IMICA01

Contribute to Housekeeping in Motor Vehicle Environments

Overview

This NOS is about the routine maintenance of the workplace, carrying out basic, non-specialist checks of relevant workplace equipment, cleaning the work area and using resources as directed.

Performance criteria

You must be able to:

1. select and use suitable personal protective equipment throughout all housekeeping and equipment maintenance activities
2. select and use cleaning equipment which is of the right type and suitable for the task
3. use resources as directed and for their intended purpose only following workplace procedures
4. follow workplace policies, schedules and manufacturers' instructions when cleaning and maintaining equipment
5. ensure your equipment maintenance activities keep your equipment fit for purpose
6. clean the work area(s), for which you are responsible, at the specified time and frequency
7. store your equipment in a safe manner which permits ease of access and identification for use
8. carry out housekeeping activities safely and in a way which minimises inconvenience to customers and staff
9. ensure your housekeeping activities keep your work area clean and free from debris and waste materials
10. dispose of used cleaning agents, materials and debris to comply with relevant legal, environmental and workplace requirements
11. report any faulty or damaged equipment to the relevant person(s) clearly and promptly
12. report any anticipated delays in completion to the relevant person(s) promptly

Knowledge and understanding

You need to know and understand:

1. the scope of your job responsibilities for the use and maintenance of equipment and your work area
2. workplace policies, schedules and legislation for housekeeping activities and equipment maintenance
3. the manufacturer's requirements for the cleaning and general, non-specialist maintenance of the 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
7. how to select and use equipment appropriate to the task
8. how to store equipment safely and accessibly
9. how to report faulty or damaged equipment
10. how to work safely when cleaning and maintaining equipment
11. how to select and use work area cleaning equipment, materials and agents
12. how to clean and maintain the equipment and work areas for which you are responsible
13. how to dispose of unused cleaning agents, materials and debris to comply with relevant legal, environmental and workplace requirements
14. the properties and hazards associated with the use of cleaning agents and materials
15. the importance of wearing personal protective equipment
16. the importance of using resources as directed and for their intended purpose only

Scope/range

1. Equipment maintenance covers:

a. routine checks on equipment
b. cleaning equipment
c. 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 taking into account relevant environmental factors

3. Motor Vehicle could include:

a. Light Vehicles
b. Heavy Vehicles/Commercial Vehicles
c. Motorcycles
d. Lift Trucks
e. Heavy Vehicle Trailers
f. Caravan and Motorhomes

IMICA01

Contribute to Housekeeping in Motor Vehicle Environments

Developed by	IMI
Version Number	2
Date Approved	October 2014
Indicative Review Date	October 2017
Validity	Current
Status	Original
Originating Organisation	IMI
Original URN	IMIARBG1
Relevant Occupations	Accident Repair Technicians; Automotive Aftermarket Electrical Enhancement Technician (Automotive); Auto-electrical Technician (Automotive); Auto and Mobile Installation Technicians; Automotive Paint Supervisor; Automotive Paint Technician; Body Builder (Automotive); Body Builder Workshop Controller (Automotive); Body Repair and Alignment Technician (Automotive); Body Repair Technician (Automotive); Caravan and Motorhome Diagnostic Technician (Automotive); Caravan and Motorhome Service Technician (Automotive); Caravans and Motorhomes Diagnostic Technician (Automotive); Caravans and Motorhomes Service Technician (Automotive); Cosmetic Refinishing Technician (Automotive); Cosmetic Senior Refinishing Technician (Automotive); Heavy Vehicle Diagnostic Technician (Automotive); Heavy Vehicle Fleet/Service Manager (Automotive); Heavy Vehicle Master Technician (Automotive); Heavy Vehicle Service Technician (Automotive); Heavy Vehicle Trailer Diagnostic Technician (Automotive); Heavy Vehicle Trailer Fleet/Service Manager (Automotive); Heavy Vehicle Trailer Master Technician (Automotive); Heavy Vehicle Trailer Service Technician (Automotive); Lift Truck Service Technician (Automotive); Lift Truck Trailer Diagnostic Technician (Automotive);

	Lift Truck Trailer Master Technician (Automotive); Lift Truck Workshop Controller ; Light Vehicle Diagnostic Technician (Automotive); Light Vehicle Fleet/Service Manager (Automotive); Light Vehicle Master Technician (Automotive); Light Vehicle Service Technician (Automotive); Maintenance and Repair Technicians; Maintenance Team Technician; Maintenance Fitter; Mechanical Fitter; Mechanical Maintenance Technician; Mechanical Supervisor; Mechanical, Electrical and Trim Assistant Technician (Automotive); Mechanical, Electrical and Trim Technician (Automotive); Motor Repair and Rewind Electrician; Motor Vehicle Valeting (Automotive); Motorcycle Diagnostic Technician; Motorcycle Fleet/Service Manager (Automotive); Motorcycle Master Technician (Automotive); Motorcycle Service Technician; Motorsport Technician; PDR Senior Technician (Automotive); PDR Technician (Automotive); Rental and Leasing Customer Service Advisor (Automotive); Rental and Leasing Maintenance Advisors (Automotive); Rental and Leasing Technical Service Advisor (Automotive); Roadside Assistance Manager; Roadside Assistance Operator; Roadside Assistance Operators; Roadside Assistance Senior Operator; Roadside Assistance Senior Technician; Roadside Assistance Technician; Sales Executive (Automotive); Sales Controller (Automotive); Tyre Fitting Operations (Automotive); Tyre exhaust and windscreen fitters ; Vehicle Damage Assessment Operators; Vehicle Damage Assessor (Automotive); Vehicle Fitters; Vehicle Fitting Operations (Automotive); Vehicle Parts Operative; Vehicle Parts Operators; Vehicle Parts Supervisor; Vehicle Recovery Operator; Vehicle Recovery Operators; Vehicle Recovery Technical Operator; Vehicle Sales Operators; Vehicle Trades; Vehicle Valeter (Automotive)
Suite	Accident Repair - Body; Accident Repair - Joining; Accident Repair - Paint; Accident Repair - SMART - Cosmetic; Accident Repair - SMART - PDR; Accident Repair - Mechanical, Electrical and Trim; Body Building; Maintenance and Repair - Caravans and Motorhomes; Maintenance and Repair - Heavy Vehicle; Maintenance and Repair - Heavy Vehicle Trailer; Maintenance and Repair - Lift Truck; Maintenance and Repair - Light Vehicle; Maintenance and Repair - Motorcycle; Auto Electrical and Mobile Electrical Installation; Roadside Assistance; Vehicle Damage Assessment Operations; Vehicle Fitting; Vehicle Parts Operations; Vehicle Recovery; Vehicle Sales v3
Keywords	Contribute, Housekeeping, Motor Vehicle Environments

IMICA02

Reduce Risk(s) to Health and Safety in the Motor Vehicle Environment

Overview

This NOS covers the basic, legally required health and safety duties of everyone in the workplace. This NOS does **not** require a full Risk Assessment to be undertaken. This NOS is about identifying hazards and evaluating risk(s) in the workplace as well as reducing the risk(s) to health and safety in the workplace. This NOS is about having an appreciation of identifiable risk(s) in the workplace and knowing how to identify them and deal with them.

It describes the competence required to ensure that:

- actions or lack of action do not create any health and safety risk(s)
- identifiable risk(s) in the workplace are not ignored
- sensible action is taken to put things right, including reporting situations which pose an identifiable risk(s) to people in the workplace, and seeking advice from others

Performance criteria

You must be able to:

1. carry out your working practices in accordance with relevant legislative requirements
2. identify the correct personal and vehicle protective equipment required to correctly carry out your workplace practices
3. carry out your workplace practices and workplace policies using the correct personal protective equipment
4. rectify health and safety risk(s) that are within your capability and scope of your job responsibilities
5. pass on any suggestions for reducing risk(s) to health and safety within your job role to the responsible persons
6. ensure your personal conduct in the workplace does not endanger the health and safety of yourself or other persons
7. follow the workplace policies and suppliers' or manufacturers' instructions for the safe use of equipment, materials and products and report any differences identified
8. ensure your personal presentation at work ensures the health and safety of yourself and others, meets any relevant legislative duties and is in accordance with workplace policies

Knowledge and understanding

You need to know and understand:

1. the current health and safety legislation, regulations and workplace policies that govern your working practices
2. your duties and responsibilities for current health and safety as defined by any specific legislation covering your job role and where to access the information
3. agreed workplace policies relating to controlling risk(s) to health and safety the responsible person(s) to whom you report health and safety concerns
4. what hazards may exist in your workplace
5. health and safety risk(s) which may be present in your own job role and the precautions you must take
6. the importance of remaining alert to the presence of hazards in the whole workplace
7. how to deal with and report risk(s)
8. the requirements and guidance on the precautions
9. the specific workplace policies including safe working practices covering your job role
10. suppliers' and manufacturers' instructions for the safe use of equipment, materials and products
11. the importance of personal presentation in maintaining health and safety in the workplace
12. the importance of personal conduct in maintaining the health and safety of yourself and others
13. the importance of personal protective equipment, when and where it should be used and the importance of maintaining it correctly
14. your scope and responsibility for rectifying risk(s)

Scope/range

1. Risk(s) resulting from:

a. use of tools and equipment relevant to the task
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

3. Motor Vehicle could include:

a. Light Vehicles
b. Heavy Vehicles/Commercial Vehicles
c. Motorcycles
d. Lift Trucks
e. Heavy Vehicle Trailers
f. Caravan and Motorhomes

IMICA02

Reduce Risk(s) to Health and Safety in the Motor Vehicle Environment

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Validity	Current
Status	Original
Originating Organisation	IMI
Original URN	IMIARB2
Relevant Occupations	Auto-electrical Technician (Automotive); Auto and Mobile Installation Technicians; Automotive Aftermarket Electrical Enhancement Technician (Automotive); Automotive Paint Supervisor; Automotive Paint Technician; Body Builder (Automotive); Body Builder Workshop Controller (Automotive); Body Repair and Alignment Technician (Automotive); Body Repair Technician (Automotive); Caravan and Motorhome Diagnostic Technician (Automotive); Caravan and Motorhome Service Technician (Automotive); Caravans and Motorhomes Diagnostic Technician (Automotive); Caravans and Motorhomes Service Technician (Automotive); Heavy Vehicle Diagnostic Technician (Automotive); Heavy Vehicle Fleet/Service Manager (Automotive); Heavy Vehicle Master Technician (Automotive); Heavy Vehicle Service Technician (Automotive); Heavy Vehicle Trailer Diagnostic Technician (Automotive); Heavy Vehicle Trailer Fleet/Service Manager (Automotive); Heavy Vehicle Trailer Master Technician (Automotive); Heavy Vehicle Trailer Service Technician (Automotive); Lift Truck Service Technician (Automotive); Lift Truck Trailer Diagnostic Technician (Automotive); Lift Truck Trailer Master Technician (Automotive); Lift Truck Workshop Controller ; Light Vehicle Diagnostic

