

# OPERATION AND MAINTENANCE MANUAL for the

**MODEL SP2-005  
1/2 TON ELECTRIC  
CHAIN HOIST**

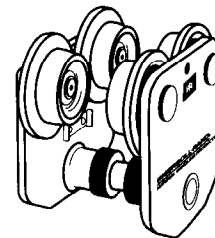
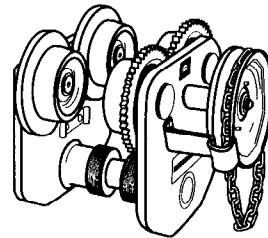
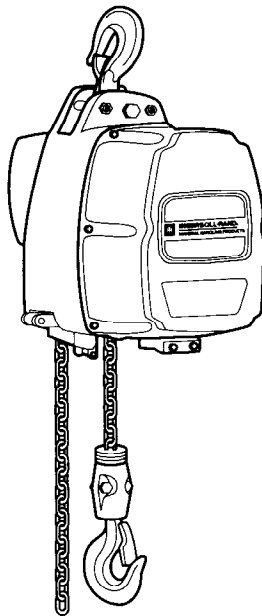
**MODEL SP3-010  
1 TON ELECTRIC  
CHAIN HOIST**

**MODEL SP3-020  
2 TON ELECTRIC  
CHAIN HOIST**

**(Including UTP and UTG trolleys)**

Unless otherwise noted, Tons in this manual are metric tons (2,200 lbs.)

Each model comes in Single Phase 115 V and 230 V versions



**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 (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**

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## SAFETY INFORMATION

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

### Danger, Warning, Caution and Notice

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

#### DANGER

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

#### NOTICE

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

### Safety Summary

#### WARNING

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

**The supporting structures and load-attaching devices used in conjunction with this hoist must provide an adequate safety factor to handle the rated load, plus the weight of the hoist. If in doubt, consult a qualified structural engineer.**

**Electrical installation should be performed by licensed electricians in accordance with the latest edition of the National Electrical Code (ANSI/NFPA 70) and any applicable local, state and national electrical codes and ordinances.**

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

To the best of our knowledge, INGERSOLL-RAND Material Handling hoists are manufactured in accordance with the latest standards in effect at time of manufacture.

However, contrary to common belief, the Occupational Safety and Health Act of 1970, as we understand it, generally places the burden of compliance with the user, not the manufacturer. Many OSHA requirements are not concerned or connected with the manufactured product but are, rather, connected with the final installation: "It is the owner's responsibility and user's responsibility to determine the suitability of a product for any particular use. Check all applicable industry, trade association, federal, state and local regulations. 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 ANSI/ASME B30.9 for rigging information, American National Standards Institute, 1430 Broadway, New York, NY 10018.

#### NOTICE

**Using other than genuine INGERSOLL-RAND Material Handling parts will result in the void of warranty.**

## SAFE OPERATING INSTRUCTIONS

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 qualified people (trained in safety and operation) to operate the hoist.
2. Only operate a hoist if you are physically fit to do so.
3. Only allow qualified people (trained in safety, electrical maintenance and troubleshooting) to perform electrical service on hoists.
4. 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.
5. Never use a hoist which inspection indicates is defective.
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. Never splice a hoist chain by inserting a bolt between links.
9. Only lift loads less than or equal to the rated capacity of the hoist. See warning labels attached to the hoist.
10. 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 or failure of one hoist.
11. Never place your hand inside the throat area of a hook.
12. Never use the hoist chain as a sling.
13. Only operate a hoist when the load chain is centered over the hook. Do not "side pull" or "yard".
14. Never operate a hoist with twisted, kinked, "capsized" or damaged load chain.
15. Do not force a chain or hook into place by hammering.
16. Never insert the point of the hook into a chain link.
17. Be certain the load is properly seated in the saddle of the hook.
18. Do not support the load on the tip of the hook.
19. Never run the load chain over a sharp edge. Use a sheave.
20. Pay attention to the load at all times when operating the hoist.
21. Make sure all people are clear of the load path. Do not lift a load over people.
22. Never use the hoist for lifting or lowering people, and never allow anyone to stand on a suspended load.
23. Ease the slack out of the chain and sling when starting a lift. Do not jerk the load.
24. Do not swing a suspended load.
25. Never suspend a load for an extended period of time.
26. Never leave a suspended load unattended.
27. Never weld or cut a load suspended by the hoist.
28. Never use the hoist chain as a welding electrode.
29. Do not operate hoist if chain jumping, excessive noise, jamming, overloading, or binding occurs.
30. Keep the load from hitting the load chain.
31. Do not use the up and down emergency stop limit protection as a normal means of stopping the hoist.
32. Avoid unnecessary jogging of hoist and/or trolley controls.
33. Always rig the hoist properly and carefully.
34. Disconnect the electrical power before performing any maintenance.
35. Avoid collision or bumping of hoist.
36. After use, properly secure hoist and all loads.
37. Allow hoist motor to come to a complete stop before reversing directions of movement.

## SAFETY LABELS

Each hoist is supplied from the factory with the safety label shown. If the label is not attached to your unit, order a new label and install it. See the parts list for the part number. 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 before reading operation and maintenance manual.
- Do not use hoist to 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 if hoist is damaged or malfunctioning.
- 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.

Part No.: 71059612

For air and electric chain and wire rope hoist.

**INGERSOLL-RAND**  
MATERIAL HANDLING

## DESCRIPTION

### General

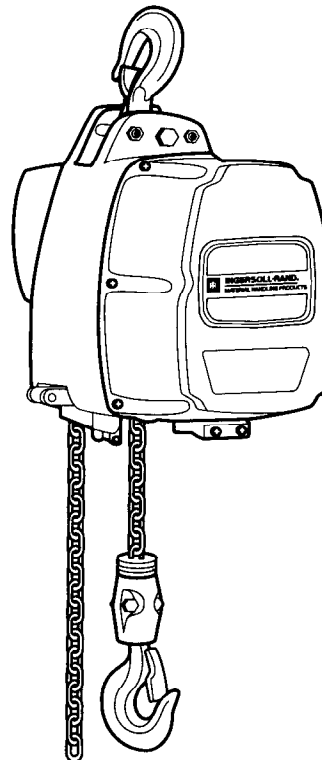
The SP-Series hoist is an electric powered hoist designed to lift and lower loads. Each capacity comes in 115 V or 230 V Single Phase power configurations. The SP hoist hook mounts to the suspension shaft of a trolley or a permanent mounting structure. The power cable can be strung to the power supply using either cable hangers or cable trolleys. A friction clutch works in conjunction with chain stoppers and anchors to prevent the hook from being raised or lowered too far.

### Specifications

Model	Capacity (tons)	Lifting Speed (ft/min) (m/min)	
SP2-005H	1/2	14	4.3
SP3-010H	1	10	3.0
SP3-020H	2	5	1.5

Model	Unit Net Wt. 10 ft. (3m) lift (lbs) (kgs)		Wt. of Extra Lift (per ft) (per meter) (lb) (kg)	
SP2-005H	99	45	.60	.89
SP3-010H	103	47	.74	1.1
SP3-020H	136	62	1.48	2.2



# INSTALLATION

## ⚠ WARNING

- A falling load can cause injury or death. Before installing, read "SAFETY INFORMATION".

Before using, remove the level plug from the side of the hoist gear case and fill the hoist with the oil provided. See "Gear Case" under "LUBRICATION".

### Hook Mounted Hoist Installation

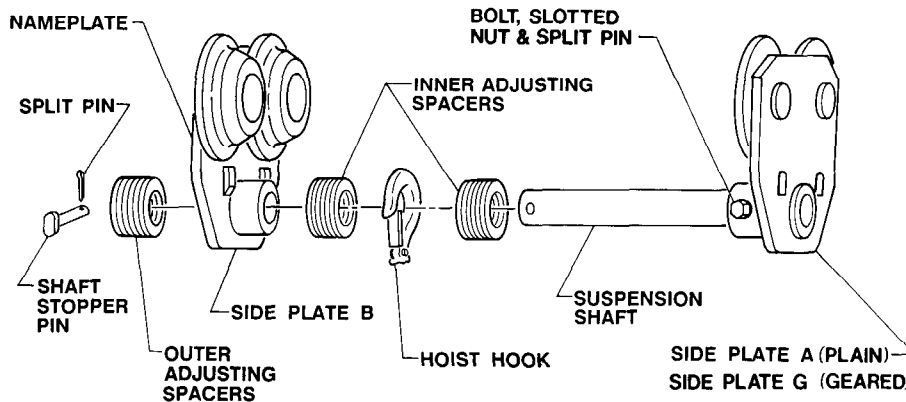
Place hook over mounting structure. Make sure hook latch is engaged.

### Installing Over the End of the Beam

Preadjust trolley width for the beam flange measurement per the table under "Plain and Geared Trolley Installation". Remove the rail stop and slide trolley on end of the beam. Reinstall rail stop. If the previous procedure cannot be used, due to insufficient space or fixed limit stops, the hoist must be installed from underneath the beam using the procedure which follows.

### Plain and Geared Trolley Installation (See Assembly Drawing for UTP and UTG Trolleys)

1. Remove fasteners (16 and 18) and spacers (12) from the suspension shaft (17).



(Dwg. MHTPB0018)

2. Insert suspension shaft into side plate A (1) on plain trolley, or side plate G (19) on geared trolley. Align holes in suspension shaft (17) and side plate (1) for plain or (19) on geared trolley. Secure with bolt (16), slotted nut (14) and split pin (13). Do not reuse a bent split pin. Replace with a new split pin.
3. Slide enough spacers (12) on the suspension shaft (17) to fill the space between the side plates with the hook installed. Center the hoist under the trolley with, as near as possible, equal amounts of spacers on each side of the hook. For standard length suspension shafts, see the table below. On geared trolleys, mount the hoist so that the power supply cable is on the opposite side of the trolley as the hand wheel.

## ⚠ CAUTION

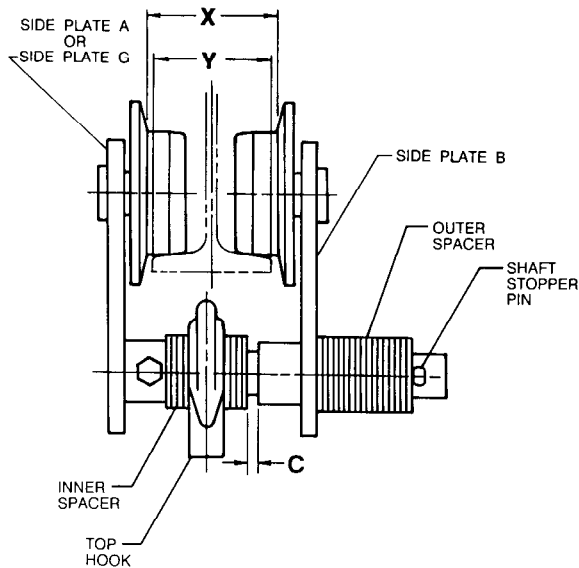
- To avoid an unbalanced load which may damage the trolley, the hoist must be centered under the trolley by the spacers.

Cap (tons)	Beam Width	Number of Adjusting Spacers (Plain and Geared Trolley)																
		(in.)	2.31	2.50	2.88	3.25	3.56	3.88	3.94	4.19	4.31	4.44	4.69	4.94	5.19	5.31	5.50	5.63
	(in.)		•	•								•			•			•
	(mm)	58	64	73	82	90	98	100	106	110	113	119	125	131	135	140	143	149
			2.63	2.94								4.75			5.38			5.94
			66	74								120			137			150
1/2 & 1 ton	Inner	1+2	2+3	4+4	5+5	6+7	7+8	8+8	9+9	9+10	10+10	11+11	12+12					
	Outer	21	19	16	14	11	9	8	6	5	4	2	0					
2 ton	Inner							1+2	2+2	3+3	3+3	4+5	5+5	6+6	7+7	7+8	8+8	9+9
	Outer							15	14	12	12	9	8	6	4	3	2	0

For the number of spacers on Inner side (reference squares with two numbers eg. 1+2): numbers on the left show the

number on side plate A or G and numbers on the right show the number on side plate B.

- Check that "C" dimension is 9/32 to 1/2 in. (7 to 13 mm). Adjust "C" by changing the number of spacers on side plate B (6) side. A minimum of one inner spacer is required on each side of the hook.



(Dwg. MHTPA0012)

- Adequately support the hoist and side plate (1 or 19) and hoist into place on the beam flange.

### NOTICE

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

- Slide side plate B (6) over the suspension shaft (17) and push both side plates together. The correct total clearance C between the beam and the trolley wheel flanges is 3/32 to 5/32 in. (2 to 4 mm). The difference between X and Y equals the total clearance C. See drawing MHTPA0012.

- Slide all extra spacers over the free end of the suspension shaft (17). Insert shaft stopper pin (18) into the hole in the suspension shaft (17), place flat side of head flush against spacers. Secure by installing split pin (15) and bending ends apart.

The stopper pin (18) and outside spacers must hold the trolley to the adjustment in step 6. If the side plates can be spread farther apart, install more spacers between side plate B (6) and the shaft stopper pin (18).

Orientation of hoist with respect to trolley: when facing the trolley hand wheel, the motor cover (2, Housing and Motor Assembly Drawing) must be on the left side.

## Power Supply Connection

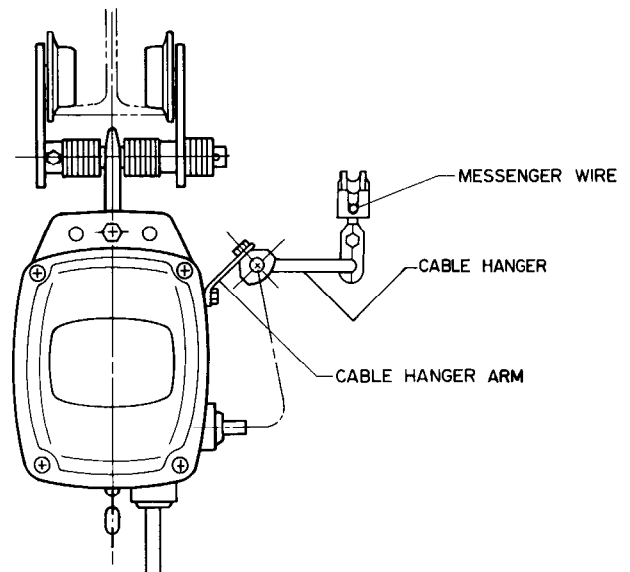
### WARNING

• Electrical shock can cause injury or death. Before connecting the power supply, read "SAFETY INFORMATION".

### CAUTION

• To avoid damaging the power cable, make sure it does not become twisted during installation.

On a straight beam less than 50 feet (15.2 m) long, install a messenger wire system to support the power supply cable. On geared trolleys, install the messenger wire on the opposite side of the trolley as the trolley hand chain. An 1/8 to 1/4 in. (3 to 6 mm) wire rope is usually used to support the power supply cable hangers. On long straight beams or curved beams where the messenger wire cannot be attached to the beam, install a cable trolley system to support the power supply cable.



(Dwg. MHTPA0103)

Connect the hoist to the power supply in accordance with National Electrical Code (ANSI/NFPA 70) and any other applicable local, state and national electrical codes and ordinances.

### CAUTION

• Never use a 115 V hoist with a 230 V power supply or a 230V hoist with a 115V power supply. The motor can be permanently damaged.

