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Specification

Edexcel BTEC Level 2 and 3 Diploma in Vehicle Accident Repair Paint Principles (QCF)

Edexcel Level 2 and 3 Diploma in Vehicle Accident Repair Paint Competence (QCF)

First registration November 2011

A PEARSON COMPANY

Edexcel, a Pearson company, is the UK's largest awarding organisation offering vocational and academic qualifications and testing, to employers, training providers, colleges, schools, and other places of learning in the UK, and in over 85 countries worldwide.

Our specialist suite of qualifications include NVQs, Apprenticeships, WorkSkills, Functional Skills, Foundation Learning, as well as our exclusive range of BTECs, from entry level right through to Higher National Diplomas.

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Contents

Qualification titles covered by this specification

This specification gives you the information you need to offer the Edexcel Principles and Competence qualifications in Vehicle Accident Repair Paint (QCF) at Levels 2 and 3.

Qualification title	Qualification Number (QN)	Operational start date
Edexcel BTEC Level 2 Diploma in Vehicle Accident Repair Paint Principles (QCF)	600/3584/5	01/11/2011
Edexcel Level 2 Diploma in Vehicle Accident Repair Paint Competence (QCF)	600/3583/3	01/11/2011
Edexcel BTEC Level 3 Diploma in Vehicle Accident Repair Paint Principles (QCF)	600/3579/1	01/11/2011
Edexcel Level 3 Diploma in Vehicle Accident Repair Paint Competence (QCF)	600/3562/6	01/11/2011

These qualifications have been accredited within the Qualifications and Credit Framework (QCF) and are eligible for public funding as determined by the Department for Education (DfE) under Section 96 of the Learning and Skills Act 2000.

The qualification titles listed above feature in the funding lists published annually by the DfE and the regularly updated website. They will also appear on the Learning Aim Reference Application (LARA), where relevant.

You should use the QCF Qualification Number (QN), when you wish to seek public funding for your learners. Each unit within a qualification will also have a unique QCF unit reference number, which is listed in this specification.

The QCF qualification title and unit reference numbers will appear on the learners' final certification document. Learners need to be made aware of this when they are recruited by the centre and registered with Edexcel.

Key features of the Edexcel Principles and Competence qualifications in Vehicle Accident Repair Paint (QCF) at Levels 2 and 3

These qualifications:

- are nationally recognised
- are based on the Accident Repair-Paint National Occupational Standards (NOS). The NOS, assessment strategy and qualification structure(s) are owned by the Sector Skills Council The Institute of the Motor Industry (IMI).

The Edexcel BTEC Level 2 Diploma in Vehicle Accident Repair Paint Principles (QCF) and the Edexcel Level 2 Diploma in Vehicle Accident Repair Paint Competence (QCF) have been approved as components of the Intermediate apprenticeship framework in Vehicle Body and Paint.

The Edexcel BTEC Level 3 Diploma in Vehicle Accident Repair Paint Principles (QCF) and the Edexcel Level 3 Diploma in Vehicle Accident Repair Paint Competence (QCF) have been approved as components ofthe Advanced apprenticeship framework in Vehicle Body and Paint.

What is the purpose and benefits of these qualifications?

These qualifications give learners flexible access to industry supported level 2 and 3 skills programmes, which act as a real alternative to academic qualifications for those who prefer this style of learning and achievement. As part of apprenticeship frameworks, the qualifications support learners in providing a career pathway into jobs and training at technician level and higher.

Learners will have the opportunity to learn and demonstrate their skills, knowledge and competence in preparing vehicles to be painted after damage has occurred, ensuring all parts have been stripped from the vehicle, sanding down relevant areas, adjoining areas for blending, masking, etching and priming areas to be treated and selecting, and matching and mixing colour.

Who are these qualifications for?

These qualifications are for all learners aged 16 and above who are capable of reaching the required standards.

Edexcel's policy is that the qualifications should:

- be free from any barriers that restrict access and progression
- ensure equality of opportunity for all wishing to access the qualifications.

Centres should be aware that within the Level 2 qualifications in this specification, learners will be required to meet the demands of units at Level 3. Centres are advised to consider the support, guidance and opportunities they give to learners to meet the demands of the higher level units during delivery and assessment of the qualification.

What are the potential job roles for those working towards these qualifications?

- Paint technician
- Senior paint technician

What progression opportunities are available to learners who achieve these qualifications?

Learners can progress on to other Edexcel automotive apprenticeship programmes and/or related qualifications detailed in *Annexe A*. Other progression routes include: further work or work experience, academic qualification(s) such as one or more GCSEs, higher education programmes and/or Foundation Degree, or employment in a range of jobs at Levels 2 and 3.

What is the qualification structure for the Edexcel BTEC Level 2 Diploma in Vehicle Accident Repair Paint Principles (QCF)?

A minimum of 65 credits is required to achieve this qualification. 18 credits from the mandatory generic units in Group A, 43 credits from the mandatory specialist units in Group B and a minimum of 4 credits from one of the option groups in Group C.

Individual units can be found in the *Units* section.

Unit No.	Unit reference No.	Unit title	Credit	Level
Group A – Mandatory generic units Learners must achieve 18 credits from this group.				
1	D/601/6171	Knowledge of Health, Safety and Good Housekeeping in the Automotive Environment	3	2
2	Y/601/7254	Skills in Health, Safety and Good Housekeeping in the Automotive Environment	7	2
3	T/601/6175	Knowledge of Support for Job Roles in the Automotive Work Environment	3	3
4	J/601/6262	Skills in Supporting Job Roles in the Automotive Work Environment	5	3
Group B – Mandatory specialist units Learners must achieve 43 credits from this group.				
5	H/601/6267	Skills in Applying Fillers and Foundation Materials	5	2
6	J/601/6116	Knowledge of Tools and Equipment Used In Vehicle Refinishings	5	2
7	Y/601/6153	Skills in Tools and Equipment Used In Vehicle Refinishing	5	2
8	H/601/6141	Knowledge of Applying Fillers and Foundation Materials	6	2
9	A/601/6145	Knowledge of Preparing Metal and Pre-Painted Surfaces	6	2
10	T/601/6273	Skills in Preparing Metal and Pre-Painted Surfaces	5	2
11	Y/601/6122	Knowledge of Repairing Minor Paint Defects	6	2

Unit No.	Unit reference No.	Unit title	Credit	Level
Group B – Mandatory specialist units continued				
12	F/601/6244	Skills in Repairing Minor Paint Defects	5	2
Group C – Optional groups Learners must achieve a minimum 4 credits from one of the option groups. All sub-components of the chosen group must be completed.				
Group C1 – Option group 1 If this group is chosen, learners must achieve 4 credits.				
13	D/601/5425	Knowledge of Removing and Fitting Non Permanently Fixed Motor Vehicle Body Panels	2	2
14	R/601/5454	Skills in Removing and Fitting Non Permanently Fixed Motor Vehicle Body Panels	2	2
Group C2 – Option group 2 If this group is chosen, learners must achieve 11 credits.				
15	Y/601/6119	Knowledge of Working with Plastic Materials and Components	6	3
16	J/601/6231	Skills in Working with Plastic Materials and Components	5	3

What is the qualification structure for the Edexcel Level 2 Diploma in Vehicle Accident Repair Paint Competence (QCF)?

A minimum of 81 credits is required to achieve this qualification. 18 credits from the mandatory generic units in Group A, 58 credits from the mandatory specialist units in Group B and a minimum of 5 credits from one of the option groups in Group C.

Individual units can be found in the *Units* section.

Unit No.	Unit reference No.	Unit title	Credit	Level
Group A – Mandatory generic units Learners must achieve 18 credits from this group.				
1	D/601/6171	Knowledge of Health, Safety and Good Housekeeping in the Automotive Environment	3	2
3	T/601/6175	Knowledge of Support for Job Roles in the Automotive Work Environment	3	3
17	A/601/6338	Competency in Health, Safety and Good Housekeeping in the Automotive Environment	7	2
18	K/601/6366	Competency in Supporting Job Roles in the Automotive Work Environment	5	3
Group B – Mandatory specialist units Learners must achieve 58 credits from this group.				
6	J/601/6116	Knowledge of Tools and Equipment Used In Vehicle Refinishings	5	2
8	H/601/6141	Knowledge of Applying Fillers and Foundation Materials	6	2
9	A/601/6145	Knowledge of Preparing Metal and Pre-Painted Surfaces	6	2
11	Y/601/6122	Knowledge of Repairing Minor Paint Defects	6	2
19	Y/601/6346	Competency in Tools and Equipment Used in Vehicle Refinishing	5	2
20	M/601/6417	Competency in Applying Fillers and Foundation Materials	10	2
21	T/601/6421	Competency in Preparing Metal and Pre-Painted Surfaces	10	2
22	J/601/6357	Competency in Repairing Minor Paint Defects	10	2

Unit No.	Unit reference No.	Unit title	Credit	Level
Group C–Optional groups Learners must achieve a minimum 5 credits from one of the option groups. All sub-components of the chosen group must be completed.				
Group C1 – Option group 1 If this group is chosen, learners must achieve 5 credits.				
13	D/601/5425	Knowledge of Removing and Fitting Non Permanently Fixed Motor Vehicle Body Panels	2	2
23	R/601/5373	Competency in Removing and Fitting Non-Permanently Fixed Motor Vehicle Body Panels	3	2
Group C2 – Option group 2 If this group is chosen, learners must achieve 6 credits.				
15	Y/601/6119	Knowledge of Working with Plastic Materials and Components	6	3
24	K/601/6352	Competency in Working with Plastic Materials and Components	10	3

What is the qualification structure for the Edexcel BTEC Level 3 Diploma in Vehicle Accident Repair Paint Principles (QCF)?

83 credits are required to achieve this qualification. 18 credits from the mandatory generic units in Group A and 65 credits from the mandatory specialist units in Group B.

Individual units can be found in the *Units* section.

Unit No.	Unit reference No.	Unit title	Credit	Level
Group A – Mandatory generic units Learners must achieve 18 credits from this group.				
1	D/601/6171	Knowledge of Health, Safety and Good Housekeeping in the Automotive Environment	3	2
2	T/601/6175	Knowledge of Support for Job Roles in the Automotive Work Environment	3	3
3	Y/601/7254	Skills in Health, Safety and Good Housekeeping in the Automotive Environment	7	2
4	J/601/6262	Skills in Supporting Job Roles in the Automotive Work Environment	5	3
Group B – Mandatory specialist units Learners must achieve 65 credits from this group.				
6	J/601/6116	Knowledge of Tools and Equipment Used in Vehicle Refinishings	5	2
7	Y/601/6153	Skills in Tools and Equipment Used in Vehicle Refinishing	5	2
9	A/601/6145	Knowledge of Preparing Metal and Pre-Painted Surfaces	6	2
10	T/601/6273	Skills in Preparing Metal and Pre-Painted Surfaces	5	2
15	Y/601/6119	Knowledge of Working With Plastic Materials and Components	6	3
16	J/601/6231	Skills in Working With Plastic Materials and Components	5	3
27	J/601/6147	Knowledge of Applying Topcoats and Completing Refinishing Operations	6	3
25	M/601/6126	Knowledge of Establishing Paint Defects	6	3
26	D/601/6252	Skills in Establishing Paint Defects	5	3

Unit No.	Unit reference No.	Unit title	Credit	Level
Group B – Mandatory specialist units continued				
28	T/601/6290	Skills in Applying Topcoats and Completing Refinishing Operations	5	3
29	R/601/6135	Knowledge of Vehicle Colour Matching	6	3
30	T/601/6256	Skills in Vehicle Colour Matching	5	3

What is the qualification structure for the Edexcel Level 3 Diploma in Vehicle Accident Repair Paint Competence (QCF)?

108 credits is required to achieve this qualification. 18 credits from the mandatory generic units in Group A and 90 credits from the mandatory specialist units in Group B.

Individual units can be found in the Units section.

Unit No.	Unit reference No.	Unit title	Credit	Level
Group A – Mandatory generic units Learners must achieve 18 credits from this group.				
17	A/601/6338	Competency in Health, Safety and Good Housekeeping in the Automotive Environment	7	2
1	D/601/6171	Knowledge of Health, Safety and Good Housekeeping in the Automotive Environment	3	2
18	K/601/6366	Competency in Supporting Job Roles in the Automotive Work Environment	5	3
3	T/601/6175	Knowledge of Support for Job Roles in the Automotive Work Environment	3	3
Group B – Mandatory specialist units Learners must achieve 90 credits from this group.				
19	Y/601/6346	Competency in Tools and Equipment Used in Vehicle Refinishing	5	2
6	J/601/6116	Knowledge of Tools and Equipment Used In Vehicle Refinishings	5	2
24	K/601/6352	Competency in Working with Plastic Materials and Components	10	3
15	Y/601/6119	Knowledge of Working with Plastic Materials and Components	6	3
21	T/601/6421	Competency in Preparing Metal and Pre-Painted Surfaces	10	2
9	A/601/6145	Knowledge of Preparing Metal and Pre-Painted Surfaces	6	2
31	R/601/6362	Competency in Establishing Paint Defects	10	3
25	M/601/6126	Knowledge of Establishing Paint Defects	6	3
32	J/601/6424	Competency in Applying Topcoats and Completing Refinishing Operations	10	3

Unit No.	Unit reference No.	Unit title	Credit	Level
Group B – Mandatory specialist units continued				
27	J/601/6147	Knowledge of Applying Topcoats and Completing Refinishing Operations	6	3
33	Y/601/6413	Competency in Vehicle Colour Matching	10	3
29	R/601/6135	Knowledge of Vehicle Colour Matching	6	3

How are the qualifications graded and assessed?

The overall grade for the qualifications is a 'pass'. The learner must achieve all the required units within the specified qualification structure.

To pass a unit the learner must:

- achieve **all** the specified learning outcomes
- satisfy **all** the assessment criteria by providing sufficient and valid evidence for each criterion
- show that the evidence is their own.

The qualifications are designed to be assessed:

- in the workplace or
- in conditions resembling the workplace, as specified in the assessment requirements/strategy for the sector, or
- as part of a training programme.

Assessment strategy for competence-based qualifications (VCQs)

The assessment strategy for the competence-based qualifications (VCQ) has been included in *Annexe C*. It has been developed by IMI in partnership with employers, training providers, awarding organisations and the regulatory authorities. The assessment strategy includes details on:

- criteria for defining realistic working environments
- roles and occupational competence of assessors, expert witnesses, internal verifiers and standards verifiers
- quality control of assessment
- evidence requirements.

Evidence of competence may come from:

- **current practice** where evidence is generated from a current job role
- a **programme of development** where evidence comes from assessment opportunities built into a learning/training programme whether at or away from the workplace
- the **Recognition of Prior Learning (RPL)** where a learner can demonstrate that they can meet the assessment criteria within a unit through knowledge, understanding or skills they already possess without undertaking a course of learning. They must submit sufficient, reliable and valid evidence for internal and standards verification purposes. RPL is acceptable for accrediting a unit, several units or a whole qualification
- a **combination** of these.

It is important that the evidence is:

Valid	relevant to the standards for which competence is claimed
Authentic	produced by the learner
Current	sufficiently recent to create confidence that the same skill, understanding or knowledge persist at the time of the claim
Reliable	indicates that the learner can consistently perform at this level
Sufficient	fully meets the requirements of the standards.

