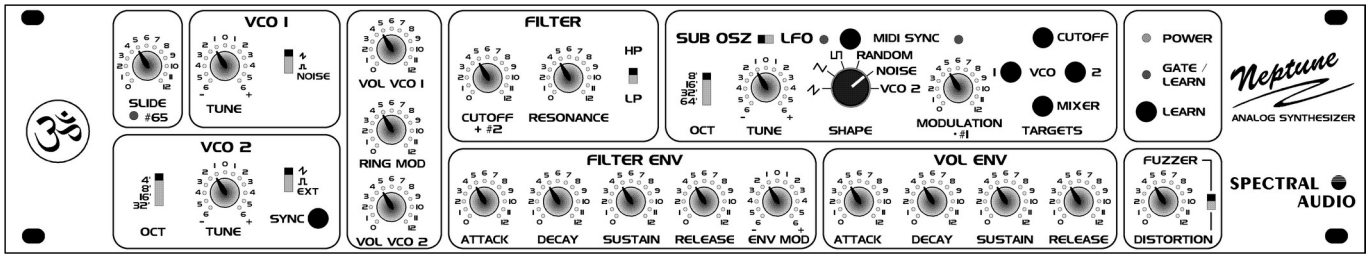
Neptune



Service Manual

Spectral Audio

Doc Rev. 2 6.9.25

Contents

1 General Note

Fully schematic is not supported by this manual. If you think you really need to receive it, please write to spectralaudio@swissonline.ch .

2 Manual Changes

2.1 Having pulse-width modulation (PWM) for the rectangular wave on OSC1..OSC3

2.1.1 OSC1

remove U01 pin 13 from Ground (it's connected on both side of pcb, so you have to heat up the pin with the solder gun and pull the pin out)

2.1.2 OSC2

remove U11 pin 9 from Ground (it's connected on both side of pcb, so you have to heat up the pin with the solder gun and pull the pin out)

2.1.3 OSC3

remove U12 pin 9 from Gound (here it's more easy, just on bottom side you have to cut the connection to the Via)

The free pin is now the input of a DC voltage in the range to have pwm 0..50%.

2.2 OSC3/LFO sync with OSC1 or OSC2

For this, connect a 470pF to Base (middle pin) of T03 (OSC2) or T01 (OSC1).

2.3 Even faster envelopes

To increase even more speed of EG1 (Volume), you may solder a resistor in the value of 100 Ohm down to 10 Ohm parallel to R118. For the VCF Envelope use R100. Both may be result in some click noise because of the low rise and decrease time of the Envelope.

2.4 Increase the tuning range for OSC1..OSC3

It is possible to reduce the value of R001 for OSC1, R022 for OSC2 and R128 for OSC3. Its standard value is 1M5. Decreasing its value may also mean to decrease of R002, R021 and R129 to have the reference note in the middle of the Tune Pot. To learn another Reference Note over MIDI is another solution but this decreases the note range.

2.5 General in/outputs

2.5.1 Oscillators

The easiest way to get the signals of the Oscillators are the switches SW02, SW03 and SW11. Amplitude is 0 to +12V. Same for the noise generator.

2.5.2 Envelopes

These signals can be taken on ENV MOD potentiometer for the filter envelope and on the Volume potentiometer for the VCA envelope.

2.5.3 Filter

The Filter input is at C18 and its output is U07 pin 8. Control voltage is applied to the Base of T05 and R073.

2.5.4 Distorter

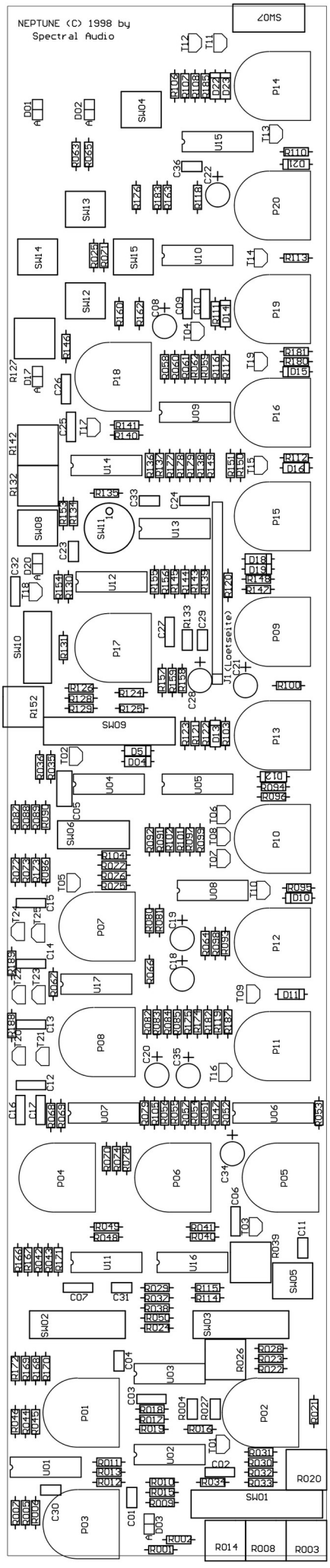
The filter output is directly connected to the distorter/fuzzer selection input. Remove pin 8 from U07 from the solder pad (leave it in the air and connect R105 to it). The remaining pad is now the input for the distorter/fuzzer selection.

