

PARTS, OPERATION AND MAINTENANCE MANUAL for AIR WIRE ROPE HOIST MODELS

A

250 kg (1/4 metric ton)

B

500 kg (1/2 metric ton)

ASR

250 kg (1/4 metric ton)

Spark Resistant

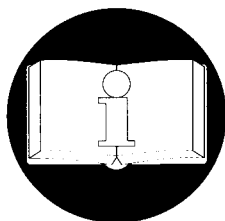
BSR

500 kg (1/2 metric ton)

Spark Resistant

TROLLEYS, MULTI-FUNCTION PENDANTS AND OTHER
ACCESSORIES ARE SHOWN IN ADDITIONAL PUBLICATIONS

(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 operation, installation 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 B30.16) and any other applicable safety codes and regulations.

Refer all communications to the nearest Ingersoll-Rand Material Handling Products Office or Distributor.

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INGERSOLL-RAND®
MATERIAL HANDLING

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 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.
- Powered hoists are designed to provide a 5 to 1 safety factor. 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 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 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 intended path of any load.

Ingersoll-Rand Material Handling 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 owner/employer, 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 responsibility 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. See ASME B30.9 for rigging information, American National Standards Institute, 1430 Broadway, New York, NY 10018.

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 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 PROCEDURES

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

An operator should be physically competent. The operator should have no health condition which might affect his ability to react, and he should understand the operation of the hoist, including reading the manufacturer's literature. The operator should have a working knowledge of hitching loads. The operator should have a good attitude regarding safety and should refuse to operate the hoist under unsafe conditions.

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 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 on 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 the hoist controls, do not operate the hoist until the sign has been removed by designated personnel.
4. Before each shift, the operator should check the hoist for wear or damage.
5. Never use a hoist which inspection indicates is worn or damaged.
6. Do not use hoist if hook latch on a hook has been sprung or broken.
7. Check that the hook latches are engaged before using.
8. Only lift loads less than or equal to the rated capacity of the hoist. See warning labels attached to the hoist.
9. 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.
10. Never place your hand inside the throat area of a hook.
11. Never use the wire rope as a sling.
12. Only operate a hoist when the wire rope is centered over the hook. Do not "side pull" or "yard".
13. Never operate a hoist with twisted, kinked or damaged wire rope.
14. Do not force wire rope or hook into place by hammering.
15. Be certain the load is properly seated in the saddle of the hook.
16. Do not support the load on the tip of the hook.
17. Never run the wire rope over a sharp edge. Use a sheave.
18. Pay attention to the load at all times when operating the hoist.
19. Make sure all people are clear of the load path. Do not lift a load over people.
20. Never use the hoist for lifting or lowering people, and never allow anyone to stand on a suspended load.
21. Ease the slack out of the wire rope and sling when starting a lift. Do not jerk the load.
22. Do not swing a suspended load.
23. Never suspend a load for an extended period of time.
24. Never leave a suspended load unattended.
25. Never weld or cut a load suspended by the hoist.
26. Never use the wire rope as a welding electrode.
27. Do not operate hoist if wire rope jumping, excessive noise, jamming, overloading, or binding occurs.
28. Keep the load from hitting the wire rope.
29. Do not use the up and down emergency stop limit protection as a normal means of stopping the hoist.
30. Avoid unnecessary joggling of hoist and/or trolley controls.
31. Always rig the hoist properly and carefully.
32. Shut off air supply before performing any maintenance.
33. Avoid collision or bumping of hoist.
34. After use, properly secure hoist and all loads.

WARNING TAGS AND LABELS

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 or label and install it. See parts list in parts section. Read and obey all warnings and other safety information attached to this hoist. Tag and label may not be shown 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 people or loads over people.
- Do not lift more than rated load.
- Do not operate unless load is centered under hoist.
- Do not operate with twisted, kinked or damaged chain or wire rope.
- Do not operate a damaged or malfunctioning hoist.
- Do not remove or obscure warning labels.
- Do not operate a wire rope hoist when rope is not properly seated in its groove.

Read the latest edition of ASME/ANSI B30.16 and National Electric Code (ANSI/NFPA 70). Comply with other federal, state and local rules.

P/N 71059612/B
for air and electric chain and wire rope hoists

INGERSOLL-RAND
MATERIAL HANDLING

SPECIFICATIONS

Table 1

Series	Lift		Lifting Speed		No. Wire Rope Falls	Wire Rope Diameter		Weight	
	ft	m	fpm	m/m		in	mm	lb	kg
1/4 ton - 250 kg (550 lb)									
A	15	4.6	70	21	2	1/4	6.5	220	100
1/2 ton - 500 kg (1,100 lb)									
B	15	4.6	35	11	2	1/4	6.5	220	100

Performance figures based on 70 SCFM (1.98 Nm³/min) at 90 psi (620 kPa) air supply at hoist inlet.

Model Code Explanation

Example:

A SR - 2 D T 2 - 10 BB

Series/Hoist Capacity

- A = 1/4 metric ton - 250 kg (550 lb)
- B = 1/2 metric ton - 500 kg (1,100 lb)

Spark Resistant

- SR = Spark Resistant

Control

- 1 = Pull Chain
- 2 = **Pendant**
- 3 = Two Motor Pendant
- 4 = Three Motor Pendant

Suspension

- A = Fixed Lug
- C = Swivel Top Hook
- D = Plain Rigid Trolley (Tapered Wheels for I-Beam)
- DT = Plain Rigid Trolley (Flat Tread Wheels)**
- F = Hand Chain Geared Trolley (Tapered Wheels for I-Beam)
- FT = Hand Chain Geared Trolley (Flat Tread Wheels)
- H = Vane Motor Driven Trolley, Pendant Control, (2) Wheel Drive (Tapered Wheels for I-Beam)
- HT = Vane Motor Driven Trolley, Pendant Control, (2) Wheel Drive (Flat Tread Wheels)
- J = Piston Motor Driven Trolley, Pendant Control, (4) Wheel Drive (Tapered Wheels for I-Beam)
- JT = Piston Motor Driven Trolley, Pendant Control, (4) Wheel Drive (Flat Tread Wheels)

Brake

- 2 = Motor Brake

Pull Chain/Pendant Control Hose Length

- 10 = 10 ft. (Standard)

Options

- BB = Bullard Burnham Hook(s) (not available on spark resistant models)**
- BR = Bronze Hook (standard on spark resistant models)

INSTALLATION

Proper installation is a prime factor in safe, efficient and trouble free operation. The following standards should be followed in planning and execution:

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

Lubrication of the wire rope is recommended before initial hoist operation.

CAUTION

• Owners and users are advised to examine specific, local and 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 using hoist.

WARNING

• A falling load can cause injury or death. Before installing or using read "SAFETY INFORMATION".

Before putting a grooved-drum hoist in service and periodically thereafter, run the hoist in the lowering direction as far as the down-stop will permit.

Hoist

Make certain the hoist is properly installed. A little extra time and effort in so doing can contribute a lot toward preventing accidents.

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 a maximum rated load plus a generous factor of at least 500% of the combined weights.

WARNING

• Before shipment, all oil was drained from the Motor Case (1). A quantity of oil sufficient for one filling is contained in the can packed with the hoist. Prior to operating the hoist, close Oil Cock (6) at the bottom of the Motor Case, remove the Vent Cap (2), and pour the entire contents of the can into the Motor Case.

Hook Mounted Hoist Installation

Place hook over mounting structure. Make sure hook latch is engaged. 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 to one side or the other.

Lug Mounted Hoist Installation

Design and construct mounting in accordance with the following standards:

- Use bolts of maximum diameter that will pass through holes in mounting boss on the hoist.
- Use a lug or plate on each side of the boss.
- Bolt lugs or plates solidly to the hoist and support. If necessary, use spacers to maintain lugs parallel to each other.
- Mounting must hold the hoist so that the longitudinal centerline of the drum is level.

Trolley Mounted Hoist Installation

(Refer to Dwg. MHTPA0580)

All Ingersoll-Rand trolleys shipped with a new hoist are adjusted at the factory to fit the minimum width beam flange on which the trolley will operate. When disassembling the trolley for installation on the beam, note the exact arrangement of spacers so that the trolley can be correctly reassembled.

For installation on a beam flange other than that for which the trolley is pre-adjusted, measure the beam flange and temporarily install the trolley on the hoist to determine the exact distribution and arrangement of the spacers.

