Form MHD56051

PARTS, OPERATION AND MAINTENANCE MANUAL

for

THV "Lo-Pro™" SERIES HOISTS*

MODELS

THV005 1/2 ton

THV010 1 ton

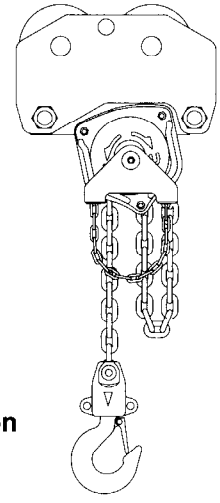
THV020 2 ton

THV030 3 ton

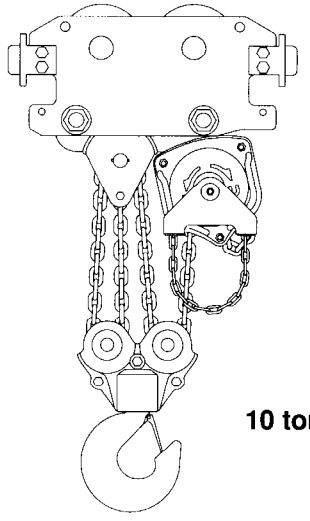
THV050 5 ton

THV080 8 ton

THV100 10 ton

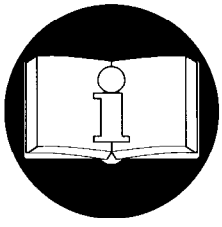


1/2 to 2 ton



10 ton

* Including **S•COR•E** (Spark and Corrosion Resistant) Features.
Unless otherwise noted, tons in this manual are metric. (1 metric ton = 2,200 lbs.)



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

⚠WARNING

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

Always operate, inspect and maintain this equipment 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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Edition 1
March 1993
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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 should 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 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 equipment for lifting, supporting, or transporting people or lifting or supporting loads over people.

• Hoists are designed to provide a 4 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 customers responsibility. If in doubt, consult a registered structural engineer.

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

NOTICE

• Using other than genuine INGERSOLL-RAND Material Handling parts will void the warranty.

SAFE OPERATING INSTRUCTIONS

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

INGERSOLL-RAND recognizes that most companies who use hoists and trolleys have a safety program in force at their facility. In the event you are aware 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 people trained in safety and operation on this equipment to operate this product.
2. Only operate this equipment if you are physically fit to do so.
3. When a "DO NOT OPERATE" sign is placed on the hoist, do not operate the hoist until the sign has been removed by designated personnel.
4. Before each shift, and during operation, the operator should inspect the equipment for wear or damage.
5. Never use equipment that inspection indicates is worn or damaged.
6. Periodically, inspect the equipment thoroughly and replace worn or damaged parts.
7. Lubricate the equipment regularly.
8. Do not use hoist if hook latch has been sprung or is broken.
9. Check that the hook latches are engaged before using.
10. Never splice chains by inserting a bolt between links.
11. Only lift loads less than or equal to the rated capacity of the hoist. See warning tags attached to hoist.
12. When using two hoists to suspend one load, select two hoists each having a rated capacity equal to or more than the load. This provides adequate safety in the event of a sudden load shift.
13. Never place your hand inside the throat area of a hook.
14. Never use the hoist chain as a sling.
15. Never operate a hoist when the load is not centered under the hook. Do not "side pull" or "yard."
16. Never operate a hoist with twisted, kinked, "capsized" or damaged load chain.
17. Do not force a chain or hook into place by hammering.
18. Never insert the point of the hook into a chain link.
19. Be certain the load is properly seated in the saddle of the hook and the hook latch is engaged.
20. Do not support the load on the tip of the hook.
21. Never run the load chain over a sharp edge. Use a sheave.
22. Pay attention to the load at all times when operating this equipment.
23. Always ensure that you, and all other people, are clear of the path of the load. Do not lift a load over people.
24. Never use this equipment for lifting or lowering people, and never allow anyone to stand on a suspended load.
25. Ease the slack out of the chain and sling when starting a lift. Do not jerk the load.
26. Do not swing a suspended load.
27. Never leave a suspended load unattended.
28. Never weld or cut on a load suspended by this equipment.
29. Never use the hoist chains as welding electrodes.
30. Do not operate this equipment if chain jumping, excessive noise, jamming, overloading or binding occurs.
31. Only operate this equipment with manual power.
32. After use, properly secure hoist and all loads.
33. Remove all loads before performing any maintenance.
34. Avoid collision or bumping of trolley.

SPECIFICATIONS

Model Codes:

Example: THV050GCP15 - 13CN THV 050 G CP 15 - 13 C N

Series:

THV

Hoist Capacity:

005 = 1/2 metric ton (1,100 lbs.)
010 = 1 metric ton (2,200 lbs.)
020 = 2 metric tons (4,400 lbs.)
030 = 3 metric tons (6,600 lbs.)
050 = 5 metric tons (11,000 lbs.)
080 = 8 metric tons (17,600 lbs.)
100 = 10 metric tons (22,000 lbs.)

Trolley Wheel Type:

P = Plain
G = Geared

S•COR•E Features:

\- = Standard (no features specified).
CP = Copper Plated.
SB = Solid Bronze.

Lift (Hoist load chain/hook travel):

10 = 10 feet (3 metres) (standard).
15 = 15 feet (4.5 metres).
20 = 20 feet (6 metres).
XX = Specify length.
F = Hoist without load chain.

Hand Chain Drop (furnished 2 feet (0.6 metres) less than lift):

8 = 8 feet (10 foot lift minus 2 feet -- standard).
13 = 13 feet (15 foot lift minus 2 feet).
18 = 18 feet (20 foot lift minus 2 feet).
XX = Specified drop.

Flange Width:

A = Standard size:
1/2 and 1 ton = 2-1/2 to 5 in. (63 to 127 mm);
2, 3, 5, 8 and 10 ton = 3 to 5 in. (76 to 127 mm).

B = 2 in. (51 mm) over standard size:
1/2 and 1 ton = 4-1/2 to 7 in. (114 to 178 mm);
2, 3 and 5 ton = 5 to 7 in. (127 to 178 mm);
8 and 10 ton = 6 to 8 in. (152 to 208 mm).

C = **4 in. (102 mm) over standard size:**
1/2 and 1 ton = 6-1/2 to 9 in. (165 to 229 mm);
2, 3 and 5 ton = 7 to 9 in. (178 to 229 mm);
8 and 10 ton = 8 to 10 in. (203 to 259 mm).

D = 6 in. (152 mm) over standard size:
1/2 and 1 ton = 8-1/2 to 11 in. (216 to 279 mm);
2, 3 and 5 ton = 9 to 11 in. (229 to 279 mm);
8 and 10 ton = 10 to 12 in. (254 to 310 mm).

Options:

V = Overload Clutch.
H = Zinc Plated Hand Chain.
N = Nickel diffused load chain.
Z = Sand blasted / carbozinc plating.
P = Special paint: Marine 812 top coat.
S = Chain container (fabric).
T = Trolley lugs (includes bumpers).

Model Specifications:

Model No.	Rated Capacity *	Minimum Beam Curve Radius		Flange Adjustment Range (Standard**)		Hand Chain Pull to Lift Rated Load	
		inches	mm	inches	mm	lb	kg
THV005	1/2	15	381	2.5 - 5	64 - 127	55	25.0
THV010	1	29	737			73	33.1
THV020	2	37	940	3 - 5	76 - 127	75	34.0
THV030	3	44	1118			77	34.9
THV050	5	55	1397			86	39.0
THV080	8	60	1524	4 - 6	102 - 152	90	40.8
THV100	10					90	40.8

Model No.	No. of chain falls	Hand Chain Overhauled to Lift Load 1 ft. (0.3 m)		Minimum Headroom ***		Unit Net Weight (Plain/Geared) ****	
		ft	m	inches	mm	lb	kg
THV005	1	25	7.6	10.62	270	35 / 38	16 / 17.2
THV010		39	11.9	12.12	308	50 / 54	23 /24.5
THV020		75	22.9	13.62	346	90 / 96	41 / 43.5
THV030	2	116	35.4	16.62	422	120 / 128	54.4 / 58
THV050		187	57.0	21.50	546	205 / 255	93 / 116
THV080	3	281	85.6	26.75	679	385 / 420	175 / 190.5
THV100	4	375	114.3	27.62	702	455 / 480	207 / 218

* Rated capacity in metric tons. 1 metric ton = 2,200 lbs.

** Flange adjustment ranges are based on units with minimum length suspension shafts installed. Refer to model code and parts list for applicable suspension shaft size(s). Trolley adjustment ranges: THV005 and THV010 = 2.5 inches (64 mm); THV020 through THV100 = 2 inches (51 mm).

*** Dimension is from bottom of beam flange to the hoist hook when hook is fully raised.

**** Standard Lift (all models) = 10 ft (3 m). Hand chain length for hoist and trolley is 2 feet (0.66 m) less than lift. Standard hand chain length (all models) = 8 ft (2.44 m). Unit net weight based on standard unit configuration.

WARNING TAG

Each unit is supplied from the factory with the warning tag shown. If the tag is not attached to your unit, order a new tag and install it. See the parts list for the part number. Tag is not shown actual size.

INSTALLATION

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

WARNING

• Before installing, read "SAFETY INFORMATION."
• To avoid an unbalanced load which may damage the trolley, ensure hoist is properly centered under the trolley.

Trolley Installation

NOTICE

• Trolley wheels ride on the top of the lower flange of the beam.
• Refer to the "MAINTENANCE" section for "General Instructions" and installation instructions for a trolley and hoist that have been completely disassembled.
• During installation lubricate gears, nuts, capscrews and all machined threads. Use of antiseize compound or thread lubricant on threaded areas prevents corrosion and allows for ease of component disassembly.

Trolley Spacer (102) Information
The spacers (102) allow the trolley to be adjusted for correct installation on the beam flange and center the hoist under the trolley. The following information is specific to the installation of the trolley spacers (102).

1. To preadjust trolley refer to Dwg. MHTPA0370 and Table 1.
2. To install the required inside spacers (102) divide the spacers into four equal groups. From each group remove the number of spacers (102) listed in the "Between each sideplate and hoist bracket" column of Table 1. Place these spacers (102) on both sides of the two suspension shafts (119).
3. After side plates (109, 110, 111) are installed, place the remaining spacers (102) on the two suspension shafts (119) in equal amounts as listed in the "Outside of each sideplate" column of Table 1.

Trolley Installation from Underneath the Beam

1. Remove nuts (101) from suspension shafts (119).
2. Remove spacers (102).
3. Remove plain (109, 110) or geared (111) sideplates.
4. Preadjust trolley width for the beam flange using Table 1 and Dwg. MHTPA0370. The total clearance between the beam and the trolley wheel flanges is 3/32 to 5/32 inches (2 to 4 mm) when the trolley is installed correctly. As shown in Dwg. MHTPA0370, the difference between dimensions "X" and "Y" equals the total clearance. Install the required inside spacers (102) equally on suspension shafts (119).
5. Slide geared (111) or plain (110) side plate on suspension shafts (119).
7. Install remaining spacers (102) equally outside the side plate (110, 111) on suspension shafts (119).
8. Install nuts (101) on suspension shafts (119) and tighten. Nuts (101) are self locking. Ensure suspension shaft (119) threads extend a **minimum** of one full thread beyond the end of the nuts (101). Tighten until trolley sideplate (110 or 111) is held firmly against the raised face of the suspension shafts (119) and the spacers (102).

⚠WARNING

• Depending on the size of unit, this equipment may weigh more than 480 lbs. (218 kg). If parts of the trolley or hoist are dropped they can cause injury or damage property. Adequately support the hoist and trolley when lifting into place on the beam.

9. Place assembled portion of trolley on beam track.
10. Install required inside spacers (102) equally on suspension shafts (119).
11. Install plain (109) side plate, the outside spacers (102) equally, and nuts (101) on suspension shafts (119). Tighten nuts. Nuts (101) are self locking. Ensure suspension shaft (119) threads extend a **minimum** of one full thread beyond the end of the nuts (101). Tighten until trolley sideplate (109) is held firmly against the raised face of the suspension shafts (119) and the spacers (102).
12. It is recommended that the nuts (101) be torqued to the values listed in Table 2. Prior to using this torque reference, read the associated notes.
13. Conduct operating checks and testing as described in the "OPERATIONS" section.

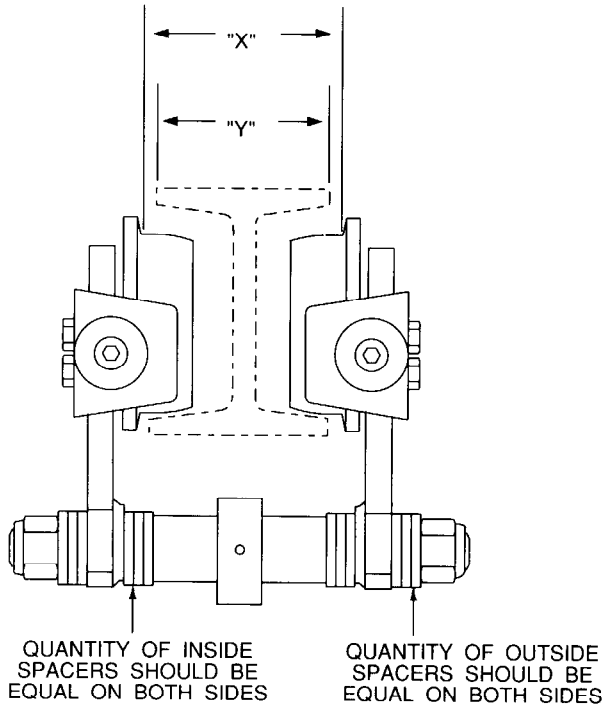
Trolley Installation Over the Open End of the Beam

1. Remove nuts (101) from suspension shafts (119).
2. Remove spacers (102) and plain (109, 110) or geared (111) side plates.
3. Preadjust trolley width for the beam flange using Table 1 and Dwg. MHTPA0370. The total clearance between the beam and the trolley wheel flanges is 3/32 to 5/32 inches (2 to 4 mm) when the trolley is installed correctly. As shown in Dwg. MHTPA0370, the difference between dimensions "X" and "Y" equals the total clearance. Install the required inside spacers (102) equally on suspension shafts (119).
4. Slide geared (111) or plain (109, 110) side plates on suspension shafts (119).
5. Install remaining spacers (102) equally to the outside of the sideplates on suspension shafts (119).
6. Install nuts (101) on suspension shafts (119). Do not tighten.
7. Remove rail stop.
8. Support the assembled portion of trolley while raising and sliding on beam track.

⚠WARNING

• Depending on the size of unit, this equipment may weigh more than 480 lbs. (218 kg). If parts of the trolley or hoist are dropped they can cause injury or damage property. Adequately support the hoist and trolley when lifting into place on the beam.

9. Tighten nuts (101) on suspension shafts (119). Nuts (101) are self locking. Ensure suspension shaft (119) threads extend a **minimum** of one full thread beyond the end of the nuts (101). Tighten until trolley sideplate (110 or 111) is held firmly against the raised face of the suspension shafts (119) and the spacers (102).
10. It is recommended that the nuts (101) be torqued to the values listed in Table 2. Prior to using this torque reference, read the associated notes.
11. Reinstall rail stop.
12. Conduct operating checks and testing as described in the "OPERATIONS" section.



