

SEMEMI2-68v2 - SQA Unit Code H2BA 04

Carrying out maintenance and repair activities on assistive technology



Overview

This unit identifies the competences you need to carry out maintenance activities on assistive technology systems and equipment, in accordance with approved procedures. This will involve dismantling, removing and replacing or repairing faulty components, in line with company procedures, on a variety of different types of assistive technology systems and equipment, such as manual and powered wheelchairs, buggies and scooters, postural support systems, hoists, personal communication aids, walking aids, adjustable beds, pressure relief and distribution equipment, telecare alarm systems, aids for daily living, environmental control systems, associated battery charging systems for assistive technology systems and equipment.

You will be expected to cover a range of maintenance activities, such as isolating equipment, labelling components, dismantling components to the required level, setting and adjusting components, replacing 'lived' items, replacing or repairing components, carrying out functional checks and safety checks before handing over to the end user.

Your responsibilities will require you to comply with organisational policy and procedures for the maintenance activities undertaken, and to report any problems with these activities, or with the tools and equipment used, that you cannot personally resolve or that are outside your permitted authority, to the relevant people (such as the reporting of any actual or potential safety related problems to the appropriate regulatory body).

You must ensure that all tools, equipment and materials used in the maintenance activities are removed from the work area on completion of the activities, and that all necessary job/task documentation is completed accurately and legibly. You will be expected to work to instructions, either alone or in conjunction with others, taking personal responsibility for your own actions, and for the quality and accuracy of the work that you carry out.

Your underpinning knowledge will be sufficient to provide a sound basis for your work, and will enable you to adopt an informed approach to applying maintenance procedures to assistive technology equipment. You will have an understanding of dismantling and reassembly methods and procedures, and their application. You will know how the equipment functions and the purpose of individual components, in adequate depth to provide a sound basis for carrying out any maintenance, repair or adjustment. In addition, you will have sufficient knowledge of these components to ensure that they are fit for purpose and meet the specifications, thus providing a sound basis for carrying out reassembly.

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You will understand the safety precautions required when carrying out the maintenance activities, especially those for isolating the equipment. You will also understand your responsibilities for safety, and the importance of taking the necessary safeguards to protect yourself and others in the workplace.

Performance criteria

- You must be able to:*
- P1 work safely at all times, complying with health and safety and other relevant regulations and guidelines
 - P2 follow the relevant maintenance schedules to carry out the required work
 - P3 carry out the maintenance activities within the limits of your personal authority
 - P4 carry out the maintenance activities in the specified sequence and in an agreed timescale
 - P5 report any instances where the maintenance activities cannot be fully met or where there are identified defects outside the planned schedule
 - P6 complete the relevant maintenance records accurately, and pass them on to the appropriate person
 - P7 dispose of waste materials in accordance with safe working practices and approved procedures

Knowledge and understanding

You need to know and understand:

- K1 the health and safety, infection control and de-contamination requirements of the work area and equipment being maintained, and the responsibility these requirements place on you
- K2 the statutory and advisory documentation relating to medical devices (such as Medical Devices Regulations, British and European standards, regulatory agency guidance and safety warnings)
- K3 the statutory documentation relating to lifting equipment and electrical safety checks (such as the lifting operations and lifting regulations and portable appliance testing)
- K4 the appropriate working practices, and the need to respect the patient and carer in the patient environment, at home or in the community (where appropriate)
- K5 the importance of reporting any 'adverse incidents' with equipment, to the regulatory authority
- K6 the hazards associated with carrying out maintenance activities on assistive technology systems and equipment (such as handling oils, greases, misuse of tools, using damaged or badly maintained tools and equipment, not following laid-down maintenance procedures), and how to minimise them
- K7 the importance of wearing protective clothing and other appropriate safety equipment during the maintenance process
- K8 how to obtain and interpret information from job instructions and other documentation used in the maintenance activities (such as drawings, specifications, manufacturers' manuals, BS 7671/IEE regulations, symbols and terminology)
- K9 the isolation procedure that applies to the maintenance activities (such as electrical isolation, removal of fuses)
- K10 methods of checking that components are fit for purpose, how to identify defects and wear characteristics, and the need to replace 'lived' items (such as seals, sensors, batteries and belts)
- K11 the basic principles of how the equipment functions, its operating sequence, the working purpose of individual units/components and how they interact
- K12 the care and use of measuring or diagnostic equipment (such as mechanical measuring devices, electrical measuring instruments, and other specific measuring or testing devices)
- K13 the techniques used to dismantle/reassemble mechanical/electromechanical equipment (such as mechanical fittings, unplugging, de-soldering, removal of crimped connections)
- K14 methods of removing and replacing components without causing damage to the equipment or other components

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- K15 how to make adjustments to components/assemblies to ensure that they function correctly
- K16 the importance of making visual checks before using or operating the equipment
- K17 the importance of carrying out electrical safety tests on medical equipment, and the implications if this is not carried out
- K18 how to check that tools and equipment are free from damage or defects, are in a safe and usable condition, and are configured correctly for the intended purpose
- K19 the importance of completing maintenance documentation and/or reports following the maintenance activity, and how to generate them
- K20 the equipment operating and control procedures to be applied during the maintenance activity
- K21 how to use lifting and handling equipment in the maintenance activity
- K22 the things that can go wrong when carrying out routine maintenance, and what to do if they occur
- K23 the organisational procedure(s) to be adopted for the safe disposal of waste of all types of materials
- K24 the extent of your own authority and to whom you should report if you have a problem that you cannot resolve

Additional Information

Scope/range related to performance criteria

You must be able to:

- 1 Carry out **all** of the following during the maintenance activities:
 - 1.1 plan the maintenance activities so as to minimise disruption to normal working
 - 1.2 use the correct issue of company and/or manufacturers' drawings and maintenance documentation
 - 1.3 adhere to procedures or systems in place for risk assessment, COSHH, personal protective equipment and other relevant safety regulations
 - 1.4 ensure the correct equipment decontamination procedure has been adhered to before and after the maintenance activity (where appropriate)
 - 1.5 provide safe access and working arrangements for the maintenance area
 - 1.6 ensure that the equipment is safe to work on before carrying out maintenance activities
 - 1.7 carry out the maintenance activities, using appropriate techniques and procedures
 - 1.8 return the equipment to service on completion of the maintenance activities
 - 1.9 dispose of waste items in a safe and environmentally acceptable manner, and leave the work area in a safe condition

- 2 Carry out maintenance activities on **two** of the following types of assistive technology systems and equipment:
 - 2.1 manual wheelchairs, buggies and wheeled commodes
 - 2.2 powered wheelchairs and scooters
 - 2.3 powered aids for daily living (such as bath lifts, riser and recliner chairs)
 - 2.4 pressure redistribution and relief devices (such as alternating pressure cushions, mattresses and overlays)
 - 2.5 environmental control systems (such as telephones, intercom systems, remote controlled equipment)
 - 2.6 walking aids and other non powered aids for daily living (such as kitchen aids, grab rails and shower seats)
 - 2.7 posture support systems (such as modular and custom made)
 - 2.8 hoists
 - 2.9 adjustable beds
 - 2.10 personal communication aids
 - 2.11 telecare alarm systems

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- 3 Carry out **twelve** of the following maintenance activities, as applicable to the equipment being maintained:
 - 3.1 isolating the equipment
 - 3.2 replacing damaged/defective/missing components
 - 3.3 checking components for serviceability
 - 3.4 repairing damaged or defective components
 - 3.5 dismantling/disconnecting equipment to the appropriate level
 - 3.6 soldering and de-soldering
 - 3.7 replacing all 'lived' items
 - 3.8 checking the condition of warning labels
 - 3.9 setting and adjusting components
 - 3.10 tightening fastenings to the required torque
 - 3.11 replacing or checking lubricants
 - 3.12 disconnecting and reconnecting wires and cables
 - 3.13 making visual checks before functional testing or powering up
 - 3.14 checking cable identification markers
 - 3.15 carrying out electrical safety tests using the appropriate equipment
 - 3.16 removing electrical/electronic units/components
 - 3.17 functionally testing the maintained equipment
 - 3.18 removing mechanical units/components

- 4 Replace or repair a range of components, to include **ten** of the following:
 - 4.1 cables and connectors
 - 4.2 motors
 - 4.3 wheels
 - 4.4 electronic modules
 - 4.5 hydraulic units
 - 4.6 hoses/pipework
 - 4.7 overload protection devices
 - 4.8 drive belts
 - 4.9 battery chargers
 - 4.10 power supplies
 - 4.11 pulleys
 - 4.12 seating
 - 4.13 actuators
 - 4.14 seals
 - 4.15 posture supports
 - 4.16 timers
 - 4.17 valves
 - 4.18 pressure relief covers, interlinings or mattresses
 - 4.19 display/indication units
 - 4.20 pumps
 - 4.21 bulbs or LEDs
 - 4.22 bearings

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- 4.23 lifting slings
 - 4.24 locking and retaining devices
 - 4.25 gauges
 - 4.26 structural components (such as bed or wheelchair frames)
 - 4.27 posture belts
 - 4.28 brake assemblies
 - 4.29 switches
 - 4.30 foot supports
 - 4.31 guards or casings
 - 4.32 sensors
 - 4.33 control levers
 - 4.34 upholstery
 - 4.35 transformers
 - 4.36 interface devices
- 5 Service assistive technology equipment to **one** or more of the following quality and accuracy standards:
- 5.1 organisational guidelines and codes of practice
 - 5.2 equipment manufacturer's instructions
 - 5.3 equipment meets CE marking and, where appropriate, BS7671/IEE wiring regulations
- 6 Complete **all** relevant paperwork from the following, and pass it to the appropriate people:
- 6.1 job cards
 - 6.2 servicing logs or reports
 - 6.3 other specific documentation

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