

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

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

Specification

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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 Body (QCF) at Levels 2 and 3.

Qualification title	Qualification Number (QN)	Operational start date
Edexcel BTEC Level 2 Diploma in Vehicle Accident Repair Body Principles (QCF)	600/3563/8	01/11/2011
Edexcel Level 2 Diploma in Vehicle Accident Repair Body Competence (QCF)	600/3586/9	01/11/2011
Edexcel BTEC Level 3 Diploma in Vehicle Accident Repair Body Principles (QCF)	600/3715/5	01/11/2011
Edexcel Level 3 Diploma in Vehicle Accident Repair Body Competence (QCF)	600/3578/X	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 Body (QCF) at Levels 2 and 3

These qualifications:

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

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

The Edexcel BTEC Level 3 Diploma in Vehicle Accident Repair Body Principles (QCF) and the Edexcel Level 3 Diploma in Vehicle Accident Repair Body Competence (QCF) have been approved as components in the 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, 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?

- Panel technician
- Senior panel technician

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

Learners can progress to other Edexcel automotive apprenticeship programmes and/or related qualifications as 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 Body Principles (QCF)?

A total of 81 credits is required to achieve this qualification. 29 credits from the mandatory generic units in Group A, 48 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 Number	Unit Reference Number	Unit Title	Credit	Level
Group A – Mandatory generic units				
Learners must achieve 29 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
5	K/601/6237	Knowledge of Materials, Fabrication, Tools and Measuring Devices used in the Automotive Environment	4	2
6	Y/601/6279	Skills in Materials, Fabrication, Tools and Measuring Devices used in the Automotive Environment	7	2
Group B – Mandatory specialist units				
Learners must achieve 48 credits from this group.				
7	D/601/5425	Knowledge of Removing and Fitting Non Permanently Fixed Motor Vehicle Body Panels	2	2
8	R/601/5454	Skills in Removing and Fitting Non Permanently Fixed Motor Vehicle Body Panels	2	2
9	H/601/5426	Knowledge of Removing and Replacing Exterior Motor Vehicle Body Panels Including Permanently Fixed Components	6	2

Unit Number	Unit Reference Number	Unit Title	Credit	Level
Group B – Mandatory specialist units continued				
10	D/601/5456	Skills in Removing and Replacing Exterior Motor Vehicle Body Panels Including Permanently Fixed Components	5	2
11	K/601/5427	Knowledge of Minor Motor Vehicle Exterior Body Panel Repairs	6	2
12	K/601/5458	Skills in Carrying Out Minor Repairs to Motor Vehicle Exterior Body Panels	5	2
13	T/601/5432	Knowledge of Motor Vehicle Body Metal Active Gas (MAG) Welding Techniques	5	2
14	R/601/5468	Skills in Motor Vehicle Body Metal Active Gas (MAG) Welding Techniques	5	2
15	F/601/5434	Knowledge of Motor Vehicle Body Resistance Spot Welding Operations	5	2
16	Y/601/5469	Skills in Motor Vehicle Body Resistance Spot Welding Operations	5	2
17	A/601/5450	Knowledge of Motor Vehicle Construction and Materials	2	2
Group C – Option Groups				
Learners must achieve a minimum of 4 credits from one of the Option Groups. All subcomponents of the chosen group must be completed.				
C1 – Option group 1				
If this group is chosen, learners must achieve 4 credits.				
18	Y/601/5424	Knowledge of Removing and Fitting Motor Mechanical, Electrical and Trim (MET) Components to Vehicles	2	2
19	F/601/5451	Skills in Removing and Fitting Motor Mechanical, Electrical and Trim (MET) Components to Vehicles	2	2
C2 – Option group 2				
If this group is chosen, learners must achieve 10 credits.				
20	J/601/5435	Knowledge of Motor Vehicle Body Metal Inert Gas (MIG) Brazing Operations	5	3
21	D/601/5473	Skills in Motor Vehicle Body Metal Inert Gas (MIG) Brazing Operations	5	3

Unit Number	Unit Reference Number	Unit Title	Credit	Level
Group C – Option Groups continued				
C3 – Option group 3				
If this group is chosen, learners must achieve 4 credits.				
22	T/601/5446	Knowledge of Motor Vehicle Body Mechanical Fastening Operations	2	3
23	A/601/5478	Skills in Motor Vehicle Body Mechanical Fastening Operations	2	3
C4 – Option group 4				
If this group is chosen, learners must achieve 4 credits.				
24	J/601/5449	Knowledge of Motor Vehicle Body Adhesive Bonding Operations	2	3
25	T/601/5480	Skills in A Motor Vehicle Body Adhesive Bonding Operations	2	3

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

A minimum of 101 credits is required to achieve this qualification. 29 credits from the mandatory generic units in Group A, 67 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 Number	Unit Reference Number	Unit Title	Credit	Level
Group A – Mandatory generic units				
Learners must achieve 29 credits from this group.				
26	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
27	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
5	K/601/6237	Knowledge of Materials, Fabrication, Tools and Measuring Devices used in the Automotive Environment	4	2
6	Y/601/6279	Skills in Materials, Fabrication, Tools and Measuring Devices used in the Automotive Environment	7	2
Group B – Mandatory specialist units				
Learners must achieve 67 credits from this group.				
28	R/601/5373	Competency in Removing and Fitting Non-Permanently Fixed Motor Vehicle Body Panels	3	2
7	D/601/5425	Knowledge of Removing and Fitting Non-Permanently Fixed Motor Vehicle Body Panels	2	2
29	K/601/5377	Competency in Removing and Replacing Exterior Motor Vehicle Body Panels Including Permanently Fixed Components	10	2
9	H/601/5426	Knowledge of Removing and Replacing Exterior Motor Vehicle Body Panels Including Permanently Fixed Components	6	2

Unit Number	Unit Reference Number	Unit Title	Credit	Level
Group B – Mandatory specialist units continued				
30	K/601/5380	Competency in Carrying Out Minor Repairs to Motor Vehicle Exterior Body Panels	10	2
11	K/601/5427	Knowledge of Minor Motor Vehicle Exterior Body Panel Repairs	6	2
31	D/601/5392	Competency in Motor Vehicle Body Metal Active Gas (MAG) Welding Techniques	9	2
13	T/601/5432	Knowledge of Motor Vehicle Body Metal Active Gas (MAG) Welding Techniques	5	2
32	T/601/5396	Competency in Motor Vehicle Body Resistance Spot Welding Operations	9	2
15	F/601/5434	Knowledge of Motor Vehicle Body Resistance Spot Welding Operations	5	2
17	A/601/5450	Knowledge of Motor Vehicle Construction and Materials	2	2
Group C – Option Groups				
Learners must achieve a minimum of 5 credits from one of the Option Groups. All subcomponents of the chosen group must be completed.				
C1 – Option group 1				
If this group is chosen, learners must achieve 5 credits.				
33	F/601/5370	Competency in Removing and Fitting Motor Mechanical, Electrical and TRIM (MET) Components to Vehicles	3	2
18	Y/601/5424	Knowledge of Removing and Fitting Motor Mechanical, Electrical and Trim (MET) Components to Vehicles	2	2
C2 – Option group 2				
If this group is chosen, learners must achieve 14 credits.				
34	F/601/5398	Competency in Motor Vehicle Body Metal Inert Gas (MIG) Brazing Operations	9	3
20	J/601/5435	Knowledge of Motor Vehicle Body Metal Inert Gas (MIG) Brazing Operations	5	3

Unit Number	Unit Reference Number	Unit Title	Credit	Level
Group C – Option Groups continued				
C4 – Option group 4				
If this group is chosen, learners must achieve 6 credits.				
36	Y/601/5407	Competency in a Motor Vehicle Body Adhesive Bonding Operations	4	3
24	J/601/5449	Knowledge of Motor Vehicle Body Adhesive Bonding Operations	2	3
C3 – Option group 3				
If this group is chosen, learners must achieve 6 credits.				
35	R/601/5406	Competency in Motor Vehicle Body Mechanical Fastening Operations	4	3
22	T/601/5446	Knowledge of Motor Vehicle Body Mechanical Fastening Operations	2	3

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

A minimum of 77 credits is required to achieve this qualification. 18 credits from the mandatory generic units in Group A, 55 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 Number	Unit Reference Number	Unit Titles	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 55 credits from this group.				
37	H/601/5460	Skills in Removing and Replacing Motor Vehicle Body Panels	5	3
38	T/601/5429	Knowledge of Motor Vehicle Body Panel Major Repairs	6	3
39	M/601/5462	Skills in Motor Vehicle Body Panel Major Repairs	5	3
40	K/601/5430	Knowledge of Identifying and Rectifying Motor Vehicle Body Misalignment	6	3
41	A/601/5464	Skills in Identifying and Rectifying Motor Vehicle Body Misalignment	5	3
13	T/601/5432	Knowledge of Motor Vehicle Body Metal Active Gas (MAG) Welding Techniques	5	2
14	R/601/5468	Skills in Motor Vehicle Body Metal Active Gas (MAG) Welding Techniques	5	2
15	F/601/5434	Knowledge of Motor Vehicle Body Resistance Spot Welding Operations	5	2

Unit Number	Unit Reference Number	Unit Title	Credit	Level
Group B – Mandatory specialist units continued				
16	Y/601/5469	Skills in Motor Vehicle Body Resistance Spot Welding Operations	5	2
17	A/601/5450	Knowledge of Motor Vehicle Construction and Materials	2	2
57	M/601/5428	Knowledge of Removing and Replacing Structural Motor Vehicle Body Panels	6	3
Group C – Option Groups				
Learners must achieve a minimum of 4 credits from one of the Option Groups. All subcomponents of the chosen group must be completed.				
C1 – Option group 1				
If this group is chosen, learners must achieve 10 credits.				
42	T/601/6242	Knowledge of How to Make Learning Possible Through Demonstrations and Instruction	5	3
43	Y/601/6282	Skills in How to Make Learning Possible Through Demonstrations and Instruction	5	3
C2 – Option group 2				
If this group is chosen, learners must achieve 10 credits.				
44	R/601/6247	Knowledge of How to Identify and Agree Motor Vehicle Customer Service Needs	5	3
45	M/601/6286	Skills to Identify and Agree Motor Vehicle Customer Service Needs	5	3
C3 – Option group 3				
If this group is chosen, learners must achieve 10 credits.				
20	J/601/5435	Knowledge of Motor Vehicle Body Metal Inert Gas (MIG) Brazing Operations	5	3
21	D/601/5473	Skills in Motor Vehicle Body Metal Inert Gas (MIG) Brazing Operations	5	3
C4 – Option group 4				
If this group is chosen, learners must achieve 10 credits.				
46	L/601/5436	Knowledge of Motor Vehicle Body Aluminium Metal Inert Gas (MIG) Welding Operation	5	3
47	K/601/5475	Skills in Motor Vehicle Body Aluminium Metal Inert Gas (MIG) Welding Operations	5	3

Unit Number	Unit Reference Number	Unit Title	Credit	Level
Group C – Option Groups continued				
C5 – Option group 5				
If this group is chosen, learners must achieve 10 credits.				
48	Y/601/5438	Knowledge of Motor Vehicle Body Tungsten Inert Gas (TIG) Welding Operations	5	3
49	T/601/5477	Skills in Motor Vehicle Body Tungsten Inert Gas (TIG) Welding Operations	5	3
C6 – Option group 6				
If this group is chosen, learners must achieve 4 credits.				
22	T/601/5446	Knowledge of Motor Vehicle Body Mechanical Fastening Operations	2	3
23	A/601/5478	Skills in Motor Vehicle Body Mechanical Fastening Operations	2	3
C7 – Option group 7				
If this group is chosen, learners must achieve 4 credits.				
24	J/601/5449	Knowledge of Motor Vehicle Body Adhesive Bonding Operations	2	3
25	T/601/5480	Skills in A Motor Vehicle Body Adhesive Bonding Operations	2	3

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

A total of 104 credits is required to achieve this qualification. 18 credits from the mandatory generic units in Group A, 80 credits from the mandatory specialist units in Group B and a minimum of 6 credits from one of the option groups in Group C.

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

Unit Number	Unit Reference Number	Unit Title	Credit	Level
Group A – Mandatory generic units				
Learners must achieve 18 credits from this group.				
26	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
27	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 80 credits from this group.				
50	T/601/5382	Competency in Removing and Replacing Structural Motor Vehicle Body Panels	10	3
57	M/601/5428	Knowledge of Removing and Replacing Structural Motor Vehicle Body Panels	6	3
51	F/601/5384	Competency in Motor Vehicle Body Panel Major Repairs	11	3
38	T/601/5429	Knowledge of Motor Vehicle Body Panel Major Repairs	6	3
52	L/601/5386	Competency in Identifying and Rectifying Motor Vehicle Body Misalignment	11	3

Unit Number	Unit Reference Number	Unit Title	Credit	Level
Group B – Mandatory specialist units continued				
Learners must achieve 80 credits from this group.				
40	K/601/5430	Knowledge of Identifying and Rectifying Motor Vehicle Body Misalignment	6	3
31	D/601/5392	Competency in Motor Vehicle Body Metal Active Gas (MAG) Welding Techniques	9	2
13	T/601/5432	Knowledge of Motor Vehicle Body Metal Active Gas (MAG) Welding Techniques	5	2
Group B – Mandatory specialist units				
32	T/601/5396	Competency in Motor Vehicle Body Resistance Spot Welding Operations	9	2
15	F/601/5434	Knowledge of Motor Vehicle Body Resistance Spot Welding Operations	5	2
17	A/601/5450	Knowledge of Motor Vehicle Construction and Materials	2	2
Group C – Option Groups				
Learners must achieve a minimum of 6 credits from one of the Option Groups. All subcomponents of the chosen group must be completed.				
C1 – Option group 1				
If this group is chosen, learners must achieve 10 credits.				
53	Y/601/6380	Competency in Making Learning Possible through Demonstrations and Instruction	5	3
42	T/601/6242	Knowledge of how to Make Learning Possible through Demonstrations and Instruction	5	3
C2 – Option group 2				
If this group is chosen, learners must achieve 10 credits.				
54	K/601/6383	Competency in Identifying and Agreeing Motor Vehicle Customer Service Needs	5	3
44	R/601/6247	Knowledge of how to Identify and Agree Motor Vehicle Customer Service Needs	5	3

Unit Number	Unit Reference Number	Unit Title	Credit	Level
Group C – Option Groups continued				
C3 – Option group 3				
If this group is chosen, learners must achieve 14 credits.				
34	F/601/5398	Competency in Motor Vehicle Body Metal Inert Gas (MIG) Brazing Operations	9	3
20	J/601/5435	Knowledge of Motor Vehicle Body Metal Inert Gas (MIG) Brazing Operations	5	3
C4 – Option group 4				
If this group is chosen, learners must achieve 14 credits.				
55	M/601/5400	Competency in Motor Vehicle Body Aluminium Metal Inert Gas (MIG) Welding Operations	9	3
46	L/601/5436	Knowledge of Motor Vehicle Body Aluminium Metal Inert Gas (MIG) Welding Operations	5	3
C5 – Option group 5				
If this group is chosen, learners must achieve 14 credits.				
56	J/601/5404	Competency in Motor Vehicle Body Tungsten Inert Gas (TIG) Welding Operations	9	3
48	Y/601/5438	Knowledge of Motor Vehicle Body Tungsten Inert Gas (TIG) Welding Operations	5	3
C6 – Option group 6				
If this group is chosen, learners must achieve 6 credits.				
35	R/601/5406	Competency in Motor Vehicle Body Mechanical Fastening Operations	4	3
22	T/601/5446	Knowledge of Motor Vehicle Body Mechanical Fastening Operations	2	3
C7 – Option group 7				
If this group is chosen, learners must achieve 6 credits.				
36	Y/601/5407	Competency in a Motor Vehicle Body Adhesive Bonding Operations	4	3
24	J/601/5449	Knowledge of Motor Vehicle Body Adhesive Bonding Operations	2	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.

Unit title:	The unit title is approved on the QCF and this form of words will appear on the learner's Notification of Performance (NOP).			
Unit reference number:	This code is a unique reference number for the unit.			
QCF level:	All units and qualifications within the QCF have a level assigned to them, which represents the level of achievement. There are nine levels of achievement, from Entry level to level 8. The level of the unit has been informed by the QCF level descriptors and, where appropriate, the NOS and/or other sector/professional.			
Credit value:	All units have a credit value. The minimum credit value is one, and credits can only be awarded in whole numbers. Learners will be awarded credits when they achieve the unit.			
Guided learning hours:	A notional measure of the substance of a qualification. It includes an estimate of the time that might be allocated to direct teaching or instruction, together with other structured learning time, such as directed assignments, assessments on the job or supported individual study and practice. It excludes learner-initiated private study.			
Unit summary:	This provides a summary of the purpose of the unit.			
Assessment requirements/evidence requirements:				
The assessment/evidence requirements are determined by the SSC. Learners must provide evidence for each of the requirements stated in this section.				
Learning outcomes:	Assessment criteria:	Evidence type:	Portfolio reference:	Date:
			The learner should use this box to indicate where the evidence can be obtained eg portfolio page number.	The learner should give the date when the evidence has been provided.
Learning outcomes state exactly what a learner should know, understand or be able to do as a result of completing a unit.	The assessment criteria of a unit specify the standard a learner is expected to meet to demonstrate that a learning outcome, or a set of learning outcomes, has been achieved.	Learners must reference the type of evidence they have and where it is available for quality assurance purposes. The learner can enter the relevant key and a reference. Alternatively, the learner and/or centre can devise their own referencing system.		

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
- c types of Extinguishers
 - i. foam
 - ii. dry powder
 - iii. CO2
 - iv. water
 - v. fire blanket

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

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

Product warning labels to include:

- a reasons for placing warning labels on containers
- b warning labels in common use, 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			
		2.7	describe procedures for starting and ending the working day which ensure effective housekeeping practices are followed			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
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			
		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			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
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: • eyes • ears • head • skin • feet • hands • 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			
		2.5	keep the work area clean and free from debris and waste materials			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
3	Be able to recognise and deal with dangers in order to work safely within the automotive workplace	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			
		3.1	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			
		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			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
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			
		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			
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			

Learner name:	_____	Date:	_____
Learner signature:	_____	Date:	_____
Assessor signature:	_____	Date:	_____
Internal verifier signature:	_____	Date:	_____
(if sampled)			

Unit 5: Knowledge of Materials, Fabrication, Tools and Measuring Devices used in the Automotive Environment

Unit reference number: K/601/6237

QCF level: 2

Credit value: 4

Guided learning hours: 40

Unit summary

This unit enables the learner to develop an understanding of:

- the correct selection, care and use of key hand tools and measuring devices for modification, fabrication and repair in the automotive environment
- the correct preparation and use of common automotive environment equipment
- the correct selection and fabrication of materials used when modifying and repairing
- the correct application of automotive engineering fabrication and fitting principles.

