

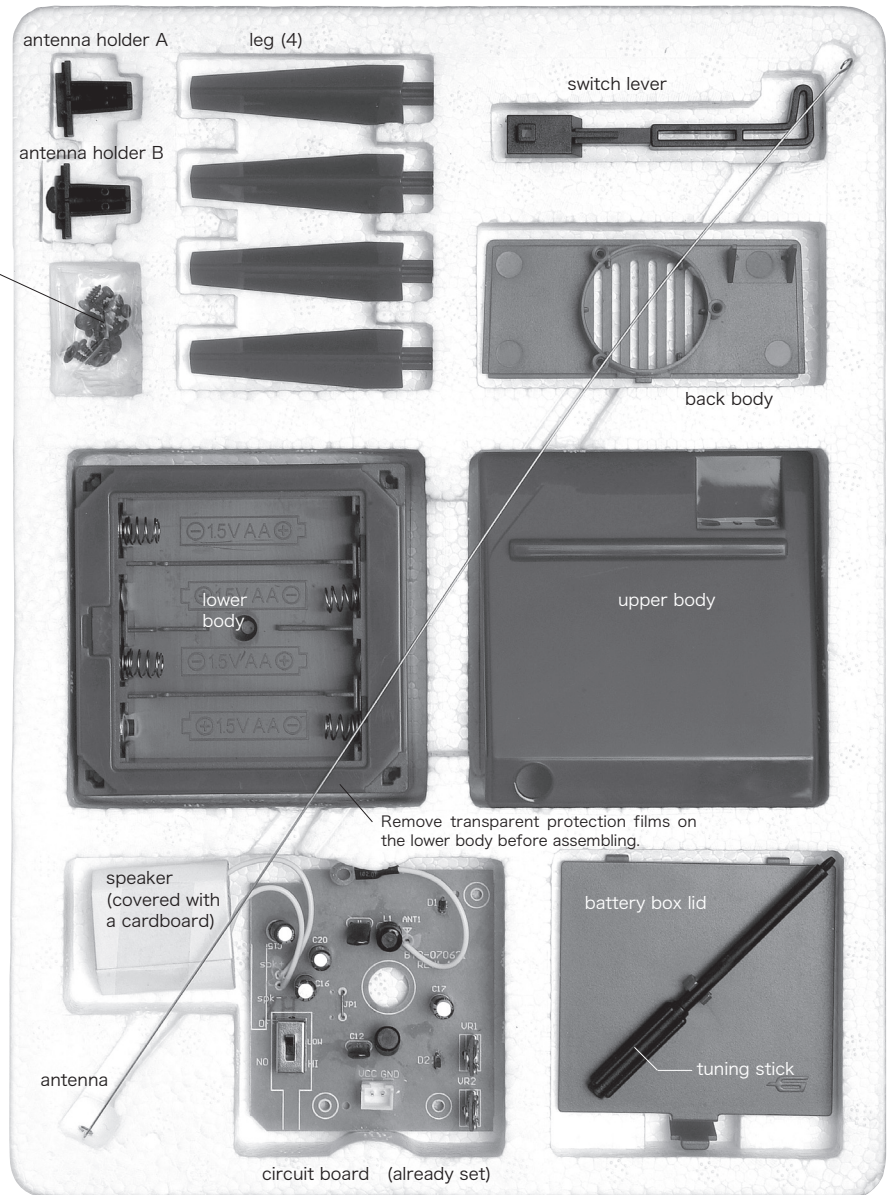
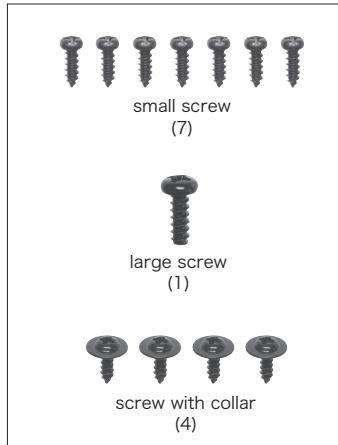
Instructions for Assembling and Operating

Термен mini

Термен = (Theremin in Russian)

Takes about 20 minutes for assembling
(The circuit board is already set.
No need of soldering.)

Parts in the Kit



Things you will need

Phillips screwdriver (#1) 4 newsize AA alkaline or manganese batteries
* Do not use nickel batteries, oxyride batteries, or rechargeable batteries such as nickel cadmium batteries to avoid the risk of dissolution of parts or ignition in case of a short circuit and other mistakes.

