

# PARTS, OPERATION AND MAINTENANCE MANUAL for LEVER CHAIN HOIST MODELS

**LV150**

3/4 ton (metric)

**LV300**

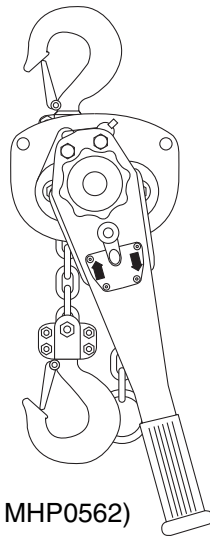
1-1/2 ton (metric)

**LV600**

3 ton (metric)

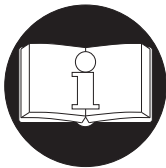
**LV1200**

6 ton (metric)



(Dwg. MHP0562)

Unless otherwise noted, tons  
in this manual are metric tons  
1 metric ton = 2,200 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 National Standards Institute Safety Code (ASME B30.21) and any other applicable safety codes and regulations.

## 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** Danger is used to indicate the presence of a hazard which *will* cause *severe* injury, death, or substantial property damage if the warning is ignored.

**⚠ WARNING** Warning is used to indicate the presence of a hazard which *can* cause *severe* injury, death, or substantial property damage if the warning is ignored.

**⚠ CAUTION** Caution is used to indicate the presence of a hazard which *will* or *can* cause injury or property damage if the warning is ignored.

**NOTICE** Notice is used to notify people of installation, operation, or maintenance information which is important but not hazard-related.

### Safety Summary

#### ⚠ WARNING

- Do not use this hoist for lifting, supporting, or transporting people or lifting or supporting loads over people.
- Hoists are designed to provide a 4 to 1 safety factor. Supporting structures and load-attaching devices used in conjunction with this hoist must provide adequate support to handle all hoist operations, plus the weight of the hoist and attached equipment. This is the customer's responsibility. If in doubt, consult a registered structural engineer.

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 cranes 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 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 line of force of any load.

**Ingersoll Rand** Material Handling hoists are manufactured in accordance with the latest ASME B30.21 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, connected 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 National Standards Institute, 1430 Broadway, New York, NY 10018.

## WARNING TAG

Each hoist is supplied from the factory with the warning tag shown. If tag is not attached to your unit, order a new tag and install it. Refer to the parts list for the part number. Read and obey all warnings and other safety information attached to this hoist. Tag may be shown smaller than actual size.

**⚠ WARNING**

Failure to follow these warnings may result in death, severe injury or property damage:

- Do not operate this hoist before reading operation and maintenance manual.
- Do not lift more than rated load.
- Do not lift people or loads over people.
- Do not operate hoist with twisted, kinked or damaged chain.
- Do not operate a damaged or malfunctioning hoist.
- Do not operate when chain cannot form straight line with load.
- Do not operate lever hoist with handle extension.
- Do not operate hoist with other than manual power.
- Do not remove or obscure warning labels.

## SAFE OPERATING INSTRUCTIONS

The following warnings and operating instructions have been adapted in part from American National Standard ASME B30.21 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 in their plants. 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 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, do not operate hoist until sign has been removed by designated personnel.
4. Before each shift, the operator should inspect hoist for wear or damage.
5. Never use a hoist which inspection indicates is worn or damaged.
6. Periodically, inspect hoist thoroughly and replace worn or damaged parts. Refer to **“INSPECTION”** section.
7. Lubricate hoist regularly. Refer to **“LUBRICATION”** section.
8. Do not use hoist if hook latch has been sprung or broken.
9. Check that hook latches are engaged before using.
10. Never splice a hoist chain by inserting a bolt between links.
11. Only lift loads less than or equal to rated capacity of hoist. Refer to **“SPECIFICATIONS”** section.
12. Never use hoist load chain as a sling.
13. Never operate a hoist when load is not centered under top hook. Do not **“side pull”** or **“yard.”**
14. Never operate a hoist with twisted, kinked, **“capsized”** or damaged load chain.
15. Do not force a chain or hook into place by hammering.
16. Never insert point of hook into a chain link.
17. Be certain load is properly seated in saddle of hook and hook latch is engaged.
18. Do not support load on tip of hook.
19. Never run load chain over a sharp edge. Use a sheave.
20. When using two hoists to suspend one load, select two hoists each having a rated capacity equal to or more than the load. This provides adequate safety in the event of a sudden load shift.
21. Pay attention to the load at all times when operating hoist.
22. Always ensure that you, and all other people, are clear of load path. Do not lift a load over people.
23. Never use hoist for lifting or lowering people, and never allow anyone to stand on a suspended load.
24. Ease slack out of chain and sling when starting a lift. Do not jerk the load.
25. Do not swing a suspended load.
26. Do not leave a load suspended when hoist is unattended or not in use.
27. Never weld or cut a load suspended by the hoist.
28. Never use hoist chain as a welding electrode.
29. Do not operate hoist if chain jumping, excessive noise, jamming, overloading or binding occurs.
30. Keep load from hitting load chain.
31. Do not use a cheater bar or extended handle.
32. After use, or when in a non-operational mode, hoist should be secured against unauthorized and unwarranted use.
33. Never place your hand inside throat area of a hook.
34. Only operate hoist with manual power.

## SPECIFICATIONS

### General

The LV Lever Chain Hoist can be mounted to the suspension shaft of a trolley or a permanent mounting structure. The hoist is designed to lift and lower loads up to rated capacity with minimal lever effort.

To determine your hoist configuration refer to the capacity and serial number nameplate located on the hand lever (below the selector lever) for serial and model number information. This manual edition incorporates the changes described in Service Bulletin SB-007, dated 1 June 1995. Refer to parts list for additional information.