(Dwg. MHTPA0370)

Table 1

Beam Flange Sizes for the 1/2 and 1 Ton Trolley *								Spacer Arrangement **	
2-1/2 to 5 inches	**63 to 127 mm**	**4-1/2 to 7 inches**	**114 to 178 mm**	**6-1/2 to 9 inches**	**165 to 229 mm**	**8-1/2 to 11 inches**	**216 to 279 mm**	**Between each sideplate and hoist bracket.**	**Outside of each sideplate.**
2-1/2	63	4-1/2	114	6-1/2	165	8-1/2	216	0	10
2-3/4	70	4-3/4	121	6-3/4	171	8-3/4	222	1	9
3	76	5	127	7	178	9	229	2	8
3-1/4	82	5-1/4	133	7-1/4	184	9-1/4	235	3	7
3-1/2	90	5-1/2	140	7-1/2	190	9-1/2	241	4	6
3-3/4	95	5-3/4	146	7-3/4	197	9-3/4	248	5	5
4	102	6	152	8	203	10	254	6	4
4-1/4	108	6-1/4	159	8-1/4	209	10-1/4	260	7	3
4-1/2	114	6-1/2	165	8-1/2	216	10-1/2	267	8	2
4-3/4	121	6-3/4	171	8-3/4	222	10-3/4	273	9	1
5	127	7	178	9	229	11	279	10	0

Beam Flange Sizes for the 2, 3 and 5 Ton Trolley *								Spacer Arrangement **	
3 to 5 inches	**76 to 127 mm**	**5 to 7 inches**	**127 to 178 mm**	**7 to 9 inches**	**178 to 229 mm**	**9 to 11 inches**	**229 to 279 mm**	**Between each sideplate and hoist bracket.**	**Outside of each sideplate.**
3	76	5	127	7	178	9	229	0	8
3-1/4	82	5-1/4	133	7-1/4	184	9-1/4	235	1	7
3-1/2	90	5-1/2	140	7-1/2	190	9-1/2	241	2	6
3-3/4	95	5-3/4	146	7-3/4	197	9-3/4	248	3	5
4	102	6	152	8	203	10	254	4	4
4-1/4	108	6-1/4	159	8-1/4	209	10-1/4	260	5	3
4-1/2	114	6-1/2	165	8-1/2	216	10-1/2	267	6	2
4-3/4	121	6-3/4	171	8-3/4	222	10-3/4	273	7	1
5	127	7	178	9	229	11	279	8	0

Beam Flange Sizes for the 8 and 10 Ton Trolley *								Spacer Arrangement ***	
4 to 6 inches	**102 to 157 mm**	**6 to 8 inches**	**152 to 203 mm**	**8 to 10 inches**	**203 to 259 mm**	**10 to 12 inches**	**254 to 310 mm**	**Between each sideplate and hoist bracket.**	**Outside of each sideplate.**
4	102	6	152	8	203	10	254	0	7
4-5/16	109	6-5/16	160	8-5/16	211	10-5/16	262	1	6
4-5/8	117	6-5/8	168	8-5/8	219	10-5/8	270	2	5
4-15/16	125	6-15/16	176	8-15/16	227	10-15/16	278	3	4
5-1/4	133	7-1/4	184	9-1/4	235	11-1/4	286	4	3
5-9/16	141.3	7-9/16	192	9-9/16	243	11-9/16	294	5	2
5-7/8	149	7-7/8	200	9-7/8	251	11-7/8	302	6	1
6-3/16	157	8-3/16	208	10-3/16	259	12-3/16	310	7	0

* Beam flange size adaptability depends on the use of the appropriate suspension shaft. Reference the "Model Code" and "Trolley Parts Lists" for information on suspension shaft application to a specific beam flange size.

** For 1/2 through 5 ton trolleys the spacer arrangement to beam size is based on the use of 1/8 inch (3 mm) thick spacers.

*** For the 8 and 10 ton trolleys the spacer arrangement to beam size is based on the use of 5/32 inch (4 mm) thick spacers.

Table 2

Recommended Nut (101) Installation Torque Values:

With Thread Lubrication			
Trolley Model	**Rated Capacity***	**Recommended Torque**	
		ft-lbs	**Nm**
THV005	1/2	62	**84**
THV010	1		
THV020	2		
THV030	3	93	**126**
THV050	5	132	**179**
THV080	8	183	**248**
THV100	10		

Dry Thread (Without Lubrication)			
Trolley Model	**Rated Capacity ***	**Recommended Torque**	
		ft-lbs	**Nm**
THV005	1/2	74	**100**
THV010	1		
THV020	2		
THV030	3	112	**152**
THV050	5	158	**214**
THV080	8	220	**298**
THV100	10		

* Capacity in metric tons. 1 metric ton = 2,200 lbs.

Table 2 Associated Notes:

1. Nuts (101) are self-locking. Nuts that can be turned by hand, or by minimum effort using a wrench, indicate the self-locking insert is no longer effective, and that the nut requires replacement.
2. To properly install, determine the amount of torque required to turn the nut on the suspension shaft when the self-locking element has engaged the shaft. Add this amount to the recommended torque. This amount is the final torque required to clamp the trolley together.

The **four most important** aspects of operation are:

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

⚠WARNING

• Severe injury can 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:

1. **Operate unit from a position that allows you to observe the load and the intended path of movement of the load.**
2. **Do not walk in the path of a moving load, or walk backwards when moving a load.**

Following these rules will allow you to stay out of the path of the load and also look in the direction you are moving.

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

Initial Operating Checks

1. After installation, ensure the hoist is centered below the trolley.
2. Raise a load equal to the rated capacity of the unit approximately 6 inches (150 mm) off the floor.
3. Operate the trolley along the entire length of the beam.
4. Inspect performance when raising, moving and lowering test load(s). Trolley and hoist must operate smoothly and at rated specifications prior to being placed in service.

Hoist Operation

1. When facing the hoist hand wheel:
   a. Pull chain down on the right side of handwheel (clockwise rotation) to lift the load.
   b. Pull chain down on the left side of handwheel (counterclockwise rotation) to lower the load.

NOTICE

• The clicking sound of the pawl on the ratchet gear is normal when a load is being raised.

Plain Trolley Operation

1. To move an unloaded trolley push on the hoist load chain.
2. To move a loaded trolley push on the load or the hoist load hook shank.

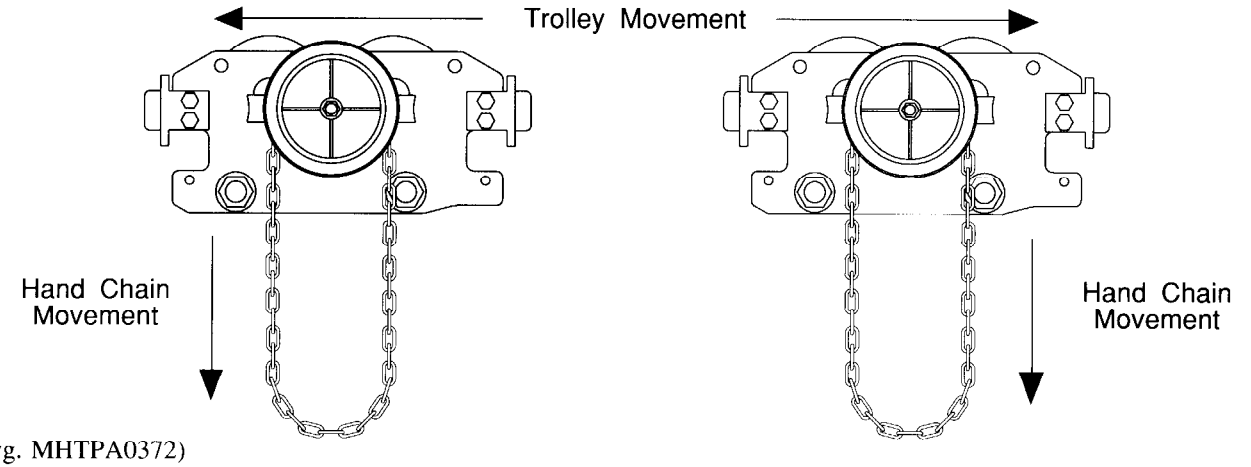
Geared Trolley Operation

(Ref. MHTPA0372)

1. When facing the trolley handwheel:
   a. Pull down on the left side of hand chain (counterclockwise rotation) to move trolley to the left.
   b. Pull down on the right side of hand chain (clockwise rotation) to move trolley to the right.

Storing the Hoist

1. Always store this equipment in a no load condition.
2. Wipe off all dirt and water.
3. Oil the chain, hook pins and hook latch pins. Lubricate other parts as necessary.
4. Store in a dry place.
5. Before returning to service follow instructions for "Hoists not in Regular Service" in the "INSPECTION" section.



(Dwg. MHTPA0372)

There are two types of inspection, the frequent inspection performed by the operator while using the equipment and periodic inspections performed by personnel trained in the operation and maintenance of this equipment. 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.

Any deficiency revealed through inspection must be reported to an appointed person. A determination must be made as to whether a deficiency constitutes a safety hazard before resuming operation of the equipment.

Records and Reports

Some form of inspection record should be maintained for each trolley and hoist, listing all points requiring periodic inspection. Periodic written reports, based on severity of service, should be made on the condition of critical parts. These reports should be dated, signed by the person who performed the inspection, and kept on file where they are readily available for review.

Frequent Inspection

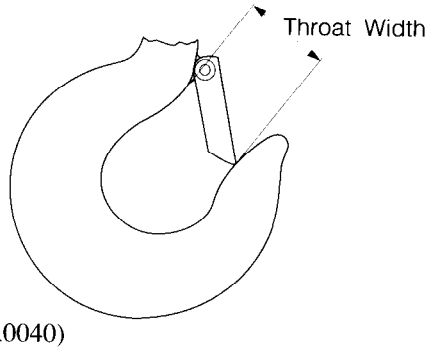
On a hoist in continuous service, frequent inspection should be made at the beginning of each shift. In addition, visual inspections should be conducted during regular service for any damage or evidence of malfunction.

1. OPERATION. Check for visual or abnormal noises which could indicate a potential problem. Do not operate a hoist unless the chain feeds through the hoist and hook block smoothly. Listen for "clicking", binding or malfunction. The clicking sound of the pawl on the ratchet gear is normal when a load is being raised. If chain binds, jumps, or is excessively noisy, clean and lubricate the chain. If problem persists, replace the chain. Do not operate the hoist until all defects have been corrected. Check that hand chain moves freely and without binding or excessive drag. Hook should stop moving when hand chain stops moving.
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 (15%) shown in Table 3 (ref. Dwg. MHTPA0040) or that exceed a 10° twist (ref. Dwg. MHTPA0111). If the hook latch snaps past the tip of the hook, the hook is sprung and must be replaced. Check hook support bearings for lubrication and damage. Make sure that they swivel easily and smoothly. Repair or lubricate as necessary.
3. HOOK LATCH. Check operation of the hook latch. Replace if broken or missing.
4. 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. Lubricate if necessary. See "Load Chain" under "LUBRICATION.

NOTICE

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

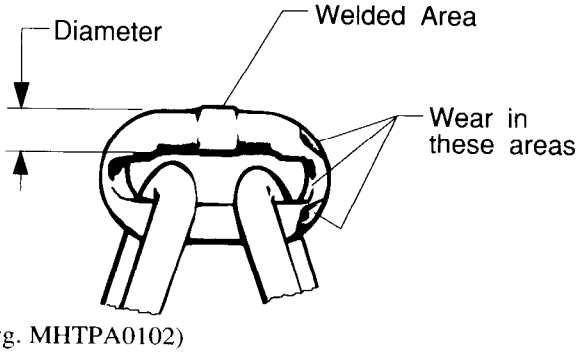
5. LOAD CHAIN REEVING. Make sure welds on standing links are away from load sheave. Re-install chain if necessary. Make sure chain is not capsized, twisted or kinked. Adjust as required. Refer to "MAINTENANCE" section for load chain reeving detailed information.



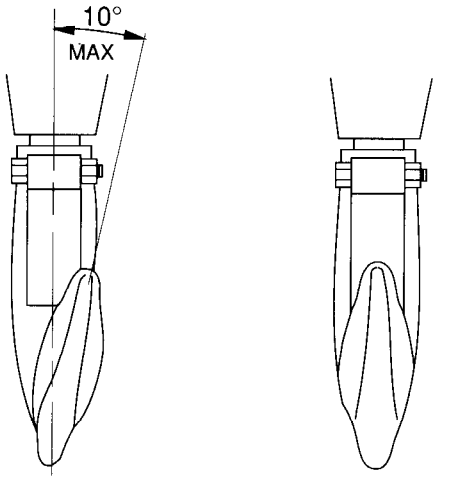
(Dwg. MHTPA0040)

Table 3: Hook Throat Width

Model Number	Throat Width		Discard Width	
	in.	mm	in.	mm
THV005	1.22	31	1.40	35.6
THV010	1.33	34	1.54	39.1
THV020	1.61	41	1.86	47.2
THV030	1.85	47	2.12	54.0
THV050	2.00	51	2.31	58.7
THV080	2.79	71	3.21	81.7
THV100	2.79	71	3.21	81.7



(Dwg. MHTPA0102)



(Dwg. MHTPA0111)

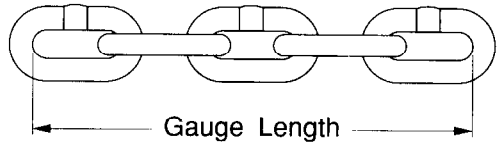
Periodic Inspection

According to ASME B30.16, frequency of periodic inspection depends on the severity of usage. Disassembly may be required for **HEAVY** or **SEVERE** usage. Keep accumulative written records of periodic inspections to provide a basis for continuing evaluation.

NORMAL	HEAVY	SEVERE
yearly	semi-annually	quarterly

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

1. FASTENERS. Check rivets, capscrews, nuts, cotter pins and other fasteners on hooks, hoist body and chain bucket, if used. Replace if missing and tighten or secure if loose.
2. ALL COMPONENTS. Inspect for wear, damage, distortion, deformation and cleanliness. If external evidence indicates the need, disassemble. Check gears, shafts, bearings, sheaves, chain guides, springs and covers. Replace worn or damaged parts. Clean, lubricate and reassemble.
3. HOOK. Inspect hooks for cracks. Use magnetic particle or dye penetrant to check for cracks. Inspect hook retaining parts. Tighten or repair, if necessary. Refer to ASME B30.10 for additional hook inspection information.
4. CHAIN SHEAVES. Check for damage or excessive wear. Replace damaged parts.
5. BRAKE. Ensure proper operation. Brake should not slip with test load (10% of rated capacity). If external inspection indicates the need, disassemble. Brake discs must be free of excess oil, any grease, unglazed, uniform in thickness and at least 5/64 in. (2 mm) thick. Check all other brake surfaces for wear, deformation or foreign deposits. Check pawl brake. Teeth of ratchet gear should be undamaged, and should stop gear rotation in the counterclockwise direction. Check pawl spring for damage. Clean and replace components as necessary.
6. SUPPORTING STRUCTURE. If a permanent structure is used inspect for continued ability to support load.
7. LABELS AND TAGS. Check for presence and legibility. Replace if necessary.
8. END ANCHOR. Ensure end anchor on chain hoist is engaged and unbent. Repair if damaged, replace if missing. See "Attaching End of Load Chain" under "MAINTENANCE."
9. LOAD CHAIN. Measure the chain for stretching by measuring across five link sections all along the chain (ref. Dwg. MHTPA0041). When any five links in the working length reach or exceed the discard length shown in Table 4 replace the entire chain. Always use a genuine **INGERSOLL-RAND Material Handling** replacement chain.



