

Trailblazer: Automotive Retail Motor Vehicle Service and Maintenance Technician (Light Vehicle) Assessment Plan - Summary

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Audience and purpose

This document describes the approach that will be taken to assess the Automotive Retail Apprenticeship for a Light Vehicle Technician. It is written for the three parties who need to work collaboratively to optimise the quality of the apprenticeship programmes provided within the sector; the employer, the training provider and the assessment organisation.

To avoid confusion, when the word 'competence' is used, it refers to the capability of the individual to consistently apply their knowledge and skills in the workplace.

Introduction

Context

Employers have designed the new apprenticeship Standard for technicians who service and repair light vehicles (cars, vans, pick-ups, sports utility vehicles, etc.) The technicians work in dealerships that focus on specific brand(s) or for independent garages that maintain and repair all makes of vehicles. The challenge from an assessment perspective is the complexity that is created by the high volume of apprentices who are trained in this sector and the wide geographical spread of the businesses involved.

Approximately 4,000 students graduate from light-vehicle apprentice programmes every year. There are more than 25,000 vehicle workshops managed by companies that range from multi-million pound trans-national dealer groups through to an owner-manager employing a handful of people.

In addition to the above complexities, there are several different training models that include residential block-release programmes devised and operated by global vehicle manufacturers and day-release courses provided by local colleges.

Challenges

Although the current system is acknowledged by employers to work reasonably well, there are concerns in key areas that include ineffective, expensive and time-consuming assessment processes, a complex and expensive qualification framework and a lack of consistency in the quality of training programmes. There are also wide variations in the quality of the training experience.

Moving forward, employers want the assessment process to reflect the increasing complexity of vehicle systems, the emergence of many unfamiliar technologies and the importance of an individual's behaviour as well as their skill.

Fundamental change

Transformation

Employers have recognised that the introduction of the new Standard provides the opportunity to transform the way the role of a vehicle technician is perceived. Both the Standard and the approach to assessment have been redesigned to attract and train higher calibre technicians equipped with the knowledge, skills and behaviours that will be required in the future.

Accountability and qualifications

In response to the challenges outlined above, employers have made a number of fundamental changes to the current assessment methods.

Accountability for assessing the competence of the apprentice in the workplace will transfer from the training provider to employers, supported by the training and assessment organisations, who will have primary responsibility for monitoring and analysing the apprentice's progress and deciding when the apprentice is ready to take the end synoptic assessment.

All formal qualifications, other than those where there is a statutory requirement, have been removed in order that the qualification valued above all else is the achievement of the Apprentice Certificate. This presents significant risks, which are addressed in the new assessment approach.

Objectives

The objective of the new approach is to ensure that an individual:

- Develops deep technical and diagnostic competence in response to the increasing complexity of vehicle technologies
- Develops sophisticated customer service behaviours
- Has the motivation and ability to contribute to the commercial success of their company

The new Standard and approach to assessment will also provide a more effective springboard for progression to higher education and a long-term career in an increasingly engineering-focused industry. The assessment process has been designed to ensure training

providers deploy the rigour, robustness, breadth and depth of on- and off-the-job training required to fully meet the LVT apprenticeship standard.

A synoptic end assessment has been introduced to ensure all apprentices achieve the same level of competence at the end of their apprenticeship regardless of where they have been trained.

Synoptic assessment

The high level steps in the synoptic assessment are illustrated here:

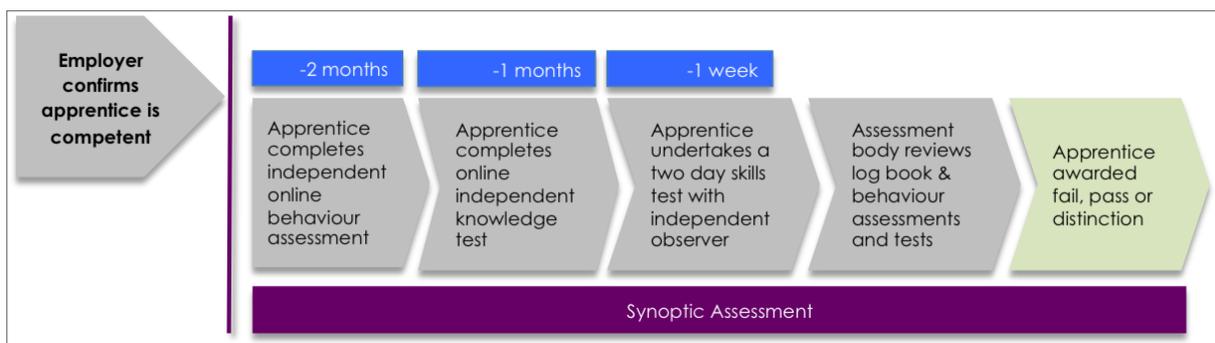


Fig 1: Synoptic end assessment

Guiding principles

In order to ensure the approach to assessment delivers on the objectives outlined above, employers have developed a set of guiding principles. The new approach to the synoptic end assessment must ensure:

- The development of high calibre apprentices with the knowledge, skills and behaviours to support the growth of companies that face an increasingly complex and challenging technical and business environment
- The same high level of competence irrespective of the type of apprentice training programme they have participated in
- The training providers are prevented from focusing their energies on 'training for the test'
- External assessment bodies are deployed effectively to ensure transparency and independence

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- External assessment bodies use the insights gained from the assessment activities to drive a continuous improvement process that will help to ensure the apprentice gets the best training and achieves the highest standards possible
- New technologies are used wherever possible to improve efficiency and effectiveness of training providers and assessment bodies
- Training providers develop end test facilities that simulate, as closely as possible, the real working environment

The new approach to on-programme assessment must ensure:

- Employers are placed at the heart of the assessment strategy and mandatory elements of the on-programme assessment have been introduced to ensure there is full compliance with this responsibility
- The employer and apprentice are fully aware of the progress that is being made at key stages in the programme compared with the norm for the sector
- Training providers and external assessment bodies develop and assess the individual's ability to apply knowledge and skills in the workplace and the abstract world of the classroom
- The apprentice's ability to make develops at a rate that is appropriate to the requirements of the employer
- Training providers take responsibility for the holistic development of the apprentice. This covers both their technical competence, emotional wellbeing and social development as it affects their ability to engage in learning and development.

The employers have explicitly not separated the on-programme from the synoptic end test because they recognise that the most effective way of inculcating deep craft-based knowledge and skills is to harness the two in unison to develop a capability that will sustain the apprentice for a lifetime.

The assessment approach

The assessment approach has two components. A rigorous synoptic end test and a light-touch robust on-programme assessment process that together provide assured outcomes for the sector. They address the serious concerns employers hold with regards to the current provision and provide a springboard that will allow an improvement in the reputation and status of this role, in turn leading to the attraction and development of higher-calibre employees and enhancing the sector's growing importance as a pathway into the automotive engineering sector as a whole.

What will be assessed?

Overview of the role

A technician works on highly sophisticated mechanical, hydraulic, electronic, electrical, cooling, hybrid and electrical-vehicle systems. This requires the use of complex diagnostic equipment. The quality of their work has to meet stringent statutory regulations, manufacturer's standards and vehicle safety requirements.

The nature of the work ranges from replacing simple parts through to solving complex faults with the use of diagnostic methods and equipment. The day-to-day tasks faced by the technician are constantly changing, driven by the introduction of ever more complex technologies and diagnostic techniques. Today's apprentice must have strong problem-solving skills.

They must be able to work independently but also operate as an effective team member, understand how their workshop and the dealership/garage functions from a commercial perspective, have good customer-handling skills and identify ways in which they can work more efficiently.

Apprenticeship duration

It is expected that it will typically take three years for the apprentice to attain the required level of competence in the workplace although it may be less if the individual already has significant training and practical experience.

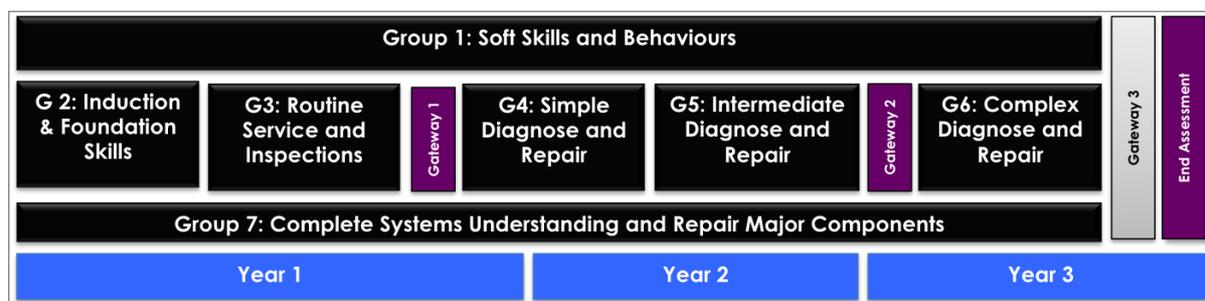


Fig 2: Apprentice development journey

We recommend that the craft journey begins with the development of the foundation knowledge and skills the apprentice requires to build their capabilities. The second step develops the ability to carry out routine services and inspections before progressing to a final stage of development that will provide them with the ability to diagnose and repair complex systems on the vehicle. Running in parallel they will progressively acquire the capability to strip and rebuild major components and acquire the soft skills and behaviours required to operate effectively with colleagues and customers. The development journey has been designed to maximise the financial return the employer will derive from their investment in an apprentice programme.

