

Building a small kantele

according to the Finnish traditions
Soitinrakentajat AmF

5-string kantele is a basic music instrument in Finland and nearby areas. It is a part and a symbol of Finnish cultural heritage, and widely used instrument in the music education. Other small kanteles, with 10 to 15 strings are played and built in the similar manner.

In this instruction we will have a look on some types and variations of small kanteles. Typical numbers of the strings are 5, 10, 11, and 15, and these will be tuned in diatonic scale. Strings are usually made of steel, horsehair or carbon fibre. Now, 2005, it is nearly a standard to tune these instruments in D-major. For 5-string kantele, we use tuning D4 E4 F#4 G4 A4, listing from low tones upwards. In this text, middle A is A4, that is 440 Hz.

The material of the strings and the tuning level determinates the aproksimate length of the strings and thus, the size of the instrument. The size that we get, using D-tuning, matches well with the museum kanteles.

The wood material for the body of the instrument was commonly elder. Birch, poplar etc. was often used, too. During last 50 years has pine and spruce come to use. Wooden tunig pegs are hardwood like maple. Metal tuning pins are of made steel, like the metal rod, "varras", at the other end of the strings.

There are three basic ideas about the body of small kantele:

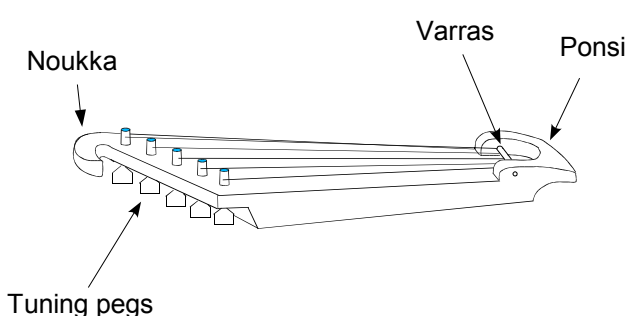
1. Closed box with some (decorative) holes, made of a few pieces of wood
2. Open box, originally carved of one piece of wood
3. Lapakantele, with the larger top plate, usually extended "lapa".

Taking 3 string materials, 2 types of tuning pegs and 3 main structures we get quite many variations for just small kanteles. Steel strings and tuning pins are most common. Wooden pegs and horsehair strings represent the oldest tradition, and they are the most difficult to make and use.

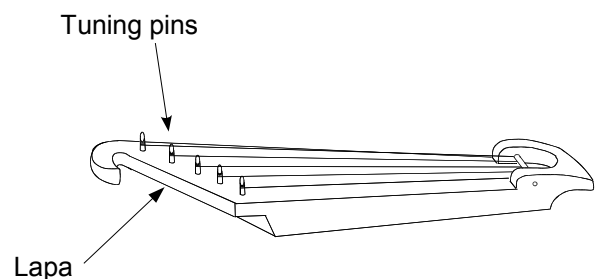
For a beginner, we suggest kantele with steel strings, steel tuning pins and the open box-type structure.

This instruction gives hints for making your small kantele totally from commonly available materials, or from professionally selected set of materials, or from a kit.

To build a kantele, you need a detailed plan, a good kantele to copy, or a kit. This way you can avoid severe problems with string lengths and locations. To get a good sounding instrument, it is enough to have good plan, or a good kit, or to make faithfull copy of a good kantele. Color, decorations and design of the "ponsi", "noukka" or "lapa" can be taken from the builders imagination. Doing so the instrument will be really your own.



Kantele and its parts, with wooden tuning pegs



Kantele and its parts, steel tuning pins

When making a kantele from selected set of materials, or just ordinary woodstore materials, a good choice is to carve the instrument from one piece of wood. Even then "ponsi" is a separate piece of wood. For the body we need a piece of wood 5 cm thick, 12-14 cm broad and 65-75 cm long. Take the measures from a plan or an existing instrument. Any soft wood will do, elder and poplar are most popular.

1. Saw first the outline of the kantele. Next, make the wedge shape of the body. Height of the body is some 3.5 - 4 cm at "ponsi" end and 5 cm at "lapa" end.

2. Hollow the box from down. It is good to drill large round holes at least at the corners of the area to be hollowed. If you have a good, flat end drill and a bench drilling machine with reliable stopper, most of the work can be done by them.

Set the drill stopper so, that it leaves some 5-7 mm of wood untouched when pressed to the bottom. **Make a trial with some scrap wood!** Then drill the hollow area with overlapping holes all over. Most of the wood can be taken out by this method.

Use chisels and knives to carve the inside clean and smooth. You can remove all the marks of the machinework, if you like. Final thickness of the top is 5-7 mm.

