

DEMON PEDALS

KONDO SHIFUKU D-STYLE

DIY Pedal Kit

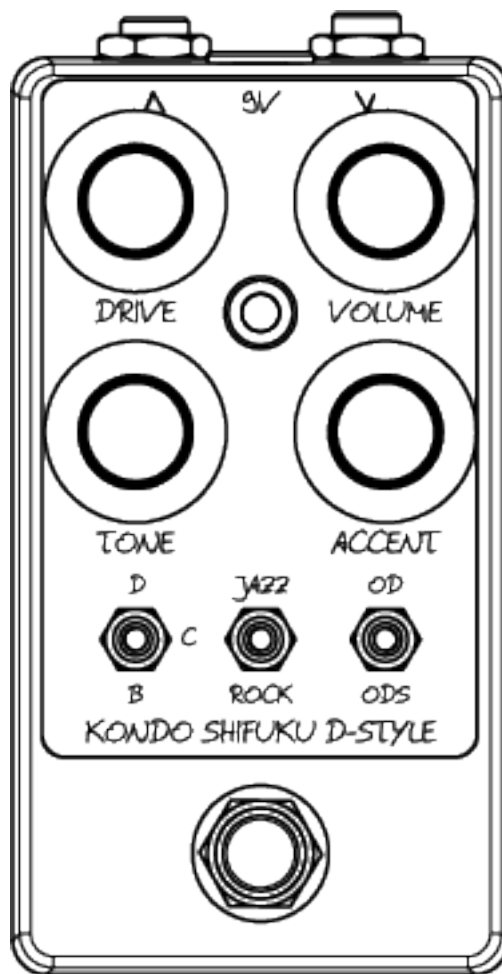


TABLE OF CONTENTS

1	Cover Page
2	Table of Contents
3	Introduction
4	Packing List
5	Packing List (Cont.)
6	PCB Assembly Overview
7	Resistors
8	Diodes
9	Socket & IC
10	Capacitors (Non.-Polarized)
11	Capacitors (Polarized)
12	Transistors
13	Wires
14	Input / Output Jacks
15	Switches / Potentiometers
16	DC Jack / LED
17	Footswitch
18	Footswitch (Cont.)
19	Drill Template
20	Drill Template (Cont.)
21	Final Testing & Assembly
22	Schematic
23	Full Parts List
24	Full Parts List (Cont.)
25	Full Parts List (Cont.)
26	Support

INTRODUCTION

If this is your first pedal, welcome to the hobby and thank you for choosing Demon Pedals. You've just joined a community of tens of thousands of people around the world with a passion for building homemade noise machines using obsolete electronics technologies.

The Kondo Shifuku D-Style kit lets you build our famous pedal at home at an affordable price tag. All you need to do is follow these instructions and you should have no problem creating this awesome sounding pedal yourself.

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

- **Before you start check that all the components listed in the parts list, included in the box the kit came with, are present.** If a part is missing contact us so that we can send it to you or help you find a replacement near you.
- **You're going to have to get your hands dirty.** Nothing in this kit comes preassembled and you'll have to learn the skill to put it all together. This document will walk you through the main steps.
- **Take your time in building the kit.** Don't rush anything and better check every component twice before soldering it to the PCB.
- **No direct technical support is offered.** There are several DIY forums with lots of members who enjoy troubleshooting and helping others.
- **There is no implied guarantee of a final product.** Demon Pedals provides you the ingredients and the recipe to build a Kondo Shifuku D-Style pedal, 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 the whole documentation first before you start, especially if you have 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.

PACKING LIST

The following list contains all the parts that are included with kit. For a list of all parts based on their PCB part numbers, please refer to pages 23 - 25

Resistors

NAME	QTY
0R	1
100R	4
220R	1
1k	3
1k5	1
10k	9
100k	1
475k	1
1M	1

Film Capacitors

NAME	QTY
100pF (marked 100)	1
100n (marked "104")	1
220n (marked "224")	3
470n (marked "474")	2
1uF (marked "105")	1

Electrolytic Capacitors

NAME	QTY
2u2	1
10uF	1
22uF	1
47uF	1
100uF	1

MLCC Capacitors

NAME	QTY
82pF (marked "820")	1

Diodes

NAME	QTY
1N4001	1
1N4148	2
OA1182	1
3mm LED (Orange)	1

ICs

NAME	QTY
JRC4562D	1
8-pin socket	1

Transistors

NAME	QTY
BC548B	2

PACKING LIST (CONT.)

Potentiometers

NAME	QTY
25kB	1
100kA	1
1MA	1
20kW	1
Dust cover	2
Mounting nut, potentiometer	4
Outer washer, potentiometer	4

Switches

NAME	QTY
Toggle switch, SPDT on-off-on	1
Toggle switch, SPST on-on	2
Mounting nut, toggle switch	3
Lock washer, toggle switch	3
Stomp switch, 3PDT	1
Mounting nut, stomp switch	2
Lock washer, stomp switch	1
Outer washer, stomp switch	1

Wiring

NAME	QTY
Red – L = 45 mm	1
Black – L = 45 mm	1
Black – L = 55 mm	4
White – L = 55 mm	6