(Dwg. MHTPA0041)

Table 4: Load Chain Length Inspection

Model Number	Chain Size	Normal Length		Discard Length	
	mm	in.	mm	in.	mm
THV005	5.0	2.95	75.0	3.03	77.0
THV010	6.3	3.76	95.5	3.87	97.9
THV020	8.0	4.72	112.0	4.84	123.0
THV030	7.1	4.17	106.0	4.28	108.7
THV050	9.0	5.35	136.0	5.47	139.0
THV080	9.0	5.35	136.0	5.47	139.0
THV100	9.0	5.35	136.0	5.47	139.0

Hoists not in Regular Service

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

General

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

Hoist

Gears (Part Number 6, 11, 13, 14 and 15)

Unscrew U-nuts (40), remove gear cover (17) and support plate (16). Remove old grease and replace with new.
For temperatures -20° to 50° F (-29° to 10° C) use EP 1 grease or equivalent.
For temperatures 30° to 120° F (-1° to 49° C) use EP 2 grease or equivalent.

Load Chain

⚠WARNING

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

1. Lubricate load chain at least weekly. More frequently in severe service usage.
2. In a corrosive environment, clean and lubricate more frequently than normal.
3. For clean chains lubricate each link of the chain and apply new lubricant over existing layer.
4. Lubricate hook swivel and hook latch pivot points.
5. To clean chain use acid free solvent to remove rust or abrasive dust build-up. Remove all solvent, ensure chain is clean and dry before lubricating the chain.
6. Recommended lubricants:
   Ingersoll-Rand Lubri-Link®
   SAE 50 to 90 EP oil.

Trolley

Wheel Bearings

Trolley wheel bearings are sealed. If wheel bearings require lubrication they must be replaced.

Geared Wheel and Pinion Gear Teeth

Remove old grease and replace with new.
For temperatures -20° to 50° F (-29° to 10° C) use EP 1 grease or equivalent.
For temperatures 30° to 120° F (-1° to 49° C) use EP 2 grease or equivalent.

TROUBLESHOOTING

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

TROLLEY		
PROBLEM	**CAUSE**	**SOLUTION**
Trolley will not operate.	Trolley is overloaded.	Reduce load to within rated capacity.
	Trolley wheel bearings are damaged.	Replace trolley wheel bearings.
	Geared trolley pinion damaged.	Replace pinion.
	Geared wheel(s) damaged.	Replace geared wheel(s).
Trolley won't stop or trolley wheels slip.	Oil or grease on beam flange.	Clean flange and trolley wheels.
Hand Chain Binds.	Damaged hand chain, handwheel, pinion, geared wheel(s), worn pinion bearings.	Disassemble trolley, inspect and repair or replace damaged components.
	Hand chain not installed properly (twisted or kinked).	Remove and re-install hand chain.
HOIST		
PROBLEM	**CAUSE**	**SOLUTION**
Hoist will not lift load.	Hoist is overloaded.	Reduce load to within rated capacity.
Hoist will not hold rated load.	Brake may be slipping and/or overload clutch may require adjustment or repair.	Inspect brake and overload clutch. Repair brake and/or overload clutch as described in the "MAINTENANCE" section.
Hoist will not lift rated load.	Overload clutch damaged or requires adjustment.	Repair and adjust overload clutch as described in the "MAINTENANCE" section.
	Gears damaged.	Disassemble hoist, inspect and repair or replace gears.
Load Chain Binds.	Damaged load chain, pinion shaft, gears, and/or sheaves.	Disassemble hoist, inspect and repair or replace damaged components.
	Load chain not installed properly (twisted, kinked or "capsized").	Remove load chain and re-install.
Hand Chain Binds.	Damaged hand chain, handwheel, pinion shaft, gears, load chain, sheaves.	Disassemble hoist, inspect and repair or replace damaged components.
	Hand chain not installed properly (twisted or kinked).	Remove and re-install hand chain.
Load Hook Latch does not work.	Latch broken.	Replace hook latch.
	Load hook bent or twisted.	Inspect load hook as described in "INSPECTION" section. Replace if necessary.

⚠WARNING

• Never perform maintenance when supporting a load.
• Before performing maintenance, tag hoist:
DANGER - DO NOT OPERATE - EQUIPMENT BEING REPAIRED.
• Only allow personnel trained in the operation and maintenance of this equipment to perform maintenance.
• After performing maintenance, test unit to 125% of its rated capacity before returning to service. Testing to 150% of rated capacity might be required to comply with standards and regulations set forth in areas outside of the USA.

General Assembly/Disassembly Instructions

1. During assembly/disassembly visually inspect components for distortion, wear and damage. Replace any item indicating damage, distortion or excessive wear.
2. **Do not** disassemble further than required to accomplish repair. A good part can be damaged during the course of disassembly.
3. **Do not** use excessive force to remove or install parts. Use proper tools for the installation of press fit parts. During disassembly, use a soft hammer to tap around the outside of parts that are tight or difficult to remove.
4. **Do not** heat a part with a flame to free it for removal. In general, this equipment is designed to permit easy disassembly and assembly. The use of heat or excessive force should not be required.
5. **Always** use leather or copper-covered vise jaws to protect threaded and machined surfaces of parts being placed in the vise.
6. **Always** use only genuine **INGERSOLL-RAND** replacement parts. When ordering specify part number, part description, unit model and serial number.
7. **Do not** perform repairs to equipment mounted to the beam flange. It is recommended that the unit be removed from the overhead beam and moved to a clean work area before performing maintenance.
8. Inspect self-locking nuts prior to re-use. The self-locking plastic insert will lose its effectiveness with repeated removal and installation. Replace the nut if it can be easily turned by hand, or with a wrench, when the plastic insert engages the threaded shaft.

Installing New Load Chain

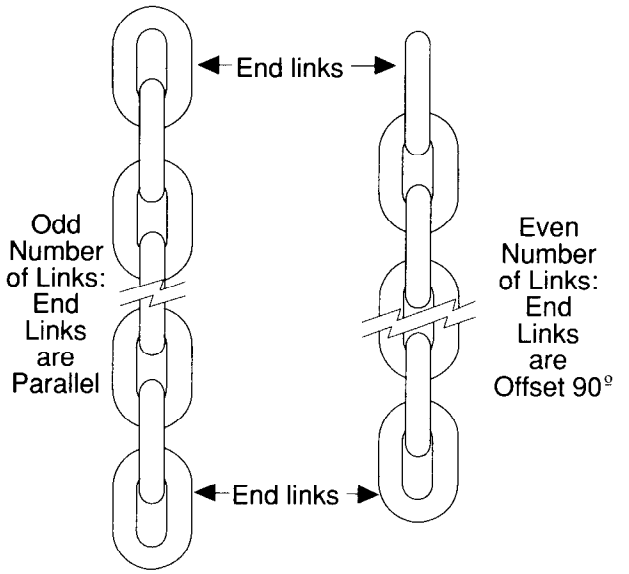
NOTICE

• Do not remove the old load chain from the hoist. Installed (old) load chain can be used to install the new load chain.

⚠WARNING

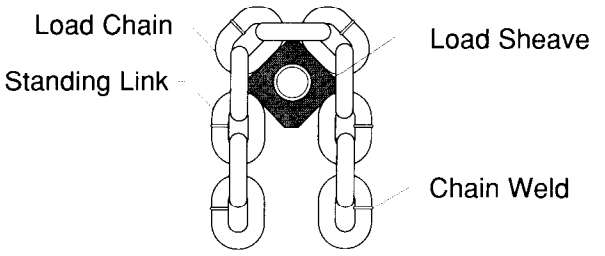
• To prevent a falling load which can cause death, injury or property damage the hook (42) must be on left fall of load chain (47) and right fall must be attached to hoist body with end anchor (21 and 22). Right and left are designated when viewed from the hand chain side of the hoist.

1. Disconnect load chain (47) from end anchor (21 and 22). Refer to Dwg. MHTPA0410 for end anchor view.
   a. 1/2, 1 and 2 ton units are single chain fall hoists. The load end of the load chain (47) is attached to the hook assembly. To disconnect the load chain from the hook assembly remove chain bolt (43) and U-nut (44). Refer to Dwg. MHTPA0424.
   b. 3 and 5 ton units are double chain fall hoists. The load end of the load chain (47) is anchored to the suspension bracket (120). To disconnect the load chain from the suspension bracket remove chain bolt (43) and U-nut (44). Refer to Dwgs. MHTPC0413 and MHTPA0424.
   c. 8 ton units are triple chain fall hoists. The load end of the load chain (47) is attached to the center of the hook assembly. To disconnect the load chain from the hook assembly remove chain bolt (43) and U-nut (44). Refer to Dwg. MHTPA0424.
   d. 10 ton units are four-chain fall hoists. The load end of the load chain (47) is anchored to the suspension frame (121). To disconnect the load chain from the suspension frame remove chain bolt (43) and U-nut (44) from suspension frame (121). Refer to Dwgs. MHTPC0412 and MHTPA0424.
2. Make a "C" link as described in the "Hand Chain Adjustment or Replacement" section and shown in Dwg. MHTPA0016.
   a. On 3, 5 and 10 ton units the load chain must have an odd number of links, not counting the "C" link, to avoid twisting the chain when attached to the anchor points on the hoist and trolley suspension bracket or suspension frame. Refer to Dwg. MHTPA0441.



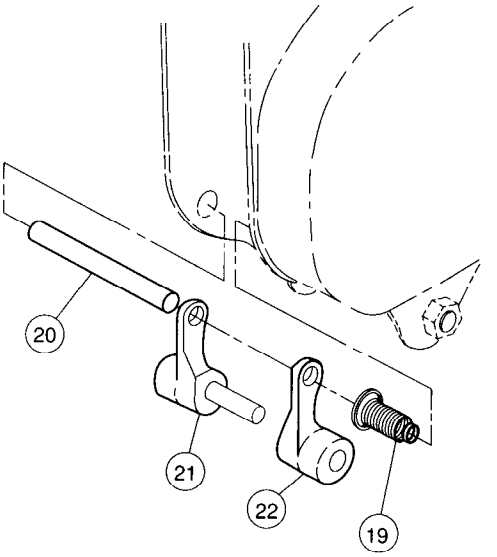
(Dwg. MHTPA0441)

3. Join the new load chain to the load end of the old load chain using the "C" link. If the old load chain was installed correctly the "C" link assures the end link of new load chain will be correctly reeved through the hoist. Ensure the "standing" link welds on new load chain are facing away from the hoist load sheave(s) (6). Refer to Dwg. MHTPA0042.



(Dwg. MHTPA0042)

4. Run the new load chain to the anchor point on the hoist.
   a. On smaller units, use the hand chain (46) to move the load chain.
   b. On larger units, load chain (47) installation can be speeded up by unscrewing U-nuts (40), removing the gear cover (17) and support plate (16) and taking out the 2nd gear set (14). With the 2nd gear set (14) removed, pull the load chain (47) by hand through the hoist body and hook blocks. Reinstall 2nd gear set, support plate (16), gear cover (17) and U-nuts (40).
5. Remove "C" link connecting the old and new load chains.
6. Anchor load chain (47) to hoist: Refer to Dwg. MHTPA0410.
   a. Push end pin (20) "in", towards end spring (19).
   b. Remove end anchor A (21).
   c. Slide end link of load chain (47) on end anchor A (21) shaft.
   d. Place end anchor A (21) shaft into end anchor B (22) guide hole.

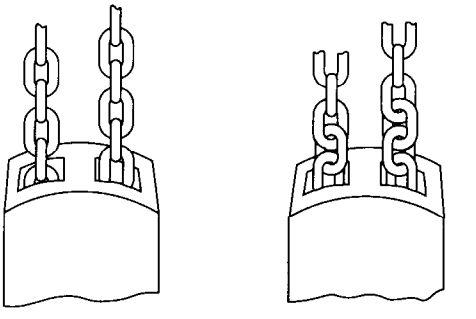


(Dwg. MHTPA0410)

   e. Reinstall end anchor A (21) on end pin (20). Depress and align end pin (20) in side plate 1 (1) hole. When released end pin (20) should spring into position and slide into hole in side plate (1).
7. Connect the load end of load chain (47) to hook or trolley as applicable:

Ensure load chain (47) is not twisted, kinked or "capsized." Refer to Dwgs. MHTPA0020 and MHTPA0043.

   a. On 1/2, 1, 2 and 8 ton units connect the load end of the load chain (47) to the hook assembly. To connect, install chain bolt (43) and U-nut (44). Refer to Dwg. MHTPA0424.
   b. On 3 and 5 ton units connect the load end of the load chain (47) to the suspension bracket (120). To connect, install chain bolt (43) and U-nut (44) to suspension bracket (120). Refer to Dwgs. MHTPA0424 and MHTPC0413.
   c. On 10 ton units connect the load end of the load chain (47) to the suspension frame (121). To connect, install chain bolt (43) and U-nut (44) in suspension frame (121). Refer to Dwgs. MHTPC0412 and MHTPA0424.

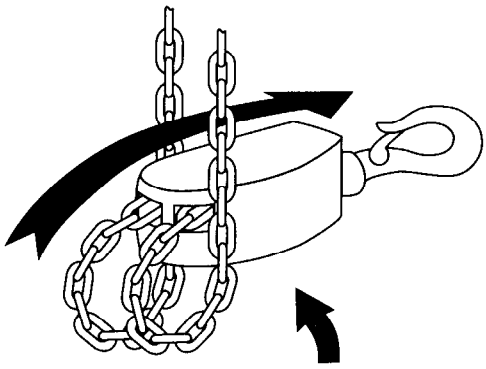


Appearance of chain that is Not Twisted

Appearance of chain that Is Twisted

(Dwg. MHTPA0020)

Capsized Hook



Make certain the bottom block has NOT been flipped through the chain falls

(Dwg. MHTPA0043)

8. Check for the following:
   a. The load chain (47) did not become twisted, when reeving, between the idler sheaves on the bottom and top hook assembly. Refer to Dwg. MHTPA0020.
   b. The load chain (47) is reeved between load sheave (6) and chain guides (7).

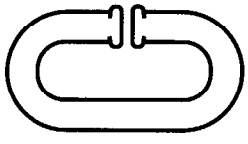
Hand Chain Adjustment or Replacement

⚠ CAUTION

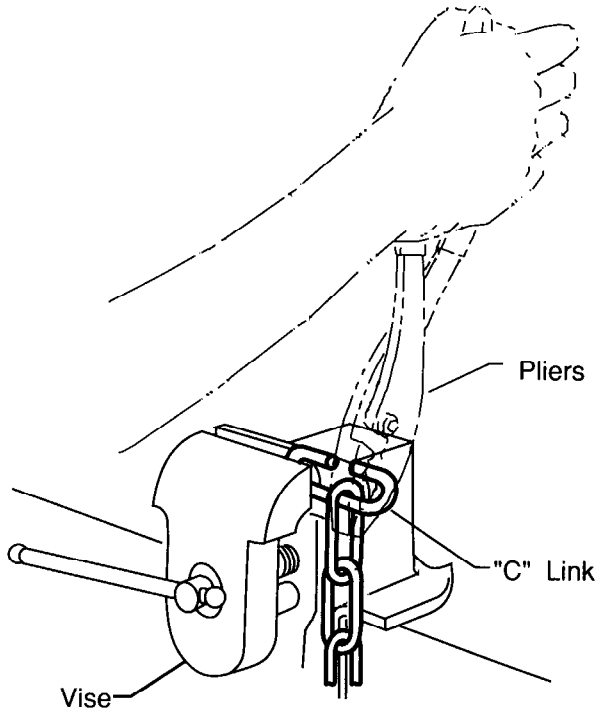
• When cutting the weld side of a hand chain link, do not cut or nick the opposite side. A damaged link must be replaced to prevent premature failure. A falling hand chain could cause injury.

