

National Occupation Standards: Maintenance & Repair – Motorcycle

NOS G1 – Contribute to Housekeeping in Motor Vehicle Environments

NOS OVERVIEW

This NOS is about the routine maintenance of the workplace, carrying out basic, nonspecialist checks of work tools and equipment, cleaning the work area and using resources economically.

SCOPE OF THIS NOS:

1. Equipment maintenance covers

- a. routine checks on work tools and equipment
- b. cleaning work tools and equipment
- c. replacing minor parts
- d. visual inspection of electrical equipment

2. Housekeeping activities cover

- a. day to day work area cleaning
- b. clearing away
- c. dealing with spillages
- d. disposal of waste, used materials and debris

3. Work tools and equipment are

- a. hand
- b. electrical
- c. mechanical
- d. pneumatic
- e. hydraulic

ESSENTIAL KNOWLEDGE

You need to understand:

Legislative and organisational requirements and procedures

- 1. the scope of your job responsibilities for the use and maintenance of hand tools, equipment and your work area.
- 2. workplace policies and schedules for **housekeeping activities** and **equipment maintenance**.
- 3. the manufacturer's requirements for the cleaning and general, non-specialist maintenance of the tools and equipment for which you are responsible.



- 4. the regulations and information sources applicable to workshop cleaning and maintenance activities for which you are responsible.
- 5. the importance of reporting faults quickly to the relevant person.
- 6. the importance of reporting anticipated delays to the relevant person(s) promptly.

Equipment maintenance

- 7. how to select and use equipment used for basic hand tool maintenance activities.
- 8. how to store hand tools safely and accessibly.
- 9. how to report faulty or damaged work tools and equipment.
- 10. how to work safely when cleaning and maintaining work tools and equipment.

General work area housekeeping

- 11. how to select and use cleaning equipment
- 12. how to use resources economically.
- 13. how to use work area cleaning materials and agents.
- 14. how to clean and maintain the **work tools and equipment** and work areas for which you are responsible.
- 15. how to dispose of unused cleaning agents, materials and debris.
- 16. the properties and hazards associated with the use of cleaning agents and materials.
- 17. the importance of wearing personal protective equipment.
- 18. the importance of using resources economically and for their intended purpose only.

PERFORMANCE OBJECTIVES

- a. wear suitable personal protective equipment throughout all **housekeeping** and **equipment maintenance activities**.
- b. select and use cleaning equipment which is:
 - of the right type
 - suitable for the task.
- c. use resources economically and for their intended purpose only, following manufacturers' instructions and workplace procedures.
- d. follow workplace policies, schedules and manufacturers' instructions when cleaning and maintaining hand tools and equipment.
- e. clean the work area(s), for which you are responsible, at the specified time and frequency.
- f. carry out **housekeeping activities** safely and in a way which minimises inconvenience to customers and staff.
- g. follow the manufacturer's instructions when using cleaning and sanitising agents.
- h. ensure your **housekeeping activities** keep your work area clean and free from debris and waste materials.



- i. ensure your **equipment maintenance** activities keep your **work tools and equipment** fit for purpose.
- j. dispose of used cleaning agents, materials and debris to comply with legal and workplace requirements.
- k. store your **work tools and equipment** in a safe manner which permits ease of access and identification for use.
- I. report any faulty or damaged tools and equipment to the relevant person(s) clearly and promptly.
- m. report any anticipated delays in completion to the relevant person(s) promptly.

NOS G2 – Reduce Risks to Health and Safety in the Motor Vehicle Environment

NOS OVERVIEW

This NOS covers the basic, legally required health and safety duties of everyone in the workplace. It describes the competence required to ensure that:

- our own actions do not create any health and safety risks
- you do not ignore significant risks in your workplace, and
- you take sensible action to put things right, including reporting situations which pose a danger to people in the workplace, and seeking advice from others

This NOS does **not** require you to undertake a full Risk Assessment. It is about having an appreciation of significant risks in the workplace and knowing how to identify them and deal with them.

When you have completed this NOS, you will have proved you can:

- 1. Identify hazards and evaluate risks in your workplace
- 2. Reduce the risks to health and safety in your workplace

SCOPE OF THIS NOS:

1. Risks resulting from

- a. the use and maintenance of machinery or equipment
- b. the use of materials or substances
- c. working practices which do not conform to laid down policies
- d. unsafe behaviour
- e. accidental breakages and spillages
- f. environmental factors
- g. working at height
- h. lifting operations and manual handling
- i. incorrect use of personal protective equipment

2. Workplace policies covering



- a. the use of safe working methods and equipment
- b. the safe use of hazardous substances
- c. smoking, eating, drinking and drugs
- d. what to do in the event of an emergency
- e. personal presentation
- f. personal protective equipment
- g. lifting operations and manual handling
- h. working at height
- i. mobile phones and personal stereo equipment

ESSENTIAL KNOWLEDGE

You need to understand:

Health and Safety Legislation and Workplace Policies

- 1. your legal duties for health and safety in the workplace as required by the Health and Safety at Work Act 1974, and any other policies or procedures that govern your working practices.
- 2. your duties for health and safety as defined by any specific legislation covering your job role.
- 3. agreed workplace policies relating to controlling risks to health and safety.
- 4. responsibilities for health and safety in your job description.
- 5. the responsible persons to whom you report health and safety matters.

Risks to Health and Safety

- 6. what hazards may exist in your workplace, (eg. Slips, trips and falls).
- 7. health and safety risks which may be present in your own job role and the precautions you must take.
- 8. the importance of remaining alert to the presence of hazards in the whole workplace.
- 9. how to deal with and report risks.
- 10. the importance of dealing with or promptly reporting risks.
- 11. the requirements and guidance on the precautions.
- 12. the specific workplace policies covering your job role.
- 13. suppliers' and manufacturers' instructions for the safe use of equipment, materials and products.
- 14. safe working practices for your own job role.
- 15. the importance of personal presentation in maintaining health and safety in the workplace.
- 16. the importance of personal conduct in maintaining the health and safety of yourself and others.
- 17. the importance of personal protective equipment, when and where it should be used and the importance of maintaining it correctly.
- 18. your scope and responsibility for rectifying risks.
- 19. workplace procedures for handling risks which you are unable to deal with.

PERFORMANCE OBJECTIVES



- a carry out your working practices in accordance with legal requirements.
- b identify the correct personal and vehicle protective equipment required to correctly carry out your workplace practices.
- c carry out your workplace practices using the correct personal protective equipment.
- d follow the most recent **workplace policies** for your job role.
- e rectify health and safety **risks** that are within your capability and scope of your job responsibilities.
- f pass on any suggestions for reducing **risks** to health and safety within your job role to the responsible persons.
- g ensure your personal conduct in the workplace does not endanger the health and safety of yourself or other persons.
- h follow the **workplace policies** and suppliers' or manufacturers' instructions for the safe use of equipment, materials and products.
- i report any differences between **workplace policies** and suppliers' or manufacturers' instructions as appropriate.
- j ensure your personal presentation at work:
 - ensures the health and safety of yourself and others,
 - meets any legal duties, and
 - is in accordance with workplace policies



NOS G3 – Maintain Working Relationships in the Motor Vehicle Environment

NOS OVERVIEW

This NOS is about maintaining good working relationships with all colleagues in the working environment by using effective communication and support skills.

SCOPE OF THIS NOS:

1. **Colleagues** are

- a. immediate work colleagues
- b. supervisors and managers
- 2. **Requests for assistance** covering
 - a. technical assistance
 - b. personal assistance

ESSENTIAL KNOWLEDGE

You need to understand:

Your responsibilities and constraints

- 1. your own and your colleague's job role and limits of responsibility for giving advice and support.
- 2. the operational constraints which may affect interaction with colleagues.
- 3. lines of communication within your workplace.

Communication skills and working relationships

- 4. how to use suitable and effective spoken communication skills when responding to and interacting with others.
- 5. how to adapt written and spoken communication methods to satisfy the needs of colleagues.
- 6. how to report problems using written and spoken methods of communication.
- 7. the importance of developing positive working relationships with colleagues the effect on morale, productivity, and company image.
- 8. the importance of accepting other peoples' views and opinions.
- 9. the importance of making and honouring realistic commitments to colleagues.

PERFORMANCE OBJECTIVES

- a. contribute actively to team working by initiating ideas and co-operating with colleagues.
- b. respond promptly and willingly to requests for assistance from **colleagues** which fall within the limits of your own job responsibilities and capabilities.



- c. where requests fall outside your responsibility and capability, refer colleagues to the relevant person(s).
- d. give colleagues sufficient, accurate information and support to meet their work needs.
- e. make **requests for assistance** to **colleagues** clearly and courteously.
- f. use methods of communication which meet the needs of colleagues.
- g. treat colleagues in a way which shows respect for their views and opinions and promotes goodwill.
- h. make and keep achievable commitments to colleagues
- i.. inform colleagues promptly of any problems or information likely to affect their own work.



NOS G4 – Use of hand tools and equipment in Motor Vehicle Engineering

NOS OVERVIEW

This NOS is about the basic use of tools, materials and fabrications relevant to the Automotive Sector.

This NOS is about:

- interpreting information
- adopting safe and healthy working practices
- · selecting materials and equipment

This NOS is those working in technical support roles. It is also appropriate for workshop planners.

ESSENTIAL KNOWLEDGE

You must know and understand:

a. The organisational procedures developed to report and rectify inappropriate information and unsuitable resources, and how they are implemented.

b. The types of information, their source and how they are interpreted.

c. The organisational procedures to solve problems with the information and why it is important they are followed.

d. The level of understanding operatives must have of information for relevant,

current legislation and official guidance and how it is applied.

e. What the accident reporting procedures are and who is responsible for making the reports.

f. Why and when personal protective equipment (PPE) should be used.

g. Why disposal of waste should be carried out safely and how it is achieved

h. Demonstrate an understanding of material properties

i. Investigate the use of materials and fabrication

j. how to file, fit, tap, thread, cut and drill plastics and metals

k. how to select and use gaskets, sealants, seals, fittings and fasteners

PERFORMANCE OBJECTIVES

You must be able to:

1. Interpret the given information relating to the work and resources to confirm its relevance

2. Carry out pre-start preparation inspections on power tools and equipment in accordance with approved procedures

3. Carry out operations using power tools and equipment in accordance with safe working practices to achieve the work outcome

4. Identify problems associated with power tools and equipment which need to be referred to authorised personnel

5. Demonstrate work skills to:

• measure, mark out, file, fit, tap, thread, cut, drill, finish, position and secure.



