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UNFRETTED
CLAVICHORD

No. 35

OWNER'S MANUAL

UNFRETTED CLAVICHORD by Peter Bavington, 2016 (No. 35)

This clavichord is based on an instrument in the Germanisches Nationalmuseum, Nuremberg, which is one of a group of five surviving clavichords of identical design. All are unsigned and undated, but have been reliably attributed to Johann Heinrich Silbermann, nephew of the famous organ builder Gottfried Silbermann. Johann Heinrich was active as a keyboard instrument maker in Strasbourg from about 1760 until his death in 1799.

The instrument is completely unfretted, and has a compass of five octaves from *FF* to *g*³.

ENVIRONMENTAL CONDITIONS AND GENERAL CARE

This clavichord was designed and made for use in a temperate climate: extremes of temperature and humidity will disturb the tuning and regulation, and may actually cause damage. An excessively dry atmosphere, in particular, such as is found in centrally heated rooms without humidification, should be avoided: ideally, relative humidity around the instrument should be maintained in the range 40%–70%. Do not let the instrument stand for long periods in direct sunlight or in a draught, and keep the lid closed when not in use. As far as possible, avoid touching the strings with your bare hands, since this may encourage corrosion.

ACCESSORIES

The tuning key should be kept, when not in use, in the special socket provided for it on the instrument.

The following items are supplied with the instrument and may be kept in the tool-box at the left-hand end of the keyboard:

- Stringing tool (see p. 6);
- Miniature wire clippers;
- Cloth strips (see p. 3);
- Wooden wedge for inserting cloth strip between strings;
- Felt wedge for minor tuning adjustments.

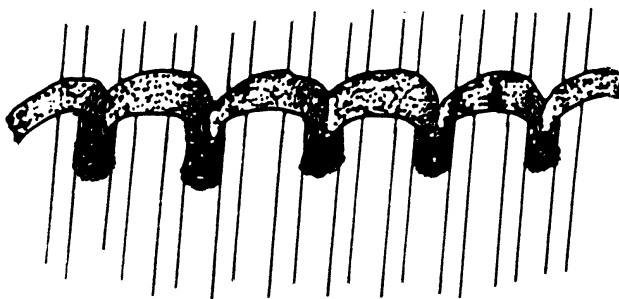
To open the tool-box, grasp the black knob and slide the lid forward.

PITCH AND TUNING

The instrument is designed to play at a pitch one semitone below the modern standard, i.e. at $a^1=415$ Hz. Any temperament or tuning system may be used. Please always use the tuning key supplied with the instrument. To help you find your place, the tuning pins for all the Cs are indicated by a red washer, those for the Fs by a blue one.

In normal circumstances, a full tuning, including re-setting the temperament, should be required, only three or four times a year. I suggest you begin by silencing one of each pair of strings, using the strips of cloth supplied. Two strips are supplied, so that the muting cloth can be placed fairly close to the bridge, where it is most effective. Use the green strip for the treble and the red strip for the tenor and bass.

Starting with the gap immediately behind the topmost treble course (note g^3), use the wooden wedge to push the strip between the strings, passing over four strings at a time, thus:



If the cloth is correctly positioned, only one string of each course will sound; the whole instrument will, in effect, be single-strung. The sounding strings will be controlled by the two inner rows of tuning pins: initially, use these only for your tuning.

First set the temperament, then tune the remaining notes upwards and downwards by octaves. When you are satisfied with your tuning of the whole instrument in its single-strung state, remove the cloth strips and tune the second string of each note, using this time the outer rows of tuning pins.

For touching-up the tuning of individual courses, on occasions when a full tuning is not necessary, you can use the felt wedge supplied.

LID

The lid is in two parts: the front section should be folded back before the complete lid is opened. It is possible to play the instrument with the main part of the lid closed. The lid is secured for transport by hooks at either end of the instrument.

MUSIC DESK, MUSIC SHELF AND FRONTBOARD

You can support music scores using either the music desk or the shelf at the spine side of the clavichord; if the latter, the lid must be fully open to support the music. The music desk can be used to support the lid leaning forward, or the desk can be supported independently with the prop, leaving the lid fully open. When not in use, the prop is secured to the back of the music rest with a small brass hook, which rotates to free the prop. The prop engages with a notch in the music shelf.

The music shelf is secured in the hitch-pin rail by a vertical prong which fits into a socket in the rail. To remove it, grasp the ends and simply lift it off vertically.

The music desk is attached to the frontboard by means of two brass plates which slide over two capstan screws on the inside of the frontboard. To remove it, grasp the leathered shelf part at either side, and lift the whole assembly vertically upwards off the frontboard.

To remove the block, pull directly upwards; the block is secured in the hitch-pin rail by a vertical prong which fits into a socket in the rail.

To remove the frontboard itself, hold at each end and lift directly upwards.

TO REMOVE THE LEGS

Rest the instrument on a table or other support, at least 2 ft 4 in (700 mm) above the floor; alternatively place it on its spine on two chairs (take care to secure the lid with the two hooks at each end, to

prevent it from falling backwards). The legs can then be screwed out by turning them anti-clockwise.

Each leg is numbered, and a corresponding number is to be found on each leg block. The legs should always be replaced in the same positions.

TO REMOVE INDIVIDUAL KEYS

Keys may have to be removed for cleaning, to deal with problems arising with the tangents, pivot-pins or guide slips, or to retrieve objects accidentally lodged inside the instrument.

