

# Unit 1: Essential Working Practices in Vehicle Technology

NQF Level 2: BTEC First

Guided learning hours: 60

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## Unit abstract

Working in the vehicle technology sector is, by its nature, high risk. The work is often complex and the potential for injury occurs frequently. The exposure to occupational hazards such as noise, dust and potentially dangerous chemicals (eg isocyanate) can also be significant. Most risks can be minimised or eliminated if the relevant people understand and adhere to the requirements of health and safety legislation, good housekeeping procedures and the need to work safely in everyday working activities. This unit enables learners to understand the essential working practices that cover these areas and will bring relevance to the study of health and safety by approaching it from a hands-on perspective.

The unit focuses on the requirement of any organisation to ensure that individuals have good working relationships with peers, supervisors, managers and customers. Learners will develop an understanding of the principles of maintaining good working relationships by focusing on effective communication and supporting skills. Learners will recognise the reasons for this in terms of customer loyalty and therefore repeat business.

This unit also examines the processes involved in ensuring that the customer receives the most efficient service are examined. The accessing of information in order to ensure a 'first time fix', recording mechanisms and the storage of information are just some of the critical aspects studied.

## Learning outcomes

**On completion of this unit a learner should:**

- 1 Understand good housekeeping and health and safety procedures
- 2 Understand the practical and legal considerations affecting repair, maintenance and servicing of motor vehicles
- 3 Understand the importance of maintaining positive communication and working relationships with colleagues and customers
- 4 Understand how to access and use information, data and documentation for vehicle service and repair.

## Unit content

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### 1 Understand good housekeeping and health and safety procedures

*Reducing risks:* scope (employees, customers and their property, vehicles); personal and protective equipment eg overalls, protective footwear, eye protection; equipment to prevent chemical contamination; safety of customers/visitors, their property and vehicles eg customer waiting rooms, customer/visitor access to workshop areas, securing valuables left in vehicles, keeping vehicle locked, safe parking of vehicles to avoid damage, use of seat and wing covers, steering wheel protection; good housekeeping eg maintaining work area, free of debris and material, returning equipment to designated area, personal presentation

*Emergency and accident action procedures:* evacuation procedures; accident and incident reporting; securing accident site

*Fire extinguishers:* types of fire extinguishers eg water, foam, dry powder, CO<sub>2</sub>; applications (combustible material, flammable liquids, electrical fires); consequence of incorrect selection

*Health and safety issues:* legislation applicable to a vehicle workshop environment; employer and employee responsibilities; requirements relating to chemicals and materials handling eg Control of Substances Hazardous to Health (COSHH) regulations, safe disposal of waste materials and components (fluids, filters, batteries, tyres); manual handling; safe use of electrical and pressurised equipment; legal consideration with regard to health and safety regulations when repairing motor vehicles; Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR); Provision and Use of Work Equipment Regulations (PUWER)

### 2 Understand the practical and legal considerations affecting repair, maintenance and servicing of motor vehicles

*Safe working practices:* use of manufacturers'/teams' inspection, maintenance and servicing techniques; preparation of the vehicle eg selection and use of jacks, axle stands, vehicle lift, body jigs and alignment equipment, protective covers; isolation of electrical and electronic systems eg battery, electronic control unit (ECU), supplementary restraint system (air bag, seat belt pre-tensioner); safe handling of vehicle components and units eg to prevent damage from static discharge, moisture, oil or chemical contamination; good housekeeping

*Safe use of tools and equipment:* basic engineering tools eg hammers, spanners, chisels, panel beating tools; electrical leads eg care and use of extension leads, precautions for trip hazard and fluid spills; vehicle supports eg stands, jacks; specialised vehicle repair equipment eg pullers, hydraulic press, tyre removal/replacement equipment, mobile crane, vehicle lift; safety checks for wear, damage and conditions likely to prejudice safety of self, others and vehicles; reporting of faults

*Legal, legislative and codes of practice:* eg relevance of current motor vehicle legislation for repairing, maintaining and enhancing road vehicles, approved codes of practice with regard to vehicle repairs, motorsport governing bodies' (FIA, MSA, ACU) rules and regulations, legal implications of fitting enhancement or performance equipment to customers' vehicles (contravention of construction and use regulations, impact on owner's insurance), understanding the concept of contract law (verbal and written contracts)

**3 Understand the importance of maintaining positive communication and working relationships with colleagues and customers**

*Positive communication:* company structure; methods of dealing with communication within a company; vehicle parts and service supply chains

