



**INSTALLATION AND OPERATION MANUAL  
for AIR CHAIN HOIST  
MODELS MLK and HLK**

**MONTAGE- UND BEDIENUNGSANLEITUNGEN  
für DRUCKLUFTBETRIEBENE KETTENZÜGE  
MODELLE MLK und HLK**

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for LUFTSTYREDE KÆDETALJER  
MODEL MLK og HLK**

**DK**

**MANUAL DE INSTALACION Y OPERACION  
para los POLIPASTOS NEUMATICOS DE CADENA  
MODELOS MLK y HLK**

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**MANUEL D'INSTALLATION ET D'UTILISATION pour  
LES MODELES DE PALANS A CHAINE  
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PAINEILMAKÄYTTÖISET NOSTOTALJAT  
MALLIT MLK ja HLK**

**SF**

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**INGERSOLL-RAND®**  
**MATERIAL HANDLING**

Authorized Sales & Service - McLaughlin Hoist & Crane - Parts, Repairs, Inspections



**READ THIS MANUAL BEFORE USING THESE PRODUCTS.**  
This manual contains important safety, installation and operation information.

ENGLISH

## SAFETY INFORMATION

This manual provides important information for all personnel involved with the safe installation and operation of these products. 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 an injury. 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 *minor* 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 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 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.

#### NOTICE

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

This manual has been produced by **Ingersoll-Rand** to provide dealers, mechanics, operators and company personnel with the information required to install and operate 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:

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

**Ingersoll-Rand** can not know of, nor 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

**Ingersoll-Rand** recognizes that most companies who use hoists have a safety program in force in their plants. In the event you are aware 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 unsafe 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 people, 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 the hoist or controls, do not operate the hoist until the sign has been removed by designated personnel.
4. Before each shift, the operator should inspect the hoist for wear or damage.
5. Never use a hoist which inspection indicates is worn or damaged.
6. Periodically, inspect the hoist thoroughly and replace worn or damaged parts.
7. Lubricate the hoist regularly.
8. Do not use hoist if hook latch on a hook has been sprung or broken.
9. Check that the 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 the rated capacity of the hoist. See "SPECIFICATIONS" section.
12. 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.
13. Never place your hand inside the throat area of a hook.
14. Never use the hoist load chain as a sling.
15. Never operate a hoist when the load is not centered under the hook. Do not "side pull" or "yard."
16. Never operate a hoist with twisted, kinked, "capsized" or damaged load chain.
17. Do not force a chain or hook into place by hammering.
18. Never insert the point of the hook into a chain link.
19. Be certain the load is properly seated in the saddle of the hook and the hook latch is engaged.
20. Do not support the load on the tip of the hook.
21. Never run the load chain over a sharp edge. Use a sheave.
22. Pay attention to the load at all times when operating the hoist.

23. Always ensure that you, and all other people, are clear of the path of the load. Do not lift a load over people.
24. Never use the hoist for lifting or lowering people, and never allow anyone to stand on a suspended load.
25. Ease the slack out of the chain and sling when starting a lift. Do not jerk the load.
26. Do not swing a suspended load.
27. Never leave a suspended load unattended.
28. Never weld or cut on a load suspended by the hoist.
29. Never use the hoist chain as a welding electrode.
30. Do not operate hoist if chain jumping, excessive noise, jamming, overloading, or binding occurs.
31. Do not use the up and down stops as a means of stopping a hoist. The up and down stops are emergency devices only.
32. Always rig the hoist properly and carefully.
33. Be certain the air supply is shut off before performing maintenance on the hoist.
34. Do not allow the chain to be exposed to extremely cold weather. Do not apply loads to a cold chain.

## WARNING LABEL

Each hoist is supplied from the factory with the warning label shown. If the label is not attached to your hoist, order a new label and install it.



## WARNING

- Do not use hoist for lifting, supporting or transporting people.

## DESCRIPTION

Hoists described in this manual are powered by air, and with the use of a pendant control, are designed to lift and lower loads. The hoists can be bolted or hook mounted to a trolley or permanent mounting structure.

The air hoists are equipped with vane motors which act as the drive for the gear section. The output from the gear section is transmitted directly to the load chain drive sheave.