	Technician (Automotive); Light Vehicle Fleet/Service Manager (Automotive); Light Vehicle Master Technician (Automotive); Light Vehicle Service Technician (Automotive); Maintenance and Repair Technicians; Maintenance Fitter; Maintenance Team Technician; Mechanical, Electrical and Trim Technician (Automotive); Mechanical, Electrical and Trim Assistant Technician (Automotive); Motorcycle Diagnostic Technician; Motor Vehicle Valeting (Automotive); Motorcycle Fleet/Service Manager (Automotive); Motorcycle Master Technician (Automotive); Motorcycle Service Technician; Motorsport Technician; PDR Senior Technician (Automotive); PDR Technician (Automotive); Rental and Leasing Customer Service Advisor (Automotive); Rental and Leasing Maintenance Advisors (Automotive); Rental and Leasing Technical Service Advisor (Automotive); Roadside Assistance Manager; Roadside Assistance Operator; Roadside Assistance Operators; Roadside Assistance Senior Operator; Roadside Assistance Senior Technician; Roadside Assistance Technician; Sales Controller (Automotive); Sales Executive (Automotive); Senior Automotive Paint Technician; Tyre Fitting Operations (Automotive); Tyre exhaust and windscreen fitters ; Vehicle Damage Assessment Operators; Vehicle Damage Assessor (Automotive); Vehicle Fitters; Vehicle Fitting Operations (Automotive); Vehicle Parts Operative; Vehicle Parts Operators; Vehicle Parts Supervisor; Vehicle Recovery Operator; Vehicle Recovery Operators; Vehicle Recovery Technical Operator; Vehicle Sales Operators; Vehicle Trades; Vehicle Valeter (Automotive)
Suite	Accident Repair - Body; Accident Repair - Joining; Accident Repair - Mechanical, Electrical and Trim; Accident Repair - Paint; Accident Repair - SMART - Cosmetic; Accident Repair - SMART - PDR; Auto Electrical and Mobile Electrical Installation; Body Building; Maintenance and Repair - Caravans and Motorhomes; Maintenance and Repair - Heavy Vehicle; Maintenance and Repair - Heavy Vehicle Trailer; Maintenance and Repair - Lift Truck; Maintenance and Repair - Light Vehicle; Maintenance and Repair - Motorcycle; Vehicle Damage Assessment Operations; Vehicle Fitting; Vehicle Parts Operations; Vehicle Recovery; Vehicle Sales v3
Keywords	Identify, Agree, Motor Vehicle, Customer Needs

IMICA03

Maintain Working Relationships in the Motor Vehicle Environment

Overview

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

Performance criteria

You must be able to:

1. contribute to team working by initiating ideas and co-operating with colleagues
2. respond promptly and willingly to requests for assistance from colleagues which fall within the limits of your own job responsibilities and capabilities
3. refer colleagues to the relevant person(s) where requests fall outside your responsibility and capability
4. give colleagues sufficient, accurate information and support to meet their work needs
5. make requests for assistance to colleagues clearly and courteously
6. use methods of communication which meet the needs of colleagues
7. treat colleagues in a way which shows respect for their views and opinions and promotes goodwill
8. make and keep achievable commitments to colleagues
9. inform colleagues promptly of any problems or information likely to affect their own work

Knowledge and understanding

You need to know and understand:

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
4. how to use suitable and effective communication skills when responding to and interacting with others
5. how to adapt communication methods to satisfy the needs of colleagues
6. how to report problems using appropriate 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 acknowledging other peoples' views and opinions
9. the importance of making and honouring realistic commitments to colleagues
10. the implications of inappropriate communication

Scope/range

1. Colleagues are:

a. immediate work colleagues
b. supervisors and managers

2. Requests for assistance covering:

a. technical assistance
b. personal assistance

3. Motor Vehicle could include:

a. Light Vehicles
b. Heavy Vehicles/Commercial Vehicles
c. Motorcycles
d. Lift Trucks
e. Heavy Vehicle Trailers
f. Caravan and Motorhomes

Developed by	IMI
Version Number	2
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Status	Original
Originating Organisation	IMI
Original URN	IMIARB3
Relevant Occupations	Accident Repair Technicians; Automotive Aftermarket Electrical Enhancement Technician (Automotive); Auto and Mobile Installation Technicians; Auto-electrical Technician (Automotive); Automotive Paint Supervisor; Automotive Paint Technician; Body Builder (Automotive); Body Builder Workshop Controller (Automotive); Body Repair and Alignment Technician (Automotive); Body Repair Technician (Automotive); Caravan and Motorhome Diagnostic Technician (Automotive); Caravan and Motorhome Service Technician (Automotive); Caravans and Motorhomes Diagnostic Technician (Automotive); Caravans and Motorhomes Service Technician (Automotive); Cosmetic Senior Refinishing Technician (Automotive); Cosmetic Refinishing Technician (Automotive); Heavy Vehicle Diagnostic Technician (Automotive); Heavy Vehicle Fleet/Service Manager (Automotive); Heavy Vehicle Master Technician (Automotive); Heavy Vehicle Service Technician (Automotive); Heavy Vehicle Trailer Diagnostic Technician (Automotive); Heavy Vehicle Trailer Fleet/Service Manager (Automotive); Heavy Vehicle Trailer Master Technician (Automotive); Heavy Vehicle Trailer Service Technician (Automotive); Lift Truck Service Technician (Automotive); Lift Truck Trailer Diagnostic Technician (Automotive);

	Lift Truck Trailer Master Technician (Automotive); Lift Truck Workshop Controller ; Light Vehicle Diagnostic Technician (Automotive); Light Vehicle Fleet/Service Manager (Automotive); Light Vehicle Master Technician (Automotive); Light Vehicle Service Technician (Automotive); Maintenance and Repair Technicians; Mechanical, Electrical and Trim Technician (Automotive); Mechanical, Electrical and Trim Assistant Technician (Automotive); Motor Repair and Rewind Electrician; Motor Vehicle Valeting (Automotive); Motorcycle Diagnostic Technician; Motorcycle Fleet/Service Manager (Automotive); Motorcycle Master Technician (Automotive); Motorcycle Service Technician; Motorsport Technician; PDR Senior Technician (Automotive); PDR Technician (Automotive); Rental and Leasing Customer Service Advisor (Automotive); Rental and Leasing Maintenance Advisors (Automotive); Rental and Leasing Technical Service Advisor (Automotive); Roadside Assistance Manager; Roadside Assistance Operator; Roadside Assistance Operators; Roadside Assistance Senior Operator; Roadside Assistance Senior Technician; Roadside Assistance Technician; Sales Executive (Automotive); Sales Controller (Automotive); Tyre exhaust and windscreen fitters ; Tyre Fitting Operations (Automotive); Vehicle Damage Assessment Operators; Vehicle Damage Assessor (Automotive); Vehicle Fitters; Vehicle Fitting Operations (Automotive); Vehicle Parts Operative; Vehicle Parts Operators; Vehicle Parts Supervisor; Vehicle Recovery Operators; Vehicle Recovery Operator; Vehicle Recovery Technical Operator; Vehicle Valeter (Automotive)
Suite	2010 Incremental change to the NOS in Interpreting; Accident Repair - Body; Accident Repair - Joining; Accident Repair - Mechanical, Electrical and Trim; Accident Repair - Paint; Accident Repair - SMART - Cosmetic; Accident Repair - SMART - PDR; Auto Electrical and Mobile Electrical Installation; Automotive Glazing; Maintenance and Repair - Caravans and Motorhomes; Maintenance and Repair - Heavy Vehicle; Maintenance and Repair - Heavy Vehicle Trailer; Maintenance and Repair - Lift Truck; Maintenance and Repair - Light Vehicle; Maintenance and Repair - Motorcycle; Roadside Assistance; Vehicle Damage Assessment Operations; Vehicle Fitting; Vehicle Sales v3; Vehicle Recovery; Vehicle Parts Operations
Keywords	Maintain Working Relationships, Motor Vehicle Environment

IMICA04

Use of tools and equipment in Motor Vehicle Environments

Overview

This NOS is about the basic use of tools, materials and fabrications relevant to the Automotive Sector. This NOS is also about interpreting information, adopting safe and healthy working practices and selecting tools, materials and equipment. This NOS is for those working in technical support roles and is also appropriate for workshop planners.

