PROJECT NAME

OCEANID

aion
DIY GUITAR EFFECTS

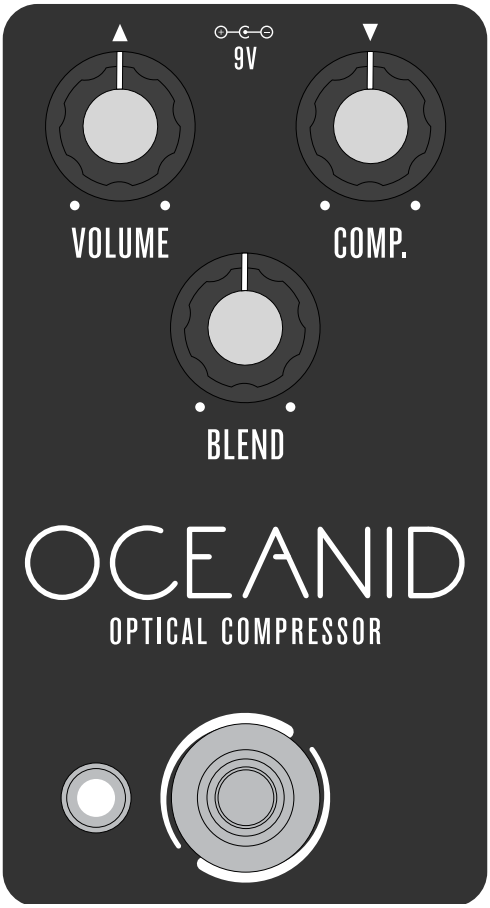
BASED ON
Cornish OC-1

BUILD DIFFICULTY
Intermediate

EFFECT TYPE
Compressor

DOCUMENT VERSION
1.0.0 (2025-08-30)

PROJECT SUMMARY
Pete Cornish's original optical compressor design features a clean blend and a complex side-chain for envelope detection along with his legendary input buffer.



IMPORTANT NOTE

This documentation is for the **kit** version of the project. If you purchased the PCB by itself, please use the PCB-only version of the documentation instead. The circuit is the same, but the instructions are completely different due to the specialized parts and assembly methods used in the kit.

TABLE OF CONTENTS

INTRODUCTION

If this is your first pedal, welcome to the hobby and thank you for choosing Aion FX. You've just joined a community of over 100,000 people around the world with a passion for building homemade noise machines using obsolete electronics technology, and we're glad to have you!

If you've done this before, it's great to see you again and we're confident you'll find this build experience an enjoyable one.

Aion FX kits are designed to empower anyone to build a high-quality pedal, no matter the skill level. The pedalbuilding hobby has traditionally had a steep learning curve, but don't be overwhelmed—we've done all the hard work for you. All you need to do is follow these instructions and you'll be on your way to transforming your tone.

There are a few things to go over before you get started.

- **You're going to have to get your hands dirty**—there's no way around it. Nothing here comes preassembled, and you'll have to learn the skills to put it all together. This document will walk you through everything you need, but be prepared to learn a few things along the way.
- **This will take time**. Plan on about two hours start to finish. It may take even longer if it's your first time building. Don't rush it. If you find yourself getting frustrated or overwhelmed, take a break and come back in a couple of hours or the next day.
- **No direct technical support is offered.** There are several DIY forums and Facebook groups with thousands of members who enjoy troubleshooting and teaching. But please be sensitive to the fact that the staff at Aion FX is minimal, and every minute spent helping individuals in private is time that can't be spent on new project development.
- **There is no implied guarantee of a final product.** Aion FX provides the ingredients and the recipe, but you are responsible for putting everything together to make it work. We've tried to make the process as clear and accessible as possible, but it must be expressly stated that purchasing the kit is not a guarantee that you will end up with a working pedal.

It's recommended to read through all of the instructions before you start, particularly if you've never built a pedal before. If you familiarize yourself with the entire process ahead of time and you know what the goal looks like, each step will make more sense.

Now, on to the fun stuff!

PACKING LIST

This is a list of all the parts that are included with the kit, grouped by value. For a list of all the parts based on their PCB part numbers, please see pages 27-28.

If you find that any parts are missing or damaged, please fill out the Missing Parts form.

Film Capacitors

NAME	QTY
1n	1
100n	4
470n	2

Electrolytic Capacitors

NAME	QTY
2.2uF	2
4.7uF	3
22uF	4
47uF	1
100uF	1
220uF	2

MLCC Capacitors

NAME	QTY
150pF (marked “151”)	1
220pF (marked “221”)	2
470pF (marked “471”)	1
100n (marked “104”)	1
220n (marked “224”)	1

Transistors

NAME	QTY
BC549C	1
BC550C	1
LM4040CIZ-5.0	1

Resistors

NAME	QTY
51R	1
91R	3
100R	4
1k	3
2k2	1
3k3	1
7k5	1
8k2	2
10k	10
15k	1
18k	1
22k	1
30k	1
47k	1
51k	2
91k	2
100k	2
120k	2
200k	1
1M	4
10M	1

Diodes

NAME	QTY
1N5817	1
1N914	2

PACKING LIST (CONT.)

Optocoupler

NAME	QTY
NSL-32	1

Trimmer

NAME	QTY
20k trimmer	1

ICs

NAME	QTY
TL072	2
LM358N	2
8-pin socket	4

Other

NAME	QTY
LED bezel	1
LED, white	1
DC jack	1
Input/output jack	2
Mounting nut, jack, 0.54"	4
Outer washer, jack, 0.6"	2
Lock washer, jack, 0.5" (thin)	2
Enclosure	1
Enclosure screws	4
PCB, main circuit	1
PCB, footswitch	1
PCB, input/output/DC	1

Potentiometers

NAME	QTY
10kC	1
25kB	1
100kA	1
Dust cover	3
Knob	3
Mounting nut, potentiometer, 0.44"	3
Lock washer, potentiometer, 0.5"	3
Outer washer, potentiometer, 0.475"	3

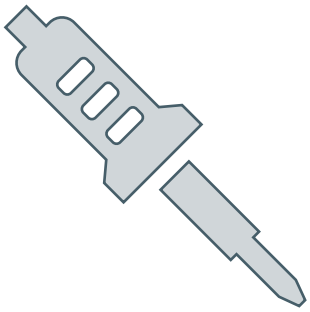
Switches

NAME	QTY
Slide switch, 4PDT	1
Stomp switch, 3PDT	1
Mounting nut, stomp switch, 0.6"	2
Lock washer, stomp switch, 0.6"	1
Dress nut, stomp switch, 0.77"	1

Wiring

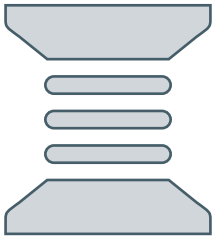
NAME	QTY
3-strand wire assembly, 70mm	2
4-strand wire assembly, 122mm	1
3-pin wire assembly header	2
4-pin wire assembly header	1

TOOLS NEEDED



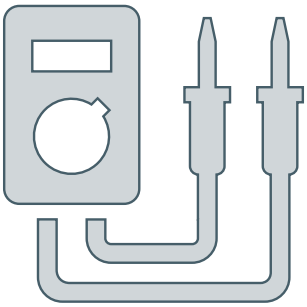
SOLDERING IRON

Temperature-adjustable is recommended. The optimum soldering temperature is 700-725° F (371-385° C) for leaded solder, or 750° F (400° C) for lead-free.



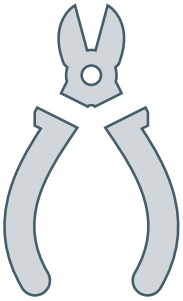
SOLDER

Preferably 63/37 or 60/40 leaded solder. Lead-free is more difficult to use, so if that's the only type you can get, it's best to watch tutorials that are specific to lead-free solder.



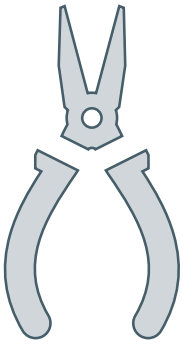
DIGITAL MULTIMETER (DMM)

Most cheap ones in the $10-30 range are fine for what we're doing. Make sure it has audible continuity testing (i.e. it beeps at the lowest resistance) and transistor hFE measurement.



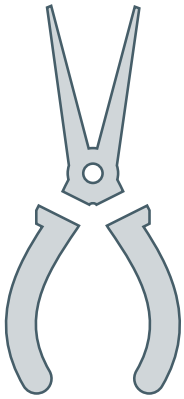
WIRE SNIPPERS

Also called nippers or wire cutters. The Hakko CHP-170 is the best you can get for less than $10.



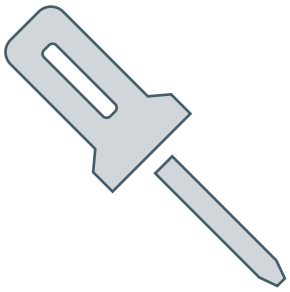
FLAT-NOSE PLIERS

Many general-purpose uses, but particularly tightening the nuts of pots, switches and jacks. Quicker than changing out sockets on a ratchet.



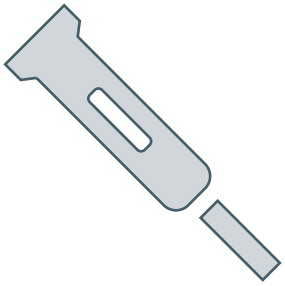
NEEDLE-NOSE PLIERS

These are used for bending leads on components and other general uses. Use the smaller type with a tip that's approximately 0.05" (1.25mm) wide.



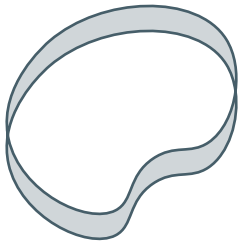
SCREWDRIVER (PHILLIPS)

Used for the enclosure screws. Get a powered driver if you'll be building a lot of pedals!



FLAT SCREWDRIVER (SMALL)

This is used for tightening the set screws on the knobs. The tip should be no more than 0.1" (2.5mm) wide.



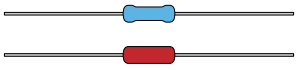
RUBBER BAND

Yes, a plain old rubber band. This is used to tighten the dress nut to avoid scratching or denting it (which can happen with metal tools).