Other

NAME	QTY
LED bezel	1
LED, blue, 5 mm	1
DC jack	1
Input/output Jack	2
Mounting nut, jack	2
Outer washer, jack	2
PCB – Kondo Shifuku D-Style	1
Faceplate (Blackpearl)	1

PCB ASSEMBLY OVERVIEW

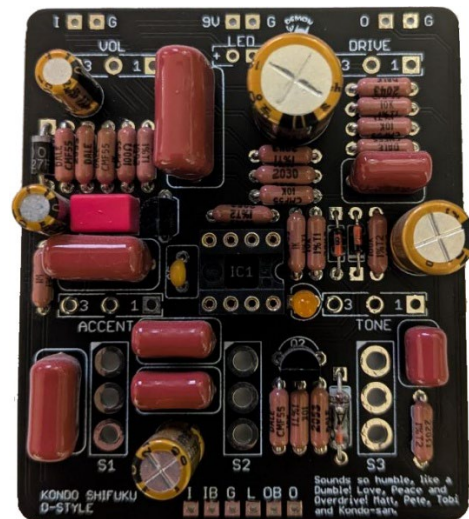
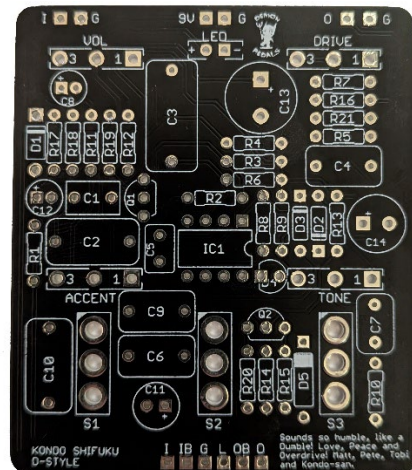
Now it's time to start building!

The first thing you should do is to separate all the different components, so you don't accidentally use the wrong part.

The general principle for PCB population is that you want to work in layers from the shortest component (i.e. lowest-profile) to tallest. This way, when you turn the PCB upside down, the components are held in place when soldering.

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

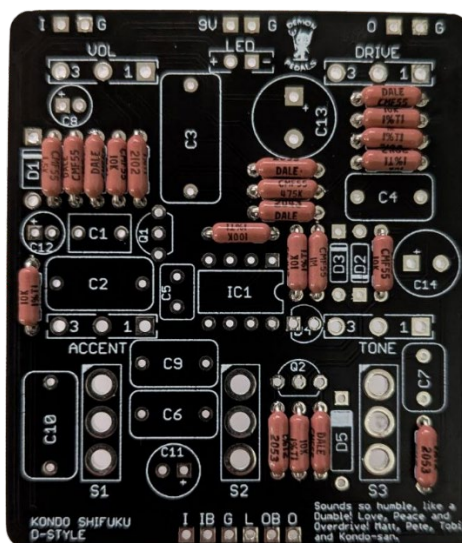


RESISTORS

PART	VALUE
R1	1M
R2	100R
R3	475k
R4	10k
R5	1k5
R6	10k
R7	10k

PART	VALUE
R8	1k
R9	10k
R10	220R
R11	1k
R12	1k
R13	100k
R14	10k

PART	VALUE
R15	100R
R16	10k
R17	10k
R18	100R
R19	100R
R20	10k
R21	10k



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.

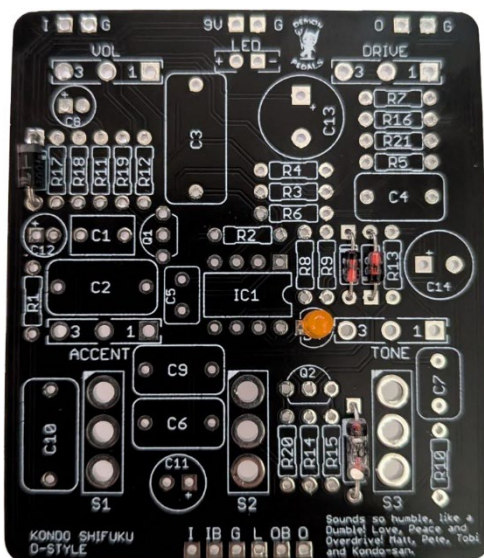


You will use this same technique for most of the other components as well.

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. Generally you don't want to do more than 5 – 10 resistors at a time or the bottom of the board will get too crowded.

DIODES

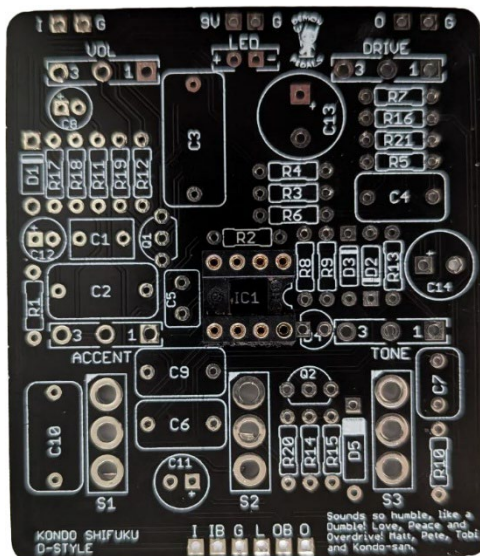
PART	VALUE
D1	1N4001
D2	1N4148
D3	1N4148
D4	3mm LED Orange
D5	OA1182



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. Be careful with the OA1182 germanium diode. The glass body breaks easily if you bend the legs to far or put too much pressure on the diode.

