

Safety Guidelines for the Live Entertainment and Events Industries

Part 3. Hazard Guide 03 – Event Rigging

Version 2: effective September 2024

Contents

Disclaimer	2
Definitions and terms	3
1. Overview	3
1.1 Definitions.....	5
1.2 Events and Entertainment Licence and Certification Summary.....	7
2. Entertainment Rigging v Construction Rigging.....	8
2.1 Construction Rigging.....	8
2.2 Event Rigging	8
2.3 Commonalities and Differences.....	9
2.4 Current skill sets and courses	10
3. Key Considerations – Event Rigging	12
3.1 Design and Planning	12
3.2 Event Delivery	13
4. General Guide – Event Rigging	14
4.1 Responsibilities	14
4.2 Consultation, cooperation and coordination	15
4.3 Design and Planning	15
4.4 Event Delivery	16
4.5 Review.....	17
4.6 Documentation and records.....	17
5. Suggested Control Measures	18
5.1 General event rigging	18
5.2 The stages of rigging	18
5.3 Control measures to be implemented.....	19
5.4 Additional factors to be considered in live entertainment and event rigging	20
6. Legislation and Guidance	23

Disclaimer

In legislative terms, the requirements of the **Australian WHS/OHS Framework** are mandatory. In contrast, a guide is designed to assist obligation holders to comply with the requirements of an act or regulation.

Obligation holders still have a duty to assess the risks in each work situation and take all reasonable steps to eliminate or minimise the risks that are specific to each work activity, so far as reasonably practicable. These obligations are described in the *Occupational Health & Safety Act 2004 (Vic)* (**Victorian OHS Act**) at section 21 and in the Work Health Safety Acts in all other states and territories at section 19.

The information contained in the LPA Safety Guidelines for the Live Entertainment and Events Industries (**LPA Safety Guidelines**) is of a general nature and may not apply in all work situations, it is not mandatory and should not be regarded as legal advice. In any important matter, you should seek appropriate independent professional advice in relation to your own circumstances. Live Performance Australia (**LPA**) accepts no responsibility or liability for any damage, loss or expense incurred as a result of the reliance on information contained in this guide.

Definitions and Terms Used

Australian WHS/OHS Framework means Model WHS Legislation and Victorian Legislation

Employer means a person who employs one or more other persons under contracts of employment or contracts of training (Victorian OHS Act)

Model WHS Act means *Work Health and Safety Act 2011* (Cth)

Model WHS Regulations means *Work Health and Safety Regulations 2011* (Cth)

WHS Legislation *Work Health and Safety Act 2020* (WA); *Work Health and Safety Regulations 2022* (WA); *Work Health and Safety Act 2012* (Tas); *Work Health and Safety Regulations 2022* (Tas); *Work Health and Safety Act 2012* (SA); *Work Health and Safety Regulations 2012* (SA); *Work Health and Safety Act 2011* (NSW); *Work Health and Safety Regulations 2017* (NSW); *Work Health and Safety Act 2011* (ACT); *Work Health and Safety Regulations 2011* (ACT) *Work Health and Safety Act 2011* (QLD); *Work Health and Safety Regulations 2011* (QLD); *Work Health and Safety Act 2011* (NT); *Work Health and Safety Regulations 2011* (NT)

WHS Acts means *Work Health and Safety Act 2020* (WA); *Work Health and Safety Act 2012* (Tas); *Work Health and Safety Act 2012* (SA); *Work Health and Safety Act 2011* (NSW); *Work Health and Safety Act 2011* (ACT); *Work Health and Safety Act 2011* (QLD); *Work Health and Safety Act 2011* (NT)

WHS Regulations means *Work Health and Safety Regulations 2022* (WA); *Work Health and Safety Regulations 2022* (Tas); *Work Health and Safety Regulations 2012* (SA); *Work Health and Safety Regulations 2017* (NSW); *Work Health and Safety Regulations 2011* (ACT); *Work Health and Safety Regulations 2011* (QLD); *Work Health and Safety Regulations 2011* (NT)

PCBU means person conducting a business or undertaking (Model WHS Legislation)

SWMS means safe work method statement

Victorian OHS Act means *Occupational Health & Safety Act 2004* (Vic)

Victorian OHS Regulations means *Occupational Health & Safety Regulations 2017* (Vic)

Victorian Legislation means *Occupational Health & Safety Act 2004* (Vic); *Occupational Health & Safety Regulations 2017* (Vic)

Hazard Guide 03 – Event Rigging

1. Overview

This guide provides information to assist in managing risks associated with **rigging** work undertaken in live entertainment and events. Information in this guide is based on the **Australian WHS/OHS framework**.

It is recommended that this information is referenced during the planning and delivery of events to assist in identifying hazards, assessing risks and determining appropriate control measures to eliminate and or minimise these risks, so far as reasonably practicable.

This guide does not replace the need to develop risk management strategies, undertake research or seek specialist advice.

Each person conducting a business or undertaking (**PCBU**), or Employer who manages or controls a workplace has a responsibility to understand their obligations under WHS Legislation. Workers and employees also have a responsibility to ensure they don't endanger themselves or others. Australian and international standards provide approved guidance on how to meet work health and safety obligations. Codes of Practice and Compliance Codes are available from the state regulator eg: SafeWork NSW, or the WHS regulator in your state or territory.