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:

Common types of hand tools used for fabricating and fitting in the automotive workplace. To include:

- a files
- b hacksaws and snips
- c hammers
- d screwdrivers
- e pliers
- f spanners
- g sockets

- h punches
- i types of drill and drill bits
- j taps and dies
- k stud removers
- l marking out tools

Common measuring devices used for fabrication and fitting in the automotive workplace. To include:

- a rule/tape
- b callipers
- c feeler gauge
- d volume measures
- e micrometer
- f dial gauges
- g torque wrenches
- h depth gauges

Common electrical measuring tools used in the repair of vehicles and components. To include:

- a ammeter
- b voltmeter
- c ohmmeter
- d multi-meter

Common electrical terms when measuring:

- a voltage
- b current
- c resistance

Workshop equipment (including appropriate PPE). To include:

- a hydraulic jacks
- b axle stands
- c pillar drills
- d air tools
- e vehicle lifts
- f cranes
- g hoists
- h electrical power tools

Properties, application and limitations (to include safe use) of ferrous and non-ferrous metals used when constructing, modifying and repairing vehicles and components. Materials to include:

- a carbon steels
- b alloy steels
- c cast iron
- d aluminium alloys
- e brass
- f copper
- g lead

Properties, application and limitations (to include safe use) of non-metallic materials used when constructing, modifying and repairing vehicles and components. Materials to include:

- a glass
- b plastics (inc. GRP)
- c Kevlar
- d rubber

Terms relating to the properties of materials. To include:

- a hardness
- b toughness
- c ductility
- d elasticity
- e tenacity
- f malleability
- g plasticity

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand how to select, use and care for hand tools and measuring devices in the automotive environment	1.1	identify and explain the use of common types of hand tools used for fabricating and fitting in the automotive environment			
		1.2	identify and explain the use of common measuring devices used for fabrication and fitting in the automotive environment			
		1.3	describe, within the scope of their responsibilities, how to select, prepare and maintain hand tools, measuring devices and PPE used for fabrication, repair and fitting in the automotive environment			
		1.4	state the limitations of common hand tools and measuring devices used for fabricating, repair and fitting in the automotive workplace			
		1.5	explain how common hand tools and measuring devices used for fabricating, repair and fitting in the automotive environment should be stored and maintained			
		1.6	identify common electrical measuring tools used in the repair of vehicles and components			
		1.7	explain the preparation and safe and correct use of common electrical tools when measuring voltage, current and resistance			
2	Understand how to prepare and use common workshop equipment	2.1	describe the preparation and safe use of workshop equipment			
		2.2	explain the term: safe working load			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
3	Understand how to select materials when fabricating, modifying and repairing vehicles and fitting components	3.1	describe the properties, application and limitations of ferrous and non-ferrous metals, including their safe use			
		3.2	describe the properties, application and limitations of common non-metallic materials, including their safe use			
		3.3	define common terms relating to the properties of materials			
4	Understand how to apply automotive engineering, fabrication and fitting principles when modifying and repairing vehicles and components	4.1	describe how to tap threads, file, cut and drill plastics and metals when modifying or repairing vehicles			
		4.2	describe how to measure, mark out, shape and join materials when fabricating			
		4.3	describe the selection and fitting procedures of the following: a. gaskets and seals c. sealants and adhesives d. fittings and fasteners e. electrical circuit components			
		4.4	identify locking, fastening and fixing devices			
		4.5	state the importance of correct operating specifications for limits, fits and tolerances in the automotive environment			

Learner name: _____
Learner signature: _____
Assessor signature: _____
Internal verifier signature: _____
(if sampled)

Date: _____
Date: _____
Date: _____
Date: _____

Unit 6: Skills in Materials, Fabrication, Tools and Measuring Devices used in the Automotive Environment

Unit reference number: Y/601/6279

QCF level: 2

Credit value: 7

Guided learning hours: 60

Unit summary

This unit helps the learner to develop the skills required for:

- the correct selection, care and use of key hand tools and measuring devices for modification, fabrication and repair in the automotive environment
- the correct preparation and use of common work environment equipment
- the correct selection and fabrication of materials used when modifying and repairing
- the correct application of automotive engineering fabrication and fitting principles.

Assessment requirements/evidence requirements:

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. produce evidence of undertaking basic routine checks of hand tools, measuring devices and workshop equipment covering all of those listed below:
 - electrical
 - mechanical
 - pneumatic
 - hydraulic

5. produce evidence of fabricating **at least 1 item** from suitable materials to known tolerances, which includes the following processes:
 - filing
 - tapping threads
 - cutting
 - drilling
 - joining
6. be observed by your assessor carrying out routine checks and during stages of fabrication.

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to select, maintain and use and hand tools and measuring devices in the automotive environment	1.1	select, maintain and use suitable hand tools safely when fabricating and fitting in the automotive workplace			
		1.2	select, maintain and use suitable measuring devices safely when fabricating and fitting in the automotive environment			
		1.3	select, maintain and use suitable PPE for fabrication, repair and fitting in the automotive environment			
		1.4	select, maintain and use suitable electrical measuring tools safely when repairing vehicles and components			
2	Be able to prepare and use common workshop equipment	2.1	use suitably maintained workshop equipment safely			
		2.2	use correct interpretation of 'safe working load' on lifting and supporting equipment			
		2.3	report any faulty or damaged tools and equipment to the relevant persons clearly and promptly			
		2.4	store work tools and equipment in a safe manner which permits ease of access and identification for use			
3	Be able to select materials when fabricating, modifying and repairing vehicles and fitting components	3.1	select and use appropriate materials whilst constructing, fitting, modifying or repairing vehicles and components			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to apply automotive engineering, fabrication and fitting principles when modifying and repairing vehicles and components	4.1	use correct procedures when: a. filing b. tapping threads c. cutting plastics and metals d. drilling plastics and metals e. fitting			
		4.2	use appropriate techniques when fabricating, repairing and modifying vehicles and components			
		4.3	select and use: a. gaskets b. seals c. sealants d. fittings and fasteners			
		4.4	apply modification and repair techniques to automotive electrical circuits			
		4.5	select and use locking, fixing and fastening devices			

Learner name: _____

Date: _____

Learner signature: _____

Date: _____

Assessor signature: _____

Date: _____

Internal verifier signature: _____

Date: _____

(if sampled)

Unit 7: 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:

This unit must be assessed in accordance with the IMI Assessment Strategy (*Annexe C*) and 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:
- e aperture gaps
- f alignment of panel features
- g best fit of components to panels
- h operation of openings such as doors, tailgates, bonnets etc
- i 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
- j 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 8: 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			
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 9:

Knowledge of Removing and Replacing Exterior Motor Vehicle Body Panels Including Permanently Fixed Components

Unit reference number: H/601/5426

QCF level: 2

Credit value: 6

Guided learning hours: 45

Unit summary

This unit enables the learner to develop an understanding of carrying out removal and refitting of exterior panels using mechanical fastening, adhesive bonding, welding and joining 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:

Selection and use of materials

- a the properties and different types of materials used in the construction of vehicle bodies
- b the properties and safe use of body component sealers, adhesives and anti-corrosion materials
- c the type of sealants and anti-corrosion materials to use and the manufacturer's recommended methods for their application and thickness
- d how to apply sealants and anti-corrosion materials

Removing and fitting of non-welded body panels

- a how to find, interpret and use sources of information applicable to the removal and fitting of non-welded body panels
- b how to select, check and use all the tools and equipment required to remove and fit non-welded structural body panels, the different types of mechanical fixings for non-welded body 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 best fit of components to panels
 - iii. 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

Removal and replacement of welded body panels

- a principles of welding
- b how to spot and MIG weld vehicle panels
- c how to remove spot and MIG welded vehicle panels
- d how to interpret and use sources of information relevant to the removal and refitting of non-stressed body panels
- e the need for correct alignment of panels and the methods used to achieve this
- f 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
- g how to work safely avoiding damage to the vehicle and its systems.
- h the methods of storing removed panels and the importance of storing them correctly
- i the removal and replacement procedures for body panels using mechanical fastening, adhesive bonding and welding techniques
- j how panel removal and refitting affects the overall body structure of the vehicle
- k the manufacturer's approved methods of working for the removal and replacement of body panels including:
 - i. resistance spot
 - ii. MIG MAG
 - iii. MIG braze
 - iv. adhesive bonding
 - v. laser
 - vi. laser stitch
 - vii. mechanical fastening

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand material types and properties used in removing and replacing exterior vehicle panels	1.1	identify the properties and different types of materials used in the construction of vehicle bodies			
		1.2	describe the properties of materials used in vehicle body construction			
		1.3	identify the properties and safe use of body component sealants, adhesives, and anti corrosion materials			
		1.4	describe the correct type of sealant to use in a given application in removing and replacing vehicle panels			
		1.5	describe how to apply sealants and anti corrosion materials following manufacturers' recommended methods			
2	Understand how to carry out removal and replacing of fixed and non-permanently fixed exterior vehicle body panels including fixed panels	2.1	identify the procedures involved in carry out the systematic removal of the manufacturers original joining technique			
		2.2	identify the procedures involved in carry out the systematic replacement of fixed and non-permanently fixed vehicle panels using recognised joining techniques			
		2.3	identify the procedures involved in working with supplementary safety systems when replacing fixed and non-permanently fixed exterior vehicle body panels including fixed panels			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
	2.4	describe the need for correct alignment of panels and the methods used to achieve this				
	2.5	identify the quality checks that can be used to ensure correct alignment and contour of panels and operation of components to manufacturer's specification				
	2.6	describe the methods and procedures for storing components and the importance of storing them correctly and in accordance with legal requirements				
	2.7	identify the different types of fastenings, fixings and adhesives bonding used in the removal and replacement of vehicle body panels				
	2.8	explain the reasons for the use of different types of fastenings, fixings and adhesives used in vehicle body panel replacement				
	2.9	identify the procedures involved in carry out the systematic replacement of vehicle panels using fastenings, fixings and adhesives bonding techniques'				
	2.10	describe how panel removal and replacement affects the overall body structure				
	2.11	identify the manufacturer's approved methods of working for the removal and replacement of exterior body panels				

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		2.12	identify correct conformity of vehicle systems against vehicle specification and legal requirements on completion			
		2.13	explain the procedure for reporting damage caused to the vehicle during the panel replacement activities			

Learner name: _____

Date: _____

Learner signature: _____

Date: _____

Assessor signature: _____

Date: _____

Internal verifier signature: _____
(if sampled)

Date: _____

Unit 10: Skills in Removing and Replacing Exterior Motor Vehicle Body Panels Including Permanently Fixed Components

Unit reference number: D/601/5456

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 a range of removal and fitting of exterior panels using mechanical fastening, adhesive bonding, welding and joining techniques. 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 developed for the unit 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 carrying out the removal and replacement of vehicle body panels **in combinations of 3 or more** adjacent panels, one of which should be **permanently fixed** eg welded or bonded. All learning outcomes must be covered.
 - exterior body panels:
 - a combinations of 3 or more adjacent panels, one of which should be permanently fixed (Examples include: two doors and a wing, two wings and a bonnet; bonnet, wing and door on the same side; bumper, wing, and bonnet.
 - b welded panel. (These are front panels; including headlamp panel, bonnet landing panel, lower crossmember) and rear panels.

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out removal and replacement of exterior vehicle panels including permanently fixed 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 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 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 exterior body panels including permanently fixed vehicle panels			
		3.2	ensure that equipment has been calibrated to meet manufacturers' and legal requirements			
		3.3	use the appropriate tools and equipment in the way specified by manufacturers when carrying removal and fitting of exterior body panels including permanently fixed vehicle panels			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to carry out removal and fitting of exterior vehicle panels including permanently fixed panels	4.1	identify prior to working on the vehicle the component materials involved that will be worked on during the repair			
		4.2	remove and re-fit adjacent exterior body panels including those that are permanently fixed			
		4.3	carry out removal and fitting of exterior body panels including permanently fixed vehicle panels adhering to specifications and tolerances for the vehicle and following: a. recognised researched removal and fitting methods b. health and safety requirements c. workplace procedures			
		4.4	use and apply sealants and anti corrosion materials conforming to the manufacturers specification			
		4.5	ensure that the replacement panels conform to the vehicle specifications for dimension, material and functional capability			
		4.6	ensure the components are realigned correctly in a way which regains their original manufactured tolerance			
		4.7	ensure any damage is minimised to mating surfaces. Any damage caused should be correctly reinstated			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		4.8	ensure permanently fixed panels are replaced without incurring damage to the vehicle systems			
		4.9	ensure all components and panels are stored safely and in the correct location			
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: _____
(if sampled)

Date: _____

Unit 11: Knowledge of Minor Motor Vehicle Exterior Body Panel Repairs

Unit reference number: K/601/5427

QCF level: 2

Credit value: 6

Guided learning hours: 45

Unit summary

This unit enables the learner to develop an understanding of carrying out repairs to exterior body panels using a variety of 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:

Selection and use of tools

- a the principles governing the selection and use of hand tools for metal finishing and plastic filler repairs, include:
 - i. panel beating hammers
 - ii. dolly blocks
 - iii. beating files
 - iv. body spoons
 - v. dual action sanders
- b how to select the correct tools to carry out reshaping work, including specialist dent removal tools including:
 - i. panel pullers
- c how to prepare, test and use and maintain the hand and power tools required to prepare damage and reshape damaged areas

Selection and use of materials

- a how to mix and apply plastic fillers
- b the properties and use of metals used to manufacture body panels
- c the properties and safe use of types of filling materials used to repair panels including:
 - i plastic fillers

- d the different types and grades of abrasive and their use
- e the techniques to identify the type of plastics used for manufactured components

Repairing body panels

- a how to interpret and use sources of information relevant to the removal of body components
- b how to prepare damaged areas to facilitate repairs
- c how to repair plastic components using thermal and adhesive techniques
- d how to rough out and metal finish body panels
- e how to reshape filling materials to match the original panel contour
- f how to finish repairs to a suitable condition for handing on to the painting stage
- g how to work safely avoiding damage to the vehicle and its systems
- h the techniques for reshaping damaged body panels using hand and specialist tools
- i the procedures for reinstating anti-corrosion, sealant and sound deadening materials
- j the procedures for repairing damage to plastic components.
- k the techniques and processes for:
 - i. plastic repairs
 - ii. hot shrinking
 - iii. panel pulling
 - iv. metal finishing
 - v. plastic filing
 - vi. indirect hammering
 - vii. direct hammering
- l. the techniques used to regain the contours of repaired plastic components
- m. methods of checking reshaped panel contours for accuracy
- n. standards of finish require to enable the next stage of repairs to proceed
- o. the manufacturer's approved methods of working for the preparation and repair of body panels

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand the principles of selection and use of appropriate tools and equipment in minor repairs on motor vehicle exterior body panels	1.1	identify tools used in the repair of metal finishing and plastic repairs			
		1.2	identify tools to carry out reshaping work including specialist dent removal tools			
		1.3	describe how to prepare, test, use and maintain the hand and power tools required to prepare damage and reshape damaged areas			
2	Understand material types and properties used in minor repairs on motor vehicle exterior body panels	2.1	identify the properties and different types of materials used in the construction of vehicle bodies			
		2.2	describe the properties and use of metals used to manufacture body panels			
		2.3	identify the properties and safe use of types of filling materials used to repair panels			
		2.4	explain how to mix and apply plastic fillers			
		2.5	describe the techniques for identifying the type of plastic used for manufactured components			
		2.6	identify and describe the different types and grades of abrasive paper and their use			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
3	Understand how to carry out minor repairs to motor vehicle exterior body panels	3.1	describe how to prepare the vehicle to avoid contamination			
		3.2	describe how to prepare damaged areas to facilitate repairs			
		3.3	describe how to rough out and metal finish body panels			
		3.4	identify the procedures involved to reshape filling materials to match the original contour			
		3.5	describe how to finish repairs to a suitable agreed condition to enable the next stage of repairs to proceed			
		3.6	identify the procedures for repairing damage to plastic components including thermal and adhesive techniques			
		3.7	describe the techniques used to regain the contours of repaired plastic components			
		3.8	identify and describe the techniques for reshaping damaged body panels using hand and specialist tools			
		3.9	describe the methods used to check for panel contours for accuracy after reshaping			
		3.10	explain the procedures for reinstating anti corrosion, sealant and sound deadening materials			
		3.11	describe the aspects of pedestrian safety in relation to the reparability of vehicles			

Learner name:	_____	Date:	_____
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Assessor signature:	_____	Date:	_____
Internal verifier signature:	_____	Date:	_____
(if sampled)			

Unit 12: Skills in Carrying Out Minor Repairs to Motor Vehicle Exterior Body Panels

Unit reference number: K/601/5458

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 minor repairs to motor vehicle exterior body panels using a variety of techniques. It also covers the evaluation of the repair once completed.

Assessment requirements/evidence requirements:

This unit must adhere to the IMI Skills Unit Assessment Requirements developed for the unit 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. be observed by an assessor carrying out **each** of the following repairs listed below, which covers the learning outcomes:
 - body filling and finishing of flat areas of panel
 - repairs to dents that are over 70mm in diameter in exterior body panels, including curvature panels and swage lines
 - repairs to scuffs on plastic components

- 5 produce evidence of covering **all of the techniques and processes** listed below in carrying out the repairs listed on the previous page:
- hot shrinking (using carbon rod)
 - panel pulling
 - metal finishing
 - indirect hammering
 - direct hammering
 - body filing
 - application of body filler/stopper.

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out minor repairs to motor vehicle exterior body panels	1.1	use suitable personal protective equipment and vehicle coverings throughout all repair 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 fitting activities including: a. manufacturers' instructions b. vehicle technical data c. removal and fitting procedures d. legal requirements			
		2.2	use technical information to support motor vehicle removal and fitting activities			
3	Be able to use appropriate tools and equipment	3.1	select the appropriate tools and equipment necessary for carrying out repairs to motor vehicle exterior and body panels			
		3.2	check 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 out repairs to motor vehicle exterior body panels			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to carry out minor repairs to motor vehicle exterior body panels	4.1	identify prior to working on the vehicle the component materials involved that will be worked on during the repair			
		4.2	carry out minor repairs to motor vehicle exterior body panels so they are restored to their original contour using hand tools and filling materials effectively			
		4.3	carry out minor repairs to motor vehicle exterior body panels adhering to specifications and tolerances for the vehicle and following: a. the manufacturer's approved removal and fitting methods b. recognised researched removal and fitting methods c. health and safety requirements d. workplace procedures			
		4.4	replace any sealer, anti corrosion and sound deadening materials which were removed prior to the repair and conforming to the manufacturer's specification			
		4.5	ensure all plastic repairs regain the strength of the original part			
		4.6	ensure any damage is minimised to mating surfaces. Any damage caused should be correctly reinstated			
		4.7	ensure all completed repairs are finished to and agreed standard ready for the refinishing 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 13: Knowledge of Motor Vehicle Body Metal Active Gas (MAG) Welding Techniques

Unit reference number: T/601/5432

QCF level: 2

Credit value: 5

Guided learning hours: 45

Unit summary

This unit enables the learner to develop an understanding of joining carbon steels using Metal Active Gas (MAG) welding 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 safe working practices and procedures to be observed when working with, MAGS or cored wire arc welding equipment (general workshop and site safety; appropriate personal protective equipment; fire prevention; protecting other workers from the effects of the welding arc; safety in enclosed/confined)

- a spaces; fume control; accident procedure; statutory requirements, risk assessment procedures and relevant requirements of HASAWA, COSHH and Work Equipment Regulations; safe disposal of waste materials
- b the correct handling and storage of gas cylinders (manual handling and use of cylinder trolley, leak detection procedures, relevant BCGA codes of practice, cylinder identification, gas pressures, cylinder and equipment safety features, emergency shutdown procedures)
- c the hazards associated with arc welding (live electrical components; current return (earth return); the electric arc; fumes and gases; gas supply leaks; spatter, hot slag and metal; elevated working; enclosed spaces; slips, trips and falls), and how they can be minimised
- d the manual, MAGS or cored wire arc welding process (principles of fusion welding, AC and DC power sources, ancillary equipment, power ranges, care of equipment)
- e the consumables associated with, MAGS or cored wire arc welding (types of wire and their application (solid and cored), types of shielding gas and their application, gas supply and control)

- f the types of welded joints to be produced (fillet and butt welds, single and multi-run welds, sheet and sections; welding positions)
- g setting up and restraining the joint (the use of jigs and fixtures, manipulators and positioners, restraining devices, tack welding size and spacing in relationship to material thickness)
- h preparing the welding equipment and checks that need to be made to ensure that it is safe and ready to use (electrical connections, power return and current return (earth return); wire feed mechanisms, gas supply, setting welding parameters, correct joint set-up, cleanliness of materials used; calibration before use; routine care and maintenance of equipment)
- i the techniques of operating the welding equipment to produce a range of joints in the various joint positions (fine tuning parameters, correct manipulation of the welding gun, safe closing down of the welding equipment)
- j the importance of complying with job instructions and the welding procedure specification
- k problems that can occur with the welding activities and how these can be overcome (causes of distortion and methods of control, effects of welding on materials and sources of weld defects; methods of prevention)
- l the importance and usage of organisational quality systems used and weld standards to be achieved; weld inspection and test procedures used (including visual and non-destructive tests)
- m personal approval tests, and their applicability to your work
- n the extent of your own authority and whom you should report to if you have problems that you cannot resolve
- o reporting lines and procedures, line supervision and technical experts

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand how to work safely when carrying out motor vehicle body MAG welding operations	1.1	describe the health, safety and legal requirements relating to the joining of carbon steels using MAG welding techniques			
		1.2	describe the importance of selecting, using and maintaining the appropriate personal protective equipment when joining carbon steels using MAG welding techniques			
		1.3	describe the requirements for protecting the vehicle and contents from damage before, during and after the joining of carbon steels by MAG welding techniques			
2	Understand how to select, check, use and maintain appropriate tools and equipment used in motor vehicle body MAG welding operations	2.1	explain the use of all tools and equipment required to join carbon steels using MAG welding techniques			
		2.2	describe, within the scope of their responsibilities, how to select, prepare and maintain the tools and equipment required to join carbon steels using MAG welding techniques			
3	Understand how to carry out motor vehicle body MAG welding operations	3.1	explain the importance of correct surface preparation methods to ensure a good MAG weld is achieved			
		3.2	identify the need for correct alignment and mating of carbon steels and the methods used to achieve this in MAG welding			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		3.3	describe the welding techniques used in MAG welding to include: a. plug b. lap c. butt d. fillet			
		3.4	identify the faults and defects that can occur when MAG welding			
		3.5	identify common causes which result in faults and defects			
		3.6	describe the quality control measures that can be used to help ensure correct joining of carbon steels before, during and after the welding process			
		3.7	describe how to inspect and assess MAG welding in accordance to Industry Standards			
		3.8	compare the advantages and disadvantages of MAG welding over other welding methods			
		3.9	explain the importance and implications of checking and carrying out weld test pieces prior to carrying out the welding process			

Learner name:	_____	Date:	_____
Learner signature:	_____	Date:	_____
Assessor signature:	_____	Date:	_____
Internal verifier signature:	_____	Date:	_____
(if sampled)			

Unit 14: Skills in Motor Vehicle Body Metal Active Gas (MAG) Welding Techniques

Unit reference number: R/601/5468

QCF level: 2

Credit value: 5

Guided learning hours: 45

Unit summary

This unit enables the learner to develop the skills required to join materials using Metal Active Gas (MAG) welding techniques. It also covers the evaluation of the completed welded component.

