VULCAN
HOIST - PALAN

OPERATOR'S MANUAL

ELECTRIC CHAIN HOISTS ¼ TO 15 TON CAPACITY

WARNING

DO NOT INSTALL, OPERATE OR PERFORM MAINTENANCE ON THIS EQUIPMENT BEFORE READING THIS MANUAL IN ITS ENTIRETY. FAILURE TO READ AND COMPLY WITH THE CONTENTS OF THIS MANUAL CAN RESULT IN SERIOUS BODILY INJURY, DEATH AND/OR PROPERTY DAMAGE.

VER 2026-09-01

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Table of Contents

1. Important Information and Warning 5
2. Technical Information 8
    2.1 Product Identification 8
    2.2 Applicable Hoists Standards 9
3. Unpacking and Installation 9
    3.1 Unpacking 9
        3.1.1 Putting the Hoist Down 10
    3.2 Mounting the Hoist 10
        3.2.1 Changing the Upper Hook or the Lug's Orientation 11
        3.2.2 Lug Mounting on Manual Trolleys' Stay Bolts 11
        3.2.3 Lug Mounting on Electric Trolley 12
        3.2.4 Lug Mounting 10 Ton Hoists to an Electric Trolley 12
    3.3 Chain Container Installation 13
        3.3.1 With Safety Stop 14
        3.3.2 With Chain Guide 15
        3.3.3 Without Chain Guide and Safety Stop 16
        3.3.4 Metal Chain Container 17
    3.4 Lubricating the Chain 18
    3.5 Chain 18
    3.6 Electrical Connection 19
        3.6.1 Thermal Overload Relay 19
        3.6.2 Wiring a Standalone Hoist to its Power Source 20
        3.6.3 Hoists Wired to an Electric Trolley 20
        3.6.4 Wiring 10 and 15 Ton Hoists without Electric Trolleys 21
        3.6.5 Checking for Adequate Voltage at Hoist 21
    3.7 Phase Sequence Relay 23
    3.8 Functional Verification and Trial Operations 24
4. Operation 25
    4.1 Introduction 25
    4.2 Operation Instructions 26
    4.3 Daily or Prestart Inspection 28
    4.4 Hoist Controls 29
    4.5 Hoist Secondary Emergency Limit Devices Operation 30
        4.5.1 Safe Operation of the Safety Stop 30
        4.5.2 Safe Use of the Chain Guide 31
5. Inspections 33
    5.1 General 33
    5.2 Inspection Classification 33
        5.2.1 Initial Inspection 33
        5.2.2 Inspection Classification 33
        5.2.3 Frequent Inspection 33
        5.2.4 Periodic Inspection 33
    5.3 Frequent Inspection 34
    5.4 Periodic Inspection 34
    5.5 Occasionnally Used Hoists 35
    5.6 Inspection Records 35
    5.7 Inspection Methods and Criteria 35
        5.7.1 Inspection Items 35
        5.7.2 Load Chain Discard Criteria 38
        5.7.3 Hook Measurements and Discard Criteria 38
6. Maintenance 40
    6.1 Maintenance Schedule and Records 40
    6.2 Lubrication — Load Chain, Hooks, and Suspension 40
        6.2.1 Load Chain 40
        6.2.2 Hooks and Suspension Components 40
    6.3 Lubrication – transmission 41
        6.3.1 Previous Hoist Generation 42
        6.3.2 New Hoist Generation 43

6.4 Load Chain 43
6.4.1 Lubrication and Cleaning 43
6.4.2 Load Chain Replacement 43
6.5 Adjusting your Vulcan Limit Switches 44
6.5.1 Removing the Electrical Enclosure Cover on New Generation Hoists 46
6.6 Adjusting the Disc Brake 46
6.6.1 Adjusting HOPHL-120 and HOPHL-120S Brakes 47
6.6.2 Adjusting HOPHL-180 Brake 47
6.7 Storage 47
6.8 Outdoor Installation 47
6.9 Operational Environment 49
7. Troubleshooting 49
8. Parts List 50
9. Warranty 51
Appendix 52

1. Important Information and Warning

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. UNLESS OTHERWISE NOTED, TONS IN THIS MANUAL ARE US SHORT TONS (2,000 lb).

Danger, Warning, Caution, and Notice

Throughout this manual, there are steps and procedures which, if not followed, may result in injury, death, or substantial property damage if the warning is ignored.



Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



Indicates a potentially hazardous situation, which, if not avoided, could result in death or serious injury.



Indicates a potentially hazardous situation, which, if not avoided, could result in minor or moderate injury or property damage.



Indicates information or a company policy that relates directly or indirectly to the safety of personnel or protection of property.

For any questions or comments:

Phone: 514 728-4527
E-mail: info@vulcanhoist.com



WARNING

Equipment described herein is not designed for and **must not be used for lifting, supporting, or transporting people** or **for lifting or supporting loads over people.**

Equipment described herein should not be used in conjunction with other equipment unless necessary applicable and/or required safety devices relevant to the system, crane, or application have been properly installed by the system designer, system manufacturer, crane manufacturer, installer or user.

Modifications to upgrade, rerate, or otherwise alter this equipment shall be authorized only by the original equipment manufacturer.

Equipment described herein may be used in the design and manufacture of larger machines like cranes or monorails. In those cases, additional equipment or devices may be required for the crane and monorail to comply with applicable design and safety standards. The crane designer, crane manufacturer, or user is responsible for furnishing said equipment. Refer to ANSI/ASME B30.17, "Overhead and Gantry Cranes (Top Running Bridge, Single Girder, Underhung Hoist)"; ANSI/ASME B30.2 "Overhead and Gantry Cranes (Top Running Bridge, Single or Multiple Girder, Top Running Trolley Hoist)"; and any other applicable ASME B30 standards.

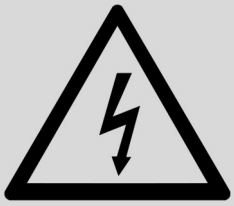
If a below the hook lifting device or a sling is used with the hoist, the user is responsible for their proper use and maintenance and should refer to ANSI/ASME B30.9 "Slings" or ANSI/ASME B30.20 "Below-The-Hook Lifting Devices".

Hoists and cranes used to handle molten material may require additional equipment or devices. Refer to ANSI Z241.2, "Safety Requirements for Melting and Pouring of Metals in the Metal Casting Industry".

Electrical equipment described herein is designed and built in compliance with Vulcan Hoist's interpretation of ANSI/NFPA 70, "National Electric Code" and CSA C22.1, "Canadian Electric Code". The system designer, system manufacturer, crane designer, crane manufacturer, installer or user is responsible for ensuring that the installation and associated wiring of these electrical components is in compliance with and all applicable Federal, State, Provincial and Local Codes.

FAILURE TO COMPLY WITH ANY ONE OF THE LIMITATIONS NOTED HEREIN CAN RESULT IN SERIOUS BODILY INJURY, DEATH, AND /OR PROPERTY DAMAGE.

DANGER



Hazardous voltages are present in the electrical components and connections between these components.

Before performing ANY mechanical or electrical maintenance on the equipment, disconnect the main switch supplying power to the equipment and lock and tag the main switch in position.

Refer to ANSI Z244.1, “Personal Protection — Lockout/Tagout of Energy Sources”.

Only trained and competent qualified personnel shall inspect and repair this equipment.

NOTICE

It is the responsibility of the owner /user to install, inspect, test, maintain, and operate this hoist in accordance with ANSI/ASME B30.16, "Overhead Hoists (Underhung)". If the hoist is installed as part of a larger lifting system, such as an overhead crane or monorail, it is also the responsibility of the owner/user to comply with the applicable ANSI/ ASME B30 volumes that address that type of equipment.

It is the responsibility of the owner/ user to have all personnel involved with the installation, inspection, testing, maintenance and operation of a hoist read the content of this manual and applicable portions of ANSI/ ASME B30.16, "Overhead Hoists (Underhung)”. If the hoist is installed as part of a larger lifting system, such as an overhead crane or monorail the applicable ANSI/ASME B30 volumes that address that type of equipment must also be read by all personnel involved.

If the hoist owner /user requires additional information, or if any information in the manual is not clear, contact Vulcan Hoist. Do not install, inspect, test, maintain, or operate this hoist unless this information is fully understood.

Inspection of the hoist must be performed on a regular basis in accordance with the ANSI/ASME B30.16 standard by a qualified individual. The owner/user is responsible for maintaining a record of all inspections performed on the hoist. A regular schedule of inspection of the hoist in accordance with the requirements of ANSI/ASME B30.16 should be established and records maintained.

Warning Labels and Nameplates

The warning labels and nameplates illustrated below are supplied on every hoist to which they apply. If one of these labels or nameplate are missing, order and install it. Read and follow all warnings attached to your hoist.

All Hoists

IMPORTANT - IMPORTANT - IMPORTANT

HUILER LA CHAÎNE RÉGULIÈREMENT | OIL CHAIN REGULARLY

or



3-Phase Powered Hoists

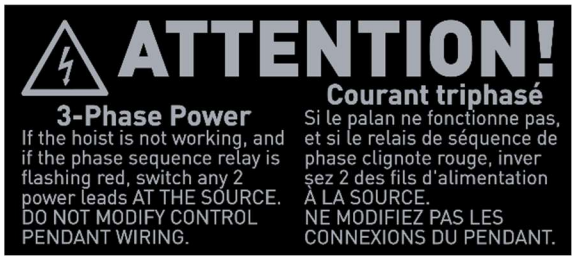
ELECTRIC CONNECTION ÉLECTRIQUE *3 PHASES*

BE SURE WHEN YOU PUSH "UP" BUTTON, HOOK GOES UP. IF HOOK GOES DOWN, REVERSE 2 POWER LEADS ONLY (RED & BLACK) AT THE WALL. *NEVER IN PUSH BUTTON*

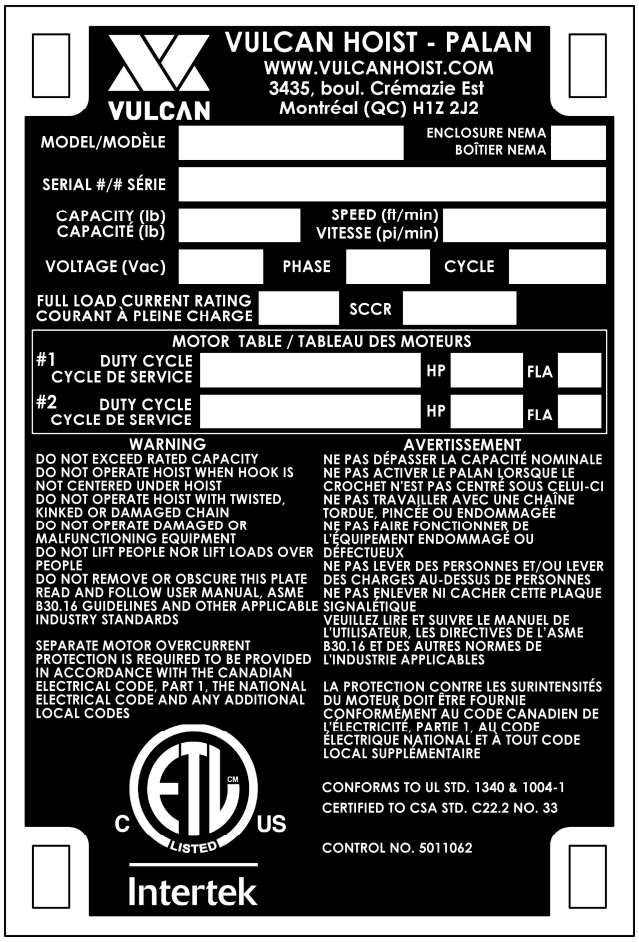
ASSUREZ-VOUS QUE LE CROCHET MONTE QUAND VOUS APPUYEZ SUR LE BOUTON « UP » SINON, INVERSEZ 2 FILS (ROUGE & NOIR) À L'ENTRÉE DU COURANT.

***** ATTENTION ATTENTION *****

or

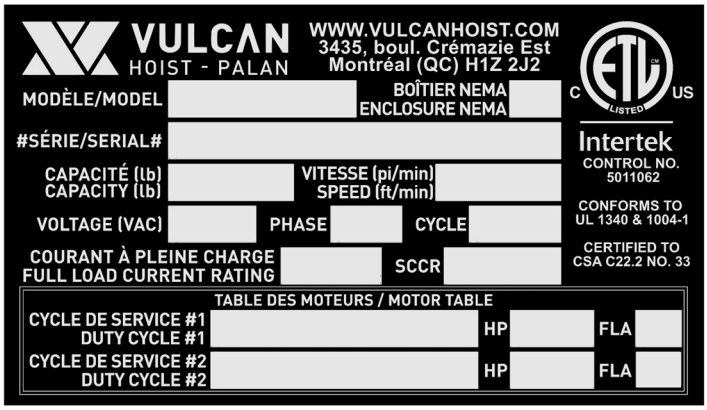


Previous Generation Hoists



New Generation Hoists





DANGER

The load chain must be oiled and free from abrasive dust along its entire length before first use and during its entire operating life. Make sure the oil gets inside the chain links, where they contact each other. Using an improperly lubricated chain may cause premature wear which can cause it to break, potentially dropping a load which could lead to serious injury or death.

2. Technical Information

2.1 Product Identification

Model Number



Type of Chain	Capacity	Voltage	Lifting Speed	Gear Ratio	Number of Speeds
L= Link chain R= Roller chain	05= ¼ ton 1= ½ ton 2= 1 ton 3= 1,5 tons 4= 2 tons 6= 3 tons 10= 5 tons 20= 10 tons 30 = 15 tons 33 = 15 metric tons	A=115 V. 1 Ph. F= 230 V. 1 Ph. H=208 V. 3 Ph 230 V. 3 Ph. T= 380 V. 3 Ph. 400 V. 3 Ph. 415 V. 3 Ph. 460 V. 3 Ph. V= 575 V. 3 Ph.	2 fpm to 52 fpm	Primary: 1 to 5 Secondary: blank or 2	Blank : 1 speed X2 : 2 speeds

Serial Number



Blank = Std. hook L = Low headroom (lug mounted)	Sequential Number	Motor Brand	Brake	Hoist Generation	Manufacturing Date
		E = Emerson D = Doerr N = Nidec A = AGI W = Weg	V= HOPHL-120 U = HOPHL-180 Z = HOPHL-120S	A = Previous generation (oval) G = New generation (octogonal)	XXX = Year (without century) ZZ = Month

Operating Conditions and Environment

Temperature Range	- 20 °C to 40 °C
Humidity	85% or less
Enclosure Rating	Optional NEMA 4 controller and TENV/TEFC
Duty Cycle	H2 to H4, see Appendix

2.2 Applicable Hoists Standards

1. All Vulcan hoists are manufactured in compliance with Vulcan Hoist's interpretation of the applicable sections of ANSI/ASME B30.16 "Overhead Hoists (Underhung)".

2. The user is responsible for installing the equipment in accordance with all provincial/state and local regulations applicable to the location where the equipment will be used.

3. Hoists accompanied by this manual meet ANSI/ASME HST - 1M "Performance Standard for Electric Chain Hoists" hoist duty class ratings.

4. Vulcan Hoist hoists meet the following standards according to Intertek's approval:

- CSA C22.2 no. 33 Electrical Safety Requirements for Cranes and Hoists
- UL 1340 Standard for Hoists
- UL 1004-1 Standard for Rotating Electrical Machines - General Requirements

5. In addition, Vulcan Hoist is part of Intertek's control panel manufacturer program, which covers the hoist control.

- CSA C22.2 No 286 Industrial Control Panels and Assemblies
- UL508A Industrial Control Panels

3. Unpacking and Installation

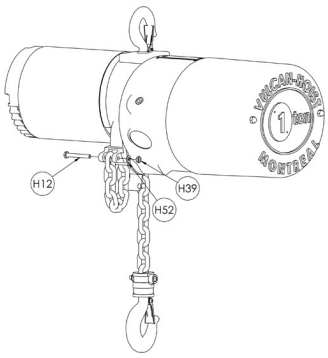
3.1 Unpacking

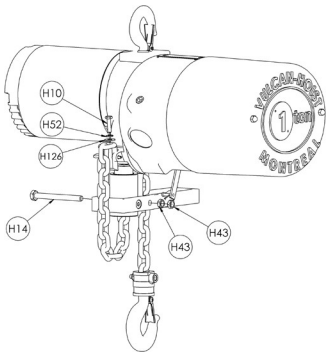
After opening the box, carefully remove the cardboard tray and set the control cables to the side of the box. Using an external lifting device, use the hoist's upper hook or lug to raise it until it is completely out of the box. It may be necessary to hold the box down.

Once the hoist is out of the box, carefully remove any cardboard, foam, or plastic wrap still attached to the hoist.

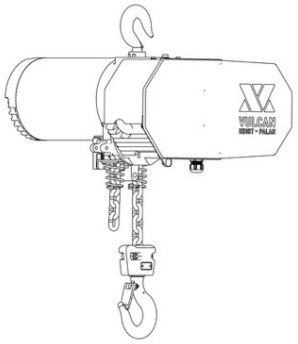
Ensure that every part of the hoist, including the chain, are free of any debris or packaging material. Inspect hoist for any scratches, dents or other damage that may have occurred during transport. When the hoist is used without a chain container, the loose end of chain must be attached to the hoist or have a bolt going through the last chain link (see figure 3.1).

s





Chain Guide

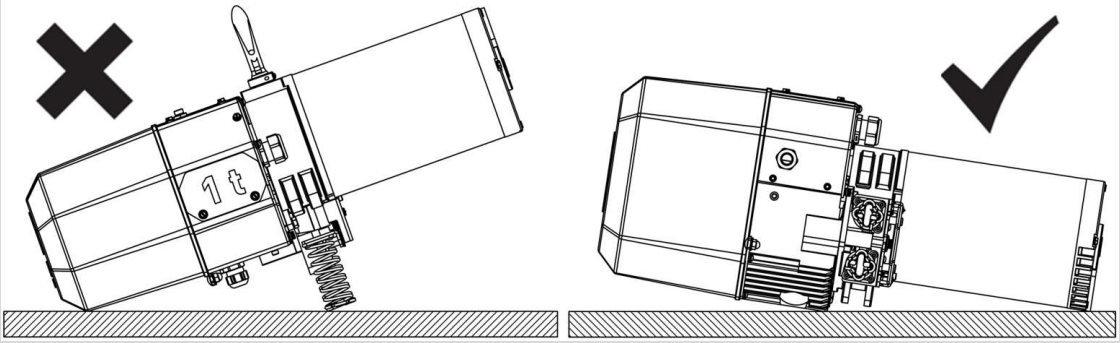


Safety Stop

3.1.1 Putting the Hoist Down

CAUTION

When putting the hoist on a flat surface, make sure to do so in a way which doesn't overstress the safety stop's springs and/or electrical cables coming out of the hoist.



3.2 Mounting the Hoist

WARNING

Ensure the fixed suspension point rests on the center of the hook's saddle and that the hook's safety latch is engaged.



Manual trolley — Follow the instructions in the operator's manual provided with the trolley.

Motorized trolley — Follow the instructions in the operator's manual provided with the trolley.

Hook mounted to a fixed location — Attach the hoist's top hook to the fixed suspension point.

3.2.1 Changing the Upper Hook or the Lug's Orientation

The hoist's upper hook or lug's orientation can be changed by loosening the collar at its base. (see figure 3.2.1). Do not forget to retighten the collar after having changed its orientation.

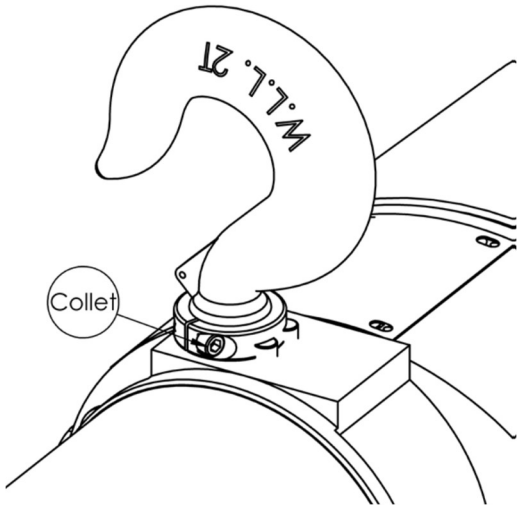


Figure 3.2.1

3.2.2 Lug Mounting on Manual Trolleys' Stay Bolts

WARNING

Do not loosen the collar and do not change the upper hook or lug's orientation while the hoist is loaded.

CAUTION

The collar at the upper hook or lug's base must be tight in order to prevent it from rotating while using the hoist.

Once the hoist is installed, check that the upper hook or lug cannot rotate.

NOTICE

The upper hook or lug's orientation cannot be changed on hoists equipped with the optional electro-mechanical overload protection (OLP).

Lugs made for manual and electric trolleys are not inter-compatible.

If the hoist is lug-mounted to a stay bolt (the threaded shaft linking both halves of the trolley), the lug will have to be tightened with the stay bolt pipes and washers at the torque specified in the trolley's manual.

Make sure the lug is centered on beam and the trolley. Before tightening the stay bolt, hang a small load on the hoist's lower hook to make sure that the hoist is correctly positioned. Once the stay bolt is tightened, the ug should not be able to pivot.

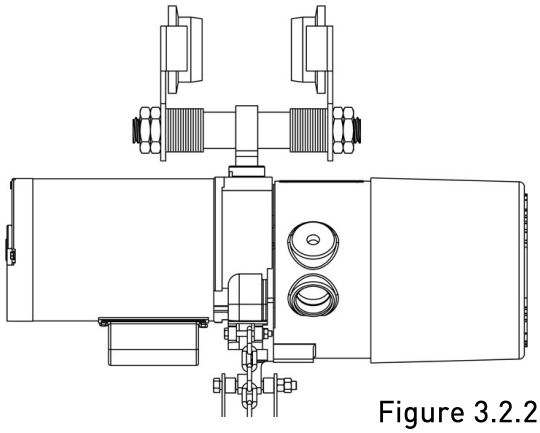


Figure 3.2.2

3.2.3 Lug Mounting on Electric Trolley

If the hoist is mounted on a trolley by a pin, the pin will not be tightened, and the hoist could pivot around it.

Start by installing the trolley on its beam and torquing its stay bolts. Then, slide the lug between the two plates holding the load pin and push the load pin in until its hole sits flush with the plate. Insert and open the provided cotter pin at each end of the load pin to prevent the load pin from falling off.

