IWEISS

LINE-SHAFT HOIST
GOES HERE

VENUE

DATE

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DISCLAIMER

This Product is offered to you conditioned upon your acceptance without modification of the terms, conditions and notices in this manual and disclaimer itself and the limited warranty. The Buyer may not modify, copy, distribute, transmit, reproduce, publish, license, create derivative work, transfer or sell any information related to this product or service. IWEISS Inc (IWEISS) reserves the right to change the terms, conditions, and notices under which their products are offered.

The information in this manual will not cover all possible situations, nor could such inclusive instructions be written by the equipment manufacturer due to the various processes of mounting theatrical equipment. This manual is intended to provide a guide to the safe and efficient operation of the furnished stage equipment and its routine maintenance. No manual can replace your duty to exercise constant vigilance and common sense. IWEISS is not responsible for any damage that results from your failure to comply with this manual.

IWEISS Inc liability to any party injured or suffering a loss in connection with the purchase, set up, use, operation, maintenance or control of the Line Shaft Hoist (User) is contained exclusively in the limited warranty which is attached to and made part of this Operation and Maintenance Manual.

User accepts the limited Warranty of IWEISS Inc as in effect from time to time with respect to the Line-Shaft Hoist, a copy of which shall be included as part of this Manual and the packaging included with the Line-Shaft Hoist. User acknowledges receipt of the limited warranty currently in effect. The limited warranty of IWEISS Inc is in lieu of all other warranties, whether expressed or implied. User shall keep a copy of IWEISS Inc limited warranty and this Operation & Maintenance Manual intact and available for reference at any time and limit the use of the Line-Shaft Hoist to persons fully familiar with the warranty and the Manual. IWEISS reserves the right to change at any time and from time to time the terms and conditions of the limited warranty, and any such changes shall become effective immediately upon IWEISS forwarding such changes in writing to the User. User acknowledges and agrees that liability of IWEISS with respect to the Line Shaft Hoist shall be limited solely to the aforementioned limited Warranty of IWEISS, as may be changed or modified from time to time by IWEISS. In the event User maintains, repairs, services or operates the Line Shaft Hoist in a manner in any way inconsistent with the contents of this Operation & Maintenance Manual, such action shall effectively terminate any IWEISS warranty for such Line Shaft Hoist.

IMPORTANT SAFETY INFORMATION

•Read this manual carefully before installing or using this product. Failure to do so can result in injury or death.

•The procedures in the manual are for use by qualified personnel only.

•Use of this hoist is undertaken at User's own direction and risk.

•If User has any questions or uncertainty regarding use of this hoist or any item contained in this manual - the machine should not be operated.

WARNING! Improper installation or maintenance can cause the load to fall.

•Machines can impose significant loads on the structure to which they are attached. The installer is responsible for verifying that a licensed structural engineer has determined that the structure can withstand the imposed loads.

•Equipment must be installed by personnel trained in the Industry Standards of theatrical rigging.

•Do not substitute or modify components provided with this equipment.

•Do not exceed the total capacity of the hoist, plainly marked on the Identification Label.

•The IWEISS Machinery is only to be used to lift equipment, NEVER to be used for lifting people.

•The IWEISS Machinery weighs several hundred pounds each, plus the weight of any packaging. Use appropriate handling equipment and safe work practices. Follow all OSHA guidelines for material handling and safety practices.

DANGER! Electrocution Hazard!

•Remove power source before opening electrical panels. Use lockout / tag out systems whenever servicing equipment.

•Electrical equipment must be installed by qualified electricians as per the electrical riser supplied. Buyer must adhere to all local & national codes

WARNING! Moving parts can cut or crush.

•Keep body parts away from machinery in motion.

•Remove power source before working on machinery.

•Always check for people or obstructions before operating.

PRODUCT USER REQUIREMENTS

•Installation of this equipment must comply with local building codes.

•Equipment must be installed according to manufacturer's drawings. Individual component information is listed in the bill of materials of these drawings.

•Curtain Machine Systems must be inspected by qualified personnel at least every year or more frequently depending on use and local, state, and federal laws. Do not install in locations that prohibit access or prevent removal of any machine covers. A "Qualified Person" is someone who has been fully trained in the use and maintenance of the machine.

