

## National Unit Specification: general information

<b>UNIT</b>	Automotive: Foundation Skills (Intermediate 1)
<b>NUMBER</b>	DE44 10
<b>COURSE</b>	Scottish Progression Award (SPA) in Vehicle Maintenance and Repair

### SUMMARY

This unit will be suitable for candidates who need to develop and apply skills and knowledge associated with the repair, servicing and maintenance of vehicles at Intermediate 1 level. The unit will enable the candidate to acquire essential foundation skills in the identification and use of tools and equipment, locking and securing devices, electrical fundamentals and fault-finding techniques.

The unit is derived from Automotive Skills' National Occupational Standards units:

Unit 1 – Contribute to good housekeeping

Unit 2 – Ensure your own actions reduce risks to health and safety.

It also applies to the units relating to vehicle maintenance and repair S/NVQs and Modern Apprenticeships.

It is designed to meet the knowledge requirements of Automotive Skills' Technical Certificate specification – (Phase 1):

LV02 – Foundation Skills

and to provide progression towards the related S/NVQs and Modern Apprenticeships.

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### Administrative Information

<b>Superclass:</b>	XS
<b>Publication date:</b>	August 2003
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## National Unit Specification: general information (cont)

### OUTCOMES

1. Identify and use common hand tools, power tools, workshop equipment, measuring equipment and electrical measuring equipment.
2. Identify locking and securing devices.
3. Identify the fundamentals of electricity and electrical circuits.
4. State the different types of inspection and fault-finding techniques.

### RECOMMENDED ENTRY

Entry is at the discretion of the centre but good communication and numeracy skills would be desirable. It would also be beneficial for candidates to have a practical aptitude for vehicle maintenance and repair.

### CREDIT VALUE

1 credit at Intermediate 1 (6 SCQF points at SCQF level 4\*)

*\*SCQF credit points are used to allocate credit to qualifications in the Scottish Credit and Qualifications Framework (SCQF). Each qualification in the Framework is allocated a number of SCQF credit points at an SCQF level. There are 12 SCQF levels, ranging from Access 1 to Doctorates.*

### CORE SKILLS

Information on the automatic certification of any core skills in this unit is published in *Automatic Certification of Core Skills in National Qualifications* (SQA, publication code BA0906).

## **National Unit Specification: statement of standards**

### **UNIT**      Automotive: Foundation Skills (Intermediate 1)

Acceptable performance in this unit will be the satisfactory achievement of the standards set out in this part of the unit specification. All sections of the statement of standards are mandatory and cannot be altered without reference to the Scottish Qualifications Authority.

#### **OUTCOME 1**

Identify and use common hand tools, power tools, workshop equipment, measuring equipment and electrical measuring equipment.

##### **Performance criteria**

- a) Correctly identify hand tools.
- b) Correctly identify power tools.
- c) Correctly identify workshop equipment.
- d) Correctly identify measuring equipment.
- e) Correctly identify electrical measuring equipment.

#### **OUTCOME 2**

Identify locking and securing devices.

##### **Performance criteria**

- a) Correctly identify locking devices.
- b) Correctly identify securing devices.

#### **OUTCOME 3**

Identify the fundamentals of electricity and electrical circuits.

##### **Performance criteria**

- a) Correctly identify Ohm's Law.
- b) Correctly identify the formula for electrical power.
- c) Correctly identify conductors and insulators.
- d) Correctly identify the fundamentals of electrical circuits.

#### **OUTCOME 4**

State the different types of inspection and fault-finding techniques.

##### **Performance criteria**

- a) Correctly state the different inspection techniques.
- b) Correctly state the different fault-finding techniques.

## **National Unit Specification: statement of standards (cont)**

**UNIT**      Automotive: Foundation Skills (Intermediate 1)

### **EVIDENCE REQUIREMENTS FOR THE UNIT**

Written evidence of the candidate's ability to show a clear understanding of the foundation skills and knowledge associated with the repair, servicing and maintenance of vehicles, including; identification of common hand tools, power tools, workshop equipment, measuring equipment, electrical measuring equipment; locking and securing devices; electrical fundamentals; inspection and fault-finding techniques

The candidate should produce sufficient correct responses to achieve an overall pass of 70% for the unit.

## National Unit Specification: support notes

### UNIT Automotive: Foundation Skills (Intermediate 1)

This part of the unit specification is offered as guidance. The support notes are not mandatory.

