Design, Manufacture and Installation of Theatrical Equipment Worldwide

Fire Curtain Hoist

(Part No. 016-500P)

Installation Manual

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IMPORTANT SAFETY INFORMATION

- The procedures in this manual are for use by qualified personnel only. If you are not qualified, contact the JR Clancy factory to find the nearest service provider.
- The Fire Curtain System Inspection Checklist must be completely filled out and a copy returned to JR Clancy as proof of initial and subsequent annual inspections. Proof of inspection may be required to activate and maintain the warranty period for this product.
- A Hoist Information Label is attached to the front of the machine enclosure and it contains important speed and capacity information that is necessary for proper maintenance and use.
- All users must be aware of maintenance requirements and warned of the associated hazards. Keep a copy of this manual available along with all other product documentation for future reference.

WARNING! Improper installation or maintenance can cause the machine to fail.

- Hoisting machines impose significant loads onto the structure to which they are attached. *You* are responsible to verify that an engineer or other qualified person has determined that this structure can withstand the loads.
- Equipment must be installed and maintained by qualified personnel.
- Annual inspection and maintenance of this product is required as a minimum. Some applications may require more frequent inspection and service.
- Do not substitute or modify components provided with this equipment.
- Do not exceed the 1100 lb (500 kg) Recommended Working Load of the hoist.
- Do not lift or support people or animals.
- The fire curtain hoist weighs 550 lbs (250 Kg), plus the weight of any packaging. You must use proper lifting and handling equipment and safe work practices.

DANGER! Electrocution Hazard

- Remove power before opening electrical panels or machine covers.
- Electrical equipment must be installed by qualified electricians.

WARNING! Moving parts can cut or crush

- Keep body parts away from machinery in motion.
- Remove power source before working on machinery.
- Install all guards and covers after installation and/or maintenance of the machine.

PRODUCT USE 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.
- Fire curtain hoists must be inspected by qualified personnel every year, or more frequently depending on use and local, state, and federal laws. They also feature circuit breakers located within the controls enclosure. Do not install these machines in locations that prohibit access to the machinery or controls.
- Fire curtain hoists are designed for indoor use only in buildings with temperatures between 50º and 100º F (10º- 38ºC).
- Do not expose machines to rain or condensing moisture.
- The recommended working load and duty cycle of each machine is marked on the product data label on the machine. Do not exceed.
- The hoist machinery must be protected from oil, dust and other contaminants.
- The fire curtain hoist is approximately 25 inches (64 cm) wide, 16 inches (41 cm) deep, 54 inches (137 cm) tall and weighs approximately 550 lbs (250 Kg).

MAINTENANCE SCHEDULE

NOTICE: This machinery must be inspected and maintained annually by qualified personnel. Proof of inspection is required to maintain warranty status.

Annual inspection and operator training is required to maintain the warranty period specified in your information binder, and proof of annual inspection and training will be required to obtain warranty service. Certain applications may demand more frequent inspections and maintenance. It is the responsibility of the user to monitor the machinery and adjust the maintenance schedule accordingly. Be aware of government regulations concerning the inspection of hoisting equipment.

REPLACEMENT PARTS

Lubricants and other components that can be procured locally are fully specified in the appropriate section of this manual. Use only the specified type and grade of materials. Contact JR Clancy to obtain any parts not listed in this document.

INSTALLATION PROCEDURE

Follow these steps carefully to help provide a safe and efficient installation of the Fire Curtain Hoist. Note that the rest of the fire curtain system (fire curtain, loft/head blocks, lift lines, release line, arbor and track [if any], clew, etc.) should be installed per the installation drawing (if provided) before following this procedure.

1. UNLOAD THE PACKAGED MACHINERY

Hoist machines are shipped on pallets. While packaged for shipment you must:

- Protect machines and pallets from rain and humidity.
- Keep equipment upright and prevent from tipping.
- Follow instructions and use safe material handling practices. Use the proper lifting points on the pallets.
- Store packaged machinery in clean and dry locations that are protected from impact or other abuse.

