

Penny Hydraulics Lorry Loader Safety Guide

REFERENCE INFORMATION

The Health and Safety at Work Act 1974

Under Section 3 of the Health and Safety at Work Act the prime duty of care rests with the employer, but employees have legal duties too, particularly under Sections 7 and 8 of the Act. These include:

- Taking reasonable care for their own Health & Safety and that of others who may be affected by what they do or don't do.
- Co-operating with their employer on Health & Safety matters.
- Not interfering with or misusing anything provided for their health, safety and welfare.

The Health and Safety at Work Act will also be used by the enforcing authority as it requires, in general terms, that the safety of all persons is, so far as is reasonably practicable, ensured at all times.

Employers have a Duty of Care for the safety of staff on work journeys whether full- or part-time or driving their own vehicle on business, their road safety is the concern of the company.

(LOLER) Lifting Operation and Lifting Equipment Regulations 1998

LOLER was brought about in 1998 to sit alongside the Health & Safety at Work Act 1974, Supply of Machinery Regulations 1992 and the Provision and Use of Work Equipment Regulations 1998. The Regulations impose health and safety requirements with respect to lifting equipment.

Previously, all of these Acts had their own schedule of legal requirements for the testing and examination of lifting equipment. LOLER sought to harmonise best practice from all previous acts and replace them with one document.

Two examples of the provisions made within LOLER are:

- The strength and stability of lifting equipment.
- Reports of thorough examinations and records of inspections.

More detail again is available in the Approved Code of Practice associated with LOLER.

An Approved Code of Practice gives one interpretation of the regulations and if this course of action is followed then a court of law would not disagree with it. The Code of Practice refers to BS7121 regarding the load testing of lifting equipment.

There may be even more detailed information available for some lifting equipment that "puts flesh on the bones"

The Provision and Use of Work Equipment Regulations 1992 (PUWER)

PUWER is a broad-based set of regulations with responsibilities for purchasers and operators. Any person who buys equipment must ensure that it is suitable for its intended use. They must also ensure that it is properly maintained, regularly inspected and the information logged. PUWER also determines any specific risks and details what information and instructions must be made available to operators.

PUWER

Section 9 Training

(1) Every employer shall ensure that all persons who use work equipment have received adequate training for purposes of health and safety, including training in the methods which may be adopted when using the work equipment, any risks which such use may entail and precautions to be taken.

(2) Every employer shall ensure that any of his employees who supervises or manages the use of work equipment has received adequate training for purposes of health and safety, including training in the methods which may be adopted when using the work equipment, any risks which such use may entail and precautions to be taken.

The Supply of Machinery (Safety) Regulations 1992 – Machinery Directive

Manufacturers have a high degree of responsibility to produce information for operators as part of the CE marking process. This takes the form of producing operating manuals, description of the intended use, service schedules and inspection regimes.

Sticking to these regimes will ensure that they meet their obligations as an operator. They must be aware though that if there has been a significant change, accident or a major new component fitted to a lifting machine then a further thorough examination and load test may be required.

The Supply of Machinery (Safety) Regulations 1992, also called the Machinery Directive, contains the essential health and safety criteria that all machines must meet. There are responsibilities for designers, manufacturers and suppliers. The manufacturer must have developed a “technical file” that is a legal requirement and it documents how they meet the criteria. Having documented how they meet the criteria, they can fix the CE mark to the machine and release a “Declaration of Conformity”.

BS 7121 Safe use of cranes, Parts 2 and 4

BS EN 12999 Cranes – Loader Cranes

British BS, European EN and International ISO Standards

Standards do not generally have the force of law; the application of a standard is almost always voluntary, although standards are very often used in support of legislation, and compliance with a standard is sometimes quoted in legislation as offering a route to discharging legal obligations. Good examples of this are references to BS7121 in the Guidance to LOLER.

British Standards (BS) are generally restricted to Codes of Practice for safe use of equipment e.g. BS7121-4 Safe Use of Lorry Loaders.

European (EN) standards cover requirements for basic principles - (Type A),
Common product requirements - (Type B)
Specific product requirements - (Type C) e.g. EN12999 Cranes – Loader Cranes.

Harmonised European Standards, which give presumption of conformity to the Essential Health and Safety Requirements of the Machinery Directive.

International Standards (ISO) cover both the safe use and specification of cranes and components. They do not have any legal status but are often taken as good practice and are cited as normative references in some EN product standards.

ALLMI Code of Practice for Installation Application and Operation

The Association of Lorry Loader Manufacturers and Importers (ALLMI) was founded in 1978 at the request of the Health and Safety Executive, and it remains today as the UK's only Trade Association devoted exclusively to the lorry loader industry. It serves, represents and promotes the interests of its members and the industry at large, and it is the natural focus and authority on all issues involving the design, manufacture, application and use of lorry loaders.

ALLMI's core aims are:

- To promote the safe use of lorry loaders.
- To ensure that the Association is involved in the formulation of any legislation which affects the industry's interests.
- To promote compliance with training requirements embodied in current legislation.

ALLMI has members drawn from all parts of the industry, including manufacturers / importers, service agents, ancillary equipment manufacturers / suppliers, fleet owners and site operators. All members share the same objective of promoting safe use and best practice

CHOOSING AN INSTALLER

It would be expected that the installer would have access to the OEM chassis manufacturers Body Builder Guide Lines and installation instructions from the crane manufacturer. The installer would be expected to work within a quality procedure, use coded welders and traceable materials. The finished loader crane installation must be subject to a thorough examination and test for which calibrated weights are required, a test area and a competent person to conduct the examination and test. The competent person may be an in-house employee, or an experienced employee of a loader crane supplier; or an insurance company inspection engineer etc., but in all cases sufficiently independent and impartial to allow

objective decisions to be made. The competent person will have adequate knowledge of the equipment.

Check that the installer has the knowledge and equipment to commission and calibrate any crane safety systems. Many new cranes have complex programmable safety systems, which must be set before the crane, can be placed into service.

Ask if the installer is an ALLMI member.