Many of the keys on this clavichord are quite severely bent (or 'cranked'); to remove such cranked keys, it may be necessary to start by removing a key in the treble part of the compass, where the cranking is only moderate; then remove adjacent keys until you reach the one you want.

To remove a treble key: first remove the music desk and front-board (see above). Lift the key off its pivot-pin and draw it forward about 6 mm ($\frac{1}{4}$ inch); then rotate it clockwise and carefully draw it forward, keeping the tangent end as low as possible so as not to foul the strings.

The bass keys are particularly awkward to remove, and it may be necessary to raise the strings by reaching under the string band. Avoid touching the strings directly by wearing a thin cotton glove, or by covering your hand with a piece of cloth. Take care not to disturb the windings of the over-wound strings.

CLEANING THE KEYS

After much use the keys may become dirty. It is best to remove them from the instrument before cleaning (see above). Rub with a damp cloth to remove dirt, then rub with a soft, dry cloth to polish. The use of detergents is not recommended.

REPLACING BROKEN STRINGS

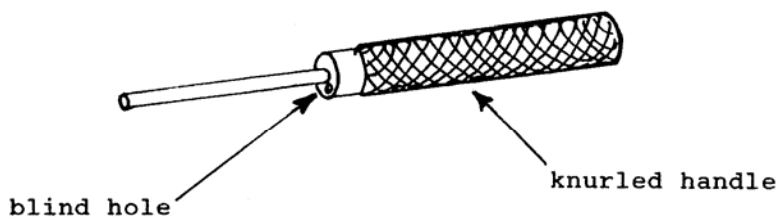
Do *not* begin by removing the broken string.

First identify the broken string, and check which note it belongs to. Now find the correct replacement string by referring to the list on the back page of this leaflet. If necessary, remove the music shelf to expose the relevant hitch-pin.

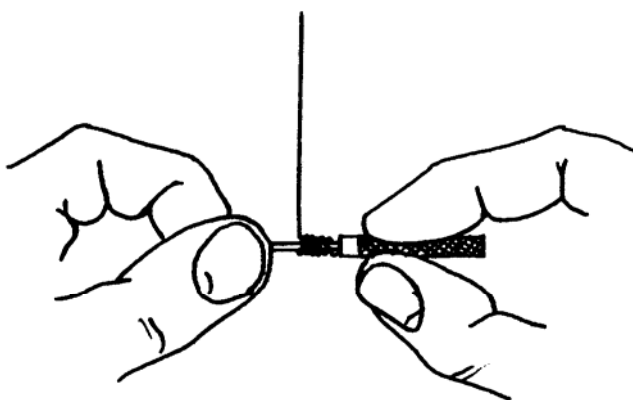
Extract the tuning pin from its hole: you may need to use smooth-jawed pliers, or a special tool (obtainable from me), to do this. Take the new string from its packet. Bend about 30 mm (1½ inches) of the plain, untwisted end of the new wire back on itself. Lift the loop of the old, broken string off the hitch-pin, and hook the bent end of the new string through the loop. Now use the old string to pull the new one through the listing cloth. Once the new string is safely through the listing, place the new loop on the hitch-pin and discard the broken string.

The next step is to wind the string on to the tuning pin. I recommend that you use the special tool supplied for this purpose. First, line up the new string so that it passes over the vacant tuning pin hole: you will need about 4 inches (100 mm) of wire beyond the hole (somewhat less for thicker wires), so cut off any excess using the clippers supplied. Put the end of the wire into the blind hole in the handle of the stringing tool, and turn the tool so that it is at right angles to the wire, with the handle in your right hand. Now roll the tool forwards so that the wire forms a tight coil round the narrow part of the tool: continue until you reach the vacant tuning pin hole.

Slip the coil off the tool and cut off the uncoiled end. Now, taking the coil in your left hand and the tuning pin in your right, gently push the coil over the bottom end of the pin whilst revolving it anticlockwise. The coil will grip tightly, but revolving the pin anticlockwise loosens it temporarily just enough for you to be able to slide it up and down the pin. Adjust the coil in this way until it matches the position of the coils on the neighbouring pins. Now push the pin into the hole with the tuning key, and use your fingers to coax the wire into its correct position on the bridge. Check that the hitch-pin end is secure, that the tuning pin is roughly the same height as its neighbours, and that the wire leaves the bridge at roughly the same downward angle as neighbouring strings. It is now safe to tune the new string to pitch.



Stringing tool



Stringing tool in use

Notes	Material	Gauge mm
<i>FF-c</i>	overwound strings	
<i>c#-d</i>	85/15 brass	.48
<i>e^b-e</i>	"	.46
<i>f</i>	"	.43
<i>f#-g</i>	yellow brass	.42
<i>g#-a</i>	"	.40
<i>b^b-b</i>	"	.38
<i>c¹-d¹</i>	"	.36
<i>e^b¹-f¹</i>	"	.34
<i>f#¹-g¹</i>	"	.33
<i>g#¹</i>	"	.32
<i>a¹-c#²</i>	"	.30
<i>d²-a²</i>	"	.29
<i>b^b²-c³</i>	"	.27
<i>c#³-g³</i>	"	.26

In the above table, '85/15 brass' means brass wire with 15% zinc content manufactured by Little Falls Alloys; 'yellow brass' means English yellow brass with 30% zinc content manufactured by Malcolm Rose. Replacement strings, including overwound strings for the lowest 20 notes, can be ordered from:

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