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# Operation & Maintenance Manual

## Straight Lift Fire Curtain

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### WARNING

Improper use of rigging equipment can result in serious injury.

Do not operate without proper training and authorization.

Not for lifting people.

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**Note** – This is a generic manual provided for guidance in the operation and maintenance of a theatrical rigging system. This manual shows the most frequently used features and options, which may differ from your system. Your system may differ from or not contain all of the options shown in this manual. If you own a J. R. Clancy rigging system, contact us for availability of a project specific manual.

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## Introduction

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Anyone who enters a building with public access has reason to expect that he or she is safe from harm from the building itself or from the equipment and activities within the building. It is the legal responsibility of the owner and his designated manager to ensure that this expectation is met.

It is the responsibility of the owner to hire and train competent people. A competent person is defined as one who is capable of identifying existing and predictable hazards in the workplace, and who has authorization to take prompt corrective action to eliminate those hazards. It is the further responsibility of the owner and his designated manager to provide a safe working environment for all employees, including proper equipment, training on the use of equipment, and written procedures for its use and maintenance. It is also important to keep all unauthorized and/or untrained personnel from the working areas of the stage.

Before operating any stage equipment, operators must be given the necessary training and must then work only under the direction of qualified supervisors. Operators of the equipment must:

- Learn the feel, sound, and even the smell of your equipment so that you will immediately sense when something is not correct.
- Study the capacities and capabilities of each system and its components.
- Thoroughly learn and practice the proper operating procedures.
- Before operating any equipment, ask yourself questions about the current condition of equipment and about any existing conditions which may affect proper operation or which could be affected by its

operation. For example, is anything fouling the equipment or in the path of its intended travel?

Any problem noticed during setup or operation of the stage equipment should be corrected **IMMEDIATELY**.

A routine maintenance schedule must be established and followed and appropriate records maintained. Perform an initial inspection, followed by inspections on a regular basis.

Routine maintenance prolongs the useful life of equipment and keeps it operating at peak efficiency. This insures the quietest possible operation and the least effort on the part of the operator.

In addition to routine maintenance, we strongly recommend that a qualified rigging firm be engaged to perform periodic inspections and to correct any deficiencies discovered. These firms have personnel who are trained to spot present hazards and many "potential" hazards.

## DISCLAIMER

The information in this manual will not cover all possible situations, nor could such inclusive instructions be possibly written by the equipment manufacturer, due to the various processes of mounting theatrical performances. 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 for constant vigilance and common sense. We are not responsible for any damage that results from failure to comply with this manual.

# Straight Lift Fire Curtain

## General

A fire safety curtain system exists to allow an audience sufficient time to safely exit from an auditorium in the event of a fire on the stage. It does this in two ways:

- It helps contain smoke and heat within the stage, so they can be effectively removed by the stage ventilation systems.
- It delays damage to the auditorium from a fire on stage or from the reverse.

In order to serve its function, the curtain must close quickly and surely. If the curtain is used to close off the stage when it is not being used, or is used as a decorative drop, it **MUST** be restored to full operating condition each time it is raised.

Some building codes require that fire safety curtains be left closed when the theatre is unoccupied as a safety measure. This may also reduce unauthorized access to the stage.

## OPERATION

The weight of the curtain is balanced by a counterweight arbor. A hand line is provided for manual operation of the fire curtain.

The deployment of the fire safety curtain is automatic in response to a fire, test, or intentionally deployed in an emergency. After any operation (intentional or not), the fire safety curtain system must be reset.

## WARNING

Fire curtain will close automatically in an emergency.  
Curtain path must be kept clear at all times.  
Improper operation may result in injury.  
Do not use emergency release to lower curtain in non-emergency situations.

An emergency release line containing fusible links and manual release devices is installed around the proscenium opening. Releasing tension in the line frees a holding device and allows the fire safety curtain to lower by gravity. The fire safety curtain can be deployed by one or more of the following methods (Check the drawings of your system for specific details):

- Temperature sensitive fuse links in the release line.
- Operating a mechanical latch (Pull Ring, Lever, etc.) in the release line.
- Activating an electro-mechanical device by means of a switch, smoke detector, temperature rate-of-rise detector, sprinkler flow detector, or signal from the fire alarm system.

