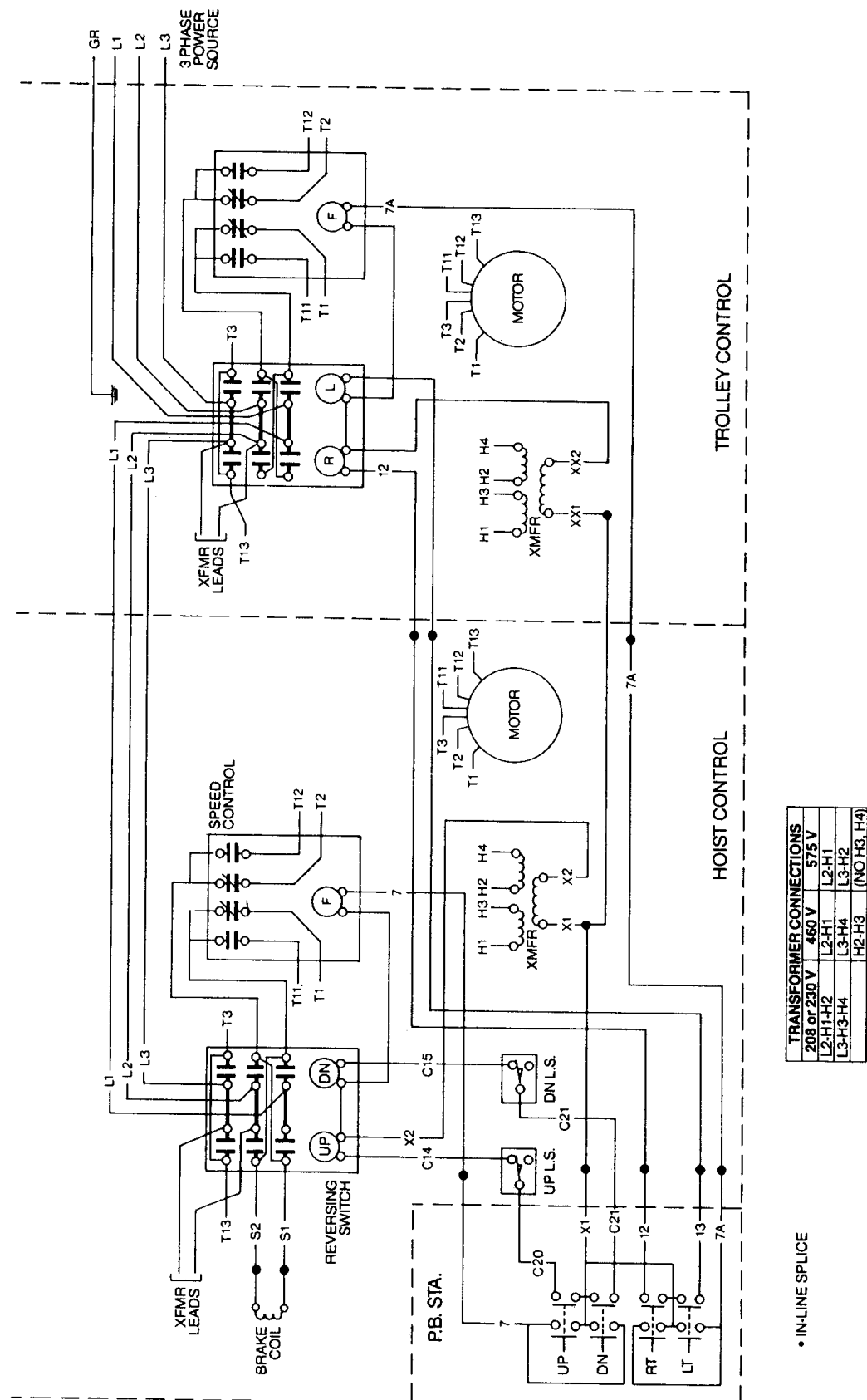


Figure 6-9. Wiring Diagram  
230, 460V, 3 Phase, Single Speed Hoist & Two Speed Trolley  
983ECMT269A



14069

Figure 6-10. Wiring Diagram  
208, 575V, 3 Phase, Single Speed Hoist & Two Speed Trolley  
983ECMT270



14070

Figure 6-11. Wiring Diagram  
230, 460, 575, & 208V 3 Phase, Two Speed Hoist & Two Speed Trolley  
983ECMT271

## SECTION VII - ILLUSTRATED PARTS LIST

### 7-1. General

7-2. The illustrated parts lists that follow are designed to help you identify the parts of your Yale hoist and trolley. Several different models of hoists and trolleys are covered by this manual and differences will be noted between your hoist and the illustrations contained herein. However, the parts list will show the correct replacement part for your model hoist.

### 7-3. HOW TO USE THE PARTS LISTS.

7-4. To identify apart from your hoist, locate the figure which illustrates that area of the hoist where your part is located. Example: The brake coil would be located in the Motor Brake Figures. At this time, it may be necessary to take into consideration certain characteristics of your hoist. Due to configuration differences, it was necessary to divide this area according to hoist motor horsepower. Therefore, when

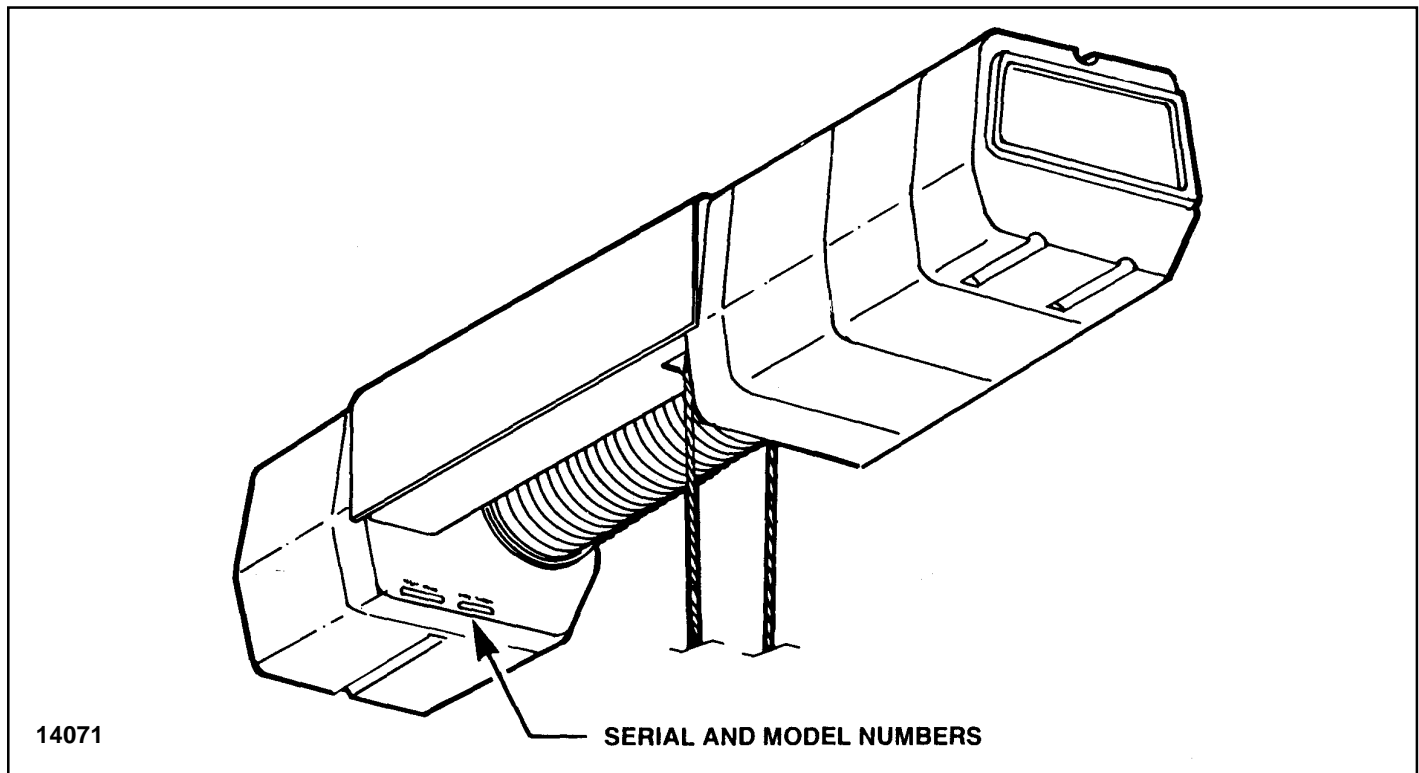
determining the figure in which your part would be illustrated, be sure the figure applies to **your** hoist or trolley. Study the illustration and locate the part you wish to find. A number will be found adjacent to the part; this number, which is the index number, will be found in the accompanying parts list with the part name and part number.

When ordering parts, please give the following information:

1. Model and serial number of your hoist.
2. Total lift of your hoist.
3. Your power supply (voltage, phase, cycles).
4. Desired part number and part name.

The serial and model numbers for your hoist are permanently stamped on the motor adaptor casting.

See the illustration below.



### EXAMPLE:

Serial Number: LEW3 B 101 NE

Model Number: LEW 2-22LG14S2

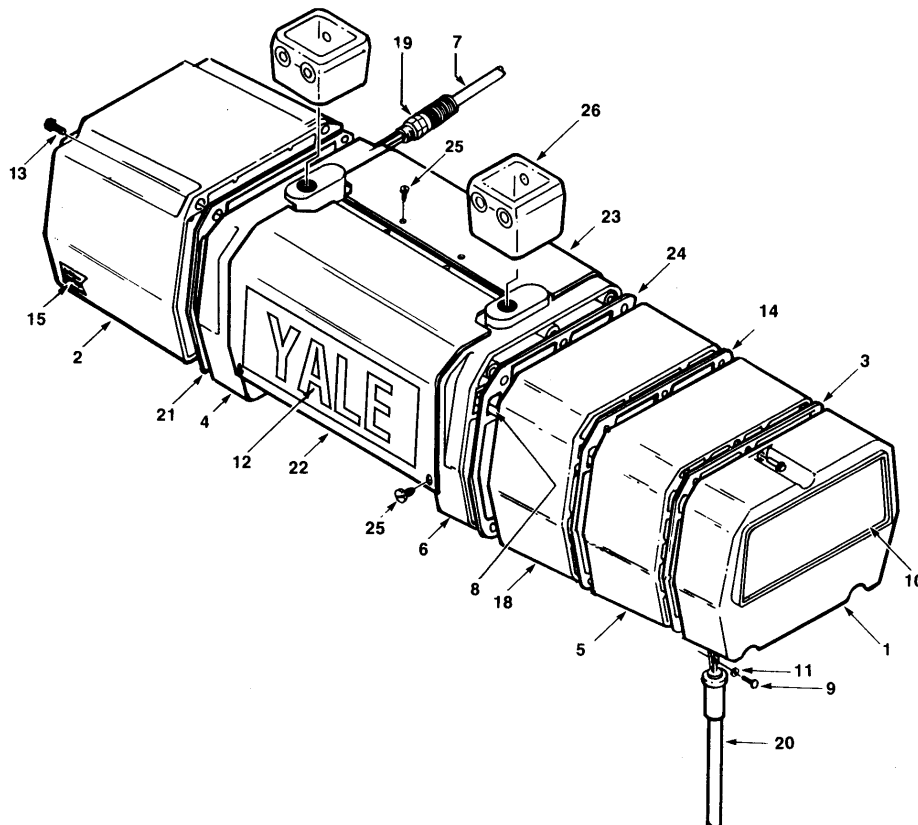
### 7-5. WARRANTY.

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

This warranty does not apply where: (1) deterioration is caused by normal wear, abuse, improper or inadequate power supply, eccentric or side loading, overloading, chemical or abrasive

actions, improper maintenance or excessive heat; (2) problems resulted from repairs,

modifications or alterations made by persons other than factory or Yale Lift-Tech Authorized Warranty Repair Station personnel; (3) the hoist has been abused or damaged as a result of an accident; (4) repair parts or accessories other than those supplied by Yale Lift-Tech are used on the hoist. Equipment and accessories not of the seller's manufacture are warranted only to the extent that they are warranted by the manufacturer. EXCEPT AS STATED HEREIN, YALE LIFT-TECH MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.



14072

Figure 7-1. Basic Hoist

Index No.	Part Name	Part No.	Index No.	Part Name	Part No.
1	Brake Cover	36J4	13	Screw, End Covers	H-2987-P
2	Control Cover	36J3	14	Gasket, Transmission Cover	560J6
3	Gasket, Brake Cover	560J2	15	Decal, YaleYift-Tech	676J2B
4	Motor Adapter:		16*	Decal, Power Requirements:	
	1 & 2-Ton	39J4-2		230/460V	679J2
	3-Ton	39J4		230V	679J3
5	Transmission Cover	34J2		230V	679J3
6	Transmission Adapter:			460V	679J4
	1 & 2-Ton	37J7-2		575V	679J5
	3-Ton	37J7		208V	679J6
7	Power Cable Assembly		18	Transmission Housing	35J3
	(15 foot length)	953KG2-15	19	Cord Grip	H-7961
8	Wiring Harness:		20	Pushbutton Cable (See Fig. 7-8)	
	1 & 2-Ton, 22 Ft. Lift, Single Speed	940J7	21	Gasket, Control Cover	560J3
	1 & 2-Ton, 35 Ft. Lift, Single Speed	940J8	22	Cover (Tube Side):	
	3-Ton, 22 Ft. Lift, Single Speed	940J9		1 & 2-Ton, 22 Ft. Lift,	270J4-1
	1 & 2-Ton, 22 Ft. Lift, Two Speed	940J7-1		1 & 2-Ton, 35 Ft. Lift	270J4-2
	1 & 2-Ton, 35 Ft. Lift, Two Speed	940J8-1		1 & 2-Ton, 44 Ft. Lift	270J4-3
	3-Ton, 22 Ft. Lift, Two Speed	940J9-1		3 Ton, 22 Ft. Lift	270J4-3
	Any Other Lift - Consult Factory			Any Other Lift - Not Available	
9	Screw	H-2981-P	23	Cover (Drum Side):	
10	Decal, Capacity:			1 & 2-Ton, 22 Ft. Lift	270J3-1
	1-Ton	675J3B		1 & 2-Ton, 35 Ft. Lift	270J3-2
	2-Ton	675J5		1 & 2-Ton, 44 Ft. Lift	270J3-3
	3-Ton	675J6		3 Ton, 22 Ft. Lift	270J3-3
11	Washer, Plain	H-4002-P		Any Other Lift - Not Available	
12	Decal, Yale	YJL677	24	Gasket, Transmission Adapter	560K15
			25	Screw, Cover	H-2970
			26	Suspension Box	
				(See Fig. 7-5)	

\* Not illustrated

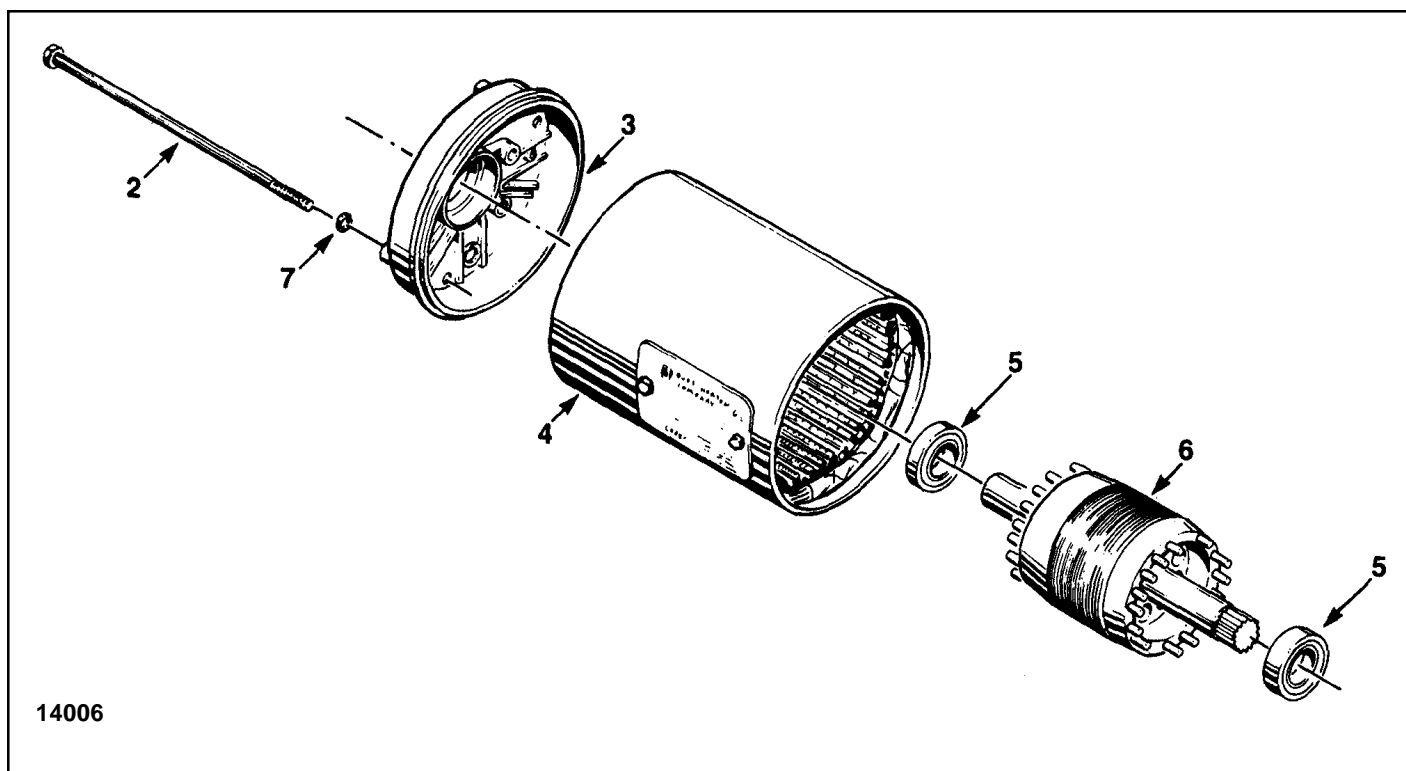


Figure 7-2. Hoist Motor Parts

Index No.	Part Name	Part No.
1	Motor Complete:	
	2 H.P. Motor	
	Single Speed - 230/460V	863J401
	Single Speed - 575V	863J403
	Single Speed - 208V	863J405
	Two Speed - 230V	873J401
	Two Speed - 460V	873J403
	Two Speed - 575V	873J405
	Two Speed - 208V	873J407
	3 H.P. Motor	
	Single Speed-230/460V	863J402
	Single Speed - 575V	863J404

Index No.	Part Name	Part No.
	Single Speed - 208V	863J406
	Two Speed - 230V	873J402
	Two Speed - 460V	873J404
	Two Speed - 575V	873J406
	Two Speed - 208V	873J408
2	Thru Bolt	*
3	End Shield	*
4	Stator - (Not available separately)	*
5	Bearing	*
6	Rotor & Shaft Assembly	*
7	Lock Washer	*

\* For individual motor parts, contact your Yale Lift-Tech Distributor and supply complete motor nameplate.

