

The Work At Height Safety Association

Technical Guidance Note 10

“Guidance on the use and inspection of Mobile man anchors to BS EN 975 Class E”

A series of informative notes for all industries
involved with work at height or rescue.

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WAHSA technical guidance note no. 4

Guidance on the use and inspection of mobile man anchors to BS EN 795 Class E

Introduction

This leaflet is designed to give guidance on deadweight anchors certified to BS EN 795 Class E: 2012 and in accordance with the recommendations of BS 7883: 2005.

It offers general advice about the types of issues surrounding the selection and use of the deadweight anchors and offers guidance on preferable methods of use.

1.0 What are deadweight anchors?

Deadweight anchors provide a secure anchorage point for use on horizontal surfaces (usually with an incline angle less than 5°) where the installation of a permanent anchor point may be unsuitable. A number of different designs are available which incorporate either concrete/steel weights or water to provide an anchor point for fall arrest or work restraint. The anchor point relies on mass and friction between itself and the surface to provide suitable anchorage.

The deadweight anchors are relatively quick and easy to install and can be removed after the work is completed leaving no trace.

Deadweight anchors are certified under BS EN 795 and are designed so that they are of sufficient strength to sustain the maximum dynamic force generated by a fall from height of one person. However, the static strength tests are designed with a minimum factor of safety of two to allow for misuse in real world applications.

All anchor points must be tested even if they are to be used for restraint only.

2.0 When should dead weight anchors be used?

A deadweight anchor should be used when it is not possible to provide a fixed anchor point such as a bolted or chemical anchor. They are of particular benefit on flat roofs such as bitumen, PVC or EPDM where perforation of the surface is undesirable and often costly.

Due to fact that the deadweight anchors are temporary installations makes them ideal for occasional access or inspection work. They can also be moved to different positions and locations relatively easily.

Deadweight anchors can be also be used in environments absent of installed safety components such as guardrails or permanent lifelines systems.

3.0 Safety Issues

Several safety issues have been raised with respect to these products. These include, but are not limited to:

- Deadweight anchors should be used in accordance with the manufacturer's recommendations and should be certified in accordance with BS EN 795 Class E
- Every effort should be made to ensure that all users are familiar with the instructions for use and should be familiar with the instructions for any other PPE that is used in conjunction with the deadweight anchor
- Sufficient care should be taken to ensure that unauthorized use is controlled. This may include additional signage on site. All equipment that is intended for use as PPE should be clearly marked using a diagram as well as sufficient text
- It is essential that a method statement and risk assessment is conducted before each and every use of a deadweight anchor. This is likely to include the height of the building or structure and considerations for which types of PPE will be used in conjunction with the deadweight anchor
- Deadweight anchors containing water should be removed from service if any leakage is found

4.0 Using deadweight anchors

When using deadweight anchors, it is recommended that users work in restraint rather than fall arrest where possible. This reduces the risk of a user falling over an edge. For example, a rope and rope grab would be preferable to an inertia fall arrest block. The rope grab should be taught to prevent a user entering a fall arrest situation as far as is reasonably practicable.

Manufacturers often set a minimum safe distance that the anchor must be placed away from an exposed edge (usually 2.5m) and specify a minimum ground clearance (such as 4m). These distances may be affected by the choice of PPE used in conjunction with the deadweight anchor.

Note: see WAHSA TGN 01 "**10 points for the use of fall protection equipment**" for further guidance on essential considerations when using this equipment.

5.0 Inspections and checks

Deadweight anchors should be inspected by the user before each and every use (pre use inspection) and on a regular basis by a competent person (detailed inspection). An interim inspection may also be required depending on working conditions.

For general information about inspecting fall protection equipment see WAHSA TGN03. This indicates several types of inspection, such as pre-use checks (carried out by the user), detailed inspection (sometimes referred to as 'periodic examination') and, where required, interim inspection (see also INDG367 – HSE).

5.1 Pre-use checks

The pre use checks should include a visual inspection of all the components of the deadweight anchor. Proof load tests should **not** be carried out. There are a number of factors that may affect the structural integrity of the deadweight anchor. These may include but are not limited to, general wear and tear, impacts, exposure to the elements, dropping or chemical contamination.

As with all PPE, it essential that the equipment is visually inspected before each and every use.

Further to this, a thorough inspection by the manufacturer or person deemed competent by the manufacturer is required at least every 12 months or in accordance with the manufacturer's instructions.

If any defects or damage to the product is observed the unit should be discontinued from use immediately and stored in such a way so that the equipment cannot be used. The manufacturer should then be contacted to see if the item can be repaired or if it should be permanently removed from service.

