

Company Logo

Company Name

Working at Height Rescue Plan Risk Assessment - Method Statement

Document.....Revision.....

Site Address:..... Rescue Plan Ref. No:.....

.....

.....

Location/area:.....

**JOB TASK:**

Reference No.:.....

Work at Height Dates: From:..... To:.....

What is task to be done:.....

.....

.....

**Operators:**

Names of operators who are involved in the work at height:

1)..... 2).....

3)..... 4).....

5)..... 6).....

Signature of Person Responsible For Working at Height Rescue (WAH).....

Date:.....

**RESCUE:**

**Communication:**

What communication systems will be used between the suspended worker and supervisor / rescue team?

(✓ as appropriate)

1) Direct voice communication

2) Whistle

- 2) Mobile Phone
- 3) Two-way Radios / Headsets

**Emergency Contact:**

In the event of an emergency / fall from height the WAH supervisor should immediately alert:

The rescue team and first aid assistance:

Rescue Team Name:..... Name:.....

☎ :..... ☎: .....

First Aider(s) Name:..... Name:.....

☎ :..... ☎: .....

If the site rescue team is unable to affect a rescue within 5 minutes the Fire & Rescue Service are to be called on ☎ - 999 and the Ambulance Service should be called immediately.

Local Accident & Emergency Hospital ☎ - .....

In all instances inform the Control Room of the situation, ☎ - .....

Note: Once the rescue team is in attendance and if required, a nominated person is to go to the site entrance to meet, and direct the emergency services, and provide the following information:

Which Floor / how high up the casualty is:.....

Operators' condition after fall:.....

**Safety of Rescuers:**

(✓as appropriate)

Are Operators trained competent & in date in use of rescue equipment? Yes  No

Are Rescue training records in date? Yes  No

Are there a sufficient number of rescuers available? Yes  No

Is rescue equipment selected appropriate for nature of work? Yes  No

What obstructions are in the way of reaching the suspended Operator? (Detail):.....

.....

.....

Have assessments been made of anchor points, & are they in date for test? Yes  No

Has consideration been made to method of attaching casualty? Yes  No

(Detail):.....

.....  
**How will rescuers get to casualty?**

- |   |                    |  |                    |
|---|--------------------|--|--------------------|
| Rescue ladder..... <input type="checkbox"/>                             | (✓ as appropriate) | Remote Rescue Kit..... <input type="checkbox"/>                            | (✓ as appropriate) |
| Keys to building & roof..... <input type="checkbox"/>                   |                    | Elevator..... <input type="checkbox"/>                                     |                    |
| Pull casualty in through window / balcony..... <input type="checkbox"/> |                    | Pull casualty up through floor / slab / roof..... <input type="checkbox"/> |                    |
| Climb / abseil down building / structure..... <input type="checkbox"/>  |                    | Suspended access equipment..... <input type="checkbox"/>                   |                    |
| Aerial equipment from ground..... <input type="checkbox"/>              |                    | Crane man basket..... <input type="checkbox"/>                             |                    |

**What equipment is needed to ensure rescue within 5 minutes in order to minimize suspension trauma?**

- |   |                    |   |                    |
|---|--------------------|---|--------------------|
| Rescue ladder..... <input type="checkbox"/>         | (✓ as appropriate) | Aerial ladder truck..... <input type="checkbox"/>           | (✓ as appropriate) |
| Rescue Kit - Winch..... <input type="checkbox"/>    |                    | Suspended access equipment..... <input type="checkbox"/>    |                    |
| Rescue Kit - Haul..... <input type="checkbox"/>     |                    | Climbing / rope rescue system..... <input type="checkbox"/> |                    |
| Low Height Rescue Kit..... <input type="checkbox"/> |                    | Crane man basket..... <input type="checkbox"/>              |                    |
| Descent Rescue Kit..... <input type="checkbox"/>    |                    | Stretcher..... <input type="checkbox"/>                     |                    |
| MEWP..... <input type="checkbox"/>                  |                    | First Aid Kit..... <input type="checkbox"/>                 |                    |

**If Operative is injured**

- |   |  |
|---|--|
| Can casualty still be rescued within 5 minutes?                                 | (✓ as appropriate)                                       |
|   | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| Is a qualified first aider who understands suspension trauma present?           | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| Who and how will the emergency services and hospital be alerted? (Detail):..... |  |
| .....   |  |

