

**Model: 08-0136-0010**  
**Nacelle Mounted Hoist**

04/2007 – Rev. 01

REVISION  
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01

DATE  
02/2006  
04/2007

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Original Release  
Modified all Parts List illustrations and cover illustration

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This product can not be modified without the written approval of Tronair, Inc. Any modifications done without written approval voids all warranties and releases Tronair, Inc., its suppliers, distributors, employees, or financial institutions from any liability from consequences that may occur. Only Tronair OEM replacement parts shall be used.

## 1.0 PRODUCT INFORMATION

### 1.1 DESCRIPTION

The Tronair Nacelle Mounted Hoist, Model 08-0136-0010, is used for the removal of the PW-150 engine propeller gear box from the Dash 8-400 aircraft.

### 1.2 MODEL & SERIAL NUMBER

Reference nameplate on unit

### 1.3 MANUFACTURER

**TRONAIR**, Inc.  
1 Air Cargo Pkwy East  
Swanton, Ohio 43558 USA

Telephone: (419) 866-6301 or 800-426-6301

Fax: (419) 867-0634

E-mail: sales@tronair.com

Website: www.tronair.com

## 2.0 TRAINING

### 2.1 TRAINING REQUIREMENTS

The employer of the operator is responsible for providing a training program sufficient for the safe operation of the unit.

### 2.2 TRAINING PROGRAM

The employer provided operator training program should cover safety procedures concerning use of the unit in and around the intended aircraft at the intended aircraft servicing location.

### 2.3 OPERATOR TRAINING

The operator training should provide the required training for safe operation of the unit.

**NOTE: Maintenance and Trouble Shooting are to be performed by a skilled and trained technician.**

## 3.0 INSTALLATION INSTRUCTIONS

1. Remove the Nacelle access doors.
2. Install the Nacelle mid-frame pins into the Nacelle mid-frame. **Reference Figure 1.** Torque the ½ inch diameter nut to 85 ft lbs.
3. Install the front support assembly (Z-6160) into position on the Nacelle front frame and insert the Ball Lok-T pins into locked position
4. Install the rear support assembly (Z-6161) onto the mid-frame mounting pins and torque the ½ inch diameter nut to 85 ft-lbs. **Reference Figure 1.**

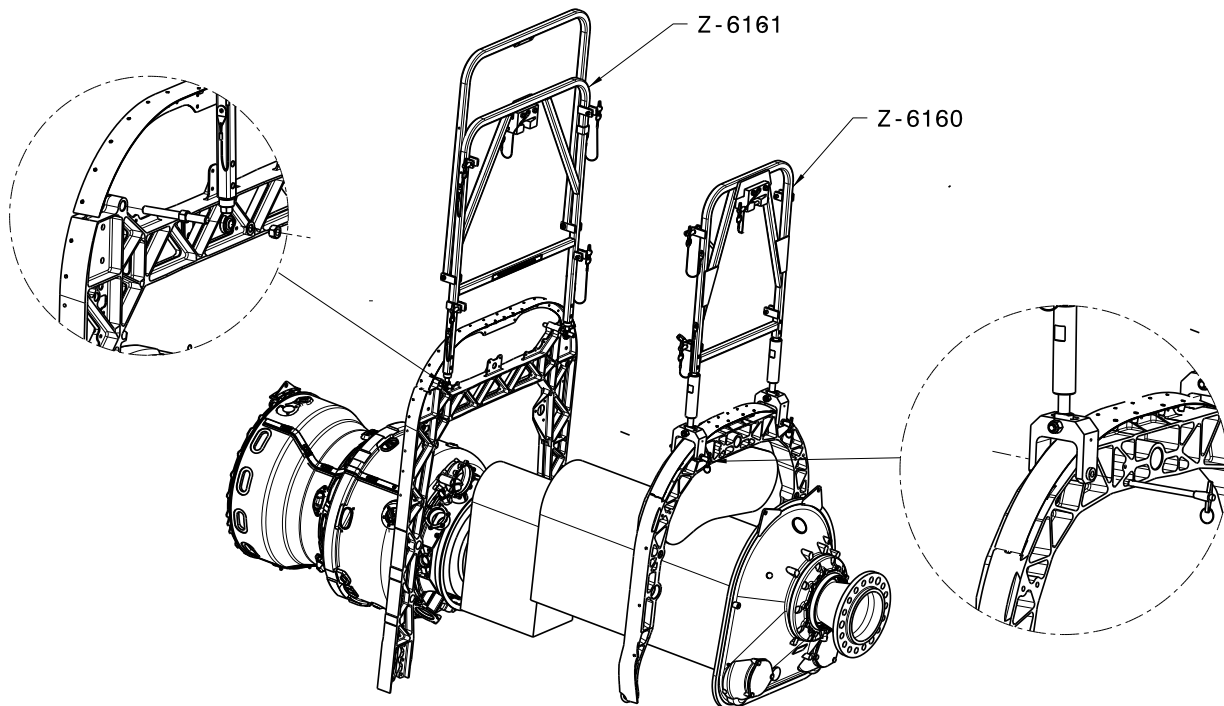
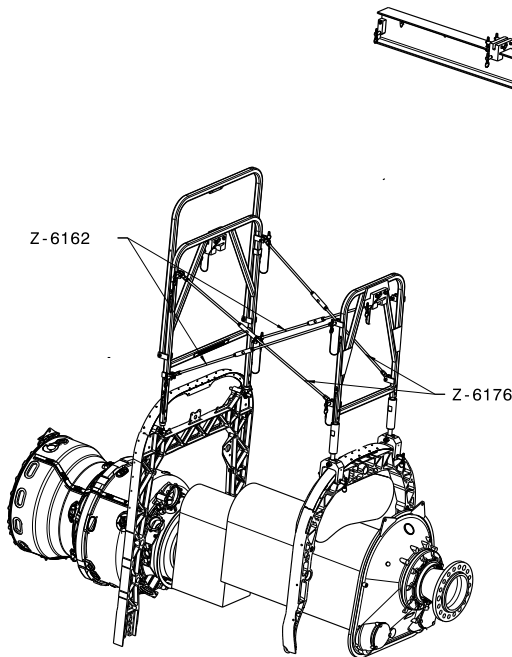


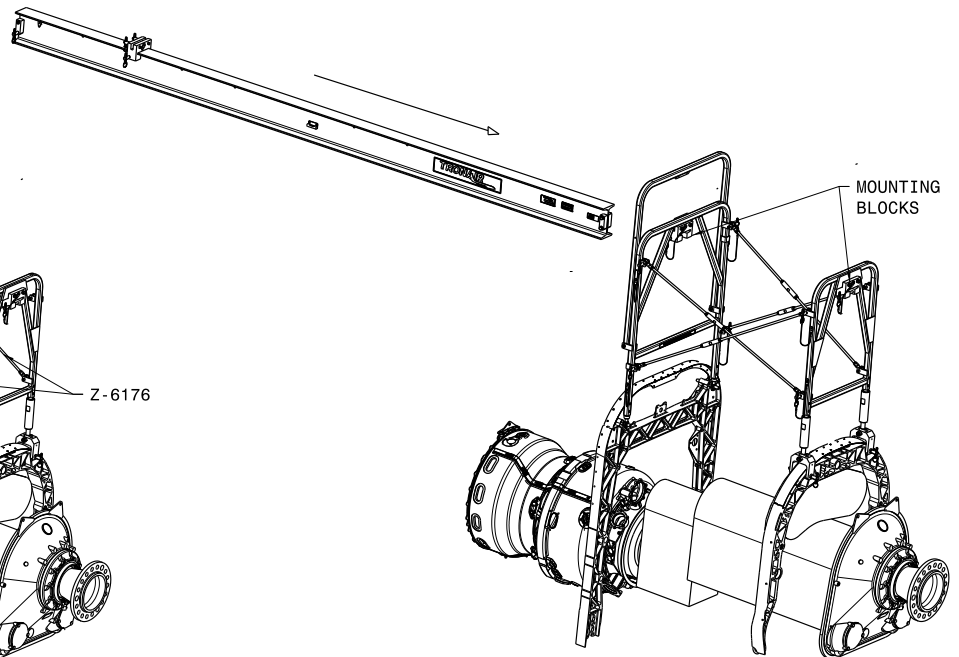
FIGURE 1



- Install the tie rods (Z-6176 & Z-6162) to the forward and aft supports as shown in **Figure 2**. The tie rods assemblies are used to stabilize the forward and aft supports into a vertical position to allow for beam assembly.