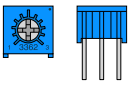
COMPONENT IDENTIFICATION

If you've never built a pedal before, you'll need to know what all the components are. These are shown actual size. (Not all of these types of components may be part of this kit.)

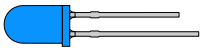
RESISTOR



TRIM POTENTIOMETER

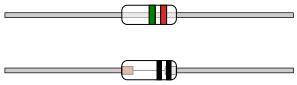


LED



SILICON DIODE

GERMANIUM DIODE



These are very fragile, so be careful when handling them.

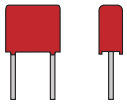
RECTIFIER DIODE

Some Schottky diodes also look like this.

SCHOTTKY DIODE

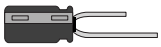
ZENER DIODE

FILM CAPACITOR



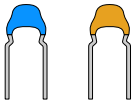
Not polarized. Color may vary by brand and type.

ELECTROLYTIC CAPACITOR



Polarized. The negative side is marked.

MLCC

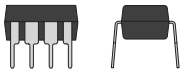


Not polarized. MLCC stands for "multi-layer ceramic capacitor."

TANTALUM CAPACITOR

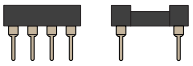
Polarized. The positive side is marked.

IC OR OP-AMP

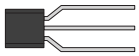


Charge pumps and delay chips also look like this. They may have more than 8 legs.

IC SOCKET

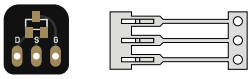


TRANSISTOR OR JFET



Some voltage regulators also look like this.

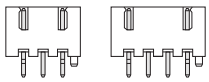
TRANSISTOR WITH ADAPTER



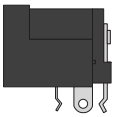
The pins will be soldered to the adapter during kit assembly.

WIRE ASSEMBLY

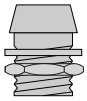
WIRE ASSEMBLY HEADER



DC JACK



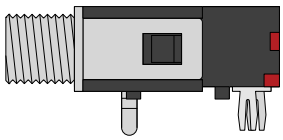
LED BEZEL



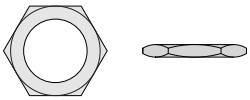
HARDWARE IDENTIFICATION

The hardware comes unassembled, so you'll need to sort & identify each of the pieces. The diagrams below are actual size, so you can set them against the printed page to identify them if needed.

I/O JACK

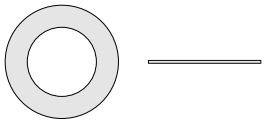


MOUNTING NUT



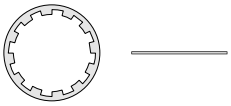
DIAMETER: 0.54" / 13.7mm

OUTER WASHER



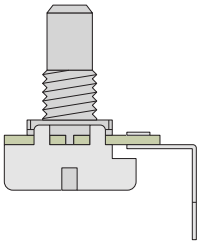
DIAMETER: 0.6" / 15.2mm

LOCK WASHER

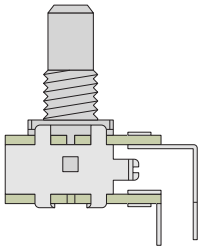


DIAMETER: 0.5" / 12.7mm

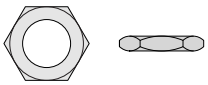
POTENTIOMETER (SINGLE)



POTENTIOMETER (DUAL)

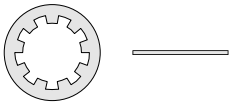


MOUNTING NUT



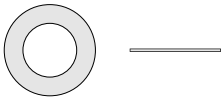
DIAMETER: 0.44" / 11.2mm

LOCK WASHER



DIAMETER: 0.5" / 12.7mm

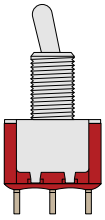
OUTER WASHER



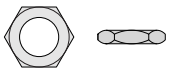
DIAMETER: 0.475" / 12mm

KNOB

TOGGLE SWITCH

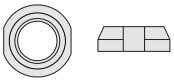


MOUNTING NUT



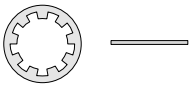
DIAMETER: 0.36" / 9.1mm

DRESS NUT



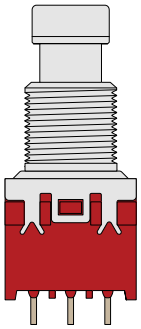
DIAMETER: 0.375" / 9.5mm

LOCK WASHER

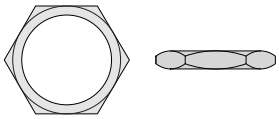


DIAMETER: 0.4" / 10.1mm

FOOTSWITCH

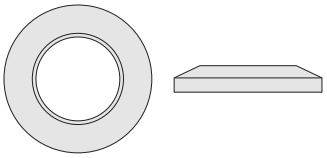


MOUNTING NUT



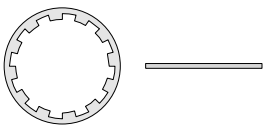
DIAMETER: 0.6" / 15.2mm

DRESS NUT



DIAMETER: 0.77" / 19.6mm

LOCK WASHER



DIAMETER: 0.6" / 15.2mm

PCB ASSEMBLY OVERVIEW

Now it's time to start building!

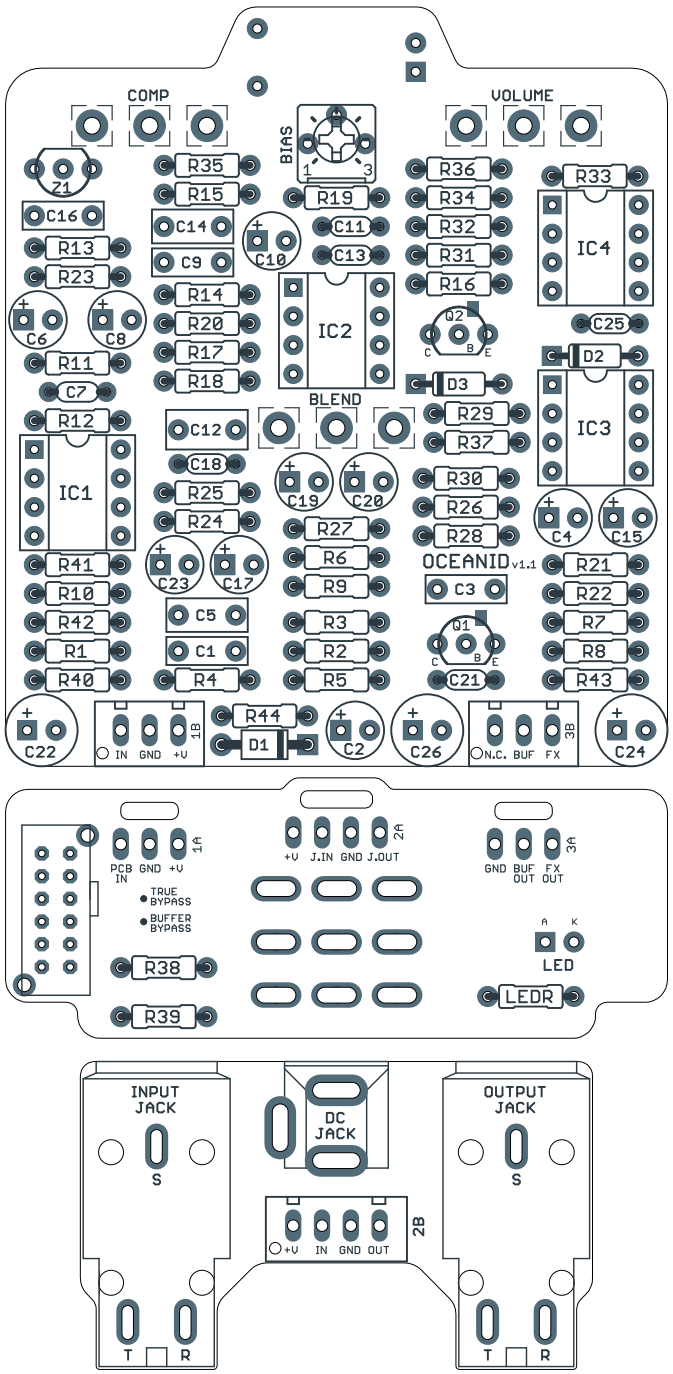
The first thing you need to do is snap apart the PCBs into 3 separate boards (if needed) and break off the tabs from each using needle-nose or flat-head pliers. You should be left with the PCBs shown to the right.

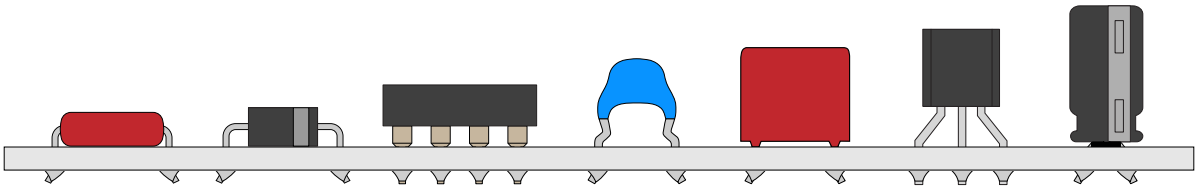
The general principle for PCB population is that you want to work in layers from shortest components (i.e. lowest-profile) to tallest so that when the PCB is upside-down, everything is making contact with the work surface and is held in place.

Generally speaking, you should populate the components in this order:

1. Resistors
2. Diodes
3. IC sockets
4. MLCC capacitors
5. Film capacitors
6. Transistors
7. Electrolytic capacitors

Not all of these component types are included in each kit, so skip them if they aren't applicable. Some types of film capacitors are taller than electrolytics, so those can be done last.