**How will others be protected?**

- |  |                    |   |                    |
|--|--------------------|---|--------------------|
| Assign someone to direct traffic..... <input type="checkbox"/> | (✓ as appropriate) | Set up barriers..... <input type="checkbox"/> | (✓ as appropriate) |
|--|--------------------|---|--------------------|

**How will Accident scene be protected?**

- |  |                    |   |                    |
|--|--------------------|---|--------------------|
| Prevent further injury or damage..... <input type="checkbox"/> | (✓ as appropriate) | Set up barriers..... <input type="checkbox"/> | (✓ as appropriate) |
|--|--------------------|---|--------------------|

Preserve wreckage..... Report Incident / Event in normal manner.....

**Other Considerations:**

Lone working precautions (Detail):.....  
.....

Unusual features of building / structure (Detail):.....  
.....

Weather Conditions (Detail):.....  
.....

Proximity to emergency services / hospital (Detail):.....  
.....

Language barriers (agency / contract staff) (Detail):.....  
.....

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**WORK AT HEIGHT RESCUE PLAN PRODUCED BY:**

**Rescuer In Charge:**

Name (print):..... Position:.....

Signature:..... Date:.....

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**APPROVAL OF WORK AT HEIGHT RESCUE PLAN:**

**Work At Height Supervisor:**

Name (print):..... Position:.....

Signature:..... Date:.....

**Authorising Manager:**

Name (print):..... Position:.....

Signature:..... Date:.....

## **Rescue Plan Supplementary Notes**

### **Introduction**

When operatives are suspended in mid-air after a fall, their lives hang in the balance - even if they have survived the fall without a scratch. Every second counts. The intention of this guidance is to help you fully understand the implications of an operative falling, being arrested and then suspended by a harness, which initially saves them, but minutes later may kill them due to suspension trauma.

More than just helping to understand why this happens, this guidance will show what action should be taken to prevent a fallen operative dying from suspension trauma. It will also clearly outline the current law with which must be complied with to discharge our legal responsibility.

### **How Soon to Death or Serious Injury?**

Harnesses can become deadly whenever an operative is suspended for durations of over five minutes in an upright posture with the legs relaxed straight beneath the body. After five minutes they are highly likely to be unconscious - but operatives attending the scene may not realise the seriousness of the situation and, 15 minutes later a dead body could be hauled up. The cause of this problem is called 'suspension trauma'.

In March 2004, OSHA (US equivalent of the UK Health and Safety Executive) issued a health and safety bulletin outlining the dangers of prolonged, upright suspension. The bulletin warned of the risk of "orthostatic intolerance" and "suspension trauma" and refers to some of the potential health hazards - death being the chief one - experienced by operatives who are suspended upright by fall arrest equipment after a fall.

### **Suspension Trauma – Orthostatic Intolerance**

Unless the operative is rescued promptly using established safe procedures, suspension trauma caused by orthostatic intolerance could occur and result in serious or fatal injury as the brain, kidneys and other organs are deprived of oxygen. Most users of fall protection equipment are unaware of the hazard of suspension trauma.

### **Venous pooling - The need to faint and fall over**

Death from suspension trauma is caused by orthostatic intolerance and is the result of venous pooling. This can occur any time a person is required to stand still for prolonged periods and may be worsened by heat and dehydration. Major blood vessels pass through the muscles in the legs. The movement of these muscles assists circulation by squeezing the blood back up towards the heart. If the muscles stop moving, gravity pulls the blood down into the legs.

Eventually, enough blood accumulates (venous pooling) so that return blood flow to the right chamber of the heart is reduced as the heart can only pump the blood available, so its output begins to fall. The heart then speeds up to maintain sufficient blood flow to the brain but, if the blood supply to the heart is restricted enough, the higher pulse and faster breathing is ineffective and the body abruptly slows the heart. The result is fainting.

The moment a person loses consciousness they collapse and become horizontal so the time spent in a vertical position while unconscious is minimal and, as blood flow improves - the result of being horizontal - the person returns to consciousness and recovery is likely to be rapid.

