

## IMIHV12

### Remove and replace large goods and passenger vehicle transmission and driveline units and components



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#### Overview

This standard is about removing and replacing large goods and passenger vehicle units and components where dismantling and re-assembly of transmission and driveline systems is required, including those which incorporate electric and hybrid driveline systems. 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

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You must be able to: P1 use suitable personal and vehicle protective equipment throughout all removal and replacement activities

Deleted: wear suitable personal protective equipment and use vehicle coverings (where appropriate)

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

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P4 prepare, check and use all the **equipment** required following manufacturers' instructions

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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

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P6 work in a way which minimises the risk of:

Deleted: <#>environmental requirements¶

P6.1 damage to other vehicle systems, units and components

Deleted: damage to other vehicle components and units

P6.2 contact with leakage and hazardous substances

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P6.3 damage to your working environment

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P6.4 injury to self and others

P7 ensure replaced transmission and driveline 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 transmission and driveline 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 in the format required

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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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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 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 implications on an Operators Licence of not carrying out repairs and inspections correctly
- 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 unit and component removal and replacement within **transmission and driveline systems**
- K10 the importance of using suitable sources of technical information
- K11 the purpose of and how to use identification codes

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You need to know and understand:

#### Electrical and electronic principles

- K12 the hazards associated with working on or near high voltage electrical vehicle components
- K13 vehicle earthing principles and methods

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You need to know and understand:

- K14 electrical and electronic principles associated with **transmission and driveline systems**, including types of sensors and actuators, their application and operation
- K15 types of circuit protection and why these are necessary
- K16 electrical safety procedures
- K17 electric symbols, units and terms
- K18 electrical and electronic control system principles

#### Transmission and driveline system operation and construction

You need to know and understand:

- K19 how large goods and passenger vehicle, transmission and driveline system and their related **units and components** are constructed, removed and replaced Deleted: commercial vehicle
- K20 how large goods and passenger vehicle, transmission and driveline system and their related **units and components** operate Deleted: commercial vehicle

#### Equipment

- K21 how to prepare, check and use all the removal and replacement **equipment** Deleted: test
- K22 how to remove and replace large goods and passenger vehicle, transmission and driveline system mechanical, electrical, hydraulic and pneumatic **units and components** Deleted: commercial vehicle
- K23 how to test and evaluate the performance of replacement transmission and driveline system **units and components** and the reassembled system against the vehicle operating specifications and any legal requirements
- K24 how to select the appropriate testing method when checking transmission and driveline systems following replacement of units and components, Deleted: the relationship between testing methods and the transmission and driveline system units and components replaced – the use of appropriate test methods
- K25 when replacement **units and components** must meet the original **equipment** specification (OES) for warranty or other requirements
- K26 how to work safely avoiding damage to other vehicle systems, components and units and contact with leakage and hazardous substances
- K27 the importance of inspecting the vehicle following any repairs

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Scope/range

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. visual
  - 2.2. aural
  - 2.3. functional
  
3. **Units and components are:**
  - 3.1. mechanical
  - 3.2. electrical
  - 3.3. hydraulic and fluid
  - 3.4. pneumatic
  
4. **Transmission and driveline systems are**
  - 4.1. gearbox and power take off
  - 4.2. hubs and bearings
  - 4.3. driveline shafts
  - 4.4. clutch
  - 4.5. final drive
  - 4.6. electric and hybrid driveline 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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**Functional testing:**

Examples include: dynamometer and transmission stall test. Large Goods and

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**Passenger Vehicles:**

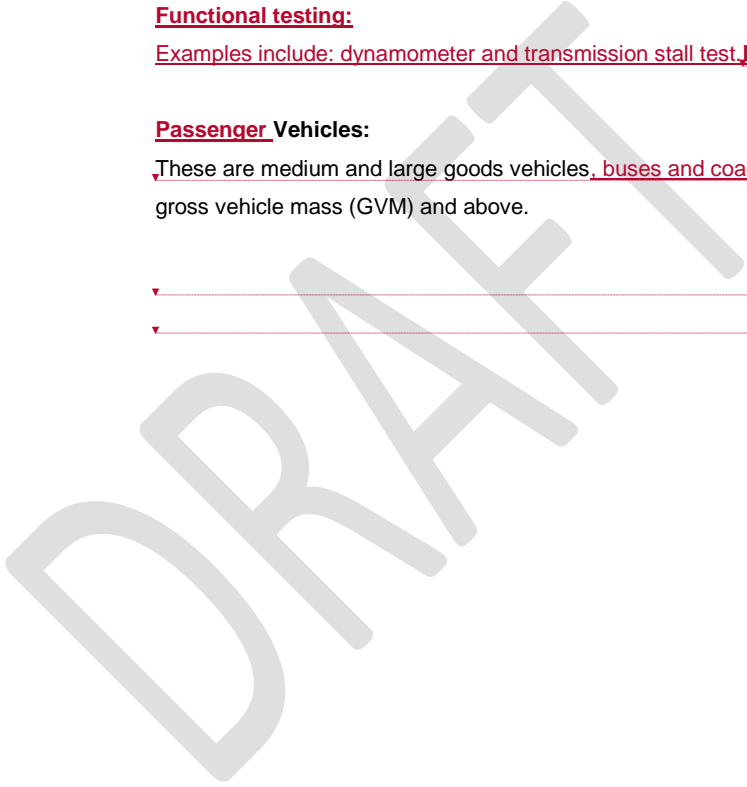
These are medium and large goods vehicles, buses and coaches of 3500kgs gross vehicle mass (GVM) and above.

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**Deleted: Units and components: ¶**  
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Any unit or component from the transmission and driveline systems defined in the Scoping Statement above.¶

**Deleted: Functional testing:¶**  
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Examples include: dynamometer and transmission stall test.



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**Status** Original

**Originating organisation** IMI Ltd

**Original URN** MRHV12

**Relevant occupations** Engineering; Vehicle Trades; Heavy Vehicle Service Technician; Bus and Coach Mechanic: Bus and Coach Mechelec

Deleted: (Automotive)

**Suite** Maintenance and Repair Large Goods and Passenger Vehicle

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**Key words** Remove; replace; large goods; passenger vehicle; vehicles; transmission; driveline; units; components; clutch; gearbox; prop-shaft; half-shaft

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