

**Bermuda National Occupational Certification
Standard 2017:
Automotive Service Technician –
Levels 1, 2, 3 & 4**

National Certification

In order to complete the process for National Automotive Certification, applicants will have several paths available dependent on their experience, qualifications and fulfillment of the requirements as outlined in the application process. Applicants can gain certification through equivalency or by proof of competencies. Equivalency is designed to speed up the process of certification and reduce industry down time for skilled staff.

Equivalency will be measured against world standards of City & Guilds(C&G) and Red Seal. Certifications must be up to date or applicants must supply proof of Continuing Professional Development.

Proof of competency requires the applicant to demonstrate how they match the required competencies. The level of competency will be confirmed by a technical interview with the Industry Assessment Panel (IAP).

National Certification will be available in eight categories, these categories are as follows:

- Level 1 Junior Tradesman
- Level 1HV Junior Tradesman Heavy Vehicles
- Level 2 Skilled Tradesman
- Level 2HV Skilled Tradesman Heavy Vehicles
- Level 3 A1 Technician
- Level 3HV A1 Technician Heavy Vehicles
- Level 4 Master Technician
- Level 4HV Master Technician Heavy Vehicles

The minimum requirement for persons to gain a work permit as an Automotive Technician in Bermuda is City & Guilds **Level 3 – A1 Technician** or the equivalency.

Terminology

DWD - Department of Workforce Development

HGV - Heavy Goods Vehicle

IAP - Industry Assessment Panel

NARIC - National Academic Recognition Information Centre

NTB - National Training Board

OAC - Occupational Advisory Committee

TCI - Technical Competency Interview

Automotive Certification Levels and Profiles

The following pages describe the different levels of certification, and criteria required to gain them through equivalency without having to go through the Technical Competency Process.

Junior Tradesman Profile (level 1)

The Junior Tradesman is the basic level maintenance & parts fitter, he/she has been working within the workshop for at least a year and is able to identify wear and tear within the more basic areas of the vehicle and replace these parts i.e. tyres, exhaust, brakes. Can also perform basic fluid and filter changes and carry out minor repair work. The Junior Tradesman can also replace some parts pre-diagnosed by a senior level technician.

Qualification/Certification/Experience (depending on light or HGV certification)

- Successfully completed a recognized automotive apprenticeship;
- Have recent experience within a garage;
- One of the following qualifications;
 - ASE G1 Auto Maintenance & Light Repair;
 - ASE T8 HGV Preventative Maintenance & Inspection;
 - City & Guilds, NVQ/VRQ/VCQ level 1, Vehicle Maintenance;

Specific requirements:

- Basic Knowledge of the vehicle systems and assemblies;
- Awareness of impact of incorrectly applied procedures;
- Awareness of safe workshop methods and processes.

Skilled Tradesman Profile (Level 2)

The Skilled Tradesman is first and foremost an expert at performing service inspection work and basic assembly/maintenance/electrical repairs to the highest standards of quality and efficiency and has earned qualification in this area. The Skilled Tradesman also supports the Senior Technicians to carry out more complex repair work.

Qualification/Certification/Experience (depending on light or HGV certification)

- Meets the requirements of the Junior Tradesman profile;
- 3 years full time recent experience carrying out automotive maintenance and repairs within a garage;
- One of the following qualification sections;
 - C&G level 2, Repair & Service of vehicles;
 - NVQ/VRQ/VCQ:
 - Level 2, Light or Heavy Vehicle Maintenance & Repair, and
 - Level 2, Auto-electrical Maintenance & Repair.

Specific requirements:

- The basic structure and function of systems, components and assemblies are known and reliably assigned to the vehicle types in which they are installed;
- Ensure operation of basic vehicle systems and functions;
- Autonomous performance of maintenance work, defined repairs and assembly work as instructed;
- Has a command of all maintenance, inspection and calibration tools. (Example: tyre pressure gauge, wheel alignment equipment);
- Can identify defects and system deviations during performance of maintenance services and accurately report attention required;
- Basic knowledge of diagnostic computers and awareness of resetting maintenance computers after required work (erasing faults, resetting service indicator).