When a person is suspended in a harness in which their legs are immobile, unlike fainting, the person does not or cannot naturally move into a horizontal position, then gravity pulls blood into the lower legs. In a harness, the operative can't fall into a horizontal posture, so the reduced heart rate causes the brain's blood

supply to fall below the critical level. During excessive venous pooling, cardiac output and arterial pressure fall to levels, which can critically reduce the quantity and/or the quality of oxygenated blood flowing to the brain.

### **Three things that occur which aggravate the problem:**

- 1 - the operative is suspended in an upright posture with legs dangling.
- 2 - the safety harness straps exert pressure on leg veins (femoral arteries), compressing them and reducing blood flow back to the heart.
- 3 - the harness keeps the operative in an upright position, regardless of loss of consciousness

Loss of consciousness assures that a suspended person will not be moving their limbs; so venous pooling will increase which will in turn reduce the circulating blood volume even further.

This includes not only a potentially fatal reduced blood flow to the brain, but also the other vital organs, such as the kidneys. The kidneys are highly sensitive to blood oxygen levels and renal failure as a result of excessive venous pooling is a real possibility.

Injuries suffered during the fall, or the shock resulting from the experience of the fall, can increase the onset and severity of venous pooling and orthostatic intolerance, as can physical and environmental factors such as fatigue, dehydration, hypothermia, cardiovascular disease, respiratory disease and blood loss. The time spent in an unmoving suspended position, with the legs below the heart, is what kills.

### **The Need for a Rescue Plan**

Operatives face considerable danger after a fall, through the lack of a thought-out, detailed and fully implemented rescue plan. It is now a legal requirement of the 'Work at Height Regulations 2005' to have a rescue plan. The best rescue strategy is to take every possible precaution to prevent operatives from falling in the first place.

But the reality is that falls happen, and a rescue plan is an essential component of the <company> overall fall protection method statement and risk assessment. The lack of any form of a pre-conceived post-fall rescue plan not only puts the fall victim at risk but also puts rescuers in harm's way. Whenever there are unplanned attempts to rescue, second or third injuries or fatalities may not be uncommon.

### **Critical Phases of Rescue**

The responsibility to have a post-fall rescue system in place lies with TWS as the employer, below are the four critical phases of rescuing a suspended operative:

1. Before the fall
2. At fall arrest
3. Suspension
4. Post-fall rescue

Each phase presents unique safety challenges. Suspension trauma can be influenced by all aspects of the fall, so they are all equally important. As with many aspects of safety, increasing the safety in one phase can compromise safety in the others. Whatever training operatives have received will determine how they respond to different phases.

#### **1. Before the fall**

The key issue of fall protection prior to a fall is compliance. If a harness is too uncomfortable, too inconvenient or interferes too much with task completion, operatives may not use the equipment or may modify it (illegally) to make it more tolerable.

A second major point is how far an operative falls before his fall is arrested. The greater the fall, the greater the stress on the body when the fall is arrested. The longer the lanyard the longer the fall distance, however, the shorter the lanyard, the more often it will have to be repositioned when operatives are mobile. Restraint lifelines are the preferred method of working because it allows maximum flexibility. Working in restraint prevents the operative from falling, yet should a fall occur the arrest distance is kept to a minimum (limited fall).

## **2. At fall arrest**

The whole concept of fall protection is that operatives who fall will be stopped by a tethering system. Unfortunately, the posture of the falling operative is unpredictable. Depending on the harness attachment point and the position of the operative's body at fall arrest, different harness attachments offer different advantages. An attachment near the shoulders means that any drag from the lanyard will serve to position the operative's body in an upright position so the forces are distributed from head to foot. The head is somewhat protected if the legs and body precede it in the fall, but this offers some disadvantages after the fall arrest is completed

## **3. Suspension**

It is natural to assume that once a fall has been arrested then the fall protection system has successfully completed its job. Unfortunately, this is not the case. An operative suspended in an upright position with the legs dangling in a harness of any type is subject to suspension trauma and orthostatic intolerance.

Fall victims can slow the onset of suspension trauma by pushing down vigorously with the legs, by positioning their body in a slight leg-high position or, by standing up. Harness design and fall injuries may prevent these actions.

## **4. Rescue**

Rescue must come rapidly to minimise the dangers of suspension trauma. The circumstances together with the lanyard attachment point will determine the possibility of self-rescue.