RESISTORS

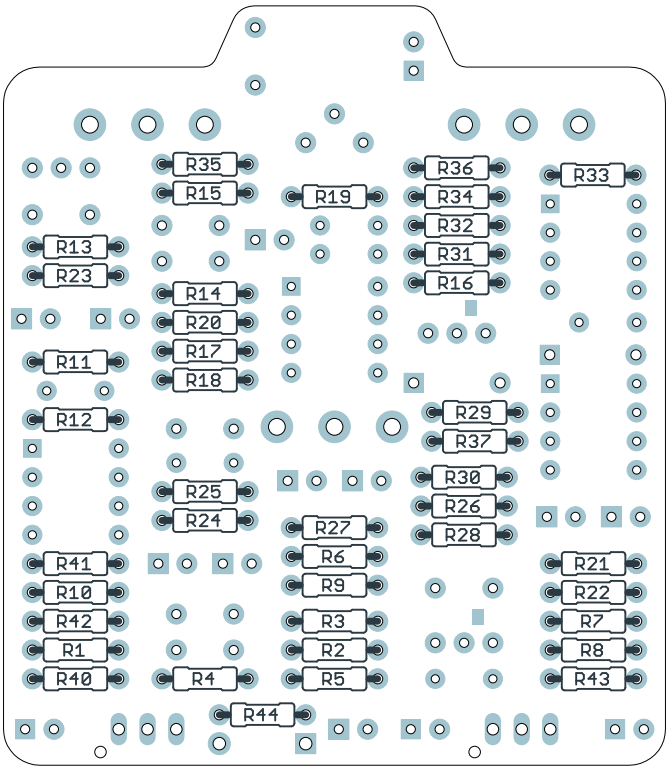
PART	VALUE
R1	10M
R2	1k
R3	120k
R4	120k
R5	200k
R6	7k5
R7	10k
R8	51R
R9	1M

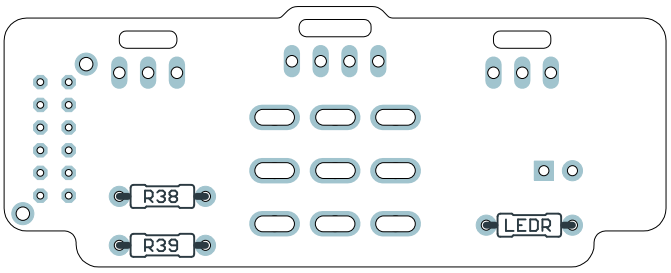
PART	VALUE
R10	1M
R11	10k
R12	10k
R13	10k
R14	1M
R15	8k2
R16	91R
R17	10k
R18	10k

PART	VALUE
R19	51k
R20	18k
R21	10k
R22	91R
R23	1M
R24	2k2
R25	30k
R26	91k
R27	10k

PART	VALUE
R28	91k
R29	100k
R30	100R
R31	1k
R32	15k
R33	10k
R34	100k
R35	47k
R36	3k3

PART	VALUE
R37	1k
R38	91R
R39	51k
R40	100R
R41	8k2
R42	10k
R43	100R
R44	100R
LEDR	22k





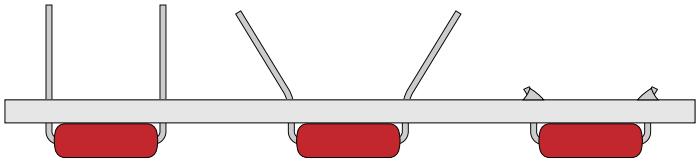
Note: R1 (10M) is a brown carbon-film resistor. It does not have the value printed, but it can be identified by color since all the other resistors are red.

Additionally, make sure to correctly identify the following resistors, since the “R” and “K” can be easily mistaken:

- 51R / 51K
- 91R / 91K
- 100R / 100K

If the resistor values are swapped, the effect likely will not work at all, so be careful!

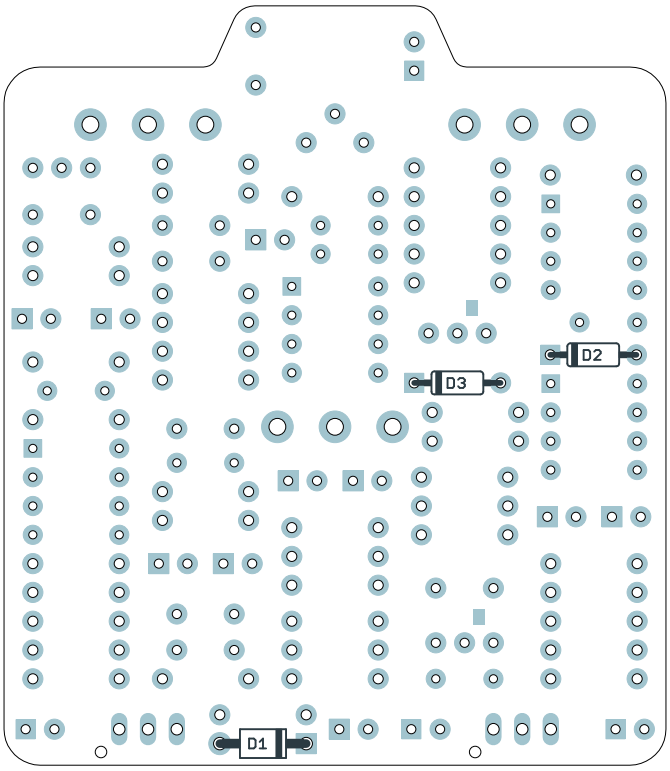
Using the parts list above, populate the resistors by pushing them through the holes and bending the leads outward at an angle to hold them in place. Resistors are not polarized, so they will work in any direction. Turn the board upside-down to keep the components held in place while you solder.



Don’t try to do all of the resistors at once. You’ll want to stop periodically flip the board and solder everything, then cut the leads using the wire snippers to make room for more.

DIODES

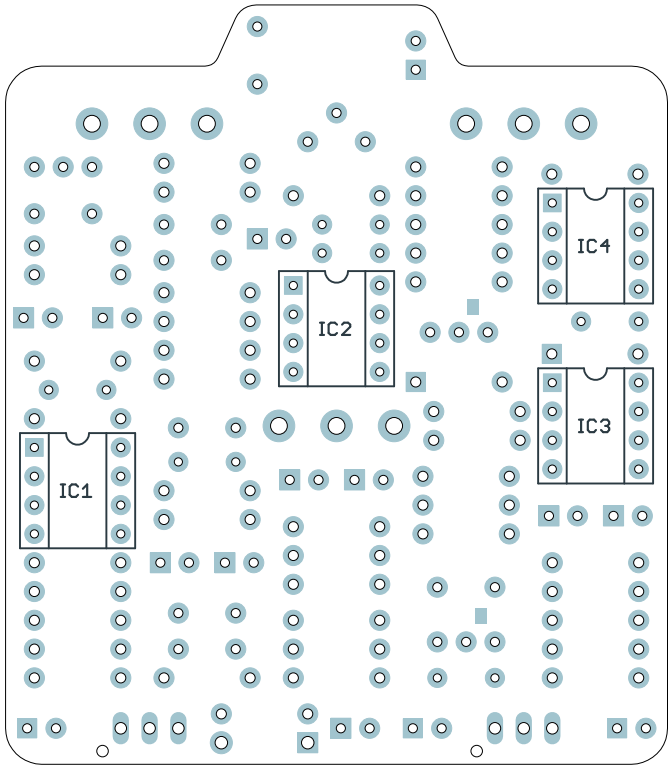
PART	VALUE
D1	1N5817
D2	1N914
D3	1N914



Next, you'll populate the diodes. Diodes are polarized, so make sure to identify the polarity band (which indicates the "cathode", or negative side) and match the band to the footprint on the PCB.

SOCKETS & ICS

PART	VALUE
IC1	TL072
IC2	TL072
IC3	LM358
IC4	LM358



Next up are the IC sockets. You can't bend the leads of the sockets like you can with the other components, so they won't stay in on their own until they are soldered.

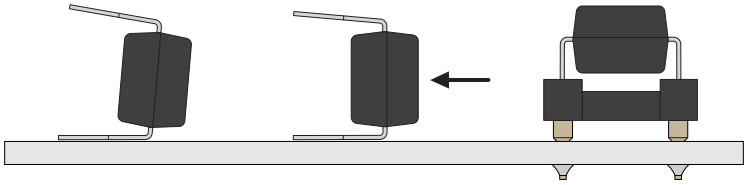
Again, it's much easier to do this with gravity holding it in place for you, so you'll want install the socket before you do any of the taller components.

Installing the ICs

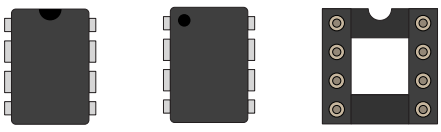
Don't insert the ICs into the sockets just yet. We will do this in a later step, after we've finished soldering the tallest components (the polarized capacitors). This information is just listed here for reference.

The legs of the ICs are bent outward slightly during manufacturing, so they'll need to be bent back inward before they can be inserted into the sockets.

It's easiest to do this by laying the IC legs against the table and bending the body itself so all four legs on the side are straightened out at once. Then, flip it and do the other side.

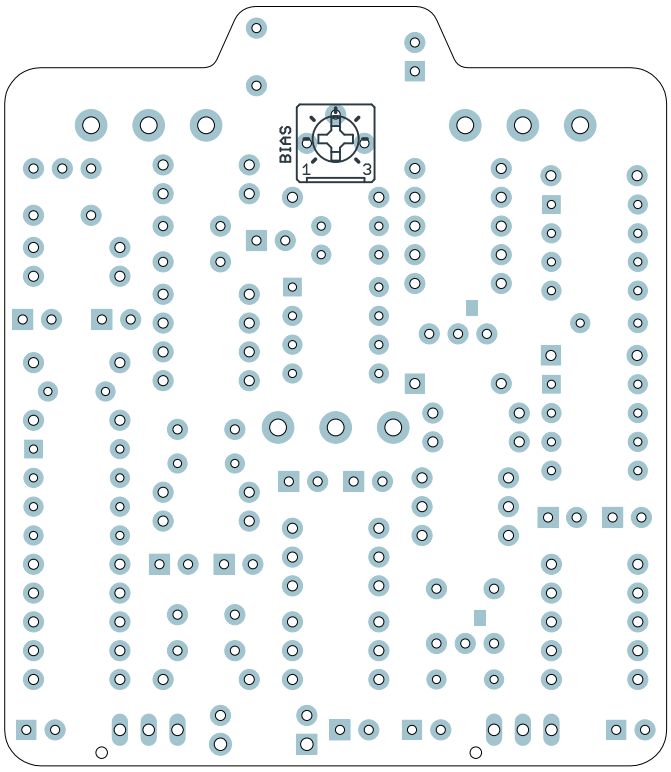


ICs may have two different orientation marks: either a dot in the upper-left or a half-circle notch in the middle of the top side. Some ICs have both marks. This shows which way the IC should be rotated when inserting it into a socket (the socket also has a half-circle notch).

