
Overview

This standard identifies the competences you need to install marine lifting equipment, in accordance with approved procedures. It includes hydraulic and mechanical devices used for davits, weapon hoists, stores lifts, hatches, derricks, aircraft lifts, cranes, vehicle ramps, ramp locking systems, windlass, capstans, gangways and platforms. You will be required to use appropriate installation drawings, specifications and documentation to install the various items of equipment. You will be expected to select the appropriate tools and equipment to use, based on the operations to be performed and components to be installed. The components to be installed will include items such as pipework, control valves, chains, cables, pulleys, actuating mechanisms, stops, lubrication systems, hooks, indication, mechanical and electrical controls and safety devices. The installation activities will include making all necessary checks and adjustments to ensure that components are correctly positioned and aligned, have appropriate travel and/or working clearances, are tightened to the correct torque and that they function as per the specification.

Your responsibilities will require you to comply with organisational policy and procedures for the installation of the marine lifting equipment and to report any problems with the installation activities that you cannot personally resolve, or are outside your permitted authority, to the relevant people. You will ensure that all tools, equipment and materials used in the installation are correctly accounted for on completion of the activities and that all necessary job/task documentation is completed accurately and legibly. You will be expected to work with a minimum of supervision, taking personal responsibility for your own actions and for the quality and accuracy of the work that you carry out.

Your underpinning knowledge will provide a good understanding of your work and will provide an informed approach to applying installation techniques and procedures for marine lifting equipment. You will understand the lifting equipment being installed and its application and will know about the installation techniques, components, tools and equipment used, in adequate depth to provide a sound basis for carrying out the activities, correcting faults and ensuring that the completed installation is to the required specification.

You will understand the safety precautions required when carrying out the lifting equipment installation operations. You will be required to demonstrate safe working practices throughout and will understand the responsibility you owe to yourself and others in the workplace, both ashore and afloat.

**Performance
criteria**

You must be able to:

- P1 work safely at all times, complying with health and safety and other relevant regulations, directives and guidelines
- P2 follow all relevant drawings and specifications for the installation being carried out
- P3 use the correct tools and equipment for the installation operations and check that they are in a safe and usable condition
- P4 install, position and secure the equipment and components in accordance with the specification
- P5 ensure that all necessary connections to the equipment are complete
- P6 deal promptly and effectively with problems within your control and report those that cannot be solved
- P7 check that the installation is complete and that all components are free from damage

Knowledge and understanding

You need to know and understand:

- K1 the specific safety practices and procedures that you need to observe when installing marine lifting equipment (including any specific legislation, regulations/codes of practice for the activities, equipment or materials)
- K2 the procedures to be carried out before starting work on the installation (such as obtaining permits to work, obtaining and complying with risk assessments and other health and safety requirements)
- K3 the hazards associated with installing marine lifting equipment and with the tools, materials and equipment used (such as moving mechanisms, rotating assemblies, guards) and how they can be minimised
- K4 the health and safety requirements of the work area where you are carrying out the installation activities and the responsibility they place on you
- K5 how to recognise and deal with emergencies and the procedures to be followed (such as methods of safely evacuating and closing down of compartments in the case of fire or other major incident, first aid, fire fighting and resuscitation of personnel)
- K6 the protective equipment that you need to use for both personal protection (PPE) and protection of the newly installed equipment
- K7 the interpretation of drawings, standards, quality control procedures and specifications used for the installation (including BS and ISO mechanical schematics, symbols and terminology used when referring to marine lifting equipment)
- K8 how to carry out currency/issue checks of the specifications you are working with
- K9 methods of marking out the site for positioning the equipment and the tools and equipment used
- K10 the basic principle of operation of the lifting equipment being installed and the function of the various components within it
- K11 the different types of lifting arrangements and lifting equipment and their application
- K12 the identification and application of different types of sensors and actuators (such as rotary, linear, mechanical, electrical)
- K13 the application and fitting of static and dynamic seals
- K14 the various mechanical fasteners that will be used and their method of installation (including threaded fasteners, special securing and locking devices, torque loading requirements)
- K15 the techniques used to position, align, adjust and secure the components and pipes without damage
- K16 methods of lifting, handling and supporting the components/equipment during the installation activities

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- K17 the tools and equipment used in the installation activities and their calibration/care and control procedures
- K18 how to make pipe bends using fittings and by hand bending, using approved forming equipment
- K19 elimination of stress on pipework/connections and the importance of supporting the pipe at suitable intervals
- K20 the use of seals, sealant, and adhesives and the precautions to be taken
- K21 why electrical bonding is critical and why it must be both mechanically and electrically secure
- K22 the quality control procedures to be followed during the installation operations
- K23 how to conduct any necessary checks to ensure the integrity, functionality, accuracy and quality of the installation
- K24 the problems that can occur with the installation operations and how these can be overcome
- K25 how to recognise installation defects (such as leaks, poor seals, misalignment, ineffective fasteners and damage)
- K26 recognition of contaminants and the problems they can create; the effects and likely symptoms of contamination on the equipment being installed
- K27 the importance of ensuring that the completed installation is free from foreign object debris and that any exposed components or pipe ends are correctly covered/protected
- K28 the procedure for the safe disposal of waste materials
- K29 the recording documentation to be completed for the activities undertaken and where appropriate, the importance of marking and identifying specific pieces of work in relation to the documentation
- K30 the extent of your own responsibility and whom you should report to if you have problems that you cannot resolve

