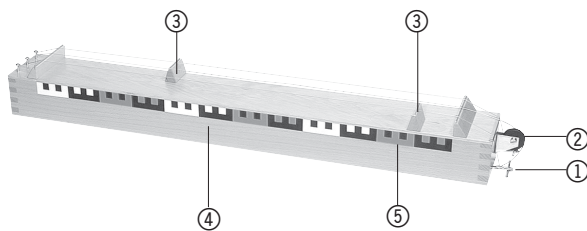


U15100 Monochord

Instruction sheet

4/03 ALF



- ① Tuning peg
- ② Pulley
- ③ Adjustable bridge
- ④ Sound box
- ⑤ Scale

The Monochord demonstrates how the pitch of the sound produced by vibrating strings is dependent on their tension, length and thickness.

1. Description, technical data

The monochord consists of a wooden sound box over which two steel strings and a nylon string are stretched. The tension of two of the strings can be adjusted by means of tuning pegs at one end while the third is adjusted by running it over a pulley and attaching weights or a dynamometer. The effective length of the strings

can be adjusted using two moveable bridges. The lengths can be read from a scale on the side of the box.

Dimensions of sound box: 700 mm x 90 mm x 70 mm
 Scale length: 600 mm
 Scale divisions: cm and dm

2. Instructions for use

- Excite the strings by plucking them or bowing them.
- The desired length of the strings can be set by moving the bridges and can be read from the scale.

A major scale can be generated by adjusted the length of the strings to the following ratios:

Name of note	Frequency ratio root : overtone	Interval	Ratio of string lengths root : overtone
c : c	1:1	root	1:1
c : d	8:9	second	9:8
c : e	4:5	major third	5:4
c : f	3:4	fourth	4:3
c : g	2:3	fifth	3:2
c : a	3:5	major sixth	5:3
c : h	8:15	major seventh	15:8
c : c`	1:2	octave	2:1
c : g`	1:3		3:1
c : c``	1:4		4:1
c : e``	1:5		5:1
c : g``	1:6		6:1

To determine the frequency ratios:

- Tune two strings to the same note.
- Move the bridge under one of the two strings to a position given by the ratios for the major scale.
- Determine the frequency ratio from the ratio of string lengths.

All the notes of the major scale are consonant apart from

the second and the seventh. With the third string, chords such as the major triad can be played. The procedure for that is as follows:

- Tune a second string in the ratio 4:5 (major third) to the first.
- Tune the third string to the same as the second.
- Move the bridge to two thirds of the way along the second string (major third).