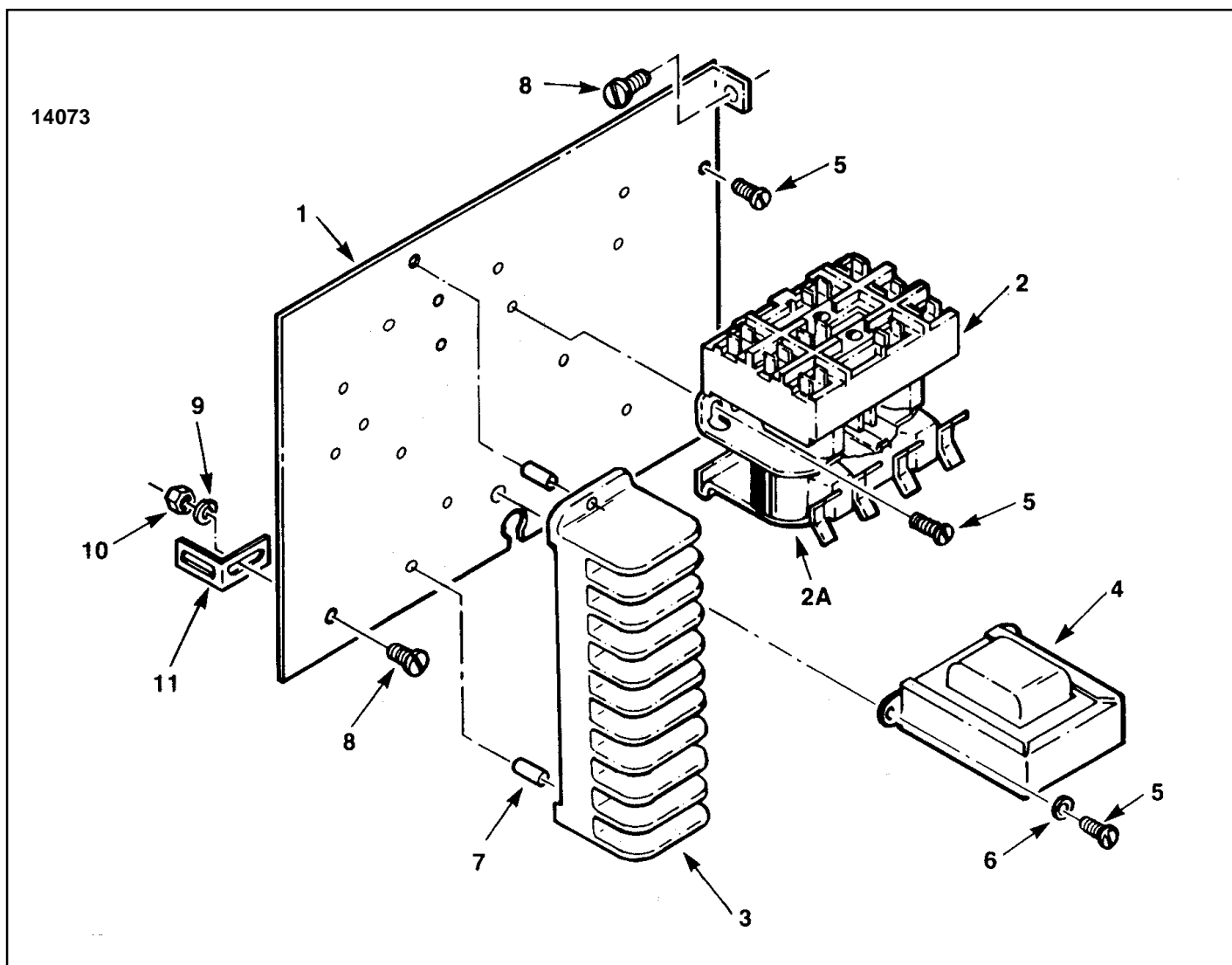


Figure 7-3A. Controller Area (Single Speed Hoist)

Index No.	Part Name	Part No.
1	Control Panel	257J1A
2	Magnetic Reversing Switch	
	24V Control	820K2
	115V Control	820K317
2A	Coil (24V)	820K301
	Coil (115V)	820K302
2B*	Replacement Contact Kit (Includes stationary & movable contacts and springs for one magnetic reversing switch)	820K300
3	Terminal Block	909JG-4
4	Transformer: (10 VA.) Pri. 230/460, 208V, Sec. 24V, 50/60 Hz.	JF-821-3

Index No.	Part Name	Part No.
	Pri. 230/460, 208V, Sec. 115V, 50/60 Hz.	JF-821
	Pri. 575V, Sec. 24V, 50/60 Hz	JF-821-9
	Pri. 575V, Sec. 115V, 50/60 Hz	JF-821-2
5	Screw	H2751
6	Lock Washer	H-4158
7	Eyelet	H-4972
8	Screw	H-2981-P
9	Lock Washer	H-4082-P
10	Nut (Retainer)	H-3862
11	Retainer	285J7
12*	Splice Connector	H-5757

\* Not illustrated

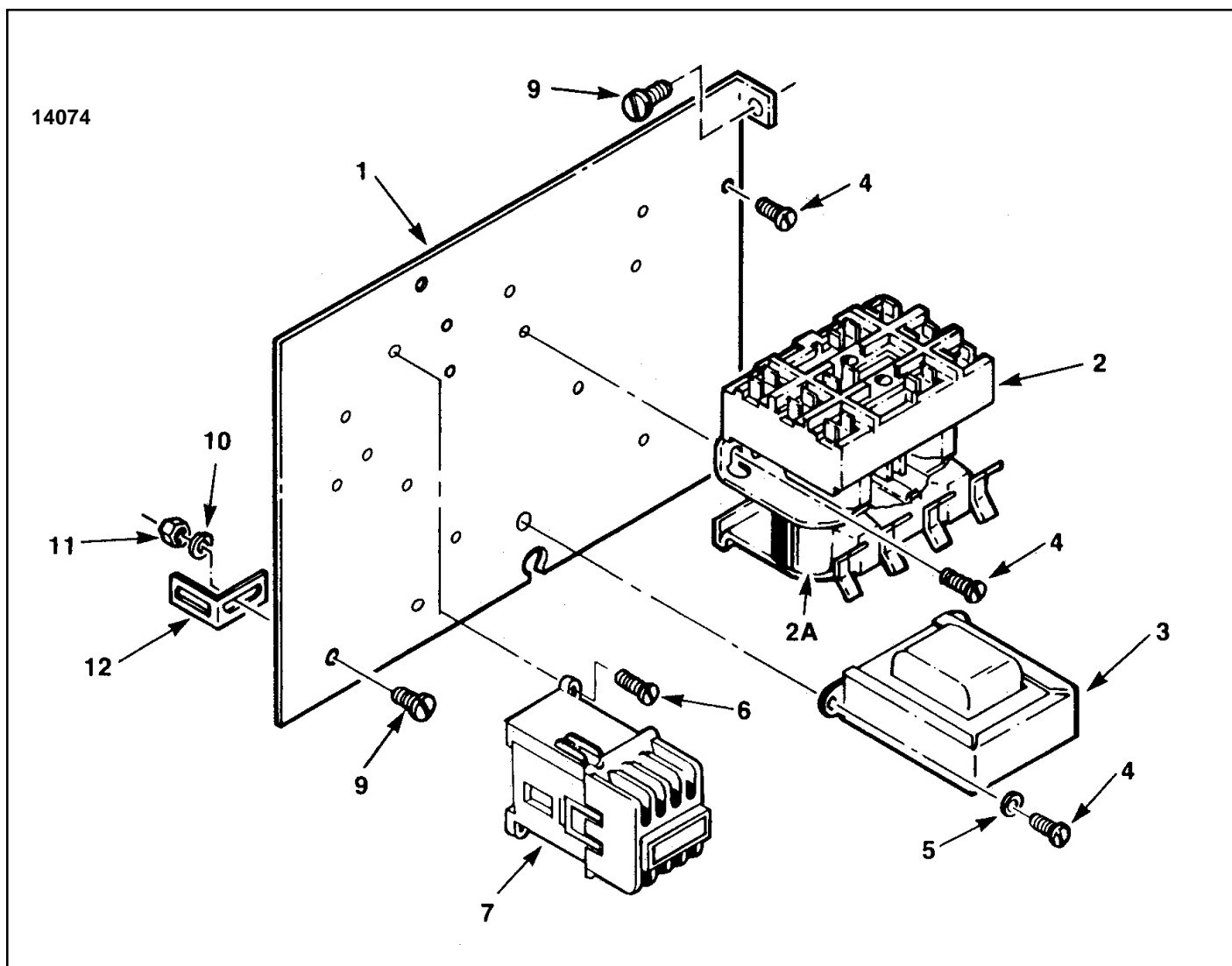
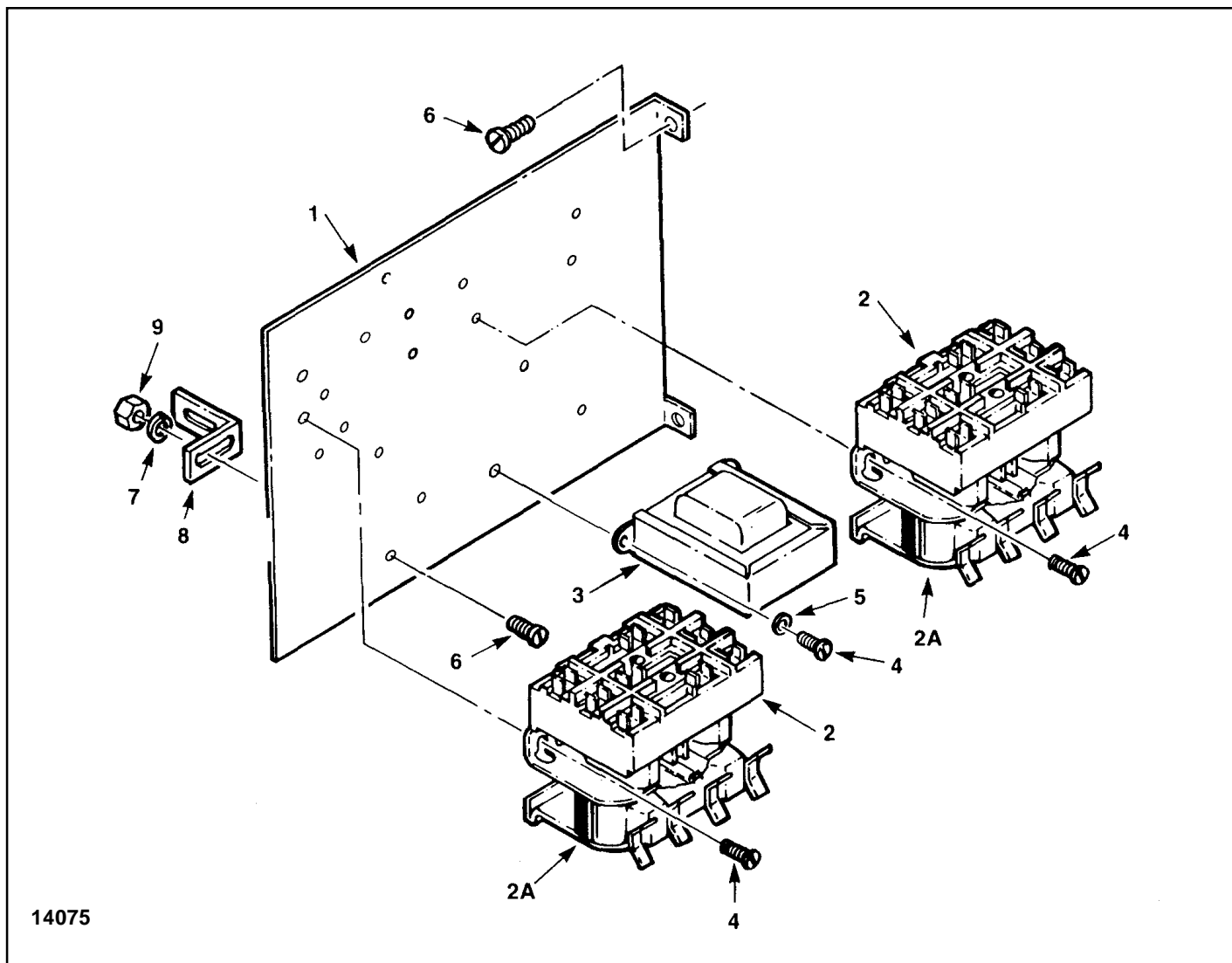


Figure 7-3B. Controller Area (Two Speed Hoist)

Index No.	Part Name	Part No.
1	Control Panel	257J1A-1
2	Magnetic Reversing Switch	
	24V Control	820K2
	115V Control	820K317
2A	Coil (24V)	820K301
	Coil (115V)	820K302
2B*	Replacement Contact Kit (Includes stationary & movable contacts and springs for one magnetic reversing switch)	820K300
3	Transformer: (20 VA.)	
	Pri. 208, 230/460V, 208V, Sec. 24V, 50/60 Hz.	JF-821-15
	Pri. 208, 230/460V, Sec. 115V, 50/60 Hz	JF-821-17

Index No.	Part Name	Part No.
	Pri. 575V, Sec. 24V, 50/60 Hz	JF-821-16
	Pri. 575V, Sec. 115V, 50/60 Hz	JF-821-20
4	Screw	H-2751
5	Lock Washer	H-4158
6	Screw	H-1901
7	Speed Control Relay:	
	24V Control	820J3
	115V Control	820J4
8*	Splice Connector	H-5757
9	Screw	H-2981-P
10	Lock Washer	H-4082-P
11	Nut	H-3862
12	Retainer	285J7

\* Not illustrated

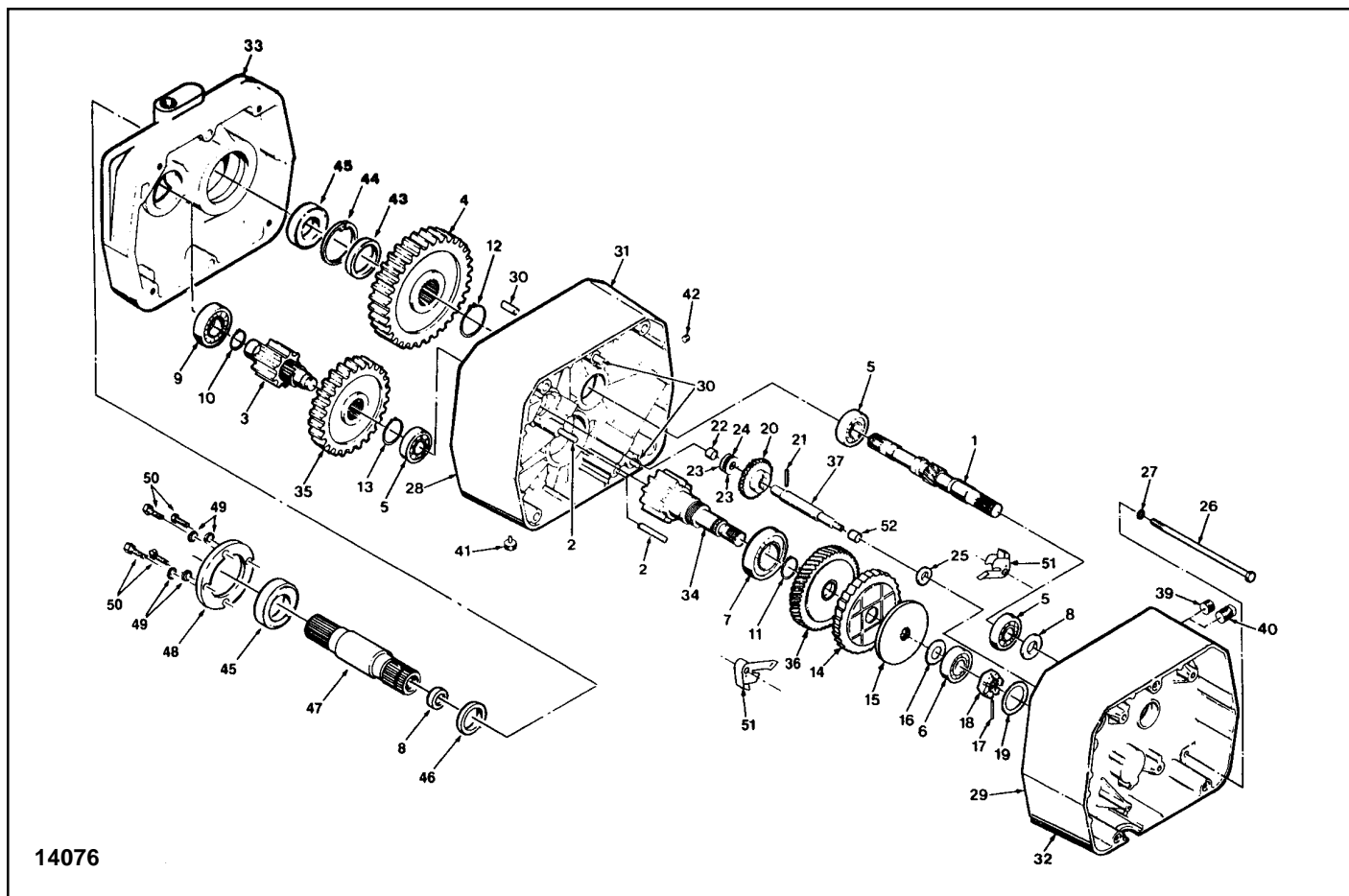


**Figure 7-3C. Controller Area**  
(Single Speed Hoist, Single Speed Trolley)

Index No.	Part Name	Part No.
1	Control Panel	257J1A
2	Magnetic Reversing Switch	
	24V Control	820K2
	115V Control	820K317
2A	Coil (24V)	820K301
	Coil (115V)	820K302
2B*	Replacement Contact Kit (Includes stationary & movable contacts and spring for one spring for one magnetic reversing switch)	820K300
3	Transformer: (20 VA.) Pri. 208, 230/460V, 208V, Sec. 24V, 50/60 Hz.	JF-821-15

Index No.	Part Name	Part No.
	Pri. 208, 230/460V, 208V, Sec. 115V, 50/60 Hz.	JF-821-17
	Pri. 575V, Sec. 24V, 50/60 Hz	JF-821-16
	Pri. 575V, Sec. 115V, 50/60 Hz	JF-821-20
4	Screw	H2751
5	Lock Washer	H-4158
6	Screw	H-2981-P
7	Lock Washer	H-4802-P
8	Retainer	285J7
9	Nut (Retainer)	H-3862
10*	Splice Connector	H-5757

\* Not illustrated



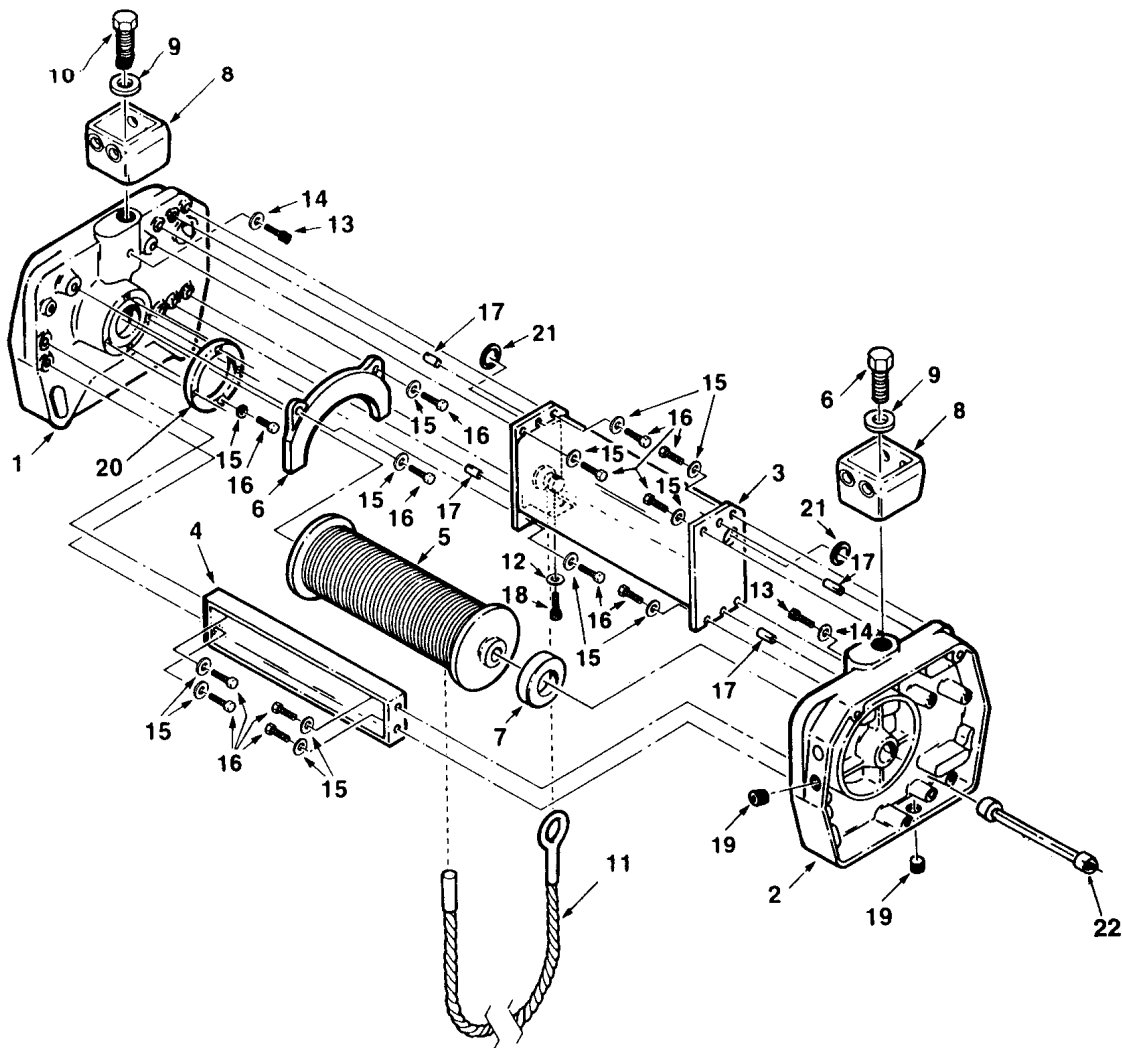
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Figure 7-4. Hoist Transmission

