

COFFING ELECTRIC CHAIN HOISTS

OPERATING
AND
MAINTENANCE
INSTRUCTIONS
AND
PARTS LISTS
FOR
JF SERIES
HOISTS

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.

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TABLE OF CONTENTS

SECTION I	INTRODUCTION	1
1-1	General Information	1
1-4	Hoist Construction	1
1-8	Leading Particulars	1
SECTION II	PREPARATION FOR USE	2
2-1	Inspection Prior to Initial Use	2
2-4	Installation	2
2-6	Load Hook Direction (Phasing)	2
2-9	Testing	2
SECTION III	OPERATION	5
3-1	Safety Considerations	5
3-3	Operation	5
3-5	Lowering Without Power	5
SECTION IV	MAINTENANCE, REPAIR AND LUBRICATION	6
4-1	Limit Switch Adjustment	6
4-5	Brake Adjustment	6
4-9	Chaining the Hoist with Old Chain in Hoist	7
4-10	Chaining the Hoist with No Chain in Hoist	5
4-11	Chaining the Hoist with No Chain in Hoist (Alternate Method)	6
4-12	Removal and Replacement of Top Hook or Suspension Lug	6
4-15	Installation of Chain Container Assembly	6
4-17	Inspections	10
4-19	Frequent Inspections	10
4-21	Periodic Inspections	10
4-23	Inspection of Hoists Not in Regular Use	11
4-25	Checking Chain for Wear	11
4-27	Cleaning	11
4-29	Lubrication	11
SECTION V	TROUBLESHOOTING	15
5-1	General	15
SECTION VI	WIRING DIAGRAMS	17
6-1	General	17
SECTION VII	ILLUSTRATED PARTS LISTS	19
7-1	General	19
7-3	How to Use the Parts Lists	19
Figure 7-1.	Basic Hoist	20
Figure 7-2A.	Motor Parts (1/4 and 1/2 HP Motors for Hoists with Serial Numbers JF-10799M4 and Below, Single and Three Phase)	22
Figure 7-2B.	Motor Parts (All Three Phase Motors, Except for 1/4 and 1/2 HP Motors with Hoist Serial Numbers JF-10799M4 and Below)	23
Figure 7-2C.	Motor Parts (All 1/4 and 1/2 HP Single Phase Motors with Serial Numbers JF-64J001D and Above and All Single Phase 3/4 and 1 HP Motors)	24
Figure 7-3A.	Electrical Parts (Single Speed, 115 Volt, 7 Wire Push-Button Control)	25
Figure 7-3B.	Electrical Parts (Single Speed Hoist, Magnetic Contactor Type)	26
Figure 7-3C.	Electrical Parts (Two Speed Hoists)	28
Figure 7-4.	Transmission	30
Figure 7-5.	Chaining Parts	32
Figure 7-6A.	Standard Limit Switch Parts	34
Figure 7-6B.	Geared Limit Switch Parts	34
Figure 7-7A.	Brake and Solenoid Parts (Disc Type)	36
Figure 7-7B.	Brake and Solenoid Parts (Shoe Type)	33
Figure 7-8A.	Push-Button (Single-Speed Hoists with Serial Numbers JF-10799M4 and below)	40
Figure 7-8B.	Push-Button (Single Speed Hoists with Serial Numbers JF-64J001D and Above)	42
Figure 7-8C.	Push-Button (Two Speed Hoists)	43

WARRANTY

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 I 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 JF 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. 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.

Note: The information herein is directed to the proper use, care and maintenance of the JF 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.

1-4. HOIST CONSTRUCTION.

1-5. This Coffing Hoist incorporates a strong, lightweight, diecast aluminum alloy frame and 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 a push-button control station that operates magnetic controllers for hoist operation. On all single speed hoists both the push-button and the magnetic controller are mechanically interlocked to prevent shorting the circuit and causing serious damage. On all two speed hoist push-buttons the elements are electrically interlocked. No mechanical interlock is furnished. In all hoists, regardless of the motor voltage, the push-button station operates on either 115 or 24 volts. The operator is further protected by the insulating push-button station.

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 "pistol-grip" 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 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 I. LEADING PARTICULARS

MODEL NUMBER	RATED LOAD (LBS.)	LIFT SPEED AT RATED LOAD (FT. PER MIN.)	MOTOR HP
JF-0516	500	16	1/4
JF-0532	500	32	1/2
JF-0564	500	64	1
JF-1008	1000	8	1/4
JF-1016	1000	16	1/2
JF-1032	1000	32	1
JF-2008	2000	8	1/2
JF-2012	2000	12	3/4
JF-2016	2000	16	1
JF-4006	4000	6	3/4
JF-4008	4000	8	1

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.

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 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 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 tugging around corners or obstructions. Also, there must be adequate space to permit the operator and other persons in the area 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 lubriplate 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.

The beam should be free of any obstructions, dirt, or grease, providing a free and level plane of movement. See figure 2-1.

2-6. LOAD HOOK DIRECTION (PHASING).

2-7. Connect hoist to electrical power source as follows:

NOTE: Single phase hoists (115/230V) are shipped wired for 115V and the 3-phase hoists (230/460V) are wired for 460V unless otherwise specified.

If single or 3-phase hoists are to be connected to 230V power supply, proceed with steps a. and b. If hoists are to be connected to 115V or 460V supply, proceed with step c.

a. Remove the electrical cover (11, figure 7-1).

b. 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.

c. After ascertaining that voltages of the power source and the hoist are the same, make permanent connections at the power source for SINGLE PHASE models.

d. 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.**

2-8. After electrical connections are completed, secure all protective covers over exposed wiring. Test the hoist operation as specified below prior to release for use.

2-9. TESTING.

2-10. Before placing hoist in operation, check for proper limit switch operation as follows:

a. Carefully raise the unloaded load block to upper limit and observe if it stops automatically at the maximum level. (See note.) Do not allow load block to run into hoist housing - this will damage the hoist. If load block does not stop at desired level, see paragraph 4-1 for limit switch adjustment.

b. Carefully lower the unloaded load block to

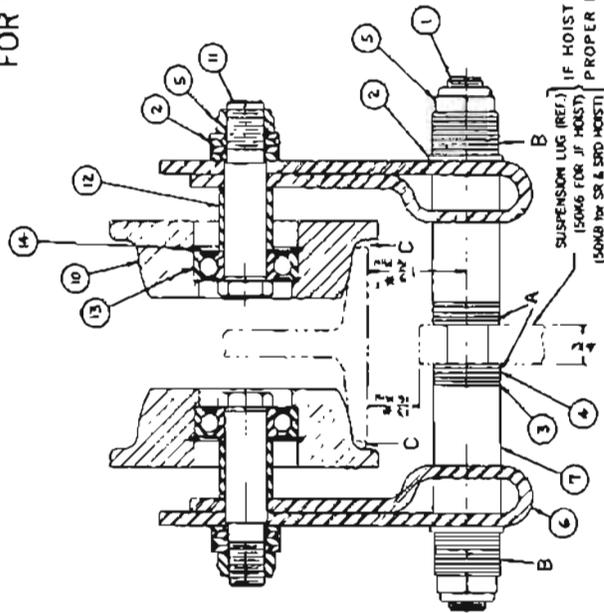
lower limit and observe if it stops automatically at the maximum level. (See note.) Do not allow dead end loop of chain to become taut against the hoist housing - this will damage the hoist. If load block does not stop at desired level, see paragraph 4-1 for limit switch adjustment.

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).

2-11. 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. See paragraph 4-5 if brake adjustment is required.

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# 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.

*American Standard¹ 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	0	8	5		
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 2-1. TROLLEY INSTALLATION (1/4 - 2 TON)

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. 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. On double chained hoists be sure that the load is equalized on the two supporting load chain strands before raising 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.

Note: The information herein is directed to the proper use, care and maintenance of the JF 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.

- 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 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 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.

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. (See Caution)

3-7. On Disc Brake Models, open brake manually by using two screwdriver blades, one on each side of brake at point close to brake spring posts. Using housing flange as pivot point, apply pressure to underside of armature plate (points "X", figure 4-2) to close solenoid and release brake. Use brief intermittent pushes. Lower the load in short increments (approximately 3 inches). Do not allow screwdriver blades to touch rotating friction discs "C".

3-8. On Shoe Brake Models, carefully push down on the solenoid plunger ("B", figure 4-3) with brief intermittent pushes. This releases the hoist brake and the load will descend by gravity. Lower the load in short increments (approximately 3 inches).

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.

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 such that one complete revolution (ten slots) of either nut is equivalent to ten links of chain travel or one slot is equivalent to approximately one link of chain travel. Movement of the limit switch nuts toward or away from each other increases or decreases the hook travel respectively. Care should be exercised when adjusting either limit of travel. When a geared type limit switch is furnished, the limit switch adjusting nuts are colored white and their location relative to the direction of travel is the same as above.** The increment of adjustment is such that one complete revolution (ten slots) of either nut is equivalent to 27-1/2 links of chain travel or one slot is equivalent to approximately 2-3/4 links of chain travel.

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

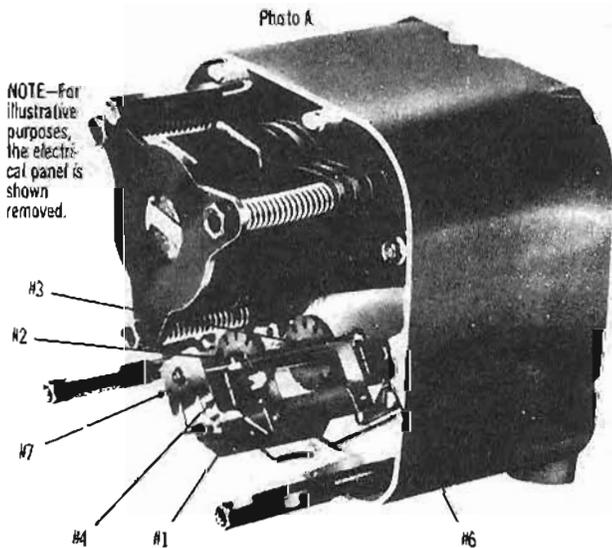


FIGURE 4-1. LIMIT SWITCH ADJUSTMENT

*Hoists with serial numbers under JF-10799M4 have white adjusting nuts with eight slots, therefore, extra caution should be exercised when making limit switch adjustments. The outboard white adjusting nut is the equivalent of the "Red Adjusting Nut".

**Hoists with serial numbers JF-64J001D and above only.

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

a. Carefully raise the load block to a point where the top of it is three inches or more from the hoist housing (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.

b. DISCONNECT HOIST FROM POWER SUPPLY and remove the electrical cover (11, figure 7-1).

c. 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).

d. 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.

e. Replace electrical cover and connect hoist to power supply.

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

a. Carefully lower the load block to a point where the dead end loop of chain hangs down six inches or more from the hoist housing (or to the limit desired in the particular application, allowing the minimum six inches).

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

b. DISCONNECT HOIST FROM POWER SUPPLY and remove the electrical cover (11, figure 7-1).

c. 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).

d. 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.

e. Replace electrical cover and connect hoist to power supply.

4-5. 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.

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

- a. Remove any load and DISCONNECT THE HOIST FROM POWER SUPPLY.
- b. Remove electrical cover (11, figure 7-1).
- c. 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.

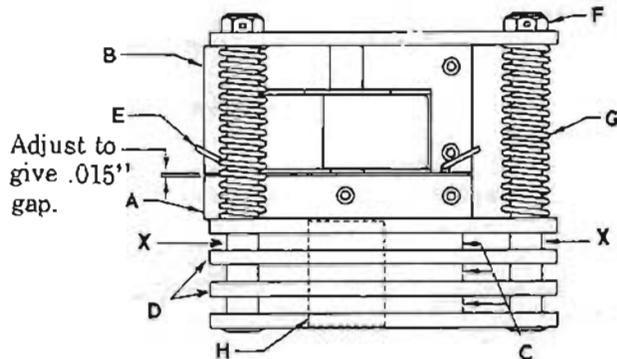


FIGURE 4-2. DISC BRAKE ADJUSTMENT

d. 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.

CAUTION: Be sure the bottom of the armature does not bear against the square adaptor (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 electrical cover, reconnect the power supply, and check brake operation per paragraph 2-11. If brake operates improperly, see troubleshooting, Section V.

4-8. To Adjust Shoe Type Brake, proceed as follows:

- a. Remove any load and DISCONNECT THE HOIST FROM POWER SUPPLY.
- b. Remove electrical cover (11, figure 7-1).
- c. Loosen two locking screws (A, figure 4-3). Hold solenoid plunger (B) at 1/2 to 9/16 inch gap as

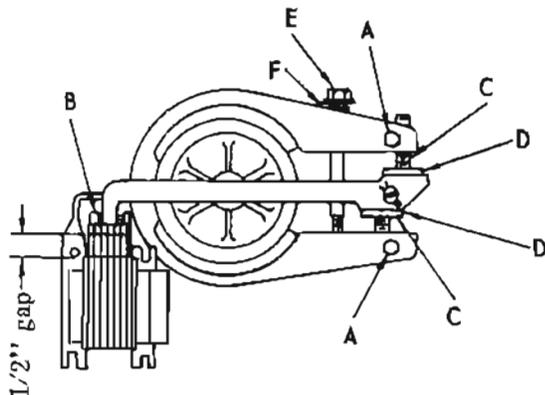


FIGURE 4-3. SHOE BRAKE ADJUSTMENT

shown. Turn each brake adjusting screw (C) until its face just engages the cam surface of the solenoid arm (D). Tighten the locking screws to retain this adjustment of the solenoid plunger.

d. Manually depress solenoid plunger (B) until it seats on the solenoid frame and rotate the brake drum to be sure that the brake shoes do not drag against the drum. If brake shoes do drag, it will be necessary to repeat paragraph c. using a gap slightly more than the 1/2 to 9/16 inch specified.

e. Reconnect the power supply, and check brake operation per paragraph 2-11. The solenoid plunger should seat with a "snap" and release promptly when the push-button is released.

f. If greater braking is desired, tighten the brake spring screw (E) approximately 1/2 turn at a time. After adjustment of the brake spring screw, manually depress the solenoid plunger (B) until it seats firmly on the solenoid frame and check to see that the spring "F" is not compressed to its solid height. If it is, the brake shoes must be replaced. Recheck steps a, c, d, and e as required.

g. Adjustment is now complete and the brake properly set. Replace the electrical cover, reconnect the power supply, and check brake operation per paragraph 2-11. If brake operates improperly, see troubleshooting, Section V.

