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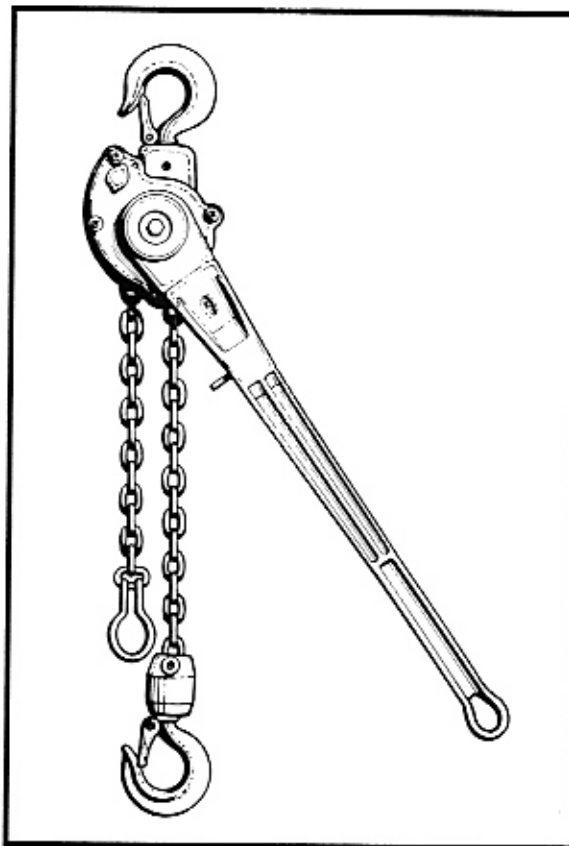
## OPERATING & MAINTENANCE INSTRUCTIONS

WITH PARTS LISTS

PUBLICATION PART NO. MAL-680

COFFING®  
HOIST

### RATCHET LEVER HOISTS WITH LOAD LIMITER



MAL SERIES

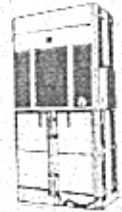
#### IMPORTANT — CAUTION

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, or to suspend unattended loads over people.

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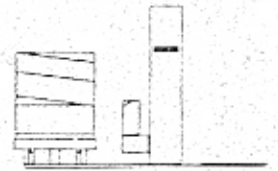
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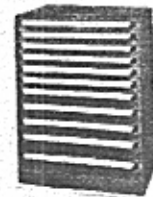
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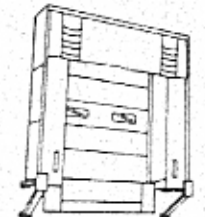
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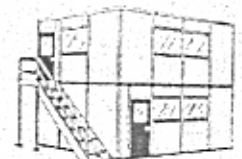
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## WARRANTY

Every hoist is thoroughly inspected and tested prior to shipment from the factory. Should any problems develop, return the complete hoist prepaid to your nearest 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.

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

modifications or alterations made by persons other than factory or 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 Company 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 COMPANY MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

## SECTION I INTRODUCTION

### 1-1. GENERAL INFORMATION.

1-2. This manual provides information for persons engaged in the operation and maintenance of a Coffing MAL Ratchet Lever Hoist. All persons operating or maintaining a model MAL Hoist must be familiar with the information contained herein. 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.

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

### 1-3. APPLICATION

1-4. The MAL series ratchet lever hoists are intended for use in general industry, utility line construction and maintenance, general construction and rigging. They are designed to lift, lower, pull or tension material loads within their rated load in normal environmental conditions within ambient temperature limits of 0°F to 130°F. These hoists are not suitable for use in certain explosive atmospheres as classified in article 500 of the National Electrical Code due to the possibility of mechanical sparking. Additionally, they should not be used in the handling of hazardous loads which if dropped could explode, pollute or contaminate, unless used in conjunction with redundant load supporting devices.

### 1-5. HOIST CONSTRUCTION.

1-6. The body and handle of the MAL Hoist are made of aluminum alloy for strength without excess weight. The hoist unit is protected from load slippage because the brake mechanism is sealed against the entrance of oil, chemicals and dirt—all common causes of hoist slippage. Five seals keep the brake clean and dry, assuring constant brake performance even under conditions of exposure. Long service life is assured by the heat-treated load sheave and high tensile, heat-treated steel link chain. High quality self-lubricating bushings are used to reduce wear. The hoist is equipped with a load limiting device which allows the handle to slip when the hoist is dangerously overloaded.

1-7. This manual covers six hoists that comprise the MAL series. They are: Models MAL-15, MAL-15-2, MAL-30, MAL-30-2, MAL-30-3, and MAL-30-4.

1-8. 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. See Table I for some leading particulars with which the operator should be familiar.

TABLE I. LEADING PARTICULARS

Model No.	Rated Capacity (Pounds)	Standard Lift (Inches)	Average Pull on Lever to Lift Full Load (Pounds)	Approx. Net Wt. (Pounds)	Min. Distance Between Hooks (Inches)	Lever Length (Inches)	Min. Incr. in Lifting Position (Inches)	Number of (Chains)
MAL-15	1,500	60	61	16½	12½	20½	.188	1
MAL-15-2	3,000	60	61	22	16½	20½	.094	2
MAL-30	3,000	60	82	25	15	20½	.088	1
MAL-30-2	6,000	60	87	38	18½	20½	.044	2
MAL-30-3	9,000	60	90	55	23½	20½	.029	3
MAL-30-4	12,000	60	93	65	22	20½	.022	4

Note: Load Limiter — The load limiting device incorporated in this hoist is effective only when the overload is being lifted or pulled through operation of the hoist lever. It will not protect against externally applied overloads.

The presence of this device is not intended to condone the application of overloads, or its use to measure the maximum load that can be pulled or lifted. Always select a hoist whose load rating is in excess of the load to be handled.

## SECTION II PREPARATION FOR USE

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

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

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

a. Ensure that the 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.

b. Ensure that there is adequate working space to permit hoist operation. Normal operation should not require pulling or tugging around corners or obstructions. Also, there must be adequate space to permit the operator and other persons to stand clear of the load and adjacent structures.

c. 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.

d. Perform both the frequent and the periodic inspections specified herein on a repaired hoist prior to initial use. Perform the frequent inspections specified herein on a new hoist prior to initial use.

### 2-4. INSTALLATION.

2-5. 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.

### 2-6. TESTING.

2-7. Check the hoist through a few lifting and lowering cycles with no load on the hook. Attach a load of fifty pounds to the hook and check the hoist through a few lifting and lowering cycles. Check for load drift. If brake operation is normal with this light load, test the hoist for operation with the rated load, and then with about 125 percent of the rated load. (See note.) The hoist should operate smoothly and the brake should prevent load drift.

Note: Because hoist is equipped with a load limiting device occasional slipping of the handle may occur when testing with 125 percent of rated load.

## 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 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 use a handle extender (cheater bar). The hoist is designed to lift or pull its rated capacity when a reasonable effort is applied to the end of the handle by one person (see table I). If effort appears to be excessive recheck the load and use a larger capacity hoist if necessary.

c. Do not side load the hoist. Always pull in a straight line between hooks. Side loading over a sharp corner may fracture the hoist housing or load block.

d. If handle slips while operating lever remove load from hoist immediately. Recheck for actual load and use a larger capacity hoist if necessary.

e. Be sure there are no twists in the load chain.

f. Do not operate the hoist from an off balance position. Operator should have firm footing or be otherwise secured before operating the hoist.

g. Before raising or pulling a load, always check to see that it is held securely in the hook or sling, etc. Raise or pull the load only until the load chain is taut and then recheck the rigging before continuing to raise the load.

h. Make sure that the slings and other rigging have sufficient capacity to support the load, and are in good condition.

i. **STAND CLEAR OF THE LOAD AT ALL TIMES.** Do not move a load in such a manner as to endanger personnel.

j. Do not leave the hoist under load for extended or unattended periods unless specific precautions have been taken to provide protection.

k. Do not wrap the load chain around a load. Use a SLING!

l. Do not TIP-LOAD any hook, as this will exert undue strain in the hook, resulting in hook failure.

m. The MAL series of hoists are designed for manual operation by one person. Do not attempt to operate hoist with other than the manual power furnished by one person.

n. **DO NOT USE THE HOIST TO LIFT, SUPPORT OR OTHERWISE TRANSPORT PEOPLE.**

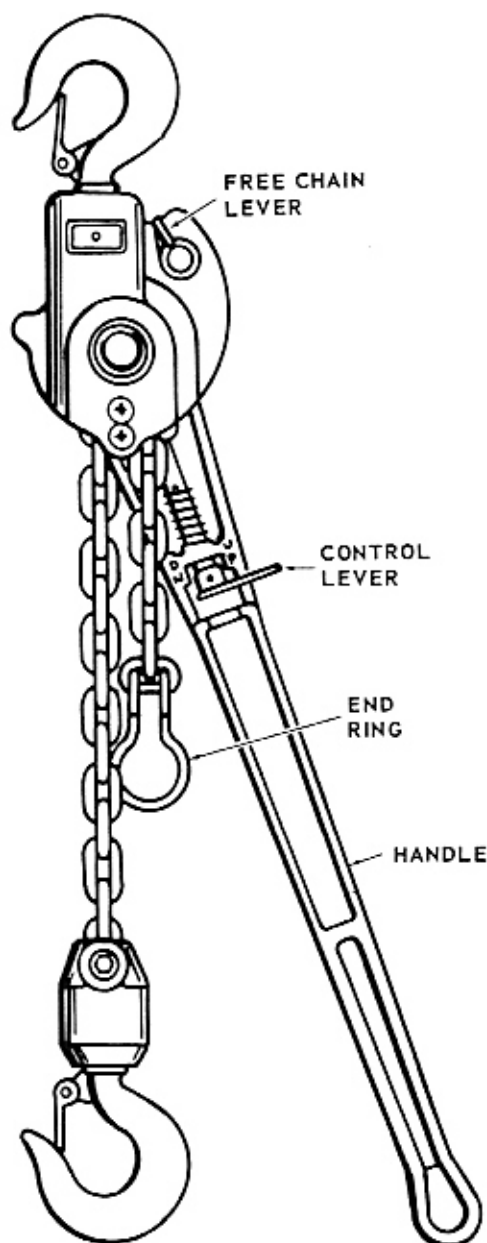


FIGURE 3-1. MAL SERIES HOIST OPERATION

3-3. OPERATION. (See figure 3-1.)

3-4. The hoist should be operated by qualified personnel only. The operator should familiarize himself with the hoist and its proper care. If adjustments or repairs are necessary or any damages known or suspected, he shall report the same promptly to the person authorized to correct the problem. He shall also notify the next operator of the damages upon changing shifts. If an "Out-of-Order" tag is on the hoist, the operator should not use the hoist until the tag has been removed by an authorized person. The

operator should not engage in any practice which will divert his attention while operating the hoist.

3-5. ATTACHING THE LOAD. Attach the load to the hook by means of slings or other approved devices. Make sure the slings or other devices are seated properly in the saddle of the hook before lifting. Be sure the hook latch is closed and working properly. Never wrap the load chain around the load.

3-6. TO RAISE OR PULL LOAD. Turn control lever to "UP" position as shown in figure 3-1. Operate the handle to raise the load while observing the following:

- a. Before lifting or pulling, make sure the load chain is not kinked or twisted or that the load will not contact any obstructions.
- b. Test the brakes each time a load approaching the rated load is handled by raising the load just enough to clear the floor, or supports, and checking for brake action.
- c. Lift or pull the load to the desired position. Do not leave the hoist under load for extended or unattended periods unless specific precautions have been taken to provide protection.

3-7. TO REMOVE LOAD. Turn control lever to "DN" position, then operate handle.

CAUTION: Do not extend bottom hook beyond the hoist's rated lift. End ring should not be allowed to enter the hoist housing.

NOTE: Under certain operating conditions such as applying overload or removing the load by external means, the brake can become locked, preventing the hoist from operating in the "DN" direction. When this happens, restrain the hoist by reapplying a load to the bottom hook or lock the hoist head so that it will not move when pressure is applied to the handle. Place control lever in the "DN" position and give the handle a sharp pull. If a load is used, give the handle a few additional strokes after load has been lowered. This will insure that the brake is in an unlocked position when the load is removed from the hoist.

3-8. TO OBTAIN FREE CHAIN. To obtain free chain when there is no load on the hoist, place control lever straight out, midway between "UP" and "DN". Push free chain lever toward hook housing and hold it there. Pull free chain in either direction.

3-9. TO TAKE UP SLACK. Place control lever straight out, midway between "UP" and "DN". Pull on ring end of chain.

CAUTION-When operating the hoist keep control of the handle at all times. Do not release the handle while it is under load.

3-10. TROUBLESHOOTING. If hoist does not operate in the manner described above, see table IV for possible cause and corrective action.



## SECTION IV MAINTENANCE

### 4-1. INSPECTIONS.

4-2. A planned inspection routine should be established for this hoist based upon frequency of use, severity of use, and environmental conditions. 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 4-4 and 4-5 be used and filed for reference. All inspections should be made by, or under the direction of a designated inspector. Special inspections should be made following any significant repairs or any operating occurrence leading one to suspect that the hoist's capabilities may have been impaired. Refer to paragraphs 4-13 and 4-25 for assistance in any disassembly and assembly necessary for inspections and subsequent replacement or repair. Prior to inspection, clean parts as required. See paragraph 4-21.

### 4-3. FREQUENT INSPECTIONS.

4-4. Perform the following inspections daily prior to initial use of the hoist. Also, observe during operation for any damage which might appear between regular inspections.