### NOTICE

• Wiring diagrams are located on page 21.

- Make sure you have the correct power supply, either 115 V or 230 V in single phase, depending on which hoist you have. Because of the different electrical control mechanisms, it is not possible to convert a 230 V

hoist to operate on 115 V, or vice versa. Power supply voltage must be within plus or minus 4%.

Power Supply	Lower Limit	Upper Limit
115 V	110V	119 V
230	221	239

2. Make sure there are adequate circuit breakers or fuses. Ampere values of hoist circuit protective devices are:

Model No.	Time	Delay Fuse
	<b>115 V</b>	<b>230 V</b>
SP2-005	20 amps	10 amps
SP3-010	20	10
SP3-020	20	10

Model No.	Inverse Circuit	Time Breaker
	<b>115 V</b>	<b>230 V</b>
SP2-005	30 amps	15 amps
SP3-010	30	15
SP3-020	30	15

3. Make sure all junction boxes and disconnect switch enclosure are adequately sealed and protected for its environmental conditions.
4. Connect and ground the pig-tailed end of the power supply cable. For 115 V units the black and white conductors are power and the earth ground is green. For 230 V units, the red and white conductors are power and the earth ground is green-and-yellow striped.

**NOTICE**

• A three pronged plug (grounded) may be connected to the power supply cable. Plug the three pronged plug into a standard electrical outlet. However, check with an electrician. Electric hoists use more electricity than conventional household equipment.

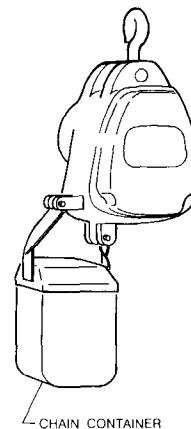
**Chain Container (See Hook Assembly Drawing)**

**CAUTION**

• Do not pile chain carelessly in the chain container. Piling the chain carelessly into the container by hand may lead to kinking or twisting that will jam the hoist.

To attach the chain container: run lower block to lowest point, attach chain container to hoist and run hoist in up direction to feed the chain back into the container.

1. Check the chain bucket label to make sure the length of load chain is within the capacity of the chain bucket. Replace with a larger chain bucket, if required.
2. Slide cushion rubber S (6) over the end of chain.
3. Attach stopper (2) to the third link from the end of the chain.
4. Install the chain bucket with the two socket bolts (26, Chaining Assembly Drawing) and U nuts (20, Chaining Assembly Drawing). See drawing MHTPA0022.



(Dwg. MHTPA0022)

**NOTICE**

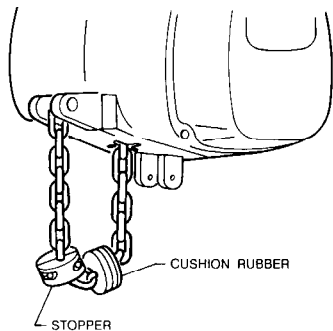
• When putting chain into the chain container by hand begin with the stopper end of the chain so that it piles naturally.



## Attaching Free End of Load Chain (See Hook Assembly Drawing)

If chain bucket is not used:

1. Slide cushion rubber S (6) over the end of the load chain.
2. Attach stopper (2) to the ninth link from the end of the load chain.
3. Attach the free end of the load chain to the hoist with two socket bolts (26, Chaining Assembly Drawing) and U nuts (20, Chaining Assembly Drawing). See drawing MHTPA0023.



(Dwg. MHTPA0023)

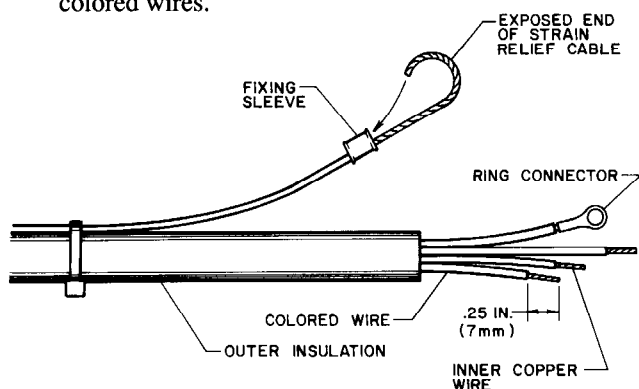
## Hoist Pendant Cord Modification (230 V With Strain Relief Cable Only)

To shorten or install new pendant cord:



• Disconnect electric power before performing any maintenance.

1. Remove the pendant cord and strain relief chain from the hoist.
2. Cut the pendant cord one foot longer than the desired cord length.
3. Strip back one foot of the outer insulation, exposing the colored wires.



(Dwg. MHTPA0104)

4. Position each colored wire at its correct terminal and cut to required length. Strip back the insulation, exposing

the inner copper wire 1/4 in. (7 mm). See drawing MHTPA0104.

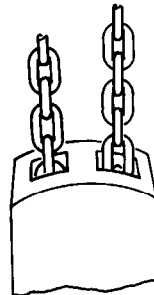
5. Crimp new ring connectors on the copper end of each colored wire and fasten to the correct terminals. See the appropriate wiring diagram.
6. Strip back the insulation on the strain relief cable 3-1/8 in. (80 mm).
7. Slip a fixing sleeve (38, Control Station (230 V Power Supply) Assembly Drawing) over the exposed end of the strain relief cable. Insert the end of the strain relief cable into the fixing sleeve until the end of the strain relief cable is flush with the end of the fixing sleeve to create a 1-1/4 in. (32 mm) loop. Crimp the fixing sleeve.



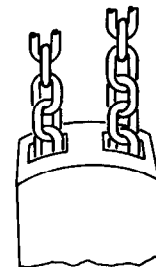
• To avoid damaging the pendant cord, make sure the strain relief cable, not the pendant cord, is supporting the weight of the pendant.

## Post-Installation Test

1. After installation, make sure the chain is not twisted or kinked. Fix before using. On the SP3-020, for a capsized bottom hook, pass the hook between the two chain falls until the chain is untwisted.



Appearance of Chain That Has Not Been Twisted



Appearance of Chain That Has Been Twisted

(Dwg. MHTPA0020)

2. If a trolley is used, check that the trolley side plates are parallel and vertical. Raise a load equal to the rated capacity of the hoist a few inches off the floor and operate the trolley along the entire length of the beam.

## TROUBLE SHOOTING

### ⚠ CAUTION

- To avoid damaging the hoist motor, interrupt operation immediately if the motor hums or does not rotate.

SYMPTOM	TROUBLE	REMEDY
Hoist will not operate.	No power to hoist.	Check connections, fuses, circuit breakers and switches in power supply line.
	Blown fuse.	Install proper fuse (never use ordinary wire or an oversized fuse).
	Damaged condenser (capacitor).	Replace condensers (capacitors) as a set.
	Incorrect voltage or frequency.	Compare voltage and frequency rating on the hoist nameplate with the power supply, with and without a load on the hoist.
	Loose or broken connections in hoist, power supply or push button.	Disconnect hoist from power source. Remove control cover and pendant cover. Check all connections and check continuity of each wire.
	Contactor failure. (230 V only)	Check contactors for wear or burn marks. Replace if necessary. See also "EXCESSIVE CONTACTOR PITTING".
	Defective transformer. (230 V only)	Check for proper voltage at primary and secondary terminals. If voltage is measured at primary, but not at secondary, transformer is defective. Replace transformer.
	Hoist is overloaded.	Reduce load to within rated capacity.
Motor is burned out.	Replace stator. See "MAINTENANCE".	
Motor brake is not releasing (Motor will not rotate).	Motor brake lining is "frozen" in drum. Remove motor end cover and remove rust, etc. from brake.	
Load continues to move when hoist is stopped.	Motor brake is slipping.	Check brake lining. See "MAINTENANCE".
	Hoist is overloaded.	Reduce load to within rated capacity.
Hoist will not lift load, is overheating, and/or does not lift at rated capacity.	Hoist is overloaded.	Reduce load to within rated capacity.
	Rotor is dragging in stator.	Check for worn motor bearings.
	Motor brake is too tight.	If hoist is new, or the motor cover has been replaced, operate without load a few times to "wear in" brake.
Hook raises but will not lower.	Starting and stopping the hoist too frequently.	Jog pendant push buttons less frequently.
	Hoist down circuit is open.	Check circuit for loose connections.
	Broken or loose conductor in pendant cable.	Disconnect power supply. Check each conductor in cable. If loose, tighten. If broken, replace cable.

<b>SYMPTOM</b>	<b>TROUBLE</b>	<b>REMEDY</b>
Hook lowers, but will not raise.	<p>Hoist is overloaded.</p> <p>Low voltage.</p> <p>Hoist up circuit is open.</p> <p>Broken or loose conductor in pendant cable.</p> <p>Friction clutch is worn out.</p>	<p>Reduce load to within rated capacity.</p> <p>Check voltage at hoist power supply connection with hoist under load. Raise voltage to within 4% of specified hoist voltage.</p> <p>Check circuit for loose connections. Have factory check slip.</p> <p>Disconnect power supply. Check each conductor in cable. If loose, tighten. If broken, replace cable.</p> <p>Replace old part with factory adjusted friction clutch.</p>
Load chain jumps on sheave or is making a snapping sound.	<p>Worn or rusted chain.</p> <p>Incorrect chain.</p> <p>Worn sheave or chain guide.</p> <p>No oil on load chain.</p>	<p>See "INSPECTION" to determine wear limit. Replace if necessary.</p> <p>Replace with correct chain.</p> <p>Replace worn parts.</p> <p>Lubricate load chain.</p>
Trolley won't stop or trolley wheels slip.	<p>Damaged beam.</p> <p>Too much oil or grease on track of beam.</p>	<p>Repair or replace beam.</p> <p>Clean off oil or grease.</p>
Excessive contactor pitting.	<p>Low voltage.</p> <p>Hoist is frequently overloaded.</p> <p>Starting and stopping the hoist too frequently.</p>	<p>Check voltage at hoist power supply connection with hoist under load. Raise voltage to within 4% of specified hoist voltage.</p> <p>Reduce loads to within rated capacity.</p> <p>Jog pendant push buttons less frequently.</p>
Electrical shock.	<p>Poor grounding.</p> <p>Foreign matter or moisture.</p> <p>Short in power supply system.</p>	<p>Correct grounding of power supply. Check wiring for broken wires.</p> <p>Dry or remove foreign material deposited on electrical parts.</p> <p>Check all switches, connections, and circuit breakers in power supply line for damaged insulation or contact with hoist frame.</p>
Oil leak.	<p>Wrong oil plug.</p> <p>Oil plug is loose or gasket is missing.</p> <p>If leak occurs at place other than plug.</p>	<p>Install correct oil plug and gasket.</p> <p>Tighten plug. Install a new gasket if missing.</p> <p>Check for loose bolts and tighten. If oil still leaks, disassemble hoist gear case. Replace gaskets and seals, and reassemble.</p>

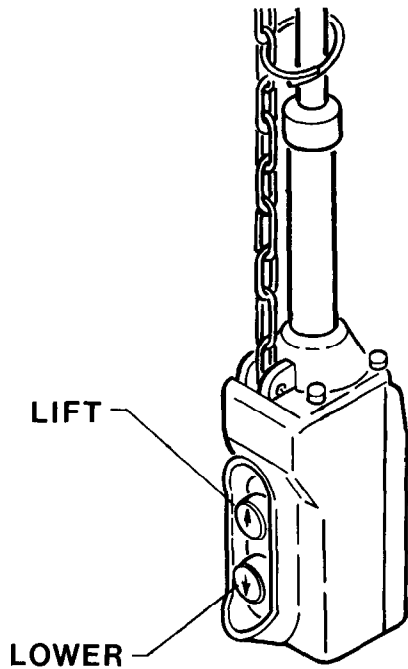
## OPERATION

The three most important aspects of hoist operation are:

- (1) Follow all safety instructions when operating hoist.
- (2) Allow only qualified people to operate a hoist.
- (3) Subject each hoist to a regular inspection and maintenance.

### Hoist Movement

Lifting and lowering a load is controlled by the pendant push buttons.

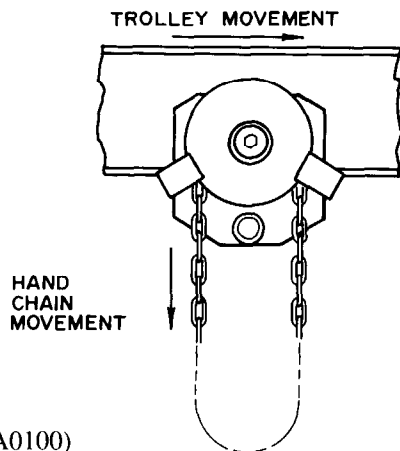


(Dwg. MHTPA0097)

### Gear Trolley Movement

For geared trolleys:

Pull down on the left side of the hand chain (Counter-clockwise rotation) to move right.



(Dwg. MHTPA0100)

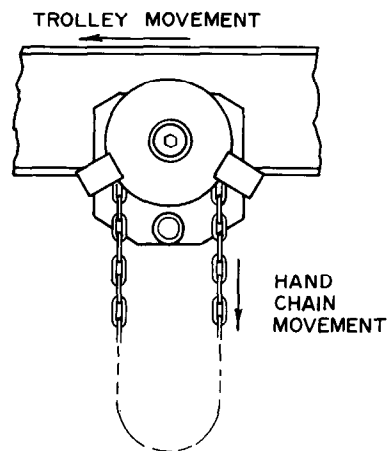
### Plain Trolley Movement

When the attached hoist is unloaded, move the trolley by pushing on the load chain. When the attached hoist is loaded, push on the load or the hook shank.



• Severe injury may be caused by: (1) falling under a moving load, (2) being caught between a moving load and an object, (3) tripping over an unseen object. To avoid injury, push to move the trolley, do not pull. Pushing will allow you to stay out of the path of the load and also look in the direction you are moving.

Pull down on the right side of the hand chain (Clockwise rotation) to move left.



# INSPECTION

There are two types of inspection, the frequent inspection performed by the operator and periodic inspections performed by qualified personnel.

## 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.

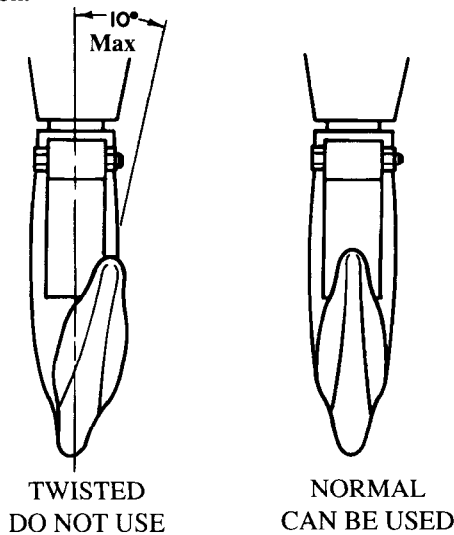
1. **OPERATION.** Check for visual signs, smells (burning insulation) or abnormal noises (humming, grinding, etc.) which could indicate a defect. Make sure all controls function properly and return to neutral when released. Check chain feed through the hoist and bottom block. If chain binds, jumps, or is excessively noisy or "clicks", clean and lubricate the chain. If problem persists, replace the chain. Do not operate the hoist until all defects have been corrected.
2. **UPPER AND LOWER LIMIT DEVICE.** Test operation with no load. Upward travel should stop when the bottom block or stopper on chain hits hoist directly while motor is turning. If the motor stops and hums for either upper or lower limit, repair or replace damaged parts. Only replace the friction clutch, do not attempt to adjust if it is found defective.