- 6. Use and maintain:
 - hand tools
 - ancillary equipment
 - safety aids

7. Disposal of waste in accordance with legislation to maintain a clean work space

8. Checks carried out in accordance with manufacturer's/operator's guidance,

legislation and official guidance and

organisational requirements

9. Demonstrate work skills to select correct materials and fabrication for project



NOS G6 – Facilitate Individual learning and Development (Imported LLUK NOS Standard 7)

This standard is imported from LLUK Learning and Development (March 2010) suite of NOS.

What this standard is about

This standard is about using a range of methods to enable individuals to acquire or improve skills and knowledge and practise their application in context. It also covers providing feedback to learners and encouraging them to reflect on and improve what they do. This standard could be achieved as part of a coaching and/or mentoring relationship.

Key Words and Phrases

Within this standard the following explanations and examples apply.

Application The process applying new or improved skills and knowledge in a real or realistic context, for example a work situation

Goals This refers to interim targets or steps towards learners meeting overall outcomes and objectives Health and safety This includes physical health and safety as well as emotional well-being

Learner objectives These will usually be performance objectives – for example doing something or doing something better.

Methods Any method that supports individual learning and development, for example, instructions,

demonstrations, opportunities to apply knowledge and practise skills, experiential learning, individual projects and research

Other people This refers to others who may be involved in, or affected by, the learning activities, for example, staff members, volunteers, assistants or people in the same area.

Reflection/reflective practice The process of thinking critically about what we do, identifying opportunities for improvement and, where appropriate, further learning needs

Resources This covers any physical or human resource that supports the learning and development process and could include technical equipment, Information Technology-based learning, handouts, workbooks, people – for example outside speakers – and visits to places of interest

Risk This relates to any risk to the facilitation of learning and development. This includes health and safety but could also cover, for example, the risk of setting unrealistic goals or selecting inappropriate learning methods.

ESSENTIAL KNOWLEDGE



Learning and development practitioners know and understand:

- The principles, uses and value of learning and development on an individual 1. basis
- 2. The characteristics of a relationship that supports individual learning. application and reflection
- 3. Aspects of equality and diversity that need to be addressed when facilitating individual learning and development
- 4. The importance of reflective practice in individual learning and development
- Key factors to consider when setting and agreeing goals with individual 5. learners
- The range of delivery methods appropriate to individual learning 6.
- The range of resources, including support from others, that are available to 7 support individual learning
- 8. How technology can enhance resources and delivery methods for individuals
- 9. The range of techniques that can be used to encourage reflective practice by the learner
- 10. How to support different types of learners in applying new or enhanced learning in context
- 11. The types of barriers that learners encounter and how to develop strategies to overcome these
- 12. How to adapt learning plans in response to learner progress and reflection whilst still focusing on learner needs and desired outcomes
- How to assess and manage risk in own area of work whilst facilitating 13. learning and development for individuals

PERFORMANCE OBJECTIVES

Learning and development practitioners:

- Establish and maintain a professional relationship with the learner that a. supports individual learning and reflection
- b. Explore and agree the learner's objectives, learning needs and goals
- Agree a plan of learning, application and reflection C.
- Use a range of methods and resources to help the learner acquire/develop d. the skills and knowledge they need
- Support the learner in applying their learning in context e.
- Provide constructive and motivational feedback to improve the learner's f. application of learning
- Assist the learner to reflect on their practice and experience g.
- Adapt learning, application and reflection to meet further needs h.
- Maintain the health and safety of the learner, self and other people i.



NOS G8 – Identify and Agree the Motor Vehicle Customer Needs

NOS OVERVIEW

This NOS is about: gaining information from customers on their perceived needs; giving advice and information and agreeing a course of action; contracting for the agreed work and completing all necessary records and instructions.

ESSENTIAL KNOWLEDGE

You need to understand:

Legislative and organisational requirements and procedures

- 1. the fundamental legal requirements of current consumer legislation and the consequences of your own actions in respect of this legislation.
- 2. the content and limitations of company and product warranties for the vehicles dealt with by your company.
- 3. the limits of your own authority for accepting vehicles.
- 4. the importance of keeping customers informed of progress.
- 5. your workplace requirements for the completion of records.
- 6. how to complete and process all the necessary documentation.

Customer communication and care

- 7. how to communicate effectively with, and listen to, customers.
- 8. how to adapt your language when explaining technical matters to nontechnical customers.
- 9. how to use effective questioning techniques.
- 10. how to care for customers and achieve customer satisfaction.

Company products and services

- 11. the range of options available to resolve vehicle problems.
- 12. the range and type of services offered by your company.
- 13. the effect of resource availability upon the receipt of customer vehicles and the completion work.
- 14. how to access costing and work completion time information.

PERFORMANCE OBJECTIVES

- a. obtain sufficient, relevant information from the customer to make an assessment of their own and perceived vehicle needs.
- b. provide customers with accurate, current and relevant advice and information on:
 - suitable vehicle inspection, repair and/or service procedures
 - potential courses of action



- the implications of courses of action
- the estimated costs.
- c. provide advice and information clearly and in a form and manner which the customer will understand.
- d. actively encourage customers to ask questions and seek clarification during your conversation.
- e. support the accurate identification and clarification of customer and vehicle needs, by referring to:
 - vehicle data
 - operating procedures.
- f. before accepting the vehicle, agree with the customer and record:
 - the extent and nature of the work to be undertaken
 - the terms and conditions of acceptance
 - the cost
 - the timescale.
- g. confirm your customer's understanding of the agreement you have made.
- h. ensure your recording systems are complete, accurate, in the format required and signed by the customer where necessary.
- i. pass all completed records to the next person in the process promptly.
- j. gain further customer approval where the contracted agreement is likely to be exceeded.



NOS G12 – Help Team Members Address Problems Affecting their Performance

(Imported CfA unit D8)

This standard is imported from the Management and Leadership (2008) suite of NOS, overseen by the Council for Administration (CfA).

NOS OVERVIEW

This NOS is about helping members of your team address problems affecting their performance. These may be work-related problems or problems arising from their personal circumstances.

The NOS involves identifying problems affecting people's performance and discussing these in a timely way with the team members concerned to help them find a suitable solution to their problem. Sometimes you may need to refer the team member to specialist support services.

The NOS is recommended particularly for first line managers and middle managers.

Links to other units

This unit is linked to units B8. Ensure compliance with legal, regulatory, ethical and social requirements, D5. Allocate and check work in your team, D6. Allocate and monitor the progress and quality of work in your area of responsibility, D9. Build and manage teams, D10. Reduce and manage conflict in your team and D13. Support individuals to develop and maintain their

performance in the overall suite of National Occupational Standards for Management and Leadership.

Skills

Listed below are the main generic 'skills' which need to be applied in helping team members address problems affecting their performance. These skills are explicit/implicit in the detailed content of the NOS and are listed here as additional information.

- Acting assertively
- Communicating
- Consulting
- Decision-making
- Empathising
- Information management
- Managing conflict
- Monitoring
- Problem solving
- Providing feedback
- Reviewing
- Setting objectives
- Team building
- Valuing and supporting others.



ESSENTIAL KNOWLEDGE

You need to know and understand the following:

- 1. The importance in giving team members opportunities to approach you with problems affecting their performance.
- 2. How to encourage team members to approach you with problems affecting their performance.
- 3. The importance of identifying performance issues and bringing these promptly to the attention of the team members concerned.
- 4. The importance of discussing problems with team members at a time and place appropriate to the seriousness and complexity of the problem.
- 5. How to gather and check the information you need to identify the problem and its cause.
- 6. The importance of identifying the problem accurately.
- 7. The range of alternative courses of action to deal with the problem.
- 8. The importance of discussing and agreeing with the team member a timely and effective way of dealing with the problem.
- 9. When to refer the team member to support services or specialists.
- 10. The importance of keeping a confidential record of your discussions with team members about problems affecting their performance, and how to do so.
- 11. The importance of ensuring your actions are in line with your organisation's policies

for managing people and their performance.

Industry/sector specific knowledge and understanding

12. Industry/sector requirements for helping team members address problems affecting their performance.

Context specific knowledge and understanding

- 12. The types of problems that your team members may encounter which can affect their performance.
- 13. Your role, responsibilities and limits of authority when dealing with team members' problems.
- 14. The range of support services or specialists that exist inside and outside your organisation.
- 15. Your organisation's policies for managing people and their performance.

PERFORMANCE OBJECTIVES

You must be able to do the following:

- a. Give team members opportunities to approach you with problems affecting their performance.
- b. Identify performance issues and bring these promptly to the attention of the team members concerned.
- c. Discuss problems with team members at a time and place appropriate to the type, seriousness and complexity of the problem.
- d. Gather and check information to accurately identify the problem and its cause.



- e. Discuss the range of alternative courses of action and agree with the team member a timely and effective way of dealing with the problem.
- f. Refer the team member to support services or specialists, where necessary.
- g. Keep a confidential record of your discussions with team members about problems affecting their performance.
- h. Ensure your actions are in line with your organisation's policies for managing people

Behaviours which underpin effective performance

- 1. You find practical ways to overcome barriers.
- 2. You show empathy with others' needs, feelings and motivations and take an active interest in their concerns.
- 3. You make time available to support others.
- 4. You comply with, and ensure others comply with, legal
- 5. requirements, industry regulations, organisational policies and professional codes.
- 6. You show integrity, fairness and consistency in decision-making.
- 7. You confront performance issues and resolve them directly with the people involved.
- 8. You keep confidential information secure.
- 9. You check the validity and reliability of information.
- 10. You identify the implications or consequences of a situation.
- 11. You take timely decisions that are realistic for the situation.



NOS MC01 – Carry Out Routine Motorcycle Maintenance

NOS OVERVIEW

This NOS is about conducting routine examination, adjustment and replacement activities as part of the periodic servicing of motorcycles, including scooters, mopeds and those with a third wheel.

KEY WORDS AND PHRASES

Agreed timescales:

Examples include: manufacturer's recommended work times, job times set by your company or a job time agreed with a specific customer.

Adjustments:

Examples include: adjustments to clearances, gaps, settings, alignment pressures, tensions, speeds and levels, and adjustments to valves, ignition, fuel and emissions, brakes, transmission, lights, tyres, steering and body fittings.

Components:

Examples include: filters, drive chains and belts, brake linings and pads, lubricants and fluids.

Conformity:

Examples include conformity to manufacturer's specifications, UK and European legal requirements where applicable.

Systems testing equipment:

Examples include: test instruments, emission test equipment, wheel alignment equipment, tyre tread depth gauges.

Maintenance records:

Examples include: records of motorcycle inspection, manufacturers', fleet, company or customer job cards.

Major service:

As defined by manufacturers' specifications appropriate to the motorcycle being working upon.

Motorcycles:

These can be any of the following – motorcycles, scooters, mopeds and those with a third wheel.



