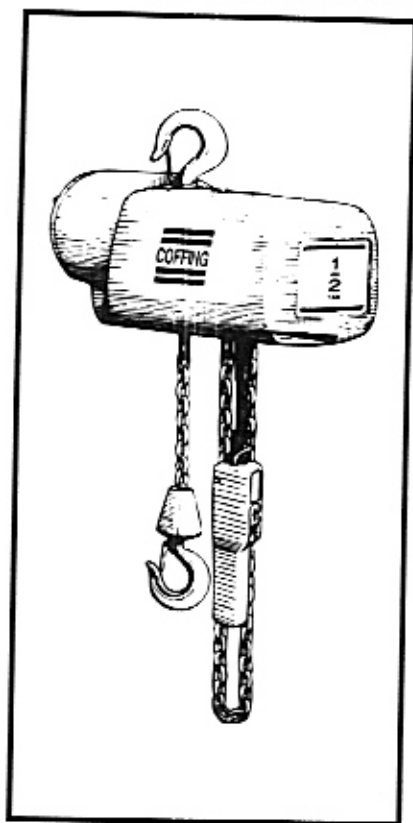


COFFING®

OPERATING & MAINTENANCE INSTRUCTIONS WITH ILLUSTRATED PARTS LIST PUBLICATION PART NO. JL-681

ELECTRIC CHAIN HOIST



IMPORTANT – CAUTION

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

WARNING

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

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Specifications

	ELC-0232-1	ELC-0516-1
Rated Load (Max.)	250 Lbs.	500 Lbs.
Lifting Speed	32 F.P.M.	16 F.P.M.
Maximum Lift	10 Ft.	10 Ft.
Horsepower	1/4 H.P.	1/4 H.P.
Power Supply	115 V, 1 Ph., 60 Hz. Only	115 V, 1 Ph., 60 Hz. Only
Amp Draw	4.8 Amps	4.8 Amps
Duty Cycle (Max.)	35% "On" Time	35% "On" Time
Push Button Cord Length	6 Feet	6 Feet
Power Cord Length	8 Feet	8 Feet
Limit Switches	Adjustable Upper & Lower	Adjustable Upper & Lower
Headroom (Min.)	18 Inches	18 Inches
Overall Dimensions	8 3/8" H. x 7 13/16" W. x 22" L.	8 3/8" H. x 7 13/16" W. x 22" L.
Net Weight	55 Lbs.	57 Lbs.

SECTION I

INTRODUCTION

1-1. Description

This electric chain hoist is designed for lifting freely suspended (unguided) material loads weighing within (no more than) the rated load capacity of the hoist, on an intermittent basis, not for industrial or production applica-

tions requiring continuous operation. The hoist is equipped with latch type top suspension hook, and lower lifting hook, along with a control switch. It can be used in a variety of lifting, lowering and spotting operations, is lightweight and easily transported to various work locations.

SECTION II

INSTALLATION

2-1. Safety Notes

- a. The supporting structure and load attaching devices should have a load rating at least equal to that of the hoist.
- b. This hoist is not suitable for use in uncovered outdoor locations or areas containing explosive dust, vapors or gases.
- c. In areas where slack chain hanging from the hoist may create hazardous conditions, use a chain container.

2-2. Power Supply

This equipment is for use on 115V, 60 Hz, and is equipped with 3-conductor cord and a 3-prong, grounding-type plug for protection against shock hazards. It should be plugged directly into a properly installed and grounded 3-prong grounding-type receptacle.

2-3. Vent Plug

Install vent plug. The hoist is shipped with a temporary plug in the top of the hoist. Remove this plug and install the vent plug which is in the envelope that is attached. To prevent oil spillage, a solid plug must be installed whenever the hoist is transported.

2-4. Limit Switch Operation

Before placing the hoist in operation, check for proper upper limit switch operation. Push the "UP" button and verify that the hook block stops at least 2 inches from the bottom of the hoist. Run the hoist down to its lower limit. At least 8 links of chain should remain on the slack end. See the Maintenance section for limit switch adjustment directions.

SECTION III

OPERATION

3-1. Safety Notes

- Before starting the hoist, the operator should be certain that all personnel are clear.
- Do not lift more than the rated load of the hoist.
- Do not lift people or loads over people.
- Avoid jogging controls or quick reversals of load.
- Do not leave a suspended load unattended.
- Do not operate a damaged or malfunctioning hoist.

- Read ANSI B30.16 Safety Standard for Overhead Hoists.

3-2. Handling the Load

- Align hoist directly over load. Avoid side pull.
- The hoist chain should not be wrapped around the load. Use proper slings.
- Bring the hook into engagement with the load and make sure it is well seated before proceeding to lift the load.
- Lift the load just clear of its supports and stop the hoist to check for proper brake operation.

SECTION IV

MAINTENANCE

4-1. Safety Notes

Always remove load and disconnect hoist from power supply before making repairs.

4-2. Inspection

Inspection procedures are divided into three general classifications based upon the intervals at which inspection should be performed. Deficiencies should be carefully examined and corrected. The intervals between inspection will vary due to operating conditions. If the hoist is used more than 40 hours per week or under adverse environmental conditions, it should be inspected more frequently.

a. Daily Inspection

- Check pushbutton station, brake and limit switch for proper operation. (See Installation section.)
- Check hooks for deformation, chemical damage or cracks. Bent hooks or hooks damaged from chemicals, deformation, cracks or having excessive throat opening (see Figure 1) should be replaced.
- Check for bent or otherwise damaged hook latches.
- Check chain for wear or damage (see Chain Inspection).
- Check for damaged or improperly working hook latch.
- Check push button and power cord for fraying or other damage.

- Quarterly Inspection**—Inspect the following items at 90-day intervals.

- Check all items under daily inspection.
- Check for loose bolts, screws and nuts.
- Inspect for worn, corroded, cracked or distorted parts.
- Check electrical parts, limit switch and pushbutton station.

