

Equipment required:

1. Small insulated trimmer screwdriver
2. Small Phillips screwdriver
3. A flat sheet of cardboard or other 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

The following equipment is required for the Oscillator adjustment and Octave Range adjustment:

1. An external MIDI keyboard of at least 6 octaves including A2 and A8
2. MIDI cable
3. 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.

This document is only used to calibrate version E. The D version has some component numbers that differ from version E. (OSCB TRIM trimmer number is VR23 in version D).

Oscillator Calibration:

Calibration Procedure using a guitar tuner. The positions of knobs and switches are shown in red mark in the Figure 1. Connect a guitar tuner to the rear panel main 1/4" output.

OSC A Calibration

1. Turn on the OSCA SAW switch and rotate clockwise (bottom view) by the OSCA TRIM trimmer (VR12 on the bottom side) to minimum.
2. On your external keyboard, press the A2 key and adjust the OSCA FREQUENCY knob on the front panel while observing the tuner display(55Hz).
3. On your external keyboard, press the A5 key and adjust the OSCA SCALE trimmer (VR32 on the bottom side) while observing the tuner display(440Hz).
4. Repeat steps 2 and 3 above until both notes are correct in the display. This may need to be repeated several times to get right.
5. On your external keyboard, press the A5 key and adjust the OSCA FREQUENCY knob on the front panel while observing the tuner display(440Hz).
6. On your external keyboard, press the A8 key and adjust the OSCA TRIM trimmer (VR12 on the bottom side) while observing the tuner display(3520Hz).
7. Repeat steps 5 and 6 above until both notes are correct in the display. This may need to be repeated several times to get right.
8. Set the positions of OCTAVE is 0, set the OSCA FREQUENCY knob at 0 point, on your external keyboard, press the A5 key and adjust the OSCA OFFSET trimmer (VR31 on the bottom side) until 440Hz.
9. Turn OFF the OSCA SAW switch.

OSC B Calibration

1. Turn on the OSCB SAW switch and KYBD switch, rotate clockwise (bottom view) by the OSCB TRIM trimmer (VR22 on the bottom side) to minimum.
2. On your external keyboard, press the A2 key and adjust the OSCB FREQUENCY knob on the front panel while observing the tuner display(55Hz).
3. On your external keyboard, press the A5 key and adjust the OSCB SCALE trimmer (VR34 on the bottom side) while observing the tuner display(440Hz).
4. Repeat steps 2 and 3 above until both notes are correct in the display. This may need to be repeated several times to get right.
5. On your external keyboard, press the A5 key and adjust the OSCB FREQUENCY knob on the front panel while observing the tuner display(440Hz).
6. On your external keyboard, press the A8 key and adjust the OSCB TRIM trimmer (VR22 on the bottom side) while observing the tuner display(3520Hz).
7. Repeat steps 5 and 6 above until both notes are correct in the display. This may need to be repeated several times to get right.
8. Set the positions of OCTAVE is 0, set the FREQUENCY knob at 0 point, on your external keyboard, press the A5 key and adjust the OSCB OFFSET trimmer (VR33 on the bottom side) until 440Hz.
9. Turn OFF the OSCB SAW switch.

OCTAVE Calibration (factory mode):

1. Set the Digital Voltmeter to measure a range below 10 VDC.
2. Locate the Test Points OCTAVE CV TP3 and ground on the bottom surface of the main PCB.
3. Connect the positive probe of your Voltmeter to TP3 (on the bottom side).
4. Connect the negative probe of your Voltmeter to ground.
5. Measure the output voltage. It should read +2.000 V (+/-0.5mV).
6. If no, Adjust the potentiometer OCT ADJ (VR30 on the bottom side). Measure the output voltage, it should read +2.000 V(+/-0.5mV).

OCTAVE Calibration (user mode):

This calibration is done after the oscillator calibration. Calibration Procedure using a guitar tuner. The positions of knobs and switches are shown in red mark in the Figure

1. Connect a guitar tuner to the rear panel main 1/4" output.
 1. Turn on the OSCA SAW switch.
 2. Set the positions of OCTAVE is 0, on your external keyboard, press the A2 key.
 3. Set the positions of OCTAVE is 3, Adjust the potentiometer OCT ADJ (VR30 on the bottom side) until there are zero beats.

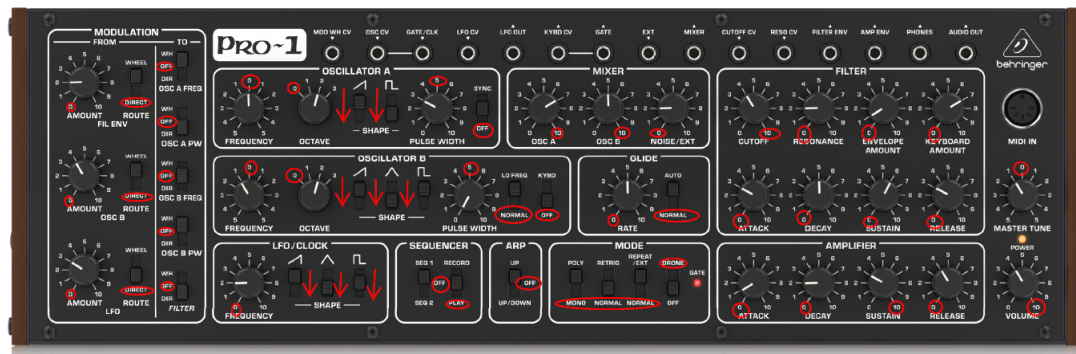


Figure 1