4-9. CHAINING THE HOIST WITH OLD CHAIN IN HOIST. (See figure 4-9, Chaining Diagrams)

- a. Run load block up to its top limit.
- b. DISCONNECT HOIST FROM POWER SUPPLY and remove electrical cover (11, figure 7-1).
- c. With a screwdriver, push the spring guide plate (1, figure 4-1) out of the slots in the plastic limit switch nuts. Turn the slotted nut (2) nearest you back to about the center of the threaded screw. DO NOT DISCONNECT THE WIRES FROM THE LIMIT SWITCHES.
- d. Remove the load hook assembly from the old chain.
- e. Make a "C"-shaped chain link by grinding through one side of the end link of either the old or new chain.
- f. Hook the special "C" link to the end link of both chains thus joining them. BE SURE the welds of the upstanding links of the new chain are out away from the load sheave, and that proper orientation is observed for attachment of the dead-end in paragraph j. below.
- g. With the electrical cover off, connect the hoist to power supply. Be sure the green ground wire is properly grounded.
- h. Carefully jog the "UP" button and run the joined pieces of chain into the hoist until about 12 inches of the new chain comes out the other side.
- i. DISCONNECT HOIST FROM POWER SUPPLY.
- j. Remove both the "C" link and the old chain

from the dead end screw on the side of the hoist with the soft link supplied, observing proper orientation of the dead-end of the chain when secured. Avoid twists in the chain.

k. Adjust the lower limit switch per paragraph 4-4.

l. Attach the bottom hook on single-chained hoists, feed the chain through the load block (welds of the upstanding links will be in towards the sheave) and fasten the end of the chain to the chain support in the bottom of the hoist. **BE SURE THERE ARE NO TWISTS IN THE CHAIN.**

m. Adjust the upper limit switch per paragraph 4-3.

n. Lubricate the new chain and perform an operational test of the hoist.

4-10. CHAINING THE HOIST WITH NO CHAIN IN HOIST. (See figure 4-9, Chaining Diagrams.)

a. **DISCONNECT HOIST FROM POWER SUPPLY.** Do not remove electrical cover.

b. Lay hoist on its side and remove three or four (depending on the model of your hoist) screws (4, figure 7-1) from the motor end of the hoist housing (serial number and lifting speed are on this end). **CAUTION** - There are wires running through the hoist. Carefully ease the hoist sections apart.

c. **CAREFULLY** pull the motor and housing assembly off the hoist. The two sections come apart where the chain enters the hoist.

d. Turn the two hoist sections at right angles and remove the chain guide screw(s) (1, figure 4-4) (some models have one, some have two) and the nearest chain guide.

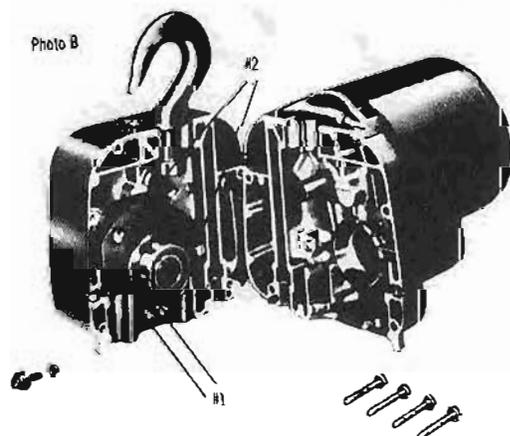


FIGURE 4-4. CHAINING THE HOIST

e. Remove two chain guide plate screws (2) and the nearest chain guide plate. Be careful not to lose the two spacers that are between the chain guide plates.

f. Lay the new chain over the load sheave. Be sure the welds of the upstanding links are out away from the load sheave and that proper orientation is observed for attachment of the dead end in paragraph i. below. Also be sure that the load hook assembly (if already attached to the chain) is toward the center of the hoist or to your right as you face the load sheave.

g. Replace the chain guide plate and the chain guide. Grease the splined shafts that project from both the housing and the motor. Use Coffing Gear Lubricant No. H-7577 or equivalent.

h. Place the motor coupling on the splined shaft and carefully fit the two hoist sections together. Be sure that the dead-end nut, (15, figure 7-5) the top hook or lug, and the support screw (22) (double-chained hoists only) are all in place. On single-chained hoists, the hook or lug goes in the center hole; on double-chained hoists it goes in the off-center hole. Be careful not to pinch any of the wiring. Turn the hoist on its side and replace the three or four screws and tighten securely.

i. Attach the upper end of the new chain to the hoist using dead end screw (17, figure 7-5) and dead end link (40). Observe proper orientation of the dead end chain when secured, avoiding twists in the chain. Attach the bottom hook to the other end of the chain on single-chained hoists. On double-chained hoists, feed the other end of the chain through the load block (welds of the upstanding links will be in towards the sheave) and then fasten it to the chain support (18) with support pin (19). **BE SURE THERE ARE NO TWISTS IN THE CHAIN.**

j. Adjust the limit switches per paragraphs 4-3 and 4-4.

k. Lubricate the new chain and perform an operational test of the hoist.

4-11. CHAINING THE HOIST WITH NO CHAIN IN HOIST. (ALTERNATE METHOD) This method is simpler but is somewhat slower than the method listed above. (See figure 4-9, Chaining Diagrams.)

a. **DISCONNECT HOIST FROM POWER SUPPLY** and remove electrical cover (11, figure 7-1).

b. With a screwdriver push the spring guide plate (1, figure 4-1) out of the slots in the plastic limit switch nuts. Turn both slotted nuts back to about the center of the threaded screw. Do not disconnect the wires from the limit switches.

c. On Shoe Brake Models, push the solenoid plunger (B, figure 4-3) into the solenoid and temporarily tie it there with a piece of cord. This releases the brake. On Disc Brake Models, remove two lock screws (12, figure 7-7A) and remove complete brake assembly (2 thru 10, figure 7-7A). Leave retaining ring and square adapter (13 and 11, figure 7-7A) in place on driving pinion.

d. Turn the hoist upside down. Lower the new chain through the clover-leaf slot in the center of the hoist. Make sure that the end link is flat with the axis

of the hoist and that the second link and all of the other upstanding links have the welds out away from the load sheave. Lower the chain as far as it will go.

e. With your fingers (do not use excessive force because of the high gear ratio), carefully turn the brake drum (5, figure 7-7B) for shoe brake models or square adapter (11, figure 7-7A) for disc brake models. The end link of the chain should catch in the load sheave and you can feed about two links into the hoist. Continue turning the brake drum or adapter until about 12 inches of the new chain comes out of the hoist.

f. Attach the upper end of the new chain to the hoist using dead-end screw (17, figure 7-5) and dead-end link (40). Observe proper orientation of the dead-end of the chain when secured, avoiding twists in the chain.

g. On Shoe Brake Models, release the solenoid plunger. On Disc Brake Models, attach the brake assembly with two lock screws (12, figure 7-7A).

h. Adjust the lower limit switch per paragraph 4-4.

i. Attach the bottom hook on single-chained hoists. On double-chained hoists, feed the chain through the load block (welds of the upstanding links will be in towards the sheave) and fasten the end of the chain to the chain support (18, figure 7-5) with chain support pin (19). **BE SURE THERE ARE NO TWISTS IN THE CHAIN.**

j. Adjust the upper limit switch per paragraph 4-3.

k. Lubricate the new chain and perform an operational test of the hoist.

4-12. REMOVAL AND REPLACEMENT OF TOP HOOK OR SUSPENSION LUG.

4-13. The top hook or suspension lug is secured to the hoist by the sheave housing (6, figure 7-1) and gear housing (8). To remove the top hook or suspension lug, proceed as follows:

a. **DISCONNECT HOIST FROM POWER SUPPLY.** Detach hoist from its mounting and move it to a safe work area.

b. Lay hoist on its side and remove screws (4, figure 7-1) and lock washers (5).

CAUTION - There are wires running through the hoist. Carefully ease the hoist sections apart.

c. **CAREFULLY** pull the motor and sheave housing assembly from the hoist just enough to remove the top hook or suspension lug.

4-14. To install the top hook or suspension lug, proceed as follows:

a. Inspect the sheave and gear housings (6 and 8, figure 7-1) for dirt, cracks, or excessive wear.

b. Apply a light coat of Coffing Gear Lubricant No. H-7577, or equivalent, to the mating surfaces of hook or suspension lug and mating housings.

c. Check that the motor coupling is on the splined shaft and carefully fit the two hoist sections

together. Be sure that the dead-end nut (15, figure 7-5) the top hook or suspension lug, and the support screw (22) (double-chained hoists only) are all in place. On single-chained hoists, the hook or suspension goes in the center hole; on double-chained hoists it goes in the off-center hole. Be careful not to pinch any of the wiring. Turn the hoist on its side and replace screws and lockwashers (4 and 5, figure 7-1).

d. Perform an operational test upon completion of reassembly.

4-15. INSTALLATION OF CHAIN CONTAINER ASSEMBLY.

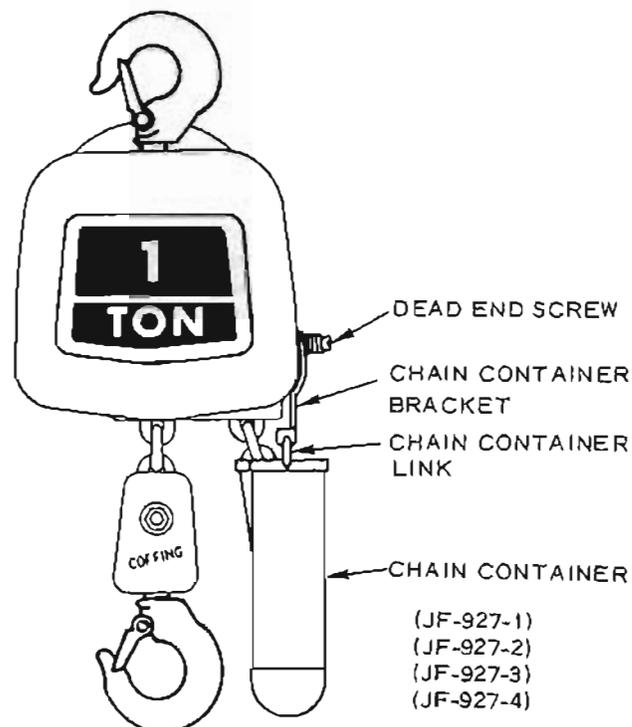


FIGURE 4-5. CHAIN CONTAINER INSTALLATION

4-16. The chain container is illustrated in figure 4-5. While referencing figure 4-5, proceed as follows to install the chain container.

a. Remove dead end screw and washers and let chain hang free.

b. Place chain container bracket flush against housing. Replace washers and screw. Tighten securely.

c. Attach chain container to bracket with two open links and then close the links.

d. Run load hook down to its lowest position. Place the slack end of chain in chain container. Feed the remainder of chain into container by operating hoist in the "Up" direction to the top limit. This will permit chain to pile freely and eliminate possibility of fouling which may occur if chain is placed in container by hand.

CAUTION: Do not allow load to come in contact with chain container. If this situation exists reset the "Up" limit switch (See paragraph 4-1) so that hook block stops below chain container.

4-17. INSPECTIONS.

4-18. A planned inspection routine should be established for this hoist based upon frequency of use, severity of use, and environmental conditions. (Reference American National Standard ANSI B30.16.) Some inspections should be made frequently (daily to monthly) and others periodically (monthly to yearly). It is strongly recommended that an Inspection and Maintenance Check List and an Inspector's Report similar to those shown in Figures 4-6 and 4-7 be used and filed for reference. All inspections should be made by, or under the directions of, a designated inspector. Special inspections should be made following any significant repairs or any operating occurrence leading one to suspect that the hoist's capabilities may have been impaired.

4-19. FREQUENT INSPECTIONS.

4-20. 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(s) or suspension lug 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. Check hook latches to see that latches perform function of closing off the hook throat in a secure manner when load is attached.
- g. Inspect load carrying chains for wear, twist, distortion or improper dead-ending. Also check for presence of foreign material and adequate lubrication.

4-21. PERIODIC INSPECTIONS.

4-22. 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, semi-annually or annually based on his monthly experience.

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 frequent inspections listed in paragraph 4-20.

b. Check nuts, bolts, rivets, and other hardware for looseness, stripped or damaged threads, and corrosion.

c. Check sheaves for distortion, cracks, and excessive wear.

d. Check housings and load block for cracks (resulting from collision, dropping, etc.), excessive wear 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, gears, and chain guides.

f. Check brakes for glazing, contamination or excessive 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 4-25. 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 hooks and suspension lugs for cracking, checking, extreme wear and spreading. Replace hooks or suspension lugs showing these signs. Use dye penetrant, magnetic 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.

i. Inspect hook and suspension lug connections for cracks, bending, stripped threads, and other damage.

j. Inspect limit switches for signs of looseness or deterioration, ensure that they are secure and connections are tight.

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

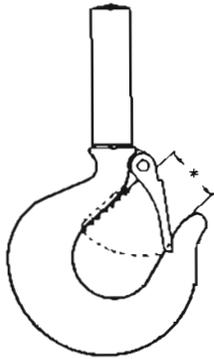
l. Inspect all gaskets.

m. Inspect 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.

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.

TABLE II. HOOK THROAT OPENING



Hoist Models	Serial Nos. JF-0001 Through JF-10799M4		Serial Nos. Through JF-10799MA — JF-410JH		Serial Nos. Starting JF-101-KH —	
	Top Hook	Bottom Hook	Top Hook	Bottom Hook	Top Hook*	Bottom Hook*
JF-0516	1-1/4"	1-1/4"	1-3/8"	1-1/4"	1-5/16"	1-3/16"
JF-0532	1-1/4"	1-1/4"	1-3/8"	1-1/4"	1-5/16"	1-3/16"
JF-0564	1-1/4"	1-1/4"	1-3/8"	1-1/4"	1-5/16"	1-3/16"
JF-1008	1-1/4"	1-1/4"	1-3/8"	1-1/4"	1-5/16"	1-3/16"
JF-1016	1-1/4"	1-1/4"	1-3/8"	1-1/4"	1-5/16"	1-3/16"
JF-1032	1-1/4"	1-1/4"	1-3/8"	1-1/4"	1-5/16"	1-3/16"
JF-2008	1-1/4"	1-1/4"	1-3/8"	1-1/4"	1-5/16"	1-3/16"
JF-2012	1-3/8"	1-1/4"	1-3/8"	1-1/4"	1-5/16"	1-3/16"
JF-2016	1-3/8"	1-1/4"	1-3/8"	1-1/4"	1-5/16"	1-3/16"
JF-4006	1-3/8"	1-3/8"	1-3/8"	1-3/8"	1-5/16"	1-5/16"
JF-4008	1-3/8"	1-3/8"	1-3/8"	1-3/8"	1-5/16"	1-5/16"

*Dimension of throat opening of hook with internal latch.

NOTE: Add 1/16" to these dimensions if hook opening is measured without hook latch.

4-23. INSPECTION OF HOISTS NOT IN REGULAR USE.

4-24. If a hoist has been idle for one month or more, but not more than six months, perform the inspections per paragraph 4-19 prior to use. If the hoist has been idle more than six months, perform the inspections per paragraph 4-21.

4-25. CHECKING CHAIN FOR WEAR.

4-26. 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.

Note: Chain gauges are available upon request. Furnish serial number of hoist when ordering.

4-27. CLEANING.

4-28. 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 (12, fig. 7-1) and warning label (12, fig. 7-8B) are clean and legible from the operator's position. Keep load chain and chain enclosure areas of hoist and load block clean at all times. Build up of foreign material or substances in these areas can bind, wear or otherwise restrict the load chain and other moving parts. During periodic inspection and with hoist disconnected from its power supply, disassemble the electrical cover (11, fig. 7-1)

and remove dust build up caused by electrical arcing and brake wear. This can be done by blowing out the area with an air hose using moderate air pressure.

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.

4-29. LUBRICATION.

