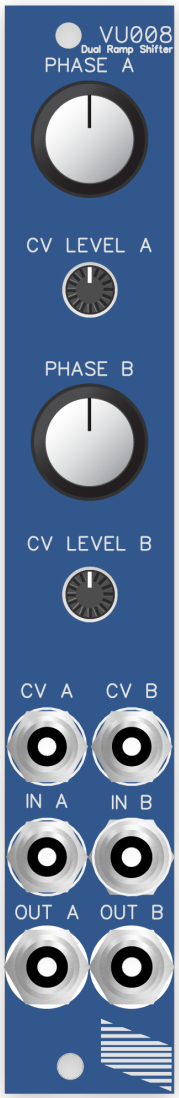
VU008

Dual ramp shifter ¬

User documentation / build guide

SYNTONIE

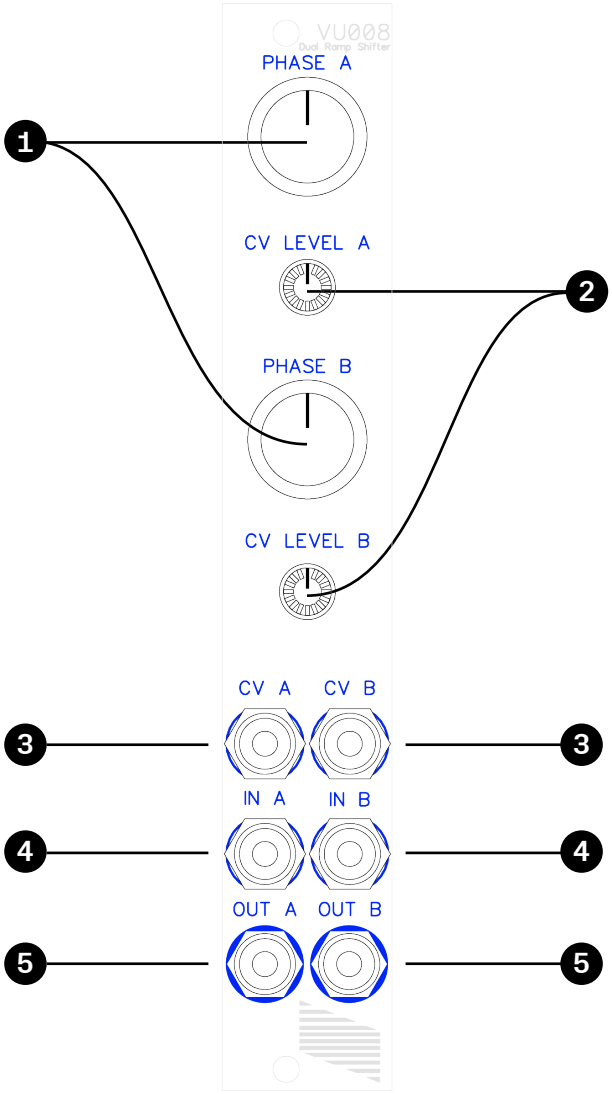


The VU008 is a dual ramp phase shifter. It phase shifts ramp signals, resulting in horizontal &/or vertical displacement. Processing other waveforms will result in waveshaping. External signals can modify the amount of phase via the CV inputs.

Specifications

- 4HP
- 55 mA +12V
- 50 mA -12V
- 0 mA +5V
- 65mm depth

Special thanks to: **Lorenzo Ferronato** for the documentation design // And of course, **everyone who has supported Syntonie until now & those who will support it in the future.**



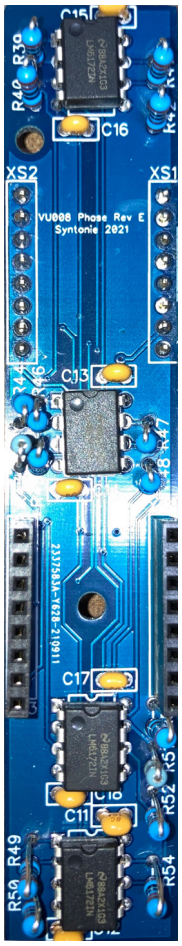
(1) Manual phase setting
(2) Control voltage attenuverter
(3) Control voltage input / `0-1V, 100k ohm`
(4) Signal input / `0-1V, 100k ohm`
(5) Phase shifted output / `0-1V, 499 ohm`

¬ Note: the phase shift produces a small glitch in the output waveform, mostly visible when the output is rectified/frequency doubled.