Note for screwing

The screws in the kit are the type of screws that carve a slot in the plastic when driven in. A #1 Philips screwdriver is the right size to use. When screwing, press a screwdriver to a screw vertically and turn firmly. The right proportion of the power is 70 % for press and 30% for turn. A precision screwdriver is difficult to turn, so use a small screwdriver that has a grip with a diameter of about 2cm.



actual size of a #1 screwdriver

⚠ CAUTION Please read the following instructions before assembling this kit

- Use caution when handling some pointed parts. Improper use may cause injury.
- To avoid the risk of suffocation, use caution not to swallow small parts such as screws.
- The point of the antenna is shaped like a hook. Use caution not to scratch your fingers with it and be injured. Also, use caution not to prick eyes with it.

Four size AA batteries are required. Improper use of the batteries may cause the generation of heat, explosions or leaks. The following precautions should be taken:

- Do not use rechargeable batteries such as nickel cadmium batteries, cadmium batteries, or oxyride batteries to avoid the risk of dissolution of parts or ignition in case of the short circuit and other mistakes.
- Ensure that the positive and negative terminals on the batteries are facing the right way.
- If liquid that leaked from batteries gets in an eye, rinse it well in a lot of water immediately and consult a doctor. When liquid stick to skin or clothes, wash it up with water immediately.
- Remove batteries after an experiment.
- ★ Please read the assembly instructions and cautions carefully before using the kit.
- ★ Instructions and cautions in this booklet should always be followed for safety. Do not use any materials that have become damaged or deformed while in use.
- ★ Remove batteries after using the kit and keep these away from babies and children.

The plastic materials used in this kit

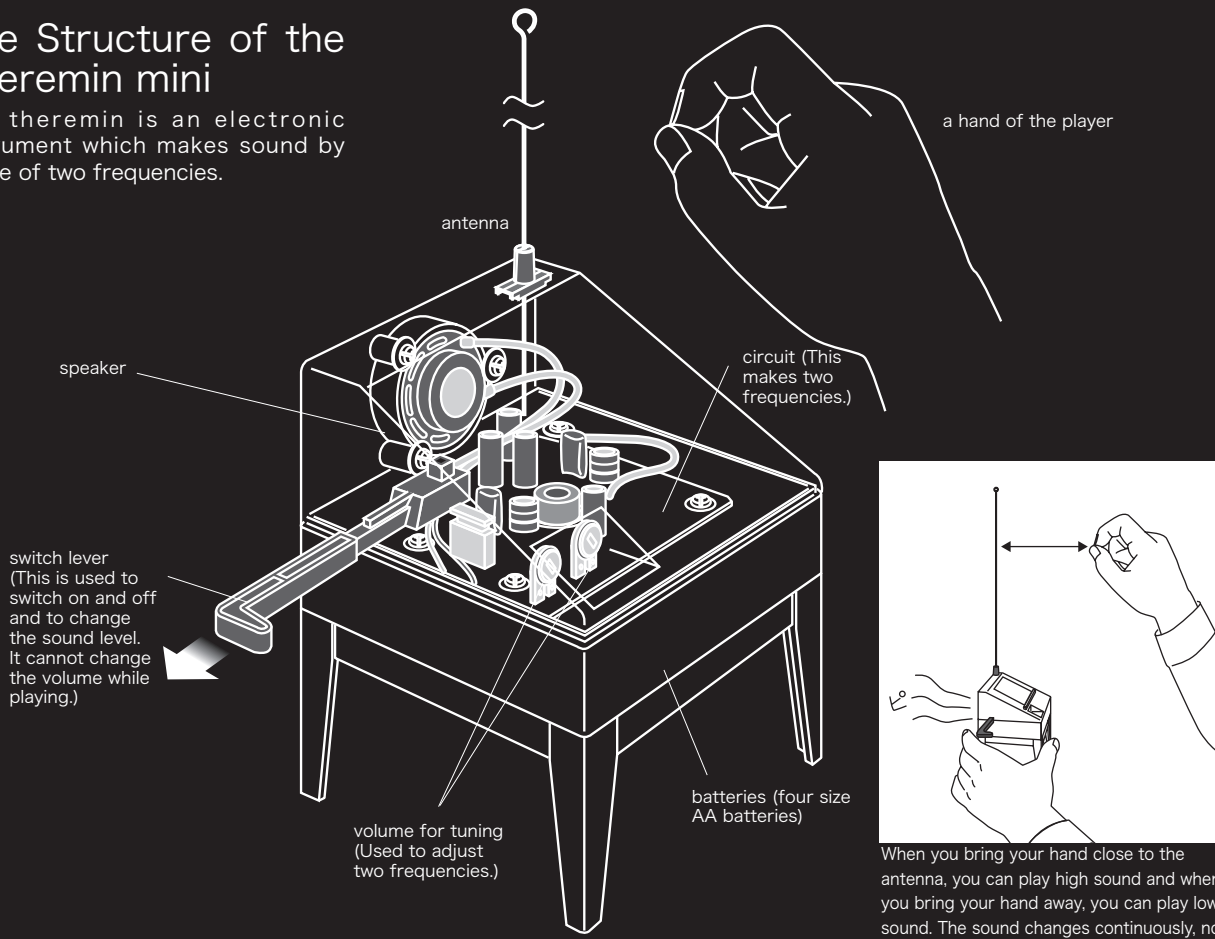
- body (rear upper lower), battery box lid, legs: ABS (red)
- antenna holder A and B, switch lever, tuning stick: POM (black)
- circuit board: phenol resin
- ☆ Vinyl chloride resin is used for the covers of the lead wires.