•IWEISS machines are designed for use in temperatures between 50° and 90°F (10°-38°).

•Do not expose machines to rain or extreme humidity.

•The recommended working load and duty cycle of each machine is marked on the Identification Label. Do not exceed.

•The machinery must be protected from oil, dust and other contaminants.

•Installation of electrical power and control devices must be coordinated prior to the installation of the hoist.

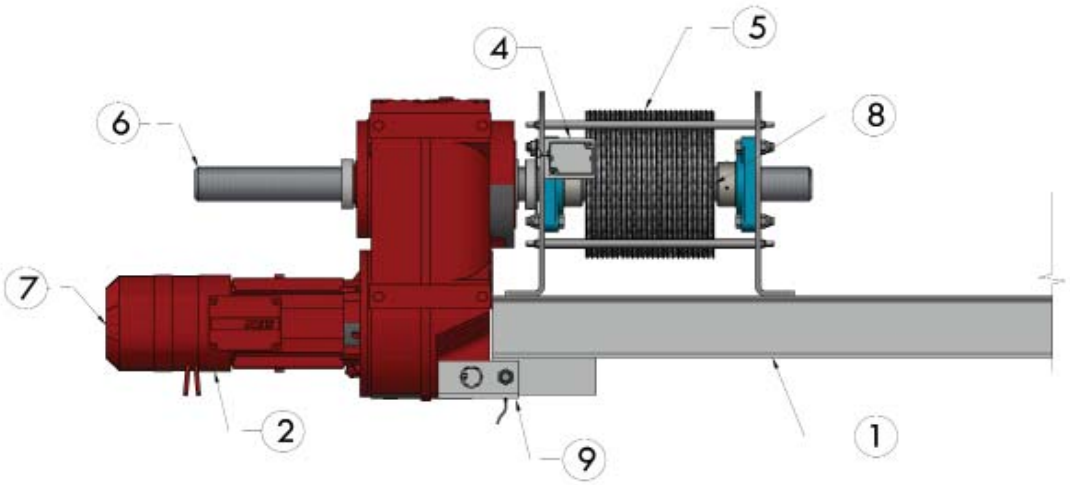
GETTING TO KNOW YOUR LINE-SHAFT HOIST

Identify the components of the winch*

*Actual machine design may vary in layout but the components will be the same

⚠WARNING

IWEISS Equipment should only be installed by personnel totally familiar with the product and the Industry Guidelines for safe rigging standards.



1.Frame (Backbone): The winch frame is constructed from plate steel and a "backbone" structure that can be constructed from various steel shapes. The entire perimeter of the device is to be considered the frame. The frame has a series of mounting points on the sides of the frame and along with the bottom base angles.

2.Gearmotor: The motor is a 3 phase 230/480vac gearmotor ranging from1HP to 5HP with integral brake. The motor will be mounted at one end of the units width. Additional componants that may be attached to the gearmotor, pending projects requirements, are electrical encoders, load cells, torque arms, along with pulleys and sprocket for the adjustable limit.

3.Power Disconnect & Motor Control Cabinet (MCC), not shown above: This enclosure houses the starter, overload, disconnect, inverter frequency drive, pendent connector (where applicable), and input power terminals. This cabinet should ONLY be opened during installation by the electrical contractor or if directed by the manufacturer. The MCC can mounted onboard but local control cabinets will frequently be mounted to structure within 10 ft of the hoist.

4.Adjustable Limit: This is the yellow or black plastic housing mounted on one side of the drivetrain. The limit will be coupled to the driveshaft with chain and sprockets or in some cases a Kevlar timing belt.

5.Grooved Drum: The drum is helically grooved for a single layer of varying cable sizes and should not be allow overwrapping cable. The cable size, travel capacity and number of lines will be stated on the product label. Machines such as line shaft winches will often have several grooved drums. Any grooved drum should never be allowed to have less than 3 dead wraps on the drum at any time. Around the perimeter of the drum are keeper bars. These can be constructed of bent flat plate, or round pipe. Some project may require a stainless member be on one of the perimeter bars to serve as a slack line sensor.