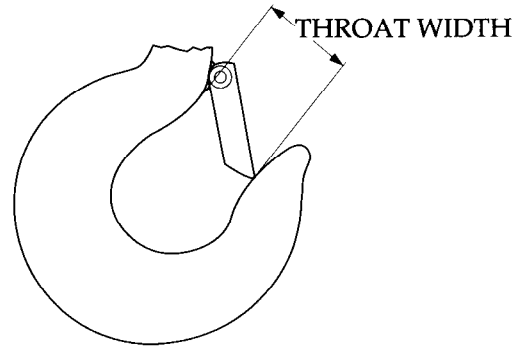
### WARNING

• The friction clutch, part of the upper and lower limit device, does not provide overload protection.

3. **HOOK.** Check for wear or damage, increased throat width, bent shank or bending of hook. Replace hooks with 15% increase in throat width (see Dwg. MHTPA0040) or 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/ANSI B30.10 "HOOKS" for additional information.



(Dwg. MHTPA0111)



(Dwg. MHTPA0040)

#### Top Hook

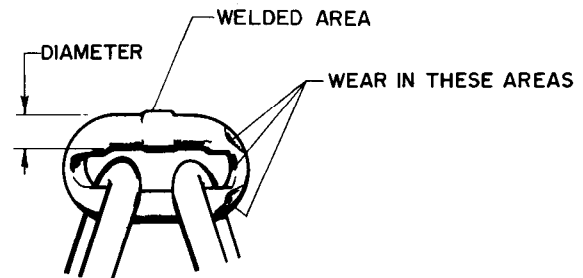
Model No.	Throat Width		Discard Width	
	in.	mm	in.	mm
SP2-005	1.10	28	1.26	32
SP3-010	1.32	33.5	1.52	38.6
SP2-020	1.57	40	1.80	45.7

#### Bottom Hook

Model No.	Throat Width		Discard Width	
	in.	mm	in.	mm
SP2-005	1.22	31	1.40	35.5
SP3-010	1.32	33.5	1.52	38.6
SP2-020	1.57	40	1.80	45.7

Check bottom hook support bearings for lubrication and damage. Make sure they swivel easily and smoothly. Repair and lubricate as necessary.

4. **HOOK LATCH.** Make sure the hook latch is present and operating. Replace if necessary.
5. **CHAIN.** Examine each of the links for bending, cracks in weld areas or shoulders, transverse nicks and gouges, weld splatter, corrosion pits, striation (minute parallel lines) and chain wear, including bearing surfaces between chain links. Replace a chain that fails any of the inspections. Check chain lubrication and lubricate if necessary. See "Load Chain" under "LUBRICATION".



(Dwg. MHTPA0102)

### NOTICE

• Excessive wear or stretching may not be apparent from visual observation. Also, inspect chain by measuring five links in accordance with instructions under "Periodic Inspection". A worn load chain may cause the load sheave to wear rapidly. Inspect the load sheave and replace if damaged or worn.

6. CHAIN REEVING. Ensure welds on standing links are away from load sheave. Reinstall chain if necessary. Make sure chain is not capsized, twisted or kinked. Adjust as required.
6. BRAKE. Raise a load equal to the rated capacity of the hoist a few inches off the floor and check ability of hoist to hold the load without excessive drift. If excessive drift occurs, disassemble. Check brake lining thickness per "Hoist Brake Lining Measurement" under "MAINTENANCE". Check friction surface of brake drum for wear, deformation or foreign deposits.

### Periodic Inspection

According to ANSI/ASME B30.16, frequency of periodic inspection 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.

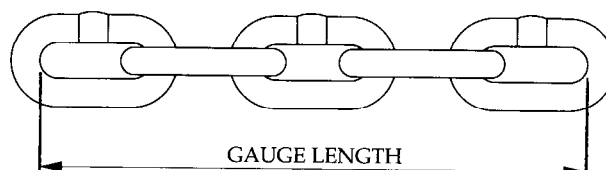
Inspect all the items in "Frequent Inspection". Also inspect the following:

1. FASTENERS. Check rivets, split pins, capscrews and nuts on hook, chain bucket and hoist body. Replace if missing and 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, chain 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. CHAIN SHEAVES. Check for damage or excessive wear. Replace if necessary.
5. MOTORS. If performance is poor, disassemble the components and check for worn gearing, bearings and shafts. The parts should be cleaned, lubricated and reassembled. Replace worn or damaged parts. Insulation resistance between conductor and ground should be higher than 2 m omhs.
7. ELECTRICAL APPARATUS. Check for loose wires, corrosion, or other signs of deterioration. On 230 V units only, inspect the contactor. To get to the contactor, remove the controller cover (30, Housing and Motor Assembly Drawing). Check for abnormal amounts of pitting, loss of contact material and burning (blackening) of contactor housing and contacts. A little discoloration and pitting of contactor contacts is normal with extensive service. Replace contactor if necessary. Contactor damage indicates a problem that should be corrected. See "Excessive Contactor Pitting" under "TROUBLESHOOTING".
8. SUPPORTING STRUCTURE. Check for distortion, wear and continued ability to support load.
9. TROLLEY. Check that the trolley wheels track the beam properly and clearance between wheels and beam is correct, 3/32 to 5/32 in. (2 to 4 mm). Check side plates for spreading due to bending.
10. LABELS. Check for presence and legibility. Replace if necessary.
11. LOAD CHAIN END ANCHORS. Ensure both ends of load chain are securely attached. Secure if loose, repair if damaged, replace if missing.
12. LOAD CHAIN. Measure the chain for stretching by suspending a light load 50 to 100 pounds (22 to 45 kgs) from the hoist and measuring across five link sections all along the chain paying particular attention to the most frequently reeved links. When any five links in the working length reaches or exceeds the discard length, replace the entire chain. Always use a genuine INGERSOLL-RAND Material Handling replacement chain for regular and nickle-diffused load chains.
13. CHAIN CONTAINER. Check for excessive wear. Replace if necessary.

### **⚠ WARNING**

• A falling load can cause injury or death. To keep the brake from slipping, do not get lubricant on the brake lining.

Model No.	Part No.	Size (mm)	Normal Length		Discard Length	
			in.	(mm)	in.	(mm)
SP2-005	LCES005	6.3	3.76	95.5	3.84	97.4
SP3-010	LCES010	7.1	4.17	106.0	4.26	108.1
SPE-020	LCES010	7.1	4.17	106.0	4.26	108.1



(Dwg. MHTPA0041)

# LUBRICATION

## Lubrication Schedule

The time intervals listed below are for service in a normal environment. Units operating in a harsh environment (excessively hot or cold, marine, hazardous gases or abrasive dust) may require more frequent lubrication.

### Usage:

Heavy	Continual daily usage.
Normal	Subject to daily use, but not continually.
Occasional	Average use of once a week or less.

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

## Load Chain

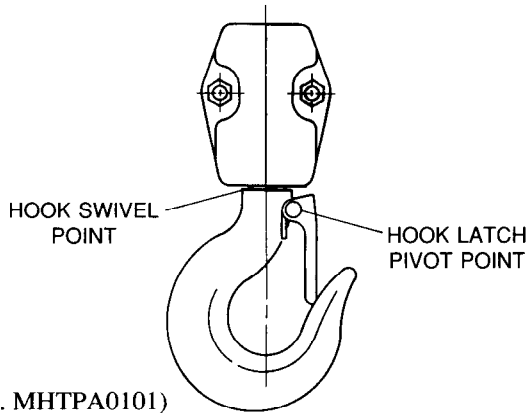


• Failure to maintain clean and well lubricated load chain will affect the life of the chain resulting in premature wear.

1. Lubricate each link of the chain and apply new lubricant over existing layer.
2. Coat entire link surfaces, including bearing surfaces between links.
3. Clean chain to remove rust or abrasive dust build-up. After cleaning, lubricate the chain using SAE 50 to 90W EP oil.

## Hook and Hook Latch

Lubricate the hook and hook latch pivot points. Hook should swivel freely. Hook latch should pivot freely. Use SAE 30 oil or SAE 50 to 90W EP oil.



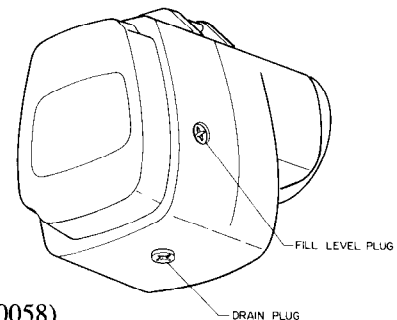
surfaces of the teeth liberally covered. If the grease becomes contaminated with sand, dirt or other abrasive materials, clean off the old grease and brush on new. Use a grease appropriate to the temperature range:

-20° to 50° F (-29° to 10° C) EP 1 grease or equivalent.  
30° to 120° F (-1° to 49° C) EP 2 grease or equivalent.

## Gear Case

To check gear case oil level, remove oil level plug on the side of the gear case. If the oil level is below the tapped level plug hole, add oil. To add oil, tilt the gear case slightly and pour oil through the oil level plug hole. After filling, check level. Replace the level plug. Use INGERSOLL-RAND gear oil, part no. 71043715, or industrial-grade, SAE 90 EP, non-lead, non-hypoid gear oil.

Model No.:	Amount of Oil	
	Quart	(Liter)
SP2-005	.63	.6
SP3-010	.63	.6
SP3-020	.63	.6



## Geared Wheels (Geared Trolley Only)

Lubricate the exposed trolley drive pinion and the wheel teeth. Brush with grease as often as necessary to keep all working

## Trolley Wheels and Hand Chain

On UTP and UTG trolleys, trolley wheel bearings cannot be lubricated and must be replaced if worn or damaged. Trolley hand chain, used on geared trolleys, requires no lubrication.

**⚠ WARNING**

- Never perform maintenance on the hoist while it is supporting a load. A falling load can cause injury or death of personnel and damage to property.
- Disconnect electric power before performing any maintenance.
- Friction clutch (15, Gearing Assembly Drawing) is properly adjusted at the factory. Do not attempt to adjust. Replace if not operating properly.
- The condensers (9, Electrical Assembly Drawing, both 115 and 230 V), visible when the controller cover (30, Housing and Motor Assembly Drawing) is removed, retain a charge — even after the power supply is disconnected. To avoid the danger of an electrical shock from accidentally touching the condenser terminals, dissipate the stored charge. On 115 V models, disconnect the power supply. Then, press either pendant push button. On 230 V models, disconnect the power supply. Then, manually depress the “UP” or “DOWN” contactor (15, Electrical (230 V Power Supply) Assembly Drawing).

When performing any maintenance:

1. Before starting maintenance, tag controls: DANGER - DO NOT OPERATE - EQUIPMENT BEING RE-PAIRED.
2. Only allow qualified service personnel to perform maintenance.
3. After performing maintenance on load bearing parts, test unit to 125% of its rated capacity before returning to service.

**Chain Replacement**

**NOTICE**

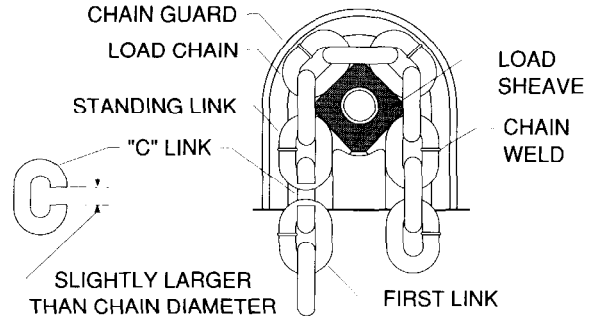
- Do not remove the old chain from the hoist. Old chain is used to feed new chain through hoist.
- Use only genuine Ingersoll-Rand replacement chain.

**⚠ CAUTION**

• When facing the brake and motor end of the hoist, the hook must be on the left fall(s) of the load chain and the right fall must be either fastened to the hoist or have a chain anchor attached.

1. Run bottom block to lowest point of travel and support bottom hook.
2. Remove chain bucket, if used.
3. Remove free end of chain from hoist body, if attached. Remove chain stopper.

4. Make a “C” link in NEW chain by grinding through one side of the end link.
5. Hook “C” link to old chain joining old and new chains. (If old chain was installed correctly, the “C” link assures that end link of new chain will be correctly reeved through the hoist). BE SURE WELDS of “standing” links on the new chain are facing away from the hoist load sheave.



(Dwg. MHTPA0057)

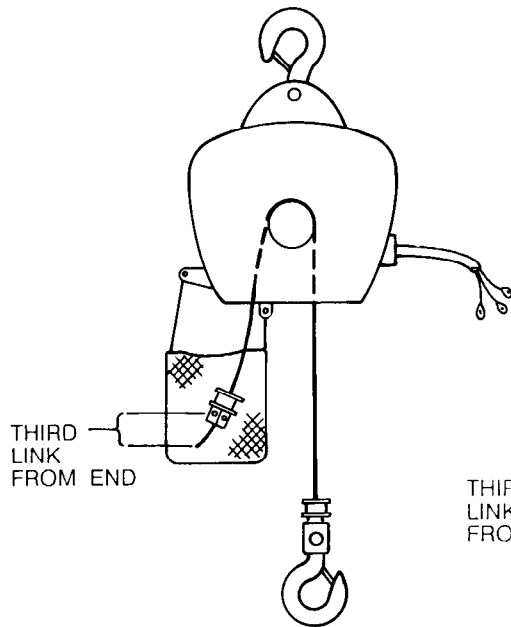
6. Check the first link of the new chain to make sure it will correctly attach to connection yoke on top hook on hoists with two falls.
7. Run the new chain 24 to 36 in. (610 to 914 mm) out the other side of the hoist.
8. On SP3-020, manually pull new chain through bottom hook using old chain.
9. On SP2-005 and SP3-010, attach end of load chain to bottom hook. On SP3-020, attach end of load chain to connection yoke (10, Chaining Assembly Drawing). Check that chain is not twisted, kinked, “capsized” or damaged. Remove one link to untwist, if required.
10. On the SP3-020, connect stopper L assembly (30, Chaining Assembly Drawing) 15 links from where the load chain attaches to the connection yoke (10, Chaining Assembly Drawing).
11. Attach chain stopper on free end of load chain, 3 links from the end when a chain container is used, and 9 links from the end without a chain container.
12. Attach chain container.