Figure 7-4. Hoist Transmission

Index No.	Part Name	Part No.	Index No.	Part Name	Part No.
1	High Speed Pinion	400J8	34	Intermediate Pinion:	
2	Dowel Pin	H-5493		LEWI-22**28S2, D2 & P2	402J12
3	Output Pinion	404J2		LEW3-22**14S4	402J12
4	Output Gear	405K3		LEW2-22**14S2, D2 & P2	402J10
5	Bearing	500K13		LEW2-22**21S2, D2 & P2	402J11
6	Bearing	500K14		LEW3-22**10S4	402J11
7	Bearing	500K15	35	Intermediate Gear:	
8	Seal	561K18		LEWI-22**28S2, D2 & P2	403J7
9	Bearing	500K16		LEW3-22**14S4	403J7
10	Retaining Ring	H-5530		LEW2-22**14S2, D2 & P2	403K4
11	Retaining Ring	H-5539		LEW2-22**21S2, D2 & P2	403K5
12	Retaining Ring	H-5541		LEW3-22**10S4	403K5
13	Retaining Ring	H-5540	36	Load Equalizer Assembly:	
14	Ratchet Assembly	7JG16-1		(See Paragraph 1-8)	
15	Pressure Plate	5J9		LEWI-22**28S2, D2 & P2	591JG18
16	Thrust Washer	255K11		LEW2-22**14S2, D2 & P2	591JG18
17	Drive-Lok Pin	H-5219		LEW2-22**21S2, D2 & P2	591JG19
18	Lock Nut	130J8		LEW3-22**14S4	591JG19
19	Spring Washer	H-7834		LEW3-22**10S4	591JG28
20	Limit Switch Gear	428J1	37	Limit Switch Drive Shaft	140J1
21	Spring Pin	H-5232	38*	Transmission Replacement	
22	Bushing	530J24		Oil Kit	14J11
23	Thrust Washer	255J19	39	Vented Plug	H-6257
24	Thrust Bearing	511J17	40	Shipping Plug	H-6272
25	Seal	561K17	41	Drain Plug	H-6268
26	Bolt H-2333		42	Level Plug	S-25-9
27	Lock Washer	H-4157	43	Spacer (Gear)	200J10
28	Gasket, Transmission Adapter (See Fig. 7-1)	560K15	44	Retaining Ring	H-5557
29	Gasket, Transmission Cover (See Fig. 7-1)	560J6	45	Bearing	500K12
30	Dowel Pin	H-5387	46	Seal	561K26
31	Transmission Housing (See Fig. 7-1)	35J3	47	Output Shaft	132J17
32	Transmission Cover (See Fig. 7-1)	34J2	48	Bearing Retainer:	
33	Transmission Adapter:			1 & 2-Ton	250J6
	1 & 2-Ton	37J7-2		3-Ton	250J9
	3-Ton	37J7	49	Lock Washer	H-4066-P
			50	Screw	H-2304
			51	Pawl Ass'y	25JG4-2
			52	Flanged Bearing	530J29

\* Not illustrated



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Figure 7-5A. Drum Area (1 &amp; 2 Ton) S2 Models Only

Index No.	Part Name	Part No.
1	Transmission Adapter	37J7-2
2	Motor Adapter	39J4-2
3	Tube Assembly:	
	22 Ft. Lift	200JG12-1
	35 Ft. Lift	200JG13-1
	44 Ft. Lift	200JG11-1
	70 Ft. Lift	200JG30-1
4	Channel Assembly:	
	22 Ft. Lift	206JG2-1
	35 Ft. Lift	206JG3-1
	44 Ft. Lift	206JG1-1
	70 Ft. Lift	206JG7-1
5	Drum Assembly:	
	22 Ft. Lift	16JG17-2
	35 Ft. Lift	16JG17-3
	44 Ft. Lift	16JG17-1
	70 Ft. Lift	16JG17-7
6	Drum Guard:	
	22 Ft.; 35 Ft. Lift	230J5
	44 Ft.; 70 Ft. Lift	230J4
7	Bearing	500K12
8	Suspension Box	50J44A
9	Washer	255K25

Index No.	Part Name	Part No.
10	Suspension Stud	50J36
11	Wire Rope Assembly:	
	22 Ft. Lift	19J202
	35 Ft. Lift	19J203
	44 Ft. Lift	19J204
	70 Ft. Lift	19J206
12	Lock Washer	H-4136
13	Suspension Stud Locking Screw	S-49-10
14	Lock Washer	H-4084-P
15	Lock Washer	H-4063-P
16	Screw	S-44-47
17	Driv-Lok Pin	H-5230-5
18	Screw (Dead End)	S-49-22
19	Pipe Plug	H-6276
20	Bearing Retainer (Reference Fig. 7-4)	250J6
21	Gasket	560J13
22	Coupling Assembly:	
	22 Ft. Lift	107JG8-2
	35 Ft. Lift	107JG8-3
	44 Ft. Lift	107JG8-1
	70 Ft. Lift	107JG8-6

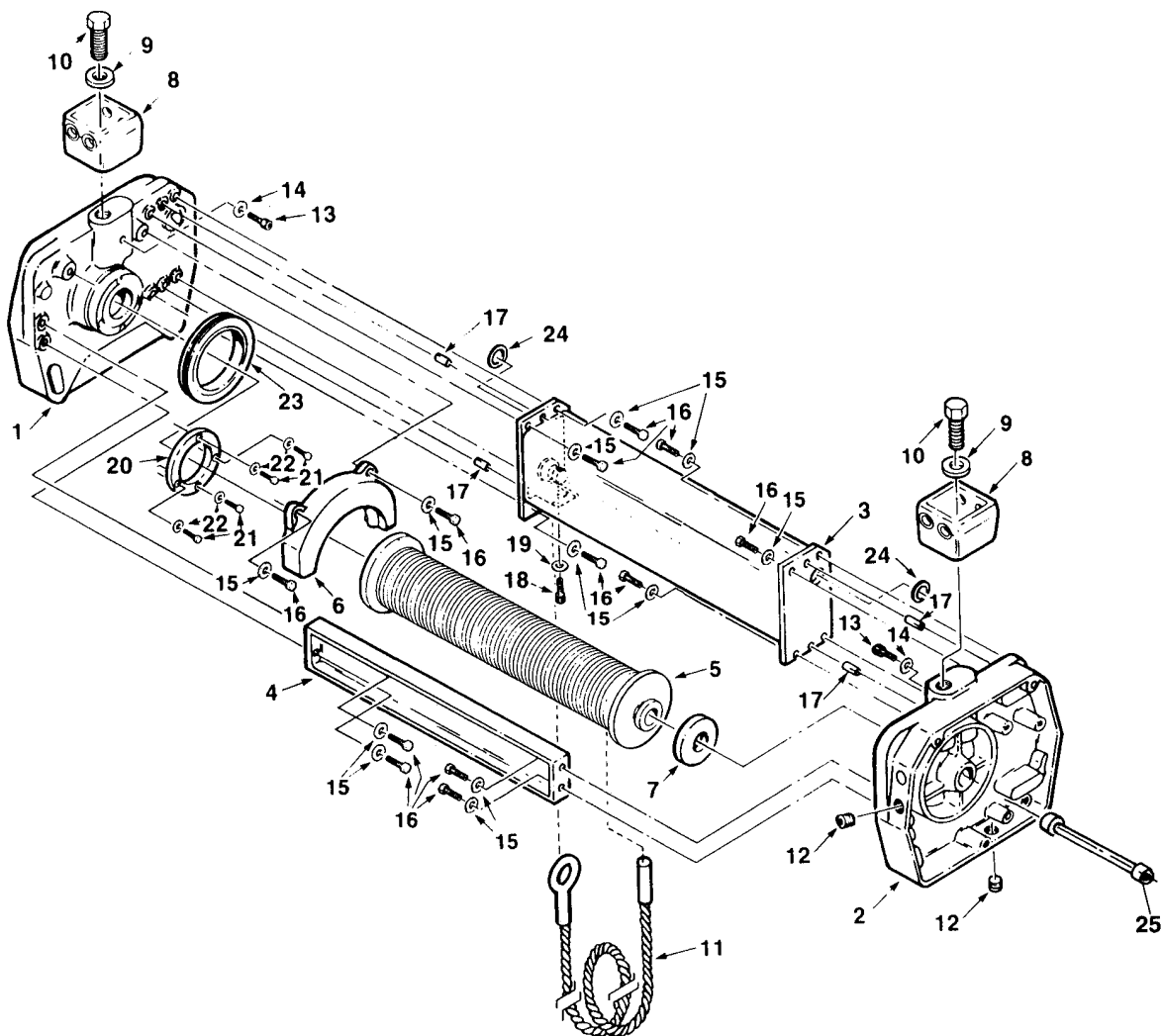


Figure 7-5B. Drum Area (3 Ton) S4 Models Only

Index No.	Part Name	Part No.
1	Transmission Adapter	37J7
2	Motor Adapter	39J4
3	Tube Assembly:	
	22 Ft. Lift	200JG11-1
	35 Ft. Lift	200JG30-1
4	Channel Assembly:	
	22 Ft. Lift	206JG1-1
	35 Ft. Lift	206JG7-1
6	Drum Guard	230J4
7	Bearing	500K12
8	Suspension Box	50J44A
9	Washer	255K25
10	Suspension Stud	50J36
11	Wire Rope Assembly:	
	22 Ft. Lift	19J201
	35 Ft. Lift	19J205
12	Pipe Plug	H-6276
13	Screw	S-49-10

Index No.	Part Name	Part No.
14	Lock Washer	H-4084-P
15	Lock Washer	H-4063-P
16	Screw	S-44-47
17	Driv-Lok Pin	H-5230-5
18	Screw	S-49-22
19	Lock Washer	H-4136
20	Bearing Retainer	250J9
21	Screw	H-2304
22	Lock Washer	H-4066-P
23	Sheave Assembly (Includes Sleeve Bearing)	28JG8
24	Gasket	560J13
25	Coupling Assembly	
	22 Ft. Lift	107JG8-1
	35 Ft. Lift	107JG8-6

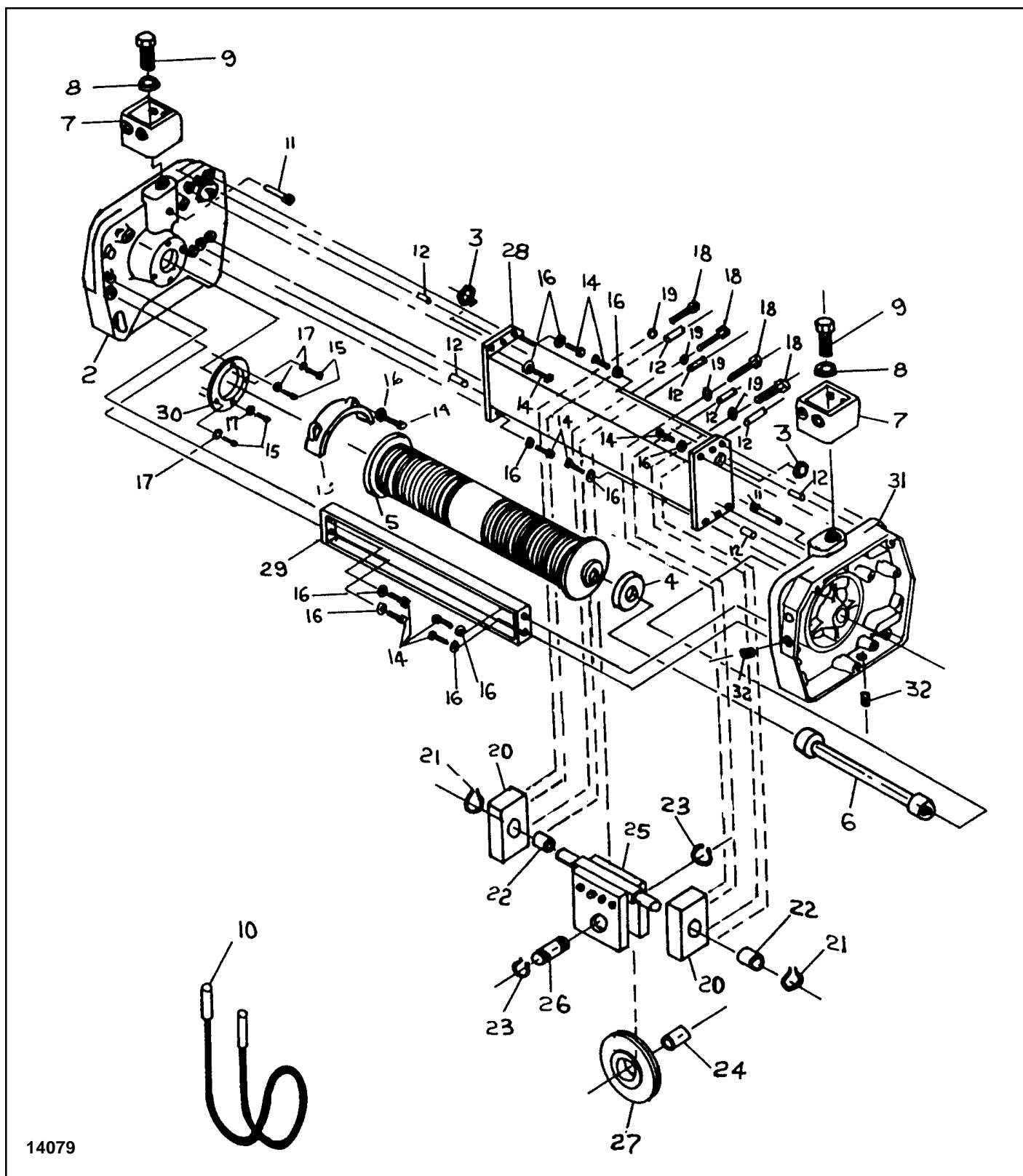


Figure 7-5C. Drum Area  
( 1 & 2 Ton) P2 Models Only

Index No.	Part Name	Part No.	Index No.	Part Name	Part No.
2	Trans. Housing	37J7-1	17	Lock Washer	H-4066P
3	Gasket	560J13	18	Screw	S-49-29
4	Bearing	500K12	19	Lock Washer	H-4083P
5	Drum Ass'y		20	Pillow Block	503J7
	15 Ft. Lift	16JG17-8	21	Ret. Ring	H-5543
	25 Ft. Lift	16JG17-5	22	Bushing	530K26
	35 Ft. Lift	16JG17-6	23	Ret Ring	H-5530
6	Coupling		24	Bushing	MA-533
	15 Ft. Lift	107JG8-9	25	Equalizer	113JG1
	25 Ft. Lift	107JG8-4		Sheave - (Includes Items	
	35 Ft. Lift	107JG8-8		Ass'y #23, 24, 26, & 27)	
7	Susp. Box	50J44A	26	Sheave Pin	122J21
8	Washer	255K25	27	Sheave	28J15
9	Susp. Stud	50J36	28	Tube Ass'y	
10	Cable Ass'y			15 Ft. Lift	200JG34-4
	15 Ft. Lift	19J303		25 Ft. Lift	200JG34-2
	25 Ft. Lift	19J302		35 Ft. Lift	200JG34-1
	35 Ft. Lift	19J304	29	Channel Ass'y	
11	Locking Screw	700J8		15 Ft. Lift	206JG11-1
12	Driv-Lok Pin	H-5230-5		25 Ft. Lift	206JG9-1
13	Drum Guard	230J4		35 Ft. Lift	206JG8-1
14	Screw	S44-47	30	Bearing Retainer	250J6
15	Screw	H-2304	31	Motor Adapter	39J4-2
16	Lock Washer	H-4063P	32	Pipe Plug	H-6276

**Figure 7-5C. Drum Area  
( 1 & 2 Ton) P2 Models Only**

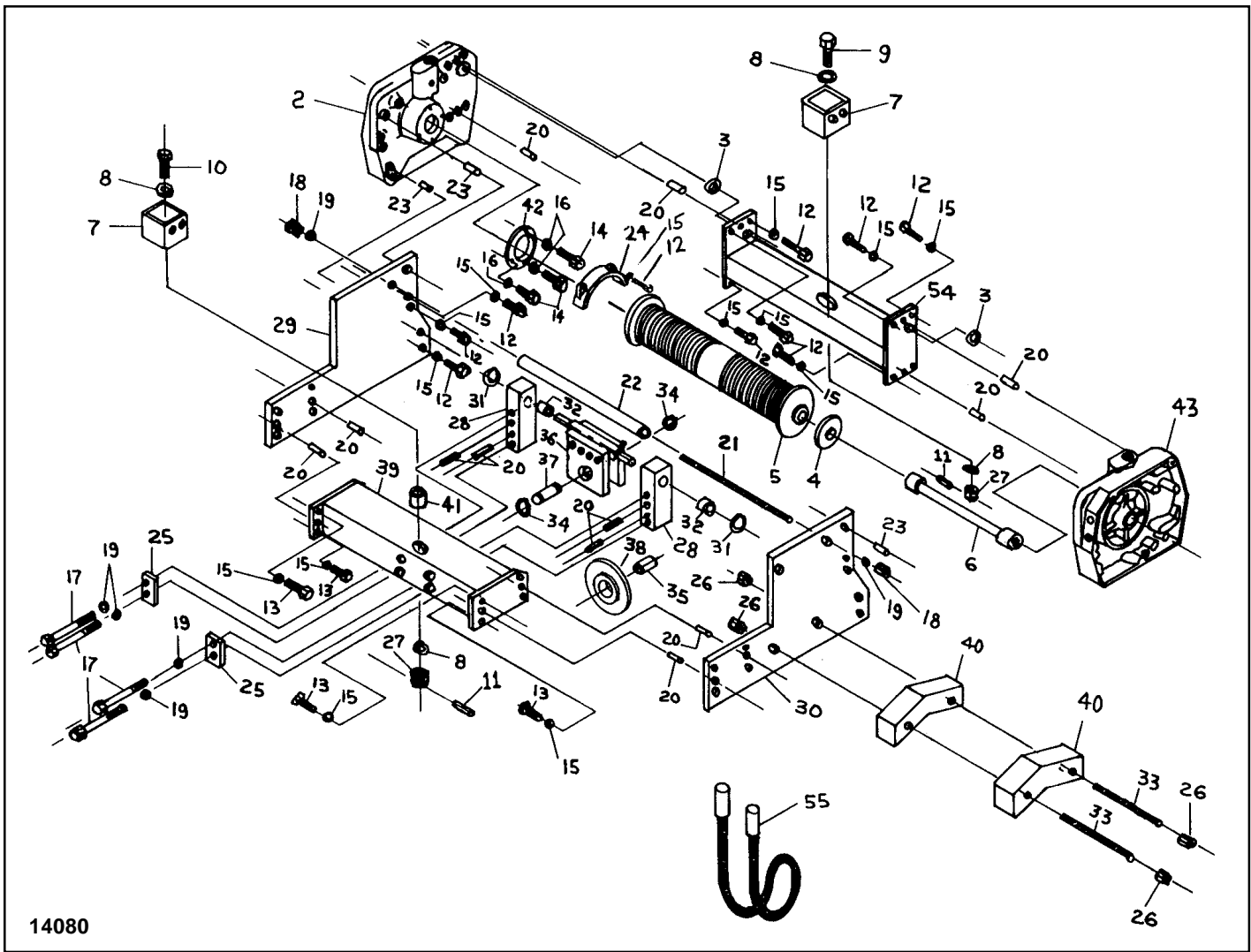
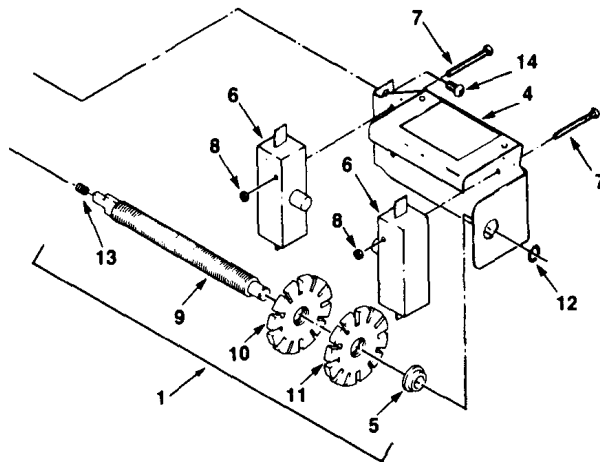


