
Overview

This standard identifies the competences you need to carry out servicing activities on mechanical and electromechanical Assistive Technology (AT) equipment, in accordance with approved procedures. You will be required to service a range of mechanical/electromechanical assistive technology equipment such as, wheelchairs, hoists, stair lifts, seating, walking aids, adjustable beds, pressure redistribution cushions, ramps, and aids to daily living. This will involve dismantling, removing and replacing faulty equipment on a variety of different types of assistive technology equipment. You will be expected to apply a range of dismantling and reassembly methods and techniques, such as mechanical fitting, fixing, fastening, soldering, crimping, harnessing, and securing cables and components.

Your responsibilities will require you to comply with organisational policy and procedures for the servicing activities undertaken, and to report any problems with the activities that you cannot personally resolve, or that are outside your permitted authority, to the relevant people. You must ensure that all tools, equipment and materials used in the servicing 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 with minimal supervision, taking personal responsibility for your 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 the correct servicing procedures. You will understand the dismantling and reassembly methods and procedures used, and their application. You will know about the assistive technology equipment being worked on, component properties, functions and associated defects, in adequate depth to provide a sound basis for carrying out the servicing activities, correcting faults and ensuring that the serviced equipment functions to the required specification and remains compliant with all standards and regulations.

You will understand the safety precautions required when carrying out the servicing 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:

1. work safely at all times, complying with health and safety legislation and other relevant regulations, directives and guidelines
2. follow the relevant servicing schedules to carry out the required work
3. carry out the servicing activities within the limits of your personal authority
4. carry out the servicing activities in the specified sequence and in an agreed timescale
5. remove and replace/refit a range of components
6. report any instances where the servicing activities cannot be fully met or where there are identified defects outside the planned schedule
7. complete and store all relevant servicing documentation in accordance with organisational requirements
8. dispose of waste materials in accordance with safe working practices and approved procedures and leave the work area in a safe condition

Knowledge and understanding

You need to know and understand:

1. the health and safety, infection control and de-contamination requirements of the work area and equipment being serviced, and the responsibility these requirements place on you
2. the statutory and advisory documentation relating to medical devices (such as Medical Devices Regulations, relevant standards, regulatory agency guidance and safety warnings)
3. the importance of reporting any equipment adverse incidents to the regulatory authority
4. the isolation procedure that applies to the servicing activities (such as electrical isolation, removal of fuses, placing of maintenance warning notices)
5. hazards associated with carrying out servicing activities on mechanical and electromechanical assistive technology equipment (such as exposure to live conductors, misuse of tools), and how to minimise them and reduce any risks
6. explain how to recognise and deal with victims of electric shock (to include methods of safely removing the victim from the power source, isolating the power source, methods of first aid resuscitation)
7. how to reduce the risks of a phase to earth shock (such as insulated tools, rubber matting and isolating transformers)
8. the importance of wearing protective clothing and other appropriate safety equipment (PPE) during the servicing
9. how to obtain and interpret drawings, circuit and physical layouts, charts, specifications, manufacturers' information, history/maintenance reports, graphical electrical symbols, current wiring regulations, other documents needed for the servicing activities
10. the appropriate working practices, and the need to respect the patient and carer in the patient environment, at home or in the community
11. the basic principle of operation of the assistive technology equipment being serviced, and the function of individual components
12. the human physiology directly associated with the assistive technology equipment being serviced
13. the risks to the human body from external energy sources associated with assistive technology equipment
14. the application and functions of a range of components used in the equipment (such as switches, sensors, overload protection devices, printed circuit boards, mechanical components, control units, valves, pumps, batteries and chargers)

15. the care, handling and application of multimeters, ohmmeters and other measuring instruments such as dedicated test equipment, built-in test equipment)
16. organisational policy on the repair/replacement of components, and the procedure for obtaining replacement parts, materials and other consumables necessary for the servicing activities
17. how to check that the replacement components meet the required specification/operating conditions (such as type, size, tolerance, current carrying capacity, voltage rating, power rating)
18. the techniques used to dismantle/reassemble AT mechanical/electromechanical equipment (such as mechanical fittings, unplugging, de-soldering, removal of crimped connections)
19. methods of removing and replacing components without causing damage to the equipment or other components
20. the different types of cabling, and their application (such as multicore cables, single core cables, steel wire armoured (SWA), mineral insulated (MI), screened cables, data cables)
21. methods of attaching identification markers/labels to removed components or cables to assist with re-assembly
22. the use of current wiring and other regulations when replacing wires and cables
23. the tools and equipment used in the servicing activities
24. methods of checking that components are fit for purpose, and the need to replace 'lived' items
25. how to make adjustments to components/assemblies to ensure that they function correctly
26. 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
27. the importance of carrying out electrical safety tests on medical equipment, and the implications if this is not carried out
28. the importance of making visual checks before functional testing or proving the equipment with the electrical supply on
29. procedures for the generation of documentation and/or reports following the servicing activity
30. the equipment operating and control procedures to be applied during the servicing activity
31. the problems that can occur during the servicing activity, and how they can be overcome
32. the organisational procedure(s) to be adopted for the safe disposal of waste of all types of materials
33. the extent of your own authority and to whom you should report if you have a problem that you cannot resolve

Scope/range

1. Carry out all of the following servicing activities:
 1. plan and communicate the servicing activities so as to minimise disruption to normal working
 2. obtain and use the correct issue of organisational and/or manufacturers' drawings and servicing documentation
 3. adhere to procedures or systems in place for risk assessment, COSHH, personal protective equipment and other relevant safety regulations and procedures to realise a safe system of work
 4. ensure that the correct equipment decontamination procedure has been adhered to before and after the servicing activities
 5. ensure the safe isolation of equipment (such as electricity, mechanical, gas, air or fluids)
 6. provide and maintain safe access and working arrangements for the servicing area
 7. carry out the servicing activities, using appropriate techniques and procedures
 8. return the equipment to service on completion of the servicing activities
 9. dispose of waste materials in accordance with safe working practices and approved procedures, and leave the work area in a safe condition
2. Carry out servicing activities on six of the following types of assistive technology equipment:
 1. wheelchairs (including buggies, scooters)
 2. adjustable beds
 3. hoists
 4. stair lifts
 5. seating systems
 6. commodes
 7. walking aids
 8. bathing equipment
 9. pressure redistribution and relief devices
 10. other specific AT equipment
3. Carry out all of the following servicing activities, as applicable to the equipment being maintained:
 1. isolating the equipment
 2. initial inspection and identification of items for servicing
 3. disconnecting and reconnecting wires and cables

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4. dismantling equipment to the appropriate level
 5. removing electrical units/components
 6. soldering and de-soldering (as appropriate)
 7. checking components for serviceability
 8. replacing damaged/defective components
 9. setting and adjusting replaced components
 10. replacing all 'lived' items
 11. replacing fasteners
 12. tightening fastenings to the required torque
 13. replacing or checking lubricants
 14. welding/brazing of mountings or support structures
 15. repairing or replacing upholstery
 16. non-destructive testing for defects
 17. attaching suitable cable identification markers
 18. making visual checks before functional test or powering up
 19. carrying out electrical safety tests
 20. functionally testing the serviced equipment
4. Remove and replace/refit a range of components, to include fifteen of the following:
1. cables and connectors
 2. rectifiers
 3. belts
 4. switches
 5. printed circuit boards/control unit
 6. sensors
 7. timers
 8. display/indication units
 9. overload protection devices
 10. thermistors
 11. seals
 12. hoses/pipework
 13. locking and retaining devices
 14. transformers
 15. valves
 16. structural components
 17. power supplies
 18. transducers
 19. pumps
 20. upholstery
 21. actuators
 22. inductors
 23. gears
 24. battery chargers
 25. hydraulic units
 26. pneumatic units
 27. motors

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28. wheels
 29. posture supports/belts
 30. pulleys
 31. bearings
 32. lifting slings
 33. gauges
 34. seating/support surface
 35. other specific components
5. Service assistive technology equipment in compliance with all of the following:
 1. organisational guidelines and codes of practice
 2. equipment manufacturer's operation range
 3. relevant and current HTM documentation
 4. equipment and associated BSEN standards, CE marking and current wiring regulations (where appropriate)
 5. the equipment functions to specification
 6. the equipment remains compliant with all standards and regulations
 7. all potential defects are identified and reported for future action
 6. Complete and store all relevant servicing documentation in accordance with organisational requirement, using one of the following:
 1. job cards
 2. servicing logs or reports
 3. organisational-specific documentation
 4. electronic reports

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Servicing mechanical and electromechanical assistive technology equipment



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