



Australian Government

AURTTQ004 Overhaul final drive assemblies

Release: 1

AURTTQ004 Overhaul final drive assemblies

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to return a final drive assembly to original manufacturer tolerances and clearances. It involves preparing for the task, dismantling and evaluating the final drive assembly, carrying out the overhaul procedures, reassembling and testing the final drive assembly, and completing workplace processes and documentation.

It applies to those working on final drive assemblies in vehicles from all sectors of the industry.

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

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Driveline and Final Drives

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 and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to dismantle final drive assembly	1.1 Job requirements are determined from workplace instructions 1.2 Dismantling information is sourced and interpreted 1.3 Dismantling options are analysed and those most appropriate to the circumstances are selected

Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	1.4 Hazards associated with the work are identified and risks are managed 1.5 Dismantling tools and equipment are selected and checked for serviceability
2. Dismantle and evaluate final drive assembly and components	2.1 Final drive assembly is dismantled in a logical sequence according to manufacturer and workplace procedures, and safety and environmental requirements , and without causing unnecessary damage to components or systems 2.2 Components are cleaned for evaluation according to workplace procedures and safety and environmental requirements 2.3 Components are measured and compared with manufacturer specifications and serviceability is determined 2.4 Components repair method is determined 2.5 Unserviceable parts are identified and replacement parts sourced
3. Carry out overhaul	3.1 Overhaul information is sourced and interpreted 3.2 Overhaul options are analysed and those most appropriate to the circumstances are selected 3.3 Overhaul tools and equipment are selected and checked according to manufacturer procedures 3.4 Components are machined, repaired and replaced as required, and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems
4. Assemble final drive assembly and components	4.1 Final drive assembly is assembled according to manufacturer specifications, workplace procedures, and safety and environmental requirements 4.2 Tolerances and clearances are measured against manufacturer specifications and necessary adjustments are made 4.3 Assembly of final drive assembly is completed within workplace timeframes and without causing damage to other components or systems 4.4 Post-assembly testing is carried out according to workplace procedures and safety and environmental requirements, and any problems detected as having been introduced during the assembly process are rectified
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and final drive assembly is presented ready for use

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	or storage 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 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 sources of information for final drive assemblies efficiently.
Reading skills to:	interpret and assess information from manufacturer and workshop literature when seeking final drive assembly specifications and procedures.
Writing skills to:	legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	clarify instructions, report evaluation findings and make overhaul recommendations.
Numeracy skills to:	measure final drive assembly components and use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate distances, areas, volumes, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	plan own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	- use precision measuring equipment, such as micrometers and dial bore gauges - use specialised final drive assembly overhaul equipment.

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 procedures for using: • specialised final drive assembly overhaul tools, equipment and machinery • chemicals and toxic substances • manual and mechanical lifting equipment • environmental requirements, including procedures for trapping, storing and disposing of fluids released from final drive assemblies.
---	---

Unit Mapping Information

Equivalent to AURTTQ4004 Overhaul final drive assemblies

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 AURTTQ004 Overhaul final drive assemblies

Modification History

Release	Comment
Release 1	New unit of competency.

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:

- overhaul three different final drive assemblies, one of which must include a limited slip final drive assembly.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) procedures relating to overhauling final drive assemblies, including procedures for using:
 - specialised final drive assembly overhaul tools, equipment and machinery
 - chemicals and toxic substances
 - manual and mechanical lifting equipment
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from final drive assemblies
- types, characteristics and operating principles of final drive assemblies, including limited slip differentials
- final drive assembly overhaul procedures, including:
 - methods for cleaning and preparing final drive assemblies for overhaul
 - final drive dismantling procedures
 - final drive component inspection, measuring and evaluation procedures, including:
 - non-destructive testing procedures, including dye penetrant testing and magnetic particle testing
 - measuring crown wheel run-out and differential case assembly side play
 - measuring ring gear mounting surface run-out

- measuring limited slip differential components
- final drive component repair and adjustment procedures, including:
 - bearings and shims
 - collapsible spacers
 - limited slip differential components
- final drive assembly procedures, including procedures for adjusting component tolerances, including:
 - pinion gear depth
 - pinion bearing preload
 - crown wheel and pinion backlash
 - side bearing preload
 - obtaining and interpreting pinion to crown wheel contact pattern
 - adjustment procedures to gain correct contact pattern
- post-overhaul testing procedures for final drive assemblies.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

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

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the final drive assemblies that they have worked on, 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:

- mechanical repair workplace or simulated workplace
- workplace instructions
- manufacturer final drive assembly specifications
- three different final drive assemblies requiring overhaul
- tools, equipment and materials appropriate for overhauling and adjusting final drive assemblies.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1>

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1>