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TECHNICAL AND MAINTENANCE MANUAL

Thank you for buying a Salvi harp.
Your new instrument is ready to offer you nothing but the best because it is the result of research, technology, and innovation.

We invite you to read the information and suggestions contained in this manual. In this way you can familiarize yourself with your harp and discover everything you need to know to maintain its quality over time.

Like you, we also love your harp.



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Quality born to last

For more than fifty years, the **Salvi Harps** brand name has become renowned for excellence in sound worldwide.

This is the result of a rigorous selection of materials combined with the development of proven construction methods to ensure optimal performance of the instruments over time.

Only natural materials from selected wood resources are used to build the **structure** of a Salvi harp.

Because wood is a living material - and therefore subject to climatic variations - criteria must be established to adequately preserve the quality of the harp's sound over time.

To construct the **mechanism**, Salvi has developed cutting-edge technical solutions so that moving parts work precisely and consistently over time, thereby maintaining perfect tuning.

To achieve this, connection levers are built in high-strength steel, while the sliding parts are in a highly wear-resistant copper-zinc alloy.

The high structural stress caused by the string tension calls for particular care in the maintenance and moving of the instrument, while the complexity of the mechanical action requires regular revision to guarantee optimal performance.

Quality maintenance

The **harpist** is the main caretaker of his or her harp.

Familiarity with one's own instrument, together with the right information concerning care and maintenance, will allow you to identify possible problems and maintain your harp for years to come.

This Technical and Maintenance Manual was compiled to help the harpist in getting to know his or her instrument. In the following pages you will find some simple rules to follow for correct maintenance and a series of suggestions to ensure that your harp functions correctly.

To ensure the quality of the instrument and the continued perfection of the sound you may contact **Salvi's Technical Service** with any questions or concerns you may have.

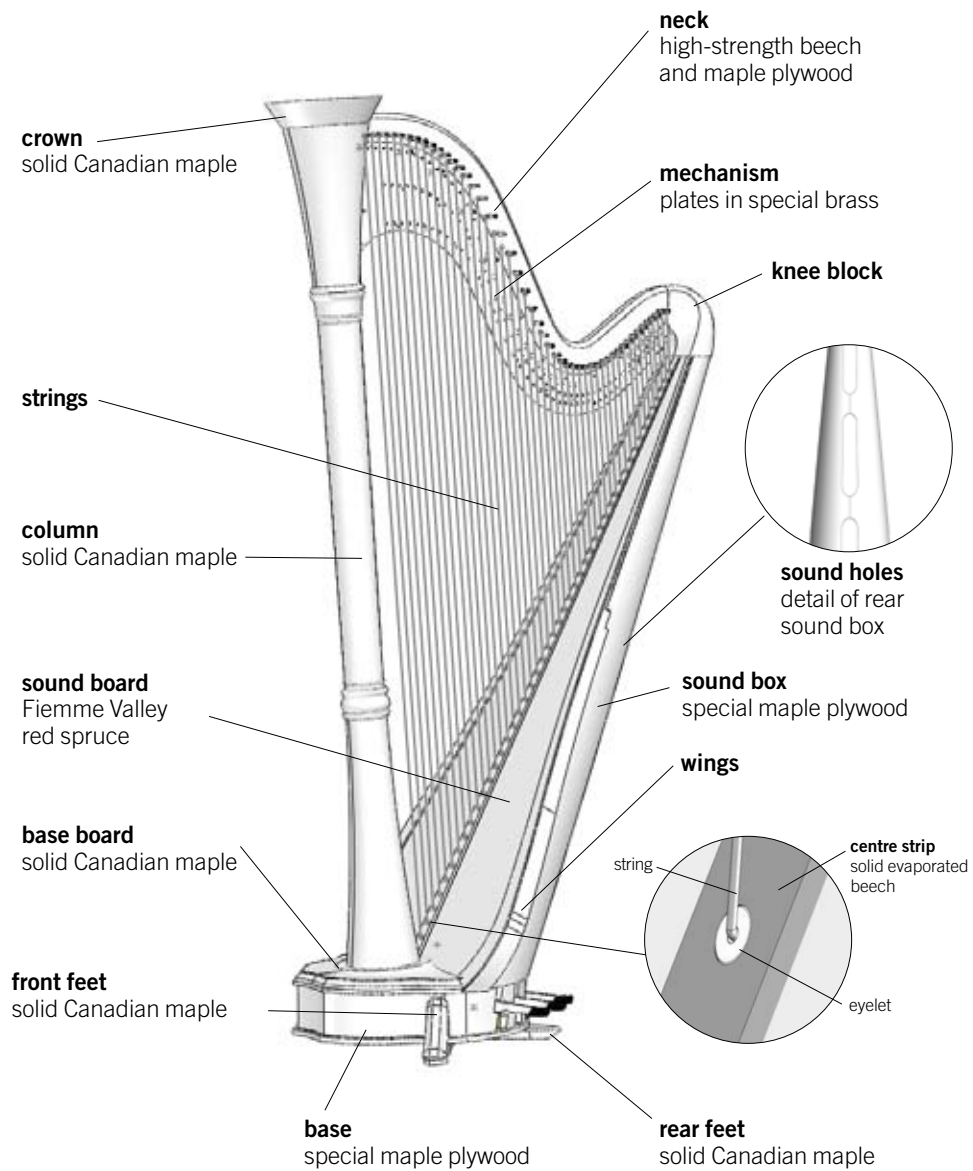
To contact the Salvi Technical Service:

Tel +39 0175 270524
mobile +39 335 5630215
e-mail: service@salviharps.com

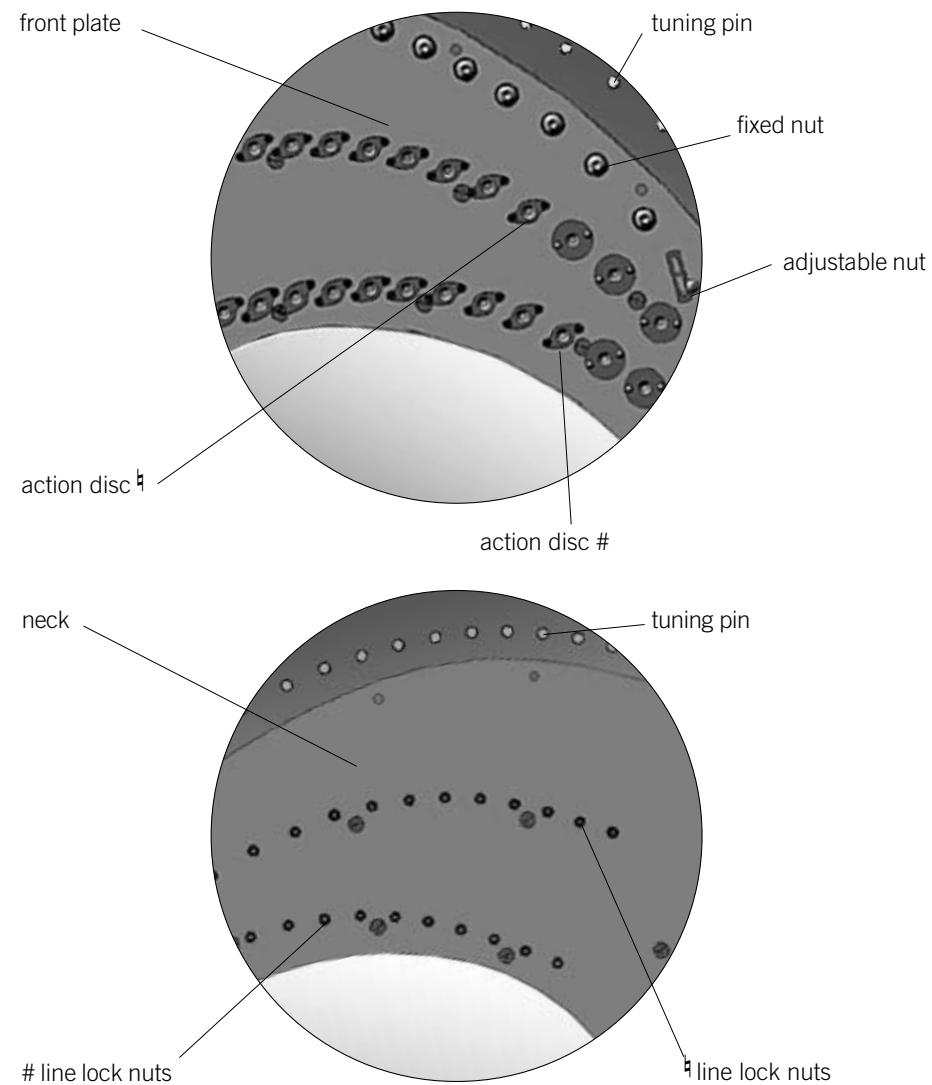


DESCRIPTION OF THE INSTRUMENT

The structure



The mechanism