Figure 7-5D. Drum Area  
(1 & 2 Ton) D2 Models Only

**Figure 7-5D. Drum Area  
(1 & 2 Ton) D2 Models Only**

Index No.	Part Name	Part No.
2	Trans. Housing	37J7-2
3	Gasket	560J13
4	Bearing	500K12
5	Drum Ass'y	
	15 Ft. Lift	16JG17-8
	25 Ft. Lift	16JG17-5
	35 Ft. Lift	16JG17-6
6	Coupling	
	15 Ft. Lift	107JG8-9
	25 Ft. Lift	107JG8-4
	35 Ft. Lift	107JG8-8
7	Susp. Box	50J33
8	Washer	H4012-P
9	King Bolt	700J7
10	King Bolt	700J6
11	Pin H-5221	
12	Screw	S44-47
13	Screw	S44-40
14	Screw	H-2304
15	Lock Washer	H-4063P
16	Lock Washer	H-4066P
17	Bolt H-3187	
18	Nut H-3725P	
19	Lock Washer	H-4083
20	Pin H-5230-P	
21	Tie Rod	
	15 Ft. Lift	931J1-5
	25 Ft. Lift	931J1-2
	35 Ft. Lift	931J1-1
22	Tie Rod Spacer	
	15 Ft. Lift	200J28-5
	25 Ft. Lift	200J28-2
	35 Ft. Lift	200J28-1
23	Pin	H5392

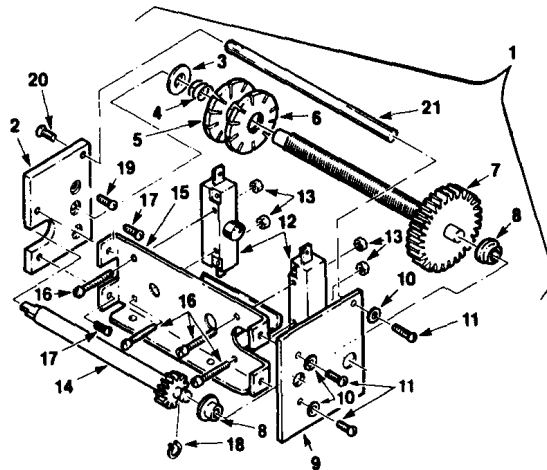
Index No.	Part Name	Part No.
24	Drum Guard	230J4
25	Backing Plate	4016
26	Nut H-3947	
27	Nut H-3928-P	
28	Pillow Block	503J5
29	Side Frame	48J6
30	Side Frame	48J7
31	Ret. Ring	H-5543
32	Bushing	530K26
33	Thr'd Rod	103J11
34	Ret. Ring	H-5530
35	Bushing	MA-533
36	Equalizer	113JG1
	Sheave - (Includes Ass'y Items #34 35, 37, 38)	
37	Sheave Pin	122J21
38	Sheave	28J15
39	Tube Ass'y	
	15 Ft. Lift	200JG27-3
	25 Ft. Lift	200JG27-2
	35 Ft. Lift	200JG27-1
40	Ct. Weight	52J3
41	Spacer	200J29
42	Bearing Retainer	250J6
43	Motor Adaptor	39J4-2
54	Tube Ass'y	
	15 Ft. Lift	200JG25-3
	25 Ft. Lift	200JG25-2
	35 Ft. Lift	200JG25-1
55	Cable Ass'y	
	15 Ft. Lift	19J303
	25 Ft. Lift	19J302
	35 Ft. Lift	19J304



14013

Figure 7-6. Limit Switch Parts

Index No.	Part Name	Part No.	Index No.	Part Name	Part No.
1	Transmission Cover - (Reference Fig. 7-1)	34J2	6	Microswitch, Limit	815J1
2	Limit Switch and Shaft		7	Screw	H-1402-P
3	Assembly (Consists of Index Nos. 3 thru 12)		8	Nut	H-3944
	Limit Switch Assembly		9	Limit Switch Shaft	JF-117-3
	(Consists of Index Nos. 4 thru 8)	918JG3	10	Limit Switch Shaft (Red)	JF-751-3-R
4	Limit Switch Bracket	JF-900-3	11	Limit Switch Nut (Green)	JF-751-3G
	Assembly (Includes Index No. 5)		12	Retaining Ring	H-5520
5	Limit Switch Bushing	JF-531-4	13	Spring	JF-343-3
			14	Screw	H-2981-P



14014

Figure 7-6A. Long Lift Limit Switch 1 &amp; 2 Ton with 70 ft. Lift and 3 Ton with 35 ft. Lift Only

Index No.	Part Name	Part No.	Index No.	Part Name	Part No.
1	Long Lift Limit Switch Assembly (all items except No. 19)	44JG6WR	11	Screw	H-2741-P
2	Mounting Plate	129J1	12	Switch	815J1
3	Thrust Washer	255K16	13	Locknut	H-3944
4	Spring	PB-287	14	Drive Pinion	427J1
5	Green Nut	JF-751-3G	15	Frame and Guide Assembly	258JG7
6	Red Nut	JF-751-3R	16	Screw	H-1402-P
7	Shaft and Gear Assembly	117JG2	17	Screw	854823
8	Bushings	JF-531-4	18	Retaining Ring	H-5520
9	End Plate	258J8	19	Mounting Screw	H-2981-P
10	Lock Washer	H-4158	20	Flat Head Screw	H-1210
			21	Post	110J14

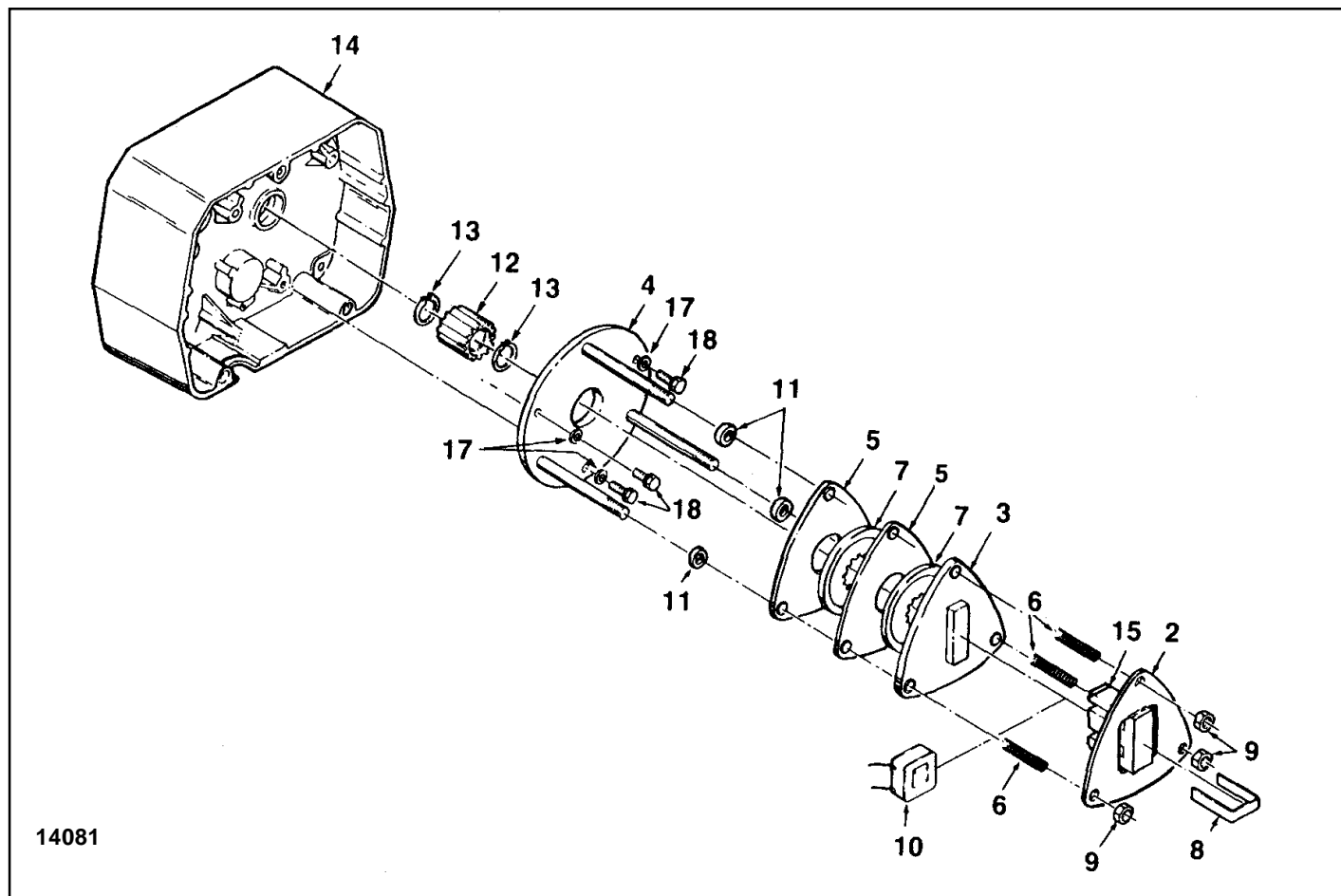


Figure 7-7A. Motor Brake Parts - (2 HP) Models

Index No.	Part Name	Part No.
1	Disc Brake Assembly: (Single Speed) 230/460V, 3-PH, 60 Hz 575V, 3-PH, 60 Hz 3-PH, 60 Hz (Two Speed) 230V, 3-PH, 60 Hz 460V, 3-PH, 60 Hz 575V, 3-PH, 60 Hz 208V, 3-PH, 60 Hz (Consists of Items 2 thru 11)	854JG24 854JG26 854JG27  854JG24 854JG25 854JG26 854JG27
2	Plate and Frame Assembly	291JG8
3	Plate and Armature Assembly	291JG9
4	Plate and Stud Assembly	290JG4
5	Brake Plate	291J10
6	Spring	344J4
7	Brake Disc Assembly	581JG2
8	Retainer	JF-710

9	Lock Nut	H-3949
10	Coil: 230V 60 Hz (For Brake 854JG24) 460V 60 Hz (For Brake 854JG25) 575V 60 Hz (For Brake 854JG26) 208V 60 Hz (For Brake 854JG27)	JF-853-2 JF-853-3 JF-853-4 JF-853-5
11	Spacer	200J15
12	Brake Adapter	142J2
13	Retaining Ring	H-5527
14	Transmission Cover (See Fig. 7-1)	34J2
15**	Shading Coil Element (Must be attached to frame with H-7812 adhesive)	860J1
16*	Adhesive (1 oz. Tube)	H-7812
17	Lock Washer	H-4063-P
18	Screw	H-2988-P

\* Not illustrated

\*\* Replacement requires use of adhesive

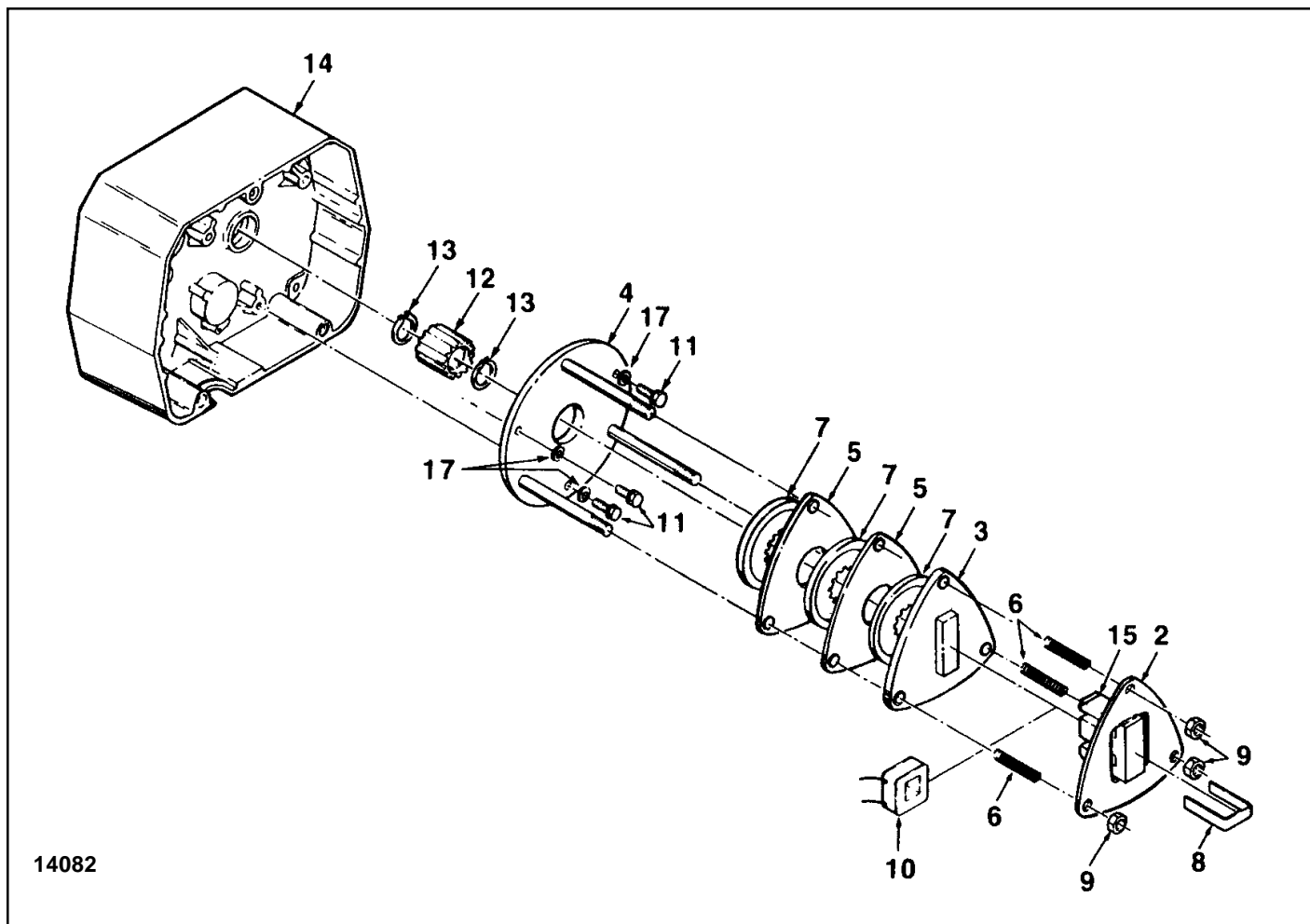


Figure 7-7B. Motor Brake Parts (3 HP) Models

Index No.	Part Name	Part No.
1	Disc Brake Assembly: (Single Speed) 230/460V, 60 Hz, 3-PH 575V, 60 Hz, 3-PH 208V, 60 Hz, 3-PH	854JG20 854JG22 854JG23
	(Two Speed) 230V, 60 Hz, 3-PH 460V, 60 Hz, 3-PH 575V, 60 Hz, 3-PH 208V, 60 Hz, 3-PH (Consists of Items 2 thru 10)	854JG20 854JG21 854JG22 854JG23
2	Plate and Frame Assembly	291JG8
3	Plate and Armature Assembly	291JG9
4	Plate and Stud Assembly	290JG4
5	Brake Plate	291J10
6	Spring	344J4
7	Brake Disc Assembly	581JG2
8	Retainer	JF-710
9	Lock Nut	H-3949

Index No.	Part Name	Part No.
10	Coil: 230V, 60 Hz (For Brake 854JG20) 460V, 60 Hz (For Brake 854JG21) 575V, 60 Hz (For Brake 854JG22) 208V, 60 Hz (For Brake 854JG23)	JF-853-2 JF-853-3 JF-853-4 JF-853-5
11	Screw	H-2988-P
12	Brake Adapter	142J2
13	Retaining Ring	H-5527
14	Transmission Cover	34J2
15**	Shading Coil Element (Must be attached to frame with H-7812 adhesive)	860J1
16*	Adhesive (1 oz. Tube)	H-7812
17	Lock Washer	H-4063-P

