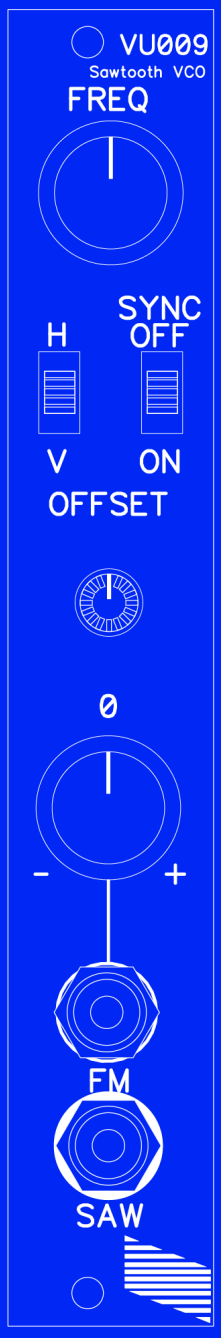
VU009

Sawtooth oscillator ¬

User documentation / build guide



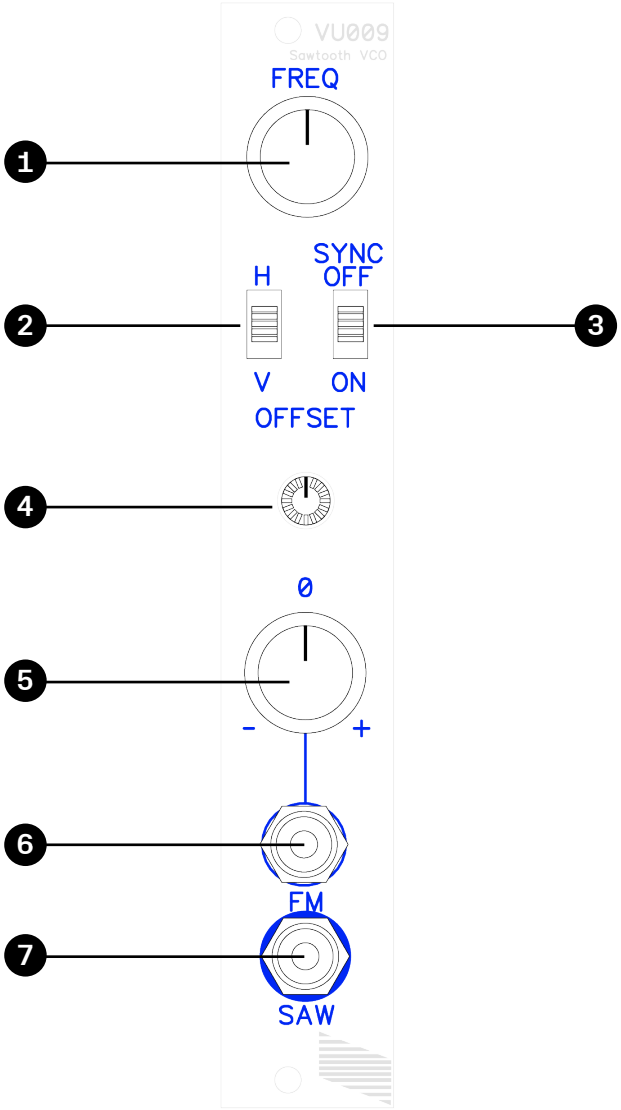
SYNTONIE

The VU009 is a 0-1V sawtooth oscillator with FM input and offset control. Comes with either 14pin sync or RCA sync by the mean of two different sync/ power boards.

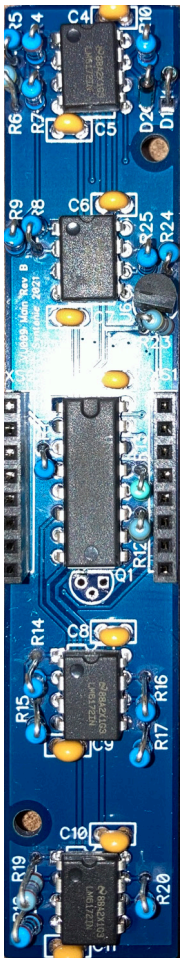
Specifications

- 4HP
- 35 mA +12V
- 20 mA -12V
- 0 mA +5V
- 55mm depth

Special thanks to: **Phil Baljeu** for the Castle 010 Clock VCO design and **Thomas Henry** for the X-4046 VCO design / **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 frequency setting
(2) Horizontal/Vertical sync switch
(3) Sync ON/OFF
(4) Sawtooth offset/Pedestal
(5) Control voltage attenuverter
(6) FM input / `0-1V, 100k ohm`
(7) Sawtooth output / `0-1V, 499 ohm`



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/Voltage reference **(pay attention to the orientation)**
- **5** 8-pin stackables XS1, XS2 **(socket goes on the component side, headers on the solder side)**

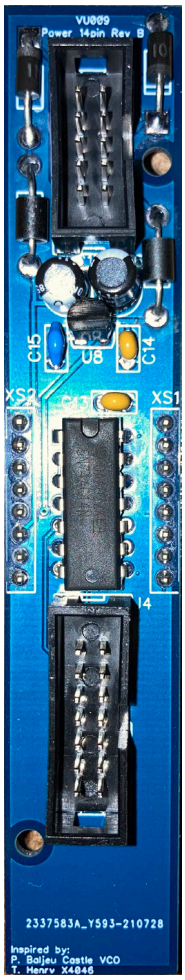
Note: Do not place Q1.