Output is at U15 pin 14.

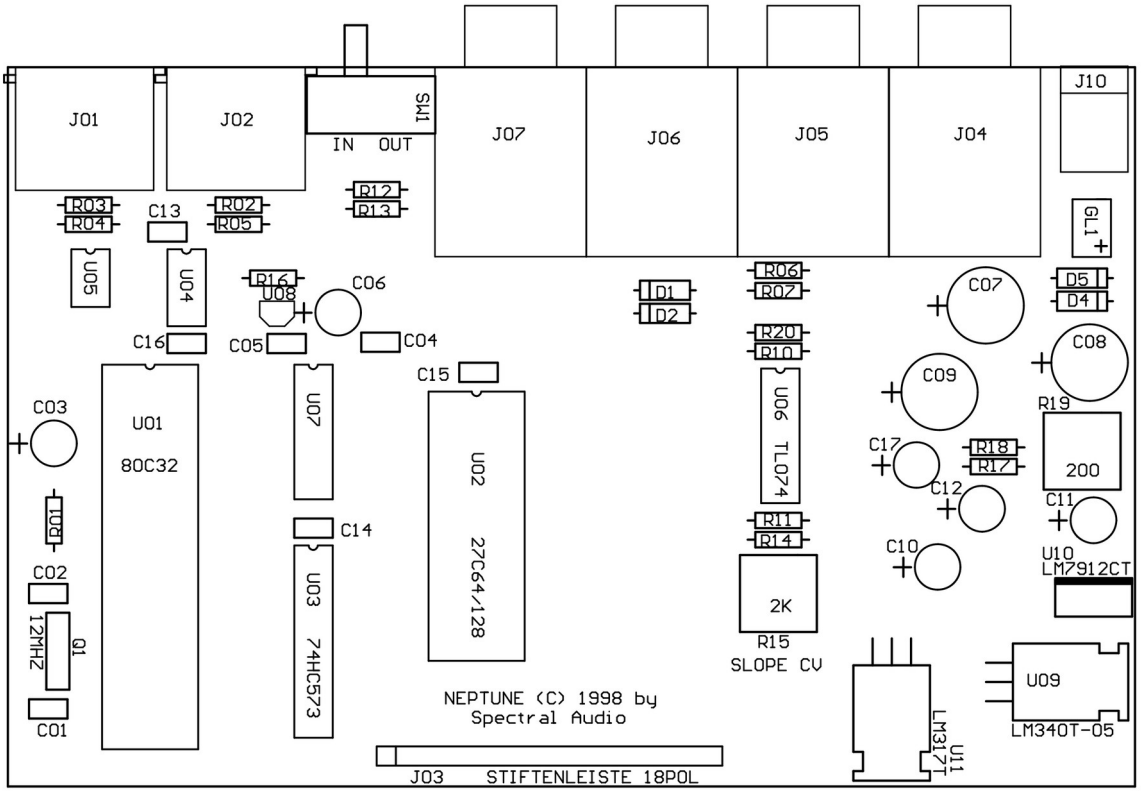
2.5.5 VCA

Input is R176 (sold it away from the output of U15 pin 14). Output is pin 12 from U06 and at the output jack on the rear side. Control voltage can be applied to the volume potentiometer.

3 Assembly plan Analogue Print



4 Assembly plan Digital Print



5 Adjustment

Keep the following sequence.

5.1 Adjustment of 12.000 V Supply

Connect a precise DVM to C12 and Ground (i.e. from a potentiometer mounting pin) and adjust R19 to 12.000V after a warm-up phase of at least 30 minutes.

5.2 CV slope adjustment

Connect a precise DVM to the output jack of CV. Adjust R15 to 4V between A1 – A5 (input over MIDI). Tolerance: ±1mV.

5.3 Osc1

The offset for VCO1 is set with R003 and the oscillator slope with R008. Nonlinearity in the upper frequency range is adjusted with R014.

Proceed as follows to make the adjustment:

1. Set the **MIDI reference note** to C1 by pressing the learn-key.

2. Press key A3 and set the VCO1 frequency with offset trimmer to 220.0 Hz, measured with an exactly frequency meter.

3. Press key A1 and set the frequency to 55.0 Hz with oscillator slope trimmer.

4. Repeat steps 2 and 3 until frequency values are stable.

5. Press the key A5 and set the frequency to 880.0 Hz with nonlinearity trimmer.

6. Repeat steps 2 to 5 and re-adjust if necessary.

5.4 Osc 2

Same as above but with R020 as offset, R026 as oscillator slope and R039 as nonlinearity correction. Do it first with Oct switch in 16' pos and correct later the Nonlinearity pot with Oct switch in the highest position until no beats are hear able to Osc 1.

5.5 Osc 3

Same as above but with R127 as offset, R132 as oscillator slope and R142 as Nonlinearity correction. Do it first with Oct switch in 32' pos. Now all frequencies are half the value of the above. Correct later the Nonlinearity pot with Oct switch in the highest position until no beats are hear able to Osc 1.

5.6 Filter

Put it in self resonation (start of). Set key follow switch to 100%. Measure the generated frequency and set Cut-off pot to 100Hz with C1 at MIDI input. Input now C4 at MIDI and adjust R152 to 800 Hz. Repeat if necessary.