Each air hoist contains a brake which is released by air pressure applied to an annular brake piston. When the "UP" or "DOWN" control pendant button/lever is pressed air is sent to the brake. The brake piston compresses the brake springs, releasing the brake. When the pendant "UP" or "DOWN" button/lever is released the air is exhausted and the brake is applied.

## SPECIFICATIONS

| Hoist Model No. | Rated Capacity (kg) | No. Chain Falls | Air Flow m <sup>3</sup> /min | Sound Pressure Level dBA | Sound Power Level dBA | Speed with Rated Load m/m |      | Speed with No Load m/m |      | Hook Mount Hoist Weight 3 m (10 ft) lift kg | Overload nominal limit kg |     |      |      |      |      |      |   |     |
|-----------------|---------------------|-----------------|------------------------------|--------------------------|-----------------------|---------------------------|------|------------------------|------|---|---------------------------|-----|------|------|------|------|------|---|-----|
|                 |                     |                 |                              |                          |                       | up                        | down | up                     | down |   |                           |     |      |      |      |      |      |   |     |
| ML250KS-E       | 250                 | 1               | 1,27                         | 90                       | 100                   | 12,2                      | 27,4 | 21                     | 16   | 21,8  | ---                       |     |      |      |      |      |      |   |     |
| ML250K-E        |                     |                 | 1,98                         |                          |                       | 30,8                      | 35,7 | 52                     | 30   |   |                           |     |      |      |      |      |      |   |     |
| ML250KR-E       |                     |                 | 1,27                         |                          |                       | 7,9                       | 11,6 | 12,8                   | 9,1  |   |                           |     |      |      |      |      |      |   |     |
| ML500KS-E       | 1,98                | 6,7             | 20,1                         |                          |                       | 13                        | 10   |                        |      |   |                           |     |      |      |      |      |      |   |     |
| ML500K-E        | 500                 | 2               | 1,27                         |                          |                       | 87                        | 97   | 16,8                   | 29,6 | 32  |                           | 18  | 27,7 |      |      |      |      |   |     |
| ML500KR-E       |                     |                 |                              |                          |                       |                           |      | 4,0                    | 6,1  | 6,4   |                           | 4,6 |      |      |      |      |      |   |     |
| ML1000KS-E      | 980                 | 2               |                              |                          |                       |                           |      | 1,27                   | 8,5  | 14,9  |                           | 16  | 9    | 7,9  | 38,1 | 1250 |      |   |     |
| ML1000K-E       |                     |                 |                              |                          |                       |                           |      |                        |      |   |                           |     |      |      |      |      | 1000 | 1 | 7,9 |
| HL1000K-E       |                     |                 |                              | 4,9                      | 7,9                   |                           |      |                        |      |   | 8,5                       |     |      |      |      |      |      |   | 4,9 |
| HL1500K-E       | 1500                | 2               |                              | 1,98                     | 87                    |                           |      | 97                     | 4    | 5,5   | 6,1                       | 4   | 56,6 | 2500 |      |      |      |   |     |
| HL2000K-E       | 2000                |                 |                              |                          |                       |                           |      |                        | 2,4  | 4   | 4,3                       | 2,4 | 58,5 | 3750 |      |      |      |   |     |
| HL3000K-E       | 3000                | 3               |                              |                          |                       |                           |      |                        | 1,4  | 3   | 3,2                       | 2   | 87,5 | 5625 |      |      |      |   |     |
| HL4500K-E       | 4500                |                 | 1                            |                          |                       | 2,3                       | 2,6  |                        | 1,5  | 112,5                                       | 7500                      |     |      |      |      |      |      |   |     |
| HL6000K-E       | 6000                |                 |                              |                          |                       |                           |      |                        |      |   |                           | 4   |      |      |      |      |      |   |     |

\* Sound measurements have been made in accordance with ISO 11201, ISO 3744-3746 and ISO 4871 test specifications for sound from pneumatic equipment. Readings shown are based on the average noise level of each hoist configuration, proportionate to the utilized time in a regular cycle.

\* Lpc (Peak Sound Pressure) does not exceed 130 dB.

