Overview

This standard identifies the competences you need to install traction lift equipment in accordance with approved procedures. This will require you to assess the site for the proposed installation, and to make the necessary arrangements to have the required lifting and handling equipment, installation tools and any specified components and site services available, so that the installation can be carried out safely and efficiently. You will be required to install a range of traction lift equipment, such as lifting machine, traction sheave, diverting pulley, over-speed governor, controller and lift machine isolation pads. This standard does not involve maintenance/repair type activities, such as removal and replacement of existing equipment.

You will be required to select the appropriate tools and equipment to use, based on the operations to be performed and the equipment and components to be worked on during the installation. You will be expected to use appropriate tools and techniques to position, level and align the equipment, and to make all necessary connections, to the required specification. The installation activities will include making all necessary checks and adjustments to ensure the components are correctly positioned and aligned, have appropriate working clearances and are tightened to the correct torque, and that the installation meets the required specification.

Your responsibilities will require you to comply with organisational policy and procedures for the installation activities undertaken, and to report any problems with the activities, tools or equipment used that you cannot personally resolve, or are outside your permitted authority, to the relevant people. You must ensure that all tools, equipment and materials used in the installation activities are removed from the work area on completion of the work, 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. The installation activity may be carried out as a team effort, but you must be able to demonstrate a significant personal contribution to the installation activities, in order to satisfy the requirements of the standard. Competence in all the areas required by the standard must be demonstrated.

Your underpinning knowledge will provide a good understanding of your work, and will provide an informed approach to applying installation...
Installing traction lift equipment

You will know about the equipment being installed, its installation requirements, the correct function of the equipment and any associated problems, in adequate depth to provide a sound basis for carrying out the installation process safely and effectively. You will also understand the installation methods and procedures used, and their application, in sufficient depth to be able to carry out the installation activities, identify and resolve any problems, and ensure that the installed equipment meets the required specification. You will understand the safety precautions required when carrying out the installation activities, especially those for ensuring the safe isolation of services. You will be required to demonstrate safe working practices throughout, and will understand your responsibility for taking the necessary safeguards to protect yourself and others in the workplace.
Performance criteria

You must be able to:

1. work safely at all times, complying with health and safety and other relevant regulations, directives and guidelines
2. carry out a site check prior to installation activities
3. follow all relevant drawings and specifications for the installation being carried out
4. use the correct tools and equipment for the installation operations and check that they are in a safe and usable condition
5. install, position and secure the equipment and components in accordance with the specification, using the correct methods, techniques and procedures
6. ensure that all necessary connections to the equipment are complete
7. deal promptly and effectively with problems within your control and report those that cannot be solved
8. check that the installation is complete and that all components are free from damage
9. complete relevant documentation in accordance with organisational requirements
You need to know and understand:

1. the specific safety practices and procedures that you need to observe when installing traction lift equipment (including any specific legislation, regulations or codes of practice for the activities, equipment or materials)
2. the safe working practices for lifts (as described in BS7255)
3. 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)
4. the health and safety requirements of the work area where you are carrying out the installation activities, and the responsibility these requirements place on you
5. the hazards associated with installing traction lift equipment, and with the tools and equipment used, and how they can be minimised
6. what constitutes a hazardous voltage/current and how to recognise victims of electric shock
7. how to reduce the risks of an electric shock (such as insulated tools, rubber matting, isolating transformers)
8. the personal protective equipment (PPE) that you need to use for the installation activities, and where it can be obtained
9. the interpretation of drawings, standards, quality control procedures and specifications used for the installation (including BS and ISO schematics, symbols and terminology)
10. how to carry out currency/issue checks on the specifications you are working with
11. the preparations that need to be carried out on equipment prior to installation
12. the equipment to be installed, its operating procedures and function
13. the various mechanical fasteners that will be used, and their method of installation (including threaded fasteners, special securing devices)
14. the importance of applying the correct torque loading on the fasteners, and what can happen if these loadings are exceeded or not achieved
15. the procedures for ensuring that you have the correct tools, equipment, and fasteners for the installation activities
16. the types of tools and instruments used to position, secure and align the equipment (such as spanners, torque wrenches, engineer's levels)
17. the techniques used to position, align, level, adjust and secure the equipment
18. methods of lifting, handling and supporting the equipment during the installation activities (such as portable lifting equipment, block and tackle,
Installing traction lift equipment