Types of evidence

To successfully achieve a unit the learner must gather evidence which shows that they have met the required standard in the assessment criteria. Evidence can take a variety of different forms including the examples below. Centres should refer to the assessment strategy for information about which of the following are permissible.

Centres should also refer to the assessment strategy (for competence-based qualifications (VCQs) and the assessment requirements/evidence requirements section within each individual unit.

- direct observation of the learner's performance by their assessor (O)
- outcomes from oral or written questioning (Q&A)
- products of the learner's work (P)
- personal statements and/or reflective accounts (RA)
- outcomes from simulation, where permitted by the assessment strategy (S)
- professional discussion (PD)
- assignment, project/case studies (A)
- authentic statements/witness testimony (WT)
- expert witness testimony (EWT)
- evidence of Recognition of Prior Learning (RPL).

The abbreviations may be used for cross-referencing purposes.

Learners can use one piece of evidence to prove their knowledge, skills and understanding across different assessment criteria and/or across different units. It is, therefore, not necessary for learners to have each assessment criterion assessed separately. Learners should be encouraged to reference the assessment criteria to which the evidence relates.

Evidence must be made available to the assessor, internal verifier and Edexcel standards verifier. A range of recording documents is available on the Edexcel website: www.edexcel.com. Alternatively, centres may develop their own.

Centre recognition and approval

Centre recognition

Centres that have not previously offered Edexcel qualifications need to apply for and be granted centre recognition as part of the process for approval to offer individual qualifications. New centres must complete both a centre recognition approval application and a qualification approval application.

Existing centres will be given 'automatic approval' for a new qualification if they are already approved for a qualification that is being replaced by the new qualification and the conditions for automatic approval are met. Centres already holding Edexcel approval are able to gain qualification approval for a different level or different sector via Edexcel online.

Approvals agreement

All centres are required to enter into an approvals agreement which is a formal commitment by the head or principal of a centre to meet all the requirements of the specification and any linked codes or regulations. Edexcel will act to protect the integrity of the awarding of qualifications, if centres do not comply with the agreement. This could result in the suspension of certification or withdrawal of approval.

Quality assurance

Quality assurance is at the heart of vocational qualifications. Assessment on BTEC and Competency qualifications is completed by your centre. You use quality assurance to ensure that your managers, internal verifiers and assessors are standardised and supported. We use quality assurance to check that all centres are working to national standards. It gives us the opportunity to identify and provide support where it is needed in order to safeguard certification. It also allows us to recognise and support good practice.

For the qualifications in this specification, the Edexcel quality assurance model will follow one of the three processes listed below.

1. Delivery of the **Competence and Principles** qualifications as part of a BTEC apprenticeship (single click registration)
   - integrated annual visits by a Standards Verifier to review centre-wide quality assurance systems and sampling of internal verification and assessor decisions
2. Delivery of the **Competence** qualifications outside the apprenticeship
   - annual visits to centres by a Centre Quality Reviewer to review centre-wide quality assurance systems
   - annual visits by a Standards Verifier for sampling of internal verification and assessor decisions for the qualification

3. Delivery of the **Principles** qualifications outside the apprenticeship

- annual visits to centres by a Centre Quality Reviewer to review centre-wide quality assurance systems
- Lead Internal Verifier accreditation. This involves online training and standardisation of Lead Internal Verifiers using our OSCA platform, accessed via Edexcel Online. Please note that not all qualifications are covered by Lead Internal Verifier accreditation. Where this is the case we will allocate a Standards Verifier annually to conduct postal sampling of internal verification and assessor decisions for the Principal Subject Area.

For further details, go to the UK BTEC Quality Assurance Handbook 2011-12 http://www.edexcel.com/quals/BTEC/quality/Pages/documents.aspx

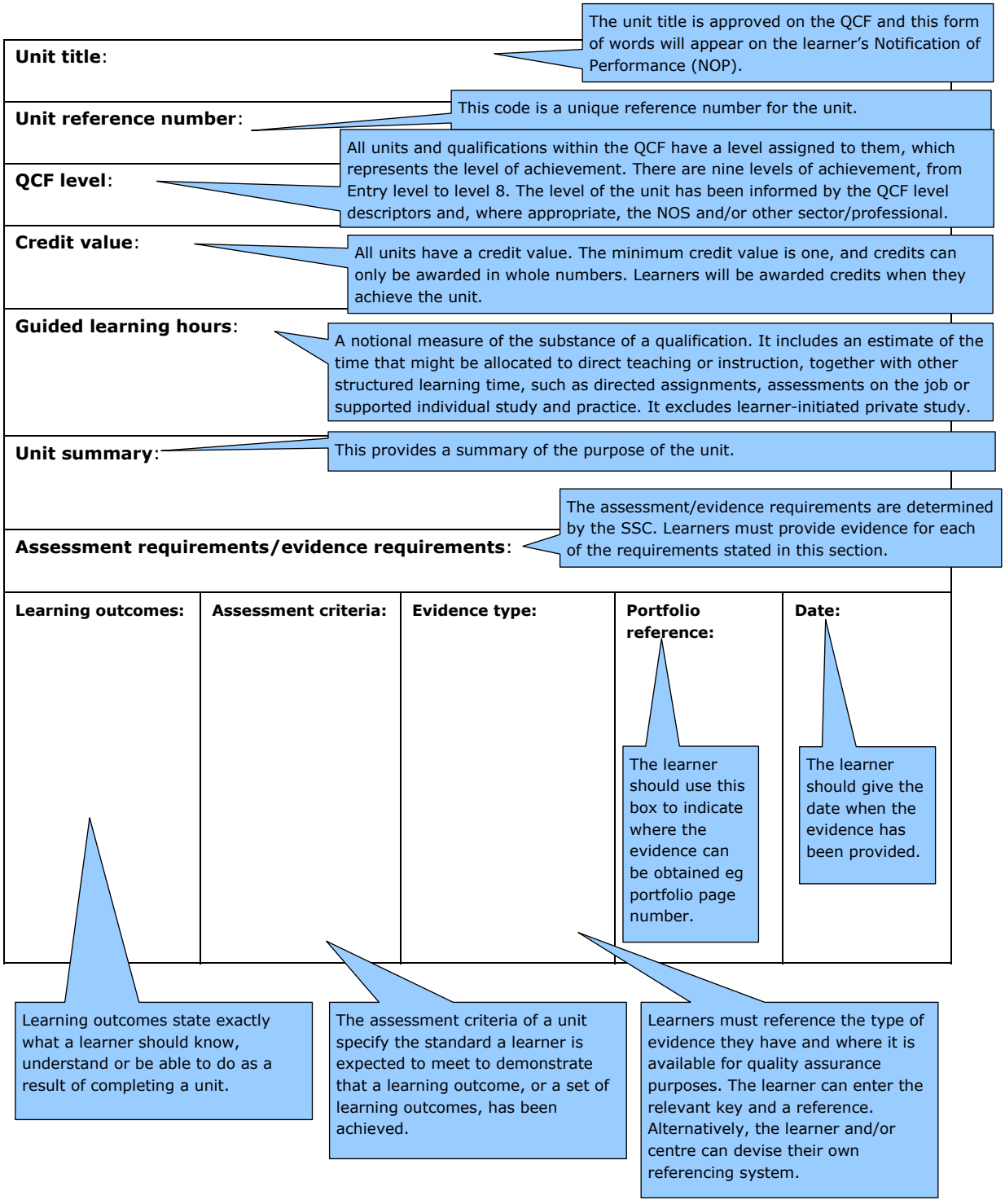
What resources are required?

Each qualification is designed to support learners working in the automotive sector. Physical resources need to support the delivery of the qualifications and the assessment of the learning outcomes and must be of industry standard.

For competence-based qualifications (VCQs), centres must meet any specific resource and staff requirements outlined in *Annexe C:* Assessment strategy.

Unit format

Each unit in this specification contains the following sections.



Units

Unit 1: Knowledge of Health, Safety and Good Housekeeping in the Automotive Environment

Unit reference number: D/601/6171

QCF level: 2

Credit value: 3

Guided learning hours: 30

Unit summary

This unit enables the learner to develop an understanding of:

- routine maintenance and cleaning of the automotive environment and using resources economically
- 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.

Assessment requirements/evidence requirements:

If this unit is offered within a competence qualification (VCQ) it must be assessed in accordance with the IMI Assessment Strategy *(Annexe C)*.

This unit must adhere to the IMI Knowledge Unit Syllabus as set out below:

Economic use of resources

a. consumable materials eg grease, oils, split pins, locking and fastening devices etc

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 (current)

i. Safe Working Loads (current)

j. Working at Height Regulations (current)

Routine maintenance of the workplace

a. trainees' 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 eg electrical safety check log

Legislation relevant to health and safety

a. HASAWA (current)

b. COSHH (current)

c. EPA (current)

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, eg 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 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 types of extinguisher
    a. foam
    b. dry powder
    c. CO2
    d. water
    e. 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, to include:
    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 personal, customers, contractors etc entering your 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 are outside your 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 ie 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 ie 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

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand the correct personal and vehicle protective equipment to be used within the automotive environment	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			
2	Understand effective housekeeping practices in the automotive environment	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			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		2.7	describe procedures for starting and ending the working day which ensure effective housekeeping practices are followed			
3	Understand key health and safety requirements relevant to the automotive environment	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			
4	Understand about hazards and potential risks relevant to the automotive environment	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			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		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			
5	Understand personal responsibilities	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			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 2: Skills in Health, Safety and Good Housekeeping in the Automotive Environment

Unit reference number: Y/601/7254

QCF level: 2

Credit value: 7

Guided learning hours: 60

Unit summary

This unit will enable the learner to develop the skills required to:

- carry out day to day work area cleaning, clearing away, dealing with spillages and disposal of waste, used materials and debris
- identify hazards and risks in the automotive environment and complying with relevant legislation and good practice
- work safely at all times within the automotive environment, both as an individual and with others.

Assessment requirements/evidence requirements:

This unit must adhere to the IMI Skills Unit Assessment Requirements as set out below:

You must:

1. produce evidence to show you meet **all** of the learning outcomes
2. produce performance evidence resulting from work you have carried out in your training workshop as managed and organised by an approved centre
3. be observed by an assessor as defined by the IMI Assessment Strategy
4. produce evidence of use of personal and vehicle protection, cleaning the work environment and disposal of waste on **2** separate **occasions**

5. produce evidence of identifying risks which may result from at least **2** of the items listed below:
   - the use and maintenance of machinery or equipment
   - the use of materials or substances
   - working practices which do not conform to laid down policies
   - unsafe behaviour
   - accidental breakages and spillages
   - environmental factors
6. produce evidence of identifying risks
7. produce evidence of following at least **2** of the workplace policies listed below:
   - the use of safe working methods and equipment
   - the safe use of hazardous substances
   - smoking, eating, drinking and drugs
   - what to do in the event of an emergency
   - personal presentation
8. produce evidence of following workplace policies.

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to use correct personal and vehicle protection within the automotive environment	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			
2	Be able to carry out effective housekeeping practices in the automotive environment	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			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		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			
3	Be able to recognise and deal with dangers in order to work safely within the automotive workplace	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			
4	Be able to conduct themselves responsibly	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			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 3: Knowledge of Support for Job Roles in the Automotive Work Environment

Unit reference number: T/601/6175

QCF level: 3

Credit value: 3

Guided learning hours: 20

Unit summary

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.

Assessment requirements/evidence requirements:

If this unit is offered within a competence qualification (VCQ) it must be assessed in accordance with the IMI Assessment Strategy *(Annexe C)*.

This unit must adhere to the IMI Knowledge Unit Syllabus as set out below:

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

b. sources of information
   - i. other staff
   - ii. manuals
   - iii. parts lists
   - iv. computer software and the internet
   - v. manufacturer
   - vi. diagnostic equipment

Communication requirements when carrying out vehicle repairs

a. 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
b. procedures for:
    i. referral of problems
    ii. reporting delays
    iii. additional work identified during repair or maintenance
    iv. keeping others informed of progress

Methods of communication

a. verbal
b. signs and notices
c. memos
d. telephone
e. electronic mail
f. vehicle job card
g. notice boards
h. SMS text messaging
i. letters

Organisational and customer requirements:

a. importance of timescales to customer and organization
b. relationship between time and costs
c. meaning of profit

Choice of communication

a. distance
b. location
c. job responsibility

Importance of maintaining positive working relationships:

a. morale

b. productivity

c. company image

d. customer relationships

e. colleagues

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand key organisational structures, functions and roles within the automotive work environment	1.1	identify the purpose of 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 automotive workplace. To include: a. trainee b. skilled technician c. supervisor d. manager			
2	Understand the importance of obtaining, interpreting and using information in order to support their job role within the automotive work environment	2.1	explain the importance of different sources of information in a 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			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		2.5	explain when replacement units and components must meet the manufacturers' original equipment specification			
		2.6	explain the purpose of how to use identification codes			
3	Understand the importance of different types of communication within the automotive work environment	3.1	explain where different methods of communication would be used within the automotive environment			
		3.2	explain the factors which can determine your choice of communication			
		3.3	explain how the communication of information can change with the target audience to include uninformed and informed people			
4	Understand communication requirements when carrying out vehicle repairs in the automotive work environment	4.1	explain how to report using written and verbal 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			
5	Understand how to develop good working relationships with colleagues and customers in the automotive workplace	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			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		5.4	explain the importance of making and honouring realistic commitments to colleagues and customers			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 4: Skills in Supporting Job Roles in the Automotive Work Environment

Unit reference number: J/601/6262

QCF level: 3

Credit value: 5

Guided learning hours: 40

Unit summary

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.

Assessment requirements/evidence requirements:

This unit must adhere to the IMI Skills Unit Assessment Requirements as set out below:

You must:

1. produce evidence to show you meet **all** of the learning outcomes
2. produce performance evidence resulting from work you have carried out in your training workshop as managed and organised by an approved centre
3. be observed by an assessor as defined by the IMI Assessment Strategy
4. produce witness testimony from your peers **and** supervisor **or** tutor that you have worked well with others
5. produce evidence carrying out the above whilst performing your normal duties.

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work effectively within the organisational structure of the automotive work environment	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			
2	Be able to obtain and use information in order to support their job role within the automotive work environment	2.1	select and use legal and technical information, in an automotive work environment			
3	Be able to communicate with and support colleagues and customers effectively within the automotive work environment	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			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to develop and keep good working relationships in the automotive work environment	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			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 5: Skills in Applying Fillers and Foundation Materials

Unit reference number: H/601/6267

QCF level: 2

Credit value: 5

Guided learning hours: 45

Unit summary

This unit will help 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

Assessment requirements/evidence requirements:

If this unit is offered within a competence qualification (VCQ) it must be assessed in accordance with the IMI Assessment Strategy *(Annexe C)*.

This unit must adhere to the IMI Skills Unit Assessment Requirements developed for the unit as detailed below:

You must:

1. produce evidence to show you meet **all** of the learning outcomes
2. produce performance evidence resulting from work you have carried out in your training workshop as managed and organised by an approved centre
3. be observed by an assessor as defined by the IMI Assessment Strategy
4. be observed by an assessor carrying out **each** of the following listed below, which covers the learning outcomes:
    - setting up and using application equipment
    - mixing etch primer
    - applying etch primer
    - mixing wet on wet primer
    - mixing high build primer
    - applying wet on wet primer
    - applying high build primer
    - dry curing foundation materials
    - cleaning application equipment and disposing of waste products.

