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## Overview

This NOS is about removing and replacing units and components where dismantling and re-assembly of transmission and driveline systems is required. 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 (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 systems and work area for safe working procedures (where appropriate)

- 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 recognised repair methods

- P5.3 health, safety and environmental requirements

- P5.4 your workplace procedures

- 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

- P6.5 damage to your working environment

- P7 ensure replacement transmission or 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 or 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 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

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## Knowledge and understanding

You need to know and understand:

### Legislative and organisational requirements and procedures

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K1 the legal requirements relating to the vehicle

K2 the legislation and workplace procedures relevant to

K2.1 health and safety

K2.2 the environment (including waste disposal)

K2.3 personal and vehicle protective equipment

K3 your workplace procedures for:

K3.1 recording removal and replacement information

K3.2 the referral of problems

K3.3 reporting delays to the completion of work

K4 the importance of documenting removal and replacement information

K5 the importance of working to agreed timescales and keeping others informed progress

K6 the relationship between time and costs

K7 the importance of reporting anticipated delays to the relevant person(s) promptly

### Use of technical information

K8 how to find, interpret and use sources of information applicable to units and component removal and replacement within **transmission and driveline systems**

K9 the importance of using suitable sources of technical information

K10 the purpose of and how to use identification codes

### Electrical and electronic principles

K11 vehicle earthing principles and earthing methods

K12 electrical and electronic principles associated with **transmission and driveline systems**

K13 types of circuit protection and why these are necessary

K14 electrical safety procedures electric symbols, units and terms

K15 electrical and electronic control system principles

K16 the hazards associated with working on or near high energy electrical vehicle components

### Transmission and driveline system operation and construction

K17 how **transmission and driveline systems** and their related units and

**components** are constructed, removed and replaced for the classification of vehicle worked upon

K18 how **transmission and driveline systems** and their related **units and components** operate for the classification of vehicle worked upon

### **Equipment**

K19 how to prepare, check and use all the removal and replacement **equipment** required

### **Transmission and driveline system units and components removal and replacement**

K20 how to remove and replace **transmission and driveline system** mechanical, electrical and hydraulic/pneumatic **units and components** for the classification of vehicle worked upon

K21 how to select and use gaskets, sealants, seals, fittings and fasteners

K22 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

K23 how to select the appropriate test method when checking transmission and driveline systems following replacement of components

K24 when replacement **units and components** must meet the original equipment specification (OES) for warranty or other requirements

K25 how to work safely avoiding damage to other vehicle systems, **units and components** and contact with leakage and hazardous substances

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## Scope/range

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**\*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
- 2.4. measurement

**3. Units and components are:**

- 3.1. mechanical
- 3.2. electrical
- 3.3. hydraulic/pneumatic

**4. Transmission and driveline systems are:**

- 4.1. gearbox
- 4.2. hubs and bearings
- 4.3. final drive assembly
- 4.4. driveline components (including propeller shafts and drive shafts)
- 4.5. clutch

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## Glossary

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

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### **Agreed timescales:**

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

### **Units and components:**

Any unit or component from the transmission and driveline systems defined in the scope/range above.

### **Functional testing:**

**Examples include:** use of brake roller tester, chassis dynamometer, transmission stall test.

### **Vehicles:**

These can be any of the following – light vehicles. Additionally, these vehicles may be SI, CI, Hybrid or Alternative fuel vehicles.

### **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.

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Suite	Maintenance and Repair - Light Vehicle
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