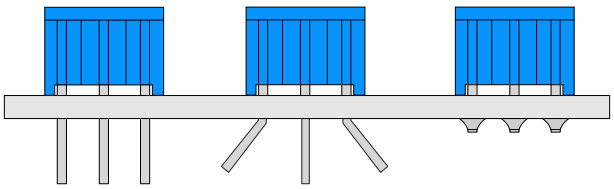


TRIMMER

PART	VALUE
BIAS	20k trimmer



Next, we'll do the trimmer. Bend the legs outward to keep it in place while soldering, as shown:



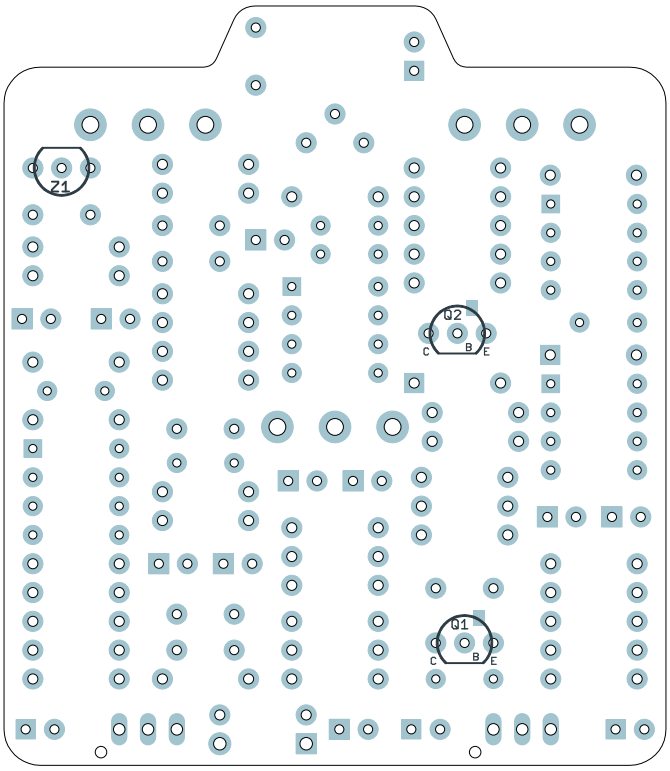
Setting the bias trimmer

The bias trimmer sets the LED's brightness in relation to the signal level. This essentially sets the range of the Compression control.

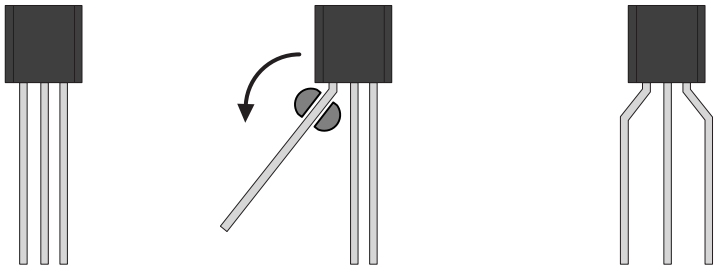
It's not known what procedure is used by the original circuit designer to calibrate this trimmer. It's recommended to set it to around 25% rotation (between 9:00 and 10:00) since that's where it was set in the unit that was traced. From there, it should only be adjusted if the control range is not suitable to your style of playing.

TRANSISTORS

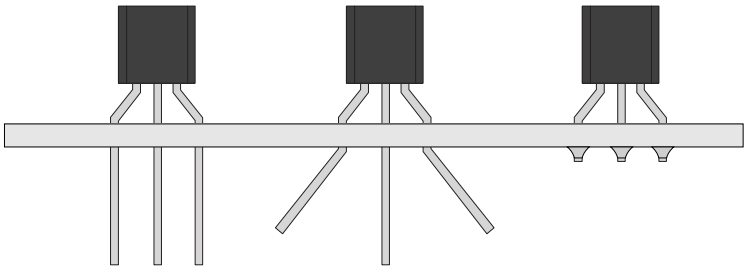
PART	VALUE
Q1	BC549C
Q2	BC550C
Z1	LM4040CIZ-5.0



Now we'll do the transistors. (Z1 is actually a regulator, but looks identical to a transistor.) If the legs are not already bent into 0.1" spacing, use your needle-nose pliers to bend the outer two legs as shown.



Once installed, bend the two outer legs to hold it in place on the board. Then, solder them in place and clip the leads.

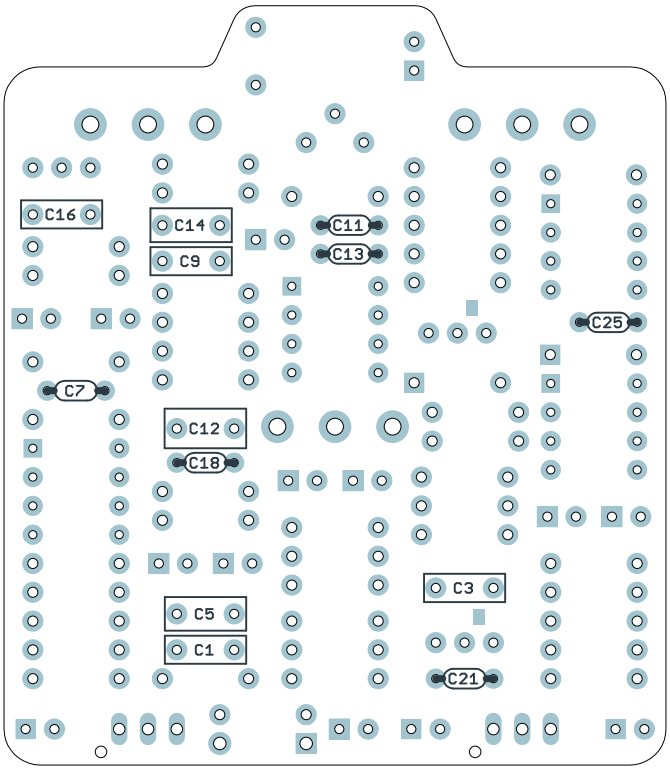


CAPACITORS (NON-POLARIZED)

PART	VALUE
C1	100n (0.1)
C3	1n
C5	100n (0.1)
C7	470pF MLCC
C9	100n (0.1)

PART	VALUE
C11	220pF MLCC
C12	470n (0.47)
C13	220pF MLCC
C14	470n (0.47)
C16	100n (0.1)

PART	VALUE
C18	150pF MLCC
C21	100n MLCC
C25	220n MLCC



Next up are the box film and MLCC capacitors. These are all several different heights, so it's recommended to do them shortest to tallest. Bend the leads at an angle to hold them in place.

MLCCs and box capacitors are not polarized, so they will work in any direction, but to keep things neat, it's best to put them all facing the same way.

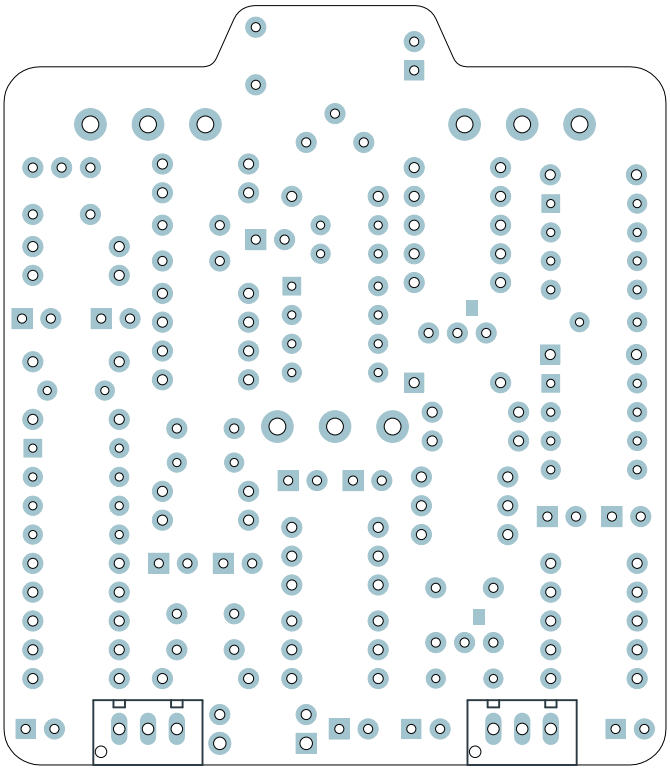
Capacitor identification

Depending on the type, the box film capacitors may have their value printed on either the top or the side. Usually the red ones have it printed on the side while the blue or gray ones have it on the top.

C1, C5 and C9 (100n) may read "µ1J100". C12 and C14 (470n) may read "µ47J50" or "µ47J63".

All MLCC capacitors except C21 will be taped to cardboard strips with the value written on the cardboard for easy identification. C21 (100n) is yellow and will be the only loose MLCC.