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

Place and solder in this order :

- **1** Resistors/Ferrites
- **2** Capacitors **(pay attention to the orientation of the electrolytics capacitors)**
- **3** Diodes/Transistor/Regulator **(pay attention to the orientation)**
- **4** 10pin power box header **(pay attention to the orientation)**
- **5** RCA jacks
- **6** 8-pin headers XS1, XS2 **(soldered on the components side, long pins goes on the solder side)**
- **7** 3-pin header XS3 **(soldered on the solder side, long pins goes on the component side)**

Note: Do not place C20. U9 (LMH1980) comes presoldered with pcb set/kit.



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

Place and solder in this order :

- **1** Diodes/Ferrite beads **(pay attention to the orientation of the diodes)**
- **2** Capacitors **(pay attention to the orientation of the electrolytic capacitors)**
- **3** IC sockets/ICs/Voltage regulator **(pay attention to the orientation)**
- **4** 10/14pin box headers **(pay attention to the orientation)**
- **5** 8-pin headers XS1, XS2 **(soldered on the component side, long pins on the solder side)**

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

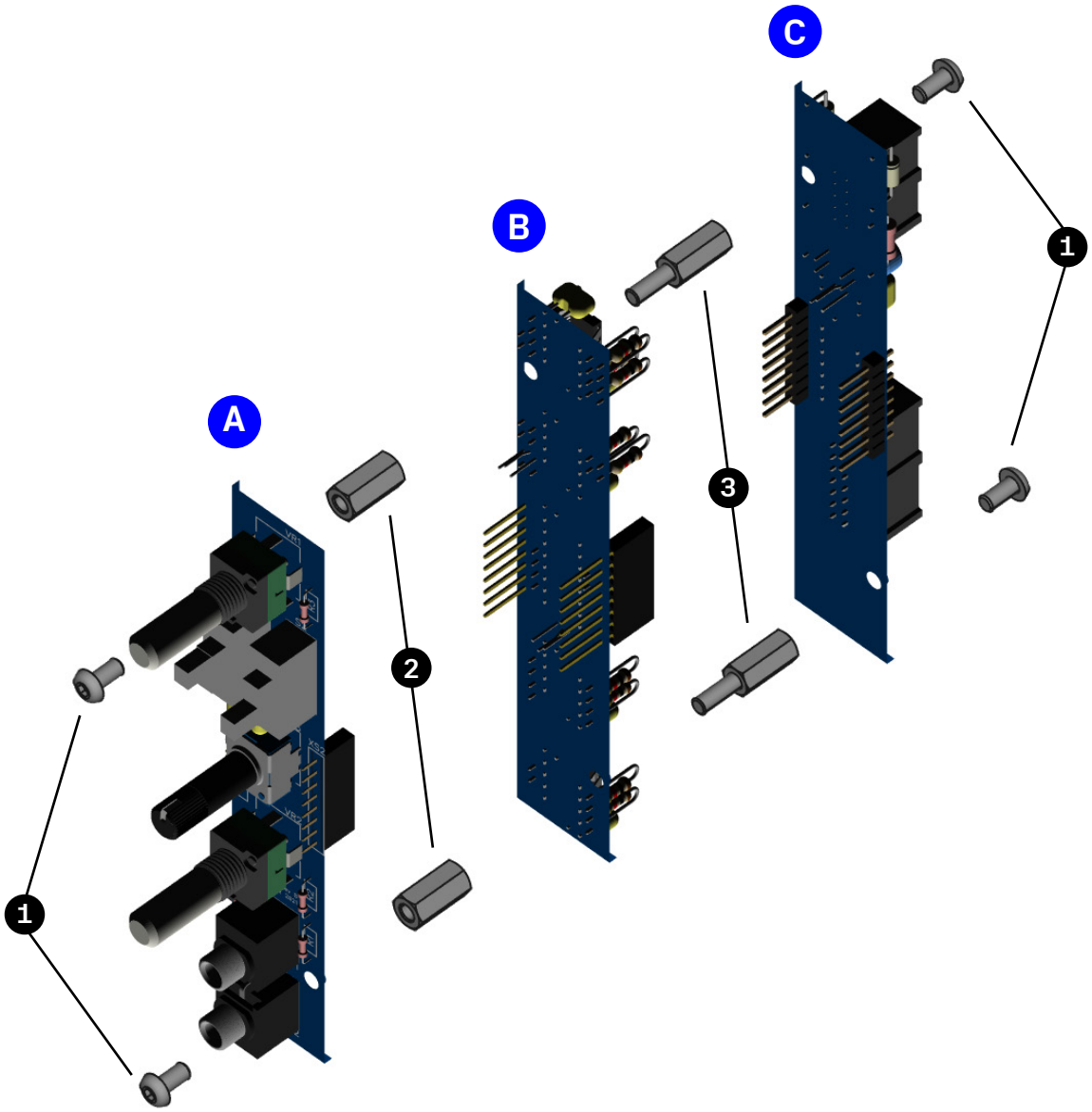
Place and solder in this order :

- ¬ **1** Resistors
- ¬ **2** Capacitors
- ¬ **3** Jacks/Switches/Potentiometers/Tall trimmer

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

- ¬ **4** 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.