Performance criteria

You must be able to:

1. select and use suitable personal protective equipment appropriate to the task
2. interpret the information supplied relating to the task
3. carry out pre-start preparation inspections on tools and equipment in accordance with approved procedures
4. carry out operations using tools and equipment in accordance with safe working practices to achieve the work outcome
5. highlight and identify problems associated with tools and equipment to the relevant person
6. demonstrate work skills to manufacture and repair components using measure, mark out, file, fit, tap, thread, cut, drill, finish, position and secure
7. use and maintain the relevant tools and equipment
8. dispose of waste in accordance with relevant legislation including environmental to maintain a clean work space
9. carry out checks in accordance with manufacturer's/operator's guidance, schedules, relevant legislation and official guidance and relevant organisational requirements.
10. demonstrate correct selection of materials for manufacture or repair
11. inspect, clean and store tools and equipment after use

Knowledge and understanding

You need to know and understand:

1. the relevant organisational procedures developed to report and rectify inappropriate information and unsuitable resources, and how they are implemented
2. the types of information, their source and how they are interpreted
3. the relevant organisational procedures to solve problems with the information and why it is important they are followed
4. the relevant legislation and official guidance and how it is applied
5. what the accident reporting procedures are and who is responsible for making the reports
6. why and when personal protective equipment (PPE) should be used
7. the relevant requirements for the disposal of waste, used materials and debris taking into account relevant environmental factors
8. material properties relevant to the task and their appropriate applications
9. the appropriate use of materials for fabrication and repair
10. how to file, fit, tap, thread, cut and drill mterials you are working on
11. how to select and use gaskets, sealants, seals, fittings and fasteners

Scope/range

1. Tools and equipment are:

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

2. Motor Vehicle could include:

a. Light Vehicles
b. Heavy Vehicles/Commercial Vehicles
c. Motorcycles
d. Lift Trucks
e. Heavy Vehicle Trailers
f. Caravan and Motorhomes

IMICA04

Use of tools and equipment in Motor Vehicle Environments

Developed by	IMI
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Date Approved	October 2014
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Validity	Current
Status	Original
Originating Organisation	IMIARB4
Original URN	IMIARB4
Relevant Occupations	Automotive Aftermarket Electrical Enhancement Technician (Automotive); Auto-electrical Technician (Automotive); Body Builder (Automotive); Body Builder Workshop Controller (Automotive); Body Repair and Alignment Technician (Automotive); Body Repair Technician (Automotive); Caravan and Motorhome Diagnostic Technician (Automotive); Caravan and Motorhome Service Technician (Automotive); Caravans and Motorhomes Diagnostic Technician (Automotive); Caravans and Motorhomes Service Technician (Automotive); Cosmetic Refinishing Technician (Automotive); Cosmetic Senior Refinishing Technician (Automotive); Heavy Vehicle Diagnostic Technician (Automotive); Heavy Vehicle Fleet/Service Manager (Automotive); Heavy Vehicle Master Technician (Automotive); Heavy Vehicle Service Technician (Automotive); Heavy Vehicle Trailer Diagnostic Technician (Automotive); Heavy Vehicle Trailer Fleet/Service Manager (Automotive); Heavy Vehicle Trailer Master Technician (Automotive); Heavy Vehicle Trailer Service Technician (Automotive); Lift Truck Service Technician (Automotive); Lift Truck Trailer Diagnostic Technician (Automotive); Lift Truck Trailer Master Technician (Automotive); Lift Truck Workshop Controller ; Light Vehicle Diagnostic

	Technician (Automotive); Light Vehicle Fleet/Service Manager (Automotive); Light Vehicle Master Technician (Automotive); Light Vehicle Service Technician (Automotive); Maintenance and Repair Technicians; Maintenance Electrician; Mechanical, Electrical and Trim Assistant Technician (Automotive); Mechanical, Electrical and Trim Technician (Automotive); Motor Repair and Rewind Electrician; Motorcycle Diagnostic Technician; Motorcycle Master Technician (Automotive); Motorcycle Service Technician; PDR Technician (Automotive); PDR Senior Technician (Automotive); Roadside Assistance Operator; Roadside Assistance Operators; Roadside Assistance Senior Operator; Roadside Assistance Senior Technician; Roadside Assistance Technician; Tyre Fitting Operations (Automotive); Tyre exhaust and windscreen fitters ; Vehicle Fitters; Vehicle Fitting Operations (Automotive); Vehicle Recovery Operator; Vehicle Recovery Operators; Vehicle Recovery Technical Operator
Suite	Accident Repair - Body; Accident Repair - Joining; Accident Repair - Mechanical, Electrical and Trim; Accident Repair - SMART - Cosmetic; Accident Repair - SMART - PDR; Auto Electrical and Mobile Electrical Installation; Body Building; Maintenance and Repair - Heavy Vehicle; Maintenance and Repair - Heavy Vehicle Trailer; Maintenance and Repair - Lift Truck; Maintenance and Repair - Light Vehicle; Maintenance and Repair - Motorcycle; Maintenance and Repair - Caravans and Motorhomes; Maintenance and Repair - Motorcycle; Vehicle Recovery; Vehicle Fitting
Keywords	Tools, Equipment, Motor Vehicle Engineering

IMIARBG6
Enable learning through demonstration and instruction

Overview

This NOS is about demonstrating skills and methods to learners and instructing learners in procedures and processes.

These include; demonstrating how equipment is used, showing a learner how to do something, giving learners instructions on what to do or how to carry out a particular activity, deciding when you should use demonstration or instruction to encourage learning, reviewing the potential use of technology- based learning, checking on the progress of learners and giving feedback to learners.

IMIARBG6

Enable learning through demonstration and instruction

Performance criteria

You must be able to:

Demonstrate skills and methods to learners

P1 base the demonstration on an analysis of the skills needed and the order they must be learned in

P2 ensure that the demonstration is accurate and realistic

P3 structure the demonstration so the learner can get the most out of it

P4 encourage learners to ask questions and get explanation at appropriate stages in the demonstration

P5 give learners the opportunities to practise the skill being demonstrated and give them positive feedback

P6 give extra demonstrations of the skills being taught to reinforce learning

P7 ensure that demonstrations take place in a safe environment and allow learners to see the demonstration clearly

P8 respond to the needs of learners during the demonstration

P9 reduce distractions and disruptions as much as possible

You must be able to:

Instruct learners

P10 match instruction to the needs of the learners

P11 identify which learning outcomes will be achieved through instruction

P12 ensure that the manner, level and speed of the instruction encourages learners to take part

P13 regularly check that learners understand and adapt instruction as appropriate

P14 give learners positive feedback on the learning experience and the outcomes achieved

P15 identify anything that prevents learning and review this with the learners

IMIARBG6

Enable learning through demonstration and instruction

Knowledge and understanding

You need to know and understand:

The nature and role of demonstrations and instruction

K1 the separate areas of demonstrations which encourage learning
K2 which types of learning are best achieved and supported through demonstrations
K3 how to identify and use different learning opportunities
K4 how to structure demonstrations and instruction sessions
K5 how to choose from a range of demonstration techniques

You need to know and understand:

Principles and concepts

K6 how to put learners at their ease and encourage them to take part
K7 how to choose between demonstration and instruction as learning methods
K8 how to identify individual learning needs
K9 which factors are likely to prevent learning and how to overcome them
K10 how to check learners' understanding and progress
K11 how to put information in order and decide whether the language you will be using is appropriate
K12 how to choose and prepare appropriate materials, including technology based materials
K13 the separate areas of instructional techniques which encourage learning
K14 which types of learning are best achieved and supported through instruction

You need to know and understand:

External factors influencing human resource development

K15 how to make sure everybody acts in line with health, safety and environmental protection l legislation and best practice
K16 how to analyse and use developments in learning and new ways of delivery, including technology-based learning

IMIARBG6

Enable learning through demonstration and instruction

Developed by	IMI Ltd
Version number	1
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Indicative review date	January 2012
Validity	Current
Status	Original
Originating organisation	IMI Ltd
Original URN	G6
Relevant occupations	Maintenance and Repair Technicians; Accident Repair Technicians; Auto and Mobile Installation Technicians; Roadside Assistance Operators; Vehicle Recovery Operators; Vehicle Damage Assessment Operators; Vehicle Parts Operators; Vehicle Sales Operators
Suite	Maintenance and Repair – Light Vehicle; Heavy Vehicle, Heavy Vehicle Trailer; Motorcycle; Lift Truck; Caravans and Motorhomes; Accident Repair – Body; Paint; Joining; Mechanical, Electrical & Trim (MET); SMART Cosmetic; SMART Paintless Dent Removal (PDR); Auto electrical and Mobile Electrical Installation; Body Building; Roadside Assistance; Vehicle Recovery; Vehicle Damage Assessors; Vehicle Fitting; Vehicle Parts; Vehicle Sales
Key words	[KEYWORDS]

IMICA08

Identify and Agree the Motor Vehicle Customer Needs

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.

Performance criteria

You must be able to:

1. obtain the relevant information from the customer to make an assessment of their own and perceived vehicle needs
2. 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 and the estimated costs
3. provide advice and information clearly and in a form and manner which the customer will understand
4. actively encourage customers to ask questions and seek clarification during your conversation.
5. support the accurate identification and clarification of customer and vehicle needs, by referring to vehicle data and operating procedures
6. agree with the customer before accepting the vehicle and record the extent and nature of the work to be undertaken, the terms and conditions of acceptance, the cost and the timescale
7. confirm your customer's understanding of the agreement you have made
8. ensure your recording systems are complete, accurate, in the format required and signed by the customer where necessary
9. pass all completed records to the next person in the process promptly
10. gain further customer approval where the contracted agreement is likely to be exceeded

Knowledge and understanding

You need to know and understand:

1. the relevant legal requirements of consumer legislation and the consequences of your own actions in respect of these
2. the different types of company and product warranties that you deal with within your organisation
3. the limits of your own responsibility for accepting and returning vehicles
4. the importance of keeping customers informed and managing their expectations
5. your workplace requirements for the completion of records and documentation
6. how to communicate effectively with, and listen to, customers
7. how to adapt your language when explaining technical matters to non-technical customers
8. how to extract the relevant information to identify and agree the motor vehicle customer needs
9. how to care for customers and achieve customer satisfaction
10. the range of options available to meet customer needs
11. the range and type of services offered by your organisation
12. the effect of non-availability of resource upon the receipt of customer vehicles and for the completion of the work
13. where and how to access costing and work completion time information

Scope/range

1. Motor Vehicle could include:

a. Light Vehicles
b. Heavy Vehicles/Commercial Vehicles
c. Motorcycles
d. Lift Trucks
e. Heavy Vehicle Trailers
f. Caravan and Motorhomes