Learning outcome and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out preparation and application of foundation materials to vehicles	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			
2	Be able to use relevant information to carry out the task	2.1	select suitable sources of technical information to support preparation and application of foundation materials to vehicles			
		2.2	use technical information to support preparation and application of foundation materials to vehicles			
3	Be able to use appropriate tools and equipment	3.1	select the appropriate tools and equipment necessary for carrying out preparation and application of foundation materials to vehicles			
		3.2	ensure that equipment has been calibrated to meet manufacturers' requirements			
		3.3	use the correct tools and equipment in the way specified by manufacturers when carrying out preparation and application of foundation materials to vehicles			
		3.4	leave all application equipment in a clean and serviceable condition			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to carry out preparation and application of foundation materials to vehicles	4.1	identify prior to working on the vehicle the type of substrate			
		4.2	use surface cleaning agents, fillers and foundation materials			
		4.3	mix and adjust the viscosity of fillers and foundation materials			
		4.4	apply all foundation materials			
		4.5	dry and cure all foundation materials			
		4.6	ensure all completed repairs are finished to an agreed standard ready for the next process			
5	Be able to record information and make suitable recommendations	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			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 6: Knowledge of Tools and Equipment Used In Vehicle Refinishings

Unit reference number: J/601/6116

QCF level: 2

Credit value: 5

Guided learning hours: 45

Unit summary

This unit enables the learner to develop an understanding for:

- the correct selection, maintenance and use of hand and power tools used in vehicle refinishing
- the correct preparation, use and maintenance of vehicle refinishing equipment.

Assessment requirements/evidence requirements:

If this unit is offered within a competence qualification (VCQ) it must be assessed in accordance with the IMI Assessment Strategy *(Annexe C)*.

This unit must adhere to the IMI Knowledge Unit Syllabus as set out below:

Equipment used in Vehicle Refinishing

a flatting 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. infrared 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
a. partial strip of paint spaying gun
b. complete strip of paint spraying gun
c. washer cycle
d. blow through
e. re-assembly
f. 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)

Learning outcome and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand how to select, use and care for hand and power tools used in vehicle refinishing	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: a. transformer/regulator b. spray gun pressure gauge			
		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 outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
2	Understand how to prepare, use and care for vehicle refinishing equipment	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			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 7: Skills in Tools and Equipment Used In Vehicle Refinishing

Unit reference number: Y/601/6153

QCF level: 2

Credit value: 5

Guided learning hours: 45

Unit summary

This unit allows the learner to develop skills in:

- the correct selection, maintenance and use of hand and power tools used in vehicle refinishing
- the correct preparation, use and maintenance of vehicle refinishing equipment.

Assessment requirements/evidence requirements:

This unit must adhere to the IMI Skills Unit Assessment Requirements as set out below:

You must:

1. produce evidence to show you meet **all** of the learning outcomes
2. produce performance evidence resulting from work you have carried out in your training workshop as managed and organised by an approved centre
3. be observed by an assessor as defined by the IMI Assessment Strategy
4. be observed by an assessor preparing and using **all** of the tools listed below:
    - flatting block
    - sponge
    - squeegee
    - chamois leather
    - trimming knife
    - polishing mop
    - sealer gun

- water traps
- pressure gauges
- paper/tape dispenser
- viscosity measuring equipment
- combi-booth
- infrared dryer
- compressor
- air line
- transformer/regulator
- vacuum extraction sander
- spray gun cleaning machines
- plastic sheeting dispenser
- random orbital sander

5. be observed by an assessor preparing and using at least 2 compliant spray guns below:
   - suction feed spray gun
   - gravity feed spray gun
   - pressure feed spray gun.

Learning outcome and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to select, use and care for hand and power tools used in vehicle refinishing	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			
2	Be able to prepare and use vehicle refinishing equipment	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			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 8: Knowledge of Applying Fillers and Foundation Materials

Unit reference number: H/601/6141

QCF level: 2

Credit value: 6

Guided learning hours: 45

Unit summary

This unit enables 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.

Assessment requirements/evidence requirements:

If this unit is offered within a competence qualification (VCQ) it must be assessed in accordance with the IMI Assessment Strategy *(Annexe C)*.

This unit must adhere to the IMI Knowledge Unit Syllabus as set out below:

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

v. list the physical properties of a substrate to include:
vi. surface condition
vii. adhesion
vii. flexibility
viii. porosity
ix. 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 flatting 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 flatting
   v. corrosion resistance

c. state that 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, ie
   ii. nitro cellulose
   iii. 1k acrylics
   iv. basecoats

k. convertibles:
   i. two packs
   ii. oil- based synthetic enamels

a. 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

b. the characteristics of these undercoats such as:
   i. protection
   ii. corrosion resistance
   iii. flexibility
   iv. build
   v. drying
   vi. flatting

c. 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

Learning outcome and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand how to identify body surfaces requiring the application of foundation materials in vehicle refinishing	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			
2	Understand how to identify, mix and apply fillers and foundation materials in vehicle refinishing	2.1	describe the choice and use of surface cleaning agents, fillers and foundation materials			
		2.2	describe how to condition and clean surfaces prior to the application of foundation coatings to ensure adequate adhesion			
		2.3	describe how to mix and check the viscosity of fillers and foundation materials			
		2.4	describe the importance of viscosity and its effects on the surface finish			
		2.5	describe the properties of the foundation materials			
		2.6	describe the principles of filler and paint mixing, the importance of the right additive (hardener or thinner) in the correct ratio			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		2.7	describe the curing and drying recommendations for the various fillers and foundation materials			
		2.8	describe how to apply foundation coatings			
		2.9	describe how to find and interpret sources of information relevant to the mixing and application of foundation coatings			
		2.10	describe how to avoid application defects			
		2.11	describe the masking procedures, methods and techniques for part or whole vehicles			
		2.12	describe how to carry out masking procedures to avoid material wastage and vehicle contamination for each stage of the process			
		2.13	identify the requirements for protecting the vehicle and contents from damage before, during and after preparing and applying foundation materials			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____

(*if sampled*)

Unit 9: Knowledge of Preparing Metal and Pre-painted Surfaces

Unit reference number: A/601/6145

QCF level: 2

Credit value: 6

Guided learning hours: 45

Unit summary

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.

Assessment requirements/evidence requirements:

If this unit is offered within a competence qualification (VCQ) it must be assessed in accordance with the IMI Assessment Strategy *(Annexe C)*.

This unit must adhere to the IMI Knowledge Unit Syllabus as set out below:

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 flatting 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

Learning outcome and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand how to identify body surfaces requiring the application of foundation/paint topcoat materials in vehicle refinishing	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			
2	Understand how to prepare new and repaired panels for the application of foundation/paint topcoat materials in vehicle refinishing	2.1	describe the choice and use of surface cleaning agents, including wax and grease remover to ensure adequate adhesion			
		2.2	describe the types of materials used to prepare the surface and the factors governing their use			
		2.3	describe how to prepare new and repaired panels			
		2.4	describe the factors governing the choice of panel preparation methods			
		2.5	describe how to prepare panels and parts adjacent to the area being painted			
		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			
		2.7	identify the requirements for protecting the vehicle and contents from damage before, during and after preparing panel surfaces			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 10: Skills in Preparing Metal and Pre-Painted Surfaces

Unit reference number: T/601/6273

QCF level: 2

Credit value: 5

Guided learning hours: 45

Unit summary

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.

Assessment requirements/Evidence requirements:

This unit must adhere to the IMI Skills Unit Assessment Requirements as set out below:

You must:

1. produce evidence to show you meet **all** of the learning outcomes
2. produce performance evidence resulting from work you have carried out in your training workshop as managed and organised by an approved centre
3. be observed by an assessor as defined by the IMI Assessment Strategy

4 be observed by an assessor preparing metal and pre-painted surfaces on **3 different vehicle body panels out of the 8 listed below,** which covers the learning outcomes:

- electro-coated panels
- repaired panels
- original manufacturers finish
- plastic components
- zinc coated panels
- steel panels
- aluminium panels
- primed panel

5. be observed by an assessor covering **all of the techniques** listed below in carrying out the preparation listed above:

- feathering out
- flatting using guide coats
- hand sanding
- machine sanding
- dry sanding.

Learning outcome and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out the preparation of metal and pre-painted surfaces	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			
2	Be able to use relevant information to carry out the task	2.1	select suitable sources of technical information to support the preparation of metal and pre-painted surfaces			
		2.2	use technical information to support the preparation of metal and pre-painted surfaces			
3	Be able to use appropriate tools and equipment	3.1	select the appropriate tools and equipment necessary for carrying out the preparation of metal and pre-painted surfaces			
		3.2	ensure that the equipment is safe and has been calibrated to meet manufacturers' requirements			
		3.3	use the correct tools and equipment in the way specified by manufacturers when carrying the preparation of metal and pre-painted surfaces			
		3.4	leave all application equipment in a clean and serviceable condition			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to carry out the preparation of metal and pre-painted surfaces to accept foundation materials and paint topcoats	4.1	identify prior to working on the vehicle the type of substrate			
		4.2	use surface cleaning agents and protect all surfaces adjacent to those being prepared using the specified method			
		4.3	remove and store safely any components likely to be affected by the preparation process			
		4.4	prepare all panel surfaces required following: a. vehicle manufacturer's technical data b. product data c. recognised methods and techniques			
		4.5	keep the work area clean and tidy throughout all preparation activities			
		4.6	dispose of waste materials to conform with legal and workplace requirements			
		4.7	ensure all preparation is finished to an agreed standard and free from contamination ready for the next process			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
5	Be able to record information and make suitable recommendations	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			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 11: Knowledge of Repairing Minor Paint Defects

Unit reference number: Y/601/6122

QCF level: 2

Credit value: 6

Guided learning hours: 45

Unit summary

This unit enables the learner to develop an understanding about the causes and rectification of minor paint defects using a range of tools, equipment and materials.

Assessment requirements/evidence requirements:

If this unit is offered within a competence qualification (VCQ) it must be assessed in accordance with the IMI Assessment Strategy *(Annexe C)*.

This unit must adhere to the IMI Knowledge Unit Syllabus as set out below:

Minor surface defects to include:

a. scratches
b. chips
c. dents
d. corrosion
e. contamination
f. blisters (including micro-blisters)
g. fading
h. loss of gloss
i. 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 flatting 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 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

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:
   iv. surface scratches
   v. surface contamination
   vi. silicone cratering
   vii. staining of painted surfaces
   viii. 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

Learning outcome and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand how to identify the body surface requiring the rectification of minor paint defects	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			
2	Understand how to repair minor paint defects	2.1	describe how to carry out flatting, burnishing, polishing and touch in techniques to correct minor paint defects			
		2.2	describe how to use polishing machines, denibbing blocks and flatting equipment			
		2.3	describe how to use compounds, flatting papers, polishes, pre-prepared paints and glazes			
		2.4	identify the factors affecting the choice and use of materials in the rectification of minor paint defects			
		2.5	describe how to prevent further paint damage during rectification			
		2.6	describe the importance of proper cleaning to the vehicle and work area prior to and after rectification work			
		2.7	describe the importance of keeping equipment and materials clean and free from contamination during rectification work			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		2.8	identify the requirements for protecting the vehicle and contents from damage before, during and after repairing minor paint defects			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 12: Skills in Repairing Minor Paint Defects

Unit reference number: F/601/6244

QCF level: 2

Credit value: 5

Guided learning hours: 45

Unit summary

This unit will help 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.

Assessment requirements/evidence requirements:

This unit must and adhere to the IMI Skills Unit Assessment Requirements as set out below:

You must:

1. produce evidence to show you meet **all** of the learning outcomes
2. produce performance evidence resulting from work you have carried out in your training workshop as managed and organised by an approved centre
3. be observed by an assessor as defined by the IMI Assessment Strategy
4. be observed by an assessor repairing 3 out of 5 defects listed below, which covers the learning outcomes:
   - loss of gloss
   - scuffs and scratches to the manufacturers finish
   - dirt inclusion in a newly applied finish
   - runs or sags in a newly applied finish
   - orange peel.

Learning outcome and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out the rectification of minor paint defects	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			
2	Be able to use relevant information to carry out the task	2.1	select suitable sources of technical information to support the rectification of minor paint defects			
		2.2	use technical information to support the rectification of minor paint defects			
3	Be able to use appropriate tools and equipment	3.1	select the appropriate tools and equipment necessary for carrying out the rectification of minor paint defects			
		3.2	ensure that the equipment is safe and has been calibrated to meet manufacturers' requirements			
		3.3	use the correct tools and equipment in the way specified by manufacturers when carrying out the rectification of minor paint defects			
		3.4	leave all equipment in a clean and serviceable condition			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to carry out the rectification of minor paint defects	4.1	identify the type of paint defect prior to working on the vehicle			
		4.2	use surface cleaning agents and protect all surfaces adjacent to those being prepared and rectified using the specified method			
		4.3	remove and store safely any components likely to be affected by the preparation and rectification process			
		4.4	correct defects using the approved tools and equipment required			
		4.5	keep the work area clean and tidy throughout all rectification activities			
		4.6	dispose of waste materials to conform with legal and workplace requirements			
		4.7	ensure all minor paint defects are rectified to a commercially acceptable standard.			
5	Be able to record information and make suitable recommendations	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 identified during the course of their work promptly in the format required			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 13: Knowledge of Removing and Fitting Non-permanently Fixed Motor Vehicle Body Panels

Unit reference number: D/601/5425

QCF level: 2

Credit value: 2

Guided learning hours: 20

Unit summary

This unit enables the learner to develop knowledge in order to carry out 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.

Assessment requirements/evidence requirements:

If this unit is offered within a competence qualification (VCQ) it must be assessed in accordance with the IMI Assessment Strategy *(Annexe C)*.

This unit must adhere to the IMI Knowledge Unit Syllabus as set out below:

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 The different types of mechanical fixings for non-welded panels and when and why they should be used

c. The correct procedures and processes for removing and fitting of non- welded body panels

d. The need for correct alignment of panels and methods to achieve this:
   i. Aperture gaps
   ii. Alignment of panel features
   iii. Best fit of components to panels
   iv. Operation of openings such as doors, tailgates, bonnets etc

e. 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

f. The method of storing removed panels and the importance of storing them correctly.

Learning outcome and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand how to carry out removal and fitting of non-permanently fixed motor vehicle body panels	1.1	identify the procedures involved in carry 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			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		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			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 14: Skills in Removing and Fitting Non-permanently Fixed Motor Vehicle Body Panels

Unit reference number: R/601/5454

QCF level: 2

Credit value: 2

Guided learning hours: 20

Unit summary

This unit will help the learner to develop skills in order to carry out the removal and fitting a range 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.

Assessment requirements/evidence requirements:

This unit must adhere to the IMI Skills Unit Assessment Requirements as set out below:

You must:

1. produce evidence to show you meet all of the learning outcomes
2. produce performance evidence resulting from work you have carried out in your training workshop as managed and organised by an approved centre
3. be observed by an assessor as defined in the IMI Assessment Strategy.
4. produce evidence of removing and replacing 3 out of the 5 panels listed below, which covers the learning outcomes:
   - wings
   - doors
   - bonnets
   - boot lids
   - tailgates.