Assessment requirements/evidence requirements:

This unit must adhere to the IMI Skills Unit Assessment Requirements developed for the unit 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 carrying out **all** of the different types of joints listed below to join materials using MAGS welding. All learning outcomes must be covered
 - lap plug
 - lap seam
 - butt joint
 - fillet joint.

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out motor vehicle body MAG welding operations	1.1	use suitable personal protective equipment and vehicle coverings throughout all motor vehicle body MAG welding operations			
		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 body MAG welding operation activities including: a. vehicle technical data b. welding procedures c. legal requirements			
3	Be able to use appropriate tools and equipment	2.2	use technical information to support motor vehicle body MAG welding operation activities			
		3.1	select the appropriate tools and equipment necessary for carrying out motor vehicle body MAG welding operations			
		3.2	ensure all tools and equipment that are required are in a safe working condition			
		3.3	set up and use the appropriate tools and equipment in the way specified by manufacturers when carrying motor vehicle body MAG welding operations			
		3.4	clean and store PPE and equipment in the appropriate manner			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to carry out motor vehicle body MAG welding operations	4.1	prepare surface to ensure a good MAG weld is achieved			
		4.2	ensure alignment, mating and treatment of flanges to enable a suitable join to be achieved			
		4.3	conduct MAG weld operations including: a. lap plug b. lap seam c. butt joint d. fillet joint			
		4.4	conduct MAG weld operations following: a. manufacturers processes, methods and procedures b. test procedures to provide test coupons on equivalent material in accordance with Industry Standards c. recognised researched repair methods			
		4.5	dress the weld area without reducing material thickness and protect the area to inhibit corrosion where applicable			
		4.6	recognise when the weld is not forming correctly and what action needs to be taken			
		4.7	inspect and assess quality of welds in accordance with Industry Standards and manufacturer's specification			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
5		4.8	avoid damaging other components, units, panels and surfaces on the vehicle and the surrounding work area. Any damage caused should be correctly reinstated			
		4.9	ensure no damage is incurred to other vehicle systems when MAG welding			
	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: _____
(if sampled)

Date: _____

Unit 15

Knowledge of Motor Vehicle Body Resistance Spot Welding Operations

Unit reference number: F/601/5434

QCF level: 2

Credit value: 5

Guided learning hours: 45

Unit summary

This unit enables the learner to develop the knowledge required to join materials using resistance spot welding techniques 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:

- a the specific safety precautions to be taken when operating resistance welding installations (working with machinery; the use of appropriate personal protective equipment machine guards; operation of machine safety devices; stopping the machine in an emergency; closing down the machine on completion of the welding activities; statutory requirements, risk assessment procedures and relevant requirements of HASAWA, COSHH and Work Equipment Regulations; safe disposal of waste materials), any regulations relating to EMF (Electric Magnetic Field)
- b the hazards associated with resistance welding machines (dangers from live internal electrical components, fumes, hot metal, expulsion of hot particles, moving parts of machines), and how they can be minimised
- c the principles of resistance welding; terminology used in welding
- d mechanised and automated weldings (types of installation; machine functions; control systems; safety features)
- e the key components and features of the equipment used (power source; electrical parameters such as arc voltage, current, electrode pressure and welding time; systems for parameter control; how variation in the parameters influence weld features, quality and output)
- f extracting the information required from drawings and welding procedure specifications

- g operation of the machine controls and their function; clamping of components and equipment care procedures
- h setting up and aligning the work piece
- i monitoring the welding process; recognition of problems, and action to be taken
- j problems that can occur with the welding activities, materials and weld defects
- k self inspection of completed work
- l organisational quality systems (standards to be achieved; production records to be kept)
- m personal approval tests and their applicability to your work
- n the extent of your own authority and whom you should report to if you have problems that you cannot resolve
- o reporting lines and procedures, line supervision and technical experts
- p the requirements of the power supply to the unit and the use of extension cables

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand how to work safely when carrying out motor vehicle body resistance spot welding operations	1.1	describe the health, safety and legal requirements relating to the joining of materials using resistance spot welding techniques			
		1.2	describe the importance of selecting, using and maintaining the appropriate personal protective equipment when joining materials using resistance spot welding techniques			
		1.3	describe the requirements for protecting the vehicle and contents from damage before, during and after the joining of materials by resistance spot welding techniques			
2	Understand how to select, check, use and maintain appropriate tools and equipment used in motor vehicle body resistance spot welding operations	2.1	identify and explain the use of all tools and equipment required to join materials using resistance spot welding techniques			
		2.2	describe, within the scope of their responsibilities, how to select, prepare and maintain tools and equipment required to join materials using resistance spot welding techniques			
3	Understand how to carry out motor vehicle body resistance spot welding operations	3.1	describe the importance of correct surface preparation methods to ensure a good resistance spot weld is achieved			
		3.2	identify the need for alignment and mating of materials and the best methods used to achieve this in resistance spot welding			
		3.3	describe the welding processes, techniques and joints used for the joining of materials using resistance spot welding			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
	3.4	identify the faults and defects that can occur when carrying out resistance spot welding				
	3.5	identify common causes which produce the faults and defects in resistance spot welding				
	3.6	describe the types of quality control checks that can be used to ensure correct joining of materials				
	3.7	describe how to inspect and assess resistance spot welding in accordance to Industry Standards including: a. weld pitch b. indentation c. heat zone d. nugget size e. peel and shear test				
	3.8	compare the advantages and disadvantages of resistance spot welding over other welding methods				
	3.9	explain the importance and implications of checking and carrying out weld test pieces prior to carrying out the welding process				

Learner name: _____ Date: _____
Learner signature: _____ Date: _____
Assessor signature: _____ Date: _____
Internal verifier signature: _____ Date: _____
(if sampled)

Unit 16: Skills in Motor Vehicle Body Resistance Spot Welding Operations

Unit reference number: Y/601/5469

QCF level: 2

Credit value: 5

Guided learning hours: 45

Unit summary

This unit will help the learner to develop the skills required to join materials correctly and effectively using resistance spot welding techniques and procedures. It also covers the evaluation of the completed welded component.

Assessment requirements/evidence requirements:

This unit must adhere to the IMI Skills Unit Assessment Requirements developed for the unit 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 carrying out resistance spot welding when joining a vehicle body panel to a vehicle, which covers the learning outcomes
5. produce evidence of covering all the checks listed below to ensure the quality of the weld area:
 - weld pitch
 - indentation
 - heat zone
 - nugget size
 - peel and shear test.

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out motor vehicle body resistance spot welding operations	1.1	use suitable personal protective equipment and vehicle coverings throughout all motor vehicle body resistance spot welding operations			
		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 body resistance spot welding operation activities including: a. vehicle technical data b. welding procedures c. legal requirements			
3	Be able to use appropriate tools and equipment	2.2	use technical information to support motor vehicle body resistance spot welding operation activities			
		3.1	select the appropriate tools and equipment necessary for carrying out motor vehicle body resistance spot welding operations			
		3.2	ensure tools and equipment that are required are in a safe working condition			
		3.3	set up and use the correct tools and equipment in the way specified by manufacturers when carrying out motor vehicle body resistance spot welding operations			
		3.4	clean and store PPE and equipment in the appropriate manner			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to carry out motor vehicle body resistance spot welding operations	4.1	carry out surface preparation to ensure a good resistance spot weld is achieved			
		4.2	ensure alignment and mating and treatment of flanges to enable a suitable join to be achieved			
		4.3	produce resistance spot welding operations following: a. manufacturer's processes, methods and procedures b. test procedures and providing test coupons on equivalent material in accordance with Industry Standards c. recognised researched repair methods			
		4.4	dress and protect the area to inhibit corrosion where applicable			
		4.5	identify when the weld is not forming correctly and what action needs to be taken			
		4.6	inspect and assess all resistance spot weld quality in accordance with Industry Standards and manufacturer's specification			
		4.7	ensure the integrity of the weld and record the type of weld achieved on the appropriate paperwork			
		4.8	store and record all weld test pieces			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
5		4.9	avoid damaging other components, units, panels and surfaces on the vehicle and the surrounding work area. Any damage caused should be correctly reinstated			
		4.10	ensure no damage is incurred to other vehicle systems when resistance spot welding			
	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: _____
(if sampled)

Date: _____

Unit 17: Knowledge of Motor Vehicle Construction and Materials

Unit reference number: A/601/5450

QCF level: 2

Credit value: 2

Guided learning hours: 20

Unit summary

This unit enables the learner to develop an understanding of types of metals and composites used in the construction of motor vehicles, the areas where these materials are used and what their properties are. It is also about the design and construction techniques used in the vehicle body and chassis.

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:

Common forms in which body repair materials are supplied

- a. identify the common forms of supply of metals to include:
 - i. sheet
 - ii. roll
 - iii. bar
 - iv. section
- b. identify common forms of supply for non metals:
 - i. solid
 - ii. liquid
 - iii. composites
 - iv. laminated

Mechanical properties and use examples of materials to illustrate these properties

- a define the three states of matter
- b state the definitions of the following mechanical properties:
 - i. ductility
 - ii. malleability
 - iii. hardness
 - iv. toughness
 - v. elasticity
 - vi. plasticity
 - vii. weld ability
 - viii. conductivity
 - ix. insulation
- c give examples of materials and components exhibiting the above properties
- d describe ways in which the above properties can be changed temporarily or permanently to include:
 - i. heating
 - ii. alloying
 - iii. cold working
 - iv. heat treatments

Define and distinguish between classes of materials

- a define classes of materials as:
 - i. metals
 - ii. non metals
 - iii. synthetic
 - iv. natural
- b classify metals into:
 - i. ferrous
 - ii. non ferrous
 - iii. pure metals
 - iv. alloys

Factors which affect the selection of listed materials

- a identify the range of selection factors which determine the use of materials to include:
 - i. material costs
 - ii. suitability for use
 - iii. form of supply
 - iv. joining characteristics
 - v. strength
 - vi. material properties
 - vii. corrosion resistance
 - viii. melting point
- b compare the factors effecting the use of:
 - i. pure metals
 - ii. alloys
 - iii. plastics
- c understand the Importance of melting points of the following:
 - i. LC steel
 - ii. aluminium alloy
 - iii. stainless steel
 - iv. solder
 - v. common plastics

Listed materials used in repair or construction

- a identify the types and properties of steels used in construction and repair to include:
 - i. low carbon steels
 - ii. medium carbon steels
 - iii. high carbon steels
 - iv. cast irons
 - v. alloy steels
 - vi. UHSS
- b describe the properties of common non ferrous metals used in construction and repair to include:
 - i. aluminium
 - ii. zinc
 - iii. lead
 - iv. tin
 - v. copper

- c compare and identify listed non-metals used in repair or construction to include:
 - i. plastics
 - ii. glass
 - iii. fabrics
 - iv. leather
 - v. rubber
- d define the terms:
 - i. thermo plastic
 - ii. thermo setting plastics
- e identify the uses and properties of materials used for interior furnishings such as:
 - i. rubber
 - ii. fabric
 - iii. leather
 - iv. glass
- f. give examples of common plastics used in repair and construction including:
 - i. ABS
 - ii. polyethylene
 - iii. polypropylene
 - iv. polyester
 - v. acrylic
 - vi. glass reinforced plastic

State the constituents and general properties of the following alloys:

- a solder
- b stainless steel
- c low carbon steel
- d brass
- e aluminium alloys including duralumin

Ways in which the properties of metals can be changed temporarily or permanently

- a explain the advantages of changing the material properties temporarily
- b explain the effects of changing the material properties permanently
- c state the advantages of changing materials properties
- d state that material properties can be changed by:
 - i. heat treatment
 - ii. cold working
 - iii. alloying

- e describe how the properties of metals are changed under the above three headings

Causes of corrosion in steel car bodies

- a explain the principle of oxidation to include:
 - i. simple corrosion cell
 - ii. combination with oxygen
 - iii. effects of an electrolyte
 - iv. effects of dissimilar metals
- b identify reasons for corrosion in vehicles to include:
 - i. bad joint design
 - ii. poor protection
 - iii. stone chips
 - iv. water leaks
 - v. industrial pollution
- c explain that methods of corrosion protection can include:
 - i. protective metal coatings
 - ii. protective non-metal coatings
 - iii. cavity waxes
 - iv. anti chip coatings
 - v. sealers
- d describe the effects of corrosion in a vehicle body to include:
 - i. loss of strength
 - ii. manufacturers warranty consideration
 - iii. loss of appearance

Characteristics of body assemblies

- a describe methods of producing body panels to include:
 - i. forming
 - ii. pressing
 - iii. moulding
- b describe the methods of imparting strength to sheet metal to include:
 - i. swages
 - ii. edging
 - iii. forming into sections
 - iv. combining sections into box sections
 - v. the principles of crowned panels
- c describe the characteristics of monocoque structures
- d describe the characteristics of separate construction

- e identify by name and description of use, the following:
- i. sill panel
 - ii. bulkhead
 - iii. chassis leg
 - iv. inner flitch
 - v. cross member
 - vi. a, b, c and d posts
 - vii. roof
 - viii. cant rail
 - ix. windscreen header rails
 - x. floor assembly
 - xi. inner wheel arches
 - xii. dog leg
 - xiii. scuttle panels
 - xiv. front panel
 - xv. headlamp mounting panels
 - xvi. back panel

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand material types and properties used in motor vehicle construction	1.1	describe the properties and different types of materials used in the construction of vehicle bodies including: a. mild steel b. ultra high strength steel c. aluminium alloys d. stainless steel e. plastics f. composites g. trim materials			
		1.2	identify the types of materials used in the construction of vehicle bodies and chassis components			
		1.3	explain the properties of materials used in vehicle body construction			
		1.4	describe how different materials used in the construction of motor vehicles react with each other			
		1.5	describe the importance of cleanliness and avoiding cross contamination when working with different materials			
		1.6	describe the importance of selecting and using the appropriate joining techniques for the type of material			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
2	Understand how the different types of materials and formation methods affect the construction of motor vehicle bodies	2.1	explain the principles of chassis frame and monocoque vehicle construction			
		2.2	identify the different types of chassis designs used for modern vehicles, including commercials			
		2.3	explain the affects on strength once the overall body structure is complete			
		2.4	identify the different body and chassis components that are made using different materials, including the advantages and disadvantages			
		2.5	describe how crumple zones affect the safety, design, cost and construction of motor vehicle bodies and chassis			
		2.6	describe how the type of material used affects the safety, design, cost and construction of motor vehicle bodies and chassis			
		2.7	identify the implications of recycling of vehicle bodies and chassis components, now and in the future			
3	Understand how damage to the construction of a motor vehicle will affect its safety	3.1	describe how to carry out a vehicle inspection to assess for damage			
		3.2	describe how to check a vehicle for correct alignment			
		3.3	describe how manipulation of the vehicle body and chassis will affect its residual strength			

Learner name: _____ Date: _____
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Assessor signature: _____ Date: _____
Internal verifier signature: _____ Date: _____
(if sampled)

Unit 18: Knowledge of Removing and Fitting Motor Mechanical, Electrical and Trim (MET) Components to Vehicles

Unit reference number: Y/601/5424

QCF level: 2

Credit value: 2

Guided learning hours: 20

Unit summary

This unit enables the learner to develop an understanding of carrying out a range of removal and fitting of mechanical, electrical and trim (MET) components to vehicles. 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:

Procedures to prevent damage to the vehicle, components and contents when removing, storing and refitting MET components

- a. the methods that can be used to protect undamaged items to ensure they are removed and refitted without causing unnecessary damage:
 - i. bumpers
 - ii. headlamp units
 - iii. road wheels
 - iv. batteries
 - v. bonnet fittings
 - vi. interior trim components
 - vii. exterior trim components
- b. the procedures for the correct storage of vehicle contents
- c. the process for the reporting of extra damage and items that may have broken when removed or refitted

The processes involved when handling batteries

- a the procedure for the removal, storage and refitting of lead acid batteries
- b the procedure for the disposal of lead acid batteries
- c battery checks:
 - i. electrolyte
 - ii. discharge
 - iii. specific gravity
- d the charging process and procedures:
 - i. trickle charge
 - ii. normal charge
 - iii. boost/start
- e the health and safety issues involved when charging (explosive gasses)

Types of clips and fixings

- a the following types of clips and identify reasons and limitations for their use:
 - i. speed
 - ii. 'c'
 - iii. 'd'
 - iv. 'j' type captive nut
 - v. 'r'
 - vi. 'u' type captive nut
 - vii. cable clip
 - viii. trim clips
- b the following types of fixings and identify reasons and limitations for their use:
 - i. rivets
 - ii. plastic capture nut
 - iii. nut and bolt
 - iv. shoulder bolt
 - v. 'Nyloc' type nuts
 - vi. washers
 - vii. 'Spring' type washers
 - viii. self tapping screws and bolts
 - ix. quick release plastic trim fastenings
 - x. trim tapes
 - xi. adhesives and sealers

The processes involved when carrying out quality checks

- a items that may have been 'workshop' soiled and describe processes for rectifying:
 - i. door cards
 - ii. seats
 - iii. carpets
 - iv. boot and bonnet trims
- b methods for checking gaps
- c the process for checking and aligning headlamps:
 - i. address handling procedures for halogen bulbs
 - ii. address handling and health and safety issues relating to xenon bulbs and systems
- d operational checks and rectification methods to include:
 - i. lights
 - ii. washers and wipers
 - iii. SRS systems (checking not rectification)
 - iv. charging system (checking not rectification)
 - v. horn
 - vi. fluid levels
 - vii. interior switches
 - viii. operation of door lock mechanisms

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand how to carry out removal and fitting of motor vehicle mechanical electrical and trim (MET) components	1.1	identify the procedures involved in carry out the systematic removal and fitting of vehicle MET components to the standard required			
		1.2	identify the procedures involved in working with supplementary safety systems when fitting vehicle MET components			
		1.3	identify the procedures involved in working with gas discharge headlamp systems when fitting vehicle MET components			
		1.4	describe the methods and procedures for storing removed vehicle MET components			
		1.5	identify the different types of fastenings and fixings used when removing and fitting vehicle MET components			
		1.6	explain the reasons for the use of different types of fastenings and fixings used in vehicle MET components			
		1.7	describe the procedures, methods and reasons for ensuring correct alignment of vehicle MET components			
		1.8	identify the quality checks that can be used to ensure correct alignment and operation of vehicle MET components			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		1.9	identify correct conformity of vehicle systems against vehicle specification and legal requirements on completion			
		1.10	explain the procedure for reporting cosmetic damage to vehicle MET components and units			

Learner name: _____

Date: _____

Learner signature: _____

Date: _____

Assessor signature: _____

Date: _____

Internal verifier signature: _____
(if sampled)

Date: _____

Unit 19: Skills in Removing and Fitting Motor Mechanical, Electrical and Trim (MET) Components to Vehicles

Unit reference number: F/601/5451

QCF level: 2

Credit value: 2

Guided learning hours: 20

Unit summary

This unit will help the learner to develop the skills in order to remove and fit a range of mechanical, electrical and trim (MET) components to vehicles.

Assessment requirements/evidence requirements:

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

Assessment requirements/evidence requirements:

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 refitting all of the units or components listed below, which covers the learning outcomes:
 - bumpers
 - headlamp units
 - road wheels
 - batteries
 - bonnet fittings
 - interior trim components
 - exterior trim components.