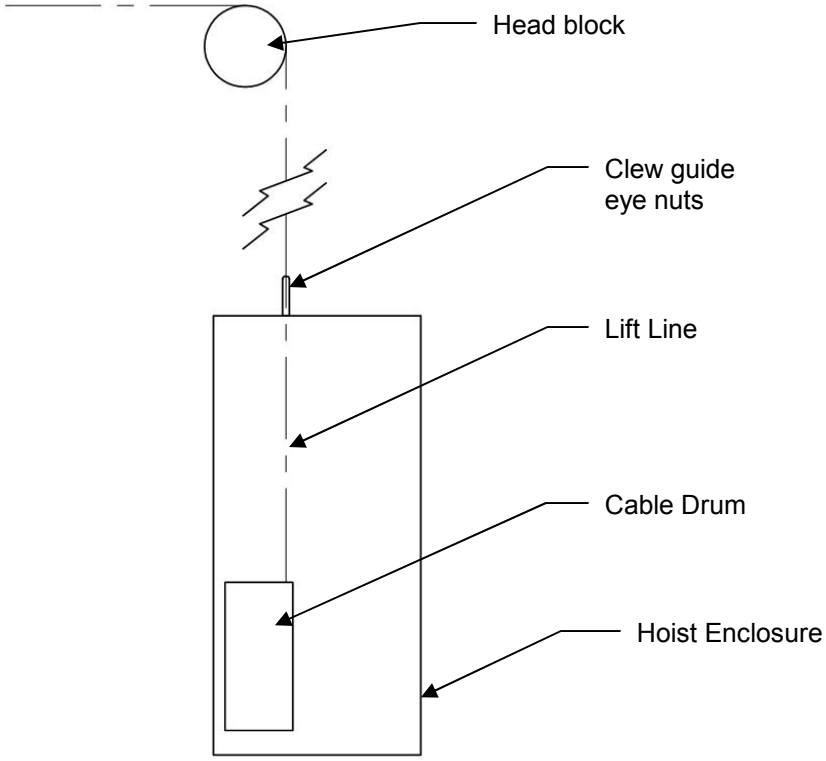

Figure 1 – Lift Line Alignment

2. MOVE THE MACHINERY INTO POSITION

Hoist machines weigh up to 550 lbs (250 kg). During and after removal from the packaging, the machine is designed to be handled in several ways.

1. Move the hoist as close as possible to its final position before removing from crate or pallet. Exercise caution if using a forklift to lift the hoist directly.

2. Align the clew guide eye nuts with a plumb line from the fire curtain headblock (as shown in Figure 1 above). This will minimize the change in fleet angle during the full travel of the clew/arbor.

NOTICE: Do not lift the machine using the clew guide eye nuts. Lift machine using marked lifting points only.

3. To lift the hoist into position, use the provided lifting points as marked on the machine *only*. Lifting by the clew guide eye nuts can damage the machine.
4. Allow sufficient clearance with the wall behind the hoist to be able to terminate the clew guide wire to the eye nut on the back of the machine.
5. Secure the hoist to the floor/wall, as indicated on the installation drawings (if provided), utilizing appropriately rated hardware.

WARNING! Improper mounting hardware or installation can cause the load to fall. Mounting structure and hardware must be designed to support loads imposed by hoist.

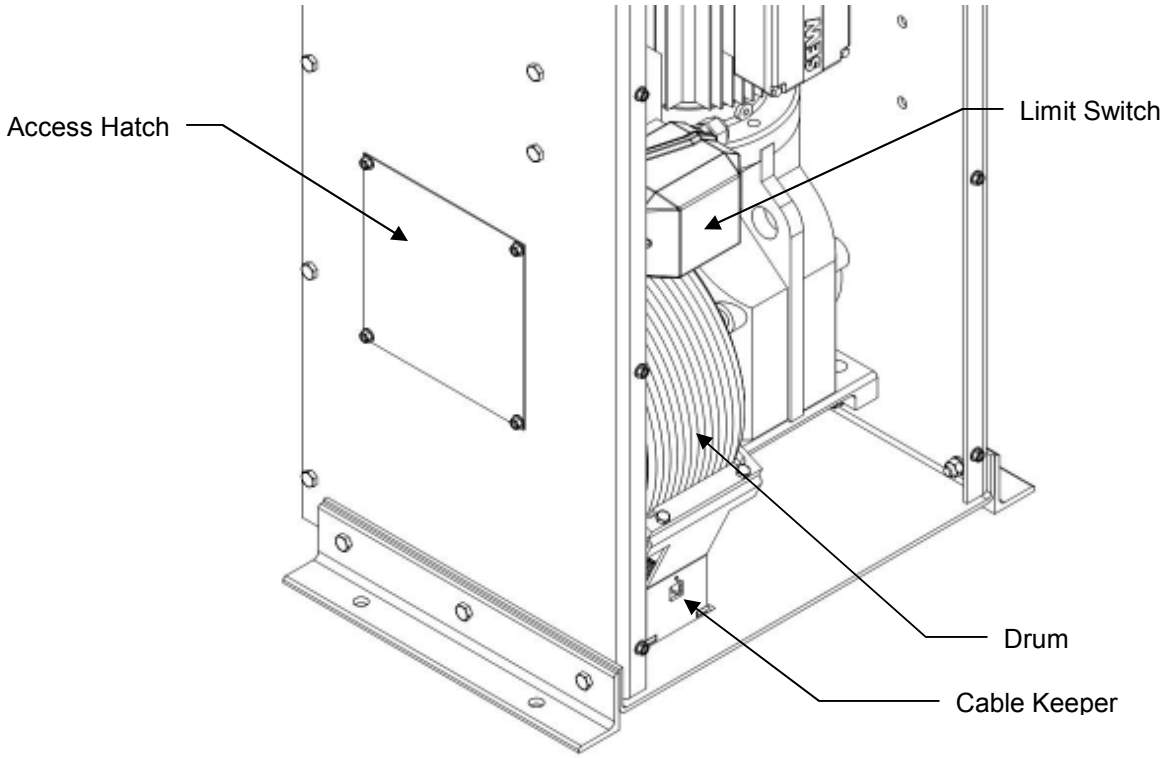

Figure 2 – Access Hatch Location

3. INSTALL LIFT LINE

The lift line (as specified on the hoist product label) is shipped separately from the hoist drum. The lift line will have one bare end and one end with a thimble and eye splice.