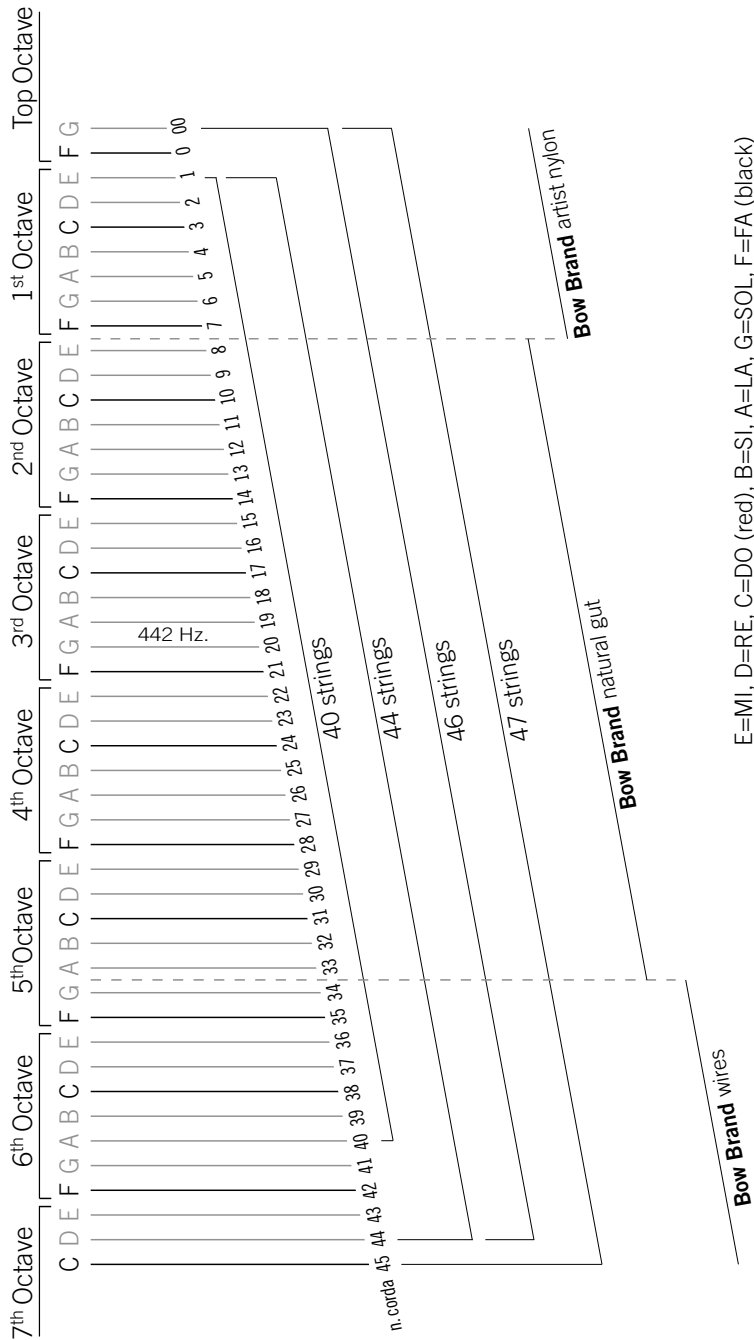
The strings

All Salvi harps are supplied with standard Bow Brand strings, specially designed and manufactured to achieve the best acoustics possible from the instrument.

