



**NATIONAL ARENAS ASSOCIATION**

**GUIDANCE FOR  
RIGGING  
IN NAA VENUES**

*Version 2  
April 2014*

[www.nationalarenasassociation.com](http://www.nationalarenasassociation.com)

**FOREWORD**

“Established in 2001 the National Arenas Association has 17 member venues which bring together the knowledge and expertise of all levels around the UK Arena circuit via the Management Meetings, Event Managers Symposium and Sales and Marketing Symposium. The Association also creates and delivers bespoke training programmes for venue staff. The criteria for venues to apply to be a member is an indoor venue with a minimum seated capacity of 5,000.”

“The NAA provides a forum for employees of indoor seated arenas to meet and share best practice and discuss common issues and has forged strong links with other industry groups.”

**Guy Dunstan – NAA Chair**

**Version Control**

**It is intended that this document will be updated annually. Please ensure that you are reading the latest version.**

### INTRODUCTION

This rigging guidance has been produced by members of the National Arenas Association (NAA) for use in NAA venues.

Its purpose is to provide:

- Guidance to venue operators on a wide range of safety matters relating to rigging, in order to ensure the health, safety and welfare of anyone working in or visiting NAA venues.
- Advice to riggers and rigging companies on general venue requirements relating to rigging and associated activities.
- Advice and guidance on the use of personal protective equipment (PPE) and commonly used rigging equipment.

This document is a guide. It consolidates and summarises key regulations, codes of practice and best practice. It does not constitute legal advice and users should ensure that they are familiar with and comply with all relevant legislation. The guidance should be used in conjunction with the NAA A-Guide, and any venue specific and national rules and regulations.

### DEFINITIONS

#### Rigging

For the purpose of this guidance, rigging is defined as “the installation, removal or other activity using lifting or suspension equipment or accessories used in tension for lifting or supporting display, production, performance or event technical requirements”.

#### Lifting Equipment

Any item used to raise, lower or suspend a load.

#### Employer

A person or entity which hires the services of another.

#### Safe Working Load (SWL)

The maximum load for which the equipment may safely be used, the SWL may differ for equipment from another country in accordance with their local regulations.

#### Working Load Limit (WLL)

The maximum load that includes mass or force, that should ever be applied to load carrying equipment in a specified configuration or application. Any rigging device or "configuration" is only as strong as its weakest, or lowest WLL rated parts.

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### 1. LEGISLATION

1.1 Health & Safety legislation, Approved Codes of Practice, guidance and general “good practice” apply to rigging operations as they do to all work activities. The overall aim is to secure the health, safety and welfare at work of employees, the self-employed and all other persons who may be affected by work activities (e.g. audiences). While not an exhaustive list, the main Regulations are:

- The Health and Safety at Work, Act 1974
- The Management of Health & Safety at Work Regulations, 1999
- The Provision and Use of Work Equipment Regulations 1998 (PUWER)
- The Manual Handling Operations Regulations 1992 (2<sup>nd</sup> edition 1998)
- The Workplace (Health, Safety and Welfare) Regulations 1992
- The Personal Protective Equipment at Work Regulations 1992 (PPE)
- The Lifting Operations and Lifting Equipment Regulations 1998 (LOLER)
- The Work at Height Regulations 2005
- The Control of Noise at Work regulations 2005

Anyone who is involved in, or has responsibility for rigging operations must ensure that he / she is familiar with these Regulations. These can be downloaded from: <http://www.hse.gov.uk>.

1.2 A list of relevant codes of practice and guidance is set out in **Appendix 1**.

A list of applicable standards: BS, BSEN, ISO etc. is set out in **Appendix 2**.

In addition, there are requirements under Local Government legislation, Conditions of License etc. that vary from venue to venue. Consultation with the appropriate Local Authority departments is essential.

1.3 Venues have the right to inspect all rigging, working methods and equipment to ensure compliance with relevant legislation, codes of practice etc., and to refuse to permit the use of non-compliant equipment and working methods.

1.4 Anyone who is involved in or has responsibility for rigging operations should ensure that he / she is familiar with and complies with these Regulations.

