



Australian Government

AURMTQ101 Analyse and repair faults in performance driveline systems

Release: 1

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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 analyse and repair performance transmissions, final drive and drivelines, including engine to transmission drive couplings. It involves identifying, evaluating, selecting, justifying, documenting and carrying out the most appropriate rectification method or variation. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

The unit 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.

Unit Sector

Motorsport 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. Identify and confirm the work requirement	1.1 Determine objective of analysis and evaluation from workplace instructions 1.2 Source and interpret specifications for driveline system 1.3 Identify, confirm and document system faults, deficiencies or discrepancies from direct and/or indirect evidence 1.4 Identify hazards associated with the work and manage risks according to safety and environmental requirements
2. Prepare for analysis and repairs	2.1 Develop or adopt evaluative criteria to meet the objective of the analysis and evaluation 2.2 Develop or identify analytical and evaluative methodology

ELEMENTS	PERFORMANCE CRITERIA
	from technical information 2.3 Identify possible causes of faults are identified from analysis of technical support information and available on-board diagnostic systems 2.4 Analyse diagnostic options and select those most appropriate to the circumstances according to evaluative criteria 2.5 Select and prepare test equipment according to manufacturer procedures and team requirements 2.6 Select and check tools and materials required to support the diagnostic process for serviceability 2.7 Prepare vehicle driveline system and components for the diagnostic process
3. Carry out analysis and determine repairs and performance enhancement strategies	3.1 Follow selected analytical and evaluative methodology according to manufacturer and workplace procedures 3.2 Carry out tests according to manufacturer and workplace procedures and safety and environmental requirements 3.3 Verify analytical and other diagnostic findings, as required, by using available alternative or optional processes 3.4 Assess analytical findings and results against the evaluative criteria 3.5 Draw valid conclusions from the available evidence and document to workplace requirements 3.6 Determine options for responding to the analysis and evaluation objective from further research of technical support information 3.7 Select and document repair or modification method from an analysis of the options, operating conditions, controlling body rules, category rules, and financial implications
4. Conduct repairs and implement performance improvement strategies	4.1 Select and prepare repair tools and materials 4.2 Carry out repairs and component replacements and adjustments according to manufacturer specifications, team requirements, and safety and environmental requirements, and without causing damage to other components or systems 4.3 Carry out post-repair testing and vehicle start-up to ensure performance and operation are to team requirements
5. Complete work processes	5.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 5.2 Clear work area and dispose of or recycle materials according to workplace procedures 5.3 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	• Locates required sources of information efficiently.
Numeracy	• Measures system components and uses basic mathematical operations, including addition and subtraction • Calculates deviations and tolerances from manufacturer specifications • Interprets units of measurement of angles and torque.
Reading	• Interprets controlling body rules, category rules and supplementary regulations • Interprets information from manufacturer and workshop literature when seeking driveline system specifications and procedures.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURMTQ001 Analyse and repair faults performance driveline systems.

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 AURMTQ101 Analyse and repair faults in performance driveline systems

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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:

- carry out the analysis, repair and post-repair checks on at least two different competition vehicles with performance driveline system faults, including:
 - gear selection
 - noise
 - vibration
 - harsh engagement
 - slipping.

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 analyse and repair faults in performance driveline systems, including:
 - information provided by customer and supervisors
 - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to analyse and repair faults in performance driveline systems, including:
 - establishing serviceability of tools and equipment
 - documentation and reporting 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

- work health and safety (WHS) requirements relating to analysing and repairing faults in performance driveline systems, including procedures for:
 - working with hot oils
 - working with rotating driveline components
 - methods of creating and repairing panels
- environmental requirements, including procedures for trapping, storing and disposing of oils released from driveline components
- analytic and evaluative methodology used to repair faults in performance driveline systems, including:
 - diagnostic process, sequence, tests, and testing equipment
- types and key features of performance transmission, final drive and driveline components, including:
 - manual transmissions
 - automatic transmissions
 - drive shafts
 - final drives
 - drive axles
- diagnostic testing procedures of performance driveline systems, including:
 - noise and vibration analysis
 - road testing procedures
 - scan tool and data logger
- procedures for identifying the causes of faults, including intermittent faults
- procedures for the repair and improvement of performance driveline systems, including:
 - driveline component dismantling, cleaning, repair and reassembly procedures
 - driveline component replacement and adjustment procedures
- post-repair testing procedures of performance driveline systems, including gear selection.

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 performance driveline systems that they have analysed and repaired, e.g. work order.

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
- manufacturer specifications for vehicle performance driveline systems
- two different competition vehicles with faults in their performance driveline systems

- diagnostic equipment for performance driveline systems
- tools, equipment and materials appropriate for analysing and repairing performance driveline systems.

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

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