Remember: -

- An incorrectly mounted loader crane is not only unsafe but can also render the vehicle unsafe.
- The safe use and life expectancy can be greatly reduced if the loader crane is incorrectly calibrated.

THE COMPETENT PERSON

Is defined in the Approved Code of Practice for LOLER as having “such appropriate practical and theoretical knowledge and experience of the lifting equipment to be thoroughly examined as will enable them to detect defects or weaknesses and to assess their importance in relation to the safety and continued use of the lifting equipment”

THE INSTALLER

It is the responsibility of the installer to ensure that the loader crane is correctly mounted, that the relevant EHSRs (Essential Health & Safety Requirements) have been considered and the appropriate CE documentation is completed. The installer must follow the recommendations of both the loader crane manufacturer and the chassis manufacturer. An incorrectly mounted loader crane may be unsafe to use and its warranty will be invalidated, it may also effect the safe use of the vehicle to which it is installed and effect the vehicle warranty.

The installer should nominate a Responsible Person who will compile a Technical File of the complete build. This Technical File must be maintained and be available for inspection by authorities for a period of ten years. Stability and axle load calculations must be carried out. A dimensional drawing must be produced as a record of the build. The helper frame must be designed in conjunction with the chassis manufacturer requirements.

INSTALLATION TECHNICAL FILES

1. Who the guidance is aimed at:

- Manufacturers and installers of loader cranes.
- Persons conducting thorough examinations of loader cranes and their employers.
- Persons and organisations that own and operate loader cranes.
- National enforcing authorities.

- Any other persons who may be deemed a duty holder under the requirements of the Lifting Operations & Lifting Equipment Regulations (LOLER) 1998, or the Provision and Use of Work Equipment Regulations (PUWER) 1998.

2. What the law says:

- Loader crane installers should record and maintain the contents of a technical file covering the installation from enquiry to handover. Technical files demonstrate how machinery meets the relevant health and safety requirements.
- Note: Lorry loader technical files are also commonly referred to as 'build files'.
- The Machinery Directive is European law which is intended to ensure that all new machinery is suitable and safe, and that important issues, including foreseeable misuse and foreseeable human error, have been addressed. The Machinery Directive 2006/42/EC states in Annex VII(A): "The technical file must demonstrate that the machinery complies with the requirements of this Directive. It must cover the design, manufacture and operation of the machinery to the extent necessary for this assessment".
- The Essential Health and Safety Requirements (EHSRs) of the Machinery Directive are enacted in the United Kingdom through the Supply of Machinery (Safety) Regulations 2008. Part 7 of Schedule 2 of these Regulations describes the procedure for compiling a technical file, and replicates the requirements from the Machinery Directive.
- The Supply of Machinery (Safety) Regulations 2008 require the technical file to be retained for at least 10 years from the machinery's date of manufacture.
- Manufacturers / installers are not obliged to make the contents of technical files available to other suppliers, or eventual users of the machinery. However, it is a recommendation in BS7121 Part 4 at 11.4 that the owner / duty holder maintains records, such as: "technical information, including maintenance instructions and performance data provided by the manufacturer".

Note: The contents of the 'machine history file' kept by the loader crane owner are listed in BS7121-2-4, 7.5.

3. Technical file contents guidance:

A typical lorry loader technical file could contain the following:

- Order Confirmation:
Including copies of production specifications and drawings; and a general description of the machinery.
- Technical Calculations and Drawings:
These could include: installation instructions; payload, axle loading and stability calculations; sub-frame designs and specifications; and stability monitoring system settings. These calculations and drawings are commonly completed using manufacturer technical calculation software packages.
- Loader Crane Manufacturer's EC Declaration(s) of Conformity:

- This (along with affixing a CE marking on the loader crane itself) is the loader crane manufacturer's EC Declaration of Conformity with the EHSRs of the Machinery Directive.
- **Note: Further detail on the required contents of loader crane mounting instructions are listed in BS-EN12999, 7.2.2.**
- ***The installer is responsible for carrying out the loader crane manufacturer's installation instructions.***

Suppliers Declaration of Conformity must:

- State the name and address of the manufacturer and, where appropriate, the name and address of their authorised representative;
- Contain a description of the machinery, its make, type and serial number;
- Indicate all European laws (Directives) with which the machinery complies;
- State details of any notified body that has been involved;
- Specify which standards have been used in the manufacture (if any);
- State the place and date of the Declaration; and
- Be signed by a person with authority to do so.

Note: The Supply of Machinery (Safety) Regulations 2008 set out the requirements for EC Declarations of Conformity in Schedule 2, Part 2, Annex II to Regulation 7(2)(e) and 8(1)(c).

Historical Note: Since 29th December 2009, the Machinery Directive classifies a loader crane as a machine at the point at which it is first made available for sale, i.e. when it has been built by the manufacturer. Historically, a loader crane had been classed as "partially completed" machinery on the understanding that it does not become "completed machinery" until it has been mounted and had a power source fitted, i.e. fitted to the vehicle. In these circumstances, loader crane manufacturers used to supply a 'Declaration of Incorporation', with the installer being responsible for completing a Declaration of Conformity once they had completed the installation.

REFERENCE

7.3 Marking

7.3.1 General

All plates affixed permanently to the crane shall be manufactured from weatherproof material.

7.3.2 Manufacturer's plate

A manufacturer's plate shall be fixed permanently on the loader crane, containing the following information:

- a) manufacturer and, where applicable, his authorised representative;
- b) year of manufacture;
- c) serial number;

d) type, if there is a type designation.

Installer's EC Declaration(s) of Conformity

- A second Declaration of Conformity is required from the installer, and a CE plate mounted on the installation itself.
- This is separate from the Installer's Plate, the requirements of which are detailed in BS-EN12999, 7.3.3.

7.3.3 Installer's plate

An installer's plate shall be fixed to the crane or the supporting item containing the following information:

- a) Installer's name and address;
- b) Year of installation;
- c) Crane serial number, chassis or registration number of vehicle (if applicable).

