

- **Assembly (Please refer to the substance chart and our homepage correspondence page on page 6 for assembly).**

Solder is basically done from short parts. I will recommend solder to be done after it confirms it enough because it is not easy to remove when solder is done once as attention like being also in the preceding clause because I use the through-hole substrate.

1. The part list and parts that undertake assembly, and exist on the previous page are confirmed. Parts are soldered with the same sign on the substrate with the sign of the sign on the substrate that exists in the part list. Please do solder to parts with the direction of the above-mentioned chart especially carefully though it basically installs from short parts. The reason for the substrate used for this kit is that might have the specialized tool etc. when parts are detached by the substrate named two sided glass [suruho-ru] after solder. Please do the soldering work after it confirms it well.

2. **【 making of control substrate TS-ParameSP1】**

In this kit, IC1, 2, 3, 5, D6, 7, 9, it resists in the control substrate, and 61 parts of the capacitor that excludes part have already been mounted with the machine (They are the part lists and parts of * mark). IC socket of first of all short IC4 for parts and CPU(IC5), tact switch (S1), the OSC ceramic departure pendulum, and four LED (It is necessary to make a mistake in neither light emitting diode nor the color) are sequentially installed as the order of parts installed in the beginning.

Parts with the direction are noted. (Please refer to the above-mentioned part substance chart and the substrate substance chart also.)

3. The important person parts are installed at the end. DC connector (J2), half fixed resistance (R7), stereo Jack (J1), the electrolytic condenser (C2, 4, 12, and the direction are noted) for the power supply, and the inductor (L1-1, L1-2, and the direction are noted) are installed.

4. Please turn on the circuit enough after doing the watching check before it turns on power when completing it. Please immediately cut and, therefore, check the power supply by about 15mA(After it turns it off, measure it because LED of FET ON when it turns it on lights between a few seconds) when flowing more than this when you turn on the power supply if there is a tester.

5. **【 oscillation frequency adjustment of control substrate TS-ParameSP2】**

The oscillatory frequency(40.3KHz) is adjusted. The measuring instrument is unnecessary. The PIC microcomputer teaches the best frequency.

The screw that turns on power before the sound source is connected and is while pushing baton switch (S1 OSC Check) after half fixed resistance of R7 is turned with a small flat screwdriver for glasses etc. , and it stops it in the place where green LED of "Good" lights. When "Over" LED lights when the frequency is high, and the frequency is low, "Under" LED lights and it leads. Because "Ticking" and the clutch work when turning to one direction too much, half fixed resistance is turned oppositely at that time and returned.

This adjustment cannot be adjusted accurately when doing while inputting the sound source, and silent do, please.

Please confirm "Good" sometimes pushing the switch though there is no necessity almost adjusted thereafter when adjusting it once.

When the adjustment is completed, it turns off power.

Attention: Please energize before adjusting the frequency after assembly of the control substrate and never connect the speaker substrate. There is a thing that the supersonic wave departure pendulum of the speaker substrate breaks.

6. 【 making of speaker substrate 】

50 supersonic wave departure pendulums are installed in the speaker substrate. Please note that there is a polarity in the supersonic wave departure pendulum (A blue or white mark's having adhered becomes "+") according to the print of the substrate. Because the degree of adhesion of the departure pendulum is raised, the substrate pattern is precise. The styrene foam is paved under the substrate before solder is done, and please upset each substrate after it puts it, and solder a flat board after removing the styrene foam ..including the difference it as for all the departure pendulums...

The lead of the departure pendulum (about 10mm) holds heat radiation concurrently and use it as it is without cutting it, please.

Attention: Please energize before adjusting the frequency after assembly of the control substrate and never connect the speaker substrate. There is a thing that the supersonic wave departure pendulum of the speaker substrate breaks.

7. The speaker substrate and the control substrate are connected with the lead wire (Thickish recommends it a little). "+" "-" is noted.

8. When the connection of the control substrate and the speaker substrate ends, the sound source is connected with the sound source input, and it turns on power. Attention: Please raise the volume from the state squeezed enough to the volume of the sound source gradually.

It is confirmed that the sound is emitted from the speaker substrate. Please confirm assembly when you cannot confirm the sound. It doesn't have the limitation circuit of an excessive input, and adjust the input noting that the output is not distorted, please.

Attention: Please deteriorate the supersonic wave departure pendulum, and note becoming the cause of damage about an excessive input.

<It assembles above, and the adjustment is completed >

- Handling notes of supersonic wave departure pendulum (..reading.. << importance >> without fail)

1. Thing that speaker substrate is not connected with power supply entered control substrate There is a thing that the supersonic wave departure pendulum breaks.