SOCKET & IC

PART	VALUE
IC1	JRC4562D



Next up is the IC socket. You can't bend the leads of the socket like you can with the other components, so it won't stay in on its own until it is soldered.

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

Installing the IC

Don't insert the IC into the socket 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 IC 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.

The IC in this kit comes with the legs already bended so you don't have to do this step yourself!

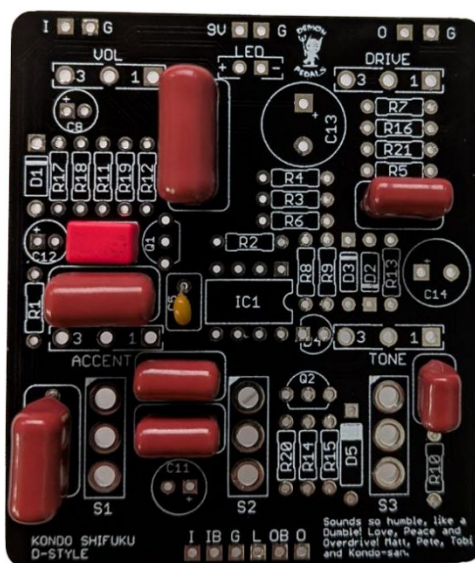
ICs may have two different orientation marks: either a dot in the upper-left or a half-circle notch in the middle of the top side. Some ICs have both marks. This shows which way the IC should be rotated when inserting it into a socket (the socket also has a half-circle notch). The JRC4562D is marked with a dot. This dot indicates pin 1 of the IC.



CAPACITORS (NON-POLARIZED)

PART	VALUE
C1	100pF film
C2	470n film
C3	1uF film
C4	220n film
C5	82pF MLCC

PART	VALUE
C6	220n film
C7	100n film
C9	220n film
C10	470n film



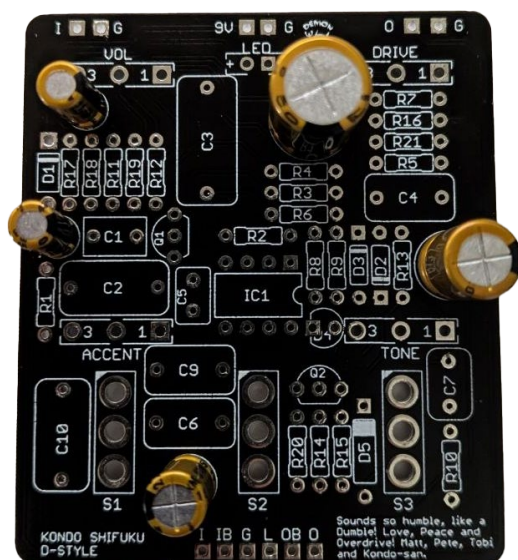
After the sockets come the box film and MLCC capacitors. These are all several different heights, but there aren't as many, so just do them all at once. Bend the leads at an angle to hold them in place.

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

Note: 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.

CAPACITORS (POLARIZED)

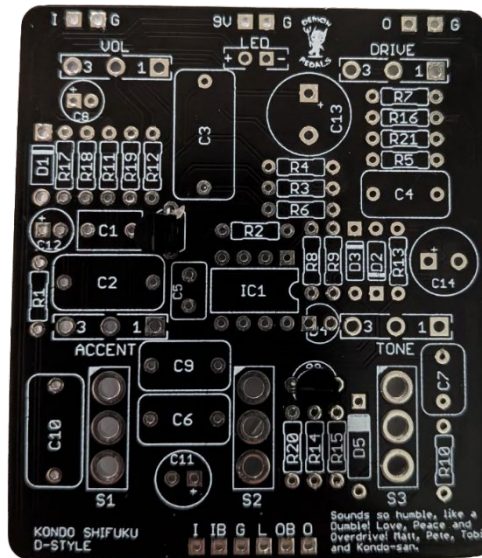
PART	VALUE
C8	2u2 electro
C11	22u electro
C12	10u electro
C13	100u electro
C14	47u electro



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.

TRANSISTORS

PART	VALUE
Q1	BC548B
Q2	BC548B



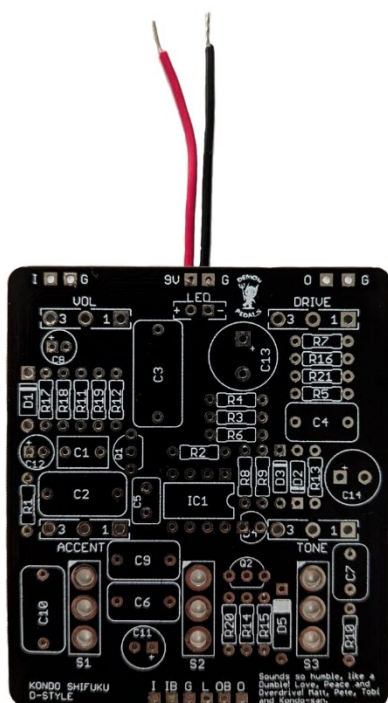
The last on-board components to be placed and soldered should be the transistors so that they are not damaged from the heat when you solder other parts.