Commissioning Documents

This could include: -

- The commissioning Report of Thorough Examination for the loader crane
- Commissioning Report of Thorough Examination for any attachments
- Stability test report
- Calculations of stability at intermediate positions
- Lorry loader inspection sheet
- Attachment inspection sheet
- Function test
- Dynamic test and calibration test records
- Any other technical reports and certificates, such as end of build compliance check sheets and non-compliance reports.

For further information on installation testing and test procedures, refer to BS-EN12999, clause 6.2.

Vehicle Manufacturer Recommendations

- The process of checking the vehicle manufacturer's recommendations should be verifiable. This could include taking photographs and retaining any drawings that have been followed as proof that these checks have been made, and the work

complies with the recommendations. Typically, this could also include a documented incoming chassis inspection assessment report, Certificate of Completion, Weight Tests including axle loadings.

Specification Details

- Such as workshop instructions and works orders
- Full specification information for the crane
- Production notes and plans
- Sub frame specifications
- Details on the position and orientation of the loader crane
- Stabiliser beam type and span
- Control systems installed
- Mounting specifications, including holding down bolts specifications
- Information on special features
- Information on specific operating conditions, such as de-rated areas; parts lists, etc.

Electrical Drawings

- Including installation wiring diagrams of electrical systems and control circuits.
- Check Sheets & Inspection Report Forms:
- Signed and dated check sheets showing all items checked by the installer, including stage inspections; installation completion inspections; quality control reports.

Loader Crane Manufacturer's Pre-Delivery Inspection Form

- For all items, including the setup of any specific safety systems, such as stability monitoring devices.

Photographs

- Photographs of the lorry loader under load test during commissioning and of the finished installation from multiple angles, immediately prior to handover. These photographs could be of assistance during repeat builds and may assist in dispute resolution, if required.

Vehicle Collection/Handover Documents

- Including a checklist of all handover items not covered elsewhere, such as warranty information and service log books.

Axle loading & stability calculations

- It is essential that axle loading and stability calculations are made before any vehicle mounted lifting equipment is purchased. Reputable commercial vehicle converters, bodybuilders and lifting equipment manufacturers that offer fitting will offer this service. The calculations will determine if a product is suitable, depending on what needs to be lifted and where the item needs to be placed. These checks are essential

in order to ensure that plated axle loads are not exceeded and that loads can be distributed evenly in both running order (unladen) and at gross vehicle weight (when the load takes mass off the front axle).

- These calculations also generate a theoretical stability envelope with the crane and its sub frame in position and determine possible stabiliser leg requirements. A commercial vehicle may be stable when the boom is fully retracted, but there may be non-linear moments with the mass of the extending booms themselves which will also contribute to the tipping point. This may well require working with an OEM and third party converter to determine an adequate chassis and sub frame.
- From a design and construction perspective, stress calculations which consider the torsional rigidity and mass of the chassis, using OEM's data is key, but it shouldn't end there. From an operational perspective, understanding the exact current and future duties of the vehicle and loader crane is vital. A higher specification crane is likely to require a heavier duty chassis cab.

Whole Vehicle Type Approval

Further to confirmation from the Vehicle Certification Agency on 06.10.16, Penny Hydraulics can confirm that:

- Cranes fitted internally into vans are out of scope of the Enhancement Scheme.
- Cranes fitted to chassis cabs are outside the scope of Whole Vehicle Type Approval if the Mass in Running Order of the vehicle is not increased by more than 3%. Mass in Running Order is the weight of the van or chassis cab as it left the factory including a full fuel tank and a nominal driver weight of 75kg. If the 3% is exceeded, the crane must be fitted post registration and is then classed as payload.
- On fitting the crane, the installer must carry out overall/axle mass checks, stability calculations and supply a test certificate.

In the above cases, the vehicle does not require a further stage of Type Approval or Individual Vehicle Approval.

This considered, should the vehicle still require bodywork and/or related work to be Type Approved, then Penny Hydraulics can arrange this on your behalf through a network of trusted converter/bodybuilder partner companies throughout the UK. Please be advised that there are cost and time implications involved in this process so this should be considered and discussed as early as possible in the specification process.

HEALTH & SAFETY

The Lifting Operations and Lifting Equipment Regulations (LOLER) replaced the legal requirement for the four yearly Overload Test with the annual Thorough Examination and Inspection, and made it the responsibility of the Competent Person to determine if and when an Overload Test should be carried out, on the grounds that "the design of certain

lifting equipment is such that damage may be caused by conventional Overload Tests". Loader cranes do not fall into this category, as witnessed by the fact that BS7121 Part 2 has an entire section devoted to the testing of loader cranes. Load Testing is a requirement of ALLMI and BS7121 Parts 2 and 4.

Thorough Examination

Inspection of the lorry loader by a Competent Person to determine if it is safe for continued use until the next Thorough Examination is due. Thorough Examinations should be conducted at least every 12 months. A Thorough Examination will also be required:

- If the lorry loader is involved in an accident or dangerous occurrence.
- After a significant change in conditions of use.
- After long periods, out of use.
- At shorter intervals as determined by the Competent Person.

Please note that in addition to the above, lifting equipment for lifting persons or an accessory for lifting, must be thoroughly examined at least every six months.

Thorough Examination and Testing Regimes for Loader Cranes beyond 8 Years Old

The recommendation for shortening intervals between thorough examinations (and also overload tests) from 8 years is intended as a guide originating from BS7121 Part 4:2010 which is a Standard as opposed to Regulation or Law. Whilst the machine may still appear perfectly serviceable, it would be worth considering in some cases whether to shorten the intervals at which thorough examination and overload testing take place as this is often regarded as a more pragmatic and cost effective alternative to non-destructive testing.

Therefore, if the owner of a lorry loader crane chose to ignore BS7121 Part 4 or if a Competent Person ignored the recommendations of BS7121 Part 2-4, they are perfectly entitled to do so as it is not a legal requirement. However, should they find themselves having to justify their position, they would need to explain why they had chosen to ignore industry recommended practice and also demonstrate what they had done instead which must have been at least as good or better than the recommendations contained within the standard.