Learning outcome and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out removal and fitting of non-permanently fixed vehicle panels	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			
2	Be able to use relevant information to carry out the task	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			
3	Be able to use appropriate tools and equipment	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			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to carry out removal and fitting of non-permanently fixed vehicle panels	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			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
5	Be able to record information and make suitable recommendations	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			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 15: Knowledge of Working with Plastic Materials and Components

Unit reference number: Y/601/6119

QCF level: 3

Credit value: 6

Guided learning hours: 45

Unit summary

This unit enables the learner to develop an understanding for identifying substrates and plastics whilst undertaking paint operations following guidelines and procedures.

Assessment requirements/evidence requirements:

If this unit is offered within a competence qualification (VCQ) it must be assessed in accordance with the IMI Assessment Strategy *(Annexe C)*.

This unit must adhere to the IMI Knowledge Unit Syllabus as set out below:

The types of substrates likely to be found in vehicle refinishing

a. types of substrate to include:
   - i. all plastics
   - ii. high bake enamels (OE finishes)
   - iii. 2 K 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:
   i. visual test for plastics and identification of plastic type through identification code

b. for determination of paint type:
   i. compound small area
   ii. solvent wipe test (1k or 2k)
   iii. colour of flatting 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/adhesion promoters
   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
   vi. the types and characteristics of common protective coatings such as: bitumen based
   vii. anti stone chip
   viii. etch primer
   v. 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
xvii. 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

Learning outcome and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand how to identify plastic body surfaces requiring the application of foundation materials in vehicle refinishing	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			
2	Understand how to prepare plastic body surfaces prior to application of foundation materials	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			
3	Understand how to mix and apply foundation materials onto plastics in vehicle refinishing	3.1	describe how to mix and check the viscosity of foundation materials			
		3.2	describe the importance of viscosity and its effects on the surface finish			
		3.3	describe the properties of the foundation materials			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		3.4	describe the principles of paint mixing, the importance of the right additive (hardener or thinner) in the correct ratio			
		3.5	describe the curing and drying recommendations for the various foundation materials to plastics			
		3.6	describe how to apply foundation coatings			
		3.7	describe how to find and interpret sources of information relevant to the mixing and application of foundation coatings relating to plastics			
		3.8	describe how to avoid application defects			
		3.9	outline and describe the masking procedures, methods and techniques for part or whole vehicles			
		3.10	describe how to carry out masking procedures to avoid material wastage and vehicle contamination for each stage of the process			
		3.11	identify the requirements for protecting the vehicle and contents from damage before, during and after preparing and applying foundation materials to plastics			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 16: Skills in Working with Plastic Materials and Components

Unit reference number: J/601/6231

QCF level: 3

Credit value: 5

Guided learning hours: 45

Unit summary

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 materials. Applying foundation materials to plastics following guidelines and procedures.

Assessment requirements/evidence requirements:

This unit must adhere to the IMI Skills Unit Assessment Requirements as set out below:

You must:

1. produce evidence to show you meet all of the learning outcomes
2. produce performance evidence resulting from work you have carried out in your training workshop as managed and organised by an approved centre
3. be observed by an assessor as defined by the IMI Assessment Strategy
4. be observed by an assessor carrying out each of the following listed below, which covers the learning outcomes:
   - apply foundation coats including adhesion promoters
   - applying top coats
   - use flexible additive.

Learning outcome and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out preparation and application of foundation materials to plastics used in vehicle refinishing	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			
2	Be able to use relevant information to carry out the task	2.1	select suitable sources of technical information to support preparation and application of foundation materials to plastics in vehicle refinishing			
		2.2	use technical information to support preparation and application of foundation materials to plastics in vehicle refinishing			
3	Be able to use appropriate tools and equipment	3.1	select the appropriate tools and equipment necessary for carrying out preparation and application of foundation materials to plastics in vehicle refinishing			
		3.2	ensure that equipment has been calibrated to meet manufacturers' requirements			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		3.3	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			
		3.4	leave all application equipment in a clean and serviceable condition			
4	Be able to carry out preparation and application of foundation materials to plastics used in vehicle refinishing	4.1	identify the type of plastic component prior to working on the vehicle			
		4.2	remove and store safely any components likely to be affected by the preparation process			
		4.3	keep the work area clean and tidy throughout all preparation activities			
		4.4	use surface cleaning agents and protect adjacent panels to those being repaired			
		4.5	leave the prepared areas free from contamination and ready for the application of foundation materials			
		4.6	check the viscosity of foundation materials			
		4.7	prepare and apply all foundation materials to plastics			
		4.8	dry and cure all foundation materials to plastics			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		4.9	dispose of waste material to conform with legal and workplace requirements			
		4.10	ensure all completed repairs are finished to an agreed standard ready for the next process			
5	Be able to record information and make suitable recommendations	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 identified during the course of their work promptly in the format required			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 17: Competency in Health, Safety and Good Housekeeping in the Automotive Environment

Unit reference number: A/601/6338

QCF level: 2

Credit value: 7

Guided learning hours: 60

Unit Summary

This unit will enable the learner to develop competency in order to:

- carry out day to day work area cleaning, clearing away, dealing with spillages and disposal of waste, used materials and debris
- identify hazards and risks in the automotive environment and complying with relevant legislation and good practice
- work safely at all times within the automotive environment, both as an individual and with others.

Assessment requirements/evidence requirements:

This unit must be assessed in accordance with the IMI Assessment Strategy *(Annexe C)* and adhere to the IMI Competence Unit Assessment Requirements as set out below:

You must:

1. produce evidence to show you meet **all** of the learning outcomes
2. produce performance evidence resulting from work you have carried out on real vehicles in your normal workplace or as defined within the IMI VCQ Assessment Strategy as managed and organised by an approved centre when naturally occurring performance evidence does not occur at frequent intervals in your normal workplace or when safety is at risk
3. be observed by an assessor as defined in the IMI VCQ Assessment Strategy
4. produce evidence of use of personal and vehicle protection, cleaning the work environment and disposal of waste on **3** separate **occasions**
5. be observed by your assessor on at least **1** occasion carrying out the above

6. produce evidence of identifying risks which may result from at least **2** of the items listed below:
   - the use and maintenance of machinery or equipment
   - the use of materials or substances
   - working practices which do not conform to laid down policies
   - unsafe behaviour
   - accidental breakages and spillages
   - environmental factors
7. be observed by your assessor on at least **1** occasion carrying out the above
8. produce evidence of following at least **4** of the workplace policies listed below:
   - the use of safe working methods and equipment
   - the safe use of hazardous substances
   - smoking, eating, drinking and drugs
   - what to do in the event of an emergency
   - personal presentation
9. be observed by your assessor following workplace policies on at least **1** occasion.

Learning outcome and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to use correct personal and vehicle protection within the automotive environment	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			
2	Be able to carry out effective housekeeping practices in the automotive environment	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			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		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			
3	Be able to recognise and deal with dangers in order to work safely within the automotive workplace	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			
4	Be able to conduct themselves responsibly	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			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 18: Competency in Supporting Job Roles in the Automotive Work Environment

Unit reference number: K/601/6366

QCF level: 3

Credit value: 5

Guided learning hours: 40

Unit summary

This unit will help the learner develop competency in order to keep good working relationships with all colleagues and customers in the automotive work environment by using effective communication and support.

Assessment requirements/evidence requirements:

This unit must be assessed in accordance with the IMI Assessment Strategy *(Annexe C)* and adhere to the IMI Competence Unit Assessment Requirements as set out below:

You must:

1. produce evidence to show you meet **all** of the learning outcomes
2. produce performance evidence resulting from work you have carried out on real vehicles in your normal workplace or as defined within the IMI VCQ Assessment Strategy as managed and organised by an approved centre when naturally occurring performance evidence does not occur at frequent intervals in your normal workplace or when safety is at risk
3. be observed by an assessor as defined in the IMI VCQ Assessment Strategy
4. produce evidence that you have worked well with others in the automotive industry
5. be observed by your assessor on at least **3** occasions carrying out the above whilst performing your normal work duties.

Learning outcome and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work effectively within the organisational structure of the automotive work environment	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			
2	Be able to obtain and use information in order to support their job role within the automotive work environment	2.1	select and use legal and manufacturers' information, in an automotive work environment			
3	Be able to communicate with and support colleagues and customers effectively within the automotive work environment	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			
		3.4	report any anticipated delays in completion to the relevant persons promptly			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to develop and keep good working relationships in the automotive work environment	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			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 19: Competency in Tools and Equipment Used in Vehicle Refinishing

Unit reference number: Y/601/6346

QCF level: 2

Credit value: 5

Guided learning hours: 45

Unit summary

This unit allows the demonstrate competency in:

- the correct selection, maintenance and use of hand and power tools used in vehicle refinishing
- the correct preparation, use and maintenance of vehicle refinishing equipment.

Assessment requirements/evidence requirements:

This unit must be assessed in accordance with the IMI Assessment Strategy *(Annexe C)* and adhere to the IMI Competence Unit Assessment Requirements as set out below:

You must:

1. produce evidence to show you meet **all** of the learning outcomes
2. produce performance evidence resulting from work you have carried out on real vehicles in your normal workplace or as defined within the IMI VCQ Assessment Strategy as managed and organised by an approved centre when naturally occurring performance evidence does not occur at frequent intervals in your normal workplace or when safety is at risk
3. be observed by an assessor as defined in the IMI VCQ Assessment Strategy
4. produce evidence from your normal workplace of preparing and using **all** of the tools listed below on at **least 2 occasions**:
    - flatting block
    - sponge
    - squeegee
    - chamois leather
    - trimming knife
    - polishing mop
    - sealer gun

- water traps
- pressure gauges
- automatic paper/tape dispenser
- viscosity measuring equipment
- combi-booth
- infrared dryer
- compressor
- main air line
- transformer/regulator
- vacuum/extraction sander
- spray gun cleaning machines
- plastic sheeting dispenser
- random orbital sander

5. produce evidence from your normal workplace of preparing and using **one** compliant spray gun of the type listed below on at **least 2 occasions:**
   - suction feed spray gun
   - gravity feed spray gun
   - pressure feed spray gun
6. be observed by your assessor on **at least 1 occasion**, preparing and using at least 4 different tools and equipment from the list contained in section 4 above.

Learning outcome and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to select, use and care for hand and power tools used in vehicle refinishing	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			
2	Be able to prepare and use vehicle refinishing equipment	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			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 20: Competency in Applying Fillers and Foundation Materials

Unit reference number: M/601/6417

QCF level: 2

Credit value: 10

Guided learning hours: 90

Unit summary

This unit will enable the learner to demonstrate competency in the identification of substrates. Mixing and adjusting the viscosity of fillers and foundation materials. Applying fillers and foundation materials following guidelines and procedures.

Assessment requirements/evidence requirements:

This unit must be assessed in accordance with the IMI Assessment Strategy *(Annexe C)* and adhere to the IMI Competence Unit Assessment Requirements as set out below:

You must:

1. produce evidence to show you meet **all** of the learning outcomes
2. produce performance evidence resulting from work you have carried out on real vehicles in your normal workplace or as defined within the IMI VCQ Assessment Strategy as managed and organised by an approved centre when naturally occurring performance evidence does not occur at frequent intervals in your normal workplace or when safety is at risk
3. be observed by an assessor as defined in the IMI VCQ Assessment Strategy
4. produce evidence from your normal workplace of carrying out **each** of the following listed below on at **least 2 occasions whilst following health and safety regulations throughout**:
   - setting up and using application equipment
   - mixing etch primer
   - applying etch primer
   - mixing wet on wet primer
   - mixing high build primer
   - applying wet on wet primer
   - applying high build primer

- dry curing foundation materials
- cleaning application equipment and disposing of waste products

5. be observed by your assessor on **at least 1 occasion**, applying fillers and foundation materials**.**

Learning outcome and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out preparation and application of foundation materials to vehicles	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			
2	Be able to carry out preparation and application of foundation materials to vehicles	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			
		2.7	work to the specified timescale for the activity			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
3	Be able to record information and make suitable recommendations	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	identify and report any expected delays in completion to the relevant person(s) promptly in the format required			
		3.4	record and report any additional faults noticed during the course of their work promptly in the format required			
4	Be able to use appropriate tools and equipment	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			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
5	Be able to use relevant information to carry out the task	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			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 21: Competency in Preparing Metal and Pre-painted Surfaces

Unit reference number: T/601/6421

QCF level: 2

Credit value: 10

Guided learning hours: 90

Unit summary

This unit will enable the learner to demonstrate competency in 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.

Assessment requirements/evidence requirements:

This unit must be assessed in accordance with the IMI Assessment Strategy *(Annexe C)* and adhere to the IMI Competence Unit Assessment Requirements as set out below:

You must:

1. produce evidence to show you meet **all** of the learning outcomes
2. produce performance evidence resulting from work you have carried out on real vehicles in your normal workplace or as defined within the IMI VCQ Assessment Strategy as managed and organised by an approved centre when naturally occurring performance evidence does not occur at frequent intervals in your normal workplace or when safety is at risk
3. be observed by an assessor as defined in the IMI VCQ Assessment Strategy
4. produce evidence from your normal workplace of preparing metal and pre-painted surfaces on **5 different vehicle body panels out of the 8 listed below*:**
   - electro-coated panels
   - repaired panels
   - original manufacturers' finish
   - plastic components
   - zinc-coated panels
   - steel panels
   - aluminium panels
   - primed panel

5. produce evidence of covering **all of the techniques** listed below in carrying out the preparation listed above:
   - feathering out
   - flatting using guide coats
   - hand sanding
   - machine sanding
   - dry sanding
6. be observed by your assessor on **at least 2 occasions** carrying out the preparation of different vehicle body panels.

*However, you must prove to your assessor that you have the necessary knowledge and understanding to be able to perform competently in respect of **all** the panels listed above.

Learning outcome and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out the preparation of metal and pre-painted surfaces	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			
2	Be able to carry out the preparation of metal and pre-painted surfaces to accept foundation materials and paint topcoats	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: a. vehicle manufacturer's technical data b. product data c. recognised methods and techniques			
		2.5	keep the work area clean and tidy throughout all preparation activities			
		2.6	dispose of waste materials to conform with legal and workplace requirements			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		2.7	ensure all preparation is finished to an agreed standard and free from contamination ready for the next process			
		2.8	work to the specified timescale for the activity			
3	Be able to record information and make suitable recommendations	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	identify and report any expected delays in completion to the relevant person(s) promptly in the format required			
		3.4	record and report any additional faults noticed during the course of their work promptly in the format required			
4	Be able to use appropriate tools and equipment	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			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		4.4	leave all application equipment in a clean and serviceable condition			
5	Be able to use relevant information to carry out the task	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			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 22: Competency in Repairing Minor Paint Defects

Unit reference number: J/601/6357

QCF level: 2

Credit value: 10

Guided learning hours: 90

Unit summary

This unit will help the learner to develop the competency 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.