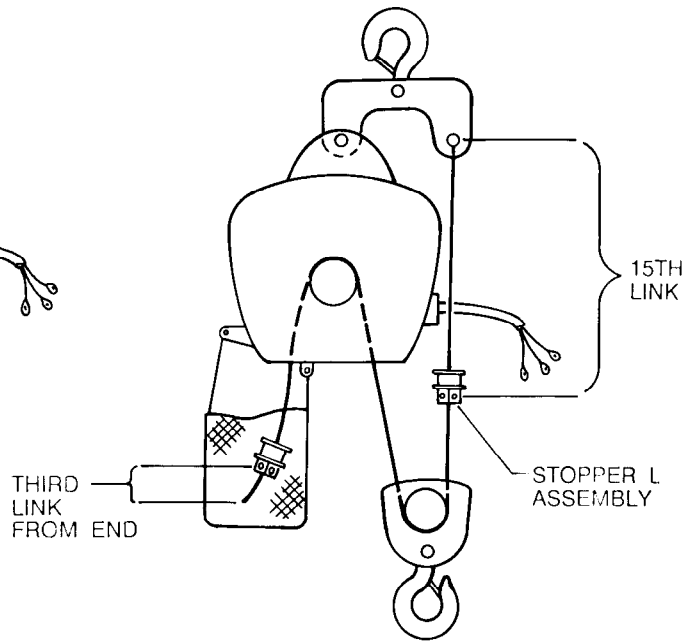
# CHAIN REPLACEMENT GUIDE

## HOISTS WITH CHAIN BUCKET

1/2 ton and 1 ton Hoists

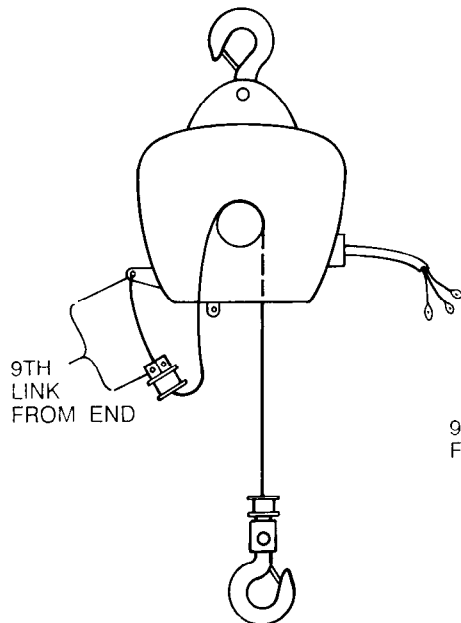


2 ton Hoists

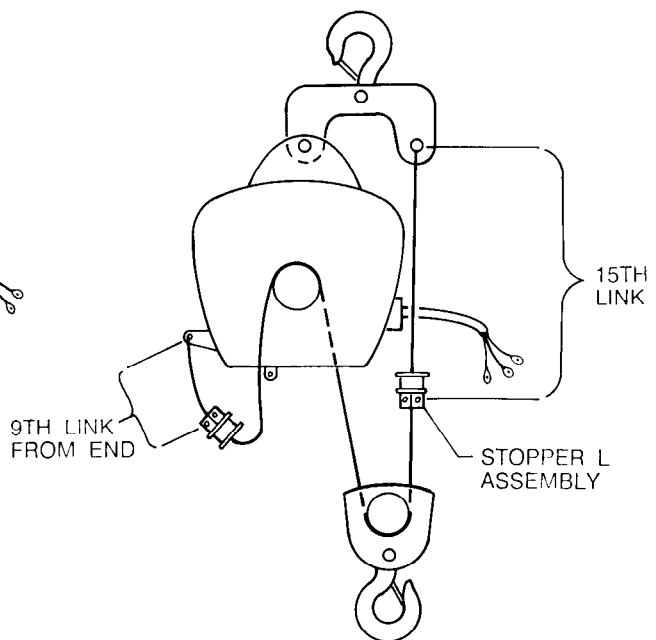


## HOISTS WITHOUT CHAIN BUCKET

1/2 ton and 1 ton Hoists



2 ton Hoists



KEY:

 CUSHION RUBBER

 STOPPER ASSEMBLY

(Dwg. MHTPB0021)

## Hoist Brake Lining Measurement (See Housing and Motor Assembly Drawing)

To check or replace the brake lining which is attached to the motor cover (2), use the following procedure.

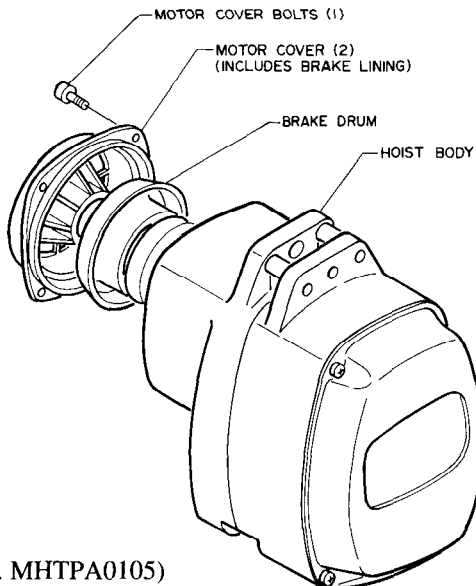
### NOTICE

• If possible, lay the hoist on its controller cover (30) so that brake drum assembly (4), brake spring (5) and thrust collar (6) will not come out during this procedure.

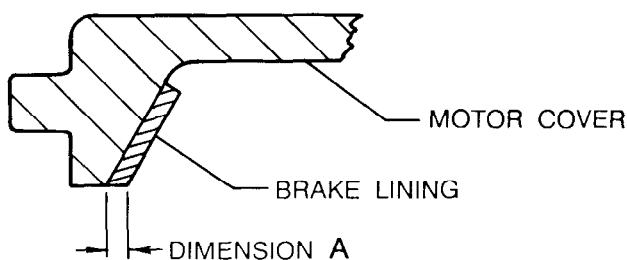
1. Unscrew socket bolts (1).
2. Pry off motor cover (2) using screwdrivers in notches in body M with stator (19). If cover (2) does not come off easily, rotate cover (2) 45 degrees and tap on the back side repeatedly and sharply with a plastic hammer to loosen cover (2) from brake drum assembly (4).

### CAUTION

• If grease gets on the brake lining attached to motor cover (2), the brake may slip.



3. Inspect the brake lining and replace the motor cover (2) if the brake lining is too thin. If dimension "A" is smaller than  $3/64$  in. (1mm) the brake lining is worn and must be replaced. Replace the motor cover, which has the brake lining attached.



### NOTICE

• Original lining thickness (Dimension "A") is  $5/64$  in. (2mm).

4. Position the motor cover (2) on body M (19) and align bolt holes.
5. Install socket bolts (1) and tighten evenly. Use Loctite 242 or equivalent on threads.

## Stator Removal (See Housing and Motor Assembly Drawing)

If the motor stator (windings) is burned out, replace body M (19) which includes the stator.

1. On 115 V models, disconnect the power supply. Press either pendant push button to discharge the condensers (9, Electrical (115 V Power Supply) Assembly Drawing). On 230 V models, disconnect the power supply and manually depress either the "UP" or "DOWN" contactor (15, Electrical (230 V Power Supply) Assembly Drawing).
2. Unscrew machine screws (35) and remove controller cover (30).
3. Cutting "tie wraps" as necessary, disconnect the motor wires (U, V and Y). See the appropriate wiring diagram.
4. To protect the electrical parts, place the controller cover (30) back on body G (20) and secure with two screws (35) in opposite corners. Lay the unit on the controller cover (30).
5. Unscrew socket bolts (1).
6. Pry off motor cover (2) using screwdrivers in notches in body M with stator (19). If cover (2) does not come off easily, rotate cover (2) 45 degrees and tap on the back side repeatedly and sharply with a plastic hammer to loosen cover (2) from brake assembly (4).

### CAUTION

• If grease gets on the brake lining attached to motor cover (2), the brake may slip.

7. Remove brake drum assembly (4) and brake spring (5).

Use the next four steps to loosen the fasteners that attach the body M (19) to body G (20).

8. Unscrew socket bolts (32).
9. Holding the nuts (21) from coming out of their indent in body G (20), unscrew socket bolts (17).
10. Remove split pin (5 or 8, Chaining Assembly Drawing). Unscrew slotted nut (4 or 9, Chaining Assembly Drawing) and remove top pin (6 or 7, Chaining Assembly Drawing) and top hook (1, Chaining Assembly Drawing).
11. There are two socket bolts (10, Gearing Assembly Drawing) and two socket bolts (11, Gearing Assembly Drawing). Only remove the socket bolt (10, Gearing Assembly Drawing) and socket bolt (11, Gearing Assembly Drawing) which screws into body M (19).

- Using notches in body G (20), pry off body M (19). Making sure the motor wires are free, remove body M (19).

### NOTICE

• **Grab body M (19) near the top hook and the chain guide. If body M (19) does not come off easily, tap sharply with a plastic hammer to loosen.**

### Stator Installation (See Housing and Motor Assembly Drawing)

- Insert motor wires through body M (19) into controller cover side of body G (20). Position body M with stator (19) on body G (20).
- Install socket bolts (32). Socket bolts (32) are shorter than socket bolts (17).
- Insert nuts (21) into indents in body G (20), hold in place and install socket bolts (17).
- Install socket bolt (10, Gearing Assembly Drawing) and socket bolt (11, Gearing Assembly Drawing) through chain guide A (8, Gearing Assembly Drawing) and into body M (19).
- Install hook (1, Chaining Assembly Drawing), insert slotted nut (4 or 9, Chaining Assembly Drawing) into indent in body M (19), hold in place and install top pin (6 or 7, Chaining Assembly Drawing). Insert split pin (5 or 8, Chaining Assembly Drawing) and bend ends apart.
- Make sure thrust collar (6) is in place around thrust discs (7).
- Install brake spring (5).
- Mate teeth and slide brake drum assembly (4) over motor shaft (10).
- Position the motor cover (2) on body M (19) and align bolt holes.
- Install socket bolts (1) and tighten evenly. Use Loctite 242 or equivalent on threads.
- Turn hoist over and remove screws (35) and controller cover (30).
- Connect wires. See appropriate wiring diagram.
- Position controller cover (30) and secure with machine screws (35).

### Load Sheave Removal (See Gearing Assembly Drawing)

- Remove chain bucket, chain stopper or anchor and run the load chain out of the hoist.
- Remove body M with stator (19, Housing and Motor Assembly Drawing). See "Stator Removal" and appropriate wiring diagram.
- Unscrew machine screws (35, Housing and Motor Assembly Drawing) and remove controller cover (30, Housing and Motor Assembly Drawing). Disconnect pendant and power wires from electrical parts.
- Unscrew machine screws (8, Electrical Assembly Drawing, both 115 V and 230 V) attaching panel assembly (5, Electrical Assembly Drawing, both 115 V and 230 V) to gear cover (24, Housing and Motor

Assembly Drawing) and remove panel assembly (5, Electrical Assembly Drawing, both 115 V and 230 V).

- Unscrew socket bolts (38, Housing and Motor Assembly Drawing) and remove gear cover (24, Housing and Motor Assembly Drawing).
- Remove set spring (16). Remove friction clutch assembly (15) as a unit.

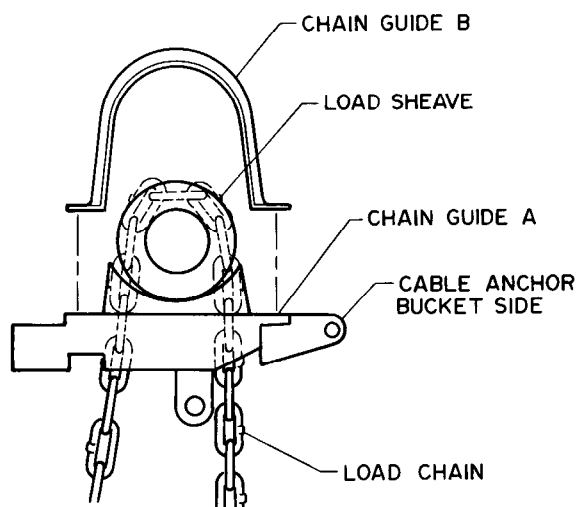
### WARNING

• **Do not disassemble or adjust friction clutch assembly (15). It is properly set at the factory. Replace the friction clutch (15) as a unit.**

- Remove packing (31, Housing and Motor Assembly Drawing).
- Remove snap ring (19).
- Turn the hoist on its side and unscrew socket bolts (10 and 11) and remove chain guide A (8).
- Remove chain guide B (1) and load sheave (3).

### Load Sheave Installation (See Gearing Assembly Drawing)

- Properly orientate chain guide A (8) and load sheave (3) by holding chain guide A (8) with chain anchor on right-hand side. Place load sheave (3) on top of chain guide A (8) with splined shaft down.



(Dwg. MHTPA0098)

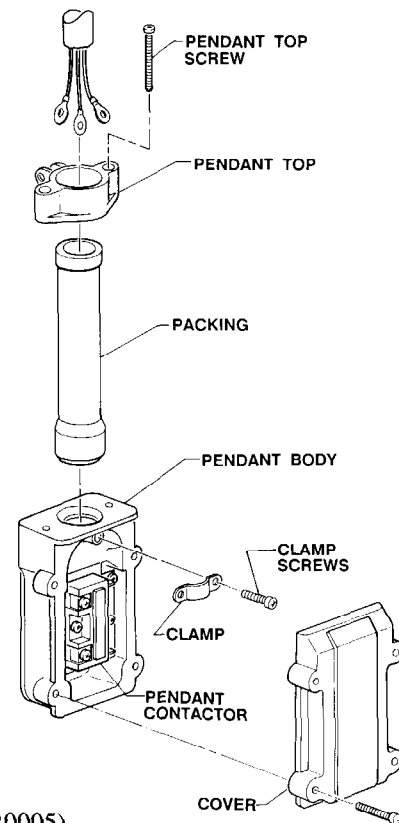
- Insert starter chain or load chain through chain guide A (8) so that first link across load sheave (3) will be standing link and welds on standing links face outward from load sheave (3).
- Aligning holes through chain guide B (1) and chain guide A (8), place chain guide B (1) over the load sheave (3).
- Insert load sheave (3) and chain guides (1 and 8) into body G (20, Housing and Motor Assembly Drawing).
- Secure chain guide A (8) to body G (20, Housing and Motor Assembly Drawing) by installing socket bolts (10 and 11).

6. Install the body M with stator (19, Housing and Motor Assembly Drawing). See steps 1 through 10 of “Stator Installation”.
7. With face marked “THIS SIDE UP” outward, install load gear (18) over load sheave (3). Secure by installing snap ring (19).
8. Align teeth of load gear (18) and friction clutch assembly (15), and install friction clutch assembly (15) as a unit.
9. Install set spring (16) on friction clutch (15).
10. Install packing (31, Housing and Motor Assembly Drawing) on body G (20Housing and Motor Assembly Drawing). Make sure motor wires stick through upper cutout in packing (31, Housing and Motor Assembly Drawing) and pendant and power wires through cutout on lower right hand side.
11. Position gear cover (24, Housing and Motor Assembly Drawing). Hole in center goes over friction clutch assembly (15). Secure with spring washer (37, Housing and Motor Assembly Drawing) and socket bolts (38, Housing and Motor Assembly Drawing). Use Loctite 242 or equivalent on threads.
12. Position panel assembly (5, Electrical Assembly Drawing, both 115 V and 230 V) and secure with machine screws (8, Electrical Assembly Drawing, both 115 V and 230 V). Use Loctite 242 or equivalent on threads.
13. Connect motor, power and pendant wires. See appropriate wiring diagram. On 115 V, run the power supply wires between gear cover (24, Housing and Motor Assembly Drawing) and panel assembly (5, Electrical (115 V Power Supply) Assembly Drawing).
14. Position controller cover (30, Housing and Motor Assembly Drawing) and secure with machine screws (35, Housing and Motor Assembly Drawing).
7. Slide the pendant top and packing off the cord, if they are going to be replaced.
8. Remove the split pin and chain pin attaching the strain relief chain to the pendant top.
9. Remove the back, top and cord packing of the new pendant.
10. Slide pendant top over the packing.
11. Insert pendant cord through the narrow end of the cord packing.

