

Assembling sub-assembly units to vehicles

Overview

This standard identifies the competences you need to assemble sub-assembly units to vehicles, in accordance with approved procedures. You will be required to assemble a range of different sub-assembly units, such as front suspension/brake sub-assembly units, rear axle/brake sub-assembly units, power unit sub-assemblies, exhaust system sub-assemblies, steering mechanism sub-assemblies, cooling system sub-assemblies, gearbox and transmission sub-assemblies, complete internal body trim, complete external body trim, complete front and rear seat assemblies, and associated components to the vehicles by using a variety of assembly methods and techniques. You will also be expected to use range of tools and specialist equipment associated with the assembly methods, and to check that the assembly has 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 sub-assembly units to the vehicles. You will understand the assembly methods and techniques used and their application, and will know about the tooling and ancillary equipment, sub-assembly components and consumables, 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.

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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 correct 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 sub-assemblies and associated components 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 sub-assemblies and associated components are to be aligned and positioned prior to securing, and the tools and equipment that are used (such as jigs and fixtures)
9. the various mechanical fasteners to be used and their method of installation (such as threaded fasteners, set and self- tap screws, weld nuts and bolts, and fasteners)
10. the application of sealants and adhesives within the assembly activities and the precautions to be taken when working with them
11. the company coding procedure for component variants to meet customer requirements
12. the operational functions of the various sub-assemblies and associated components
13. the use of torque wrenches and the importance of ensuring fasteners are adjusted to the required settings
14. the consumables, tools and equipment that are used for the assembly of sub-assemblies and associated components to the vehicle
15. the importance of using the specified fasteners for the assembly and why you must not use substitutes
16. how to deal with components or fastening devices that are incorrectly assembled, damaged or have other faults
17. the quality control procedures to be followed during the assembly operations
18. how to conduct any necessary checks to ensure the accuracy and quality of the assembly produced
19. recognising defects (incorrect assembly, ineffective fasteners, damage)

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20. the importance of ensuring that the completed assembly is free from left-over items and foreign objects
21. the methods and equipment used to transport, handle and lift the sub-assemblies and components into position, and how to check that the equipment is within its current certification dates
22. preparations to be undertaken on the sub-assemblies, associated components and fixing points, prior to fitting the sub-assemblies and associated components into the vehicle
23. how to check that the tools and equipment to be used are correctly calibrated and are in a safe, tested and serviceable condition.
24. the importance of ensuring that all tools are used correctly and within their permitted operating range
25. problems with the assembly operations and the importance of informing appropriate people of non-conformances
26. the extent of your own responsibility and to whom you should report if you have problems that you cannot resolve
27. how to access, use and maintain information to comply with organisational requirements and legislation

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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 assemble 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 three of the following complete sub-assembly units to the vehicle:
 1. front suspension/brake sub-assembly unit
 2. cooling system sub-assembly
 3. rear axle/brake sub-assembly unit
 4. gearbox and transmission sub-assembly
 5. power unit sub-assembly
 6. complete internal body trim
 7. exhaust system sub-assembly
 8. complete external body trim
 9. steering mechanism sub-assembly
 10. complete front and rear seat assemblies
3. Assemble sub-assemblies/components, using four of the following:
 1. bolts
 2. staples
 3. sealants

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4. clip/push fasteners
 5. drive/interference fits
 6. rivets
 7. adhesives
 8. weld nuts/bolts
 9. set/self-tap screws
4. Use appropriate methods and techniques to assemble sub-assembly units/components to vehicles, using three of the following devices:
 1. jigs
 2. spring compression devices
 3. torque drivers
 4. alignment devices
 5. fixtures
 6. power drivers
 7. sub-assembly cradles
 8. lifting devices
5. Assemble sub-assembly units to the vehicle, using four of the following components:
 1. locators
 2. mounting brackets
 3. special connectors
 4. strengtheners
 5. positional brackets
 6. control wires and rods
 7. cables and connectors
 8. spring/snap clips
 9. foam/padding
 10. pipes/hoses and connectors
 11. terminals
 12. adhesives/tapes
6. Check that assemblies comply with all of the following quality and accuracy standards:
 1. all sub-assemblies are complete
 2. all fastenings are secure and, where appropriate, torque loaded to specifications
 3. components are correctly aligned to facilitate further assembly
 4. the completed assembly meets quality control requirements

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