6.Drive Shaft: Round steel member that is connected to the gearmotor and the grooved drum. For lifting machines these will be directly coupled and keyed to the motor. For traveling machines a chain or belt drive may be utilized. For a line shaft style of machine, it is possible to have multiple drive shafts coupled together with longer tubular drive shafts. This allows for several drums to be turned by the same motor.

7.Absolute Encoder (Optional): This Mechanical device reads the number of rotations the motor produces. This information is fed back to the control system primarily to track the position of the moving device.

8.Slack Line / Cross Grove (Optional): A stainless steel angle iron is isolated within the mounting assembly. Should a lifting cable come in contact with this member, a small voltage will ground out the system and put the unit into a fault, similar to an E-stop.

9.Load Cell & Torque Arm (Optional): This assembly holds the entire load of the system. The load cell reads the present load and feeds this information back to the control system. The torque arm is the mechanical attachment of the load cell to the gearmotor housing.

2. Unload the packaged machinery.

IWEISS equipment is typically shipped on pallets. While packaged you must:

- Protect pallets from rain and humidity.
- Use safe material handling practices.

-Store packaged machinery in clean and dry locations that are protected from impact or other abuse.

Some assembly may be required:

Line-shaft Hoist: When a line-shaft winch longer than 20' is shipped, it will be broken into 20' sections with the driveshaft in between sections removed. For assembly details, please see below:

-Locate and anchor the motor module of the line-shaft machine as per guidelines listed below and engineers specifications.

-Determine the next section which attaches to the motor module and prepare to splice the backbone together in place but leave roughly 3" between the two sections of backbone.

-Locate the appropriate driveshaft for the section that is currently being spliced and attach one end to the motor module.

-While mating the coupling on the other end of the driveshaft, slide the two sections of backbone together and make the splice.

-Finalize attachment of spliced section of backbone as well as the keyed couplings on the drive shaft.

- Repeat this process for all backbone sections

3. Anchoring the hoist.

-Use required toolage to remove all lags, bolts, etc. to free winch from pallet

-Always use two people and/or appropriate material handling machinery when moving a winch into place. The winches can weigh several hundred pounds.

-Set winch into proper place, where alignment is required with the device(s) you intend to move.

-Once location is confirmed, anchor winch into location.

oHoists must be attached to structure for a minimum of 200% of the intended load.

If you are not sure how to attach the winch to structure please contact the manufacturer or a local structural engineer.

-It is important to ensure that the mounting of the unit is level and plumb.

4. Confirm power to machine.

To get power to the winch (THIS MUST ONLY BE DONE BY A QUALIFIED ELECTRICIAN):

- First, ensure that the main circuit breaker for the hoist you are working on is switched off and tagged out.

- Remove the face plate of the MCC.

- Each connection in the MCC housing is labeled displaying where the high voltage, and Ground wires are to be terminated. In some cases, the machine will require 1-phase OR 3-phase input power which will be clearly noted.

- Once the power has been run and the knockout in the rear of the cabinet has be secured or closed, re-install the face plate on the MCC and the circuit breaker can be turned back on.

- DO NOT ATTEMPT TO OPERATE THE EQUIPMENT UNTIL QUALIFIED TECHNICIANS OR ELECTRICIANS HAVE CONFIRMED PROPER WIRING HAS BEEN INSTALLED.

5. Install Motor and Limit Wiring.

Some IWEISS hoists can come pre-wired so this section is not necessary. Others have connectors preinstalled so they will just need to be connected. For machines that require an electrician for motor and limit connections, follow the steps below:

(THIS MUST ONLY BE DONE BY A QUALIFIED ELECTRICIAN):

- Locate and open the motor junction box as well as the winche's MCC.

- Install required conduit between the winch and the MCC as per local codes.

- In the motor junction box, using properly crimped ring terminals and wire sized for the motors rated current, land individual conductors on terminals labeled L1, L2, L3 and Ground.

- Using two separate wires, strip back 3/16" of the jacket and land these wires in the motor's junction box on the brake rectifier terminals labeled 1 and 2 (in some cases these terminals will have a "~" over them rather than numbers.)