IMICA08

Identify and Agree the Motor Vehicle Customer Needs

Developed by	IMI
Version Number	2
Date Approved	October 2014
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Validity	Current
Status	Original
Originating Organisation	IMI
Original URN	IMIARB8
Relevant Occupations	Body Builder (Automotive); Body Builder Workshop Controller (Automotive); Body Repair and Alignment Technician (Automotive); Body Repair Technician (Automotive); Caravan and Motorhome Diagnostic Technician (Automotive); Caravan and Motorhome Service Technician (Automotive); Caravans and Motorhomes Diagnostic Technician (Automotive); Caravans and Motorhomes Service Technician (Automotive); Cosmetic Senior Refinishing Technician (Automotive); Cosmetic Refinishing Technician (Automotive); Heavy Vehicle Diagnostic Technician (Automotive); Heavy Vehicle Fleet/Service Manager (Automotive); Heavy Vehicle Master Technician (Automotive); Heavy Vehicle Service Technician (Automotive); Heavy Vehicle Trailer Diagnostic Technician (Automotive); Heavy Vehicle Trailer Fleet/Service Manager (Automotive); Heavy Vehicle Trailer Master Technician (Automotive); Heavy Vehicle Trailer Service Technician (Automotive); Lift Truck Service Technician (Automotive); Lift Truck Trailer Diagnostic Technician (Automotive); Lift Truck Trailer Master Technician (Automotive); Lift Truck Workshop Controller ; Light Vehicle Diagnostic Technician (Automotive); Light Vehicle Fleet/Service Manager (Automotive); Light Vehicle Master Technician (Automotive); Light Vehicle

	Service Technician (Automotive); Maintenance and Repair Technicians; Mechanical, Electrical and Trim Assistant Technician (Automotive); Mechanical, Electrical and Trim Technician (Automotive); Motorcycle Diagnostic Technician; Motorcycle Fleet/Service Manager (Automotive); Motorcycle Master Technician (Automotive); Motorcycle Service Technician; PDR Senior Technician (Automotive); PDR Technician (Automotive); Roadside Assistance Manager; Roadside Assistance Operator; Roadside Assistance Operators; Roadside Assistance Senior Operator; Roadside Assistance Senior Technician; Roadside Assistance Technician
Suite	Accident Repair - Body; Accident Repair - Joining; Accident Repair - Mechanical, Electrical and Trim; Accident Repair - SMART - Cosmetic; Accident Repair - SMART - PDR; Auto Electrical and Mobile Electrical Installation; Body Building; Maintenance and Repair - Caravans and Motorhomes; Maintenance and Repair - Heavy Vehicle; Maintenance and Repair - Heavy Vehicle Trailer; Maintenance and Repair - Lift Truck; Maintenance and Repair - Light Vehicle; Maintenance and Repair - Motorcycle; Roadside Assistance; Vehicle Fitting; Vehicle Recovery
Keywords	Reduce Risk(s), Health and Safety, Motor Vehicle Environment

IMIAEMEI01

Locate and correct motor vehicle electrical faults

Overview

This standard is about conducting a range of routine electrical tests and identifying simple faults on a variety of basic electrical components and undertaking suitable correction activities.

Performance criteria

You must be able to:

1. select and use appropriate personal protective equipment and use appropriate vehicle protection at all times
2. support the identification of electrical faults, by reviewing manufacturer:
2.1 technical data
2.2 diagnostic test procedures
3. confirm that all equipment is safe prior to use
4. check the functionality of the electrical system(s) / component
5. carry out tests on electrical system(s) relevant to the identified fault on the vehicle
6. use electrical testing techniques which are suitable for the electrical system(s) / components concerned
7. carry out all diagnostic & **rectification activities** following:
7.1 manufacturers' procedures
7.2 industry recognised repair methods
7.3 health and safety requirements
8. work in a way which minimises the risk of :
8.1 damage to other vehicle systems
8.2 damage to other components and units
8.3 contact with leakages
8.4 contact with hazardous substances
8.5 injury to yourself and others
9. ensure your electrical testing techniques clearly identify the cause/s of identified fault/s
10. report the results of your tests and any recommendations for further action to the relevant person(s) clearly and accurately in an appropriate format, when necessary
11. seek the assistance of the relevant person(s) promptly where the results of your testing are unclear
12. ensure all removed, replaced and repaired components are secure and function as specified by the manufacturer prior to release to the customer
13. dispose of any removed electrical components safely to comply with legal and environmental requirements in line with your workplace procedures
14. complete all electrical fault location and correction activities within the **agreed timescale**
15. report any anticipated delays in completion to the relevant person(s) promptly

Knowledge and understanding

You need to know and understand:

Legislative and organisational requirements and procedures

1. the current health and safety legislation and workplace procedures relevant to workshop practices and personal and vehicle protection when carrying out electrical fault location and correction activities
2. statutory legal requirements relating to the vehicle and the components fitted
3. your workplace procedures for:
3.1 recording fault location and correction activities
3.2 reporting the results of tests
3.3 the referral of problems
3.4 reporting delays to the completion of work
4. the importance of working to recognised diagnostic procedures and processes and obtaining the correct information for diagnostic activities to proceed
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 any anticipated delays to the relevant person(s) promptly

Electrical and electronic principles

8. vehicle earthing principles and earthing methods
9. basic electrical and electronic principles, including Ohms Law, voltage, power, current (AC/DC), resistance, magnetism, electromagnetism and electromagnetic induction
10. circuit protection
11. how electrical / electronic systems within motor vehicles operate electrical / electronic symbols, units and terms
12. how to interpret wiring diagrams
13. the risks and dangers associated with hybrid and alternative fuel vehicles

Use of electrical testing equipment and electrical testing techniques

14. when and where to use voltage, ohm, amp and specific gravity measurements and simple circuit testing techniques
15. how to measure voltage, resistance, current and specific gravity and simple circuit

16. testing techniques to determine the cause(s) of a fault
17. how to use the electrical testing equipment required
18. how to conduct tests following electrical safety and workplace procedures
19. how to determine the suitability of a component based upon calculations using ohms law
20. how to interpret the results of your tests
21. how to make recommendations based upon the results of your tests
22. the importance of basing your recommendations upon the results of your tests

Vehicle electrical equipment faults and their correction

23. how to identify faults and damage in vehicle electrical systems through effective interpretation of test results
24. the common underlying causes of faults and damage within the electrical components
25. the purpose and function of motors, capacitors, resistors, semi-conductors, transistors, actuators and sensors (including active or self-generating and passive or modulating)
26. how to dispose of any removed electrical components in line with legislation and organisational procedures
27. how to perform safety and operational checks on the tools and equipment required to remove and replace electrical components
28. how to check that any replaced electrical components are functioning correctly and the importance of doing so before release to the customer

Scope/range

1. Examples of Electrical components include:
a. power storage devices
b. power generating devices
c. vehicle starting devices
d. vehicle lighting devices
e. wiring harness and connection devices
f. vehicle sensors and actuators
g. circuit protection devices
h. infotainment systems
i. telematic / tracking systems
j. security systems
k. communication systems
l. comfort systems
m. safety systems

2. Electrical testing equipment includes:
a. volt meters
b. ammeters
c. ohmmeters
d. battery testing equipment
e. diagnostic equipment
f. oscilloscope

3. Tools and equipment include:
a. hand tools
b. special purpose tools
c. general workshop equipment
d. specialist electrical testing equipment

4. Electrical testing techniques include:
a. voltage measuring
b. current measuring
c. resistance measuring
d. visual
e. aural
f. functional

5. Electrical fault location within systems:

As listed within 1. above

Glossary

Rectification activities are defined as:
An appropriate repair or replacement that rectifies the fault(s) identified from the diagnostic activities carried out. Post repair diagnostic confirmation of rectification.

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

Vehicles:
These can be any of the following – light vehicles, commercial vehicles, motorcycles, mopeds and scooters

Locate and correct motor vehicle electrical faults

Developed by	IMI
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Relevant Occupations	Auto-electrical Technician (Automotive); Auto and Mobile Installation Technicians
Suite	Auto Electrical and Mobile Electrical Installation
Keywords	locate correct motor vehicle electrical faults

IMIAEMEI02

Install motor vehicle electrical system enhancements

Overview

This standard is about fitting electrical features and components to enhance the original vehicle features and specification to meet customer requirements.

Performance criteria

You must be able to:

1. select and use appropriate personal protective equipment and use appropriate vehicle protection at all times
2. support your enhancement activities by reviewing:
2.1 fitting procedures
2.2 technical data
2.3 legal requirements
3. prepare and test all the tools and equipment required, following manufacturers' instructions, prior to use
4. fit components that are compatible with the vehicle specification and customer requirements
5. carry out all enhancement activities following:
5.1 manufacturers' procedures
5.2 your workplace procedures
5.3 health and safety requirements
6. work in a way which minimises the risk of:
6.1 damage to other vehicle systems
6.2 damage to other components and units
6.3 contact with leakages
6.4 contact with hazardous substances
6.5 injury to yourself and others
7. adjust the enhancements fitted and vehicle systems to ensure that they comply with all relevant specification for effective operation, if appropriate
8. ensure all enhancements function to specification prior to handover to the customer
9. complete all enhancement activities within the **agreed timescale**
10. report any anticipated delays in completion to the relevant person(s) promptly

Knowledge and understanding

You need to know and understand:

Legislative and organisational requirements and procedures

1. the current health and safety legislation and workplace procedures relevant to workshop practices and personal and vehicle protection when fitting vehicle electrical enhancements
2. the legal implications of the mechanical and electrical enhancement of vehicles
3. your workplace procedures for:
3.1 recording enhancement activities
3.2 recording functionality of enhancements
3.3 the referral of problems
3.4 reporting delays to the completion of work
4. the importance of working to **agreed timescales** and keeping others informed of progress
5. the relationship between time and costs
6. the importance of reporting anticipated delays to the relevant person(s) promptly

Tools and Equipment

7. how to prepare, test and use general workshop, special tools and appropriate testing equipment

Electrical and electronic principles

8. vehicle earthing principles and earthing methods
9. basic electrical and electronic principles, including Ohms Law, voltage, power, current (AC/DC) resistance, magnetism, electromagnetism, electromagnetic induction and EMF
10. circuit protection devices
11. electrical safety procedures
12. electric symbols, units and terms
13. how charging, lighting and warning systems operate

Fitting electrical enhancements

14. the risks and dangers associated with hybrid and alternative fuel vehicles
15. the function and purpose of any enhancements and how they operate
16. how to interpret and follow technical instructions and customer

requirements
17. how enhancement opportunities may be limited by the existing vehicle systems and fitments
18. the advantages and disadvantages of electrical customisation including possible impact on warranty and customers' vehicle insurance
19. manufacturers' requirements relating to the components to be fitted
20. how to fit enhancements
21. how to check that the components to be fitted are compatible with the vehicle specification and customer requirements
22. how to check that newly fitted enhancements are functioning correctly and the importance of doing so before handover to the customer
23. how to make adjustments to components and any surrounding systems to ensure correct operation
24. how to work safely avoiding injury to yourself, others and damage to vehicles

Scope/range

1. Enhancements include:
a. audio systems
b. visual systems
c. communication systems
d. safety systems
e. lamps
f. tow bar electrical systems
g. navigation systems
h. security systems
i. auxiliary power supplies
j. telematics / vehicle location systems
k. software modification

2.Tools and equipment include:
a. hand tools
b. specialist fitting tools
c. general workshop equipment
d. electrical and electronic testing equipment

Glossary

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

Vehicles:
These can be any of the following – light vehicles, commercial vehicles, motorcycles, mopeds and scooters

IMIAEMEI02

Install motor vehicle electrical system enhancements

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Status	Original
Originating Organisation	IMI
Original URN	IMIAEMEI02
Relevant Occupations	Auto-electrical Technician (Automotive)
Suite	Auto Electrical and Mobile Electrical Installation
Keywords	Install motor vehicle electrical system enhancements

IMIAEMEI03

Repair and overhaul motor vehicle electrical units

Overview

This standard is about the off vehicle repair and overhauling of electrical units and components.

