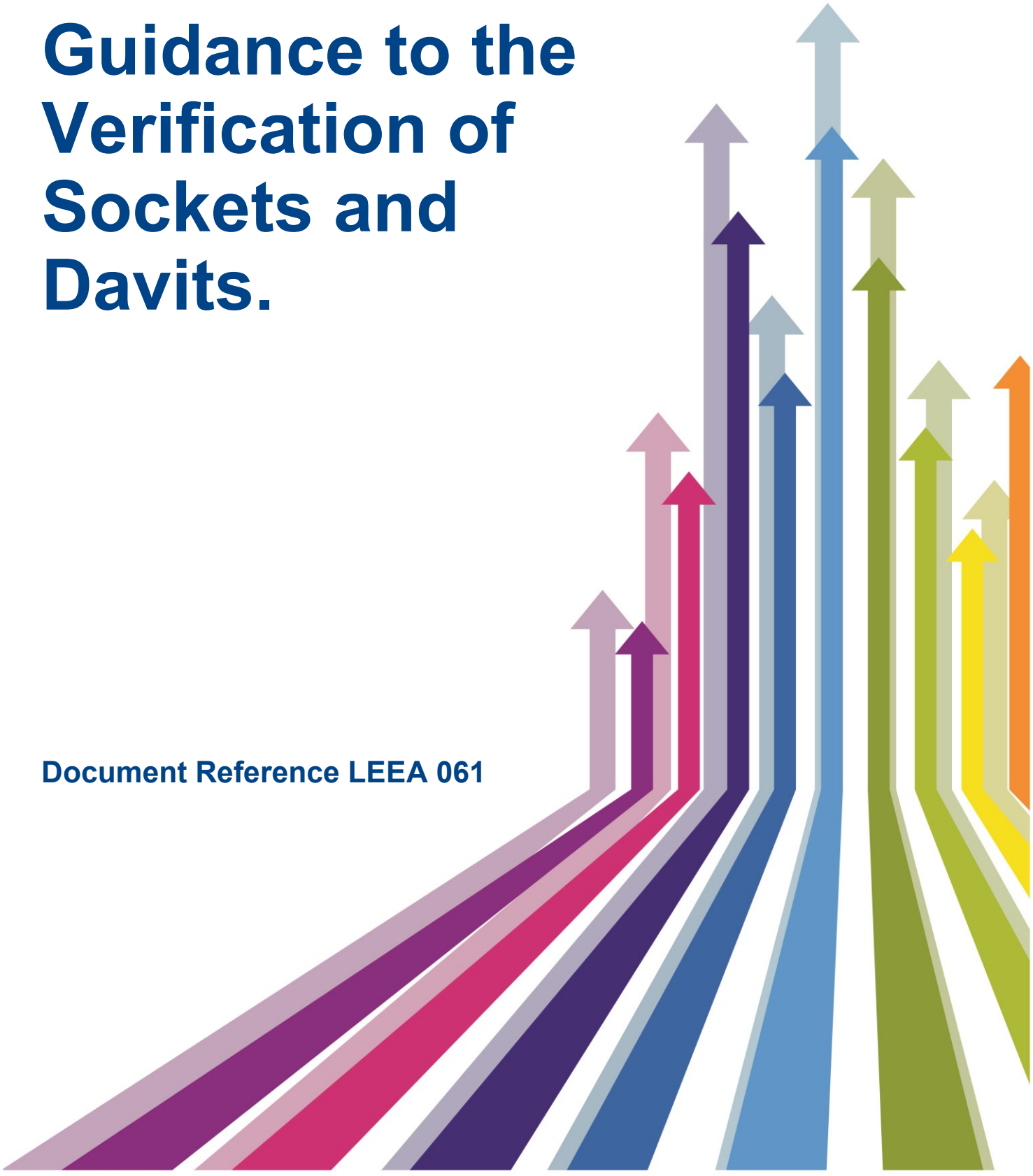
Lifting Standards Worldwide™

Guidance to the Verification of Sockets and Davits.



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Guide to the Verification of Sockets and Davits
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1.0 Introduction

Owing to its simple design and versatility davits and sockets are increasingly being used as portable structures primarily for light duty maintenance, lifting people, and fall arrest applications. To maintain its portability these davits are usually of the manual operation type, although some will operate with power operated lifting appliances. The advantage of the socket is that one davit could be used with a number of sockets situated at key locations around a worksite. Due to this increased use and the fact that there are no specific standards for them, LEEA has been requested to produce this guide to ensure that davits for these applications are installed, maintained and used safely.