1. To create a "C" link, cut the welded side of the link with a hack saw. Clamp one side of the "C" link in a vise and bend it open by using pliers to grip the exposed part of the link. Refer to Dwgs. MHTPA0014 and MHTPA0016.
2. If you are replacing the hand chain, disconnect it at the "C" link and carefully remove the hand chain.
3. If replacing the hand chain, cut a length 2 times the required hand chain drop plus about one foot (305 mm). If adjusting the hand chain length, remove or add a length of chain 2 times the difference in the required hand chain height.

To prevent the hand chain from twisting, maintain an even number of links, by removing or adding an even number of links.



(Dwg. MHTPA0016) "C" Link



(Dwg. MHTPA0014)

4. To replace the hand chain, run the new hand chain through the left hand chain guide, around the hand wheel. Make sure the hand chain is seated in the hand wheel pockets. Run the hand chain back through the right hand chain guide.
5. Connect the hand chain ends with the "C" link. The total number of links must be even. Bend the "C" link shut.
6. Make sure the hand chain is not twisted. If twisted, untwist or open a "C" link and remove one hand chain link.

Overload Clutch Adjustment:

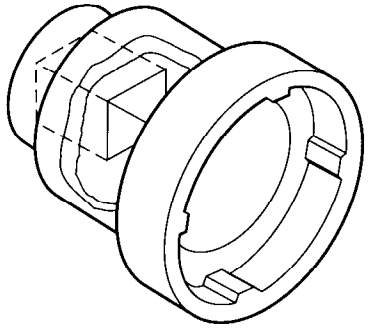
Refer to Dwg. MHTPA0322.

1. With the hoist installed on the trolley, remove the wheel cover (38), cotter pin (34), pinion nut (33), and washer (32).
2. Attach a load equal to **150%** of the rated capacity of the hoist to the load chain. Refer to Table 5, Overload Clutch Adjustment Table.
3. Operate hoist in the raise direction to remove all slack from the load chain.
4. Pull on the hand chain and raise the load approximately 3 feet (1 metre).
5. Using the overload clutch adjusting tool, part number 71112064 (refer to Dwg. MHTPA0225), adjust overload clutch. When properly adjusted, the overload clutch should begin to slip with load listed in Table 5.
   a. Tighten nut (82) to increase clutch overload limit.
   b. Loosen nut (82) to decrease clutch overload limit.

Table 5: Overload Clutch Adjustment

Model No.	Adjusting Load (150% of rated capacity)	
	lbs.	kgs.
THV005	1,650	750
THV010	3,300	1,500
THV020	6,600	3,000
THV030	9,900	4,500
THV050	16,500	7,500
THV080	26,400	12,000
THV100	33,000	15,000

Special Tool: Overload Clutch Adjusting Tool
Part Number: 71112064



(Dwg. MHTPA0225)

6. When the required clutch overload limit has been reached bend one of the outer tabs on washer (81) into a slot in nut (82). Install washer (32) and pinion nut (33).
7. Tighten pinion nut (33). Align pinion nut (33) with hole in pinion shaft (13) and install cotter pin (34). Install wheel cover (38) and secure with U-nuts (40).

Hoist Removal From Trolley

⚠WARNING

• Depending on the size of unit, it may weigh more than 480 lbs. (218 kg). If parts of the trolley or hoist are dropped they can cause injury or damage property. Adequately support the hoist and trolley when removing from or installing on the beam.

It is recommended that this unit be removed from the overhead beam and moved to a clean work area before performing maintenance.
If your hoist is supplied with an Overload Clutch Assembly refer to the "Overload Clutch Assembly" section for additional disassembly information.

1. Remove U-nuts (40).
2. Remove gear cover (17), wheel cover (38), and hand chain (46) with chain guides (35).
3 Remove cotter pin (34), nut (33), washer (32), handwheel (31) and brake cover (30).

Handwheel (31) is threaded onto the pinion shaft (13). To remove turn handwheel (31) counterclockwise. Hold load chain (47) to prevent pinion shaft (13) from turning.

4. Remove pin (18) by tapping through sideplates (1 and 9) and suspension bracket (120) or suspension frame (121). Refer to "Hoist Disassembly" section if further disassembly is required.
5. Disconnect load end of load chain (47) from suspension bracket (120) or suspension frame (121) (as applicable) by removing U-nut (44) and chain bolt (43). To remove or replace load chain (47) from hoist refer to "Installing New Load Chain" section.

Hoist Disassembly

Overload Clutch (Optional Equipment) Disassembly

If not equipped on your hoist, continue with disassembly instructions in "Brake Disc Disassembly" section.

1. Remove U-nuts (40).
2. Remove wheel cover (38) and hand chain (46) with chain guides (35).
3. Remove cotter pin (34), nut (33) and washer (32).
4. Using a small punch, bend washer (81) tab out of slot in nut (82). Refer to Dwg. MHTPA0322.
5. Firmly grip the outside of the slip clutch assembly when removing nut (82) from supporter (78) using overload clutch adjusting tool. Refer to Dwg. MHTPA0225.
6. Remove washer (81), cone spring (80), cone wheel (79), handwheel (31) and supporter (78).

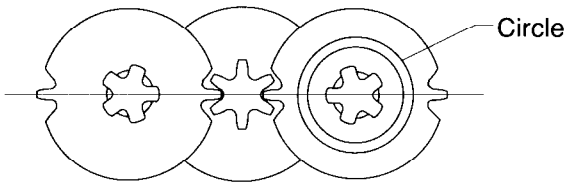
Brake Disc Disassembly

1. Remove brake cover (30) and brake disc A (27).
2. Remove ratchet gear (29) and brake disc B (28).
3. Remove hub (26).
4. Inspect brake discs (27 and 28) and brake components as described in "Periodic Inspection" of "INSPECTION" section. Replace if discs fail inspection criteria.

Hoist Body Disassembly

Disassemble only if repairs or inspections are required.

1. Gear End:
   a. Remove support plate (16). Gears (11, 14, 15), pinion shaft (13), bearings and bushings can be inspected and removed as necessary from sideplate 2 assembly (9).
   b. 3, 5, 8 and 10 ton hoist bodies **must** have one gear (14) with a "circle" and one gear without a "circle." (Ref. Dwg. MHTPA0044.)
   1/2, 1 and 2 ton hoist bodies **do not** use gears (14) with a circle.



(Dwg. MHTPA0044)

2. Separate sideplate 1 assembly (1) from sideplate 2 assembly (9). Load sheave (6), load chain guides (7) and end anchor components can be inspected and removed as necessary.

Trolley Removal

Open End of Beam Removal

1. Support the trolley and hoist prior to beginning removal.
2. Remove rail stop.
3. Loosen, but **do not remove**, trolley nuts (101).
4. Slide trolley and hoist off of the open end of the beam.

When removed from the overhead beam, it is recommended that equipment be moved to a clean work area before continuing with disassembly and inspections.

5. Continue with disassembly as described in "Disassembly" section.

Underneath the Beam Removal

1. Support the trolley and hoist prior to beginning removal.
2. Remove nuts (101) on plain sideplate (109) side of trolley only.
3. Remove spacers (102) on outside of sideplate (109).

During disassembly, record the number of spacers on the outside and on the inside of sideplates (109, 110 or 111). This information will be required for reassembly.

4. Remove sideplate (109).
5. Remove spacers (102) on inside of sideplate (109).
6. Remove trolley and hoist from the beam.

When removed from the overhead beam, it is recommended that equipment be moved to a clean work area before continuing with disassembly and inspections.

7. Continue with disassembly as described in "Disassembly" section.

Disassembly

1. To remove hoist refer to the "Hoist Disassembly" section.
2. Remove nuts (101).
3. Remove spacers (102) on outside of sideplates (109, 110 or 111).

During disassembly, record the number of spacers on the outside and on the inside of sideplates (109, 110 or 111). This information will be required for reassembly.

4. Remove sideplates (109, 110 or 111).
5. Remove spacers (102) on inside of sideplates (109, 110 or 111).
6. To disassemble:
   a. Suspension bracket (120) on 1/2 to 5 ton units from suspension shafts (119), remove screws (118) and slide shafts through bracket.
   b. Suspension frame (121) on 8 and 10 ton units from suspension shafts (119), remove screws (118) and slide shafts through frame.

Geared Sideplate (111) Disassembly

1. On 1/2 to 5 ton units:
   (Ref. Dwg. MHTPB0411)
   a. Remove pin (144), nut (143) and washer (142).
   b. Remove handwheel (136), hand chain (137) and chain guide (138).
   c. To remove pinion (133) from sideplate (111) gently tap the end of pinion (133) with a soft hammer and slide pinion through sideplate (111) sleeve.

2. On 8 and 10 ton units:
   (Ref. Dwg. MHTPC0412)
   a. Remove pin (144), nut (143) and washer (142).
   b. Remove screws (131) and lockwashers (130). Remove chain guides (132).
   c. Remove handwheel (136) and hand chain (137).
   d. Remove capscrews (128) and lockwashers (127). Remove pinion sleeve (129) with pinion (133) installed. Pinion (133) will be removed from pinion sleeve (129) as an assembly containing the pinion (133), bearings (126) and retainer rings (125).

Do not remove pinion (133) from pinion sleeve (129) assembly unless inspection or repair is required.

   e. To disassemble pinion (133) place pinion sleeve (129) in a vise and:
      (1) Using a soft hammer tap the **non-geared end** of pinion (133) while guiding it through the pinion sleeve (129).
      (2) Remove retainer rings (125) from pinion (133). Clean pinion ends in preparation for bearing (126) removal.
      (3) Remove bearings (126) from pinion (133) by gently sliding bearings off pinion using a rocking motion. Forcing the bearing will cause the bearing to bind. If bearings stick use a bearing puller to remove.

Cleaning, Inspection and Repair

Clean and inspect the hoist and trolley components when disassembled as follows.

Cleaning

Clean all hoist component parts in solvent (except for the brake discs). The use of a stiff bristle brush will facilitate the removal of accumulated dirt and sediments on the gears and frames. Dry each part using low pressure, filtered compressed air and lubricate prior to assembling.

General Inspection Notes

Inspect all parts when unit is disassembled. Inspect in accordance with the guidelines described in the "INSPECTION" section. Pay particular attention to the following:

1. Inspect all gears for worn, cracked, or broken teeth.
2. Inspect shafts for ridges caused by wear. If ridges caused by wear are apparent on shafts, replace the shaft.
3. Inspect shafts for bending. Replace bent shafts.
4. Inspect all threaded items and replace those having damaged threads.
5. Measure the thickness of the brake discs. If brake discs do not have uniform thickness or are less than 5/64 in. (2 mm) thick replace brake discs.
6. Inspect trolley sideplates for wear and bending. Replace sideplates that show any signs of bending.
7. Inspect trolley wheels. If wheels do not rotate freely on the shafts, disassemble and repair.

Repair

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

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

Hoist Assembly

⚠WARNING

• The brake may not operate properly if there is too much oil or grease on the brake discs (27 and 28). Excessive oil or grease on brake components could cause the load to slip.

NOTICE

• As components are assembled lubricate using EP 1 or EP 2 grease or equivalent. Load chain and riding surfaces should be lubricated with LUBRI-Link®or SAE 50 to 90 EP oil.

1. Install load chain sheave (6) and load chain guides (7) on sideplate 1 assembly (1).
2. Install load chain (47) on load sheave (6).

Welds on load chain (47) must face away from load sheave (6). Refer to "Installing New Load Chain" section and Dwg. MHTPA0042.

3. Install pin (18) in suspension bracket (120) or suspension frame (121).
4. Place sideplate 1 assembly (1) on pin (18).
5. Align and place sideplate 2 assembly (9) on pin (18). Ensure chain stripper (8) is installed during this step.
6. Install pinion shaft (13) and load chain guides (7) between sideplate 1 assembly (1) and sideplate 2 assembly (9).
7. Place end spring (19) on end pin (20) and slide end pin (20) through sideplate 1 (1) and 2 (9) assemblies. Install with end spring (19) on sideplate 2 assembly (9) side.
8. To install end anchor assembly:
   a. Push end pin (20) in direction of sideplate 2 assembly (9).
   b. Place end anchor B (22) on end pin (20).
   c. Place load chain (47) end link on end anchor A (21) shaft.
   d. Place end anchor A (21) on end pin (20) and align hole in end anchor B (22) with shaft on end anchor A (21) to lock load chain (47) in place.
   e. Depress and align end pin (20) with hole in sideplate 1 assembly (1) and release. When released end spring (19) will shift end pin (20) into hole in side plate (1) assembly if installed correctly.
9. Pack gears with EP 1 or EP 2 grease and install in the following order:
   a. Install 1st gear (11) on load sheave (6) splines. Place pinion washer (12) on pinion shaft (13).
   b. Install 2nd (14) and 3rd (15) gears as a set by aligning splines of pinion shaft (13) with 2nd gear (14) sets and splines of 3rd gear (15) sets with 1st gear (11). 2nd gear sets (14) install onto 3rd gear sets (15). 3rd gear sets (15) install into gear bushings (10) located on sideplate 2 assembly (9) and support plate (16).
10. Install support plate (16) by aligning tabs with slots in sideplate 2 assembly (9) and 3rd gear set (15) shafts.
11. Install gear cover (17) and secure in place using U-nuts (40).
12. Thread hub (26) on pinion shaft (13) by turning in a clockwise direction until seated.
13. Dip replacement brake discs (27 and 28) in ISO VG32 hydraulic oil or SAE 10 oil for two seconds. Wipe off excess oil.

Measure the thickness of the brake discs. If brake discs do not have uniform thickness or are less than 5/64 in. (2 mm) thick replace brake discs.

14. Place brake disc B (28) on hub (26).

Brake disc B (28) has a smaller outside diameter than brake disc A (27).

15. Install ratchet gear (29) on hub (26).

During installation ensure recessed face of ratchet gear (29) fits over brake disc B (28).

Ensure ratchet gear (29) is installed such that the ratchet gear (29) teeth are engaged by the pawl (24) and will not rotate in the counterclockwise direction. It is normal to hear a "clicking" sound when the hoist is operated in the 'raise' direction; as the ratchet gear rotates clockwise the pawl (24) rides over the ratchet gear teeth.

