



## National unit specification

### General information

**Unit title:** Painting and Decorating: HVLP, Airless Spraying and Ancillary Equipment (SCQF level 6)

**Unit code:** HH65 46

**Superclass:** TG

**Publication date:** December 2016

**Source:** Scottish Qualifications Authority

**Version:** 02

### Unit purpose

This unit is suitable for learners working towards a Modern Apprenticeship in Painting and Decorating and will develop the learner's craft skills in HVLP spraying and airless spraying techniques. This unit is designed to provide learners with the competences to select, set up and use High Volume Low Pressure turbines and equipment along with airless pumps, guns and ancillary equipment. The learners will also be able transfer these skills to the workplace. It is also designed to instil safe use of this equipment within the learner and develop their application techniques. This unit will enable learners to develop their understanding and use of painting and decorating terminology, equipment, techniques and practices to apply coatings. Problem solving will be an endemic part of the unit as learners learn to troubleshoot (diagnose and prescribe remedies) for, setting up, equipment and application faults.

### Outcomes

On successful completion of the unit the learner will be able to:

- 1 Demonstrate knowledge and understanding of HVLP spraying, airless spraying and ancillary equipment.
- 2 Prepare for the application of coatings by HVLP and airless spray guns.
- 3 Prepare for the application of coatings by airless spray ancillary equipment.
- 4 Apply coatings by HVLP spray, airless spray and ancillary equipment.

### Credit points and level

2.5 National unit credits at SCQF level 6: (15 SCQF credit points at SCQF level 6)

## National unit specification: General information (cont)

**Unit title:** Painting and Decorating: HVLP, Airless Spraying and Ancillary Equipment (SCQF level 6)

### Recommended entry to the unit

Entry to this unit is at the discretion of the centre.

### Core Skills

Achievement of this unit gives automatic certification of the following:

Complete Core Skill	None
Core Skill component	Critical Thinking at SCQF level 5

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

### Context for delivery

If this unit is delivered as part of a Group Award, it is recommended that it should be taught and assessed within the subject area of the Group Award to which it contributes.

The Training and Assessment Programme (TAP) for this unit provides assessment and marking guidelines that exemplify the national standard for achievement. It is a valid, reliable and practicable assessment. Centres wishing to develop their own assessment should refer to the TAP to ensure a comparable standard. A list of existing ASPs is available to download from SQA's website (<http://www.sqa.org.uk/sqa/46233.2769.html>).

### Equality and inclusion

This unit specification has been designed to ensure that there are no unnecessary barriers to learning or assessment. The individual needs of learners should be taken into account when planning learning experiences, selecting assessment methods or considering alternative evidence.

Further advice can be found on our website [www.sqa.org.uk/assessmentarrangements](http://www.sqa.org.uk/assessmentarrangements).

## **National unit specification: Statement of standards**

### **Unit title:     Painting and Decorating: HVLP, Airless Spraying and Ancillary Equipment (SCQF level 6)**

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**

Demonstrate knowledge and understanding of HVLP spraying, airless spraying and ancillary equipment.

##### **Performance Criteria**

- (a) Explain the basic working principles of an airless pump and HVLP turbine.
- (b) Describe the advantages of using HVLP and airless spray systems.
- (c) Identify the component parts of an HVLP and airless spray gun and state their function.
- (d) Identify and correctly describe the function of ancillary equipment used with the airless spray system.
- (e) Explain the risk factors involved when using HVLP and airless spray.
- (f) Explain the causes of, and remedies for HVLP and airless spray equipment and application faults.

#### **Outcome 2**

Prepare for the application of coatings by HVLP and airless spray guns.

##### **Performance Criteria**

- (a) Select and prepare materials for application by HVLP and airless spray.
- (b) Mask, and/or shield, and de-mask all appropriate areas prior to and after HVLP and airless spraying.
- (c) Check all equipment for damage prior to use.
- (d) Set up, use, dismantle, clean, maintain and store airless pump, air turbine, fluid hose, air hose and guns.

#### **Outcome 3**

Prepare for the application of coatings by airless spray ancillary equipment.

##### **Performance Criteria**

- (a) Select and prepare materials for application by airless spray ancillary equipment – pole gun and airless fed roller (either internal fed or external fed).
- (b) Mask, and/or shield, and de-mask all appropriate areas prior to and after airless spraying.
- (c) Check airless equipment for damage prior to use.
- (d) Set up, use, dismantle, clean, maintain and store airless pump, fluid hose and ancillary equipment.

## **National unit specification: Statement of standards**

**Unit title:** Painting and Decorating: HVLP, Airless Spraying and Ancillary Equipment (SCQF level 6)

### **Outcome 4**

Apply coatings by HVLP spray, airless spray and ancillary equipment.

