Learning for CPCS
Appointed Person - A61
Lifting operations

AN nocn JOB CARD

Outcomes

Through a combination of targeted training and experience, an appointed person will be able to:

Legislative and regulative	• State basic requirements of legislation, regulations, codes of practice, guidance and good practice documentation that relate to all types of lifting duties • Explain the duties and responsibilities of those involved in a lifting operation including: an appointed person, a lifting operations supervisor, a lift co-ordinator, a machine operator, a slinger, a signaller, a lifting equipment installer/erector and maintenance personnel • Identify the requirements for basic, standard and complex lifts • Describe the lighting requirements for in and out of service conditions for lifting equipment • State requirements to be followed when planning the lifting of persons
Lifting equipment	• Identify different types of lifting equipment, and explain capabilities and limitations of each for given lifting operations • Outline pre-use checks requirements for lifting equipment and accessories • Explain maintenance inspection, thorough examination and testing requirements for lifting equipment and accessories • Describe setting up, erection, levelling and dismantling requirements for different types of lifting equipment and lifting operations • Calculate lifting equipment point loadings/outrigger loadings, spreader mat types and sizes from given information • Identify ground pressure and support loadings from given information • Explain the function and use of, and use information provided by, RCIs and safety devices applicable to a range of lifting equipment • Select the correct lifting equipment for specified lifts • Extract information from manufacturer's technical specifications, duties charts, range diagrams and other information sources • Specify lifting equipment configurations for specific types of lifting operations • Identify attachments and ancillaries to lifting equipment. • Describe out of service procedures for lifting equipment including locations, configurations, and markings
Lifting accessories	• List different types of lifting accessories and explain typical applications • Identify and explain relevant information relating to different types of lifting accessories e.g. markings, certificates and thorough examination reports • Calculate sling capacities, lengths and angles • Explain slinging techniques for given loads including balanced, unbalanced and loose • Specify appropriate lifting accessories for given types of loads • Identify weights and centres of gravity for different types of loads

Outcomes *(Continued)*

Communication	• Describe and specify different types of communication methods for lifting purposes • Explain factors that determine types of communication methods, the limitations of each and the effects of poor communication • State the need to complete a reflective report following a typical lifting operation
Planning	• Identify potential proximity and underground hazards from given plans and drawings • Identify and plan an area, with exclusion zones for different, given lifting operations incorporating safe access/egress routes for before, during and after the lift • State requirements that allow safe site access and egress for typical lifting equipment • Specify the security requirements for specific lifting operations • Construct a safe system of work by producing risk assessments, method statements and lift plans, including drawings, using given information • Explain additional requirements for pick and carry duties • Communicate lift plan information to others involved in a lifting operation i.e. lifting supervisor, machine operator, slinger etc. • Specify positioning of lifting equipment, loads in relation to fixed objects and other limiting factors • Explain the definition, requirements and factors for temporary works management and the effects on typical lifting operations • Identify how the effects of fatigue on the lifting team can affect a lifting operation and how it should be managed • Evaluate and explain how the weather, other environmental factors, and the surrounding area external to the lift zone - can affect the planned lifting operation • Explain how wind loadings and sail-affect areas are calculated • Describe notification, liaising and reporting procedures to statutory, authority, and utility bodies when affected by the lifting operation, i.e. works, railways, highways, airfields, etc. • Explain the requirements to be followed when lifting loads from height

Learning for CPCS

Appointed Person - A61 Lifting operations

Syllabus

	Learning outcome	Training content
Legislative and regulative	• State basic requirements of legislation, regulations, codes of practice and good guidance practice that relate to all types of lifting duties	An overview of: Health & Safety at Work Act 74, The Management of H & S Regs 99 , ACOPs, BS 7121 Parts 1 to 5, LOLER 98, PUWER 98, Work at Height Regulations Aug 2005, Technical Improvement Notices (CPA), SFPSG guidance
	• Explain the duties and responsibilities of those involved in a lifting operation including: an appointed person, a lifting operations supervisor, a lift co-ordinator, a machine operator, a slinger, a signaller, a lifting equipment installer/erector and maintenance personnel	Contents of relevant sections of BS 7121 Parts 1 to 5, LOLER 98 & PUWER 98, and how they apply to each of the designated persons and their duties.
	• Identify the requirements for basic, standard and complex lifts	Requirements of the various types of lifts as defined in BS 7121 Part 3 (overview of complex only). How to compile risk assessments and method statements based on specific lift requirements.
	• Describe the lighting requirements for in and out of service conditions for lifting equipment	Requirements for adequate lighting of lifting equipment that identifies it's proportions and location from a variety of vantage points including ground and at height
	• State requirements to be followed when planning the lifting of persons	Extracts from LOLER, PUWER, BS 8460, BS7121 Parts 1 to 5 relating to the lifting of persons, Work at Height Regs Aug 2005 relating to the use of fall arrest equipment as defined by BS EN 363.
Lifting equipment (cranes)	• Identify different types of lifting equipment, and explain capabilities and limitations of each for given lifting operations	Differing model options for selecting the right crane for particular lifts Identify types of lifting equipment comprising: mobile (Inc. rough terrain, truck type, truck mounted, all purpose, all terrain etc.) plus crawlers, fixed base, tower (Inc. self-erect), yard, low headroom, gantry, lorry loader/knuckle boom, forklifts, telescopic handlers, MEWPS, excavators (used as cranes), hoists. (using the list of equipment on page 9)
	• Outline pre-use checks requirements for lifting equipment and accessories	Level and types of checks for a range of lifting equipment and accessories for configuring and carrying out suspended loads lifting operations