Learning outcomes 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 MET components to vehicles	1.1	use suitable personal protective equipment and use suitable vehicle coverings throughout all MET 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 MET components			
		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 MET components			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to carry out removal and fitting of MET components	4.1	carry out removal and fitting of MET components adhering to the correct specifications and tolerances for the vehicle and following: a. the manufacturer's approved removal and fitting methods b. recognised researched removal and fitting methods c. health and safety requirements d. workplace procedures			
		4.2	ensure that the removal and fitting of MET components conforms to the vehicle operating specification and any legal requirements			
		4.3	ensure no damage occurs to other components when removal and fitting of MET components			
		4.4	ensure all components and panels are stored safely and in the correct location			
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: _____
Learner signature: _____
Assessor signature: _____
Internal verifier signature: _____
(if sampled)

Date: _____
Date: _____
Date: _____
Date: _____

Unit 20: Knowledge of Motor Vehicle Body Metal Inert Gas (MIG) Brazing Operations

Unit reference number: J/601/5435

QCF level: 3

Credit value: 5

Guided learning hours: 45

Unit summary

This unit enables the learner to develop an understanding of joining materials using Metal Inert Gas brazing operations techniques 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:

- a the safe working practices and procedures to be observed when operating brazing installations (working with machinery; the use of appropriate personal protective equipment; machine guards; operation of machine safety devices; stopping the machine in an emergency; closing the machine down on completion of activities; statutory requirements, risk assessment procedures and relevant requirements of HASAWA, COSHH and Work Equipment Regulations; safe disposal of waste materials)
- b the hazards associated with MIG brazing machines (dangers from relevant equipment sources; fumes and gases; hot metal; moving parts of machinery), and how they can be minimised
- c principles of the relevant brazing process; terminology used in brazing
- d the key components and features of the equipment
- e how to extract the information required from drawings and brazing procedure specifications
- f operation of the machine controls and their function; care of equipment; control and storage of consumables
- g setting up and aligning the work pieces
- h monitoring the installation during the brazing process; recognition of problems, and action to be taken

- i problems that can occur with the brazing activities, materials, filler metals and joint defects
- j self inspection of completed work
- k organisational quality systems (standards to be achieved; production records to be kept)
- l personal approval tests and their applicability to your work
- m the extent of your own authority and whom you should report to if you have problems that you cannot resolve
- n reporting lines and procedures, line supervision and technical experts

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand how to work safely when carrying out motor vehicle body MIG brazing operations	1.1	explain the health, safety and legal requirements relating to the joining of materials using MIG brazing operations			
		1.2	explain the importance of selecting, using and maintaining the appropriate personal protective equipment when joining materials using MIG brazing operations			
		1.3	explain the requirements for protecting the vehicle and contents from damage before, during and after the joining of materials by MIG brazing operations			
2	Understand how to select, check, use and maintain appropriate tools and equipment used in motor vehicle body MIG brazing operations	2.1	explain the use of all tools and equipment required to join materials using MIG brazing operations			
		2.2	explain, within the scope of their responsibilities, how to select, prepare and maintain tools and equipment required to join materials using MIG brazing operations			
3	Understand how to carry out motor vehicle body MIG brazing operations	3.1	explain the importance of correct surface preparation methods to ensure a good MIG brazing operation is achieved			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		3.2	identify the correct need for alignment/mating of materials and the best methods used to achieve this in MIG brazing operations			
		3.3	explain the welding processes, techniques and joints used for the joining of materials using MIG brazing operation, joints include: a. lap slot b. lap seam c. butt joint			
		3.4	identify the faults and defects that can occur when carrying out MIG brazing operation			
		3.5	identify common causes which produce the faults and defects in MIG brazing operation			
		3.6	describe the types of quality control checks that can be used to ensure correct joining of materials			
		3.7	describe how to inspect and assess MIG brazing operation in accordance to Industry Standards			
		3.8	explain the advantages and disadvantages of MIG brazing operation over other welding methods			
		3.9	explain the importance and implications of checking and carrying out brazing test pieces prior to carrying out the brazing process			

Learner name: _____ Date: _____
Learner signature: _____ Date: _____
Assessor signature: _____ Date: _____
Internal verifier signature: _____ Date: _____
(if sampled)

Unit 21: Skills in Motor Vehicle Body Metal Inert Gas (MIG) Brazing Operations

Unit reference number: D/601/5473

QCF level: 3

Credit value: 5

Guided learning hours: 45

Unit summary

This unit will help the learner to develop the skills required to join materials correctly and effectively using Metal Inert Gas (MIG) brazing techniques and procedures. It also covers the evaluation of the completed brazed component.

Assessment requirements/evidence requirements:

This unit must adhere to the IMI Skills Unit Assessment Requirements developed for the unit 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 carrying out all of the different types of joints listed below to join materials using MIG brazing. All learning outcomes must be covered
 - lap slot
 - lap seam
 - butt joint.

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out motor vehicle body MIG brazing operations	1.1	use suitable personal protective equipment and vehicle coverings throughout all motor vehicle body MIG brazing operations			
		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 body MIG brazing operations activities including: a. vehicle technical data b. welding procedures c. legal requirements			
3	Be able to use appropriate tools and equipment	2.2	use technical information to support motor vehicle body MIG brazing operations activities			
		3.1	select the appropriate tools and equipment necessary for carrying out motor vehicle body MIG brazing operations			
		3.2	ensure all tools and equipment that are required are in a safe working condition			
		3.3	set up and use the correct tools and equipment in the way specified by manufacturers when carrying motor vehicle body MIG brazing operations			
		3.4	clean and store PPE and equipment in the appropriate manner			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to carry out motor vehicle body MIG brazing welding operations	4.1	prepare surface to ensure a good MIG brazing operation is achieved			
		4.2	ensure alignment, and mating treatment of flanges to enable a suitable join to be achieved			
		4.3	carry out MIG brazing operations including: a. lap slot b. lap seam c. butt joint			
		4.4	carry out MIG brazing operations following: a. manufacturer's processes, methods and procedures b. test procedures and providing test coupons on equivalent material in accordance with Industry Standards c. recognised researched repair methods			
		4.5	dress the weld area without reducing material thickness and protect the area to inhibit corrosion where applicable			
		4.6	recognise when the weld is not forming correctly and what action needs to be taken			
		4.7	inspect and assess all MIG brazing operations for quality in accordance with Industry Standards and manufacturer's specification			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		4.8	ensure the integrity of the weld and record the type of weld achieved on the appropriate paperwork			
		4.9	avoid damaging other components, units, panels and surfaces on the vehicle and the surrounding work area. Any damage caused should be correctly reinstated			
		4.10	ensure no damage is incurred to other vehicle systems when carrying out MIG brazing operations			
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 22: Knowledge of Motor Vehicle Body Mechanical Fastening Operations

Unit reference number: T/601/5446

QCF level: 3

Credit value: 2

Guided learning hours: 20

Unit summary

This unit enables the learner to develop an understanding of joining materials using mechanical fastening techniques 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:

- a the hazards associated with the joining operations (such as handling sheet/fabricated components, using hot metal riveting techniques, handling and using sealants and cleaning agents, dangerous or badly maintained tools and equipment), and how they can be minimised
- b how to obtain the necessary drawings and joining procedure specifications
- c how to extract information from engineering drawings and related specifications (to include symbols and conventions to appropriate bs or iso standards in relation to work undertaken)
- d the use of manufacturers' specifications for the types of fasteners used
- e the various joining processes that are used, and the tools and equipment required
- f the preparations to be carried out on the materials/components prior to joining them (such as materials to be degreased, dry and clean, with holes and flanges de-burred)
- g how to set up and align the joints prior to fixing, and the tools and methods that can be used (such as clamps, rivet gripping tools, temporary fixings, jacking and supporting devices)
- h how to produce a secure joint using blind rivets, and the type of riveting tools that are available

- i the range of bolts and screwed fasteners that are to be used; why it is important to use the correct type of washer; sequence of tightening bolts on flanged joints; and the tools and equipment used to ensure they are tightened to the required torque
- j checks to be carried out on the tools and equipment prior to use to ensure that they are in a safe and usable condition (such as condition of plugs and leads on power tools, condition of striking faces on hammers, condition of riveting tools)
- k equipment setting, operating and care procedures; why equipment and tools need to be correctly set up and in good condition
- l the importance of using the tools only for the purpose intended; the care that is required when using the equipment and tools; the proper way of preserving and storing tools and equipment between operations
- m the things that can go wrong with the joining operations, and how these can be avoided
- n the extent of your own authority and whom you should report to if you have problems that you cannot resolve
- o reporting lines and procedures, line supervision and technical experts

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand how to select, check, use and maintain appropriate tools and equipment used in motor vehicle body mechanical fastening operations	1.1	explain the use of all tools and equipment required to join materials using mechanical fastening operations			
		1.2	explain, within the scope of their responsibilities, how to select, prepare and maintain tools and equipment required to join materials using mechanical fastening operations			
2	Understand how to carry out motor vehicle body mechanical fastening operations	2.1	describe the importance of correct surface preparation methods to ensure a good mechanical fastening is achieved			
		2.2	identify the correct need for alignment and mating of materials and the best methods used to achieve this in mechanical fastening operations			
		2.3	explain the mechanical fastening processes, techniques and joints used for the joining of materials, joints include: a. riveting (single sided, double sided and self piercing) b. clinching c. bolts and fasteners d. screwing (self threading and self piercing) e. hybrid joining (combinations of techniques listed that may also include adhesives)			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
	2.4	explain how different materials used in the construction of motor vehicles react with each other				
	2.5	identify the faults and defects that can occur when carrying out mechanical fastening operations				
	2.6	identify common causes which produce the faults and defects in mechanical fastening operations				
	2.7	explain the types of quality control checks that can be used to ensure correct joining of materials				
	2.8	explain how to use adhesives with riveting techniques				
	2.9	explain the advantages and disadvantages of mechanical fastening operations over other joining methods				

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

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

Unit 23: Skills in Motor Vehicle Body Mechanical Fastening Operations

Unit reference number: A/601/5478

QCF level: 3

Credit value: 2

Guided learning hours: 20

Unit summary

This unit will help the learner to develop the skills required to join materials using mechanical fastening techniques and procedures. It also covers the evaluation of the completed mechanical joint.

Assessment requirements/evidence requirements:

This unit must adhere to the IMI Skills Unit Assessment Requirements developed for the unit 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 carrying out 4 of the 5 different types of joints listed below to join materials using mechanical fastenings. All learning outcomes must be covered
 - riveting
 - clinching
 - bolts and fasteners
 - screwing
 - hybrid joining (combinations of techniques listed that may also include adhesives)

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out motor vehicle body mechanical fastening operations	1.1	use suitable personal protective equipment and vehicle coverings throughout all motor vehicle body mechanical fastening operations			
		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 body mechanical fastening operations activities including: a. vehicle technical data b. joining procedures c. legal requirements			
3	Be able to use appropriate tools and equipment	2.2	use technical information to support motor vehicle body mechanical fastening operations activities			
		3.1	select the appropriate tools and equipment necessary for carrying out motor vehicle body mechanical fastening operations			
		3.2	ensure all tools and equipment that are required are in a safe working condition			
		3.3	set up and use the correct tools and equipment in the way specified by manufacturers when carrying out motor vehicle body mechanical fastening operations			
		3.4	clean and store PPE and equipment in the appropriate manner			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to carry out motor vehicle body mechanical fastening operations	4.1	prepare surface to ensure a good mechanical fastening is achieved			
		4.2	ensure alignment and mating and treatment of flanges to enable a suitable join to be achieved			
		4.3	carry out a range of mechanical fastening			
		4.4	carry out mechanical fastening operations following: a. manufacturer's processes, methods and procedures b. recognised researched repair methods			
		4.5	dress and protect the joint area to inhibit corrosion where applicable			
		4.6	recognise when the joint is not forming correctly and what action needs to be taken			
		4.7	ensure integrity of the joint and record the type of joint achieved on the appropriate paperwork			
		4.8	avoid damaging other components, units, panels and surfaces on the vehicle and the surrounding work area. Any damage caused should be correctly reinstated			

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: _____
(if sampled)

Date: _____

Unit 24: Knowledge of Motor Vehicle Body Adhesive Bonding Operations

Unit reference number: J/601/5449

QCF level: 3

Credit value: 2

Guided learning hours: 20

Unit summary

This unit enables the learner to develop an understanding of joining materials using adhesive bonding techniques 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:

- a the specific safety precautions to be taken when bonding engineering materials using adhesives in a fabrication environment (general workshop and site safety, appropriate personal protective equipment, accident procedure; statutory regulations, risk assessment procedures and COSHH regulations)
- b the personal protective clothing and equipment to be worn when carrying out bonding as part of the fabrication activities (gloves, eye protection, respiratory protection, etc)
- c the importance of good workshop practice and house keeping, ventilation and fume control equipment, first aid procedures and actions, hazardous substances and relevant sections of coshh
- d the hazards associated with bonding fabricated components, and how they can be minimised
- e how to obtain the necessary drawings and joining specifications
- f how to extract information from research repair methodology in relation to the work undertaken
- g types of adhesives:
 - i. compact
 - ii. two parts
 - iii. cyanoacrylate
 - iv. anerobic
 - v. sealants
 - vi. toughened

- h knowledge of curing mechanisms including:
 - i. moisture/solvent evaporation
 - ii. chemical/thermal reaction
 - iii. exposure/exclusion to oxygen
- i understanding the importance of recording shelf life, pot life, setting and curing times
- j knowledge of adhesion and cohesion
- k the material preparations that are required, and the equipment and consumables that are used
- l the importance of working to organisational and bonding agent manufacturers' instructions whilst carrying out the bonding activities
- m the methods and techniques used for bonding the materials (such as gluing, impact, chemical and thermal reaction techniques)
- n the characteristics of the adhesives that are to be used
- o the application of, and precautions to be taken when using, adhesives and solvents
- p maintenance and care of tools and equipment
- q methods of degreasing components and producing a keying surface
- r type and suitability of adhesives, setting or curing requirements and time, strength and appearance
- s common causes of defects associated with the bonding processes, and how to avoid them
- t the effects of the environment on the bonding process (such as temperature humidity, cleanliness)
- u how to identify, select, use, and clean, the appropriate bonding agent holding vessels, brushes, stirrers and spatulas, scrapers, knives, clamps and weights
- v the importance of cleaning up after use, to ensure everything can be used again and to minimise the need for replacement of equipment
- w reasons for checking that components are assembled in the correct sequence, are positioned dimensionally accurately and to the correct orientation, in accordance with the specifications, prior to bonding
- x how to check that completed joints are firm, sound and fit for purpose
- y procedures for cleaning off surplus adhesive and tidying up the appearance of joints
- z the extent of your own authority and whom you should report to if you have problems that you cannot resolve
- aa reporting lines and procedures, line supervision and technical experts

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand how to work safely when carrying out motor vehicle body adhesive bonding operations	1.1	explain the health, safety and legal requirements relating to the joining of materials using adhesive bonding techniques			
		1.2	explain the importance of selecting, using and maintaining the appropriate personal protective equipment when joining materials using adhesive bonding techniques			
		1.3	explain the requirements for protecting the vehicle and contents from damage before, during and after the joining of materials by adhesive bonding techniques			
2	Understand how to select, check, use and maintain appropriate tools and equipment used in motor vehicle body adhesive bonding operations	2.1	explain the use of all tools and equipment required to join materials using adhesive bonding techniques			
		2.2	explain, within the scope of their responsibilities, how to select, prepare and maintain tools and equipment required to join materials using adhesive bonding techniques			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
3	Understand how to carry out motor vehicle body adhesive bonding operations	3.1	explain the importance of correct surface preparation methods to ensure a good adhesive bonding joint is achieved			
		3.2	identify the need for alignment/mating of materials and the best methods used to achieve this in adhesive bonding			
		3.3	explain the joining processes, techniques and joints used for the joining of materials using adhesive bonding			
		3.4	identify the faults and defects that can occur when carrying out adhesive bonding			
		3.5	identify common causes which produce the faults and defects in adhesive bonding			
		3.6	explain the types of quality control checks that can be used to ensure correct joining of materials			
		3.7	explain the advantages and disadvantages of adhesive bonding over other joining methods			
		3.8	explain the importance and implications of checking and carrying out test pieces prior to carrying out the joining process			

Learner name: _____ Date: _____
Learner signature: _____ Date: _____
Assessor signature: _____ Date: _____
Internal verifier signature: _____ Date: _____
(if sampled)

Unit 25: Skills in a Motor Vehicle Body Adhesive Bonding Operations

Unit reference number: T/601/5480

QCF level: 3

Credit value: 2

Guided learning hours: 20

Unit summary

This unit will help the learner to develop the skills required to join materials using adhesive bonding techniques and procedures. It also covers the evaluation of the completed joint.

Assessment requirements/evidence requirements:

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 in the IMI Assessment Strategy
4. produce evidence of carrying out adhesive bonding operations in joining a vehicle body panel to a vehicle, which covers the learning outcomes.

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out motor vehicle body adhesive bonding operations	1.1	use suitable personal protective equipment and vehicle coverings throughout all motor vehicle body adhesive bonding operations			
		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 body adhesive bonding operation activities including: a. vehicle technical data b. joining procedures c. legal requirements			
3	Be able to use appropriate tools and equipment	2.2	use technical information to support motor vehicle body adhesive bonding operation activities			
		3.1	select the appropriate tools and equipment necessary for carrying out motor vehicle body adhesive bonding operations			
		3.2	ensure tools and equipment that are required are in a safe working condition			
		3.3	set up and use the correct tools and equipment in the way specified by manufacturers when carrying out motor vehicle body adhesive bonding operations			
		3.4	clean and store PPE and equipment in the appropriate manner			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to carry out motor vehicle body adhesive bonding operations	4.1	prepare surface to ensure a good adhesive bond is achieved			
		4.2	ensure alignment and mating and treatment of flanges to enable a suitable join to be achieved			
		4.3	carry out adhesive bonding operations following: a. manufacturer's processes, methods and procedures b. test procedures and providing test coupons on equivalent material c. recognised researched repair methods			
		4.4	dress and protect the area to inhibit corrosion where applicable			
		4.5	identify when the joint is not forming correctly and what action needs to be taken			
		4.6	avoid damaging other components, units, panels and surfaces on the vehicle and the surrounding work area. Any damage caused should be correctly reinstated			

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 26: 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			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		2.4	perform housekeeping activities safely and in a way which minimizes inconvenience to customers and staff			
		2.5	keep the work area clean and free from debris and waste materials			
		2.6	keep tools and equipment fit for purpose by regular cleaning and keeping tidy			
		2.7	dispose of used cleaning agents, waste materials and debris to comply with legal and workplace requirements			
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			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
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 27: 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 28: 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: _____
(if sampled)

Date: _____

Unit 29: Competency in Removing and Replacing Exterior Motor Vehicle Body Panels Including Permanently Fixed Components

Unit reference number: K/601/5377

QCF level: 2

Credit value: 10

Guided learning hours: 90

Unit summary

This unit will enable the learner to demonstrate competency in the removing and fitting of exterior panels using mechanical fastening, adhesive bonding, welding and joining techniques. 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 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 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 the removal and replacement of vehicle body panels **in combinations of 3 or more** adjacent panels, one of which should be **permanently fixed** eg welded or bonded, to be carried out on **2 occasions**
exterior body panels:
 - a. combinations of 3 or more adjacent panels, one of which should be permanently fixed (Examples include: two doors and a wing, two wings and a bonnet; bonnet, wing and door on the same side; bumper, wing, and bonnet
 - b. welded panel. (These are front panels; including headlamp panel, bonnet landing panel, lower crossmember) and rear panels
5. be observed by your assessor on **at least 1 occasion** carrying out the removal and replacement of vehicle body panels in combinations of three or more adjacent panels.