#### **Performance Criteria**

- (a) Apply coatings by HVLP and airless spray guns to the given specification and standards.
- (b) Apply coatings by pole gun and airless fed roller (internal fed or external fed) ancillary equipment to the given specification and standards.

#### **Evidence Requirements for this unit**

These Evidence Requirements will be met by the completion of the Painting and Decorating Training and Assessment Programme (TAP).

Evidence is required to demonstrate that the learner has achieved this unit to the standard specified in all Outcomes and Performance Criteria.

Written and/or oral evidence is required to demonstrate that the learner has achieved Outcomes 1 and 2 to the standards required in the Performance Criteria. Learners will be required to demonstrate their knowledge of:

- ◆ HVLP and Airless spray systems, including; identify and correctly state the function of trigger guard, trigger lock, trigger, reversible tip and tip guard.
- ◆ Ancillary equipment, including; identify and correctly state the function of pole guns and airless external fed rollers and internal fed rollers.
- ◆ Risk factors, including injection injury and the need to earth equipment through anti-static wires, safety mechanisms and risk assessments.
- ◆ Troubleshooting, equipment and coating faults.

This assessment will be through a question paper and conducted under closed-book, controlled, supervised conditions. However, to encourage safety, the use of equipment operating/safe handling manuals can be used by learners when answering troubleshooting questions.

Product and performance evidence is required to demonstrate that the learner has achieved Outcomes 2, 3 and 4 to the standards specified in the Performance Criteria. The learners will be required to complete four spraying tests. The tests will require that the learners use a HVLP gun, airless gun, a spray pole gun and a spray fed roller (either external or internal fed) to given specifications and standards. Assessment of these Outcomes will be evidenced through observation of work processes and assessment of the completed pieces of work. Learners must meet the given standards and tolerances during the practical assessments. An assessor observation checklist must be used to record this evidence. Assessment should be conducted under controlled, supervised conditions.

## National unit specification: Statement of standards (cont)

### Unit title: Painting and Decorating: HVLP, Airless Spraying and Ancillary Equipment (SCQF level 6)

Learners must adhere to relevant Health and Safety and Environmental regulations and legislation relating both to working practices within the construction environment, as well as those specific to any practical task they are requested to carry out (such as emphasising the importance of selecting and using the correct PPE at all times, keeping waste to a minimum at all times, recycling and disposal of waste).

The learner is required to carry out the assessment activity to the standards detailed below:

<b>Summary of standards (working towards industrial tolerances)</b>	
<b>Item</b>	<b>Measurement of standard</b>
Prepares materials for spraying with airless equipment	<ul style="list-style-type: none"> <li>◆ Paint materials mixed in compliance with manufacturer's instructions</li> <li>◆ Material mixed, decanted, strained and thinned correctly</li> </ul>
Protects surfaces for spraying operations	<ul style="list-style-type: none"> <li>◆ Immediately adjacent surfaces masked and/or shielded</li> <li>◆ Masking tape finished to correct position and firmly fixed</li> <li>◆ Masking paper and /or film correctly used where required</li> <li>◆ De-masking on completion of spraying operations without damage to the surface</li> <li>◆ No overspray evident on adjacent surfaces</li> </ul>
Checks all equipment for damage prior to use	<ul style="list-style-type: none"> <li>◆ Checks fluid and air hose for damage free from, bulges kinks fraying, etc checks pump, turbine and guns for damage prior to use</li> </ul>
Set up equipment correctly and safely	<ul style="list-style-type: none"> <li>◆ Connects hose and guns to correct torque</li> <li>◆ Sets up correct spraying pressure or speed free from tailing</li> </ul>
Spraying application technique meets required standard	<ul style="list-style-type: none"> <li>◆ Even coating applied with minimum evidence of the following defects:               <ul style="list-style-type: none"> <li>— runs and sags</li> <li>— dry misty coating</li> <li>— arcing</li> <li>— banding</li> <li>— orange peel</li> <li>— misses</li> </ul> </li> </ul>

## National unit specification: Statement of standards (cont)

**Unit title:** Painting and Decorating: HVLP, Airless Spraying and Ancillary Equipment (SCQF level 6)

<b>Summary of standards (working towards industrial tolerances) (cont)</b>	
<b>Item</b>	<b>Measurement of standard</b>
Health and safety requirements met under current regulations	<ul style="list-style-type: none"><li>◆ Complies at all times</li><li>◆ Correct PPE selected and worn</li><li>◆ Local exhaust ventilation (LEV) must be used, if applicable.</li></ul>
Risk assessment	<ul style="list-style-type: none"><li>◆ Safety boots worn at all times</li><li>◆ Overalls worn at all times</li><li>◆ Safety glasses worn at all times</li><li>◆ Particulate respirators worn during all spraying operations</li><li>◆ Gloves worn</li><li>◆ Equipment used correctly at all times</li><li>◆ Equipment cleaned and stored safely after all spraying operations</li></ul>



## **National unit Support Notes**

**Unit title:** Painting and Decorating: HVLP, Airless Spraying and Ancillary Equipment (SCQF level 6)

Unit Support Notes are offered as guidance and are not mandatory.

