

Assembling body sub-assemblies to produce a vehicle

Overview

This standard identifies the competences needed to assemble various body-in-white (panel) sub-assemblies to manufacture complete vehicles, in accordance with approved procedures. You will be required to assemble a range of body sub-assemblies and associated components to make complete vehicles, by using a variety of assembly methods and techniques. You will also be expected to use a range of tools and specialist equipment associated with the assembly methods, and to check that the assembly activities have been completed to the level of accuracy and quality required by the specification.

Your responsibilities will require you to comply with organisational policy and procedures for the assembly activities undertaken, and to report any problems with the process that you cannot resolve, or that are outside your permitted authority, to the relevant people. You will be expected to work 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 provide a good understanding of your work, and will provide an informed approach to applying procedures appropriate to the assembly of the body sub-assemblies to the vehicle. You will understand the assembly methods and techniques used, and their application, and will know about the tooling and ancillary equipment, body-in-white components and consumables, 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.

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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 instructions, assembly drawings and any other specifications
3. ensure that the specified components are available and that they are in a usable condition
4. assemble the components in their correct positions using appropriate methods and techniques
5. secure the components using the specified connectors and securing devices
6. check the completed assembly to ensure that all operations have been completed and the finished assembly meets the required specification
7. deal promptly and effectively with problems within your control and report those that cannot be solved
8. ensure that work records are completed, stored securely and available to others as per organisational requirements
9. leave the work area in a safe condition on completion of the activities, as per organisational and legal requirements

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Knowledge and understanding

You need to know and understand:

1. the specific safety precautions to be taken whilst carrying out the activities (including any specific legislation, regulations or codes of practice relating to the activities, equipment or materials used)
2. the health and safety requirements of the work area and activities and the responsibility they place on you
3. the hazards associated with the activities, and how to minimise them and reduce any risks
4. the personal protective equipment and clothing (PPE) to be worn during the activities
5. the procedures for obtaining the various types of drawing, job instructions and specifications that are used during the assembly of body sub-assemblies to the vehicle, and how to interpret them correctly
6. how to identify the components to be used; component identification systems (codes and component orientation indicators)
7. the assembly methods and procedures to be used, and the importance of adhering to these procedures
8. how the components are to be aligned and positioned prior to securing, and the tools and equipment that are used (including jigs and fixtures)
9. the effects on welding equipment settings of joining different thicknesses and types of metals
10. how to set and operate gas/electric welding equipment safely and correctly
11. how to check for effective weld and weld penetration following panel assembly
12. the consumables, tools and equipment that are used for the assembly
13. how to deal with components or fastening devices that are incorrectly assembled, damaged or have other faults
14. the quality control procedures to be followed during the assembly operations
15. how to conduct any necessary checks to ensure the accuracy and quality of the assembly produced
16. how to recognise defects (incorrect assembly and component damage)
17. the importance of ensuring that the completed assembly is free from left-over items and foreign objects
18. the methods and equipment used to transport, handle and lift the components into position, and how to check that the equipment is within its current certification dates
19. the preparations to be undertaken on the components and fixing

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- points, prior to fitting the components into the assembly
- 20. how to check that the tools and equipment to be used are correctly calibrated and are in a safe, tested and serviceable condition
- 21. the importance of ensuring that all tools are used correctly and within their permitted operating range
- 22. the problems with assembly operations and the importance of informing appropriate people of non-conformances
- 23. the extent of your own responsibility and to whom you should report if you have problems that you cannot resolve
- 24. how to access, use and maintain information to comply with organisational requirements and legislation

Scope/range related to performance criteria

1. Carry out all of the following during the assembly activities:
 1. obtain and use the appropriate documentation (job instructions, assembly drawings, quality control documentation)
 2. adhere to procedures or systems in place for risk assessment, hazardous substances, personal protective equipment and other relevant safety regulations and procedures to realise a safe system of work
 3. check that all cables, extension leads or air supply hoses are in a safe, tested and serviceable condition
 4. check that all tools and equipment to be used are within current calibration/certification dates
 5. ensure that sub-assemblies and components used are free from damage, foreign objects, dirt or other contamination before assembling them
 6. use lifting and slinging equipment in accordance with health and safety guidelines and procedures
 7. use safe and approved techniques to secure the sub-assemblies and components to the vehicles
 8. return all tools and equipment to the correct location on completion of the assembly activities
 9. leave the work area in a safe and appropriate condition on completion of the activities
2. Assemble complete body-in-white sub-assemblies and associated components to manufacture complete vehicle bodies, to include four of the following:
 1. rear quarter
 2. body side
 3. front end assembly
 4. roof
 5. door assembly
 6. bulkhead
 7. front fender
 8. trunk lid assembly
 9. hood assembly
 10. underbody
 11. dash assembly
3. Assemble vehicle body sub-assemblies, to include two of the following:

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1. resistance welding
 2. brazing
 3. filling/sealing
 4. MIG welding
 5. TIG welding
 6. riveting
 7. other specific technique
4. Finish metal panels, using all of the following:
 1. grinding devices
 2. file/smoothers
 3. 'ding' and bump repairing equipment
 4. metal polishing devices
 5. abrasive materials
5. Assemble sub-assemblies and components, using three of the following devices:
 1. static jigs
 2. body side gates
 3. bucks
 4. lifting devices
 5. portable jigs
 6. fixtures
 7. jig trucks
 8. auto-clamping devices
6. Assemble body sub-assemblies to the vehicle, to include all of the following components:
 1. skin panels
 2. reinforcements
 3. structural panels
7. Check assemblies comply with all of the following quality and accuracy standards:
 1. the assembly of body sub-assemblies to the vehicle is complete
 2. all welds meet strength, penetration and finish specifications
 3. correct panel alignment, clearances and finishing are achieved

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