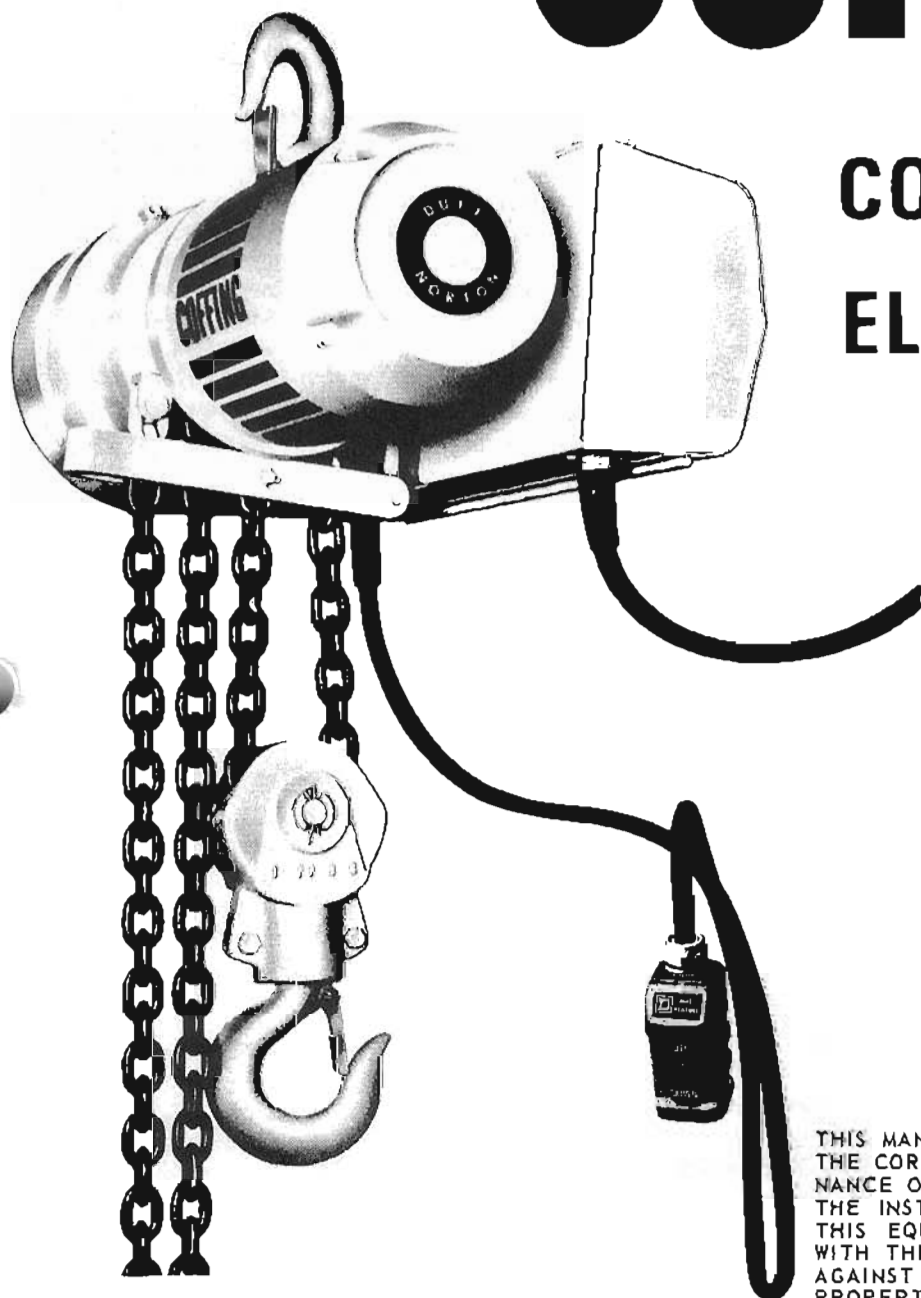


COFFING



COIL CHAIN ELECTRIC HOISTS

*OPERATING
AND
MAINTENANCE
INSTRUCTIONS
AND
PARTS LISTS
FOR
SR SERIES*

CAUTION - IMPORTANT

THIS MANUAL CONTAINS IMPORTANT INFORMATION FOR THE CORRECT INSTALLATION, OPERATION, AND MAINTENANCE OF THIS EQUIPMENT. ALL PERSONS INVOLVED IN THE INSTALLATION, OPERATION, OR 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.

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Duff-Norton

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WARRANTY STATEMENT

Unless otherwise stated herein, Seller will repair or replace, without charge f.o.b. point of shipment any parts proven to Seller's satisfaction and upon Seller's examination to have been defective in material or workmanship when furnished, provided claim is made within one year after date of shipment. Deterioration or wear occasioned by abuse, severe eccentric loading, overloading, chemical or abrasive action or excessive heat shall not constitute defects. Equipment and accessories not of the Seller's manufacture are warranted only to the extent that they are warranted by the manufacturers, and this warranty is applicable only if the defect was the result of normal use, application and service, and is void if the product or any part thereof was tampered with, repaired or altered by any person other than the factory or authorized repair station. THERE ARE NO OTHER WARRANTIES, EXPRESS, STATUTORY, OR IMPLIED, INCLUDING THAT OF MERCHANTABILITY AND OF FITNESS.

Authorization for return must be received from the Duff-Norton Company before returning any equipment for inspection or warranty repair.

SECTION 1 INTRODUCTION

1-1. GENERAL INFORMATION.

1-2. This manual provides necessary and proper information for persons engaged in the operation and maintenance of this Coffing SR Hoist. Any person(s) 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. We have anticipated, as best as we can, what is needed to keep your hoist properly maintained, serviced and repaired. 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. HOIST CONSTRUCTION.

1-5. This Coffing Hoist incorporates a strong, relatively lightweight housing that permits easy movement of the hoist between locations. The hoist is powered by an electric motor that drives a chain sheave by use of a transmission. Control is achieved from either a push-button or pendant rope control station. The push-button control station operates magnetic controllers for hoist operation. The pendant rope operates a reversing switch for hoist operation.

On the push-button, single-speed hoists, both the push button and the magnetic controller are mechanically interlocked to prevent shorting the circuit and causing major damage thereby. On the push-button, two-speed hoists the control elements are electrically interlocked only. On the pendant rope hoists it is not possible to engage both up and down circuits simultaneously because both sets of switch rotor contacts are mounted on a single spindle within the reversing switch.

1-6. A strain cable is built into the push-button cable and is securely anchored to the push-button station and the hoist housing. The push-button 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.

1-7. 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.

1-8. LEADING PARTICULARS.

1-9. 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 are some leading particulars with which the operator should be familiar.

TABLE 1. LEADING PARTICULARS

MODEL NUMBER	RATED LOAD (POUNDS)	LIFT SPEED (FT PER MIN.)	MOTOR HP
S-1000-36	1000	36	1-1/2
S-2000-18	2000	18	1-1/2
S-2000-36	2000	36	2
SD-4000-9	4000	9	1-1/2
S-4000-18	4000	18	2
SD-6000-9	6000	9	2
SR-1000-36	1000	36	1-1/2
SR-2000-18	2000	18	1-1/2
SR-2000-36	2000	36	2
SRD-4000-9	4000	9	1-1/2
SR-4000-18	4000	18	2
SRD-6000-9	6000	9	2

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 purposes.

a. Ensure that the facility power supply is adequate to furnish voltage within 10 percent of that specified for the hoist. Also, that the facility power is properly fused to protect the hoist from power surges.

b. Ensure that no live part of the electrical system, either facility or hoist, will be exposed to accidental contact under normal operating conditions.

c. Ensure that the hoist is effectively grounded. If in doubt, reference National Electrical Code ANSI C1.

d. 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.

e. Ensure that there is adequate working space to permit hoist operation in the hanging position only. Normal operation should not require pulling or rugging around corners or obstructions. Also, there must be adequate space to permit the operator to stand clear of the load and adjacent structures.

f. 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.

g. 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. On Hook Suspended Hoists secure the hoist to a suitable supporting member by use of the top hook. Make sure that the hook latch is closed. Apply a small amount of lubricate or equivalent between the

hook and supporting member.

On Trolley Mounted Hoists, the trolley should be properly mounted to allow for clearance between trolley wheels and beam flange to avoid binding. Beam should be free of any obstructions, dirt or grease, providing a free and level plane of movement. See figures 2-1 and 2-2.

2-6. Make only temporary connections at the power source. Push the UP button or pull the UP control rope and observe the direction of bottom hook movement. 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 or rope 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.**

2-7. After electrical connections are completed, secure all protective covers over exposed wiring. Test the hoist operation as specified below prior to release for use.

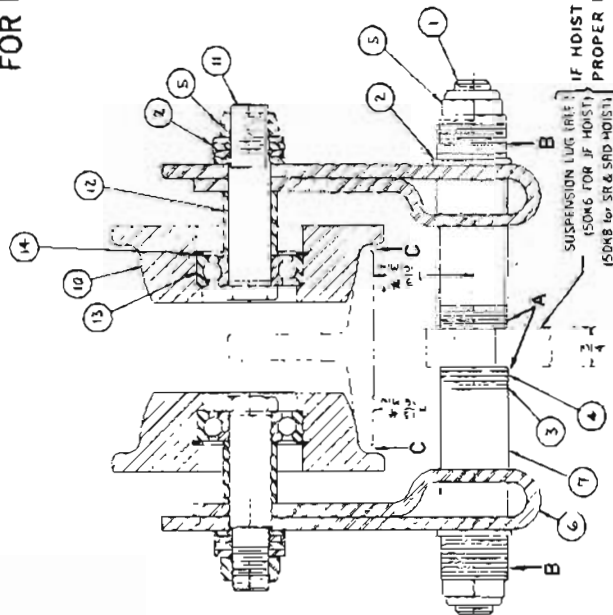
2-8. TESTING.

2-9. Before placing hoist in operation, check for proper limit switch operation. This can be done by operating the hoist limit yoke (25, figure 7-6) manually. While the hoist is running in an unloaded condition, pull down on the looped end of the limit yoke to stop the hook when in the UP direction and push up on the yoke to stop the hook when operating in the DOWN direction. The hook should stop immediately. Overtravel in either direction will cause the hoist to reverse and move the load to a safe position. If manual operation of the limit yoke stops hook travel, use the control button or rope to check for limit switch automatic operation by running the hook in each direction until the limit switches stop movement. If your hoist is two-speed, check limit switch operations at both speeds.

2-10. Attach a light load to the hook and check the hoist through a few lifting and lowering cycles. Check for hook drift. The hook shall not drift more than one inch. If brake operation is normal with a light load, test the hoist for operation with rated load, and then with 125 percent of rated load. The hoist shall operate smoothly and the brake shall prevent hook drift in excess of one inch at both rated load and 125 percent of rated load.

CT — 40P TROLLEY (1/4 - 2 Ton) FOR USE WITH COFFING JF, S, SD, SR AND SRD HOISTS

This CT Series Trolley can be mounted on standard "I" beams from 6 to 18 inches. This is accomplished by properly locating the spacer washers as shown in Figure 1. The normal placement of washers is given in Chart 2. "I" beam manufacturing tolerances may require slight changes to recommended washer distribution. See Chart 1 for identification of part names and numbers.



*DIMENSIONS SHOWN FOR 6" I BEAM @ 12.5 TON

Figure 1

MAINTENANCE.

Trolley should be inspected periodically for evidence of excess wear or overload. Parts should be replaced as required.

LUBRICATION.

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

NOTE.

This trolley can be mounted on radius as small as 5 feet. Slightly increased spacing is required when the trolley is mounted on curved beams. The radius will determine the amount of increase.

^oAmerican Standard I Beam

CHART 1

SYMBOL NO.	PART NAME	PART NUMBER
1	Load Pin	103K1
2	Washer (1/8" Thick)	H-4211
3	Washer (.135 Thick)	H-4209
4	Washer (.075 Thick)	H-4210
5	Nut	H-3945
6	Side Plate	5K1
7	Sleeve	201K1
10	Wheel	45K7
11	Axle	102K1
12	Spacer	200K1
13	Bearing	500K4
14	Retaining Ring	H-5528

TROLLEY I BEAM ADJUSTMENT DATA

CHART 2

I BEAM # SIZE & WEIGHT	FLANGE WIDTH	POINT A WASHERS BETWEEN SUSP. LUG & SLEEVE .135 THICK (.075 THICK)		POINT B WASHERS BETWEEN SIDEPLATE & NUT .135 THICK (.075 THICK)		ACT. SPACING SUSP. LUG TO SLEEVE		POINT C CLEARANCE WHEEL TO BEAM
		2	3	4	5	8	5	
6" - 12.5*	3.330	2	0	0	8	.270	.125	
6" - 17.25*	3.555	3	0	0	7	.405	.143	
8" - 18.4*	4.000	4	1	1	6	.615	.135	
8" - 23.0*	4.171	4	2	2	6	.690	.125	
10" - 25.4*	4.660	7	0	0	3	.945	.135	
10" - 35.0*	4.984	8	0	0	2	1.080	.128	
12" - 31.8*	5.000	6	4	4	4	1.100	.120	
12" - 35.0*	5.078	8	1	1	2	1.156	.136	
15" - 42.9*	5.500	10	0	0	5	1.350	.120	
15" - 50.0*	5.640	10	1	1	4	1.425	.125	
18" - 54.7*	6.000	9	5	5	1	1.595	.117	
18" - 70.0*	6.250	10	5	5	0	1.725	.121	

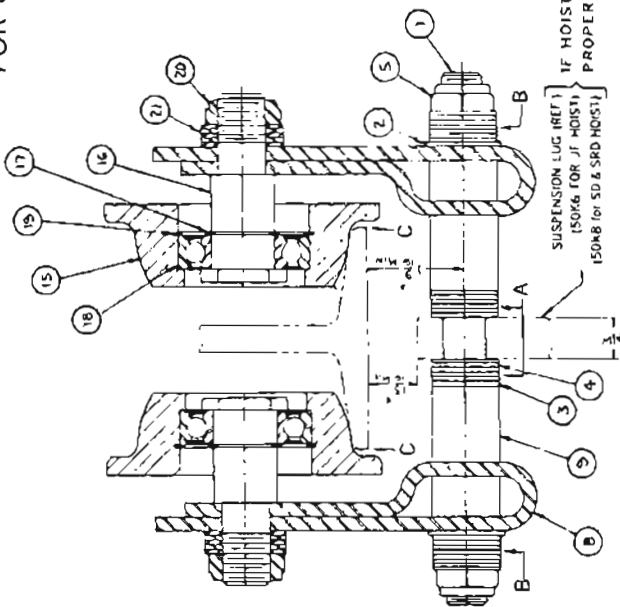
NOTE:

It may be necessary to change the number of adjusting washers to suit specific installations.

FIGURE 2-1. 1/4 - 2 TON TROLLEY INSTALLATION

CT - 60P TROLLEY (3 Ton) FOR USE WITH COFFING JF, S, SD, SR AND SRD HOISTS

This CT Series Trolley can be mounted on standard "I" beams from 6 to 18 inches. This is accomplished by properly locating the spacer washers as shown in Figure 1. The normal placement of washers is given in Chart 2. "I" beam manufacturing tolerances may require slight changes to recommended washer distribution. See Chart 1 for identification of part names and numbers.



DIMENSIONS SHOWN FOR 6" I BEAM @ 12.5 BEAM

Figure 1

MAINTENANCE.

Trolley should be inspected periodically for evidence of excess wear or overload. Parts should be replaced as required.

LUBRICATION.

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

NOTE.

This trolley can be mounted on radius as small as 5 feet. Slightly increased spacing is required when the trolley is mounted on curved beams. The radius will determine the amount of increase.

^oAmerican Standard I Beam

CHART 1

SYMBOL NO.	PART NAME	PART NUMBER
1	Load Pin	103K1
2	Washer (1/4" Thick)	H-4211
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4	Washer (.075 Thick)	H-4210
5	Nut	H-3945
8	Side Plate	5K2
9	Sleeve	201K2
15	Wheel	45K2
16	Axle	102K2
17	Retaining Ring	H-5530
18	Bearing	500K5
19	Retaining Ring	H-5529
20	Nut	H-3946
21	Washer	H-4212

TROLLEY I BEAM ADJUSTMENT DATA

CHART 2

I BEAM # SIZE & WEIGHT	FLANGE WIDTH	POINT A WASHERS BETWEEN SUSP. LUG & SLEEVE .135 THICK (.075 THICK)		POINT B WASHERS BETWEEN SIDEPLATE & HOIST 1/32 THICK (.075 THICK)		ACT. SPACING SUSP. LUG TO SLEEVE	POINT C CLEARANCE WHEEL TO BEAM
		0	1	2	3		
6"-12.5*	3.330	2	0	8	5	.270	.125
6"-17.25*	3.565	3	0	7	5	.405	.143
8"-18.4*	4.000	4	1	6	4	.615	.135
8"-23.0*	4.171	4	2	6	3	.690	.125
10"-25.4*	4.660	7	0	3	5	.945	.135
10"-35.0*	4.944	8	0	2	5	1.080	.128
12"-31.8*	5.000	6	4	4	1	1.100	.120
12"-35.0*	5.078	8	1	2	4	1.156	.136
15"-42.9*	5.500	10	0	0	5	1.350	.120
15"-50.0*	5.640	10	1	0	4	1.425	.125
18"-54.7*	6.000	9	5	1	0	1.595	.117
18"-70.0*	6.250	10	5	0	0	1.725	.121

NOTE:

It may be necessary to change the number of adjusting washers to suit specific installations.

FIGURE 2-2. 3 TON TROLLEY INSTALLATION

SECTION III OPERATION

3-1. SAFETY CONSIDERATIONS.

3-2. This hoist is designed for proper operation within the limits of its rated capacity. This hoist has features designed to minimize the potential for injury due to the failure of the hoist itself. However, here are some additional pointers which should be followed in order to ensure proper operation.