**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. Inspect the hooks for deformations, chemical damage or cracks. Hooks damaged by chemicals, deformation or cracks, or having throat openings greater than the "Maximum Allowable Opening" shown in figure 4-1 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 figure 4-1 indicates abuse



HOIST MODEL NO.	REJECT HOOK OPENING	
	TOP HOOK	BOTTOM HOOK
MAL-15	1 1/32"	1 1/2"
MAL-15-2	1 1/32"	1 1/32"
MAL-30	1 1/32"	1 1/32"
MAL-30-2	1 1/4"	1 1/4"
MAL-30-3	2 1/32"	2 1/32"
MAL-30-4	2 1/32"	2 1/32"

FIGURE 4-1. HOOK THROAT OPENING

or overloading of the hoist. Other load bearing components should be inspected accordingly.

b. Check that both hooks swivel freely.

c. Check the hoist handle for bends. If the handle is bent, the hoist has probably been highly overloaded. A qualified service man should inspect the hoist for other damage or return the hoist to the factory.

d. Check load chain for wear, twist and distortion and ensure that dead end ring or connection is secure. Also check the chain for presence of foreign material and adequate lubrication.

### 4-5. PERIODIC INSPECTIONS.

4-6. 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 4-4.

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

c. Check load sheave and chain attachments for distortion, cracks and excessive wear.

d. Check pawls for excessive wear, binding and missing or broken pins.

e. Check pawl springs for breaks, corrosion and continued ability to hold pawl properly.

f. Check load pawl shaft for excessive wear.

g. Inspect gear and pinion shaft for adequate lubrication, cracks, distortion, worn or broken teeth.

h. Inspect bearings for adequate lubrication, distortion, cracks and excessive wear.

i. Check housing, covers, swivel frames, load blocks and outrigger for cracks and distortion.

j. Inspect hub for damage to threads. Check hub and thrust washer for scoring or other damage to braking surfaces.

k. Check brake discs for excessive wear, glazing or oil contamination. Replace discs worn to a thickness of 5/64 inch or less.

l. Inspect seals, "o" rings and gaskets for deterioration and wear.

m. Inspect decal and capacity plate for legibility.

n. Inspect supporting structure for continued ability to support imposed loads.

o. Inspect the chain for gouges, nicks, weld splatter, corrosion and distorted links. Slacken the

chain and inspect for wear at contact points. If wear is observed, or if stretching is suspected, measure the chain per paragraph 4-10. 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.

p. Check hooks for cracks using dye penetrant, magnetic particle or other suitable detection method.

q. Check load limiting device for obvious defects. If this device requires repair or calibration, it must be returned to the factory.

#### 4-7. INSPECTION OF HOIST NOT IN REGULAR USE.

4-8. If the hoist has been idle for one month or more, perform the inspections listed in paragraph 4-4. If the hoist has been idle more than six months, perform the inspections listed in paragraph 4-6.

#### 4-9. CHECKING CHAIN FOR WEAR.

4-10. Chain inspection and evaluation is a very important phase of hoist maintenance. In general, removal of the load chain from the hoist is not necessary. To check the load chain for excessive wear, proceed as follows:

a. Inspect the chain for "elongation", which is a condition caused by overloading or wear. Table II shows the normal and reject lengths for MAL hoist chain. A chain gauge similar to that shown in figure 4-2 or a Vernier caliper may be used. Hang the chain up or stretch it out on a work table in a taut position. Place one edge of the gauge or caliper over the end of a chain link. The number of links within the gauge limits will correspond to the "Number of Links" as indicated in Table II. If the last link, which should be within the gauge limits, makes contact or extends past the inside edge of the gauge, or if the reading of the

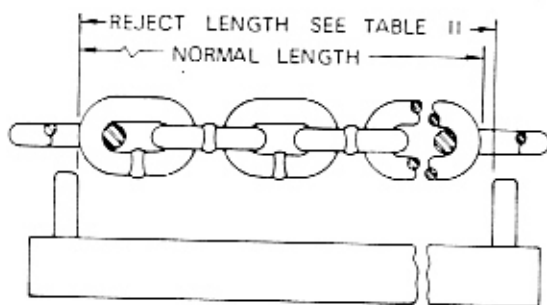


FIGURE 4-2. CHAIN SALVAGE GAUGE

TABLE II. LOAD CHAIN LINK

CHAIN PART NO.	NOM. DIA.	NO. OF LINKS	NORMAL LGTH. FOR NO. LINKS	REJECT LGTH. FOR NO. LINKS	GAUGE NUMBER
JL-19-B	.250	19	14.776	14.957	GA-3441
C-19-10**	.312	19	17.832	18.069	GA-3441-2

\*Used on MAL-15, MAL-15-2. \*\*Used on MAL-30, MAL-30-2, MAL-30-3, and MAL-30-4.

Vernier caliper is equal to or greater than the "Reject Length", the entire chain shall be replaced. If the last link does not contact the edge of the gauge, or the Vernier caliper reading is less than the "Reject Length", check the chain along its entire length. If all readings are within tolerance, the chain is free of elongation.

b. Inspect each individual chain link diameter for wear of the link. See figure 4-3. The nominal diameter of the link is 0.250 inch for the C-19-8 chain and 0.312 inch for the C-19-10 chain. If the diameter for any link of C-19-8 chain is less than 0.200 inch, replace the entire chain. If the diameter of any link of C-19-10 chain is less than 0.275 inch, replace the entire chain.

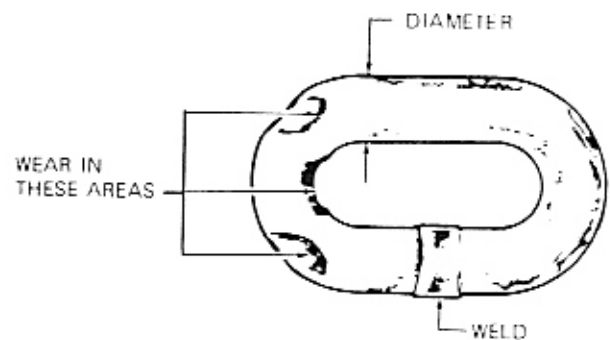


FIGURE 4-3. TYPICAL WEAR ON LINKS

#### 4-11. LUBRICATION.

4-12. Proper lubrication is necessary for a long and relatively trouble-free hoist operation. Refer to the following and to Table III, 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 Chain Lubricant No. H-7595, or equivalent. Allow oil to work into each link end and be carried into the sheave pockets. Wipe excess oil to prevent dripping.

b. During periodic inspection apply a light coating of Coffing No. H-7577 grease to bearing surfaces of load pawl shaft; to grease seals; to o-rings; to pinion shaft and gear teeth; and to all bearings. Use H-7593 grease on gear teeth.

c. **BOTTOM HOOK BEARING.** Invert bottom hook and allow a few drops of SAE 20-30 oil to run down the hook shank and into the swivel.

d. **TOP HOOK.** Allow a few drops of SAE 20-30 oil to run down between the housing and hook shank.

e. **BOTTOM BLOCK SHAFT AND BUSHING** (Multiple Chained Models). Disassemble bottom block to the degree required to remove shaft. Lubricate shaft and bushing with SAE 20-30 oil.

#### 4-13. **DISASSEMBLY.**

4-14. The following paragraphs suggest the easiest method of disassembly and reassembly of the **MAL** hoists. Procedures are included for all six hoists in the series, with references made to the exploded view illustrations in Section V for parts identification. Use only those assembly/disassembly procedures identified as applicable to your hoist. Some procedures for one hoist may reference steps already delineated for another hoist; this is done to avoid too much repetitious procedure since all eight hoists have much common construction.

4-15. It is expected that whenever any part is removed from the hoist that the part will be cleaned and inspected before reuse. Some instructions for cleaning and inspection are given in paragraphs 4-21 through 4-24. Always give careful attention to lubrication of parts during reassembly.

#### **WARNING**

The hoist is equipped with a factory calibrated load limiting device to prevent operation when hoist is dangerously overloaded. This device consists of indexes 25 through 31 on figures 5-1 through 5-6. This load limiting device must be returned to the factory for overhaul and calibration if any part of the device requires replacement. Tampering or disassembly of this device voids the warranty and may create unsafe conditions.

4-16. **MAL-15 DISASSEMBLY.** Disassemble the MAL-15 hoist as follows while referencing figure 5-1.

a. Remove nut (50) and swivel screw (51). Separate swivel frames (54) from bottom hook assembly (55). Do not remove latch (56) from bottom hook unless replacement is required. Place control lever (7) straight out, midway between "UP" and "DN" positions. Place lever (40) toward hook housing and hold it there. Pull load chain (52) by pulling end ring (53) until chain is clear of hoist. Remove end ring only if replacement is required.

b. Remove pin (43) from top hook (57) shaft. Separate nut (58) from top hook and remove nut, hook washer (59) and top hook. Do not remove latch (56) from top hook unless replacement is required.

c. Remove set screw (60) and clutch cap (2). The clutch cap has left hand threads and must be turned clockwise for removal. Remove screw (1), washer (32) and thread stop (11). Remove load limiting device assembly (25 thru 31) that retains the handle (10) by turning this assembly clockwise.

d. Place control lever (7) straight out, midway between "UP" and "DN" positions and separate handle (10) from load limiting device assembly (25-31). Punch plug (4) from handle. Drive pins (5 and 6) from handle pawl rod (9). Remove lever (7), spring (8) and handle pawl rod from handle.

e. Remove four screws (12).

**CAUTION:** Take care not to damage sealing surfaces of cover (16) and housing (49) when removing cover.

Remove cover (16) from housing (49) and, if replacement is required, remove oil seal (15) from cover. Remove gasket (14) from housing.

f. Slide front brake disc (19), ratchet (20), rear brake disc (22) and thrust bearing (23) remove pin (37) from load sheave (38). If replacement is required, press bearing (21) from ratchet.

g. Remove spring (24) and load pawl (18) from load pawl shaft (44).

h. Remove screws (35) and lockwashers (13). Slide shedder (36) from housing (49). Remove ring (33) and washer (34) from load sheave (38) and slide load sheave from housing.

i. Drive pin (39) from lever (40) and remove lever from shaft (44). Slide shaft from housing (49) and remove ring (41) and washer (42) from shaft. If pin (43) requires replacement, press pin from shaft.

j. If oil seal (45), bearing (46), bearing (47) and pins (48) require replacement, remove these items from housing (49).

4-17. **MAL-15-2 DISASSEMBLY.** Disassemble the MAL-15-2 hoist as follows while referencing figure 5-2.

a. Press pin (50) from top hook and outrigger assembly (58). Pull load chain (57) through lower sheave (68 for MAL-15-2). Place control lever straight out, midway between "UP" and "DN" positions. Place lever (40) toward hook housing and hold it there. Pull load chain from hoist. Remove end ring (56) from chain only if replacement is required.

b. (For MAL-15-2 Hoist Only) Remove two nuts (61), lockwashers (62) and screws (63) and separate frames (64). Remove two pins (65) and separate shaft (66), bearing (67) and sheave (68). Remove roll pin (69) and remove nut (70) and thrust bearing (71) from hook (72). Remove latch (59) from hook only if replacement is required.

c. Remove two pins (51 and 52) from coupling shaft (53). Remove top hook and outrigger assembly (58), coupling shaft, hook collar (54) and washer (55) from housing (49).

d. Remove set screw (81) and clutch cap (2). The clutch cap has left hand threads and must be turned clockwise for removal. Remove screw (1), washer (32) and thread stop (11). Remove load limiting device assembly (25 thru 31) that retains the handle (10) by turning this assembly clockwise.

e. The remainder of model MAL-15-2 parts are disassembled in the same manner as the MAL-15 hoist. Perform steps c thru k of paragraph 4-16.

4-18. **MAL-30 DISASSEMBLY.** Disassemble the MAL-30 hoist as follows while referencing figure 5-3.

a. Remove nut (57) and swivel screw (58). Separate swivel frames (61) from bottom hook assembly (62). Do not remove latch (63) from bottom hook unless replacement is required. Place control lever (7) straight out, midway between "UP" and "DN" positions. Place lever (46) toward hook housing and hold it there. Remove load chain (59) by pulling end ring (60) until

**INSPECTION AND MAINTENANCE CHECK LIST  
LEVER OPERATED CHAIN HOIST**

TYPE OF HOIST \_\_\_\_\_  
 LOCATION \_\_\_\_\_  
 MANUFACTURER \_\_\_\_\_

CAPACITY \_\_\_\_\_  
 ORIGINAL USE DATE \_\_\_\_\_  
 MANUFACTURER'S SERIAL NO. \_\_\_\_\_

ITEM	FREQUENCY OF INSPECTION			POSSIBLE DEFICIENCIES	OK	ACTION REQUIRED
	FREQUENT		PERIODIC			
	DAILY	MONTHLY	1-12 MO.			
Load Chain	*	*	*	Inadequate lubrication, excessive wear or stretch, cracked, damaged or twisted links, corrosion or foreign substance		
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)		
Hook Retainers			*	Worn or damaged nuts, pins, washers, collars used to secure hook in load block or housing		
Pawl, Ratchet			*	Wear and binding		
Pawl Spring			*	Breaks, corrosion, ability to retain pawl		
Brake Parts: Ratchet Brake Discs Hub Thrust Washer Load Limiting Device	*	*	*	Wear, binding, worn bearing Excessive wear, glazing, grease Scoring, thread damage Scoring, grease Slipping under load		
Seals, "O" Rings and Gasket			*	Wear, Deterioration		
Handle Parts: Pawl Rod Pawl Spring  Handle	*	*	*	Wear, binding Breaks, corrosion, ability to keep rod in position Cracks, bends		
Nuts, Bolts, Rivets			*	Looseness, stripped or damaged threads		
Sheave, Pinion Shaft, Gear			*	Damage to teeth, distortion, cracks, excessive wear, build up of foreign substances		
Bearings			*	Adequate lubrication, wear		
Housing, Covers, Swivel Frames, Load Blocks & Outriggers			*	Cracks, Distortion		
Supporting Structure			*	Damage or wear which restricts ability to support imposed loads		
Decal, Capacity Plate			*	Missing, damaged or illegible		

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

**FREQUENCY OF INSPECTION:**

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

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

FIGURE 4-4. INSPECTION AND MAINTENANCE CHECK LIST



TABLE IV. TROUBLESHOOTING CHART

IF DISASSEMBLY OF UNIT IS REQUIRED, REFER TO PARAGRAPH 4-13. TEST HOIST PER PARAGRAPH 2-6 AFTER REASSEMBLY OR REPLACEMENT OF ANY OF ITS COMPONENT PARTS.

