

Title	Operate a vibration table for aerospace testing		
Level	4	Credits	20

Purpose	People credited with this unit standard are able to: prepare to test aerospace components on a vibration table; prepare for the collection of vibration data from vibration table; test and collect vibration data from aerospace components; evaluate operating data; and complete finishing activities related to the vibration testing of aerospace components.
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Classification	Aeronautical Engineering > Aerospace Engineering
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Available grade	Achieved
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Guidance Information

1 Definitions

Abnormal measurement – a departure in the frequency and/or amplitude characteristics from the normal fault characteristic.

DUT – device under test. The aerospace component being tested on the vibration table.

Enterprise procedures – procedures used by the organisation carrying out the work and applicable to the tasks being carried out. Examples are – 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.

Vibration measuring equipment – a range of instruments that measure, display, and analyse acceleration and vibration response. Technologies include accelerometers and displacement sensors.

Vibration table – a machine to apply a periodic oscillating movement upon a device under test, secured to the table through the use of fasteners.

- 2 This unit standard can be assessed against using a stand-alone vibration instrument, or in conjunction with a data acquisition system.
- 3 Evidence of establishing vibration data should be collected on at least five different components, with at least fifty measurements taken.

- 4 The following apply to all outcomes of this unit standard:
- a all activities are to be completed and reported in accordance with enterprise procedures;
 - b all work practices must meet worksite's documented quality management requirements;
 - c all activities must comply with policies, procedures and requirements of the enterprises involved; and any relevant legislative and/or regulatory requirements, which include, but are not limited to, the Health and Safety at Work Act 2015.

Outcomes and performance criteria

Outcome 1

Prepare to test aerospace components on a vibration table.

Performance criteria

- 1.1 Testing task is determined by reviewing enterprise procedures, operating documentation and manuals.
- 1.2 Aerospace component identity is confirmed with operating documentation by comparing serial and part numbers.
- 1.3 Work area is prepared, and resources are obtained and checked for serviceability.
- Range may include but is not limited to – publications, tools, equipment, safety equipment, safety devices fitted, hazard symbols displayed, environmental conditions established.
- 1.4 Support equipment is positioned.
- Range may include but is not limited to – testing and measuring equipment, data acquisition devices and power supplies.
- 1.5 Aerospace components are prepared for testing on vibration table.
- Range may include but is not limited to – clean, inspect, install on vibration table.

Outcome 2

Prepare for the collection of vibration data from vibration table.

Performance criteria

- 2.1 Vibration test conditions are identified and explained.
- Range includes but is not limited to – mechanical, electrical, fluids.
- 2.2 Operational limitations applying to the DUT are identified.

- 2.3 Measuring equipment is selected, in accordance with equipment operating instructions.

Outcome 3

Test and collect vibration data from aerospace components.

Performance criteria

- 3.1 Test is undertaken by operating the vibration table and DUT.
- 3.2 Vibration measurements are taken in accordance with database requirements.
- Range may include but is not limited to – record data, determine adjustments, calibrate, functionally test.
- 3.3 Database is updated with the recorded data.
- 3.4 Abnormal measurements and defects found during testing are reported and recorded.
- Range may include but is not limited to – out of limits performance parameters, leaks, departure in the operating characteristics from the normal fault characteristics.
- 3.5 Inspections are obtained.
- 3.6 Awareness of actions to be taken in abnormal and emergency occurrences is demonstrated.
- Range may include fire suppression, emergency stops, power isolation.

Outcome 4

Evaluate operating data.

Performance criteria

- 4.1 Vibration trends are determined from current and historical data.
- 4.2 Data is assessed against performance criteria.
- Range may include but is not limited to – vibration test profile (cycles, ramp rates, axes, amplitudes), and DUT performance characteristics (input power, operation, degradation) against pass/fail criteria.
- 4.3 Any data irregularities are explained, and action is taken.

Outcome 5

Complete finishing activities related to the vibration testing of aerospace components.

Performance criteria

- 5.1 Tested aerospace components are prepared for use, storage, or transit.
- Range may include but is not limited to – locking, inhibiting, blanking, removing from vibration table, preparing for transit.
- 5.2 Completion activities specific to the task and work area are carried out.
- Range may include but is not limited to – tool control, cleanliness, tidiness, return of publications and equipment.
- 5.3 Resources are checked for serviceability and returned to service or storage.
- Range may include but is not limited to – tools, equipment, safety equipment.
- 5.4 Leftover parts and materials are disposed of.
- Range may include but is not limited to – serviceable, unserviceable, surplus, waste, scrap, hazardous.
- 5.5 Documentation is completed.
- Range may include but is not limited to – work orders, job sheets, non-conformance reporting.
- 5.6 Work area is left in a state that enables the next task to begin.

Planned review date	31 December 2027
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	30 March 2023	N/A
Rollover and Revision	2	27 June 2024	N/A

Consent and Moderation Requirements (CMR) reference	0028
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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 Ringa Hora Services Workforce Development Council
qualifications@ringahora.nz if you wish to suggest changes to the content of this unit standard.