

National Unit Specification: General Information

UNIT Automotive: Suspension Systems (Intermediate 2)

NUMBER 2210288

COURSE

SUMMARY

A unit designed to develop knowledge of the main suspension system components fitted to a vehicle, how they operate, the areas of potential failure or wear, the need for settings and adjustment, including removal and replacement techniques.

OUTCOMES

- 1 Identify suspension system arrangements and selected components.
- 2 Explain the methods used to locate and control suspension movement.
- 3 Indicate suspension components which are subject to wear and/or failure.
- 4 Demonstrate the procedure for the removal and fitting of a suspension component.

RECOMMENDED ENTRY

Access to this unit is at the discretion of the centre, however no entry prerequisites are envisaged.

CREDIT VALUE

0.5 Credit at Intermediate 2.

CORE SKILLS

Information on the automatic certification of the core skills in this unit is published in *Automatic Certification of Core Skills in National Qualifications* (SQA, 1999)

Administrative Information

Superclass: XS

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National unit specification: statement of standards

UNIT Automotive: Suspension Systems (Intermediate 2)

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 suspension system arrangements and selected components.

Performance Criteria

- a) The main components of a suspension system are correctly identified.
- b) A beam axle suspension layout arrangement is identified correctly.
- c) Independent front suspension layouts are identified correctly.
- d) Independent rear suspension layouts are identified correctly.

Evidence Requirements

Written and/or graphical evidence of the candidate's ability to identify suspension system components and arrangements.

Satisfactory achievement will be demonstrated by the candidate producing for:

PC (a) correct identification of 4 suspension system components.

PC (b) correct identification of a beam axle layout.

PC (c) correct identification of 3 independent front suspension system layouts.

PC (d) correct identification of 3 independent rear suspension system layouts.

OUTCOME 2

Explain the methods used to locate and control suspension movement.

Performance Criteria

- a) The explanation of the method used to locate and control suspension movement on a beam axle suspension system is correct.
- b) The explanation of the operation of an independent front suspension system is correct.
- c) The explanation of the operation of an independent rear suspension system is correct.
- d) The explanation of the operation of a suspension damper during bump and rebound conditions is correct.

National unit specification: statement of standards (cont)

UNIT Automotive: Suspension Systems (Intermediate 2)

Evidence Requirements

Written and/or graphical evidence of the candidate's ability to explain the methods used to locate and control suspension movement.

Satisfactory achievement will be demonstrated by the candidate producing for:

PC (a) correct explanation of methods used to locate and control movement on a beam axle.

PC (b) correct explanation of an independent front suspension operation.

PC (c) correct explanation of an independent rear suspension operation.

PC (d) correct explanation of a damper during bump and rebound conditions.

OUTCOME 3

Indicate suspension components which are subject to wear and/or failure.

Performance Criteria

- a) The main components of an independent front suspension system which are subject to wear are indicated correctly.
- b) The main components of an independent rear suspension system which are subject to wear are indicated correctly.
- c) The main components of a beam axle suspension system which are subject to wear are indicated correctly.

Evidence Requirements

Written and/or graphical evidence of the candidate's ability to indicate suspension components subject to wear and/or failure.

Satisfactory achievement will be demonstrated by the candidate producing for:

PC (a) correct indication of 5 components of an independent front suspension system.

PC (b) correct indication of 5 components of an independent rear suspension system.

PC (c) correct indication of 3 components of a beam axle suspension system.

OUTCOME 4

Demonstrate the procedure for the removal and fitting of a suspension component.

Performance Criteria

- a) The tools/equipment are used in accordance with manufacturers' or companies' set procedures.
- b) The removal and fitting task is carried out correctly.
- c) The torque setting to set specifications for the given task is carried out correctly.
- d) The alignment of components is correct.
- e) The relevant safety requirements are adhered to for the given task.

National unit specification: statement of standards (cont)

UNIT Automotive: Suspension Systems (Intermediate 2)

Evidence Requirements

Evidence of actual performance of the candidate's ability to follow instructions (manufacturer or company set procedures), use tools, observe relevant/set safety requirements for the given task and meet set time scales within defined criteria.

National unit specification: support notes

UNIT Automotive: Suspension Systems (Intermediate 2)

This part of the unit specification is offered as guidance. None of the sections of the support notes is mandatory.

GUIDANCE ON CONTENT AND CONTEXT

This unit is designed to operate in conjunction with the SVQ Level II 'Vehicle Mechanical: Unit Replacement', building the underpinning theory which will assist in the attainment of the SVQ, the PDA Certificate in Motor Vehicle Systems, Intermediate 2 of the Higher Still programme, or as a freestanding unit.

The candidate should be given the opportunity to examine and identify, in a practical situation/location with video and other demonstration aids used as reinforcement to the practical demonstration, suspension system components and layouts.

The main type of suspension layouts could be taken from the following list:

McPherson strut, parallel link, transverse link, swinging arm, torsion bar, four link coil spring, five link coil spring, trailing arm, strut and link, semi trailing arm.

The main type of suspension components could be taken from the following list:

leaf spring, coil spring, gas spring, rubber spring, anti roll bar, U bolts, suspension arms, wishbone, damper, tie bar, strut, shackle.

Explanation of how the wheel axis position is maintained within a suspension system using a beam axle arrangement, an independent front suspension and independent rear arrangements. The operation of suspension damper during bump and rebound conditions should also be taught at this time.

Demonstrations of methods/techniques used to determine wear, defects, measurement and pressurisation can be used to reinforce learning.

GUIDANCE ON TEACHING AND LEARNING APPROACHES

The candidate could be given the opportunity to examine a practical location suspension system and/or components to identify the main principles of operation.

Demonstrations of methods/techniques used to determine wear, defects, measurement and pressurisation can be used to reinforce learning.

GUIDANCE ON APPROACHES TO ASSESSMENT

Outcome 1

Written and/or oral evidence which may be in the form of multi choice type questions, a matching exercise, from diagrams, slides, videos or actual vehicle/units which allows the candidate to identify the suspension arrangements and components.

National unit specification: support notes (cont)

UNIT Automotive: Suspension Systems (Intermediate 2)

Outcome 2

Written and/or oral evidence which may be in the form of multi choice type questions, short answer or gapped response, which allows the candidate to explain the operation of suspension systems and components.

Outcome 3

Written and/or oral evidence which may be in the form of multi choice type questions, a matching exercise, from diagrams, slides, videos or actual vehicle/units which allows the candidate to indicate the suspension components subject to wear and/or failure.

Outcome 4

A practical exercise either in the candidate's normal workplace, when being assessed during his/her SVQ, or in the centre on actual units or vehicles, with access to all relevant tools, equipment, data, and a clean and safe work area.