The metallic materials used in this kit

- antenna: stainless steel
- screw, metal contact: iron

The Structure of the Theremin mini

The theremin is an electronic instrument which makes sound by drone of two frequencies.



When you bring your hand close to the antenna, you can play high sound and when you bring your hand away, you can play low sound. The sound changes continuously, not stepwise.

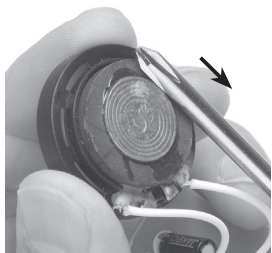
Assembling the Body

1 Attach the legs.

Put legs into the lower body and fix with small screws.

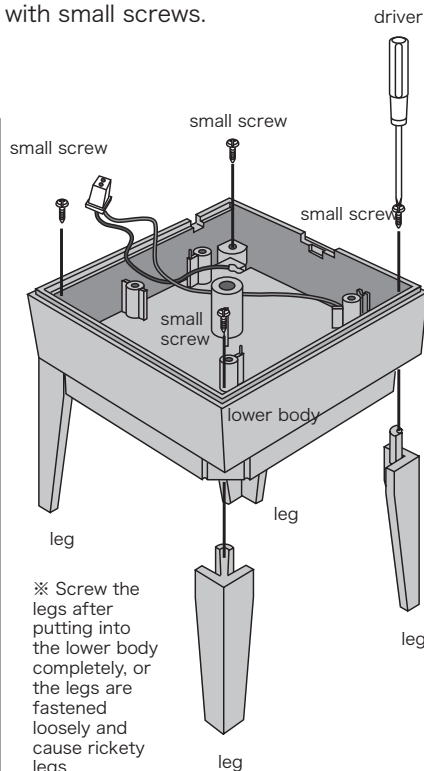
※ For easy handling, stick a screw to the magnetized tip of the driver.

How to magnetize the driver



A strong magnet is used in the speaker. Rub the tip of the driver against the magnet at the back of the speaker a couple of times to the same direction, and the tip of the driver is magnetized to stick the screws. Let's try!

※ Be careful of the wires of the speaker since it comes off easily. Use caution not to touch the transparent cone since it is dented easily.



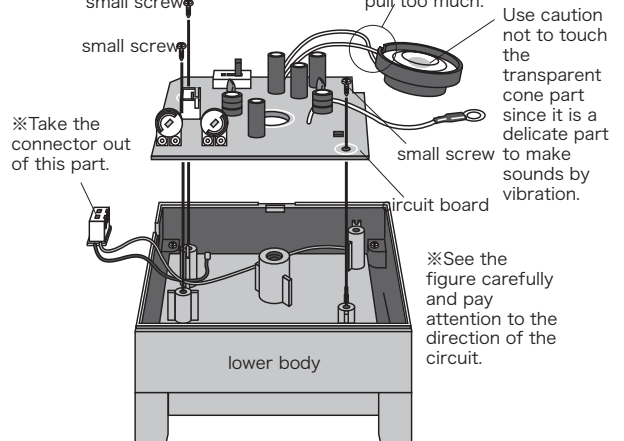
※ Screw the legs after putting into the lower body completely, or the legs are fastened loosely and cause rickety legs.

2 Install the circuit board.

1. Set the circuit board into the lower body and fix with small screws.

※ The wires of the speaker come off easily. Pay attention not to pull too much.

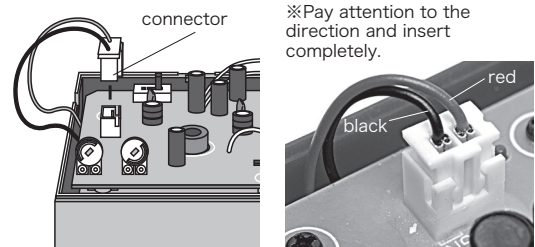
Use caution not to touch the transparent cone part since it is a delicate part to make sounds by vibration.



※ Take the connector out of this part.

