

# Diploma in Accident Repair Paint Principles at SCQF Level 5 (4391-22)

February 2018 Version 1.3





## Qualification at a glance

<b>Subject area</b>	<b>Vehicle Accident Repair</b>
<b>City &amp; Guilds number</b>	4391
<b>Age group approved</b>	16-18, 19+
<b>Assessment</b>	Assignment and Online Multiple Choice
<b>Fast track</b>	Not available
<b>Support materials</b>	Centre handbook Practical assessment workbook
<b>Registration and certification</b>	Consult the Walled Garden/online catalogue for last dates

<b>Title and level</b>	<b>City &amp; Guilds number</b>	<b>Accreditation number</b>
Diploma in Accident Repair Paint Principles at SCQF Level 5	4391-22	R170 04

<b>Version and date</b>	<b>Change detail</b>	<b>Section</b>
1.1 Feb 2013	Amend range Units 251/253/256	<b>Units</b>
1.2 Oct 2013	Unit supporting information updated with introductory text	<b>Units</b>
1.3 February 2018	Amended Quality Assurance Requirements	Appendix 2



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# 1 Introduction

This document tells you what you need to do to deliver the qualification:

Area	Description
Who is the qualification for?	<p>This Diploma in Accident Repair Paint is for anyone developing a career in the motor industry. This practical qualification demonstrates candidates' skills on the job and in their own workplace showing that they meet national standards for automotive workers.</p> <p>The structure and assessment strategy has been produced by the Institute of the Motor Industry, who are the Sector Skills Council for the Automotive Industry.</p>
What does the qualification cover?	<p>Candidates cover areas such as preparing, painting and finishing different surfaces, applying fillers and carrying out repairs to motor vehicles paintwork. They are assessed in the workplace by using the following methods:</p> <ul style="list-style-type: none"> <li>• Assignment</li> <li>• verbal questioning of essential knowledge</li> <li>• City &amp; Guilds' GOLLA multiple choice test</li> </ul>
Is the qualification part of a framework or initiative?	<p>The qualification is part of the Scottish Automotive Maintenance and Repair Modern Apprenticeship Frameworks.</p>
What opportunities for progression are there?	<p>After taking this qualification, candidates will have a qualification that shows employers and customers they have the skills required to carry out paint repairs to paintwork as a result of accidents and will be able to progress into employment.</p> <p>Candidates may also wish to progress to the SVQ 2 in Accident Repair Paint at SCQF Level 5 (4311-22) or the Diploma in Accident Repair Paint Principles at SCQF Level 6 (4391-23).</p> <p>In addition, candidates who enjoy leading teams of people at work could also move onto a qualification as a Team Leader or Supervisor such as qualifications at Levels 2, 3 and 4 through the Institute of Leadership and Management (ILM).</p>

## Structure

To achieve the **Diploma in Accident Repair Paint Principles at SCQF Level 5**, learners must achieve a minimum of **65** credits. **61** credits from the mandatory units and a minimum of **4** credits from the optional units as specified. Both the skills and the corresponding knowledge unit must be completed in order to gain the qualification.

City & Guilds unit	Unit title	Credit value
<b>Mandatory</b>		
001	Skills in health, safety and good housekeeping in the automotive environment	7
003	Skills in supporting job roles in the automotive work environment	5
051	Knowledge in health, safety and good housekeeping in the automotive environment	3
053	Knowledge of support for job roles in the automotive work environment	3
201	Skills in tools and equipment used in vehicle refinishing	5
202	Skills in applying fillers and foundation materials	5
204	Skills in preparing metal and pre-painted surfaces	5
206	Skills in repairing minor paint defects	5
251	Knowledge of tools and equipment used in vehicle refinishing	5
252	Knowledge of applying fillers and foundation materials	6
254	Knowledge of preparing metal and pre-painted surfaces	6
256	Knowledge of repairing minor paint defects	6
<b>Optional</b>		
102	Skills in removing and refitting non permanently fixed motor vehicle body panels	2
152	Knowledge of removing and refitting non permanently fixed motor vehicle body panels	2
203	Skills in working with plastic materials and components	5
253	Knowledge of working with plastic materials and components	6



## 2 Centre requirements

### Approval

Centres already approved to offer the Level 3 Certificate/Diploma in Maintenance and Repair – Paint (4101-57) will be automatically approved to register and certificate candidates on the 4391-22 (unless the centre is already subject to sanctions).

Centres will need to gain both centre and qualification approval. Please refer to the *Centre Manual - Supporting Customer Excellence* for further information. Centre staff should familiarise themselves with the structure, content and assessment requirements of the qualifications before designing a course programme.

### Resource requirements

#### Physical resources and site agreements

Centres must have access to sufficient equipment in the college, training centre or workplace to ensure candidates have the opportunity to cover all of the practical activities.

#### Centre staffing

Staff delivering this qualification must be able to demonstrate that they meet the following occupational expertise requirements. They should:

- be occupationally competent or technically knowledgeable in the areas for which they are delivering training and/or have experience of providing training. This knowledge must be to the same level as the training being delivered
- have recent relevant experience in the specific area they will be assessing
- have credible experience of providing training.

#### Assessors and internal verifiers

While the Assessor/Verifier (A/V) units are valued as qualifications for centre staff, they are not currently a requirement for this qualification.

#### Continuing professional development (CPD)

Centres must support their staff to ensure that they have current knowledge of the occupational area, that delivery, mentoring, training, assessment and verification is in line with best practice, and that it takes account of any national or legislative developments.

## **Candidate entry requirements**

City & Guilds does not set entry requirements for this qualification. However, centres must ensure that candidates have the potential and opportunity to gain the qualification successfully.

## **Age restrictions**

City & Guilds cannot accept any registrations for candidates under 16 as this qualification not approved for under 16s.





## 3 Delivering the qualification

### Initial assessment and induction

An initial assessment of each candidate should be made before the start of their programme to identify:

- if the candidate has any specific training needs
- support and guidance they may need when working towards their qualifications
- any units they have already completed, or credit they have accumulated which is relevant to the qualifications
- the appropriate type and level of qualification.

We recommend that centres provide an induction programme so the candidate fully understands the requirements of the qualifications, their responsibilities as a candidate, and the responsibilities of the centre. This information can be recorded on a learning contract.

### Support materials

City & Guilds will provide the following learning and support resources which will be posted on our website. [www.cityandguilds.com/automotive](http://www.cityandguilds.com/automotive)

- Practical Assessment workbook
- Centre Handbook

### Health and safety

The requirement to follow safe working practices is an integral part of all City & Guilds qualifications and assessments, and it is the responsibility of centres to ensure that all relevant health and safety requirements are in place before candidates start practical assessments.

Should a candidate fail to follow health and safety practice and procedures during an assessment, the assessment must be stopped. The candidate should be informed that they have not reached the standard required to successfully pass the assessment and told the reason why. Candidates may retake the assessment at a later date, at the discretion of the centre. In case of any doubt, guidance should be sought from the external verifier.

### Data protection and confidentiality

Centres offering this qualification may need to provide City & Guilds with personal data for staff and candidates. Guidance on data protection and the obligations of City & Guilds and centres are explained in *Centre Manual - Supporting Customer Excellence*.

## **Equal opportunities**

It is a requirement of centre approval that centres have an equal opportunities policy (see *Centre Manual - Supporting Customer Excellence*).

The regulatory authorities require City & Guilds to monitor centres to ensure that equal opportunity policies are being followed.

The City & Guilds equal opportunities policy is set out on the City & Guilds website, in *Centre Manual - Supporting Customer Excellence*, and is also available from the City & Guilds Customer Relations department.

Access to qualifications on the Qualifications Credit Framework is open to all, irrespective of gender, race, creed, age or special needs. The centre co-ordinator should ensure that no candidate is subject to unfair discrimination on any ground in relation to access to assessment and the fairness of the assessment.

## **Access to assessment**

City & Guilds' guidance and regulations on access to assessment are designed to facilitate access to assessments and qualifications for candidates who are eligible for adjustments to assessment arrangements. Access arrangements are designed to allow attainment to be demonstrated. For further information, please see *Access to assessment and qualifications*, available on the City & Guilds website.

## **Appeals**

Centres must have their own, auditable, appeals procedure that must be explained to candidates during their induction. Appeals must be fully documented by the quality assurance co-ordinator and made available to the external verifier or City & Guilds.

Further information on appeals is given in *Centre Manual - Supporting Customer Excellence*. There is also information on appeals for centres and learners on the City & Guilds website or available from the Customer Relations department.



## 4 Assessment

City & Guilds has written the following assessments to use with this qualification:

- Assignments (practical assessment workbooks) comprising of practical tasks and knowledge based questions to cover all learning outcomes. Graded Pass only.
- Online multiple choice tests graded as Pass, Merit, Distinction.
- Assignments can be downloaded from [www.cityandguilds.com/automotive](http://www.cityandguilds.com/automotive). These assessments are carried out in centres and must be completed to current industry standards and practice.

- Assessment requirements for all skills units are shown in full in our assessment documentation.

Full details of the assessment requirements relating to these qualifications can be obtained directly from the Institute of the Motor Industry (IMI) <http://www.motor.org.uk>

### Time constraints

The following must be applied to the assessment of this qualification:

- Candidates must complete their assessments within their registration period.

### Test specifications

Summary test specifications for all 4391 online tests can be found in the 'Automotive online test specifications' document, downloadable from the 4391 website.

Unit	Title	Assessment method
001	Skills in health, safety and good housekeeping in the automotive environment	Assignment
003	Skills in supporting job roles in the automotive work environment	Assignment
051	Knowledge in health, safety and good housekeeping in the automotive environment	Assignment
053	Knowledge of support for job roles in the automotive work environment	Assignment
102	Skills in removing and refitting non permanently fixed motor vehicle body panels	Assignment

<b>Unit</b>	<b>Title</b>	<b>Assessment method</b>
152	Knowledge of removing and refitting non permanently fixed motor vehicle body panels	Multiple choice
201	Skills in tools and equipment used in vehicle refinishing	Assignment
202	Skills in applying fillers and foundation materials	Assignment
203	Skills in working with plastic materials and components	Assignment
204	Skills in preparing metal and pre-painted surfaces	Assignment
206	Skills in repairing minor paint defects	Assignment
251	Knowledge of tools and equipment used in vehicle refinishing	Multiple choice
252	Knowledge of applying fillers and foundation materials	Multiple choice
253	Knowledge of working with plastic materials and components	Multiple choice
254	Knowledge of preparing metal and pre-painted surfaces	Multiple choice
256	Knowledge of repairing minor paint defects	Multiple choice



## 5 Units

### Structure of units

These units each have the following:

- City & Guilds reference number
- title
- level
- credit value
- unit aim
- relationship to NOS, other qualifications and frameworks
- endorsement by a sector or other appropriate body
- information on assessment
- learning outcomes which are comprised of a number of assessment criteria
- notes for guidance.

## Unit 001

# Skills in health, safety and good housekeeping in the automotive environment

<b>Level:</b>	5
<b>Credit value:</b>	7
<b>Relationship to NOS:</b>	This unit is linked to the NOS G1 Contribute to the housekeeping in motor vehicle environments and NOS G2 Reduce risks to health and safety in the motor vehicle environment
<b>Assessment requirements specified by a sector or regulatory body:</b>	This unit is endorsed by IMI, the Standards Setting Body for the automotive industry. All assessments have been developed in accordance with the IMI Assessment Requirements.
<b>Aim:</b>	<p>This unit will enable the learner to develop the skills required to:</p> <ul style="list-style-type: none"><li>• carry out day to day work area cleaning, clearing away, dealing with spillages and disposal of waste, used materials and debris</li><li>• identify hazards and risks in the automotive environment and complying with relevant legislation and good practice</li><li>• work safely at all times within the automotive environment, both as an individual and with others</li></ul>

<b>Learning outcome</b>	<b>The learner will:</b>
1.	be able to use correct personal and vehicle protection within the automotive work environment
<b>Assessment criteria</b>	
The learner can:	
1.1	select and use personal protective equipment throughout activities. To include appropriate protection of: a. eyes b. ears c. head d. skin e. feet f. hands g. lungs
1.2	select and use vehicle protective equipment throughout all activities.

