

## National Unit Specification: general information

**UNIT** Construction Crafts: Practical Copper Pipework (Intermediate 1)

**CODE** DM7W 10

**COURSE** Construction Crafts (Intermediate 1)

### SUMMARY

This Unit is suitable for candidates who have limited or no experience of plumbing craft practices. The Unit is based on practical workshop activities in plumbing work such as cutting, fitting and connecting and assembling copper pipework. Candidates will also develop safe working practices and general skills which will enhance employability.

The Unit is an optional Unit in the Intermediate 1 Construction Crafts Course, but can also be taken as a free-standing Unit. Candidates who achieve this Unit should feel confident in progressing to further Units in plumberwork at Intermediate 1 or Intermediate 2.

### OUTCOMES

- 1 Select, use and maintain basic plumbing tools and materials.
- 2 Join copper pipes using compression fittings.
- 3 Fabricate a copper pipework arrangement using proprietary fittings and by forming bends.

### RECOMMENDED ENTRY

Access to this Unit is at the discretion of the centre.

### CREDIT VALUE

0.5 credit at Intermediate 1 (3 SCQF credit points at SCQF level 4\*).

*\*SCQF 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 points at an SCQF level. There are 12 SCQF levels, ranging from Access 1 to Doctorates.*

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### Administrative Information

**Superclass:** TH

**Publication date:** April 2007

**Source:** Scottish Qualifications Authority

**Version:** 02

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## **National Unit Specification: general information (cont)**

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### **CORE SKILLS**

There is no automatic certification of Core Skills in this Unit.

Opportunities for developing aspects of Core Skills are highlighted in *Guidance on Learning and Teaching Approaches for this Unit*.

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

### **UNIT Construction Crafts: Practical Copper Pipework (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**

Select, use and maintain basic plumbing tools and materials.

##### **Performance Criteria**

- (a) The selection of tools and materials is appropriate for the work to be done.
- (b) The tools are used in the correct manner.
- (c) The tools are used solely for the purpose which they are intended.
- (d) The tools are cleaned, maintained and stored correctly.
- (e) Health and safety requirements are complied with during all activities.

#### **OUTCOME 2**

Join copper pipes using compression fittings.

##### **Performance Criteria**

- (a) The pipes are free from excessive marking.
- (b) The product is completed to within prescribed tolerances.
- (c) All pipework is cut square, free from burrs and completed using associated fittings.
- (d) A quality check is carried out on the finished work against prescribed standards and tolerances.
- (e) Health and safety requirements are complied with during all activities.

#### **OUTCOME 3**

Fabricate a copper pipework arrangement using proprietary fittings and by forming bends.

##### **Performance Criteria**

- (a) The pipework is free from excessive marking.
- (b) The exercise is completed to within prescribed tolerances.
- (c) All pipework is cut square, free from burrs and completed using associated fittings.
- (d) A quality check is carried out on the finished work, including bends, to ensure prescribed standards and tolerances are met.
- (e) Health and safety requirements are complied with during all activities.

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

### UNIT Construction Crafts: Practical Copper Pipework (Intermediate 1)

#### EVIDENCE REQUIREMENTS FOR THIS UNIT

Performance evidence is required to show that all Outcomes and Performance Criteria have been achieved.

**Performance evidence** will be supported by assessor checklists. This evidence will be generated from a number of practical activities carried out in supervised workshop conditions. The evidence may be gathered at different points throughout the Unit. The practical activities will cover:

- ◆ selecting the correct tools and materials for the activities
- ◆ measuring and cutting copper pipework correctly for subsequent assembly
- ◆ joining copper pipes using compression fittings
- ◆ fabricating and forming copper pipework and associated fittings into assemblies (to include bends) in accordance with given drawings and specifications
- ◆ candidates carrying out a quality check on their own work before submitting for final assessment
- ◆ candidates maintaining a clean and tidy workplace and adhering to health and safety requirements throughout all activities

The National Assessment Bank item (NAB) for this Unit provides an assessor checklist together with details of the practical assignment for Outcome 3. Centres wishing to develop their own assessments should refer to the NAB to ensure a comparable standard.

## **National Unit Specification: support notes**

### **UNIT Construction Crafts: Practical Copper Pipework (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 20 hours.

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

The content in this Unit covers practical plumbing work activities at an introductory level. The candidate is required to develop the ability to select and use tools correctly and safely. It is therefore important that the learning takes place in a supervised workshop/site environment. Basic safe working practices will be included in the content as it is important that candidates learn to adhere to these at all times.

During the process of practical work the candidate will become accustomed to the use of plumbing work terms and will be able to demonstrate knowledge and understanding of these terms when carrying out practical activities. The main content of the Unit will be learning the skills required to cut, form and assemble copper pipework and fittings into an overall assembly in accordance with given drawings. Candidates should be taught good working practices at each stage and should learn how to carry out a quality check on their own work on completion.

In addition to the vocational content, candidates should be encouraged to focus on the general work practices and attitudes which are valued by employers. These should be delivered as an integral part of the Unit. Opportunities will arise in various practical contexts to discuss the value of, for example, good time-keeping and attendance; thorough planning and preparation; working co-operatively; maintaining a clean, tidy and organised workplace; checking own work to ensure it is of an appropriate standard; adopting a positive attitude to learning; demonstrating a willingness to follow instructions and taking a positive attitude to receiving feedback on performance. The context for learning should include the requirement to be clean, presentable and appropriately dressed for the workshop, wearing personal protective equipment (PPE) including protective clothing when required.