- a. Do not overload the hoist.
- b. Do not make extreme side pulls with the hoist. On trolley mounted hoists always position hoist 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. Be sure there are no twists or kinks in the load chain as it travels into the hoist housing. This condition must be constantly checked on the double chained hoists because it is possible for the load block to be "capsized" or turned over one or more times.
- e. Before raising a load, always check to see that it is held securely in the hook or sling chains, etc. Raise the load only until the load chain is taut and then double check the rigging before continuing to raise the load. Never use the hoist load chain in sling fashion around the load.
- f. Make sure that the slings and other rigging have sufficient capacity to support the load, and are in good condition.
- g. **DO NOT STAND OR WALK BENEATH A LOAD.** Do not move the load in such a manner as to endanger personnel.
- h. Never leave a suspended load unattended.
- i. Do not lower the load into areas where visibility is obscured unless someone else is guiding the operation.
- j. Use common sense at all times when operating a hoist.
- k. **DO NOT USE THE HOIST TO LIFT, SUPPORT OR TRANSPORT HUMANS.**

3-3. OPERATION.

3-4. The hoist should be operated by qualified per-

sonnel 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 chain travel into the sheave. Avoid excessive inching and quick reversals, as these can cause 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 of a suspect hoist until the proper inspection/repair has been made.

3-5. LOWERING WITHOUT POWER.

CAUTION: Do not allow the load to descend rapidly. This causes the motor to race and serious damage may result. Use several quick releases instead of holding brake open continuously. Do not exceed normal lowering speed.

3-6. If the power fails with a load suspended, the hoist will automatically stop and hold the load suspended. In an emergency, the load can be lowered without power. On the pendant rope models, pull the DOWN control rope and lower the load in short increments (approximately 3 inches), each time releasing the pull rope to allow the brake to reset.

3-7. On the push-button shoe brake models, disconnect the hoist from the power source and open the electrical cover. Then carefully push down on the brake solenoid plunger with brief intermittent pushes. Lower the load in short increments (approximately 3 inches).

3-8. On the push-button-disc brake models, disconnect the hoist from the power source and remove screws (11, Figure 7-5B), washers (12) and cover (10). Pull on the back of armature plate assembly (26) with brief intermittent pulls. Lower the load in short increments (approximately 3 inches).

SECTION IV MAINTENANCE, REPAIR, AND LUBRICATION

4-1. BRAKE ADJUSTMENT.

4-2. When properly adjusted the brake will release promptly when energized, and will smoothly stop and securely hold any load up to the rated capacity of the hoist. If the hoist develops either: (a) undesirable overtravel after the push button or control rope is released (this condition is most noticeable in the lowering direction), or (b) hesitates to move the load promptly when the push button or control rope is actuated (this condition is most noticeable in the lifting direction) the brake should be adjusted.

CAUTION: On rope controlled (pendant rope) models it is important that correct timing be maintained. The motor must be energized before the brake releases for proper load control. After any brake adjustment, check hoist operation per paragraph 2-8.

4-3. To adjust brakes on the pendant rope model proceed as follows:

a. Remove any load and disconnect the hoist from power supply.

b. Inspect brake linings for excessive wear. Linings worn to 0.06 inch or less should be replaced before proceeding.

c. Loosen the locking nuts (A, figure 4-1) and back off the brake adjusting screws (B).

d. Remove the controller cover.

e. Manually turn the controller in either direction until the rotor contacts just engage the stationary finger contacts. With the controller maintained in this position, adjust each brake adjusting screw (B) until the screw just engages the brake release cam (D). Tighten the locking nuts (A) being careful not to move the brake adjusting screws (B).

f. Lubricate the contacting surfaces of the brake release cam (D) and the brake adjusting screws (B) with Molykote "G" or lubriplate.

g. Reconnect the hoist to the power supply and check brake operation per paragraph 2-8.

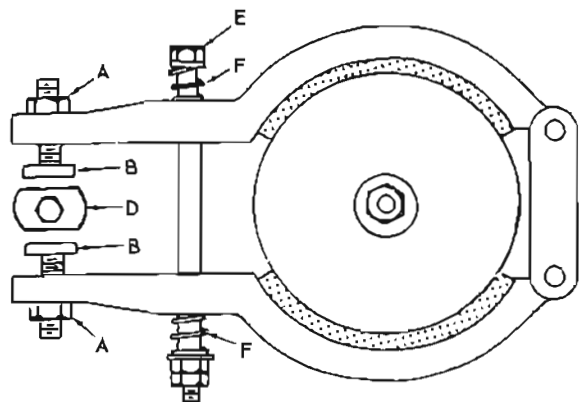


FIGURE 4-1. BRAKE ADJUSTMENT—PENDANT ROPE MODEL

h. If greater braking is desired, it will be necessary to tighten the brake spring bolt (E) approximately one-half turn at a time. After any adjustment of the brake spring bolt check to see that the brake springs (F) are not compressed to solid height. If the desired braking is not achieved before the brake springs (F) are compressed to solid height, either the brake linings need replacing or the brake arm assembly is worn or distorted.

i. The brake adjustment is now completed. Reinstall controller cover.

4-4. To adjust brakes on the push-button shoe brake model, proceed as follows:

a. Remove any load and disconnect the hoist from power supply.

b. Remove the brake cover and open the control enclosure.

c. Inspect brake linings for excessive wear. Linings worn to 0.06 inch or less should be replaced before proceeding.

d. Loosen the locking nuts (A, figure 4-2) and back off the brake adjusting screws (B) until the solenoid gap diminishes to approximately 1/4 inch.

e. Establish the solenoid gap at 7/16 inch by inserting a 7/16-inch block or gage between the solenoid plunger and solenoid frame.

f. Adjust the brake adjusting screws (B) individually until each just touches the corner of the canted brake release cam (D) and tends to lift the solenoid plunger off the 7/16-inch block or gage. Tighten the locking nuts (A) being careful not to move the brake adjusting screws (B). After this adjustment, the clearance between brake adjusting screws (B) and horizontal cam (D) should be 0.050 inch minimum.

g. With the 7/16-inch block or gage removed, manually depress the solenoid plunger until the plunger seats on the solenoid frame. The linkage

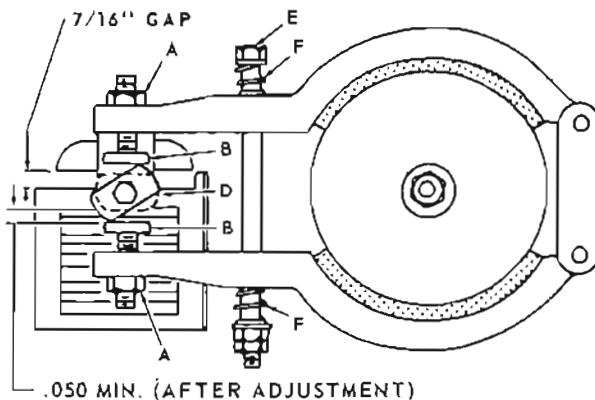


FIGURE 4-2. BRAKE ADJUSTMENT—PUSH BUTTON MODEL (WITH SHOE BRAKE)

must be free and not binding.

h. Lubricate all joints in the linkage with Molykote "G" or lubriplate, including the contacting surfaces of the brake release cams (D) and the brake adjusting screws (B). Do not under any circumstances lubricate the solenoid plunger.

i. With the solenoid plunger manually depressed, manually rotate the brake drum. The brake linings may drag slightly at the heels.

j. Manually depress the solenoid plunger again and observe the action of the brake linings to be sure that they are opening both equally and simultaneously.

k. Reconnect the hoist to the power supply and check brake operation per paragraph 2-8. The solenoid plunger must seat with a "snap" and release promptly when the push button is released.

CAUTION: Disconnect the hoist from power source before performing step l.

l. If greater braking is desired, it will be necessary to tighten the brake spring bolt (E) approximately one-half turn at a time. After any adjustment of the brake spring bolt (E) manually depress the solenoid plunger until the plunger seats firmly on the solenoid frame and check to see that the brake springs (F) are not compressed to solid height. If the desired braking is not achieved before the brake springs (F) are compressed to solid height, either the brake linings need replacing or the brake arm assembly is worn or distorted.

m. The brake adjustment is now complete. Reconnect power, reinstall brake cover, and close the control enclosure.

4-5. To adjust brakes on the push-button disc brake model, proceed as follows:

a. Remove any load and disconnect hoist from power supply.

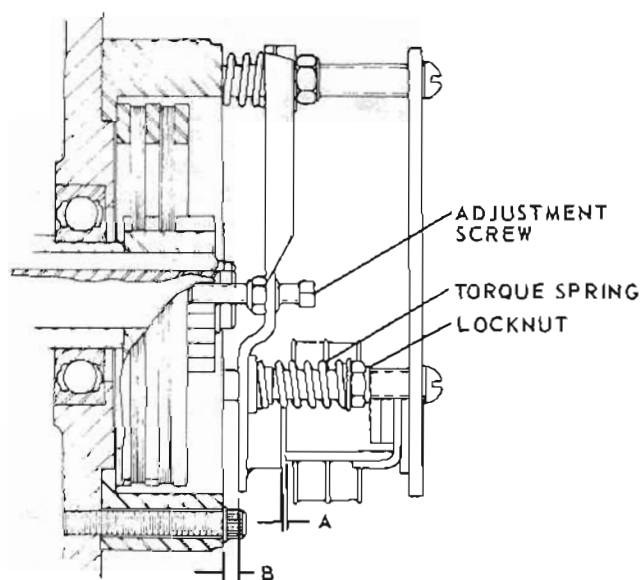


FIGURE 4-3. BRAKE ADJUSTMENT--PUSH BUTTON MODEL (WITH DISC BRAKE)

b. Remove screws (11, figure 7-5B), washers (12) and brake cover (10).

c. Inspect friction discs for excessive wear. The discs should be replaced when either disc has worn 1/16 inch (one-third of original thickness).

d. Turn the two adjustment screws shown in figure 4-3 until magnetic gap A reads 0.040 to 0.045 inch at narrowest gap.

e. The brake adjustment above should not cause gap B to close. Gap B represents the clearance between armature plate (26, figure 7-5B) and bracket (16). If the proper setting for gap A can not be obtained without closing gap B, then it is probable that the friction discs need replacing.

f. The brake adjustment is now complete. Reinstall cover, washers and screws; reconnect power.

4-6. REMOVAL AND REPLACEMENT OF TOP HOOK OR SUSPENSION LUG.

4-7. The top hook or suspension lug is secured to the hoist by the two sheave housings (31 and 33, figure 7-6). To remove the top hook or suspension lug, proceed as follows:

a. SR and SRD Shoe Brake Models.

(1) Disconnect hoist from power supply. Detach hoist from its mounting and move it to safe work area.

(2) Unlatch the control box cover (9, figure 7-1) and swing the cover down to fully open position.

(3) Remove brake cover (1, figure 7-1).

(4) Remove two screws, lockwashers and nuts (6, 7, and 8, figure 7-1) that secures the control box to the brake end back plate (4).

(5) Remove the two round head screws (not shown) on the extreme right hand side of the control box that secures the control box to the hoist. Do not remove any other control box mounting hardware since the control box will be subsequently moved clear together with the motor.

(6) Disconnect the limit yoke and arm assembly (25, figure 7-6) by removing pin (40).

(7) Remove the four motor mounting bolts (34, figure 7-1).

(8) Slide the motor and control box to the left. It is not necessary to disconnect any more wiring.

(9) Remove the four bolts (35, figure 7-6) that hold the two sheave housings (31 and 33) together.

(10) Remove the top hook or suspension lug.

b. SR and SRD Disc Brake Push Button Models.

(1) Disconnect hoist from power supply.

(2) Move hoist to safe work area and turn upside down.

(3) Remove two brake cover screws, lockwashers and brake cover (10, 11, and 12, figure 7-5B).

(4) Remove brake bracket screws and lockwashers (8 and 28, figure 7-5B). This will allow

complete brake assembly to be removed from the hoist with the brake interconnection cable still attached.

(5) Remove the two round head screws that mount the control box on the hoist. These two screws are located on the extreme right hand side of the control box panel.

(6) Disconnect the limit yoke and arm assembly by removing pin, flat washer, and cotter pin (40, 41, and 42, figure 7-6).

(7) Remove the four motor mounting bolts. (34, figure 7-1).

(8) Slide motor and control box assembly to the left. Note that it is not necessary to disconnect any wiring.

(9) Remove the four bolts (35, figure 7-6) that hold the housing castings together. The top hook or suspension lug can now be removed or replaced.

c. S and SD Pendant Rope Models.

(1) Disconnect hoist from power supply.

(2) Move hoist to safe work area and turn upside down.

(3) Remove cotter pin and flat washer. (3 and 4, figure 7-9B).

(4) Remove two reversing switch control cover screws (17, figure 7-9B) and remove control cover.

(5) Remove reversing switch assembly away from hoist with conduit attached.

(6) Remove the four motor mounting bolts (34, figure 7-1).

(7) Slide motor and reversing switch assembly to the left. Note that it is not necessary to disconnect any wiring.

(8) Remove the four bolts (35, figure 7-6) that hold the housing castings together. The top hook or suspension lug can now be removed or replaced.

d. SR and SRD Pendant Rope Models.

(1) Disconnect hoist from power supply.

(2) Move hoist to safe work area and turn upside down.

(3) Remove cotter pin, flat washer, and connecting pin (1, 3, and 4, figure 7-9A) that connects limit yoke assembly to reversing switch bracket.

(4) Remove two screws and lockwashers (9 and 10, figure 7-9A) that mount reversing switch to hoist. These two screws are located on right hand side of reversing switch base plate.

(5) Remove reversing switch assembly away from hoist with interconnection cable attached.

(6) Remove the four motor mounting bolts (34, figure 7-1).

(7) Slide motor and reversing switch assembly to the left. Note that it is not necessary to disconnect any wiring.

(8) Remove the four bolts (35, figure 7-6)

that hold the housing castings together. The top hook or suspension lug can now be removed or replaced.

4-8. To install the top hook or suspension lug, reverse the removal procedures with the following additions:

a. Inspect the sheave housings (31 and 33, figure 7-6) for dirt, cracks, or excessive wear.

b. Apply a light coat of Coffing Gear Lubricant No. H7577, or equivalent, to the mating surfaces of hook or suspension lug and sheave housings.

c. Replace any worn gasket, pin, or hardware as required.

d. Perform an operational test upon completion of reassembly.

4-9. INSTALLATION OF NEW CHAIN IN HOIST WITH OLD CHAIN IN HOIST.

4-10. To install a new chain in the hoist with a chain already installed, proceed as follows:

a. Raise the load hook assembly to within a few inches of its top limit.

b. Disconnect the hoist from the power supply. Install an "Out-of-Order" tag on the hoist.

c. On single chain models, remove the load hook assembly from the old chain.

On double chain models, remove load block assembly and detach end of chain by disconnecting at the limit yoke pivot pin (28, figure 7-6).

d. Make a "C"-shaped link to join the end links of both the new and old chains. See figure 4-4. BE SURE the welds of the upstanding links of the new

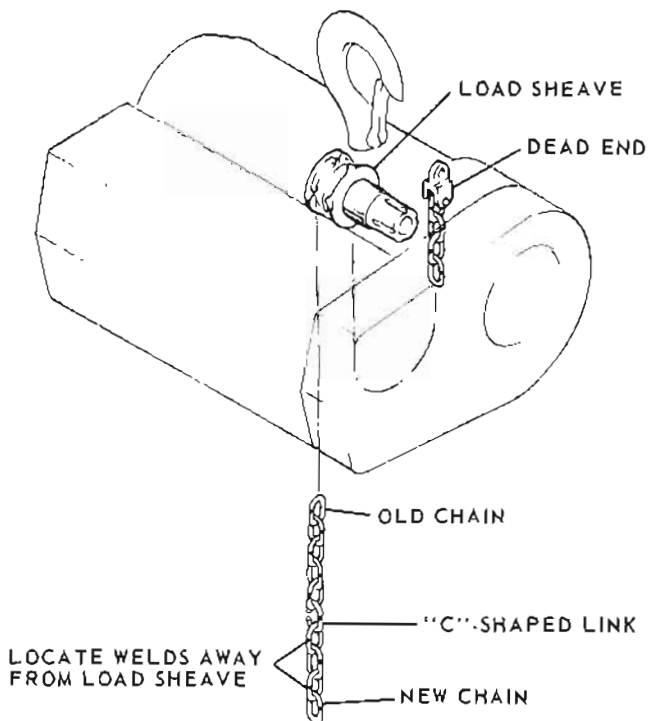


FIGURE 4-4. CHAIN INSTALLATION

chain are out away from the load sheave, and that proper orientation is observed for attachment of the dead-end in step h. below.

e. Reconnect the hoist to power supply.

f. Carefully jog the UP button or pendant rope and run the joined pieces of chain into the hoist until about 12 inches of the new chain emerges from the other side.

g. Disconnect the hoist from the power supply.

h. Remove both the "C"-shaped link and the old chain from the dead-end. Fasten the end link of the new chain to the clevis of the dead-end, observing proper orientation of the dead-end of the chain when secured. It is of utmost importance that twists in the chain are avoided.

i. On single-chained hoists attach the bottom hook. Apply a light coat of Coffing Gear Lubricant No. H-7577, or equivalent, to the mating surfaces of hook and swivel halves.

j. On double-chained hoists, feed the chain through the load block and fasten the end of the chain to the chain shedder at the limit yoke pivot pin. BE SURE THAT THERE ARE NO TWISTS IN THE CHAIN.

k. Lubricate the new chain and perform an operational test of the hoist. Remove the "Out-of-Order" tag.

4-11. INSTALLATION OF NEW CHAIN IN HOIST WITH NO CHAIN IN HOIST.

