

	Construction Plant-hire Association Tower Crane Interest Group							
	<i>Tower Crane Technical Information Note</i>							
TIN 013	Rescue of Personnel From Height on Tower Cranes							
1.0 Introduction Wherever tower cranes are being erected, used, altered, maintained, inspected, thoroughly examined or dismantled, the evacuation and rescue of persons from height, although required infrequently, must be planned for. This document's primary purpose is to provide guidance on the planning of the rescue of persons from height on tower cranes. NOTE: This document does not cover the rescue of non authorised persons such as trespassers Health and safety legislation requires that safe systems of work are in place for all work activities and the particular references for the requirement to provide a means of safe rescue are: • The Health and Safety at Work etc Act 1974 (HSWA) - Sections 2 & 3 • Work at Height Regulations 2005 (WAHR) – Regulation 4(2) • Lifting Operations and Lifting Equipment Regulations 1998 (LOLER) – Regulation 5(1)(d) • Management of Health and Safety at Work Regulations 1999 (MHSW) – Regulation 3 HSE's Operational Circular OC 200/31 on the Work at Height Regulations, states in paragraph 60, <i>"Reg. 4(2) [of WAHR] requires duty holders to plan for emergencies and rescue. Effort should be in proportion to the risk and should cover reasonably foreseeable situations such as users stranded in equipment, e.g. MEWPs or high bay order pickers and deployed fall arrest equipment. The duty holder needs to have plans in place to deal with such situations. Workers need to be trained in the procedures, together with any rescue equipment which may need to be used"</i>. The Operational Circular (OC) also states in paragraph 61 that, <i>"Duty holder's arrangements for emergency and rescue should not rely on the fire brigade"</i>. Since the OC was written in 2006 the ability of the fire and rescue services around the UK to provide rescue from height has improved considerably. It is recommended that when planning rescue from height from tower cranes duty holders should always consult their local fire and rescue service, who may be able to assist. The primary duty for ensuring that there are adequate resources for carrying out rescue from a height of persons on a tower crane rests with the organization in control of the premises on which any tower crane is sited. In the case of a construction site this is the Principal Contractor as defined by the Construction (Design and Management) Regulations 2007 (CDM). In practice, it is likely that arrangements for rescue during the erection, alteration and dismantling (see 3.1) will be planned and implemented by the tower crane supplier. The responsibility for planning and implementing rescue during use, maintenance and thorough examination (see 3.2) lies with the Principal Contractor, who may take advice from the tower crane supplier. 2.0 Definitions 2.1 duty holder any person or organisation holding a legal duty - in particular those placed by the HSWA, the MHSWR, the WAHR and the CDM Regulations 2.2 evacuation typically carried out by a user to escape unaided in an emergency from a remote situation such as a tower crane using a standard method of egress								
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2.3 fall arrest preventing the user of a personal fall protection system from colliding with the ground, structure, or any other obstacle during free fall NOTE: Taken from EN 363: 2008, <i>Personal fall protection equipment: Personal fall protection systems</i> (Clause 3.1.1). 2.4 fall arrest system personal fall protection system which limits the impact force of the body on the user during fall arrest NOTE: Taken from EN 363: 2008, <i>Personal fall protection equipment: Personal fall protection systems</i> (Clause 3.2.1.4). 2.5 fall prevention preventing the user of a personal fall protection system from going into a free fall NOTE: Taken from EN 363: 2008, <i>Personal fall protection equipment: Personal fall protection systems</i> (Clause 3.1.2). 2.6 personal fall protection system assembly of components intended to protect the user against falls from a height, including a body holding device and an attachment system, which can be connected to a reliable anchorage point NOTE: Taken from EN 363: 2008, <i>Personal fall protection equipment: Personal fall protection systems</i> (Clause 3.2.1). 2.7 rescue the recovery of a person or persons by another person either remotely or directly 2.8 rescue system personal fall protection system by which a person can rescue themselves or others, in such a way that a free fall is prevented NOTE: Taken from EN 363: 2008, <i>Personal fall protection equipment: Personal fall protection systems</i> (Clause 3.2.1.5). 2.9 (work) restraint system personal fall protection system which prevents the user from reaching zones where the risk of a fall from a height exists NOTE: Taken from EN 363: 2008, <i>Personal fall protection equipment: Personal fall protection systems</i> (Clause 3.2.1.1). 2.10 self rescue the self recovery by a user in an emergency from a remote situation using suitable rescue equipment and procedures 2.11 work positioning system personal fall protection system which enables the user to work in tension or suspension in such a way that a free fall is prevented NOTE: Taken from EN 363: 2008, <i>Personal fall protection equipment: Personal fall protection systems</i> (Clause 3.2.1.2).								
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3.0 Circumstances Requiring Rescue from Height

