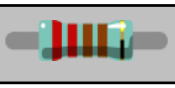
THANKS FOR CHOOSING ONE OF OUR KITS!

This manual has been written taking into account the common issues that we often find people experience in our workshops. The order in which the components are placed on the board is meant to make assembly as easy as possible. Some steps are not obvious, so even if you're an experienced DIYer please read the steps thoroughly before starting.
If this is your first project, please read this article before you start assembling the kit:
www.befaco.org/howto/
You will be soldering both boards at the same time.

Please refer to page 7 for a component placing reference. Some names could be small and difficult to spot.

HAVE FUN!

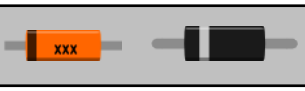
RESISTORS



Color code can be difficult to identify, we strongly recommend to use a **multimeter**.

Qty	Value	Code	Name on PCB
16	10k	Brown, black, black, red, brown	R4, R15, R27, R28, R30, R31, R33, R35, R41, R43, R101, R104, R107, R115, R120, R122
12	100k	Brown, black, black, orange, brown	R3, R7, R14, R22, R29, R39, R100, R109, R110, R112, R125, R126
8	470 Ohm	Yellow, violet, black, black, brown	R1, R5, R10, R17, R34, R37, R38, R40
6	1k	Brown, black, black, brown, brown	R6, R8, R102, R117, R121, R123
3	47k	Yellow, violet, black, red, Brown	R9, R45, R118
3	43k	Yellow, orange, black, red, brown	R26, R36, R42
3	1M	Brown, black, black, yellow, brown	R11, R19, R106
2	680 Ohm	Blue, gray, black, black, brown	R20, R116
2	15k	Brown, green, black, red, brown	R13, R129
2	22k	Red, red, black, red, brown	R23, R113
2	120k	Brown, red, black, orange, brown	R119, R128
1	4.7M	Yellow, violet, black, yellow, brown	R103
1	390 Ohm	Orange, white, black, black, brown	R32
1	1.8k	Brown, gray, black, brown, brown	R12
1	3k	Orange, black, black, brown, brown	R108
1	3k3	Orange, orange, black, brown, brown	R105
1	4.3k	Yellow, orange, black, brown, brown	R24
1	4.7k	Yellow, violet, black, brown, brown	R44
1	5.6k	Green, blue, black, brown, brown	R21
1	20k	Red, black, black, red, brown	R111
1	27k	Red, violet, black, red, brown	R127
1	33k	Orange, orange, black, red, brown	R25
1	68k	Blue, gray, black, red, brown	R2
1	82k	Gray, red, black, red, brown.	R124
1	240k	Red, yellow, black, orange, brown	R16
1	330k	Orange, orange, black, orange, brown	R114
1	680k	Blue, gray, black, orange, brown	R18

DIODES



Solder the diodes **observing their polarity**. The black or white line on the diode must match with the white line on the diode symbol on the PCB silkscreen.

Qty	Value	Name on PCB
4	1N4148	D100, D101, D102, D103
2	1N5817 (black)	D1, D2

FERRITE

To solder the two ferrite beads use a recycled resistor leg passed through each ferrite and proceed as if it were a resistor. Ferrite beads don't have polarity.

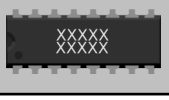
Qty	Name on PCB
2	Ferrite

CAPACITORS

Identifying capacitors can be quite tricky. Codes stated are indicative, please take a look at this guide for help identifying capacitors: http://www.wikihow.com/Read-a-Capacitor

Qty	Value	Code	Name on PCB
15	100n	104	C1, C7, C10, C11, C12, C19, C20, C100, C101, C103, C104, C106, C107, C108, C109
4	1uF	1k	C4, C6, C13, C15
4	10nF	10nk	C3, C5, C8, C9
1	10pF	10	C14
1	1nF	102	C2

ICs



Place the sockets (taking care to orientate them properly – the notch or dot on one end of the IC should match the image on the silkscreen) and solder them into their correct positions.