## NOTICE

• If it is difficult to slide the cord through the packing, lubricate the cord with bar soap. Do not use oil as a lubricant as it will damage the rubber packing.

12. Connect wires to contactor. See appropriate wiring diagram.
13. Seat the cord on the inside of the pendant. Secure cord to pendant by installing cable clamp with the two clamp screws.
14. Slide pendant top down cable packing onto top of pendant and secure with the two pendant top screws.
15. Position back of pendant. Secure with screws.
16. Secure strain relief chain or cable to pendant top with chain pin. Insert split pin into chain pin and bend ends back.



(Dwg. MHTPB0005)

## CAUTION

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

## Pendant Replacement

If the pendant contactors or inserts need replacement, the entire pendant body will have to be replaced.

1. Remove screws, washer and spring washers attaching pendant back to pendant body.
2. Remove screws connecting all wires to contactor.

## CAUTION

• Reassembling the contactor incorrectly could damage the hoist. Do not remove the screws which attach the contactor to the pendant.

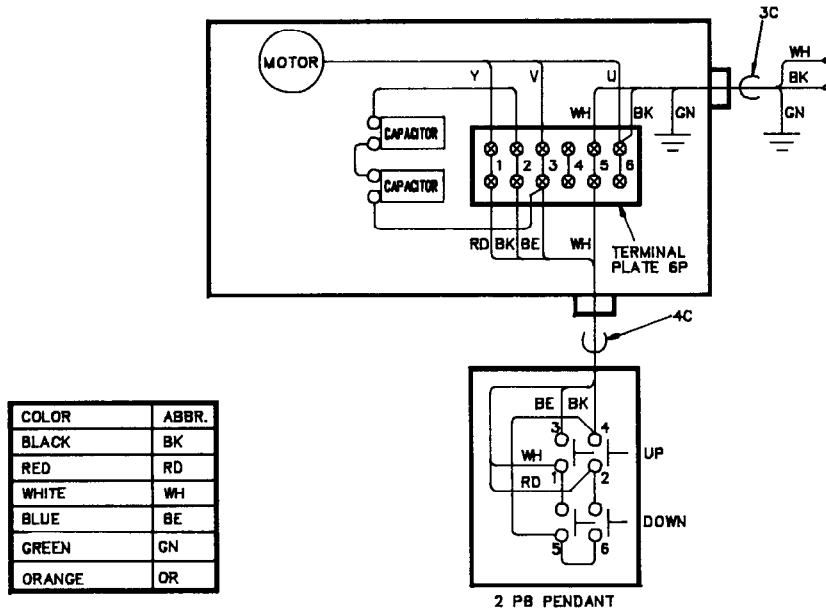
3. Loosen or remove the two clamp screws securing the cable clamp, located inside the pendant.
4. Remove the two screws attaching the top of pendant to the pendant body.
5. Slide pendant top off packing.
6. Pull the pendant off the pendant cord.

## NOTICE

• If the pendant top and packing is not going to be replaced, the pendant can now be attached.

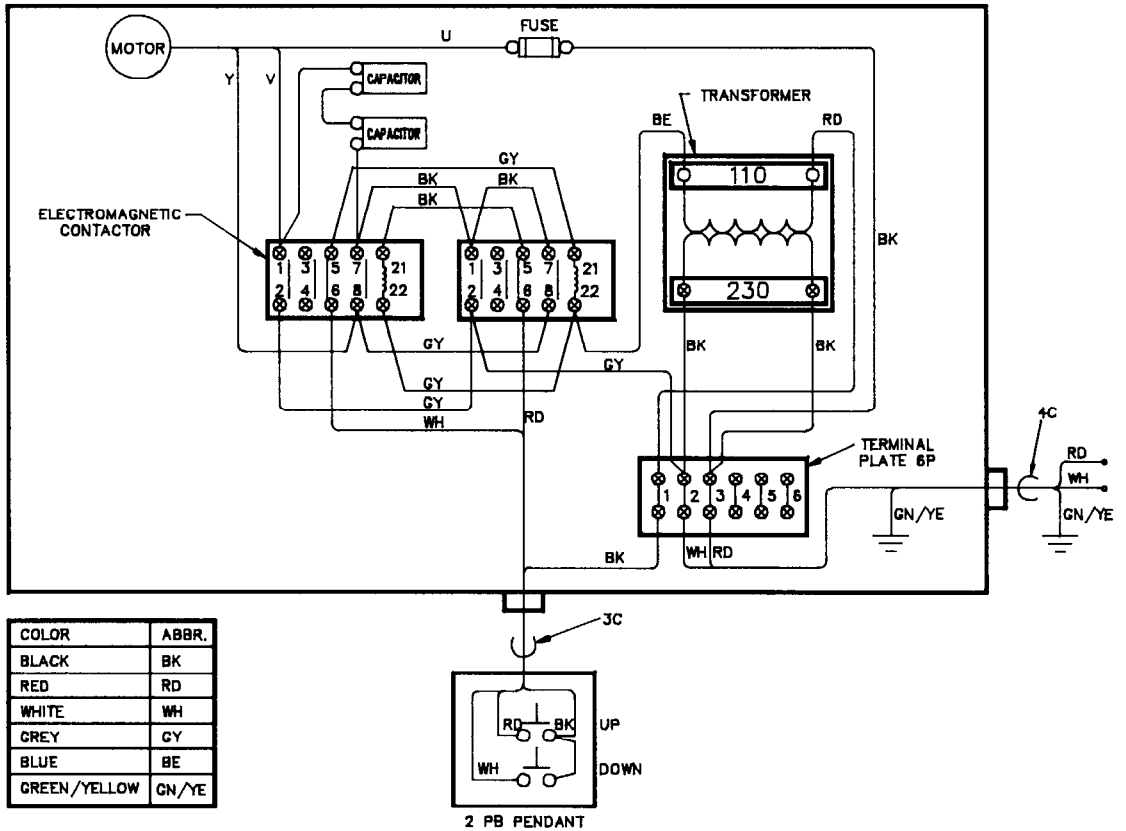
# WIRING DIAGRAM

## 115 V Wiring Diagram



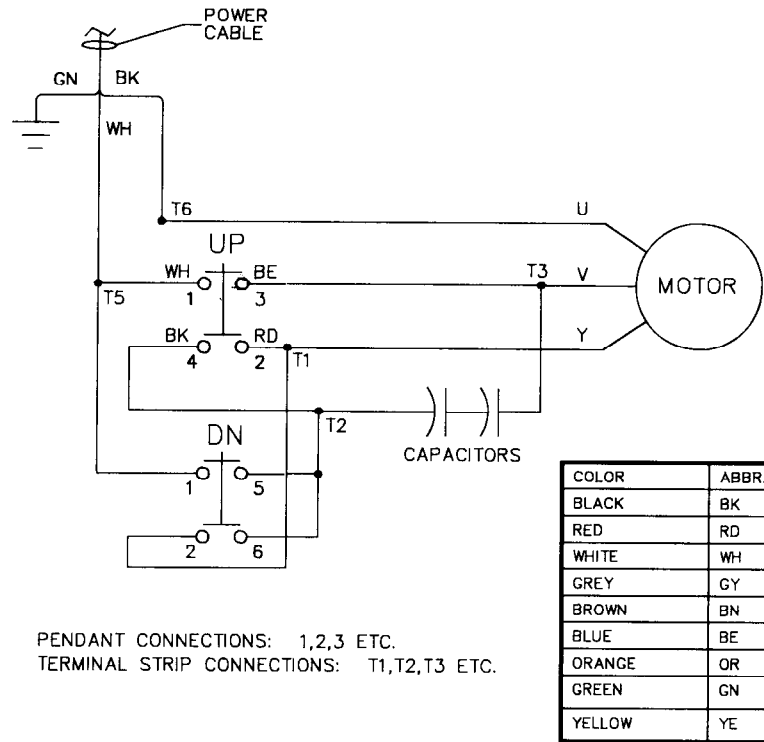
(Engr. Dwg. A17994)

## 230 V Wiring Diagram



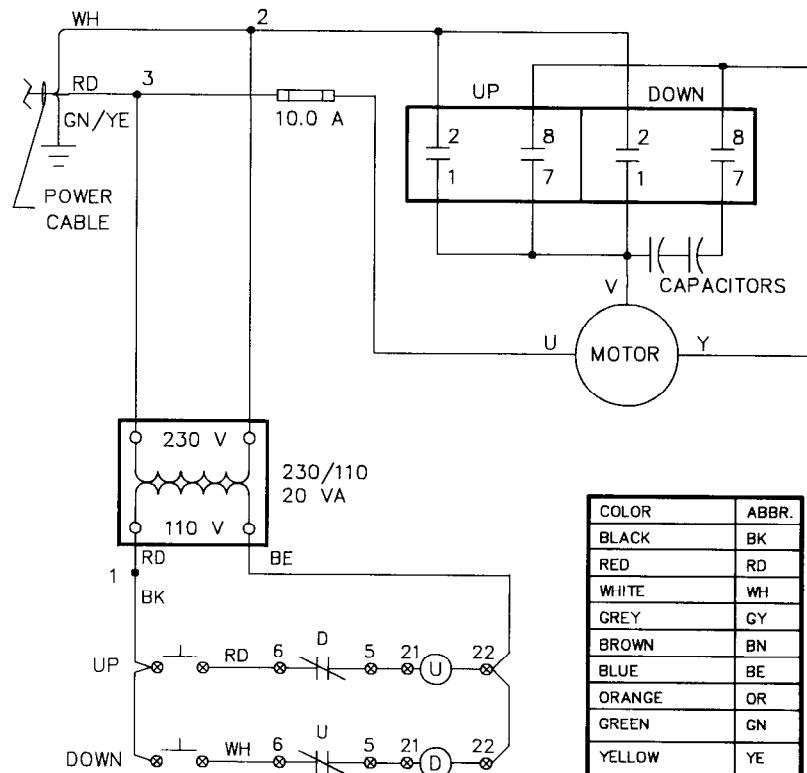
(Engr. Dwg. A17994)

## 115 V Schematic



(Engr. Dwg. A19198)

## 230 V Schematic



(Engr. Dwg. A19199)

## PARTS ORDERING INFORMATION

The use of replacement parts other than INGERSOLL-RAND Material Handling will 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 and serial number as it appears on the nameplate. For:
  - Electric chain hoist, SP plus capacity.
  - Specify power supply voltage.
  - Plain trolley, UTP plus capacity.
  - Geared trolley, UTG plus capacity.
2. Part number and part description as shown in this manual.
3. Quantity required.

### NOTICE

• **Except where noted in the parts list, part numbers for components of 230 V models and 115 V models are the same.**

### Return Goods Policy

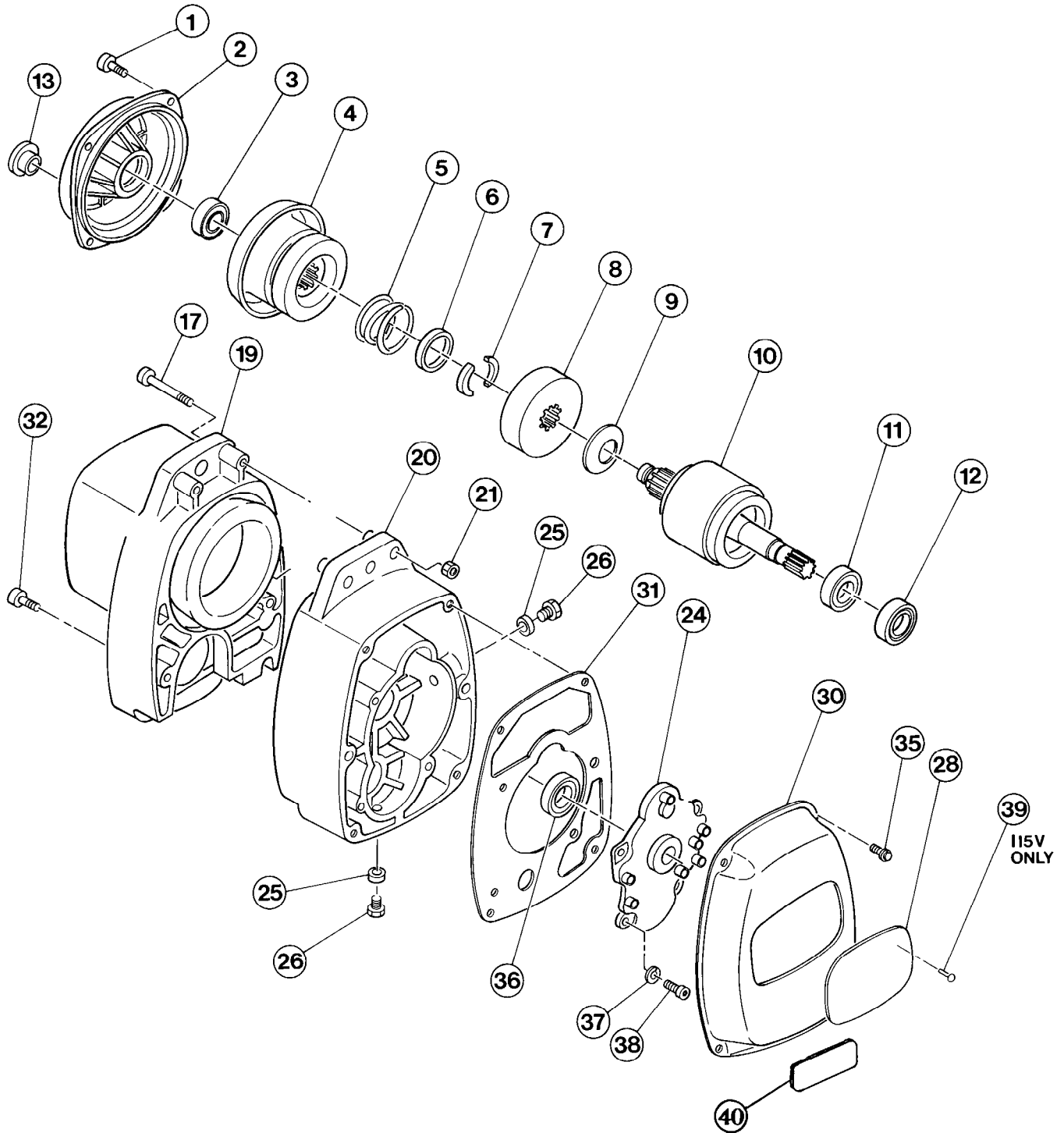
Ingersoll-Rand will not accept any returned goods for warranty or service work unless prior arrangements have been made and written authorization has been provided from the location where the goods were purchased.

Hoists returned with opened, bent or twisted hooks, or without chain and hooks, will not be repaired or replaced under warranty.

