

NEUTRON

Paraphonic Analog and Semi-Modular Synthesizer with Dual 3340 VCOs, Multi-Mode VCF, 2 ADSRs, BBD Delay and Overdrive Circuit in a Eurorack Format



User Support Bulletin

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. Digital DC Voltmeter
2. 3.5 mm patch cable
3. Phillips screw driver
4. Small Insulated trimmer screwdriver
5. PC Computer with MIDI-OX installed
6. USB cable

Calibration Procedure



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

IMPORTANT NOTE: Make sure the unit has been powered on for more than 30 minutes, and that it is in a place where the temperature will not change drastically while performing the calibration.

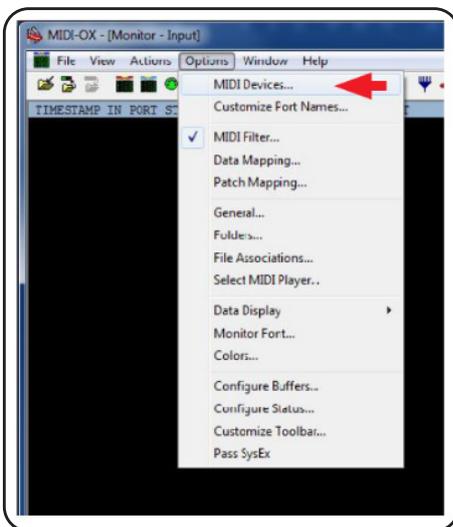
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Assign Out Calibration

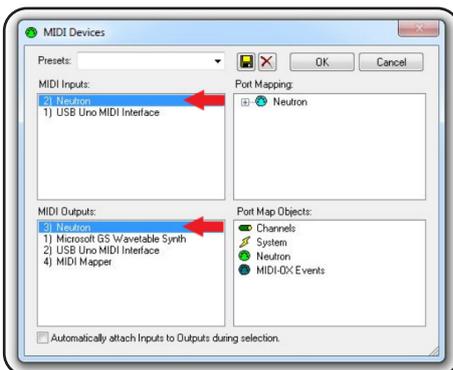
This calibration has been carried out by the factory at the manufacturing stage but instructions are described here if needed.

STEP 1 Insert the patch cable into the ASSIGN output on the Neutron front panel.

STEP 2 Run MIDI-OX on your computer. Go to OPTIONS > MIDI DEVICES.

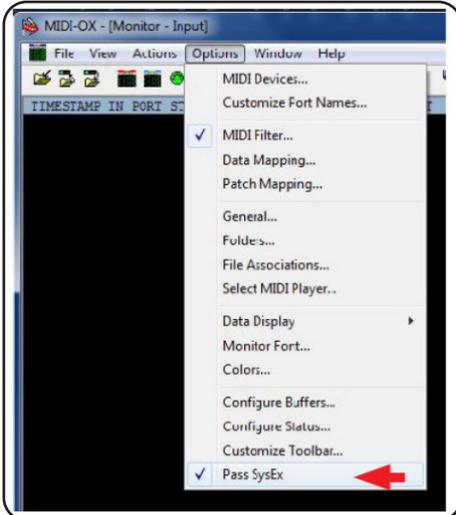


STEP 3 Select Neutron as the MIDI IN and MIDI OUT.

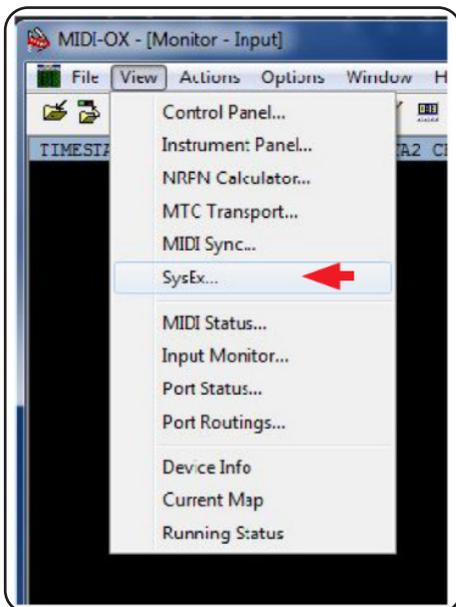


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STEP 4 Make sure "Pass SysEx" at the bottom of the Options drop-down menu is ticked.