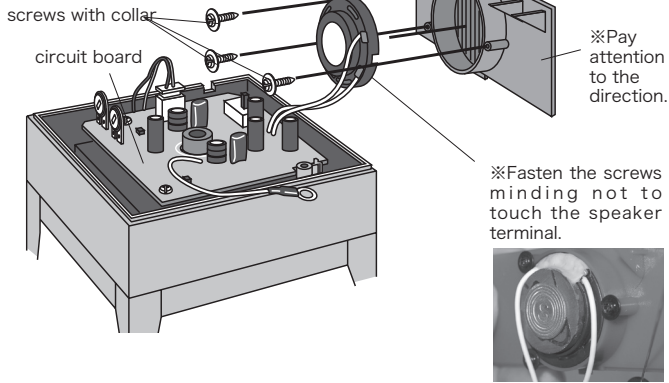
※ See the figure carefully and pay attention to the direction of the circuit.

2. Insert the connector of the battery box into the circuit board.

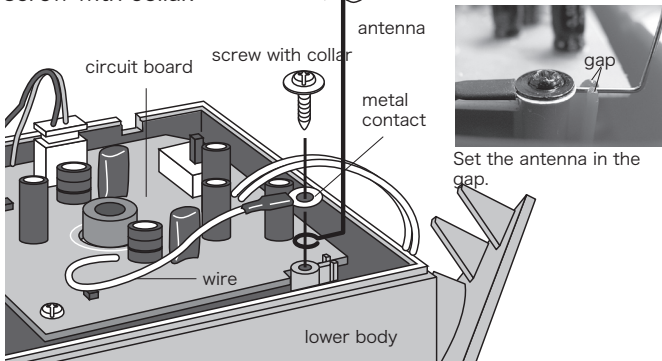


※ Pay attention to the direction and insert completely.

3. Fit the speaker in the back body and fix with screws with collar.



4. Fix the antenna and the metal contact to the lower body with a screw with collar.

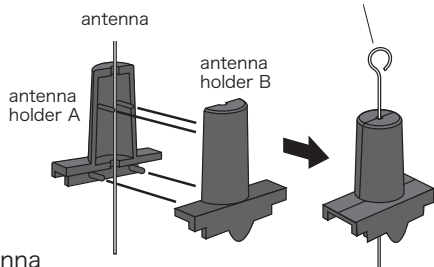


3 Attaching the upper

※Pay attention not to be injured with the hook at the tip of the antenna.

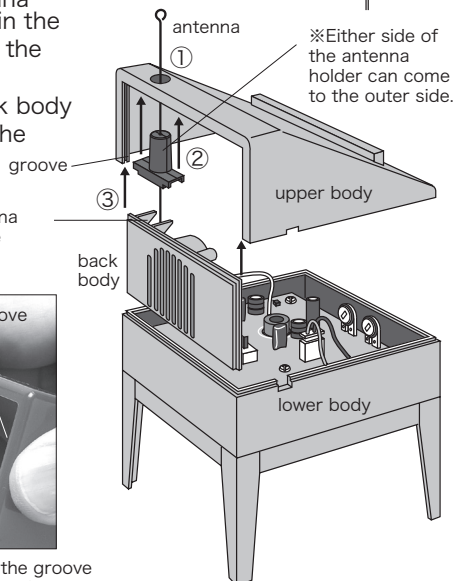
1. Attach the antenna holders to the antenna.

※Press and snap them in.



2. ①Put the antenna through the hole in the upper body. ②Put the antenna holder in. ③Slide the back body in the groove of the upper body.

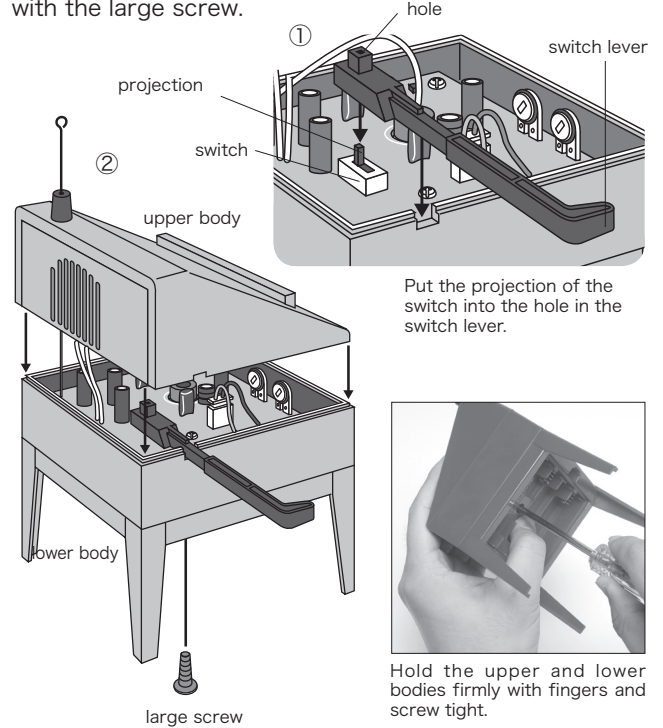
※Hold the antenna holder with these projections.