<b>Learning outcome</b>	<b>The learner will:</b>
2.	be able to carry out effective housekeeping practices in the automotive work environment
<b>Assessment criteria</b>	
The learner can:	
2.1	select and use cleaning equipment which is of the right type and suitable for the task.
2.2	use utilities and appropriate consumables, avoiding waste
2.3	use materials and equipment to carry out cleaning and maintenance duties in allocated work areas, following automotive work environment policies, schedules and manufacturers instructions
2.4	perform housekeeping activities safely and in a way which minimizes inconvenience to customers and staff.
2.5	keep the work area clean and free from debris and waste materials.
2.6	keep tools and equipment fit for purpose by regular cleaning and keeping tidy
2.7	dispose of used cleaning agents, waste materials and debris to comply with legal and workplace requirements.

<b>Learning outcome</b>	<b>The learner will:</b>
3.	be able to recognise and deal with dangers in order to work safely within the automotive workplace
<b>Assessment criteria</b>	
The learner can:	
3.1	name and locate the responsible persons for health and safety in their relevant workplace
3.2	identify and report working practices and hazards which could be harmful to themselves or others
3.3	carry out safe working practices whilst working with equipment, materials and products in the automotive environment
3.4	rectify health and safety risks encountered at work, within the scope and capability of their job role.

<b>Learning outcome</b>	<b>The learner will:</b>
4.	be able to conduct themselves responsibly
<b>Assessment criteria</b>	
The learner can:	
4.1	show personal conduct in the workplace which does not endanger the health and safety of themselves or others
4.2	display suitable personal presentation at work which ensures the health and safety of themselves and others at work.

## Unit 003

# Skills in supporting job roles in the automotive work environment

<b>Level:</b>	6
<b>Credit value:</b>	5
<b>Relationship to NOS:</b>	This unit is linked to G3 Maintain Working Relationships in the Motor Vehicle Environment.
<b>Assessment requirements specified by a sector or regulatory body:</b>	This unit is endorsed by IMI, the Standards Setting Body for the automotive industry. All assessments have been developed in accordance with the IMI Assessment Requirements.
<b>Aim:</b>	This unit will help the learner develop the skills required to keep good working relationships with all colleagues and customers in the automotive work environment by using effective communication and support.

<b>Learning outcome</b>	<b>The learner will:</b>
1.	be able to work effectively within the organisational structure of the automotive work environment
<b>Assessment criteria</b>	
The learner can:	
1.1	respond promptly and willingly to requests for assistance from customers and colleagues
1.2	refer customers and colleagues to the correct person should requests fall outside their responsibility and capability.

<b>Learning outcome</b>	<b>The learner will:</b>
2.	be able to obtain and use information in order to support their job role within the automotive work environment
<b>Assessment criteria</b>	
The learner can:	
2.1	select and use legal and technical information, in an automotive work environment.



<b>Learning outcome</b>	<b>The learner will:</b>
3.	be able to communicate with and support colleagues and customers effectively within the automotive work environment
<b>Assessment criteria</b>	
The learner can:	
3.1	use methods of communication with customers and colleagues which meet their needs
3.2	give customers and colleagues accurate information
3.3	make requests for assistance from or to customers and colleagues clearly and courteously.

<b>Learning outcome</b>	<b>The learner will:</b>
4.	be able to develop and keep good working relationships in the automotive work environment
<b>Assessment criteria</b>	
The learner can:	
4.1	contribute to team work by initiating ideas and co-operating with customers and colleagues
4.2	treat customers and colleagues in a way which shows respect for their views and opinions
4.3	make and keep achievable commitments to customers and colleagues
4.4	inform colleagues promptly of anything likely to affect their own work.

## Unit 051

# Knowledge of health, safety and good housekeeping in the automotive environment

<b>Level:</b>	<b>5</b>
<b>Credit value:</b>	<b>3</b>
<b>Relationship to NOS:</b>	This unit is linked to the NOS G1 Contribute to the housekeeping in motor vehicle environments and NOS G2 Reduce risks to health and safety in the motor vehicle environment.
<b>Assessment requirements specified by a sector or regulatory body:</b>	This unit is endorsed by the IMI, the Standards Setting Body for the automotive industry. All assessments have been developed in accordance with the IMI Assessment Requirements.
<b>Aim:</b>	This unit enables the learner to develop an understanding of: <ul style="list-style-type: none"><li>• routine maintenance and cleaning of the automotive environment and using resources economically</li><li>• health and safety legislation and duties of everyone in the motor vehicle environment. It will provide an appreciation of significant risks in the automotive environment and how to identify and deal with them. Once completed the learner will be able to identify hazards and evaluate and reduce risk.</li></ul>

<b>Learning outcome</b>	<b>The learner will:</b>
1. understand the correct personal and vehicle protective equipment to be used within the automotive environment	
<b>Assessment criteria</b>	
The learner can:	
1.1	explain the importance of wearing the types of PPE required for a range automotive repair activities
1.2	identify vehicle protective equipment for a range of repair activities
1.3	describe vehicle and personal safety considerations when working at the roadside

<b>Learning outcome</b>	<b>The learner will:</b>
2.	understand effective housekeeping practices in the automotive environment
<b>Assessment criteria</b>	
The learner can:	
2.1	describe why the automotive environment should be properly cleaned and maintained
2.2	describe requirements and systems which may be put in place to ensure a clean automotive environment.
2.3	describe how to minimise waste when using utilities and consumables
2.4	state the procedures and precautions necessary when cleaning and maintaining an automotive environment
2.5	describe the selection and use of cleaning equipment when dealing with general cleaning, spillages and leaks in the automotive environment
2.6	describe procedures for correct disposal of waste materials from an automotive environment
2.7	describe procedures for starting and ending the working day which ensure effective housekeeping practices are followed.

<b>Learning outcome</b>	<b>The learner will:</b>
3.	understand key health and safety requirements relevant to the automotive environment
<b>Assessment criteria</b>	
The learner can:	
3.1	list the main legislation relating to automotive environment health and safety
3.2	describe the general legal duties of employers and employees required by current health and safety legislation
3.3	describe key, current health and safety requirements relating to the automotive environment
3.4	describe why workplace policies and procedures relating to health and safety are important.

<b>Learning outcome</b>	<b>The learner will:</b>
4.	understand about hazards and potential risks relevant to the automotive environment
<b>Assessment criteria</b>	
The learner can:	
4.1	identify key hazards and risks in an automotive environment
4.2	describe policies and procedures for reporting hazards, risks, health and safety matters in the automotive environment
4.3	state precautions and procedures which need to be taken when working with vehicles, associated materials, tools and equipment
4.4	identify fire extinguishers in common use and which types of fire they should be used on
4.5	identify key warning signs and their characteristics that are found in the vehicle repair environment
4.6	state the meaning of common product warning labels used in an automotive environment.

<b>Learning outcome</b>	<b>The learner will:</b>
5.	understand personal responsibilities
<b>Assessment criteria</b>	
The learner can:	
5.1	explain the importance of personal conduct in maintaining the health and safety of the individual and others
5.2	explain the importance of personal presentation in maintaining health safety and welfare.

# **Unit 051                    Knowledge of health, safety and good housekeeping in the automotive environment**

## **Supporting information**

**Candidates will be assessed on the assessment criteria as specified within the unit. The following information has been provided by IMI SSC and is included to support centres in terms of teaching and delivery.**

### **Economic use of Resources**

- a. Consumable materials eg grease, oils, split pins, locking and fastening devices.

### **Requirement to maintain work area effectively**

- a. Cleaning tools and equipment to maximise workplace efficiency.
- b. Requirement to carry out the housekeeping activities safely and in a way that minimises inconvenience to customers and staff.
- c. Risks involved when using solvents and detergents.
- d. Advantages of good housekeeping.

### **Spillages, leaks and waste materials**

- a. Relevance of safe systems of work to the storage and disposal of waste materials.
- b. Requirement to store and dispose of waste, used materials and debris correctly.
- c. Safe disposal of special / hazardous waste materials.
- d. Advantages of recycling waste materials.
- e. Dealing with spillages and leaks.

### **Basic legislative requirements**

- a. Provision and Use of Work Equipment Regulations 1992
- b. Power Presses Regulations 1992
- c. Pressure Systems and Transportable Gas Containers Regulations 1989
- d. Electricity at Work Regulations 1989
- e. Noise at Work Regulations 1989
- f. Manual Handling Operations Regulations 1992
- g. Health and Safety (Display Screen Equipment) Regulations 1992
- h. Abrasive Wheel Regulations
- i. Safe Working Loads
- j. Working at Height Regulations.

### **Routine maintenance of the workplace**

- a. Trainee's personal responsibilities and limits of their authority with regard to work equipment.
- b. Risk assessment of the workplace activities and work equipment.
- c. Workplace person responsible for training and maintenance of workplace equipment.
- d. When and why safety equipment must be used.
- e. Location of safety equipment.
- f. Particular hazards associated with their work area and equipment.
- g. Prohibited areas.
- h. Plant and machinery that trainees must not use or operate.
- i. Why and how faults on unsafe equipment should be reported.
- j. Storing tools, equipment and products safely and appropriately.
- k. Using the correct PPE.
- l. Following manufacturers' recommendations.
- m. Location of routine maintenance information e.g. electrical safety check log.

### **Legislation relevant to Health and Safety**

- a. HASAWA
- b. COSHH
- c. EPA
- d. Manual Handling Operations Regulations 1992
- e. PPE Regulations 1992.

### **General regulations to include an awareness of:**

- a. Health and Safety (Display Screen Equipment) Regulations 1992
- b. Health and Safety (First Aid) Regulations 1981
- c. Health and Safety (Safety Signs and Signals) Regulations 1996
- d. Health and Safety (Consultation with Employees) Regulations 1996
- e. Employers Liability (Compulsory Insurance) Act 1969 and Regulations 1998
- f. Confined Spaces Regulations 1997
- g. Noise at Work Regulations 1989
- h. Electricity at Work Regulations 1989
- i. Electricity (Safety) Regulations 1994
- j. Fire Precautions Act 1971
- k. Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1985
- l. Pressure Systems Safety Regulations 2000
- m. Waste Management 1991
- n. Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) 2002
- o. Control of Asbestos at Work Regulations 2002.

### **Legislative duties**

- a. The purpose of a Health and Safety Policy.
- b. The relevance of the Health and Safety Executive.

- c. The relevance of an initial induction to Health and Safety requirements at your workplace.
- d. General employee responsibilities under the HASAWA and the consequences of non-compliance.
- e. General employer responsibilities under the HASAWA and the consequences of non-compliance.
- f. The limits of authority with regard to Health and Safety within a personal job role.
- g. Workplace procedure to be followed to report Health and Safety matters.

**Precautions to be taken when working with vehicles, workshop materials, tools and equipment including electrical safety, pneumatics and hydraulics**

- a. Accessing and interpreting safety information.
- b. Seeking advice when needed.
- c. Seeking assistance when required.
- d. Reporting of unsafe equipment.
- e. Storing tools, equipment and products safely and appropriately.
- f. Using the correct PPE.
- g. Following manufacturers' recommendations.
- h. Following application procedures e.g. hazardous substances.
- i. The correct selection and use of extraction equipment.

**PPE to include:**

- a. typical maintenance procedures for PPE equipment to include:
  - i. typical maintenance log
  - ii. cleaning procedures
  - iii. filter maintenance
  - iv. variation in glove types
  - v. air quality checks.
- b. choice and fitting procedures for masks and air breathing equipment.
- c. typical workplace processes which would require the use of PPE to include:
  - i. welding
  - ii. sanding and grinding
  - iii. filling
  - iv. panel removal and replacement
  - v. drilling
  - vi. cutting
  - vii. chiselling
  - viii. removal of broken glass
  - ix. removal of rubber seals from fire damaged vehicles
  - x. removal of hypodermic needles
  - xi. servicing activities
  - xii. roadside recovery.
- d. unserviceable PPE.
- e. PPE required for a range of automotive repair activities. To include appropriate protection of:

- i. eyes
- ii. ears
- iii. head
- iv. skin
- v. feet
- vi. hands
- vii. lungs.

