



Australian Government

AURMTE001 Test engines using a dynamometer

Release: 1

AURMTE001 Test engines using a dynamometer

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to test engines using a dynamometer. The engines being tested may be in a vehicle or stand alone. It involves preparing for the task, selecting the correct test procedure, carrying out testing, analysing test results, and completing workplace processes and documentation. It involves setting up and conducting dynamometer tests on engines, and logging, analysing and reporting the test data in order to maximise engine performance.

It applies to those working in the motor sport industry.

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

Competency Field

Motor Sport

Unit Sector

Technical - Engines

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 for dynamometer operation	1.1 Job requirements are determined from <i>test information</i> 1.2 Dynamometer is checked for calibration and serviceability according to manufacturer and workplace procedures 1.3 Tools, equipment and materials are selected and checked for

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.
	serviceability 1.4 Hazards associated with the work are identified and risks are managed according to <i>safety and environmental requirements</i> 1.5 <i>Engine or vehicle is checked</i> prior to testing according to manufacturer and workplace procedures 1.6 Engine or vehicle connections to dynamometer are checked and secured according to manufacturer, workplace and safety procedures
2. Conduct dynamometer testing	2.1 Appropriate load and run sequence and test parameters are determined, including run-in period for new engines 2.2 Selected dynamometer testing sequence is carried out according to manufacturer and team procedures and safety requirements, and data is documented 2.3 Correction factors are calculated and applied to data
3. Analyse test results	3.1 Dynamometer test data is analysed and conclusions are drawn about condition and performance of engine and associated systems according to manufacturer specifications and workplace procedures 3.2 Findings are reported based on dynamometer data, including recommendations for engine configuration and/or modifications to improve performance, according to workplace procedures 3.3 Recommended engine modifications are tested on dynamometer according to manufacturer and workplace procedures and safety requirements, and data is documented 3.4 Data is presented to team members according to workplace procedures
4. Complete work processes	4.1 Dynamometer shutdown procedure is carried out according to manufacturer and workplace procedures and safety requirements 4.2 Engine is disconnected from dynamometer according to manufacturer and workplace procedures 4.3 Dynamometer and associated equipment are checked and maintained according to workplace procedures 4.4 Tools and equipment are checked and stored according to workplace procedures 4.5 Workplace documentation, including dynamometer test results, are 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:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret technical information relating to engine dynamometer testing.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting failure analysis findings.
Numeracy skills to:	• use basic mathematical operations to complete measurements, calculate analytical requirements, calibrate testing equipment, and present test results.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Digital Literacy skills to:	• use dedicated engine dynamometer software.
Technology skills to:	• use specialised engine dynamometer 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>Test information</i> must include:	• workplace instructions • category regulations and component supplier specifications, including allowable quality, materials, equipment and specifications.
<i>Safety and environmental requirements</i> must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for: • connecting and securing engines to dynamometers • dealing with exhaust gases from engines • dealing with high levels of noise • environmental requirements, including procedures for trapping, storing and disposing of fluids released during engine testing.
<i>Checking of engine or vehicle</i> must include:	• engine oil level and condition • cooling system condition and coolant level

	• exhaust extraction system connection • drive shaft condition and connection.
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Unit Mapping Information

Equivalent to AURMTE4001 Test engines using a dynamometer

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 AURMTE001 Test engines using a dynamometer

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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:

- carry out dynamometer testing on two different engines.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to testing engines using a dynamometer, including procedures for:
 - connecting and securing engines to dynamometers
 - dealing with exhaust gases from engines
 - dealing with high levels of noise
- environmental requirements, including procedures for trapping, storing and disposing of fluids released during engine testing
- application, purpose and operation of engine dynamometers, including associated hardware and software
- engine and chassis dynamometer testing procedures, including:
 - dynamometer preparation procedures
 - engine connection and securing procedures
 - vehicle connection and securing procedures
 - test environment correction factors
 - dynamometer data interpretation and analysis
- operator dynamometer maintenance procedures
- engine performance and dynamometer terminology.

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 engines that they have tested using a dynamometer, 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
- two different engines requiring testing using a dynamometer
- engine or chassis dynamometer
- tools and equipment appropriate for connecting, securing and disconnecting engines to dynamometers.

Links

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