SYMPTOM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
1. Hoist raises but will not lower.	"Brake Lock-Up" caused by shock load, leaving load on hoist for extended periods of time or removing load from hoist without slacking chain.	Unlock brake following procedure outlined on Page 3. Check application for conditions suggested in "Possible cause(s)".
2. Hoist lowers erratically.	(a) Brake friction surfaces are contaminated with oil or grease. (b) Brake discs are worn or glazed.	(a) Replace brake discs and wipe mating friction surfaces clean. (b) Replace brake discs if worn excessively, remove glaze by placing a fine grade emery cloth on a flat surface and rubbing discs lightly on this surface.
3. Hoist requires excessive effort to raise or lower.	(a) Overloading (b) Worn or damaged load chain. (c) Load Chain rusty or coated with foreign material. (d) Load sheave or guide portion of housing have build-up of foreign material. (e) Worn gearing or bearings.	(a) Reduce load or use correct capacity unit. (b) Check chain per instructions on Page 5 and replace if necessary. (c) Clean chain with suitable acid-free solvent and relubricate. Replace chain if badly pitted with rust. (d) Disassemble part and clean out foreign material. Inspect and replace parts if worn excessively. (e) Disassemble parts and check for wear. Replace parts if necessary and relubricate.
4. Hoist will not raise or lower.	(a) Chain jammed in housing (b) Broken load sheave (c) Broken or worn tip on handle pawl or stripped spline on brake hub.	(a) (b) & (c) Disassemble per instructions. Inspect parts for wear or breakage and replace if necessary.
5. Hoist "Free Chains" under load.	(a) Load pawl not engaged (free chain lever sticks) (b) Brake hub not operating freely. (c) Load chain installed from wrong side of load sheave.	(a) Check load pawl shaft for binding condition. Check for broken load pawl or load pawl spring. (b) Check thread in brake hub or mating part for damage, corrosion or foreign material. Check for broken or improperly positioned thread stop. (See Fig. 4-6) (c) Correct chain reeving. (See Fig. 4-8)
6. Hoist difficult to "Free Chain".	See 3 (b) (c) & (d)	See 3 (b) (c) & (d)
Hoist lowers but will not raise. Handle slips while operating.	Overloaded.	If handle slips while operating remove load from hoist immediately recheck for actual load and use a larger capacity hoist if necessary.

chain is clear of hoist. Remove end ring only if replacement is required.

b. Remove pin (65) from top hook (64) shaft. Separate nut (66) from top hook and remove nut, hook washer (67) and top hook. Do not remove latch (63) from top hook unless replacement is required.

c. Remove set screw (13) and clutch cap (2). The clutch cap has left hand threads and must be turned clockwise for removal. Remove screw (1), washer (32) and thread stop (11). Remove load limiting assembly (25 thru 31) that retains the handle (10) by turning this assembly clockwise.

d. Place control lever (7) straight out, midway between "UP" and "DN" positions and separate handle (10) from hub (25). Punch plug (4) from handle. Drive pins (5 and 6) from handle pawl rod (9). Remove lever (7), spring (8) and handle pawl rod from handle.

e. Remove four screws (12).

**CAUTION:** Take care not to damage sealing surfaces of cover (16) and housing (56) when removing cover.

Remove cover (16) from housing (56) and, if replacement is required, remove oil seal (15) from cover. Remove gasket (14) from housing.

f. Slide front brake disc (19), ratchet (20), rear brake disc (22) and thrust washer (23) remove pin (41) from pinion shaft (42). If replacement is required, press bearing (21) from ratchet.

g. Remove spring (24) and load pawl (18) from load pawl shaft (50).

h. Remove screws (33) and lockwashers (34), then remove cover (35). Press pins (38) from housing (56) and remove shedder (39). Remove screws (36) and capacity plate (37) if replacement is required.

i. Remove gear (40) from shaft of load sheave (43). Then remove pinion shaft (42), thrust washer (44) and load sheave (43).

j. Drive pin (45) from lever (46) and remove lever from shaft (50). Slide shaft from housing (56) and remove ring (47) and washer (48) from shaft. If pin (49) requires replacement, press pin from shaft.

k. If oil seal (51), bearings (52, 53 and 54) and pins (55) require replacement, remove these items from housing (56).

**4-19. MAL-30-2 DISASSEMBLY.** Disassemble the MAL-30-2 hoist as follows while referencing figure 5-4.

a. Press pin (57) from outrigger (66). Pull load chain (68) through lower sheave (76 for MAL-30-2 hoist). Place control lever (7) straight out, midway between "UP" and "DN" positions. Push lever (46) toward hook housing and hold it there. Pull load chain from hoist. Remove end ring (67) only if replacement is required.

b. (For MAL-30-2 Hoist Only) Remove two nuts (70) and screws (71) and separate load block frames (72). Remove pin (73) and separate shaft (74), bearing (75) and sheave (76). Remove pin (77), then remove nut (78), hook washer (79), and thrust bearing (80) from bottom hook (81). Do not remove latch (65) from bottom hook unless replacement is required.

c. Remove screws (58), lockwashers (59) and keeper (60). Separate outrigger (66) from housing (56). Press pin (61) from top hook (64). Remove nut (62), washer (63) and top hook from outrigger. Do not remove latch (65) from top hook unless replacement is required.

d. The remainder of model MAL-30-2 parts are disassembled in the same manner as the model MA-30 hoist. Perform steps d thru l of paragraph 4-18 to complete the disassembly.

**4-20. MAL-30-3 AND MAL-30-4 DISASSEMBLY.** Disassemble the MAL-30-3 or MAL-30-4 hoist as follows while referencing figure 5-5 or figure 5-6, as applicable.

a. (For MAL-30-3 Hoist Only) Remove dead end screw (86, figure 5-5) and nut (72) to separate load block frames (76) from load chain (71). Pull chain through sheaves (68 and 80).

b. (For MAL-30-4 Hoist Only) Remove pin (70, figure 5-6) from outrigger (69) to free end of load chain (72). Pull chain through sheaves (68 and 80).

c. Place control lever (7) straight out, midway between "UP" and "DN" positions. Push lever (46) toward hook housing and hold it there. Pull load chain (71, figure 5-5 or 72, figure 5-6) from hoist. Remove end ring (70, figure 5-5 or 71, figure 5-6) from chain only if replacement is required.

d. Remove screws (75) and nuts (74) to separate load block frames (76). Remove pin(s) (77) and disassemble shaft(s) (78), bearing(s) (79) and sheave(s) (80).

e. Remove pin (81) and separate nut (82), hook washer (83) and thrust bearing (84) from bottom hook (85). Do not remove latch (61) from bottom hook unless replacement is required.

f. Remove screws (62), lockwashers (63) and keeper (64). Separate outrigger (69) from housing (56). Disassemble pin (65), shaft (66), bearing (67) and sheave (68) from outrigger.

g. Press pin (57) from top hook (60). Remove nut (58), washer (59) and top hook from outrigger (69). Do not remove latch (61) from top hook unless replacement is required.

h. The remainder of model MAL-30-3 and MAL-30-4 parts are disassembled in the same manner as the model MAL-30 hoist. Perform steps d thru l of paragraph 4-18 to complete the disassembly.

#### **4-21. CLEANING.**

**4-22.** All parts (except self lubricating bearings located in housing and bottom block assembly on multiple chained models) may be cleaned with a pressure spray of acid-free cleaning solvent or immersed in the solvent and dried with compressed air or a clean, lintless cloth. Stubborn deposits of dirt and grease may be removed from gears, housings, chains, etc., by using a stiff-bristled brush dipped in the solvent.

**CAUTION:** Ensure that adequate ventilation is provided when using cleaning solutions. Wear protective clothing, and avoid prolonged contact with solvents.

#### 4-23. INSPECTIONS FOR EXCESSIVE WEAR.

4-24. The existence of well-worn parts is sufficient reason for questioning safe hoist operation, not to mention the added costs to repair damage that will inevitably result if severe wear is permitted to continue. The parts most likely to first evidence wear are: brake discs; bushing type bearings for sheave and pinion shafts; the sheaves and their shafts and bushings; thrust bearings and washers for the hooks; pawls, ratchets and gears; and the chain and hooks. Inspection and replacement criteria for worn chain and hooks are located elsewhere in this manual.

#### 4-25. ASSEMBLY.

4-26. Assemble parts that have been cleaned and inspected. Apply a light coating of Cofing No. H-7577 grease to o-rings, seals, bearings, apply H-7593 grease to gear and gear portion of pinion prior to assembly.

4-27. MAL-15 ASSEMBLY. Assemble the MAL-15 hoist as follows while referencing figure 5-1.

a. If oil seal (45), bearing (46), bearing (47) or pins (48) were removed, press these items into housing (49).

b. If pin (43) was removed, press pin in shaft (44) until 1/8 inch of the pin protrudes from the top of shaft. Place washer (42) and "o" ring (41) on shaft and insert shaft in housing (49). Secure lever (40) to shaft with pin (39).

c. Insert load sheave (38) in housing (49) and install pin (37) in load sheave. Install washer (34) and ring (33) on load sheave. Attach shedder (36) to housing with two screws (35) and lockwashers (13).

d. Place load pawl (18) on shaft (44) so that the long end of shaft pin (43) is located between pins. This allows load pawl to be moved out of engagement with the ratchet for free chaining. Install spring (24) and test the action of load pawl by turning lever (40).

e. If bearing (21) was removed, press bearing into ratchet (20) until bearing is flush with side of ratchet that fits against rear brake disc (22). Assure that the ratchet (20), thrust bearing (23), brake discs (19 and 22) and area of hub (25) that contacts brake disc are free of oil or other contamination. Install thrust bearing, rear brake disc, ratchet and front brake disc on load sheave (38) while taking care not to get oil, grease or fingerprints on friction surfaces.

f. If oil seal (15) was removed, press seal in cover (16). Place gasket (14) on housing (49). Place cover on housing and attach cover with four screws (12).

g. Insert handle pawl rod (9) into handle (10). Place spring (8) on rod and press pin (5) in rod. Attach lever (7) to rod with pin (6). See figure 4-7 for correct orientation of rod and lever. Replace plug (4) in handle.

h. Pull down on lever (7) and slide handle (10) into place on load limiting device (25 thru 31) and release lever.

NOTE: For proper brake operation the brake hub (25) should turn down freely on the male thread of the load sheave (38). If excessive effort is required, remove hub and inspect threads for nicks, burrs or foreign matter.

i. Assemble handle and load limiting device to hoist by screwing brake hub (25) counter-clockwise onto

load sheave (38) until hub face has locked against brake disc (19). Continue turning hub counter-clockwise until the cast stop within the hub is at the top as shown in figure 4-6. Place thread stop (11) over the notched end of load sheave and to the right of the cast hub stop, allowing a minimum 1/8 inch movement to a maximum 5/16 inch movement between hub stop and the protrusion on thread stop. Install washer (32) and screw (1).

j. Place "o" ring (3) in clutch cap (2). Assemble clutch cap on hub (25) by turning cap counter-clockwise with a spanner wrench. Install set screw (60) in clutch cap.

k. Assemble top hook (57), hook washer (59) and nut (58) in housing (49). Screw nut on hook until approximately 1/64 inch vertical play (to allow hook to swivel freely) remains. Align pin hole in hook and slot in nut and insert pin (43). If latch (56) was removed, attach latch to top hook.

l. Position swivel frames (54) over bottom hook (55). If latch was removed, attach latch to bottom hook.

m. See figure 4-8 for diagram of chain reeving. Turn handle pawl lever to "DN" position. Invert the hoist on a work table and move handle until a flat chain pocket in the load sheave (38) can be seen. Drop loose end of the load chain into the side of load sheave on same side as load pawl lever (40). The first link of the chain shall be upstanding in the load sheave groove, with the weld on the link facing away from the load sheave. The second link of chain should ride in one of the load sheave pockets. Use handle to turn sheave in the lowering direction. As the end of the chain moves around load sheave, turn hoist upright so load chain will move around load sheave correctly and out of housing.

n. Attach the first link of chain (52) to swivel frames (54) with swivel screw (51) and nut (50). If end ring (53) was removed, attach ring to opposite end of chain.

o. Coat the load chain with Cofing Chain Lubricant No. H-7595, or equivalent. Allow oil to work into each link and be carried into the sheave pockets. Wipe excess oil to prevent dripping.

p. Allow a few drops of SAE 20-30 oil to run down the bottom hook shank and into the swivel. Allow a few drops of SAE 20-30 oil to run down between housing and top hook washer.

q. Test the hoist per paragraph 2-6 before placing hoist in use.

4-28 MAL-15-2 ASSEMBLY. Assemble the MAL-15-2 hoist as follows while referencing figure 5-2.

a. Perform steps a thru i of paragraph 4-27.

b. Place "o" ring (3) in clutch cap (2). Assemble clutch cap on hub (25) by turning cap counter-clockwise with a spanner wrench. Install set screw (81) in clutch cap.

c. Insert coupling shaft (53) in housing (49). Place washer (55) and hook collar (54) onto end of shaft and secure with pin (51). Place top hook and outrigger assembly (58) over coupling shaft and secure with pin (46). If latch (59) was removed, attach latch to top hook.



d. (For MAL-15-2 Hoist Only) Place thrust bearing (71) on bottom hook (72) and secure with nut (70). Place hook in one load block frame (64) and screw nut on hook until approximately 1/64 inch vertical play (to allow hook to swivel freely) remains. Align pin hole in hook and slot in nut and insert pin (69). Assemble shaft (66), bearing (67), sheave (68) and pins (65). Assemble load block frames (64) and hook and secure with screws (63), lockwashers (62) and nuts (61). If latch (59) was removed, attach latch to bottom hook.

e. Perform step m. of paragraph 4-27.

