



Mast and Tower Safety Group

promoting safety and best practice

Guidance Note

GN-008

Mast and Tower Rescue – Guidance for Radio and Rigging Teams working on Radio Structures



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1 Introduction

This document provides guidance on rescue procedures for people who are required to climb masts and towers. It discusses the factors to be considered in any rescue, and explains some of the equipment available to high climbers with guidance on some of the rescue techniques.

Please note that ***the examples and equipment mentioned in this document are illustrative only***. There are various types of equipment available and companies should ensure that the equipment they use meets recognised industry and regulatory standards. There are many types and manufacturers of Rescue kit; this document provides examples, but companies need to review their own requirements when making choices about rescue kit, taking account of factors including the number of people on site, heights that people are working at, types of structures they are accessing, how frequently they climb and the nature of works being undertaken.

2 Method Statement, Risk Assessment and Safety Plan

All work on radio structures requires a risk assessment and method statement suitable for the site and tasks to be undertaken. The exact detail required will depend on the magnitude of the task and in some cases the Construction Design and Management Regulations 2007 (CDM2007) will also apply. A Rescue Plan must also be considered as part of the risk assessment and method statement. The Work at Height Regulations 2005 (WAH Regulations 2005) require that a rescue plan is in place before work begins. ***Remember there is no safe system of work without a means of rescue.***

3 Minimum Rescue kit requirements

As a minimum a Rescue kit for one to one rescue should be available on site at all times when climbers are working at height. This is a rescue kit that can be used by one person to rescue another, whether a casualty on a working platform or a casualty suspended from open steelwork.

4 Provision of Rescue Equipment

It is the responsibility of the climber's line manager to ensure that all climbing teams are equipped with sufficient and suitable rescue equipment based on the task and geographic location. Managers of contractors who are required to access masts and towers must provide their staff with appropriate rescue kits.

The following factors should be considered when deciding on the deployment of equipment:

- An appropriate rescue kit should be available on site and the equipment must be kept together and be ready for deployment at all times.
- A one to one rescue kit must be available on site if any work is taking place on a radio structure (mast or tower).
- An appropriate full rescue kit (which may include one to one kit and a stretcher) should be available on site if a full rigging team of four or more people is working at height or if this requirement is specified by a customer.
- No rescue kit is generally required for work undertaken on flat roofs although rescue kit would be required if a mast or stub tower exists on a roof-top or elevating platform.

Before work on any structure begins, consideration should be given to:

- Lifting the rescue equipment to the place of work, and

- Ensuring that the whereabouts of rescue kits is known.

All aerial riggers and radio installation/maintenance engineers who are in possession of a rescue kit need to ensure that their employer is aware of their whereabouts. Anyone requiring assistance will then be able to make contact with the company to ensure that the nearest additional rigging/radio personnel can be deployed to assist in the shortest possible time.

5 Priorities

The order of priorities for the rescuer/rescue team is to:

- raise the alarm
- not to endanger themselves
- prevent further injury to the casualty
- move the casualty to the ground or a safe position as soon as possible so that essential and effective treatment may be administered.

In all cases the emergency services must be the first point of contact to ensure that medical help is on hand as soon as possible.

6 Training

Whenever possible an experienced trained rigger should lead a rescue. It is important in any rescue scenario that one person takes overall control and communicates as necessary with the emergency services.

All radio climbers must hold a current emergency aid certificate.

All climbers should be trained to carry out one to one rescues. Climbers must not work alone. There must be a minimum of two climbers on site at all times in case a one to one rescue is necessary.

7 Size of Rescue Party

One to one rescue requires one trained person to rescue another. One to one rescue can be used, for example, for rescue from a monopole.

Use of a stretcher such as Paraguard or Chrysalis requires a minimum of three trained riggers (not including the casualty).

All rescue operations will benefit from additional people being present to assist, but it is important that one person takes charge of the rescue operation.