In situations where self-rescue is not possible, operatives must be supervised at all times. Regardless of whether an operative can self-rescue or must rely on others, time is of the essence because an operative may lose consciousness in only a few minutes.

For conscious casualties it is recommended (where possible) that the suspended person keep their legs moving to keep the blood pumping and reduce the risk of venous pooling.

## **5. First Aid Procedures**

Following completion of evidence based review of published medical literature: HSE has clarified guidance on the first aid management of a person falling into suspension in a harness who may develop 'suspension trauma'.

The key recommendations are:

- a) No change should be made to the standard first aid guidance for the post recovery of a semi-conscious or unconscious person in a horizontal position, even if the subject of prior harness suspension.
- b) No change should be made to the standard first aid guidance of ABC management, even if the subject of prior harness suspension.
- c) A casualty who is experiencing pre-syncopal symptoms or who is unconscious whilst suspended in a harness should be rescued as soon as is safely possible.
- d) If the rescuer is unable to immediately release a conscious casualty from a suspended position, elevation of the legs by the casualty or rescuer where safely possible may prolong tolerance of suspension.
- e) First responders to persons in harness suspension should be able to recognise the symptoms of pre-syncope.

**For further guidance contact your first aid training provider**

## **What to look out for - If a worker is suspended in a harness**

The possible signs and symptoms of orthostatic intolerance can start to be seen in 2/3 minutes and can include:

- Faintness
- Nausea
- Breathlessness
- Dizziness
- Sweating
- Unusually low heart rate
- Unusually low blood pressure
- Paleness
- Hot flushes
- Skin tone may appear grey in colour
- Loss of vision
- Increased heart rate

Owing to the possibility of damage to vital organs - the result of suspension trauma - it is recommended that all recovered casualties should be taken to their nearest Accident & Emergency Unit for examination and observation.

## **Rescue Plans**

Rescue plans don't have to be complex, but should include procedures for:

- Preventing prolonged suspension
- Performing rescue and treatment as quickly as possible
- Identifying orthostatic intolerance signs and symptoms

Management's reasonability for safety needs to give careful consideration to the methodology of rescuing a fallen operative. Such considerations might include:

### **Dialling 999**

It is often thought that the word 'rescue' means calling 999, but calling the Local Area Fire & Rescue Service does not constitute an effective rescue plan. 'The Fire Scotland Act 2005', and 'The Regulatory Reform (Fire Safety) Order 2005' places a new duty on employers to consider self rescue in the first instance, the LAFRS response times cannot be guaranteed due to changes in their working practices, also not all FRS have the capability to rescue from height.

### **Crane Man Basket**

This option has severe limitations, the main one being time. Target time from 'Man Down' to being recovered needs to be no more than five minutes. Other restrictions and shortcomings that make this a less than ideal solution are:

- The crane is out of action for some reason, e.g. it may be 'winded-off'.
- The driver may be away from the crane.
- Rescue by crane is limited to building façades and often is not able to provide access and rescue internal to the structure.
- The crane man basket may be in the wrong location.

## **Mobile Elevating Work Platform (MEWP)**

This option for rescue can have its limitations such as available access and height restriction as the casualty may be at a height greater than the reach of the MEWP.

## **Rope Access Rescue**

Rope rescue requires a technical competency, which demands a high level of training and re-training to acquire and retain this skill set. Given the limited time to complete a rescue, trained rope rescue personnel would need to be on stand-by and within close proximity to any incident. Donning the necessary kit to carry out a rope rescue can also be time consuming given that every minute the casualty is hanging is critical. Perhaps the greatest restriction is that it is a skill to which only a few would, or could, be trained.

## **Third Party Rescue Systems**

There are a number of considerations to take into account when considering third part rescue systems. In every consideration TIME is the critical factor and should be done as quickly as possible, but 100 percent safe for the rescue crew. The speed with which the system can be deployed and the rescue carried out is vitally important, as is the SIMPLICITY and EASE of use so that a typical operative can deploy and carry out a rescue after being trained.

### **Remember:**

Whichever methodology is chosen, the target time should be to rescue the casualty in under five minutes.

## **Planning for Fall Protection must include Rescue**

Having a rescue plan is just as important as having a fall protection plan. No site should have one without the other. Just putting together a fall protection program without rescue is only doing half the job.