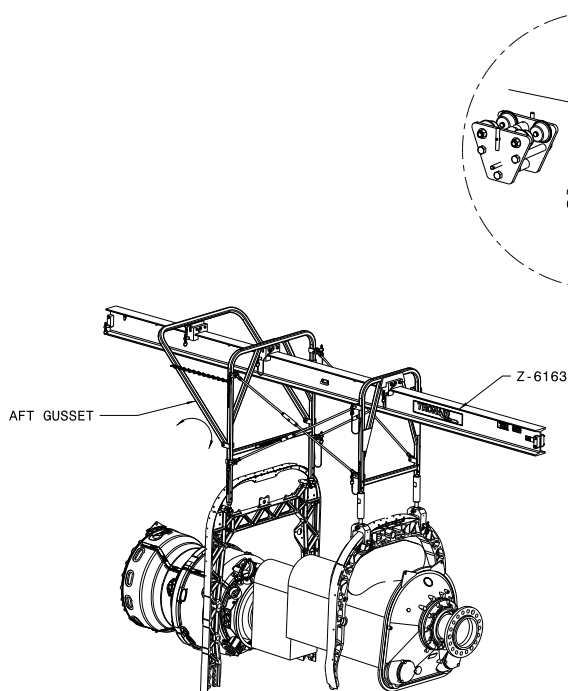


**FIGURE 2**

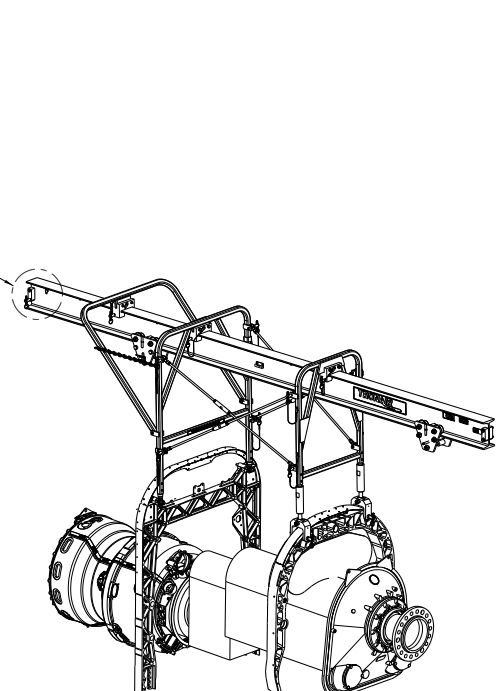


**FIGURE 3**

- Remove the ball lock pins from the mounting blocks located at the top of the forward and aft supports. **Reference Figure 3**.
- Assemble the mounting block (Z-4152) to the beam assembly (Z-6163) located at the aft most engine mounting hole.
- Slide the I-beam assembly through the aft support block into the forward support block. Position the I-beam assembly mounting with the front support aligning to the forward most engine mounting hole. The aft support is mounted to the second engine mounting hole. **Reference Figure 3**.



**FIGURE 4**



**FIGURE 5**

- The aft gusset is lowered into the mounting block on the I-beam. **Reference Figure 4**.

**NOTE:** The forward and aft mounting pins must remain out until the aft support gusset is pinned in place.

3.0 Instructions continued on following page

### 3.0 INSTALLATION INSTRUCTIONS *(continued)*

10. After the I-beam is pinned in place at the engine locations on the I-beam, assemble the trolleys on the I-beam by pulling the rear stop pin and rolling the trolleys onto the I-beam. After the trolleys are installed onto the I-beam, install the stop pin. **Reference Figure 5.**

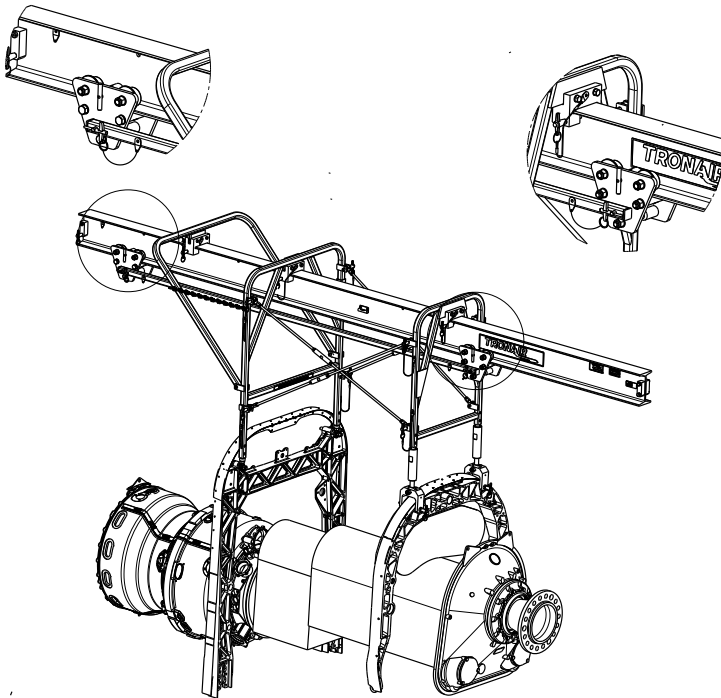


FIGURE 6

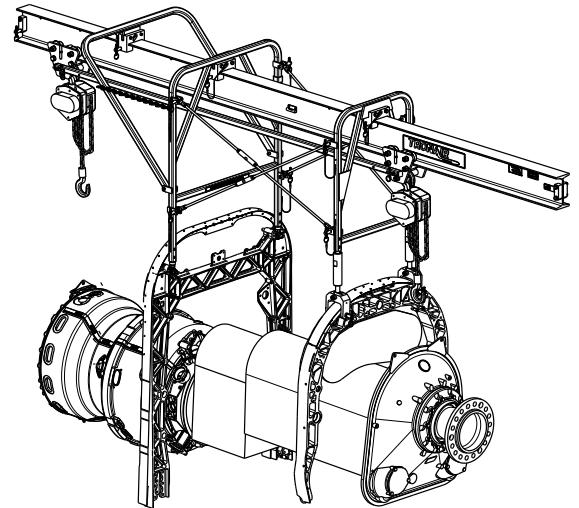


FIGURE 7

11. Install the trolley spreader bar onto the hoist. **Reference Figure 6.**
12. Using the bubble levels on the I-beam, adjust the forward supports to level the hoist to ground level.
13. Install chain falls to the trolleys. **Reference Figure 7.**
14. Install forward and aft lifting straps. **Reference Figure 8.**
15. The Nacelle mounted hoist is now ready to remove the engine per the manufacturer's guide lines.
16. To remove the Nacelle hoist, reverse installation instructions.

### 4.0 PROPELLER REMOVAL INSTRUCTIONS

1. Install nacelle mounted hoist per Section 2.0, Steps 1 through 6.
2. Slide beam through rear support block into the front support block.
3. Locate the I-beam forward to the first propeller mounting hole. This extends the I-beam 12 inches forward of the engine mount locations.
4. Install the trolley assembly forward of the forward support.
1. Attach the chain fall and propeller removal tool.

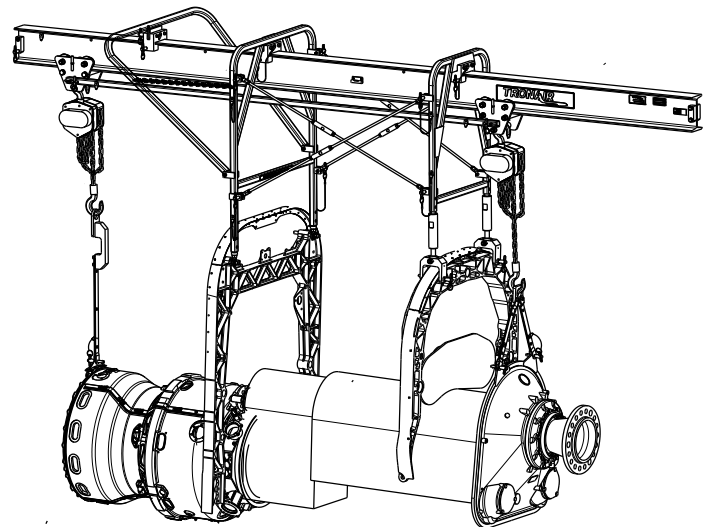


FIGURE 8

**5.0 INSPECTION/MAINTENANCE**

| SERVICE                | INTERVAL   |   |
|------------------------|--|---|
| Normal                 | Yearly   | Inspect equipment at site of use. Operation with various weights within the rated load limit, or uniform loads less than 65 percent of rated load.  |
| Heavy                  | Semi-Annual  | Inspect equipment at site of use unless external conditions indicate that disassembly should be done to permit detailed inspection. Operation within the rated load limit that exceeds normal service.        |
| Severe                 | Quarterly  | Inspect equipment at site of use unless external conditions indicate that disassembly should be done to permit detailed inspection. Operation at normal or heavy service under abnormal operating conditions. |
| Special/<br>Infrequent | As recommended by a qualified person before the first such use and as directed by the qualified person for any subsequent uses |   |

**It is recommended to send Equipment to Manufacturer or Authorized Service Center for Recertification.**

Rated load at engine sling lift hole: 2000 lbs.

The rated capacity shall not be more than 80 percent of the maximum load sustained during the test. Test loads shall not be more than 125 percent of the rated capacity unless otherwise recommended by the manufacturer. Test weights shall be accurate to within -5 percent, +0 percent of stipulated values.

**5.1 TEST PROCEDURE**

1. Load test sling to 125% of rated load
2. Hold for one (1) minute.
3. Remove the sling from the test weight and inspect the entire sling for broken welds, elongated holes, or any other signs of failure.)

**6.0 PROVISION OF SPARES**

**6.1 SPARE PARTS**

Spare parts may be obtained from the manufacturer:

|                         |   |
|-------------------------|---|
| <b>TRONAIR</b> , Inc.   | Telephone: (419) 866-6301 or 800-426-6301 |
| 1 Air Cargo Pkwy East   | Fax: (419) 867-0634                       |
| Swanton, Ohio 43558 USA | E-mail: sales@tronair.com                 |
|                         | Website: www.tronair.com                  |

**6.2 PARTS LISTS & ILLUSTRATIONS**

Reference the following page for Replacement Parts and Kits available.