Routine motorcycle maintenance:

Examples include: conducting scheduled examinations, adjustments, replacements and replenishment of, or to, components and systems in accordance with manufacturer's instructions for the period and/or mileage interval.

Motorcycle technical data:

Examples include: hard copy manuals, data on computer and data obtained from onboard diagnostic displays

SCOPE OF THIS NOS:

All of the items listed below form part of this National Occupational Standard.

1. Sources of technical information are:

- a. motorcycle technical data
- b. schedules of inspection
- c. regulations

2. Examination methods are:

- a. aural
- b. visual
- c. functional
- d. measurements

3. Assessments are for:

- a. malfunction
- b. damage
- c. fluid levels
- d. leaks
- e. wear
- f. security
- g. condition and serviceability
- h. conformity
- i. necessity for adjustment(s)

ESSENTIAL KNOWLEDGE

You need to understand:

Legislative and organisational requirements and procedures

- 1. the manufacturer's and legal requirements relating to routine maintenance activities for motorcycle systems and components.
- 2. the legal requirements relating to the motorcycle (including road safety requirements).



- 3. the health and safety legislation and workplace procedures relevant to motorcycle maintenance activities and personal and motorcycle protection.
- 4. your workplace procedures for
 - recording motorcycle maintenance work and any variations from the original motorcycle specification
 - the referral of problems
 - reporting delays to the completion of work
- 5. the importance of documenting motorcycle maintenance information
- 6. the importance of working to agreed timescales and keeping others informed of progress.
- 7. the relationship between time and costs.
- 8. the importance of reporting anticipated delays to the relevant person(s) promptly.

Use of technical information

- 9. how to find, interpret and use **sources of current technical information** for scheduled maintenance activities, including on-board diagnostic displays.
- 10. the importance of using the correct **sources of technical information**.
- 11. the purpose of and how to use identification codes.

Motorcycle system operation

- 12. how engines, cooling systems, intake and exhaust systems, fuel systems and ignition systems operate for the type(s) of motorcycle on which you are working.
- 13. how clutch assemblies, clutch operating systems, manual gear boxes, automatic gear boxes, drivelines and hubs (if appropriate) and final drive assemblies operate for the type of motorcycle on which you are working.
- 14. how suspension systems, steering systems, braking systems, non-electrical body systems, wheels and tyres operate for the type of motorcycle on which you are working.
- 15. how batteries, starting systems, charging systems, lighting systems and ancillary equipment operate for the type of motorcycle on which you are working.
- 16. the operating specifications and tolerances for the type(s) of motorcycles on which you are working.

Routine maintenance requirements



- 17. how to conduct scheduled, routine **examination methods** and **assessments** against motorcycle specifications to identify damage, corrosion, inadequate fluid levels, leaks, wear, security problems and general condition and serviceability.
- 18. check and make adjustments to clearances, gaps, settings, alignment, pressures, tension, speeds and levels relevant to the engine area, transmission area, chassis area, electrical area and body (including to valves, ignition, fuel and emissions, brakes, transmission, lights, wheels, tyres, steering and body fittings).
- 20. how to replenish and replace routine service components and materials, including filters, drive systems, lubricants and fluids.
- 20. how to recognise cosmetic damage to motorcycle components and units outside normal service items
- 21. how to identify codes and grades of lubricants.
- 22. how to work safely avoiding damage to the motorcycle and its systems.

PERFORMANCE OBJECTIVES

- a. use suitable personal protective equipment and motorcycle coverings throughout all motorcycle maintenance activities.
- b. use suitable **sources of technical information** to support all your motorcycle maintenance activities.
- c. use the correct specifications and tolerances for the motorcycle when making **assessments** of system and component performance.
- d. where the customer's motorcycle falls outside the manufacturer's original specification, record details accurately and use this modified specification as the basis for your examination and assessment.
- e. examine the motorcycle's systems and components following:
 - the manufacturer's approved **examination methods**
 - your workplace procedures
 - health and safety requirements.
- f. ensure your **examination methods** identify accurately any motorcycle system and component problems falling outside the servicing schedule specified.
- g. carry out adjustments, replacement of motorcycle components and replenishment of consumable materials following the manufacturer's current specification for:



- the particular service interval
- working methods and procedures
- use of equipment
- the tolerances for the motorcycle.
- h. where system adjustments cannot be made within the manufacturer's specification, record the details accurately and take action which complies with the customer's instructions.
- i. work in a way which minimises the risk of damage to the motorcycle and its systems.
- j. use suitable testing methods to evaluate the performance of all replaced and adjusted components and systems accurately, prior to returning the motorcycle to the customer.
- k. report any problems or issues relating to the motorcycle's condition or conformity to the relevant person(s) promptly.
- I. ensure your maintenance records are accurate, complete and passed to the relevant person(s) promptly in the format required.
- m. complete all motorcycle maintenance activities within the agreed timescale.
- n. report any anticipated delays in completion to the relevant persons(s) promptly.



NOS MC02 – Remove and Replace Motorcycle Engine Units and Components

NOS OVERVIEW

This NOS is about removing and replacing units and components where dismantling and re-assembly of engine systems is required. It is also about evaluating the performance of replaced units and components. The units and components concerned are those **outside those replaced as part of normal routine**, **motorcycle maintenance (servicing) activities**.

KEY WORDS AND PHRASES

Agreed timescales:

Examples include: manufacturer's recommended work times, job times set by your company or a job time agreed with a specific customer.

Units and components:

Any unit or component from the engine system as defined in the Scoping Statement below.

Motorcycles:

These can be any of the following – motorcycles, scooters, mopeds and those with a third wheel.

SCOPE OF THIS NOS:

All of the items listed below form part of this National Occupational Standard

1. Equipment is

- a. hand tools
- b. special workshop tools
- c. general workshop equipment
- d. electrical testing equipment

2. Testing methods are:

- a. visual
- b. aural
- c. functional
- d. measurement

3. Unit and components are



- a. mechanical
- b. electrical
- c. fluid systems

4. Engine systems are

- a. engine mechanical systems
- b. cooling systems
- c. intake and exhaust systems
- d. fuel and ignition systems
- e. lubrication systems
- f. clutch
- g. transmission and final drive
- h. starting and charging

ESSENTIAL KNOWLEDGE

You need to understand:

Legislative and organisational requirements and procedures

- 1. the legal requirements relating to the motorcycle (including road safety requirements).
- 2. the health and safety legislation and workplace procedures relevant to motorcycle maintenance activities and personal and motorcycle protection.
- 3. your workplace procedures for
 - recording removal and replacement information
 - the referral of problems
 - reporting delays to the completion of work
- 4. the importance of documenting removal and replacement information
- 5. the importance of working to agreed timescales and keeping others informed of progress.
- 6. the relationship between time and costs.
- 7. the importance of reporting anticipated delays to the relevant person(s) promptly.

Use of technical information

- 8. how to find, interpret and use sources of information applicable to **unit and component** removal and replacement within **engine systems.**
- 9. the importance of using the correct sources of technical information
- 10. the purpose of and how to use identification codes. Final Version Approved – March 2011 The Institute of the Motor Industry



Engine system operation and construction

- 11. how **engine systems** and their related **units and components** are constructed and their operation for those motorcycles worked upon.
- 12. electrical and electronic principles associated with fuel and ignition systems, including types of sensors and actuators, their application and operation.
- 13. how **engine systems** and their related **units and components** are dismantled and reassembled for those motorcycles worked upon.

Equipment

14. how to prepare, test and use all the removal and replacement equipment required.

Engine unit and component removal and replacement

- 15. how to remove and replace **engine system** mechanical and electrical units and components for those motorcycles worked upon.
- 16. how to file, fit, tap, thread, cut and drill plastics and metals.
- 17. how to select and fit gaskets, shims, sealants, fittings and fasteners.
- 18. how to test and evaluate the performance of replacement engine **units** and components and the reassembled system against the motorcycle operating specifications and any legal requirements.
- 19. the relationship between testing methods and the engine **units and components** replaced the use of appropriate test methods.
- 20. the properties of jointing and locking materials and when and where they should be used.

21. the manufacturer's specification for the engine **units and components** to be used.

22. how to work safely avoiding damage to other motorcycle systems, components and units, contact with leakage and hazardous substances, electric shock.

PERFORMANCE OBJECTIVES

To be competent you must:

a. wear suitable personal protective equipment and use motorcycle coverings throughout all removal and replacement activities.



- b. support your removal and replacement activities by reviewing
 - motorcycle technical data
 - removal and replacement procedures
 - legal requirements.
- c. prepare, test and use all the **equipment** required following manufacturers' instructions.
- d. carry out all removal and replacement activities following;
 - manufacturers' instructions
 - your workplace procedures
 - health and safety requirements.
- e. you work in a way which minimises the risk of:
 - damage to other motorcycle systems
 - damage to other motorcycle components and units
 - contact with leakage
 - contact with hazardous substances
 - electric shock.
- f. ensure replaced engine **units and components** conform to the motorcycle operating specification and any legal requirements.
- g. record and report any additional faults you notice during the course of your work promptly.
- h. use suitable **testing methods** to evaluate the performance of the reassembled system accurately.
- i. ensure the reassembled **engine system** performs to the motorcycle operating specification and meets any legal requirements prior to return to the customer.
- j. ensure your records are accurate, complete and passed to the relevant person(s) promptly in the format required.
- k. complete all removal and replacement activities within the agreed timescale.
- I. you report any expected delays in completion to the relevant person(s) promptly.



NOS MC03 - Remove and Replace Motorcycle Electrical Units and Components

NOS OVERVIEW

This NOS is about removing and replacing units and components previously identified as faulty, damaged, deteriorated or where the customer has requested replacements. It is also about evaluating the performance of replaced units and components. The units and components concerned are those **outside those replaced as part of normal routine, motorcycle maintenance (servicing) activities**.

KEY WORDS AND PHRASES

Agreed timescales:

Examples include: manufacturer's recommended work times, job times set by your company or a job time agreed with a specific customer.

Comfort and convenience systems

Examples are heated grips, electrically adjusted screens, satellite navigation systems, audio systems, communication systems.

Electrical rider safety systems

Examples are traction control, power mode selection, starter inhibit systems.

Units and components:

Any unit or component from the electrical systems defined in the Scoping Statement below.

Motorcycles:

These can be any of the following – motorcycles, scooters, mopeds and those with a third wheel.

