

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 of the cabinet

3. Turn on the following components *in this order*:

- turn the large central dial on the multimeter to point the dial marker to V~ or V_{AC}. If number ranges are given, we need to measure 1.5 volts of alternating current. Be careful to NOT choose V --- or, V_{DC}. This is the symbol for Direct (DC) Current and should not be used to measure voltage on the doug coil machine. If your meter has only a few V settings choose the closest one to 1.5 volts. Sometimes 200V is the closest one given. Some meters are auto ranging and choose the range automatically.
- frequency generator - push "ON" button on the bottom left of the front. (the multimeter may register a low reading at this point
- amplifier - press the switch to the on position. A fan will start inside the amplifier.

4. Adjust settings on the frequency generator: To set the frequency, punch 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 switches on the doug coil 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 aplitude, or "AMPL" knob on *frequency generator* clockwise (about 1/10 of a turn or less) until the multimeter shows 1.5 volts. The voltage increases fast so watch the multimeter. The -20 db setting will allow more turn and less change on the voltage meter, allowing fine-tuning. DO NOT EXCEED 1.5 volts!

You could damage the amplifier if you are not careful with this step.

8. If the multimeter reading does not increase , turn the "AMPL" knob to "Min" and go through the shutoff procedure below. Note that for frequencies below 150 Hz and above 2000 Hz, the current

might not be able to reach 1.5v, even with the signal generator "AMPL" (amplitude) knob all the way on. If the voltmeter does not reach 1.5v, you can turn off the -20db button on the frequency 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. It is normal for the Amplifier to turn on and off during operation since it can heat up. This is a built-in overheating protection system. You will also hear the built-in cooling fan of the amplifier run faster after a few minutes of operation. When the amplifier turns off, the multimeter will show a reading very close to 0v. After some cooling, the amplifier will turn back on automatically. If you are timing the use of the machine, only the time when the amplifier is on counts. If the amplifier is off the coil has no current running through it and has no magnetic field.

11. BEFORE CHANGING FREQUENCIES

- Turn "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

12. Continue from step 4 for a new frequency

13. 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.