If there is any doubt as to the integrity of a deadweight anchor or if any damage to the unit is observed, do not use the equipment.

Do not use the equipment if is dirty or has come into contact with solvents, lubricants or other contaminants. Deadweight anchors use friction to arrest a load. Do not use a deadweight anchor if you feel this friction has been compromised in anyway.

Inspection records should be kept and made available to all persons using deadweight anchors.

5.2 Detailed Inspection

These are the same as the pre-use checks carried out by a competent person at a set period (WAHSA recommends every 3 months). These checks must be documented and the documents kept.

5.3 Interim Inspection

These are additional detailed inspections. The need for and frequency of interim inspections will depend on the use and the environment. Examples of situations where they may be appropriate include: arduous working environments involving paints, chemicals, grit blasting operations and acidic or alkaline environments. The results of interim inspections should be recorded and kept.

6.0 Longevity and obsolescence of energy absorbing lanyards

Advice on obsolescence will be contained within the user instructions supplied by the manufacture. Deadweight anchors must not be used for periods which exceed the date given by the manufacturer. However, this lifespan may be significantly reduced dependent on working conditions. This reduced lifespan should be specified by a competent person. For detailed guidance on inspection procedures, see WAHSA TGN03.

7.0 Cleaning and maintenance

If the deadweight anchor becomes heavily soiled it should be cleaned using a mild soap solution. It is important that no abrasive cleaners are used which may damage the structural integrity of the deadweight anchor. Every care should be taken to ensure identification labels remain intact and readable.

8.0 Storage

Store the deadweight anchor in a dry, shaded, ventilated area away from direct heat.

9.0 Rescue

A rescue plan should be formulated for the rescue of a person with the required equipment and trained personnel to carry it out. (See WAHSA TGN05).

10.0 Training

WAHSA strongly recommend that all users of fall protection equipment are trained by a competent organisation. Training should include information on the selection of the correct products for intended work situation and pre-use checks for specific equipment.

11.0 Testing Procedure

Deadweight anchors are tested in accordance with the procedure for testing set out in BS EN 795 2012 and EN 364:1992.

Prior to test, the equipment is installed as per the manufacturer's instructions.

The deadweight anchors are then subjected to dynamic, post suspension, static and deformation tests to ensure the product is of sufficient quality to satisfy the testing criteria.

When subject to this testing, deadweight anchors may deform or elongate within given parameters and still be deemed fit for purpose. This is limited to a 10mm deformation in the direction of the load.

Deadweight anchors are also tested in wet conditions and are tested with salt spray to measure corrosion resistance. These tests are designed to simulate real world conditions.

11.1 Dynamic test

The dynamic test consists of a 100kg steel mass drop test. The mass is arranged in such a way as to simulate a dynamic fall. The mass is suspended by an 8mm steel wire cable of 7 x 19 construction with swaged terminations. The wire is then diverted over a number of pulleys and is connected to the deadweight anchor. The height that the steel mass is raised is calculated to create an arrest force of 9kN.

To pass the test, the deadweight anchor must arrest the load and hold it clear of the ground. A digital load cell is used to determine peak load and the deflection is also measured. Deflection (or in this case movement of the deadweight anchor) is permitted up to a maximum of 1000mm. If the device is fitted with a fall indicator, this is tested to ensure it complies with the manufacturer's instructions.

11.2 Post suspension test

Assuming that the deadweight anchor holds the dynamic load, a post-arrest suspension test is carried out. This involves increasing the mass further to 300kg. The deadweight anchor must then hold this load for a further 3 minutes.

The test is then repeated in all foreseeable directions of pull that can be ascertained. The maximum permitted angle of the testing surface is 5° from the horizontal and on products where the manufacturer permits the use of retractable type fall arresters the test is repeated with each permitted device.

11.3 Static test

During the static test, the dead weight anchor is subjected to a 12kN static load for a period of 3 minutes. If the anchor is made of non-metallic materials or if information on the strength of the materials is not available from the manufacturer, this load is increased to 18kN for 3 minutes.

11.4 Deformation test

The deadweight anchor is subject to a load equal to 0.7kN for 1 minute. After this time, the load is removed and any deformation is recorded.

12.0 Useful References

BS 7883: 2205 *Code of practice for selection, installation, use and maintenance of anchor devices conforming to BS EN 795*

BS EN 795: 2012 *Protection from falls from a height – Anchor devices. Requirements and testing*

Personal protective equipment (EC Directive) regulations 1992 (SI 1992/3129)

BS 8437: 2005 *Code of practice for selection, use and maintenance of personal fall protection systems and equipment for use in the work place*

BS EN 364: 1993 *Personal protective equipment against falls from height*