StewMac® + JHS PEDALS

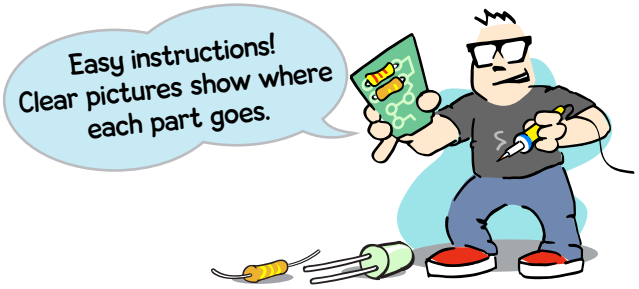
OLD SCHOOL FUZZ

CLASSIC PEDAL KIT

Assembly Instructions

The **OLD SCHOOL FUZZ** is a pedal designed exclusively for StewMac by Josh Scott, the founder of JHS Pedals, makers of quality hand-built effects pedals.

Josh used the classic 1968 FUZZrite™ from Mosrite™ as the starting point for the **OLD SCHOOL FUZZ**. He made his own tweaks to the circuit, including a Hi/Lo toggle that switches between a brighter sound with less gain and a heavier fuzz with more bass. This pedal loves to be loud! High volume lets more low end through, so it really shines when it's hitting a tube amp hard. You can't buy this fuzz pedal ready-made, but you can build yourself one with this kit—and it's fun!



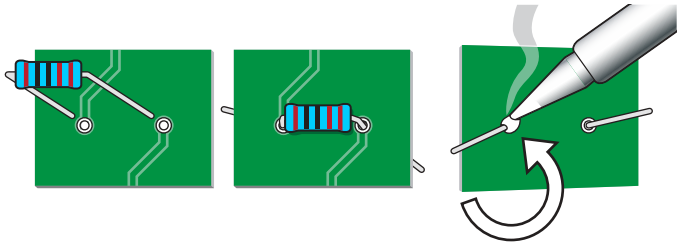
Tools and supplies

Required:	Soldering iron with fine point tip
	Solder
	Wire cutter/stripper
	1/2" nut driver or socket
	10mm nut driver or socket
	14mm wrench
	#1 Phillips screwdriver
Also helpful:	Clear silicone adhesive
	Circuit card holder
	Magnifying glass or OptiVISOR
	StewMac Soldering Aids
Power:	This pedal requires a standard 9V DC center-negative power supply (not included) and consumes less than 100mA. There's no battery option.

Tips for soldering

The solder joints you'll make on the circuit board are very small, and too much heat can damage the board. The idea is to make joints quickly, without scorching the eyelets.

Hold components in place for soldering by threading the leads through the board and bending them apart on the reverse side.



Make your solder joints on the reverse side. Insert the tip into the eyelet and let it heat for 4-5 seconds before touching it with solder. This heats the contact enough for the solder to flow nicely without damage. You don't need much solder, just enough to fill the eyelet. After soldering, trim away the excess lead wire.

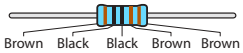
Give your pedal a custom paint job!

Any paint sold for use on metal will work well on the kit case. Spray paints like Rustoleum® or Krylon® are a durable finish. You might want to paint the case before building the kit, so you won't need to take the parts back out for painting.

A way to add custom graphics is to print them from your computer onto waterslide decal paper. If you use decals, protect them from scratches by spraying clear topcoats over them.

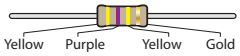
Parts list

Resistor values are indicated by colored bands, read from left to right. The first color in the code is usually the one painted closest to a lead wire. When a gold or silver band is present, it's always one of the last colors in the code. A magnifier is a big help in reading these codes.



(1) **R6** Resistor (1 kΩ)

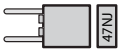
(1) **R4** Resistor (47 Ω)



(4) **R1, R2, R3, R5** (470 kΩ)

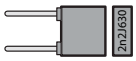
(1) **D1** Diode (P6KE22A)

(1) **C1** Capacitor (100 µF)



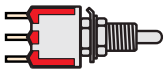
(2) **C2, C5** Capacitors (.047 µF)

(1) **C3** Capacitor (.0047 µF)



(2) **C4, C6** Capacitors (.0022 µF)

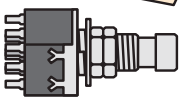
(2) **Q1, Q2** Transistors (2n3904)



(1) On-On solder lug toggle

(1) Volume pot (100 kΩ, audio taper)
(1) Fuzz pot (500 kΩ, linear taper)