A1 Technician Profile (level 3)

The A1 Technician has superseded the Skilled Tradesman level and retains that profile. The A1 Technician has also received advanced training which allows for professional repairs to the highest standards of quality and efficiency.

Qualification/Certification/Experience (depending on light or HGV certification)

- Meets the requirements of the Skilled Tradesman profile;
- 5 years full time recent experience carrying out automotive maintenance and repairs within a garage;
- One of the following qualification sections;
 - C&G level 3, Repair & Service of vehicles;
 - NVQ/VRQ/VCQ:
 - Level 3, Light or Heavy Vehicle Maintenance & Repair, and
 - Level 3, Auto-electrical Maintenance & Repair, and
 - Level 3, A/C & Climate Control Maintenance & Repair.
 - Red Seal, Automotive Service Technician or Truck & Transport Technician.

Specific requirements:

The A1 Technician has superseded the Skilled Tradesman level and retains that knowledge, the A1 Technician can also describe the design, function and individual components of:

- Spark Ignition (SI) and Compression Ignition (CI) engines including ignition and injection systems, On Board Diagnostics(OBD) and emission control and peripheral engine systems (e.g. turbocharging and Exhaust Gas Recycling (EGR) cooling);
- The electrical power generation and management;
- Automatic transmission, manual transmission, differential, transfer case and “all wheel systems”;
- Brakes, Suspension & Steering systems including Active Safety Systems;
- Climate Control systems;
- Passive Safety Systems, Safety Related Systems (SRS);
- Windows and Opening Roof systems;
- Lighting systems (e.g. Xenon lamps, LED lighting, cornering lamps, interior illumination);
- Immobilizer, alarm and locking systems. Can also program keys;
- Audio, Multimedia, Navigation and Telephone systems;

The A1 Technician can also:

- Test vehicle components using actual values and actuations, and can locate the information required for troubleshooting and diagnosis;
- Demonstrate basic knowledge relating to Controller Area Network (CAN) technology, understand the principle of the data transfer process in the vehicle networking and the interactive functions;
- Interpret function descriptions, basic circuit diagrams and repair procedures from the workshop literature and use them for correct diagnosis and repair

Master Technician Profile (level 4)

The Master Technician is the specialist for systematically performing complex diagnoses of defects, for monitoring repair processes and performing final inspection. He/she supports co-workers not only with systematic diagnoses, but also during the following steps of the repair process, thus ensuring professional solutions even in difficult cases.

Qualification/Certification/Experience

- Meets the requirements of the A1 Technician profile;
- 10 years full time recent experience carrying out automotive diagnostics, maintenance and repairs within a garage;
- One of the following qualification sections;
 - C&G/NVQ/VRQ/VCQ:
 - Level 4, Automotive Advanced Diagnostic Techniques, and
 - Level 4, Hybrid Electrical Vehicle Operation & Maintenance;
 - IMI, Level 4 Certificate in Advanced Automotive Studies Light or Heavy Vehicles.

Specific requirements:

The Master Technician has superseded the A1 Technician level and retains that knowledge. He/she also:

- Has advanced knowledge of all of the vehicle systems, functions and assemblies. And can perform diagnosis and repair on such systems;
- Has advanced knowledge about the organization, functions and networking of vehicle systems and components;
- Has advanced knowledge of vehicle electronics and data bus systems;
- Has advanced knowledge about telecommunications, software handling, IT networks and menu structures;
- Can perform and document complex diagnoses, particularly in networked systems, and pass on the results to others along with expertly structured comments;
- Can conduct diagnostic consultations with customers;
- Can provide technical support and advice to colleagues;
- Can create & present occupational training courses for other staff within the garage.

Technical Competency Process

Applicants who are not automatically graded as described previously will complete a Technical Competency Process. The IAP will review the applicants' certificates and work experience, then either:

- Provide recommendation for Certification at a prescribed level, or
- Invite the applicant for a Technical Competency Interview.