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out removal and replacement of exterior vehicle panels including permanently fixed 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 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 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 exterior body panels including permanently fixed vehicle panels			
		3.2	ensure that equipment has been calibrated to meet manufacturers' and legal requirements			
		3.3	use the appropriate tools and equipment in the way specified by manufacturers when carrying removal and fitting of exterior body panels including permanently fixed vehicle panels			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to carry out removal and fitting of exterior vehicle panels including permanently fixed panels	4.1	identify prior to working on the vehicle the component materials involved that will be worked on during the repair			
		4.2	remove and re-fit adjacent exterior body panels including those that are permanently fixed			
		4.3	carry out removal and fitting of exterior body panels including permanently fixed vehicle panels adhering to specifications and tolerances for the vehicle and following: a. recognised researched removal and fitting methods b. health and safety requirements c. workplace procedures			
		4.4	use and apply sealants and anti corrosion materials conforming to the manufacturer's specification			
		4.5	ensure that the replacement panels conform to the vehicle specifications for dimension, material and functional capability			
		4.6	ensure the components are realigned correctly in a way which regains their original manufactured tolerance			
		4.7	ensure any damage is minimised to mating surfaces. Any damage caused should be correctly reinstated			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		4.8	ensure permanently fixed panels are replaced without incurring damage to the vehicle systems			
		4.9	ensure all components and panels are stored safely and in the correct location			
		4.10	work to the specified timescale for the activity			
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 30: Competency in Carrying Out Minor Repairs to Motor Vehicle Exterior Body Panels

Unit reference number: K/601/5380

QCF level: 2

Credit value: 10

Guided learning hours: 90

Unit summary

This unit will enable the learner to become competent in carrying out minor repairs to motor vehicle exterior body panels using a variety of techniques. It also covers the evaluation of the repair once completed.

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 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 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 repairs listed below:
 - body filling and finishing of flat areas of panel
 - repairs to dents that are over 70mm in diameter in exterior body panels, including curvature panels and swage lines
 - repairs to scuffs on plastic components

5. produce evidence of **covering 5** of the techniques and processes* listed below in carrying out the repairs listed above:
 - hot shrinking (using carbon rod)
 - panel pulling
 - metal finishing
 - indirect hammering
 - direct hammering
 - body filing
 - application of body filler/stopper
6. be observed by your assessor **on at least 2** 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 techniques and processes.

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out minor repairs to motor vehicle exterior body panels	1.1	use suitable personal protective equipment and vehicle coverings throughout all repair 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 fitting activities including: a. manufacturers' instructions b. vehicle technical data c. removal and fitting procedures d. legal requirements			
		2.2	use technical information to support motor vehicle removal and fitting activities			
3	Be able to use appropriate tools and equipment	3.1	select the appropriate tools and equipment necessary for carrying out repairs to motor vehicle exterior and body panels			
		3.2	check 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 out repairs to motor vehicle exterior body panels			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to carry out minor repairs to motor vehicle exterior body panels	4.1	identify prior to working on the vehicle the component materials involved that will be worked on during the repair			
		4.2	carry out minor repairs to motor vehicle exterior body panels so they are restored to their original contour using hand tools and filling materials effectively			
		4.3	carry out minor repairs to motor vehicle exterior body panels adhering to specifications and tolerances for the vehicle and following: a. the manufacturer's approved removal and fitting methods b. recognised researched removal and fitting methods c. health and safety requirements d. workplace procedures			
		4.4	replace any sealer, anti corrosion and sound deadening materials which were removed prior to the repair and conforming to the manufacturer's specification			
		4.5	ensure all plastic repairs regain the strength of the original part			
		4.6	ensure any damage is minimised to mating surfaces. Any damage caused should be correctly reinstated			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		4.7	ensure all completed repairs are finished to and agreed standard ready for the refinishing process			
		4.8	work to the specified timescale for the activity			
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: _____
(if sampled)

Date: _____

Unit 31: Competency in Motor Vehicle Body Metal Active Gas (MAG) Welding Techniques

Unit reference number: D/601/5392

QCF level: 2

Credit value: 9

Guided learning hours: 90

Unit summary

This unit will enable the learner to demonstrate competency in joining materials using Metal Active Gas (MAG) welding techniques. It also covers the evaluation of the completed welded component.

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 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 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 **all** of the different types of joints listed below **on at least 2 occasions** to join materials using MAGS welding.
 - lap plug
 - lap seam
 - butt joint
 - fillet joint
5. be observed by your assessor on completing all of the above welds, **2 of which can be simulated. All** of the observations must be carried out **in your normal workplace.**

Evidence from simulated activities is acceptable for this unit.

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out motor vehicle body MAG welding operations	1.1	use suitable personal protective equipment and vehicle coverings throughout all motor vehicle body MAG welding operations			
		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 body MAG welding operation activities including: a. vehicle technical data b. welding procedures c. legal requirements			
		2.2	use technical information to support motor vehicle body MAG welding operation activities			
3	Be able to use appropriate tools and equipment	3.1	select the appropriate tools and equipment necessary for carrying out motor vehicle body MAG welding operations			
		3.2	ensure all tools and equipment that are required are in a safe working condition			
		3.3	set up and use the appropriate tools and equipment in the way specified by manufacturers when carrying motor vehicle body MAG welding operations			
		3.4	clean and store PPE and equipment in the appropriate manner			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to carry out motor vehicle body MAG welding operations	4.1	prepare surface to ensure a good MAG weld is achieved			
		4.2	ensure alignment, mating and treatment of flanges to enable a suitable join to be achieved			
		4.3	conduct MAG weld operations including: a. lap plug b. lap seam c. butt joint d. fillet joint			
		4.4	conduct MAG weld operations following: a. manufacturer's processes, methods and procedures b. test procedures to provide test coupons on equivalent material in accordance with Industry Standards c. recognised researched repair methods			
		4.5	dress the weld area without reducing material thickness and protect the area to inhibit corrosion where applicable			
		4.6	recognise when the weld is not forming correctly and what action needs to be taken			
		4.7	inspect and assess quality of welds in accordance with Industry Standards and manufacturer's specification			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
5		4.8	avoid damaging other components, units, panels and surfaces on the vehicle and the surrounding work area. Any damage caused should be correctly reinstated			
		4.9	ensure no damage is incurred to other vehicle systems when MAG welding			
		4.10	work to the specified timescale for the activity			
	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 32: Competency in Motor Vehicle Body Resistance Spot Welding Operations

Unit reference number: T/601/5396

QCF level: 2

Credit value: 9

Guided learning hours: 90

Unit summary

This unit will enable the learner to demonstrate competency in joining materials correctly and effectively using resistance spot welding techniques and procedures. It also covers the evaluation of the completed welded component.

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 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 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 resistance spot welding when joining a vehicle body panel to a vehicle on at **least 3 separate occasions**
5. produce evidence of covering **all** the checks listed below to ensure the quality of the weld area:
 - weld pitch
 - indentation
 - heat zone
 - nugget size
 - peel and shear test
6. be observed by your assessor on at least **2 occasions in your normal workplace.**

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out motor vehicle body resistance spot welding operations	1.1	use suitable personal protective equipment and vehicle coverings throughout all motor vehicle body resistance spot welding operations			
		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 body resistance spot welding operation activities including: a. vehicle technical data b. welding procedures c. legal requirements			
3	Be able to use appropriate tools and equipment	2.2	use technical information to support motor vehicle body resistance spot welding operation activities			
		3.1	select the appropriate tools and equipment necessary for carrying out motor vehicle body resistance spot welding operations			
		3.2	ensure tools and equipment that are required are in a safe working condition			
		3.3	set up and use the correct tools and equipment in the way specified by manufacturers when carrying out motor vehicle body resistance spot welding operations			
		3.4	clean and store PPE and equipment in the appropriate manner			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to carry out motor vehicle body resistance spot welding operations	4.1	carry out surface preparation to ensure a good resistance spot weld is achieved			
		4.2	ensure alignment and mating and treatment of flanges to enable a suitable join to be achieved			
		4.3	produce resistance spot welding operations following: a. manufacturer's processes, methods and procedures b. test procedures and providing test coupons on equivalent material in accordance with Industry Standards c. recognised researched repair methods			
		4.4	dress and protect the area to inhibit corrosion where applicable			
		4.5	identify when the weld is not forming correctly and what action needs to be taken			
		4.6	inspect and assess all resistance spot weld quality in accordance with Industry Standards and manufacturers' specification			
		4.7	ensure the integrity of the weld and record the type of weld achieved on the appropriate paperwork			
		4.8	store and record all weld test pieces			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
5		4.9	avoid damaging other components, units, panels and surfaces on the vehicle and the surrounding work area. Any damage caused should be correctly reinstated			
		4.10	ensure no damage is incurred to other vehicle systems when resistance spot welding			
		4.11	work to the specified timescale for the activity			
	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 33: Competency in Removing and Fitting Motor Mechanical, Electrical and TRIM (MET) Components to Vehicles

Unit reference number: F/601/5370

QCF level: 2

Credit value: 3

Guided learning hours: 30

Unit summary

This unit will enable the learner to demonstrate competency in order to remove and fit a range of mechanical, electrical and trim (MET) components to vehicles.

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 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 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 replacing **6 of the 7** units or components from the list below on at **least 2 occasions**:
 - bumpers
 - headlamp units
 - road wheels
 - batteries
 - bonnet fittings
 - interior trim components
 - exterior trim components
5. be observed by your assessor **on at least 2 occasions**, each observation covering the removal and replacement of different units.

Learning outcomes 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 MET components to vehicles	1.1	use suitable personal protective equipment and use suitable vehicle coverings throughout all MET 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 MET components			
		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 MET components			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to carry out removal and fitting of MET components	4.1	carry out removal and fitting of MET components adhering to the correct specifications and tolerances for the vehicle and following: a. the manufacturer's approved removal and fitting methods b. recognised researched removal and fitting methods c. health and safety requirements d. workplace procedures			
		4.2	ensure that the removal and fitting of MET components conforms to the vehicle operating specification and any legal requirements			
		4.3	ensure no damage occurs to other components when removal and fitting of MET components			
		4.4	ensure all components and panels are stored safely and in the correct location			
		4.5	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: _____
(if sampled)

Date: _____

Unit 34: Competency in Motor Vehicle Body Metal Inert Gas (MIG) Brazing Operations

Unit reference number: F/601/5398

QCF level: 3

Credit value: 9

Guided learning hours: 90

Unit summary

This unit will help the learner to develop the skills required to join materials correctly and effectively using Metal Inert Gas (MIG) brazing techniques and procedures. It also covers the evaluation of the completed brazed component.

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 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 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 **all** of the different types of joints listed below **on at least 2 occasions** to join materials using MIG brazing:
 - lap slot
 - lap seam
 - butt joint
5. be observed by your assessor on **at least 2 occasions**, each observation covering a different brazed joint. **Both** of the observations must be carried out **in your normal workplace**.

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out motor vehicle body MIG brazing operations	1.1	use suitable personal protective equipment and vehicle coverings throughout all motor vehicle body MIG brazing operations			
		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 body MIG brazing operations activities including: a. vehicle technical data b. welding procedures c. legal requirements			
		2.2	use technical information to support motor vehicle body MIG brazing operations activities			
3	Be able to use appropriate tools and equipment	3.1	select the appropriate tools and equipment necessary for carrying out motor vehicle body MIG brazing operations			
		3.2	ensure all tools and equipment that are required are in a safe working condition			
		3.3	set up and use the correct tools and equipment in the way specified by manufacturers when carrying out motor vehicle body MIG brazing operations			
		3.4	clean and store PPE and equipment in the appropriate manner			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to carry out motor vehicle body MIG brazing welding operations	4.1	prepare surface to ensure a good MIG brazing operation is achieved			
		4.2	ensure alignment, and mating treatment of flanges to enable a suitable join to be achieved			
		4.3	carry out MIG brazing operations including: a. lap slot b. lap seam c. butt joint			
		4.4	carry out MIG brazing operations following: a. manufacturer's processes, methods and procedures b. test procedures and providing test coupons on equivalent material in accordance with Industry Standards c. recognised researched repair methods			
		4.5	dress the weld area without reducing material thickness and protect the area to inhibit corrosion where applicable			
		4.6	recognise when the weld is not forming correctly and what action needs to be taken			
		4.7	inspect and assess all MIG brazing operations for quality in accordance with Industry Standards and manufacturer's specification			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		4.8	ensure the integrity of the weld and record the type of weld achieved on the appropriate paperwork			
		4.9	avoid damaging other components, units, panels and surfaces on the vehicle and the surrounding work area. Any damage caused should be correctly reinstated			
		4.10	ensure no damage is incurred to other vehicle systems when carrying out MIG brazing operations			
		4.11	work to the specified timescale for the activity			
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 35: Competency in Motor Vehicle Body Mechanical Fastening Operations

Unit reference number: R/601/5406

QCF level: 3

Credit value: 4

Guided learning hours: 40

Unit summary

This unit will enable the learner to demonstrate competency in joining materials using mechanical fastening techniques and procedures. It also covers the evaluation of the completed mechanical joint.

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 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 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 of the 5*** different types of joints listed below **on at least 2 occasions:**
 - riveting
 - clinching
 - bolts and fasteners
 - screwing
 - hybrid joining (combinations of techniques listed that may also include adhesives)

5. be observed by your assessor on **at least 2 occasions**, each observation covering a different mechanical fastening joint. **Both** of the observations must be carried out **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 of the mechanical fastening techniques.

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out motor vehicle body mechanical fastening operations	1.1	use suitable personal protective equipment and vehicle coverings throughout all motor vehicle body mechanical fastening operations			
		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 body mechanical fastening operations activities including: a. vehicle technical data b. joining procedures c. legal requirements			
3	Be able to use appropriate tools and equipment	2.2	use technical information to support motor vehicle body mechanical fastening operations activities			
		3.1	select the appropriate tools and equipment necessary for carrying out motor vehicle body mechanical fastening operations			
		3.2	ensure all tools and equipment that are required are in a safe working condition			
		3.3	set up and use the correct tools and equipment in the way specified by manufacturers when carrying out motor vehicle body mechanical fastening operations			
		3.4	clean and store PPE and equipment in the appropriate manner			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to carry out motor vehicle body mechanical fastening operations	4.1	prepare surface to ensure a good mechanical fastening is achieved			
		4.2	ensure alignment and mating and treatment of flanges to enable a suitable join to be achieved			
		4.3	carry out a range of mechanical fastening			
		4.4	carry out mechanical fastening operations following: a. manufacturer's processes, methods and procedures b. recognised researched repair methods			
		4.5	dress and protect the joint area to inhibit corrosion where applicable			
		4.6	recognise when the joint is not forming correctly and what action needs to be taken			
		4.7	ensure integrity of the joint and record the type of joint achieved on the appropriate paperwork			
		4.8	avoid damaging other components, units, panels and surfaces on the vehicle and the surrounding work area. Any damage caused should be correctly reinstated			
		4.9	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 36: Competency in a Motor Vehicle Body Adhesive Bonding Operations

Unit reference number: Y/601/5407

QCF level: 3

Credit value: 4

Guided learning hours: 40

Unit summary

This unit will enable the learner to demonstrate competency in joining materials using adhesive bonding techniques and procedures. It also covers the evaluation of the completed joint.

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 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 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 adhesive bonding operations in joining a vehicle body panel to a vehicle **on at least 3 separate occasions**
5. be observed by your assessor on **at least 2 occasions in your normal workplace**

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out motor vehicle body adhesive bonding operations	1.1	use suitable personal protective equipment and vehicle coverings throughout all motor vehicle body adhesive bonding operations			
		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 body adhesive bonding operation activities including: a. vehicle technical data b. joining procedures c. legal requirements			
		2.2	use technical information to support motor vehicle body adhesive bonding operation activities			
3	Be able to use appropriate tools and equipment	3.1	select the appropriate tools and equipment necessary for carrying out motor vehicle body adhesive bonding operations			
		3.2	ensure tools and equipment that are required are in a safe working condition			
		3.3	set up and use the correct tools and equipment in the way specified by manufacturers when carrying out motor vehicle body adhesive bonding operations			
		3.4	clean and store PPE and equipment in the appropriate manner			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to carry out motor vehicle body adhesive bonding operations	4.1	prepare surface to ensure a good adhesive bond is achieved			
		4.2	ensure alignment and mating and treatment of flanges to enable a suitable join to be achieved			
		4.3	carry out adhesive bonding operations following: a. manufacturer's processes, methods and procedures b. test procedures and providing test coupons on equivalent material c. recognised researched repair methods			
		4.4	dress and protect the area to inhibit corrosion where applicable			
		4.5	identify when the joint is not forming correctly and what action needs to be taken			
		4.6	avoid damaging other components, units, panels and surfaces on the vehicle and the surrounding work area. Any damage caused should be correctly reinstated			
		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: _____
(if sampled)

Date: _____

Unit 37: Skills in Removing and Replacing Motor Vehicle Body Panels

Unit reference number: H/601/5460

QCF level: 3

Credit value: 5

Guided learning hours: 45

Unit summary

This unit enables the learner to develop the skills required to carry out removal and replacement/repair of exterior and sub-structure body panels and panel sections where these are damaged. It also covers the evaluation of the components when fitted.

Assessment requirements/evidence requirements:

This unit must adhere to the IMI Skills Unit Assessment Requirements developed for the unit 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 4** types of vehicle body panels listed below, which covers the learning outcomes:
 - non permanently fixed body panels
 - welded exterior panels
 - a welded sub structure panel (eg rear quarter panel, rear panel, roof, chassis legs, inner wheel housing, boot floors, complete sill, A post, B post, C post, D post and cross members)
 - bonded panels (eg any panel that is fixed by adhesive bonding as part of the original manufacturer's process).

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out removal and replacement of vehicle body 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 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 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 vehicle body 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 out removal and fitting of vehicle body panels			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to carry out removal and fitting of vehicle body panels	4.1	identify prior to working on the vehicle the component materials that will be worked on during the repair or replacement			
		4.2	carry out the removal and fitting of non-permanently fixed, welded and bonded vehicle body panels			
		4.3	carry out removal and fitting of vehicle body panels to specification and tolerance following: a. the manufacturer's approved removal and fitting methods b. recognised researched removal and fitting methods c. health and safety requirements d. workplace procedures			
		4.4	ensure all test weld pieces conform to the current Industry Standard for appearance and penetration			
		4.5	use and apply sealants and anti corrosion materials to the manufacturers' specification			
		4.6	ensure that replacement panels conform to the vehicle specifications for dimension, material, quality of finish and functional capability			
		4.7	ensure the components are realigned to the manufacturer's tolerance			
		4.8	ensure damage to mating surfaces is minimised and any additional damage caused correctly reinstated			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
5		4.9	ensure panels are replaced without causing damage to the vehicle systems			
		4.10	ensure all components and panels are stores safely and in the correct location			
	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 38: Knowledge of Motor Vehicle Body Panel Major Repairs

Unit reference number: T/601/5429

QCF level: 3

Credit value: 5

Guided learning hours: 45

Unit summary

This unit enables the learner to develop an understanding of carrying out repairs to motor vehicle body panels using a variety of 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:

Selection and use of tools and equipment

- a the principle governing the selection and use of hand tools for metal finishing and plastic repairs
- b the factors governing the selection and use of panel beating and hydraulic reforming equipment, including specialist pulling systems
- c how to prepare, test, use and maintain the tools and equipment required to repair vehicle body panels
- d how to adapt hydraulic push equipment to perform pulling operations

Selection and use of materials

- a the types and selection of filling materials, their preparation and application
- b the properties, types, grades and use of abrasives used in vehicle body panel repair process
- c the properties and safe use of types of filling materials used to repair panels including
 - i. plastic fillers
 - ii. body solder
- d how to mix and apply plastic fillers

Repairing vehicle bodies

- a how to prepare the vehicle to avoid contamination
- b how to assess the extent of damage, including corrosion damage
- c how unitary vehicle bodies and cabs are constructed
- d the principles of resistance spot welding, gas shielded arc plug welding and gas shielded arc brazing
- e how body panels and component damage can affect other panels and the operation of vehicle systems
- f the factors determining the use of specific preparation and repair methods
- g the repair and welding implications of working with:
 - i. high strength steels (HSS)
 - ii. low carbon steels (LCS)
 - iii. aluminium alloys
 - iv. galvanized coatings
 - v. Boron steels.
 - i. TRIP
 - ii. TWIP
 - iii. laminated
- h the consequences of using inappropriate repair methods
- i how heat can be used to assist reforming
- j how heating can affect the properties of steels
- k the techniques for identifying the type of plastics used for manufactured components
- l the procedures for reinstating anti-corrosion, sealant and sound deadening materials.
- m the causes and rectification and distortion resulting from welding
- n the manufacturers approved methods of working for the preparation and repair of vehicle body panels
- o the specification of panel shapes, dimensions and tolerances for the vehicle worked on
- p the type of quality control checks that can be used to ensure the correct contour and standard of finish
- q how to interpret and use sources of information relevant to the repair of vehicle body panels and components
- r how to prepare damaged areas to facilitate repairs
- s how to repair corrosion damaged panels
- t how to remove protective materials