19. the appropriate electrical checks to be carried out on traction lift equipment slings, manual handling)
20. how to conduct any necessary checks and adjustments to ensure the equipment integrity, accuracy and quality of the installation (including the fitting of guards to all moving parts and covers on electrical connections)
21. how to recognise installation defects (such as leaks, poor seals, misalignment, ineffective fasteners, damage)
22. the lubrication requirements, and methods for protecting equipment from mechanical and weather damage
23. the importance of ensuring that the completed installation is free from dirt and damage, and that components are correctly covered/protected
24. the calibration/care and control procedures for the tools and equipment used during the installation activities
25. the problems that can occur with the installation operations, and how these can be overcome
26. the recording documentation to be completed for the activities undertaken
27. the organisational procedures to be adopted for the safe disposal of waste of all types of materials
28. the extent of your own authority, and whom you should report to if you have a problem that you cannot resolve
Installing traction lift equipment

Scope/range related to performance criteria

1. Carry out all of the following during the installation activities:
   1. plan the installation activities to minimise disruption to normal working
   2. ensure that you have the correct installation documentation (such as, drawings, instructions, manufacturer's data, settings and other documentation)
   3. adhere to risk assessment, COSHH and other relevant safety standards
   4. obtain clearance to carry out the installation activities
   5. ensure that electrical supplies have been isolated
   6. ensure safe access and working arrangements for the installation area
   7. carry out the installation activities using appropriate techniques and procedures
   8. dispose of waste items in a safe and environmentally acceptable manner
   9. leave the work area in a safe condition and free from foreign object debris

2. Confirm that all of the following conditions have been met, prior to installing the lift equipment:
   1. the site is suitably prepared for the installation to take place
   2. appropriate utilities are available (such as gas, water, air, electricity)
   3. the site is accessible and free from obstructions or hazards
   4. any required installation consumables are available
   5. safety and environmental conditions can be met

3. Install all of the following types of traction lift equipment:
   1. lifting machine
   2. traction sheave
   3. conduit/trunking
   4. over-speed governor
   5. lift controller equipment
   6. cables and wires
   7. diverting pulley
   8. lift machine isolation pads

4. Apply the correct installation methods and techniques for nine of the following:
   1. drilling and hole preparation
2. shimming and packing
3. positioning and securing the equipment
4. lifting and supporting
5. aligning equipment to plumb lines and marked dimensions
6. protecting the installation from weather
7. aligning pulley with sheave and counterweight
8. connecting electrical wires and cables
9. plumbing with rope pick-up points
10. securing by using mechanical fixings
11. aligning governor with rope anchorage and tension frame
12. applying screw fastening locking devices
13. levelling the equipment

5. Move and position equipment using two of the following:
   1. slings
   2. portable lifting equipment
   3. block and tackle
   4. manual handling and moving of loads

6. Use two of the following instruments/devices during the installation activities:
   1. straight edges
   2. mechanical measuring instruments/devices
   3. engineer's levels
   4. electrical measuring instruments
   5. dial test indicators
   6. self-diagnostic equipment

7. Carry out all necessary checks, and adjust/rectify where appropriate, to include all of the following:
   1. working clearance is appropriate
   2. visual (for completeness and freedom from damage)
   3. correct application of oils and greases
   4. other sensory checks (sound, smell, touch)
   5. making 'off-load' checks
   6. moving parts are guarded and clear of obstruction
   7. level and alignment is correct
   8. torque setting of fasteners is correct
9. electrical wiring is encased and secure
10. locking devices are fitted to fasteners (where appropriate)
11. electrical continuity is achieved

8. Produce installations which comply with **two** of the following:
   1. equipment manufacturer's operating spec/range
   2. BS and/or ISO standards (including BS EN 81-20)
   3. BS 7255 (code of practice)
   4. customer standards and requirements
   5. company standards and procedures
   6. the Lift Regulations

9. Complete the relevant documentation, to include **one** of the following, and pass it to the appropriate people:
   1. installation records
   2. company specific documentation
   3. job card
Installing traction lift equipment

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