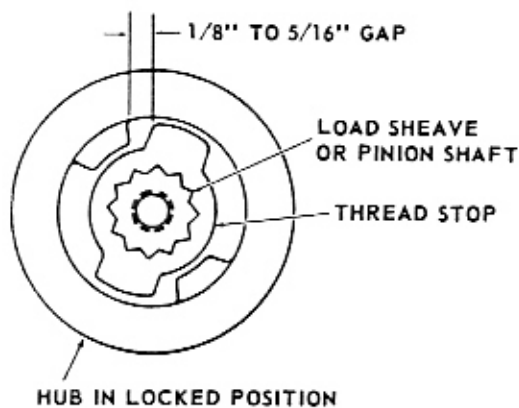


FIGURE 4-6. POSITIONING OF THREAD STOP

f. Route the load chain (57) around sheave of bottom block (with chain welds next to sheave), then attach the first link of chain to top hook and outrigger assembly (58) with pin (50). Make sure there are not twists in the chain. If end ring (56) was removed, attach ring to opposite end of chain.

g. Perform steps o, p and q of paragraph 4-27.

4-29 MAL-30 ASSEMBLY. Assemble the MAL-30 hoist as follows while referencing figure 5-3.

a. If oil seal (51), bearings (52, 53 and 54) or pins (55) were removed, press these items into housing (56).

b. If pin (49) was removed, press pin in shaft (50) until 1/8 inch of the pin protrudes from the top of shaft. Place washer (48) and "o" ring (47) on shaft and insert shaft in housing (56). Secure lever (46) to shaft with pin (45).

c. Install thrust washer (44) and pinion shaft (42) in housing (56). Insert pin (41) in pinion shaft. Install load sheave (43) in housing and place gear (40) on load sheave.

d. If capacity plate (37) was removed, attach plate to cover (35) with two screws (36). Secure shedder (39) to housing (56) with two pins (38). Attach cover to housing with two screws (33) and lockwashers (34).

e. Place load pawl (18) on shaft (50) so that the long end of shaft pin (49) is located between pins. This allows load pawl to be moved out of engagement with the ratchet for free chaining. Install spring (24) and test the action of load pawl by turning lever (46).

f. If bearing (21) was removed, press bearing into ratchet (20) until bearing is flush with side of ratchet that fits against rear brake disc (22). Assure that

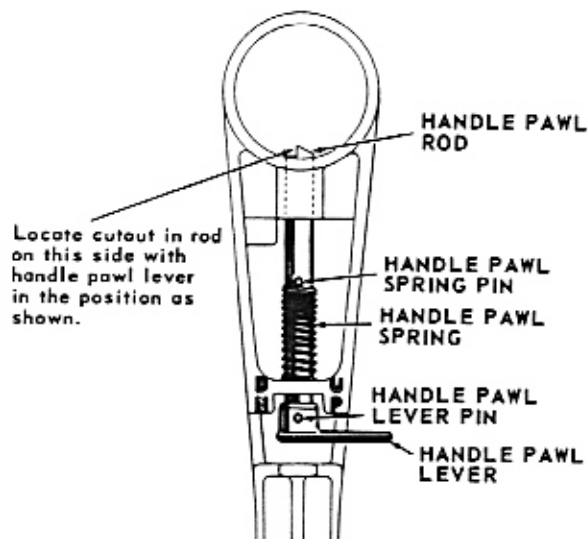


FIGURE 4-7. LEVER AND ROD ASSEMBLY

the ratchet (20), thrust bearing (23), brake discs (19 and 22) and area of hub (25) that contacts brake disc are free of oil or other contamination. Install thrust bearing, rear brake disc, ratchet and front brake disc on pinion shaft (42) while taking care not to get oil, grease or fingerprints on friction surfaces.

g. If oil seal (15) was removed, press seal in cover (16). Place gasket (14) on housing (56). Place cover on housing and attach cover with four screws (12).

h. Insert handle pawl rod (9) into handle (10). Place spring (8) on rod and press pin (5) in rod. Attach lever (7) to rod with pin (6). See figure 4-7 for correct orientation of rod and lever. Replace plug (4) in handle.

i. Pull down on lever (7) and slide handle (10) into place on load limiting device (25 thru 31) and release lever.

NOTE: For proper brake operation the brake hub (25) should turn down freely on the male thread of the pinion shaft (42). If excessive effort is required, remove hub and inspect threads for nicks, burrs or foreign matter.

j. Assemble handle and load limiting device to hoist by screwing brake hub (25) counter-clockwise onto pinion shaft (42) until hub face has locked against brake disc (19). Continue turning hub counter-clockwise until the cast stop within the hub is at the top as shown in figure 4-6. Place thread stop (11) over the notched end of pinion shaft and to the right of the cast hub stop, allowing a minimum 1/8 inch movement to a maximum 5/16 inch movement between hub stop and the protrusion on thread stop. Install washer (32) and screw (1).

k. Place "o" ring (3) in clutch cap (2). Assemble clutch cap on hub (25) by turning cap counter-clockwise with a spanner wrench. Install set screw (13) in clutch cap.

l. Assemble top hook (64), hook washer (67) and nut (66) in housing (56). Screw nut on hook until approximately 1/64 inch vertical play (to allow hook to swivel freely) remains. Align pin hole in hook and slot in

nut and insert pin (65). If latch (63) was removed, attach latch to top hook.

m. Position swivel frames (61) over bottom hook (62). If latch was removed, attach latch to bottom hook.

n. See figure 4-8 for diagram of chain reeving. Turn handle pawl lever to "DN" position. Invert the hoist on a work table and move handle until a flat pocket in the load sheave can be seen. Drop loose end of the load chain into the side of load sheave on same side as load pawl lever (46). The first link of the chain shall be upstanding in the load sheave groove, with the weld on the link facing away from the load sheave. The second link of chain should ride in one of the load sheave pockets. Use handle to turn sheave in the lowering direction. As the end of the chain moves around load sheave, turn hoist upright so load chain will move around load sheave correctly and out of housing.

o. Attach the first link of chain (59) to swivel frames (61) with swivel screw (58) and nut (57). If end ring (60) was removed, attach ring to opposite end of chain.

p. Perform steps o, p and q of paragraph 4-27. 4-30. MAL-30-2 ASSEMBLY. Assemble the MAL-30-2 hoist as follows while referencing figure 5-4.

a. Perform steps a thru k of paragraph 4-29.

b. Assemble top hook (64), washer (63) and nut (62) in outrigger (66). Screw nut on hook until approximately 1/64 inch vertical play (to allow hook to swivel freely) remains. Align pin hole in hook and slot in nut and insert pin (62). If latch (65) was removed, attach latch to top hook.

c. Position outrigger (66) in housing (56) and secure with keeper (60), lockwashers (59) and screws (58).

d. (For MAL-30-2 Hoist Only) Place thrust bearing (80) on bottom hook (81) and secure with nut (79). Place hook in one load block frame (72) and screw nut on hook until approximately 1/64 inch vertical play (to allow hook to swivel freely) remains. Align pin hole in hook and slot in nut and insert pin (77). Assemble shaft (74), bearing (75), sheave (76) and pin (73). Assemble load block frames (72) and hook and secure

with screws (71) and nuts (70). If latch (65) was removed, attach latch to bottom hook.

e. Perform step n of paragraph 4-29.

f. Route the load chain (68) around sheave of bottom block (with chain welds next to sheave), then attach the first link of chain to outrigger (66) with pin (57). If end ring (67) was removed, attach ring to opposite end of chain.

g. Perform steps o, p and q of paragraph 4-27. 4-31. MAL-30-3 and MAL-30-4 ASSEMBLY. Assemble the MAL-30-3 or MAL-30-4 hoist as follows while referencing figure 5-5 or figure 5-6 as applicable.

a. Perform steps a thru k of paragraph 4-29.

b. Assemble top hook (60), washer (59) and nut (58) in outrigger (69). Screw nut on hook until approximately 1/64 inch vertical play (to allow hook to swivel freely) remains. Align pin hole in hook and slot in nut and insert pin (57). If latch (61) was removed, attach latch to top hook.

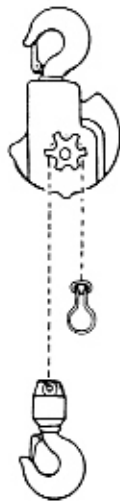
c. Assemble sheave (68), bearing (67), shaft (66) and pin (65) in outrigger (69). Position outrigger in housing (56) and secure with keeper (64), lockwashers (63) and screws (62).

d. Place thrust bearing (84), hook washer (83) and nut (82) on bottom hook (85). Place hook in one load block frame (76) and screw nut on hook until approximately 1/64 inch vertical play (to allow hook to swivel freely) remains. Align pin hole in hook and slot in nut and insert pin (81). Assemble shaft(s) (78), bearing(s) (79), sheave(s) (80) and pin(s) (77). Assemble load block frames (76) and hook and secure with screws (75) and nuts (74). If latch (61) was removed, attach latch to bottom hook.

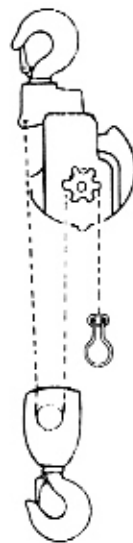
e. Perform step n of paragraph 4-29.

f. On the model MAL-30-3 hoist route chain thru sheave (80), thru sheave (68) and then attach loose end to bottom block with dead end screw (86) and nut (72). On the model MAL-30-4 hoist route chain thru first sheave (80) in load block, then thru sheave (68), back thru second sheave (80) in load block, then attach loose end of chain to outrigger (69) with pin (70).

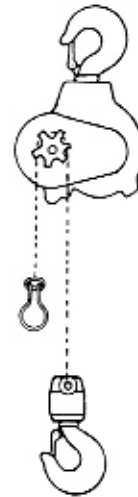
g. Perform steps o, p and q of paragraph 4-27.



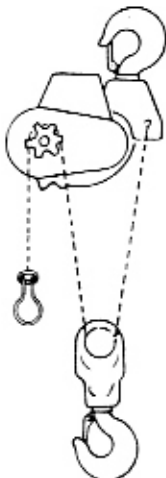
MAL-15



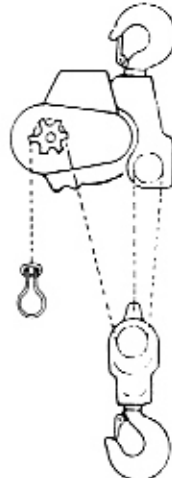
MAL-15-2



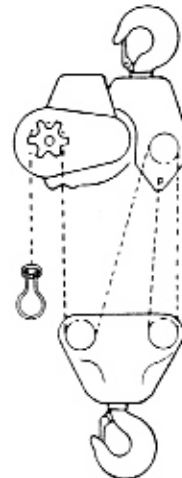
MAL-30



MAL-30-2



MAL-30-3



MAL-30-4

FIGURE 4-8. CHAIN REEVING

**SECTION V**  
**ILLUSTRATED PARTS LISTS**

**5-1. GENERAL.**

5-2. Exploded illustrations of the six Model MAL Hoists follow. The number adjacent to each part is the index number. Keyed to this index number on the follow-

ing page is the part name and quantity required. To order parts for your hoist please see the current parts list.

**PARTS LIST FOR MODEL MAL-15 HOIST**

Index No.	Part Name	Qty. Req.	Part No.
1	Screw	1	H-4208
2	Clutch Cap	1	MAL-100
3	"O" Ring, Clutch Cap	1	H-5613
4**	Plug, Handle	1	MA-254
5**	Pin, Handle Pawl Spring	1	H-5249
6**	Pin, Handle Pawl Lever	1	H-5250
7**	Lever, Handle Pawl	1	MA-31
8**	Spring, Handle Pawl	1	MA-311
9**	Handle Pawl Rod	1	MA-4
10**	Handle	1	MAL-1
11	Thread Stop	1	MAL-251-1
12	Screw, Cover	4	H-1302
13	Lockwasher	2	H-4134
14	Gasket, Housing	1	MA-560
15**	Oil Seal	1	561K22
16*	Cover, Housing	1	MAL-11
17	Warning Decal	1	687K11
18	Load Pawl	1	MA-25
19	Brake Disc, Front	1	MA-580-1
20*	Ratchet	1	MA-7
21**	Bearing, Ratchet	1	MA-530
22	Brake Disc, Rear	1	MA-580
24	Spring, Load Pawl	1	MA-310
25*	Hub	1	MAL-35-G
26*	Set Screw	1	S-7-107
27*	Nut	1	MAL-37
28*	Thrust Washer	1	255J18
29*	Belleville Spring	2	H-4225
30*	Ratchet Ring	1	MAL-36
31*	"O" Ring	1	X-6477-42
32	Washer	1	A-17
33	Ring, Load Sheave	1	H-5506
34	Washer, Retaining	1	MA-250
35	Screw, Shedder	2	H-1847-P
36	Shedder	1	MA-37
38	Load Sheave	1	MAL-16-6
39	Pin, Load Pawl Lever	1	H-5240
40	Lever, Load Pawl	1	MA-32
41**	"O" Ring, Load Pawl Shaft	1	H-5607
42	Washer, Load Pawl Shaft	1	MA-252
43**	Pin	2	H-5251
44*	Shaft, Load Pawl	1	MA-26
45**	Oil Seal, Housing	1	MA-561

Index No.	Part Name	Qty. Req.	Part No.
46**	Bearing, Load Sheave	1	RA-534
47**	Bearing, Load Sheave	1	MA-531
48	Pin, Housing	2	H-5384
49*	Housing	1	MA-18
50**	Nut	1	H-3472-P
51**	Swivel Screw	1	JF-700
52	Load Chain	1	JL-19-B
53	End Ring	1	MA-75
54**	Swivel Frame	2	MA-20-1
55**	Hook Assembly, Bottom (Includes Index No. 56)	1	3K8-S
56*	Latch Kit	2	H-7540
57	Hook Assembly, Top (Includes Index No. 56)	1	MA3-10-S
58	Nut, Top Hook	1	H-3986-P
59	Washer, Top Hook	1	JF-260
60	Set Screw	1	H-2594
61	Capacity Decal	1	675K71
62	Overload Decal	1	687K12
62A	Warning Decal	1	687K6
63†	Housing Cover and Oil Seal Assembly (Includes Index Nos. 15 and 16)	1	MAL-950
64†	Ratchet Assembly (Includes Index Nos. 20 and 21)	1	MA-901
65†	Housing, Bearings and Oil Seal Assembly (Includes Index Nos. 45, 46, 47 and 49)	1	MA-951
66†	Handle Assembly (Includes Index Nos. 4 thru 10)	1	MAL-908
67†	Load Block Assembly (Includes Index Nos. 50, 51 and 54 thru 56)	1	MA-913-20
68†	Load Pawl Shaft Assembly (Includes Index Nos. 41, 43 and 44)	1	MA-900
69†	Load Limiting Device Assembly (Includes Index Nos. 25 thru 31)	1	MAL-905

\* Not sold separately as a repair part. If replacement is required, procure the appropriate following assembly.

