

Overview

This standard identifies the competences you need to assemble electrical or electronic components to mechanical equipment, in accordance with approved procedures. You will be required to check that specified components are available and fit for purpose, to obtain all relevant and current documentation, to obtain the tools and equipment required for the assembly operations and to check that they are in a safe and usable condition. In carrying out the assembly operations, you will be required to follow company procedures and specified assembly techniques, in order to fit the electrical or electronic components to the mechanical assembly.

The assembly activities will also include making all necessary checks and adjustments, to ensure that the electrical or electronic components are correctly orientated, positioned and secured correctly. You must also check that any cables and wires are routed correctly and are tidy in appearance, and that connections are mechanically sound and checked for electrical continuity.

Your responsibilities will require you to comply with organisational policy and procedures for the assembly activities undertaken, and to report any problems with the assembly activities, materials or equipment that you cannot personally resolve, or are outside your permitted authority, to the relevant people. You will be expected to work to instructions, 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.

Your underpinning knowledge will be sufficient to provide a good understanding of your work, and will provide an informed approach to applying electrical or electronic fitting and assembly techniques and procedures. You will have an understanding of the product being assembled and its application, and will know about the equipment, relevant components and joining techniques, in adequate depth to provide a sound basis for carrying out the activities to the required specification.

You will understand the safety precautions required when carrying out the assembly activities. You will be required to demonstrate safe working practices throughout, and will understand the responsibility you owe to 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, directives and guidelines
- P2 follow the relevant instructions, assembly drawings and any other specifications
- P3 ensure that the specified components are available and that they are in a usable condition
- P4 use the appropriate methods and techniques to fit the electrical or electronic components in their correct positions
- P5 secure the components using the specified connectors and securing devices
- P6 check the completed assembly to ensure that all operations have been completed and the finished assembly meets the required specification
- P7 complete and store all relevant documentation in accordance with organisational requirements
- P8 deal with problems within your control and report those that cannot be solved

Knowledge and understanding

You need to know and understand:

- K1 how to work safely at all times, complying with health and safety and other relevant regulations, directives and guidelines
- K2 the importance of wearing the appropriate personal protective equipment (PPE), and of keeping the work area clean and tidy
- K3 how to extract and use information from engineering drawings and related specifications in relation to work undertaken
- K4 the general principles of electrical and electronic fitting techniques
- K5 the purpose and function of the components, including identification systems
- K6 preparations to be undertaken on the electrical or electronic components prior to fitting them into the assembly
- K7 the correct component handling procedures, including any relevant handling equipment
- K8 the assembly and securing methods and procedures to be used, and the importance of adhering to these
- K9 how the components are to be positioned, aligned and secured, and the tools and equipment that are used
- K10 the importance of using the specified electrical or electronic components and securing devices for the assembly, and why you must not use substitutes
- K11 the quality control procedures to be followed during the assembly operations
- K12 how to conduct any necessary checks to ensure the accuracy, position, security, function, completeness and electrical continuity of the assembly
- K13 how to detect assembly defects and what to do to rectify them
- K14 how to check that the tools and equipment to be used are in a safe and serviceable condition
- K15 the importance of ensuring that all tools are used correctly and within their permitted operating range
- K16 the importance of ensuring all tools, equipment and components are accounted for and returned to their correct location on completion of the assembly activities
- K17 the issues that can occur with the assembly operations, and what to do if they occur
- K18 the extent of your own responsibility and to whom you should report if you have problems that you cannot resolve

Scope/range related to performance criteria

1. Carry out all of the following during the assembly activities:
 - 1.1 obtain and use the appropriate documentation (such as job instructions, drawings, quality control documentation)
 - 1.2 adhere to procedures or systems in place for risk assessment, personal protective equipment and other relevant safety regulations and procedures to realise a safe system of work
 - 1.3 use lifting and slinging equipment (where appropriate) in accordance with health and safety guidelines and procedures
 - 1.4 check that tools and measuring instruments to be used are fit for service
 - 1.5 use appropriate and approved fitting and assembly techniques at all times
 - 1.6 ensure that the components used are free from damage, foreign objects, dirt or other contamination
 - 1.7 leave the work area in a safe and appropriate condition on completion of the activities
2. Fit electrical or electronic components using all of the following techniques:
 - 2.1 routeing cables and wires
 - 2.2 mounting/securing components
 - 2.3 cable fixings and fasteners
3. Terminate and join cables/wires to components using two of the following:
 - 3.1 screwed connections
 - 3.2 clamped connections
 - 3.3 soldering
 - 3.4 crimping
 - 3.5 cable protection devices (such as sleeving or grommets)
 - 3.6 punch down/push fit connections
 - 3.7 plugs/sockets
4. Fit four of the following electrical components on the mechanical equipment:
 - 4.1 cables and wires
 - 4.2 wiring harness
 - 4.3 transformers
 - 4.4 lamps/lighting
 - 4.5 electronic modules

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- 4.6 circuit protection devices
 - 4.7 switches
 - 4.8 junction boxes
 - 4.9 instrumentation
 - 4.10 plugs
 - 4.11 sensors
 - 4.12 earthing devices
 - 4.13 relays
 - 4.14 sockets
 - 4.15 motors
 - 4.16 coils
 - 4.17 programme logic control units
 - 4.18 pumps
 - 4.19 chokes
 - 4.20 other specific component
5. Carry out the required checks using the correct tools and equipment, to include four of the following:
- 5.1 dimensions
 - 5.2 completeness
 - 5.3 electrical inputs and outputs
 - 5.4 position
 - 5.5 free from damage or foreign objects
 - 5.6 function
 - 5.7 alignment
 - 5.8 electronic inputs and outputs
 - 5.9 component security
 - 5.10 cable/wire routing
6. Produce mechanical assemblies which comply with one of the following standards:
- 6.1 BS, ISO or BSEN standards and procedures
 - 6.2 customer standards and requirements
 - 6.3 organisational standards and procedures
 - 6.4 specific system requirements

SEMMME229

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Developed by	Enginuity
Version Number	3
Date Approved	31 Mar 2026
Indicative Review Date	01 Apr 2029
Validity	Current
Status	Original
Originating Organisation	Enginuity
Original URN	SEMMME2-29
Relevant Occupations	Engineering, Engineering and Manufacturing Technologies, Engineering Technicians
Suite	Mechanical Manufacturing Engineering Suite 2
Keywords	engineering; manufacturing; mechanical; assembly; electrical components; electronic components; routeing cables; securing electrical components; cable fitting; terminating. cables; wires
