

1. Module details

Module name

Service Domestic Gas Appliances

Suggested structured learning time

A learner possessing the prerequisite skills and knowledge should achieve the module purpose in 36 to 40 hours.

Module code

NUE145

Field of Education code

040327

2. Module purpose

This module provides the knowledge and skills to service, fault find and repair domestic gas appliances.

Learners will gain an understanding of the principles of operation and the Codes, Acts and Regulations that cover domestic gas appliances.

It covers safety, construction and operation, installation and commissioning, servicing, fault finding and repair of domestic gas appliances.

3. Learning pathway

Intended use in the structured learning program

This module is intended to supplement extensive workplace exposure to domestic appliance servicing work. In particular it applies to domestic gas appliance installation, commissioning, servicing, fault finding and repair. Therefore before undertaking this module an apprentice should have a clear understanding and experience of:

- earthing systems, circuit protection and isolation devices required to protect both persons and electrical appliances against damage, under both normal and fault conditions.
- work practices, regulations governing gas appliances, components and operation of gas appliances and testing gas equipment.
- servicing and fault finding single and three phase motors and their associated circuits, applicable to appliance, refrigeration and air conditioning applications.
- servicing and fault finding appliance timers and controllers.

Recommended prerequisites

For the most effective learning this module should be undertaken only after modules in Appliance Motors and Circuits; Timers and Controllers; Appliance Circuit Protection and Safety Testing; and Domestic Gas Appliance Principles and Regulations have been completed.

4. Relationship to competency standards

This module provides part of the underpinning knowledge and skills in the 'Evidence Guide' of specific units of competency in the National Electrotechnology Training Package and provides similar support, where mapped, to equivalent units in the National Metals and Engineering Competency Standards. For details refer to the module to unit maps, available from EEQSBA.

5. Content

Summary of content

1. Safety
 - Codes, Regulations and Acts
 - Electrical
 - Water
 - Gas
 - Building
 - Health
 - Gas and electric isolation procedures
 - Leak testing
 - Electrical safety tests
 - Interpret rating plate
 - Potential Hazards
 - Combustible materials
 - Fluing and ventilation
 - Safety devices
2. Construction and operation
 - Types - stoves, ovens, ranges, clothes dryers, space heaters, etc.
 - Ignition system
 - Regulator
 - Burner assembly
 - Temperature controllers
 - Safety controls
 - Overall unit operation
3. Installation and commissioning requirements
 - Appliance location
 - Services
 - Commissioning procedures
 - Customer information

4. Service fault finding and repair
 - Manufacturers' data
 - Safety checks
 - Operating sequences
 - Typical symptoms
 - Test equipment
 - Fault identification
 - Fault location using test equipment and service manuals
 - Repairs
 - Respect for customers premises
 - Customer communication

6. Assessment strategy

Assessment methods

Assessment should be progressive reflecting a holistic approach to ensure the module is met. To assist in ensuring validity, reliability and fairness assessment instruments should include practical exercises, assignments and written tests consisting of item types, such as multiple choice, short answer and problem solving.

Conditions of assessment

Normally learning and assessment will take place in a formal learning environment.

7. Learning outcome details

Learning outcome 1

Identify dangers and observe safety procedures associated with domestic gas appliances.

Assessment criteria

- 1.1 Identify the relevant codes associated with domestic gas appliances.
- 1.2 Demonstrate both gas and electrical isolation procedures.
- 1.3 Perform safety checks on domestic gas appliances.
- 1.4 Identify and recommend corrective measures of potentially hazardous situations.

Learning outcome 2

Describe the construction and operation of domestic gas appliances.

Assessment criteria

- 2.1 Identify the major components, describing their construction and operation within the domestic gas appliance.

Learning outcome 3	2.2 Describe the overall system operation of typical domestic gas appliances. Describe the installation and commissioning procedures for domestic gas appliances.
Assessment criteria	3.1 Using manufacturers' data and relevant codes describe the appropriate installation procedure for each type of domestic gas appliance. 3.2 Develop commissioning sheets for each type of domestic gas appliance. 3.3 From manufacturers' data develop essential operator instructions to assist customers. 3.4 Demonstrate correct lifting and moving techniques consistent with the installation and service of domestic gas appliances.
Learning outcome 4	Use appropriate resources to service, fault find and repair domestic gas appliances.
Assessment criteria	4.1 Using manufacturers' data select and use appropriate tools and test equipment to fault find and repair domestic gas appliances. 4.2 Carry out gas and electric safety checks. 4.3 Isolate services and make safe components and the overall appliance. 4.4 Prepare a report to the customer.
8. Delivery of the module	
Delivery strategy	Delivery strategies must be suitable for learning both theoretical and practical aspects described in the module purpose. It is considered that the most effective method to achieve this is by integration of theory and practice where students learn by experimentation, research and reports. It is recommended that learning and assessment be facilitated in a holistic manner that may require a learning outcome sequence other than that indicated in the module.
Resource requirements	Resources should be sufficient for students to carry out exercises on an individual basis.

Useful references include:

Australian Gas Association, *Appliance Manual*

Australian Gas Association and LPG Association, *Installation Code for Gas Burning Appliances and Equipment*, Melbourne, Victoria, 1987.

Australian LPG Association, *Installation Code for Gas Burning Appliances and Equipment*, Milsons Point, New South Wales, 1987.

Langley, B.C., *Electric Controls for Refrigeration and Air Conditioning*, Prentice Hall, New Jersey

Langley, B.C., *Major Appliances - operation, maintenance, troubleshooting and repair*, Prentice Hall, New Jersey, 1992

Rheem, *Hot Water Manual*, Latest edition

Rinnai Australia, *Hot Water Manual (Commercial, Industrial, Domestic)*, Australia, 1999

Standards Australia, Standards New Zealand:

AS/NZS 3760 (Latest edition) *In-service Safety Inspection and Testing of Electrical Equipment*

AS/NZS 4836 (Latest edition) *Safe Working Practice on Low-voltage Electrical Installations*

WorkCover NSW, *WorkCover Code of Practice - Low Voltage Electrical Work Local electricity distributor and authority regulations*

Videos:

Bi-metal Flame Failure Device, Plumbing Development Panel, TAFE Victoria, 198?, 5 minutes.

Constant Pressure Appliance Regulator, Swinburne Institute of TAFE (Vic), 1982, 7 minutes

Gas Appliance Commissioning, Moorabbin College of TAFE (Vic), 1986, 9 minutes

Gas - The Natural Choice, Natural Gas Company, Sydney, 1991, 11 minutes.

Thermo - Electric Flame Failure Device, Swinburne Institute of TAFE (Vic), 198?, 11 minutes

Quaser Gas, Gable Summertime, Melbourne, 1984, 12 minutes.

Occupational health and safety requirements

Where this module is used in an approved Traineeship or Apprenticeship program learners should be advised to obtain, where available, respective EEQSBA¹ *User Guides* (these outline in detail what training and work performance the Learner is required to undertake for the program).

A safe and healthy environment will be provided for learners and teachers. Safety procedures for the particular learning facilities shall be followed as part of the learning / teaching activity and assessment.

¹ EEQSBA – ElectroComms and EnergyUtilities Qualifications Standards Body of Australia Ltd