\* Performance based on 6,3 bar operating pressure.

## INSTALLATION

Prior to installing the hoist, carefully inspect it for possible shipping damage.

Hoists are supplied fully lubricated from the factory.

Lubricate load chain before initial hoist operation.



### CAUTION

- Owners and users are advised to examine specific, local or other regulations which may apply to a particular type of use of this product before installing or putting hoist to use.



### WARNING

- A falling load can cause injury or death. Before installing, read "SAFE OPERATING INSTRUCTIONS".

## Hoist

The 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.

On HLK hoists remove the solid plug located on top of the hoist and install the attached vent plug prior to using the hoist. When the hoist is in its normal level position check that the gear case oil level is at the check plug on the side of the gear box.

## Hook Mounted Hoist Installation

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

Ensure the supporting member rests completely within the saddle of the hook and is centered directly above the hook shank.



**CAUTION**

- **Do not use a supporting member that tilts the hoist to one side or the other.**

## Trolley Mounted Hoist Installation

Refer to trolley manufacturers installation information to safely install the trolley and attach the hoist.

## Chain Container

When installing a chain container, refer to the manufacturers installation Instructions for Chain Containers.



**CAUTION**

- **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.**

1. Check the chain container size to make sure the length of load chain is within the capacity of the chain container. Replace with a larger chain container, if required.
2. Attach the chain container to the hoist.
3. Run bottom block to lowest point and run hoist in up direction to feed the chain back into the container.

## Air System

The supply air must be clean, lubricated and free from water or moisture. A minimum of 6.3 bar/ 630 kPa (90 psig) at the hoist motor is required, during operation to provide rated hoist performance.

## Air Lines

The minimum allowable hose size is 13 mm (1/2 in). Hose size is based on a maximum of 15 m (50 ft) between the air supply and the hoist motor. Contact your nearest distributor for recommended air line sizes for distances greater than 15 m (50 ft). Before making final connections to hoist inlet, all air supply lines should be purged with clean, moisture free air. 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. If quick-disconnect fittings are used at the inlet of the hoist, they must have at least a 10 mm (3/8 in) air passage. Use of smaller fittings will reduce performance.

**NOTICE**

- **Always use an air line filter and lubricator with the hoist.**

**Air Line Lubricator**

Always use an air line lubricator with these hoists. Use a lubricator having an inlet and outlet at least as large as the inlet on the hoist motor. Install the air line lubricator as close to the air inlet on the hoist motor as possible.

**NOTICE**

- **Lubricator must be located no more than 3 m (10 ft) from the hoist motor.**
- **Shut off air supply before filling air line lubricator.**

The air line lubricator should be replenished daily and set to provide lubrication at a minimum rate of 1 to 3 drops per minute adjusted at maximum hoist speed, of SAE 10W oil or a good grade of hydraulic oil.

**NOTICE**

- **Do not use automotive type detergent oil. Detergents will delaminate the MLK and HLK hoist motor vanes and cause premature failure.**

**Air Line Filter**

It is recommended that an air line strainer/filter be installed as close as practical to the motor air inlet port to prevent dirt from entering the motor. The strainer/filter should provide 10 micron filtration and include a moisture trap. Clean the strainer/filter monthly to maintain 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 to 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.

**Overload Device**

An overload device is required on all hoists with a rated capacity of over 1 metric ton (2,200 lbs) used for lifting applications.

The overload device is integrated into the hoist air motor and prevents the hoist from lifting a load greater than the overload value listed in the specifications chart. If an overload is detected, inlet supply air is stopped and the hoist will not operate.

If the overload device is activated the load must be lowered and reduced. Alternative methods should be used to accomplish the task. To lower the load reset the hoist by pressing the "ON" button of the emergency stop device and press the hoist control lever to lower.

**Adjustment of Bleed Screws on MLK and HLK Pendant Control Hoists**

The two bleed adjustment screws, located under the valve chest, used on MLK and HLK hoists with a pendant control are factory adjusted to provide optimum control and performance at 6.3 bar/ 630 kPa (90 psig) air pressure. If the hoist is used with other air supply pressures, the bleed adjustment screws may require readjustment.

