
Overview

This standard is about the removal, renewal and refitting of electrical components where the procedure is straightforward and where items are not directly linked to vehicle safety systems. This standard does not cover working on high voltage systems.

Performance criteria*You must be able to*

- P1. use the appropriate personal protective equipment when removing and refitting electrical components
- P2. protect the vehicle and its contents when removing and refitting electrical components
- P3. support your removal and replacement activities by referring to:
 - P3.1. vehicle technical data
 - P3.2. removal and replacement procedures
 - P3.3. legal requirements
- P4. ensure that the **tools and equipment** you require are calibrated and in a safe working condition to meet manufacturer's and legal requirements
- P5. select and use the correct **tools and equipment** for the components you are going to remove or refit
- P6. remove and refit electrical components following:
 - P6.1. recognised research methods
 - P6.2. removal and refitting procedures
 - P6.3. manufacturers' instructions
 - P6.4. your workplace procedures
 - P6.5. health, safety and legal requirements
- P7. renew fittings and fasteners that are unsuitable for re-use
- P8. dispose of waste materials to conform with legal, environmental and workplace requirements
- P9. work in a way which reduces the risk of damaging other components and units on the vehicle
- P10. adapt your work techniques safely to suit the needs of the job when necessary
- P11. store all removed components safely in the correct location
- P12. check that the components you have fitted operate correctly following the manufacturer's specification
- P13. promptly report any additional faults or defects you find during the course of your work to the relevant person(s)
- P14. promptly report any delays in completing your work to the relevant person(s) in the format required
- P15. remove and refit electrical components within the agreed timescale

P16. complete work records accurately, in the format required and promptly pass them to the relevant person(s)

Knowledge and understanding

You need to know and understand:

Legislative and organisational requirements and procedures

- K1 the health, safety, environmental and legal requirements relating to the removal and refitting of electrical components
- K2 how the vehicle is powered and the associated health and safety risks
- K3 your workplace procedures for:
 - K3.1 referral of problems
 - K3.2 reporting of delays to the completion of work
 - K3.3 completion of work records and the format required
- K4 the work that needs to be done and the standard required
- K5 the requirements for protecting the vehicle and contents from damage before, during and after removing and refitting activities
- K6 the importance of selecting, using and maintaining the appropriate personal protective equipment when removing and refitting electrical components

Equipment

- K7 how to select, check and use all the **tools and equipment** required to remove and refit electrical components

Removal, renewal and refitting of mechanical components

- K8 the types of common vehicle **electrical systems** components
- K9 the construction and operation of common vehicle **electrical systems**
- K10 how **electrical systems** and their components work and their function
- K11 where to find and how to interpret and use sources of information applicable to the removal and fitting of electrical components
- K12 the procedures for removing and fitting electrical components
- K13 the methods of storing removed parts and the importance of storing them correctly
- K14 the different types of fastenings and the reasons for their use
- K15 single use mechanical fasteners, why they are used and the dangers of not renewing them
- K16 the need for correct alignment of components and the methods used to achieve this

K17 the types of quality checks that can be used to ensure correct alignment and operation of components to manufacturer's specification and their purpose

Scope/range

- 1. Electrical Systems** are:
 - 1.1. engine (air, fuel and exhaust)
 - 1.2. transmission
 - 1.3. chassis (covers steering, suspension and brakes)
 - 1.4. body electrics (e.g. lighting, wipers)
 - 1.5. Advanced Driver Assistance Systems (passive and active)
 - 1.6. high voltage integrated electrical systems

- 2. Tools and equipment** required for :
 - 2.1. removal and refitting of engine electrical systems
 - 2.2. removal and refitting of transmission electrical systems
 - 2.3. removal and refitting of chassis electrical systems
 - 2.4. specialist electrical work
 - 2.5. general workshop activities
 - 2.6. jacking and lifting

**Additional
Information****Glossary**

This section contains examples and explanations of some of the terms used but does not form part of the standard.

Alternative Fuel

This is defined as any type of fuel that may be used to power an internal combustion engine; examples would include LPG, bio ethanol etc.

Vehicles

These can be light vehicles or commercial vehicles. In addition, they may be SI, CI, Hybrid, Electric or Alternative fuel vehicles.

Vehicle Safety Systems

This is a generic term which includes, for example, supplemental restraint systems (SRS), engine managements systems, assisted brake systems (ABS), Advanced Driver Assistance Systems (ADAS) and any equipment related to safety.

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