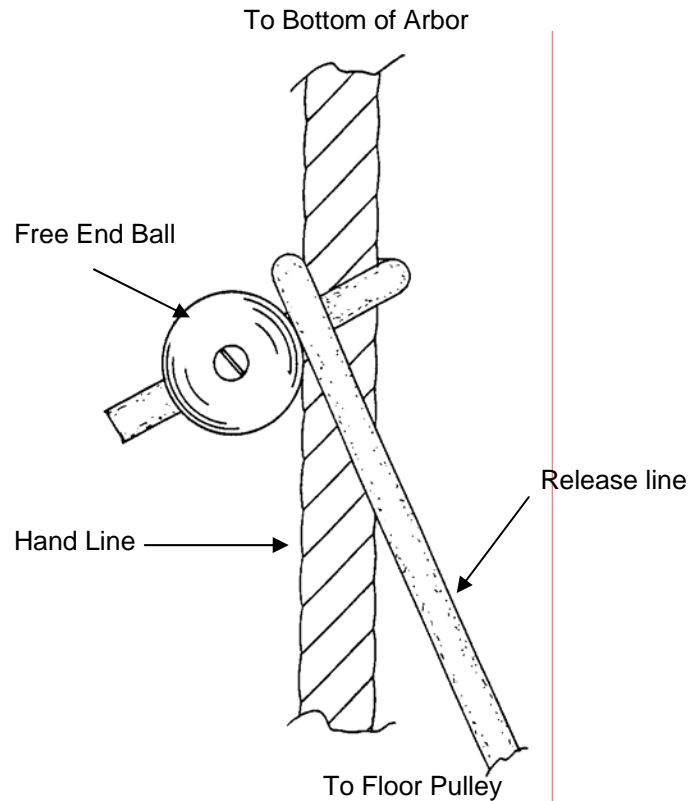
## RELEASE MECHANISM

The most common manual emergency release mechanism for this type of system is a small lever located at either side of the proscenium opening. Pulling on the lever frees the release line, disengaging the clutch at the winch, and allowing the curtain to deploy. Some lever type releases may be located within a protective cover. Consult your system specific drawings for complete information.



## Free End Ball

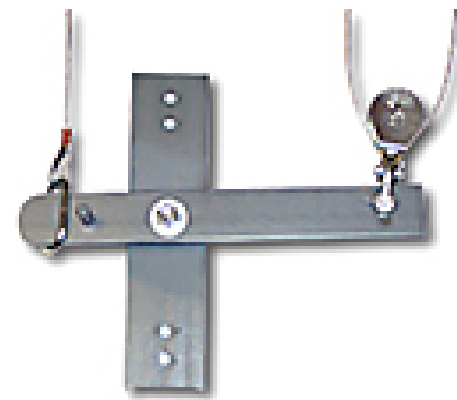
The most basic of releases, this system requires that the curtain be heavier than the counterweight at all times. The free end of the release line is terminated by a steel ball. The release line is looped over itself in such a way that it chinsches down between the steel ball and the handline. The tension placed into the release line by the upward pull of the curtain against the arbor holds the loop in place and prevents the curtain from deploying. When the release line goes slack, the loop falls off of the handline, allowing the curtain to deploy.



This type of system requires some practice and angle at which the release line is attached to the handline is critical. Too little of an angle, and the curtain will not deploy. Too much of angle and the release line won't hold. Additional weight may be added to the release line either before or after the floor block to aid in the quick freeing of the line. If you are having difficulty with setting your release, contact a professional stage rigging company.

**Arbor Release (Lever Type)**

The ring and line on the left are attached to the bottom of the arbor, restraining it and keeping the curtain open. The lever is held in place by the release line (at right). Once the release line is freed, the lever pivots, releasing the arbor and allowing the curtain to close. This device requires that the curtain be heavier than the counterweight at all times.



**SURE-GUARD II™ Release System**

The Sure-Guard II allows smoke detectors, rate of rise detectors or other electrical signals to deploy the fire safety curtain in an emergency. In response to these signals, the Sure-Guard II's electro-mechanical mechanism releases tension in the release line, allowing the fire safety curtain to deploy. The release mechanism may be located at any point along the release line and does not interfere with other deployment mechanisms.

The Sure-Guard II contains an integral battery and charger to provide emergency power in case of interruption to normal power. A test switch on the cover allows the fire safety curtain and control to be tested and LED's indicate the presence of 120 VAC power and the status of the battery power.

After operation, the Sure-Guard II system and release line must be reset. Reeve the release line around either of the two stacked sheaves on the unit, through the small pulley, and then around the other stacked sheave. The loop on the small pulley is then placed over the trip arm and the arm is placed in contact with the electromagnet. The Sure-Guard II must be powered before the arm and release line will stay engaged.



To ensure proper operation, the tension in the release line must be set between 5 & 40 pounds (3 & 18 Kg). See the fire safety curtain system drawings for additional details on installing the release line and rigging for your specific system.

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## Fire Curtain Inspection & Testing

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### INSPECTION

All equipment requires periodic maintenance and inspection to insure long life and trouble free operation. Inspect your system on a regular, scheduled basis and keep records. These inspections will provide information on length of service and any changes in performance which might indicate wearing parts.

Inspections should include, at minimum, the following items:

- All blocks, cables, fittings, etc. (See Rigging Inspection Instruction Sheet)
- The condition of the curtain, including seams, frayed edges, tears or holes, curtain guides, and clamps.
- The condition of fusible links including bends or fractured solder joints.
- The condition of all curtain release devices and instruction signs or labels
- Any obstructions that would block proper access to, or operation of, the curtain
- The condition of a brail winch: Is the brail winch handle present and properly stored for use? Is the brake handle clear and the brake properly adjusted?