SCOPE OF THIS NOS:

All of the items listed below form part of this National Occupational Standard

- 1. Equipment is
 - a. hand tools
 - b. special workshop tools
 - c. general workshop equipment
 - d. electrical testing equipment

2. Testing methods are:



- a. visual
- b. aural
- c. functional
- d. measuring

3. Electrical units and components are for

- a. lighting systems
- b. security and alarm systems
- c. comfort and convenience systems
- d. electrical rider safety systems
- e. monitoring and instrumentation systems

ESSENTIAL KNOWLEDGE

You need to understand:

Legislative and organisational requirements and procedures

- 1. the legal requirements relating to the motorcycle .
- 2. the health and safety legislation and workplace procedures relevant to motorcycle maintenance activities and personal and motorcycle protection.
- 3. your workplace procedures for
 - recording removal and replacement information
 - the referral of problems
 - reporting delays to the completion of work
- 4. the importance of documenting removal and replacement information
- 5. the importance of working to agreed timescales and keeping others informed of progress.
- 6. the relationship between time and costs.
- 7. the importance of reporting anticipated delays to the relevant person(s) promptly.

Use of technical information

8. how to find, interpret and use sources of information applicable to **electrical unit and component** removal and replacement.

- 9. the importance of using the correct sources of technical information
- 10. the purpose of and how to use identification codes



Electrical system operation and construction

11. how **electrical units and components** are constructed and their operation for those motorcycles worked upon.

12. how **electrical units and components** are removed and replaced for those motorcycles worked upon.

Equipment

13. how to prepare, test and use all the removal and replacement equipment required.

Electrical and electronic principles

- 14. electrical and electronic principles associated with electrical systems, including types of sensors and actuators, their application and operation
- 15. types of circuit protection and why these are necessary.
- 16. electrical safety procedures.
- 17. how circuits work.
- 18. electric symbols, units and terms.
- 19. the operation of electrical/electronic control systems

Electrical unit and component removal and replacement

20. how to remove and replace **electrical units and components** for those motorcycles worked upon.

- 21. how to test and evaluate the performance of replacement **electrical units and components** and the reassembled system against the motorcycle operating specifications and any legal requirements.
- 23. the relationship between testing methods and the **electrical units and components** replaced the use of appropriate test methods.
- 24. the manufacturer's specification for the **electrical units and components** to be used.
- 25. how to work safely avoiding damage to other motorcycle systems, components and units, contact with leakage and hazardous substances and electric shock.

PERFORMANCE OBJECTIVES

To be competent you must:

I. wear suitable personal protective equipment and use motorcycle coverings throughout all removal and replacement activities.



- m. support your removal and replacement activities by reviewing
 - motorcycle technical data
 - removal and replacement procedures
 - legal requirements.
- n. prepare, test and use all the **equipment** required following manufacturers' instructions.
- o. carry out all removal and replacement activities following;
 - manufacturers' instructions
 - your workplace procedures
 - health and safety requirements.
- p. you work in a way which minimises the risk of:
 - damage to other motorcycle systems
 - damage to other motorcycle components and units
 - contact with leakage
 - contact with hazardous substances
 - electric shock.
- q. ensure replaced **electrical units and components** conform to the motorcycle operating specification and any legal requirements.
- r. record and report any additional faults you notice during the course of your work promptly.
- s. use suitable **testing methods** to evaluate the performance of the reassembled system accurately.
- t. ensure the reassembled system performs to the motorcycle operating specification and meets any legal requirements prior to return to the customer.
- u. ensure your records are accurate, complete and passed to the relevant person(s) promptly in the format required.
- v. complete all removal and replacement activities within the agreed timescale.
- I. you report any expected delays in completion to the relevant person(s) promptly



NOS MC04 – Remove and Replace Motorcycle Chassis Units and Components

NOS OVERVIEW

This NOS is about removing and replacing units and components where dismantling and re-assembly of chassis systems is required. It is also about evaluating the performance of replaced units and components. The units and components concerned are those **outside those replaced as part of normal routine**, **motorcycle maintenance (servicing) activities**.

KEY WORDS AND PHRASES

Agreed timescales:

Examples include: manufacturer's recommended work times, job times set by your company or a job time agreed with a specific customer.

Units and components:

Any unit or component from the chassis systems defined in the Scoping Statement below.

Functional testing:

Examples include: use of brake tester, road test.

Steering and suspension system:

For the purposes of this unit, this will also include wheels and tyres.

Motorcycles:

These can be any of the following – motorcycles, scooters, mopeds and those with a third wheel.

SCOPE OF THIS NOS:

All of the items listed below form part of this National Occupational Standard

1. Equipment is

- a. hand tools
- b. special workshop tools
- c. general workshop equipment
- d. electrical testing equipment

2. Testing methods are:

- a. visual
- b. aural
- c. functional

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d. measurement

3. Units and components are:

- a. mechanical
- b. electrical
- c. hydraulic

4. Chassis systems are

- a. steering
- b. suspension
- c. braking

ESSENTIAL KNOWLEDGE

You need to understand:

Legislative and organisational requirements and procedures

- 1. the legal requirements relating to the motorcycle (including road safety requirements).
- 2. the health and safety legislation and workplace procedures relevant to motorcycle maintenance activities and personal and motorcycle protection.
- 3. your workplace procedures for
 - recording removal and replacement information
 - the referral of problems
 - reporting delays to the completion of work
- 4. the importance of documenting removal and replacement information
- 5. the importance of working to agreed timescales and keeping others informed of progress.
- 6. the relationship between time and costs.
- 7. the importance of reporting anticipated delays to the relevant person(s) promptly.

Use of technical information

- 8. how to find, interpret and use sources of information applicable to **unit and component** removal and replacement within **chassis systems.**
- 9. the importance of using the correct sources of technical information
- 10. the purpose of and how to use identification codes. Final Version Approved – March 2011 The Institute of the Motor Industry



Electrical and electronic principles

- 11. electrical and electronic principles associated with motorcycle ABS systems, including types of sensors, actuators and motors.
- 12. types of circuit protection and why these are necessary
- 13. electrical safety procedures
- 14. how circuits work.
- 15. electrical symbols, units and terms
- 16. the operation of electrical and electronic control systems

Chassis system operation and construction

17. how **chassis systems** and their related **units and components** (including wheels) are constructed and their operation for those motorcycles worked upon.

Equipment

18. how to prepare, test and use all the removal and replacement equipment required.

Chassis system unit and component removal and replacement

- 19. how to remove and replace **chassis system** mechanical, electrical and hydraulic units and components (including wheels) for those motorcycles worked upon .
- 20. how to file, fit, tap, thread, cut and drill plastics and metals.
- 21. how to select and use gaskets, sealants, seals, fittings, fasteners and locking devices
- 22. how to test and evaluate the performance of replacement chassis system **units and components** and the reassembled system against the motorcycle operating specifications and any legal requirements.
- 23. the relationship between testing methods and the chassis system **units and components** replaced the use of appropriate test methods.
- 24. when replacement units and components must meet the original equipment specification (OES) for warranty or other requirements.
- 25. how to work safely avoiding damage to other motorcycle systems, components and units, contact with leakage and hazardous substances and electric shock.



PERFORMANCE OBJECTIVES

- w. wear suitable personal protective equipment and use motorcycle coverings throughout all removal and replacement activities.
- x. support your removal and replacement activities by reviewing
 - motorcycle technical data
 - removal and replacement procedures
 - legal requirements.
- y. prepare, test and use all the **equipment** required following manufacturers' instructions.
- z. carry out all removal and replacement activities following;
 - manufacturers' instructions
 - your workplace procedures
 - health and safety requirements.
- aa. you work in a way which minimises the risk of:
 - damage to other motorcycle systems
 - damage to other motorcycle components and units
 - contact with leakage
 - contact with hazardous substances
 - electric shock
- bb. ensure replaced chassis **units and components** conform to the motorcycle operating specification and any legal requirements.
- cc. record and report any additional faults you notice during the course of your work promptly.
- dd. use suitable **testing methods** to evaluate the performance of the reassembled system accurately.
- ee. ensure the reassembled **chassis system** performs to the motorcycle operating specification and meets any legal requirements prior to return to the customer.
- ff. ensure your records are accurate, complete and passed to the relevant person(s) promptly in the format required.
- gg. complete all removal and replacement activities within the agreed timescale.
- I. you report any expected delays in completion to the relevant person(s) promptly



NOS MC05 – Carry Out Motorcycle Preparation and Inspections

NOS OVERVIEW

This NOS is about carrying out motorcycle preparation activities and a range of inspections using a variety of testing methods and equipment.

KEY WORDS AND PHRASES

Agreed timescales:

Examples include: manufacturer's recommended work times, job times set by your company or a job time agreed with a specific customer.

Motorcycles:

These can be any of the following – motorcycles, scooters, mopeds and those with a third wheel.

Preparation:

Examples include – making seat, handlebar and or foot peg adjustments to suit the customer, uncrating and assembly.

Sources of technical information:

Examples include inspection schedules, MOT inspection manuals and guides, manufacturers' manuals and Trade Association check lists, workplace procedures.

SCOPE OF THIS NOS:

All of the items listed below form part of this National Occupational Standard

1. Motorcycle preparation and inspections can cover

- a. pre-work
- b. post-work
- c. pre-delivery
- d. pre-MOT test
- e. safety
- f. uncrate and assembly

2. Test methods are

- a. visual
- b. aural
- c. functional
- d. measurement

3. Equipment

- a. emissions testing
- b. brake testing



- c. headlamp alignment
- d. wheel alignment
- e. torque setting
- f. diagnostic equipment
- g. battery charger
- h. lifting and support equipment
- i. measuring
- j. tyre inflation

ESSENTIAL KNOWLEDGE

You need to understand:

Legislative and organisational requirements and procedures

- 1. the health and safety legislation and workplace procedures relevant to conducting **motorcycle preparation and inspections** and personal and motorcycle protection.
- 2. the legislation relevant to the types of **motorcycle preparation and inspections** described in the Scoping Statement for this NOS.
- 3. your workplace procedures for
 - recording motorcycle preparation and inspections and any variations from acceptable tolerances
 - the referral of problems
 - reporting delays to the completion of work.
- 4. the importance of making accurate records of the results of your tests and inspections and interpreting them correctly.
- 5. the importance of working to agreed timescales and keeping others informed of progress.
- 6. the relationship between time, costs and profitability.
- 7. the importance of reporting anticipated delays to the relevant person(s) promptly.

Sources of information

- 8. how to find, interpret and use technical information .
- 9. the importance of using technical information to inform your inspection and testing of motorcycles.

