

Learning for CPCS

Overhead Travelling Crane - A64

Outcomes

Through a combination of targeted training and experience, an individual with an overhead travelling crane will be able to:

| | |
|-----------------------------------|---|
| Roles and responsibilities | <ul style="list-style-type: none"> Describe the nature of the sector of industry and their role and responsibilities as a plant operator |
| Preparing for work | <ul style="list-style-type: none"> Name and explain the purpose of the principal components, the basic construction, controls and terminology including warning systems, limits of operation and motion types Conform with all requirements as per the operator's handbook, other types of information source and relevant regulations and legislation Explain all relevant documentation Use correct access and egress procedures Explain emergency egress procedures - cab types Undertake all pre-use checks and put the crane into service Check all relevant warning systems, emergency stop function, motion limiters and prepare the crane for work |
| Travelling and manoeuvring | <ul style="list-style-type: none"> Travel using the full working range of the beam and trolley (with and without loads) |
| Setting up for work | <ul style="list-style-type: none"> Configure and set for lifting and transferring duties Outline how weights and centres of gravity are identified Explain actions required for relevant proximity hazards |
| Working tasks | <ul style="list-style-type: none"> Maintain safe working situations Lift and control the movement of various loads using the full lateral and longitudinal travel of the crane at varying heights Recognise & respond to given signals and instructions Place loads safely and accurately Control load swings Explain slinging techniques applicable to overhead travelling cranes Place loads out of sight of the operator |
| Completing work | <ul style="list-style-type: none"> Maintain safe and tidy working areas |
| Shutting down | <ul style="list-style-type: none"> Place the crane in an out-of-service condition Explain environmental factors relating to working and out-of-service procedures |

Syllabus

| Learning outcome | Training content | |
|--|--|--|
| <ul style="list-style-type: none"> Describe the nature of the sector of industry and their role and responsibilities as a plant operator | <ul style="list-style-type: none"> Industry type Customer / client needs Sector contribution Role Communication with colleagues / management / other trades | <ul style="list-style-type: none"> Reporting structures Social responsibilities Lifelong skills Health and Safety at Work Act Environmental issues Other trades Working practices |
| <ul style="list-style-type: none"> Name and explain the purpose of principal components, the basic construction, controls and terminology including warning systems, limits and motions | <ul style="list-style-type: none"> Differing types Function and applications Power/drive units/methods of propulsion Electrical systems Supports, beams and trolley functions | <ul style="list-style-type: none"> Hoisting gear/ropes/hook blocks Attachments Control types Remote operation Use of radio-controlled units Safe Working Loads/Working Load Limits |
| <ul style="list-style-type: none"> Conform with manufacturer's requirements as per the operator's handbook, other types of information source and relevant regulations and legislation | <ul style="list-style-type: none"> Operator's Manual Machine decals Health and Safety at Work Act PPE Markings/lifting capacities Codes of Practice Site plans / drawings | <ul style="list-style-type: none"> Method statements Lifting requirements and limitations Risk assessments / COSHH Inspection and reporting forms / procedures |
| <ul style="list-style-type: none"> Explain all relevant documentation | <ul style="list-style-type: none"> Certification Inspections and examinations | <ul style="list-style-type: none"> Lifting attachments |
| <ul style="list-style-type: none"> Use correct access and egress procedures | <ul style="list-style-type: none"> Cab types/platforms Access to height Types of access/egress Methods of access/points of access | <ul style="list-style-type: none"> Working at height Harnessing/restraining Accessing/egressing equipment |
| <ul style="list-style-type: none"> Explain emergency egress procedures | <ul style="list-style-type: none"> Emergency planning Evacuation procedures Temporary/emergency arrangements | <ul style="list-style-type: none"> Methods of communication Working at height |
| <ul style="list-style-type: none"> Undertake all pre-use checks and put the crane into service | <ul style="list-style-type: none"> Regular and non-scheduled maintenance procedures Types and content of checks and inspections | <ul style="list-style-type: none"> Integrity of the travel rails and clear of debris (where relevant) Sequence of pre-use checks Defect reporting |

Syllabus (continued)