4-30. Proper lubrication is necessary for a long and relatively trouble-free hoist operation. Refer to the following and to figure 4-8, Recommended Lubrication Schedule, for lubrication points, type of lubricant and frequency of lubrication.

a. LOAD CHAIN. Clean the load chain with acid-free solvent and coat with "Coffing" Lubricant No. H-7595 or equivalent. Wipe excess oil to prevent dripping. If the hoist is used in an atmosphere containing abrasive dust chain should be cleaned and oiled more frequently. Never apply grease to the chain.

b. GEARING. The gear housing of this hoist is packed at assembly with one pound of permanent type grease. When the gear housing is opened, repack with "Coffing" Gear Lubricant No. H-7577.

c. BEARINGS. All bearings except hook and idler sheave bearings are lubricated at the factory and should not require additional lubrication. Noisy or worn bearings should be replaced.

d. LIMIT SWITCH SHAFT. The threaded limit switch shaft (17, figure 7-6A or 9, figure 7-6B) should be given a light coat of grease to prevent rust.

e. HOOK BEARINGS. Apply a few drops of SAE 20-30 gear oil inside edge of shield and outside edge of bearing.

f. IDLER SHEAVE BEARING (BUSHING). Disassemble load block and apply a light coat of "Coffing" No. H-7577 gear lubricant, or equivalent, inside of bearing.

**INSPECTION & 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 wear 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, Chain Guides			*	Excessive wear, corrosion, cracks, distortion		
Nuts, Bolts, Rivets			*	Looseness, stripped and damaged threads, corrosion		
Sheaves			*	Distortion, cracks, and excessive wear Build up of foreign substances		
Housings, Load Block			*	Cracks, distortion, excessive wear. Internal build up of foreign substances.		
Wiring and Terminals			*	Fraying, defective insulation		
Contact Block, Magnetic Hoist Control Switch, Other Electrical Apparatus			*	Loose connections, burned or pitted contacts		
Supporting Structure and Trolley (if used)			*	Damage or wear which restricts ability to support imposed loads		
Nameplates, Decals, Warning Labels			*	Missing, damaged or illegible		

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

FREQUENCY OF INSPECTION:

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

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

FIGURE 4-6. RECOMMENDED INSPECTION AND MAINTENANCE CHECK LIST

NOTE: This inspection and maintenance check list is in accordance with our interpretation of the requirements of the Safety Standard for Overhead Hoists ANSI B30.16-73. 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 4-7. RECOMMENDED INSPECTOR'S REPORT

RECOMMENDED LUBRICATION SCHEDULE* MODEL JF ELECTRIC POWERED CHAIN HOIST					
FIGURE AND INDEX NO.	COMPONENT	TYPE OF LUBRICANT	TYPE OF SERVICE AND FREQUENCY OF LUBRICATION		
			HEAVY	NORMAL	INFREQUENT
23, Figure 7-5	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	At periodic inspection (see Figure 4-6)		
17, Figure 7-6A 9, Figure 7-6B	Limit Switch Shaft	"Coffing" No. H-7577 gear lubricant Alternate - multi purpose lithium base bearing grease	Monthly	Yearly	Yearly
28, Figure 7-5	Load Hook Bearing	SAE 20 - 30 gear oil	Weekly	Monthly	Yearly
17, 18, 19, 21, Figure 7-1	Top Hook or Suspension Lug Bearing Surfaces	SAE 20 - 30 gear oil	Monthly	Yearly	Yearly
36, Figure 7-5	Idler Sheave Bearing (Bushing)	"Coffing" No. H - 7577 gear lubricant Alternate - multi purpose lithium base bearing grease	At periodic inspection (see Figure 4-6)		

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 4-8. RECOMMENDED LUBRICATION SCHEDULE

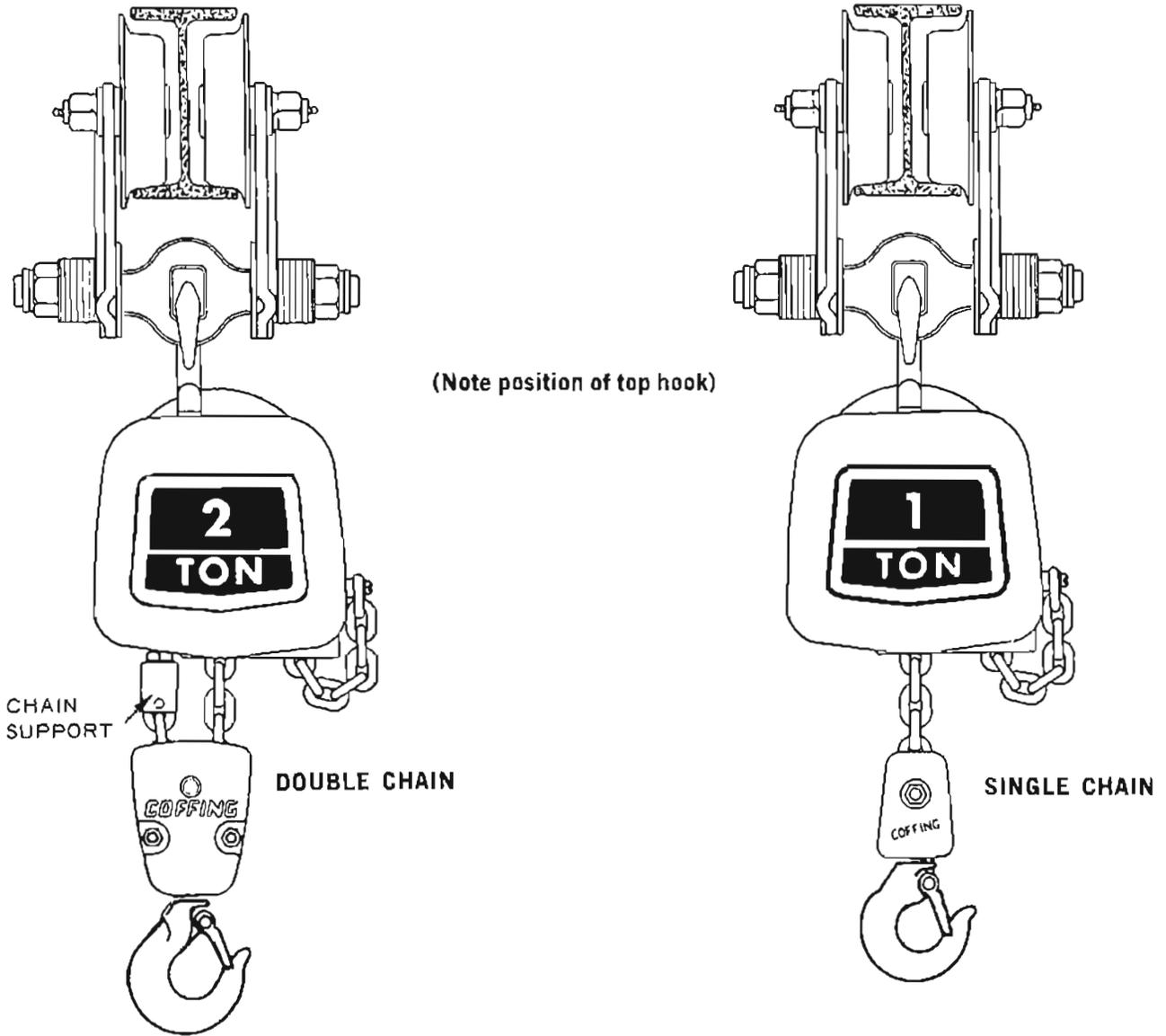


FIGURE 4-9. CHAINING DIAGRAMS

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	REMEDY
HOOK FAILS TO STOP AT END OF TRAVEL	
1. Brake needs adjustment	1. See paragraph 4-5
2. Limit switches not operating	2. Check adjustment. See paragraph 4-1. Check connections against wiring diagram. Tighten loose connections or replace.
3. Plastic limit switch nuts not moving on shaft	3. Check for stripped threads or bent nut guide.
4. Magnetic reversing switch malfunction	4. Remove electrical cover and check reversing switch.
HOIST DOES NOT RESPOND TO PUSHBUTTON	
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. Improper connections in hoist or push-button station	3. Check all connections at line connectors and on terminal block. Check terminal block on dual-voltage hoists for proper voltage connections.
4. Brake does not release	4. Check connections to the solenoid coil. Check for open or short circuit. Check for proper adjustment. See paragraph 4-5.
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. Check brake adjustment. See paragraph 4-5.
HOOK MOVES IN WRONG DIRECTION	
1. Three-phase reversal	1. Reverse any two wires (except the green ground wire) at the power source (see paragraph 2-6).
2. Improper connections	2. Check all connections against Wiring Diagram.
3. Faulty instant-reversing switch (single-phase hoists only)	3. Check contacts and springs of instant-reversing switch inside the motor. Replace if necessary.

TROUBLE

REMEDY

HOOK RAISES BUT WILL NOT LOWER

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. "Down" circuit open 2. Broken conductor in push-button cable 3. Faulty magnetic hoist control switch | <ol style="list-style-type: none"> 1. Check circuit for loose connections. Check "Down" limit switch for malfunction. 2. Check each conductor in the cable. If one is broken, replace entire cable. 3. Check coils for open or short circuit. Check all connections in control circuit. Check for burned contacts. Replace as needed. |
|---|--|

HOOK LOWERS,BUT WILL NOT RAISE

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. Hoist overloaded 2. Low voltage 3. "UP" circuit open 4. Broken conductor in push-button cable 5. Faulty magnetic hoist control switch 6. Faulty capacitor (single-phase hoists only) 7. Motor is overheating | <ol style="list-style-type: none"> 1. Reduce load to within rated capacity. 2. Determine cause of low voltage and bring up to within plus or minus 10 per cent of the voltage specified on hoist. 3. Check circuit for loose connections. Check "UP" limit switch for malfunction. 4. Check each conductor in the cable. If one is broken, replace entire cable. 5. Check coils for open or short circuit. Check all connections in control circuit. Check for burned contacts. Replace as needed. 6. Check starting capacitor in motor. Replace if necessary. 7. See note below. |
|---|--|

LACK OF PROPER LIFTING SPEED

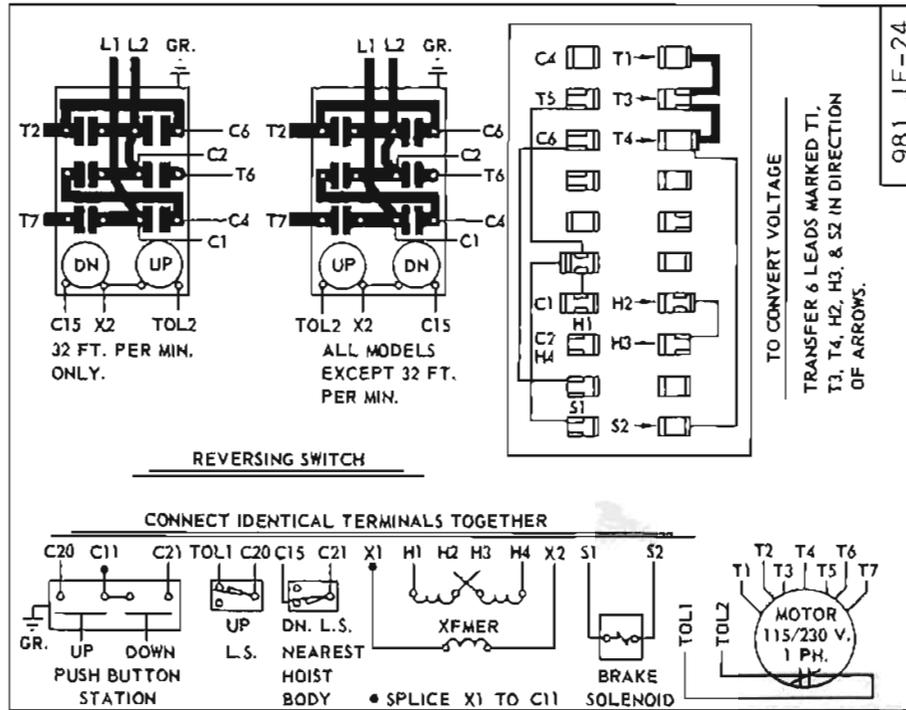
- | | |
|---|---|
| <ol style="list-style-type: none"> 1. Hoist overloaded 2. Brake is dragging 3. Low voltage | <ol style="list-style-type: none"> 1. Reduce load to within rated capacity of hoist. 2. Check for proper brake adjustment or other defects. See paragraph 4-5. 3. Bring up voltage to plus or minus 10 per cent of voltage specified on hoist. |
|---|---|

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 corrected before continuing the hoist operation.

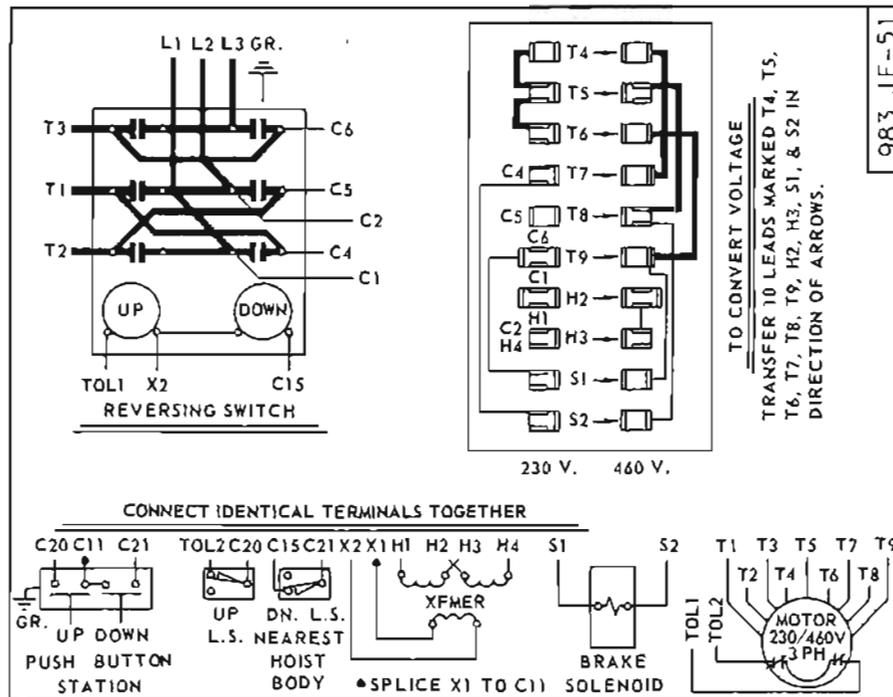
SECTION IV
WIRING DIAGRAMS

6-1. GENERAL.

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



1 SPEED, 1 PHASE WITH THERMAL OVERLOAD



1 SPEED, 3 PHASE WITH THERMAL OVERLOAD

SECTION VII
ILLUSTRATED PARTS LISTS

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.

7-3. HOW TO USE THE PARTS LIST.