WIRE HEADERS

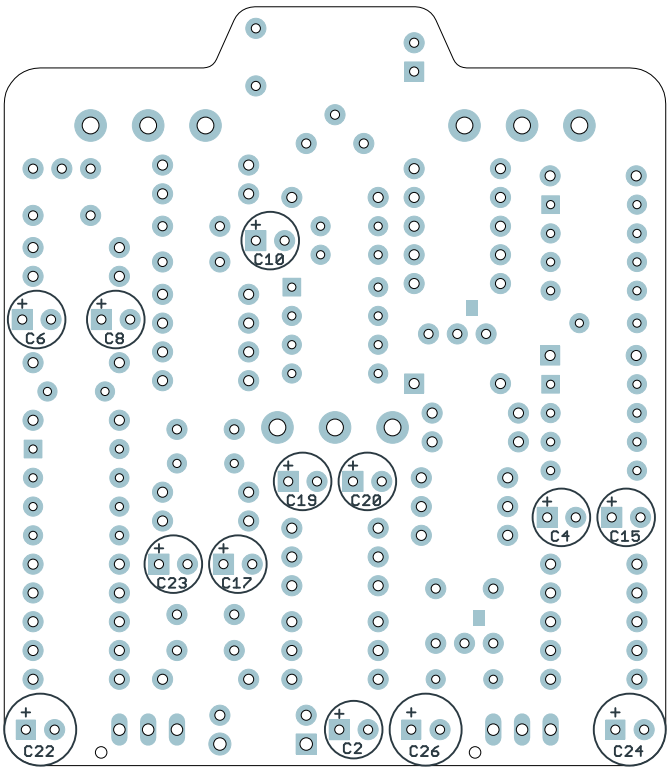


Install the two 3-pin headers (wire connectors) as shown above. These have a polarity pin, so as long as they are pressed all the way down, there's only one possible way to install them. They do fit pretty tightly in the holes, though, so press firmly.

There's also a 4-pin header on the I/O board that we will do in a later step.

CAPACITORS (POLARIZED)

PART	VALUE
C2	4.7uF
C4	22uF
C6	2.2uF
C8	22uF
C10	4.7uF
C15	22uF
C17	2.2uF
C19	22uF
C20	4.7uF
C22	100uF
C23	47uF
C24	220uF
C26	220uF



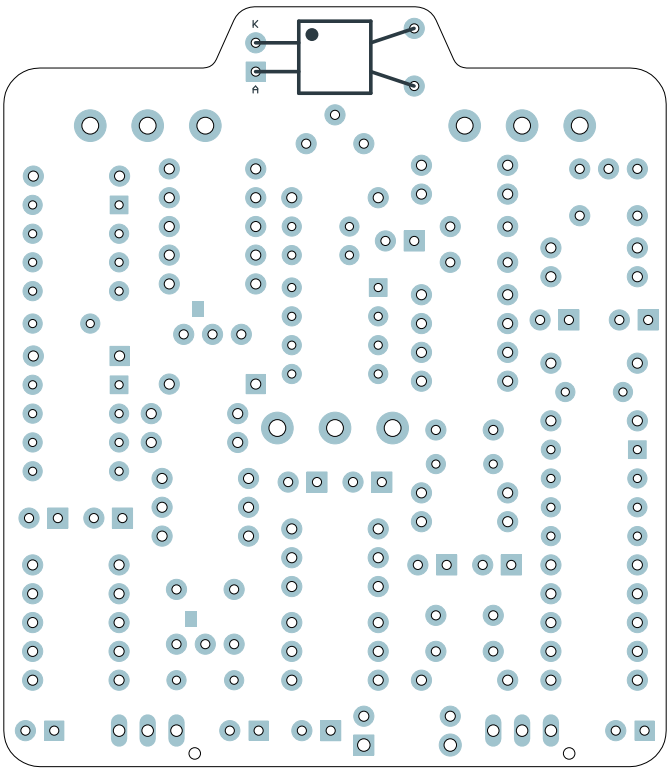
Populate the electrolytic capacitors. These are the tallest components so we save them for last. They are polarized (i.e. they will only work in one direction), so note the vertical mark that indicates the negative side. The longer leg is positive and fits in the square pad.

Be careful not to mix up the 2.2uF and 22uF capacitors. They're the same size and the only difference is the decimal point.

These are the last of the on-board components on the top side of the PCB. Now is the time to go back to page 12 and insert the ICs into the sockets.

OPTOCOUPLER (VACTROL)

PART
NSL-32



Now, flip the board over. The optocoupler (also known as a vactrol) will be installed on the reverse side of the PCB. This type of optocoupler is much smaller than the silkscreen outline. The diagram above shows the actual size relative to the PCB.

The NSL-32 optocoupler is poorly marked by the manufacturer, so make sure to identify the leads before installing to make sure it's oriented correctly.

The short, flat pair of leads is for the LED half of the optocoupler. Next to one of these legs, on the body of the optocoupler, there is a silver dot. This dot sometimes overlaps the "NSL-32" label which is also silver, so it may be hard to see at a glance.

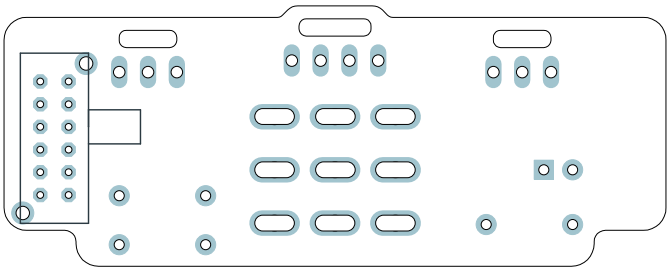
This dot marks the cathode (negative side) of the LED. Orient the optocoupler as shown in the diagram so that this leg is inserted into the top-left pad, which is round and marked with a small "K".

The longer set of leads corresponds to the LDR (light-dependent resistor) half of the optocoupler. They will need to be bent outward slightly to fit the holes on the right. The LDR is not polarized.

Once the four legs are inserted, bend them outwards from the reverse side to hold the optocoupler in place, then solder them as you would any other component.

FOOTSWITCH PCB

PARTS
4PDT slide switch
3-strand wire assembly (2)
4-strand wire assembly



Next, it's time to finish up the footswitch board. You should have done the resistors on this board in a previous step, but if not, go back and do those.

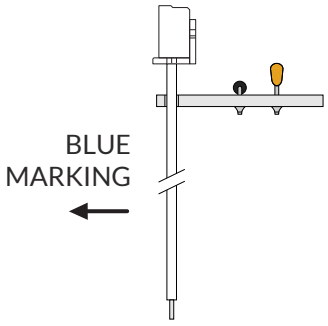
It's easiest to start with the slide switch. Fit it in as shown in the diagram above, with the slide lever facing to the right. Be careful—the pads are small. Make sure you don't accidentally "bridge" two pads together when soldering or you will have issues with the bypass.

The wires are next. There will be one longer assembly with 4 wires and two shorter ones with 3 wires. The longer one goes in the middle and the shorter ones go on the left and right sides. The wire assemblies should then be soldered to the footswitch board as shown.

STEP 1

First, thread the wire through the strain-relief slots, with the blue side facing outward and the PCB's previously-installed components facing up.

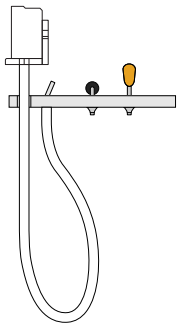
For now, pull it through as far as it can go.



STEP 2

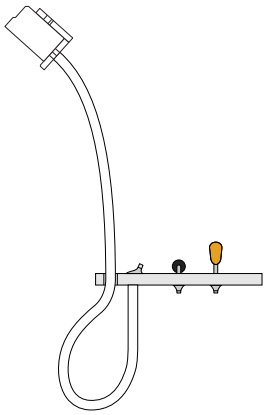
Next, bend the wires back upward and fit the ends of the wires into the solder pads.

On the top side of the PCB, bend the exposed wires backward so it holds the wire in place. Pull the header back up through the slot partway.



STEP 3

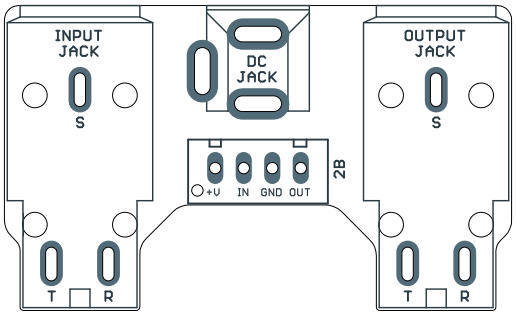
Then, solder the wires from the top. This is the trickiest part of the whole build. You want to solder the pads without touching the iron to the wires themselves and risking burning through the insulation. It helps to use a sharp or narrow tip on the soldering iron.



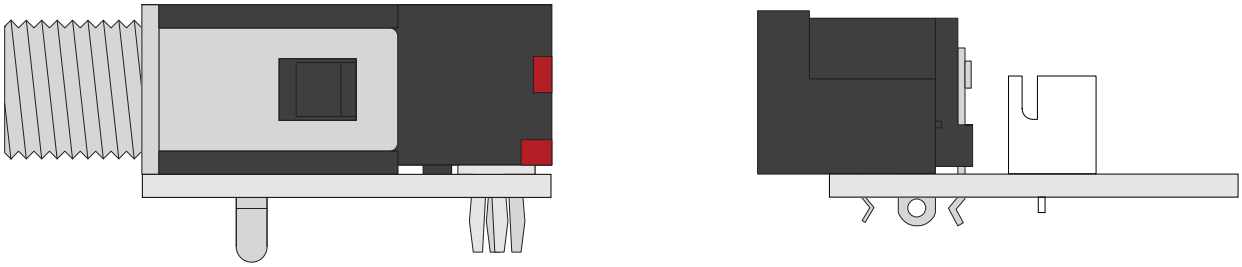
Once all three wire assemblies are soldered, set the footswitch PCB aside. We'll solder the actual footswitch and LED in a later step.

INPUT/OUTPUT PCB

PARTS
Input & output jacks
DC jack
Wire header



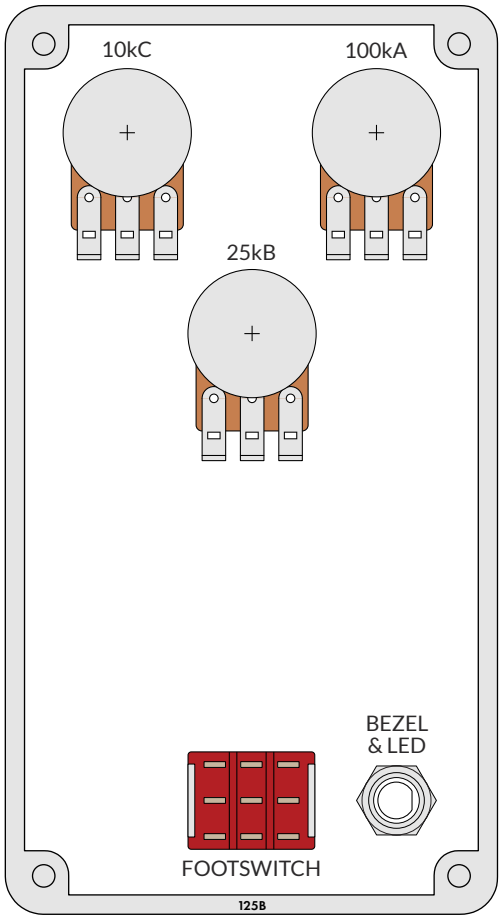
Almost done! Get the two input/output jacks, the DC jack and the wire header and snap them in place. The PCB is designed for them to fit securely, so you can do them all at once before flipping and soldering.