### 2. RESPONSIBILITIES

All parties involved in or controlling rigging operations have responsibilities to themselves and to others. There is a general hierarchy to the process but it is important to note that persons in overall control always retain some degree of liability for activities carried out under that control, even when specialist contractors are hired in to do the work.

#### 2.1 Employer Responsibilities

Consideration should be given to appropriate written procedures for rigging activities and this may include sign-off documentation. Procedures and documentation will vary from venue to venue.

Venues may be considered as shared workplaces where employers' responsibilities fall upon the venue and its hirers and agents which may include venue management companies, promoters, organising companies, production companies and rigging contractors.

Effective communication between all employers is paramount. Particular attention should be paid to communication when different nationalities and therefore different languages are involved. It is easy for misunderstandings to arise when people are using a language that is not their first language.

Under Health & Safety Legislation an employer has a duty to ensure, so far as is reasonably practicable, the health, safety and welfare of his employees and that the activities being undertaken do not affect the safety of others, including members of the public.

This duty covers the following areas:

- Provision and maintenance of plant and systems of work so that they are safe and without risk to health.
- Ensuring reasonable arrangements are in place for the safe use, handling, storage and transportation of articles and substances.
- Provision of information, instruction and training to his employees.
- Ensuring the workplace is safe, including safe access and egress, and is without risk to health.
- Provision of adequate facilities to look after the welfare of employees whilst at work.

This duty extends to those who may be contracted to undertake work on behalf of the employer who will, in this case, be acting as a Client. The Client cannot absolve himself of the principle duties outlined above by contractually deferring them to his contractor or sub-contractors. Even though the Client may be contractually two or three times removed from an individual working on a project, he still carries responsibility for that individual's conduct. This duty also applies to the self-employed. Wherever possible, documentation should be put in place and signed by relevant individuals.

Should an accident occur to a contractor or sub-contractor, the Client will be expected to demonstrate to an enforcement agency that he undertook the appropriate measures to ensure that his contractors were competent and possessed the appropriate skills and resources to safely undertake the project involved.

## **2.2 Employees / Self-Employed Responsibilities**

Under Health and Safety Legislation, employees and the self-employed have a duty of care to look after their own health and safety and that of others they may affect by their acts or omissions.

These individuals carry a responsibility for ensuring that all equipment being used has been properly maintained and inspected; whether this equipment is owned by the individual or by a third party.

Individuals also carry responsibility for ensuring that they are fit and able to carry out particular tasks, this includes control of working hours and ensuring that appropriate rest periods are taken. (Working Time Regulations)

## **2.3 Reporting of Accidents**

Any accidents/incidents or near misses involving rigging operations shall be reported to venue management immediately in addition to any other statutory reporting requirements that may be applicable.

# **3. COMPETENCE**

3.1 A competent person is someone who has sufficient training and experience or knowledge to carry out rigging operations safely whilst recognising their own limitations. Rigging operations shall be undertaken and supervised by competent persons who are qualified by training and experience.

3.2 Any company involved with rigging operations must appoint a competent person to advise on rigging matters. The competent person shall have the practical experience and theoretical knowledge of the use of any equipment to be used to enable faults and weaknesses to be assessed and to determine whether such equipment is able to perform within its design limits.

The appointed competent person shall carry out periodic examinations in line with relevant Legislation and the approved company examination regime, or at more regular frequencies.

The competent person must have authority to reject the use of defective equipment when the defect(s) render the equipment unsuitable or unsafe for its intended use

3.3 Ground riggers should have a level of knowledge to enable them to undertake the inspection of chains and other equipment to prepare them for lifting and, whilst not necessarily having the experience for working at heights, should have the same knowledge as that of a climbing rigger.

3.4 Training for riggers may include but not be limited to the following:

- Work at height and correct use of PPE for Work at height in accordance with current legislation and guidance
- Rescue Techniques
- Emergency First Aid
- Manual Handling Techniques
- Mobile Elevated Work Platforms and other similar equipment
- Use of lifting equipment as a competent person

In assessing experience, account should be taken of the fact that, in many cases, riggers gain their experience within the industry and that historically there has been a lack of formal training leading to nationally recognised qualifications. However, it is recommended that where possible, riggers should undertake training in relevant areas and a record of this training kept in the company files.