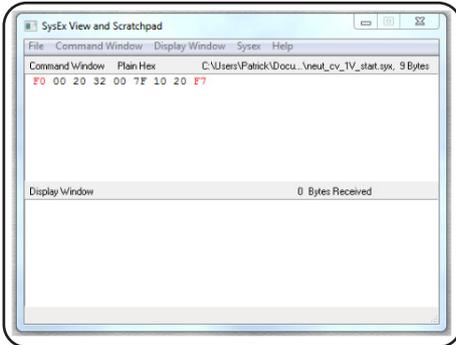


STEP 5 In the VIEW menu, select SysEx...

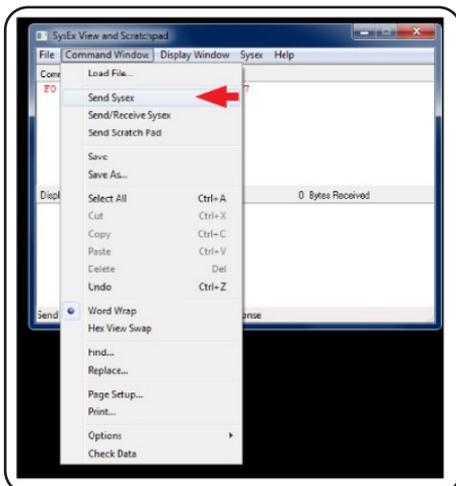


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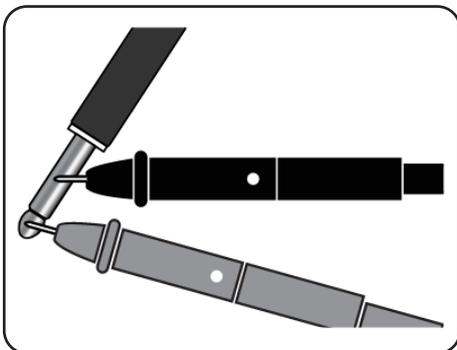
STEP 6 In the Command Window, enter the SysEx command to be sent to the Neutron. For ASSIGN out calibration at 1 V, the command is: F0 00 20 32 28 7F 10 20 F7



STEP 7 In the Command Window drop-down menu, select Send SysEx. The Sysex command will be sent to the Neutron. Both 8' octave range LEDs will be flashing to indicate the Neutron is in ASSIGN out 1 V calibration mode.



STEP 8 Measure the voltage on the patch cable attached to the ASSIGN out and adjust until it reads 1 V +/- 0.001 V.



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STEP 9 To increase the voltage send the Sysex command F0 00 20 32 28 F7 10 23 F7. To decrease the voltage, send the Sysex command F0 00 20 32 28 F7 10 22 F7. Repeat until the voltage reads 1 V +/- 0.001 V. Then move on to step 10.

STEP 10 Send the Sysex command for ASSIGN out calibration to the Neutron at 4 V. The command is F0 00 20 32 28 7F 10 21 F7. Both 32' octave range LEDs will be flashing to indicate the Neutron is in ASSIGN out 4 V calibration mode.

STEP 11 Repeat step 9 until the voltage reads 4 V +/- 0.001 V. Then move onto step 12.

STEP 12 Save the calibration data and exit calibration mode by sending the Sysex command F0 00 20 32 28 7F 10 24 F7. The Neutron will return to its normal operating mode.

Bucket Brigade Delay Calibration

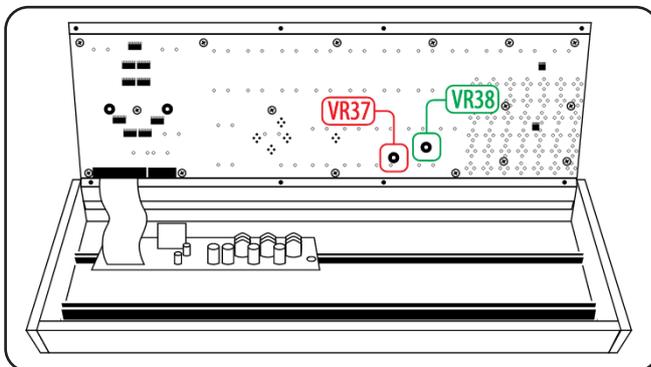
The Neutron Delay stage is designed to give as much control and variety as possible to the user. With that in mind, it may be necessary to tweak your Neutron to sound the way you want it to.