\* Not illustrated

\*\* Replacement requires use of adhesive

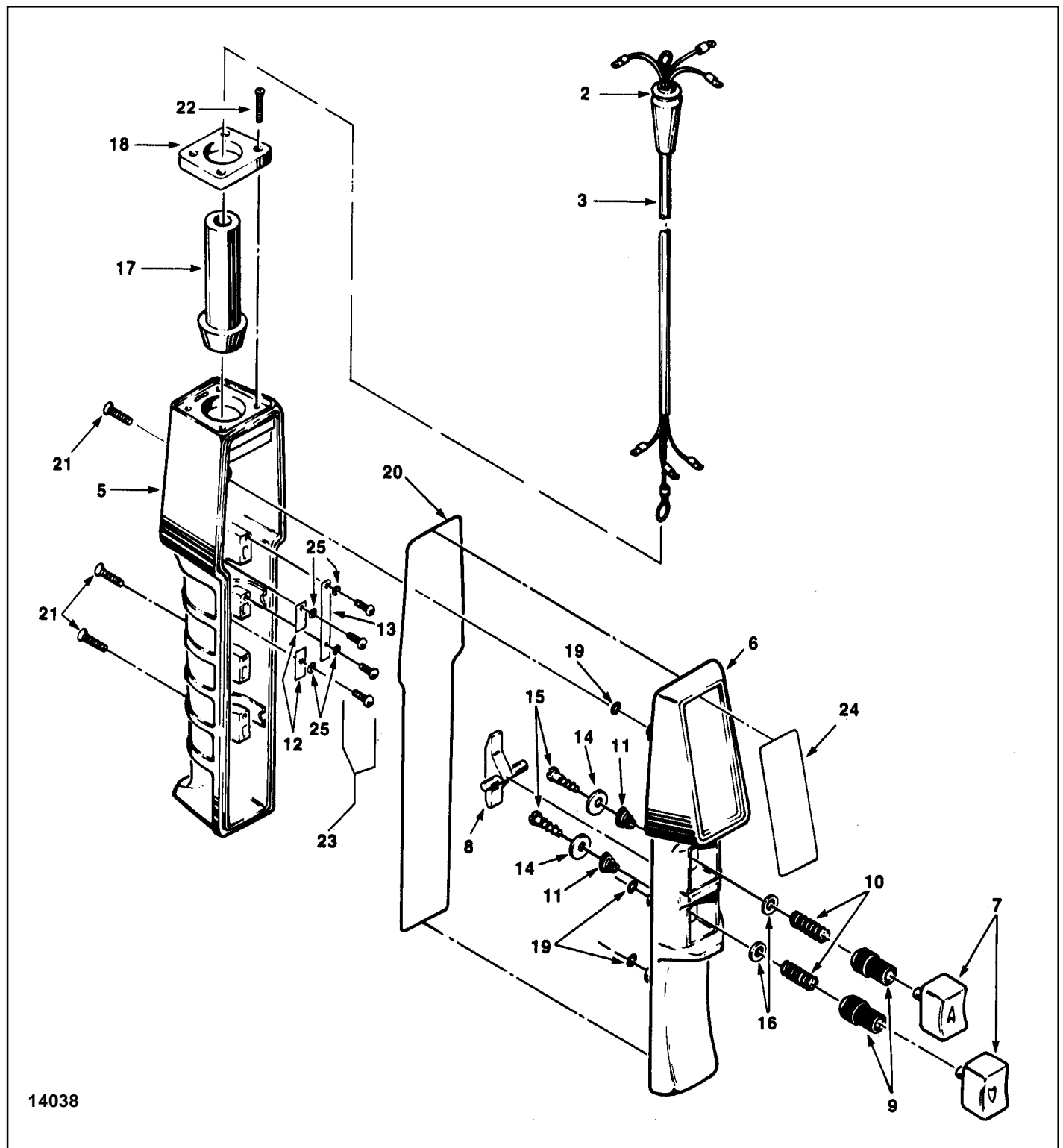


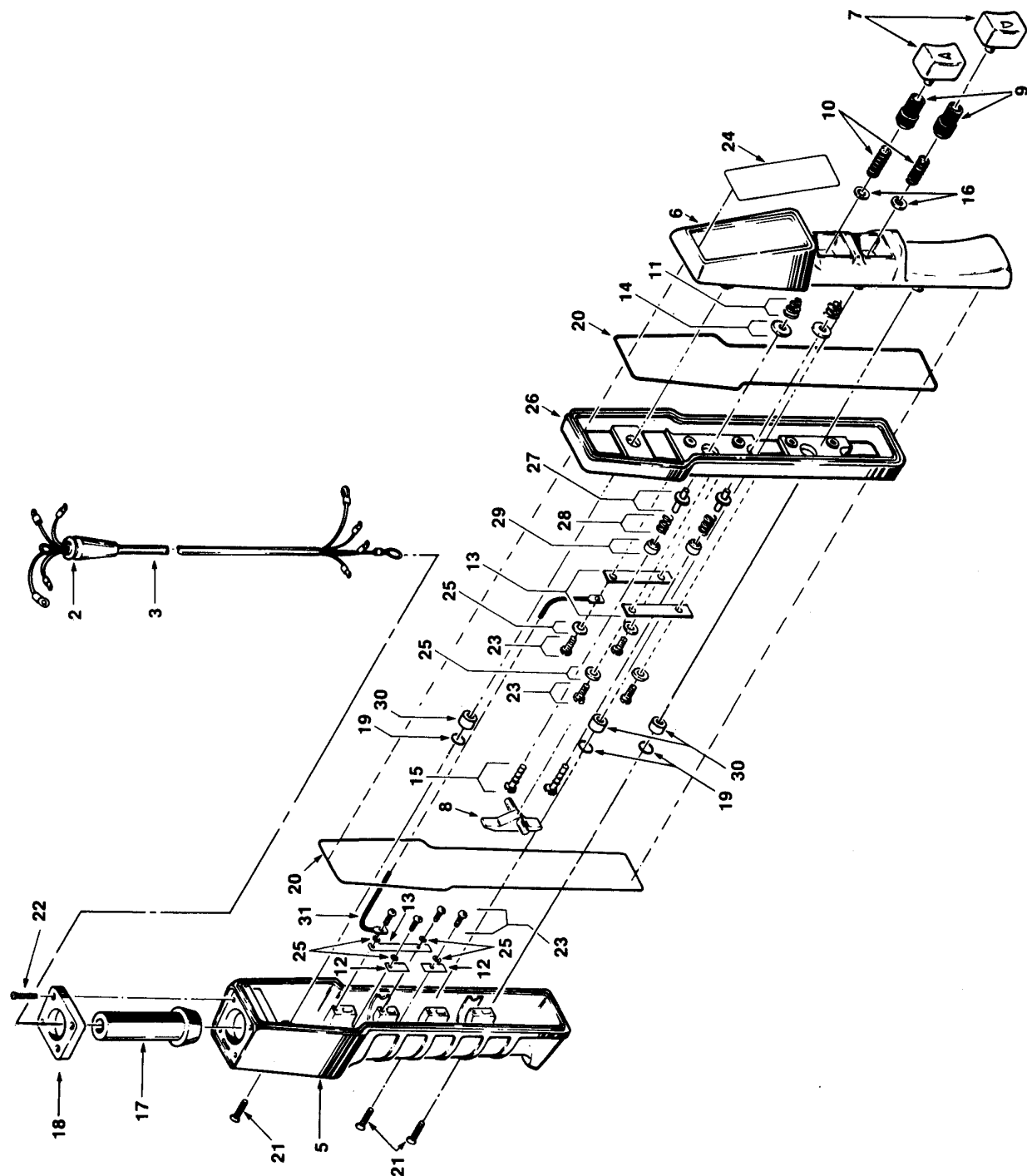
Figure 7-8A. Pushbutton  
(Single Speed Hoists)

**Figure 7-8A. Pushbutton  
(Single Speed Hoists)**

Index No.	Part Name	Part No.
1	Pushbutton and Cable	
2	Assembly: (Consists of	
3	Index Nos. 2 thru 25)	
	PB Drop	
	11 Ft.	PB-299-11B
	18 Ft.	PB-299-16B
	21 Ft.	PB-299-21B
	26 Ft.	PBS-299-26B
	31 Ft.	PB-299-31B
	40 Ft.	PBS-299-40B
	66 Ft.	PBS-299-66B
	Special PB Drop	PBS-299-*B
2	Rubber Grommet	JF-761
3	Pushbutton Cable Assembly:	
	PB Drop In Feet:	
	11 Ft.	PB-299-11
	18 Ft.	PB-299-18
	21 Ft.	PB-299-21
	26 Ft.	PBS-299-26
	31 Ft.	PB-299-31
	40 Ft.	PBS-299-40
	66 Ft.	PBS-299-66
	Special PB Drop	PBS-299-*
4	Pushbutton Assembly: (Consists of Index Nos. 5 thru 25)	534K97-B

Index No.	Part Name	Part No.
5	Enclosure	PB-282-4
6	Cover	PB-298
7	Pushbutton	PB-284-2
8	Interlock	PB-285
9	Boot	PB-286
10	Spring, Compression	PB-287
11	Spring, Conical	PB-288
12	Contact Plate	PB-289
13	Contact Plate, Common	PB-290
14	Washer, Contact	PB-291
15	Screw	PB-301
16	Washer, Boot	PB-293
17	Grommet	PB-294-1
18	Cap, Enclosure	PB-295
19	"O" Ring	X-6477-1
20	Rubber Seal	H-7851
21	Screw	H-2991
22	Screw	H-2992
23	Screw	H-2993
24	Warning Tag	PB-296
25	Lock Washer	H-4160

\*Equal to Pushbutton Drop



14039

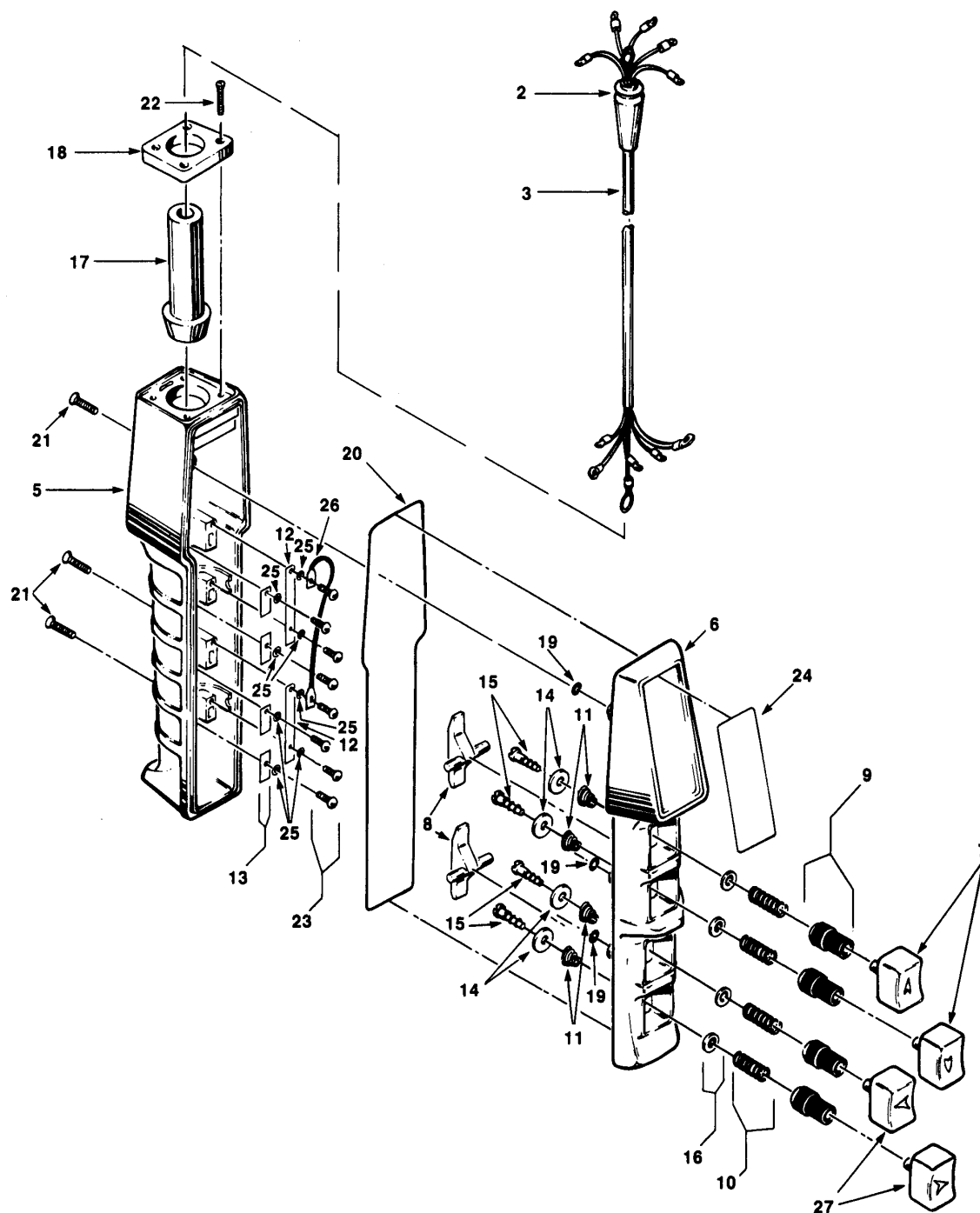
Figure 7-8B. Pushbutton (Two Speed Hoists)

Index No.	Part Name	Part No.
1	Pushbutton and Cable Assembly: (Consists of Index Nos. 2 thru 31) PB Drop In Feet: 11 Ft. 21 Ft. 26 Ft. 31 Ft. 46 Ft. 61 Ft. Special PB Drop	534JG4-11 534JG4-21 534JG4-26 534JG4-31 534JG4-46 534JG4-61 534JG4-*
2	Rubber Grommet	JF-761
3	Pushbutton Cable Assembly: PB Drop In Feet: 11 Ft. 21 Ft. 26 Ft. 31 Ft. 46 Ft. 61 Ft. Special PB Drop	PB-300-11 PB-300-21 PBS-300-26 PB-300-31 PBS-300-46 PBS-300-61 PBS-300-*
4	Pushbutton Assembly: (Consist of Index Nos. 5 thru 31)	534JG4
5	Enclosure	PB-282-4
6	Cover	PB-298

Index No.	Part Name	Part No.
7	Pushbutton	PB-284-22
8	Interlock	PB-285-1
9	Boot	PB-286
10	Spring, Compression	PB-287
11	Spring, Conical	PB-288
12	Contact Plate	PB-289
13	Contact Plate, Common	PB-290
14	Washer, Contact	PB-291
15	Screw	H-1852-P
16	Washer, Boot	PB-293
17	Grommet	PB-294-1
18	Cap, Enclosure	PB-295
19	"O" Ring	X-6477-1
20	Rubber Seal	H-7851
21	Screw (Enclosure)	H-2925
22	Screw (Cap)	H-2992
23	Screw (Plates)	H-2993
24	Warning Tab	PB-296
25	Lock Washer	H-4160
26	2-Speed Adapter	PB-308
27	Insulating Bushing	755J1
28	Spring, Lower	344J5
29	Contact Button	201J1
30	Bushing	200J16
31	Jumper Wire	JF-940-42

\*Equal to Pushbutton Drop

**Figure 7-8B. Pushbutton (Two Speed Hoists)**



14040

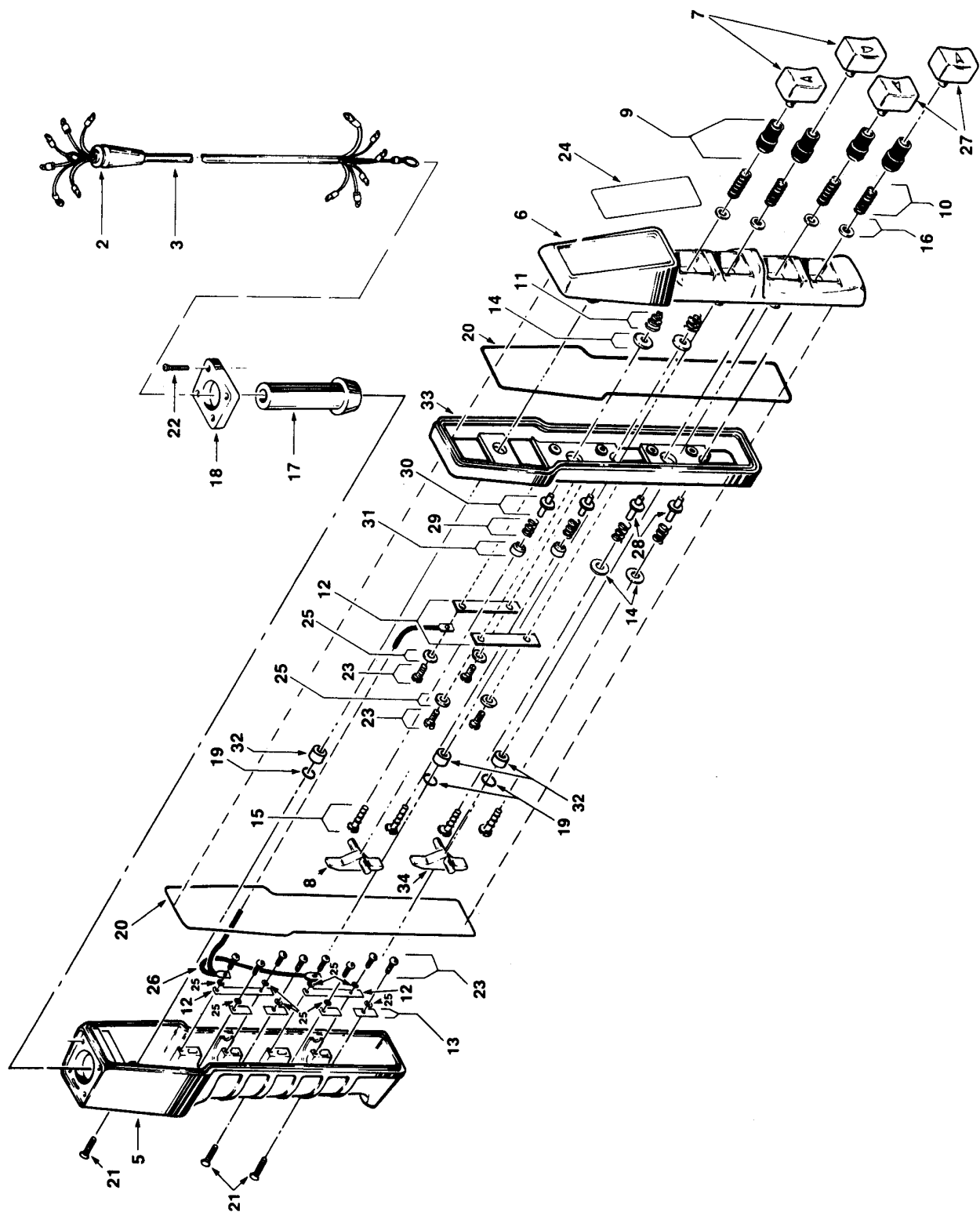
Figure 7-8C. Pushbutton (Single Speed Hoist - Single Speed Trolley)

Index No.	Part Name	Part No.
1	Pushbutton and Cable Assembly: (Consists of Index Nos. 2 thru 27) PB Drop In Feet: 11 Ft. 21 Ft. 26 Ft. 31 Ft. 46 Ft. 61 Ft. Special PB Drop	PB-300-11A PB-300-21A PBS-300-26A PB-300-31A PBS-300-46A PBS-300-61A PBS-300-*A JF-761
2	Rubber Grommet	
3	Pushbutton Cable Assembly: PB Drop In Feet: 11 Ft. 21 Ft. 26 Ft. 31 Ft. 46 Ft. 61 Ft. Special PB Drop	PB-300-11 PB-300-21 PBS-300-26 PB-300-31 PBS-300-46 PBS-300-61 PBS-300-*
4	Pushbutton Assembly: (Consist of Index Nos. 5 thru 27)	534K98
5	Enclosure	PB-282-4
6	Cover	PB-283

Index No.	Part Name	Part No.
7	Pushbutton (Hoist)	PB-284-2
8	Interlock	PB-285
9	Boot	PB-286
10	Spring, Compression	PB-287
11	Spring, Conical	PB-288
12	Contact Plate, Common	PB-290
13	Contact Plate	PB-289
14	Washer, Contact	PB-291
15	Screw	PB-301
16	Washer, Boot	PB-293
17	Grommet	PB-294-2
18	Cap, Enclosure	PB-295
19	"O" Ring	X-6477-1
20	Seal	H-7851
21	Screw	H-2991
22	Screw	H-2992
23	Screw	H-2993
24	Warning Tab	PB-296
25	Lock Washer	H-4160
26	Jumper (Common)	JF-940-42
27	Pushbutton (Trolley)	PB-284-1

\*Equal to Pushbutton Drop

**Figure 7-8C. Pushbutton (Single Speed Hoist - Single Speed Trolley)**



14041

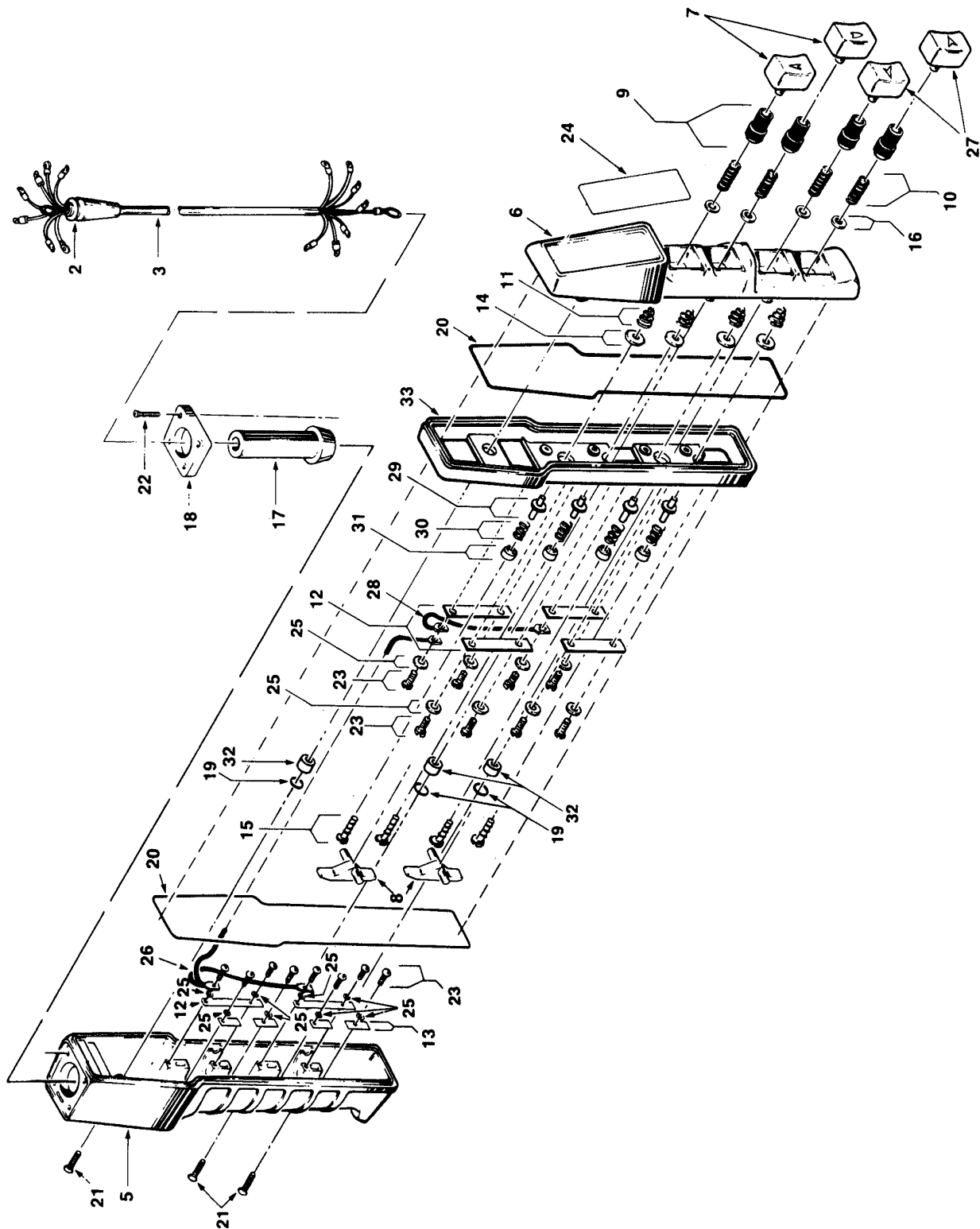
**Figure 7-8D. Pushbutton**  
(Two Speed Hoist, Single Speed Trolley;  
Single Speed Hoist, Two Speed Trolley)