- All the conductors listed above should run through the conduit to the MCC and land in their respective terminals:

o L1 to U

o L2 to V

o L3 to W

o 1 to B1

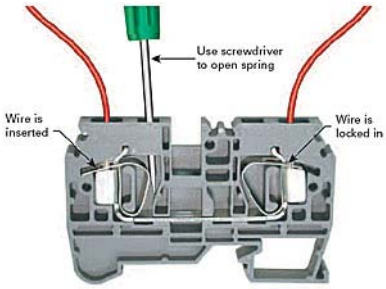
o 2 to B2

- The limit switch will often come prewired from IWEISS and simply needs to be landed in the MCC.

- In the MCC, there will be a group of 8 terminals labeled 1-8 with one side empty. The limit wires should be landed here and matched the supplied electrical drawing.

SETTING THE LIMITS

*To open the terminals in the MCC, a small flat head screwdriver should be placed in the square hole next to the terminal location in which you would like to land the wire. Turn the screwdriver so the head is perpendicular to the terminal and press it lightly towards the center of the terminal. Once the screwdriver is fully engaged the hole will be ready to receive the wire. Insert the stripped wire and remove the screwdriver. Tug on the wire to make sure it is fully seated.



Limit switches determine the amount of travel allowed in the system. These positions are set during the installation process and should not have to be re-adjusted. This system has a total of 4 limit positions:

- Ultimate Down limit position
- Primary Down limit position
- Primary Up limit position
- Ultimate Up limit position

THESE LIMIT POSITIONS MUST BE SET DURING INSTALLATION, PRIOR TO THE USE OF THE HOIST.

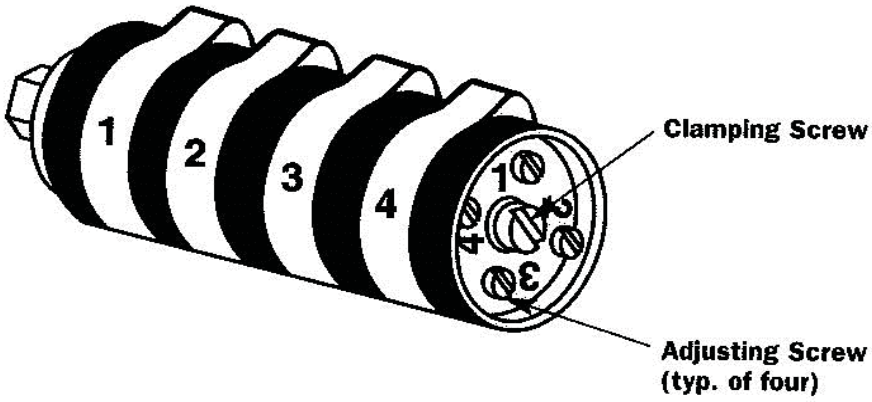
In this system, the Ultimate positions are set just inches past the Primary positions. IT IS THE INSTALLER'S RESPONSIBILITY TO SET ALL OF THE LIMIT POSITIONS IN ORDER TO OPERATE AND MAINTAIN THE HOIST IN THE SPECIFIC INSTALLATION.

If for any reason the system over runs the Primary position, the Ultimate limit will stop the system from moving and completely shut it down, similar to the E-STOP. However, if the Ultimate limit is reached [see note below], an "Over-ride" button must be engaged in order to re-restart the system. The system must then be run in the opposition direction of the limit to get back to normal settings. This "Over-ride" button is located in the MCC.

PLEASE NOTE: IF THE OVER-TRAVEL LIMIT IS ENGAGED A FULL INSPECTION OF THE SYSTEM MUST BE PERFORMED BEFORE OPERATING THE SYSTEM OUT OF ITS OVERTRAVEL POSITION TO SEE WHAT PROBLEMS OCCURRED TO ALLOW THE OVERTRAVEL TO BE REACHED.