4-12. To install a new chain in the hoist with no chain already in the hoist, proceed as follows:

Shoe Brake Models

a. Disconnect the hoist from the power supply. Install an "Out-of-Order" tag on the hoist.

b. Remove the brake end cover. Release the brake by either depressing the brake solenoid plunger or by blocking the brake arm in the open position.

c. If possible turn the hoist upside down.

d. Start the chain into the hoist on the side of the load sheave closest to the hoist control. Apply a wrench to the lock nut (23, figure 7-5A) which secures the brake drum and rotate the drum in a counterclockwise direction. This will rotate the sheave and feed the chain through the hoist. Make sure that the first link is upstanding or perpendicular to the axis of the hoist, with the chain weld out away from the load sheave. The second link must fit flat in the pocket of the load sheave.

e. Continue turning the brake drum until about 12 inches of the chain emerges from the other side.

f. Release the solenoid plunger or unblock the brake arms.

g. Fasten the end link of the chain to the clevis of the dead-end, observing proper orientation of the dead-end of the chain when secured. It is of utmost importance that twists in the chain are avoided.

h. On single-chained hoists attach the bumper spring and bottom hook. Apply a light coat of Coffing

Gear Lubricant No. H-7577, or equivalent, to the mating surfaces of the hook and swivel halves.

i. On double-chained hoists, feed the chain through the load block and fasten the end of the chain to the chain shedder at the limit yoke pivot pin. BE SURE THAT THERE ARE NO TWISTS IN THE CHAIN.

j. Lubricate the chain and perform an operational test of the hoist. Remove the "Out-of-Order" tag.

Disc Brake Models

a. Disconnect hoist from power supply. Install an "Out of Order" tag on the hoist.

b. Move hoist to a safe work area and turn upside down.

c. Remove two brake cover screws and washers and remove brake cover (10, 11, and 12, figure 7-5B). Remove two brake bracket screws and washers (8 and 28, figure 7-5B). This will allow complete brake assembly to be removed from the hoist with the brake interconnection cable still attached.

d. Start the new chain into the hoist on the side of the load sheave closest to hoist control. Make sure the first link is upstanding or perpendicular to the axis of the hoist, with the chain weld out away from the load sheave. The second link should lie flat in the pocket of the load sheave. Rotate the brake hub pinion in a counterclockwise direction. This will rotate the load sheave and feed the chain through the hoist.

e. Turn the brake hub pinion until about 12 inches of the new chain comes out of the hoist. Fasten this end of the chain to the dead-end clevis, observing proper orientation of the dead-end of the chain when secured and avoiding twists in the chain. Reassemble the brake assembly and brake cover properly.

f. Attach the bumper spring and bottom hook on single-chain hoist. On double-chain hoist, feed the chain through the load block and fasten the end of the chain to the chain shedder at the limit yoke pivot pin. BE SURE THERE ARE NO TWISTS IN THE CHAIN.

g. Lubricate the chain and perform an operational test of the hoist. Remove the "Out-of-Order" tag.

4-13. INSTALLATION OF CHAIN CONTAINER ASSEMBLY.

4-14. The chain container is illustrated in figure 7-10. While referencing figure 7-10, proceed as follows to install the chain container:

a. Remove the motor mount screw and limit switch pin at the location shown.

b. Attach two mounting brackets (5) to chain container (1), using screws (10), washers (8), lock washers (9), nuts (7), and reinforcing pads (4). The nuts and reinforcing pads should be on the outside of chain container with the washers (9) under the screw heads.

c. Attach mounting bracket (2) to chain container using hardware as shown.

d. Secure opposite end of bracket (2) to hoist, using the motor mount screw previously removed.

e. Attach the two brackets (5) to limit yoke assembly with limit switch pin (6) and cotter pins (11).

CAUTION: The chain container should not be subjected to an open flame and should not be used in areas where ambient temperatures exceed 175° F.

1-15. INSPECTIONS.

4-16. 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 directions of, a designated inspector. Special inspections should be made following any significant repairs or any operating occurrence leading one to suspect that the hoist's capabilities may have been impaired.

4-17. FREQUENT INSPECTIONS.

4-18. 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 hooks for deformations, chemical damage, or cracks. Hooks damaged from chemicals, deformation or cracks or having throat openings greater than those listed in Table II must be replaced. If the hook is twisted more than 10 degrees from the plane of the unbent hook, it must be replaced.

NOTE: Any hook that is twisted or has throat openings in excess of those listed in Table II indicates abuse or overloading of the hoist. Other load bearing components should be inspected accordingly.

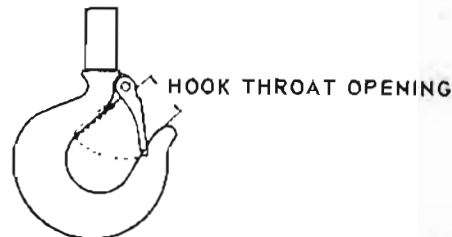
- e. Check that bottom hook swivels freely.
- f. Inspect load carrying chains for wear, twist, distortion or improper dead-ending. Also check for presence of foreign material and adequate lubrication.

4-19. PERIODIC INSPECTIONS.

4-20. It is recommended that the following inspections be performed at 12 month intervals or as otherwise noted. This recommendation assumes the hoist is used for a one-shift 40-hour week under normal environmental conditions. Hoists exposed to adverse environmental conditions or having greater activity should be inspected more frequently.

TABLE II. HOOK THROAT OPENINGS

Hoist Model	Top Hook (Inches)	Bottom Hook (Inches)
SR-1000-36	1 15/16	1 5/16
SR-2000-18	1 15/16	1 5/16
SR-2000-36	1 15/16	1 5/16
SRD-4000-9	1 15/16	1 15/16
SR-4000-18	1 15/16	1 5/16
SRD-6000-9	1 15/16	1 15/16



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. Perform all the daily inspections listed in paragraph 4-17.
- b. Check for loose, missing or corroded hardware.
- c. Check for cracked or worn sheaves and blocks.
- d. Check for worn, corroded, cracked or distorted parts such as pins, bearings, bushings, shafts, couplings, gears, rollers, and locking and clamping devices.
- e. Check for excessive wear on motor shaft keyways.
- f. Check brake linings for glazing, contamination or excessive wear. See paragraph 4.1. (Brake Adjustment) for maximum permissible brake lining wear.

g. Inspect the chain for gouges, nicks, weld splatter, corrosion and distorted links. Slacken the chain and inspect for wear at the contact points. If wear is observed, or if stretching is suspected, measure the chain per paragraph 4-23. If any portion of the chain is worn, nicked, twisted or stretched, replace the whole chain.

CAUTION: Do not attempt to reweld sections of the chain and do not try to add on to the chain. Use only chain supplied by our company; it is specially manufactured to very close tolerances of dimension, composition and heat treatment. A substitute chain may damage the load sheave. Never use "missing links" because they will jam in the load sheave or chain guide.

h. Inspect the hooks or suspension lugs for cracking, checking, extreme wear or spreading. Replace hooks or suspension lugs and all connections showing these signs. Use dye penetrant, mag-

netic particle or other suitable crack detecting method. If the throat openings are spread wider than those listed in Table II the hooks have been overstressed and must be replaced. The method of re-retaining the load hook or suspension lug in the hook swivel, load block, and hoist frame should be inspected periodically. In the case of threaded connections the hook and nut threads should be observed for stripping or other damage. In the case of un-threaded pinned collars the pin should be removed and examined for cracks or bending. This inspection should be performed as often as practicable but not less than once every 6 months.

j. Inspect limit switches for signs of pitting or deterioration. Ensure that they are secure and connections are tight.

j. Inspect all wiring and terminals for fraying and defective insulation. Check connections for tightness. Inspect crimp and insulation on terminal blocks.

k. On push button hoists, inspect the connections on the contact block and coil of the magnetic hoist control switch for tightness. Check for burned or pitted contacts. If one contactor needs replacement, it is recommended that the contactors be replaced in sets.

l. On pendant rope hoists, inspect the connections on the contact block for tightness. Check for burned or pitted contacts on the control switch.

m. Inspect all housings for cracks (resulting from collision, dropping, etc.) and abnormal openings between housing sections (resulting from overloading). In either case it is recommended that the hoist be returned to the manufacturer for repair. Inspect the housing, hook swivel, and load block bolts for tightness.

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.

4-21. INSPECTION OF HOISTS NOT IN REGULAR USE.

4-22. If a hoist has been idle for one month or more, but not more than six months, perform the inspections per paragraph 4-17 prior to use. If the hoist has been idle more than six months, perform the inspections per paragraph 4-19.

4-23. CHECKING CHAIN FOR WEAR.

4-24. To check the chain for excessive wear, proceed as follows:

a. Select an unworn, unstretched length of chain from the slack end.

b. Suspend the chain vertically under tension and, using a caliper type gage, measure the outside length of any convenient number of links approximately 12 to 14 inches overall.

c. Measure the same number of links in the used sections and calculate the percentage increase in length.

d. If the used chain is 1-1/2 percent longer than the unused chain, replace the chain.

4-25. CLEANING.

4-26. Nonelectrical parts may be cleaned with a pressure spray of acid-free dry cleaning solvent and dried with compressed air or clean, lintless cloth. Wipe switches, wiring, and other electrical components with a clean cloth dampened with dry cleaning solvent. Do not immerse any electrical part or brake linings in cleaning solutions. Stubborn deposits of dirt and grease may be removed from gears, housings, chains, and other mechanical parts by using a stiff-bristled brush dipped in the dry cleaning solvent. CAUTION: Ensure that adequate ventilation is provided when using cleaning solutions. Wear protective clothing, and avoid prolonged contact with solvents.

4-27. LUBRICATION.

4-28. 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.

4-29. LOAD CHAIN. Clean the load chain every few days with acid-free solvent and coat with Coffing Chain Lubricant No. H-7595, or equivalent. Wipe excess oil to prevent dripping. If the hoist is used in an atmosphere containing abrasive dust do not oil the chain. Never apply grease to the chain.

4-30. GEARS. The gear housing is packed at assembly with one pound of permanent type grease. If the gear housing is opened, remove the old grease, clean the housing, and repack with one pound of Coffing Gear Lubricant No. H-7577, or equivalent.

4-31. BEARINGS. All bearings are lubricated at the factory and should not require additional lubrication. Noisy or worn bearings should be replaced.

4-32. BRAKE CAMS (SHOE BRAKES ONLY). Apply a light coat of Molykote "G" or lubriplate as required, but not less than every 30 days.

4-33. HOOK BEARINGS. Apply a few drops of oil between inside edge of shield and outside edge of bearing every 30 days.

4-34. IDLER SHEAVE BEARING (BUSHING). Dissamble load block and apply a light coat of high quality grease inside of bearing every six months.

4-35. LIMIT SWITCH LINKAGE. Apply a light coat of lubriplate at all pivot points every 30 days.

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

TYPE OF HOIST _____ CAPACITY (TONS) _____
 LOCATION _____ ORIGINAL INSTALLATION DATE _____
 MANUFACTURER _____ MANUFACTURER'S SERIAL NO. _____

ITEM	FREQUENCY OF INSPECTION			POSSIBLE DEFICIENCIES	OK	ACTION REQUIRED
	FREQUENT		PERIODIC			
	DAILY	MONTHLY	1-12 MO.			
Operating Controls	.	.	.	Any deficiency causing improper operation		
Limit Switches	.	.	.	Any deficiency causing improper operation Pitting or deterioration		
Brake Mechanism	.	.	.	Slippage or excessive drift Glazing, contamination or excessive wear		
Hooks	.	.	.	Excessive throat opening, bent or twisted more than 10 degrees, damaged hook latch, wear, chemical damage, worn hook bearing Cracks (use dye penetrant, magnetic particle or other suitable detection method)		
Suspension Lug (if used)	.	.	.	Cracks, excessive wear or other damage which may impair the strength of the lug Cracks (use dye penetrant, magnetic particle or other suitable detection method)		
Chain	.	.	.	Inadequate lubrication, excessive wear or stretch, cracked, damaged or twisted links, corrosion or foreign substance		
Hook and Suspension Lug Connections			.	Cracks, bending, stripped threads		
Pins, Bearings, Bushings, Shafts, Couplings, Locking and Clamping Devices			.	Excessive wear, corrosion, cracks, distortion		
Nuts, Bolts, Rivets			.	Looseness, stripped and damaged threads, corrosion		
Shafts			.	Distortion, cracks, and excessive wear		
Housings, Load Block			.	Cracks, distortion		
Wiring and Terminals			.	Fraying, defective insulation		
Contact Block, Magnetic Hoist Control Switch, other Electrical Apparatus			.	Loose connections, burned or pitted contacts		
Supporting Structure and Trolley (if used)			.	Damage or wear which restricts ability to support imposed loads		
Nameplates, Decals, Warning Labels			.	Missing, damaged or illegible		

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

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

FIGURE 4-6. RECOMMENDED INSPECTION AND MAINTENANCE CHECK LIST

NOTE: This inspection and maintenance check list is in accordance with our interpretation of the requirements of the safety standard for overhead hoists ANCI B30.16-73. 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 SR ELECTRIC POWERED CHAIN HOIST

FIGURE AND INDEX NO.	COMPONENT	TYPE OF LUBRICANT	TYPE OF SERVICE AND FREQUENCY OF LUBRICATION		
			HEAVY	NORMAL	INFREQUENT
8. Figure 7-6	Load Chain	"Coffing" No. H-7595 penetrating oil with graphite or moly additive Alternate — SAE 20 — 30 gear oil	Daily	Weekly	Monthly
Figure 7-4	Gearing	"Coffing" No. H-7577 gear lubricant Alternate — multi purpose lithium base bearing grease	Yearly	Every 2 Yrs.	
25. Figure 7-6 2 Figure 7-9A 8 Figure 7-9B	Limit Yoke Assembly (Pivot Points)	"Coffing" No. H-7595 Alternate — SAE 20 — 30 gear oil	Monthly	Yearly	Yearly
5, 13 Figure 7-6	Load Hook Bearing	SAE 20 — 30 gear oil	Weekly	Monthly	Yearly
13, 14, 16, 17, 18, 19 Figure 7-1	Top Hook or Suspension Lug Bearing Surface	SAE 20 — 30 gear oil	Monthly	Yearly	Yearly
12. Figure 7-6	Idler Sheave Bearing (Bushing)	"Coffing" No. H-7577 gear lubricant Alternate — multi purpose lithium base bearing grease	at periodic inspection (see Figure 4-5)		

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

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

FIGURE 4-7. RECOMMENDED LUBRICATION SCHEDULE

SECTION V TROUBLESHOOTING

5-1. GENERAL.

5-2. Use the following table as an aid to troubleshoot the 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 or to us for repairs.

TROUBLE/PROBABLE CAUSE	REMEDY
HOOK FAILS TO STOP AT END OF TRAVEL . . .	
1. Brake needs adjustment	1. Adjust brake (Section IV).
2. Limit switches not operating	2. Check connections against wiring diagram. Tighten loose connections, or replace switches as required.
3. Magnetic reversing switch malfunction	3. Check reversing switch and wiring. Replace as required.
4. Brake linings worn, glazed, or contaminated with oil	4. Inspect linings. Clean or replace as required.
HOIST DOES NOT RESPOND TO PUSH BUTTON OR CONTROL ROPE . . .	
1. Power failure in supply lines	1. Check circuit breakers, switches, and connections in power supply lines.
2. Wrong voltage or frequency	2. Check voltage and frequency of power supply against the rating on the nameplate of the hoist.
3. Brake does not release	3. Shoe Brake—Check connections to the solenoid coil. Check for open or short circuit. Check force of brake spring. Check setting of brake adjustment screws. Check tightness of brake linkage to the solenoid. Disc Brake a. Check brake visually for broken or damaged parts. b. Check for broken leadwire or bad electrical connection. c. Check for correct voltage. Voltage must correspond to that listed on brake nameplate. If voltage is more than 10% below figure stamped on nameplate, magnet will not pull in, causing coil to burn out. If voltage is more than 10% above listed voltage, coil will overheat and burn out. d. Check for burned out coil. (Coil may be charred or burned.) e. Check for failure of power supply to brake. f. Check for proper solenoid lead connections in hoist control (See Wiring Diagram, Section VI.).
4. Improper connections in hoist or push-button	4. Check all connections at line connectors and on terminal block. Check terminal block on dual-voltage hoists for proper voltage connections.
5. Faulty magnetic hoist control switch	5. Check coils for open or short circuit. Check all connections in control circuit. Check for burned contacts. Replace as needed.
HOOK DOES NOT STOP PROMPTLY . . .	
1. Hoist overloaded	1. Reduce load to within rated capacity of hoist.
2. Brake not holding	2. Shoe Brake—Check brake adjustment (Paragraph 4-4). Disc Brake a. Check brake visually for broken or damaged parts. b. Check disc wear (Paragraph 4-5). c. Check for broken friction disc. d. Make certain hub has not shifted position on shaft, and that all rotating discs are fully engaged on hub.

TROUBLE/PROBABLE CAUSE

REMEDY

HOOK FAILS TO STOP PROMPTLY (Cont.) . . .

- | | |
|-------------------------------------|--|
| 3. Disc brake chattering or humming | <p>Disc Brake</p> <p>a. See that magnet faces are clean. To remove dirt, insert a clean sheet of paper between magnet faces. Move paper around between faces to dislodge dirt, then remove paper.</p> <p>b. See that magnet faces are parallel in closed position.</p> <p>(1) If not parallel along length of magnet, check bushings (23, figure 7-8) under torque springs for binding or excessive wear.</p> <p>(2) If not parallel across width of magnet, adjust pivot nut (21) on post to obtain minimum magnet hum. After adjusting pivot nut, lock in place with adjacent lock nut. Check magnet gap "A" and adjust if necessary (See adjustment instructions, Paragraph 4-5.).</p> <p>c. Check if shading coil (19) is cracked, broken or out of position.</p> <p>d. Check for low voltage. Magnet will not pull in and coil will burn out if voltage is more than 10% below figure stamped on nameplate.</p> |
|-------------------------------------|--|

HOOK MOVES IN WRONG DIRECTION . . .

- | | |
|-------------------------|--|
| 1. Three-phase reversal | 1. Reverse any two wires (except the green ground wire) at the power source (Paragraph 2-6). |
| 2. Improper connections | 2. Check all connections against Wiring Diagram. |

HOOK RAISES BUT WILL NOT LOWER . . .