**Figure 7-8D. Pushbutton  
(Two Speed Hoist, Single Speed Trolley;  
Single Speed Hoist, Two Speed Trolley)**

Index No.	Part Name	Part No.
1	Pushbutton and Cable Assembly: (Consists of Index Nos. 2 thru 34) Two Speed Hoist, Single Speed Trolley PB Drop In Feet: 11 Ft. 21 Ft. 26 Ft. 31 Ft. 46 Ft. 61 Ft. Special PB Drop Single Speed Hoist, Two Speed Trolley PB Drop In Feet: 11 Ft. 21 Ft. 26 Ft. 31 Ft. 46 Ft. 61 Ft. Special PB Drop	534JG5-11 534JG5-21 534JG5-26 534JG5-31 534JG5-46 534JG5-61 534JG5-*
2	Rubber Grommet	JF-761-1
3	Pushbutton Cable Assembly: PB Drop In Feet: 11 Ft. 21 Ft. 26 Ft. 31 Ft. 46 Ft. 61 Ft. Special PB Drop	PB-309-11 PBS-309-21 PBS-309-26 PB-309-31 PBS-309-46 PBS-309-61 PBS-309-*
4	Pushbutton Assembly: (Consist of Index Nos. 5 thru 34) Two Speed Hoist, Single Speed Trolley Single Speed Hoist, Two Speed Trolley	534JG5 534JG6

Index No.	Part Name	Part No.
5	Enclosure	PB-282-4
6	Cover	PB-283
7	Pushbutton (Hoist)	PB-284-22
8	Interlock (Black)	PB-285-1
9	Boot	PB-286
10	Spring, Compression	PB-287
11	Spring, Conical	PB-288
12	Contact Plate, Common	PB-290
13	Contact Plate	PB-289
14	Washer, Contact	PB-291
15	Screw	H-1852-P
16	Washer, Boot	PB-293
17	Grommet	PB-294-2
18	Cap, Enclosure	PB-295
19	"O" Ring	X-6477-1
20	Seal	H-7851
21	Screw	H-2925
22	Screw	H-2992
23	Screw	H-2993
24	Warning Tab	PB-296
25	Lock Washer	H-4160
26	Jumper	940J111
27	Pushbutton (Trolley)	PB-284-21
28	Spacer	755J2
29	Spring, Lower	344J5
30	Insulating Bushing	755J1
31	Lower Contact	201J1
32	Bushing	200J16
33	Two-Speed Adapter	PB-308
34	Interlock (Red)	PB-285

\*Equal to Pushbutton Drop



14042

Figure 7-8E. Pushbutton (Two Speed Hoist - Two Speed Trolley)

Index No.	Part Name	Part No.
1	Pushbutton and Cable Assembly: (Consists of Index Nos. 2 thru 33) PB Drop In Feet: 11 Ft. 21 Ft. 26 Ft. 31 Ft. 46 Ft. 61 Ft. Special PB Drop	534JG7-11 534JG7-21 534JG7-26 534JG7-31 534JG7-46 534JG7-61 534JG7-*
2	Rubber Grommet	JF-761-1
3	Pushbutton Cable Assembly: PB Drop In Feet: 11 Ft. 21 Ft. 26 Ft. 31 Ft. 46 Ft. 61 Ft. Special PB Drop	PB-309-11 PB-309-21 PBS-309-26 PBS-309-31 PBS-309-46 PBS-309-61 PBS-309-*
4	Pushbutton Assembly: (Consist of Index Nos. 5 thru 33)	534JG7
5	Enclosure	PB-282-4
6	Cover	PB-283
7	Pushbutton (Hoist)	PB-284-22

Index No.	Part Name	Part No.
8	Interlock (Black)	PB-285-1
9	Boot	PB-286
10	Spring, Compression	PB-287
11	Spring, Conical	PB-288
12	Contact Plate, Common	PB-290
13	Contact Plate	PB-289
14	Washer, Contact	PB-291
15	Screw	H-1852-P
16	Washer, Boot	PB-293
17	Grommet	PB-294-2
18	Cap, Enclosure	PB-295
19	"O" Ring	X-6477-1
20	Seal	H-7851
21	Screw	H-2925
22	Screw	H-2992
23	Screw	H-2993
24	Warning Tab	PB-296
25	Lock Washer	H-4160
26	Jumper	940J111
27	Pushbutton (Trolley)	PB-284-21
28	Jumper (Two-Speed Common)	JF-940-42
29	Insulating Bushing	755J1
30	Spring, Lower	344J5
31	Lower Contact	201J1
32	Bushing	200J16
33	Two-Speed Adapter	PB-308

\*Equal to Pushbutton Drop

**Figure 7-8E. Pushbutton (Two Speed Hoist - Two Speed Trolley)**

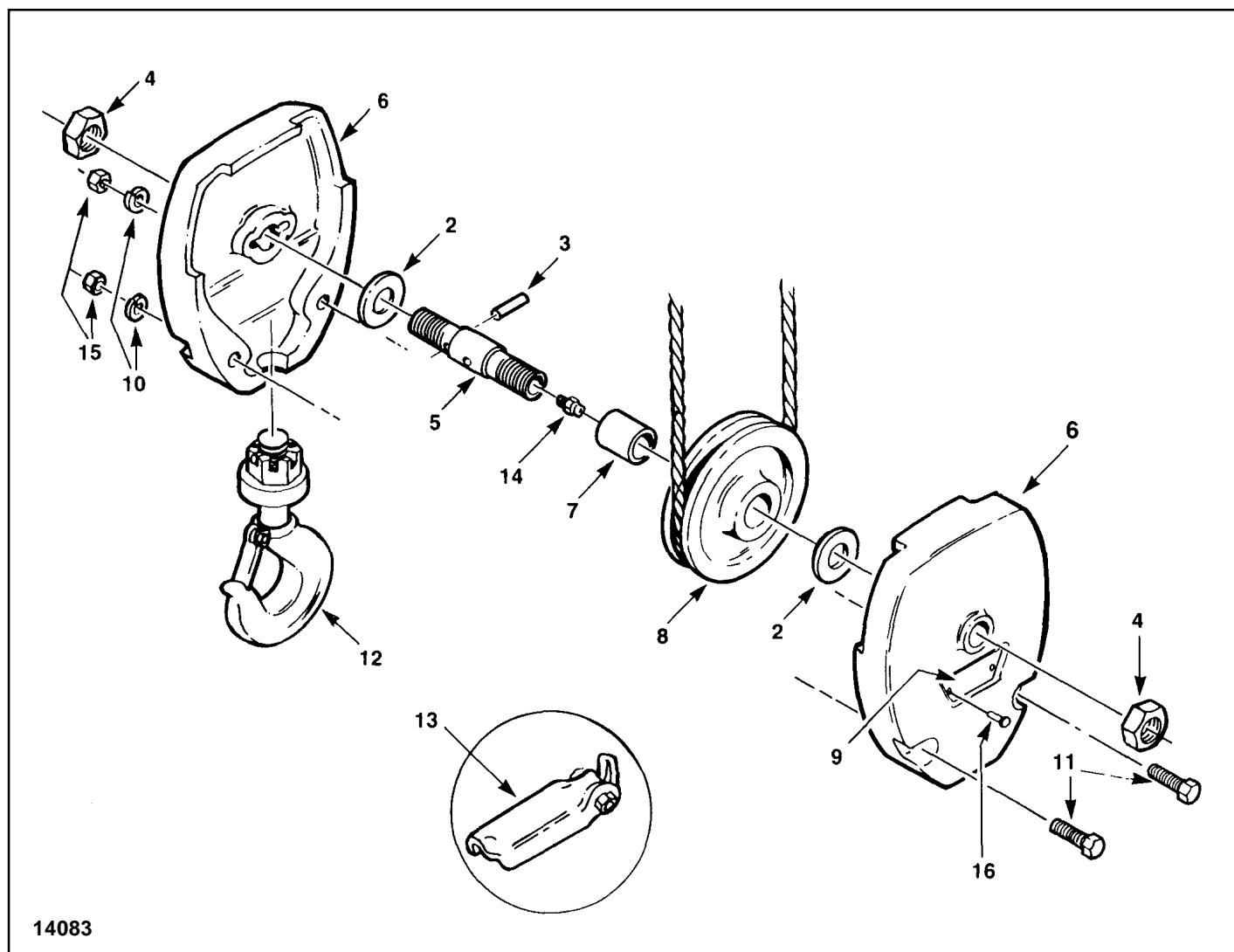


Figure 7-9A. Bottom Block (1 & 2 Ton) S2 Models Only

Index No.	Part Name	Part No.
1	Bottom Block Assembly (Capacity Plate and Drive Rivet Not Included)	914JG17
2	Washer	CB-252-2
3	Driv-Lok Pin	H-5211
4	Lock Nut	H-3940
5	Sheave Pin	122J9
6	Side Plate	30J18
7	Bushing	F-1-A
8	Sheave	28J9

Index No.	Part Name	Part No.
9	Capacity Plate 1 Ton 2 Ton	675K28 675K30
10	Lock Washer	H-4063-P
11	Screw	S44-45
12	Hook Assembly with Latch	3JG14S
13	Latch Kit	H-7544
14	Grease Fitting	H-7818
15	Nut	H-3563
16	Drive Rivet	H-2861-P

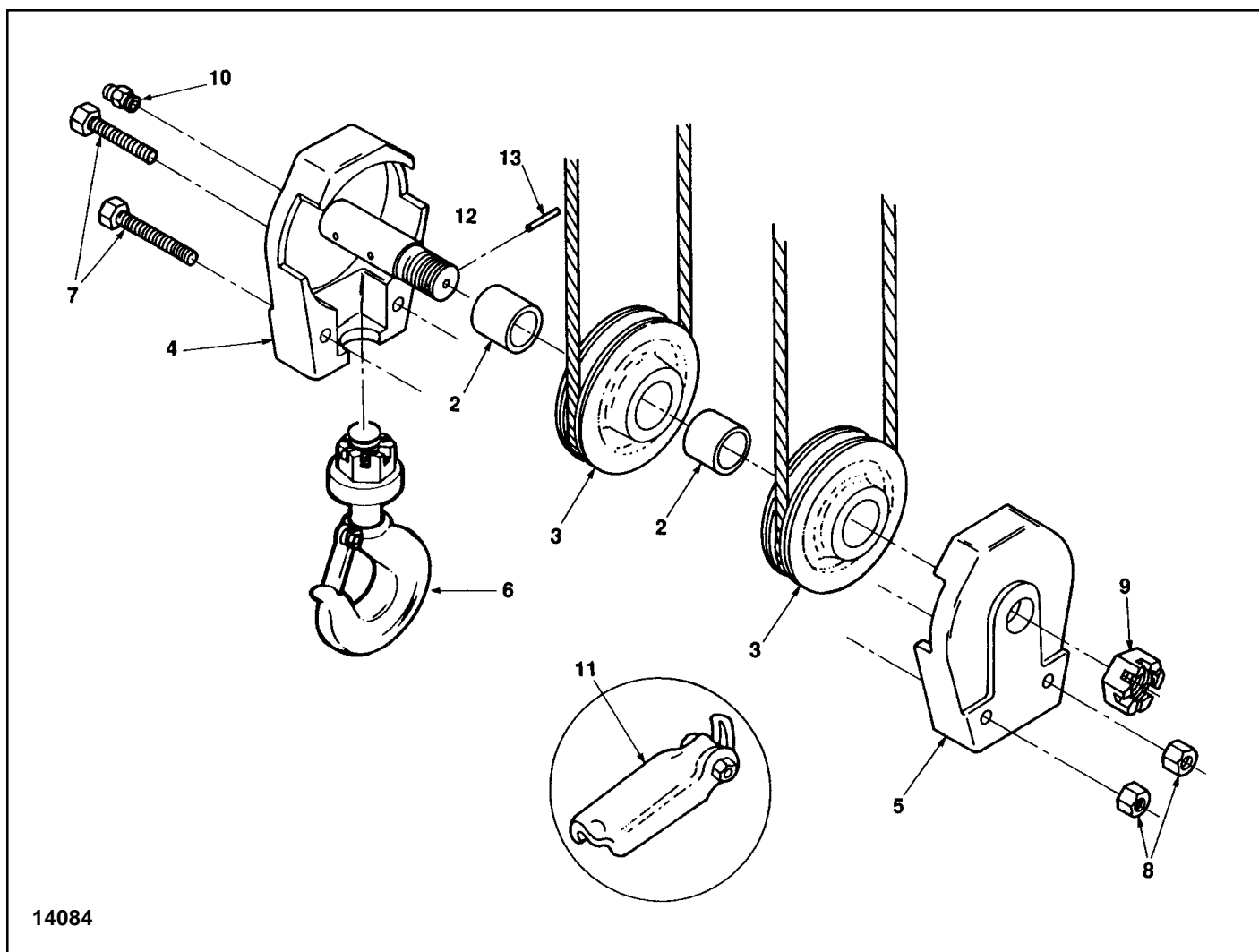
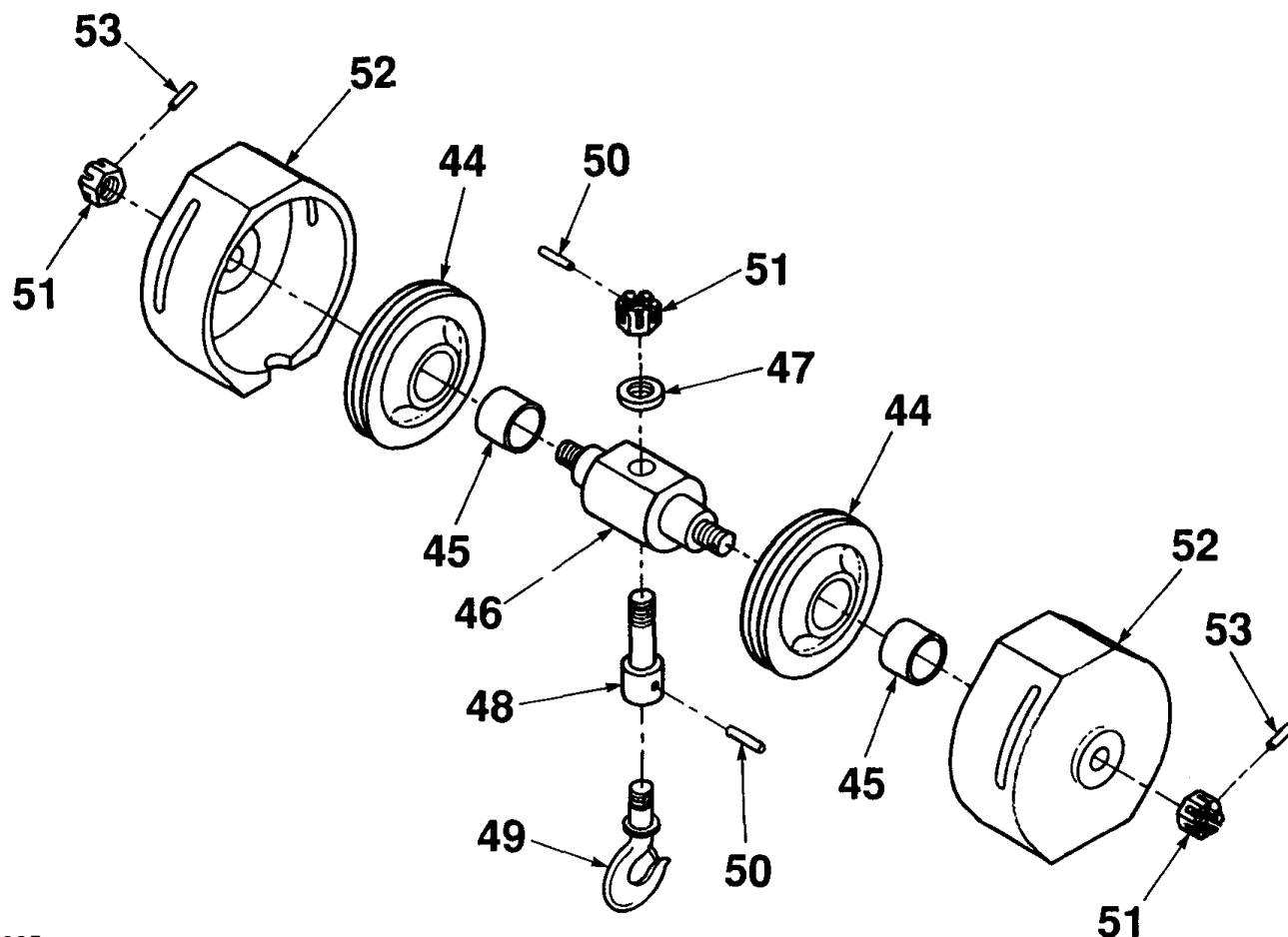


Figure 7-9B. Bottom Block (3 Ton) S4 Models Only

Index No.	Part Name	Part No.
1	Bottom Block Ass'y (Consists of Index Nos. 2-13)	914JG22
2	Bushing	530K10
3	Sheave	28J13
	Bottom Block Half (Grease Fitting Side)	30J22
5	Bottom Block Half (Nut Side)	30J22-1

Index No.	Part Name	Part No.
6	Hook Assembly	3JG8S
7	Screw	H-2431
8	Lock Nut	H-3966P
9	Slotted Nut	H-3925P
10	Grease Fitting	SK974-32
11	Latch Kit	H-7545
12	Sheave Pin	122J17
13	Roll Pin	H-5256



14085

**Figure 7-9C. Bottom Block  
(1 & 2 Ton) D2 & P2 Models**

Index No.	Part Name	Part No.
43	Bottom Block Ass'y. (Consists of Index No's. 44-53)	914JG28
44	Sheave	28J14
45	Bushing	530K10
46	Yoke	122J18
47	Bearing	CB-510

Index No.	Part Name	Part No.
48	Shank Ext.	124J10
49	Hook & Latch	3J14S
50	Pin	H-5219
51	Nut	H-3922P
52	Cover	30J23
53	Pin	H-5234

