

-SQA- SCOTTISH QUALIFICATIONS AUTHORITY

**Hanover House
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GLASGOW G2 7NQ**

NATIONAL CERTIFICATE MODULE DESCRIPTOR

-Module Number-	4280070	-Session-	1990-91
-Superclass-	TH		

-Title-	GAS SERVICES: GAS REFRIGERATION (X 1¹/₂)
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-DESCRIPTION-

Purpose	This module is designed to develop the knowledge and skills involved in the installation and servicing of gas refrigerators or freezers.
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It is aimed at those following a career in the service sector of the gas industry and receiving complementary industrial experience.

Preferred Entry Level	4280040 Gas Services: Domestic Meters (x 1.1/2).
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Outcomes	The student should: <ol style="list-style-type: none">1. prepare to install a gas refrigeration appliance.2. install a gas refrigeration appliance;3. service a gas refrigeration appliance;4. rectify a fault on a gas refrigeration appliance.
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Assessment Procedures	Acceptable performance in the module will be satisfactory achievement of all the Performance Criteria specified for each Outcome.
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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 A GAS REFRIGERATION APPLIANCE

PCs

- (a) The procedures used for preparation ensure:
- (i) appliance, fittings and materials are checked for suitability and proved to be in a serviceable condition;
 - (ii) installation is tested and proved sound using the appropriate procedure;
 - (iii) any faults on the existing installation are identified and repaired;
 - (iv) suitable location for appliance is identified.
- (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 prepare for the installation of a gas refrigeration appliance.

The student will be required to prepare for the installation of the appliance 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 gas supply suitably terminated within 1 metre of the proposed appliance location;
- (iii) a refrigerator or freezer, installation kit, manufacturer's instructions and other suitable reference material.

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 INSTALL A GAS REFRIGERATION APPLIANCE

PCs

- (a) The appliance is correctly positioned and levelled following manufacturer's instructions and in accordance with gas industry requirements.
- (b) The procedures used to install pipework ensure:
 - (i) existing installation is safely and completely isolated and associated controls are accurately and securely installed;
 - (ii) pipework is correctly connected to appliance using suitable materials.
- (c) The procedures used to commission the appliance ensure:
 - (i) gas joints are proved sound, gas is restored to the equipment and installation is purged;
 - (ii) associated controls, equipment and appliance are proved to work correctly;
 - (iii) appliance and controls are set to provide optimum performance;
 - (iv) customer's understanding for correct operation of appliance is checked, all relevant literature is left with customer and advice is given on the need for regular servicing.
- (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 install a gas refrigeration appliance.

The student will be required to install the appliance 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 gas supply suitably terminated within 1 metre of the proposed appliance location;
- (iii) a refrigerator or freezer, installation kit, manufacturer's instructions and other suitable reference material.

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

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

OUTCOME 3**SERVICE A GAS REFRIGERATION APPLIANCE**

PCs

- (a) The procedures used to check the installation and operation of the appliance ensure:
 - (i) appliance and associated equipment is visually checked for correct and incorrect installation and operation;
 - (ii) any faults are noted and the customer is informed of the action required.
- (b) The installation is tested and proved sound using the appropriate procedure.
- (c) The procedures used in servicing the appliance ensure:
 - (i) appliance is safely and completely isolated;
 - (ii) appliance or equipment is dismantled in a logical manner;
 - (iii) appliance and equipment is serviced and checked to manufacturer's specifications;
 - (iv) appliance and equipment is reassembled in a logical manner;
 - (v) all gas joints are proved sound and gas is restored.
- (d) The checking of the appliance proves it to work correctly and effectively.
- (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 service a gas refrigeration appliance.

The student will be required to service the appliance and its associated controls in a provided work area. The area should contain the following:

- (i) an existing gas installation complete with meter and control valve;
- (ii) a correctly installed refrigerator or freezer;
- (iii) a set of manufacturer's instructions and other suitable reference material.