Performance criteria

You must be able to:

1. select and use suitable personal protective equipment throughout all repair activities
2. use suitable sources of technical information to support your repair activities
3. assess and prepare all the electrical equipment required, following manufacturers' instructions, prior to use
4. use the electrical equipment required correctly and safely throughout all repairing activities
5. carry out all repair activities following:
5.1 manufacturers' instructions
5.2 recognised researched repair methods
5.3 health and safety requirements
6. work in a way which minimises the risk of:
6.1 damage to other vehicle systems
6.2 damage to other components and units
6.3 contact with leakages
6.4 contact with hazardous substances
6.5 injury to yourself and others
7. ensure your initial assessment and testing methods of electrical units identifies accurately their condition and suitability for reconditioning, repair or replacement
8. inform the relevant person(s) promptly where a repair is uneconomic or unsatisfactory to perform
9. use electrical testing methods which are suitable for assessing the performance of the type of electrical unit repaired
10. adjust electrical units and associated components to the specified settings correctly to ensure that they operate to requirements, when necessary
11. ensure repaired alternators and starters conform to the electrical efficiency operating specification required and any legal requirements
12. ensure your repair records are accurate, complete and passed to the relevant person(s) promptly in the format required
13. complete all repair activities within the agreed timescale
14. report any anticipated delays in completion to the relevant person(s) promptly

Knowledge and understanding

You need to know and understand:

Legislative and organisational requirements and procedures

1. the current health and safety legislation and workplace procedures relevant to workshop practices and personal protection when undertaking electrical unit repair activities
2. your workplace procedures for:
2.1 recording fault location and repair / correction activities
2.2 reporting the results of tests
2.3 the referral of problems
2.4 reporting delays to the completion of work
3. the importance of documenting repair / correction information
4. the importance of working to **agreed timescales** and keeping others informed of progress
5. the cost-benefit relationship between the reconditioning, repair and replacement of components within electrical units and components
6. the importance of reporting anticipated delays to the relevant person(s) promptly

Electrical principles

7. the principles of electrical charging
8. how starting, charging and electrical motor circuits work
9. basic electrical and electronic principles, including Ohms Law, voltage, power, current (AD/DC) resistance, magnetism, electromagnetism and electromagnetic induction
10. electrical symbols, units and terms
11. the types of charging components, starting components and motors, and how they work
12. how starter motor drive mechanisms work (including epicyclic gearing)
13. electrical safety procedures

Use of electrical testing equipment and electrical testing techniques

14. how to prepare, assess and test the accuracy and operation of all the electrical repair and testing equipment required
15. how to use all the electrical repair and testing equipment required
16. how to interpret test results and perform electrical efficiency calculations

Charging system components, starting system components and motors fault finding and repair

17. how to find, interpret and use sources of information on electrical repair procedures
18. manufacturers specifications for the units being repaired, and where this information can be sourced
19. suppression requirements applicable to electrical components and the type and causes of faults which can occur in charging, starting and motor systems
20. the purpose of, and when to use torque, resistance, insulation and visual tests
21. how to test the internal components of an alternator including: diode pack, rotor field and stator windings
22. the relationship between test methodology and the faults repaired – the use of appropriate testing methods
23. how to assess the condition of components within charging system components, starting system components and motors and locate electrical faults
24. how to repair charging system components, starting system components and motors
25. how to test and evaluate the performance of repaired electrical components against the operating specification required
26. how to carry out wiring harness repairs including soldering and crimping of wires and terminals
27. how to identify the types and causes of alternator and starter failure
28. how to make suitable adjustments to the starter drive setting

Scope/range

1. Electrical equipment includes:
a. volt meters
b. ammeters
c. ohmmeters
d. electrical insulation testing equipment

2. Testing methods include:
a. torque tests
b. resistance tests
c. insulation tests
d. visual
e. aural
f. measurement

3. Repair activities include:
a. stripping
b. cleaning and evaluating the unit
c. soldering
d. replacing faulty parts
e. reassembly
f. testing

4. Electrical units include:
a. generators
b. starters
c. motors
d. actuators

Glossary

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

Generators:
These can be externally and internally regulated

Starters:
Examples include pre-engaged; inertia; axial and co-axial

IMIAEMEI03

Repair and overhaul motor vehicle electrical units

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Status	Original
Originating Organisation	IMI
Original URN	IMIAEMEI03
Relevant Occupations	Auto and Mobile Installation Technicians; Auto-electrical Technician (Automotive)
Suite	Auto Electrical and Mobile Electrical Installation
Keywords	Repair overhaul motor vehicle electrical units

IMIAEMEI04
Diagnose and rectify motor vehicle engine electrical faults

Overview

This unit is about diagnosing and rectifying electrical faults occurring within the vehicle engine area.

IMIAEMEI04

Diagnose and rectify motor vehicle engine electrical faults

Performance criteria

You must be able to:

P1 wear suitable personal protective equipment and use vehicle coverings when using **electrical testing techniques** and carrying out **rectification activities**

P2 support the identification of **electrical faults**, by reviewing vehicle:
- P2.1 technical data
- P2.2 diagnostic test procedures

P3 prepare, connect and test all the required **electrical and electronic testing equipment** following manufacturers' instructions prior to use

P4 use **electrical and electronic testing techniques** which are relevant to the symptoms presented

P5 collect sufficient diagnostic information in a systematic way to enable an accurate diagnosis of electrical system faults

P6 identify and record any system deviation from acceptable limits accurately

P7 make cost effective recommendations for rectification based upon your analysis of the diagnostic information gained

P8 use all tools and equipment required for your diagnostic and rectification activities, correctly and safely throughout

P9 carry out all diagnostic & rectification activities following:
- P9.1 manufacturers' instructions
- P9.2 recognised researched repair methods(see guidance document)
- P9.3 health and safety requirements

P10 work in a way which minimises the risk of :
- P10.1 damage to other vehicle systems
- P10.2 damage to other components and units
- P10.3 contact with leakages
- P10.4 contact with hazardous substances

P11 ensure all repaired and replaced electrical components and units conform to the vehicle operating specification and any legal requirements

P12 when necessary, adjust components and units correctly to ensure that they operate to meet system requirements

P13 ensure the electrical system rectified performs to the vehicle operating specification and any legal requirements prior to return to the customer

P14 ensure your records are accurate, complete and passed to the relevant person(s) promptly in the format required

P15 complete all diagnostic and rectification activities within the agreed timescale

P16 report any anticipated delays in completion to the relevant person(s) promptly

IMIAEMEI04
Diagnose and rectify motor vehicle engine electrical faults

Knowledge and understanding

You need to know and understand:

Legislative and organisational requirements and procedures

K1 the health and safety legislation and workplace procedures relevant to workshop practices and personal and vehicle protection when diagnosing and rectifying electrical faults

K2 legal requirements relating to the vehicle electrics (including road safety and refrigerant handling requirements)

K3 your workplace procedures for

- K3.1 recording fault location and **correction activities**
- K3.2 reporting the results of tests
- K3.3 the referral of problems
- K3.4 reporting delays to the completion of work

K4 the importance of working to recognised diagnostic procedures and processes and obtaining the correct information for diagnostic activities to proceed

K5 the importance of, documenting diagnostic and rectification information

K6 the importance of working to agreed timescales and keeping others informed of progress

K7 the relationship between time, costs and profitability

K8 the importance of reporting anticipated delays to the relevant person(s) promptly

Electrical and electronic principles

K9 electrical and electronic principles, including Ohms Law, voltage, power, current (AC/DC) resistance, magnetism, electromagnetism and electromagnetic induction, digital and fibre optics principles

K10 electrical symbols, units and terms

K11 electrical safety procedures

K12 how electrical and electronic units and components are constructed, dismantled and reassembled

K13 how electrical and electronic units and components operate, including electrical component function, electrical inputs, outputs, voltages and patterns

K14 the interaction between electrical, electronic and mechanical components within the systems defined

K15 how engine management system (both fuel and ignition) circuits work

K16 how electrical systems interlink and interact, including multiplexing

K17 the operation of the electrical and electronic systems for electric, hybrid and alternative fuel vehicles (including regenerative braking systems)

Use of electrical testing equipment

K18 how to prepare and test the accuracy of diagnostic testing equipment

K19 how to use **electrical and electronic testing equipment** to correctly and safely diagnose electrical faults

Auxiliary equipment electrical faults, their diagnosis and correction

K20 the types and causes of electrical system, component and unit faults and failures
K21 electrical component and unit replacement procedures, the circumstances which will necessitate replacement and other possible courses of action
K22 how to find, interpret and use sources of information on electrical operating specifications, diagnostic test procedures, repair procedures and legal requirements
K23 how to carry out systematic diagnostic testing of electrical and electronic systems using **electrical testing techniques**
K24 how to select the most appropriate diagnostic testing method for the symptoms presented
K25 how to interpret test results and vehicle data in order to identify the location and cause of vehicle system faults
K26 how to rectify electrical and electronic faults
K27 how to make suitable adjustments to components and units
K28 how to make cost effective recommendations for rectification

