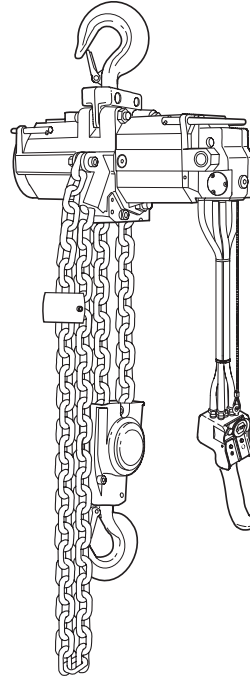


PARTS, OPERATION AND MAINTENANCE MANUAL for LIFTCHAIN INDUSTRIAL AIR HOIST MODELS

LCA015
(1.5 metric tons)

LCA060
(6 metric tons)

LCA180
(18 metric tons)



LCA030
(3 metric tons)

LCA120
(12 metric tons)

LCA125
(12.5 metric tons)

LCA250
(25 metric tons)

(Dwg. MHP1336)

(1 metric ton = 2200 lbs)



READ THIS MANUAL BEFORE USING THESE PRODUCTS. This manual contains important safety, installation, operation and maintenance information. Make this manual available to all persons responsible for the installation, operation and maintenance of these products.

⚠ WARNING

Do not use this hoist for lifting, supporting, or transporting people or lifting or supporting loads over people.

Always operate, inspect and maintain this hoist in accordance with American Society of Mechanical Engineers (ASME B30.16) and any other applicable safety codes and regulations.

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SAFETY INFORMATION

This manual provides important information for all personnel involved with the safe installation, operation and proper maintenance of this product. Even if you feel you are familiar with this or similar equipment, you should read this manual before operating the product.

Danger, Warning, Caution and Notice

Throughout this manual there are steps and procedures which, if not followed, may result in a hazard. The following signal words are used to identify the level of potential hazard.

DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

Indicates a potential hazardous situation which, if not avoided, may result in minor or moderate injury or property damage.

NOTICE

Indicates information or a company policy that relates directly or indirectly to the safety of personnel or protection of property.

Safety Summary

WARNING

- Do not use this hoist or attached equipment for lifting, supporting, or transporting people or lifting or supporting loads over people.
- The supporting structures and load-attaching devices used in conjunction with this hoist must provide an adequate safety factor to handle the rated load, plus the weight of the trolley and attached equipment. This is the customer's responsibility. If in doubt, consult a registered structural engineer.

NOTICE

- Lifting equipment is subject to different regulations in each country. These regulations may not be specified in this manual.

The National Safety Council, Accident Prevention Manual for Industrial Operations, Eighth Edition and other recognized safety sources make a common point: Employees who work near suspended loads or assist in hooking on or arranging a load should be instructed to keep out from under the load. From a safety standpoint, one factor is paramount: conduct all lifting or pulling operations in such a manner that if there were an equipment failure, no personnel would be injured. This means keep out from under a raised load and keep out of the intended path of any load.

Ingersoll Rand hoists are manufactured in accordance with the latest ASME B30.16 standards.

The Occupational Safety and Health Act of 1970 generally places the burden of compliance with the user, not the manufacturer. Many OSHA requirements are not concerned or connected with the manufactured product but are, rather, associated with the final installation. It is the owner's and user's responsibility to determine the suitability of a product for any particular use. It is recommended that all applicable industry, trade association, federal, state and local regulations be checked. Read all operating instructions and warnings before operation.

Rigging: It is the responsibility of the operator to exercise caution, use common sense and be familiar with proper rigging techniques. Refer to ASME B30.9 for rigging information, American Society of Mechanical Engineers, Three Park Avenue, New York, NY 10016.

This manual has been produced by **Ingersoll Rand** to provide dealers, mechanics, operators and company personnel with the information required to install, operate, maintain and repair the products described herein.

It is extremely important that mechanics and operators be familiar with the servicing procedures of these products, or like or similar products, and are physically capable of conducting the procedures. These personnel shall have a general working knowledge that includes:

1. Proper and safe use and application of mechanics common hand tools as well as special **Ingersoll Rand** or recommended tools.
2. Safety procedures, precautions and work habits established by accepted industry standards.

Ingersoll Rand cannot know of, or provide all the procedures by which product operations or repairs may be conducted and the hazards and/or results of each method. If operation or maintenance procedures not specifically recommended by the manufacturer are conducted, it must be ensured that product safety is not endangered by the actions taken. If unsure of an operation or maintenance procedure or step, personnel should place the product in a safe condition and contact supervisors and/or the factory for technical assistance.

SAFE OPERATING INSTRUCTIONS

The following warnings and operating instructions have been adapted in part from American Society of Mechanical Engineers (Safety) Standard ASME B30.16 and are intended to avoid unsafe operating practices which might lead to injury or property damage.

Ingersoll Rand recognizes that most companies who use hoists have a safety program in force at their facility. In the event that some conflict exists between a rule set forth in this publication and a similar rule already set by an individual company, the more stringent of the two should take precedence.

Safe Operating Instructions are provided to make an operator aware of dangerous practices to avoid and are not necessarily limited to the following list. Refer to specific sections in the manual for additional safety information.

1. Only allow personnel trained in safety and operation of this product to operate and maintain the hoist.
2. Only operate a hoist if you are physically fit to do so.
3. When a **“DO NOT OPERATE”** sign is placed on hoist, or controls, do not operate hoist until sign has been removed by designated personnel.
4. Before each shift, check hoist for wear and damage. Never use a hoist that inspection indicates is worn or damaged.
5. Never lift a load greater than the rated capacity of the hoist. Refer to **“SPECIFICATIONS”** section.
6. Keep hands, clothing, etc., clear of moving parts.
7. Never place your hand in the throat area of a hook.
8. Always rig loads properly and carefully.
9. Never use the load chain as a sling.
10. Be certain load is properly seated in saddle of hook. Do not tipload hook as this leads to spreading and eventual failure of the hook.
11. Do not **“side pull”** or **“yard.”**
12. Make sure everyone is clear of the load path and there are no objects in the way of the load. Do not lift a load over people.
13. Never use hoist for lifting or lowering people, and never allow anyone to stand on a suspended load.
14. Ease the slack out of the chain when starting a lift. Do not jerk the load.
15. Do not swing a suspended load.
16. Never suspend a load for an extended period of time.
17. Never leave a suspended load unattended.
18. Pay attention to the load at all times when operating the hoist.
19. After use, properly secure hoist and all loads.
20. The operator must maintain an unobstructed view of the load at all times.
21. Never operate a hoist with twisted, kinked or damaged chain.
22. After use, or when in a non-operational mode, the chain hoist should be secured against unauthorized and unwarranted use.
23. Do not do anything you believe may be unsafe.
24. Never splice a hoist chain by inserting a bolt between links or by any other means.
25. Do not force a chain or hook into place by hammering. Do not insert the point of the hook into a chain link.
26. Do not expose the sling chain to freezing temperatures, and do not apply sudden loads to a cold chain.
27. Follow lubrication instructions.
28. Do not attempt to repair load chains or hooks. Replace them when they become worn or damaged.
29. Periodically inspect the hoist thoroughly and replace worn or damaged parts.
30. Shut off air supply before performing maintenance on hoist.
31. Do not use load chain as a ground (earth) for welding. Do not attach a welding electrode to a hoist or chain.

WARNING TAG AND LABEL

Each hoist is supplied from the factory with the warning tag and label shown. If the tag or label are not attached to your hoist, order a new tag and/or label and install them. Read and obey all warnings and other safety information attached to this hoist. Tag and label are shown smaller than actual size.



SPECIFICATIONS

Description

LCA Liftchain hoists are air powered and designed to suit industrial or mining applications. LCA Liftchain hoists can be hook-mounted to the suspension shaft of a trolley, permanent mounting structure or any mounting point capable of supporting both load and hoist. Retractable lifting handles are built into the hoist body.

The air supply line can be strung to the hoist using cable hangers, cable trolleys or any festooning system that will ensure the air line remains free of kinks or sharp bends and is protected from being pinched or crushed by other equipment.

LCA Liftchain hoists are driven by a lube-free gear motor which is connected to a pinion shaft which in turn drives the planetary reduction gear. The output from the planetary reduction gear drives the load chain sprocket. The pinion shaft from the planetary reduction is also coupled to the brake discs. The brake is engaged at all times, until the hoist is powered in either the raise or lower direction. System pressure acts on the brake piston to release the spring-applied brake. The brake and gear components run in an oil bath. Top and bottom limit switches are completely integrated in the hoist body.

The optional overload protection kit is completely integrated into the motor body.

Hoist Model	Rated Capacity metric tons	Load Chain Falls	Pressure		Air Flow		Chain Size mm	Wt. of Chain		Unit Net Wt. with standard 10 ft Lift				
			psi	bar	cu ft/ min	cu m/ min		per ft (lb)	per metre (kg)	lbs	kg			
LCA015SIC	1.5	1	90	6.3	74	2.1	8 x 24	1.01	1.5	110	50			
LCA015SIP		2								132	80			
LCA030DIP	3							1	124	3.5	13 x 36	2.59	3.85	176
LCA030DIC		2												220
LCA030SIP					1	286	130							
LCA030SIC	6	1			124			3.5	16 x 45	3.86	5.75	396	180	
LCA060DIP						2	1					124	3.5	16 x 45
LCA060DIC	6	1			124			3.5	16 x 45	3.86	5.75			
LCA060SIP						12	2					124	3.5	16 x 45
LCA060SIC	12	2			124			3.5	16 x 45	3.86	5.75			
LCA120DIP						12	2					124	3.5	16 x 45
LCA120DIC	12.5	2			124			3.5	16 x 45	3.86	5.75			
LCA125DIP			18	3		124	3.5					16 x 45	3.86	5.75
LCA180TIP	18	3			124			3.5	16 x 45	3.86	5.75			
LCA180TIC			25	4		124	3.5					16 x 45	3.86	5.75
LCA250QIP	25	4			124			3.5	16 x 45	3.86	5.75			
LCA250QIC			75	2		124	3.5					16 x 45	3.86	5.75
LCA750TIP	75	2			124			3.5	16 x 45	3.86	5.75			
LCA750TIC			100	2		124	3.5					16 x 45	3.86	5.75
LCA1000QIP	100	2			124			3.5	16 x 45	3.86	5.75			
LCA1000QIC			Contact Technical Sales for product specifications on these models.											

Hoist Performance at 90 psi (6.3 bar) Air Pressure

Hoist Model	Rated Capacity metric tons	Max. Lifting Speed with Rated Load		Max. Lowering Speed with Rated Load		Max. Lifting Speed with No Load	
		ft/min	m/min	ft/min	m/min	ft/min	m/min
LCA015SIC	1.5	13.1	4	21.3	6.5	24.6	7.5
LCA015SIP							
LCA030DIP	3	6.6	2	10.5	3.2	12	3.7
LCA030DIC							
LCA030SIP							
LCA030SIC	6	5.2	1.6	11.5	3.5	9.8	3
LCA060DIP							
LCA060DIC							
LCA060SIP							
LCA060SIC	12	2.95	0.9	4.9	1.5	5.9	1.8
LCA120DIP							
LCA120DIC	12.5	2.82	0.86	5.11	1.56	5.9	1.8
LCA125DIP							
LCA180TIP	18	1.64	0.5	3.3	1	3.3	1
LCA180TIC							
LCA250QIP	25	1.31	0.4	2.5	0.75	2.62	0.8
LCA250QIC							
LCA750TIP	75	2	124	3.5	16 x 45	3.86	5.75
LCA750TIC							
LCA1000QIP	100	2	124	3.5	16 x 45	3.86	5.75
LCA1000QIC							

Model Code Explanation: (Example LCA030DIP3RU3M2A-E) **LCA030D** **I** **P3** **RU** **3M** **2** **A** **-** **E**

Liftchain Air Hoist Capacity and Chain Falls

- LCA015S = 1500 kg (3,300 lbs), single fall
- LCA030S = 3000 kg (6,600 lbs), single fall
- LCA030D = 3000 kg (6,600 lbs), double fall**
- LCA060S = 6000 kg (13,200 lbs), single fall
- LCA060D = 6000 kg (13,200 lbs), double fall
- LCA120D = 12000 kg (26,400 lbs), double fall
- LCA125D = 12500 kg (27,500 lbs), double fall
- LCA180T = 18000 kg (39,600 lbs), triple fall
- LCA250Q = 25000 kg (55,100 lbs), quadruple fall

Application

- I = Industrial**
- M = Mining

Control Type

- C1 = Rope Control
- P2 = 1 motor pendant
- P3 = 2 motor pendant**

Suspension

- A = Fixed lug
- C = Swivel top hook
- PU = Plain rigid universal trolley (flat or tapered beam) 1500 to 6000 kg
- PE = Plain rigid trolley (flat beam) 12000 to 25000 kg
- PN = Plain rigid trolley (tapered beam) 12000 to 25000 kg
- GU = Geared rigid universal trolley (flat or tapered beam) 1500 to 6000 kg
- GE = Geared rigid trolley (flat beam) 12000 to 25000 kg
- GN = Geared rigid trolley (tapered beam) 12000 to 25000 kg
- RU = Motorized rigid universal trolley (flat or tapered beam) 1500 to 6000 kg**
- RE = Motorized rigid trolley (flat beam) 12000 to 25000 kg
- RN = Motorized rigid trolley (tapered beam) 12000 to 25000 kg
- RUA = Motorized articulated universal trolley (flat or tapered beam) 1500 to 6000 kg
- REA = Motorized articulated trolley (flat beam) 12000 to 25000 kg
- RNA = Motorized articulated trolley (tapered beam) 12000 to 25000 kg

Load Chain Lift

- 3M = 3 metres (standard) 10 ft**
- X = Specify length
- 0M = No lift; for flex units †

Pendant Control

- 2 = 2 metres (standard) 6 ft**
- XX = Specify length (maximum 66 ft (20 m))
- 0 = No lift; for flex units †

Options

- A = Standard chain bucket**
- B = Large chain bucket
- C = Extra large chain bucket
- K = Cast Iron Pendant
- L = Low temperature TD-20
- P = Marine Paint (150 µ DFT)
- Q = Offshore Paint (290 µ DFT)
- R = Zinc-plated (S•COR•E) Package
- T = Bronze/copper-plated (S•COR•E) Package
- Z = Sandblast and primer
- M1 = DIN50049-2.2 Material traceability certificates
- M2 = DIN50049-3.16 Material traceability certificates

Options for Non -E Models

- U = Emergency stop (only with pendants, not available with rope control)
- SU = Overload protection with emergency stop

European Package

- E = Compliance with the European Machinery Directive and includes:
Emergency Stop on Pendant, Main Air Shut-off Valve and Overload Protection Device**

† Not covered in this manual.

INSTALLATION

• Prior to installing the hoist, carefully inspect it for possible shipping damage. Hoists are supplied fully lubricated from the factory. Lubrication of the load chain is recommended before initial hoist operation.

WARNING

• A falling load can cause injury or death. Before installing, read “Safety Information.”

CAUTION

• Owners and users are advised to examine specific, local or other regulations, including American National Standards and/or OSHA Regulations which may apply to a particular type of use of this product before installing or putting hoist to use.

Mounting

Make certain your hoist is properly installed. A little extra time and effort in doing so can contribute a lot toward preventing accidents and helping you get the best service possible.

Always make certain the supporting member from which the hoist is suspended is strong enough to support the weight of the hoist plus the weight of the maximum rated load plus a generous factor of at least 500% of the combined weights.

If the hoist is suspended by a top hook, the supporting member should rest completely within the saddle of the hook and be centered directly above the hook shank. Do not use a supporting member that tilts the hoist.

Hook Mounted Hoist

Place hook over mounting structure. Make sure hook latch is engaged.

Trolley Mounted Hoist

When installing a trolley on a beam, measure the beam flange and temporarily install the trolley on the hoist to determine the exact distribution and arrangement of the spacers. The total distance between the wheel flanges should be 3/16 in. to 1/4 in. (4.76 mm to 6.35 mm) greater than the width of the beam flange. The number of spacers between the trolley side plate and the mounting lug on the hoist must be the same in all four locations in order to keep the hoist centered under the I-beam. The remaining spacers must be equally distributed on the outside of the side plates. (For additional information refer to the trolley manufacturer’s literature.)

WARNING

• At least one mounting spacer must be used between the head of each trolley bracket bolt and the trolley bracket and between each trolley bolt nut and the trolley bracket. Failure to do this could cause the hoist to fall when used improperly.

Ensure trolley bolts or nuts are torqued in accordance with manufacturer’s specifications. When installing hoist and trolley on the beam, make certain the side plates are parallel and vertical.

After installation, operate trolley over entire length of beam with a capacity load suspended 4 to 6 inches (10 to 15 cms) off the floor.

CAUTION

• To avoid an unbalanced load which may damage the trolley, the hoist must be centered under the trolley.

NOTICE

• Trolley wheels ride on the top of the lower flange of the beam.

Air System

Supply air must be clean and free from moisture. A minimum of 90 psi (6.3 bar/630 kPa) at the hoist motor is required to provide rated hoist capacity. Air inlet port size for LCA015S and LCA030D hoists are 1/2 in. (12.7 mm) BSP. On all other LCA hoists inlet port size is 3/4 in. (19.1 mm) BSP. Refer to Dwg. MHP2115 on page 8.

Air Lines

The inside diameter of the hoist air supply lines must not be smaller than 3/4 in. (19 mm). Before making final connections, all air supply lines should be purged before connecting to system inlet. Supply lines should be as short and straight as installation conditions will permit. Long transmission lines and excessive use of fittings, elbows, tees, globe valves, etc. cause a reduction in pressure due to restrictions and surface friction in the lines.

Lubricator

The air motor may be operated without lubrication. If an air line lubricator is used, it should be replenished daily with SAE 30W Grade ISO VG 100 oil (minimum viscosity 135 Cst at 104° F (40° C)).

CAUTION

• Shut off air supply before filling air line lubricator.

Filter

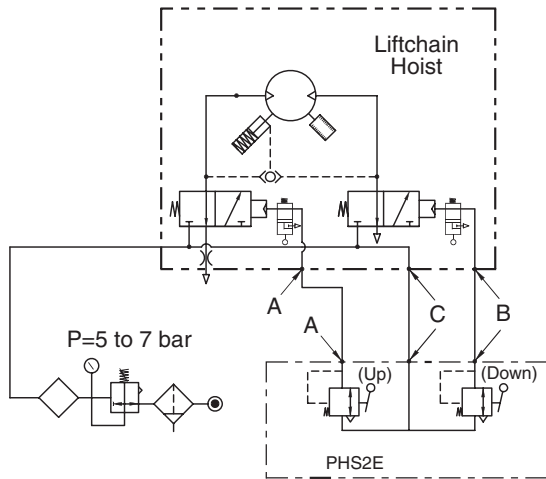
It is recommended that an air line strainer/filter be installed within 3 ft (1 m) of the motor air inlet port to prevent dirt from entering the motor. The strainer/filter should provide 20 micron filtration and include a moisture trap. Clean the strainer/filter monthly to retain its operating efficiency.

Moisture in Air Lines

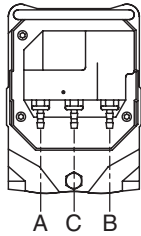
Moisture that reaches the air motor through the supply lines is the chief factor in determining the length of time between service overhauls. Moisture traps can help eliminate moisture.

Other methods, such as an air receiver which collects moisture before it reaches the motor or an aftercooler at the compressor that cools the air prior to distribution through the supply lines are also helpful.

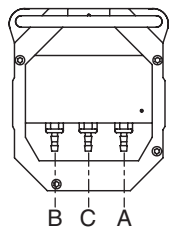
LCA015SIP2C to LCA250QIP2C Series



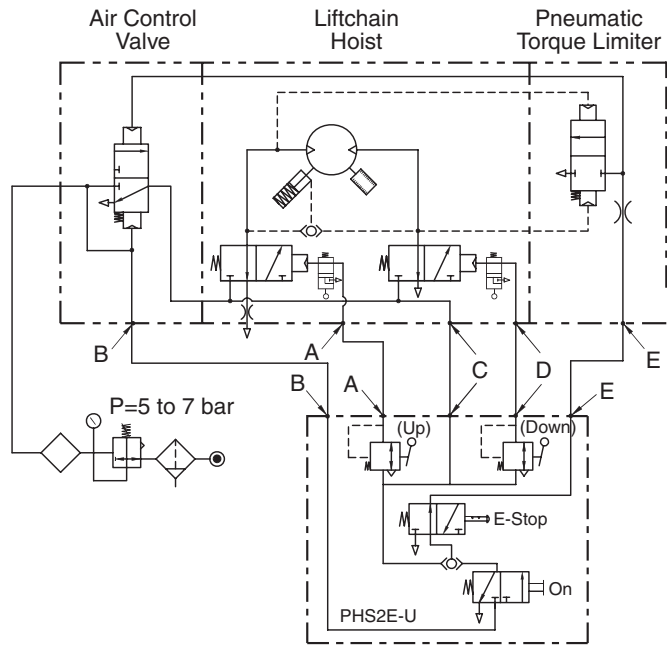
View of Motor for Hoist Models LCA015SIP & LCA030DIP



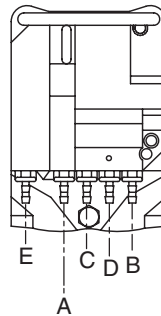
View of Motor for Hoist Models LCA030DIP & LCA250QIP



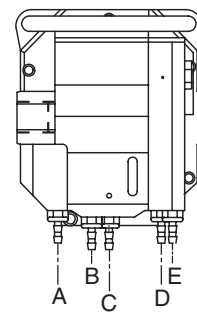
LCA015SIP2C-E to LCA250QIP2C-E Series



View of Motor for Hoist Models LCA015SIP & LCA030DIP



View of Motor for Hoist Models LCA030SIP & LCA060SIP to LCA250QIP



(Dwg. MHP2115)

Motor

For optimum performance and maximum durability of parts, operate the air motor within the operating specifications provided. Refer to the "SPECIFICATIONS" section on page 5. The air motor should be installed as near as possible to the compressor or air receiver. Refer to Dwg. MHP2115 on page 8 for motor port connections.

Overload Device (optional feature)

Overload protection is integrated into the motor body and is standard on -E versions. The overload system is based on detection of the difference in air pressure between the inlet and outlet ports. It consists of a valve which is normally closed. The valve senses pressure at the motor inlet and outlet and compares the difference between the two pressures to the index value established by spring adjustment. A difference in pressure greater than the index value causes the emergency stop to be activated. This then exhausts the air and hoist operation stops.

Overload protection is adjusted at the factory to 120% of the safe working load (SWL). It is also able to operate on both sides for mining versions with two bottom hooks. Refer to the "MAINTENANCE" section on page 19 for adjustment procedures.

Main Air Shut-off Valve

The main air shut-off valve is completely integrated into the motor body and is standard on -E versions.

Chain Container

Refer to Dwgs. MHP1975 or MHP1976 on page 64.

1. Check the chain container size to make sure the length of the load chain is within the capacity of the chain container. Replace with a larger chain container if required.
2. When a chain bucket is used, always connect the free end of the chain to the hoist. Install a chain buffer on the ninth link from the end of the chain.
3. Attach the chain container to the hoist.
4. Run bottom block to the lowest point and run hoist in the "UP" direction to feed the chain back into the container.

NOTICE

- Make certain to adjust the balance chain so that the chain container does not contact the load chain.
- Allow chain to pile naturally in the chain container. Piling the chain carelessly into the container by hand may lead to kinking or twisting that will jam the hoist.

Attaching Limit Stop

1. On hoists without a chain bucket, slide buffer and washer onto chain.
2. Install limit stop as described under "Load Chain Replacement." Refer to the "MAINTENANCE" section on page 19.
3. Run hoist slowly in the "DOWN" direction to verify limit stop activates cutout.

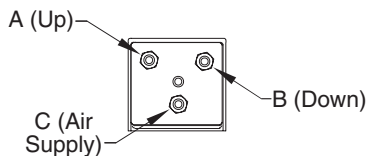
Pendant

Check that all hose connections are tight and that hoses are not twisted or crimped. Refer to Dwg. MHP1299 on page 9 for hose connections. Pendant lengths up to 66 ft (20 m) are available. Contact the factory for pendant lengths greater than 66 ft (20 m).

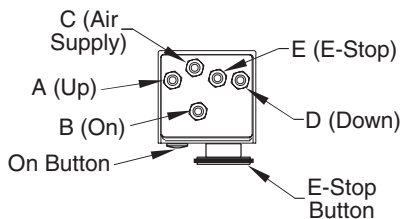
CAUTION

• To avoid damaging the pendant hose, make sure the strain relief cable, not the pendant hose, is supporting the weight of the pendant.

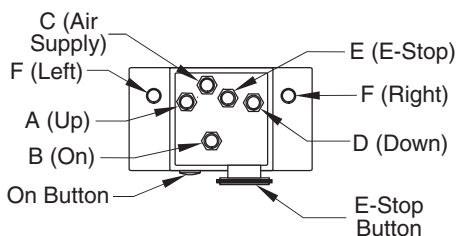
Single Motor Pendant PHS2E Top View



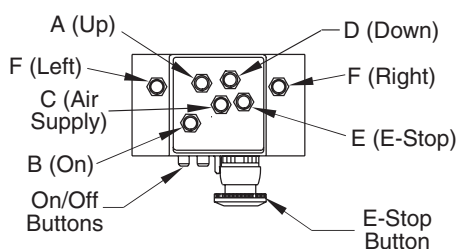
Single Motor Pendant PHS2E(-U) Top View



Two Motor Pendant PHS4E(-U) Top View New Style Hoists Shipped After 31 Dec. 1997



Two Motor Pendant PHS4E(-U) Top View Old Style Hoists Shipped Before 31 Dec. 1997



(Dwg. MHP1299)

Storing the Hoist

1. Always store the hoist in a no load condition.
2. Wipe off all dirt and water.
3. Oil the chain, hook pins and hook latch.
4. Place in a dry location.
5. Plug hoist air inlet port.
6. Before returning hoist to service, follow instructions for hoists not in regular service. Refer to the "INSPECTION" section on page 12.

OPERATION

The four most important aspects of hoist operation are:

1. Follow all safety instructions when operating the hoist.
2. Allow only people trained in safety and operation of this product to operate the hoist.
3. Subject each hoist to a regular inspection and maintenance program as outlined in ASME B30.16.
4. Be aware of the hoist capacity and weight of load at all times.

Operators must be physically competent. Operators must have no health condition which might affect their ability to act, and they must have good hearing, vision and depth perception. The hoist operator must be carefully instructed in his or her duties and must understand the operation of the hoist, including a study of the manufacturer's literature. The operator must thoroughly understand proper methods of hitching loads and should have a good attitude regarding safety. It is the operator's responsibility to refuse to operate the hoist under unsafe conditions.

Initial Operating Checks

Hoists are tested for proper operation prior to leaving the factory. Before the hoist is placed in service the following initial operating checks should be performed.

1. After installation of trolley mounted hoists, check to ensure the hoist is centered below the trolley.
2. Check for air leaks in the supply hose and fittings to pendant, as well as from pendant to manifold.
3. When first running the hoist or trolley motors, some light oil should be injected into the inlet connection to allow good lubrication.
4. When first operating the hoist and trolley it is recommended that the motors be driven slowly in both directions for a few minutes.
5. Operate trolley along entire length of beam.
6. Inspect hoist and trolley performance when raising, moving and lowering test loads. Hoist and trolley must operate smoothly and at rated specifications prior to being placed in service.
7. Check that trolley and hook movement is in the same direction as arrows and pendant control labels.
8. Raise and lower a light load to check operation of hoist brake.
9. Check hoist operation by raising and lowering a load equal to the rated capacity of the hoist 3 to 4 inches (7 to 10 cm) off the floor.
10. Check operation of limit devices.
11. Check to see that hoist is directly over load. Do not lift load at an angle ("side pull" or "yard").
12. Check to see hoist is securely connected to overhead crane, monorail, trolley or supporting member.
13. Check to see that load is securely inserted in hook, and that hook latch is engaged.