While the exact time allocated to this unit is at the discretion of the centre, the notional design length is 10 hours.

### **Guidance on the content and context for this unit**

This unit has been developed as a mandatory unit in the Professional Development Award in Painting and Decorating at SCQF level 6.

The successful completion of this unit will provide learners with the required underpinning knowledge to set up, use and clean airless spray equipment and ancillary equipment correctly and safely.

The unit should be offered to learners from the construction and related or similarly structured industries, and the skills are transferable within different working environments. The unit is primarily aimed at learners whose normal place of work would be a site, workshop, or similar type of work environment.

This unit will deal with the preparation of learners for the completion of three spraying tests using HVLP spray gun, airless spray gun, pole gun and internal or external fed roller equipment. It should be delivered as part of a structured programme of training and orientated to the context of the learner's work area of responsibility.

Health and safety and sustainability are integral and key to the construction industry, therefore, throughout the unit, emphasis will be placed where appropriate on the application of health and safety and sustainability. Safety working practices should be looked at in accordance with current safety codes of practice and regulation. Sustainability should include reference to the criteria of affecting sustainability, the impact of not implementing sustainability on the environment and the legislation promoting sustainability.

### **Guidance on approaches to delivery of this unit**

Safe use of the equipment should be instilled within the learner from the outset and constantly reinforced. Learners should be encouraged to read and use the equipment safe operating manuals. Checking of equipment prior to use should be encouraged throughout the unit. The learners should be given every opportunity to practice spraying application techniques with HVLP and airless equipment through the initial tasks and/or naturally occurring practical projects in order that they can successfully achieve the standards specified in all spraying tests.

## National unit Support Notes (cont)

**Unit title:** Painting and Decorating: HVLP, Airless Spraying and Ancillary Equipment (SCQF level 6)

Knowledge of the working principles of the equipment should be developed by the learner. The method of how to set the pressure or speed safely should be reinforced continuously and faults with too high or too low pressure should be highlighted. Equipment faults and their remedies (troubleshooting) should also be a significant part of the teaching approach and whether faults can be remedied by the operative (on site) or whether the faults need to be rectified by a specialised spray equipment service engineer.

The use of solvent borne and/or water borne paint coatings is at the discretion of the delivery centre, however, learners must demonstrate knowledge of cleaning HVLP airless spray systems after use with both solvent and water borne based coatings and Airless spray and ancillary equipment with water borne materials.

Opportunities should be taken throughout the delivery of this unit to meet the requirements of the generic Units of the Training and Assessment Programme including:

- ◆ *Conform to General Workplace Health, Safety and Welfare*
- ◆ *Confirm Work Activities and Resources for the Work*
- ◆ *Develop and Maintain Good Working Relationships*
- ◆ *Confirm the Occupational Method of Work*
- ◆ *Conform to Productive Working Practices*
- ◆ *Move Handle or Store Resources*

### Guidance on approaches to assessment of this unit

Detailed assessment material for this unit will be found in section 6 of the Painting and Decorating Training and Assessment Programme (TAP). Centres may use the instruments of assessment which they consider to be most appropriate but are advised to use the TAP which has been developed centrally by SQA. Any other instruments of assessment used must be comparable to the TAP and have been through prior verification.

The learner's knowledge and understanding of terminology and spray systems will be assessed through a question paper.

Learners should be given as much practice in spraying application techniques, prior to being set the assessment. Practical setting up of the equipment safely should be reinforced. Evidence will be gathered for Outcomes 3 and 4 through observation that the learners have met the given standards and tolerances during the practical assessment. An assessor observation checklist should be used to record this evidence.



## National unit Support Notes (cont)

**Unit title:** Painting and Decorating: HVLP, Airless Spraying and Ancillary Equipment (SCQF level 6)

### Opportunities for e-assessment

E-assessment may be appropriate for some assessment 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 learner evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. The most up-to-date guidance on the use of e-assessment to support SQA's qualifications is available at [www.sqa.org.uk/e-assessment](http://www.sqa.org.uk/e-assessment).