Description of what will be assessed

The knowledge, skills and behaviours that will be achieved are described, at a high level, in the new Level 3 Standard for light-vehicle service and maintenance technicians.

Employers have subsequently developed an occupational brief that provides the detail required by training providers and assessment bodies on which they can build their services.

The brief consists of two documents:

1. The Training Statement [See Appendix I.] This describes the apprentice's development journey, the competence they need to attain and the pace of progress they are expected to make.
2. The Soft Skills and Behaviour Framework [see Appendix II.] This describes the soft skills the apprentice is expected to master and the behaviours they are required to demonstrate. The framework also describes the standards they must meet.

How will they be assessed?

Overview

We will look at the two elements of the assessment strategy starting with the synoptic end assessment.

End synoptic assessment

The programme will conclude with an independent synoptic assessment. This begins with the employer and training provider confirming that the apprentice is fully competent and ready to enter this final phase.

This is followed by the synoptic assessment, of which there are four components.

1. Log book

The assessment organisation will review the final year of the apprentice's logbook in order to assess the progress the individual has made over time, particularly with regard to the way the development of their soft skills and behaviours have progressed. The training organisation and the employer will be required to maintain an electronic version of the log book in order that it can be reviewed remotely

2. Behaviour Assessment

They will conduct an independent behaviour assessment, taking input from the apprentice's immediate work circle. This will be the final peer review, completing a sequence that started at the point the apprentice joined the programme. It will provide evidence of the quality of the individual's soft skills and the degree to which their behaviours meet the requirements of the workplace. The framework that sets out three levels, fail, pass and distinction, can be found in Appendix II. The review of the logbook will be used to validate the accuracy of the assessment test. The final mark will be based on a combination of logbook and behaviour assessment

3. Knowledge Test

There will be an in-depth, online test that will use a range of question types to explore both the knowledge and understanding of the apprentice. The question types will be designed to test the ability of the apprentice to apply their knowledge to real-world problems.

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4. Skills Test

The fourth element is a two-day practical examination of the skills of the apprentice and their understanding of the underpinning theory. There will be approximately ten exercises that will provide an effective test of the range of skills required by a technician. They will be timed and carried out in an environment that simulates the workplace to ensure they provide an insight into the individual's competence.

The end test will take place over a period of several weeks, building progressively to the practical test.

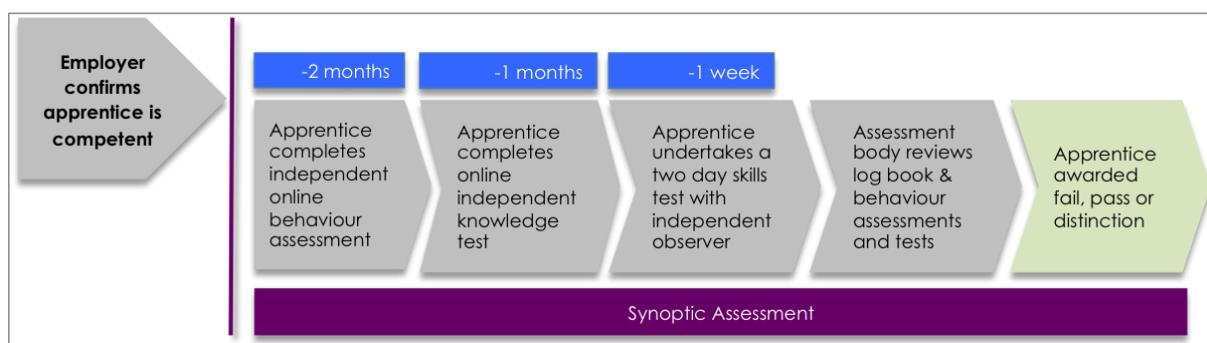


Fig 1: Synoptic end assessment

How will independence be assured?

The following steps will assure the independence of the synoptic assessment:

- An independent body will conduct the knowledge test which will be held in an independent centre or invigilated by an independent body within the training provider's facilities
- The framework for the practical skills exercises will be written by an independent assessment body and they will work with the manufacturers, independent garages and training providers to ensure they are relevant to the equipment and vehicles that are used in the test centre
- The exercises will be drawn at random from a large bank of exercises and provided by the assessment body to the test centre just in time for the test area to be prepared
- Steps will be taken to remove subjective judgements by using objective success criteria wherever possible

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- The training provider will conduct the practical tests. However, in 100 per cent of cases, the tests will be observed by an independent technical specialist who will recommend either pass or fail to the assessment organisation
- Recording technology will increasingly be used on a sample basis to monitor and record the assessment procedures.

The independent assessment organisation will make a holistic assessment of each apprentice's performance based on the evidence produced by the four elements of the synoptic assessment.

How will the performance of the apprentice be graded?

The overall grade, to be finalised in consultation with employers, for the apprenticeship will be calculated on a weighted score based on the following guidelines:

- The assessor will review the evidence of the candidate's progress described in the log book and the results of the online behaviour assessment and grade the candidate fail, pass (65 per cent) or distinction (85 per cent)
- All candidates must achieve a 65 per cent pass in the knowledge test
- All candidates will be assessed pass or fail in the practical skills test

The overall grade for the Apprenticeship certificate will be calculated on a weighted score. The weighting will be finalised in consultation with employers and will be based on the following recommendation:

- Log book and online behaviour assessment – 25 per cent
- On-programme knowledge tests at Gateway 2 – 15 per cent
- Synoptic knowledge end test – 25 per cent
- Synoptic skills end test – 35 per cent

To achieve a distinction, the candidate must exceed 85 per cent in the two synoptic end tests; the behaviour assessment and the knowledge and skills tests.

Where will the skills test be conducted?

The skills test will be taken either in the individual's place of training or third-party premises. The employer can select the location that suits them best.

All test premises must comply with a set of standards that will be developed by the Automotive Retail employer group in conjunction with an independent assessment body. They will include the ability to provide a test environment that simulates the work place. When complete, these will be published and will be made freely available.

On-programme assessment

Employers are recommending that on-programme assessment commences with an initial assessment prior to entry on to the programme and is then followed by two mandatory gateways that are positioned at key transition points in the programme. The gateways will provide structure to a robust process of on programme assessment that will be agreed between the employer and their training provider.

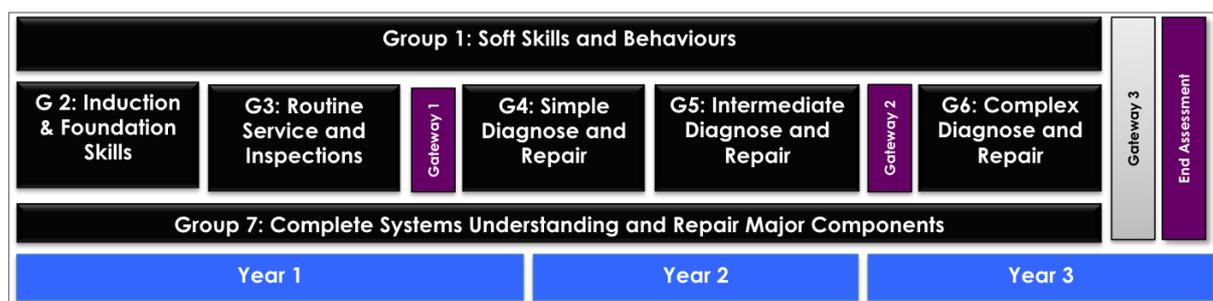


Fig 3: On-programme assessment

The apprentice will be required to pass Gateway 1 and Gateway 2 before progressing to the next phase of the programme. It is further recommended that there is a third gateway positioned about three months from the synoptic end test that will enable the employer to establish whether the apprentice is on course to complete the apprenticeship successfully or not.

It is required that the on-programme assessment should comprise:

1. Competence assessment.

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The employer and training provider at the end of Gateway 1 and 2 will formally assess the progressive development of competence. This will provide the opportunity to assess, for the benefit of the individual and employer the standard reached at these points and how they compare with the sector norm.

The third check will be at Gateway 3 as the apprentice approaches the end independent synoptic assessment. At this point the employer and training provider are required to agree and confirm that the apprentice is fully competent and ready to take the independent assessment.

2. Log book

The individual, employer and training provider are required to jointly to maintain a log book that captures robust evidence of the progress of the individual over the lifetime of the programme. This will be designed to strike a balance between thoroughness and complexity. It is required that this is in electronic form, viewable by the apprentice, employer and training provider. This content will be designed in consultation with the employers and assessment organisation and examples include reflections on improvements behaviour, examples of work (for example repair orders signed off by the employer and the results of the gateway assessments.

3. Knowledge and Understanding Test

On-going on-programme knowledge tests that reinforce learning. A proportion of the knowledge tests should be carried out during the execution of a task to assess the degree to which the apprentice can apply their knowledge in a practical context.

4. Behaviour Assessment

On-going on-programme assessment of soft skills and behaviours, with feedback drawn from the apprentices immediate work circle, to establish the progress the apprentice is making and to identify and adjust their development plan.

5. Skills Test

Comprehensive skills test at each of the three gateways.

If the apprentice completes these assessments successful they are then able to move onto the next phase of development.