The following table summarises the activities during which persons may require rescue from height, the persons who may require rescue and the types of emergency that may precipitate the need for rescue:-

Activity	Person requiring rescue					Type of emergency			
	Erector	Operator	Maintenance Persons	Competent Person	Visitors	Suspension from fall arrest system	Equipment failure	Medical emergency/injury	Partial collapse of tower crane structure
Erection	✓					✓	✓	✓	✓
Use		✓					✓	✓	✓
Alteration	✓					✓	✓	✓	✓
Maintenance			✓			✓	✓	✓	✓
Thorough Examination				✓		✓	✓	✓	✓
Dismantling	✓					✓	✓	✓	✓
Other					✓	✓	✓	✓	✓

Table 1 - Circumstances Requiring Rescue from Height

The table above indicates that the circumstances requiring rescue from height fall into two categories:-

- 3.1** During erection, alteration and dismantling of the crane when the people who may require rescue are members of the crane supplier's erection team.
- 3.2** During use, maintenance and thorough examination of the crane when those that may require rescue are the operator, visitors to the crane (e.g. safety advisors, HSE inspectors, managers, etc.), maintenance persons and 'competent persons' carrying out thorough examinations.

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4.0 Planning for Rescue from Height								
4.1 General								
Before carrying out rescue from height, as with all activities in the workplace, employers must ensure that a safe system of work is in place. An emergency plan is vital to establish a safe system of work and will involve the following stages:								
1. Identify the task to be undertaken; 2. Identify the hazards associated with the task; 3. Assessment of the risks involved with the rescue operation; 4. Identification of the required control measures; 5. Develop the method to be used, including identification and provision of equipment, identification and training of suitable persons, availability of appropriately trained persons, and liaison with the local fire and rescue service; 6. Record the planning in a Method Statement; 7. Communicate the plan to all those involved; 8. Review the plan at intervals, incorporating any changed circumstances and undertake periodic refresher training.								
The control measures identified should include arrangements for training of persons and the inspection and maintenance of the rescue equipment.								
4.2 Options								
There are four options for dealing with an emergency which requires a person to be recovered to safety, presented here in order of preference (bearing in mind the immediate aim is to recover the person to the nearest point of safety):-								
1. Lowering a casualty; 2. Raising a casualty; 3. Self rescue by use of emergency equipment; and 4. Specialist techniques only undertaken by specially trained persons.								
4.3 Essential planning issues								
All rescue planning and operations should address the following issues:								
• The need for rescue in good time; • Taking account of lone worker issues and procedures; • Communication requirements; • The safety of the persons carrying out or assisting with the rescue; • Means of access to the casualty;								
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- The medical needs that the casualty may have with respect to injury or the effects of suspension; NOTE: There should be a first aider on the rescue team who is able to reach the cab promptly. (This person must hold a valid approved certificate of competence in first aid at work). NOTE: The use of an Automated External Defibrillator should be considered. This should only be used by a suitably trained person. - The anchor points to be used for any equipment; - The suitability of equipment (anchors, harnesses, attachments and connectors) that has already arrested the fall of the casualty for use during the rescue; - Rescuers are shown the actual provision for rescue (i.e. anchor points) on the site crane(s) and familiarised with the rescue techniques to be used on these cranes - The method that will be used to attach the casualty to the recovery system; - The direction that the casualty needs to be moved to get them to the point of safety (i.e. raising, lowering or lateral); - The possible needs of the casualty following the rescue.								
4.4 Other planning issues The potential for a casualty to be located over an edge should be considered. Any rescue will be further complicated where edges and obstructions are involved. Recovery over an edge will:- - Increase the effective load in raising operations due to additional friction; - Create risks of cutting or abrasion of equipment such as ropes, slings and harnesses; and - Interfere with the operation of rescue equipment.								
5.0 Measures to Reduce the Requirement for Rescue from Height Section 3.0 indicates that the requirement for rescue from height may result from one of four types of emergency. The probability of occurrence of these may be reduced as follows:-								
