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| **Title** | **Test, connect, purge and commission steel mains or services in a gas network** | | |
| **Level** | **4** | **Credits** | **12** |

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| **Purpose** | People credited with this unit standard are able to demonstrate knowledge of company procedures, documentation, hazards and equipment to pneumatic pressure test, connect, purge and commission a steel gas main or service; prepare to test, connect, purge and commission a steel gas main or service; carry out a pneumatic pressure test on a steel gas main or service; connect, purge and commission a steel gas main or service; and complete reporting and documentation. |

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| **Classification** | Gas Industry > Gas Network Construction |

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| **Available grade** | Achieved |

**Guidance Information**

1 This unit standard is intended for, but is not limited to, workplace assessment. The range statements relate to enterprise specific equipment, procedures, and processes.

2 Evidence presented for assessment against this unit standard must be consistent with safe working practices and be in accordance with applicable manufacturer's specifications, company procedures and legislative requirements. This includes the knowledge and use of suitable tools and equipment.

3 Legislation, regulations and/or industry standards relevant to this unit standard include but are not limited to the current version of:
Health and Safety at Work Act 2015;
Resource Management Act 1991;
AS/NZS 4645.1:2018 *Gas distribution networks – Network management*;
AS/NZS 4645.2:2018 *Gas distribution networks – Steel pipe systems*;
AS/NZS 2885. *Pipelines - Gas and liquid petroleum.*

4 References
Australian standards (AS) may be found at www.standards.org.au;
Australian/New Zealand standards (AS/NZS) may be found at www.standards.govt.nz.

5 Any new, amended or replacement Acts, regulations, standards, codes of practice, guidelines, or authority requirements or conditions affecting this unit standard will take precedence for assessment purposes, pending review of this unit standard.

6 Definitions
*Company procedures* mean the documented methods for performing work activities, and include health and safety, operational, environmental, and quality management requirements. They may refer to legislation, regulations, guidelines, standard operating procedures, manuals, codes of practice, or policy statements.
*Connect* refers to using tapping fittings, full-flow connections and valves to join mains and services in a gas network.
*Test* refers to pneumatic leakage testing.

7 Evidence is required for a steel gas pipe with a diameter equal to or greater than 50mm to achieve this unit standard.

## Outcomes and performance criteria

### Outcome 1

Demonstrate knowledge of company procedures, documentation, hazards and equipment to pneumatic pressure test, connect, purge and commission a steel gas main or service.

### Performance criteria

1.1 Company procedures for testing, connecting, purging and commissioning a steel gas main and a service are located and interpreted.

Range may include – company standard, safe work procedure, operating procedure, maintenance procedure, work instruction, equipment operating manual, job hazard analysis, job risk assessment.

1.2 Documentation and instructions for a specified job are obtained.

Range instructions may include – site location, network drawings, job card, utility plans, network pressure monitoring, test pressure, test duration, consents, easement conditions, cathodic protection requirements, welding procedure and testing requirements.

1.3 Reasons for testing steel mains and services are described.

Range strength, leakage.

1.4 Methods of connecting steel mains and services are described.

Range methods may include – mechanical saddle tee, steel self-tapping tee, mechanical coupling, welded fitting, valve.

1.5 Pressure test criteria are described.

Range pressure range, duration, allowable pressure loss, atmospheric pressure, temperature.

1.6 Methods for purging steel mains and services and the required purge levels are described.

Range methods include – direct purge, indirect purge;
purge levels include – odourant levels, minimum gas-in-air levels.

1.7 Potential environmental and safety hazards and their controls associated with testing, connecting, purging and commissioning steel gas mains and services are described.

Range hazards may include – gas release, flames, excavations, confined spaces, welding, pneumatic release, contaminants, noise, vehicles and public, static electricity, electrical current;
controls may include – temporary traffic control, signage, barriers, personal protective equipment, safe access and egress, pressure restraint, anchoring, exclusion zones, continuity bond, environmental protection, earthing, waste disposal;
evidence of six hazards and their controls are required.

1.8 The equipment and materials required for testing and purging are described in terms of type and function.

Range test gauge, air compressor, test piece, leak detection equipment, purge stack, flare stack, gas detection equipment, hoses, anchors, restraints, continuity bond, earthing equipment, inert gas supply, fire extinguisher.

1.9 The potential hazards associated with incorrect pressure testing and purging of steel gas mains and services are described.

**Outcome 2**

Prepare to test, connect, purge and commission a steel gas main or service.

**Performance criteria**

2.1 Hazards for the specified job are identified and controlled.

2.2 Testing, connecting, purging and commissioning equipment and materials for specified job is prepared and positioned.

Range may include – pressure gauges, hoses, anchors, restraints. test gauge, air compressor, inert gas supply, test piece, leak detection equipment, purge rider, purge stack, flare stack, gas detection equipment, continuity bond, earthing equipment, tools, fittings, fire extinguisher.

2.3 Preparation ensures that pipework and fittings are anchored in position, pipe systems are isolated, and purge stacks and drainage points are positioned.

**Outcome 3**

Carry out a pneumatic pressure test on a steel gas main or service.

**Performance criteria**

3.1 Pneumatic pressure test criteria are established.

Range test medium, test pressure, test duration, stabilisation period.

3.2 Pneumatic pressure test safety controls are applied.

Range may include – exclusion zone, restraints, anchoring.

3.3 Test pressure is applied.

3.4 Test equipment is checked for leaks.

3.5 Stabilisation period is timed.

3.6 Atmospheric pressure reading is obtained.

3.7 Test period is timed, and pressure and time readings are recorded.

Range initial readings, final readings.

3.8 Pneumatic pressure test criteria is met.

3.9 Where test results show a pressure loss, leaks are traced and repaired, and retesting is completed.

3.10 On completion of the test, pipe is depressurised in a controlled manner and test equipment is disconnected.

3.11 Record of test is completed.

**Outcome 4**

Connect, purge and commission a steel gas main or service.

**Performance criteria**

4.1 Gas main or service is connected.

Range connection may include – saddle tee, self-tapping tee, welded punch tee, mechanical coupling, valve.

4.2 Purging is carried out and pressure and flow conditions are monitored until the required gas concentration level is confirmed at the purge outlet(s).

Range may include – direct purge, indirect purge.

4.3 The purge outlet is closed, and the main and purge equipment is fully pressurised to operating pressure and any final joints checked for leakage.

4.4 Any leaks are identified and repaired if required.

4.5 Purging equipment is depressurised and disconnected.

**Outcome 5**

Complete reporting and documentation.

**Performance criteria**

5.1 Records and documents are completed and processed, and information is communicated to internal and external parties as required.

Range may include – job card, test records, as-built records, odourant records, special conditions, completion notice, additional work.

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| **Replacement information** | This unit standard, unit standard 32335 and unit standard 32336 replaced unit standard 30373. |

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| **Planned review date** | 31 December 2025 |

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

| Process | Version | Date | Last Date for Assessment |
|---|---|---|---|
| Registration | 1 | 27 May 2021 | N/A |

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| **Consent and Moderation Requirements (CMR) reference** | 0014 |

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.

**Comments on this unit standard**

Please contact MITO New Zealand Incorporated info@mito.org.nz if you wish to suggest changes to the content of this unit standard.