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 motor, electrical, limit switch, and push button areas of the hoist it was necessary to divide these areas as follows:

FIGURE	TITLE
7-2A	Motor Parts (1/4 and 1/2 HP Motors for Hoists with Serial Numbers JF-10799M4 and Below, Single and Three Phase)
7-2B	Motor Parts (All 3 Phase Motors, Except for 1/4 and 1/2 HP Motors with Hoist Serial Numbers JF-10799M4 and Below)
7-2C	Motor Parts (All 1/4 and 1/2 HP Single Phase Motors with Serial Numbers JF-64J001D and Above and All Single Phase 3/4 and 1 HP Motors)
7-3A	Electrical Parts (Single Speed, 115 Volt, 7 Wire Push-Button Control)
7-3B	Electrical Parts (Single Speed Hoist, Magnetic Contactor Type)
7-3C	Electrical Parts (Two Speed Hoists)
7-6A	Standard Limit Switch Parts
7-6B	Geared Limit Switch Parts
7-7A	Brake and Solenoid Parts (Disc Type)
7-7B	Brake and Solenoid Parts (Shoe Type)
7-8A	Push-Button (Single Speed Hoists with Serial Numbers JF-10799M4 and Below)
7-8B	Push-Button (Single Speed Hoists with Serial Numbers JF-64J001D and Above)
7-8C	Push-Button (Two Speed Hoists)

Therefore, when determining the figure in which your part would be illustrated, take the above into consideration. Study the illustration and locate the part you wish to find. A number will be located adjacent to the 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 2 of the current parts list.

NOTE: When ordering motor parts always give the motor reference number and motor model number.

DUFF-NORTON COMPANY
MANUFACTURERS OF
COFFING HOISTS
CHARLOTTE, NORTH CAROLINA 28201

MODEL H.P. V V
R.P.M. A. A.
CYC FR PART NO.
DUTY RISE C
TYPE SER. FACT
MOTOR REF.
CODE PHASE

MAKE SURE THAT VOLTAGE, CYCLES, AND PHASES OF LINE AGREE WITH VALUES GIVEN ON THIS PLATE. CONNECT PER WIRING DIAGRAM IN HOIST UNIT. MOTOR EQUIPPED WITH PRE-LUBRICATED BALL BEARINGS.

DOERR MOTOR MADE BY
ELECTRIC CORPORATION B-4077
CEDARBURG WISCONSIN, U.S.A.

FIGURE 7-1. BASIC HOIST

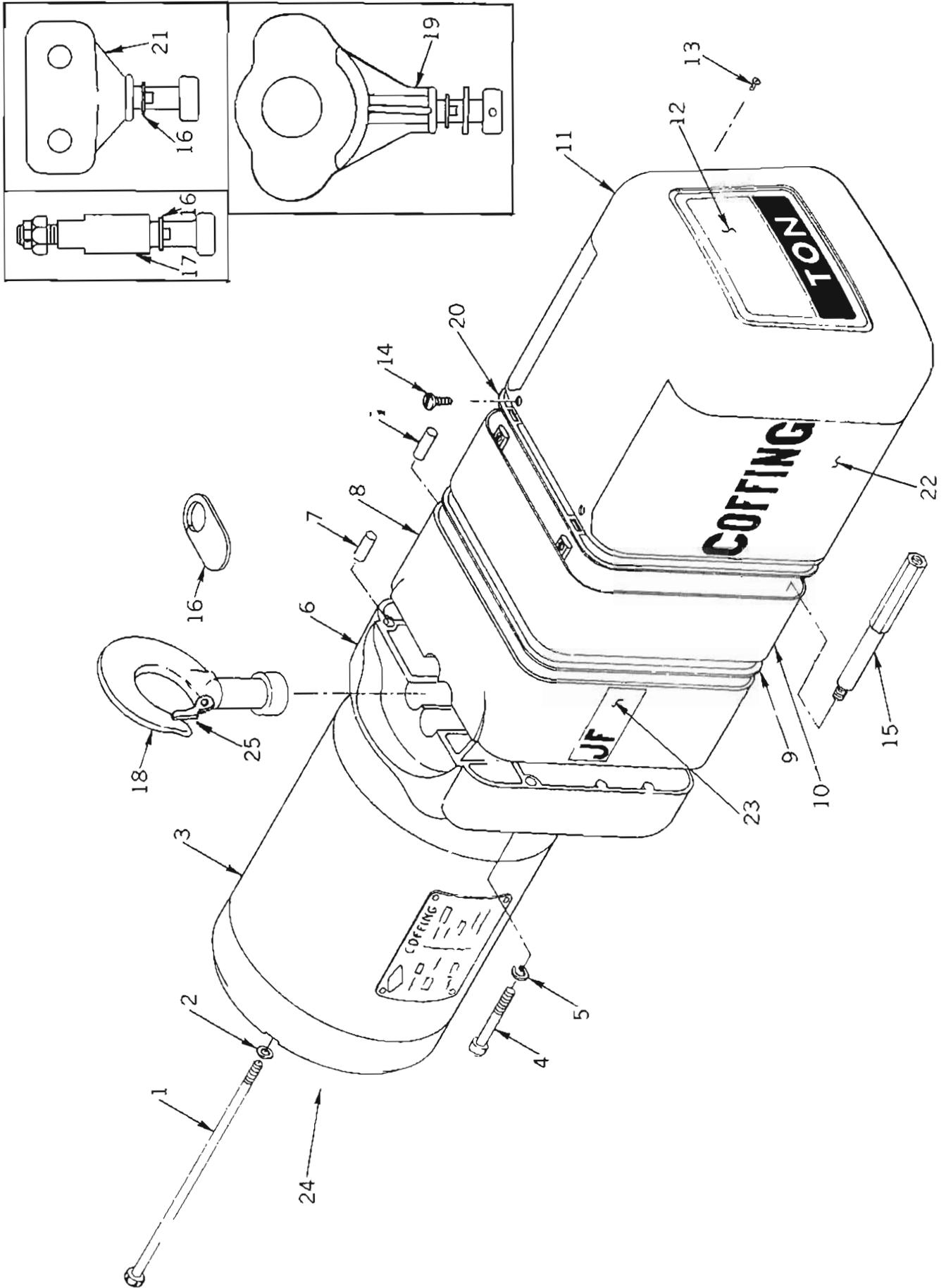
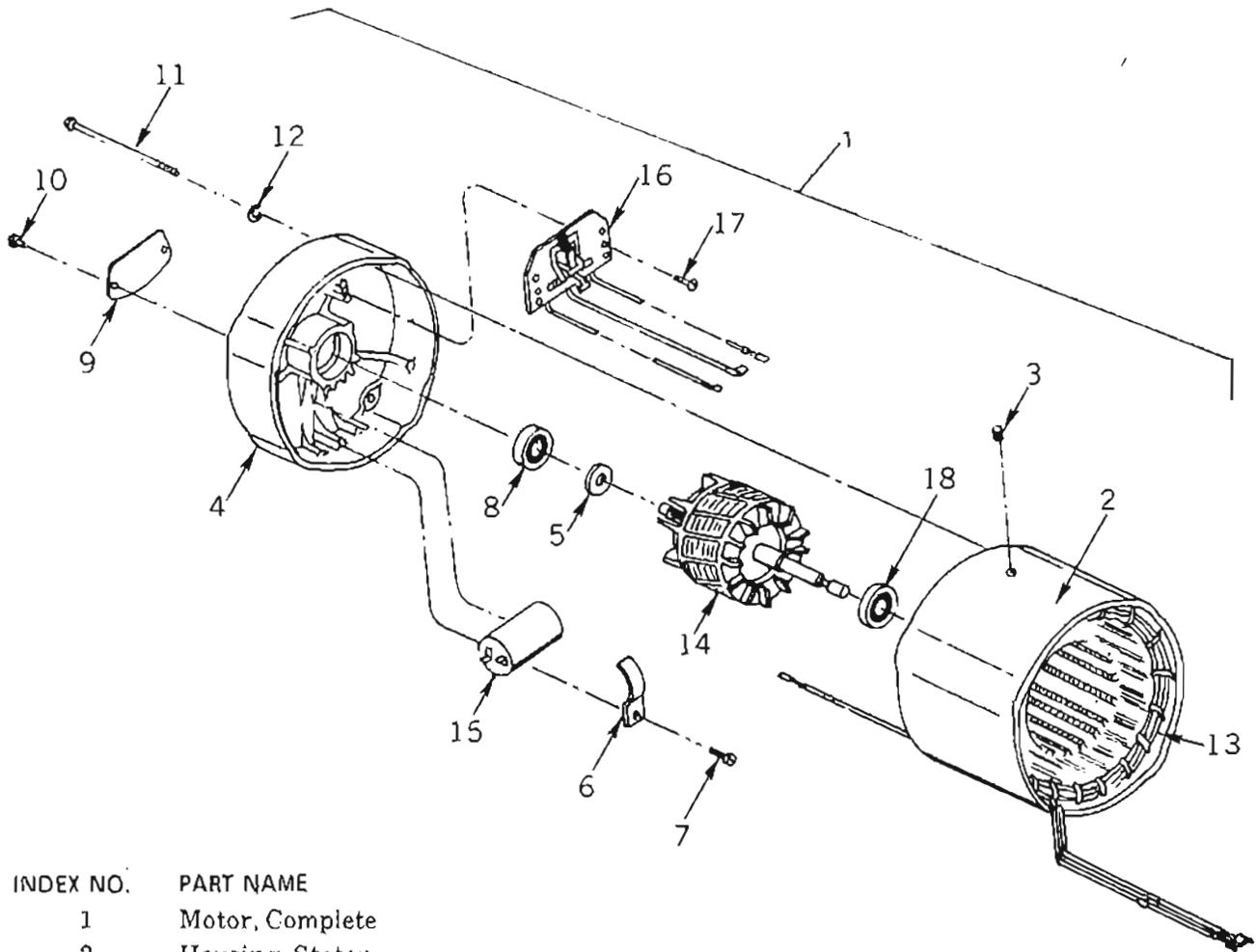


FIGURE 7-1. BASIC HOIST

FIG. NO.	PART NAME
1	Screw, Motor Mount
2	Lock Washer
3	Motor, Complete (Reference—See Figure 7-2)
4	Screw, Sheave Housing
5	Lock Washer
6	Housing, Sheave
7	Pin, Dowel
8	Housing, Gear
9	Gasket, Gear Case
10	Cover, Gear Box
11	Cover, Electrical
12	Plate, Capacity
13	Screw, Drive
14	Screw
15	Stud Post
16	Cover, Hook Hole
17	Lug Assembly, Rigid or Swivel
18	Hook Assembly, With Latch, Top, Rigid or Swivel
19	Lug Assembly, Multi-Purpose, Rigid or Swivel
20	Gasket
21	Lug, Suspension, Rigid
22	Decal, Coffing
23	Decal, Tonnage
24	Decal, Motor End
25	Hook Latch Kit

FOR PART NUMBERS SEE FIGURE 7-1 OF CURRENT PARTS LIST.

FIGURE 7-2A. MOTOR PARTS
 (¼ AND ½ HP MOTORS FOR HOISTS WITH SERIAL NUMBERS
 JF-10799M4 AND BELOW, SINGLE AND THREE PHASE)

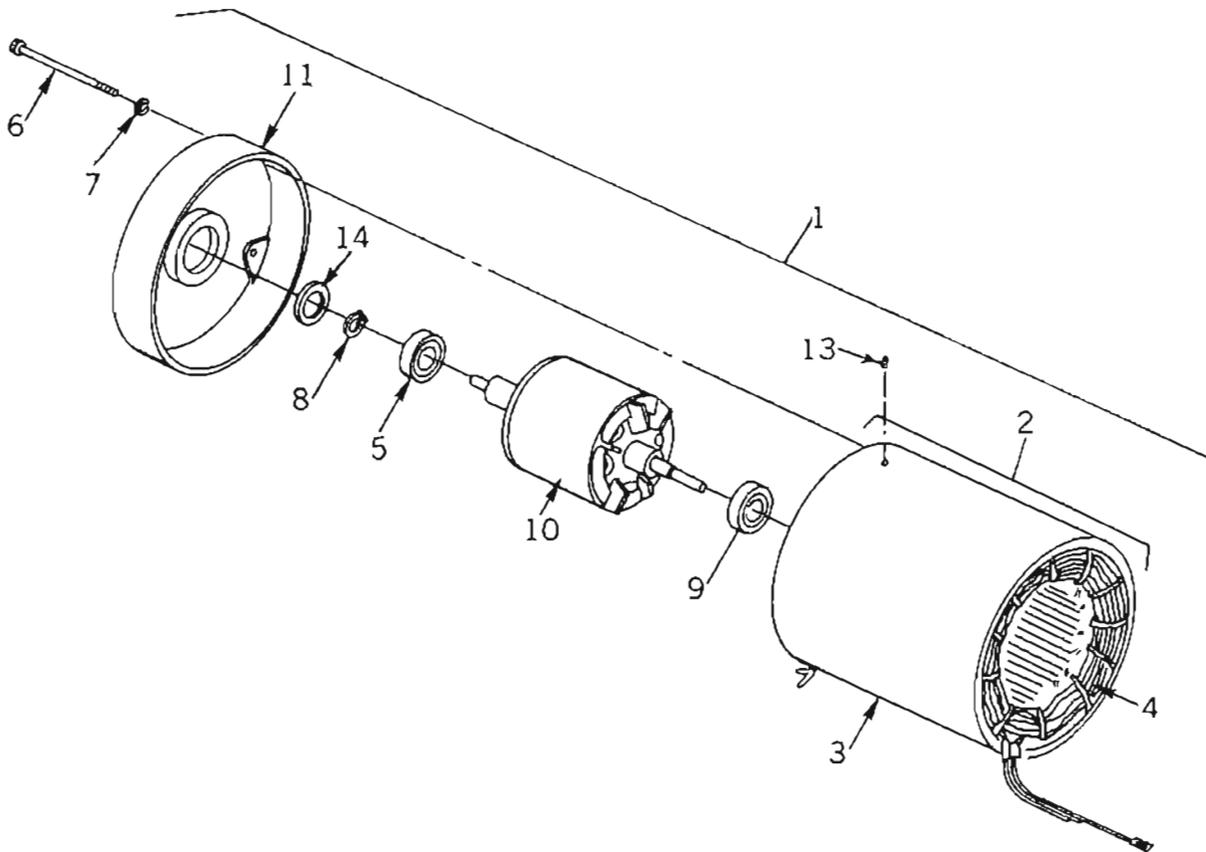


INDEX NO.	PART NAME
1	Motor, Complete
2	Housing, Stator
3	Screw, Stator Lock
4	End Shield
5	Spacer
6	Clamp, Capacitor, Single Phase Only
7	Screw, Clamp, Single Phase Only
8	Bearing, Front
9	Name Plate, Motor
10	Screw, Motor Name Plate
11	Screw, Motor Mount (Reference—See Figure 7-1)
12	Lock Washer (Reference—See Figure 7-1)
13	Stator
14	Rotor and Shaft Assembly
15	Capacitor, Single Phase Only
16	Switch, Stationary, Single Phase Only
17	Screw, Switch, Single Phase Only
18	Bearing, Rear

When ordering repair parts for motors, give motor model numbers for Jack & Heintz and Doerr motors. Give complete motor nameplate data for all other motors.