Non-Destructive Testing

NDT is employed to assist in the detection of any material cracks or defects that may lead to structural failure.

The Competent Person making the examination must either be qualified in the techniques of NDT or employ a suitably qualified specialist.

The crane should be thoroughly cleaned to remove grease and grime that would hinder a visual inspection. In the case of a more in depth analysis the crane may require dismantling and or removal of paint. The extent of this preparation depends greatly on the NDT method adopted. Blistering, flaking or cracked paint must be removed.

Common methods of NDT used to investigate structural failure.

- Visual Inspection
- Electromagnetic Testing
- Dye Penetrant Testing
- Magnetic Particle Testing
- Ultrasonic
- Radiographic Testing
-

WHEN TO TEST

Full Testing after a Structural Repair or Component Change

In all cases, it is the responsibility of the Competent Person to make the appropriate judgement. As a rule of thumb, and in the case of a structural repair then almost definitely; but in the case of a component change it should be determined by assessing the nature of the repair and the condition of the equipment.

Attachments

All loader crane attachments must be thoroughly examined at least every six months, with the exception of the loader crane hook which can be examined as part of the loader crane at 12 monthly intervals.

SAFETY CONSIDERATIONS WHEN TESTING

Site Conditions

- The ground should be well consolidated and capable of withstanding the loads that will be applied to it.
- There should be no known hazards such as drains, cable ducts, back filled areas or any other subterranean weaknesses.
- Loader cranes should not be tested in the vicinity of overhead power lines. A strict safety rule is that no lorry loader must be used closer than the distance of the maximum radius of the loader plus 15 metres (taking the load into account) to any overhead power lines suspended from steel towers, or the maximum radius plus 9 metres to overhead power lines supported on wood, concrete or steel poles.
- Tests should be carried out on ground with a slope no greater than 5'.

- The test site should be of a sufficient size to allow unobstructed movement of the loader crane and load.
- The test area should be segregated and notices posted prohibiting unauthorised entry.
- The test site should be well clear of public areas such as roads and railways.
- The test site should be clear of plant and property.

Personal Protection

- Test personnel should wear appropriate and high visibility clothing, approved safety helmets, rigging gloves and shoes or boots with steel toe protection.

Test Personnel

- Testing should not be conducted unless the test personnel are familiar with the type of loader crane and safety systems being used.
- Ensure that all personnel not essential to the test are kept away from the test area.
- Test personnel should be safely positioned at all times.

Test Equipment

- Any chains or slings used should be checked for damage before use.
- Any chains or slings used should have been purchased with a Declaration of Conformity within the last six months, or have been thoroughly examined within the last six months and be suitable for the load to be lifted.

Documentation

- Prior to the lorry loader being thoroughly examined, previous Reports of Thorough Examination and test certificates should be made available to the examiner. These will form the basis for any testing to be conducted. The previous test certificate should be checked for any limitations placed on the crane at the initial installation. If a test certificate cannot be found, then the lorry loader should be treated as a new installation.
- A copy of the operator's instruction for the model of loader crane that is being tested should be available.
- Before conducting any tests for new installations, the following documentation should be collated:
 - A copy of the stability calculations.
 - A copy of the axle load calculations.
 - A drawing showing the recommended sub frame specification.
 - Information on any special features for consideration.
 - Loader crane/build specification, including:

- The position and orientation of the loader crane.
- Stabiliser beam type and span.
- The control system installed.
- Any additional options in the build specification.

SPECIFICATION CHECK

The Examiner should confirm that the loader crane presented for examination matches the loader crane specified in the documentation.

VISUAL INSPECTION

The lorry loader can be operated (with caution) for this inspection.

Supply copy of SwingLift/PH crane visual inspection sheet

Hoist (if fitted)

- Visually Check all pulleys/sheaves and drums to ensure they are adequately lubricated, free from damage and wear, and that the rope fits correctly.
- Check that all idler pulleys/sheaves turn freely.
- Ensure that all guards are in place and undamaged.
- Examine the entire length of the hoist rope for signs of wear, damage, deformation, corrosion or broken wires (for further information refer to BS7121 Part 2 or ISO 4309). This must include rope anchors.
- If specified, check pressure roller assembly.
- Check for a Report of Thorough Examination and a test certificate for the rope. Check the rope identification number against the certificate.
- Check whether the hoist rope is of the size and type specified by the manufacturer, and is reeved in accordance with the instructions. Pay particular attention to the end terminations.
- Inspect the hoist limit switches, when fitted. Check they operate correctly and are free from damage and excessive wear.

Thorough examination of hoists and wire ropes

- The hoist and wire rope (where fitted) are an integral part of the lorry loader and their examination should be in accordance with the lorry loader's regime.
- The continued safe use of wire ropes depends on regular assessment of the condition of the ropes and the equipment with which they are used.
- Some lorry loaders operate in conditions where the wire ropes and equipment are particularly liable to damage, e.g. corrosive atmosphere, abrasive particles. In such circumstances, assessment of the condition of the rope and the equipment should be carefully carried out and the rope removed from service when the damage affects its safe operation.

- Records should be kept of the examination and replacement of wire ropes. These should consist of the reports of thorough examination for the lorry loader and certificates of test for the wire ropes at time of supply.
- When carrying out inspections and examinations to assess the fitness of the wire rope for further service, both general deterioration and localized deterioration or damage should be considered. Therefore, the whole length of the rope should be examined, paying particular
- Attention to the rope adjacent to the terminations, lengths that have been running or are stationary over drums, sheaves and deflection pulleys and any other areas likely to sustain damage.

NOTE Information on the installation, maintenance and thorough examination of wire ropes is given in BS 7121-1.

FUNCTION CHECK

The operational functions of the crane shall be tested with no load to demonstrate the following:

- The satisfactory operation of each control device. Check for smoothness of operation and ensure that all controls return to neutral when released. Check that the motion is in the direction as indicated by the decal.
- The satisfactory operation of each crane motion.
- The crane functions should be operated throughout the full range of permitted movements up to the maximum speeds.