A Code of Practice, or Compliance Code is a refined version of a Standard, which also refers to Australian WHS/OHS framework legislation. They can be easily read and understood, with information on specific work tasks and procedures, to assist you to achieve compliance required under the WHS/OHS Acts and Regulations in each state or territory.

As rigging work can only be undertaken by appropriately licensed personnel who are able to properly identify and control risks associated with rigging, this guide does not provide detailed advice on suggested control measures.

Specialist rigging activities MUST be performed by competent companies or individuals with current insurances, risk assessments, verified engineering and safe work methods. If you don't have the knowledge to assess the activity your "duty of care" is to find an expert in this area who can.

New to Australian Training Framework

- Skill Set for entertainment rigging (Theatre)
[training.gov.au - CUASS00063 - Specialist Entertainment Rigging Skill Set \(Theatre\)](https://training.gov.au/Training/Details/CUASS00063)
- Skill Set for entertainment rigging (Arena)
[training.gov.au - CUASS00064 - Specialist Entertainment Rigging Skill Set \(Arena\)](https://training.gov.au/Training/Details/CUASS00064)
- Skill Set for entertainment rigging (R2)
<https://training.gov.au/Training/Details/CUASS00089>, including
<https://training.gov.au/Training/Details/CUASTA413>

When undertaking rigging, additional risks associated with working at height must also be identified and managed, see Hazard Guide 11 - Working at Height.

The Safety Guidelines for Live Entertainment and Events Part 1 – WHS Commitment and Responsibilities provides general information on duties, obligations and risk management.

1.1. Definitions

Rigging

Rigging is defined by Part 1 of the WHS Regulations in all states and territories except Victoria.

Rigging work means:

- (a) the use of mechanical load shifting equipment and associated gear to move, place or secure a load using plant, equipment or members of a structure to ensure the stability of those members; or
- (b) The setting up or dismantling of cranes or hoists.

Rigging is defined by Part 1.1 of the Victorian OHS Regulations.

Rigging work means:

- (a) the use of mechanical loadshifting equipment and associated gear—
 - (i) to move, place or secure a load including plant, equipment or members of a building or structure; and
 - (ii) to ensure the stability of members of a building or structure; or
- (b) the setting up or dismantling of cranes and hoists—

but does not include the setting up of a crane or hoist which only requires the positioning of integral outriggers or stabilisers.

In terms of the WHS Regulations, rigging work typically meets the requirements for high risk work, construction work and high risk construction work, as follows:

- **High risk work**, as it is within the scope of a high risk work licence for dogging and rigging work.
- **Construction work**, as it includes the assembly of prefabricated elements to form a structure, or the disassembly of prefabricated elements forming part of a structure. Assembly of rigging is adding a new element of structure to the existing structure.
- **High risk construction:**
 - there is a risk of a person falling more than two metres; and/or
 - The work is carried out in an area in a workplace in which there is movement of powered mobile plant(s).

Chapter 6 of the Model WHS Regulations and Chapter 5, Part 5.1 of the Victorian OHS Regulations define certain requirements related to rigging as high risk construction work including the use of Safe Work Method Statements (**SWMS**), security of the workplace, and general construction induction training.

Classes of rigging

DOGGING (DG)

Definition:	Dogging work: <ul style="list-style-type: none"> • Selection and inspections of lifting gear (e.g. slings, shackles wire ropes etc) • Safe work load (SWL) calculations • Slinging techniques and attachment of crane/winch or chain motor hooks to loads • Direction of crane/winch or chain motor operators for load movements • Adherence to Safety standards and SWMS related to lifting loads
Examples:	Selection of attachment to chain block, motor, wire/batten, truss arch or truss upright that is lifted by a mechanical device. Assisting rigger with Design, planning and consultation for lifting tasks
Competence:	Dogman (DB) high risk working licence (HRWL) plus relevant experience in applying load assessment skills in a live entertainment context

BASIC RIGGING (RB)

Definition:	Dogging work, plus: <ul style="list-style-type: none"> • Hanging (placing) a single hoist • Installing a suspension point to a structure • Installing a counterweight flying line or winch (temporary or permanent)
Examples:	Operating the device to lift or lower (e.g. single chain block, motor, wire/batten, truss arch or truss upright that is lifted by a mechanical device Installing lifelines Design, planning and consultation for basic rigging tasks Supervision of basic rigging activities
Competence:	Basic rigging certificate plus relevant experience in applying rigging skills in a live entertainment or event context

INTERMEDIATE RIGGING (RI)

Definition:	Dogging and basic rigging work, plus: <ul style="list-style-type: none"> • Installing multiple hoist systems with multiple power sources that can be controlled individually or collectively • Planning and coordinating of multi hoist lifts, irrespective of scale (number of points)
Examples:	Installing lighting truss supported by two or more chain blocks, hoists or winches Installing speaker or AV system supported by two or more chain blocks, hoists or winches Installing multiple bar load equalisation or power assisting hoist or winches to theatre flying systems Supervision, design or planning work that requires intermediate and below competence in rigging
Competence:	Intermediate rigging certificate plus relevant experience in applying rigging skills in a live entertainment or event context

ADVANCED RIGGING (RA)

Definition: Dogging, basic and intermediate rigging work, plus:

- Suspension of persons
- Temporary guyed structures
- Span lines

Examples: Flying performers

Rigging circus or aerial acts

Rigging work that can be covered by a safe operating procedure

Definition: Attaching or suspending items – these tasks involve attaching items to a pre-existing/proprietary system using a standard method. This work is often referred to as theatrical rigging, such as ‘rigging a light’, or ‘rigging sound/AV’. It is not rigging as defined by WHS regulations.