Note that a davit is a name more commonly associated with the system used to raise and lower rescue or work boats on or off a ship or offshore installation. They are also commonly used as the suspension rig for Suspended Access Equipment. Each of these applications are covered by EU regulations and standards, such as the Marine Equipment Directive and BS EN 1808:1999+A1:2010; Safety requirements on suspended access equipment; Design calculations, stability criteria, construction; Tests. For this reason they have been excluded from the scope of this guidance.

2.0 Scope.

This guidance has been developed as a means to support the installer, tester and examiner in terms of the correct method of verifying portable davits.

This guidance does not cover the design of the socket and davit. It does not apply to jib cranes covered by BS 7333.

This guidance does not cover davits installed in masonry, where special guidance must be sought from the manufacturer or BS 8539.

3.0 Terms and Definitions

For the purposes of this document, the following terms and definitions apply.

3.1 Davit

A portable structure typically constructed from a beam or strut, which is fastened to a vertical post and used with a socket. It can be fitted with a portable lifting appliance which is positioned to provide easy access to the operator. Typically a winch wire would then extend along the beam or strut, which has a sheave mounted at its end to allow the wire rope to hang vertically. Another configuration would exclude the winch and sheave and instead the strut would terminate in a hook or shackle to which a portable lifting appliance could be fitted, refer to figure 1.

3.2 Fall arrest Davit.

A davit structure as defined in 3.1 designed to be used in conjunction with relevant PPE

3.3 Goods lifting davit

A davit structure as defined in 3.1 generally used for low duty cycles, maintenance applications.

3.4 Socket.

A permanent or temporary interface for the davit with a structure, see figure 2. It can facilitate slewing motion. These also can be portable, designed with a base and may include ballast to ensure stability.

3.5 Working Load Limit (WLL)

The working load limit (WLL) is the maximum load (mass) that an item of lifting equipment is designed to raise, lower or suspend. In some standards and documents the WLL is referred to as ‘maximum safe working load’ or ‘rated capacity’.

4.0 Standards and legislation

The legislation for this equipment will vary slightly depending on the design intent. Also in the absence of a specific standard, the choice of standard would also be dependant on the intended use. The following sections offer guidance as to the specific choices that should be made. In terms of supply legislation, section 6 of the Health and Safety At Work etc Act 1974 always applies.