Salvi recommends using the same string setup as the one found on the new harp for all successive replacements (see diagram on page 11). Different strings could have different diameters, materials and tensions, perhaps causing changes in the sound of the harp and potentially influencing the structural stability of the entire instrument and tuning.

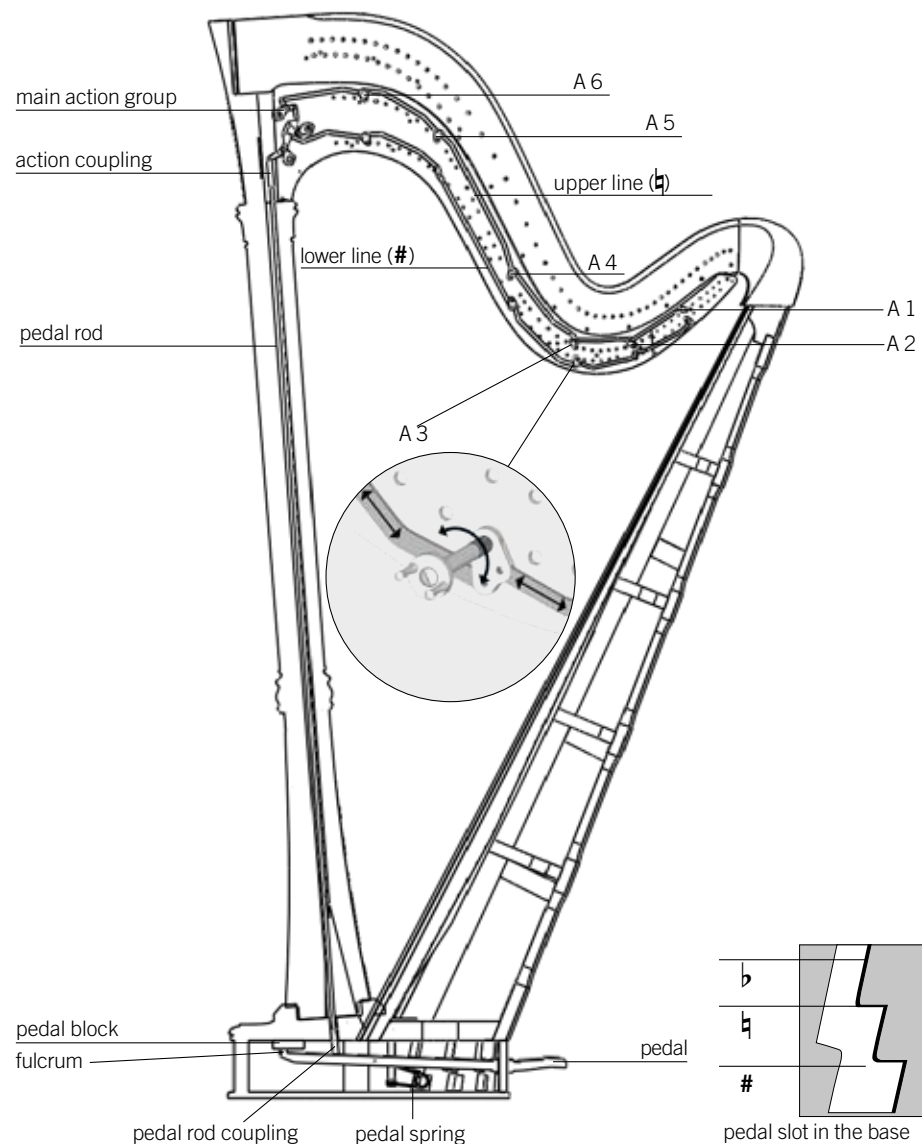
Remember that your harp has been tuned at A 442Hz by Salvi tuning technicians.

Note: When tuning your harp, always leave the pedals in the flat position (C♭+), so as to avoid unnecessary overloading of the strings and the mechanism that might compromise the precision of the operation.



