LEEA 076 – Guide to the Verification of Lift Shaft Lifting Equipment Support Structures – Version 2

Lifting Equipment Engineers Association

www.leeaint.com

Guide to the Verification of Lift Shaft Lifting Equipment Support Structures , Version 2, dated April 2025

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1. Introduction

To facilitate the installation, maintenance, and inspection of lifts there will commonly be a supporting structure with attachment points for lifting equipment at the top of a lift shaft. These structures are generally in two forms;

1. Steel beam(s) spanning the top of the lift shaft with a lifting equipment attachment point(s)(commonly referred to as a lifting eye) along the span.

NOTE: in some cases a round sling is choked around the beam to act as an attachment point. This is not recommended without the use of suitable edge protection as the edges of the beam can cut the sling. Refer to LEEA Code of Practice for the Safe Use of Lifting Equipment (COPSULE) sections 1A5.4.6 and 17.9 for further guidance.

2. A precast concrete slab or site cast slab using decking, with;

- Cast in threaded socket(s) to which a lifting equipment attachment point is fitted; or
- Lifting equipment attachment point installed through the slab with a bearing plate on the top; or
- Lifting equipment attachment point fixed to the underside of the slab using fixings suitable for cracked concrete.

These structures are commonly used for both goods lifting and people carrying applications. On the odd occasion they are sometimes used for fall arrest applications. However it should be noted that in most cases fall arrest anchors are usually fitted to the carriage or platform suspended from the beam.

As a result of there being no specific standard for these structures there is much confusion as to how they should be verified by design, following installation and periodically while in service. This LEEA guidance has therefore been developed as a means of setting a benchmark and standard approach to their verification.

2. Scope

This guidance has been developed as a means to support the designer, manufacturer, installer, tester, and examiner in terms of the correct method of verifying lift shaft lifting equipment support structures.

This guidance applies to goods lifting, people carrying and fall arrest using a lift shaft beam assembly. The legislation and standards referenced within in this guidance are applicable in the UK.

Note: This document does not deal with lift shaft lifting equipment support structures made from aluminium.

3. Terms and definitions

For the purposes of this document, the terms, definitions and symbols given in the LEEA Code of Practice for the Safe Use of Lifting Equipment - COPSULE and the following apply.

3.1. Lift shaft beam
A steel beam at the top of the lift shaft for the purpose of supporting lifting equipment and/or fall arrest equipment. See figure 1.

3.2. Lifting eyes
A permanently fixed or removable anchor point fitted to the beam or a concrete slab from which lifting equipment can be suspended. See figure 1.

NOTE: Some lifting eyes used are general purpose lifting eyes, i.e. BS EN ISO 3266 Eyebolts. General purpose items such as these are also intended for use as lifting accessories and as such may include a marking for the appropriate conformity assessment. Bespoke lifting eyes fabricated and placed on the market to be used to suspend machinery in a lift shaft do not require a conformity assessment and marking as they are not covered by any EU Directive.

3.3. Fall arrest anchor
An anchor point designed in accordance with BS EN 795 to which fall arrest PPE can be fitted.

NOTE: BS EN 795 Fall arrest anchors are not suitable for general lifting purposes, however they can be used for rescue. In the event the anchor is used for rescue then it cannot continue in service until it has been fully assessed by a competent person.

3.4. Lift shaft beam assembly
A single lift shaft beam fitted with lifting eye(s) and/or fall arrest anchor(s)

Figure 1. Steel lift shaft beam with lifting eyes (left) and concrete slab with lifting eyes (right)

4. Standards and legislation
In general the following standards would apply for goods lifting and people carrying, however in the latter case the factors of safety used in the design standards for goods lifting shall be doubled.

- BS EN 1993-6: Eurocode 3: Design of steel structures - Part 6: Crane supporting structures
- BS EN 1090 Series – Parts 1-2: Requirements for the conformity assessment of steel structures
- BS 2853 Specification for the testing of steel overhead runway beams for hoist blocks
- BS 7255 Safe working on lifts - Code of practice

NOTE: All persons working on a lift or related equipment, including within a well, machinery space, pulley room or lift lobby, or carrying out risk assessments, should either possess demonstrable competence in basic lift safety and procedures or be under relevant supervision. Guidance on suitable basic levels of certified competence for various types of workers can be found in BS 7255 Safe working on lifts – code of practice.

For fall arrest applications the standards are BS EN 795 and BS EN 17235.

