PRO-1

Analog Synthesizer with Dual VCOs,
3 Simultaneous Waveforms, 4-Pole VCF,
Extensive Modulation Matrix, 16-Voice
Poly Chain and Eurorack Format

User Support Document

Introduction

The unit is carefully calibrated at the factory. The performance may change over time or due to environmental changes, and the following recalibration procedures can be used to bring it back to its factory settings. If you do not feel comfortable doing these calibrations, then we recommend they are done by an experienced audio service technician. This is especially true for those units that need to be opened to gain access to voltage test points and calibration potentiometers.

CAUTION: Incorrect calibration or damage to the delicate adjustment potentiometers may lead to the unit becoming inoperable.

Note: Although re-calibration will not invalidate the warranty, any damage caused during re-calibration may invalidate the warranty.

Equipment required

1. Small insulated trimmer screwdriver.
2. Small Phillips screwdriver.
3. A flat sheet of cardboard or another insulator as wide as the PRO 1. (This will help prevent damage to the top panel when it is inverted and resting on the bottom chassis).
4. Digital DC Voltmeter with a scale that can display accurately to 0.001 V.
5. Guitar tuner
6. An external MIDI keyboard of at least 6 octaves including A1 and A7.
7. MIDI cable.
8. Pair of headphones or a sound system to monitor the main output.

Important Note:

Leave the PRO 1 turned on for approximately 30 minutes. This will allow the circuits time to warm up and the components and performance to stabilize with temperature. Without this warm-up time, the calibrations will be inaccurate.

Preparation

Follow all steps in the order in which they are presented.

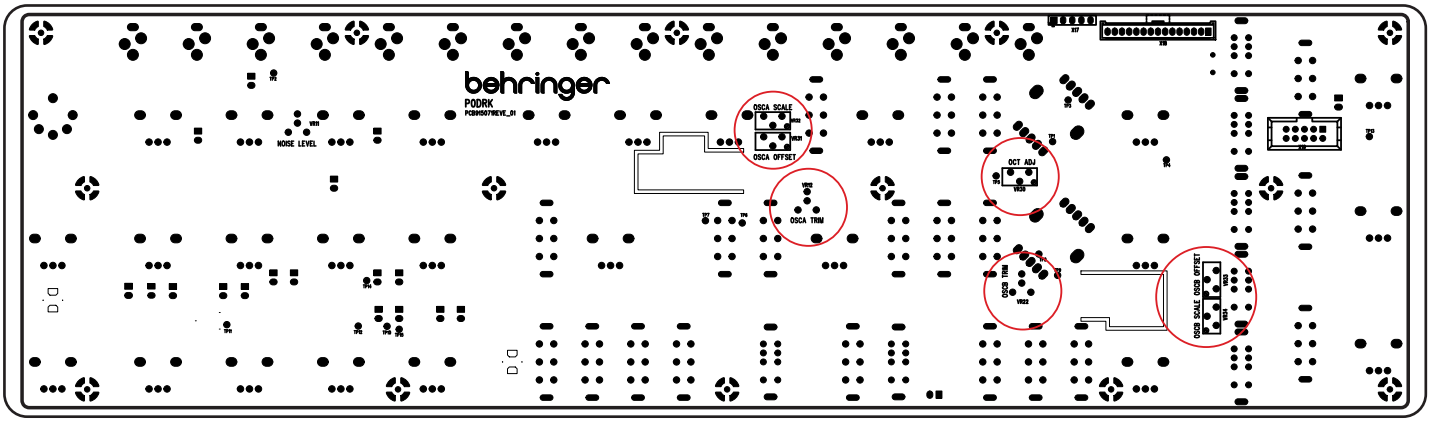
STEP 1 Remove all cables and connections to the unit.

STEP 2 Remove the 8 screws holding the top panel to the chassis.

STEP 3 Turn over the top panel to gain access to the bottom surface of the printed circuit board (pcb). Be careful not to strain the ribbon cables. Use the cardboard to protect the top panel.