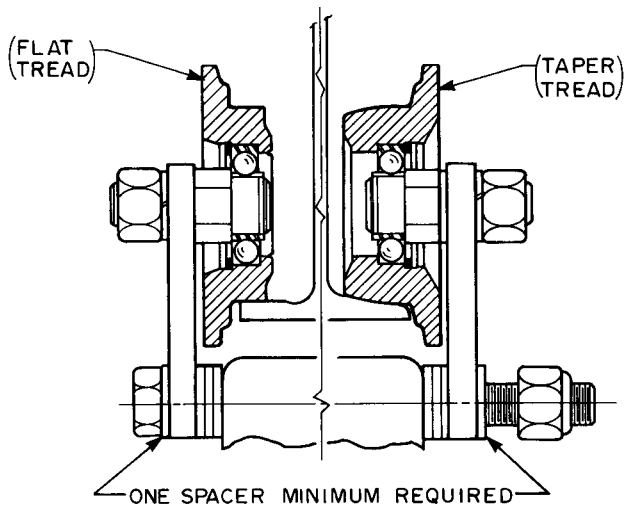
The distance between the wheel flanges should be 3/16 in. (5 mm) greater than the width of the beam flange for straight runway beams, and 3/16 in. to 1/4 in. (5 to 6 mm) greater in a runway system that includes sharp curves. The number of spacers between the Trolley Bracket and the mounting lug on the hoist should 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 Trolley Bracket. At least one spacer must be installed between each bolt head and Trolley Bracket, and each nut and Trolley Bracket.

When installing the hoist and trolley on the beam, make certain the Trolley Brackets are parallel and vertical.

Ensure beam stops are installed prior to operating hoist and trolley.

After installation, operate the trolley over the entire length of beam with a capacity load suspended 4 to 6 inches (100 to 150 mm) off the floor to make certain that adjustment and operation are satisfactory.

(For additional information refer to Installation and Maintenance Manual Form P6609 for Vane Motor Driven Trolleys.)



A or B Hoist Plain Rigid Trolley

(Dwg. MHTPA0580)

⚠ WARNING

- At least one Mounting Spacer (257) must be used between the head of each Trolley Bracket Bolt (255) and the Trolley Bracket (250) and between each Trolley Bolt Nut (256) and the Trolley Bracket. Failure to do this could cause the hoist to fall when used improperly.

Torque the Trolley Bolt Nuts (256) to 150 ft lb (203 N.m).

⚠ 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

The supply air must be clean, lubricated and free from water or moisture. A minimum of 90 psi (6.2 bar/620 Kpa) at 70 SCFM (1.98 Nm³/min) at the hoist motor is required to provide rated hoist performance.

Air Lines

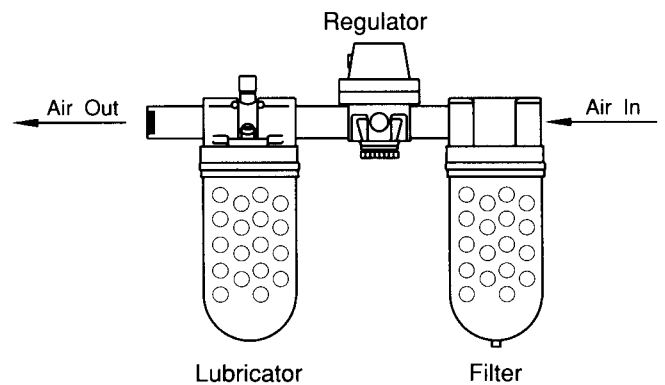
The inside diameter of the hoist air supply lines must not be smaller than 3/4 in. (19 mm) based on a maximum of 50 ft. (15 m) between the air supply and the hoist. Contact the factory for recommended air line sizes for distances greater than 50 ft. (15 m). Before making final connections, all air supply lines should be purged with clean, moisture free air before connecting to unit 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. If quick-disconnect fittings are used at the inlet of the hoist, they must have at least a 1/2 in. (13 mm) air passage. Use of smaller fittings will reduce performance.

NOTICE

- Always use an air line filter and lubricator with an A or B Series Hoist.

Muffler

A safety chain is furnished with each Ingersoll-Rand Muffler. Secure the end of the Chain under a capscrew so that the Muffler will not fall should it loosen or be broken from the Hoist.



(Dwg. MHTPA0191)

Air Line Lubricator

(Ref. Dwg. MHTPA0191)

Always use an air line lubricator with these hoists. Use a lubricator having an inlet and outlet at least one size larger than the inlet on the hoist motor. Install the air line lubricator as close to the air inlet on the hoist motor as possible. Refer to "ACCESSORIES" in the parts section for the recommended Filter-Lubricator-Regulator.

CAUTION

- Lubricator must be located no more than 10 ft. (3 m) from the motor.

The air line lubricator should be replenished daily and set to provide lubrication at a minimum rate of 2 to 3 drops per minute adjusted at maximum hoist speed, of SAE 10W oil or a good grade of hydraulic oil. A fine mist will be expelled from the exhaust when the air line lubricator is functioning properly.

CAUTION

- Do not use automotive type detergent oil. Detergents will delaminate the motor vanes (trolley motor) and cause premature failure.

Air Line Filter

(Ref. Dwg. MHTPA0191)

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. Refer to "ACCESSORIES" in the parts section for the recommended Filter-Lubricator-Regulator.

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.

CAUTION

- Shut off air supply before filling air line lubricator.

Hose Support

Use some type of support for supply hose to protect it and keep it out of the way. An **Ingersoll-Rand** AHC Hose Carrier is recommended. Hose Trolleys that operate on I-Beams or that operate on a special track are also available from **Ingersoll-Rand**. Various hose reels are also on the market. Your nearest **Ingersoll-Rand** distributor will be glad to assist you.

Controls

See that the controls function properly and return to neutral when released. Check the functioning of up and down stops by running the empty hook slowly to both extremes of travel. If the hook does not stop in its normal position, do not operate the Hoist until the cause of the trouble is located and corrected.

Wire Rope Handling Procedures

1. Always use gloves when handling wire rope.
2. Never use wire rope which is twisted, frayed or kinked.
3. Always ensure wire rope correctly spools in the wire rope drum grooves.

Storing the Hoist

1. Always store the hoist in a no load condition.
2. Wipe off all dirt and water.
3. Oil the wire rope, 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 product to operate hoist.
3. Subject each hoist to a regular inspection and maintenance 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 duties and be familiar with the operation of the hoist, including a study of the manufacturer's literature. The operator should be knowledgeable on the 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 light oil should be injected into the inlet connection to allow good lubrication.
4. When first operating the hoist and/or 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. 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.
7. Check that trolley (if equipped) and hook movement is the same direction as arrows or information on the pendant control.
8. Raise and lower a light load to check operation of the hoist brake.
9. Check hoist operation by raising and lowering a load equal to the rated capacity of the hoist 4 to 6 inches (100 - 150 mm) off the floor.
10. Check operation of limit devices.
11. Check to see that the hoist is directly over the load. Do not lift the load at an angle (side pull or "yard").
12. Check to see that the hoist is securely connected to the overhead crane, monorail, trolley or supporting member.
13. Check to see that the load is securely inserted in the hook, and that the hook latch is engaged.
14. Provide stops on the track to prevent over travel.

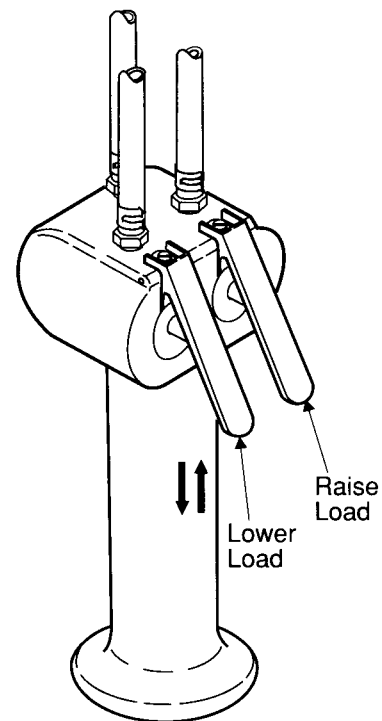
⚠ WARNING

- 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. (Ref. Dwg. MHTPA0547). For units with powered trolleys a four lever pendant is required.



(Dwg. MHTPA0547)

⚠ WARNING

- The hook latch is intended to retain loose slings or devices under slack conditions. Hook latches are not intended to be an anti-fouling device, so caution must be used to prevent the latch from supporting any of the load.

Refer to Form P6778 for information on Pendant Throttle Handle Assemblies for two and three motor functions.

