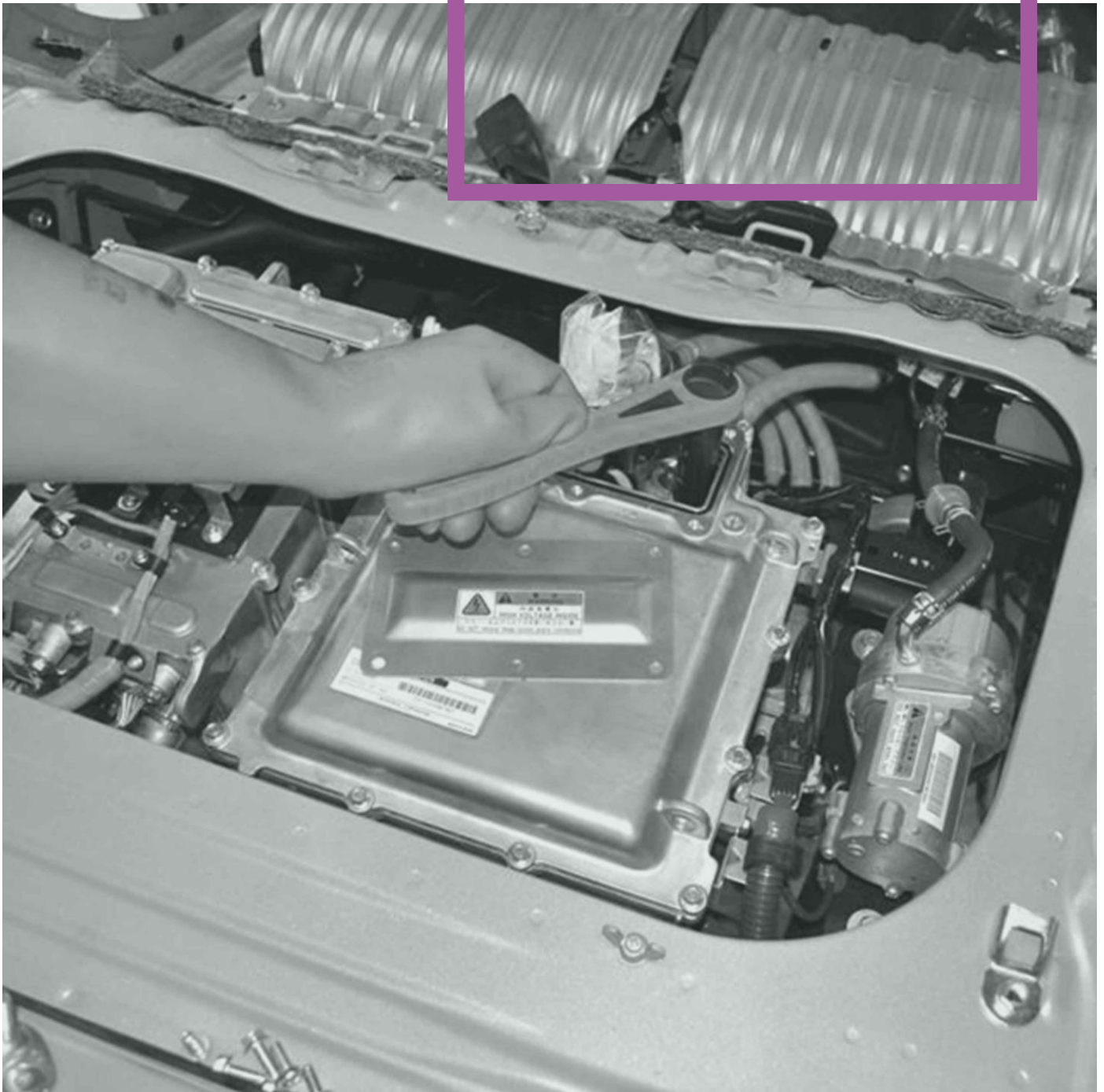




INSTITUTE OF THE
MOTOR INDUSTRY

IMI ACCREDITATION

ELECTRIC VEHICLE





What is IMI Accreditation?

IMI Accreditation is a practical, non-academic way to demonstrate individual capability, providing independent proof of current competence, knowledge and skills.

Focused on the Light Vehicle area of the automotive sector, IMI Accreditation encompasses everyone within this area, from individuals working directly on vehicles to those advising customers or managing a dealership. Three different types of accreditation reflect the diverse range of roles within the motor industry: Technical, Customer Facing and Management

Accreditation typically takes just one day to achieve (depending on the specific route), with individuals assessed against industry-agreed standards. Each accreditation route is designed using best practice techniques, and offers multiple career development options for a specific job role.