### Model Code Explanation

**Example: LV300-5N**    LV   300   -   5   N

Series \_\_\_\_\_

Hoist Capacity \_\_\_\_\_

Lift \_\_\_\_\_

Options \_\_\_\_\_

Series	Hoist Capacity	Lift	Options
LV	150 = 3/4 metric ton (1,650 lbs / 750kg) <b>300 = 1-1/2 metric tons (3,300 lbs / 1,500 kg)</b> 600 = 3 metric tons (6,600 lbs / 3,000 kg) 1200 = 6 metric tons (13,200 lbs / 6,000 kg)	<b>5 = 5 feet (standard) (1.5 metres)</b> 10 = 10 feet (3 metres) 15 = 15 feet (4.5 metres) 20 = 20 feet (6 metres) XX = Specify length F = Hoist without chain	<b>N = Nickel diffused load chain</b> -E = Meets European Machinery Directives

Model No.	Rated Capacity (metric tons)	Lever Pull to lift rated load		Load Chain size (mm)	Wt. of chain per 1 ft. (0.3 m) of lift		No. of chain falls	Hoist Net Weight with standard 5 ft. (1.52 m) of lift	
		lb	kg		lb	kg		lb	kg
LV150	3/4	35	16	6.3	0.57	0.26	1	15	6.9
LV300	1-1/2	40	18	7.1	0.74	0.34		21	9.7
LV600	3	73	33	9.0	1.19	0.54		34	15.4
LV1200	6	77	35		2.38	1.08	2	62	28

1 metric ton = 2,200 lbs /1,000 kg

## INSTALLATION

Prior to installing 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.

### ⚠ CAUTION

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

The LV hoist can be used in any position provided it is rigged to pull in a straight line from top hook to bottom hook. The hoist body must be positioned so that it does not contact the load or support members when in use. Ensure hand lever movement is unrestricted.

When operating in limited areas suitable lifting attachments or slings must be used to prevent hoist body and hand lever from being obstructed.

### ⚠ CAUTION

• **Ensure hoist top and bottom hooks are properly rigged and hook latches are engaged, prior to use.**

#### Initial Operating Checks

Operate hoist with a test load (10% of rated capacity) by raising and lowering this load several times. Verify brake operation by lowering same load to check load does not slip when lowering stops.

### NOTICE

• **Each time a load is lifted, the operation of the brake should be checked by raising load slightly and stopping to ensure brake will hold load before continuing to lift load.**

Familiarize operators and personnel responsible for hoist installation and service with ASME B30.21 specifications and this manual prior to placing unit into service. All requirements of this specification, including testing should be met before approving hoist for operation.

## OPERATION

The four most important aspects of hoist operation are:

1. Follow all safety instructions when operating hoist.
2. Allow only personnel trained in safety and operation of this hoist to operate hoist.
3. Subject each hoist to a regular inspection and maintenance procedure.
4. Be aware of the hoist capacity and weight of load at all times.

### ⚠ WARNING

• **The hoist is not designed or suitable for lifting, lowering or moving persons. Never lift loads over people.**

#### Positioning Unloaded Hook (Free-Chain)

##### Short Distances

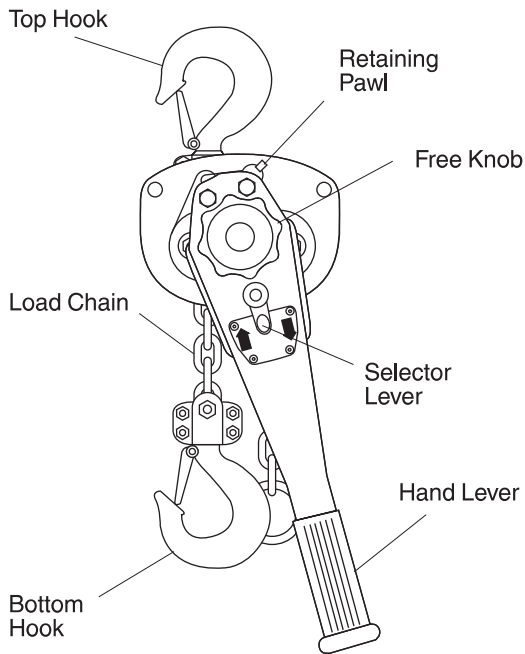
1. Set selector lever to neutral (center position).
2. Grip free knob and turn clockwise.

#### Long Distances

1. Set selector lever to neutral (center position).
2. While pressing down the retaining pawl (15), pull free knob (36) out. The hand lever and brake cover will pull away from hoist body. Release pawl.
3. Pull down on load chain to move hook to desired location.
4. Stop free-chaining by moving selector lever to down position. Press down on retaining pawl and hold. Push free knob in. Rotate free knob slightly clockwise if necessary. Hand lever and brake cover will move to hoist body. Release pawl.
5. Remove remaining slack by turning free knob clockwise. This resets brake and allows normal ratcheting to resume.

### NOTICE

• **Do not use excessive force to engage free knob or damage may occur to gears.**



(Dwg. MHP0561)

### Lifting or Lowering the Load

Select direction of movement and ratchet hand lever back and forth, see below:

Chain Movement:	Selector Lever:	Hand Lever Rotation:
Raise (Haul-in)	UP	Clockwise
Lower (Payout)	DOWN	Counterclockwise

## NOTICE

- If hand lever movement does not produce lifting, pull down on load chain while ratcheting until slack is removed and hoist begins lifting load.
- The brake is engaged whether lowering or raising load.