**All Rigging tasks must be undertaken ONLY by a person fully competent in rigging methods and standards – the PLASA National Rigging Certificate or equivalent is a good example of proof of competence.**

#### 4. GENERAL SAFETY PRECAUTIONS

##### 4.1. Working underneath rigging operations

Where possible, all personnel should be excluded from beneath areas where overhead rigging or lifting operations are taking place.

The exclusion zone shall be clearly identified and appropriate signs should be in place to close off the area entirely.

When designating a hard-hat area, it may be more easily managed if an entire space, hall or room is designated as such, rather than specific areas within the space. Clear and unambiguous signage must be put in place.

The person or persons responsible for designating exclusion zones, hard-hat areas and for issuing hard-hats must be defined. This person must also determine when the area ceases to be an exclusion zone or hard-hat area.

All venues should adopt and enforce a clear policy on the use of hard-hats and this should be documented alongside relevant Risk Assessments and Method Statements.

##### 4.2. Working at Height

The Work at Height Regulations 2005 set out a simple hierarchy for managing and selecting equipment for work at height. Duty Holders must:

- Avoid work at height where possible
- Use work equipment or other measures to prevent falls where they cannot avoid working at height.
- Ensure that measures are in place to prevent falling objects
- Where they cannot eliminate the risk of a fall, use work equipment or other measures to minimise the distance and consequences of a fall should one occur.

Work at height must be properly planned, appropriately supervised and undertaken by competent individuals all of which should be supported by appropriate documentation.

Rigging Work at height should not be undertaken by an individual without a second person on hand to react to any accidents or safety related situations that may arise. Ideally that person should be a rigger competent with working at height.

Work at height should not be undertaken by an individual who is feeling unwell or suffering from a condition (physical or mental) that may result in difficulties when working at height. Any such condition must be reported to the Rigging Manager / Supervisor prior to work commencing.

Under no circumstances shall rigging personnel be under the influence of alcohol and / or drugs while carrying out rigging operations.

Riggers shall obtain confirmation from their Doctor / Physician that any prescribed or none prescribed medication or medical condition will not affect their ability to perform their duties. Any such confirmation must be reported to the Rigging Manager / Supervisor prior to work commencing.

High-level walkways and work areas must be kept clear of loose equipment at all times. An inspection of the work area should be undertaken before work commences and upon completion of work. Tools and other equipment should be hoisted to high level by means of rope or similar system where carrying by hand may be hazardous.

Any loose equipment (including tools and communication devices) must be properly secured when working at height.

Attachment points for PPE when working at height shall be clearly identified

### **Access Equipment**

All access equipment shall be used in accordance with manufacturers' instructions / guidelines, including the correct use of harnesses and head protection.

The Safe Working Load of access equipment shall be permanently displayed on the equipment. It is the responsibility of the operator of the equipment to ensure that the carried weight does not exceed the Safe Working Load.

Special attention should be paid to the correct assembly and stability of ladders and other static forms of access equipment, including the use of outriggers where fitted.

Persons trained in the correct use of such equipment should only carry out assembly of static access equipment.

Operators of Mobile Elevated Work Platforms for use in rigging related operations must ensure that they comply with venue competency requirements.

### **Flexible Ladders**

Flexible ladders used to access flown truss structures shall only be used in conjunction with a suitable fall arrest system which should be rigged independently and positioned directly above the user. In cases where it is intended to attach fall arrestors to ground supported systems, the manufacturer of the support structure must be consulted.

### **Mobile Elevated Work Platforms**

If it is necessary for an operative to leave a mobile elevated work platform while positioned at high level, he / she must have appropriate PPE and identify a secure point of anchorage for the harness lanyard. The lanyard shall be secured before leaving the platform.

When returning to the platform, the operative must ensure the lanyard remains in position until the transfer to the carriage has been completed. **At no time should the operative be connected to both the platform and the structure.**

## **5. HOURS OF WORK**

Employers should refer to the Working Time regulations; Riggers have a duty to ensure that their competency is not affected by tiredness and/or fatigue. Employers, Promoters, Production Managers and Venue Managers have a duty to ensure that Riggers and Rigging Supervisors get adequate rest periods.