While the exact time allocated to this unit is at the discretion of the centre, the notional design length is 40 hours.

#### GUIDANCE ON THE CONTENT AND CONTEXT FOR THIS UNIT

This unit is designed to develop the basic skills and knowledge associated with the repair, servicing and maintenance of vehicles at Intermediate 1.

The aim of this unit is to deliver the knowledge requirements of Automotive Skills' Technical Certificate – Foundation Skills (Phase 1). It would however be advantageous to deliver it in a practical setting.

#### Outcome 1

##### *Identification and use of:*

##### **Hand tools**

- spanners (ring, open end, combination)
- sockets (1/4, 3/8 and 1/2 inch drive) hex, bi-hex, impact, Allen, torx, spline
- socket accessories (ratchet, extension, speed brace, universal joint, etc)
- screwdrivers (plain, philips, posidrive)
- pliers and grips (side cutters, vice grips, long nose etc)
- hammers (ball peen and soft face)
- punches (parallel, taper, centre)
- taps and dies
- hacksaw
- files (thread, flat, round, square)

##### **Power tools**

- electric drills (cordless, mains)
- air tools (gun, ratchet, drill)
- electric power tools (110/240 volts, cordless)

##### **Equipment**

- vices
- hydraulic jack
- ramp
- axle Stands
- torque wrenches
- angular gauge
- torque multiplier
- specialist service tools

## National Unit Specification: support notes (cont)

**UNIT** Automotive: Foundation Skills (Intermediate 1)

### Measuring Equipment

- micrometers (internal, external)
- vernier calliper
- dial gauge
- feeler gauge
- volume measures
- rule
- thread gauge

### Electrical measuring equipment

- multimeter
- ammeter
- voltmeter
- ohmmeter

### Outcome 2

#### *Identification of:*

#### Locking and securing devices

- nuts (hex, flanged, nylock, castellated, wing, shear)
- bolts
- screws
- split pins
- locking wire
- locking tab washers
- washers (flat, spring)
- speed fasteners
- chemical thread locking
- circlip (internal, external)

#### Screw threads

- course/fine

### Outcome 3

#### *Identification of:*

#### Electrical Fundamentals

- ohm's Law
- amps
- ohms
- volts

#### Electrical Power

- volts
- amps
- ohms

## National Unit Specification: support notes (cont)

**UNIT** Automotive: Foundation Skills (Intermediate 1)

### Materials

- conductors
- insulators

### Principles of Electrical Circuits

- series, parallel and series/parallel circuits

### Outcome 4

#### *State:*

#### Inspection techniques

- visual
- aural
- functional assessments

#### Fault finding techniques

- road tests
- questioning
- review of symptoms

## GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT

This unit has been designed to develop the basic skills and knowledge associated with the repair, servicing and maintenance of vehicles. Hence it should be delivered in a practical workshop/lab situation to maximise the candidate's experiential learning.

It is designed to support the delivery of other units within the Scottish Progression Award (SPA) in Vehicle Maintenance and Repair and delivery could be integrated with other units.

### Outcome 1

Candidates could be given the opportunity to become familiar with the range of tools and equipment, through their use, in a practical/workshop environment. This could be integrated with the work of other units in the SPA.

### Outcome 2

Candidates could be given the opportunity to become familiar with the range of fixing and securing devices, through their use, in a practical/workshop environment where possible. This could be integrated into the work of other units.

### Outcome 3

Candidates could be given the opportunity to measure and investigate, as appropriate, principles of electricity and electrical circuits. Lab exercises are particularly suited to the delivery of this outcome.

## **National Unit Specification: support notes (cont)**

**UNIT**          Automotive: Foundation Skills (Intermediate 1)

### **Outcome 4**

Candidates could be given the opportunity to carry out these inspection and fault-finding techniques. This could be achieved through integration with other units contained in the SPA.

### **GUIDANCE ON APPROACHES TO ASSESSMENT FOR THIS UNIT**

Assessment of knowledge could take the form of a multiple-choice test to cover all outcomes.

### **SPECIAL NEEDS**

This unit specification is intended to ensure that there are no artificial barriers to learning or assessment. Special needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments or considering special alternative outcomes for units. For information on these, please refer to the SQA document *Guidance on Special Assessment Arrangements* (SQA, publication code AA0645).