



Australian Government

MSFPT4006 Apply piano tuning theory and basic acoustics

Release: 1

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Modification History

Release 1. Changes to code, application, elements, performance criteria, assessment requirements. Foundation skills added. Range of conditions removed. Assessment requirements changed.

Application

This unit describes the skills and knowledge required to apply piano tuning theory and basic acoustics to piano tuning tasks.

Piano technologists with this competency follow established procedures, using discretion, judgement and problem-solving to apply and communicate technical solutions to predictable and unpredictable issues.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Competency Field

Piano Technology

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Analyse existing acoustics and apply knowledge to optimise	1.1 Analyse existing piano acoustics and apply elements of basic acoustics to piano tuning tasks to achieve optimal acoustics 1.2 Analyse existing piano acoustics and apply acoustical laws of sounding strings to piano tuning tasks to achieve optimal acoustics
2. Analyse existing tuning and apply knowledge to optimise	2.1 Assess and analyse existing piano tuning against piano tuning theory 2.2 Apply elements of piano tuning theory to adjust piano tuning 2.3 Assess effect of inharmonicity on piano tuning and make required adjustments
3. Analyse existing scales pitching and apply knowledge to optimise	3.1 Analyse existing scales and apply elements of musical scale theory to piano tuning tasks 3.2 Assess existing behaviour of piano strings and apply proper dimensions to piano tuning to achieve optimal behaviour 3.3 Assess existing string behaviour against laws of strings and make

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
	required adjustment to optimise behaviours 3.4 Apply optimal musical scales tuning to piano tuning tasks

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Foundation skills essential to performance are explicit in the performance criteria of this unit.

Unit Mapping Information

Release 1. Supersedes and is not equivalent to MSFPT3008 Apply piano tuning theory and basic acoustics.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=0601ab95-583a-4e93-b2d4-cfb27b03ed73>

Assessment Requirements for MSFPT4006 Apply piano tuning theory and basic acoustics

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Performance Evidence

There must be evidence the candidate has completed all the tasks outlined in the elements and performance criteria of this unit, and demonstrated the ability to:

- analyse existing acoustics, tuning and scales and apply basic acoustics, piano tuning theory and musical scale theory to tuning on at least two upright pianos.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- the physics and features of basic acoustics, including:
 - sound waves
 - beats
 - frequencies
 - harmonics
 - cycles
 - partials
 - overtones
 - nodes
 - fundamentals
 - sine waves
 - intonation
 - transients
 - cents
 - commas
 - compound tones
 - inharmonicity
- the physics and features of piano tuning theory, including:
 - how wire vibrates
 - what happens when two or more wires vibrate simultaneously
 - how vibrations are organised into a tuning scale
 - how vibrations are related mathematically

- pitch, beat rates, intervals and octave stretching
- musical scale theory, including:
 - diatonic scale
 - equal temperament
 - mean-tone
- laws of strings including Mersenne's laws, including:
 - First law
 - Third law
 - Combined law
 - Taylor's Formula
 - need for wrapped strings
- problem identification for acoustics and tuning, and resolution.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources required for performance evidence, including:
 - upright or grand pianos
 - workplace procedures, manufacturing specifications, codes, standards, manuals, and reference materials.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

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