**7.0 IN-SERVICE SUPPORT**

Contact Tronair for technical services and information.

## 8.0 GUARANTEES/LIMITATION OF LIABILITY

Tronair products are warranted to be free of manufacturing or material defects for a period of one year after shipment to the original customer. This is solely limited to the repair or replacement of defective components. This warranty does not cover the following items:

- a) Parts required for normal maintenance
- b) Parts covered by a component manufacturers warranty
- c) Replacement parts have a 90-day warranty from date of shipment

If you have a problem that may require service, contact Tronair immediately. Do not attempt to repair or disassemble a product without first contacting Tronair, any action may affect warranty coverage. When you contact Tronair be prepared to provide the following information:

- a) Product Model Number
- b) Product Serial Number
- c) Description of the problem

If warranty coverage is approved, either replacement parts will be sent or the product will have to be returned to Tronair for repairs. If the product is to be returned, a Return Material Authorization (RMA) number will be issued for reference purposes on any shipping documents. Failure to obtain a RMA in advance of returning an item will result in a service fee. A decision on the extent of warranty coverage on returned products is reserved pending inspection at Tronair. Any shipments to Tronair must be shipped freight prepaid. Freight costs on shipments to customers will be paid by Tronair on any warranty claims only. Any unauthorized modification of the Tronair products or use of the Tronair products in violation of cautions and warnings in any manual (including updates) or safety bulletins published or delivered by Tronair will immediately void any warranty, express or implied.

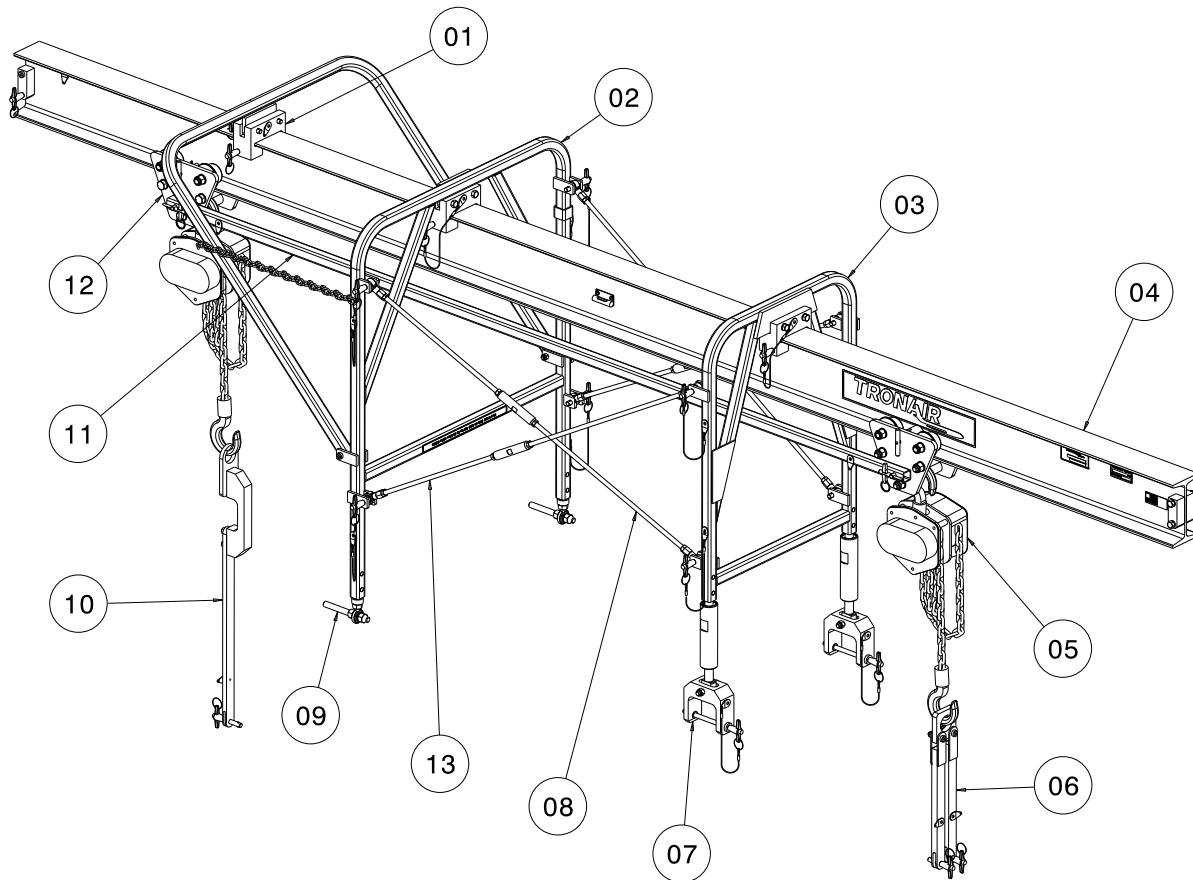
The obligations of Tronair expressly stated herein are in lieu of all other warranties or conditions expressed or implied. **Any unauthorized modification of the Tronair products or use of the Tronair products in violations of cautions and warnings in any manual (including updates) or safety bulletins published or delivered by Tronair will immediately void any warranty, express or implied and Tronair disclaims any and all liability for injury (WITHOUT LIMITATION and including DEATH), loss or damage arising from or relating to such misuse.**

## 9.0 APPENDICES

APPENDIX I Coffing Publication LHH-680-5 Hand Chain Hoist Operating & Maintenance Instructions with Parts List

## Parts List

When ordering Replacement Parts/Kits, please specify Model & Serial Number of your product.