Accreditation is available for the following routes:

- Technical
 - Air Conditioning
 - Autoglazing
 - Cosmetic Repair
 - Digital Audio Broadcasting
 - Electric Vehicle
 - Fast Fit
 - Light Vehicle Maintenance & Repair
 - Light Vehicle Inspection
 - Mechanical Electrical Trim
 - Motorcycle
 - Paint
 - Panel
 - Roadside
 - Vehicle Damage Assessor
- Customer Facing
 - Customer Service
 - Parts
 - Sales
- Management
 - Management

Once an individual has passed all the required practical and knowledge-based modules in a specific route, they will receive a certificate of achievement which is valid for three years.



IMI Accreditation benefits

IMI Accreditation was created to help the motor industry keep on top of constant, rapid changes in technology, legislation and working methods, by encouraging and measuring the current competence, knowledge and ability of those working within it. By providing proof of current competence, IMI Accreditation benefits both individuals and their employers.

Those gaining accreditation receive:

- An IMI Accredited certificate
- Inclusion on IMI Professional Register
- Industry-wide recognition of their skills and abilities
- Confidence
- Advice and guidance for development
- An opportunity for career progression

While the employer of an accredited individual benefits from:

- Confidence in the individual's ability
- Eligibility for British Standard/DVSA requirements (depending on routes)
- Increased customer visibility on the IMI Professional Register
- Higher work output and fewer mistakes
- Public confidence in abilities

Industry Recognition through the IMI Professional Register

The IMI Professional Register is an industry-wide database of professionals in the motor industry. The Register is promoted to consumers as a place to find trustworthy professionals who have proven their skills and competence within specialist areas of the industry. IMI Accredited individuals are automatically included on the IMI Professional Register.

Routes to Accreditation

There are two routes to gaining IMI Accredited status: Full Assessment and Conversion*. Full Assessment involves the completion of all practical and knowledge-based assessments at each level. Conversion enables an individual to use existing qualifications to gain exemption from specific modules.

IMI Accreditation continually evolves to meet the changing needs of the industry, with each accreditation valid for three years, after which time an individual is required to undertake a new assessment either at the same level, next career level or a different route in order to prove their current competence.

IMI Accreditations are delivered through the IMI approved centre network, and you can find your nearest centre or explore assessment routes at www.theimi.org.uk/awarding



Further Information

For further information on any of the accreditation routes, please visit www.theimi.org.uk/accreditation. Alternatively call 01992 511521 to contact IMI directly.

Who is the Electric Vehicle route for?

The Electric Vehicle route is intended for technicians whose job role involves the inspection maintenance and repair of light vehicles, as well as those involved in accident repair bodyshops (i.e. MET, Panel, Paint, VDA).

There is one level within Electric Vehicle:

- **Technician**
The technician must be able to work unsupervised – ideally, they should be in full time employment with at least two years experience to ensure they are familiar with the skills, knowledge and techniques required to service, maintain and repair vehicles fitted with high voltage batteries / components such as ‘hybrid’ or pure electric vehicles.

Electric Vehicle Route Structure

For technicians wishing to achieve accreditation there is only one method:

- **Full Assessment**

For technicians wishing to retain their accreditation there is only one option:

- **Full Assessment**

To achieve each module the technician is measured by a skill and knowledge test.

Technician Full Assessment

This level requires the technician to complete the following modules:

Safe Working Practices	AOM 081
High Voltage Battery Replacement	AOM 082
High Voltage Component Replacement	AOM 083

This will normally be a one-day assessment.



This page is intentionally left blank



Accreditation Module Title	Safe Working Practices
----------------------------	------------------------

Module Code	ATA - AOM - 081
-------------	-----------------

Practical Assessment Time	1.0 hour
---------------------------	----------

On-line Knowledge Test	K - 081
------------------------	---------

IMI AOM Level	2
---------------	---

Module Overview	
<p>This module is to determine that the candidate is able to make the vehicle safe through the removal of any high voltage safety devices (typically switch or plug) to allow the vehicle to be worked on to carry out maintenance and repair procedures.</p> <p>The candidate will need to follow any procedures to ensure the high voltage has been isolated before others can work on the vehicle which may include the checking of voltages using the appropriate tools and equipment. Once the vehicle has been 'made safe', the candidate will be required to return the vehicle to a fully operational condition, ready to be returned to the driver.</p> <p>The candidate will be required to ensure that they follow all appropriate health & safety procedures and wear the necessary Personal Protection Equipment during the assessment.</p>	