⚠ WARNING

- Allow only personnel trained in safety and operation of this product to operate hoist and trolley.
- The hoist is not designed and not suitable for lifting, lowering or moving people. Never lift loads over people.

⚠ WARNING

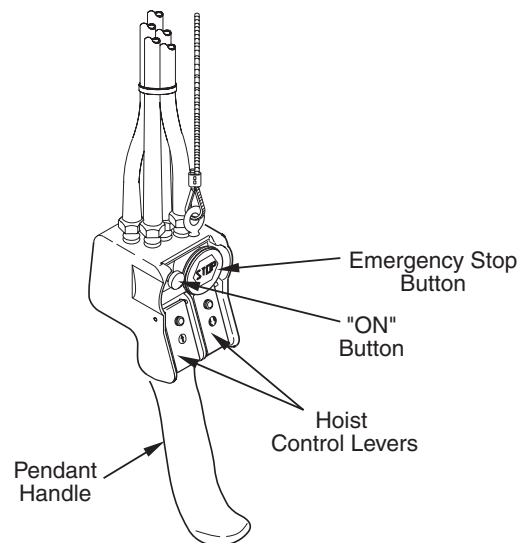
- The hook latch is intended to retain loose slings or devices under slack conditions. Use caution to prevent the latch from supporting any of the load.

Controls

Pendant Operation

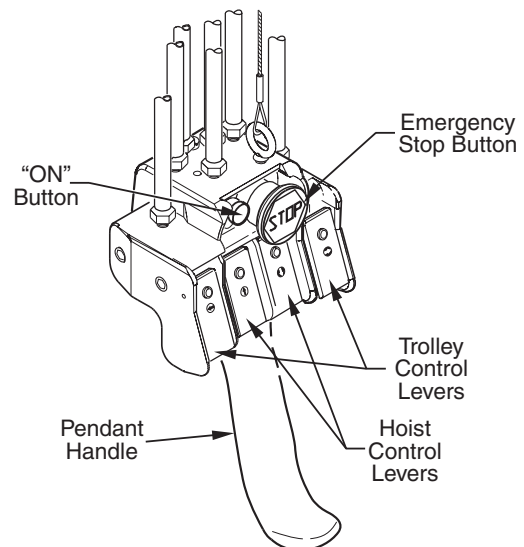
The pendant is a remote control that allows the operator to control the positioning of a load. The pendant can have from two to six levers. The two-lever pendant will control hoist movement in the UP and DOWN direction. A four-lever pendant will control trolley movement along the support beam and hoist operation. A six-lever pendant would include the above movements plus control a bridge assembly allowing hoist movement in four directions. Always apply smooth even pressure to pendant levers, avoid quick starts and abrupt stops. This will allow smoother control of suspended loads and reduce undue stress on components.

Two Lever Pendant



(Dwg. MHP1649)

Four Lever Pendant



(Dwg. MHP1547)

Emergency Stop

The Emergency Stop button, when activated, will immediately stop all operations of the trolley and hoist. The Emergency Stop button will remain depressed after activation. To reset Emergency Stop button, twist (rotate) Emergency Stop button clockwise until button releases and spring returns to its original position. Depress "ON" button.

For older style four lever pendants supplied on hoists shipped before 31 December, 1997 reset the Emergency Stop button by performing the following steps.

1. Locate the serrated ring directly behind the Emergency Stop button.
2. Rotate the serrated ring until the Emergency Stop button pops out.
3. Depress the Emergency Stop valve "ON" button on the left of the Emergency Stop button to resume air supply to the hoist.

Rope Control (optional feature)

The rope control provides the operator with a local hoist operating station. The following directions are as viewed from the motor end of the hoist, facing the rope control.

1. To lift a load, pull down on the right rope.
2. To lower a load, pull down on the left rope.
3. Pull rope to full travel for maximum speed. Pull rope partially for slower speeds.
4. To stop lifting or lowering, release rope. Hoist motor will stop.

INSPECTION

Inspection information is based in part on American Society of Mechanical Engineers Safety Codes (ASME B30.16).

⚠ WARNING

- All new, altered or modified equipment should be inspected and tested by personnel instructed in safety, operation and maintenance of this equipment to ensure safe operation at rated specifications before placing equipment in service.
- Never use a hoist that inspection indicates is damaged.

Frequent and periodic inspections should be performed on equipment in regular service. Frequent inspections are visual examinations performed by operators or personnel trained in safety and operation of this equipment and include observations made during routine hoist operation. Periodic inspections are thorough inspections conducted by personnel trained in the safety, operation and maintenance of this equipment.

ASME B30.16 states inspection intervals depend upon the nature of the critical components of the equipment and the severity of usage. Inspection intervals recommended in this manual are based on intermittent operation of the hoist eight hours each day, five days per week, in an environment relatively free of dust, moisture and corrosive fumes. If hoist is operated almost continuously or more than eight hours each day, more frequent inspections will be required.

Careful inspection on a regular basis will reveal potentially dangerous conditions while still in the early stages, allowing corrective action to be taken before the condition becomes dangerous.

Deficiencies revealed through inspection, or noted during operation, must be reported to designated personnel instructed in safety, operation and maintenance of this equipment. A determination as to whether a condition constitutes a safety hazard must be made, and the correction of noted safety hazards accomplished and documented by written report before placing the equipment in service.

Records and Reports

Inspection records, listing all points requiring periodic inspection should be maintained for all load bearing equipment. Written reports, based on severity of service, should be made on the condition of critical parts as a method of documenting periodic inspections. These reports should be dated, signed by the person who performed the inspection, and kept on file where they are readily available for review.

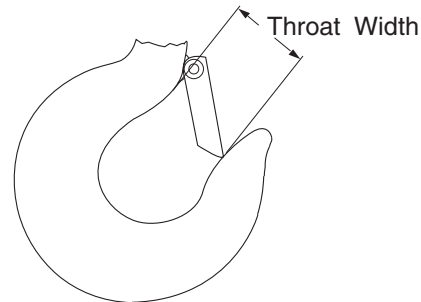
Load Chain Reports

Records should be maintained documenting the condition of load chain removed from service as part of a long-range load chain inspection program. Accurate records will establish a relationship between visual observations noted during frequent inspections and actual condition of load chain as determined by periodic inspection methods.

Frequent Inspection

On hoists in continuous service, frequent inspections should be made by operators at the beginning of each shift. In addition, visual inspections should be conducted during regular service for any damage or evidence of malfunction.

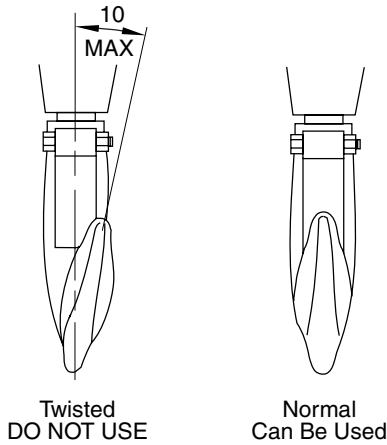
1. OPERATION. Check for visual signs or abnormal noises (grinding, etc.) which could indicate a potential problem. Make sure all controls function properly and return to neutral when released. Check chain feed through hoist and bottom block. If chain binds, jumps, is excessively noisy or "clicks," clean and lubricate chain. If problem persists, replace chain. Do not operate hoist until all problems have been corrected.
2. UPPER AND LOWER LIMIT DEVICE. Test operation with no load slowly in both extremes of travel. Upward travel must stop when the stop buffer on the bottom block hits hoist limit switch. Downward travel must stop when the stop buffer attached to the end of the unloaded load chain decreases and activates limit switch.
3. HOOKS. Check for wear or damage, increased throat width, bent shank or twisting of hook. Replace hooks which exceed the throat opening discard width specified in Table 1 (refer to Dwg. MHP0040 on page 12) or which exceed a 10° twist (refer to Dwg. MHP0111 on page 13. If hook latch snaps past tip of hook, the hook is sprung and must be replaced. Refer to the latest edition of ASME B30.10 "HOOKS" for additional information. Check hook support bearings for lubrication or damage. Ensure that they swivel easily and smoothly.



(Dwg. MHP0040)

Table 1 - Hook Throat Normal and Discarded Width

Hoist Model	Capacity metric tons	Throat Width		Discard Width	
		in.	mm	in.	mm
LCA015S	1.5	1.26	32	1.45	36.8
LCA030S	3	1.50	38	1.72	43.7
LCA030D					
LCA060S	6	1.89	48	2.17	55.2
LCA060D					
LCA120D	12	2.56	65	2.94	74.8
LCA125D					
LCA180T	18	3.50	89	4.03	102.4
LCA250Q	25	3.98	101	4.57	116.2



(Dwg. MHP0111)

- HOOK LATCH. Make sure hook latch is present and operating. Replace if necessary.

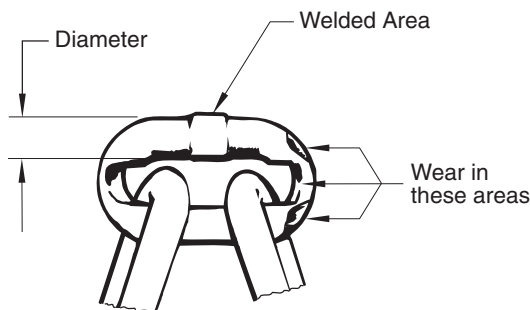
CAUTION

• Do not use hoist if hook latch is missing or damaged.

- CONTROLS. During operation of the hoist, verify that response to pendant is quick and smooth. Ensure controls return to neutral when released. If hoist responds slowly or movement is unsatisfactory, do not operate hoist until all problems have been corrected.
- AIR SYSTEM. Visually inspect all connections, fittings, hoses and components for indication of air leaks. Repair any air leaks found. Check and clean filter.
- LOAD CHAIN. Examine each of the links for bending, cracks in weld areas or shoulders, traverse nicks and gouges, weld splatter, corrosion pits, striation (minute parallel lines) and chain wear, including bearing surfaces between chain links. Refer to Dwg. MHP0102 on page 13. Replace a chain that fails any of the inspections. Check chain lubrication and lubricate if necessary. Refer to "Load Chain" in "LUBRICATION" section on page 17.

NOTICE

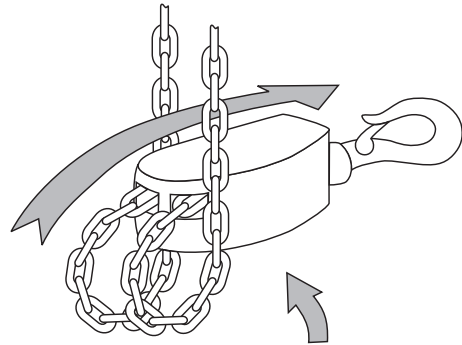
• The full extent of load chain wear cannot be determined by visual inspection. At any indication of load chain wear, inspect the chain and chain wheel in accordance with instructions in "Periodic Inspection."



(Dwg. MHP0102)

- LOAD CHAIN REEVING. Ensure welds on standing links are away from load sheave. Reinstall chain if necessary. Make sure chain is not capsized, twisted or kinked. Adjust as required. Refer to Dwg. MHP0043 on page 13.

Capsized Hook



Make certain the bottom block has NOT been flipped through the chain falls
(Dwg. MHP0043)

Periodic Inspection

According to ASME B30.16, frequency of periodic inspection depends on severity of usage:

NORMAL	HEAVY	SEVERE
yearly	semiannually	quarterly

Disassembly may be required for HEAVY or SEVERE usage. Keep accumulative written records of periodic inspections to provide a basis for continuing evaluation. Inspect all the items in "Frequent Inspection" on page 12. Also inspect the following:

- FASTENERS. Check all rivets, split pins, capscrews and nuts. Replace if missing or tighten if loose.
- ALL COMPONENTS. Inspect for wear, damage, distortion, deformations and cleanliness. If external evidence indicates the need, disassemble. Check gears, shafts, bearings, sheaves, chain guides, springs and covers. Replace worn or damaged parts. Clean, lubricate and reassemble.
- HOOKS. Inspect hooks carefully for cracks using magnetic particle or other suitable non-destructive method. Inspect hook retaining parts. Tighten or repair if necessary.
- LOAD CHAIN SPROCKET. Check for damage or excessive wear. Replace if necessary. Observe the action of load chain feeding through hoist. Do not operate a hoist unless load chain feeds through hoist and hook block smoothly and without audible clicking or other evidence of binding or malfunctioning.
- MOTOR. If performance is poor, disassemble motor and check for wear or damage to bearings and shafts. Parts should be cleaned, lubricated and reassembled. Replace worn or damaged parts.
- BRAKE. Raise a load equal to rated capacity of hoist a few inches (cms) off the floor. Verify hoist holds the load without drift. If drift occurs, disassemble. Remove brake discs as described in "MAINTENANCE" section on page 19. Check and clean brake parts each time hoist is disassembled. Replace brake discs if grooves are no longer visible.
- SUPPORTING STRUCTURE. Check for distortion, wear and continued ability to support a load.

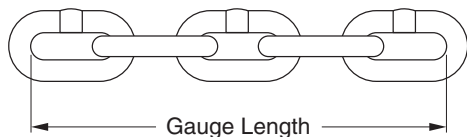
8. TROLLEY (if equipped). Check that the trolley wheels track beam properly and trolley is correctly adjusted in accordance with manufacturer's literature. Check that wheels and beam are not excessively worn and inspect side plates for spreading due to bending. Do not operate hoist until problem has been determined and corrected.
9. LABELS AND TAGS. Check for presence and legibility. Replace if necessary.
10. LOAD CHAIN END ANCHORS. Ensure both ends of load chain are securely attached. Secure if loose, repair if damaged, replace if missing. Check chain stoppers are correctly installed and functional.
11. LOAD CHAIN. Measure the chain for stretching. Measure the load chain over the outside of five link sections all along chain, paying particular attention to the most frequently reeved links. Refer to Dwg. MHP0041 on page 14. When any five links in the working length reaches or exceeds the discard length, replace entire chain. Refer to Table 2 on page 14. Always use genuine **Ingersoll Rand** replacement chain. Zinc plated load chain is standard on Liftchain hoists.

Hoists Not in Regular Use

1. A hoist which has been idle for a period of one month or more, but less than one year, should be given an inspection conforming to the requirements of "Frequent Inspection" prior to being placed in service.
2. A hoist which has been idle for a period of more than one year should be given an inspection conforming to the requirements of "Periodic Inspection" prior to being placed in service.
3. Standby hoists should be inspected at least semiannually in accordance with the requirements of "Frequent Inspection."

Table 2 - Load Chain Normal and Discard Length

Hoist Model	Chain Size	Normal Length		Discard Length	
	mm	in.	mm	in.	mm
LCA015S	8 x 24	4.72	120	4.8	122
LCA030D					
LCA030S	13 x 36	7.09	180	7.2	183
LCA060D					
LCA060S	16 x 45	8.85	225	8.99	228
LCA120D					
LCA125D					
LCA180T					
LCA250Q					



(Dwg. MHP0041)

12. CHAIN CONTAINER. Check for damage or excessive wear and that chain container is securely attached to the hoist. Secure or replace if necessary.
13. LIMIT SWITCH. Check limit switches function correctly.
14. EMERGENCY STOP. During hoist operation verify emergency shut-off by activating button. All operation must stop quickly. Stop button must reset properly.

INSPECTION AND MAINTENANCE REPORT FORM

Ingersoll-Rand LCA Liftchain Industrial Air Hoist

Model Number:			Date:		
Serial Number:			Inspected by:		
Reason for Inspection: (Check Applicable Box)					
	1. Scheduled Periodic Inspection (___ Quarterly ___ Semiannually ___ Yearly)	Operating Environment: Normal ___ Heavy ___ Severe ___			
	2. Discrepancy(s) noted during Frequent Inspection				
	3. Discrepancy(s) noted during maintenance				
	4. Other: _____				
Refer to the Parts, Operation and Maintenance Manual "INSPECTION" section on page 12 for general inspection criteria. Refer to appropriate National Standards and Codes of practice. If in doubt about an existing condition contact the nearest Ingersoll Rand Distributor or the factory for technical assistance.					
COMPONENT	CONDITION		CORRECTIVE ACTION		NOTES
	Pass	Fail	Repair	Replace	
Fasteners					
Gears					
Shafts					
Bearings			---		
Load Bearing Sheave					
Chain Guides					
Springs			---		
Covers, Housings					
Hooks			---		
Top	Actual Hook Throat Width: _____ inches / _____ mm (Refer to Table 4 for minimum/maximum acceptable widths.)				
	Hook Twist			---	(maximum 10%)
	Hook Crack Test Method Used: Dye Penetrant _____ Magnetic Particle _____ Other: _____				
Bottom	Actual Hook Throat Width: _____ inches / _____ mm (Refer to Table 4 for minimum/maximum acceptable widths.)				
	Hook Twist			---	(maximum 10%)
	Hook Crack Test Method Used: Dye Penetrant _____ Magnetic Particle _____ Other: _____				
Hook Latch			---		
Brake (100% Load Test)			---		
Brake (Visual Inspection)					
Tail Pin (End Anchor)					
Load Chain:			---		
Working length(s) maximum wear: _____ inches / _____ mm (Refer to Table 5)					
Supporting Structure					
Labels and Tags			---		
Other Components (List in NOTES section)					

Testing:	Pass	Fail	NOTES
Operational (No Load)			
Operational (100% Load)			
Operational (Maximum Test Load*)			

* Testing to more than 100% of rated capacity may be required to set overload device.

This page may be photocopied and used by inspectors or maintenance personnel.

LUBRICATION

To ensure continued satisfactory operation of the hoist, all points requiring lubrication must be serviced with the correct lubricant at the proper time intervals indicated for each assembly. Correct lubrication is one of the most important factors in maintaining efficient operation.

The lubrication intervals recommended in Table 3 on page 16 are based on intermittent operation of the hoist eight hours each day, five days per week. If the hoist is operated almost continuously, or for more than eight hours each day, or under severe conditions, more frequent lubrication will be required.

Table 3 - Lubrication Intervals

Component	Lubrication Frequency by Usage Level		
	Severe	Heavy	Normal
Load Chain	Daily	Weekly	At Usage
Hook and Hook Latch	Daily	Weekly	At Usage
Gear Case	Yearly	Every 3 Years	Unnecessary
Geared Trolley Wheels	Monthly	Quarterly	Yearly

Lubricant types and change intervals are based on operation in an environment relatively free of dust, moisture and corrosive fumes. Use only those lubricants recommended. Other lubricants may affect performance of the hoist. Approval for the use of other lubricants must be obtained from your **Ingersoll Rand** Technical Support Department or distributor. Failure to observe this precaution may result in damage to the hoist and/or its associated components.

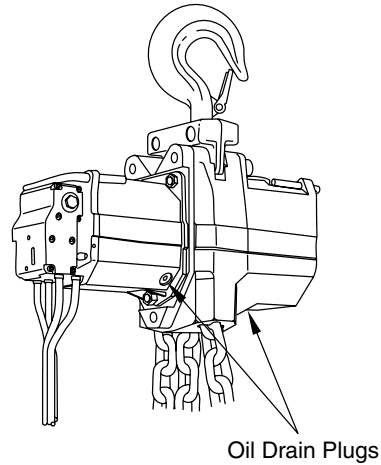
Whenever a hoist is disassembled for overhaul or replacement of parts, lubricate as follows:

Brake and Gear Assemblies

Gear and brake assemblies share a common oil bath. On larger capacity hoists, the output shaft from the motor is offset and utilizes a pinion gear to drive the sun gear. These gears operate in the motor casing oil bath. Refer to Table 4 on page 16 for oil quantities. Refer to Dwg. MHP1338 on page 16 for position of gear box oil drain plugs.

Table 4 - Gear and Motor Casing Quantities

Model	Gear Casing		Motor Casing	
	Pints	ml	Pints	ml
LCA015S and LCA030D	0.32	150	N/A	N/A
LCA030S and LCA060D	0.8	400	0.32	150
LCA060S, LCA120D, LCA125D, LCA180T and LCA250Q	1.6	750		

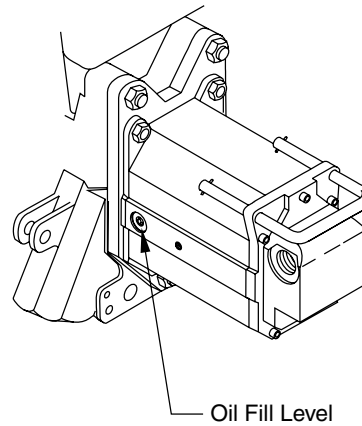


(Dwg. MHP1338)

LCA015S and LCA030D Hoists Oil Fill Level Position
Fill to level of plug on side of gear housing.

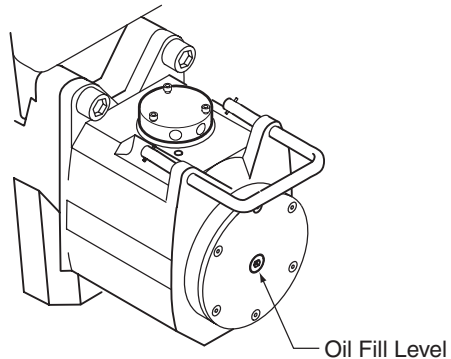
LCA030S and Larger Hoists Oil Fill Level Positions
Fill to level of plug on side of motor housing and on gear end in the center of brake end cover. Refer to Dwgs. MHP1439 and MHP1440 on page 16.

Oil Fill Level Position on Motor Housing



(Dwg. MHP1439)

Oil Fill Level Position on Brake End Cover



(Dwg. MHP1440)

Replace the oil in the brake and gear housing in accordance with Table 3 on page 16 recommendations. Refer to Table 5 on page 17 for recommended oil type. If hoist use is at normal frequency, the oil in the reduction housing need not be changed. However, when hoist use is at greater frequency, or under severe conditions, the oil may need to be changed.

To ensure correct performance, highest efficiency and long life, it is essential that the lubricating oil be maintained at the correct level. The recommended grade of oil must be used at all times since the use of unsuitable oil may result in excessive temperature rise, loss of efficiency and possible damage to the gears.

Liftchain hoists are shipped from the factory with oil in the brake and reduction gear assembly.

Table 5 - Recommended Lubricants

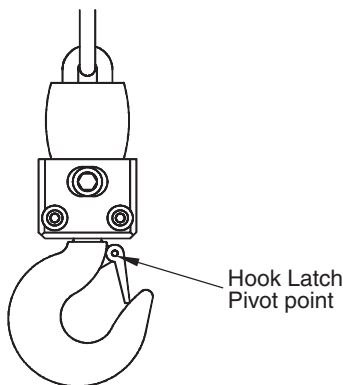
Ambient Temperature	Recommended Oil Type
Below 32° F (0° C)	ISO VG 22 (SAE50W)
30° to 80° F (0° to 26° C)	ISO VG 150 (SAE90W)
Above 80° F (26° C)	ISO VG 460 (SAE140W)
TD-20 Option	Synthetic Oil 626*

* Use Mobile Gear 626 or equivalent synthetic oil.

Hook Assemblies

Hoist top and bottom hooks are supported by thrust bearings. These bearings must be packed with **Ingersoll Rand** No. 68 Grease or a standard No. 2 multi-purpose grease at regular intervals. Neglect of proper lubrication can lead to bearing failure.

1. Lubricate hook and latch pivot points. Refer to Dwg. MHP1300 on page 17. Hook and latch should swivel/pivot freely.
2. Use **Ingersoll Rand** LUBRI-LINK-GREEN® or ISO VG 220 (SAE50W) lubricant.
3. Lubricate hook bearings by applying several shots of grease from a grease gun to the grease fittings provided on the hook blocks.



(Dwg. MHP1300)

Air Line Lubricator

If an air line lubricator is used, it should be replenished daily with ISO VG 100 (SAE30W) lubricant (minimum viscosity 135 Cst at 104° F (40° C)).

Trolley (optional feature)

Grease wheel bearings and wheel drive gear with **Ingersoll Rand** No. 68 Grease or a standard No. 2 multi-purpose grease periodically. Refer to manufacturer's literature for additional lubrication information.

Load Chain

⚠ WARNING

• **Failure to maintain a clean and well-lubricated load chain will result in rapid load chain wear that can lead to chain failure which can cause severe injury, death or substantial property damage.**

1. Lubricate each link of load chain weekly, or more frequently, depending on severity of service.
2. In corrosive environments, lubricate more frequently than normal.
3. Lubricate each link of the load chain and apply new lubricant over existing layer.
4. Lubricate hook and hook latch pivot points.
5. If required, clean chain with acid free solvent to remove rust or abrasive dust buildup and lubricate chain.
6. Use **Ingersoll Rand** LUBRI-LINK-GREEN® or an ISO VG 220 to 320 (SAE50W to 90 EP) oil.

TROUBLESHOOTING

This section provides basic troubleshooting information. Specific causes to problems are best identified by thorough inspections performed by personnel instructed in safety, operation and maintenance of this equipment. The chart below provides a brief guide to common hoist and trolley symptoms, probable causes and remedies.

SYMPTOM	CAUSE	REMEDY
Hoist will not operate.	No air supply to hoist, or too little CFM or PSI.	Check PSI (bar) at hoist inlet. Refer to “SPECIFICATIONS” section on page 5 for correct CFM (cu.m/min) and PSI (bar).
	Pendant lever sticking.	Check pendant lever and restore free movement.
	Pendant malfunction.	Check PSI (bar) at pendant. Minimum operating pressure in pendant line is 60 PSI (4 bar).
	Hoist is overloaded.	Reduce load to within rated capacity.
	Motor is damaged.	Repair or replace. Refer to “MAINTENANCE” section on page 19.
	Limit switch sticking.	Check limit switch button moves freely. Clean and lubricate if sticking.
	Brake is not releasing.	Check brake release circuit and PSI (bar) at brake inlet (60 PSI (4 bar) minimum).
Load continues to move when hoist is stopped. “UP” direction.	Pendant lever sticking.	Check lever and restore free movement.
Load continues to move when hoist is stopped. “DOWN” direction.	Pendant lever sticking.	Check lever and restore free movement.
	Hoist is overloaded.	Reduce load to within rated capacity.
	Brake is slipping.	Check brake springs and brake disc linings for wear. Refer to the “MAINTENANCE” section on page 19.
Hoist will not lift rated capacity.	Hoist is overloaded.	Reduce load to within rated capacity.
	No air supply to hoist or too little CFM or PSI (cu. m/min or bar).	Check PSI (bar) at hoist inlet. Refer to “SPECIFICATIONS” section on page 5 for correct CFM (cu.m/min) and PSI (bar).
	Brake is not releasing.	Check brake release circuit and PSI (bar) at brake inlet (60 PSI (4 bar) minimum).
	Exhaust is restricted.	Inspect vents and clean or replace muffler.
	Motor is damaged.	Check for worn motor bearings.
Hook lowers but will not raise.	Hoist is overloaded.	Reduce load to within rated capacity.
	No air supply to hoist or too little CFM or PSI (cu. m/min or bar).	Check at hoist power supply connection with hoist under load. Raise pressure to rated capacity.
	Pendant malfunction.	Check PSI (bar) at air inlet connection on pendant.
Load chain jumps on sprocket or is making a snapping sound.	Worn or rusted chain.	Refer to “INSPECTION” section on page 12 to determine wear limit. Replace if necessary.
	Incorrect chain.	Replace with correct chain.
	Worn sprocket or chain guide.	Replace worn parts.
	Capsized hook.	Correct as described in “MAINTENANCE” section on page 19.
	Hoist not in line with load.	Align hoist with load. Do not “yard” or side pull.
	Incorrectly reeved load chain.	Check load chain is correctly reeved.
	No oil on load chain.	Lubricate load chain.
Trolley (optional feature) Trolley will not stop or trolley wheels slip.	Damaged beam.	Repair or replace beam.
	Excessive oil, grease or paint on track of beam.	Clean off oil, grease or paint.
	Trolley not spaced for beam clearance.	Check trolley spacing. Refer to the manufacturer’s literature.
Air-powered trolley does not operate.	Pendant lever sticking.	Check lever and restore free movement.
	No air supply to trolley or too little CFM or PSI (cu. m/min or bar).	Check PSI (bar) at trolley inlet. Refer to manufacturer’s specifications.