Place the ICs in their respective sockets taking note of their orientation – the notch or dot on the top of the IC must match that of the socket and silkscreen.

Qty	Value	Name on PCB
1	3340	IC2
2	LM13700	IC1, IC4
4	TL072	IC3, IC100, IC101, IC102

ELECTROLYTIC CAPACITORS

Values are written on the side of the capacitor. Mind their polarity (The long leg of the capacitor is the positive (+)).

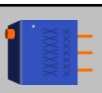
Qty	Value	Code	Name on PCB
1	4.7uF	4.7uF	C102
4	10uF	10uF	C16, C17, C18, C105

TRANSISTORS

Be sure they are orientated correctly. The curved and flat sides of the silkscreen outline of the transistor on the PCB must match that of the transistor's body.

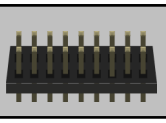
Qty	Value	Name on PCB
4	2n3906	T1, T2, T3, T100
4	2n3904	T4, T5, Q100, Q101

TRIMMERS



Solder the 10k trimmer at ZZZ with the screw facing out from the edge of the PCB.

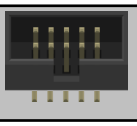
PIN HEADERS



Place and solder the Pin Headers on the Main Board where the silkscreen indicates (It is the shorter pins that you are soldering). Double check they all are perfectly straight.

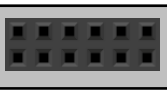
Qty	PINs	Name on PCB
2	2x4	CON_1, CON_2

POWER CONNECTOR



Solder the power connector at "POWER" ensuring it is facing out from the edge of the PCB.

SOCKET CONNECTORS



Place and solder the socket connectors on the control board where the silkscreen indicates. Double check they all are perfectly straight.

Qty	PINs	Name on PCB
2	2x4	TO_CON_1, TO_CON_2

SPACER

Secure the spacer onto the CONTROL PCB (through the two hole with silver outline) with the main body of the spacer on the component side, and the nut on the opposite.

FADER

Solder the faders on the PCB where it is indicated by the silkscreen (on the reverse side to the smaller components).

Qty	Name on PCB
1	DECAY

You're nearly at the end, but the next part is critical and takes a good bit of concentration. If you're feeling a bit strained, a break would definitely help. Reply to those unread messages or prove someone wrong in Internet, for example. Mechanical parts are really delicate and will need your full attention.

FRONT PANEL COMPONENTS MOUNTING TIPS:

Now we will proceed to mount mechanical parts to panel. This part of the assembly is CRITICAL. Please take your time and read the following instructions carefully.

These components must **NOT** be soldered until they are placed on the PCB and fully attached to the front panel!!!

There are two reasons for this:

> The height of the panel components are not all the same. Because of this, if not attached properly before soldering, they will not stay properly seated against the panel. This might cause mechanical stress reducing their life expectancy and in the worst case cause them to break.
> The second reason is that it is very difficult to align the components to the holes if the panel is not positioned prior to soldering.

MINI-JACKS

Place the mini-jacks on the PCB ensuring they are on the side with the silkscreen but **don't solder them until the front panel is in place with all nuts screwed to it.** This way it's easier to solder them in the right position. Keep in mind that the front panel holes are quite narrow and it is almost impossible to place it with all the components already soldered. Also

POTENTIOMETERS		
Now place the potentiometer on the PCB but... **don't solder it yet!**		
Qty	Type	Name on PCB
4	Single (3pin) B100k	BEND, SHAPE, TIME, TUNE

PUSH BUTTON		
Remove the nut from the push button and the washer. Now fit the push button onto the PCB but again...**don't solder it yet**.		
Qty	Type	Name on PCB
1	Red Cap OFF/ON Push-Button	M_TRIG

LED

Place the LED onto the PCB minding their polarity, but **don't solder them** until the front panel is in place. This is the only way to solder them in the right position.
The long leg is the positive and the short the negative. On the PCB the square pad indicates the negative side and there is a + symbol to indicate the positive.