\*\* Sold individually as a repair part and as a part of the appropriate following assembly.

† Assembly not indexed on illustration

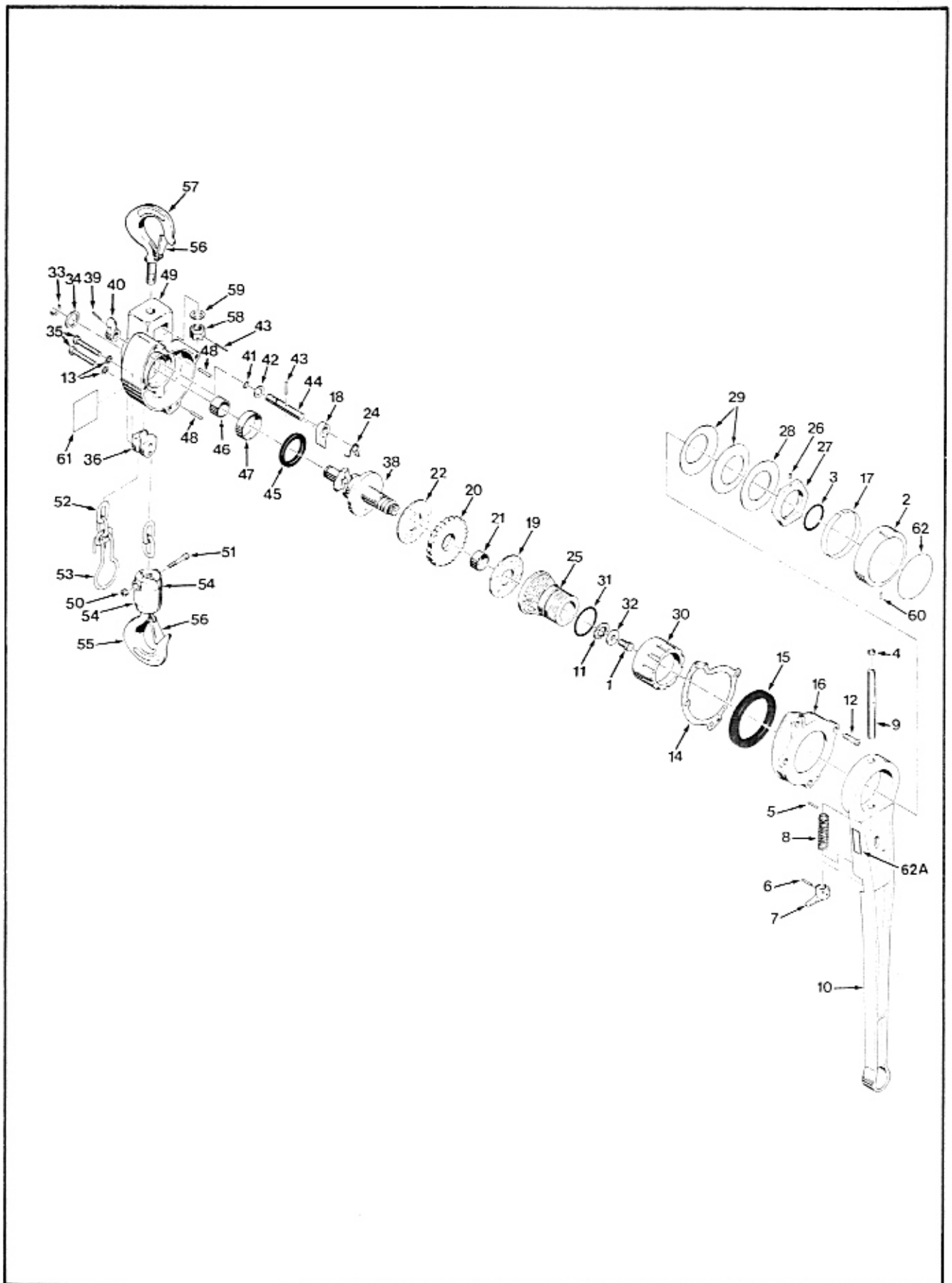


FIGURE 5-1. EXPLODED ILLUSTRATION OF MODEL MAL-15 HOIST

**PARTS LIST FOR MODEL MAL-15-2 HOIST**

Index No.	Part Name	Qty. Req.	Part No.
1	Screw	1	H-4208
2	Clutch Cap	1	MAL-100
3	"O" Ring, Clutch Cap	1	H-5613
4**	Plug, Handle	1	MA-254
5**	Pin, Handle Pawl Spring	1	H-5249
6**	Pin, Handle Pawl Lever	1	H-5250
7**	Lever, Handle Pawl	1	MA-31
8**	Spring, Handle Pawl	1	MA-311
9**	Handle Pawl Rod	1	MA-4
10**	Handle	1	MAL-1
11	Thread Stop	1	MAL-251-1
12	Screw, Cover	4	H-1302
13	Lockwasher	2	H-4134
14	Gasket, Housing	1	MA-560
15**	Oil Seal	1	561K22
16*	Cover, Housing	1	MAL-11
17	Warning Decal	1	687K11
18	Load Pawl	1	MA-25
19	Brake Disc, Front	1	MA-580-1
20*	Ratchet	1	MA-7
21**	Bearing, Ratchet	1	MA-530
22	Brake Disc, Rear	1	MA-580
24	Spring, Load Pawl	1	MA-310
25*	Hub	1	MAL-35-G
26*	Set Screw	1	S-7-107
27*	Nut	1	MAL-37
28*	Thrust Washer	1	255-J18
29*	Belleville Spring	2	H-4225
30*	Ratchet Ring	1	MAL-36
31*	"O" Ring	1	X-6477-42
32	Washer	1	A-17
33	Ring, Load Sheave	1	H-5506
34	Washer, Retaining	1	MA-250
35	Screw, Shedder	2	H-1847-P
36	Shedder	1	MA-37
38	Load Sheave	1	MAL-16-6
39	Pin, Load Pawl Lever	1	H-5240
40	Lever, Load Pawl	1	MA-32
41**	"O" Ring, Load Pawl Shaft	1	H-5607
42	Washer, Load Pawl Shaft	1	MA-252
43**	Pin	2	H-5251
44*	Shaft, Load Pawl	1	MA-26
45**	Oil Seal, Housing	1	MA-561
46**	Bearing, Load Sheave	1	RA-534
47**	Bearing, Load Sheave	1	MA-531
48	Pin, Housing	2	H-5384
49*	Housing	1	MA-18
50	Pin	1	H-5123
51	Pin	1	H-5122
52	Pin	1	H-5129
53	Coupling Shaft	1	MA-106
54	Hook Collar	1	JF-108

Index No.	Part Name	Qty. Req.	Part No.
55	Washer	1	JF-260
56	End Ring	1	MA-75
57	Load Chain	1	JL-19-B
58	Top Hook and Outrigger Assembly (Includes Index No. 59)	1	MA-915-17
59**	Latch Kit	2	H-7540
60†	Load Block Assembly (Consists of Index Nos. 61 thru 72)	1	JF-914-7
61	Nut	2	H-3473-9
62	Lockwasher	2	H-4063-P
63	Screw	2	H-2403-P
64	Load Block Frame	2	JF-30
65**	Pin	2	H-J334
66**	Shaft	1	JF-122-1
67**	Bearing	1	HJ-16B
68*	Sheave	1	B-57-1
69	Pin	1	H-5251
70	Nut	1	H-3986-P
71	Thrust Bearing	1	JF-510
72	Bottom Hook (Includes Index No. 59)	1	3K6S
81	Set Screw	1	H-2594
82	Capacity Decal	1	675K70
83	Overload Decal	1	687K12
83A	Warning Decal	1	687K6
84†	Housing Cover and Oil Seal Assembly (Includes Index Nos. 15 and 16)	1	MAL-950
85†	Ratchet Assembly (Includes Index Nos. 20 and 21)	1	MA-901
86†	Housing, Bearings and Oil Seal Assembly (Includes Index Nos. 45, 46, 47 and 50)	1	MA-951
87†	Handle Assembly (Includes Index Nos. 4 thru 10)	1	MAL-908
88†	Load Pawl Shaft Assembly (Includes Index Nos. 41, 43 and 44)	1	MA-900
89†	Load Block Sheave and Shaft Assembly (Includes Index Nos. 65, 66, 67 and 68)	1	JF-917
90†	Load Limiting Device Assembly (Includes Index Nos. 25 thru 31)	1	MAL-905

\* Not sold separately as a repair part. If replacement is required, procure the appropriate following assembly.

\*\* Sold individually as a repair part and as a part of the appropriate following assembly.

† Assembly not indexed on illustration.

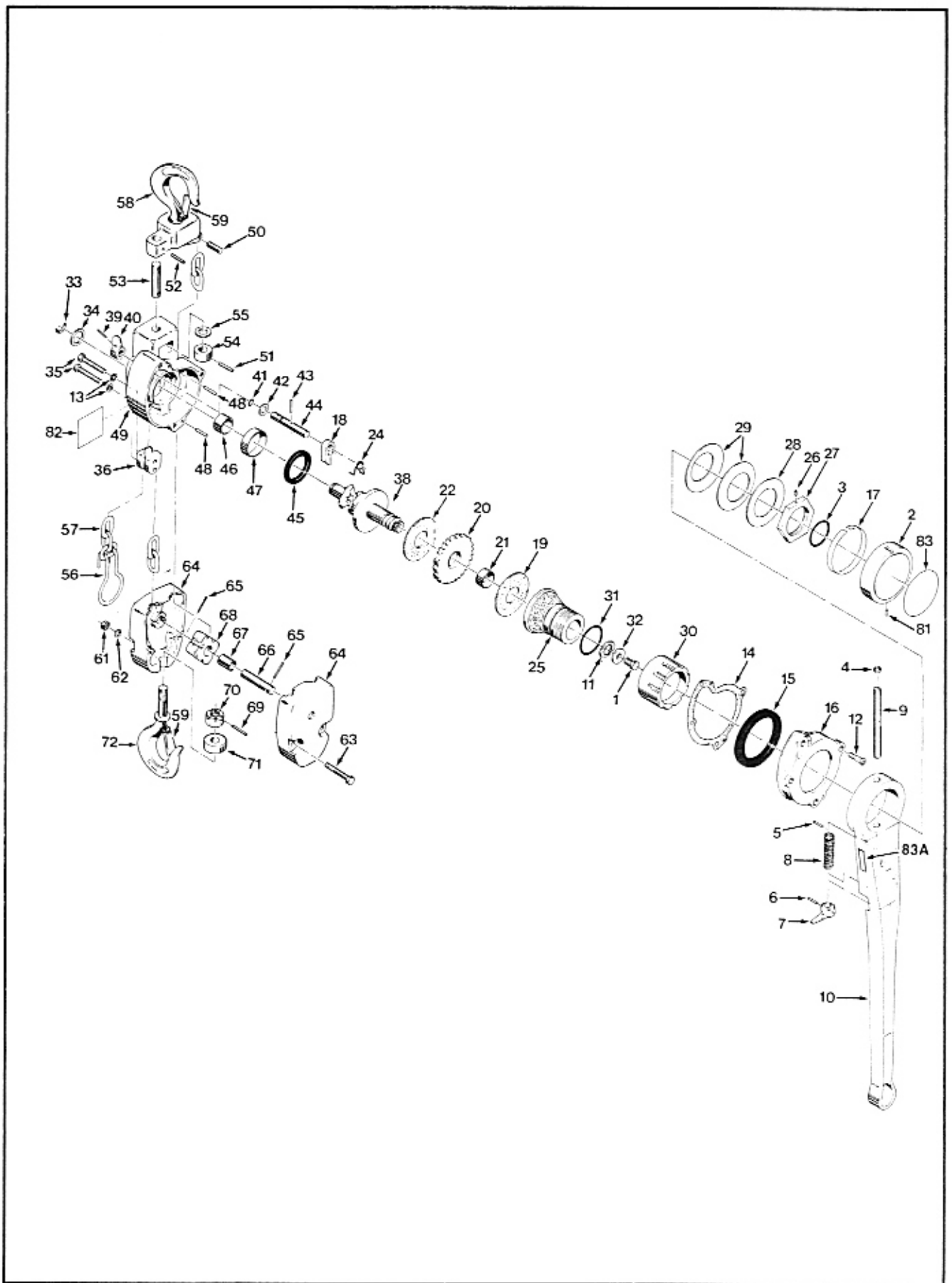


FIGURE 5-2. EXPLODED ILLUSTRATION OF MODEL MAL-15-2



## PARTS LIST FOR MODEL MAL-30 HOIST

Index No.	Part Name	Qty. Req.	Part No.
1	Screw	1	H-4208
2	Clutch Cap	1	MAL-100
3	"O" Ring, Clutch Cap	1	H-5613
4**	Plug, Handle	1	MA-254
5**	Pin, Handle Pawl Spring	1	H-5249
6**	Pin, Handle Pawl Lever	1	H-5250
7**	Lever, Handle Pawl	1	MA-31
8**	Spring, Handle Pawl	1	MA-311
9**	Handle Pawl Rod	1	MA-4
10**	Handle	1	MAL-1
11	Thread Stop	1	MAL-251-1
12	Screw, Cover	4	H-1302
13	Set Screw	1	H-2594
14	Gasket, Housing	1	MA-560
15**	Oil Seal, Cover	1	561K22
16*	Cover, Housing	1	MAL-11
17	Warning Decal	1	687K11
18	Load Pawl	1	MA-25
19	Brake Disc, Front	1	MA-580-1
20*	Ratchet	1	MA-7
21**	Bearing, Ratchet	1	MA-530
22	Brake Disc, Rear	1	MA-580
23	Thrust Washer	1	MA-33
24	Spring, Load Pawl	1	MA-310
25*	Hub	1	MAL-35-G
26*	Set Screw	1	S-7-107
27*	Nut	1	MAL-37
28*	Thrust Washer	1	255-J18
29*	Belleville Spring	2	H-4225
30*	Ratchet Ring	1	MAL-36
31*	"O" Ring	1	X-6477-42
32	Washer	1	A-17
33	Screw, Gear Cover	2	H-1886-P
34	Lockwasher	2	H-4138
35	Cover, Gear	1	MA-11-1
36	Screw, Capacity Plate	2	H-2864-P
37	Capacity Plate	1	MA-675
38	Pin, Chain Shedder	2	H-5126
39	Shedder	1	MA-37-1
40	Gear	1	MA-480
41	Pin	1	H-5261
42	Pinion Shaft	1	MAL-483
43	Load Sheave	1	MA-16-5
44	Washer, Thrust	1	MA-253
45	Pin Load Pawl Lever	1	H-5240
46	Lever, Load Pawl	1	MA-32
47**	"O" Ring, Load Pawl Shaft	1	H-5607