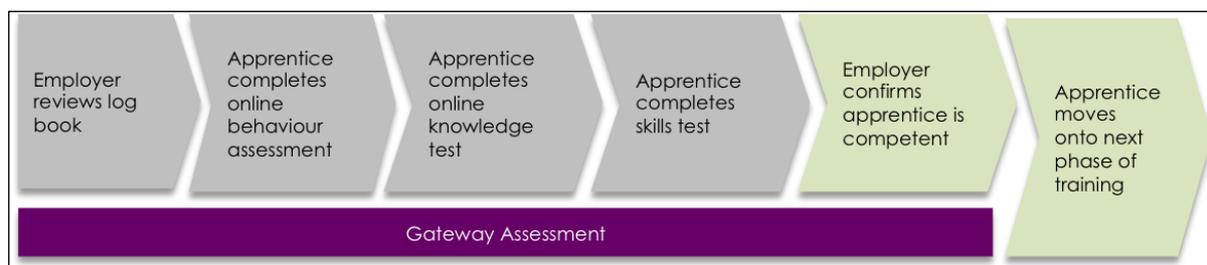


Fig 4: Gateway assessment

On-programme assessment – external validation

Employers require an external independent assessment body to validate the progress the apprentice is making at the first two gateways.

Their involvement will be:

- Reviewing the progress that has been made as recorded in the log book
- Carrying out the independent online knowledge test
- Providing the online behaviour assessment tools and analysing the results
- Reviewing the results of the skills test.

An independent check on progress at key gateways is essential in such a fragmented sector with varying levels of commitment by the parties involved in the training and assessment process. They are particularly important in this model because the alternative controls, externally set and assessed qualifications, have been removed.

There will be independent reviews on a sample basis of the training provider's assessment processes to ensure quality and enable comparisons of outcomes across the sector.

Required qualification

F-Gas

All apprentices are required to obtain the F-Gas qualification in line with the EU regulation that everyone involved in the installation, commissioning, service, maintenance and leak testing of stationary refrigeration, air conditioning and heat pump equipment containing or designed to contain refrigerants need to hold one.

Functional Skills

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Employers who recruit candidates without English and Maths at GCSE Grade C (or Functional Skills Level 2) or above must ensure that the candidate achieves this standard before the apprentice is submitted for the end assessment.

What recognition will the apprentice receive for their course of study?

The apprentice will receive from the assessment organisation recognition of the completion of a course of study at the end of Gateway 1 and 2. This meets the employer's requirement that, in the absence of external qualifications, if an individual leaves the programme, they will have a formal note of the stage they have reached within the programme.

On successful completion of the end test, the apprentice will receive a Certificate of Competence that will be issued by the Federation for Independent Sector Skills Standards.

How will relevance be assured?

The skills tests will be tailored, in consultation with the Original Equipment Manufacturer or independent retailer, to reflect the tools, systems and processes they use, so long as it does not add or subtract from the core set of knowledge, skills and behaviours on which every candidate is being assessed. [For example, if a manufacturer has a diagnostic system that obviates the need for human intervention, the candidate will still be tested on the underlying knowledge and skills required to diagnose the fault.]

Content that is unique to the OEM can be embedded or tested either immediately before or after the 'core' test. This element will not impact the pass/fail or grading of the candidate. The assessment will be based wholly on the core element of the test.

Who will carry out the on-programme and synoptic end assessments?

Any assessment body that is registered with the Skills Funding Agency Register of Apprenticeship Assessment Organisations will carry out the assessment observations, and the final decision on the performance of the apprentice. However, to participate, the assessment body and their independent assessors must satisfy the criteria of competence set out by the Automotive Retailers Employer Group. The criteria, that will be published and made freely available, will include:

- Understanding of the sector and the assessment requirements for this Standard, together with the expertise to administer the Assessment Tools required.
- Capability to deliver assessments at the scale and with the levels of service required, giving confidence that this is a strategic part of their business.
- Assessors with technical/occupational competence at or above the Apprenticeship Standard for Motor Vehicle Service and Maintenance Technician (Light Vehicle).
- Programme of ongoing CPD to provide 30 hours of work experience or technical/qualification related CPD within a 12 month period for each assessor.
- Robust internal quality assurance and verification processes to ensure that the quality, consistency and validity of assessments are maintained.

How will reliable, accurate and consistent judgements be delivered?

The Apprenticeship Standard, and the supporting Occupational Brief, defines what is required in terms of skills, knowledge and behaviours. With the removal of external

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qualifications, this then becomes the single source of information that will drive standardisation and comparability between employers.

The Automotive Employers Retail Group work with the assessment bodies to develop specifications for the tools, materials and techniques that will be used in the assessment process.

They will specify the skills and experience required by the independent assessors and will be published and made freely available.

The assessment bodies will be required to work collaboratively to ensure that the tools and processes are producing comparable results. In particular they will be required to work together to ensure that the capability of the apprentices entering the workplace is the same irrespective of the training and assessment provider and the method of study.

We are considering employer-led approaches for quality assurance and governance, and are working through the options with the Department for Business, Innovation and Skills. At the moment awarding organisations who wish to deliver against the standard will need to be on the Skills Funding Agency's register of assessment organisations.

Affordability and 'manageability'

The final design of the assessment process has been based on a pragmatic approach that takes into account the principle of focusing available resources as far as possible on training and development activities.

The decision to remove the on-programme external qualifications and transfer responsibility for assessing workplace competence to the employer has rebalanced assessment costs.

Steps have been taken to limit the bureaucracy that can make employers reluctant to engage in apprentice programmes. This is particularly important in a sector that is dominated by thousands of small businesses that are anxious to avoid further 'red tape'.

In terms of manageability, discussions have been held with assessment bodies on the practicality of the assessment approach. They have modelled the resource requirements and are confident that they can meet them; in particular the number of assessors that will be required at peak periods. They will work together to decide how best to provide the online tools.

Professional body recognition

Employers have insisted from the start of the Trailblazer design process that it forms part of a clear pathway of career progression for the apprentice.

For those deemed capable and ready, further career development / progression opportunities could be considered such as Master Technician, Engineering Technician registration (EngTech) or higher levels of education and training. Discussions are being held with several organisations in the engineering sector to refine the pathway to professional recognition, which when agreed, will be published and made available.

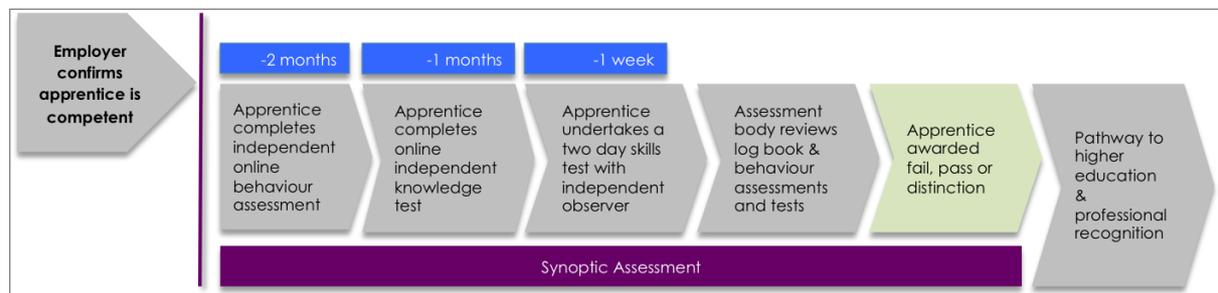


Fig 5: Career journey

Governing body

The sector is looking at options to form a governing body that will have responsibility for the on going management of the Standard and approach to assessment. This will include monitoring its effectiveness and adjusting as necessary and managing the assessment bodies. The Automotove Retail group are considering employer-led approaches for governance and are working through the options with BIS. Its primary purpose will be to ensure that the apprenticeship is fit for purpose, that it delivers to the sector individuals who have the competencies that keep pace with the rapid changes in both the way the products they repair are built and the service they offer to customers, and that the assessment processes are transparent and independent.

Its overall objective will be to ensure that the sector can be confident that an apprentice who enters employment has the same high level of competence irrespective of the type of apprentice training programme they have participated in.