Qty	Name on PCB
1	LED1

FRONT PANEL

Attach the **front panel** adjusting the parts one by one if necessary until it fits. At this point a pair of fine tweezers can be helpful.

To Finish:

- Screw in the parts in this order: A) **Mini-jacks** B) **Pots** C) **Push button.** Take care to **use the correct nuts**, as the mini-jack and pot nuts look similar (both black). The mini-jack nuts are slightly smaller in circumference. Use a **pot nut** for the **push button**.
- Ensuring all of the above parts are flush with the panel and both PCB and panel are perfectly parallel. Then you can **finally solder** them!
- **Cut the exceeding part of the legs of the push button, after soldering).**
- Fit the LEDs on the panel holes and solder them
- Put the **knobs** on the potentiometers and the red caps on the switches/Faders.
- Connect the **power ribbon cable**: The red wire (-12V) on the power ribbon cable corresponds to pin number one on the male power connector. The number one pin is indicated with a small triangle on the male power connector and a white line on the main PCB. A white or black line (or "-12v") marked on your power bus normally indicates the corresponding pin.

CALIBRATION PROCEDURE

The tuning procedure is an iteration of successive approximations. We will try in each iteration to get closer to a perfect tune. Just follow the next steps and your Kickall will be ready to go in a few minutes.

1 - Turn the knobs to the following position:
TUNE: Center
BEND and TIME: Minimum (counterclockwise)
DECAY: Maximum (slider upper position)
SHAPE: Maximum (fully clockwise)

2 - Feed the TRIG input with a very fast trigger signal (a square signal from an oscillator can work too)

3 - Plug a **V/Oct signal from a well calibrated CV source** like a sequencer or a keyboard into the **TUNE** input and connect the **OUT of the module to a tuner**. Note: if you don't have a hardware tuner you can connect the module to your audio interface and use a software tuner as well.

4 - Send a voltage of **0V from your CV source** and check the tuner, adjust the TUNE knob till your tuner shows **C0** note. Be patient on this step, on the low frequency range it is a bit harder to be precise.

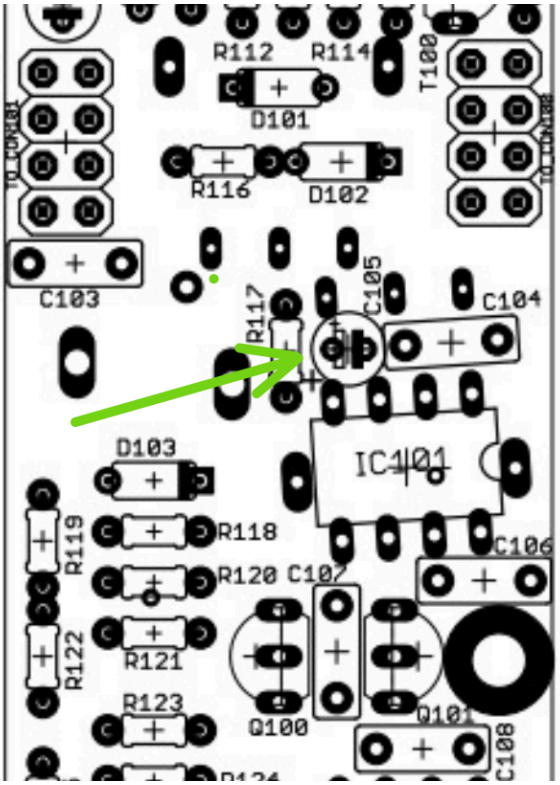
5 - Send a voltage of **4V from your CV source** and check the tuner, adjust the **ZZZ** trimmer located on the upper part of the module (the little blue one) with a small flat screw driver till your tuner shows you a **C4** note.