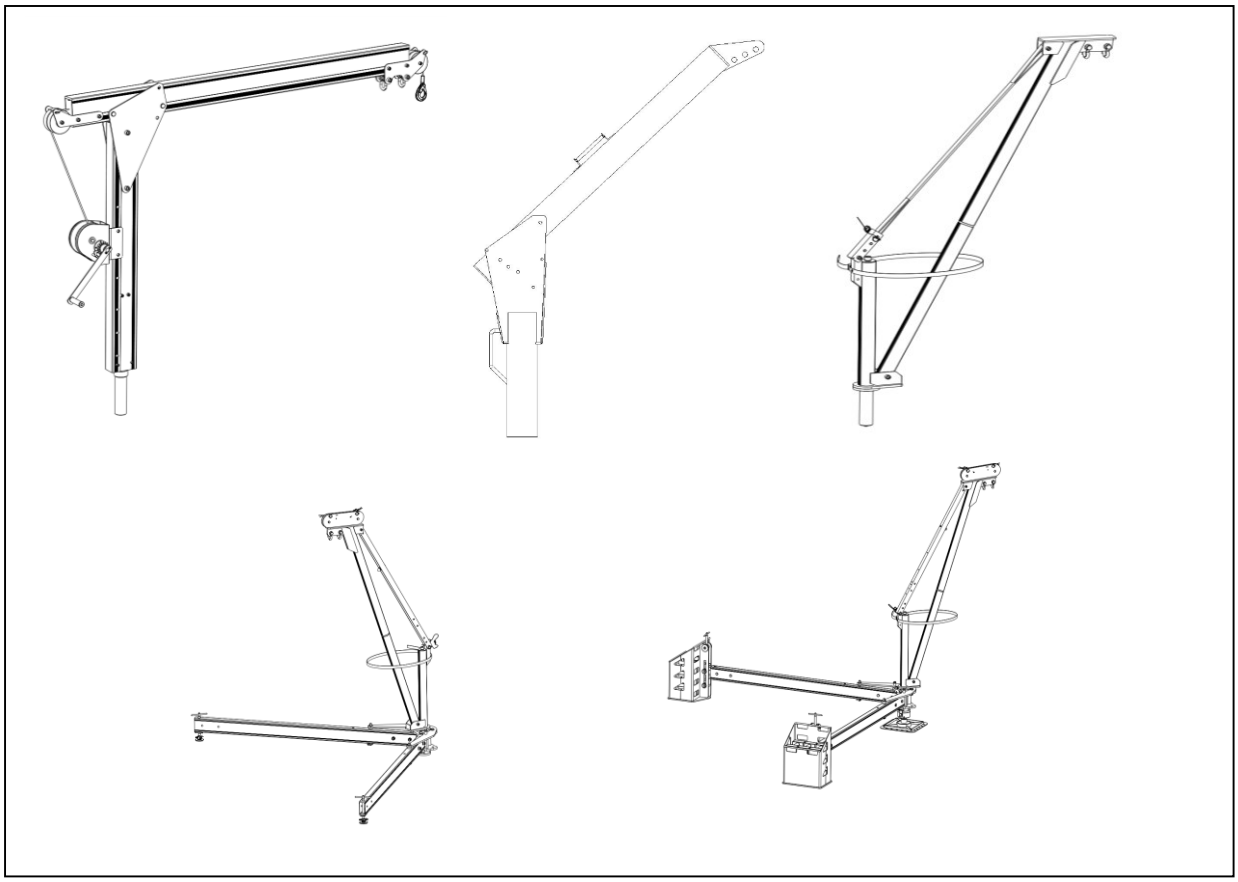

Figure 1: typical davit structures. Top left, davit with winch; top centre and right davits with appliance suspension points; bottom left, free standing davit; bottom right, counterweight free standing davit.

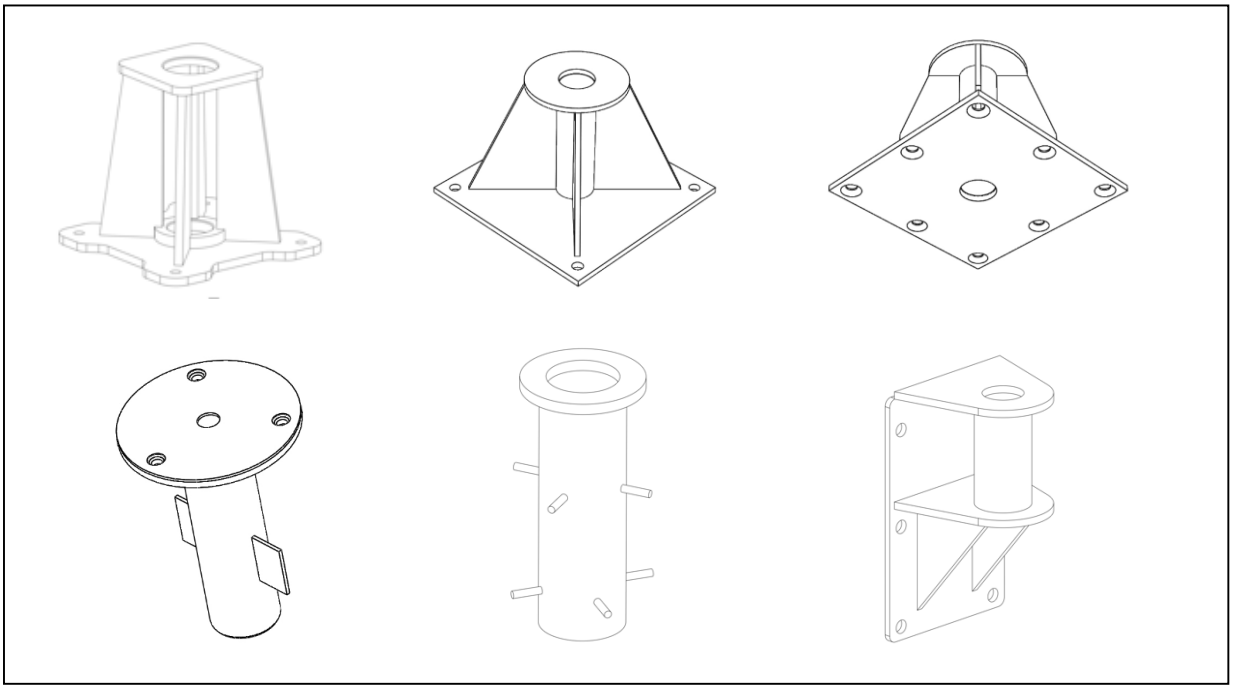

Figure 2: typical sockets, top surface mounted type sockets, bottom left and bottom middle cast in socket, bottom right side mounted.

4.1 Supply legislation for lifting davits and davits for people carrying.
If the davit is fitted with a winch or other lifting appliance the Supply of Machinery (Safety) Regulations 2008 would also be applicable and would require the assembly to be CE marked. If it is just supplied as a davit without a lifting appliance then the regulations do not apply as supporting structures are not

within scope. However, if the manufacturer does not supply the lifting appliance, but specifies the limitations on the lifting appliance that can be used with a davit, i.e. type, speed, weight and installation instructions for example, then the davit manufacturer can take responsibility for the final assembly and can CE mark it and issue an EC Declaration of Conformity.