⚠ WARNING

- Never perform maintenance on the hoist while it is supporting a load.
- Before performing maintenance, tag controls:
WARNING - DO NOT OPERATE - EQUIPMENT BEING REPAIRED.
- Only allow personnel trained in operation and service of this hoist to perform maintenance.
- After performing any maintenance on the hoist dynamically test the hoist to 100% of its rated capacity, in accordance with ASME B30.16 standards, before returning hoist to service. Testing to more than 100% of rated capacity is required to set overload device and may be required to comply with standards and regulations set forth in areas outside the USA.
- Shut off air system and depressurize air lines before performing any maintenance.

Proper use, inspections and maintenance increase the life and usefulness of your **Ingersoll Rand** equipment. During assembly, lubricate gears, bearings and shafts with applicable lubricants. Use of a thread locking compound and/or thread lubricant on capscrew and nut threaded areas helps prevent corrosion of components.

Maintenance Intervals

The Maintenance Interval Chart below is based on intermittent operation of equipment for eight hours each day, five days per week. If the equipment is in operation for more than eight hours a day or is operated in severe applications or environments, more frequent maintenance should be performed.

INTERVAL	MAINTENANCE CHECK
Start of each shift	Make a thorough visual inspection of hoist for damage. Do not operate hoist if damage is found.
	Operate in both directions. Hoist must operate smoothly without sticking, binding or abnormal noises.
	Check operation of brake.
Quarterly	Remove, clean or replace muffler in top of gear housing.
Yearly	Inspect hoist gearing, shafts and bearings for damage or wear. Repair or replace as necessary.
	Check all supporting members, including the trolley if used. Repair or replace as required.

Adjustments

Brake

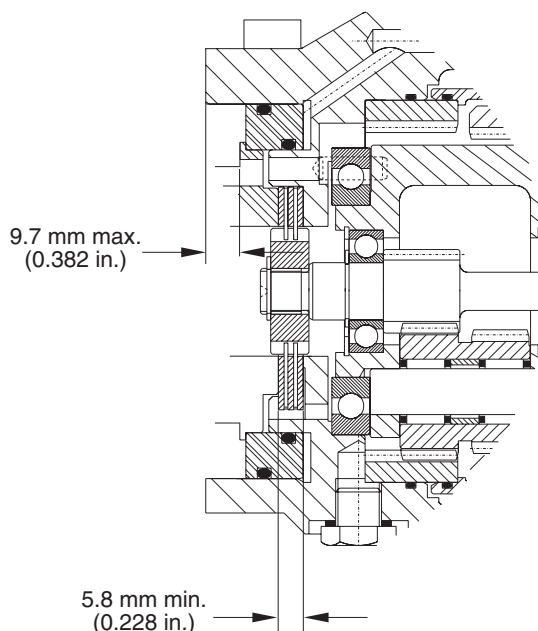
No brake adjustment is required. If brake fails to hold load brake must be disassembled, inspected, repaired and tested prior to further use. Refer to 'Accessing the Brake' on page 22.

Annual Maintenance is limited to:

1. A general cleaning.
2. The friction discs have a 0.2 mm (0.079 in.) deep groove on each side. Replace the friction discs if the grooves are no longer visible. Refer to Dwg. MHP1415 or MHP1416 on page 19.

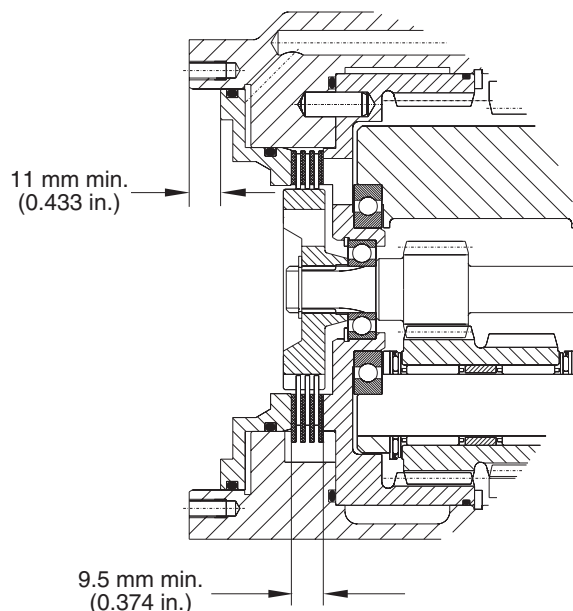
3. Measure total brake and steel plate stack up. Check that measurement is not less than minimum shown.

LCA015S and LCA030D Hoists



(Dwg. MHP1415)

LCA030S, LCA060S, LCA060D, LCA120D, LCA125D LCA180T and LCA250Q Hoists



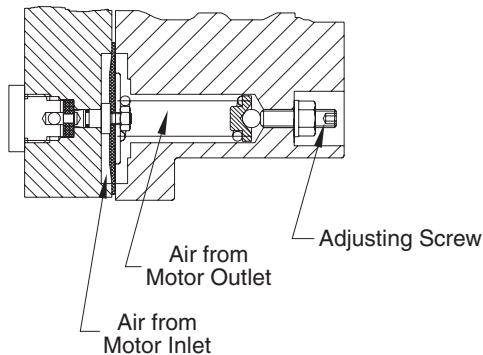
(Dwg. MHP1416)

Overload Device

1. Connect hoist to air supply.
2. Release locknut and turn adjustment screw in order to increase or decrease the SWL (increase SWL by tightening the adjustment screw). Adjustment must be made for an overload of 20% maximum of the SWL.
3. Tighten locknut securing adjustment screw.
4. Check hoist operation at rated load. If necessary repeat adjustment.

NOTICE

- Do not change factory settings unless hoist is tested and recertified at an authorized repair facility.



(Dwg. MHP1302)

Disassembly

General Instructions

WARNING

- Disconnect air supply hose before performing any maintenance or repairs on the hoist.

All maintenance work done on the Liftchain hoist should be performed on a bench in a clean dust free work area. In the process of disassembling the hoist, observe the following:

1. Never disassemble hoist any further than is necessary to accomplish the needed repair. A good part can be damaged during the course of disassembly.
2. Never use excessive force when removing parts. Tapping gently around the perimeter of a cover or housing with a soft hammer, for example, is sufficient to break seal.
3. Do not heat a part with a flame to free it for removal, unless part being heated is already worn or damaged beyond repair and no additional damage will occur to other parts.

In general, the hoist is designed to permit easy disassembly and assembly. Use of heat or excessive force should not be required.

4. Keep work area clean to prevent dirt and other foreign matter from getting into bearings and other moving parts.
5. All seals and 'O' rings should be discarded once they have been removed. New seals and 'O' rings should be used when assembling hoist.
6. When grasping a part in a vise, always use leather- or copper-covered vise jaws to protect surface of part and help prevent distortion. This is particularly true of threaded members, machined surfaces and housings.
7. Do not remove any part which is press fit in or on a subassembly unless removal of the part is necessary for repairs or replacement.

8. To avoid damaging bearings during hoist assembly or disassembly always tap or press on bearing inner race for shaft fit bearings or outer race for bore fit bearings.
9. For assembly work above body height, suitable working platforms or ladders should be made available.
10. Do not attempt to wash sealed bearings.

If hoists are to be completely disassembled it is recommended that motor assembly and brake/gear housing assembly be removed as complete assemblies from chain guide housing. This can be accomplished by removing capscrews, nuts and washers that clamp housings together. Carefully separate assemblies and clean mating surfaces. Assemblies are Loctited together.

The muffler is located in the top of the gear housing. To clean muffler remove retainer ring in gear housing and with the aid of small pick remove the first muffler plate. Remove 'O' ring, second muffler plate and last 'O' ring.

Load Chain Replacement

WARNING

- NEVER splice a load chain except when installing a new load chain by the following method. Always discard link used to connect old chain with new.

Excessive chain wear cannot be detected by casual observation. Chain is case hardened and once the case hardening is worn through, wear will progress rapidly and the strength of the chain will be considerably reduced. Further, the chain will no longer fit the chain sprocket properly, greatly increasing the chance of malfunction and chain breakage.

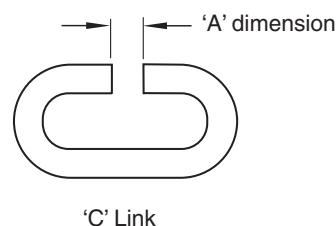
One chain sprocket will outlast several chains if chain is replaced as recommended. The use of a worn chain will cause the chain sprocket to wear rapidly.

If the chain is visibly damaged, examine chain sprocket and chain guide. Install a new chain sprocket if the old one is visibly worn. Install a new guide if old one is broken or distorted.

NOTICE

- For ease of installation, do not remove old chain from hoist. Use the old chain to feed new chain through hoist.

1. Hoist must be hung and connected to air supply. Reduce air pressure to 60 psi (4 bar).
2. Remove chain bucket, if used.
3. Remove chain buffer and limit stop.
4. Remove load hook.
5. Run hoist slowly in lifting direction until chain free end is approximately 2 ft (60 cm) from hoist.
6. Using an abrasive wheel, cut a section from the last link as shown in Dwg. MHP0817 on page 20. Use a 'C' link which is the same size as the chain. Refer to Table 6 on page 21.



(Dwg. MHP0817)

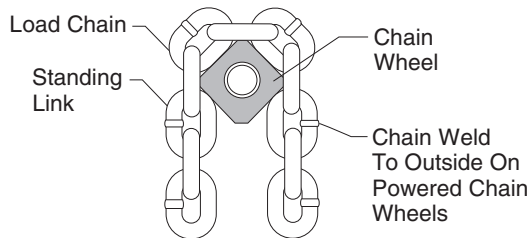
Table 6 - 'C' Link Dimension

Hoist Model	Chain Size	'A' Dimension	
	mm	in.	mm
LCA015S	8 x 24	0.4	10
LCA030D			
LCA030S	13 x 36	0.5	15
LCA060D			
LCA060S	16 x 45	0.7	18
LCA120D			
LCA125D			
LCA180T			
LCA250Q			

⚠ CAUTION

- Do not distort link in any manner. Link must be able to pass over the pocket and idler wheels without binding.
- Ensure chain does NOT become twisted during reeving. All chain welds must align while chain is hanging free.

7. Connect new chain to old chain by hooking end of new chain onto 'C' link. Make certain welds and links on new chain match positioning of welds and links on chain being replaced.
8. Slowly run hoist in raise direction, running off old chain and reeving new chain over the chain wheel. **The first link of new chain over the chain wheel must be a standing link.** Refer to Dwg. MHP0472 on page 21.



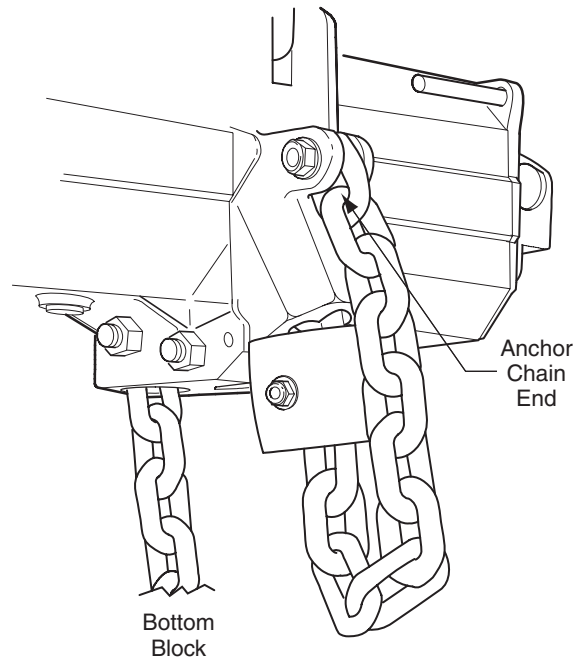
(Dwg. MHP0472)

9. Reinstall load hook, chain buffer and limit stop. Connect free end of chain to hoist body.

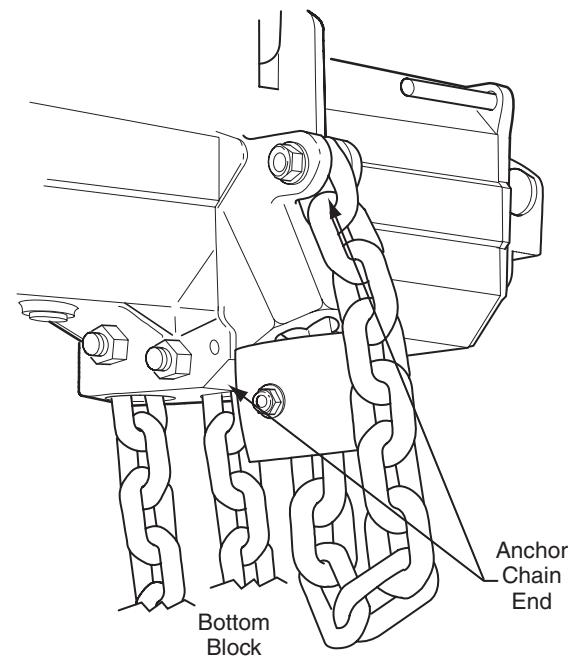
⚠ WARNING

- A twisted chain can jam as it passes over pocket wheel, possibly resulting in damage to hoist or even breaking chain and causing injury.

Chain Reeving



(Dwg. MHP1469)



(Dwg. MHP1502)

Accessing the Brake

LCA015S and LCA030D Hoists

Refer to Dwg. MHP1967 on page 31.

1. It is recommended that carry handle (25) on the brake end be removed prior to brake disassembly.
2. Carefully remove the four brake cover screws (27) one half turn at a time each, until spring compression is relaxed. Remove brake cover (34), brake support plate (64) and three brake springs (33).
3. Using low pressure air in the brake port carefully remove brake piston (37) from gear housing (28).
4. Remove 'O' rings (24) and (38) from brake support plate (64) and brake piston (37).
5. Remove brake disc (28), friction discs (35) and steel discs (36).
6. Check brake plate wear tolerance.
7. Remove retainer ring (30) from drive pinion (21) and pull out brake sleeve (29).

LCA030S and LCA060D Hoists

Refer to Dwg. MHP1504 on page 34.

1. It is recommended that carry handle (37) on brake end be removed prior to brake disassembly.
2. Carefully remove the six brake cover screws (32) one half turn at a time each, until spring compression is relaxed. Remove brake cover (35) and eight brake springs (34).
3. Using low pressure air in the brake port, carefully remove brake piston (29) from gear housing (31).
4. Remove 'O' rings (30) and (33) from brake piston (29) and brake cover (35).
5. Check brake plate wear tolerance.

LCA060S, LCA120D, LCA125D, LCA180T and LCA250Q Hoists

Refer to Dwgs. MHP1969 on page 38 and MHP1886 on page 42.

1. It is recommended that carry handle (28) on brake end be removed prior to brake disassembly.
2. Carefully remove the six brake cover screws (31) one half turn at a time each, until spring compression is relaxed. Remove brake cover (37) and eight brake springs (38).
3. Remove brake piston (33).
4. Remove retainer ring (36) from sun gear (41) and pull out brake sleeve (39).
5. Remove 'O' rings (8) and (32) from brake cover (37) and brake piston (33).
6. Check brake plate wear tolerance.

Motor Disassembly

2 HP without Emergency Stop or Overload

Refer to Dwg. MHP1970 on page 44.

1. Remove four capscrews (21) and pull motor assembly from motor housing.
2. Remove capscrews (8) from motor flange (9) and pull motor flange assembly from motor housing (1).
3. Separate motor housing (1) from motor cover (22).
4. Remove rear stops (10), springs (11) and slide valves (25) from gear housing.
5. Immobilize the idle gear (4) and drive gear (7) with a rod between the teeth and remove locknuts (3).
6. Remove idle gear (4) and drive gear (7) from motor flange (9).
7. Remove capscrew (6) and washer (5). Tap bearings (2) from motor flange.

2 HP with Emergency Stop and Overload

Refer to Dwg. MHP1970 on page 44.

Follow steps 1 through 7 immediately above for initial motor disassembly.

1. Remove the three capscrews (36) from cover (27).

2. Pry cover (27) from housing and remove spring (28) and 'O' ring (29).
3. Remove plug (50) and seal washer (49) from motor cover.
4. Remove eight capscrews (39) and lift off cover (38).
5. Remove diaphragm (34). Remove capscrew (30) and separate valve cones (31) and (35), seal washers (33), washers (32) and spacer (37).
6. Remove diaphragm assembly (46) from housing. Unscrew valve cone (47) and nut (44). Remove washer (45) and 'O' ring (48) from valve cone.
7. Remove spring (43), spring receiver (42) and ball (52) from motor cover. Remove screw (40) with self locking nut (41) and seal ring (51) from same cover.
8. Check dowel pins (12) are not damaged.

4 HP Motors

Refer to 2 HP motor disassembly instructions and Dwg. MHP1971 in "PARTS" section on page 48.

Power Head Disassembly

LCA015S and LCA030D Hoists

Refer to Dwgs. MHP1966 on page 30 and MHP1967 on page 31.

1. Remove four nuts (53), lockwashers (54) and capscrews (52) which secure motor assembly and gear housing assembly to chain guide housing (9).
2. Carefully pry gear housing assembly (23) from chain guide housing (9).
3. Disassemble brake parts as described in "Accessing the Brake" on page 22.
4. Remove retainer ring (32) in planetary support (19).
5. Carefully tap on motor end of pinion shaft (21) until it can be removed from brake end of gear housing.
6. Remove pinion (11) and gear cover (48).
7. Remove ring gear (18) and planetary support assembly.
8. Remove bearings (17) and (40) from planetary support (19).
9. Remove ring gear (20), and 'O' rings (43). Discard and replace 'O' rings (43).

LCA030S and LCA060D Hoists

Refer to Dwgs. MHP1505 on page 32 and MHP1504 on page 34.

1. Remove four nuts (13), lockwashers (12) and capscrews (11) which secure motor assembly and gear housing assembly to chain guide housing (52).
2. Carefully pry gear housing assembly (31) from chain guide housing (52).
3. Using the two puller screw holes (M6 mm) provided in the gear cover (55) remove gear cover.
4. Tap drive pinion (17) from the gear side to separate parts. Remove bearing (44), spring washer (19), ring gear (18) and gear cover (55) from drive pinion (17).
5. Remove oil seal (57) and 'O' rings (54) and (56) from gear cover (55).
6. Remove 'O' ring (16) from drive pinion (17).
7. Remove planetary assembly.
8. Refer to "Accessing the Brake" on page 22 to remove brake cover.
9. Remove retainer ring (36) from sun gear (20) and pull out brake sleeve (39).
10. Pull sun gear (20) from motor side of the housing.
11. Remove retainer ring (48) from gear housing bore. Tap on ring gear (45) hub from brake side to remove.
12. Remove retainer ring (41) from ring gear (45) and tap out bearing (43). Remove and discard 'O' ring (47). Always replace 'O' ring (47) as it is normally damaged during disassembly.
13. Remove friction discs (27) and steel discs (28) from gear housing.
14. Slide planet axles (23) from planetary support and remove bearings (21), thrust bearings (25), spacers (22), thrust rings (26) and planetary gears (24).

- Remove remaining bearing (44) from planetary support (46).

LCA060S, LCA120D and LCA125D Hoists

Refer to Dwgs. MHP1968 on page 36 and MHP1969 on page 38.

- Remove the four nuts (52), lockwashers (51) and capscrews (50) and (69) which secure motor assembly and gear housing assembly to chain guide housing (12).
- Carefully pry gear housing assembly (30) from chain guide housing (12).
- Remove brake assembly as described in "Accessing the Brake."
- Using two puller screw holes (M6 mm) provided in gear cover (13) remove gear cover. Remove oil seal (53) and 'O' rings (9) and (14) from gear cover (13).
- Remove ring gear support (54).
- Remove ring gear (16) from gear housing (30). Remove retainer ring (15) from ring gear.
- Pull planetary support (48) assembly from gear housing.
- Remove capscrews (27) from ring gear support (45). Remove ring gear (47) and ring gear support from gear housing (30).
- Remove friction discs (43) and steel discs (44).
- Remove retainer ring (40) and bearing (5) from ring gear support (45).
- Remove 'O' rings (46) from gear housing (30).

LCA180T and LCA250Q Hoists

Refer to Dwgs. MHP1885 on page 40 and MHP1886 on page 42.

- Remove nuts (56), lockwashers (50) and capscrews (49) which secure motor assembly and gear housing to chain guide housing (12)
- Carefully pry gear housing assembly (63) from chain guide (12)
- Remove brake assembly as described in "Accessing the Brake."
- Using two puller screw holes (M6mm) provided in gear cover (13) remove gear cover. Remove oil seal (51) and 'O' rings (9) and (14) from gear cover.
- Remove ring gear support (52).
- Remove ring gear (16) from gear housing (30). Remove retainer ring (15) from ring gear.
- Remove Sun Gear (41) and pull planetary support assembly from gear housing.
- To disassemble planetary assembly, drive pins (25) completely through to the inside of planetary support (47). Push planet axles (48) out of planetary support. Remove bearings (24), thrust rings (23), bearings (21), spacers (20) and planetary gears (22) from planetary support (47).
- Remove 'O' rings (69) and retainer ring (26) from ring gear.
- Pull ring gear (46) from gear housing.
- Remove capscrews (27) and pins (42) from ring gear support (45).

Chain Guide Housing Disassembly

LCA015S and LCA030D Hoists

Refer to Dwg. MHP1966 on page 30.

- Remove gear housing assembly and motor assembly as previously described.
- Tap on sprocket (2), on brake side, until bearing (12) and sprocket (2) are clear of chain guide housing (9).
- Remove chain guide (50) and remaining bearing (12).
- If replacement is required remove retainer ring (56) and oil seal (55) from bore of sprocket.
- If replacement is required, remove limit switch body (61) and limit switch (62). Remove spring (63).

LCA030S and LCA060D Hoists

Refer to Dwg. MHP1505 on page 32.

- Remove gear housing assembly and motor assembly as previously described.
- Tap on the sprocket (9), on brake side, until bearing (10) and sprocket (9) are clear of chain guide housing (52).
- Remove chain guide (14) and remaining bearing (10).
- If replacement is required remove bearing (63) and oil seal (62) from bore of sprocket.
- If replacement is required, remove limit switch body (64) and limit switch (65). Remove spring (66).

LCA060S, LCA120D and LCA125D Hoists

Refer to Dwgs. MHP1968 on page 36.

- Remove gear housing assembly and motor assembly as previously described.
- Tap on the sprocket (59), on brake side, until bearing (55) and sprocket (59) are clear of chain guide housing (12).
- Remove chain guide (56) and remaining bearing (55).
- If replacement is required remove bearing (5) and oil seal (6) from bore of sprocket.
- If replacement is required, remove limit switch body (66) and limit switch (67). Remove spring (68).

LCA180T and LCA250Q Hoists

Refer to Dwg. MHP1885 on page 40.

- Remove gear housing assembly and motor assembly.
- Remove capscrews (78), nuts (80) and lockwashers (79) from top hook assembly.
- Remove capscrews (49), nuts (50) and lockwashers (56).
- Remove motor flange (11).
- Separate chain guide housing (12), flange (86) and second chain guide housing (68).
- Tap on the brake side of sprocket (57) until bearing (53) and sprocket are clear of the chain guide housing. Remove chain guide (76).
- Remove bearing (74) and eccentric ring (72).
- Tap on the motor side of sprocket (77) until bearing (53) and sprocket are clear of the chain guide housing (12). Remove chain guide (54) and bearing (74).
- If replacement is required remove bearing (5) and oil seal (6) from bore of sprocket (77).
- If replacement is required remove limit switch body (64) and limit switch (65). Remove spring (66).

Two Lever Pendant Disassembly

Refer to Dwg. MHP1977 or MHP1978 on page 60.

- Remove fittings (265) and lifting eye (250).
- Unscrew plugs (254). Remove springs (255) and balls (256).
- Tap out pin (257) and remove levers (263).
- Remove setscrews (260) from pendant handle (264).
- Remove valve assemblies (262). Remove 'O' rings (253) and (259) and protector (261) from valve assemblies. Discard 'O' rings.
- Remove plug (270) or emergency stop valve (251) from pendant handle (264).
- Remove retainer ring (268) and exhaust washer (267).

Four Lever Pendant Disassembly

Refer to Dwg. MHP1979 or MHP1980 on page 62.

- Remove fittings (265) and lifting eye (250).
- Unscrew plugs (254). Remove springs (255) and balls (256).
- Remove capscrews (280) and (283) and washers (281) from attachment (left) (286). Remove attachment (left) taking care not to damage pin (284). Separate pin (284), lever (257) and 'O' rings (282) from attachment (left). Discard 'O' rings.
- Repeat step 3 for attachment (right) (287).
- Tap out pin (257) and remove levers (263).

6. Remove valve assemblies (262). Remove 'O' rings (253) and (259) and protector (261) from valve assemblies. Discard 'O' rings.
7. Remove plug (270) or emergency stop valve (266) from pendant handle (264).
8. Remove retainer ring (268) and exhaust washer (267).

Cleaning, Inspection and Repair

Use the following procedures to clean, inspect and repair the components of the hoist.

Cleaning



• Bushings that rotate in the frame or are loose or worn must be replaced. Failure to observe this precaution will result in additional component damage.

Clean all hoist component parts in solvent (except for the friction discs). Use of a stiff bristle brush will facilitate the removal of accumulated dirt and sediments on the gears and frames. If bushings have been removed, it may be necessary to carefully scrape old Loctite® from the bushing bores. Dry each part using low pressure, filtered compressed air.

Inspection

All disassembled parts should be inspected to determine their fitness for continued use. Pay particular attention to the following:

1. Inspect all gears for worn, cracked or broken teeth.
2. Inspect all bushings for wear, scoring or galling.
3. Inspect shafts for ridges caused by wear. If ridges caused by wear are apparent on shafts, replace shaft.
4. Inspect all threaded items and replace those having damaged threads.
5. Measure thickness of friction disc. Replace friction discs if grooves are no longer visible.

Repair

Actual repairs are limited to the removal of small burrs and other minor surface imperfections from gears and shafts. Use a fine stone or emery cloth for this work.

1. Worn or damaged parts must be replaced. Refer to applicable Parts Listing for specific replacement parts information.
2. Inspect all remaining parts for evidence of damage. Replace or repair any part which is in questionable condition. The cost of the part is often minor in comparison with the cost of redoing the job.
3. Smooth out all nicks, burrs or galled spots on shafts, bores, pins or bushings.
4. Examine all gear teeth carefully and remove nicks or burrs.
5. Polish the edges of all shaft shoulders to remove small nicks which may have been caused during handling.
6. Remove all nicks and burrs caused by lockwashers.

Assembly

Brake Assembly

LCA015S and LCA030D Hoists

Refer to Dwg. MHP1967 on page 31.

1. Lubricate 'O' rings (24) and (38) and install on brake support plate (64) and brake piston (37).
2. Install brake sleeve (29) on drive pinion (21) and secure in position with retainer ring (30).

3. Install brake piston (37) in gear housing (28). Internal 'O' ring groove must be positioned nearest the gear compartment.
4. Install friction and steel discs, beginning with a friction disc (35) and alternating with a steel disc (36), until discs are used.
5. Install brake disc (28).
6. Position springs in brake disc spring holes and install brake support plate (64) and brake cover (34) on gear housing (28). Install and tighten four cover screws (27), one half turn at a time each, until cover is secure. Keep brake cover square to gear housing during installation to avoid damaging 'O' ring.
7. Reinstall handle (25) if previously removed.

LCA030S and LCA060D Hoists

Refer to Dwg. MHP1504 on page 34.

