
Overview

This standard is about carrying out tests to identify faulty batteries, then the removal and replacement of them.

NB: This unit does not include working on high voltage battery packs.

Performance criteria

- You must be able to:*
- P1 select and use suitable personal protective equipment and vehicle coverings throughout all battery and component testing and replacement activities
 - P2 work in a way which minimises the risk of damage to the vehicle and its systems
 - P3 carry out tests on **batteries and components** relevant to the faults reported
 - P4 conduct all testing and replacement activities following:
 - P4.1 vehicle, equipment and component manufacturers' recommendation
 - P4.2 your workplace procedures
 - P4.3 health and safety requirements
 - P5 ensure your **testing techniques** clearly identify the type of battery or charging system fault(s)
 - P6 make clear and suitable recommendations for further action based upon the results of your inspection to the relevant person(s)
 - P7 carry out removal and replacement activities using:
 - P7.1 suitable **tools and equipment**
 - P7.2 the correct techniques
 - P7.3 suitable replacement **batteries and components**
 - P8 ensure that the replacement battery and charging system function correctly prior to releasing the vehicle to the customer
 - P9 dispose of removed batteries safely to comply with current legal requirements and your workplace procedures
 - P10 store batteries safely to comply with current legal requirements and your workplace procedures
 - P11 complete all testing, inspection and replacement activities within the agreed timescale
 - P12 promptly report any anticipated delays in completion to the relevant person(s)

Knowledge and understanding

You need to know and understand:

Legislative and organisational requirements and procedures

K1 the current health and safety legislation and workplace procedures relevant to workshop practices and personal and vehicle protection

K2 the current legal requirements relating to vehicle **batteries and components**

K3 your workplace procedures for:

K3.1 the referral of problems

K3.2 reporting of delays to the completion of work

K3.3 personal protection

K3.4 storage and maintenance of battery stock

K4 how to dispose of removed components in line with health and safety and legal requirements

K5 the importance of disposing of waste safely and the consequences of not doing so to others and the environment

K6 the importance of storing batteries safely and the consequences of not doing so to others and the environment

K7 the importance of working to agreed timescales and keeping others informed of progress

K8 the importance of promptly reporting anticipated delays to the relevant person(s)

K9 the relationship between time and costs

Tools and equipment

K10 the function and use of diagnostic testing equipment

K11 the **tools and equipment** used for replacing batteries and how to select and use them

K12 how to perform safety and operational checks on **tools and equipment**

K13 code saving devices and how and when to use them

Battery fault finding and replacement

K14 the purpose, function and layout of automotive batteries and charging system, including smart charging

K15 battery ratings and the circumstances in which differently rated batteries should be fitted

K16 the possible faults associated with batteries and charging systems

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- K17 fault identification methods and procedures and **testing techniques** associated with **batteries and components** (e.g. visual, use of hand held diagnostic equipment, use of battery manufacturer's battery testing equipment)
- K18 how to interpret test results
- K19 the removal and replacement procedures associated with **batteries and components** including electrolyte filling, coding of replacement batteries using battery management facility in diagnostic tool and health and safety requirements
- K20 how to check that replacement **batteries and components** are of the correct type and quality for the vehicle
- K21 how to inspect, replace and adjust drive belt tension (manual and automatic adjustment) as required
- K22 how to check that **batteries and components** are functioning correctly, referring to manufacturers' procedures, and the importance of doing so before release to the customer
- K23 how to work safely avoiding injury to yourself, to others and damage to vehicles
- K24 the implications of electrical conductivity through the human body

Scope/range

1. **Batteries and components** include:

- 1.1. automotive batteries
- 1.2. battery connections
- 1.3. battery supports
- 1.4. battery hold down device
- 1.5. generators
- 1.6. drive belt

2. **Testing techniques** include:

- 2.1. sensory
- 2.2. functional
- 2.3. electronic

3. **Tools and equipment** include:

- 3.1. hand tools
- 3.2. diagnostic equipment

Glossary

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

Agreed timescales

Examples include job times set by your company or agreed with a specific customer.

Automotive batteries

Examples include lead-acid, flooded, enhanced-flooded, calcium, absorbed glass mat (AGM), gel filled and low voltage lithium.

Diagnostic equipment

Examples include voltmeter, multimeter, battery test equipment, hydrometer and diagnostic tool

Generators

These can be alternators, dynamos and electronic components in a high voltage system

Vehicles

These can be light vehicles and light commercial vehicles. These may also include electric/hybrid vehicles.

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Inspect, test and replace motor vehicle batteries and related components



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