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

FIGURE 7-2B. MOTOR PARTS
 (ALL 3 PHASE MOTORS, EXCEPT FOR ¼ AND ½ HP MOTORS
 WITH HOIST SERIAL NUMBERS JF-10799M4 AND BELOW)



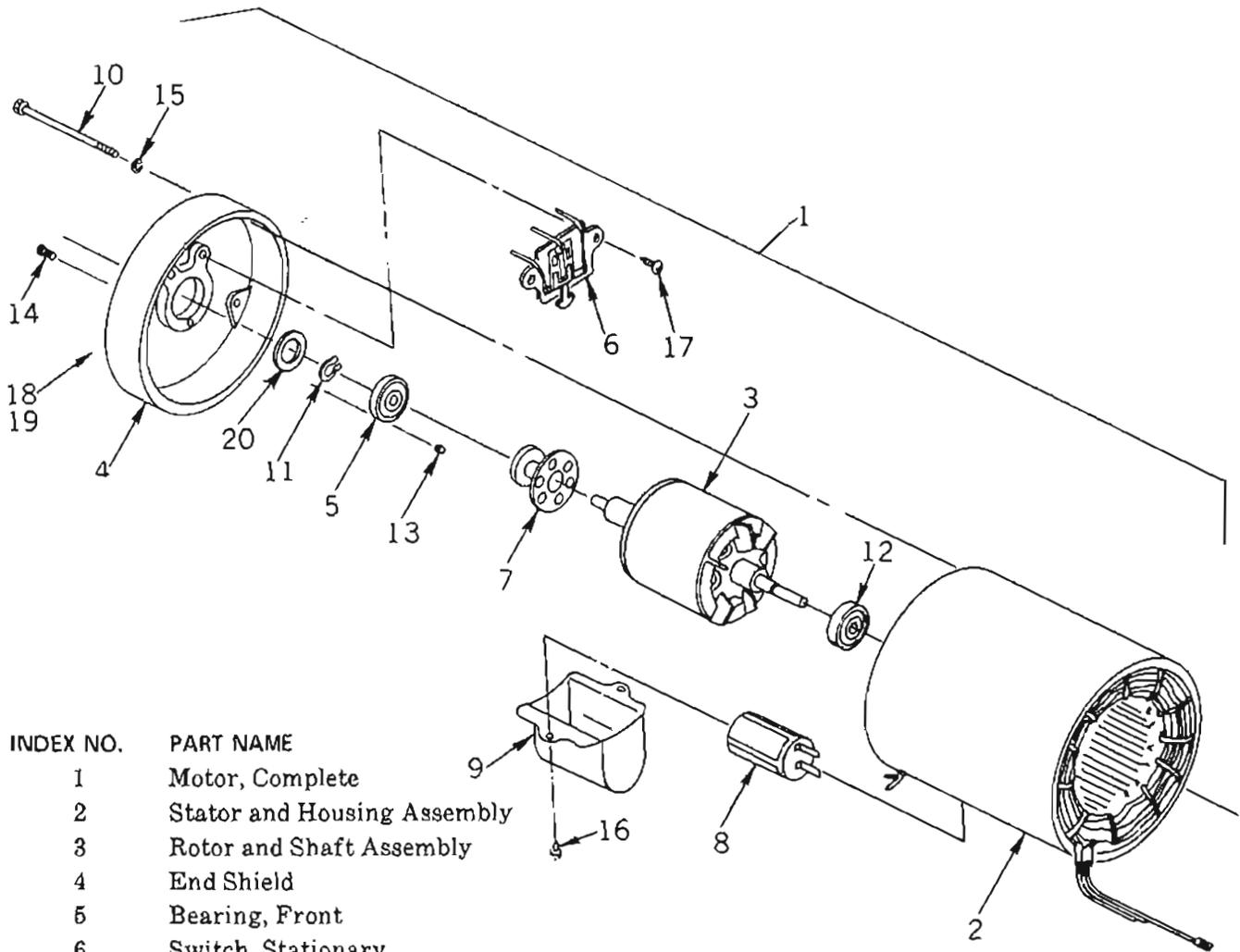
INDEX NO.	PART NAME
1	Motor, Complete
2	Stator and Housing Assembly (Consists of Index Nos. 3-4)
3	Housing, Stator
4	Stator
5	Bearing, Front
6	Screw, Motor Mount (Reference—See Figure 7-1)
7	Lock Washer (Reference—See Figure 7-1)
8	Ring, Retaining
9	Bearing, Rear
10	Rotor and Shaft Assembly
11	End Shield
12*	Nameplate
13	Screw, Stator Lock
14	Washer, Shim
	* Not Illustrated

When ordering repair parts for motors, give motor model numbers for Jack & Heintz and Doerr motors. Give complete motor nameplate data for all other motors.

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

FIGURE 7-2C. MOTOR PARTS

{ALL ¼ AND ½ HP SINGLE PHASE MOTORS WITH SERIAL NUMBERS JF-64J001D AND ABOVE AND ALL SINGLE PHASE ¾ AND 1 HP MOTORS}

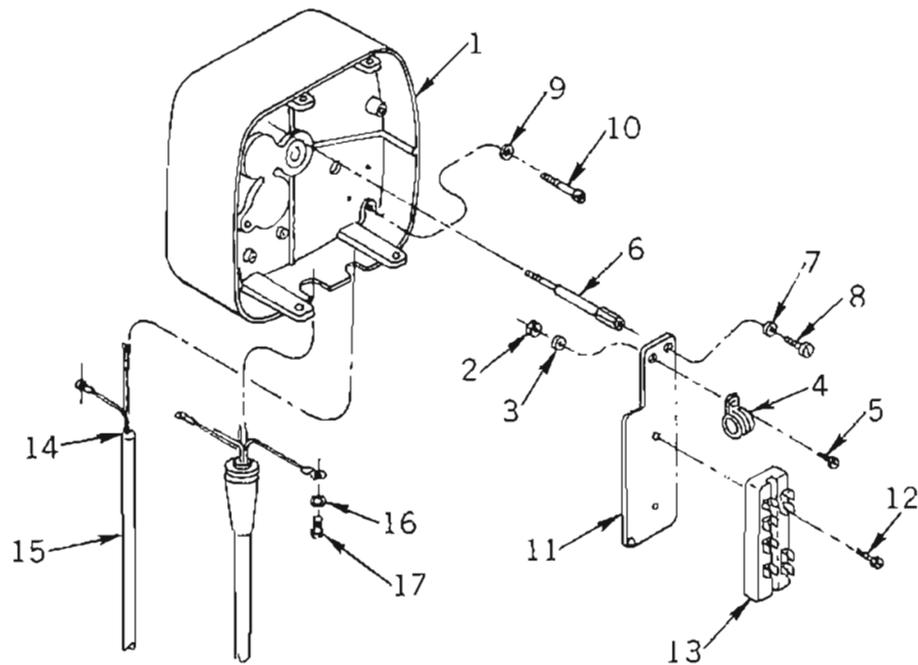


INDEX NO.	PART NAME
1	Motor, Complete
2	Stator and Housing Assembly
3	Rotor and Shaft Assembly
4	End Shield
5	Bearing, Front
6	Switch, Stationary
7	Switch, Rotating
8	Capacitor
9	Cover, Capacitor
10	Screw, Motor Mount (Reference—See Figure 7-1)
11	Ring, Retaining
12	Bearing, Rear
13	Flange Nut
14	Screw
15	Lock Washer (Reference—See Figure 7-1)
16	Screw
17	Screw
18	Nameplate, Motor
19	Gasket, Motor Nameplate
20	Washer, Shim

When ordering repair parts for motors, give motor model numbers for Jack & Heintz and Doerr motors. Give complete motor nameplate data for all other motors.

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

FIGURE 7-3A. ELECTRICAL PARTS
(SINGLE SPEED, 115 VOLT, 7 WIRE PUSH-BUTTON CONTROL)



INDEX NO.	PART NAME
1	Cover, Gear Box (Reference—See Figure 7-1)
2	Nut, Cable Clamp
3	Lock Washer
4	Clamp, Cable
5	Screw, Cable Clamp
6	Stud Post (Reference—See Figure 7-1)
7	Lock Washer
8	Screw
9	Lock Washer
10	Screw
11	Plate, Electrical Panel
12	Screw
13	Block Terminal
14	Relief, Strain
15	Power Cable Assembly
16	Washer, Flat
17	Screw

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

FIGURE 7-38. ELECTRICAL PARTS
(SINGLE SPEED HOIST, MAGNETIC CONTACTOR TYPE)

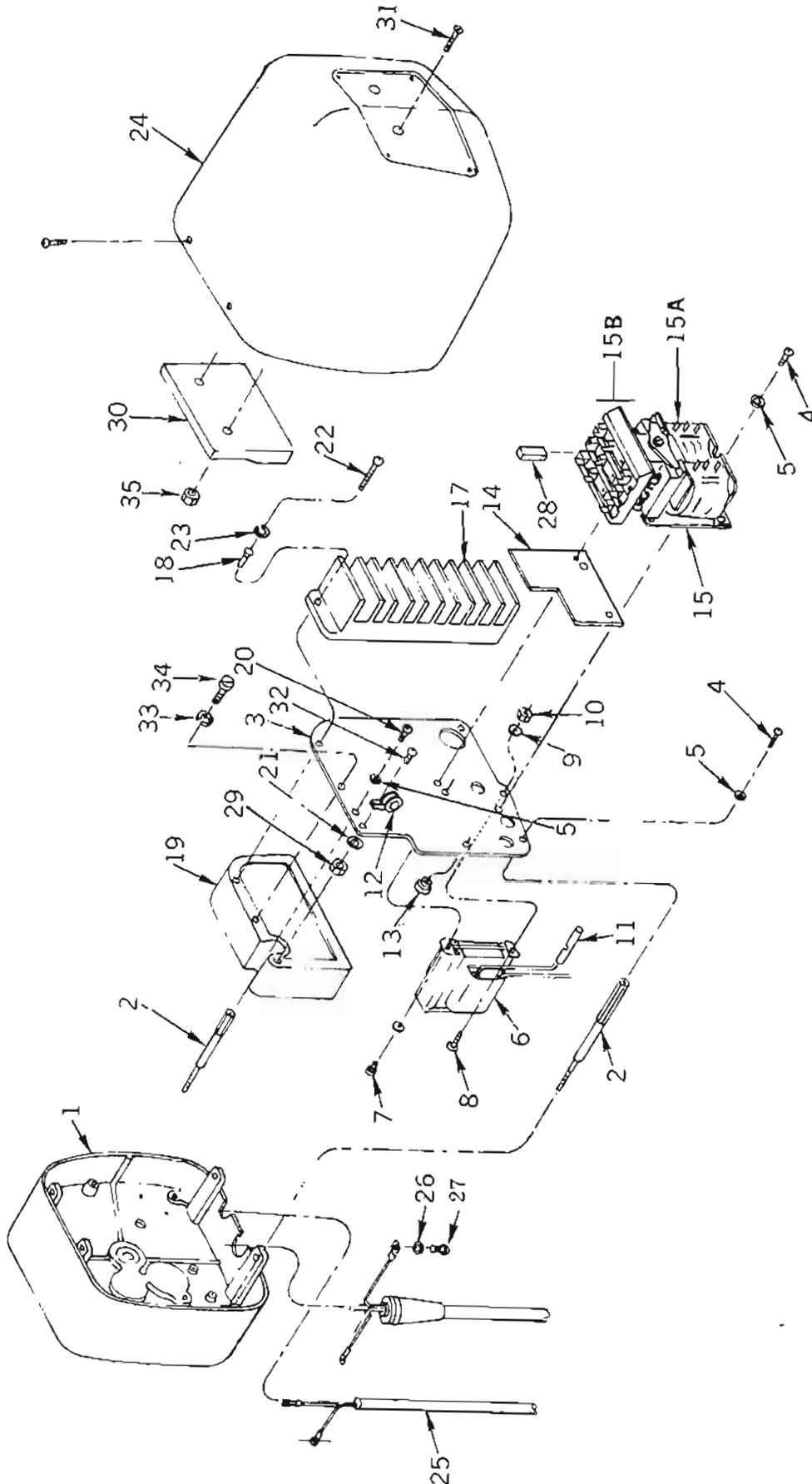


FIGURE 7-3B. ELECTRICAL PARTS
(SINGLE SPEED HOIST, MAGNETIC CONTACTOR TYPE)

INDEX NO.	PART NAME
1	Cover, Gear Box (Reference—See Figure 7-1)
2	Stud Post (Reference—See Figure 7-1)
3	Plate, Electric Panel
4	Screw
5	Lock Washer
6	Transformer
7	Screw
8	Screw
9	Lock Washer
10	Nut
11	Connector, Splice
12	Clamp, Cable
13	Plug Nut
14	Insulator
15	Contactor, Reversing Magnetic (Complete)
15A	Contactor, Coil
15B	Contactor, Service Parts Kit
17	Block, Terminal
18	Eyelet, Terminal Block
19*	Counterweight
20	Screw
21	Lock Washer
22*	Screw
23*	Lock Washer
24	Cover, Electrical (Reference—See Figure 7-1)
25	Power Cable
26	Washer, Flat
27	Screw
28	Insulator, Terminal
29	Nut
30	Adapter, Cover
31	Screw
32	Screw, Cable Clamp
33*	Screw
34*	Lockwasher
35	Nut

*Used on shoe brake models only.

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

FIGURE 7-3C. ELECTRICAL PARTS
(TWO SPEED HOISTS)

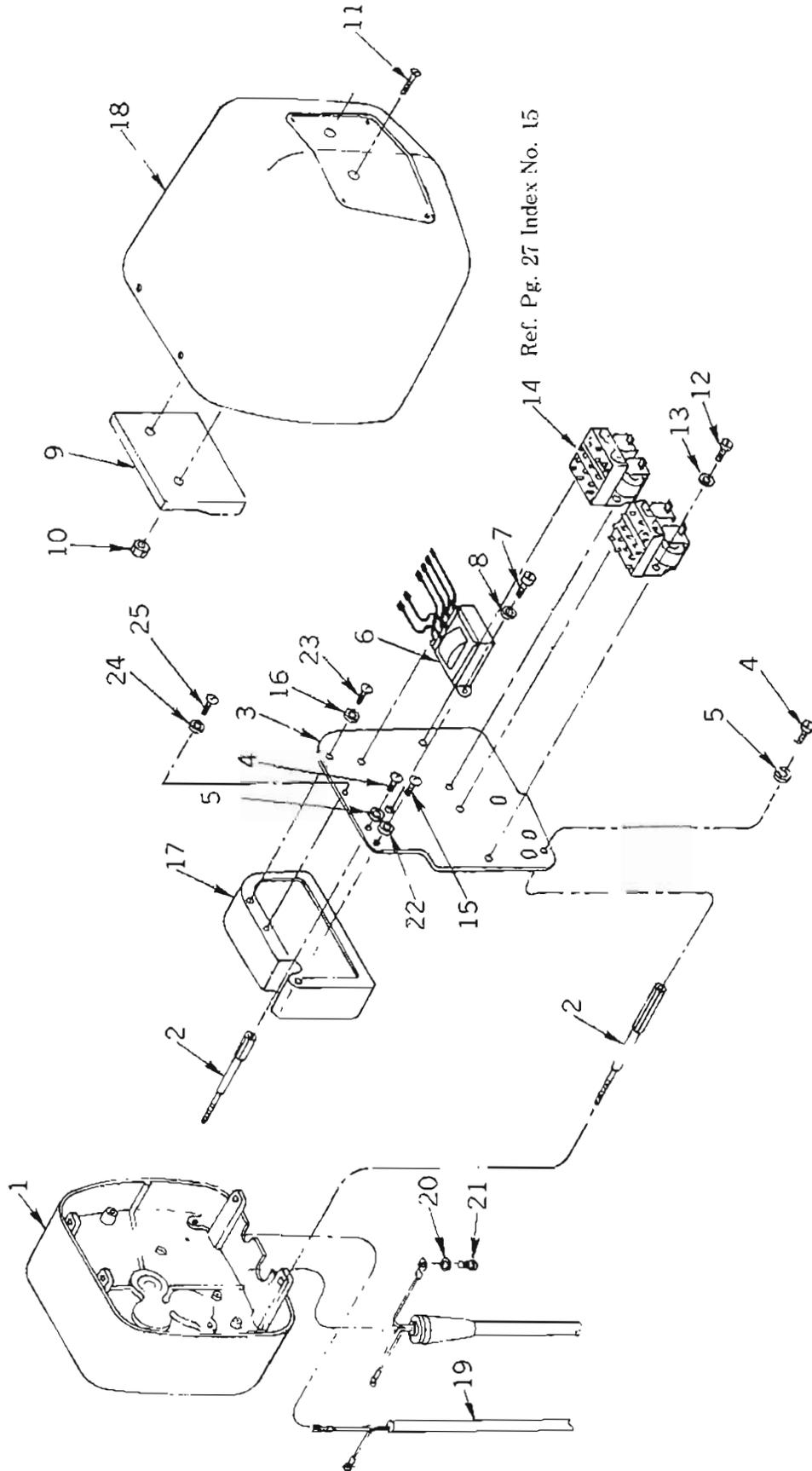


FIGURE 7-3C. ELECTRICAL PARTS
(TWO SPEED HOISTS)