On top of the center cam there are five screws:

- Center (clamping) screw=Located at the center of cam stack
- Screw #1=Ultimate Down limit position
- Screw #2=Primary Down limit position
- Screw #3=Primary Up limit position
- Screw #4=Ultimate Up limit position



HOW TO OPERATE THE WINCH

(This will be further covered in the control stations manual and onsite training)

Any IWEISS equipment is only to be operated by qualified personnel fully familiar with all of the contents of this manual.

•Confirm that the line is clear of all obstructions.

•Turn on the control cabinet and plug in the handheld pendent.

•Double check that the E-stop has not been engaged. Reset if need be.

•Make sure you are holding the pendent in the correct orientation.

•Confirm the direction that you intend to move the hoist and press the corresponding button.

•You MUST keep eye contact with the hoist at all times. If something doesn't look right or sound right you must STOP moving the hoist immediately.

•The handheld pendent is made with momentary pushbuttons, meaning that once you remove your finger from the button, the hoist will stop moving. Once the hoist moves to a limit position the hoist will automatically stop moving.

CHECKS & MAINTENANCE PROCEDURES

Inspections

a)Annual Maintenance Inspection – All IWEISS products require an ANNUAL MAINTENANCE INSPECTION to insure safety and trouble-free operation. Inspect on a scheduled basis and keep records [See Maintenance Log]. These records will provide information on length of service and any changes which might indicate worn parts. Industry Standards require that that a safety inspection be performed by a professional stage rigging company, employing ETCP certified riggers, at least once a year.

Copy of completed Annual Maintenance Logs should be sent to IWEISS via fax in a timely fashion in order to maintain Warranty. In the event that the Maintenance Logs are not received, the Warranty will be void.

b)Routine Visual Inspection – The User should always be aware of the equipment and its various components. When the equipment is in operation, any change in sound or look should be noted. The frequency of the Routine Visual Inspection depends on the usage and severity of the operating conditions. At a minimum the owner should look for problems (nicked/kinked cables, loose fittings, obstructions, oil drips, etc.) and conduct a full visual inspection at least once a month.

Maintenance of any IWEISS equipment should only be performed by a Via approved firm with ETCP Certified Riggers.

Maintenance

•Power supply must be locked out before and during any checks or maintenance is performed.

•Components in the power disconnect box should be checked. Turn the power off at the circuit breaker panels and install a tag out notice for that hoist. Excessive dirt should be vacuumed from the cabinet interior to prevent contact arcing and premature relay failure.

•Inspect for signs of metal shavings, metal dust, leaking oil, etc.

•Check and tighten, if needed, motor mounting, all mounting bolts, cap screws.

•Check and tighten, if needed, winch frame mounting to structure.

•Inspect the drive cable, attachment to grooved drum, how cable wraps around drive, etc... Inspect final connection to the moving device (i.e. clew, pipe batten, wagon, etc…)

•Clean the motor fans to keep them from overheating.

• Inspect the tension of the limit chain.

•Inspect the connection of wires to terminals as well as the tightness of the screws on the limit switch.

- Keep safety guards, if applicable, in place except when access is required for service.
- Confirm that the electrical feed to the MCC cabinet is tight, and conduit strain relief is tight.
- Inspect all cable terminations in the system.
- This Hoist is equipped with a gearmotor. Every year a sample of the oil in the gearbox should be inspected for color, metal shaving, etc. Please contact the manufacture to correctly perform this action.

TROUBLESHOOTING

The first step in trouble shooting any circuit is to obtain a clear understanding of the circuit and its function. If you are unaware of how a power or control circuit works then you should refer to a qualified technician to troubleshoot this portion.

Next, gain an understanding of the problem. Troubleshooting is very difficult if you do not know what you are looking for. Obtain information from the operator who uses the equipment. Often he can help to describe and isolate the problems more quickly.

NOTE: MOST TROUBLESHOOTING CALLS ARE THE RESULT OF AN E-STOP BUTTON BEING PRESSED. PLEASE PRESS AND RELEASE ALL E-STOP BUTTONS BEFORE CALLING FOR SERVICE IF A MACHINE IS NOT MOVING.

