

## 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.

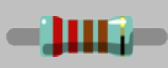
Some steps are not obvious, so even if you're an experienced DIYer please read the steps thoroughly before starting.


If this is your first project, please read this article before you start assembling the kit:  
[www.befaco.org/howto/](http://www.befaco.org/howto/)


**GOOD LUCK!**

## MAIN PCB

### OPEN MAIN BOARD BAG A

RESISTORS 			
Qty	Value	Code	Name on PCB
15	10k	Brown, black, black, red, brown	R5, R6, R20, R21, R22, R23, R25, R26, R30, R31, <b>R32 - place and solder same time as R36 (2.2k)</b> , R35, R39, R40, R42
8	100k	Brown, black, black, orange, brown	R13, R14, R15, R16, R29, R37, R43, R48
4	1M	Brown, black, black, yellow, brown	R3, R4, R41, R47
2	1k	Brown, black, black, brown, brown	R7, R8
2	2.2k	Red, red, black, brown, brown	<b>(R36 - should already be soldered)</b> , R38
2	3k	Orange, black, black, brown, brown	R9, R24
2	4.3k	Yellow, orange, black, red	R28, R33
2	6.2k	Blue, red, black, brown, brown	R1, R2
2	8.2k	Gray, red, black, brown, brown	<b>R27 - be very careful not to fill the adjacent hole, R34</b>
2	22k	Red, red, black, red, brown	R10, R17
2	39k	Orange, white, black, red, brown	R11, R19
2	82k	Gray, red, black, red, brown	R12, R18
2	470k	Yellow, violet, black, orange, brown	R45, R46
1	4.7k	Yellow, violet, black, brown, brown	R44

DIODES 		
Qty	Value	Name on PCB
Solder the diodes <b>observing their polarity</b> . The black or white line on the diode must match with the white line on the diode symbol on the PCB silkscreen.		
2	1N4148 (Orange)	D1, D2
2	1N5817 (Black ones)	D3, D4




**FERRITE**

Solder the two ferrite beads by using 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+, FERRITE-

**OPEN THE ICS BAG**




**ICs**

First **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.

Next place the ICs in their respective sockets (again 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
6	TL072	IC1, IC2, IC3, IC4, IC5, IC6



**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
10	100nF	104	C1, C2, C3, C4, C5, C6, C7, C11, C12, C14
2	47nF	47nk100	C8, C13



**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
2	10uf	10uf	C9, C10



**POWER CONNECTOR**

Solder the power connector where it says "EPOWER" ensuring the position is correct: it must be placed over the silkscreen marking with the small triangle on the connector on the same side as the thick white line on the PCB.

**FRONT PANEL COMPONENTS MOUNTING TIPS:**

Now we will proceed to mount the jacks, potentiometers, switches and LEDs. 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. In the case of the LEDs, they are almost impossible to set to the correct height without reference to the front panel.

**OPEN MINI-JACKS BAG**

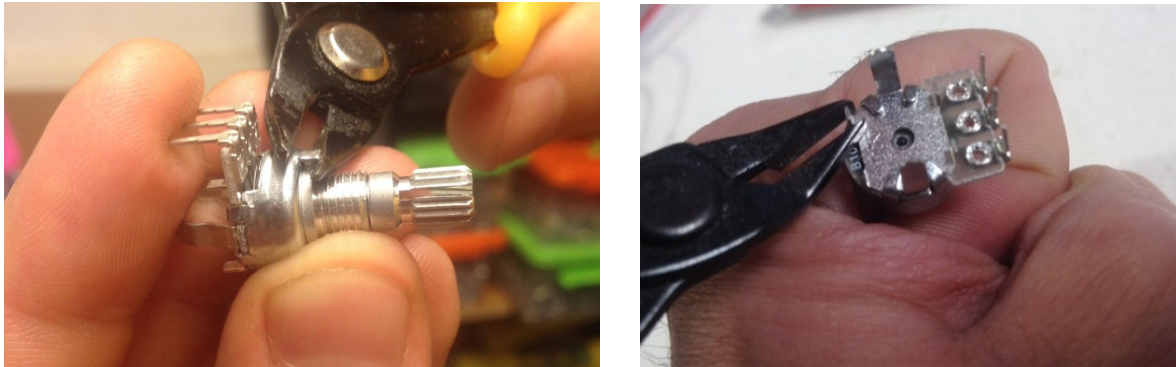
**MINIJACKS**

Place all the mini-jacks onto the PCB ensuring they are on the silkscreen side, but **don't solder yet.**

**Caution:** the switch nut and the jack nuts look the same, but they are not equally sized and will not fit in each others' thread, so make sure to keep them separate!