| Learning outcome | Training content | |
|---|---|---|
| <ul style="list-style-type: none"> • Check all relevant warning systems, emergency stop function, motion limiters and prepare the crane for work | <ul style="list-style-type: none"> • Types of warning systems and motion limiters • Function of warning systems and motion limiters • Function of emergency stop systems • Types and sequences of checks | <ul style="list-style-type: none"> • Information provided by warning systems and actions to be taken • Maintenance requirements of motion limiters and warning systems |
| <ul style="list-style-type: none"> • Travel using the full working range of the beam and trolley (with and without loads) | <ul style="list-style-type: none"> • Use of controls • Working range of hook block • Proximity hazards • Clear accessing for travelling | <ul style="list-style-type: none"> • Warning/communication to nearby personnel prior to travelling • Operator positioning/visibility of working range • Slips, trips and falls |
| <ul style="list-style-type: none"> • Configure and set for lifting and transferring duties | <ul style="list-style-type: none"> • Required configuration • Use of controls (for lifting purposes) • Safe Working Loads/Working Load Limits • Maximum lifting capacity • Load de-rating • Load characteristics and sizes • Establishing exclusion zone for working area, signage etc. • Requirements for lifting of persons | <ul style="list-style-type: none"> • Suitability of hook and accessories for required load lifting and movement • Sufficient hoist rope length for below-ground level operations • Slinging procedures • Load lifting points • Load and lifting accessory protection • Crane underhook height |
| <ul style="list-style-type: none"> • Outline how weights and centres of gravity are identified | <ul style="list-style-type: none"> • Types of loads • Load sizes, areas and volumes • Material densities • Long loads • Moisture content | <ul style="list-style-type: none"> • Unbalanced loads • Uniform/non-uniform load shapes • Load characteristics e.g. fluid loads • Load/tare sheets |
| <ul style="list-style-type: none"> • Explain actions required for relevant proximity hazards | <ul style="list-style-type: none"> • Pre-work planning • Types of hazards and risks • Warnings/identification of hazards • Reporting procedures for damages to services/structures etc. | <ul style="list-style-type: none"> • Lift planning • Control methods for nearby hazards • Minimum distances/clearances • Plant within working area Inc. mobile |

Syllabus (continued)

| Learning outcome | Training content | |
|---|--|--|
| <ul style="list-style-type: none"> Maintain safe working situations | <ul style="list-style-type: none"> Maintaining stability/integrity Excessive load swings Overlifting/exceeding SWL | <ul style="list-style-type: none"> Large surface area loads Load security and integrity Lifting/travelling loads above personnel |
| <ul style="list-style-type: none"> Lift and control the movement of various loads using the full lateral and longitudinal travel of the crane at varying heights | <ul style="list-style-type: none"> Operational function of controls (levers, switches etc.) Stability/overloading Vertical lifting Load integrity/security Load route pre-checks Establishing placing point Slips and trips Factors for working inside and outside | <ul style="list-style-type: none"> Minimising load swings Trial lifts Environmental factors Travel speeds/changing direction Visibility of path of load/signaling Proximity hazards Load travelling heights |
| <ul style="list-style-type: none"> Recognise & respond to given signals & instructions | <ul style="list-style-type: none"> Code of signals and communication Competencies of additional signalers Radio selection and checks | <ul style="list-style-type: none"> Radio use protocol Visibility with signallers (one or more) Emergency procedures and signals Signalling codes of practice |
| <ul style="list-style-type: none"> Place loads safely and accurately | <ul style="list-style-type: none"> Environmental factors/housekeeping of working area Visibility Signalling/following instructions Stacking of loads Inc. organizational requirements | <ul style="list-style-type: none"> Out-of-sight load placing Below ground level load lifting and placing Load swings Load/ground protection and support Security of loads after placing Accessory retrieval |
| <ul style="list-style-type: none"> Control load swings | <ul style="list-style-type: none"> Hoist rope length Travelling speeds Load weight Lifting accessories | <ul style="list-style-type: none"> Changes of direction Effects of wind Load clearances against other objects/structures |
| <ul style="list-style-type: none"> Explain slinging techniques applicable to overhead travelling cranes | <ul style="list-style-type: none"> Types of accessory and limitations of each SWL/WLL Suitability and use of accessories to typical loads Checks and inspection requirements Sling angles | <ul style="list-style-type: none"> De-rating of accessories Methods of securing typical loads Protection of accessories and loads Retrieval of accessories after load placing Storage requirements of accessories |

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Syllabus (*continued*)

| Learning outcome | Training content | |
|---|--|---|
| <ul style="list-style-type: none"> Place loads out of sight of the operator | <ul style="list-style-type: none"> Communication and signaling procedures Below ground level load lifting and placing | <ul style="list-style-type: none"> Proximity hazards Lift planning |
| <ul style="list-style-type: none"> Maintain safe and tidy working areas | <ul style="list-style-type: none"> Load placing Load stacking/security Clear walkways for operator/others Suitable ground conditions | <ul style="list-style-type: none"> Minimizing trip hazards Maintaining exclusion zones/signage etc. Procedures for inclement weather |
| <ul style="list-style-type: none"> Place the crane in an out-of-service condition | <ul style="list-style-type: none"> Shut down procedures Cab/beam/trolley positioning Security of control units/cab access | <ul style="list-style-type: none"> Hook positioning and condition Egress cab/working area Isolation requirements |
| <ul style="list-style-type: none"> Explain environmental factors relating to working and out-of-service procedures | <ul style="list-style-type: none"> Excessive winds Accessing and working at height | <ul style="list-style-type: none"> Effects of inclement weather |

Note: The listed training content should not be considered exhaustive and subjects may be added to reflect the individuals' working environment.