Check that load chain stopper (41) or anchor (47) is securely installed in last link of free end of load chain. Load chain stopper, or anchor, is intended to prevent load chain from becoming disengaged from hoist and is not intended to support the full load. Do not hang loads from free end of load chain.

## WARNING

- Do not continue to operate hoist after chain stopper or anchor has contacted hoist body as damage may occur to hoist resulting in a falling load which can cause severe injury, death or property damage.

### Storing the Hoist

1. Always store hoist in a no load condition.
2. Switch selector lever to neutral (center position).
3. Wipe off all dirt and water.
4. Oil the chain, hook pins and hook latch pins.
5. Hang in a dry place.
6. Before returning hoist to service follow instructions for "Hoists not in Regular Use" in "INSPECTION" section.

## INSPECTION

### WARNING

- All new, altered or modified equipment should be inspected and tested by personnel trained in safety, operation and maintenance of this equipment to ensure safe operation at rated specifications before placing equipment in service.

Frequent and periodic inspections should be performed on equipment in regular service. Frequent inspections are visual examinations performed by operators or service personnel and include observations made during routine equipment operation. Periodic inspections are thorough inspections conducted by personnel trained in the safety, operation and maintenance of this equipment. ASME B30.21 states inspection intervals depend upon the nature of the critical components of the equipment and severity of usage.

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 trained in safety, operation and maintenance of this equipment. A determination as to whether a condition constitutes a safety hazard must be decided, 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.

## NOTICE

- The external placement of coded marks on equipment identifying completed inspections and operationally certified equipment is an acceptable method of documenting periodic inspections in place of written records.

### Load Chain Reports

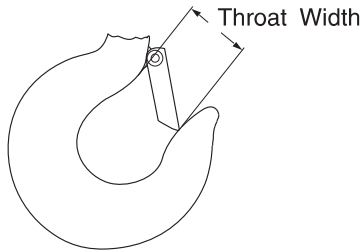
Records should be maintained documenting the condition of load chain removed from service as part of a long-range load chain inspection program. Accurate records will establish a relationship between visual observations noted during frequent inspections and

actual condition of the load chain as determined by periodic inspection methods.

**Frequent Inspection**

The lever chain hoist should be inspected at the beginning of each shift. Visual inspections should also be conducted during regular service for any damage or evidence of malfunction which appears between regular inspections.

1. OPERATION. Check for visual signs or abnormal noises which could indicate a potential problem. Make sure hoist functions properly. Check chain feed through hoist and hook idler sheaves. If chain binds, jumps, or is excessively noisy or “clicks,” clean and lubricate the chain. If problem persists, the chain and load sheave may have to be replaced. Do not operate the hoist until all problems have been determined and corrected.
2. HOOKS. Check for wear or damage, increased throat width, bent shank or twisting of hook. Replace hooks that exceed the throat opening discard width (15%) shown in Table 1, refer to Dwg. MHP0040 on page 6, or exceed a 10° twist, refer to Dwg. MHP0111 on page 6. If hook latch snaps past tip of hook, hook is sprung and must be replaced. Check hook support bearings for lubrication and damage. Check hooks swivel easily and smoothly. Repair or lubricate as necessary.



(Dwg. MHP0040)

**Table 1**

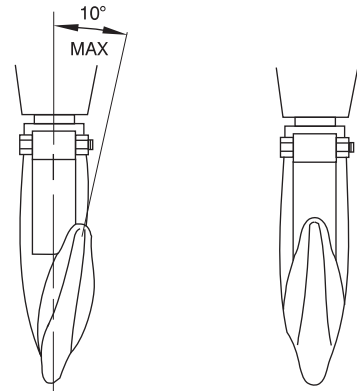
Model No.	Throat Width		Discard Width	
	in	mm	in	mm
LV150	1.22	31	1.4	35.6
LV300	1.50	38	1.72	43.7
LV600	1.85	47	2.12	53.8
LV1200	2.00	51	2.31	58.7

3. HOOK LATCHES. Check operation of hook latches. Replace if broken or missing.
4. CHAIN. Refer to Dwg. MHP0102 on page 6. Examine each link for bending, cracks in weld areas or shoulders, transverse nicks and gouges, weld splatter, corrosion pits, striation (minute parallel lines) and chain wear, including bearing surfaces between chain links. Replace a chain that fails any of the inspections. Check lubrication and lubricate if necessary. Refer to “Load Chain” in “LUBRICATION” section.

**CAUTION**

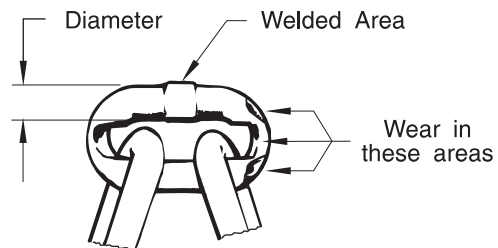
• The full extent of chain wear cannot be determined by visual inspection. At any indication of chain wear, inspect chain and load sheave in accordance with instructions in “Periodic Inspection.”

• A worn load chain may cause damage to load sheave. Inspect load sheave and replace if damaged or worn.



Twisted DO NOT USE Normal Can Be Used

(Dwg. MHP0111)



(Dwg. MHP0102)

5. LOAD CHAIN REEVING. Refer to Dwg. MHP0042 on page 8. Make sure welds on standing links are away from load sheave. Reinstall chain if necessary. On 6 ton hoists, make sure chain is not “capsized”, twisted or kinked. Ensure chain stopper or anchor is in last link of free end of load chain. Adjust as required.
6. HAND LEVER. Check for cracks, bending and other damage. Replace if necessary.