For maximum performance and control, adjust the bleed screws as follows:

1. Loosen the adjustment screw locknut.
2. Back out the adjustment screw approximately one third (1/3) of a turn.

3. While fully depressing the pendent throttle lever and holding it in that position, turn in the adjustment screw until the piston rod fully retracts. This adjustment will provide a good balance of spotting control and maximum hoist speed. If better spotting control is desired, slowly back out the adjustment screw a little at a time until the spotting control is suitable.
4. Tighten the adjustment screw locknut.

### Storing the Hoist

1. Always store the hoist in a no load condition.
2. Wipe off all dirt and water.
3. Oil the load 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 in the "INSPECTION" section.

## OPERATION

The four most important aspects of hoist operation are:

1. Follow all safety instructions when operating hoist.
2. Allow only people trained in safety and operation on this hoist to operate the 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.

Always operate, inspect and maintain this hoist in accordance with any applicable safety codes and regulations.

Operators must be physically competent. Operators should have no health condition which might affect their ability to react, and they must have good hearing, vision and depth perception. The hoist operator must be carefully instructed in his duties and must understand the operation of the hoist, including a study of the manufacturer's literature. The operator must be aware of 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 into 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, and from pendant to manifold.
3. When first running the hoist or trolley motors, a small amount of non-detergent, 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 the trolley along the entire length of the beam.
6. Check operation of limit devices.
7. Check that trolley (if equipped) and hook movement is the same direction as arrows or information on the pendant control.
8. Check to see that the hoist is securely connected to the overhead crane, monorail, trolley or supporting member.
9. Check to see that the load is securely inserted in the hook, and that the hook latch is engaged.
10. Raise and lower a light load to check operation of the hoist brake.



11. Check hoist operation by raising and lowering a load equal to the rated capacity of the hoist a few centimeters off the floor.
12. Check to see that the hoist is directly over the load. Do not lift the load at an angle (side pull or “yard”).
13. Inspect hoist and trolley performance when raising, moving and lowering test load(s). Hoist and trolley must operate smoothly and at rated specifications prior to being placed in service.

**⚠ WARNING**

- **Only allow personnel instructed in safety and operation of this product to operate the hoist and trolley.**
- **The hoist is not designed or suitable for lifting, lowering or moving persons. Never lift loads over people.**

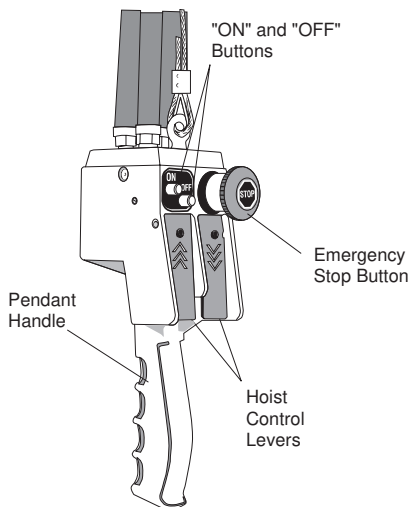
## Hoist Controls

### Two Lever Pendant

Two lever pendants provide operation of the hoist only. For units with powered trolleys a four lever pendant is required. Refer to manufacturers information on Pendant Throttle Handle Assemblies for two and three motor functions.

The pendant control throttle uses two separate levers for hoist operation. Direction of hook travel is controlled by whichever lever is depressed.

1. To start hoist operation, press the “ON” button.
2. To operate hoist, press the “UP” or “DOWN” control lever.
3. In the event of an emergency, all hoist operation can be stopped by pushing the emergency stop button. This will prevent air from reaching the hoist motor which will stop any movement.
4. The “OFF” button will also stop hoist operation if pressed.
5. The “ON” button must be pushed to restart the hoist after the “Emergency Stop” or “OFF” button have been used.



(Dwg. MHTPA0671)

**⚠ WARNING**

- **The hook latch is intended to retain loose slings or devices under slack conditions. Caution must be used to prevent the latch from supporting any of the load.**

## INSPECTION

ENGLISH



### 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 during routine hoist operation. Periodic inspections are thorough inspections performed by personnel trained in inspection and maintenance of the hoist.

