
Overview

This standard identifies the competences needed to assemble and fit pipework systems to commercial and passenger carrying vehicles, in accordance with approved procedures. You will be required to assemble and fit a range of pipework systems and components to the vehicle, which could include steel, copper and plastic pipe, flexible and braided hose, straight connectors, reduction pieces, tee pieces, flanges, elbows, couplings, curved/profiled/angular sections, gaskets, seals, pipe supports and clips, by using a variety of assembly methods and joining techniques, such as push fits, bolting, screwing, compression, brazing, soldering, torque setting, sealing and bonding.

You will be expected to prepare the work area, ensuring it is safe and free from hazards, to check the specified components are available and fit for purpose, to obtain all relevant and current documentation, and to obtain the tools and equipment required for the assembly operations, checking 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 pipework systems to the vehicle. The assembly activities will also include making all necessary checks and adjustments, to ensure that the pipework, when fitted to the vehicle, is checked for position, security, function, safety, completeness, leaks and component quality.

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 that are outside your permitted authority, to the relevant people. You will be required to ensure that all tools, equipment and materials used in the assembly are correctly accounted for on completion of the activities, and to complete all necessary job/task documentation accurately and legibly. 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 fitting and assembly of pipework systems to commercial and passenger carrying vehicles. You will understand the assembly methods and techniques used, and their application, and

will know about the tools, equipment, pipework components and joining methods, 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 fitting and 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:

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

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)
2. the health and safety requirements of the work area and the activities, and the responsibility these requirements place on you
3. the hazards associated with the activities, and how to minimise them and reduce risks
4. the personal protective equipment and clothing (PPE) to be worn during the activities
5. how to extract and use information from engineering drawings and related specifications (to include symbols and conventions to current industry standards and codes of practice)
6. how to interpret first and third angle drawings, imperial and metric systems of measurement, workpiece reference points and system of tolerancing
7. how to extract the necessary information in order to produce and fit pipework assemblies
8. the general principles of producing pipework assemblies, and the purpose and function of the components and materials used (including identification systems, such as colour codes)
9. the application of different pipework assembly methods and techniques
10. preparations that need to be undertaken on the pipework prior to fitting them to the vehicle
11. the pipework assembly/joining methods and procedures to be used, and the importance of adhering to these procedures.
12. how pipework is formed, aligned, adjusted and positioned prior to joining, and the tools and equipment that are used
13. the importance of using the specified pipework and fittings for the assembly, and why you must not use substitutes
14. the tests that can be applied to ensure the pipework assembly is safe and leak free
15. the quality control procedures to be followed during the assembly operations
16. how to conduct any necessary checks to ensure the safety, accuracy, position,

security, function and completeness of the pipework assembly how to identify pipework assembly defects (ineffective joining techniques, component damage) and what to do to rectify them

17. how to check that the tools and equipment to be used are correctly calibrated and are in a safe, tested and serviceable condition

18. the importance of ensuring that all tools are used correctly and within their permitted operating range

19. the importance of ensuring that all tools, equipment and components are accounted for and returned to their correct location on completion of the assembly and fitting activities

20. the problems with the assembly and fitting operations, and the importance of informing the appropriate people of non- conformances

21. the extent of your own responsibility and to whom you should report if you have problems that you cannot resolve

22. 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:

- 1.1 obtain and use the appropriate documentation (such as job instructions, assembly drawings, quality control documentation)
- 1.2 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
- 1.3 check that all cables, extension leads or air supply hoses are in a safe, tested and serviceable condition
- 1.4 check that all tools and equipment to be used are within current calibration/certification dates
- 1.5 ensure that components and pipes used are free from damage, foreign objects, dirt or other contamination before fitting them to the vehicle
- 1.6 use safe and approved fitting and assembly techniques at all times
- 1.7 return all tools and equipment to the correct location on completion of the fitting and assembly activities
- 1.8 leave the work area in a safe and appropriate condition on completion of the activities

2.

Assemble pipework systems using two of the following types of pipe:

- 2.1 steel pipe
- 2.2 flexible hose
- 2.3 copper pipe
- 2.4 braided hose
- 2.5 plastic pipe

3.

Produce pipework assemblies using two of the following methods:

- 3.1 compression
- 3.2 brazing
- 3.3 cementing/bonding
- 3.4 bolting
- 3.5 push fit
- 3.6 soldering
- 3.7 screwing/threaded

4.

Assemble pipework systems using four of the following components:

- 4.1 straight connectors
- 4.2 tee pieces
- 4.3 curved/profiled sections
- 4.4 gaskets/seals
- 4.5 reduction pieces

- 4.6 flanges
- 4.7 pipe supports and clips
- 4.8 angular sections
- 4.9 straight sections
- 4.10 elbows
- 4.11 couplings

5.

Carry out quality checks using appropriate equipment, to include seven of the following:

- 5.1 dimensions
- 5.2 correct direction and flow
- 5.3 alignment
- 5.4 torque loading of bolts
- 5.5 completeness
- 5.6 component security
- 5.7 function
- 5.8 component quality (free from ripple, creases)
- 5.9 positional accuracy
- 5.10 leak/pressure tests

6.

Ensure the pipework, its assembly and fitting, comply with one of the following quality and accuracy standards:

- 6.1 legislation, industry standards, codes of practice and procedures
- 6.2 specific system requirements
- 6.3 company standards and procedures

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Fitting pipework systems to commercial and passenger carrying vehicles



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