(4) Adhesive foam tape



(1) Footswitch (TPDT, latching)

(1) Ribbon cable

(1) Lead wire (12")

(1) LED mounting bezel (5mm)

(2) Mono jacks, 1/4"

(1) **D8** Clear LED (5mm, glows violet)

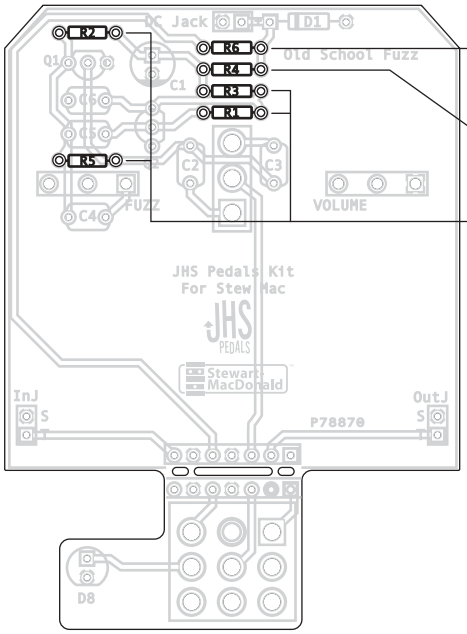
(1) DC power connector (21MM)

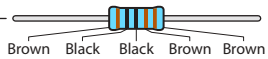
(2) Control knobs

(Not pictured) (1) Circuit board

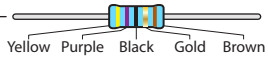
(Not pictured) (1) Metal case with 4 screws

Step 1: Install six resistors

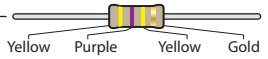




R6 Resistor (1 kΩ)



R4 Resistor (47 Ω)

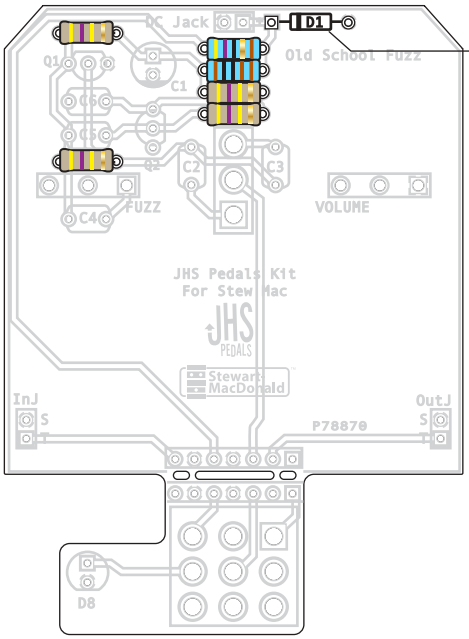


R1, **R2**, **R3**, **R5** Resistors (470 kΩ)

Resistors have a low profile, sitting closer to the board than taller components, so install them first. Their locations are marked with numbers on the board.

Resistors are not polarized, so it doesn't matter which lead goes in which eyelet. They can be installed in either direction.

Step 2: Install the diode

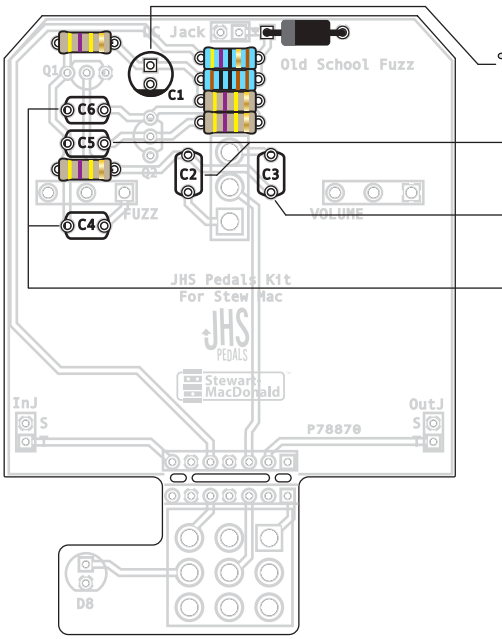


D1 Diode (P6KE22A)

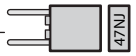
D1 is a polarized diode, so it needs to be installed in the correct orientation. Note the stripe around one end of the diode. This marks the negative (minus) lead of the polarized diode. On the circuit board, the printed outline of the diode also shows this stripe—toward the left. Install the diode so that its stripe matches the direction shown on the circuit board. Solder the diode in place.