### Opportunities for developing Core and other essential skills

The Core Skill of *Problem Solving* could be developed as learners undertake this unit. Learners will need to take account of a range of factors in order to work efficiently and safely, such as the choice of tools, appropriate materials, safety issues, safety equipment and sustainability. Individual discussions with assessors will enhance the evaluation of efficient working practices.

There are opportunities to develop the Core Skill of *Working with Others* at SCQF level 4. Outcome 4 will give the learners opportunities to work with others as they plan and set out work surfaces, requisition equipment, and check equipment. They will also be required to work in groups to set up, clean dismantle and store equipment after use. The learners will also work in groups completing risk assessments. Learners can agree responsibilities and provide support and information to each other during the assessments. After assessment, they should be encouraged to consider how effectively they supported each other. There could be opportunities for learners to develop the Core Skill of *Communication* at SCQF level 4. Learners will have the opportunity to develop written and/or communication skills for the knowledge part of the assessment in covering Outcomes 1 and 2.

The Core Skill of *Information and Communication Technology (ICT)* at SCQF level 3 will be developed by learners researching Health and Safety legislation affecting their area of work and by visiting sites related to HVLP and airless spraying equipment.

*Numeracy* at SCQF level 4 could be developed as the learners work through the Outcome 2 completing the calculations.

This unit has the Critical Thinking component of *Problem Solving* embedded in it. This means that when learners achieve the unit, their Core Skills profile will also be updated to show they have achieved Critical Thinking at SCQF level 5.

## History of changes to unit

Version	Description of change	Date
02	Core Skills Component Critical Thinking at SCQF level 5 embedded.	21/02/17

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## General information for learners

### **Unit title:** Painting and Decorating: HVLP, Airless Spraying and Ancillary Equipment (SCQF level 6)

This section will help you decide whether this is the unit for you by explaining what the unit is about, what you should know or be able to do before you start, what you will need to do during the unit and opportunities for further learning and employment.

This unit will enable you to select suitable tools, equipment and prepare surfaces HVLP and airless spraying.

You will learn how to Mask, and/or shield, and de-mask all appropriate areas prior to and after airless spraying.

You will develop knowledge and understanding of work methods and terminology used in HVLP and airless spraying. This unit may provide further progression in the Construction Craft industry.

You will also be provided with the knowledge to allow you to appreciate the reasons for carrying out the practical work in the manner directed and the reasons for using specific tools, materials, components and equipment.

Health and Safety and Sustainability are integral and key to the Construction Industry therefore throughout the unit emphasis will be placed where appropriate on the application of Health and Safety and Sustainability. Safety working practices will be looked at in accordance with current safety codes of practice and regulations.

There will be a series of training exercises followed by some practical tasks based assessment and multi choice knowledge assessment. Completion of the unit will provide you with the basic skills necessary to enable you to progress to more complex aspects of Painting and Decorating which in turn will further develop your skills and knowledge.

During practical activities you must comply with all aspects of Health and Safety. This includes wearing appropriate personal protective equipment (PPE) and compiling risk assessment and method statements for each practical assessment. This will be assessed on an on-going basis for performance evidence.

Health and Safety is an extremely important part of this programme. Achievement of a unit will not be awarded where practical assessment are not carried out in a safe manner — even if the other standards have been met.

In order to successfully complete the programme, you must learn to think, work and behave in a safe manner, and be aware of the safety of others.

The Core Skill of *Problem Solving* could be developed as you undertake this unit. You will need to take account of a range of factors in order to work efficiently and safely, such as the choice of tools, appropriate materials, safety issues, safety equipment and sustainability.

There are opportunities for you to develop the Core Skill of *Working with Others* at SCQF level 4.

## General information for learners (cont)

**Unit title:** Painting and Decorating: HVLP, Airless Spraying and Ancillary Equipment (SCQF level 6)

There will be opportunities to work with others as you plan and set out work surfaces, requisition equipment, and check equipment. You will also be required to work in groups to set up, clean dismantle and store equipment after use. You will also work in groups completing risk assessments.

There could be opportunities for you to develop the Core Skill of *Communication* at SCQF level 4. You will have the opportunity to develop written and/or communication skills for the knowledge part of the assessments.

The Core Skill of *Information and Communication Technology (ICT)* at SCQF level 3 will be developed by you while researching Health and Safety legislation affecting your area of work and by visiting sites related to HVLP and airless spraying equipment.

*Numeracy* at SCQF level 4 could be developed as you complete the calculations.

This unit has the Critical Thinking component of *Problem Solving* embedded in it. This means that when you achieve the unit, your Core Skills profile will also be updated to show you have achieved Critical Thinking at SCQF level 5.