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Safety critical

Emphasis to be placed on the following topics:

| Topic | Emphasis |
|---|--|
| <ul style="list-style-type: none"> Tidiness of the work area/good housekeeping | Implementing of procedures for effective communication when lifting or placing loads in confined areas, areas out-of-sight of the machine operator such as below ground level load lifting and placing |
| <ul style="list-style-type: none"> Access and egress within the working area | The working area has clear defined walkways within the working area to allow the operator and/or slinger to safely follow a load during transit |
| <ul style="list-style-type: none"> Footprint of the working area | That an exclusion zone within the working range of the crane is both set up and maintained throughout operations |
| <ul style="list-style-type: none"> Load swings | How a suspended load and swinging attachments can affect the crane and load |
| <ul style="list-style-type: none"> Lifting of persons | The legislative requirements for the carrying of persons in overhead travelling cranes |
| <ul style="list-style-type: none"> Below ground level load lifting placing | Implementing of procedures for effective communication when lifting or placing loads in confined areas below ground level |
| <ul style="list-style-type: none"> Hands Off Step Away – Slinger/ Signaller | <p>Identifying where it will be safe to be positioned during the lift, especially the first raising of the load (including trial lift), taking into account the potential unexpected load movement that may occur at this stage</p> <p>Understanding the actions to take before directing the equipment to first raise the load (including for trial lift): taking hands off the load, stepping away from the load, and moving to a safe space</p> <p>Understanding the actions to take after initial raising of the load: stopping the lift if there is an issue, not intervening in an unexpectedly moving load, waiting for the load to become steady and stable, and only approaching when safe and if necessary</p> |

Duration / Ratios

To allow effective learning, these training times are recommended for this category. Candidates must be profiled to establish learning needs. Durations should be of a length to ensure the learning outcomes are met.

| Experience | Accumulated hours |
|--|-------------------|
| <ul style="list-style-type: none"> Novice operators with no industry or machine operating | 21 |

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| | |
|---|----|
| experience | |
| • Novice operators with industry experience but no machine operating experience | 14 |
| • Operators with unrelated lifting equipment experience | 7 |
| All candidates must have received the equivalent to 7 hours of site safety and induction training | |

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

3 candidates : 1 machine: 1 instructor

A period of 7 hours of training should be planned where the additional endorsement may be required.

Resources

| Practical equipment | Theory equipment |
|---|--|
| <ul style="list-style-type: none"> • Suitable overhead travelling crane • Selection of loads having various characteristics • Suitable lifting accessories for the relevant loads • Work area clear of hazards <p>PLUS</p> <ul style="list-style-type: none"> • Suitable PPE • Risk assessment for all areas where training is occurring | <ul style="list-style-type: none"> • PUWER 1998 Regulations • LOLER 1988 Regulations • Operator's Manual • Specifications of various types of overhead travelling cranes <p>PLUS</p> <ul style="list-style-type: none"> • Suitable room for theory training purposes • Welfare and rest facilities during training. |

Training attributes

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

| | |
|---|--|
| • Construction or related experience | • Have received site safety and induction training |
| • Able to calculate basic formula | • Possess good eye and hand co-ordination |
| • Able to record basic details | • Have mechanical appreciation |
| • Understand basic written words | |
| • Comfortable with working at height (cab-controlled types) | |

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

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. This category is predominately used in the construction and allied sector, and for CPCS training and assessment standards, the descriptions reflect basic core use. Endorsements are sub-categories that reflect the variations for this category by operating method type. This category has two endorsements.

To identify a machine within this category, an overhead travelling crane would normally have the listed features and be used within the described characteristics.

Category features

- Travelling single or double beam mounted on a running track
- Two parallel rails forming the running track of which may be ground fixed, supported by a structure, or a combination of both
- Travelling trolley mounted on the beam (usually underslung) containing the winching system and hook block

Category characteristics

- Lifts and transfers loads within the operating area which is defined by the length of the track and the width of the beam.
- Depending on the configuration, OTCs are described as travelling beam crane, bridge crane, underhung crane, gantry crane or portal crane
- The working height of the crane is dependent on the ground to height dimension of the beam
- The beam may be wider than the supporting structure allowing loads to be placed beyond the track area (cantilever)

Endorsement characteristics

Endorsement A - Fixed Cab Controls: operated from a platform or cab at height which may be fixed to the bridge (only travelling in one plane) or fixed to the trolley (travelling in both planes)

Endorsement B - Remote Operated Control: operated at ground level by the operator who may either need to follow the load on foot (pendant control) or can remain in a fixed position (radio-controlled remote)

Note: This role does not include the physical attaching and detaching (slinging) of loads.