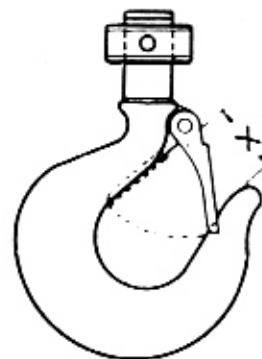


FIGURE 1. HOOK REPLACEMENT

	NORMAL "X"	REJECT "X"
TOP HOOK	1 1/8"	1 7/32"
BOTTOM HOOK	1"	1 5/32"

c. **Annual Inspection**—Inspect the following items annually.

1. Check all items under daily and 90-day interval inspection.
2. Check hooks for cracks by means of a magnetic particle test or other suitable crack detecting test.
3. Inspect for worn, corroded, cracked or distorted parts including pins, bearings, shafts and gears.
4. Inspect supporting structure and trolleys (if used) for continued ability to support the imposed loads.
5. Check brake for worn disc.

4-3. Chain

Chain is to be kept clean and lubricated. Visually check chain every time hoist is used. Hoist must not be operated when chain is twisted or kinked. A very important phase of hoist maintenance is chain inspection. Check individual links and check for chain stretch. Replace entire chain when nicked, gouged or excessively worn. Use a gauge similar to that illustrated or a Vernier Caliper to check for stretch. Replace chain when any reading exceeds "Reject Length" as shown in accompanying chart (below).

CAUTION

The load chain used on this hoist is of special material and pitch. Do not substitute other manufacturer's chain. Hoist limit switches must be readjusted if the length of the chain supplied with the hoist is shortened from either end (see limit switch adjustment instructions on page 6).

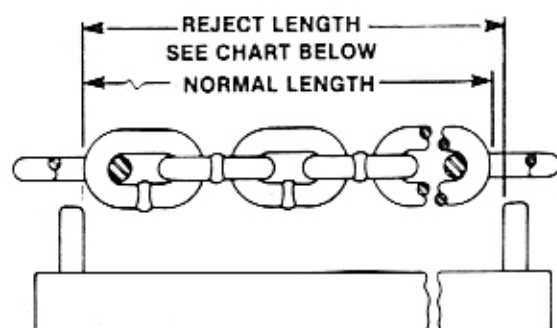


FIGURE 2.

NOMINAL CHAIN DIA.	NO. OF LINKS	NOMINAL LGTH. FOR NO. LINKS	REJECT LGTH. FOR NO. LINKS
.250"	19	14.766 ± .031	14.957"

4-4. Chain Replacement

(With chain already in hoist.) (See Chaining Diagram, page 11.)

- a. Run hook up to its top limit.
- b. DISCONNECT HOIST FROM POWER SUPPLY and remove the electrical cover.
- c. With a screwdriver, push the spring guide plate (#1) out of the slots in the plastic limit switch nuts. Turn the slotted nut nearest you (#2) back to about the center of the threaded screw. Do not disconnect the wires from the limit switches (see Figure 3).
- d. Remove the load hook 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 the new chain and to the end link of the old chain 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 Step j.
- g. With the electrical cover off, connect the hoist to power supply. Be sure the green ground wire is properly grounded. (See "Installation" on page 3.)
- h. Carefully jog the "UP" button and run the joined pieces of chain into the hoist until about 12" 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. Fasten the end of the new chain to 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 (see "Adjusting Lower Limit" on page 6).

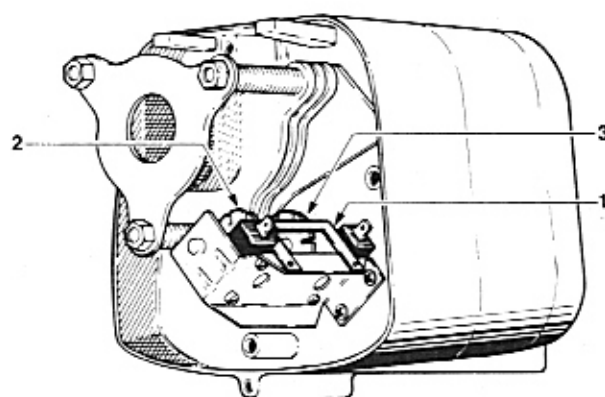


FIGURE 3.

- l. Attach the bottom hook.
- m. Adjust the upper limit switch (see "Adjusting Upper Limit" on page 6).

4-5. Limit Switch Adjustment

IMPORTANT

BEFORE PLACING HOIST IN OPERATION, CHECK THE LIMIT SWITCH ADJUSTMENT. LIMIT SWITCHES ARE PROVIDED TO PROTECT THE HOIST AGAINST DAMAGE RESULTING FROM OVERTRAVEL. FOR EASY IDENTIFICATION THE UPPER AND LOWER LIMIT SWITCH ADJUSTING NUTS ARE COLOR-CODED RED AND GREEN RESPECTIVELY. EACH LIMIT NUT HAS 10 SLOTS FOR ADJUSTMENT, AND THE INCREMENT OF ADJUSTMENT IS SUCH THAT ONE (1) SLOT IS EQUIVALENT TO APPROXIMATELY ONE (1) 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.

Adjusting Upper Limit (Red Nut)

- a. Suspend the hoist. Carefully raise the load block to point where the top of it is 2" or more from the hoist housing (or to the limit desired in any particular application, allowing the minimum of 2").
- b. DISCONNECT HOIST FROM POWER SUPPLY and remove the electrical cover.
- c. With a screwdriver, pry the spring guide plate (#1) out of the slots in the colored limit switch nuts (#2 & #3). (See Figure 3)
- d. Turn the slotted red nut (#2) toward its limit switch until the switch "clicks." Release the spring guide plate and be sure it slips back into the slots in both colored limit switch nuts. Do not disturb the other slotted nut if it has been set previously.

Adjusting Lower Limit (Green Nut)

- a. Suspend the hoist. Carefully lower the load block to a point where the dead-end loop of the chain hangs down 4" or more from the hoist housing (or the limit desired in any particular application allowing the minimum 4").
- b. DISCONNECT HOIST FROM POWER SUPPLY and remove the electrical cover.
- c. With a screwdriver, push the spring guide plate (#1) out of the slots in the colored limit switch nuts (#2 & #3). (See Figure 3).
- d. Turn the slotted green nut (#3) towards its limit switch

until the switch "clicks." Release the spring guide plate and be sure it slips back in the slots in both colored limit switch nuts. Do not disturb the other slotted nut if it has been set previously.

