
VEHICLE STEERING AND SUSPENSION
Demonstrate knowledge of fine tuning
motorcycle steering, suspension, and
frame

level:	5
credit:	4
final date for comment:	December 2008
expiry date:	December 2009
sub-field:	Motor Industry
purpose:	People credited with this unit standard are able to demonstrate knowledge of the requirements for fine tuning motorcycle steering, suspension, and frame systems; and procedures to carry out fine tuning of a motorcycle.
entry information:	Open.
accreditation option:	Evaluation of documentation and visit by NZQA and industry.
moderation option:	A centrally established and directed national moderation system has been set up by the NZ Motor Industry Training Organisation.
special notes:	<ol style="list-style-type: none">1 The following legislation must be consulted and followed where applicable: Consumer Guarantees Act 1993; Fair Trading Act 1986; Health and Safety in Employment Act 1992; Land Transport Rules; Transport (Vehicle Standards) Regulations 1990.2 Land Transport Rules are produced for the Minister of Transport by Land Transport New Zealand. These rules are available online at http://www.landtransport.govt.nz.

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- 3 Reference to *company work standards* means that the standard must comply with any policies, procedures, and requirements of the company involved, and the ethical codes of relevant professional management organisations.
- 4 Any modification or change to the motorcycle's specifications and/or original configuration may void manufacturer's warranty provisions. All changes from the original specifications are subject to the 'Low Volume Vehicle Code'.
- 5 The Low Volume Vehicle Code is developed and issued by the Low Volume Vehicle Technical Association Inc (LVVTA).
The Code is the legal framework leading to the LVVTA Standards that are used by Land Transport New Zealand Certifiers, and is referenced in the Vehicle Standards Regulations. This Code is available online at <http://www.lvvta.org.nz>.

Elements and Performance Criteria

element 1

Demonstrate knowledge of the requirements for fine tuning motorcycle steering, suspension, and frame systems.

performance criteria

- 1.1 The explanation identifies the reasons for fine tuning motorcycle systems in relation to the handling and stability of the machine.

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- 1.2 The analysis of motorcycle and rider requirements identifies factors to consider when fine tuning steering, suspension, and frame systems.
- Range: requirements include but are not limited to – rider weight, street or high performance riding, limitations of the machine, amount and type of adjustment allowable, tyre profile, spring rate, machine accessories, aerodynamics, load transfer, structural considerations.
- 1.3 Motorcycle handling definitions are described according to the manufacturers' specifications and/or textbook descriptions.
- Range: definitions include but are not limited to – handling, road holding, stability, linear and angular motions (yaw, pitch, roll).
- 1.4 Geometric considerations to take into account when fine tuning motorcycle systems are described in terms of safety and stability.
- Range: considerations include but are not limited to – steering axis, rake or caster angle, front and rear ground trail, centre of gravity.
- 1.5 Damping forces provided by shock absorbers are defined in terms of manufacturer's calibrations and component design.
- Range: includes but is not limited to – shim-valving, charge pressures, oil viscosity, adjustable spring, electronic control (by-pass bleed).

element 2

Demonstrate knowledge of the procedures to carry out fine tuning of a motorcycle.

performance criteria

- 2.1 The analysis identifies the variance of tuning requirements dependent on different customer requirements.
- Range: may include but is not limited to – intended use of machine, attachments, rider's personal handling requirements, loaded weight.

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2.2 Inspecting and testing procedures on components and systems required to assess machine capabilities are described according to the machine manufacturers' specifications.

Range: steering, suspension, frame.

2.3 Requirements when testing machine's handling characteristics are described according to the machine manufacturers' recommendations.

Range: on terrain suitable for intended use of the machine, safety, legal.

2.4 Procedure to complete the fine tuning is described according to the machine manufacturers' procedures and legislation.

Range: may include but is not limited to – steering components and geometry, suspension spring and dampening rates, replacement forks and shock absorbers, frame alignment, ride height, tyres.

Comments on this unit standard

Please contact the NZ Motor Industry Training Organisation jlane@mito.org.nz if you wish to suggest changes to the content of this unit standard.

Please Note

Providers must be accredited by the Qualifications Authority or a delegated inter-institutional body before they can register credits from assessment against unit standards or deliver courses of study leading to that assessment.

Industry Training Organisations must be accredited by the Qualifications Authority before they can register credits from assessment against unit standards.

Accredited providers and Industry Training Organisations assessing against unit standards must engage with the moderation system that applies to those standards.

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Accreditation requirements and an outline of the moderation system that applies to this standard are outlined in the Accreditation and Moderation Action Plan (AMAP). The AMAP also includes useful information about special requirements for providers wishing to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.

This unit standard is covered by AMAP 0014 which can be accessed at <http://www.nzqa.govt.nz/site/framework/search.html>.