### **Fire and extinguishers**

- a. Classification of fire types.
- b. Using a fire extinguisher effectively.
- c. Types of extinguishers:
  - i. foam
  - ii. dry powder
  - iii. CO<sub>2</sub>
  - iv. water
  - v. fire blanket.

### **Action to be taken in the event of a fire to include:**

- a. the procedure as:
  - i. raise the alarm
  - ii. fight fire only if appropriate
  - iii. evacuate building
  - iv. call for assistance.

### **Product warning labels to include:**

- a. reasons for placing warning labels on containers.
- b. warning labels in common use
  - i. toxic
  - ii. corrosive
  - iii. poisonous
  - iv. harmful
  - v. irritant
  - vi. flammable
  - vii. explosive.

### **Warning signs and notices**

- a. Colours used for warning signs:
  - i. red
  - ii. blue
  - iii. green.
- b. Shapes and meaning of warning signs:
  - i. round
  - ii. triangular
  - iii. square.
- c. The meaning of prohibitive warning signs in common use.
- d. The meaning of mandatory warning signs in common use.



- e. The meaning of warning notices in common use.
- f. General design of safe place warning signs.

**Hazards and risks to include:**

- a. the difference between a risk and a hazard.
- b. potential risks resulting from:
  - i. the use and maintenance of machinery or equipment
  - ii. the use of materials or substances
  - iii. accidental breakages and spillages
  - iv. unsafe behaviour
  - v. working practices that do not conform to laid down policies
  - vi. environmental factors
  - vii. personal presentation
  - viii. unauthorised personnel, customers, contractors etc entering the work premises
  - ix. working by the roadside
  - x. vehicle recovery.
- c. the employee's responsibilities in identifying and reporting risks within their working environment.
- d. the method of reporting risks that is outside own limits of authority.
- e. potential causes of:
  - i. fire
  - ii. explosion
  - iii. noise
  - iv. harmful fumes
  - v. slips
  - vi. trips
  - vii. falling objects
  - viii. accidents whilst dealing with broken down vehicles.

**Personal responsibilities**

- a. The purpose of workplace policies and procedures on:
  - i. the use of safe working methods and equipment
  - ii. the safe use of hazardous substances
  - iii. smoking, eating, drinking and drugs
  - iv. emergency procedures
  - v. personal appearance.
- b. The importance of personal appearance in the control of health and safety.

**Action to be taken in the event of colleagues suffering accidents**

- a. The typical sequence of events following the discovery of an accident such as:
  - i. make the area safe
  - ii. remove hazards if appropriate i.e. switch off power
  - iii. administer minor first aid
  - iv. take appropriate action to re-assure the injured party
  - v. raise the alarm

- vi. get help
  - vii. report on the accident.
- b. Typical examples of first aid which can be administered by persons at the scene of an accident:
- i. check for consciousness
  - ii. stem bleeding
  - iii. keep the injured person's airways free
  - iv. place in the recovery position if injured person is unconscious
  - v. issue plasters for minor cuts
  - vi. action to prevent shock i.e. keep the injured party warm
  - vii. administer water for minor burns or chemical injuries
  - viii. wash eyes with water to remove dust or ingress of chemicals (battery acid)
  - ix. need to seek professional help for serious injuries.
- c. Examples of bad practice which may result in further injury such as:
- i. moving the injured party
  - ii. removing foreign objects from wounds or eyes
  - iii. inducing vomiting
  - iv. straightening deformed limbs.

## Unit 053

## Knowledge of support for job roles in the automotive work environment

<b>Level:</b>	6
<b>Credit value:</b>	3
<b>Relationship to NOS:</b>	This unit is linked to G3 Maintain Working Relationships in the Motor Vehicle Environment.
<b>Assessment requirements specified by a sector or regulatory body:</b>	This unit is endorsed by the IMI, the Standards Setting Body for the Automotive industry. All assessments have been developed in accordance with the IMI Assessment Requirements.
<b>Aim:</b>	This unit enables the learner to develop an understanding of how to keep good working relationships with all colleagues in the automotive work environment by using effective communication and support skills.

<b>Learning outcome</b>	<b>The learner will:</b>
1.	understand key organisational structures, functions and roles within the automotive work environment
<b>Assessment criteria</b>	
The learner can:	
1.1	identify the purpose of the different sections of a typical automotive work environment
1.2	explain organisational structures and lines of communication within the automotive work environment
1.3	explain levels of responsibility within specific job roles in an automotive workplace. To include: a. trainee b. skilled technician c. supervisor d. manager.

<b>Learning outcome</b>	<b>The learner will:</b>
2.	understand the importance of obtaining, interpreting and using information in order to support their job role within the automotive work environment
<b>Assessment criteria</b>	
The learner can:	
2.1	explain the importance of different sources of information in an automotive work environment.
2.2	explain how to find, interpret and use relevant sources of information.
2.3	describe the main legal requirements relating to the vehicle, including road safety requirements
2.4	explain the importance of working to recognised procedures and processes
2.5	explain when replacement units and components must meet the manufacturers' original equipment specification
2.6	explain how to use identification codes.

<b>Learning outcome</b>	<b>The learner will:</b>
3.	understand the importance of different types of communication within the automotive work environment
<b>Assessment criteria</b>	
The learner can:	
3.1	explain where different methods of communication would be used within the automotive environment
3.2	explain the factors which can determine their choice of communication
3.3	explain how the communication of information can change with the target audience.

<b>Learning outcome</b>	<b>The learner will:</b>
4.	understand communication requirements when carrying out vehicle repairs in the automotive work environment
<b>Assessment criteria</b>	
The learner can:	
4.1	explain how to report using written and spoken methods of communication
4.2	explain the importance of documenting information relating to work carried out in the automotive environment
4.3	explain the importance of working to agreed timescales.

Learning outcome	The learner will:
5.	understand how to develop good working relationships with colleagues and customers in the automotive workplace
<b>Assessment criteria</b>	
The learner can:	
5.1	describe how to develop positive working relationships with colleagues and customers
5.2	explain the importance of developing positive working relationships
5.3	explain the importance of accepting other peoples' views and opinions
5.4	explain the importance of making and honouring realistic commitments to colleagues and customers.

## **Unit 053                    Knowledge of support for job roles in the automotive work environment**

### **Supporting information**

**Candidates will be assessed on the assessment criteria as specified within the unit. The following information has been provided by IMI SSC and is included to support centres in terms of teaching and delivery.**

#### **The structure of a typical vehicle repair business**

a. How these areas relate to each other within the business:

- i.     body shop
- ii.    vehicle repair workshop
- iii.   paint shop
- iv.    valeting
- v.     vehicle parts store
- vi.    main office
- vii.   vehicle sales
- viii.  reception.

#### **Sources of information:**

- a. other staff
- b. manuals
- c. parts lists
- d. computer software and the internet
- e. manufacturer
- f. diagnostic equipment

#### **Communication requirements when carrying out vehicle repairs**

a. Procedures for:

- i.     referral of problems
- ii.    reporting delays
- iii.   additional work identified during repair or maintenance
- iv.    keeping others informed of progress

b. Methods of communication:

- i.     verbal
- ii.    signs and notices
- iii.   memos
- iv.    telephone
- v.     electronic mail
- vi.    vehicle job card
- vii.   notice boards
- viii.  SMS text messaging

- ix. letters.
- c. Choice of communication
  - i. distance
  - ii. location
  - iii. job responsibility.
- d. How the communication of information can change with the target audience. To include:
  - i. uninformed people
  - ii. informed people.
- e. Locating and using correct documentation and information for:
  - i. recording vehicle maintenance and repairs
  - ii. vehicle specifications
  - iii. component specifications
  - iv. oil and fluid specifications
  - v. equipment and tools
  - vi. identification codes.
- f. Organisational and customer requirements:
  - i. importance of time scales to customer and organization
  - ii. relationship between time and costs
  - iii. meaning of profit.

**Importance of maintaining positive working relationships:**

- a. morale
- b. productivity
- c. company image
- d. customer relationships
- e. colleagues.

## Unit 102

# Skills in removing and fitting non permanently fixed motor vehicle body panels

<b>Level:</b>	5
<b>Credit value:</b>	2
<b>Relationship to NOS:</b>	This unit is linked to BP18 Remove and fit basic motor MET components and non permanently fixed motor vehicle body panels.
<b>Assessment requirements specified by a sector or regulatory body:</b>	This unit is endorsed by IMI, the Standards Setting Body for the automotive industry. All assessments have been developed in accordance with the IMI Assessment Requirements.
<b>Aim:</b>	This unit will enable the learner to develop the skills required to be able carry out a range of removal and fitting of non-permanently fixed vehicle panels such as wings, doors, bonnets, boot lids and tailgates. It also covers the evaluation of the operation of the components when fitted.

Learning outcome	The learner will:
1.	be able to work safely when carrying out removal and fitting of non-permanently fixed vehicle panels
<b>Assessment criteria</b>	
The learner can:	
1.1	use suitable personal protective equipment and vehicle coverings throughout all removal and replacement activities
1.2	work in a way which minimises the risk of damage or injury to the vehicle, people and the environment.

Learning outcome	The learner will:
2.	be able to use relevant information to carry out the task
<b>Assessment criteria</b>	
The learner can:	
2.1	select suitable sources of technical information to support motor vehicle removal and recognised fitting activities including:
	a. vehicle technical data
	b. removal and fitting procedures
	c. legal requirements



2.2 use technical information to support motor vehicle removal and recognised fitting activities.
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<b>Learning outcome</b>	<b>The learner will:</b>
3.	be able to use appropriate tools and equipment
<b>Assessment criteria</b>	
The learner can:	
3.1	select the appropriate tools and equipment necessary for carrying out removal and fitting of non-permanently fixed vehicle panels
3.2	ensure that equipment has been calibrated to meet manufacturers' and legal requirements
3.3	use the correct tools and equipment in the way specified by manufacturers when carrying removal and fitting of non-permanently fixed vehicle panels.

<b>Learning outcome</b>	<b>The learner will:</b>
4.	be able to carry out removal and fitting of non-permanently fixed vehicle panels
<b>Assessment criteria</b>	
The learner can:	
4.1	carry out removal and fitting of non-permanently fixed vehicle panels
4.2	carry out removal and fitting of non-permanently fixed vehicle panels adhering to the correct specifications and tolerances for the vehicle
4.3	ensure that the removal and fitting of non-permanently fixed panels conforms to the vehicle operating specification and any legal requirements
4.4	ensure the components are realigned correctly in a way which regains their original manufactured tolerance
4.5	ensure no damage occurs to other components when removal and fitting of non-permanently fixed vehicle panels
4.6	ensure all components and panels are stored safely and in the correct location.

<b>Learning outcome</b>	<b>The learner will:</b>
5.	be able to record information and make suitable recommendations
<b>Assessment criteria</b>	
The learner can:	
5.1	produce work records that are accurate, complete and passed to the relevant person(s) promptly in the format required
5.2	make suitable and justifiable recommendations for cost effective repairs
5.3	record and report any additional faults noticed during the course of their work promptly in the format required.

## Unit 152

# Knowledge of removing and fitting non permanently fixed motor body panels

<b>Level:</b>	<b>5</b>
<b>Credit value:</b>	<b>2</b>
<b>Relationship to NOS:</b>	This unit is linked to BP18 Remove and fit basic motor MET components and non permanently fixed motor vehicle body panels.
<b>Assessment requirements specified by a sector or regulatory body:</b>	This unit is endorsed by IMI, the Standards Setting Body for the automotive industry. All assessments have been developed in accordance with the IMI Assessment Requirements.
<b>Aim:</b>	This unit will enable the learner to develop an understanding of carrying out a range of removal and fitting of non-permanently fixed vehicle panels such as wings, doors, bonnets, boot lids and tailgates. It also covers the evaluation of the operation of the components when fitted.