The onus is on Management to ensure that the suspended operative is rescued quickly. That means ensuring that for anyone who is working at height, there's a rescue plan. Fall protection must include an emergency rescue plan.

How will the rescue of an operative who has fallen and is suspended in a fall-arrest system be conducted? By answering some basic questions can help in developing a rescue plan.

The following questions require answers:

- If an operative's fall is arrested can they be rescued in under five minutes?
- How will you know that someone has fallen?
- Will someone see it happen?
  - Co-workers
  - Tanker / HGV Drivers
  - Business Partners (Sub-contractors)
  - Contractors
  - Members of the public
- What communication systems will be used between the suspended operative and the rescue team?
- How will the operative call for help?

- Voice
  - Whistle
  - Mobile Phone
- Who will the Co-worker call?
    - Nearest co-workers
    - Supervisor
    - Site Management
    - 999 Fire /ambulance where available
  - Is information available? Who and how will it be communicated?
    - Emergency phone numbers
    - Site address
    - Directions and access for ambulance/fire vehicle or other emergency services
    - Which floor/how high up
    - Operative's condition after fall
  - How will the safety of the rescuers be assured, as well as that of the suspended operative?
    - Are operatives trained and competent in the use of rescue equipment?
    - Is there sufficient number of trained personnel onsite?
    - Are rescue-training records kept up-to-date including any re-assessments?
    - Is the rescue equipment selected appropriate for the nature of the work?
    - What obstructions are in the way reaching the suspended operative?
    - Have assessments been made of anchor points?
    - Has consideration been given to the method of attaching to the casualty?
  - How will rescue workers get to the casualty?
    - Rescue Ladder System
    - Rescue Haul System
    - Keys to building and roof
    - Elevator
    - Pull casualty in through window or balcony
    - Pull casualty up to floor/slab/roof
    - Climb/abseil down the building/structure
    - Aerial equipment from ground
    - Suspended access equipment
    - Crane Man Basket
  - How will rescue be assured within five minutes of the occurrence of a fall to minimize the risk of further injury or death due to suspension trauma? And, what rescue equipment is needed?
    - Rescue Ladder
    - Rescue Haul System (casualty lowering)
    - Rescue Winch (casualty raising or lowering)
    - Rescue Descent kit (casualty lowering)
    - Rescue Low height kit (casualty lowering)
    - Suspended access equipment
    - Ropes
    - Aerial ladder truck
    - MEWPS or scissor lift
    - Climbing/rope rescue equipment
    - Crane Man Basket
    - First aid kit
    - Stretcher available should casualty be seriously injured
  - What if the operative is injured?
    - Can the casualty still be rescued within five minutes?
    - Is there a qualified first-aider who understands suspension trauma and knows how to treat it?

- Who and how will the emergency services and hospital be alerted?
- How will others personnel be protected?
  - Assign someone to direct traffic
  - Set up barriers
- How will the accident scene be protected?
  - Prevent further injury or damage
  - Set up barriers
  - Preserve wreckage
  - Aid investigation later
- Are there other considerations?
  - Working alone
  - Language barrier
  - Unusual features of building/structure
  - Wind
  - Other hazards
  - No emergency services nearby
  - Distance from rescue teams

## Warning!

An operative who has suffered a fall and is suspended in his harness is a true medical emergency. Just because they are hanging in a harness doesn't mean there is plenty of time to perform a rescue. Rescue has to be planned, practiced and performed quickly and effectively or the victim may very well die before the rescue finally occurs.

### Practice can save lives

Perhaps just as important as having a rescue plan in place is practicing the plan before a real-life fall occurs. The new Working at Height Regulations state that a rescue procedure must be in place and practiced on a regular basis and competence maintained and recorded.

### Are we breaking the Law on site without knowing it?

<company> has legal obligations inline with localised dispensation and European directives brought into effect by the introduction of the new standards: The Work at Height Regulations 2005 and British Standard BS 8437:2005 Before any work at height can commence on site the following provisions must be in place as a minimum legal requirement:

- There must be a rescue plan and procedure.
- The operatives are trained and competent in use of rescue equipment.
- Sufficient number of trained and competent personnel on site.
- The rescue procedure in place is practised on a regular basis and competence is maintained on record.
- The selection of rescue equipment needs to be appropriate for the nature of work.