## 6. PERSONAL PROTECTIVE EQUIPMENT FOR WORK AT HEIGHT

### 6.1 General

Personal Protective Equipment (PPE) for working at height shall be provided by employers and the self-employed in compliance with the Personal Protective Equipment Regulations 1992 (as amended) PPE for working at height should be suitable and sufficient for the work to be carried out and conform to relevant standards, legislation, regulations and venue specific requirements.

PPE for rigging activities must be suitable for both work positioning and fall arrest. The users of the PPE must be trained in its use and inspection. Inspections should be documented. Equipment should be renewed in accordance with any manufacturers' recommendations.

### 6.2 Rescue from workplaces at height

Venues and riggers must have in place a rescue plan and the appropriate equipment and training for a rescue operation.

Within the venue, safe systems will be available such as horizontal lifeline systems, catch net systems, fall arrest systems or some combination of these. Ideally consideration will be given to self-rescue methods during the design and installation phases of such systems; production must have their own rescue plan in place.

#### 6.2.1 In any rescue plan, some of the areas to consider are:

- Correct PPE i.e. compliant with the recommendations in Section 5.1 of this guidance.
- The risks of lone working. A second person that should ideally be a competent climbing rigger will be able to react immediately to a situation.
- A person falling in a full body harness may very quickly experience circulatory problems please refer to suspension intolerance advice from the HSE
- Communication
- Location of access equipment
- Location of medical facilities
- Liaison with the Fire & Rescue Emergency Services to ascertain means of access when working at heights.
- Availability of telephone numbers and contact details for relevant individuals and agencies.

## 7. LIFTING EQUIPMENT

### 7.1 Legislation

All lifting equipment used shall comply with all current relevant legislation.

### 7.2 General

All lifting equipment and accessories designed in accordance with current Regulations Must:

- Have the SWL/WLL clearly marked or be available to users by other means, e.g. charts or tables provided with the equipment.
- Carry the CE mark
- In the case of equipment originating from another country, meet the required standard for that country
- Carry an individual distinguishing mark
- Be used in accordance with the manufacturer's instructions / guidelines
- Be of sound material, construction and free from defects
- Be tested, inspected and maintained as necessary in accordance with manufacturer's recommendations and relevant legislation.

Current valid reports of thorough examination and/or of inspection must be available for all lifting equipment and lifting accessories.

If a test was necessary, the report should contain details of the type of test.

Lifting equipment must only be used by competent persons and should be subject to pre-use checks.

## 8. EXAMINATION AND INSPECTION OF EQUIPMENT

Examination and inspection of lifting equipment is covered under Lifting Operations and Lifting Equipment Regulations 1998 (LOLER) and Provision and Use of Work Equipment Regulations 1998 (PUWER) and is fundamental to safety in rigging operations.

### 8.1 The nature, type and frequency of examinations

All equipment used in rigging should be subject to an examination scheme that is compliant with Regulations 9 and 10 of LOLER. In summary, as an employer or self-employed person "you must ensure that:

- Where appropriate, before lifting equipment (including accessories) is used for the first time, it is **thoroughly examined**.
- Lifting equipment may need to be thoroughly examined in use at periods specified in the Regulations (i.e. at least six-monthly for accessories and equipment used for lifting people and, at a minimum, annually for all other equipment), or
- At intervals laid down in an examination scheme drawn up by a competent person.
- All examination work should be performed by a competent person and following a thorough examination or inspection of any lifting equipment a report is submitted by the competent person to the employer to take the appropriate action."

(Reproduced from the HSE Simple Guide to LOLER 1998 – INDG 290)

An examination scheme should also consider manufacturer's and insurers recommendations.

If any equipment suffers damage **it should be withdrawn immediately until it is re-examined, re-tested (where necessary) and documented**. If found to be beyond repair it should be destroyed or made unusable. If any delay exists then there should be an effective quarantine procedure in place.

Electrical portable appliance testing records should be available and the equipment suitably marked and documented.

## 8.2 Lifting Equipment Documentation

Venue owned lifting equipment must have appropriate documentation confirming that it has been thoroughly examined in accordance with legislation and manufacturer's recommendations. National or Local Authority enforcing departments may require to see documentation at "reasonable notice".