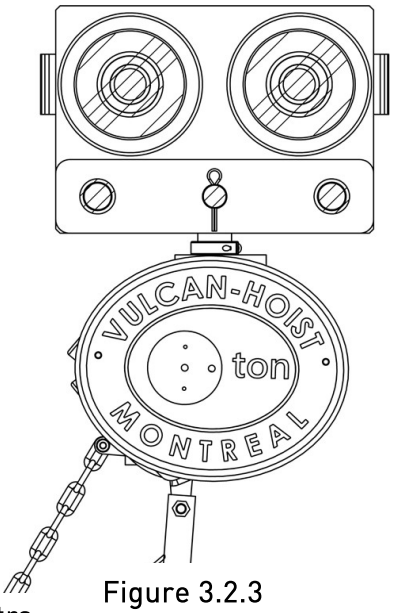


Figure 3.2.3

3.2.4 Lug Mounting 10 Ton Hoists to an Electric Trolley

10-ton hoists are made from two 3 fall hoists working on the same lower hook. Mounting is similar to the method described in the previous section, but some extra instructions are needed.

Mount one 3 fall hoist at a time. Finish the first installation before starting the second. Both 3 fall hoists must face in opposite directions, with their chain baskets towards the trolley's exterior.

1. Load pins go through the entire trolley (see figure 3.2.4). Insert the load pin by its narrow end through the trolley's side plates and load plates and the hoist's lug. Insert the provided washers on the narrow end, then insert and open the provided cotter pin to hold everything in place.
2. Repeat for the second 3 fall hoist.
3. Make sure that the lifting chain is correctly aligned between the two 3 fall hoists. It must not be twisted, and all 6 loaded chain falls must be in the same vertical plane.
4. Check that both 3 fall chain hoists are parallel to each other and perpendicular to the beam. Adjust the lug's orientation if needed. It is possible that the 3 fall hoists touch each other; this is normal.

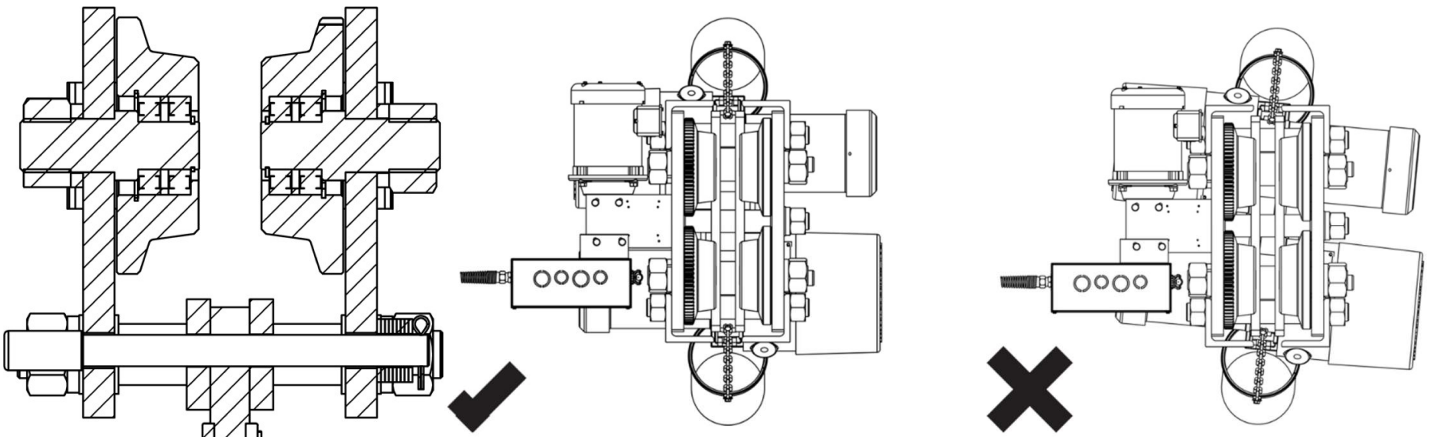


Figure 3.2.4

3.3 Chain Container Installation

DANGER

Improper installation of chain container could result in chain and hoist damage leading to a potentially hazardous situation, which, if not avoided, could result in death or serious injury.

WARNING

DO NOT modify or install a homemade chain container. Use only the Vulcan Hoist chain container.

NEVER knot chain or attach foreign objects to the chain to act as limits or chain holders. This could cause serious injury and / or serious damage to chain and hoist.

When installing the chain container, be sure to assemble the spacers the right way (the longer one closer to the motor), and that the chain and lower hook do not rub on the chain container.

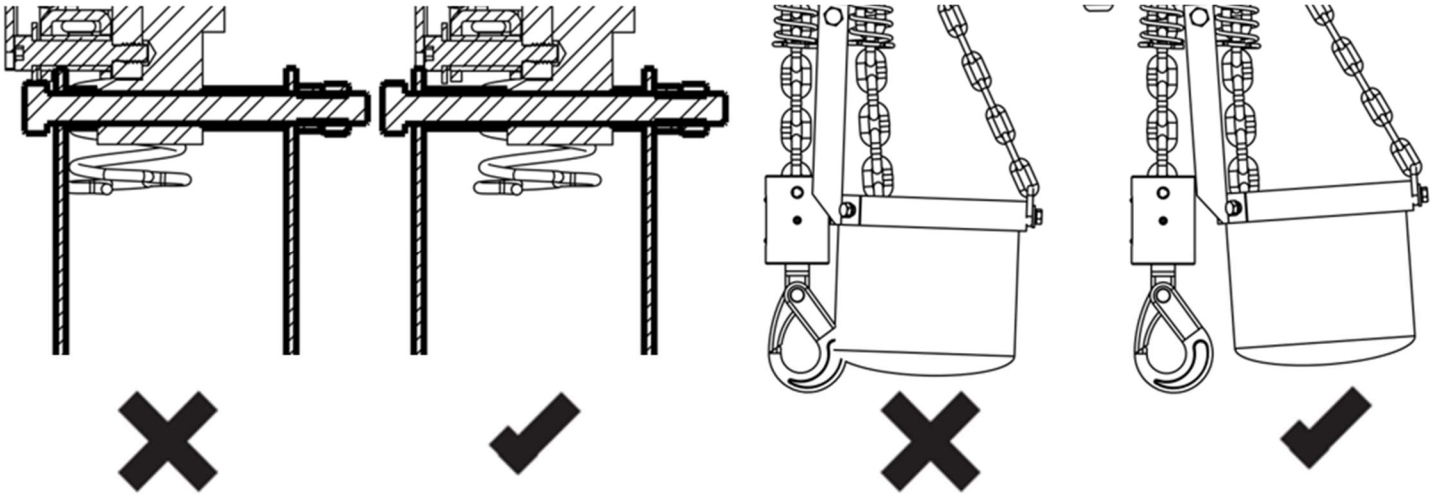


Figure 3.3

3.3.1 With Safety Stop

See Figure 3.1 to distinguish between the chain guide and the safety stop. See Figure 4.5.1 to distinguish between the 1 and 2 chain falls safety stop and the 3 chain falls safety stop.

1. Lower the hook until there are 2 feet of chain left on the free end of the chain (on the chain basket side).

2. Turn off and lockout/tagout the hoist's power source.

3. Remove bolt H14, its 2 nuts H43 and the two spacers H116D and E from the chain basket. Line up the chain basket's mounting hole with the corresponding hole on the hoist (see figure 3.3.1).

4. Insert bolt H14, and the H116D spacer into the hoist's frame hole between the chain falls. It's important that the longest spacer be on the motor side to align the chain basket with the chain exiting the hoist and to ensure that the chain basket does not interfere with the safety stop. Push the bolt H14 until it sticks out of the hoist to insert the H116E spacer. Push the bolt H14 all the way through, screw on both nuts H43 and tighten one against the other.

5. Remove bolt H12 and nut H39. Put the free end of the lifting chain in the chain basket. Fasten the chain basket's chain to the hoist's frame with bolt H12 and nut H39 (see figure 3.3.1).

6. Turn on the hoist's power source.

7. Check that the lifting chain does not chafe on the chain basket; this could damage prematurely the chain basket. If the lifting chain does chafe the chain basket, adjust the chain basket's chain by one chain link.

8. A) Once the chain basket has been correctly fastened, activate the hoist in the "UP" direction gradually to lower the whole chain into the chain basket to avoid knotting. This must be done WITHOUT load; check that the whole chain goes into the chain basket correctly.

B) Once the chain basket has been correctly fastened, activate the hoist in the "UP" direction gradually to lower the whole chain into the chain basket to avoid knotting. This must be done WITH load; check that the whole chain goes into the chain basket correctly.

9. Make sure that a load will not hit the chain basket. A load hitting the chain basket could cause the chain to knot, causing it to eventually break which could cause serious injuries to operators and other people. If needed, adjust the limit switch to stop loads before they hit the chain basket.

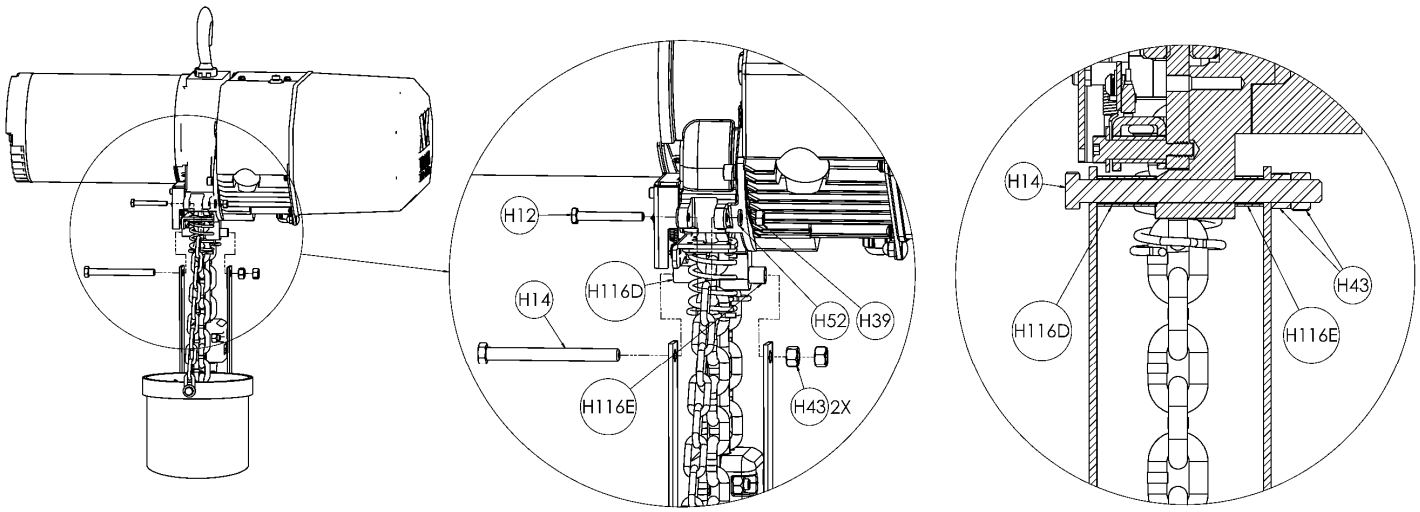


Figure 3.3.1

3.3.2 With Chain Guide

See Figure 3.1 to distinguish between the chain guide and the safety stop.

1. Lower the hook until there are 2 feet of chain left on the free end of the chain (on the chain basket side).

2. Turn off and lockout/tagout the hoist's power source.

3. Remove the bolt H14 from the limit lever, install chain container arms on the outside of the limit lever. Install bolt H14 through the chain container arms and limit lever. Install 2 nuts H43 and tighten them against each other. (do not tighten to the limit lever). See Figure 3.3.2 below.

4. Install the end of the chain attached to the chain container into the designated hole on the casting with bolt H91 and washers H52 and H16.

5. Manually verify if the limit lever moves freely. This is your safety limit switch control.

6. Adjust the chain container's level.

7. Check that the lifting chain does not chafe on the chain basket; this could damage prematurely the chain basket. If the lifting chain does chafe the chain basket, adjust the chain basket's chain by one chain link.

8. A) Once the chain basket has been correctly fastened, activate the hoist in the "UP" direction gradually to lower the whole chain into the chain basket to avoid knotting. This must be done WITHOUT load; check that the whole chain goes into the chain basket correctly.

B) Once the chain basket has been correctly fastened, activate the hoist in the "UP" direction gradually to lower the whole chain into the chain basket to avoid knotting. This must be done WITH load; check that the whole chain goes into the chain basket correctly.

9. Make sure that a load will not hit the chain basket. A load hitting the chain basket could cause the chain to knot, causing it to eventually break which could cause serious injuries to operators and other people. If needed, adjust the limit switch to stop loads before they hit the chain basket.

10. Once the chain container is securely in place, feed the free end of the load chain gradually into the chain container to prevent the chain from bundling.

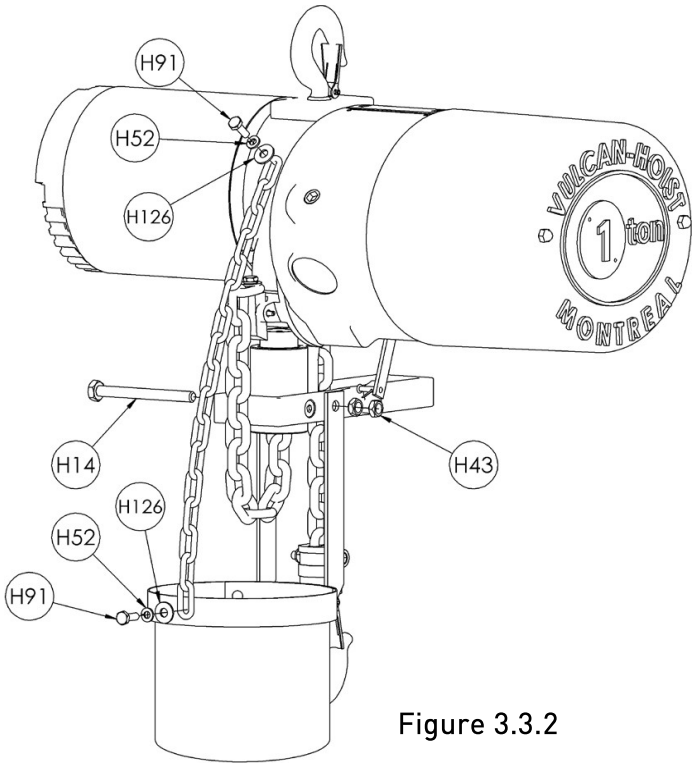


Figure 3.3.2

3.3.3 Without Chain Guide and Safety Stop

See Figure 3.1 to distinguish between the chain guide and the safety stop.

1. Lower the hook until there are 2 feet of chain left on the free end of the chain (on the chain basket side).

2. Turn off and lockout/tagout the hoist's power source.

3. Using the bolt, attach the chain bag to the hole located at the bottom of the hoist frame. Insert bolt H14 through the chain bag and the frame hole, with one 116A bushing on each side of the hole. Tighten both H43 nuts; see figure 3.3.3 below.

4. Remove bolt H12 and nut H39. Put the free end of the lifting chain in the chain basket. Fasten the chain basket's chain to the hoist's frame with bolt H12 and nut H39 (see figure 3.3.1).

5. Turn on the hoist's power source.

6. Verify if the load chain is rubbing on the chain container; this would cause premature chain container wear. If the chain is rubbing on the container, adjust the chain container's chain by one link.

7. A) Run the hoist WITHOUT load; check that the whole chain goes into the chain basket correctly.

B)) Run the hoist WITH load; check that the whole chain goes into the chain basket correctly.

8. Make sure that a load will not hit the chain basket. A load hitting the chain basket could cause the chain to knot, causing it to eventually break which could cause serious injuries to operators and other people. If needed, adjust the limit switch to stop loads before they hit the chain basket.

9. Once the chain container is securely in place, feed the free end of the load chain gradually into the chain container to prevent the chain from bundling.

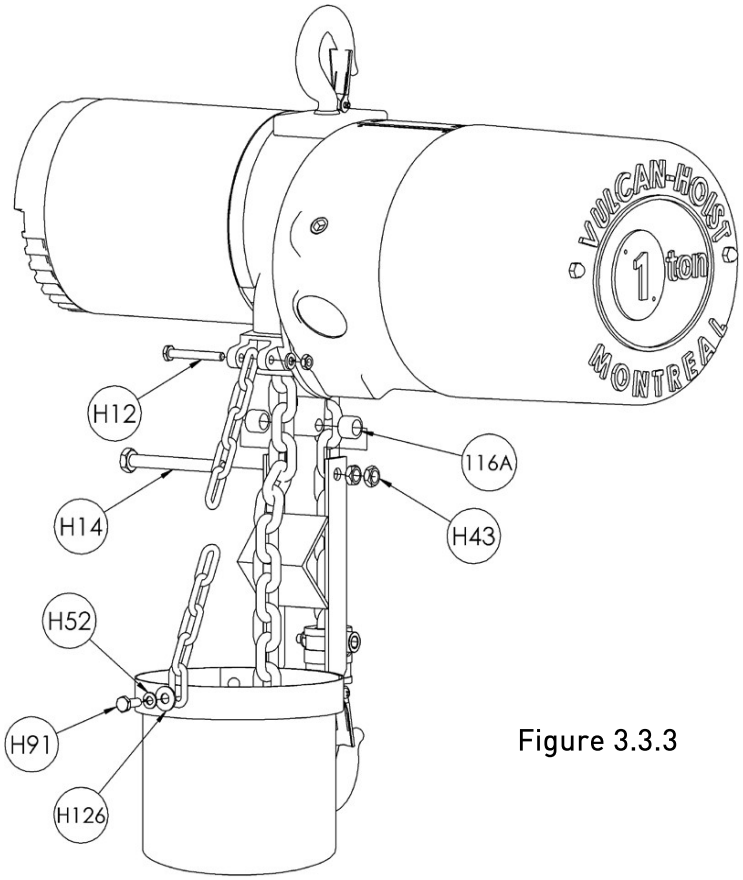


Figure 3.3.3

3.3.4 Metal Chain Container

Bolt the chain container's bracket to the hoist as described in the previous section.

Bolt the chain bumper and chain basket to their bracket as shown below (figure 3.3.4).

Depending on your chain container's size and hoist and trolley combo, a chain or steel cable will also be provided. It goes from the hole opposite the bracket to an anchor point which can be:

- The hoist's normal chain container anchor bolt
- Around the hoist's top hook
- A bolt on the hoist's top hook frame (10 and 15 t models)
- Around a trolley's stay bolt
- On a separate push trolley
- On a beam clamp

Contact Vulcan Hoist if you cannot find that anchor point.

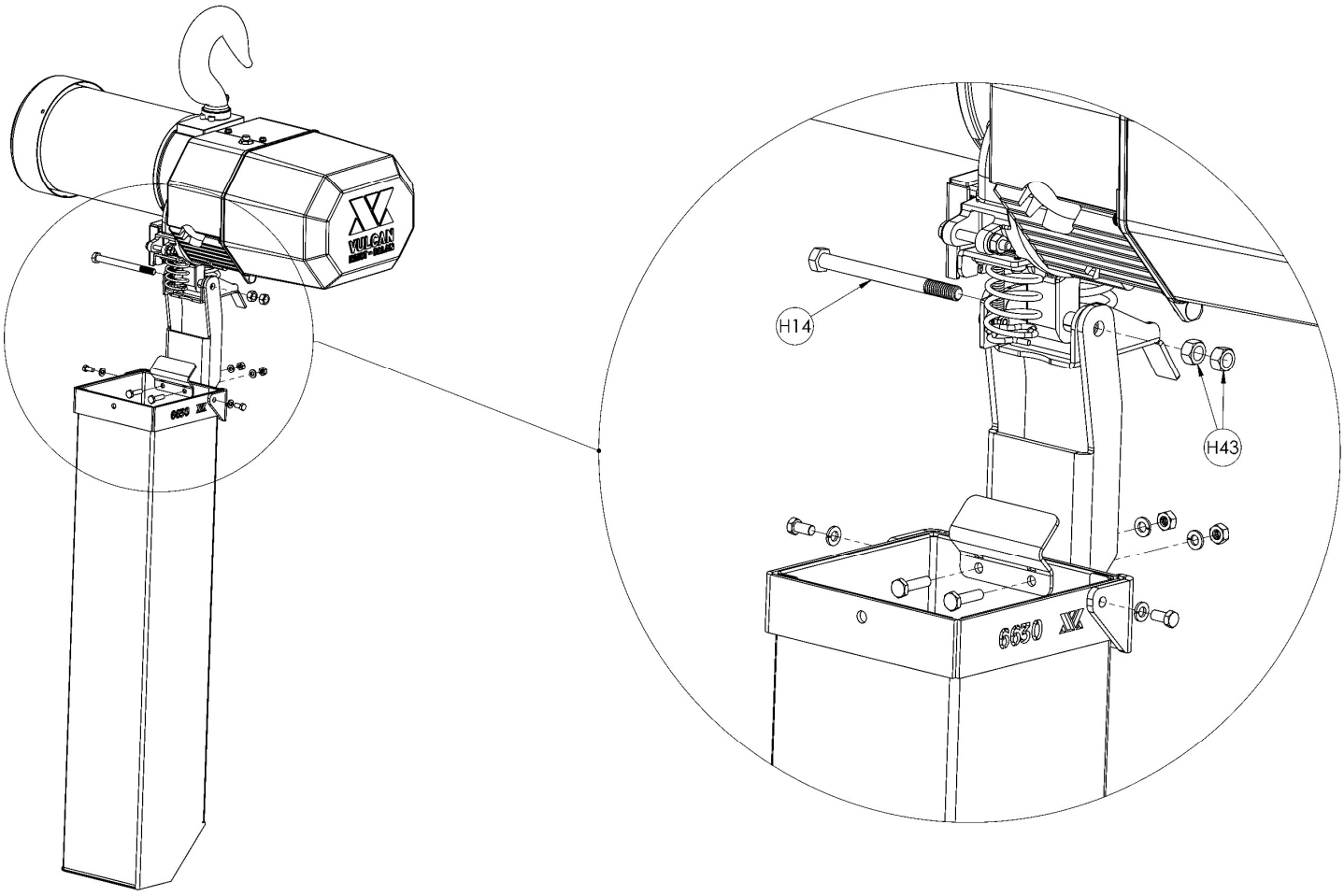


Figure 3.3.4

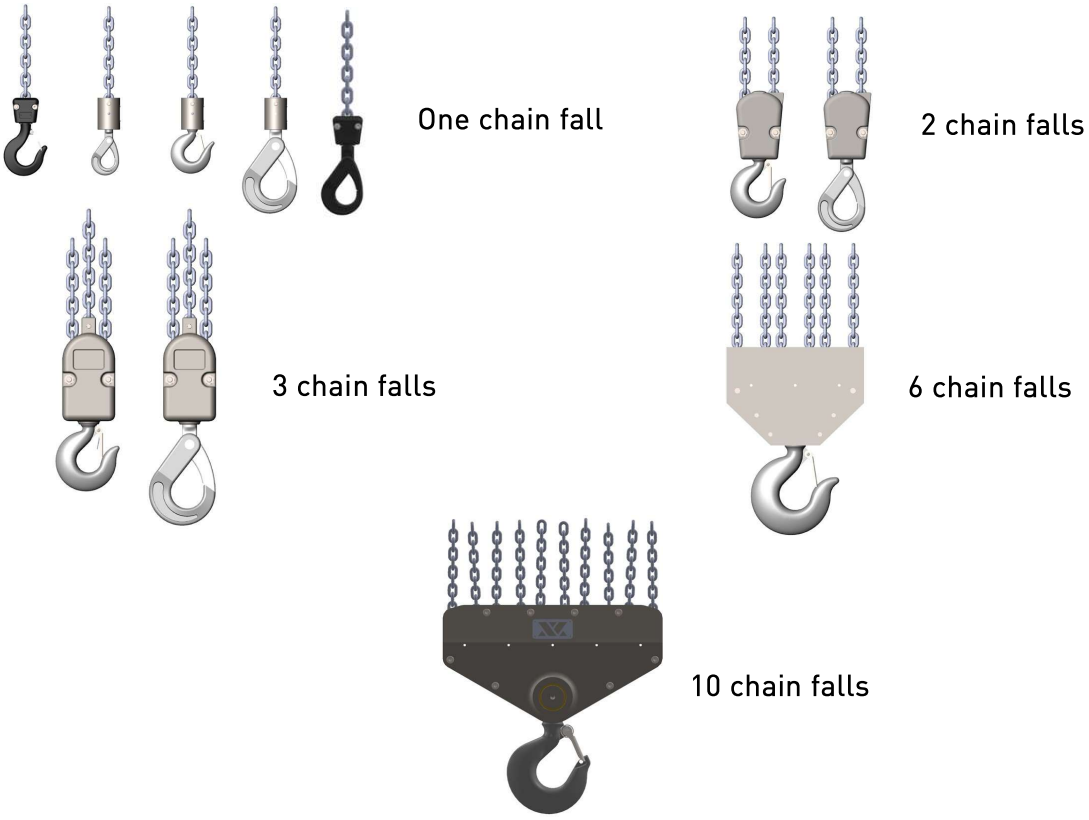
3.4 Lubricating the Chain

DANGER

The load chain must be oiled and free from abrasive dust along its entire length before first use and during its entire operating life. Make sure the oil gets inside the chain links, where they contact each other. Using an improperly lubricated chain may cause premature wear which can cause it to break, potentially dropping a load which could lead to serious injury or death.

