

Equipment Arrangement

Place the amplifier on the bottom, the capacitor cabinet next, and the frequency generator on the very top.

Operating Instructions – Instek SFG 1003

Warning: Do not allow children to have access to this device while it is in operation or otherwise. The voltage within the cabinet can reach high levels and should be considered dangerous.

1. Before plugging in the amplifier and the frequency generator into an electric outlet, make sure that:
 - A. The amplifier ON/OFF switch is OFF and the frequency generator ON/OFF switch is OFF.
 - B. **The amplitude, or "AMPL" knob on frequency generator is turned fully counterclockwise to "MIN" position. THIS IS CRITICAL!!!**
 - C. All 16 (A-P) toggle switches are OFF (down position).
2. Plug in the amplifier, and the frequency generator into a 120V outlet, or power strip. Plug the wires to the coil into the red and black binding post sockets on the right side of the of the cabinet, do not unplug them or any wires from the generator or the amplifier while either is powered on. Move the coil **at least 6 feet (2 m) away from any sizable metal objects and all other electronic devices including the amplifier and frequency generator.** The magnetic field made by the coil can damage electronic equipment by inducing electric current to flow through circuits.
3. Use the **Switch Calculator program** on the supplied CD to determine the toggle switches to turn on (in the up position) for the frequency you want. Copy the Switch Calculator program from the CD and paste it in your Documents. Open the switch calculator folder. Right click on the icon with the three colorful blocks and create a shortcut. Place it on your desktop. Open the Switch Calculator program by clicking on the shortcut. In the "Desire Freq" box type in the frequency you want, and use your mouse arrow to click the "calculate" button, or hit Tab then Enter. The toggle switches you will need to flip up are displayed close to the bottom in the box "Switches to turn ON". The switches are given in two formats; arranged like the switches on the cabinet, and also in rows of letters. Set the correct toggle switches on the capacitor cabinet to the "on" or up position.
4. Do the following in this order:
 - A. **Frequency generator** – Turn on power to frequency generator. Enter the frequency you want to run. Use the "Wave button to choose the sine curve icon on the display. This icon looks like a sideways S (looks like~). Enter the desired frequency, push "SHIFT" button and "0" to keep the frequency in memory. Flip up the correct toggle switches. Push "OUTPUT ON" button. The frequency you set must match the switches you turn on or the coil machine will not operate. On the amplifier, turn up the gain knobs to maximum.

B. Always carefully and VERY SLOWLY turn the "AMPL" knob on the frequency generator clockwise until the panel meter shows 11 amperes with a QSC 2450a amplifier, since the factory set the shut off switch at 11 amps. The amperage increases quickly so watch the meter. **DO NOT EXCEED 11 amps! Be sure to view the meter from a direction perpendicular to the face of the meter.** (Below frequencies of 150 Hz and above 2000 Hz, the meter might not be able to reach 11 amps so operate with the amperage you can get.

Turning up the "AMPL" knob quickly is equivalent to large voltages (push of the current) into the capacitors, so turn the knob in a gradual manner and not in an abrupt jump. TURNING THE AMPL KNOB UP RAPIDLY IS EQUIVALENT TO A LIGHTNING STRIKE FOR THE CAPACITORS – THEY WILL FAIL BY BURSTING AND SMOKING.
5. The capacitor cabinet is now operating. For lower frequencies the coil hums loudly. If your hearing is sensitive you may want to use earplugs when the capacitor cabinet is turned on.
6. The amplifier may turn on and off during operation if you are operating, since it needs to cool but if you operate the machine at 11 amps you will very likely never have the amp do this. This is a built-in overheating protection system but it was not intended that the amp stop frequently, just occasionally to avoid overheating. You will also hear the built-in cooling fan of the amplifier run faster after a few minutes of operation. You can reduce heating of

the amp and the coil by not exceeding 11 amps on the amperes meter. A good indicator of not overloading the system is if the fan in the amplifier begins the higher speed (it is louder) at 3 to 4 minutes. It is normal for coils to get warm or hot but if you smell hot plastic fumes then you should allow the coil to cool before proceeding.

Twenty nine minutes is the maximum recommended use time until the coil has cooled.

7. BEFORE CHANGING FREQUENCIES

- A. Turn the "AMPL" knob (on function/frequency generator) all the way to the left (counterclockwise) to "Min" setting and the "OUTPUT ON" button off.
- B. Turn the two "Gain" knobs on the amplifier all the way counterclockwise.
- C. NEVER FLIP ANY CAPACITOR SWITCHES until you have completed A and B.
- D. Turn all toggle switches off.
- E. Enter the frequency into the Instek frequency generator.
- F. Then set the correct switches for the new frequency.

8. Startup procedure

- A. Install black cord on right receptacle of the frequency generator (MAIN 50Ω)
- B. Turn on power to frequency generator
- C. Enter desired frequency, push "SHIFT" button and "0" to keep frequency in memory
- D. Flip up the correct toggle switches
- E. Push "OUTPUT ON" button
- F. Turn on power to the amplifier
- G. On the amplifier, **turn gain knobs together to maximum slowly**
- H. The amperes gauge on the switch box will rise to 4-6 amps
- I. **Very slowly** turn the "AMPL" knob to the right until the amperes gauge reads 11 amperes (turn very slowly to prevent a power surge to the capacitors in the switch box).

