



National Unit specification: general information

Unit title: Small Powered Machine Operation

Unit code: H09E 10

Superclass: SK

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Summary

The purpose of this Unit is to provide candidates with basic level knowledge and skills regarding the use of electric, 2-stroke and 4-stroke engine powered machinery commonly used in a range of rural work environments.

It is designed to aid candidates with the selection of appropriate machines for tasks whilst providing experience of operating machines and carrying out basic pre and post-operative maintenance.

Candidates will also be required to carry out a risk assessment for a given task involving the use of machinery.

This is an optional Unit within the National Certificate in Rural Skills at SCQF level 4. It can also be offered as a free-standing Unit.

Outcomes

- 1 Describe the use of small powered machinery in rural work tasks.
- 2 Carry out a risk assessment for a given task involving the use of small powered machinery.
- 3 Operate small powered machinery safely under supervision.

Recommended entry

Entry is at the discretion of the centre.

General information (cont)

Credit points and level

1 National Unit credit at SCQF level 4: (6 SCQF credit 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

Achievement of this Unit gives automatic certification of the following Core Skills component:

- ◆ Critical Thinking at SCQF level 4

There are also opportunities to develop aspects of Core Skills which are highlighted in the Support Notes of this Unit specification.

National Unit specification: statement of standards

Unit title: Small Powered Machine Operation

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 SQA.

Outcome 1

Describe the use of small powered machinery in rural work tasks.

Performance Criteria

- (a) Identify types of small powered machinery.
- (b) Explain the uses of the machinery identified.

Outcome 2

Carry out a risk assessment for a given task involving the use of small powered machinery.

Performance Criteria

- (a) Identify the risks associated with using machines in a given task.
- (b) Describe the preventative/risk reduction measures.

Outcome 3

Operate small powered machinery safely under supervision

Performance Criteria

- (a) Undertake pre-operative checks and maintenance on selected machinery.
- (b) Operate the machinery following safety procedures.
- (c) Undertake post-operative machine maintenance.

National Unit specification: statement of standards (cont)

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Evidence Requirements for this Unit

Evidence is required to demonstrate that candidates have achieved all Outcomes and Performance Criteria.

There is opportunity to undertake a holistic approach to assessment in this Unit. See Guidance on Assessment.

All activities undertaken in this Unit must adhere to current health and safety legislation, regulations and codes of practice.

Evidence is required to demonstrate that candidates have achieved all Outcomes and Performance Criteria.

Outcome 1

Discussions regarding health and safety must be included in any site visits and/or talks, which take place as part of Outcome 1.

All evidence should be gathered under closed-book conditions. The candidate will provide written and/or oral evidence of identification of machinery to include:

- ◆ A minimum of two types of electric powered machinery.
- ◆ A minimum of two types of 2-stroke engine powered machinery.
- ◆ A minimum of two types of 4-stroke engine powered machinery.

The candidate will provide written and/or oral evidence of one suitable task for each of the identified machines.

Support notes regarding health and safety when using small machines must be provided and discussed at this stage in order to prepare the candidate for Outcome 3.

Outcome 2: Written and/or oral evidence. All evidence should be gathered under closed-book conditions.

It is the tutors' responsibility to make sure candidates are made fully aware of all health and safety guidelines, policies and procedures relating to each activity.

Candidates must be informed of any other potential risks not identified by themselves and this must also be completed prior to, during and after the task.

The candidate is required to identify 5 risks and/or potential hazards when using specified machinery in a given task. These should be identified from a provided list containing five relevant and five non-relevant risks and/or hazard as well as:

- ◆ an accurate description of the measures taken to reduce risks.
- ◆ an accurate description of the personal protective equipment to be used.

National Unit specification: statement of standards (cont)

Unit title: Small Powered Machine Operation

Outcome 3: Performance evidence. The candidate must meet all of the Performance Criteria for one machine. This activity must be carried out under the supervision of a qualified operator. Manufacturer guidelines must be made available and followed at all times. Machine operation should take place with a suitable tutor/instructor to candidate ratio to maximize safe working conditions and ensure tasks are undertaken to an appropriate standard.

To include:

- ◆ Identifying all pre-operative checks and maintenance from manufacturers guidelines.
- ◆ Carrying out appropriate pre-operative checks.
- ◆ Carrying out appropriate pre-operative maintenance.
- ◆ Correctly setting operational adjustments.
- ◆ Operating machinery following manufacturer's guidelines.
- ◆ Using all associated personal protective equipment.
- ◆ Identifying post-operational maintenance following manufacturers guidelines.
- ◆ Carrying out post-operational maintenance, including cleaning machinery to the appropriate standard.
- ◆ Cleaning of associated personal protective equipment.
- ◆ Storing machinery and equipment correctly.