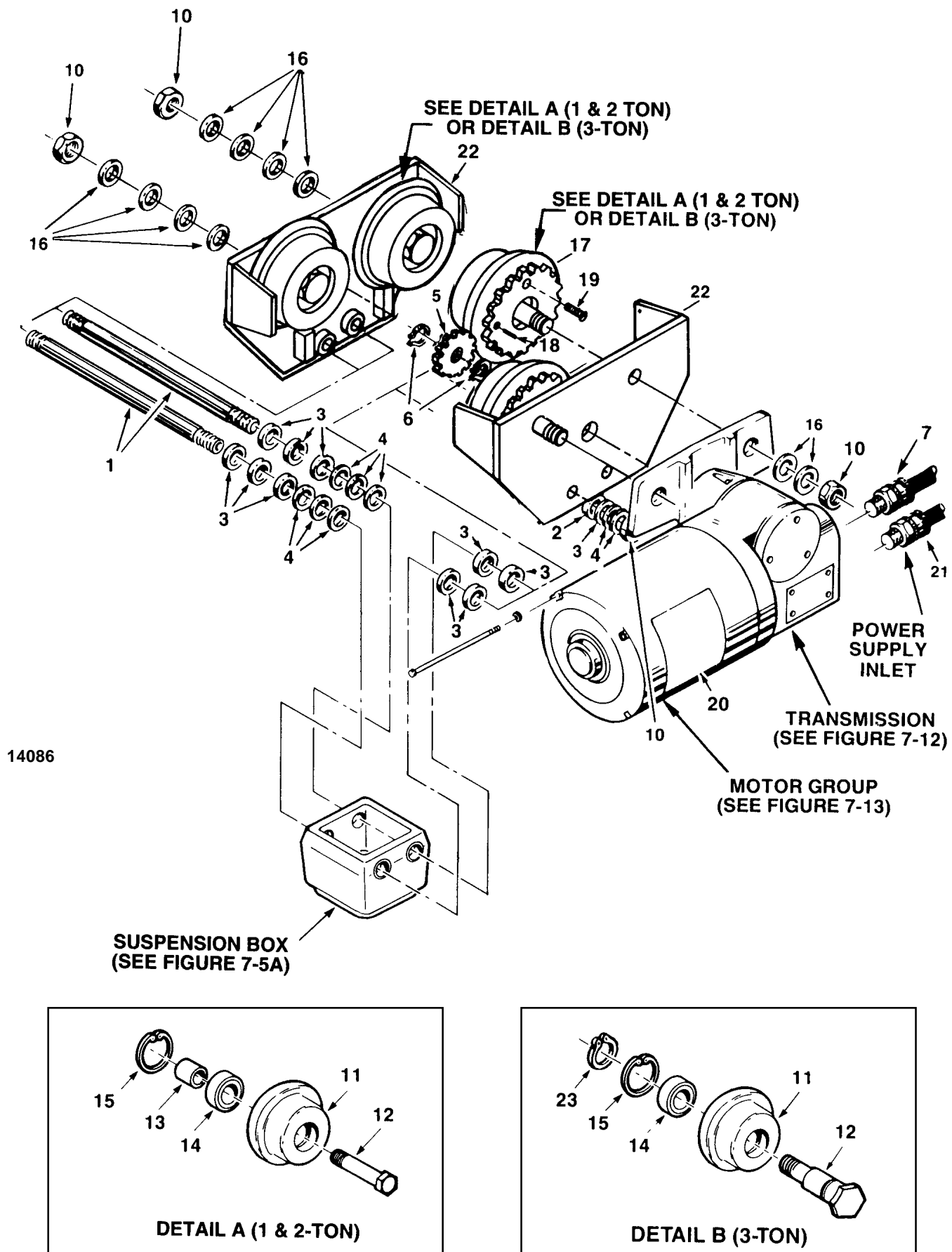


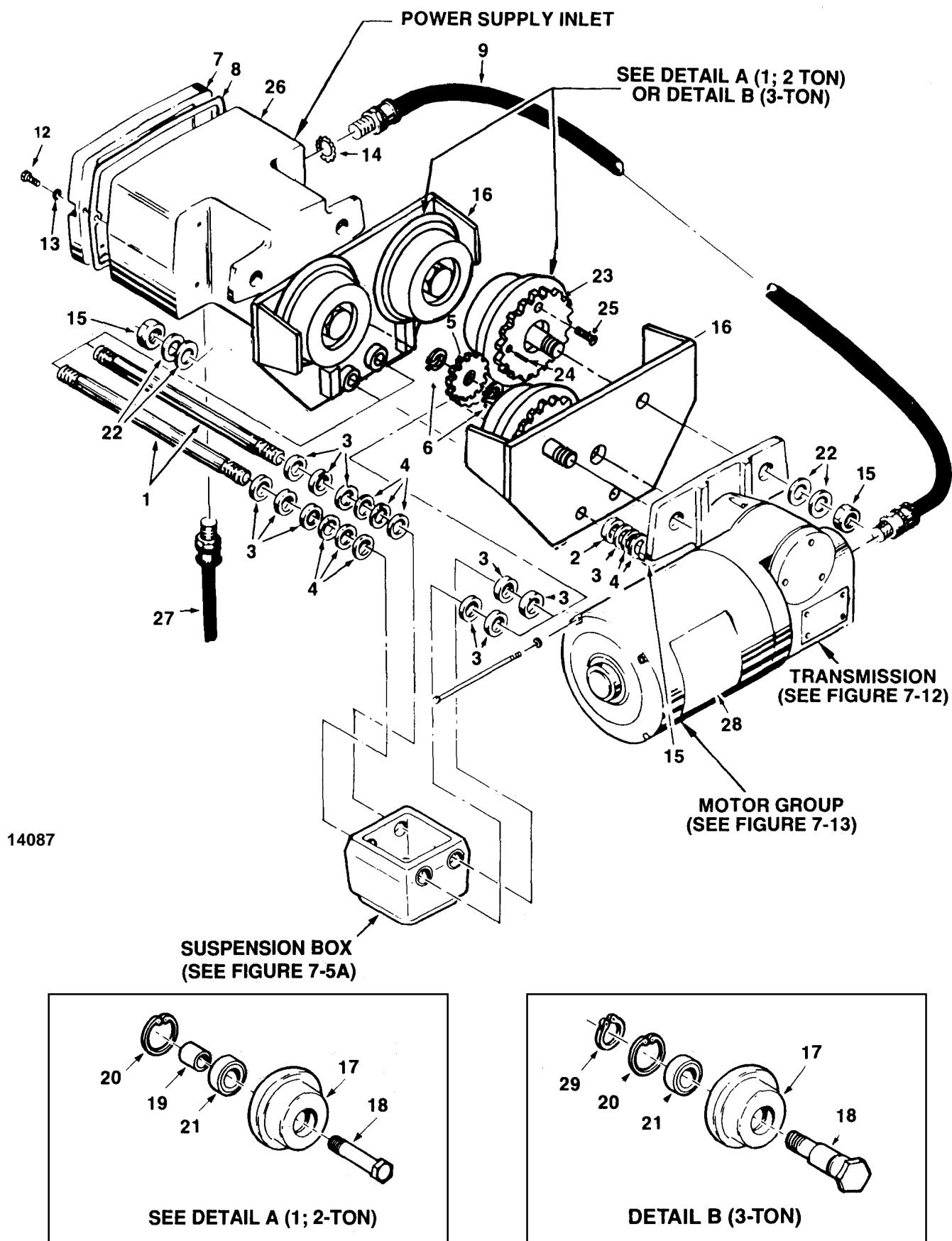
Figure 7-10A. Trolley General Assembly  
(Single Speed Hoist, Single Speed Trolley)

Index No.	Part Name	Part No.
1	Load Pin	103K1
2	Washer (1/8 Thick)	H-4211
3	Washer (.135 Thick)	H-4209
4	Washer (.075 Thick)	H-4210
5	Pinion	420K1
6	Retaining Ring	H-5501
7	Tie Cable Assembly:	
	1 & 2-Ton, 22 Ft. Lift	955JG37
	1 & 2-Ton, 35 Ft. Lift	955JG30
	3-Ton, 22 Ft. Lift	955JG38
8*	Any Other Lift	Consult Factory
	Splice Cap	H-7519
9*	Insulator, Splice Cap	H-7520
10	Nut, Elastic Stop	H-3945
11	Wheel:	
	Plain (1 & 2-Ton)	45K10
	Plain (3-Ton)	45K20
	Drive (1 & 2-Ton)	45K1
	Drive (3-Ton)	45K2

Index No.	Part Name	Part No.
12	Axle:	
	1 & 2-Ton	102K1
	3-Ton	102K2
13	Spacer (1 & 2-Ton Only)	200K1
14	Bearing:	
	1 & 2-Ton	500K4
	3-Ton	500K5
15	Retaining Ring:	
	1 & 2-Ton	H-5528
	3-Ton	H-5530
16	Washer (1/8 Thick)	H-4211
17	Gear	420K2
18	Dowel Pin	H-5384
19	Screw	H-1204
20	Decal	YJL677
21	Cable Connector	H-7609
22	Side Plate Weldment:	
	1 & 2-Ton	5KG4
	3-Ton	5 KG31
23	Retaining Ring (3-Ton only)	H-5529

\*Not Illustrated

**Figure 7-10A. Trolley General Assembly  
(Single Speed Hoist, Single Speed Trolley)**



**Figure 7-10B. Trolley General Assembly**  
(Single Speed Hoist, Two Speed Trolley, Two Speed Hoist, Single Speed Trolley, Two Speed Hoist, Two Speed Trolley)

**Figure 7-10B. Trolley General Assembly**  
**(Single Speed Hoist, Two Speed Trolley, Two Speed Hoist,**  
**Single Speed Trolley, Two Speed Hoist, Two Speed Trolley)**

Index No.	Part Name	Part No.	Index No.	Part Name	Part No.
1	Load Pin	103K1	22	Washer (1/8 Thick)	H-4211
2	Washer (1/8Thick)	H-4211	23	Gear	420K2
3	Washer (.135 Thick)	H-4209	24	Dowel Pin	H-5384
4	Washer (.075 Thick)	H-4210	25	Screw	H-1204
5	Pinion	420K1	26	Control Box:	
6	Retaining Ring	H-5501		1 & 2 Ton	36K1
7	Cover, Control Box	36K3		3-Ton	36K2
8	Gasket	560K4	27	Interconnection Cable	
9	Tie Cable Assembly:			Assembly (1 & 2-Ton)	
	Two Speed Hoist,			Two Speed Hoist, One Speed	
	One Speed Trolley	955KG3		Trolley (22 Ft. Lift)	954KG18
	One Speed or			One Speed or Two Speed	
	Two Speed Hoist,	955KG4		Hoist, Two Speed Trolley	
	Two Speed Trolley			(22 Ft. Lift)	954KG19
10*	Splice Cap	H-7519		Two Speed Hoist, One Speed	
11*	Insulator, Splice Cap	H-7520		Trolley (35 Ft. Lift)	954KG20
12	Screw	S-44-4			
13	Lock Washer	H-4084-P		One Speed or Two Speed	
14	Lock Nut	H-7569		Hoist, Two Speed Trolley	
15	Nut, Elastic Stop	H-3945		(35 Ft. Lift)	954KG21
16	Side Plate Weldment:			Any Other Lift - Consult Factory	
	1; 2-Ton	5KG4		Interconnection Cable	
	3;Ton	5KG31		Assembly (3-Ton):	
17	Wheel:			Two Speed Hoist, One Speed	
	Plain (1; 2 Ton)	45K10		Trolley (22 Ft. Lift)	955KG22
	Plain (3-Ton)	45K20			
	Drive (1; 2-Ton)	45K1		One Speed or Two Speed	
	Drive (3-Ton)	45K2		Hoist, Two Speed Trolley	
18	Axle:			(22 Ft. Lift)	955KG23
	1; 2-Ton	102K1		Any Other Lift - Consult Factory	
	3-Ton	102K2	28	Decal	YJL677
19	Spacer (1; 2-Ton Only)	200K1	29	Retaining Ring (3-Ton only)	H-5529
20	Retaining Ring:				
	1; 2-Ton	H-5528			
	3-Ton	H-5530			
21	Bearing:				
	1 & 2-Ton	500K4			
	3-Ton	500K5			

\*Not Illustrated

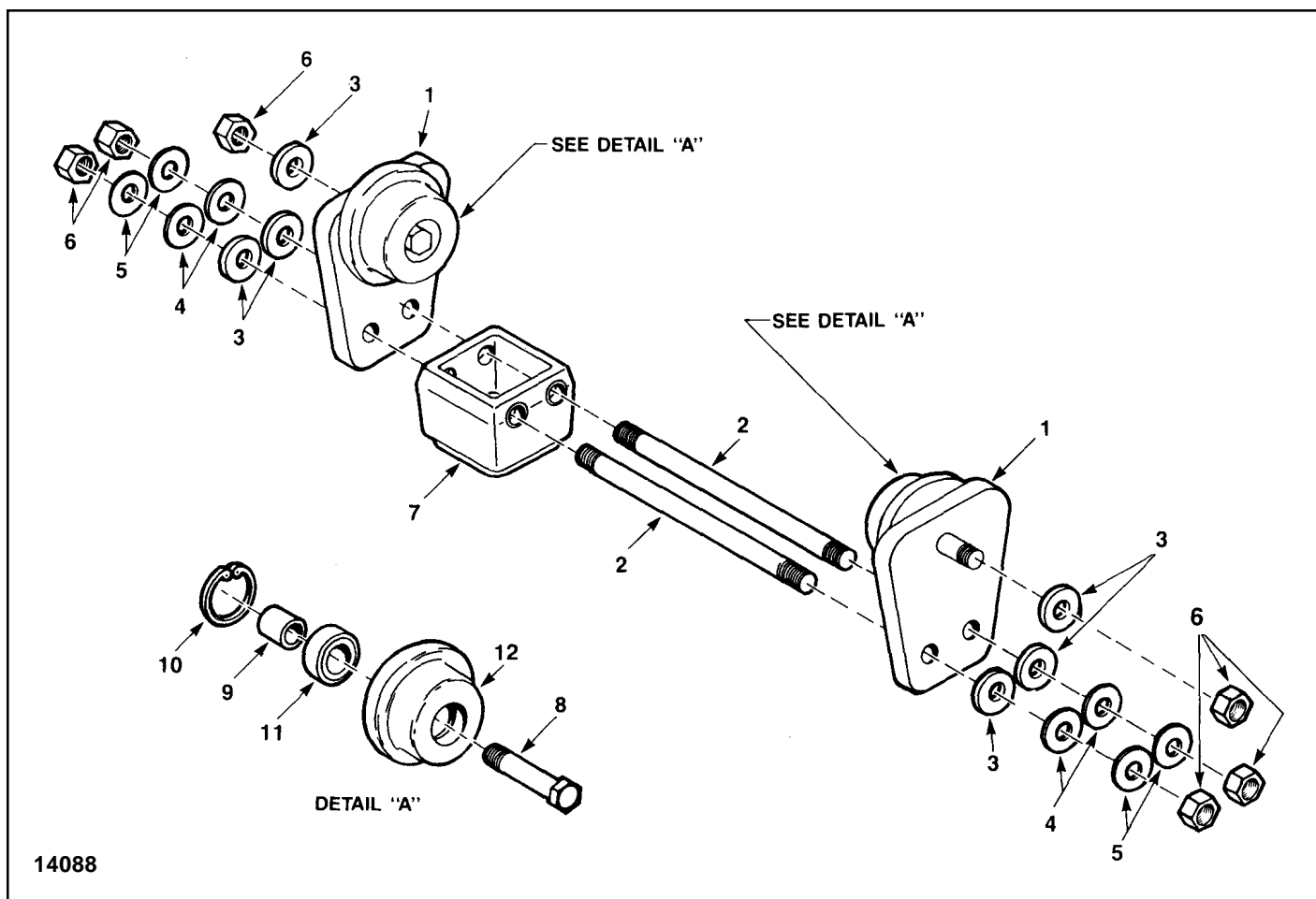


Figure 7-11. Plain Trolley  
(Two Wheel)

Index No.	Part Name	Part No.
1	Side Plate	5K56
2	Load Pin	103K1
3	Washer (1/8 Thick)	H-4211
4	Washer (.135 Thick)	H-4209
5	Washer (.075 Thick)	H-4210
6	Nut	H-3945
7	Suspension Box (Ref. See Figure 7-5A)	50J44A

Index No.	Part Name	Part No.
8	Axle	102K1
9	Spacer	200K1
10	Retaining Ring	H-5528
11	Bearing	500K4
12	Wheel	45K7

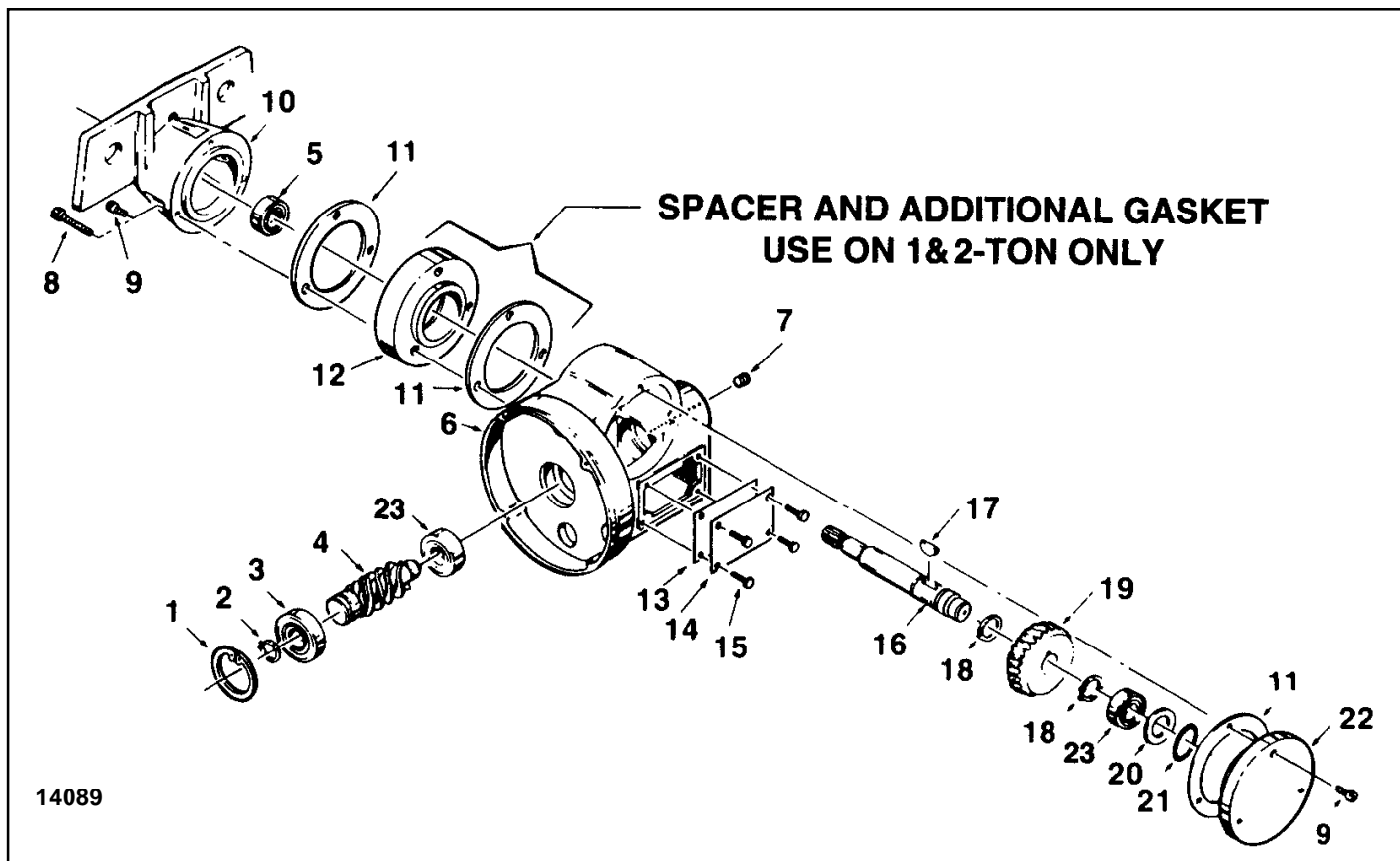


Figure 7-12. Trolley Transmission

Index No.	Part Name	Part No.
1	Retaining Ring	SK2658-6
2	Retaining Ring	H-5549
3	Bearing	JF-504-2
4	Worm:	
	35 FPM	485K21
	75 FPM	485K22
5	Bearing	500K3
6	Gear Housing	39K22
7	Plug	S-25-13
8	Screw (Used on 1 & 2-Ton only)	S-49-3
9	Screw	H-2215
10	Adapter Housing:	
	1 & 2-Ton	38K60A
	3-Ton	38K61A
11	Gasket	560K2
12	Spacer (Used on 1 & 2-Ton only)	201K13

Index No.	Part Name	Part No.
13	Gasket	560K3
14	Splice Plate	295K1
15	Screw	H-1009-P
16	Shaft:	
	1 & 2-Ton	100K13
	3-Ton	100K12
17	Woodruff Key	S-23-15
18	Retaining Ring	H-5527
19	Worm Gear:	
	35 FPM	487K4
	75 FPM	487K3
20	Shim Washer	202K1
21	"O" Ring	H-5609
22	End Cap	32K3
23	Bearing	500K7