16. Place brake disc A (27) on ratchet gear (29).
17. Place brake cover (30) on stay bolts on side plate 1 assembly (1).
18. With brake surface (non-painted surface) of handwheel (31) towards the brake disc A (27), place handwheel (31) on pinion shaft (13). Thread handwheel (31) on pinion shaft (13) by turning clockwise until clicking occurs. Hold load chain (47) to prevent pinion shaft rotation, if necessary.
19. Place washer (32) and nut (33) on pinion shaft (13). Thread nut (33) fully on pinion shaft (13). Back nut (33) off approximately 1/8 of a turn to align hole in pinion shaft (13) end with groove on nut (33) and install cotter pin (34).
20. Install hand chain (46) on handwheel (31). Make sure hand chain (46) is seated properly in handwheel (31) pockets.
21. Hand chain guide installation:
    A. Standard Hoist:
        (1) Install "looped" end of hand chain guides (35) over the upper stay bolts on side plate 1 assembly (1). The hand chain guides (35) must be positioned like two "L's" pointing inward. Refer to Dwg. MHTPA0424.
    B. **S•COR•E** Feature:
        (1) The one-piece hand chain guide is attached to the outside of the wheel cover (38) by sliding the hand chain guide (35) on capscrew (75) and securing with washer (76) and nut (77). Refer to Dwg. MHTPA0430.
22. Place wheel cover (38) on stay bolts.
23. Install U-nuts (40) and tighten.

Overload Clutch Assembly

1. Install supporter (78) on pinion shaft (13). Set cone wheel (79) in handwheel (31) and position on supporter (78).
2. Install cone spring (80) with dished surface towards the brake discs (27) and (28).
3. Install washer (81) on hub of supporter (78) so tab locates in supporter slot. Outer tabs on washer (81) must face outward away from cone spring (80).
4. Install nut (82) on supporter (78) until finger tight.
5. Install washer (32) and nut (33) on pinion shaft (13).
6. Adjust overload clutch as described in the "Overload Clutch Adjustment" section.

Trolley Assembly

NOTICE

• This assembly procedure describes the basic requirements to assemble the hoist to the trolley and the assembly of the trolley components. For information and specifications regarding the installation of this unit to the beam refer to the "INSTALLATION" section.

• Lubricate components during assembly using EP 1 or EP 2 grease or equivalent. Load chain and riding surfaces should be lubricated with LUBRI-Link® or SAE 50 to 90 EP oil.

Trolley Sideplate Assembly

1. Slide suspension shafts (119) through suspension bracket (120) or suspension frame (121). Center (120 or 121) and lock in place using screws (118).
2. Install spacers (102) on suspension shafts (119) in equal amounts and in quantities recommended in Table 1 (refer to the "INSTALLATION" section) or as noted during disassembly.
3. Slide sideplates (109, 110 or 111) on suspension shafts (119).
4. Install remaining spacers (102) on suspension shafts (119) in equal amounts and in quantities recommended in Table 1 (refer to the "INSTALLATION" section) or as noted during disassembly.
5. Install nuts (101) on suspension shafts (119) and torque to the values listed in Table 2 (refer to the "INSTALLATION" section).

Trolley Wheel Assembly

1. Clean and lightly lubricate bearing race surfaces in trolley wheels (114, 117). Press bearings (113) into trolley wheels (114, 117). Install retainer rings (112).
2. Clean and lightly lubricate wheel shafts (attached to sideplates (109, 110, 111)). Slide applicable wheels (114, 117) onto wheel shafts.
3. Install washers (115) and retainer rings (116) on the wheel shafts to lock wheels in place.
4. Check wheel operation. Turn wheels by hand. Ensure wheels turn freely without sticking or binding.

Geared Trolley Pinion Assembly

1/2 to 5 Ton Trolleys:

1. Ensure pinion sleeve (attached to geared sideplate (111)) bore is clean. Clean and heavily lubricate the pinion (133) and insert into pinion sleeve from the wheel side of geared sideplate (111). Align pinion (133) gear teeth with teeth on geared wheel (117).
2. Install chain guide (138) on geared sideplate (111) pinion sleeve with chain guide positioned as shown in Dwg. MHTPB0411. Install spacer (148) and washer (149) to outside of chain guide (138) on pinion sleeve.

Hand chain (137) installed in chain guide (138) will need to be placed such that it does not interfere with further assembly. If hand chain must be installed in chain guides refer to "Hand Chain Replacement" section.

3. Align splines and slide handwheel (136) on pinion (133). Install washer (142) and nut (143) on pinion (133).
4. Tighten, and then back nut (143) off approximately 1/ 8 turn to align pinion (133) hole and groove on nut (143). Insert cotter pin (144) through nut (143) groove and pinion (133) hole. Bend cotter pin (144) ends apart to secure.
5. Place hand chain (137) in pockets on handwheel (138).
6. Check operation of geared trolley as described in the "OPERATION" section. Trolley geared wheels (117), pinion (133), handwheel (136) and all components must operate smoothly without sticking or binding.

8 and 10 Ton Trolleys:

1. Ensure pinion sleeve (129) bore is clean. Attach pinion sleeve (129) to trolley geared sideplate (111) using capscrews (128) and lockwashers (127).
2. Clean and heavily lubricate the pinion (133). Slide bearings (126) on each end of pinion (133) and lock in place with retainer rings (125).
3. Insert pinion (133) into pinion sleeve (129) from the wheel side of geared sideplate (111). Align pinion (133) gear teeth with teeth on geared wheel (117).
4. Install chain guide (132) on pinion sleeve (129). Secure using capscrews (131) and lockwashers (130).
5. Align splines and slide handwheel (136) on pinion (133). Secure using washer (142) and nut (143) to pinion (133).
6. Tighten, and then back nut (143) off approximately 1/ 8 turn to align pinion (133) hole and groove on nut (143). Install cotter pin (144). Spread ends of cotter pin (144) apart to secure.
7. Place hand chain (137) in pockets on handwheel (138).
8. Check operation of geared trolley as described in the "OPERATION" section. Trolley geared wheels (117), pinion (133), handwheel (136) and all components must operate smoothly without sticking or binding.

Testing

After performing maintenance, but prior to placing this equipment into service, conduct the following tests.

Visual Inspection:

1. Before testing trolley and hoist, visually check the following:
   a. Trolley sideplates are vertical and trolley is set evenly on beam flange.
   b. Hand chain and load chain are not twisted.
   c. All fastener connections are tight.
   d. Hook is firmly attached to load chain and hook latch works properly.
   e. Load chain is properly lubricated. Trolley and hoist hand chains **are not** lubricated.

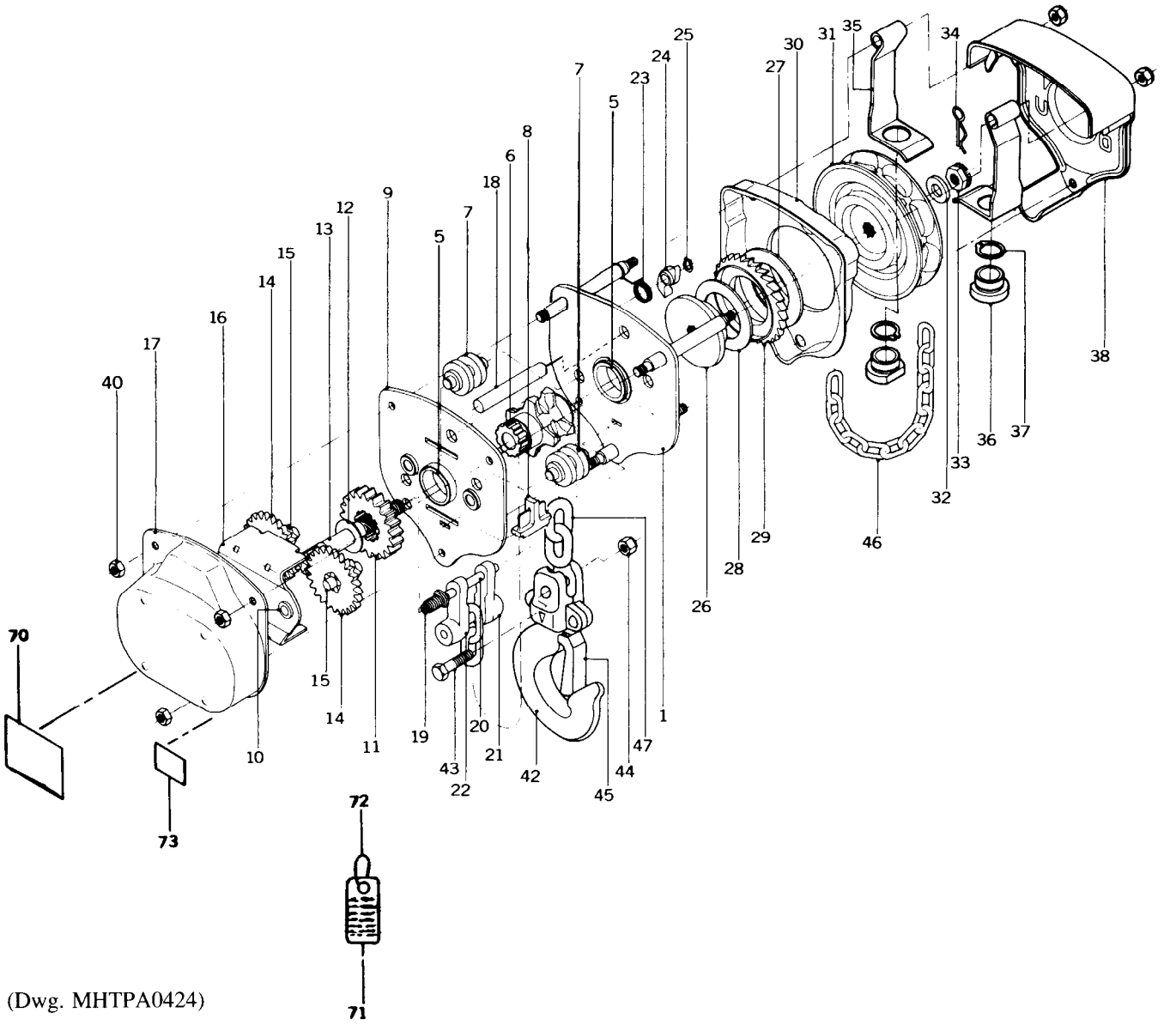
Trolley Operation:

1. **With no load** operate the trolley along the entire length of the beam. Trolley must operate smoothly without sticking or binding. Visually inspect trolley wheels during operation. Wheels must rotate easily on beam flange during trolley travel. Ensure hand chain and pinion do not bind during the operation of geared trolleys.
2. **With hoist holding a load equal to 10% of the rated capacity of the hoist,** operate the trolley along the entire length of the beam. Trolley must operate smoothly without sticking or binding. Visually inspect trolley wheels during operation. Wheels must rotate easily on beam flange during trolley travel. Ensure hand chain does not bind during the operation of geared trolleys.
3. Repeat Step 2 with hoist **holding a load equal to 125% of the rated capacity of the hoist**. Testing to 150% of rated capacity might be required to comply with standards and regulations set forth in areas outside of the USA.

Hoist Operation:

1. **With no load** operate the hoist. Operate the hoist to fully raise and lower the load hook. Hoist must operate smoothly without sticking or binding. Ensure hand and load chain do not bind during the operation.
2. **Attach a load equal to 10% of hoist rated capacity.** Operate the hoist to fully raise and lower the load. Hoist must operate smoothly without sticking or binding. Ensure hand and load chain do not bind during the operation.
   a. Test the hoist brake when lifting and lowering the test load. To test brake, raise the load 3 feet (1 meter) and stop. Hoist should hold load without slipping. If load lowers or slips adjust or repair the brake or slip clutch (if installed) as described in the "MAINTENANCE" section.
3. Repeat Step 2 after attaching **a load equal to 125% of hoist rated capacity.** Testing to 150% of rated capacity might be required to comply with standards and regulations set forth in areas outside of the USA.
4. After testing verify slip clutch (if installed) adjustment as described in the "Overload Clutch Adjustment" section.

1/2 TO 10 TON MANUAL CHAIN HOIST ASSEMBLY DRAWING



(Dwg. MHTPA0424)

NOTE: For hoist overload clutch parts information refer to the **"OVERLOAD CLUTCH ASSEMBLY DRAWING AND PARTS LIST"** shown in this manual.

1/2 TO 10 TON MANUAL CHAIN HOIST ASSEMBLY PARTS LIST

ITEM NO.	DESCRIPTION OF PART	QTY. TOTAL	PART NUMBER				
			1/2 ton	1 ton	2 ton	3 ton	5, 8 & 10 ton
1	Side Plate 1 Assembly (Includes item 5)	1	71029169	71029201	71029185	71029177	71029193
5	Needle Bearing with Snap Ring	2	2372782	2372824	2372869	2372824	2372903
6	Load Sheave	1	2372784	2372826	2372871	2372852	2372905
7	Load Chain Guide	2	2372785	2372827	2372872	2372827	2372872
8	Chain Stripper	1	2372786	2372828	2372873	2372828	2372873
9	Side Plate 2 Assembly	1	2372787	2372829	2372874	2372853	2372906
10	Gear Bushing	4	2372788		2372875	2372788	2372875
11	1st Gear	1	2372789	2372830	2372876	2372854	2372907
12	Pinion Washer	1	2372790	---			
13	Pinion Shaft	1	2372791	2372831	2372877	2372831	2372877
14	2nd Gear Set	1 Set	2372792	2372832	2372878	2372855	2372908
15	3rd Gear	2	2372793	2372833	2372879	2372833	2372909
16	Support Plate	1	2372794	2372834	2372880	2372856	2372910
17	Gear Cover	1	2372795	2372835	2372881	2372857	2372911
18	Pin	1	2372796	2372836	2372882	2372836	2372912
19	End Spring	1	2372797				
20	End Pin	1	2372798	2372837	2372883	2372837	2372883
21	End Anchor A	1	2372799	2372838	2372884	2372838	2372884
22	End Anchor B	1	2372800	2372839	2372885	2372839	2372885
23	Spring	1	2372801	2372840	2372886	2372858	2372913
24	Pawl	1	2372802		2372887	2372802	2372887
25	Snap Link	1	2372803		2372888	2372803	2372888
26	Hub	1	2372804	2372841	2372889	2372841	2372889
• 27	**Brake Disc A**	1 Set	71112353		71112361	71112353	71112361
• 28	**Brake Disc B**						
29	Ratchet Gear	1	2372807		2372891	2372807	2372891
30	Brake Cover	1	2372808	2372842	2372892	2372859	2372914
31 Note 1	Handwheel	1	2372809	2372843	2372893	2372860	2372915
	Handwheel, Copper Plated **	1	2372809-CP	2372843-CP	2372893-CP	2372860-CP	2372915-CP
	Handwheel (Overload Clutch*)	1	71108914	71108922	71108948	71108930	71108955
	Handwheel Assy with Overload Clutch*	1	2373079	2373080	2373082	2373081	2373083
	Handwheel Assy with Overload Clutch*, Copper Plated **	1	2373079-CP	2373080-CP	2373082-CP	2373081-CP	2373083-CP
32	Washer	1	2372810				
33	Nut	1	2372811				
34	Cotter Pin	1	2372812				
35	Chain Guide (2 piece)	2	71026546	71026553	71026561	71026553	71026579
	Chain Guide (1 piece) **	1	12901		9967	12901	9967

• Recommended spares.

Note 1 Handwheel assemblies include items 31 through 34 and 78 through 82 (for optional overload clutch). Refer to the "HOIST OVERLOAD CLUTCH ASSEMBLY DRAWING AND PARTS LIST" shown in this manual.

* Optional equipment.