**Periodic Inspection**

According to ASME B30.21, frequency of periodic inspection depends on the severity of usage:

<b>NORMAL</b> yearly	<b>HEAVY</b> semiannually	<b>SEVERE</b> quarterly
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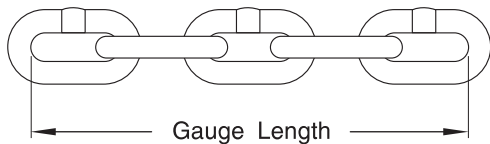
Disassembly may be required for HEAVY or SEVERE usage. Keep accumulative records of periodic inspections to provide a basis for continuing evaluation. Inspect all items in “Frequent Inspection”. Also inspect the following:

1. FASTENERS. Check rivets, capscrews, nuts, cotter pins and other fasteners on hooks and hoist body. Replace if missing and tighten or secure if loose.
2. ALL COMPONENTS. Inspect for wear, damage, distortion, deformation 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.
3. HOOKS. Inspect hooks for cracks. Use magnetic particle or dye penetrant to check for cracks. Inspect hook retaining parts. Tighten, repair or replace if necessary. Refer to the latest edition of ASME B30.10 (Hooks) for additional hook inspection information.

4. CHAIN SHEAVES. Check for excessive wear or damage. Replace if necessary.
5. BRAKES. Ensure proper operation. Brake must hold hoist rated capacity. If load test indicates the need, disassemble. Brake discs must be free of oil, any grease, unglazed and uniform in thickness. Refer to "MAINTENANCE" section for allowable brake disc wear. Check all other brake surfaces for wear, deformation or foreign deposits. Inspect gear teeth, pawl and pawl spring for damage. Check that brake pawl stops counterclockwise rotation of ratchet gear. Clean and replace damaged components as necessary.
6. SUPPORTING STRUCTURE. If a permanent structure is used, inspect for continued ability to support load.
7. LABELS AND TAGS. Check for presence and legibility. Replace if necessary.
8. LOAD CHAIN. Measure chain for stretching by measuring across five link sections all along chain length. Refer to Dwg. MHP0041 on page 7 and Table 2. When any five links in the working length reach or exceed discard length shown in Table 2, replace entire chain. Always use a genuine **Ingersoll Rand** Material Handling replacement chain.
9. CHAIN STOPPER OR ANCHOR. Ensure that chain stopper or anchor is securely attached to free end of load chain. Replace if worn or damaged.

**Hoists Not in Regular Use**

1. Hoists which have been idle for a period of one month or more, but less than one year shall be given an inspection conforming with requirements of "Frequent Inspection" before being placed into service.
2. Hoists which have been idle for a period of over one year shall be given a complete inspection conforming with requirements of "Periodic Inspection" before being placed into service.
3. Standby hoists shall be inspected at least semiannually in accordance with requirements of "Frequent Inspection". In abnormal operating conditions equipment should be inspected at shorter intervals.



(Dwg. MHP0041)

**Table 2**

Model No.	Part No.	Chain Size		Normal Length		Discard Length	
		mm	in	mm	in	mm	mm
LV150	LCCF010	6.3	3.76	95.5	3.85	97.9	
LV300	LCCF015	7.1	4.17	106.0	4.28	108.7	
LV600	LCCF025	9.0	5.35	136.0	5.47	139.0	
LV1200							

**Note:** Nickel Diffused chain for the LV is designated by "ND" at the end of the part number.

**LUBRICATION**

**General**

Thread lubricant or an anti-seize compound use is recommended for threaded shafts, capscrews and nuts. Unless otherwise stated, remove old lubricant, clean part with an acid free solvent and apply a new coating of lubricant to part before assembly.

**Gears**

Unscrew U-Nuts (13) on side of hoist opposite hand lever and remove gear cover (12). Remove old grease and replace with new. For temperatures -20° to 50° F (-29° to 10° C) use EP 1 grease or equivalent. For temperatures 30° to 120° F (-1° to 49° C) use EP 2 grease or equivalent.

**Load Chain**

**⚠ WARNING**

• Failure to maintain clean and well-lubricated load chain may result in chain failure causing injury, death or substantial property damage.

1. Lubricate each link of chain weekly. Apply new lubricant over existing layer.
2. In severe applications or corrosive environments, lubricate more frequently than normal.
3. Lubricate hook and hook latch pivot points with same lubricant used on load chain.
4. To remove rust or abrasive dust build-up, clean chain with an acid free solvent. After cleaning, lubricate chain.
5. Use **Ingersoll Rand** LUBRI-LINK-GREEN® or SAE50 to 90W 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 symptoms, probable causes and remedies.

Symptom	Cause	Remedy
Hoist will not hold rated load.	Brake may be slipping.	Inspect and repair as described in “INSPECTION” and “MAINTENANCE” sections.
Hoist will not lift load.	Excess slack in load chain.	Pull down on load end or load chain while ratcheting up until slack is removed and hoist begins lifting load. Refer to “OPERATION” section.
	Hoist is overloaded.	Reduce load to within rated capacity.
Load Chain binds.	Damaged load chain, pinion shaft, gears or sheaves.	Disassemble and inspect components as described in “MAINTENANCE” and “INSPECTION” sections.
	Load chain not installed properly (twisted, kinked or “capsized”).	Inspect and adjust or repair as described in “INSPECTION” and “MAINTENANCE” sections.
Load Hook Latch does not work.	Latch broken.	Replace hook latch.
	Load hook bent or twisted.	Inspect load hook as described in “INSPECTION” section. Replace if necessary.