Examples: Hanging technical elements (lighting, sound, AV equipment) from a hook clamp
 Attaching cloths, drapes, banners
 Attaching scenery with a dedicated attachment point
 Attaching styling/design elements
 Attaching or running cables

Competence: Follow task instruction

Controls: Site supervision by a rigger (at level required by task)
 Following venue guidelines, including allowable weights for items
 Following proprietary system manuals
 Safe operating procedures (SOP)/SWMS

1.2 Events and Entertainment License and Certification summary

Dogging is required for using slings, shackles, wires, and other accessories for suspending a load from a hoist that is already in place.

Basic Rigging is required for the installation of a single hoist from a supporting structure such as a theatre grid or exhibition hall roof structure.

Intermediate Rigging is required for the planning and operational coordination of a multiple hoist rigging system. (it is important to note that the intermediate rigger does not need to operate the hoist control, but to DIRECT the operation from a place where they can efficiently view the moving system).

Advanced Rigging is required for Flying persons, or items designed to suspend a person, Cableways and spanlines, and temporarily guyed structures such as Circus Tents and Aerial rigs.

2. Entertainment Rigging v Construction Rigging

It is important to describe when a site is a construction site/ 'in construction mode'. As this is when controls need to be in place for protection of employees/workers.

The Construction Industry is where work is essentially building low rise and high rise structures that will be permanent. The Entertainment Industry is where work is essentially temporary installation, operation and dismantlement of infrastructure to support the delivery of a concert or show.

Construction rigging and entertainment rigging in Australia, though sharing some fundamental principles and safety concerns, serve distinctly different purposes and involve unique sets of skills and equipment.

2.1 Construction Rigging

Construction rigging primarily deals with the use of cranes, hoists, and other mechanical devices to lift, move, and position heavy building materials and large structural components. The focus is on safety, efficiency, and precision in handling loads that can include everything from steel beams and concrete panels to large machinery. Construction riggers in Australia must adhere to stringent safety standards regulated by bodies such as Safe Work Australia and state-specific regulations.

Construction rigging work is generally unionised. Construction unions may train riggers to follow certain work methods.

Key aspects of construction rigging include:

- **Load Calculations:** Ensuring all weights and stresses are accurately calculated to prevent accidents.
- **Safety Compliance:** Adhering to strict safety protocols and wearing appropriate personal protective equipment (**PPE**).
- **Equipment Inspection:** Regularly checking all rigging hardware and machinery for wear and defects.
- **Equipment Inspection:** Regularly checking all rigging hardware and machinery for wear and defects.

2.2 Entertainment Rigging

Entertainment rigging, pertains to the setup and dismantling of stage equipment, lighting, sound systems, and scenery in theatres, film sets, and other entertainment venues. This type of rigging needs to be highly adaptable and often temporary, as the configurations can change with different productions or events.

Key features of entertainment rigging include:

- **Dynamic Configurations:** Riggers must be capable of quickly adapting to different setups and artistic requirements.
- **Load Dynamics:** Understanding the dynamic loads involved with moving parts and performers, which differ significantly from the static loads in construction.
- **Visibility and Aesthetics:** Rigs often need to be unobtrusive or hidden from view, requiring creativity in the setup.

2.3 Commonalities and Differences

Both types of rigging require a thorough understanding of mechanical forces, load dynamics, and safety protocols. However, the materials and methods can vary greatly. Construction riggers might use heavy steel cables and chains, while entertainment riggers often use lighter materials like wires and synthetic fibers.

The training for riggers in both fields includes understanding the equipment and safety measures, but entertainment rigging also requires a greater focus on the artistic and visual aspects of production, making it unique. Both roles demand high levels of expertise and responsibility, given the potential risks involved.

In summary, while construction and entertainment rigging in Australia both deal with the fundamental task of safely handling heavy loads, the environments, equipment, and specific challenges they face are quite distinct.

Complex rigging in the entertainment industry is vital for creating dynamic and visually engaging experiences in concerts, theatre productions, circus performances, and audiovisual presentations. Set out below are some examples of how rigging plays a crucial role in these areas.

Concerts

In the context of concerts, rigging is used to suspend lighting, sound systems, and video panels, often integrating trusses to create large, elaborate stage setups. For instance, rigging for a major concert might involve:

- **Flying PA Systems:** Large speaker arrays are flown (suspended from trusses) to ensure even sound distribution across large venues.
- **Lighting Trusses:** Trusses are configured above the stage and sometimes around the audience to mount and position lighting fixtures, enabling dynamic lighting effects synchronised with the music.
- **Video Walls:** Large LED panels are rigged to trusses to display live footage and visuals, enhancing the audience's experience.

Theatre

Theatre productions use rigging to bring scenes to life and transition smoothly between different settings:

- **Scenery and Set Changes:** Rigging systems move large scenic elements seamlessly on and off stage. Automated fly systems can lift and lower backdrops or set pieces, changing scenes without interrupting the flow of the performance.
- **Flying Effects:** Special rigging techniques are used for scenes requiring characters to fly or for dramatic entrances and exits.

Circus Activities

Circus rigging is particularly specialised, given the high risks involved with aerial performances:

- **Aerial Apparatus:** Equipment such as trapezes, hoops, and fabrics are suspended from high rigging points, allowing performers to execute acrobatics above the ground.
- **Safety Rigging:** In addition to performance rigging, safety lines and nets are strategically rigged to protect performers during high-risk acts.