Syllabus *(Continued)*

	Learning outcome	Training content
Lifting equipment (cranes) *(Continued)*	• Explain maintenance inspection, thorough examination and testing requirements for lifting equipment and accessories	Relevant sections of LOLER 98 and BS 7121 Part 2. Manufacturer's requirements and, Various examination reports and test certificates – both in date and out of date. Areas of importance when checking certificates as an AP. High frequency use and the need for more frequent checks/examinations
	• Describe setting up, erection, levelling and dismantling requirements for different types of lifting equipment and lifting operations	Requirements of BS 7121 Parts 1 to 5, BS 8460, BS 7212, LOLER 98, PUWER 98 for erecting/dismantling, and the importance of FLS (Firm Level Standing). Overview of the Work at Height Regulations Aug 2005.
	• Calculate lifting equipment point loadings/outrigger loadings, spreader mat types and sizes from given information	Appreciate the importance of outrigger/base foundation/ground bearing pressures and relevant formulae. Apply formulae to ascertain relevant information required to calculate outrigger and base loadings using various crane manufacturer's outrigger loading charts. Calculate the required size of spreader mat to achieve acceptable limits as required by a main contractor. Awareness of a range of software programmes for ground loadings.
	• Identify ground pressure and support loadings from given information	Appreciate the types of ground support loading based on differing types of strata and factors that can affect ground support.
	• Explain the function and use off, and use information provided by, RCIs and safety devices applicable to a range of lifting equipment	Check settings of an RCI unit in various codes extracted from a given load chart including e.g. FOWs, blocked, swingaway/stinger, main jib extensions, fly and luffing fly jibs etc. Types of other warning devices and anti-collision systems i.e. SMIEs
	• Select the correct lifting equipment for specified lifts	Identify and select a suitable lifting type machine that can effectively, efficiently and safely undertake given lifting duties, taking into account frequency and repetitiveness of use, types of loads and typical weights, shock loadings, fatigue, and whether applicable to the environment etc.

Syllabus *(Continued)*

	Learning outcome	Training content
• Lifting equipment (cranes) *(Continued)*	• Extract information from manufacturer's technical specifications, duties charts, range diagrams	Extract and use information from various lifting equipment load charts to determine basic to complex lifts. Extract and use information from examples of loads to be lifted in order to ascertain a) if the lift is possible? b) is there adequate FOS/down-rating? c) is there sufficient height? d) are environmental factors addressed?
	• Specify lifting equipment configurations for specific types of lifting operations	Identify how the chosen lifting equipment will be set up and configured in a given environment for a range of lifts and includes ground conditions and support factors.
	• Identify attachments and ancillaries to lifting equipment	Examine and evaluate where and how ancillary equipment and accessories can be used within a lifting operation and the advantages and disadvantages of common types across a range of lifting equipment.
	• Describe out of service procedures for lifting equipment including locations, configurations and markings	Identify how a range of lifting equipment needs to be configured, de-rigged etc. following a lifting operation or where lifting equipment remains rigged or partially rigged for work for the following day and includes procedures for placing the lifting equipment into the out-of-service modes.
Lifting accessories	• List different types of lifting accessories and explain typical applications	Differing types of lifting accessories and uses. Limitations of use and de-rating due to application as applicable. Other types of lifting frames and specialist equipment as required. Limitations of an AP's knowledge and forms of guidance.
	• Identify and explain relevant information relating to different types of lifting accessories i.e. markings, certificates and thorough examination reports, etc.	Inspecting lifting accessories. Extraction of relevant information from the equipment information tags. Differences between SWL/WLL/rated capacity. Extract relevant information using test certificates & thorough examination reports.
	• Calculate sling capacities, lengths and angles	Calculation of sling capacities, lengths and angles (of at least 30, 60, 90 and 120 Degrees) and implications of wide angles,, and various computations of slings as required for load size i.e. long loads etc.