Check Both Upper and Lower Limits

- a. Connect hoist to power supply. Be sure the plug is properly grounded.
- b. Carefully raise load block to upper limit and observe if it stops automatically at desired level. Do not allow load block to run into hoist housing — this will damage the hoist. Maintain a minimum of 2" between housing and top of hook swivel.
- c. Carefully lower load block to lower limit and observe if it stops automatically at the desired level. Do not allow slack-end loop of chain to become taut against hoist housing. Maintain minimum of 8 chain links in the slack chain loop after hook block has reached its lowermost limit.
- d. If upper and lower limits operate satisfactorily, hoist is ready for use. If they are not as desired, repeat adjustment.

4-6. Lubrication

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

- a. **Load Chain**—Clean the load chain with non-corrosive solvent and coat with SAE 90 Gear Oil. Wipe excess oil to prevent dripping. Never apply grease to the chain.
- b. **Gearing**—The gear case if this hoist is filled at assembly with 1½ pints of gear oil. Oil level can be checked by the following method. Lay hoist on its side as in Figure 4. Remove vent plug. Oil level should be even with the edge of the vent plug hole. The recommended lubricant is SAE 90 EP Hypoid Gear Oil.

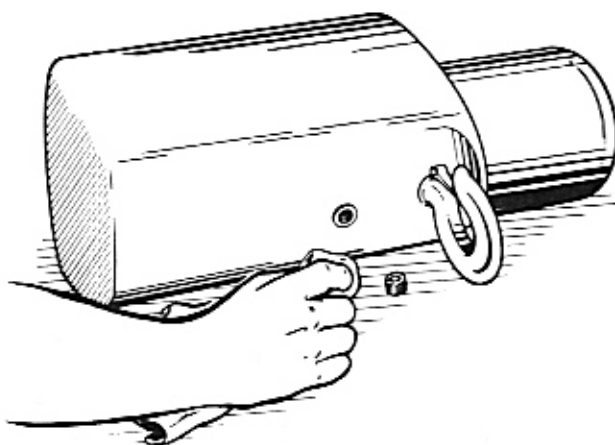


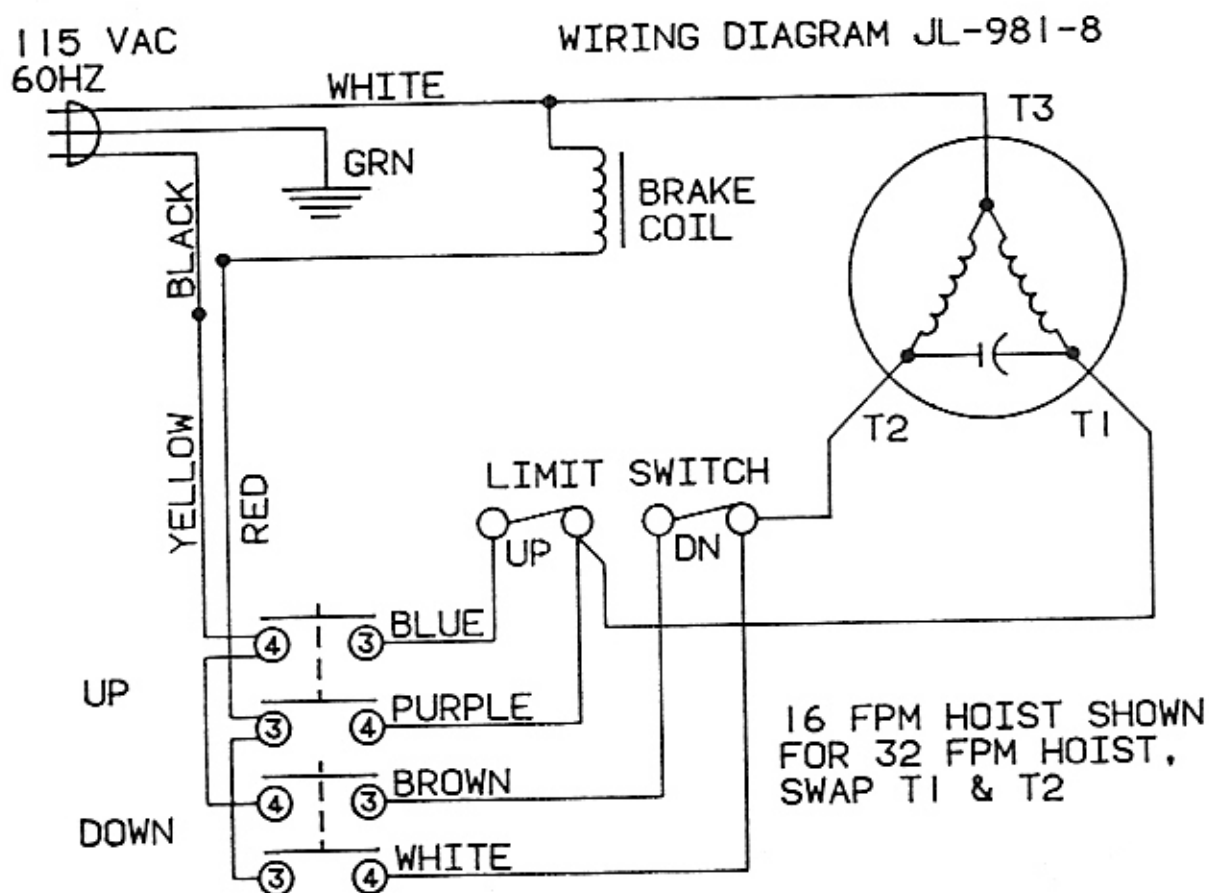
FIGURE 4.

- c. **Bearings**—All bearings except the hook bearing 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 (page 15, Ref. No. 95) 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.