For multi-purpose applications, then the requirements of the above shall be combined and the worst case loading conditions of the combinations determined.

In terms of supply legislation, section 6 of the Health and Safety At Work etc Act 1974 always applies. However, additional legislation may have to be considered depending on the design intent of the structure.

5. Construction Products Regulations

The Construction Products Regulation (EU) No 305/2011 was published in Europe to be the basis of the CE marking for the construction products. After BREXIT, it was transposed to UK law through The Construction Products (Amendment etc.) (EU Exit) Regulations 2019 and 2020 (UK Statutory Instruments 465/2019 and 1359/2020). This transposition kept its technical content but made changes in responsibility (e.g. the Secretary of State instead of the European Commission) and terminology (e.g. UKCA marking instead of CE marking). As they are not technical differences in the requirements to affix CE and the UKCA marking, both marks are considered equivalent by the UK government. This is reciprocal in Europe, where only the CE marking is accepted.

NOTE: For clarity, text from the Construction Products Regulation (EU) No 305/2011 has been used in the guidance within this section.

The regulation *"lays down conditions for the placing or making available on the market of construction products by establishing harmonised rules on how to express the performance of construction products in relation to their essential characteristics and on the use of CE marking on those products*" (article 1)

5.1. Declaration of Performance

If placed on the market, a lift shaft beam designed in line with BS EN 1993-6:2007 "Eurocode 3. Design of steel structures - Part 6: Crane supporting structures" that is intended to be permanently installed in the construction works is a construction product because its *"produced for incorporation in a permanent manner in construction works or parts thereof and the performance of which has an effect on the performance of the construction works with respect to the basic requirements for construction works."* (article 2), specifically *"mechanical resistance and stability"* (as listed in Annex I).

The manufacturer should draw up a declaration of performance and affix the conformity mark according to the applicable designated standard BS EN 1090-1:2009+A1:2011 "Execution of steel structures - Requirements for conformity assessment of structural components", because BS EN 1090-1 has an AVCP system of 2+, it requires they have a third-party approved body's approval of their manufacturing processes. (in line with article 4, see below)

"When a construction product is covered by a harmonised standard or conforms to a European Technical Assessment which has been issued for it, the manufacturer shall draw up a declaration of performance when such a product is placed on the market." (article 4(1))

Note: In reference to steel structures, part 2 of BS EN 1090 is considered indispensable for the application of part 1; BS EN 1090-1:2009+A1:2011.

5.2. Exemption

Where a lift shaft beam is manufactured specifically to order and the manufacturer installs the product in the building themselves, they may refrain from drawing up the declaration of performance and affixing the conformity marking. See article 5(a) below.

"By way of derogation from Article 4(1) and in the absence of Union or national provisions requiring the declaration of essential characteristics where the construction products are intended to be used, a manufacturer may refrain from drawing up a declaration of performance when placing a construction product covered by a harmonised standard on the market where:"

"the construction product is individually manufactured or custom-made in a non-series process in response to a specific order, and installed in a single identified construction work, by a ***manufacturer who is responsible for the safe incorporation of the product into the construction works, in compliance with the applicable national rules and under the responsibility of those responsible for the safe execution of the construction works designated under the applicable national rules****" (article 5(a))*

The manufacturer should then be aware of their responsibility in both the installation and design according to the national building codes, which in the case of the UK are the Building Regulations 2010, which refer BS EN 1993-1-1:2005 "Eurocode 3: Design of steel structures. General rules", among others.

If you wish to use this exemption it is highly recommended to make sure it definitely applies to your product. Questions relating to your product can be directed to **product contact points** for your country. Product contact points for the UK can be found via the link below.

UK Product Contact Points

5.3. Non-permanent lift shaft beam

A lift shaft beam designed to be removed from the building after use is not within scope of the Construction Products Regulation.

6. Fall arrest

The legislation for lift shaft beams and lifting eyes for fall arrest applications varies based on the type of anchor being used. The pathway to conformity assessment is addressed in the subsections below.

6.1. Removeable anchor devices

BS EN 795: "Personal fall protection equipment – Anchor devices" gives the definition of Class B anchor devices in clause 3.2.2.

"anchor device with one or more stationary anchor points without the need for a structural anchor(s) or fixing element(s) to fix it to the structure"

BS EN 795 Class B anchor devices are considered PPE and therefore fall under Personal Protective Equipment (Enforcement) Regulations and should undergo conformity assessment and have the conformity mark affixed.