Eliminate the obvious, no matter how simple:

- Is the winch turned on?
- Are the disconnects turned on?
- Are all E-Stops released?
- Check the fuses, circuit breakers and overload relays.
- Are limit switches tripped or blocked?
- Are all wires firmly secured?
- Is the machine receiving proper voltage?
- Look for overheating or warm areas, signs of leakage, smells and recently made changes.
- THEN use the following procedures to isolate the problem to the control circuits, power circuit, load, or incoming power.

Troubleshooting the incoming power supply, fuses and circuit breakers:

1. One of the most common problems found in all electrical circuits is a blown fuse or a tripped circuit breaker. This is because the fuse or breaker is sized to open or trip in case of trouble. The device that has opened or tripped has done so because of some fault on the line. This fault may be located in any load connected to the line, a combination of loads, the wiring, or even the fuse or breaker itself. In any case, the fuse must be replaced or the breaker reset.

2. Although circuit breakers usually have an indicator to tell when they are tripped. Check the incoming power supply for incoming power. It is a common mistake to assume that power is present on incoming lines. Remember that these lines are also protected by other fuses and breakers that may have tripped or failed for any reason.

3. Use a voltmeter to check the voltage between each pair of power leads. The supply voltage should be within 10% of the voltage rating on the motor nameplate and other connected devices. If the voltage is present, but out of specification, further research is needed. If the voltage is correct, check the enclosure for proper ground. To test for ground, connect one side of the voltmeter to an unpainted metal part of the enclosure and touch the other side of each of the line terminals. A voltage difference should be indicated on the voltmeter.

4. Next test the fuses or breaker for an open circuit. Apply power to the fuses or breaker. To prevent any possible feedback through the connected loads, it may be necessary to disconnect the load side of the fuses or breaker. Connect the meter from the line side of one fuse to the load side of another (never the same one.) A full voltage reading (phase to phase, not phase to ground) indicates a good fuse.

Troubleshooting a control circuit:

1. Eliminate the incoming power as the source of trouble by connecting a voltmeter or test light across the terminals and verifying that the proper voltage is present.

2 Once the control circuit has been determined to be the source of the problem, continue by jumping each control device until the problem is found.

Troubleshooting limit switches:

1. Rotary limit switches should have:

a. Locking screws tight on switch cams.

b. Switches making contact with cams.

c. Wires tight in terminals.

INSTRUCTIONS FOR USE

1.Prior to maintenance, obtain and review a copy of the Line-Shaft Hoist Operation and Maintenance Manual for the hoist being maintained.

2.Inspect each of the items on the Log and verify that the machinery is serviced and adjusted according to the requirements of the maintenance manual. Remove the covers from the machine as required.

3.Replace the covers and repeat the process for each machine on site.

4.Make sure that the Identification Label is still adhered on each unit. Contact IWEISS for a new label if necessary.

5.Make contact with the authorized person at the venue and make sure that the manual and maintenance logs are available for use.

6.File copies of the Maintenance Log with the Owner along with any recommendations for service. Complete the Certificate of Maintenance and fax or mail a copy to IWEISS.

LIMITED WARRANTY

The limited warranty stated below is given in place of all other warranties, express or implied, of merchantability, fitness for a particular purpose, or otherwise, no promise or affirmation of fact made by any agent or representative of seller shall constitute a warranty by seller or give rise to any liability or obligation.

Seller warrants that on the date of delivery to carrier the equipment is free from defects in workmanship and materials.

Seller's sole obligation in the event of breach of warranty or contract or for negligence or otherwise with respect to equipment sold shall be exclusively limited to repair or replacement, F.O.B. Seller's point of shipment, of any parts which Seller determines to have been defective or if Seller determines that such repair or replacement is not feasible, to a refund of the purchase price upon return of the equipment to Seller.

Any action against Seller including but not limited to breach of warranty, breach of contract, product defect, negligence or otherwise, must be commenced within one year after such cause of action accrues.

Seller shall not be liable for any damage, injury or loss arising out of the use of the equipment if, prior to such damage, injury or loss, such equipment is (1) damaged or misused following the Seller's delivery to carrier; (2) not maintained, inspected, or used in compliance with applicable law and Seller's Operation & Maintenance Manual; or (3) installed, repaired, altered or modified without compliance with such law, or manual.