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 an appointed person. A determination must be made as to whether a deficiency constitutes a safety hazard before resuming operation of the hoist.

#### Records and Reports

Some form of inspection record should be maintained for each hoist, listing all points requiring periodic inspection. A written report should be made monthly on the condition of the critical parts of each hoist. 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.**

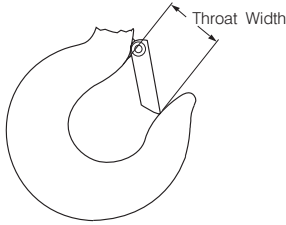
#### Load Chain Reports

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

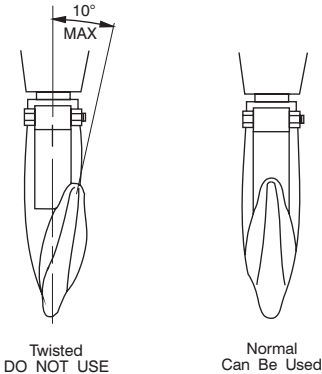
#### Frequent Inspection

On a hoist in continuous service, frequent inspection should be made 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 the hoist and bottom block. If chain binds, jumps, is excessively noisy or “clicks”, clean and lubricate the chain. If problem persists, replace the chain. Do not operate the hoist until all problems have been corrected.



(Dwg. MHTPA0040)



(Dwg. MHTPA0111)

**Table 1**

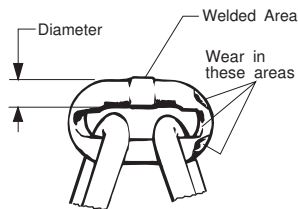
| Hoist Model  | "T" Throat Opening |      |              |    |
|--|--------------------|------|--------------|----|
|  | New Hook           |      | Discard Hook |    |
|  | in                 | mm   | in           | mm |
| ML250K-E,<br>ML250KS-E,<br>ML500K-E<br>and ML500KS-E   | 1,06               | 27   | 1,15         | 29 |
| ML1000K-E<br>and ML1000KS-E                            | 1,25               | 31,8 | 1,35         | 34 |
| ML250KR-E,<br>ML500KR-E,<br>HL1000K-E<br>and HL1500K-E | 1,22               | 31   | 1,32         | 34 |
| HL2000K-E  | 1,50               | 38   | 1,62         | 41 |
| HL3000K-E<br>and HL4500K-E                             | 1,87               | 48   | 2,02         | 51 |
| HL6000K-E  | 2,25               | 57   | 2,43         | 62 |

- HOOKS.** Check for wear or damage, increased throat width, bent shank or twisting of hook. Replace hooks which exceed the throat opening discard width shown in Table 1 (ref. Dwg. MHTPA0040) or exceed a 10° twist (ref. Dwg. MHTPA0111). If the hook latch snaps past the tip of the hook, the hook is sprung and must be replaced. Check hook support bearings for lubrication or damage. Make sure they swivel easily and smoothly. Repair or lubricate as necessary.
- UPPER AND LOWER LIMIT DEVICE.** Test operation with no load slowly to both extremes of travel. Upward travel must stop when the bottom block or stop buffer on chain hits hoist limit arm. Downward travel must stop when the loop at the unloaded end of the chain decreases and activates the limit arm.
- AIR SYSTEM.** Visually inspect all connections, fittings, hoses and components for indication of air leaks. Repair any leaks found. Check and clean filters if equipped.
- CONTROLS.** During operation of hoist, verify response to pendant is quick and smooth. Ensure the controls return to neutral when released. If hoist responds slowly or movement is unsatisfactory, do not operate hoist until all deficiencies have been corrected.
- HOOK LATCH.** Check operation of the hook latch. Replace if broken or missing.

**CAUTION**

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

7. **CHAIN** (ref. Dwg. MHTPA0102). 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. Replace a chain that fails any of the inspections. Check chain lubrication and lubricate if necessary. See “Load Chain” under “LUBRICATION.”



(Dwg. MHTPA0102)

### 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 the load sheave.**

8. **LOAD CHAIN REEVING.** Make sure welds on standing links are away from the powered chain sheave. Reinstall chain if necessary. Make sure chain is not capsized, twisted or kinked. Adjust as required.