⚠ 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 personnel trained in safety and operation of this equipment 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 B30.16 states inspection intervals depend upon the nature of the critical components of the equipment and the 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.

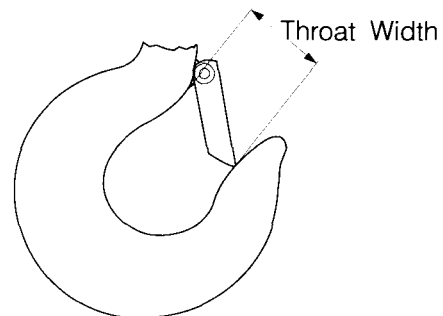
Wire Rope Reports

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

Frequent Inspection

On hoists 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 wire rope feed through the hoist and bottom block. If wire rope binds or jumps, clean and lubricate the wire rope. If problem persists, replace the wire rope. Do not operate the hoist until all problems have been corrected.
2. **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 2 (see Dwg. MHTPA0040) or exceed a 10° twist (see Dwg. MHTPA0111). If the hook latch snaps past the tip of the 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 they swivel easily and smoothly.
3. **UPPER AND LOWER LIMIT DEVICE.** Test operation with no load slowly to both extremes of travel. Upward travel must stop when the bottom block contacts hoist stop lever. Downward travel must stop when the rope guide contacts the cam on the stop lever.

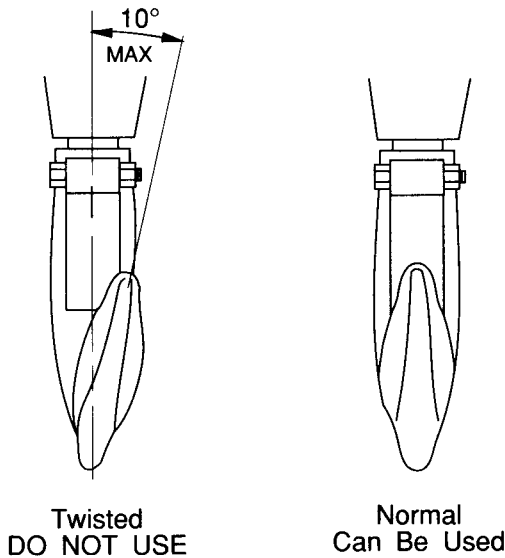


(Dwg. MHTPA0040)

Table 2

Hook Assembly No.	Illus. No.	THROAT OPENING			
		New Hook		Discard Hook	
		in.	mm	in.	mm
D01C-S377	118	1-1/8	28.6	1-7/32	31
D02-AS377	147	1-1/2	38	1-5/8	41.0

Bullard Hooks must be discarded if the self-closing and locking feature of the swing gate does not function or misaligns with the tip of the hook.



(Dwg. MHTPA0111)

4. AIR SYSTEM. Visually inspect all connections, fittings, hoses and components for indication of air leaks. Repair any leaks found. Check and clean all filters in the system.
5. 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.
6. HOOK LATCH. Make sure the hook latch is present and operating. Replace if necessary.

⚠ CAUTION

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

7. WIRE ROPE. Visually inspect all wire rope which can be expected to be in use during the day's operations. Inspect for damage indicated by distortion of wire rope such as kinking, "birdcaging," core protrusion, main strand displacement, corrosion, broken or cut strands. If damage is evident, do not operate hoist until the discrepancies have been reviewed and inspected further by personnel instructed in the operation, safety and maintenance of this hoist.

NOTICE

- The full extent of wire rope wear cannot be determined by visual inspection. At any indication of wear inspect the wire rope in accordance with instructions in "Periodic Inspection."

8. WIRE ROPE REEVING. Make sure wire rope spools evenly and correctly into grooves in the wire rope drum. Check wire rope is not twisted or kinked.

Periodic Inspection

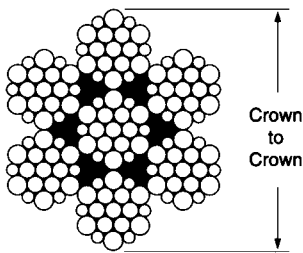
According to ASME B30.16, frequency of periodic inspection depends on the severity of usage:

NORMAL	HEAVY	SEVERE
yearly	semi-annually	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 all rivets, split pins, capscrews and nuts. Replace if missing or tighten 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, wire rope guides, springs and covers. Replace worn or damaged parts. Clean, lubricate and reassemble.
3. HOOKS. Inspect hooks carefully for cracks using magnetic particle or other suitable non-destructive method. Inspect hook retaining parts. Tighten or repair, if necessary.
4. MOTOR. If performance is poor, disassemble the motor and check for wear or damage to bearings and shafts. The parts should be cleaned, lubricated and reassembled. Replace worn or damaged parts.
5. BRAKE. Raise a load equal to the rated capacity of the hoist 4-6 inches (100-150 mm) off the floor. Verify hoist holds the load without drift. If drift occurs, disassemble. Remove brake plates as described in the "MAINTENANCE" section. Check and clean the brake parts each time the hoist is disassembled. Replace the brake discs if the thickness is less than 0.125 in. (3.18 mm) or is not uniform.
6. SUPPORTING STRUCTURE. Check for distortion, wear and continued ability to support load.
7. TROLLEY. (if equipped) Check that the trolley wheels track the beam properly and clearance between side rollers and beam is correct, 1/16 to 3/16 in. (2 to 5 mm). Check and that wheels and rail are not excessively worn and inspect side plates for spreading due to bending. Do not operate the hoist until the problem has been determined and corrected.
8. LABELS AND TAGS. Check for presence and legibility. Replace if necessary.
9. WIRE ROPE END ANCHORS. Ensure both ends of wire rope are securely attached. Secure if loose, repair if damaged, replace if missing.

10. WIRE ROPE. Besides the items in a frequent inspection, inspect for the following:
- Build-up of dirt and corrosion. Clean if necessary.
 - Loose or damaged end connection. Replace if loose or damaged.
 - Check wire rope anchor is secure.
 - Changes in the size of the wire rope diameter. Periodically measure the diameter of the wire rope from crown-to-crown throughout the life of the wire rope. The actual diameter should be recorded when the wire rope is under equivalent loading and in the same operating section. If the actual diameter of the wire rope has decreased more than 1/64 in. (.04 mm) a thorough examination of the wire rope should be conducted by an experienced inspector to determine the suitability of the wire rope to remain in service. (see Dwg. MHTPA0056).



(Dwg. MHTPA0056)

11. LIMIT ASSEMBLY. Check stop lever moves freely.

Hoists Not in Regular Use

- A hoist which has been idle for a period of one month or more, but less than one year, shall be given an inspection conforming with the requirements of "Frequent Inspection" prior to being placed into service.
- A hoist which has been idle for a period of more than one year shall be given an inspection conforming with the requirements of "Periodic Inspection" prior to being placed into service.
- Standby hoists should be inspected at least semi-annually in accordance with the requirements of "Frequent Inspection". In abnormal operating conditions hoists should be inspected at shorter intervals.

INSPECTION AND MAINTENANCE REPORT

A or B SERIES AIR WIRE ROPE HOIST

Model Number:			Date:		
Serial Number:			Inspected by:		
Reason for Inspection: (Check Applicable Box)					
<input type="checkbox"/>	1. Scheduled Periodic Inspection (___ Monthly ___ Quarterly ___ Yearly).				
<input type="checkbox"/>	2. Discrepancy(s) noted during Frequent Inspection.				
<input type="checkbox"/>	3. Discrepancy(s) noted during maintenance.				
<input type="checkbox"/>	4. Other: _____				
Refer to the Parts, Operation and Maintenance Manual "INSPECTION" section for general inspection criteria. Refer to appropriate National Standards and Safety 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			---		
Sheaves					
Wire Rope Guides					
Springs			---		
Covers					
Hooks:			---		
Top	Actual Hook Throat Width: _____ inches / _____ mm (See Table 2 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 (See Table 2 for minimum/maximum acceptable widths).				
	Hook Twist		---		(maximum 10%)
	Hook Crack Test Method Used: ___ Dye Penetrant ___ Magnetic Particle ___ Other: _____				
Hook Latch			---		
Brake (10% Load Test)			---		
Brake (Visual Inspection)					
Wire Rope Anchor					
Trolley					
Wire Rope			---		
Working length(s) _____ feet / _____ M Diameter _____ inches _____ mm					
Supporting Structure					
Labels and Tags			---		
Other Components (list in NOTES section)					
Testing:			Pass	Fail	
Operational (No Load)					
Operational (10% Load)					
Operational (Maximum Test Load *)					

* Refer to the Parts, Operation and Maintenance manual "Testing" in the "MAINTENANCE" section to determine Maximum Test Load.