Index No.	Part Name	Qty. Req.	Part No.
48	Washer, Load Pawl Shaft	1	MA-252
49**	Pin, Load Pawl Shaft	1	H-5251
50*	Shaft, Load Pawl	1	MA-26-2
51**	Oil Seal, Pinion Shaft	1	MA-563
52**	Bearing, Pinion Shaft	2	MA-533
53**	Bearing, Load Sheave	1	MA-531-1
54*	Bearing, Load Sheave	1	MA-532
55	Pin, Housing	2	H-5384
56*	Housing	1	MA-18-2
57**	Nut	1	H-3473-P
58**	Swivel Screw	1	MA-718-2
59	Load Chain	1	C-19-10
60	End Ring	1	MA-75
61**	Swivel Frame	2	MA-20-2
62**	Hook Assembly, Bottom (Includes Index No. 63)	1	3K9S
63**	Latch Kit	2	H-7540
64	Hook Assembly, Top (Includes Index No. 63)	1	3K10S
65	Pin, Top Hook	1	H-5232
66	Nut, Top Hook	1	H-3991-P
67	Washer, Top Hook	1	JF-265
68	Overload Decal	1	687K12
68A	Warning Decal	1	687K6
69†	Housing Cover and Oil Seal Assembly (Includes Index Nos. 15 and 16)	1	MAL-950
70†	Ratchet Assembly (Includes Index Nos. 20 and 21)	1	MA-901
71†	Load Pawl Shaft Assembly (Includes Index Nos. 47, 49 and 50)	1	MA-900-2
72†	Handle Assembly (Includes Index Nos. 4 thru 10)	1	MAL-908
73†	Housing, Bearings and Oil Seal Assembly (Includes Index Nos. 51, 52, 53, 54 and 56)	1	MA-951-3
74†	Load Block Assembly (Includes Index Nos. 56, 57 and 61 thru 63)	1	MA-913-21
75†	Load Limiting Device Assembly (Includes Index Nos. 25 thru 31)	1	MAL-906

\* Not sold separately as a repair part. If replacement is required, procure the appropriate following assembly.

\*\* Sold individually as a repair part and as a part of the appropriate following assembly.

† Assembly not indexed on illustration.

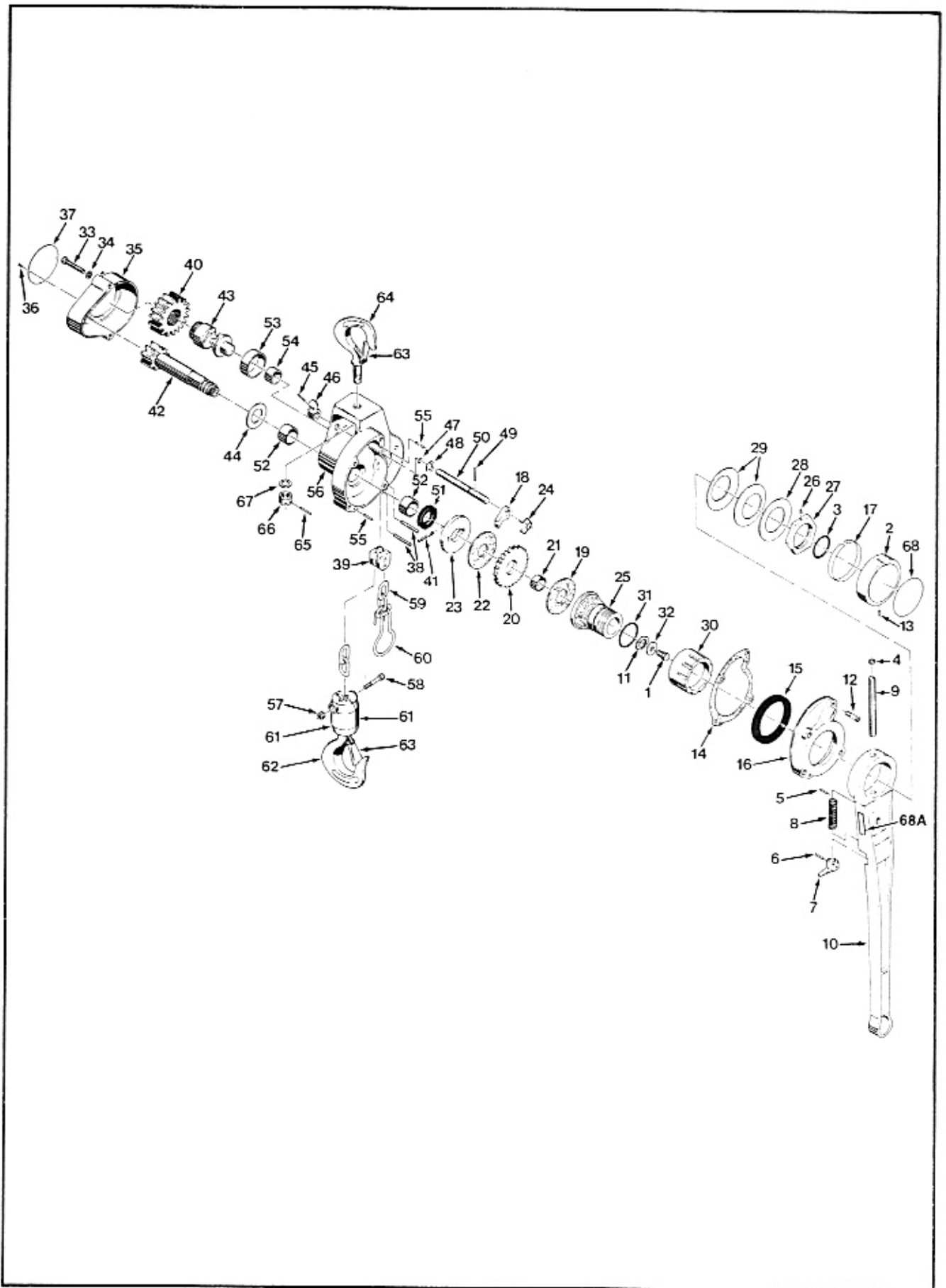


FIGURE 5-3. EXPLODED ILLUSTRATION OF MODEL MAL-30 HOIST

## PARTS LIST FOR MODEL MAL-30-2 HOIST

Index No.	Part Name	Qty. Req.	Part No.
1	Screw	1	H-4208
2	Clutch Cap	1	MAL-100
3	"O" Ring, Clutch Cap	1	H-5613
4**	Plug, Handle	1	MA-254
5**	Pin, Handle Pawl Spring	1	H-5249
6**	Pin, Handle Pawl Lever	1	H-5250
7**	Lever, Handle Pawl	1	MA-31
8**	Spring, Handle Pawl	1	MA-311
9**	Handle Pawl Rod	1	MA-4
10**	Handle	1	MAL-1
11	Thread Stop	1	MAL-251-1
12	Screw, Cover	4	H-1302
13	Set Screw	1	H-2594
14	Gasket, Housing	1	MA-560
15**	Oil Seal, Cover	1	561K22
16*	Cover, Housing	1	MAL-11
17	Warning Decal	1	686K11
18	Load Pawl	1	MA-25
19	Brake Disc, Front	1	MA-580-1
20*	Ratchet	1	MA-7
21**	Bearing, Ratchet	1	MA-530
22	Brake Disc, Rear	1	MA-580
23	Thrust Washer	1	MA-33
24	Spring, Load Pawl	1	MA-310
25*	Hub	1	MAL-35-G
26*	Set Screw	1	S-7-107
27*	Nut	1	MAL-37
28*	Thrust Washer	1	255J18
29*	Belleville Spring	2	H-4225
30*	Ratchet Ring	1	MAL-36
31*	"O" Ring	1	X-6477-42
32	Washer	1	A-17
33	Screw, Gear Cover	2	H-1886-P
34	Lockwasher	2	H-4138
35	Cover, Gear	1	MA-11-1
36	Screw, Capacity Plate	2	MA-675-3
37	Capacity Plate	1	H-2864-P
38	Pin, Chain Shedder	2	H-5126
39	Shedder	1	MA-37-1
40	Gear	1	MA-480
41	Pin	1	H-5261
42	Pinion Shaft	1	MAL-483
43	Load Sheave	1	MA-16-5
44	Washer, Thrust	1	MA-253
45	Pin, Load Pawl Lever	1	H-5240
46	Lever, Load Pawl	1	MA-32
47**	"O" Ring, Load Pawl Shaft	1	H-5607
48	Washer, Load Pawl Shaft	1	MA-252
49**	Pin, Load Pawl Shaft	1	H-5251
50*	Shaft, Load Pawl	1	MA-26-2
51**	Oil Seal, Pinion Shaft	1	MA-563
52**	Bearing, Pinion Shaft	2	MA-533
53**	Bearing, Load Sheave	1	MA-531-1
54**	Bearing, Load Sheave	1	MA-532
55	Pin, Housing	2	H-5384
56*	Housing	1	MA-18-2
57	Pin, Dead End	1	H-5131

Index No.	Part Name	Qty. Req.	Part No.
58	Screw, Outrigger	2	H-2425-P
59	Lockwasher	2	H-4136
60	Keeper	1	MA-43-1
61**	Pin, Top Hook	1	H-5243
62**	Nut, Top Hook	1	H-3922-P
63**	Washer	1	CB-253
64**	Top Hook Assembly (Includes Index No. 65)	1	SHL-5
65**	Latch Kit	2	H-7544
66**	Outrigger	1	MA-42
67	End Ring	1	MA-75
68	Load Chain	1	C-19-10
69†	Bottom Block Assembly (Consists of Index Nos. 70 thru 81)	1	MA-914-4
70	Nut	2	H-3964-P
71	Screw	2	H-2423-P
72	Load Block Frame	2	MA-29
73**	Pin	1	H-5234
74**	Load Block Shaft	1	MA-101
75**	Bearing	1	A-28-B
76*	Sheave	1	SP-28
77**	Pin	1	H-5243
78**	Nut	1	H-3922-P
79**	Hook Washer	1	CB-253
80**	Thrust Bearing	1	CB-510
81**	Bottom Hook (Includes Index No. 65)	1	SHL-6
83	Warning Decal	1	687K6
90	Overload Decal	1	687K12
91†	Housing Cover and Oil Seal Assembly (Includes Index Nos. 15 and 16)	1	MAL-950
92†	Ratchet Assembly (Includes Index Nos. 20 and 21)	1	MA-901
93†	Load Pawl Shaft Assembly (Includes Index Nos. 47, 49 and 50)	1	MA-900-2
94†	Handle Assembly (Includes Index Nos. 4 thru 10)	1	MAL-908
95†	Housing, Bearings and Oil Seal Assembly (Includes Index Nos. 51, 52, 53, 54 and 56)	1	MA-951-3
96†	Load Block Shaft Assembly (Includes Index Nos. 73 and 74)	1	MA-903
97†	Bottom Hook Assembly (Includes Index Nos. 77 thru 81)	1	MA-912-2
98†	Outrigger Assembly (Includes Index Nos. 61 thru 66)	1	MA-915-5
100†	Load Block Sheave and Bearing Assembly (Includes Index Nos. 75 and 76)	1	SSP-28
101†	Load Block Assembly (Model MAL-30-2)	1	MA-914-4
102†	Load Limiting Device Assembly (Includes Index Nos. 25 thru 31)	1	MAL-906

\* Not sold separately as a repair part. If replacement is required, procure the appropriate following assembly.

\*\* Sold individually as a repair part and as a part of the appropriate following assembly.

† Assembly not indexed on illustration.