5.1 Tower crane selection At the site planning stage, by considering the type and characteristics of the tower crane, the need for rescue from height from the tower crane can be reduced and ease of rescue improved:-								
5.1.1 Pedestrian operated tower cranes (POTCs) Where the operator uses a remote control station to operate the crane will remove the need for the operator to climb up to the cab. There are however a number of issues associated with the use of POTCs which should be taken into account when considering this option:- - Lack of feel by the operator making the crane more difficult to control in certain circumstances; - The operator will have restricted view of the load when compared with a tower crane operated from an elevated cab;								
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• The operator when walking across the site and operating the crane is at increased risk of slips, trips and falls; • The productivity of POTCs is less than tower cranes operated from an elevated cab.								
5.1.2 Davits and derricks								
Some tower cranes are provided with or can be provided with davits or derricks which can assist in lowering a casualty to the ground. If such a device is fitted it should be assessed to ensure that it has an adequate rated capacity (safe working load) and should be subject to thorough examination at a maximum interval of six months.								
5.1.3 Cab access								
Different makes and models of tower cranes have different means of access to the cab. Some have rear doors which will assist in the rescue of the operator, whilst others are accessed through a hatch in the floor or a hatch in the roof which may cause difficulties. These factors should be taken into account when selecting a tower crane.								
5.2 Lone working								
Tower crane operators spend long periods of time alone in tower crane cabs and arrangements should be made to ensure that regular contact is maintained with the operator to ensure that they are safe and well.								
5.3 Medical fitness								
The medical fitness of all persons working on or using tower cranes – including the rescue team - should be assessed and monitored at appropriate intervals to identify any issues that might lead to medical problems.								
NOTE: Further guidance is given in the Strategic Forum for Construction <i>Good Practice Guide on Medical Fitness to Operate Construction Plant</i> which may be downloaded from www.cpa.uk.net.								
NOTE: Although this document is primarily aimed at plant operators, the principles set out in the Good Practice Guide are equally applicable to other persons such as erectors, maintenance fitters, competent persons carrying out thorough examinations and rescue persons.								
NOTE: Guidance on medical contra-indications for individuals undertaking work at height are given in Clause 15.1.3 of BS 8437:2005 + A2:2012, <i>Code of practice for selection, use and maintenance of personal fall protection systems and equipment for use in the workplace</i>.								
5.4 Competence								
All persons working on or using a tower crane should be competent to carry out their allotted task and be working to an agreed method statement. They should also have been trained in appropriate work at height and rescue techniques.								
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6.0 Methods of Rescue from Height

Table 1 in **Section 3.0** identifies seven distinct activities where evacuation/rescue from height is required. The current methods used in each of these situations are as follows:

6.1 Recovery from suspension during erection, alteration and dismantling

The majority of tower crane supply companies use a self-contained proprietary rescue system, taken up the crane by the erection team and kept there whenever fall arrest systems are in use. In the event of a person falling and being suspended in the fall arrest system his colleagues will attach a rescue device to the crane structure and clip one end of the rescue rope to the casualty's harness D-ring using the telescoping pole provided. The casualty can then be raised back up to the crane structure or lowered to the ground (after the casualty's harness lanyard has been disconnected). See **Annex 1** for the desired attributes of a proprietary casualty rescue system.

NOTE: There are various steps that a suspended casualty can take to reduce the risk of further injury such as keeping limbs moving, flexing leg muscles, transferring body weight from side to side and using foot straps if they are available. The extent to which such measures can be used will depend on the nature and extent of any injuries.

The rescue system is operated by trained members of the erection team.

An alternative system is the use of a specially designed rescue man riding carrier (see **Figure 1**) suspended from the crane on which the rescue is being carried out or a nearby crane. The advantage of this system is that the casualty can be speedily recovered and lowered to the ground.

