

Overview

This standard identifies the competencies you need to assist with the disconnection and removal of yacht and boat electrical/electronic equipment in preparation for activities such as repair or refit in accordance with approved procedures. This will involve disconnecting and removing equipment at component or unit level on a variety of different types of electrical/electronic equipment such as power supply and distribution equipment, lighting, domestic equipment, alarm, motor/rotating equipment, pumping equipment, entertainment equipment, instrument systems, positioning systems, autopilot systems, communication systems and radar systems.

Your responsibilities will require you to comply with organisational policy and procedures for the disconnecting and removal of the yacht or boat electrical/electronic equipment and to report any problems with the disconnection/removal activities that you cannot personally resolve, or are outside your permitted authority, to the relevant people. You will be expected to work with either a high level of supervision or as a member of a team. You will take personal responsibility for your own actions and for the quality and accuracy of the work that you carry out. Where team working is involved you must demonstrate a significant personal contribution during the team activities in order to satisfy the requirements of the standard and competency in all the areas required by the standard must be demonstrated.

Your underpinning knowledge will be sufficient to provide a sound basis for your work and provide an informed approach to applying disconnection and removal techniques on yacht and boat electrical/electronic equipment. You will have an understanding of the disconnection and removal methods and procedures used and their application. You will know about the electrical/electronic equipment being removed, in adequate depth to provide a sound basis for carrying out the disconnection and removal activities to the required specification.

You will understand the safety precautions required when carrying out the electrical/electronic equipment disconnection and removal activities, especially those for isolating the equipment and taking the necessary safeguards to protect yourself and others in the workplace. 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:

1. work safely at all times, complying with health and safety and other relevant regulations, directives and guidelines
2. establish and where appropriate mark component for re-assembly
3. ensure that any stored energy or substances are released safely and correctly
4. make all isolations and disconnections to the equipment in line with approved procedures
5. assist in the disconnection and removals to the agreed level using correct tools and techniques
6. store equipment for re-use in approved locations
7. dispose of unwanted components and substances in accordance with approved procedures
8. complete relevant paperwork in accordance with organisational requirements
9. deal promptly and effectively with problems within your control and report those that cannot be solved
- 10.

Knowledge and understanding

You need to know and understand:

1. the specific safety practices and procedures that you need to observe when assisting in the disconnection and removal of electrical/electronic equipment in yachts or boats, including any specific legislation, regulations/codes of practice for the activities, equipment or materials
2. the isolation and lock off procedure or permit to work procedure that applies to the disconnection and removal activities (to include electrical isolation, locking off switch gear, removal of fuses, placing maintenance warning notices, proving the isolation has been achieved and secured)
3. how to recognise and deal with emergencies and the procedures to be followed (such as methods of safely evacuating and closing down compartments in the case of fire or other major incident)
4.
the importance of wearing protective clothing and other appropriate safety equipment (PPE) during the electrical disconnection and removal activities
5.
the precautions to be taken to prevent electrostatic discharge (ESD) damage to circuits and sensitive components (such as use of earthed wrist straps)
6.
what constitutes a hazardous voltage and how to recognise victims of electric shock
7.
how to reduce the risks of a phase to earth shock (such as insulated tools, rubber matting and isolating transformers)
8.
how to obtain the necessary job instructions required for the work being carried out
9.
the extent to which the equipment is to be dismantled for removal
10. the different types of cabling used in the yacht or boat electrical/electronic installations and their method of disconnection (such as multi-core cables, single core-cables, steel wire armoured (SWA), mineral insulated (MI), screened cables)
11. the different types of wiring enclosures that are used to include conduit and trunking systems and the methods of removing them
12. the techniques used to disconnect and remove electrical/electronic equipment

(such as unplugging, de-soldering, removal of screwed, clamped and crimped connections)

13. methods of removing and replacing cables and wires in wiring enclosures without causing damage to existing cables

14.

methods of attaching identification marks/labels to removed components or cables to assist with re-assembly

15.

methods of supporting and lifting the equipment being removed

16. the tools and equipment used in the disconnection activities including the use of soldering irons, gland disconnecting tools

17. why tool/equipment control is critical and what to do if a tool or piece of equipment is unaccounted for on completion of the activities

18. the storage requirements of removed units and assemblies which are not part of the repair/overhaul process

19.

the methods used to protect and prepare the removed equipment during transportation to the place of repair/overhaul

20.

the generation of maintenance documentation and/or reports following the disconnection and removal activity

21. the problems that can occur during the electrical/electronic disconnection and removal activity and how they can be overcome

22. the extent of your own authority and who you should report to when you have a problem you cannot resolve

Scope/range related to performance criteria

1.