- | | |
|--|---|
| 1. "Down" circuit open | 1. Check circuit for loose connections. Check "Down" limit switch for malfunction. |
| 2. Broken conductor in push-button cable | 2. Check each conductor in the cable. If one is broken, replace entire cable. |
| 3. Faulty magnetic hoist control switch | 3. Check coils for open or short circuit. Check all connections in control circuit. Check for burned contacts. Replace as needed. |

HOOK LOWERS BUT WILL NOT RAISE . . .

- | | |
|--|--|
| 1. Hoist overloaded | 1. Reduce load to within rated capacity. |
| 2. Low voltage | 2. Determine cause of low voltage and bring up to within plus or minus 10% of the voltage specified on the hoist. |
| 3. "UP" circuit open | 3. Check circuit for loose connections. Check "UP" limit switch for malfunction. |
| 4. Broken conductor in push-button cable | 4. Check each conductor in the cable. If one is broken, replace entire cable. |
| 5. Faulty magnetic hoist control switch | 5. Check coils for open or short circuits. Check all connections in control circuit. Check for burned contacts. Replace as needed. |
| 6. Motor is overheating | 6. See note below. |

LACK OF PROPER LIFTING SPEED . . .

- | | |
|---------------------|---|
| 1. Hoist overloaded | 1. Reduce load to within rated capacity of hoist. |
| 2. Brake arms drag | 2. Check brake adjustment screws for proper clearance. (See Section IV.) Check solenoid mount screws for tightness and proper location of solenoid. |
| 3. Low voltage | 3. Bring up voltage to plus or minus 10% of voltage specified on hoist. |

MOTOR ROTATES -HOIST DOES NOT LIFT OR LOWER . . .

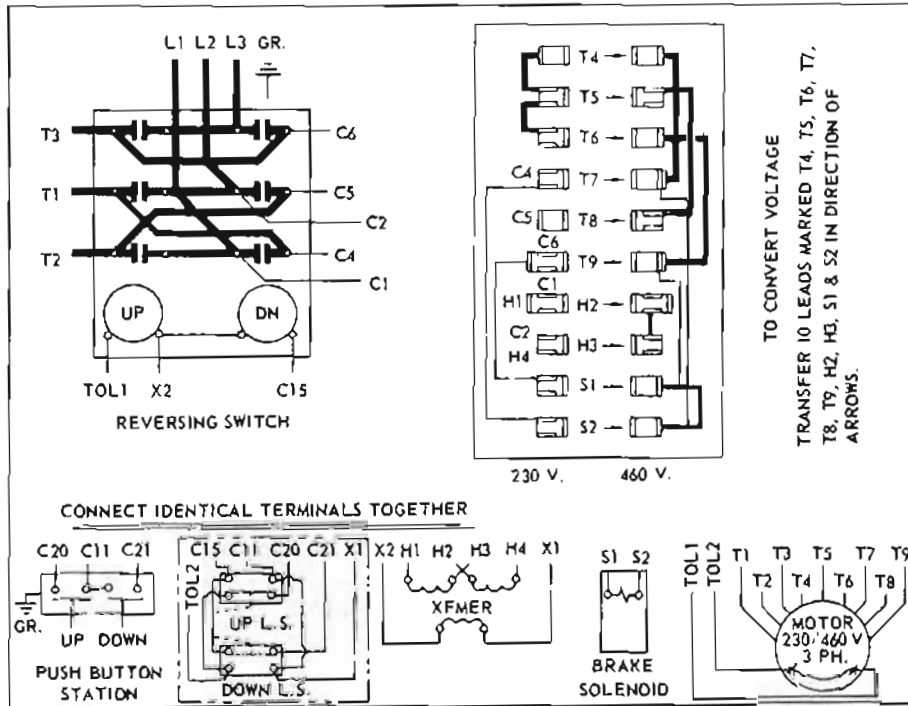
- | | |
|-----------------------|--|
| 1. Broken shafting | 1. Check for broken motor shaft, brake shaft or load sheave shaft. |
| 2. Sheared drive keys | 2. Check for sheared keys in motor coupling or drive plate. |

NOTE: Hoist motors on most late model hoists have been provided with thermally activated cutoff switches to protect against overheating of the motor windings. The tripping of this protective switch will de-energize the UP control circuit and prevent further hoisting. It will, however, permit the load to be lowered. The cutoff switch will reset automatically after the motor winding has cooled. The cause of motor overheating should be investigated and corrected before continuing the hoist operation.

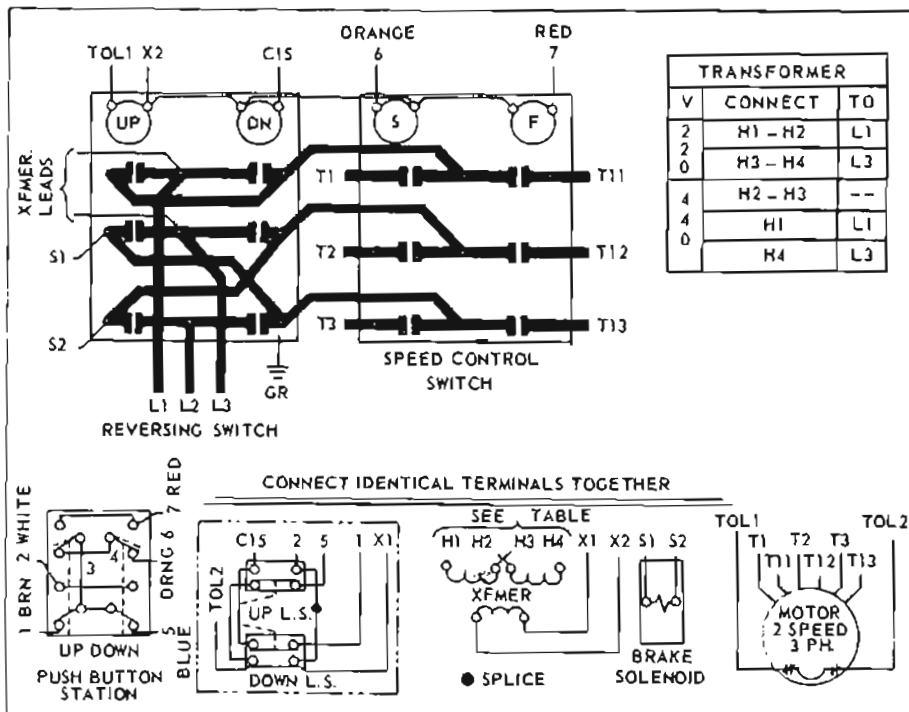
SECTION VI WIRING DIAGRAMS

6-1. GENERAL.

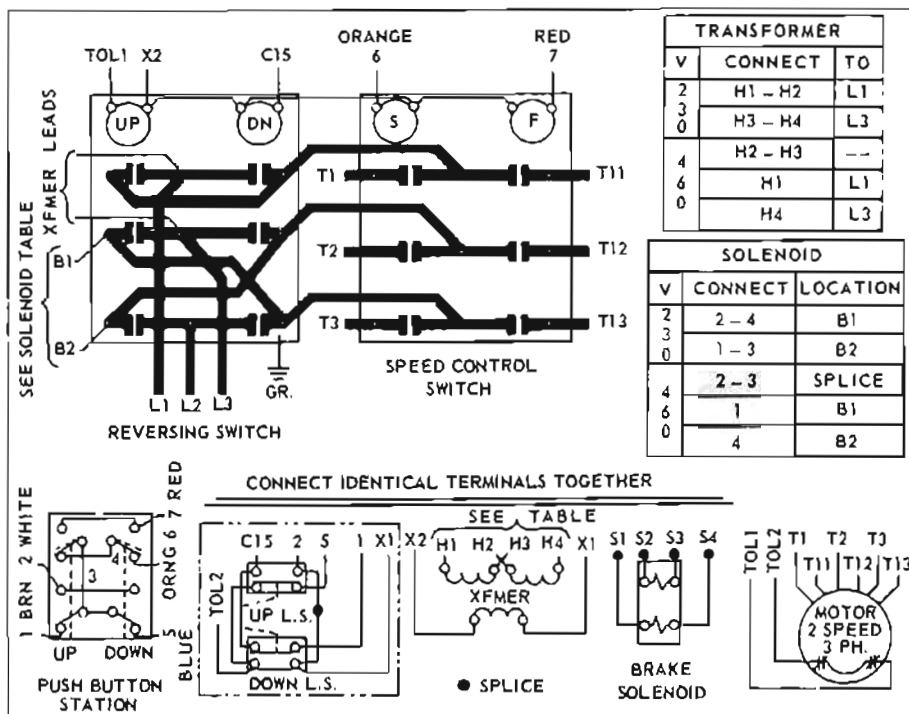
6-2. The wiring diagrams are designed to assist you in identifying electrical malfunctions of your hoist.



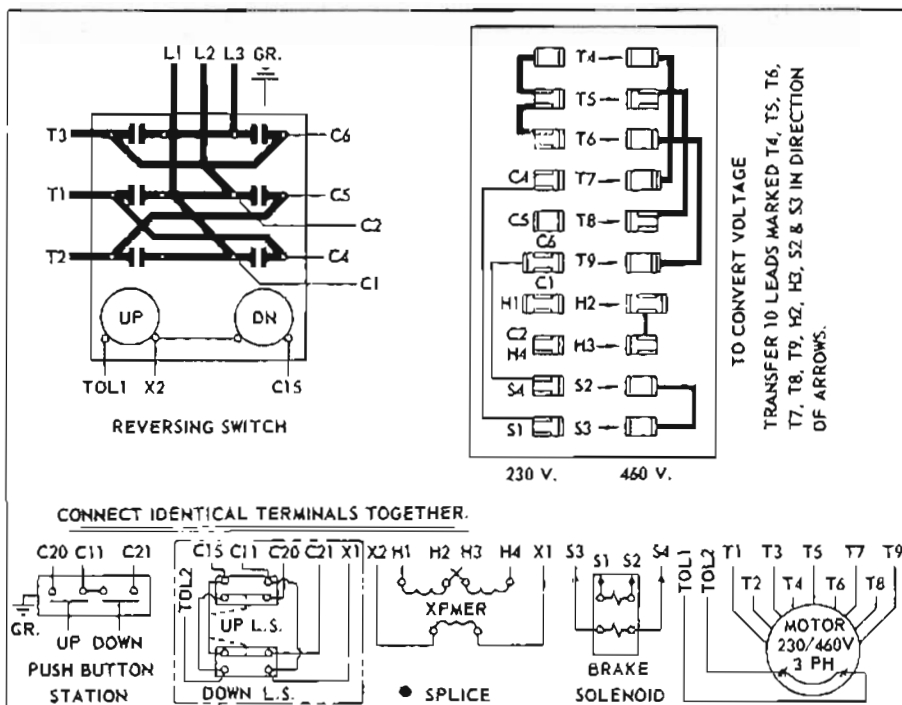
SINGLE SPEED SHOE BRAKE WIRING DIAGRAM - 3 PHASE



TWO SPEED SHOE BRAKE WIRING DIAGRAM - 3 PHASE



TWO SPEED DISC BRAKE WIRING DIAGRAM - 3 PHASE



SINGLE SPEED DISC BRAKE WIRING DIAGRAM - 3 PHASE

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 Coffing hoist. However, these lists do not contain part numbers. All part numbers will be found in the parts list. Several different models of hoists 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.

- 7-3A Controller Group (Two Speed-Push Button)
- 7-3B Controller Group (Single Speed-Push Button with Hoist Model No. Beginning with SR or SRD)
- 7-3C Electrical Parts (Single Speed-Push Button with Hoist Model No. Beginning with S or SD)
- 7-5A Brake and Solenoid Parts (Shoe Type)
- 7-5B Brake and Solenoid Parts (Disc Type)
- 7-7A Push Button (Single Speed Hoists with Hoist Model No Beginning with SR or SRD)
- 7-7B Push Button (Two Speed Hoists)
- 7-7C Push Button (Single Speed Hoists with Hoist Model No. Beginning with S or SD)
- 7-8A Limit Switch Parts (Push Button Hoists with Hoist Model No. Beginning with SR or SRD)
- 7-8B Limit Switch Parts (Push Button Hoists with Hoist Model No. Beginning with S or SD)
- 7-9A Controller Parts (Pendant Rope Hoists with Hoist Model No. Beginning with SR or SRD)
- 7-9B Controller Parts (Pendant Rope Hoists with Hoist Model No. Beginning with S or SD)

7-5. Therefore, when determining the figure in which your part would be illustrated, take the above into consideration.

7-6. Study the illustration and locate the part you wish to find. A number will be located adjacent to the

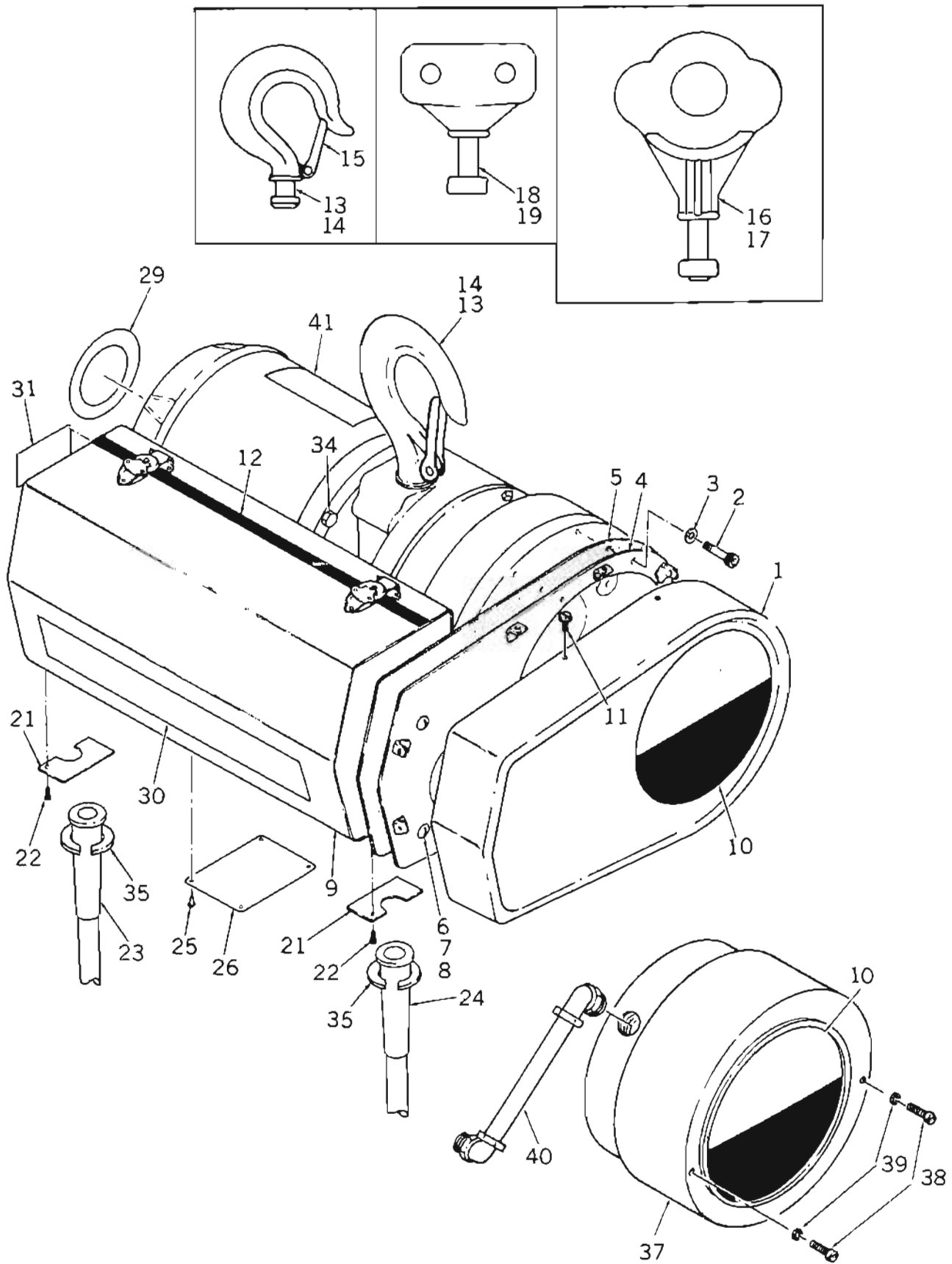
7-3. HOW TO USE THE PARTS LISTS.

7-4. To identify a part from your hoist, locate the figure which illustrates that area of the hoist where your part is located. Example: the rotor and shaft of the motor would be located in the Motor Parts Figure. At this time, it may be necessary to take into consideration certain characteristics of your hoists. Due to configuration changes within the electrical, limit switch, controller and push button areas of the hoist it was necessary to divide these figures as follows:

part; this number, which is the index number, will be found in the accompanying parts list with the part name. To obtain the correct part number for your part see page 1 of the current parts list.