Standard man riding carriers may be used for rescue if the operation is formally planned, following a risk assessment, to enable a safe system of work to be put in place.

Detailed guidance on the use of cranes or the raising or lowering of persons is given in:-

- Clause 23.1 of BS 7121-1:2006, *Code of practice for the safe use of cranes - Part 1: General*.
- Annex H of the *CPA Best Practice Guide on the Safe Use of Top Slew Tower Cranes*.



Figure 1 – Example of a Purpose Designed Rescue Man Riding Carrier

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6.2 <i>During use, maintenance and thorough examination of the crane</i> The basic principles of rescue from height whilst the crane is in use are similar to those outlined above. There are likely to be several different scenarios that need to be considered in the planning process. Issues to be considered in rescuing persons from the operator’s cab include:- • cab location, e.g. side hung or within the tower; • access/egress, e.g. from the rear, top or trap door in the floor. Examples of the issues with different types of tower cranes are given in Annex 2 Before moving a casualty a first aid assessment should be undertaken. The assessment will indicate whether there is an immediate need for recovery, or stabilisation of the casualty whilst awaiting the rescue team or emergency services. Once the person being rescued has been recovered from the cab they are generally moved to part of the crane structure, such as the counter jib, from which they can be lowered to ground level. This is generally carried out using either a proprietary rescue system or a man riding basket (see 6.1) and it is sometimes possible to utilise a davit arm and/or tag line(s) to keep the casualty clear of the tower crane structure. The casualty may either be placed in a rescue stretcher or in a rescue harness, depending upon the injury and its severity. The rescue equipment should be available on site at all times that persons are on the crane, as should be adequately trained persons. Consideration should be given to how rescue equipment will be carried or hauled aloft, or any additional risks that may be created if it is to be carried. Where a fall can occur (see definitions in 2.2), arrangements should be made to ensure that rescue from suspension can be carried out (See 6.1). Where a work restraint system is used there will be no need to recover a suspended casualty; however, lowering may be required for other reasons, e.g. ill-health. NOTE: There are various steps that a suspended casualty can take to reduce the risk of further injury such as keeping limbs moving, flexing leg muscles, transferring body weight from side to side and using foot straps if they are available. The extent to which such measures can be used will depend on the nature and extent of any injuries. As with 6.1, an alternative system to personal rescue equipment is the use of a specially designed man riding basket (see Figure 1) suspended from the crane on which the rescue is being carried out or a nearby crane. The advantage of this system is that the casualty can be speedily recovered and lowered to the ground in some comfort. 6.3 <i>Rescue by stretcher</i> Certain medical emergencies or injuries may require the casualty to be lowered by stretcher (see Annex 1). Consideration should be given to: • The type of stretcher required for the type of rescue envisaged; • Whether a stretcher should be stored on a tower crane or in a secure and accessible location nearby; • The security of the casualty in the stretcher during any transport phase.								
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6.4 Rescue Davits A recent development to assist in the lowering of persons from a tower crane to the ground is the provision of powered davits on the crane's counter jib. These allow the person requiring rescue to be lifted, either in a stretcher or a harness, over the handrails and lowered to the ground using a powered winch. Two example of these rescue davits are shown in Annex 3. 6.5 Permanent Horizontal Lines on Jibs Where a permanent horizontal line is fitted and used, account should be taken of the number of people who can attach to the system safely. This information should be provided by the manufacturer of the tower crane and/or the manufacturer of the line system. Advice on horizontal lines can be found in EN795, EN365 and BS7883 (See 10.0). 