

Title	Commission mechanical building services		
Level	5	Credits	25

Purpose	<p>This unit standard is intended primarily for use in the training of personnel in the mechanical building services industry and covers commissioning mechanical building services.</p> <p>People credited with this unit standard are able to: prepare for commissioning mechanical building services; commission mechanical building services; complete mechanical building services commissioning documentation; and diagnose and rectify mechanical building services faults at commissioning.</p>
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Classification	Mechanical Engineering > Heating, Ventilating, and Air Conditioning
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Available grade	Achieved
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Guidance Information

- 1 Reference and legislation
Health and Safety at Work Act 2015.
- 2 Definitions

Accepted industry practice refers to approved codes of practice and standardised procedures accepted by the mechanical building services industry sector as examples of best practice.

Building management system refers to computer-based systems used to automatically control and monitor mechanical building services and other building features such as lighting, security and access.

Pre-commissioning refers to those checks and procedures required to ensure proper equipment functionality and integration of components.

System documents refer to all documents and drawings required to commission the system. This may include contract documentation, installation drawings and specifications, operating procedures, maintenance procedures, and manufacturers' specifications.

Workplace procedures refer to 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, safety procedures, equipment operating procedures, codes of practice, quality management practices and standards, procedures to comply with legislative and local body requirements.
- 3 Range
Air conditioning and ventilation systems include – large central air conditioning systems, ducted constant-flow rate and variable-flow rate air conditioning systems,

packaged and split air conditioning, heat pumps, supply and extract ventilation systems, fume ventilation, industrial ventilation systems.

Chilled water systems include – plain water, brine, glycol systems.

Gas systems include – medical gases, LPG, CNG, oxygen, acetylene, compressed air, natural gas.

Hot water heating systems include – low, medium, and high temperature systems.

Industrial liquids may include – acids, alkalis, detergents, printing inks, food products.

Potable hot and cold water systems include – commercial, industrial, institutional systems larger than domestic systems.

Steam and condensate systems include – systems that use gas, coal, oil, or electricity as fuel sources for the heating system components.

Evidence is required of commissioning of: an air conditioning and ventilation system, a chilled water system, a hot water heating system, and one from – an industrial liquid system, a potable hot and cold water system, a steam and condensate system, a gas system, a building management system.

4 Assessment information

- a Evidence may be gathered by the candidate over several work sites and may need to be spread between several time periods. There will typically be jobs where part of the job is completed in conjunction with other mechanical building services personnel. The evidence relates to the candidates own specific work, not work jointly performed with other team members, except where the other team member is checking or assessing the candidate.
- b All activities must comply with applicable workplace procedures and must be consistent with accepted industry practice.

Outcomes and performance criteria

Outcome 1

Prepare for commissioning mechanical building services.

Performance criteria

- 1.1 Completion of pre-commissioning tests and compliance with procedures laid down in system documents are ascertained.
- 1.2 System documentation is analysed to extract objective flow rates and other relevant information for preparing of recording sheets.
- 1.3 Commissioning instruments are procured and calibrated in accordance with system documents.

Outcome 2

Commission mechanical building services.

Performance criteria

- 2.1 The system is test run in accordance with system documents and commissioning method and programme.
- 2.2 Readings are taken and recorded from the system test-run.
- 2.3 System is adjusted and readings are re-checked for conformity to performance levels and ranges specified in system documents.

Outcome 3

Complete mechanical building services commissioning documentation.

Performance criteria

- 3.1 System compliance with commissioning requirements is recorded in accordance with system documents.
- 3.2 Commissioning report is completed and actioned in accordance with system documents and company practice, and maintenance manuals and operating instructions updated if necessary.

Outcome 4

Diagnose and rectify mechanical building services faults at commissioning.

Performance criteria

- 4.1 Faults are identified and diagnosed through the senses of sight, hearing, smell and/or touch.
- 4.2 Faults are identified and diagnosed through engineering data.

Range engineering data may include but is not limited to – pressure variances, temperature variances, superheats, sub-cooling, humidity levels, air flows, fluid flows, carbon dioxide levels.
- 4.3 Faults are rectified.

Range may include but is not limited to – pump-down; recovery; evacuation; replacement of failed components; removal of non-system contaminants such as air, debris, oil, and purging chemicals; re-commissioning.
- 4.4 System is test run and adjusted for conformity to performance levels and ranges specified in system documents.

Replacement information	This unit standard replaced unit standard 3224, unit standard 3225, unit standard 3226, unit standard 3227, unit standard 3228, unit standard 3229, unit standard 3230, unit standard 3231, and unit standard 3232.
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Planned review date	31 December 2023
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	16 July 2010	31 December 2023
Review	2	29 March 2018	N/A

Consent and Moderation Requirements (CMR) reference	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 if you wish to suggest changes to the content of this unit standard.