Candidate Profile	
<p>The technician should be working in the light vehicle sector of the industry and ideally have at least two years experience to ensure they are familiar with the skills, knowledge and techniques required to service, maintain and repair vehicles fitted with high voltage batteries / components such as 'hybrid' or pure electric vehicles.</p>	

Links with Accreditation Routes and Modules	
This module features in:	
IMI Accreditation Route	IMI Accreditation Level
Electric Vehicle	Technician



Skills Requirements	
The candidate must demonstrate the ability to:	
1.1	Identify suitable sources of information (inc manufacturer guidelines)
1.2	Select the Personal Protection Equipment (PPE) for the purpose of the task and use throughout the assessment
1.3	Identify high voltage cabling & components
1.4	Identify AC and DC voltage symbols
1.5	Identify vehicle high voltage status - pre / during / post service & repair activities
1.6	Follow procedures before removing/disarming HV safety device
1.7	Remove the ignition key and store securely whilst working in engine compartment- technician has control of vehicle at all times during assessment
1.8	Measure any voltages to identify the vehicle is in a safe condition to carry out any other service / repair work
1.9	Identify how to connect an additional power source to a high voltage vehicle e.g. to jump start
1.10	Advise others when vehicle is in 'safe condition' to carryout maintenance and/or repair procedures
1.11	Select the correct tools and equipment throughout task to carry out activities on vehicle
1.12	Competently and safely use of test equipment - including multi-meter/equipment to measure AC and DC voltages
1.13	Reset vehicle systems post repair to ensure vehicle is in condition to handover to customer
1.14	Complete all the necessary records with accuracy in the format required
1.15	Follow health and safety guidelines
1.16	Work within given time constraints



Knowledge Requirements	
The candidate must indicate a sound knowledge of:	
2.1	Health and Safety requirements when working on hybrid / electric vehicles
2.2	The necessary Personal Protection Equipment required when working on hybrid / electric vehicles
2.3	The various high voltage components and their function within hybrid / electric vehicle
2.4	The necessary safety procedures in the event of incidents involving hybrid / electric vehicles
2.5	The tools and equipment (inc specifications) used when working on hybrid / electric vehicle
2.6	The generic procedures used to make a vehicle 'safe' before carrying out maintenance and repair procedures



This page is intentionally left blank



Accreditation Module Title	High Voltage Battery Replacement
-----------------------------------	----------------------------------

Module Code	ATA - AOM - 082
--------------------	-----------------

Practical Assessment Time	1.0 hour
----------------------------------	----------

On-line Knowledge Test	K - 082
-------------------------------	---------

IMI AOM Level	2
----------------------	---

Module Overview	
<p>This module is to determine that the candidate is able to replace the high voltage battery following the isolation of the high voltage.</p> <p>The candidate will need to follow any procedures to ensure they and others remain safe at all times. The candidate should follow the correct procedures as defined by the vehicle manufacturer and be aware of any specialised tools and equipment necessary to carry out this operation.</p> <p>The candidate should be able to replace the battery and return the vehicle to a condition where it is ready to return the vehicle to a fully operational condition The candidate will be required to ensure that they follow all appropriate health & safety procedures and wear the necessary Personal Protection Equipment during the assessment.</p>	

Candidate Profile	
<p>The technician should be working in the light vehicle sector of the industry and ideally have at least two years experience to ensure they are familiar with the skills, knowledge and techniques required to service, maintain and repair vehicles fitted with high voltage batteries / components such as 'hybrid' or pure electric vehicles.</p>	

Links with Accreditation Routes and Modules	
This module features in:	
IMI Accreditation Route	IMI Accreditation Level
Electric Vehicle	Technician



Skills Requirements	
The candidate must demonstrate the ability to:	
1.1	Correctly identify suitable sources of information (inc manufacturer guidelines) before working on vehicle
1.2	Selected correct PPE for the purpose of the task and used correctly throughout the assessment
1.3	Ensure that any equipment has been calibrated to meet manufacturers' requirements
1.4	Select correct tools and equipment to carry out activities on vehicle
1.5	Correctly identify high voltage cabling / harness
1.6	Correctly identify high voltage components
1.7	Correctly identifies AC and DC voltage symbols
1.8	Correctly identify vehicle high voltage status - pre / during / post service & repair activities
1.9	Correct, competent and safe use of test equipment to measure high voltage DC pre repair
1.10	Use of procedures when removing vehicle high voltage battery
1.11	Use procedures to handle the high voltage battery during removal from the vehicle
1.12	Store the high voltage battery pack to ensure that the pack is a safe / isolated condition to include: storage, environment, location and position / level
1.13	Use procedures to handle the high voltage battery during refitting to the vehicle
1.14	Use procedures when replacing vehicle high voltage battery
1.15	Competently and safely use test equipment to measure high voltage DC post repair
1.16	Reset vehicle systems post repair to ensure vehicle is in state to handover to customer
1.17	Complete all records with accuracy in the format required
1.18	Follow health and safety guidelines at all times
1.19	Work within given time constraints