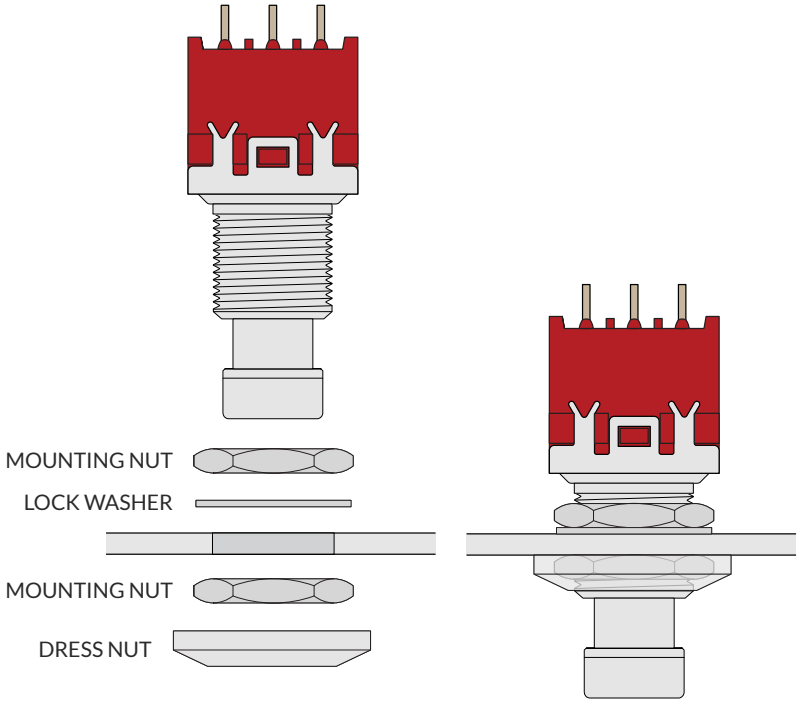
After you've soldered everything, make sure to **snip the leads on the I/O jacks as close as possible to the PCB**. There's not a lot of clearance between the bottom of this board and the top of the main PCB once everything is in place, and you don't want the pins to short against anything on accident.

ENCLOSURE LAYOUT: PANEL MOUNTS

Attach the hardware to the inside of the enclosure as shown. (The I/O board is done in a later step.)



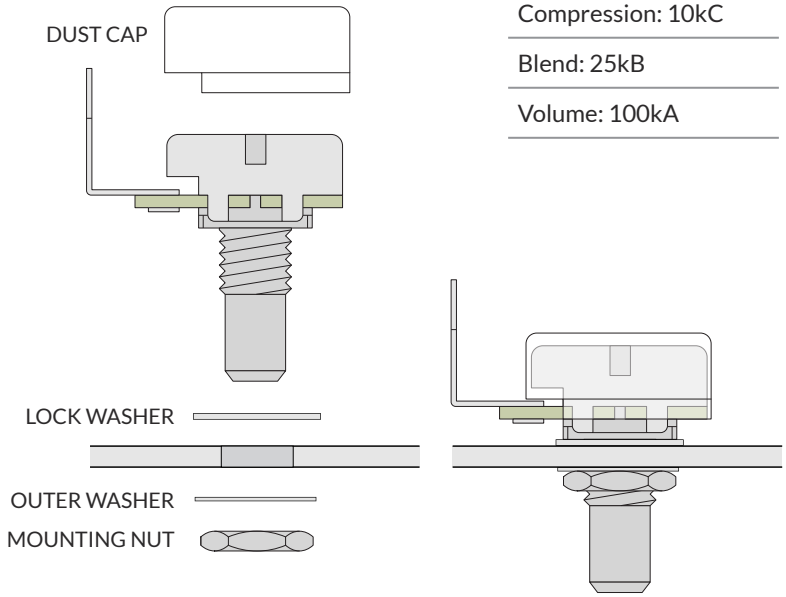
FOOTSWITCH



The dress nut fits over the top of the mounting nut and is for aesthetic purposes only. Wrap a rubber band around it to use as a grip when tightening. Avoid using metal tools on it or you run the risk of scratching or denting it.

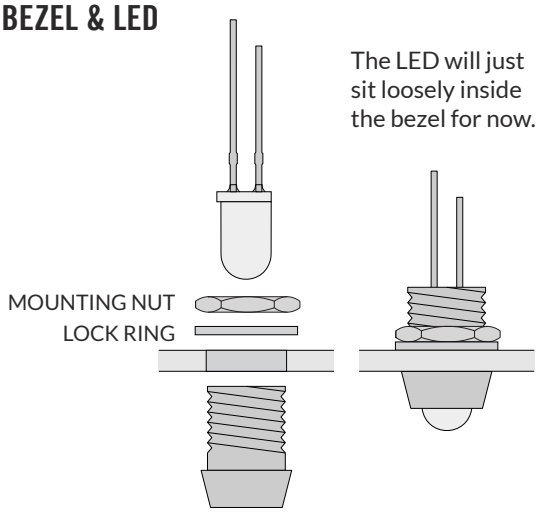
POTENTIOMETERS

Compression: 10kC
Blend: 25kB
Volume: 100kA



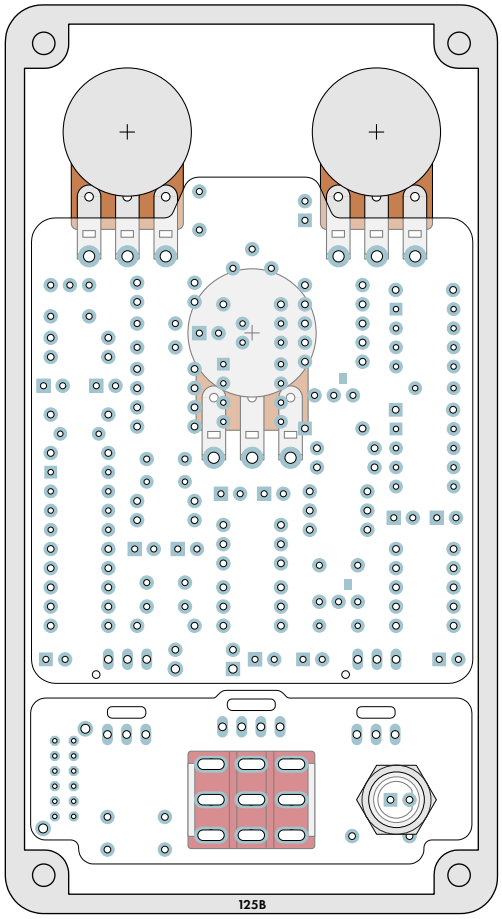
BEZEL & LED

The LED will just sit loosely inside the bezel for now.



You'll need to hold the bezel in place when tightening the nut. Be aware that the bezel is fairly sharp. Try using a rubber band for grip instead of just pressing your finger against the bottom.

ENCLOSURE LAYOUT: MAIN & FOOTSWITCH PCBS



After all the components are affixed to the enclosure as shown on the previous page, place the main PCB on top of the potentiometers as in the diagram to the left, with the component side facing up.

You may need to adjust the position of the potentiometers slightly if they are not aligned straight.

Once all of the pins are through and the PCB is laying flat, solder each of the pins from the top, being careful not to touch any of the surrounding components with the soldering iron.

After you've finished soldering the pots, **clip the leads as close as you can to the main PCB**. This is important because the input/output PCB overlaps them and you need to avoid any of the components shorting.

Next, do the same thing with the footswitch board—the 3PDT footswitch and the LED.

Before soldering, double-check to **make sure the flat side of the LED is facing to the right**, as shown in the diagram, and that the short leg is coming through the pad on the right. It won't work if it's turned the other way.

Why solder everything inside the enclosure before testing it?

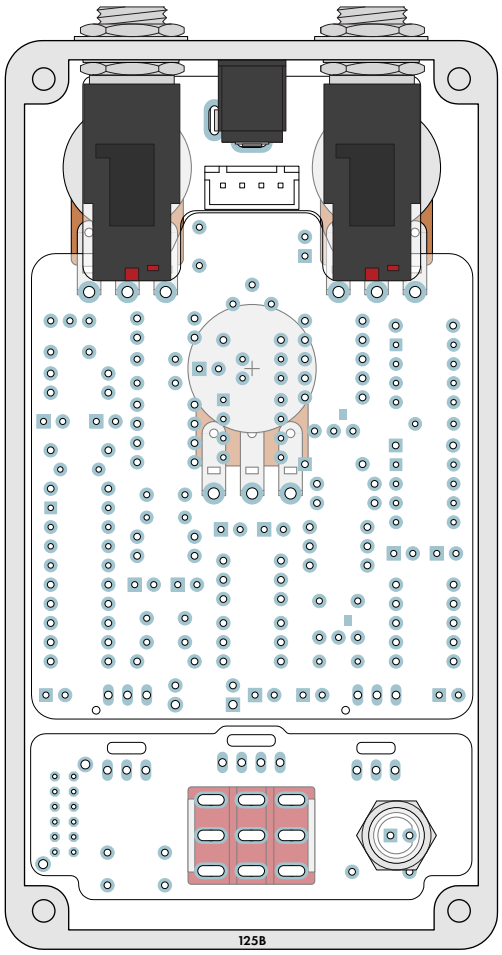
"Rock it before you box it" is conventional wisdom in pedalbuilding, and you'll often hear it recommended that builders should test the circuit before putting everything inside the enclosure. However, Aion FX projects are designed to be extremely easy to remove from the enclosure for troubleshooting, with no desoldering required—so with these kits, it's actually much easier to "box it before you rock it".

