

**FALL PROTECTION AND
RESCUE PLANNING**

FEARLESS PROOF

THE QUICK GUIDE



H • A • R • T
HEIGHT AND RESCUE TRAINING

introduction

Health and safety whilst working at height is a huge priority for local and international enforcing authorities. Every year in the UK alone, over 4,000 major injuries are caused by falls from height at work.

When working at height it is absolutely **ESSENTIAL** you are aware of the *Working at Height Regulations 2005 (WAHR)*.

The Provision and Use of Work Equipment Regulations 1998 (PUWER) also references WAHR ensuring that it is at the very top of the regulation hierarchy.

Health & Safety at Work Act 1974 **EMPLOYERS DUTY TO EMPLOYEES**

Regulation 2 (2C)

Employers **MUST** provide:

- **INFORMATION**
- **INSTRUCTION**
- **TRAINING**
- **SUPERVISION** (where required)

Regulation 9

It is an employer's duty to ensure that all persons who use work equipment have received adequate training for the purpose of Health & Safety.

General Requirements for Training

- 1** Health & Safety at Work Act (Reg 2 [2c] & Reg 9)
- 2** PUWER
- 3** WAHR (Reg 5 – Competence)
- 4** BS8454 (Training Code of Practice)

regulations and standards are always divided

The WAHR is exactly that, a 'regulation' it is enforceable in the UK by the local enforcing authority, in our case the Health & Safety Executive (HSE). But we **MUST** be clear that this is **NOT** a manufacturer's standard.

The *Manufacturing Standards for Fall Protection Equipment* forms part of the *Personal Protective Equipment Directive 89/686/EEC (PPE)* defining the legal obligations that ensure PPE on the European market has the appropriate level of protection against hazards, the 'CE' marking affixed to PPE signifies this. As this is new legal legislation manufacturers, or their authorised representative in the European Union, can comply with the technical requirements either directly, or by means of 'European Harmonised Standards' (EHS), the latter providing a presumption of conformity to the essential health and safety requirements.

It is important that equipment being purchased meets or exceeds the basic requirements of the directive and where applicable a user should always look for the CE mark. All manufacturers, including fall protection equipment, should be able to provide an **EC Declaration of Conformity**, **EC Type Examination Certificate** and independent test results if required.

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Interestingly in the USA compliance is solely down to the manufacturer's verification process and virtually unaudited.

So in theory the EU remains one of the most stringently audited and thoroughly tested environments to manufacture compliant equipment in the World.

Users and purchasers should beware that there are an increasing number of 'rogue traders' copying products with sub-standard materials or falsely applying the CE mark to PPE. Both of which can, and often does, end in tragedy.

risk management and risk assessment hierarchy

AVOID

Assuming exhaustive measures have been taken to passively minimize the risks whilst working at height, i.e. guardrails, mobile platforms, etc. You are left with two final options: **Restraint Systems** or **Fall Protection Equipment**.



PREVENT

Restraint Systems:

These should be constructed in accordance with **EN363** and limit the use of the products or systems to ensure the user can't reach a fall risk where a slip, trip or fall could occur and put the user in a suspended or arrested state.

MINIMISE

Fall Protection or Fall Arrest Equipment:

This is the absolute last resort and should only be used when all other measures have been explored and deemed unsuitable.



the A B C and D of fall protection

Equipment should be manufactured and independently tested to the correct EN standard or in some cases the local legislation, which can often take precedence when adopted or harmonised standards are not applicable or you are outside of the EU.

A - Anchorage

B - Full Body Harness

C - Connecting Device

D - Descent or Rescue Equipment

A anchorage

EN795

**This section should probably stand for
A = an “Absolute mess” of a standard but
nonetheless the facts are:**

A safe anchorage must be selected which should be sufficiently strong enough for the equipment in use. There are, however, some important changes within the directive to note. See the table opposite for clarification on what class of anchorage has a presumption of conformity, i.e. CE marked and type approved to a ‘European Harmonised Standard’.