<b>Learning outcome</b>	<b>The learner will:</b>
1.	understand how to carry out removal and fitting of non-permanently fixed motor vehicle body panels.
<b>Assessment criteria</b>	
The learner can:	
1.1	identify the procedures involved in carrying out the systematic removal and fitting of non-permanently fixed vehicle body panels: a. wings b. doors c. bonnets d. boot lids e. tailgates
1.2	identify the procedures involved in working with supplementary safety systems when fitting basic non-permanently fixed vehicle body panels
1.3	describe the methods and procedures for storing removed non-permanently fixed vehicle body panels
1.4	identify the different types of fastenings and fixings used when removing and fitting non-permanently fixed vehicle body panels
1.5	explain the reasons for the use of different types of fastenings and

fixings used in non-permanently fixed vehicle body panels

- 1.6 describe the procedures, methods and reasons for ensuring alignment of non-permanently fixed vehicle body panels
- 1.7 identify the quality checks that can be used to ensure alignment and operation of non-permanently fixed vehicle body panels
- 1.8 identify conformity of vehicle systems against vehicle specification and legal requirements on completion
- 1.9 explain the procedure for reporting damage to vehicle non-permanently fixed vehicle body panels.

## **Unit 152                    Knowledge of removing and fitting non permanently fixed motor body panels**

### **Supporting information**

**Candidates will be assessed on the assessment criteria as specified within the unit. The following information has been provided by IMI SSC and is included to support centres in terms of teaching and delivery.**

#### **Removing and Fitting non permanently fixed Body Panels**

- a. Find, interpret and use sources of information applicable to the removal and fitting of basic non-welded body panels.
- b. Select check and use all the tools and equipment required to remove and fit basic non welded body panels
- c. The different types of mechanical fixings for non welded body panels and when and why they should be used
- d. The correct procedures and processes for removing and fitting of non welded body panels.
- e. The need for correct alignment of panels and methods to achieve this:
- f. Aperture gaps
- g. Alignment of panel features
- h. Best fit of components to panels
- i. Operation of openings such as doors, tailgates, bonnets etc.
- j. The types of quality control checks that can be used to ensure correct alignment and contour of panels and operation of components to manufacturer's specification.
- k. The method of storing removed panels and the importance of storing them correctly.

## Unit 201

## Skills in tools and equipment used in vehicle refinishing

<b>Level:</b>	5
<b>Credit value:</b>	5
<b>Relationship to NOS:</b>	This unit is linked to Poo1S Demonstrating skills in tools and equipment used in vehicle refinishing.
<b>Assessment requirements specified by a sector or regulatory body:</b>	This unit is endorsed by IMI, the Standards Setting Body for the automotive industry. All assessments have been developed in accordance with the IMI Assessment Requirements.
<b>Aim:</b>	This unit allows the learner to develop skills in the correct: <ul style="list-style-type: none"><li>• selection, maintenance and use of hand and power tools used in vehicle refinishing</li><li>• preparation, use and maintenance of vehicle refinishing equipment.</li></ul>

<b>Learning outcome</b>	<b>The learner will:</b>
1.	be able to select, use and care for hand and power tools used in vehicle refinishing
<b>Assessment criteria</b>	
The learner can:	
1.1	select, prepare, safely use and maintain suitable hand and power tools when vehicle refinishing.
1.2	report any faulty or damaged tools to the relevant person(s) clearly and promptly
1.3	store work tools in a clean, serviceable and safe manner, which permits ease of access and identification for use.

<b>Learning outcome</b>	<b>The learner will:</b>
2.	be able to prepare and use vehicle refinishing equipment
<b>Assessment criteria</b>	
The learner can:	
2.1	select, prepare and safely use vehicle refinishing workshop equipment
2.2	report any faulty or damaged equipment to the relevant person(s) clearly and promptly
2.3	store work equipment in a clean, serviceable and safe manner, which permits ease of access and use.

<b>Level:</b>	5
<b>Credit value:</b>	5
<b>Relationship to NOS:</b>	This unit is linked to PO0205S Demonstrating skills in applying fillers and foundation materials.
<b>Assessment requirements specified by a sector or regulatory body:</b>	This unit is endorsed by IMI, the Standards Setting Body for the automotive industry. All assessments have been developed in accordance with the IMI Assessment Requirements.
<b>Aim:</b>	This unit will enable the learner to develop the skills required to carry out the identification of substrates. Mixing and adjusting the viscosity of fillers and foundation materials. Applying fillers and foundation materials following guidelines and procedures.

Learning outcome	The learner will:
1.	be able to work safely when carrying out preparation and application of foundation materials to vehicles
<b>Assessment criteria</b>	
The learner can:	
1.1	use suitable personal protective equipment and vehicle coverings throughout all preparation and application of foundation materials to plastics used in vehicle refinishing
1.2	work in a way which minimises the risk of damage or injury to the vehicle, people and the environment.

Learning outcome	The learner will:
2.	be able to use carry out preparation and application of foundation materials to vehicles
<b>Assessment criteria</b>	
The learner can:	
2.1	identify prior to working on the vehicle the type of substrate
2.2	use surface cleaning agents, fillers and foundation materials
2.3	mix and adjust the viscosity of fillers and foundation materials
2.4	apply all foundation materials

2.5	dry and cure all foundation materials
2.6	ensure all completed repairs are finished to an agreed standard ready for the next process.

<b>Learning outcome</b>	<b>The learner will:</b>
3.	be able to record information and make suitable recommendations
<b>Assessment criteria</b>	
The learner can:	
3.1	produce work records that are accurate, complete and passed to the relevant person(s) promptly in the format required
3.2	make suitable and justifiable recommendations for cost effective repairs
3.3	record and report any additional faults noticed during the course of their work promptly in the format required.

<b>Learning outcome</b>	<b>The learner will:</b>
4.	be able to use appropriate tools and equipment
<b>Assessment criteria</b>	
The learner can:	
4.1	select the appropriate tools and equipment necessary for carrying out preparation and application of foundation materials to vehicles
4.2	ensure that equipment has been calibrated to meet manufacturers requirements
4.3	use the correct tools and equipment in the way specified by manufacturers when carrying out preparation and application of foundation materials to vehicles
4.4	leave all application equipment in a clean and serviceable condition.

<b>Learning outcome</b>	<b>The learner will:</b>
5.	be able to use relevant information to carry out the task
<b>Assessment criteria</b>	
The learner can:	
5.1	select suitable sources of technical information to support preparation and application of foundation materials to vehicles
5.2	use technical information to support preparation and application of foundation materials to vehicles.

<b>Level:</b>	5
<b>Credit value:</b>	5
<b>Relationship to NOS:</b>	This unit is linked to PO03S Demonstrating Skills in Working with Plastic Materials and Components.
<b>Assessment requirements specified by a sector or regulatory body:</b>	This unit is endorsed by IMI, the Standards Setting Body for the automotive industry. All assessments have been developed in accordance with the IMI Assessment Requirements.
<b>Aim:</b>	This unit will help the learner to develop the skills required to carry out the identification of plastic substrates. Mixing and adjusting the viscosity of foundation/topcoat materials. Applying foundation/topcoat materials to plastics following guidelines and procedures.

Learning outcome	The learner will:
1.	be able to work safely when carrying out preparation and application of foundation materials to plastics used in vehicle refinishing
<b>Assessment criteria</b>	
The learner can:	
1.1	use suitable personal protective equipment and vehicle coverings throughout all preparation and application of foundation materials to plastics used in vehicle refinishing
1.2	work in a way which minimises the risk of damage or injury to the vehicle, people and the environment.

Learning outcome	The learner will:
2.	be able to carry out preparation and application of foundation materials to plastics used in vehicle refinishing
<b>Assessment criteria</b>	
The learner can:	
2.1	identify the type of plastic component prior to working on the vehicle
2.2	remove and store safely any components likely to be affected by the preparation process
2.3	keep the work area clean and tidy throughout all preparation



activities
2.4 use surface cleaning agents and protect adjacent panels to those being repaired
2.5 leave the prepared areas free from contamination and ready for the application of foundation materials
2.6 check the viscosity of foundation materials
2.7 prepare and apply all foundation materials to plastics
2.8 dry and cure all foundation materials to plastics
2.9 dispose of waste material to conform with legal and workplace requirements
2.10 ensure all completed repairs are finished to an agreed standard ready for the next process.

Learning outcome	The learner will:
3.	be able to record information and make suitable recommendations
Assessment criteria	
The learner can:	
3.1	produce work records that are accurate, complete and passed to the relevant person(s) promptly in the format required
3.2	make suitable and justifiable recommendations for cost effective repairs
3.3	record and report any additional faults identified during the course of their work promptly in the format required.

Learning outcome	The learner will:
4.	be able to use appropriate tools and equipment
Assessment criteria	
The learner can:	
4.1	select the appropriate tools and equipment necessary for carrying out preparation and application of foundation materials to plastics in vehicle refinishing
4.2	ensure that equipment has been calibrated to meet manufacturers requirements
4.3	use the correct tools and equipment in the way specified by manufacturers when carrying out preparation and application of foundation materials to plastics in vehicle refinishing
4.4	leave all application equipment in a clean and serviceable condition.

Learning outcome	The learner will:
5.	be able to use relevant information to carry out the task
Assessment criteria	
The learner can:	
5.1	select suitable sources of technical information to support preparation and application of foundation materials to plastics in vehicle refinishing

5.2 use technical information to support preparation and application of foundation materials to plastics in vehicle refinishing.

<b>Level:</b>	5
<b>Credit value:</b>	5
<b>Relationship to NOS:</b>	This unit is linked to PO0408S Demonstrating skills in preparing metal and pre-painted surfaces.
<b>Assessment requirements specified by a sector or regulatory body:</b>	This unit is endorsed by IMI, the Standards Setting Body for the automotive industry. All assessments have been developed in accordance with the IMI Assessment Requirements.
<b>Aim:</b>	This unit will help the learner to develop the skills required to carry out the preparation of a wide variety of different panels and component surfaces to accept foundation/paint topcoat materials. It also covers the importance of following guidelines and recommended procedures.

Learning outcome	The learner will:
1.	be able to work safely when carrying out the preparation of metal and pre-painted surfaces
<b>Assessment criteria</b>	
The learner can:	
1.1	use suitable personal protective equipment and vehicle coverings throughout the preparation of metal and pre-painted surfaces
1.2	work in a way which minimises the risk of damage or injury to the vehicle, people and the environment.

Learning outcome	The learner will:
2.	be able to carry out the preparation of metal and pre-painted surfaces to accept foundation materials and paint topcoats
<b>Assessment criteria</b>	
The learner can:	
2.1	identify prior to working on the vehicle the type of substrate
2.2	use surface cleaning agents and protect all surfaces adjacent to those being prepared using the specified method
2.3	remove and store safely any components likely to be affected by the preparation process
2.4	prepare all panel surfaces required following: <ul style="list-style-type: none"> <li>a. vehicle manufacturer technical data</li> <li>b. product data</li> </ul>

<ul style="list-style-type: none"> <li>c. recognised methods and techniques</li> <li>2.5 keep the work area clean and tidy throughout all preparation activities</li> <li>2.6 dispose of waste materials to conform with legal and workplace requirements</li> <li>2.7 ensure all preparation is finished to an agreed standard and free from contamination ready for the next process.</li> </ul>
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<b>Learning outcome</b>	<b>The learner will:</b>
3.	be able to record information and make suitable recommendations
<b>Assessment criteria</b>	
The learner can:	
3.1	produce work records that are accurate, complete and passed to the relevant person(s) promptly in the format required
3.2	make suitable and justifiable recommendations for cost effective repairs
3.3	record and report any additional faults noticed during the course of their work promptly in the format required.

<b>Learning outcome</b>	<b>The learner will:</b>
4.	be able to use appropriate tools and equipment
<b>Assessment criteria</b>	
The learner can:	
4.1	select the appropriate tools and equipment necessary for carrying out the preparation of metal and pre-painted surfaces
4.2	ensure that the equipment is safe and has been calibrated to meet manufacturers requirements
4.3	use the correct tools and equipment in the way specified by manufacturers when carrying the preparation of metal and pre-painted surfaces
4.4	leave all application equipment in a clean and serviceable condition.