※Put the back body in the groove and slide to fit in completely.

3. ①Set the switch lever on the switch on the circuit board.

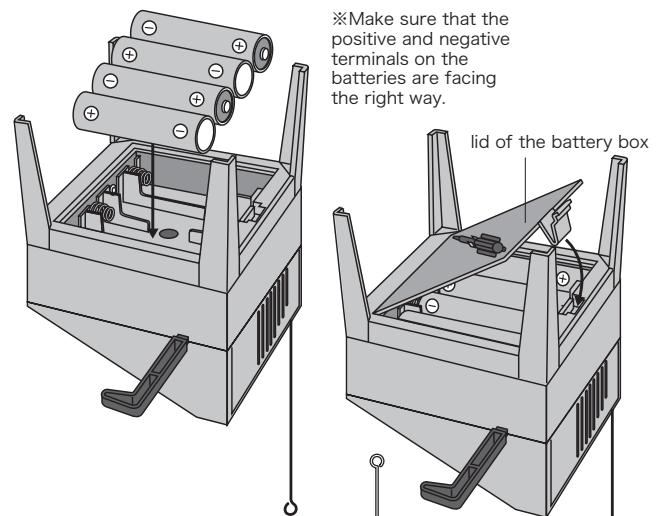
②A Put the upper body on the lower body and fix with the large screw.



Put the projection of the switch into the hole in the switch lever.

Hold the upper and lower bodies firmly with fingers and screw tight.

4. Set batteries in the battery box at the lower body and fit the lid on.



※Make sure that the positive and negative terminals on the batteries are facing the right way.

Cut a mini musical score on the p.67 and put it on.

※Pay attention not to bend the antenna.

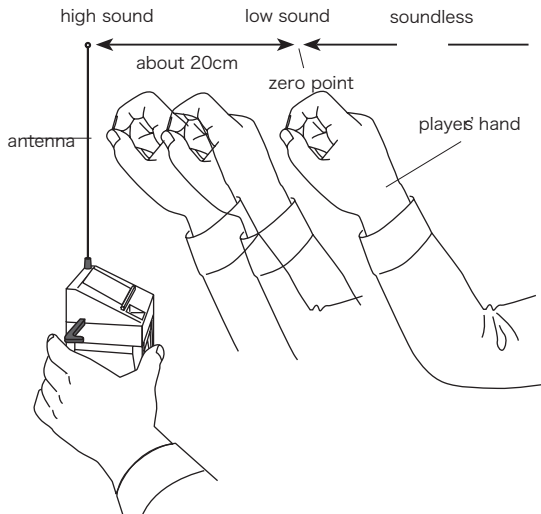
Remove the tuning stick from the lid.

Complete!

Tuning

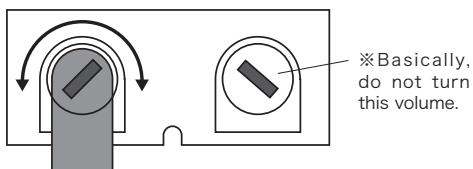
1 What is tuning?

A theremin is easily influenced by the circumstance including the player. So every time before playing a theremin, the player needs to tune the theremin for himself. Concretely speaking, tuning means to set the zero point that is, the condition that sound of the theremin becomes lower and lower to be soundless, to the normal position. The ideal zero point is the position about 20cm away from the antenna like the figure below but it is playable if the point goes forward about



Turn the volumes to tune

A theremin produces sound by the resonance of two frequencies. The two volumes on the body are to change each one of two frequencies. Turn the volumes with the tuning stick.



Hint on turning the tuning stick

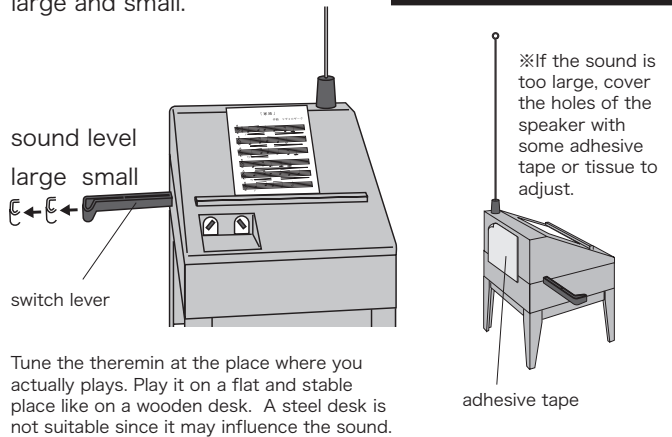
At the last stage of the fine tuning, don't really move the stick but just put power to the direction. Such subtlety is needed to fine tune.