6.2. Permanent anchor devices

BS EN 795: "Personal fall protection equipment – Anchor devices" gives the definition of Class A anchor devices in clause 3.2.2.

"anchor device with one or more stationary anchor points, while in use, and with the need for a structural anchor(s) or fixing element(s) to fix to the structure"

"Note 1 to entry: Anchor points may rotate or swivel when in use, where they are designed to do so."

BS EN 795 Class A anchor devices are NOT considered PPE and therefore fall under the Construction Products Regulations.

NOTE: Class A anchor devices manufactured in accordance with BS EN 795 cannot presume conformity with PPE Regulations as per the department for business and trade notice of publication 0107/25 of 9 January 2025 of references to standards for personal protective equipment in support of Regulation 2016/425 on personal protective equipment as it has effect in domestic law. (See text below taken from the publication)

EN 795:2012

Personal fall protection equipment – Anchor devices

Restriction: This publication does not concern the equipment described in: — type A (anchor devices with one or more stationary anchor points and with the need for structural anchors or fixing elements to fix to the structure) referred to in clauses 3.2.1, 4.4.1, 5.3, — type C (anchor devices employing horizontal flexible anchor lines) referred to in clauses 3.2.3, 4.4.3 and 5.5, — type D (anchor devices employing horizontal rigid anchor lines) referred to in clauses 3.2.4, 4.4.4 and 5.6, — any combination of the above. In respect of types A, C and D, this publication does not concern either clauses: 4.5, 5.2.2, 6, 7; Annex A or Annex ZA.

The designated standard for permanent anchor devices is BS EN 17235:2024 "Permanent anchor devices and safety hooks", published on the 30th Sep 2024, however it isn't currently cited in the designated standards at GOV.UK, so conformity assessment and marking cannot be completed at this time. Nevertheless the requirements within the standard should be followed as best practise to achieve the most attainable level of compliance with the Construction Products Regulation.

NOTE: Cited designated standards can be checked at GOV.UK, see link below.

Designated standards - GOV.UK

6.3. In service use

Lift shaft beams and lifting eyes are considered as work equipment and therefore the Provision and Use of Work Equipment Regulations (PUWER) will apply regardless of the intended use. In addition to this, the Lifting Operations and Lifting Equipment Regulations (LOLER) would apply if used for a lifting operation. Finally if the lift shaft beam is used for people carrying and/or fall arrest then the Work at Height Regulations 2005 would also apply.

7. Supply documentation

Due to the differences in standards and legislation concerning lift shaft beams the supply documentation requirements vary. The following sections describe the requirements for each.

7.1. Lift shaft beam assembly for the support of lifting appliances only

These are considered as supporting structures and are therefore not within the scope of the Supply of Machinery (Safety) Regulations 2008. This means conformity assessment and a Declaration of Conformity are not applicable. 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 safe working load(s)
- Serial number, if any
- The test loads to be applied
- Name, position, and signature of the responsible person

NOTE: if general purpose equipment such as an eyebolt, refer to section 3.2, is used in the assembly then the manufacturers certificate should include the Declaration of Conformity that was originally supplied with it.

In the case were the supplier and installer of the assembly are the same then, it is acceptable to certify the assembly under LOLER and issue a report of test and a report of thorough examination, which can be combined on one document, containing the following minimum information.

The report of test and report of thorough examination should contain the following minimal information:

- 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 and grades of steel, its size and length
- The position and magnitude of the deflections obtained during the traversing of the test at SWL and the proof load
- The maximum safe working load
- A statement confirming the lift shaft beam assembly conforms to BS 2853, where applicable
- Date of manufacture
- 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 maximum safe working load 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 runway beam only and not to any trolley or lifting appliance that may be fitted
- Date of next thorough examination
- Name and qualifications of the person making the report
- Name and signature of person authenticating the report, completed where applicable
- Name and address of the employer of persons making and authenticating this report, completed where applicable

7.2. Lift shaft beam assembly for the support of fall arrest equipment only

For removable anchor devices used in accordance with a lift shaft beam assembly an appropriate Declaration of Conformity 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 Personal Protective Equipment (Enforcement) Regulations and the designated standard BS EN 795
- Where applicable certificate numbers of the approved body
- Where applicable, the PPE directive quality control system in place and the monitoring approved body and their identifying number

A lift shaft beam assembly with permanently fixed anchor devices installed may or may not have a declaration of performance drawn up and the conformity mark affixed. The designated standard for the permanently fixed anchor device(s) specifically is BS EN 17235, unfortunately conformity assessment and marking cannot be completed as this time. See section 6.2.