FIGURE 7-1. BASIC HOIST PARTS

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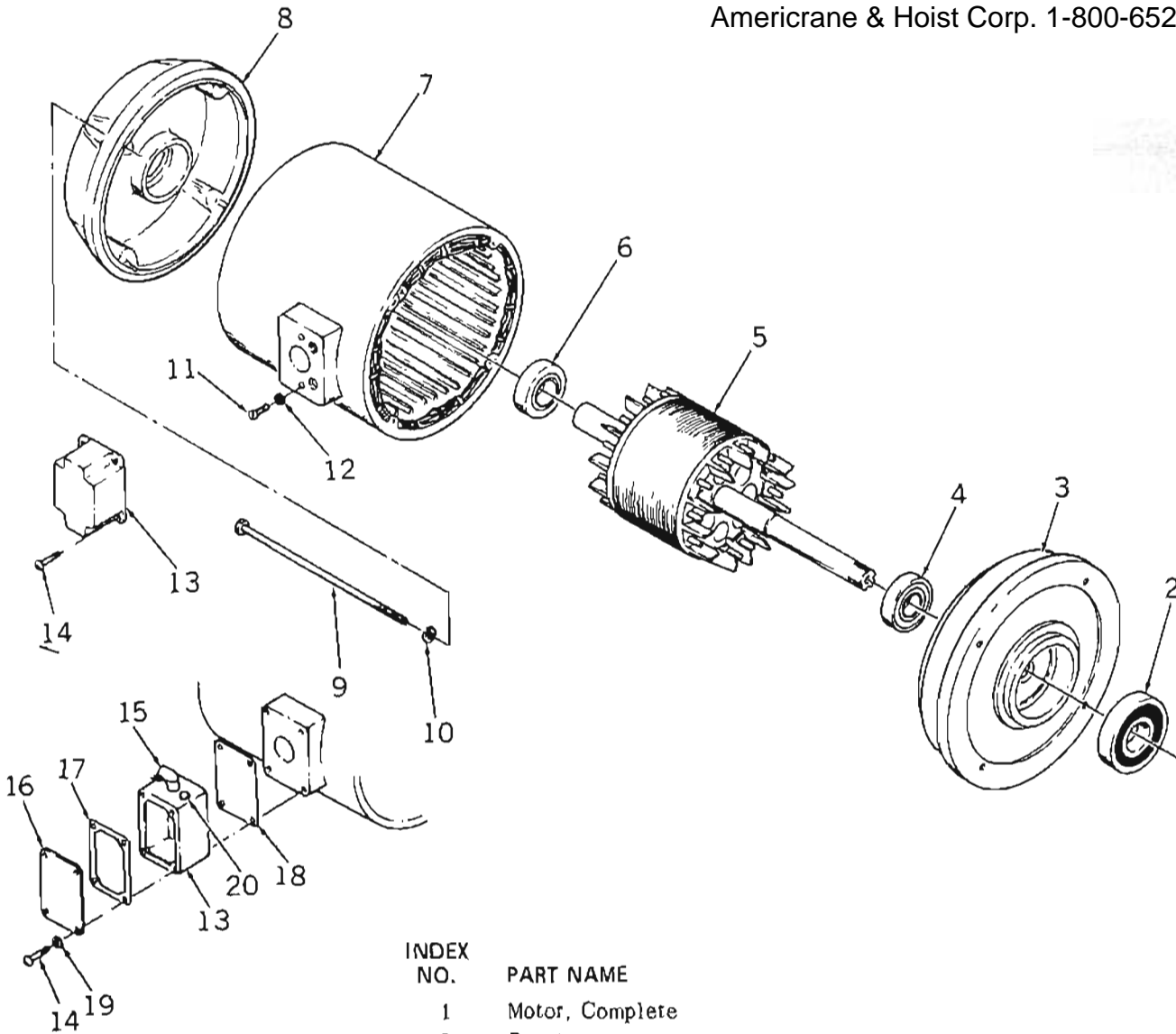


INDEX NO.	PART NAME
1	Cover, Brake End, Shoe Brake
2	Screw, Cap
3	Lock Washer
4	Back Plate, Brake End
5	Gasket, Back Plate
6	Screw
7	Lock Washer
8	Nut
9	Control Box Assembly
10	Decal, Capacity
11	Screw
12	Gasket, 17 Inch
13	Hook, Top with Latch
14	Hook Assembly, Rigid with Latch
15	Latch Kit
16	Lug Assembly, Multi-Purpose, Swivel
17	Lug Assembly, Multi-Purpose, Rigid
18	Suspension Lug, Rigid
19	Suspension Lug, Rigid
20*	Gasket, 93 Inch (Used in Control Box Assembly and Brake End Cover)
21	Retainer
22	Screw
23	Power Cable
24	Push Button Cable
25	Pin
26	Nameplate
27*	Lubricant, Chain
28*	Lubricant, Gear
29	Decal, Motor End
30	Decal, Coffing
31	Warning Tag, Three Phase
32*	Label, Power Cable
33*	Label, Power Cable
34	Bolt, Motor Mounting
35	Split Washer
36*	Instruction Tag
37	Cover, Disc Brake
38	Screw
39	Lock Washer
40	Disc Brake Interconnection Assembly
41	Decal

*Not Illustrated

FIGURE 7-2. MOTOR PARTS

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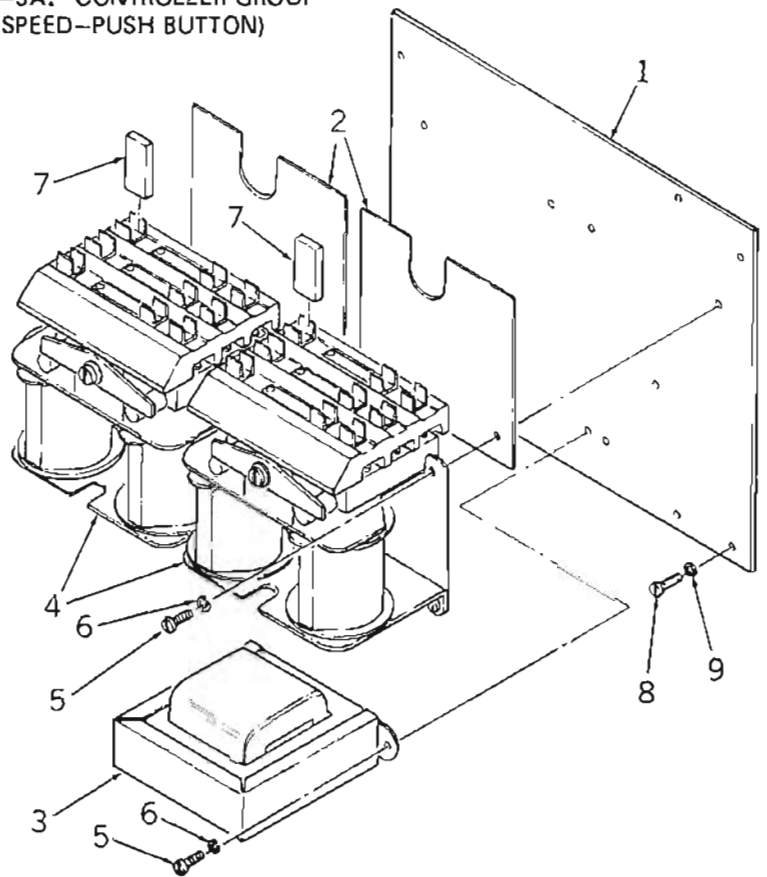
INDEX NO.	PART NAME
1	Motor, Complete
2	Bearing
3	Endshield
4	Bearing
5	Rotor
6	Bearing
7	Stator
8	Endbell
9	Thru-Bolt
10	Lock Washer
11	Screw
12	Lock Washer
13	Conduit Box
14	Screw
15	Connector
16	Conduit Box Cover
17	Conduit Box Cover Gasket
18	Gasket (Conduit Box to Motor)
19	Lock Washer
20	Hole Plug

FOR PART NUMBERS SEE FIGURE 7-2 OF CURRENT PARTS LIST.

FIGURE 7-3A. CONTROLLER GROUP
(TWO SPEED-PUSH BUTTON)

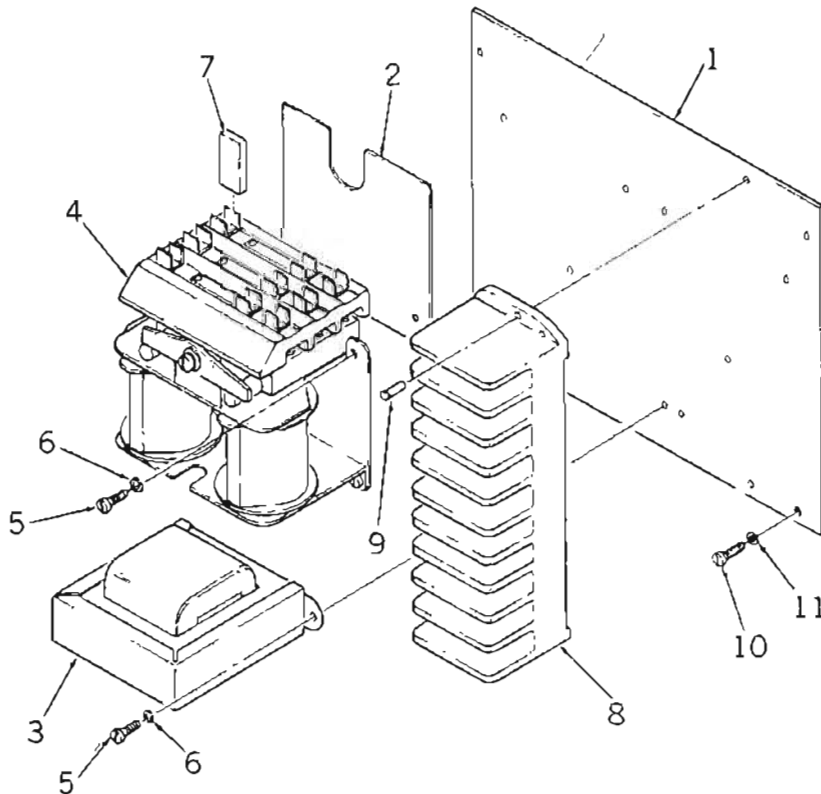
INDEX NO.	PART NAME
1	Panel Plate
2	Insulator
3	Transformer
4	Contactors
5	Screw
6	Lock Washer
7	Insulator, Terminal
8	Screw
9	Lock Washer
10*	Wire Jumper Assembly
11*	Wire Jumper Assembly
12*	Splice Connector

*Not Illustrated



FOR PART NUMBERS SEE FIGURE 7-3A OF CURRENT PARTS LIST.

FIGURE 7-3B. CONTROLLER GROUP
(SINGLE SPEED-PUSH BUTTON WITH HOIST MODEL NO. BEGINNING WITH SR OR SRD)

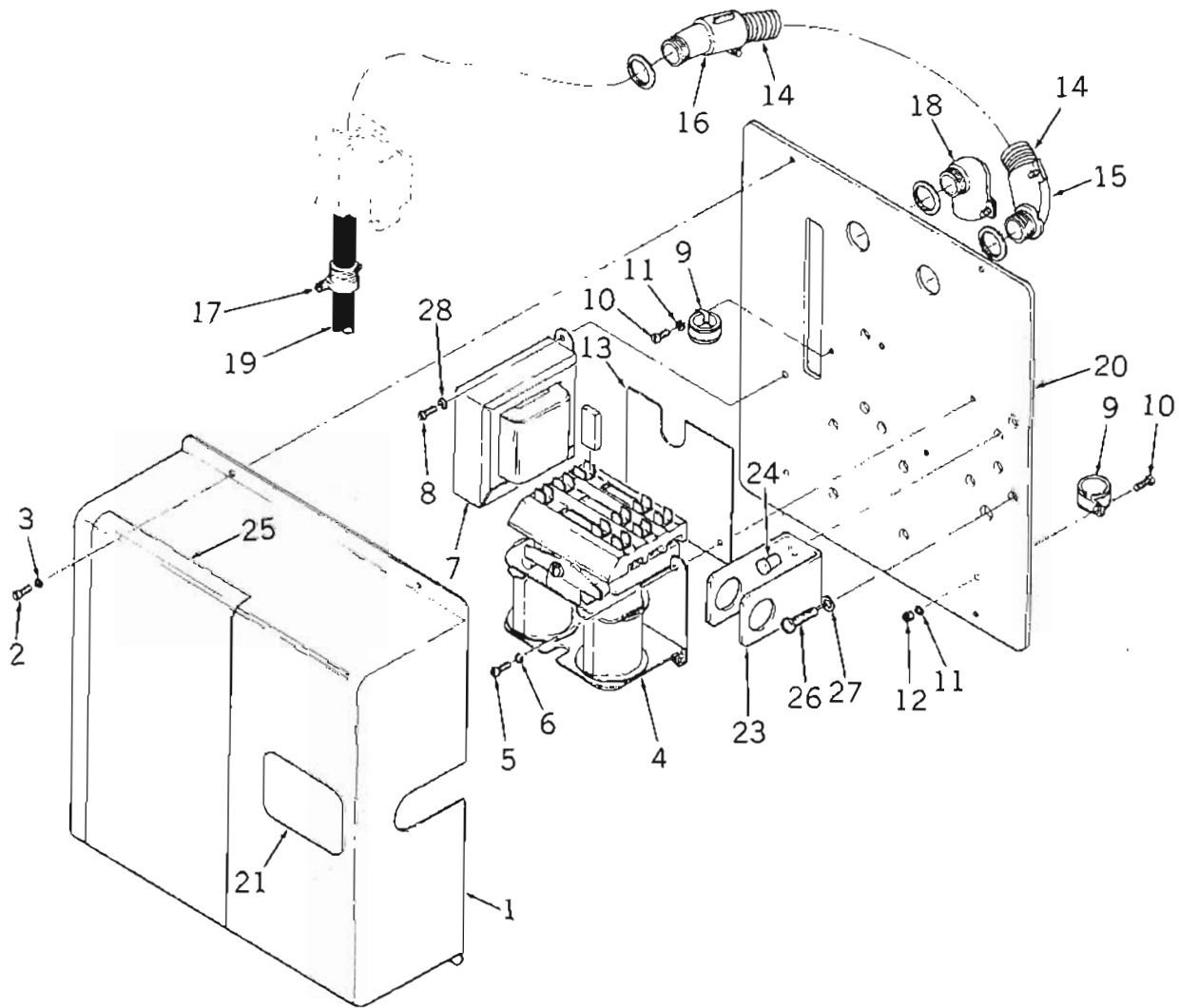


INDEX NO.	PART NAME
1	Panel Plate
2	Insulator
3	Transformer
4	Contactors
5	Screw
6	Lock Washer
7	Insulator, Terminal
8	Terminal Block
9	Eyelet
10	Screw
11	Lock Washer

FOR PART NUMBERS SEE FIGURE 7-3B OF CURRENT PARTS LIST.

FIGURE 7-3C. ELECTRICAL PARTS
(SINGLE SPEED-PUSH BUTTON WITH HOIST MODEL NO. BEGINNING WITH S OR SD)

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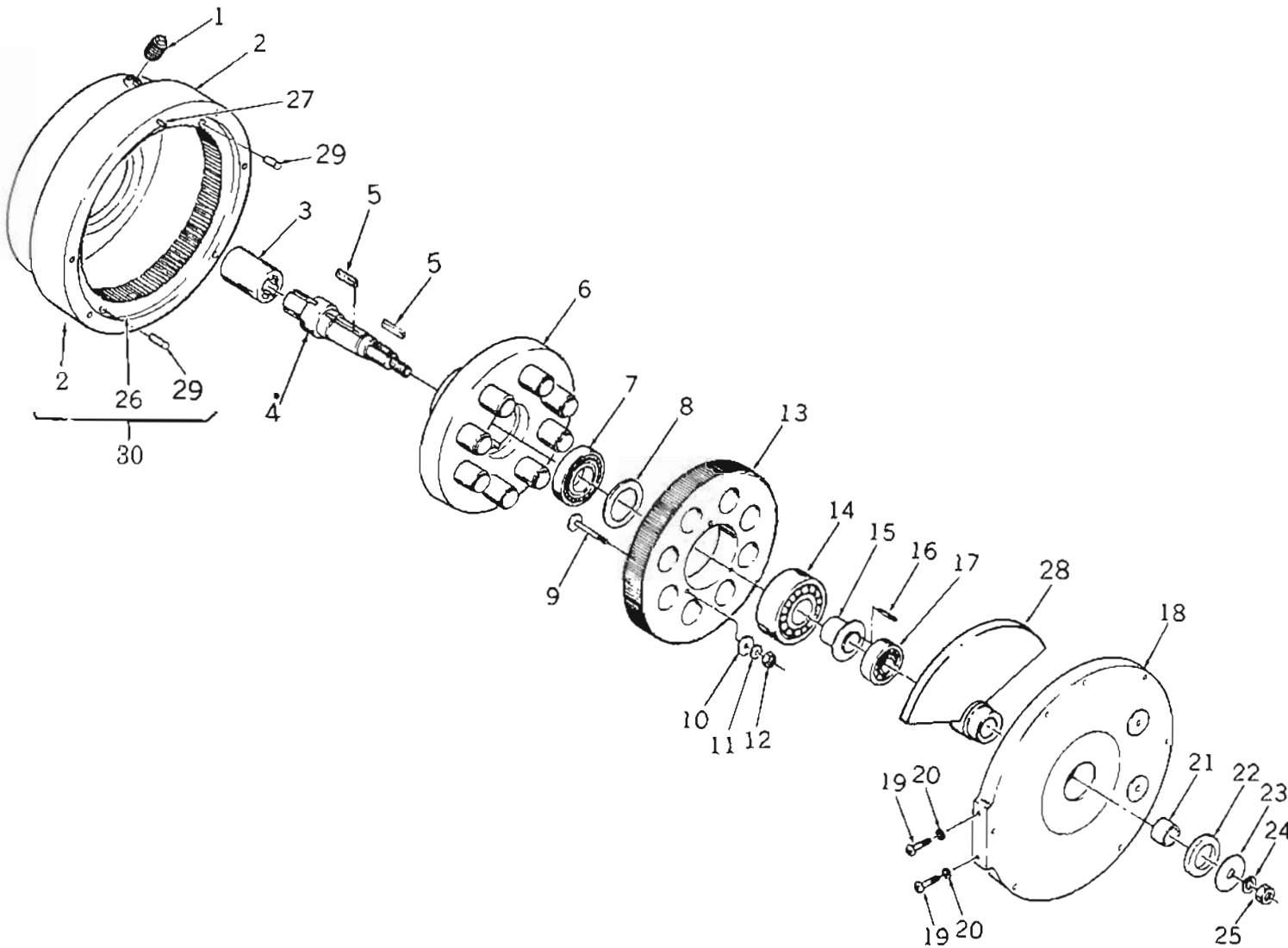
INDEX NO.	PART NAME	INDEX NO.	PART NAME
1	Cover	15	Connector, Conduit
2	Screw	16	Connector, Conduit
3	Lock Washer	17	Connector
4	Contactator	18	Connector
5	Screw	19	Power Cable
6	Lock Washer	20	Plate, Switch Base
7	Transformer	21	Tag, Instruction
8	Screw	22*	Tag, Three Phase Warning
9	Clamp	23	Bracket
10	Screw	24	Rivet
11	Lock Washer	25	Decal
12	Nut	26	Screw
13	Insulator	27	Lock Washer
14	Conduit, Flexible (12 inches)	28	Lock Washer

*Not Illustrated

FOR PART NUMBERS SEE FIGURE 7-3C OF CURRENT PARTS LIST.