IMIAEMEI04
Diagnose and rectify motor vehicle engine electrical faults

Additional Information

Scope/range related to performance criteria

1. **Electrical faults** occurring within
   - 1.1. starting and charging system
   - 1.2. engine management systems (fuel and ignition)
   - 1.3. electrical components of the cooling system

2. **Electrical and electronic testing equipment** covers:
   - 2.1. volt meters
   - 2.2. ammeters
   - 2.3. ohmmeters
   - 2.4. multimeters
   - 2.5. battery testing equipment
   - 2.6. dedicated and computer based diagnostic equipment
   - 2.7. oscilloscopes

3. **Tools and equipment:**
   - 3.1. hand tools
   - 3.2. special purpose tools
   - 3.3. general workshop equipment

4. **Diagnostic Testing is defined as:**
   - 4.1. Verify the fault
   - 4.2. Collect further information
   - 4.3. Evaluate the evidence
   - 4.4. Carry out further tests in a logical sequence
   - 4.5. Rectify the problem
   - 4.6. Check all systems

5. **Electrical and electronic testing techniques** are:
   - 5.1. voltage, resistance and current measuring
   - 5.2. frequency measuring
   - 5.3. visual
   - 5.4. dedicated and computer based testing

6. **Rectification activities** are defined as:

A suitable repair or replacement that rectifies the fault(s) identified from the diagnostic activities carried out

IMIAEMEI04

Diagnose and rectify motor vehicle engine electrical faults

Glossary

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

Commercial Vehicles:
These are medium and large goods vehicles of 3500kgs gross vehicle mass (GVM) and above

Electrical faults:
These are faults that require a multi stage inspection and a series of test results to identify the cause

Vehicles:
These can be any of the following – light vehicles, commercial vehicles, motorcycles, mopeds and scooters

IMIAEMEI04

Diagnose and rectify motor vehicle engine electrical faults

Developed by	IMI Ltd
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Originating organisation	IMI Ltd
Original URN	4
Relevant occupations	Engineering; Vehicle Trades
Suite	Auto Electrical & Mobile Electrical Installation
Key words	Diagnose Rectify Motor Vehicle Engine Electrical Faults

IMIAEMEI06

Diagnose and rectify motor vehicle electrical unit and component faults

Overview

This standard is about identifying and rectifying electrical faults occurring within a variety of electrical systems

Performance criteria

You must be able to:

1. select and wear appropriate personal protective equipment and use vehicle coverings when using electrical testing techniques and carrying out **rectification activities**
2. support the identification of electrical faults, by reviewing vehicle:
2.1 technical data
2.2 diagnostic test procedures
3. prepare, connect and test all the required electrical and electronic testing equipment following manufacturers' instructions prior to use
4. use electrical and electronic testing techniques which are relevant to the symptoms presented
5. collect sufficient diagnostic information in a systematic way to enable an accurate diagnosis of electrical system faults
6. identify and record any system deviation from acceptable limits
7. make cost effective, accurate recommendations for rectification based upon your analysis of the diagnostic information gained
8. use all tools and equipment required for your diagnostic and rectification activities, correctly and safely throughout
9. carry out all diagnostic & rectification activities following:
9.1 manufacturers' instructions
9.2 recognised researched repair methods
9.3 health and safety requirements
10. work in a way that minimises the risk of:
10.1 damage to other vehicle systems
10.2 damage to other components and units
10.3 contact with leakages
10.4 contact with hazardous substances
10.5 injury to yourself and others
11. ensure all repaired and replaced electrical components and units conform to the vehicle operating specification and any legal requirements
12. adjust components and units correctly to ensure that they operate to meet system requirement, wehn necessary
13. ensure the rectified electrical system performs to the vehicle operating specification and
any legal requirements prior to handover to the customer
14. ensure your records are accurate, complete and passed to the relevant person(s)promptly in the format required
15. complete all diagnostic and rectification activities within the agreed timescale
16. report any anticipated delays in completion to the relevant person(s)

promptly

Knowledge and understanding

You need to know and understand:

1. the current health and safety legislation and workplace procedures relevant to workshop practices and personal and vehicle protection when diagnosing and rectifying complex electrical faults
2. legal requirements relating to the vehicle electrics (including road safety and refrigerant handling requirements)
3. your workplace procedures for:
3.1 recording fault location and correction activities
3.2 reporting the results of tests
3.3 the referral of problems
3.4 reporting delays to the completion of work
4. the importance of working to recognised diagnostic procedures and processes and obtaining the correct information for diagnostic activities to proceed
5. the importance of documenting diagnostic and rectification information
6. the importance of working to agreed timescales and keeping others informed of progress
7. the relationship between time, costs and profitability
8. the importance of reporting anticipated delays to the relevant person(s) promptly
9. electrical and electronic principles, including Ohms Law, voltage, power, current (AC/DC) resistance, magnetism, electromagnetism and electromagnetic induction, digital and fibre optics principles
10. electrical symbols, units and terms
11. electrical safety procedures
12. how electrical and electronic units and components are constructed, dismantled and reassembled
13. how electrical and electronic units and components operate, including electrical component function, electrical inputs, outputs, voltage/current variation and patterns
14. the interaction between electrical, electronic and mechanical components within the systems defined
15. how electrical systems interlink and interact, including multiplexing
16. the operation of the electrical and electronic systems for electric, hybrid and alternative fuel vehicles (including regenerative braking systems)
17. how to prepare and test the accuracy of diagnostic testing equipment
18. how to use electrical and electronic testing equipment to correctly and safely diagnose electrical faults
19. the types and causes of electrical system, component and unit faults and

failures
20. electrical component and unit replacement procedures, the circumstances which will necessitate replacement and other possible courses of action
21. how to find, interpret and use sources of information on electrical operating specifications, diagnostic test procedures, repair procedures and legal requirements
22. how to carry out systematic diagnostic testing of electrical and electronic systems using electrical testing techniques
23. how to select the most appropriate diagnostic testing method for the symptoms presented
24. how to interpret test results and vehicle data in order to identify the location and cause of vehicle system faults
25. how to rectify electrical and electronic faults
26. how to make suitable adjustments to components and units
27. how to make cost effective recommendations for rectification

Scope/range

1. Electrical faults can occur within the following systems:
a. Infotainment
b. Comfort and Convenience
c. Supplementary Restraint Systems (SRS)
d. Networking Systems
e. Body Electric Systems

2. Electrical and electronic testing equipment includes:
a. volt meters,
b. ammeters,
c. ohmmeters
d. multimeters
e. battery testing equipment
f. dedicated and computer based diagnostic equipment
g. oscilloscopes

3. Tools and equipment include:
a. hand tools
b. special purpose tools
c. general workshop equipment

4. Diagnostic Testing is defined as:
a. verify the fault
b. vollect further information
c. evaluate the evidence
d. carry out further tests in a logical sequence
e. rectify the problem
f. check all systems

5. Electrical and electronic testing techniques include:
a. voltage, resistance and current measuring
b. frequency measuring
c. visual
d. dedicated and computer based testing

Glossary

Rectification activities are defined as:
A suitable repair or replacement of a component(s) that rectifies the fault(s) identified from the diagnostic activities carried out

IMIAEMEI06

Diagnose and rectify motor vehicle electrical unit and component faults

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Relevant Occupations	Auto and Mobile Installation Technicians; Auto-electrical Technician (Automotive)
Suite	Auto Electrical and Mobile Electrical Installation
Keywords	Diagnose rectify motor vehicle electrical unit component faults

IMIAEMEI07

Identify and fit motor vehicle auxiliary locks and security devices

Overview

This standard is about identifying and fitting suitable supplementary locking and security devices that are permanently fitted to vehicles to deter theft.

Performance criteria

You must be able to:

1. select and use suitable personal protective equipment and use appropriate vehicle protection at all times
2. support the fitting of supplementary locks and security systems by reviewing vehicle:
2.1 technical data
2.2 diagnostic test procedures
3. prepare, connect and test all the required equipment following manufacturers' instructions prior to use
4. collect sufficient information to enable an accurate fitting of supplementary locking and security devices
5. use fitting techniques (both electrical and mechanical) which are relevant to the systems presented
6. use the tools and equipment required, correctly and safely throughout all fitting activities
7. make cost effective recommendations for the fitting of relevant supplementary locks and security devices according to the customers' needs and vehicle type
8. carry out all fitting activities following:
8.1 manufacturers' instructions
8.2 recognised researched repair methods
8.3 health and safety requirements
9. work in a way which minimises the risk of:
9.1 damage to other vehicle systems
9.2 damage to other components and units
9.3 contact with leakages
9.4 contact with hazardous substances
10. ensure all components and units conform to the vehicle operating specification and any legal requirements
11. adjust components and units correctly to ensure that they operate to meet system requirements
12. ensure the systems fitted perform to the vehicle operating specification and any legal requirements prior to return to the customer
13. ensure your records are accurate, complete and passed to the relevant person(s) promptly in the format required
14. complete all activities within the **agreed timescale**
15. report any anticipated delays in completion to the relevant person(s) promptly

Knowledge and understanding

You need to know and understand:

Legislative and organisational requirements and procedures

1. the current health and safety legislation and workplace procedures relevant to workshop practices and personal and vehicle protection when fitting supplementary locks and security devices
2. legal requirements relating to the vehicle and fitment of supplementary locks and security devices (including road safety, MOT, Construction and Use regulations and Type Approval)
3. your workplace procedures for:
3.1 fitting supplementary locks and security devices
3.2 recording information
3.3 the referral of problems
3.4 reporting delays to the completion of work
4. the importance of working to recognised procedures and processes and obtaining the correct information to enable fitting activities to proceed
5. the importance of documenting 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

Electrical and electronic principles

9. electrical and electronic principles, including Ohms Law, voltage, power, current (AC/DC) resistance, magnetism, electromagnetism and electromagnetic induction, EMC, digital and fibre optics principles
10. electrical symbols, units and terms
11. electrical safety procedures
12. how electrical and electronic units and components are constructed, dismantled and reassembled
13. how electrical and electronic units and components operate, including electrical component function, electrical inputs, outputs, voltages and patterns
14. the interaction between electrical, electronic and mechanical components within the systems defined
15. how vehicle electrical systems interlink and interact with supplementary vehicle locks and additional security devices, including networking protocols

Locking Device Principles and Operations

16. the operating principle and construction of mechanical locking systems
17. the operating principle and construction of pneumatic locking systems
18. how locking systems (electrical, mechanical and pneumatic) can be integrated with Type Approved vehicle latches

Mechanical/Electrical Competencies and Fitting principles

19. how to identify suitable supplementary locks and security devices for the type/use of vehicle
20. how to prepare, test and use all the equipment required for the fitting of supplementary locks and security devices
21. how to use measuring devices in order to measure and mark out vehicles to enable the fitting of supplementary locks and security devices
22. how to file, fit, tap, thread, cut and drill plastics and metals
23. how to integrate vehicle electrical systems with supplementary locks and security devices (where applicable)
24. how to apply vehicle body anticorrosion treatment to meet vehicle requirements
25. how to make suitable adjustments to components and units
26. how to make cost effective recommendations for rectification
27. how to work safely avoiding damage to other vehicle systems, components and units and contact with leakage and hazardous substances

Scope/range

1. Examples of supplementary locks and security devices include:
a. electronic / electro mechanical lock mechanisms
b. additional / supplementary mechanical door locks using cylinder type lock
c. additional / supplementary mechanical door / aperture locks using external locking systems
d. mechanical window protection devices (internal and external)
e. replacement security windows / window security films
f. pneumatic locking systems

2. Tools and equipment include:
a. hand tools
b. special purpose tool
c. general workshop equipment
d. measuring equipment

Glossary

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

Vehicles:
These can be any of the following – light vehicles, commercial vehicles, motorcycles, mopeds and scooters.

