IMIMCQ08

Diagnose and rectify quad bike steering, brakes and suspension system faults

Overview

This standard is about diagnosing and rectifying faults occurring within quad bike steering, brakes and suspension systems, including wheels and tyres.
For the purposes of this standard a quad bike is a motorcycle-derived all-terrain vehicle (ATV) which you sit astride with four or more wheels.

Performance criteria

You must be able to:

P1.use suitable personal protective equipment and quad bike coverings (where applicable) when using **diagnostic methods** and carrying out **rectification activities**
P2.ensure the quad bike and the work area is safe prior to commencing with any diagnostic or rectification activity
P3.support the identification of **faults** by reviewing:

P3.1.technical data
P3.2.appropriate diagnostic test procedures
P4.prepare and check all the required **equipment** following manufacturer's instructions prior to use
P5.use **diagnostic methods** which are relevant to the symptoms presented
P6.collect diagnostic information in a systematic way relevant to the **diagnostic methods** used
P7.collect sufficient diagnostic information to enable an accurate diagnosis of steering, brakes and suspension system **faults**
P8. accurately identify and record any system deviation from acceptable limits
P9.ensure your assessment of dismantled sub-assemblies, units and components accurately identifies their condition and suitability for repair or replacement
P10.promptly inform the relevant person(s) where repairs are uneconomic or unsatisfactory to perform
P11.use the **equipment** required correctly and safely throughout all **rectification activities**
P12.carry out all rectification activities following:

P12.1.manufacturer's instructions
P12.2.industry recognised repair methods
P12.3.your workplace procedures
P12.4.health, safety and environmental requirements
P13.work in a way which minimises the risk of:

P13.1.damage to other systems, units and components
P13.2.contact with leakages and hazardous substances
P13.3.damage to your working environment
P13.4.contact with hazardous substances
P13.5.injury to self and others
P14.ensure all repaired and replaced units and components conform to the manufacturers' operating specification and relevant legal requirements

P15.when necessary, correctly adjust units and components to ensure that they operate to meet system requirements
P16.promptly record and report any additional **faults** you notice during the course of work

P17.use appropriate **testing methods** which are suitable for assessing the performance of the rectified system
P18.ensure the steering, brakes or suspension system rectified performs to the quad bike's operating specification and any legal requirements prior to it being returned to the customer
P19.record and report any steering, brakes or suspension systems that do not conform to legal requirements
P20.ensure your records are accurate, complete and promptly passed to the relevant person(s) in the format required
P21.complete all system diagnostic activities within agreed timescales
P22.promptly report any anticipated delays in completion to the relevant person(s)

Knowledge and understanding

You need to know and understand:

Legislative and organisational requirements and procedures
ing methods
K1.the health and safety legislation, environmental requirements and workplace procedures relevant to workshop practices and personal and quad bike protection when diagnosing and rectifying steering, brakes and suspension **faults**
K2.legal requirements relating to the quad bike (including road safety requirements)
K3.your workplace procedures for:

K3.1.recording diagnostic and **rectification activities**
K3.2.the referral of problems
K3.3.reporting delays to the completion of work
K4.the importance of documenting diagnostic and rectification information
K5.the importance of working to agreed timescales and keeping others informed of progress
K6.the relationship between time, cost and productivity
K7.the importance of promptly reporting anticipated delays to the relevant person(s)

Electrical and electronic principles
K8.electrical and electronic principles associated with steering, brakes and suspension systems, including wheels and tyres, types of sensors and actuators, their application and operation
K9.how electrical and electronic brake and suspension systems operate, including electrical component function, electrical inputs, outputs, voltages, wave forms and digital principles
K10.the interaction between electrical, electronic and mechanical systems and components within brake and suspension systems
K11.electrical symbols, units and terms
K12.electrical safety procedures
K13.the hazards associated with high voltage electrical components and systems

Use of diagnostic and rectification equipment
K14.how to select, prepare and check the accuracy of diagnostic testing equipment

K15.how to use diagnostic and rectification equipment, specialist repair tools and general workshop equipment for steering, brakes and suspension mechanical, electrical, hydraulic systems, including wheels and tyres

Steering, brakes and suspension faults, their diagnosis and rectification
K16.how steering, brakes and suspension mechanical (including wheels and tyres), electrical, electronic and hydraulic systems are constructed, dismantled, reassembled and operate

K17.the types and causes of steering, brakes and suspension mechanical (including wheels and tyres), electrical, electronic and hydraulic system, unit and component **faults** and failures
K18.steering, brakes and suspension mechanical, electrical and hydraulic unit and component replacement procedures, the circumstances which will necessitate replacement and other possible courses of action
K19.how to minimise the likelihood of corrosion when assembling and reassembling quad bikes
K20.how to find, interpret and use sources of information on electrical operating specifications, diagnostic test procedures, repair procedures and legal requirements relating to brake systems
K21.quad bike operating specifications for limits, fits and tolerances relating to steering, brakes and suspension mechanical, electrical, electronic and hydraulic systems for the types of quad bike on which you work
K22.how to select and carry out the appropriate **diagnostic testing** method
K23.how to assess and interpret results of the condition of components
K24.how to make cost effective recommendations for rectification
K25.the correct choice and applications of lubricants and fluids
K26.how to carry out the **rectification activities** in order to correct **faults** and make adjustments to meet rider requirements in the steering, brakes and suspension mechanical, electrical, electronic and hydraulic systems
K27.the relationship between test methodology and the **faults** rectified – the use of appropriate **testing methods**

Scope/range

1**Faults** are:

1.1.brakes (mechanical)
1.2.brakes (hydraulic)
1.3.brakes (electrical and electronic)
1.4.brakes (servo assist)
1.5.braking efficiency
1.6.steering control
1.7.steering alignment
1.8.suspension (mechanical)
1.9.suspension (hydraulic)
1.10.suspension (electrical and electronic)
1.11.wheels and tyres

2**Diagnostic** and **testing methods** are:

2.1.sensory
2.2.functional
2.3.measurement

3**Equipment** is:

3.1.diagnostic and rectification equipment for steering, brakes and suspension mechanical systems
3.2.diagnostic and rectification equipment for steering, brakes and suspension electrical and electronic systems
3.3.diagnostic and rectification equipment for hydraulic braking systems
3.4.specialist repair tools
3.5.general workshop equipment

4**Rectification activities** are:

4.1.dismantling
4.2.replacement of units and components
4.3.adjustment of units and components
4.4.repairs to wiring and connectors
4.5.re-programming quad bike systems
4.6.reassembly
4.7.functional testing

Glossary