Assessment requirements/evidence requirements:

This unit must be assessed in accordance with the IMI Assessment Strategy *(Annexe C)* and adhere to the IMI Competence Unit Assessment Requirements as set out below:

You must:

1. produce evidence to show you meet all of the learning outcomes
2. produce performance evidence resulting from work you have carried out on real vehicles in your normal workplace or as defined within the IMI VCQ Assessment Strategy as managed and organised by an approved centre when naturally occurring performance evidence does not occur at frequent intervals in your normal workplace or when safety is at risk
3. be observed by an assessor as defined in the IMI VCQ Assessment Strategy
4. produce evidence from your normal workplace of repairing 4 out of the 5 defects listed below*:
    - loss of gloss
    - scuffs and scratches to the manufacturers' finish
    - dirt inclusion in a newly applied finish
    - runs or sags in a newly applied finish
    - orange peel

5. be observed by your assessor carrying out **2 different rectification activities in your normal workplace**.

*However, you must prove to your assessor that you have the necessary knowledge and understanding to be able to perform competently in respect of all categories of paint fault listed above.

Learning outcome and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out the rectification of minor paint defects	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			
2	Be able to carry out the rectification of minor paint defects	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			
		2.8	work to the specified timescale for the activity			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
3	Be able to record information and make suitable recommendations	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	identify and report any expected delays in completion to the relevant person(s) promptly in the format required			
		3.4	record and report any additional faults noticed during the course of their work promptly in the format required			
4	Be able to use appropriate tools and equipment	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			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
5	Be able to use relevant information to carry out the task	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			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 23: Competency in Removing and Fitting Non-permanently Fixed Motor Vehicle Body Panels

Unit reference number: R/601/5373

QCF level: 2

Credit value: 3

Guided learning hours: 30

Unit summary

This unit will enable the learner to demonstrate competency in the removing 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.

Assessment requirements/evidence requirements:

This unit must be assessed in accordance with the IMI Assessment Strategy *(Annexe C)* and adhere to the IMI Competence Unit Assessment Requirements as set out below:

You must:

1. produce evidence to show you meet **all** of the learning outcomes
2. produce performance evidence resulting from work you have carried out on real vehicles in your normal workplace or as defined within the IMI VCQ Assessment Strategy as managed and organised by an approved centre when naturally occurring performance evidence does not occur at frequent intervals in your normal workplace or when safety is at risk
3. be observed by an assessor as defined in the IMI VCQ Assessment Strategy
4. produce evidence from your normal workplace of removing and refitting 4 out of the 5 panels from the list below on at **least 2 occasions**:
   - wings
   - doors
   - bonnets
   - boot lids
   - tailgates

5. be observed by your assessor removing and refitting **two different panels** listed above.

Learning outcome and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out removal and fitting of non-permanently fixed vehicle panels	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			
2	Be able to use relevant information to carry out the task	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			
3	Be able to use appropriate tools and equipment	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			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to carry out removal and fitting of non-permanently fixed vehicle panels	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			
		4.7	work to the specified timescale for the activity			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
5	Be able to record information and make suitable recommendations	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	identify and report any expected delays in completion to the relevant person(s) promptly in the format required			
		5.4	record and report any additional faults noticed during the course of their work promptly in the format required			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 24: Competency in Working with Plastic Materials and Components

Unit reference number: K/601/6352

QCF level: 3

Credit value: 10

Guided learning hours: 90

Unit summary

This unit will enable the learner to demonstrate competency in the identification of plastic substrates. Mixing and adjusting the viscosity of foundation materials. Applying foundation materials to plastics following guidelines and procedures.

Assessment requirements/evidence requirements:

This unit must be assessed in accordance with the IMI Assessment Strategy *(Annexe C)* and adhere to the IMI Competence Unit Assessment Requirements as set out below:

You must:

1. produce evidence to show you meet **all** of the learning outcomes
2. produce performance evidence resulting from work you have carried out on real vehicles in your normal workplace or as defined within the IMI VCQ Assessment Strategy as managed and organised by an approved centre when naturally occurring performance evidence does not occur at frequent intervals in your normal workplace or when safety is at risk
3. be observed by an assessor as defined in the IMI VCQ Assessment Strategy
4. produce evidence from your normal workplace of carrying out **each** of the following listed below on at **least 2 occasions** (only use the flexible additive on **one occasion):**
   - apply foundation coats including adhesion promoters
   - applying top coats
   - use flexible additive
5. be observed by your assessor on **at least 1 occasion**, applying foundation and topcoat materials**.**

Learning outcome and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out preparation and application of foundation materials to plastics used in vehicle refinishing	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			
2	Be able to carry out preparation and application of foundation materials to plastics used in vehicle refinishing	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			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		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			
		2.11	work to the specified timescale for the activity			
3	Be able to record information and make suitable recommendations	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	identify and report any expected delays in completion to the relevant person(s) promptly in the format required			
		3.4	record and report any additional faults identified during the course of their work promptly in the format required			
4	Be able to use appropriate tools and equipment	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			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		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			
5	Be able to use relevant information to carry out the task	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			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 25: Knowledge of Establishing Paint Defects

Unit reference number: M/601/6126

QCF level: 3

Credit value: 6

Guided learning hours: 45

Unit summary

This unit enables the learner to develop an understanding about a range of faults that often require the removal of materials to a sound substrate in order for rectification to take place.

Assessment requirements/evidence requirements:

If this unit is offered within a competence qualification (VCQ) it must be assessed in accordance with the IMI Assessment Strategy *(Annexe C)*.

This unit must adhere to the IMI Knowledge Unit Syllabus as set out below:

Type of defects

a. acid spotting
b. blistering
c. blushing
d. blooming
e. bridging
f. chalking
g. checking
h. crazing
i. dirt
j. dry spray
k. edge mapping
l. etching
m. fading
n. fish eyes
o. flaking
p. haloing

q. humidity blisters
r. mottling
s. orange peel
t. overspray
u. pin holes
v. poor opacity
w. plastic bleed through
x. runs
y. rust
z. sand scratch swelling
aa. shrinking and splitting
bb. streaking
cc. solvent popping
dd. tape marks
ee. water spotting
ff. webbing

Types of paint finishes likely to be found in moern 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 flatting 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 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

Paint defects and 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 paint defects

a. the procedures for the rectification of 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 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:
   iv. surface scratches
   v. surface contamination
   vi. silicone cratering
   vii. staining of painted surfaces
   viii. equipment malfunction

Materials used for the rectification of 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

Learning outcome and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand how to identify and explain paint defects	1.1	explain how to identify the existing paint surface finish on which the defect has occurred			
		1.2	explain the main methods used to determine the surface finish			
		1.3	explain the types and appearance of paint defects			
		1.4	explain the causes of the paint defects including: a. environment b. preparation c. application d. deterioration			
2	Understand how to repair paint defects	2.1	explain the factors affecting the choice and use of materials in the rectification of paint defects			
		2.2	explain the procedures involved in repairing paint defects			
		2.3	explain how to prevent further paint damage during rectification			
		2.4	Describe the importance of proper cleaning prior to and after rectification work			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		2.5	explain the importance of keeping equipment and materials clean and free from contamination during rectification work			
		2.6	explain the requirements for protecting the vehicle and contents from damage before, during and after repairing paint defects and faults			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 26: Skills in Establishing Paint Defects

Unit reference number: D/601/6252

QCF level: 3

Credit value: 5

Guided learning hours: 45

Unit summary

This unit will help the learner to develop the skills required to identify and repair a range of paint faults that often require the removal of materials to a sound substrate in order for rectification to take place.

Assessment requirements/evidence requirements:

This unit must adhere to the IMI Skills Unit Assessment Requirements as set out below:

You must:

1. produce evidence to show you meet **all** of the learning outcomes
2. produce performance evidence resulting from work you have carried out in your training workshop as managed and organised by an approved centre
3. be observed by an assessor as defined by the IMI Assessment Strategy
4. be observed by an assessor establishing and rectifying paint defects **from 3 out of the** 8 listed below, which covers the learning outcomes:
    - poor application
    - environmental conditions
    - contamination
    - corrosion
    - wear and tear
    - adverse chemical reactions
    - panel deformation
    - poor preparation.

Learning outcome and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out the identification and rectification of paint defects	1.1	use suitable personal protective equipment and vehicle coverings when carrying out the identification and rectification of paint defects			
		1.2	work in a way which minimises the risk of damage or injury to the vehicle, people and the environment			
2	Be able to use relevant information to carry out the task	2.1	select suitable sources of technical information to support the identification and rectification of paint defects			
		2.2	interpret technical information to support the rectification of minor paint defects			
3	Be able to use appropriate tools and equipment	3.1	select the appropriate tools and equipment necessary for carrying out the identification and rectification of paint defects			
		3.2	check that the equipment is safe and has been calibrated to meet manufacturers' requirements			
		3.3	use the correct tools and equipment in the way specified by manufacturers when carrying out the identification and rectification of paint defects			
		3.4	leave all application equipment in a clean and serviceable condition			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to carry out the identification and rectification of paint defects	4.1	identify on the vehicle the type of paint defect and the body panel surface prior to working on the vehicle			
		4.2	use surface cleaning agents and protect all surfaces adjacent to those being prepared using the specified method			
		4.3	remove and store safely any components likely to be affected by the preparation process			
		4.4	correct defects using the approved tools and equipment required			
		4.5	keep the work area clean and tidy throughout all rectification activities			
		4.6	dispose of waste materials to conform with legal and workplace requirements			
		4.7	ensure all paint defects are rectified to an agreed standard			
5	Be able to record information and make suitable recommendations	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			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 27: Knowledge of Applying Topcoats and Completing Refinishing Operations

Unit reference number: J/601/6147

QCF level: 3

Credit value: 6

Guided learning hours: 45

Unit summary

This unit enables the learner to develop an understanding for following guidelines and procedures for the refinishing of new and repaired vehicle panels. Including the preparation of the surface panel, application of the topcoat and any refinishing techniques.

Assessment requirements/evidence requirements:

If this unit is offered within a competence qualification (VCQ) it must be assessed in accordance with the IMI Assessment Strategy *(Annexe C)*.

This unit must adhere to the IMI Knowledge Unit Syllabus as set out below:

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. 2 K paints
   - vii. 1K paints
   - viii. clear over bases
   - ix. polyester fillers
   - x. repaired panels
   - xi. primed panels (E coat)

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 flatting sludge (straight colour or C O B)
   iv. 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. vehicles 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 used 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
   vi. synthetic enamels
   vii. timber (trim parts only)

b. the procedures for the preparation of plastics to include:
   i. identification
   ii. tempering
   iii. porefilling

iv. cleaning
v. adhesion promotion
vi. elastic primers

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

The term 'feather edging' and 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

Masking procedures for part and whole vehicles. 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

The factors affecting the choice and use of topcoat materials

a. The types of paints such as:
   i. non-convertible
      - nitro cellulose
      - 1k acrylic

ii. convertible
- oil-based synthetics
- 2 k acrylics
- 2k polyurethane
- polyesters
- isocyanate resins

iii. waterborne basecoats
- microgel
- latex

b. the reasons for using paint to include:
i. protection
ii. filling
iii. decoration
iv. identification
v. safety

c. 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

d. 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

e. the problems of over catalysed body filled areas

f. the correct health and safety procedures associated with body fillers

g. aids and techniques which can be used to achieve the correct contour of a filled area

h. undercoat materials for plastics to include:
i. adhesion promoters
ii. surface modifiers
iii. flexible additives
iv. texture additives

i. listed additives such as:
    i. adhesion promoters
    ii. flexible additives
    iii. texture finishes
    iv. extenders
    v. UV absorbers
    vi. flow aids

The properties of topcoat materials

a. the ingredients of paint include:
    i. pigment
    ii. binder/vehicle
    iii. solvent/thinner/reducer
    iv. additives

b. the different types of paints to include:
    i. non- convertible:
        - nitro cellulose
        - 1k acrylics
        - basecoats
    ii. convertibles:
        - two packs
        - oil- based synthetic enamels

c. the characteristics and properties of surface coatings to include:
    i. nitro-cellulose- non- convertible-low build –fast surface dry
    ii. oil-based synthetics-convertible-slow dry through uptake of oxygen
    iii. two packs - convertible- chemical reaction –high build
    iv. base coats- solvent or water borne –non- convertible-very low build-high opacity-have to be over
    v. coated with a clear coat

d. the principles of operation of water- based materials

e. the materials used in water- based paint technology

f. the environmental advantages of using water- based paints

g. the materials in terms of their:
    i. preparation of substrates
    ii. mixing procedures
    iii. application
    iv. drying processes
    v. working techniques
    vi. covering and hiding power
    vii. rectification
    viii. cleaning process

Preparation and use of topcoat materials for refinishing procedures

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. procedures for mixing topcoats such as:
   i. 1K – cellulose and acrylics
   ii. 2K solid finishes and clear lacquers
   iii. basecoats – solid, metallic and pearlescent

Tools and equipment used in the preparation of topcoat materials

a. the tools and equipment required for paint preparation to include:
   i. mixing schemes
   ii. ratio/mixing sticks
   iii. calibrated mixing cups
   iv. paint filters
   v. viscosity cups
   vi. timers
   vii. appropriate PPE

The selection of appropriate techniques for refinishing new and repaired panels, using edge-to-edge, fade outs, blending and spot repair methods

a. the procedure for carrying out edge-to-edge paint application to include:
   i. panel preparation
   ii. masking
   iii. gun technique

b. the procedure for carrying out paint blend to include:
   i. panel preparation
   ii. masking
   iii. gun technique
   iv. final thinning

c. the procedure for carrying out spot or fade out repair to include:
    i. panel preparation
    ii. masking
    iii. gun technique
    iv. final thinning
    v. fade out thinners

Correct application of topcoat materials can help to avoid surface defects such as colour/tone variations, overspray, etc

a. spray gun motion to include:
    i. gun distance
    ii. gun angle
    iii. gun speed
    iv. overlaps
b. the relationship between the four motions to give an even film thickness
c. the reason for flash off times between coats
d. what is meant by 'Wet on Wet' applications
e. the application differences of using MS, HS and UHS materials
f. methodology to refinish a large part of or complete vehicle
g. the differences to applying a basecoat material compared with one stage solid colours such as:
    i. gun distance
    ii. gun speed
    iii. air pressure
    iv. 'drop coats'
h. the application of clearcoat with reference to:
    i. gun speed
    ii. flash off
    iii. number of coats
    iv. HS and UHS

The procedures to be adopted to rectify spray gun, topcoat surface defects and avoid their recurrence

a. the 'Spray Out' checks to establish spray gun faults such as:
    i. spray flutter
    ii. sickle-shaped patterns
    iii. centre heavy pattern
    iv. constricted centre pattern
    v. top/bottom heavy patterns
b. the causes and remedies for these faults

c. application paint faults to include:
    i. runs
    ii. sags
    iii. dirt
    iv. contamination (fish eyes)
    v. orange peel
    vi. dry spray
    vii. Solvent pop
d. the causes, prevention and rectification of these faults