Once BS EN 17235 is cited in the designated standards at GOV.UK, these products will fall under the Construction Products Regulations and the manufacturer should draw up a declaration of performance and affix the conformity mark. The contents of a declaration of performance can be found in Annex 3 of the Construction Products Regulations.

8. Instructions for use

Instructions for use and maintenance must be supplied with the lift shaft beam assembly, 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.

8.1. Contents of the instructions for lift shaft beam assemblies for lifting operations

Manufacturers creating instruction manuals for lift shaft beam assemblies should consider including at least the following generic information; however additional information may be required for non-standard lift shaft beams and lifting eyes or additional fitted devices.

- The business name and full address of the manufacturer
- Name or serial number given to the beam and lifting eye to which the instructions are for
- A general description of the lift shaft beam and lifting eye
- Drawings, diagrams, descriptions, and explanations necessary for use, maintenance and repair of the lift shaft beam and lifting eye, these should include checking correct functioning of parts that have motion
- The technical characteristics of the lift shaft beam and lifting eye, and in particular:
- the safe working load
- the reactions at the supports or anchors
- The test loads that must be applied following installation
- A description of the intended use
- Warnings concerning ways in which the lift shaft beam and lifting eye must not be used that experience has shown may occur
- Assembly, installation, and connection instructions, including drawings, diagrams, and the means of attachment to the lift shaft and lift shaft beam

NOTE: The lift shaft or any other structure for supporting the lift shaft beam is the responsibility of the end user in terms of adequacy of strength for the imposed in-service and test loads. The Competent Person has a duty of care to ensure that they advise the end user of the imposed loadings and receive written confirmation that the lift shaft or other supporting structure is of adequate strength and stability.

- Instructions for the putting into service and use of the lift shaft beam and lifting eye, if necessary, instructions for training of operators
- Information about residual risks that remain despite the inherent safe design measures, safeguarding and complementary protective measures adopted
- Instructions on the protective measures to be taken by the user, including, where appropriate, the PPE to be provided
- The essential characteristics of devices that may be fitted to the lift shaft beam and lifting eye

- 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
- Instructions designed to enable adjustment and maintenance to be carried out safely, including the protective measures that should be taken during these operations
- The specifications of the spare parts to be used when these affect the health and safety of operators

8.2. Contents of the instructions for lift shaft beam assemblies for fall arrest applications

Where removable anchor devices are used the instructions for fall arrest lift shaft beam assemblies are generally as section 8.1 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”

The designated standard for permanently fixed anchor devices BS EN 17235 doesn’t address the content of instructions at this time.

9. Marking

Lift shaft beam assemblies should be clearly and permanently marked by the manufacturer with information described in sections 9.1 and 9.2, as applicable.

Lifting eyes shall be clearly marked to indicate their individual SWL as their function may be different. Removable anchor devices shall also be clearly and individually rated in accordance with BS EN 795. If the beam SWL is less than the combined SWL of the eyes / anchors, then the allowable loading combinations must be indicated on the beam. The intended function, i.e. people carrying, fall arrest, etc. shall also be marked. It is also recommended that the date of last thorough examination is indicated on the assembly. These markings must be visible from the landing.

9.1. Marking for lifting operations

The lift shaft beam assembly must be marked with the following information:

- Business name and address of the manufacturer
- Identification number
- Safe working load, including any limiting conditions such as reduced SWL on cantilever or for people carrying the maximum number of people and weight restrictions
- Year of manufacture
- Maximum hoisting speed for powered hoists or else the words ‘Manual Hoist Only’

Additional marking requirements for lift shaft beam assemblies described in 5.1:

- The conformity mark, where applicable, see section 5.1.
- Number of the approved body responsible for verifying the quality process, where applicable, see section 5.1.

9.2. Marking for fall arrest applications

Removable anchor devices should be marked with the following information:

- Means of identification, e.g. manufacturer's name, supplier's name, or trademark
- The conformity mark
- The number of the approved 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 'single user only'
- 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. BS EN 795

For permanently fixed anchor devices, clause 6.3.1.4 of the designated standard BS EN 17235 states:

- Individual permanent anchor devices and safety hooks shall be identifiable and traceable with regard to their place of their production

10. Verification following installation of the lift shaft beam assembly

Following installation of the lift shaft beam assembly it must be tested to supplement the PUWER inspection (fall arrest) or LOLER thorough examination (lifting operations). This section concentrates on the testing following installation, as it is much more critical in placing the item into service.