Control System

All control system functions should be checked for correct function. The following should be checked:

- If fitted, 'legs not stowed warning' (visual standard, audible optional). **Please note, this is a requirement for loader cranes with manual legs which are manufactured from the 1st October 2007, and have been issued with an EC Declaration of Incorporation and/or an EC Declaration of Conformity stating that the loader crane complies with EN12999.**

Over Height Warning/Bridge Bashing Regulations

Under Statutory Instrument No. 530/1997, The Road Vehicles (Construction and Use) (Amendment) Regulations 1997, the following apply: -

- From the 1st October 1997, all relevant vehicles over 3 metres in height must have a notice in the vehicle cab indicating the vehicles normal travelling height.
- From the 1st April 1998, all relevant vehicles put on the road for the first time, must be fitted with devices to warn the driver that the travelling height stated on the notice in the cab, has been exceeded.

- From the 1st October 1998, all relevant vehicles first put on the road after 1st April 1993, must be retro fitted with devices to warn the driver that the travelling height stated on the notice in the cab, has been exceeded.

For CE marked machines, EN12999 Section 5.6.1.3 calls for an indicator to warn the operator when the crane height exceeds a predetermined maximum.

Slew Stability:

In many cases, it is not possible to use the maximum capacity of the loader crane in the whole slewing sector with the stability of the vehicle ensured.

The slewing can be restricted either electronically or mechanically.

If installing the loader crane, check the work instructions to establish whether the crane is unstable in any slew area. If a supply only crane, check the stability calculations you made for the installation.

If mechanical stops are in place, checks should be made to ensure that the crane stops slewing at the correct angle according to the work instructions or the stability calculation results.

For electronic SCU Stability, it is possible to reduce the capacity of the loader crane in the SCU Stability Sector. The amount this should be reduced by will be given in the work instructions or can be established by the stability calculations.

With electronic SCU Stability, check that when the crane is slewed into the reduced sector with too much load, the SCU cuts in and the slewing stops.

Check that it is then possible to slew the crane back or to operate according to the normal SCU logic.

Check that if a load is lifted in the reduced sector and the SCU cuts in, it is possible to use normal SCU logic and possible to slew out of the sector only on the side where you came into the sector.

Loader Crane

- Check the operation of stabiliser “Cam Locks” and automatic latches. Check they are free from wear, distortion and corrosion.
- Check that the stabiliser beams slide in and out correctly. Also, check for wear and security.
- Check the operation and locking of swing up stabilisers, if fitted.
- Ensure that stabiliser legs make firm contact with the ground and do not creep during operation.

- Check the stabiliser foot pads fitted to the stabilisers.
- Check the condition of any supplementary load spreader mats.
- Operate the telescopic extensions on the loader crane and inspect them for wear, lubrication and security.

Hoist (if fitted)

Check:

- Manufacturers Guidelines - Three turns remain on the hoist drum.
- Over hoist limit function (if fitted).
- Torque limit.

RUNNING IN

- All functions are to be operated without load, throughout their permitted range in order to purge the hydraulic system of any air pockets.
- End stroke each hydraulic cylinder in both directions and check for any hydraulic fluid leak (note: end-stroking the inner and/or outer boom cylinders could induce an overload condition).
- If a hoist is fitted, the hoist drum should be rotated four times in each direction.
- Slew the loader crane fully, clockwise and anticlockwise to purge the slew system.

CALIBRATION CHECK

Test Weights

- The following test weights should be used.
 - Weights of proven accuracy to within +/-1.0%.
 - Weights proven on a weighbridge. The weighbridge must have been calibrated to within +/-1.0% within the last 12 months.
 - For weights suspended from a calibrated weighing device, the weighing device must have been calibrated to within +/-1.0% within the last 12 months.
- Check that the Rated Capacity Limiter operates to prevent dangerous movements and allows return movements to a safe condition.
- Rated capacities should be checked with the loader crane in the condition shown on the load chart (i.e. attachments removed).
- When checking Rated Capacity for hydraulic extensions, any manual extensions should be removed or their weight should be taken into account in determining the test load.
- Remember that the test load shall be the combination of the test weight and any slings or chains.

Safety System

- See the relevant manufacturer's manual for adjustment of approach and SCU settings.

Boom System

- The outer boom should be horizontal for this calibration check.
- The inner boom should be raised as shown on the capacity plate for the calibration check.
- The radius should be measured from the centre line of rotation of the column to the centre of the load hook.
- With the boom system retracted, lift a load equivalent to 110% of the Rated Capacity for maximum hydraulic extension.
- Keeping the load as close to the ground as possible, increase the radius by extending the boom system until the indicator gives the approach to Rated Capacity warning.
- The radius should be measured and the load on the loader crane confirmed between 90% and 97.5% of the Rated Capacity for that radius.
- The radius shall then be further increased until the indicator gives an overload warning. Confirm at this point that the radius cannot be increased.
- The radius should be measured and the load on the loader crane confirmed between 102.5% and 110% of Rated Capacity.
- Repeat the process for a mid-radius rating.

Guidance on how to calibrate the Rated Capacity Indicator/Limiter should be obtained from the manufacturer.

OVERLOAD TEST

The purpose of the Overload Test is to confirm the structural integrity of the lorry loader. This includes anchorages to the vehicle, vehicle structural parts, stabiliser legs and all hydraulic equipment.

- Before the Overload Test takes place, the Thorough Examination should have determined whether the loader crane is free from any defect that would prevent it from safely handling the test load and that it is in the correct configuration and condition according to the instructions. All lifting accessories should also be thoroughly examined before the Load Test to ensure they are safe for use.
- Before the Overload and Stability Tests, check the loader crane's reaction with Rated Capacity for maximum hydraulic extension. i.e. does the vehicle appear stable.
- The loader crane should be tested in all configurations and rated capacities for which it is designed to be used. This may include reduced Rated Capacity areas, various stabiliser positions, manual sections or third booms.
- All attachments with the exception of the hook, should be removed before testing.
- Hydraulic oil should be at normal operating temperature before testing commences.