<b>Learning outcome</b>	<b>The learner will:</b>
5.	be able to use relevant information to carry out the task
<b>Assessment criteria</b>	
The learner can:	
5.1	select suitable sources of technical information to support the preparation of metal and pre-painted surfaces
5.2	use technical information to support the preparation of metal and pre-painted surfaces.

## Unit 206

## Skills in repairing minor paint defects

<b>Level:</b>	<b>5</b>
<b>Credit value:</b>	<b>5</b>
<b>Relationship to NOS:</b>	This unit is linked to POo6S Demonstrating skills in repairing minor paint defects.
<b>Assessment requirements specified by a sector or regulatory body:</b>	This unit is endorsed by IMI, the Standards Setting Body for the automotive industry. All assessments have been developed in accordance with the IMI Assessment Requirements.
<b>Aim:</b>	This unit will enable the learner to develop the skills required to carry out the rectification of minor paint defects using a range of tools, equipment and materials. It also covers the importance of following guidelines and recommended procedures.

<b>Learning outcome</b>	<b>The learner will:</b>
1.	be able to work safely when carrying out the rectification of minor paint defects
<b>Assessment criteria</b>	
The learner can:	
1.1	use suitable personal protective equipment and vehicle coverings when carrying out the rectification of minor paint defects
1.2	work in a way which minimises the risk of damage or injury to the vehicle, people and the environment.

<b>Learning outcome</b>	<b>The learner will:</b>
2.	be able to carry out the rectification of minor paint defects
<b>Assessment criteria</b>	
The learner can:	
2.1	identify the type of paint defect prior to working on the vehicle
2.2	use surface cleaning agents and protect all surfaces adjacent to those being prepared and rectified using the specified method
2.3	remove and store safely any components likely to be affected by the preparation and rectification process
2.4	correct defects using the approved tools and equipment required
2.5	keep the work area clean and tidy throughout all rectification activities
2.6	dispose of waste materials to conform with legal and workplace

requirements
2.7 ensure all minor paint defects are rectified to a commercially acceptable standard.

<b>Learning outcome</b>	<b>The learner will:</b>
3.	be able to record information and make suitable recommendations
<b>Assessment criteria</b>	
The learner can:	
3.1	produce work records that are accurate, complete and passed to the relevant person(s) promptly in the format required
3.2	make suitable and justifiable recommendations for cost effective repairs
3.3	record and report any additional faults identified during the course of their work promptly in the format required.

<b>Learning outcome</b>	<b>The learner will:</b>
4.	be able to use appropriate tools and equipment
<b>Assessment criteria</b>	
The learner can:	
4.1	select the appropriate tools and equipment necessary for carrying out the rectification of minor paint defects
4.2	ensure that the equipment is safe and has been calibrated to meet manufacturers requirements
4.3	use the correct tools and equipment in the way specified by manufacturers when carrying out the rectification of minor paint defects
4.4	leave all equipment in a clean and serviceable condition.

<b>Learning outcome</b>	<b>The learner will:</b>
5.	be able to use relevant information to carry out the task
<b>Assessment criteria</b>	
The learner can:	
5.1	select suitable sources of technical information to support the rectification of minor paint defects
5.2	use technical information to support the rectification of minor paint defects.

## Unit 251

## Knowledge of tools and equipment used in vehicle refinishing

<b>Level:</b>	5
<b>Credit value:</b>	5
<b>Relationship to NOS:</b>	This unit is linked to PO01K Knowledge of tools and equipment used in vehicle refinishing.
<b>Assessment requirements specified by a sector or regulatory body:</b>	This unit is endorsed by the IMI, the Standards Setting Body for the automotive industry. All assessments have been developed in accordance with the IMI Assessment Requirements.
<b>Aim:</b>	This unit enables the learner to develop an understanding for the: <ul style="list-style-type: none"><li>• correct selection, maintenance and use of hand and power tools used in vehicle refinishing</li><li>• correct preparation, use and maintenance of vehicle refinishing equipment.</li></ul>

<b>Learning outcome</b>	<b>The learner will:</b>
1. understand how to select, use and care for hand and power tools used in vehicle refinishing	
<b>Assessment criteria</b>	
The learner can:	
1.1	describe the use of common types of hand and power tools used for vehicle refinishing
1.2	identify the main components of a spray gun
1.3	describe, within the scope of their responsibilities, how to select, prepare and maintain hand and power tools used in vehicle refinishing
1.4	state the limitations of hand and power tools used in vehicle refinishing
1.5	explain how hand and power tools used in vehicle refinishing should be stored
1.6	describe the methods of adjusting compressed air pressures by use of: <ul style="list-style-type: none"><li>a. transformer/regulator</li><li>b. spray gun pressure gauge</li></ul>
1.7	describe the operation of gun cleaning machines to include the use of solvent and water based gun cleaners
1.8	describe the cleaning and maintenance of suction/gravity feed guns
1.9	identify spray gun faults, their cause and how they should be rectified.

Learning outcome	The learner will:
2.	understand how to prepare, use and care for vehicle refinishing equipment
<b>Assessment criteria</b>	
The learner can:	
2.1	identify workshop equipment used in vehicle refinishing
2.2	describe the preparation and safe use of workshop equipment
2.3	describe the maintenance requirements of a compressed air system oil level.



# Unit 251 Knowledge of tools and equipment used in vehicle refinishing

## Supporting information

Candidates will be assessed on the assessment criteria as specified within the unit. The following information has been provided by IMI SSC and is included to support centres in terms of teaching and delivery.

### Equipment used in Vehicle Refinishing

- a. Flattening block
- b. Sponge
- c. Squeegee
- d. Chamois leather
- e. Trimming knife
- f. Polishing mop
- g. Denibbing blocks
- h. Sealer gun
- i. Air duster
- j. Rotary sander
- k. DA random orbital sander
- l. Orbital flat bed sander
- m. Belt sander
- n. Vacuum extraction sander
- o. Specialist extraction for aluminium particles (explosive)
- p. Suction feed spray gun
- q. Gravity feed spray gun
- r. Pressure feed spray gun
- s. HVLP spray guns
- t. Identify spray gun cleaning machines

### Workshop equipment

- a. Combi-booth
- b. Separate oven
- c. Infra-red drying
- d. Compressor
- e. Main air line
- f. Transformer/regulator
- g. Water traps
- h. Flexible air and fluid hoses
- i. Pressure gauges
- j. Automatic paper/tape dispenser
- k. Plastic sheeting dispenser

- l. Complete car covers dispenser
- m. Wheel covers dispenser
- n. Viscosity measuring equipment
- o. Paint mixing schemes
- p. Air feed breathing equipment
- q. Smart scales

#### **Paint Gun Cleaning and Maintenance**

- a. Loading
- b. Cleaning cycle
- c. Coagulant (water-based paints only)
- d. Filtration of solids
- e. Partial strip of paint spaying gun
- f. Complete strip of paint spraying gun
- g. Washer cycle
- h. Blow through
- i. Re-assembly
- j. Lubrication

#### **Main parts of a spray gun**

- a. Trigger
- b. Body
- c. Packing gland
- d. Air valve
- e. Fluid needle
- f. Fluid tip (nozzle)
- g. Air cap
- h. Paint volume control
- i. Fan width control
- j. Material cup
- k. Filters

#### **Compressed air systems:**

- a. tank drainage
- b. ring drainage
- c. regular maintenance and service logs
- d. air quality checks (breathable air)
- e. Air filter/cartridge changes (breathable air)

<b>Level:</b>	5
<b>Credit value:</b>	6
<b>Relationship to NOS:</b>	This unit is linked to PO0205K Knowledge of applying fillers and foundation materials.
<b>Assessment requirements specified by a sector or regulatory body:</b>	This unit is endorsed by IMI, the Standards Setting Body for the automotive industry. All assessments have been developed in accordance with the IMI Assessment Requirements.
<b>Aim:</b>	This unit will enable the learner to develop an understanding for identifying substrates. Mixing and adjusting the viscosity of fillers and foundation materials. Applying fillers and foundation materials following guidelines and procedures.

Learning outcome	The learner will:
1.	understand how to identify body surfaces requiring the application of foundation materials in vehicle refinishing
<b>Assessment criteria</b>	
The learner can:	
1.1	state the types of substrate likely to be found in vehicle refinishing
1.2	identify the main methods used to determine the vehicle substrate
1.3	identify the properties of the substrate
1.4	describe why the substrate will determine the selection of a suitable foundation material.

Learning outcome	The learner will:
2.	understand how to identify, mix and apply fillers and foundation materials in vehicle refinishing
<b>Assessment criteria</b>	
<p>The learner can:</p> <ul style="list-style-type: none"> <li>2.1 describe the choice and use of surface cleaning agents, fillers and foundation materials</li> <li>2.2 describe how to condition and clean surfaces prior to the application of foundation coatings to ensure adequate adhesion</li> <li>2.3 describe how to mix and check the viscosity of fillers and foundation materials</li> <li>2.4 describe the importance of viscosity and its effects on the surface finish</li> <li>2.5 describe the properties of the foundation materials</li> <li>2.6 describe the principles of filler and paint mixing, the importance of the right additive (hardener or thinner) in the correct ratio</li> <li>2.7 describe the curing and drying recommendations for the various fillers and foundation materials</li> <li>2.8 describe how to apply foundation coatings</li> <li>2.9 describe how to find and interpret sources of information relevant to the mixing and application of foundation coatings</li> <li>2.10 describe how to avoid application defects</li> <li>2.11 describe the masking procedures, methods and techniques for part or whole vehicles</li> <li>2.12 describe how to carry out masking procedures to avoid material wastage and vehicle contamination for each stage of the process</li> <li>2.13 identify the requirements for protecting the vehicle and contents from damage before, during and after preparing and applying foundation materials.</li> </ul>	

# Unit 252 Knowledge of applying fillers and foundation materials

## Supporting information

Candidates will be assessed on the assessment criteria as specified within the unit. The following information has been provided by IMI SSC and is included to support centres in terms of teaching and delivery.

### The types of substrates likely to be found in vehicle refinishing

- a. List types of substrate to include:
  - i. steel
  - ii. aluminium
  - iii. all plastics
  - iv. coated steels
  - v. high bake Enamels (O E finishes)
  - vi. 2K Paints
  - vii. 1K Paints
  - viii. clear over bases
  - ix. polyester fillers
  - x. repaired panels
  - xi. primed panels (E coat)
- b. Identify substrates to determine selection of undercoat with reference to:
  - i. condition of surface
  - ii. type of substrate
  - iii. process requirements
  - iv. material requirement
- c. List the physical properties of a substrate to include:
  - i. surface condition
  - ii. adhesion
  - iii. flexibility
  - iv. porosity
  - v. texture

### Methods used in determining vehicle substrates

- a. Workshop tests to determine substrates to include:
  - i. visual test for aluminium, plastics
  - ii. magnet test for steel
- b. For determination of paint type:
  - i. compound small area
  - ii. solvent wipe test (1k or 2k)
  - iii. colour of flattening sludge (straight colour or C O B)



### **The properties and correct use of conditioning materials**

- a. State that a vehicle must be thoroughly washed and cleaned prior to refinishing to include:
  - i. outside body panels
  - ii. under arches
  - iii. under bonnet
  - iv. all apertures
  - v. degreased
- b. State the reasons for masking components adjacent to repair areas.
- c. State the correct preparation of parts prior to painting to include products used for the removal of:
  - i. wax
  - ii. grease
  - iii. skin oils
  - iv. dust
  - v. water
  - vi. abrasive contaminates
  - vii. environmental pollution
- d. Identify materials used for conditioning processes such as:
  - i. wax and grease removers
  - ii. spirit wipes
  - iii. acid based
  - iv. water based
- e. The correct and safe use of the above materials.
- f. State the properties of pre-preparation material to include:
  - i. neutralisation
  - ii. ability to alter the surface
  - iii. reaction with oxide

### **The types and properties of fillers and foundation materials in common use**

- a. State what the ingredients of paint are to include:
  - i. pigment
  - ii. binder/vehicle
  - iii. solvent/thinner/reducer
  - iv. additives
- b. Properties of pigments to include:
  - i. opacity
  - ii. colour
  - iii. build
  - iv. easy flattening
  - v. corrosion resistance
- c. State the forms of pigments that are:
  - i. natural ground powders
  - ii. synthetic powders and dyes
- d. The uses of pigments in paints such as:
  - i. stoppers/putties

- ii. etch primers
- iii. primer surfacers
- iv. primer filler



- e. The properties of binders to include:
  - i. film forming
  - ii. binding
  - iii. cohesion
  - iv. adhesion
  - v. flexibility
- f. State the forms of binder which dry by the following methods:
  - i. solvent evaporation only
  - ii. oxidation
  - iii. polymerisation
- g. The properties of solvent/thinners to include:
  - i. speed of evaporation
  - ii. its ability to dissolve the binder
  - iii. its ability to be tolerated by a binder
- h. The use of solvent/thinner:
  - i. to make the paint fluid in the tin
  - ii. to reduce the paint to a spraying/ application viscosity
- i. State the meaning of paint terms such as:
  - i. activator
  - ii. adhesion
  - iii. build
  - iv. cohesion
  - v. compatibility
  - vi. curtains
  - vii. degreaser
  - viii. drier
  - ix. enamel
  - x. etch
  - xi. flash off
  - xii. floating
  - xiii. gloss
  - xiv. hardener
  - xv. lacquer
  - xvi. opacity
  - xvii. pigment
  - xviii. polymerization
  - xix. pot life
  - xx. shelf life
  - xxi. substrate
  - xxii. thermoplastic
  - xxiii. thermosetting
  - xxiv. thixotropic
  - xxv. two pack
  - xxvi. viscosity
- j. Explain the difference between types of paints to include:
  - i. non convertible, i.e.