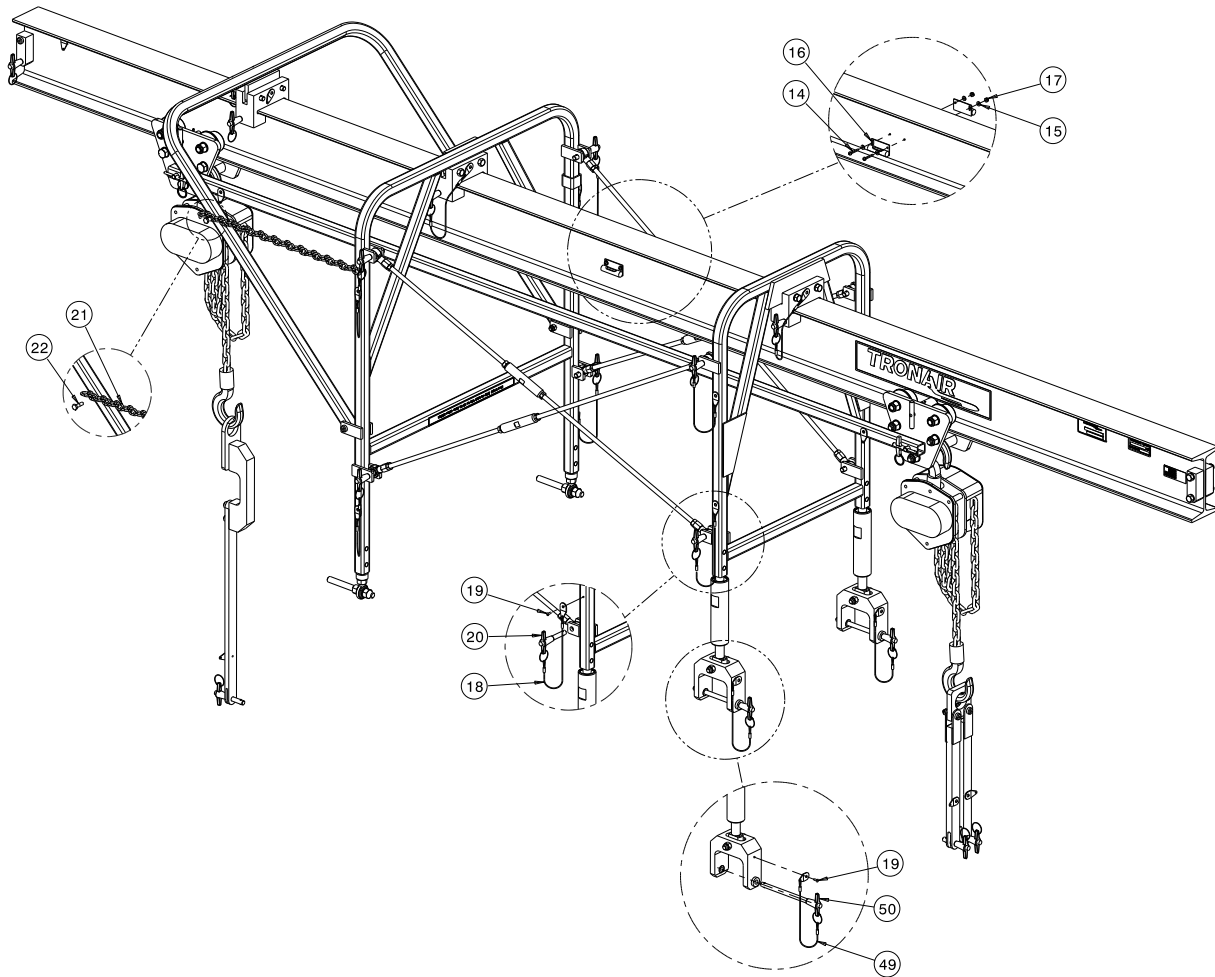


| Item | Part Number | Description                      | Qty                        |
|------|-------------|----------------------------------|----------------------------|
| 1    | Z-4152      | Support Block Assembly           | 1                          |
| * 2  | Z-6161      | Rear Support Assembly            | 1                          |
| * 3  | Z-6160      | Front Support Assembly           | 1                          |
| 4    | Z-6163      | Beam Assembly                    | <i>Not Sold Separately</i> |
| 5    | H-2223      | One (1) Ton Chain Hoist Puller   | 2                          |
| 6    | K-4891      | Kit, Front Engine Strap Assembly | 1                          |
| 7    | Z-6170      | Front Support Assembly           | 2                          |
| 8    | Z-6162      | Tie Rod Assembly                 | 2                          |
| 9    | Z-4129      | Mid-Frame Pin Assembly           | 2                          |
| 10   | Z-4121      | Rear Strap Assembly              | 1                          |
| 11   | Z-4111      | Spreader Bar Assembly            | 1                          |
| 12   | Z-4104      | Trolley Assembly                 | 2                          |
| 13   | Z-6176      | Tie Rod Assembly                 | 2                          |

\* Entire 08-0136-0010 assembly must be sent back to Tronair for repair and testing.

## Parts List

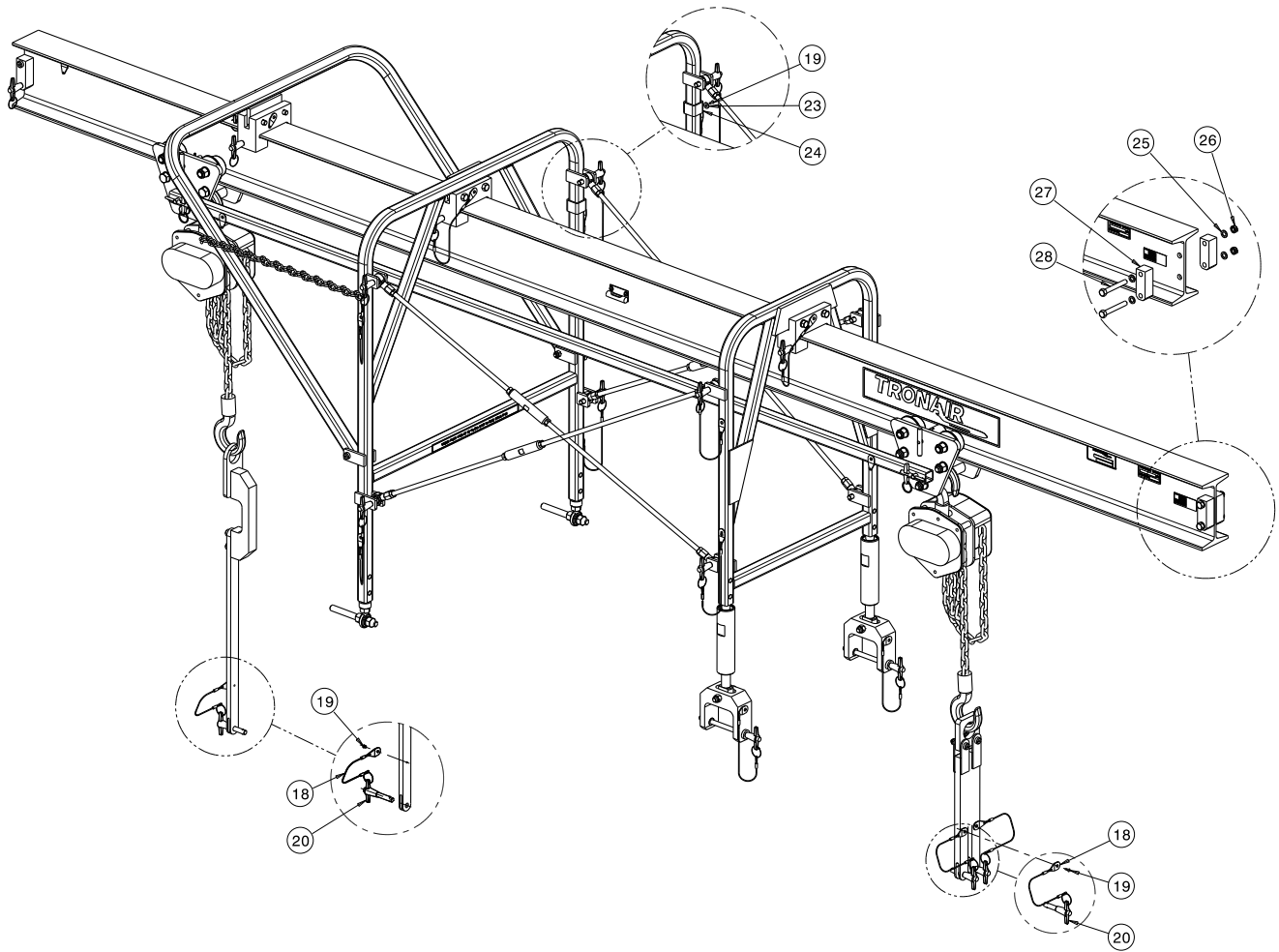
When ordering Replacement Parts/Kits, please specify Model & Serial Number of your product.



| Item | Part Number    | Description  | Qty |
|------|----------------|--|-----|
|      | <b>K-2966</b>  | <b>Kit, Level Replacement; consists of:</b>          |     |
| 14   | G-1157-101510  | Pan Head Screw, #6-32 x 1" long                      | 2   |
| 15   | G-1255-02      | Washer, #6 AN  | 4   |
| 16   | H-2221         | Tubular Level  | 2   |
| 17   | G-1202-1010    | Elastic Stopnut, #6-32                               | 2   |
|      | <b>K-2625</b>  | <b>Kit, Ball Lok-T Pin Replacement; consists of:</b> |     |
| 18   | H-1026*07.0    | Lanyard Assembly                                     | 1   |
| 19   | G-1351-04      | Rivet  | 1   |
| 20   | G-1310-0613    | Ball Lok-T Pin, 3/8" diameter x 1.3" long            | 1   |
|      | <b>K-2967</b>  | <b>Kit, Chain Replacement; consists of:</b>          |     |
| 21   | H-1024-01*18.5 | Double Loop Chain                                    | 1   |
| 22   | G-1110-4-7A    | AN 4 Bolt  | 2   |
|      | <b>K-3978</b>  | <b>Kit, Ball Lok-T Pin Replacement; consists of:</b> |     |
| 49   | H-1026*02.0    | Lanyard Assembly                                     | 1   |
| 19   | G-1351-04      | Rivet  | 1   |
| 50   | G-1310-0650    | Ball Lok-T Pin, 3/8" diameter x 6.5" long            | 1   |

## Parts List

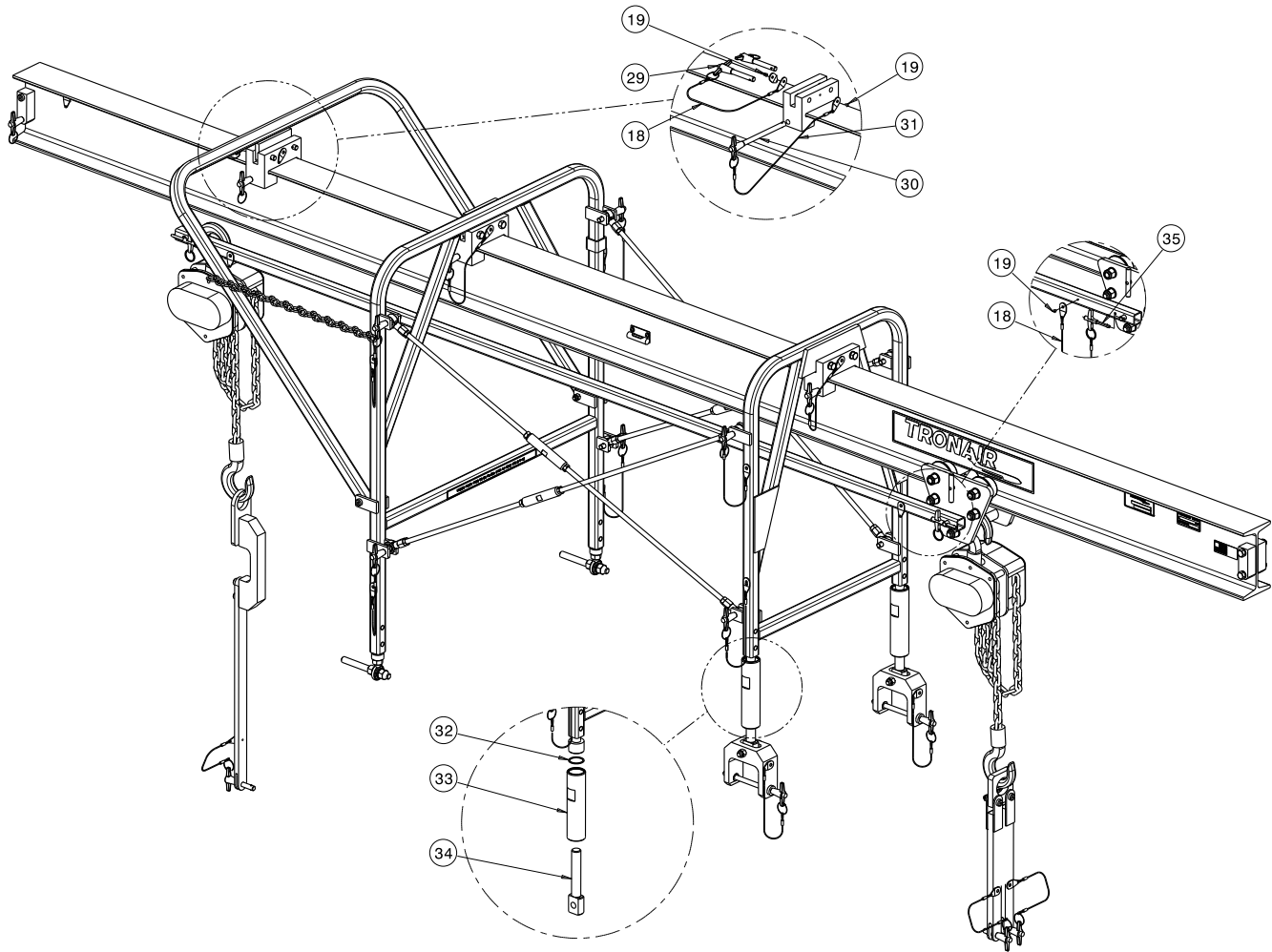
When ordering Replacement Parts/Kits, please specify Model & Serial Number of your product.



