

Title	Demonstrate knowledge of the installation, commissioning, and maintenance of hot water supply systems		
Level	4	Credits	10

Purpose	<p>This unit standard is for people who work, or intend to work, in the plumbing industry.</p> <p>People credited with this unit standard are able to:</p> <ul style="list-style-type: none"> – demonstrate knowledge of regulatory requirements, selection of methods and materials, and underpinning concepts and principles, as applied to the installation, commissioning, and maintenance of hot water supply systems; – describe types of hot water supply systems; – describe the positioning of hot water supply systems; – describe the installation and commissioning of hot water supply systems; and – describe the maintenance of hot water supply systems.
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Classification	Plumbing, Gasfitting and Drainlaying > Plumbing
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Available grade	Achieved
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Guidance Information

- 1 References

Building Act 2004;
 Health and Safety at Work Act 2015;
 Plumbers, Gasfitters, and Drainlayers Act 2006;
 Plumbers, Gasfitters, and Drainlayers Regulations 2010;
 The following standards, which are available at <https://www.standards.govt.nz>:
 AS/NZS 3500.4:2015 *Plumbing and drainage – Part 4 Heated water services*,
 NZS 3604:2011 *Timber-framed buildings*.
 The following clauses, current versions, and any related compliance documents, which are available at <https://www.building.govt.nz>:
 New Zealand Building Code Clause G10 Piped Services,
 New Zealand Building Code Clause G12 Water Supplies.
 and all subsequent amendments and replacements.
- 2 Credit for this unit standard does not entitle the candidate to legally perform certain aspects of electrical work unless registered or supervised by a registered person under the provisions of the Electricity Act 1992.

3 Definitions

Hot water supply systems – low pressure systems, which include open vented, valve vented, wet back, and push through systems; and mains pressure systems.

Job requirements – specific requirements of the job at hand not covered by job specifications.

Job specifications – instructions (oral, written, graphic) and may include any of the following: manufacturer instructions; design drawing detail specifications; specifications from a specialist source such as an architect, designer, engineer, or a supervisor; and site or work specific requirements. Where job specifications are in conflict with applicable legislation, standards, and/or codes, such legislation, standards, and/or codes shall take precedence for the purpose of assessment.

Low pressure – storage water heaters less than or equal to 120 kilopascals.

Maintain may refer to all or any of – repair, upgrade, alter, remove.

- 4 Candidates must hold a current limited certificate or exemption under supervision as issued under the Plumbers, Gasfitters, and Drainlayers Act 2006.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of regulatory requirements, selection of methods and materials, and underpinning concepts and principles, as applied to the installation, commissioning, and maintenance of hot water supply systems.

Performance criteria

1.1 Describe applicable sections of legislation, standards, and codes in terms of their application to the installation, commissioning, and maintenance of hot water supply systems.

1.2 Justify selection of methods and materials.

Range job specifications, operation of the installed system and components, prudent use and longevity of materials; may include job requirements.

1.3 Explain underpinning concepts and principles in terms of their application to the installation, commissioning, and maintenance of hot water supply systems.

Range conduction, convection, corrosion, electrical earthing and bonding, expansion and contraction, freezing, friction, heat and latent heat, hydraulic gradient, hydrostatics and hydraulics, pH, pressure on boiling point, properties of metals, radiation, relative density, siphon, temperature and behaviour of water at temperature, water hardness and softness.

Outcome 2

Describe types of hot water supply systems.

Range direct, indirect.

Performance criteria

- 2.1 Describe low pressure hot water supply systems in terms of pressure control valves, supply tank, hydraulic gradient, controlled and uncontrolled heat source, and pressure maximums.
- 2.2 Describe mains pressure hot water supply systems in terms of pressure control valves, heat source, and pressure maximums.

Outcome 3

Describe the positioning of hot water supply systems.

Performance criteria

- 3.1 Describe the positioning of hot water supply systems to measurements in accordance with job specifications and relevant standards and codes.

Outcome 4

Describe the installation and commissioning of hot water supply systems.

Performance criteria

- 4.1 Describe the selection of appropriate hot water supply systems in accordance with job specifications.
- 4.2 Describe the installation of hot water supply systems in accordance with job specifications and relevant standards and codes.
- 4.3 Describe the connection of hot water supply systems to connection and termination points in accordance with job specifications and relevant standards and codes.
- 4.4 Describe the carrying out of soundness tests in accordance with job specifications and relevant standards and codes.
- 4.5 Describe the protection of hot water supply systems in accordance with job specifications and relevant standards and codes.
- 4.6 Describe the identification of hot water supply systems and pipelines by label and/or colour that comply with relevant standards and codes.

Outcome 5

Describe the maintenance of hot water supply systems.

Performance criteria

- 5.1 Describe the identification of faults in terms of causes and means of rectification.

- 5.2 Describe the rectification of faults in accordance with maintenance requirements, job specifications, and relevant standards and codes.

Replacement information	<p>This unit standard and unit standard 30551 replaced unit standard 23850.</p> <p>This unit standard and unit standard 30552 replaced unit standard 23851.</p>
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Planned review date	31 December 2022
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	26 October 2017	N/A

Consent and Moderation Requirements (CMR) reference	0003
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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 The Skills Organisation reviewcomments@skills.org.nz if you wish to suggest changes to the content of this unit standard.