7.0 Method Statement Details of the rescue plan should be recorded in a method statement which should be specific for each type and model of crane. The plan should include: • Details of the rescue equipment to be used; • Configuration of the equipment for different types of casualty, e.g. walking wounded, assisted lower, stretcher rescue; • The requirement that those on site who will carry out rescue should be familiarised with the provision for rescue on the particular crane(s) used on site; • Identification of anchor points on the crane for each type of planned rescue; • Action to be taken in the event of adverse weather such as high winds. NOTE: A tagline should be used to control any stretcher. The method statement should be used to brief those who will be working at height (and involved in the rescue plan), who will all have received suitable training. NOTE: Training should, preferably, be to BS 8454: 2006. 8.0 Selection and Training of Persons It is essential that all rescue from height on tower cranes is carried out by adequately trained (competent) persons who should be available on site at all times when rescue may be required. Initial training, which should include pre-use checks of equipment, should be carried out by the supplier of the system to be used, or by in-house trainers who have been trained and assessed by the system supplier. Trainees should be assessed using practical exercise(s), as well as theory session(s). It is desirable to undertake a simulated rescue on site to confirm that the training has been assimilated. Refresher training should be carried out at a intervals not exceeding six months, followed by an assessment of competence by carrying out a simulated rescue. This should include a review of the rescue plan, as well as the equipment being used and its location. Equipment should be inspected at the end of any exercise and the findings recorded.								
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It is important that trainees are not exposed to additional risk during any simulated rescue carried out during training. It is generally preferable to utilise a mannequin of representative height and weight during a rescue exercise, although it can sometimes be beneficial to use a "live" casualty (person) for maximum authenticity. If a "live" casualty is being used a lifeline must be used to provide fall protection back-up. Additional guidance is given in: BS 8454: 2006 <i>Code of practice for delivery of training and education for work at height and rescue</i> and OC 282/31. It is also important that persons operating or carrying out work on erected tower cranes have an appreciation of the rescue process. This will ensure that if they have to be rescued they will know what to expect and, if conscious, may be able to cooperate with the rescue team. 9.0 Inspection and Maintenance of Rescue Equipment All equipment used for the rescue of persons from height on tower cranes must have a pre-use check before each use. Damaged equipment should be taken out of service immediately. In addition to pre-use checks, equipment should be subjected to periodic detailed inspection (and/or thorough examination) by a competent person in accordance with a pre-determined regime specified by the equipment manufacturer (or LOLER). NOTE: The inspection regime may specify the need for 'interim inspection'. LOLER requires lifting equipment to undergo a six-monthly thorough examination. It may be desirable to extend the six-monthly period, e.g. where rescue kit has been hermetically sealed (which will also prevent mis-use). Furthermore, equipment should be inspected after use and, if damaged, taken out of service immediately. Equipment should be kept clean and dry and should be properly stored, in a secure place. Wet equipment should be thoroughly dried before storage. Equipment should not be altered or repaired, unless this has been authorized by the manufacturer. The frequency of detailed inspection should be reviewed by a competent person to take account of storage conditions and any damage found at pre-use and detailed inspections. Where a permanent horizontal line is fitted it should be inspected regularly (and tested, if required by the manufacturer) Additional guidance is given in:- • BS 8437:2005 + A2:2012 - <i>Code of practice for selection, use and maintenance of personal fall protection systems and equipment for use in the workplace</i> • INDG 367 – Inspecting fall arrest equipment made from webbing or rope.								
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10.0 References								
10.1 Legislation								
The Health and Safety at Work etc Act 1974 (HSWA); The Work at Height Regulations 2005 (WAHR); Lifting Operations and Lifting Equipment Regulations 1998 (LOLER), <i>Safe use of lifting equipment</i>, Approved code of practice and Guidance (HSE, L113); The Management of Health and Safety at Work Regulations 1999 as amended (MHSW); The Construction (Design and Management) Regulations 2007 (CDM); Personal Protective Equipment at Work Regulations 1992 (as amended), Personal protective equipment at work, Guidance (HSE, L25).								
