

Pickup Simulator Add-on Kit

DISREGARD PAGE 16

in your Beginner Pedal Kit booklet. This printout replaces page 16

ABOUT THE PICKUP SIMULATOR

This fuzz circuit, like some vintage fuzzes, sounds best when it comes first in the pedal chain, with the guitar plugged directly into it. This is because it has a low impedance input that loads your guitar's pickups. This is generally considered a "wrong" approach from a technical perspective, but you can achieve some amazing sounds by doing it.

If you put any pedal with a buffer (which is most) in front of it, however, it will unfortunately make the pedal lose its characteristic low growls, and will sound harsh.

We can counteract this by using an inductor (coil of wire), resistor, and capacitor to simulate the response of guitar pickups. Technically we're using a transformer instead of an inductor, but since only one of its windings is used by the circuit, it's functionally identical. This transformer is chosen because it's small, inexpensive, and readily available.

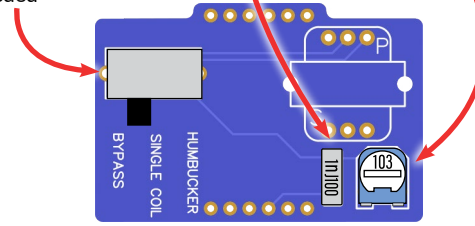
To add the pickup simulator to our pedal, we'll insert another PCB between the main PCB and the foot switch. It will inject the simulator circuit before the fuzz circuit.

ASSEMBLE PCB

Typically we'll build from shortest to tallest component. This makes it easier to hold them in place while soldering.

Solder the switch, then trimmer, then capacitor into place. Trim the capacitor's leads.

1. Switch
Use blue putty to hold it in place if needed
2. Capacitor
Trim the capacitor's leads
3. Trimmer
i.e., a variable resistor

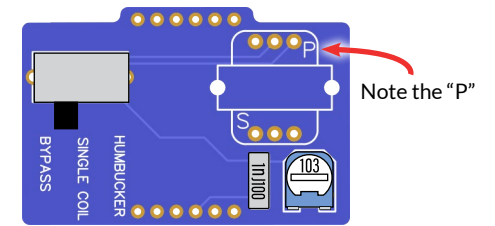


Solder the switch, trimmer, and capacitor

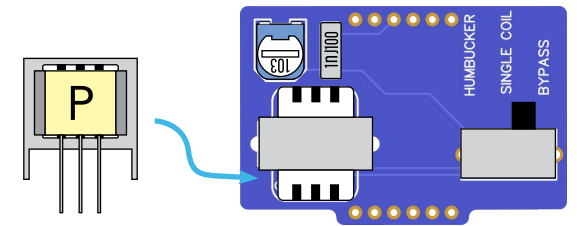
The trimmer lets you adjust a low pass filter, giving you the option to roll off some high frequencies. Leaving it in the middle is a good, sensible option to mimic typical pickup. If you want more sustain and to keep all the frequencies, though, turn it all the way counter-clockwise.

The switch lets you choose to bypass the pickup simulator altogether, or use half of the inductor's coil to approximate a single coil pickup, or the entire coil to approximate a humbucker.

You can experiment with the switch and trimmer setting after the pedal is built and let your ear decide which settings are best for you.



Next, install the transformer into place. Make sure the primary winding, indicated with a P, is over the "P" on the PCB.

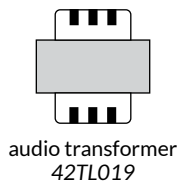


NOTE: We've rotated the PCB to better show the placement of the "P" (primary) side of the transformer

You may need to slightly bend the leads to get them lined up with the pads on the PCB.

Solder the leads, then trim them.

COMPONENTS



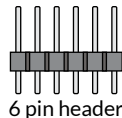
audio transformer
42TL019



2P3T switch



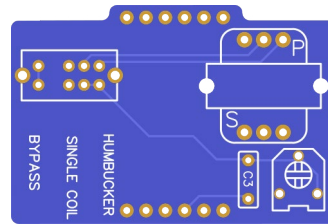
trimmer
10 kΩ



6 pin header



capacitor
1 nF



pickup simulator PCB

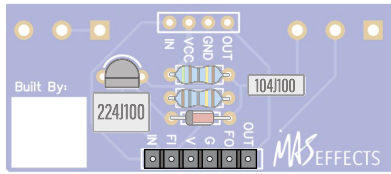
Want to learn more?