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

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

OUTCOME 4 RECTIFY A FAULT ON A GAS REFRIGERATION APPLIANCE

PCs

- (a) The procedures used to check the installation and operation of the appliance are correct in terms of gas industry requirements.
- (b) The procedures used to locate the fault ensure:
 - (i) fault is diagnosed using a logical sequence with the assistance of fault-finding aids;
 - (ii) any faults are noted and the customer is informed of the action required;
 - (iii) any unsafe appliance or equipment which cannot be repaired immediately is suitably labelled, disconnected and customer informed of action as appropriate.
- (c) The procedures adopted for the rectification of the fault ensure:
 - (i) appliance is safely and completely isolated;
 - (ii) appliance and equipment is dismantled in a logical manner;
 - (iii) appliance and equipment is repaired to manufacturer's specification;
 - (iv) parts are replaced or ordered as necessary;
 - (v) appliance is reassembled in a logical manner.
- (d) The procedures adopted for testing the appliance ensure:
 - (i) all gas joints are proved sound as appropriate and gas is restored;
 - (ii) appliance and equipment is proved to work correctly and effectively.
- (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 rectify a fault on a gas refrigeration appliance.

The student will be required to repair the appliance and its associated controls in a provided work area. The area should contain the following:

- (i) an existing gas installation complete with meter and control valve;
- (ii) a correctly installed refrigerator or freezer with one pre-programmed mechanical fault;
- (iii) a set of manufacturer's instructions and other suitable reference material.

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

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

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

CONTENT/CONTEXT

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

Corresponding to Outcomes 1-4:

- 1-2. Types of refrigerators. Factors which influence the location of refrigerators. Method of installing appliance. Importance of working to manufacturer's instructions. Materials used to install refrigerators. Tools and equipment used when working on appliance. Inspecting work area and checking existing installation for faults. Identifying a suitable location for the appliance. Handling, assembling and checking appliance for damage. Planning work and preparing site. Installing refrigerators. Connecting to existing gas point. Commissioning appliances and setting controls.

Instructing customer on operation of appliance. Leaving manufacturer's instructions with customer.

The requirements for the installation and commissioning of refrigerators as detailed in the Gas Safety (Installation and Use) Regulations 1984 and current British Standards.

3. Procedures for servicing and testing refrigerators. Tools and materials used for servicing. Importance of working to manufacturer's instructions. Servicing all types of refrigerators and fridge freezers, their controls and the associated installation including: checking the appliance for correct installation and operation, disconnecting and reconnecting components and controls, testing for soundness. Inspecting, maintaining and cleaning component parts of appliance in accordance with manufacturer's instructions.

Identifying, ordering and renewing spare parts.

The requirements for servicing refrigerators as detailed in the Gas Safety (Installation and Use) Regulations 1984.

4. Common faults and fault-finding procedures. The use of fault-finding aids from sources such as manufacturer's instructions. Correct use and operation of the appliance. Frozen food storage compartments, star ratings. Checking temperatures with a suitable thermometer. Correct placing of food in cabinet. The adoption of a systematic approach to the diagnosis and rectification of all types of mechanical faults on refrigerators and fridge freezers.

The checking of the existing installation for faults. Procedures to be adopted where the appliance or part of the installation cannot be repaired and an unsafe condition exists.

Diagnosing and rectifying faults on refrigerators and fridge freezers.
Ordering and renewing spare parts.

The requirements for repairing refrigerators and fridge freezers as detailed in the Gas Safety (Installation and Use) Regulations 1984.

SUGGESTED LEARNING AND TEACHING APPROACHES

The 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, different models of refrigerators should be made available. A selection of controls and visual aids could also be provided to aid the student.

The use of a film describing the operating cycle of the refrigerator should be considered.

Role-play could be used to good effect for customer relations elements of the module.

Throughout the module the student should be actively encouraged to make use of reference material such as manufacturer's instructions, gas industry publications and course handouts.

It is recommended that the assessment of Outcomes 1 and 2 be integrated by using the same work area and equipment for each.

It would be useful to teach this module in conjunction with Module No 4280380 Gas Services: Domestic Appliance Technology (x 2).

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10/02/98 JH/AM