Lifting equipment brought into a venue by others e.g. a touring production, must have accompanying documentation confirming that it has been thoroughly examined in accordance with legislation and manufacturers recommendations. This documentation shall be made available to the venue management when requested.

## 9. WORKING PRACTICES

### 9.1 General

A competent rigger shall undertake all rigging work in a responsible manner and consideration shall be given to the safety of all persons who may be affected by such works. A Rigging Supervisor (Head Rigger) shall be appointed to supervise all rigging operations in accordance with an agreed plan. Any deviation from the plan should be assessed by a competent person and agreed with the venue before being implemented.

### 9.2 Suspension Points and Method of Attachment

Arenas have venue specific requirements / regulations regarding suspension points, method of attachment and the loading capacity of different elements of the building structure. Riggers must ensure that they comply with these requirements and **there must be consultation with the venue management.**

When working at height, riggers will inevitably be working in the vicinity of building services including electrical equipment, cables, gas and water pipes, sprinkler system etc. No load, no matter how small, shall be suspended from any of these services or containment systems carrying such services. Care should be exercised when working or rigging near light fittings or other heat generating equipment. Before carrying out work on, or adjacent to, any electrical equipment, ensure that the necessary electrical isolation has been carried out.

### 9.3 Bridles

When bridles are installed to provide suspension points, particular attention will be paid to the included angle created between the individual legs of bridles. This angle will at all times be the minimum possible to keep the forces within agreed limits.

### 9.4 Load Spreader Beams

In situations where bridling is unsuitable, e.g. if the attachment points are unsuitable for application of a horizontal load then the use of spreader beams should be considered.

### 9.5 Truss Systems

All truss systems should be used in accordance with manufacturers' instructions / guidelines.

## **9.6 Slinging**

Slinging of equipment and loads shall be undertaken in accordance with manufacturers' recommendations, best practice and in conjunction with venue specific regulations.

Prior to final lifting, a check shall be made at ground level and any necessary adjustments made.

## **9.7 Work Areas and communication**

Every arena will have its own specific rules and guidelines for rigging operations work areas. Some points for consideration are:

- Areas for rigging operations to be clearly defined and access to such areas restricted to competent personnel.
- Communication between persons working at high level and ground crew.
- Notification of rigging operations to other personnel working in or near areas where rigging is taking place.
- Designation of temporary storage and assembly area for rigging equipment.
- Provision of Safety signs.

## **9.8 Suspended Signs**

*Prior arrangement shall be made with the venue for the hanging of suspended signage.*

Any signs supplied for rigging shall be checked to ensure they are fit for suspension.

An assessment should be made by a competent person of the requirements for the safe rigging of every sign.

The suppliers of such signs shall be responsible for the integrity of the sign and its suspension fittings.

Signs of timber or metal framed construction may only be rigged if fitted with fully closed eye lifting rings, bolted preferably through the full depth of the sign, the capacity of which must be sufficient to completely support the load on any individual fitting.

Screw-in eyes are not acceptable for this purpose and the venue will reserve the right to refuse to allow the suspension of any signs where the suspension fitting supplied is inadequate.

Drop weighting to the bottom of banners may only take place when the weighting is completely sealed within the banner by positive means, such as stitching or vinyl welding. The provision of bottom drop weight pockets by gluing is not acceptable.

## **9.9 Catenaries**

Prior arrangement shall be made with the venue for the installation of catenaries

## **9.10 The Installation of Secondary Suspensions**

Where necessary, the installation of Secondary or "Safety" suspensions for suspended loads should be considered. The requirement for this varies and should be discussed with the Venue.

## 10. INSURANCE AND PUBLIC LIABILITY

The minimum level of liability cover required by rigging companies working within venues will be set by the venue's insurers.

## 11. PLANNING AND PROVISION OF INFORMATION

As with most activities, the key to safe and successful rigging lies in effective forward planning and exchange of information.