3.5 Chain

The number of chain falls depends on the hoist model, capacity and options. Never operate the hoist with incorrect, missing, or damaged chain links. Refer to figure below to identify components.



DANGER



Verify that the load chain is not twisted or tangled prior to operating the hoist. Make sure bottom hook on 2, 3, 6, and 10 fall models (2 ton and over) is not capsized. Always ensure that the welds on the chain links are properly oriented. Correct all chain irregularities before operating hoist.

3.6 Electrical Connection

WARNING

If motor rotation is incorrect (power phases have been reversed), THE LIMIT SWITCHES, CHAIN GUIDE, AND SAFETY STOP WILL NOT FUNCTION PROPERLY, which may cause serious damage to the hoist and/or serious injury to the operator and others, notably by not preventing the hook from hitting the hoist nor preventing the hoist from dropping a load by running out of chain.

All electrical wiring of the hoist should be performed by a qualified electrician. Verify the hoist's current draw and its distance to its electrical inlet when the hoist is at the FURTHEST POSITION from the inlet. Inadequate wiring may cause the motor to burn, EVEN IF THERE IS NO LOAD ON THE HOIST.

The hoist must be connected in accordance withthe requirements of the Canadian Electrical Code, Part I — Overcurrent Protection.

The hoist must be connected to the electrical supply using one or more of the following devices, as recognized by the Code:

- Time-delay fuse, in accordance with the recommendations provided in tables A.1 and A.2 in the appendix
- Instantaneous-trip (magnetic only) circuit breaker, compliant with Section 28-210
- Self-protected combination motor controller, compliant with Section 28-500.

Note that hoists equipped with the optional overload protection relay are already compliant with the requirements of Section 28-500 of the Canadian Electrical Code.

NOTICE

115 V motors: do not plug the hoist into a standard household outlet. Although some models will work with these outlets, they may draw more current and exceed the capacity of the electrical circuit or interfere with other devices on the same circuit. Always do the connections in a junction box. Always consult a qualified electrician when you wire one or more hoists to the electrical network.



3.6.1 Thermal Overload Relay

The thermal overload relay triggers when the motor draws more amperage than an adjusted value over a predetermined time frame. A triggered relay will prevent you from running your hoist for approximately 5 minutes. This feature protects the motor from overheating. If the relay triggers repeatedly:

- Check the relay's set amperage value. It should be between 100% and 125% of the motor's FLA. The relay is located under the cover (see section 6.5.1)
- Avoid jogging the hoist (quick repetitive starts and stops)
- Make sure that you are not overloading the hoist and that you operate within its duty cycle (see appendix)
- Take ambient temperature into consideration; it may be a contributing factor
- Make sure that there are no mechanical issues which may make the motor draw more amperage.

3.6.2 Wiring a Standalone Hoist to its Power Source



Figure 3.6.2

The hoist must be connected to the power source such that its direction of operation corresponds to the up-and-down commands sent from the pendant control, i.e. pushing the UP button moves the load chain up and pushing the DOWN button moves the load chain down. Please follow the steps below to wire the hoist:

1. Make a temporary connection at the power supply and make sure supply to the hoist can be quickly disconnected in case of a problem,

2. Push the up button momentarily and observe movement of the hook:

a. If the hook moves up, the connections are correct and can be made permanent.

b. If the hook moves down, the motor phasing must be changed. To do so, turn the power off and:

i. If your model uses a 3-phase motor (208, 230, 380, 400, 415, 460 or 575 volts), swap the connections of any two of the three phases **at the power source**.

ii. If your model uses a 1-phase motor (115 or 230 volts), please contact Vulcan for additional details.

Proper operation of the limit switches, chain guide and safety stop ARE DEPENDENT ON CORRECT MOTOR PHASING, rotation and pendant signal:

- Limit switches are factory preconfigured – when required, always reverse phasing at the power source, never in the pendant.
- If the phasing is incorrect, the limit switches will not function properly which could result in serious damage to the hoist and/or serious injury to the operator and others.

3.6.3 Hoists Wired to an Electric Trolley

When a hoist is installed on an electric trolley, the hoist's power and control signal wires will come from the trolley's control panel. A single electric cable, containing both power and control signal wires, will come out of the hoist. After the trolley has been installed on its beam and the hoist on the trolley, you will have to plug this cable into the trolley's control panel.

1. Make sure the trolley is not powered according to proper lockout/tagout practices.

2. Open the control panel. You will see a numbered terminal block.

3. Introduce the cable in the control panel through the cable gland provided for this purpose until the cable's insulating sheath starts to enter the panel. Tighten the cable gland until the cable is securely fastened.

4. Each wire is numbered. Connect the wires to their corresponding terminals and close the control panel's door.

For hoists composed of two 3 fall hoists working on the same lower hook (10 tons and more), wires from both 3 fall hoists will have to connect to the same terminal.

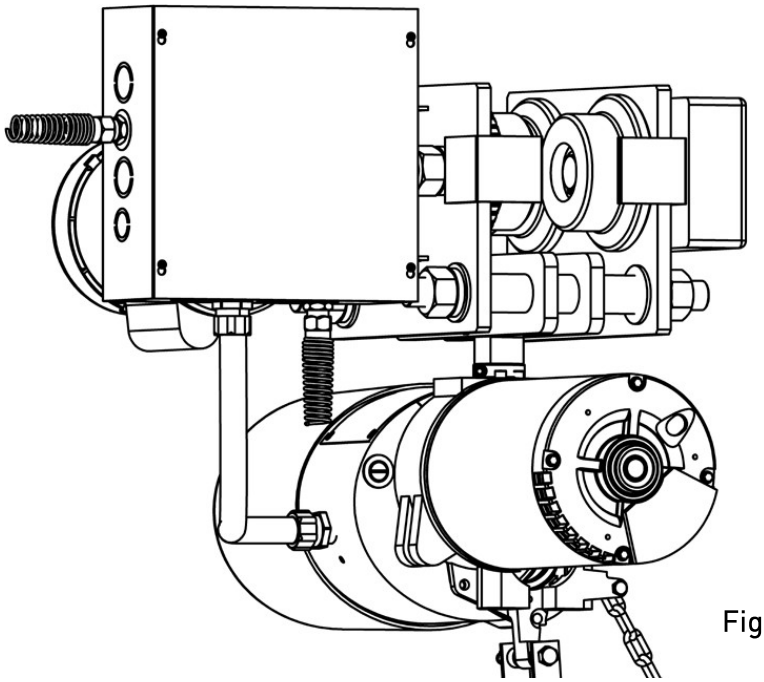


Figure 3.6.3

3.6.4 Wiring 10 and 15 Ton Hoists without Electric Trolleys

Just like a hoist wired to an electric trolley, each of the two 3 fall electric hoists power and control signal cable will have to be plugged to a control panel. This control panel will be on the hoist's upper hook. Follow the same wiring procedure described in the previous section. Note that each terminal on the terminal block will have to connect 2 wires.

3.6.5 Checking for Adequate Voltage at Hoist

The hoist must be supplied with adequate electrical power in order to operate properly. For proper operation, the voltage (measured at the hoist end of the standard power cord with the hoist operating in the up direction with full load) must be within 10% of nominal voltage.

SIGNS OF INADEQUATE ELECTRICAL POWER (LOW VOLTAGE) ARE:

- Noisy hoist operations due to brake and contactor chattering
- Dimming of lights or slowing of motors connected to the same circuit
- Heating of the hoist motor and other internal components as well as heating of the wires and connectors in the circuit feeding the hoist
- Blowing fuses or tripping circuit breakers
- Failure of the hoist to lift the load due to motor stalling
- Blowing of fuses or tripping of circuit breakers
- Wireless controller receivers close.

Table 3.6.5 COPPER CONDUCTOR SIZES FOR 2% DROP IN POTENTIAL ON 110-120 VOLTS 2 CONDUCTORS																		
CURRENT AMPS	Aproximate Distance in Feet to Center of Distribution																	
	20	30	40	50	60	70	80	90	100	120	140	160	180	200	240	280	320	360
	Copper Conductor Sizes in AWG. Calculated for Conductor Temperature of 60 °C and Ambient 30 °C																	
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	-	-	-
1,5	-	-	-	-	-	-	-	-	-	-	-	16	-	-	-	14	-	-
2	-	-	-	-	-	-	-	-	-	16	-	-	-	14	-	-	12	-
3	-	-	-	-	-	-	16	-	-	-	14	-	-	12	-	-	-	10
4	-	-	-	-	16	-	-	-	14	-	-	12	-	-	10	-	-	-
5	-	-	-	16	-	-	14	-	-	12	-	-	-	10	-	-	8	-
6	-	-	16	-	-	14	-	-	12	-	-	-	10	-	-	8	-	-
7	-	-	-	-	14	-	-	12	-	-	10	-	-	-	8	-	-	6
8	-	16	-	14	-	-	12	-	-	-	-	-	-	8	-	-	6	-
9	-	-	-	-	-	12	-	-	-	10	-	-	8	-	-	6	-	-
10	-	-	14	-	12	-	-	-	10	-	-	8	-	-	6	-	5	-
12	16	-	-	12	-	-	10	-	-	-	8	-	-	6	-	5	-	4
14	-	14	-	-	-	10	-	-	-	8	-	-	6	-	5	4	-	3
16	-	-	12	-	10	-	-	-	8	-	-	6	-	5	-	-	3	-
18	-	-	-	-	-	-	-	8	-	-	6	-	5	-	4	3	-	2
20	14	12	-	10	-	-	8	-	-	6	-	5	-	4	3	-	2	-
25	-	-	10	-	8	-	-	-	6	-	5	4	-	3	2	-	1	-
30	12	-	-	8	-	-	-	6	5	-	4	-	3	2	-	1	1/0	-
35	-	10	-	-	-	6	-	5	-	4	3	-	2		1	1/0	-	2/0
40	-	-	8	-	-	-	5	-	4	-	-	2	-	1	1/0	-	2/0	-
45	-	-	-	-	6	5	-	4	-	3	2	-	1	-	-	2/0	-	3/0
50	-	8	-	6	5	-	-	-	3	2	-	1		1/0	2/0	-	3/0	-
60	-	-	6	5	-	4	-	3	2	-	1	-	1/0	2/0	-	3/0	-	4/0
70	-	-	-	-	4	3	-	2	-	1	1/0	-	2/0	-	3/0	4/0		
80	-	6	5	4	-	-	-	-	1	-	-	2/0	-	3/0				
90	-	-	-	-	3	2	-	1	-	1/0	2/0	-	3/0	-	4/0			
100	-	5	-	3	2	-	1	-	1/0	2/0	-	3/0	-	4/0				
125	-	-	-	2	1	-	1/0	-	2/0	3/0	-	4/0						
150	-	-	-	1	-	1/0	2/0	-	3/0	-	4/0							
175	-	-	-	-	1/0	2/0	-	3/0	-	4/0								
200	-	-	-	-	2/0													
250	-	-	-	-	-	3/0	4/0											
300	-	-	-	-	-	4/0												

1. This table is calculated for wire sizes No. 16 to No. 4/0 AWG and gives for each size specified, the approximate maximum distance in feet of the distribution center for a 2% drop in potential at a given current. Inductive reactance has not been included since it is a function of conductor size and spacing.

2. This table is based on conductor resistance at 60OC. For conductor temperatures above 60OC, multiply distances in feet in the column headings by a factor as follows to retain 2% drop in potential.

Conductor Temperature	Distance Correction Factor
75°C	0,94
85-90°C	0,9
110°C	0,83
125°C	0,79
200°C	0,64

3. For 220-240 volts, multiply the distance in feet in the column headings by two, for the same percentage drop.

4. Example on use of Table: Consider a 2-conductor circuit carrying 10 amperes at 110-120 volts. From the Table opposite "10 amperes", it will be found that a No. 14 AWG circuit can be run 40 feet from the distribution center to the load without exceeding a 2% drop. Beyond this distance, a larger size of conductor is required (i.e. No. 12 AWG beyond 40 feet up to and including 60 feet).

3.7 Phase Sequence Relay

All 3-phase powered hoists built since 2025, and some built before 2025, are equipped with a phase sequence relay.

This relay cuts the signal coming from the control pendant or radio receiver if your power voltage:

- doesn't have the right phase sequence (i.e. L1 → L3 → L2 instead of L1 → L2 → L3)
- is outside a ±15% volts range from its nominal voltage
- has a frequency not between 45 and 65 Hz
- has a voltage difference of over 8% between any 2 phases

If your 3-phase hoist doesn't work at all after being connected to your electrical supply for the first time, begin by removing the hoist's cover (see section 6.5.1) and check the phase sequence relay's status LED.

If the status LED remains red, there is a voltage problem. Measure the voltage between each phase to confirm that it meets the conditions listed above.

If the LED blinks red, your phases are not in the right sequence. To obtain the right phase sequence, swap any two phases AT THE POWER SOURCE (not inside the hoist).

WARNING

See the warning in section 3.6.

Bypassing the phase sequence relay and using a hoist powered by the wrong phase sequence will void your warranty. A hoist used with the wrong phase sequence also bypasses the limit switches, the safety stop, and the chain guide, which may cause a load to drop which can cause property damage, injuries, or death.

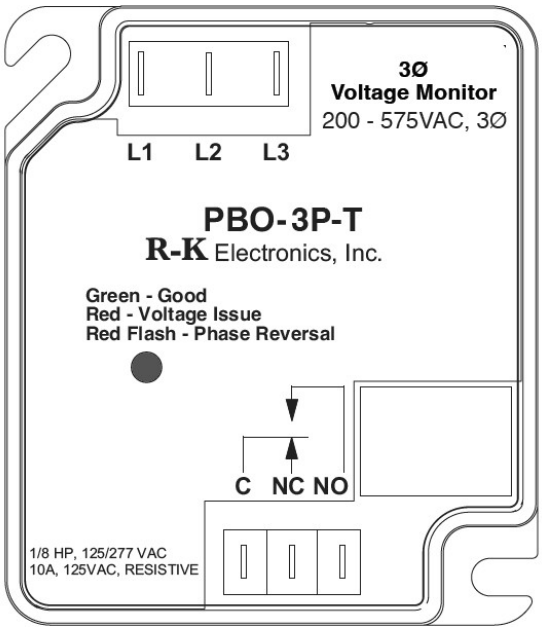


Figure 3.7

3.8 Functional Verification and Trial Operations

1. Confirm the adequacy of the rated capacity for all slings, chains, wire ropes and all other lifting attachments before use. Inspect all load suspension members for damage prior to use and replace or repair all damaged parts.

2. Verify and correct all chain irregularities prior to operating the hoist. Refer to sections 3.4 and 3.5.

3. Measure and record the "k" dimension of all hooks on back cover of this manual. See section 5.7.3.

4. Record the hoist's model and serial number (from the hoist's nameplate, see section 2.1) in the space provided in the appendix of this manual.

5. Ensure that the hoist is properly installed to either a fixed point or trolley, whichever applies.

6. If the hoist is installed on a trolley, ensure that:

- The trolley is properly installed on the beam.
- Trolley end stops are correctly positioned and securely installed on the beam.

7. Ensure that all nuts, bolts, and split pins (cotter pins) are sufficiently fastened.

8. Pull down on the pendant and ensure that the cord strain relief cable takes the force, not the pendant cord.

9 Check supply voltage before everyday use. If the voltage is lower than 10% below nominal voltage for the pendant cord.

9. Check supply voltage before everyday use. If the voltage is lower than 10% below nominal voltage for the motor, do not operate the hoist.

10. Confirm that the hoist works properly:

- Before operating, read and become familiar with Section 4 – Operation.
- Before operating, ensure that the hoist (and trolley) meets the Inspection, Testing and Maintenance requirements and ANSI / ASME B30.16.
- Before operating, ensure that nothing will interfere with the full range of the hoist's (and trolley's) operation.

11. The hoist must be connected to the power source so that its direction of operation corresponds to the up and down commands sent by the remote control; that is, the "UP" button should raise the lifting chain and the "DOWN" button should lower the lifting chain. If the hoist does not operate correctly, refer to Section 3.6 to verify that the motor is properly connected. Failure to do so could result in significant damage to the equipment and/or serious injury to the operator and others in the vicinity.

12. Once the hoist is connected, ALWAYS test the limit switches by raising the hook until it stops at approximately 4 to 6 in. (10.1 to 15.2 cm). Next, lower the hook until it stops, leaving about 12 in. (30.5 cm) of slack chain on the unloaded side.

4. Operation

4.1 Introduction

The operation of an overhead hoist involves more than activating the hoist's controls. As per the ANSI/ASME B30 standards, the use of an overhead hoist is subject to certain hazards that cannot be mitigated by engineered features, but only by the exercise of intelligence, care, common sense, and experience in anticipating the effects and results of activating the hoist's controls. Use this guidance in conjunction with other warnings, cautions, and notices in this manual to govern the operation and use of your overhead hoist.



Hoist operators shall be required to read the Operation section of this manual, the warnings contained in this manual and warning labels on the hoist or lifting system, and the operation section of ANSI/ASME B30.16 and ANSI/ASME B30.10. The operator shall also be required to be familiar with the hoist and hoist controls before being authorized to operate the hoist or lifting system.

Hoist operators shall be trained in proper load rigging procedures.

Hoist operators shall be trained to be aware of potential malfunctions of the equipment that require adjustment or repair, and to be instructed to stop operations if such malfunctions occur, and to immediately advise their supervisor so corrective actions can be taken.

Hoist operators shall have adequate depth perception, field of vision, reaction time, manual dexterity, and coordination.

Hoist operators shall not have a history of or be prone to seizures, loss of physical control, emotional instability or operate under the influence of alcohol, rugs, or medication negatively affecting his mental or physical abilities.

Overhead hoists are intended only for vertical lifting service of freely suspended unguided loads. Do not use this hoist for loads that are not lifted vertically, loads that are not freely suspended, or loads that are guided.

4.2 Operation Instructions

Taking precedence over any specific rule, however, is the most important rule of all: "USE COMMON SENSE".

It is the responsibility of the hoist owner / user to establish programs to:

1. Train and designate hoist operators.
2. Train and designate hoist inspection and maintenance personnel.

The words **shall** and **should** are used throughout this manual in accordance with definitions in the ANSI/ASME B30 standards as follows:

shall this word indicates that a rule is mandatory and must be followed.

should this word indicates that a rule is a recommendation, the advisability of which depends on the facts in each situation.

Hoist operator and hoist inspection and maintenance personnel training programs should be based on requirements in accordance with the latest edition of ANSI/ASME B30.16, "Overhead Hoists (Underhung)".



Improper operation of a hoist can create a potentially hazardous situation which, if not avoided, could result in death, serious injury or substantial property damage. To avoid such a potentially hazardous situation, the operator must be familiar with the instructions listed in this section.

THE OPERATOR SHALL:

1. NOT operate a damaged, malfunctioning or abnormally performing hoist.
2. NOT operate a hoist until he has thoroughly read and understood the manufacturer's operating and maintenance instructions, and the user manual.
3. NOT operate a hoist that has been modified without the manufacturer's approval or without certification that it is in conformity with ANSI/ASME B30 volumes.
4. NOT lift more than the hoist's rated load.
5. NOT use a hoist with twisted, kinked, damaged, or worn load chain.
6. NOT use the hoist to lift, support, or transport people.
7. NOT lift loads over people.
8. NOT operate a hoist unless all people are and remain clear of the supported load.
9. NOT lift a load unless it is centered under the load.
10. NOT attempt to lengthen the load chain or repair a damaged load chain.
11. NOT attempt to lengthen the load chain or repair a damaged load chain.