### NOTICE

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

# HOUSING AND MOTOR ASSEMBLY DRAWING



(Dwg. MHTPC0032)



## HOUSING AND MOTOR ASSEMBLY PARTS LIST

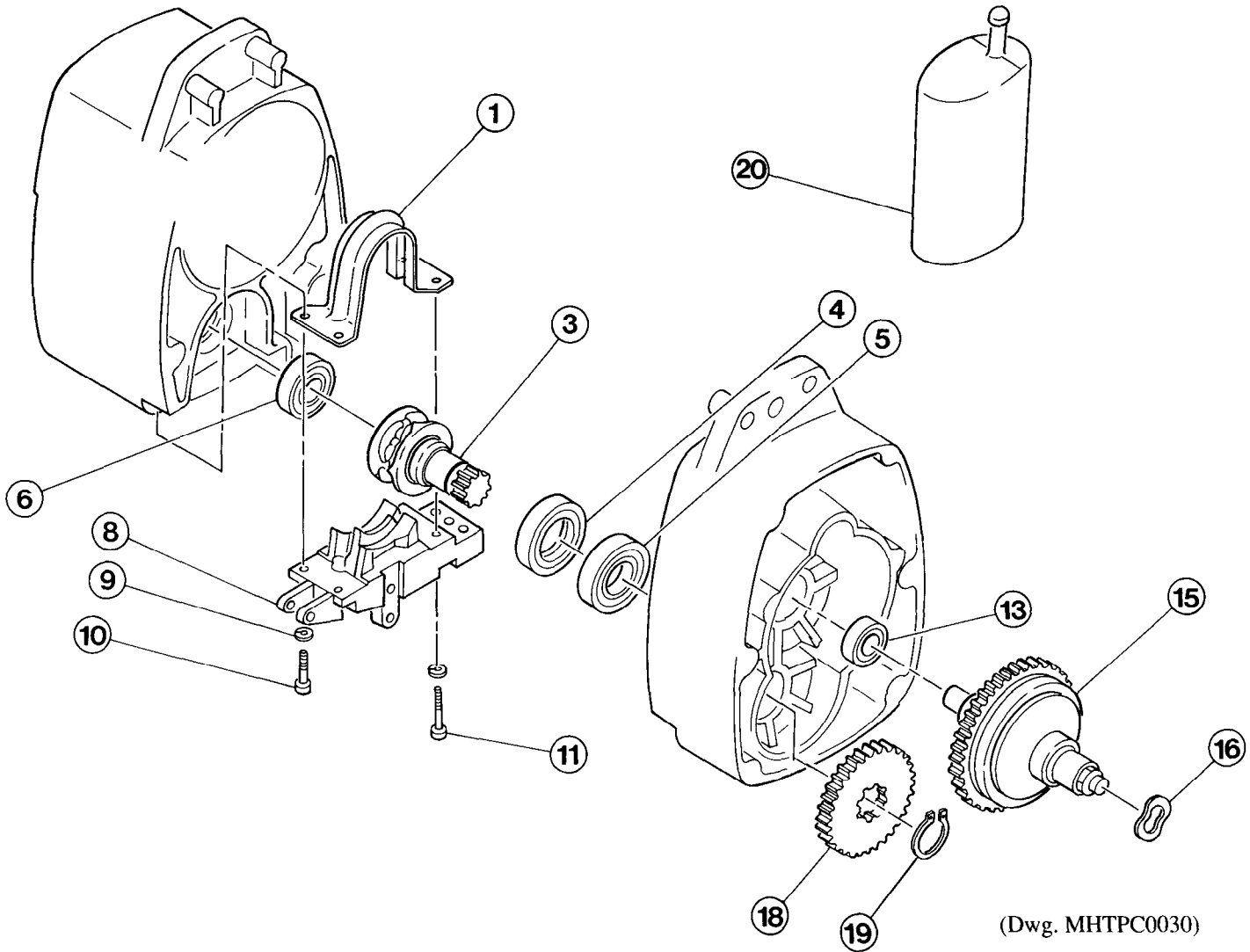
ITEM NO.	DESCRIPTION OF PART	QTY. TOTAL	PART NO.		
			1/2 ton	1 ton	2 ton
1	Socket Bolt	4	70892		
2	Motor Cover Assembly	1	50119 OR 9778-1		
3*	Ball Bearing	1	70896		
4	Brake Drum Assembly	1	70898		
5	Brake Spring	1	70900		
6	Thrust Collar	1	70904	70905	
7	Thrust Disc	2	70906	70907	
8	Pull-Rotor	1	70908	70909	
9	Coned-Disc Spring	1	70910	70911	
10	Motor Shaft With Rotor	1	70913	70914	
11	Oil Seal	1	70919		
12	Ball Bearing	1	70920		
13	Plug	1	70921		
17	Socket Bolt	2	70923		
19	Body M With Stator, 115V Power	1	70925		
	Body M With Stator, 230V Power	1	72152		
20	Body G	1	70930		
21	Nut	2	70932		
24	Gear Cover	1	70934		
25	Plug Packing	2	70935		
26	Oil Plug	2	70936		
28	Nameplate	1	71043780		
30	Controller Cover	1	70939		
31	Controller Cover Packing	1	70941		
32	Socket Bolt	2	70943	---	
35	Screw With Spring Washer	6	70947		
36	Oil Seal	1	71043699		
37	Spring Washer	4	70948		
38	Socket Bolt	4	70950	70951	
39	Rivet (115 V Only)	4	71043707		
40	Capacity Label	1	71043798	71043806	71043814
41+	Operation and Maintenance Manual	1	Form No. MHD56005		

\*(3) When replacing ball bearing, use Loctite "Bearing Mount No. 85" or equivalent chemical glue.

+ Not illustrated.

Recommended Spare.

## GEARING ASSEMBLY DRAWING AND PARTS LIST

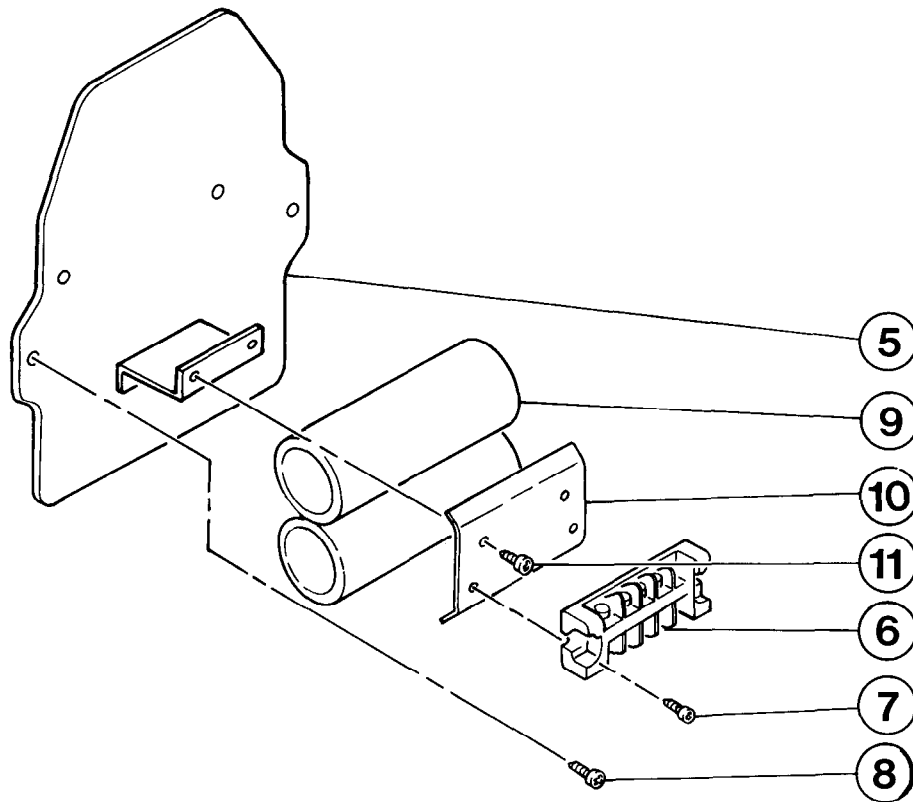


(Dwg. MHTPC0030)

ITEM NO.	DESCRIPTION OF PART	QTY. TOTAL	PART NO.		
			1/2 ton	1 ton	2 ton
1	Chain Guide B	1	70953	70954	
3	Load Sheave	1	70956	70957	
4	Oil Seal	1	70959		
5	Ball Bearing	1	70961		
6	Ball Bearing	1	70963		
8	Chain Guide A	1	70965	70966	
9	Spring Washer	4	70968		
10	Socket Bolt	2	70970		
11	Socket Bolt	2	70972		
13	Ball Bearing	1	70974		
15	Friction Clutch Assembly	1	70976	70977	
16	Set Spring	1	70978		
18	Load Gear	1	70980	70981	
19	Snap Ring	1	70983		
20	Gear Oil	1	71043715		

Recommended Spare.

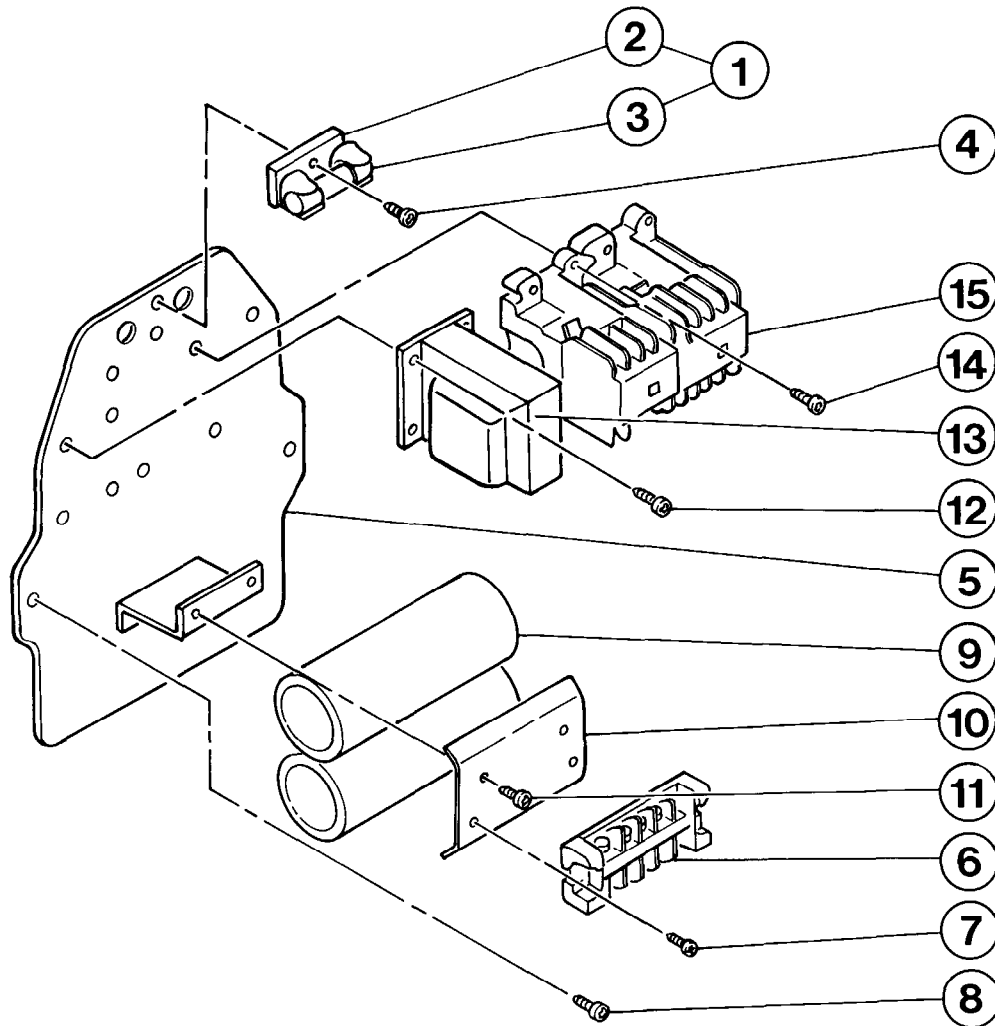
## ELECTRICAL (115 V POWER SUPPLY) ASSEMBLY DRAWING AND PARTS LIST



(Dwg. MHTPB0028)

ITEM NO.	DESCRIPTION OF PART	QTY. TOTAL	PART NO.		
			1/2 ton	1 ton	2 ton
5	Panel Assembly	1	70996		
6	Terminal Plate	1	70997		
7	Screw With Spring Washer	2	70994		
8	Screw With Spring Washer	3	71004	71005	
9	Condenser Assembly, 110V	1	71000	71001	
10	Condenser Holder	1	71002	71003	
11	Screw With Spring Washer	2	70994		

# ELECTRICAL (230 V POWER SUPPLY) ASSEMBLY DRAWING AND PARTS LIST

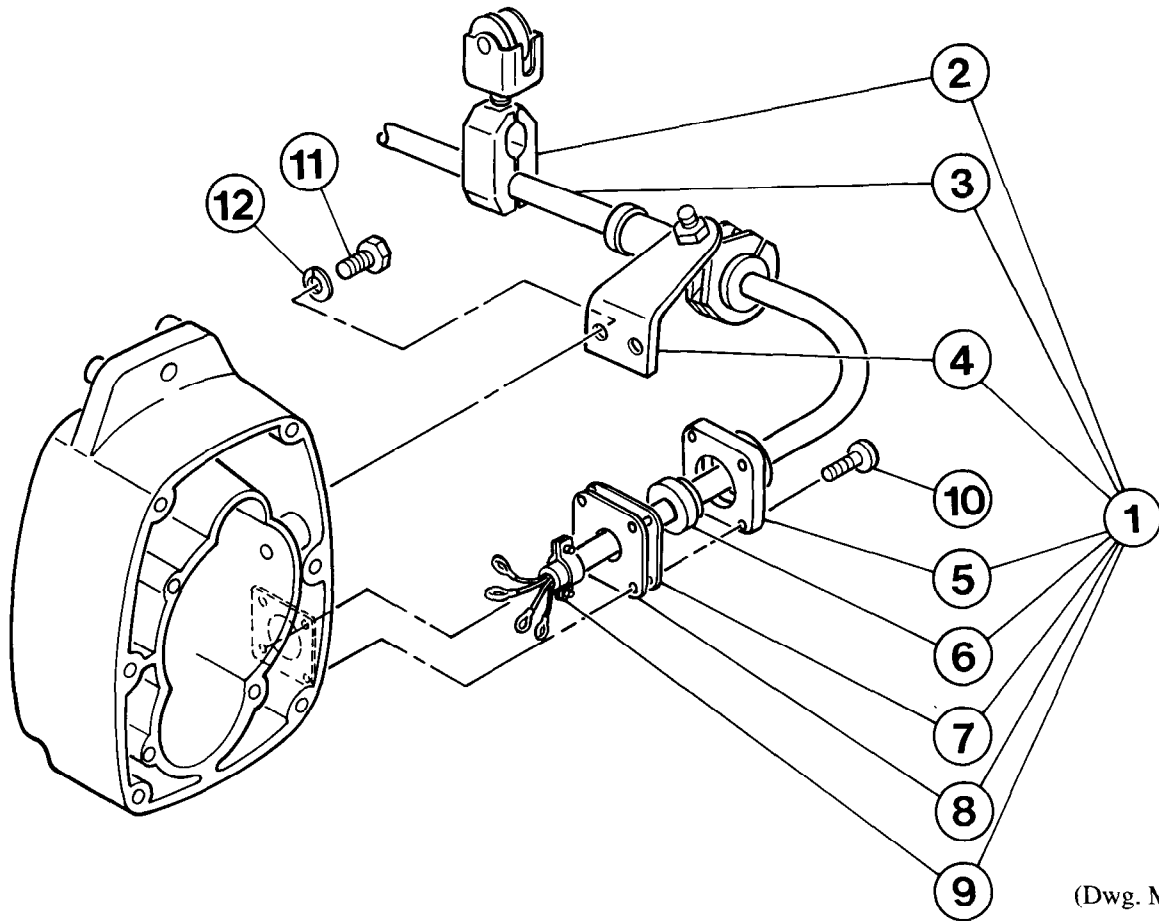


(Dwg. MHTPB0029)

ITEM NO.	DESCRIPTION OF PART	QTY. TOTAL	PART NO.		
			1/2 ton	1 ton	2 ton
1	Fuse Assembly (Includes items 2 & 3)	1	70987	70988	
2	Fuse Holder	1	Not Sold Separately		
3	Fuse	1	Not Sold Separately		
4	Screw With Spring Washer	2	70994		
5	Panel Assembly	1	70996		
6	Terminal Plate	1	70997		
7	Screw With Spring Washer	2	70994		
8	Screw With Spring Washer	3	70947		
9	Condenser Assembly, 230V	1	72154	72155	
10	Condenser Holder	1	71002	71003	
11	Screw With Spring Washer	4	71004	71005	
12	Screw With Spring Washer	4	71006		
13	Transformer, 115V	1	71007		
14	Screw With Spring Washer	4	70994		
15	Electromagnetic Contactor, 115V	2	70528		

Recommended Spare.