4-7. Wiring Diagram

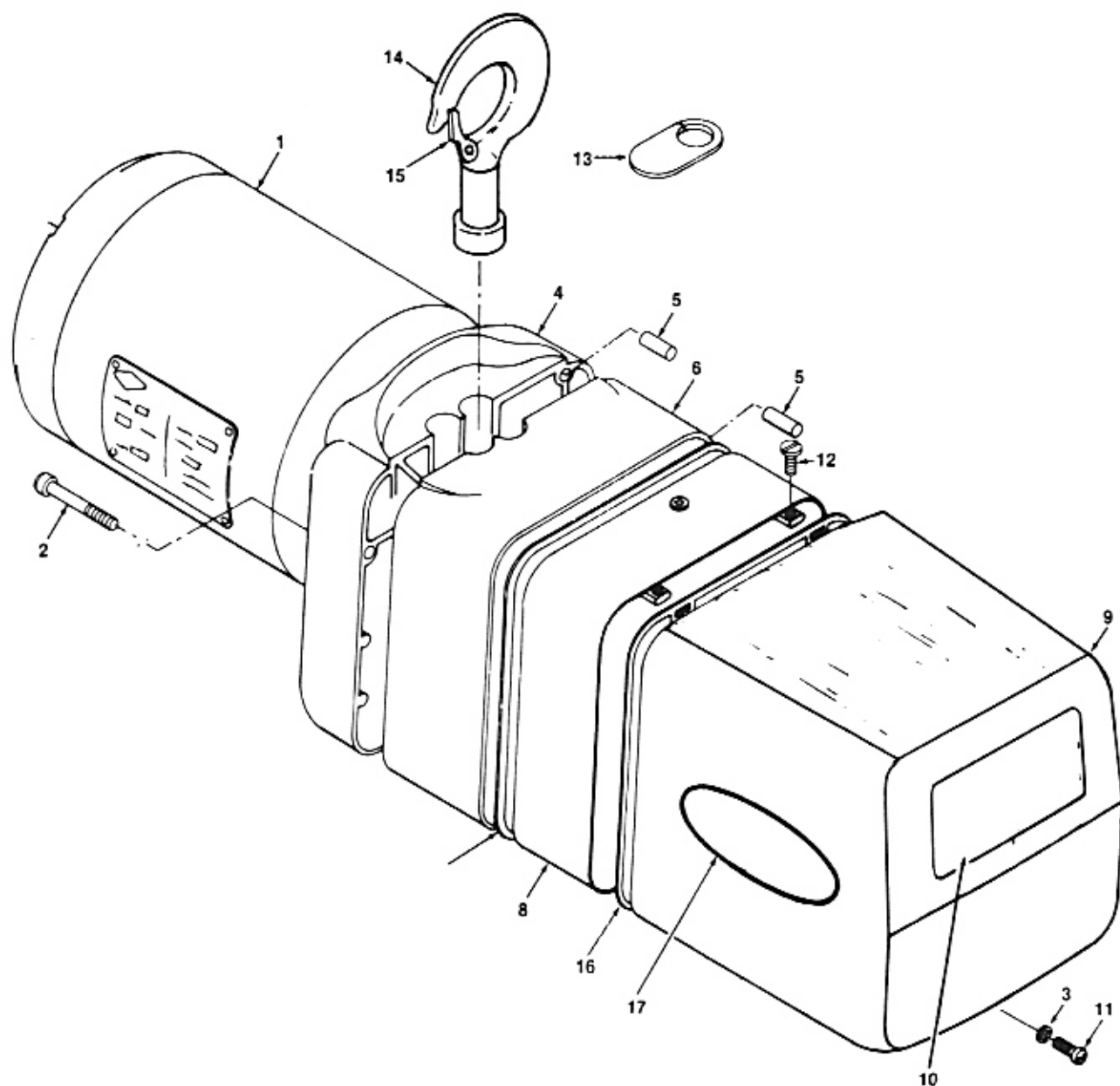
The hoist is wired for 115 volt, 60 Hz, single phase operation and is not convertible to other voltages. Refer to the following wiring diagram for any electrical repairs.