E=M1, D=RE, C=DO (red), B=SI, A=LA, G=SOL, F=FA (black)

HOW A HARP WORKS



When the string of a harp is plucked, it produces an oscillation characterised by a specific frequency (pitch) that depends on the properties of the material, the tension, and length.

The contact between the string and the sound board transmits a pulsation to the eyelet inserted in the string hole of the sound board, setting it to vibrating with the same frequency as the string.

Sound box

The sound box amplifies the vibration and transmits it to the surrounding air in the form of sound. The sound waves may be reflected or absorbed by the surrounding surfaces; when reflected they are amplified; when absorbed, the volume seems to be reduced.

It then appears evident how the characteristics of the environment where the harp is played may strongly influence the acoustic performance of the harp or any other musical instrument.

Chromatic variations

Modifications of the length of the string are obtained by rotating the discs by means of the pedals (variations of frequency \flat - \natural - \sharp). To understand how this works, see the figure on the page to the left and the description on page 14.

Pedals

The seven pedals of the harp (from left to right: D, C, B – E, F, G, A) are connected inside the base to the pedal block that serves as a fulcrum; a spring guarantees the upward return of the pedal lever.

Mechanical functioning

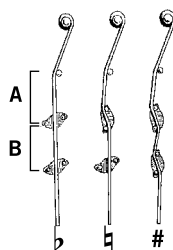
The pedal slides in special grooves cut into the base that allow them to stop in three preset positions. In order to dampen the sound of the impact between the pedal and the wooden groove, it is wrapped in a cushioning felt to eliminate undesired noise.

The rod is connected to the pedal level with a coupling. The rod slides inside the column and connects the pedal to the mechanism.

The rod is connected by means of another coupling to the main action group, which serves to distribute the movement of the 7 rods to the 7 lines of lower levers (#) and the 7 higher lines (h), which slide inside the mechanics between the two brass plates.

These levers connect the spindles of the action discs of the same note for all octaves. For example, the A line of levers connects all the A strings from the 6th octave to the 1st octave, as illustrated in the drawing on page 12.

The movement of the levers inside the mechanics is transmitted by a special device to the disc spindles; when these spindles rotate, they clamp down on the string in two very precise points to ensure the correct alteration - from the flat (string resting on the nut) to the natural (string clamped by the disc of the upper line, thereby shortened by the distance "A"), to the sharp (string clamped by the disc of the lower line, therefore shortened the distance "A+B").



CARE AND MAINTENANCE

The structure of a Salvi harp is entirely made of wood, one of the most precious materials that nature has to offer: it is therefore a "living" instrument.

By following a few simple rules, it is possible to keep your harp in excellent condition for many years.

Safety at home

When your harp is not being played, it should preferably be kept in an isolated area, positioning the knee block close to a wall.

Optimal climatic conditions

The ideal climatic conditions for your harp are as follows:

temperature: 20°C±10°C (50°F-86°F);

relative humidity: 50%±15%.

Your harp must be kept away from sources of heat and never exposed to direct sunlight to avoid damage to the varnished surfaces, the wooden structure, and the strings.

It is always advisable to cover your instrument with the indoor cover provided for this purpose.

Cleaning the surfaces

To avoid damage to the varnished surfaces, it is recommended that you remove marks or fingerprints with a soft cloth that is either dry or slightly damp.

Note: never use solvents (like acetone, various ethers, etc.) or commercial products generally used to clean furniture.

Replacing the strings

The strings are the "voice" of the harp and should be replaced regularly. They may age due to time, attacks by chemical agents in the atmosphere, and the sweat on your hands while playing.

It is usually advisable to replace the finer strings (0, 1st and 2nd octaves) once per year.

Moreover, the metal strings should be replaced when the outer surface of the winding begins to tarnish due to the oxidation of the metal or, alternatively every 2 years.

Front wheels

The wheels located under the front feet of the base of all Salvi harps facilitate any movement of the instrument over short distances without having to lift the instrument.

