

<b>Title</b>	<b>Commission commercial RAC equipment under supervision</b>		
<b>Level</b>	<b>3</b>	<b>Credits</b>	<b>8</b>

<b>Purpose</b>	<p>This unit standard is intended for people working in the refrigeration and air conditioning (RAC) sector of the engineering industry.</p> <p>People credited with this unit standard are able to, under supervision: carry out pre-start commissioning tasks; carry out start-up commissioning tasks; provide information to operators and complete documentation, for commercial RAC systems.</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 Recommended skills and knowledge  
Unit 28959, *Demonstrate knowledge of installation and commissioning procedures for commercial RAC equipment*, or demonstrate equivalent knowledge and skills.
- 2 Legislation and standards  
Health and Safety at Work Act 2015;  
Building Act 2004;  
Climate Change Response Act 2002;  
Electricity (Safety) Regulations 2010;  
Electricity Act 1992;  
Hazardous Substances and New Organisms Amendment Act 2015;  
Ozone Layer Protection Act 1996;  
AS/NZS 5149:2016 *Parts 1:5 Refrigerating Systems and Heat pumps – Safety and environment requirements*;  
AS/NZS 817:2016 *Refrigerants – Designation and safety classification*;  
AS/NZS 3000:2007 *Electrical installations (known as the Australian/New Zealand Wiring Rules)*;  
and any subsequent amendments.
- 3 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.  
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, <http://www.irhace.org.nz/>.

## 4 Definitions

*Standard industry practices* refer to 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 holding an Electrical Service Technician licence who takes overall responsibility for the work carried out.

*Worksite procedures* refer to 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.

## 5 Assessment information

This unit standard may be assessed in the workplace using naturally occurring evidence or in a simulated environment that demands performance equivalent to that required in the workplace.

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

## Outcomes and performance criteria

### Outcome 1

Carry out pre-start commissioning tasks.

### Performance criteria

1.1 Mechanical systems and components are checked and set up in accordance with standard industry practices, drawings and specifications.

Range may include but are not limited to – compressors, lubricants, controls, pumps, evaporators, condensers, connectors, valves, metering devices, filters, fluid flows, cleanliness, absence of leaks.

1.2 Electrical systems and components are checked and set up in accordance with standard industry practices, and drawings and specifications.

Range may include but are not limited to – continuity, insulation resistance, polarity, voltage, motors, wiring, condition and security of terminals and connections.

1.3 Safety devices are calibrated and tested in accordance with specifications.

Range may include but are not limited to – fuses, circuit breakers, fusible links, relief valves.

- 1.4 Control equipment is tested and set to meet performance and safety requirements.  
  
Range programmable logic control (PLC), electronic, electromechanical, pneumatic;  
evidence of two different control equipment types is required.
- 1.5 Fluid flows are tested and balanced as required by system specifications.
- 1.6 System is evacuated, and vacuums broken in accordance with standard industry practices.

**Outcome 2**

Carry out start-up commissioning tasks.

**Performance criteria**

- 2.1 System is checked and charged in accordance with standard industry practices to meet system specifications.
- 2.2 Refrigerant and/or lubricant identification labels are affixed in accordance with legislative requirements.
- 2.3 System performance data is recorded in accordance with standard industry practices.  
  
Range temperatures, pressures, super-heat, sub-cooling, current draw, fluid flows, humidity, noise, vibration.

**Outcome 3**

Provide information to operators and complete documentation.

**Performance criteria**

- 3.1 Operators are familiarised with equipment manuals and system operating instructions.
- 3.2 Operators are instructed to operate RAC systems within design parameters.
- 3.3 Documents and records are completed to meet job requirements.  
  
Range work carried out, time taken, details for costing and invoicing, refrigerant and lubricant used, test results, details required for warranties.

<b>Replacement information</b>	This unit standard, and unit standards 28959 and 28963 replaced unit standard 22702.
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<b>Planned review date</b>	31 December 2020
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**Status information and last date for assessment for superseded versions**

Process	Version	Date	Last Date for Assessment
Registration	1	20 August 2015	N/A
Revision	2	22 October 2020	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>.

**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.