(A) Control board
(B) Main board
(C) Sync/Power board

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

- **Rev B :** initial release

References

- Phil Baljeu – Castle 010 Clock VCO
  https://github.com/lzxindustries/lzxdocs/blob/master/Castle%20010%20Clock%20VCO/Castle%20010%20Clock%20VCO%20Schematics.pdf

- Thomas Henry - X-4046
  https://www.birthofasynth.com/Thomas_Henry/Pages/X-4046.html

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

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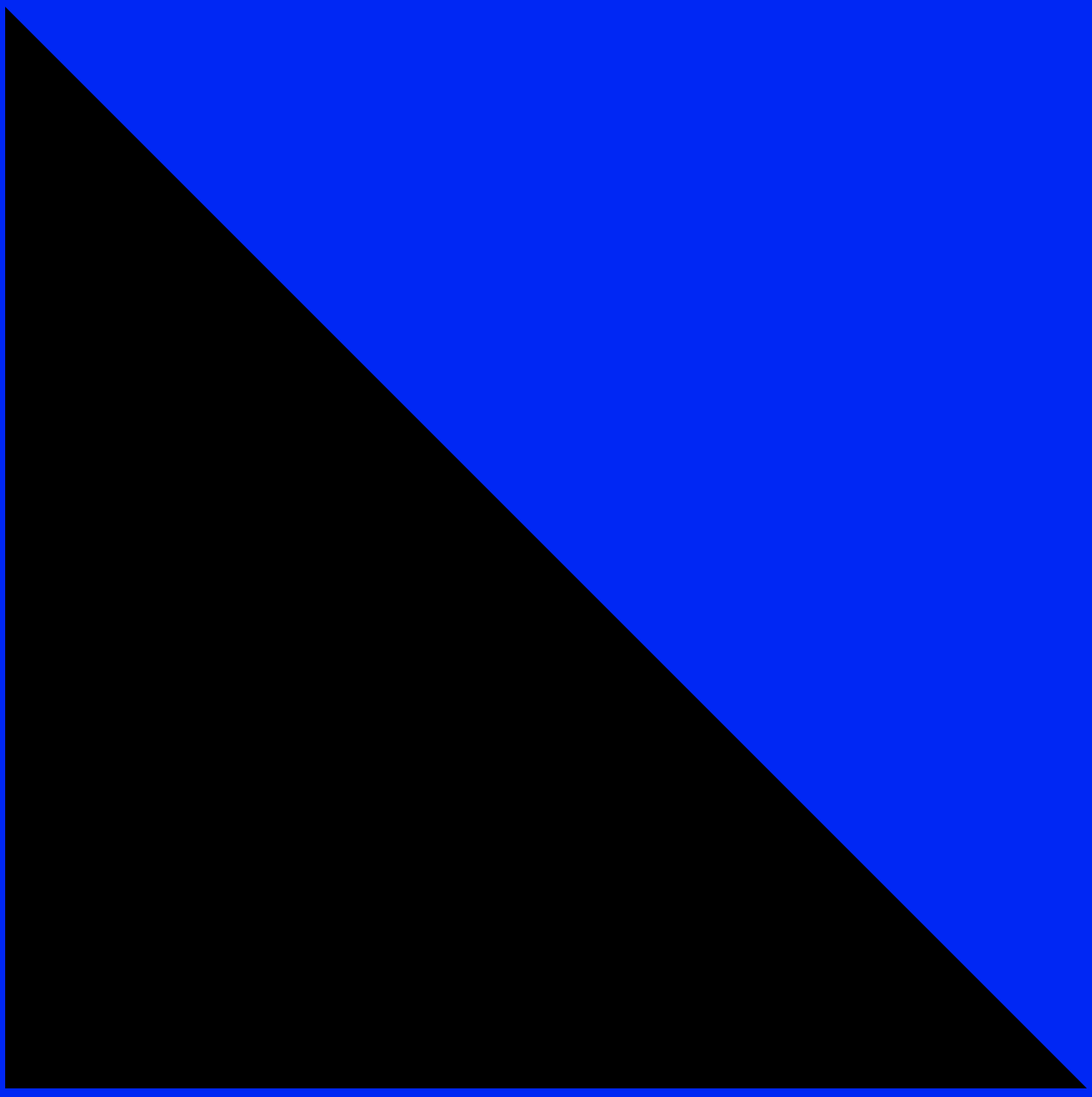

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