THANKS FOR CHOOSING ONE OF OUR SEMI KITS!

What you have here is a semi kit, where all components are soldered in the boards and you will be doing the final assembly of mechanical components, testing and calibration.

This is a quite complex build. If you are not an experienced DIYer you might find yourself in trouble. Some steps are not obvious, and some components tricky to solder, so even if you're an experienced DIYer please read the steps thoroughly before starting.

Also, even if this is a semi kit, **TROUBLESHOOTING SKILLS ARE MANDATORY and you should be an experienced DIYer with basic schematics reading skills.**
This semi kit is not suitable for beginners.

HAVE FUN!

First thing we will do, before soldering is taking both boards apart. Please be gentle and make sure no pieces of pcb are left In the borders.

We will be working mostly with control board, where all mechanical components are soldered. Remember components are placed on silkscreen side.

TRIMMERS
Solder the two 10k trimmers at "SYMETRY_A" and "SYMETRY_"B on the reverse side of the PCB (opposite side to the components) with the screws facing the edge of the PCB.

FADERS
Solder the faders onto the PCB at the positions indicated by the silkscreen on the opposite side of the board to most of the components (but the same side as the two trimmer potentiometers you previously soldered).

Qty	Name on PCB
4	FALL_POT, FALL_POT_B, RISE_POT, RISE_POT_B

SPACERS
Secure the spacers onto the board (through the holes with silver outlines) with the main body of the spacer on the component side, and the nut on the opposite. This spacer will be used to fix main board to control one.

FRONT PANEL COMPONENTS MOUNTING TIPS

Now we will proceed to mount the jacks, potentiometer, 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

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. **Caution** the switch nuts and the jack nuts looks the same but they are not and will not fit in each others' thread so don't mix them!

POTENTIOMETERS
Now place the potentiometer on the PCB. Do not place them all the way down, leave them loose and... **don't solder them yet!**

Qty	Type	Name on PCB
2	Dual (6pin) 10K	SHAPE_A, SHAPE_B
1	Single (3pin) 1M	CROSSFADER

SWITCHES
Remove the two nuts and the tabbed washer from the toggle switches. Discard one nut and the tabbed washer, but keep one nut for securing to the front panel later. Place the four toggle switches on the PCB but **don't solder them** yet. You will know which ones are the two and three position switches because when switching, two will have just two positions it can rest in and the other two will have a third rest position (in the center). Remove the nut and the washer from the push button. Now fit the push button onto the PCB but again...**don't solder it yet**.

Qty	Type	Name on PCB
2	Single two position	CYCLE_A, CYCLE_B
2	Single tree position	RANGE_1, RANGE_2
2	Push Button	M_TRIG_A, M_TRIG_B

LEDs	

LEDs
Place the LEDs 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
9	F_A_LED, F_B_LED, LED_A, LED_A>B, LED_B, LED_MAX, LED_MIN, R_A_LED, R_B_LED

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) **Switches** C) **Pots** D) **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.

– Connect the **main PCB** to the **control PCB** by threading the 2x M3 screws through the main PCB and securing them to the 2 spacers. The main PCB should be orientated so that the component side is facing towards the front panel.

– Put the **knobs** on the potentiometers and the red end-**caps** on the switches/faders.

CALIBRATION

Sometimes, due to the tolerance of the potentiometer, the response of the **SHAPE** pot may not be quite symmetrical. If this is the case, adjust **SYMETRY_A** and **SYMETRY_B** trimmers as required.

To do this
1. Connect the Rampage's **OUT A** to an oscilloscope. A software oscilloscope on your computer is fine but in this case the signal needs to be attenuated to avoid clipping. If attenuation is needed you can use the **MAX OUT** in place of **OUT A** and adjust the amplitude with the **BALANCE** pot

2. Set **RANGE** switch A to MID (bottom position).

3. Set the **CYCLE** Switch A to CYCLE (Top position).

4. Push the manual trigger A (**TRIGG**) button, to put your rampage into oscillation.

5. Set **RISE** and **FALL** faders at minimum.

6. Turn the **SHAPE A** pot to the center (so you have a perfect triangle wave on your scope). Check if rise and fall times are equal. If so you are done. If not go to the next step.

7. Turn the **SYMETRY_A** trimmer and try to match (as much as possible) the rise and fall times.

8. Repeat the previous steps for **SYMETRY B**.

ENJOY YOUR NEW BEFACO MODULE!