The leads on diodes sometimes vary in diameter. If the leads don't fit into the holes in the circuit board, trim them at a steep angle to create sharp points that fit into the holes.

Step 3: Install six capacitors

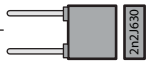


C1 Capacitor (100 µF)



C2, C5 Capacitors (.047 µF)

C3 Capacitor (.0047 µF)



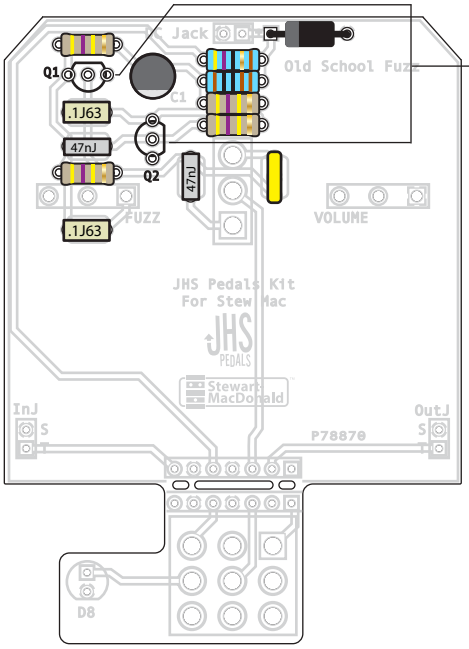
C4, C6 Capacitors (.0022 µF)

C1 is a 100 µF polarized capacitor and has to be installed in the right orientation or it will fail. Note that there is a white stripe running the length of the cap, identifying the negative (minus) lead. On the circuit board, the circle for this cap's location has a thicker line on one side: insert **C1** with its stripe facing that side. (On polarized caps of this type, there's a second way to identify the minus lead: it is the shorter of the two leads.)

Solder cap **C1** in place.

The remaining caps are not polarized. Solder them into place facing either direction.

Step 4: Install two transistors

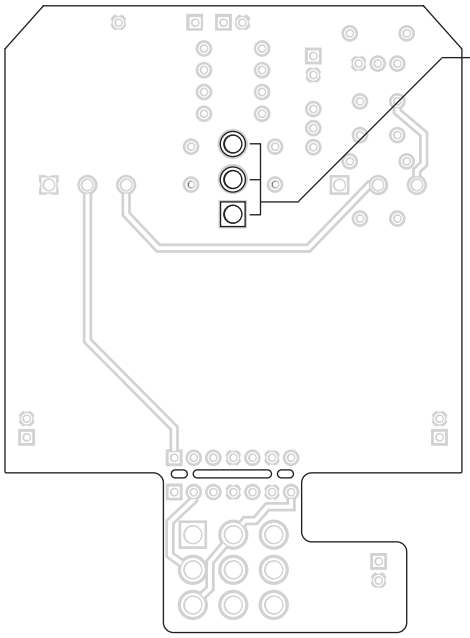


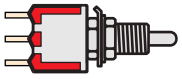
Q1, Q2 Transistor (2n3904)

Q1 and **Q2** are 2n3904 JFET* transistors. They are also directional and need to be installed in a specific orientation. Note that these transistors have a flat side. On the circuit board, the location outlines also have a flat side. Install this transistor to match its outline on the card.