- u how to repair and reinstate vehicle body panel contours and components using:
 - i. body filling operations
 - ii. metal finishing
 - iii. plastic filling
 - iv. panel beating
 - v. panel shrinking
 - vi. hydraulic reforming
 - vii. specialist dent removal tools
 - viii. spot welding
 - ix. gas shielded arc welding
 - x. gas shielded arc brazing
- v the techniques of reshaping damaged vehicle body panels using hand and specialist tools
- w how to check the accuracy of reinstated vehicle body panel shapes
- x how to finish repairs to a suitable condition for handing on to the painting stage
- y how to work safely avoiding damage to the vehicle and its systems

Repairs are:

- a correction of severely distorted panels
- b assessing panel damage
- c splits on metal panels, using relevant joining techniques
- d fractures on plastic panels

Vehicle panels are:

- a non-permanently fixed exterior panels
- b permanently fixed exterior panels
- c sub-structure components
- d bonded panels

TRIP

- a TWIP
- b Laminated

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand the principles of selection and use of appropriate tools and equipment in major repairs to motor vehicle body panels	1.1	identify tools used in the repair of metal finishing and plastic repairs			
		1.2	identify tools used in hydraulic reforming equipment including specialist pulling systems			
		1.3	explain how to prepare, test, use and maintain the hand and power tools required to repair vehicle body panels			
		1.4	explain how to adapt hydraulic push equipment to perform pulling operations			
2	Understand material types and properties used in major repairs to motor vehicle body panels	2.1	identify and describe the properties and different types of materials involved in the construction of the vehicle in the areas that will be worked on during repair			
		2.2	explain the types and selection of filling materials, their preparation and application			
		2.3	identify the properties and safe use of types of filling materials used to repair panels			
		2.4	explain how to mix and apply plastic fillers			
		2.5	identify and explain the different types and grades of abrasive paper and their use			
		2.6	explain the principles of chassis frame and monocoque vehicle construction			
		2.7	describe the techniques for identifying the type of plastic used for manufactured components			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
3	Understand how to carry out major repairs to motor vehicle body panels	3.1	explain how to assess the extent of damage, including corrosion damage			
		3.2	explain how body panel and component damage can affect other panels and the operation of vehicle systems			
		3.3	identify the factors determining the use of specific preparation and repair methods			
		3.4	explain the implications of working and joining mild, high, ultra high strength steels, aluminium alloys and galvanised coatings			
		3.5	explain the principles associated with hot and cold shrinking			
		3.6	explain how heat can assist in reforming panels but also affect the properties of the steel			
		3.7	explain the consequences of using inappropriate repair methods			
		3.8	identify the causes and rectification of distortion resulting from welding			
		3.9	explain how to prepare the vehicle to avoid contamination			
		3.10	describe how to prepare damaged areas to facilitate repairs			
		3.11	describe how to prepare the panel surface prior to filling			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
	3.12	explain how to repair corrosion damage				
	3.13	explain how to repair and reinstate vehicle body panel contours and components				
	3.14	describe the methods used to check for panel contours for accuracy after reshaping				
	3.15	explain the procedures for reinstating anti corrosion, sealant and sound deadening materials				
	3.16	describe how to finish repairs to a suitable agreed condition to enable the next stage of repairs to proceed				
	3.17	identify the specification for panel shapes, dimensions and tolerances for the vehicles worked upon				
	3.18	identify the types of quality control checks that can be used to ensure the correct contour and standard of finish				
	3.19	describe the aspects of pedestrian safety in relation to the reparability of vehicles				

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

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

Unit 39: Skills in Motor Vehicle Body Panel Major Repairs

Unit reference number: M/601/5462

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 major repairs to motor vehicle body panels using a variety of techniques. It also covers the evaluation of the repair once completed.

Assessment requirements/evidence requirements:

This unit must adhere to the IMI Skills Unit Assessment Requirements developed for the unit 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. be observed by an assessor repairing **2 of the 4** of the following repairs listed below, which covers the learning outcomes:
 - severely distorted panels
 - difficult to access panel damage
 - splits on metal panels, using relevant joining techniques
 - fractures on plastic repairs

5. produce evidence of covering **5 of the techniques and processes** listed below in carrying out the repairs listed above:
- panel beating
 - panel shrinkage
 - hydraulic forming
 - resistance spot welding (dent pulling kits)
 - MIG/MAG welding
 - MIG brazing
 - body filling operations
 - metal finishing
 - plastic repair
 - specialist dent removal.

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out major repairs to motor vehicle body panels	1.1	use suitable personal protective equipment and vehicle coverings throughout all repair 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 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 fitting activities			
3	Be able to use appropriate tools and equipment	3.1	select the appropriate tools and equipment necessary for carrying out major repairs to motor vehicle body panels			
		3.2	ensure that equipment has been calibrated to meet manufacturers' and legal requirements			
		3.3	use the tools and equipment in the way specified by manufacturers when carrying out major repairs to motor vehicle body panels			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to carry out major repairs to motor vehicle body panels	4.1	identify prior to working on the vehicle the component materials involved that will be worked on during the repair			
		4.2	ensure the methods of preparation leave sub-structure body panels clean, free from materials likely to hinder repair and free of surface finishes when required			
		4.3	prepare and reinstate vehicle body panels using the equipment recommended and following: a. the manufacturer's approved removal and fitting methods b. recognised researched removal and fitting methods c. health and safety requirements			
		4.4	carry out major repairs to motor vehicle body panels so they are restored to their original contour and dimensions using hand/power tools and filling materials effectively			
		4.5	replace any sealer, anti corrosion and sound deadening materials which were removed prior to the repair and conforming to the manufacturer's specification			
		4.6	ensure all test weld pieces conform to the current Industry Standard for appearance and penetration			
		4.7	ensure any damage is minimised to mating surfaces. Any damage caused should be reinstated			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		4.8	ensure all completed repairs are finished to and agreed standard ready for the refinishing 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: _____
(if sampled)

Date: _____

Unit 40: Knowledge of Identifying and Rectifying Motor Vehicle Body Misalignment

Unit reference number: K/601/5430

QCF level: 3

Credit value: 6

Guided learning hours: 45

Unit summary

This unit enables the learner to develop an understanding of how to identify and rectify motor vehicle body misalignment.

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:

Selection and use of tools and equipment

- a the constraints the type of vehicle places on the choice of repair equipment
- b how to prepare, test and adjust all equipment required for misalignment rectification
- c how to install vehicles on misalignment rectification equipment, including the use of lifting equipment
- d how to use rectification equipment including:
 - i. hand and power tools
 - ii. safety chains
 - iii. hydraulic push and pull
 - iv. body jigs (bracket system and/or measuring system)
- e the correct use of clamps, restraints and supports to minimise additional damage during repair

Realignment of vehicles

- a the principle of chassis frame and monocoque vehicle construction
- b the principle of damage assessment and identification of direct and indirect damage
- c the function of the pulling system and the criteria for selection:
 - i. vector
 - ii. pull arm
 - iii. tower system
 - iv. floor mounted
 - v. bench mounted
- d how to use geometric principles of alignment in the absence of data sheets
- e the properties of vehicle body construction materials
- f how to find, interpret and use sources of information relevant to the rectification of vehicle misalignment
- g how to establish the extent of misalignment using measuring equipment and/or measuring system
- h how to realign vehicles to the manufacturers' original specification
- i how to work safely avoiding damage to vehicles, personal injury and injury to colleagues
- j the importance of following manufacturers' instructions and using their approved methods of working (including use of materials and equipment)
- k the consequences of failing to follow manufacturers' instructions and data sheets

Rectification activities are:

- a visual examination
- b setting up
- c measurement in conjunction with alignment measuring equipment
- d realignment using pulling equipment

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand the principles of selection and use of appropriate tools and equipment in identifying and rectifying motor vehicle body misalignment	1.1	identify the constraints the type of vehicle construction places on the choice of repair equipment			
		1.2	identify the tools and equipment used in the repair of vehicle body misalignment			
		1.3	explain how to prepare, test and adjust the equipment required for misalignment rectification			
		1.4	explain how to install vehicles on misalignment rectification equipment, including the use of lifting equipment			
		1.5	explain how to use rectification equipment including hand and power tools, safety chains, hydraulic push and pull and body alignment jigs (bracket system and or measuring system)			
		1.6	explain how to use clamps, restraints and supports to minimise additional damage during the repair			
2	Understand how to identify and rectify motor vehicle body misalignment	2.1	describe the properties of vehicle body construction materials			
		2.2	compare the materials used in the construction of vehicle bodies			
		2.3	compare chassis frame and monocoque vehicle construction			
		2.4	explain the principles of damage assessment and identification of direct and indirect damage			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
	2.5	describe the function of pulling systems and the criteria used for their selection				
	2.6	identify the geometric principles of alignment in the absence of a data sheet				
	2.7	use sources of information relevant to the rectification of vehicle bodies				
	2.8	identify the extent of the damage or misalignment using measuring equipment and or a measuring system				
	2.9	explain how to realign vehicles to the manufacturer's original specification				
	2.10	explain the importance of following manufacturers'/research repair methods, instructions and data sheets				
	2.11	state the possible consequences of failing to follow the manufacturer's repair methods, instructions and data sheets				

Learner name: _____ Date: _____
 Learner signature: _____ Date: _____
 Assessor signature: _____ Date: _____
 Internal verifier signature: _____ Date: _____
 (if sampled)

Unit 41: Skills in Identifying and Rectifying Motor Vehicle Body Misalignment

Unit reference number: A/601/5464

QCF level: 3

Credit value: 5

Guided learning hours: 45

Unit summary

This unit enables the learner to develop the skills required to carry out identification and rectification of motor vehicle body misalignment. It also covers the evaluation of the repair once completed.

Assessment requirements/evidence requirements:

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 in the IMI Assessment Strategy
4. produce evidence of rectifying vehicle body misalignment* covering **all of the rectification activities** listed below, which covers the learning outcomes
 - visual examination
 - setting up
 - measurement in conjunction with alignment measuring equipment
 - realignment using pulling equipment.

*The vehicle must have sustained misalignment of at least **2** critical measuring points.

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out identification and rectification to motor vehicle body misalignment	1.1	use suitable personal protective equipment and vehicle coverings throughout all repair 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 the identification and rectification of motor vehicle body misalignment including: a. vehicle technical data b. removal and fitting procedures c. equipment data specific to the vehicle d. legal requirements			
		2.2	use technical information to support the identification and rectification of motor vehicle body misalignment			
3	Be able to use appropriate tools and equipment	3.1	select the appropriate tools and equipment necessary for carrying out identification and rectification to motor vehicle body misalignment			
		3.2	ensure that equipment has been calibrated to meet manufacturers' and legal requirements			
		3.3	use the appropriate tools and equipment in the way specified by manufacturers when carrying out identification and rectification to motor vehicle body misalignment			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to carry out identification and rectification to motor vehicle body misalignment	4.1	load and secure the vehicle to the body jig correctly following: a. the manufacturer's approved instructions b. recognised researched methods c. health and safety requirements			
		4.2	establish the extent of the vehicle misalignment accurately and completely			
		4.3	align and anchor areas adjacent to the damage in a way that prevents further damage to the vehicle			
		4.4	attach the pulling system securely to the damaged components and operate it to achieve the realignment required			
		4.5	operate the pulling system in a way that minimises the risk of injury to yourself and others			
		4.6	ensure all completed rectification activities restore the vehicle to the correct specification and tolerances			

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: _____
(if sampled)

Date: _____

Unit 42: Knowledge of How to Make Learning Possible through Demonstrations and Instruction

Unit reference number: T/601/6242

QCF level: 3

Credit value: 5

Guided learning hours: 45

Unit summary

This unit enables the learner to develop an understanding of how to carry out demonstrations and instruction which will help the learner to learn. It includes demonstrating equipment, showing skills, giving instruction, deciding when to use demonstration or instruction, potential of technology based learning, checking on learners' progress and giving feedback.

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:

Separate areas of demonstration which encourage learning. To include:

- a demonstration is particularly applicable to learning manual skills
- b learning to do something usually involves:
 - i. purpose – the aim or objective
 - ii. procedure – the most effective way of completing the task
 - iii. practice – all skills require practice to improve
- c practical tasks are more quickly learnt through demonstration
- d emphasis is required to body movements when demonstrating
- e the demonstrator should encourage learners to ask questions
- f emphasis should be placed upon key points whilst demonstrating
- g any demonstration should ensure that all safety aspects are covered

Types of learning which are best achieved and supported through demonstrations. To include:

- a types of learning:
 - i. psychomotor – measurement of manual skill performance
 - ii. cognitive – learning involving thought processes
 - iii. affective – demonstration of feelings, emotions or attitudes
- b demonstration – involves learning to do something (Psychomotor Domain)
- c combination of instruction and practical demonstrations are very effective means of learning practical skills

How to structure demonstration and instruction sessions. To include:

- a before the demonstration and/or instruction ensure that the following good practice is recognised:
 - i. identify key points
 - ii. relate theoretical underpinning knowledge to key points
 - iii. rehearse to ensure that all equipment is working
 - iv. ensure all students can see even small equipment and processes
 - v. time the demonstration
 - vi. consider how to make students participate
 - vii. consider how to emphasise safe working practices
- b during the demonstration and/or instruction good practice is to:
 - i. give a clear introduction
 - ii. identify any tools/equipment
 - iii. determine the current audience level of knowledge
 - iv. complete the demonstration correctly (do not show how not to do it)
 - v. stress key points and show links between them
 - vi. monitor safety aspects
 - vii. check learner understanding
- c after the demonstration(if possible)
 - i. enable the audience to practice the techniques
 - ii. provide feedback on their performance

How to identify individual learning needs

- a diagnose the learning needs of your audience to include:
 - i. what competencies they already have
 - ii. what experience they have of the subject area
 - iii. what competencies they need to achieve
 - iv. what demonstration techniques are best suited to their needs
 - v. how you will assess their needs have been met

What factors are likely to prevent learning. To include:

- a language barriers
- b physical barriers
- c specialist knowledge
- d pace of learning
- e method of delivery
- f environmental factors
- g teaching styles
- h dyslexia

How to check learner understanding and progress

- a questionnaires
- b verbal questioning
- c observation
- d assessment
- e role play
- f projects/assignments
- g multi-choice questions
- h simulation
- i tests

How to organise information and prepare materials

- a identify the course aim
- b identify the subject aim
- c identify the lesson aim
- d complete a lesson plan — plan the teaching
- e identify a series of 'cues' to be used during the lesson
- f logically organise the information
- g use suitable resources and equipment to maximise learning opportunities
- h assess the learner's progress and understanding

Instructional techniques

- a. types of instructional techniques to include:
 - i. lectures
 - ii. handouts
 - iii. team teaching
 - iv. peer teaching
 - v. discussion – individual, group and peer
 - vi. question and answer
 - vii. multimedia
 - viii. seminars
 - ix. case studies
 - x. project/assignments

Environmental factors that affect learning

- a environmental factors that should be considered before demonstration/instruction to include:
 - i. loud noises
 - ii. bright colours
 - iii. bright lights
 - iv. strong smells
 - v. atmosphere
 - vi. temperature
 - vii. classroom seating
 - viii. classroom layout
 - ix. bright lights

Health and safety factors that affect learning

- a health and safety factors that should be considered before demonstration/instruction to include:
 - i. assessment of risk and hazards
 - ii. condition of electrical/electronic equipment
 - iii. position of cables and wires
 - iv. safety of equipment used in demonstration/instruction
 - v. condition of classroom equipment/furniture/structure
 - vi. suitable protective clothing/equipment

Analysis of demonstration/instruction

- a analysis of demonstration/instruction to include:
 - i. feedback from students
 - ii. feedback from colleagues
 - iii. organisational quality assessment
 - iv. feedback from external organisations
 - v. awarding body requirements

Developments in learning. To include:

- a multimedia-based materials
- b web-based materials
- c interactive materials

How to choose and prepare appropriate materials. To include:

- a putting information in order
- b deciding whether the language used is appropriate
- c type of material ie paper and technology based etc

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand the nature and role of demonstrations and instruction	1.1	classify the separate areas of demonstrations which encourage learning			
		1.2	identify which types of learning are best achieved and supported through demonstrations			
		1.3	explain how to identify and use different learning opportunities			
		1.4	explain how to structure demonstrations and instruction sessions			
		1.5	explain how to choose from a range of demonstration techniques			
2	Understand the principles and concepts of demonstration and instruction	2.1	describe how to put learners at ease and encourage them to take part			
		2.2	justify the choice between demonstration and instruction as a learning method			
		2.3	explain how to identify individual learning needs			
		2.4	clarify which factors are likely to prevent learning and how to overcome them			
		2.5	explain how to check learners' understanding and progress			
		2.6	explain how to choose and prepare appropriate materials			
		2.7	explain the separate areas of instructional techniques which encourage learning			
		2.8	describe which types of learning are best achieved and supported through instruction			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
3	Understand the external factors influencing human resource development	3.1	explain how to make sure everybody acts in line with health, safety and environmental protection, legislation and best practice			
		3.2	analyse developments in technology based learning and new ways of delivery			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

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

Unit 43: Skills in how to Make Learning Possible through Demonstrations and Instruction

Unit reference number: Y/601/6282

QCF level: 3

Credit value: 4

Guided learning hours: 45

Unit summary

This unit will help the learner to develop the skills required to carry out demonstrations and instruction which will help the learner to learn. It includes demonstrating equipment, showing skills, giving instruction, deciding when to use demonstration or instruction, potential of technology based learning, checking on learners' progress and giving feedback.

Assessment requirements/evidence requirements:

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 provide **1 record** of an activity which has been a combination of demonstration and instruction
- 5 provide records of an **observation**, which covers **a combination of demonstration and instruction**

It is expected that the **records** must include evidence to show how you:

- decided on the sequence of the demonstration
- ensured that the demonstration was accurate and realistic
- identified which learning outcomes were achieved
- ensured a safe environment for the demonstration and allowed all learners to see the demonstration clearly

In preparing the record you should consider:

- which types of learning are best achieved and supported through demonstrations
- how to choose between instruction and demonstration as learning methods
- how to identify individual learning needs
- which factors are likely to prevent learning and how to overcome them
- how to choose and prepare appropriate materials, including technology-based materials.
- which types of learning are best achieved through instruction
- how to make sure everybody acts in line with health, safety and environmental protection legislation and best practice
- how to analyse developments in learning and new ways of delivery, including technology-based learning

It is also expected that evidence from your observations **will show** how you:

- structured the demonstration so that the learner got the most out of it
- encouraged learners to ask questions and get explanations at appropriate stages in the demonstration
- gave learners the opportunities to practice the skill being demonstrated
- gave learners positive feedback
- reinforced learning by repeating demonstration
- responded to the needs of learners during the demonstration
- reduced distractions and disruptions as much as possible
- matched instruction to the needs of learners
- ensured that the manner, level and speed of the instruction encourages learners to take part
- regularly check that learners understand and adapt instruction as appropriate
- gave learners positive feedback on the learning experience and the outcome achieved
- identified anything that prevented learning and reviewed this with the learner

Evidence from **real** or **simulated** activities and **role play** is acceptable for this unit.

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to demonstrate skills and methods to learners	1.1	perform demonstrations based on an analysis of the skills needed and the order in which they must be learned			
		1.2	perform demonstrations that are accurate and realistic			
		1.3	perform structured demonstrations so that the learner can get the most out of it			
		1.4	perform demonstrations whilst encouraging learners to ask questions and get explanation at appropriate stages in the demonstration			
		1.5	provide positive feedback to learners whilst they are being given the opportunity to practise the skills that have been demonstrated			
		1.6	perform additional demonstrations of skills being taught to reinforce learning			
		1.7	perform demonstrations in a safe environment which also allows learners to see clearly			
		1.8	respond to the needs of the learners during demonstrations			
		1.9	reduce distractions and disruptions as much as possible			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
2	Be able to instruct learners	2.1	implement instruction which is matched to the needs of learners			
		2.2	use identified learning outcomes which can be achieved through instruction			
		2.3	perform instruction, ensuring that the manner, level and speed of the instruction encourages learners to take part			
		2.4	perform instruction whilst regularly checking that the learners understand and adapt instruction as appropriate			
		2.5	give learners positive feedback on the learning experience and the outcomes achieved			
		2.6	carry out a review with the learners to identify anything that prevented learning and adapt instruction as appropriate			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

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

Unit 44: Knowledge of how to Identify and Agree Motor Vehicle Customer Service Needs

Unit reference number: R/601/6247

QCF level: 3

Credit value: 5

Guided learning hours: 45

Unit summary

This unit enables the learner to develop an understanding of how to gain: information from customers on their perceived needs; give advice and information and agree a course of action; contract for the agreed work and complete all necessary records and instructions.