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. 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 Series A or B Hoist is disassembled for overhaul or replacement of parts, lubricate as follows:

1. Coat all motor parts with a light film of **Ingersoll-Rand Pneu-Lube®** Medium Oil No. 50 or a good quality hydraulic oil before assembling.

⚠ CAUTION

- **Do not use automotive type detergent oil. Detergents will delaminate the motor vanes (trolley motor) and cause premature failure.**

2. The 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 will lead to bearing failure.

Wire Rope

Follow the wire rope manufacturer's instructions. At a minimum, observe the following guidelines.

1. Clean with a brush or steam if there is dirt, rock dust or other foreign material on the surface of the wire rope.

⚠ CAUTION

- **Do not use an acid-based solvent. Only use cleaning fluids specified by the wire rope manufacturer.**

2. Apply a wire rope lubricant, **Ingersoll-Rand LUBRI-LINK®** or SAE 30W oil.
3. Brush, drip or spray lubricant weekly, or more frequently, depending on severity of service.

Maintain Oil Level in Motor Case

At regular intervals, depending on the service to which the Hoist is subjected, check the oil level in the motor as follows:

After the Hoist has been idle for several hours, open the Oil Cock (6) at the bottom of the Motor Case (1) and allow the accumulated water to drain out. Open the plug on the side of the Motor Case and unscrew the Vent Cap (2) from the top of the Motor Case. Add oil through the top opening of the Motor Case until the oil in the case is level with the side plug located below the center of the motor. Do not overfill.

Maintain Grease Level in Gear Chamber

Periodically, as experience indicates, remove the Grease Plug (59) from the side of the Hoist Housing (57). If the grease level is below the opening, remove the top Grease Plug and add **Ingersoll-Rand Heavy Gear Grease No. 70** to bring the grease in the chamber to the level of the side opening. **Ingersoll-Rand Light Grease No. 28**, or a lime or soda soap grease may be substituted for the No. 70 Grease. Two pounds of grease are required for an initial filling.

Valve Chest, Sheaves and Trolley Wheels

Weekly inject about 1.5 cc of **Ingersoll-Rand Light Grease No.28** or No 2 cup grease through the Grease Fitting in the Valve Chest. Inject a few drops of machine oil into the oil hole in the Sheave Block.

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 Piston Trolley Wheel Shafts.

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®** or a SAE 50 to 90 EP oil.

In Line Lubricator

Lubricate the motor with **Ingersoll-Rand Pneu-Lube** Medium Oil No. 10 (or SAE 10), or No. 50 (SAE 20 or 20W) non-detergent motor oil from an in-line lubricator. The use of detergent oil may cause premature failure of trolley vane motor.

Recommended Lubricants:

Motor

For ambient temperatures of 30° F to 80° F (0° to 26° C), use **Ingersoll-Rand Pneu-Lube®** Medium Oil No. 50 or SAE 20 or 20W motor oil.

For ambient temperatures below 30° F (0° C), use SAE 10 motor oil.

For ambient temperatures above 80° F (26° C), use SAE 30 motor oil.

TROUBLESHOOTING

This section provides the information necessary for troubleshooting this hoist. The troubleshooting guide provides a general outline of problems which could be experienced with normal use of this hoist. It lists the symptom, the possible cause, and the possible remedy for the trouble being experienced.

SYMPTOM	CAUSE	REMEDY
Hoist will not operate.	<p>No air supply to hoist, or too little flow or pressure.</p> <p>Valve or throttle lever sticking.</p> <p>Pendant malfunction.</p> <p>Hoist is overloaded.</p> <p>Motor is damaged.</p> <p>Lubricator or motor is low on oil.</p> <p>Brake is not releasing.</p>	<p>Check PSI (bar) at hoist inlet when running at full throttle. Refer to "SPECIFICATIONS" section for correct CFM (cu.m/min) and PSI (bar).</p> <p>Check throttle lever for free movement.</p> <p>Check PSI (bar) at pendant while running at full throttle. Minimum operating pressure in pendant line is 55 PSI (3.8 bar).</p> <p>Reduce load to within rated capacity.</p> <p>Repair or replace. See "MAINTENANCE" section.</p> <p>Fill lubricator and check oil level in motor.</p> <p>Check brake release circuit and PSI (bar) at the brake outlet when running at full throttle. (55 PSI (3.8 bar) minimum)</p>
Load continues to move when hoist is stopped. "UP" direction.	<p>Valve or throttle lever sticking.</p> <p>Dump valves not releasing.</p> <p>Pendant lever sticking.</p>	<p>Check throttle lever for free movement.</p> <p>Check pendant hose dump valves.</p> <p>Check lever and restore free movement.</p>
Load continues to move when hoist is stopped. "DOWN" direction.	<p>Valve or throttle lever sticking.</p> <p>Dump valves not releasing.</p> <p>Brake is slipping.</p> <p>Hoist is overloaded.</p> <p>Pendant lever sticking.</p>	<p>Check throttle lever for free movement.</p> <p>Check pendant hose dump valves.</p> <p>Check brake springs and brake plate lining for wear and proper adjustment. See "MAINTENANCE" section.</p> <p>Reduce load to within rated capacity.</p> <p>Check lever and restore free movement.</p>
Hoist will not lift load.	<p>Hoist is overloaded.</p> <p>No air supply to hoist, or too little CFM or PSI.</p> <p>Main air valve travel is restricted.</p> <p>Exhaust restricted.</p> <p>Motor is damaged.</p>	<p>Reduce load to within rated capacity.</p> <p>Check PSI (bar) at hoist inlet. Refer to "SPECIFICATIONS" section for correct CFM (cu.m/min) and PSI (bar).</p> <p>Check throttle lever and linkage for free movement.</p> <p>Inspect vents and replace mufflers.</p> <p>Check for contamination in rotary valve bushing and damage to crankshaft and rod bearings.</p>

SYMPTOM	CAUSE	REMEDY
Hook lowers, but will not raise.	No air supply to hoist, or too little CFM (cu.m/min). Hoist is overloaded. Pendant malfunction.	Check power supply and connections, in power supply line. Reduce load to within rated capacity. Check PSI (bar) at air inlet connection on pendant.
Hook can be raised but not lowered.	Brake diaphragm leaking, or brake is out of adjustment. Low air pressure. Pendant malfunction.	Install new brake diaphragm, refer to "MAINTENANCE" section. Check for proper brake adjustment. Check PSI (bar) at valve inlet. Raise pressure to recommended level. Check PSI (bar) at fitting connection on pendant.
Wire rope jumps or binds.	No lubrication on wire rope. Worn or stretched wire rope. Capsized hook. Hoist not in-line with load. Incorrectly reeved wire rope.	Lubricate wire rope. See "LUBRICATION" section. See "INSPECTION" to determine wear limit. Replace if necessary and lubricate frequently. Correct as described in "MAINTENANCE" section. Align hoist with load. Do not "yard" or side pull. Check wire rope is correctly reeved.
Trolley Trolley binds or trolley wheels slip.	Damaged beam. Too much oil, grease or paint on track of beam. Trolley not spaced for beam clearance.	Repair or replace beam. Clean off oil, grease or paint. Check trolley spacing. Refer to "INSTALLATION" section.
Air powered trolley does not operate.	Pendant lever sticking. No air supply to trolley, or too little CFM (cu.m/min) or PSI (bar). Control valve is sticking.	Check lever and restore free movement. Check PSI (bar) at trolley valve. See "MAINTENANCE" section.

⚠ WARNING

- Never perform maintenance on the hoist while it is supporting a load.
- Before performing maintenance, tag controls:
DANGER - DO NOT OPERATE - EQUIPMENT BEING REPAIRED.
- Only allow personnel instructed in the operation and service of this hoist to perform maintenance.
- After performing any maintenance on the hoist, dynamically test 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 may be required to comply with standards and regulations set forth in areas outside of the USA.
- Shut off air system and depressurize air lines before performing any maintenance.

Wire Rope

Keep the Wire Rope tightly wound on the grooved Rope Drum (69).

Apply a load to the Hook and rewind the Rope on the Drum. During storage, shipment or if the hoist is used primarily for lowering loads, the Wire Rope tends to uncoil. If not corrected, loops will form which may in time cross over one another and cause serious damage to the wire rope.

Brake Adjustment

Screw the Brake Bolts (92) along the studs until there is 1/32 in. to 1/16 in. (1 to 2 mm) play of the Brake Plunger (98) on the studs.