| Item | Part Number    | Description  | Qty |
|------|----------------|--|-----|
|      | <b>K-2625</b>  | <b>Kit, Ball Lok-T Pin Replacement; consists of:</b> |     |
| 18   | H-1026*07.0    | Lanyard Assembly                                     | 1   |
| 19   | G-1351-04      | Rivet  | 1   |
| 20   | G-1310-0613    | Ball Lok-T Pin, 3/8" diameter x 1.3" long            | 1   |
|      | <b>K-2968</b>  | <b>Kit Velcro Strap Replacement; consists of:</b>    |     |
| 19   | G-1351-04      | Rivet  | 1   |
| 23   | G-1250-1030N   | Flatwasher, #10 Narrow                               | 1   |
| 24   | H-2220-04*12.0 | Velcro Strap   | 1   |
|      | <b>K-2969</b>  | <b>Kit Stop Block Replacement; consists of:</b>      |     |
| 25   | G-1255-07      | Washer, 3/8" AN                                      | 4   |
| 26   | G-1202-1075    | Stopnut, 3/8-24 Elastic                              | 2   |
| 27   | J-2851         | Stop Block   | 2   |
| 28   | G-1100-107530  | Bolt, Hex Head, Grade 5, 3/8-24 x 3" long            | 2   |

## Parts List

When ordering Replacement Parts/Kits, please specify Model & Serial Number of your product.

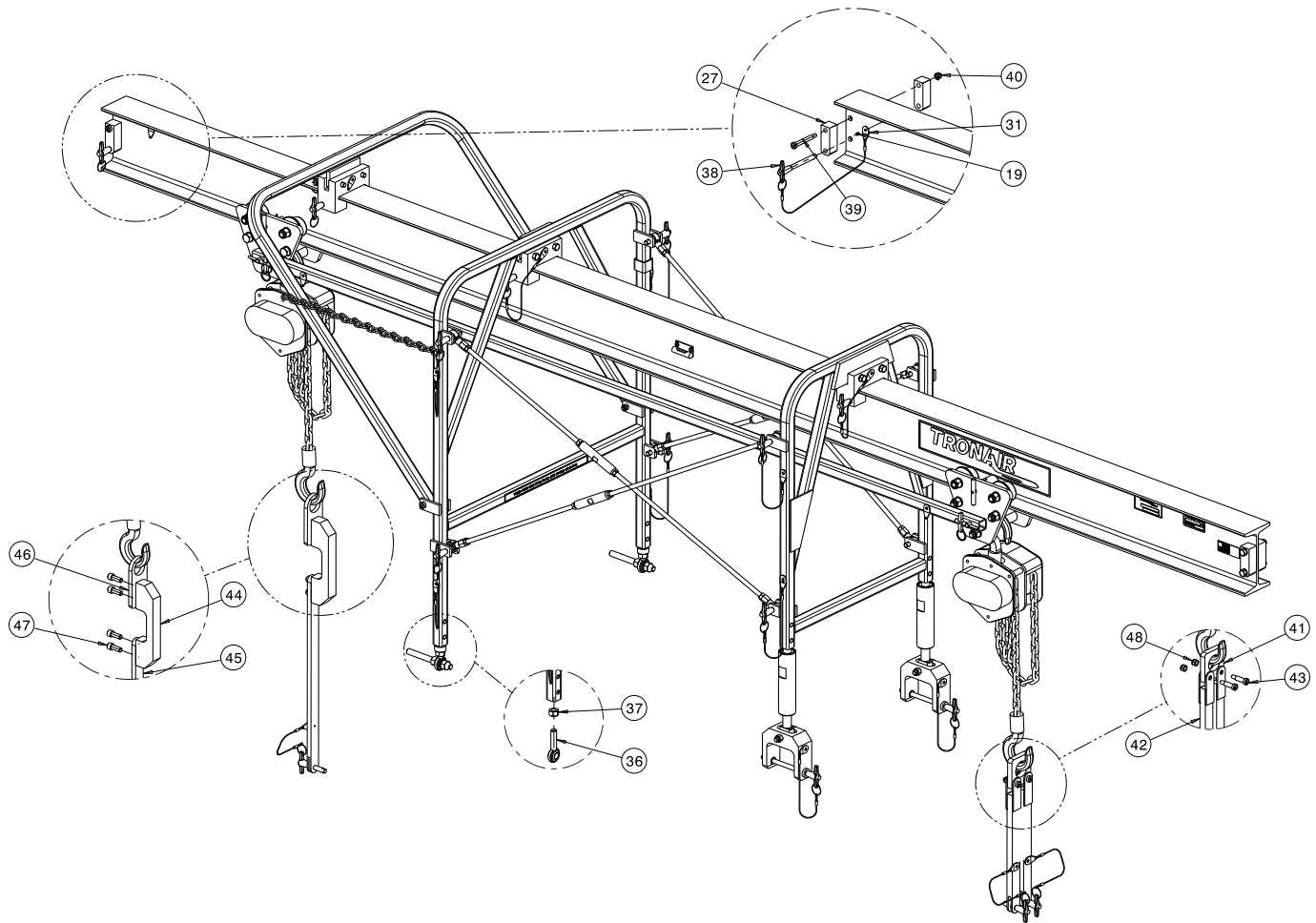


| Item | Part Number   | Description  | Qty |
|------|---------------|--|-----|
|      | <b>K-2376</b> | <b>Kit, Ball Lok-T Pin Replacement; consists of:</b>         |     |
| 18   | H-1026*07.0   | Lanyard Assembly   | 1   |
| 19   | G-1351-04     | Rivet  | 1   |
| 29   | G-1310-0620   | Ball Lok-T Pin, 3/8" diameter x 2" long                      | 1   |
|      | <b>K-2970</b> | <b>Kit, Ball Lok-T Pin Replacement; consists of:</b>         |     |
| 19   | G-1351-04     | Rivet  | 1   |
| 30   | G-1310-0645   | Ball Lok-T Pin, 3/8" diameter x 4.5" long                    | 1   |
| 31   | H-1026*12.0   | Lanyard Assembly   | 1   |
|      | <b>K-3975</b> | <b>Kit, Front Support Adjuster Replacement; consists of:</b> |     |
| 32   | G-1398-125    | Internal Ring  | 1   |
| 33   | R-1872        | Nut Adjuster   | 1   |
| 34   | R-2217        | Rod Adjuster   | 1   |
|      | <b>K-2978</b> | <b>Kit, Ball Lok-T Pin Replacement; consists of:</b>         |     |
| 18   | H-1026*07.0   | Lanyard Assembly   | 1   |
| 19   | G-1351-04     | Rivet  | 1   |
| 35   | G-1310-0311   | Ball Lok-T Pin, 3/16" diameter x 1.1" long                   | 1   |



## Parts List

When ordering Replacement Parts/Kits, please specify Model & Serial Number of your product.



