

<b>Title</b>	<b>Install refrigeration and/or air conditioning system components under supervision</b>		
<b>Level</b>	<b>2</b>	<b>Credits</b>	<b>6</b>

<b>Purpose</b>	<p>This unit standard is intended for people under training in the refrigeration and/or air conditioning industries.</p> <p>People credited with this unit standard are able to, under supervision; prepare to install refrigeration and/or air conditioning system components, install refrigeration and/or air conditioning system components, and complete installation activities.</p>
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<b>Classification</b>	Mechanical Engineering > Refrigeration and Air Conditioning
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<b>Available grade</b>	Achieved
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### Guidance Information

- Legislation and references relevant to this unit standard include:

Althouse, Turnquist, Bracciano. *Modern Refrigeration and Air Conditioning*, 20<sup>th</sup> edition. Tinley Park, Illinois: The Goodhouse-Willcox Company Inc. ISBN 1-59070-280-8.

The Health and Safety at Work Act 2015;

Montreal Protocol and its amendments;

Building Act 2004;

Electricity Act 1992;

Electricity (Safety) Regulations 2010;

AS/NZS 3000:2007, *Electrical installations known as the Australian/New Zealand Wiring Rules*;

Institute of Refrigeration, Heating and Air Conditioning Engineers of New Zealand (IRHACE New Zealand). *2001 Code of Practice for the reduction of emissions of fluorocarbon refrigerants in refrigeration and air conditioning applications*. Available from IRHACE, 5/42 Ormiston Road, Flat Bush, Auckland 2016.  
<https://www.irhace.org.nz/>.
- Definitions

*Drawings* – for the purpose of this unit standard include engineering technical drawings and freehand sketches provided they contain all technical data required to build and install a system.

*Instructions* – include written and verbal instructions from the supervisor.

*Primary components* – evaporator, condenser, compressor set, expansion device.

*Refrigeration and/or air conditioning systems* refers to equipment found in: retail food outlets, truck and shipping container refrigeration, horticultural cool room refrigeration, controlled atmosphere fruit stores; and packaged or split air conditioning equipment as found in commercial buildings and computer rooms.

*Secondary components* – refers to items such as valves, sensors, switches, control mechanisms, cabinets, panels, tubing, fittings, mounting brackets, seismic restraints.

*Standard industry practices* – standard and proven industry practices accepted by the refrigeration and air conditioning industry.

*Under supervision* – means under the oversight and guidance of an experienced and authorised person who takes overall responsibility for the work carried out.

*Workplace procedures* – documented procedures used by the organisation carrying out the work and applicable to the tasks being carried out. They may include but are not limited to – standard operating procedures, site safety procedures, equipment operating procedures, industry codes of practice, quality assurance procedures, housekeeping standards, procedures to comply with legislative and local body requirements.

### 3 Recommended units for entry:

Unit 21911, *Demonstrate knowledge of safety on engineering worksites*;

Unit 21912, *Apply safe working practices on an engineering worksite*;

Unit 21913, *Lift loads in engineering installation, maintenance, and fabrication work*;

Unit 29655, *Manually produce engineering sketches*.

### 4 Assessment Information

This unit standard is intended to cover the skills required to install pre-assembled refrigeration or air conditioning system components. The skills must be demonstrated on job at the installation site.

### 5 Range

All work must be carried out under supervision, in accordance with workplace procedures, standard industry practices, and AS/NZS 5149:2016 *Refrigerating systems and heat pumps – Safety and environmental requirements* parts 1 through 4.

## Outcomes and performance criteria

### Outcome 1

Prepare to install refrigeration and/or air conditioning system components.

Range primary components, secondary components.

### Performance criteria

1.1 Components are checked in accordance with drawings and instructions and made ready for installation to site.

1.2 Work site is prepared and made ready for installation of components.

1.3 Fixing and mounting hardware, appropriate for the components to be installed, is selected in accordance with drawings and instructions.

Range may include but is not limited to – mounts, pads, brackets, supports, straps, hangers, bracing, seismic restraints, fasteners, locking hardware.

**Outcome 2**

Install refrigeration and/or air conditioning system components.

Range primary components, secondary components.

**Performance criteria**

2.1 Components are installed in accordance with drawings and instructions.

Range positioned, mounted, fastened, connected.

2.2 Joints are brazed.

2.3 Seismic restraints are installed in accordance with drawings and instructions, and legislative requirements.

2.4 Integral and/or finishing parts and/or materials are fitted or applied in accordance with drawings and instructions.

**Outcome 3**

Complete installation activities.

**Performance criteria**

3.1 Tools, equipment, and materials are accounted for and returned to storage.

3.2 Waste materials and leftover parts are processed or disposed of.

3.3 Work area is cleaned up and left in the state required by workplace procedures.

3.4 Documentation is completed.

<b>Replacement information</b>	This unit standard and unit standard 31809 replaced unit standard 28967.
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<b>Planned review date</b>	31 December 2024
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**Status information and last date for assessment for superseded versions**

Process	Version	Date	Last Date for Assessment
Registration	1	27 June 2019	N/A

<b>Consent and Moderation Requirements (CMR) reference</b>	0013
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

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**Comments on this unit standard**

Please contact Competenz [qualifications@competenz.org.nz](mailto:qualifications@competenz.org.nz) if you wish to suggest changes to the content of this unit standard.