General Maintenance Instructions

It is recommended that all maintenance work on the hoist be performed on a bench in a clean dust free work area. In the process of disassembling the hoist, observe the following:

1. Turn off air system and depressurize air lines before performing any maintenance. Disconnect hoses from hoist and trolley. Plug or cap openings to keep out dirt and contaminants.
2. Never disassemble the hoist any further than is necessary to accomplish the needed repair. A good part can be damaged during the course of disassembly.
3. 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.
4. Do not heat a part with a flame to free it for removal, unless the 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. The use of heat or excessive force should not be required.

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

Reverse Valve Removal

Unscrew the Throttle Valve Cap (23) and remove the Poppet Throttle Valve (20) from the Valve Chest (7) before attempting to withdraw the Reverse Valve (25) from the Reverse Valve Bushing (12).

Valve Chest Removal

Use two D01-932 Jack Bolts, listed under Maintenance Tools, to remove the Valve Chest (7) from the Motor Case (1).

Removal and Installation of Bushings in Valve Chest

Use an arbor that will clear the Bushing Key (10) that projects into each valve chest bore and press on the bushing face that is flush with the valve chest face when pressing either Rotary Valve Bushing (8) or Reverse Valve Bushing (12) from the Valve Chest. Otherwise the Bushing Key will be sheared off.

If Rotary Valve (26) is too tight in the new Bushing, lap it to a good running fit; if too tight to lap, ream the Bushing to 1.000 in. (25.4 mm).

Do not tap the Reverse Valve (25) into the Reverse Valve Bushing. If the Valve fits too tightly in the new Bushing ream the bushing to 1.250 in. (31.75 mm).

Crank Assembly

The two sections of the Crank (28) are joined and marked before final machining, therefore only those with identical marking can be used together. If two or more Cranks are disassembled at one time, be sure the stamping on each web is identical when reassembling.

Lightly strike the large end of the Crank Lock Pin (30) to firmly seat it in the Crank and tightly screw the Crank Lock Pin Nut (31) onto it.

Piston and Cylinder Replacement and Installation

Do not use a combination of old and new style Piston (48) in the same motor.

Do not expand the Piston Ring (49) more than is necessary to slide it over the Piston (48) and into the groove.

Use the D01-933 Piston Ring Compressor when installing the Cylinders (44) on the Hoists with Ring-Type Pistons (48).

Drive Shaft Bearing Installation

Install the Drive Shaft Inner Bearing (78) so that the felt-sealed side is adjacent to the gear cut on the Drive Shaft (75). On the Felt-sealed side, the faces of the outer and inner rings are flush, while on the shielded side, the face of the inner ring is slightly lower than that of the outer ring.

Install the Drive Shaft Outer Bearing (77), open side first, on the Shaft. Lock the Bearing Screw (79) with a punch after tightening it in the Shaft.

Intermediate Gear Bearing Installation

Do not remove the Intermediate Gear Bearings (85) from the Intermediate Gear (82) unless the Bearings must be replaced.

Use a Needle Bearing Inserting Tool (see Maintenance Tool No. 32788) when installing new Bearings.

Do all pressing on the stamped face of the Bearing. Press one Bearing in from each end of the gear bore until the oil hole in the bearing shell aligns with the hole in the gear hub.

Gear Cover Installation

To facilitate the installation of the Gear Cover (86), run the Brake Bolt Nuts (92) onto the studs compressing the Brake Springs (94) enough to allow the Brake Plate (90) to clear the brake facing (65) before applying the Gear Cover of the Hoist Housing (57). Adjust the brake as instructed in Brake Adjustment after the Cover is secured to the Housing.

Guide Rods

Periodically clean and lubricate guide rods (102). Dry or contaminated guide rods may prematurely wear wire rope or cause spooling problems.

Testing

After performing any maintenance on the hoist, dynamically test 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 may be required to comply with standards and regulations set forth in areas outside of the USA.

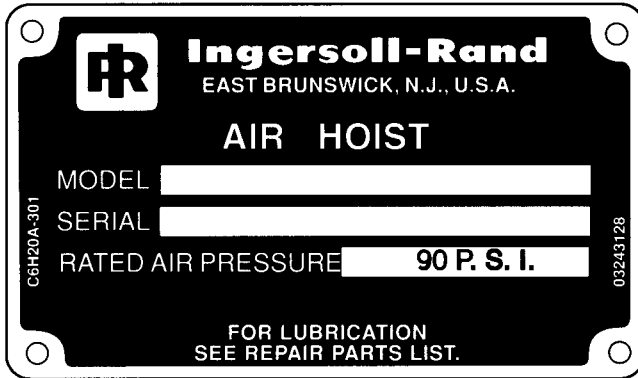
PARTS ORDERING INFORMATION

The hoist is 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.

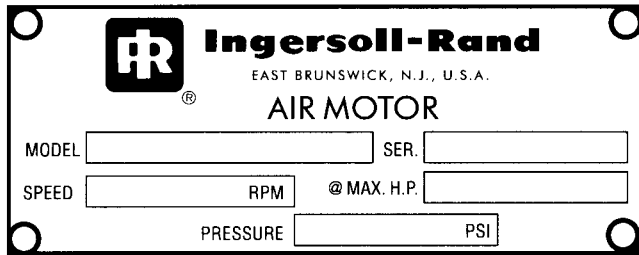
The use of other than **Ingersoll-Rand** Material Handling replacement parts may result in decreased hoist performance, and may, at the company's option, invalidate the warranty. For prompt service and genuine **Ingersoll-Rand** Material Handling parts, provide your nearest Distributor with the following:

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

The model and serial number label is located on the hoist housing.



The air motor label is located on the hoist motor case.



Labels are shown smaller than actual size. For your convenience and future reference it is recommended that the following information be recorded.

Hoist Model Number _____

Hoist Serial Number _____

Motor Serial Number _____

Hoist Purchase Date _____

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 your nearest **Ingersoll-Rand** Distributor.

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 cause changes to this hoist which are not included in this manual. Manuals are periodically revised to incorporate changes. Always check the manual edition.**

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. For additional information contact:

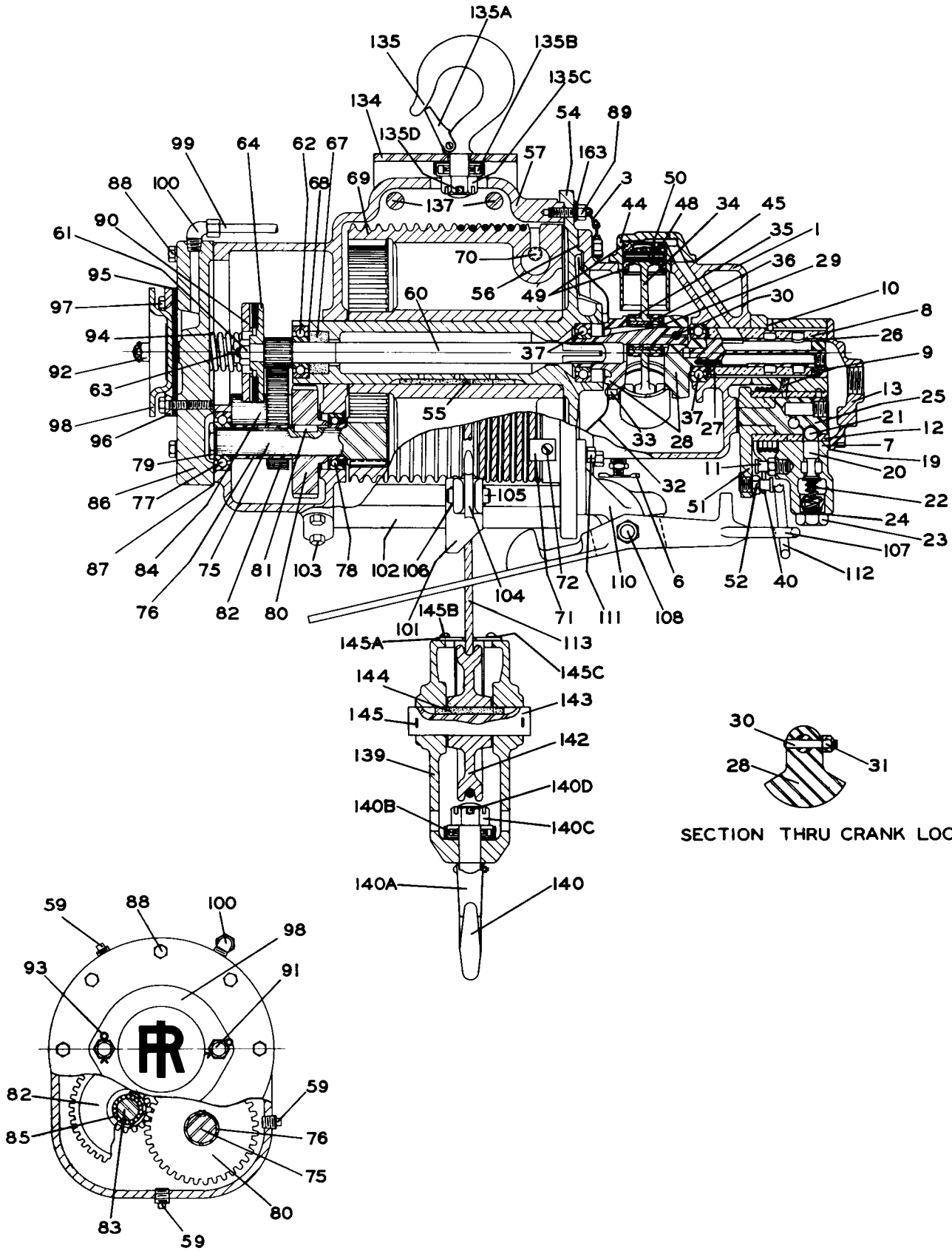
Ingersoll-Rand Material Handling

2724 Sixth Avenue South
Seattle, Wa 98124 USA
Phone: (206) 624-0466
Fax: (206) 624-6265
or

Ingersoll-Rand Material Handling

Samia, Douai Operations
111, avenue Roger Salengro
59450 Sin Le Noble, France
Phone: (33) 27-93-08-08
Fax: (33) 27-93-08-00

HOIST ASSEMBLY DRAWING

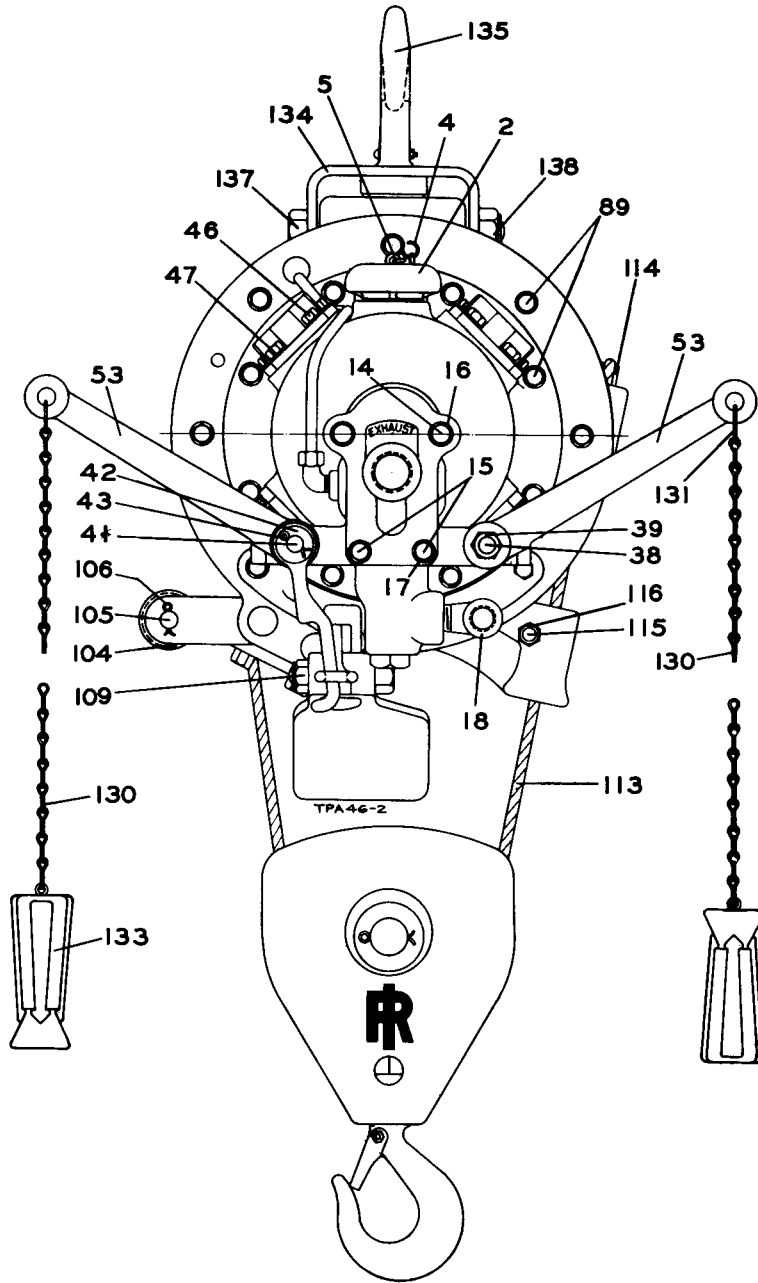


(Dwg. TPA46-2)

HOIST ASSEMBLY PARTS LIST

ITEM NO.	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER
---	Motor Assembly (with Pendant control valve chest)	1	D01-A501B WPT
---	Motor Assembly (with Pull Chain control valve chest)	1	D01-A501B
1	Motor Case	1	D01-501C
2	Vent Cap Assembly	1	D02-303A
3	Vent Cap Chain	1	D02-891
4	Vent Cap Chain S-Hook	1	D02-421
*	Vent Cap Screen	1	D02-889
*	Vent Cap Screen Retainer	1	6CND-233-1/2
5	Vent Cap Cotter	1	D02-893
6	Oil Cock	2	D02-308
*	Motor Nameplate	1	D01-99-R
	Motor Nameplate (stainless)		D01-99-RS
*	Nameplate Screw	4	R4K-302-12
---	Valve Chest Assembly	1	D01-A545A-4
7	Valve Chest	1	D01-545A-4
8	Rotary Valve Bushing	1	D01-525AS
9	Valve Oiler	2	JA4-75
10	Bushing Key	2	D02-538
11	Throttle Spring Stop Pin	1	D02-553
12	Reverse Valve Bushing	1	D01-945S
*	Grease Fitting	1	R1-188
*	Valve Chest Gasket	1	D01-128
13	Valve Chest Cover	1	D01-546A
14	Valve Chest Long Screw	2	D01-548
15	Valve Chest Short Screw	2	T33-68
16	Long Screw Lockwasher	2	D02-321-10
17	Short Screw Lockwasher	2	T11-58-5
18	Inlet Fitting, Elbow	1	D01-581
• 19	Valve Chest Cover Gasket	1	D01-928
20	Poppet Throttle Valve	1	D01-940
21	Throttle Valve Ball	1	D10-280
22	Throttle Valve Spring	1	B01-11
23	Throttle Valve Cap	1	D01-943
24	Throttle Valve Cap Gasket	1	D01-946
25	Reverse Valve	1	D01-944
26	Rotary Valve	1	D01-526A
27	Rotary Valve Drive Pin	1	D01-527A
*	Control Hose Union	3	MR-129
*	Lockwasher	2	D01-322
*	Motor Case Screw Nut	1	G7-139
---	Crank Assembly	1	D01-A561B
28	Crank (two matched parts, not sold separately)	1 Set	D01-516B
29	Crank Lock Pin	1	D01-520A
30	Crank Lock Pin Nut	1	501-639
31	Oil Splasher	1	D01-540A
32	Oil Splasher Rivet	3	T06-66
33	Crank Pin Sleeve	1	D01-519A
34	Connecting Rod	4	D01-509A
35	Connecting Rod Ring	2	D01-510
• 36	Connecting Rod Bushing	1	D01-511A

HOIST ASSEMBLY DRAWING



HOIST ASSEMBLY PARTS LIST (CONT'D)