10.2 Standards								
BS 7121-1:2006, <i>Code of practice for the safe use of cranes - Part 1: General</i> BS 7883:2005, <i>Code of practice for the design, selection, installation, use and maintenance of anchor devices conforming to BS EN 795</i> BS 8437:2005+A1:2012, <i>Code of practice for selection, use and maintenance of personal fall protection systems and equipment for use in the workplace</i> BS 8454:2006, <i>Code of practice for delivery of training and education for work at height and rescue</i> BS EN 361:2002, <i>Personal protective equipment against falls from a height. Full body harnesses</i> BS EN 362:2004, <i>Personal protective equipment against falls from a height. Connectors</i> BS EN 363:2008, <i>Personal protective equipment against falls from a height. Personal fall protection systems</i> BS EN 365:2004, <i>Personal protective equipment against falls from a height. General requirements for instructions for use, maintenance, periodic examination, repair, marking and packaging</i> BS EN 795:2012, <i>Protection against falls from a height — Anchor devices — Requirements and testing</i> BS EN 1496:2006, <i>Personal fall protection equipment. Rescue equipment. Rescue lifting devices</i> BS EN 1497:2007, <i>Personal fall protection equipment. Rescue harnesses.</i> BS EN 1498:2006, <i>Personal fall protection equipment. Rescue loops.</i>								
10.3 Other Publications								
INDG 367, <i>Inspecting fall arrest equipment made from webbing or rope</i> (HSE, www.hse.gov.uk/pubns/indg367.pdf) OC 282/31, <i>Rope evacuation from mechanical handling equipment</i> (HSE, HSE Operational Circular, http://www.hse.gov.uk/foi/internalops/ocs/200-299/282_31.htm) OC 200/31, <i>The Work at Height Regulations 2005</i> (HSE, http://www.hse.gov.uk/foi/internalops/ocs/200-299/200_31/index.htm)								
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Topic Inspection Pack – Falls from Height (HSE, www.hse.gov.uk/foi/internalops/fod/inspect/falls.pdf) Guidance on rescue during work at height (Work at Height Safety Association, Technical Guidance Note 5) http://www.wahsa.co.uk/component/option,com_docman/task,cat_view/gid,5/Itemid,8/ CPA Best Practice Guide on the Safe Use of Top Slew Tower Cranes (Construction Plant-hire Association) http://www.cpa.uk.net/p/Tower-Crane-Interest-Group/ Strategic Forum for Construction Plant Safety Group Best Practice Guide on Medical Fitness to Operate Construction Plant (Construction Plant-hire Association) http://www.cpa.uk.net/p/Medical-Fitness-for-Operating-Plant/																				
10.4 Useful Websites <table><tr><td>Chief Fire Officer's Association</td><td>www.cfoa.org.uk</td></tr><tr><td>Construction Plant-hire Association</td><td>www.cpa.uk.net</td></tr><tr><td>Construction Skills</td><td>www.constructionskills.net</td></tr><tr><td>Health and Safety Executive</td><td>www.hse.gov.uk</td></tr><tr><td>Industrial Rope Access Trade Association</td><td>www.irata.org</td></tr><tr><td>Safety Assessment Federation</td><td>www.safed.co.uk</td></tr><tr><td>Strategic Forum for Construction</td><td>www.strategicforum.org.uk</td></tr><tr><td>UK Contractors Group</td><td>www.ukcg.org.uk</td></tr><tr><td>Work at Height Safety Association</td><td>www.wahsa.co.uk</td></tr></table>			Chief Fire Officer's Association	www.cfoa.org.uk	Construction Plant-hire Association	www.cpa.uk.net	Construction Skills	www.constructionskills.net	Health and Safety Executive	www.hse.gov.uk	Industrial Rope Access Trade Association	www.irata.org	Safety Assessment Federation	www.safed.co.uk	Strategic Forum for Construction	www.strategicforum.org.uk	UK Contractors Group	www.ukcg.org.uk	Work at Height Safety Association	www.wahsa.co.uk
Chief Fire Officer's Association	www.cfoa.org.uk																			
Construction Plant-hire Association	www.cpa.uk.net																			
Construction Skills	www.constructionskills.net																			
Health and Safety Executive	www.hse.gov.uk																			
Industrial Rope Access Trade Association	www.irata.org																			
Safety Assessment Federation	www.safed.co.uk																			
Strategic Forum for Construction	www.strategicforum.org.uk																			
UK Contractors Group	www.ukcg.org.uk																			
Work at Height Safety Association	www.wahsa.co.uk																			
NOTE: The Work at Height Safety Association can provide a list of manufacturers and providers of rescue equipment																				
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Annex 1 - Attributes of a proprietary casualty rescue system