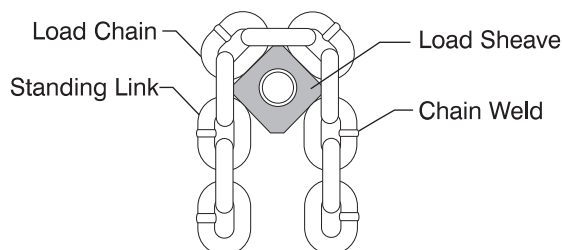
## MAINTENANCE

### ⚠ WARNING

- Never perform maintenance on hoist while it is supporting a load.
- Before performing maintenance, tag hoist:  
**WARNING - DO NOT OPERATE - EQUIPMENT BEING REPAIRED.**
- Only allow personnel trained in safety and service on this product to perform maintenance.
- After performing any maintenance on hoist, test to 125% of its rated capacity before returning to service. Testing to more than 125% of rated capacity might be required to comply with standards and regulations set forth in areas outside of the USA.

#### Installing a New Chain

1. Ensure welds of “standing” links on new chain are facing away from load sheave (2). Refer to Dwg. MHP0042 on page 8.
2. Ensure load chain (39) is reeved between load sheave (2) and chain guides (5).
3. Bottom hook assembly (40) must be on left fall of load chain (39) and right fall must have chain stopper (41) or anchor (47) attached to end link.

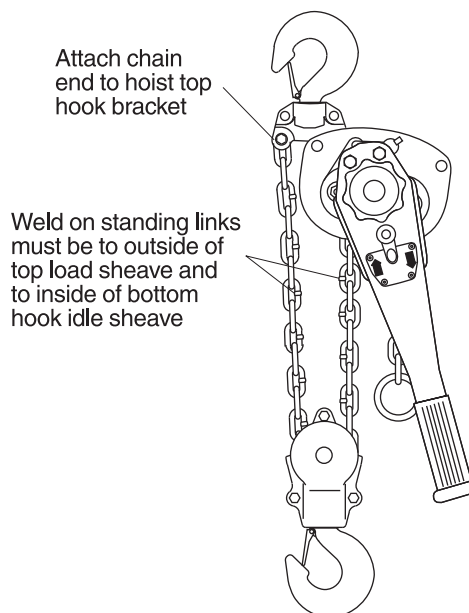


(Dwg. MHP0042)

### NOTICE

- Right and left designations are as viewed from the hand lever side of the hoist.
4. On 6 ton hoists feed load chain through bottom block assembly and secure to top hook bracket. Ensure load chain is straight and not twisted. Refer to Dwg. MHP0584 on page 8. Weld on standing links will be to the inside of bottom hook idle sheave (54).
  5. Lubricate new load chain before use. Refer to “LUBRICATION” section for recommended lubricants.

#### 6 ton Hoist Chain Installation



(Dwg. MHP0584)



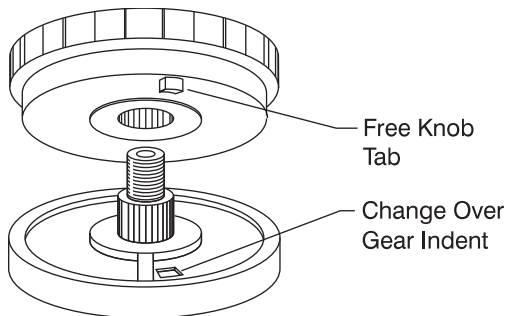
## Brake Adjustment

1. Switch selector lever to neutral.
2. Remove cotter pin (38) and pinion nut (37). Remove free knob (36). New style hoists do not have cotter pin (38). Refer to parts list.
3. Set brake by pulling firmly on hook (40) in the lowering direction.

## NOTICE

- **Switching selector lever to UP or DOWN and rotating pinion (3) counterclockwise also sets the brake.**

4. Install free knob (36) by placing free knob tab, on bottom of free knob (36), over indent in change gear (30). Refer to Dwg. MHP0074 on page 9.



(Dwg. MHP0074)

5. Secure free knob (36) using pinion nut (37) and cotter pin (38). New style hoists do not have cotter pin (38). Refer to parts list.

## General Disassembly

The following instructions provide necessary information to disassemble, inspect, repair, and assemble hoist. Hoist assembly parts drawings are provided in “PARTS” section.

If a hoist is being completely disassembled for any reason, follow the order of the topics as they are presented. It is recommended that all maintenance work on hoist be performed on a bench in a clean, dust free area.

In the process of disassembling the hoist, observe the following:

1. Never disassemble hoist any further than is necessary to accomplish 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 the seal.
3. Do not apply heat to a part 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 as clean as practical, to prevent dirt and other foreign matter from getting into bearings or other moving parts.

5. When grasping a part in a vise, always use leather-covered or copper-covered vise jaws to protect the surface of the part and help prevent distortion. This is particularly true of threaded members, machined surfaces and housings.
6. Do not remove any part which is press fit in or on a subassembly unless removal of that part is necessary for repairs or replacement.

## Hoist Disassembly

Refer to Dwg. MHP0092 on page 12.

## Disc Brake Disassembly

To remove brake discs (23A) and (23B) disassemble hoist using the following procedure:

1. Switch selector lever to UP or DOWN position.
2. Remove cotter pin (38) and pinion nut (37). Remove free knob (36). New style hoists do not have cotter pin (38). Refer to parts list.
3. While holding load chain (39), unscrew hand lever (28) assembly counterclockwise and remove.

## NOTICE

- **Rotating pinion (3) clockwise will also remove hand lever (28) assembly.**

4. Remove brake disc (23A) and brake ring (25).
5. Remove nuts (27) and brake cover (26).
6. Remove ratchet gear (24) and brake disc (23B).
7. Remove brake pawls (22) and pawl springs (21) from retainer plate (19).