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:

Organisational Requirements

- a explain the organisation's terms and conditions applicable to the acceptance of customer vehicles
- b explain the content and limitations of vehicle and component warranties for the vehicles dealt with by your organisation
- c detail what, if any, limits there are to the authority for accepting vehicles
- d detail why it is important to keep customers advised of progress and how this is achieved within the organisation
- e detail the organisation's procedures for the completion and processing of documentation and records, including payment methods and obtaining customer signatures as applicable

Principles of Customer Communication and Care

- a first impressions
- b listening skills – 80:20 ratio
- c eye contact and smiling
- d showing interest and concern

- e questioning techniques and customer qualification
- f giving clear non-technical explanations
- g confirming understanding (statement/question technique, reflective summary)
- h written communication – purpose, content, presentation and style
- i providing a high quality service – fulfilling (ideally exceeding) customer expectations within agreed time frames
- j obtaining customer feedback and corrective actions when dissatisfaction expressed
- k dealing with complaints

Company Products and Services

- a service standards
 - i. national
 - i. manufacturer
 - ii. organisational
- b the range and type of services offered by the organisation
 - i. diagnostic
 - ii. servicing
 - iii. repair
 - iv. warranty
 - v. mot testing
 - vi. fitment of accessories/enhancements
 - vii. internal
- c the courses of action available to resolve customer problems
 - i. the extent and nature of the work to be undertaken
 - ii. the terms and conditions of acceptance
 - iii. the cost
 - iv. the timescale
 - v. required payment methods
- d the effect of resource availability upon the receipt of customer vehicles and the completion of work
 - i. levels and availability of equipment
 - ii. levels and availability of technicians
 - iii. workshop loading systems
- e how to access costing and work completion time information
 - i. manuals
 - ii. computer based

Vehicle Information Systems, servicing and repair requirements

- a accessing technical data including diagnostics
- b servicing to manufacturer requirements/standards
- c repair/operating procedures
- d MOT standards/requirements
- e quality controls – interim and final
- f requirements for cleanliness of vehicle on return to customer
- g handover procedures

Consumer legislation. To include:

- a consumer protection
- b sale of goods
- c data protection
- d product liability
- e health and safety
- f discrimination

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand legislative and organisational requirements and procedures	1.1	describe the fundamental legal requirements of current consumer legislation and the consequences of their own actions in respect of this legislation			
		1.2	describe the content and limitations of company and product warranties for the vehicles dealt with by their company			
		1.3	explain the limits of their own authority for accepting vehicles			
		1.4	explain the importance of keeping customers informed of progress			
		1.5	describe their workplace requirements for the completion of records			
		1.6	explain how to complete and process all the necessary documentation			
2	Understand how to communicate and care for customers	2.1	explain how to communicate effectively with customers			
		2.2	describe how to adapt your language when explaining technical matters to non-technical customers			
		2.3	explain how to use effective questioning techniques			
		2.4	describe how to care for customers and achieve customer satisfaction			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
3	Understand company products and services	3.1	describe the range of options available to resolve vehicle problems			
		3.2	describe the range and type of services offered by their company			
		3.3	explain the effect of resource availability upon the receipt of customer vehicles and the completion work			
		3.4	explain how to access costing and work completion time information			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

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

Unit 45: Skills to Identify and Agree Motor Vehicle Customer Service Needs

Unit reference number: M/601/6286

QCF level: 3

Credit value: 5

Guided learning hours: 40

Unit summary

This unit helps the learner to develop the skills required to: gain information from customers on their perceived needs; give advice and information and agree a course of action; contract for the agreed work and complete all necessary records and instructions.

Assessment requirements/evidence requirements:

This unit must adhere to the IMI Skills Unit Assessment Requirements developed for the unit 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, including records, to show that you have dealt **with 3 different customers**
- 5 be observed by your assessor on **at least 1 occasion**

Evidence from real activity or role-play is acceptable for this unit.

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to obtain relevant information from the customer	1.1	obtain and interpret sufficient, relevant information, from the customer to make an assessment of their needs			
		1.2	clarify customer and vehicle needs by referring to vehicle data and operating procedures			
2	Be able to provide relevant information to the customer	2.1	provide customers with accurate, current and relevant advice and information, in a form that the customer will understand			
		2.2	demonstrate techniques which encourage customers to ask questions and seek clarification during conversation			
3	Be able to agree work undertaken with the customer	3.1	summarise and record work agreed with the customer, before accepting the vehicle			
		3.2	implement confirmation of the agreement by ensuring customer understanding			
4	Be able to ensure recording systems are implemented correctly	4.1	use recording systems which are accurate and complete, in the required format and signed by the customer where necessary			
		4.2	perform the next stage in the process by passing on completed records to the correct person promptly			
		4.3	demonstrate correct procedures for customer approval where the contracted agreement is likely to be exceeded			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

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

Unit 46: Knowledge of Motor Vehicle Body Aluminium Metal Inert Gas (MIG) Welding Operations

Unit reference number: L/601/5436

QCF level: 3

Credit value: 5

Guided learning hours: 45

Unit summary

This unit enables the learner to develop an understanding of joining materials using aluminium Metal Inert Gas (MIG) welding techniques 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:

- a the safe working practices and procedures to be observed when working with aluminum welding equipment (general workshop and site safety; appropriate personal protective equipment; fire prevention; protecting others)
- b workers from the effects of the electric arc; safety in enclosed/confined spaces; fume control; accident procedure; statutory requirements, risk assessment procedures and relevant requirements of HASAWA, COSHH and Work Equipment Regulations; safe disposal of waste materials
- c the hazards associated with aluminum welding (live electrical components; current return (earth return) arrangements; the electric arc; fumes and gases; gas supply leaks; spatter; hot slag and metal; grinding and mechanical metal/slag removal; elevated working; enclosed spaces; slips, trips and falls), and how they can be minimized
- d the correct handling and storage of gas cylinders (manual handling and use of cylinder trolley, leak detection procedures, relevant BCGA codes of practice, cylinder identification, gas pressures, cylinder and equipment safety features, emergency shutdown procedures)
- e the manual MIG welding process (principles of fusion welding; power sources; ancillary equipment; power ranges; arc initiation system; care and maintenance of equipment)

- f the consumables associated with MIG welding (types of filler wire, types of shielding gas, welding electrodes, gas supply and control, control and storage of consumables)
- g the types of welded joints to be produced (fillet and butt welds, single and multi-run welds, sheet and sections; welding positions)
- h setting up and restraining the joint (confirming correct set-up of joint; cleanliness of materials used; the use of jigs and fixtures, manipulators and positioners, restraining devices; tack welding size and spacing in relationship to material thickness)
- i preparing the equipment, and checks that need to be made to ensure that it is safe to use (condition of electrical connections, power return and current return (earth return) arrangements, operating parameters)
- j the techniques of operating the welding equipment to produce a range of joints in the various joint positions (fine tuning parameters, correct manipulation of torch, safe closing down of the welding equipment)
- k the importance of complying with job instructions and the welding procedure specification
- l problems that can occur with the welding activities and how these can be overcome (causes of distortion and methods of control, effects of welding on materials and sources of weld defects; methods of prevention)
- m the organisational quality systems used and weld standards to be achieved; weld inspection and test procedures used (including visual and non-destructive tests)
- n personal approval tests and their applicability to your work
- o the extent of your own authority and whom you should report to if you have problems that you cannot resolve
- p reporting lines and procedures, line supervision and technical experts

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand how to work safely when carrying out motor vehicle body aluminium MIG welding operations	1.1	explain the health, safety and legal requirements relating to the joining of materials using aluminium MIG welding techniques			
		1.2	explain the importance of selecting, using and maintaining the appropriate personal protective equipment when joining materials using MIG aluminium welding techniques			
		1.3	explain the requirements for protecting the vehicle and contents from damage before, during and after the joining of materials by aluminium MIG welding techniques			
2	Understand how to select, check, use and maintain appropriate tools and equipment used in motor vehicle body aluminium MIG welding operations	2.1	explain the use of all tools and equipment required to join materials using aluminium MIG welding techniques			
		2.2	explain, within the scope of their responsibilities, how to select, prepare and maintain tools and equipment required to join materials using aluminium MIG welding techniques			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
3	Understand how to carry out motor vehicle body aluminium MIG welding operations	3.1	explain the importance of correct surface preparation methods to ensure a good aluminium MIG weld is achieved			
		3.2	identify the correct need for alignment/mating of materials and the best methods used to achieve this in aluminium MIG welding			
		3.3	explain the welding processes, techniques and joints used for the joining of materials using aluminium MIG welding, joints include: a. lap seam b. butt joint c. fillet joint			
		3.4	identify the faults and defects that can occur when carrying out aluminium MIG welding			
		3.5	identify common causes which produce the faults and defects in aluminium MIG welding			
		3.6	explain the types of quality control checks that can be used to ensure correct joining of materials including: a. dye penetrate b. crack tests			
		3.7	explain how to inspect and assess aluminium MIG welding in accordance to Industry Standards			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
	3.8	explain the advantages and disadvantages of aluminium MIG welding over other welding methods				
	3.9	explain how to ensure cross contamination does not occur and the effect of cross contamination on aluminium				
	3.10	explain the importance and implications of checking and carrying out weld test pieces prior to carrying out the welding process				

Learner name: _____ Date: _____
 Learner signature: _____ Date: _____
 Assessor signature: _____ Date: _____
 Internal verifier signature: _____ Date: _____
 (if sampled)

Unit 47: Skills in Motor Vehicle Body Aluminium Metal Inert Gas (MIG) Welding Operations

Unit reference number: K/601/5475

QCF level: 3

Credit value: 5

Guided learning hours: 45

Unit summary

This unit will help the learner to develop the skills required to join materials correctly and effectively using aluminium Metal Inert Gas (MIG) welding techniques and procedures. It also covers the evaluation of the completed welded components.

Assessment requirements/evidence requirements:

This unit must adhere to the IMI Skills Unit Assessment Requirements developed for the unit 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 carrying out all of the different types of joints listed below to join materials using aluminium welding. All learning outcomes must be covered
 - lap seam
 - butt joint
 - fillet joint

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out motor vehicle body aluminium MIG welding operations	1.1	use suitable personal protective equipment and vehicle coverings throughout all motor vehicle body aluminium MIG welding operations			
		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 body aluminium MIG welding operation activities including: a. vehicle technical data b. welding procedures c. legal requirements			
		2.2	use technical information to support motor vehicle body aluminium MIG welding operation activities			
3	Be able to use appropriate tools and equipment	3.1	select the appropriate tools and equipment necessary for carrying out motor vehicle body aluminium MIG welding operations			
		3.2	ensure tools and equipment that are required are in a safe working condition			
		3.3	set up and use the correct tools and equipment in the way specified by manufacturers when carrying out motor vehicle body aluminium MIG welding operations			
		3.4	clean and store PPE and equipment in the appropriate manner			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to carry out motor vehicle body aluminium MIG welding operations	4.1	prepare surface preparation to ensure a good aluminium weld is achieved			
		4.2	ensure alignment, and mating and treatment of flanges to enable a suitable join to be achieved			
		4.3	carry out aluminium welding operations including: a. lap seam b. butt joint c. fillet joint			
		4.4	carry out aluminium welding operations following: a. manufacturer's processes, methods and procedures b. test procedures and providing test coupons on equivalent material in accordance with Industry Standards c. recognised researched repair methods			
		4.5	dress the weld area without reducing material thickness and protect the area to inhibit corrosion where applicable			
		4.6	identify when the weld is not forming correctly and what action needs to be taken			
		4.7	inspect and assess all aluminium weld quality in accordance with Industry Standards and manufacturer's specification			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		4.8	ensure the integrity of the weld and record the type of weld achieved on the appropriate paperwork			
		4.9	store and record all weld test pieces			
		4.10	avoid damaging other components, units, panels and surfaces on the vehicle and the surrounding work area. Any damage caused should be correctly reinstated			
		4.11	ensure no damage is incurred to other vehicle systems when aluminium welding			
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 48: Knowledge of Motor Vehicle Body Tungsten Inert Gas (TIG) Welding Operations

Unit reference number: Y/601/5438

QCF level: 3

Credit value: 5

Guided learning hours: 45

Unit summary

This unit enables the learner to develop an understanding of joining materials using Tungsten Inert Gas (TIG) welding techniques 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:

- a the safe working practices and procedures to be observed when working with TIG or Plasma-arc welding equipment (general workshop and site safety; appropriate personal protective equipment; fire prevention; protecting other workers from the effects of the electric arc; safety in enclosed/confined spaces; fume control; accident procedure; statutory requirements, risk assessment procedures and relevant requirements of HASAWA, COSHH and Work Equipment Regulations; safe disposal of waste materials)
- b the hazards associated with arc welding (live electrical components; current return (earth return); the electric arc; fumes and gases; gas supply leaks; spatter; hot slag and metal; grinding and mechanical metal/slag removal; elevated working; enclosed spaces; slips, trips and falls), and how they can be minimised
- c the correct handling and storage of gas cylinders (manual handling and use of cylinder trolley, leak detection procedures, relevant BCGA codes of practice, cylinder identification, gas pressures, cylinder and equipment safety features, emergency shutdown procedures)
- d the manual TIG or Plasma-arc welding process (principles of fusion welding; power sources; ancillary equipment; power ranges; arc initiation system; care and maintenance of equipment)

- e the consumables associated with TIG or Plasma-arc welding (types of filler wire, types of shielding gas, welding electrodes, gas supply and control, control and storage of consumables)
- f the types of welded joints to be produced (fillet and butt welds, single and multi-run welds, sheet and sections; welding positions)
- g setting up and restraining the joint (confirming correct set-up of joint; cleanliness of materials used; the use of jigs and fixtures, manipulators and positioners, restraining devices; tack welding size and spacing in relationship to material thickness)
- h preparing the equipment, and checks that need to be made to ensure that it is safe to use (condition of electrical connections, power return and earthing arrangements, operating parameters)
- i the techniques of operating the welding equipment to produce a range of joints in the various joint positions (fine tuning parameters, correct manipulation of torch, safe closing down of the welding equipment)
- j the importance of complying with job instructions and the welding procedure specification
- k problems that can occur with the welding activities and how these can be overcome (causes of distortion and methods of control, effects of welding on materials and sources of weld defects; methods of prevention)
- l the organisational quality systems used and weld standards to be achieved; weld inspection and test procedures used (including visual and non-destructive tests)
- m personal approval tests and their applicability to your work
- n the extent of your own authority and whom you should report to if you have problems that you cannot resolve
- o reporting lines and procedures, line supervision and technical experts

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand how to work safely when carrying out motor vehicle body TIG welding operations	1.1	explain health, safety and legal requirements relating to the joining of materials using TIG welding techniques			
		1.2	explain the importance of selecting, using and maintaining the appropriate personal protective equipment when joining materials using TIG welding techniques			
		1.3	explain the requirements for protecting the vehicle and contents from damage before, during and after the joining of materials by TIG welding techniques			
2	Understand how to select, check, use and maintain appropriate tools and equipment used in motor vehicle body TIG welding operations	2.1	explain the use of all tools and equipment required to join materials using TIG welding techniques			
		2.2	explain within the scope of their responsibilities, how to select, prepare and maintain tools and equipment required to join materials using TIG welding techniques			
3	Understand how to carry out motor vehicle body TIG welding operations	3.1	explain the importance of correct surface preparation methods to ensure a good TIG weld is achieved			
		3.2	identify the need for alignment and mating of materials and the best methods used to achieve this in TIG welding			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		3.3	identify and describe the welding processes, techniques and joints used for the joining of materials using TIG welding, joints include: a. lap seam b. butt joint c. fillet joint			
		3.4	identify the faults and defects that can occur when carrying out TIG welding			
		3.5	identify common causes which produce the faults and defects in TIG welding			
		3.6	explain the types of quality control checks that can be used to ensure correct joining of materials			
		3.7	explain how to inspect and assess TIG welding in accordance to Industry Standards			
		3.8	explain the advantages and disadvantages of TIG welding over other welding methods			
		3.9	explain the importance and implications of checking and carrying out weld test pieces prior to carrying out the welding process			

Learner name: _____ Date: _____
Learner signature: _____ Date: _____
Assessor signature: _____ Date: _____
Internal verifier signature: _____ Date: _____
(if sampled)

Unit 49: Skills in Motor Vehicle Body Tungsten Inert Gas (TIG) Welding Operations

Unit reference number: T/601/5477

QCF level: 3

Credit value: 5

Guided learning hours: 45

Unit summary

This unit will help the learner to develop the skills required to join materials using TIG welding techniques and procedures. It also covers the evaluation of the completed welded component.

Assessment requirements/evidence requirements:

This unit must adhere to the IMI Skills Unit Assessment Requirements developed for the unit 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 carrying out **all** of the different types of joints listed below to join materials using TIG welding. All learning outcomes must be covered
 - lap seam
 - butt joint
 - fillet joint.

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out motor vehicle body TIG welding operations	1.1	use suitable personal protective equipment and vehicle coverings throughout all motor vehicle body TIG welding operations			
		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 body TIG welding operation activities including: a. vehicle technical data b. welding procedures c. legal requirements			
		2.2	use technical information to support motor vehicle body TIG welding operation activities			
3	Be able to use appropriate tools and equipment	3.1	select the appropriate tools and equipment necessary for carrying out motor vehicle body TIG welding operations			
		3.2	ensure all tools and equipment that are required are in a safe working condition			
		3.3	set up and use the correct tools and equipment in the way specified by manufacturers when carrying out motor vehicle body TIG welding operations			
		3.4	clean and store PPE and equipment in the appropriate manner			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to carry out motor vehicle body TIG welding operations	4.1	prepare surface to ensure a good TIG weld is achieved			
		4.2	ensure alignment and mating and treatment of flanges to enable a suitable join to be achieved			
		4.3	carry out TIG welding operations including: a. lap seam b. butt joint c. fillet joint			
		4.4	carry out TIG welding operations following: a. manufacturer's processes, methods and procedures b. test procedures and providing test coupons on equivalent material in accordance with Industry Standards c. recognised researched repair methods			
		4.5	dress the weld area without reducing material thickness and protect the area to inhibit corrosion where applicable			
		4.6	identify when the weld is not forming correctly and what action needs to be taken			
		4.7	inspect and assess all TIG weld quality in accordance with Industry Standards and manufacturer's specification			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		4.8	ensure the integrity of the weld and record the type of weld achieved on the appropriate paperwork			
		4.9	store and record all weld test pieces			
		4.10	avoid damaging other components, units, panels and surfaces on the vehicle and the surrounding work area. Any damage caused should be correctly reinstated			
		4.11	ensure no damage is incurred to other vehicle systems when TIG welding			
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 50: Competency in Removing and Replacing Structural Motor Vehicle Body Panels

Unit reference number: T/601/5382

QCF level: 3

Credit value: 10

Guided learning hours: 90

Unit summary

This unit will enable the learner to demonstrate competency in the removing and replacing or repair of exterior and sub-structure body panels and panel sections where these are damaged. It also covers the evaluation 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 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 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 replacing each type of vehicle body panel listed below:
 - non permanently fixed body panels
 - welded exterior panels
 - a welded sub-structure panel (eg rear quarter panel, rear panel, roof, chassis legs, inner wheel housing, boot floors, complete sill, A post, B post, C post, D post and cross members)
 - bonded panels (eg any panel that is fixed by adhesive bonding as part of the original manufacturer's process)

- 5 be observed by your assessor on **at least 2 occasions** carrying out different panel removal and replacement fitting methods.

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out removal and replacement of vehicle body 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 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 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 vehicle body 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 out removal and fitting of vehicle body panels			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to carry out removal and fitting of vehicle body panels	4.1	identify prior to working on the vehicle the component materials that will be worked on during the repair or replacement			
		4.2	carry out the removal and fitting of non-permanently fixed, welded and bonded vehicle body panels			
		4.3	carry out removal and fitting of vehicle body panels to specification and tolerance following: a. the manufacturer's approved removal and fitting methods b. recognised researched removal and fitting methods c. health and safety requirements d. workplace procedures			
		4.4	ensure all test weld pieces conform to the current Industry Standard for appearance and penetration			
		4.5	use and apply sealants and anti corrosion materials to the manufacturers' specification			
		4.6	ensure that replacement panels conform to the vehicle specifications for dimension, material, quality of finish and functional capability			
		4.7	ensure the components are realigned to the manufacturer's tolerance			
		4.8	ensure damage to mating surfaces is minimised and any additional damage caused correctly reinstated			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		4.9	ensure panels are replaced without causing damage to the vehicle systems			
		4.10	ensure all components and panels are stores safely and in the correct location			
		4.11	work to the specified timescale for the activity			
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 51: Competency in Motor Vehicle Body Panel Major Repairs

Unit reference number: F/601/5384

QCF level: 3

Credit value: 11

Guided learning hours: 90

Unit summary

This unit will enable the learner to demonstrate competency in carrying out major repairs to motor vehicle body panels using a variety of techniques. It also covers the evaluation of the repair once completed.

