



Australian Government

Department of Education, Employment and Workplace Relations

AURM441749A Prepare competition vehicle suspension

Release: 1

Modification History

Not Available

Unit Descriptor

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This unit covers the competence to test, dismantle, inspect, reassemble and adjust competition vehicle suspension. This includes determining competition vehicle suspension requirements and the effects of making changes to variables.

Prerequisite Unit(s)

(AURT216170A Inspect and service suspension systems
AURTL316166A Repair suspension systems (light vehicle))

Unit Sector

No sector assigned

ELEMENT

PERFORMANCE CRITERIA

1. Determine competition vehicle suspension requirements

- 1.1 Controlling body and category rules, supplementary regulations, specifications and team instructions are used to develop task specifications, quality, material, equipment and quantities
- 1.2 Regulations, specifications and tolerances are examined for compliance
- 1.3 OH&S requirements, including regulatory requirements, equipment requirements and personal protection needs are observed throughout
- 1.4 Specifications are checked for required operating conditions and adjustments are sought where required
- 1.5 Suspension requirements are calculated/determined according to specifications
- 1.6 Component requirements are listed and communicated to appropriate persons

2. Prepare for work on suspension

- 2.1 Tooling and equipment are identified and checked for safe and effective use
- 2.2 Work area is cleaned and laid out for job requirements
- 2.3 Vehicle is cleaned and prepared for initial measurement
- 2.4 Existing suspension settings are measured and documented prior to adjustment
- 2.5 Problems with the work area or the operation of the equipment are reported to appropriate persons

3. Dismantle, repair/modify and assemble dampers

- 3.1 Methods for removing and dismantling damper(s) according to technical manuals/specifications are determined
- 3.2 Damper(s) are tested, dismantled, cleaned and tolerances/wear checked against specifications
- 3.3 Components are inspected for functioning and quality
- 3.4 Decision to retain, replace, repair, adjust or service component is made in accordance with team policies and procedures
- 3.5 Repairs/modifications to dampers are carried out in accordance with specifications for methods, equipment and tolerances
- 3.6 Dampers are re-oiled, bled, (and if necessary, re-gassed) and bent to specifications

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| 4. Dismantle, replace and/or change springs | 4.1 Methods for removing and dismantling springs according to team manuals/specifications are determined
4.2 Dimensions are documented before disassembly
4.3 Springs are disassembled, cleaned and rates/tolerances checked and retained or replaced according to team policies and procedures
4.4 Replacement springs are tested for rate and wear |
| 5. Configure suspension components/settings | 5.1 Removed suspension components are inspected for quality and r
5.2 Installation sequence and techniques are used
5.3 Sub-assemblies are installed and fasteners tensioned to manufact
specifications
5.4 Checks are made during and after installation to ensure accurate
5.5 Associated components, sub-assemblies or structural elements of
suspension configuration are inspected for serviceability and rep
5.6 Suspension components/settings are configured as determined an |
| 6. Configure suspension components/settings | 6.1 Settings are documented in accordance with team procedures
6.2 Problems with sub-assemblies are identified and reported to app |
| 7. Clean up work area and complete record keeping | 7.1 Tooling is maintained and returned to storage
7.2 Surplus components/consumables are tagged and shelved/stored
7.3 Surplus material is removed from work area
7.4 Spillage from work area and vehicle is cleaned up
7.5 Team/component supplier documentation is completed |

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 involves testing, dismantling, inspecting, reassembling and adjusting competition vehicle suspension. This includes determining competition vehicle requirements and the effects of making changes to variables
- Determining competition vehicle suspension requirements may include the following components:
 - springs
 - dampers
 - suspension/swing arms/joints
 - pivot locations/pickup points
 - lateral control devices
 - travel limiters
 - anti-roll bars
 - weight jackers
- Dismantling, repair/modification and assembly of dampers refer only to non-sealed dampers. Manufacturer/component supplier instructions must be observed at all times

Unit context

- OH&S requirements include State/Territory and Commonwealth safety management systems, controlling body requirements, manufacturer safe operating procedures
- Work is carried out in accordance with legislative obligations (including requirements), health regulations, manual handling procedures and requirements
- Work requires individuals to demonstrate analytical and organisational and problem-solving skills in preparing competition vehicle suspension