1. Connect the eye splice to the clew or arbor (depending on your system configuration) with the load (curtain) at its lowest position.
2. Feed the bare end of the cable down through the opening in the top of the hoist enclosure.
3. Wrap the cable around the grooved drum at least three (3) times (dead wraps). Be sure to wrap the cable the correct direction and not snag the cable on any internal components of the hoist.
4. Cut the cable to the proper length, including dead wraps and space for termination.
5. Insert the end of the cable through the cable termination hole on the drum (located in the last groove on the left-hand side of the drum).
6. Pull the end of the cable out through the access hatch (see Figure 2) and install swaged end stop per the manufacturer's instructions.

WARNING! Incorrect termination of lift line can cause the load to fall. Terminate with correctly sized swaged end stop only. Inspect termination with manufacturer's recommended gauge after swaging.

7. Pull the cable back so the swaged stop sleeve rests on the inside surface of the drum. Make sure the cable lays properly into the grooves on the drum.
8. Confirm that the lift line leaves the drum at maximum fleet angle of 1.5 degrees. This is equivalent to 3" (76 mm) over 10 ft (3 m).
9. Connect the clew guide wires to the eye nuts provided on the hoist enclosure as shown on the installation drawings (if provided).

NOTICE: Do not over-tighten clew guide wires. Excessive tension can damage the hoist machinery. The maximum recommended tension is 100 lbs (45 kg).

4. INSTALL CABLE KEEPERS

WARNING! Improperly installed or missing cable keepers can cause the lift line to come off the drum and the load to fall. Do not operate hoist with cable keepers removed.

The cable keepers are shipped loose inside the hoist enclosure. The cable keeper assembly consists of three parts: two cable keeper brackets and a connecting spring.

1. Connect the spring between the holes in the brackets as shown in Figure 3.
2. Insert one of the cable keeper brackets into the slot in the bottom plate at the rear of the enclosure. (See Figure 3) Pull the bracket towards the front of the enclosure to ensure the bracket engages in the slot.
3. Carefully stretch the spring and insert the other bracket into the slot near the front of the enclosure.
4. Make sure that the cable keepers are resting on the edges of the drum and do not rub the cable as the drum rotates. See Figure 4.

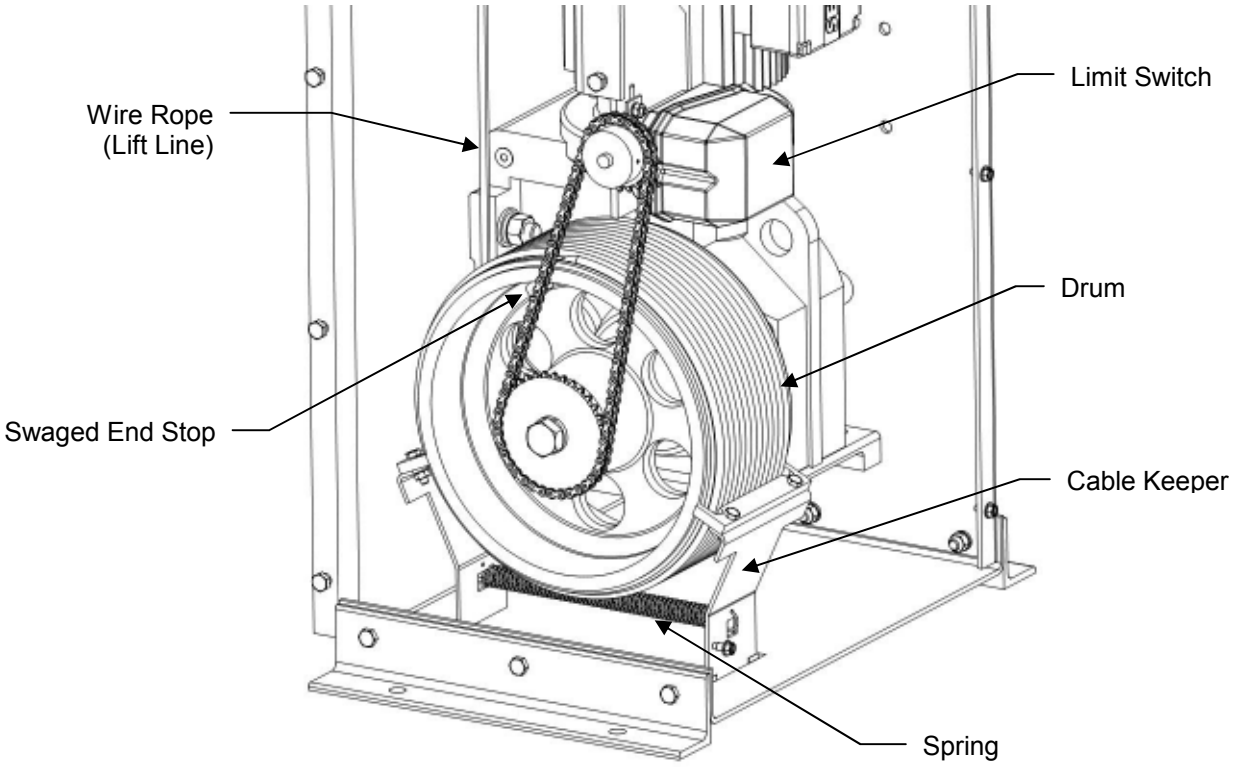

Figure 3 – Cable Keepers (Covers removed for illustration)

