Specification of Competency Standards
for the Automotive
Unit of Competency

Functional Area - Vehicle Servicing

Title	Master the complicated techniques of suspension systems
Code	111755L4
Range	This unit of competency is applicable to technicians working in vehicle service and inspection departments. Practitioners should be able to master the effect of the suspension system on vehicle ride comfort and stability to enhance the efficiency and accuracy of inspection and complicated fault diagnosis.
Level	4
Credit	6 *(For Reference Only)*
Competency	**Performance Requirements** 1. Knowledge (Various suspension systems and driving stability) • Good understanding of the affecting factors overcoming the driving vibration, such as tyres, seats, suspension setup, spring stiffness and damping coefficient. • Good understanding of the effects of the centre of gravity of the vehicle and suspension system design on driving stability, such as the change of wheel alignment and wheel span, pitching during speed change, instantaneous roll centre, roll axis, roll steer, etc. • Master the structures, functions, controlling methods, operating principles and standard parameters of various systems and related components, e.g., electromagnetic, hydraulic or gas pressure actuators and sensors, such as: ◦ independent suspension and rigid axle suspension, including tandem axle and lift axle ◦ stiffness control of metal and air springs ◦ damping coefficient control of the shock absorber ◦ yaw rate control and anti-roll devices

	2. Performance (Inspection, fault diagnosis and analysis of the suspension system performance)
	• Conduct inspection, fault diagnosis and analysis procedures according to the fault symptoms (including recurrent and intermittent defects) of suspension systems and related components, such as:
	  ◦ Degraded ride comfort, including yaw, toss or shock of the vehicle body
	  ◦ Damaged anchoring points or perished bushings for the linkages of suspension system
	  ◦ Abnormal operating noise or vibration
	  ◦ Tilted vehicle body or abnormal ride height
	  ◦ Abnormal tyre wear
	• Conduct inspection, fault diagnosis and analysis procedures on the performance of suspension systems, damping and yawing control, etc., according to symptoms of instability (including recurrent and intermittent defects) when the vehicle is driving, speed changing or high-speed cornering, such as:
	  ◦ Swaying when driving straight ahead
	  ◦ Pitching seriously when changing speed
	  ◦ Excessive body rolling when cornering, yawing when speed changing or steering
	  ◦ Abnormal side-slip
	  ◦ Abnormal steering performance
	• Review the causes of defects and diagnostic methods; submit written report to seniors covering preventive measures, instructions on inspection and maintenance, as well as suggestions for improvement.
	• Ascertain that springs and shock absorbers, etc., can meet safety standards according to respective legislative requirements, such as the free play of suspension linkage joints.

Assessment Criteria	The integrated outcome requirements of this unit of competency are that the practitioner being assessed shall prove that he/she is: • Capable of mastering the structure, functions and operating principles of various types of suspension systems (including related components) to enhance the efficiency and accuracy of inspection and complicated fault diagnosis; • Capable of understanding the principles of vehicle ride comfort and stability as well as the affecting factors of vehicle stability, such as wheel alignment, suspension methods, spring stiffness, damping coefficient, instantaneous roll centre and roll steer, to solve the complicated technical problems, such as abnormal noises and driving instability, etc., effectively and accurately; and • 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.
Remark	The credit for this competency unit assumes that the practitioner already possesses extensive knowledge of automotive technology, vehicle repair and testing procedures. (This UoC replaced 108737L4)