The Client or the Client's representative in the form of Designer, Contractor, and Production Manager Etc. should ensure that accurate information regarding the loads to be rigged is provided to the arena as soon as possible. This is irrespective of whether the rigging will be carried out by venue riggers, touring riggers or outside contractors. Information should also be provided on any moving loads, loads involving people or anything else out of the ordinary. In turn, the venue should highlight any problems, restrictions, regulations and other requirements. Where appropriate, method statements and risk assessments should also be provided.

### 11.1 Risk Assessment

A suitable and sufficient Risk Assessment must be carried out for all rigging and lifting operations.

Those individuals and / or organisations that are responsible for the rigging and lifting operations must carry out the Risk Assessment. The Risk Assessment must be documented and available for examination.

### 11.2 Format of Information

The documents that are requested below include most of the data arenas require for rigging purposes, but it may be some venues may ask for additional information depending on the complexity of the event.

Some venues request rigging information by a certain date prior to an event, and some venues impose charges for late submission of rigging information. Either way it is best practise to provide rigging information at least three weeks prior to the event. This will enable all the relevant parties to start the various processes they may be required to do to fulfil their obligations for the event. Some productions leave the rigging until production rehearsals and in many instances this is often far too late.

It is understood that rigging information will be more accurate if done at rehearsals, however if the rehearsals are very close to the first events, a provisional rigging plot prior to this would be useful to venues as it would usually indicate **at the very least** if the show is small medium or large.

### 11.3 Document provision:

- Rigging Plot in PDF: should have dimensions, loads and datum
- Rigging Plot in DWG: should have dimensions, loads and datum
- DWG should be saved as the penultimate release version i.e. Latest version = V14 so provide a V13, any X – References should be fully bound.

- Spread sheet in XLS with loads, dimensions, motor type (SWL i.e. 1T, 2T, D8, D8+, Cat A), The Total load should be metric and imperial.
- Spread sheet PDF with loads, dimensions, motor type (SWL i.e. 1T, 2T, D8,D8+, Cat A) The Total load should be metric and imperial.
- Any symbols used in rigging plots should be accompanied with a clear key
- Stage size to be shown with a dimension from datum to downstage or upstage edge
- Version number with date to be indicated on all documents.
- Changes to be indicated from version to version.

Avoid where possible drawings with very large file sizes that have excessive information on such as 3d, set etc. As well as being potentially ambiguous, these can be very difficult to manipulate if the user at a particular venue does not have an in depth knowledge of CAD or do not have a computer with suitably fast graphics cards. If this type of drawing is deemed necessary as it could provide helpful information, it should therefore be additional to the requested rigging information/plots.

Try to be pragmatic with sending out too many rigging plot updates with very small and minor changes. If the venue already has a version it is usually prudent to wait until a significant number of revisions have been made before sending a revised plot.

- Always include Head rigger name, email, contact details, or single rigging representative point of contact
- Indicate if the weight of the hoist is included, particularly if using inverted
- Indicate the required hook height
- Indicate loads in pounds (lbs.) and kilograms (kg)
- Indicate if the load moves during the show. If so indicate peak loads at relevant point positions.
- Where relevant, how sound load changes with build or angle.
- Where relevant, how moving loads are transferred from point to point i.e. tracking video loads.
- Indicate with documentation how load was determined? Load cell or calculation.
- Any performer flying should be clearly identified within rigging documentation. Separate relevant detailed information must be provided as necessary. (i.e. position, risk assessment, timings, rescue)
- Any flown follow spot chairs should be clearly identified. Separate relevant detailed information must be provided as necessary. (i.e. position, risk assessment, timings, rescue) Indicate where any operative may have to be positioned at height on the suspended system during the event for example a flown dimmer system with a dimmer technician. Separate relevant detailed information must be provided as necessary. (i.e. position, risk assessment, timings, rescue).