- **Audiovisual Systems:** In conferences, exhibitions, and large corporate events, trusses and rigging systems are extensively used to support audiovisual equipment:
 - **Projection and Lighting:** Trusses provide the framework to position projectors and lighting in optimal locations, enhancing the visual and auditory reception for the audience.
 - **Modular Displays:** Rigging allows for the creation of custom modular setups that can be adjusted or moved around depending on the event's specific requirements.
 - These examples highlight the diverse applications and critical importance of rigging in the entertainment industry, where both safety and creativity are paramount. Rigging technicians in this field must possess a deep understanding of mechanical physics, material limitations, and aesthetic considerations to successfully execute these complex setups.

Conferences, exhibitions and large corporate events

In conferences, exhibitions, and large corporate events, trusses and rigging systems are extensively used to support audiovisual equipment:

- **Projection and Lighting:** Trusses provide the framework to position projectors and lighting in optimal locations, enhancing the visual and auditory reception for the audience.
- **Modular Displays:** Rigging allows for the creation of custom modular setups that can be adjusted or moved around depending on the event's specific requirements.

These examples highlight the diverse applications and critical importance of rigging in the entertainment industry, where both safety and creativity are paramount. Rigging technicians in this field must possess a deep understanding of mechanical physics, material limitations, and aesthetic considerations to successfully execute these complex setups.

NOTE: Automated flying and staging systems also can require rigging knowledge and are covered in Hazard Guide 8 - Stage Machinery Automation Systems.

In comparing the content of rigging licensing, the focus is very much on construction-based rigging. When looking at entertainment, a lot of the rigging is not covered in license training but rather taught during an apprenticeship with new riggers being supervised by experienced riggers. In Theatre this work is done by machinists and carpenters. Specialist skill sets exist for entertainment rigging and are available through the Australian Training Framework. Only a limited number Registered Training Organisations (RTOs) deliver this training.

Since the last revision of the LPA guidelines in 2018, consultative groups along with peak bodies have been developing content and course delivery.

2.4 Current skill sets and courses

Current skill sets and courses designed to have entertainment rigging focus:

- Specialist Entertainment Rigging Skillset [training.gov.au - CUASS00089 - Specialist Entertainment Rigging Skill Set](https://training.gov.au/CUASS00089)
- Specialist Entertainment Rigging Skillset (Arena) [training.gov.au - CUASS00064 - Specialist Entertainment Rigging Skill Set \(Arena\)](https://training.gov.au/CUASS00064);
This Skillset includes Undertake Arena Rigging Activities [training.gov.au - CUASTA414 - Undertake arena rigging activities](https://training.gov.au/CUASTA414)
- Specialist Entertainment Rigging Skillset (Theatre) [training.gov.au - CUASS00063 - Specialist Entertainment Rigging Skill Set \(Theatre\)](https://training.gov.au/CUASS00063)

- This Skillset includes Operate Fly systems [training.gov.au - CUASTA413 - Operate flying systems](https://training.gov.au/units/CUASTA413)
- Both Arena and Theatre courses contain the 'Apply work health and safety practices in a live production environment'
[training.gov.au - CUAWHS313 - Apply work health and safety practices in a live production environment](https://training.gov.au/units/CUAWHS313)

The courses are now available for delivery. The first delivery by Arts Centre Melbourne was completed in July 2024.

3. Key Considerations – Entertainment/Event Rigging

The following questions must be considered during event design, planning and delivery. Use them to identify hazards and plan how risks will be managed.	Yes	No	Comments/Action
3.1 Design and planning			
<i>Will other PCBUs/workers and Employers/employees be involved or affected by this activity?</i>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Have arrangements been made to consult with and cooperate and coordinate activities with other PCBUs/Employers before and during the undertaking of this activity?</i>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Has the scope of work been defined (duration, equipment required, scheduling, location)?</i>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Are there site-specific safety requirements or procedures that must be considered?</i>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Are there elements to be suspended?</i>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Has it been determined how the weight will be distributed?</i>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Does the venue have the appropriate rigging infrastructure?</i>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Have the capacities of the venue rigging infrastructure been determined?</i>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Is venue approval required to install rigging?</i>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Will mobile plant be required?</i>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Is the rigging equipment fit for purpose and compliant with legislation (including Test and Tag)?</i>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Are the weights of all suspended elements known, including all rigging components, brackets etc.?</i>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Have all environmental conditions that may affect the rigging structure been taken into consideration?</i>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Will engineering certificates be required?</i>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Have all PPE requirements been determined?</i>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Is it clear who will conduct the risk assessment?</i>	<input type="checkbox"/>	<input type="checkbox"/>	

3.2 Event delivery			
<i>Do workers have the appropriate licences?</i>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Will workers be exposed to the risk of falls?</i>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Will movements of rigging be part of the performance?</i>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Have the procedures and authority for calling stop and go/no go been established?</i>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Have rigging communication protocols been established?</i>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Are adequate rigging inspections scheduled, including by whom and when?</i>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Is the activity coordinated with other PCBU's/Employers?</i>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Can the rigging work be scheduled to minimise exposure to other workers/services?</i>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Have the identities of all individuals who will be in the work area when rigging is being conducted been determined?</i>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Has it been determined how exclusion zones will be established and maintained?</i>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Are arrangements in place to ensure the rigging structure cannot be accessed by the general public/audience?</i>	<input type="checkbox"/>	<input type="checkbox"/>	

4. General Guide – Entertainment/Event Rigging

4.1. Responsibilities

The WHS/OHS Regulations require that people undertaking high risk work hold the license appropriate for that class of high risk work. Specific licenses apply for dogging and rigging work; relevant experience in applying rigging skills in a live entertainment or event context is also required.