12. NOT use a load chain as a sling or wrap a load chain around a load.

13. NOT apply the load to the tip of the hook or to the hook latch.

14. NOT apply load unless the load chain is properly seated in the sprockets' grooves.

15. NOT lift any load if the weight of the load is not evenly distributed across all chain falls.

16. NOT operate beyond the limits of the load chain travel.

17. NOT allow the load chain or hook to be used as an electrical or welding ground.

18. NOT allow the load chain or hook to be touched by a live welding electrode.

19. NOT remove or obscure warning labels and nameplates on the hoist.

20. NOT operate a hoist on which the nameplate is missing or illegible

21. NOT use the hoist in such a way that could result in shock or impact loads being applied to the hoist.

22. NOT use the hoist load limiting or warning device to measure load.

23. NOT use limit switches as routine operating stops unless the hoist is equipped with a chain guide or a safety stop.

24. NOT activate the chain guide or the safety stop during regular use of the hoist. They are safety devices only. Limit switches can be activated during normal use of the hoist if they stop the hoist before activating the chain guide or safety stop.

25. NOT allow the hoist to hit other hoists, structures, or objects through misuse.

26. NOT adjust or repair the hoist unless qualified to perform such adjustments or repairs.

27. NOT "jerk" the hoist in position to tighten the grip on the load or to facilitate the unloading process.

28. NOT jog the hoist, i.e. press up and down quickly, successively, repeatedly. Wait for the hoist to be immobilized before changing directions.

THE OPERATOR SHALL:

1. Protect the hoist's load chain from weld splatter or other damaging contaminants.

2. Be familiar with operating controls, procedures, and warnings.

3. Take up chain slack carefully – make sure load is balanced and load-holding action is secure before continuing.

4. Shut down a hoist that malfunctions or performs abnormally and report such malfunction.

5. Make sure hoist limit switches function properly.

6. Warn personnel before lifting or moving a load.

7. Warn personnel of an approaching load.

8. Maintain firm footing when operating the hoist.

9. Check brake function by stopping the lift as soon as the load leaves the ground to check for brake slip.

10. Use hook latches. Latches are to retain slings chains, etc. under slack conditions only.

11. Make sure the load is free to move and will clear all obstructions.

12. Make sure the hook travels in the same direction as shown on controls.

13. Inspect the hoist regularly, replace damaged or worn parts, and keep appropriate records of maintenance.

14. Use the hoist manufacturer's recommended parts when repairing the unit.

15. Lubricate the lifting chain according to Vulcan's recommendations.

16. Ensure that the hook latches are closed and that they do not bear any part of the load.

17. Avoid swinging the load or the hook.

4.3 Daily or Prestart Inspection

In accordance with the requirements of ANSI / ASME B30.16, the hoist operator SHALL perform daily (prestart) inspections at the start of each shift or at the time of the hoist's first use during each shift. The daily inspection is a visual and audible examination of the hoist. Records of the daily inspection are not required except as required by the hoist owner / user. Daily inspection items that shall be performed include the following:

TABLE 4.3 HOIST DAILY INSPECTION	
Inspection Item	The operator shall:
Hoist Labels	-Check that the hoist is not tagged with an out-of-order sign.
Control Directions	-Check that all travel motions agree with control device markings. When checking hoist travel motion, always use the lifting or up control first.
Brakes	-Check that all travel motions do not have excessive drift and that stopping distances are normal.
Hooks	-Check for damage, cracks, nicks, gouges, deformation of the throat opening, wear on saddle or load bearing point, and twist.
Hook Latches	-Check that hook latches are not missing and that they operate properly
Load Chain	-Check for nicks, gouges, and any type of deformation or damage to the chain. -Check that the load chain is lubrified.
Reeving	-Check that the load chain is properly reeved, that it is not kinked or twisted, and that its links are not twisted about each other.
Limit Switches	-Check that the primary upper limit switch stops lifting motion of the hoist load block at the upper limit of travel and that the lower limit switch stops lowering motion of the hoist load back at the lower limit of travel. -Check that the primary limit switches stop motion before the safety stop or chain guide does.
Oil Leaks	-Check for any sign of oil leakage on the hoist and on the floor area beneath the hoist.
Unusual Sounds	-Check for any unusual sounds from the hoist and hoist mechanism while operating the hoist.
Warning Labels and Nameplate	-Check that warning and other safety labels are not missing and that they are legible.

4.4 Hoist Controls

1. For hoists mounted to motorized trolleys, follow the control instruction included in the trolley's operator's manual.

2. Single Speed Pendant Control – When using the pendant control depress the UP button to raise the hoist load chain / hook or the DOWN button to lower the hoist load chain / hook as shown in figure 4.4. To stop motion, release the buttons.

3. Dual Speed Control – Pendant controls supplied with dual speed hoists have two step control buttons. For low speed, depress the button halfway to the first step and for high speed, depress the button fully to the second step. Use the UP button to raise the hoist load chain / hook or the DOWN button to lower the hoist load chain / hook as shown in Figure 4.4. To stop motion, release the buttons.

4. OPTIONAL Emergency Stop Button – Press the emergency stop button to perform an emergency stop and lock-out of hoist motion controls. Turn the emergency stop button clockwise to unlock the controls and allow hoist operation.

5. Wireless Controller - Consult the wireless controller's user manual.



Figure 4.4

WARNING

The emergency stop does not cut electrical power to all hoist components.

Make sure the hoist completely stops before reversing direction.

4.5 Hoist Secondary Emergency Limit Devices Operation

4.5.1 Safe Operation of the Safety Stop

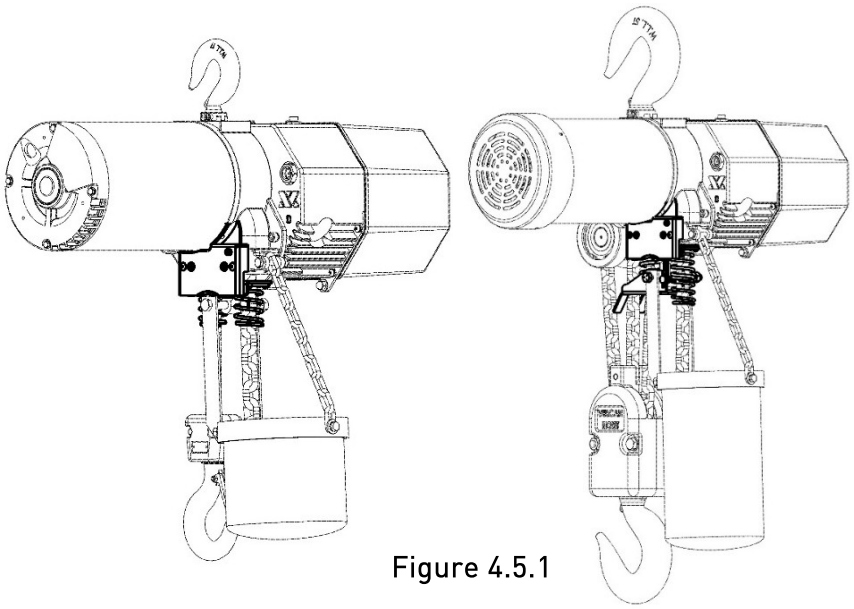


Figure 4.5.1

The safety stop is designed to prevent accidents due to obstacles on the chain - the hook, a foreign object, or a chain twist or knot - colliding with the hoist while lifting and lowering. The springs through which the chain travels have a special shape to ensure that the chain is lined up correctly before entering the hoist. Additionally, there is a bolt in the last chain link which will activate the safety stop device before the hoist runs out of chain.

WARNING

If the safety stop is triggered, you must fix the issue which caused the safety stop's activation immediately after each activation of the safety stop.

The safety stop is an emergency safety device only! It is not meant to be used during normal operation. It is not made to be used as a normal end-stop.

The limit switch is still the primary travel limiting device.

The limit switch must be adjusted so that it stops the chain from moving before the safety stop does.

As per ASME B30.16, lifting devices such as this electric chain hoist are meant to lift vertically only. Lifting at a significant angle from vertical is dangerous and may cause the safety stop to trigger intermittently.

Like with any chain guide or limit switch, this safety stop relies on the brake to stop an obstacle from colliding with the hoist. It is important that you keep your brake well adjusted for this safety stop to work properly. Follow the brake adjustment schedule and procedure outlined in your user manual, especially if you notice that the load keeps moving for a split second after releasing the pendant or the radio controller's buttons.

Procedure in Case of Safety Stop Activation

Should an obstacle come into contact with the safety stop, the compression spring will absorb the impact, causing the pivot plate to tilt which activates a switch. This switch will immediately interrupt the up or the down signal depending on which side the pivot plate tilts, thus preventing the obstacle from colliding into the hoist. Once the chain is stopped by the safety stop, go in the opposite direction to let the pivoting plate return to its neutral position and deactivate the switch.



The safety stop has been adjusted and tested by Vulcan Hoist before leaving the factory to make sure they trigger at the right time. It must not be modified or bypassed in any way. Vulcan Hoist will not be held responsible for accidents which may occur due to the safety stop triggering too early, too late, or not at all.

Vulcan Hoist's warranty will be void if the safety stop has been modified, adjusted, removed or bypassed in anyway, including adjusting the switches' position, and if Vulcan Hoist judges that the warranty claim could have been avoided if the safety stop had worked as designed.

Reasons for which Vulcan Hoist would void its warranty and deny responsibility for any damage caused by the safety stop include, but are not limited to:

- Limit switch adjustments which cause the safety stop to be used as a limit switch.
- Activating the safety stop during normal operation of the hoist.
- A bad brake adjustment which allows the chain to move significantly after the safety stop has been triggered.
- Lifting or lowering a load at an angle significantly deviating from vertical.

4.5.2 Safe Use of the Chain Guide



If the chain guide is triggered, you must fix the issue which caused the chain guide's activation immediately after each activation of the chain guide.

The chain guide is an emergency safety device only! It is not meant to be used during normal operation. It is not made to be used as a normal end-stop.

The limit switch is still the primary travel limiting device.

The limit switch must be adjusted so that it stops the chain from moving before the chain guide does.

As per ASME B30.16, lifting devices such as this electric chain hoist are meant to lift vertically only. Lifting at a significant angle from vertical is dangerous and may cause the chain guide to trigger intermittently.

Like with any limit switch, this chain guide relies on the brake to stop an obstacle from colliding with the hoist. It is important that you keep your brake well adjusted for the chain guide to work properly. Follow the brake adjustment schedule and procedure outlined in your user manual, especially if you notice that the load keeps moving for a split second after releasing the pendant or the radio controller's buttons.

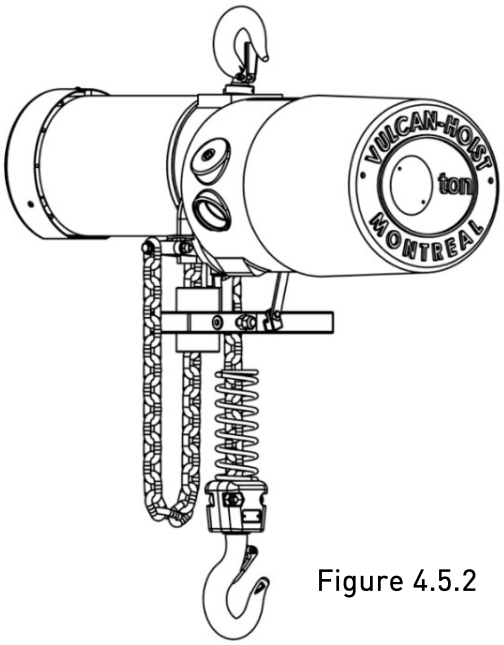


Figure 4.5.2

The chain guide is designed to prevent accidents due to obstacles on the chain - the hook, a foreign object, or a chain twist or knot - colliding with the hoist while lifting and lowering. On the hook side, a spring rests against the hook and will activate the chain guide if the spring pushes on the chain guide's lever. On the chain container side (dead end), the chain passes through a spring-loaded specially shaped guide that ensures it is properly aligned before entering the hoist. The dead end of the chain is attached to a component designed to activate the chain guide before the hoist runs out of chain.

Procedure in Case of Chain Guide Activation

Should an obstacle come into contact with the chain guide, the compression spring (either the one the hook or the one inside the guide on the chain container's side) will absorb the impact, causing the lever to tilt which activates a switch. This switch will immediately interrupt the up or the down signal depending on which side the lever tilts, thus preventing the obstacle from colliding into the hoist. Once the chain is stopped by the safety stop, go in the opposite direction to let the lever return to its neutral position and deactivate the switch

WARNING

The chain guide has been adjusted and tested by Vulcan Hoist before leaving the factory to make sure it triggers at the right time. It must not be modified or bypassed in any way. Vulcan Hoist will not be held responsible for accidents which may occur due to the safety stop triggering too early, too late, or not at all.

Vulcan Hoist's warranty will be void if the chain guide has been modified, adjusted, removed or bypassed in anyway if Vulcan Hoist judges that the warranty claim could have been avoided if the chain guide had worked as designed.

Reasons for which Vulcan Hoist would void its warranty and deny responsibility for any damage caused by the chain guide include, but are not limited to:

- Limit switch adjustments which cause the chain guide to be used as a limit switch.
- Activating the chain guide during normal operation of the hoist.
- A bad brake adjustment which allows the chain to move significantly after the chain guide has been triggered.
- Lifting or lowering a load at an angle significantly deviating from vertical.

5. Inspections

5.1 General

The inspection procedure and the following definitions are based on the ANSI/ASME B30.16 standard and pertain to the inspection procedure below:

• Designated Person — a person selected or assigned as being able to perform the specific duties to which he/she is assigned.

• Qualified Person — a person who, by possession of a recognized degree or certified professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter and work.

• Normal Service — service that involves operation with randomly distributed loads within the rated load limit or uniform loads less than 65 % of rated load for not more than 25% of the time.

• Heavy Service — service which involves operation within the rated load limit which exceeds normal service.

• Severe Service — service which involves normal or heavy service with abnormal operating conditions.

5.2 Inspection Classification

5.2.1 Initial Inspection — prior to initial use, all new, altered, repaired, or modified hoists shall be inspected by a designated person to ensure compliance with the applicable provisions of this manual.

5.2.2 Inspection Classification — the inspection procedure for hoists in regular service is divided into two general classifications based upon the intervals at which inspection should be performed. The intervals in turn are dependent upon the nature of the critical components of the hoist and the degree of their exposure to wear, deterioration, or malfunction. The two general classifications are herein designated as frequent and Periodic, with respective intervals between inspections as defined below.

5.2.3 Frequent Inspection — visual examinations by the operator or other designated personnel with intervals as per the following criteria:

- Normal Service — monthly
- Heavy Service — weekly to monthly
- Severe service – daily to weekly
- Special or infrequent service – as recommended by a qualified person before and after each occurrence.

5.2.4 Periodic Inspection — visual inspection by designated person with intervals as per the following criteria:

- Normal Service — yearly
- Heavy Service — semi-annually
- Severe service – quarterly
- Special or infrequent service – as recommended by qualified person before the first such occurrence and as directed by the qualified person for any subsequent occurrences.

5.3 Frequent Inspection

Inspections should be made on a frequent basis in accordance with Table 5.3, "Frequent Inspection". Included in these frequent inspections are observations made during operation for any defects or damage that might appear between periodic inspections. Evaluation and resolution of the results of frequent inspections shall be made by a designated person (who may be the hoist's operator) such that the hoist is maintained in safe working conditions.

TABLE 5.3 FREQUENT INSPECTION
All functional operating mechanisms for maladjustment and unusual sounds.
Operation of limit switches and associated components such as the chain guide and safety stop.
Hoist braking system for proper operation.
Hooks are compliant with Section 5.7.3 and ANSI/ASME B30.10.
Hook latches operation.
Load chain is compliant with Section 5.7.2.
Idle sprocket does not show signs of excessive wear.
Check for any loose parts or fasteners on the hoist structure.
For hoists with safety stops or chain guides, check that the safety stop's springs and sheet metal or the chain guide's lever are not deformed and that the balance plate can pivot.

5.4 Periodic Inspection

Inspections should be made on a periodic basis in accordance with Table 5.4, "Periodic Inspection". Evaluation and resolution of the results of periodic inspections shall be made by a designated person such that the hoist is maintained in a safe working condition. For inspections where load suspension parts of the hoist are disassembled, a load test as per ANSI/ ASME B30.16 must be performed on the hoist after it is re-assembled and prior to its return to service.

TABLE 5.4 PERIODIC INSPECTION
Requirements of frequent inspection (see table 5.3).
Evidence of loose bolts, nuts or rivets.
Evidence of worn, corroded, cracked or distorted parts such as load blocks, suspension housing, chain attachments, clevises, yokes, suspension bolts, shafts, gears, bearings, pins and rollers.
Evidence of damage or excessive wear of the load and idler sprockets.
Evidence of excessive brake wear.
Electrical contactors for signs of pitting or any deterioration of visible controller contact.
Evidence of damage of supporting structure or trolley, if used.
Legible function labels on pendant control stations.
Legible warning labels and nameplate properly attached to the hoist.
Connections at both ends of the chain (pin in the lower hook assembly or hoist frame, and fastening of the free end of the chain).
The lower hook must be able to pivot freely.
Chain guide or safety stop function: pivot the chain guide lever or the safety stop balance plate to check that it prevents the hoist from moving. Also check that the chain guide or safety stop returns to its initial position on its own.

5.5 Occasionnally Used Hoists

For hoists idle for more than 1 month but less than 1 year: inspect following the frequent inspection criteria in section 5.3.

For hoists idle more than 1 year: inspect following the periodic inspection criteria in Section 5.4.

5.6 Inspection Records

Dated inspection reports and records should be maintained at time intervals corresponding to those that apply for the hoist's periodic intervals as per section 5.4. These records should be stored where they are available to personnel involved with the inspection, maintenance or operation of the hoist.

A long-term chain inspection program should be established and should include records of examination of chains removed from service so a relationship can be established between visual observation and actual condition of the chain.

5.7 Inspection Methods and Criteria

5.7.1 Inspection Items

This section covers the inspection of specific items. The list of items in this section is based on those listed in ANSI/ASME B30.16 for the frequent and periodic Inspections. In accordance with ANSI/ASME B30.16, these inspections are not intended to involve disassembly of the hoist. Disassembly for further inspection would be required if frequent or periodic inspection results indicate so. Such disassembly and further inspection should be performed by a Vulcan Hoist qualified technician.

TABLE 5.7 HOIST INSPECTION METHODS AND CRITERIA

Item	Method	Criteria	Action
Functional Operating mechanisms	Visual Auditory	Mechanisms should be properly adjusted and should not produce unusual sounds when operated.	Repair or replace as required.
Limit Switches (Upper and lower)	Function	Proper operation. Actuation of limit switch shall stop hoist.	Adjust or replace as required.
Braking System Operation	Function	Shall stop the load without significant travel after motor is turned off.	Adjust or replace.
Hooks – Fretting wear	Measure	Excessive wear of original hook dimensions resulting in reduction of the load bearing cross section area of 10% or more. Refer to section 5.7.3 for details.	Replace
Hooks – Stretch	Measure	Any distortion resulting in throat opening larger than 5% of the original dimension. For additional details, refer to section 5.7.3.	Replace
Hooks – Thrust Bearing	Visual Function	Bearing parts and surfaces should not show significant wear, and should be free of dirt, grime and deformations. Hook should rotate freely with no roughness.	Clean and lubricate, or replace as required.

TABLE 5.7 HOIST INSPECTION METHODS AND CRITERIA (followed)			
Item	Method	Criteria	Action
Hooks – Bent Shank or Neck	Visual	Shank and neck portions of hook should be free of deformations.	Replace
Hooks – Yoke Assembly	Visual	Should be free of significant rust, weld splatter, nicks, and gouges. Holes should not be elongated.	Measure, tighten, or replace as required.
Hooks – Idle Sprocket and Bearings (Bottom Hook on Multiple Fall Hoist)	Visual Function	Pockets of idle sprocket should be free of significant wear. Idle sprocket surfaces should be free of nicks, gouges, dirt, and grime. Bearing parts and surfaces of idle sprocket should not show significant wear. Idle sprocket should rotate freely with no roughness or significant free play.	Clean and lubricate, or replace as required.
Hooks – Hook Latches	Visual Function	Latches should not be deformed. Attachment of latch to the hook should not be loose. Latch spring should not be missing and should not be weak, latch movement should not be stiff – when depressed and released, the latch should snap quickly to its closed position.	Replace
Load Chain – Surface Condition	Visual	Should be free of rust, nicks, gouges, dents and weld splatter. Links should not be deformed and should not show signs of abrasion. Surfaces where links touch should be free of significant wear.	Replace
Load Chain – Pitch and Wire Diameter	Measure	The "P" dimension should not be greater than the maximum value listed in section 5.7.2. The "d" dimension should not be less than the minimum value listed in section 5.7.2.	Replace. Inspect load sprocket (and idle sprocket(s) on multiple fall hoists).
Load Chain – Lubrication	Visual Auditory	Entire surface of each chain link should be coated with lubricant and should be free of dirt and grime. Chain should not emit cracking noise when hoisting a load.	Clean/lubricate (see section 6.2).
Load Chain – Reeving	Visual	The chain's weld must be facing away from the drive sprocket.Chain should be reeved properly through load sprocket (and idle sprocket(s) on multiple fall hoists).	Reeve/Install chain properly (refer to section 6.4).
Load chain – Connection Yoke Chain Pin (2 & 3 Fall Hoists Only)	Measure	The connection yoke chain pin should not have any apparent deformation. The "d" dimension should not be less than the discard value listed at the bottom of section 5.7.2.	Replace
Chain Container	Visual	Container should not be damaged. Brackets should not be deformed or missing.	Replace
Bolts, Nuts, and Rivets	Visual	Bolts, nuts, and rivets should not be loose.	Tighten or replace.
Electromagnetic Brake Assembly	Measure Visual	The electromagnetic motor brake gap is directly related to brake disk wear. As the disk wears, the brake gap will increase. The brake gap / wear dimension should not be more than 0.030". Bolts and screws should not be loose.	Section 6.6 for disc brake adjustment.

