

Assessment Requirements

Unit MC08K – Knowledge in Diagnosis and Rectification of Motorcycle Chassis Faults

Content:

Electrical and electronic principles of motorcycle chassis systems

- a. The operation of electrical and electronic systems and components related to motorcycle chassis systems including:
 - i. ECU
 - ii. sensors and actuators
 - iii. electrical inputs
 - iv. voltages
 - v. oscilloscope patterns
 - vi. digital principles
- b. The interaction between the electrical/electronic system and mechanical components of chassis systems.
- c. Electronic and electrical safety procedures.

Operation of electronic ABS and traction control systems

- a. Layout of:
 - i. ABS and traction control systems
 - ii. warning systems
- b. Operation of:
 - i. hydraulic and electronic control units
 - ii. wheel speed sensor
 - iii. hoses
 - iv. cables and connectors
- c. The relationship and interaction of braking with other motorcycle systems – traction control.

Steering geometry for motorcycle applications

- a. Front/rear wheel geometry:

Symptoms and faults in braking systems

- a. Symptoms and faults associated with braking systems:
 - i. mechanical
 - ii. hydraulic
 - iii. electrical and electronic systems
 - iv. fluid leaks
 - v. warning light operation
 - vi. poor brake efficiency
 - vii. wheel locking under braking

Diagnosis and faults in braking systems

- a. Locate and interpret information for:
 - i. diagnostic tests
 - ii. motorcycle and equipment specifications
 - iii. use of equipment
 - iv. testing procedures
 - v. test plans
 - vi. fault codes
 - vii. legal requirements

- b. Prepare equipment for use in diagnostic testing.
- c. Conduct systematic testing and inspection of:
 - i. braking system
 - ii. ABS
 - iii. traction control
 - iv. mechanical
 - v. hydraulic
 - vi. electrical and electronic systems
- d. Using appropriate tools and equipment including:
 - i. multi-meters
 - ii. oscilloscope
 - iii. pressure gauges
- e. Evaluate and interpret test results from diagnostic testing.
- f. Compare test result and values with motorcycle manufacturer's specifications and settings.
- g. How to dismantle, components and systems using appropriate equipment and procedures.
- h. Assess, examine and evaluate the operation, settings, values, condition and performance of components and systems.
 - i. Probable faults, malfunctions, incorrect settings.
 - j. Rectification or replacement procedures.
- k. Operation of systems following diagnosis and repair to confirm operation and performance.

Symptoms and faults associated with steering systems

- a. Symptoms and faults associated with steering systems:
 - i. mechanical
 - ii. steering joints and bushes
 - iii. bearings

Diagnosis and faults in steering systems

- a. Locate and interpret information for:
 - i. diagnostic tests
 - ii. motorcycle and equipment specifications
 - iii. use of equipment
 - iv. testing procedures
 - v. test plans
 - vi. legal requirements
- b. How to prepare equipment for use in diagnostic testing.
- c. Conduct systematic testing and inspection of:
 - i. steering systems
 - ii. mechanical
- d. Using appropriate tools and equipment including:
 - i. wheel alignment equipment
- e. Evaluate and interpret test results from diagnostic testing.
- f. Compare test result and values with motorcycle manufacturer's specifications and settings.
- g. How to dismantle, components and systems using appropriate equipment and procedures.
- h. Assess, examine and evaluate the:
 - i. operation
 - ii. settings
 - iii. values
 - iv. condition and performance of components and systems
- i. Probable faults, malfunctions, and incorrect settings.
- j. Rectification or replacement procedures.
- k. Operation of systems following diagnosis and repair to confirm operation and performance.

Symptoms and faults associated with suspension systems

- a. Symptoms and faults associated with suspension systems:
 - i. mechanical
 - ii. hydraulic
 - iii. ride height
 - iv. wear
 - v. noises under operation
 - vi. fluid leakage
 - vii. excessive travel
 - viii. excessive tyre wear

Diagnosis and faults in suspension systems

- a. Locate and interpret information for:
 - i. diagnostic tests
 - ii. motorcycle and equipment specifications
 - iii. use of equipment
 - iv. testing procedures
 - v. test plans
 - vi. legal requirements
- b. How to prepare equipment for use in diagnostic testing.
- c. How to conduct systematic testing and inspection of:
 - i. suspension systems
 - ii. mechanical
 - iii. hydraulic
- d. Using appropriate tools and equipment including:
 - i. alignment equipment
- d. Evaluate and interpret test results from diagnostic testing.
- e. Compare test result and values with motorcycle manufacturer's specifications and settings.
- f. How to dismantle, components and systems using appropriate equipment and procedures.
- g. Assess, examine and evaluate the operation, settings, values, condition and performance of components and systems.
- h. Probable faults, malfunctions and incorrect settings.
- i. Rectification or replacement procedures.
- k. Operation of systems following diagnosis and repair to confirm operation and performance.

Construction and operation of motorcycle chassis systems to include: -

- a. Steering
- b. Suspension
- c. Anti-lock-braking system(ABS)
- d. traction control
- e. front and rear wheel geometry

Engineering principles that are related to motorcycle chassis systems

- a. inertia force, mass and acceleration
- b. laws of friction
- c. static's
- d. hydraulic machines

Examine, measure and make suitable adjustments to the components including:

- a. settings
- b. input and output values
- c. voltages
- d. current consumption
- e. resistance
- f. output patterns with oscilloscope



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- g. pressures
- h. condition
- i. wear and performance