2 Tuning

1. Pull out the switch lever from the body. It beeps. (Don't mind if it doesn't beep.) There are two sound levels, large and small.

Tuning is very fine work. Be patient to tune!

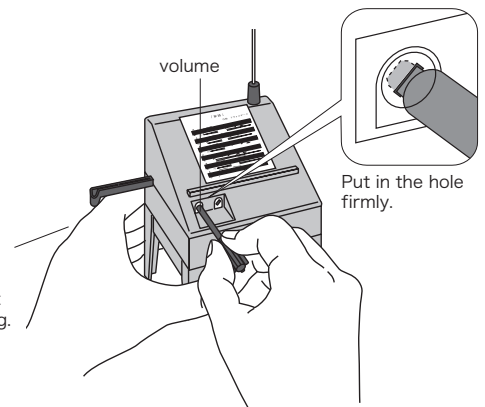


Tune the theremin at the place where you actually plays. Play it on a flat and stable place like on a wooden desk. A steel desk is not suitable since it may influence the sound.

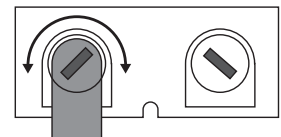
2. Turn the left volume with the tip of the tuning stick to tune. Don't move your left hand since it plays an important role in tuning.

※Tuning doesn't go well if there are something moving around the theremin. Keep these things off the body as far as possible.

※Put your forefinger on the uppermost place of the leg tuning stick



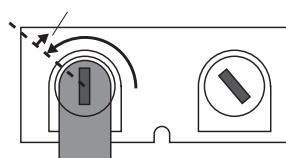
3. Turn large the left volume to right and left with the tuning stick and make sure the sound becomes high and low. Also make sure there is a soundless part.



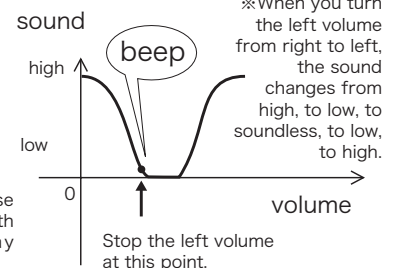
※In case there are no soundless parts, turn the right volume a little to right or left. Then turn the left volume again to make sure if there is a soundless part. If there are no soundless places yet, turn the right volume larger.

4. Turn the left volume to the rightmost and then turn to the left little by little. The sound becomes lower as shown in the right figure below. When it becomes soundless, reverse the volume a little. Stop at the point where the sound beeps faintly.

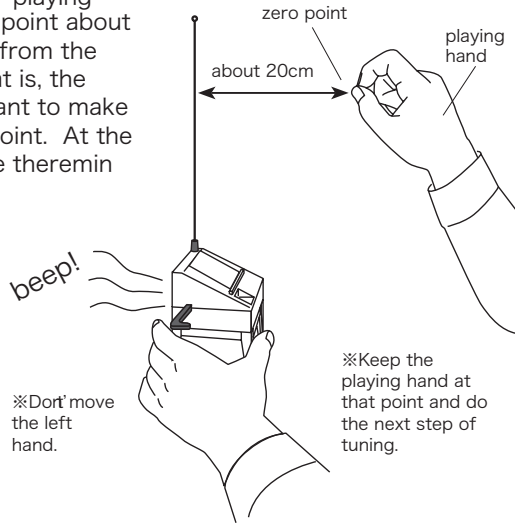
※Reverse a little bit.



※When the beep stops, reverse the volume a little and stop with the small beep sound. Pay attention not to reverse too far.



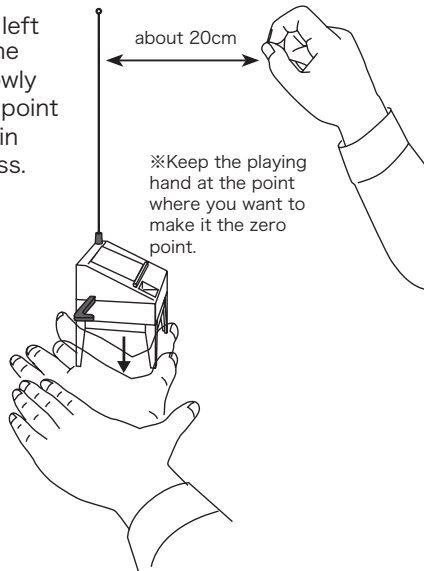
5. Bring your playing hand to the point about 20cm away from the antenna, that is, the point you want to make it the zero point. At the moment, the theremin still beeps.



※Don't move the left hand.

※Keep the playing hand at that point and do the next step of tuning.

6. Bring down the left hand that holds the root of the leg slowly and stop it at the point where the theremin becomes soundless.