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Appendix I

The Training Statement

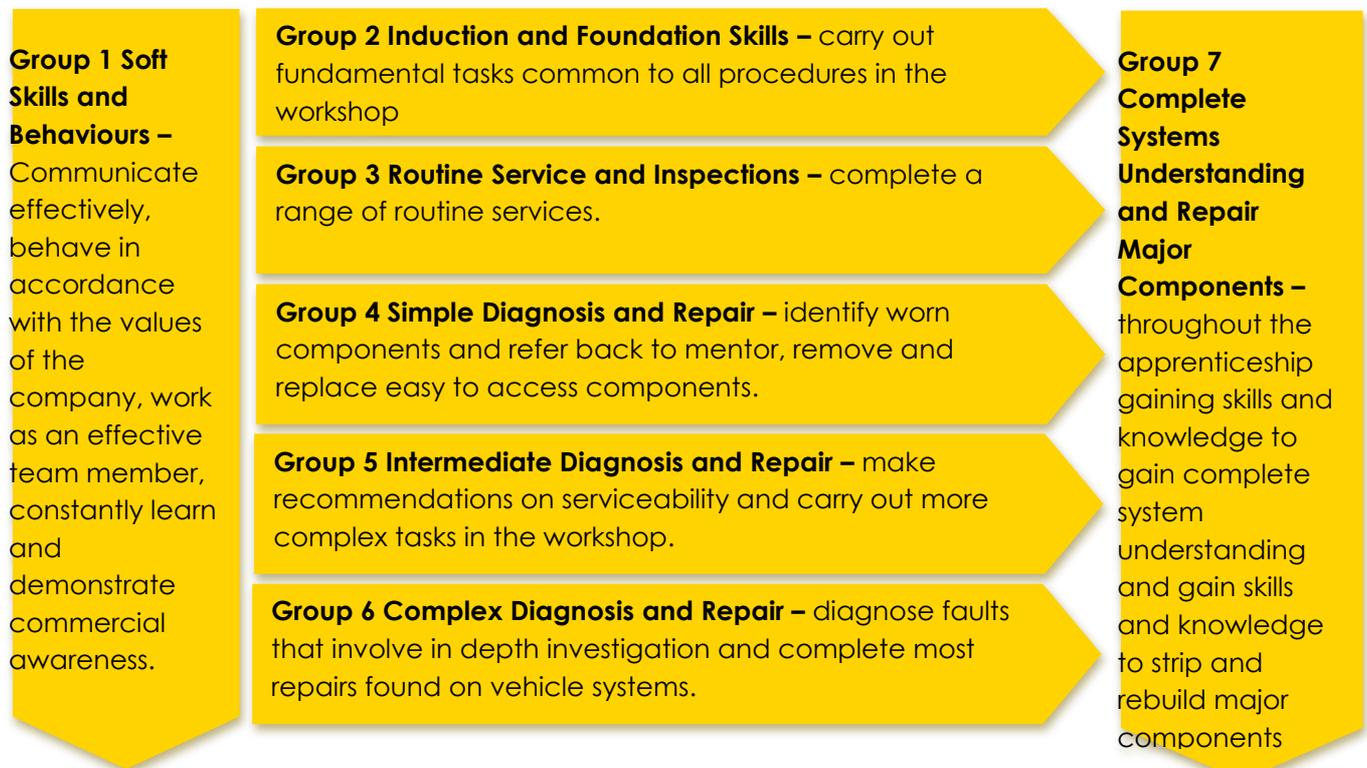
The Automotive Retail Light Vehicle Technician Apprenticeship.

LVT Training Specification

Introduction

Competence is achieved by continually applying skills and knowledge taught. This is best achieved if the knowledge and skills are applied immediately after they are taught. The Assessment Strategy is designed to assess knowledge, competence and behaviours that mirror the natural progression within the workplace.

The training specification is designed to give a clear indication of what the Light Vehicle apprentice needs to be taught and trained at each stage of development. It covers the knowledge, skills, competence and behaviours that the apprentice will be assessed on during and at the end of their apprenticeship. There are 7 groups:



Groups 1 and 7 run alongside groups 2 to 6; as the apprentice gains the competences required to gain complete understanding they will develop effective behaviours to be a valued team member. Groups 2 to 6 would normally be completed in the order presented.

Group 1 Soft Skills and Behaviours

Competence Required

The apprentice will:

- Unit 1.1 Working Together & Building Trust
 - Routinely collaborate with others to achieve targets.
 - Maintain positive working relationships even though the other person may be very different.
 - Accept the tasks given, quickly recognise whether they have the ability to complete them and seek help appropriately.
 - Demonstrate honesty when working as part of a team.
 - Carry out tasks with consideration for others.
 - Seek support & help from colleagues when appropriate.
 - Flag up difficulties in sufficient time to take remedial action.
 - Provide feedback to others at the appropriate moment and support it with relevant evidence.
 - Actively contribute to team goals.
- Unit 1.2 Customer Experience & Communication
 - Use a clear voice and polite tone. Speak confidently and use different types of questions appropriately.
 - Complete internal documentation as required using legible, grammatically correct written communication for internal e-mails/repair order completion.
 - Exhibits appropriate body language and attitude when dealing with colleagues and customers.
 - Be trusted and deal with customers with honesty and with fairness.
 - Able to converse with others regarding technical issues explaining technical terminology when asked.
 - Approach colleagues and customers with respect and follow the appropriate procedures when dealing with a problem. Quickly refer difficult issues to others.
 - Wear appropriate clothes at all times and present a clean appearance especially when meeting customers.

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- Unit 1.3 Making it Happen & Commercial Awareness
 - Contribute ideas, think them through in detail and their implications and present them clearly.
 - Take a systematic approach to problem solving. Know their limitations and when best to escalate issues.
 - Know what they need to do and the roles of people close to them. Use confidently systems and processes relevant to the role. Comply with legislation.
 - Complete documentation with a clear understanding of its purpose.
 - Understand the business side of managing a workshop and take steps to improve its overall efficiency.
 - Be punctual and routinely meet deadlines. Think about the tasks ahead and how they should be prioritised. React well to the unexpected.
 - Confidently break down complex tasks and allocate time and resources appropriately
 - Understand the environmental impact of the materials they use and take steps to minimise waste.
 - Understands the importance of PPE. Good housekeeping in the workshop. Routinely operate safely without the need for reminders.
- Unit 1.4 Learn to Learn & Striving for Excellence
 - Independently and regularly reflect on progress and set goals and priorities for future development.
 - Share their knowledge and skills when requested.
 - Demonstrate an interest in learning and actively use the opportunities to extend their knowledge and skills that are put in front of them.
 - Provide reports on my progress when asked.

Group 2 Induction and Foundation Skills

Group Overview

This is the initial stage of the apprenticeship; it is designed to get the apprentice to the point where they can assist others to complete simple, process driven tasks in the workshop, gaining experience and learning while contributing to the productivity of others.

Competence Required

The apprentice will have developed the competence to:

- Contribute to the maintenance of a safe and efficient workshop and adheres to business processes.
- Carry out fundamental tasks associated with removal and replacement procedures on a vehicle:
 - Using common tools, torque wrench and measuring instruments.
 - Removing and replace bolts, setscrews, studs, hoses, electrical connectors, trim, clips, drive belts, gaskets.
 - Extracting seized and broken bolts.
 - Handling fluids.
 - Drilling, cutting, filing, tapping, riveting, joining metals and plastics.
 - Carrying out basic procedures with the diagnostic machine.
 - Jacking and lifting a vehicle.

Knowledge and Understanding Required

The apprentice will understand:

- Unit 2.1 Soft Skills and Behaviours
 - Health and safety: legislation; policy, hazards; risks, signs; location and use of safety equipment; prohibited areas and equipment; reporting procedures; implications of not following procedures.
 - The structure of the organisation: lines of communication.
 - Employment law: own rights and responsibilities; responsibilities of the employer; support available as an employee.
 - The importance of vehicle protection.
 - How to ensure workplace security.

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- Environmental procedures and the implications of not following them.
 - Equal opportunities & diversity legislation and benefits of following E&D procedures.
 - How to communicate effectively: body language; rapport; barriers to communication; confirming understanding.
 - Core values and the impact of positive and negative traits.
 - Standards of behaviour defined by own workplace.
 - The purpose of improving own performance, ways of improving own performance and identifying opportunities that are available.
- Unit 2.2 Tools
 - Maintenance procedure and understands why they are carried out.

The apprentice will have knowledge of:

- Unit 2.3 Vehicle
 - The location and function of main components of a vehicle.

Group 3 Routine Services and Inspections

Group Overview

On completion of this group the apprentice should be able to complete a good range of routine services. They will not be expected to do some of the more complex tasks found on large services such as timing belt change. They should be able to identify the difference between good and possible faulty components but, at this stage, they will not be expected to make any decisions on whether a component is serviceable or if any future action is to be taken.

Competence Required

The apprentice will have developed the competence to:

- Use ICT to create emails and word-processed documents; copy and paste across documents; save and print documents.
- Use ICT to carry out web based searches.
- Obtain inspection schedules, data and recall information.
- Use equipment normally found in the workplace relating to servicing and inspections.
- Reset service indicator.
- Consistently complete a range of services and inspect and prepare a vehicle to the required quality standard for handover to the customer.
- Identify common faults found during routine service and inspections.
- Report faults using company procedures.
- Complete documentation following workplace procedures.
- Test the function of a wide range of fitted accessories.

Knowledge and Understanding Required

The apprentice will understand:

- Unit 3.1 Soft Skills and Behaviours:
 - How the business works from an operational perspective: organisational structure and interrelationship.
 - Industry structure: manufacturers; large dealer groups; non-franchised; Vehicle Inspectorate; professional bodies and organisations.
 - Developing positive working relationships: importance of; listening to the views of others; honouring commitments.

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- Commercial awareness: importance of promoting products and services to customers; factors that influence customers.
- Self-evaluation: when, how and why to carry out; opportunities in the Automotive Industry; career development.
- Unit 3.2 Electrical Systems:
 - Requirements for an electrical circuit: voltage; current; resistance; Ohms law; Watts law direction of current flow; continuity; switches.
 - Connection between volts, amps & resistance; volt drop.
 - Series and parallel circuits: current flow; voltage of components.
 - Electrical calculations.
- Unit 3.3 Servicing:
 - Where to obtain inspection schedules, data and recall information.
 - The need to use the correct lubricants for the vehicle.
 - Why and how to carry out checks usually carried out at routine services and inspections.
 - Importance of following procedures when reporting faults.
 - Knowledge of the legal requirements for tyres, brakes, steering, suspension and lighting.
 - Knowledge of which components should be checked during a road test.
- Unit 3.4 Accessories:
 - The implications and legal requirements of fitting accessories and carrying out modifications.