- Ensure that the stabiliser legs are fully extended and that the vehicle tyres are inflated to the manufacturer’s recommended pressure. If the loader crane is mounted on a vehicle with active air suspension, the air must be dumped and locked off in the fully deflated position before deploying the stabilisers. Ensure that the stabiliser legs are in firm contact with the ground, to the extent that they provide adequate support for the loader crane, but not as to take the load from the wheel and reduce the efficiency of the parking brake.
- Remember that the weight of all additional lifting equipment fitted to the loader crane should be regarded as part of the test load.
- The test should be carried out using an unloaded vehicle, without the operator in the cab.
- For the Overload Test to be performed, the relief valve system, Rated Capacity Indicator and overload protection system, should be overridden or disconnected.
- All safety devices should be reconnected and where appropriate, reset, retested and resealed before the lorry loader is released from testing.

Performing the Overload Test

- The test load shall be 125% of the Rated Capacity of the lorry loader.
- The Competent Person should clearly indicate when the test starts and when it has been completed. During the test, any operator and/or slinger should accept instructions from only the Competent Person (with the exception of the emergency stop signal).
- If the operator feels that the instructions create an unsafe situation, then they should stop and seek further advice from their employer.
- The test shall be considered successful if no connection has been loosened or damaged and if there are no cracks, permanent deformation, paint flaking or damage which affect the function and safety of the loader crane and its installation.
- The test shall be carried out with the test load at the following radii:
 - Maximum radius attainable with hydraulic outreach. Any manual boom sections must be removed. This test may (new installations) be carried out as part of the Stability Test.
 - At the shortest **practical radius** shown on the Rated Capacity chart. Any manual boom sections must be removed.
 - Maximum radius with any manual extensions.
 - One intermediate radius, preferably corresponding to one of the ratings shown on the load plate.

Note – The test for maximum hydraulic radius is not required if a Stability Test is made for the same radius.

- At each radius, the load should be positioned as close to the ground as possible, allowing for vehicle stability and boom deflection. Slew slowly through the full in service slewing arc of the loader crane.

- Avoid shock loading, which can be caused by rapid acceleration of loader crane motions, sudden braking or erratic movements.

SINK RATE

The sink rate is caused by leakage in hydraulic components.

- The sink rate shall be tested at the maximum Rated Capacity at the maximum hydraulic outreach.
- The sink rate shall be measured at the boom tip.
- The sink rate shall be considered acceptable if the rate of sink does not exceed 0.5% of outreach per minute. The test load should be left suspended for 10 minutes.

STABILITY TEST

It is a requirement of the Supply of Machinery (Safety) Regulations, Schedule 3, Section 1.3.1, that “machines must be so designed and constructed that they are stable enough under the foreseen conditions for use without risk of overturning.” The purpose of the Stability Test is to verify the stability of the loader crane mounted onto the unloaded vehicle (EN12999). This test is required for new installations.

- The Stability Test load shall be determined using a computer package, such as Trailer Win, or according to the Calculation of the Stability Test Load, details of which can be found in the Lorry Loader Manufacturers’ Installation Manual.
- The Stability Test shall be conducted with the vehicle unloaded and without the driver or any ancillary crane or chassis equipment (this includes timber cranes).
- The RCL and RCI will need to be disabled.
- The test should be carried out at the following radii:
 - Maximum radius with any special extensions.
 - Maximum radius attainable with hydraulic outreach.
- A Stability Test will be made for each slew sector, e.g. if a reduced capacity exists over the cab of the chassis.
- In cases where the crane has a stabiliser safety system which allows the crane to be used with various stabiliser beam spans, the stability will be checked for any reduced capacity areas/sectors.
- At each radius, the load should be slewed slowly through the full slewing arc.
- During the Stability Test, one or more stabiliser legs or wheels may lift from the ground. However, at least one of the hand-braked wheels should remain in contact with the ground.
- The Stability Test shall be made according to the least favourable boom/extension configuration within the whole slewing range.
- The test shall be considered successful if the test load is held static throughout the full slewing arc of the loader crane and at least one hand-braked wheel remains in contact with the ground. It must also be the case that no crack, permanent

deformation, paint flaking or damage to the lorry loader occurs as a result of the test.

- All safety devices should be reconnected, reset and resealed before the lorry loader is released from testing.

DYNAMIC TEST

The object of this test is to subject the hydraulic system and structural members to dynamic conditions and fluctuating loads, in order to check each powered function through its full range of travel and operating speeds, and to confirm the operation of load decelerating valves.

- Dynamic Tests should be performed separately for each loader crane motion.
- Testing shall be carried out at speeds to those appropriate for normal crane operation and shall include repeated starting and stopping of each motion throughout the range of the motion. **However, aggressive shock loading should be avoided.**
- The test load shall be 110% of the Rated Capacity for the maximum hydraulic extension.
- Manual boom sections shall be removed for this test.
- If the crane is fitted with a manual section, this should be removed and the crane tested without it. The manual section should then be remounted and the crane tested again.
- The hydraulic oil shall be at working temperature.
- The RCI and RCL should be disabled.
- All crane positions attainable in service should be reached during the course of the tests.
- The test shall be considered successful if all components have been found to perform their functions correctly in accordance with the design specification and if an examination after the test reveals no damage to the mechanisms or structural components. The hydraulic oil must also be at a satisfactory temperature at the end of the continuous test period.
- At the end of the test, all adjustable relief valves should be sealed with tamper proof seals. The RCL and RCI should be enabled.

2ND VISUAL INSPECTION

- Following the Overload, Stability and Dynamic Tests, the loader crane should be inspected for signs of structural damage that will affect its safety. Look for:
 - Cracking.
 - Permanent deformation.
 - Paint flaking.
 - Loosening of, or damage to, structural connections.

- Twists or deflections in the chassis.
- If any of the above are found, then the test should be considered unsuccessful. After repairs, have been carried out the full test should be re-applied.
- Check for the correct oil level in the hydraulic tank.
- Check for any oil leaks.
- Check for any signs that hoses and/or electrical cable have been snagging.

