

**Specification of Competency Standards**  
**for the Automotive Industry**  
**Unit of Competency**

Functional Area - Vehicle Servicing

Title	Master the complicated techniques of suspension systems
Code	108737L4
Range	This unit of competency is applicable to technicians working at vehicle servicing and inspection departments. Practitioners should be able to master the effect of suspension system on vehicle vibration and stability to enhance the efficiency and accuracy of inspection and complicated fault diagnosis.
Level	4
Credit	6 (For Reference Only)
Competency	<p>Performance Requirements</p> <p>1. Knowledge (Relevant suspension systems and driving stability)</p> <ul style="list-style-type: none"> <li>• Good understanding of the affecting factors overcoming the driving vibration, such as tyres, seats, suspension methods, spring stiffness and damping coefficient.</li> <li>• Good understanding of the effects of centre of gravity of vehicle and suspension systems design affecting driving stability, such as the change of wheel alignment and wheel span, pitching during speed change, instantaneous rolling axis and roll axis, roll steer.</li> <li>• Master the structure, functions controlling methods, operating principles and standard parameters of various systems (including related components, e.g. electronic or pressure actuators and sensors), such as: <ul style="list-style-type: none"> <li>○ rigid axle suspension and independent suspension,</li> <li>○ stiffness control of metal and air springs,</li> <li>○ damping coefficient control of shock absorber</li> <li>○ anti-roll devices.</li> </ul> </li> </ul> <p>2. Performance (Inspection, fault diagnosis and analysis of suspension system performance)</p> <ul style="list-style-type: none"> <li>• Conduct inspection, fault diagnosis and analysis procedures according to the fault symptoms (including recurrent or intermittent defects) of suspension systems and related components, such as: <ul style="list-style-type: none"> <li>○ Decreasing comfort, including toss or shock of vehicle body</li> <li>○ Damaged anchoring points for the linkages of suspension system (vehicle body or frame)</li> <li>○ Abnormal noise or vibration</li> <li>○ Tilted vehicle body or incorrect height</li> <li>○ Abnormal tyre wear</li> </ul> </li> <li>• Conduct inspection, fault diagnosis and analysis procedures on suspension systems, damping control and electric control etc. according to symptoms of instability (including recurrent or intermittent defects) when the vehicle is in driving, speed changing or high-speed cornering, such as: <ul style="list-style-type: none"> <li>○ Pulling aside when driving straight ahead</li> <li>○ Pitching seriously when changing speed</li> <li>○ Excessive body rolling when cornering</li> <li>○ Abnormal side slip</li> <li>○ Abnormal steering performance</li> </ul> </li> <li>• Review the causes of defects and diagnostic methods; submit report to seniors covering preventive measures, instructions on inspection and maintenance as well as suggestions for improvement.</li> <li>• Ascertain that springs and shock absorbers etc. can meet safety standard according to respective legislative requirements, such as the free-plays of suspension linkages.</li> </ul>

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Assessment Criteria	<p>The integrated outcome requirements of this unit of competency are that the practitioner being assessed shall prove that he/she is:</p> <ul style="list-style-type: none"><li>• Capable of mastering the structure, functions and operating methods of various types of suspension systems (including related components) to enhance the efficiency and accuracy of inspection and complicated fault diagnosis;</li><li>• Capable of understanding the principles of vehicle vibration and stability as well as the affecting factors of vehicle stability, such as wheel alignment, suspension methods, spring stiffness, damping coefficient, instantaneous rolling axis and roll steer to solve the complicated technical problems, such as abnormal noises and driving instability, etc., effectively and accurately; and</li><li>• Capable of compiling reports covering preventive measures, instructions on inspection and maintenance as well as providing suggestions for improvement, etc. according to the specific defects relating to respective suspension systems.</li></ul>
Remark	<p>The credit for this competency unit assumes that the practitioner already has possessed extensive knowledge of automotive, vehicle repair and testing procedures.</p>