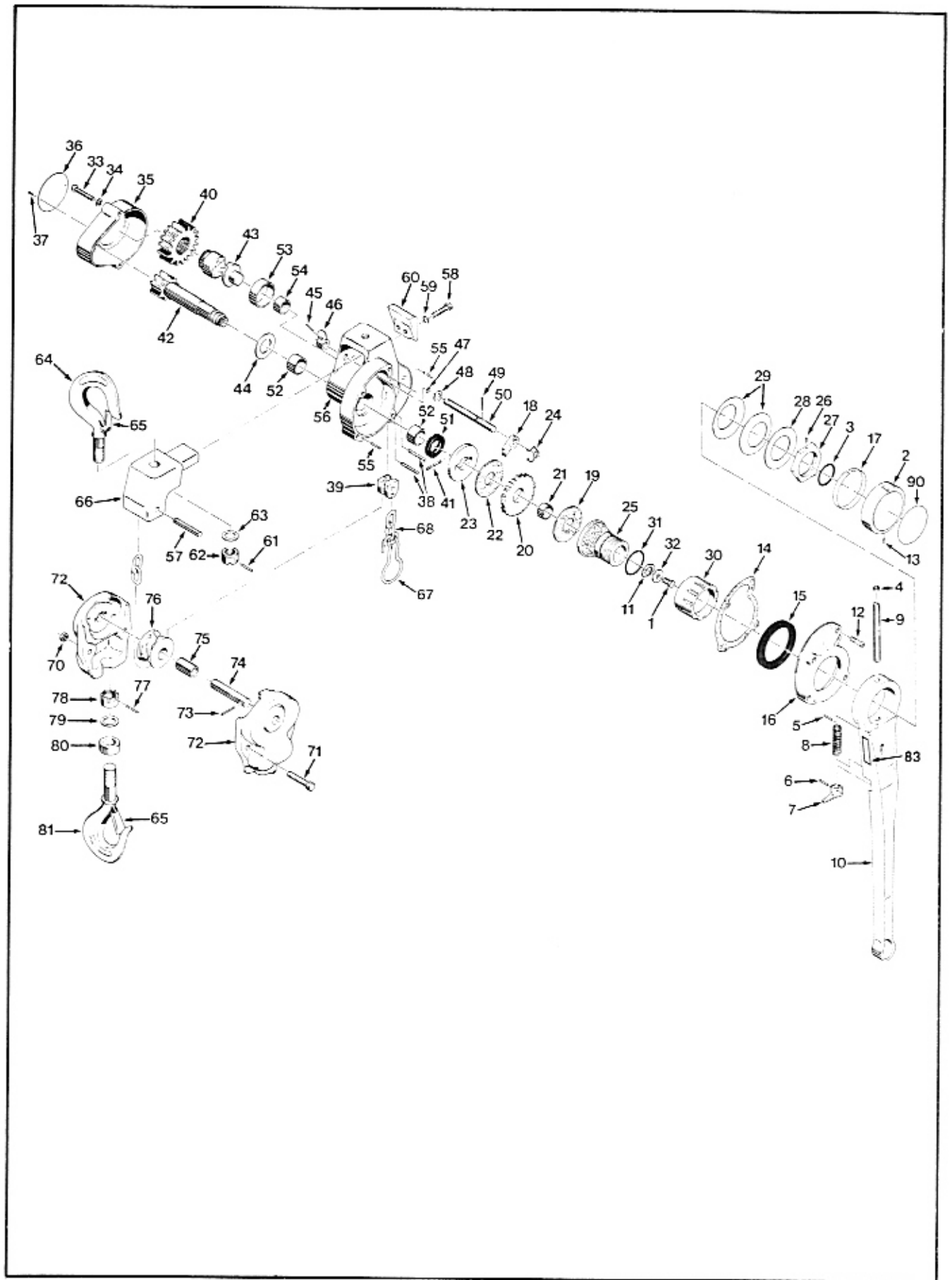


FIGURE 5-4. EXPLODED ILLUSTRATION OF MODEL MAL-30-2 HOIST

## PARTS LIST FOR MODEL MAL-30-3 HOIST

Index No.	Part Name	Qty. Req.	Part No.
1	Screw	1	H-4208
2	Clutch Cap	1	MAL-100
3	"O" Ring, Clutch Cap	1	H-5613
4**	Plug, Handle	1	MA-254
5**	Pin, Handle Pawl Spring	1	H-5249
6**	Pin, Handle Pawl Lever	1	H-5250
7**	Lever, Handle Pawl	1	MA-31
8**	Spring, Handle Pawl	1	MA-311
9**	Handle Pawl Rod	1	MA-4
10**	Handle	1	MAL-1
11	Thread Stop	1	MAL-251-1
12	Screw, Cover	4	H-1302
13	Set Screw	1	H-2594
14	Gasket, Housing	1	MA-560
15**	Oil Seal, Cover	1	561K22
16*	Cover, Housing	1	MAL-11
17	Warning Decal	1	687K11
18	Load Pawl	1	MA-25
19	Brake Disc, Front	1	MA-580-1
20*	Ratchet	1	MA-7
21**	Bearing, Ratchet	1	MA-530
22	Brake Disc, Rear	1	MA-580
23	Thrust Washer	1	MA-33
24	Spring, Load Pawl	1	MA-310
25*	Hub	1	MAL-35-G
26*	Set Screw	1	S-7-107
27*	Nut	1	MAL-37
28*	Thrust Washer	1	255-J18
29*	Belleville Spring	2	H-4225
30*	Ratchet Ring	1	MAL-36
31*	"O" Ring	1	X-6477-42
32	Washer	1	A-17
33	Screw, Gear Cover	2	H-1886-P
34	Lockwasher	2	H-4138
35	Cover, Gear	1	MA-11-1
36	Screw, Capacity Plate	2	H-2864-P
37	Capacity Plate	1	MA-675-1
38	Pin, Chain Shedder	2	H-5126
39	Shedder	1	MA-37-1
40	Gear	1	MA-480
41	Pin	1	H-5261
42	Pinion Shaft	1	MAL-483
43	Load Sheave	1	MA-16-5
44	Washer, Thrust	1	MA-253
45	Pin, Load Pawl Lever	1	H-5240
46	Lever, Load Pawl	1	MA-32
47**	"O" Ring, Load Pawl Shaft	1	H-5607
48	Washer, Load Pawl Shaft	1	MA-252
49**	Pin, Load Pawl Shaft	1	H-5251
50*	Shaft, Load Pawl	1	MA-26-2
51**	Oil Seal, Pinion Shaft	1	MA-563
52**	Bearing, Pinion Shaft	2	MA-533
53**	Bearing, Load Sheave	1	MA-531-1
54**	Bearing, Load Sheave	1	MA-532
55	Pin, Housing	2	H-5384
56*	Housing	1	MA-18-2
57**	Pin	1	H-5235
58	Nut	1	H-3924-P

Index No.	Part Name	Qty. Req.	Part No.
59**	Hook Washer	1	CB-252-1
60**	Top Hook (Includes Index No. 61)	1	SHL-7
61	Latch Kit	2	H-7545
62	Screw	2	H-2425-P
63	Lockwasher	2	H-4136
64	Keeper	1	MA-43-1
65**	Pin	1	H-5234
66**	Shaft	1	MA-101
67**	Bearing	1	A-28-B
68*	Sheave	1	SP-28
69**	Outrigger	1	MA-42-1
70	End Ring	1	MA-75
71	Load Chain	1	C-19-10
72	Nut	1	H-3964-P
73†	Bottom Hook and Block Assembly (Consists of Index Nos. 74 thru 85)	1	MA-914-5
74	Nut	2	H-3965-P
75	Screw	2	H-2411-P
76	Load Block Frame	2	MA-29-1
77**	Pin	1	H-5234
78**	Load Block Shaft	1	MA-101
79**	Bearing	1	A-28-B
80**	Sheave	1	SP-28
81**	Pin	1	H-5235
82**	Nut	1	H-3924-P
83**	Hook Washer	1	CB-252-2
84**	Thrust Bearing	1	CB-511
85**	Bottom Hook (Includes Index No. 61)	1	SHL-8
86	Dead End Screw	1	MA-700-1
87	Overload Decal	1	687K12
87A	Warning Decal	1	687K6
88†	Housing Cover and Oil Seal Assembly (Includes Index Nos. 15 and 16)	1	MAL-950
89†	Ratchet Assembly (Includes Index Nos. 20 and 21)	1	MA-901
90†	Load Pawl Shaft Assembly (Includes Index Nos. 47, 49 and 50)	1	MA-900-2
91†	Handle Assembly (Includes Index Nos. 4 thru 10)	1	MAL-908
92†	Housing, Bearings and Oil Seal Assembly (Includes Index Nos. 51, 52, 53, 54 and 56)	1	MA-951-3
93†	Idler Sheave and Bearing Assembly (Includes Index Nos. 67 and 68)	1	SSP-28
94†	Load Block Sheave and Bearing Assembly (Includes Index Nos. 79 and 80)	1	SSP-28
95†	Load Block Shaft Assembly (Includes Index Nos. 77 and 78)	1	MA-903
96†	Bottom Hook Assembly (Includes Index Nos. 81 thru 85)	1	MA-912-3
97†	Outrigger Assembly (Includes Index Nos. 57 thru 69)	1	MA-915-6
98†	Load Block Assembly (Includes Index Nos. 74 and 85)	1	MA-914-5
99†	Load Limiting Device Assembly (Includes Index Nos. 25 thru 31)	1	MAL-906

\* Not sold separately as a repair part. If replacement is required, procure the appropriate following assembly.

\*\* Sold individually as a repair part and as a part of the appropriate following assembly.

† Assembly not indexed on illustration.

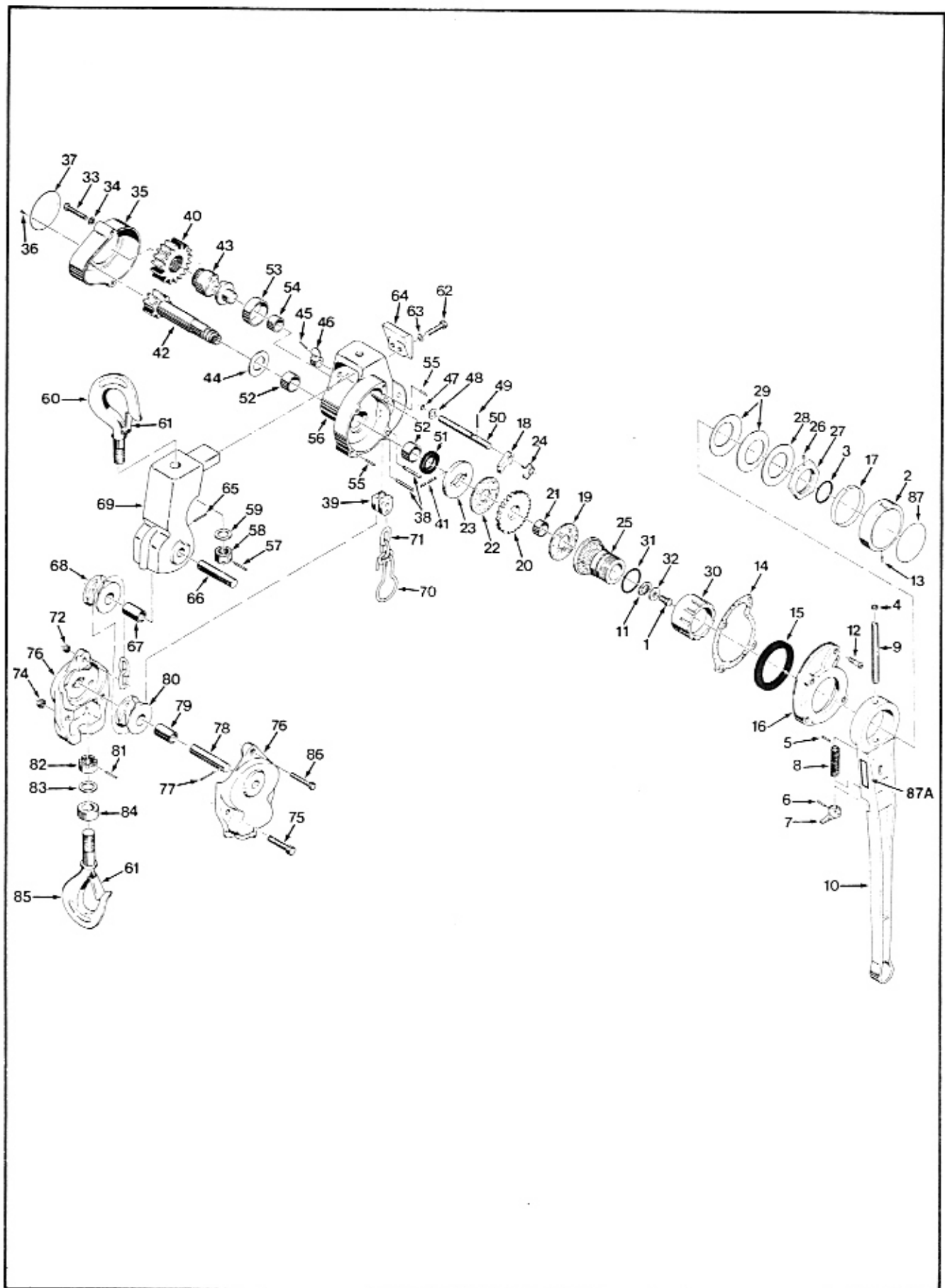


FIGURE 5-5. EXPLODED ILLUSTRATION OF MODEL MAL-30-3 HOIST

**PARTS LIST FOR MODEL MAL-30-4 HOIST**

Index No.	Part Name	Qty. Req.	Part No.
1	Screw	1	H-4208
2	Clutch Cap	1	MAL-100
3	"O" Ring, Clutch Cap	1	H-5613
4**	Plug, Handle	1	MA-254
5**	Pin, Handle Pawl Spring	1	H-5249
6**	Pin, Handle Pawl Lever	1	H-5250
7**	Lever, Handle Pawl	1	MA-31
8**	Spring, Handle Pawl	1	MA-311
9**	Handle Pawl Rod	1	MA-4
10**	Handle	1	MAL-1
11	Thread Stop	1	MAL-251-1
12	Screw, Cover	4	H-1302
13	Set Screw	1	H-2594
14	Gasket, Housing	1	MA-560
15**	Oil Seal, Cover	1	561K22
16*	Cover, Housing	1	MAL-11
17	Warning Decal	1	687K11
18	Load Pawl	1	MA-25
19	Brake Disc, Front	1	MA-580-1
20*	Ratchet	1	MA-7
21**	Bearing, Ratchet	1	MA-530
22	Brake Disc, Rear	1	MA-580
23	Thrust Washer	1	MA-33
24	Spring, Load Pawl	1	MA-310
25*	Hub	1	MAL-35-G
26*	Set Screw	1	S-7-107
27*	Nut	1	MAL-37
28*	Thrust Washer	1	255-J18
29*	Belleville Spring	2	H-4225
30*	Ratchet Ring	1	MAL-36
31*	"O" Ring	1	X-6477-42
32	Washer	1	A-17
33	Screw, Gear Cover	2	H-1886-P
34	Lockwasher	2	H-4138
35	Cover Gear	1	MA-11-1
36	Screw, Capacity Plate	2	H-2864-P
37	Capacity Plate	1	CB-675-4
38	Pin, Chain Shedder	2	H-5126
39	Shedder	1	MA-37-1
40	Gear	1	MA-480
41	Pin	1	H-5261
42	Pinion Shaft	1	MAL-483
43	Load Sheave	1	MAL-16-5
44	Washer, Thrust	1	MA-253
45	Pin, Load Pawl Lever	1	H-5240
46	Lever, Load Pawl	1	MA-32
47**	"O" Ring, Load Pawl Shaft	1	H-5607
48	Washer, Load Pawl Shaft	1	MA-252
49**	Pin, Load Pawl Shaft	1	H-5251
50*	Shaft, Load Pawl	1	MA-26-2
51**	Oil Seal, Pinion Shaft	1	MA-563
52**	Bearing, Pinion Shaft	2	MA-533
53**	Bearing, Load Sheave	1	MA-531-1
54**	Bearing, Load Sheave	1	MA-532
55	Pin, Housing	2	H-5384
56*	Housing	1	MA-18-2
57**	Pin	1	H-5235
58**	Nut	1	H-3924-P
59**	Hook Washer	1	CB-252-1
60**	Top Hook (Includes Index No. 61)	1	SHL-9