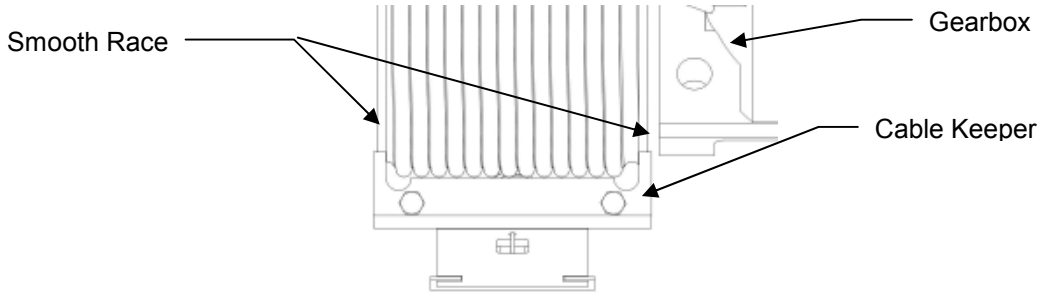

Figure 4 – Cable Keeper Alignment

5. MOTOR AND GEAR REDUCER

1. The gear reducer unit is filled with oil when shipped from the factory. The oil level is determined by what position the reducer is operating in. The oil level should be checked when the machine is installed to ensure that the reducer is properly lubricated. Check the gear reducer oil level by removing the access panel on the lower right side of the machine. The oil level should be visible through the fill hole as shown. (See Figure 5). Contact JR Clancy if the lubrication level is incorrect.

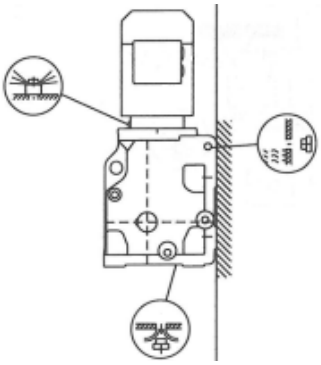

Figure 5 – Gear Reducer Lubrication Ports

2. Check the reducer breather valve and make sure that the protective rubber band is removed and discarded. See Figure 6.

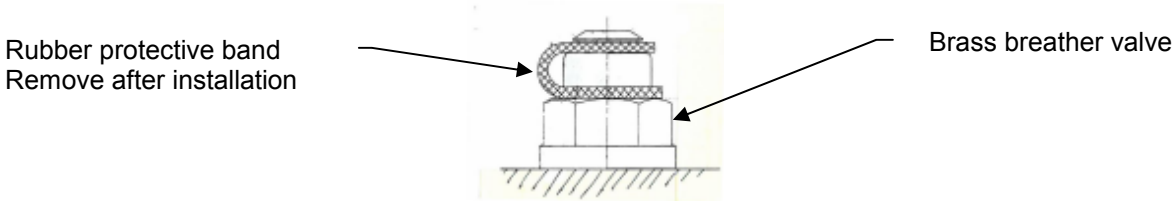

Figure 6 – Reducer breather valve with protective band

6. CONNECT AND ACTIVATE POWER TO THE HOIST

DANGER! Electrocution hazard. Remove power source before opening electrical enclosures.

WARNING! Machinery and loads can collide with surroundings when operated before limit switches are set. Operate machine at slow speed only. Operator or observer must be in sight of all obstacles in the path of the machine or load. Do not operate over the heads of people.

In most installations, the Fire Curtain Hoist features an integrated motor starter and control cabinet. (Note: other configurations may be employed depending on project requirements. Consult project drawings for more information). This cabinet is attached to the top of the hoist enclosure. Connection to building power should be performed by a licensed electrician.

1. Confirm the building service provided is the same voltage as required by the hoist. The hoist voltage option is indicated on the installation drawing (if provided), on the hoist identification label, and inside the control cabinet.

2. Consult the controls and electrical drawings for detailed termination information.

3. Once power is connected and activated, check the rotation of the hoist. If the hoist moves the load down when the “UP” button is pressed, have the electrician switch any two legs of the 3-phase input power to correct the rotation direction. DO NOT modify any of the factory-installed wiring.

7. SET LIMIT SWITCHES

WARNING! Machinery and loads can collide with surroundings if limit switches are incorrectly adjusted. Operator or observer must be in sight of all obstacles in the path of machine or load. Do not operate over the heads of people.

The limit switches are not set when the hoist is shipped from the factory. The limits must be set for the specific installation configuration before the hoist can be used. The upper limit should stop the load no closer than 6 inches (150 mm) from the nearest obstruction above the curtain. The lower limit should be set just past the point where the curtain touches the floor. The total possible travel of the hoist is printed on the identification label on the front of the hoist, and must not be exceeded. At all times, there should be three dead wraps when the drum is empty and no less than one empty groove when the drum is full.

The fire curtain hoist is provided with two types of travel limits: operational limits and overtravel limits.

1. Operational (normal) limits control the distance the load will travel (both up and down) under normal conditions, such as the normal low and high trim (positions) of a load. These should be set within the limits established by the overtravel limit switches.