TABLE 5.7 HOIST INSPECTION METHODS AND CRITERIA (followed)			
Item	Method	Criteria	Action
Contactors	Visual	Contact should be free of significant pitting or deterioration.	Replace
Load Sprocket	Visual	Pockets of Load Sprocket shall be free of excessive wear.	Replace
Pendant – Housing	Visual	Pendant housing shall be free of cracks and mating surfaces of parts should seal without gaps.	Replace
Pendant – Wiring	Visual	Wire connections to switches in pendant shall not be loose or damaged.	Replace
Pendant – Switches	Function	Depressing and releasing push-button shall make and break contact in switch contact block and result in corresponding electrical continuity or open circuit. Push-buttons shall be interlocked either mechanically or electrically to prevent simultaneous energization of circuits for opposing motions (up and down).	Replace
Pendant – Cable	Visual, Electrical Continuity	Surface of cable should be free from nicks, gouges, and abrasions. Each conductor in cord should have 100 % electrical continuity even when cord is flexed back-and forth.	Replace
Pendant - Cable Strain Relief Cable	Visual Functional	Pendant cable strain relief cable shall absorb the entire load associated with forces applied to the pendant.	Replace
Pendant - Labels	Visual	Labels denoting functions shall be legible.	Replace
Warning Labels	Visual	Warning labels shall be affixed to the hoist (see section 1) and they shall be legible.	Replace
Hoist Capacity Tag	Visual	Tags or labels indication the hoist's capacity shall be affixed to the hoist and they shall be legible.	Replace
Nameplate	Visual	The nameplate indicating the hoist's model and other data shall be affixed to the hoist (see section 1) and it shall be legible.	Replace
Safety Stop	Function	Works as intended. Activating the safety stop's switches must stop the hoist. See section 4.5.1.	Adjust or replace if needed
Chain Guide	Function	Works as intended. Activating the chain guide's switches must stop the hoist. See section 4.5.2.	Adjust or replace if needed

5.7.2 Load Chain Discard Criteria

The load chain used on Vulcan hoists is heat treated. No link or links can be added or welded after leaving factory. **DO NOT USE** the hoist, even if there is only one (1) link worn out or elongated beyond the permissible dimensions listed below:

TABLE 5.7.2 ALLOWABLE CHAIN STRETCH			
Capacity	Diameter	Length of 11 links	
		Nominal	Permissible
All	7.9 mm	9.961" (253 mm)	10.157" (258 mm)

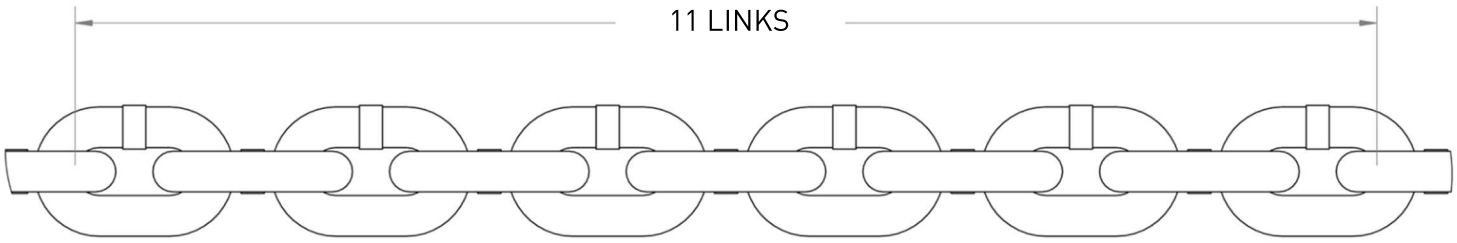


Figure 5.7.2

5.7.3 Hook Measurements and Discard Criteria

As per the ASME B30.10 guidelines, Vulcan recommends changing any hook that exhibits the following signs of wear:

- Presence of pitting corrosion, deep rust, cracks, nicks, or gouges on the hook body, eye, or retaining pin.
- Evidence of damage caused by welding or heat on the hook body or connecting pin.
- Any wear resulting in a dimensional change greater than 5% of the original value on the hook body or connecting pin.
- Permanent deformation resulting in an increase of more than 5% in the hook throat opening compared with its original value.
- Missing or illegible hook identification or Working Load Limit (WLL, aka capacity) marking.

Note: if there is excessive throat opening, DO NOT attempt to repair by closing the hook. The strength of the hook will not be the same as the original.

The user is responsible for measuring the exact initial dimensions of the hook for future maintenance purposes. The following table can be used as a reference; please note that the dimensions provided are nominal and the actual hook dimensions may vary.

CAUTION

The following values are nominal. Your hooks could have slightly different dimensions than the initial dimensions specified. You must measure your hook's initial dimensions to ensure that they do not deform by more than 5%.

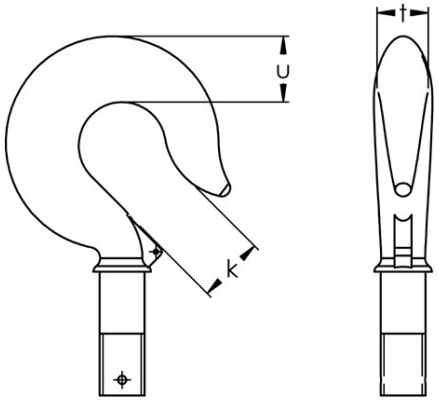
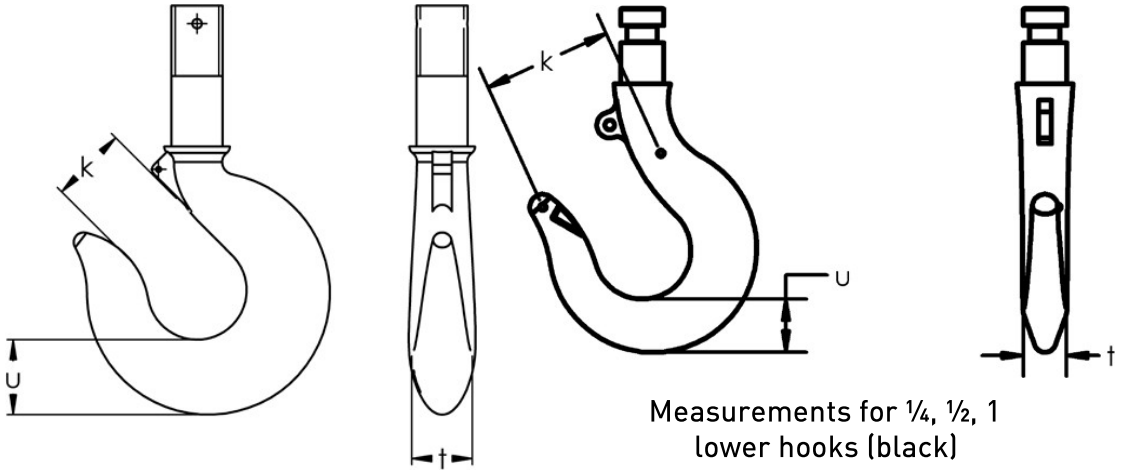


Figure 5.7.3a

Hook Capacity (t)	TABLE 5.7.3a UPPER HOOK DEFORMATION					
	k		t		u	
	Initial	Discard	Initial	Discard	Initial	Discard
¼ - ½	0.98	⩾ 1.03	0.71	⩽ 0.67	0.83	⩽ 0.79
1	1.18	⩾ 1.24	0.89	⩽ 0.85	1.01	⩽ 0.95
1.5	1.26	⩾ 1.32	0.94	⩽ 0.90	1.11	⩽ 1.05
2-3	1.50	⩾ 1.57	1.15	⩽ 1.09	1.45	⩽ 1.37
5	2.05	⩾ 2.15	1.44	⩽ 1.37	1.83	⩽ 1.74
10	2.32	⩾ 2.44	1.88	⩽ 1.79	2.27	⩽ 2.15

*All dimensions are in inches



Measurements for ¼, ½, 1 lower hooks (black)

Figure 5.7.3b

Hook Capacity (t)	TABLE 5.7.3b LOWER HOOK DEFORMATION					
	k		t		u	
	Initial	Discard	Initial	Discard	Initial	Discard
¼, ½, 1 (black)	2.36*	⩾ 2.48*	0.79	⩽ 0.71	0.96	⩽ 0.91
¼, ½, 1, 1.5	1.26	⩾ 1.32	0.94	⩽ 0.90	1.11	⩽ 1.05
2, 3, 5	1.50	⩾ 1.57	1.15	⩽ 1.04	1.45	⩽ 1.37
5	2.05	⩾ 2.15	1.44	⩽ 1.37	1.83	⩽ 1.74
10	2.32	⩾ 2.44	1.88	⩽ 1.79	2.27	⩽ 2.15
15	2.65	⩾ 2.78	1.97	⩽ 1.87	2.60	⩽ 2.47

*This measurement is different, see figure 5.7.3b

TABLE 5.7.3 c LUG FOR ELECTRIC TROLLEY DEFORMATION		
Lug Capacity (t)	E (maximum value)	
	Initial	Discard
¼, ½, 1	0.880	⩾ 0.924
1.5, 2	0.880	⩾ 0.924
3	1.005	⩾ 1.055
5, 10, 15	1.005	⩾ 1.055

TABLE 5.7.3c LUG FOR MANUAL TROLLEY DEFORMATION		
Lug Capacity (t)	E (maximum value)	
	Initial	Discard
¼, ½	0.955	⩾ 1.003
1, 1.5	1.190	⩾ 1.249
2	1.420	⩾ 1.491
3	1.655	⩾ 1.738
5	1.890	⩾ 1.984

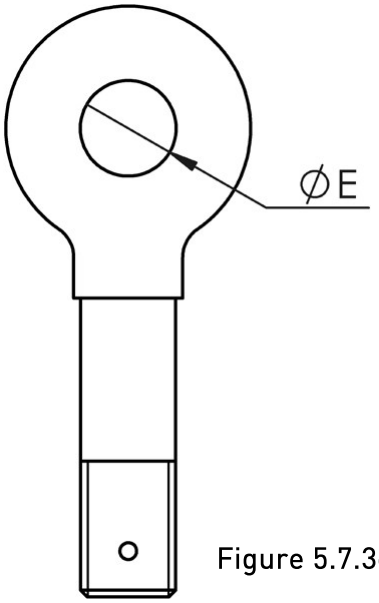


Figure 5.7.3c

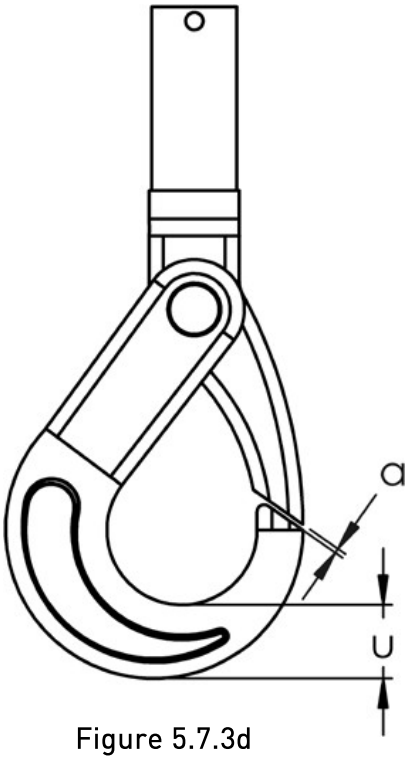


Figure 5.7.3d

TABLE 5.7.3d SELF-LOCKING HOOK DEFORMATION			
Hook Capacity (t)	a	u	
	Discard	Initial	Discard
¼, ½, 1	⩾0.08	0.81	⩽ 0.77
1.5, 2, 3	⩾0.08	1.18	⩽ 1.12
5	⩾0.12	1.57	⩽ 1.50

6. Maintenance

6.1 Maintenance Schedule and Records

Maintenance schedule should be based on inspection results and any maintenance procedure should be recorded in a logbook for future reference.

6.2 Lubrication — Load Chain, Hooks, and Suspension

6.2.1 Load Chain

- For longer life, the load chain SHALL be lubricated.
- The load chain lubrication should be accomplished after cleaning the load chain with an acid-free cleaning solution.
- Use lifting chain oil. Machine or gear oil (grade ISO VG 46 or 68 or equivalent) may be used as an alternative lubricant but must be applied more frequently.
- The chain should be lubricated every 3 months (more frequently for heavier usage or severe conditions).
- For dusty environments, it is acceptable to use a dry lubricant.
- See section 3.4, "Lubricating the Chain"

6.2.2 Hooks and Suspension Components

- Hooks - Bearings should be cleaned and lubricated at least once per year for normal usage. Clean and lubricate more frequently for heavier usage or severe conditions.
- Hook Suspension Pins (1.5 and 5 tons) – Lubricate at least twice per year for normal usage; more frequently for heavier usage or severe conditions.

6.3 Lubrication – transmission



Turn off and lockout/tagout the hoist's power source for the oil change's whole duration to avoid potential injuries and damage.



Neglecting to change the oil, using a hoist with used oil, using the wrong type, viscosity and/or volume of oil, or any other mix of different types of lubricants may cause important damage to the gearbox, reducer, and gears.

Change the hoist's oil at least once 6 months after first use and every 2 years thereafter. The oil may need to be changed more often depending on its usage and its environment. Follow this procedure to change your hoist's gearbox oil.

6.3.1 Previous Hoist Generation

NOTICE

The oil level is above the fill plug. Removing the fill plug while the hoist is suspended upright will cause an oil leak.

To properly fill the hoist, you will have to tilt it. Dismount the hoist to fill it on a flat surface or make sure that you will be able to keep the hoist tilted long enough to fill it.

1. Turn off and lockout/tagout the hoist's power source.

2. If possible, dismount the hoist and put it on a work bench.

3. Unscrew the 2 acorn nuts holding the electrical enclosure cover, then remove the cover.

4. Place an empty container with a capacity over 1 liter under the drain plug (Figure 6.3.1). Unscrew the drain plug using a 3/16" hexagonal key.

5. Let the oil drain. You can accelerate the flow by removing the fill plug or the pressure relief valve which is under the nameplate.

6. Screw the drain plug back on and remove the fill plug using a 5/16" hexagonal key.

7. Tilt the hoist (Figure 6.3.2) and pour 1 liter of Meropa EP 220 (synthetic) or equivalent. The oil will not leak if the hoist is properly tilted.

8. Thread the fill plug back on and wipe off any oil which may have leaked.

9. Put the electrical enclosure cover and the two acorn nuts holding it back on.

10. Dispose of the used oil in accordance with applicable laws

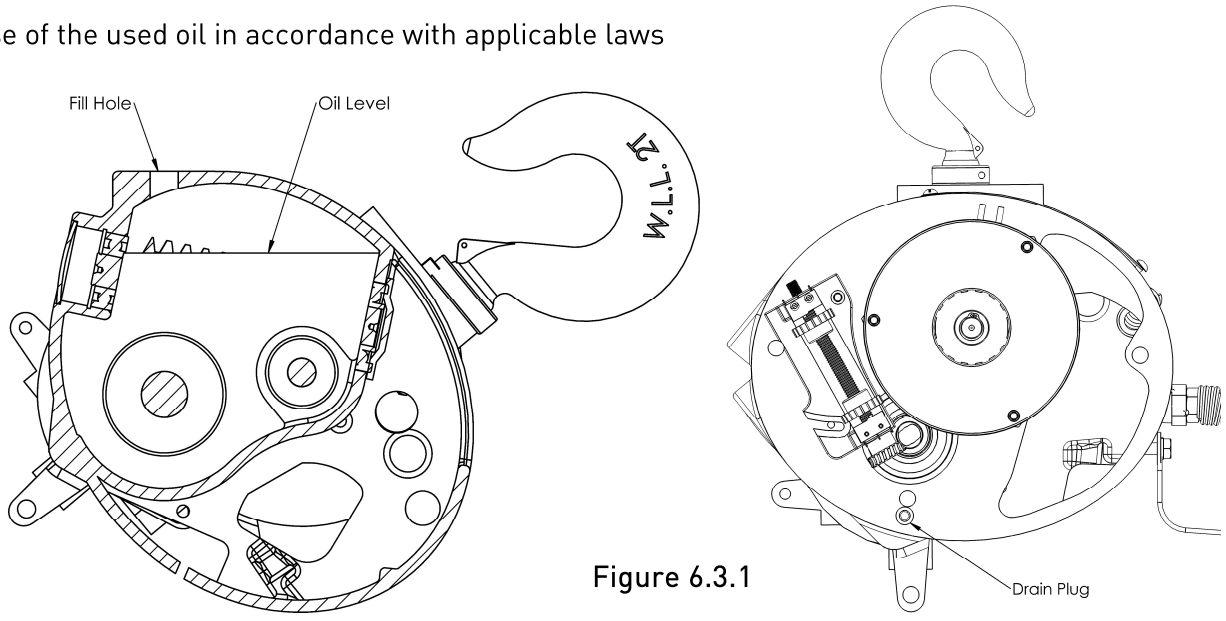


Figure 6.3.1

6.3.2 New Hoist Generation

1. Turn off and lockout/tagout the hoist's power source.

2. Place an empty container with a capacity over 1.2 liter under the drain plug (Figure 6.3.2). Unscrew the drain plug using a 3/16" hexagonal key.

3. Let the oil drain. You can accelerate the flow by removing the fill plug.

4. Screw the drain plug back on and remove the fill plug using a 17 mm wrench.

5. Pour **1,15 liter of Meropa EP 220** (synthetic) or equivalent. If the hoist is leveled, you should be able to spot the new oil through the sight glass.

6. Thread the fill plug back on and wipe off any oil which may have leaked.

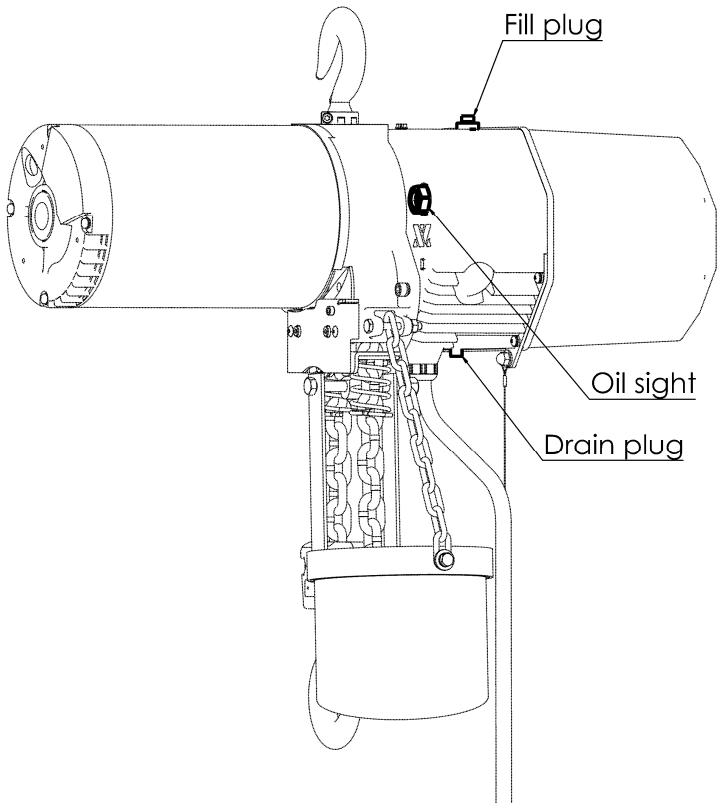


Figure 6.3.2

7. Dispose of the used oil in accordance with applicable laws.

6.4 Load Chain

6.4.1 Lubrication and Cleaning – see Section 6.2.1.

6.4.2 Load Chain Replacement

DANGER

The hoist must be properly powered and operational in order to perform the following procedures.

Be certain that the replacement chain is obtained from Vulcan Hoist Co. Ltd. and is the exact size, grade and construction as the original chain. The new load chain must have an odd number of links so that both its end links have the same orientation. If the load chain is being replaced due to damage or wear, destroy the old chain to prevent its reuse.

When replacing load chain, check for wear on mating parts, i.e. sprockets, chain guide, safety stop, and any other parts the chain could rub against.

Replacing the hoist load chain is a procedure that must be performed with extreme caution. If the chain is not replaced correctly, several transmission components may be damaged. It is strongly recommended that this task be performed by Vulcan Hoist.

1. Turn off and lockout/tagout the hoist's power source.

2. Remove the 2 acorn nuts holding the electrical enclosure cover, then remove the cover itself.

3. Loosen and pull the limit switch adjustment bar away from the limit switch adjustment wheels (see Section 6.5).

4. Put the electrical enclosure cover and its 2 acorn nuts back on.

5. Remove all chain components including the bottom hook set assembly and stoppers from the chain for reuse on new chain. Inspect and replace any damaged or worn parts.

6. Activate the down button until there is approximately 12" of chain on the no load side.

7. Using a C-link, attach the new chain to the end link of the old chain on the no-load side. The end link of the new load chain should be connected so that the welded portions of the load chain's standing links are oriented to the outside as they pass over the sprocket.

8. Operate the hoist down to move the chain though the hoist body. Stop when a sufficient amount of new chain is accumulated on the load side.

9. Single fall hoists – Attach the components to the chain. See sections 3.4 and 3.5 for the proper locations.

10. Multiple falls hoists – Feed the end link on the load side of the new chain through the required chain components and the bottom hook's idle sprocket. Attach the remaining chain components to the chain. Refer to sections 3.4 and 3.5 for the proper locations. Connect the end link to the top connection yoke with the chain pin, slotted nut, and cotter pin. Ensure that chain remains free of twists. Refer to Section 3.5.

11. After installation has been completed, perform steps outlined in Section 3.8, "Functional verification and trial operations".

12. Re-adjust the limit switches, see section 6.5.

6.5 Adjusting your Vulcan Limit Switches



Turn off and lockout/tagout the hoist's power source every time you must manipulate the limit switches! While adjusting the limit switches, your fingers and tools will be in close proximity with high voltage electrical wires and components which will be live of you do not turn off the hoist's power source.



The limit switch is not 100% accurate, which means that the height calibrated for either upper or lower limit WILL vary up to 6 inches every time. Keep that in mind while adjusting your limit switch and make sure you test it a few times before operating the hoist.

DO NOT SUSPEND a load while adjusting the limit switches.

1. Bring the hook to the desired height using the pendant control.

2. Turn off and lockout/tagout the hoist's power source.

3. Remove the 2 acorn nuts holding the plastic electrical enclosure cover (previous generation hoists) or the four Phillips-head screws holding the aluminium enclosure cover (new generation hoists, see section 6.5.1).

4. Remove the electrical enclosure cover to access the limit switches.

5. Loosen the 2 limit switches' adjustment bar screws (9) without removing them.

Adjusting the Lower Limit	Adjusting the Upper Limit
6. Turn the lower limit adjustment wheel (7) towards the microswitch with black wires (12) until you hear it click.	6. Turn the lower limit adjustment wheel (8) towards the microswitch with white or gray wires (11) until you hear it click.