Preparation, testing methods and the conduct of Inspections



- 10. how motorcycle systems operate (including the engine area, transmission area, chassis or frame area and electrical area) and the operational tolerances for the motorcycle(s) on which you are working.
- 11. how to follow procedures for the systematic inspection and preparation of motorcycles.
- 12. how to test the operation of motorcycle systems and motorcycle condition, including workshop based and road tests.
- 13. how to compare test and inspection results against motorcycle specifications and legal requirements.
- 14. how to record test and inspection results in the format required.
- 15. how to make recommendations based upon the results of your inspections.
- 16. the implications of failing to carry out an inspection correctly.
- 17. how to safely uncrate and assemble motorcycles following manufacturer's instructions and procedures.
- 18. the differences between preparation of motorcycles for the showroom and the customer.
- 19. how to minimise the likelihood of corrosion when assembling and reassembling motorcycles.

PERFORMANCE OBJECTIVES

To be competent you must:

- a. use suitable personal protective equipment throughout all **motorcycle inspection** activities.
- b. use suitable sources of technical information to support your **motorcycle inspection** activities.
- c. where necessary, confirm that **equipment** has been calibrated to meet manufacturers' and legal requirements.
- d. carry out systematic motorcycle preparation and inspections following:
 - your workplace procedures
 - health and safety requirements.
- e. conduct all motorcycle testing following:
 - the manufacturer's instructions
 - the recognised test methods
 - your workplace procedures

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- health and safety requirements.
- f. ensure your comparison of the motorcycle against specification accurately identifies any:
 - differences from the motorcycle specification
 - motorcycle appearance and condition faults
 - non-compliance with statutory requirements
- g. prepare motorcycles for sale to meet your organisation's, manufacturer's and legal requirements.
- h. work in a way which minimises the risk of damage to the motorcycle and its systems, other people and their property.
- i. make suitable recommendations for future action based upon the results of your tests and inspections.
- j. ensure your records are accurate, complete and passed to the relevant person(s) promptly in the format required.
- k. complete all inspection activities within the agreed timescale and to specification.
- I. report any anticipated delays in completion to the relevant person(s) promptly.



NOS MC07 – Diagnose and Rectify Motorcycle Engine and Component Faults

NOS OVERVIEW

This NOS is about diagnosing and rectifying faults occurring in the motorcycle engine mechanical, electrical and hydraulic and fluid systems.

KEY WORDS AND PHRASES

Agreed timescales:

Examples include: manufacturer's recommended work times, job times set by your company or a job time agreed with a specific customer.

Diagnostic information

This relates to mechanical condition, including wear, run out, pressures and compressions, flow, leakage and electrical measurements such as voltage and pulse displays, electronic systems data, including fault codes, sensor measurements and control unit outputs and/or signals.

Engine Area

Engine mechanical, cooling systems, electronic ignition, petrol fuel injection, lubrication, engine management systems, emissions control systems and starting/charging.

Engine and component faults

These are faults that require a two or more step diagnostic activity using a prescribed process or format to identify the cause.

Functional testing

Examples include: intake system balance, performance testing and road testing where relevant.

Hydraulic and fluid systems

These are fuel, oil, lubrication and cooling.

Recommendations

Examples include: servicing, dismantling for further inspection and test, repair and replacement.

Motorcycles:

These can be any of the following – motorcycles, scooters, mopeds and those with a third wheel.

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SCOPE OF THIS NOS:

All of the items listed below form part of this National Occupational Standard

- **1. Faults** occur within
 - a. the engine mechanical system
 - b. the engine electrical and electronic systems
 - c. the engine hydraulic and fluid systems

2. Diagnostic methods are

- a. visual
- b. aural
- c. measurement
- d. functional testing
- e. electrical and electronic systems testing

3. Equipment is

- a. diagnostic and rectification equipment for engine mechanical systems
- b. diagnostic and rectification equipment for engine electrical and electronic systems
- c. diagnostic and rectification equipment for engine hydraulic and fluid systems
- d. specialist repair tools
- e. general workshop equipment

4. **Rectification activities** are:

- a. dismantling
- b. replacement of units and components
- c. adjustment of units and components
- d. repairs to wiring and connectors
- e. re-programming motorcycle systems
- f. reassembly
- g. functional testing

ESSENTIAL KNOWLEDGE

You need to understand:

Legislative and organisational requirements and procedures



- 1. the health and safety legislation and workplace procedures relevant to workshop practices and personal and motorcycle protection when diagnosing and rectifying engine faults.
- 2. legal requirements relating to the motorcycle (including road safety requirements).
- 3. your workplace procedures for
 - recording diagnostic and rectification activities
 - the referral of problems
 - reporting delays to the completion of work.
- 4. the importance of, documenting diagnostic and rectification information.
- 5. the importance of working to agreed timescales and keeping others informed of progress.
- 6. the relationship between time, costs and profitability.
- 7. the importance of reporting anticipated delays to the relevant person(s) promptly.

Electrical and electronic principles

- 8. electrical and electronic principles associated with engine systems, including types of sensors and actuators, their application and operation.
- 9. how electrical and electronic engine systems operate, including electrical component function, electrical inputs, outputs, voltages and oscilloscope patterns, digital principles.
- 10. the interaction between electrical, electronic and mechanical components within motorcycle engine systems.
- 11. electrical symbols, units and terms.
- 12. electrical safety procedures.

Use of diagnostic and rectification equipment

- 13. how to prepare and test the accuracy of diagnostic testing equipment.
- 14. how to use diagnostic and rectification **equipment** for engine mechanical, electrical, electronic, hydraulic and fluid systems; specialist engine repair tools and general workshop equipment.

Engine electrical faults, their diagnosis and correction

15. how engine mechanical, electrical, electronic and hydraulic and fluid systems are constructed, operate, dismantled and reassembled.



- 16. the types and causes of engine mechanical, electrical, electronic and hydraulic and fluid system, component and unit faults and failures.
- 17. engine mechanical, electrical, electronic and hydraulic and fluid component and unit replacement procedures, the circumstances which will necessitate replacement and other possible courses of action.
- 18. how to find, interpret and use sources of information on engine electrical and electronic operating specifications, diagnostic test procedures, repair procedures and legal requirements.
- 19. motorcycle operating specifications for limits, fits and tolerances relating to engine mechanical, electrical, electronic and hydraulic and fluid systems for the motorcycle(s) on which you work.
- 20. how to select and carry out the correct diagnostic testing method.
- 21. how to assess and interpret results of the condition of components.
- 22. how to make cost effective recommendations for rectification.
- 23. how to carry out the **rectification activities** listed in the Scoping Statement for this unit in order to correct faults in the engine mechanical, electrical, electronic and hydraulic and fluid systems.
- 24. the relationship between test methodology and the faults repaired the use of appropriate testing methods.

- a. wear suitable personal protective equipment and use motorcycle coverings when using **diagnostic methods** and carrying out **rectification activities**.
- b. support the identification of **faults**, by reviewing motorcycle:
 - technical data
 - diagnostic test procedures.
- c. prepare, connect and test all the required **equipment** following manufacturers' instructions prior to use.
- d. use **diagnostic methods** which are relevant to the symptoms presented.
- e. collect sufficient diagnostic information in a systematic way to enable an accurate diagnosis of engine system faults.



- f. correctly interpret test results from engine mechanical, electrical, electronic, hydraulic, fluid and lubrication systems.
- g. identify and record any system deviation from acceptable limits accurately.
- h. ensure your assessment of dismantled sub-assemblies, components and units identifies their condition and suitability for repair or replacement, accurately.
- i. inform the relevant person(s) promptly where repairs are uneconomic or unsatisfactory to perform.
- j. use the **equipment** required, correctly and safely throughout all **rectification activities**.
- k. carry out all **rectification activities** following:
 - manufacturers' instructions
 - your workplace procedures
 - health and safety requirements.
- I. work in a way which minimises the risk of :
 - damage to other motorcycle systems
 - damage to other components and units
 - contact with leakages
 - contact with hazardous substances
 - electric shock.
- m. ensure all repaired and replaced components and units conform to the motorcycle operating specification and any legal requirements.
- n. when necessary, adjust components and units correctly to ensure that they operate to meet system requirements.
- o. record and report any additional faults you notice during the course of work promptly.
- p. use testing methods which are suitable for assessing the performance of the system rectified.
- q. ensure the engine system rectified performs to the motorcycle operating specification and any legal requirements prior to return to the customer.
- r. ensure your records are accurate, complete and passed to the relevant person(s) promptly in the format required.
- s. complete all system diagnostic activities within the agreed timescale.
- t. report any anticipated delays in completion to the relevant person(s) promptly.



NOS MC08 – Diagnose and Rectify Motorcycle Chassis System Faults

NOS OVERVIEW

This NOS is about diagnosing and rectifying faults occurring within motorcycle steering, suspension systems and braking systems.

KEY WORDS AND PHRASES

Agreed timescales:

Examples include: manufacturer's recommended work times, job times set by your company or a job time agreed with a specific customer.

Chassis or Frame Area

Suspension systems, steering systems, braking systems to include ABS/traction control, wheels and tyres.

Chassis system faults

These are faults that require a two or more step diagnostic activity using a prescribed process or format to identify the cause.

Diagnostic information

This relates to mechanical condition, including wear, run out, pressures, flow, leakage and electrical measurements such as voltage and wave form, electronic systems data, including fault codes, sensor measurements and control unit outputs and/or signals.

Functional testing

Examples include: suspension and steering alignment, performance testing and road testing where relevant.

Recommendations

Examples include: servicing, dismantling for further inspection and test, repair and replacement.

Motorcycles:

These can be any of the following – motorcycles, scooters, mopeds and those with a third wheel.

SCOPE OF THIS NOS:

All of the items listed below form part of this National Occupational Standard

1. Chassis systems are



- a. steering
- b. suspension
- c. braking

2. Diagnostic methods are

- a. visual
- b. aural
- c. measurement
- d. functional testing
- e. electrical and electronic systems testing

3. Equipment is

- a. diagnostic and rectification equipment for chassis mechanical systems
- b. diagnostic and rectification equipment for chassis electrical and electronic systems
- c. diagnostic and rectification equipment for hydraulic braking systems
- d. specialist repair tools
- e. general workshop equipment

4. Faults are

- a. mechanical
- b. electrical and electronic
- c. hydraulic

5. **Rectification activities** are:

- a. dismantling
- b. replacement of units and components
- c. adjustment of units and components
- d. repairs to wiring and connectors
- e. re-programming motorcycle systems
- f. reassembly
- g. functional testing

ESSENTIAL KNOWLEDGE

You need to understand:

Legislative and organisational requirements and procedures

1. the health and safety legislation and workplace procedures relevant to workshop practices and personal and motorcycle protection when diagnosing and rectifying chassis faults.



- 2. legal requirements relating to the motorcycle (including road safety requirements).
- 3. your workplace procedures for
 - recording diagnostic and rectification activities
 - the referral of problems
 - reporting delays to the completion of work.
- 4. the importance of, documenting diagnostic and rectification information.
- 5. the importance of working to agreed timescales and keeping others informed of progress.
- 6. the relationship between time, costs and profitability.
- 7. the importance of reporting anticipated delays to the relevant person(s) promptly.