First, decide how much feedback you want. Adding more feedback gives the option of having the delay stage feedback on itself creating screaming effects. This results in higher distortion through the circuit, which may be a desirable effect.

Warning! When completing this procedure please keep the level down low as it may get loud.

STEP 1 Turn off the unit.

STEP 2 Open the unit by removing the top 8 screws. Lift the top panel carefully from the lower edge to give access to trim pots VR37 and VR38. Take care not to put strain on the ribbon connector.

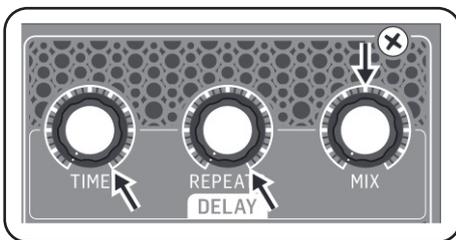


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STEP 3  Make sure that the circuit board is not touching any bare metal that may cause a short circuit and damage the unit. Do not touch the circuit board while the unit is powered up.

STEP 4 Carefully power up the unit.

STEP 5 Set the Delay Time and Repeats controls fully clockwise (turning to the right) and set the Mix control to 12 o'clock.



STEP 6 Turn VR37 fully CW.

STEP 7 Turn the Time control fully counter clockwise to the left (faster repeats), the circuit should feedback and scream at you.

STEP 8 With the delay feeding back on itself turn VR37 CCW until the repeats soften but do not die off.

STEP 9 To test the setup:

- Turn the Repeats control fully CCW so that there are no repeats and the Time fully clockwise for long repeats.
- Next, turn the Repeats control up full again.
- When the Time control is turned fully CCW the delay should start to feedback again, if not dial VR37 CW a little further. Or alternatively, if it feeds back too easily or if you don't want this behavior at all, turn VR37 a little more CCW to reduce the effect of the feedback.

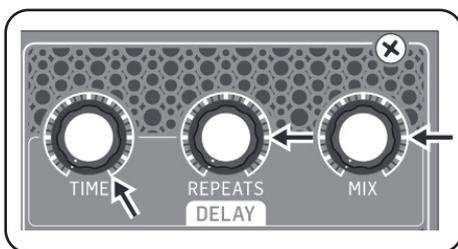
If you would like clean repeats lower the amount of feedback so the delay does not feedback on itself easily, or at all, and keep the level through the delay circuit low. This can be achieved by using the Overdrive level to control the amount of signal sent to the delay. This flexibility lets you achieve clean and crisp repeats or a delay that screams at you as you let it feedback on itself.

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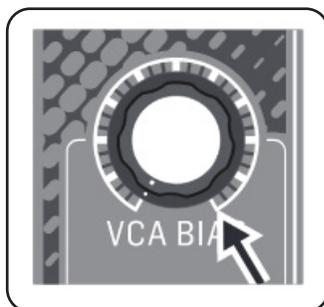
Clock Noise Calibration

Once the Repeats calibration has been completed you may need to dial out some clock noise from the delay output. This procedure has knock on effects to the repeats calibration so once complete, you may need to repeat the previous stage until you find the right balance. The output level may need to be increased so that clock noise can be heard; this will sound like a high frequency drone in the background of any signals played through the delay.

STEP 1 Turn Time fully CW and both Repeats and Mix to 3 o'clock.



STEP 2 Set VCA Bias fully CW so a signal is fed through the system and heard at the output. If you have no audio check that the VCF is not cutting off any audio and that the Overdrive level is up. A low frequency sound may be best, one so that you can easily distinguish the clock noise.



STEP 3 With a constant drone on the output turn VR38 until you can hear clock noise, then move VR38 until the clock noise is at a minimum. Note, with long repeats there will always be a bit of clock noise present.

STEP 4 Reassemble the Unit.

End of Procedure