After soldering all the electronic components to the PCB, the next step would be to add the wires, so that you can still lay the PCB flat on the table to hold the wires in place while soldering them.

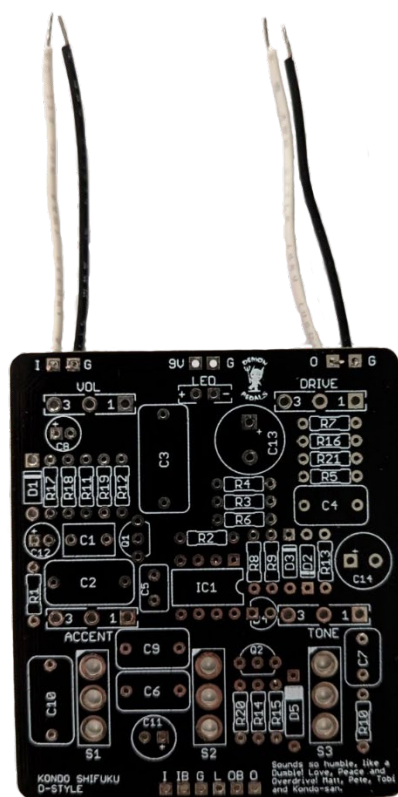
WIRES

PART	VALUE
9V	Red – L = 45 mm
G	Black – L = 45 mm
O	White – L = 55 mm
I	White – L = 55 mm
G	Black – L = 55 mm
G	Black – L = 55 mm

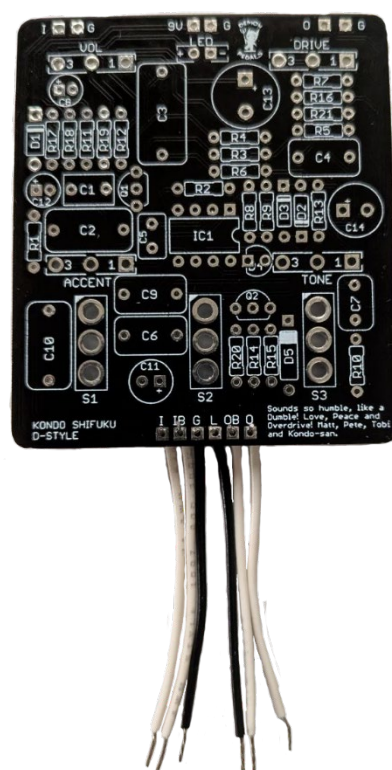
PART	VALUE
O	White – L = 55 mm
I	White – L = 55 mm
OB	White – L = 55 mm
IB	White – L = 55 mm
L	Black – L = 55 mm
G	Black – L = 55 mm



The smaller red and black wire are for the power connection. They should be attached to the following 9V and G pad.



For the input/output jack connection attached 1 white and 1 black 55 mm wire each.



For the 3PDT switch connection you need 4 white and 2 black 55 mm wires. Connect the black wires to G and L. The remaining pads are connected with the white wires.

INPUT / OUTPUT JACKS

PART

Input & output jacks



The black wire has to be connected to center hole of the jack. The white wire is connected to the tip of the jack. Please refer to the above picture to verify you have connected to wires correctly.

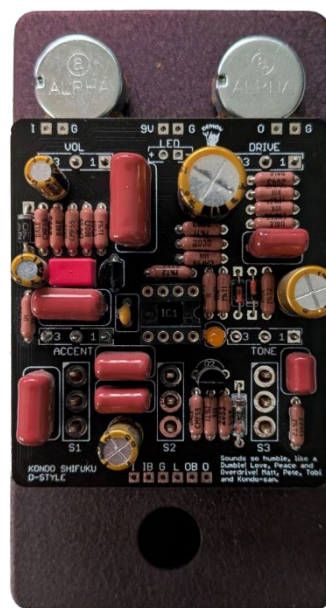
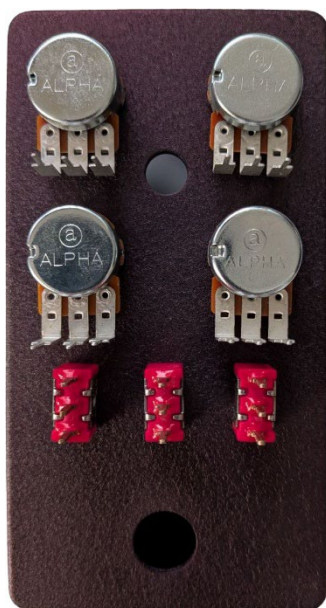
SWITCHES / POTENTIOMETERS

PART	VALUE
S1	SPDT on-on
S2	SPDT on-on
S3	SPDT on-off-on
ACCENT	25k Ω
TONE	20k Ω
VOL	100k Ω
DRIVE	1M Ω

Now it is time to connect the toggle switches and potentiometers to the PCB. The easiest way to do this is to use the holes in the drilled enclosure. This will give you the correct spaces and hold the PCB in place. You should tighten the nuts just enough so that you can still turn the parts left and right for better alignment.

Before placing the ACCENT and TONE potentiometer you have to add the dust cover. This is a plastic cover that is put over the back side of the potentiometer to prevent it from touching the bare connections on the underside of the PCB.

Also remember that you place the parts according to the location on the PCB and not of the enclosure!