8 Communications

A rescue plan should include a suitable communications method to summon help. In the event of an accident the first duty of the person in charge is to ensure that a doctor and an ambulance have been summoned. Suitable communication systems include land lines, mobiles and radio. In all cases the communications system must be tested before work starts.

9 Emergency services

Whilst the fire brigade are rescue professionals, they are not always equipped to access tall structures and may not have suitable equipment for recovering a casualty. However they do have turntable ladders and, assuming normal vehicular access, can often recover a casualty quickly using these. This could be, for example, where the casualty has been recovered to a safe place on the structure and a turntable ladder could be used to lower them to the ground.

A medical professional (paramedic or doctor) may need to reach the casualty in order to stabilise them before any recovery is attempted. If the casualty has been suspended for any length of time the paramedic or doctor should be made aware of this and precautions will need to be taken in the event of suspension intolerance or syncope.

10 Casualty management

It is essential that all rescuers have up to date first aid training. A casualty having survived a fall may be at significant risk from his/her injuries and correct management may save their life.

If a casualty has taken a fall and is left unconscious and suspended then there is a high risk from suspension intolerance and they should be rescued as quickly as possible. A suspended immobile person could die in as little as 30 minutes. See Section 13 below for further information.

If the casualty is conscious it is important to reassure them. Explain what you are doing and monitor their level of consciousness at all times. If they are uninjured encourage them to move their legs and if possible take their body weight on a bracing or any surrounding steel - this will help to prevent the onset of suspension intolerance.

A close working attachment may be fully extended and used as a form of stirrup to enable them to flex leg muscles. Flexing muscles in the legs will help maintain blood circulation and offset the effect of suspension intolerance.

11 Selection of a Suitable Anchorage

Before work begins and at each change of job/task on a structure, an assessment should be made of the form of rescue that can be made (see BS7985 : 2009 Clause 12.3.7).

In any rescue plan (which must be completed before starting the task on the structure) careful consideration must be given to ensuring that a suitable anchorage point above the workplace is available. This would be used by the rescuer and casualty during a rescue and will be supporting the weight of two people in the case of a one to one rescue.

It is possible that the exact position of the anchorage will need be chosen at the time of the rescue but it is essential that an attachment point is available above the casualty to enable equipment to be deployed.

- Never attach to hand railing.
- Use only substantial structural members - primary or secondary strong points if possible.
- If a rescue attachment point is provided and it can support 2 persons, use it.
- Welded lugs are not strong points - unless marked as a rescue point.
- Steps on monopoles are not strong points.
- If in doubt use a round sling (provided in kit) and wrap around structural steel sections avoiding sharp edges.
- It is permissible to choke the round slings provided, but they must be inspected for signs of damage after the rescue.
- Try to ensure that slings are choked around the largest section of steel work available.
- Look out for signs of corrosion that may signify weakness in materials.

It is vital to remember that there is no fall arrestor back up during a live rescue.

12 Rescue Exercises and Training

It is mandatory that every qualified climber is trained to use the rescue equipment they have been issued with. Line managers must ensure their people carry out a rescue exercise with this equipment at least every 12 months. Some companies carry out rescue exercises more frequently, for example 8 monthly.

It is the responsibility of the Competent Health and Safety Representative or Trainer to assess all climbers attending training events and practice rescue exercises, and to record their attendance in the individual's record of competence stating which type of rescue they have completed.

Climbers should be assessed on their ability to deploy their rescue equipment to ensure they are familiar with its use. Where stretcher rescue exercises are undertaken, which should be only by a

trained full rigging team, anthropometric dummies must be used rather than a person role-playing a casualty. Training in rescue exercise is included in all climbing and rigging courses.

Rescue exercises carried out during training and field exercises require the use of a back-up fall arrester for each person (one for the rescuer and one for the person acting as a casualty). **No fall arrester would be required in an emergency rescue situation.**

13 Suspension Intolerance or suspension syncope

Suspension intolerance or syncope (formerly known as suspension trauma) is a risk when someone is hanging in a harness, immobile, in a vertical position. The restriction of the harness affects blood circulation and may cause the casualty to become unconscious. This situation could arise in radio mast climbing activities when:

- A climber has had their fall arrested by their fall arresting equipment.
- During one to one rescue training when a suspended mock casualty is awaiting rescue.
- During rescue (or training) when the casualty is suspended in their harness or strapped into a stretcher.