Caution:

Make sure that the circuit board is not touching any bare metal that may cause a short circuit and damage the unit. Do not touch the circuit board while the unit is powered up.



STEP 4 Carefully connect the power and turn on the unit.

STEP 5 Leave the unit turned on for approximately 30 minutes.

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Calibration Procedure

Oscillator Calibration using a guitar tuner:

STEP 1 The positions of knobs and switches are shown in red on Figure 1.

STEP 2 Connect a guitar tuner to the rear panel main ¼" output.

STEP 3 Please pay special attention to the FREQUENCY knobs of Oscillator A and B.

STEP 4 Note that a pitch within 2 to 3 cents of the target frequency should be fine.

Figure 1

OSCA Calibration

STEP 1 Turn on the OSCA SAW switch.

STEP 2 On your external keyboard, press the A1 key and adjust the OSCA FREQUENCY on the front panel to zero while observing the tuner display. A1 should be 55 Hz.

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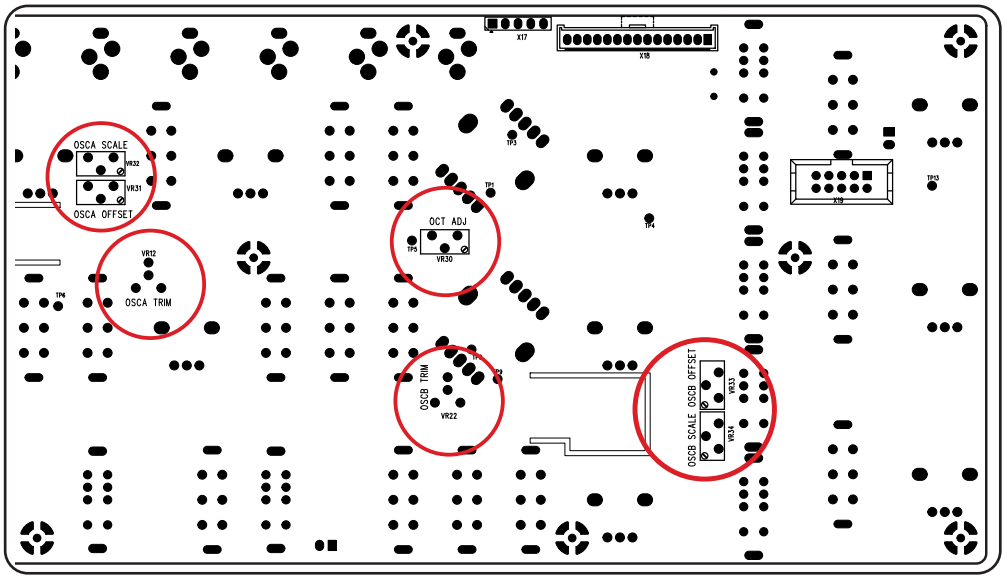
STEP 3 On your external keyboard, press the A4 key and adjust the OSCA SCALE trimmer while observing the tuner display. This should be trimmed to 440 Hz.



STEP 4 Press A1 key again check how much the frequency has drifted and adjust this frequency with OSCA OFFSET trimmer back to 55 Hz.

STEP 5 Repeat steps 3 and 4 until both frequencies are correct A1 - 55 Hz and A4 - 440 Hz.

STEP 6 On your external keyboard, press the A7 key and adjust the OSCA TRIM trimmer while observing the tuner display.

STEP 7 Turn OFF the OSCA SAW switch.

OSCB Calibration

STEP 1 Turn on the OSCB SAW switch and KYBD.

STEP 2 On your external keyboard, press the A1 key and adjust the OSCB FREQUENCY on the front panel while observing the tuner display.

STEP 3 On your external keyboard, press the A4 key and adjust the OSCB SCALE trimmer while observing the tuner display.

STEP 4 Repeat the same steps as oscillator A but using OSCB SCALE and OSCB OFFSET trimmers.

STEP 5 On your external keyboard, press the A7 key and adjust the OSCB TRIM trimmer while observing the tuner display.