Alternatively, instead of listening for a click you can use a multimeter in continuity mode touching the microswitch's terminals

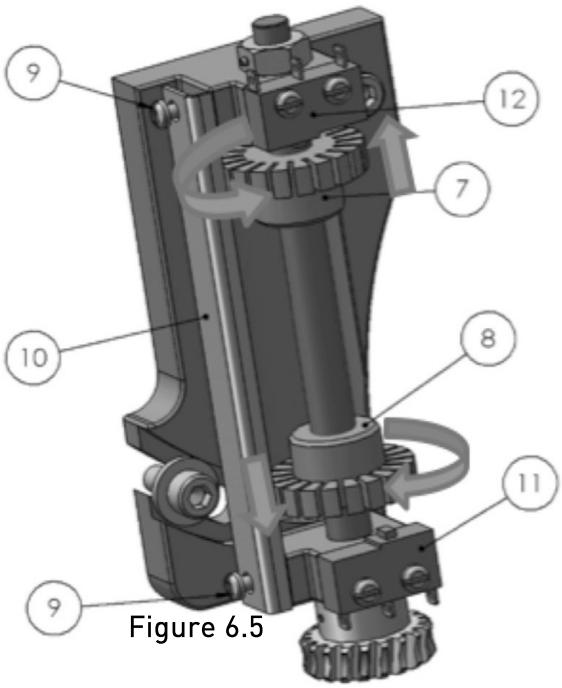


Figure 6.5

7. Push the adjustment bar (10) back into the adjustment wheels and tighten the 2 screws (9).
8. Reinstall the electrical enclosure cover to avoid inadvertently touching live electrical parts.
9. Turn on the hoist's power source.
10. Test the limit switch a few times, until the hoist stops consistently at the desired height. If the hoist does not stop at the desired height, repeat these steps to fine tune the desired stopping height.

Note: 2 to 3 teeth on the adjustment wheel represent approximately 1 foot of chain. Putting the adjustment wheel closer to the micro switch will reduce (restrain) the lower limit. Putting it further will increase it.

WARNING

When adjusting the lower limit, always make sure that there is no tension in the free end of the chain. Failure to adjust the lower limit properly will damage your hoist and /or your chain and may cause your hoist to run out of chain, potentially provoking a load to fall.

When adjusting the upper limit, always make sure that you have a safe distance between the hook and the hoist body. Failure to adjust the upper limit properly will damage your hoist and/or your chain, potentially provoking a load to fall.

6.5.1 Removing the Electrical Enclosure Cover on New Generation Hoists

The new generation hoist's electrical enclosure covers are fastened using a spring pin and four Phillips-head screws. Two of these Phillips-head screws are inside the cooling fins, the other two are much longer and are next to the power cable's cord grip.

When pulling the cover off the hoist, be careful not to tear off the gasket.

When reinstalling the cover, put the spring pin into the gearbox before fastening the screws, and be mindful not to pinch any wire.

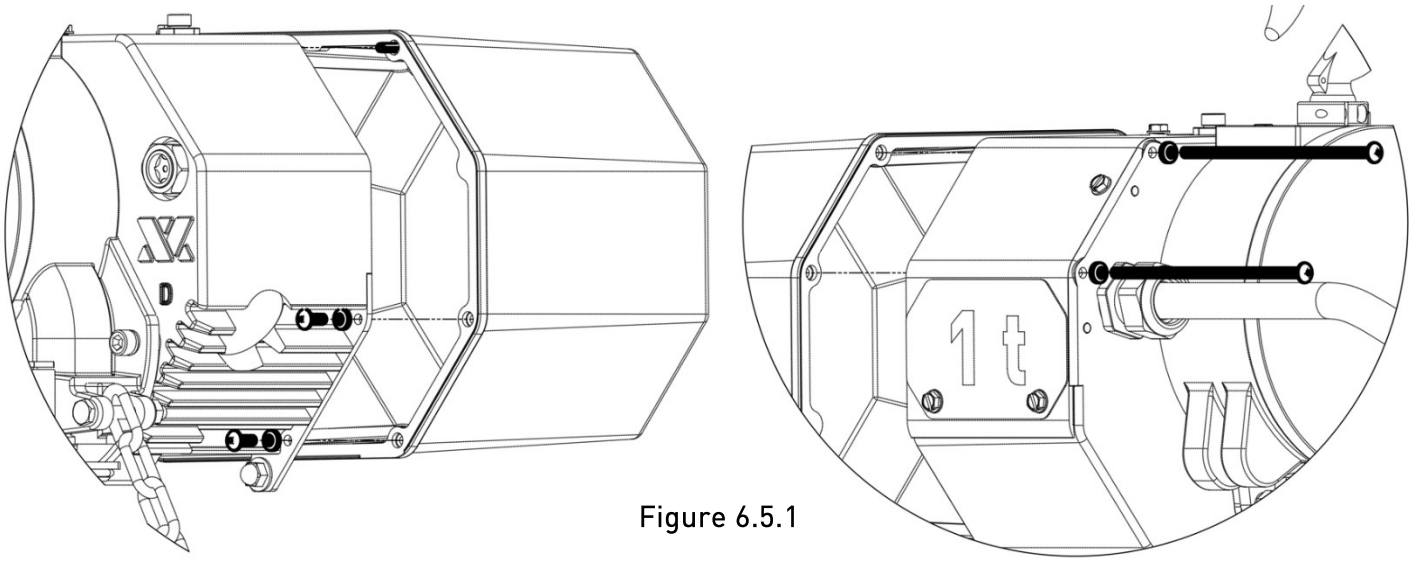
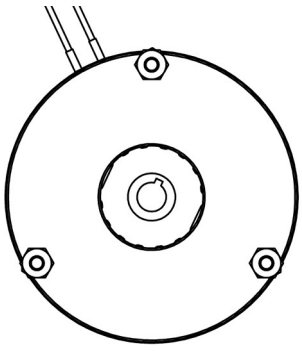


Figure 6.5.1

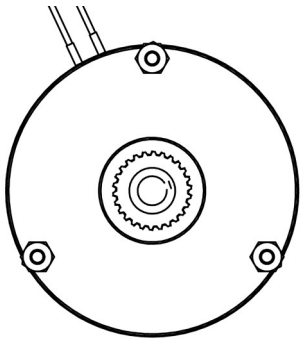
6.6 Adjusting the Disc Brake

Your hoist has one of the three following brake models. The brake model is specified by the 2nd letter following the 5 number sequential number of your hoist's serial number. This letter is either V, Z, or U, i.e. #####EVA##### is a hoist with an HOPHL-120 brake.

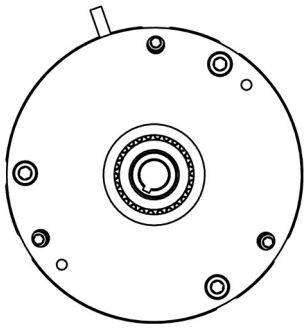
V: HOPHL-120



Z: HOPHL-120S



U: HOPHL-180



WARNING

Check the brake gap regularly and/or during the periodic maintenance of the equipment hoist. **Readjust the brake if the gap (1) is larger than 0.030 in.**

6.6.1 Adjusting HOPHL-120 and HOPHL-120S Brakes

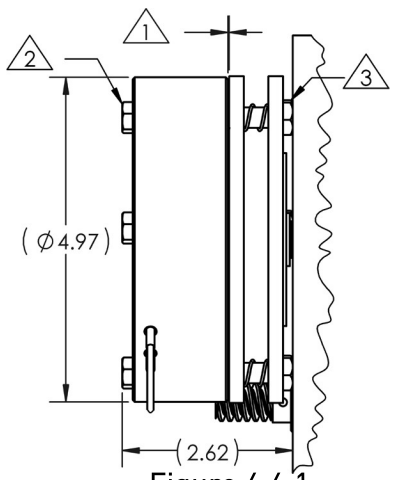


Figure 6.6.1

1. Tighten all three mounting bolts (2) to snug, 3-4 N-m / 2.2-3.0 ft-lb.

2. Adjust the gap (1) to .010 in by tightening or loosening the three bolts (3). Use a thickness gauge to check the gap at all three bolts (3).

3. Tighten all three mounting bolts (2) to 5-6 N-m / 3.74.4 ft-lb.

4. Recheck the gap (1) with a thickness gauge.

Repeat steps 2, 3 and 4 until the gap is adjusted to 0.010 in.

6.6.2 Adjusting HOPHL-180 Brake

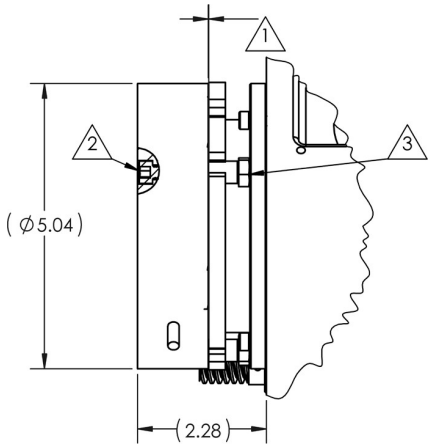


Figure 6.6.2

1. Slightly loosen the three mounting bolts (2).

2. Adjust the gap (1) to .010 in by tightening or loosening the three bolts (3). Use a thickness gauge to check the gap (1) at all three bolts (3).

3. Tighten all three mounting bolts (2) to 8,9-10,9 Nm / 6,6-8,0 ft-lb.

4. Recheck the gap (1) with a thickness gauge.

Repeat steps 2, 3and 4 until the gap is adjusted to 0.010 in.

6.7 Storage

1. All hoists equipped with a vented oil cap should be stored with the cap oriented upwards to prevent oil leakage.

2. The storage area should be clean and dry.

6.8 Outdoor Installation

1. For hoist installations that are outdoors, the hoist MUST BE always covered and protected from the weather. We offer a weather-resistant rain cover (HOUARAINCOVER), TENV/TEFC options, and motor treatment against humidity and acidity.

2. Possibility of corrosion on components of the hoist increases for installation where salty air and high humidity are present. The hoist may require more frequent lubrication. Make frequent and regular inspections of the unit's condition and operation.

3. For hoist installations where temperature variations introduce condensation into the hoist, additional inspection and more frequent lubrication may be required. Refer to the next section for allowable environmental conditions.

6.9 Operational Environment

Unless otherwise specified, the hoist does not conform to the following operational environments and should therefore not be used for any such applications:

- Explosive gases or vapour.
- Organic solvents or volatile powder.
- Excessive amounts of powder and dust of general substances.
- Excessive amount of acids or salts.

7. Troubleshooting



Hazardous voltages are present in the hoist and in connections between components.

De-energize equipment before performing ANY maintenance. Refer to ANSIZ244.1, "Personnel Protection – Lockout / Tag out of Energy Sources".

To avoid a shock hazard, DO NOT perform ANY mechanical or electrical maintenance on single phase, dual speed, or VFD hoists within 5 minutes of de-energizing (disconnecting) the trolley or hoist.

Only trained and qualified personnel shall inspect and repair this equipment.

TABLE 7.1 TROUBLESHOOTING GUIDE

Symptom	Cause	Solution
Hoist moving in wrong direction	Power supply reverse phased	Switch 2 of the 3 power supply wires at the power source. See section 3.6 and 3.7 for instructions on how to check for correct power supply phase connections).
	Improper electrical connections	Refer to wiring diagram and check all connections.
Hoist will not operate	Loss of power	Check circuit breakers, switches, fuses, and connections on power lines / cable.
	Faulty magnetic contractor	Check coil for open or short circuit. Check all connections in the control circuit. Check for open contactors. Replace as needed.
	Low voltage in hoist's power supply	Determine cause of low voltage and bring to within plus or minus 10% of the voltage specified on the motor nameplate. The voltage should be measured at the hoist contactor. See section 3.7.
	Wrong voltage or frequency	Check voltage and frequency of power supply against the rating on the nameplate of the motor. See section 3.7.
	Hoist overloaded	Reduce load to within rated capacity of hoist.
	Motor overheated and thermal overload protector has tripped	See section 3.6.1.
	Improper, loose, or broken wire in hoist electrical system	Shut off power supply, check wiring connection on hoist control panel and inside push-button pendant.

TABLE 7.1 TROUBLESHOOTING GUIDE (CONT'D)		
Symptom	Cause	Solution
Hoist will not operate	Brake does not release	Check motor brake coil for continuity. Replace brake if needed.
	Emergency stop depressed on push button pendant	Turn the emergency stop button clockwise to unlock the control and allow hoist operation.
	Defect in control transformer	Check transformer coil for signs of overheating. Disconnect transformer and check for open winding.
	Power supply reverse phased	See section 3.7.
Hoist lifts but will not lower	Faulty switch in pendant	Check electrical continuity. Check electrical connections. Replace or repair as needed.
	Up circuit is open	Check circuit for loose connections. Check the up side of the limit switch for malfunction.
	Broken conductor in pendant cord	Check the continuity of each conductor in the cable. If one is broken, replace entire cable.
	Safety stop or chain guide activated	Check that the safety stop or chain guide's switch on the chain basket side is not triggered. If not, check the electrical continuity between the pendant and contactor (black wire).
Hoist lowers but will not lift	Faulty switch in pendant	Check electrical continuity. Check electrical connections. Replace or repair as needed.
	Down circuit is open	Check circuit for loose connections. Check the down side of the limit switch for malfunction.
	Broken conductor in pendant cord	Check the continuity of each conductor in the cable. If one is broken, replace entire cable.
	Safety stop or chain guide activated	Check that the safety stop or chain guide's switch on the chain basket side is not triggered. If not, check the electrical continuity between the pendant and contactor (white or gray wire).
	Hoist overloaded	Reduce load within rated capacity.
Hoist will not lift rated load or does not have the proper lifting speed	Low voltage in hoist's power supply.	Determine cause of low voltage and bring to within plus or minus 10% of voltage specified on the motor nameplate. The voltage should be measured at the hoist contactor.
	Hoist overloaded	Reduce load within rated capacity.
Load drifts Excessively when hoist is stopped	Motor brake not holding	Check brake for proper "Brake Gap" dimension (section 6.6). Replace if needed.
Brake or motor overheating	Load too heavy	Reduce load within rated capacity.
	Excessive duty cycle	Reduce frequency of lifts. See tables A.1 and A.2 in the appendix.
	Wrong voltage or frequency	Determine cause of low voltage and bring to within plus or minus 10% of the voltage specified on the motor nameplate. The voltage should be measured at the hoist contactor. See sections 3.6 and 3.7.
	Ambient temperature too hot	Over an ambient temperature of 40 °C, the hoist's duty cycle shall be lowered to prevent the motor from overheating. Special measures should be taken to provide adequate ventilation for the hoist or to protect it from heat by other means.

Hoist operates intermittently	Electrical arcing between the contactor contacts	Check for burned contacts. Replace the contactors as necessary.
	Loose connection in circuit	Check all wires and terminals for bad connections. Replace as needed.
	Broken conductor in pendant cable	Check for intermittent continuity in each conductor in the pendant cable. Replace entire Pendant Cord if continuity is not constant.

8. Parts List

Please consult our website vulcanhoist.com for the complete parts list.

9. Warranty

Warranty explanation and terms

All products sold by the Vulcan Hoist Company Ltd. (hereinafter referred to as Vulcan) are warranted to be free from defects in material and workmanship from date of shipment by Vulcan for the following periods:

Vulcan electric hoists, trolleys, and winches – 2 years

GIS and VS1 electric hoists, trolleys – 2 years

Nova manual chain blocks, trolleys, and lever hoists – 1 year

Nova Cronos manual chain blocks (2 speeds) – 2 years

Nova Plus manual lever hoists – 2 years

Vulcan Max manual chain blocks and lever hoists – 2 years

William Hackett manual chain blocks, trolleys, and lever hoists – 2 years

Mini XT manual chain blocks and lever hoists – 2 years

XTS stainless steel manual chain blocks and trolleys – 2 years

Nova lifting clamps – 1 year

Super Tools lifting clamps – 2 years

Spanset lifting clamps – 5 years

Spare and replacement parts – 1 year

The product must be used in accordance with manufacturer's recommendations and must not have been subject to abuse, lack of maintenance, misuse, negligence, or unauthorized repairs or alterations.

Should any defect in material or workmanship occur during the above time period in any product as determined by Vulcan's inspection of the product, Vulcan agrees, at its discretion, either to replace (not including installation) or repair the part or product free of charge and deliver said item F.O.B. Vulcan place of business to customer.

Customer must obtain a Return Good Authorization as directed by Vulcan prior to shipping the product for warranty evaluation. An explanation of the complaint must accompany the product. The product must be returned freight prepaid. Upon repair, the product will be covered for the remainder of the original warranty period. If it is determined there is no defect, or that the defect resulted from causes not within the scope of Vulcan's warranty, the customer will be responsible for the costs of returning the product.

Vulcan disclaims any and all other warranties of any kind expressed or implied as to the product's merchantability or fitness for a particular application. Vulcan will not be liable for any deaths or injuries to people, any property damages, or any additional expenses resulting from failure to follow the guidelines (intentionally or due to negligence) for safe installation, use, maintenance and inspection described in this manual and all applicable standards.

Appendix

DEFINITIONS OF VARIOUS HOIST TERMS

Abnormal operating conditions - Environmental conditions that are unfavorable, harmful, or detrimental to or for the operation of a hoist, such as excessively high or low ambient temperatures, exposure to weather, corrosive fumes, dust laden or moisture laden atmospheres, and hazardous locations.

Below-the-hook lifting devices - Devices that are not normally reeved onto the hoist chain, such as hook on buckets, magnets, grabs, and other supplemental devices used for ease of handling certain types of loads. The weight of these devices is to be considered part of the load to be lifted.

Brake, holding - A friction brake for a hoist that is automatically applied and prevents motion when power to the brake is removed.

Chain falls - Number of lines of chain supporting the load blocks or hook.

Chain, load - Welded link chain rated for lifting.

Chain, roller - A series of alternately assembled roller links and pin links in which the pins articulate inside the bushings and the rollers are free to tum on the bushings. Pins and bushings are press fit in their respective link plates.

Chain, welded link - A chain consisting of a series of interwoven links formed and welded.

Designated person - A person selected or assigned by the employer or the employer's representative as being competent to perform specific duties.

Guide, chain - A means to guide the load chain at the load sprocket.

Hoist - A machinery unit that is used for lifting or lowering a freely suspended (unguided) load.

Lifting devices - Devices that are not normally reeved onto the hoist chain, such as hook-on buckets, magnets, grabs, and other supplemental devices used for ease of handling certain types of loads. The weight of these devices is to be considered part of the load to be lifted.

Limit switch – A device actuated by the movement of the hoist and used to prevent the chain from traveling too far in either direction. The primary limit switch is the one described in section 6.5. The secondary limit switch is actuated by the safety stop or the chain guide.

Load - The total superimposed weight on the load block or hook.

Load, rated - The maximum load for which a hoist is designated by the manufacturer or a qualified person.

Load block - The assembly of hook, swivel, bearing, sprockets, pins, and frame suspended by the hoisting load chain. This shall include any appurtenances reeved in the hoisting load chain.

Load chain - See chain, load.

Load suspension parts - The load suspension parts of the hoist are the means of suspending the hoist structure and load such as hooks, lugs, load blocks, drum and rope/cable, or sprocket and chain.

Normal operating conditions - Conditions during which a hoist performs functions within the scope

of the original design.

Overload - Any load greater than the rated load.

Over travel restraint - A device used to prevent the slack load chain from inadvertently being lowered out of the load sprocket.

Pendant station - Controls suspended from the hoist for operating the unit from the floor.

Power transmission parts - The machinery components including the gears, shafts, clutches, couplings, bearings, motors, and brakes.

Qualified person - A person who, by possession of a recognized degree in an applicable field or a certificate of professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter and work.

Rated load - See load, rated.

Reeving - A system in which a chain travels around sprockets, roller chain - See chain, roller.

Safety stop - Device designed to prevent collisions due to obstacles on the chain (hooks, other objects, chain twists and knots, etc.).

Sheave - A grooved wheel or sprocket used with a chain to change direction and point of application of a pulling force.

Sprocket, idler - A freely rotating device that changes the direction of the load chain.

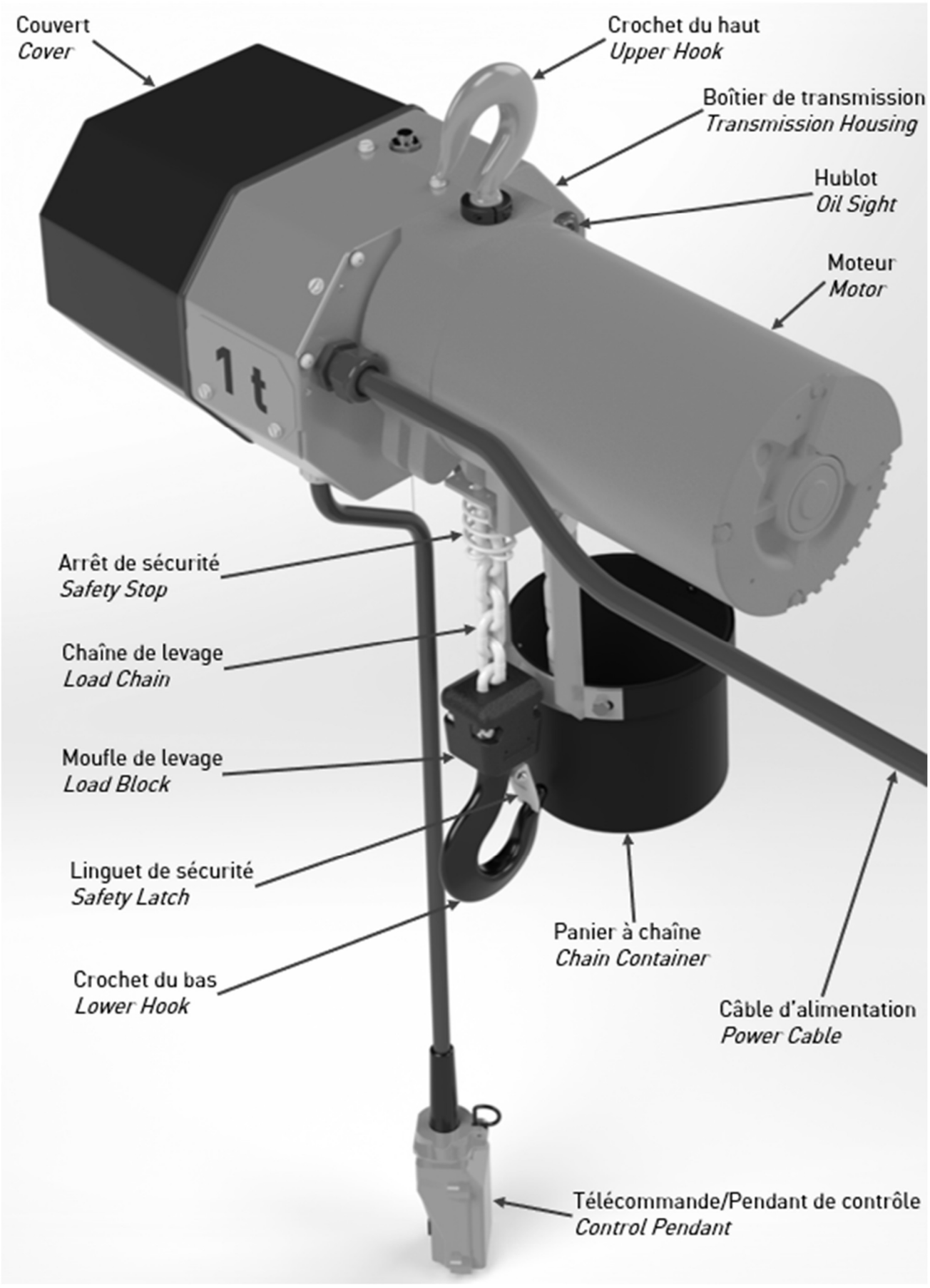
Sprocket, load - A hoist component that transmits motion to the load chain. This component is sometimes called load wheel, load sheave, pocket wheel, or chain wheel.