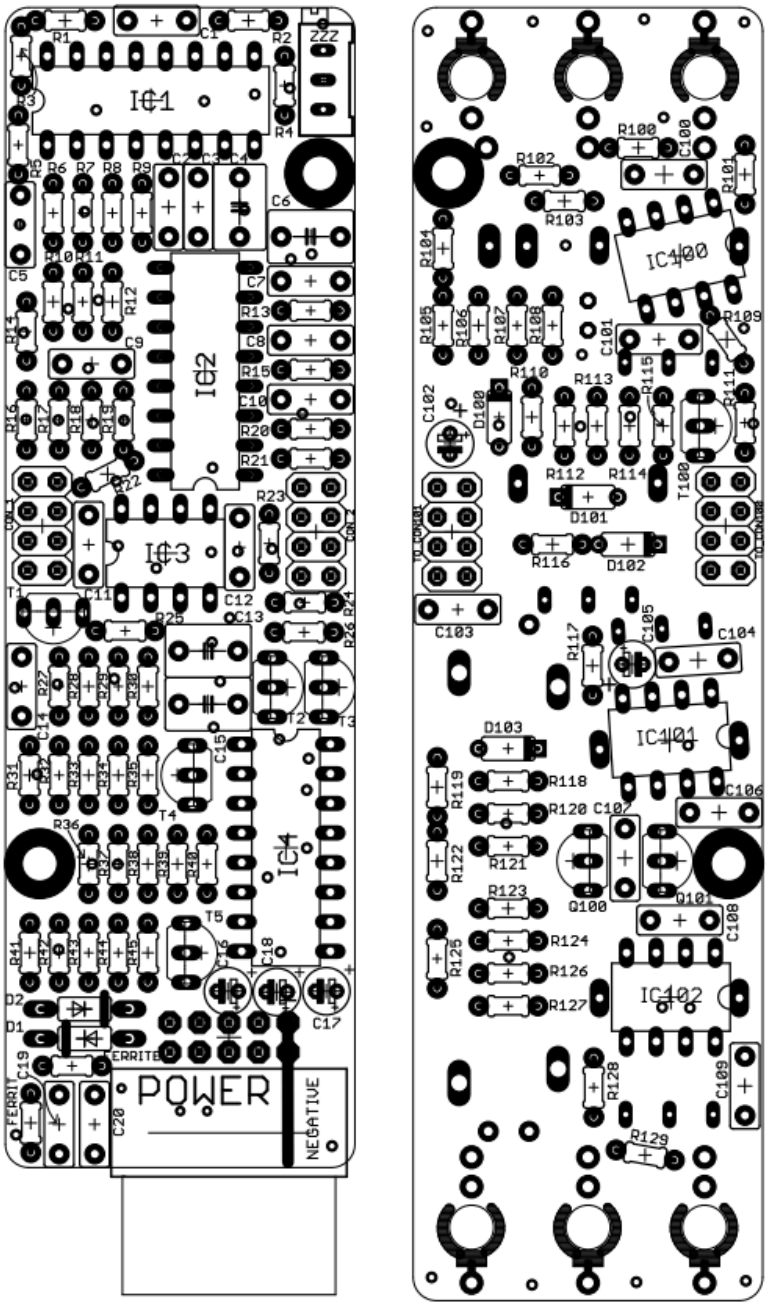
6 - Now send again a **0V** voltage and check the tuner. **You will notice that it is not showing you the C0 note that we adjusted before but we are closer than the first time. Let's repeat steps 4 and 5 till we get C0 and C4 in both.**

Once this is done, send other notes from the CV source and check the tuner, to make sure the whole range is tracking. If not, repeat steps 4 and 5 again till you get it.

BONUS TRACK

It is possible to modify Kickall to reduce pitch envelope maximum decay time by decreasing the value of C105 Electrolytic Capacitor (to 1uF for example) and viceversa, C105 can be increased to achieve longer maximum decay time pitch envelopes.




IC1
IC2
IC3
IC4
POWER
NEGATIVE
IC100
IC101
IC102