| Item     | Part Number   | Description  | Qty |
|----------|---------------|--|-----|
|          | <b>K-2977</b> | <b>Kit, Rear Engine Strap Replacement; consists of:</b>  |     |
| Ref Only | H-1026*07.0   | Lanyard Assembly   | 1   |
| 19       | G-1351-04     | Rivet  | 1   |
| Ref Only | G -1310-0613  | Ball Lok-T Pin, 3/8" diameter x 1.3" long                | 1   |
| 45       | Z-4120        | Engine Strap Weldment                                    | 1   |
| 47       | G-1151-107210 | Socket Head Cap Screw, 3/8- 16 x 1" long                 | 4   |
|          | <b>K-2535</b> | <b>Kit, Ball Lok-T Pin Replacement; consists of:</b>     |     |
| 19       | G-1351-04     | Rivet  | 1   |
| 31       | H-1026*12.0   | Lanyard Assembly   | 1   |
| 38       | G-1310-0630   | Ball Lok-T Pin, 3/8" diameter x 3" long                  | 1   |
|          | <b>K-2972</b> | <b>Kit, Pivot Block Replacement; consists of:</b>        |     |
| 27       | J-2851        | Stop Block   | 2   |
| 39       | G-1155-106222 | Socket Head Shoulder Screw, 3/8" diameter                | 1   |
| 40       | G-1202-1060   | Stopnut, 5/16-18 Elastic                                 | 1   |
|          | <b>K-2975</b> | <b>Kit, Rear Support Pivot Replacement; consists of:</b> |     |
| 36       | H-1609-07     | Male Rod End   | 1   |
| 37       | G-1200-1095   | Hex Nut, 1/2-20  | 1   |

### Parts List

When ordering Replacement Parts/Kits, please specify Model & Serial Number of your product.

| Item | Part Number   | Description  | Qty |
|------|---------------|--|-----|
|      | <b>K-2973</b> | <b>Kit, Lifting Eye Replacement; consists of:</b>        |     |
| 48   | G-1202-1060   | Stopnut, 5/16-18 Elastic                                 | 2   |
| 41   | J-2863        | Lifting Eye  | 1   |
| 43   | G-1155-106206 | Socket Head Shoulder Screw, 3/8" diameter                | 2   |
|      | <b>K-2974</b> | <b>Kit, Front Engine Strap Replacement; consists of:</b> |     |
| 48   | G-1202-1060   | Stopnut, 5/16-18 Elastic                                 | 1   |
| 42   | Z-4119        | Engine Strap Assembly                                    | 1   |
| 43   | G-1155-106206 | Socket Head Shoulder Screw, 3/8" diameter                | 1   |
|      | <b>K-2976</b> | <b>Kit, Strap Offset Replacement; consists of:</b>       |     |
| 44   | J-2861        | Strap Offset   | 1   |
| 46   | J-2859        | Lift Plate   | 1   |
| 47   | G-1151-107210 | Socket Head Cap Screw, 3/8-16 x 1" long                  | 4   |



## **APPENDIX I**

**Instrument Certification Notice  
Coffing Publication LHH-680-5  
Hand Chain Hoist  
Operating & Maintenance Instructions With Parts List**

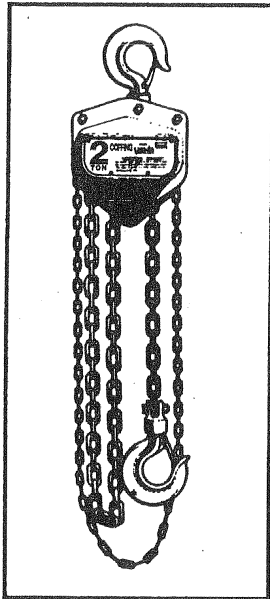


# COFFING®

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## OPERATING AND MAINTENANCE INSTRUCTIONS WITH PARTS LIST PUBLICATION NO. LHH-680-5

## HAND CHAIN HOIST



### IMPORTANT – CAUTION

This manual contains important information for the correct installation, operation and maintenance of the equipment described herein. All persons involved in such installation, operation and maintenance should be thoroughly familiar with the contents. To safeguard against the possibility of personal injury or property damage, follow the recommendations and instructions of this manual and keep it for further reference.

### WARNING

The equipment shown in this manual is intended for industrial use only and should not be used to lift, support, or otherwise transport people.

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## WARRANTY

Every hoist is thoroughly inspected and tested prior to shipment from the factory. Should any problems develop, return the complete hoist prepaid to your nearest Duff-Norton Authorized Warranty Repair Station. If inspection reveals that the problem is caused by defective workmanship or materials, repairs will be made without charge and the hoist will be returned, transportation prepaid.

This warranty does not apply where: (1) deterioration is caused by normal wear, abuse, improper or inadequate power supply, eccentric or side loading, overloading, chemical or abrasive actions, improper maintenance or excessive heat; (2) problems resulted from repairs, modifications or

alterations made by persons other than factory or Duff-Norton Authorized Warranty Repair Station personnel; (3) the hoist has been abused or damaged as a result of an accident; (4) repair parts or accessories other than those supplied by Duff-Norton are used on the hoist. Equipment and accessories not of the seller's manufacture are warranted only to the extent that they are warranted by the manufacturer. EXCEPT AS STATED HEREIN, DUFF-NORTON MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

## GENERAL INFORMATION

This manual provides information for the safe operation and maintenance of Coffing® Hand Chain Hoist. All persons operating or maintaining the hoist should be familiar with the information contained herein. Adherence to the precautions, procedures, and maintenance practices described should ensure long, reliable operation.

All persons responsible for the installation, operation, or maintenance of hoisting equipment should read American National Standard ANSI B30.16 for guidelines toward the safe operation of hoists. This standard contains rules pertaining to inspection requirements and records that may be required by some regulatory agencies.

## HOIST CONSTRUCTION

This Hand Chain Hoist provides an efficient means for lifting of freely suspended material loads within its load rating. The frame and covers of the hoist are of stamped steel construction.

The cast hand chain wheel and load activated brake provide smooth, precise spotting of loads.

## INSPECTION PRIOR TO INITIAL USE

When unpacking the hoist, inspect carefully for any damage that may have occurred during shipping. Check for loose, missing, or damaged parts.

## INSTALLATION

Be sure that the structures supporting the hoist are strong enough to support the full rated load of the hoist with a generous factor of safety. The hoist should be suspended directly over the load, so that the load can be lifted without side pull. The hoist body must be free to align itself between the two hooks. Do not restrain the hoist frame in any way, or allow it to rest directly against any part of the supporting structure.

## TESTING

Apply a light load to the hoist and check for smooth operation and proper brake function. If the hoist works properly with light load, connect rated load to the hoist and raise the load just clear of the floor. Check that the brake holds the load before lifting any higher. No drifting of the hook should occur under any size load within the hoist's load rating.

## SAFETY RULES

Inspect the hoist for any sign of loose, broken or malfunctioning parts. Any malfunctioning hoist should be tagged as "out of order" and removed from service until the defect is corrected.

- a. Do not overload the hoist.
- b. Do not exert more than the hand chain pull to lift rated load by one operator (see Table 1). The hoist is designed to lift its rated capacity when a reasonable force is exerted. If effort appears to be excessive, recheck the load and use a larger capacity hoist if necessary.
- c. Do not side load the hoist. Always pull in a straight line between hooks. Side loading over a sharp corner may fracture the hoist housing, load block or hook.
- d. Be sure there are no twists in the load chain and make sure that load chain is free to move and will clear all obstructions. On multiple chained hoist it is possible for the load block to be capsized or turned over one or more times causing the chain to twist.
- e. Do not operate the hoist from an off balanced position. Operator should have firm footing or be otherwise secured before operating the hoist.
- f. Before raising or pulling a load, always check to see that it is held securely in the hook or sling chains, etc. Raise the load only until the load chain is taut and then recheck the rigging before continuing to raise the load.
- g. Make sure that the slings and other rigging have sufficient capacity to support the load, and are in good condition.

TABLE 1. GENERAL SPECIFICATIONS

| Model                                     | LHH-1/2B                       | LHH-1B                           | LHH-2B                        | LHH-3B                         | LHH-5B                         |
|---|--------------------------------|----------------------------------|-------------------------------|--------------------------------|--------------------------------|
| Rated Load (lbs.)                         | 1000                           | 2000                             | 4000                          | 6000                           | 10,000                         |
| Weight (lbs.)                             | 20                             | 23                               | 44                            | 65                             | 74                             |
| Standard Lift (ft.)                       | 8-10-15-20                     | 10-15-20                         | 10-15-20                      | 10-15-20                       | 10-15-20                       |
| Pull on Hand Chain to Raise Load (lbs.)   | 55                             | 60                               | 88                            | 84                             | 79                             |
| Hand Chain Overhaul for 1 Foot Lift (ft.) | 32                             | 56                               | 75                            | 95                             | 203                            |
| Throat Opening of Hooks (in.)             | 1 <sup>5</sup> / <sub>16</sub> | 1 <sup>1</sup> / <sub>8</sub>    | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>9</sup> / <sub>16</sub> | 1 <sup>7</sup> / <sub>8</sub>  |
| Minimum Distance Between Hooks (in.)      | 10 <sup>1</sup> / <sub>4</sub> | 11 <sup>13</sup> / <sub>16</sub> | 15                            | 17 <sup>1</sup> / <sub>8</sub> | 22 <sup>5</sup> / <sub>8</sub> |
| Load Chain Size Wire Diameter (mm)        | 5                              | 6.3                              | 8                             | 10                             | 7.1                            |

- h. **DO NOT STAND BENEATH A LOAD!** Do not move a load in such a manner as to endanger personnel.
- i. Do not leave the hoist under load for extended or unattended periods unless specific precautions have been taken to provide protection.
- j. Do not wrap the load chain around a load. **USE A SLING!**
- k. Do not **TIP-LOAD** any hook, as this will exert undue strain in the hook, resulting in hook failure.
- l. The hoist is designed for manual operation by one person. Do not attempt to operate hoist with other than the manual power furnished by one person.
- m. **DO NOT USE HOIST TO LIFT, SUPPORT OR OTHERWISE TRANSPORT HUMAN CARGO.**
- n. The hand chain is equipped with a safety link. When the safety link opens or deforms, stop at once and inspect for the cause.
- o. Lifting a load with two hoists is not recommended. If the operation is unavoidable, hoist the load with utmost care, keeping balance of the load.
- p. Never run the load chain out too far. When operated beyond the range of lift, an excessive load that can cause damage will be imposed on the hoist.
- q. Hoists are designed for lifting loads vertically and should not be used for horizontal or angle hoisting.
- r. Extreme temperatures will lower the toughness of the hoist. Loads should be hoisted or lowered very slowly and carefully.
- s. The hoisting operation should never be done with the bottom hook or load caught on a fixed object.
- t. Never use the chain or hook as a ground for welding.
- u. Use only genuine parts and chains supplied by the authorized distributor.

