

## 1. Module details

**Module name**

**Service Clothes Washers and Dryers (Revised)**

**Suggested structured learning time**

A learner possessing the prerequisite skills and knowledge should achieve the module purpose in 54 to 60 hours.

**Module code**

NUE012.1

**Field of Education code**

031315

## 2. Module purpose

This module will provide students with the underpinning knowledge and skills necessary to install, test, fault find and repair clothes washers and clothes dryers.

Learners will gain an understanding of the principles of operation of clothes washers and dryers.

It covers basic clothes washers and dryers fundamentals, types and applications, OH&S, installation, repairs, tests and service reports.

## 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 testing and servicing of clothes washer and dryers to ensure they comply with requirements and are safe to use. Therefore before undertaking this module an apprentice should have a clear understanding and experience of:

- the basic operation of various domestic appliances.
- 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; Timers and Controllers and Domestic Appliance Principles 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**

Codes and Regulations  
Plumbing - water supply, drainage, back siphoning.  
Electrical insulating, earthing  
Manufacturers data  
Types and Applications  
Washing Machines  
Principles of operation  
Types of washing machines  
- Automatic washers: top load, front load and other  
- Twin tub washers  
- Washer / dryer combinations  
Application and significant differences  
Clothes Dryers  
Principles of operation  
Types of clothes dryers  
- Tumble  
Application  
Washing and Drying Principles  
Powders and softeners  
Mechanical, electrical and hydro

Fault Diagnosis  
OH&S procedures  
Manufacturers data  
Test instruments  
Tools  
Service report, customer advice  
Access to appliance  
Electrical / Electronic testing: motors, controllers, timers, operational and safety thermostats  
Mechanical testing: safety locks, soiled clothes, out of balance, not draining or filling and noisy  
Confirm fault diagnosis  
- Mechanical  
- Electrical  
- Electronic / control  
Disconnect services: water, electricity  
Manual handling  
Repair/replace faulty components  
Select components from manufacturers data  
Removal and replacement of electrical controls, motors, capacitors, thermostats, switches, heaters, lead, plug, timer, wiring  
Removal and replacement of various mechanical items; belts, bearings, door locks, filters, hoses, pumps, float switch, clutch, brake, dispenser, levelling feet, balance control, gaskets, lint screens  
Adhesives and water sealants  
Cleaning of cabinets and components  
Minor repairs to cabinets  
Touching up paint work  
Test  
Set operational and safety controls  
Check electrical components  
Operate system and adjust cycle controls, etc.  
Carry out leak tests  
Electrical test and label

	<p>Service report</p> <p>Information and advice to equipment owners</p> <p>Equipment labels</p> <p>Service reports</p> <p>Documentation</p> <p>Warranty reports and obligations</p>
<b>6. Assessment strategy</b>	
<b>Assessment methods</b>	<p>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.</p>
<b>Conditions of assessment</b>	<p>Normally learning and assessment will take place in a formal learning environment.</p>
<b>7. Learning outcome details</b>	
<b>Learning outcome 1</b>	<p>List statutory requirements relating to washing machines and clothes dryers.</p>
<b>Assessment criteria</b>	<p>1.1 Identify relevant codes, regulations and statutory requirements.</p> <p>1.2 List requirements for electrical safety and water supply and drainage.</p>
<b>Learning outcome 2</b>	<p>Identify types, application and operating principles of typical washing machines and clothes dryers.</p>
<b>Assessment criteria</b>	<p>2.1 List typical types of washing machines and clothes dryers.</p> <p>2.2 Identify the principles of operation of the various types of washing machines and dryers.</p> <p>2.3 List significant differences between the various types of washing machines and clothes dryers.</p>
<b>Learning outcome 3</b>	<p>Describe the principle elements of washing machines and dryers.</p>
<b>Assessment criteria</b>	<p>3.1 Identify the principles of operation of detergents and softener action.</p>

	3.2 Describe the principle of operation of a washing and drying process.
<b>Learning outcome 4</b>	Carry out test procedures to diagnose faults.
<b>Assessment criteria</b>	4.1 Test the appliance in accordance with industry standards (electrically and mechanically). 4.2 Identify the fault and faulty component. 4.3 Tag the appliance in the approved manner.
<b>Learning outcome 5</b>	Repair/relace faulty components in washing machines and clothes dryers in accordance with manufacturer's specifications.
<b>Assessment criteria</b>	5.1 Remove and replace a given component (electrical, control, mechanical, water hose etc.) 5.2 Reseal components using adhesive, gasket. 5.3 Carry out minor cabinet repairs, and paint touch up.
<b>Learning outcome 6</b>	Test repaired appliance to ensure it meets company standards and customer satisfaction.
<b>Assessment criteria</b>	6.1 Set operational and safety controls. 6.2 Test electrical components. 6.3 Adjust controls and check system operation.
<b>Learning outcome 7</b>	Compete service report and required documentation
<b>Assessment criteria</b>	7.1 Complete customer service report. 7.2 Complete warranty/company documentation. 7.3 Change equipment labels.
<b>8. Delivery of the module</b>	
<b>Delivery strategy</b>	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:

*Domestic Whitegood Service Industry - Code of Practice.*  
NSW Department of Fair Trading, Sydney.

Kleinert E. *Troubleshooting & Repairing Major Appliance.*  
TAB Books McGraw Hill Inc., USA. 1995

Standards Australia, Standards New Zealand:

AS/NZS 3100 (Latest edition) *Approval and Test Specifications - General Requirements for Electric Equipment*

AS/NZS 3350.2.7 (Latest edition) *Approval and Test Specifications - Safety of Household or Similar Appliances - Particular Requirements - Dishwashers*

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*

Where this module is used in an approved Traineeship or Apprenticeship program learners should be advised to obtain, where available, respective EEQSBA<sup>1</sup> **User Guides** (*these outline in detail what training and work performance the Learner is required to undertake for the program*).

**Occupational health and safety requirements**

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.

---

<sup>1</sup> EEQSBA – ElectroComms and EnergyUtilities Qualifications Standards Body of Australia Ltd