## 12. ACKNOWLEDGEMENTS

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Tom Meaney	ACC Liverpool	NAA
Steven Morrison	AECC Aberdeen	NAA
David Macphail	AECC Aberdeen	NAA
Alexander Tripp	Royal Albert Hall	NAA
Harry Box	UK Rigging	
Mike Hindle	UK Rigging	
Chris Higgs	Total Solutions LTD	

**APPENDIX 1**

**Codes of Practice and Guidance**

- Safe Use of Lifting Equipment. Lifting Operations and Lifting Equipment Regulations 1998. Approved Code of Practice and Guidance L113 HSE Books 1998  
ISBN 0 7176 1628 2
- Simple Guide to The Lifting Operations and Lifting Equipment Regulations 1998 Leaflet INDG 290 HSE Books 1998  
ISBN 0 7176 2430 7
- Safe Use of Work Equipment. Provision and Use of Work Equipment Regulations 1998. Approved Code of Practice and Guidance L22 (2<sup>nd</sup> Edition) HSE Books 1998  
ISBN 0 7176 1626 6 (Currently under revision)
- Simple Guide to the Provision and Use of Work Equipment Regulations 1998 Leaflet INDG 291 HSE Books 1999  
ISBN 0 7176 2429 3
- Five Steps to Risk Assessment  
Leaflet INDG 163 (Rev 1) HSE Books 1998  
ISBN 0 7176 1565 0
- Managing Health and Safety: Five Steps to Success  
Leaflet INDG 275 HSE Books 1998  
ISBN 0 7176 2170 7
- The Work at Height Regulations 2005 - A Brief Guide  
Leaflet INDG 401  
ISBN 0 7176 2976 7
- Code of Practice for the Safe use of Lifting Equipment  
Published by the Lifting Equipment Engineers Association
- Lifting Equipment – A User’s Pocket Guide  
Published by the Lifting Equipment Engineers Association
- CWA 15902-1:2008 - Lifting and load-bearing equipment for stages and other production areas within the entertainment industry. General requirements (excluding aluminium and steel trusses and towers)
- CWA 15902-2:2008 - Lifting and load-bearing equipment for stages and other production areas within the entertainment industry. Specifications for design, manufacture and for use of aluminium and steel trusses and towers
- Code of practice for the safe use of long link chain as a means of adjusting rigging in the entertainment industry.
- ABTT Code of Practice – Flying
- Temporary demountable structures. Guidance on procurement, design and use. (Third Edition) (2007) - Institution of Structural Engineers. (Endorsed By HSE)

**APPENDIX 2**

**British Standard, DIN and ISO Standards**

- BS EN 12385-1:2002 + A1:2008 - Steel wire ropes. General requirements.
- BS EN 13411-1:2002 + A1:2008. - Terminations for steel wire ropes. Thimbles for steel wire rope slings.
- BS EN 13411-3:2004 + A1:2008 - Terminations for steel wire ropes. Ferrules and ferrule-securing.
- BS EN 13411-4:2011 - Terminations for steel wire ropes. Metal and resin socketing.
- BS EN 13411-5:2003 + A1:2008 - Terminations for steel wire ropes. Safety - U-bolt wire rope grips
- BS EN 12385-1:2002 + A1:2008. Steel wire ropes. Safety - General requirements.
- BS EN 12385-2:2002 + A1:2008. Steel wire ropes. Safety - Definitions, designation and classification.
- BS EN 12385-3:2004 + A1:2008. Steel wire ropes. Safety - Information for use and maintenance.
- BS EN 12385-4:2002 + A1:2008. Steel wire ropes. Safety - Stranded ropes for general lifting applications.
- BS 463-1:1958 - Specification for sockets for wire ropes.
- BS EN 13414-1:2003 + A2:2008 - Steel wire rope slings. Slings for general lifting service.
- BS EN 1492-1:2000 + A1:2008 - Textile slings. Flat woven webbing slings made of man-made fibres for general purpose use.
- BS EN 1492-2:2000 + A1:2008 - Textile slings. Roundslings made of man-made fibres for general purpose use.
- BS EN 1492-4:2004 + A1:2008 - Textile slings. Safety - Lifting slings for general service made from natural and man-made fibre ropes.
- BS EN 1677 (all parts) - Components for slings.
- BS EN ISO 1141:2012 - Fibre ropes. Polyester. 3-, 4-, 8- and 12-strand ropes
- BS EN ISO 1181:2004 - Fibre ropes. Manila and sisal. 3-, 4- and 8-strand ropes.
- BS EN ISO 9554:2010 - Fibre ropes. General specifications.
- BS EN 1261:1995 - Fibre ropes for general service. Hemp.
- BS 3551:1962 - Specification for alloy steel shackles.
- BS EN 13889:2003 + A1:2008 - Forged steel shackles for general lifting purposes. Dee shackles and bow shackles. Grade 6. Safety
- BS EN ISO 3266:2010 - Forged steel eyebolts grade 4 for general lifting purposes.
- BS 4429:1987 - Specification for rigging screws and turnbuckles for general engineering, lifting purposes and pipe hanger applications.
- BS EN ISO 12100:2010 - Safety of machinery. General principles for design. Risk assessment and risk reduction.
- BS EN ISO 13850:2008 - Safety of machinery. Emergency stop. Principles for design.
- BS EN 39:2001 - Loose steel tubes for tube and coupler scaffolds. Technical delivery conditions.
- BS 1139-1.2:1990- Metal scaffolding. Tubes Specification for aluminium tube.
- BS EN 1991-1-4:2005 + A1:2010 - Eurocode 1. Actions on structures General actions.
- BS EN 1993-6:2007 Eurocode 3 - Design of steel structures Crane supporting structures.
- BS EN 1994-1-1:2004 -Eurocode 4. Design of composite steel and concrete structures - General rules and rules for buildings.
- BS 2853:2011 - Specification for the testing of steel overhead runway beams for hoist blocks.
- BS EN 13157:2004 + A1:2009 Cranes. Hand powered cranes.
- BS 7121-1:2006 - Code of practice for safe use of cranes.
- BS 7121-2-1:2012 - Code of practice for the safe use of cranes Inspection, maintenance and thorough examination. General.