## HANDLING THE LOAD

### 1. ATTACHING THE LOAD

- a. The load should be attached to the hook by means of slings or other appropriate devices. Never wrap the load chain around a load.
- b. Be sure the load is supported in the saddle of the hook and the latch is closed. Do not support a load on the tip of the hook.

### 2. LIFTING THE LOAD

- a. Raise the load by pulling the right side hand chain. Lift the load just clear of the floor. Check that slings are secure in the hook, the load is well balanced, and the hoist brake is holding the load. Lift the load to desired height, always standing clear of the suspended load.
- b. Lower the load by pulling the left side hand chain. Pull smoothly and slowly. Avoid "spinning" the hand chain.
- c. Never jam the hook block into the bottom of the hoist, or run the hook down until the slack chain is pulled tight.

## PREVENTIVE MAINTENANCE

Periodic inspection and lubrication is important to ensure long and satisfactory operation of the hoist. The recommended inspection intervals indicated in Table 2 are based on intermittent operation. The user should reduce or extend his inspection intervals based on usage and individual experience.

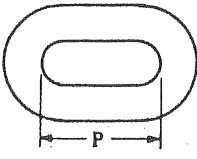
Use calipers to check the chain for wear as shown in Figure 1. Replace any chain showing damage or wear beyond the wear limit shown. (Make certain that caliper anvils are small enough to seat in the links.)

### CAUTION

If chain is worn or otherwise damaged, replace entire chain with new chain supplied by the hoist manufacturer. Do not substitute. Do not attempt to reweld damage.

FIGURE 1. CHAIN WEAR MEASUREMENT

|                    | Diameter of Link (mm) | Standard Dimension P (inch) | Permissible Limit P (inch) |
|--------------------|-----------------------|-----------------------------|----------------------------|
| 1/2 Ton Load Chain | 5                     | .590                        | .602                       |
| 1 Ton Load Chain   | 6.3                   | .752                        | .767                       |
| 2 Ton Load Chain   | 7.9                   | .953                        | .972                       |
| 3 Ton Load Chain   | 10                    | 1.193                       | 1.216                      |
| 5 Ton Load Chain   | 7.1                   | .835                        | .850                       |
| Hand Chain         | .5                    | .945                        | .984                       |

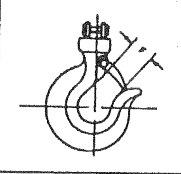




### HOOK DIMENSIONS (OPENING)

Inspect the hooks for deformations, chemical damage or cracks. Hooks damaged from chemicals, deformation or cracks, having throat openings greater than the "reject opening" shown in the table must be replaced. If the hook is twisted more than 10 degrees from the plane of the unbent hook it must be replaced.

| Capacity (ton) | Standard Dimension F (inch) | Reject Opening F (inch) |
|----------------|-----------------------------|-------------------------|
| 1/2            | 1.181                       | 1.300 & Over            |
| 1              | 1.417                       | 1.535 & Over            |
| 2              | 1.653                       | 1.811 & Over            |
| 3              | 1.890                       | 2.086 & Over            |
| 5              | 2.205                       | 2.362 & Over            |



**TABLE 2. INSPECTION SCHEDULE**

| Interval                      | Inspection  |
|-------------------------------|---|
| DAILY                         | a. Check hooks and hook latches for deformation or cracks. Twisted hooks or hooks with throat openings more than the reject openings listed in above table should be replaced.<br>b. Check chain for wear and twist.<br>c. Check brake for drift.   |
| QUARTERLY                     | a. Check for loose screws, nuts, etc.<br>b. Check load sprocket and hand chain wheel for wear.  |
| ANNUALLY<br>(See Disassembly) | a. Inspect for worn gears, bearings, pawl, pawl spring, ratchet, and shafts.<br>b. Check for worn brake discs.<br>c. Inspect hooks for cracks using magnetic particle or similar test.<br>d. Clean chain in kerosene or other non-corrosive solvent and inspect for wear, nicks, or distortion of any kind. |

### DISASSEMBLY

Disassembly of the hoist is straightforward. Note the location and orientation of the various parts.

### LUBRICATION

- Good lubrication is vital to long chain life. The load chain should be kept well oiled with SAE 30 weight oil. Be sure that the oil is worked into the area between the links.
- If the hoist is disassembled for inspection or repair, relubricate the moving parts according to Table 3.

### CAUTION

The brake surfaces must be kept free of any trace of oil or grease. Apply lubricant sparingly to the parts near the brake to avoid oil contamination of the brake.

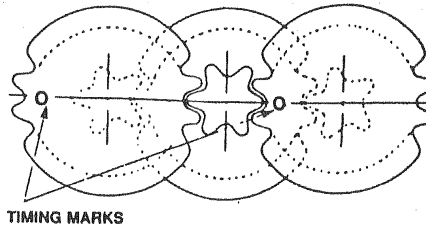
**TABLE 3. RECOMMENDED LUBRICANTS**

| PART  | LUBRICANT                       |
|---|---------------------------------|
| Gears, bearings, pawl pivot pin, guide roller pin, hook shanks, and chain wheel threads | Any good quality NLGI #2 grease |
| Chain   | SAE 30 weight oil               |
| Brake parts, ratchet teeth  | Do Not Lubricate                |

### ASSEMBLY

Assembly is the reverse of disassembly. Be sure to note the following points.

- The twin gears each have an "O" stamped on them which is used as a timing mark. The twin gears must be installed so that the timing marks both point to exactly the 9 o'clock position at the same time (see Figure 2).