## POWER SUPPLY ASSEMBLY DRAWING AND PARTS LIST



(Dwg. MHTPB0027)

ITEM NO.	DESCRIPTION OF PART	QTY. TOTAL	PART NO.		
			1/2 ton	1 ton	2 ton
1	Power Supply Cable Assembly, 115V (Includes items 2 thru 9)	1	71043723		
	Power Supply Cable Assembly, 230V (Includes items 2 thru 9)	1	71021		
2	Cable Hanger Assembly	3	70574		
3*	Power Supply Cable 3C (115 V)	1	71043731		
	Power Supply Cable 4C (230 V)	1	71022		
4	Cable Clamp Arm Assembly	1	71023		
5	Cable Holder	1	71014		
6	Packing	1	71013		
7	Holder Plate	1	71024		
8	Plate Packing	1	71025		
9	Cable Clamp Assembly	1	71011		
10	Screw With Spring Washer	4	71018		
11	Bolt	2	71026		
12	Spring Washer	2	71027		

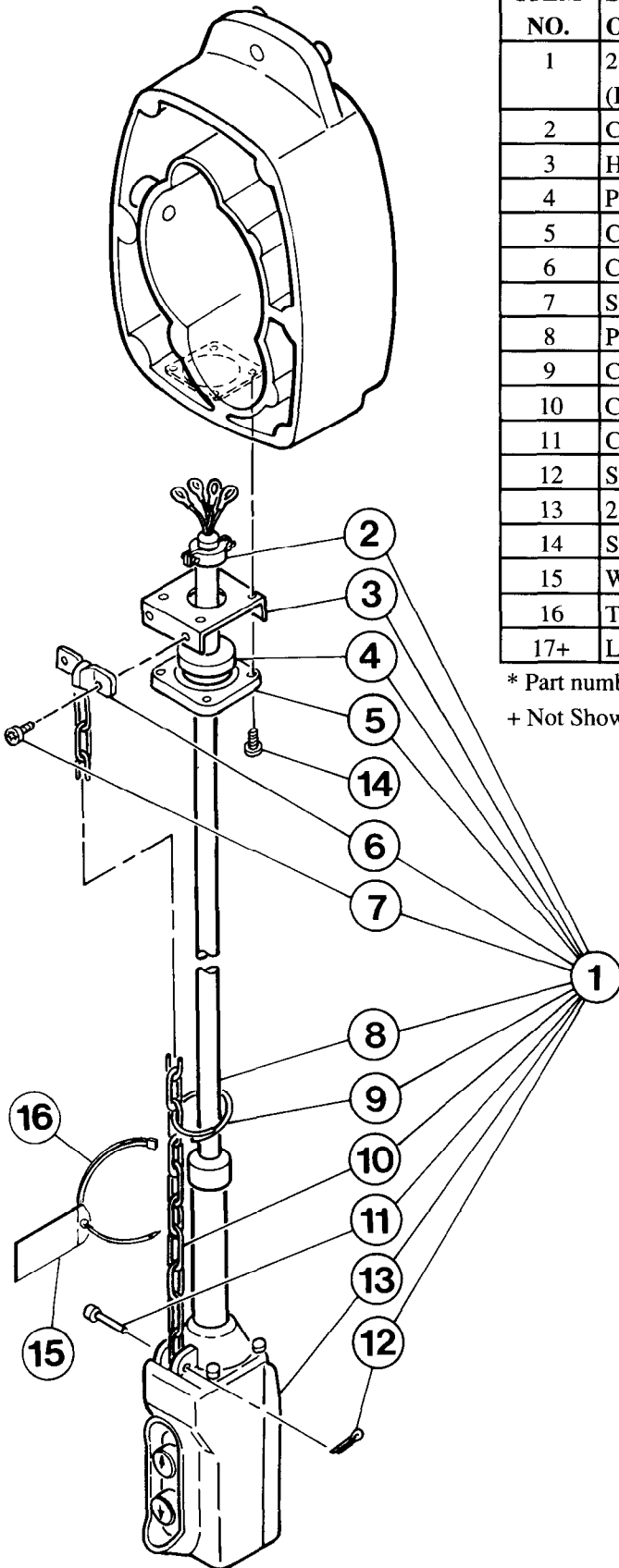
\* Standard length is 17 feet (5.2m), specify other lengths. Additional cable and cable hangers may be needed.

# CONTROL STATION (115 V POWER SUPPLY) ASSEMBLY DWG. AND PARTS LIST

ITEM NO.	DESCRIPTION OF PART	QTY. TOTAL	*PART NO.
1	2 Push Button Pendant and Cord Assy. (Includes items 2 thru 13,15 & 16)	1	71019
2	Cable Clamp Assembly	1	71011
3	Holder Plate U	1	71012
4	Packing	1	71013
5	Cable Holder	1	71014
6	Cord Chain Stopper	1	71015
7	Screw With Spring Washer	2	70947
8	Push Button Cord	1	71020
9	Cord Ring	5	50040
10	Cord Chain	1	50041
11	Cord Chain Pin	1	70558
12	Split Pin	1	70557
13	2 Push Button Pendant Assembly	1	71017
14	Screw With Spring Washer	4	71018
15	Warning Tag	1	71059612
16	Tie Wrap	1	50040
17+	Logo Label	1	71043822

\* Part numbers are the same for the 1/2, 1 and 2 ton hoists.

+ Not Shown

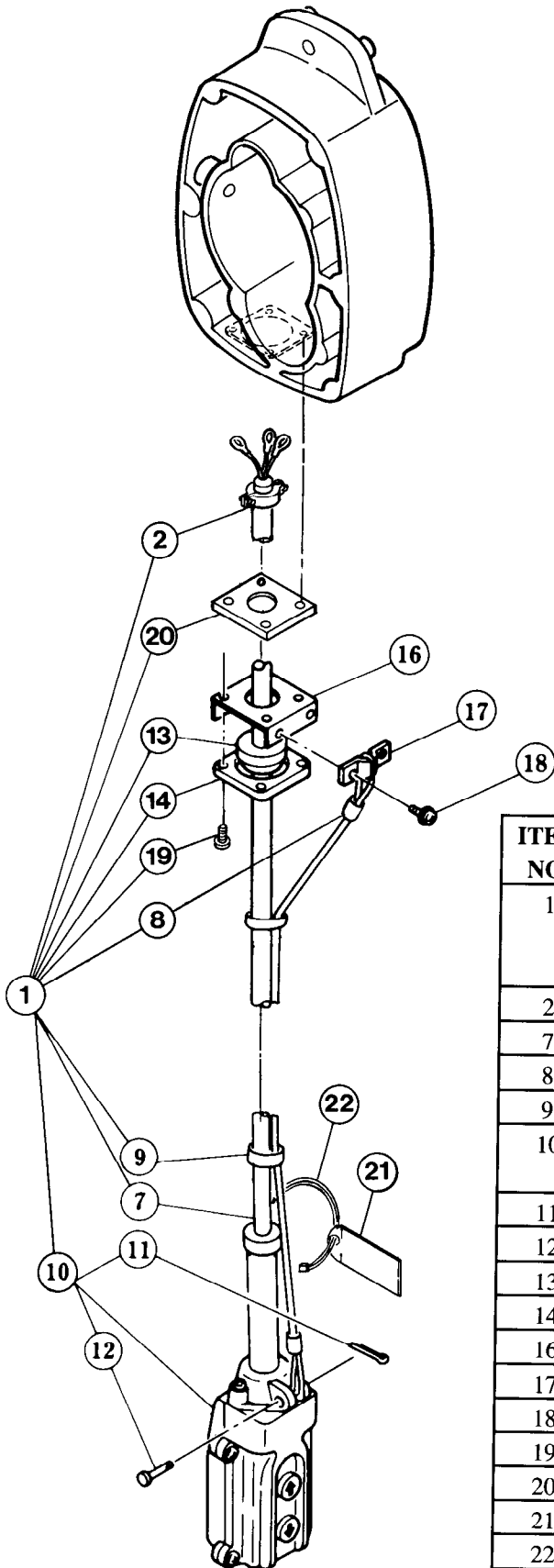


(Dwg. MHTPB0026)

# CONTROL STATION (230 V POWER SUPPLY) ASSEMBLY DWG. AND PARTS LIST

## NOTICE

• A transformer is used to "stepdown" the 230V of the power supply to 115V for use in the control circuit and pendant. See "Wiring Diagram" 230 V.



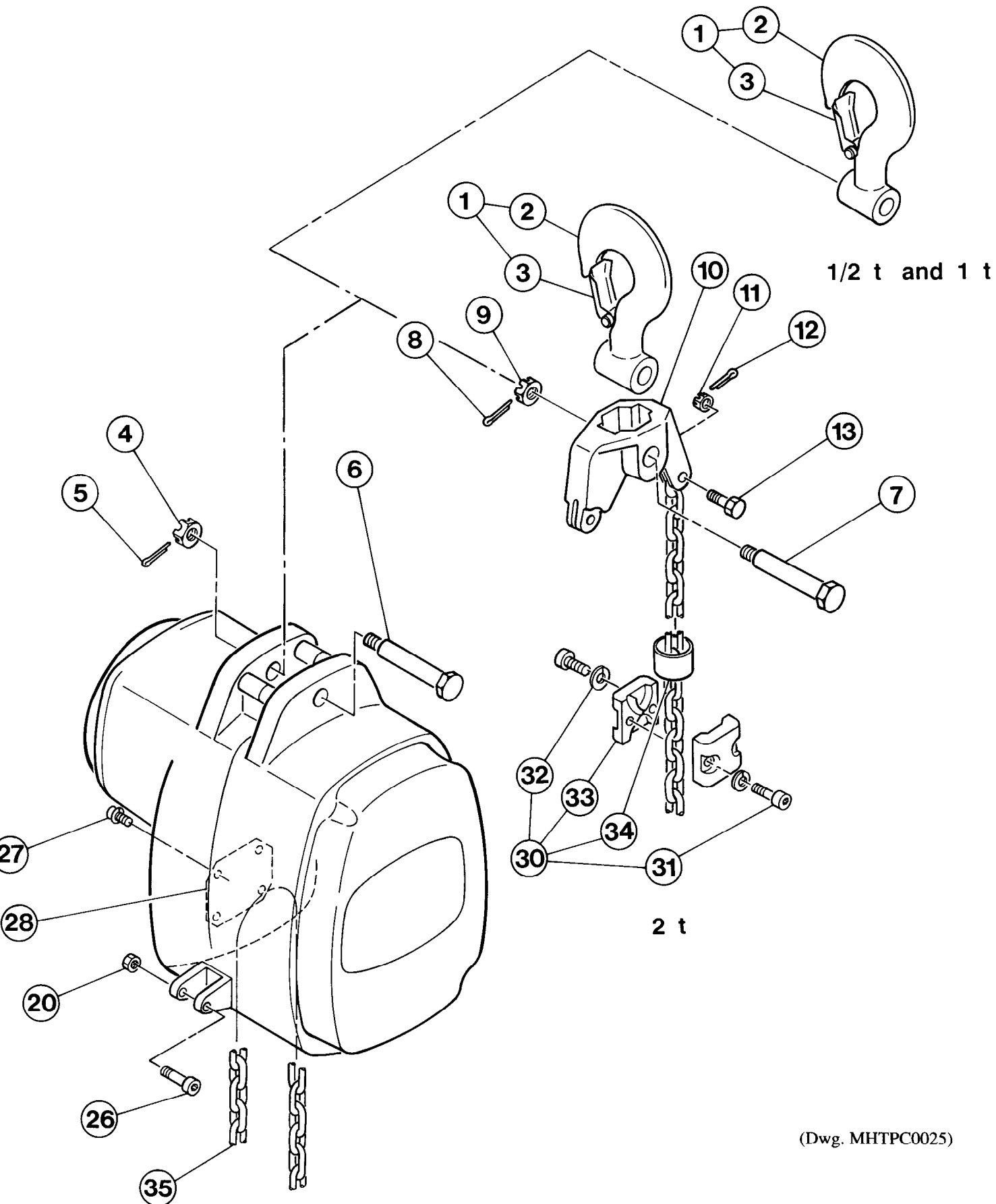
ITEM NO.	DESCRIPTION OF PART	QTY. TOTAL	*PART NO.
1	2 Push Button Pendant and Cord Assy. (Includes items 2,7 thru 14,16,17,18, 20, 21 and 22)	1	71043749
2	Cable Clamp Assembly	1	71011
7	Push Button Cord	1	71043756
8	Fixing Sleeve	2	54799
9	Lock Belt	2	73218
10	2 Push Button Pendant Assy. (230 V) (Includes items 11 & 12)	1	70555
11	Split Pin	1	70557
12	Cord Chain Pin	1	70558
13	Packing	1	71043764
14	Cable Holder	1	71014
16	Holder Plate U	1	71012
17	Cord Chain Stopper	1	71015
18	Screw With Spring Washer	2	70947
19	Screw With Spring Washer	4	71018
20	Packing	1	70559
21	Warning Tag	1	71059612
22	Tie Wrap	1	50040
23+	Logo Label	1	71043822

(Dwg. MHTPA0059)

\* Part numbers are the same for the 1/2, 1 and 2 ton hoists.