### Periodic Inspection

Frequency of periodic inspection primarily depends on the severity of usage:

**NORMAL**  
yearly

**HEAVY**  
semiannually

**SEVERE**  
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”. Also inspect the following:

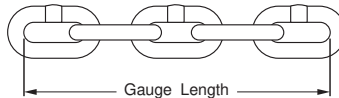
1. **FASTENERS.** Check rivets, capscrews, nuts, cotter pins and other fasteners on hooks, hoist body and chain bucket, if used. Replace if missing and tighten or secure if loose.
2. **ALL COMPONENTS.** Inspect for wear, damage, distortion, deformation and cleanliness. If external evidence indicates the need for additional inspection return hoist to your nearest **Ingersoll-Rand** service repair center.
3. **HOOKS.** Inspect hooks for cracks. Use magnetic particle or dye penetrate to check for cracks. Inspect hook retaining parts. Tighten or repair, if necessary.
4. **LOAD CHAIN WHEELS.** Check for damage or excessive wear. Replace damaged parts. Observe the action of the load chain feeding through the hoist. Do not operate a hoist unless the load chain feeds through the hoist and hook block smoothly and without audible clicking or other evidence of binding or malfunctioning.
5. **MOTOR.** If performance is poor, contact your nearest service repair center for repair information.
6. **BRAKE.** Raise a load equal to the rated capacity of the hoist a few cms (inches) off the floor. Verify hoist holds the load without drift. If drift occurs, contact your nearest service repair center for repair information.
7. **SUPPORTING STRUCTURE.** If a permanent structure is used inspect for continued ability to support load.
8. **TROLLEY** (if equipped). Refer to manufacturers instructions for installation and service information.
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.
11. **LOAD CHAIN.** Measure the chain for stretching by measuring across eleven link sections all along the chain (ref. Dwg. MHTPA0041) paying particular attention to the most reeved links. When any eleven links in the working length reach or exceed the discard length shown in Table 2, replace the entire chain. Always use a genuine **Ingersoll-Rand** Material Handling replacement chain.

**Table 2**

| Model No. | Chain Wire Size |      | Normal Length |       | Discard Length |     |
|-----------|-----------------|------|---------------|-------|----------------|-----|
|           | in              | mm   | in            | mm    | in             | mm  |
| MLK       | 1/4             | 6,35 | 8448          | 214,6 | 8,57           | 218 |
| HLK       | 3/8             | 9,52 | 9108          | 231,3 | 9,24           | 234 |

Zinc plated load chain is available for standard hoists. Always use stainless steel load chain on HL1000KR Spark Resistant Hoists.



(Dwg. MHTPA0041)

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 ASSEMBLY.** Check throttle lever moves freely. To limit hook downward travel the loop in the slack chain side must contact the throttle lever. To limit hook upward travel the bottom hook block must contact the throttle lever.

To test “UP” and “DOWN” travel limits first run hoist slowly with no load to verify proper function. Repeat test at full speed with no load to verify proper function.

### Hoists Not in Regular Service

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 with the requirements of “Frequent Inspection” before being placed into service.
2. A hoist that has been idle for a period of more than one year should be given a complete inspection conforming with the requirements of “Periodic Inspection” before being placed into service.
3. Standby hoists should be inspected at least semiannually in accordance with the requirements of “Frequent Inspection.” In abnormal operating conditions equipment should be inspected at shorter intervals.

## LUBRICATION

ENGLISH

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

The lubrication intervals recommended in this manual are based on intermittent operation of the hoist eight hours each day, five days per week. If the hoist is operated almost continuously or more than the eight hours each day, more frequent lubrication will be required. Also, the 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 the performance of the hoist. Failure to observe this precaution may result in damage to the hoist and/or its associated components.

### General Lubrication Information

The top and bottom hooks are supported by thrust bearings. These bearings require to be packed with a standard No. 2 multipurpose grease at regular intervals. Neglect of proper lubrication will lead to bearing failure. Contact your nearest **Ingersoll-Rand** service repair center for additional information.