For details on how this operates, visit
<http://www.muzique.com/lab/pickups.htm>

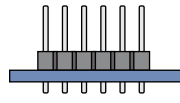
PIN HEADERS

The main PCB, jack PCB, and foot switch PCB are each held rigidly in place by jacks, potentiometers, and a foot switch. This prevents the PCBs from moving inside the pedal and creating accidental short circuits (i.e., unwanted electrical pathways). Although the pickup simulator PCB won't be secured to the enclosure in the same way, we can use header pins to firmly attach it to the main PCB.

Install 6 pins onto the bottom row of pads on your main PCB. The shorter side of the pin goes into the PCB as shown here.



Install the pins at the bottom of the main PCB

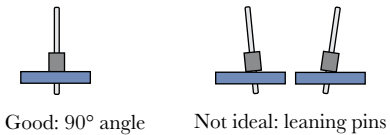


View from the side

Turn the board over to solder the pins in place. Do your best to keep them at a 90 degree, right angle from the PCB.

Use blue putty to hold it, if needed.

Solder one pin into place. Let it cool then check that the pins are at a right angle and not leaning inward or out from the PCB. If you need to adjust the angle, reheat the joint and move the pins with your other hand. Take care to avoid touching the pin you are heating!



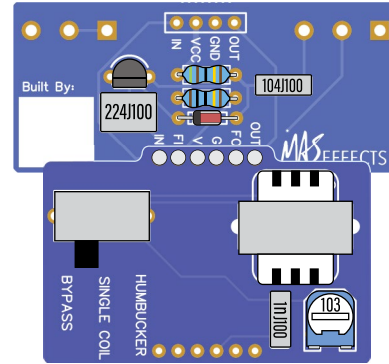
Solder the rest of the pins into place.

These pins require more heat than other components we've done so far, so don't be surprised if these take a bit longer to solder. Just be sure your soldering iron's tip is bluntly and firmly touching both the pin and the pad. Also ensure you have a wet tip, and push enough solder to form a good heat bridge.

ATTACH TO MAIN PCB

Slide the pickup simulator PCB onto the pin headers at the bottom of the main PCB.

Solder each into pin. Take care not to touch the transformer or the capacitor on the main PCB with your soldering iron.



Install and solder the pickup simulator PCB onto the main PCB

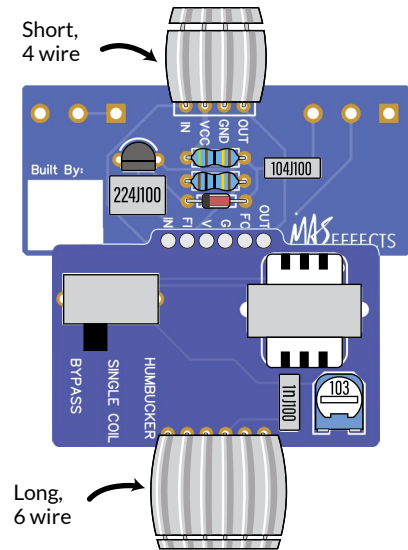
RIBBON CABLE

Individual wires are most commonly used to connect your audio circuit to the jacks and foot switch, but sometimes, you'll find other connectors, such as ribbon cable or the pin headers we just used.

Although more expensive than regular wire, ribbon cables and pin headers are a convenient way to keep the wiring tidy, prevent mistakes, and make the build process quicker and easier.

This kit includes 2 ribbon cables: a short 4-wire ribbon to connect the main PCB to the jack PCB at the top, and a longer 6-wire ribbon to connect the main PCB to the foot switch PCB at the bottom.

The insulation is pre-cut at both ends of the ribbon cables. Pull it off one end. Leave the other end covered to prevent accidentally bending the wires while you work.



Solder both ribbon cables.

Insert the wires into the top of the PCBs, as shown in this illustration. If your cable has a red stripe on one side, disregard it. We're not using the stripe to signify anything so the ribbon can be inserted in either direction.

The ribbons will stick up on the same side as the rest of the components you have attached so far.

Turn the board over and solder each of the wires. Gravity should hold it in place, but if it doesn't want to sit flat, use a little blue putty from your practice kit to keep things where you want them.

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