Group 4 Simple Diagnosis and Repair

Group Overview

At this stage the apprentice will be able to identify obvious broken or heavily worn components and will refer all other diagnoses to their mentor. Repair will be limited to removing and replacing components that are easy to access and require limited skill.

Competence Required

The apprentice will have developed the competence to:

- Remove and replace a range of components that involve simple procedures (components that have easy access and no special tools or procedures are needed).
- Measure components and carry out test procedures for common faults associated with simple removal and replacement procedures.

Knowledge and Understanding Required

The apprentice will understand:

- Unit 4.1 Soft Skills and Behaviours:
 - Prioritising work; not overpromising and under delivering
 - Taking on new challenges and adapting to change.
- Unit 4.2 Electrical Systems:
 - Vehicle batteries including low maintenance and maintenance free; lead acid and nickel cadmium types; cells; separators; plates; electrolyte
- Unit 4.3 Lighting and Auxiliary Systems:
 - Simple circuit diagrams and operation of: front and tail lamps; main and dip beam headlamps; fog and spot lamps, lighting and dip switch; interior lights; directional indicators, circuit relays.
 - Statutory requirements for vehicle lighting, headlamp adjustment and beam setting.
 - Bulb types and advanced lighting technology: Xenon lighting; gas discharge lighting; ballast system; LED; intelligent front lighting; blue lights; complex reflectors; fibre optic; optical patterning.
- Unit 4.4 Wheels and Tyres Construction:

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- Tyre constructions and tyre markings: tyre & wheel size markings; speed rating; direction of rotation; profile; load rating; ply rating; tread-wear indicators.
- Light vehicle wheels: light alloy; pressed steel and wire wheels; flat-edge and double hump rims.
- Unit 4.5 Disc Brakes Construction:
 - Construction and operation of disc brakes: disc pads; calliper; brake disc; ventilated disc; disc pad retraction; wear indicators and warning lamps.
- Unit 4.6 Steering:
 - Vehicle wheel alignment: toe in toe out.
- Unit 4.7 Engine Types and Configurations:
 - Two & four stroke cycles: petrol; diesel; naturally aspirated and turbocharged engines.
- Unit 4.8 Exhaust Systems:
 - Construction, purpose, layout and design to include brackets, silencers and safety with catalytic converters.
- Unit 4.9 Engine Cooling Systems:
 - Components, operating principles and functions of the cooling system: cooling fans and control devices; header tanks; radiators and pressure caps; hoses clips; pipes; thermostats; water pumps; coolants, cooling effect of oils.
 - Ventilation systems, layout and construction of internal heater systems: heater matrix; temperature control systems.

Group 5 Intermediate Diagnosis and Repair

Group Overview

At this stage the apprentice will be starting to carry out more complex tasks in the workshop and using logic to carry out diagnostic techniques. They will also have gained further experience to make recommendations to their mentor on serviceability of components and make recommendations based on their judgement.

Competence Required

The apprentice will have developed the competence to:

- Complete repairs that involve two stage removal and replacement and involve removal of other components to access the repair.
- Identify causes of common faults associated with two stage removal and replacement and recommend suitable further actions.

Knowledge and Understanding Required

The apprentice will understand:

- Unit 5.1 Soft Skills and Behaviours:
 - How to share ideas.
- Unit 5.2 Diagnostic Skills:
 - Common fault types, causes and effects of different types of faults, eg. whine, rumble, vibration, wander, rattle, knock, misfire, leak.
 - How to ask questions and how to avoid making wrong assumptions.
- Unit 5.3 Electrical Systems:
 - Magnetism; diodes; transistors; capacitors; construction and operation of Inductive and Hall effect sensors.
 - The effect on circuit operation of open circuit component(s); meaning of open circuit.
- Unit 5.4 Drum Brakes:
 - Construction and operation of drum brakes: brake drums; linings and shoes; leading and trailing shoes; self-servo action; automatic adjusters; backing plates; parking brake system.
- Unit 5.5 Suspension Layouts and Components:

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- Advantages of light vehicle suspension systems: rigid axle; independent suspension.
- Suspension terms: rebound; bump; float; dive; pitch roll; compliance; forces acting on suspension systems during braking, driving and cornering.
- Operation of light vehicle suspension, types and components: trailing arms; wish bones; ball joints; track control arms; bump stops; Macpherson strut system; anti-roll bars; stabiliser bars; swinging arms; parallel link; swinging half-axes; transverse link and semi-swinging arms; methods of locating the road wheels against braking, driving and cornering forces; methods of controlling cornering forces by fitting anti roll torsion members; leaf spring, coil springs, torsion bar, rubber springs, hydraulic, hydro-pneumatic, hydraulic dampers; adaptive dampening; electronic systems.
- Unit 5.6 Steering:
 - Geometry: castor; camber; kingpin or swivel pin inclination; negative offset; Ackerman principle; toe-out on turns; steered wheel geometry; slip angles; oversteer; understeer; slip angles; self-aligning torque; neutral steer.
 - Operation and layout of rear and four wheel steering: passive; active.
- Unit 5.7 Power assisted steering:
 - Components layout and operation: piston; power cylinders; drive belts; pumps; hydraulic valve (rotary, spool and flapper type); hydraulic fluid.
 - Principles and components of electrical and electronic steering systems: motor, torque sensor; ECU.
 - Advantages of power steering, operation and layout of rear and four wheel steering.
- Unit 5.8 Vehicle Starting and Charging System:
 - Alternator: drive systems, rotor; stator; slip ring; brush assembly; diode rectification pack; voltage regulation; cooling fan; phased winding connections; three phase output.
 - Starter: ignition/starter switch; solenoid; inertia and pre-engaged starters; ring gear and pinion; one-way clutch.
- Unit 5.9 Auxiliary electrics 1:
 - Relays; engine cooling fan.

- Telematics and I.C.E. systems and components: radios; CD and multi play units; DVD players; MP3 players; speakers; aerial systems; amplifiers; V.D.U. screens; SAT/NAV; communication units.
- Knowledge of radio frequencies: analogue; DAB; factors affecting performance.
- Unit 5.10 Ignition Systems:
 - Knowledge of layout of distributor ignition systems: ignition terminology; dwell angle; dwell variations; ignition timing advance and retard systems; dynamic and static ignition timing.
 - Coils: voltages; principles of a coil; safety; oscilloscope patterns; mapping; advance and retard.
 - Spark plugs: reach; heat range; electrode features and electrode polarity.
- Unit 5.11 Transmission Drivelines:
 - Layout and construction of drive shafts used in front wheel, rear wheel and four-wheel drive systems: flexible couplings; sliding joints; constant velocity joints; universal joints.
 - Stresses applied to shafts: torsional; bending; shear.
 - Wheel bearing arrangements: non-driving and driven wheel arrangements; roller; taper roller; needle; ball; plain.
 - Knowledge of fully floating, three quarter floating and semi floating axles.

Group 6 Complex Diagnosis and Repair

Group Overview

At this stage the apprentice will be able to diagnose faults that involve in depth investigation. They will be able to fully follow logical fault finding processes and make decisions based on test results narrowing down to the root cause. They will have gained experience and transferable skills to complete most repairs found on vehicle systems.

Competence Required

The apprentice will have developed the competence to:

- Complete a wide range of repairs that involve complex procedures, or in depth knowledge.
- Identify causes of common faults associated with two stage removal and replacement and recommend suitable further actions.
- Use current flow diagrams and electrical test equipment to carry out standard diagnostic and repair procedures.
- Use diagnostic, mechanical and electrical measuring equipment.
- Follow a logical diagnostic sequence; carries out tests on components based only on the information available; makes sound recommendations based on the information found.

Knowledge and Understanding Required

The apprentice will understand:

- Unit 6.1 Soft Skills and Behaviours:
 - How to communicate effectively outside their own work environment.
 - Resolve problem within the workplace: types of problems that may occur; identifying problems; ways of dealing with problems; how and when to refer problems.
- Unit 6.2 Diagnostic Skills:
 - Fault finding strategies: how to adopt a methodical approach; dealing with the unknown; where to start; initial assessment.
 - How to work efficiently to minimize spares used in effecting a repair.
- Unit 6.3 Electrical Systems:

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- Meaning of: short circuit; bad earth; high resistance; electrical capacity.
- Complex vehicle wiring diagrams: electrical and electronic symbols; earth and insulated return systems'
- Carrying out repairs to wires and connectors.
- Multiplex: principles; digital and fibre optic; databus types; error checking; oscilloscope patterns; ECU; electronic and electrical safety procedures.
- Unit 6.4 Auxiliary electrics 2:
 - Construction and operation of: displays; clock clusters; switch fitted to stalk and steering systems.
 - Security: central door lock locking system; door locking actuators; solenoids; dead locking actuators; luggage compartment release solenoids; anti-theft modules; audible warning units; sensing units; immobiliser units.
 - Supplementary restraint and airbag systems: clock spring; airbag assemblies; seatbelt tensioner; control units; sensors; seat belt pre-tensioners; warning systems; circuit protection; safe handling procedures and regulations.
 - Heater operation and construction; fan motors; rheostat interfaces; electro-valves modules; switches; heated seats; electrically adjusted seats.
 - Convenience systems: electric windows; window motor/regulator; heated screens; mirror operation mechanisms; sun roof operation.
 - Construction and operation of wiper and washer systems: motor, auto and intermittent wash wipe; relays; washer motors, wiper linkage, multifunction relays, headlamp wash/wipe.
- Unit 6.5 Engine Inlet Systems:
 - Construction and purpose of air filtration systems:
 - Torque and power: meaning of volumetric efficiency and the effect of volumetric efficiency on engine performance.
 - Methods used to improve volumetric efficiency: turbo-charges; supercharges; waste gates. disadvantages of pressure charging induction systems.
- Unit 6.6 Engine Sensors:
 - Sensors: analogue and digital signals; MAP; air and coolant temperature; air flow; throttle potentiometer; oxygen; flywheel; camshaft.
 - Closed/open loop engine management systems.