*Working relationships:* good and bad practices eg dress, language, timekeeping, personal appearance, behaviour, fulfilling obligations; company image; dealing with a customer complaint; actions in the event of a dispute with a customer or colleague; options available to resolve disputes; importance of team work; extent of own authority

**4 Understand how to access and use information, data and documentation for vehicle service and repair**

*Information:* eg workshop manuals, technical bulletins, servicing schedules, approved body repair techniques; standard/critical repair times

*Data:* currency; sources eg manuals, online data, CD ROM, microfiche, telemetry, inspection reports; types eg technical data manuals, repair times, tyre pressures

*Documentation:* documentation for both company and customer purposes eg service history sheet, reporting faults, customer's service/repair report; importance of accuracy and record keeping eg filing, use of databases; post-repair documentation

## Grading grid

In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all of the learning outcomes for the unit. The criteria for a pass grade describe the level of achievement required to pass this unit.

<b>Grading criteria</b>		
<b>To achieve a pass grade the evidence must show that the learner is able to:</b>	<b>To achieve a merit grade the evidence must show that, in addition to the pass criteria, the learner is able to:</b>	<b>To achieve a distinction grade the evidence must show that, in addition to the pass and merit criteria, the learner is able to:</b>
P1 identify how risks to safety can be reduced P2 describe emergency and accident action procedures used in the workplace P3 identify and select four different types of fire extinguisher for given applications P4 identify health and safety issues relevant to a vehicle repair or maintenance environment P5 prepare a vehicle for repair or maintenance using safe working practices P6 use vehicle workshop tools and equipment safely P7 identify legal, legislative and codes of practice to be considered when working on vehicles P8 determine the factors that create positive communication and working relationships with colleagues and customers P9 retrieve, interpret, apply and process the information, data and documentation necessary for a vehicle repair or maintenance procedure.	M1 explain methods of assessing and minimising risks to health and safety in the vehicle repair environment M2 explain the legal implications of a vehicle repair or maintenance procedure M3 compare methods of maintaining effective working relationships with colleagues to those with customers M4 compare different methods of accessing information, data and documentation for a vehicle repair or maintenance procedure.	D1 evaluate the health, safety and risk issues involved in a specific workshop situation D2 analyse a specific working relationship and identify its strengths and potential improvements.

Guidance to support the assessment of this unit is available on pages 17, 18 and 19.

## Essential guidance for tutors

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### Delivery

This unit could be delivered in the context of the learner's chosen vehicle area (eg body and paint, vehicle fitting, motorsports), although a generic approach would be equally suitable. Delivery will need to focus on developing a sound understanding of health and safety requirements in the workplace. This should be from a practical perspective, tempered with an awareness of the legal implications of the learner's actions. It should also help develop understanding of the methods of accessing, assessing and using information, data and documentation. The importance of successful working relationships with colleagues and customers is also an underpinning aspect of the unit.

It is recommended that centres maintain a balance of theoretical and practical study. Where possible, principles and concepts should be reinforced through practical investigation and demonstration. It is strongly recommended that some of the delivery of this unit takes place in a workshop environment to ensure that learners can relate their studies to an industrial context. Whatever approach is taken it is expected that the learners' experience should be sufficiently varied to provide them with the underpinning knowledge and skills to enable them to perform safely in an industrial setting.

The four learning outcomes are logically ordered and it would be a reasonable approach to develop them sequentially. In this way, learners will begin to understand health and safety requirements and the consequences of not adhering to them, before implementing what has been learned in a practical environment. It should be noted that the work undertaken for learning outcome 2 is intended to give the learner an awareness of specific applications of law and legislative processes in a vehicle context and not an in-depth understanding of law in general. This could be achieved by references to suitable extracts or case studies set within a vehicle context. Finally, the maintenance of positive working relationships and the information/data/documentary processes used in the effective and efficient execution of vehicle repair work will need to be considered. A hands-on approach to these areas is recommended (eg use of role play, work-based experiences, observation of practice).

Formative assessment will play an important part in the general development of learners throughout the delivery of the unit, particularly in aiding achievement at merit and distinction level. Formative assessment and feedback in the delivery phase can be used to good effect to encourage learners to develop the comparative, evaluative and analytical skills required.

Note that the use of 'eg' in the content is to give an indication and illustration of the breadth and depth of the area or topic. As such, not all content that follows an 'eg' needs to be taught or assessed.

### Assessment

This unit will benefit from a variety of evidence being gathered to support assessment. For example, the centre may wish to devise assignments where learners are asked to describe, explain, compare and justify. However, although most of the pass criteria require descriptive evidence, it is not expected that centres will only use tests to achieve this. The unit lends itself to a varied approach and this should also be reflected in the assessment strategy wherever possible.