FIG NO.	PART NAME
1	Cover, Gear Box (Reference—See Figure 7-1)
2	Stud Post (Reference—See Figure 7-1)
3	Plate, Electrical Panel
4	Screw
5	Lock Washer
6	Transformer
7	Screw
8	Lock Washer
9	Counterweight
10	Nut
11	Screw
12	Screw
13	Lock Washer
14	Contactor, Magnetic Reversing (Complete)
14A	Contactor, Coil
14B	Contactor, Service Parts Kit
15	Screw
16*	Lock Washer
17*	Counterweight
18	Cover, Electrical (Reference—See Figure 7-1)
19	Power Cable
20	Flat Washer
21	Screw
22	Lock Washer
23*	Screw
24*	Lock Washer
25*	Screw

* Used on shoe brake models only.

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

FIGURE 7-4. TRANSMISSION

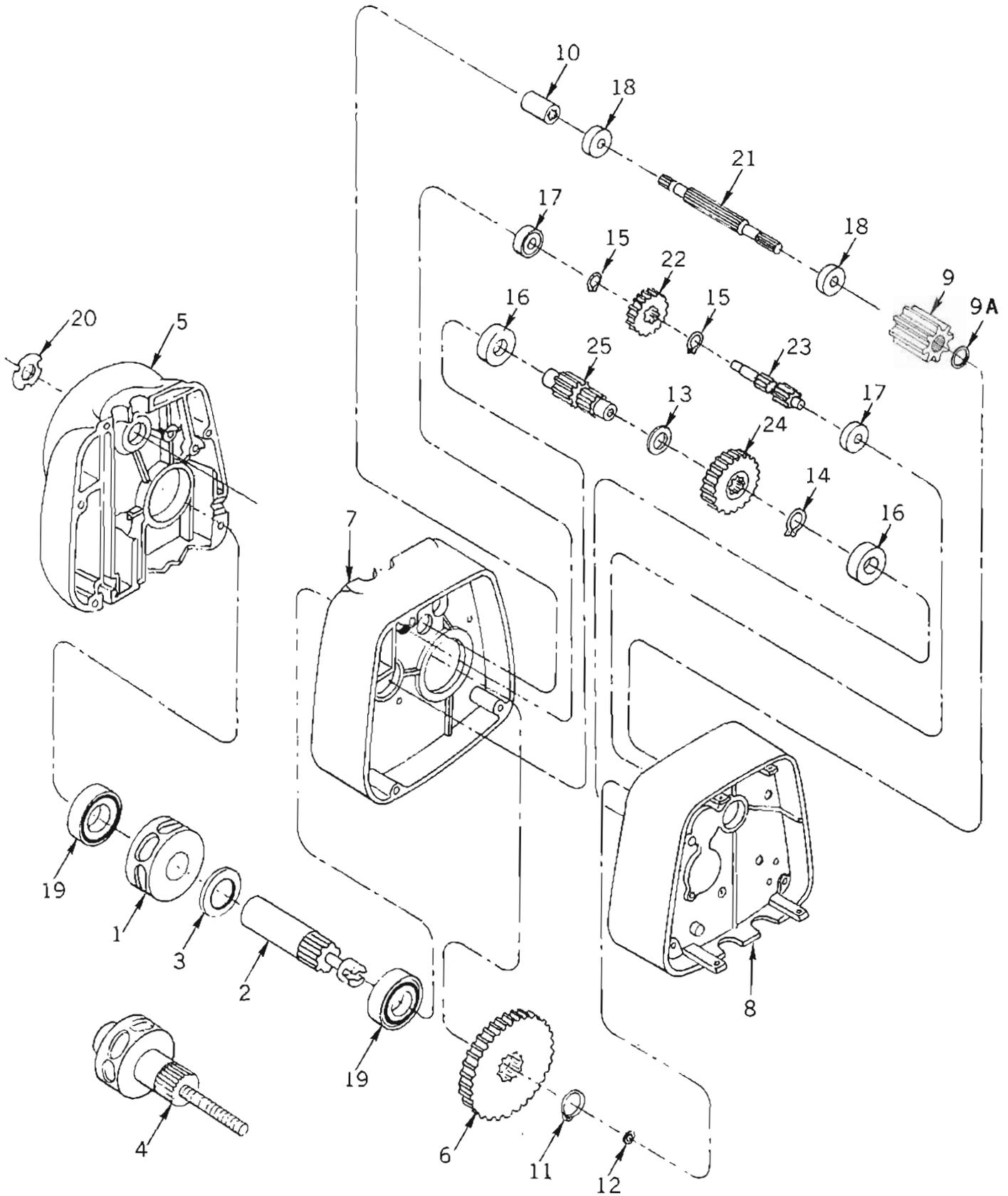


FIGURE 7-4. TRANSMISSION

INDEX NO.	PART NAME
1	Sheave, Load (Reference—See Figure 7-5)
2	Shaft Assembly, Load (Reference—See Figure 7-5)
3	Spacer (Reference—See Figure 7-5)
4	Load Sheave and Limit Switch Shaft Assembly, 1/4" Chain (Reference—See Figure 7-5)
5	Housing, Sheave (Reference—See Figure 7-5)
6	Gear, Output
7	Housing, Gear (Reference—See Figure 7-1)
8	Cover, Gear Box (Reference—See Figure 7-1)
9	Adaptor
9a	Retaining Ring
10	Coupling, Motor
11	Ring, Retaining
12	"O" Ring (Reference—See Figures 7-6A and 7-6B)
13	Spacer, Gear—Used on shoe brake units only.
14	Ring, Retaining
15	Ring, Retaining
16	Bearing
17	Bearing
18	Bearing
19	Bearing (Reference—See Figure 7-5)
20	Spring, Bearing Load
21	Pinion, Driving
22	Gear, High Speed
23	Pinion, High Speed
24	Gear, Intermediate
25	Pinion, Intermediate
26*	Lubricant * Not Illustrated

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

FIGURE 7-5. CHAINING PARTS

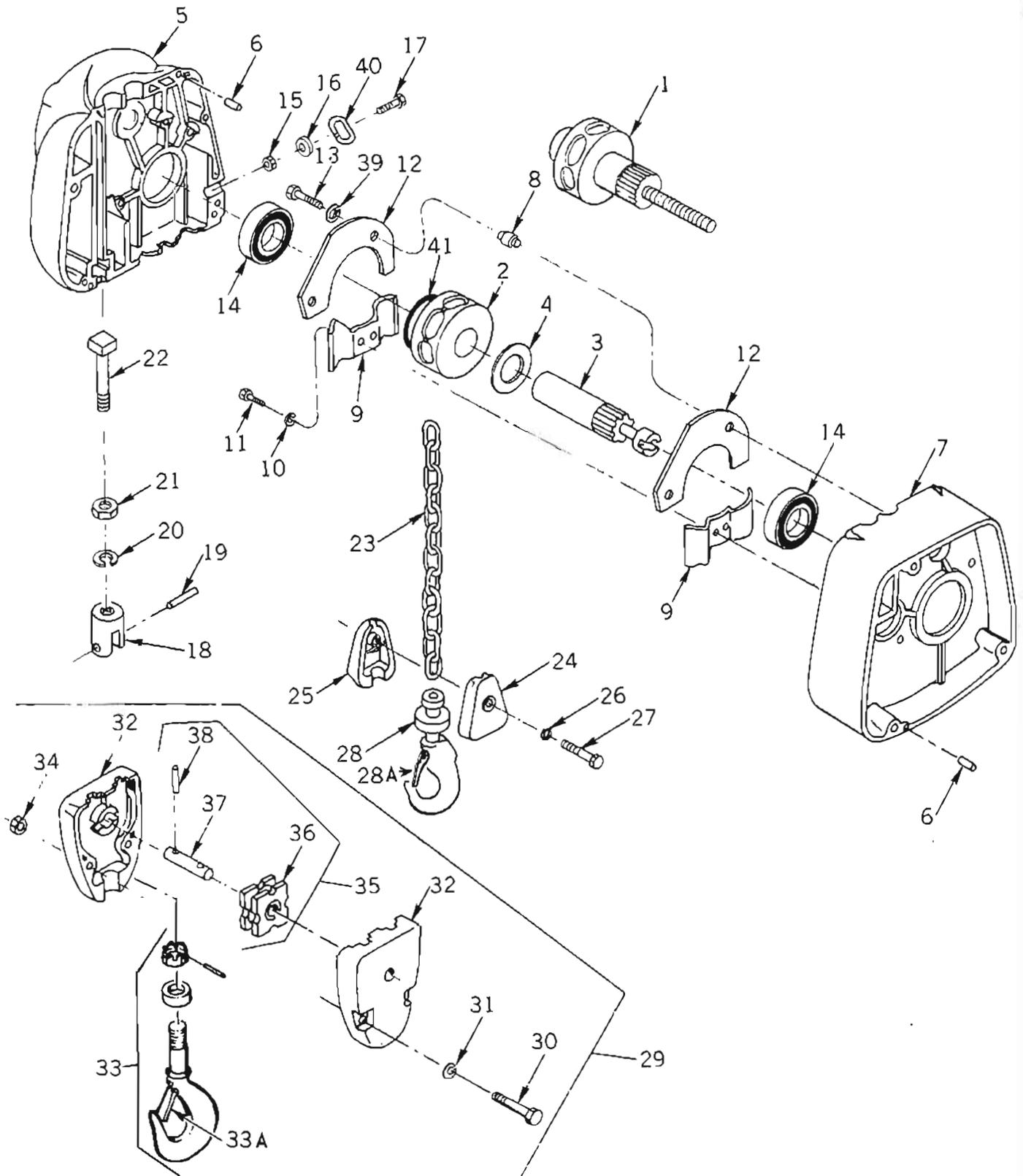


FIGURE 7-5. CHAINING PARTS

INDEX NO.	PART NAME
1	Load Sheave and Limit Switch Shaft Assembly ($\frac{1}{4}$ " Chain)
2	Sheave, Load
3	Load Shaft Assembly
4	Spacer ($\frac{9}{32}$ " Chain)
5	Housing, Sheave (Reference—See Figure 7-1)
6	Pin, Dowel
7	Housing, Gear (Reference—See Section 7-1)
8	Spacer, Chain Guide
9	Guide, Chain
10	Lock Washer
11	Screw, Chain Guide
12	Plate, Chain Guide
13	Screw, Chain Guide Plate
14	Bearing
15	Nut, Dead End Screw
16	Washer, Flat
17	Screw, Dead End
18	Support, Chain
19	Pin, Chain Support
20	Lock Washer
21	Nut, Support Screw
22	Screw, Support
23	Chain
24	Frame, Single Chain Load Block (Unthreaded)
25	Frame, Single Chain Load Block (Threaded)
26	Lock Washer
27	Screw, Load Block
28	Hook Assembly with Latch, Bottom
28a	Latch Kit
29	Load Block Assembly, Double Chain (Consists of Index Nos. 30-38)
30	Screw, Load Block
31	Lock Washer
32	Frame, Double Chain Load Block
33	Hook Assembly with Latch, Bottom
33a	Latch Kit
34	Nut, Load Block Screw
35	Shaft Assembly, Load Block (Consists of Index Nos. 36-38)
36	Sheave and Bearing Assembly
37	Shaft, Load Block
38	Pin, Load Block Shaft
39	Lock Washer
40	Link, Dead End
41	"O" Ring