Applicants invited for the TCI will be asked to complete a self-assessment competency form and provide a portfolio containing any other certificates and/or worksheets as evidence of automotive tasks carried out, specifically within certain automotive subject areas to count towards the Competency score totals i.e. steering, electrical etc. Submitted evidence should be signed/verified by a workshop foreman/manager.

The applicant attending the TCI with the IAP will need to demonstrate how they match the required competencies.

The tables listed on pages 10-17 will be used to assess and score the applicant.

To achieve the **Level 1 Junior Tradesman Certification**, applicants must achieve 60 credits from the L1 Mandatory units and a minimum of 5 credits from the L1 Optional units available.

To achieve the **Level 2 Skilled Tradesman Certification**, applicants must achieve 60 credits from the Mandatory units and a minimum of 5 credits from the Optional units available.

To achieve the **Level 3 A1 Technician Certification**, applicants must achieve 70 credits from the Mandatory units and a minimum of 5 credits from the Optional units available.

To achieve the **Level 4 Master Technician Certification**, applicants must achieve 45 credits from the Mandatory units and a minimum of 5 credits from the Optional units available.

- **Evidence units** are gained by presenting documented work i.e. worksheets or invoices, that are signed by a supervisor/witness to state that the applicant has completed this work;
- **Knowledge units** are gained by presenting certification and/or answering questions presented by the IAP.

If further evidence is required then the applicant will be required to provide a demonstration of competency in the required areas.

A summary of the IAP recommendation will be forwarded to the OAC before being sent to NTB.

Level 1 Competency

To achieve the Level 1 Junior Tradesman Certification, applicants must achieve 60 credits from the Mandatory units and a minimum of 5 credits from the Optional units available.

- Evidence units are gained by presenting documented work that has been carried out by the applicant i.e. worksheets or invoices;
- Knowledge units are gained by presenting certification and/or answering questions presented by the IAP.

Level 1 Mandatory Evidence Units

Unit ref	Credit value	Unit title
L1ME1	3	Competency in Removing & Replacing Vehicle Engine Oil & Filters
L1ME2	3	Competency in Removing & Replacing Vehicle Wheels & Tyres
L1ME3	4	Competency in Removing & Replacing Vehicle Braking Units & Components
L1ME4	3	Competency in Removing & Replacing Vehicle Fuel System Units & Components
L1ME5	3	Competency in Removing & Replacing Vehicle Ignition System Units & Components
L1ME6	3	Competency in Removing & Replacing Vehicle Intake and Exhaust System Units & Components
L1ME7	3	Competency in Removing & Replacing Vehicle Steering & Suspension Components
L1ME8	5	Competency in Removing & Replacing Vehicle Battery, Starter Motor & Alternator Units

Level 1 Optional Evidence Units

Unit ref	Credit value	Unit title
L1OE1	2	Competency in Overhauling Vehicle Braking Units
L1OE2	2	Competency in Removing & Replacing Vehicle Driveline Units & Components
L1OE3	2	Competency in Removing & Fitting Basic Vehicle Mechanical, Electrical & Trim (MET) Components & Non-permanently Fixed Vehicle Body Panels

Level 1 Mandatory Knowledge Units

Unit ref	Credit value	Unit title
L1MK1	4	Knowledge of Health, Safety & Good Housekeeping in the Automotive Environment
L1MK2	3	Knowledge to Support Working Relationships in the Automotive Work Environment
L1MK3	3	Knowledge of Basic Tools & Measuring Devices used in the Automotive Environment
L1MK4	5	Basic Knowledge of Vehicle Engine Mechanical, Lubrication & Cooling Systems
L1MK5	3	Basic Knowledge of Vehicle Wheels & Tyres
L1MK6	3	Basic Knowledge of Vehicle Braking Systems
L1MK7	3	Basic Knowledge of Vehicle Suspension/Steering Systems
L1MK8	5	Basic Knowledge of Vehicle Fuel, Ignition, Air and Exhaust System Systems
L1MK9	4	Basic Knowledge of Vehicle Battery, Alternator & Starter Systems

Level 1 Optional Knowledge Units

Unit ref	Credit value	Unit title
L1OK1	2	Basic Knowledge of Vehicle Driveline Systems
L1OK2	3	Basic Knowledge of Vehicle Transmission Systems
L1OK3	2	Knowledge of Basic Vehicle Mechanical, Electrical & Trim (MET) Components & Non-permanently Fixed Vehicle Body Panels

Level 2 Competency

To achieve the **Level 2 Skilled Tradesman Certification**, applicants must achieve **60 credits** from the Mandatory units and a minimum of **5 credits** from the Optional units available.