NOTE: Offsite thorough examination of components of the lift shaft beam assembly are inadequate.

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, should 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 Process Control Procedures for guidance.

Lift manufacturers use different installation methods and this should be taken into account during the verification process. To meet the design criteria the test must accurately simulate the in-service loading conditions for which the lift shaft beam 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.

10.1. Lift shaft beam assembly support structure specification and verification.

It is the responsibility of the lift shaft beam manufacturer to specify the size and type of fixing to be used to connect the lift shaft beam assembly to the supporting structure, and to provide worst case reaction forces at each fixing under normal operation. It is recommended that the fixings used meet the requirements of a European Technical Approval (ETA). For guidance on load actions reference should be made to BS EN 1991-3: Eurocode 1 - Actions on structures - Part 3: Actions induced by cranes and machinery. This information should then be passed on to the building owner, who is responsible for ensuring the adequacy of the supporting structure.

NOTE: Lift shaft beams are a form of runway beam and LEEA 075 Guidance to the verification of runway beams has guidance and worked examples to their design in accordance with the BS EN 1993 series.

Also BSI have a suite of free guidance to Eurocode design that can be downloaded from the following website; Worked example for Eurocodes 3: Design of steel structures

If the lift shaft or other supporting structure is of adequate strength then following installation the lift shaft beam assembly should be tested in accordance with 10.2 or 10.3 as applicable.

10.2. Lift shaft beams for lifting operations

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
- condition and adequacy of the lift shaft beam assembly support, i.e. pad stones
- suitability of lateral restraints
- level of the lift shaft beam and lifting eyes in accordance with manufacturers tolerances
- welds, joints, connections and supports

Once the preliminary inspection has been carried out, a test load equivalent to the safe working load (SWL) shall be applied to the lift shaft beam assembly. The load shall be kept at rest while stable deflection readings are recorded and compared with the manufacturer's limits. Note that for lift shaft beam assemblies, the test load should include the self-weight of the portable lifting appliance specified for use with it. Likewise the self-weight of lifting accessories used should also be taken into account.

Any connection of the lift shaft beam assembly or lifting eye to concrete with little or no measurable deflections should be white washed or have a similar coating applied prior to application of the SWL to highlight any cracks. Any cracks present prior to the load should be recorded and monitored underload. Any new cracking should be recorded and verified to be within the manufacturer's tolerances.

The loads shall be measured by a load cell calibrated in accordance with 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. As a general rule, the proof load applied shall be 125% of the safe working load for goods lifting, or 250% of the safe working load for people carrying.

The proof load values for goods lifting and people carrying are specified in general terms and in accordance with industry accepted practices. However, when determining the proof load to be applied consideration shall be made to the following:

1. If the verification by calculation can justify, perhaps based on utilisation which can be monitored and controlled in service for example, that lower working coefficients can be used while maintaining an adequate margin of safety with respect to deterioration over time, then for people carrying the proof load shall be twice the working coefficient than that used to determine the goods lifting safe working load. However, as a minimum, in this case, the proof load applied for both cases shall not be less than 125% of the safe working load.

2. In the absence of such design data then the general proof load values shall be applied. However, please note that many in-service and some new installations are rated at a considerably higher loads than that required for the people carrying applications. For example, a lift shaft beam assembly may be rated at 4 tonnes SWL for goods lifting. Therefore, the proof load would be 5 tonnes to verify such a structure for goods lifting. However, this does not always mean that to certify the beam for people carrying that the proof load would have to be 10 tonnes. This is because that some lift shaft beam designers rate the beams with a goods lifting loads of twice that required for people carrying to make allowance for regulation 5 of LOLER.

Regulation 5 of LOLER states that when using equipment that is rated for goods lifting for people carrying applications, the safe working load shall be derated by 50%. Therefore, for people carrying the option is to de-rate the 4 tonnes by 50% to give 2 tonne SWL people carrying. In terms of proof loading in this case either 125% of the 4 tonne SWL or 250% of the derated 2 tonne SWL can be applied.