The importance of sourcing, correctly interpreting and following manufacturers' instructions and the consequences of failing to do so

a. sources of material information to include:
    i. PC based material
    ii. paint manufacturers information
    iii. paint data sheets
    iv. world wide web
    v. Thatcham methods manuals
b. types of material recoverable from the above sources to include:
    i. product and mixing information
    ii. health and safety information
    iii. first aid procedures
    iv. application techniques
    v. rectification procedures
    vi. colour information
c. sources of information relevant to equipment to include:
    i. manufacturers instructions
    ii. operating manuals
    iii. trade publications
    iv. world wide web
d. the type of information recoverable from theses sources such as:
    i. maintenance schedules
    ii. maintenance procedures
    iii. replacing parts and consumables
    iv. spare parts list and suppliers
    v. accessories available
    vi. trouble shooting information
    vii. adjustment and operation guides

Learning outcome and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand how to prepare panels and refinishing systems for the application of topcoat materials in vehicle refinishing	1.1	explain how to prepare panels and parts adjacent to the area being paint			
		1.2	explain how to prepare refinishing systems and materials for use			
		1.3	explain the properties of the refinishing system and materials and the factors affecting their use			
2	Understand how to identify, mix and apply topcoat materials in vehicle refinishing	2.1	explain how to condition and clean surfaces prior to the application of topcoat coatings			
		2.2	explain the importance of proper cleaning and correct use of foundation material to ensure adequate adhesion			
		2.3	explain the methods of protecting panels and parts adjacent to the areas being painted and the circumstances in which they should be used			
		2.4	describe the choice and use of topcoat materials			
		2.5	explain how to mix and check the viscosity of topcoat materials			
		2.6	explain the importance of viscosity and its effects on the surface finish			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		2.7	explain the principles of paint mixing, the importance of the right additive (hardener or thinner) in the correct ratio			
		2.8	explain how to apply topcoat coatings avoiding contamination and defects including a. edge to edge techniques b. spot repairs c. fade out and blending techniques			
		2.9	Explain the curing and drying recommendations for the various topcoat materials			
		2.10	explain the effects of the spray environment and natural environment on vehicle refinishing			
		2.11	explain the techniques used in polishing the vehicle topcoat finish			
		2.12	explain the requirements for protecting the vehicle and contents from damage before, during and after preparing and applying topcoat materials			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 28: Skills in Applying Topcoats and Completing Refinishing Operations

Unit reference number: T/601/6290

QCF level: 3

Credit value: 5

Guided learning hours: 45

Unit summary

This unit will help the learner to develop the skills required to follow guidelines and procedures for the refinishing of new and repaired vehicle panels. Including the preparation of the surface panel and application of the topcoat.

Assessment requirements/evidence requirements:

This unit must adhere to the IMI Skills Unit Assessment Requirements as set out below:

You must:

1. produce evidence to show you meet **all** of the learning outcomes
2. produce performance evidence resulting from work you have carried out in your training workshop as managed and organised by an approved centre
3. be observed by an assessor as defined by the IMI Assessment Strategy
4. be observed by an assessor carrying out **different** vehicle refinishing operations **from 3 out of the 5** listed below, which covers the learning outcomes:
   - metallic or mica clear over base finish
   - textured finish
   - edge to edge finish
   - spot repair finish
   - fade out or blending finish.

Learning outcome and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out preparation and application of topcoat materials in vehicle refinishing	1.1	use suitable personal protective equipment and vehicle coverings when carrying out preparation and application of topcoat materials in vehicle refinishing			
		1.2	work in a way which minimises the risk of damage or injury to the vehicle, people and the environment			
2	Be able to use relevant information to carry out the task	2.1	select suitable sources of technical information to support preparation and application of topcoat materials to vehicles			
		2.2	use technical information to support preparation and application of topcoat materials to vehicles			
3	Be able to use appropriate tools and equipment	3.1	select the appropriate tools and equipment necessary for carrying out preparation and application of topcoat materials to vehicles			
		3.2	ensure that equipment has been calibrated to meet manufacturers requirements			
		3.3	use the correct tools and equipment in the way specified by manufacturers when carrying out preparation and application of topcoat materials to vehicles			
		3.4	leave all application equipment in a clean and serviceable condition			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to carry out preparation and application of topcoat materials in vehicle refinishing	4.1	identify the type of substrate prior to working on the vehicle			
		4.2	use of surface cleaning agents materials			
		4.3	prepare all the refinishing systems and materials required following health and safety requirements			
		4.4	mix and check the viscosity of topcoat materials			
		4.5	apply all topcoat materials			
		4.6	dry and cure all topcoat materials			
		4.7	ensure the finish product meets the requirements of the manufacturer's warranty, the refinishing specification required and customer needs			
		4.8	dispose of waste materials to conform with legal and workplace requirements			
5	Be able to record information and make suitable recommendations	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			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 29: Knowledge of Vehicle Colour Matching

Unit reference number: R/601/6135

QCF level: 3

Credit value: 6

Guided learning hours: 45

Unit summary

This unit enables the learner to develop an understanding of colours, undercoats paints, identification, mixing and matching of vehicle paint colours including the use of tinters and preparation of test cards.

Assessment requirements/evidence requirements:

If this unit is offered within a competence qualification (VCQ) it must be assessed in accordance with the IMI Assessment Strategy *(Annexe C)*.

This unit must adhere to the IMI Knowledge Unit Syllabus as set out below:

The effects of the viewing environment on colour matching:

a. artificial light
b. natural light
c. light box
d. direct sunlight
e. shaded light
f. reflection

The purpose of paint materials:

a anti-corrosion
b protection
c reflection
d visual
e body sound deadening (all list to go in content)

Types of undercoats and their function:

a primer
b primer surfacer
c anticorrosion

d etch primers
e plastic primers
f primer fillers
g electrodepositing (E-coating)
h e-coat replacement products
i sealers/isolators
j anti chip/texture coatings

Types of paints and their function:

a. single pack
b. two pack
c. acrylic
d. alkyd
e. epoxy
f. polyurethane
g. phenolic
h. polyester

Types of pigments available and their function:

a coloured
b metallic
c pearl
d anti corrosion
e extender
f special effects

The purpose of testing paint materials:

a. adhesion
b. durability
c. corrosion
d. resistance to chemicals
e. abrasion
f. acid rain
g. ultraviolet

Types of topcoat

a. solid colours

b. clear over base colours

c. metallic colours

d. pearl colours

Methods and importance of correctly identifying paint substrates prior to undertaking any refinishing work

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

b. substrates to determine selection of undercoat with reference to:
   i. condition of surface
   ii. type of substrate
   iii. process requirements
   iv. material requirements

c. the physical properties of a substrate to include:
   i. surface condition
   ii. adhesion
   iii. flexibility
   iv. porosity

d. 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

How to prepare existing paint substrates for colour matching

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
   vi. synthetic enamels

b. the procedures for the preparation of paint finishes to include:
   i. thorough cleaning and drying
   ii. compounding to restore original colour

c. 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
d. the preparation requirements for textured and special effect coatings to include:
    i. spoilers
    ii. bumpers
    iii. exterior trim

How different light sources can affect the perception of colour for matching purposes

a. colour in terms of light reflected from a surface to include:
    i. light quality
    ii. surface quality
    iii. absorbed light
    iv. reflected light
b. the effects of metamerism under:
    i. sodium light
    ii. mercury vapour
    iii. explain how this phenomenon is created

Types of refinishing materials by their film forming characteristics

a. the different types of paints to include:
    i. Non- convertible
    ii. nitro cellulose
    iii. 1k acrylic
    iv. convertible
    v. oil based synthetics
    vi. 2 k acrylics
    vii. 2k polyurethane
    viii. polyesters
    ix. isocyanate resins
    x. waterborne basecoats
    xi. microgel
    xii. latex
b. the properties of binders to include:
    i. convertible
    ii. oxidise
    iii. high temperature reactants
    iv. chemical reactants

c. non-convertible:
    a. solvent evaporation
d. the forms of binder such as:
    i. nitro-cellulose
    ii. alkyds
    iii. urethanes
    iv. polyesters
    v. isocyanates
    vi. acrylics
e. the uses of binders in paints:
    i. film forming
    ii. binding the pigments
    iii. adhesion
    iv. cohesion
    v. flexibility
f. the principles of operation of water- based materials
g. the materials used in water- based paint technology
h. the environmental advantages of using water- based paints

Distinguish between paint system classification, such as MS, HS, UHS, water-based, etc.

a. the difference between paint systems to include:
    i. medium solids
    ii. high solids
    iii. ultra high solids
    iv. water based

The properties of different types of solvents, thinners and hardeners

a. the properties of different types of solvent, thinners and hardeners such as:
    i. evaporation rate
    ii. ability to dissolve the binder
    iii. ability to be tolerated by the binder
    iv. fade out properties
    v. drying rate
b. the forms of solvent/thinner such as:
    i. alcohols
    ii. ketones
    iii. glycol ethers
    iv. blends
c. the use of solvent/thinner
    i. to make the paint fluid in the tin
    ii. to reduce the paint to a spraying/application viscosity

d. the properties of 2K hardeners to include:
    i. effectiveness at blocking out harmful ultra violet light
    ii. necessity for adding to 2k paints to effect curing
    iii. inclusion of isocyanates requires special H&S procedures

The properties of paint system additives

a. listed additives and describe their properties to include:
    i. adhesion promoters
    ii. flexible additives
    iii. texture finishes
    iv. extenders
    v. UV absorbers
    vi. flow aids
b. the characteristics of additives to be added to textured paints such as those for:
    i. textured finish
    ii. leather look finishes
    iii. crackle finishes
    iv. metallic additives other than aluminium

The factors to be considered when choosing and using refinishing systems

a. the characteristics and properties of surface coatings to include:
    i. nitro-cellulose- non -convertible-low build –fast surface dry
    ii. oil- based synthetics-convertible-slow dry through uptake of oxygen
    iii. two packs- convertible- chemical reaction –high build
    iv. basecoats- solvent or water borne –non- convertible-very low build-high opacity have to be overcoated with clearcoat
b. the listed paint materials in terms of their:
    i. preparation of substrates
    ii. mixing procedures
    iii. application
    iv. drying processes
    v. working techniques
    vi. covering and hiding power
    vii. rectification
    viii. cleaning processes

Spraying equipment adjustments can alter the colour of refinishing materials

a. the spray gun adjustments that can be made to determine the surface finish of a colour coat to include:
    i. air pressure
    ii. fluid volume
    iii. fan width

Sources of information relevant to the mixing and matching of vehicle paint colours

a. the information that may be gained from the Vehicle Identification No. (VIN) plate with regard to paint codes.

b. alternative areas of the vehicle where the paint code may be found.

c. the sources of information relevant to paint finishing to include:
   i. PC-based material
   ii. paint manufacturers' information
   iii. trade magazines
   iv. specialist magazines (customising periodicals)
   v. vehicle manufacturers' information sheets
   vi. paint data sheets
   vii. microfiche
   viii. worldwide web
   ix. Thatcham methods manuals

d. types of information recoverable from the above sources to include:
   i. product and mixing information
   ii. health and safety information
   iii. first aid procedures
   iv. application techniques
   v. rectification procedures
   vi. colour information

e. the meaning of the symbols used on most microfiche such as:
   i. colour data
   ii. formula field
   iii. technical field
   iv. on line finish
   v. coding field
   vi. formula in development
   vii. special technical information
   viii. variants
   ix. respray
   x. poor opacity
   xi. 3-stage colour
   xii. colours for mouldings/bumpers
   xiii. revised formula

f. the extra colour information available such as:
   i. colour variants
   ii. colour 'wheel'
   iii. online colour back up

g. the sources of tinting information available to the painter to aid colour matching of metallics.

The principles of colour, the colour wheel, and Munsell's Notation

a. the theory of colour matching to include:
   i. primary and secondary colours
   ii. metamerism
   iii. quality of light source
   iv. colour circles

b. the terminology used to describe the matching of metallic colours with reference to:
   i. the munsell colour circle
   ii. the variant shade
   iii. hue
   iv. chroma
   v. value

c. what is meant by subtractive mixing.

d. what is meant by additive mixing.

The factors affecting colour and colour perception, including metamerism

a. factors affecting colour variation such as:
   i. orientation of metallic particles
   ii. flip and face tones
   iii. coating thickness and viscosity
   iv. spraying temperatures
   v. spraying pressures

b. how each of the above has an effect on the colour match

c. how the above problems can be overcome

d. the process of light and pigment interaction with reference to:
   i. colour spectrum
   ii. colour effects
   iii. refraction
   iv. diffusion
   v. light wavelengths
   vi. thickness of pigment particles
   vii. type of pigment particles

e. the function of a light box testing unit as:
   i. testing under normal daylight conditions
   ii. testing for metamerism
   iii. comparison of colour standards

f. the operation of a light testing unit with reference to:
   i. operation
   ii. type of light used

How to obtain matching colours and how to compare them with the original finish in terms of colour, tone and effect, including the use of dried test cards or panels

a. the procedures and principles for using colour chips such as:
   i. cleaning the panel
   ii. matching in daylight conditions
   iii. matching adjacent panels

b. what is meant by subtractive mixing

c. what is meant by additive mixing

d. the mixing of basecoat materials to include:
   i. mixing tinters
   ii. thinners, solvents or water
   iii. additives

e. the preparation of a clearcoat material to include:
   i. hardeners
   ii. thinners/solvents
   iii. additives

f. the types of 'advanced pigments' used in modern paints:
   i. metallic (aluminium and titanium)
   ii. pearlescents (micas)
   iii. 'multi flip' pigments

g. the operation and characteristics of different pigments to include:
   i. acicular-noodle shaped-add strength and reinforcing
   ii. lamollar — flakes-increased durability
   iii. nodular- roughly spherical-most common

h. the function of spray out cards to determine:
   i. opacity of colour
   ii. hiding power
   iii. colour comparison
   iv. as a reference for future use

i. the functions of spray out cards with reference to a 'colour library':
   i. reference functions
   ii. colour tinting information
   iii. information required
   iv. recording of information

Different application techniques

a. the differences to applying a base coat material compared with one stage solid colours such as:
   i. gun distance
   ii. gun speed
   iii. air pressure
   iv. 'drop coats'
   v. flash off

b. the application of clear coat with reference to:
   i. gun speed
   ii. flash off
   iii. number of coats
   iv. MS, HS and UHS

The importance of using material application methods which assist in achieving colour match

a. the differences to applying a base coat material compared with one stage solid colours such as:
   i. gun distance
   ii. gun speed
   iii. air pressure
   iv. 'drop coats'
   v. flash off

b. the effects of applying metallic colours:
   i. wet
   ii. dry

c. the application of clear coat with reference to:
   i. gun speed
   ii. flash off
   iii. number of coats
   iv. MS, HS and UHS

The use of blending techniques as an aid to achieving an acceptable colour match

a. the procedure for carrying out paint blend to include:
   i. panel preparation
   ii. masking
   iii. gun technique
   iv. final thinning
   v. spraying onto adjacent areas and panels to assist in matching colours

The methods used to rectify mismatches caused by over tinting

a. the requirements of tinting colours to:
   i. lighten the colour
   ii. darken the colour
   iii. tint the colour
   iv. 'clean' the colour

b. the procedure of colour matching with reference to:
   i. identifying the mismatch
   ii. describing the hue and value
   iii. identifying the required tinter
   iv. regulating the tinter additions

Learning outcome and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand about colour theory	1.1	describe the colours of the spectrum			
		1.2	identify the primary colours			
		1.3	explain the effect by which pigments produce visible colour, including black and white			
		1.4	identify and recognise colour classification systems			
		1.5	describe the terms colour, strength, hue, chroma			
		1.6	explain the effects of the viewing environment on colour matching			
		1.7	explain the terms gloss, opacity and metamerism and there effects on colour matching			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
2	Understand about vehicle paint coatings, ingredients and their application	2.1	explain the purpose of paint materials			
		2.2	describe the kinds of undercoats, their functions and use on motor vehicles			
		2.3	describe the kinds of topcoats, their functions and use on motor vehicles including: a. solid colours b. clear over base colours c. metallic colours d. pearl colours			
		2.4	identify and explain the basic ingredients of paints			
		2.5	explain the types of paints available and their function including: a. single pack b. two pack c. acrylic			
		2.6	explain the types of pigments available and their function			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		2.7	explain the types of solvents available and their function			
		2.8	explain the purpose of testing paint materials			
3	Understand about mixing and matching vehicle paint colours	3.1	describe how to find, interpret and use sources of information relevant to the mixing and matching of vehicle paint colours			
		3.2	describe how to identify the paint substrate and the importance of doing so			
		3.3	explain how to compare, mix, test and adjust colour tones and effects, including metallic and mica effects			
		3.4	explain the consequences of adding too much of one type of tinter and the process for correcting and adjusting it			
		3.5	describe how to use test panels and colour test cards including drying and the importance of doing so			
		3.6	explain how spray equipment adjustments can alter colour			
		3.7	explain how to identify the causes of colour mismatch and how to rectify			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		3.8	explain how to assess and evaluate the need for blending techniques to achieve and acceptable colour match			
		3.9	describe the importance of correctly preparing the existing finish for colour matching and checking the match using the correct light source			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 30: Skills in Vehicle Colour Matching

Unit reference number: T/601/6256

QCF level: 3

Credit value: 5

Guided learning hours: 45

Unit summary

This unit will help the learner to develop the skills required to identify, mix and match vehicle paint colours including the use of tinters and preparation of test cards.