To achieve a pass, learners should demonstrate an understanding, within the scope of employees, customers/visitors and their property and vehicles, of how risks can be reduced. This will include personal and protective equipment, the safety of the customer or visitor (eg waiting rooms, customer/visitor access to workshop areas), their property (eg securing valuables left in vehicles) and their vehicle (eg safe parking of vehicle to avoid damage). Learners must also be able to describe emergency and accident action procedures used in the workplace, identifying and selecting four different types of fire extinguisher for given applications. Some examples of fire appliances are given but not intended to be exhaustive, for example the simple methods of using a fire blanket or sand are not included but could be used. The three types of fire (combustible material, flammable liquids, electrical fires) need to be covered and this means that learners will need to choose two different appliances for one type of fire (eg water or fire blanket for types of combustible material fires). This could be achieved through a short test item that lists types of fires in vehicle settings and asks learners to identify at least four different fire extinguishers that would be suitable.

Pass criteria P4, P5 and P6 could be linked together using a suitable vehicle repair task(s). The task(s) would need to allow the learner to identify health and safety issues relevant to the vehicle repair or maintenance environment, prepare the vehicle for repair or maintenance using safe working practice and use vehicle workshop tools and equipment safely. If only one task is used, centres would need to take care that all the relevant content can be covered.

The legal and legislative aspects of P7 should be at a level appropriate to the work of an NQF Level 2 motor vehicle technician. It should be related to the areas of their work that law, legislation and codes of practice will impact upon. For example, entering into a verbal contract with a customer requires a basic understanding of contract law. However, it is not expected that learners would be able to write a contract but rather have an awareness of the implications of entering into a contract, both written and verbal.

Pass criteria P8 and P9 require learners to consider communication and working relationships with colleagues and customers and how to work with information, data and documentation necessary for a vehicle repair or maintenance procedure. Both criteria lend themselves to practical hands-on applications but where real work-based evidence is not available centres may wish to consider role-play and/or case study methods to retain relevance to the vehicle industry.

Positive communication begins with the learner understanding a company structure and the methods of dealing with communication within that specific company. In this way, learners can begin to interact effectively and will begin to know when to communicate with others. The other aspect to this is a wider appreciation of communication through the vehicle parts and service supply chains. This is essential for the smooth operation of a vehicle repair and maintenance organisation.

Communication relies on the learners' ability to establish working relationships and appreciate both good and bad practices (eg dress, language, timekeeping, personal appearances, behaviour, fulfilling obligations). For many organisations, company image, the ability to deal with customers and team work are key to survival in a very competitive arena. The emphasis of assessment should once again be on application and use. An example might be the use of role-play for a customer complaint or for dealing with a dispute with a customer or colleague. The possible options available to resolve the dispute could then be assessed through oral questioning during the de-brief with the learner.

When working with information the sources can be varied and may contain data. For example, a workshop manual would give learners information on disassembly and reassembly methods but could also provide the data on settings (eg clearances, angles, timings). The important aspects to capture during assessment will be the actual use of documentation for both company and customer purposes (eg for the company it may be the service history sheet or the method of reporting faults to line manager/supervisor in writing; for the customer it may be the service/repair report provided with their invoice that details the work carried out). The most important dimension to this will be the accuracy (and legibility) of records and the ability to access information through good record keeping, eg filing, use of databases. Learners should be able to competently demonstrate a general awareness of post-repair documentation and procedures within the context of how it impacts upon repair and maintenance work.

To achieve a merit, learners need to explain methods of assessing and minimising risks to health and safety in the vehicle repair environment (M1). Learners should now be considering the wider working environment and reflecting on the assessment and minimisation of risks. This could be achieved through an extension activity from P1 and P2 or as a stand-alone activity. Learners should also be able to explain the legal implications of a vehicle repair or maintenance procedure. This is a natural extension to the task(s) undertaken for the pass criteria P5, P6 and P7. The last two merit criteria are comparative. Firstly, the learner is required to compare the methods adopted to maintain effective working relationships with colleagues to the approaches necessary with customers. This is an important step for learners to take as it requires a degree of self-awareness. Second, the learner is required to compare different methods of accessing information, data and documentation for a vehicle repair or maintenance procedure. This is another important step towards independence for the learner's development.

To achieve a distinction, learners should be able to evaluate the health, safety and risk issues involved in a workshop situation and analyse a specific working relationship for its strengths and potential improvements. Both criteria require a high level of independence. The first could be linked to the task set for P5–P7 or an alternative opportunity used. The second criterion (D2) will require a detailed study of a working relationship, which could be based on a colleague, a tutor, or a work-based supervisor. The criterion focuses on strengths and potential improvements, therefore there should not be confidentiality issues in respect of negative comments.