**TIMING MARKS**

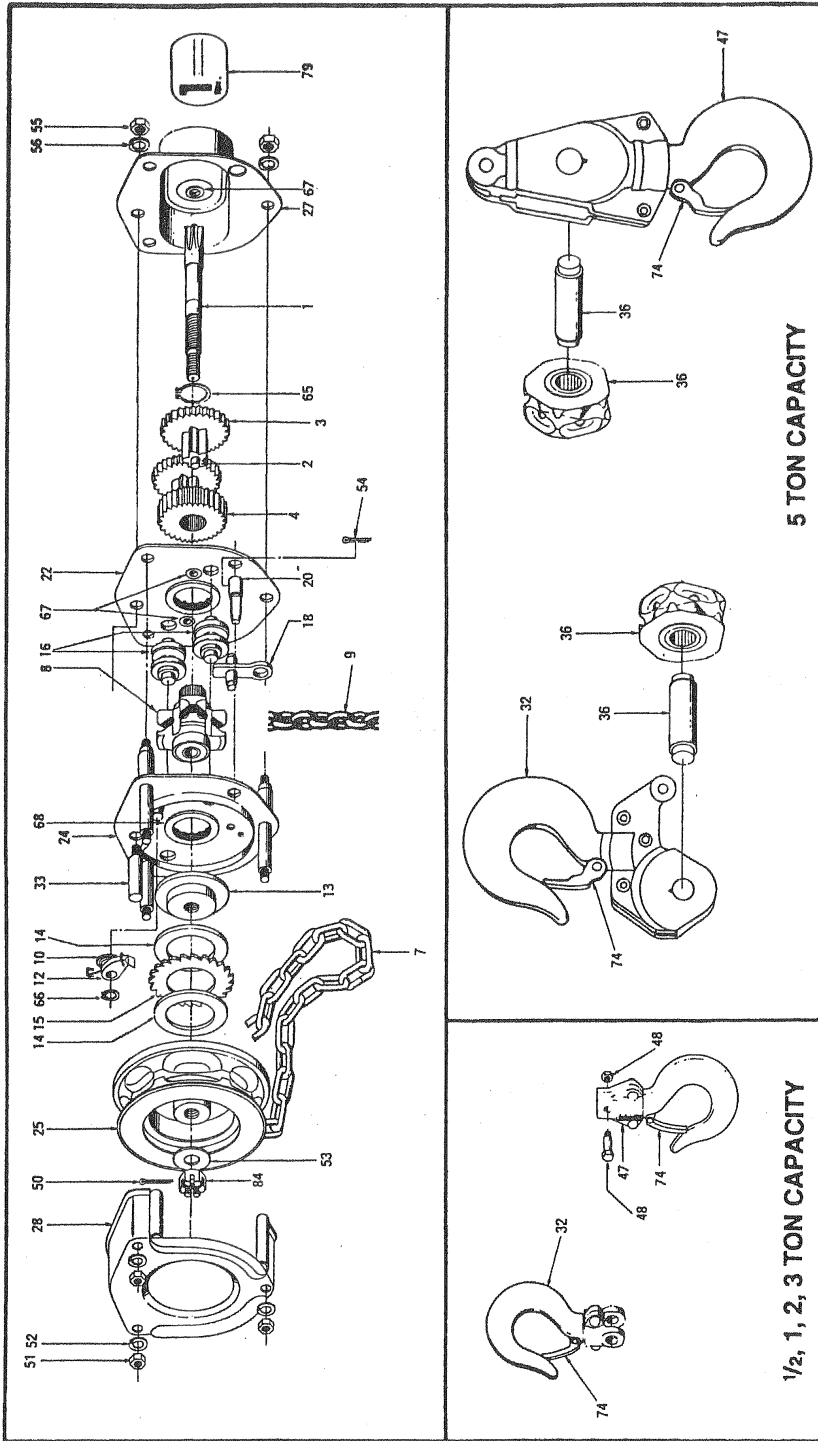
**FIGURE 2.**

- Assemble the brake parts as shown in the exploded view (Figure 3). Screw hand chain wheel down tight. Screw the nut down finger tight on the input shaft, then back it off approximately one-quarter turn and install the cotter pin.
- Install chain by running a piece of wire or string between the chain guide roller and load sprocket and then over and around the load sprocket. Tie the chain to the wire or string and pull it into the hoist so that the first link is standing on edge in one of the slots of the load sprocket, with the weld away from the sprocket. Operate hoist in the UP direction, pulling about a foot of chain around the sprocket and out the hoist. Remove the cotter pin from the slack end pin and slide the pin to one side. Pull the end of the chain under the chain guide roller and hook the last link over the slack end pin, being sure the chain has no twist. Slide the slack end pin back into position and install the cotter pin through it.

### CAUTION

Be sure the slack end of chain passes between the chain guide roller and the load sprocket and under the chain guide roller.

FIGURE 3 — EXPLODED VIEW



### PARTS LIST

| Description                   | Consist of Index No.                 | 1/2 Ton Part No. | 1 Ton Part No. | 2 Ton Part No. | 3 Ton Part No. | 5 Ton Part No. |
|-------------------------------|--------------------------------------|------------------|----------------|----------------|----------------|----------------|
| Pinion Shaft                  | 1                                    | GHH5001          | JHH5001        | LHH5001        | NHH5001        | KHH5001        |
| Pinion Gear                   | 2, 3 (Set of 2)                      | GHH5003T         | JHH5003T       | LHH5003T       | NHH5003T       | KHH5003T       |
| Load Gear                     | 4                                    | GHH5004          | JHH5004        | LHH5004        | NHH5004        | KHH5004        |
| Load Sheave                   | 8                                    | GHE5008          | JHE5008        | LHE5008        | NHH5008        | KHH5008T       |
| Hand Chain (Per Foot)         | 7                                    | GHH5009J         | GHH5009J       | GHH5009J       | GHH5009J       | GHH5009J       |
| Load Chain (Per Foot)         | 9                                    | GH5009T          | JHH5009T       | LHH5009T       | NHH5009T       | KHH5009T       |
| Pawl Kit                      | 10, 12, 66                           | GHH5099          | JHH5099        | LHH5099        | NHH5099        | KHH5099        |
| Disc Hub                      | 13                                   | GHH5013          | JHH5013        | LHH5013        | LHH5013        | KHH5013        |
| Friction Disc                 | 14 (Set of 2)                        | GHH5014          | JHH5014        | LHH5014        | LHH5014        | KHH5014        |
| Ratchet                       | 15                                   | GHH5015          | JHH5015        | LHH5015        | LHH5015        | KHH5015        |
| Handwheel Cover               | 28                                   | GHH5028          | JHH5028        | LHH5028        | NHH5028        | KHH5028        |
| Top Hook                      | 32 w/74                              | GHH5032T         | JHH5032T       | LHH5032T       | NHH5032T       | PHH5032T       |
| Bottom Hook                   | 47, 48 w/74                          | GHH5047U         | JHH5047U       | LHH5047U       | NHH5047U       | PHH5047U       |
| Chain Fastening Bolt          | 48                                   | GHH5048U         | JHH5048U       | LHH5048U       | NHH5048U       | PHH5048U       |
| Hardware Repair Kit Per Hoist | 50, 51, 52, 53, 54<br>55, 56, 65, 84 | GHH5586          | JHH5586        | LHH5586        | NHH5586        | KHH5586        |
| Bearing for Pinion            | 67 (Set of 4)                        | GHH5067          | GHH5067        | LHH5067        | TR132713NR     | KHH5067        |
| Bearing for Load Sheave       | 68 (Set of 2)                        | GHE5005          | JHE5005        | LHE5005        | TR506213NR     | TR364710NR     |
| Latch Kit                     | 74                                   | GHH5074U         | JHH5074U       | KHH5074U       | NHH5074U       | PHH5074U       |
| Chain Guide Kit               | 16 (2), 18, 20                       | GHH161820        | JHH161820      | LHH161820      | NHH161820      | KHH161820      |
| Gear Side Plate               | 22 w/o 67, 68                        | GHH5022          | JHH5022        | LHH5022        | NHH5022        | KHH5022        |
| Wheel Side Plate              | 24 w/o 68                            | GHE5024T         | JHE5024T       | LHE5024T       | NHE5024T       | KHE5024T       |
| Handwheel                     | 25                                   | GHH5025          | JHH5025        | LHH5025        | NHH5025        | KHH5025        |
| Gear Cover                    | 27 w/o 67, 79                        | GHH5027          | JHH5027        | LHH5027        | NHH5027        | KHH5027        |
| Yoke Pin                      | 33                                   | RH4010033        | RH4010033      | RH4020033      | HH4030033      | RH4015033      |
| Decal                         | 79                                   | LHH674 6         | LHH674 7       | LHH674 8       | LHH674 9       | LHH674 10      |
| Idle Sheave Assembly          | 36                                   | —                | —              | —              | —              | PHH5042        |

When ordering spare parts, be sure to state part number, capacity, model number and quantities referring to the above list.

# DO'S AND DO NOT'S

## Hand Chain Manually Operated Chain Hoists

The following warnings and operating practices have been taken from American National (Safety) Standard ANSI B30.16 and are intended to avoid unsafe hoisting practices which might lead to personal injury or property damage.

These recommendations apply to all hand chain manually operated chain hoists for vertical lifting service involving material handling of freely suspended unguided loads.

### WARNING: TO AVOID INJURY

1. DO read ANSI B30.16 Safety Standard for Overhead Hoists and the Hoist Manufacturer's Operating and Maintenance Instructions.
2. DO be familiar with hoist operating controls, procedures and warnings.
3. DO make sure the hoist suspension hook is securely attached to a suitable support.
4. DO maintain firm footing or be otherwise secured when operating hoist.
5. DO make sure that load slings or other approved attachments are properly sized and seated in the hook saddle.
6. DO make sure the hook latch, if used, is closed and not supporting any part of the load.
7. DO make sure that load is free to move and will clear all obstructions.
8. DO take up slack carefully, check load balance, lift a few inches, and check load holding action before continuing.
9. DO make sure all persons stay clear of the suspended load.
10. DO avoid swinging of load or load hook.
11. DO protect load chain from weld spatter or other damaging contaminants.
12. DO promptly report any malfunction, unusual performance, or damage of the hoist.
13. DO inspect hoist regularly, replace damaged or worn parts, and keep appropriate records of maintenance.
14. DO use the hoist manufacturer's recommended parts when repairing a hoist.
15. DO use hook latches wherever possible.
16. DO apply lubricant to load chain as recommended by the hoist manufacturer.
17. DO NOT lift more than rated load.
18. DO NOT use the hoist load limiting device to measure the load.
19. DO NOT use damaged hoist or hoist that is not working correctly.
20. DO NOT use hoist with twisted, kinked, damaged, or worn chain.
21. DO NOT lift a load unless chain is properly seated in chain wheel(s) or sprocket(s).
22. DO NOT use load chain as a sling or wrap load chain around the load.
23. DO NOT lift a load if any binding prevents equal loading on all supporting chains.
24. DO NOT apply the load to the tip of the hook.
25. DO NOT operate unless load is centered under hoist.
26. DO NOT operate hoist with other than manual power.
27. DO NOT permit more than one operator to pull on a single hand chain at one time.
28. DO NOT allow your attention to be diverted from operating the hoist.
29. DO NOT operate hoist beyond limits of load chain travel.
30. DO NOT use hoist to lift, support, or transport people.
31. DO NOT lift loads over people.
32. DO NOT leave a suspended load unattended unless specific precautions have been taken.
33. DO NOT allow sharp contact between two hoists or between hoist and obstructions.
34. DO NOT allow the chain or hook to be used as a ground for welding.
35. DO NOT allow the chain or hook to be touched by a live welding electrode.
36. DO NOT remove or obscure the warnings on the hoist.
37. DO NOT adjust or repair a hoist unless qualified to perform hoist maintenance.
38. DO NOT attempt to lengthen the load chain or repair damaged load chain.

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