Electrical and electronic principles

- 8. electrical and electronic principles associated with chassis systems, including types of sensors and actuators, their application and operation.
- 9. how electrical and electronic chassis systems operate, including electrical component function, electrical inputs, outputs, voltages and wave form, digital principles.
- 10. the interaction between electrical, electronic and mechanical components within motorcycle chassis systems.
- 11. electrical symbols, units and terms.
- 12. electrical safety procedures.

Use of diagnostic and rectification equipment

- 13. how to prepare and test the accuracy of diagnostic testing equipment.
- 14. how to use diagnostic and rectification **equipment** for chassis mechanical, electrical, hydraulic systems, specialist repair tools and general workshop equipment.

Chassis faults, their diagnosis and correction

- 15. how chassis mechanical (including wheels), electrical, electronic and hydraulic systems are constructed, dismantled, reassembled and operate.
- 16. the types and causes of chassis mechanical (including wheels), electrical, electronic and hydraulic system, component and unit faults and failures.



- 17. chassis mechanical, electrical and hydraulic component and unit replacement procedures, the circumstances which will necessitate replacement and other possible courses of action.
- 18. how to minimise the likelihood of corrosion when assembling and reassembling motorcycles.
- 19. how to find, interpret and use sources of information on chassis electrical operating specifications, diagnostic test procedures, repair procedures and legal requirements.
- 20. motorcycle operating specifications for limits, fits and tolerances relating to chassis mechanical, electrical, electronic and hydraulic braking systems for the motorcycle(s) on which you work.
- 21. how to select and carry out the correct diagnostic testing method.
- 22. how to assess and interpret results of the condition of components.
- 23. how to make cost effective recommendations for rectification.
- 24. the correct choice and applications of lubricants and fluids.
- 25. how to carry out the **rectification activities** listed in the Scoping Statement for this unit in order to correct faults in the chassis mechanical, electrical, electronic and hydraulic braking systems.
- 26. the relationship between test methodology and the faults repaired the use of appropriate testing methods.

To be competent you must:

- h. wear suitable personal protective equipment and use motorcycle coverings when using **diagnostic methods** and carrying out **rectification activities**.
- i. support the identification of **faults**, by reviewing motorcycle:
 - technical data
 - diagnostic test procedures.
- j. prepare, connect and test all the required **equipment** following manufacturers' instructions prior to use.
- k. use **diagnostic methods** which are relevant to the symptoms presented.
- I. collect diagnostic information in a systematic way relevant to the diagnostic methods used.
- m. collect sufficient diagnostic information to enable an accurate diagnosis of chassis system faults.

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- n. identify and record any system deviation from acceptable limits accurately.
- h. ensure your assessment of dismantled sub-assemblies, components and units identifies their condition and suitability for repair or replacement, accurately.
- i. inform the relevant person(s) promptly where repairs are uneconomic or unsatisfactory to perform.
- j. use the **equipment** required, correctly and safely throughout all **rectification activities**.
- k. carry out all rectification activities following:
 - manufacturers' instructions
 - your workplace procedures
 - health and safety requirements.
- I. work in a way which minimises the risk of :
 - damage to other motorcycle systems
 - damage to other components and units
 - contact with leakages
 - contact with hazardous substances
 - electric shock.
- m. ensure all repaired and replaced components and units conform to the motorcycle operating specification and any legal requirements.
- n. when necessary, adjust components and units correctly to ensure that they operate to meet system requirements.
- o. record and report any additional faults you notice during the course of work promptly.
- p. use testing methods which are suitable for assessing the performance of the system rectified.
- q. ensure the chassis system rectified performs to the motorcycle operating specification and any legal requirements prior to return to the customer.
- r. ensure your records are accurate, complete and passed to the relevant person(s) promptly in the format required.
- s. complete all system diagnostic activities within the agreed timescale.
- t. report any anticipated delays in completion to the relevant person(s) promptly.



NOS MC11 – Overhaul Motorcycle Mechanical Units

NOS OVERVIEW

This NOS is about the bench-based overhaul of motorcycle mechanical units, involving dismantling, assessment, repair, replacement or adjustment of internal components together with re-assembly and testing.

KEY WORDS AND PHRASES

Adjustments

Examples include, adjustments made to clearances, gaps, settings, pressures, tensions, pre-load.

Agreed timescales

Examples include manufacturer's recommended work times, job times set by your company or a job time agreed with a specific customer.

Assessments

Examples include those for wear, damage, alignment, corrosion, leakage, distortion and balance.

Equipment

Examples include hand tools, pullers and presses, measuring instruments, general workshop equipment and special service tools.

Functional testing

This refers to any applicable functional tests carried out after overhaul.

Motorcycles:

These can be any of the following – motorcycles, scooters, mopeds and those with a third wheel.

Testing methods

As prescribed by the appropriate technical literature.

SCOPE OF THIS NOS:

All of the items listed below form part of this National Occupational Standard

1. **Overhaul activities** are



- a. dismantling
- b. assessment,
- c. repair
- d. replacement
- e. adjustment of internal components
- f. re-assembly
- g. functional testing

2. Mechanical Units are

- a. engines
- b. transmission and drive systems
- c. steering
- d. suspension
- e. motorcycle chassis assemblies

ESSENTIAL KNOWLEDGE

You need to understand:

Legislative and organisational requirements and procedures

- 1. the legal requirements applicable to the motorcycle units and assemblies overhauled (including road safety requirements).
- 2. the health and safety legislation and workplace procedures relevant to workshop practices and personal and motorcycle protection.
- 3. your workplace procedures for
 - recording overhaul activities
 - the referral of problems
 - reporting delays to the completion of work.
- 4. the importance of, documenting repair information.
- 5. the importance of working to agreed timescales and keeping others informed of progress.
- 6. the importance of reporting any anticipated delays to the relevant person(s) promptly.

Equipment

- 7. how to prepare, and assess the accuracy and operation of all the overhauling and testing equipment required.
- 8. how to use all the overhauling and testing equipment required.

Motorcycle Mechanical unit overhauling activities



- 9. how to find, interpret and use sources of information on motorcycle overhauling procedures and statutory requirements.
- 10. how motorcycle mechanical units and assemblies are constructed and their operation.
- 11. how motorcycle mechanical units and assemblies are dismantled and reassembled.
- 12. the types and possible causes of faults in motorcycle mechanical units and assemblies units and how to identify them.
- 13. motorcycle operating specification for limits, fits and tolerances and where this information can be sourced.
- 14. how to assess the condition evident within unit motorcycle sub-assemblies and components.
- 15. the cost-benefit relationship between the reconditioning, repair and replacement of components within units.
- 16. how to carry out **overhauling activities** for the type(s) of motorcycle unit worked upon.
- 17. the relationship between test methodology and the faults repaired the use of appropriate testing methods.
- 18. how to test and evaluate the performance of overhauled units against the operating specification.
- 19. how to interpret test results.
- 20. how to make suitable adjustments to motorcycle components and units.
- 21. how to work safely avoiding personal injury, damage to components leakage and hazardous substances.

- a. wear suitable personal protective equipment throughout all **overhauling activities**.
- b. use suitable sources of technical information to support your **overhauling activities**.
- c. assess and prepare all the equipment required, following manufacturers' instructions, prior to use.
- d. use the tools and equipment required correctly and safely throughout all **overhauling activities**.



- e. carry out all **overhauling activities** following:
 - the manufacturer's instructions
 - your workplace procedures
 - health and safety requirements.
- f. work in a way which minimises the risk of:
 - damage to other components
 - leakages
 - contact with hazardous substances.
- g. ensure your assessment of the dismantled unit identifies accurately its condition and suitability for overhaul.
- h. inform the relevant person(s) promptly where an overhaul is uneconomic or unsatisfactory to perform.
- i. use testing methods which comply with the manufacturer's requirements.
- j. when necessary, adjust the unit's components correctly to ensure that they operate to meet the motorcycle operating requirements.
- k. ensure the overhauled units and assemblies conform to the motorcycle operating specification and any legal requirements.
- I. ensure your overhaul records are accurate, complete and passed to the relevant person(s) promptly in the format required.
- m. complete all **overhauling activities** within the agreed timescale.
- n. report any anticipated delays in completion to the relevant person(s) promptly.



NOS MC12 – Diagnose and Rectify Motorcycle Transmission and Drive System Faults

NOS OVERVIEW

This NOS is about diagnosing and rectifying faults occurring within motorcycle gearboxes, hubs and bearings, drive and clutches.

KEY WORDS AND PHRASES

Agreed timescales:

Examples include: manufacturer's recommended work times, job times set by your company or a job time agreed with a specific customer.

Transmission and drive system faults

These are faults that require a two or more step diagnostic activity using a prescribed process or format to identify the cause.

Diagnostic information

This relates to mechanical condition, including wear, run out and any electrical measurements.

Functional testing

Examples include performance testing and road testing where relevant.

Transmission Area

Clutch assemblies, clutch operating systems, gear boxes, drives, hubs and final drive assemblies.

Recommendations

Examples include: servicing, dismantling for further inspection and test, repair and replacement.

Motorcycles:

These can be any of the following – motorcycles, scooters and mopeds and those with a third wheel.

SCOPE OF THIS NOS:

All of the items listed below form part of this National Occupational Standard

1. Transmission and drive systems are

a. gearbox



- b. hubs and bearings
- c. drive
- d. clutch

2. Diagnostic methods are

- a. visual
- b. aural
- c. measurement
- d. functional testing

3. Equipment is

- a. diagnostic and rectification equipment for transmission mechanical systems
- b. specialist repair tools
- c. general workshop equipment

4. Faults are

- a. mechanical
- b. hydraulic

5. **Rectification activities** are:

- a. dismantling
- b. replacement of units and components
- c. adjustment of units and components
- d. reassembly
- e. functional testing

ESSENTIAL KNOWLEDGE

You need to understand:

Legislative and organisational requirements and procedures

- 1. the health and safety legislation and workplace procedures relevant to workshop practices and personal and motorcycle protection when diagnosing and rectifying transmission and drive faults.
- 2. legal requirements relating to the motorcycle (including road safety requirements).
- 3. your workplace procedures for
 - recording diagnostic and rectification activities
 - the referral of problems
 - reporting delays to the completion of work
- 4. the importance of, documenting diagnostic and rectification information.



- 5. the importance of working to agreed timescales and keeping others informed of progress.
- 6. the relationship between time, costs and profitability.
- 7. the importance of reporting anticipated delays to the relevant person(s) promptly.