However, **it is recommended that the harp should not be moved** over rough surfaces, on asphalt, or irregular or bumpy surfaces that might damage the material of the wheels, loosening them or even blocking them completely. This may lead to an increase in vibrations and annoying noises when certain frequencies are played.

For important suggestions on how to move and transport your harp, please read the specific chapter on page 19.

Pedal felts

The red felts around the pedals serve to dampen the impact of the pedal lever against the base, ensuring a fluid movement.

This is why they are subject to wear from rubbing against the slots in the base.

It is usually advisable to replace these felts periodically. Check the condition of the felts and, if the surface of the felt is notably deteriorated, request the intervention of an authorised Salvi technician to replace the felts and regulate the pedals.

Full regulation of the harp

The structure of the harp evolves constantly due to the nature of its materials. The overall stress of the strings amounts to about **1,200 kg for a Concert Grand harp**, a factor that influences the settling of the wooden structural part and on the movements of the internal parts of the mechanism.

These factors become increasingly important when a harp is played several hours a day or when it is transported.

This settling may even cause minimal shifting of each individual part of the harp. This emphasises the importance of the instrument being periodically inspected by authorised **Salvi Technicians, who have the necessary knowledge and expertise required to keep all the moving parts working freely**, and are also trained to ensure that the structural parts are working properly, thereby guaranteeing functionality and perfect sound.

It is advisable to carry out a full regulation of the harp once per year or at least once every two years, according to how much the instrument is actually used.

Moving and transporting your harp

By following a few simple rules, it is possible to move your harp without causing any damage whatsoever.

The harp rests on the floor with 4 feet positioned on the base so as to guarantee the correct balance of the instrument when it is being played.

The front feet are equipped with **wheels** to facilitate any movement of the harp for short distances over flat and smooth surfaces without having to lift it; it will suffice to slightly tip the instrument forward (toward the column) to lift the rear feet approximately 2 - 3 cm from the floor. In this way, the wheels will be free to turn, making it possible to move the harp frontwards or backwards for a short distance.

Remember to hold the harp firmly with one hand inside a sound hole and balance the instrument on the other hand placed firmly on the neck.

When it is necessary to move the harp for longer distances or on rougher surfaces, it is advisable to use a special 2 or 6-wheel **trolley**, useful for either level surfaces or stairs.

It is also possible to use the trolley without having protected the harp with its transport cover; however, it is always advisable to use the cover to protect the instrument. The trolley is equipped with belts that should be strapped around the harp to limit the risk of instability and falling.

When the harp must be transported **by car**, it is always necessary to use its indoor cover and complete transport cover to protect it from scratches or impacts as well as from direct sunlight. If possible, the harp must be placed on one side, taking care to leave the discs upward, thereby avoiding potential damage to the strings and the mechanism.

If the harp is to be entrusted to a **transporter**, it is recommended that a special trunk should be used. Always wrap the instrument in its indoor cover and transport cover to ensure maximum protection inside the trunk.

For more information on the accessories described above, please contact your retailer directly.

CORRECT SETUP OF THE STRINGS

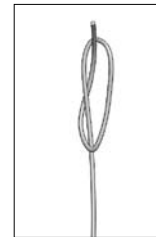
Below are some suggestions that will help in replacing the strings.

We recommend only the use of the types of strings indicated in the previous chapter “Description of the instrument” in the Strings section (page 10).

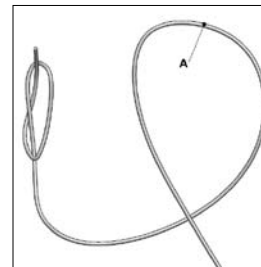
- 1 For convenience, we suggest inserting the string (with the exception of those in metal) through the centre strip rather than from the sound holes in the sound box.
- 2 To make the knots in the lower part of the nylon and gut strings, follow the indications below.