Relevant aspects of current health and safety legislation and any systems of work relevant to the candidates' workshop/workplace should be explained and adhered to as part of the work of this Unit.

#### **Employability Skills**

On completion of this Unit the candidate will have had opportunities to develop the following employability skills:

- ◆ timekeeping
- ◆ attendance
- ◆ following instructions
- ◆ taking advice and dealing with constructive feedback
- ◆ maintaining a tidy work area
- ◆ working co-operatively with others
- ◆ planning and preparation\*
- ◆ checking quality of own work\*
- ◆ positive attitude to learning
- ◆ review and self-evaluation
- ◆ awareness of health and safety issues\*
- ◆ interpretation of graphic information\*

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

### **UNIT Construction Crafts: Practical Copper Pipework (Intermediate 1)**

Achievement in a number of these employability skills (those marked with an asterisk) will be clearly identified as a result of the evidence generated through the assessment activities for this Unit. There are opportunities to develop the remaining skills.

#### **GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT**

Experiential learning is the main approach recommended for this Unit. This involves learning through practical experiences and activities. For example, one of the key aspects of this Unit is that candidates learn how to use plumbing tools and materials in a correct and safe manner. This can best be achieved by candidates undertaking practical plumbing activities in a workshop environment.

Experiential learning also involves reflecting on experiences/activities, identifying strengths and areas for improvement. It is important to encourage candidates throughout the Unit to evaluate their own work and progress. They should be encouraged to seek advice and set themselves goals to build competence and confidence in undertaking tasks.

During the delivery of this Unit candidates should be encouraged to learn and use common plumbing terms with a view to helping them remember these terms. Individual candidates should be encouraged to use and develop techniques suited to their own physical strengths and abilities.

It is recommended that, prior to candidates commencing any practical activity, the tutor demonstrates the correct and safe way to undertake this activity. Candidates should also be provided with simple working drawings of exercises to assist them in undertaking these exercises.

If this Unit is delivered as part of the Construction Crafts, teachers/lecturers should seek every opportunity to build up an understanding of work practices and attitudes required of employees and employers. Checking standards of work against prescribed tolerances is a very useful skill and habit that candidates can develop during their work. For example, in undertaking the various plumbing practical exercises in this Unit candidates should check that all work is completed within prescribed tolerances. The construction industry is very keen on producing work that is 'right first time' and quality checks are an inherent part of the work in the industry. Candidates can be encouraged to approach their work with care and build in a checking process as part of good practice.

Responsible, safe behaviour in the workplace can be demonstrated and practised as part of the routine essential work, for example: candidates will learn that leaving plumbing tools, equipment and materials randomly around a workspace could be a tripping hazard; they will learn how to use tools and equipment in a safe manner and how to clean and maintain tools; daily routines in the workplace will include maintaining a clean and tidy workspace.

Opportunities for developing aspects of Core Skills should be incorporated where they arise naturally in the teaching and learning process. For example, candidates will be required to read instructions for work activities, including information about different materials and jointing compounds; they will also take part in discussions with peers and tutors regarding work activities, interpretation of drawings, materials, use of tools and workshop protocols. They will need to demonstrate, at all times, clear and courteous communication with their peers, supervisors and technicians. All of these activities present opportunities for developing oral and reading Communication Skills.

## National Unit Specification: support notes (cont)

### UNIT Construction Crafts: Practical Copper Pipework (Intermediate 1)

Where this Unit is taken alongside the *Construction Crafts: Employability Skills* Unit, candidates will have additional opportunities to develop an awareness of the general work practices and attitudes which employers value. Integrated activities will involve the candidate assessing his/her own performance on time-keeping and attendance, planning and preparation, working co-operatively, maintaining a tidy and safe work area, checking own work, demonstrating a positive attitude to learning, showing a willingness to follow instructions and responding positively to feedback on performance. Candidates will also seek the views of tutors/supervisors and will identify areas for improvement and take responsibility for action plans. These activities will add value to the candidate's experience and help to enhance employability.

#### Core Skills

There are opportunities to develop aspects of the Core Skills *Problem Solving* in this Unit. Candidates are required to check their own practical work against given standards and tolerances and are required to review and evaluate their work.

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

Candidates should be made aware of what will be required of them in order to achieve credit for the Unit. They should be encouraged to discuss the work with the teacher/lecturer and with their colleagues. Help and encouragement should be given throughout the Unit so that the candidates become confident in their ability to achieve the Performance Criteria.

It is expected that candidates will be given as much practice as possible in practical plumbing techniques prior to being set the assessment task. The National Assessment Bank items for the Unit detail the quality and quantity of practical work to be produced for the Unit assessment. The standards required for the assessment task are significantly less onerous than those required by National Occupational Standards. Nevertheless, such an approach introduces candidates to the kind of quality regime they will experience if and when they pursue a career as a tradesperson in the construction industry.

The use of observation checklists is recommended when gathering performance evidence. Examples of checklists are given in the NAB items for this Unit. Centres may develop their own instruments of assessment but these must be of a comparable standard to the NABs.

#### CANDIDATES WITH DISABILITIES AND/OR ADDITIONAL SUPPORT NEEDS

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering alternative Outcomes for Units. Further advice can be found in the SQA document *Guidance on Assessment Arrangements for Candidates with Disabilities and/or Additional Support Needs* ([www.sqa.org.uk](http://www.sqa.org.uk)).