FIGURE 7-4. TRANSMISSION

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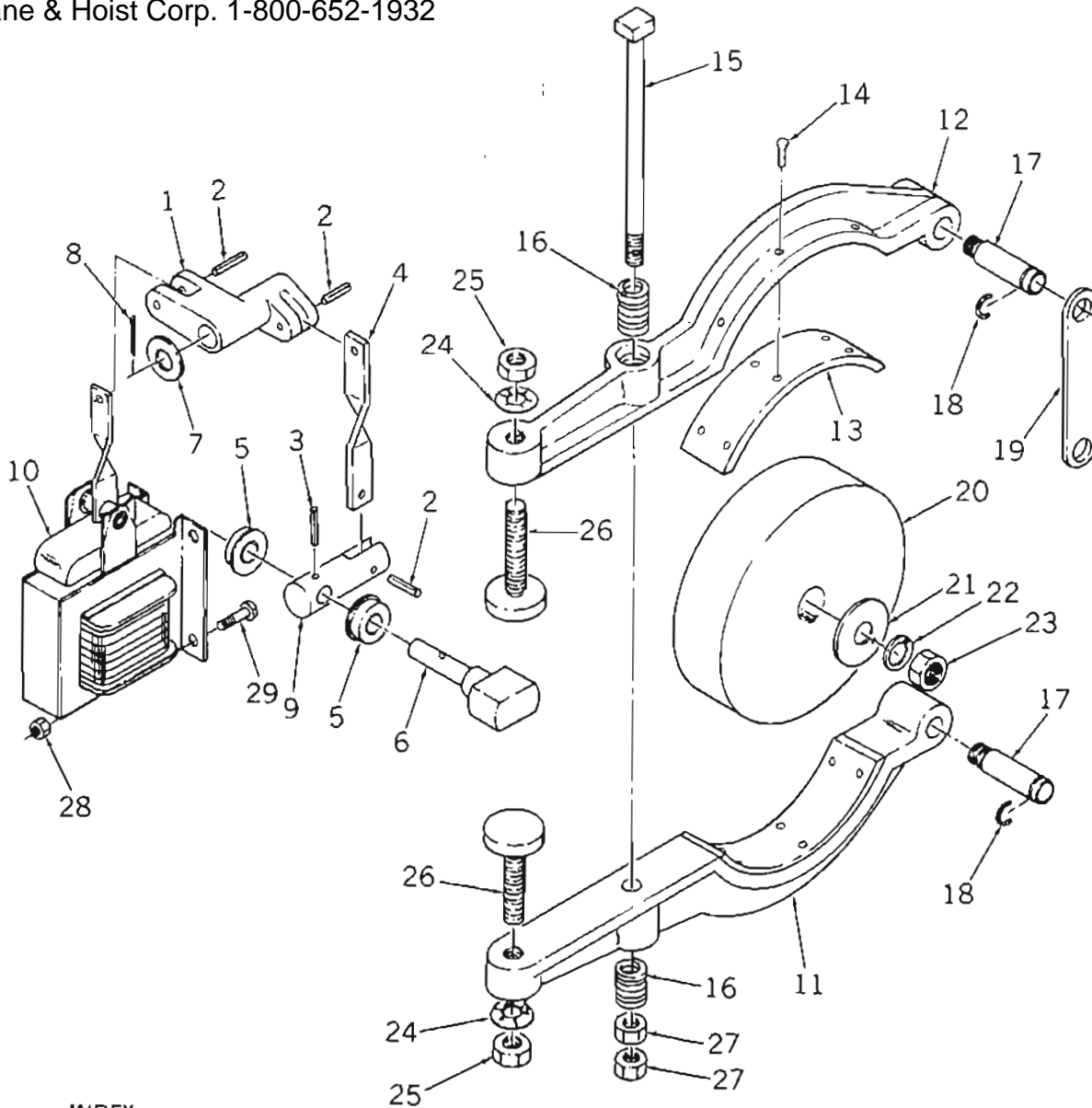


INDEX NO.	PART NAME	INDEX NO.	PART NAME
1	Pipe Plug	15	Eccentric
2	Housing	16	Key
3	Coupling	17	Bearing
4	Drive Shaft	18	Plate, Cover
5	Key	19	Screw
6	Drive Plate Assembly	20	Lock Washer
7	Bearing	21	Bushing, Shaft
8	Washer, Spacing	22	Oil Seal
9	Screw, Bearing Retainer	23	Washer, Brake Drum
10	Washer	24	Lock Washer
11	Lock Washer	25	Nut
12	Nut	26	Ring Gear
13	Spur Gear	27	Dowel Pin
14	Bearing	28	Counterbalance Assembly
		29	Pin
		30	Gear & Housing Assy. (Includes Items 2, 26, 29).

FOR PART NUMBERS SEE FIGURE 7-4 OF CURRENT PARTS LIST.

FIGURE 7-5A. BRAKE AND SOLENOID PARTS (SHOE BRAKE)

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INDEX
NO.

INDEX NO.	PART NAME
1	Pivot, Brake Release
2	Spring Pin
3	Spring Pin
4	Link, Cam
5	Bearing
6	Cam, Brake Release
7	Washer
8	Cotter Pin
9	Arm, Brake Release
10	Solenoid Assembly
11	Brake Arm Assembly (Consists of Index Nos. 12-14)
12	Brake Arm
13	Brake Lining
14	Rivet
15	Bolt, Brake

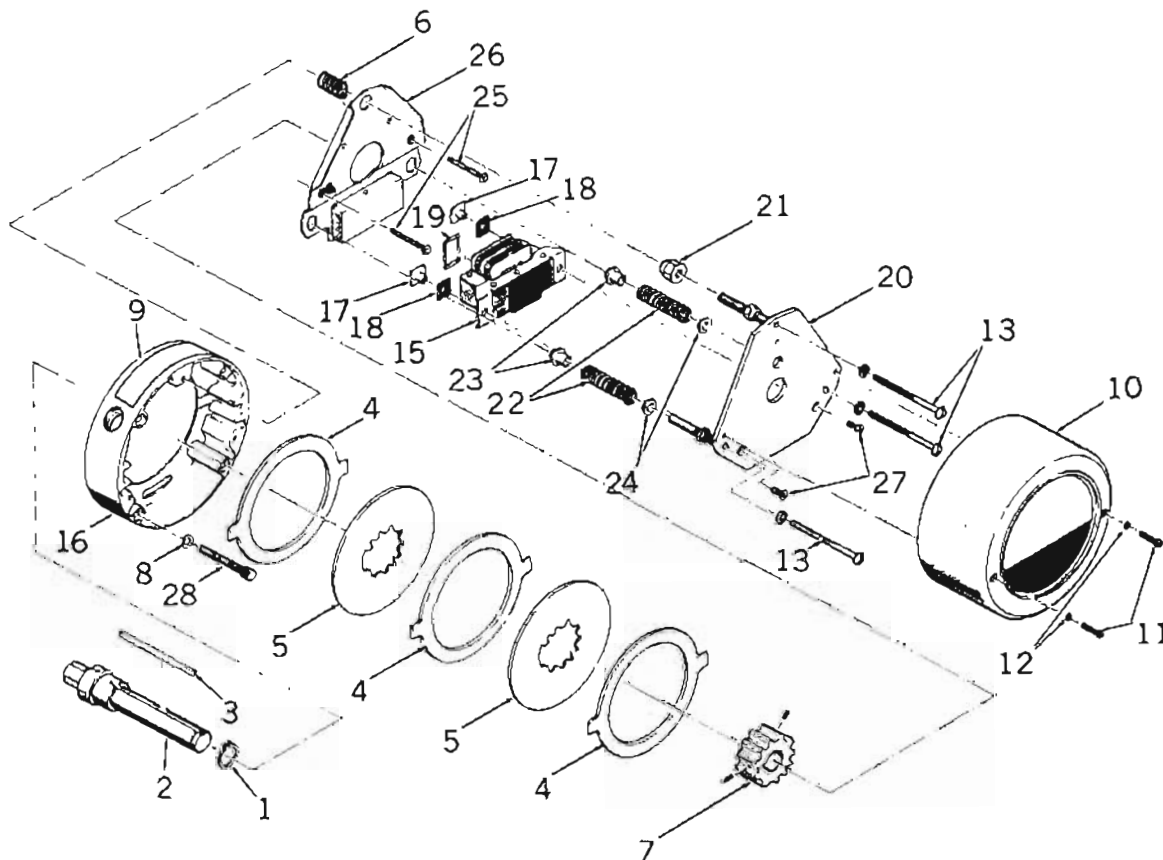
INDEX
NO.

INDEX NO.	PART NAME
16	Spring, Brake Adjusting.
17	Pin, Brake Hinge
18	Retainer Ring
19	Yoke, Brake Hinge
20	Brake Drum
21	Washer, Brake Drum
22	Lock Washer
23	Nut
24	Lock Washer, Internal Shakeproof
25	Nut
26	Screw, Brake Adjusting
27	Jam Nut
28	Nut
29	Screw, Solenoid Mount

FOR PART NUMBERS SEE FIGURE 7-5A OF CURRENT PARTS LIST.

FIGURE 7-5B. BRAKE AND SOLENOID PARTS (DISC BRAKE)

Americrane & Hoist Corp. 1-800-652-1932



INDEX NO.	PART NAME
1	Retaining Ring
2	Drive Shaft
3	Key
4	Stationary Disc
5	Friction Disc
6	Compression Spring
7	Hub
8	Lock Washer
9	Nameplate
10	Cover
11	Screw
12	Lock Washer
13	Screw with Lock Washer
14	Operator Assy. (Consists of Index Nos. 15 thru 27)
15	Magnet Assembly (Includes Index No. 19)

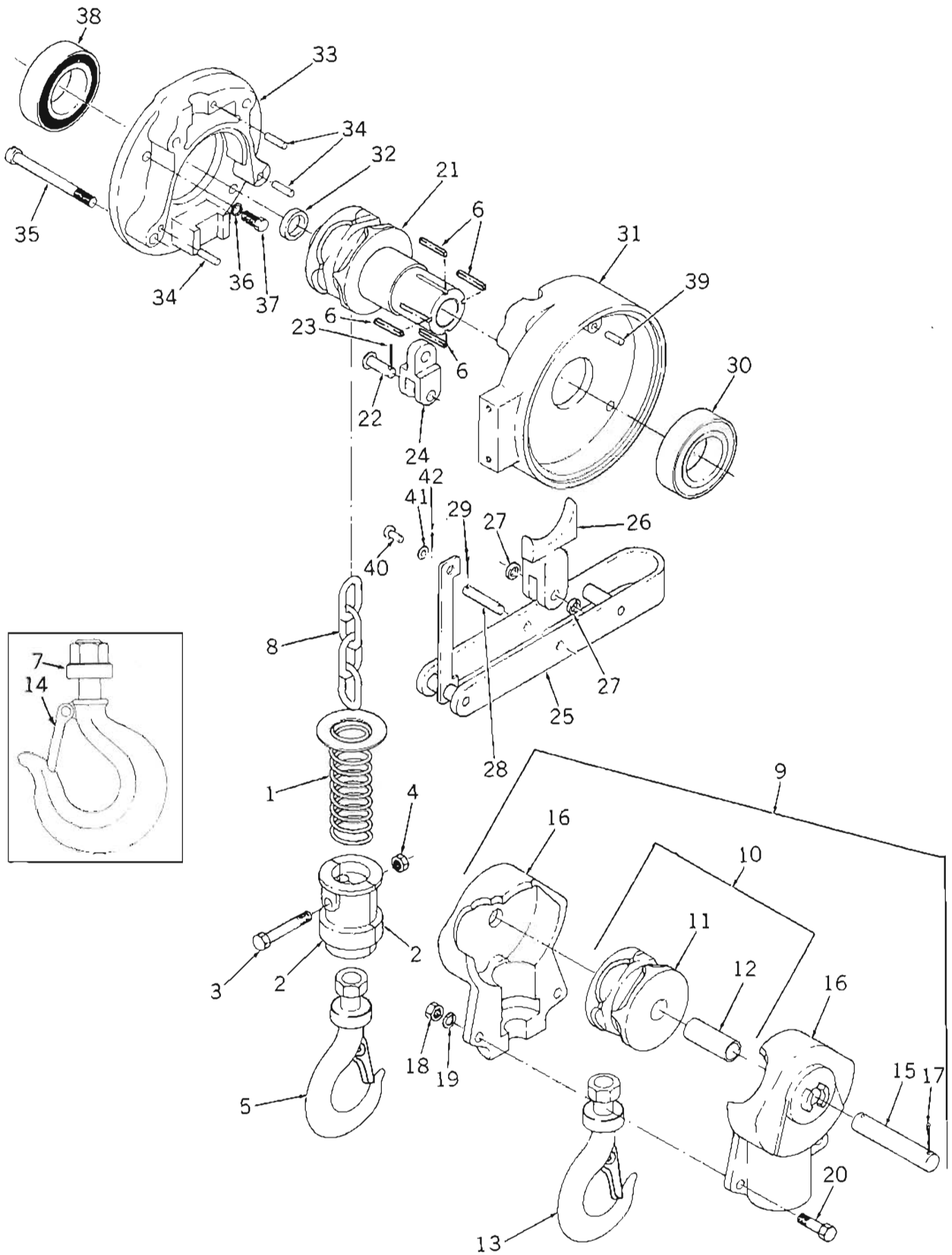
INDEX NO.	PART NAME
16	Bracket
17	Shoulder Nut
18	Rubber Washer
19	Shading Coil
20	End Plate Assy. (Includes Index No. 21)
21	Jam Nut
22	Torque Spring
23	Bushing
24	Washer
25	Set Screw
26	Armature Plate Assy. (Includes Index No. 25)
27	Flat Head Screw
28	Screw

Note: Index nos. 17 thru 27 not handled as separate items. They are supplied as part of various assemblies.

FOR PART NUMBERS SEE FIGURE 7-5B OF CURRENT PARTS LIST.

FIGURE 7-6. CHAINING PARTS

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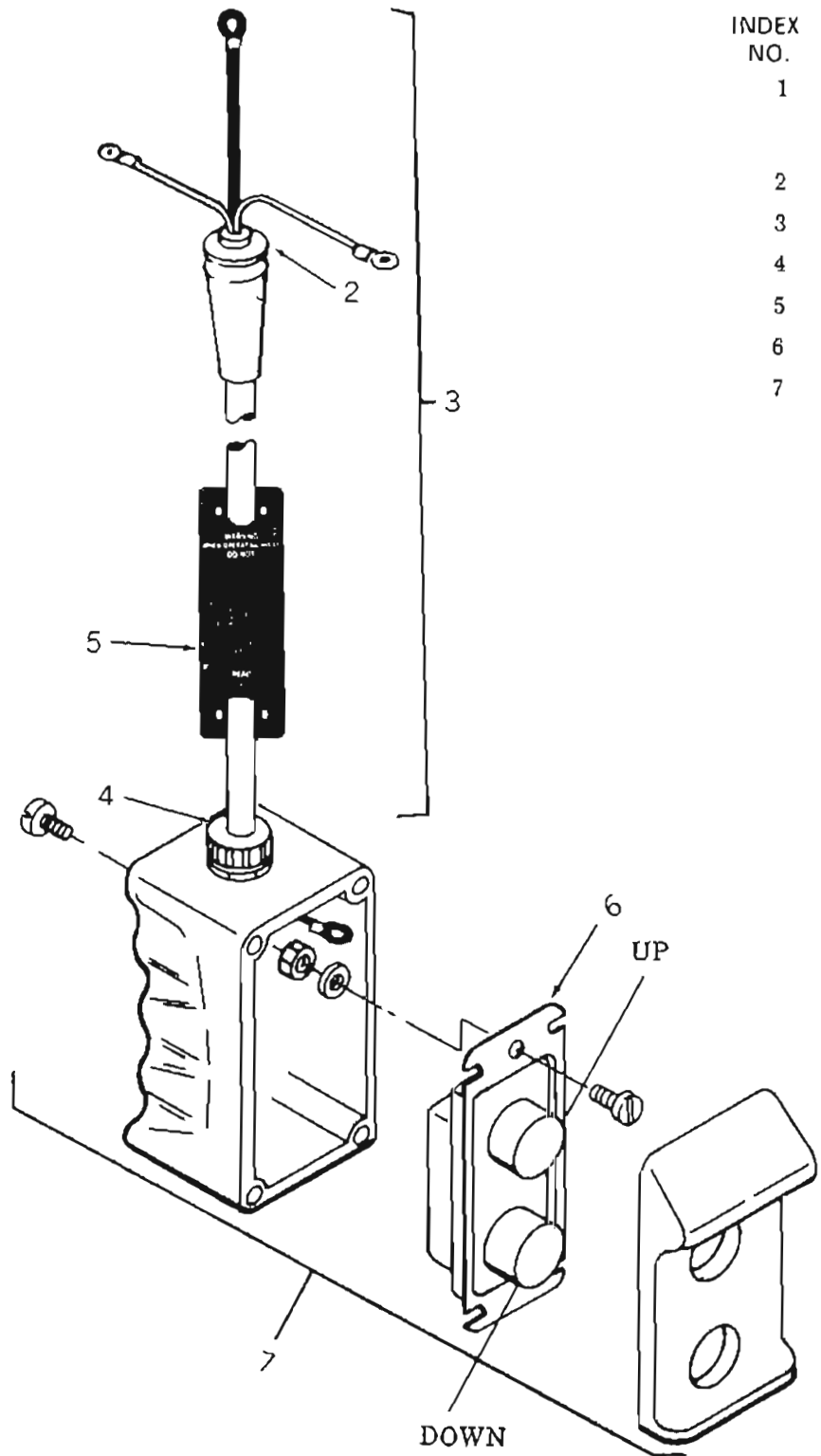


INDEX NO.	PART NAME
1	Bumper Spring Assembly
2	Swivel Half
3	Screw
4	Nut
5	Hook Assembly, Bottom, with Latch
6	Key
7	Hook Assembly, Bottom, Safety Type
8	Chain
9	Load Block Assembly, Double Chain, Plain Hook (Consists of Index Nos. 10-20)
10	Super Sheave Assembly (Consists of Index Nos. 11 and 12)
11	Sheave
12	Sleeve Bearing
13	Hook Assembly, Bottom, with Latch
14	Latch Kit
15	Idler Shaft
16	Frame, Super
17	Cotter Pin
18	Nut
19	Lock Washer
20	Bolt
21	Sheave, Chain
22	Pin, Dead End
23	Cotter Pin
24	Dead End, Chain
25	Limit Yoke and Arm Assembly
26	Shedder, Chain
27	Spacer
28	Pin
29	Cotter Pin
30	Bearing
31	Housing, Sheave
32	Oil Seal
33	Housing, Sheave
34	Dowel Pin
35	Cap Screw
36	Lock Washer
37	Screw
38	Bearing
39	Dowel Pin
40	Pin
41	Washer
42	Cotter Pin

FOR PART NUMBERS SEE FIGURE 7-6 OF CURRENT PARTS LIST.