Carry out all of the following during the disconnection and removal activities:

- 1.1 ensure you have the necessary information to carry out the disconnection and removal activities (such as job instructions or disconnection documentation)
- 1.2 adhere to procedures or systems in place for risk assessment, COSHH, personal protective equipment and other relevant safety regulations
- 1.3 obtain clearance to work on the system and observe the appropriate power isolation and safety procedures
- 1.4 maintain safe access and working arrangements for the work area
- 1.5 in conjunction with others, carry out the disconnection and removal activities using appropriate techniques and procedures
- 1.6 return all tools and equipment to the correct location on completion of the activities
- 1.7 leave the work area in a safe and tidy condition

2.

Assist in the disconnection and removal of three of the following types of yacht or boat electrical/electronic equipment:

- 2.1 power distribution panel
- 2.2 autopilot equipment
- 2.3 power supply equipment (such as, batteries, generators, alternators, wind and solar)
- 2.4 lighting (such as cabin lighting, navigation lighting , cockpit and deck lighting)
- 2.5 services/domestic equipment (such as heating, cooking, air conditioning and refrigeration systems)
- 2.6 alarm equipment (such as flood and liquid level detection, security/intruder detection, gas and fire detection)
- 2.7 motor/rotating equipment (such as bow thrusters, anchor windlasses, trim tabs winches and hoists)
- 2.8 pumping equipment (such as freshwater systems, bilge pumping systems, sanitary systems)
- 2.9 entertainment equipment (such as sound systems, video entertainment systems)
- 2.10 communications equipment (such as very high frequency (VHF) radio, SSB, satellite communications (SATCOM), Navtex, weather fax, on-board entertainment systems, intercom)
- 2.11 positioning equipment (such as chart plotter, global positioning system (GPS), long range navigation (LORAN), compass, gyro)
- 2.12 instrumentation (such as speed, depth, wind, velocity made good)
- 2.13 sensor equipment (such as RADAR)

3.

Assist in carrying out eight of the following dismantling and removal activities:

- 3.1 isolating and locking off equipment
- 3.2 disconnecting wires and cables
- 3.3 attaching suitable cable identification markers
- 3.4 removing wiring enclosures (where applicable)
- 3.5 removing electrical/electronic units/components
- 3.6 making safe all disconnected service supplies
- 3.7 supporting equipment to be removed
- 3.8 removing mechanical fastening devices
- 3.9 safely storing all peripheral units which are not part of the repair/overhaul
- 3.10 protecting and preparing removed components for transportation for repair/overhaul

4.

Assist in dismantling and removing yacht or boat electrical/electronic equipment in accordance with **one** of the following:

- 4.1 BS, EN or ISO standards and procedures
- 4.2 customer (contractual) standards and requirements
- 4.3 company standards and procedures
- 4.4 specific equipment requirements/manufacture's data
- 4.5 wiring Regulations (current edition)
- 4.6 recognised compliance agency/body's standards (such as Lloyds, Boat Safety Scheme, BMEA Code)
- 4.7 other accepted international standards

5.

Complete the relevant paperwork, to include one of the following and pass it to the appropriate people:

- 5.1 installation record
- 5.2 job cards
- 5.3 time sheets
- 5.4 system log
- 5.5 other specific recording method

Behaviours

You will be able to apply the appropriate behaviours required in the workplace to meet the job profile and overall company objectives, such as:

- strong work ethic
- positive attitude
- team player
- dependability
- responsibility
- honesty
- integrity
- motivation
- commitment

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