National Unit specification: support notes

Unit title: Small Powered Machine Operation

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 give the candidate confidence in selection and use of hand held machinery whenever possible by exposure to practical experience. Therefore allowance should be made to enable the candidates' time to familiarize themselves with a variety of machinery used.

The Unit is designed for practical outdoor activities with minimal classroom work.

Outcome 1

The candidate is required to visually identify a range of electric, 2-stroke and 4-stroke machinery as well as describe a suitable task for each machine therefore reference should be made and demonstration carried out using machinery available at the delivering centre. Examples of equipment could include:

- ◆ lawnmower
- ◆ strimmer/brush-cutter
- ◆ hedge trimmer
- ◆ leaf blower
- ◆ rotavator
- ◆ cement mixer
- ◆ generator
- ◆ air compressor
- ◆ pressure washer
- ◆ drill
- ◆ sander.

Reference should be made to the basic differences between 2 and 4-stroke engines so candidates are aware of the associated uses, maintenance and operating procedures. These should include *fuel* (2 stroke requires an additive to be added to petrol), *general appearance* (2-stroke engines are usually smaller in size and lighter) and *uses* (4 stroke is for more heavy duty applications).

Reference should also be made to the fact that some 4-stroke engines require petrol as fuel and others diesel.

National Unit specification: support notes (cont)

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Outcome 2

This Outcome is intended for completion within a practical context and should be carried out prior to a task given in Outcome 3. The tools and equipment to be used should have already been identified.

Candidates are expected to be able to highlight the main risks involved in using the machinery and show understanding through description of preventative or risk reduction measures. They should also be able to select and describe the personal protective equipment (PPE) needed. PPE relating to specific items of equipment should also be included after direct observation of use. For example, a helmet with attached visor and ear defenders should be worn when using a hedge trimmer. Demonstration would be required to ensure that the helmet is adjusted and fits correctly.

Candidates are then expected to implement the measures correctly prior to, during and after the task.

Outcome 3

This Outcome requires the candidate to understand the importance of reading and understanding the manufacturers' guidelines regarding the use of powered machinery.

The candidates are required to identify and wear appropriate personal protective equipment. Demonstration should be given regarding any extra PPE required for operation of specific machinery and students would be expected to identify and use it correctly during operational tasks.

Tutor/instructor led demonstrations should be provided ensuring that students witness the correct and safe usage first hand. Formative questioning throughout will help to embed knowledge.

Close supervision will be required to ensure candidates have identified all pre-operative checks and maintenance required. Candidates should be encouraged to report defects as a routine procedure. The assessor must be satisfied pre-operative maintenance tasks have been carried out to the correct standard. Examples of tasks could include:

- ◆ lubricating moving parts
- ◆ checking spark plug/s
- ◆ maintaining correct oil level.
- ◆ adding fuel
- ◆ inspecting cables, plugs or battery packs.

The candidate should be given the opportunity to mix 2-stroke oil with the correct amount of petrol to create a fuel mix suitable for use as part of the pre-operative routine.

National Unit specification: support notes (cont)

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Operational adjustments should be demonstrated in relation to the task and closely supervised to ensure they have been carried out correctly. Examples could include:

- ◆ adding drill bits or screw heads to a drill
- ◆ adjusting the cutting height of a lawn mower
- ◆ adding the correct grade of sandpaper to a sander.
- ◆ adjusting the water flow on a power washer.

The instructor should present a number of common rural work tasks for which the candidate is required to operate the machine and carry out the task to a satisfactory standard.

Vocational tasks could include:

- ◆ maintenance of a lawn
- ◆ clearing a pathway
- ◆ cleaning agricultural equipment
- ◆ repairing a wall or fence
- ◆ maintaining an area of hedge.

Health and safety should be emphasized at all times and the establishment's safe working policy should be highlighted.

This Outcome also requires the candidate to identify and carry out post-use maintenance. Instructor demonstration should be carried out to allow the candidate first-hand experience of procedures and standards.

Cleaning the machine must be included during this Outcome and candidates must be clear about how this is done as well as its importance in preserving the life of the machine. There may be opportunity to assess the use of other suitable machines during cleaning such as a compressor with air blower attachment or power washer.

