

Overview

This NOS is about removing and replacing motorcycle electrical and electronic units and components previously identified as faulty or damaged or where the customer has requested replacements. It is also about evaluating the performance of replaced units and components.

The units and components concerned are not those replaced as part of normal routine vehicle maintenance.

In this standard the term 'motorcycle' includes motorcycles, scooters, mopeds and motorcycle-derived three- or four-wheel vehicles (such as quad bikes) on which the rider sits.

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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, check and use all the **equipment** required following manufacturers' instructions
 - P4 prepare the vehicle systems and work area for safe working procedures, as appropriate to the vehicle
 - 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
 - P6.2 damage to other vehicle components and units
 - P6.3 contact with leakage
 - P6.4 contact with hazardous substances
 - P7 ensure replacement electrical and electronic **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
 - P11 ensure your records are accurate, complete and passed to the relevant person(s) within the agreed timescale and 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

Knowledge and Understanding

You need to know and understand:

Legislative and organisational requirements and procedures

- K1 the legal requirements relating to the vehicle (including road safety, fuel storage, high voltage or other requirements)
- K2 the legislation and workplace procedures relevant to
 - K2.1 health and safety
 - K2.2 the environment (including waste disposal)
 - K2.3 appropriate personal and vehicle protective equipment
- K3 the importance of documenting removal and replacement information
- K4 the importance of working to agreed timescales and keeping others informed of progress
- K5 the relationship between time and costs
- K6 the importance of reporting anticipated delays to the relevant person(s) promptly

Use of technical information

- K7 how to find, interpret and use sources of information applicable to electrical and electronic units and component removal and replacement
- K8 the importance of using the correct sources of technical information
- K9 the purpose of and how to use identification codes

Electrical and electronic system operation and construction

- K10 how **electrical and electronic units and components** are constructed, removed and replaced for the classification of vehicle worked upon
- K11 how **electrical and electronic units and components** operate for the classification of vehicle worked upon

Equipment

- K12 how to prepare, check and use all the removal and replacement **equipment** required

Electrical and electronic principles

- K13 vehicle earthing principles and earthing methods
- K14 electrical and electronic principles associated with electrical systems, including types of sensors and actuators, their application and operation

You need to know
and understand:

- K15 types of circuit protection and why these are necessary
- K16 electrical safety procedures
- K17 how lighting and warning circuits work
- K18 electric symbols, units and terms
- K19 electrical/electronic control system principles
- K20 the hazards associated with working on or near high voltage electrical vehicle components

Electrical and electronic units and component removal and replacement

- K21 how to remove and replace **electrical and electronic units and components** for the classification of vehicle worked upon
- K22 how to test and evaluate the performance of replacement **electrical and electronic units and components** and the reassembled system against the vehicle operating specifications and any legal requirements
- K23 the relationship between **testing methods** and the **electrical and electronic units and components** replaced – the use of appropriate test methods
- K24 the manufacturer's specification for the type and quality of **electrical and electronic units and components** to be used
- K25 how to work safely avoiding damage to other vehicle systems, components and units and contact with leakage and hazardous substances

Scope/range

All of the items listed below form part of this National Occupational Standard.

- 1. Equipment is**
 - 1.1. hand tools
 - 1.2. special workshop tools
 - 1.3. general workshop equipment
 - 1.4. electrical testing equipment

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

- 3. Electrical and electronic units and components** in the following systems:
 - 3.1. lighting and signalling
 - 3.2. wiring and loom
 - 3.3. starting and charging
 - 3.4. comfort and convenience
 - 3.5. circuit protection
 - 3.6. infotainment and communications
 - 3.7. monitoring and instrumentation systems
 - 3.8. security systems
 - 3.9. rider safety systems
 - 3.10. control systems

Additional Information

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

Comfort and convenience systems

Examples are heated seats, heated grips, electrically adjusted seats.

Infotainment systems

For example, sat nav, Bluetooth communications systems

Motorcycles

In this standard the term 'motorcycle' includes motorcycles, scooters, mopeds and motorcycle-derived three- or four-wheel vehicles (such as quad bikes) on which the rider sits.

Sensory testing methods

These may include looking, listening, smelling and touching for heat.

IMIMC03a Remove and replace motorcycle electrical and electronic units and components



Developed by	IMI
Version number	3
Date approved	Not yet approved
Indicative review date	March 2025
Validity	Draft
Status	Original
Originating organisation	IMI Ltd
Original URN	??
Relevant occupations	Engineering; Vehicle Trades; Motorcycle Service Technician; ATV Service Technician
Suite	Maintenance and Repair - Motorcycle
Key words	Motorcycle; electrical; electronic; units; components; remove; replace; lighting; alarms;