During the application of the test load and of the proof load the lifting beam assembly and lift shaft or other supporting structure shall be kept under such visual observation as to ensure the ready detection of any obvious defect in the installation.

NOTE: for steel lift shaft beam assemblies the maximum measured deflection under the safe working load, relative to its supports, shall not exceed 1/500th of the span or 1/250th of a cantilever as a general rule.

To ascertain whether or not the acceptance criteria has been met, the competent person 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 lift shaft beam assembly must be thoroughly examined. For further details of this thorough examination refer to section 11. of this guidance.

10.3. Lift shaft beam assemblies and anchor devices for fall arrest applications

Testing of fall arrest lift shaft beam assemblies and anchor devices may not be required if they are constructed of components that have been individually tested and are installed in accordance with the manufacturer's instructions. Otherwise, the test procedure in 10.2 should be followed, but with a proof load of 9kN applied in the direction of the fall for permanently fixed anchor devices in accordance with BS EN 17235: "Permanent anchor devices and safety hooks" or 12kN for removable anchor devices in accordance with BS EN 795: "Personal fall protection equipment – Anchor devices".

NOTE: for anchor devices fitted to steel work testing may not be required if the anchor is properly torqued and fitted as per the manufacturer's instructions.

10.4. Dual purpose lift shaft beam assemblies

For multipurpose, i.e. goods lifting, people carrying lifting beams and fall arrest assemblies 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. However, if the beam could be used for multiple purposes at the same time, then the combined maximum test loading shall be derived from sections 10.3 and 10.2 where applicable.

11. Thorough examination

A lift shaft beam assembly should be thoroughly examined following installation (after a load test), periodically (whilst in use) and following exceptional circumstances by a competent person.

A competent person must have sufficient knowledge and experience of the applicable legislation, standards and equipment being examined in order to identify defects and assess their importance in terms of the continued safety of the equipment. They need to maintain records of their examinations and report them to duty holder clearly and concisely.

NOTE: it is a LEEA technical requirement that the competent person has the LEEA Supporting Structures (SUP) Diploma qualification and associated TEAM card.

The competent person must be sufficiently independent and impartial to allow objective decisions to be made. This means that duty holders are responsible for ensuring that the competent person has the genuine authority and independence to ensure that examinations are properly carried out and that the necessary recommendations arising from them are made without fear or favour.

When conducting the thorough examination, the lift shaft beam assembly should be cleaned of dirt and debris 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 rated at 200 lux as a minimum in line with HSE guidance – HSG38 Lighting at work. Where the inspection of finer detail is required, portable lighting of a higher lux could be more suitable, this is at the discretion of the competent person.

11.1. Thorough examination following installation

Following installation the lift shaft beam assembly should be tested in accordance with the procedures defined in sections 10.1, 10.2 and 10.3 depending on the intended use, then thoroughly examined as follows.

The examinations should include the following checks:

1. **Lift shaft beam**

- Check for clear identification number
- Check for clear marking of SWL
- Check beam assembly has the original installation report of test and thorough examination
- Check integrity of the installation to its supporting structure
- Check along the whole length of the beam for wear, damage, distortion, cracking or corrosion
- Check all welded connections are free from cracking or corrosion
- Check any bolted connections are free from corrosion and cracking
- Check that bolts used in the assembly are of the correct grade and are secured

2. **Lifting eyes**

- Check for clear identification number
- Check for clear marking of SWL
- Check for wear, distortion, damage, nicks, gouges, cracks, corrosion
- Check for correct thread form, i.e. BSW, Metric, or UNC
- Check thread for wear, distortion, damage, nicks, gouges, cracks, corrosion and concentricity
- Check for full or partial seizure of rotating components

3. **Fall arrest anchors**

- Check for clear identification number
- Check for clear marking of SWL, or if no marking ensure correct torque (swivel end) in accordance with manufacturers specification or BS 7883 Personal fall protection equipment. Anchor systems. System design, installation and inspection. Code of practice
- Check for wear, distortion, damage, nicks, gouges, cracks, corrosion
- Check for correct thread form, i.e. BSW, Metric, or UNC
- Check thread for wear, distortion, damage, nicks, gouges, cracks, corrosion, and concentricity

- Check for full or partial seizure of rotating components

NOTE: these lists are not exhaustive, and some configurations may require additional checks. Manufacturer's instructions and section 6 should also be referred to.