Other post operative maintenance could include:

- ◆ removing specific attachments such as drill bits
- ◆ fitting storage guards correctly
- ◆ lubricating parts.

A final supervised check should take place to ensure all machinery is ready for storage.

This Unit aligns to the following National Occupational Standards from Lantra:

- CU17 Assist with the maintenance of equipment
- CU27 Maintain equipment and machines
- L27 Use and maintain equipment and machines
- F2 Make recommendations as a result of workplace investigations

National Unit specification: support notes (cont)

Unit title: Small Powered Machine Operation

Guidance on learning and teaching approaches for this Unit

Outcome 1

Practical, outdoor learning sessions using machines available at the delivering centre for identification. Delivery methods could include:

- ◆ demonstration/practical activities
- ◆ talks/discussions
- ◆ site visits.

Support material could be provided such as:

- ◆ worksheets
- ◆ links to internet sites
- ◆ video
- ◆ slides/electronic presentations.

Outcome 2

A mixture of practical and class-based sessions, which could include:

- ◆ practical observations
- ◆ group discussion
- ◆ demonstration
- ◆ group/individual activities.

Support notes should be provided highlighting all relevant policies and procedure.

Outcomes 3

Emphasis on practical sessions with some class based sessions to deliver/gather information on personal protective equipment and manufacturers guidelines.

Delivery methods could include:

- ◆ demonstration/observation
- ◆ talks/discussions
- ◆ site visits.

Support material should be made available:

- ◆ manufacturers guidelines
- ◆ health and safety guidelines.

National Unit specification: support notes (cont)

Unit title: Small Powered Machine Operation

Guidance on approaches to assessment for this Unit

A holistic approach to assessment could be adopted to gather evidence for each Outcome. Site visits with demonstrations could introduce candidates to machinery and provide opportunity to answer questions pertaining to Outcome 1. Following this, machines could be identified for specific tasks and a relevant risk assessment carried out for Outcome 2. Candidates could then undertake all tasks and gather the required evidence pertaining to Outcome 3.

Outcome 1

Candidates should be assessed using machinery that is available for use at the delivering centre.

Candidates could be presented with photographic and/or physical evidence of machinery for which written and/or oral short answers must be given for each of the Performance Criteria. A checklist could be used to record answers. Candidates could be encouraged to gather a portfolio containing visual and written information on each machine.

Outcome 2

Worksheets containing a skeleton template could be provided and candidates would be required to complete the necessary information as specified in Performance Criteria (a) and (b).

Outcome 3

Manufacturer's guidelines should be referred and adhered to at all times. An assessor observation checklist should be used to record evidence of Performance Criteria. Photographic documentation is not essential but would provide visual evidence to supplement the checklist.

Opportunities for the use of e-assessment

E-assessment may be appropriate for some assessments in this Unit. By e-assessment we mean assessment which is supported by Information and Communication Technology (ICT), such as e-testing or the use of e-portfolios or social software. Centres which wish to use e-assessment must ensure that the national standard is applied to all candidate evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. Further advice is available in *SQA Guidelines on Online Assessment for Further Education (AA1641, March 2003)*, *SQA Guidelines on e-assessment for Schools (BD2625, June 2005)*.

National Unit specification: support notes (cont)

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Opportunities for developing Core Skills

In this Unit candidates will select tools and equipment for specified rural work activities. Candidates will carry out the specified activities using appropriate machines for the task and apply safe working practices.

Candidates could:

- ◆ carry out research using ICT to identify a range of machines and the tasks they are used for.
- ◆ produce written work using ICT to describe appropriate machines, operatives checks and maintenance.
- ◆ work in groups to investigate and record findings and carry out risk assessments.
- ◆ use simple calculations to measure fuel mix where necessary and top up consumables.

As they are doing this Unit candidates will be developing aspects of the Core Skills in *Problem Solving, Communication, Using Information and Communication Technology, Numeracy and Working with Others*.

This Unit has the Problem Solving component of Critical Thinking embedded in it, so when the candidate achieves this Unit their Core Skills profile will be updated to show they have achieved Critical Thinking at SCQF level 4.

Disabled candidates and/or those with additional support needs

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering whether any reasonable adjustments may be required. Further advice can be found on our website www.sqa.org.uk/assessmentarrangements

History of changes to Unit

Version	Description of change	Date
02	Core Skills Component Critical Thinking at SCQF level 4 embedded.	19/01/2012

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