

## SERVICE VEHICLE TRANSMISSION SYSTEMS

UNIT CODE: ENG/OS/AUT/CR/4/5/A

### Unit description:

This unit specifies competencies required to service vehicle transmission system.

It involves organize to service vehicle transmission systems, Troubleshoot vehicle transmission system ,overhaul gearbox unit (manual), overhaul gearbox semi/automatic, carry out hydraulic/tiptronic test and measurement.

### ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA <i>(Bold and italicized terms are elaborated in the Range)</i>
1. Organize to service vehicle transmission system	1.1 Work area is cleaned and safety measures undertaken before use as per workshop regulations/ OSHA 1.2 Vehicle is parked on a workshop hoist as per workshop regulations` 1.2 Interpret the job card 1.3 <b>Tools and equipment</b> and materials are availed as per manufacturers recommendation
2. Troubleshoot vehicle transmission system	2.1 Visual inspection of the vehicle is done 2.2 Technical inspection is done while engine is running according to manufacturer's specifications. 2.3 Vehicle is inspected underneath according to workshop setup. 2.4 Faulty <b>components</b> are established according to inspection done.
3. Overhaul gear box unit (Manual)	3.1 Drain gearbox oil according to workshop procedures. 3.2 Remove faulty gearbox from vehicle according to manufacturer's manual. 3.3 Clean external housing of the gearbox according to workshop procedures. 3.4 Dismantle faulty gearbox according to manufacturer's manual. 3.5 Clean internal <b>manual gearbox components</b> according to workshop procedures. 3.6 Service and replace worn out gearbox components according to manufacturer's specifications. 3.7 Assemble serviced/new components of the gearbox according to manufacturer's manual. 3.8 Fit new gearbox mounting according to workshop procedures. 3.9 Refit serviced gearbox to the vehicle according to manufacturer's manual.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>(Bold and italicized terms are elaborated in the Range)</i>
	3.10 Refill gearbox oil to the recommended level according to manufacturer's specification. 3.11 Test serviced gearbox according to workshop procedures.
4. Overhaul gearbox (semi/automatic)	4.1 Drain automatic transmission fluid (ATF) according to workshop procedures. 4.2 Remove faulty gearbox from the vehicle according to manufacturer's manual. 4.3 Clean external housing of the gearbox according to workshop procedures. 4.4 Dismantle faulty gearbox according to manufacturer's manual. 4.5 Clean internal <b><i>semi/automatic gearbox components</i></b> according to workshop procedures. 4.6 Service and replace worn out gearbox components according to manufacturer's specifications. 4.7 Assemble serviced/new components of the gearbox according to manufacturer's manual. 4.8 Fit new gearbox mountings according to workshop procedures. 4.9 Refit serviced gearbox to the vehicle according to manufacturer's manual. 4.10 Refill ATF to the recommended level according to manufacturer's specification.
5. Carry out hydraulic/tiptronic system tests and measurements	5.3 Identify tools and equipment according to manufacturer's specifications. 5.4 Perform stall test according to manufacturer's manual 5.5 Perform pressure test according to manufacturer's specifications. 5.6 Perform shift test according to manufacturer's specifications. 5.7 Perform tiptronic diagnosis test using fault diagnostic gadget according to manufacturer's manual. 5.8 Record and file results according to standards operation procedures.

### RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

<b>Variable</b>	<b>Range</b>
1. Components may include but is not limited to:	<ul style="list-style-type: none"> <li>• Bearings</li> <li>• Gears</li> <li>• Synchromesh unit</li> <li>• Gearbox shafts and thrust plates</li> </ul>

Variable	Range
	<ul style="list-style-type: none"> <li>• Gear selectors, sensors and linkages</li> <li>• Constant velocity and universal joints</li> <li>• Clutch assemblies release bearings</li> <li>• Automatic gearbox pump and oil strainer</li> <li>• Transmission unit mounting</li> <li>• Flywheel</li> <li>• Transmission drive shaft/half shaft</li> <li>• propeller shaft/center rubber</li> </ul>
2. Manual gearbox components may include but is not limited to:	<ul style="list-style-type: none"> <li>• Input shaft</li> <li>• Lay shaft</li> <li>• Output shaft</li> <li>• Speed gearwheels</li> <li>• Synchronizer unit</li> <li>• Selector shafts/forks</li> </ul>
2. Semi/automatic gearbox components may include but is not limited to:	<ul style="list-style-type: none"> <li>• Fluid flywheel</li> <li>• Torque convertor</li> <li>• Shift valve</li> <li>• Brake bands</li> <li>• Front clutch</li> <li>• Rear clutch</li> <li>• Sun wheel gears</li> <li>• Planetary gears</li> <li>• Carrier gear</li> <li>• Output shaft</li> </ul>

## REQUIRED KNOWLEDGE AND SKILL

### Required Skills

The individual needs to demonstrate the following skills:

- Decision making;
- Multitasking;
- First aid;
- Communications (verbal and written);
- Proficient in ICT;
- Time management;
- Problem solving;
- Planning;
- Report writing;
- Driving

### Required knowledge

The individual needs to demonstrate knowledge of:

- Operation of transmission systems
- Measuring, assessing the condition of components
- Recognized assessment and rectification
- Procedures and obtaining the correct information for rectification
- Documenting assessment and rectification information
- The relationship between time, costs and profitability
- Technical information for Transmission of servicing activities
- Reporting anticipated delays to relevant person(s)
- Purpose of, and how to use identification codes
- Operation of transmission systems
- Gaskets, sealants, seals, fittings and fasteners
- Test and evaluate the performance of replacement transmission System units and components

### EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

<p>1. Critical Aspects of Competency.</p>	<p><b>Assessment requires evidence that the candidate:</b></p> <p>1.1 Worked in a safe and clean environment using personal protection and appropriate tools and equipment;</p> <p>1.2 Observed regulations concerned with health and safety and the disposal of waste;</p> <p>1.3 Used technical information to remove and dismantle transmission units and assess components against manufacturers' specifications</p> <p>1.4 Prepared recommendations for the repair and restoration of components</p> <p>1.5 Restored, reassembled and replaced transmission units to accord with manufacturers' specifications</p> <p>1.6 Prepared vehicle transmission system servicing report.</p> <p>1.7 Completed vehicle transmission system servicing within agreed time frame.`</p>
<p>2 Resource Implications.</p>	<p><b>The following resources must be provided:</b></p> <p>2.1 Workshop fully equipped for servicing motor vehicle transmission systems</p> <p>2.2 Vehicle lift,</p> <p>2.3 Specialist tools and equipment appropriate for the different makes of vehicles</p> <p>2.4 Instruments and equipment for measuring and assessing the condition of transmission units;</p> <p>2.5 Specialist equipment for servicing automatic transmission units;</p>

		2.6 Access to manufacturers' technical information; 2.7 Facilities for the disposal of waste oil and scrap parts; 2.8 Customer database and systems for recording service records; 2.9 Personal protection equipment.
3	Methods of Assessment.	<b>Competency may be assessed through:</b> 3.1 Observation 3.2 Oral questioning 3.3 Written tests
4	Context of Assessment.	Competency may be assessed individually in an actual workplace or in work-simulated conditions within Accredited institutions or during industrial attachment
5	Guidance information for assessment.	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

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