** S•COR•E (Spark and Corrosion Resistant) Feature.

(continued on next page)

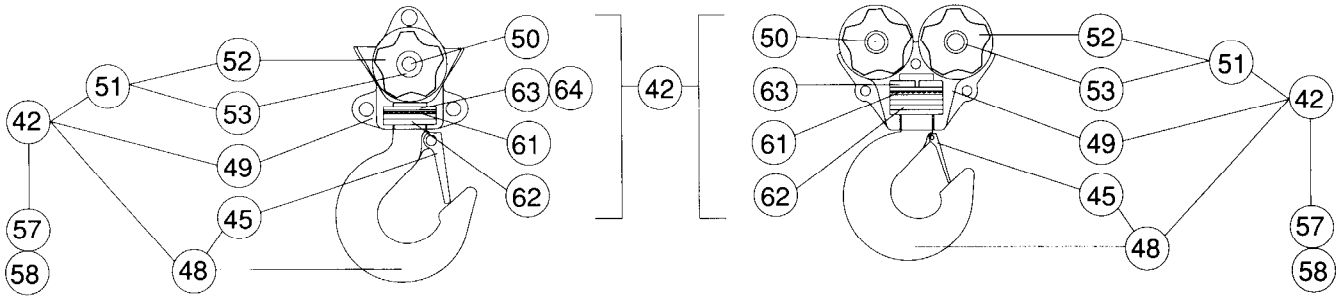
1/2 TO 10 TON MANUAL CHAIN HOIST ASSEMBLY PARTS LIST

ITEM NO.	DESCRIPTION OF PART	QTY. TOTAL	PART NUMBER				
			1/2 ton	1 ton	2 ton	3 ton	5, 8 & 10 ton
• 36	Nylon Ring (2 piece)	2	71026595				
	Bushing (1 piece) **	2	2982-1				
37	Snap Ring	2	71026603				
38	Wheel Cover	1	71028955	71028963	71028989	71028971	71028997
	Wheel Cover **		12545-4	12545-3	12545-2	12545-1	12545
40	U-Nut	6	2372814		2372895	2372814	2372895
43	Chain Bolt	1	2372818	2372848	2372899	2372848	2372920
44	U-Nut	1	2372819	2372849	2372900	2372849	2372900
46	Hand Chain, Standard	1	HCCB005		HCCV020	HCCB005	HCCV020
	Hand Chain, Zinc Plated **		HCCB005ZP		HCCV020ZP	HCCB005ZP	HCCV020ZP
47	Load Chain, Standard	1	LCCF005	LCCF010	LCCV020	LCCF015	LCCF025
	Load Chain, Zinc Plated **		LCCF005ZP	LCCF010ZP	LCCV020ZP	LCCF015ZP	LCCF025ZP
	Load Chain, Nickel Diffused **		LCCF005ND	LCCF010ND	LCCV020ND	LCCF015ND	LCCF025ND
70	Model Label	1	71087118	71087126	71087142	71087159	71087167 (5 ton)
							71087175 (8 ton)
							71087183 (10 ton)
71	Warning Tag	1	71038863				
72	Tag Ring	1	50040				
73	Chain Installation Label	1	T-6				
74	O & M Manual MHD56051	1	71079149				
75	Capscrew **	1	71031314				
76	Washer **	1	12632				
77	Nut **	1	71061584				

• Recommended spare.

** S•COR•E (Spark and Corrosion Resistant) Feature.

3 TO 10 TON HOIST BOTTOM HOOK DRAWINGS



3, 5 and 8 Ton Bottom Hook

10 Ton Bottom Hook

(Dwg. MHTPA0432)

1/2 TO 10 TON HOIST BOTTOM HOOK PARTS LIST

ITEM NO.	DESCRIPTION OF PART	QTY. TOTAL	PART NO.						
			1/2 ton	1 ton	2 ton	3 ton	5 ton	8 ton	10 ton
• 42	Bottom Hook Set (Standard)	1 Note 1	2372817	2372847	2372898	2372924	2372940	2372956	2372968
	Bottom Hook Set (Copper Plated) *		2372817-CP	2372847-CP	2372898-CP	2372924-CP	2372940-CP	2372956-CP	2372968-CP
	Bottom Hook Set (Solid Bronze) *		2372817-SB	2372847-SB	2372898-SB	2372924-SB	2372940-SB	2372956-SB	2372968-SB
• 45	Hook Latch (Standard and Copper Plated* Hook)	1	2372820	2372850	2372901	2372925	2372941	2372957	2372969
	Hook Latch (Solid Bronze* Hook only)	1	51502		52377	51202	50597	50779	
48	Bottom Hook	1	Not Sold Separately			2372928	2372944	2372960	2372972
49	Bottom Frame (Standard)	2	---			2372930	2372946	2372962	2372974
	Bottom Frame (Copper Plated)*		---			2372930-CP	2372946-CP	2372962-CP	2372974-CP
50	Axle	Qty. ( )	---			2372931 (1)	2372947 (1)	2372947 (2)	2372947 (3)
51	Idler Sheave (Incl's item 52 and 53)	Qty. ( )	---			2372932 (1)	2372948 (1)	2372948 (2)	2372948 (3)
52	Idler Sheave	Qty. ( )	---			71029110 (1)	71029128 (1)	71029128 (2)	71029128 (3)
53	Needle Bearing	Qty. ( )	---			2372933 (1)	2372949 (1)	2372949 (2)	2372949 (2)
** 57	Yoke Bolt (Standard)	Qty. ( )	---			2372783 (2)	2372825 (3)	2372870 (5)	2372904 (6)
	Yoke Bolt (Copper Plated and Solid Bronze)*	Qty. ( )	54560 (1)			54558 (2)	54561 (2)	---	
** 58	Yoke Nut (Standard)	Qty. ( )	---			2372816 (2)	2372846 (3)	2372863 (5)	2372897 (6)
	Yoke Nut (Copper Plated and Solid Bronze)*	2	50852			54559	54562	---	
** 60	Axle Washer	2	---			2373137	---		
61	Thrust Bearing	1	---			2372934	2372950	2372963	2372975
62	Thrust Washer	1	---			2372935	2372951	2372964	2372976
63	C-Link	2	---			2372936	2372952	2372965	2372977
64	O-Link	1	---			2372937	2372953	---	

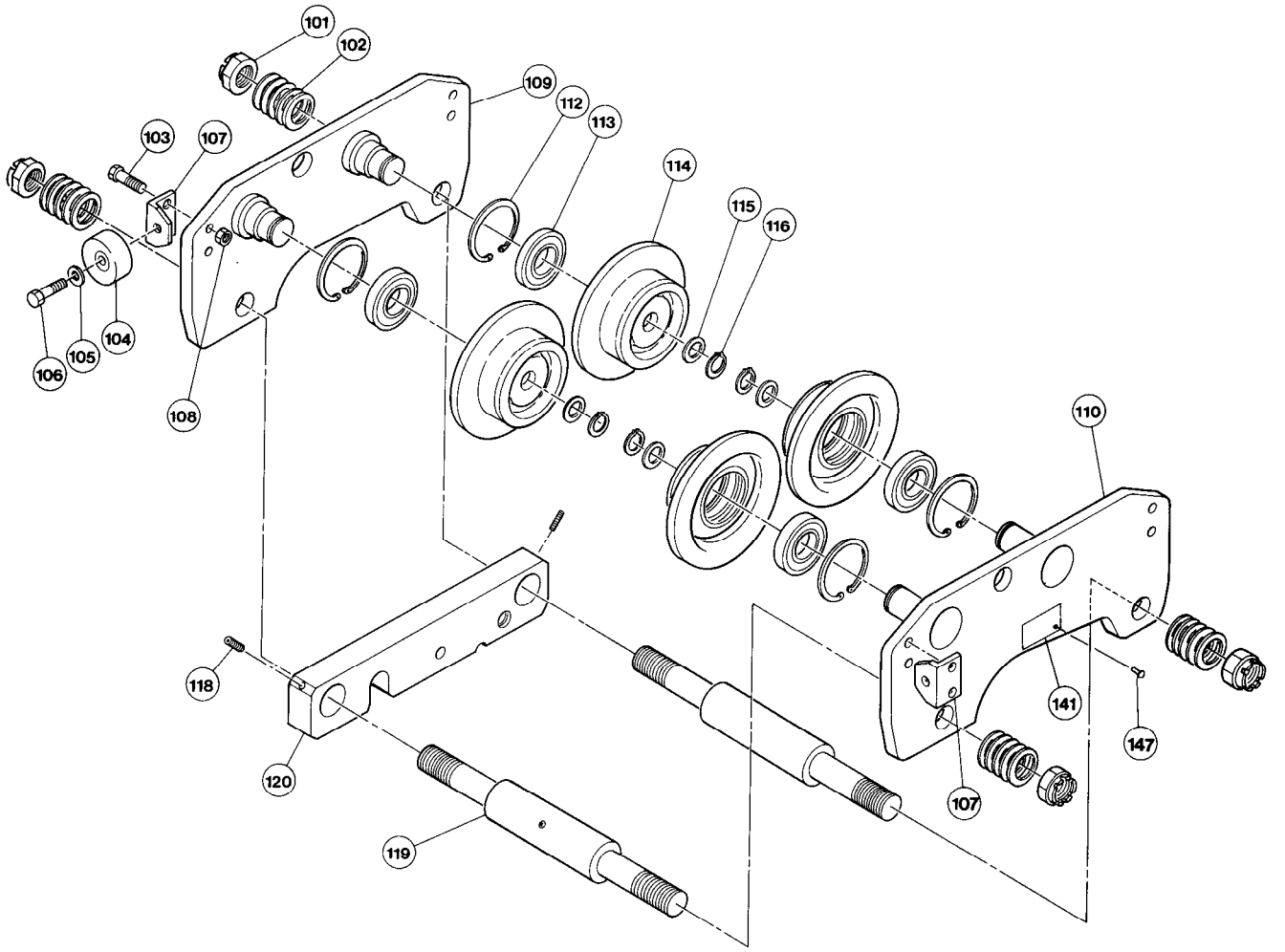
• Recommended spare.

Note 1 Bottom Hook Sets: 1/2 to 2 ton include items 45 and 48; 3, 5, 8 and 10 ton include items 48, 49, 50, 51, 57, 58 and 61 through 64.

* S•COR•E (Spark and Corrosion Resistant) feature.

** Item 57, 58 and 60 not shown on drawing.

1/2 TO 5 TON PLAIN TROLLEY ASSEMBLY DRAWING



(Dwg. MHTPC0413)

1/2 TO 5 TON PLAIN TROLLEY PARTS LIST

ITEM NO.	DESCRIPTION OF PART	QTY. TOTAL	PART NUMBER				
			1/2 ton	1 ton	2 ton	3 ton	5 ton
101	Nut	4	51011			51774	52286
102	Spacer	See ( )	54086 (40)		54086 (36)	53076 (32)	54037 (32)
103	Capscrew	8	52906		71084081		71097869
104	Bumper	4	52973				51722
105	Washer	4	54785				51883
106	Capscrew	4	71098446				52905
107	Rail Sweep	4	21640		21575		21641
108	Nut	8	54668		71020887		71020895
109	Side Plate (Plain)	1	9796-010		12033	9796-030	9796-050
110	Side Plate (Plain)	1	9796-010-OH		12033-OH	9796-030-OH	9796-050-OH
112	Retainer Ring *	4	71893		71894	71895	71896
113	Bearing *	4	71888		71889	71890	71891
114	Wheel (Plain)	4	70818		70819	70820	70821
	Wheel (Plain - Copper Plated)		70818-CP		70819-CP	70820-CP	70821-CP
	Wheel (Plain - Solid Bronze)		71003966		71003974	71003982	71003990
115	Washer	4	70822		70823	70824	70825
116	Retainer Ring	4	70827		70828	70829	70830
118	Screw	2	50975			50855	
119	Suspension Shaft (Standard) 3 to 5 inch flange ** (76 to 127 mm)	2	9614-020-A **			9614-030-A	9614-050-A
	Suspension Shaft 5 to 7 inch flange ** (127 to 178 mm)		9614-020-B **			9614-030-B	9614-050-B
	Suspension Shaft 7 to 9 inch flange ** (178 to 229 mm)		9614-020-C **			9614-030-C	9614-050-C
	Suspension Shaft 9 to 11 inch flange ** (229 to 279 mm)		9614-020-D **			9614-030-D	9614-050-D
120	Suspension Bracket	1	12930-1	12930	12035	12914	12896
141	Nameplate	1	71106223				
147	Drive Screw	4	50917				

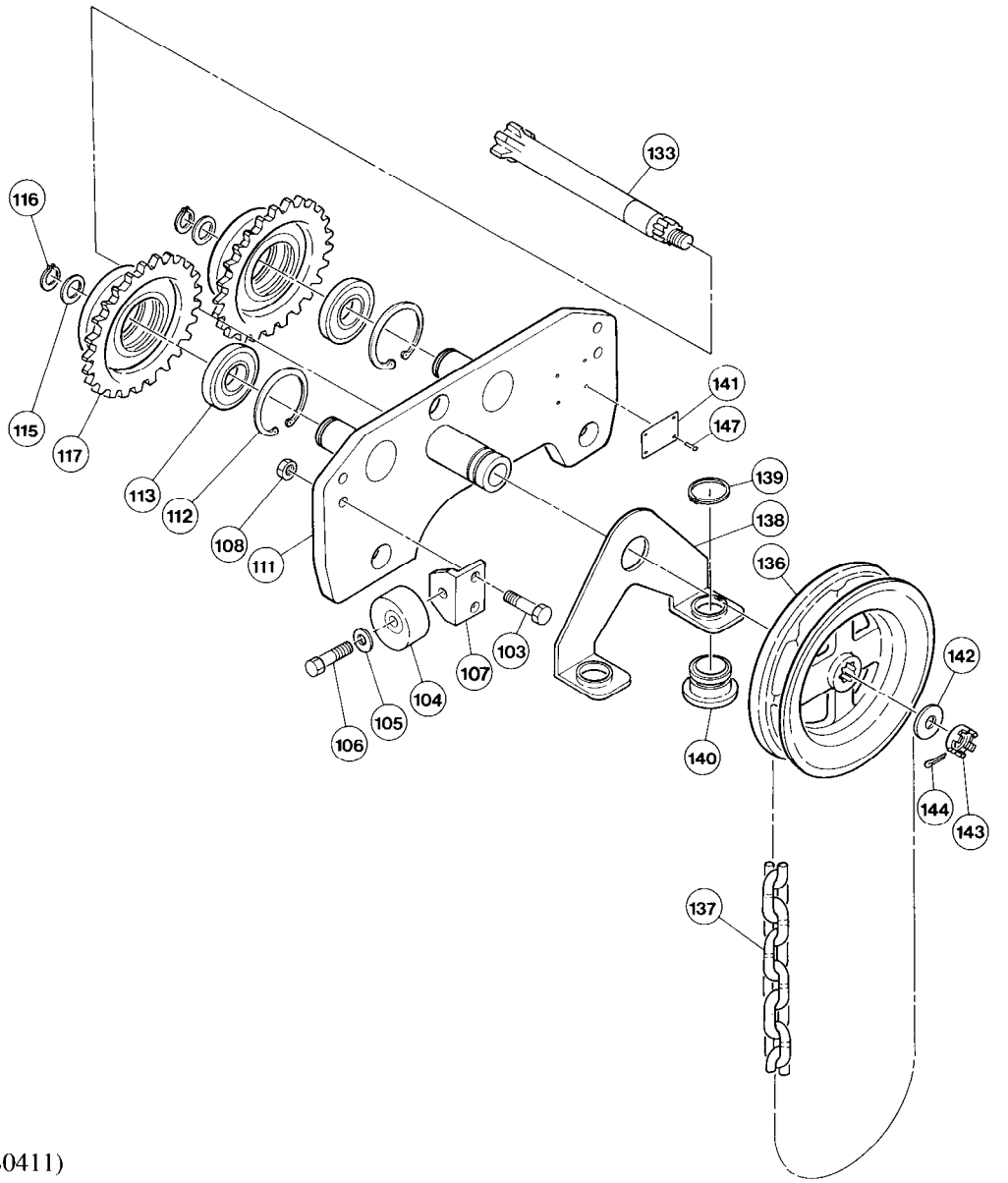
* Retainer ring (112) and bearing (113) included with plain wheel (114).