FINAL CHECK LIST

- Check that the installer's "CE" plate has been correctly stamped and fixed to the sub frame.
- Re-check the holding down bolt torque test with 80% of original tightening torque.
- Check that the Height Warning Device is fitted in the cab and set correctly.
- Check that the Height Warning notice is fitted in the cab.
- Check that all valve "tamper" seals are in place and secure.
- Check that an audible alarm is fitted for cranes with boom systems (with or without manual section) over 12m in length.
- If an attachment is fitted, then check:
 - That the attachment is installed and functions correctly.
 - The attachment should be cycled through all hydraulic movements, end stroking all cylinders. Check for any signs of leakage.
 - That the secondary pressure relief valves for attachment operation from the crane are correctly set for the maximum operating pressure of the attachment fitted.
 - If fitted with lifting hooks then these should be examined. For instruction, see the attachment manufacturer's operator manual.
 - Perform a load check as prescribed in the operator's manual for the attachment.

PREPARING AND ISSUING A REPORT OF THOROUGH EXAMINATION AND TEST

- On completion of a successful test, an ALLMI test certificate should be completed. The certificate should be signed by the person completing the test.
- Separate certificates may be required to cover all possible combinations of the crane, e.g. in standard condition, with manual sections, slew sectors, etc.
- It should be ensured by the Competent Person that the rated capacities stated in the Report of Thorough Examination are identical to those given on the load plates of the crane and the settings on the RCI/RCL. The rated capacities established by the Competent Person and referred to in the Report of Thorough Examination could make it necessary to alter the load plates of the crane and recalibrate the RCI/RCL.
- An ALLMI Report of Thorough Examination should be sent to the employer controlling the use of the lorry loader and also, where appropriate, the person from

whom the equipment has been hired or leased. Where a defect is identified by the Competent Person which needs to be rectified within a specified timeframe, a Report should be submitted to the employer/owner to allow the necessary action to be taken within the required period. Any defects to the lifting accessory must also be reported.

- Explain to the employer/owner, the legal requirement for the keeping of the Report (refer to LOLER).
- Examiners must be aware that they have a duty to notify the relevant enforcing authority when a defect is discovered which poses an existing or imminent risk of serious personal injury arising from the failure of the equipment, should anyone attempt to use it (refer to LOLER).

Details of the written scheme of thorough examination

- The written scheme of thorough examination should, as a minimum, contain the following information:
- The name and address of the owner.
- The name, qualifications and address of the person drawing up the scheme and certifying that it is suitable and sufficient. If the competent person is not working on their own account, the name of their employing organisation and their position in that organisation should be given.
- The make, model and unique identification number of the equipment.
- Any information references used in drawing up the scheme. This may include the manufacturer's manual, or specific information from the designer on the design life of the structure and mechanisms.
- Details of any data logging system fitted, including a listing of the parameters monitored and the means by which data retrieval, monitoring and storage is achieved.
- Details of the environment in which the equipment will be used during the period covered by the scheme.
- Identification of those parts of the equipment requiring thorough examination and the probable methods of deterioration e.g. wear, corrosion etc.
- Frequency of thorough examination for those identified parts which may include time or loading or duty cycle limits and vary for different parts of the equipment.
- Method of thorough examination of those identified parts requiring thorough examination which may include the degree of dismantling required, any preparation to be carried out by the user prior to the examination, NDT techniques, timed replacement etc.
- An indication of the resources required to carry out the inspection. This may include qualified personnel, workshop facilities, specialist NDT and metallurgical facilities etc.
- Any changes to equipment condition, operational or environmental parameters that would require a review of the scheme by the competent person. These may include

damage to the structure, change of use from general use to heavy duty work, or moving from an inland location to a marine environment.

- The date of drawing up the scheme and the date at which any routine review will be required.

Insert Sample certificate of thorough examination

Penny Hydraulics Sales Order Process

Lead times & our order process

On receipt of a purchase order, we aim to confirm your order within 24 hours. The order confirmation is sent via email to the email address we have on file for your company (typically the order contact specified to us) and the document details an order dispatch date. Unless agreed otherwise, this is the date that we will work to.

Payment & quotation terms

Penny Hydraulics quotations are valid for a period of 90 Days.

All sales are subject to our standard Conditions of Sale, a copy of which are available on request, or can be downloaded from www.pennyhydraulics.com

Payment terms are dependent on a customer's financial history with Penny Hydraulics and will be outlined at quote/order stage. It is typical that 50% up to a full upfront payment be requested from new customers. Long-standing customers may be given the option to open a credit account. This is subject to receipt of a completed credit application form and the necessary credit checks being carried out.

Penny Hydraulics use credit report data from RiskDisk (part of the Experian Group). RiskDisk allows us to determine the credit worthiness of our customers and prospects using an Experian Commercial Delphi scorecard and many other publicly & privately available data sources.

Warranty

Penny Hydraulics warranty policy is intended to provide customers with the best possible support to ensure trouble free use of new lifting equipment. Products sold by the company are guaranteed to be free from defective material and workmanship for a period of one year from the date of invoice, or from the date of the commissioning certificate. This warranty applies only under the following conditions:

- The unit or part must not have been subject to neglect or abuse, or operated under abnormal conditions or in an unapproved application.
- The responsibility of the company is restricted to what is, in their judgement an adequate repair or replacement of the company's product.
- An authorised engineer must carry out a six monthly inspection
- The warranty is void if examination reveals that the unit or part has been repaired or adjusted other than by an authorised engineer.
- Normal service repairs carried out by authorised engineers are supported by their own warranty.
- Warranty does not extend to consumable items requiring replacement due to normal wear and tear.
- Any claim under warranty must be made in the first instance by contacting Penny Hydraulics Ltd Service Department on 01246 811475 or via email service@pennyhydraulics.com. The decision will then be made on how best to proceed after consultation with the customer.

Training

The latest health and safety legislation requires that all employers ensure that all employees using or supervising the use of work equipment have received adequate training in method, risk and precautions associated with that equipment.