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- Unit 6.7 Fuel Systems:
 - The relative advantages and disadvantages of petrol and diesel engines.
 - Fuel pressure regulators, fuel pump relays.
 - Mechanical control and electronic control throttle units: idle speed control
 - Function and layout of petrol injection systems: single and multi-point systems; unit injectors; injection components; injection pump, pump relay.
 - Principles and requirements of compression ignition engines: combustion chambers (direct and indirect injection); function and basic operation of diesel fuel injection components; fuel pump; HP Pump; fuel filters; sedimenters; injector types (direct and indirect injection); single and multi-hole; pintle; glow plugs; cold start devices; fuel cut-off solenoid.
 - Knowledge of rotary diesel systems: governors; fuel pipes; procedures for injection pump timing; bleeding the system.
- Unit 6.8 Emissions:
 - Terms related to hydro-carbon fuels: volatility; calorific value; flash point; octane rating; cetane value.
 - Composition of hydro-carbon fuels and air: percentages hydrogen; carbon; nitrogen and oxygen and the combustion processes; stoichiometric ratio; lambda; weak and rich air/fuel ratios;
 - By-products of combustion for different engine conditions and fuel mixtures: water vapour (H₂O); nitrogen (N); carbon monoxide (CO); carbon dioxide (CO₂); carbon (C); hydrocarbon (HC); oxides of nitrogen (NO_x, NO₂, NO) and particulates; MOT requirements; current European legislation and regulations.
 - Engine combustion: flame travel; pre-ignition and detonation; flash point; fire point; methods used to reduce emissions; EGR; low emission fuels; AdBlue; lean burn technology; catalytic converters.
- Unit 6.9 Clutch:
 - Construction and operation of clutch: reasons for fitting; coil spring clutches; diaphragm spring clutches; single plate clutches; multi plate clutches; mechanical and hydraulic operating mechanisms; master cylinder; slave cylinder; EGS clutch systems.
- Unit 6.10 Advanced Suspension Systems:

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- ECU, sensors and actuators, electrical inputs, voltages, oscilloscope patterns; safety procedures
- Self-levelling suspensions: reasons for fitting; operation under different conditions.
- Operation of driver controlled and ride controlled systems.
- Unit 6.11 Brake Hydraulics:
 - Requirements of brake fluid: properties; boiling point; potential damage to paint surfaces; hygroscopic action; manufacturer's change periods; fluid classification and rating.
 - Terms associated with mechanical and hydraulic braking systems: braking efficiency; brake fade; brake balance.
 - Components and operation of master cylinder; vacuum pumps; servo; proportioning and load sensing pressure valves.
 - The principles and components of ABS and EBS systems: ECU, Speed sensors, pump & valves.
- Unit 6.12 Stability:
 - Operation of stability and traction control systems
- Unit 6.13 Climate Control:
 - Air conditioning mechanical components and operation: compressors; condensers; receivers; dryers; connection; valves; hoses; thermostats; refrigerants; comfort control systems; internal heater system.
 - Electronic climate control: control panel, sunlight sensors, internal/external temperature sensors.

Group 7 Complete Systems Understanding and Repair Major Components

Group Overview

At this stage, in addition to being able to complete most repairs, they will have the skills and knowledge to strip and rebuild major components but may not have gained enough experience to be competent at this.

Competence Required

The apprentice will have developed the competence to:

- Apply advanced diagnostic principles and logical problem-solving techniques, supported by diagnostic tools and testing regimes, to establish electrical, mechanical and electronic faults.
- Use appropriate recommended diagnostic techniques across all systems.
- Interpret a wide range of diagnostic information and confirm system serviceability using suitable test instruments.

Skills Required

The apprentice will have the skills to:

- Differential and gearbox:
 - Carry out procedures used for inspecting, testing and rebuilding gearboxes including, leaks, gear selection, synchromesh operation, abnormal noise, electrical and hydraulic systems.
- Engine mechanical
 - Carry out restoration and repair, assessing engine mechanical components, measuring for wear and serviceability including cylinder bores, crankshaft journals.

They will also be required to complete the F-Gas certificate.

Knowledge and Understanding Required

The apprentice will understand:

- Unit 7.1 Differential:
 - Calculate final drive gear ratios and calculate the overall gear ratio from given data.

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- Construction and operation of final drive units, reasons for fitting; crown wheel & pinion; bevel; hypoid and helical gears; differential gears; sun & planet gears; lubricants; lubrication bearings and seals; limited slip differential; third differential, differential locks; traction control systems and launch control.
- Unit 7.2 Manual Gearboxes:
 - Reasons for fitting gearboxes.
 - Calculate gear ratios and driving torque for typical gearbox specifications.
 - Transverse and inline layouts: layout and construction of gears and shafts for 4, 5 and 6 speed gearbox designs; sliding mesh; constant mesh; synchromesh; reverse gear; gear selection linkages; selector forks and rods; detents and interlock mechanisms; arrangements for gearbox bearings; bushes; oil seals; gaskets; gearbox lubrication; speedometer drive; electrical and electronic components including reverse lamp switch.
 - Procedures used for inspecting, testing and rebuilding gearboxes including, leaks, gear selection, synchromesh operation, abnormal noise
- Unit 7.4 Engine Mechanical:
 - Calculate compression ratios from given data.
 - Engine components and layouts: single (OHC) and multi camshaft (DOHC) arrangements; single and multi-cylinder (2, 4, 6, 8 cylinder) types; cylinder head layout and design; combustion chamber and piston design; layout and operation of multi-valve arrangements; variable valve timing and the effect on performance.
 - Rotary engine: advantages; disadvantages; rotor; eccentric shaft; housing; seal.
 - How to restore and repair: assess engine mechanical components; measure for wear and serviceability including cylinder bores, cylinder heads, crankshaft journals, valve faces, valve guides, valve seats and camshafts.
- Unit 7.3 Engine: Lubrication:
 - Terms associated with lubrication and engine oil: full-flow; hydrodynamic; boundary; multi-grade; organic, mineral and synthetic oil; lubrication grades; viscosity index; additives; detergents; dispersants; anti-oxidants inhibitors; anti-foaming agents; anti-wear.

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- Requirements and features of engine oil: operating temperatures; pressures; splash and pressurised systems; pumps; pressure relief valve; filters full flow and by-pass; oil ways; oil coolers; wet and dry sump systems.
- Unit 7.4 Automatic Transmissions:
 - Fluid couplings, fluid flywheel, torque converter, epicyclic gearing (sun, planet, annulus and carrier) and method for achieving different gear ratios; hydraulic control systems, electronic control systems.
 - Continuously variable transmissions (CVT) and sequential manual gearbox (SMG): ECU; sensors and actuators; electrical inputs & outputs; voltages; oscilloscope patterns; interaction between the electrical/electronic system with hydraulic system and mechanical components; electronic and electrical safety procedures.
- Unit 7.5 Alternative fuels and hybrid and electric systems
 - The apprentice will have knowledge of alternative fuels and hybrid and electric systems.
 - Health and safety: industry standards and regulations, the importance of isolating high voltage systems.
 - Advantages and disadvantages of the different alternative fuels and hybrid and electric systems
 - System layouts: charging systems, regeneration brakes, battery types

Appendix II

The Soft Skills and Behaviour Framework

The Automotive Retail Light Vehicle Technician Apprenticeship Soft Skills & Behaviours

This document sets out the soft skills and behaviours and provides the framework that will provide the basis for the approach to assessment.

