

**-SQA- SCOTTISH QUALIFICATIONS AUTHORITY**

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**NATIONAL CERTIFICATE MODULE DESCRIPTOR**

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**-Module Number-** 4280110 **-Session-**1990-91  
**-Superclass-** TH

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**-Title-** **GAS SERVICES: INSTALLATION OF INTERNAL  
PIPEWORK AND CONTROLS (x 2)**  
**-DESCRIPTION-**

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**Purpose** This module is designed to further the knowledge and skills required to install and service internal gas pipework and controls.

It is aimed at those following a career in the service sector of the gas industry and receiving complementary industrial experience.

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**Preferred Entry Level** 4280040 Gas Services: Domestic Meters (x 1.1/2).

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**Outcomes** The student should:

1. prepare to install internal gas pipework;
2. raise flooring to install gas pipework;
3. install pipework for internal gas installation;
4. commission an internal gas installation.

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**Assessment Procedures** Acceptable performance in the module will be satisfactory achievement of all the Performance Criteria specified for each Outcome.

The following abbreviations are used below:

PC Performance Criteria  
IA Instrument of Assessment

**Note:** The Outcomes and PCs are mandatory and cannot be altered. The IA may be altered by arrangement with SQA. (Where a range of performance is indicated, this should be regarded as an extension of the PCs and is therefore mandatory.)

**OUTCOME 1****PREPARE TO INSTALL INTERNAL GAS PIPEWORK**

## PCs

- (a) The pipes, fittings and materials are suitable in terms of size, quantity and condition.
- (b) The procedures used to test the installation for soundness are appropriate.
- (c) The procedures adopted for preparation ensure:
  - (i) the meter outlet and internal pipework are physically isolated;
  - (ii) unsafe appliances, pipework and equipment are cut-off, warning labels fixed and the customer advised of the action taken and the reasons;
  - (iii) temporary electrical continuity is maintained.
- (d) Working practices followed are safe.
- (e) Tools used are appropriate to the task.

## IA Practical Exercise

The student will be set a practical exercise to test the application of knowledge and skills required to prepare to install internal gas pipework.

The student will be required to prepare for the installation of gas pipework in a provided work area. The area should contain the following:

- (i) an existing fully operational gas installation including meter and control valve;
- (ii) an outlet supply connected to an appliance;
- (iii) a fault on the installation or appliance.

The student will be required to undertake the given task in accordance with the Performance Criteria above.

Satisfactory achievement of the Outcome will be based on all Performance Criteria being met.

**OUTCOME 2 RAISE FLOORING TO INSTALL GAS PIPEWORK**

- PCs
- (a) The procedures adopted to raise flooring ensure:
- (i) the flooring is cut so that cut ends are adequately supported;
  - (ii) the flooring is lifted with the minimum of damage;
  - (iii) the flooring lifted is the minimum necessary to carry out the installation;
  - (iv) the joists are cut correctly in terms of minimum loss of strength for snug pipe fit;
  - (v) the replaced flooring is secured with screws and flush to existing flooring.
- (b) Working practices followed are safe.
- (c) Tools used are appropriate to the task.

**IA Practical Exercise**

The student will be set a practical exercise to test the application of knowledge and skills required to raise flooring to install gas pipework.

The student will be required to raise the flooring in a provided work area. The work area should contain either:

- (i) a section of tongue and groove flooring supported by timber joists;
- or
- (ii) a section of chipboard flooring supported by timber joists.

The student will be required to undertake the given task in accordance with the Performance Criteria above.

Satisfactory achievement of the Outcome will be based on all Performance Criteria being met.

**OUTCOME 3 INSTALL PIPEWORK FOR INTERNAL GAS INSTALLATION**

- PCs
- (a) The installation of the pipework is to the required standards in terms of:
- (i) pipes are cut to required length;
  - (ii) pipes are free of restrictions;
  - (iii) pipes are bent to required shape and degree of accuracy;
  - (iv) joints are mechanically sound and visually acceptable;

- (v) material wastage is kept to a minimum;
  - (vi) accurate location and secure support.
- (b) The pipework is protected from corrosion and damage where necessary.
  - (c) The pipe is sleeved where necessary.
  - (d) The disturbance to furnishings and unavoidable damage is kept to a minimum.
  - (e) Working practices followed are safe.
  - (f) Tools used are appropriate to the task.