When hanging immobile in a harness in a vertical position, there is a tendency for the blood to pool in the legs. Normal movement of the legs prevents this. The pooling of the blood in the legs in a motionless head-up position can lead to the onset of suspension intolerance in between 10 minutes and 30 minutes. This can lead to unconsciousness followed by death. To date this condition has not been reported in anyone using harnesses who has been able to move and adjust their position, or by anyone using rope access equipment.

A suspended casualty who has been knocked unconscious during the fall is particularly at risk. The risk is also increased in those who are in pain, dehydrated, cannot move their legs, suffer from heart or respiratory disease, or experience hypothermia, shock or fatigue.

Symptoms of suspension intolerance can be faintness or dizziness, breathlessness, sweating, pallor, hot flushes, increased or unusually low pulse rate or blood pressure, nausea, and loss or greying of vision. If anyone suspended in a harness experiences any of these symptoms urgent steps should be taken to move them into a non suspended position.

The onset of suspension intolerance may be prevented by:

- Ensuring proper adjustment of harness before climbing.
- Ensuring that during rescue training and practice exercises trainees are not left suspended for long and are rescued quickly.
- Leg muscle pumping by the suspended casualty (real or trainee) or arranging them so that their legs are in a horizontal position or with the knees elevated.
- Speedy recovery of the casualty.
- Immediate termination of rescue exercises/training if any symptoms are reported.

The Health and Safety Executive has produced guidance on the treatment and management of casualties experiencing symptoms of pre-syncope or suspension intolerance and this should be referred to on the HSE website at <http://www.hse.gov.uk/falls/harness.htm> or by searching the site for 'suspension syncope'.

14 Storage, Care, Maintenance and Additional Equipment

Any equipment used to lift a person must be returned to a competent tester for testing every six months. This is a legal requirement under the Lifting Operations and Lifting Equipment Regulations (LOLER).

All the component parts of the rescue equipment should be subject to a six monthly thorough examination and inspection by a competent tester and a record/certificate of examination issued.

Parts need to be replaced if they are worn, damaged, obsolescent, or missing. New equipment should be ordered by the designated company representative.

One to One rescue kits and stretchers should be thoroughly examined by competent persons. A competent person is someone with the theoretical and practical experience of the equipment who has successfully attended a Thorough Examination and Recording of Lifting Equipment course.

Equipment must be stored at all times in the equipment storage bags or valises that they are supplied in. All the items should be kept together and available for immediate use by the rigging team. They should be dry before being stored, and should be stored in a dry place away from chemicals, abrasive materials and direct sunlight.

Fibre ropes and webbing should be cleaned with a mild detergent/soap and rinsed thoroughly before being allowed to dry naturally in a well-ventilated area away from excess heat or sunlight. Chemicals should not be used to clean equipment unless specified by the manufacturer.

15 Related Documents

- MATS Group Guidance Note GN-001 – Working at Height Training
- MATS Group Guidance Note GN-003 – Construction Design & Management for Multi-site Projects in the Broadcast and Telecommunications Sector
- MATS Group Guidance Note GN-005 – Medical requirements for climbing masts & towers
- MATS Group Guidance Note GN-009 – First Aid Guidance

16 Rescue Kit Examples

The Annex to this document on the following pages provides an example of the use of rescue equipment on a monopole. ***This is illustrative only and is not intended to provide a set of detailed instructions for rescue from a monopole.***

There are various types of equipment on the market and its suitability for specific circumstances should be assessed by a Competent Health and Safety Representative in order to ensure that it meets the specific requirement of an organisation.