In this position solder the parts in place. Be careful that you don't touch any of the other components with the soldering iron. This could damage or destroy them.

DC JACK / LED

PART

DC jack

LED bezel

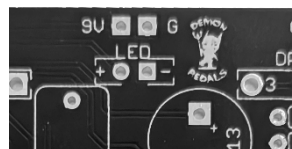
LED 5 mm blue

Faceplate

You can now add the DC jack to the enclosure. Before you attach the LED bezel you have to put the Faceplate on. The LED bezel is then put through the Faceplate and after tightening holds it in place.



Then you put the LED into the LED bezel. The longer leg of the LED indicates the positive side. This has to go through the LED + hole of the PCB. The shorter leg through the LED – hole.



The potentiometers and toggle switches should also go through their respective holes and be secured with their nuts, so that everything is in place. Then you can solder the LED to the PCB.

Now it is time to solder the power wires to the DC jack. Use the below picture to see where the red 9V and black ground wire goes.



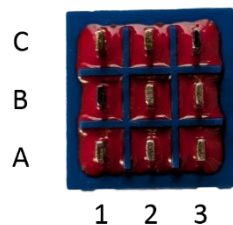
After soldering the power wires, you can attach the input and output jack to the enclosure.

FOOTSWITCH

PART

3PDT footswitch

OR resistor



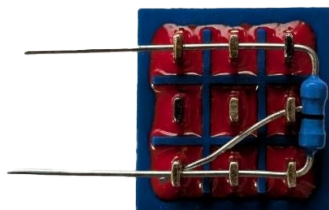
Before you attach the wires of the PCB to the footswitch you have to prepare it first.

You have to make a connection between lug 1A and 3B. For this connection just use a cut off leg of one of the resistors that you soldered to the PCB. The easiest way is to use the tweezers to get it through both lugs. It should look something like this.

But for now you only solder it to lug 3B. Lug 1A will later be soldered with a wire from the PCB.

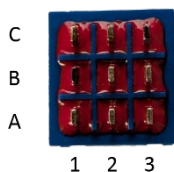
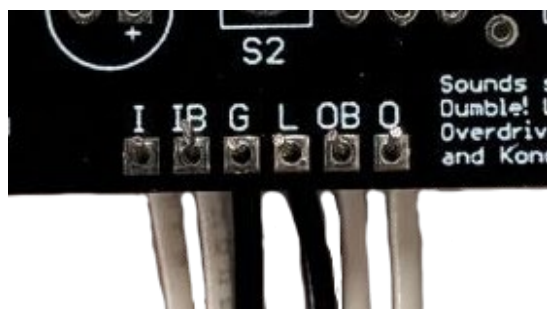


Then you use the OR resistor and make a connection between lug 3C and 3A. You can just push it through all lugs, solder it and then cut the excess legs off.



You should now secure the footswitch to the enclosure and then attach the wires from the PCB.

FOOTSWITCH (CONT.)



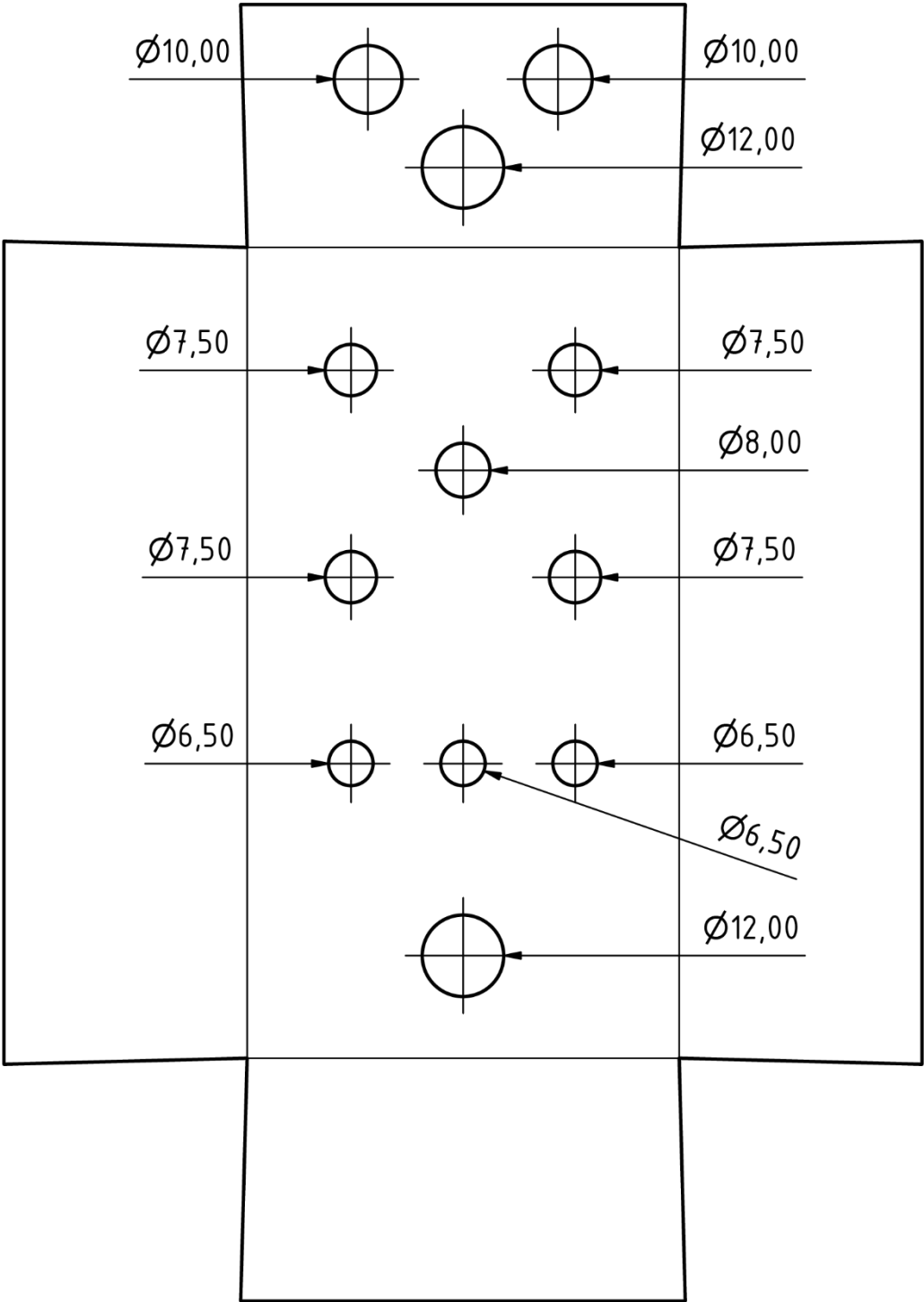
The following matrix shows you where each wire from the PCB should be soldered on the footswitch:

I -> 2A
IB -> 1A
G -> 2B
L -> 1B
OB -> 1C
O -> 2C

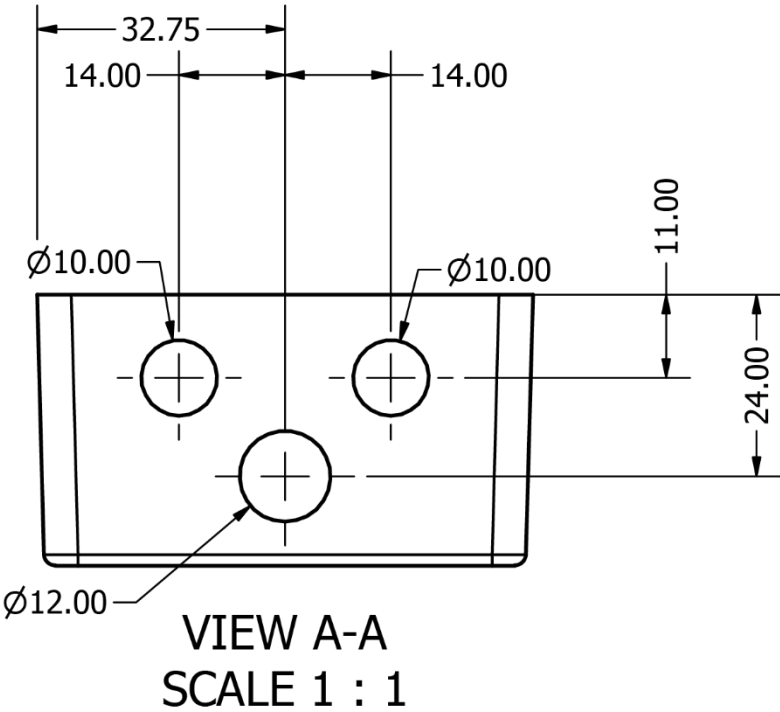
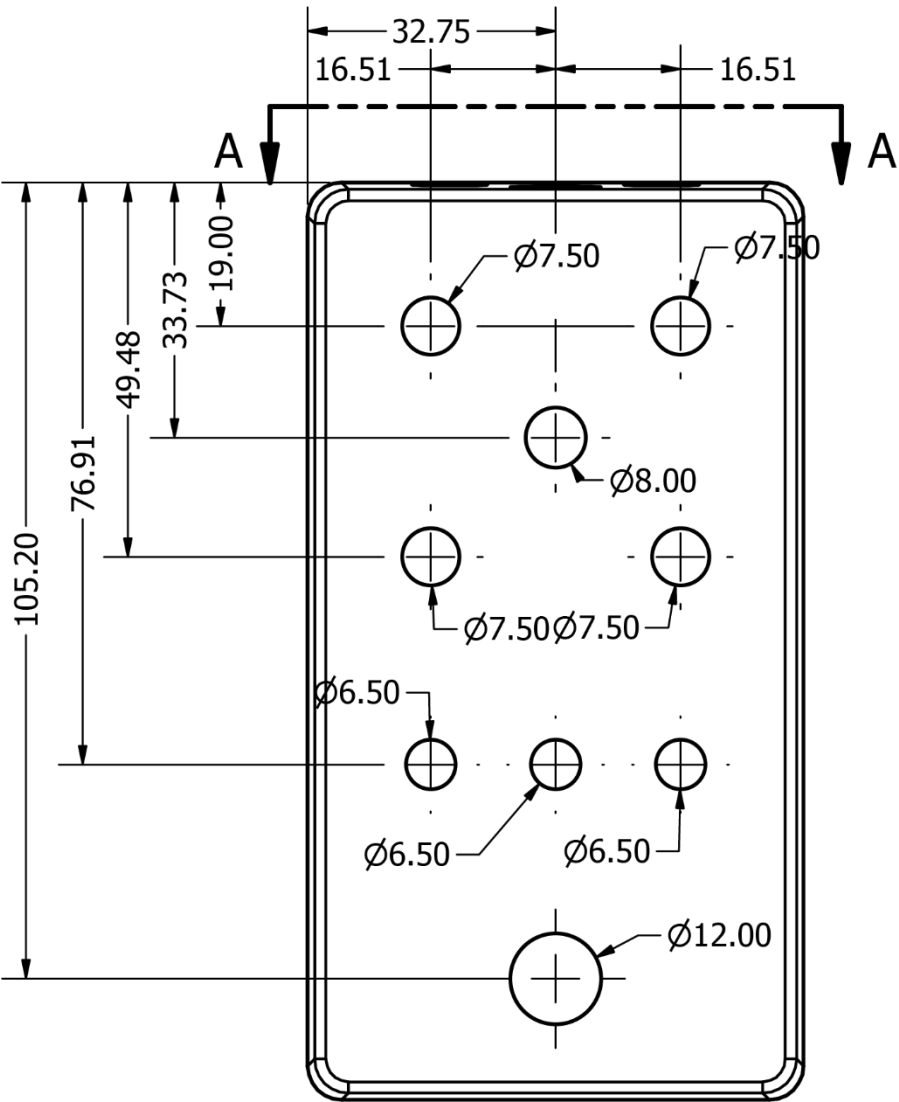
If everything went according to the documentation you should now be done with all the soldering. Every component and wire should be soldered in place.