Use the interactive BOM regarding component placement / Find the BOM here

Place and solder the components in the following order:

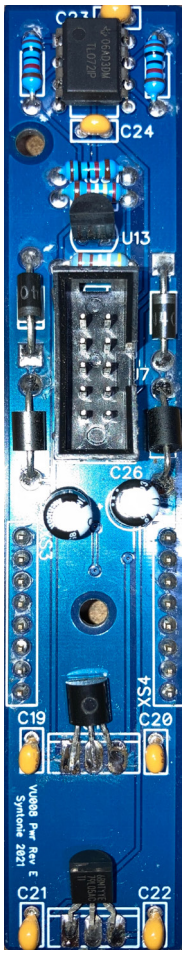
- **1** Resistors **(be careful not to short resistors' leads as they stand vertically)**
- **2** Diodes **(pay attention to the orientation)**
- **3** Capacitors
- **4** IC sockets/ICs **(pay attention to the orientation)**
- **5** 8-pin stackables XS1, XS2 **(socket goes on the component side, headers on the solder side)**
- **6** 8-pin sockets XS3, XS4 **(socket goes on the component side, pins on the solder side)**



Use the interactive BOM to look for component placement / Find the BOM here

Place and soldercomponents in the following order:

- **1** Resistors
- **2** Capacitors
- **3** IC sockets/ICs **(pay attention to the orientation)**
- **4** 8-pin header XS1, XS2 **(short pins goes on the component side, long pins on the solder side)**
- **5** 8-pin stackables XS3, XS4 **(socket goes on the component side, headers on the solder side)**

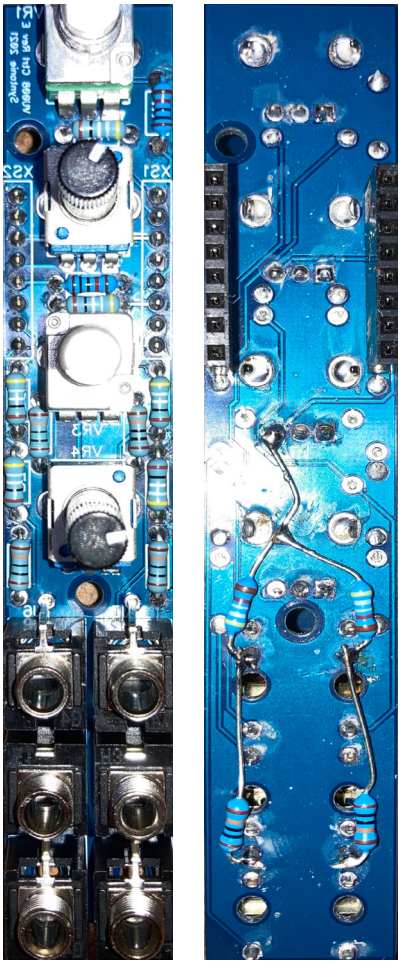


Use the interactive BOM to look for component placement / Find the BOM here

Place and solder components in the following order:

- **1** Resistors
- **2** Diodes/Ferrite Beads **(pay attention to the orientation of the diodes)**
- **3** Capacitors **(pay attention to the orientation of the electrolytics capacitors)**
- **4** IC sockets/ICs/Transistor/Voltage regulators **(pay attention to the orientation)**
- **5** 10-pin power box header **(pay attention to the orientation)**
- **6** 8-pin headers XS3, XS4 **(short pins on the component side, long pins on the solder side)**

Note: U11/78L05 needs to be mounted with the flat side facing the board.
U12/79L05 needs to be mounted with the curved side facing the board.