2. Overtravel limits are intended to protect the building and equipment against damage from excessive travel of the hoist system. These limits are often called the “ultimate” limits. Overtravel limits are usually set within a few inches past the operational limits. These and other safety devices must be set at installation and be tested occasionally, but never changed to suit temporary needs.

3. Before setting the limit switches, check the tension in the chain connecting the limit switch sprocket to the drum. The chain should deflect a maximum of 3/4” under light hand pressure. The limit switch sprocket should not be able to turn on its own.

NOTICE: Do not over-tension the chain. This will put excessive stress on the limit switch shaft.

3.1 If the chain requires adjustment, loosen the bolts that secure the limit switch mounting bracket to the hoist enclosure, and slide the limit switch assembly up or down as necessary. Re-tighten the bolts after adjustment.

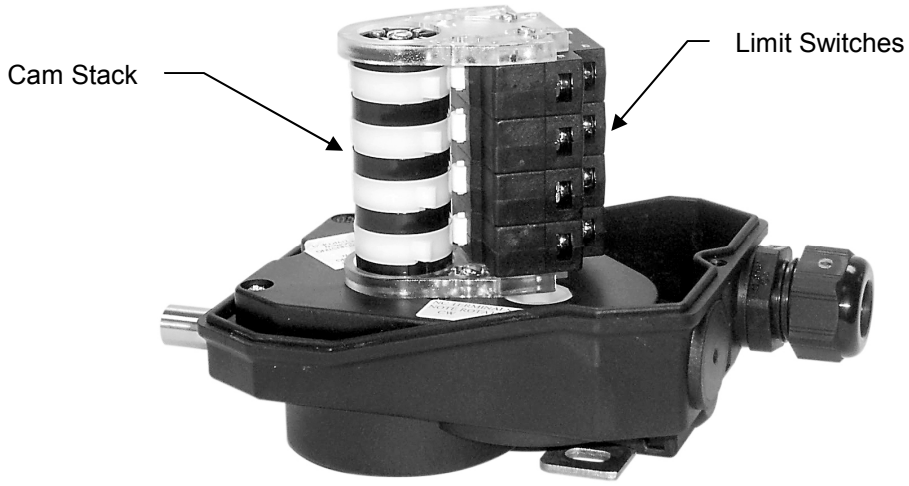

Figure 7 – Rotary Limit Switch

NOTICE: The hoist cannot be operated if an overtravel limit has been activated. If this occurs, the overtravel bypass switch located in the motor starter cabinet must be pressed to drive the hoist off of the overtravel limit.

In order to set the limit switches, follow the procedure below.

4. Determine the travel of the hoist:

    4.1 Determine where the load must stop to avoid damage to the equipment or building, set overtravel limits short of this point. (For most fire curtains, the down overtravel limit will be set just past the point where the curtains weight is transferred to the safety chains)

    4.2 Determine the range of travel required for the load, set the operational limits to stop at these points.

    4.3 For each end of travel, set overtravel limit first, then set operational limits.

    4.4 Make sure the operator or an observer can see the load for its entire travel.

5. Establish switch rotation:

    5.1 Remove hoist and limit switch covers.

    5.2 Drive hoist in UP direction. Note direction of cam stack rotation.

    5.3 Mark switch cover or label inside switch to record cam stack rotation.

6. Adjust limit.

    6.1 Position operator or an observer so all parts of the lifted load can be seen.

    6.2 Drive hoist to the desired end of travel.

    6.3 Re-verify cam stack rotation (when the winch travels up, does the cam stack rotate clockwise or counterclockwise). Determine which side of the desired switch the limit cam must strike (i.e. if the cam stack rotates clockwise when the winch travels down, and you are setting a down limit, the cam must actuate the down limit while moving in a clockwise direction).

    6.4 Loosen the central cam stack clamping screw 1/2 turn (Figure 8).

    6.5 Locate the adjusting screw for the desired limit by referring to the numbers adjacent to the adjusting screws. Note that the lowest switch in the cam stack (down overtravel) is **switch 1**, the next switch (down limit) is **switch 2**, the next switch (up limit) is **switch 3**, and the highest switch in the stack (up overtravel) is **switch 4**.

    6.6 Rotate the adjusting screw to adjust the limit cam lobe to a position where the selected limit switch is just actuated (audible click).