- nitro cellulose
- 1k acrylics
- basecoats

- ii. Convertibles:
  - two packs
  - oil based synthetic enamels
- k. List the types of undercoat in common use to include:
  - i. etch primer
  - ii. primer surfacer
  - iii. primer filler
  - iv. stopper/putty
  - v. sealers
  - vi. anti stone chip
  - vii. polyester fillers
- l. The characteristics of these undercoats such as:
  - i. protection
  - ii. corrosion resistance
  - iii. flexibility
  - iv. build
  - v. drying
  - vi. flattening
- m. List the types and characteristics of common protective coatings such as:
  - i. zinc rich primers
  - ii. bitumen based
  - iii. anti stone chip
  - iv. etch primer
  - v. PVC

**The factors affecting the choice and use of fillers and foundation materials**

- a. State the reasons for using paint to include:
  - i. protection
  - ii. filling
  - iii. decoration
  - iv. identification
  - v. safety
- b. Use process data sheets to determine information such as:
  - i. material description
  - ii. material properties
  - iii. material characteristics
  - iv. limitations
  - v. related materials
  - vi. mixing ratios
  - vii. viscosity
  - viii. build film thickness
  - ix. pot life
- c. Describe the procedure for the preparation of minor damage to include:
  - i. paint removal
  - ii. feather edge
  - iii. surface condition

- iv. substrate identification
- v. cleanliness
- vi. achieving correct contour
- d. Describe the problems of over catalysed body filled areas
- e. Identify the correct Health and Safety procedures associated with body fillers
- f. Describe aids and techniques which can be used to achieve the correct contour of a filled area
- g. List undercoat materials for plastics to include:
  - i. adhesion promoters
  - ii. surface modifiers
  - iii. flexible additives
  - iv. texture additives

**The procedures for the mixing, application and curing of single and 2-pack fillers and stoppers**

- a. The properties of 2k stoppers to include:
  - i. convertible coating
  - ii. drying
  - iii. build
- b. The properties of 1K stoppers to include:
  - i. non convertible coating
  - ii. drying
  - iii. build
- c. The use of 2K and 1K stoppers to include:
  - i. 2k used for the filling of minor imperfections in 2K system
- d. That 1K stopper is ready for use.
- e. That 2k stopper is mixed with activator just prior to use.
- f. That 1K stopper has to be applied:
  - i. in thin layers and with adequate flash off
- g. That 2K stopper can be applied.
  - i. in thicker layers and is cured after 20 mins ( quicker with heat )
  - ii. 1K used for the filling of minor imperfections in 1K system

**The procedures for mixing foundation materials to the correct ratio with hardeners and thinners**

- a. Describe procedures for mixing undercoats such as:
  - i. etch primers
  - ii. anti-stone chip primers
  - iii. surfacers
  - iv. wash fillers
  - v. primer fillers
  - vi. plastic adhesion promoters
  - vii. elastic primers
  - viii. sealers
  - ix. spraying polyester fillers

### **The importance of checking and adjusting paint viscosity and its effect on surface finish**

- a. State why the viscosity of a paint is important to application to include:
  - i. build
  - ii. surface finish
  - iii. speed of application
  - iv. describe the procedure for checking viscosity
  - v. describe the effects on viscosity of:
    - vi. temperature
    - vii. additions of thinner/reducer

### **Filler and foundation material technical data sheets to extract listed information. The importance of correctly interpreting and following manufacturers' instructions and the consequences of failing to do so**

- a. Use the process data sheets to determine information such as:
  - i. mixing ratios
  - ii. viscosity
  - iii. number of coats
  - iv. flash off times
  - v. build film thickness
  - vi. spray gun type
  - vii. spray gun set up
  - viii. air pressure requirements
  - ix. substrate requirements
  - x. suitability as a substrate
  - xi. drying times
  - xii. suitability to be applied by methods other than spraying
- b. Define the main information sourced from data sheets to include:
  - i. product identification
  - ii. product description
  - iii. substrate suitability
  - iv. pre-treatment requirement
  - v. mixing ratio
  - vi. pot life
  - vii. method of application
  - viii. spray viscosity
  - ix. nozzle/air cap set up
  - x. number of coats
  - xi. flash off times
  - xii. drying times
  - xiii. recoatability
- c. List common pictograms and state their meaning including those for:
  - i. cleaning information
  - ii. mixing ratios
  - iii. use a measuring stick
  - iv. addition of hardener
  - v. application viscosity

- vi. type of spray gun
- vii. spray coats information
- viii. application with spatula
- ix. application with brush
- x. application with roller
- xi. flash-off
- xii. drying time
- xiii. drying with infrared
- xiv. sanding
- xv. polishing
- xvi. technical data required
- xvii. hand stirring

**Masking procedures for part and whole vehicles. Describe masking processes and techniques**

- a. List common masking systems, materials and techniques to include:
  - i. masking paper
  - ii. plastic sheeting
  - iii. masking tape
  - iv. foam tape
  - v. wheel covers
  - vi. liquid Masking
  - vii. roll-back masking
- b. Identify the characteristics of a quality masking tape to include:
  - i. ability to turn corners
  - ii. non-aggressive adhesive/non-drying
  - iii. clean edges to painted areas
- c. Describe the properties of these masking materials such as:
  - i. economy of use
  - ii. costs per unit
  - iii. absorption
  - iv. flexibility
- d. Identify where and how these masking materials and systems should be used.
- e. Describe the masking procedures for listed items such as:
  - i. door glass and windscreens
  - ii. handles
  - iii. lights
  - iv. mirrors
  - v. wheels
- f. Describe a masking schedule for the type of repair to include:
  - i. time efficiency
  - ii. material costs
  - iii. given protection
- g. Identify faults which are caused by careless masking such as:
  - i. flash lines
  - ii. bridging

- iii. creep
- iv. hard edges

## Unit 253

## Knowledge of working with plastic materials and components

<b>Level:</b>	5
<b>Credit value:</b>	6
<b>Relationship to NOS:</b>	This unit is linked to PO03K Knowledge of Working with Plastic Materials and Components
<b>Assessment requirements specified by a sector or regulatory body:</b>	This unit is endorsed by the IMI, the Standards Setting Body for the automotive industry. All assessments have been developed in accordance with the IMI Assessment Requirements.
<b>Aim:</b>	This unit enables the learner to develop an understanding for identifying substrates and plastics whilst undertaking paint operations following guidelines and procedures.

Learning outcome	The learner will:
1.	understand how to identify plastic body surfaces requiring the application of foundation materials in vehicle refinishing
<b>Assessment criteria</b>	
The learner can:	
1.1	identify the types of substrate likely to be found in vehicle refinishing
1.2	identify the main methods used to determine the vehicle substrate
1.3	identify the properties of the substrate
1.4	identify substrate to determine the selection of the preparation process and suitable foundation material
1.5	identify the types of plastic likely to be found in vehicle body manufacturing.

Learning outcome	The learner will:
2.	understand how to prepare plastic body surfaces prior to application of foundation materials
<b>Assessment criteria</b>	
The learner can:	
2.1	describe the choice and use of surface cleaning agents prior to applying foundation materials to plastics
2.2	describe how to condition and clean surfaces prior to the application of foundation coatings to ensure adequate adhesion.



Learning outcome	The learner will:
3.	understand how to mix and apply foundation materials onto plastics in vehicle refinishing
<b>Assessment criteria</b>	
<p>The learner can:</p> <ul style="list-style-type: none"> <li>3.1 describe how to mix and check the viscosity of foundation materials</li> <li>3.2 describe the importance of viscosity and its effects on the surface finish</li> <li>3.3 describe the properties of the foundation materials</li> <li>3.4 describe the principles of paint mixing, the importance of the right additive (hardener or thinner) in the correct ratio</li> <li>3.5 describe the curing and drying recommendations for the various foundation materials to plastics</li> <li>3.6 describe how to apply foundation coatings</li> <li>3.7 describe how to find and interpret sources of information relevant to the mixing and application of foundation coatings relating to plastics</li> <li>3.8 describe how to avoid application defects</li> <li>3.9 outline and describe the masking procedures, methods and techniques for part or whole vehicles</li> <li>3.10 describe how to carry out masking procedures to avoid material wastage and vehicle contamination for each stage of the process</li> <li>3.11 identify the requirements for protecting the vehicle and contents from damage before, during and after preparing and applying foundation materials to plastics.</li> </ul>	

## Unit 253 Knowledge of working with plastic materials and components

### Supporting information

Candidates will be assessed on the assessment criteria as specified within the unit. The following information has been provided by IMI SSC and is included to support centres in terms of teaching and delivery.

#### The types of substrates likely to be found in vehicle refinishing

- a. Types of substrate to include:
  - i. all plastics
  - ii. high bake Enamels (O E finishes)
  - iii. 2K Paints
  - iv. 1K Paints
  - v. clear over bases
  - vi. polyester fillers
  - vii. repaired panels
  - viii. primed panels
- b. Substrates to determine selection of undercoat with reference to:
  - i. condition of surface
  - ii. type of substrate
  - iii. process requirements
  - iv. material requirement
- c. list the physical properties of a substrate to include:
  - i. surface condition
  - ii. adhesion
  - iii. flexibility
  - iv. porosity
  - v. texture

#### Methods used in determining vehicle substrates

- a. Workshop tests to determine substrates to include:
- b. visual test for plastics and identification of plastic type through identification code For determination of paint type:
  - i. compound small area
  - ii. solvent wipe test (1k or 2k)
  - iii. colour of flattening sludge (straight colour or C O B)

#### The properties and correct use of conditioning materials

- a. That a vehicle must be thoroughly washed and cleaned prior to refinishing to include:

- i. outside body panels
  - ii. under arches
  - iii. under bonnet
  - iv. all apertures
  - v. degreased
- b. The reasons for masking components adjacent to repair areas.
- c. The correct preparation of parts prior to painting to include products used for the removal of:
  - i. wax
  - ii. grease
  - iii. skin oils
  - iv. dust
  - v. water
  - vi. abrasive contaminates
  - vii. environmental pollution
- d. Materials used for conditioning processes such as:
  - i. wax and grease removers
  - ii. spirit wipes
  - iii. acid based
  - iv. water based
- e. The correct and safe use of the above materials.
- f. The properties of pre-preparation material to include:
  - i. neutralisation
  - ii. ability to alter the surface
  - iii. reaction with oxide