Syllabus *(Continued)*

	Learning outcome	Training content
Lifting accessories *(Continued)*	• Explain slinging techniques for given loads including balanced, unbalanced and loose	Correct and incorrect slinging techniques – with the use of multi-legged types, shortening clutches, SWR, web and nylon slings etc., for loads with varying centres of gravity.
	• Specify appropriate lifting accessories for given types of loads	Define types of lifting accessories from various given lift scenarios Options to type/types of accessories that may be selected to carry out lifts.
	• Identify weights and centres of gravity for different types of loads	Methods of calculating weights and centres of gravity using known formulae.
Communication	• Describe and specify different types of communication methods for lifting purposes	Signals from BS 7121 (manual & radio)/safety signs and signals, radio use and protocol, other options of relaying standard signals. Advantages and limitations of different communication types.
	• Explain factors that determine types of communication methods, the limitations of each and the effects of poor communication	Analysing and specifying a range of communication methods for different types of lifting equipment. Methods of communicating lift plan information to the members of the lifting team and how communication can be compromised.
	• State the need to complete a reflective report following a typical lifting operation	The need and how to compile a report on a given lift scenario highlighting the positive and negative aspects of the lift. Ways to improve lift procedures i.e. revised risk assessment/method statement etc.
Planning	• Identify potential proximity and underground hazards from given plans and drawings	Identify the proximity hazards from examples of lifts using existing drawings/plans. Highlight hazards and risks including multi-lift use – with possible solutions (if any) to the lift.
	• Identify and plan an area, with exclusion zones for different, given lifting operations incorporating safe access/egress routes for before, during and after the lift	Plan a specific lift from given scenarios – including identifying and dealing with exclusion zones, access/egress points etc. Devise a lift plan from given scenarios, highlighting all proximity hazards, and parts of the lift that will require monitoring.

	Learning outcome	Training content
Planning *(continued)*	• State requirements that allow safe site access and egress for typical lifting equipment	Examine typical lifting equipment widths, sizes, weights, transportation methods and turning circles – with known site plans, with particular reference to confined areas and delivery vehicles for lifting equipment components. Marshalling procedures and hierarchy.
	• Specify the security requirements required for specified lifting operations	Factors that can affect security within the lifting area and of restriction requirements to prevent unauthorised access.
	• Construct a safe system of work by constructing risk assessments, method statements, including drawings and lift plans using given information	Devise a lift plan and rigging studies, which includes a risk assessment/method statement, using the details of a successfully completed standard lift.
	• Explain additional requirements for pick and carry duties	Identify additional requirements including manufacturer's instructions, ground type and conditions, configuration, proximity hazards, route planning.
	• Communicate lift plan information to others involved in a lifting operation i.e. lifting supervisor, machine operator, slinger	Designate the sections applicable to all individuals involved in the lift plan. Role play of lift supervisor, co-ordinator and operator etc. high risk areas of the operation clearly communicated.
	• Specify positioning of lifting equipment, loads in relation to fixed objects and other limiting factors	Planning requirements including; proximity hazards, lifting equipment configuration which includes boom length, radii, boom deflection, how it is rigged, lift and lay down area, how specific codes are selected, what the outrigger loadings are and the resultant support required for outrigger pads to meet the stated ground pressure, environmental conditions etc. value of 'dummy' run/weight and radius check
	• Explain the definition, requirements and factors for temporary works management and the effects on typical lifting operations	Legislative requirements, CDM requirements, definitions and scope, characteristics, responsibilities, hazards arising from temporary works, good practices, management of, roles and responsibilities, briefing of temporary works, communication with others.

Syllabus *(Continued)*

	Learning outcome	Training content
Planning *(Continued)*	• Identify how the effects of fatigue on the lifting team can affect a lifting operation and how it should be managed	Identification of human factors such as fatigue, employer's legal duties, factors that affect fatigue Inc. working hours, rest breaks, shift patterns, night working, environmental etc. Effects of fatigue on a range of lifting operations. Effect of fatigue on the lifting team.
	• Evaluate and explain how the weather, other environmental factors and the surrounding area, external to the lift zone, can affect the planned lifting operation	Role-play in explaining the restrictions imposed on the actual lift plan by being near (a) a railway (b) an airport (c) a hospital (d) city centre location (e) dockside location (f) residential.
	• Explain how wind loadings and sail-affect areas for given types of loads are calculated	Identification of wind speed factors for different types of lifting equipment and loads and methods of calculation and extraction of information relating to readings of wind speeds etc.
	• Describe notification, liaising and reporting procedures to statutory, authority, and utility bodies when affected by the lifting operation, i.e. works, railways, highways, airfields, etc.	Required notification procedures for authorities etc. to include a) airport authorities and The Air Navigation Order, CAP 168 – Licensing of Aerodromes, BS 7121 Part 1 para 9.3.3 etc., b) Environment Agency, c) Highways Agency d) local and district councils e) Network Rail/London Underground etc.
	• Explain the additional requirements to be followed when lifting loads from height	Extracts from BS 7121 for requirements of lifting from height – specifically dismantling operations, with appropriate dangers and implications to Crane safety. Below ground level lifting including derating requirements and rope lengths. Estimation of loads to be lifted/sufficient FOS and unknown weights