+ Not Shown

# CHAINING ASSEMBLY DRAWING



(Dwg. MHTPC0025)



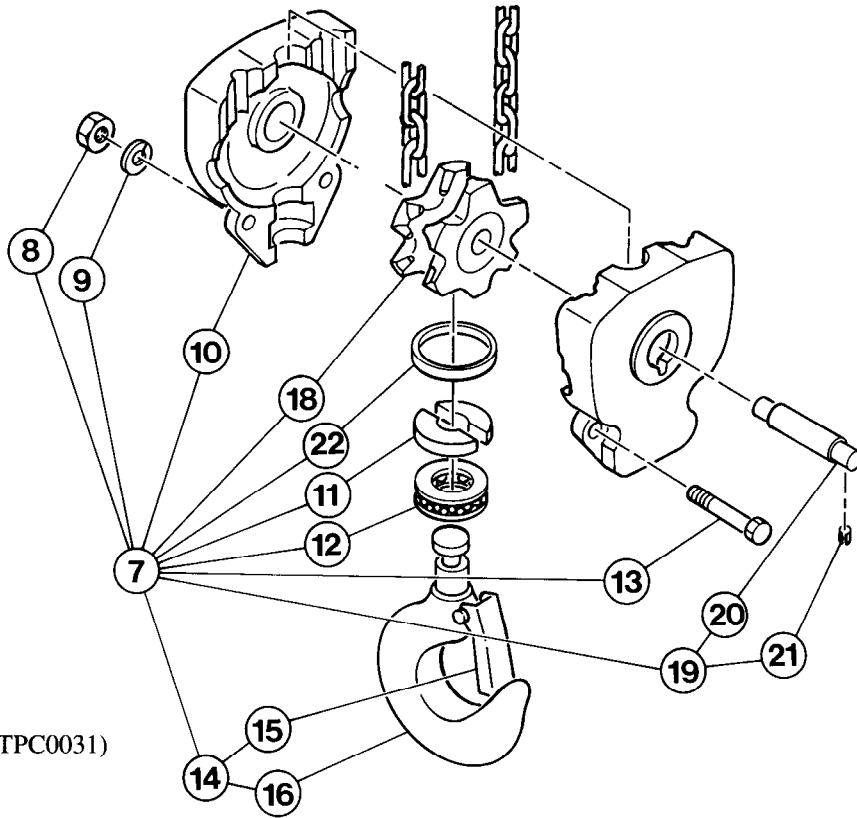
## CHAINING ASSEMBLY PARTS LIST

ITEM NO.	DESCRIPTION OF PART	QTY. TOTAL	PART NO.		
			1/2 ton	1 ton	2 ton
1	Top Hook Assembly (Includes items 2 & 3)	1	71028	71029	71030
2	Top Hook	1	Not Sold Separately		
3	Hook Latch Assembly	1	70367	70368	70369
4	Slotted Nut	1	71034		
5	Split Pin	1	71035		
6	Top Pin	1	71037		
7	Top Pin L	1	---		71038
8	Split Pin	1	---		71039
9	Slotted Nut	1	---		71040
10	Connection Yoke	1	---		71041
11	Slotted Nut	1	---		71042
12	Split Pin	1	---		71043
13	Chain Pin	1	---		71044
20	U Nut	1*	71045		
26	Socket Bolt	1*	71054		
27	Screw With Spring Washer	4	70947		
28	Cover	1	71053		
30	Stopper L Assembly (Includes items 31 thru 34)	1	---		71056
31	Socket Bolt	2	---		70951
32	Spring Washer	2	---		70948
33	Stopper L	2	---		71059
34	Stopper Cover	1	---		71060
35	Load Chain	1	LCES005	LCES010	

\* (20) and (26) Quantity of 2 each needed with chain bucket.

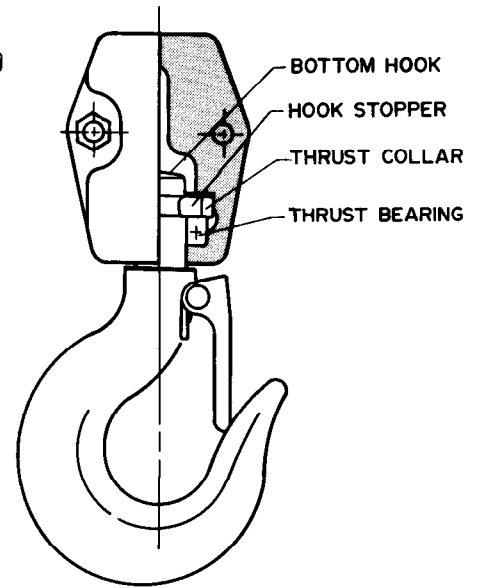
Recommended Spare.

# HOOK ASSEMBLY DRAWING

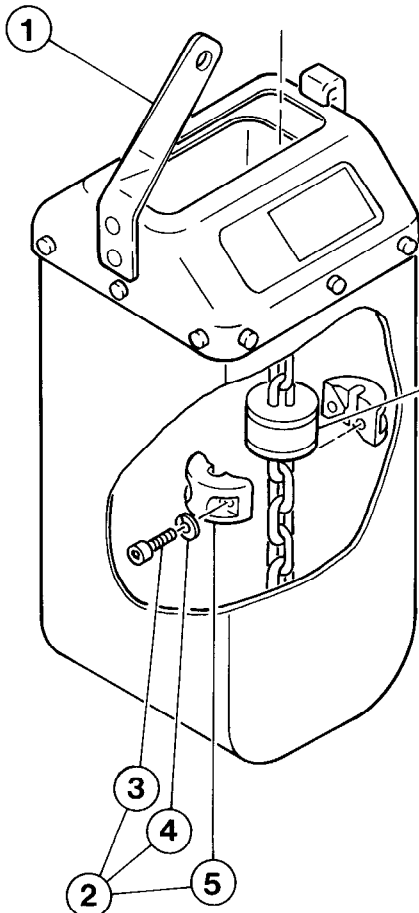


(Dwg. MHTPC0031)

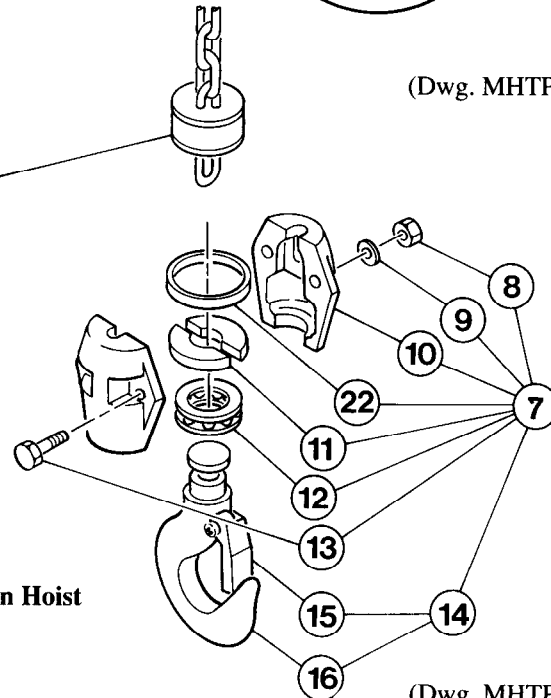
2 ton Hoist



(Dwg. MHTPA0101)



1/2 ton and 1 ton Hoist



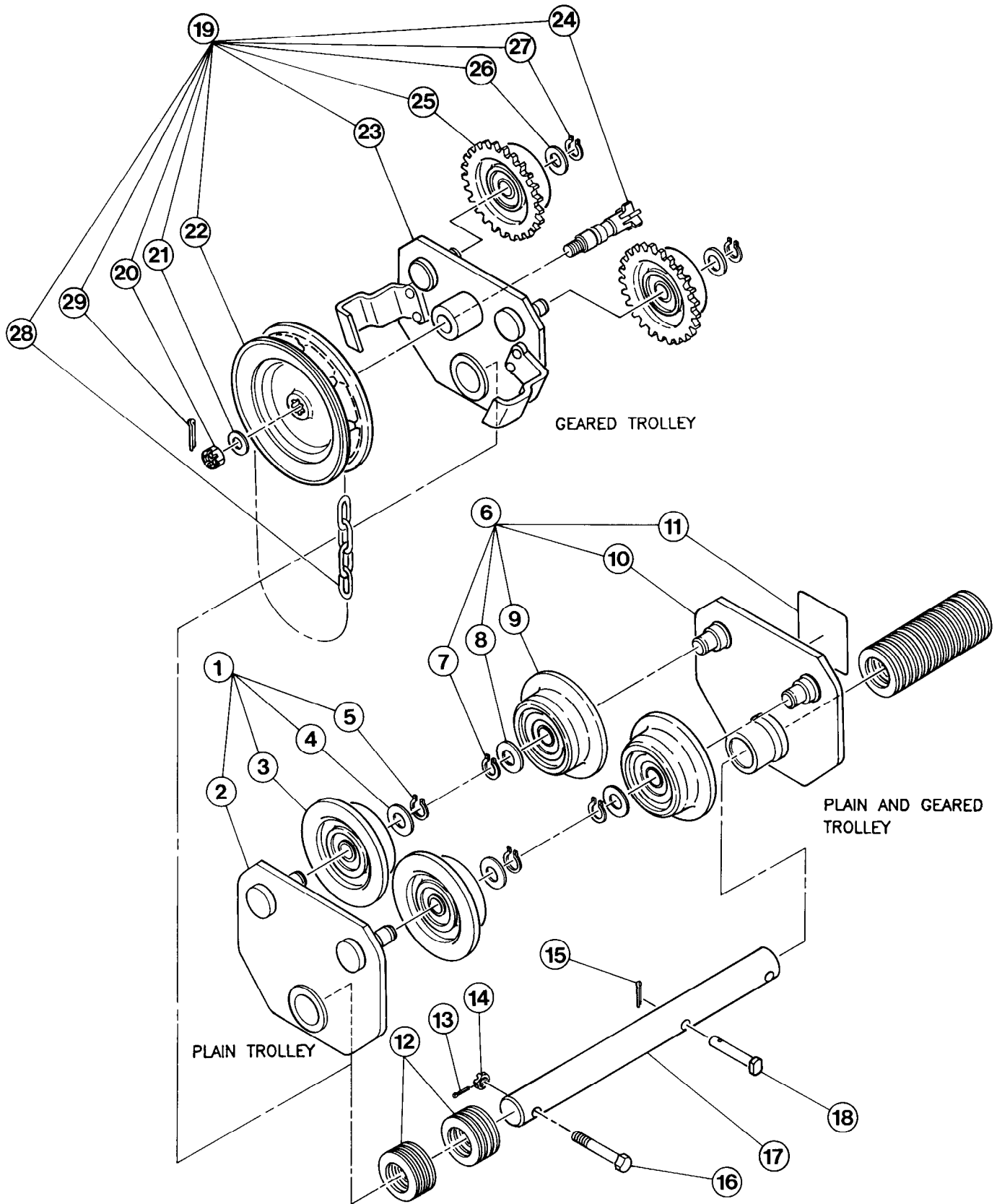
(Dwg. MHTPB0033)

## HOOK ASSEMBLY PARTS LIST

ITEM NO.	DESCRIPTION OF PART	QTY. TOTAL	PART NO.		
			1/2 ton	1 ton	2 ton
1	Chain Container (Maximum feet of lift)	1	CC-2 (25 ft)	CC-7 (25 ft)	CC-7 (13 ft)
		1	CC-3 (50 ft)	CC-4 (50 ft)	CC-4 (25 ft)
2	Stopper Assembly (Includes items 3,4 and 5)	1	71062		
3	Socket Bolt	2	71064		
4	Spring Washer	2	71066		
5	Stopper	2	71068		
6	Cushion Rubber S	1	---		71900
		2	71070	71900	---
7	Bottom Hook Complete Set (Includes items 8 thru 14 and 22. For 2 ton, also 18 and 19)	1	70413	70415	70416
8	Nut	2	70469	---	
		4	---	70470	
9	Spring Washer	2	70465	---	
		4	---	70466	
10	Bottom Yoke	2	70456	70458	70459
11	Hook Stopper	2	70449	70450	70451
12	Thrust Bearing	1	70444	70445	70446
13	Bolt	2	70436	70437	---
		4	---	---	70441
14	Bottom Hook Assembly (Includes Items 15 & 16)	1	70423	70424	70425
15	Hook Latch Assembly	1	70430	70431	70432
16	Bottom Hook	1	Not Sold Separately		
18	Idle Sheave Assembly	1	---		70475
19	Bottom Shaft Assembly (Includes Items 20 & 21)	1	---		70481
20	Bottom Shaft	1	Not Sold Separately		
21	Spring Pin	1	Not Sold Separately		
22	Thrust Collar	1	70483	70484	70485

Recommended Spare.

# PLAIN AND GEARED TROLLEY ASSEMBLY DRAWING



(Dwg. MHTPC0007)

## PLAIN AND GEARED TROLLEY ASSEMBLY PARTS LIST

See form MHD56003 for complete Trolley Operation and Maintenance Instructions

ITEM NO.	DESCRIPTION OF PART	QTY. TOTAL	PART NO.		
			1/2 ton	1 ton	2 ton
1	Side Plate A, Assembly (Includes Items 2 thru 5)	1	73317	70808	70809
2	Side Plate A	1	70812	70813	70814
3	Trolley Wheel P (Includes Items 3A & 3B)	2	70817	70818	70819
3A	Wheel Bearing (For Trolley Wheel P)	2	71887	71888	71889
3B	Retaining Ring (For Trolley Wheel P)	2	71892	71893	71894
4	Washer	2	---	70822	70823
	Slotted Nut	2	70826	---	
5	Snap Ring	2	---	70827	70828
	Split Pin	2	70831	---	
6	Side Plate B, Assembly (Includes Items 7 thru 11)	1	70832	70833	70834
7	Snap Ring	2	---	70827	70828
	Split Pin	2	70831	---	
8	Washer	2	---	70822	70823
	Slotted Nut	2	70826	---	
9	Trolley Wheel P (Includes Items 9A and 9B)	2	70817	70818	70819
9A	Wheel Bearing (For Trolley Wheel P)	2	71887	71888	71889
9B	Retaining Ring (For Trolley Wheel P)	2	71892	71893	71894
10	Side Plate B	1	70812	70813	70814
11	Nameplate B, Plain	1	71004063	71004071	71004089
	Nameplate B, Geared	1	---	71004121	71004139
12	Spacer	24	70842	70843	---
		18	---		70844
13	Split Pin	1	70847	70848	
14	Slotted Nut	1	73316	70850	70851
15	Split Pin	1	70853		70841
16	Bolt	1	70855	70856	70857
17	Suspension Shaft (Standard Length)	1	70860 (3 to 5 in.)	70861 (3 to 5 in.)	70862 (4 to 6 in.)
18	Shaft Stopper Pin	1	70865	70866	70867
19	Side Plate G, Assembly (Includes Items 20 thru 29)	1	---	70870	70872
20	Nut	1	---	70875	
21	Washer	1	---	70876	
22	Hand Wheel, Impact Resistant Nylon	1	---	70877	
	Hand Wheel, Cast Iron ***	1	---	70763	
23	Side Plate G	1	---	70878	70880
24	Pinion	1	---	70883	70884
25	Trolley Wheel G (Includes Items 3A and 3B)	2	---	70885	70886
25A	Wheel Bearing (For Trolley Wheel G)	2	---	71888	71889

**PLAIN AND GEARED TROLLEY ASSEMBLY PARTS LIST (Continued)**

ITEM NO.	DESCRIPTION OF PART	QTY. TOTAL	PART NO.		
			1/2 ton	1 ton	2 ton
25B	Retaining Ring (For Trolley Wheel G)	2	---	71893	71894
26	Washer	2	---	70822	70823
27	Snap Ring	2	---	70827	70828
28	Hand Chain	1	---	HCCF005	
29	Split Pin	1	---	70890	

\*\*\* Option. Does not come as standard with unit. Must be ordered separately.

## 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.

**INGERSOLL-RAND Material Handling Division**  
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P.O. Box 24046, Seattle, Washington, USA 98124-0046  
Phone (206) 624-0466, Telex: 3723554  
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