Assessment requirements/evidence requirements:

This unit must adhere to the IMI Skills Unit Assessment Requirements as set out below:

You must:

1. produce evidence to show you meet **all** of the learning outcomes
2. produce performance evidence resulting from work you have carried out in your training workshop as managed and organised by an approved centre
3. be observed by an assessor as defined by the IMI Assessment Strategy
4. be observed by an assessor matching and mixing 1 non-metallic **colour and 1 metallic or mica colour,** which covers the learning outcomes.

Learning outcome and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out vehicle mixing and matching	1.1	use suitable personal protective equipment and vehicle coverings when carrying vehicle mixing and matching			
		1.2	work in a way which minimises the risk of damage or injury to the vehicle, people and the environment			
2	Be able to use relevant information to carry out the task	2.1	select suitable sources of technical information to support paint mixing and matching activities			
		2.2	use technical information to support paint mixing and matching activities			
3	Be able to use appropriate tools and equipment	3.1	select the appropriate tools and equipment necessary for carrying out paint mixing and matching activities			
		3.2	ensure that equipment has been calibrated to meet manufacturers' requirements			
		3.3	use the correct tools and equipment in the way specified by manufacturers when carrying out paint mixing and matching activities			
		3.4	leave all mixing and application equipment in a clean and serviceable condition			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to carry out vehicle mixing and matching activities	4.1	identify prior to working on the vehicle the type of substrate to be painted			
		4.2	prepare all the refinishing systems and materials required following health and safety requirements			
		4.3	mix, compare and adjust colour tones and effects using suitable mixing and matching techniques			
		4.4	ensure all refinishing systems and materials prepared meet the specification required for colour and viscosity prior to application			
		4.5	apply refinishing systems and materials to colour test cards			
		4.6	dry all colour test cards before checking colour			
		4.7	ensure the colour produced meets the material manufacturer's requirements, the customer requirements and is a blendable match to the existing colour			
		4.8	dispose of waste materials to conform with legal and workplace requirements			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
5	Be able to record information and make suitable recommendations	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			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 31: Competency in Establishing Paint Defects

Unit reference number: R/601/6362

QCF level: 3

Credit value: 10

Guided learning hours: 90

Unit summary

This unit will enable the learner to demonstrate competency in identifying and repairing a range of paint faults that often require the removal of materials to a sound substrate in order for rectification to take place.

Assessment requirements/evidence requirements:

This unit must be assessed in accordance with the IMI Assessment Strategy *(Annexe C)* and adhere to the IMI Competence Unit Assessment Requirements as set out below:

You must:

1. produce evidence to show you meet all of the learning outcomes
2. produce performance evidence resulting from work you have carried out on real vehicles in your normal workplace or as defined within the IMI VCQ Assessment Strategy as managed and organised by an approved centre when naturally occurring performance evidence does not occur at frequent intervals in your normal workplace or when safety is at risk
3. be observed by an assessor as defined in the IMI VCQ Assessment Strategy
4. produce evidence from your normal workplace of **establishing and rectifying** paint defects **from 4 out of the 8** listed below*:
    - poor application
    - environmental conditions
    - contamination
    - corrosion
    - wear and tear
    - adverse chemical reactions
    - panel deformation
    - poor preparation

5. be observed by your assessor on at **least 2 different paint defects on separate occasions in your normal workplace**.

*****However, you must prove to your assessor that you have the necessary knowledge and understanding to be able to perform competently in respect of **all categories of paint fault** listed above.

Learning outcome and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out the identification and rectification of paint defects	1.1	use suitable personal protective equipment and vehicle coverings when carrying out the identification and rectification of paint defects			
		1.2	work in a way which minimises the risk of damage or injury to the vehicle, people and the environment			
2	Be able to carry out the identification and rectification of paint defects	2.1	identify on the vehicle the type of paint defect and the body panel surface prior to working on the vehicle			
		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	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 paint defects are rectified to an agreed standard			
		2.8	work to the specified timescale for the activity			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
3	Be able to record information and make suitable recommendations	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	identify and report any expected delays in completion to the relevant person(s) promptly in the format required			
		3.4	record and report any additional faults noticed during the course of their work promptly in the format required			
4	Be able to use appropriate tools and equipment	4.1	select the appropriate tools and equipment necessary for carrying out the identification and rectification of paint defects			
		4.2	check 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 identification and rectification of paint defects			
		4.4	leave all application equipment in a clean and serviceable condition			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
5	Be able to use relevant information to carry out the task	5.1	select suitable sources of technical information to support the identification and rectification of paint defects			
		5.2	interpret technical information to support the rectification of minor paint defects			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 32: Competency in Applying Topcoats and Completing Refinishing Operations

Unit reference number: J/601/6424

QCF level: 3

Credit value: 10

Guided learning hours: 90

Unit summary

This unit will enable the learner to demonstrate competency in following guidelines and procedures for the refinishing of new and repaired vehicle panels. Including the preparation of the surface panel and application of the topcoat.

Assessment requirements/evidence requirements:

This unit must be assessed in accordance with the IMI Assessment Strategy *(Annexe C)* and adhere to the IMI Competence Unit Assessment Requirements as set out below:

You must:

1. produce evidence to show you meet all of the Learning Outcomes
2. produce performance evidence resulting from work you have carried out on real vehicles in your normal workplace or as defined within the IMI VCQ Assessment Strategy as managed and organised by an approved centre when naturally occurring performance evidence does not occur at frequent intervals in your normal workplace or when safety is at risk.
3. be observed by an assessor as defined in the IMI VCQ Assessment Strategy.
4. produce evidence from your normal workplace of carrying out 4 out of the 5 vehicle refinishing operations listed below.
   - metallic or mica clear over base finish
   - textured finish
   - edge to edge finish
   - spot repair finish
   - fade out or blending finish
5. be observed by your assessor on **at least 2 occasions** carrying out different refinishing operations **in your normal workplace.**

Learning outcome and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out preparation and application of topcoat materials in vehicle refinishing	1.1	use suitable personal protective equipment and vehicle coverings when carrying out preparation and application of topcoat materials in vehicle refinishing			
		1.2	work in a way which minimises the risk of damage or injury to the vehicle, people and the environment			
2	Be able to carry out preparation and application of topcoat materials in vehicle refinishing	2.1	identify the type of substrate prior to working on the vehicle			
		2.2	use of surface cleaning agents materials			
		2.3	prepare all the refinishing systems and materials required following health and safety requirements			
		2.4	mix and check the viscosity of topcoat materials			
		2.5	apply all topcoat materials			
		2.6	dry and cure all topcoat materials			
		2.7	ensure the finish product meets the requirements of the manufacturer's warranty, the refinishing specification required and customer needs			
		2.8	dispose of waste materials to conform with legal and workplace requirements			
		2.9	work to the specified timescale for the activity			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
3	Be able to record information and make suitable recommendations	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	identify and report any expected delays in the completion to the relevant person(s) promptly in the format required			
		3.4	record and report any additional faults noticed during the course of their work promptly in the format required			
4	Be able to use appropriate tools and equipment	4.1	Select the appropriate tools and equipment necessary for carrying out preparation and application of topcoat 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 topcoat materials to vehicles			
		4.4	Leave all application equipment in a clean and serviceable condition			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
5	Be able to use relevant information to carry out the task	5.1	select suitable sources of technical information to support preparation and application of topcoat materials to vehicles			
		5.2	use technical information to support preparation and application of topcoat materials to vehicles			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 33: Competency in Vehicle Colour Matching

Unit reference number: Y/601/6413

QCF level: 3

Credit value: 10

Guided learning hours: 90

Unit summary

This unit will enable the learner to demonstrate competency in identifying, mixing and matching vehicle paint colours including the use of tinters and preparation of test cards.

Assessment requirements/evidence requirements:

This unit must be assessed in accordance with the IMI Assessment Strategy *(Annexe C)* and adhere to the IMI Competence Unit Assessment Requirements as set out below:

You must:

1. produce evidence to show you meet **all** of the learning outcomes
2. produce performance evidence resulting from work you have carried out on real vehicles in your normal workplace or as defined within the IMI VCQ Assessment Strategy as managed and organised by an approved centre when naturally occurring performance evidence does not occur at frequent intervals in your normal workplace or when safety is at risk
3. be observed by an assessor as defined in the IMI VCQ Assessment Strategy
4. produce evidence from your normal workplace of mixing and matching **2 non-metallic colours and 2 metallic or mica colours**
5. be observed by your assessor on **at least 1 non-metallic and 1 metallic finish in your normal workplace.**

Learning outcome and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out vehicle mixing and matching	1.1	use suitable personal protective equipment and vehicle coverings when carrying vehicle mixing and matching			
		1.2	work in a way which minimises the risk of damage or injury to the vehicle, people and the environment			
2	Be able to carry out vehicle mixing and matching activities	2.1	identify prior to working on the vehicle the type of substrate to be painted.			
		2.2	prepare all the refinishing systems and materials required following health and safety requirements			
		2.3	mix, compare and adjust colour tones and effects using suitable mixing and matching techniques			
		2.4	ensure all refinishing systems and materials prepared meet the specification required for colour and viscosity prior to application			
		2.5	apply refinishing systems and materials to colour test cards			
		2.6	dry all colour test cards before checking colour			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		2.7	ensure the colour produced meets the material manufacturer's requirements, the customer requirements and is a blendable match to the existing colour			
		2.8	dispose of waste materials to conform with legal and workplace requirements			
		2.9	work to the specified timescale for the activity			
3	Be able to record information and make suitable recommendations	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	identify and report any expected delays in completion to the relevant person(s) promptly in the format required			
		3.4	record and report any additional faults noticed during the course of their work promptly in the format required			
4	Be able to use appropriate tools and equipment	4.1	select the appropriate tools and equipment necessary for carrying out paint mixing and matching activities			
		4.2	ensure that equipment has been calibrated to meet manufacturers' requirements			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		4.3	use the correct tools and equipment in the way specified by manufacturers when carrying out paint mixing and matching activities			
		4.4	leave all mixing and application equipment in a clean and serviceable condition			
5	Be able to use relevant information to carry out the task	5.1	select suitable sources of technical information to support paint mixing and matching activities			
		5.2	use technical information to support paint mixing and matching activities			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Further information

Our customer service numbers are:

BTEC and NVQ	0844 576 0026
GCSE	0844 576 0027
GCE	0844 576 0025
The Diploma	0844 576 0028
DiDA and other qualifications	0844 576 0031

Calls may be recorded for training and quality purposes.

Useful publications

Related information and publications include:

- *Centre Handbook for Edexcel QCF NVQs and Competence-based Qualifications* published annually
- Functional Skills publications – specifications, tutor support materials and question papers
- *Regulatory Arrangements for the Qualification and Credit Framework* (published by Ofqual, August 2008)
- the current Edexcel publications catalogue and update catalogue.

Edexcel publications concerning the Quality Assurance System and the internal and standards verification of vocationally related programmes can be found on the Edexcel website.

NB: Some of our publications are priced. There is also a charge for postage and packing. Please check the cost when you order.

How to obtain National Occupational Standards

To obtain the National Occupational Standards please go to www.ukstandards.org.uk.

Professional development and training

Edexcel supports UK and international customers with training related to NVQ and BTEC qualifications. This support is available through a choice of training options offered in our published training directory or through customised training at your centre.

The support we offer focuses on a range of issues including:

- planning for the delivery of a new programme
- planning for assessment and grading
- developing effective assignments
- building your team and teamwork skills
- developing student-centred learning and teaching approaches
- building Functional Skills into your programme
- building effective and efficient quality assurance systems.

The national programme of training we offer can be viewed on our website (www.edexcel.com/training). You can request customised training through the website or by contacting one of our advisers in the Training from Edexcel team via Customer Services to discuss your training needs.

The training we provide:

- is active
- is designed to be supportive and thought provoking
- builds on best practice
- may be suitable for those seeking evidence for their continuing professional development.