1. Lubricate and install 'O' rings (30) and (33) on brake piston (29) and brake cover (35).
2. Install brake piston (29) with 'O' rings in gear housing (31).
3. Using a small amount of grease on each spring (34) position springs in brake cover spring holes and install brake cover (35) on gear housing (31). Install and tighten six cover screws (32), one half turn at a time each, until cover is secure. Keep brake cover square to gear housing during installation to avoid damaging 'O' ring (33).
4. Install plug (7) and copper washer (8) in brake cover (35).
5. Reinstall handle (37) if previously removed.

LCA060S, LCA120D, LCA125D, LCA180T and LCA250Q Hoists

Refer to Dwg. MHP1969 on page 38 and MHP1886 on page 42.

1. Lubricate 'O' rings (8) and (32) and install on brake cover (37) and brake piston (33).
2. Install brake sleeve (39) on sun gear (41) and secure in position with retainer ring (36).
3. Install brake piston (33).
4. Using a small amount of grease on each spring (38), position springs in brake cover spring holes and install brake cover (37) on gear housing (30). Install and tighten six cover screws (31), one half turn at a time each, until cover is secure. Keep brake cover square to gear housing during installation to avoid damaging 'O' ring.
5. Install plug (34) and seal washer (35) in cover (37).
6. Reinstall handle (28) if previously removed.

Motor Assembly

2HP without Emergency Stop or Overload

Refer to Dwg. MHP1812 on page 43.

1. Lubricate bearings (2) with Grade 2 grease then install bearings in motor flange (9). Ensure markings on bearing cage are still visible after installation.
2. Install washer (5) and capscrew (6) to retain bearings. Lightly coat capscrew threads with Loctite® 234.
3. Install idle gear (4) and drive gear (7) through bearings in motor flange (9).
4. Immobilize idle gear (4) and drive gear (7) with a rod between the teeth. Install and tighten locknuts (3). Lightly coat locknut threads with Loctite® 234.
5. Install motor housing (1) on motor flange.
6. Lubricate and install quad rings (23) on slide valves (25). Lubricate and install quad ring (24) in bore of gear housing (1).
7. Install rear stops (10), springs (11) and slide valves (25) in gear housing.
8. Position stop (18) in recess in motor cover (22). Install needle bearings (14) in motor cover (22).
9. Lubricate and install 'O' rings (19) in gear housing. Carefully install motor cover assembly on gear housing until fully seated. Ensure pins (12) are aligned and fully engaged.

10. Lightly coat capscrew threads with Loctite® 234 then install and torque capscrews (8) to 7.5 ft-lbs (5.5 Nm). After assembly of the motor, check to ensure motor driving gear rotates freely in both directions.
11. Install motor assembly in motor housing (60). Secure in position with four capscrews (21). Torque capscrews to 7.5 ft-lbs (5.5 Nm).

2HP with Emergency Stop and Overload

Refer to Dwg. MHP1812 on page 43.

Follow steps 1 through 11 immediately above, for initial motor assembly.

Assembly of Emergency Stop and Overload options:

1. Ensure dowels (12) are installed in motor cover (22).
2. Lubricate and position 'O' rings (13) and stops (18) on motor cover.
3. Assemble items (31), (32), (33) and (37) on screw (30). Install screw with parts into motor cover. Screw (32), (33) and (35) on opposite end and tighten. Use Loctite® 243 on threads.
4. Install spring (28) and 'O' ring (29) in cover (27) and assemble on motor cover. Secure with three capscrews (36). Apply Loctite® 243 to threads.
5. Install diaphragm (34) on opposite side.
6. Grease and install ball (52), spring receiver (42) and spring (43) in motor cover.
7. Assemble items (47), (44) and (45) to diaphragm (46). Ensure parts are assembled from correct side. There is one extra hole in addition to the four capscrew holes. The extra hole must align with port hole in motor cover and cover (38).
8. Install cover (38) with capscrews (39) and (54) using Loctite® 243 on the threads. Torque capscrews to 7.5 ft-lbs (5.5 Nm).
9. Install seal washer (49) in cover (38) with plug (50).
10. Thread nut (41) onto screw (40) and install with seal ring (51).
11. Refer to Overload Device Adjustments in the "MAINTENANCE" section to reestablish settings.

4HP without Emergency Stop or Overload

Refer to Dwg. MHP1422 on page 50.

1. Lubricate bearings (10) and (2) with Grade 2 grease then install bearings in motor housing (14). Ensure markings on bearing cage are still visible after installation.
2. Install washer (5) and screw (6) to retain bearings. Lightly coat screw threads with Loctite® 234.
3. Install 'O' ring (12) on shuttle valve stop (11). Install ball (13) and screw shuttle valve stop into motor housing (14).
4. Install idle gear (15) and drive gear (4) through bearings in motor housing (14).
5. Immobilize the idle gear (15) and drive gear (4) with a rod between the teeth. Install and tighten locknuts (3) and (9). Lightly coat locknut threads with Loctite® 234.
6. Lubricate and install quad rings (29) on slide valves (16). Lubricate and install quad ring (1) in bore of motor housing (14).
7. Install rear stops (7), springs (8) and slide valves (16) in motor housing.
8. Install bearing (23) on smaller stepped diameter of idle gear (15). Secure in position with retainer ring (24).
9. Position rear stops (28) in recess in motor cover (21). Install needle bearing (30) in motor cover (21).
10. Lubricate and install 'O' rings (26) and (27) in motor cover. Carefully install motor cover assembly on motor housing until fully seated. Ensure pins (19) are aligned and fully engaged.
11. Lightly coat capscrew threads with Loctite® 234 then install and torque capscrews (17) to 16.3 ft-lbs (12 Nm). After assembly of the motor, check to ensure motor driving gear rotates freely in both directions.

12. Install motor assembly in motor housing (60). Secure in position with six capscrews (20) and (32). Verify capscrew lengths for correct positioning.

4HP with Emergency Stop and Overload

Refer to Dwg. MHP1971 on page 48.

Follow steps 1 through 12 immediately above, for initial motor assembly.

Assembly of Emergency Stop and Overload options:

1. Ensure dowels (19) are installed in motor cover (21).
2. Lubricate and position 'O' rings (26), (27) and exhaust washer (25) on motor cover.
3. Assemble items (37), (38), (39) and (44) on screw (43). Install screw with parts into motor cover. Screw (35), (37) and (38) on opposite end and tighten. Use Loctite® 243 on threads.
4. Install spring (42) and 'O' ring (46) in cover (45) and assemble on motor cover. Secure with three capscrews (41). Apply Loctite® 243 to threads.
5. Install diaphragm (36) on opposite side.
6. Grease and install ball (50), spring receiver (51) and spring (52) in motor cover.
7. Assemble items (53), (54) and (55) to diaphragm (59). Ensure parts are assembled from correct side. There is one extra hole in addition to the four capscrew holes. The extra hole must align with the port hole in the motor cover and cover (34).
8. Install cover (34) with capscrews (20) using Loctite® 243 on the threads. Torque capscrews to 7.5 ft-lbs (5.5 Nm).
9. Install seal washer (57) in cover (34) with plug (58).
10. Thread nut (48) onto screw (47) and install with seal ring (49).
11. Refer to Overload Device Adjustments in the "MAINTENANCE" section to reestablish settings.

Reduction Housing Assembly

LCA015S and LCA030D Hoists

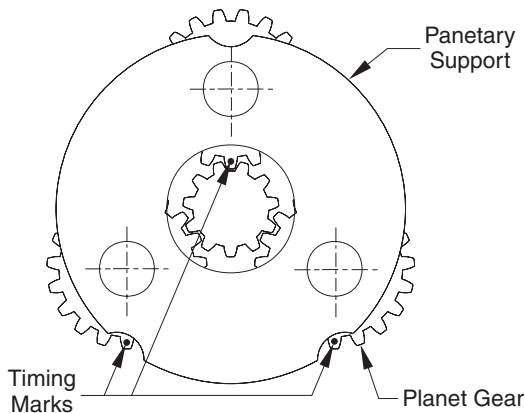
Refer to Dwg. MHP1967 on page 31.

1. Install 'O' ring (43) in gear housing (28). Ensure two dowel pins (22) are in place in the gear housing and are undamaged.
2. Carefully install ring gear (20) in gear housing making sure dowel pins are aligned with the holes in the ring gear. Tap down until seated.
3. Install bearing (40) on planetary support (19).
4. Install two bearings (46) with a spacer (45) between, in each planetary gear (44).
5. Install planetary gears with bearings into planetary support (19) and locate with satellite axles (47). Ensure planet gears (44) are installed with the smaller gear head diameter nearest the side of the planetary support (19) with the timing notches.
6. Rotate satellite axles to allow installation of bearing (17).
7. Install bearing (39) and secure with retainer ring (32).
8. Time planetary gears as shown in drawing MHP1406 on page 26. Use of a separate ring gear tool to maintain gear position during installation of planetary assembly is helpful. Install planetary assembly and tap down until planetary assembly is fully seated.
9. Install pinion (21). Tap into position until seated against bearing (39).
10. Install ring gear (18).
11. Lubricate and install 'O' ring (43) in gear cover (48). Install oil seal (13) with lip toward planetary support.
12. Install gear cover (48). Attempt to locate the puller holes at top and bottom just off vertical. This may aid disassembly at some later date. Install pinion (11).
13. Install spring (63), limit switch (62) and limit switch body (61) in chain guide housing (9).
14. Refer to "Accessing the Brake" for information on assembling the remaining brake parts.

LCA030S and LCA060D Hoists

Refer to Dwg. MHP1504 on page 34.

1. Install 'O' ring (42) in gear housing (31). Ensure three dowel pins (40) are in place in the gear housing (31) and are undamaged.
2. Install new 'O' ring (47) on ring gear (45).
3. Install friction and steel discs. Begin with a friction disc (27) and then alternate with a steel disc (28) until discs are used. Locate friction disc tabs in slots provided in gear housing.
4. Install bearing (43) in ring gear and secure with retainer ring (41).
5. Carefully install ring gear in gear housing making sure dowel pins are aligned with holes in ring gear. Tap down until retainer ring groove in gear housing bore, is visible. Use a clamp to further pull ring gear into position compressing 'O' ring (42). Install retainer ring (48). Ensure retainer ring is fully seated, then release clamp.
6. Install sun gear (20) and tap into position through bearing (43) until seated.
7. Turn gear housing over and support to avoid damaging sun gear. Align tabs on steel discs (28) and install brake sleeve (39) on sun gear spline. Secure in position with retainer ring (36).
8. Install two bearings (21) with a spacer (22) between, in each planetary gear (24).
9. Install planet gears with bearings into planetary support (46) and locate with planet axles (23). Place one bearing (25) and one thrust ring (26) on each side of the planetary gears. Bearings (25) must contact inside face of planetary support and thrust rings (26) must contact planet gears. Ensure planet gears (24) are installed with the smaller gear head diameter nearest the side of the planetary support (46) with the timing notches.
10. Rotate planet axles to allow installation of bearing (44) on brake side. Pin punch around bearing to hold in place during assembly into gear housing (31).
11. Time gears as shown in drawing MHP1406 on page 26. Using a separate ring gear tool to maintain gear position during installation of planetary assembly is helpful. Tap down until planetary assembly is fully seated.



(Dwg. MHP1406)

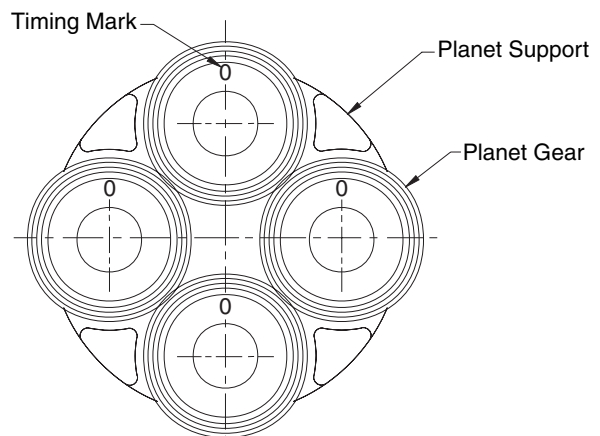
12. Install oil seal (57) and 'O' rings (54) and (56) on gear cover (55). Seal lip must be toward gear side.
13. Set drive pinion (17) on bench with splined end up. Install gear cover on drive pinion with threaded jacking holes toward bench.
14. Install ring gear (18) on spline. Install spring washer (19) with concave side toward ring gear. Install bearing (44) and tap into place.
15. Install assembled parts in gear housing aligning gear teeth with ring gear. Position puller holes at top and bottom just off vertical. This may aid disassembly on another occasion.

16. Lubricate 'O' rings (30) and (33) and install on brake cover (35) and brake piston (29).
17. Install brake piston (29). Refer to "Accessing the Brake" for information on assembling remaining brake parts.

LCA060S, LCA120D and LCA125D Hoists

Refer to Dwg. MHP1969 on page 38.

1. Install 'O' rings (46) in gear housing (30). Ensure three dowel pins (42) are in place in gear housing (30) and are undamaged.
2. Install friction and steel discs. Beginning with a friction disc (43) and then alternate with a steel disc (44) until discs are used. Locate friction disc tabs in slots provided in gear housing.
3. Install bearing (5) in ring gear support (45) and secure with retainer ring (40).
4. Carefully install ring gear support in gear housing making sure dowel pins are aligned with the holes in the ring gear support. Tap down and secure with three capscrews (27). Use Loctite® 243 on capscrew threads.
5. Install retainer ring (26) in ring gear (47) then install ring gear in gear housing.
6. Install two bearings (21) with a spacer (20) between, in each planet gear (22).
7. Install planet gears with bearings into planetary support (48) and locate with planet axle (49). Place one bearing (24) and one thrust ring (23) on each side of planet gears. Bearings (24) must contact inside face of planetary support and thrust rings (23) must contact planet gears. Ensure planet gears (22) are installed with smaller gear head diameter nearest the side of the planetary support (48) with the puller holes.
8. Align pin hole in planet axle with pin hole in planetary support. Install pins (25). Tap down until flush with planetary support.
9. Time gears, refer to Dwg. MHP1417 on page 26. Using a separate ring gear tool to maintain gear position during installation of planetary assembly is helpful. Tap down until planetary assembly is fully seated.
10. Install retainer ring (15) in ring gear (16). Install ring gear in gear housing (30).
11. Install sun gear (41) and tap into position through bearing (5) until seated.
12. Turn gear housing over and support to avoid damaging the sun gear. Align tabs on steel discs (44) and install brake sleeve (39) on sun gear spline. Secure in position with retainer ring (36).
13. Install remaining brake parts as described in "Accessing the Brake."
14. Install oil seal (53) and 'O' rings (9) and (14) on gear cover (13). Seal lip must be toward gear side.
15. Install ring gear support (54).
16. Install gear cover (13) in gear housing (30).



(Dwg. MHP1417)

LCA180T and LCA250Q Hoists

Refer to Dwg. MHP1886 on page 42.

1. Install 'O' rings (46) in gear housing (30). Ensure three dowel pins (42) are in place in gear housing (30) and are undamaged.
2. Install friction and steel discs. Beginning with a friction disc (43) and then alternate with a steel disc (44) until discs are used. Locate friction disc tabs in slots provided in gear housing.
3. Install bearing (5) in ring gear support (45) and secure with retainer ring (40).
4. Carefully install ring gear support in gear housing making sure dowel pins are aligned with the holes in the ring gear support. Tap down and secure with three capscrews (27). Use Loctite® 243 on capscrew threads.
5. Install retainer ring (26) in ring gear (47) then install ring gear in gear housing.
6. Install two bearings (21) with a spacer (20) between, in each planet gear (22).
7. Install planet gears with bearings into planetary support (48) and locate with planet axle (49). Place one bearing (24) and one thrust ring (23) on each side of planet gears. Bearings (24) must contact inside face of planetary support and thrust rings (23) must contact planet gears. Ensure planet gears (22) are installed with smaller gear head diameter nearest the side of the planetary support (48) with the puller holes.
8. Align pin hole in planet axle with pin hole in planetary support. Install pins (25). Tap down until flush with planetary support.
9. Time gears, refer to Dwg. MHP1417 on page 26. Using a separate ring gear tool to maintain gear position during installation of planetary assembly is helpful. Tap down until planetary assembly is fully seated.
10. Install retainer ring (15) in ring gear (16). Install ring gear in gear housing (30).
11. Install sun gear (41) and tap into position through bearing (5) until seated.
12. Turn gear housing over and support to avoid damaging the sun gear. Align tabs on steel discs (44) and install brake sleeve (39) on sun gear spline. Secure in position with retainer ring (36).
13. Install remaining brake parts as described in "Accessing the Brake."
14. Install oil seal (53) and 'O' rings (9) and (14) on gear cover (13). Seal lip must be toward gear side.
15. Install ring gear support (54).
16. Install gear cover (13) in gear housing (30).

Two Lever Pendant Assembly

Refer to Dwg. MHP1977 or MHP1978 on page 60.

1. Assemble protectors (261) and 'O' rings (253) and (259) on valves (262).
2. Insert valve (262) assemblies into pendant handle (264).
3. Install screws (260) in pendant handle.
4. Install balls (256), springs (255) and plugs (254) into pendant handle.
5. Install plug (270) or emergency stop valve (251) into pendant handle.
6. Install fittings (265) and lifting eye (250) into top of pendant handle.
7. Facing pendant handle operation side, place levers (263) such that lever direction indicators show 'UP' on left hand side and 'DOWN' on right hand side. Install pin (257) ensuring pin inserts through levers and locates on opposite side of pendant handle.

8. Install exhaust washer (267) and secure with retainer ring (268).
9. Attach hoses to fittings located on top of pendant handle. Locate hoses to fittings as shown in the "INSTALLATION" section.

NOTICE

- **Screws (258) are installed in pendant levers allowing adjustment of pendant levers.**

Four Lever Pendant Assembly

Refer to Dwg. MHP1979 or MHP1980 on page 62.

1. Assemble protectors (261) and 'O' rings (253) and (259) on valves (262).
2. Insert valve (262) assemblies into pendant handle (264) and attachments (right) (287) and (left) (286).
3. Install screws (260) in pendant handle and attachments (right) and (left).
4. Install balls (256), springs (255) and plugs (254) into pendant handle and attachments (right) and (left).
5. Install plug (270) or emergency stop valve (251) into pendant handle.
6. Install fittings (265) into top of pendant handle and attachments (right) and (left). Install lifting eye (250) into top of pendant handle.
7. Facing pendant handle operation side, place levers (263) such that lever direction indicates 'UP' on left hand side and 'DOWN' on right hand side. Install pin (257) ensuring pin inserts through levers and locates on opposite side of pendant handle.
8. Lubricate and install 'O' rings (282) in recesses on sides of pendant handle (264).
9. Install attachment (right) (287) and (left) (286) to pendant handle (264) and secure with washers (281) and capscrews (280) and (283). Install shorter screws in back, longer screws in front.
10. Facing pendant handle operation side, place levers (285) such that lever direction indicates 'LEFT' on left hand side and 'RIGHT' on right hand side. Install pins (284) ensuring pins insert through levers and locate on side of pendant handle.
11. Install exhaust washer (267) in pendant handle and secure with retainer ring (268).
12. Attach hoses to fittings located on top of pendant handle. Locate hoses to fittings as shown in the "INSTALLATION" section.

Load Test

Prior to initial use, all new, extensively repaired or altered hoists shall be load tested by or under the direction of a person trained in safety and operation of this hoist. Dynamically load test hoist to **100%** of its rated capacity in accordance with ASME B30.16 standards. Testing to more than **100%** is required to set overload device and may be necessary to comply with standards and regulations set forth in areas outside the USA.

SERVICE NOTES

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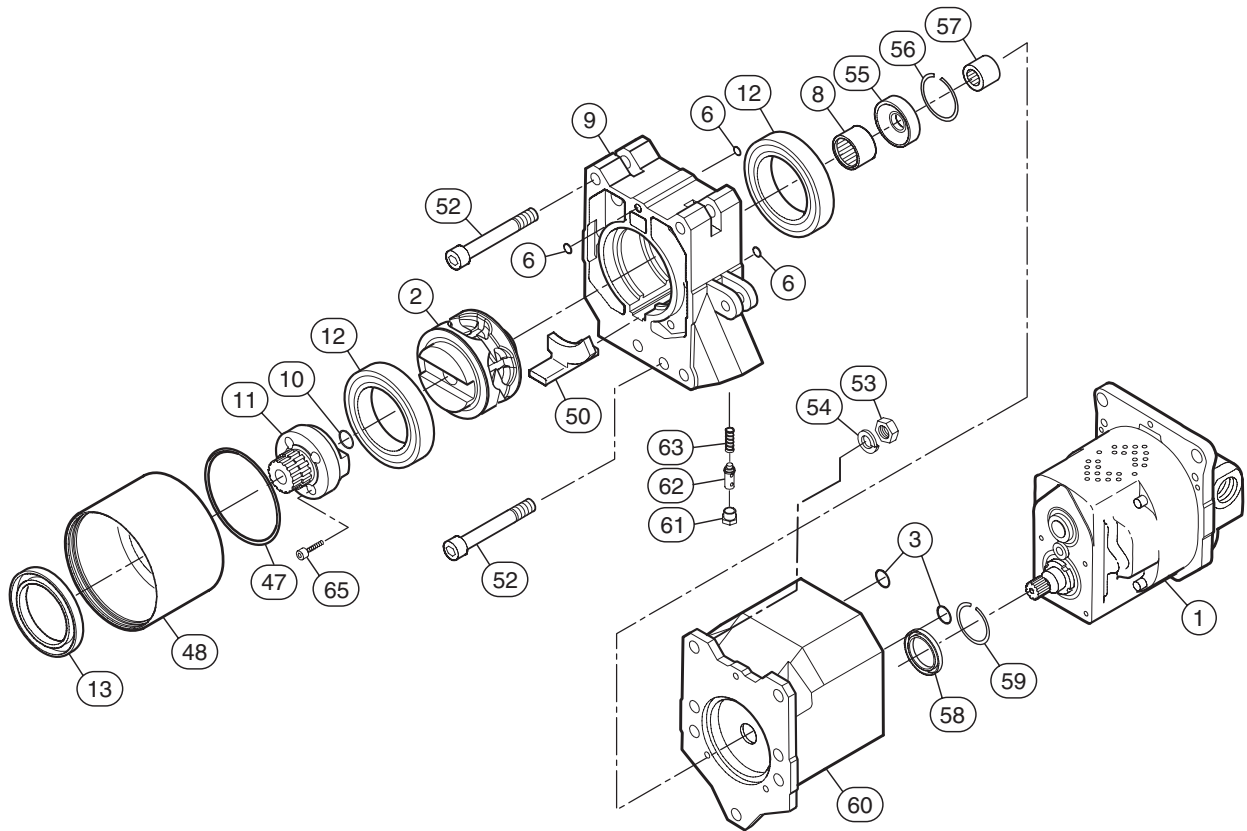
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LCA015S AND LCA030D POWER HEAD PARTS DRAWING AND PARTS LIST

1.5 and 3 ton Hoist Capacities



(Dwg. MHP1966)

Item No.	Description of Part	Total Qty	Part Number	Item No.	Description of Part	Total Qty	Part Number
1	Motor	1	Refer to Motor Section	53	Nut	4	43006911
2	Sprocket**	1	Order Item 300	54	Lockwasher	4	45201010
• 3	'O' Ring	2	58224929	• 55	Oil Seal	1	58021430
• 6	'O' Ring	4	58212229	56	Retainer Ring	1	47703035
8	Needle Bearing	1	56471916	57	Coupling	1	96090034
9	Chain Guide Housing	1	94247299	• 58	Oil Seal	1	58021530
• 10	'O' Ring	1	58211729	59	Retainer Ring	1	47703024
11	Pinion	1	94240314	60	Motor Housing	1	94240310
12	Bearing	2	50050010	61	Limit Switch Body**	1 Set	74240441
• 13	Oil Seal	1	58006330	62	Limit Switch**		
47	'O' Ring	1	58235529	63	Spring**	4	41307206
48	Gear Cover	1	94240313	65	Capscrew		
50	Chain Guide	1	94240306	*	Load Chain (Bulk)	As Req'd	LC824-G8ZP
52	Capscrew	4	41326506				

* Not Illustrated

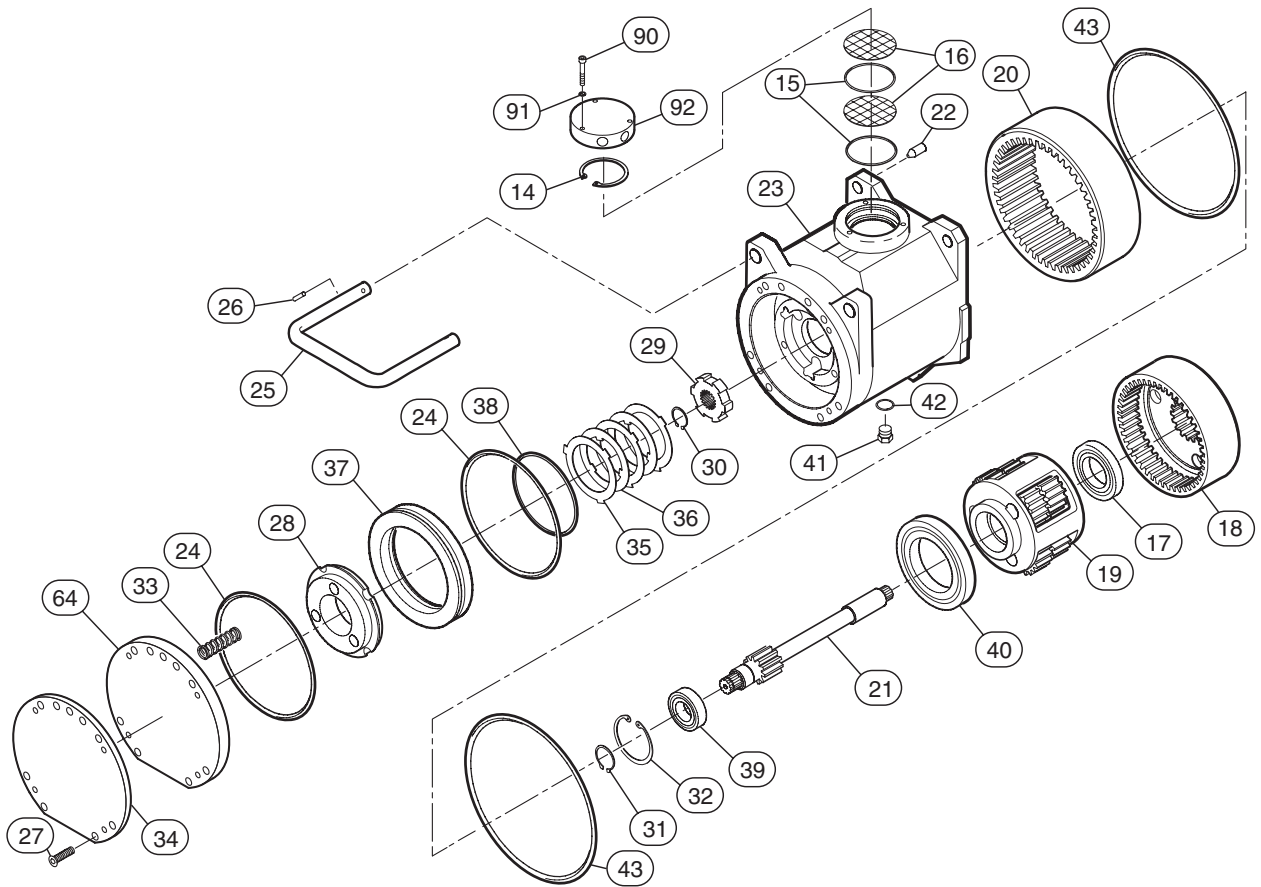
** Not Sold Separately

Item No.	Kit Description	Total Qty	Part Number
• 300	Sprocket Service Kit (Includes items 2, 8, 10, 12, 50, 55 and 56)	1	74240444

• Recommended spares for one hoist, 2 years of normal service.