**The types and properties of foundation materials in common use**

- a. The types of undercoat in common use to include:
  - i. etch primer
  - ii. primer surfacer
  - iii. primer filler
  - iv. stopper/putty
  - v. sealers
  - vi. anti stone chip
  - vii. polyester fillers
- b. The characteristics of these undercoats such as:
  - i. protection
  - ii. flexibility
  - iii. build
  - iv. drying
  - v. flatting
- c. The types and characteristics of common protective coatings such as:
  - i. bitumen based
  - ii. anti stone chip
  - iii. etch primer
  - iv. PVC

### **The factors affecting the choice and use of foundation materials**

- a. The reasons for using paint to include:
  - i. protection
  - ii. filling
  - iii. decoration
  - iv. identification
  - v. safety
- b. Undercoat materials for plastics to include:
  - i. adhesion promoters
  - ii. surface modifiers
  - iii. flexible additives
  - iv. texture additives
- c. The procedures for the preparation of plastics to include:
  - i. identification
  - ii. cleaning
  - iii. adhesion promotion
  - iv. elastic primers
- d. Identify the preparation requirements for textured and special effect coatings to include:
  - i. spoilers
  - ii. bumpers
  - iii. exterior trim

### **The procedures for mixing foundation materials to the correct ratio with hardeners and thinners**

- a. Procedures for mixing undercoats such as:
  - i. etch primers
  - ii. anti-stone chip primers
  - iii. surfacers
  - iv. wash fillers
  - v. primer fillers
  - vi. plastic adhesion promoters
  - vii. elastic primers
  - viii. sealers
  - ix. spraying polyester fillers
- b. Listed additives such as:
  - i. adhesion promoters
  - ii. flexible additives
  - iii. texture finishes
  - iv. extenders
  - v. UV absorbers
  - vi. flow aids

### **The importance of checking and adjusting paint viscosity and its effect on surface finish**

- a. Why the viscosity of a paint is important to application to include:
  - i. build

- ii. surface finish
- iii. speed of application
- iv. describe the procedure for checking viscosity
- v. describe the effects on viscosity of:
- vi. temperature
- vii. additions of thinner/reducer

**Foundation material technical data sheets to extract listed information.  
The importance of correctly interpreting and following manufacturers' instructions and the consequences of failing to do so**

- a. The process data sheets to determine information such as:
  - i. mixing ratios
  - ii. viscosity
  - iii. number of coats
  - iv. flash off times
  - v. build film thickness
  - vi. spray gun type
  - vii. spray gun set up
  - viii. air pressure requirements
  - ix. substrate requirements
  - x. suitability as a substrate
  - xi. drying times
  - xii. suitability to be applied by methods other than spraying
- b. The main information sourced from data sheets to include:
  - i. product identification
  - ii. product description
  - iii. substrate suitability
  - iv. pre-treatment requirement
  - v. mixing ratio
  - vi. pot life
  - vii. method of application
  - viii. spray viscosity
  - ix. nozzle/air cap set up
  - x. number of coats
  - xi. flash off times
  - xii. drying times
  - xiii. recoatability
- c. Common pictograms and state their meaning including those for:
  - i. cleaning information
  - ii. mixing ratios
  - iii. use a measuring stick
  - iv. addition of hardener
  - v. application viscosity
  - vi. type of spray gun
  - vii. spray coats information
  - viii. flash-off
  - ix. drying time
  - x. drying with infrared
  - xi. sanding
  - xii. polishing
  - xiii. technical data required
  - xiv. hand stirring

**Masking procedures for part and whole vehicles. Describe masking processes and techniques**

- a. Common masking systems, materials and techniques to include:
  - i. masking paper
  - ii. plastic sheeting
  - iii. masking tape
  - iv. foam tape
  - v. wheel covers
  - vi. liquid Masking
  - vii. roll-back masking
- b. The characteristics of a quality masking tape to include:
  - i. ability to turn corners
  - ii. non-aggressive adhesive/non-drying
  - iii. clean edges to painted areas
- c. The properties of these masking materials such as:
  - i. economy of use
  - ii. costs per unit
  - iii. absorption
  - iv. flexibility
- d. Where and how these masking materials and systems should be used.
- e. The masking procedures for listed items such as:
  - i. door glass and windscreens
  - ii. handles
  - iii. lights
  - iv. mirrors
  - v. wheels
- f. Masking schedule for the type of repair to include:
  - i. time efficiency
  - ii. material costs
  - iii. given protection
- g. Faults which are caused by careless masking such as:
  - i. flash lines
  - ii. bridging
  - iii. creep
  - iv. hard edges

<b>Level:</b>	5
<b>Credit value:</b>	6
<b>Relationship to NOS:</b>	This unit is linked to PO0408K Knowledge of preparing metal and pre-painted surfaces
<b>Assessment requirements specified by a sector or regulatory body:</b>	This unit is endorsed by the IMI, the Standards Setting Body for the automotive industry. All assessments have been developed in accordance with the IMI Assessment Requirements.
<b>Aim:</b>	This unit enables the learner to develop an understanding for preparing a wide variety of different panels and component surfaces to accept foundation/paint topcoat materials. It also covers the importance of following guidelines and recommended procedures.

<b>Learning outcome</b>	<b>The learner will:</b>
1.	understand how to identify body surfaces requiring the application of foundation/paint topcoat materials in vehicle refinishing
<b>Assessment criteria</b>	
The learner can:	
1.1	identify the types of substrate likely to be found in vehicle refinishing
1.2	identify the main methods used to determine the vehicle substrate
1.3	identify the properties of the substrate.



Learning outcome	The learner will:
2.	understand how to prepare new and repaired panels for the application of foundation/paint topcoat materials in vehicle refinishing
<b>Assessment criteria</b>	
<p>The learner can:</p> <ul style="list-style-type: none"> <li>2.1 describe the choice and use of surface cleaning agents, including wax and grease remover to ensure adequate adhesion</li> <li>2.2 describe the types of materials used to prepare the surface and the factors governing their use</li> <li>2.3 describe how to prepare new and repaired panels</li> <li>2.4 describe the factors governing the choice of panel preparation methods</li> <li>2.5 describe how to prepare panels and parts adjacent to the area being painted</li> <li>2.6 identify the methods of protecting panels and parts adjacent to the areas being painted and the circumstances in which they should be used</li> <li>2.7 identify the requirements for protecting the vehicle and contents from damage before, during and after preparing panel surfaces.</li> </ul>	

## Unit 254 Knowledge of preparing metal and pre-painted surfaces

### Supporting information

Candidates will be assessed on the assessment criteria as specified within the unit. The following information has been provided by IMI SSC and is included to support centres in terms of teaching and delivery.

#### Types of substrate likely to be found in modern vehicles

- a. Substrates to determine selection of undercoat with reference to:
  - i. condition of surface
  - ii. type of substrate
  - iii. process requirements
  - iv. material requirements
- b. The physical properties of a substrate to include:
  - i. surface condition
  - ii. adhesion
  - iii. flexibility
  - iv. porosity
- c. The technical properties of a substrate to include:
  - i. type of paint
  - ii. steel
  - iii. aluminium
  - iv. plastic
  - v. coated steels
  - vi. repaired panels
  - vii. OE finish
  - viii. primed panels (including 'E'-coat).

#### Methods used in determining vehicle substrates

- a. Workshop tests to determine substrates to include:
  - i. solvent wipe test (1k or 2k)
  - ii. colour of flattening sludge (straight colour or C O B).
  - iii. VIN plate

#### The main stages required in preparing a vehicle for refinishing, including areas adjacent to the painting area

- a. Manufacturers protective coatings and explain their warranty implications such as:
  - i. electrostatic dip
  - ii. under-body compounds
  - iii. cavity wax
  - iv. body caulking

- b. A vehicle must be thoroughly washed and cleaned prior to refinishing to include:
  - i. outside body panels
  - ii. under arches
  - iii. under bonnet
  - iv. all apertures
  - v. degreased
- c. The reasons for vehicle masking
- d. The correct preparation of parts prior to painting to include products use for the removal of:
  - i. wax
  - ii. grease
  - iii. skin oils
  - iv. dust
  - v. water
  - vi. abrasive contaminates
  - vii. environmental pollution.

**The procedures used in preparing listed substrates**

- a. The required preparation for the listed substrates to include:
  - i. steel
  - ii. aluminium alloys
  - iii. GR plastics
  - iv. thermo plastics
  - v. cured 2K materials
- b. The procedures for the preparation of plastics to include:
  - i. identification
  - ii. tempering
  - iii. porefilling
  - iv. release agent removal
  - v. cleaning
  - vi. adhesion promotion
  - vii. elastic primers.

**The procedures for the preparation and application of chemical solutions and solvents to remove paint**

- a. Materials used for conditioning processes such as:
  - i. wax and grease removers
  - ii. spirit wipes
  - iii. acid based
  - iv. water based
- b. The correct and safe use of the above materials
- c. The properties of pre-preparation materials to include:
  - i. neutralisation
  - ii. ability to alter the surface
  - iii. reaction with oxide
- d. Types of paint stripper available to include:

- i. aggressive
  - ii. non-aggressive
- e. The procedures for the preparation and application of chemical solutions and solvents to include:
  - i. Health and Safety
  - ii. PPE
  - iii. mixing schedules
  - iv. application schedules
  - v. waste disposal
- f. The process of stripping paint from:
  - i. steel
  - ii. aluminium
  - iii. plastics.

**The selection and uses of a range of abrasives in common use**

- a. Types and uses of abrasives materials to include:
  - i. aluminium oxide
  - ii. silicon carbide
  - iii. wet and dry types
  - iv. open coat
  - v. closed coat
  - vi. papers, pastes and woven plastics
- b. Forms of abrasive to include:
  - i. pad
  - ii. disc
  - iii. sheet
  - iv. roll
  - v. backing materials
  - vi. methods of attachments
- c. How grit sizes are classified according to the FEPA standards using 'P' grades with regard to:
  - i. the process being carried out
  - ii. the material being abraded
  - iii. the technique being employed
- d. The differences between Open and Closed coat abrasives
  - i. open coat
  - ii. closed coat
  - iii. P Grades.

**Define the term 'feather edging' and explain why correct operation is required in achieving the required surface finish**

- a. The procedure for the preparation of a repaired area on a large panel in terms of:
  - i. repair edge preparation
  - ii. surrounding area
  - iii. bare metal
- b. Why correct preparation is required with reference to:

- i. surface finish
- ii. film thickness
- iii. sinkage
- iv. mapping
- v. contouring.

**The procedures for the preparation of minor damage prior to the application of body fillers**

- a. The procedure for the preparation of minor damage to include:
  - i. paint removal
  - ii. feather edge
  - iii. surface condition
  - iv. substrate identification
  - v. cleanliness
  - vi. achieving correct contour
- b. The problems of over catalysed body filled areas.
- c. The correct Health and Safety procedures associated with body fillers.
- d. Aids and techniques which can be used to achieve the correct contour of a filled area.

## Unit 256

## Knowledge of repairing minor paint defects

<b>Level:</b>	<b>5</b>
<b>Credit value:</b>	<b>6</b>
<b>Relationship to NOS:</b>	This unit is linked to POo6K Knowledge of repairing minor paint defects.
<b>Assessment requirements specified by a sector or regulatory body:</b>	This unit is endorsed by IMI, the Standards Setting Body for the automotive industry. All assessments have been developed in accordance with the IMI Assessment Requirements.
<b>Aim:</b>	This unit will enable the learner to develop an understanding about the causes and rectification of minor paint defects using a range of tools, equipment and materials. It also covers the importance of following guidelines and recommended procedures.

<b>Learning outcome</b>	<b>The learner will:</b>
1. understand how to identify the body surface requiring the rectification of minor paint defects	
<b>Assessment criteria</b>	
The learner can:	
1.1	describe how to identify the existing paint surface finish on which the minor paint defect has occurred
1.2	identify the minor paint defects, their cause and methods of rectification suitable for the paint finish.