Knotting nylon and gut strings

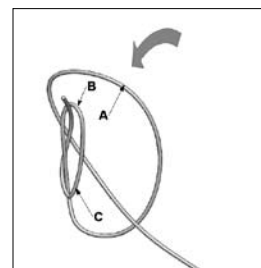
- 1 Make a simple knot in the string



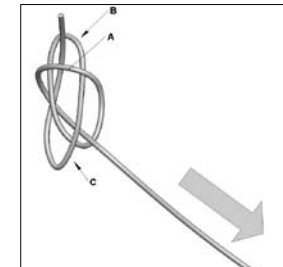
- 2 Make a loop as indicated in the figure



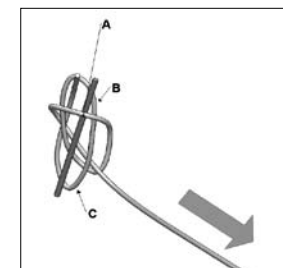
- 3 Overlap the loop on the knot in the direction indicated by the arrow, holding onto points B and C of the knot



- 4 Tighten the loop on the knot in the direction indicated by the arrow, holding points B and C of the knot still

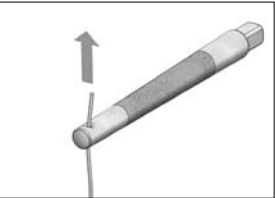


- 5 From the strings of the 3rd octave to those of the 0 octave, insert an anchor in the knot by using a 2-cm piece of gut string from the 5th octave; tighten by pulling the string in the direction indicated by the arrow, holding points B and C of the knot still

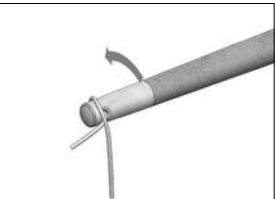


Winding nylon strings of the 0 and 1st octaves and gut strings of the 2nd and 3rd octaves around the tuning pin

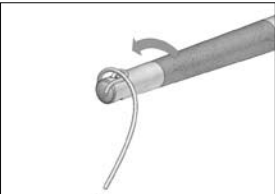
- 1 Thread the string into the hole of the tuning pin and pull in the direction indicated by the arrow (for the 0 and 1st octave strings, thread the string into the hole of the pin twice)



- 2 Use the tuning key to turn the tuning pin clockwise



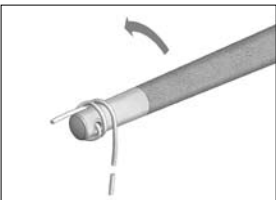
- 3 Make a loop and fix it under the string by turning the pin further clockwise



- 4 Turn the pin clockwise, taking care the keep the string to the right of the hole

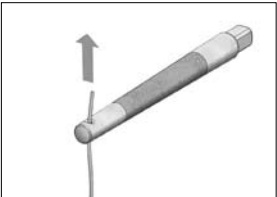


- 5 Winding the string correctly: to the right of the hole in the direction of the neck

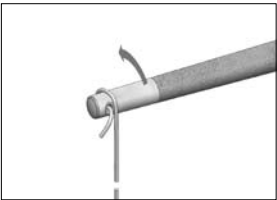


Winding gut strings of the 4th and 5th octaves on the tapered tuning pin

- 1 Thread the string into the hole of the tapered pin and pull in the direction indicated by the arrow. Continue turning the pin clockwise



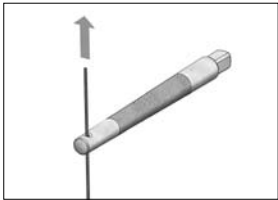
- 2 Turn the pin clockwise, taking care the keep the string to the right of the hole



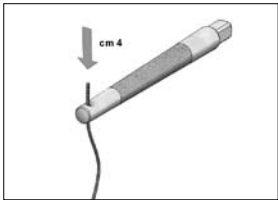
Note: The number of turns that the string makes around the tapered pin must never be excessive (no more than three) so that too strong an angle is created between the part of the vibrating string (under the nut) and the fixed part (between the nut and the tapered pin).

Winding metal strings on the tapered tuning pin

- 1 Thread the string into the hole of the tapered pin and pull in the direction indicated by the arrow



- 2 Release the string pulling it out about 4 cm (2 - 3 fingers)



- 3 Turn the pin clockwise, taking care to keep the string to the right of the hole

