



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **AURTL306666A Repair transmissions - manual (light vehicle)**

**Release: 1**

## AURTL306666A Repair transmissions - manual (light vehicle)

### Modification History

Not Applicable

### Unit Descriptor

|                        |                                                                                                                |
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| <b>Unit descriptor</b> | This unit covers the competence required to carry out removal, repair and replacement of manual transmissions. |
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### Application of the Unit

|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
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| <b>Application of the unit</b> | <p>The unit includes identification and confirmation of work requirement, preparation for work, testing and analysis of systems, removal, repair and replacement of manual transmissions and completion of work finalisation processes, including clean-up and documentation.</p> <p>This unit of competence applies to the following and should be contextualised to the qualification to which it is being applied:</p> <ul style="list-style-type: none"><li>• light vehicles, motorcycle and outdoor power equipment.</li></ul> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p> <p>Work is carried out in accordance with award provisions.</p> |
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### Licensing/Regulatory Information

Not Applicable

## Pre-Requisites

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| <b>Prerequisite units</b> |  |  |
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## Employability Skills Information

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| <b>Employability skills</b> | This unit contains employability skills. |
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## Elements and Performance Criteria Pre-Content

|                                                                   |                                                                                                                                                                                                                                                                                                                  |
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| Elements describe the essential outcomes of a unit of competency. | Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide. |
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## Elements and Performance Criteria

| ELEMENT                                                | PERFORMANCE CRITERIA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Prepare to undertake testing of manual transmission | <p>1.1. Nature and scope of work requirements are identified and confirmed</p> <p>1.2. OH&amp;S requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3. Procedures and information such as workshop manuals and specifications, and tooling, are sourced</p> <p>1.4. Method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.5. Technical and/or calibration requirements for testing of manual transmissions are sourced and support equipment is identified and prepared</p> <p>1.6. Warnings in relation to working with manual transmissions are observed</p> |
| 2. Test manual transmission and analyse results        | <p>2.1. Methods for tests are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>2.2. Road/site test is conducted for abnormalities</p> <p>2.3. Results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance</p> <p>2.4. Results are documented with evidence and supporting information and recommendation(s) made</p> <p>2.5. Report is processed in accordance with workplace procedures</p>                                                                                                                                                                                                        |
| 3. Prepare to repair manual transmissions              | <p>3.1. OH&amp;S requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>3.2. Procedures and information are identified and sourced</p> <p>3.3. Technical and tool requirements for repair are identified and support equipment is identified and prepared</p>                                                                                                                                                                                                                                                                                                                                                                |
| 4. Carry out repairs                                   | <p>4.1. Methods for repairs are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>4.2. Adjustments made during repairs are in accordance with manufacturer/component supplier specifications</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 5. Prepare vehicle/                                    | 5.1. Repair schedule documentation is completed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

| ELEMENT                      | PERFORMANCE CRITERIA                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
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| equipment for use or storage | <p>5.2.Road/site test is conducted to ensure transmission operation is to manufacturer/component supplier specifications</p> <p>5.3.Final inspection is made to ensure protective guards, safety features and cowlings are in place</p> <p>5.4.Final inspection is made to ensure work is to workplace expectations</p> <p>5.5.Vehicle/equipment is cleaned for use or storage to workplace expectations</p> <p>5.6.Job card is processed in accordance with workplace procedures</p> |

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology, including the use of measuring equipment,

**REQUIRED SKILLS AND KNOWLEDGE**

computerised technology and communication devices and the documenting/recording of results

**Required knowledge**

A working knowledge of:

- OH&S regulations/requirements, equipment, material and personal safety requirements
- dangers of working with transmissions
- the identification of application, purpose and operation
- the identification of component parts to include physical, fluid, gases and heat generation
- types and layout of service/repair manuals (hard copy and electronic)
- diagnostic procedures
- repair procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques, appropriate to the circumstances
- completing preparatory activity in a systematic manner
- interpreting testing results
- identification of application, purpose and operation
- application of full repair sequence as per the Range Statement to a manual transmission relative to the qualification being sought
- conducting repairs in accordance with workplace and manufacturer/component supplier requirements
- completing repair of transmissions and associated components within workplace timeframes

#### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to repairing manual transmissions
- equipment, hand and power tools appropriate to repairing manual transmissions
- activities covering mandatory task requirements
- specifications and work instructions

| <b>EVIDENCE GUIDE</b>                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Method of assessment</b>                | <p>Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p> |
| <b>Guidance information for assessment</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

## Range Statement

| <b>RANGE STATEMENT</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                  |
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| <p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p> |                  |
| <b>Repair methods</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Methods include: |

| <b>RANGE STATEMENT</b>               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
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|                                      | <ul style="list-style-type: none"> <li>• road testing, test under operating conditions</li> <li>• visual, aural and functional assessment (including: fluid leakage, gear selection, wear, damage, corrosion)</li> </ul>                                                                                                                                                                                                                                                                                         |
| <b>Specific requirements</b>         | <p>Specific requirements:</p> <ul style="list-style-type: none"> <li>• manual transmissions, front and/or rear wheel drive configurations</li> <li>• belt drive transmission</li> <li>• transmission must be of multiple speed constant mesh or synchromesh design</li> </ul>                                                                                                                                                                                                                                    |
| <b>Variables</b>                     | <p>Other variables may include:</p> <ul style="list-style-type: none"> <li>• power take off assemblies</li> <li>• multiple forward and reverse gears</li> <li>• multi countershaft</li> <li>• synchronised and non-synchronised gear selection</li> <li>• metal and non-metal gears</li> <li>• electrical/pneumatic control</li> <li>• transverse/longitudinal mounting</li> <li>• helical, double helical and spur gears</li> <li>• transaxle, overdrive, transfer case and belt drive speed control</li> </ul> |
| <b>Repair methods and sequence</b>   | <p>Repair methods and sequence are to include isolation of fault(s); dismantling, inspection and evaluation; replacement of component parts; assembly and completion of operational tests and records</p>                                                                                                                                                                                                                                                                                                        |
| <b>Faults</b>                        | <p>Faults to include noisy operation, jumping out of gear, external oil leaks, loss of drive</p>                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>OH&amp;S</b>                      | <p>OH&amp;S requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances</p>                                                                                                         |
| <b>Personal protective equipment</b> | <p>Personal protective equipment is to include that</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

| <b>RANGE STATEMENT</b>                  |                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                         | prescribed under legislation/regulation/codes of practice and workplace policies and practices                                                                                                                                                                                                                      |
| <b>Safe operating procedures</b>        | Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors |
| <b>Emergency procedures</b>             | Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation                                                                                                         |
| <b>Environmental requirements</b>       | Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management                                                                                                                                                                                              |
| <b>Quality requirements</b>             | Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures                                                                                                                     |
| <b>Statutory/regulatory authorities</b> | Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice                                                                                                                                                                   |
| <b>Tooling and equipment</b>            | Tooling and equipment may include hand tooling, meters, gauges and load testing devices                                                                                                                                                                                                                             |
| <b>Materials</b>                        | Materials may include fluids, spare parts and cleaning materials                                                                                                                                                                                                                                                    |
| <b>Communications</b>                   | Communications are to include but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers                                                                        |
| <b>Information/documents</b>            | Sources of information/documents may include:                                                                                                                                                                                                                                                                       |

**RANGE STATEMENT**

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to repair, removal and replacement of manual transmissions and/or associated components</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul> |
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**Unit Sector(s)**

|                    |           |
|--------------------|-----------|
| <b>Unit sector</b> | Technical |
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**Co-requisite units**

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| <b>Co-requisite units</b> |  |  |
|                           |  |  |
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## Competency field

|                  |  |
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| Competency field |  |
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