4.2 Supply legislation for fall arrest davits.
For davits that can be used for fall arrest the PPE directive applies and the structure must be CE marked. These structures are also within the scope of EN 795 class B

4.3 In Service use.
Davits are considered as work equipment and therefore the Provision and Use of Work Equipment Regulations 1998 (PUWER) will apply regardless of the intended use. In addition to this, the Lifting Operations and Lifting Equipment Regulations 1998 (LOLER) would apply if used for lifting. Finally if the davit is used for people carrying and/or fall arrest, then the Work at Height Regulations 2005 would apply.

5.0 Supply Documentation.
Due to the differences in standards and legislation concerning lifting davits and those used for fall arrest the supply documentation requirements vary. The following sections describe the requirements for each.

5.1 Lifting Davit Supply Documentation.
Davits supplied without a lifting appliance are considered as supporting structures and are therefore not within the scope of the Supply of Machinery (Safety) Regulations 2008. They should however be sent with a manufacturer's certificate that contains at least the following information:

- Name and address of the manufacturer
- Description of the equipment, type, and working load limits,
- Serial number, if any
- The test loads to be applied,
- Name, position and signature of the responsible person.

For davits that are fitted with a portable lifting appliance, or supplied as described in 4.1, then they must be issued with a EC Declaration of Conformity which must contain the following minimum information:

- The name and address of the manufacturer.
- The name and address of the manufacturers authorised representative, where appropriate.
- The name and address of the person responsible for compiling the technical file.
- Description of the equipment, type, serial number and WLL.
- The standards and specifications used.
- The place and date of the declaration.
- A declaration claiming conformance with the essential health and safety requirements as defined in the directive 2006/42/EC
- Name, position and signature of the person making the declaration.

5.2 Fall Arrest Davit Supply Documentation.
With regards to fall arrest equipment a EC Declaration is required as follows:

- The name and address of the manufacturer
- The name and address of the manufacturers authorised representative, where appropriate.
- Description of the PPE, make, type, serial number, etc.
- Declaration claiming conformity with council directive 89/686/EEC and the harmonised standard EN 795.
- Where applicable certificate numbers of the notified body
- Where applicable, the PPE directive quality control system in place and the monitoring notified body and their identifying number.

5.3 Instructions for use.
Instructions for use and maintenance must be supplied with the davit, which will vary depending on the intended use. The intended use must be specified in the instructions as well as any reasonably foreseeable misuse. The following sections offer guidance to the content for each type.

5.3.1 Contents of the instructions for Lifting davits.
Each instruction manual must contain at least the following generic information, however additional information may be required for bespoke davits or additional fitted devices.

1. The business name and full address of the manufacturer
2. Name or code number given to the model of davit to which the instructions are for.
3. If supplied with hoist or winch incorporated, then a copy of the particulars within the EC Declaration of Conformity.
4. A general description of the davit
5. Drawings, diagrams, descriptions and explanations necessary for use, maintenance and repair of the davit and for checking correct functioning.
6. The technical characteristics of the davit, and in particular:
   - the working load limit
   - the reactions at the supports or anchors
   - where appropriate, the definition and the means of installation of the ballast.
7. The test loads that must be applied following installation.
8. A description of the controls.
9. A description of the intended use.
10. Warnings concerning ways in which the davit must not be used that experience has shown that may occur.
11. Assembly, installation and connection instructions, including drawings, diagrams and the means of attachment to the davits foundation. Note: The foundation is the responsibility of the end user.
12. Instructions for the putting into service and use of the davit and, if necessary, instructions for training of operators.
13. Information about residual risks that remain despite the inherent safe design measures, safeguarding and complementary protective measures adopted.
14. Instructions on the protective measures to be taken by the user, including, where appropriate, the PPE to be provided.
15. The essential characteristics of devices that may be fitted to the davit
16. Instructions with a view to ensuring that transport, handling and storage operations can be made safely, given the mass of the davit and of its various parts where these are regularly transported separately.
17. The operating method to be followed in the event of accident or breakdown.
18. A description of the adjustment and maintenance operations that should be carried out by the user and the preventive maintenance measures that should be observed.
19. Instructions designed to enable adjustment and maintenance to be carried out safely, including the protective measures that should be taken during these operations.
20. The specifications of the spare parts to be used, when these affect the health and safety of operators.

5.3.2 Contents of the instructions for Fall Arrest davits.
The instructions for fall arrest davits are generally as section 5.3.1 above. However, this information is complementary to the information required by BS EN 365 Personal protective equipment against falls from a height, general requirements for instructions for use, maintenance, periodic examination, repair, marking and packaging and BS EN 795 Personal fall protection equipment, Anchor devices.