IMIAEMEI07

Identify and fit motor vehicle auxiliary locks and security devices

Developed by	IMI
Version Number	2
Date Approved	November 2014
Indicative Review Date	November 2017
Validity	Current
Status	Original
Originating Organisation	IMI
Original URN	IMIAEMEI07
Relevant Occupations	Auto and Mobile Installation Technicians; Auto-electrical Technician (Automotive)
Suite	Auto Electrical and Mobile Electrical Installation
Keywords	Identify fit motor vehicle auxiliary locks security devices

IMIAEMEI08

Inspect motor vehicles using prescribed inspection methods

Overview

This standard is about carrying out a range of inspections on vehicles using a variety of prescribed testing and inspection methods.

Performance criteria

You must be able to:

1. select and use suitable personal protective equipment throughout all vehicle inspection activities
2. use suitable **sources of technical information** to support your vehicle inspection activities
3. carry out systematic **vehicle inspections** following:
3.1 manufacturer's approved procedures
3.2 recognised researched repair methods
3.3 health and safety requirements
3.4 prescribed documentation
4. confirm all systems and components inspected function correctly following the manufacturer's specifications
5. ensure your comparison of the vehicle against specification accurately identifies any:
5.1 differences from the vehicle specification
5.2 vehicle appearance and condition faults
6. work in a way which minimises the risk of damage to the vehicle and its systems, other people and their property
7. make suitable recommendations for future action based upon the results of your tests and inspections
8. ensure your records are accurate, complete and passed to the relevant person(s) promptly in the format required. (This includes all vehicle related paperwork)
9. complete all inspection activities within the **agreed timescale** and to specification
10. report any anticipated delays in completion to the relevant person(s) promptly

Knowledge and understanding

You need to know and understand:

Legislative and organisational requirements and procedures

1. the current health and safety legislation and workplace procedures relevant to conducting **vehicle inspections** and personal and vehicle protection
2. the legislation relevant to the activities described in the Scoping Statement for this unit
3. your workplace procedures for:
3.1 recording vehicle inspections and any variations from acceptable methods and procedures
3.2 the referral of problems
3.3 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 and costs
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 vehicles

Testing methods and the conduct of Inspections

10. how vehicle systems operate and the operational tolerances for the vehicle(s) on which you are working
11. how to follow procedures to carry out the systematic inspections described in the Scoping Statement
12. how to confirm the correct operation of vehicle systems and vehicle condition
13. how to compare test and inspection results against vehicle 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 inspections activities correctly

17. the implications of signing workplace documentation and vehicle records

Scope/range

1. Vehicle inspections include:
a. pre-work
b. installed system functional check
c. post work
d. vehicle handover inspection

2. Test methods include:
a. visual
b. aural
c. functional
d. measurement

3. Examples of Equipment includes:
Appropriate test equipment to correctly confirm the functionality of the system that you are inspecting; this may include measuring equipment, specialist diagnostic equipment or any type of tool required

Glossary

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

Sources of technical information:
Examples include pre-determined / pre-printed inspection schedules, manufacturers' manuals and Trade Association check lists, workplace procedures

IMIAEMEI08

Inspect motor vehicles using prescribed inspection methods

Developed by	IMI
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Validity	Current
Status	Original
Originating Organisation	IMI
Original URN	IMIAEMEI08
Relevant Occupations	Auto and Mobile Installation Technicians; Auto-electrical Technician (Automotive)
Suite	Auto Electrical and Mobile Electrical Installation
Keywords	Inspect motor vehicle prescribed inspection methods

IMIAEMEI09

Identify suitability, installation and configuration of vehicle enhancements and vehicle security systems

Overview

This standard is about identifying electronic enhancements, vehicle electronic security systems and vehicle tracking systems for vehicle types to ensure that the vehicle enhancement meets the specification and functionality of the vehicle and also correctly installing those products to ensure that the vehicle systems function correctly after installation.

Performance criteria

You must be able to:

1. identify which vehicle electronic enhancement products meet the customers requirements and will also integrate fully with the vehicle factory fit electronic systems
2. support the identification of suitable vehicle enhancement installations by reviewing:
2.1 vehicle technical data
2.2 diagnostic test procedures
2.3 customer requirements
2.4 electrical component technical data
3. select and use suitable personal protective equipment and use appropriate vehicle protection at all times
4. prepare and test all the tools and equipment required, following manufacturers' instructions, prior to use
5. fit vehicle enhancement components which are compatible with the vehicle specification and customer requirements
6. carry out all enhancement activities following:
6.1 manufacturers' procedures
6.2 your workplace procedures
6.3 health and safety requirements
6.4 legal requirements
7. work in a way which minimises the risk of:
7.1 damage to other vehicle systems
7.2 damage to other components and units
7.3 contact with leakages
7.4 contact with hazardous substances
7.5 injury to yourself and others
8. adjust the components fitted and vehicle systems (including any reconfiguration of electronic systems) to ensure that they comply with all relevant specification for effective operation, if appropriate
9. ensure all vehicle enhancements made to the vehicle function to its specification
10. ensure that all vehicle systems function correctly prior to handover to the customer
11. complete all enhancement activities within the **agreed timescale**
12. report any anticipated delays in completion to the relevant person(s) promptly
13. liaise with other relevant person(s) (or with the customer) to agree the next course of action if there are any issues with the vehicle enhancement
14. ensure your records are complete, accurate, in the format required and

signed by the customer, when necessary

15. explain to customers any action that has been taken regarding their vehicle in non technical terms to give a clear understanding of the work carried out

Knowledge and understanding

You need to know and understand:

Legislative and organisational requirements and procedures

1. the current health and safety legislation and workplace procedures relevant to workshop practices and personal and vehicle protection when enhancing vehicle systems
2. legal requirements relating to the vehicle (including road safety requirements)
3. your workplace procedures for:
3.1 recording fault location and correction activities
3.2 reporting the results of tests
3.3 the referral of problems
3.4 reporting delays to the completion of work
4. the importance of working to recognised procedures and processes and obtaining the correct information for enhancement activities to proceed and how to formulate and construct procedures and processes in order for enhancement activities to proceed
5. the importance of documenting installation and enhancement 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

Electrical and electronic principles

9. electrical and electronic principles, including Ohms Law, voltage, power, current (AC/DC) resistance, magnetism, electromagnetism and electromagnetic induction, EMF digital and fibre optics principles
10. electrical symbols, units and terms
11. electrical safety procedures
12. how electrical and electronic units and components operate, including electrical component function, electrical inputs, outputs, voltages/current levels and their associated patterns/waveforms
13. the interaction between electrical, electronic and mechanical components within the systems defined
14. how electrical systems interlink and interact, including networking protocols
15. the functionality of the electrical and electronic systems for electric, hybrid and alternative fuel vehicles
16. how installed electronic enhancements interact with factory fit electronic

components, including networking systems

Use of electrical testing equipment

18. how to prepare and test the accuracy of diagnostic testing equipment
19. how to use electrical and electronic testing equipment to correctly and safely test electrical and electronic systems
20. how to find, interpret and use sources of information on electrical operating specification and legal requirements
21. how to use dedicated and computer based equipment to configure vehicle electronic controlled systems to operate correctly within legal requirements
22. how to prepare and reconfigure electronically controlled vehicle enhancement systems to allow them to function correctly with factory fit vehicle systems
23. how to rectify electrical and electronic faults, in standard and enhanced / modified systems
24. how to make suitable adjustments to components and units

Scope/range

1. Vehicle inspections include:

a. pre-work

b. installed system functional check

c. post work

d. vehicle handover inspection

2. Test methods include:

a. visual

b. aural

c. functional

d. measurement

3. Examples of Equipment Includes:

Appropriate test equipment to correctly confirm the functionality of the system that you are inspecting; this may include measuring equipment, specialist diagnostic equipment or any type of tool required

Glossary

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

Sources of technical information:
Examples include pre-determined / pre-printed inspection schedules, manufacturers' manuals and Trade Association check lists, workplace procedures

IMIAEMEI09

Identify suitability, installation and configuration of vehicle enhancements and vehicle security systems

Developed by	IMI
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Indicative Review Date	November 2017
Validity	Current
Status	Original
Originating Organisation	IMI
Original URN	IMIAEMEI09
Relevant Occupations	Auto and Mobile Installation Technicians; Auto-electrical Technician (Automotive)
Suite	Auto Electrical and Mobile Electrical Installation
Keywords	Identify suitability installation configuration vehicle enhancements vehicle security systems

IMIAEMEI10

Conduct vehicle enhancement and installation consultations with customers in the motor vehicle environment

Overview

This standard is about carrying out **consultations with customers** to investigate their concerns relating to electrical enhancements for their vehicle. It also includes making recommendations to ensure that the customer's concerns are addressed and explaining the outcomes that the enhancements will achieve so that customers fully understand the work that will be undertaken.