NOTE: Equipment should meet appropriate personal fall protection standards - See 10.0.

Rescue systems may consist of some or all of the following:-

- A suitable number of rescuer harnesses;
- A suitable number of casualty harnesses;
- A suitable casualty stretcher;
- A reach and recovery mechanism that will allow an individual to access and recover a fallen worker and then either lower or raise that person to a point of safety and/or;
- A controlled descent device which will allow an individual to self-rescue or be rescued by attaching it to a suitable anchor point and controlling the descent of that individual in suspension to the ground.



A rescue kit will be compact and simple to use, easily carried and may consist of some or all of the following:

- A locking, extendable rescue pole allowing easy connection to a person hanging suspended after a fall;
- A controlled rate lowering device with lifting capability and maximum speed limiter, designed to rescue casualties by lifting or lowering;
- A universal fitting casualty harness;
- A pulley, providing mechanical advantage to raise a load or deviate a rope;
- Sufficient slings suitable for the application.



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A rescuer harness will be quick and easy to fit, taking into account the locations in which it may be required to be put on and will be constructed with:-

- Suitable attachment points to allow quick connection to a system for lowering, raising and/or suspension;
- Suitable accessory loops to allow attachment of ancillary equipment such as a torch, radio, etc.



A rescue stretcher will:-

- Meet appropriate standards;
- Be suitable for both horizontal and vertical lowering;
- Provide protection to the casualty;
- Provide security to the casualty;
- Be sufficiently stiff to support the casualty;
- Where necessary, be able to incorporate spinal immobilisation equipment;
- Be easy to lift whether manually or by crane, e.g. lifting bridle;
- Be easy to wash and disinfect;
- Be easily stored and transportable.



Consultation with equipment manufacturers/suppliers, training providers and local fire and rescue services will enable suitable equipment and training to be procured and appropriate systems of rescue to be implemented and maintained.

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Rescue of Personnel From Height on Tower Cranes

Annex 2 - Examples of Access Issues for Rescue from Tower Crane Cabs



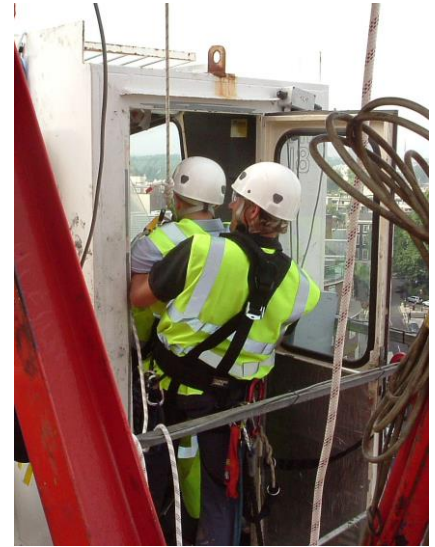
© Trevor Jepson - City Lifting

Narrow cab door makes access to the casualty difficult as they have to be lifted over the seat



© Trevor Jepson - City Lifting

Small walkways also restrict access



© S Appleyard

Casualty may require rope assistance to lift them out of the cab



© Phil Crook - Hampshire Fire & Rescue

Another example of restricted access, which limits the number of rescuers around the casualty