ITEM NO.	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER
37	Crank Bearing	2	G7-24
38	Throttle Lever Bolt	1	D02-411A
39	Throttle Lever Bolt Nut	2	D02-418A
40	Throttle Lever Spring	1	D01-412A
41	Stop Link Bolt	1	D02-523
42	Stop Link Bolt Washer	1	D02-419
43	Stop Link Bolt Cotter	1	D02-524
44	Cylinder	4	D01-A505A
*	Cylinder Head	1	D01-H505A
*	Cylinder Sleeve	1	D01-L505A
• 45	Cylinder Gasket	4	D01-507
46	Cylinder Capscrew	16	D01-506
47	Cylinder Capscrew Washer	16	D01-504
48	Piston	4	D01-A513B
	Ring-Type Piston (for Hoists over serial number 71,000)		D01-A513A
	Plain-Type Piston (for Hoists under serial number 71,000)		TC-142A
• 49	Piston Ring (included only with Ring-Type Piston)	1 Set	D01-337-8
50	Piston Wrist Pin	4	TC-389B
51	Throttle Control Arm	1	D01-555A
52	Throttle Spring Stop Pin	1	D02-553
53	Throttle Lever	2	D01-556
54	Motor Case Cover	1	D01-K502B
55	Drum Bearing Oiler	1	D02-542
• 56	Motor Case Cover Gasket	1	D01-592A
57	Hoist Housing	1	D01-300B
58	Dowel Pin	2	D02-347
59	Grease Plug	3	D02-351
*	Nameplate	1	C6H20A-301-R
	Nameplate (stainless)		C6H20A-301-RS
*	Caution Plate	1	TA-147A
*	Screw, Drive	8	R4K-302-12
---	Motor Shaft Assembly	1	D01-A316B
60	Motor Shaft	1	D01-316B
61	Motor Shaft Nut	1	D02-394
• 62	Motor Shaft Bearing	1	T02-33
63	Motor Shaft Cotter	1	D02-524
64	Brake Plate	1	D01-388
67	Motor Shaft Packing	1	D01-872
68	Motor Shaft Packing Washer	1	D01-873
69	Grooved Rope Drum	1	D01-K371A
70	Rope Setscrew	1	D01-381B
71	Rope Clip	1	D02-949
72	Rope Clip Screw	1	D02-950
75	Drive Shaft	1	D01-358
76	Drive Shaft Spacer	1	D02-356A
• 77	Drive Shaft Outer Bearing	1	58-96
78	Drive Shaft Inner Bearing	1	D01-616
79	Bearing Screw	1	D02-361

• Recommended Spare

* Not shown on drawing

HOIST ASSEMBLY PARTS LIST (CONT'D)

ITEM NO.	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER
80	Drive Gear	1	D02-542
	For Size A or ASR		D00-357A
	For Size B or BSR		D01-357A
81	Drive Gear Key	1	TB-410
82	Intermediate Gear For Size A or ASR	1	D00-364B
	Intermediate Gear For Size B or BSR		D01-364B
83	Intermediate Gear Shaft	1	D01-365A
*	Intermediate Gear Shaft Pin	1	D01-368
84	Intermediate Gear Spacer	1	D01-369A
85	Intermediate Gear Bearing	2	D01-363A
86	Gear Cover	1	D01-352A
• 87	Gear Cover Gasket	1	D01-931
88	Gear Cover Screw	8	D01-354A
89	Motor Case Screw	13	W9-56
• 90	Brake Plate (includes 2 Brake Bolts)	1	D01-K389
92	Brake Bolt Nut	2	D01-394
93	Brake Bolt Cotter	2	D02-524
• 94	Brake Spring	2	D01-393
• 95	Brake Diaphragm	1	D01-390
96	Brake Diaphragm Ring	1	D01-395
97	Brake Diaphragm Screw	6	T33-68
98	Brake Plunger	1	D01-391
99	Brake Pipe	specify length	D02-401A
100	Brake Pipe Elbow	2	D02-400
101	Rope Guide	1	D01-790
102	Guide Rod	2	D01-791
103	Guide Rod Retaining Screw	2	D01-795
104	Rope Guide Roller	1	D01-792
105	Guide Roller Pin	1	D01-793
• 106	Roller Pin Cotter	2	D02-524
107	Stop Lever For Pull Chain Control	1	D01-1422
	Stop Lever For Pendant Control		D01-1222
108	Stop Lever Bolt	1	D10-354A
109	Stop Lever Bolt Nut	1	D02-904
110	Stop Lever Bracket	1	D01-905
111	Stop Lever Bracket Screw	3	W9-53
112	Stop Lever Link For Pull Chain	1	D01-1424
	Stop Lever Link For Pendant Control	1	D02-418
• 113	Wire Rope For Size A or B	1	D01-372
	Wire Rope For Size ASR or BSR	1	D01-1372
114	Wire Rope Wedge	1	D01-373
115	Wire Rope Clamp	1	D02-375
116	Wire Rope Clamp Nut	1	D02-418
130	Throttle Lever Chain For Size A or B		CA110-B240
	Throttle Lever Chain For Size ASR or BSR		D02-1413
131	Throttle Lever S-Hook	4	D02-421
133	Throttle Handle	2	MR-415

• Recommended spare

* Not shown on drawing

TOP HOOK AND LOAD BLOCK ASSEMBLY PARTS LIST

Top Hook Assembly

ITEM NO.	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER	
			A or B	ASR or BSR
	Top Hook Assembly	1	D01-S590B	D01-AS1590
134	Top Hook Yoke	1	D01-590C	D01-1590
135	Hook Assembly	1	D01-KS304A	D01-S1304
•135A	Hook Latch Kit	1	D01-379A	
•135B	Hook Bearing	1	C620C40-305	D02-305A
135C	Hook Nut	1	20QDM-330	D02-1376
•135D	Lock Pin	1	D01-S4055	D02-S4055
137	Yoke Bolt	2	D01-339	
138	Yoke Bolt Nut	2	D01-341A	

Load Block Assembly

ITEM NO.	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER			
			A	ASR	B	BSR
---	Load Block Assembly	1	D00-AS378B	D00-AS1378A	D0A-AS378B	D01-AS1378A
139	Block Sheave	1	D00-378C	D00-1378A	D01-378C	D01-1378A
140	Hook	1	D01-KS377	D00-S1377	D01-KS377	D01-S1377
•140A	Hook Latch Kit	1	D01-S4055			D02-S4055
•140B	Bearing	1	D01-379A			D02-379A
140C	Nut	1	C620C40-305	D04-305	C620C40-305	D02-305A
•140D	Pin	1	20QDM-330	5BM-278	20QDM-330	D02-1376
142	Sheave	1	D01-380	D00-1380	D01-380	D00-1380
143	Shaft	1	D02-K382	D02-1382	D02-K382	D02-1382
144	Oiler	1	D02-384			
145	Cotter Pin	2	D04-383			
•145A	Cover	1	C6H20A28-441	C6H20A28-R441	C6H20A28-441	C6H20A28-R441
145B	Bolt	4	J-376	C6H20A-R937	J-376	C6H20A-R937
145C	Lockwasher	4	L01-67-10	P225-67	L01-67-10	P225-67

Bullard Burnham Hook Assembly

ITEM NO.	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER
---	Bullard Burnham Hook Assembly for A and B wire Rope Hoist Lower Block only	1	C6H20A-ABB377
140	Hook	1	D01-BB377
•140B	Bearing	1	D01-379A
140C	Nut	1	C620C40-305
•140D	Pin	1	20QDM-330

• Recommended Spare

VALVE CHEST ASSEMBLY PARTS LIST

ITEM NO.	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER
---	Pendant Throttle Conversion Unit (for converting from Pull Chain Throttle to Pendant Throttle)	1	D01-C269
---	Shuttle Valve Chest Assembly	1	D01-A245A
200	Shuttle Valve Chest	1	D01-245A
201	Rotary Valve Bushing	1	D01-525BPTS
*	Valve Oiler	1	JA4-75
*	Bushing Key	1	D02-538
202	Brake Valve Bushing	1	D01-63
203	Shuttle Valve Bushing	2	D01-247BS
204	Stop Arm Shaft Bearing	1	D01-243
205	Pipe Plug	2	502-95
206	Shuttle Valve Chest Cover	1	D01-241A
207	Air Inlet Plug	1	D02-351
208	Brake Valve	1	D01-62A
209	Brake Valve Seat	2	D01-65
210	Brake Valve Cap	2	D01-943
• 211	Brake Valve Cap Gasket	2	D01-946
212	Shuttle Valve (Old Style)	1	D01-246
212A	Shuttle Valve (New Style)	1	D01-246A
213	Shuttle Valve Cap	2	DLC-238
• 214	Shuttle Valve Cap Gasket	2	G601-411
215	Shuttle Valve Washer	2	DLC-248
216	Shuttle Valve Spring	2	DLC-268
217	Shuttle Valve Finger	1	D01-251
218	Stop Arm	1	D01-254
219	Stop Arm Shaft	1	D01-255
220	Stop Arm Shaft Pin	2	D01-256
221	Rotary Valve	1	D01-526A
*	Rotary Valve Drive Pin	1	D01-527A
222	Shuttle Valve Chest Screw	2	D01-548
223	Valve Chest Screw Lockwasher	2	D02-321-10
224	Brake Pipe		D01-401B
225	Brake Pipe Elbow	2	D02-400
226	Stop Lever	1	D01-1222
227	Stop Lever Link	1	D01-224
228	Friction Spring (For Size A or B only)	2	D01-268
229	Stop Lever Link Nut	3	D02-418
230	Stop Lever Link Spring	2	D01-106
231	Stop Lever Link Washer	4	D02-419
232	Pendant Throttle Chain Screw	1	R3-7A