6.0 Marking.
Davits should be clearly and permanently marked by the manufacturer as follows:

6.1 Marking for Lifting Davits.
The lifting davit must be marked with the following information:

- The name and address of the manufacturer.
- The CE mark, if supplied with integrated lifting appliance or as described in 4.1.
- Number of the notified body responsible for verifying the quality process, where applicable.
- The serial number, if any.
- Designation of series or type.
- Year of construction.

- Maximum working load in tonnes or kilograms, or for people carrying the maximum number of people and weight restrictions.

6.2 Marking for fall arrest davits
The fall arrest davit must be marked with the following information:

- Means of identification, e.g. manufacturer's name, supplier's name, or trademark;
- The CE mark
- The number of the notified body responsible for verifying the quality process, where applicable.
- Manufacturer's production batch or serial number or other means of traceability;
- Model and type/identification
- Statement that specifies, 'the maximum number of people it can be used with'
- Pictogram or other method to indicate the necessity for users to read the instructions for use.
- Number and year of the document to which it conforms, i.e. EN 795:2012

6.3 Marking for sockets.
Sockets must be marked with information that defines the type of davit, i.e. manufacturer, size or capacity that can be used safely with it.

7.0 Verification following installation of the socket.
In general the davit will have been factory tested, however sockets must be tested following installation to supplement the PUWER inspection or LOLER thorough examination. This section concentrates on the testing following installation, as it is much more critical in placing the item into service, particularly if one davit is used with multiple sockets.

An adequate test specification must be drawn up against the design criteria, which should be obtained from the manufacturer. Acceptance criteria, such as maximum permissible deflections, deformations or no free movement for worst case loading conditions, etc., must be included in the specification. A load test should always be planned on the assumption that the item under test might fail. Adequate precautions should be in place to prevent injury to any persons or damage to anything other than the item under test, refer to LEEA 017 for guidance.

To meet the design criteria the test must accurately simulate the in-service loading conditions for which the davit has been designed. Depending on the design intent, i.e. lifting or fall arrest, the test procedure will vary slightly as the following sections will explain.

7.1 Foundation specification and verification.
It is the responsibility of the davit manufacturer to specify the size and type of anchor to be used and to provide worst case reaction forces at each anchor under normal operation. It is recommended that the anchors used meet the requirements of a European Technical Approval (ETA) This information should then be passed on to the building owner, who is responsible for ensuring that adequate foundations are provided for the davit.

If the foundations are of adequate strength then, following installation the davit should be tested in accordance with 7.2 or 7.3 as applicable.

7.2 Lifting Davits
Prior to the application of the test load in accordance with the manufacturer's installation instructions, special attention must be paid to:

- the security of nuts and bolts.
- condition and grade of the concrete or other supporting structure whether a 'cast in', surface mounted socket or other type is used.
- level of the socket in accordance with manufacturers tolerances.
- joints, connections and supports

Once the preliminary inspection has been carried out, a test load equivalent to the working load limit shall be applied to the test davit. The load shall be kept at rest while stable deflection readings are recorded and compared with the manufacturer's limits. Note that for davits that can be fitted with a portable lifting appliance to facilitate the lifting, the test load should include the self-weight of the appliance, unless the manufacturer has specified the type or size and weight of appliance that has been

included in the design. Likewise the self-weight of lifting accessories used should also be taken into account.

The loads shall be measured by a load cell calibrated to BS EN ISO 7500-1, such that the sum of the inaccuracies of the load and the load cell do not exceed ±2%. Where containers may be required to house the weights, the self-weight of these containers must be considered.

The procedure outlined above shall then be repeated except that the proof load shall be applied and the stable net deflection shall be recorded. The proof load applied shall be 125% of the working load limit for goods lifting, or 150% of the working load limit for people carrying. For multipurpose davits and their sockets the test load would be applied to the rated capacity for each purpose. The proof load may only be applied to whichever is the higher. The davit should also be rotated through 360 degrees to simulate the use of the davit and to load all combinations of socket/anchors accordingly. Site constraints may prevent 360 degrees rotation, but loadings should certainly include rotation through the most probable arc of usage.

During the application of the test load and of the proof load the davit, socket and foundation shall be kept under such visual observation as to ensure the ready detection of any obvious defect in the installation.
Note that for davits fitted with a running trolley the maximum measured deflection under the working load limit, relative to its supports, shall not exceed the manufacturer's specification.

To ascertain whether or not the acceptance criteria has been met, the tester will need to use measuring equipment. This measuring equipment will depend on the acceptance criteria, but it must be calibrated, and may include dial test indicators, strain gauges, etc. Equipment used for measuring deflections must have a resolution such as to allow the measurement to within ±5% of the permitted deflection of the structure under test.

Following the proof force test the davit must be thoroughly examined. For further details of this thorough examination refer to section 8.0 of this guidance.

This test procedure should be conducted for all sockets in all worst case loading conditions with which a davit is to be used.