1. *Note: The listed training content should not be considered exhaustive and subjects may be added to reflect the individuals' working environment.*
2. *The definition of lifting equipment in this document includes:*

Access equipment	Crawler cranes	Drilling rigs	Excavator/crane
Floating lifting equipment	Hoists	Knuckle-boom crane	Lorry loaders
Masted forklifts	Mobile cranes	Overhead cranes	Pedestal cranes
Piling rigs	Telescopic handlers	Tower Cranes	Specialist lifting equipment

Additional items to be covered within training programme:

CIRIA recommendations and calculations to be included as detailed in C703 – Crane stability on site Version 2 and C654 – Tower crane stability.

Lifting equipment types within training: Where all candidates on a course have sound knowledge of the variety of lifting equipment types, the need to have appropriate machines during the course may be optional. However, where candidates have limited knowledge of lifting equipment types, access to an appropriate machines must be made available during the course, so that candidates can observe and evaluate certification requirements, maintenance and setting up procedures etc.

Reference and other material: The items listed are not exhaustive and should be considered the minimum. Instructors must provide all relevant resources and material to ensure effective dissemination of information.

Current recommended references and other material
Air Navigation Order (as dictated by the required utility)
Avoiding Danger from Overhead Power Lines (GS6)
BS 7121 Parts 1 to 5
BS 7212
BS 8460
CIRIA C654 Tower crane stability
CIRIA C703 Crane stability on site
CPA Best and Good Practice guides
CPA Technical Information Notes
Lifting equipment operator's manual
Drawings / plans from actual, successfully completed or simulated lifts
HASWA 74
LEEA Code of Practice
LEEA Inspection manual
LEEA Slinging/Lifting manual
Lift plans and lift accessories certification
Lifting equipment and accessories
Load charts and applicable codes for different rigging applications / outrigger loadings
LOLER 98
Management of Health & Safety Regulations 1999
Managing Health and Safety on Construction Sites (L144)
Manufacturer's specifications / outrigger loadings
Materials/data on why / how accidents happen
Method statements
Personal Protective Equipment Regulations 2002

Current recommended references and other material
PUWER 98
Range diagrams
Risk assessment
Safe use of Lifting Equipment (L113)
Safe use of Work Equipment (L22)
Safe use of Vehicles on Construction Sites (HSG144)
Selection of applicable lifting accessories (with the exceptions of lifting frames or other specialised equipment)
Selection of certificates for lifting equipment
Selection of loads including balanced, unbalanced and bundled/loose
Strategic Forum for Construction Plant Safety Group Publications Inc. ground conditions, fitness for work, tele handlers etc.
Videos of lifting equipment accidents
Work at Height Regulations 2005

Duration / Ratios

To allow effective learning, at least 40 hours of training must have been completed for this category. Candidates must be profiled to establish learning needs. Course durations should be of a length to ensure the learning outcomes are met.

To allow effective learning, the listed candidate / instructor ratio is the maximum recommended for this category

8 candidates : 1 instructor

Training attributes

***To help candidates in learning the necessary skills for each category, it would be ideal if they possess one or more of the following:**

- Lifting operations experience
- Able to calculate and interpret arithmetical data
- Able to record details in a logical and clear format
- Verbally communicate data
- Write reports, risk assessments and method statements
- Use IT

***Note:** Lack of any of these attributes does not prevent anyone from being trained for this category.

Category description and types

CPCS defines a category as an item of plant or equipment used within the construction or allied industries and worked in accordance with the manufacturer's basic design or legislative guidance or a role or duty in support of plant operations This category is defined as a role or duty of an individual planning lifting operations.

Duties

The Appointed Person is responsible for ensuring that a lifting operation is properly planned, appropriately supervised and carried out in a safe manner. A full description of the duties and responsibilities of an appointed person can be found in the Approved Code of Practice for the Lifting Operations and Lifting equipment Regulations 2014 (L113) and BS 7121 Part 1:2016.