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

FIGURE 7-6A. STANDARD LIMIT SWITCH PARTS

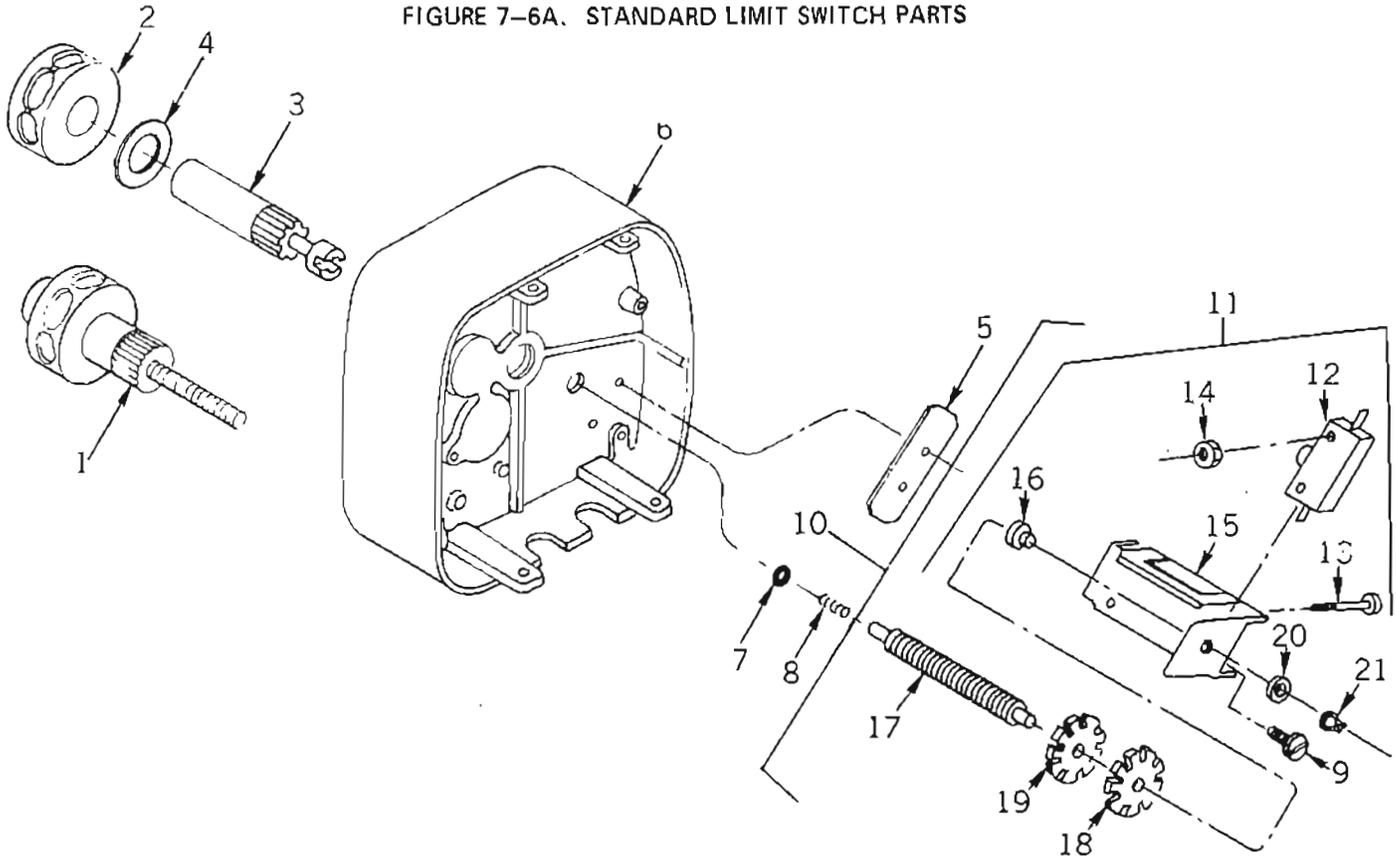


FIGURE 7-6B. GEARED LIMIT SWITCH PARTS

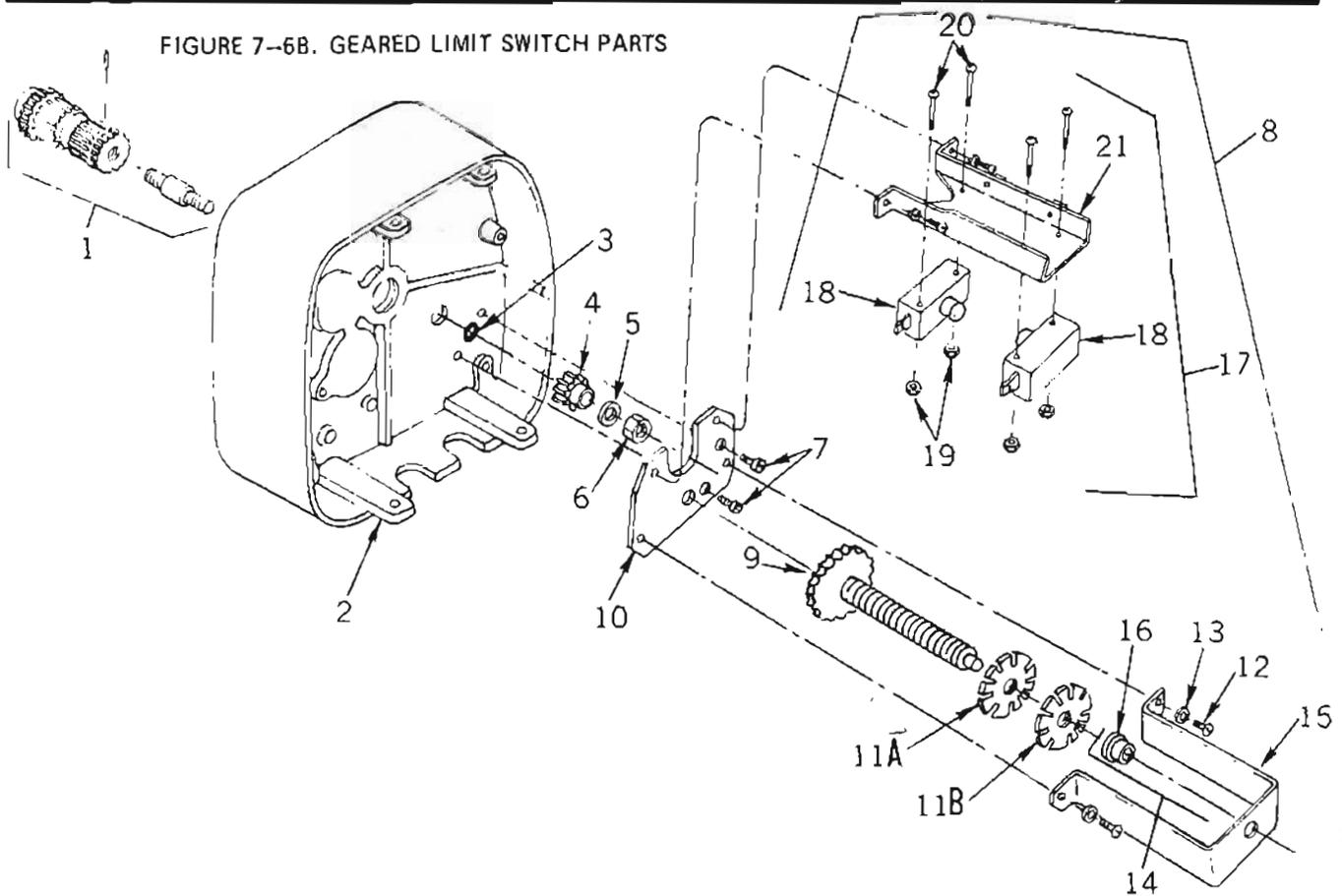


FIGURE 7-6A. STANDARD LIMIT SWITCH PARTS

INDEX NO.	PART NAME	INDEX NO.	PART NAME
1	Load Sheave and Limit Switch Shaft Assembly (Reference--See Figure 7-5)	11	Limit Switch Assembly (Consists of Index Nos. 12-15)
2	Sheave, Load (Reference--See Figure 7-5)	12	Switch
3	Load Shaft Assembly (Reference--See Figure 7-5)	13	Screw
4	Spacer (9/32" Chain) (Reference--See Figure 7-5)	14	Nut
5	Insulator	15	Limit Switch Bracket Assembly
6	Cover, Gear Box (Reference--See Figure 7-1)	16	Bearing, Bronze (Component of Index No. 15--can be purchased separately)
7	"O" Ring	17	Shaft, Limit Switch
8	Spring	18	Nut, Limit Switch (Red)
9	Screw	19	Nut, Limit Switch (Green)
10	Limit Switch and Shaft Assembly (Consists of Index Nos. 11-21)	20	Washer, Thrust
		21	Ring, Retaining

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

FIGURE 7-6B. GEARED LIMIT SWITCH PARTS

INDEX NO.	PART NAME
1	Load Shaft Assembly (Reference--See Figure 7-5)
2	Cover, Gear Box (Reference--See Figure 7-1)
3	"O" Ring
4	Pinion
5	Lock Washer
6	Nut
7	Screw
8	Limit Switch Assembly (Consists of Index Nos. 9-21)
9	Shaft and Gear Assembly
10	Base
11A	Nut, Limit Switch
11B	Nut, Limit Switch
12	Screw
13	Lock Washer
14	Bracket and Bearing Assembly (Consists of Index Nos. 15-16)
15	Bracket
16	Bearing, Bronze
17	Limit Switch and Bracket Assembly (Consists of Index Nos. 18-20)
18	Switch
19	Nut
20	Screw
21	Limit Switch and Bracket Assembly

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

FIGURE 7-7A. BRAKE AND SOLENOID PARTS
(DISC TYPE)

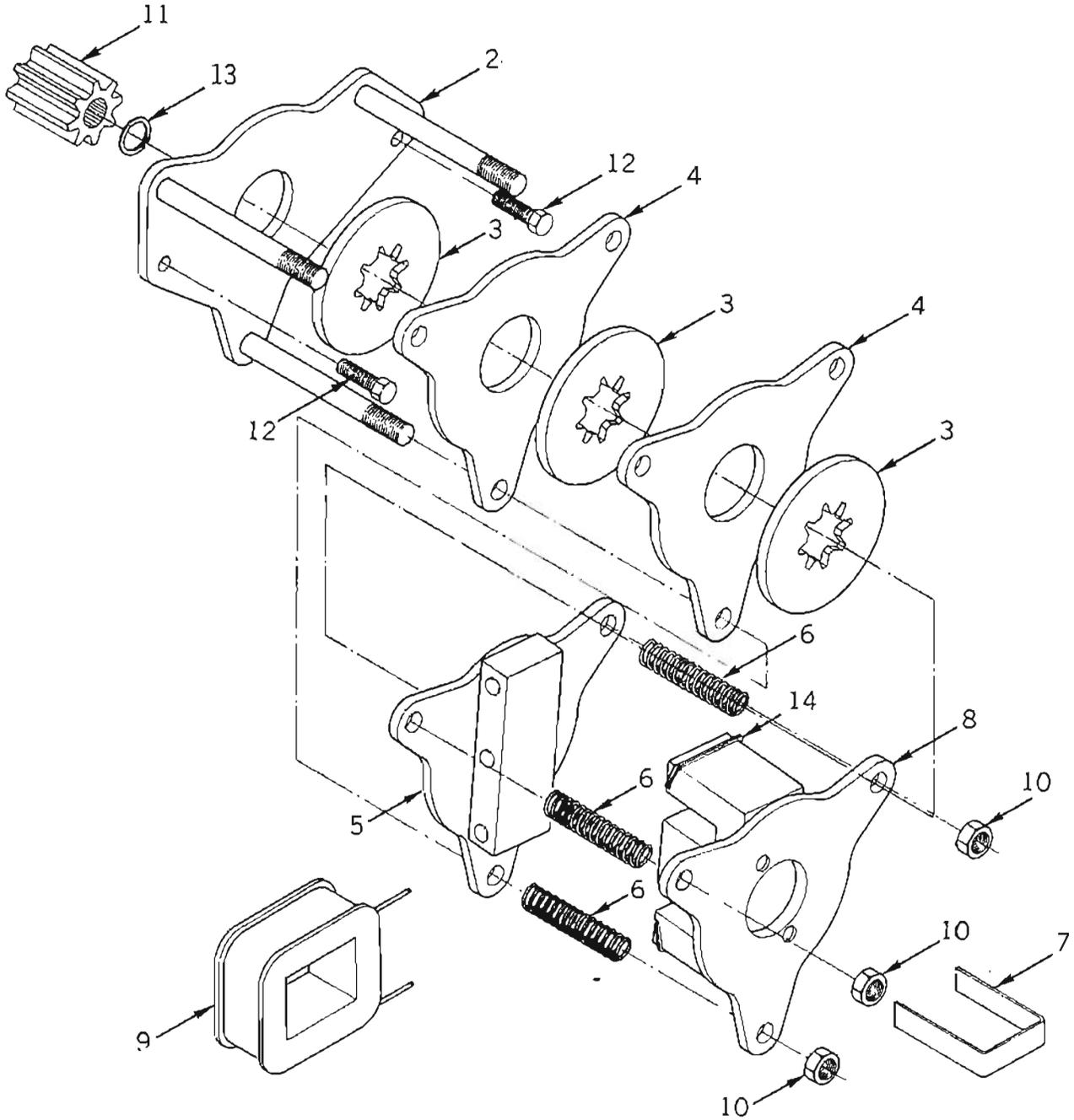


FIGURE 7-7A. BRAKE AND SOLENOID PARTS
(DISC TYPE)

INDEX NO.	PART NAME
1	Disc Brake Assembly (Consists of Index Nos. 2-10)
2	Plate and Stud Assembly
3	Disc, Brake
4	Plate, Brake
5	Plate and Armature Assembly
6	Spring
7	Retainer
8	Plate and Frame Assembly (Includes index no. 14)
9	Coil
10	Lock Nut
11*	Adapter
12*	Lock Screw
13*	Retaining Ring
14**	Shading Coil Element
15	Adhesive (Not shown)

*Not included with brake assembly—
order separately.

**Replacement requires use of adhesive.

FIGURE 7-7B. BRAKE AND SOLENOID PARTS
(SHOE TYPE)

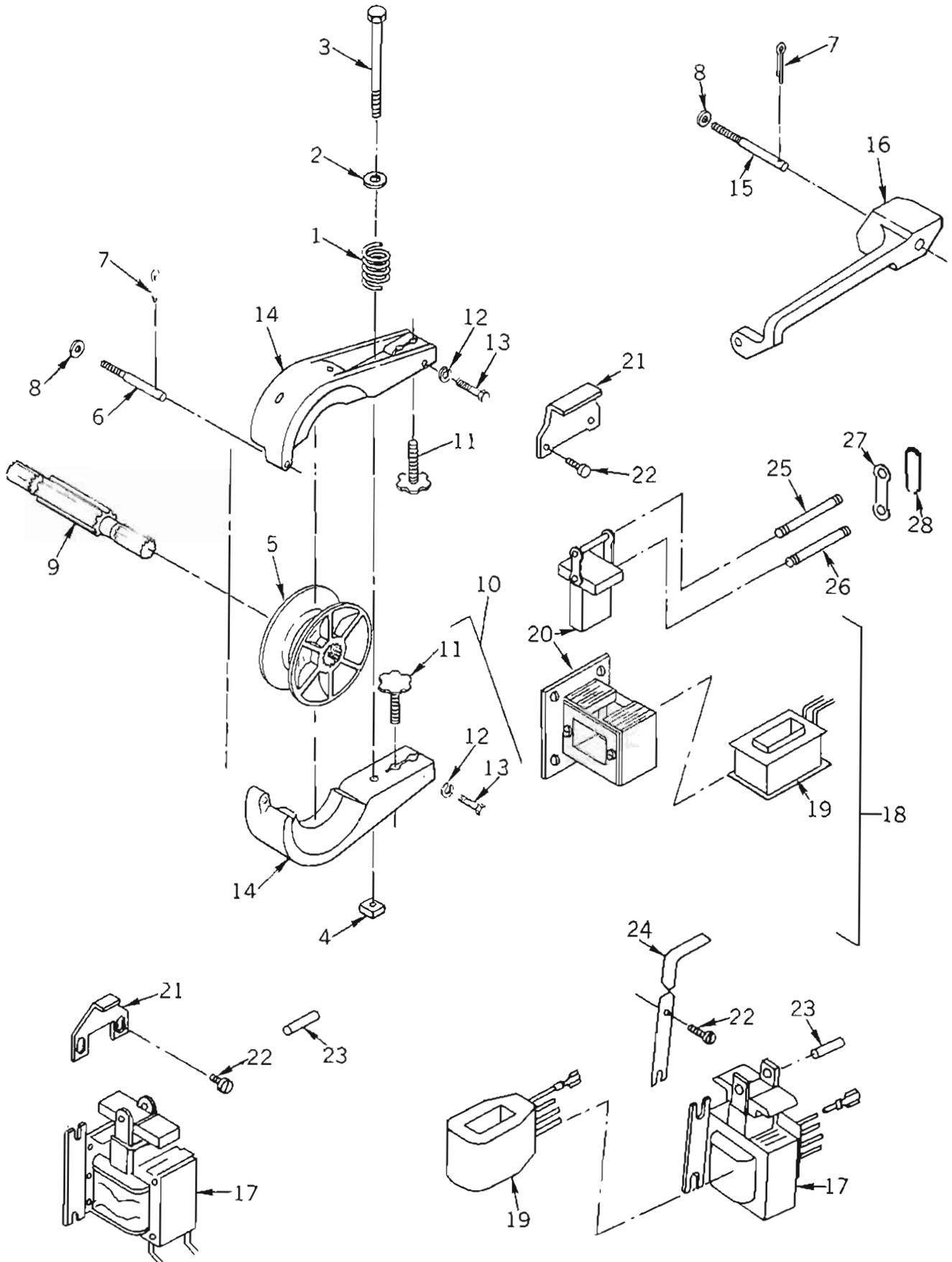


FIGURE 7-7B. BRAKE AND SOLENOID PARTS
(SHOE TYPE)

INDEX NO.	PART NAME
1	Spring, Brake
2	Washer, Flat
3	Screw, Brake Spring
4	Nut, Brake Spring
5*	Drum, Brake
6†	Stud, Brake
7	Cotter Pin
8	Washer, Stud Post
9*	Pinion, Driving (Reference—See Figure 7-4)
10	Brake Arm Assembly, Complete (Consists of Index Nos. 11-14)
11	Screw, Brake Adjustment
12	Lock Washer
13	Screw, Locking
14	Brake Arm and Lining Assembly
15†	Stud, Solenoid Arm
16	Arm, Solenoid
17	Solenoid Assembly
18	Solenoid Assembly (Consists of Index Nos. 19-20)
19	Coil
20	Frame and Plunger Assembly
21	Solenoid Stop
22	Screw, Solenoid Mount
23	Pin, Solenoid
24	Stop, Solenoid
25	Pin, Upper
26	Pin, Lower
27	Plate
28	Spring Clip

† Loctite sealant, type AV is added to the threaded portions of Index Nos. 6 and 15.