7.3 Fall Arrest Davits.
For the testing of davits and/or sockets that are used for fall arrest, and where the foundation properties are known and meet the requirements of the anchor European Technical Approval (ETA), the test procedure in 7.2 should be followed, but with a proof load of 6kN applied in the direction of the fall.

7.4 Unknown foundation properties.
In many cases the davit will be installed on an existing foundation with unknown strength and in this case two main verification methods must be considered when installing anchors:

1. Tests to determine allowable resistance – unknown foundation allowable working load.

2. Tests to check the quality of the installation

7.4.1 Tests to determine allowable resistance.
These tests are used to determine the suitability of an anchor in a particular base material and to determine the allowable resistance (allowable load) in that material. These tests are always carried out on anchors that will not be used on the job. These tests may not be needed for anchors with ETA for use in concrete as the necessary performance data is quoted in the ETA. If the base material does not conform to the ETA tests may be required.

For Anchors with a ETA, but with base material not known or not covered by the ETA testing will have to be undertaken on between 5 to 15 sacrificial anchors. The larger the sample size then more confidence can be attributed to the resulting characteristic resistance.

Each of the anchors in the sample are tested to failure and the load at first movement, N_{1st}, is recorded. The load at which complete failure occurs, N_{Ru}, is also recorded. Once all the sample

anchors have been tested the mean load at first movement, $N_{1st,m}$, and the mean failure load, $N_{Ru,m}$, are calculated.

The next stage is to calculate the Characteristic resistance using the following equation:

$N_{Rk1} = N_{Ru,m} (1 – k . v) . \beta$

Note that this characteristic resistance should be less than or equal to the characteristic resistance specified in the ETA.

The values of *k* are taken from standard statistical tables as follows:

- For 5 tests; *k* = 3.4
- For 10 tests; *k* = 2.57
- For 15 tests; *k* = 2.33

The coefficient of variation of the failure loads, *v*, is given by $v = (s/N_{Ru,m})$, where s is the standard deviation of failure loads, refer to annex 1 for guidance.

Next calculate the design resistance, $N_{Rd} = N_{Ru,m} / \gamma_m$ where γ_m is specified in the ETA for the anchor.

Finally calculate the allowable resistance, $N_{R,all} = N_{Rd} / 1.5$

Note the calculated allowable resistance must be less than or equal to N_{1st} and greater than the worst case anchor point reaction load as specified by the davit manufacturer.

Note that LEEA only recommends the use of anchors with a ETA. If the anchor does not have a ETA, then the test procedure above will have to be substituted for a more suitable test method, refer to BS 8539.

7.4.2 Tests to check Quality of installed anchors.
To prove the installation of the anchor bolts installed in accordance with the ETA for the davit socket they can be tested using a hydraulic pull cylinder. The cylinder must have a calibrated dial or used with a calibrated load cell such that the sum of the inaccuracies of the load and the load cell/dial do not exceed ±2%.

The load must be applied to a minimum of 2.5% and at least 3 of the total number of anchors installed for each socket. The test load to be applied is 1.25 times the maximum, worst case, reaction load on the anchor as specified by the davit manufacturer.

Anchors can be said to have satisfied the test if the required load is held without movement or any damage or deformation occurring to either the fixing or the foundation. It is recommended that the foundation is white washed so that any cracks will be more visible.

Note that due to the fact that there are other variables to consider when verifying the installation of a davit, it may be more practicable to test the socket and davit together to verify that the anchors, socket and davit have been installed correctly. In this case, and providing the foundation is of known strength, then the guidance in sections 7.2 and 7.3, where applicable, should be followed.

8.0 Thorough Examination
Regardless of use a davit will need to be thoroughly examined following installation, periodically and following exceptional circumstances.

When conducting the thorough examination the davit and socket must be cleaned of dirt and debris and any accumulation of water should be drained to ensure that all critical components can be examined effectively. If the local lighting is not adequate for examination purposes it should be supplemented by portable lighting.

8.1 Thorough examination following installation.
Following installation the davit should be tested in accordance with the procedures defined in sections 7.1, 7.2 and 7.3 depending on the intended use, then thoroughly examined as follows.