Trolley - A machine unit that travels on a monorail track or crane bridge girder.

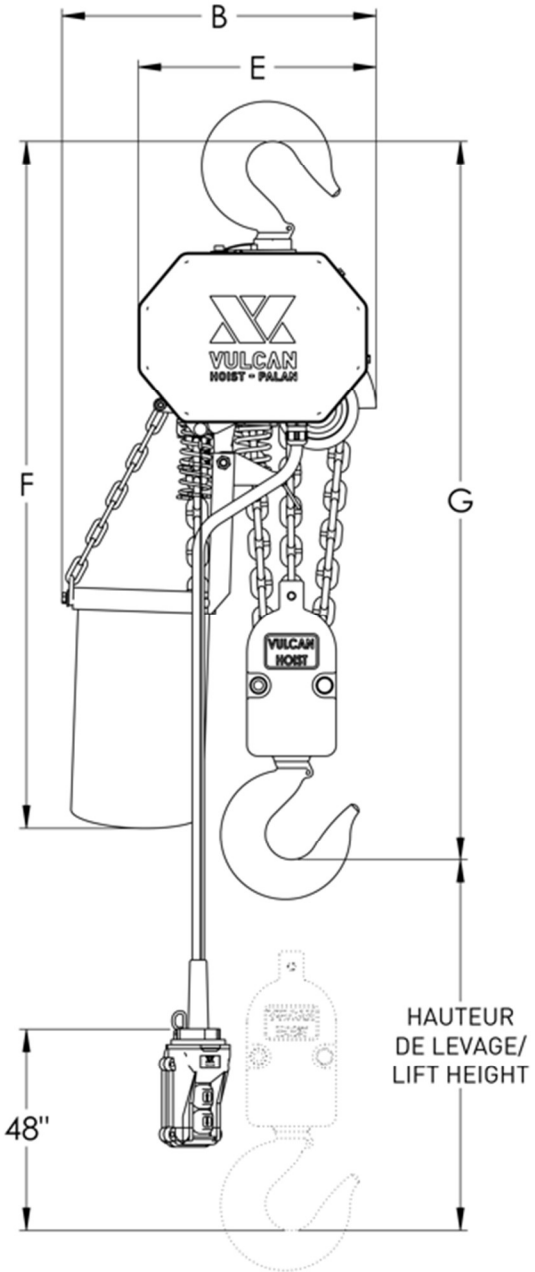
Trolley hoist - A hoist and trolley unit consisting of a hoist suspended from or mounted to a trolley, or a hoist with an integral trolley.

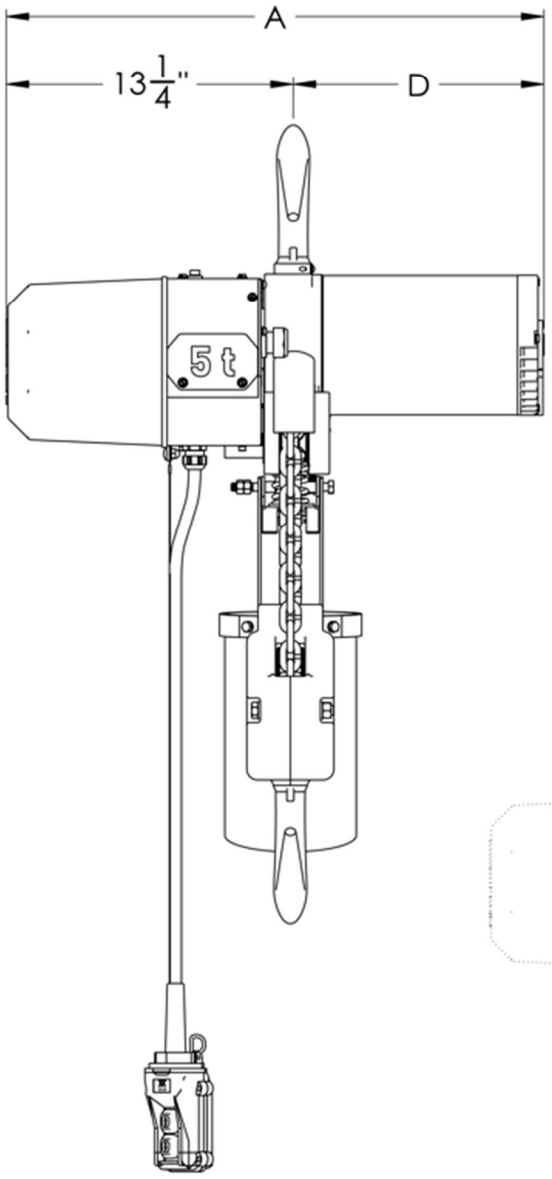
Welded link chain - See chain, welded link.

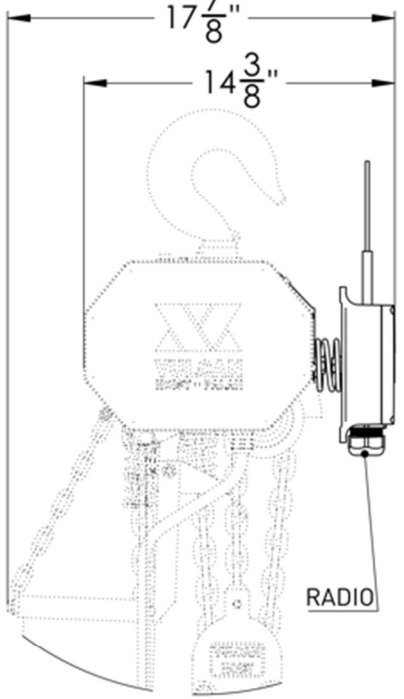
Nomenclature



Spécifications des produits / *Product Specifications*







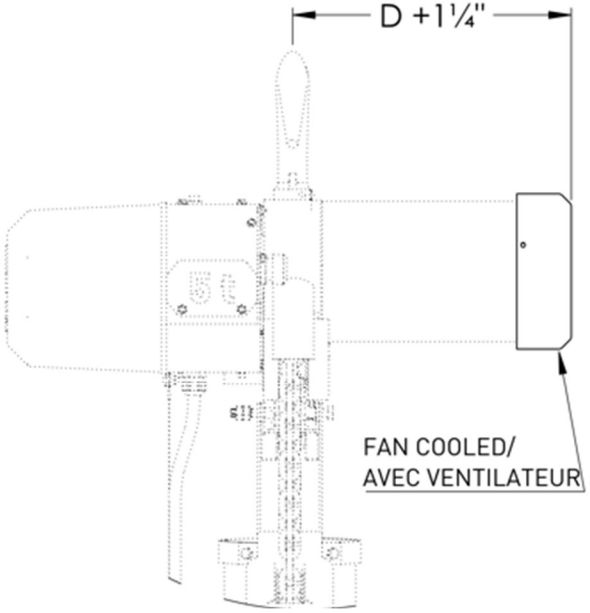


TABLEAU A.1: MODÈLES À UNE VITESSE / *TABLE A.1: SINGLE SPEED MODELS*															
Capacité *Capacity*	Voltage / Phase	Modèle *Model*	Vitesse de levage (pi/min) *Lifting speed (fpm)*	Cycle de service avec ventilateur en option *Duty cycle with optional fan*	HP	Moteur Nidec - Fusible principal (A) *Nidec Motor - Main fuse (A)*	Moteur WEG – Fusible principal (A) *WEG Motor - Main fuse (A)*	Retom-bée(s) *Chain fall(s)*	Poids pour 10' de levage (lb) *Weight for 10' of lift (lb)*	A (po / *in*)	B (po / *in*)	D (po / *in*)	E (po / *in*)	F jusqu'à 15' de levage (po) *F up to 15' of lift (in)*	G (po / *in*)
1/4 de tonne *1/4 ton*	115/1	L05A08	8	H4	0.75	20	20	1	100	24	14 1/4	10 3/4	10 3/4	24 1/4	24
		L05A14	14												
		L05A20	20		1.5	30	25		105	25 1/8		11 7/8			25 1/2
		L05A26	26												
		L05A33	33												
		L05A40	40												
		L05A52	52												
	230/1	L05F10	10	H4	0.75	10	10	1	100	24	14 1/4	10 3/4	10 3/4	24 1/4	24
		L05F16	16												
		L05F20	20		1.5	15	12		105	25 1/8		11 7/8			25 1/2
		L05F26	26												
		L05F33	33												
		L05F40	40												
		L05F52	52												
	230/3	L05H16	16	H4	1	6	6	1	103	23 3/4	14 1/4	10 1/2	10 3/4	24 1/4	24
		L05H20	20		2	10	12		103	25 1/8		11 7/8			25 1/2
		L05H28	28												
		L05H33	33												
		L05H40	40												
		L05H52	52												
	460/3	L05T16	16	H4	1	3	3	1	94	23 3/4	14 1/4	10 1/2	10 3/4	24 1/4	24
		L05T20	20		2	5	6		103	25 1/8		11 7/8			25 1/2
		L05T28	28												
		L05T33	33												
		L05T40	40												
		L05T52	52												
	575/3	L05V10	10	H4	1	2	3	1	94	23 3/4	14 1/4	10 1/2	10 3/4	24 1/4	24
		L05V16	16												
		L05V20	20		2	4	5		103	25 1/8		11 7/8			25 1/2
		L05V28	28												
		L05V33	33												
		L05V40	40												
		L05V52	52												

TABLEAU A.1: MODÈLES À UNE VITESSE / *TABLE A.1: SINGLE SPEED MODELS*															
Capacité *Capacity*	Voltage / Phase	Modèle *Model*	Vitesse de levage (pi/min) *Lifting speed (fpm)*	Cycle de service avec ventilateur en option *Duty cycle with optional fan*	HP	Moteur Nidec - Fusible principal (A) *Nidec Motor - Main fuse (A)*	Moteur WEG – Fusible principal (A) *WEG Motor - Main fuse (A)*	Retom-bée(s) *Chain fall(s)*	Poids pour 10' de levage (lb) *Weight for 10' of lift (lb)*	A (po / *in*)	B (po / *in*)	D (po / *in*)	E (po / *in*)	F jusqu'à 15' de levage (po) *F up to 15' of lift (in)*	G (po / *in*)
1/2 tonne 1/2 ton	115/1	L1A08	8	H4	0.75	20	20	1	100	24	14 1/4	10 3/4	10 3/4	24 1/4	24
		L1A14	14												
		L1A20	20		1.5	30	25		105	25 1/8		11 7/8			
		L1A26	26												
		L1A33	33												25 1/2
	230/1	L1F10	10	H4	0.75	10	10	1	100	24	14 1/4	10 3/4	10 3/4	24 1/4	24
		L1F16	16												
		L1F20	20		1.5	15	12		105	25 1/8		11 7/8			
		L1F26	26												
		L1F33	33												25 1/2
		L1F40	40		2	20	20		111	26		12 3/4			
	230/3	L1H10	10	H4	1	6	6	1	94	23 3/4	14 1/4	10 1/2	10 3/4	24 1/4	24
		L1H13	13												
		L1H16	16												
		L1H20	20		2	10	12		103	25 1/8		11 7/8			
		L1H28	28												
		L1H33	33												25 1/2
		L1H40	40												
		L1H52	52												
	460/3	L1T10	10	H4	1	3	3	1	94	23 3/4	14 1/4	10 1/2	10 3/4	24 1/4	24
		L1T13	13												
		L1T16	16												
		L1T20	20		2	5	6		103	25 1/8		11 7/8			
		L1T28	28												
		L1T33	33												25 1/2
		L1T40	40												
		L1T52	52												
	575/3	L1V10	10	H4	1	2	3	1	94	23 3/4	14 1/4	10 1/2	10 3/4	24 1/4	24
		L1V13	13												
		L1V16	16												
		L1V20	20		2	4	5		103	25 1/8		11 7/8			
		L1V28	28												
		L1V33	33												25 1/2
		L1V40	40												
		L1V52	52												

TABLEAU A.1: MODÈLES À UNE VITESSE / *TABLE A.1: SINGLE SPEED MODELS*															
Capacité *Capacity*	Voltage / Phase	Modèle *Model*	Vitesse de levage (pi/min) *Lifting speed (fpm)*	Cycle de service avec ventilateur en option *Duty cycle with optional fan*	HP	Moteur Nidec - Fusible principal (A) *Nidec Motor - Main fuse (A)*	Moteur WEG - Fusible principal (A) *WEG Motor - Main fuse (A)*	Retom-bée(s) *Chain fall(s)*	Poids pour 10' de levage (lb) *Weight for 10' of lift (lb)*	A (po / *in*)	B (po / *in*)	D (po / *in*)	E (po / *in*)	F jusqu'à 15' de levage (po) *F up to 15' of lift (in)*	G (po / *in*)
1 tonne 1 ton	115/1	L2A07	7	H4	0.75	20	20	1	100	24	14 1/4	10 3/4	10 3/4	24 3/4	25
	230/1	L2F07	7	H4	0.75	10	10	1	100	24	14 1/4	10 3/4	10 3/4	24 3/4	25
		L2F14	14												
		L2F20	20		2	20	20		111	26		12 3/4			
	230/3	L2H10	10	H4	1	6	6	1	103	23 3/4	14 1/4	10 1/2	10 3/4	24 3/4	25
		L2H14	14		2					25 1/8		11 7/8			
		L2H20	20												
		L2H33	33		4.5	20	20		114	26 3/8		13 1/8			26 1/2
		L2H40	40	H3											
		L2H52	52												
	460/3	L2T10	10	H4	1	3	3	1	94	23 3/4	14 1/4	10 1/2	10 3/4	24 3/4	25
		L2T14	14		2					25 1/8		11 7/8			
		L2T33	33		4.5	10	10		114	26 3/8		13 1/8			26 1/2
		L2T40	40	H3											
		L2T52	52												
	575/3	L2V14	14	H4	2	4	5	1	103	25 1/8	14 1/4	11 7/8	10 3/4	24 3/4	25
		L2V20	20												
		L2V27	26												
		L2V33	33		3	5	7		107	25 5/8		12 3/8			26 1/2
		L2V40	40	H3											
		L2V52	52		4.5	8	8		114	26 3/8		13 1/8			
1 1/2 tonne 1 1/2 ton	230/1	L3F07	7	H3	1.5	15	12	1	105	25 1/8	14 1/4	11 7/8	10 3/4	25 1/4	26
		L3F13	13		2	20	20		111	26		12 3/4			
	230/3	L3H20	20	H3	4.5	20	20	1	114	26 3/8	14 1/4	13 1/8	10 3/4	25 1/4	26
		L3H26	26												
		L3H33	33												27 1/2
	460/3	L3T20	20	H3	4.5	10	10	1	114	26 3/8	14 1/4	13 1/8	10 3/4	25 1/4	26
		L3T26	26												
		L3T33	33												27 1/2
	575/3	L3V13	13	H3	2	4	5	1	107	25 1/8	14 1/4	11 7/8	10 3/4	25 1/4	26
		L3V20	20		3					25 5/8		12 3/8			
		L3V26	26		4.5	8	8		114	26 3/8		13 1/8			
		L3V33	33												27 1/2

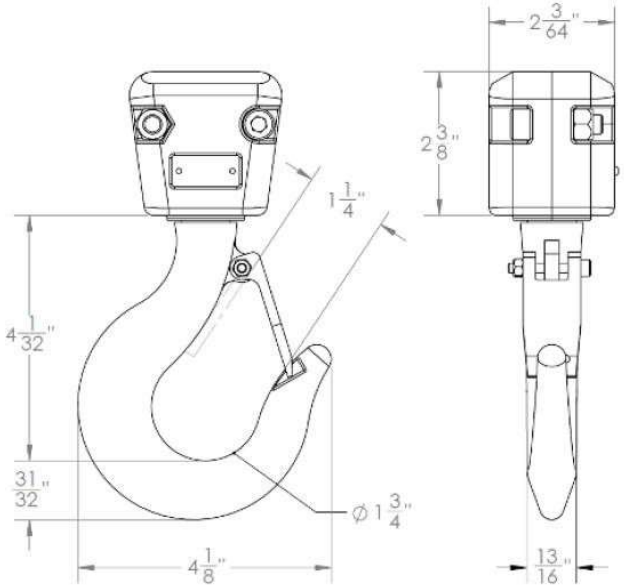
TABLEAU A.1: MODÈLES À UNE VITESSE / *TABLE A.1: SINGLE SPEED MODELS*															
Capacité *Capacity*	Voltage / Phase	Modèle *Model*	Vitesse de levage (pi/min) *Lifting speed (fpm)*	Cycle de service avec ventilateur en option *Duty cycle with optional fan*	HP	Moteur Nidec - Fusible principal (A) *Nidec Motor - Main fuse (A)*	Moteur WEG – Fusible principal (A) *WEG Motor - Main fuse (A)*	Retom-bée(s) *Chain fall(s)*	Poids pour 10' de levage (lb) *Weight for 10' of lift (lb)*	A (po / *in*)	B (po / *in*)	D (po / *in*)	E (po / *in*)	F jusqu'à 15' de levage (po) *F up to 15' of lift (in)*	G (po / *in*)
2 tonnes 2 tons	115/1	L4A04	4	H4	0.75	20	20	2	122	24	14 1/4	10 3/4	10 3/4	30 3/4	30
	230/1	L4F04	4	H4	0.75	10	10	2	128	24	14 1/4	10 3/4	10 3/4	30 3/4	30
		L4F10	10		2	20	20		133	26		12 3/4			
		L4F13	13												
	230/3	L4H06	6	H4	2	10	12	2	126	25 1/8	14 1/4	11 7/8	10 3/4	30 3/4	30
		L4H10	10												
		L4H15	15												
		L4H20	20	H3	4.5	20	20		137	26 3/8		13 1/8			31 1/2
		L4H26	26												
	460/3	L4T06	6	H4	2	5	6	2	126	25 1/8	14 1/4	11 7/8	10 3/4	30 3/4	30
		L4T20	20	H3	4.5	10	10		137	26 3/8		13 1/8			31 1/2
		L4T26	26												
	575/3	L4V06	6	H4	2	4	5	2	126	25 1/8	14 1/4	11 7/8	10 3/4	30 3/4	30
		L4V10	10												
		L4V15	15												
		L4V20	20	H3	3	5	7		130	25 5/8		12 3/8			31 1/2
		L4V26	26		4.5	8	8		137	26 3/8		13 1/8			
3 tonnes 3 tons	230/1	L6F04	4	H3	2	20	20	2	131	26	14 1/4	12 3/4	10 3/4	30 3/4	30
		L6F07	7					3	138		14 1/2		11		34 1/2
	230/3	L6H05	5	H3	2	10	12	2	129	25 1/8	14 1/4	11 7/8	10 3/4	30 3/4	30
		L6H09	9		4.5	20	20		140	26 3/8		13 1/8			
		L6H15	15												
		L6H20	20	H2											31 1/2
	460/3	L6T05	5	H3	2	5	6	2	129	25 1/8	14 1/4	11 7/8	10 3/4	30 3/4	30
		L6T09	9		4.5	10	10		140	26 3/8		13 1/8			
		L6T15	15												
		L6T20	20	H2											31 1/2
	575/3	L6V05	5	H3	2	4	5	2	129	25 1/8	14 1/4	11 7/8	10 3/4	30 3/4	30
		L6V09	9		4.5	8	8		140	26 3/8		13 1/8			
		L6V15	15												
		L6V20	20	H2											31 1/2

TABLEAU A.1: MODÈLES À UNE VITESSE / *TABLE A.1: SINGLE SPEED MODELS*															
Capacité *Capacity*	Voltage / Phase	Modèle *Model*	Vitesse de levage (pi/min) *Lifting speed (fpm)*	Cycle de service avec ventilateur en option *Duty cycle with optional fan*	HP	Moteur Nidec - Fusible principal (A) *Nidec Motor - Main fuse (A)*	Moteur WEG – Fusible principal (A) *WEG Motor - Main fuse (A)*	Retom-bée(s) *Chain fall(s)*	Poids pour 10' de levage (lb) *Weight for 10' of lift (lb)*	A (po / *in*)	B (po / *in*)	D (po / *in*)	E (po / *in*)	F jusqu'à 15' de levage (po) *F up to 15' of lift (in)*	G (po / *in*)
5 tonnes 5 tons	115/1	L10A02	2	H3	1.5	30	25	3	165	25 1/8	14 1/2	11 7/8	11	38	34 1/2
	230/1	L10F02	2	H3	1.5	15	12	3	165	25 1/8	14 1/2	11 7/8	11	38	34 1/2
		L10F04	4		2	20	20		170	26		12 3/4			
	230/3	L10H05	5	H3	4.5	20	20	3	173	26 3/8	14 1/2	13 1/8	11	38	34 1/2
		L10H10	10												
		L10H13	13	H2											
	460/3	L10T05	5	H3	4.5	10	10	3	173	26 3/8	14 1/2	13 1/8	11	38	34 1/2
		L10T10	10												
		L10T13	13	H2											
	575/3	L10V05	5	H3	3	5	7	3	167	25 5/8	14 1/2	12 3/8	11	38	34 1/2
		L10V10	10		4.5	8	8		173	26 3/8		13 1/8			
		L10V13	13	H2											
10 tonnes 10 tons	230/3	L20H07	7	H3	2x 4.5	40	40	6	700	26 1/2	29 3/4	13 1/4	22 1/4	46	43 1/2
	460/3	L20T07	7	H3	2x 4.5	20	20	6	700	26 1/2	29 3/4	13 1/4	22 1/4	46	43 1/2
	575/3	L20V07	7	H3	2x 4.5	15	15	6	700	26 1/2	29 3/4	13 1/4	22 1/4	46	43 1/2
15 tonnes 15 tons	230/3	L30H04	4	H3	2x 4.5	40	40	10	1400	26 1/2	37 3/4	13 1/4	30 1/4	59 1/4	48
	460/3	L30T04	4	H3	2x 4.5	20	20	10	1400	26 1/2	37 3/4	13 1/4	30 1/4	59 1/4	48
	575/3	L30V04	4	H3	2x 4.5	15	15	10	1400	26 1/2	37 3/4	13 1/4	30 1/4	59 1/4	48
15 tonnes métriques 15 metric tons	230/3	L33H04	4	H3	2x 4.5	40	40	10	1400	26 1/2	37 3/4	13 1/4	30 1/4	59 1/4	48
	460/3	L33T04	4	H3	2x 4.5	20	20	10	1400	26 1/2	37 3/4	13 1/4	30 1/4	59 1/4	48
	575/3	L33V04	4	H3	2x 4.5	15	15	10	1400	26 1/2	37 3/4	13 1/4	30 1/4	59 1/4	48