Before you close up the enclosure and attach the knobs, you can now put the IC into the socket.

DRILL TEMPLATE



DRILL TEMPLATE (CONT.)



FINAL TESTING & ASSEMBLY

At this point, you have completed the full circuit. Plug in a 9-volt, center negative, 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. Check page 19 for the schematic to troubleshoot the pedal. You can find lots of info on the internet on the steps to take.

Finishing touches

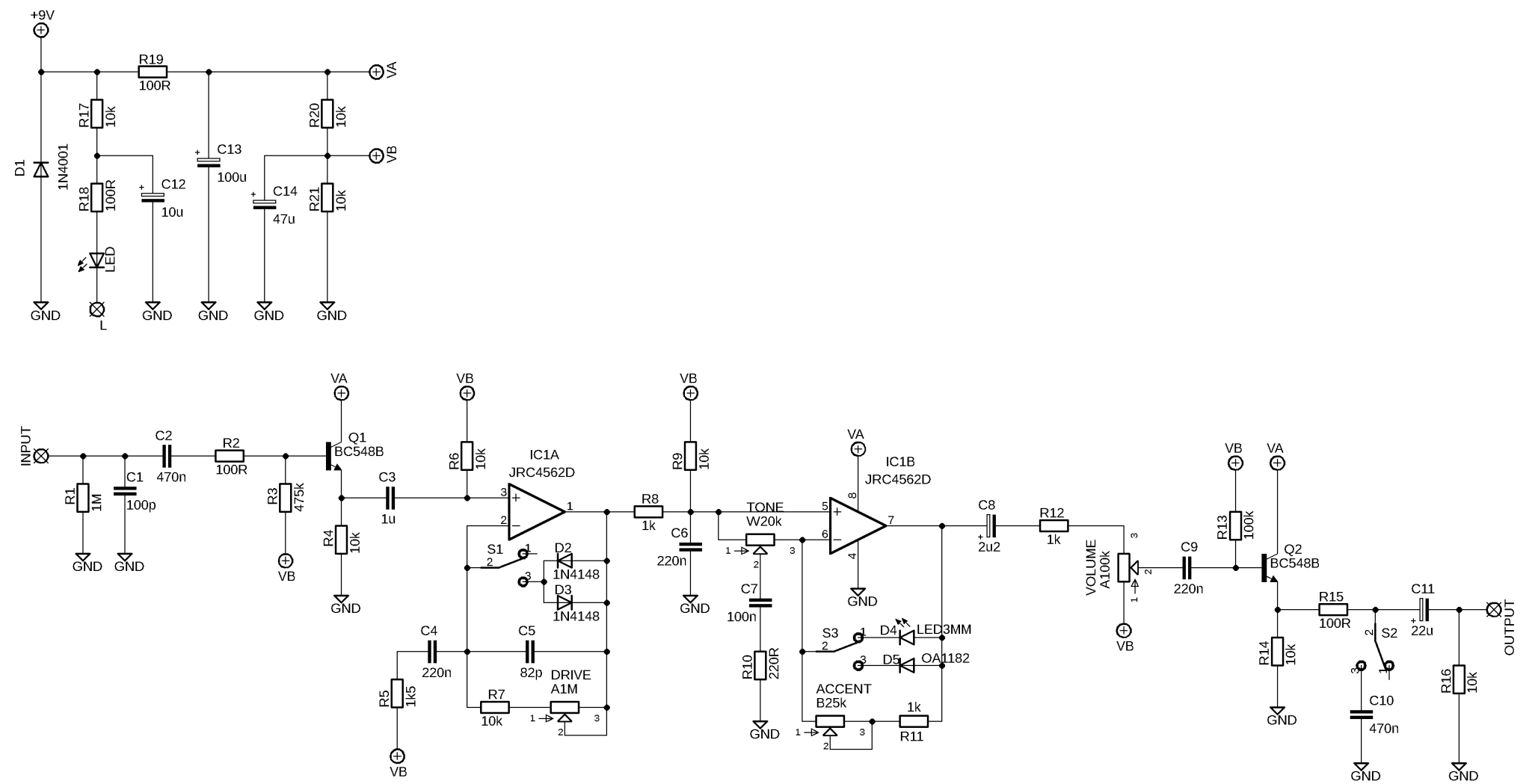
Now, just a couple of things for the final assembly. Turn the shafts all fully counter-clockwise, then put on the knob and rotate until the indicator line is aligned with the dot on the enclosure that shows the zero point. Affix the knobs to each of the potentiometer shafts.