PCBUs/Employers have a duty to ensure people hold the required license and individuals are required to provide evidence of the class of license held and relevant contextual experience.

Training and competence

Competence to undertake various classes of high risk work is regulated through a national licensing system. Rigging work in live entertainment and events requires persons to hold one of the following classes of license in addition to the general construction induction training card (White Card):

- Dogging
- Basic rigging
- Intermediate rigging
- Advanced rigging

Personnel must also be competent to undertake work at heights. Completion of a Work Safely at Heights or equivalent unit is the recommended standard. See, [Work at Heights unit RIIWHS204E](#)

Information on the specific competencies and licensing arrangement can be obtained from the state/territory safety regulator or from Safe Work Australia. Details are included in:

- [Certification Standard for Users and Operators of Industrial Equipment](#) [NOHSC: 1006 (2001)] and
- [National Standard for Licensing Persons Performing High Risk Work.](#)

The following are examples of tasks that are related to rigging but **not deemed as rigging** within this guide. They require a level of competence but not a high risk work licence. Examples are:

Operation of flying systems

An operator of a flying/hoisting system (counterweight or powered) must:

- have received specific training in the use of the particular flying/hoisting system
- be competent to operate the equipment
- have undertaken a venue-specific induction before operating the flying/hoisting system.

Adjusting lights on a truss or lighting bar/suspension

- Hanging technical elements (lighting, sound, AV) from a theatrical hook style clamp
- Attaching cloths, drapes, banners
- Attaching scenery with a dedicated attachment point
- Attaching styling/design elements
- Attaching or running cables

4.2. Consultation, cooperation and coordination

The WHS Acts and the Victorian OHS Act make consultation with workers a legal requirement. Consultation, cooperation and coordination between PCBU/Employers is a requirement where they share a duty for the safety of a worker or for work to be done.

PCBU/Employers should use the information in this guide to consult with workers, including event staff, to determine the rigging hazards and risks associated with an event and how to best eliminate or minimise these risks using the hierarchy of controls.

Consultation should start as early as possible, before decisions are made, and continue through the duration of the event.

Consider the other parties who will need to be involved in the consultation process in the planning stages of the event and determine what information needs to be shared and discussed. In particular, consultation must include gathering information from designers, which will inform the approach to rigging. See part 5.4 of this guide Additional factors to be considered in live entertainment and event rigging.

During an event, PCBU/Employers are required to consult, cooperate and coordinate with other PCBU/Employers such as the venue or site management, unions, production companies, designers, event organisers or promoters, security, subject matter experts such as licensed riggers, engineers, safety officers, local authorities or governments, performers, suppliers of plant or equipment etc.

If employees are represented by health and safety representatives, the consultation must involve those representatives.

Areas to address during consultation may include induction, schedules, floor plans, set, lighting and sound designs, site-specific requirements, venue structure and weight loads, risk assessments, SWMS, hazards and control measures, legislative requirements, licences, plant movement, traffic management, exclusion zones, key contacts, emergency procedures, permits to work etc.

Opportunities for consultation include toolbox talks, event briefings, site inspections, stakeholder meetings, post event reviews, working groups or forums.

Cooperating with the scheduling and control of rigging activities

Rigging is high risk work and there must be clear allocation and communication of responsibilities for all people working on site.

The person with authority for rigging such as the rigging company, rigging supervisor or head rigger will be responsible for the planning, scheduling and control of rigging operations. In particular, the person responsible for rigging will determine exclusion zones while rigging is being undertaken and will ensure sufficient mechanisms are in place to maintain the exclusion zones during work.

Authority to issue safety instructions and call 'stop' must be clearly established. This must be communicated to all people on site and they must understand and be able to follow these safety protocols.

4.3. Design and Planning

In the early stages of design and planning for an event, the following criteria should be addressed when planning rigging work:

- Consultation with relevant PCBUs/workers and Employer/employees (your planned venue location may also include a Rigging Supervisor as a PCBU/Employer)
- Selection of the rigging plant and equipment required to complete the task

- Scheduling and allocation of resources to minimise impact on others
- Consultation with contractors
- Work permits, engineering certificates or safety plans requirements
- Development of risk assessments and SWMS including controls agreed to during consultation
- Access to site and logistics
- Maintenance programs
- Legislative requirements such as a rescue plan & equipment to perform rescue
- Emergency procedures
- Communication methods

Indicative rigging planning considerations

- Obtain technical specifications from the promoter/technical director/production manager/project manager/organiser about the production rigging requirements including:
 - lighting design sound design set design
 - set builders
 - production design
 - suppliers of equipment
 - temporary structure designer
- Obtain technical specifications for the venue
- Take into account the loads applied to the system by the weight of fittings, equipment and other items. This must take into account the capacity of all elements including trusses, hoists and points of attachment
- The rigging plan must meet the requirements specified by the venue including meeting SWMS's procedures, weight statements, and any work permits
- Any new risks that result from the placement of rigged items must also be managed. For example, the choice of rigging points should ensure that the installation of false ceiling does not obstruct fire safety systems
- Access requirements for inspection and maintenance must also be considered to ensure new height safety hazards are eliminated or minimised
- Assess the work to be undertaken and determining high risk work license requirements
- Any other considerations that may arise from event specific requirements