9. Shut down procedure:

- A. On the Frequency Generator turn the "AMPL" knob fully counterclockwise
- B. Turn both amplifier gain knobs fully counterclockwise
- C. Push the "OUTPUT ON" so you see no green light
- D. Turn off Frequency Generator.
- E. Only turn off the Amplifier if the fan is blowing cool air.

10. In thunder and lightning storm season it is good practice to use a quality surge protector and unplug it from the wall outlet during storms.

Operating Instructions – Instek SFG 2004

Equipment Arrangement

Place the amplifier on the bottom, the switch cabinet next, and the frequency generator on the very top.

Operating Instructions

Warning: Do not allow children to have access to this device while it is in operation or otherwise. The voltage within the cabinet can reach high levels and should be considered dangerous.

1. Before plugging in the amplifier and the frequency generator into an electric outlet, make sure that:

- the amplifier ON/OFF switch is OFF
- the frequency generator ON/OFF switch is OFF
- the amplitude, or "AMPL" knob on frequency generator is turned fully counterclockwise
- all 16 capacitor switches are OFF

2. Plug in the amplifier, and the frequency generator into a 120V outlet, or power strip. Plug the coil wire plugs into the binding post sockets on the right side of the cabinet, do not unplug them from the generator or the amplifier while either is powered on. Move the coil at least 6 feet (2 m) away from all other electronic devices, including the amplifier and frequency generator. The magnetic field made by the coil can damage electronic equipment by inducing electric current to flow through circuits.

3. Do the following in this order: (you can reverse A and B if you choose)

A. Frequency generator – push “ON” button on the bottom left of the front. Push the number buttons for the frequency you want to run – then push the gray button that has Hz on it (it’s just to the right of the number buttons). The MHz and KHz buttons are never used with a coil machine. Use the “Wave button to choose the sine curve icon on the display. This icon looks like a sideways S (looks like ~). All of these settings are automatically saved when the frequency generator is turned off. The frequency you set must match the switches you turn on or the coil machine will not operate.

B. Use the Switch Calculator program on the supplied CD to determine the toggle switches to turn on (in the up position) for the frequency you want. Copy the Switch Calculator program from the CD and paste it in your Documents. Open the switch calculator folder. Right click on the icon with the three colorful blocks and create a shortcut. Place it on your desktop. Open the Switch Calculator program by clicking on the shortcut. In the “Desire Freq” box type in the frequency you want, and use your mouse arrow to click the “calculate” button, or hit Tab then Enter. The toggle switches you will need to flip up are displayed close to the bottom in the box “Switches to turn ON”. The switches are given in two formats; arranged like the switches on the cabinet, and also in rows of letters. Set the correct toggle switches on the Doug coil machine to the “on” position.

C. amplifier - press the rocker switch to the on position. A fan will start inside the amplifier. Turn both gain knobs on the amplifier **ALL THE WAY** clockwise.

D. Carefully and **SLOWLY** turn the “**AMPL**” knob on the frequency generator clockwise

4. Adjust settings on the frequency generator: To set the frequency, enter the number in using the numeric keypad, then press the Hertz button. Make sure the wave chosen is the sine wave (looks like ~). You can press the “Shift” button and the “8” button to subtract 20 decibels from the current going into the amplifier. This will allow you to fine-tune the voltage; however you will not get enough amplitude at that setting for higher frequencies. You would press the shift and 8 button again, to turn off the -20. Be careful when turning it off, that you ALWAYS have the amplitude turned down. If you have not turned it down prior, you may wind up with a voltage surge through the Doug coil machine, and burn out your capacitors.

5. Set the toggle switches on the Doug coil machine for the frequency you want, according to the switch calculator.

6. Turn both gain knobs on the amplifier all the way clockwise.

7. VERY, VERY SLOWLY TURN THE AMPLITUDE, or "AMPL" knob on frequency generator clockwise (about 1/10 of a turn or less) until the ac amperes gauge shows 13 amps with a QSC RMX 1850HD amplifier or 11 amps with a QSC RMX 2450a amplifier. You could damage the amplifier if you are not careful with this step.

8. If the ac amperes gauge reading does not increase , turn the "AMPL" knob to "Min" and go through the shutoff procedure below. Note that for frequencies below 220 Hz and above 2000 Hz, the current might not be able to reach 11 or 13 amps depending on your amplifier model, even with the signal generator "AMPL" (amplitude) knob all the way on generator by pushing "Shift" and "8" which will add current to the amplifier. If the red clip lights turn red on the amplifier, you should immediately turn down the amplitude on the frequency generator. Regardless what the voltage is, you should never operate the machine with the amplifier lights red.

9. If you have adjusted your switches, frequency, and amplitude, correctly, you will hear a hum, and your machine is operating. If your hearing is sensitive you may want to use earplugs when the coil machine is turned on.

10. BEFORE CHANGING FREQUENCIES

- Turn the "AMPL" knob (on signal/frequency generator) all the way to the left (counterclockwise) to "Min" setting.
- Turn the two "Gain" knobs on the amplifier all the way to the left (counterclockwise)
- NEVER FLIP ANY CAPACITOR SWITCHES until you have completed the two steps above.

11. Continue from step 4 for a new frequency.

12. To turn machine OFF: turn "AMPL" knob fully counterclockwise and turn both amplifier gain knobs fully counterclockwise turn off Frequency Generator, Amplifier – if it is hot to warm, let it cool before turning off.