



**Australian Government**

# **AURKTQ101 Diagnose and repair mobile plant final drive assemblies**

**Release: 1**

# AURKTQ101 Diagnose and repair mobile plant final drive assemblies

## Modification History

| Release   | Comments                                                                                                |
|-----------|---------------------------------------------------------------------------------------------------------|
| Release 1 | This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0 |

## Application

This unit describes the skills and knowledge required to diagnose and repair faults in the final drive assemblies of mobile plants. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The final drive assemblies include those in agricultural machinery or mobile plant machinery.

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

## Unit Sector

Mechanical Mobile Plant Technical – Driveline and Final Drives

## Elements and Performance Criteria

| ELEMENTS                                                            | PERFORMANCE CRITERIA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Elements describe the essential outcomes.</i>                    | <i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 1. Prepare to diagnose and repair mobile plant final drive assembly | 1.1 Identify job requirements from workplace instructions<br>1.2 Identify required information for diagnosis activity<br>1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures<br>1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures<br>1.5 Identify tools and equipment required for testing strategy |

| ELEMENTS                                      | PERFORMANCE CRITERIA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                               | and establish serviceability according to workplace procedures                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 2. Diagnose mobile plant final drive assembly | 2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements<br>2.2 Identify cause of fault through analysis of diagnostic test results<br>2.3 Confirm and report cause of fault according to workplace procedures<br>2.4 Develop and report recommendations for necessary repairs according to workplace procedures                                                                                      |
| 3. Repair mobile plant final drive assembly   | 3.1 Identify required information for repair activity<br>3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures<br>3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements<br>3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements |
| 4. Complete work processes                    | 4.1 Conduct final inspection according to workplace procedures and confirm machinery is ready for use<br>4.2 Clear work area and dispose of or recycle materials according to workplace procedures<br>4.3 Complete documentation according to workplace procedures                                                                                                                                                                                                                                       |

## Foundation Skills

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

| SKILL              | DESCRIPTION                                                                                                                                                                          |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Learning           | <ul style="list-style-type: none"> <li>Locates required sources of information efficiently</li> <li>Develops a sequenced plan for a specific task.</li> </ul>                        |
| Reading            | <ul style="list-style-type: none"> <li>Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications.</li> </ul> |
| Oral communication | <ul style="list-style-type: none"> <li>Clarifies instructions</li> </ul>                                                                                                             |

| SKILL                   | DESCRIPTION                                                                                                                                                                                                                                                              |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                         | <ul style="list-style-type: none"><li>• Obtains information from customers and supervisors.</li></ul>                                                                                                                                                                    |
| Numeracy                | <ul style="list-style-type: none"><li>• Measures final drive assembly components</li><li>• Uses mathematical operations</li><li>• Calculates deviations and tolerances from manufacturer specifications</li><li>• Calculates gear ratios and torque reduction.</li></ul> |
| Planning and organising | <ul style="list-style-type: none"><li>• Plans own work requirements</li><li>• Prioritises actions to achieve required outcomes</li><li>• Ensures tasks are completed within workplace timeframes.</li></ul>                                                              |
| Technology              | <ul style="list-style-type: none"><li>• Uses precision measuring equipment.</li></ul>                                                                                                                                                                                    |

## Unit Mapping Information

Supersedes and is equivalent to AURKTQ001 Diagnose and repair mobile plant final drive assemblies.

## Links

Companion Volume Implementation Guide is found on VETNet -

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

# Assessment Requirements for AURKTQ101 Diagnose and repair mobile plant final drive assemblies

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## Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair faults in at least two mobile plant final drive assemblies as follows:
  - at least one differential carrier assembly
  - at least one of the following final drive assemblies:
    - double reduction
    - planetary final drive
    - chain drive.

## Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair mobile plant final drive assemblies, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair mobile plant final drive assemblies, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

- workplace health and safety (WHS) requirements relating to diagnosing and repairing mobile plant final drive assemblies, including procedures for isolating and stabilising machinery
- environmental requirements relating to diagnosing and repairing mobile plant final drive assemblies, including procedures for trapping, storing and disposing of oils and fluids released from final drive assemblies
- operating principles of mobile plant final drive assemblies and associated components, including:
  - final drive gears, including:
    - gear types and specific lubrication requirements
    - gear ratios and torque reduction and multiplication
  - differential function
  - chain drives
- purpose and operation of mobile plant final drive assemblies and components, including:
  - differential carrier
  - limited slip, no-spin and differential lock
  - double reduction
  - planetary final drive
  - chain drive
- diagnostic testing procedures for mobile plant final drive assemblies, including:
  - sources of fluid leaks
  - abnormal final drive vibration, noises and operation
  - pre-dismantling inspection procedures
- repair procedures for mobile plant final drive assemblies, including procedures for:
  - dismantling final drive assemblies
  - inspecting final drive assemblies
  - reassembling and adjusting the following components:
    - pinion depth
    - pinion bearing preload
    - crown wheel and pinion backlash
    - side bearing preload
    - crown wheel and pinion tooth contact
    - chain drive system
- post-repair testing procedures for mobile plant final drive assemblies.

## Assessment Conditions

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 mobile plant 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:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer mobile plant final drive assembly specifications
- two different mobile plant with the final drive assemblies specified in the performance evidence
- diagnostic equipment for mobile plant final drive assemblies
- tools, equipment and materials appropriate for repairing and adjusting mobile plant final drive assemblies.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

## **Links**

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