The examinations should include the following checks:

- Check for clear identification number.
- Check for clear marking of WLL.
- Check structure of davit and socket is free from distortion, corrosion, cracks, gouges, or wear.
- Check all welded connections are free from cracking or corrosion.
- Check that any bolted connections are free from corrosion and cracking and that all are secure using the correct bolts.
- Check all major components of any integrated portable lifting appliance for wear, damage or corrosion.
- Check bottom hook and loose end anchor pins for wear, damage, and security to load chain/hoist
- Check the portable lifting appliance rope along its whole length for kinks, exposure of inner core, flattening, broken wires, broken strands, and corrosion. Refer to ISO 4309 for rejection criteria. Or for chain, check along its whole length for stretched, distorted, worn, corroded, chain links. Refer to ISO 7592 for rejection criteria.
- Check hoist rope ferrule eye for security, cracking, indentations, or corrosion.
- Check- hoist rope for its security to its anchorage point and the winch drum.
- Check the winch for correct operation and that the brake operates correctly and is effective.
- Check functionally in the up/down mode preferably with a light load to confirm the integrity of the brake and other load bearing components.
- Check that sheave wheels are free from cracks, chips, distortion, nicks, gouges or wear
- Check that axle pins are free from distortion, nicks, gouges or wear.
- Check that any shackles are free from distortion, nicks, gouges or wear.
- Check that all shackle pins are captivated preferably with a nut and pin arrangement.
- Check free standing or counterbalance davits for correct configuration.

Note that this list is not exhaustive and some configurations may require additional checks. Manufacturer's instructions, section 5.3, should also be referred to.

8.2 Documentation following the installation examination.

The use of the davit will determine the legislative requirements and therefore the minimum documentation required. However, due to the fact the requirements only differ slightly and all requirements would be good practice regardless of use, then LEEA have merged the requirements into one report to be used as a best practice document. This will be referred to as a Report of Thorough Examination and the contents are as follows:

- The date on which the proof load was applied and the thorough examination made.
- Date of the report.
- Report number.
- Name and address of employer for whom the thorough examination was made.
- Address of the premises at which the examination was made.
- Description and identification of the equipment which must include its distinguishing number or mark.
- The position and magnitude of the deflections obtained during the test at WLL and the proof load, refer to section 7.2.
- The working load limit.
- Date of manufacture and service life expiry date, if applicable.
- Reason for the examination, i.e. after first installation and before being used for the first time.
- Particulars of any defect found during the examination and affecting the working load limit and the particulars of the steps taken to remedy such defect.
- A statement stating that the equipment is safe to operate or not
- A statement indicating clearly that it applies to the davit only and not to any trolley or lifting appliance that may be fitted separately and at the discretion of the user.
- Date of next thorough examination.
- Name, signature and qualifications of the person making the report.
- Name and signature of person authenticating the report
- Name and address of the employer of persons making and authenticating this report.

The report should also include a warning against misuse of the davit drawing attention for the need to inspect the sockets and davits before each occasion of use.

8.3 Periodic thorough examination.
All davits and their sockets will be subject to statutory periodic examinations, typically this will be every 12 months, however for davits used for lifting people the requirement would be every 6 months. In addition to the thorough examination the Davit and socket must be checked before each use for any damage or deterioration, refer to 9.1.

The examination should be a careful visual examination, supplemented, where relevant, by other tests including non-destructive testing of critical welds and checking the tightness of pre-loaded bolts, in order to arrive at a reliable conclusion as to the safety of the davit. If dismantling is necessary for the purpose of the examination, the load test and bolt tightening checks, refer to 7.2, shall be repeated after assembly. This does not include any dismantling as intended by the manufacturer in terms of normal use, i.e. the removal of the davit from the socket.

The periodic examination should follow the same checklist procedure as specified in section 8.1. Note that load testing is at the discretion of the competent person, but routine overloading is not recommended. The competent person may want to verify the deflections as recorded in the initial report, but this can be achieved at working load limit.

8.4 Documentation following Periodic thorough examination.
When a thorough examination only is made of a socket and davit already in use and for which a report of thorough examination as referred to in section 8.2 has been granted, the report of such examination must contain the following information.

- The date of the report referred to in section 8.2.
- Date of the report.
- Report number.
- Name and address of employer for whom the thorough examination was made.
- Address of the premises at which the examination was made.
- Description and identification of the equipment which must include its distinguishing number or mark.
- The working load limit.
- Date of manufacture and service life expiry date, if applicable.
- Reason for the examination, i.e. 6 monthly, 12 monthly or in accordance with an examination scheme.
- Particulars of any defect found during the examination and affecting the working load limit and the particulars of the steps taken to remedy such defect.
- A statement stating that the equipment is safe to operate or not
- A statement indicating clearly that it applies to the davit only and not to any trolley or lifting appliance that may be fitted.
- Date of next thorough examination.
- Name, signature and qualifications of the person making the report.
- Name and signature of person authenticating the report
- Name and address of the employer of persons making and authenticating this report.

8.5 Verification following exceptional circumstances.
Lifting equipment will require a thorough examination after exceptional circumstances which could affect the safe operation of the equipment. An exceptional circumstance would include, for example, a major modification, repair, over load, known or suspected damage or a change in the nature of use.

Due to their portable nature, davits will inevitably get abused or even misused in service resulting in damage and the need for repair. Whenever a davit requires repair it is advisable that the cause of the damage is investigated. It may be that the equipment is no longer adequate for the task.