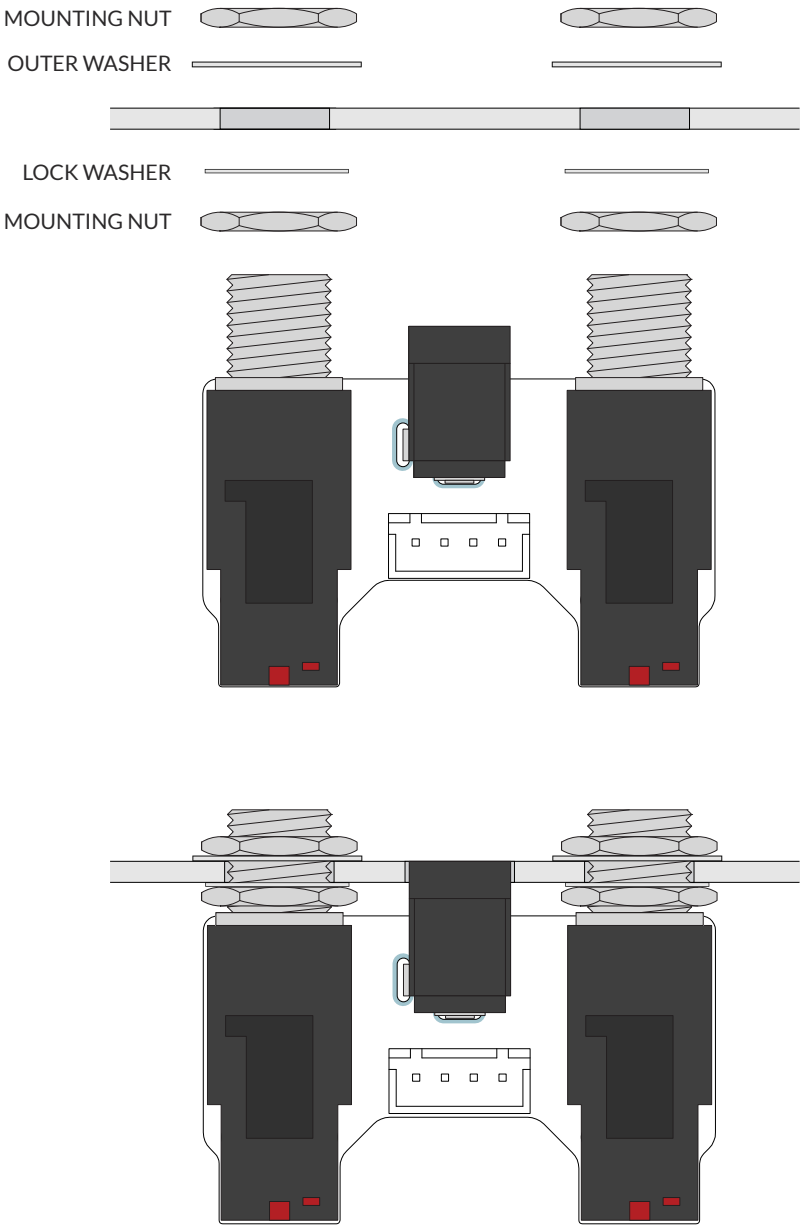
If you've read the documentation carefully and followed all the instructions, there's a good chance you will get it right the first time!

ENCLOSURE LAYOUT: INPUT/OUTPUT PCB

Affix the input/output PCB to the north-facing panel of the enclosure as shown.

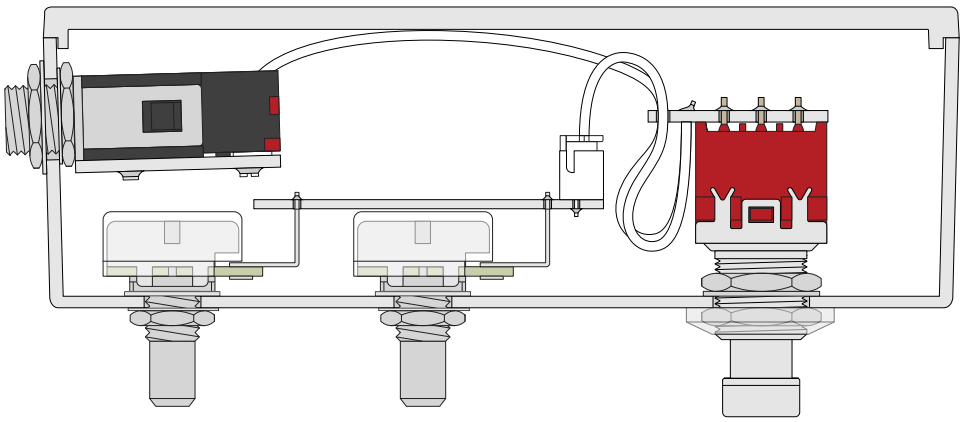
Note the use of two mounting nuts on each of the jacks, one inside and one outside. The inner nut acts as a spacer to set the DC jack flush with the outside of the enclosure. The inner nuts should be threaded as far down as they can go.





FINAL TESTING & ASSEMBLY

After everything is in place, just plug the 3 wire assemblies into their respective headers and make sure they're secure. Here is a cross-section of the inside of the completed pedal.



At this point, you have completed the full circuit as far as the electrons are concerned. Plug in a 9-volt supply and test it out with a guitar and an amplifier.

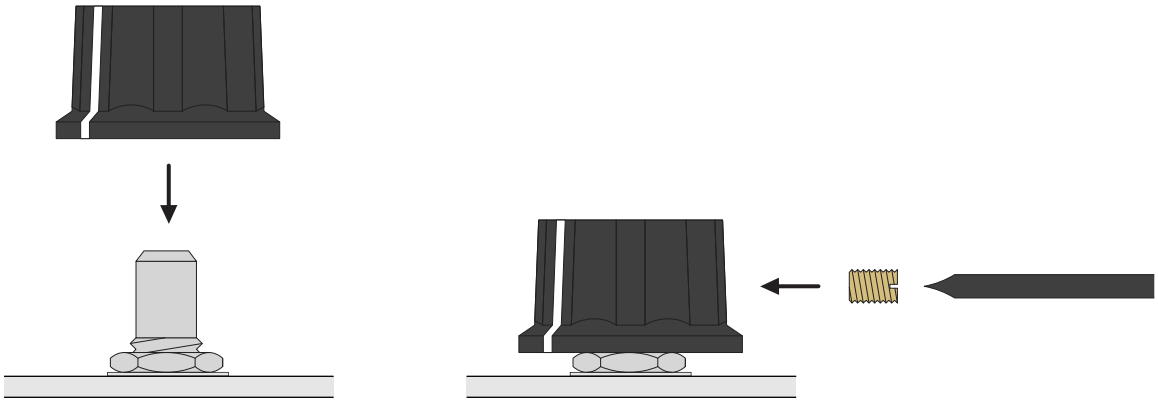
Test the bypass switch a few times, then start turning the knobs and see if everything sounds OK. If it works, great! If not, don't be discouraged. See page 26 for troubleshooting info.

Finishing touches

Now, just a couple of things for the final assembly. Turn the shafts all fully counter-clockwise, then put on the knob and rotate until the indicator line is aligned with the dot on the enclosure that shows the zero point. Affix the knobs to each of the potentiometer shafts as shown in the diagram below.

Using a small flat-head screwdriver (no more than 0.1" / 2.5mm in diameter), firmly tighten the set screw until it presses against the shaft of the potentiometer and holds the knob in place.

Be careful not to over-tighten or you may damage the set screw. But if it's not tight enough, the knob will be more likely to fall off or lose its alignment with the markings on the enclosure.



Last, just close the panel on the back using the four screws. That's it!

USAGE

The Oceanid has the following controls:

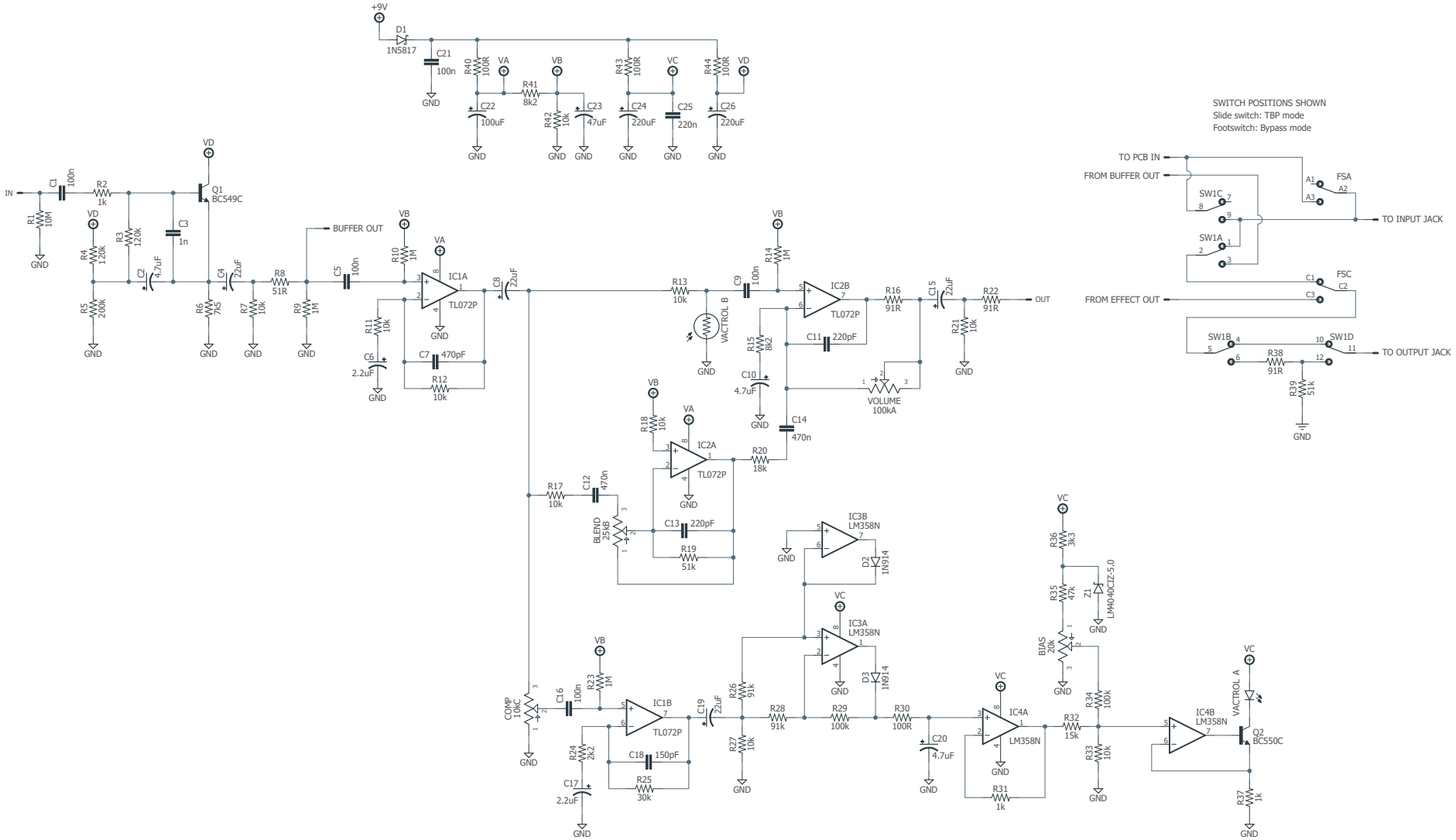
- **Compression** sets the compression threshold and amount of sustain. At low settings, it acts as a subtle limiter. As it's turned up, the compression & sustain increases while the overall volume decreases.
- **Blend** allows the clean signal to be mixed back in, which is especially useful for bass guitar, or at higher compression settings.
- **Volume** sets the overall output level, and is located after the blend control.