The information in this document does not absolve contractors or suppliers from their responsibility to identify and comply with all relevant legislation, regulations and legal standards nor does it take precedence over laws, regulations and external standards.

Annex - EXAMPLE OF A MONOPOLE RESCUE

This annex describes an example of a rescue technique which could be used on steel monopoles. The procedure is intended for a two man working party who should if possible be assisted by a third person providing ground support. This technique may be used on many different designs of monopole, but as an example the procedure will be described using a Vodafone pole, equipped with removable steps and a fixed fall arrest system of the wire type (Latchway).

There should always be a second Latchway carriage on site. For other systems there should always be a carriage available for each member of the two man working party. The second carriage is needed as part of the rescue equipment.

Equipment used

- One to one rescue equipment.
- Additional Latchway carriage (part of monopole climbing kit - one per climber - minimum 2 on site).
- 3 metre round sling.
- Bag for steps where required (tool bass - part of monopole climbing kit).
- Lift line (not included in rescue kit - see text).

Procedure

Please refer to the diagram on the following page.

- 1 It is assumed that the casualty, whilst climbing the pole and fitting the steps has become incapacitated.
- 2 The rescuer must lay out the equipment as illustrated.
- 3 Ensure the one to one rescue kit chain is set to its maximum length. Attach the one to one rescue kit to the descent control unit. Attach the 3m round sling into the karabiner at end of rope. The rescuer now fits the swing seat using the captive karabiner to the front D ring of his harness.
- 4 There are now two options:
 - ◆ If a lift line is available the simplest option is for the rescuer to attach the lift line to his harness and pull up the one to one rescue kit and descender when in position above the casualty.
 - ◆ If no lift line is available then the rescuer can un-thread the descent control unit from its rope and position it further along allowing sufficient rope to climb above the casualty. The rescuer then attaches the Saflok Hook/Karabiner to his harness climbing as in (a) pulling up the one to one Rescue kit and descender when in position.

Using a separate line, or repositioning the descender, enables the rescuer to climb without the encumbrance of ropes/chains/slings etc - however the climber must ensure that he keeps the line clear and not tangled when climbing past the casualty.
- 5 Using a second Latchway carriage the rescuer ascends to a position immediately below the casualty. After attaching his Close Working Attachment around the pole the rescuer then uses one leg of his twin tail lanyard to attach into the casualty's Latchway carriage karabiner (NOT HIS D RING). The rescuer must be attached at all times - it is not permissible to free climb around the casualty. In some cases the rescuer may be able to attach to other substantial parts of the structure. It must be remembered that clip on steps are not designed as fall arrest points and must never be used as such.

- 6 Having attached and made himself safe the rescuer may now detach his own Latchway carriage and CWA. (NB - A two person Latchway Carriage is designed to a capacity of 400kgs, so 2 x Climbers can access the system, checking it is operational before ascending – the disc spins and fall arrestor has not deployed. If one person then takes a fall, the system is designed to sufficient capacity to take another person accessing for a rescue).
- 7 The rescuer should carefully work his way around the casualty taking care not to entangle the trailing lift line or rescue rope.
- 8 When past the casualty the rescuer reaffixes his CWA and Latchway carriage and after detaching his lanyard from the casualty's carriage continues fixing steps and moves upwards a further 3 metres. It is important that the rescuer allows sufficient space for deployment of the one to one system.
- 9 The rescuer now uses the lifting line or rescue rope to pull up the one to one rescue kit and descender unit complete with a 3 metre round sling. If a suitable anchorage point is available then this may be used to attach the rescue kit safety hook. If none is available or there is any doubt about an anchorage's strength the procedure shown in the diagram below using the 3 metre round sling is used. Position the choked sling between steps to aid positioning.
- 10 Having checked the safety hook anchorage point the rescuer attaches the one to one rescue equipment to his front 'D' ring. He then disconnects his Latchway carriage and CWA then descends the pole until held by the rescue rope.
- 11 The rescuer now using the descender controls his descent to the casualty and completes the rescue.

Monopole Rescue Example – diagram