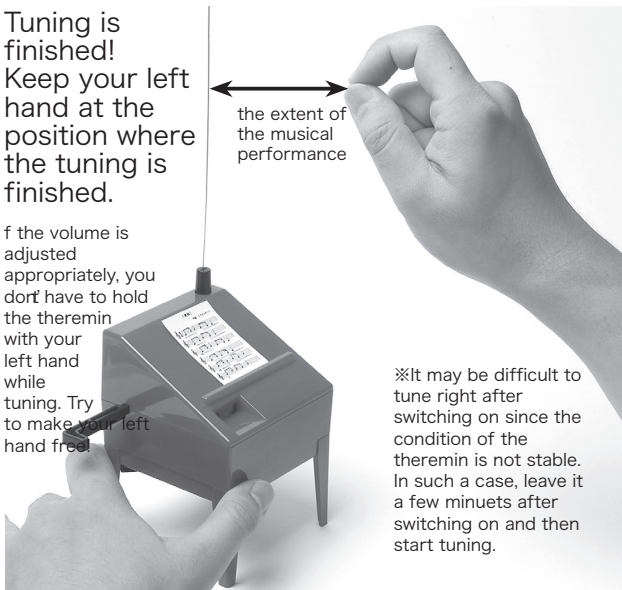
※In case the sound doesn't stop when you bring down your left hand,

If the sound doesn't stop though you bring your hand away, turn the left volume to the left a little bit and redo from 5. Use caution not to turn the volume too much.

Tuning is finished!

Tuning is finished! Keep your left hand at the position where the tuning is finished.

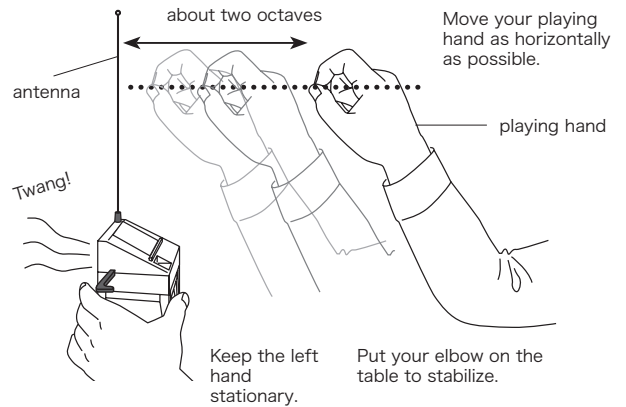
If the volume is adjusted appropriately, you don't have to hold the theremin with your left hand while tuning. Try to make your left hand free.



※It may be difficult to tune right after switching on since the condition of the theremin is not stable. In such a case, leave it a few minutes after switching on and then start tuning.

Let's Try to Play!

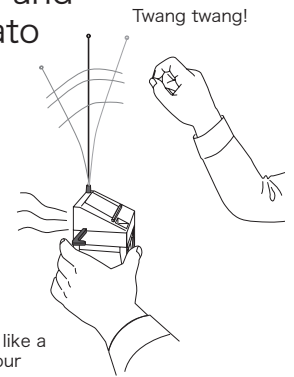
Move your right hand and play C, D, E, F, G, A, B, C with your left hand fixed.



The sound is continuous and it changes when the hand moves even if it is only 1mm move. Look for the scales patiently and carefully.

Swing the antenna and enjoy making vibrato sound.

Swing the antenna while playing. Then the sound becomes unstable and sounds like vibrato.



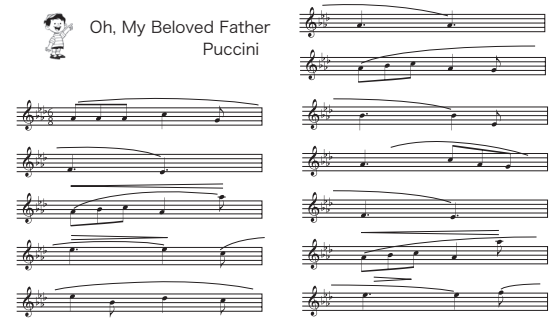
The point of the antenna is shaped like a hook. Use caution not to scratch your fingers with it and be injured.

Mini Scale

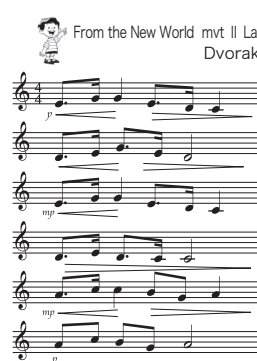
Cut these scale along the line and put these on the music stand of the theremin!