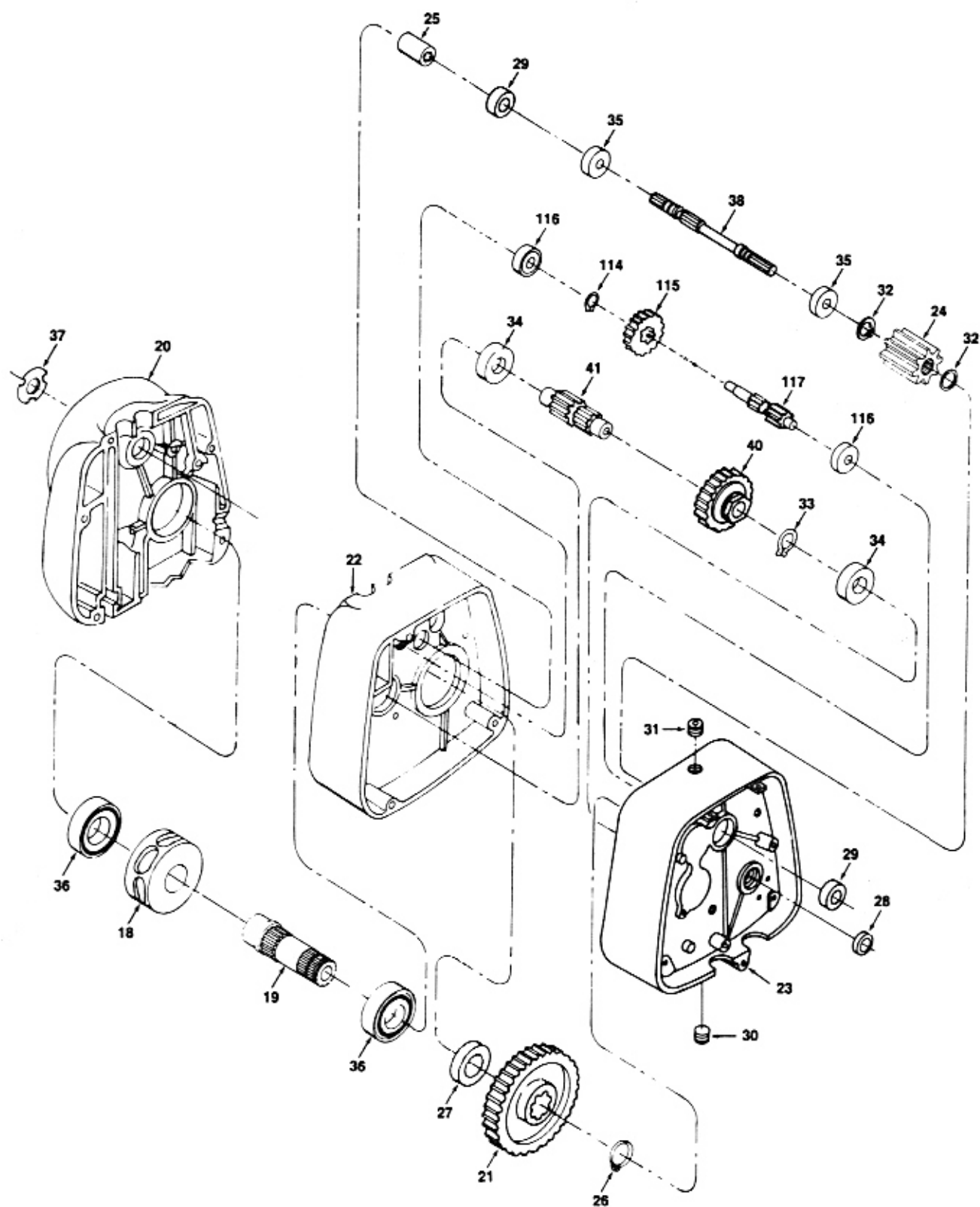
BASIC HOIST

REPLACEMENT PARTS LIST

Ref. No.	Description	Qty. Req.	Part Number	Ref. No.	Description	Qty. Req.	Part Number
1	Motor (Complete)	1	JL-861-5	9	Electrical Cover	1	JL-36
not shown	Motor Capacitor	1	JL-810-1	10	Capacity Decal	1	See Pg. 15
2	Screw, Sheave Housing	4	H-2978-P	11	Cover Screw	1	H-1412-P
3	Lockwasher	1	H-4062-P	12	Screw	2	H-2970
4	Sheave Housing	1	JL-33	13	Hook Hole Cover	1	JF-277-3
5	Dowel Pin	2	H-5382	14	Hook Assembly w/Latch	1	3K4S
6	Gear Housing	1	JL-35	15	Latch Kit	1	H-7540
7	Gear Case Gasket	1	JL-560	16	Gasket	1	JL-563
8	Gear Box Cover	1	JL-34	17	Decal	2	See Pg. 15



TRANSMISSION PARTS



TRANSMISSION PARTS

REPLACEMENT PARTS LIST

Ref. No.	Description	Qty. Req.	Part Number	Ref. No.	Description	Qty. Req.	Part Number
18	Load Sheave (Ref. - See Chaining Parts)	1	JL-420	29	Oil Seal	2	561K2
19	Load Shaft Assembly (Ref. - See Chaining Parts)	1		30	Drain Plug	1	H-6268
20	Sheave Housing (Ref. - See Chaining Parts)	1		31	Vent Plug	1	H-6258
21	Output Gear	1		32	Retaining Ring	2	H-5501
22	Gear Housing (Ref. - See Basic Hoist)	1		33	Retaining Ring	1	H-5503
23	Gear Box Cover (Ref. - See Basic Hoist)	1		34	Bearing	2	500K36
24	Adaptor (Ref. - See Brake & Solenoid Parts)	1	JL-107	35	Bearing	2	500K33
25	Motor Coupling	1		36	Bearing (Ref. - See Chaining Parts)	2	
26	Retaining Ring	1		37	Bearing Spring	1	360J1
27	Oil Seal	1	H-5503	38	Driving Pinion (250 lb. Cap.)	1	JL-400-1
28	Oil Seal	1	561K20		Driving Pinion (500 lb. Cap.)	1	JL-400B
			JL-561	40	Slip Clutch (250 lb. Cap.)	1	591JG22
					Slip Clutch (500 lb. Cap.)	1	591JG16
				41	Intermediate Pinion	1	JL-401
				42	Lubricant	1 1/2 pt.	H-7642