Internally, there is a slide switch that selects between true bypass and buffered bypass modes. The buffered bypass mode is better in almost every scenario, but for larger pedalboards or more complex impedance matching, true bypass mode may be preferred.

Note that unlike most pedals, the volume control does not go all the way to zero. It's an active gain stage designed so that the zero volume position is unity gain when the compression knob is all the way down.

As the compression knob is turned up, the overall volume is reduced. Once you have found your ideal compression & blend settings, use the volume knob to find unity gain with the bypass signal.

The internal bias trimmer should be set between 9:00 and 10:00 by default and will likely not need to be adjusted further. If you find that the range of the compression knob is not to your liking, you can make small adjustments to the trimmer to see if you notice an improvement.


+9V
D1
1N5817
C21
100n
GND
R40
100R
VA
R41
8k2
VB
R43
100R
VC
R44
100R
VD
C22
100uF
R42
10k
C23
47uF
C24
220uF
C25
220n
C26
220uF
IN
C1
100n
R2
1k
Q1
BC549C
R1
10M
R3
120k
C3
1n
R4
120k
C2
4.7uF
R5
200k
C4
22uF
R6
7K5
R7
10k
R8
51R
R9
1M
BUFFER OUT
C5
100n
R10
1M
R11
10k
C6
2.2uF
IC1A
TL072P
C7
470pF
R12
10k
C8
22uF
R13
10k
R14
1M
C9
100n
VACTROL B
R15
8k2
C10
4.7uF
IC2B
TL072P
C11
220pF
VOLUME
100kA
R16
91R
C15
2.2uF
R21
10k
R22
91R
OUT
SWITCH POSITIONS SHOWN
Slide switch: TBP mode
Footswitch: Bypass mode
TO PCB IN
FROM BUFFER OUT
SW1C
SW1A
FSA
TO INPUT JACK
FSC
FROM EFFECT OUT
SW1B
SW1D
TO OUTPUT JACK
R38
91R
R39
51k
R18
10k
IC2A
TL072P
R20
18k
C14
470n
R17
10k
C12
470n
BLEND
25kB
C13
220pF
R19
51k
IC3B
LM358N
D2
1N914
R36
3k3
R35
47k
Z1
LM4040CIZ-5.0
BIAS
20k
IC3A
LM358N
D3
1N914
COMP
10kC
C16
100n
R23
1M
IC1B
TL072P
C19
22uF
R26
91k
R28
91k
R29
100k
R30
100R
C20
4.7uF
IC4A
LM358N
R32
15k
R34
100k
R33
10k
R24
2k2
C18
150pF
R25
30k
C17
2.2uF
R27
10k
R31
1k
IC4B
LM358N
VACTROL A
Q2
BC550C
R37
1k

FULL PARTS LIST

Resistors

PART	VALUE
R1	10M
R2	1k
R3	120k
R4	120k
R5	200k
R6	7k5
R7	10k
R8	51R
R9	1M
R10	1M
R11	10k
R12	10k

PART	VALUE
R13	10k
R14	1M
R15	8k2
R16	91R
R17	10k
R18	10k
R19	51k
R20	18k
R21	10k
R22	91R
R23	1M
R24	2k2

PART	VALUE
R25	30k
R26	91k
R27	10k
R28	91k
R29	100k
R30	100R
R31	1k
R32	15k
R33	10k
R34	100k
R35	47k
R36	3k3

PART	VALUE
R37	1k
R38	91R
R39	51k
R40	100R
R41	8k2
R42	10k
R43	100R
R44	100R
LEDR	22k

Capacitors

PART	VALUE
C1	100n film
C2	4.7uF electro
C3	1n film
C4	22uF electro
C5	100n film
C6	2.2uF electro
C7	470pF MLCC

PART	VALUE
C8	22uF electro
C9	100n film
C10	4.7uF electro
C11	220pF MLCC
C12	470n film
C13	220pF MLCC
C14	470n film

PART	VALUE
C15	22uF electro
C16	100n film
C17	2.2uF electro
C18	150pF MLCC
C19	22uF electro
C20	4.7uF electro
C21	100n MLCC

PART	VALUE
C22	100uF electro
C23	47uF electro
C24	220uF electro
C25	220n MLCC
C26	220uF electro

Diodes

PART	VALUE
D1	1N5817
D2	1N914
D3	1N914

Potentiometers

PART	VALUE
Comp	10kC
Blend	25kB
Volume	100kA

Transistors

PART	VALUE
Q1	BC549C
Q2	BC550C
Z1	LM4040

ICs

PART	VALUE
IC1	TL072
IC2	TL072
IC3	LM358
IC4	LM358
DIP-8 socket (4)	

FULL PARTS LIST, CONT.

Optocoupler

PART
NSL-32

Trimmer

PART
20k trimmer

Switches

PART
3PDT stomp
4PDT slide

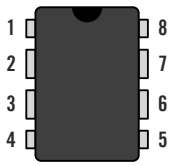
TROUBLESHOOTING INFORMATION

If you finish building the kit and find that it doesn't work right, we've written a separate in-depth Troubleshooting Guide that applies to all of our kits. The main troubleshooting process is covered there. Here you will find information specific to this kit that will help with that process.

Voltages

The following voltages are taken from our prototype unit using a **9.6V** supply. Your measured voltages won't be exactly the same due to variance in power supplies and component tolerances. However, if you see anything more than +/-0.5V from the listed voltages, it's a good indicator of an issue, and the exact voltages can help narrow it down.

Note that IC pins are labeled counter-clockwise from the upper-left, as shown in the diagram to the right. Transistors have their pins labeled on the PCB.



IC1

PIN	VOLTAGE
1	4.67
2	4.67
3	4.33 (falling)
4	0
5	4.26
6	4.67
7	4.67
8	8.51

IC2

PIN	VOLTAGE
1	4.66
2	4.67
3	4.66
4	0
5	4.25
6	4.67
7	4.67
8	8.51

IC3

PIN	VOLTAGE
1	0
2	0
3	0
4	0
5	0
6	0
7	0.05
8	9.14

IC4

PIN	VOLTAGE
1	0
2	0.02
3	0.01
4	0
5	0.04
6	0.04
7	0.58
8	9.14

Q1

PIN	VOLTAGE
C	9.29
B	5.44
E	4.95

Q2

PIN	VOLTAGE
C	7.63
B	0.58
E	0.04

Z1

PIN	VOLTAGE
Left	0
Center	5.01
Right	0

SUPPORT

Aion FX does not offer direct support for these projects beyond the provided documentation. Replacements and refunds cannot be offered unless it can be shown that the circuit or documentation are in error or that the included components are non-functional.

Where to get help

The three best places to ask for help are the DIY Stompboxes forum, the DIY Stompboxes Facebook group, and the r/diypedals subreddit. These communities have more than 150,000 members between them and they are very accommodating to new builders.

When posting a troubleshooting request, always include the following:

1. A thorough description of the problem you are experiencing
2. A photo of the inside of the pedal
3. A list of all the measured voltages of each of the pins, described on the previous page

While we cannot offer direct, private support, you may send a link to your public troubleshooting thread to Aion FX using the contact form on the website. There is no guarantee that we will be able to join the discussion and help solve your problem, but this improves the chances.

It benefits the whole community if the troubleshooting process is public because then people who have the same issue in the future may come across it when searching. And if you do get help, remember to pay it forward! The best way to learn new skills is to help others. Even if you've only built one pedal, you have more experience than someone who is brand new, so you have something to offer.

RESALE TERMS

These kits may be used for commercial endeavors in any quantity unless otherwise noted. It's okay to sell individual builds locally or online, or even to offer a service to build pedals based on these kits.

No direct attribution is necessary, though a link back is always greatly appreciated. The only usage restriction is that you cannot "goop" the PCB or otherwise obscure the source. In other words: you don't have to go out of your way to advertise the fact that you use Aion FX kits, but please don't go out of your way to hide it. The guitar effects industry needs more transparency, not less!

LEGAL INFORMATION

All trademarks are property of their respective owners.

Any use of trademarks is for comparative advertising purposes only under fair use. It is not an endorsement of this product by the trademark holders.

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DOCUMENT REVISIONS

1.0.0 (2025-08-29)
Initial release.