



Australian Government

AURTTX012 Dismantle and assemble conventional manual transmissions

Release: 1

AURTTX012 Dismantle and assemble conventional manual transmissions

Modification History

Release	Comment
Release 1	New unit of competency

Application

This unit describes the performance outcomes required to dismantle and reassemble a conventional manual transmission. It requires the learner to plan and prepare the task; dismantle the transmission and inspect the components; reassemble the transmission and check the transmission operation; and maintain the work area, tools and equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Transmission

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare to dismantle and assemble conventional manual transmission	1.1 <i>Safety and environmental requirements</i> are sourced and interpreted 1.2 Task instruction is interpreted and transmission to be worked on

ELEMENTS	PERFORMANCE CRITERIA
	is identified 1.3 Manufacturer specifications and workplace procedures for conventional manual transmission dismantle and assembly are sourced and interpreted 1.4 Potential hazards and risks associated with task are identified and reported to workplace supervisor 1.5 Tools and equipment required for conventional manual transmission dismantle and reassembly are identified according to manufacturer specifications
2. Dismantle a conventional manual transmission	2.1 Tools, equipment and materials are selected and checked prior to use according to manufacturer specifications and safety requirements 2.2 Manual transmission is dismantled according to workplace procedures and safety and environmental requirements, and without causing damage to components, tools or equipment 2.3 Transmission components are cleaned and arranged for identification according to workplace procedures
3. Inspect and identify gears and bearings	3.1 Measuring equipment and tools are selected and checked according to manufacturer specifications and workplace safety procedures 3.2 Gears and bearings are inspected and measured, and measurements are compared against manufacturer specifications 3.3 Transmission bearing information is sourced and interpreted, and bearing type and associated loads are identified 3.4 Gear types are identified and gear ratios calculated and recorded
4. Inspect components and re-assemble transmission	4.1 Transmission seals, sealants and gasket information is sourced and interpreted; and seals, sealants and gaskets are identified 4.2 Transmission component's inspection results are recorded 4.3 Transmission components are prepared for assembly according to manufacturer specifications and safety and environmental requirements 4.4 Transmission is assembled according to manufacturer specifications and requirements
5. Complete work processes	5.1 Final inspection is made to ensure work meets task instruction and workplace standards, and conventional manual transmission is presented ready for use or storage according to workplace procedures 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored according to environmental requirements and workplace procedures

ELEMENTS	PERFORMANCE CRITERIA
	5.3 Tools and equipment are checked and stored according to workplace procedures, or tagged and reported where necessary 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	locate appropriate sources of vehicle transmission information and transmission dismantle and reassembly procedures.
Reading skills to:	- select and interpret key information from manufacturer specifications, safety requirements and workplace procedures to safely dismantle and assemble a conventional manual transmission - select and interpret key information from environmental requirements and workplace procedures to ensure a clean and safe work site.
Writing skills to:	legibly and accurately fill out workplace documentation using correct industry terminology and conventions.
Oral communication skills to:	participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.
Numeracy skills to:	- read and interpret numerical information in transmission information - use specialist tools and measuring equipment correctly, including verniers, micrometers and torque wrenches, and report and record the results correctly using relevant mathematical symbols and conventions (e.g. mm for millimeters) - use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate clearances and ratios.
Planning and organising skills to:	plan own work requirements and prioritise actions to achieve required outcomes.
Self-management skills to:	recognise own limitations when selecting and using tools and equipment and seek timely advice.

Skills	Description
Problem-solving skills to:	- identify potential or actual hazards and take action to minimise risk - refer problems that cannot be readily resolved and seek assistance from workplace supervisor.
Technology skills to:	set up and operate equipment and tools required to dismantle and assemble a conventional manual transmission.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

<i>Safety and environmental requirements</i> must include:	- work health and safety (WHS) and occupational health and safety (OHS) requirements, including: - use of personal protective equipment, including safety glasses, ear protection and safety footwear - applying procedures for disposing of used oil, lubricants and coolants.
<i>Tools and equipment</i> must include:	- micrometers and other measurement instruments - torque wrench.
<i>Manual transmission</i> must include:	a complete conventional manual transmission, with at least four gears.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1>

Assessment Requirements for AURTTX012 Dismantle and assemble conventional manual transmissions

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Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- dismantle and re-assemble a minimum of two different conventional manual transmissions.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:
 - use of personal protective equipment, including safety glasses, ear protection and safety footwear
 - procedures for disposing of used oil and lubricants
- types of manual transmissions, including:
 - conventional
 - transaxle
- transmission operating principles, including:
 - types of gears
 - gear ratios
 - transmission bearings, seals and gaskets
 - transmission oils
- construction and operation of transmissions, including:
 - power flows
 - gear selector mechanisms and interlocks
 - synchromesh units
- transmission dismantling procedures
- transmission inspection procedures

- transmission reassembly procedures
- work area clean-up and maintenance requirements.

Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to dismantling and re-assembling a conventional manual transmission e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- personal protective equipment appropriate to the workplace
- two different conventional manual transmissions with at least four gears
- tools and special equipment, including lifting equipment.

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