Use of diagnostic and rectification equipment

- 8. how to prepare and test the accuracy of diagnostic testing equipment.
- 9. how to use diagnostic and rectification **equipment** for transmission and drive mechanical and hydraulic systems, specialist repair tools and general workshop equipment

Transmission and drive faults, their diagnosis and correction

10. how motorcycle transmission and drive mechanical and hydraulic systems are constructed, dismantled, reassembled and operate.

- 11. the types and causes of motorcycle transmission and drive mechanical and hydraulic system, component and unit faults and failures
- 12. transmission and drive mechanical and hydraulic component and unit replacement procedures, the circumstances which will necessitate replacement and other possible courses of action.

13. how to find, interpret and use sources of information on transmission and drive operating specifications, diagnostic test procedures, repair procedures and legal requirements.

14. motorcycle operating specifications for limits, fits and tolerances relating to transmission and drive mechanical and hydraulic systems for the motorcycle(s) on which you work.

15. how to select and carry out the correct diagnostic testing method

- 16. how to assess and interpret results of the condition of components
- 17. how to make cost effective recommendations for rectification.

18. how to carry out the **rectification activities** listed in the Scoping Statement for this unit in order to correct faults in the transmission and drive mechanical and hydraulic systems.

19. the relationship between test methodology and the faults repaired – the use of appropriate testing methods

PERFORMANCE OBJECTIVES



- o. wear suitable personal protective equipment and use motorcycle coverings when using **diagnostic methods** and carrying out **rectification activities**.
- p. support the identification of **faults**, by reviewing motorcycle:
 - technical data
 - diagnostic test procedures.
- q. prepare, connect and test all the required **equipment** following manufacturers' instructions prior to use.
- r. use **diagnostic methods** which are relevant to the symptoms presented.
- s. collect diagnostic information in a systematic way relevant to the diagnostic methods used.
- t. collect sufficient diagnostic information to enable an accurate diagnosis of transmission and drive system faults.
- u. identify and record any system deviation from acceptable limits accurately.

h. ensure your assessment of dismantled sub-assemblies, components and units identifies their condition and suitability for repair or replacement, accurately.

i. inform the relevant person(s) promptly where repairs are uneconomic or unsatisfactory to perform.

- j. use the **equipment** required, correctly and safely throughout all **rectification activities**.
- k. carry out all rectification activities following:
 - manufacturers' instructions
 - your workplace procedures
 - health and safety requirements.
- I. work in a way which minimises the risk of :
 - damage to other motorcycle systems
 - damage to other components and units
 - contact with leakages
 - contact with hazardous substances
 - electric shock.
- m. ensure all repaired and replaced components and units conform to the motorcycle operating specification and any legal requirements.
- n. when necessary, adjust components and units correctly to ensure that they operate to meet system requirements.
- o. record and report any additional faults you notice during the course of work promptly.



p. use testing methods which are suitable for assessing the performance of the system rectified.

- q. ensure the transmission and drive system rectified performs to the motorcycle operating specification and any legal requirements prior to return to the customer.
- r. ensure your records are accurate, complete and passed to the relevant person(s) promptly in the format required.
- s. complete all system diagnostic activities within the agreed timescale.
- t. report any anticipated delays in completion to the relevant person(s) promptly.



NOS MC13 – Remove and Replace Motorcycle Drive Units and Components

NOS OVERVIEW

This NOS is about removing and replacing units and components where dismantling and re-assembly of drive systems is required. It is also about evaluating the performance of replaced units and components. The units and components concerned are those **outside those replaced as part of normal routine**, **motorcycle maintenance (servicing) activities**.

KEY WORDS AND PHRASES

Agreed timescales:

Examples include: manufacturer's recommended work times, job times set by your company or a job time agreed with a specific customer.

Units and components:

Any unit or component from the drive systems defined in the Scoping Statement below.

Motorcycles:

These can be any of the following – motorcycles, scooters, mopeds and those with a third wheel.

SCOPE OF THIS NOS:

All of the items listed below form part of this National Occupational Standard

1. Equipment is

- a. hand tools
- b. special workshop tools
- c. general workshop equipment

2. Testing methods are:

- a. visual
- b. aural
- c. functional
- d. measurement

3. Drive systems are

- a. chain and sprockets
- b. wheel bearings and seals
- c. drive shafts
- d. gear drive
- e. belts and pulleys



ESSENTIAL KNOWLEDGE

You need to understand:

Legislative and organisational requirements and procedures

- 1. the legal requirements relating to the motorcycle (including road safety requirements).
- 2. the health and safety legislation and workplace procedures relevant to motorcycle maintenance activities and personal and motorcycle protection.
- 3. your workplace procedures for
 - recording removal and replacement information
 - the referral of problems
 - reporting delays to the completion of work.
- 4. the importance of documenting removal and replacement information.
- 5. the importance of working to agreed timescales and keeping others informed of progress.
- 6. the relationship between time and costs.
- 7. the importance of reporting anticipated delays to the relevant person(s) promptly.

Use of technical information

- 8. how to find, interpret and use sources of information applicable to **unit and component** removal and replacement within **drive systems.**
- 9. the importance of using the correct sources of technical information.
- 10. the purpose of and how to use identification codes.

Drive system operation and construction

- 11. how **drive systems** and their related **units and components** are constructed and their operation for those motorcycles worked upon.
- 12. how **drive systems** and their related **units and components** are , removed and replaced for those motorcycles worked upon.

Equipment

13. how to prepare, test and use all the removal and replacement equipment required.

Drive system unit and component removal and replacement



- 14. how to remove and replace **drive system** mechanical components for those motorcycles worked upon .
- 15. how to file, fit, tap, thread, cut and drill plastics and metals.
- 16. how to select and use gaskets, sealants, seals, fittings, fasteners and locking devices.

17. how to test and evaluate the performance of replacement drive system **units and components** and the reassembled system against the motorcycle operating specifications and any legal requirements.

18. the relationship between testing methods and the drive system **units and components** replaced – the use of appropriate test methods.

19. when replacement units and components must meet the original equipment specification (OES) for warranty or other requirements.

20. how to work safely avoiding damage to other motorcycle systems, components and units and contact with leakage and hazardous substances.

PERFORMANCE OBJECTIVES

- hh. wear suitable personal protective equipment and use motorcycle coverings throughout all removal and replacement activities.
- ii. support your removal and replacement activities by reviewing
 - motorcycle technical data
 - removal and replacement procedures
 - legal requirements.
- jj. prepare, test and use all the **equipment** required following manufacturers' instructions.
- kk. carry out all removal and replacement activities following;
 - manufacturers' instructions
 - your workplace procedures
 - health and safety requirements.
- II. you work in a way which minimises the risk of:
 - damage to other motorcycle systems
 - damage to other motorcycle components and units
 - contact with leakage
 - contact with hazardous substances.



- mm. ensure replaced drive **units and components** conform to the motorcycle operating specification and any legal requirements.
- nn. record and report any additional faults you notice during the course of your work promptly.
- oo. use suitable **testing methods** to evaluate the performance of the reassembled system accurately.
- pp. ensure the reassembled **drive system** performs to the motorcycle operating specification and meets any legal requirements prior to return to the customer.
- qq. ensure your records are accurate, complete and passed to the relevant person(s) promptly in the format required.
- rr. complete all removal and replacement activities within the agreed timescale.
- I. you report any expected delays in completion to the relevant person(s) promptly.



NOS VF04MC – Inspect, Repair and Replace Motorcycle Tyres

NOS OVERVIEW

This NOS is about inspecting motorcycle tyres on wheels not fitted to a machine to assess their condition and suitability for repair and carrying out necessary repair, replacement or refitting activities.

KEY WORDS AND PHRASES

Agreed time scales

Examples include job times set by your company or agreed with a specific customer

Common tyre faults

Examples include: normal wear; abnormal wear due to misalignment; incorrect inflation, adjustment, installation and application; damage.

Motorcycle

Use of this term will also include quads, tricycles, scooters, mopeds and sidecar combinations.

Sources of information

Examples include: tyre manufacturer's publications, Government publications, company documentation, BSI publications.

SCOPE OF THIS NOS:

- 1. Motorcycle tyres are
 - a. tube
 - b. tubeless

2. Tools and equipment are

- a. lifting and supporting equipment
- c. tyre removal and refitting tools and equipment
- d. measuring equipment
- e. tyre inflation equipment
- f. wheel balancing equipment
- g. tyre repair tools

3. Inspection covers

- a. wheel rim and fixings
- b. tyres



- c. valves
- d. inner tubes

4. **Inspection techniques** are

- a. visual
- b. measurements of tread depth
- c. tyre pressures
- d. balance

ESSENTIAL KNOWLEDGE

You need to understand:

Legislative and organisational requirements and procedures

- 1. the health and safety legislation and workplace procedures relevant to workshop practices and personal and motorcycle protection.
- 2. the legal requirements for motorcycle tyres, and the relevant parts of the prevailing British and or European standard for the repair of **motorcycle** tyres.
- 3. how to isolate scrapped tyres and dispose of waste materials in your workplace.
- 4. the importance of disposing of waste safely and the consequences of not doing so to others and the environment.
- 5. the importance of selecting, using and maintaining the appropriate personal protective equipment when inspecting, repairing and replacing **motorcycle tyres**.
- 6. the agreed work specification.
- 7. your workplace procedures for
 - the referral of problems
 - reporting of delays to the completion of work
 - personal protection.
- 8. the requirements for protecting the motorcycle and contents from damage before, during and after removing and replacing wheels.
- 9. the importance of working to agreed timescales and keeping others informed of progress.
- 10. the relationship between time and cost.
- 11. the importance of reporting anticipated delays to the relevant person(s) promptly



Tools and equipment

12. how to select, prepare and use the **tools and equipment** necessary for inspecting, repairing, replacing and refitting **motorcycle tyres**.

Materials

- 13. the types of tyre repair materials available (i.e. rubber only plug patch unit and rubber only patch and filler material).
- 14. the repair material manufacturer's instructions for the application of repair materials for the type(s) of tyres on which you are working.