The fire safety curtain emergency deployment system should be tested a minimum of four times a year. Some local codes may have specific requirements for the periodic replacement of certain items, such as fusible links. Check with your local code authority for information.

### TESTING

Immediately prior to testing, it is necessary to perform a visual inspection as described above.

If the curtain system permits operation by power or hand without tripping the automatic descent, perform a full lower and raise cycle. Look and listen for any unusual performance or problems.

Deploy the curtain using each automatic release device that is installed in the system, except for the fusible links. You can also deploy the curtain by lifting round weight arbor at the end of the release line, or by disconnecting the release line itself.

A second person should time the curtain as it closes. Most codes require that the curtain close within 30 seconds and that the last 5 to 10 feet of travel must take at least 5 seconds.

The curtain must not bounce back into the air after it hits the floor.

Travel must be smooth and free of pinch points in the guide system.

If practical and appropriate, test the curtain at least once with the smoke hatches open or with the heat or air conditioning blowers on to determine if air loads prevent the lowering of the curtain.

If problems exist, make immediate adjustments or repairs, or contact a qualified professional stage rigging company for assistance.

Reset all curtain functions when finished.

### MAINTENANCE

Since the fire safety curtain may not be routinely activated, but must always be functional in an emergency, routine scheduled inspections and maintenance are vital. Maintenance for fire safety curtain rigging is much the same as other stage rigging systems, but with the following additions:

- DO NOT ALLOW the travel path of the cables, guided clew, or curtain to be blocked.
- DO NOT ALLOW access to the release line or other controls to be obstructed.
- Operate the curtain on a regular schedule to determine if the curtain or its rigging has fouled.
- Vacuum the curtain on a regular basis. Dust burns and can help defeat the purpose of the fire safety curtain if it is allowed to accumulate. It will also help keep the theatre clean and prevent the curtain from getting heavier, thus altering the balance of the system. The proprietary coatings are easily removed, so any cleaning should be done only when necessary and then with great care.

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## Sure-Guard Maintenance

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### GENERAL DESCRIPTION

The Sure-Guard II safety curtain release system consists of a trip arm with pulleys, a metal loop, an electromagnet, and a control section with a lead-acid battery, battery charger, terminals and fuse blocks.

The system can be installed at the end of the fireline or at any point in the line and can be used to release various types of safety curtains. Terminals in the controller allow connection to normally open and normally closed contacts used in push buttons, heat and smoke detectors, rate of rise heat detectors, fire alarms, and other similar devices. These devices are not supplied with the basic system. A test switch on the cover allows the fire curtain and control to be tested and LED's indicate the presence of 120 VAC power and battery power.



### INSPECTION

All equipment requires periodic maintenance and inspection to insure long life and trouble free operation. Inspect on a scheduled basis and keep records. These will provide information on length of service and upon any changes in performance which might indicate wearing parts. The whole fire curtain system, including the Sure-Guard II release, should be tested occasionally by using the test button or other installed release controls. This test checks the operation of the electronics and all of the associated rigging.

The battery should be tested approximately once each year by removing input power for 20 minutes and verifying that the curtain stays up.

### MAINTENANCE

- Any damaged equipment or obstructions found during inspections or in use should be attended to immediately.
- Before performing any maintenance on the Fireline Release Control, it should be removed from use and disconnected or locked out.
- Keep all objects away from the curtain and fireline that would prevent proper operation.
- TROUBLE SHOOTING: See the following trouble shooting check list.



**TROUBLE SHOOTING CHECK LIST**

PROBLEM	POSSIBLE CAUSE	REMEDY
Trip arm will not stay engaged	Excessive pull in fireline	The maximum permissible pull on the hook is 50 pounds (100 pounds (45 Kg) in the fireline). <b>Note that the maximum allowable force in a fuse link is 40 pounds (18 Kg).</b>
	No power to electromagnet to engage arm	See balance of "Trouble Shooting Check List."
No power to control box	Switch off	Turn on switch or circuit breaker at power source.
	Blown fuse	Replace fuse. Check for possible short circuit.
	Normally closed devices missing, defective, or improperly wired	Install or repair devices. Check wiring.
		Install a jumper between terminals 'A' & 'B' if no normally closed devices are installed.
	Normally open devices defective or improperly wired	Install or repair devices. Check wiring.
Battery not charging	Defective control board	Unplug the battery and check to see that voltage is present at the receptacle. If not, replace control board.
	Battery not connected	Check the wire connections on the battery to be sure it is fully engaged

PROBLEM	POSSIBLE CAUSE	REMEDY
	Battery worn out or defective	Unhook the battery and check output voltage. It should be at least 12 VDC.
		Note that a new battery will take about 24 hours to fully charge after installation.
		With the electromagnet installed, check the voltage between terminals 'D' & 'E' on the control board. If the voltage is 0 VDC, replace the battery.
Electromagnet not holding	Defective Electromagnet	If 12 VDC can be measured between terminals 1 & 2 with the electromagnet properly installed, it is defective and must be replaced.