Model ELC 600 Only

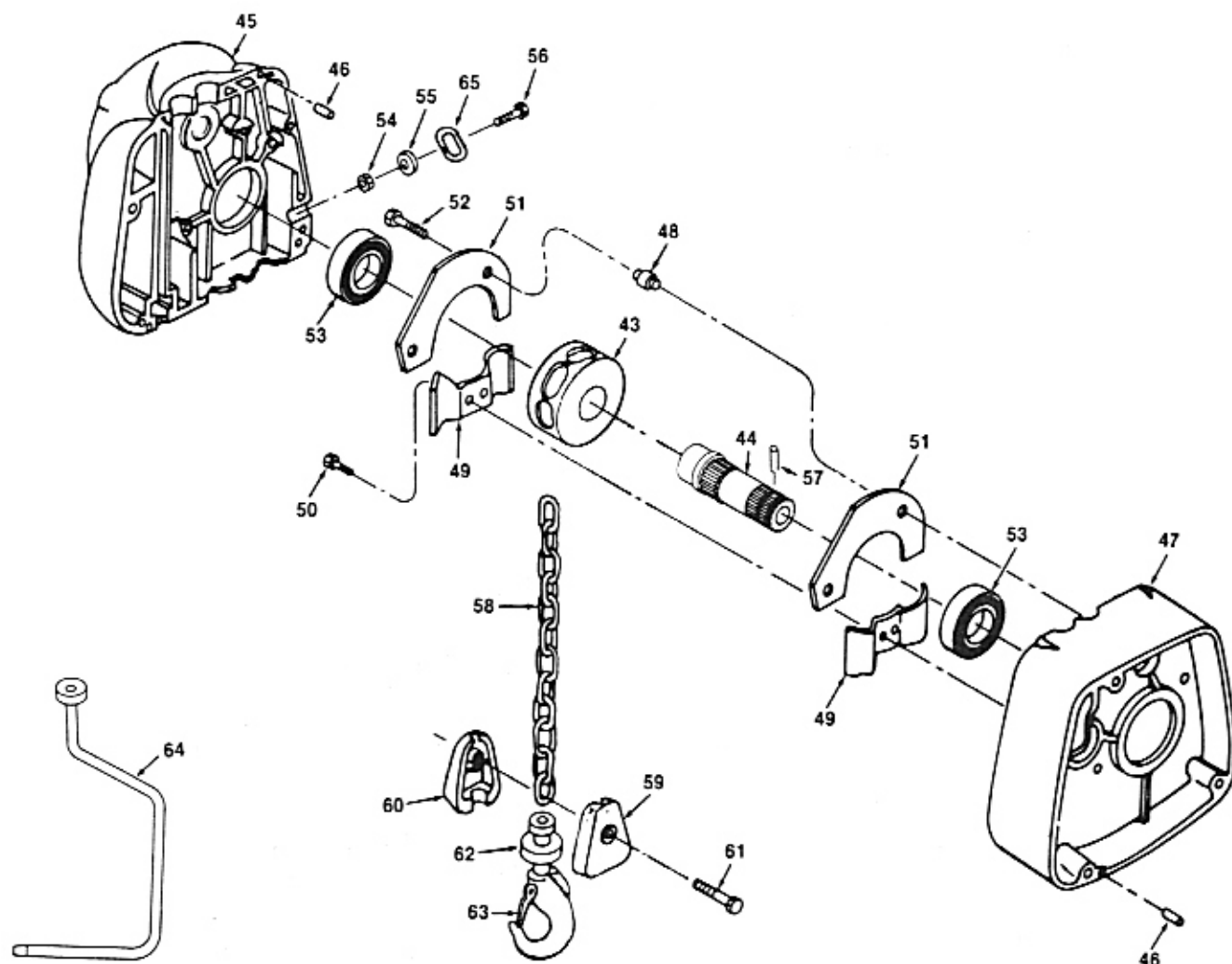
Ref. No.	Description	Qty. Req.	Part Number	Ref. No.	Description	Qty. Req.	Part Number
114	Retaining Ring	1	H-5501	116	Bearing	2	500K34
115	High Speed Gear	1	JL-426	117	High Speed Pinion	1	JL-402A

CHAINING PARTS

REPLACEMENT PARTS LIST

Ref. No.	Description	Qty. Req.	Part Number	Ref. No.	Description	Qty. Req.	Part Number
43	Load Sheave	1	JF-16-4	54	Dead End Screw Nut	1	H-3942-P
44	Load Shaft	1	JL-132	55	Flat Washer	5	H-4002-P
45	Sheave Housing (Ref. - See Basic Hoist)	1		56	Dead End Screw	1	H-2502-P
46	Dowel Pin	2	H-5382	57	Roll Pin	1	H-5240
47	Gear Housing (Ref. - See Basic Hoist)	1		58	Chain	12 ft.	JL-19
48	Chain Guide Spacer	2	JF-127	59	Load Block Frame	1	JF-20-2
49	Chain Guide	2	JF-250-3	60	Load Block Frame (Threaded)	1	JF-20-3
50	Screw	2	H2982-P	61	Load Block Screw	1	JF-700
51	Chain Guide Plate	2	JF-272	62	Bottom Hook with Latch Assembly	1	3JG20S
52	Screw	2	H-2692-P	63	Latch Kit	1	H-7540
53	Bearing	2	CB-504	64	*Special Hook Assby. (Opt.)	1	JF-912-20
				65	Dead End Link	1	H-7596

*Special Purpose Hook Not Suitable for General Lifting Applications.