    6.7 Once the limit cam is at the proper place, tighten the cam stack clamping screw.

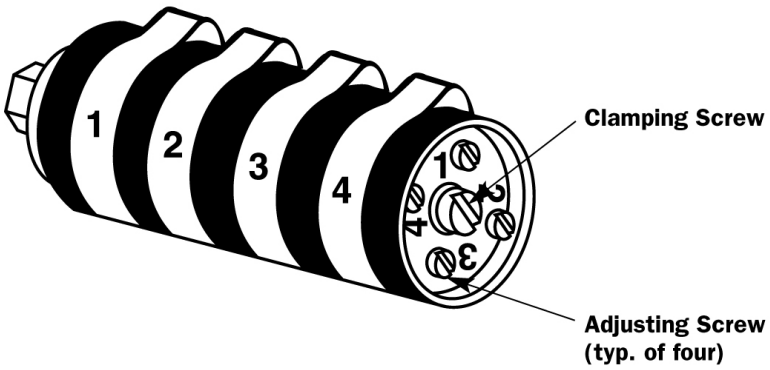

Figure 8 – Rotary Limit Switch Cam Stack

7. Test Limit

   7.1 Drive winch away from limit until limit is cleared (use overtravel bypass switch to move off overtravel limit).

   7.2 Drive winch toward limit until limit stops motion.

   7.3 Assess stopping position (measurement vs. target).

   7.4 Drive winch off limit (use overtravel bypass switch to move winch off overtravel limit).

8. Refine Limit Adjustment

   8.1 Repeat the **Adjust Limit** procedure, as detailed above.

   8.2 Move cam lobe closer to switch to make switch trip sooner (decrease travel distance).

   8.3 Move cam lobe further from switch to make switch trip later (increase travel distance).

   8.4 **Make sure to tighten cam stack clamping screw after each adjustment!**

   8.5 Retest limit adjustment until winch stops at desired position.

9. Adjust Remaining Limits

   9.1 Once overtravel limit is set, set normal limit at same end of travel.

   9.2 Check to ensure that there is sufficient distance between normal limit and overtravel limit - if the winch strikes both limits before stopping, increase the distance between the limits by moving the normal limit to stop the load sooner.

   9.3 Once all limits are set, check that cam stack clamping screw is tightened, then replace the limit switch cover.

8. ACTIVATE THE RELEASE MECHANISM

The fire curtain system is designed to be rigged to a number of release mechanisms around the proscenium opening that can release the curtain to lower automatically in case of fire. These can include manual release levers, fusible links, electro-thermal links and the SureGuard II electro-mechanical release. These devices are connected together and to the hoist with the fire line (typically 1/8" galvanized utility cable). See Figure 10. When tension in the fire line is released, the brake on the gearmotor is disengaged allowing the curtain to fall (See Figure 9). Follow the procedure below to complete the installation of the release line.

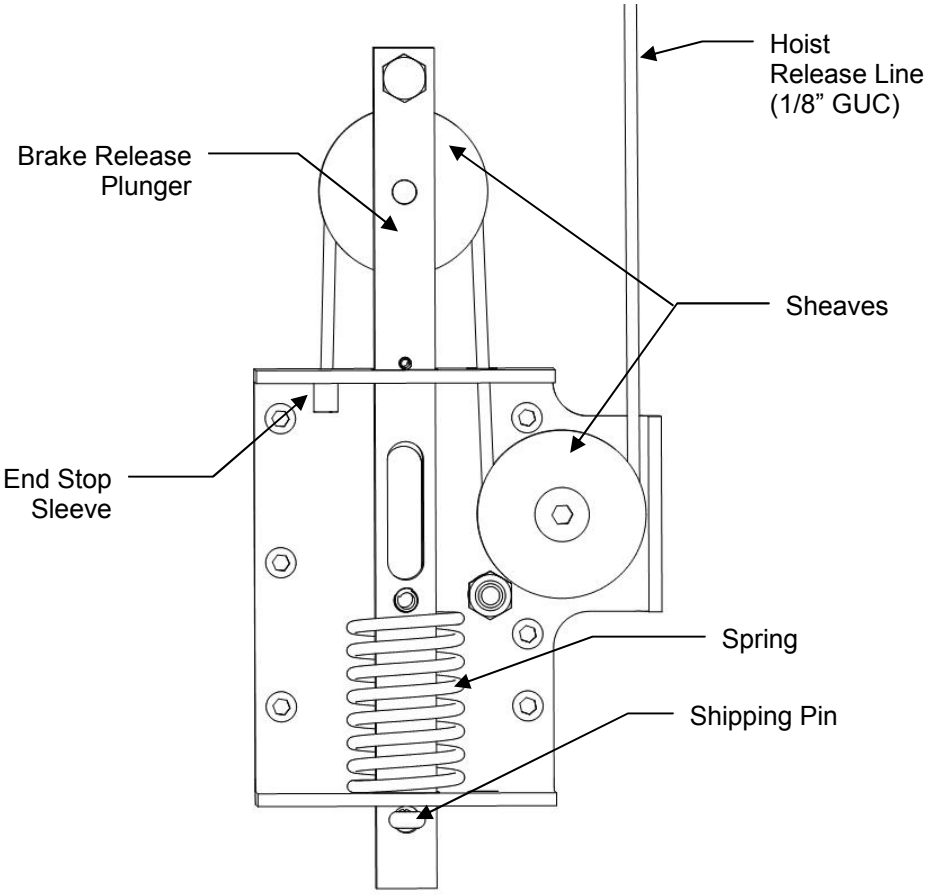

Figure 9 – Motor Brake Release Mechanism

1. The end of the hoist release line (with thimble/eye) should be hanging out of the top of the hoist enclosure. Open the small access panel on the right side of the hoist enclosure to access the release mechanism. Make sure that the release line is properly wrapped around the sheaves as shown above.

2. Install the rest of the fire line system as shown on the installation drawing (if provided).

3. Connect the fire line to the hoist release line using a shackle or other appropriate connection device.

4. Tension the fire line using the tensioning weights in the fire line system. The hoist release line must have a minimum of 30 lbs of tension in order to engage the motor brake.

WARNING! Insufficient tension on the release line can cause curtain to close unexpectedly. Release line requires a minimum of 30 lbs of tension.