Index No.	Part Name	Qty. Req.	Part No.
61	Latch Kit	2	H-7545
62	Screw	2	H-2425-P
63	Lockwasher	2	H-4136
64	Keeper	1	MA-43-1
65**	Pin	1	H-5234
66**	Load Block Shaft	1	MA-101
67**	Bearing	1	A-28-B
68*	Sheave	1	SP-28
69**	Outrigger	1	MA-42-2
70	Pin	1	H-5131
71	End Ring	1	MA-75
72	Load Chain	1	C-19-10
73†	Bottom Hook and Block Assembly (Consists of Index Nos. 74 thru 85)	1	MA-914-6
74	Nut	2	H-3966-P
75	Screw	2	H-2419-BP
76	Load Block Frame	2	MA-29-2
77**	Pin	2	H-5131
78**	Load Block Shaft	2	MA-101
79**	Bearing	2	A-28-B
80*	Sheave	2	SP-28
81**	Pin	1	H-5235
82**	Nut	1	H-3924-P
83**	Hook Washer	1	MA-103
84**	Thrust Bearing	1	CB-511-1
85**	Bottom Hook (Includes Index No. 61)	1	SHL-10
86	Overload Decal	1	687K12
86A	Warning Decal	1	687K6
87†	Housing Cover and Oil Seal Assembly (Includes Index Nos. 15 and 16)	1	MAL-950
88†	Ratchet Assembly (Includes Index Nos. 20 and 21)	1	MA-901
89†	Load Pawl Shaft Assembly (Includes Index Nos. 47, 49 and 50)	1	MA-900-2
90†	Handle Assembly (Includes Index Nos. 4 thru 10)	1	MAL-908
91†	Housing, Bearings and Oil Seal Assembly (Includes Index Nos. 51, 52, 53, 54 and 56)	1	MA-951-3
92†	Idler Sheave and Bearing Assembly (Includes Index Nos. 67 and 68)	1	SSP-28
93†	Load Block Sheave and Bearing Assembly (Includes Index Nos. 79 and 80)	1	SSP-28
94†	Load Block Shaft Assembly (Includes Index Nos. 77 and 78)	1	MA-903
95†	Bottom Hook Assembly (Includes Index Nos. 81 thru 85)	1	MA-912-4
96†	Outrigger Assembly (Includes Index Nos. 57 thru 69)	1	MA-915-7
97†	Load Block Assembly (Includes Index Nos. 74 and 85)	1	MA-914-6
98†	Load Limiting Device Assembly (Includes Index Nos. 25 thru 31)	1	MAL-906

\* Not sold separately as a repair part. If replacement is required, procure the appropriate following assembly.

\*\* Sold individually as a repair part and as a part of the appropriate following assembly.

† Assembly not indexed on illustration.

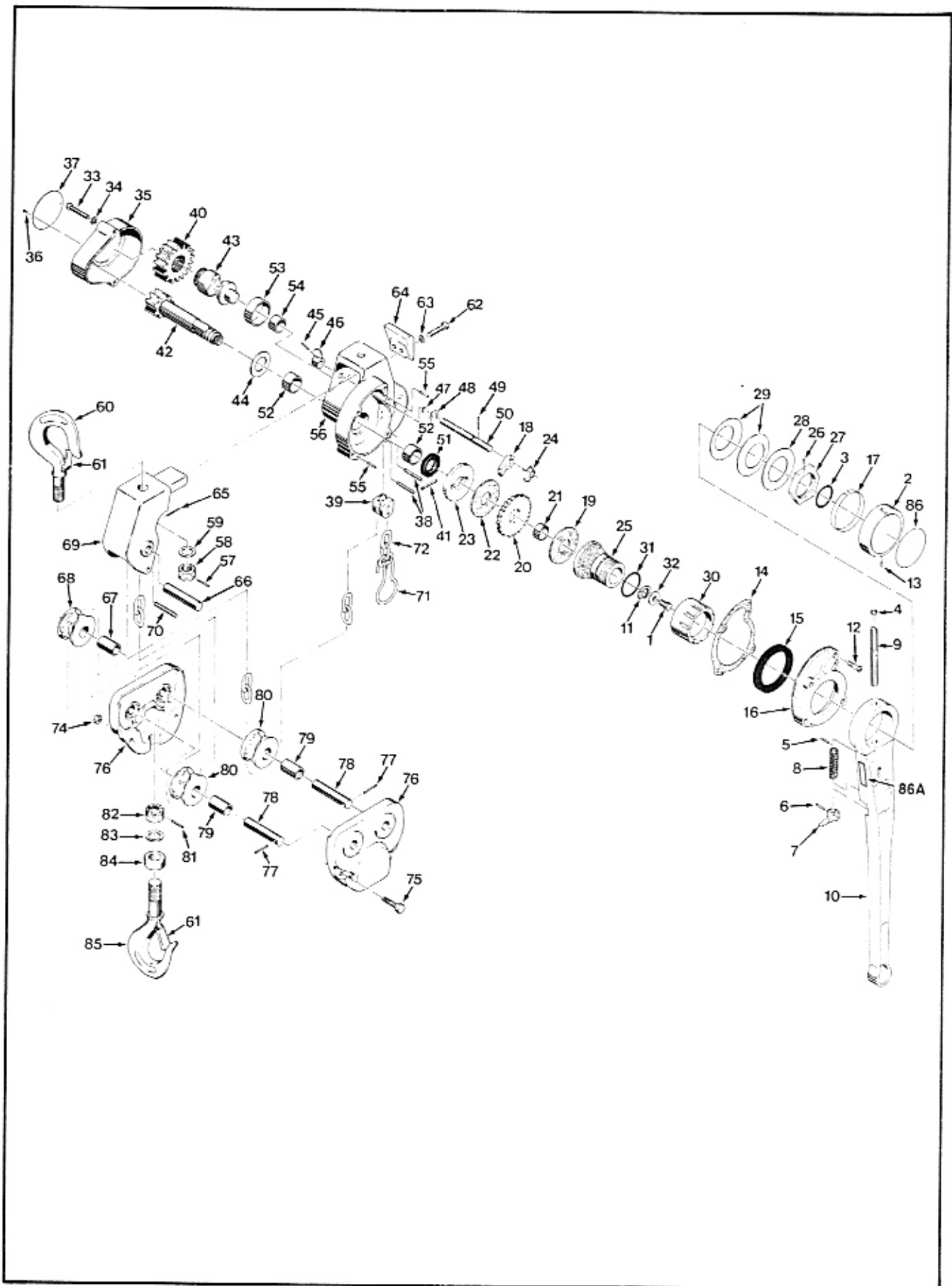


FIGURE 5-6. EXPLODED ILLUSTRATION OF MODEL MAL-30-4 HOIST



## DO'S AND DO NOT'S

### Manually Lever Operated Chain Hoists

The following warnings and operating practices are intended to avoid unsafe hoisting practices which might lead to personal injury or property damage.

These recommendations apply to all manually lever operated chain hoists used for lifting, pulling, and tensioning type applications.

#### WARNING: TO AVOID INJURY

1. **DO** read the Hoist Manufacturer's Operating and Maintenance Instructions.
2. **DO** be familiar with operating controls, procedures, and warnings on the unit.
3. **DO** make sure that the unit is securely attached to a suitable support before applying load.
4. **DO** maintain firm footing or be otherwise secured when operating unit.
5. **DO** make sure that load slings or other approved sling attachments are properly sized and seated in the hook saddle.
6. **DO** make sure the hook latches, if used, are closed and not supporting any part of the load.
7. **DO** make sure that load is free to move and will clear all obstructions.
8. **DO** take up slack carefully, check load balance, move the load a few inches, and check load holding action before continuing.
9. **DO** make sure all persons stay clear of the supported load.
10. **DO** avoid swinging of load or load hook.
11. **DO** protect load chain from weld spatter or other damaging contaminants.
12. **DO** avoid lever "fly-back" by keeping a firm grip on the lever until operating stroke is completed and the lever is at rest.
13. **DO** promptly report any malfunction, unusual performance, or damage of the unit.
14. **DO** inspect unit regularly, replace damaged or worn parts, and keep appropriate records of maintenance.
15. **DO** use the Hoist Manufacturer's recommended parts when repairing unit.
16. **DO** use hook latches wherever possible.
17. **DO** apply lubricant to load chain as recommended by the Hoist Manufacturer.

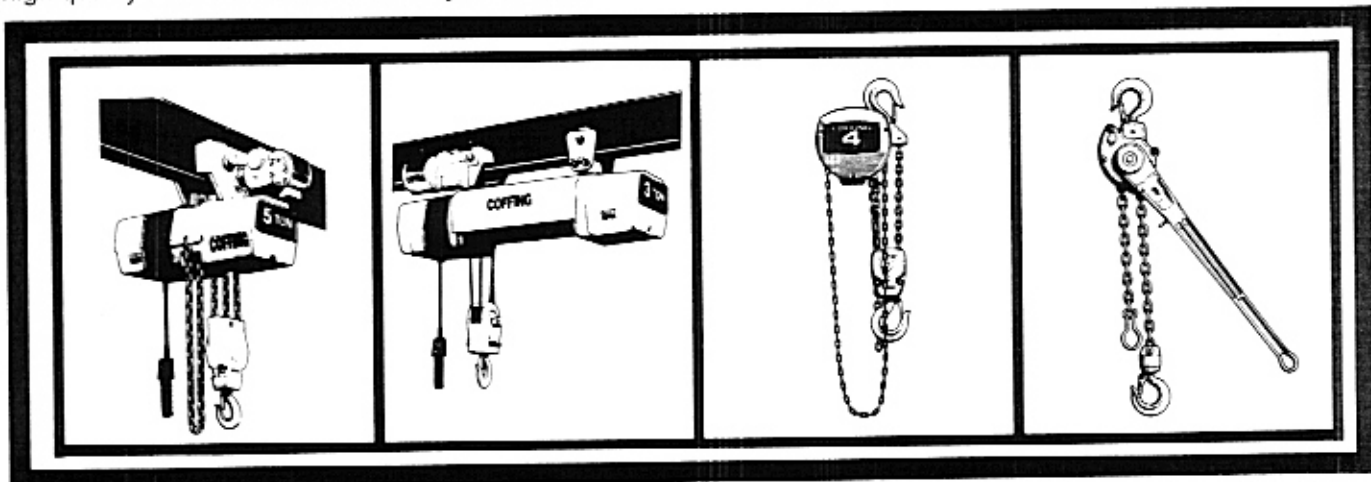
"DO's and Do Not's" reprinted with the permission of the Hoist Manufacturer's Institute.

18. **DO NOT** lift or pull more than rated load.
19. **DO NOT** use the hoist load limiting or warning device to measure the load.
20. **DO NOT** use damaged unit or unit that is not working correctly.
21. **DO NOT** use unit with twisted, kinked, damaged, or worn chain.
22. **DO NOT** apply a load unless chain is properly seated in chain wheel(s) or sprocket(s).
23. **DO NOT** use load chain as a sling or wrap chain around a load.
24. **DO NOT** apply a load if any binding prevents equal loading on all load supporting chains.
25. **DO NOT** apply the load to the tip of the hook.
26. **DO NOT** operate unit when it is restricted from adjusting itself to form a straight line with the direction of loading.
27. **DO NOT** operate except with hand power.
28. **DO NOT** permit more than one operator to pull on lever at the same time.
29. **DO NOT** operate with any lever extension (cheater bar).
30. **DO NOT** allow your attention to be diverted from operating the unit.
31. **DO NOT** operate unit beyond limits of load chain travel.
32. **DO NOT** attempt to "free chain" unit with any load applied.
33. **DO NOT** use hoist to lift, support, or transport people.
34. **DO NOT** lift loads over people.
35. **DO NOT** leave a load supported by the unit unattended unless specific precautions have been taken.
36. **DO NOT** allow unit to be subjected to sharp contact with other units, structures or objects through misuse.
37. **DO NOT** allow the chain or hook to be used as a ground for welding.
38. **DO NOT** allow the chain or hook to be touched by a live welding electrode.
39. **DO NOT** remove or obscure the warnings on the unit.
40. **DO NOT** adjust or repair a unit unless qualified to perform such maintenance.
41. **DO NOT** attempt to lengthen the load chain or repair damaged load chain.

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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.

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#### Coffing® Lever Hoists.

A variety of mechanisms and rated loads from ¼ to 15 tons; in 36 models for both conventional and special purpose applications.

**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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