- Evidence units are gained by presenting documented work that has been carried out by the applicant i.e. worksheets or invoices;
- Knowledge units are gained by presenting certification and/or answering questions presented by the IAP.

Level 2 Mandatory Evidence Units

Unit ref	Credit value	Unit title
L2ME1	3	Competency in Routine Vehicle Maintenance
L2ME2	5	Competency in Removing & Replacing Vehicle Engine Units & Components
L2ME3	5	Competency in Removing & Replacing Vehicle Braking Units & Components
L2ME4	5	Competency in Removing & Replacing Vehicle Suspension/Steering Units & Components
L2ME5	5	Competency in Removing & Replacing Vehicle Driveline Units & Components
L2ME6	5	Competency in Removing & Replacing Vehicle Electrical Units & Components

Level 2 Optional Evidence Units

Unit ref	Credit value	Unit title
L2OE1	2	Competency in Overhauling Vehicle Engine Mechanical Units
L2OE2	2	Competency in Overhauling Vehicle Braking Units
L2OE3	2	Competency in Overhauling Vehicle Steering and Suspension Units
L2OE4	2	Competency in Overhauling Vehicle Driveline Units & Components
L2OE5	2	Competency in Removing & Fitting Basic Vehicle Mechanical, Electrical & Trim (MET) Components & Non-permanently Fixed Vehicle Body Panels

Level 2 Mandatory Knowledge Units

Unit ref	Credit value	Unit title
L2MK1	4	Knowledge of Health, Safety & Good Housekeeping in the Automotive Environment
L2MK2	3	Knowledge of Tools & Measuring Devices used in the Automotive Environment
L2MK3	3	Knowledge of Routine Vehicle Maintenance
L2MK4	5	Knowledge of Vehicle Engine Mechanical, Lubrication & Cooling System Units & Components
L2MK5	3	Knowledge of Vehicle Braking Units & Components
L2MK6	4	Knowledge of Vehicle Suspension/Steering Units & Components
L2MK7	3	Knowledge of Vehicle Driveline Units & Components
L2MK8	3	Knowledge of Vehicle Fuel, Ignition, Air and Exhaust System Units & Components
L2MK9	4	Knowledge of Vehicle Electrical Units & Components

Level 2 Optional Knowledge Units

Unit ref	Credit value	Unit title
L2OK1	3	Knowledge of Overhauling Vehicle Engine Units
L2OK2	2	Knowledge of Overhauling Vehicle Braking Units
L2OK3	3	Knowledge of Overhauling Vehicle Suspension/Steering Units
L2OK4	5	Knowledge of how to Identify & Agree Motor Vehicle Customer Service Needs
L2OK5	2	Knowledge of Basic Vehicle Mechanical, Electrical & Trim (MET) Components & Non-permanently Fixed Vehicle Body Panels

Level 3 Competency

To achieve the **Level 3 A1 Technician Certification**, applicants must achieve **70 credits** from the mandatory units and a minimum of **5 credits** from the optional units available.

- Evidence units are gained by presenting documented work that has been carried out by the applicant i.e. worksheets or invoices;
- Knowledge units are gained by presenting certification and/or answering questions presented by the IAP.