11.2. Documentation following the installation examination

If the thorough examination finds the assembly to be installed correctly and free from defects affecting safe operation, then the competent person shall issue a report of test and report of thorough examination as described in section 7.1.

NOTE: the report of test and report of thorough examination can be combined onto one document.

11.3. Periodic thorough examination

When in use all lift shaft beam assemblies will be subject to statutory periodic examinations, typically this will be every 12 months, however for lifting beam assemblies used for lifting people the requirement will be every 6 months.

However, once a lift is commissioned and is in service the utilisation of such equipment is generally very low, in which case a written scheme of examination approach may be justified. Such justification, must be derived from a thorough risk assessment and supported by suitable control measures, refer to LEEA 032 Guidance on Written Schemes of Examination for Lifting equipment. For example the justification may be that the lift shaft beam is effectively mothballed following installation until the next planned maintenance is scheduled. Therefore any deterioration would be due to other factors such as the environmental conditions, which can be controlled with suitable protection, i.e. against corrosion, vibration, etc. Another factor to consider is deterioration through use due to unplanned maintenance. Once all these factors have been identified for the specific lift shaft beam installation it will be possible to estimate when the next examination would be required.

NOTE: if the period of thorough examination elapses, it is acceptable to do the examination before the next use of the equipment.

In addition to the thorough examination and where reasonably practicable to do so, the lifting beam assembly should be checked at the end of each use for any damage or deterioration, refer to section 11.1. This information should be made available to any subsequent user who would be responsible for taking appropriate action before re-using the equipment.

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 lift shaft beam assembly. If dismantling is necessary for the purpose of the examination, the load test and bolt tightening checks, shall be repeated after assembly. This does not include any dismantling as intended by the manufacturer in terms of normal use and documented in their instructions, i.e. the removal of lifting eye to an adjacent socket.

The periodic examination should follow the same checklist procedure as specified in section 11.1. Note that load testing is at the discretion of the competent person. If the original report of test and report of thorough examination is available and the equipment is free from defect, then an overload test is not required. The competent person may

want to verify the deflections as recorded in the initial report, but this can be achieved at safe working load.

11.4. Documentation following periodic thorough examination

When a thorough examination only is made of a lift shaft beam assembly already in use and for which a report of thorough examination as referred to in section 11.1 has been granted, the report of such examination must contain the following information.

- The date of the report referred to in section 7.1
- 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 safe working load
- 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 safe working load 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 lift shaft beam assembly only and not to any trolley or lifting appliance that may be fitted
- Date of next thorough examination
- Name and qualifications of the person making the report
- Name and signature of person authenticating the report, completed where applicable
- Name and address of the employer of persons making and authenticating this report, completed where applicable

A suite of template reports that are compliant with the above are available to LEEA members. An example of one such report can be found in appendix 1 of this guidance.

11.4.1. 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.

Whenever a lift shaft beam assembly 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.

11.4.2. Repair and verification due to in-service wear and tear

If a lift shaft beam assembly 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 lifting beam assembly 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.

11.4.3. Modification and verification

There are a variety of reasons why a lift shaft beam assembly may be modified during its life. It may be that the load it lifts has been altered requiring different reach distances or an increase in weight for example.

If the lift shaft beam assembly is modified in a manner that is not supported by the original manufacturer or if the manufacturer is unknown or uncontactable, then the modifier is fully responsible for the modified assembly.

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 lift shaft assembly from second hand materials and the modifier must ensure that all applicable essential health and safety requirements are met.

12. In service use

The owner of the lift shaft assembly, 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.

12.1. Pre-use inspections

When reasonably practicable pre-use checks should be carried out before each new use or at the start of each shift during which the lift shaft beam assembly is to be used. These are to test the functionality of the lift shaft assembly 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.

12.2. In service inspection

Due to the frequency of use regular in-service inspections may not be necessary. The inspection should be sufficient 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 lift shaft beam assembly or injury to persons.

It might be convenient to schedule the inspections concurrently with planned preventive maintenance (see section 13).

The period between inspections should be decided on the basis of the frequency of use and the environmental conditions. The period should be kept under review and adjusted according to the results of the inspections.

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

12.3. 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.

12.3.1. Pre-use checks

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

- Identity of the lift shaft beam assembly
- 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 lift shaft beam assembly.

12.3.2. 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; wear on the profile section

The record should be related to the lift shaft beam assembly's historical records and made available to the competent person responsible for the thorough examination.

13. 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 12.2.