Penny Hydraulics offer product familiarisation courses to promote the safe use of their equipment. Familiarisation is carried out by qualified instructors and includes practical and theoretical input from the delegates with a certificate of competence issued on successful completion of the course. This type of training is more suited to the smaller Swing Lift cranes and loading platforms. However, for the larger V, FV and PH Cranes or where an approved site certificate or industry card may be required we would always suggest using an approved ALLMI training provider. As long standing ALLMI members, Penny Hydraulics are always striving to promote best practice within the lorry loader industry.

The Training itself includes:

- A brief overview of the lifting legislation
- CE marking and test procedures
- The siting of the lorry loader
- Daily checks
- Proximity to hazards
- Alterations and repairs
- Procedures and precautions
- Maintenance
- Stowing for transit
- Demonstration by Penny Hydraulics trainer
- Practical demonstration by each trainee
- Written test by each trainee

ALLMI is the Association of Lorry Loader Manufacturers & Importers. It is the UK's only Trade Association exclusively dedicated to companies involved in the manufacture, importation, servicing, testing and use of lorry loaders. Founded in 1978, ALLMI was formed at the behest of the Health & Safety Executive (HSE) and it works closely with the HSE in promoting Best Practice.

Reasons to Choose ALLMI Training:

- The ALLMI scheme is fully compliant with the requirements of BS7121 Part 4 2010 (the British Standard for lorry loaders).
- ALLMI is the only accrediting body to specialise in lorry loader training and it delivers the only operator programme to be written for the lorry loader industry. ALLMI's training standards are developed and maintained by the ALLMI Training Committee which consists of representatives from various UK loader crane manufacturers, importers, fleet owners and training companies as well as the HSE.
- ALLMI provides unequalled and comprehensive technical and legislative support for its accredited instructor network.
- The quality and standard of ALLMI's course documentation for both its instructors and operators cannot be rivalled.
- HSE Recognition.

Due to the consistently high standards of its training scheme, ALLMI has been awarded the Health and Safety Executive's 'Working in Partnership' logo of recognition. The logo comes complete with a commendation:

"The Health and Safety Executive (HSE) commends the use of this Training Programme to those who have duties under the Health and Safety at Work etc. Act 1974. This programme was drawn up with the participation of a HSE representative and will be referred to in relevant HSE publications."

The ALLMI training scheme is the only lorry loader training scheme in the UK to have received this commendation from the HSE.

Further information regarding ALLMI certificated training please visit www.allmi.com.

Planned Maintenance Programme

Penny Hydraulics Limited offer nationwide, local service and maintenance programmes for vehicle mounted lifting equipment, goods lifts, tyre handling equipment and lighting winch systems. Our nationwide network of highly trained, specialist lifting equipment engineers based throughout the UK delivers excellent local service and maintenance, repairs and refurbishment services to keep your goods and business moving.

Planned maintenance programmes including scheduled annual Statutory Testing give business owners peace of mind that they are complying with current UK legislation. A next

working day emergency breakdown service ensures equipment is up and running in no time. Engineers carry a full stock of replacement parts so that in almost all cases they can fix any issues on their first visit.

Penny Hydraulics office-based service team remain constantly in touch with the engineers in the field meaning calls will be dealt with quickly by our friendly and efficient staff. With over 38 years' experience in lifting equipment service, Penny Hydraulics have many special order national service programmes in place for large, multi-vehicle fleets, national restaurant chains, pub companies, hotels and breweries covering multiple sites across the UK.

Further sources of reference:

- [☞ ASSOCIATION OF LORRY LOADER MANUFACTURERS AND IMPORTERS \(ALLMI\)](#). Guidance Note 017 Guidance for Employee Induction. Chippenham, England: ALLMI.
- [☞ BRITISH STANDARDS INSTITUTION](#), 2013. BS 7121-2-4:2013. Code of practice for the safe use of cranes Part 2-4: Inspection, maintenance and thorough examination – Loader cranes. London, England: BSI.
- [☞ BRITISH STANDARDS INSTITUTION](#), 2010. BS 7121-4:2010. Code of practice for safe use of cranes – Part 4: Lorry loaders. London, England: BSI.
- [☞ BRITISH STANDARDS INSTITUTION](#), 2011. BS EN 12999-2011+A1: 2012. Cranes – Loader cranes. London, England: BSI.
- [☞ CONSTRUCTION PLANT-HIRE ASSOCIATION \(CPA\) & ASSOCIATION OF LORRY LOADER MANUFACTURERS AND IMPORTERS \(ALLMI\)](#). Safe use of lorry loaders: CPA – ALLMI best practice guide. London, England: CPA & Chippenham, England: ALLMI.
- [☞ EUROPEAN COMMISSION ENTERPRISE AND INDUSTRY](#), 2010. Guide to application of the Machinery Directive 2006/42/EC. 2nd Edition June 2010. Brussels, Belgium: European Commission Enterprise and Industry.
- [☞ EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION](#), 9.6.2006. L 157/24 Directive 2006/42/EC of the European Parliament and of the Council of 17th May 2006 on machinery, and amending Directive 95/16/EC (recast). Official Journal of the European Union.
- [☞ GREAT BRITAIN](#). The Supply of Machinery (Safety) Regulations 2008. London, England: The Stationery Office.
- [☞ HEALTH AND SAFETY EXECUTIVE](#), 2014. Safe use of lifting equipment. Lifting Operations and Lifting Equipment Regulations 1998. Approved Code of Practice and Guidance to LOLER L113. Second edition. Sudbury, England: HSE Books.
- [☞ HEALTH AND SAFETY EXECUTIVE](#), 2014. Safe use of work equipment. Provision and Use of Work Equipment Regulations 1998. Approved Code of Practice and Guidance to PUWER L22. Fourth edition. Sudbury, England: HSE Books.

Disclaimer

This information is for guidance only. It should be studied and the information applied with the assistance of expert advice as necessary. Every effort has been made to ensure the accuracy of the information provided, but no legal liability can be accepted by Penny Hydraulics Ltd or any individual for any errors or omissions, nor for any consequences thereof.