### CAUTION

• **Do not use automotive type detergent oil. Detergents will delaminate the motor vanes in MLK and HLK hoists and cause premature failure.**

### Air Line Lubricator

Lubricate the hoist supply air with SAE 30W non-detergent motor oil (minimum viscosity 135 Cst at 40° C (104° F)) from an in-line lubricator. The use of detergent oil may cause premature failure.

### Load Chain

### WARNING

• **Failure to maintain 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 the load chain weekly. Apply new lubricant over existing layer.
2. In severe applications or corrosive environment, lubricate more frequently than normal.
3. Lubricate hook and hook latch pivot points with the same lubricant used on the load chain.
4. To remove rust or abrasive dust buildup, clean chain with acid free solvent. After cleaning, lubricate the chain.
5. Use **Ingersoll-Rand** LUBRI-LINK-GREEN or a SAE 50 to 90 EP oil.

### Hook and Suspension Assemblies

1. Lubricate the hook and hook latch pivot points. Hook and latch should swivel/pivot freely.
2. Use **Ingersoll-Rand** LUBRI-LINK-GREEN or a SAE 50 to 90 EP oil.
3. On HL4500K and HL6000K hoists Lubricate the Idler wheel bearings in the upper suspension housing and bottom hook assembly with **Ingersoll-Rand** No. 68 Grease or a good quality No. 2 multipurpose grease.
4. On HL4500K and HL6000K hoists after each 300 hours of operation or more frequently if hoist is operating in a contaminated atmosphere, inject 2 or 3 shots of grease from a grease gun into grease fittings in the end of the idler wheel shafts.

**Gear Housing****MLK Hoists**

No additional lubrication is required for the gearing.

**HLK Hoists**

Remove the oil level plug from the side of the housing. If the oil level is below the piped tapped hole, remove the vent plug and add a sufficient amount of **Ingersoll-Rand** No. 62 oil (Texaco Meropa No. 3 or Texaco Meropa No. 220). Replace the oil level plug and vent plug.

**PARTS ORDERING INFORMATION**

The use of replacement parts other than **Ingersoll-Rand** Material Handling may invalidate the Company's warranty. For prompt service and genuine **Ingersoll-Rand** Material Handling parts provide your nearest Distributor with the following:

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

**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.

**Disposal**

When the life of the hoist has expired, it is recommended that the hoist be disassembled, degreased and parts separated by material so that they can be recycled.

**SERVICE AND MAINTENANCE**

Hoist repair and maintenance should only be carried out by an Authorized Service Repair Center. Contact your nearest **Ingersoll-Rand** office for details.

The original language of this manual is English.

Hoist Parts and Maintenance information is available in English by requesting the following publications:

MLK Hoist Parts, Operation and Maintenance Manual Form Number P6554

HLK Hoist Parts, Operation and Maintenance Manual Form Number P6587

Contact the nearest **Ingersoll-Rand** office for the name and address of the distributor in your country.

Setzen Sie sich mit der nächstgelegenen Geschäftsstelle von **Ingersoll-Rand** in Verbindung, um den Namen und die Anschrift des Vertriebshändlers in Ihrem Land zu erfahren.

Kontakt nærmeste **Ingersoll-Rand** kontor for at få oplyst navn og adresse på distributøren i Deres respektive land.

Comuníquese con la oficina de **Ingersoll-Rand** le más cercana para obtener el nombre y la dirección del distribuidor en su país.

Contactez le bureau **Ingersoll-Rand** le plus proche pour obtenir le nom et l'adresse du distributeur de votre pays.

Per ottenere il nome e l'indirizzo del distributore **Ingersoll-Rand** nel vostro paese, contattare l'ufficio **Ingersoll-Rand** più vicino tra quelli elencati di seguito.

Navn og adresse til distributører i Norge kan fås ved henvendelse til nærmeste **Ingersoll-Rand**-kontor.

Neem contact op met het dichtstbijzijnde **Ingersoll-Rand** kantoor voor de naam en het adres van de distributeur in uw land.

Kontakta närmaste **Ingersoll-Rand** kontor för att få namn och adress på återförsäljaren inom landet.

Lähimmistä **Ingersoll-Rand**-toimistosta saat maahantuojan nimen ja osoitteen.

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