Factors and calculations

- Known factors for determining suspension requirements may include:
 - regulatory constraints
 - team budgetary constraints
 - load and speed characteristics
 - terrain and climate conditions
 - driver/rider preferences

	• When determining suspension requirements calculations may include • wheel rate • spring rate • linkage and leverage ratios • spring pre-load • vehicle weight • sprung and unsprung weight • anti-roll bar rate • Determinations can be confirmed through the use of shock dynamics and data analysis or software simulation
Tooling and equipment	• Tooling and equipment must include component supplier specifications but is not limited to, jacking equipment, measuring devices, hardware, computers and data acquisition systems
Personal protective equipment	• Personal protective equipment is to include that prescribed under enterprise policies and practices
Information and procedures	• Controlling body rules, category rules and supplementary regulations • Team procedures relating to preparing competition vehicle suspension • Task instructions including worksheets, checklists, plans, drawings • Team procedures relating to reporting and communication • Team procedures relating to the use of tooling and equipment • Manufacturer/component supplier specifications and application of 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 cat supplementary regulations
- Correctly apply and use safety equipment and personal protective
- Follow task instructions, operating procedures and inspection p
 - minimise the risk of injury to self or others
 - prevent damage to competition vehicle or equipment
 - achieve required outcomes within team time and quality stan
- Correctly prepare a competition vehicle suspension on a minim vehicles in situations involving: (each of the following must be vehicles):
 - calculations to determine spring rate and spring pre-load
 - determination of component selection within constraints of l
 - configuration of dampers and springs
 - adjustment of suspension components/settings
- Work effectively with others
- Modify activities to cater for variations in workplace context and tolerances

Underpinning knowledge

- Team requirements/job specifications, supplementary regulation specifications
- Competition vehicle suspension component types, function, app configuration considerations
- Suspension related calculations
- Safety related to repair of suspension components and assembly
- Damper disassembly, inspection, repair/modification, assembly gassing and bench testing techniques, suspension components/s keeping techniques
- Procedures for reporting equipment faults and component defec
- Workplace guidelines regarding acceptable tolerance levels OH

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

These include a number of processes that are learned throughout w required in most jobs. Some of these are covered by the national ke although others may be added. The details below highlight how the applied in the attainment of this unit.

Application of the key competencies in this unit are to satisfy the n
 Level 1 - relates to working effectively within set conditions and pr
 Level 2 - relates to the management or facilitation of conditions or
 Level 3 - relates to the design, development and evaluation of cond

How will the candidate apply the following key competency in this to:

Collect, analyse and organise information	Collect, organise and understand information related to preparing competition vehicle suspension, including team requirements, manufacturer specifications and standardised procedures (Level 2)
Communicate ideas and information	Communicate ideas and information to enable clarification of requirements and to coordinate work with supervisors and other workers and reporting of work outcomes (Level 2)
Plan and organise activities	Plan and organise activities including the preparation and layout of equipment, systems and material to avoid backtracking or wastage (Level 2)
Work with others and in a team	Work with others to foster the team by recognising dependencies and coordinating approaches to optimise workflow and productivity (Level 2)
Use mathematical ideas and techniques	Use mathematical ideas and techniques to complete measurements and calculations during the preparation of competition vehicle suspension (Level 2)
Solve problems	Use pre-checking and inspection techniques to anticipate assembly issues and solve problems efficiently and effectively (Level 2)
Use technology	Use workplace technology related to determining requirements for competition vehicle suspension including tooling, measuring devices, spreadsheets and computers (Level 2)
Resource implications	• Access to competition vehicles and associated assembly tooling and equipment in situations involving the application of repair/modification techniques • Access to real or simulated concepts, work areas, material, equipment and tools • Access to work specifications, team requirements, organisational procedures, regulations, and quality standards
Method of assessment	• Assessment methods must confirm consistency of performance across different workplace contexts • Assessment should be by direct observation of tasks and questioning to confirm knowledge • Assessment should be conducted over time and may be in conjunction with other units of competence

Context of assessment

- Assessment may occur on the job or in a workplace simulated for equipment, material, work instructions and deadlines