5. If the plunger is pressing on the brake release handle, increase tension in the release line. If increasing the tension does not relieve pressure on the brake release handle, contact JR Clancy for assistance.

WARNING! Do not remove the shipping pin until the release line is under tension. The brake will release and the load will fall if the release line is not under tension. Make sure that the path of the curtain is clear of obstructions and personnel.

6. Once the release mechanism is under tension, remove the shipping pin and discard.

WARNING! Failure to remove the shipping pin will prevent curtain from closing in case of fire. Pin must be removed and discarded prior to completing installation.

7. The spring should be fully compressed and there should be no upward pressure on the brake release handle.

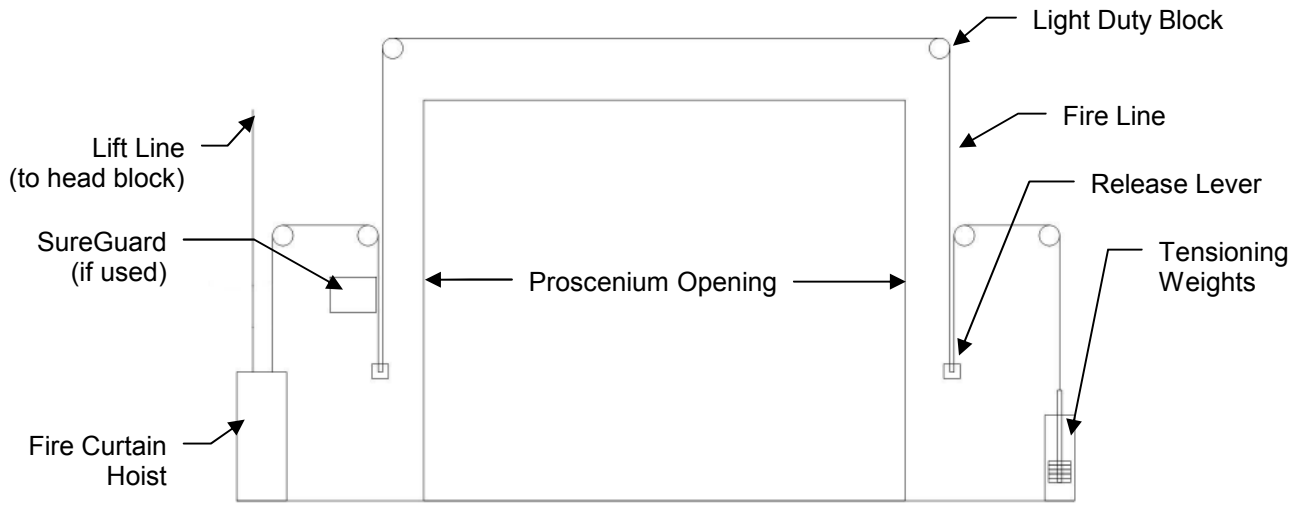

Figure 10 – Fire Line Schematic Drawing

9. ADJUST THE HYDRAULIC DAMPENER

WARNING! High pressure fluid ejection hazard. Hydraulic fluid is under pressure during operation. Do not tamper with pump or reservoir.

The fire curtain hoist is provided with a hydraulic dampener to control the descent of the curtain during emergency operation. The dampener is shipped from the factory with the descent speed set to the middle of the adjustment range and must be adjusted to suit each installation. The dampener must be adjusted to allow the curtain to fall within the time required by local codes, but care should be taken to prevent the curtain from causing injury or damage when it closes. (Typically, the curtain is required to close within 30 seconds and must take at least 5 seconds to close the last 8 feet. Note that these requirements may vary depending on local codes and regulations.) Use the procedure below to complete the installation of the dampener.