#### IA Practical Exercise

The student will be set a practical exercise to test the application of knowledge and skills required to install pipework for internal gas installations.

The student will be required to install the pipework in a provided work area. The area should contain the following:

- (i) an existing fully operational gas installation including meter and control valve;
- (ii) an outlet supply connected to an appliance;
- (iii) basic furnishing and carpeting;
- (iv) a minimum of two domestic appliances to be connected;
- (v) pipework installation kits.

The student will be required to undertake the given tasks in accordance with the Performance Criteria above.

Satisfactory achievement of the Outcome will be based on all Performance Criteria being met.

### **OUTCOME 4**

### **COMMISSION AN INTERNAL GAS INSTALLATION**

#### PCs

- (a) The procedures used to commission the installation ensure the meter outlet and internal pipework is reconnected.
- (b) The procedures used to test the installation for soundness are appropriate.
- (c) The procedures used to purge the installation are appropriate.
- (d) The procedures used to commission the installation ensure:
  - (i) the supply is turned on and governor is set to provide the correct working pressure;
  - (ii) the individual appliances are set up to burn correctly;
  - (iii) the setting of the appliance controls ensures optimum performance;

- (iv) the customer is fully briefed in the use of appliances.
- (e) Tools used are appropriate to the task.
- (f) Working practices followed are safe.

#### IA Practical Exercise

The student will be set a practical exercise to test the application of knowledge and skills required to commission an internal gas installation.

The student will be required to commission the installation in a provided work area. The area should contain the following:

- (i) an existing fully operational gas installation including meter and control valve;
- (ii) an outlet supply connected to a minimum of two appliances;
- (iii) manufacturer's instructions and other suitable reference material.

The student will be required to undertake the given tasks in accordance with the Performance Criteria above.

Satisfactory achievement of the Outcome will be based on all Performance Criteria being met.

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**The following sections of the descriptor are offered as guidance.  
They are not mandatory.**

Safety regulations and safe working practices and procedures should be adhered to at all times.

### CONTENT/CONTEXT

Corresponding to Outcomes 1-4:

1. Inspecting work area. Planning job and preparing site. Care in customers' premises. Checking pipes, fittings and materials to confirm their suitability. Testing new and existing installations for soundness. Procedures for dealing with internal installations or appliances which are unsafe or potentially dangerous. Precautions to be taken when breaking joints or cutting gas supply pipework. Ensuring meter outlet and internal pipework are physically isolated.
2. Types of flooring. Method of lifting and replacing floorboards and chipboard flooring. Method of cutting a floor hatch. Procedure for notching joints.

Preparing work area, checking tools and materials. Identifying the type of floorboard to be raised. Checking condition of ceiling where appropriate. Checking for electric cables and other services. Informing customer that flooring is being lifted. Using correct tools to lift flooring. Raising flooring safely and correctly. Notching joists to accommodate gas pipes. Preparing flooring and opening for relaying. Relaying flooring and checking for firmness. Replacing floor covering and furniture.

- 3-4. Suitable locations for gas pipework. Positions to be avoided. Locations where pipework requires protection. Methods of providing protection. Procedures to be adopted where pipes pass through walls or solid floors. Methods of securing pipework. Types and spacing of clips and fastenings. Methods of fixing to walls and other surfaces. Precautions to be taken when working in difficult or confined spaces. Methods of cutting floors, walls and ceilings.

Connecting pipework into an existing installation and installing pipes in various locations such as under floors, in attic spaces and through walls. Connecting pipework to gas appliances. Reconnecting meter to internal pipework. Carrying out soundness testing and purging operations. Repairing leaks where necessary. Checking operation of all appliances and confirming that working pressure is correct. Confirming that appliances are installed in accordance with manufacturer's instructions and that adequate ventilation and where applicable, flueing are correctly provided. Instructing the customer on the operation of appliances.

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SUGGESTED LEARNING AND TEACHING APPROACHES

This module should integrate technology with workshop practice. Workshop activities should be centred on practical exercises based on well-designed task sheets.

Each procedure should be explained, demonstrated and followed by supervised student participation.

The student should work alone to complete the given practical exercises.

To assist the student in the understanding of the topic, work areas which contain timber floors and simulated attic spaces should be provided. The work areas should also be large enough to allow realistic installation work which simulates conditions found in domestic premises.

At all times during the module the student should be actively encouraged to make use of reference material such as gas industry publications and course handouts.

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10/02/98