** THV005 (1/2 ton), THV010 (1 ton) and THV020 (2 ton) trolley suspension shaft (item 119) to beam flange size ranges are:

9614-020-A = 2-1/2 to 5 inch (63 to 127 mm) 9614-020-B = 4-1/2 to 7 inch (114 to 178 mm)

9614-020-C = 6-1/2 to 9 inch (165 to 229 mm) 9614-020-D = 8-1/2 to 11 inch (216 to 279 mm)

1/2 TO 5 TON GEARED TROLLEY ASSEMBLY DRAWING



(Dwg. MHTPB0411)

1/2 TO 5 TON GEARED TROLLEY PARTS LIST

ITEM NO.	DESCRIPTION OF PART	QTY. TOTAL	PART NUMBER				
			1/2 ton	1 ton	2 ton	3 ton	5 ton
101	Nut	4	51011			51774	52286
102	Spacer	See ( )	54086 (40)		54086 (36)	53076 (32)	54037 (32)
103	Capscrew	8	52906		71084081		71097869
104	Bumper	4	52973				51722
105	Washer	4	54785				51883
106	Capscrew	4	71098446				52905
107	Rail Sweep	4	21640		21575		21641
108	Nut	8	54668		71020887		71020895
109	Side Plate (Plain)	1	9796-010		12033	9796-030	9796-050
111	Side Plate (Geared)	1	9928-010		13011	9928-030	9928-050

1/2 TO 5 TON GEARED TROLLEY PARTS LIST

ITEM NO.	DESCRIPTION OF PART	QTY. TOTAL	PART NUMBER				
			1/2 ton	1 ton	2 ton	3 ton	5 ton
112	Retainer Ring *	4	71893		71894	71895	71896
113	Bearing *	4	71888		71889	71890	71891
114	Wheel (Plain)	2	70818		70819	70820	70821
	Wheel (Plain - Copper Plated)		70818-CP		70819-CP	70820-CP	70821-CP
	Wheel (Plain - Solid Bronze)		71003966		71003974	71003982	71003990
115	Washer	4	70822		70823	70824	70825
116	Retainer Ring	4	70827		70828	70829	70830
117	Wheel (Geared)	2	70885		70886	70887	70888
	Wheel (Geared - Copper Plated)		70885-CP		70886-CP	70887-CP	70888-CP
	Wheel (Geared - Solid Bronze)		71004014		71004022	71004030	71004048
118	Screw	2	50975			50855	
119	Suspension Shaft (Standard) 3 to 5 inch flange ** (76 to 127 mm)	2	9614-020-A **			9614-030-A	9614-050-A
	Suspension Shaft 5 to 7 inch flange ** (127 to 178 mm)		9614-020-B **			9614-030-B	9614-050-B
	Suspension Shaft 7 to 9 inch flange ** (178 to 229 mm)		9614-020-C **			9614-030-C	9614-050-C
	Suspension Shaft 9 to 11 inch flange ** (229 to 279 mm)		9614-020-D **			9614-030-D	9614-050-D
120	Suspension Bracket	1	12930-1	12930	12035	12914	12896
132	Chain Guide	1	9967				
133	Pinion	1	70884				
136	Handwheel (Nylon)	1	70877				
	Handwheel (Cast)	1	70763				
	Handwheel (Copper Plated)	1	70763-CP				
137	Chain (Standard)	***	HCCF005				
	Chain (Zinc Plated)	***	HCCF005ZP				
138	Chain Guide	1	9967	12901	9967	12901	9967
139	Retainer Ring	2	51398				
• 140	**Chain Guide Bushing**	**2**	**2982-1**				
141	Nameplate	1	71106223				
142	Washer	1	70876				
143	Nut	1	70875				
144	Pin	1	70890				
147	Drive Screw	4	50917				

• Recommended spare.

* Retainer Ring (112) and bearing (113) are supplied with plain wheel (114) and geared wheel (117).

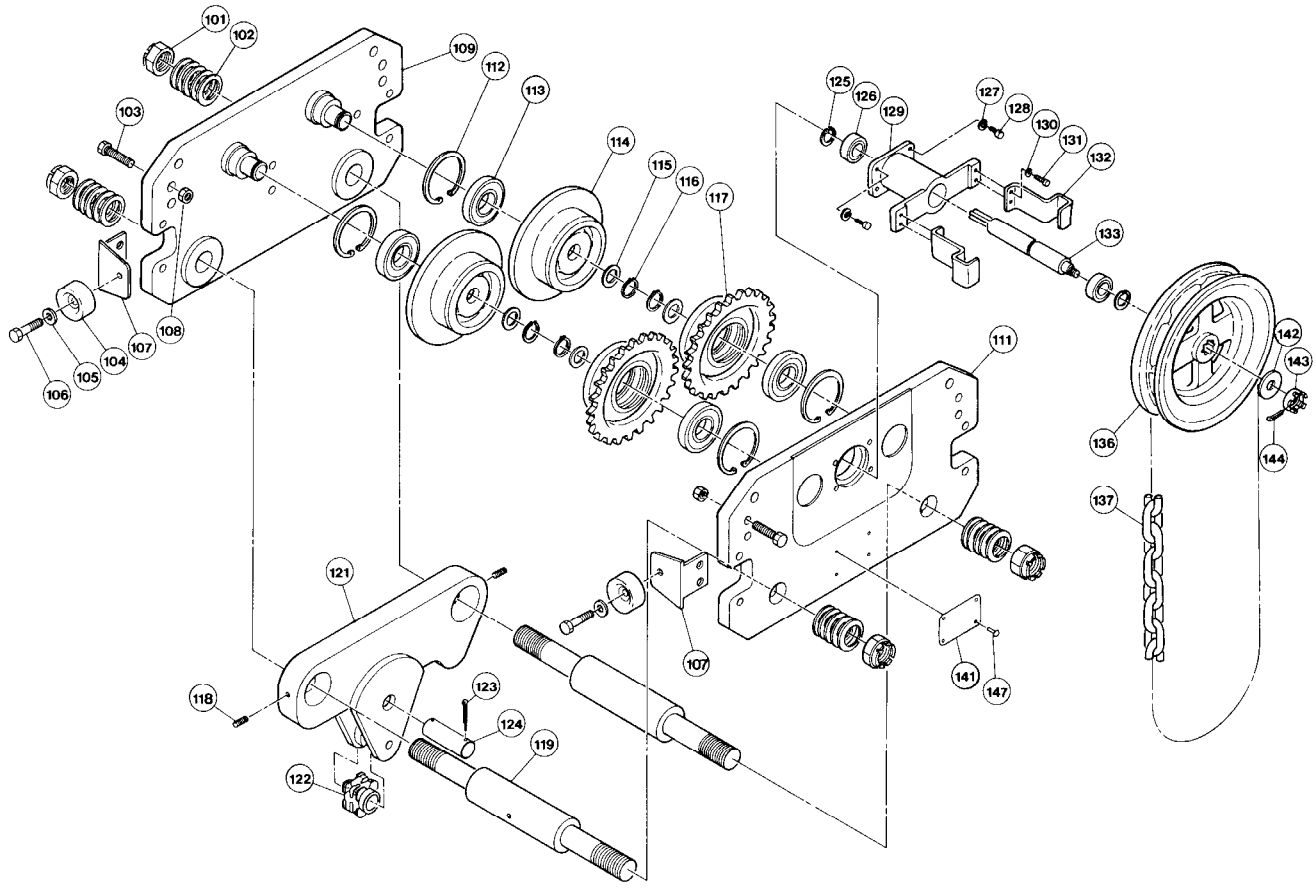
** THV005 (1/2 ton), THV010 (1 ton) and THV020 (2 ton) trolley suspension shaft (item 119) to beam flange size ranges are:

9614-020-A = 2-1/2 to 5 inch (63 to 127 mm) 9614-020-B = 4-1/2 to 7 inch (114 to 178 mm)

9614-020-C = 6-1/2 to 9 inch (165 to 229 mm) 9614-020-D = 8-1/2 to 11 inch (216 to 279 mm)

*** Reference "Model Code" to determine hand chain length required.

8 AND 10 TON PLAIN AND GEARED TROLLEY ASSEMBLY DRAWING



(Dwg. MHTPC0412)

8 AND 10 TON PLAIN AND GEARED TROLLEY PARTS LIST

ITEM NUMBER	DESCRIPTION OF PART	QUANTITY TOTAL	PART NUMBER	
			8 ton	10 ton
101	Nut	4	51491	
102	Spacer	28	52017	
103	Capscrew	8	71097869	
104	Bumper	4	51722	
105	Washer	4	51883	
106	Capscrew	4	52905	
107	Rail Sweep	4	21641	
108	Nut	8	71020895	
109	Side Plate (Plain)	1	13208-1	
110	Side Plate (Plain) *	1	13208-2	

8 AND 10 TON PLAIN AND GEARED TROLLEY PARTS LIST

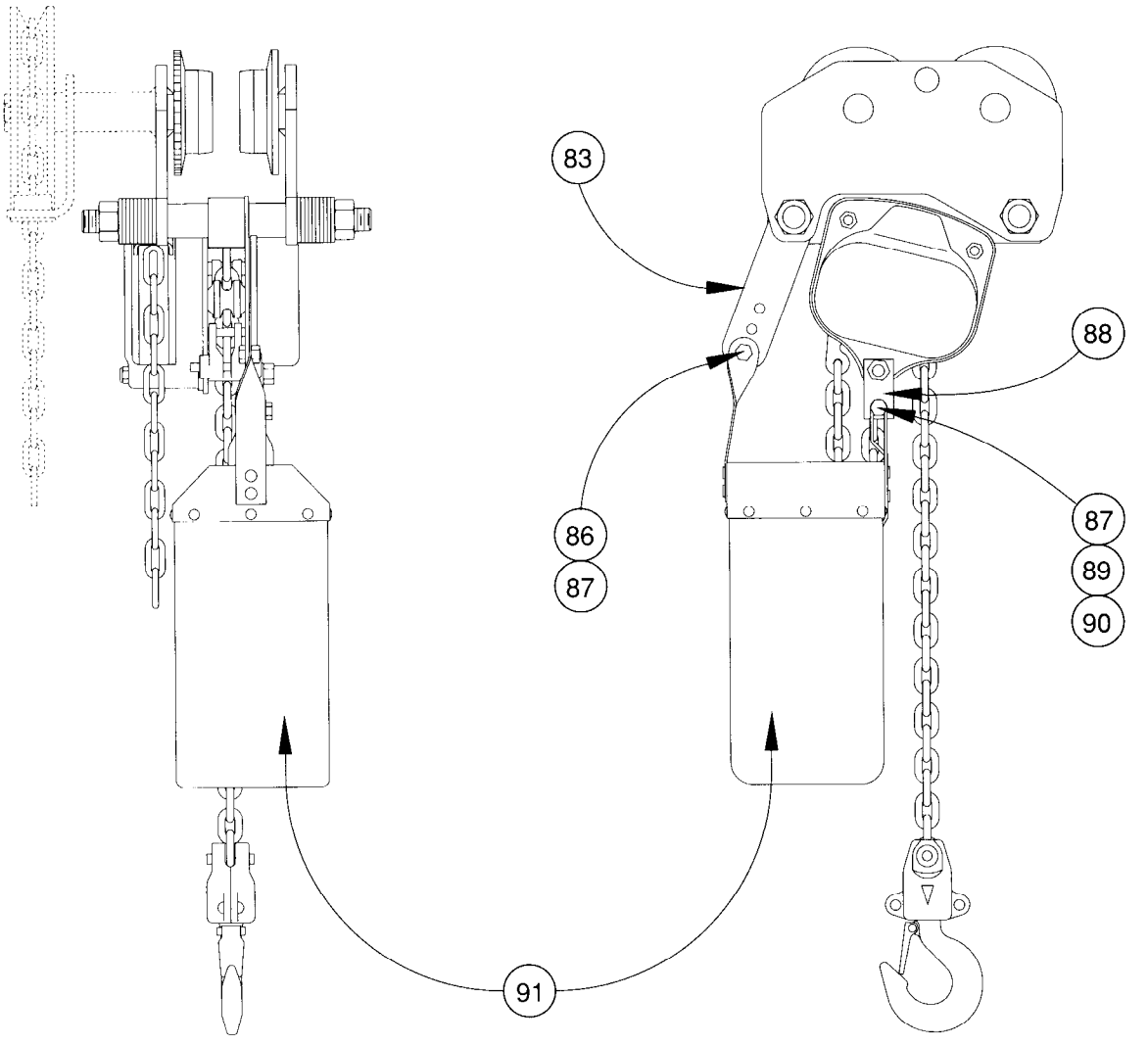
ITEM NUMBER	DESCRIPTION OF PART	QUANTITY TOTAL	PART NUMBER	
			8 ton	10 ton
111	Side Plate (Geared)	1	13209	
112	Retainer Ring	4	71601	
113	Bearing	4	71600	
114	Wheel (Plain)	**	71607	
	Wheel (Plain - Copper Plated)		71607-CP	
	Wheel (Plain - Solid Bronze)		71004006	
115	Washer	4	71699	
116	Retainer Ring	4	71700	
117	Wheel (Geared)	2	71606	
	Wheel (Geared - Copper Plated)		71606-CP	
	Wheel (Geared - Solid Bronze)		71004055	
118	Screw	2	50855	51088
119	Suspension Shaft 4 to 6 inch (102 to 157 mm) flange	2	9614-100-1	
	Suspension Shaft 6 to 8 inch (152 to 208 mm) flange		9614-100-2	
	Suspension Shaft 8 to 10 inch (203 to 259 mm) flange		9614-100-3	
	Suspension Shaft 10 to 12 inch (254 to 310 mm) flange		9614-100-4	
121	Suspension Frame	1	13215	17586
122	Sheave	1	2372948	
123	Pin (Axle)	2	71001135	
124	Axle	1	13214	
125	Retainer Ring	2	71684	
126	Bearing	2	71622	
127	Lockwasher	4	71705	
128	Capscrew	4	71704	
129	Pinion Sleeve	1	71683	
130	Lockwasher	4	71703	
131	Capscrew	4	71702	
132	Chain Guide	2	71621	
133	Pinion	1	71614	
136	Handwheel (Standard)	1	71608	
	Handwheel (Copper Plated)	1	71608-CP	
137	Hand Chain (Standard)	***	HCCV020	
	Hand Chain (Zinc Plated)	***	HCCV020ZP	
138	Chain Guide Bracket	2	71621	
141	Nameplate	1	71106223	
142	Washer	1	70876	
143	Nut	1	71701	
144	Pin	1	51996	
147	Drive Screw	4	50915	

* Item 110 not shown on drawing. Item 110 is used in place of item 111 on the plain trolley.