## Gear End Disassembly

1. Remove U-Nuts (13) and pry gear cover (12) from side plate 2 (8).
2. Remove 2nd and 3rd gears (11) and 1st gear (10).

## Load Sheave Disassembly

1. Follow steps 1 through 7 under “Disc Brake Disassembly” and steps 1 and 2 under “Gear End Disassembly”.
2. Pry side plate 2 (8) from hoist assembly.
3. Remove top hook (7), load chain guides (5) and chain stripper (6).
4. Remove load chain (39).
5. Unscrew hub (18) from pinion shaft (3). Remove ‘C’ washer (4) and remove pinion shaft. New style hoists do not have ‘C’ washer (4). Refer to parts list.
6. Remove nut (17), washer (16), retainer pawl (15) and spring (14) from side plate 1 (1).
7. Remove retainer ring (20) from hub (18).
8. Separate side plate 1 (1), hub (18), retainer plate (19) and load sheave (2).

## Cleaning, Inspection and Repair

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

### Cleaning

#### CAUTION

• Do not use trichloroethylene to clean parts.

Clean all hoist component parts in an acid free solvent (except for brake discs). Use of a stiff bristle brush will facilitate removal of accumulated dirt and sediments on gears, shaft and housings. Dry each part using low pressure, filtered, compressed air. If LV brake discs are oil soaked, they must be replaced.

### 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 shafts for ridges caused by wear. If ridges caused by wear are apparent on shafts, replace shaft.
3. Inspect all threaded items and replace those having damaged threads.
4. Inspect LV brake discs for oil. If brake discs are oil-soaked, replace brake discs.
5. Measure thickness of brake discs. Refer to Table 3 Brake Disc Thickness for discard thickness.

Table 3 Brake Disc Thickness

Model No.	New Disc Thickness		Discard Thickness	
	in	mm	in	mm
All LV Models	0.098	2.5	0.078	2

### Repair

Actual repairs are limited to removal of small burrs and other minor surface imperfections. 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 minor nicks, burrs or galled spots on shafts, bores, pins or spacers.
4. Polish edges of all shaft shoulders to remove small nicks which may have been caused during handling.
5. Remove all nicks and burrs caused by lockwashers.

## Hoist Assembly

Refer to Dwg. MHP0092 on page 12.

### Disc Brake Assembly

#### CAUTION

• The LV brake will not operate properly if brake discs (23A) or (23B) are oil soaked or covered in grease.

1. Place brake disc (23B) on hub (18).
2. Install ratchet gear (24), pawl springs (21) and pawls (22). Pawl springs must hold pawls engaged with teeth of ratchet gear. Ratchet gear should not rotate counterclockwise and should “click” when rotating clockwise.
3. Slide brake cover (26) over studs on retaining plate (19) and secure with nuts (27).
4. Place brake disc (23A) on hub (18).
5. Place brake ring (25) on brake disc (23A). Orientate brake ring (25) so that three of its teeth will mesh with three teeth on change gear (30).
6. Place hand lever (28) assembly over pinion (3). Ensure selector lever is in UP or DOWN position. While holding load chain (39), rotate hand lever (28) clockwise.

#### NOTICE

• Rotating pinion (3) counterclockwise will also install hand lever (28).

7. Adjust brake and install free knob (36) as described in “Brake Adjustment” procedure.

### Gear End Assembly

As gears are assembled, thoroughly coat gears with recommended lubricant.

1. Align gear splines and install 1st gear (10) on load sheave (2).
2. Install 2nd and 3rd gears (11) so gear teeth are correctly timed and spigots locate in bearing sleeves in side plate 2 (8). Refer to “Gear Timing” and Dwg. MHP0557 on page 11 for gear timing.
3. Install gear cover (12) on side plate 2 and secure with U-Nuts (13).

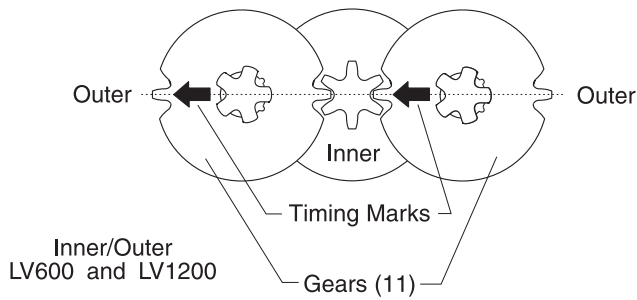
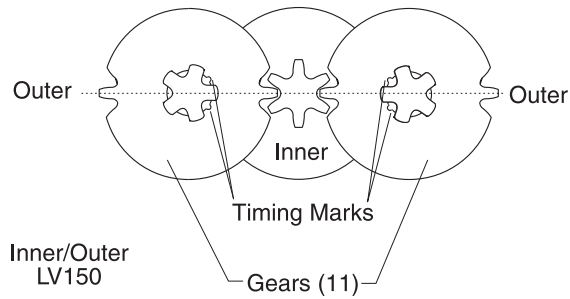
### Load Sheave Assembly

1. Install load sheave (2) on side plate 1(1) with gear splines on load sheave located opposite of sideplate 1.
2. Install load chain on load sheave (2). Refer to “Installing a New Chain” for correct installation.
3. Install chain stripper (6) in slot in side plate 1 with tab projection toward load sheave.
4. Install chain guides (5) and top hook assembly (7).
5. Carefully install side plate 2 (8) ensuring all parts are located in their respective bores and slots.
6. Install pinion shaft (3) from gear side. Install ‘C’ washer (4) to lock load sheave (2) on smooth shaft section of pinion shaft. New style hoists do not have ‘C’ washer (4). Refer to parts list.
7. Follow steps 1 through 3 under “Gear End Assembly”.
8. Screw hub (18) onto pinion shaft (3).