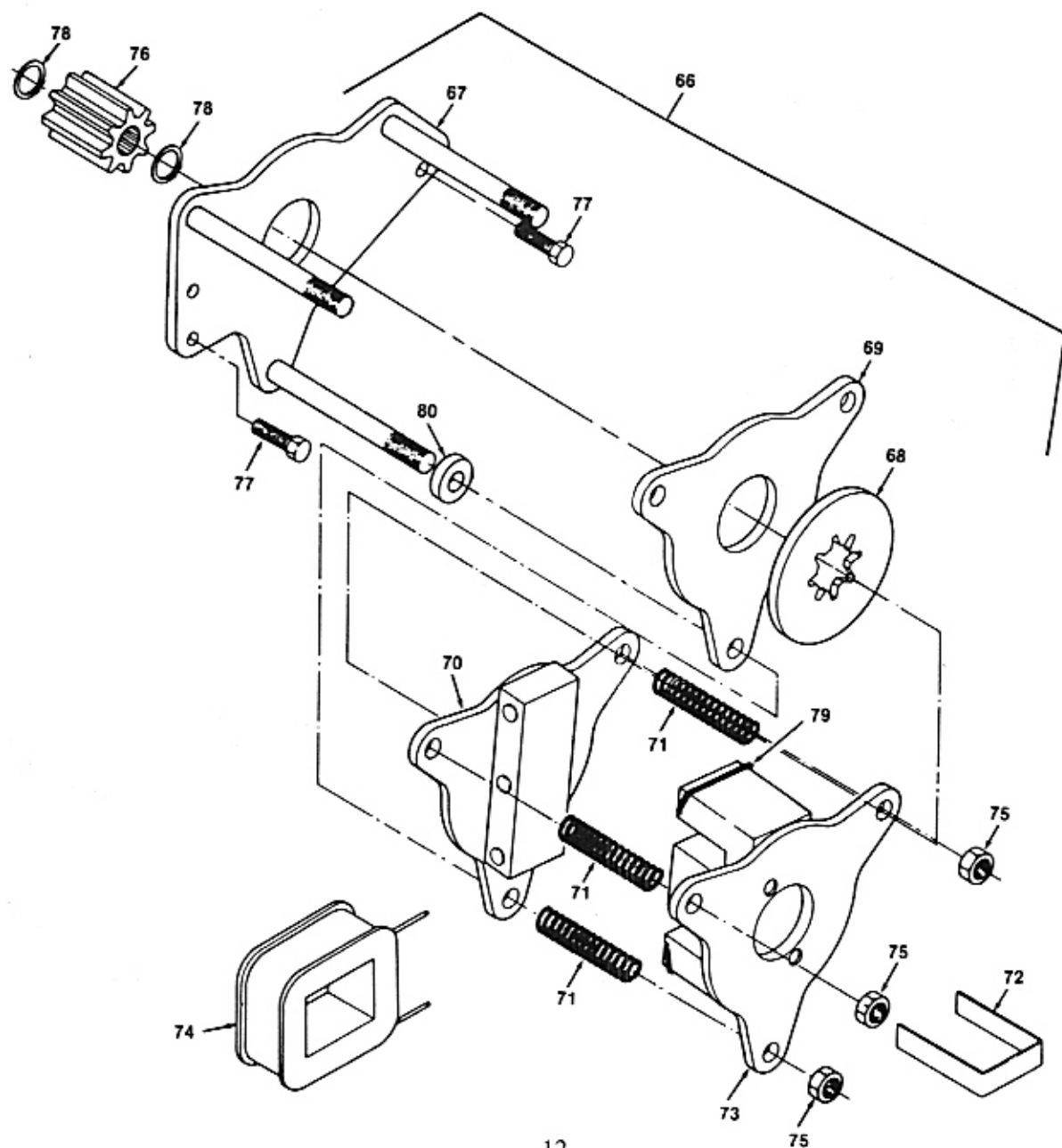


REPLACEMENT PARTS LIST

Ref. No.	Description	Qty. Req.	Part Number	Ref. No.	Description	Qty. Req.	Part Number
66*	Disc Brake Assembly	1	JL-854-6	74	Coil — 115V, 1Ph, 60 Hz	1	JF-853-1
67	Plate & Stud Assembly	1	JF-859A	75	Lock Nut	3	H-3949
68	Brake Disc	1	581J1A	76	Adapter	1	JL-142
69	Brake Plate	1	JF-291	77	Screw	2	H-2982-P
70	Plate & Armature Assembly	1	JF-858	78	Retaining Ring	2	H-5501
71	Spring	3	344J6	79	Shading Coil		680J1
72	Retainer	1	JF-710		Adhesive		H-7812
73	Plate & Frame Assembly	1	JF-857	80	Spacer	3	JL-141

*Includes all items except 76 and 78.

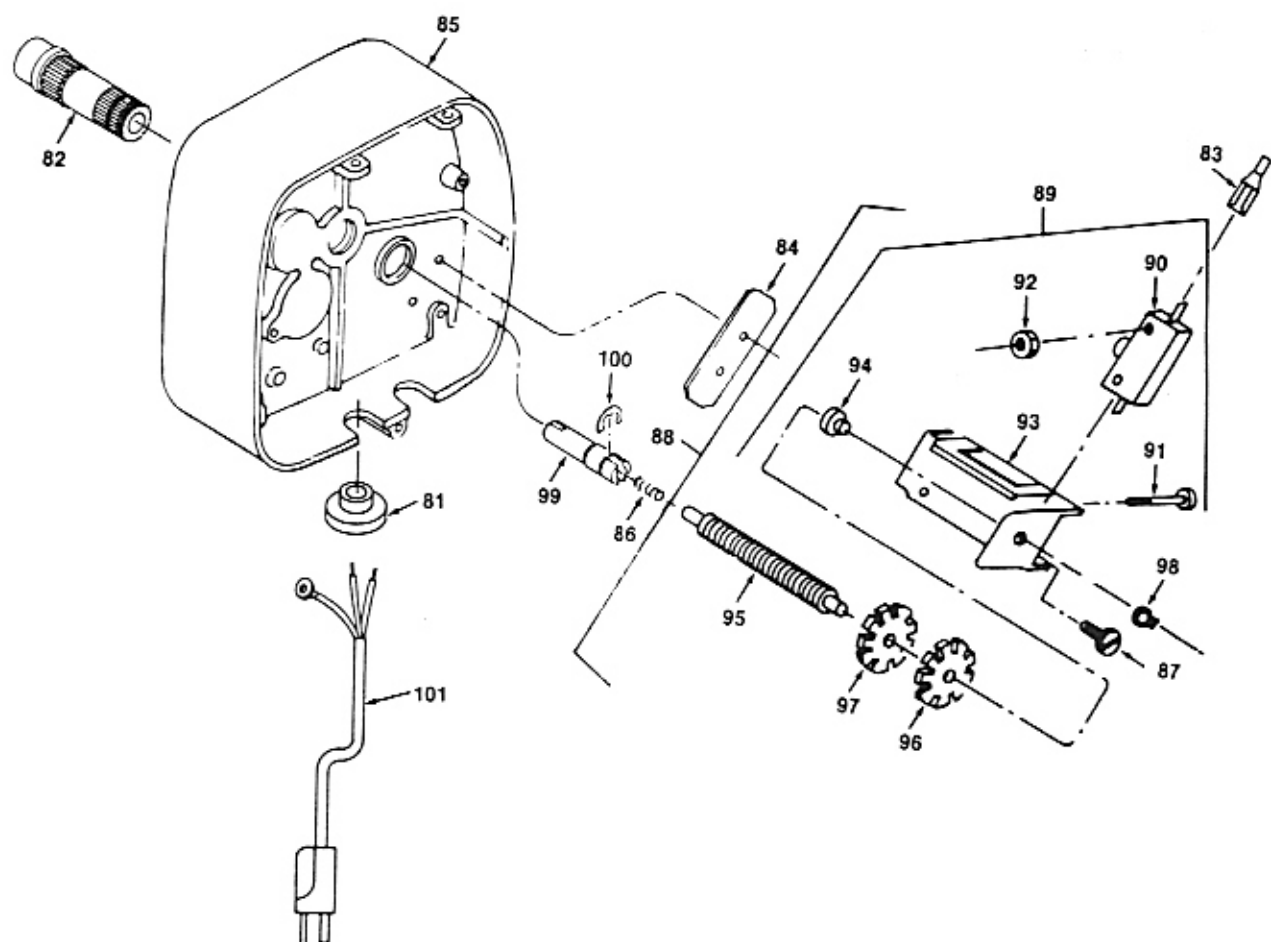
*Refer to wiring diagram inside electrical cover of hoist or wiring diagram page 7 when connecting any wiring.