2. There is a polarity in the supersonic wave departure pendulum like the above-mentioned. Please install the polarity noting no mistake. The phase of the supersonic wave with the supersonic wave departure pendulum of the polarity opposite to a correct polarity reverses when installing it by mistake, the acoustic pressure will be denied each other, and the acoustic pressure lowered.

3. Please arrange and install height in the installation of the supersonic wave departure pendulum as much as possible. This also lowers the acoustic pressure by the gap of the phase of the supersonic wave. The wavelength of supersonic wave 40KHz is 8.1mm.

4. The sound source input after the power supply is turned on must not close the speaker side of the supersonic wave departure pendulum a certain relations of [shini] ..it is... It is because the load hangs in the supersonic wave departure pendulum and there is fear to advance deterioration because the

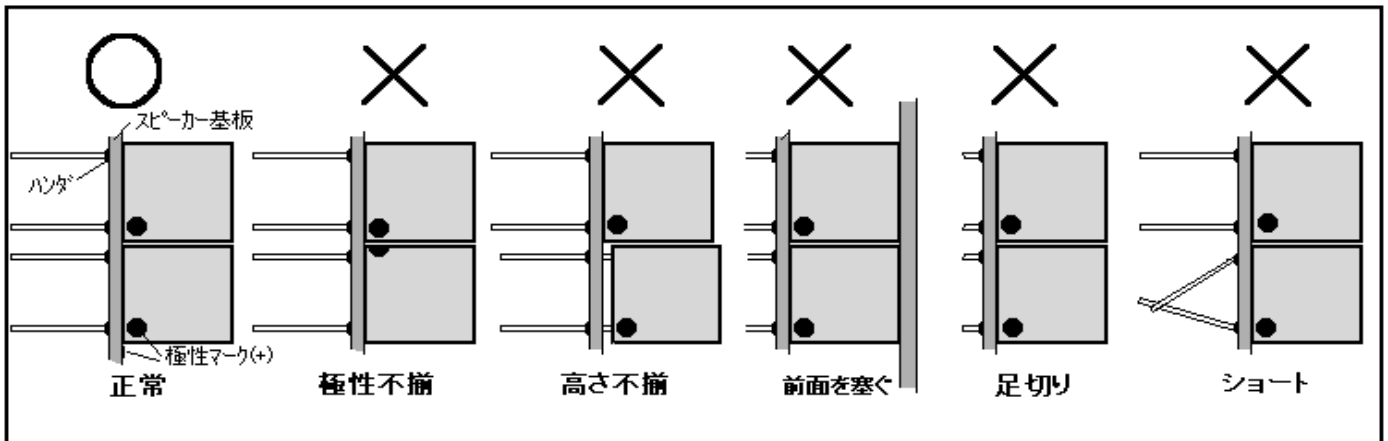
supersonic wave of a considerable acoustic pressure has gone out though the supersonic wave career has stopped when silent continues for five seconds. It differs from a usual speaker, and the supersonic wave is almost absorbed and doesn't pass in front of the departure pendulum when closing it on the saran net etc. I will recommend an ox-eyed wire net etc.

5. Please do not cut the foot of extra length of the supersonic wave departure pendulum when you install the supersonic wave departure pendulum like the above-mentioned. Because heat is generated when the ultrasound transducer operates continuously, a long foot holds heat radiation concurrently.
6. There must not be short-circuit of the foot of '+' of the supersonic wave departure pendulum. This foot is connected 50 pieces all in parallel.

FET that drives the supersonic wave departure pendulum is damaged when even 1 piece short-circuited.

After assembly, it is necessary to devise short prevention to the other side of the speaker substrate.

【 note illustration to speaker substrate of ultrasound transducer when mounting 】



normal Pol. irregular Height irregular front close foot cut footshort

Please guard because it is a matter that becomes the cause of the trouble of the acoustic pressure (volume) and the board.

- About the frequency trimming of this kit

The supersonic wave departure pendulum of this kit use is \pm around 40.0KHz It has the resonance point in 1KHz. In this kit, 40.3KHz \pm 0.1KHz oscillates and is oscillated in addition to the supersonic wave departure pendulum. The oscillatory frequency can be easily adjusted by the frequency counter function of R7 (potentiometer) on the substrate and the PIC microcomputer. When it turns on power and the baton switch of S1 "OSC Check" on the substrate is pushed, LED that either "Under" or "Over" is red is a point. Light on. Then, because green LED of "Good" lit in the place that was when the potentiometer was turned while pushing the baton switch, it was suitable for the frequency in the stipulated range (Figure 1).