

## Rigging And Flying Operations / Flying of Performers

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### **RIGGING**

#### **Relevant Legislation and Documents**

*Safety in Construction no.26, Rigging Code of Practice, OSH,*

*1989 Current Rigging Code of Practice, OSH*

*ASNZS 1891*

*ASNZS 4488*

*A guide to dogging (Victoria Worksafe)*

#### **General Guidelines.**

All persons undertaking flying operations must be deemed competent to operate the relevant equipment by their employer and to the satisfaction of the producing company and the venue. All systems must undergo a visual inspection by a competent person prior to each use or event.

- 1) Properly trained and competent persons only must be involved with the operation and routine maintenance of any rigging equipment.
- 2) These persons must be knowledgeable in safe operation and functioning of the equipment, safe working loads, routine maintenance, operation of safety devices, possible dangers during proper and improper operation, and emergency procedures.
- 3) All rigging equipment must be inspected once per year by a qualified person (a certificate of test/inspection must be provided), before use, after alterations, and at regular intervals between annual inspections. Repairs and modifications to any rigging equipment must only be carried out by a qualified person.
- 4) Counterweights must be enclosed with a guard preventing passage underneath. The guards must be secured in place.
- 5) Damaged or defective slings and ropes must be removed from service.
- 6) Chains or ropes must not be shortened by knotting.
- 7) Be sure all loads do not exceed the safe capacity of the system.
- 8) Follow safe procedures when loading, unloading, or operating rigging systems.
- 9) The operation of an unbalanced counterweight system may be required under special circumstances (e.g. during the flying of performers). The system must always be operated within the manufacturer's guidelines and the ability of the operator(s) to hold the out of balance load safely.
- 10) Maintain visual contact with a moving piece and control at all times.
- 11) Only assigned personnel shall have access to suspended work areas such as grids and catwalks.
- 12) All hoisting systems must be secured to prevent accidental or unauthorized use.

- 13) No person shall ever ride on hoist hooks, slings or loads.
- 14) The safe working load (SWL) shall never be exceeded.
- 15) When moving flown scenery always warn those below and or above verbally prior to flying said items. Unless it is not practical to do so (e.g. during performance) in which event appropriate communication systems must be implemented and understood by all.
- 16) Aerial performance sequences must be planned with appropriate rigging for the size of the performer/s and the tasks to be completed. This may include the need for crash mats, safety netting and appropriate emergency contingency planning. Consideration of lighting, set or sound changes must be communicated to both riggers and aerial performers.
- 17) The Safety Factor of any rigging is 1:5 (unless stated otherwise).
- 18) Checks of rope locks of a flying system must be conducted prior to use.
- 19) Testing of all rigging equipment must be in line with manufacturer's recommendations.
- 20) Steel slings shall be used as a secondary for fibre slings if there is a risk of fire.
- 21) Packing must be used between slings and sharp edges.
- 22) The rigging and operation of chain hoists, truss, etc, must only be undertaken by competent persons and within the manufacturer's specifications and recommendations.
- 23) Flown props and scenery which is used to fly a performer must be designed and manufactured by a qualified person. Initial operation must include a training process by the qualified person for both operators and performers.
- 24) All loads at or over 500kg lifting to 5 metres vertical must be notified to your nearest OSH office.

### **Flying of Performers**

The creation, design and installation of effects for the flying of performers are a highly specialized area of rigging and must only be undertaken by a suitably qualified person.

Operation of a system for the flying of performers must only be undertaken by persons who are deemed competent and who have received training by a qualified person in the use of the particular equipment to be used.

A complete inspection of all system components must be performed by a competent person prior to each performance. Any damaged flying wires or other components shall be replaced immediately, prior to any further use.

All flying system operators and performers, including understudies, must be fully trained by a qualified person and rehearsed with the flying equipment. The exact nature of the training may be dependent on the specifics of the flying effect and the situation(s) in which it is to be used.

**IF IN DOUBT, DON'T!!!**

## **Equipment specifications:**

### **Relevant Legislation and Documents**

ASNZS 1891

### **Harnesses:**

Any flying harness shall only be manufactured by a qualified person and shall be considered as part of the rigging and NOT part of the costume. Careful attention shall be paid so that any costume elements worn over the flying harness do not impair the vision, mobility and/or safety of the performer. No part of the costume shall be attached to the harness. No harness shall be cleaned, dyed, painted or marked with a substance which may degrade the strength and/or integrity of the harness materials.

The flying harness must have a minimum designed **safety factor of 8: 1**.

All flying harnesses must be inspected for wear or other defects by a competent person prior to each performance.

### **Flying props:**

All flying props which support a performer must have a minimum designed **safety factor of 8: 1**.

Performers flown on flying props must be secured to the prop, by means of cables and harnesses that meet these specifications, during flying effects.

### **Rigging equipment:**

All rigging equipment which supports the performer's GENERATED weight must have a minimum designed **safety factor of 8: 1**.

(I.e. when calculating the SWL it should be noted that the weight of the performer applies an active, dynamic load not only a static load)

Wire ropes to be used for the flying wires shall be sized depending on the weight to be lifted, flying choreography (pendulums, somersaults, etc), number of wire ropes supporting the performer, rigging method, inspection schedule and other relevant factors. This shall include the method of termination of the wire rope. Wire ropes must be labelled with the SWL.

Where two or more flying wires are supporting the performer, and both wires support the performer at all times, each wire rope must have a minimum designed **safety factor of 5: 1**.

If in any doubt the wire rope must be rated at a minimum designed **safety factor of 8: 1**.

The equipment which connects the flying wire(s) to the harness is frequently of a non-standard nature. While these connectors must be proof tested to establish the SWL they are rarely stamped and rated items. The system designer and/or user must satisfy themselves that the connectors are capable of safely carrying the required loads and that any quick release system has a satisfactory, positive safety lock. Proof test certificates for all items must be available for inspection if required.

Pulleys, blocks, sheaves and drums must be designed in such a fashion as to prevent the wire rope from coming out of the groove and becoming jammed between the sheave/drum and side plate of the pulley or block. Installation and use of these items must take into account recommended fleet angles when the flying wires are subject to swing during operation.

If tracks are used for the transverse movement of the flying performer, these must have a minimum designed **safety factor of 8: 1**. In the case of a cable or wire rope track, these must have a minimum designed **safety factor of 12: 1**. This includes all load trolleys.

All tracks must be supported according to manufacturer's recommendations and must be designed and rated specifically for the flying of performers.

Installation, Testing, Inspection and maintenance of the flying equipment:

The equipment to be used for the flying of performers is often attached to the stationary structural members of a building or theatre, to a movable batten of a mechanical counterweight or motorized rigging system, or to a temporary truss or supporting member.

**A written statement of methodology for the installation and intended use must be provided well prior to the installation of the equipment to allow a suitably qualified person to assess the appropriateness of the venue and equipment to be used, the method of rigging the flying equipment and the competency of all personnel involved, including the performers.**

The initial installation of the flying equipment must be supervised by a qualified person who is familiar with the specific equipment being utilized for the flying effect, its design, proper use and installation requirements. The level and actual on-site supervision is subject to the competency of the installation persons involved, each individual situation and any other factors which are deemed necessary for a safe installation of the flying equipment.

After installation, the entire system must be proof load tested to **1.5 x the designed SWL**.