LCA015S AND LCA030D BRAKE AND REDUCTION GEAR DRAWING AND PARTS LIST

1.5 and 3 ton Hoist Capacities



(Dwg. MHP1967)

Item No.	Description of Part	Total Qty	Part Number	Item No.	Description of Part	Total Qty	Part Number
14	Retainer Ring	1	47703043	31	Retainer Ring	1	47700015
• 15	'O' Ring	2	58236129	32	Retainer Ring	1	47703032
• 16	Muffler	2	94240328	33	Spring**	3	Order Item 302
17	Bearing	1	50800005	34	Brake Cover	1	94240327
18	Ring Gear**	1	74240442	35	Friction Disc**	3	Order Item 302
19	Planetary Assembly**	1		36	Steel Disc**	2	
20	Ring Gear	1	96090038	37	Brake Piston	1	96180126
21	Pinion	1	94240315	• 38	'O' Ring	1	58235129
22	Pin	2	46001116	39	Bearing	1	50000002
23	Gear Housing	1	94240308	40	Bearing	1	50800009
• 24	'O' Ring	2	58235229	41	Plug	2	65159732
25	Handle	1	94240055	• 42	Seal Washer	2	58406031
26	Pin	2	46402918	• 43	'O' Ring	2	58235829
27	Screw	4	41104203	64	Brake Support Plate	1	94240309
28	Brake Disc	1	94240326	90	Capscrew	3	41330506
29	Brake Sleeve	1	94240316	91	Washer	3	45201005
30	Retainer Ring	1	47700012	92	Cap	1	94240337

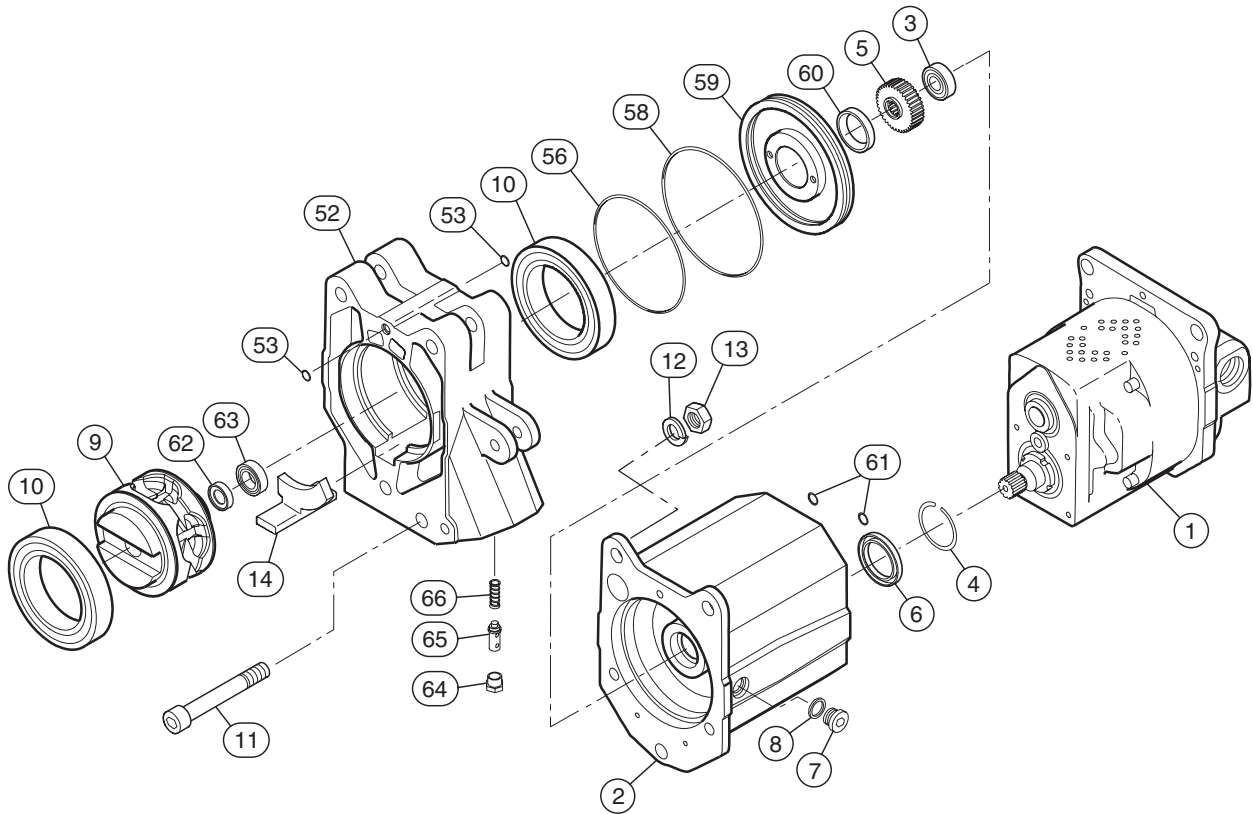
** Not Sold Separately

Item No.	Kit Description	Total Qty	Part Number
• 302	Brake Service Kit (Includes items 24, 27, 33, 35, 36, 38 and 40)	1	74240443

• Recommended spares for one hoist, 2 years of normal service.

LCA030S AND LCA060D POWER HEAD DRAWING AND PARTS LIST

3 and 6 ton Hoist Capacities



(Dwg. MHP1505)

Item No.	Description of Part	Total Qty	Part Number	Item No.	Description of Part	Total Qty	Part Number
1	Motor	1	Refer to Motor Section	52	Chain Guide Housing	1	94127416
2	Motor Housing	1	94120405	• 53	'O' Ring	2	58212529
3	Bearing	1	50100001	• 56	'O' Ring	1	58234829
4	Retainer Ring	1	47703035	• 58	'O' Ring	1	58212829
5	Gear Wheel	1	94120410	59	Motor Cover	1	94120409
• 6	Oil Seal	1	58020030	• 60	Oil Seal	1	58007230
• 7	Plug	4	65119732	61	'O' Ring	2	58224929
• 8	Washer (copper)	4	58403431	• 62	Oil Seal	1	58021330
9	Sprocket**	1	Order Item 304	63	Bearing	1	50000002
10	Bearing	2	50050015	64	Limit Switch Body**	1 Set	74240441
11	Capscrew	4	41308606	65	Limit Switch**		
12	Lockwasher	4	45201014	66	Spring**		
13	Nut	4	43005811	*	Load Chain (Bulk)	Specify length (metres)	LC1336-G8ZP
14	Chain Guide	1	94120420				

* Not Illustrated

** Not Sold Separately

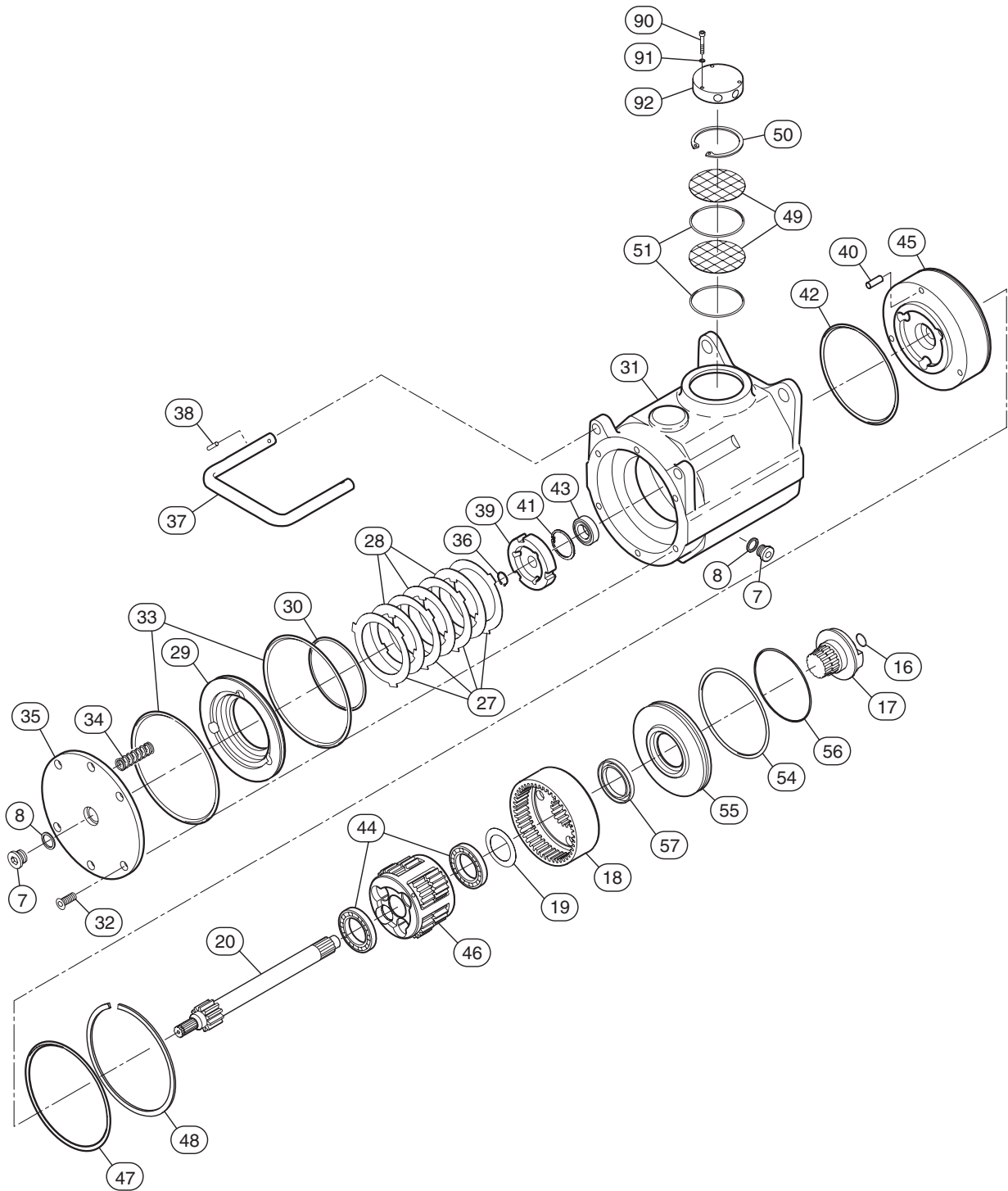
Item No.	Kit Description	Total Qty	Part Number
• 304	Sprocket Service Kit (Includes items 9, 10, 14, 62 and 63)	1	74120520

• Recommended spares for one hoist, 2 years of normal service.

SERVICE NOTES

LCA030S AND LCA060D BRAKE AND REDUCTION GEAR PARTS DRAWING

3 and 6 ton Hoist Capacities



(Dwg. MHP1504)

LCA030S AND LCA060D BRAKE AND REDUCTION GEAR PARTS LIST

Item No.	Description of Part	Total Qty	Part Number	Item No.	Description of Part	Total Qty	Part Number
• 7	Plug	4	65119732	40	Pin	3	46000416
• 8	Copper Washer	4	58403431	41	Retainer Ring	1	47703032
• 16	'O' Ring	1	58215829	• 42	'O' Ring	1	58221829
17	Drive Pinion	1	94120408	43	Bearing	1	50000002
18	Ring Gear**	1	74120521	44	Bearing	2	50800008
19	Spring Washer	1	69172132	45	Ring Gear**	1	74120521
20	Sun Gear	1	94120411	46	Planetary Assembly**	1	
27	Friction Disc**	4	Order Item 306	• 47	'O' Ring	1	58231129
28	Steel Disc**	3		48	Retainer Ring	1	47847832
29	Brake Piston	1	96310093	49	Muffler	2	94120426
• 30	'O' Ring	1	58230929	50	Retainer Ring	1	47703060
31	Gear Housing	1	94120399	• 51	'O' Ring	2	58235729
32	Screw	6	41104503	• 54	'O' Ring	1	58234929
• 33	'O' Ring	2	58212829	55	Gear Cover	1	94120407
34	Spring**	8	Order Item 306	• 56	'O' Ring	1	58234829
35	Brake Cover	1	94120406	• 57	Oil Seal	1	58012230
36	Retainer Ring	1	47700015	90	Capscrew	3	41322106
37	Handle	1	94120080	91	Washer	3	45201005
38	Pin	2	46503420	92	Cap	1	94120447
39	Brake Sleeve	1	36317420				

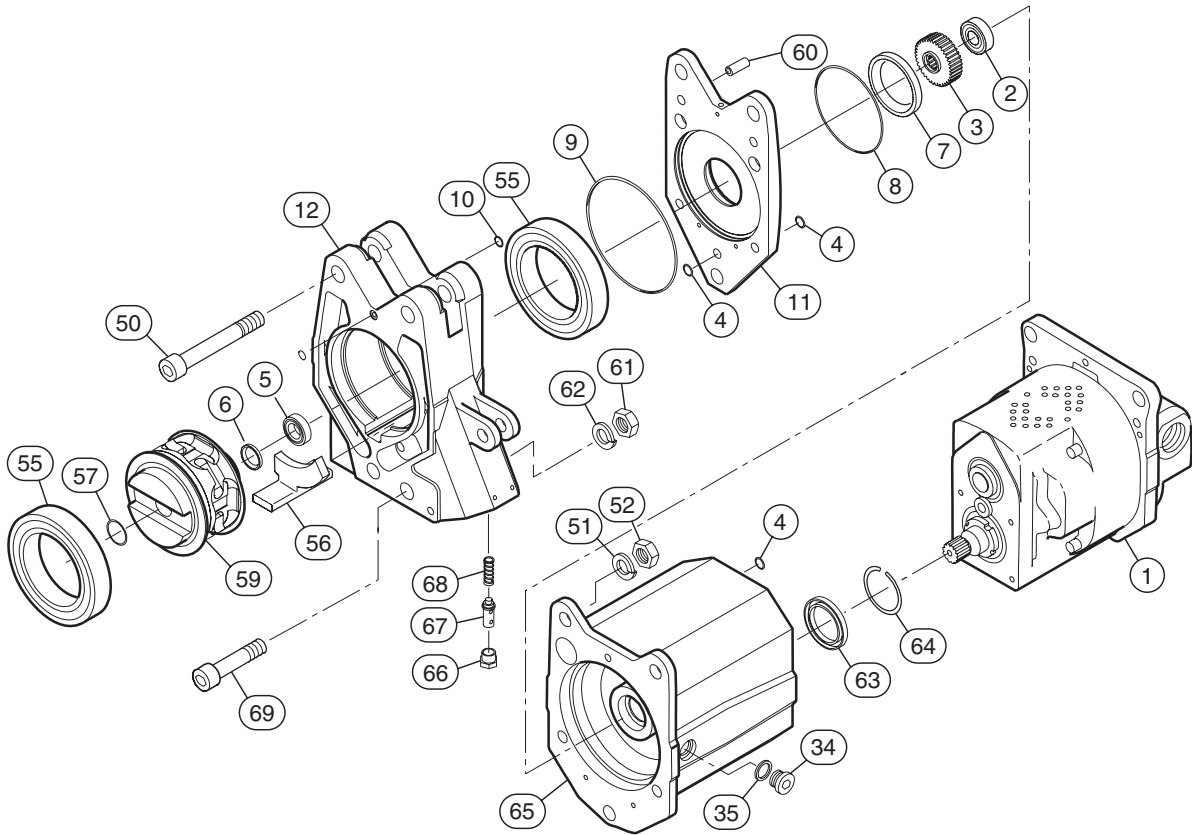
** Not Sold Separately

Item No.	Kit Description	Total Qty	Part Number
• 306	Brake Service Kit (Includes items 27, 28, 30 and 32-34)	1	74120522

•	Recommended spares for one hoist, 2 years of normal service.
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LCA060S, LCA120D & LCA125D POWER HEAD PARTS DRAWING AND PARTS LIST

6, 12 and 12.5 ton Hoist Capacities



(Dwg. MHP1968)

Item No.	Description of Part	Total Qty	Part Number	Item No.	Description of Part	Total Qty	Part Number
1	Motor	1	Refer to Motor Section	54	Ring Gear Support	1	95260152
2	Bearing	1	50100001	55	Bearing	2	50060018
3	Gear Wheel	1	94120410	56	Chain Guide	1	95260156
• 4	'O' Ring	3	58224929	• 57	'O' Ring	1	58220129
5	Bearing	1	50000002	59	Sprocket**	1	Order Item 307
• 6	Oil Seal	1	58021330	60	Dowel	3	95260105
• 7	Oil Seal	1	58006330	61	Nut	1	43005811
• 8	'O' Ring	1	58212829	62	Lockwasher	1	45201014
• 9	'O' Ring	1	58234929	• 63	Oil Seal	1	58020030
• 10	'O' Ring	2	58212529	64	Retainer Ring	1	47703035
11	Motor Flange	1	95260147	65	Motor Housing	1	94120405
12	Chain Guide Housing	1	95267145	66	Limit Switch Body**	1 Set	74240441
• 34	Plug	1	65119732	67	Limit Switch**		
• 35	Washer (copper)	1	58403431	68	Spring**		
50	Capscrew	3	41321606	69	Capscrew	1	41323906
	Capscrew (TD-20)		41333906		Capscrew (TD-20)		41334006
51	Lockwasher	4	45201020	*	Load Chain (Bulk)	Specify length (metres)	LC1645-G8ZP
52	Nut	4	43004011				

* Not Illustrated

** Not Sold Separately

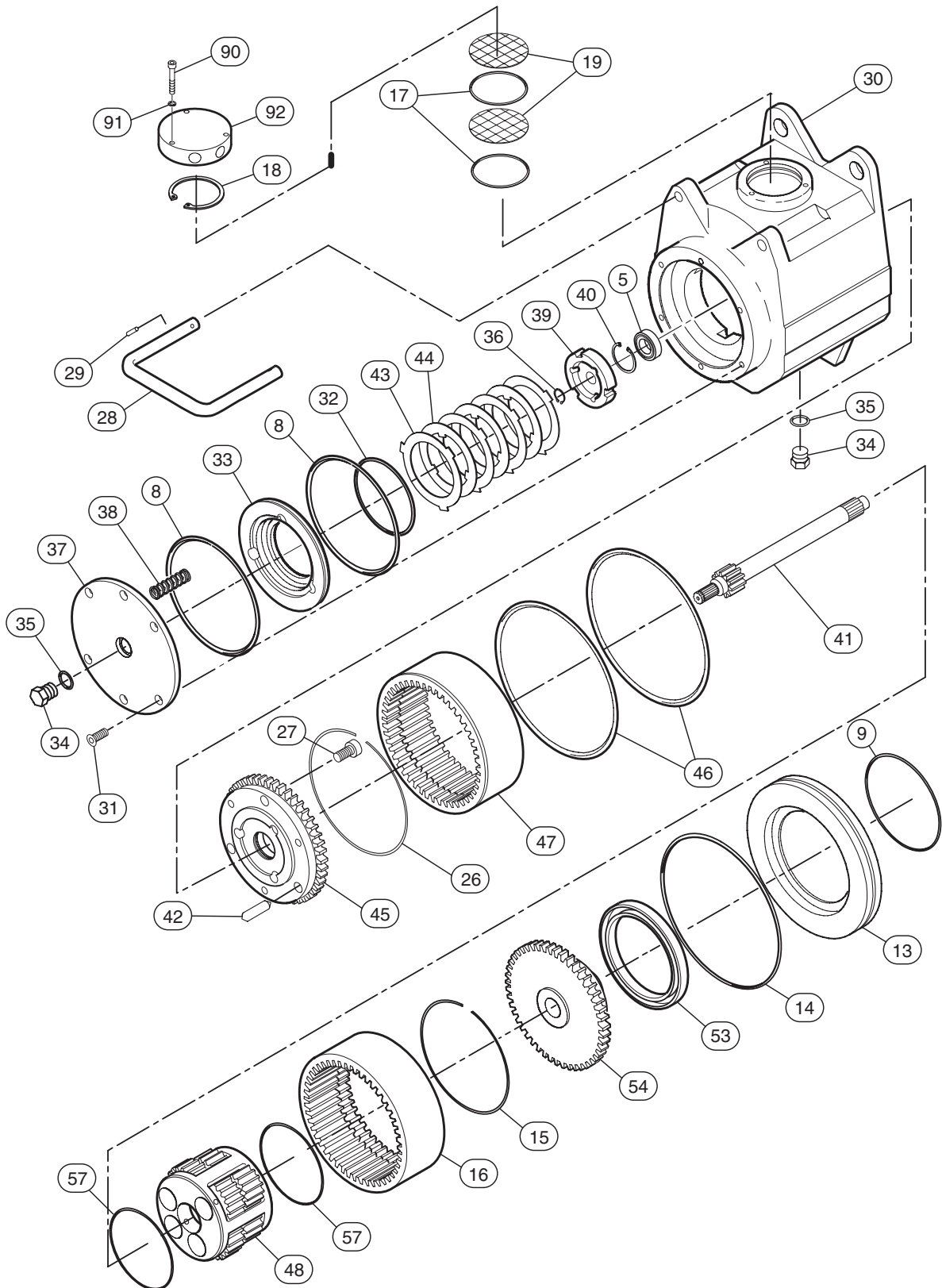
Item No.	Kit Description	Total Qty	Part Number
• 307	Sprocket Service Kit (Includes items 5, 6, 55, 56 and 59)	1	74120523

• Recommended spares for one hoist, 2 years of normal service.

SERVICE NOTES

LCA060S, LCA120D & LCA125D BRAKE AND REDUCTION GEAR PARTS DRAWING

6, 12 and 12.5 ton Hoist Capacities



(Dwg. MHP1969)

LCA060S, LCA120D & LCA125D BRAKE AND REDUCTION GEAR PARTS LIST

Item No.	Description of Part	Total Qty	Part Number	Item No.	Description of Part	Total Qty	Part Number
5	Bearing	1	50000002	36	Retainer Ring	1	47700015
• 8	'O' Ring	2	58212829	37	Brake Cover	1	94120406
• 9	'O' Ring	1	58234929	38	Spring**	8	Order Item 308
13	Gear Cover	1	95260148	39	Brake Sleeve	1	96310120
• 14	'O' Ring	1	58235029	40	Retainer Ring	1	47703032
15	Retainer Ring	1	47834832	41	Sun Gear	1	95260153
16	Ring Gear**	1	74120524	42	Pin	3	46002216
• 17	'O' Ring	2	58235729	43	Friction Disc**	4	Order Item 308
18	Retainer Ring	1	47703060	44	Steel Disc**	3	
19	Muffler	2	94120426	45	Ring Gear Support	1	95260149
26	Retainer Ring	1	47836832	• 46	'O' Ring	2	58235929
27	Capscrew	3	41321806	47	Ring Gear**	1	74120524
28	Handle	1	94120080	48	Planetary Assembly**	1	
29	Pin	2	46503420	• 53	Oil Seal	1	58008630
30	Gear Housing	1	95260146	54	Ring Gear Support	1	95260152
31	Screw	6	41104503	• 57	'O' Ring	2	58220129
• 32	'O' Ring	1	58230929	90	Capscrew	3	41322106
33	Brake Piston	1	96310093	91	Washer	3	45201005
• 34	Plug	4	65119732	• 92	Cap	1	94120447
• 35	Washer (copper)	4	58403431				

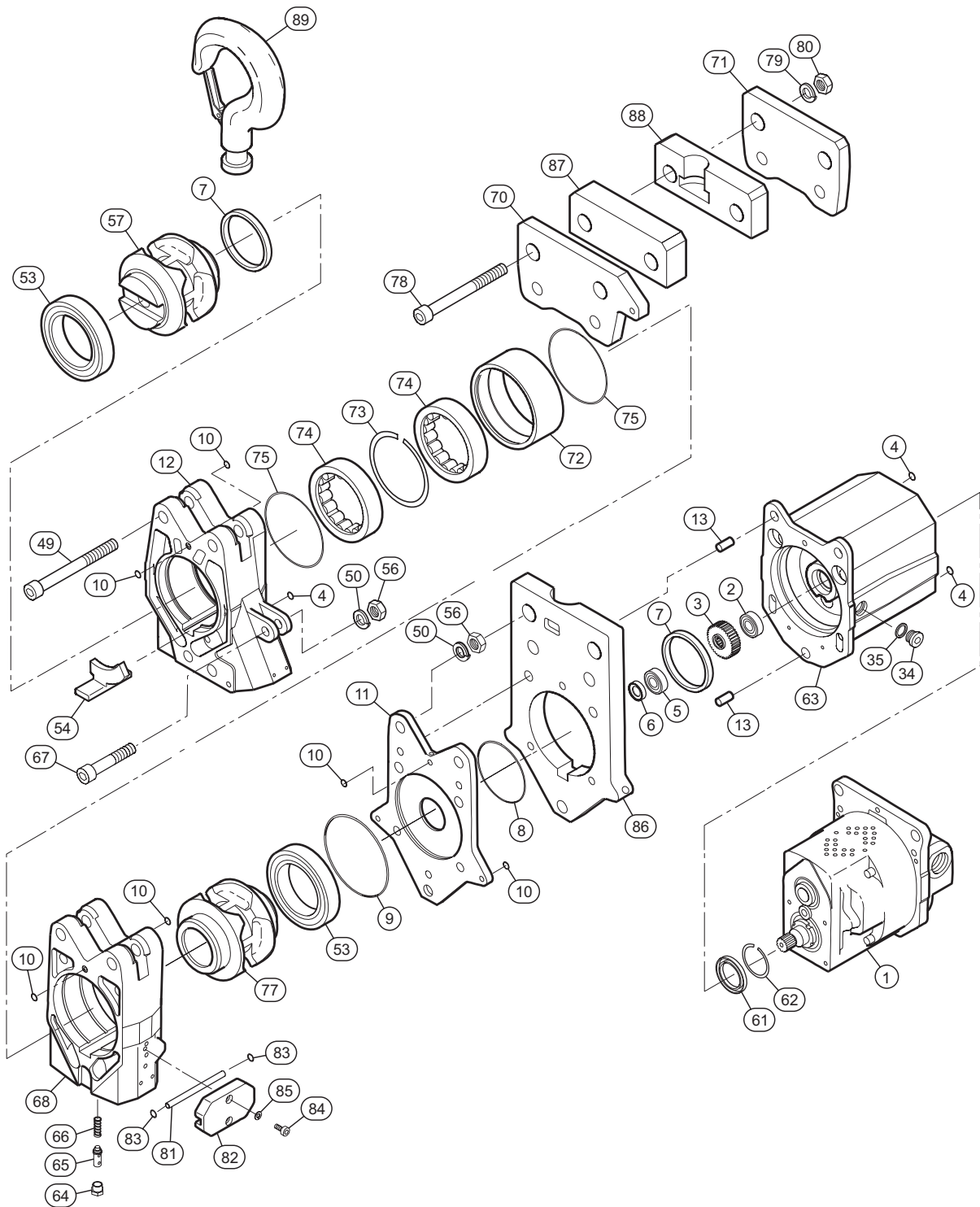
** Not Sold Separately

Item No.	Kit Description	Total Qty	Part Number
• 308	Brake Service Kit (Includes items 8, 31, 32, 38, 43 and 44)	1	74120522

•	Recommended spares for one hoist, 2 years of normal service.
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LCA180T AND LCA250Q POWER HEAD PARTS DRAWING

18 and 25 ton Hoist Capacities



(Dwg. MHP1885)