FIGURE 7-7A. PUSH BUTTON
 (SINGLE SPEED HOISTS WITH MODEL NO. BEGINNING WITH SR OR SRD)
 (SQUARE D TYPE)

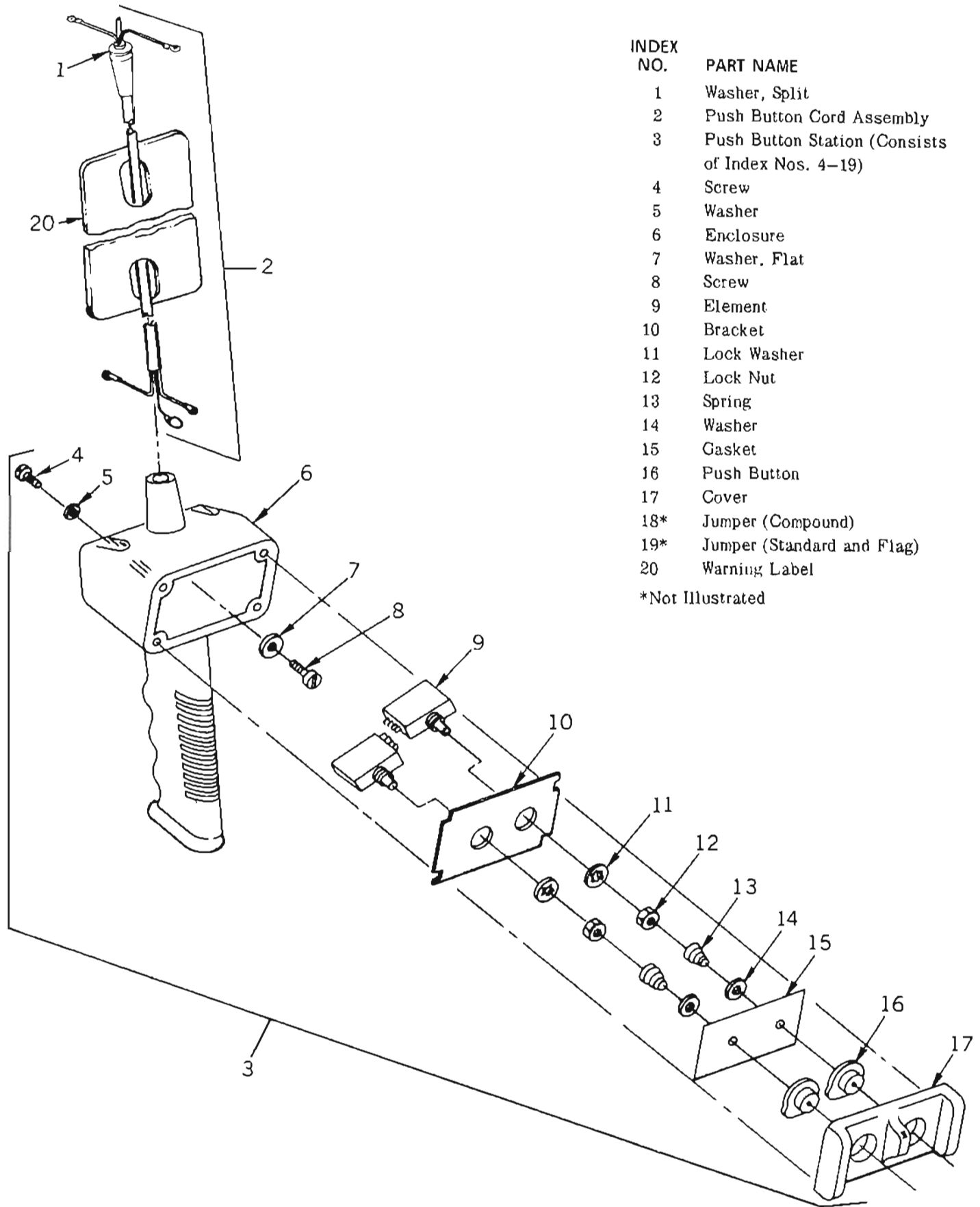
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INDEX NO.	PART NAME
1	Push Button and Cable Assembly (Consists of Index No's 2-7.)
2	Washer, Split
3	Push Button Cable Assem.
4	Connector
5	Warning Label
6	Push Button Element
7	Push Button Station Assem.

FOR PART NUMBERS SEE FIGURE 7-7A OF CURRENT PARTS LIST.

FIGURE 7-7B. PUSH BUTTON
(TWO SPEED HOISTS)

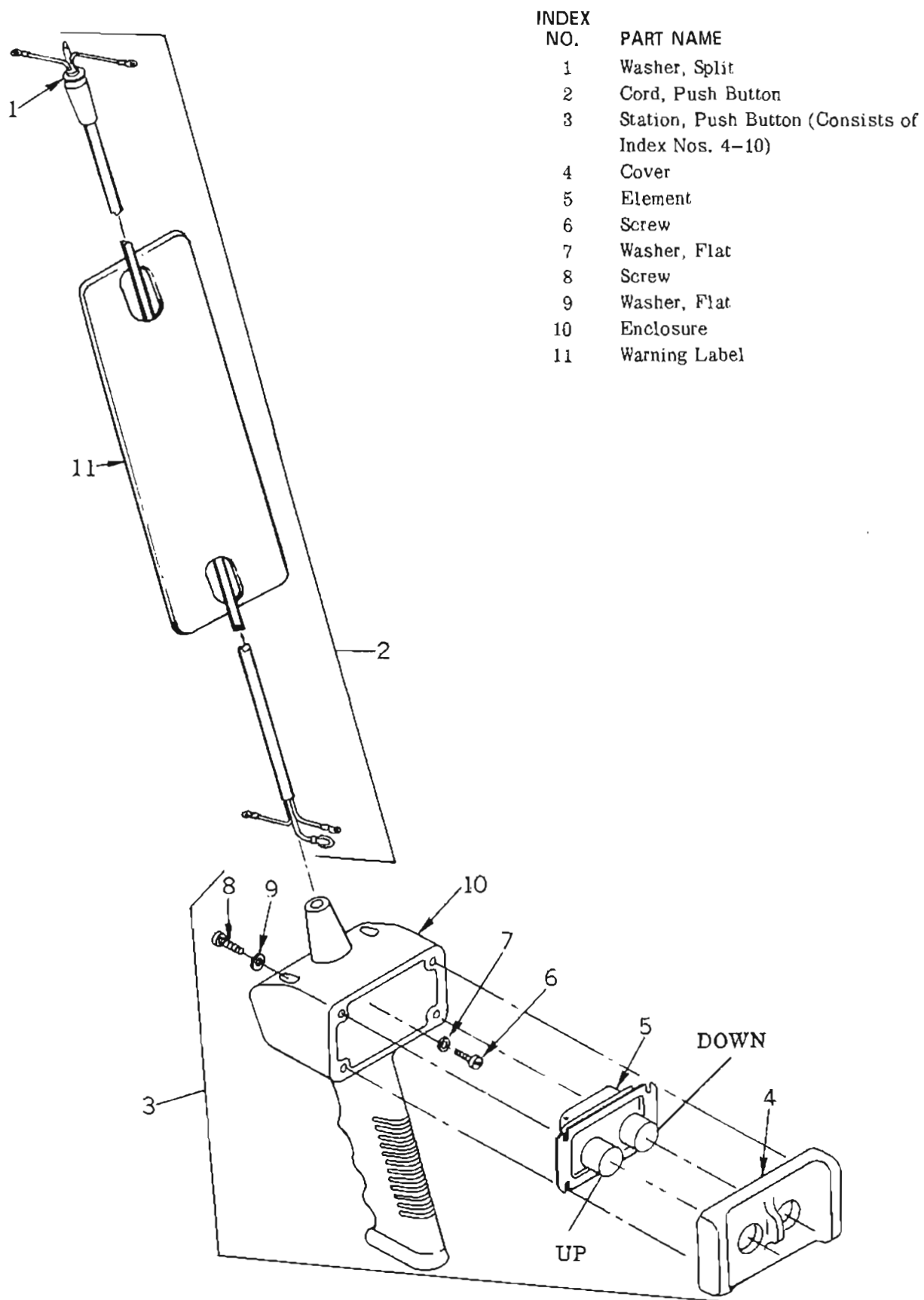


INDEX NO.	PART NAME
1	Washer, Split
2	Push Button Cord Assembly
3	Push Button Station (Consists of Index Nos. 4-19)
4	Screw
5	Washer
6	Enclosure
7	Washer, Flat
8	Screw
9	Element
10	Bracket
11	Lock Washer
12	Lock Nut
13	Spring
14	Washer
15	Gasket
16	Push Button
17	Cover
18*	Jumper (Compound)
19*	Jumper (Standard and Flag)
20	Warning Label

*Not Illustrated

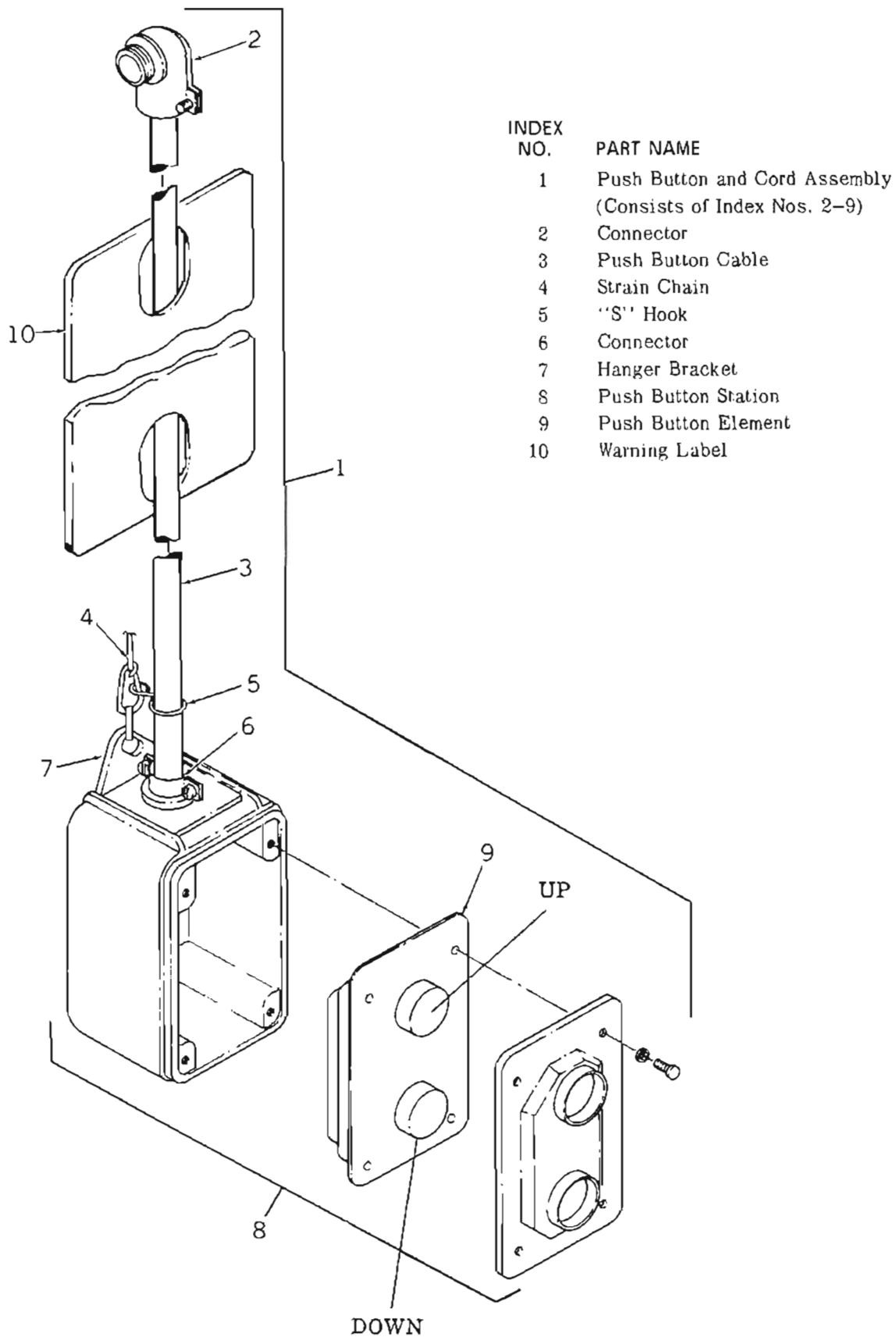
FOR PART NUMBERS SEE FIGURE 7-7B OF CURRENT PARTS LIST.

FIGURE 7-7C. PUSH BUTTON
 (SINGLE SPEED HOISTS WITH HOIST MODEL NO. BEGINNING WITH SR OR SRD)
 (PISTOL GRIP TYPE)



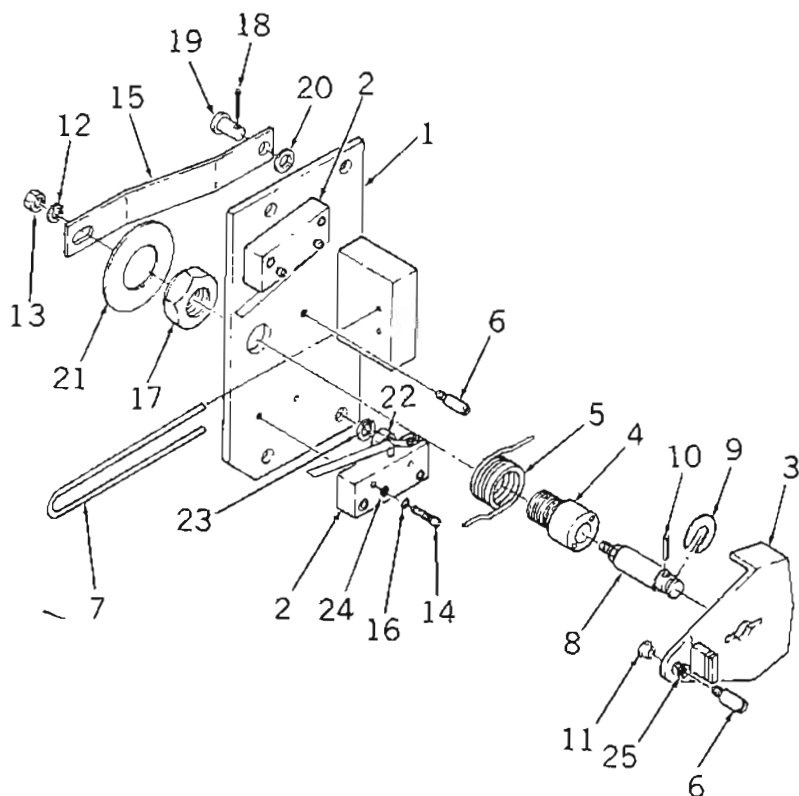
FOR PART NUMBERS SEE FIGURE 7-7C OF CURRENT PARTS LIST.

FIGURE 7-7C. PUSH BUTTON
 (SINGLE SPEED HOISTS WITH HOIST MODEL NO. BEGINNING WITH S OR SD)



FOR PART NUMBERS SEE FIGURE 7-7C OF CURRENT PARTS LIST.

FIGURE 7-8A. LIMIT SWITCH PARTS
(PUSH BUTTON HOISTS WITH HOIST MODEL NO. BEGINNING WITH SR OR SRD)

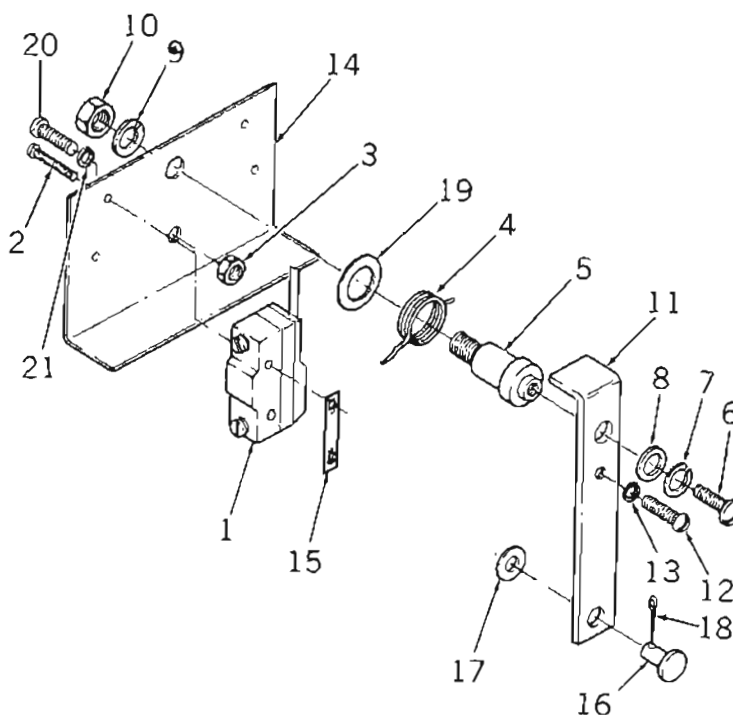


INDEX NO.	PART NAME
1	Mounting Plate Assembly
2	Limit Switch Block
3	Operator
4	Bushing
5	Spring, Torsion
6	Stud
7	Spring
8	Shaft
9	Snap Ring
10	Spring Pin
11	Plug Nut
12	Lock Washer
13	Nut
14	Screw
15	Arm, Linkage
16	Lock Washer
17	Stop Nut
18	Cotter Pin
19	Pin
20	Washer
21	Gasket
22	Nut
23	Washer
24	Lock Washer
25	Washer, Plain

FOR PART NUMBERS SEE FIGURE 7-8A OF CURRENT PARTS LIST

FIGURE 7-8B. LIMIT SWITCH PARTS
(PUSH BUTTON HOISTS WITH HOIST MODEL NO. BEGINNING WITH S OR SD)

INDEX NO.	PART NAME
1	Limit Switch
2	Screw
3	Nut
4	Spring, Equalizing
5	Stud, Pivot
6	Screw
7	Lock Washer
8	Washer
9	Lock Washer
10	Nut
11	Arm, Pivot
12	Screw
13	Lock Washer
14	Bracket, Limit Switch
15	Twin Type Fastener
16	Pin
17	Washer
18	Cotter Pin
19	Washer, Retaining
20	Screw
21	Washer



FOR PART NUMBERS SEE FIGURE 7-8B OF CURRENT PARTS LIST.