WORKING TOGETHER & BUILDING TRUST

I know that we will achieve more working with other people than we can do separately. I operate as an effective team member, taking responsibility when required and am honest and accountable when things don't go as planned. I behave in accordance with the values of the company I work for and treat colleagues and customers with respect and courtesy

Quality	THE STANDARD	Distinction
Working with others	Routinely collaborate with others to achieve targets	Recognise when others are struggling and offer support where appropriate
Positive working relationships	Maintain positive working relationships even though the other person may be very different from myself	Encourage others to be involved, recognise those that are slow to contribute or are being excluded and take steps to bring them into the team
Receiving and managing tasks	Accept the tasks I am given and quickly recognise whether I have the ability to complete them and seek help appropriately	Recognise the strengths and weaknesses in myself and others and allocate tasks to those who are best able to complete them
Developing trust	Demonstrate honesty when working as part of a team	
Impact on others	Carry out tasks with consideration for others	
Remedial action	Seek support & help from colleagues when appropriate	Alert others to the problems they may encounter when completing a task and offer solutions to ensure a

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	Flag up difficulties in sufficient time to take remedial action	team meets its agreed goals
Feedback	Provide feedback to others at the appropriate moment and support it with relevant evidence	Provide accurate, balanced constructive feedback to others using the appropriate approach and supported by relevant evidence
Contribution to team goals	Actively contribute to team goals	Contribute towards setting clear team goals and make a significant contribution to the effort required to complete them

WHAT IT IS NOT

Ignoring that I am part of a team	Behaving in a dishonest way
Failing to handle differences between myself and others	Ignoring the impact of my actions on others
Not seeking the support of others when I need it	Failing to provide honest feedback to my colleagues when they do something I am not happy about
Not supporting my colleagues when I can see they are in trouble	Competing against colleagues to the detriment of shared goals
Refusing tasks I don't want to do	

CUSTOMER EXPERIENCE & COMMUNICATION

I build effective relationships with my colleagues and all the customers I come into contact with. I gain their trust and pay attention to their concerns and needs. I communicate effectively on a range of topics and with all sorts of different people and am fully aware that how I present myself, my body language and attitude has a big influence on how others perceive me.

Quality	THE STANDARD	Distinction
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Oral communication	Use a clear voice and polite tone. Speak confidently and use different types of questions appropriately	Use actively listening skills and use the appropriate tone and questioning techniques particularly when talking to customers
Written communication	Complete internal documentation as required using legible, grammatically correct written communication for internal e-mails/repair order completion	Confidently complete external documentation using an appropriate 'tone of voice'
Body language and attitude	Exhibits appropriate body language and attitude when dealing with colleagues and customers.	Aware of how tone and body language impacts communications and adjusts to suit colleagues and customers and the situation.
Honesty and ethics	Apprentice can be trusted and deals with customers with honesty and with fairness.	
Technical language	Able to converse with others regarding technical issues explaining technical terminology when asked.	Able to talk about technical issues automatically using the language that is appropriate to the audience
Colleague and customer relationships	Approach colleagues and customers with respect and follow the appropriate procedures when dealing with a problem. Quickly refers difficult issues to others	Deals with difficult situations appropriately and balances the needs of customers with the requirements of the organisation. Capable of ensuring the customers enjoys a positive experience irrespective of the issue.
Personal presentation	Wear appropriate clothes at all times and present a clean appearance especially when meeting customers	Take pride in my appearance and check that I look good before approaching a customer.

WHAT IT IS NOT

Communication is unclear.	Spoken communication that is full of jargon and technical terminology
Writing is illegible and documentation completed incorrectly.	Customers are neglected
Discourteous and an unhelpful attitude.	Inappropriate work wear and bad language
Untrustworthy, corrupt and customers dealt with unfairly	

MAKING IT HAPPEN & COMMERCIAL AWARENESS

I deliver excellent results and achieve challenging goals. I contribute lots of good ideas and enjoy solving my own and the problems of others. I understand the contribution systems and processes can make to the efficient running of a business. I know how the business works from an operational perspective and suggest ways to make our place more efficient. I know the business targets we are aiming for and seize opportunities to contribute to its commercial growth.

Quality	THE STANDARD	Distinction
Idea generation & creative thinking	Contribute ideas, think them through in detail[and their implications and present them clearly	Take an idea, whether my own or others, evaluate its feasibility and add detail to make it work better.
Problem solving	Take a systematic approach to problem solving. Know my limitations and when best to escalate issues	Analyse cause and effect and use learnt techniques to solve complex problems. Appreciate the value of documenting what I am doing to create an audit trail.
Roles and responsibilities	Know what I need to do and the roles of people close to me. Use confidently systems and processes relevant to the role. Comply with legislation. Complete documentation with a clear understanding of its purpose	Suggest how systems and processes can be improved in particular to reduce risks to the business
Commercial acumen	Understand the business side of managing a workshop and take steps to improve its overall efficiency	Suggest how to reduce costs and generate revenue
Time management	Punctual and routinely meet deadlines. Think about the tasks ahead of me and how they should be prioritised. React well	Always focused on the job in hand and make confident judgements when choosing between quality and speed. Re-

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	to the unexpected	schedule work appropriately and keep everyone informed
Completing tasks	Confidently break down complex tasks and allocate time and resources appropriately	Take account of the impact of my tasks on other business activities when organising my work. I keep everyone informed I need to.
Environmental awareness	Understand the environmental impact of the materials I use and takes steps to minimise waste.	Take pride in the place where I work and look for environmental issues I can solve.
Health and safety	Understands the importance of PPE. Good housekeeping in the workshop. Routinely operate safely without the need for reminders.	Observant and vigilant and actively look for ways to make the place safer for myself and others

WHAT IT IS NOT

Not put forward ideas.	Disorganised and work in a cluttered environment
Not attempt to understand a problem and search for a solution to it	Dispose waste with little regard to the impact on the environment.
Not understand my role within the organisation. Not aware of the systems and legislation around my role	Do not use internal processes and systems required for my job role.
Fail to meet deadlines	Carry out work with little regard to health and safety requirements.

LEARN TO LEARN & STRIVING FOR EXCELLENCE

I constantly learn in order to improve my own performance and that of the business and share my knowledge and skills. I demonstrate the passion I have for engineering by having hobbies and interests that are related to automotive.

Quality	THE STANDARD	Distinction
Reflection and taking action	Independently and regularly reflect on progress and set goals and priorities for future development.	Careful analyse my strengths and weaknesses and what I need to learn next. Record my reflections in a learning journal, portfolio or blog.
Sharing learning with others	Share my knowledge and skills when requested	Think how I can best support others, sharing my knowledge and skills at the appropriate time and in a way that works best for them
Passion for engineering	Demonstrate an interest in learning and actively use the opportunities to extend my knowledge and skills that are put in front of me	Demonstrate a passion for my job and engage in a wide range of activities e.g. self-study, related hobbies etc. to develop the competence I need to be excellent at my job
Keeping others informed about progress	Provide reports on my progress when asked	Actively seek opportunities to share with my mentor and tutors my progress

WHAT IT IS NOT

Don't think about my progress and set personal goals	Have little interest in engineering and new technologies
Don't share my knowledge and skills with others	Don't keep my mentor or tutors up-to-date on the progress I am making

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Appendix III

Criteria of Competence

An Assessment Organisation must:

1. Ensure that all Assessment Centres
 - Have sufficient workspace, workshop and candidate facilities which are clean, tidy and well maintained.
 - Have private and quiet breakout areas where the Assessor can explain the assessments being carried out, carry out professional discussion and give feedback.
 - Maintain a full set of tools and resources defined by the Assessment Organisation
2. Publish, at least 12 months before the tooling and resource is required, a list of resources and tools to be kept by at an Assessment Centre.
3. Ensure that all Assessors:
 - Have an understanding of the sector and the assessment requirements for this Standard
 - Have the expertise to operate administer the Assessment Tools required.
 - Have technical/occupational competence at or above the Apprenticeship Standard for Motor Vehicle Service and Maintenance Technician (Light Vehicle).
 - Completed Programme of ongoing CPD to provide 30 hours of work experience or technical/qualification related CPD within a 12 month period.
4. Complete an annually Internal Verification Plan based on a risk assessment of the organisation.
5. Establish, maintain and publish a written procedure for the investigation and actions to take in the event of suspected or alleged malpractice or maladministration, and include:
 - how whistle-blowers will be treated
 - when and how interested parties will be notified
 - how any interviews should be conducted
 - how facts will be gathered and evidence found, collated and stored
 - how documentary evidence will be verified
 - how confidentiality of investigation materials is assured
 - how the records of its investigations will be presented
6. Must take all reasonable steps to avoid any part of the assessment of an Apprentice being undertaken by any person who has a personal interest in the result of the assessment. There must not be a direct link between any employer of Assessor and any employer of the Trainer.
7. Have written assessments that:
 - Do not restrict a sub-contractor to using a particular make of equipment or product
 - Only test the candidate on the requirements of the published standard and assessment plan. Where a manufacturer or training provider requests additional

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content to cover specific systems or procedures the marking scheme must allow a candidate to pass the apprenticeship assessment even if they do not pass the additional requirements.

8. Annually publish information on:

- Number of Assessment Centres
- Number of assessments that have taken place
- Percentage of apprentice that Gain Distinction, Pass and Fail
- Average number of waiting days before the 2 day Skills Test can take place

Appendix IV

Assessment Guidance

Introduction

This document gives guidance on the minimum assessment required to comply with the 'Trailblazer: Automotive Retail Motor Vehicle Service and Maintenance Technician (Light Vehicle) Assessment Plan'. It is in everyone's interest that apprentices are fully prepared before taking the end assessment so Training providers may wish to consider adding additional checks to ensure that apprentices are on track and are prepared for the end assessment.

Guidance

Start

At the start of the apprenticeship the training provider should identify a suitable workplace mentor who is in a position to make a judgement on the apprentice's progress. The mentor should be briefed on their responsibilities.

Training Organisation should register the apprentice with an Assessment Organisation. This will give them access to the online Logbook, Behavioural Tools, Assessment Material and End Testing.