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 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 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 **each** of the following repairs listed below on **2 separate occasions**:
 - severely distorted panels
 - difficult to access panel damage
 - splits on metal panels, using relevant joining techniques
 - fractures on plastic repairs

- 5 produce evidence of covering **6 of the techniques and processes*** listed below in carrying out the repairs listed on the previous page:
- panel beating
 - panel shrinkage
 - hydraulic forming
 - resistance spot welding (dent pulling kits)
 - MIG or MAG welding
 - MIG brazing
 - body filling operations
 - metal finishing
 - plastic repair
 - specialist dent removal
- 6 be observed by your assessor on **at least 2 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 of the techniques and processes.

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out major repairs to motor vehicle body panels	1.1	use suitable personal protective equipment and vehicle coverings throughout all repair 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 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 fitting activities			
3	Be able to use appropriate tools and equipment	3.1	select the appropriate tools and equipment necessary for carrying out major repairs to motor vehicle body panels			
		3.2	ensure that equipment has been calibrated to meet manufacturers' and legal requirements			
		3.3	use the tools and equipment in the way specified by manufacturers when carrying out major repairs to motor vehicle body panels			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to carry out major repairs to motor vehicle body panels	4.1	identify prior to working on the vehicle the component materials involved that will be worked on during the repair			
		4.2	ensure the methods of preparation leave sub-structure body panels clean, free from materials likely to hinder repair and free of surface finishes when required			
		4.3	prepare and reinstate vehicle body panels using the equipment recommended and following: a. the manufacturer's approved removal and fitting methods b. recognised researched removal and fitting methods c. health and safety requirements			
		4.4	carry out major repairs to motor vehicle body panels so they are restored to their original contour and dimensions using hand/power tools and filling materials effectively			
		4.5	replace any sealer, anti corrosion and sound deadening materials which were removed prior to the repair and conforming to the manufacturer's specification			
		4.6	ensure all test weld pieces conform to the current Industry Standard for appearance and penetration			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
5		4.7	ensure any damage is minimised to mating surfaces. Any damage caused should be reinstated			
		4.8	ensure all completed repairs are finished to and agreed standard ready for the refinishing process			
		4.9	work to the specified timescale for the activity			
	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 52: Competency in Identifying and Rectifying Motor Vehicle Body Misalignment

Unit reference number: L/601/5386

QCF level: 3

Credit value: 11

Guided learning hours: 90

Unit summary

This unit will enable the learner to demonstrate competency in identifying and rectifying motor vehicle body misalignment. It also covers the evaluation of the repair once completed.

Assessment requirements/evidence requirements:

This unit must be assessed in accordance with the IMI Assessment Strategy (*Annexe C*) and adhere to the IMI Competency Unit Assessment Requirements 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 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 rectifying vehicle body misalignment* **on 3 separate occasions** covering **all of the rectification activities** listed below:
 - visual examination
 - setting up
 - measurement in conjunction with alignment measuring equipment
 - realignment using pulling equipment

*Each vehicle re-alignment must have sustained misalignment of at least **2** critical measuring points.

5. be observed by your assessor on **at least 2 separate occasions in your normal workplace.* See requirement on 2.**

Evidence from simulated activities is acceptable for this unit.

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out identification and rectification to motor vehicle body misalignment	1.1	use suitable personal protective equipment and vehicle coverings throughout all repair 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 the identification and rectification of motor vehicle body misalignment including: a vehicle technical data b removal and fitting procedures c equipment data specific to the vehicle d legal requirements			
		2.2	use technical information to support the identification and rectification of motor vehicle body misalignment			
3	Be able to use appropriate tools and equipment	3.1	select the appropriate tools and equipment necessary for carrying out identification and rectification to motor vehicle body misalignment			
		3.2	ensure that equipment has been calibrated to meet manufacturers' and legal requirements			
		3.3	use the appropriate tools and equipment in the way specified by manufacturers when carrying out identification and rectification to motor vehicle body misalignment			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to carry out identification and rectification to motor vehicle body misalignment	4.1	load and secure the vehicle to the body jig correctly following: a. the manufacturer's approved instructions b. recognised researched methods c. health and safety requirements d. workplace procedures			
		4.2	establish the extent of the vehicle misalignment accurately and completely			
		4.3	align and anchor areas adjacent to the damage in a way that prevents further damage to the vehicle			
		4.4	attach the pulling system securely to the damaged components and operate it to achieve the realignment required			
		4.5	operate the pulling system in a way that minimises the risk of injury to yourself and others			
		4.6	ensure all completed rectification activities restore the vehicle to the correct specification and tolerances			
		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 53: Competency in Making Learning Possible through Demonstrations and Instruction

Unit reference number: Y/601/6380

QCF level: 3

Credit value: 5

Guided learning hours: 40

Unit summary

This unit will help the learner to develop competency in order to carry out demonstrations and instruction which will help the learner to learn. It includes demonstrating equipment, showing skills, giving instruction, deciding when to use demonstration or instruction, potential of technology based learning, checking on learners' progress and giving feedback.

Assessment requirements/evidence requirements:

This unit must be assessed in accordance with the IMI Assessment Strategy (*Annexe C*) and adhere to the IMI Competency Unit Assessment Requirements 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 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 **or** by a witness who has been previously agreed with the assessor prior to the observation taking place
- 4 provide at least **1 record** of an activity which has been demonstrated

- 5 provide records of at least **2 observations**, **1** of which **must be** by your assessor, which cover at least **1 demonstration** and **1 instruction or a combination of both**

It is expected that the **records** must include evidence to show how you:

- decided on the sequence of the demonstration
- ensured that the demonstration was accurate and realistic
- identified which learning outcomes were achieved
- ensured a safe environment for the demonstration and allowed all learners to see the demonstration clearly

In preparing the records you should consider:

- which types of learning are best achieved and supported through demonstrations
- how to choose between instruction and demonstration as learning methods
- how to identify individual learning needs
- which factors are likely to prevent learning and how to overcome them
- how to choose and prepare appropriate materials, including technology-based materials.
- which types of learning are best achieved through instruction
- how to make sure everybody acts in line with health, safety and environmental protection legislation and best practice
- how to analyse developments in learning and new ways of delivery, including technology-based learning

It is also expected that evidence from your observations **will show** how you:

- structured the demonstration so that the learner got the most out of it
- encouraged learners to ask questions and get explanations at appropriate stages in the demonstration
- gave learners the opportunities to practise the skill being demonstrated
- gave learners positive feedback
- reinforced learning by repeating demonstration
- responded to the needs of learners during the demonstration
- reduced distractions and disruptions as much as possible
- matched instruction to the needs of learners
- ensured that the manner, level and speed of the instruction encourages learners to take part
- regularly check that learners understand and adapt instruction as appropriate
- gave learners positive feedback on the learning experience and the outcome achieved
- identified anything that prevented learning and reviewed this with the learner

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to demonstrate skills and methods to learners	1.1	perform demonstrations based on an analysis of the skills needed and the order in which they must be learned			
		1.2	perform demonstrations that are accurate and realistic			
		1.3	perform structured demonstrations so that the learner can get the most out of it			
		1.4	perform demonstrations whilst encouraging learners to ask questions and get explanation at appropriate stages in the demonstration			
		1.5	provide positive feedback to learners whilst they are being given the opportunity to practise the skills that have been demonstrated			
		1.6	perform additional demonstrations of skills being taught to reinforce learning			
		1.7	perform demonstrations in a safe environment which also allows learners to see clearly			
		1.8	respond to the needs of the learners during demonstrations			
		1.9	reduce distractions and disruptions as much as possible			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
2	Be able to instruct learners	2.1	implement instruction which is matched to the needs of learners			
		2.2	use identified learning outcomes which can be achieved through instruction			
		2.3	perform instruction, ensuring that the manner, level and speed of the instruction encourages learners to take part			
		2.4	perform instruction whilst regularly checking that the learners understand and adapt instruction as appropriate			
		2.5	give learners positive feedback on the learning experience and the outcomes achieved			
		2.6	carry out a review with the learners to identify anything that prevented learning and adapt instruction as appropriate			

Learner name: _____ Date: _____
 Learner signature: _____ Date: _____
 Assessor signature: _____ Date: _____
 Internal verifier signature: _____ Date: _____
 (if sampled)

Unit 54: Competency in Identifying and Agreeing Motor Vehicle Customer Service Needs

Unit reference number: K/601/6383

QCF level: 3

Credit value: 5

Guided learning hours: 40

Unit summary

This unit helps the learner to develop competency in order to: gain information from customers on their perceived needs; give advice and information and agree a course of action; contract for the agreed work and complete all necessary records and instructions.

Assessment requirements/evidence requirements:

This unit must be assessed in accordance with the IMI Assessment Strategy (*Annexe C*) and adhere to the IMI Competency Unit Assessment Requirements 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 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, including records, to show that you have dealt with **3 different customers**
- 5 be observed by your assessor in your normal workplace dealing with **at least 1 customer**

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to obtain relevant information from the customer	1.1	obtain and interpret sufficient, relevant information, from the customer to make an assessment of their needs			
		1.2	clarify customer and vehicle needs by referring to vehicle data and operating procedures			
2	Be able to provide relevant information to the customer	2.1	provide customers with accurate, current and relevant advice and information, in a form that the customer will understand			
		2.2	demonstrate techniques which encourage customers to ask questions and seek clarification during conversation			
3	Be able to agree work undertaken with the customer	3.1	summarise and record work agreed with the customer, before accepting the vehicle			
		3.2	implement confirmation of the agreement by ensuring customer understanding			
4	Be able to ensure recording systems are implemented correctly	4.1	use recording systems which are accurate and complete, in the required format and signed by the customer where necessary			
		4.2	perform the next stage in the process by passing on completed records to the correct person promptly			
		4.3	demonstrate correct procedures for customer approval where the contracted agreement is likely to be exceeded			

Learner name: _____ Date: _____
Learner signature: _____ Date: _____
Assessor signature: _____ Date: _____
Internal verifier signature: _____ Date: _____
(if sampled)

Unit 55: Competency in Motor Vehicle Body Aluminium Metal Inert Gas (MIG) Welding Operations

Unit reference number: M/601/5400

QCF level: 3

Credit value: 9

Guided learning hours: 90

Unit summary

This unit will enable the learner to demonstrate competency in joining materials correctly and effectively using aluminium Metal Inert Gas (MIG) welding techniques and procedures. It also covers the evaluation of the completed welded components.

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 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 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 **all** of the different types of joints listed below **on at least 2 occasions** to join materials using aluminium welding:
 - lap seam
 - butt joint
 - fillet joint
- 5 be observed by your assessor on **at least 2 occasions**, each observation covering a different welded joint. **Both** of the observations must be carried out **in your normal workplace**.

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out motor vehicle body aluminium MIG welding operations	1.1	use suitable personal protective equipment and vehicle coverings throughout all motor vehicle body aluminium MIG welding operations			
		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 body aluminium MIG welding operation activities including: a. vehicle technical data b. welding procedures c. legal requirements			
		2.2	use technical information to support motor vehicle body aluminium MIG welding operation activities			
3	Be able to use appropriate tools and equipment	3.1	select the appropriate tools and equipment necessary for carrying out motor vehicle body aluminium MIG welding operations			
		3.2	ensure tools and equipment that are required are in a safe working condition			
		3.3	set up and use the correct tools and equipment in the way specified by manufacturers when carrying out motor vehicle body aluminium MIG welding operations			
		3.4	clean and store PPE and equipment in the appropriate manner			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to carry out motor vehicle body aluminium MIG welding operations	4.1	prepare surface preparation to ensure a good aluminium MIG weld is achieved			
		4.2	ensure alignment, and mating and treatment of flanges to enable a suitable join to be achieved			
		4.3	carry out aluminium MIG welding operations including: a. lap seam b. butt joint c. fillet joint			
		4.4	carry out aluminium MIG welding operations following: a. manufacturer's processes, methods and procedures b. test procedures and providing test coupons on equivalent material in accordance with Industry Standards c. recognised researched repair methods			
		4.5	dress the weld area without reducing material thickness and protect the area to inhibit corrosion where applicable			
		4.6	identify when the weld is not forming correctly and what action needs to be taken			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		4.7	inspect and assess all aluminium MIG weld quality in accordance with Industry Standards and manufacturer's specification			
		4.8	ensure the integrity of the weld and record the type of weld achieved on the appropriate paperwork			
		4.9	store and record all weld test pieces			
		4.10	avoid damaging other components, units, panels and surfaces on the vehicle and the surrounding work area. Any damage caused should be correctly reinstated			
		4.11	ensure no damage is incurred to other vehicle systems when aluminium MIG welding			
5	Be able to record information and make suitable recommendations	4.12	work to the specified timescale for the activity			
		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 56: Competency in Motor Vehicle Body Tungsten Inert Gas (TIG) Welding Operations

Unit reference number: J/601/5404

QCF level: 3

Credit value: 9

Guided learning hours: 90

Unit summary

This unit will enable the learner to demonstrate competency in joining materials using TIG welding techniques and procedures. It also covers the evaluation of the completed welded component.

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 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 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 **all** of the different types of joints listed below **on at least 2 occasions** to join materials using TIG welding:
 - lap seam
 - butt joint
 - fillet joint
- 5 be observed by your assessor on **at least 2 occasions**, each observation covering a different welded joint. **Both** of the observations must be carried out **in your normal workplace**.

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to work safely when carrying out motor vehicle body TIG welding operations	1.1	use suitable personal protective equipment and vehicle coverings throughout all motor vehicle body TIG welding operations			
		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 body TIG welding operation activities including: a. vehicle technical data b. welding procedures c. legal requirements			
		2.2	use technical information to support motor vehicle body TIG welding operation activities			
3	Be able to use appropriate tools and equipment	3.1	select the appropriate tools and equipment necessary for carrying out motor vehicle body TIG welding operations			
		3.2	ensure all tools and equipment that are required are in a safe working condition			
		3.3	set up and use the correct tools and equipment in the way specified by manufacturers when carrying out motor vehicle body TIG welding operations			
		3.4	clean and store PPE and equipment in the appropriate manner			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to carry out motor vehicle body TIG welding operations	4.1	prepare surface to ensure a good TIG weld is achieved			
		4.2	ensure alignment and mating and treatment of flanges to enable a suitable join to be achieved			
		4.3	carry out TIG welding operations including: a. lap seam b. butt joint c. fillet joint			
		4.4	carry out TIG welding operations following: a. manufacturer's processes, methods and procedures b. test procedures and providing test coupons on equivalent material in accordance with Industry Standards c. recognised researched repair methods			
		4.5	dress the weld area without reducing material thickness and protect the area to inhibit corrosion where applicable			
		4.6	identify when the weld is not forming correctly and what action needs to be taken			
		4.7	inspect and assess all TIG weld quality in accordance with Industry Standards and manufacturer's specification			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
5		4.8	ensure the integrity of the weld and record the type of weld achieved on the appropriate paperwork			
		4.9	store and record all weld test pieces			
		4.10	avoid damaging other components, units, panels and surfaces on the vehicle and the surrounding work area. Any damage caused should be correctly reinstated			
		4.11	ensure no damage is incurred to other vehicle systems when TIG welding			
		4.12	work to the specified timescale for the activity			
	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 57: Knowledge of Removing and Replacing Structural Motor Vehicle Body Panels

Unit reference number: M/601/5428

QCF level: 3

Credit value: 6

Guided learning hours: 45

Unit summary

This unit enables the learner to develop an understanding of how to remove a range of exterior and structural motor vehicle body panels and panel sections where these are damaged and how to refit with new or repaired replacements.

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:

Selection and use of tools and equipment

- a how to prepare, test and use the tools and equipment required for the removal and replacement of vehicle body panels and ancillary fittings
- b how to operate spot welding and gas shielded arc-welding equipment to achieve welds to the current industry standard

Selection and use of materials

- a the properties of sealants, adhesives and anti-corrosion materials and the requirement for their safe use
- b the type of sealants and anti corrosion materials to use and the manufacturer's recommended methods of their application and thickness
- c how to use adhesive bonding materials
- d how to select and apply sealants and anti-corrosion materials
- e the properties and different types of materials used in the construction of vehicle bodies

Removing and replacing vehicle body panels

- a the principles governing how unitary and separate chassis vehicle bodies are constructed
- b how to identify and remove spot and gas shielded arc welds to meet manufacturers and current Industry Standards
- c how to identify the difference between manufacturer's processes and repair processes
- d the principles of resistance spot welding, gas shielded arc plug welding, gas shielded arc welding and gas shielded brazing
- e correct procedures for the removal and replacement of vehicle body panels
- f the manufacturers approved methods of working for the removal and replacement of vehicle body panels
- g the different types of mechanical fixings for vehicle body panels and when and why they should be used
- h the repair and welding implications of working with:
 - i. high strength steels (HSS)
 - ii. low carbon steels (LCS)
 - iii. aluminium alloys
 - iv. galvanized coatings
 - v. Boron steels
 - vi. TRIP
 - vii. TWIP
 - viii. laminated
- i how panel removal and refitting affects the overall body structure of the vehicle
- j the cause and rectification of distortion resulting from welding
- k how to find, interpret and use sources of information relevant to the removal and replacement of vehicle body panels and assemblies
- l how to remove and replace vehicle body panels and assemblies
- m how to remove and replace door skins
- n how to establish cut lines for partial panel replacement
- o how to prepare all edges to be joined
- p how to select the correct joints and joining process to match the repair area
- q the importance and implications of panel clamping and alignment to match existing contours and gaps
- r how to test spot weld strength
- s how to load a vehicle onto a jig system to ensure correct alignment and positioning of new panels

- t how to remove and replace supplementary restraint systems (SRS) using the manufacturers approved method
- u how to work safely avoiding damage to the vehicle and its systems
- v the importance and implications of checking accuracy of repair work
- w the types of quality control checks that can be used to ensure correct alignment and contour of panels and the operation of components to manufacturer's specification
- x the method of storing removed panels and the importance of storing them correctly

Learning outcomes and assessment criteria

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand material types and properties used in removing and replacing structural motor vehicle body panels	1.1	identify the properties and different types of materials used in the construction of vehicle bodies			
		1.2	explain the properties of the materials used in vehicle body construction			
		1.3	identify the properties and safe use of body component sealants, adhesives, and anti corrosion materials			
		1.4	explain how to apply sealants and anti corrosion materials following manufacturers recommended methods			
		1.5	compare the advantages and limitations of vehicles built using chassis frame and monocoque construction			
		1.6	identify the implications of working with: a. galvanised coatings b. mild steels c. HSS d. UHSS e. aluminium alloys			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
2	Understand how to carry out removal and replacing of structural motor vehicle body panels	2.1	explain how to identify the manufacturers' joining techniques and how they may differ from the repair method			
		2.2	explain where the different types of mechanical fasteners should be used in the replacement of vehicle body panels			
		2.3	explain the procedures involved in the removal and replacement of vehicle body panels and assemblies			
		2.4	explain the procedures involved in the removal and replacement of vehicle door skins			
		2.5	explain the procedures involved in establishing cut lines for partial panel replacement			
		2.6	explain how to select the correct joints and joining processes for the repaired area			
		2.7	explain the importance of clamping and aligning panels to match existing contours and gaps			
		2.8	explain the effect on the overall body structure of removing and replacing panels			
		2.9	describe the procedures involved in loading a vehicle onto a jig system to ensure correct alignment and positioning of new panels			
		2.10	explain the importance of checking the accuracy of repair work			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
	2.11	outline the quality checks that can be used to ensure correct alignment and contour of panels, and operation of components to manufacturers specification				
	2.12	explain the methods and procedures for storing components and the importance of storing them correctly and in accordance with legal requirements				

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 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 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) Edexcel Level 3 Diploma in Lift Truck Maintenance & Repair Competence (QCF)

Level	BTEC vocationally-related qualifications	BTEC specialist qualification/ professional	NVQ/competence
3 cont'd		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 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 cont'd		Edexcel 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



THE INSTITUTE OF THE MOTOR INDUSTRY

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 reflect 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, 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 addition 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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**For more information on Edexcel and BTEC qualifications please
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