### **Links to National Occupational Standards, other BTEC units, other BTEC qualifications and other relevant units and qualifications**

This unit covers some of the knowledge and understanding associated with the Automotive Skills Level 2 National Occupational Standards, particularly core units:

- Unit G1: Contribute to Workplace Good Housekeeping
- Unit G2: Ensure Your Own Actions Reduce Risk to Health and Safety
- Unit G3: Maintain Positive Working Relationships.

The unit also covers some of the knowledge and understanding associated with the motorsport units within the SEMTA Level 2 NVQ in Performing Engineering Operations:

- Unit 1: Working Safely in An Engineering Environment
- Unit 2: Developing yourself and Working with Other People on Engineering Activities
- Unit 3: Using and Communicating Technical Information
- Unit 42: Stripping and Rebuilding Motorsport Vehicles (Pre-Competition)
- Unit 43: Inspecting a Motorsport Vehicle During a Competition
- Unit 44: Diagnosing and Rectifying Faults on Motorsport Vehicle System (During Competition)
- Unit 45: Carrying out Maintenance Activities on Motorsport Vehicle Electrical Equipment
- Unit 46: Stripping and Rebuilding Motorsport Engines (Pre-Competition).

### **Essential resources**

Centres will need to have, or at least have access to, a vehicle workshop equipped with appropriate vehicles and a range of tools and equipment (eg jacks, axle stands, lifting platforms). The centre will also need to have the necessary documentation systems (eg risk assessments, COSHH assessments) together with the control measures (eg COSHH storage facilities, manufacturers' safety data sheets (MSDS)) with which to demonstrate good practice.

### **Indicative reading for learners**

Materials that illustrate the level of learning required and that are particularly relevant.

Health and Safety Executive — *A Step by Step Guide to COSHH Assessments* (HSE Books, 2004) ISBN 0717627853

Health and Safety Executive — *Health and Safety in Motor Vehicle Repair* (HSE Books, 1990) ISBN 0717604837

Hillier V and Coombes P — *Hillier's Fundamentals of Motor Vehicle Technology, Fifth Edition* (Nelson Thornes, 2004) ISBN 0748780823

## Key skills

Achievement of key skills is not a requirement of this qualification but it is encouraged. Suggestions of opportunities for the generation of Level 2 key skill evidence are given here. Tutors should check that learners have produced all the evidence required by part B of the key skills specifications when assessing this evidence. Learners may need to develop additional evidence elsewhere to fully meet the requirements of the key skills specifications

<b>Communication Level 2</b>	
<b>When learners are:</b>	<b>They should be able to develop the following key skills evidence:</b>
<ul style="list-style-type: none"> <li>identifying how risks to safety can be reduced</li> <li>describing emergency and accident action procedures used in the workplace</li> <li>identifying health and safety issues relevant to a vehicle repair or maintenance environment</li> <li>identifying legal, legislative and codes of practice liabilities to be considered when working on vehicles.</li> </ul>	<p>C2.1a Take part in a group discussion.</p> <p>C2.1b Give a talk of at least four minutes.</p> <p>C2.2 Read and summarise information from at least <b>two</b> documents about the same subject. Each document must be a minimum of 500 words long.</p> <p>C2.3 Write <b>two</b> different types of documents each one giving different information. One document must be at least 500 words long.</p>
<b>Improving own learning and performance Level 2</b>	
<b>When learners are:</b>	<b>They should be able to develop the following key skills evidence:</b>
<ul style="list-style-type: none"> <li>planning and carrying out practical activities and/or oral presentations.</li> </ul>	<p>LP2.1 Help set targets with an appropriate person and plan how these will be met.</p> <p>LP2.2 Take responsibility for some decisions about your learning, using your plan to help meet targets and improve your performance.</p> <p>LP2.3 Review progress with an appropriate person and provide evidence of your achievements.</p>

<b>Problem solving Level 2</b>	
<b>When learners are:</b>	<b>They should be able to develop the following key skills evidence:</b>
<ul style="list-style-type: none"> <li>• preparing vehicles and using workshop tools and equipment safely</li> <li>• accessing and interpreting information necessary for vehicle maintenance or repair.</li> </ul>	<p>PS2.1 Identify a problem, with help from an appropriate person, and identify different ways of tackling it.</p> <p>PS2.2 Plan and try out at least one way of solving the problem.</p>