** Quantity of 4 plain wheels required for plain trolley; 2 plain wheels and 2 geared wheels for geared trolley.

*** Reference Model Code to determine hand chain length required.

THV LOAD CHAIN CONTAINER ASSEMBLY DRAWING



(Dwg. MHTPA0429)

THV LOAD CHAIN CONTAINER ASSEMBLY PARTS LIST

ITEM NUMBER	DESCRIPTION OF PART	QTY. TOTAL	PART NUMBER					
			1/2 ton	1 ton	2 ton	3 ton	5 ton	8 & 10 ton
*	Bracket Kit	1	12586-1			12586-2	12586-3	12586-4
83	Bracket	1	12064-1				12064-2	
86	Capscrew	1	53966					
87	Nut	2	54171					
88	Bracket	1	12063-1			12063-2	12063-3	12063-4
89	Capscrew	1	53420					
90	Washer	3	53978					
91	Chain Container	1	Reference Chain Container Chart					

* Bracket Kit consists of item numbers 83 and 86 through 90.

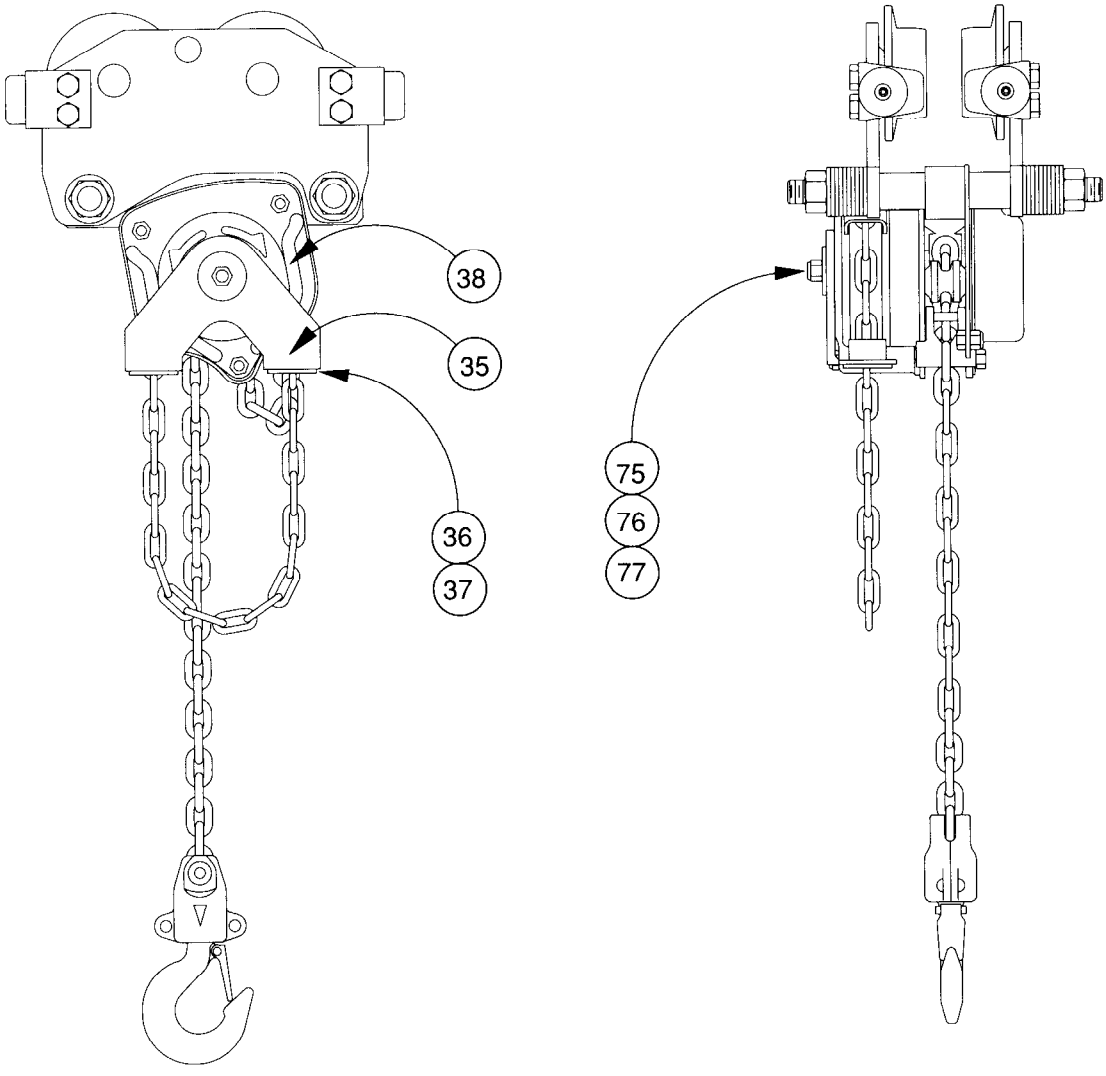
Chain Container Chart

MODEL NUMBER	PART NUMBER and CHAIN LENGTH CAPACITY																	
	CC-1		CC-2		CC-3		CC-4		CC-5		CC-6		CC-7		CC-8		CC-9	
	ft.	m	ft.	m	ft.	m	ft.	m	ft.	m	ft.	m	ft.	m	ft.	m	ft.	m
THV005	20	6.1	41	12.5	77	23.5	101	30.8	167	51	250	76.2	53	16	214	65.2	428	130.5
THV010	13	4	26	8	49	15	64	19.5	105	32	158	48	34	10.4	111	33.8	261	79.6
THV020	---	---	16	5	30	9	40	12.2	66	20	98	29.8	21	6.4	78	23.8	165	50.3
THV030	---	---	10	3	19	5.8	25	7.6	41	12.5	62	19	13	4	47	14.3	101	30.8
THV050	---	---	---	---	12	3.7	15	4.6	25	7.6	38	11.6	---	---	29	8.8	62	19
THV080	---	---	---	---	---	---	10	3	17	5.2	25	7.6	---	---	19	5.8	41	12.5
THV100	---	---	---	---	---	---	---	---	12	3.7	19	5.8	---	---	14	4.3	31	9.4

ACCESSORIES

DESCRIPTION OF ACCESSORY	ACCESSORY PART NUMBER
Lubricant	LUBRI-Link®
Touch-up Paint	MHD-OR
Overload Clutch Adjusting Tool	71112064

THV HOIST OPTIONAL HAND CHAIN GUIDE ASSEMBLY DRAWING



(Dwg. MHTPA0430)

THV HOIST HAND CHAIN GUIDE KITS *

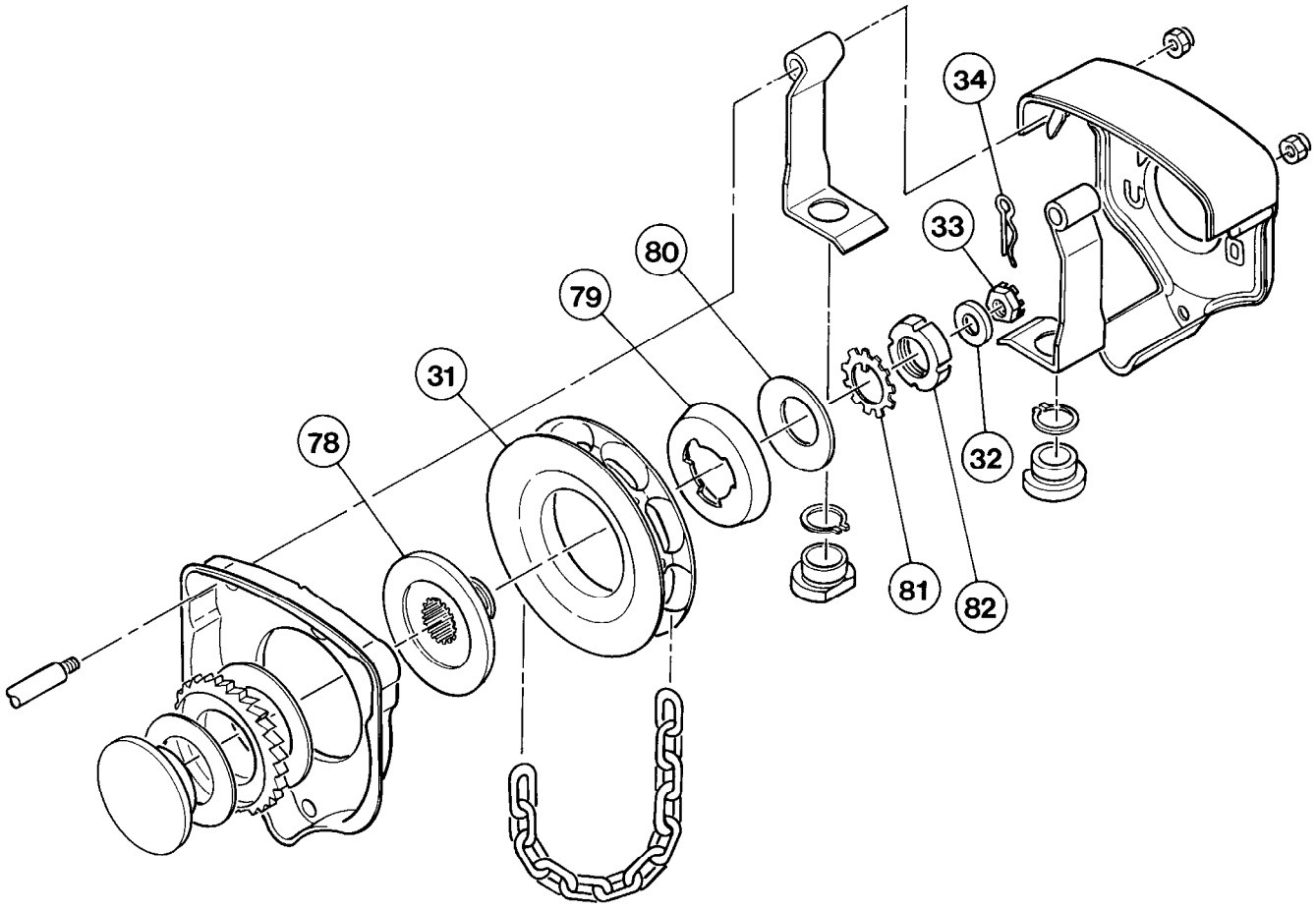
HOIST MODEL	KIT PART NUMBER	
	Two Piece Design **	One Piece Design ***
THV005	71051130	71057251
THV010	71051148	71057269
THV020	71051163	71057285
THV030	71051155	71057277
THV050	71051171	71057293
THV080	71051171	71057293
THV100	71051171	71057293

* Chain Guide Kits consist of Dwg. MHTPA0424 item numbers 35 through 38 and 75 through 77 as listed in the "Hoist Assembly Parts List."

** Standard units.

*** S•COR•E (Spark and Corrosion Resistant) feature.

THV HOIST OVERLOAD CLUTCH ASSEMBLY DRAWING AND PARTS LIST



(Dwg. MHTPA0322)

ITEM NO.	DESCRIPTION OF PART	QTY. TOTAL	PART NUMBER				
			1/2 ton	1 ton	2 ton	3 ton	5, 8, 10 ton
31 Note 1	Handwheel Assy with Overload Clutch	1	2373079	2373080	2373082	2373081	2373083
	Handwheel Assy with Overload Clutch, Copper Plated *	1	2373079-CP	2373080-CP	2373082-CP	2373081-CP	2373083-CP
	Handwheel	1	Not sold separately.				
78	Supporter	1	Not sold separately. Order Item No. 31.				
79	Cone Wheel	1	71108963	71108971			
80	Cone Spring	1	71108989				
81	Washer	1	71076491				
82	Nut	1	71076509				

Note 1 Assemblies include items 31 through 34 and 78 through 82 as shown on "Chain Hoist Parts List".

* S•COR•E (Spark and Corrosion Resistant) feature.

PARTS ORDERING INFORMATION

The use of other than **INGERSOLL-RAND Material Handling Products** replacement parts will invalidate the Company's warranty.
For your convenience and future reference it is recommended that the following information be recorded.

Model Number _____

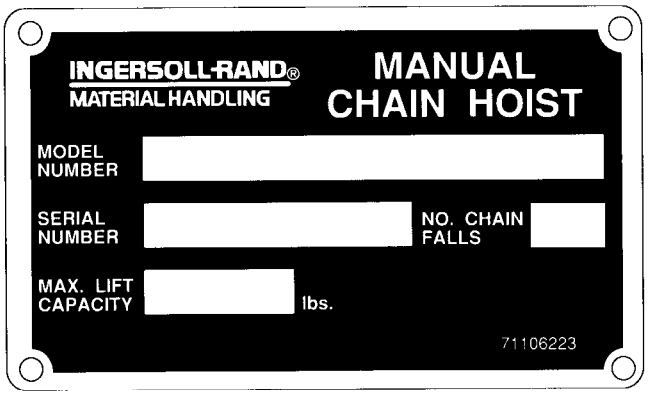
Serial Number _____

Date Purchased _____

When ordering replacement parts, please specify the following:

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

The hoist nameplate is located on the trolley side plate.



NOTICE

• Continuing improvement and advancement of design may cause changes to this equipment 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.

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.

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

For additional information contact:

Ingersoll-Rand Material Handling
P.O. Box 24046
2724 Sixth Avenue South
Seattle, WA 98124-0046 USA
Phone: (206) 624-0466 Telex: 328795
Fax: (206) 624-6265

or

Ingersoll-Rand Material Handling
Samiia, Douai Operations
111, Avenue Roger Salengro
59450 Sin Le Noble, France
Phone: (33) 27-93-08-08
Fax: (33) 27-93-08-00

MODEL LABEL

NOTICE

• Model label is located on the hoist gear cover.

Each unit is supplied from the factory with the model label shown. If a label is not attached to your unit, order a new label and install it. See the parts list for the part numbers. Label not shown actual size.

Model Label: (Example is for a 5 ton THV)

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.

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Phone: (615) 672-0321
Telex: 786573
Fax: (615) 672-0801

Technical Support
Ingersoll-Rand Material Handling
P.O. Box 24046
2724 Sixth Avenue South
Seattle, WA 98124-0046
Phone: (206) 624-0466
Telex: 328795
Fax: (206) 624-6265

Regional Sales Offices

Atlanta, GA
111 Ingersoll-Rand Drive
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King of Prussia, PA 19406
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Ingersoll-Rand Material Handling
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Seattle, WA 98124-0046
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Technical Support
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Phone: (604) 985-4470
Fax: (604) 985-0160

Latin America Operations
Ingersoll-Rand
Production Equipment Group
730 N.W. 107 Avenue
Suite 300, Miami, FL
33172-3107
Phone: (305) 559-0500
Telex: 441617TLS UI
Fax: (305) 559-7505

Europe, Middle East and Africa
Ingersoll-Rand
Material Handling
Samiia, Douai Operations
111, avenue Roger Salengro
59450 Sin Le Noble, France
Phone: (33) 27-93-08-08
Fax: (33) 27-93-08-00

Asia Pacific Operations
Ingersoll-Rand (Japan) Ltd.
Kawa Bldg. No. 17
2-7 Nishi-Azabu
1-Chrome
Minato-ku, Tokyo 106
Japan
Phone: (03) 3403-0641/7
Fax: 81 3 3401-2409

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