9. Align hole in retainer plate (19) to non-threaded shaft on sideplate 1 (1) and place retainer plate fully on hub (18). Secure hub with retainer ring (20).
10. Install spring (14), retainer pawl (15), washer (16) and nut (17).
11. Follow steps 1 through 7 under “Disc Brake Assembly”.

### Gear Timing

For proper operation, timing marks on 2nd and 3rd gears (11) must be in correct positions. **LV150** timing marks are two enlarged cutouts near the center of gears (11). Refer to Dwg. MHP0557 on page 11.



(Dwg. MHP0557)

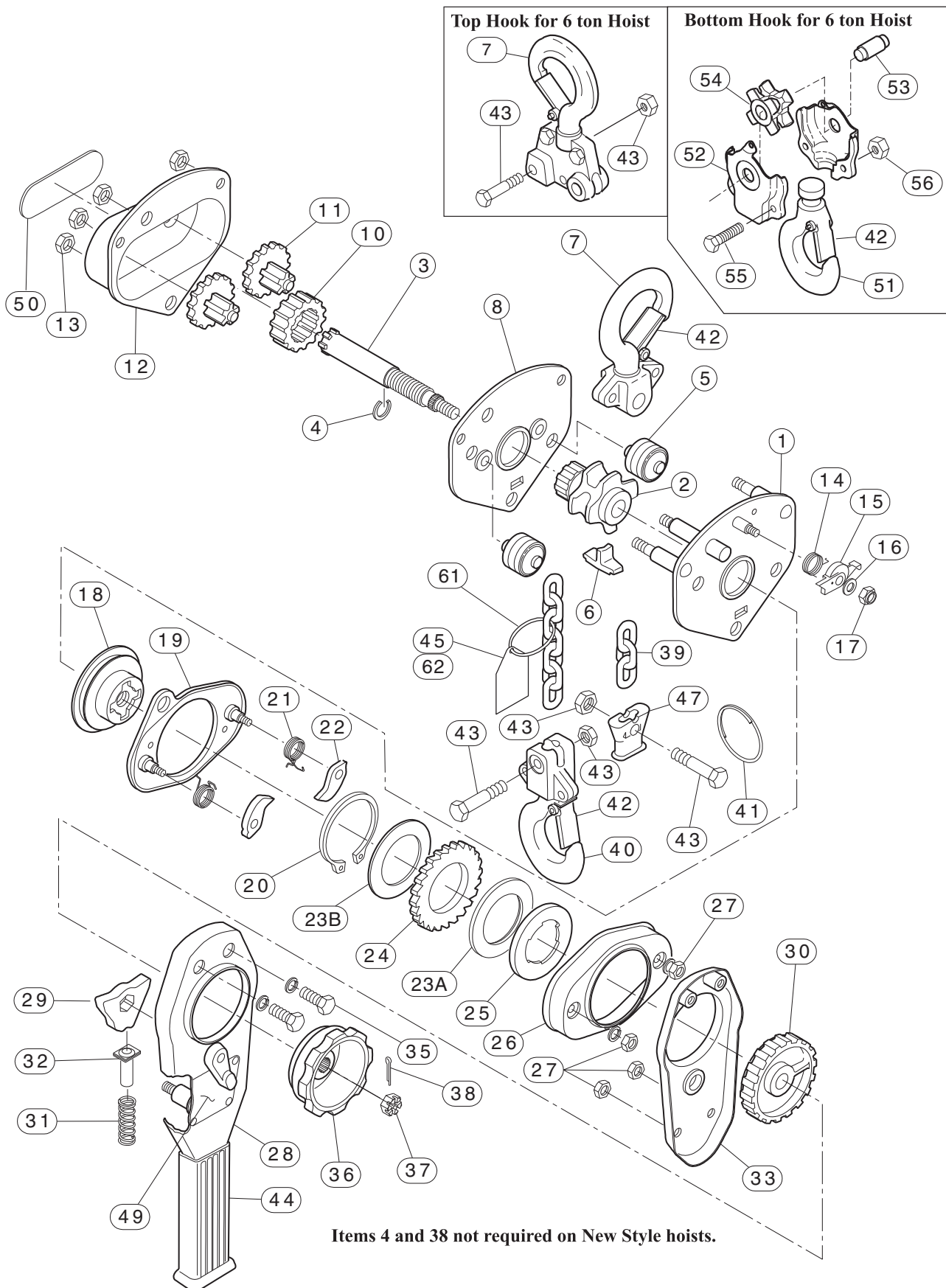
## NOTICE

- **Model LV300 does not have timing marks. Timing not required.**

### 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 operation and maintenance of this hoist, and a written report furnished confirming rating of hoist. Test hoist to 125% of rated hoist capacity. Testing to more than 125% may be necessary to comply with standards and regulations set forth in areas outside of the USA.

