Voyager Tuning Instructions 2010

This guide will walk you through the Voyager tuning process step by step. For additional support, email techsupport@moogmusic.com.

Note: This document is written for Voyagers with keyboard included. If you have a rack mount, the tuning adjustments are the same. Simply send Midi Note E4 from external keyboard to Voyager to begin tuning. This should correspond to E3 on your electronic tuner.

DISCLAIMER: Please be aware that a Voyager's tuning can easily become worse if done incorrectly. You can also damage a Voyager's electronics and injure yourself by opening a Voyager while it's turned on. By proceeding with these instructions, you are assuming the risks associated with opening the Voyager and adjusting components inside. Any damages and injuries that occur are not the fault of Moog Music Inc. Be mindful of the power supply especially!

You will need:
An electronic tuner
1/4" Cable
A calibration tool (or small flat-head driver)
Phillips Screwdriver to open Voyager panel
Patience

A brief word on tuning analog synths: When your Voyager is well-tuned, it should have a pleasant 'vocal' quality to it. The oscillators will never be 'exactly' the same pitch in every range and position like a digital synth. This is what gives analog synth their charm. Be reasonable with your expectations. You should have an instrument that sounds "spot-on" across octaves with no beating between the oscillators.

The best way to check your Voyager's tuning is to go to "Init Parameters" in the Edit Menu and then flip the Env Gate (front panel) to On/External (leaves notes on). Play the lowest E on the keyboard. You should hear Osc 1 as a simple square wave. Now flip Osc 2 and 3 on. The three oscillators should track in tune with one another at 8' (Init parameters default), down to 32', up to 1' and finally when you play the highest E on the keyboard on 8.' If they don't sound in tune, this document will explain how to tune them.

This document assumes that you are running the latest Voyager OS 3.5. You can download it for free here for units that include a keyboard.

http://www.moogmusic.com/software/voyager_3_5_keyboard_web.zip

And here for Rack Mounts:

http://www.moogmusic.com/software/voyager_3_5_rme_web.zip

These instructions assume you are using a Voyager with keyboard included. If you are using a rack mount, just use an external midi controller keyboard to trigger the notes.

Turn the Voyager on and tilt the front panel up. We use a soft wooden block to tilt the unit up here at the factory. You will need to open the Voyager's back panel via five black metal screws. Let the unit warm up for twenty minutes with the back open before checking/adjusting the tuning. Voyagers must get warm to stabilize in tuning.

The tuning described here is on the Voyager's largest circuit board. It reads "Moog Music Brd 11-404P." You will be turning trimmers on this board. They are labeled.

Section 1: Tuning the Pitch Wheel Null and Pitch Wheel

First, check the voltages on the pitch wheel. Go to "Software Version" in the Master Menu and hit enter. Then press 'cursor' to see a hidden menu with the wheel voltages. The pitch wheel should sit at zero, max out at +127 and min at -128.

If the wheel voltages are correct you need to tweak the null. The best way to do this is go to 'Init Parameters' in the Edit Menu. Hit enter and yes. Then flip the gate on and press the lowest E on the Voyager. Go to 'Pitch Wheel' Amount in the Edit menu and put Pitch Bend up at its max value: 2 and a half octaves. Then toggle up once more so PW is off and listen to the note. Did the pitch change? If it did, then adjust RP5 so the low E is the same pitch with pitch wheel at maximum and off.

To tweak RP5, you'll need to open the unit up via five screws on the back and make small, precise adjustments to the analog board.

Some units will have another trimmer next to RP5. This trimmer sets the accuracy of the actual pitch bend itself. It isn't necessary for tuning the oscillators but it will improve the response of the pitch wheel.

Section 2: Tuning the Oscillators

Now, with the Voyager's back open, turn the "Fine Tune" knob slightly past 12 o'clock (perhaps 12:10). Just a tiny bit! You will be tuning the Oscillators to this point because when you close the back up the pitch will go slightly sharp.

Read through all the following instructions before doing the tuning.

Tuning Oscillator 1:
We will explain Osc 1 tuning in detail. It's the same procedure for Osc 2 and 3. The trimmers are listed in the order that you must tune them.

The best way to check your Voyager's tuning is to go to "Init Parameters" in the Edit Menu, choose "yes" and then flip the Env Gate (front panel) to On/External. Play the lowest E on the keyboard. You should hear Osc 1 as a simple square wave. Go to "Pitch Bend Amt" in the Edit Menu and turn Pitch Bend off.

      a. Adjust RT2 (Range) so Osc1 is E3.
      b. Turn Osc 1 Octave switch to 32.' Adjust RT1 (Scale) until Osc 1 is E1.
      c. Repeat a & b until both E3 and E1 are accurate.
      d. Turn Osc 1 Octave switch to 1.' Turn RP11 (High) until you get E6.
      e. Repeat a, b, and d until they are all accurate.
      f. Turn Osc 1 Octave switch to 8' and play high E on keyboard. Adjust RP9 (Keyboard) to get E5.
      g. Repeat a, b, d and f until Osc 1 is in tune in all positions.

Tuning Oscillator 2:
Go to "init parameters" again and turn Osc 1 off. Flip Osc 2 on and repeat the same procedure discussed for Osc 1 with the following trimmers:

    a. Range (RT4)
    b. Scale (RT3)
    c. Repeat a & b
    d. High (RP20)
    e. Repeat a, b and c
    f. Keyboard (RP21)
    g. Repeat a, b, d and f.
    h. Adjust (RP19) for Osc 2 5th

Note: You can load a 5th calibration preset for Step h. Email techsupport@moogmusic.com and ask for this preset.

Tuning Oscillator 3:
Note on Osc 3 tuning: Osc 3 has the tendency to sync with Osc 2. You may find it helpful to de-tune Osc 2 before tuning Osc3. Go to "init parameters" and turn Osc 1 off. Then, turn the Osc 2 Freq knob fully counterclockwise and turn the Osc 2 Octave switch down to 32.'

    a. Range (RT6)
    b. Scale (RT5)
    c. Repeat a & b
    d. High (RP14)
    e. Repeat a, b and c
    f. Keyboard (RP16)
    g. Repeat a, b, d and f.
    h. 5th (RP17) – Load 5th calibration preset
    i. Lo (RP18) – Switch Osc 3 to Lo and turn Octave switch to 1'. Play highest C on keyboard and tune.

Note: Be sure to do "init parameters" again before Step i. This will undo the 5th setting used in Step g.

Temperature and time will affect the tuning of all analog synthesizers. After you tune Osc 3 go back through Osc 1 and 2 again. Then re-tune Osc 3. Once you are satisfied with the tuning of all three oscillators, close up the back of the panel and put one screw in. Let the unit warm up for 15 minutes and check everything again. Adjust the Fine Tune knob if necessary. If you need to make any final tweaks, just open the unit quickly and turn the necessary trimmers.