		First Publication OJ		Date of cessation of presumption of conformity of superseded standard
CEN	EN 795:1996 Protection against falls from a height - Anchor devices - Requirements and testing	12/02/2000		
	EN 795:1996/ A1:2000	24/01/2001	Note 3	Date expired (30/04/01)
Warning: This publication does not concern the equipment described in classes A (structural anchors), C (anchor devices employing horizontal flexible lines) and D (anchor devices employing horizontal rigid anchor rails) referred to in paragraphs 3.13.1, 3.13.3, 3.13.4, 4.3.1, 4.3.3, 4.3.4, 5.2.1, 5.2.2, 5.2.4, 5.2.5, 5.3.2 (in respect of class A1), 5.3.3, 5.3.4, 5.3.5, 6 (in respect of classes A, C and D), Annex A (paragraphs A.2, A.3, A.5 and A.6), Annex B, and Annex ZA (in respect of classes A, C and D), in respect of which there shall be no presumption of conformity with the provisions of Directive 89/686/EEC				

In summary, classes B and E should still be CE marked and comply with the basic health and safety requirements of the directive. Class C anchorages can also have the CE mark on the basis that they satisfied the requirements of EN795 class C which had previously been assessed and deemed to meet the basic health and safety requirements (Annex II).

Confused? So is most of the industry, from the designers and manufacturers right through to the EN Council themselves! This has been a problem for well over a decade and we're still not really any closer to seeing a standard that covers practical applications for this product group.

In all fairness it is a challenging subject matter and not many are very well versed in the real issues surrounding its complexity. For instance some anchorages are designed to deform under impact and yet the testing methods don't allow for this style of anchor. The list of exceptions is endless and we all live in the hope that this will be addressed soon. In the meantime we should all know that the benefit of hindsight would always be used if and when accidents occur and the standards will always serve as the only real technical reference.

So in the absence of the standards actually making any sense and the fact that the anchor is still deemed as "part of the building and structure" and thus not PPE, we should go back to the old and long forgotten world of "**common sense**" and ensure anchorages are always "**sufficiently strong enough**".



So some quick calculations are called for:

If you can apply a maximum input force of **6kN** to the anchorage it would be safe and sensible to assume that the structural anchor point should be stronger to give you a reasonable safety factor. As a rule you should be looking for a safety factor of **2**. PPE eyebolts should be tested to a minimum of **10kN** in all directions of a fall, so with this as a guide we can at the very least create some reference points.

The advice in EN795 class A regarding anchor fixings in steelwork or timber states that, "the design or installation should be verified by calculation by a qualified engineer to be capable of sustaining the type test force".

If you are in any doubt as to the structural integrity of the anchor point you should seek expert advice and find a safer alternative attachment.

B full body harness

EN361, EN358 & EN813



Selecting the right harness should be less about your budget and more about the safety, suitability and correct fitment.

Don't be fooled by the all-singing all-dancing, bells and whistles, very often they add little or no technical advantage.

There are, of course, times when side D-rings, belts, abseil points and additional leg supports or padding are advantageous but for the basic working at height tasks a simple two-point product is normally sufficient.

Unless a harness is being used where there will never be a need to remotely rescue the user we would always recommend a two-point harness as a minimum. It adds very little cost but ensures, in the event of an emergency rescue where the rear D-ring is not accessible, the rescuer can safely connect to the casualty.



connecting devices

EN362, EN354, EN355, EN358, EN360 & (EN353-1 EN353-2.)*

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The connecting device can range from a simple restraint lanyard, if working in a MEWP, to a fall arrest lanyard or fall arrest block.

When choosing the correct connecting device it is important you understand the limitations of each type and what your own functional requirements are within your work task.

Basic Lanyards

The basic lanyard offers the user a MAXIMUM of 2m of movement from the anchorage point and a choice of karabiners or connectors allowing you to connect directly to larger objects such as scaffold tubes.

Twin or Y-type Lanyards

This type of device allows the user to transfer from one attachment point to another without the need to disconnect, thus maintaining a 100% tie-off, making it ideal for climbing structures or when you need to move from one anchorage to another.

Fall Arrest Blocks or Self Retracting Lifelines

By choosing this style of retractable device you can effectively move freely within a cone angle of 45°, dependent on the manufacturers specific parameters. Your vertical working length is purely limited by the capacity of the device but it is normally to a MAXIMUM of 45m.

Variations of this type of device include palm-sized twins, which allow similar benefits to a twin or Y-type lanyard with the added advantage that the device will always be on its minimum not maximum extension. Therefore the total arrest distance is usually reduced along with potential impact loads on the body and structure.

Rope Grabs or Flexible/Rigid Anchor Lines*

A simple piece of rope, normally three-strand or kernmantle in construction, with an adjustable rope grab. These can be manual or automatic.