LCA180T AND LCA250Q POWER HEAD PARTS LIST

Item No.	Description of Part	Total Qty	Part Number	Item No.	Description of Part	Total Qty	Part Number
1	Motor	1	Refer to Motor Section	• 61	Oil Seal	1	58020030
2	Bearing	1	50100001	62	Retainer Ring	1	47703035
3	Gear Wheel	1	94120410	63	Motor Housing	1	94120405
• 4	'O' Ring	3	58224929	64	Limit Switch Body**	1 Set	74240441
• 5	Bearing	1	50000002	65	Limit Switch**		
• 6	Oil Seal	1	58021330	66	Spring**		
• 7	Oil Seal	2	58021630	67	Screw†	1	41323906
• 8	'O' Ring	1	58212829		Screw† (TD-20)		41333606
• 9	'O' Ring	1	58234929	68	Chain Guide Housing	1	95900048
• 10	'O' Ring	9	58212529	72	Eccentric Ring	1	95900067
11	Motor Flange	1	95900052	73	Retainer Ring	1	47703125
12	Chain Guide Housing	1	95267145	74	Bearing	2	51200014
• 34	Plug	4	65119732	• 75	Quad Ring	2	58236029
• 35	Washer (copper)	4	58403431				
49	Capscrew	3	41331006	77	Sprocket	1	95908054
	Capscrew (TD-20)		41333406				
50	Lockwasher	4 (3)	45201020	81	Tube	2	95900049
53	Bearing	2	50060018	82	Cover	2	95900050
53	Bearing	2	50060018	• 83	'O' Ring	4	58212229
54	Chain Guide	1	95260156	84	Screw	4	41321406
56	Nut	4 (3)	43004011	85	Lockwasher	4	45201006
57	Sprocket	1	95908053				

Top Hook

Item No.	Description of Part	Total Qty	Part Number	
			LCA180T	LCA250Q
70	Hook Support	1	95908059	
	Hook Support (TD-20)		95900169	
71	Hook Support	1	95908060	
	Hook Support (TD-20)		95900171	
78	Capscrew	2	41330806	
	Capscrew (TD-20)		41333506	
79	Lockwasher	2	45201024	
80	Nut	2	43006111	
86	Flange	1	95908056	95908051
	Flange (TD-20)		---	95900173
87	Hook Support	1	95908061	95908057
88	Hook Support	1	95908062	95908058
89	Hook, Standard	1	95968048	96238015
	Hook, Option "R"		95968062	96238169
90	Hook Latch Kit	1	95960075	96230146
*	Load Chain (Bulk)	Specify Length (in metres)	LC1645-G8ZP	

() Quantity Required for LCA180T Hoist

† Required for LCA250Q Hoist Only

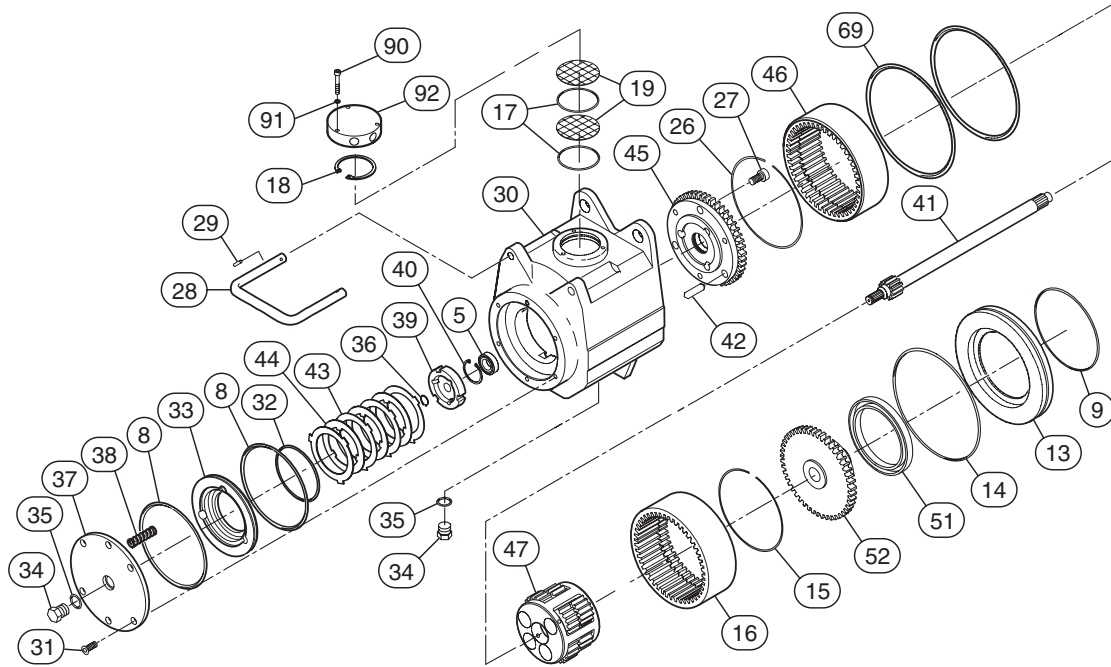
* Not Illustrated

** Not Sold Separately

• Recommended spares for one hoist, 2 years of normal service.

LCA180T AND LCA250Q BRAKE AND REDUCTION GEAR DRAWING AND PARTS LIST

18 and 25 ton Hoist Capacities



(Dwg. MHP1886)

Item No.	Description of Part	Total Qty	Part Number	Item No.	Description of Part	Total Qty	Part Number
5	Bearing	1	50000002	• 35	Washer (copper)	4	58403431
• 8	'O' Ring	2	58212829	36	Retainer Ring	1	47700015
• 9	'O' Ring	1	58234929	37	Brake Cover	1	94120406
13	Gear Cover	1	95260148	38	Spring**	8	Order Item 309
• 14	'O' Ring	1	58235029	39	Brake Sleeve	1	96310120
15	Retainer Ring	1	47834832	40	Retainer Ring	1	47703032
16	Ring Gear***	1	74120524	41	Input Shaft	1	95900055
• 17	'O' Ring	2	58235729	42	Pin	3	46002216
18	Retainer Ring	1	47703060	43	Friction Disc**	4	Order Item 309
19	Muffler	2	94120426	44	Steel Disc**	3	
26	Retainer Ring	1	47836832	45	Ring Gear Support	1	95260149
27	Capscrew	3	41321806	46	Ring Gear***	1	74120524
28	Handle	1	94120080	47	Planetary Assembly***	1	
29	Pin	2	46503420	• 51	Oil Seal	1	58008630
30	Gear Housing	1	95260146	52	Ring Gear Support	1	95260152
31	Screw	6	41104503	• 69	'O' Ring	2	58235929
• 32	'O' Ring	1	58230929	90	Capscrew	3	41322106
33	Brake Piston	1	96310093	91	Washer	3	45201005
• 34	Plug	4	65119732	92	Cap	1	92120447
• 35	Washer (copper)	4	58403431				

** Not Sold Separately

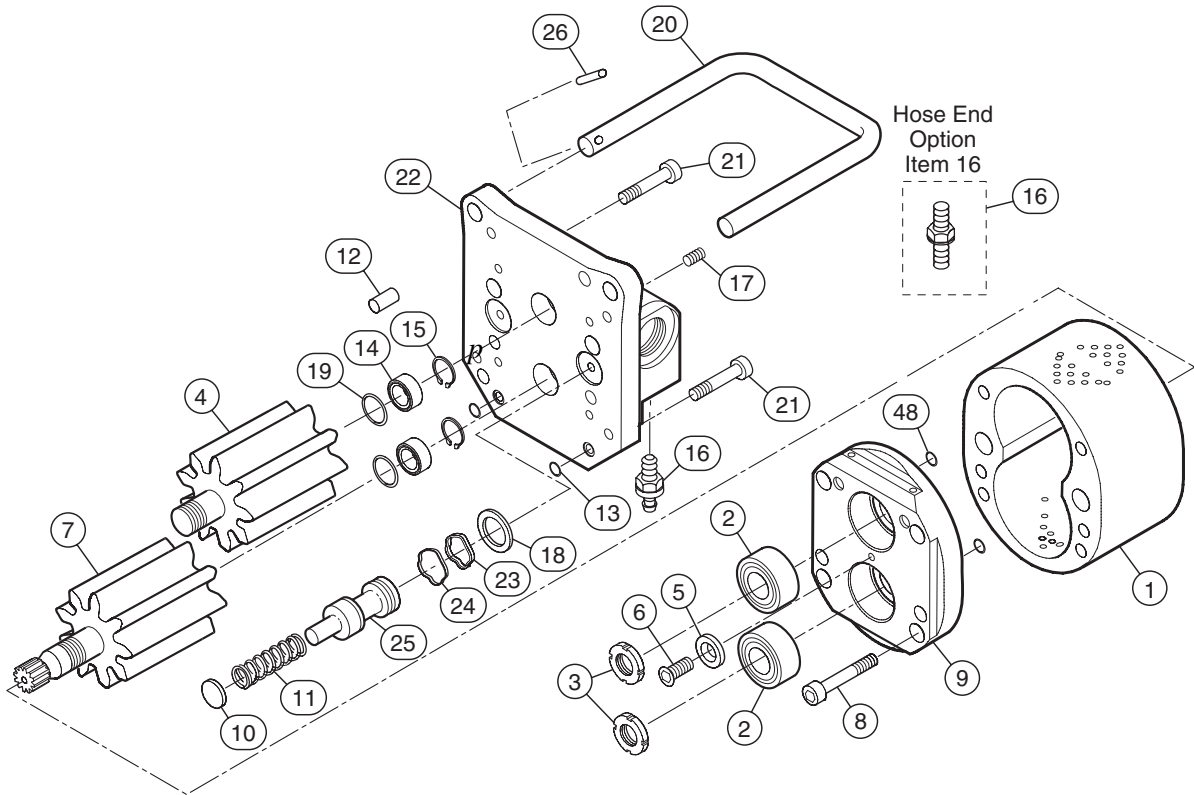
*** Items 16, 46 and 47 are sold as a kit.

Item No.	Kit Description	Total Qty	Part Number
• 309	Brake Service Kit (Includes items 8, 31, 32, 38, 43, 44 and 69)	1	74120522

• Recommended spares for one hoist, 2 years of normal service.

2 HP MOTOR ASSEMBLY PARTS DRAWING AND PARTS LIST

2HP Motor (without Overload or Emergency Stop) for use with Hoist Models LCA015S and LCA030D



(Dwg. MHP1812)

Item No.	Description of Part	Total Qty	Part Number	Item No.	Description of Part	Total Qty	Part Number
300	Motor Assembly	1	74240129	15	Retainer Ring	2	47801339
1	Motor Housing	1	**	16	Fitting, Hose	3	61652632
2	Bearing	2	50600002		Adapter (option)	3	68237528
3	Locknut	2	57000002	17	Setscrew	1	42007307
4	Idle Gear**	1	Order Item 310	18	Stop	2	96090042
5	Washer	1	96090032	• 19	'O' Ring	2	53205029
6	Capscrew	1	41326306	20	Handle	1	94240055
7	Drive Gear**	1	Order Item 310	21	Capscrew	4	41312206
8	Capscrew	4	41331306	22	Motor Cover	1	94240318
9	Motor Flange	1	96090008	• 23	Quad Ring	2	58228929
10	Rear Stop	2	94120030	• 24	Quad Ring	2	58231229
11	Spring	2	94240224	25	Slide Valve	2	94240212
12	Pin	6	46000416	26	Pin	2	46507220
• 13	'O' Ring	2	58212229	• 48	'O' Ring	2	58222329
14	Needle Bearing	2	56461912				

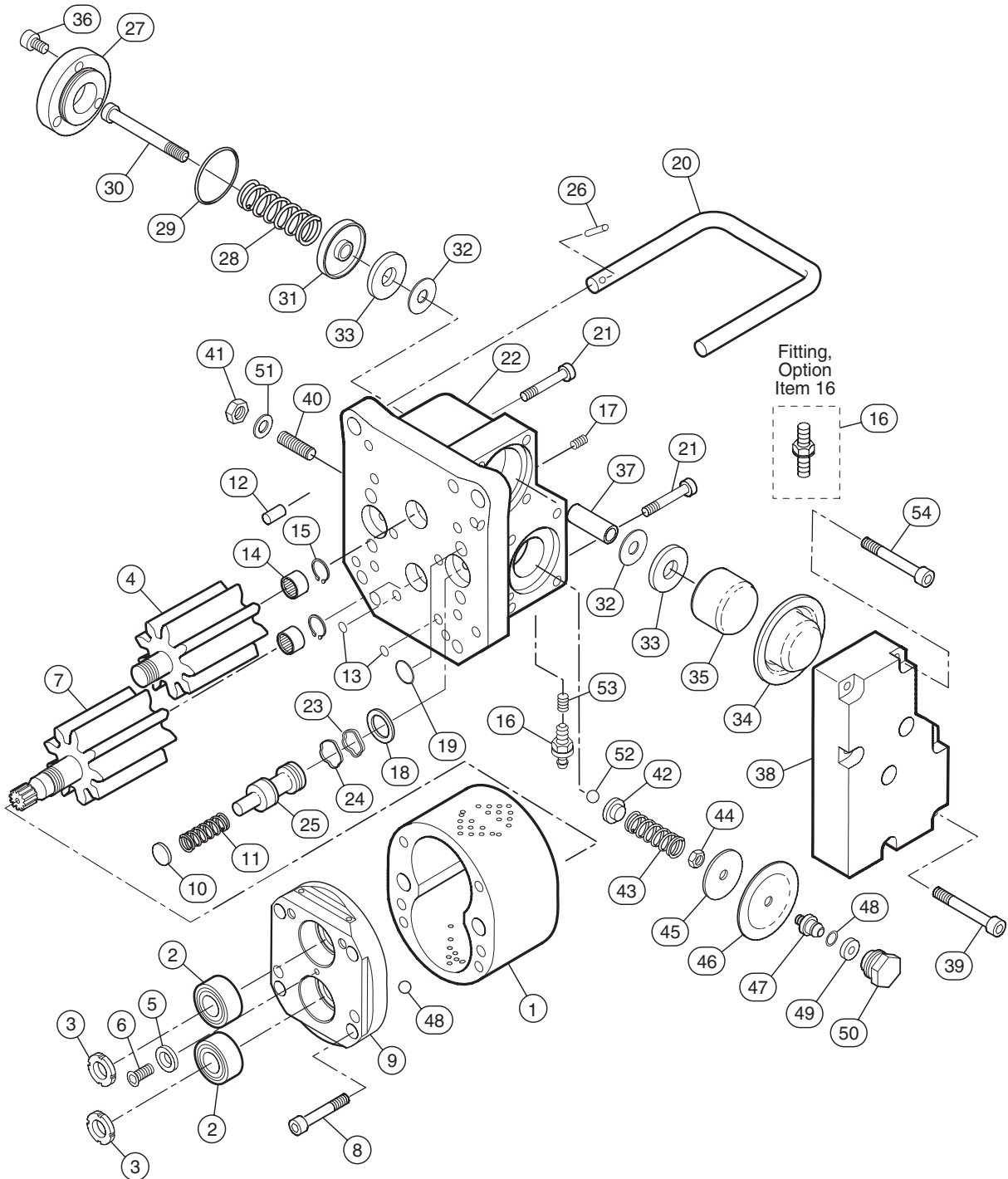
** Not Sold Separately

Item No.	Kit Description	Total Qty	Part Number
• 310	Motor Service Kit (Includes items 2-7, 10, 11, 13-15, 18, 19, 23, 24 and 48)	1	74240440

• Recommended spares for one hoist, 2 years of normal service.

2 HP SU MOTOR ASSEMBLY PARTS DRAWING

2HP Motor (with Overload and Emergency Stop) for use with Hoist Models LCA015S and LCA030D



(Dwg. MHP1970)

2 HP SU MOTOR ASSEMBLY PARTS LIST

Item No.	Description of Part	Total Qty	Part Number	Item No.	Description of Part	Total Qty	Part Number
302	Motor Assembly	1	74240130	27	Cover	1	96170081
1	Motor Housing	1	**	28	Spring	1	69158732
2	Bearing	2	50600002	• 29	'O' Ring	1	58214829
3	Locknut	2	57000002	30	Capscrew	1	41326106
4	Idle Gear**	1	Order Item 310	31	Valve Cone	1	96170053
5	Washer	1	96090032	32	Washer	2	45700005
6	Capscrew	1	41326306	33	Seal Washer	2	96170056
7	Drive Gear**	1	Order Item 310	• 34	Diaphragm	1	67716341
8	Capscrew	4	41300806	35	Valve Cone	1	96170054
9	Motor Flange	1	96090008	36	Capscrew	3	41326306
10	Rear Stop	2	94120030	37	Spacer	1	96170055
11	Spring	2	94240224	38	Cover	1	94240312
12	Pin	6	46000416	39	Capscrew	6	41322306
• 13	'O' Ring	2	58212229	40	Screw	1	42007107
14	Needle Bearing	2	56461912	41	Locknut	1	43707611
15	Retainer Ring	2	47801339	42	Spring Receiver	1	96360023
16	Fitting, Hose End	5	61652632	43	Spring	1	69159432
	Adapter (option)	5	68237528	44	Nut	1	43001111
17	Set Screw	1	42007307	45	Washer	1	96360019
18	Stop	2	96090042	• 46	Diaphragm	1	96360020
• 19	'O Ring'	2	58205029	47	Valve Cone	1	96360017
20	Handle	1	94240317	• 48	'O' Ring	1	58222329
21	Capscrew	4	41322206	49	Seal Washer	1	96360021
22	Motor Cover	1	94240320	50	Plug	1	96090269
• 23	Quad Ring	2	58228929	51	Seal Ring	1	58404531
• 24	Quad Ring	2	58231229	52	Ball	1	69400125
25	Slide Valve	2	94240212	53	Nozzle	1	96170071
26	Pin	2	46507220	54	Capscrew	2	41321406

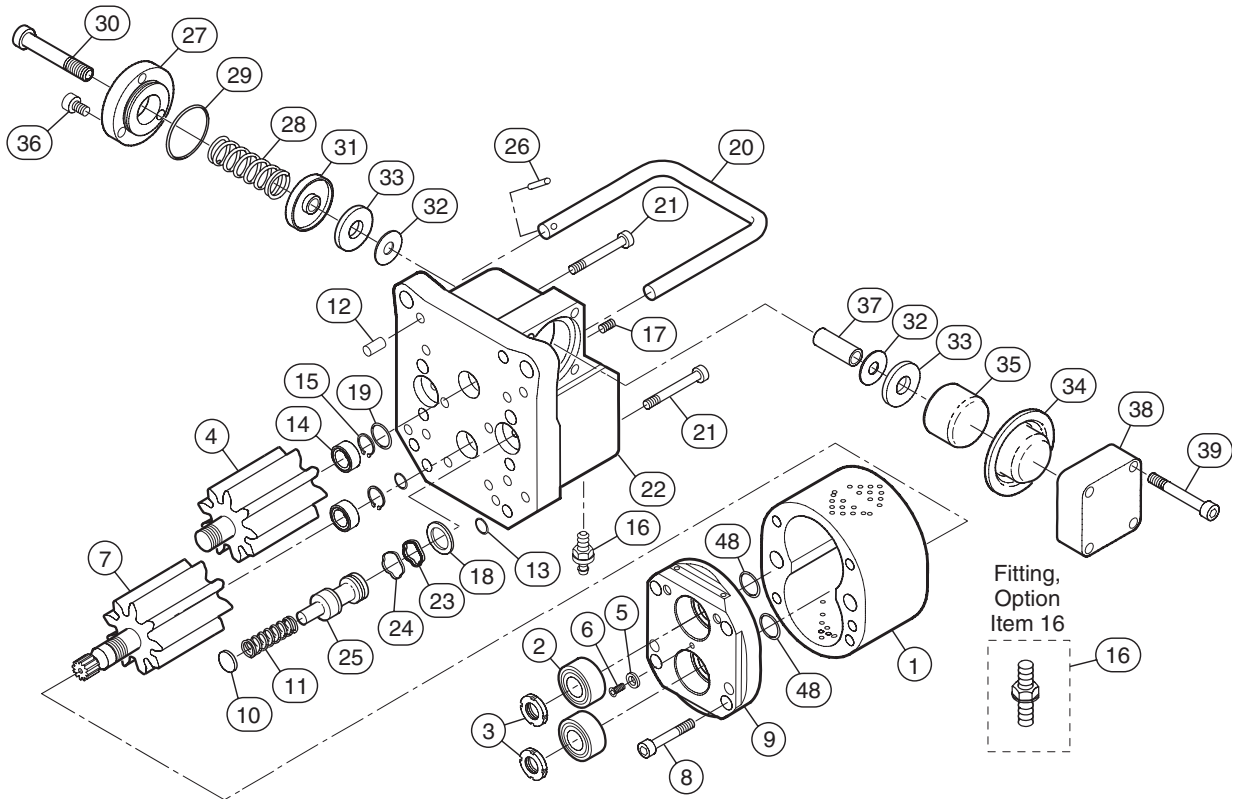
** Not Sold Separately

Item No.	Kit Description	Total Qty	Part Number
• 310	Motor Service Kit (Includes items 2-7, 10, 11, 13-15, 18, 19, 23, 24 and 48)	1	74240440

• Recommended spares for one hoist, 2 years of normal service.

2 HP U MOTOR ASSEMBLY PARTS DRAWING AND PARTS LIST

2 HP Motor (with Emergency Stop only) for use with Hoist Models LCA015S and LCA030D



(Dwg. MHP1814)

Item No.	Description of Part	Total Qty	Part Number	Item No.	Description of Part	Total Qty	Part Number
306	Motor Assembly	1	74240137	20	Handle	1	94240317
1	Motor Housing	1	**	21	Capscrew	4	41322206
2	Bearing	2	50600002	22	Motor Cover	1	94240321
3	Locknut	2	57000002	• 23	Quad Ring	2	58228929
4	Idle Gear**	1	Order Item 310 †	• 24	Quad Ring	2	58231229
5	Washer	1	96090032	25	Slide Valve	2	94240212
6	Screw	1	41326306	26	Pin	2	46507220
7	Drive Gear**	1	Order Item 310 †	27	Cover	1	96170081
8	Capscrew	4	41331306	28	Spring	1	69158732
9	Motor Flange	1	96090008	• 29	'O' Ring	1	58214829
10	Rear Stop	2	94120030	30	Capscrew	1	41326106
11	Spring	2	94240224	31	Valve Cone	1	96170053
12	Pin	6	46000416	32	Washer	2	45700005
• 13	'O' Ring	2	58212229	33	Seal Washer	2	96170056
14	Needle Bearing	2	56461912	• 34	Diaphragm	1	67716341
15	Retainer Ring	2	47801339	35	Valve Cone	1	96170054
16	Fitting, Hose End	5	61652632	36	Capscrew	3	41326306
	Adapter (option)	5	68237528	37	Spacer	1	96170055
17	Set Screw	1	42007307	38	Cover	1	94120388
18	Stop	2	96090042	39	Capscrew	4	41322306
• 19	'O' Ring	2	58205029	• 48	'O' Ring	2	58222329

** Not Sold Separately

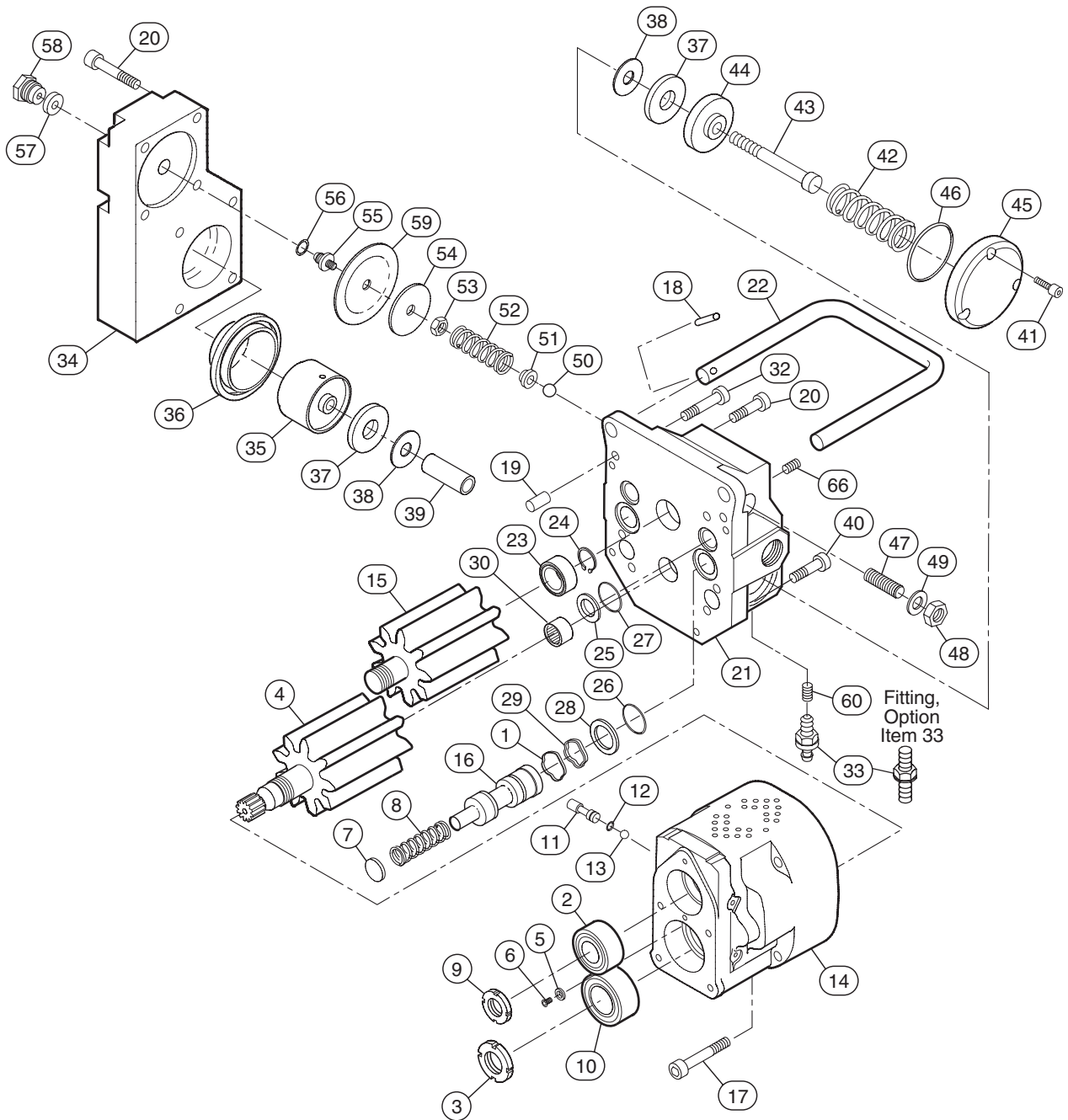
† Refer to page 43 for Motor Service Kit part number

• Recommended spares for one hoist, 2 years of normal service.

