



Future Retro 777 Tuning Procedure

The 777 contains five internal trimmers. One to calibrate the V/Oct DAC, and four that are used to set the scaling and initial frequency for the oscillators. These trimmers are calibrated at the factory, but may need to be adjusted over time.

You will need to remove the 777's front panel to access these internal trimmers. **Please turn the unit's power off while removing and reinstalling the unit's front panel.** This procedure includes removing the front panel knobs, by gently pulling them off, and removing the 7 hex nuts around the toggle switches. You will also need to remove the four black screws at the bottom front of the unit, as well as the four black screws on the rear of the unit. Once this is done the front panel can be removed by carefully pulling the chassis panel up.

Turn the unit on and let it warm up for approximately 20 minutes before attempting to retune the oscillators.

First you need to make sure the DAC is calibrated to produce 1 V/Oct. Use a short ¼" cable to connect the CV out of the 777 to a digital voltmeter (shied connects to the black lead, tip connects to the red lead of your voltmeter).

Play C1 in the 777, and check the CV out voltage reading. Then play C6 in the 777 and adjust the blue trimmer (located on the right-hand side of the switch board) so that note C6 produces a voltage which is exactly +5v higher than note C1. Go back and forth between playing C1 and C6 a couple times to make sure the difference is +5v between the two. Once this is done, you're ready to tune the oscillators.

There are several methods you can use to tune the 777's oscillators. The best method will be to use an oscilloscope or music tuner. If you don't have access to these tools you can attempt to tune the instrument by ear, or compare the oscillator tuning to another instrument.

If you are using an oscilloscope, locate the big blue colored capacitor (by the power switch) and connect the ground lead of your probe to this capacitor's lead nearest the edge of the board. You can connect the main lead of your probe to the left-most pin of the prefilter gain control pot. This allows you to monitor the oscillator's raw waveforms simply by turning their level up.

If you are using a music tuner, simply connect the output of the 777 into the tuner.

To start with, set all the front panel controls to their left most position.

Set oscillator A and B frequency controls to their mid position, turn the filter's cutoff control to maximum, and make sure the volume control is up if you wish to monitor the sound as you are tuning.

Locate the four yellow trim pots on the left-hand side of the analog board (next to the oscillator frequency controls). These trimmers are labeled R1, R2, R5, and R6. These are the trimmers you will be adjusting.

Create a simple two note sequence containing the notes C1 and C2. *Note: you may want to slow the sequencer's tempo down while performing the tuning procedure.*

Start with tuning oscillator A. You will need to turn oscillator A's volume control up. As the sequence now plays C1 and C2 adjust trimmer R5 for a 2:1 scaling of frequency. Once this is done, change the sequence to play C2 and C3. Continue to adjust R5 for a 4:1 scaling of frequency. Change the sequence once again to play C2 and C4. Continue to adjust R5 for a 8:1 scaling of frequency. Change the sequence once more to play C2 and C5, and adjust R5 for a 16:1 scaling of frequency. And finally, change the sequence once to play C2 and C6, and adjust R5 for a 32:1 scaling of frequency. Once this is done the scaling has been set for oscillator A. You can now play a single tone in the sequencer and adjust R6 until the oscillator produces the correct pitch for the note the sequencer is set to play. But make sure the oscillator Frequency controls are set to their absolute mid position.

You can use this same procedure to tune oscillator B. Make sure to turn down oscillator A's volume and turn oscillator B's volume up so you can monitor the sound as you tune. While tuning oscillator B you will use trimmer R1 to set the oscillator scaling, and R2 to set the initial frequency of the oscillator.

Once this is done you can reinstall the unit's front panel on the unit, along with the screws, nuts, and knobs.

If you have any questions about the tuning procedure, please feel free to contact us for further assistance.