Skills Requirements	
The candidate must indicate a sound knowledge of:	
2.1	Health and Safety requirements when working on hybrid / electric vehicles
2.2	The necessary Personal Protection Equipment required when working on hybrid / electric vehicles
2.3	The various high voltage components and their function within hybrid / electric vehicle
2.4	The necessary safety procedures in the event of incidents involving hybrid / electric vehicles
2.5	The tools and equipment (inc specifications) used when working on hybrid / electric vehicle
2.6	The generic procedures used to make a vehicle 'safe' before carrying out maintenance and repair procedures
2.7	Electrical knowledge including types of current (AC/DC), high voltage and low voltage systems
2.8	Hybrid / Electric Vehicle service procedures



This page is intentionally left blank



Accreditation Module Title	High Voltage Component Replacement
----------------------------	------------------------------------

Module Code	ATA - AOM - 083
-------------	-----------------

Practical Assessment Time	1.0 hour
---------------------------	----------

On-line Knowledge Test	K - 083
------------------------	---------

IMI AOM Level	2
---------------	---

Module Overview	
<p>This module is to determine that the candidate is able to replace a high voltage component such as the '3 phase Inverter' following the isolation of the high voltage.</p> <p>The candidate will need to follow any procedures to ensure they and others remain safe at all times.</p> <p>The candidate should follow the correct procedures as defined by the vehicle manufacturer and be aware of any specialised tools and equipment necessary to carry out this operation.</p> <p>The candidate should be able to replace the high voltage component and return the vehicle to a condition where it is ready to return the vehicle to a fully operational condition.</p> <p>The candidate will be required to ensure that they follow all appropriate health & safety procedures and wear the necessary Personal Protection Equipment during the assessment.</p>	

Candidate Profile	
<p>The technician should be working in the light vehicle sector of the industry and ideally have at least two years experience to ensure they are familiar with the skills, knowledge and techniques required to service, maintain and repair vehicles fitted with high voltage batteries / components such as 'hybrid' or pure electric vehicles.</p>	

Links with Accreditation Routes and Modules	
This module features in:	
IMI Accreditation Route	IMI Accreditation Level
Electric Vehicle	Technician

Skills Requirements	
The candidate must demonstrate the ability to:	
1.1	Identify suitable sources of information (inc manufacturer guidelines) before working on vehicle
1.2	Select Personal Protection Equipment (PPE) for the purpose of the task and use throughout the assessment
1.3	Ensure that any equipment has been calibrated to meet manufacturers' requirements
1.4	Competently use of tools and equipment to carry out pre and post activities on vehicle
1.5	Identify low / high voltage components on vehicle – including low / high voltage wiring harnesses and connectors
1.6	Identify AC and DC voltage symbols
1.7	Identify vehicle high voltage status - pre / during / post service & repair activities
1.8	Identify the type of cooling systems used on vehicle high voltage components and remove/disconnect correctly
1.9	Complete all records with accuracy in the format required
1.10	Remove wiring harnesses to high voltage components i.e. inverter, and other electrical components as required
1.11	Identify vehicle low voltage status and disconnect low voltage battery prior to high voltage component removal activities
1.12	Use the identified procedures to remove high voltage component(s)
1.13	Use the identified procedures to replace high voltage component(s)
1.14	Refit wiring harnesses to high voltage component(s) and other electrical components
1.15	Reinstate the high voltage components cooling system(s) used on vehicle
1.16	Identify vehicle's low voltage status and reconnect using the appropriate procedures
1.17	Confirm repairs carried out as per manufacturers instructions
1.18	Follow health and safety guidelines
1.19	Work within given time constraints



Knowledge Requirements	
The candidate must indicate a sound knowledge of:	
2.1	Health and Safety requirements when working on hybrid / electric vehicles
2.2	The necessary Personal Protection Equipment required when working on hybrid / electric vehicles
2.3	The various high voltage components and their function within hybrid / electric vehicle
2.4	The necessary safety procedures in the event of incidents involving hybrid / electric vehicles
2.5	The tools and equipment (inc specifications) used when working on hybrid / electric vehicle
2.6	The generic procedures used to make a vehicle 'safe' before carrying out maintenance and repair procedures
2.7	Electrical knowledge including types of current (AC/DC), high voltage and low voltage systems
2.8	Hybrid / Electric Vehicle service procedures
2.9	Three phase electricity within a motor vehicle environment