Level 3 Mandatory Evidence Units

Unit ref	Credit value	Unit title
L3ME1	5	Competency in Removing & Replacing Vehicle Heating & Air Conditioning System Units & Components
L3ME2	5	Competency in Removing & Replacing Vehicle Automatic Transmission Units & Components
L3ME3	5	Competency in Removing & Replacing Vehicle Manual Drive Train/Axle Units & Components
L3ME4	5	Competency in Diagnosing & Rectifying Vehicle Braking System Faults
L3ME5	5	Competency in Diagnosing & Rectifying Vehicle Steering and Suspension Faults
L3ME6	5	Competency in Diagnosing & Rectifying Vehicle Driveline Faults
L3ME7	5	Competency in Diagnosing & Rectifying Vehicle Engine Faults
L3ME8	5	Competency in Diagnosing & Rectifying Vehicle Electrical/Electronic Faults

Level 3 Optional Evidence Units

Unit ref	Credit value	Unit title
L3OE1	5	Competency in Overhauling Vehicle Transmission Units
L3OE2	2	Competency in Diagnosing & Rectifying Vehicle Heating & Air Conditioning Faults
L3OE3	5	Competency in Diagnosing and Rectifying Vehicle Transmission Faults

Level 3 Mandatory Knowledge Units

Unit ref	Credit value	Unit title
L3MK1	5	Knowledge of Vehicle Heating & Air Conditioning System Units & Components
L3MK2	5	Knowledge of Vehicle Automatic Transmission/Transaxle & Components
L3MK3	5	Knowledge of Vehicle Manual Gearbox/Axles & Components
L3MK4	5	Knowledge of Diagnosis & Rectification of Vehicle Chassis System Faults
L3MK5	5	Knowledge of Diagnosis & Rectification of Vehicle Engine Faults
L3MK6	5	Knowledge of Diagnosis & Rectification of Vehicle Electrical Faults

Level 3 Optional Knowledge Units

Unit ref	Credit value	Unit title
L3OK1	3	Knowledge of Diagnosing and Rectifying Vehicle Transmission Faults
L3OK2	3	Knowledge of Overhauling Vehicle Transmission Units
L3OK3	3	Knowledge of Overhauling Vehicle Drivetrain Units
L3OK4	5	Knowledge of how to Identify & Agree Motor Vehicle Customer Service Needs

Level 4 Competency

To achieve the **Level 4 Master Technician Certification**, applicants must achieve **45 credits** from the mandatory units and a minimum of **5 credits** from the optional units available.

- Evidence units are gained by presenting documented work that has been carried out by the applicant i.e. worksheets or invoices;
- Knowledge units are gained by presenting certification and/or answering questions presented by the IAP.

Level 4 Mandatory Evidence Units

Unit ref	Credit value	Unit title
L4ME1	5	Competency in Advanced Diagnosis & Repair of Vehicle Electrical/Electronic Faults i.e. CAN System, Software, Signal Interpretation
L4ME2	5	Competency in Structured Diagnostic Approach
L4ME3	5	Competency in Creating Automotive Technical Report
L4ME4	5	Competency in Creating Automotive Training Presentation

Level 4 Optional Evidence Units

Unit ref	Credit value	Unit title
L4OE1	2	Competency in Vehicle Electronic Software Reprogram/Recalibration
L4OE2	5	Competency in Diagnosing & Rectifying Electrical/Electronic Faults on Hybrid or Electric Vehicles
L4OE3	2	Competency in Automotive Diagnostic Software Install/Update

Level 4 Mandatory Knowledge Units

Unit ref	Credit value	Unit title
L4MK1	20	Manufacturer Certification - Master Technician / Technical Expert / Diagnostic Technician
L4MK2	5	Knowledge of Hybrid & Electric Vehicle Units & Components
L4MK3	5	Knowledge of Advanced Diagnostic Methods
L4MK4	5	Knowledge of Vehicle Electronic Data Bus Systems
L4MK5	5	Knowledge of Telecommunications, Software Handling, IT Networks & Menu Structures
L4MK6	5	Knowledge of Information Structure & Presentation

Level 4 Optional Knowledge Units

Unit ref	Credit value	Unit title
L4OK1	3	Knowledge of Vehicle High Voltage Systems Safety Awareness
L4OK2	2	Knowledge of Vehicle Electronic Software Reprogram/Recalibration
L4OK3	2	Knowledge of Diagnostic Software Install/Update

Approval by the Ministry of Education and Workforce Development



The Hon Diallo Rabain, JP, MP.

Minister of Education and Workforce Development

Approval by the National Training Board



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Approval by the OAC for the Automotive Industry



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