Oh, My Beloved Father
Puccini

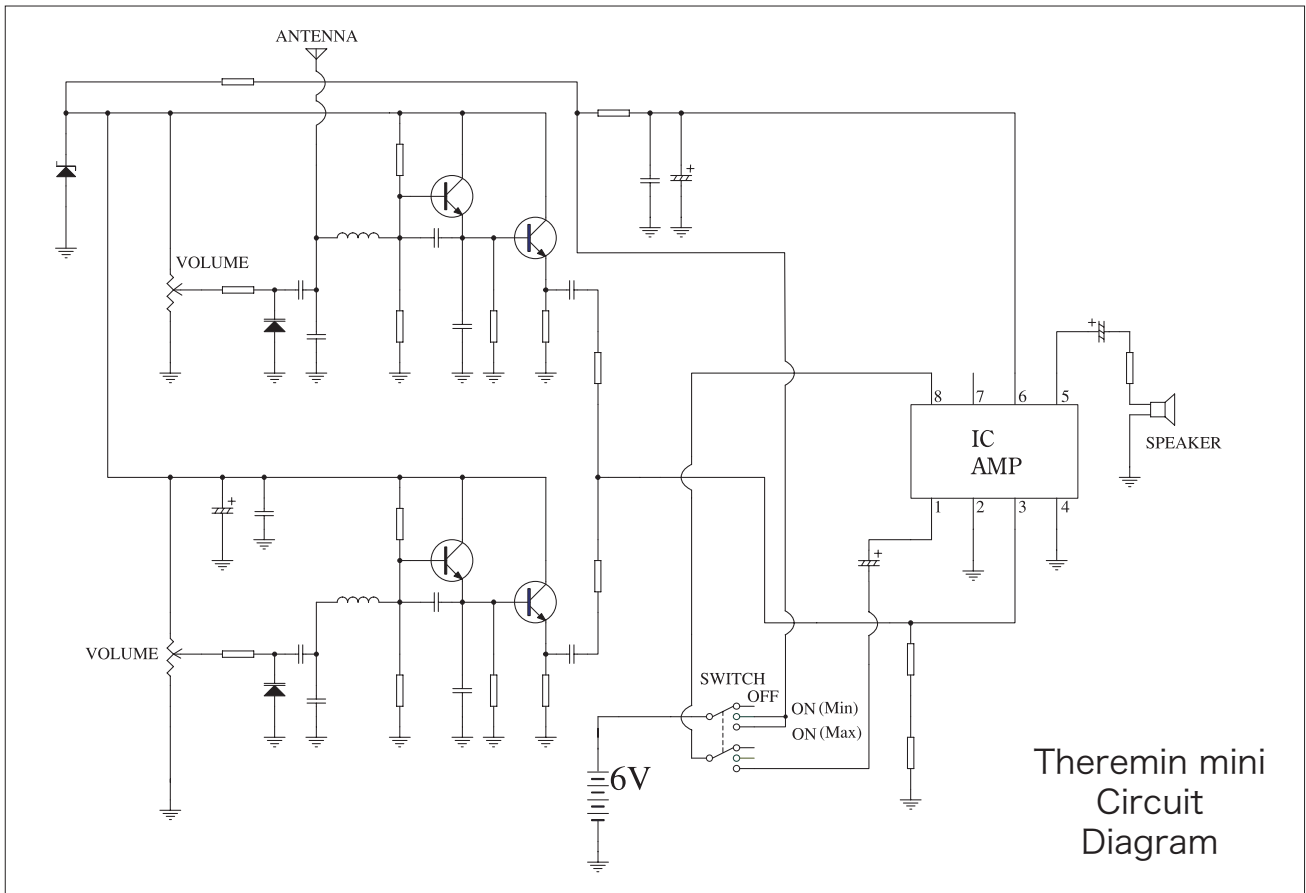


From the New World mvt II Largo
Dvorak



El Condor Pasa
Robles / Milchberg





Theremin mini
Circuit
Diagram

Q: My theremin doesn't make sound.

A: Check the assembly process.

Is the switch lever attached to the right place?

Are the antenna and wires attached correctly?

Is the connector of the battery box set in the circuit completely?

A: Check the cone of the speaker.

The transparent part of the speaker oscillates to make sound.

If it is pushed with fingers and dented, it may not make clear sound.

A: Check if the batteries are new.

If the batteries are dead, change these with new batteries. Be careful of the direction of the batteries.

A theremin consumes batteries as long as the switch is on even if it doesn't make sound. Turn off the switch when not in use and remove batteries.

A: Check the wires of the speaker

If the wires come off of the speaker, solder these up.

Q: I can't tune it well.

A: Tuning needs fine adjustment.

Turn the tuning stick more slightly. See XHint on turning the tuning stick at the lower left of the p.4 and tune patiently.

Q: The zero point doesn't become stable after tuning.

A: Check if there is something moving around the theremin.

If something that conducts electricity is moving around the theremin, the sound changes. Keep these things at a distance while tuning.

A: A theremin is easily influenced by temperature and humidity.

Leave the theremin a few minutes after switching on until it becomes stable, and then start tuning one more time.

