

IMIHV03

Remove and replace large goods and passenger vehicle electrical auxiliary units and components



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Overview

This standard is about removing and replacing large goods and passenger vehicle units and components previously identified as faulty, damaged, deteriorated or where the customer/driver has requested replacement. It is also about evaluating the performance of replaced units and components. The units and components concerned are those not replaced as part of normal routine vehicle maintenance (servicing) activities.

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Performance criteria

You must be able to:

- P1 use suitable personal and vehicle protective equipment throughout all removal and replacement activities
- P2 support your removal and replacement activities by reviewing
 - P2.1 vehicle technical data
 - P2.2 removal and replacement procedures
 - P2.3 legal requirements
- P3 prepare the vehicle, vehicle systems and work area for safe working procedures
- P4 prepare, check and use all the **equipment** required following manufacturers' instructions
- P5 carry out all removal and replacement activities following;
 - P5.1 manufacturers' instructions
 - P5.2 your workplace procedures
 - P5.3 health, safety and environmental requirements
- P6 work in a way which minimises the risk of:
 - P6.1 damage to other vehicle systems, units and components
 - P6.2 contact with leakage and hazardous substances
 - P6.3 damage to your working environment
 - P6.4 injury to self and others
- P7 ensure replaced **electrical auxiliary units and components** conform to the vehicle operating specification and any legal requirements
- P8 record and report any additional faults you notice during the course of your work promptly
- P9 use suitable **testing methods** to evaluate the performance of the reassembled system accurately
- P10 ensure the reassembled system performs to the vehicle operating specification and meets any legal requirements prior to return to the customer/driver
- P11 ensure your records are accurate, complete and passed to the relevant person(s) within the agreed timescale in the format required
- P12 complete all removal and replacement activities within the agreed timescale
- P13 report any expected delays in completion to the relevant person(s) promptly

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Deleted: <#>environmental requirements¶

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Knowledge and understanding

Legislative and organisational requirements and procedures

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You need to know and understand:

- K1 the legal requirements relating to the vehicle (including road safety and refrigerant handling requirements)
- K2 the implications on an Operators Licence of not carrying out repairs and inspections correctly
- K3 the legislation and workplace procedures relevant to
 - K3.1 health and safety
 - K3.2 the environment (including waste disposal)
 - K3.3 appropriate personal and vehicle protective equipment
- K4 your workplace procedures for
 - K4.1 recording removal and replacement information
 - K4.2 the referral of problems
 - K4.3 reporting delays to the completion of work
- K5 the importance of documenting removal and replacement information
- K6 the importance of working to agreed timescales and keeping others informed of progress
- K7 the relationship between time and costs
- K8 the importance of reporting anticipated delays to the relevant person(s) promptly

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You need to know and understand:

Use of technical information

- K9 how to find, interpret and use sources of information applicable to electrical unit and component removal and replacement
- K10 the importance of using the correct sources of technical information
- K11 the purpose of and how to use identification codes

You need to know and understand:

Electrical auxiliary system operation and construction

- K12 how **electrical auxiliary units and components** are constructed, removed and replaced for the classification of vehicle worked upon
- K13 how **electrical auxiliary units and components** operate for the classification of vehicle worked upon

Equipment

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You need to know

and understand:

- K14 how to prepare, check and use all the removal and replacement **equipment** required

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Electrical and electronic principles

You need to know

and understand:

- K15 vehicle earthing principles and methods
- K16 electrical and electronic principles associated with electrical auxiliary systems, including types of sensors and actuators, their application and operation
- K17 types of circuit protection and why these are necessary
- K18 electrical safety procedures
- K19 how lighting, warning, charging and starter circuits work
- K20 electric symbols, units and terms
- K21 electrical/electronic control system principles
- K22 the hazards associated with working on or near high energy electrical vehicle components

Electrical unit and component removal and replacement

You need to know

and understand:

- K23 how to remove and replace **electrical auxiliary units and components** for the classification of vehicle worked upon
- K24 how to test and evaluate the performance of replacement **electrical auxiliary units and components** and the reassembled system against the vehicle operating specifications and any legal requirements
- K25 the relationship between **testing methods** and the **electrical auxiliary units and components** replaced – the use of appropriate test methods
- K26 the manufacturer's specification for the type and quality of **electrical auxiliary units and components** to be used
- K27 how to work safely avoiding damage to other vehicle systems, components and units and contact with leakage and hazardous substances
- K28 the importance of inspecting the vehicle following any repairs

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Scope/range

1. **Equipment** is, for example:
 - 1.1. hand tools
 - 1.2. special workshop tools
 - 1.3. general workshop equipment
 - 1.4. testing equipment
 - 1.5. interface

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2. **Testing methods** are:
 - 2.1. sensory
 - 2.2. functional
 - 2.3. measurement

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3. **Electrical auxiliary units and components** are for
 - 3.1. lighting systems
 - 3.2. wiper systems
 - 3.3. security and alarm systems
 - 3.4. comfort and convenience systems (including infotainment and communications)
 - 3.5. electric window systems
 - 3.6. monitoring and instrumentation systems
 - 3.7. starter battery and charging systems

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communication systems¶

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Additional information

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

Glossary

Agreed timescales:

Examples include: manufacturer's recommended work times, job times set by your company or a job time agreed with a specific customer.

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Comfort and convenience systems:

Examples are heated seats, electrically adjusted seats, heated screens, electric mirrors, heating, climate control and air conditioning.

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Large Goods and Passenger Vehicles:

These are medium and large goods vehicles, buses and coaches of 3500kgs gross vehicle mass (GVM) and above.

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Any unit or component from the electrical systems defined in the Scoping Statement above.

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Suite Maintenance and Repair - Large goods and Passenger Vehicle

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