4.4. Event Delivery

In the delivery stages of an event (set up, rehearsal, presentation/performance and breakdown/bump out) the following requirements should be addressed:

- Ongoing consultation with relevant PCBUs/workers and Employer/employees
- Site specific inductions
- Equipment inspections and/or maintenance
- Implementation and monitoring of controls identified in risk assessments or SWMS
- Enforcing compliance to legislative requirements
- Review, consultation and adjustment control measures as required on site
- Incident reporting and management
- Sign-off and handover process

Rigging during event set up and event de-rig should adhere to the following steps:

- Conduct tool box talks with crew and production representatives
- Establish works area and exclusion zones
- Establish access methods
- Mark out rigging points
- Hang hoists
- Layout trussing system
- Lift truss to work height
- Allow other suppliers or technical departments to install their equipment
- Check that what was installed complies with agreed rigging documentation
- Clear work zone for truss to move to trim height

Rigging during presentation/performance mode should adhere to the following steps, which may be repeated for each presentation/performance event:

- Agree timings with production
- Establish the communication protocols, including verifying who calls 'stop'
- Agree process with other technical areas (lighting, sound, AV) for rigging test/rehearse rigging in full work light without any other technical elements
- Progressively introduce technical layers of performance one by one – e.g. lighting, then sound, then performers
- Establish responsibility for deciding who does what in the performance/event space

4.5. Review

After an event, review the following elements in consultation with other stakeholders:

- Incident reports and outcomes including near-misses
- Effectiveness of the control measures
- Scheduling
- Areas for improvement
- Incidents of non-compliance
- Any new hazards or risks identified

4.6. Documentation and records

The following documents and records should be created, maintained and kept readily accessible when undertaking rigging:

- Rigging plan
- Point load document
- Periodic inspection certificates
- Rigging test tags (where used)
- Risk assessments and SWMS
- Training records, certificates of competency and licences
- Induction records
- Toolbox talk topics and attendance
- Evidence of consultation
- Incident reports, including near-misses
- Plant design specifications and maintenance records
- Engineering certification, work permits and sign-off records

Any of the above documents could be requested to be sighted by other PCBU's/Employers for verification or clarification and should be available at all times.

Some WHS documents and records need to be retained for a specific period of time – see relevant WHS legislation for details.

Copies of high risk work licenses must be kept for a minimum of one year.

5. Suggested Control Measures

5.1. General event rigging

Rigging work will often take place amongst a range of other activities during set up/breakdown or bump-in/bump-out and performance/presentation of live entertainment and events. To manage associated risks it is essential to clearly distinguish rigging work from other related activities and ensure relevant controls are in place.

5.2. The stages of rigging

Stage 1: Top rigging – to be considered 'rigging' and therefore a high risk activity.

Commences from when the elevated work platform is in a lowered static position ready to begin the task of attaching a new element to the structure. This would include, but not be limited to, connecting top points and positioning chain motors. Top rigging ceases when all attaching tasks at height are completed and the elevated work platform is returned to the lowered static position.

Stage 2: Ground rigging and ground work

(a) Ground Rigging – Preparation of points for hanging associated with top rigging. This is still defined as high risk activity as it is associated with the overall rigging installation or dismantle.

Use of demarcation zones on the floor where work is happening above is required. Ground Riggers must work as spotters in this activity.

(b) Ground Work – not deemed to be 'rigging' or a high risk activity.

This stage includes all work conducted at or below two metres with workers positioned at the ground level. During this stage there may still be risk of objects falling from height and spotting/demarcation by ground riggers is used to minimize risk of harm from falling objects.

Ground work would include, but not be limited to, the assembling of trusses, attaching banners, lights and audio visual equipment to the truss or structure to be lifted. These can be covered by SOPs and workers can assist with these tasks under the supervision of riggers.

Stage 3: Movement – to be considered 'rigging' and therefore a high risk activity (other than the operation of a flying or hoisting system – see definitions at 1.1 in this document).

Movement commences from when the structure is moved to when it is stationary again.

This would be for the purposes of loading and attaching lights and audio-visual equipment. This often happens will other ground work is active and requires control measures by ground riggers to be in place.

5.3. Control measures to be implemented

For the stages listed above that are considered 'rigging', the following control measures must be implemented and enforced by the person or company responsible for undertaking rigging. These are legal requirements and any persons undertaking rigging work or working in the vicinity of rigging activity must be aware of these safety requirements and adhere to them.

