Specification of Competency Standards
for the Automotive
Unit of Competency

Functional Area - Vehicle Servicing

Title	Conduct fault diagnosis on the propulsion and power control systems of electric motorcycle
Code	111709L3
Range	This unit of competency is applicable in motorcycle service workshops. Practitioners should be able to masterly conduct fault diagnosis on the propulsion and power control systems of electric motorcycles and arrange rectification according to the instructions in the vehicle manufacturer's service manual and the relevant requirements of environmental protection, occupational safety and health regulations. They should also be able to conduct system tests and provide written report upon completion of work.
Level	3
Credit	5 *(For Reference Only)*
Competency	**Performance Requirements** 1. Knowledge (Structure and operating principles of the propulsion and power control systems on various types of electric motorcycles) • Master the structure and operating principles of the propulsion and associated power controls of various types of electric motorcycles, such as the onboard charger, electric power control and modulation units, traction motors, driving mechanisms, etc. • Good understanding of the hazards and safety rules of electrical drive system servicing on electric motorcycles. • Master the function and application of personal protection equipment (PPE), service tool, various types of diagnostic and testing instruments and equipment, such as on-board diagnostic systems, for electric motorcycle servicing. • Application of fault diagnosis procedure for the abnormal performance of propulsion and control systems of electric motorcycles, including but not limited to onboard charging, electric power control and modulation units, traction motors and driving mechanisms, with reference to instructions in the vehicle manufacturer's service manual. • Understanding of the relevant legal requirements of road and vehicle safety and environmental protection.

	2. Performance (Conduct fault diagnosis on the propulsion and power control systems of electric motorcycles)
	• Correctly select and apply the PPE, special service tools, diagnostic and testing equipment and instruments for conducting electric motorcycle system diagnosis, including road tests.
	• Conduct fault diagnosis on the propulsion and control systems of electric motorcycles according to the instructions in the vehicle manufacturer's service manual and safety rules as well as the requirements of environmental protection, occupational safety and health regulations, including:
	  ◦ Onboard charging system;
	  ◦ Electric power control and modulation systems;
	  ◦ Electric drive unit; and
	  ◦ Driving mechanism.
	• Arrange rectification of defects identified from diagnosis.
	• Conduct performance and safety inspection after the rectification or replacement work and provide written report focusing on:
	  ◦ Abnormalities
	  ◦ Measurement data
	  ◦ Major decisions and the effectiveness

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 accurately conducting fault diagnosis on the onboard charging, propulsion and power control systems of electric motorcycles, such as defective or deficient charging power, abnormal operating noise and vibration, jerky acceleration, inoperative propulsion control, traction power and driving range deficiencies, etc., according to the instructions in the vehicle manufacturer's service manual and the relevant requirements on environmental protection, occupational safety and health regulations; • Capable of arranging rectification of defects according to diagnostic results; and • Capable of conducting performance and safety tests on the electric motorcycle accurately upon completion of the rectification or replacement work and providing written report.
Remark	The credit value of this unit of competency is set on the presumption that the practitioner concerned has already possessed good knowledge of repairing and diagnosing various types of electric motorcycles. The practitioner concerned should be a recognised competent person in electrified vehicle servicing, such as a registered vehicle mechanic who has completed an electric motorcycle training course, or equivalent. The major ordinance involved in this unit of competency is as follows: • Relevant ordinances to the Road Traffic (Construction and Maintenance of Vehicles) Regulations • Occupational Safety and Health Ordinance