Performance criteria

You must be able to:

1. respond to customers' concerns in a positive and friendly manner
2. give a positive impression of yourself and your organisation when dealing with customers
3. obtain sufficient, detailed information using suitably structured questions
4. carry out, when appropriate, a suitable road test to obtain further detailed information on, or clarification of a customer's request
5. provide customers with accurate, current and relevant advice and information on vehicle enhancement products
6. support the identification of suitable vehicle enhancement installations, by reviewing:
6.1 vehicle technical data
6.2 diagnostic test procedures.
6.3 customer requirements
6.4 electrical component technical data
7. explain to the customer the implications of any enhancement(s) that may be needed clearly in simple and non complex terms
8. give technical advice and information accurately, clearly and in a form and manner which the customer will understand using simple and non complex terms
9. liaise with the customer and or other relevant person(s) to agree the next course of action
10. explain to customers the action that has been taken regarding their vehicle clearly in simple and non complex terms
11. ensure that your records are complete, accurate, in the format required and signed by the customer, when necessary
12. suggest possible methods for improving the customer care process to your manager, when necessary

Knowledge and understanding

You need to know and understand:

Legislative and organisational requirements and procedures

1. the current health and safety legislation and workplace procedures relevant to workshop practices and personal and vehicle protection when enhancing vehicle systems
2. legal requirements relating to the vehicle (including road safety requirements)
3. your workplace procedures for:
3.1 recording fault location and correction activities
3.2 reporting the results of tests
3.3 the referral of problems
3.4 reporting delays to the completion of work
4. the importance of working to recognised procedures and processes and obtaining the correct information for enhancement activities to proceed and how to formulate and construct procedures and processes in order for enhancement activities to proceed
5. the importance of documenting installation and enhancement information
6. the importance of working to **agreed timescales** and keeping others informed of progress
7. the relationship between time, costs and profitability
8. the importance of reporting anticipated delays to the relevant person(s) promptly

Electrical and electronic principles

9. electrical and electronic principles, including Ohms Law, voltage, power, current (AC/DC) resistance, magnetism, electromagnetism and electromagnetic induction, EMF, digital and fibre optics principles
10. electrical symbols, units and terms
11. electrical safety procedures
12. how electrical and electronic units and components operate, including electrical component function, electrical inputs, outputs, voltage/current and their respective oscilloscope patterns
13. the interaction between electrical, electronic and mechanical components within the systems defined
14. how electrical systems interlink and interact, including networking protocols
15. the principal operation of the electrical and electronic systems for electric, hybrid and alternative fuel vehicles
16. how installed enhancements will interact and influence with factory fit

electrical components, including networking systems

Personal Skills

17. how to give straightforward presentations on technical matters
18. how to communicate effectively with and listen to customers
19. how to present yourself in a positive and professional manner to customers
20. how to recognise and handle different **customer reactions**
21. how to adapt your language when explaining technical matters to customers
22. how to use effective questioning techniques
23. how to care for customers and achieve customer satisfaction
24. your organisation's requirements for personal appearance and conduct when dealing with customers

Scope/range

1. Enhancements include:
a. audio systems
b. visual systems
c. communication systems
d. networking systems
e. body electric systems
f. data logging
g. safety systems
h. lighting systems
i. tow bar electrical systems
j. auxiliary power supplies
k. telematics / vehicle location systems
l. electronic security systems
m. software modifications

2. Electronic Security Systems include:
a. alarm systems
b. immobiliser systems
c. location / tracking systems
d. electronic deadlocking systems

3. Electrical and electronic testing equipment includes:
a. volt meters
b. ammeters
c. ohmmeters
d. multimeters
e. dedicated and computer based diagnostic equipment
f. oscilloscopes

4. Tools and equipment includes:
a. hand tools
b. special purpose tools
c. general workshop equipment
d. electrical and electronic testing equipment

Glossary

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

Customer Reactions:
Examples include anger, confusion, frustration

Consultations with Customers:
Examples include face to face and telephone conversations including questioning. It also includes giving technical advice, product information and clarification of technical issues after work has been completed

Vehicles:
These can be any of the following – light vehicles, commercial vehicles, motorcycles, mopeds and scooters

IMIAEMEI10

Conduct vehicle enhancement and installation consultations with customers in the motor vehicle environment

Developed by	IMI
Version Number	2
Date Approved	November 2014
Indicative Review Date	November 2017
Validity	Current
Status	Original
Originating Organisation	IMI
Original URN	IMIAEMEI10
Relevant Occupations	Auto and Mobile Installation Technicians; Auto-electrical Technician (Automotive)
Suite	Auto Electrical and Mobile Electrical Installation
Keywords	conduct vehicle enhancement installation consultations customers motor vehicle environment

IMILVBP18

remove and fit basic motor Mechanical, Electrical and Trim (MET) components and non permanently fixed vehicle body panels

Overview

This NOS is about the straightforward removal and fitting of basic mechanical, electrical and trim (MET) components to vehicles. It is also about checking the operation of the components fitted.

IMILVBP18

Remove and fit basic motor Mechanical, Electrical and Trim (MET) components and non permanently fixed vehicle body panels

Performance criteria

You must be able to:

P1 use the appropriate personal protective equipment when removing and fitting **basic MET components and non welded non-structural body panels**

P2 protect the vehicle and its contents effectively when removing and fitting **basic MET components and non welded non-structural body panels**

P3 select and use the correct **tools and equipment** for the panels or components you are going to remove or fit

P4 ensure that the **tools and equipment** you require are in a safe working condition

P5 remove and fit **basic MET components and non welded non-structural body panels** following:

- P5.1 removal and fitting procedures
- P5.2 manufacturers' instructions
- P5.3 your workplace procedures
- P5.4 health, safety and legal requirements

P6 avoid damaging other components, units and panels on the vehicle

P7 store all removed panels and components safely in the correct location

P8 realign the panels and components you have fitted correctly in a way which regains their original manufactured gaps

P9 check that the components you have fitted operate correctly following the manufacturer's specification

P10 report any additional faults you find during the course of your work to the relevant person(s) promptly

P11 report any delays in completing your work to the relevant person(s) promptly

P12 remove and fit **basic MET components or non welded non-structural body panels** within the agreed timescale

P13 complete work records accurately, in the format required and pass them to the relevant person(s) promptly

IMILVBP18

Remove and fit basic motor Mechanical, Electrical and Trim (MET) components and non permanently fixed vehicle body panels

Knowledge and understanding

You need to know and understand:

Legislative and organisational requirements and procedures

K1 the health, safety and legal requirements relating to the removal and fitting of **basic MET components and non welded non-structural body panels**

K2 your workplace procedures for:

- K2.1 the referral of problems
- K2.2 reporting of delays to the completion of work
- K2.3 completion of work records

K3 the work that needs to be done and the standard required

K4 the requirements for protecting the vehicle and contents from damage before, during and after removing and fitting activities

K5 the importance of selecting, using and maintaining the appropriate personal protective equipment when removing and fitting **basic MET components and non welded non-structural body panels**

Removing and fitting basic MET components

K6 how to find, interpret and use sources of information applicable to the removal and fitting of **basic MET components and non welded non-structural body** panels

K7 how to select, check and use all the tools and equipment required to remove and fit **basic MET components and non welded non-structural body** panels

K8 the correct procedures for removing and fitting basic MET components and **non welded non-structural body panels**

K9 the correct procedures for working with supplementary safety systems when fitting and removing **basic MET components and non welded non- structural body panels**

K10 the correct procedures for working with Gas Discharge headlight systems and when fitting and removing **basic MET components and non welded non- structural body panels**

K11 the methods of storing removed panels and components and the importance of storing them correctly

K12 the different types of fastenings and fixings and the reasons for their use

K13 the need for correct alignment of panels and components and the correct methods used to achieve this

K14 the types of quality checks that can be used to ensure correct alignment and operation of components to manufacturer's specification and their purpose

IMILVBP18

Remove and fit basic motor Mechanical, Electrical and Trim (MET) components and non permanently fixed vehicle body panels

Additional Information

Scope/range related to performance criteria

1. **Basic MET components includes:**
   - 1.1. bumpers
   - 1.2. headlamp units
   - 1.3. road wheels
   - 1.4. batteries
   - 1.5. bonnet and boot lid trim
   - 1.6. interior trim components
   - 1.7. exterior trim components

2. **Non permanently attached body panels** are
   - 2.1. wings
   - 2.2. doors
   - 2.3. bonnets
   - 2.4. boot lids and tailgates
   - 2.5. bumper bars, covers and components

3. **Tools and equipment** are
   - 3.1. spanners
   - 3.2. socket set
   - 3.3. screwdrivers
   - 3.4. manufacturer's specified specialist tools
   - 3.5. pliers and self locking grips
   - 3.6. power drill and drill bits
   - 3.7. trolley jack
   - 3.8. axle stands
   - 3.9. vehicle lifts
   - 3.10. torque wrench

IMILVBP18

Remove and fit basic motor Mechanical, Electrical and Trim (MET) components and non permanently fixed vehicle body panels

Glossary

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

Commercial Vehicles:
These are medium and large goods vehicles of 3500kgs gross vehicle mass (GVM) and above.

Components fitted:
These can be either replacement or refitted components

MET:
Mechanical, electrical and trim

Non Permanently Fixed panels:
Any cosmetic panel within a vehicle that is fitted by mechanical fastening devices and will be undamaged when removed

Vehicles:
These can be any of the following: light vehicles, commercial vehicles, motorcycles, mopeds and scooters

IMILVBP18

Remove and fit basic motor Mechanical, Electrical and Trim (MET) components and non permanently fixed vehicle body panels

Developed by	IMI Ltd
Version number	1
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Indicative review date	January 2012
Validity	Current
Status	Original
Originating organisation	IMI Ltd
Original URN	8
Relevant occupations	Engineering; Vehicle Trades
Suite	Maintenance and Repair – Light Vehicle; Accident Repair - SMART – Cosmetic; Accident Repair - SMART – PDR; Accident Repair – Joining; Auto Electrical and Mobile Electrical Installation
Key words	Basic Motor Mechanical Electrical Trim MET Components Non Permanently Fixed Vehicle Body Panels