FIGURE 7-9A. CONTROLLER PARTS
(PENDANT ROPE HOISTS WITH HOIST MODEL NO. BEGINNING WITH SR OR SRD)

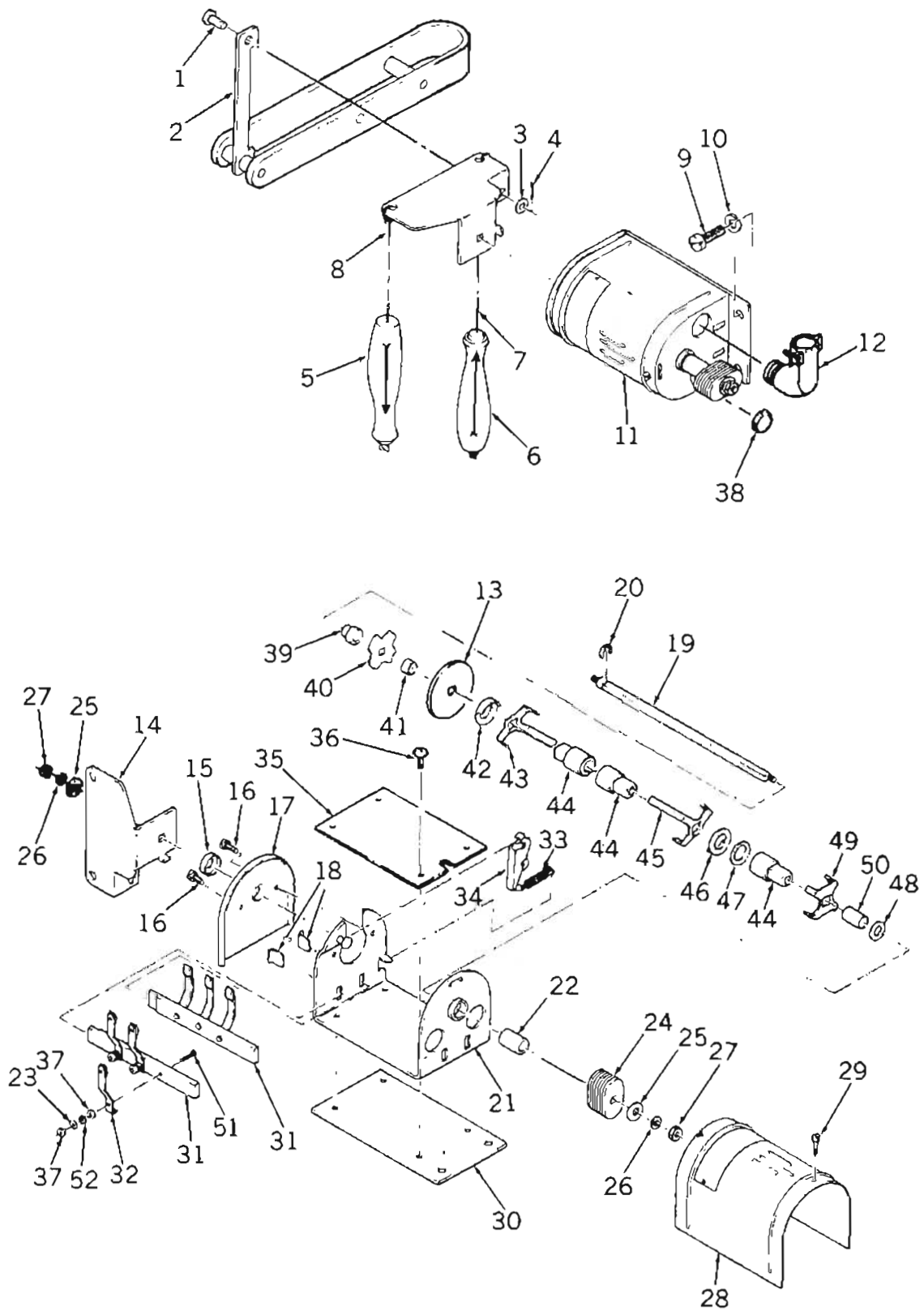


FIGURE 7-9A. CONTROLLER PARTS
(PENDANT ROPE HOISTS WITH HOIST MODEL NO. BEGINNING WITH SR OR SRD)

INDEX NO.	PART NAME
1	Pin
2	Limit Switch Yoke Assy.
3	Washer
4	Cotter Pin
5	Control Handle (Down)
6	Control Handle (Up)
7	Control Rope (Up)
8	Control Rope (Down)
9	Screw
10	Lock Washer
11	Switch, Reversing (Consists of Index Nos. 12-52)
12	Connector
13	Arc Shield
14	Rope Lever
15	Lever Cap
16	Screw
17	Top
18	Wedge
19	Spindle
20	Retaining Ring
21	Frame Assy.
22	Spacer
23	Washer, Flat
24	Cam (7 Req.)
25	Washer
26	Lock Washer
27	Jam Nut
28	Cover Assy.
29	Screw
30	Backplate
31	Finger Board
32	Finger Assy.
33	Spring Assy.
34	Lever and Roller Assy.
35	Frame Insulator
36	Sems Screw With Lock Washer
37	Nut
38	Hole Plug
39	Collar
40	Cam
41	Outer Tubing
42	Contact Shield
43	Rotor Contact
44	Rotor Sleeve
45	Rotor Contact
46	Contact Shield
47	Washer
48	Washer
49	Rotor Contact
50	Outer Tubing
51	Screw
52	Cup Washer

FOR PART NUMBERS SEE FIGURE 7-9A OF CURRENT PARTS LIST.

FIGURE 7-9B. CONTROLLER PARTS
(PENDANT ROPE HOISTS WITH HOIST MODEL NO. BEGINNING WITH S OR SD)

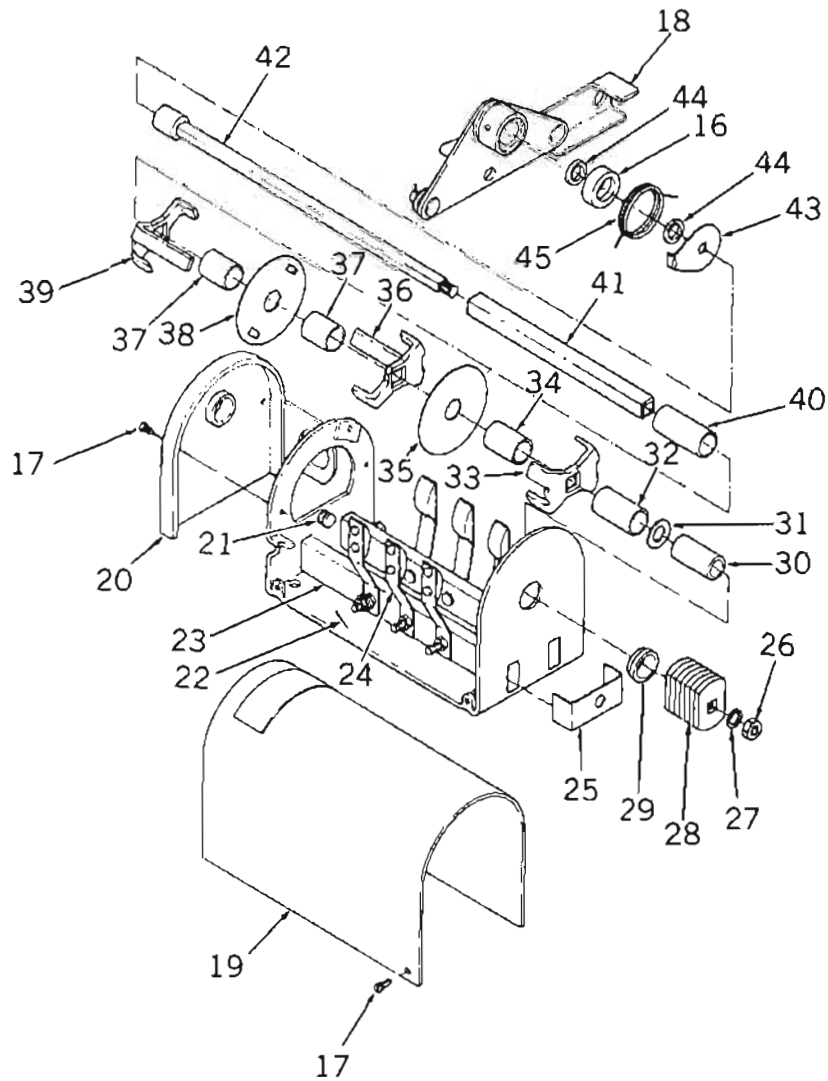
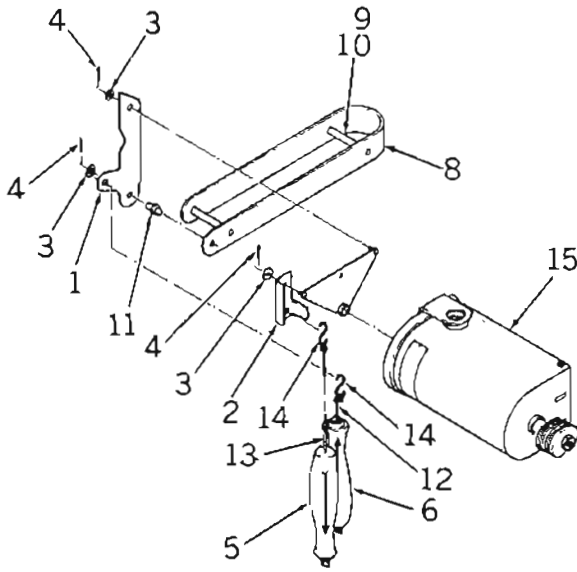


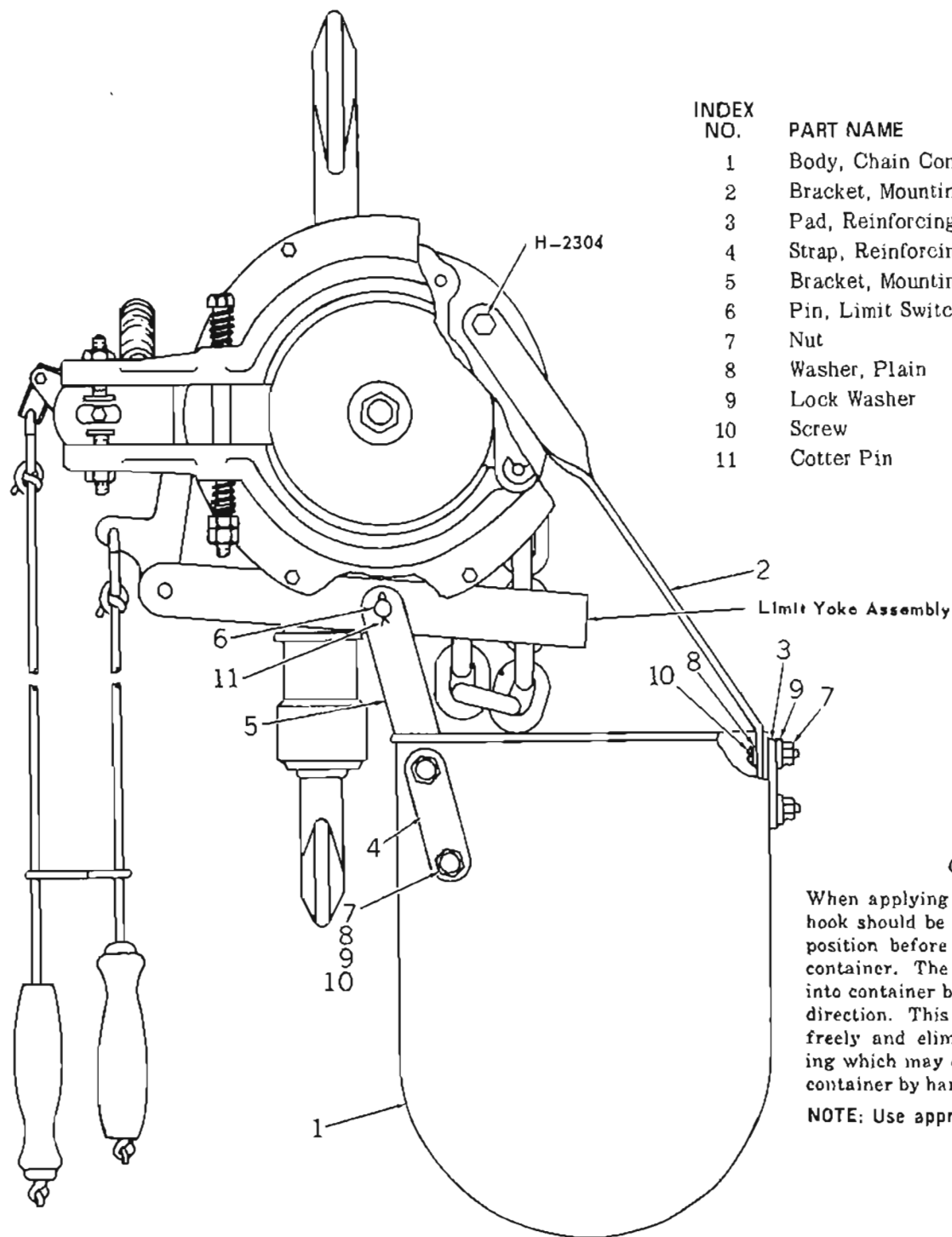
FIGURE 7-9B. CONTROLLER PARTS
(PENDANT ROPE HOISTS WITH HOIST MODEL NO. BEGINNING WITH S OR SD)

INDEX NO.	PART NAME
1	Arm
2	Link
3	Washer, Plain
4	Cotter Pin
5	Handle, Down Control
6	Handle, Up Control
7*	Tag, Instruction
8	Limit Yoke Assy. (Includes Index Nos. 9-11)
9	Limit Yoke Pin
10	Limit Yoke Spacer
11	Limit Yoke Shoulder Pin
12	Control Rope (Up)
13	Control Rope (Down)
14	"S" Hook
15	Switch, Reversing (Consists of Index Nos. 16-45)
16	Spacer
17	Screw
18	Control Switch Lever Assy.
19	Control Switch Cover
20	Top Assy. (Includes Bushing and Conduit Support)
21	Spring Return Post
22	Frame Insulator
23	Finger Board Assy. (Includes three Fingers, Index No. 24)
24	Finger
25	Finger Board Retaining Clip
26	Nut
27	Lock Washer
28	Brake Cam (8 req.)
29	Frame Bushing
30	Spacer
31	Washer
32	Outer Tubing (15/16 Inch)
33	Rotor Contact
34	Outer Tubing (3/4 Inch)
35	Arc Shield
36	Rotor Contact
37	Outer Tubing (5/8 Inch)
38	Arc Shield
39	Rotor Contact
40	Outer Tubing (1-1/8 Inch)
41	Inner Tubing
42	Spindle Assy.
43	Spring Driver
44	Spacer
45	Spring

*Not Illustrated

FOR PART NUMBERS SEE FIGURE 7-9B OF CURRENT PARTS LIST.

FIGURE 7-10. CHAIN CONTAINER ASSEMBLY INSTRUCTIONS AND PARTS LIST



INDEX NO.	PART NAME
1	Body, Chain Container
2	Bracket, Mounting
3	Pad, Reinforcing
4	Strap, Reinforcing
5	Bracket, Mounting
6	Pin, Limit Switch
7	Nut
8	Washer, Plain
9	Lock Washer
10	Screw
11	Cotter Pin

CAUTION

When applying chain container, the load hook should be run "Down" to its lowest position before placing the slack end in container. The chain should then be fed into container by operating hoist in "Up" direction. This will permit chain to pile freely and eliminate possibility of fouling which may occur if chain is placed in container by hand.

NOTE: Use approved chain container only.

Remove motor mount screw (H-2304) and limit switch pin (C-4-2). Attach two mounting brackets (5) to the chain container (1) using screws (10), washers (8), lock washers (9), nuts (7) and reinforcing pads (4). The nuts and reinforcing pads should be on the outside of the chain container with the washers (9) under the screw heads. Attach mounting bracket (2) to the chain container as shown in the illustration. Assemble the chain container assembly to the hoist by attaching bracket (2) with the H-2304 screw which was removed previously. Attach two brackets (5) to limit yoke assembly with limit switch pin (6) and cotter pins (11).

CAUTION: This container should not be subjected to an open flame and should not be used in areas where ambient temperature exceeds 175 degrees F.

FOR PART NUMBERS SEE FIGURE 7-10 OF CURRENT PARTS LIST.

WARNING: The equipment shown in this bulletin is intended for Industrial use only and should not be used to lift, support, or otherwise transport human cargo.

Duff-Norton

Amstar

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