- **Construction induction card and HRW license** – all persons involved in the activity of rigging are to hold a general construction induction training card. As a minimum this would include the licensed rigger, dogger and the spotter. Persons undertaking dogging and rigging work must hold the appropriate class of high risk license.
- **Safe work method statement (SWMS)** – as the rigging process has been defined as a high risk activity, a task specific SWMS must be provided on site and reviewed prior to work commencing and signed off by all workers involved in the activity of rigging. This should also include use of mobile plant such as forklifts and elevating work platforms (EWPs). The SWMS must be kept for the duration of the works.
- **Head protection and safety boots/other PPE** – riggers, spotters and other workers within the exclusion zone must wear appropriate head protection and safety boots during the stages identified as rigging. Gloves and eye protection may also be required.
- **Isolation and control of the area of risk** – the area below the activity is to be isolated during each stage identified as rigging to minimise the risk of harm from falling objects. The means of isolation and the size of the exclusion zone is to be determined by the company or authorised person undertaking the rigging, with consideration of the activity being undertaken, and should be identified in their task-specific SWMS. Only workers necessary to the rigging process should remain in the exclusion zone and all workers remaining within this area are required to comply with the controls stated above.
- **Supervision of workers by qualified riggers** - for ground work like attachment of lights and other hook clamped items, an SOP can be useful for workers to be trained or briefed on with riggers checking installation prior to lifting a rigging element. As installation and dismantle of complex rigging is done in stages, there are times when riggers will be required to move sections whilst ground work is also happening. This MUST be coordinated with all Heads of Department and workers. This may mean stopping ground work and staff moving to designated safe areas under instruction.

In the planning stages of an event, the move-in/move-out schedules should also take into consideration minimising the number of persons exposed to the rigging activity whenever reasonably practicable.

Source: Adapted from information kindly supplied by the Sydney Convention and Exhibition Centre, 2013.

5.4. Additional factors to be considered in live entertainment and event rigging

An experienced and competent rigger who also has experience in the entertainment and event field and holds the appropriate licenses for the relevant high risk work must be consulted when circumstances/effects involve highly complex rigging situations.

Non 'construction rigging' standard equipment

Rated equipment suitable for use in the entertainment industry must comply with the following three requirements:

1. The minimum breaking load is known and the item is stamped or marked with a serial, part or reference number
2. The appropriate safety factor must be applied, and
3. The item must be inspected prior to each use.

This means that equipment from the climbing and yachting industries or equipment that does not have a marked Working Load Limit (**WLL**) may be used for entertainment rigging as long all of the above three requirements are met.

Material sizes and capacities

Minimum sizes for wire, ropes, and chains are specified by Australian Standards and rigging license training. However, the smaller wires, ropes, chains etc. may be used where an appropriate risk assessment or method diagram demonstrates that they can be used safely.

The diagram must state the working load limit of the cable or fitting and the weight of the load to be supported. Typical examples include suspension of lightweight scenic item, stunts or magic style effects.

Safety factors

Safety factors must be incorporated into design, planning and risk assessment for an activity. Requirements may vary depending on the circumstances.

As a guideline it is globally accepted, a minimum safety factor of eight (8) should be considered for any load suspended over people. As most entertainment rigging is left suspended above people a minimum safety factor of 8 should be used for all entertainment rigging.

Actors and crew are statistically are more at risk than the general public due to the level of exposure to the risk.

A factor of 8 should be used as the minimum factor of safety and is easily achievable with most equipment that is currently available by simply lowering the WLL (work load limit).

8:1 is commonly accepted by many as a minimum starting point, but the required factor of safety should ultimately be decided on the risk assessment depending on the requirements of the production. See the chart below (*).

Item	Safety Factor
Chain, shackles and other solid metal fitting	4
Wire Rope	5
Natural Fibre Rope	6
Synthetic Ropes or webbing	6
Anything used to suspend a person	10*
As a general guideline a minimum safety factor of 8 should be considered for suspending over people	
Note: a safety factor is only applied ONCE and only to an MBL	
WLL = MBL/SFWLL – working load limit; MBL – minimum breaking load; SF – safety factor	

What can become confusing for Safety Factors is the derivation of a number.

It is also important to understand “failure load” vs “Work Load Limit”. Failure load is the load to destroy the item. Work Load Limit is a safety factor applied to allow the safe usage of an item. This can be a percentage of the Failure load.

Where items are manufactured in different parts of the world, the way items are marked and the symbols used are different. e.g. a Carabiner may have a mark in kN (Kilo Newtons) for its vertical and horizontal load. This is most likely its failure load. A Work Load Limit reduction would need to be applied to 80% of the failure load. When this piece of equipment is then applied to a system where it is used on personnel, then the 10:1 factor needs to be applied to the WLL.

Another scenario, e.g. a 1T chain motor is tested to 1.3 times (applied 1.3T for a period of time) its Load Rating for its annual load test. The chain motor is then used in a show scenario to lift a set piece that will be suspended over a stage area where an actor will walk through. Using the 10:1 Safety Factor, the set piece can weigh a maximum of 100 kg including all attachment gear. All pieces of the set will need to have the 10:1 rating (slings, shackles, wire rope, etc). If the set piece and attachment gear weighs more than 100 kg then a larger chain motor will need to be used.

External entertainment specific factors such as pyrotechnics, low light, atmospheric haze

The consequence of using special effects and the general environment must be considered when selecting items for entertainment rigging. For example, synthetic slings should not be used where pyrotechnics and/or extreme heat may cause a failure, or for a long-term installation where slings may be exposed to chemicals like smoke fluid, or sunlight. Typical features of the entertainment work environment must be detailed when preparing risk assessments or SWMSs for entertainment rigging. This may include low light, high noise, difficult access, large audiences or members of the public etc. (See also Hazard Guide 7 – Special Effects).

Rescue Planning

It is a requirement to have crew members with equipment and training to enable a rescue. Before a rescue plan is developed for a workplace the workers/employees working at height must have a *'work safely at heights'* competency.

Where possible, rescue training and practice should be regularly undertaken to minimise the amount of time needed to perform a rigging rescue.