INDEMNIFICATIONAND SAFE OPERATION

Buyer shall comply and require its employees to comply with directions set forth in instructions and manuals furnished by Seller and shall use and require its employees to follow such instructions and manuals and to use reasonable care in the use and maintenance of the equipment. Buyer shall not remove or permit anyone to remove any warning or instruction signs on the equipment. In the event of personal injury or damage to property or business arising from the use of the equipment, Buyer shall within 48 hours thereafter give Seller written notice of such injury or damage and shall cooperate in the handling of any claims arising therefrom.

If Buyer fails to comply with this section or if any injury or damage is caused, in whole or in part, by Buyer's failure to comply with applicable federal or state safety requirements and/or Buyer's failure to follow Seller's Operation

& Maintenance Manual, Buyer shall indemnify and hold Seller harmless against any claims, loss or expense for injury or damage arising from the use of the equipment.

Buyer shall indemnify, defend, and hold Seller harmless.

HOW TO CONTACT IWEISS:

IWEISS Inc 815 Fairview Avenue Unit 10

Fairview, NJ 07022

Phone (201)402-6500

Fax (201)402-6530

MAINTENANCE LOG

PRODUCTUSEREQUIREMENTS

This Maintenance Log is provided as a tool for use by a qualified person while inspecting any hoist. Although an attempt has been made to include all of the most important points of maintenance, no such list can anticipate the particular circumstances of every installation. It is the responsibility of the qualified person to make a reasonable effort to identify hazardous conditions not mentioned herein and formally advise the owner to take corrective action.

IMPORTANTSAFETYINFORMATION

See Identification Label on the unit for serial number, manufacture date and contact number.

WARNING! Improper installation or maintenance can cause the load to fall.

•Do not substitute or modify components provided with this unit. Use only parts provided by IWEISS

•Do not exceed the total capacity of the hoist. It is plainly marked on the Identification Label.

DANGER! Electrocution Hazard!

•Remove power source before opening electrical and inspection panels. Use lockout / tag out systems where necessary.

•Electrical equipment must be serviced by qualified personnel only.

WARNING! Moving parts can cut or crush.

•Keep body parts away from machinery in motion.

•Remove power source before working on machinery.

INSTRUCTIONS FOR USE

1.Prior to maintenance, obtain and review a copy of the Winch Operation and Maintenance Manual for the hoist being maintained.

2.Inspect each of the items on the Log and verify that the machinery is serviced and adjusted according to the requirements of the maintenance manual. Remove the covers from the machine as required.

3.Replace the covers and repeat the process for each machine on site.

4.Make sure that the Identification Label is still adhered on each unit. Contact IWEISS for a new label if necessary.

5.Make contact with the authorized person at the venue and make sure that the manual and maintenance log are available for use.

6.File copies of the Maintenance Log with the Owner along with any recommendations for service. Complete the Certificate of Maintenance email a copy to IWEISS.

ANNUAL MAINTENANCE LOG

The following chart lists items to be checked and noted on an annual basis. Confirm that each line has been addressed, as well as any notes from the inspection, and initial. Repeat for each individual hoist in the system.

- Components in the power disconnect box should be checked. Turn the power off at the circuit panels and install a tag out notice for that hoist. Excessive dirt should be vacuumed from the cabinet interior to prevent contact arcing and premature relay failure.
- Inspect and look for signs of metal shavings, metal dust, leaking oil, hydraulic fluid, etc. Check and tighten, if needed, motor mounting, all mounting bolts, and cap screws.
- Inspect the operating rope for opening or fatigue around the wraps of the drum.
- Clean motor fans to keep them from overheating.
- Inspect the tension of the limit chain.
- Inspect the connection of wires to terminals as well as the tightness of the screws on the limits switch.
- Keep safety guards in place except when access is required for service
- Confirm that the cable connections to moving devices are properly installed
- Inspect the mounting of anchors to the building structure.
- Run the hoist and listen for strange noise after movement feel for any excessive heat.

NOTES:

Is this a New Installation or Yearly Maintenance?

I have inspected this curtain machine and I have verified that the machinery is configured and maintained according to the Maintenance Manual.

Print Name

Signature

Company Name