Rope grabs allow for both horizontal and vertical movement and are manually adjusted if used horizontally but they still suffer from the risk of cutting over sharp edges and pendulum or swing falls when operating away from the anchorage.



**Denotes the de-harmonised status of this standard. All notified bodies should be reviewing all products previously issued with EC Type Examination Certificates as this standard is still under review. This product type should now be subject to additional testing prior to certification and approvals.*



descent and rescue

EN1496 Class A, B EN341 Type A & BS 7985:2002

Most people are only concerned with preventing or arresting a fall, and pay little attention to how to get the victim down once the fall has been arrested.

Traditionally it has been assumed that the maximum period a victim could hang suspended in a harness is 20 minutes. BUT this time frame no longer applies, in fact it is nearly impossible to quantify how long a person can be left in a suspended state, as the variables are vast: from the weight and build of the individual to the type of harness they are wearing, the anchor position and whether the casualty is conscious or not.

The **RESCUE** must now be performed **ASAP** because of the potentially fatal medical phenomenon previously known as “Suspension Trauma”. The correct term for this condition is Orthostatic Intolerance (ORTHO meaning “Body” and STATIC meaning “Still”). The change of name is for two reasons:

- 1 Technically this condition is NOT classed as a “trauma”. Traumas happen immediately (such as a broken bone) – this condition takes time to appear.
- 2 Suspension is only part of the problem – the real problem is the lack of muscle movement – it is this lack of movement in the legs that forces blood up against the force of gravity, NOT the heart.

Without this “muscle pump”, blood pools in the lower extremities, and therefore becomes de-oxygenated because it is not passing through the pulmonary system.

Lack of oxygen in the blood can eventually cause brain and major organ damage, leading to death.

Workers must be made aware of these dangers, AND what can be done when in a suspension situation to help themselves while awaiting rescue.

Elevating the legs (where possible) so that the casualty is in a more seated position or supine position will help prevent venous pooling, and enable them to survive longer.

Another option available is to use Harness Suspension Loops, this system enables the casualty to fit a loop under their feet and “stand” in it, thereby taking the pressure off the groin and allowing the leg muscles to get moving.

Both methods are obviously only good if the victim is conscious – when unconscious, the victim will be in mortal danger very quickly and it is imperative that the rescue is affected promptly.

If there is ANY chance of a fall occurring (as identified in the Risk Assessment), there is a **LEGAL OBLIGATION** to have a **RESCUE PLAN**.

Work at Height Regulations 4 – (2) state that, “Organisation & Planning – should include Planning for Emergencies & Rescue”.

The British Standard BS 8437: 2005 (Code of Practice for selection, use and maintenance of personal fall protection systems and equipment for use in the workplace), also references Rescue:

“It is essential that there is a specific rescue plan and resources in place for each work site and that these are regularly assessed, and updated where necessary. Resources should include not only equipment but also trained personnel (see 11.5 and clause 15). Rescue methods which do not require a rescuer to be exposed to risk are preferable.”

Rescue Plans DO NOT have to be complicated!

Based on your risk assessment, a rescue could be as easy as:

- Pulling a fallen scaffolder into the next lowest level
- Using a MEWP to approach the casualty from below

To

- Rope access equipment (IRATA technicians and in accordance with BS 7985:2002)
- Descent control devices
- Manufactured rescue equipment such as winch's, fall arrest blocks and pulley systems, etc.

Each work at height application may require a different type of rescue, and each scenario must be looked at individually.

Having that said, many rescue systems will work in a multitude of situations, but bear in mind there is NO one piece of rescue equipment that is right for ALL rescues!

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summary

Employers and their employees should never take working at height lightly; the inappropriate selection of equipment, irregular and poor maintenance checks, lack of rescue planning and inadequate training will only increase the risks.

In the modern-day workplace, whether in your office or on a construction site, we all have a responsibility and duty of care for our own safety and that of our colleagues. Simply turning the other cheek when you see something that is less than best practice or makes you cringe is frankly unacceptable.

So instead of finding the reasons why fall protection can't be used why not think of the ways it can, and be a frontline safety champion.

Ultimately you are worth far more to your families and your employer alive. Remember, gravity is very unforgiving if you forget to don your harness correctly, connect your lanyard to a safe anchorage or have no provision for a rescue.

For more information and technical advice on all working at height products, rescue equipment and consultancy or training please contact:

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or **HART Height and Rescue Training**

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