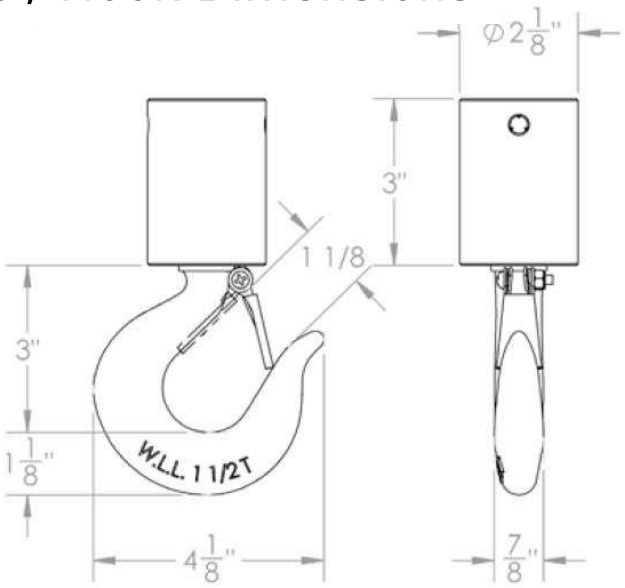
TABLEAU A.2: MODÈLES À DEUX VITESSES / *TABLE A.2: DUAL SPEED MODELS*														
Capacité *Capacity*	Voltage / Phase	Modèle *Model*	Vitesse de levage rapide /lente(pi/min) *Fast / Slow Lifting speed (fpm)*	Cycle de service avec ventilateur inclus *Duty cycle with included fan*	HP rapide /lente *Fast / Slow*	Fusible principal (A) *Main fuse (A)*	Retombée(s) *Chain fall(s)*	Poids pour 10' de levage (lb) *Weight for 10' of lift (lb)*	A (po / *in*)	B (po / *in*)	D (po / *in*)	E (po / *in*)	F jusqu'à 15' de levage (po) *F up to 15' of lift (in)*	G (po / *in*)
1/4 de tonne 1/4 ton	230/3	L05H13X2	13 / 4.3	H4	2 / 0.67	10	1	114	25 1/8	14 1/4	12	10 3/4	24 1/4	24
		L05H20X2	20 / 6.7											
		L05H26X2	26 / 8.7											
		L05H33X2	33 / 11											25 1/2
		L05H40X2	40 / 13.3											
		L05H52X2	52 / 17.3											
	460/3	L05T13X2	13 / 4.3	H4	2 / 0.67	5	1	114	25 1/8	14 1/4	12	10 3/4	24 1/4	24
		L05T20X2	20 / 6.7											
		L05T26X2	26 / 8.7											
		L05T33X2	33 / 11											25 1/2
		L05T40X2	40 / 13.3											
		L05T52X2	52 / 17.3											
	575/3	L05V13X2	13 / 4.3	H4	2 / 0.67	4	1	114	25 1/8	14 1/4	12	10 3/4	24 1/4	24
		L05V20X2	20 / 6.7											
		L05V26X2	26 / 8.7											
		L05V33X2	33 / 11											25 1/2
		L05V40X2	40 / 13.3											
		L05V52X2	52 / 17.3											
1/2 tonne 1/2 ton	230/3	L1H07X2	7 / 2.3	H4	2 / 0.67	10	1	114	25 1/8	14 1/4	12	10 3/4	24 1/4	24
		L1H13X2	13 / 4.3											
		L1H20X2	20 / 6.7											
		L1H26X2	26 / 8.7											
		L1H33X2	33 / 11											25 1/2
		L1H40X2	40 / 13.3											
		L1H52X2	52 / 17.3											
	460/3	L1T07X2	7 / 2.3	H4	2 / 0.67	5	1	114	25 1/8	14 1/4	12	10 3/4	24 1/4	24
		L1T13X2	13 / 4.3											
		L1T20X2	20 / 6.7											
		L1T26X2	26 / 8.7											
		L1T33X2	33 / 11											
		L1T40X2	40 / 13.3											25 1/2
		L1T52X2	52 / 17.3											

TABLEAU A.2: MODÈLES À DEUX VITESSES / *TABLE A.2: DUAL SPEED MODELS*														
Capacité *Capacity*	Voltage / Phase	Modèle *Model*	Vitesse de levage rapide /lente(pi/min) *Fast / Slow Lifting speed (fpm)*	Cycle de service avec ventilateur inclus *Duty cycle with included fan*	HP rapide /lente *Fast / Slow*	Fusible principal (A) *Main fuse (A)*	Retombée(s) *Chain fall(s)*	Poids pour 10' de levage (lb) *Weight for 10' of lift (lb)*	A (po / *in*)	B (po / *in*)	D (po / *in*)	E (po / *in*)	F jusqu'à 15' de levage (po) *F up to 15' of lift (in)*	G (po / *in*)
1/2 tonne 1/2 ton	575/3	L1V07X2	7 / 2.3	H4	2 / 0.67	4	1	114	25 1/8	14 1/4	12	10 3/4	24 1/4	24
		L1V13X2	13 / 4.3											
		L1V20X2	20 / 6.7											
		L1V26X2	26 / 8.7											
		L1V33X2	33 / 11											25 1/2
		L1V40X2	40 / 13.3											
		L1V52X2	52 / 17.3											
1 tonne 1 ton	230/3	L2H07X2	7 / 2.3	H4	2 / 0.67	10	1	114	25 1/8	14 1/4	12	10 3/4	24 3/4	25
		L2H13X2	13 / 4.3		3 / 1.2	12								
		L2H20X2	20 / 6.7											
		L2H26X2	26 / 8.7											
	460/3	L2T07X2	7 / 2.3	H4	2 / 0.67	5	1	114	25 1/8	14 1/4	12	10 3/4	24 3/4	25
		L2T13X2	13 / 4.3		3 / 1.2	7								
		L2T20X2	20 / 6.7											
		L2T26X2	26 / 8.7											
	575/3	L2V07X2	7 / 2.3	H4	2 / 0.67	4	1	114	25 1/8	14 1/4	12	10 3/4	24 3/4	25
		L2V13X2	13 / 4.3		3 / 1.2	5								
		L2V20X2	20 / 6.7											
		L2V26X2	26 / 8.7											
1 1/2 tonne 1 1/2 ton	230/3	L3H13X2	13 / 4.3	H3	3 / 1.2	12	1	114	25 1/8	14 1/4	12	10 3/4	25 1/4	26
	460/3	L3T13X2	13 / 4.3	H3	3 / 1.2	7	1	114	25 1/8	14 1/4	12	10 3/4	25 1/4	26
	575/3	L3V13X2	13 / 4.3	H3	3 / 1.2	5	1	114	25 1/8	14 1/4	12	10 3/4	25 1/4	26
2 tonnes 2 tons	230/3	L4H10X2	10 / 3.3	H4	3 / 1.2	12	2	137	25 1/8	14 1/4	12	10 3/4	30 3/4	30
		L4H13X2	13 / 4.3											
	460/3	L4T10X2	10 / 3.3	H4	3 / 1.2	7	2	137	25 1/8	14 1/4	12	10 3/4	30 3/4	30
		L4T13X2	13 / 4.3											
	575/3	L4V10X2	10 / 3.3	H4	3 / 1.2	5	2	137	25 1/8	14 1/4	12	10 3/4	30 3/4	30
		L4V13X2	13 / 4.3											
3 tonnes 3 tons	230/3	L6H07X2	7 / 2.3	H3	3 / 1.2	12	2	140	25 1/8	14 1/4	12	10 3/4	30 3/4	30
	460/3	L6T07X2	7 / 2.3	H3	3 / 1.2	7	2	140	25 1/8	14 1/4	12	10 3/4	30 3/4	30
	575/3	L6V07X2	7 / 2.3	H3	3 / 1.2	5	2	140	25 1/8	14 1/4	12	10 3/4	30 3/4	30

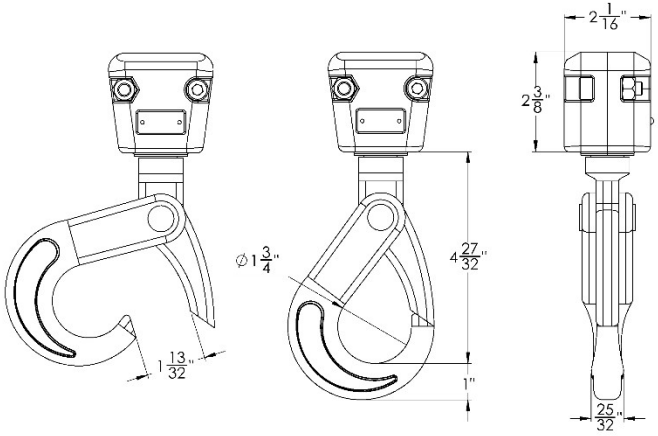
Dimensions des crochets / *Hook Dimensions*



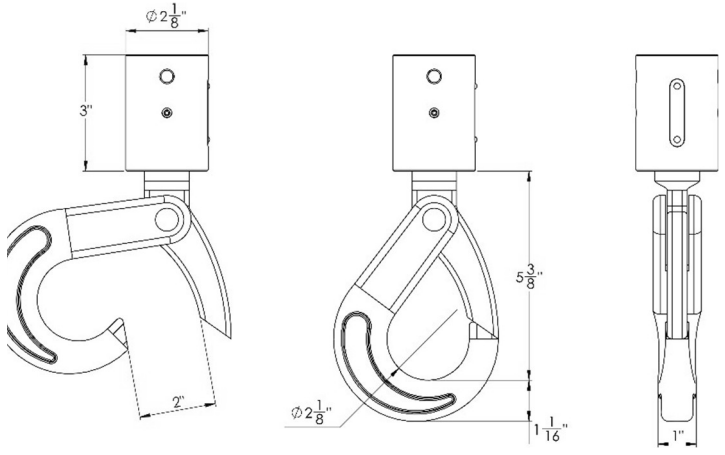
Une retombée (1/4T – 1T)
1 Chain Fall (1/4T – 1T)



Une retombée (1 1/2T)
1 Chain Fall (1 1/2T)

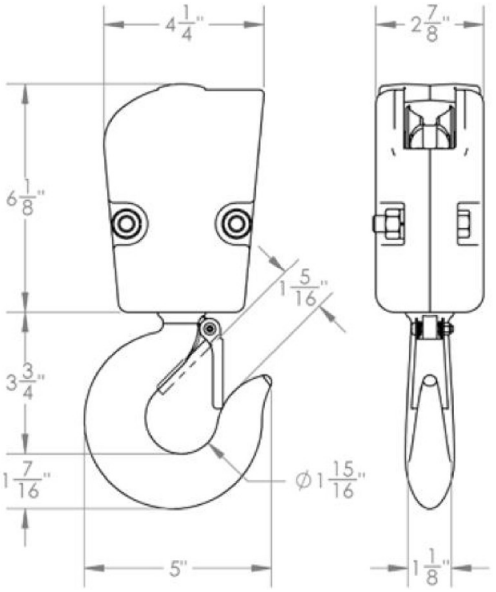


Une retombée autobloquant (1/4T – 1T)
1 Chain Fall Self-Locking (1/4T – 1T)

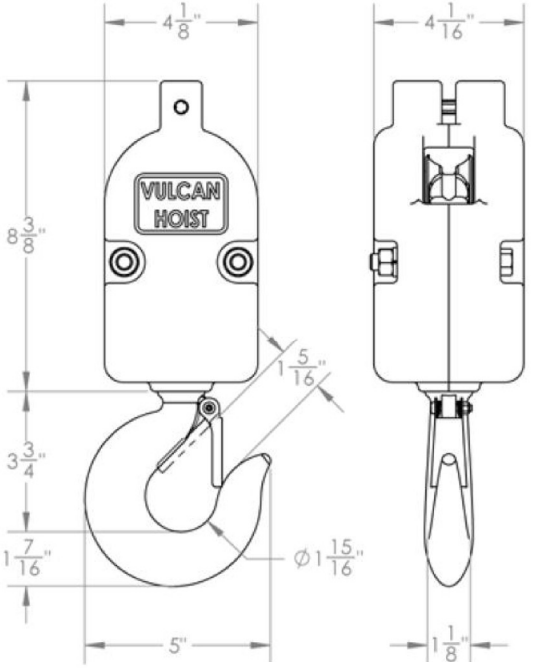


Une retombée autobloquant (1 1/2T)
1 Chain Fall Self-Locking (1 1/2T)

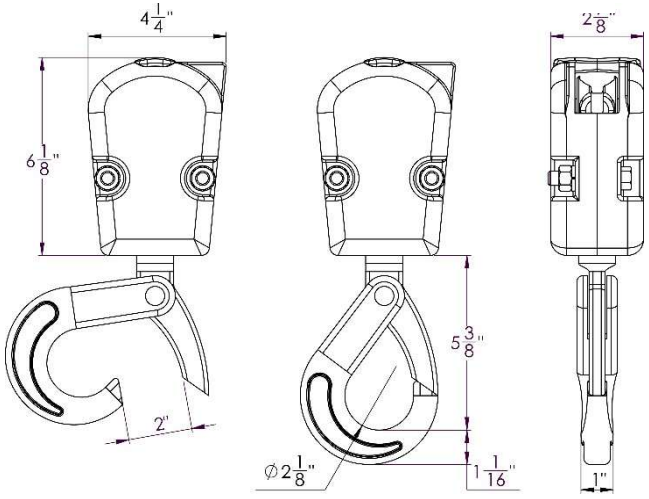
Dimensions des crochets / *Hook Dimensions*



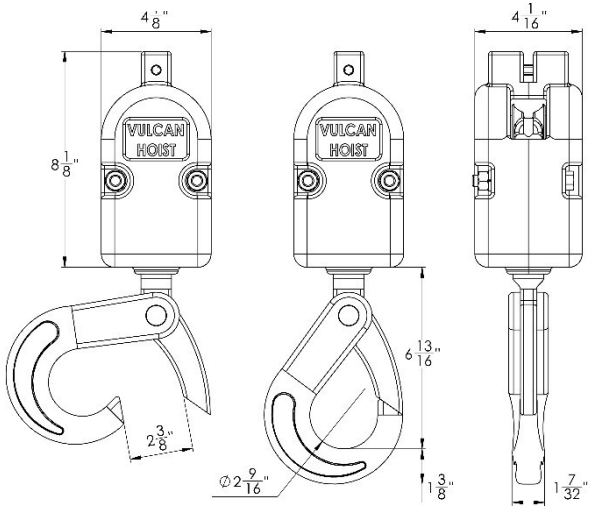
Deux retombées (2T – 3T)
2 Chain Falls (2T – 3T)



Trois retombées (3T – 5T)
3 Chain Falls (3T – 5T)

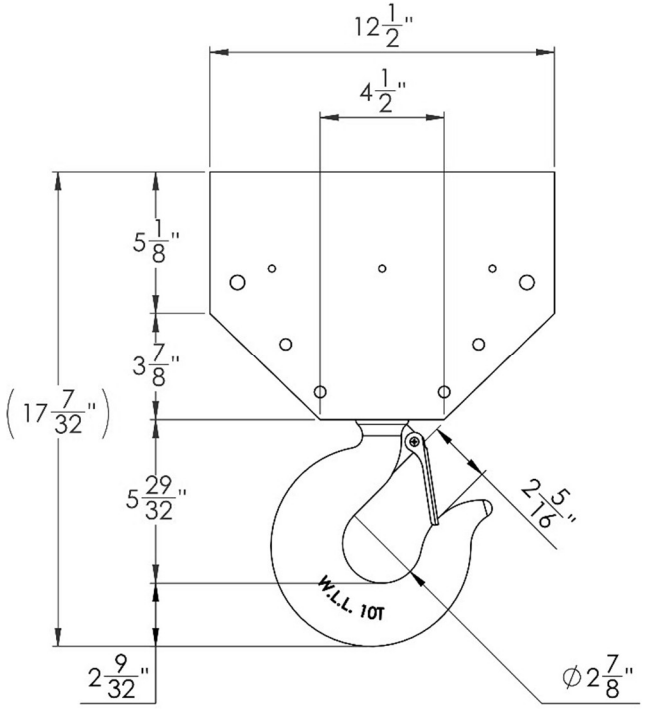


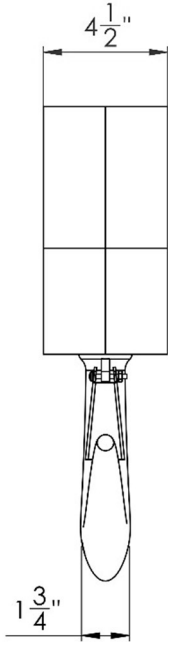
Deux retombées autobloquant (2T – 3T)
2 Chain Falls Self-Locking (2T – 3T)



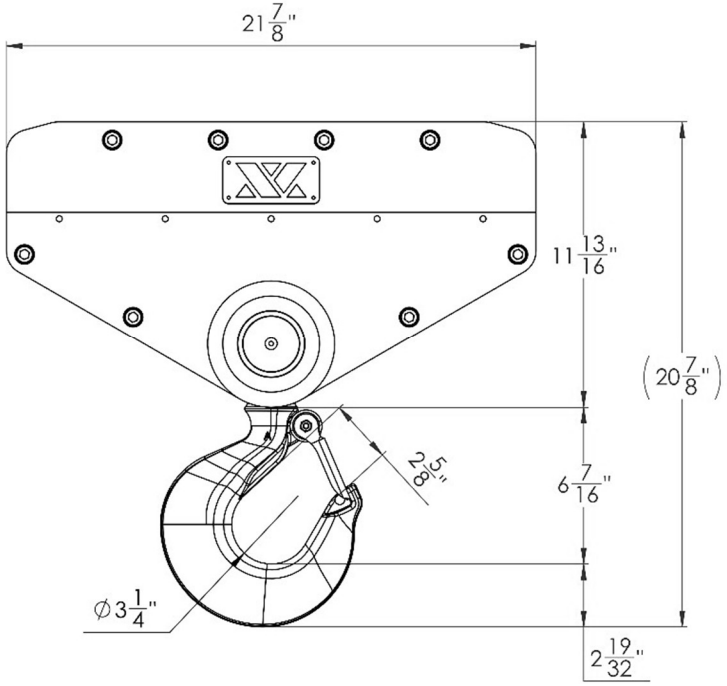
Trois retombées autobloquant (3T – 5T)
3 Chain Falls Self-Locking (3T – 5T)

Dimensions des crochets / *Hook Dimensions*

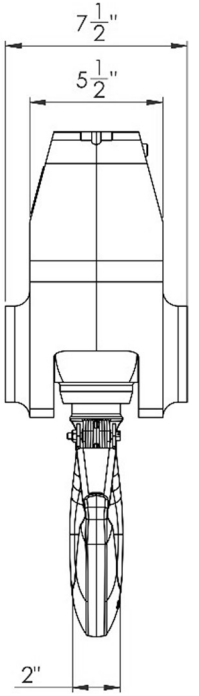




Six retombées (10T)
6 Chain Falls (10T)



Dix retombées (15T)
10 Chain Falls (15T)



Caractéristiques techniques du palan / *Hoist Specifications*

NUMÉRO DE COMMANDE / *ORDER NUMBER*: _____

NUMÉRO DE MODÈLE / *MODEL NUMBER*: _____

NUMÉRO DE SÉRIE / *SERIAL NUMBER*: _____

DATE D'ACHAT / *PURCHASE DATE*: _____

TENSION / *VOLTAGE*: _____

CHARGE NOMINALE / *RATED LOAD*: _____

HAUTEUR DE LEVAGE / *LIFT HEIGHT*: _____

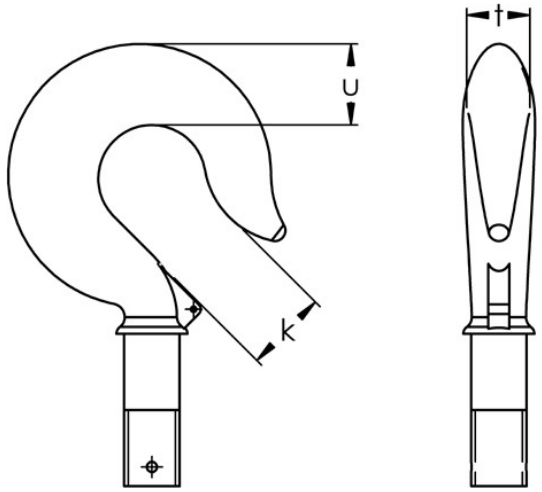
TAILLE DU PANIER DE CHAÎNE / *CHAIN CONTAINER SIZE*: _____

NUMÉRO DE SÉRIE DU CHARIOT / *TROLLEY SERIAL NUMBER*: _____

IMPORTANT

AVANT D'UTILISER LE PALAN, MESUREZ LES TROIS DIMENSIONS
INDIQUÉES CI-DESSOUS ET PRENEZ-LES EN NOTE :

BEFORE USING, TAKE AND RECORD THE FOLLOWING 3 DIMENSIONS AS SHOWN BELOW:



k	
t	
u	

VULCAN
HOIST - PALAN

NOTES



The Vulcan Hoist Company Ltd.

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