During Phase 1 (before Gateway 1)

When the apprentice considers that they are competent in the relevant area they will ask their mentor to fill in the online Logbook and confirm that the apprentice can:

- Contribute to the maintenance of a safe and efficient workshop and adheres to business processes.
- Carry out fundamental tasks associated with removal and replacement procedures on a vehicle:
 - Using common tools, torque wrench and measuring instruments.
 - Removing and replace bolts, setscrews, studs, hoses, electrical connectors, trim, clips, drive belts, gaskets.
 - Handling fluids.
 - Carrying out basic procedures with the diagnostic machine.
 - Jacking and lifting a vehicle.

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- Use ICT to create emails and word-processed documents; copy and paste across documents; save and print documents.
- Use ICT to carry out web based searches.
- Obtain inspection schedules, data and recall information.
- Use equipment normally found in the workplace relating to servicing and inspections.
- Reset service indicator.
- Complete a range of services and inspect and prepare a vehicle to the required quality standard for handover to the customer.
- Identify common faults found during routine service and inspections.
- Report faults using company procedures.
- Complete documentation following workplace procedures.
- Test the function of a wide range of fitted accessories.

Gateway 1

1. The Mentor will review the online Logbook and confirm that the apprentice has achieved all of the requirements in Phase 1.
2. The Employer and Training Provider will score the apprentice against the Soft Skills and Behaviour framework. Two points will be awarded if the apprentice has achieved the Quality and three points if they have achieved a Distinction in the particular Quality. There is no requirement to achieve every quality. The apprentice should score a minimum of 50% in Working Together & Building Trust and consider the areas where they have scored zero and use this to drive improvement.
3. The apprentice carries out a multi choice online knowledge test that covers knowledge taught in Training Groups 2 & 3.
4. The apprentice attends a skills assessment conducted by the Training Organisation. The assessment should be timed, during which the apprentice should:
 - Carry out a Vehicle Inspection.
 - i. Tick sheets are to be provided
 - ii. 10 faults are to be set up on the vehicle.
 - Carry out task(s) that include:
 - i. Extracting seized and broken bolts.
 - ii. Drilling, cutting, filing, tapping, riveting, joining metals and plastics.

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5. The Mentor, supported by the Training Provider, should review the results from the Behaviour Assessment, Knowledge Test and Skills Test and decide on:
 - Pass – Apprentice is on target and can continue to the next stage
 - Referred – Apprentice is not on target but with support can get back on track. Apprentice moves on to the next stage but is reassessed in the areas they have failed on.
 - Fail – If the apprentice continues they will not be able to reach the standard required for the end test so will need to retake the training again.
6. There will be independent reviews on a sample basis of the training provider's assessment processes to ensure quality and enable comparisons of outcomes across the sector.

During Phase 2 (between Gateways 1 and 2)

The apprentice needs to fully document on the online Logbook four repairs, from different systems, that involve two phase removal and replacement or removal of other components to access the repair.

Gateway 2

1. The Mentor will review the online Logbook and confirm that the apprentice can consistently:
 - Complete repairs that involve two phase removal and replacement or removal of other components to access the repair.
 - Identify causes of common faults associated with two phase removal and replacement and recommend suitable further actions.
2. The Employer and Training Provider will score the apprentice against the Soft Skills and Behaviour framework. Two points will be awarded if the apprentice has achieved the Quality and three points if they have achieved a Distinction.
There is no requirement to achieve every quality. The apprentice should score a minimum of 50% in Working Together & Building Trust and 33% in the other three sections. They should also consider the areas where they have scored zero and use this to drive improvement.
3. The apprentice carries out a multi choice online knowledge test that covers knowledge taught in Training Groups 4 & 5.

4. The apprentice attends a skills assessment conducted by the Training Organisation. The assessment should be completed within 110% of manufacturers recommended time and consist of:
 -
 - Skills task(s) that have a total manufacturer's repair time of a minimum of 3 hours and involve diagnosing simple faults and two phase removal and replacement or removal of other components to access the repair.
 - Professional discussion about one of the four tasks from Phase 2

5. Mentor, supported by the Training Provider, should review the results from the Behaviour Assessment, Knowledge Test and Skills Test and decide on:
 - Pass – Apprentice is on target and can continue to the next stage
 - Referred – Apprentice is not on target but with support can get back on track. Apprentice moves on to the next stage but is reassessed in the areas they have failed on.
 - Fail – If the apprentice continues they will not be able to reach the standard required for the end test so will need to retake the training again.

2. There will be independent reviews on a sample basis of the training provider's assessment processes to ensure quality and enable comparisons of outcomes across the sector.

During Phase 3 (between Gateways 2 and End Test)

The apprentice needs to fully document on the online Logbook four repairs, from different systems, that involve complex diagnosis and repair.

End Test

1. The Mentor will review the online Logbook and confirm that the apprentice can consistently:
 - Complete a wide range of repairs that involve complex procedures, or in depth knowledge.
 - Identify causes of common faults associated with two phase removal and replacement and recommend suitable further actions.

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- Use current flow diagrams and electrical test equipment to carry out standard diagnostic and repair procedures.
 - Use diagnostic, mechanical and electrical measuring equipment.
 - Follow a logical diagnostic sequence; carries out tests on components based only on the information available; makes sound recommendations based on the information found.
2. The Employer and Training Provider will score the apprentice against the Soft Skills and Behaviour framework. Two points will be awarded if the apprentice has achieved the Quality and three points if they have achieved a Distinction. There is no requirement to achieve every quality. The apprentice should have an overall score of 65% for a pass.
3. The apprentice carries out an online knowledge test that uses a range of question types to assess their ability to apply knowledge gained throughout the apprenticeship to real-world problems.
4. The apprentice attends a skills assessment conducted by the Training Organisation and 100% observed by the Assessment Organisation or an Independent Assessment Centre. The assessment should be completed within 125% of manufacturers recommended time and consist of:
- Presentation of fault(s) that have a total manufacturer's repair time and estimated diagnostic time of a minimum of 12 hours and include at least all requirements from Skill Set A and 1 from each of Skill Sets B, C, D, E, F, G, H, I. The assessor will role play the customer and the apprentice will be expected to:
 - i. Ask questions to determine the exact fault
 - ii. Present verbally what is involved with the repair and list the replacement parts involved
 - iii. Present the repaired 'vehicle' and explain further action that may be required following on from the repair.
 -
 - In-depth professional discussion about one of the four tasks from Phase 3. Including
 - i. Details of fault presented to the apprentice
 - ii. Knowledge and understanding of the system(s) involved
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- iii. Possible actions that the apprentice could have chosen
- iv. Strengths and weaknesses of each action
- v. Why they chose the particular route that they followed

Skill Sets

All from Skill Set A

- Remove and replace range of bolts and tighten correctly (using torque wrench when appropriate)
- Read and follow instructions to carry out procedures to set up a component (eg clutch, height adjustment)
- Carry out complex task (procedure involves a range of skills that need to be carried out in a specific methodical order)

1 from Skill Set B

- Inspect a range of components normally found on a vehicle service and determine serviceability
- Check for leak
- Measuring components and determine serviceability
- Diagnose mechanical braking fault
- Diagnose charging and starting systems

1 from Skill Set C

- Diagnose brake hydraulic fault
- Diagnose steering/suspension mechanical faults
- Diagnose steering hydraulic faults
- Diagnose suspension hydraulic faults
- Diagnose sensor fault
- Use computer based test equipment

1 from Skill Set D

- Test an auxiliary electrical component and determine if faulty
- Diagnose overheating faults
- Diagnose SRS fault

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- Diagnose manual transmission or driveline faults
- Diagnose climate control faults
- Diagnose steering, suspension or brakes electrical faults
- Diagnose broken/shorted wire.

1 from Skill Set E

- Diagnose turbo fault
- Diagnose engine mechanical fault
- Diagnose ECU faults
- Diagnose engine management fault
- Diagnose automatic transmission faults
- Diagnose advanced suspension systems
- Diagnose multiplex fault
- Diagnose emissions fault

1 from Skill Set F

- Remove and replace clips
- Remove and replace connectors
- Remove and replace trim
- Remove and replace and tyre
- Handle fluids (antifreeze, oil, grease, acid. Sealant etc.)
- Balance a wheel

1 from Skill Set G

- Remove and replace hoses
- Remove and replace drive belts
- Bleed fluid system
- Carry out wheel alignment
- Use press to press rubber bush
- Replace road spring
- Time up engine component

1 from Skill Set H

- Engineering skills
- Remove and replace gasket
- Remove and replace an auxiliary electrical component
- Repair SRS fault
- Carry out minor repairs to wiring loom

1 from Skill Set I

- Free off seized components
- Remove component from a tapered shaft
- Use press to press bearing
- Remove and replace bearing
- Remove and replace seal
- Fit head gasket
- Replace loom

Accreditation of Prior Learning

Apprentices that have previously completed a Framework 1 Level 2 Apprenticeship will automatically be exempt from completing Gateways 1 one and 2. However, they will still be required to complete the Logbook and Behaviours assessments. For the purpose of grading they will be awarded a score of 60% at Gateway 2. They will also have the option to take Gateway 2 and obtain a higher score.

Apprentices that have previously completed a Level 2 Diploma in Light Vehicle Maintenance and Repair Principles (IMIAL 500/9818/4, City and Guilds 500/9707/6, EDEXCEL 501/0269/2 or ABC 600/2143/3) will automatically be exempt from completing Gateway 1 Knowledge and Skills tests.

No other accreditations of prior learning will apply.