3. Saw the part under "lapa" away with a hand saw. If you are making a kantele with wooden pegs, make sure that there is enough space for the handles of the pegs. The final thickness for "lapa" should be 16 mm for the wooden pegs, 20-22 mm for the steel tuning pins.

4. Make the "ponsi" of extra piece of wood. Use the plan or the model to get the right shape. Straighten its bottom and make it fit to the narrow end of top. Glue on place.

5. Now is good time to smoothen the kantele to give it nice looks. Give it colour or not, and give it a coat of linseed oil, wax, or both.

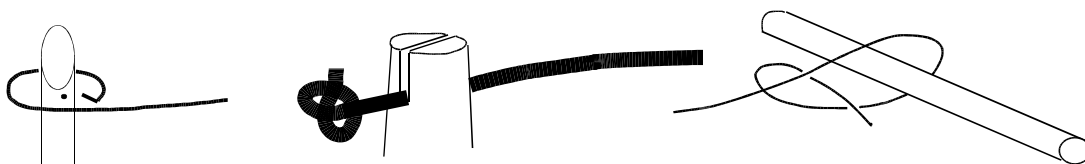
6. "Varras" is the steel rod where the strings will be knotted. It will be set to holes, that are drilled to the arms of "ponsi". Make varras perpendicular to the middle line of the kantele body. Varras is a steel rod 5 mm dia.

7. For the steel tuning pins, make holes with a drill. The drill should be 0,5 mm smaller than the pin. Mark the locations of the holes from the plan or the model.

For the wooden pegs drilling the holes is more complicated. Take the diameter of the drill from the narrow tip of the peg. Then, in best case you have a conical reamer to enlargen the hole to fit the conical peg. If a reamer is not available, try a round file and later sanding paper that is wrapped around a peg. Do this sensitive work little by little, not to spoil the hole too big.

The peg should come some 20 mm out from the top side, and the handle should be 2-3 mm from the underside of "lapa". Finally, the handles should be so short, that they do not touch the table when the instrument is put on table. For steel string, there should be a hole trough, about diameter 1 mm, at 15 mm distance from the top. For horsehair- and fibrecarbon strings, 5 mm deep cut at the narrow end of the peg is better. Make it with a saw.

8. Use steelwire, so called pianowire, of 0,35 mm dia for the strings. You need a tuning wrench to wind the pins and long tipped pliers to handle the wire. Tie the strings according to the picture:



Tying of the steel string on steel pin, horse-hair-string on a peg, and tying of any string to the "varras"

When using horsehair or fibrecarbon, take a bunch of 15-25 hairs with plenty of extra length. This extra is needed for the knots and tying. Make the hairs parallel and make a knot at one end. This knotted end will be tied around the "varras", in the same manner as the steel string, and pulled tight. Next, the hairs are combed parallel again and carefully to equal tension. When none of the hairs has loose, the bunch will be wound around from the free end. Keep the bunch tight so that knurls do not appear. When the bunch looks like knitting thread it is ready for the tuning peg.

Put the wound bunch to the slot that is at the tip of the peg. Ask a helping hand to keep the string tight so that it will not form knurls. Then, keep the string in its slot by one hand, and begin to wind the peg by the other.

There should be some 3-7 rounds around the peg or the pin.

9. The knot of the string around the varras is very important detail. Actually, it makes most of the speciality of the steel string kantele sound. It makes the sound colour fluctuate, a bit in a slow vibratolike manner. You can even regulate this fluctuation by making the knot looser or tighter. Diameter of the varras matters, too.

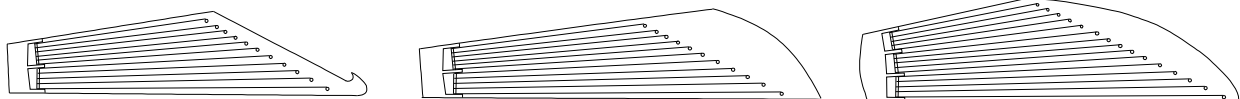
10. Put the rest of the strings in the same manner, tune the kantele and play!

Other small kanteles

The general measures are again based on tuning level and the string material. The kanteles with 10 to 15 strings are most commonly tuned so, that they include typical 5-string kantele that begins from the string nro 4 when counting from the lowest sounding string. The 3 strings, which sound lower than the 5-string-area, must be longer. Lowest, the A3-string should be 63-72 cm long. The higher strings should be about half length when compared to the tones one octave lower.

The criteria for proper string length is easy to find by trial: For any planned tuning level, the string is too long if it breaks. The string is too short, if it sounds bad and the pitch glides when playing loud.

Like with the 5-string kantele, get a good plan or make a copy of a good existing instrument.



11-string traditional model and 11- and 15-string modern lapakannel.

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