**OPEN CONTROL BOARD BAG B**

**POTENTIOMETERS**



Cut the locating lug and base standoffs on all pots with cutting pliers as pictured. **IMPORTANT:** If you do not cut the base stands, they might short-circuit the ICs!

Now place potentiometers on the PCB but... **don't solder them.**

Qty	Type	Name on PCB
4	Single (3pin) 100K	ATV1, ATV2, OFFSET1, OFFSET2

### Push Button

Remove the nut from the two push buttons but leave the washers on. Fit the push buttons with the washers on to the panel where the silkscreen indicates but **don't solder them yet.**

Qty	Type	Name on PCB
2	Push Button	MGATE_1, MGATE_2

### LEDs



Place the LEDs onto the PCB mindings, 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	Type	Name on PCB
2	Dual_Led (white)	LEDX, LEDY
2	Led_3mm_Red	LED_G1, LED_G2

### FRONT PANEL

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

To finish:

- Secure the parts to the panel in this order: A) **Mini-jacks** B) **Pots** C) **Push buttons.**
- Ensuring all of the above parts are flush with the panel then you can finally **solder** them!
- Next, adjust the **LEDs** so that they are flush with the panel and solder them.
- Put the **knobs** on the potentiometers

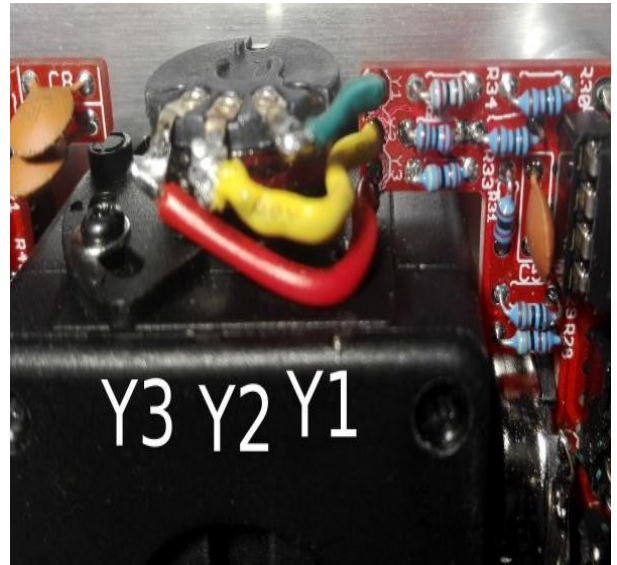
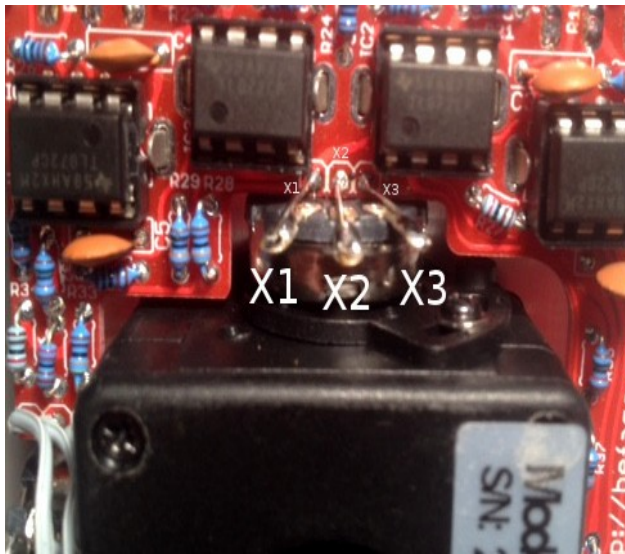
**[CONTINUED ON NEXT PAGE]**

First solder three resistor legs to points X1,X2,X3 on the PCB. Next solder three wires about 5cm long to Y1,Y2,Y3 on the PCB. As you can see in the pictures below, you will be soldering them to the pot lugs at the end of the assembly.

Now place the joystick into the front panel. There is only one possible orientation. Make sure the rubber cover is in its right place in order to secure it later.

There is a circular plastic cover that must go on the front of the panel. Make sure the holes are aligned correctly and then secure it to the panel. Solder the potentiometer lugs to the resistor legs and cables you previously soldered (X1, X2, X3 and Y1, Y2, Y3 - see images below).

Finally 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.



**ENJOY YOUR NEW BEFACO MODULE!**