ELECTRICAL PARTS

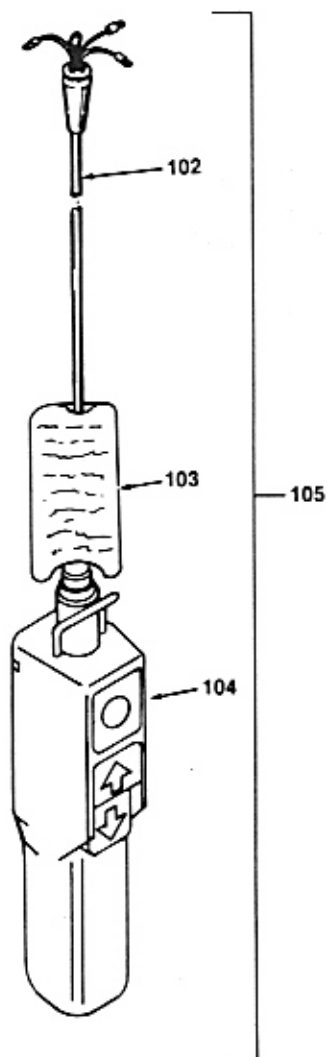
REPLACEMENT PARTS LIST

Ref. No.	Description	Qty. Req.	Part Number	Ref. No.	Description	Qty. Req.	Part Number
81	Strain Relief	1	JL-761	90	Switch	2	815J1
82	Load Shaft Assembly (Ref. - See Chaining Parts)	1		91	Screw	4	H-1402-P
83	Q-C Terminal	2	H-5802	92	Nut	4	H-3944
84	Insulator	1	JF-754	93	Limit Switch	1	JF-900-3
85	Gear Box Cover (Ref. - See Basic Hoist)			94	Bushing	1	JF-531-4
86	Spring	1	JF-343-3	95	Limit Switch Shaft	1	JF-117-3
87	Screw	2	H-2981-P	96	Limit Switch Nut (Red)	1	JF-751-3R
88	Limit Switch & Shaft Assembly (Includes Items 89-98)	1	918JG4	97	Limit Switch Nut (Green)	1	JF-751-3G
89	Limit Switch Assembly (Includes Items 90-94)	1	918JG3	98	Retaining Ring	1	H-5520
				99	L.S. Stud Shaft	1	JL-140
				100	E Ring	1	H-5563
				101	Power Cord	1	JL-951-1



PUSH BUTTON STATION

REPLACEMENT PARTS LIST



Ref. No.	Description	Qty. Req.	Part Number
102	Cord Assembly (6' Drop)	1	299JG1-6
103	Warning Tag	1	687K3
104	Push Button Station (Complete)	1	534J11
105	Push Button and Cable Assembly (Complete)	1	534JG11-6
not shown	Switch Block (N.O.) ZB2-BE101	4	536K102

REPLACEMENT DECALS
(Ref. Pg. 8)

Ref. No.	Description	Qty. Req.	Part Number
10	Capacity Decal (250 Lbs.)	1	JL-675-1
	Capacity Decal (500 Lbs.)	1	JL-675-2
17	Coffing Decal	2	JL-677

WARRANTY

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

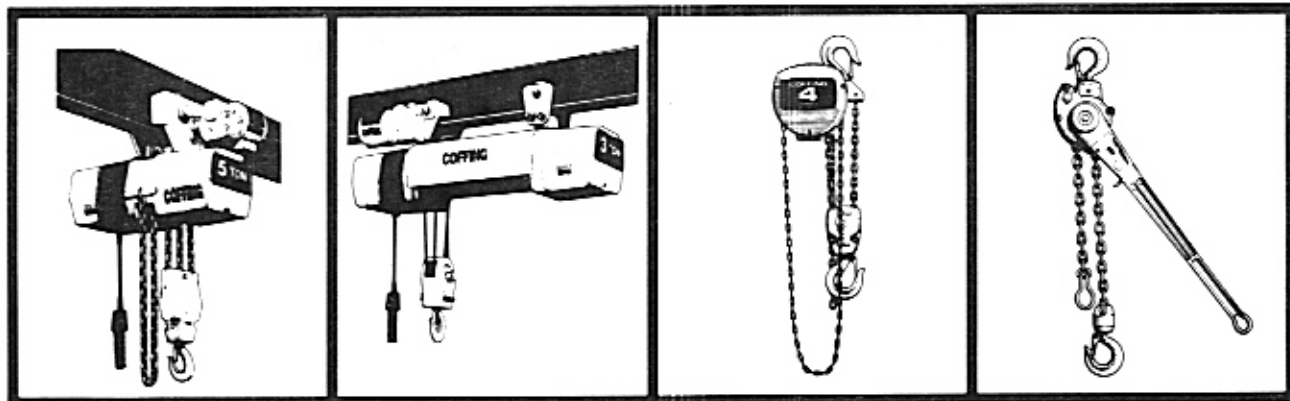
The warranty does not apply where: (1) deterioration is caused by normal wear, abuse, improper or inadequate power supply, eccentric or side loading, overloading, chemical or abrasive actions, improper maintenance or excessive heat; (2) problems

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

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Coffing® is America's first name in quality, industrial hoisting equipment. Nowhere else can you find such a broad range of hoists with such consistent high-quality construction and durability. A detailed

product catalog is available from your local Coffing hoist distributor, Duff-Norton District Sales Manager, or by writing directly to Duff-Norton Company. **Ask for Catalog 201, it includes:**



Coffing® Electric Chain Hoists

Load ratings from ¼ to 5 tons. More standard features than any comparable hoist. Two-speed options available; 47 models to choose.

Coffing® Electric Wire Rope Hoists

Low headroom units with load ratings from ½ to 3 tons. Choice of rigid hook or lug suspensions, plus plain, geared or motorized trolleys. Single or two speed options and variety of standard lifts. 35 models.

Coffing® Hand Chain Hoists

Designed for light weight and long life with minimum maintenance. Optional capacity limiter available in some models. 99 models in rated loads from ½ to 25 tons.

Coffing® Lever Hoists.

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

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