- BS 7121-2-7:2012 - Code of practice for the safe use of cranes Inspection, maintenance and thorough examination. Overhead travelling cranes, including portal and semi-portal cranes, hoists, and their supporting structures.
- BS EN 818 (all parts) - Short link chain for lifting purposes
- BS 6521:1984, ISO 7592-1983 - Guide for proper use and maintenance of calibrated round steel link lifting chains
- BS 7909:2011 - Code of practice for temporary electrical systems for entertainment and related purposes.
- BS EN 25817 - Arc-welded joints in steel – Guidance on quality levels for imperfections
- BS EN 30042 Arc-welded joints in aluminium and its weldable alloys. Guidance on quality levels for imperfections.
- BS EN 60204 Safety of machinery. Electrical equipment of machines - Part 1: Specification for general requirements.
- DIN 1142 Wire rope grips for rope terminations to meet safety requirements
- DIN 15315 Symmetrical wedge sockets for wire ropes
- DIN 1142 Wire rope grips
- DIN 15315 Wedge socket (Elevator type, for wire rope termination)

### **Fall Arrest Equipment Standards**

- EN 361 Harness for fall arrest
- EN 355 Energy (shock) absorbers for industrial use
- EN 360 Retractable line fall arrestors
- EN 362 Connectors (karabiners) for industrial use
- EN 354 Lanyards
- EN 363 Complete fall arrest systems
- EN 353-1 Fall arrestors on a rigid anchorage line/rail
- EN 353-2 Fall arrestors on a flexible rigid anchorage line/rope
- EN 795 Anchors for fall arrest, Types A,B,C,D

### **Work Positioning Equipment**

- EN 358 Sit harnesses
- EN 358 Lanyards for work positioning (pole straps, etc)
- EN 341 Descenders
- EN 567 Rope clamps (ascenders, etc)
- EN 12278 Pulleys
- EN 1891 Ropes for “industrial” rope access and climbing

### **Helmets**

- EN 397 Construction industry safety helmets
- EN 12492 Mountaineering helmets

### Other Standards

- BS 7905-1:2001. Lifting equipment for performance, broadcast and similar applications Specification for the design and manufacture of above stage equipment (excluding trusses and towers)
- BS 7905-2:2000. Lifting equipment for performance, broadcast and similar applications Specification for design and manufacture of aluminium and steel trusses and towers
- BS 7906-1:2005. Use of lifting equipment for performance, broadcast and similar applications Code of practice for installation, use and removal of above stage equipment (excluding trusses and towers)
- BS 7906-2:2000. Lifting equipment for performance, broadcast and similar applications Code of practice for use of aluminium and steel trusses and towers