© Nick Croudace - heightec

On larger tower cranes access is still tight

TIN 013

Rescue of Personnel From Height on Tower Cranes



© Swindon Advertiser

**Getting a casualty in a rescue
stretcher into the lowering
position is not easy**

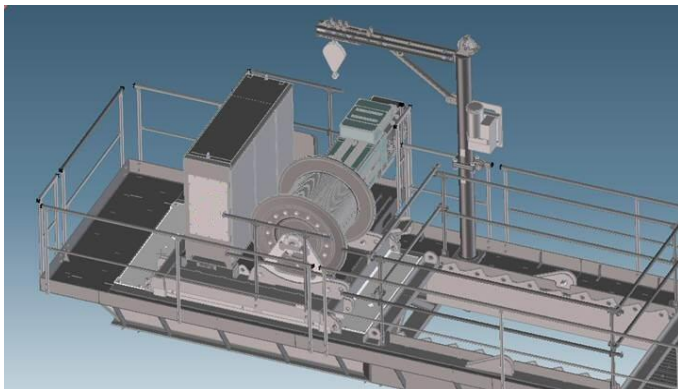


© Nick Croudace - heightec

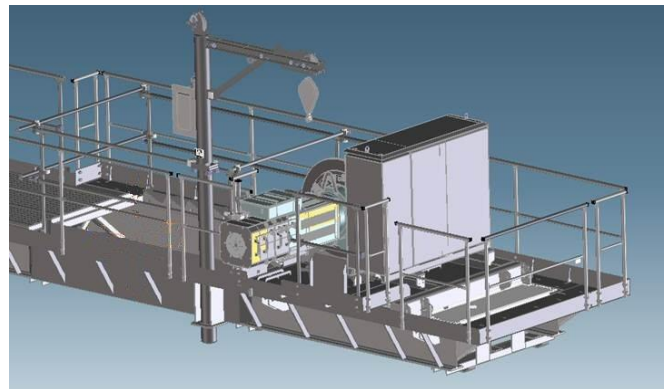
**Rescuing a casualty suspended in
a fall arrest harness may mean
working outside collective
protection**



Annex 3 - Examples of Rescue Davits

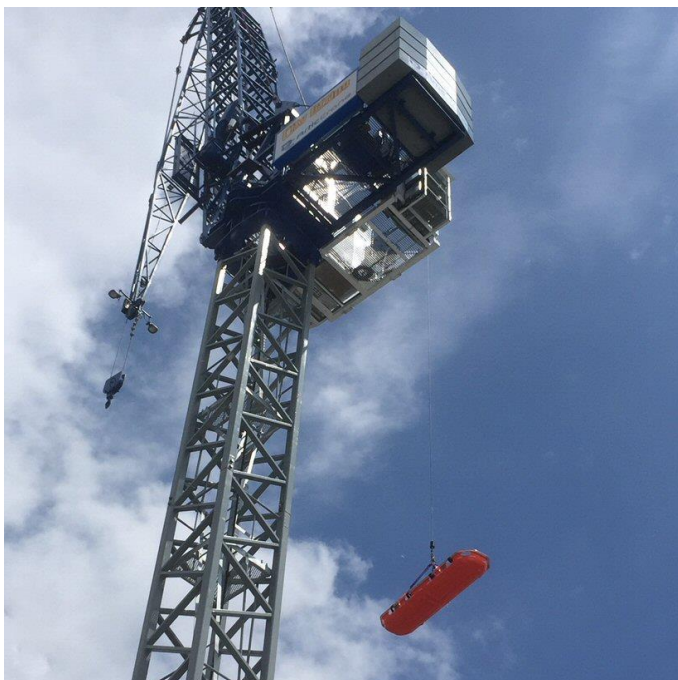


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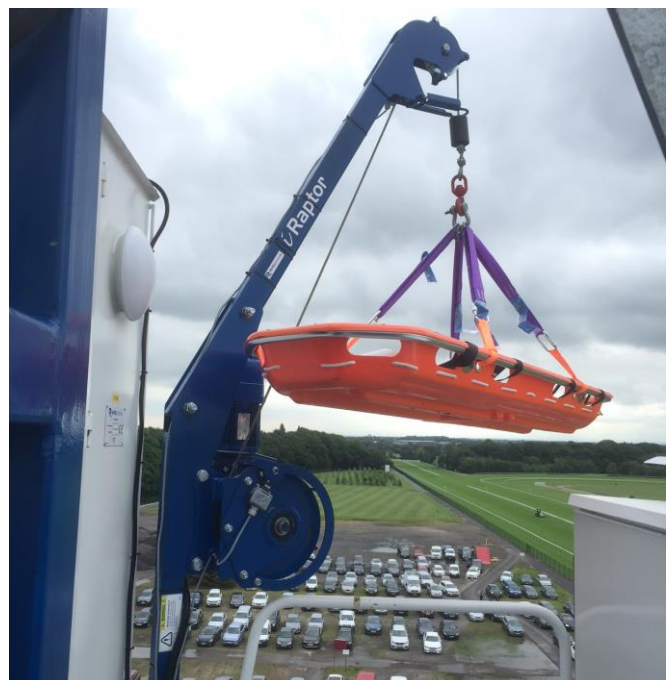


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Liebherr System



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Artic Crane Raptor System