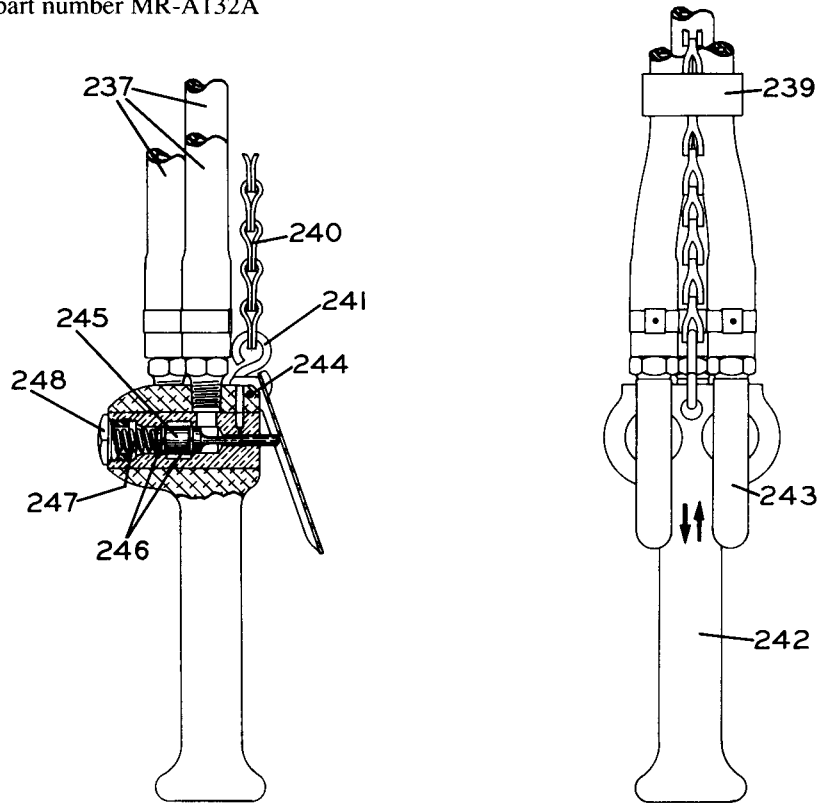
- Recommended Spare
- * Not shown on drawing.

PENDANT THROTTLE HANDLE ASSEMBLY DRAWING

For Multi-Function Pendant Handles See Form P6778

Two Motor Pendant part number MR-A122A

Three Motor Pendant part number MR-A132A

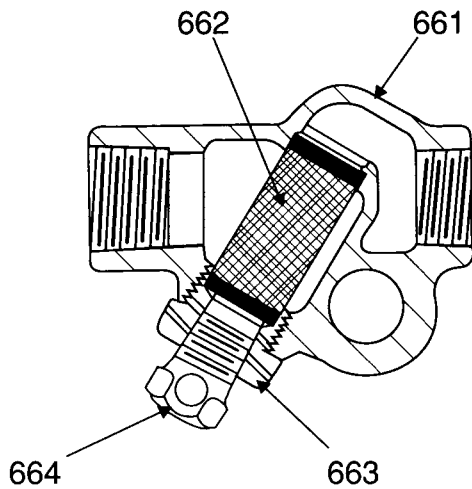


(Dwg. TPA41/2)

Pendant Throttle

For A or B Hoist with serial numbers above 49 000

SPECIAL EQUIPMENT AND ACCESSORIES DRAWINGS



Air Strainer Assembly

(Dwg. TPD36)

PENDANT THROTTLE HANDLE ASSEMBLY PARTS LIST

ITEM NO.	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER
- - -	Pendant Throttle Handle Assembly	1	MR-269A
233	Chain Screw Lockwasher	1	T11-58-5
234	Plain Washer	1	B8-259
235	Pendant Throttle Inlet Nipple	3	HUS-908
236	Control Hose Union	3	MR-129
237	Control Hose (10 ft. length Standard.)	1	H6A-10
	Control Hose (specify length)		BH6A
238	Control Hose Nipple	6	Nipple/IR6225
239	Control Hose Clamp	6	B-1
240	Pendant Throttle Chain (specify length 1 ft. shorter than (237) Control Hose)	see desc.	D02-413-10
241	Pendant Throttle Chain S-Hook	2	D01-221
242	Pendant Throttle Handle	1	Order assembly MR-269A
243	Pendant Throttle Lever	2	MR-273
244	Throttle Lever Pin	1	DLC-120A
245	Pendant Throttle Valve	2	MR-264
• 246	Pendant Throttle Valve Seal Ring	4	20A11-CM111
247	Pendant Throttle Valve Spring	2	D01-51A
248	Pendant Throttle Valve Cap	2	D02-180A
*	Control Hose Exhaust Valve	2	MR-939
250	Warning Tag (shown on page 4)	1	71059612

* Not shown on drawing

• Recommended Spare

SPECIAL EQUIPMENT AND ACCESSORIES PARTS LIST

ITEM NO.	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER
661	Air Strainer Assembly	1	EU-A267MFG
662	Air Strainer Screen	1	P25-61A
663	Air Strainer Cap	1	P25-268
664	Air Strainer Plug	1	P25-536
*	Reducing Bushing Required for attaching Air Strainer Assembly to Hoist	1	D02-420
*	Air Strainer Nipple Required for attaching Air Strainer Assembly to Hoist	1	4H0-3
668	Exhaust Muffler	1	D02-674A
*	Muffler Chain	1	D02-673
*	Muffler Chain S-Hook	2	D02-421

* Not shown

TROLLEYS

For Parts, Service and Maintenance information on trolley used with Wire Rope Hoist, select trolley type from description column and order form number.

Trolley Description	Form Number	Trolley Series
Plain Rigid Trolley	P6721	B Trolley Series
Vane Motor Powered Trolley	P6609	TA3A Trolley Series
Piston Motor Powered Trolley	P6772	ATC Trolley Series
Hand Chain Trolley	*	TC3A Trolley Series
Adapter Kit for use with Vane, Piston and Hand Chain Trolley Series	P6745	TA-K852 Trolley

* Contact Ingersoll-Rand factory for additional information

MAINTENANCE TOOLS

DESCRIPTION OF TOOL	OPERATION	QTY TOTAL	PART NUMBER
Valve Chest Jack Bolt	Removing the Valve Chest (7) from the Motor Case (1).	2	D01-932
Piston Ring Compressor	Compressing the Piston Rings (49) when installing the Cylinder (44).	1	D01-933
Throttle Valve Seat Reamer	Refacing the seat in the Valve Chest (7) for the Poppet Throttle Valve (20).	1	22891
Throttle Valve Stem Reamer	Reaming the throttle valve stem hole in the wall of the Reverse Valve Bushing (12) after installing new Bushing.	1	23470
Shuttle Valve Bushing Reamer	Reaming the Shuttle Valve Bushing (203).	1	36860
Bearing Installation Tool	Installing Needle Bearings (85).	1	32788

DESCRIPTION	PART NUMBER
Yellow Touch-Up Paint	FAP-237Y
Wire Rope or Chain Lubricant	LUBRI-LINK

ACCESSORIES

Filter, Regulator and Lubricator Kit Part Number	Filter Part Number		Regulator Part Number	Lubricator Part Number		Size NPTF
	Polycarbonate Bowl	Metal Bowl		Polycarbonate Bowl	Metal Bowl	
C22-04-G00	F20-04-000	F20-04-G00	R20-04-G00	L20-04-000	L20-04-G00	1/2
C31-06-G00	F30-06-000	F30-06-G00	R20-06-G00	L30-06-000	L30-06-G00	3/4
C31-08-G00	F30-08-000	F30-08-G00	R30-08-G00	L30-08-000	L30-08-G00	1

Polycarbonate Bowls include a metal bowl guard.
Metal Bowls include sight gauges.

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 enroute 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.

United States Office Locations

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