Appendix 1: Template - Report of thorough examination

Document Reference LEEA-030.1a3

REPORT OF THOROUGH EXAMINATION

This report complies with the requirements of the Lifting Operations and Lifting Equipment Regulations 1998

Date of Thorough Examination:	Date of Report:	Report number:
Name and Address of employer for whom the thorough examination was made:	Address of premises at which the examination was made:	

Description and identification of the equipment:	Safe Working Load(s):	Date of manufacture if known:	Date of last thorough examination:

Is this the first examination after installation or assembly at a new site or location?	YES		NO	
If the answer to the above question is YES has the equipment been installed correctly?	YES		NO	

Was the examination carried out:				
Within an interval of 6 months?	YES		NO	
Within an interval of 12 months?	YES		NO	
In accordance with an examination scheme?	YES		NO	
After the occurrence of exceptional circumstances?	YES		NO	

Identification of any part found to have a defect which is or could become a danger to persons and a description of the defect: (If none state NONE)

Is the above an existing or imminent danger to persons ***Note**-This is a reportable defect	YES		NO	
Is the above a defect which is not yet but could become a danger to persons: (If YES state the date by when)	YES by:			

Particulars of any repair, renewal or alteration required to remedy the defect identified above:

Particulars of any tests carried out as part of the examination: (If none state NONE)

Observations / additional comments relative to this thorough examination

IS THIS EQUIPMENT SAFE TO OPERATE?	YES		NO	

Name & Qualifications of person making this report:	Name of person signing or authenticating this report on behalf of the author: Signature:	Latest date by which next thorough examination must be carried out:

Name and address of employer of persons making and authenticating this report:

Version 2 August 2019

Document Originator: D Hogan

SAMPLE

Annex 1 – Bibliography

Note: Some standards below have been assigned a link to our International standards portal where LEEA Members can access a comprehensive library of International Standards for reference, as part of their membership. You will need to login first and all standards are read only.

Standards

BS 2853:2011 Specification for the testing of steel overhead runway beams for hoist blocks

BS 7255:2023 Safe working on lifts. Code of practice

BS 8539:2012+A1:2021 Code of practice for the selection and installation of post-installed anchors in concrete and masonry

BS 7883:2019 Personal fall protection equipment. Anchor systems. System design, installation and inspection. Code of practice

BS EN 1090-1:2009+A1:2011 Execution of steel structures and aluminium structures - Requirements for conformity assessment of structural components

BS EN 1090-2:2018+A1:2024 Execution of steel structures and aluminium structures - Technical requirements for steel structures

BS EN ISO 3266:2010+A1:2015 Forged steel eyebolts grade 4 for general lifting purposes

BS EN 1991-3:2006 Eurocode 1 - Actions on structures - Part 3: Actions induced by cranes and machinery

BS EN 1993-6:2007 Eurocode 3: Design of steel structures - Part 6: Crane supporting

BS EN 365:2004 Personal protective equipment against falls from a height, general requirements for instructions for use, maintenance, periodic examination, repair, marking and packaging

BS EN 795:2012 Personal fall protection equipment – Anchor devices

BS ISO 7500-1:2018 Metallic materials — Calibration and verification of static uniaxial testing machines. Part 1: Tension/compression testing machines — Calibration and verification of the force-measuring system

BS EN 17235:2024 Permanent anchor devices and safety hooks

Legislation

Health and Safety at Work etc. Act 1974

Lifting Operations and Lifting Equipment Regulations 1998 (LOLER)

Provision and Use of Work Equipment Regulations 1998 (PUWER)

Personal Protective Equipment (Enforcement) Regulations 2018

The Construction Products (Amendment etc.) (EU Exit) Regulations 2019

The Construction Products Regulation (EU) No 305/2011

The Work at Height Regulations 2005

The Supply of Machinery (Safety) Regulations 2008

LEEA Guidance Documents

LEEA Code of Practice for the Safe Use of Lifting Equipment - COPSULE, Edition 9.1 - January 2024

LEEA 017 PROCESS CONTROL PROCEDURES Guidance for the Examination, Overhaul, Repair and Test of Lifting Equipment – Version 4 - February 2020

LEEA 032 Guidance on Written Schemes of Examination for Lifting Equipment - Version 2 -July 2023

LEEA 075 Guide to the Verification of Runway Beams - Version 3 - March 2022

Health and Safety Executive Guidance

HSG38 Lighting at work