An Effective Rescue requires:

- a defined plan;
- the proper equipment readily available in the position it is needed;
- a well-trained team;
- frequent practice; and
- constant review / updating (especially if there is a change in personnel).

For all work that is performed at height, a rescue plan must be created. This may not just be 'rigging work'. For example, focusing of lighting fixtures may involve working at height.

A detailed rescue plan specific to aerial or performer flying, and the challenges associated with an 'in view' rescue, should be drafted whenever these elements are included in a production.

A rescue plan should outline the procedures to rescue a worker from an elevated location or after sustaining a fall. Depending on the circumstances, this may require an injured worker to be lifted to a place of safety and not to just be lowered to the ground.

A rescue plan must be understood by all pertinent parties, not just the rigging crew.

Any equipment required must be on hand at the point a rescue may need to be performed ready to be deployed, not in a location at the other end of the site or locked away.

A rescue plan cannot depend solely on emergency services for the rescue.

As it's extremely time critical, a rescue plan should first involve trained personnel located on site in addition to the notification of local emergency/medical services if deemed necessary.

A rescue plan must be created well in advance and be specific to the anticipated event/rigging situations.

Alternatives for aerial performers

The Model WHS Legislation and the Victorian OHS Legislation allow variation from standard working at height principles for aerial performers, acrobats, stunt persons etc. ONLY where it is not reasonably practicable to eliminate the risk of a fall.¹

Acceptable circumstances include:

1. The performer is engaged in stunt work;
2. The performer is engaged in the performance of acrobatics;
3. Working in a theatrical performance; and
4. Working in a sporting or athletic activity.

¹ See Model WHS Regulations Chapter 4 Hazardous work, Part 4.4 Falls, Reg 79 (4); Victorian OHS Regulations Chapter 3 Physical Hazards, Part 3.3 Prevention of Fall, Reg 41 (2).

NOTE: this does not apply to a performer while they are rigging, inspecting, or de-rigging their equipment, or any other person assisting them.

The performer should be consulted and incorporated in the planning and development of controls. For more information, please see Hazard Guide 6 – Performer Hazards.

PCBUs/Employers at a workplace must manage the risk of a fall by a person from one level to another where it is reasonably likely to cause injury to the person or any other person.

For further information regarding fall prevention and fall-arrest systems see: [Model Code of Practice: Managing the risk of falls at workplaces \(safeworkaustralia.gov\)](https://www.safeworkaustralia.gov.au/Model-Code-of-Practice-Managing-the-risk-of-falls-at-workplaces)

6. Legislation and Guidance

6.1 Australian WHS/OHS legislative framework

Consultation

Model WHS Acts

(NSW, QLD, ACT, NT, SA, TAS and WA)

Part 5 - Consultation, representation and participation

- Division 1 - Consultation, cooperation and coordination between duty holders, s 46
- Division 2 - Consultation with workers, ss 47, 48, 49

Victorian OHS Act

Part 4 - Duty of employers to consult

- Duty of employers to consult with employees, s 35,
- Duty to consult with other employees in relation to duties relating to labour hire, s 35A

Prevention of Falls

Model WHS Regulations

(NSW, QLD, ACT, NT, SA, TAS and WA)

Chapter 4 Hazardous work – Part 4.4

- Management of risk of fall, s 78
- Specific requirements to minimise risk of fall, s 79
- Emergency and rescue procedures, s 80

Victorian OHS Regulations

Chapter 3 Physical Hazards - Part 3.3

- Prevention of falls, ss 43, 44, 45, 46, 47, 48, 49

Managing the risk of falling objects

Model WHS Regulations

(NSW, QLD, ACT, NT, SA, TAS and WA)

Chapter 3 - General risk and workplace management, Division 10 Falling objects,

- Management of risk of falling objects, s 54
- Minimising risk of falling objects, s 55

Workcover NSW, *A Guide to Rigging* 1995

- [Rigging: Guide 1995 \(theriggerspen.com.au\)](http://theriggerspen.com.au)

International Code of Practice for Concert Rigging

- [Cover \(plasa.org\)](http://plasa.org)

Safe Work Australia. National Standard for Licensing Persons Performing High Risk Work. 2006:

- [nationalstandard_licensingpersonsperforminghighriskwork_2006_pdf.pdf \(safeworkaustralia.gov.au\)](http://safeworkaustralia.gov.au)

Safe Work Australia. Certification Standard for Users and Operators of Industrial Equipment [NOHSC: 1006 (2001)]:

- [Assessment Guidelines 1994.PDF \(safeworkaustralia.gov.au\)](http://safeworkaustralia.gov.au)

References and guidelines

International Code of Practice for Entertainment Rigging

- [ICOPER-Version-2.0](http://icoper.org)

International Guidance and reference

- ANSI standards ANSI E #.## available from the esta.org/tsp website.
- BS standards BS E3.## available from plasa.org
- International Code of Practice for Entertainment Rigging.
- Available from ESTA and PLASA

Version Control	
Title: HG03 – Event Rigging	Version: V 2.0
Owner: Live Performance Australia	Date amended:
Date of release: September 2024	Date of review: September 2026

Version 2 note: Version 1 of the LPA Safety Guidelines were written when the Model WHS was believed to be rolled out in all Australian states and territories. This did not occur, and Victoria maintains its OHS Act and Regulations. The key differences include the use of the terms ‘Employers’ (as opposed to PCBU) and ‘employees’ (as opposed to workers). This version of the Guidelines has been modified to include this difference.