Tyre inspection, removal, repair and replacement

- 15. how to find and use suitable sources of information on **motorcycle tyres.**
- 16. the purpose, function and construction of **motorcycle tyres**.
- 17. the types of valves used in **motorcycle tyres** and their installation techniques.
- 18. the common faults associated with **motorcycle tyres** and their causes (e.g. normal wear; abnormal wear due to misalignment; incorrect inflation, adjustment, installation and application; damage).
- 19. the manufacturer's recommendations on the 'repairability' of their tyres.
- 20. what a tyre **inspection** should cover.
- 21. the **inspection techniques** associated with **motorcycle tyres** and how to conduct them.
- 22. the importance of taking accurate measurements and ensuring any adjustments are within acceptable tolerances for the motorcycle.
- 23. the importance of basing your decision to replace or repair tyres upon the results of your inspection.
- 24. how to remove, repair, replace and refit **motorcycle tyres**, wheels, tubes and valves.
- 25. the importance of checking the safety and operation of equipment prior to use.
- 26. how to work safely avoiding injury to yourself, others and damage to wheels when removing and refitting **motorcycle tyre.**



- a. use suitable personal protective equipment throughout all **motorcycle tyre inspection**, repair and replacement activities.
- b. use suitable sources of technical information to support your **inspection**, repair and replacement of **motorcycle tyres**.
- c. work in a way which minimizes the risk of damage to the motorcycle and its systems.
- d. confirm that all the **tools and equipment** required are safe prior to use.
- e. ensure your **inspection techniques** are sufficiently in depth to identify the severity of all tyre, valve, inner tube and wheel defects.
- f. conduct all **inspection**, repair and replacement activities following:
 - manufacturers' instructions
 - your workplace procedures
 - health and safety requirements
 - the current industry standard for tyre repair.
- g. carry out all **inspection**, repair and replacement activities using:
 - suitable tools and equipment
 - the correct inspection techniques
 - the correct type and size of component.
- h. clearly identify and record the cause of any tyre, valve, inner tube or wheel faults following your normal workplace procedures.
- i. make clear and accurate recommendations for further action to the relevant person(s), when necessary.
- j. ensure that replaced and refitted **motorcycle tyres**, valves and any inner tubes are correctly fitted and balanced and conform to legal requirements prior to releasing motorcycle to the customer.
- k. dispose of removed components safely to meet legal and your workplace requirements.
- I. complete all activities within the agreed timescale.
- m. report any anticipated delays in completion and any additional faults identified to the relevant person(s) promptly.



NOS AE06MC – Diagnose and Rectify Motorcycle Electrical Faults

NOS OVERVIEW

This NOS is about identifying and rectifying electrical faults occurring within a variety of electrical systems within motor cycle equipment.

KEY WORDS AND PHRASES

Agreed timescales:

Examples include: manufacturer's recommended work times, job times set by your company or a job time agreed with a specific customer.

Electrical rider safety systems

Examples are traction control, power mode selection, starter inhibit systems.

Electrical testing equipment

This can include multimeter, hydrometer, battery tester.

Electrical faults:

These are faults that require a two or more step inspection and a series of test results to identify the cause.

Comfort and Convenience systems:

Examples are heated grips, electrically adjusted screens, navigation and communication systems.

Motor cycles:

These can be the following – motor cycles, scooters, mopeds and those with a third wheel.

SCOPE OF THIS NOS:

All of the items listed below form part of this National Occupational Standard

- 1. Electrical faults occurring within
 - a. lighting systems
 - b. security and alarm systems
 - c. comfort and convenience systems
 - d. electrical rider safety systems
 - e. monitoring and instrumentation systems

2. Electrical and electronic testing equipment covers:

- a. multimeters
- b. battery testing equipment
- c. dedicated and computer based diagnostic equipment

3. Tools and equipment:

a. hand tools



- b. special purpose tools
- c. general workshop equipment

4. Electrical and electronic testing techniques are:

- a. aural
- b. voltage, resistance and current measuring
- c. frequency measuring
- d. visual
- e. dedicated and computer based testing

5. Rectification activities are:

- a. replacing electrical components
- b. repairing wiring and connectors
- c. re-programming

ESSENTIAL KNOWLEDGE

You need to understand:

Legislative and organisational requirements and procedures

- 1. the health and safety legislation and workplace procedures relevant to workshop practices and personal and motor cycle protection when diagnosing and rectifying complex electrical equipment electrical faults.
- 2. legal requirements relating to motor cycle electrics (including road safety requirements).
- 3. your workplace procedures for
 - recording fault location and **rectification activities**
 - the referral of problems
 - reporting delays to the completion of work.
- 4. the importance of, documenting diagnostic and rectification information.
- 5. the importance of working to agreed timescales and keeping others informed of progress.
- 6. the relationship between time, costs and profitability.
- 7. the importance of reporting anticipated delays to the relevant person(s) promptly.

Electrical and electronic principles

8. electrical and electronic principles, including Ohms Law, voltage, power, current (AC/DC) resistance, magnetism, electromagnetism and electromagnetic induction, digital principles.



- 9. electrical symbols, units and terms.
- 10. electrical safety procedures.
- 11. how electrical equipment electrical and electronic systems are constructed, dismantled, reassembled and re-programmed.
- 12. how electrical equipment electrical and electronic systems operate, including electrical component function, electrical inputs, outputs, voltages and wave form patterns.
- 13. the interaction between electrical, electronic and mechanical components within the systems defined in Scoping Statement 1 above.
- 14. how equipment electrical systems interlink and interact, including multiplexing.

Use of electrical testing equipment

- 15. how to prepare and test the accuracy of diagnostic testing equipment.
- 16. how to use electrical and electronic testing equipment

Motorcycle electrical equipment faults, their diagnosis and correction

17. the types and causes of electrical equipment system faults and failures.

18. electrical equipment component and unit replacement procedures, the circumstances which will necessitate replacement and other possible courses of action.

19. how to find, interpret and use sources of information on electrical equipment electrical operating specifications, diagnostic test procedures, repair procedures and legal requirements.

- 20. how to carry out systematic diagnostic testing of electrical equipment electrical and electronic systems using **electrical testing techniques**.
- 21. how to select the most appropriate diagnostic testing method for the symptoms presented.
- 22. how to interpret test results and motorcycle data in order to identify the location and cause of motorcycle system faults.
- 23. how to rectify electrical and electronic faults in electrical systems within electrical equipment (i.e. lighting systems, security and alarm systems, comfort and convenience, electrical rider safety, monitoring and instrumentation systems).
- 24. how to make suitable adjustments to components and units.
- 25. how to make cost effective recommendations for rectification.



To be competent you must:

- v. wear suitable personal protective equipment and use motor cycle coverings when using **electrical testing techniques** and carrying out **rectification activities**.
- w. support the identification of **complex electrical faults**, by reviewing motor cycle:
 - technical data
 - diagnostic test procedures.
- x. prepare, connect and test all the required **electrical and electronic testing equipment** following manufacturers' instructions prior to use.
- y. use **electrical and electronic testing techniques** which are relevant to the symptoms presented.
- z. collect sufficient diagnostic information in a systematic way to enable an accurate diagnosis of electrical system faults.
- aa. identify and record any system deviation from acceptable limits accurately.
- bb. make cost effective recommendations for rectification based upon your analysis of the diagnostic information gained.

h. use the **tools and equipment** required, correctly and safely throughout all rectification activities.

- i. carry out all **rectification activities** following:
 - manufacturers' instructions
 - your workplace procedures
 - health and safety requirements.
- j. work in a way which minimises the risk of :
 - damage to other motorcycle systems
 - damage to other components and units
 - contact with leakages
 - contact with hazardous substances
 - electric shock.

k. ensure all repaired and replaced electrical components and units conform to the motorcycle operating specification and any legal requirements.

I. when necessary, adjust components and units correctly to ensure that they operate to meet system requirements.

m. ensure the electrical system rectified performs to the motorcycle operating specification and any legal requirements prior to return to the customer.



- n. ensure your records are accurate, complete and passed to the relevant person(s) promptly in the format required.
- o. complete all system diagnostic activities within the agreed timescale.
- p. report any anticipated delays in completion to the relevant person(s) promptly.



NOS BP03MC Remove and Fit Non Welded Non-Structural Motorcycle Body Panels

NOS OVERVIEW

This NOS is about removing and fitting basic non welded panels such as front

fairings, seat cowlings, screens, mirrors and luggage fittings on motorcycles.

KEY WORDS AND PHRASES

Agreed timescales

Examples include job times set by your company or agreed with a specific customer.

Motorcycles

These can be the following – motorcycles, scooters, mopeds and those with a third wheel.

SCOPE OF THIS NOS:

All of the items listed below form part of this National Occupational Standard.

1. Motorcycle non welded non-structural body panels are

- a. front fairings
- b. seat cowlings
- c. mudguards
- d. screens
- e. mirror
- f. luggage and fittings

2. Tools and equipment are

- a. hand tools
- b. general workshop tools

ESSENTIAL KNOWLEDGE



You need to understand:

Legislative and organisational requirements and procedures

- 1. the health, safety and legal requirements relating to the removal and fitting of **motorcycle non welded non-structural body panels.**
- 2. your workplace procedures for:
 - the referral of problems
 - reporting of delays to the completion of work
 - completion of work records.
- 3. the work that needs to be done and the standard required.
- 4. the requirements for protecting the motorcycle and contents from damage before, during and after removing and fitting activities.
- 5. the importance of selecting, using and maintaining the appropriate personal protective equipment when removing and fitting motorcycle non welded non-structural body panels.

Removing and fitting motorcycle non-structural body panels

- 6. how to find, interpret and use sources of information applicable to the removal and fitting of basic motorcycle non welded non-structural body panels.
- 7. how to select, check and use all the tools and equipment required to remove and fit basic motorcycle non welded non-structural body panels.
- 8. the different types of mechanical fixings for **motorcycle non welded** nonstructural body panels and when and why they should be used.
- 9. the correct procedures and processes for removing and fitting motorcycle non welded non-structural body panels.
- 10. the need for correct alignment of panels and the methods used to achieve this.
- 11. the types of quality control checks that can be used to ensure correct alignment and contour of panels and operation of components to manufacturer's specification.
- 12. the methods of storing removed panels and the importance of storing them correctly.



- a. use the appropriate personal protective equipment when removing and fitting **motorcycle non welded non-structural body panels.**
- b. protect the motorcycle and its contents effectively when removing and fitting **motorcycle non welded non-structural body panels.**
- c. select and use the correct **tools and equipment** for the panels you are going to remove or fit.
- d. ensure that the **tools and equipment** you require are in a safe working condition.
- e. remove and fit **motorcycle non welded non-structural body panels** following:
 - removal and fitting procedures
 - manufacturers' instructions
 - your workplace procedures
 - health, safety and legal requirements.
- f. avoid damaging other components, units and panels on the motorcycle.
- g. store all removed panels safely in the correct location.
- h. realign the panels you have fitted correctly in a way which regains their original manufactured gaps.
- i. check that the components you have fitted operate correctly following the manufacturer's specification.
- j. report any additional faults you notice during the course of your work to the relevant person(s) promptly.
- k. report any delays in completing your work to the relevant person(s) promptly.
- I. remove and fit **motorcycle non welded non-structural body panels** within the agreed timescale.
- m. complete work records accurately, in the format required and pass them to the relevant person(s) promptly.