Learning outcome	The learner will:
2.	understand how to repair minor paint defects
<b>Assessment criteria</b>	
<p>The learner can:</p> <ul style="list-style-type: none"> <li>2.1 describe how to carry out flattening, burnishing, polishing and touch in techniques to correct minor paint defects</li> <li>2.2 describe how to use polishing machines, denibbing blocks and flattening equipment</li> <li>2.3 describe how to use compounds, flattening papers, polishes, pre-prepared paints and glazes</li> <li>2.4 identify the factors affecting the choice and use of materials in the rectification of minor paint defects</li> <li>2.5 describe how to prevent further paint damage during rectification</li> <li>2.6 describe the importance of proper cleaning to the vehicle and work area prior to and after rectification work</li> <li>2.7 describe the importance of keeping equipment and materials clean and free from contamination during rectification work</li> <li>2.8 identify the requirements for protecting the vehicle and contents from damage before, during and after repairing minor paint defects.</li> </ul>	



# Unit 256 Knowledge of repairing minor paint defects

## Supporting information

Candidates will be assessed on the assessment criteria as specified within the unit. The following information has been provided by IMI SSC and is included to support centres in terms of teaching and delivery.

### Minor surface defects to include:

- i. scratches
- ii. chips
- iii. dents
- iv. corrosion
- v. contamination
- vi. blisters (including micro-blisters)
- vii. fading
- viii. loss of gloss
- ix. chalking

### Types of paint finishes likely to be found in modern vehicles

- a. Types of substrate to include:
  - i. steel
  - ii. aluminium
  - iii. all plastics
  - iv. coated steels
  - v. high bake enamels ( o e finishes )
  - vi. 2 k paints
  - vii. 1k paints
  - viii. clear over bases
  - ix. polyester fillers
- b. Substrates to determine selection of undercoat with reference to:
  - i. condition of surface
  - ii. type of substrate
  - iii. process requirements
  - iv. material requirement
- c. The physical properties of a substrate to include:
  - i. surface condition
  - ii. adhesion
  - iii. flexibility
  - iv. porosity
  - v. texture

### Methods used in determining types of vehicle paint finishes

- a. Workshop tests to determine paint substrates to include:
  - i. compound small area
  - ii. solvent wipe test (1k or 2k)
  - iii. colour of flattening sludge (straight colour or c o b)
  - iv. VIN plate

### **Vehicle cleaning and protection procedures during paint defect rectification processes**

- a. Vehicle must be thoroughly washed and cleaned prior to refinishing to include:
  - i. outside body panels
  - ii. under arches
  - iii. under bonnet
  - iv. all apertures
  - v. degreased
- b. The reasons for masking components adjacent to repair areas.
- c. The correct preparation of parts prior to painting to include products used for the removal of:
  - i. wax
  - ii. grease
  - iii. skin oils
  - iv. dust
  - v. water
  - vi. abrasive contaminants
  - vii. environmental pollution
- d. Materials used for conditioning processes such as:
  - i. wax and grease removers
  - ii. spirit wipes
  - iii. acid based
  - iv. water based
- e. The correct and safe use of the above materials.
- f. The properties of pre-preparation material to include:
  - i. neutralisation
  - ii. ability to alter the surface
  - iii. reaction with oxide

### **Identification of the common minor paint defects and list their causes**

- a. The reasons for the defects in vehicle finish such as:
  - i. environmental pollution
  - ii. ultra violet reaction
  - iii. industrial pollution
  - iv. accidental damage

### **Which rectification procedure to use for each of the minor paint defects**

- a. The procedures for the rectification of minor defects to include:
  - i. compound/polish surface
  - ii. flat/polish surface

- iii. local paint removal/repaint
- iv. panel/edge-to-edge repaint

### **Tools and equipment used for the rectification of minor paint defects**

- a. The hand tools and equipment used by a paint refinisher to include:
  - i. flatting block
  - ii. squeegee
  - iii. leather
  - iv. trimming knife
  - v. masking dispensers
  - vi. sander
  - vii. DA random orbital
  - viii. orbital flat bed
  - ix. belt sander
  - x. polishing equipment
  - xi. spray guns
  - xii. sealer guns
  - xiii. air dusters
  - xiv. vacuum extraction
  - xv. compressed air systems

### **The selection, operation and maintenance of listed tools and equipment for paint defect rectification**

- a. The above tools and equipment with regard to their:
  - i. selection
  - ii. correct and safe use
  - iii. adjustment
  - iv. maintenance
  - v. accessories
- b. The function and correct use of each of the sanders listed:
  - i. rotary
  - ii. DA random orbital
  - iii. orbital flat bed
  - iv. belt
- c. Comparison of the above sanders in terms of:
  - i. selection
  - ii. abrasive pattern produced
  - iii. aggressiveness
  - iv. heat produced
  - v. adjustment
  - vi. abrasive change
- d. The equipment required for polishing to include:
  - i. air polisher
  - ii. electric polisher
  - iii. foam compound mop
  - iv. foam polishing mop
  - v. lambs-wool mop

- vi. types of paste compound
  - vii. types of liquid compound
  - viii. types of polishing cloth
  - ix. lubricants
  - x. specialist de-nib equipment
- e. The maintenance requirement of these tools.

**Adjust, set up and use listed tools and equipment for paint defect rectification**

- a. The process of using a polishing machine to refurbish paint work to include:
- i. speed of polishing machine
  - ii. application of the machine to the surface
  - iii. application of compound to the surface
  - iv. operation of polishing machine
  - v. awareness of polishing near to edges and swage lines
  - vi. avoiding burn marks
  - vii. removal of dried polish
- b. the process of using sanders to prepare surface defects to include:
- i. choosing correct sander for job in hand
  - ii. selection of appropriate grade of abrasive
  - iii. correct technique with regard to pressure applied
  - iv. avoiding sanding to bare metal on edges
  - v. use of dust extraction
- c. The methods of paint application for defect repair to include:
- i. touch-up brushes
  - ii. coloured film patches
  - iii. aerosols
  - iv. touch-up spray guns and air brushes
  - v. standard spray guns
  - vi. adjusting spray guns for optimum atomisation

**Tools and equipment must be kept free from contamination to avoid further defects**

- a. The methods of cleaning tools and equipment after use:
- i. washing polishing/compound heads to remove residues
  - ii. cleaning spray guns and brushes with appropriate solvents
  - iii. explain that failure to carry out these procedures may lead to defects to include:
    - surface scratches
    - surface contamination
    - silicone cratering
    - staining of painted surfaces
    - equipment malfunction

**Materials used for the rectification of minor paint defects**

- a. Types and uses of abrasives to include:

- i. aluminium oxide
  - ii. silicon carbide
  - iii. wet and dry types
  - iv. open coat
  - v. closed coat
  - vi. p grades
  - vii. papers, pastes and woven plastics
- b. The properties of compounds used to refurbish paintwork including:
- i. cutting compounds
  - ii. cutting creams
  - iii. surface polishes
  - iv. protective waxes
  - v. sponge cutting heads
  - vi. polishing mops
  - vii. polishing cloths
- c. Types and uses of filler materials to include:
- i. 2k polyester filler paste
  - ii. 2k and 1k stopper
- d. Types and uses of paints to include:
- i. touch-up pots
  - ii. self-adhesive coloured paint film
  - iii. aerosols
  - iv. standard 2k and 1k paints

#### **Select the correct materials for rectifying listed paint defects**

- a. Selection of materials for rectification will depend on:
- i. type of surface defect to be repaired
  - ii. severity of defect
  - iii. size of area to be repaired
  - iv. equipment available
  - v. expertise of operator
  - vi. customer preference

#### **Correct preparation and use of materials for rectifying paint defects**

- a. The preparation of listed materials for defect rectification to include:
- i. replacing worn or used abrasive papers, pads and discs
  - ii. checking compound and polish pastes for contamination
  - iii. mixing of 2k fillers and stoppers to correct ratios
- b. The preparation required prior to paint application to include:
- i. stirring/shaking paint containers
  - ii. mixing touch-up and standard paints to correct ratios
  - iii. carrying out viscosity checks on mixed paint materials

#### **Touch-in techniques as required for the rectification of some paint defects**

- a. Touch-in techniques:
- i. may not exactly match factory (OE) finish

- ii. may be viewed as a temporary repair
- iii. should be confined to small areas

**Procedures for the safe disposal of waste material and the consequences of failing to follow disposal regulations**

- a. How the disposal of products is influenced by the duty of care regulations.
- b. The disposal procedures for used products to include:
  - i. waste paper and card
  - ii. empty containers
  - iii. waste thinners
  - iv. body filler dust
  - v. spray booth filters
  - vi. soiled rags
  - vii. body panels
  - viii. damaged vehicle parts
- c. Documentation required for correct disposal of the above items.
- d. The penalties for non compliance.
- e. The effects on the environment of non compliance.



## Appendix 1 Sources of general information

The following documents contain essential information for centres delivering City & Guilds qualifications. They should be referred to in conjunction with this handbook. To download the documents and to find other useful documents, go to the **Centres and Training Providers homepage** on [www.cityandguilds.com](http://www.cityandguilds.com).

***Centre Manual - Supporting Customer Excellence*** contains detailed information about the processes which must be followed and requirements which must be met for a centre to achieve 'approved centre' status, or to offer a particular qualification, as well as updates and good practice exemplars for City & Guilds assessment and policy issues. Specifically, the document includes sections on:

- The centre and qualification approval process
- Assessment, internal quality assurance and examination roles at the centre
- Registration and certification of candidates
- Non-compliance
- Complaints and appeals
- Equal opportunities
- Data protection
- Management systems
- Maintaining records
- Assessment
- Internal quality assurance
- External quality assurance.

***Our Quality Assurance Requirements*** encompasses all of the relevant requirements of key regulatory documents such as:

- SQA Accreditation's Regulatory Principles, version 2, 1 December 2014
- NVQ Code of Practice (2006)

and sets out the criteria that centres should adhere to pre and post centre and qualification approval.

***Access to Assessment & Qualifications*** provides full details of the arrangements that may be made to facilitate access to assessments and qualifications for candidates who are eligible for adjustments in assessment.

The **centre homepage** section of the City & Guilds website also contains useful information such on such things as:

- **Walled Garden:** how to register and certificate candidates on line
- **Events:** dates and information on the latest Centre events
- **Online assessment:** information on how to register for GOLLA/e-volve assessments.



## Useful contacts

<b>UK learners</b> General qualification information	<b>T: +44 (0)844 543 0033</b> <b>E: learnersupport@cityandguilds.com</b>
<b>International learners</b> General qualification information	<b>T: +44 (0)844 543 0033</b> <b>F: +44 (0)20 7294 2413</b> <b>E: intcg@cityandguilds.com</b>
<b>Centres</b> Exam entries, Certificates, Registrations/enrolment, Invoices, Missing or late exam materials, Nominal roll reports, Results	<b>T: +44 (0)844 543 0000</b> <b>F: +44 (0)20 7294 2413</b> <b>E: centresupport@cityandguilds.com</b>
<b>Single subject qualifications</b> Exam entries, Results, Certification, Missing or late exam materials, Incorrect exam papers, Forms request (BB, results entry), Exam date and time change	<b>T: +44 (0)844 543 0000</b> <b>F: +44 (0)20 7294 2413</b> <b>F: +44 (0)20 7294 2404 (BB forms)</b> <b>E: singlesubjects@cityandguilds.com</b>
<b>International awards</b> Results, Entries, Enrolments, Invoices, Missing or late exam materials, Nominal roll reports	<b>T: +44 (0)844 543 0000</b> <b>F: +44 (0)20 7294 2413</b> <b>E: intops@cityandguilds.com</b>
<b>Walled Garden</b> Re-issue of password or username, Technical problems, Entries, Results, e-assessment, Navigation, User/menu option, Problems	<b>T: +44 (0)844 543 0000</b> <b>F: +44 (0)20 7294 2413</b> <b>E: walledgarden@cityandguilds.com</b>
<b>Employer</b> Employer solutions, Mapping, Accreditation, Development Skills, Consultancy	<b>T: +44 (0)121 503 8993</b> <b>E: business@cityandguilds.com</b>
<b>Publications</b> Logbooks, Centre documents, Forms, Free literature	<b>T: +44 (0)844 543 0000</b> <b>F: +44 (0)20 7294 2413</b>

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#### City & Guilds Group

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