Annexe A: Progression pathways

The Edexcel qualification framework for the automotive sector

Level	BTEC vocationally-related qualifications	BTEC specialist qualification/ professional	NVQ/competence
5	BTEC Level 5 HND Diploma in Vehicle Operations Management (QCF)		
4	BTEC Level 4 HNC Diploma in Vehicle Operations Management (QCF)		
3		Edexcel BTEC Level 3 Diploma in Light Vehicle Maintenance and Repair Principles (QCF) Edexcel BTEC Level 3 Diploma in Heavy Vehicle Maintenance and Repair Principles (QCF) Edexcel BTEC Level 3 Diploma in Auto Electrical and Mobile Electrical Principles (QCF) Edexcel BTEC Level 3 Diploma in Vehicle Fitting Supervisory Principles (QCF) Edexcel BTEC Level 3 Diploma in Vehicle Accident Repair Body Principles (QCF) Edexcel BTEC Level 3 Diploma in Vehicle Accident Repair Paint Principles (QCF)	Edexcel Level 3 Diploma in Light Vehicle Maintenance and Repair Competence (QCF) Edexcel Level 3 Diploma in Heavy Vehicle Maintenance and Repair Competence(QCF) Edexcel Level 3 Diploma in Auto Electrical and Mobile Electrical Competence (QCF) Edexcel Level 3 Diploma in Vehicle Fitting Supervisory Competence (QCF) Edexcel Level 3 Diploma in Vehicle Accident Repair Body Competence (QCF) Edexcel Level 3 Diploma in Vehicle Accident Repair Paint Competence (QCF)

Level	BTEC vocationally-related qualifications	BTEC specialist qualification/ professional	NVQ/competence
3		Edexcel BTEC Level 3 Diploma in Lift Truck Maintenance & Repair Principles (QCF) Edexcel BTEC Level 3 Diploma in Motorcycle Maintenance and Repair Principles (QCF) Edexcel BTEC Level 3 Diploma in Vehicle Sales Principles (QCF) Edexcel BTEC Level 3 Diploma in Body Building Principles (QCF)	Edexcel Level 3 Diploma in Lift Truck Maintenance & Repair Competence (QCF) Edexcel Level 3 Diploma in Motorcycle Maintenance and Repair Competence (QCF) Edexcel Level 3 Diploma in Vehicle Sales Competence (QCF) Edexcel Level 3 Diploma in Body Building Competence (QCF)
2		Edexcel BTEC Level 2 Diploma in Light Vehicle Maintenance and Repair Principles (QCF) Edexcel BTEC Level 2 Diploma in Heavy Vehicle Maintenance and Repair Principles (QCF) Edexcel BTEC Level 2 Diploma in Auto Electrical and Mobile Electrical Principles (QCF) Edexcel BTEC Level 2 Diploma in Vehicle Fitting Principles (QCF) Edexcel BTEC Level 2 Diploma in Vehicle Accident Repair Paint Principles (QCF) Edexcel BTEC Level 2 Diploma in Vehicle Accident Repair Body Principles (QCF)	Edexcel Level 2 Diploma in Light Vehicle Maintenance and Repair Competence(QCF) Edexcel Level 2 Diploma in Heavy Vehicle Maintenance and Repair Competence (QCF) Edexcel Level 2 Diploma in Auto Electrical and Mobile Electrical Competence (QCF) Edexcel Level 2 Diploma in Vehicle Fitting Competence (QCF) Edexcel Level 2 Diploma in Vehicle Accident Repair Paint Competence (QCF) Edexcel Level 2 Diploma in Vehicle Accident Repair Body Competence (QCF)

Level	BTEC vocationally-related qualifications	BTEC specialist qualification/ professional	NVQ/competence
2		Level 2 Diploma in Lift Truck Maintenance & Repair Principles (QCF) Edexcel BTEC Level 2 Diploma in Motorcycle Maintenance and Repair Principles (QCF)Edexcel BTEC Level 2 Diploma in Vehicle Sales Principles (QCF) Edexcel BTEC Level 2 Diploma in Vehicle Accident Repair Mechanical, Electrical and Trim (MET) Principles (QCF) Edexcel BTEC Level 2 Diploma in Body Building Principles (QCF) Edexcel BTEC Level 2 Diploma in Heavy Vehicle Trailer Maintenance & Repair Principles (QCF)	Edexcel Level 2 Diploma in Lift Truck Maintenance & Repair Competence (QCF) Edexcel Level 2 Diploma in Motorcycle Maintenance and Repair Competence (QCF) Edexcel Level 2 Diploma in Vehicle Sales Competence (QCF) Edexcel Level 2 Diploma in Vehicle Accident Repair Mechanical, Electrical and Trim (MET) Competence (QCF) Edexcel Level 2 Diploma in Body Building Competence (QCF) Edexcel Level 2 Diploma in Heavy Vehicle Trailer Maintenance & Repair Competence (QCF)
1			
Entry			

Annexe B: Centre certification and registration

Edexcel Standards Verifiers will provide support, advice and guidance to centres to achieve Direct Claims Status (DCS). Edexcel will maintain the integrity of Edexcel QCF NVQs through ensuring that the awarding of these qualifications is secure. Where there are quality issues identified in the delivery of programmes, Edexcel will exercise the right to:

- direct centres to take action
- limit or suspend certification
- suspend registration.

The approach of Edexcel in such circumstances is to work with the centre to overcome the problems identified. If additional training is required, Edexcel will aim to secure the appropriate expertise to provide this.

What are the access arrangements and special considerations for the qualifications in this specification?

Centres are required to recruit learners to Edexcel qualifications with integrity.

Appropriate steps should be taken to assess each applicant's potential and a professional judgement should be made about their ability to successfully complete the programme of study and achieve the qualification. This assessment will need to take account of the support available to the learner within the centre during their programme of study and any specific support that might be necessary to allow the learner to access the assessment for the qualification. Centres should consult Edexcel's policy on learners with particular requirements.

Edexcel's policy on access arrangements and special considerations for Edexcel qualifications aims to enhance access to the qualifications for learners with disabilities and other difficulties (as defined by the Equality Act 2010) without compromising the assessment of skills, knowledge, understanding or competence. Please refer to *Access Arrangements and Special Considerations for BTEC and Edexcel NVQ Qualifications* for further details. www.edexcel.com.

Please refer to Edexcel's Equality Policy for further details, www.edexcel.co/policies/pages/home.aspx

Assessment Strategy For

Vocational Competency Qualifications (VCQs)

Introduction

This document sets out the recommendations of IMI for the assessment of VCQ qualifications based on IMI developed National Occupational Standards. The Strategy is designed to operate across all four nations, bringing parity to all learners. Awarding Organisations wishing to operate VCQs in the retail motor sector must take full part in the IMI Awarding Body Forum.

This is the overarching strategy for the assessment and verification of competency based qualifications (VCQs) that are based upon National Occupational Standards from the IMI and will come into force on the 30th June 2010, it will apply to any new competence based units and qualifications.

Assessment

VCQs are a type of qualification which reflects the unique needs of the workplace. They should be assessed in a holistic way by technically competent assessors. The primary method of assessment should always be direct workplace observation. Some use of simulation is allowed (please see section on Workplace Assessment/Simulation).

Additionally Awarding Organisations are encouraged to make use of naturally occurring quality assurance and monitoring systems where they exist in workplace assessment environments.

The Institute of the Motor Industry require Awarding Organisations delivering VCQs to participate in an Awarding Body Forum. This will, as a minimum, involve an annual meeting to discuss issues of assessment and verification.

VCQ must attest to competence in an occupational role (where competence is defined as the ability to apply knowledge, understanding, practical and thinking skills to be effective in work: these skills will usually include problem-solving, being flexible to meet changing demands and the ability to work with or alongside others).

Any assessment must attest to competence in an occupational role (where competence is defined as the ability to apply knowledge, understanding, practical and thinking skills to be effective in work: these skills will usually include problem-solving, being flexible to meet changing demands and the ability to work with or alongside others)

Evidence Requirements for VCQ

Candidates working towards a VCQ must provide evidence from the workplace that covers a minimum of a 4 month, (16 week), period.

All evidence for VCQs must be assessed by suitably qualified assessors and must adhere to the requirements for the QCF units being assessed.

Rules of combination

Rules of combination must be that determined by the IMI SSC.

Evidence other than from direct workplace observation

Workplace Assessment/Simulation

IMI credit based units are work/competency based and therefore candidates are to be assessed under normal workplace conditions. It is recognised however, that there are situations where the workplace may not be appropriate or that waiting for naturally occurring evidence is impractical. In these situations IMI will allow centres to set up or devise assessment situations.

These assessment situations can only be set up after:

- all possible routes for the collection of naturally occurring evidence have been exhausted.
- the exact make up and content of the centre devised assessment has been agreed and approved by the external verifier.
- the assessor can assure that the simulation will provide evidence that is valid reliable and authentic

We suggest that centres seek written confirmation before proceeding with assessment. The need for simulation may result from consideration of:

- Safety
- Legislation
- Regulation
- Contingency
- Cost
- Frequency

In addition, IMI recognises that candidates using these credit based units in the context of a Level 1 qualification may be in a learning environment and not in a workplace. In these situations, centres may set up or devise assessment situations as required, with prior written agreement of the external verifier.

Any simulation must be carried out using actual vehicles; the use of engine rigs or electrical boards is not permitted.

IMI re-iterates that its credit based units have been designed to be capable of assessment in the normal workplace and that subject to the arrangements for simulation described above this should be the case.

Simulation will be monitored by the Awarding Organisations and where it is found to be the 'norm' rather than the exception suitable action will need to be taken.

Realistic Work Environment

The IMI requires that candidates are assessed within their normal workplace, or in exceptional circumstances as described previously via simulation. The use of approved simulation means therefore that RWE, Realistic Work Environment is not to be used.

Expert Witnesses

The use of **witness testimony** and **expert witness testimony** are appropriate methods for assessors to collect supplementary evidence on candidates' performance.

Witness testimonies can be obtained from people that are occupationally competent and who may be familiar with the national occupational standards, such as the candidate's line manager.

The assessor must judge the validity of the witness testimony and these may vary depending on the source. Witness testimonies can only support the assessment process and may remove or reduce the need to collect supplementary evidence, however, the awarding organisation's/body's quality assurance requirements must be met. Additionally the person or persons providing the Witness Testimony evidence must make themselves available to the External Verifier for confirmation of evidence validity if required.

Remote Observation

The use of direct observation from a remote location is permitted as long as the centre seeks and receives the approval of their awarding organisation prior to its use and the awarding organisation discusses and agree this with the IMI prior to its use.

Assessor Requirements

The assessment of VCQs must be carried out by approved industry competent assessors.

Assessors will be responsible for, and accountable for, the validity, reliability and authenticity of evidence.

The primary responsibility of the assessor is to ensure that candidates satisfy the requirements of the national occupational standards. It is important that an assessor can recognise occupational competence as specified by the national occupational standards. Assessors therefore need to have a thorough understanding of assessment and quality assurance practices, as well as have in depth technical competence related to the qualifications for which they are assessing candidates.

It will be the responsibility of the approved centre to select and appoint assessors.

It will be the responsibility of the Awarding Organisation to approve centre selected assessors.

To be an approved assessor the person must:

- have sufficient and relevant technical/occupational competence in the Unit, at or above the level of the Unit being assessed
- have in depth knowledge of the Qualification or credit based unit evidence requirements.
- hold or be working towards a relevant assessors award as specified by the Institute of the Motor Industry. This will include, but not be limited to the Assessor qualifications, Level 3 Award in Assessing Competence in the Work Environment, Level 3 Award in Assessing Vocationally Related Achievement, Level 3 Certificate in Assessing Vocational Achievement. (and by implication legacy Assessor units A1, A2 and D32/33 unit) but may be an appropriate equivalent as defined by the IMI, SSC)..
- assessors working towards a relevant assessor qualification must achieve their qualification within 12 months.
- demonstrate knowledge and understanding of the competencies that a learner is required to demonstrate for the qualification that they are undertaking
- provide evidence of completing 5 days working/job shadowing in industry within their professional area in a 24 month period.
- provide evidence of 30 hours of technical/qualification related CPD within a 12 month period.(This is in additional to working/job shadowing).
- be approved by the Awarding Organisation to carry out assessments for the VCQs they are competent in.

Approval of assessors can be **removed.**

Assessors **cannot** assess the VCQ if they are not currently approved by, or have had their approval removed by, the Awarding Organisation.

Internal Verifier Requirements

VCQs must be underpinned by quality assurance appropriate to workplace based delivery. At a minimum this should reflect the principles outlined below.

Internal Verification of VCQ shall be the responsibility of approved industry competent internal verifiers.

The primary responsibility of the internal verifier is to assure the quality and consistency of assessments by the assessors for whom they are responsible. Internal verifiers therefore need to have a thorough understanding of quality assurance and assessment practices, as well as technical competence related to the qualifications that they are internally verifying.

Internal verifiers will be responsible for, and accountable for consistency, quality and reliability of evidence and assessors.

It will be the responsibility of the approved centre to select and appoint internal verifiers .

It will be the responsibility of the Awarding Organisation to approve centre selected internal verifiers.

To be an approved internal verifier the person must:

- have in-depth knowledge of the occupational standards and credit based unit evidence requirements.
- be occupationally aware of the relevant industry sector being internally verified
- hold or be working towards a relevant verifier award as specified by the Institute of the Motor Industry. This will include, but not be limited to the Quality Assurance qualifications Level 4 Award in the Internal Quality Assurance of Assessment Processes and Practice, Level 4 Certificate in Leading the Internal Quality Assurance of Assessment Processes and Practice, (and by implication legacy Internal Verifier unit V1 D34 unit) but may be an appropriate equivalent as defined by the SSC.
- verifiers working towards a relevant qualification must achieve their qualification within 12 months.
- provide evidence of CPD totalling not less than 30 hours from within their professional area within a 12 month period.
- be approved by the Awarding Organisation to carry out internal verification for relevant VCQ(s)
- demonstrate knowledge and understanding of the quality assurance processes required by the centre and the awarding organisation

Approval of internal verifiers can be **removed.**

Internal Verifiers **cannot** verify the VCQ if they are not approved by, or have had their approval removed by the Awarding Organisation.

Multi Discipline Assessors and Internal Verifiers

Assessors and Internal Verifiers who work across multi disciplines must agree to a programme of CPD that will, over an agreed period of time, show their competence across all areas that they assess.

The programme of CPD and the timescale must be agreed for each multi discipline assessor by their External Verifier and may be subject to scrutiny by the IMI.

It is the responsibility of the centre to keep a record of these agreements.

External Verifier Requirements

Awarding Organisations will be responsible for selection and appointment of external verifiers.

To be an approved external verifier or moderator the person must:

- hold or be working towards an appropriate qualification as specified by the Institute of the Motor Industry, confirming their competence to externally verify VCQ assessments This will include, but not be limited to the Level 4 Award in Externally Assuring the Quality of Assessment Processes and Practice, Level 4 Certificate in Leading the External

Quality Assurance of Assessment Processes and Practice, (and by implication legacy External Verifier unit V2 and D35 units) but may be an appropriate equivalent as defined by the SSC.

- external verifiers working towards a relevant qualification must achieve their qualification within 12 months.
- have experience of working within the Automotive Industry gained through current or prior employment in order to have an up to date technical awareness relevant to the VCQ they are seeking to externally verify
- have a sound and in-depth knowledge of the VCQ requirements
- demonstrate their commitment to maintaining their industry knowledge by providing evidence of CPD totalling not less than 30 hours from within their professional area within a 12 month period.

External Quality Control

It is expected that the awarding of qualifications will be underpinned by quality assurance appropriate to workplace based delivery. At a minimum this should reflect the principles outlined below.

External quality control of assessment is the responsibility of the Awarding Organisations, they must ensure that common approaches are employed and that consistent, high standards are achieved.

External verifiers will be required to implement rigorous risk management strategies consistently across all centres for which they are responsible.

IMI recommends that Awarding Organisations adopt a risk rating and risk management system for centres offering IMI VCQs.

IMI recommend that such systems identify:

- Commercial Risk – is there potential for commercial pressures to ensure that candidates achieve qualifications within unduly short time frames?
- Assessment/Verification risk – are factors apparent in the relationship between candidates, assessors and verifiers that might prejudice a fair and consistent assessment process?

Where risks or potential risks are identified, IMI expects that the Awarding Organisation, via the external verifier takes appropriate action to ensure that the credibility of the assessment process is not prejudiced.

Awarding Organisations will be responsible for and accountable for the quality of VCQs delivered and assessed by their approved assessment centres.

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