8.5.1 Repair and verification due to in-service wear and tear.
If a davit is to be repaired it is advisable that the original design specification is consulted. Where this is not feasible then the repairer will have to take responsibility to ensure that the correct materials and components are used. To that end the repairer must have adequate information about the application the davit is used for.

A record of the repairs and details of the components used should be recorded and retained with the maintenance log of the equipment.

Following the repair the equipment should be thoroughly examined by a competent person. If the repair is such that the load bearing capability may be affected, then the thorough examination may need to include NDT and / or a load test.

8.5.2 Modification and verification.
There are a variety of reasons why a davit may be modified during its life. It may be that the product it lifts has been altered requiring different reach distances or an increase in weight for example.

If the davit or socket is modified in a manner that is not supported by the original manufacturer, then the modifier is fully responsible for the modified socket and/or davit.

Whatever the reason it is important that the original design specification, test data, and technical file is referred to where possible. In the absence of this information then the person responsible for the modification will have to make assumptions about certain aspects of the design in order to minimise the risks associated with the modification. For example, assume the lowest grade of steel for calculation purposes.

The modification should then be treated as making a new davit from second hand materials and the modifier must ensure that all applicable essential health and safety requirements are met.

9.0 In Service Use
The owner of the socket and davit, and the employer of persons using the equipment, are responsible for ensuring that the equipment is properly maintained and that operatives have received sufficient training in terms of the safe use of the equipment. It is therefore imperative that the manufacturer's instructions are consulted and followed.

The following sections can be used as a means of ensuring that the equipment is properly maintained.

9.1 Pre-use Inspections.
Pre-use checks should be carried out before each new use or at the start of each shift during which the davit and socket are to be used. These are to test the functionality of the davit and socket and visually check for any obvious defects. It is essential that these are carried out from a position of safety.

In the event that equipment fails the pre-use check, then there should be a procedure to quarantine the equipment and effectively prevent further use until the problem has been resolved.

9.2 In service inspection
A regular in-service inspection should be made to identify any defects which might not be detected by the pre-use checks. In-service inspections should be carried out at intervals which ensure that any deterioration is identified before there is a risk of failure of the davit or socket or injury to persons.

It might be convenient to schedule the inspections concurrently with planned preventive maintenance (see 9.4).

The period between inspections should be decided on the basis of the frequency of use and the environmental conditions and might need to vary between 1 week and 6 months. The period should be kept under review and adjusted according to the results of the inspections.

In the event that equipment fails the pre-use check, then there should be a procedure to quarantine and effectively prevent further use until the problem has been resolved.

9.3 Records of Pre-use Checks and In Service Inspections
Written records of all pre-use checks and in-service inspections should be kept and the following sections provide recommendations for each.

9.3.1 Pre-use Checks
The record of a pre-use check should include at least the following information:

- Identity of the davit and socket
- Date of the check
- Result of the check, i.e. pass or fail.
- Name and signature of the person carrying out the check.

It is recommended that this information is completed on a single line of a pro-forma record card kept in a waterproof wallet attached to the davit.

9.3.2 In Service Inspections.
The record of an in-service inspection should include at least the following information:

- Date of the inspection
- Name of person carrying out the inspection
- Description and unique identification number of the equipment inspected
- Nature and extent of the inspection
- Results of the inspection, including details of the condition of critical components which need to be monitored, for example wire rope showing signs of wear.

The record should be related to the davit and sockets historical records and made available to the competent person responsible for the thorough examination, refer to section 8.3.

9.4 Planned preventative Maintenance
Planned preventative maintenance should be carried out in accordance with the manufacturer's instructions. It might be convenient to schedule in service inspections concurrently with the planned preventative maintenance, refer to 9.2.

9.5 Storage.
It is important that when the davit is not required for use it can be set down and stored such that it is protected from damage.

If the davit is fitted with ancillary items then the storage should also provide effective protection for them. Alternatively these items should be removed and stored separately. In the latter case the identity of the equipment must be maintained.

Annex 1 – Example calculation of the standard deviation (s)

For a finite set of numbers, the standard deviation is found by taking the square root of the average of the squared differences of the values from their average value. For example, the test results are recorded as the following five values:

10, 11, 11,12, 13

These five data points have the mean (average) of 11.4

First, calculate the difference of each data point from the mean, and square the result of each:

$(10 – 11.4)^2 = 1.96$
$(11 – 11.4)^2 = 0.16$
$(11 – 11.4)^2 = 0.16$
$(12 – 11.4)^2 = 0.36$
$(13 – 11.4)^2 = 2.56$

The variance is the mean of these values and therefore 1.04:

And the standard deviation is equal to the square root of the variance and therefore, s = 1.02: