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 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 the relevant servicing records accurately, and pass them on to the appropriate person
8. dispose of waste materials in accordance with safe working practices and approved procedures
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 assistive technology equipment (such as warnings and guidance from the MHRA or other regulatory authority and British and European standards)
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. 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 mating 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 and 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 and other measuring instruments (including dedicated test equipment and 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 tools and equipment used in the servicing activities

23. methods of checking that components are fit for purpose, and the need to replace ‘lifed’ items

24. how to make adjustments to components/assemblies to ensure that they function correctly

25. 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

26. the importance of carrying out electrical safety tests on medical equipment, and the implications if this is not carried out

27. the importance of making visual checks before functional testing or proving the equipment with the electrical supply on

28. procedures for the generation of documentation and/or reports following the servicing activity

29. the equipment operating and control procedures to be applied during the servicing activity

30. the problems that can occur during the servicing activity, and how
they can be overcome

31. the organisational procedure(s) to be adopted for the safe disposal of waste of all types of materials such as WEEE directive

32. the extent of your own authority and to whom you should report if you have a problem that you cannot resolve
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 company 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 items in a safe and environmentally acceptable manner, 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
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 `lifed' 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  
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 documentation such as those provided by MHRA or the regulatory authority
   4. equipment and associated BSEN standards, CE marking and where appropriate wiring regulations
   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 the relevant paperwork from one of the following, and pass it to the appropriate people:
   1. job cards
   2. servicing logs or reports
   3. company-specific documentation
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