Use the interactive BOM to look for component placement / Find the BOM here

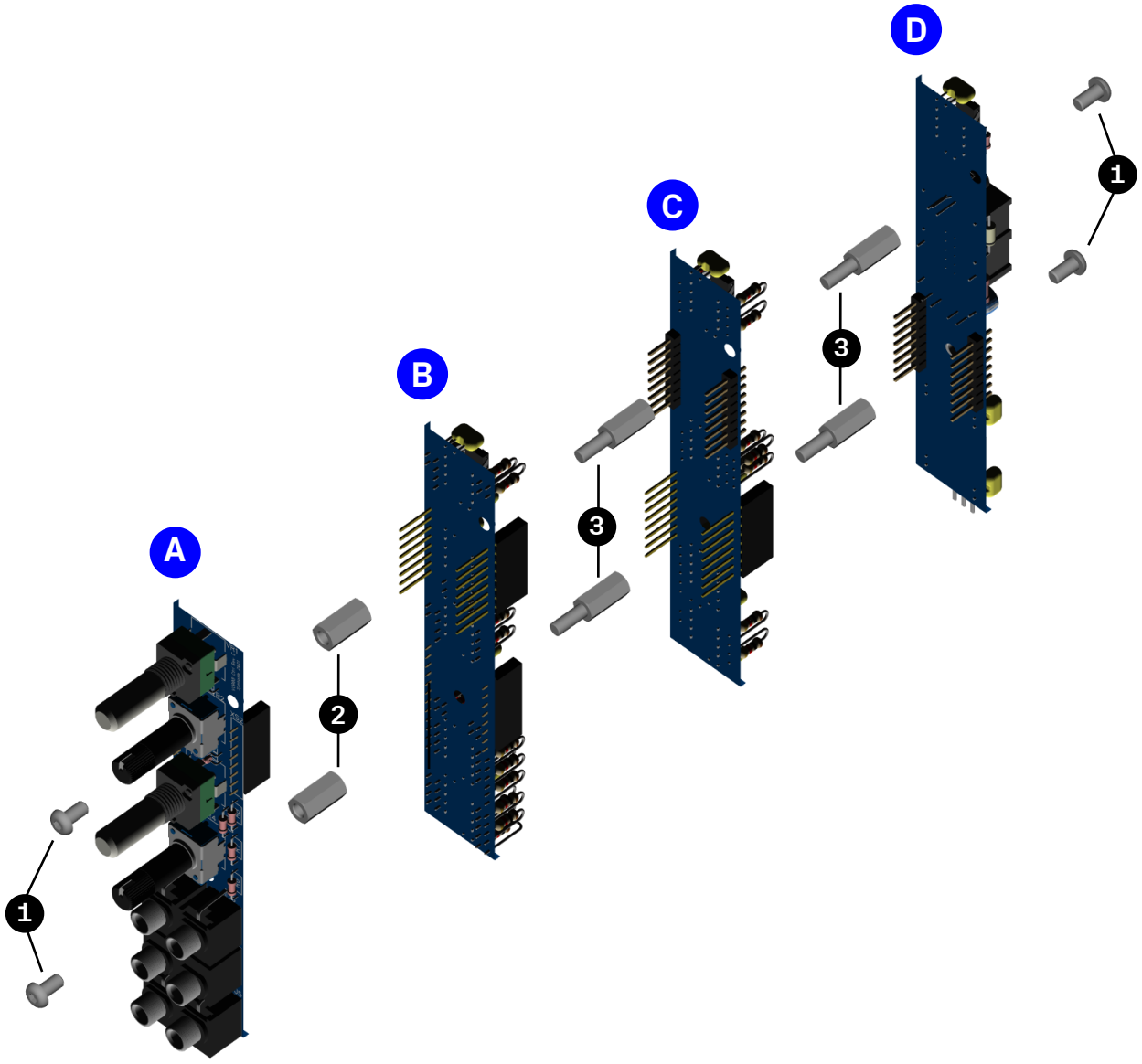
Place and solder components in the following order:

- **1** Resistors
- **2** Jacks/Switches/Potentiometers/Tall trimmer

(solder one pin and check that the component is correctly alligned. If so, then solder all the other pins)

- **3** 8-pin sockets XS1, XS2 **(soldered on the component side of the board, box header on the solder side)**

Note: Pairs of jacks share the same ground hole, solder the other pins first. Then solder the ground pins once all jacks are correctly placed.
Modification: two 49.9k and two 100k resistors can be added to each CV input jack's switch pin so the output signals are less affected by the CV level potentiometers when nothing is plugged into the CV inputs. 49.9k are tied to the 1V reference voltage (pin 3 of VR3) on one side, the other side is connected to switch pins of CV jacks. 100k are soldered between the switch pins of the CV jacks and ground. This modification is optional and the module will work without it.



(A) Control board
(B) Clip board
(C) Phase board
(D) Power board

(1) 6mm M3 screw
(2) 11mm M3 spacer
(3) 11mm+6mm M3 spacer

- **Rev E:** initial release

References

- Electronotes #87 - A Sawtooth Drive Multiphase Drive Waveform Animator - B. Hutchins

- Yusynth - Saw Animator http://yusynth.net/Modular/EN/SAWANIM/index.html

- LZX – Reference Designs https://github.com/lzxindustries/lzxdocs/blob/master/Reference%20Designs/LZX%20Interface%20Examples%20RevA.pdf

- circuitjs simulation https://tinyurl.com/yh9kbffj

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