SERVICE NOTES

4 HP SU MOTOR ASSEMBLY PARTS DRAWING

4 HP SU Motor (with Overload and E-Stop) for use with Hoist Models LCA030S, LCA060D, LCA060S, LCA120D, LCA125D, LCA180T and LCA250Q



(Dwg. MHP1971)

4 HP SU MOTOR ASSEMBLY PARTS LIST

Item No.	Description of Part	Total Qty	Part Number	Item No.	Description of Part	Total Qty	Part Number
308	Motor Assembly	1	71420115	32	Capscrew	4	41322206
• 1	Quad Ring	2	58232429	33	Fitting, Hose End	5	61652632
2	Bearing	1	50600004		Adapter (option)	5	68237528
3	Locknut	1	57000004	34	Cover	1	94120351
4	Drive Gear**	1	Order Item 311	35	Valve Cone	1	96170054
5	Washer	1	96310054	• 36	Diaphragm	1	67716341
6	Screw	1	41103403	• 37	Seal	2	96170056
7	Rear Stop	2	94120030	38	Washer	2	45700005
8	Spring	2	94120289	39	Spacer	1	96170055
9	Locknut	1	57000003	40	Capscrew	1	41322606
10	Bearing	1	50600003	41	Capscrew	3	41326306
11	Shuttle Stop	1	96090223	42	Spring	1	69158732
• 12	'O' Ring	1	58212229	43	Capscrew	1	41326106
13	Ball	1	69401625	44	Valve Cone	1	96170053
14	Motor Housing	1	**	45	Cover	1	96170081
15	Idle Gear**	1	Order Item 311	• 46	'O' Ring	1	58214829
16	Slide Valve	2	96200006	47	Screw	1	42007107
17	Capscrew	4	41321506	48	Locknut	1	43707611
18	Pin	2	46503420	• 49	Seal Ring	1	58404531
19	Pin	4	46000416	50	Ball	1	69400125
20	Capscrew	9	41322306	51	Spring Receiver	1	96360023
21	Motor Cover	1	94120350	52	Spring	1	69159432
22	Handle	1	94120080	53	Nut	1	43001111
23	Bearing	1	56462813	54	Washer	1	96360019
24	Retainer Ring	1	47836732	55	Valve Cone	1	96360017
25	Exhaust Washer	2	96200045	• 56	'O' Ring	1	58222329
• 26	'O' Ring	1	58226029	• 57	Seal	1	96360021
• 27	'O' Ring	2	58225929	58	Plug	1	96090269
28	Rear Stop	2	96200069	• 59	Diaphragm	1	96360020
• 29	Quad Ring	2	58229029	60	Nozzle	1	96170071
30	Bearing	1	56492213	66	Set Screw	1	42008607

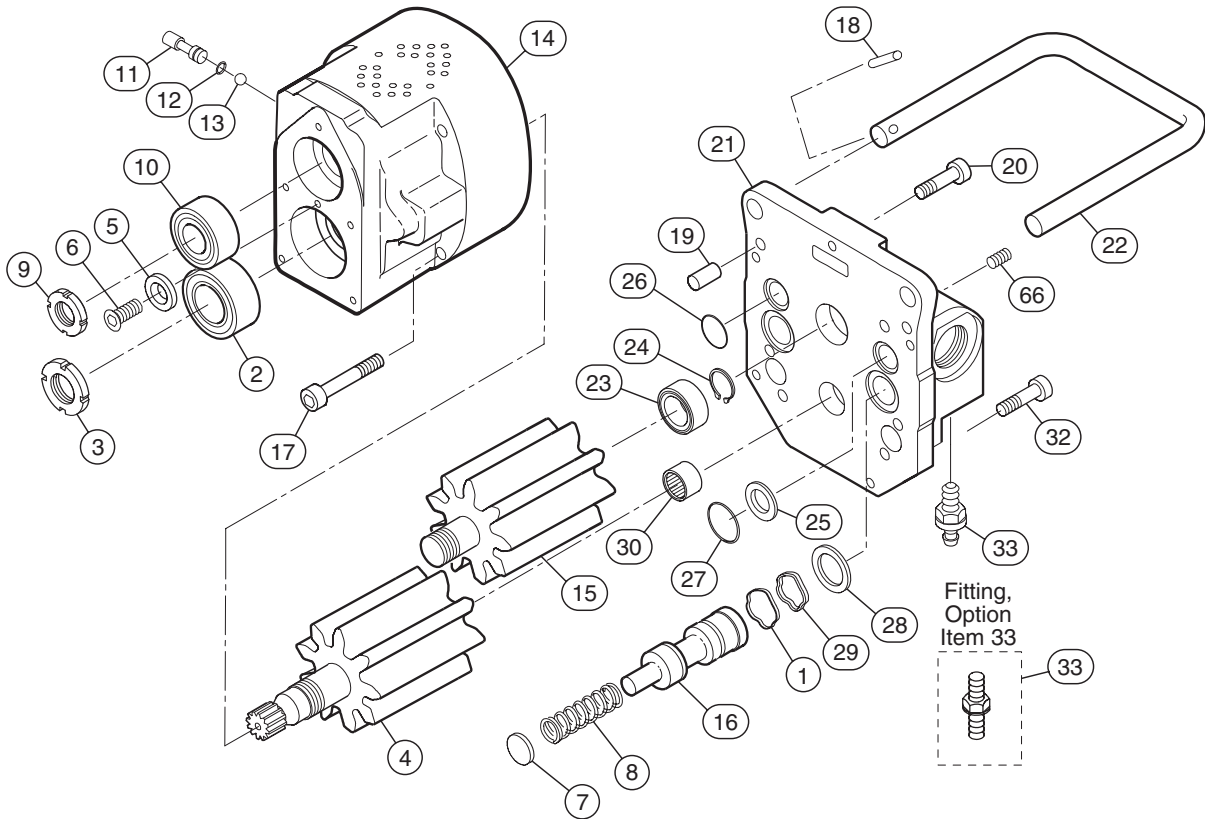
** Not Sold Separately

Item No.	Kit Description	Total Qty	Part Number
• 311	Motor Service Kit (Includes items 1-13, 15, 17, 20, 23-30 and 32)	1	74120525

• Recommended spares for one hoist, 2 years of normal service.

4 HP MOTOR ASSEMBLY PARTS DRAWING AND PARTS LIST

4 HP Motor (without Overload or E-Stop) for use with Hoist Models LCA030S, LCA060D, LCA060S, LCA120D, LCA125D, LCA180T and LCA250Q



(Dwg. MHP1422)

Item No.	Description of Part	Total Qty	Part Number	Item No.	Description of Part	Total Qty	Part Number
310	Motor Assembly	1	71420124	18	Pin	2	46503420
• 1	Quad Ring	2	58232429	19	Pin	4	46000416
2	Bearing	1	50600004	20	Capscrew	1	41322306
3	Locknut	1	57000004	21	Motor Cover	1	94120379
4	Drive Gear**	1	Order Item 311 †	22	Handle	1	94120080
5	Washer	1	96310054	23	Bearing and Sleeve	1	56462813
6	Screw	1	41103403	24	Retainer Ring	1	47836732
7	Rear Stop	2	94120030	25	Exhaust Washer	1	96200045
8	Spring	2	94120289	• 26	'O' Ring	1	58226029
9	Locknut	1	57000003	• 27	'O' Ring	1	58225929
10	Bearing	1	50600003	28	Rear Stop	2	96200069
11	Shuttle Stop	1	96090223	• 29	Quad Ring	2	58229029
• 12	'O' Ring	1	58212229	30	Bearing	1	56492213
13	Ball	1	69401625	32	Capscrew	4	41322206
14	Motor Housing	1	**	33	Fitting, Hose End	3	61652632
15	Idle Gear**	1	Order Item 311 †		Adapter (option)	3	68237528
16	Slide Valve	2	96200006	66	Setscrew	1	42007307
17	Capscrew	4	41321506				

** Not Sold Separately

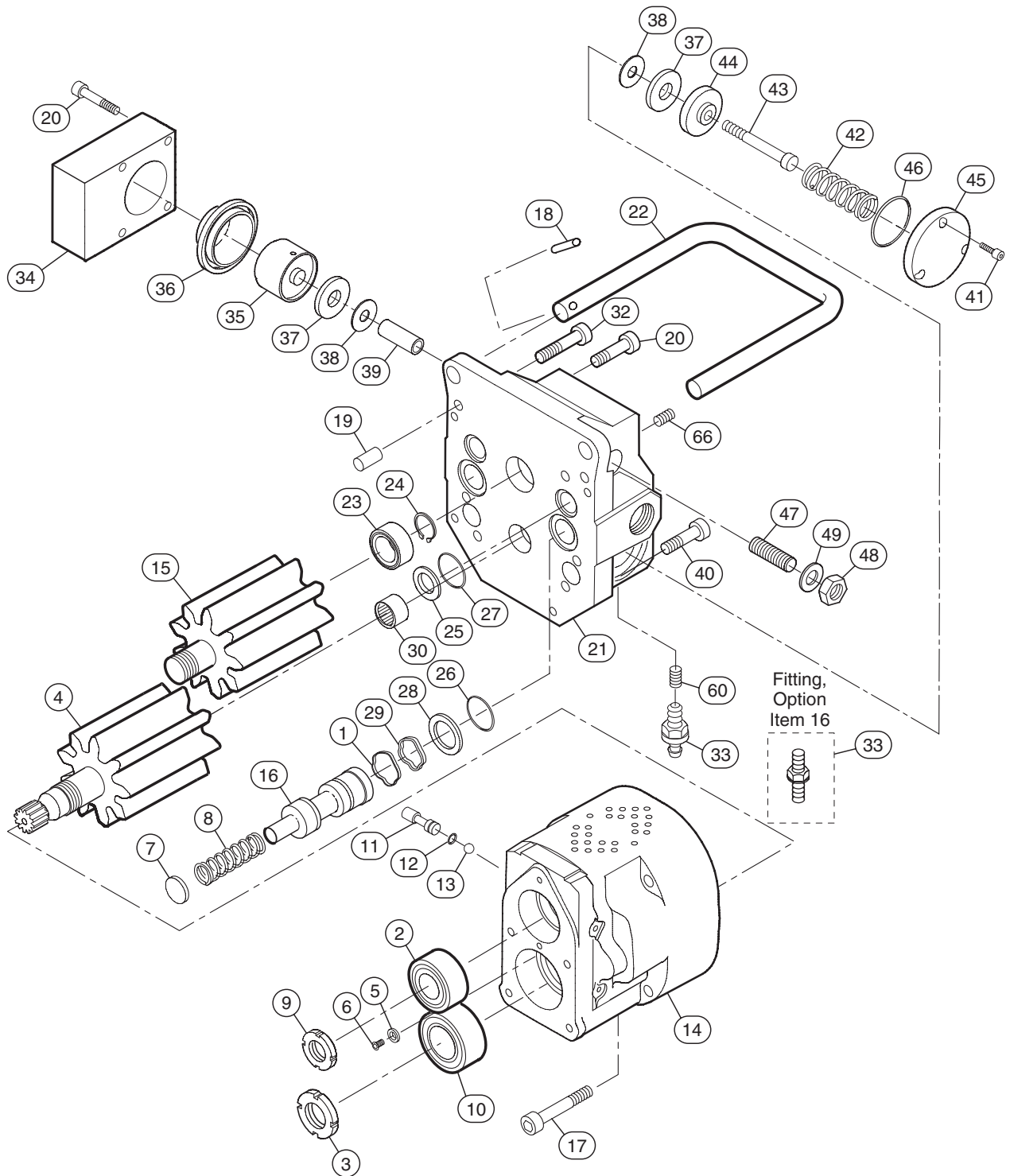
† Refer to page 49 for Motor Service Kit part number

• Recommended spares for one hoist, 2 years of normal service.

SERVICE NOTES

4 HP U MOTOR ASSEMBLY PARTS DRAWING

4 HP Motor (with Emergency Stop only) for use with Hoist Models LCA030S, LCA060D, LCA060S, LCA120D, LCA125D, LCA180T and LCA250Q



(Dwg. MHP1421)

4HP U MOTOR ASSEMBLY PARTS LIST

Item No.	Description of Part	Total Qty	Part Number	Item No.	Description of Part	Total Qty	Part Number
312	Motor Assembly	1	74120139	• 26	'O' Ring	1	58226029
• 1	Quad Ring	2	58232429	• 27	'O' Ring	2	58225929
2	Bearing	1	50600004	28	Rear Stop	2	96200069
3	Locknut	1	57000004	• 29	Quad Ring	2	58229029
4	Drive Gear**	1	Order Item 311 †	30	Bearing	1	56492213
5	Washer	1	96310054	32	Capscrew	3	41322206
6	Screw	1	41103403	33	Fitting	5	61652632
7	Rear Stop	2	94120030		Adapter (option)	5	68237528
8	Spring	2	94120289	34	Cover	1	94120388
9	Locknut	1	57000003	35	Valve Cone	1	96170054
10	Bearing	1	50600003	• 36	Diaphragm	1	67716341
11	Shuttle Stop	1	96090223	• 37	Seal	2	96170056
• 12	'O' Ring	1	58212229	38	Washer	2	45700005
13	Ball	1	69401625	39	Spacer	1	96170055
14	Motor Housing	1	**	40	Capscrew	1	41322606
15	Idle Gear**	1	Order Item 311 †	41	Capscrew	3	41326306
16	Slide Valve	2	96200006	42	Spring	1	69158732
17	Capscrew	4	41321506	43	Capscrew	1	41326106
18	Pin	2	46503420	44	Valve Cone	1	96170053
19	Pin	4	46000416	45	Cover	1	96170081
20	Capscrew	5	41322306	• 46	'O' Ring	1	58214829
21	Motor Cover	1	94120387	47	Screw	1	42007107
22	Handle	1	94120080	48	Locknut	1	43707611
23	Bearing	1	56462813	• 49	Seal Ring	1	58404531
24	Retainer Ring	1	47836732	60	Nozzle	1	96170071
25	Exhaust Washer	2	96200045	66	Setscrew	1	42008607

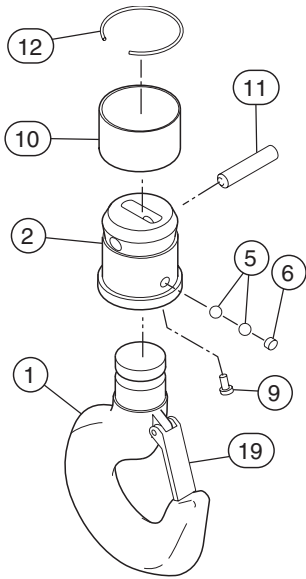
** Not Sold Separately

† Refer to page 49 for Motor Service Kit part number

• Recommended spares for one hoist, 2 years of normal service.

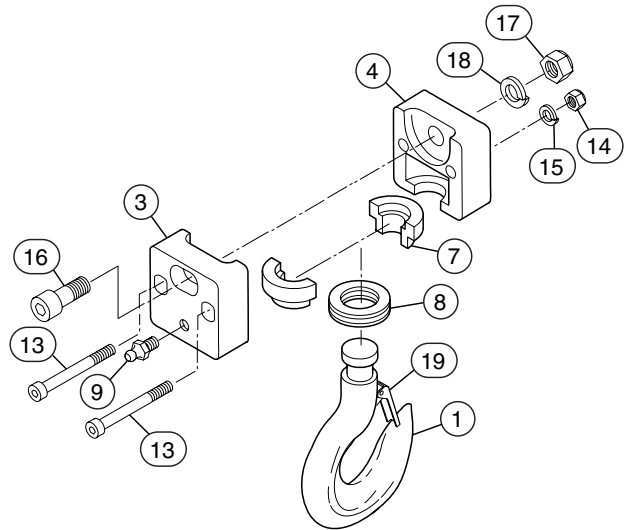
SINGLE AND DOUBLE FALL BOTTOM HOOK ASSEMBLY PARTS DRAWINGS

Single Fall 1.5 ton Hoist



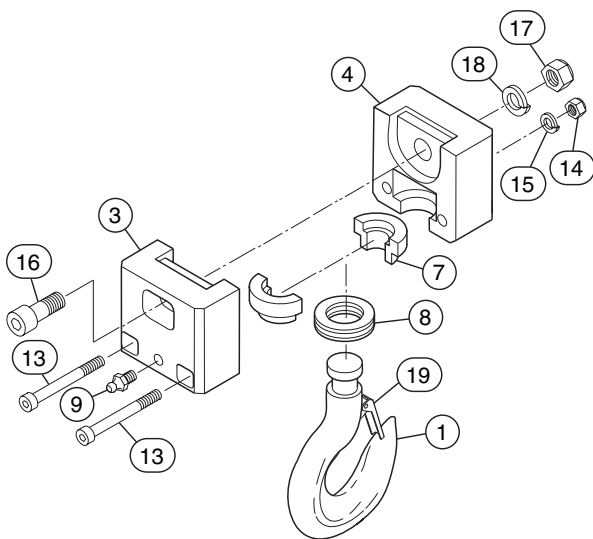
(Dwg. MHP1972)

Single Fall 3 ton Hoists



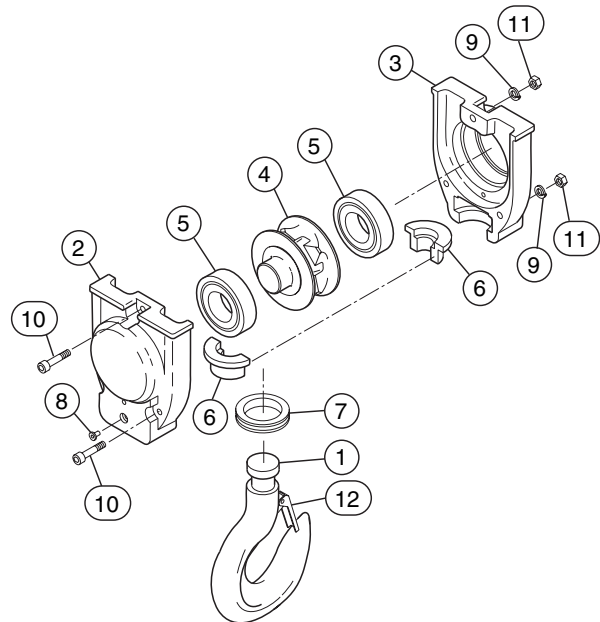
(Dwg. MHP2063)

Single Fall 6 ton Hoist



(Dwg. MHP2064)

Double Fall 3, 6, 12 and 12.5 ton Hoists



(Dwg. MHP1981)

SINGLE AND DOUBLE FALL BOTTOM HOOK ASSEMBLY PARTS LIST

Single Fall Hoists

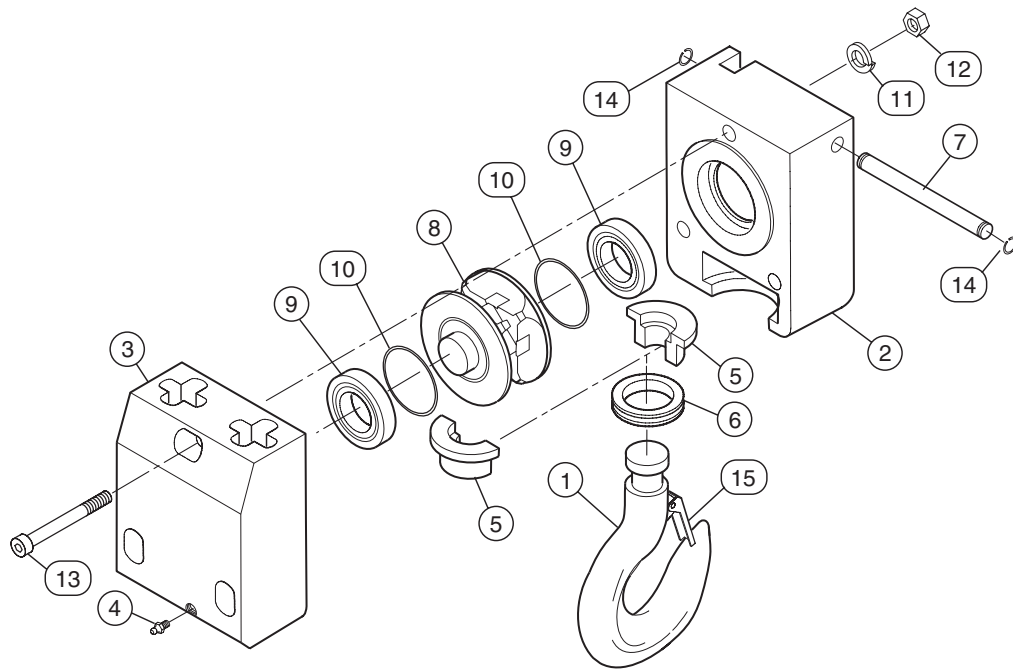
Item No.	Description of Part	Total Qty	Part Number					
			1.5 ton		3 ton		6 ton	
			Standard	Option 'R'	Standard	Option 'R'	Standard	Option 'R'
400	Bottom Hook Assembly	1	74240110	74240112	74120144	74120746	75260100	75260102
1	Hook	1	Order Item 400		94248357	94240296	94128459	94128402
2	Hook Block	1	Order Item 400		---			
3	Bottom Block Flange	1	---		94128394	94128401	95260138	95268144
4	Bottom Block Flange	1	---		94128393	94128400	95260139	95268143
5	Ball	11	69401125		---			
6	Plug	1	96090060		---			
7	Ring, 2-piece	1	---		94247291		94127398	
8	Thrust Bearing	1	---		54000006		54700007	
9	Grease Fitting	1	67102627		67102627			
10	Ring	1	96090025	96090146	---			
11	Pin	1	46001916		---			
12	Retainer Wire	1	96090148		---			
13	Capscrew	2	---		41326206		41330006	
14	Nut	2	---		75589M		43006911	
15	Lockwasher	2	---		---		45201010	
16	Capscrew	1	---		41309006		95260037	
17	Nut	1	---		75582M		43004011	
18	Lockwasher	1	---		---		45201020	
19	Hook Latch Kit	1	94240364	---	94240365		94120460	

Double Fall Hoists

Item No.	Description of Part	Total Qty	Part Number						
			3 ton		6 ton		12 ton		12.5 ton
			Standard	Option 'R'	Standard	Option 'R'	Standard	Option 'R'	TD-20
402	Bottom Hook Assembly	1	74240111	74240113	74120145	74120185	75260101	75260120	35260312
1	Hook	1	94248357	94240296	94128459	94128402	96238234	96238168	95268263
2	Half Hook Block	1	94240289	94240297	94120397	94127404	95260136	95267142	65260314
3	Half Hook Block	1	94240288	94240298	94120396	94127403	95260137	95267141	95260316
4	Sprocket Wheel	1	94240056	94240263	94120113	94128328	95268006	95268104	95268006
5	Bearing	2	50250005		50250006		50250011		50250011
6	Ring, 2-piece	1	94247291		94127398		96237014		96230373
7	Thrust Bearing	1	54000006		54700007		54700013		54700013
8	Grease Fitting	1	67102627		67100827			67100827	
9	Lockwasher	3	45201008		45201012			45201012	
10	Capscrew	3	41326706		41324406		41310306		41310306
11	Nut	3	43003511		43003611		---		---
12	Hook Latch Kit	1	94240365		94120460		96230236		96230236

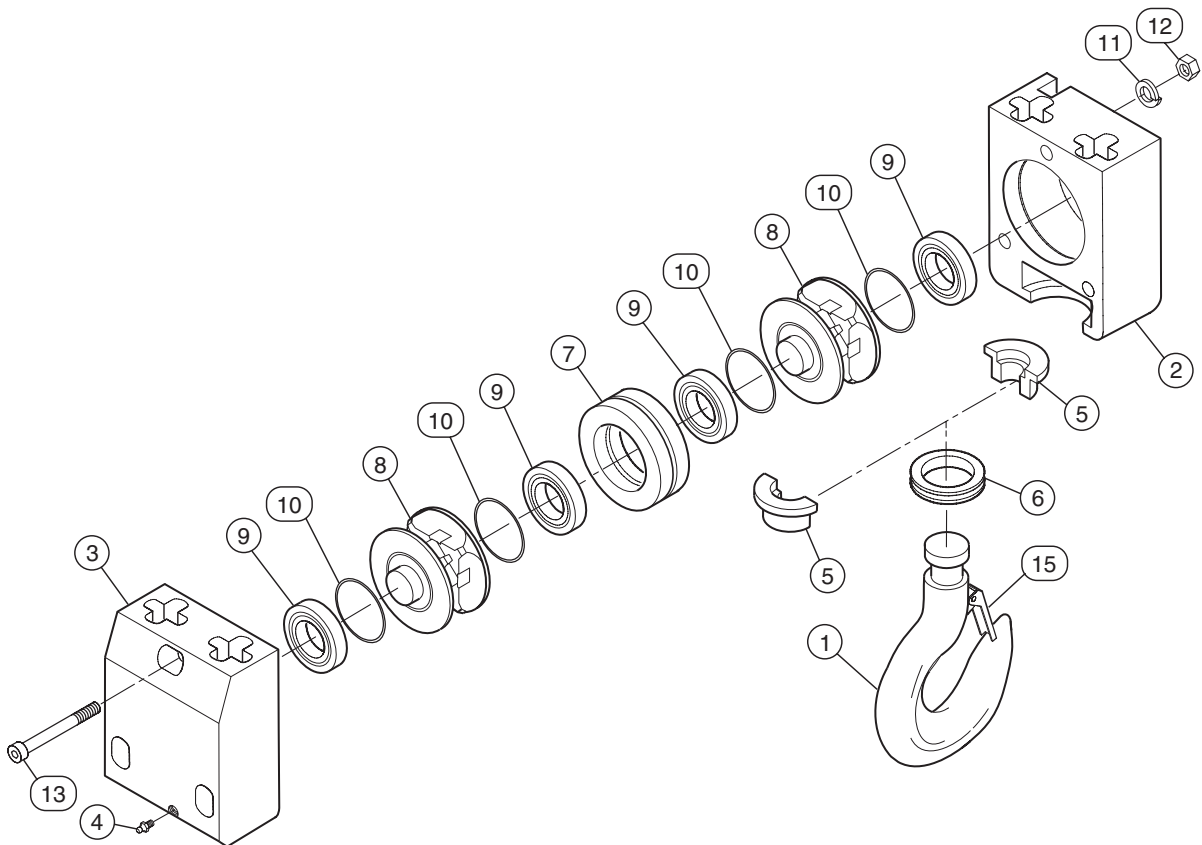
TRIPLE AND QUADRUPLE FALL BOTTOM HOOK PARTS DRAWINGS

Triple Fall 18 ton Hoist



(Dwg. MHP1973)

Quadruple Fall 25 ton Hoist



(Dwg. MHP1982)

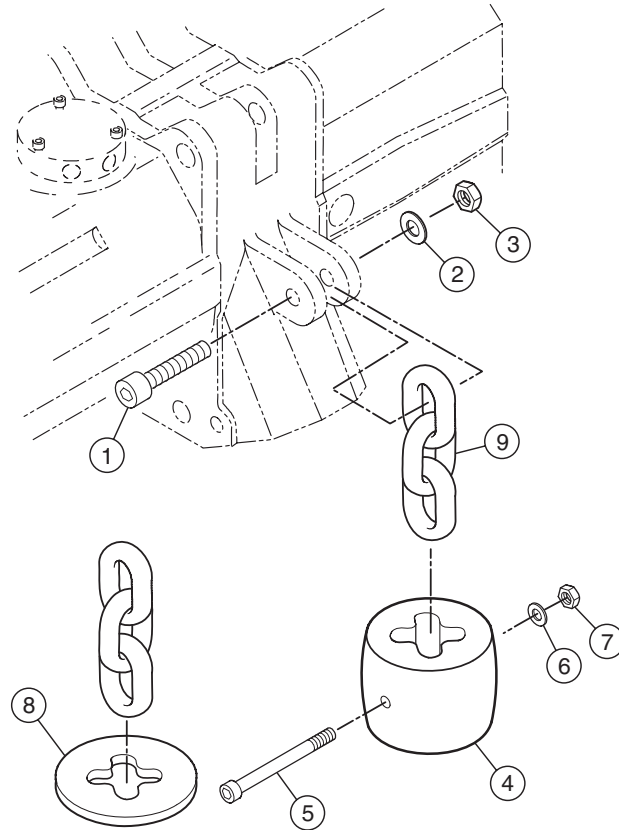
TRIPLE AND QUADRUPLE FALL BOTTOM HOOK PARTS LIST

Item No.	Description of Part	Total Qty	Part Number				
			18 ton		25 ton		
			Standard	Option 'R'	Standard	Option 'R'	Option TD-20
406	Bottom Hook Assembly	1	75900009	75900011	75900008	75900010	35960176
1	Hook	1	95968135	95968144	96238233	96238169	9623830
2	Half Hook Block	1	95907073	95907079	95907071	95907076	95900129
3	Half Hook Block	1	95907072	95907078	95907070	95907075	95900130
4	Grease Fitting	1	67100827				
5	Ring, 2-piece	1	95967060		96237026		96230337
6	Thrust Bearing	1	54700018				
7	Anchor Pin	1	95907074		---		
	Center Ring		---		95900068		
8	Sprocket Wheel	1(2)	95908069	95908077	95908069	95908077	95908069
9	Roller Bearing	2(4)	51200009				
• 10	'O' Ring	2(4)	58232329				
11	Lockwasher	3	45201020				
12	Nut	3	43004011				
13	Capscrew	3	41331206		41331106		
14	Retainer Ring	2	47713020		---		
15	Hook Latch Kit	1	95960136		96230235		

() Quantities for 25 ton hoists

• Recommended spares for one hoist, 2 years of normal service.