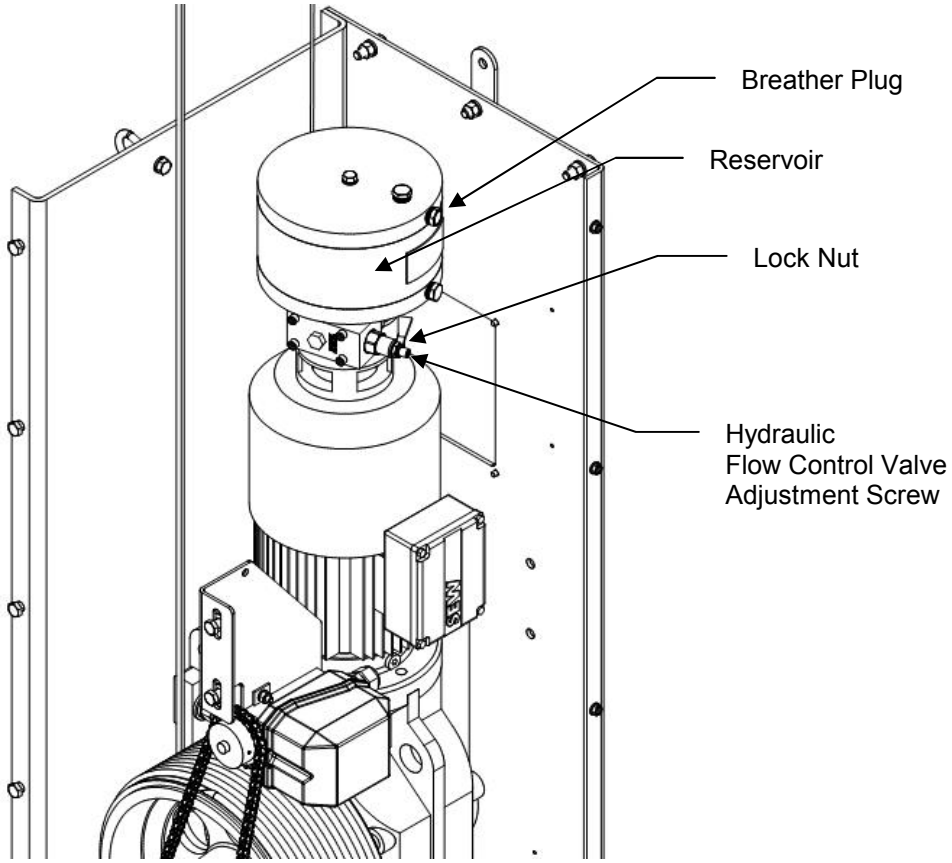

Figure 11 – Hydraulic Dampener Assembly (Covers removed for illustration)

1. Visually inspect the hydraulic assembly for any leaks or damage caused by shipping. Contact JR Clancy immediately if any damage is noted.

2. The reservoir ships with a solid plug in place of the breather plug to prevent leaks during shipping. Remove shipping plug and replace with supplied breather plug as shown (see Figure 11).

3. Determine the required closing time per local codes.

WARNING! Improper adjustment of the hydraulic dampener can cause the curtain to fall too fast in an emergency descent, resulting in damage and/or personal injury. Use caution when adjusting hydraulic dampener. Keep area under curtain clear of obstructions and personnel.

4. Lift the curtain to the raised position. Release the curtain by releasing the tension in the fire line. Time the descent of the curtain. If the curtain does not fall within the required time, or the curtain bounces at the bottom of travel after hitting the stage, adjust the valve using the steps below.
5. Locate the hydraulic flow control valve (Figure 11).
6. Loosen the lock nut on the adjustment screw and adjust the valve. Turning the valve adjustment screw clockwise will decrease the speed of the curtain, turning counterclockwise will increase the speed of the curtain. After adjusting, tighten the lock nut.
7. Reset the fire line with at least 30 lbs of tension.

WARNING! Failure to reset release line properly after an emergency descent (or test) and before raising curtain will cause curtain to close when "UP" button is released. Keep clear of curtain when raising or lowering.

8. Raise the curtain and retime the descent of the curtain. (Note: Raising the curtain may require using the overtravel bypass switch in the controls enclosure if the overtravel limit switch was activated when the curtain closed.) If necessary, repeat adjustment until descent time is correct.
9. Replace cover on hoist.
10. Check and reset fire line.
11. If multiple tests were required to set the hydraulic dampener, wait 30 minutes for the hydraulic fluid to return ambient temperature, and then repeat the test a final time to confirm that the descent is still within the required time.

10. ACTIVATE THE SERVICE LIGHT CIRCUIT

DANGER! Electrocution hazard. Disconnect power from the control station before removing cover.

1. Open the cover of the control station and locate the time accumulator module. See Figure 12.
2. Remove the jumper wire between terminals 5 and 6 of that module.
3. The timer circuit has been activated, and the service light will turn on in one year.

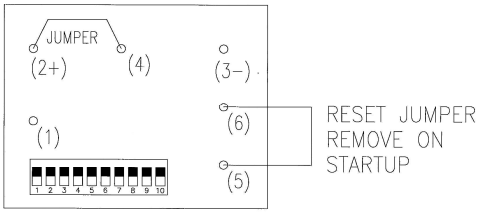

Figure 12 – Time Accumulator Module

11. INSTALL SAFETY SIGNS

In the event that operation, service, or training questions arise, the users must have contact information for qualified service personnel readily available.

Install all safety and notification signs for the hoist and the fire curtain system. These are shown on the installation drawing (if provided). Fill in the set capacity information. Fill out or attach a business card to the designated area of the sign. Note the date of next required inspection.

12. TRAIN THE OPERATORS

The owner and users must be trained to operate this equipment, including:

1. Basic safe operation of motorized rigging.
2. Basic maintenance and troubleshooting. Present and discuss the Maintenance Manual.
3. The requirements of pertinent codes and how they relate to operation of the fire curtain system.
4. The requirements for regular Training, Inspection and Maintenance.
5. Use of the Maintenance and Inspection Log.

13. INSPECT THE COMPLETED INSTALLATION

NOTICE: Final inspection must be performed. The inspection checklist must be filled out, signed, and returned to JR Clancy to activate the warranty.

After the system is installed a final inspection is required.

1. Use JR Clancy part number 003-855 Fire Curtain System Inspection Checklist. A copy was shipped with your order, or you can contact the factory to obtain a copy.
2. Follow the instructions on the checklist and fill out completely.
3. Fill out the attached Certificate of Inspection. You must mail or fax the signed document to JR Clancy to receive a letter of warranty for this product.

HOW TO CONTACT JR CLANCY

Contact the factory at any time with questions and comments concerning this product

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