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!

SCHEMATIC



FULL PARTS LIST

RESISTORS

PART	VALUE	MANUFACTURER	SERIES	DESCRIPTION
R1	1M	Vishay/Dale	CMF-55	
R2	100R	Vishay/Dale	CMF-55	
R3	475k	Vishay/Dale	CMF-55	
R4	10k	Vishay/Dale	CMF-55	
R5	1k5	Vishay/Dale	CMF-55	
R6	10k	Vishay/Dale	CMF-55	
R7	10k	Vishay/Dale	CMF-55	
R8	1k	Vishay/Dale	CMF-55	
R9	10k	Vishay/Dale	CMF-55	
R10	220R	Vishay/Dale	CMF-55	
R11	1k	Vishay/Dale	CMF-55	
R12	1k	Vishay/Dale	CMF-55	
R13	100k	Vishay/Dale	CMF-55	
R14	10k	Vishay/Dale	CMF-55	
R15	100R	Vishay/Dale	CMF-55	
R16	10k	Vishay/Dale	CMF-55	
R17	10k	Vishay/Dale	CMF-55	
R18	100R	Vishay/Dale	CMF-55	
R19	100R	Vishay/Dale	CMF-55	
R20	10k	Vishay/Dale	CMF-55	
R21	10k	Vishay/Dale	CMF-55	
RFSW	0R	YAGEO	MFR	For Footswitch bridge

CAPACITORS

PART	VALUE	MANUFACTURER	SERIES	DESCRIPTION
C1	100p	WIMA	FKP2	
C2	470n	Panasonic	ECQE(B)	
C3	1u	Panasonic	ECQE(B)	
C4	220n	Panasonic	ECQE(B)	
C5	82p	KEMET	COG	

FULL PARTS LIST (CONT.)

CAPACITORS

PART	VALUE	MANUFACTURER	SERIES	DESCRIPTION
C6	220n	Panasonic	ECQE(B)	
C7	100n	Panasonic	ECQE(B)	
C8	2u2	Nichicon	UFG	
C9	220n	Panasonic	ECQE(B)	
C10	470n	Panasonic	ECQE(B)	
C11	22u	Nichicon	UFG	
C12	10u	Nichicon	UFG	
C13	100u	Nichicon	UFG	
C14	47u	Nichicon	UFG	

DIODES

PART	VALUE	MANUFACTURER	SERIES	DESCRIPTION
D1	1N4001	Diotec		
D2	1N4148	Diotec		
D3	1N4148	Diotec		
D4	LED 3mm Orange	Kingbright Electronic		
D5	OA1182			

TRANSISTORS

PART	VALUE	MANUFACTURER	SERIES	DESCRIPTION
Q1	BC548B	ON Semiconductor		
Q2	BC548B	ON Semiconductor		

ICs

PART	VALUE	MANUFACTURER	SERIES	DESCRIPTION
IC1	JRC4562D	Nisshinbo	NJM	

FULL PARTS LIST (CONT.)

POTENTIOMETER

PART	VALUE	MANUFACTURER	SERIES	DESCRIPTION
Volume	100kA	TAIWAN ALPHA		
Drive	1MA	TAIWAN ALPHA		
Accent	25kB	TAIWAN ALPHA		
Tone	20kW	TAIWAN ALPHA		

SWITCHES

PART	VALUE	MANUFACTURER	SERIES	DESCRIPTION
S1	On-On	E-SWITCH	100	
S2	On-On	E-SWITCH	100	
S3	On-Off-On	E-SWITCH	100	
FTSW				3PDT Footswitch

OTHER

PART	VALUE	MANUFACTURER	SERIES	DESCRIPTION
	Wires Black			1 x 45mm / 4 x 55mm
	Wires Red			1 x 45mm
	Wires White			6 x 55mm
LED	LED 5 mm Blue	Kingbright Electronic		
	LED Bezel 5mm			
	DC-Jack 2,1mm			
	Input Jack	Neutrik	NYS229	
	Output Jack	Neutrik	NYS229	
PCB	Kondo Shifuku	Demon Pedals		
FACE	Faceplate	Demon Pedals		

SUPPORT

Demon Pedals does not offer direct support for this project beyond the provided documentation.

Replacements cannot be offered unless it can be shown that the components are non-functional prior to soldering them.

These kits are intended to be built by the customer. Demon Pedals is not responsible for language that may be used by the customer in the marketing or resale of the finished product.