BOTTOM HOOK ACCESSORIES PARTS DRAWING AND PARTS LIST

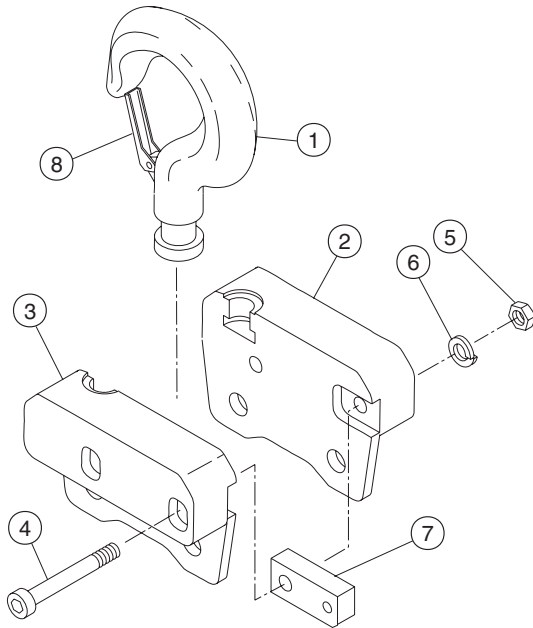


(Dwg. MHP1501)

Item No.	Description of Part	Total Qty	Part Number					
			LCA015S	LCA030D	LCA030S	LCA060D	LCA060S	LCA120D/ 125D/180T/ 250Q
			1.5 ton	3 ton	3 ton	6 ton	6 ton	12/12.5/18/ 25 ton
1	Capscrew	1	41326706		41324206		41321906	
2	Washer	1	45001108		45001112		45001116	
3	Nut	1	75582M		43706311		43703711	
4	Buffer	1	94240069		94120119		95260040	
5	Capscrew	1	41321506		70926M		41322006	
6	Washer	1	45001108				45001112	
7	Nut	1	75582M				43706311	
8	Washer	1	94240177	---				
9	Load Chain (Bulk)	Specify Length (metres)	LC824-G8ZP		LC1336-G8ZP		LC1645-G8ZP	

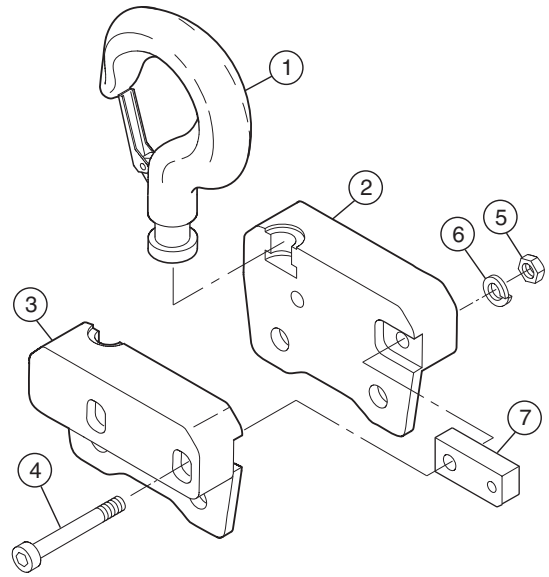
TOP HOOK ASSEMBLY PARTS DRAWINGS AND PARTS LIST

Single Fall Hoists



(Dwg. MHP1974)

Double Fall Hoists



(Dwg. MHP2116)

Single Fall Hoists

Item No.	Description of Part	Total Qty	Part Number					
			1.5 ton		3 ton		6 ton	
			Standard	Option 'R'	Standard	Option 'R'	Standard	Option 'R'
408	Top Hook Assembly	1	74247115	74247445	74127156	74127160	75267110	75267112
1	Hook	1	94248356	94248307	94248357	94240296	94128459	94128409
2	Half Hook Support	1	94247304		94127421		95267157	
3	Half Hook Support	1	94247305		94127422		95267158	
4	Capscrew	2	41326206		41325306		41330106	
5	Nut	2	43003511		43006911		43005811	
6	Lockwasher	2	45201008		45201010		45201014	
7	Support	1	94240286		94240286		95260135	
8	Hook Latch Kit	1	94240364		94240365		94120460	

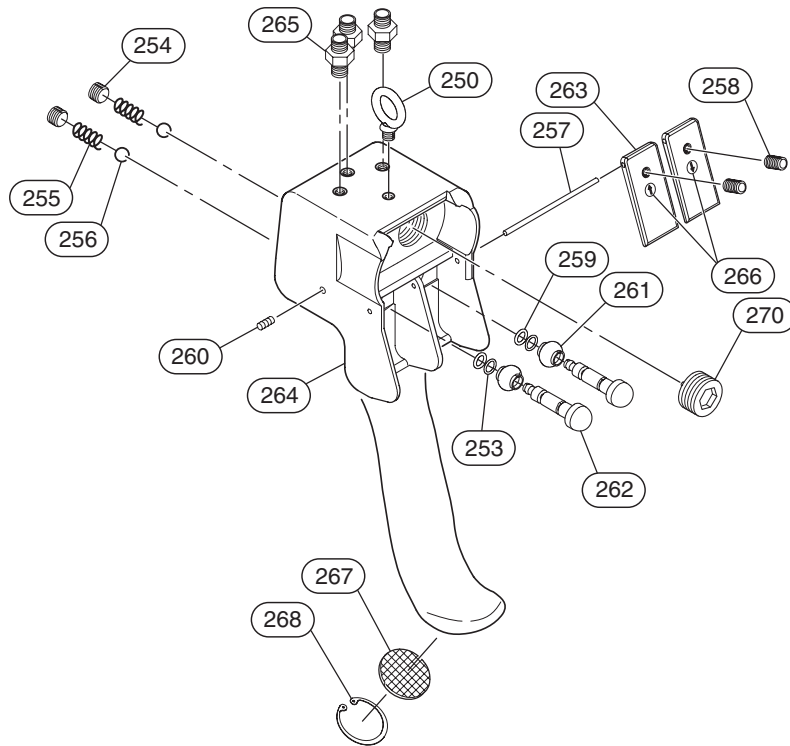
Double Fall Hoists

Item No.	Description of Part	Total Qty	Part Number					
			3 ton		6 ton		12 ton	
			Standard	Option 'R'	Standard	Option 'R'	Standard	Option 'R'
410	Top Hook Assembly	1	74247114	74247124	74127155	74127184	75267111	75267119
1	Hook	1	94248357	94240296	94128459	94128402	96238234	96238168
2	Half Hook Support	1	94247302		94128418	94128503	95267128	
3	Half Hook Support	1	94247303		94128419	94128502	95267129	
4	Capscrew	2	41326206		41325306		41330106	
5	Nut	2	43003511		43006911		43005811	
6	Lockwasher	2	45201008		45201010		45201014	
7	Support	1	94240286				95260135	
8	Hook Latch Kit	1	94240365		94120460		95960061	

Note: For 18 and 25 ton Top Hook Assemblies, refer to Hoist Assembly Dwg. MHP1885 on page 40.

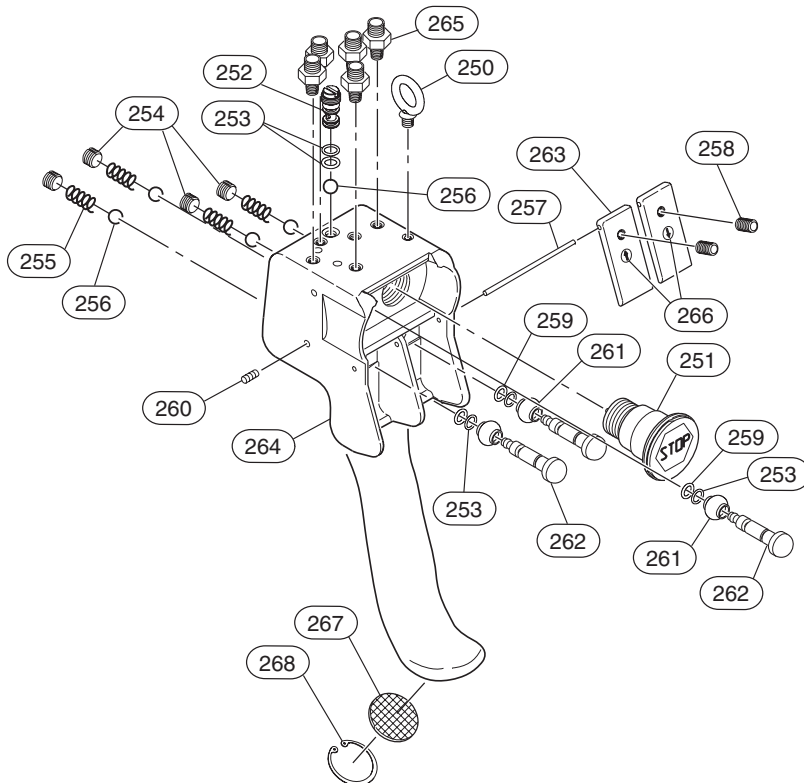
TWO LEVER PENDANT ASSEMBLY PARTS DRAWINGS

Pendant without Emergency Stop



(Dwg. MHP1977)

Pendant with Emergency Stop



(Dwg. MHP1978)

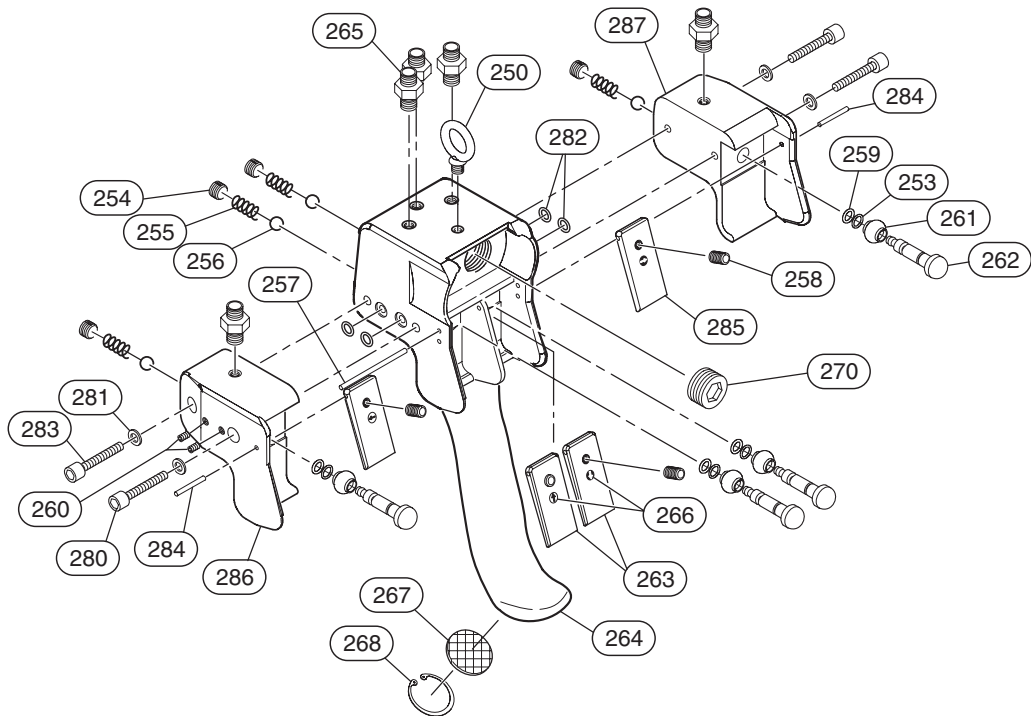
TWO LEVER PENDANT ASSEMBLY PARTS LIST

Item No.	Description of Part	Total Qty	Part Number				
			Without Emergency Stop			With Emergency Stop	
500	Pendant Assembly	1	PHS2E	PHS2E-R	PHS2E-F	PHS2E-U	PHS2E-RU
250	Lifting Eye	1	64222332				
251	Emergency Stop Valve	1	---			95790108	
252	Plug	1	95790106				
253	'O' Ring	2 (3)	58235329				
254	Plug	2 (4)	54292				
255	Spring	2 (4)	69128541				
• 256	Ball	2 (5)	69401625				
257	Pin	1	95790040				
258	Screw	2	42008607				
• 259	'O' Ring	2 (5)	58235329				
260	Screw	2 (3)	42008307				
261	Protector	2 (3)	95790107				
262	Valve	2 (3)	95790106				
263	Lever	2	95790122				
264	Pendant Handle*	1	Order item 500				
265	Fitting	3 (5)	71078158				
266	Label Kit	1	95790111				
267	Exhaust Washer	1	67600303				
268	Retainer Ring	1	47713030				
270	Plug	1	65129541			---	
**	Label: "Read the Manual"	1	96180098				
**	Label: "Do Not Use Lifting Personnel"	1	96180100				
**	Pendant Service Kit (Includes items 253-259, 261, 266-270)	1	---			75790183	

- Recommended Spare
- * Not sold separately. Order new pendant.
 - ** Not illustrated
 - () Quantity Required for Pendants with Emergency Stop
 - R = Spark and Corrosion Resistance Package
 - F = Food Grade
 - U = With Emergency Stop
 - RU = Emergency Stop and Spark and Corrosion Resistance Package

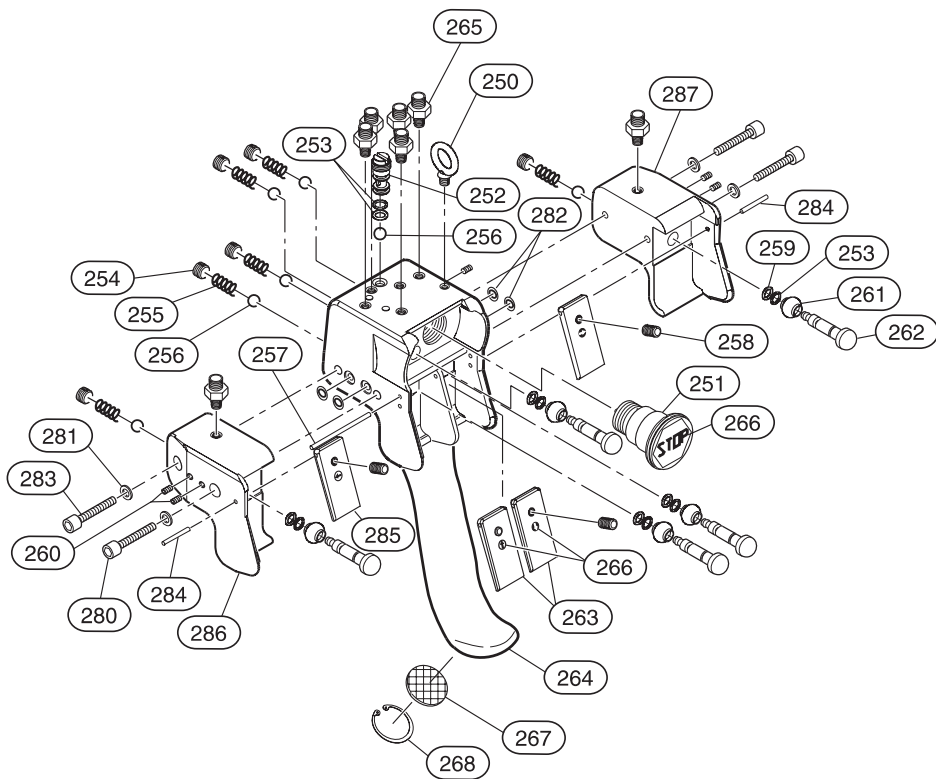
FOUR LEVER PENDANT AND EMERGENCY STOP DRAWINGS

Pendant without Emergency Stop



(Dwg. MHP1980)

Pendant with Emergency Stop



(Dwg. MHP1979)

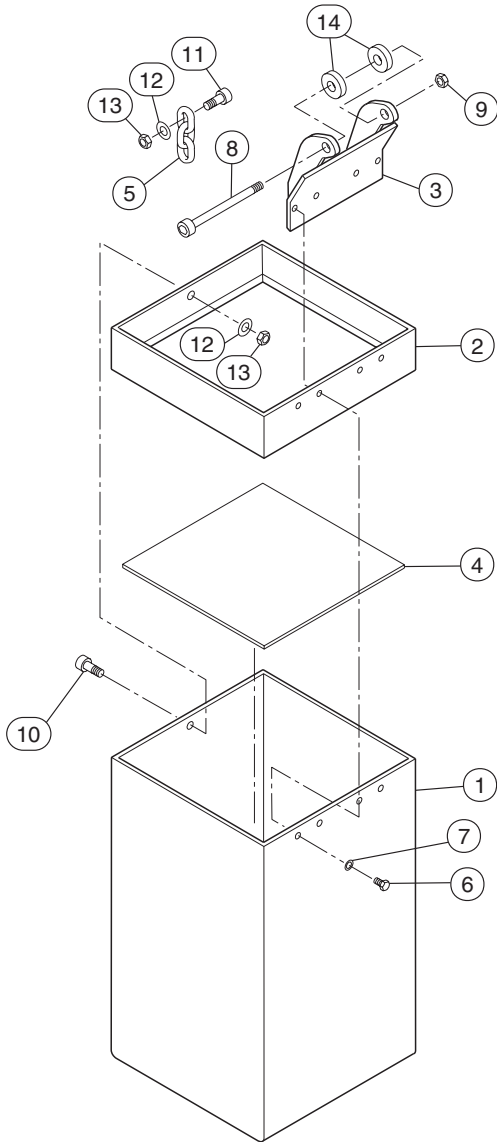
FOUR LEVER PENDANT CONTROL ASSEMBLY PART

Item No.	Description of Part	Total Qty	Part Number				
			Without Emergency Stop			With Emergency Stop	
501	Pendant Assembly	1	PHS4E	PHS4E-R	PHS4E-F	PHS4E-U	PHS4E-RU
250	Lifting Eye	1	64222332				
251	Emergency Stop Valve	1	---			95790108	
252	Plug	1				95790106	
• 253	'O' Ring	4 (7)	58235329				
254	Plug	4 (6)	65107741				
255	Spring	4 (6)	69128541				
• 256	Ball	4 (6)	69401625				
257	Pin	1	95790040				
258	Screw	2	42008607				
• 259	'O' Ring	2 (5)	58235329				
260	Screw	2 (5)	42008307				
261	Protector	4 (5)	95790107				
262	Valve	4 (5)	95790106				
263	Lever	2	95790122				
264	Pendant Handle*	1	Order item 501				
265	Fitting	5(7)	71078158				
266	Label Kit	1	95790111				
267	Exhaust Washer	1	67600303				
268	Retainer Ring	1	47713030				
270	Plug	1	65107761			---	
280	Capscrew	2	41322106				
281	Washer	4	45201005				
• 282	'O' Ring	4	58218229				
283	Screw	2	41330506				
284	Pin	2	95790127				
285	Lever	2	95790128				
286	Attachment (Left)	1	95790125				
287	Attachment (Right)	1	95790126				
**	Label: "Read the Manual"	1	96180098				
**	Label: "Do Not Use Lifting Personnel"	1	96180100				

- Recommended Spare
- * Not sold separately. Order new pendant.
- ** Not illustrated
- () Quantity Required for Pendants with Emergency Stop
 - R = Spark and Corrosion Resistance Package
 - F = Food Grade
 - U = With Emergency Stop
 - RU = Emergency Stop and Spark and Corrosion Resistance Package

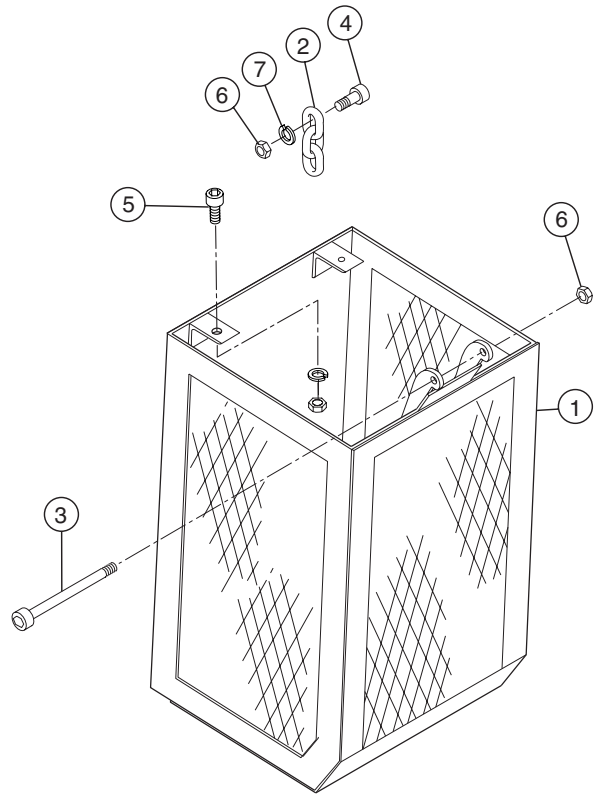
CHAIN CONTAINER ASSEMBLY PARTS DRAWINGS

Non-metallic Chain Container for up to 12 ton Hoists



(Dwg. MHP1975)

Metal Chain Container for LCA060S, LCA120D, LCA125D, LCA180T and LCA250Q Hoists



(Dwg. MHP1976)

CHAIN CONTAINER ASSEMBLY PARTS LIST

Hoist Model	Capacity*		Dimension 'A'		Container Assembly Part Number	
	ft	m	inch	mm	Non-Metallic	Metallic
LCA015S and LCA030D	39	12	7.1	180	CB030D-12M	---
	98	30	9.1	230	CB030D-30M	---
	197	60	12.2	310	CB030D-60M	---
LCA030S and LCA060D	39	12	9.1	230	CB060D-12M	---
	82	25	12.2	310	CB060D-25M	---
LCA060S, LCA120D and LCA125D	39	12	---	---	CB120D-12M	---
	85	26	---	---	---	CB120D-26M
LCA180T	39	12	---	---	CB120D-12M	---
	85	26	---	---	---	CB120D-26M
LCA250Q	39	12	---	---	CB120D-12M	---
	85	26	---	---	---	CB120D-26M

* Capacity is for single fall hoist. Divide capacity by number of chain falls when determining chain container size.

Non-Metallic Chain Containers

Item No.	Description of Part	Total Qty	Part Number						
			LCA015S	LCA030D	LCA030S	LCA060D	LCA060S	LCA120D/ LCA125D	
1	Chain Container	1	94240137	94120177	95260056	94120177	95260056		
2	Frame	1	94240139	94120179	95260054	94120179	95260054		
3	Support Bracket	1	94240287					95260160	
4	Plate	1	94240161	94120201	95260057	94120201	95260057		
5	Chain	**	69001332	69029232					
6	Screw	4	41321406						
7	Lock Washer	4	45001106						
8	Screw	1	71910M					41330306	
9	Nut	1	75583M						
10	Screw	1	---	41325006					
11	Screw	1	---	41326206					
12	Washer	2	---	45001108					
13	Nut	2	---	75582M					
14	Washer	2	94240168			---			
15	Loop for Chain Clasp*	2	90530031	---					

Metal Chain Containers

Item No.	Description of Part	Total Qty	Part Number
			LCA060S, LCA120D, LCA125D, LCA180T and LCA250Q
1	Chain Container	1	Contact Factory
2	Chain	**	69089432
3	Capscrew	1	41330306
4	Capscrew	1	41323306
5	Screw	2	41323506
6	Nut	4	75583M
7	Washer	4	45001110

* Not Illustrated

** Order in feet (m).

PARTS ORDERING INFORMATION

Liftchain hoists are designed and constructed to provide long, trouble-free service. In time it may become necessary to order and install new parts to replace those that have been subjected to wear.

The use of replacement parts other than **Ingersoll Rand** may result in decreased hoist performance, and may, at the company's option invalidate the warranty. For prompt service and genuine **Ingersoll Rand** parts, provide your nearest Distributor with the following:

1. Complete hoist model number as it appears on the nameplate.
2. Part number and part description as shown in this manual.
3. Quantity required.

The nameplate is located on the brake cover.

Return Goods Policy

If it becomes necessary to return the complete hoist or certain parts to the factory, contact the Distributor from whom you purchased the hoist, or the nearest **Ingersoll Rand** Distributor in your locality. **Ingersoll Rand** will not accept any returned goods for warranty or service work unless prior arrangements have been made and written authorization has been provided from the location where the goods were purchased.

NOTICE

• **Continuing improvement and advancement of design may produce changes to this hoist which are not included in this manual. Manuals are periodically revised to incorporate changes. Always check the manual edition number on the front cover for the latest issue.**

For additional information on related products order publication by the referenced Part/Document Number listed:

Publication	Part/Document Number
Product Safety Manual (Hoist)	MHD56295
Product Safety Manual (Trolley)	MHD56291
TRU and TRU2 Product Information Manual	MHD56289
TRU and TRU2 Product Parts Manual	MHD56290
TRU Trolley Manual	MHD56156
Rope Control Supplement	SAM0148

ACCESSORIES

DESCRIPTION	PART NUMBER
Chain Lubricant	LUBRI-LINK-GREEN®

Disposal

When the life of the hoist has expired, it is recommended that the hoist be disassembled, degreased and parts separated as to materials so that they may be recycled.

NOTICE

• **Mineral-based oils can be recycled, however, some oils such as glycols may be extremely toxic and must be identified and disposed of in accordance with local, state and national regulations.**

For additional information contact:

Ingersoll Rand
 2724 Sixth Avenue South
 Seattle, WA
 Phone: (206) 624-0466
 Fax: (206) 624-6265

or

**Ingersoll Rand
 Douai Operations**
 529, avenue Roger Salengro
 59450 Sin Le Noble, France
 Phone: (33) 3-27-93-08-08
 Fax: (33) 3-27-93-08-00

WARRANTY

Limited Warranty

Ingersoll Rand Company (I-R) warrants to the original user its Hoists and Winches (Products) to be free of defects in material and workmanship for a period of one year from the date of purchase. **I-R** will repair, without cost, any Product found to be defective, including parts and labor charges, or at its option, will replace such Products or refund the purchase price less a reasonable allowance for depreciation, in exchange for the Product. Repairs or replacements are warranted for the remainder of the original warranty period.

If any Product proves defective within its original one year warranty period, it should be returned to any Authorized Hoist and Winch Service Distributor, transportation prepaid with proof of purchase or warranty card.

This warranty does not apply to Products which **I-R** has determined to have been misused or abused, improperly maintained by the user, or where the malfunction or defect can be attributed to the use of non-genuine **I-R** parts.

I-R makes no other warranty, and all implied warranties including any warranty of merchantability or fitness for a particular purpose are limited to the duration of the expressed warranty period as set forth above. I-R's maximum liability is limited to the purchase price of the Product and in no event shall I-R be liable for any consequential, indirect, incidental, or special damages of any nature rising from the sale or use of the Product, whether based on contract, tort, or otherwise.

Note: Some states do not allow limitations on incidental or consequential damages or how long an implied warranty lasts so that the above limitations may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which may vary from state to state.

Important Notice

It is our policy to promote safe delivery of all orders.

This shipment has been thoroughly checked, packed and inspected before leaving our plant and receipt for it in good condition has been received from the carrier. Any loss or damage which occurs to this shipment while en route is not due to any action or conduct of the manufacturer.

Visible Loss or Damage

If any of the goods called for on the bill of lading or express receipt are damaged or the quantity is short, do not accept them until the freight or express agent makes an appropriate notation on your freight bill or express receipt.

Concealed Loss or Damage

When a shipment has been delivered to you in apparent good condition, but upon opening the crate or container, loss or damage has taken place while in transit, notify the carrier's agent immediately.

Damage Claims

You must file claims for damage with the carrier. It is the transportation company's responsibility to reimburse you for repair or replacement of goods damaged in shipment. Claims for loss or damage in shipment must not be deducted from the **Ingersoll Rand** invoice, nor should payment of **Ingersoll Rand** invoice be withheld awaiting adjustment of such claims as the carrier guarantees safe delivery.

You may return products damaged in shipment to us for repair, which services will be for your account and form your basis for claim against the carrier.