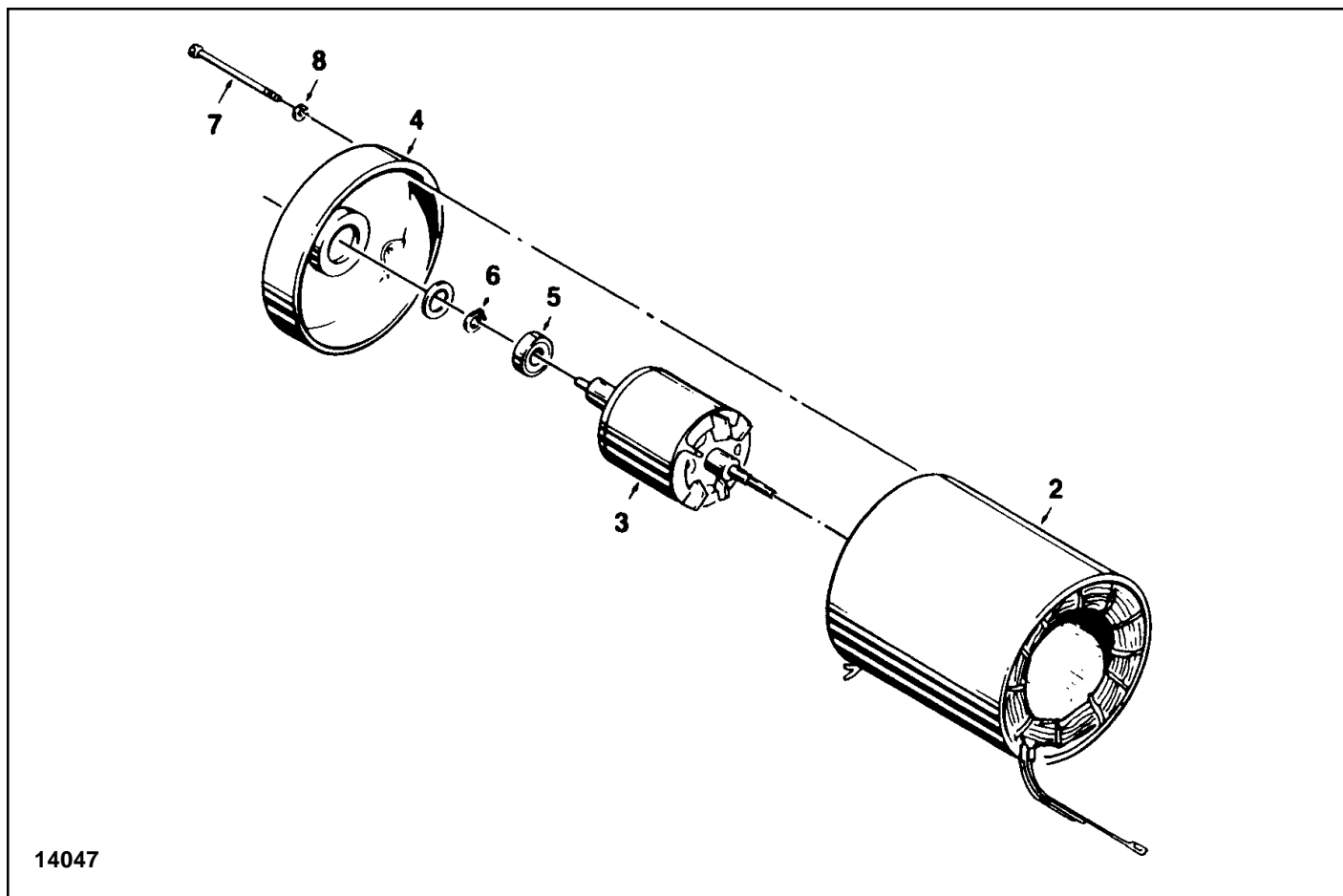
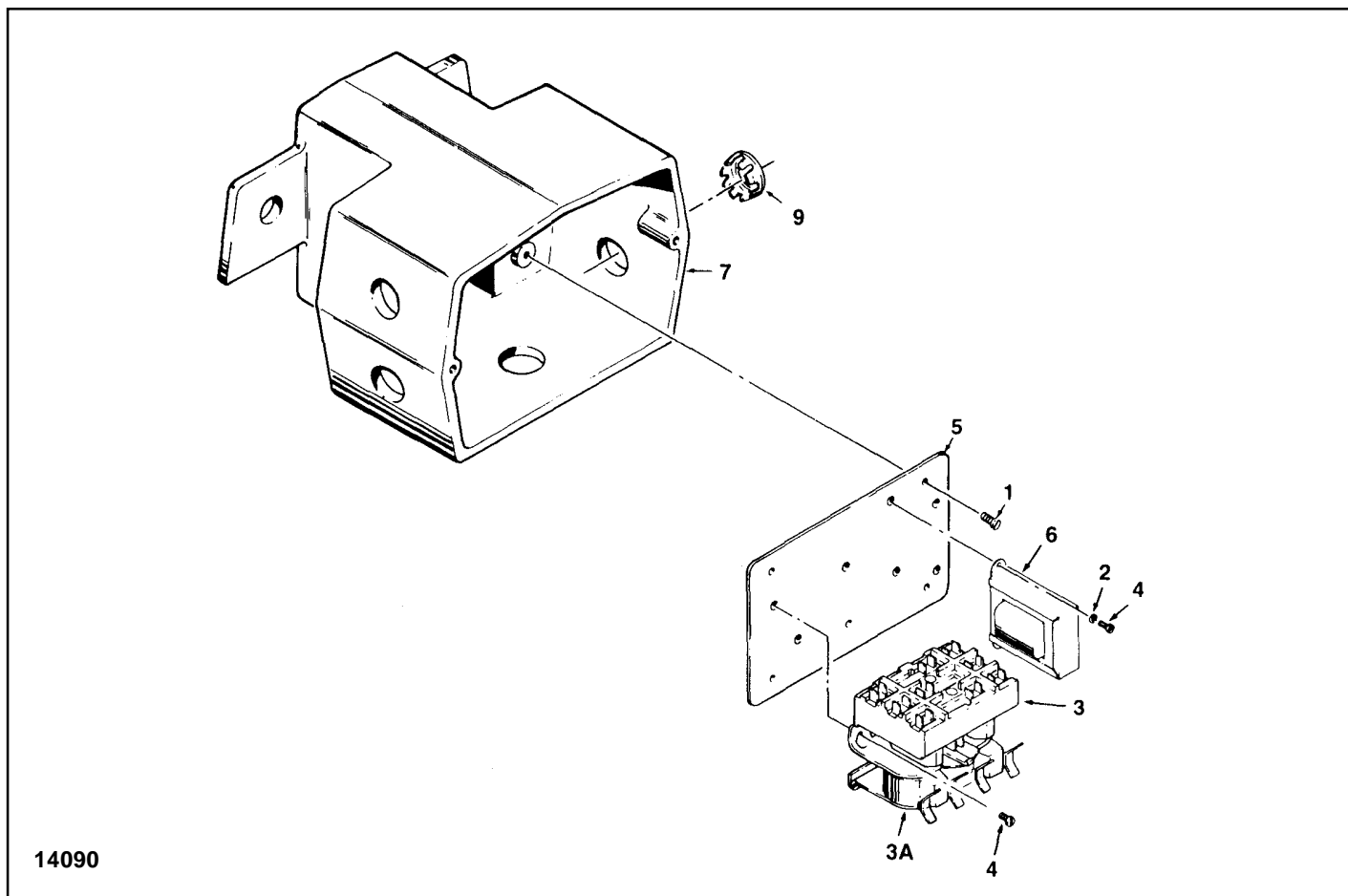


Figure 7-13. Trolley Motor Parts

Index No.	Part Name	Part No.
1	Motor Complete:	
	(Single Speed, 35 FPM, ¼ HP)	
	208, 230/460V, 3 PH	JL-863-1M
	575V, 3 PH	JL-863-5M
	(Single Speed, 75 FPM, ½ HP)	
	208, 230/460V, 3 PH	JL-863-2
	575V, 3 PH	JL-863-6
	(Two Speed,	
	35/12 FPM, ¼ HP)	JL-873-1M
	208, 230V, 3 PH	JL-873-5M
	460V, 3 PH	JL-873-9M
	575V, 3 PH	

Index No.	Part Name	Part No.
	(Two Speed,	
	75/25 FPM, ½ HP)	
	208, 230V, 3 PH	JL-873-2M
	460V, 3 PH	JL-873-6M
	575V, 3 PH	JL-873-10M
2	Stator (Not available separately)	*
3	Rotor & Shaft	*
4	End Shield	*
5	Bearing	*
6	Retaining Ring	*
7	Screw, Motor Mount	*
8	Lock Washer	*

\* For individual motor parts, contact your Yale Lift-Tech Distributor and supply complete motor nameplate data.

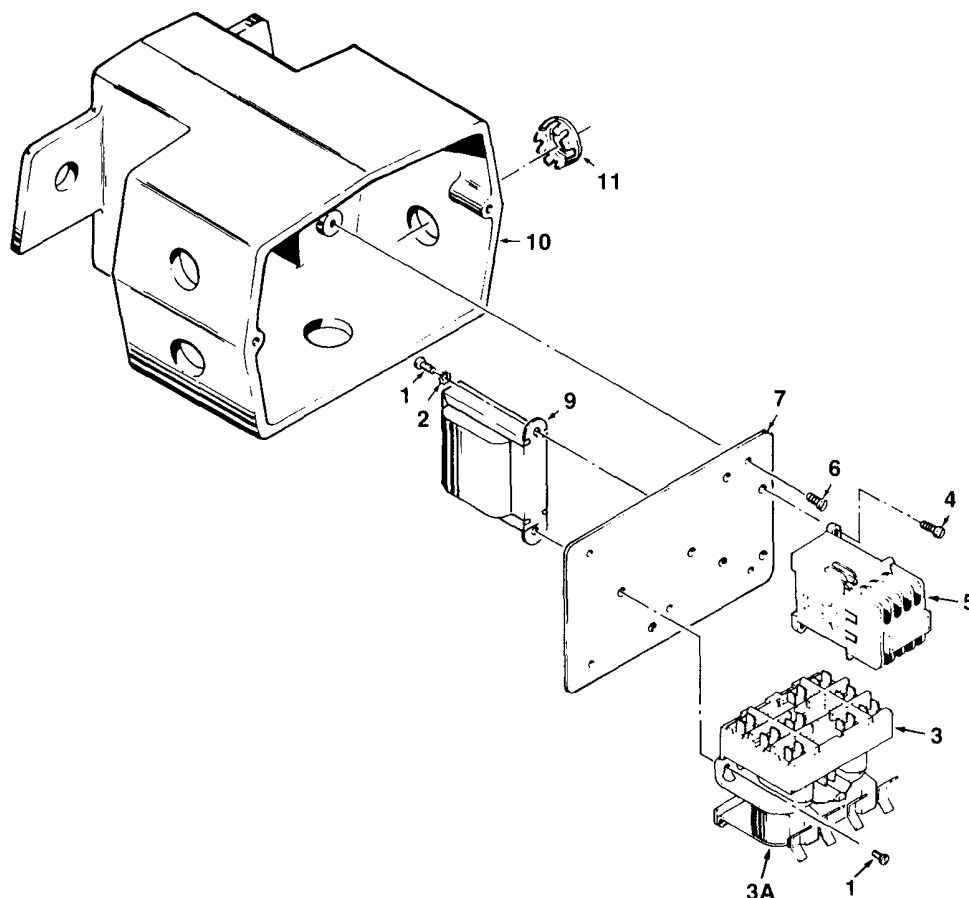


**Figure 7-14A. Trolley Control, Single Speed  
(Single Speed Trolley, Two Speed Hoist)**

Index No.	Part Name	Part No.
1	Screw	H-1005-P
2	Lock Washer	H-4158
3	Magnetic Reversing Switch: 24V Control	820K2
	115V Control	820K317
3A	Coil: 24V	820K301
	115V	820K302
3B*	Replacement Contact Kit (Includes stationary & movable contacts & springs for one magnetic reversing switch)	820K300
4	Screw	H-2751
5	Panel Plate	257K267

Index No.	Part Name	Part No.
6	Transformer: (10 VA) Pri. 208, 230/460V, Sec. 24V, 50/60 Hz	JF-821-3
	Pri. 208, 230/460V, Sec. 115V, 50/60 Hz	JF-821
	Pri. 575V, Sec. 24V, 50/60 Hz	JF-821-9
	Pri. 575V, Sec. 115V, 50/60 Hz	JF-821-2
7	Control Box: 1; 2-Ton	36K1
	3-Ton	36K2
8*	Jumper Wire	JF-940 7
9	Hole Plug	H-6286

\*Not Illustrated



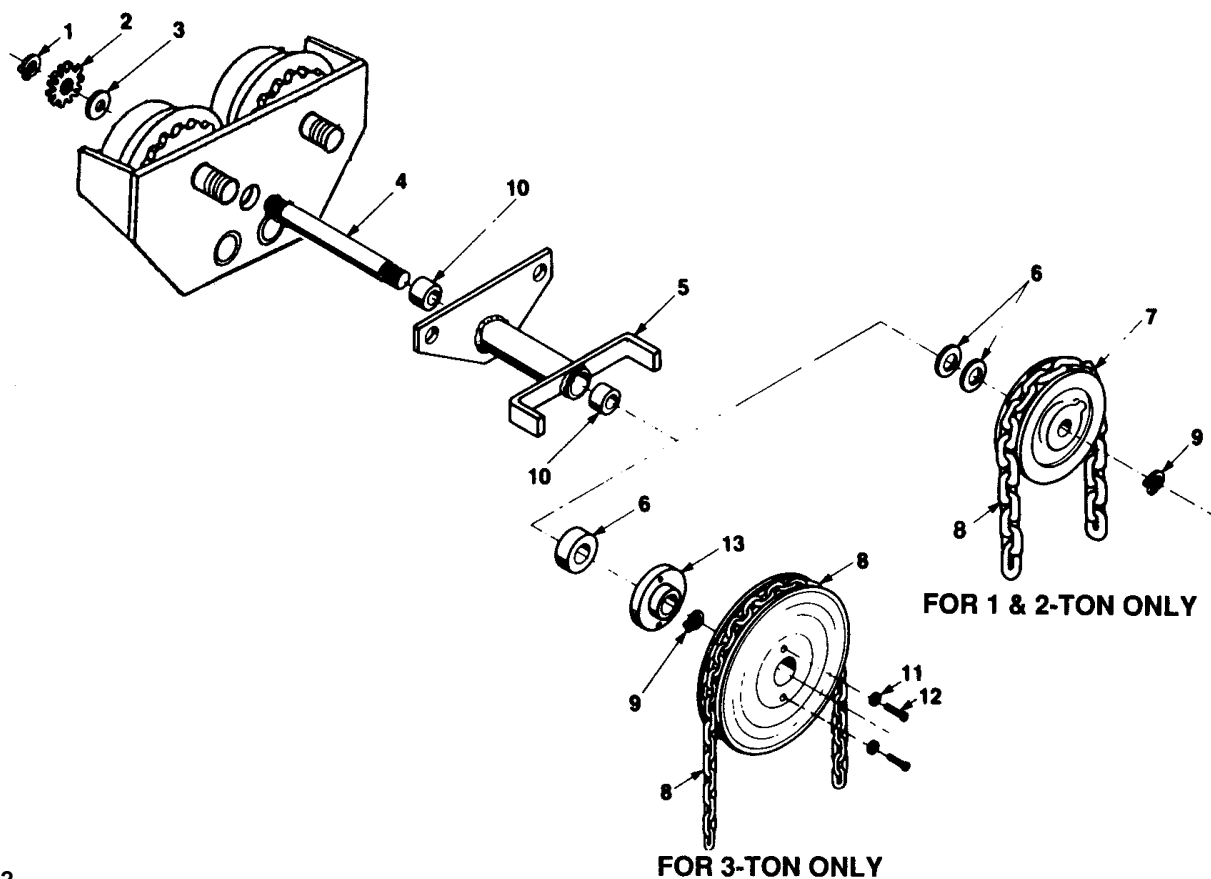
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**Figure 7-14B. Trolley Control, Two Speed  
(Two Speed Trolley with One or Two Speed Hoist)**

Index No.	Part Name	Part No.
1	Screw	H-2751
2	Lock Washer	H-4158
3	Magnetic Reversing Switch:	
	24V Control	820K2
	115V Control	820K317
3A	Coil:	
	24V	820K301
	115V	820K302
3B*	Replacement Contact Kit (Includes stationary and movable contacts and springs for one magnetic reversing switch)	820K300
4	Screw	H-1901
5	Speed Control Relay:	
	24V Control	820J3
	115V Control	820J4

Index No.	Part Name	Part No.
6	Screw	H-1005-P
7	Panel Plate	257K267
8*	Jumper Wire	JF-940 7
9	Transformer: (20 VA) Pri. 208, 230/460V, Sec. 24V, 50/60 Hz	JF-821-15
	Pri. 208, 230/460V, Sec. 115V, 50/60 Hz	JF-821-17
	Pri. 575V, Sec. 24V, 50/60 Hz	JF-821-16
	Pri. 575V, Sec. 115V, 50/60 Hz	JF-821-20
10	Control Box:	
	1; 2-Ton	36K1
	3-Ton	36K2
11	Hole Plug	H-6286

\*Not Illustrated



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Figure 7-16. Geared Trolley

Index No.	Part Name	Part No.
1	Retaining Ring	H-5501
2	Pinion	420K1
3	Spacer Bearing (1/16 Thick)	525K2
4	Gear Shaft	100K14
5	Sleeve and Adapter Assembly:	
	1 & 2-Ton	51KG1
	3-Ton	51KG2
6	Spacer Bearing (1/8 Thick)	525K1

Index No.	Part Name	Part No.
7	Hand Chain Wheel:	
	1 & 2-Ton	33K23
	3-Ton	33K13
8	Hand Chain (Specify length)	53A
9	Retaining Ring	H-5527
10	Sleeve Bushing	530K6
11	Washer	H-4138
12	Bolt	H-2304
13	Hub Adapter	51K4

**Note: When ordering parts always furnish Model and Catalog Number of Hoist and lift of hoist on which the parts are to be used.**

Parts for your hoist are available from your local authorized **Yale** repair station.  
For the location of your nearest repair station, write:

**IN USA**

**Yale•Lift-Tech**

P.O. Box 769

Muskegon, MI 49443-0769

Phone: **800 742-9269**

Fax: **800 742-9270**



**⚠ WARNING**

To prevent personal injury, do not use the equipment shown in this manual to lift, support or otherwise transport people, or to suspend unattended loads over people.

# WARRANTY

## WARRANTY AND LIMITATION OF REMEDY AND LIABILITY

A. Seller warrants that its products and parts, when shipped, and its work (including installation, construction and start-up), when performed, will meet applicable specifications, will be of good quality and will be free from defects in material and workmanship. All claims for defective products or parts under this warranty must be made in writing immediately upon discovery and in any event, within one (1) year from shipment of the applicable item unless Seller specifically assumes installation, construction or start-up responsibility. All claims for defective products or parts when Seller specifically assumes installation, construction or start-up responsibility and all claims for defective work must be made in writing immediately upon discovery and in any event, within one (1) year from completion of the applicable work by Seller, provided; however, all claims for defective products and parts made in writing no later than eighteen (18) months after shipment. Defective items must be held for Seller's inspection and returned to the original f.o.b. point upon request. THE FOREGOING IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES WHATSOEVER, EXPRESS, IMPLIED AND STATUTORY, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS.

B. Upon Buyer's submission of a claim as provided above and its substantiation, Seller shall at its option either (i) repair or replace its product, part or work at either the original f.o.b. point of delivery or at Seller's authorized service station nearest Buyer or (ii) refund an equitable portion of the purchase price.

C. This warranty is contingent upon Buyer's proper maintenance and care of Seller's products, and does not extend to normal wear and tear. Seller reserves the right to void warranty in event of Buyer's use of inappropriate materials in the course of repair or maintenance, or if Seller's products have been dismantled prior to submission to Seller for warranty inspection.

D. The foregoing is Seller's only obligation and Buyer's exclusive remedy for breach of warranty and is Buyer's exclusive remedy hereunder by way of breach of contract, tort, strict liability or otherwise. In no event shall Buyer be entitled to or Seller liable for incidental or consequential damages. Any action for breach of this agreement must be commenced within one (1) year after the cause of action has accrued.