



Australian Government

Department of Education, Employment and Workplace Relations

AURM442076A Test suspension dampers using a dynamometer

Release: 1

Modification History

Not Available

Unit Descriptor

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This unit covers the competence to test suspension dampers using a dynamometer. This includes dynamometer set-up, use of software relevant to the dynamometer, testing, data logging and analysis, devising strategies for improvement and dynamometer maintenance procedures.

Unit Sector

No sector assigned

ELEMENT

PERFORMANCE CRITERIA

1. Prepare for dynamometer operation

- 1.1 Team instructions, category regulations and component supplier specifications are used to determine job requirements including design, quality, material, equipment and specifications
- 1.2 OH&S requirements, including regulatory requirements, equipment and system isolation requirements and personal protection needs are observed throughout the work
- 1.3 Outcomes of dynamometer testing are determined and documented
- 1.4 Dynamometer is checked for calibration and serviceability and prepared for operation

2. Conduct dynamometer testing

- 2.1 Load and run sequence is determined and test parameters are determined/calculated/measured
- 2.2 Dampers are connected to dynamometer and damper security to the dynamometer is confirmed
- 2.3 The selected dynamometer testing sequence is performed in accordance with technical specifications and directions and/or the locally authorised method
- 2.4 Dynamometer test data is analysed and valid conclusions about damper condition and performance are made
- 2.5 Findings, including recommendations for damper configuration and/or modifications to improve performance based on dynamometer data, are reported to appropriate persons
- 2.6 Approved modifications are tested with confirmation runs
- 2.7 Data is presented to team members as information to complement suspension set-up

3. Clean up work area and log test results

- 3.1 Dynamometer shutdown procedure is performed in accordance with manufacturer requirements
- 3.2 Dampers are disconnected from dynamometer
- 3.3 Dynamometer and associated tooling and equipment are

cleaned and refurbished

3.4 Operator maintenance of dynamometer is conducted

3.5 Dynamometer test results are logged to create/add to damper history

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

RANGE STATEMENT

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.

Unit scope

- Work includes the use of dynamometers to test suspension damper performance and the interpretation of dynamometer results in order to maximise damper performance for the motorsport/performance enhancement environment. This includes dynamometer set-up, use of software relevant to the dynamometer, data recording and dynamometer maintenance procedures
 - Test parameters may include, but is not limited to:
 - ambient and damper temperature
 - damper stroke and frequency
 - sample rates
- Units of measurements must include metric and imperial units

Unit context

- OH&S requirements include State/Territory and Commonwealth legislation, material safety management systems, controlling body requirements, manufacturer specifications and local safe operating procedures
- Work is carried out in accordance with legislative obligations (including environmental requirements), health regulations, manual handling procedures and team insurance requirements
- Work requires individuals to demonstrate discretion, judgement and problem-solving skills in the set-up and operation of dynamometers
- Competence may be demonstrated in workplaces involved in the design, development, manufacture and maintenance of performance vehicles and/or performance vehicle components and assemblies used in motorsport

Tooling and equipment

- Tooling and equipment may include, but is not limited to, damper dynamometer, hand and power tooling, diagnostic computer hardware and software

Personal protective equipment

- Personal protective equipment is to include that prescribed under dynamometer manufacturer/component supplier specifications, legislation, regulations and team policies and practices

Information and procedures

- Controlling body rules, category rules and supplementary regulations
- Team procedures relating to testing suspension dampers using a dynamometer
- Task instructions including worksheets, checklists, plans, drawings and designs
- Team procedures relating to reporting and communication
- Team procedures relating to the use of tooling and equipment
- Manufacturer/component supplier specifications and application procedures for test equipment and material
- Australian Design Rules (where applicable)

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.

Critical aspects of evidence

- Interpret and apply team requirements, controlling body and category rules and supplementary regulations
- Correctly apply and use safety equipment and personal protective equipment
- Follow task instructions, operating procedures and inspection processes to:
 - minimise the risk of injury to self or others
 - prevent damage to competition vehicle or equipment
 - achieve required outcomes within team time and quality standards

- Correctly set up and operate a damper dynamometer to test a minimum of three (3) different dampers (of at least two (2) different types or brands) to complete the following:
 - determine damper performance
 - analyse damper performance data
 - assess effect of damper changes and present to team members as information to complement suspension set-up
 - confirm effectiveness of damper set-up modifications
- Work effectively with others
- Modify activities to cater for variations in workplace context and environment

Underpinning knowledge

- Suspension damper and dynamometer terminology
- Preparation procedure for dynamometer testing
- Dynamometer operation and use of associated hardware and software
- Test environment correction factors
- Dynamometer data interpretation and analysis
- Damper modification and adjustment procedures
- Operator dynamometer maintenance
- Procedures for reporting task completion
- OH&S policies and procedures

Specific key competencies, underpinning and employability skills required to achieve the performance criteria

These include a number of processes that are learned throughout work and life, which are required in most jobs. Some of these are covered by the national key competencies, although others may be added. The details below highlight how these competencies are to be applied in the attainment of this unit.

Application of the key competencies in this unit are to satisfy the nominated level in which:

Level 1 - relates to working effectively within set conditions and processes;

Level 2 - relates to the management or facilitation of conditions or processes; and

Level 3 - relates to the design, development and evaluation of conditions or process.

How will the candidate apply the following key competency in this unit? The candidate will need to:

Collect, analyse and organise information

Collect, organise, understand and analyse information related to dynamometer test results, team requirements and safety procedures

(Level 2)

Communicate ideas and information

Communicate ideas and information to enable confirmation of work requirements, coordination of work with technical supervisors, other technicians and team members and reporting of work outcomes and problems

(Level 2)

Plan and organise activities

Plan and organise activities including the preparation and layout of the work area and the obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage

(Level 2)

Work with others and in a team	Work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity (Level 2)
Use mathematical ideas and techniques	Use mathematical ideas and techniques to correctly complete measurement of suspension damper performance required for the team (Level 2)
Solve problems	Use pre-checking and inspection techniques to anticipate test problems, in order to work efficiently and effectively (Level 2)
Use technology	Use workplace technology related to dynamometers including associated software and hardware, tooling, equipment, calculators and measuring devices (Level 2)
Resource implications	• Access to tooling and equipment as identified in the Range Statement, dampers, dynamometer and test equipment and technical references or information
Method of assessment	• Assessment methods must confirm consistency of performance over time and in a range of workplace contexts • Assessment should be by direct observation of tasks and questioning on underpinning knowledge • Assessment should be conducted over time and may be in conjunction with assessment of other units of competence
Context of assessment	• Assessment may occur on the job or in a workplace simulated facility with process equipment, material, work instructions and deadlines