OCTAVE Calibration (factory mode)

STEP 1 Set the Digital Voltmeter to measure a range below 10 VDC.

STEP 2 Locate the Test Points OCTAVE CV TP3 and ground (the red arrow in Figure 2) on the bottom surface of the main PCB.

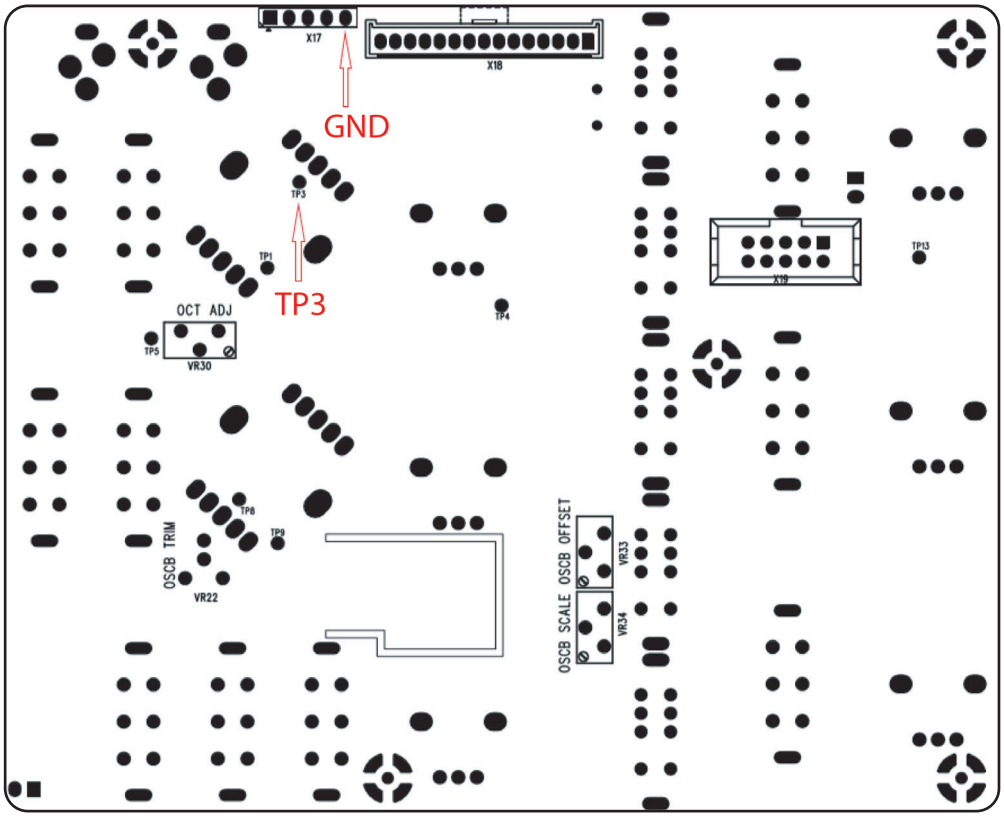


Figure 2

STEP 3 Connect the positive probe of your Voltmeter to TP3.

STEP 4 Connect the negative probe of your Voltmeter to ground.

STEP 5 Measure the output voltage. It should read +2.000 VDC.

STEP 6 If not, then adjust the OCT ADJ potentiometer until the measured output voltage is +2.000 VDC.

OCTAVE Calibration (user mode)

This calibration is done after the oscillator calibration. The positions of knobs and switches are shown in red on Figure 1. Connect a guitar tuner to the rear panel main 1/4" output.

STEP 1 Turn on the OSCA SAW switch.

STEP 2 Set the position of the OCTAVE switch to 0. On your external keyboard, press the A1 key.

STEP 3 Set the position of the OCTAVE switch to 3. Adjust the OCT ADJ trimmer until there are zero beats.

STEP 4 Turn off the power and unplug the power connector.

STEP 5 Make sure the internal connections are still correctly inserted and secured.

STEP 6 Refit the top panel back into the bottom chassis and secure with all the screws.

End of Procedure