Additional Information

Scope/range related to performance criteria

You must be able to:

1. Carry out **all** the following during the installation of the marine lifting equipment:
 - 1.1. use the correct issue of vessel or craft installation drawings and planning documentation
 - 1.2. use copies of relevant COSHH sheets, risk assessment and marine standards
 - 1.3. check the calibration dates of tools and test equipment to be used
 - 1.4. obtain clearance to work on the vessel/system and observe the power isolation and safety procedures
 - 1.5. return all tools and equipment to the correct location on completion of the activities
 - 1.6. leave the work area in a safe condition and to the prescribed category of cleanliness

2. Install **one** of the following items of marine lifting equipment:
 - 2.1. electro-hydraulic (such as davit, crane, capstan, windlass, hoist, winch, hatch, derrick or vehicle ramp)
 - 2.2. electro-mechanical (such as davit, crane, capstan, windlass, winch, hoist, hatch, derrick or vehicle ramp)
 - 2.3. combined electro-mechanical/hydraulic (such as gangway hoist/platform, stores lift, personnel lift, derrick, gantry)

3. Install **four** of the following items of marine lifting equipment:
 - 3.1. davit
 - 3.2. crane
 - 3.3. capstan
 - 3.4. windlass
 - 3.5. gangway
 - 3.6. aerial hoist
 - 3.7. winch
 - 3.8. weapon hoist
 - 3.9. hatch hoist
 - 3.10. aircraft lift
 - 3.11. derrick
 - 3.12. vehicle ramp
 - 3.13. gantry
 - 3.14. platform

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- 3.15. other specific lifting equipment
4. Install marine lifting equipment components, including **eight** of the following:
 - 4.1. rigid pipe-work
 - 4.2. flexible hoses
 - 4.3. control valve
 - 4.4. chain and guard
 - 4.5. actuating mechanism
 - 4.6. flexible bellows
 - 4.7. gauge
 - 4.8. gasket and seal
 - 4.9. filter and regulator
 - 4.10. hook and shackle
 - 4.11. brake
 - 4.12. hook mechanism
 - 4.13. safety device
 - 4.14. cable
 - 4.15. pulley
 - 4.16. stop
 - 4.17. braking mechanism
 - 4.18. locking mechanism
 - 4.19. electrical controls (such as solenoids, motors, pressure switches)
 - 4.20. mechanical controls (such as plungers, springs, rollers)
5. Use **twelve** the following installation methods and techniques:
 - 5.1. marking/setting out of locating and securing positions
 - 5.2. preparing holes (such as drilling, cleaning out threads)
 - 5.3. positioning equipment/components
 - 5.4. levelling of equipment
 - 5.5. aligning of equipment
 - 5.6. assembly/connection of components or sub-assemblies
 - 5.7. aligning pipework and connections
 - 5.8. setting and adjusting equipment
 - 5.9. torque setting of mechanical fasteners
 - 5.10. making pipe connections
 - 5.11. lifting and handling
 - 5.12. connecting wires and cables
 - 5.13. setting travel or working clearance
 - 5.14. securing by using mechanical fixings
 - 5.15. securing by using adhesives
 - 5.16. sealing
 - 5.17. lubricating
 - 5.18. applying screw fastener locking devices
 - 5.19. earth bonding

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- 5.20. making flexible hose connections
 - 5.21. ensuring the system cleanliness (such as covering exposed pipe ends or components)
6. Use **six** of the following types of fasteners and securing devices:
- 6.1. swing bolts
 - 6.2. screws
 - 6.3. dowels
 - 6.4. quick-release fasteners
 - 6.5. studs with nuts
 - 6.6. wing nuts
 - 6.7. bolts
 - 6.8. flexible bellows
 - 6.9. locking devices (such as split, parallel, clevis or taper pin)
 - 6.10. keys/keyways (such as slotted, semi-circular, woodruff, taper)
7. Produce marine lifting equipment installations which comply with **one** of the following standards:
- 7.1. BS or ISO standards and procedures
 - 7.2. customer (contractual) standards and requirements
 - 7.3. company standards and procedures
 - 7.4. specific system requirements
 - 7.5. recognised compliance agency/body's standards
 - 7.6. other accepted international standards
8. Complete the relevant paperwork, to include **one** from the following and pass it to the appropriate people:
- 8.1. acceptance documentation
 - 8.2. installation records
 - 8.3. work authorisation documents
 - 8.4. job cards
 - 8.5. time sheets
 - 8.6. system log
 - 8.7. other specific recording method

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