# HOIST ASSEMBLY PARTS DRAWING



(Dwg. MHP0092)

## HOIST ASSEMBLY PARTS LIST

Item No.	Description of Part	Qty. Total	Part Number			
			3/4 ton	1-1/2 ton	3 ton	6 ton
1	Side Plate 1	1	3372348	3372389	3372411	
2	Load Sheave (Old Style)	1	3372349	3372390	3372412	
	Load Sheave (New Style)**		71272090			
3	Pinion Shaft (Old Style)	1	3372350	3372391	3372413	
	Pinion Shaft (New Style)**		71272033	71272041	71272058	
4	C Washer (Old Style)	1	3372351	3372392		
	C Washer (New Style)**	0	Not Required			
5	Load Chain Guide	2	3372352	3372393	3372414	
6	Chain Stripper	1	3372353	3372394	3372415	
7	Top Hook	1	3372354	3372395	3372416	3372439
8	Side Plate 2	1	3372355	3372396	3372417	
10	1st Gear	1	3372356	3372397	3372418	
11	2nd and 3rd Gear	1 set	3372357	3372398	3372419	
12	Gear Cover	1	3372358	3372399	3372420	
13	U-Nut*	4	3372359			3372421
14	Retainer Spring	1	3372360	3372400	3372422	
15	Retainer Pawl	1	3372361	3372401	3372423	
16	Washer	1	3372362			3372424
17	U-Nut*	1	3372363			3372359
18	Hub (Old Style)	1	3372364	3372402	3372426	
	Hub (New Style)**		71272066	71272074	71272082	
19	Retainer Plate	1	3372365	3372403	3372427	
20	Retainer Ring	1	3372366			3372428
21	Pawl Spring	2	3372367			3372429
22	Brake Pawl	2	3372368			3372430
• 23A	Brake Disc	1 set	3372369-2			71079305
• 23B						
24	Ratchet Gear	1	3372370			3372432
25	Brake Ring	1	3372371			3372433
26	Brake Cover	1	3372372			3372434
27	U-Nut*	4	3372363			3372359
28	Hand Lever	1	3372374	3372404		
29	Change Pawl	1	3372375			
30	Change Gear (Old Style)	1	3372376	3372405		
	Change Gear (New Style)**			71272108		
31	Spring	1	3372377			
32	Pin	1	3372378			
33	Lever Cover	1	3372379			
35	Bolt*	2	3372381			
36	Free Knob	1	3372382	3372406		
37	Pinion Nut (Old Style)	1	3372383	3372407		
	Pinion Nut (New Style)**		71137244			
38	Cotter Pin (Old Style)	1	3372384	3372408		
	Cotter Pin (New Style)**	0	Not Required			
39	Load Chain	1	LCCF010	LCCF015	LCCF025	
	Load Chain (Nickel Diffused)		LCCF010ND	LACCF015ND	LCCF025ND	
• 40	Bottom Hook	1	L5H150-BHK	L5H300-BHK	L5H600-BHK	3372440
41	Chain Stopper	1	3372386			
• 42	Hook Latch	1	3372387	3372410	3372437	3372373
• 43	Bolt/Nut	2 set	3372388	45987765	3372438	

Item No.	Description of Part	Qty. Total	Part Number			
			3/4 ton	1-1/2 ton	3 ton	6 ton
44	Handle Grip	1	3372441	3372442		
45	Warning Label*	1	71301097			
47	Anchor*	1	71046924		71046932	
49	Nameplate*	1	71111520	71111553	71111538	71111561
50	Capacity Label*	1	71111546	71111512	71111496	71111504
51	Bottom Hook*	1	—			71076293
52	Bottom Frame*	1	—			2372946
53	Axle*	1	—			71076301
54	Idle Sheave*	1	—			71076319
55	Yolk Bolt*	3	—			2372825
56	U-Nut*	3	—			3372421
61	Tag Tie	1	HREZOA-283			
62	Bag	1	71302582			
Orange Touch-up Paint			MHD-OR			
Chain Lubricant			LUBRI-LINK-GREEN			

**Kits and Assemblies**

57	Label Kit (Incl's items 45, 49 and 50)	1	LV150-LBK	LV300-LBK	LV600-LBK	LV1200-LBK
58	Fastener Kit (Incl's items 13, 27 and 35)	1	71079313			
59	Anchor Assembly (Incl's items 27, 47 and 48)	1	71046965		71046973	
60	Bottom Hook Assembly (Incl's items 51 through 56)	1	—			3372440

•  Recommended Spare

\* It is recommended that where possible replacement parts be ordered as a complete kit or assembly. Refer to “Kits and Assemblies”.

\*\* New style hoists have either a ‘B’ designation in their serial numbers or have serial numbers equal to or greater than the following: LV150 (3/4 ton) Serial No. 953089; LV300 (1-1/2 ton) Serial No. 952760; LV600 (3 ton) Serial No. 951710; LV1200 (6 ton) Serial No. 951042.

Parts are not interchangeable between older and newer versions of the hoist.

## PARTS ORDERING INFORMATION

Use of other than genuine **Ingersoll Rand** Material Handling replacement parts may result in decreased hoist performance and may invalidate the warranty. For prompt service and genuine **Ingersoll Rand** Material Handling parts, provide your nearest Distributor with the following:

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

The model and serial number nameplate is located on the hand lever under the selector lever. Model and serial number nameplate shown is for 3 ton LV Hoist.



### NOTICE

• **Parts for LV hoists with a ‘B’ designation in the serial number or with serial numbers equal to or greater than those listed below contain parts which are different from earlier models. Ensure hoist is correctly identified before ordering replacement parts.**

MODEL NO.	CAPACITY	SERIAL NO.
LV150	3/4 ton	953089
LV300	1-1/2 ton	952760
LV600	3 ton	951710
LV1200	6 ton	951042

For your convenience and future reference it is recommended that the following information be recorded.

**Hoist Model Number** \_\_\_\_\_

**Hoist Serial Number** \_\_\_\_\_

**Date Purchased** \_\_\_\_\_

### Return Goods Policy

**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. Hoists returned with opened, bent or

twisted hooks, or without chain and hooks, will not be repaired or replaced under warranty.

### NOTICE

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

### Disposal

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

## WARRANTY

### HOIST AND WINCH 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.

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