* Loctite sealant, type C is added to the spline portion of Index Nos. 5 and 9.

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

FIGURE 7-8A. PUSH-BUTTON
(SINGLE SPEED HOISTS WITH SERIAL NUMBERS JF-10799M4 AND BELOW)

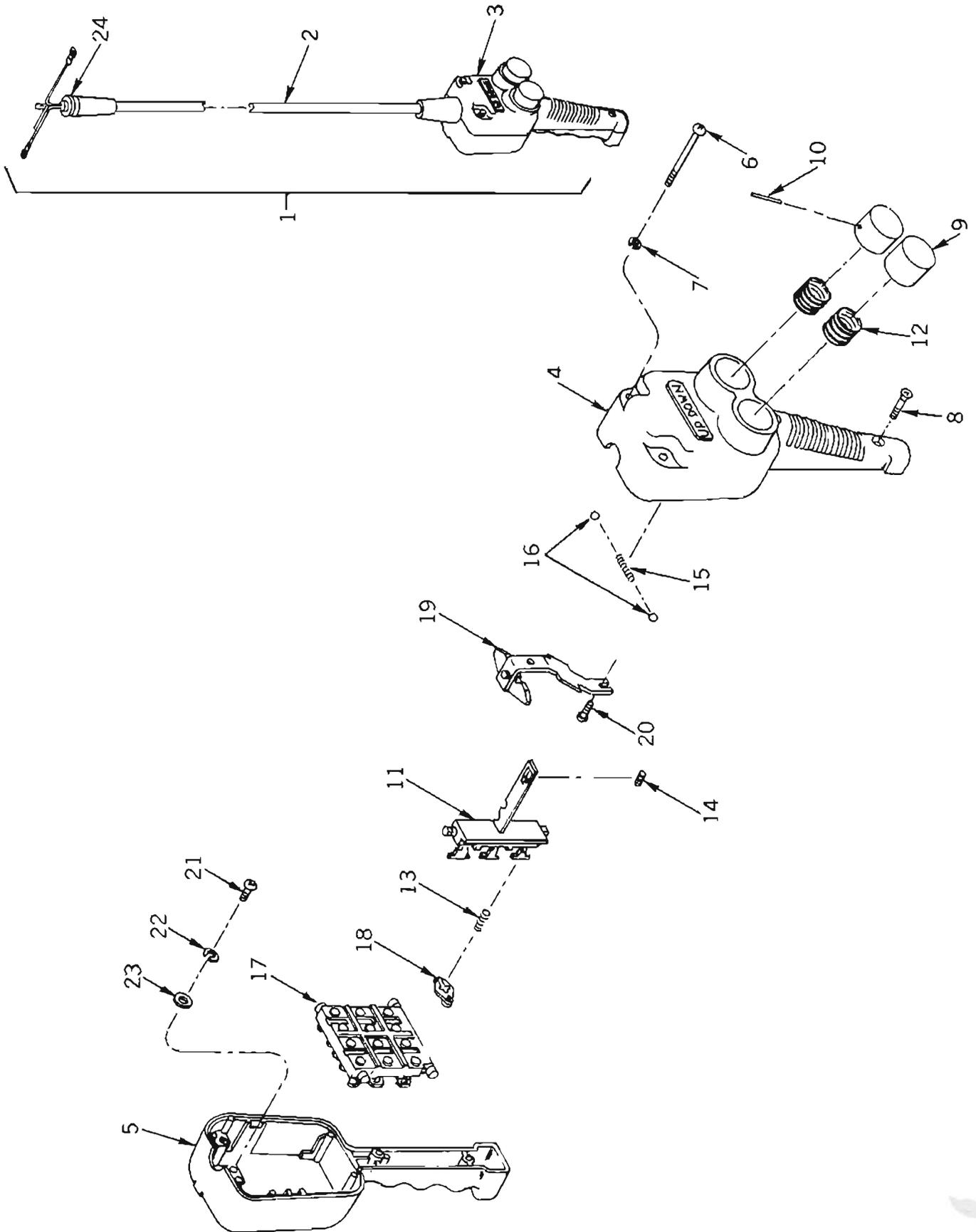
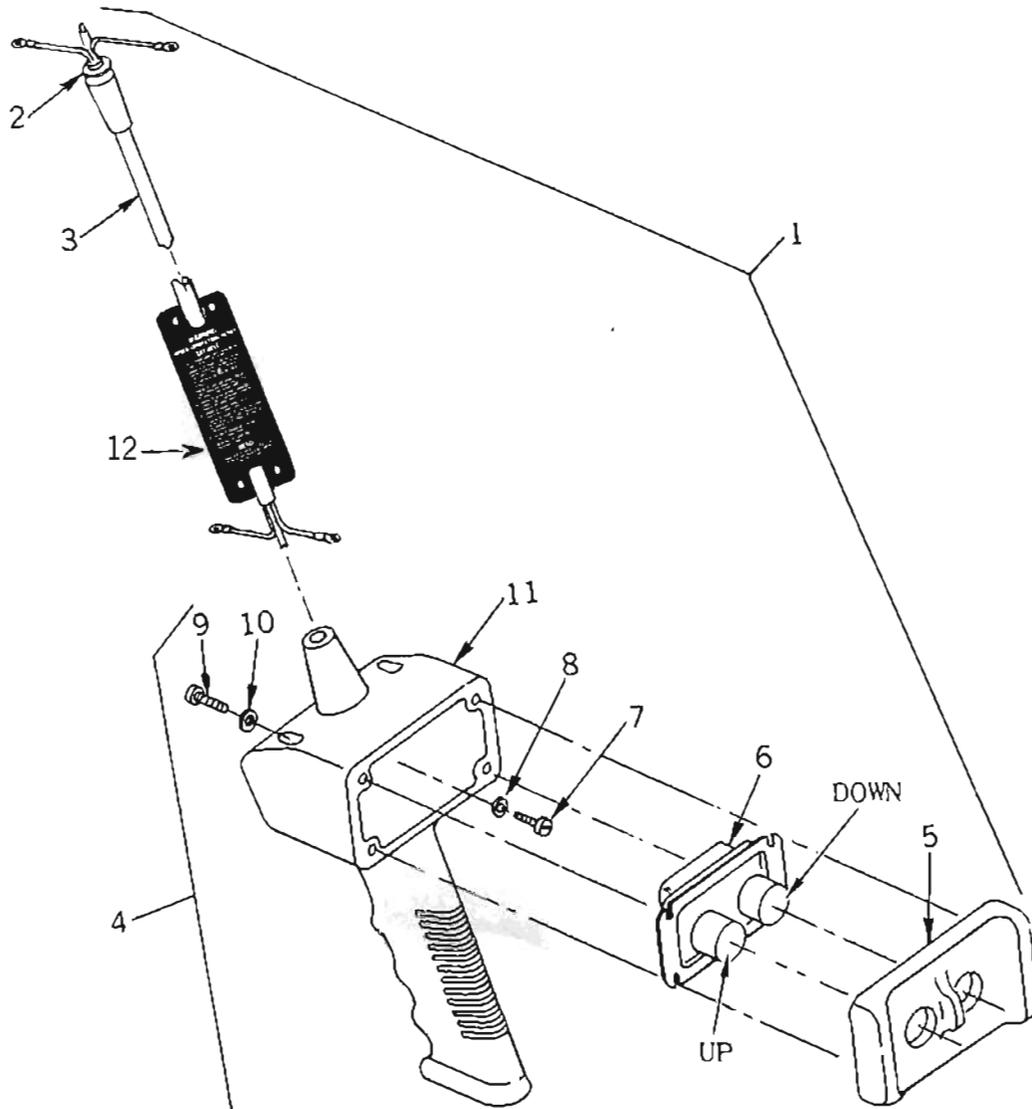


FIGURE 7-8A. PUSH-BUTTON
(SINGLE SPEED HOISTS WITH SERIAL NUMBERS JF-10799M4 AND BELOW)

INDEX NO.	PART NAME
1	Push Button and Cable Assembly (Consists of Index Nos. 2-24)
2	Push Button Cable Assembly
3	Push Button Station (Consists of Index Nos. 4-24)
4	Housing, Front
5	Housing, Back
6	Screw, Housing
7	Lock Washer, Housing Screw
8	Screw, Grip Handle
9	Push Button
10	Pin, Push Button
11	Switch Body Assembly
12	Spring, Push Button
13	Spring, Contact Bar
14	Spring, Body Shaft
15	Spring, Detent
16	Ball, Detent
17	Switch Block Assembly
18	Contact Bar Assembly
19	Interlock Assembly
20	Screw, Interlock Bracket
21	Screw, Cable Tie Down
22	Lock, Washer, Cable Tie Down
23	Flat Washer, Cable Tie Down
24	Washer, Push Button Cable

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

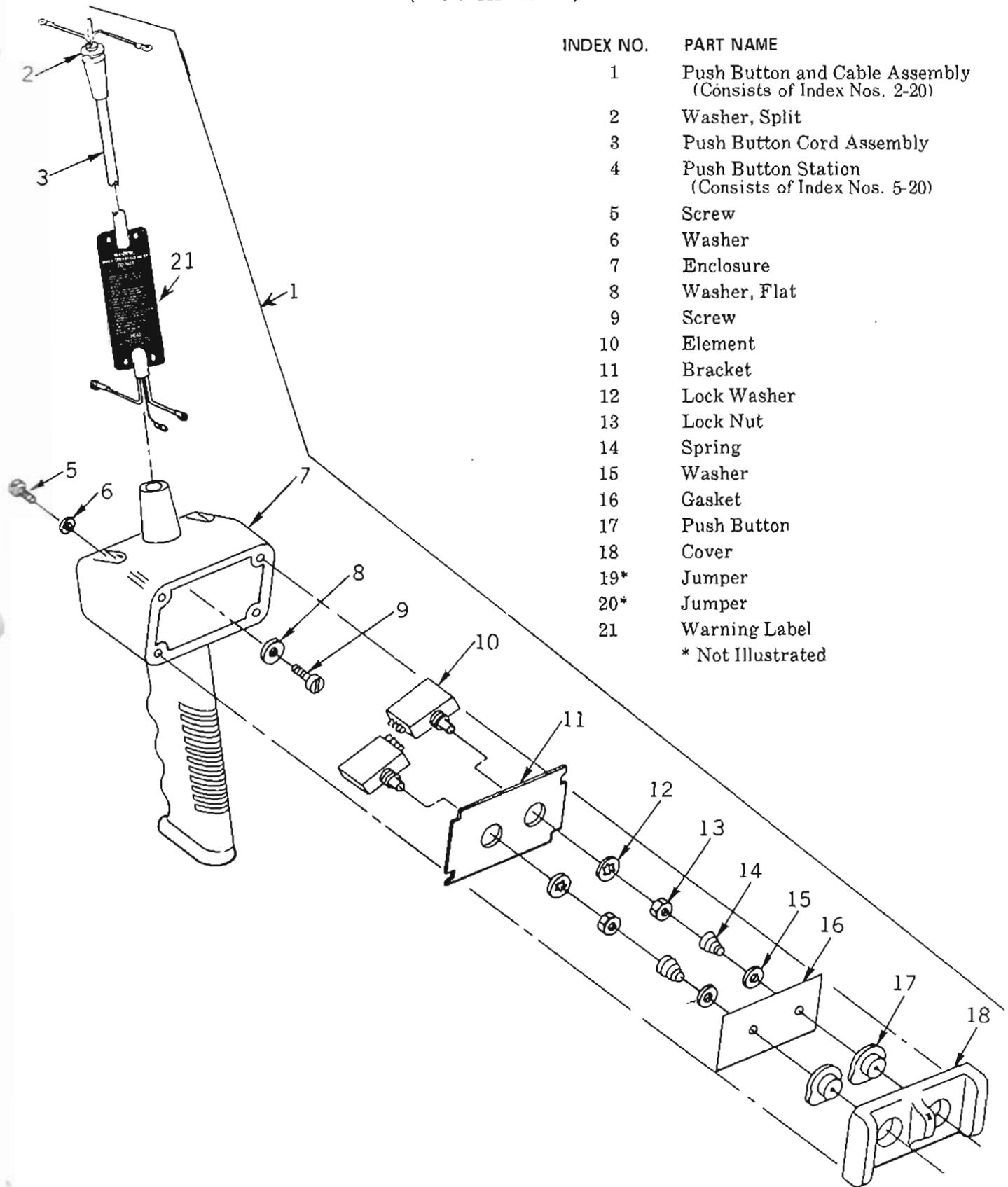
FIGURE 7-8B. PUSH-BUTTON
(SINGLE-SPEED HOISTS WITH SERIAL NUMBERS JF-64J001D AND ABOVE)



INDEX NO.	PART NAME
1	Push Button and Cable Assembly (Consists of Index Nos. 2-11)
2	Washer, Split
3	Cable, Push Button
4	Station, Push Button (Consists of Figure Nos. 5-11)
5	Cover
6	Element
7	Screw
8	Washer, Flat
9	Screw
10	Washer, Flat
11	Enclosure
12	Warning Label

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

FIGURE 7-8C. PUSH-BUTTON
(TWO SPEED HOISTS)



INDEX NO.	PART NAME
1	Push Button and Cable Assembly (Consists of Index Nos. 2-20)
2	Washer, Split
3	Push Button Cord Assembly
4	Push Button Station (Consists of Index Nos. 5-20)
5	Screw
6	Washer
7	Enclosure
8	Washer, Flat
9	Screw
10	Element
11	Bracket
12	Lock Washer
13	Lock Nut
14	Spring
15	Washer
16	Gasket
17	Push Button
18	Cover
19*	Jumper
20*	Jumper
21	Warning Label
	* Not Illustrated

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

WARNING: The hoisting 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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