

<b>Title</b>	<b>Fabricate, assemble, and install refrigeration and air conditioning components under supervision</b>		
<b>Level</b>	<b>2</b>	<b>Credits</b>	<b>6</b>

<b>Purpose</b>	<p>This is an entry level unit standard for people who work in the refrigeration and air conditioning (RAC) sector of the engineering industry.</p> <p>People credited with this unit standard are able to; prepare to fabricate and assemble components; fabricate components; install components; and complete fabrication and assembly activities; for refrigeration and/or air conditioning systems, under supervision.</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**

1 References

Althouse, Turnquist, Bracciano. *Modern Refrigeration and Air Conditioning*. 19<sup>th</sup> edition. Tinley Park, Illinois: The Goodhouse-Willcox Company Inc. ISBN 1-59070-280-8.

Health and Safety in Employment Act 1992;

Ozone Layer Protection Act 1996;

Building Act 2004;

Electricity Act 1992;

Electricity (Safety) Regulations 2010;

AS/NZS 1677:1998, *Refrigerating systems – Refrigerant classification*;

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.

<http://www.irhace.org.nz/>.

2 Definitions

*Commercial refrigeration and/or air conditioning systems* refers to items such as: refrigeration equipment as 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.

*Worksite 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, codes of practice, quality assurance procedures, housekeeping standards, procedures to comply with legislative and local body requirements.

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

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

*Drawings* – for the purpose of this unit standard include freehand sketches, and engineering technical drawings.

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

*Refrigeration and/or air conditioning system components* – include ducts, trays, panels, tubing.

### 3 Assessment information

All work practices must meet recognised codes of practice and documented worksite safety procedures (where these exceed the codes) for personal, product, and worksite safety, and the obligations required under current legislation.

### 4 Range

All work must be carried out in accordance with worksite procedures.

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## Outcomes and performance criteria

### Outcome 1

Prepare to fabricate and assemble refrigeration and/or air conditioning system components.

#### Performance criteria

1.1 Fabrication and assembly tasks are established from drawings and instructions.

1.2 Parts, materials, and equipment needed to fabricate and assemble components are selected, and verified as serviceable, in accordance with drawings and instructions.

Range may include but are not limited to – sheet metal, fasteners, adhesives, tooling, equipment, safety equipment, documentation and publications.

### Outcome 2

Fabricate and assemble commercial refrigeration and/or air conditioning system components.

Range may include – ducts, trays, panels, tubing, mounting platforms, brackets;  
evidence is required of fabrication and assembly of four different component types.

**Performance criteria**

- 2.1 Materials are worked in accordance with drawings and instructions.  
 Range may include but is not limited to – marked out, cut, drilled, shaped, bent, folded, deburred, flared.
- 2.2 Worked parts are assembled in accordance with drawings and instructions.  
 Range assembly methods may include but are not limited to the use of – soldering, brazing, adhesives, rivets, other fasteners.

**Outcome 3**

Install refrigeration and/or air conditioning systems.

**Performance criteria**

- 3.1 Components are installed into the system in accordance with drawings, instructions, and worksite procedures.  
 Range positioned, mounted, fastened, connected.
- 3.2 Integral and/or finishing parts and/or materials are fitted and/or applied in accordance with drawings, instructions and standard industry practices.

**Outcome 4**

Complete fabrication, assembly, and installation activities.

**Performance criteria**

- 4.1 Tools, equipment, and materials are accounted for and returned to storage in accordance with worksite procedures.
- 4.2 Waste materials and leftover parts are disposed of or processed in accordance with worksite procedures.

<b>Replacement information</b>	<p>This unit standard was replaced by unit standard 31809 and unit standard 31810.</p> <p>This unit standard replaced unit standard 22706.</p>
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**This unit standard is expiring. Assessment against the standard must take place by the last date for assessment set out below.**

**Status information and last date for assessment for superseded versions**

Process	Version	Date	Last Date for Assessment
Registration	1	18 June 2015	31 December 2023
Review	2	27 June 2019	31 December 2023

<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>.

This unit standard is Expiring