*JFET: Junction Gate Field-Effect Transistor

Step 5: Install the mini toggle switch



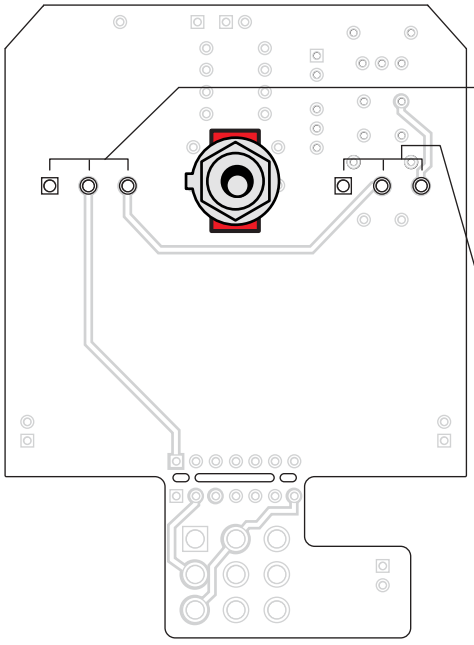


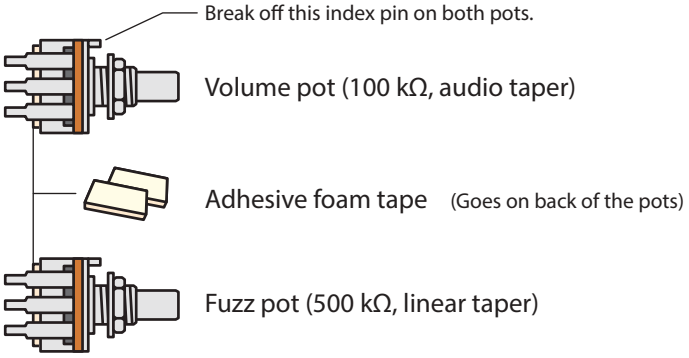
On-on solder lug toggle

The **mini toggle switch** installs on the back of the board. It is not directional so it will work in whichever orientation you install it.

Solder the switch into place making sure it sits as flat and square to the circuit board as possible.

Step 6: Install the volume and fuzz pots



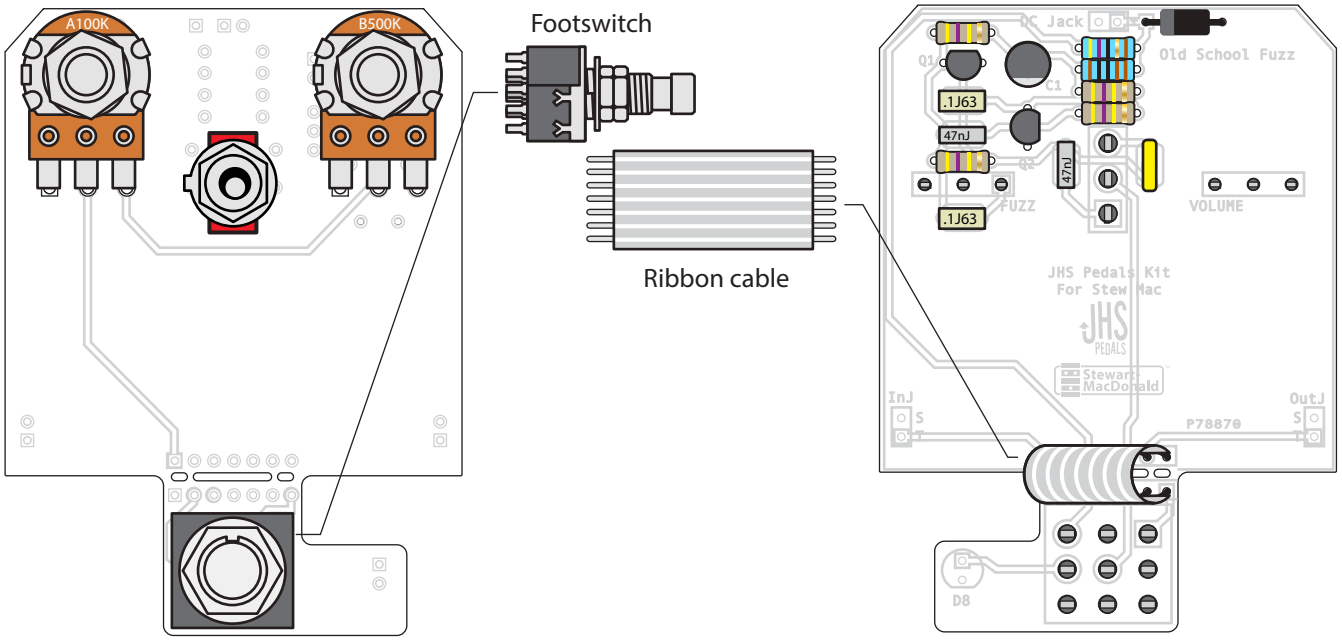


The last components to go onto the circuit board are the two control pots. They install on the back of the board. Each pot has three connecting lugs; the illustration in **Step 7** shows the three pots in position on the board.

Each pot has an index pin protruding from the case. Break off this pin before installation, so the pot will mount flush against the pedal case. Needle nose pliers work well for removing the pins.

Use the **adhesive foam tape** to insulate the back of the pot from the soldered leads of the other parts. Solder the pot in place, making sure it sits flat on the back of the board.

Step 7: Install the footswitch, then the ribbon cable



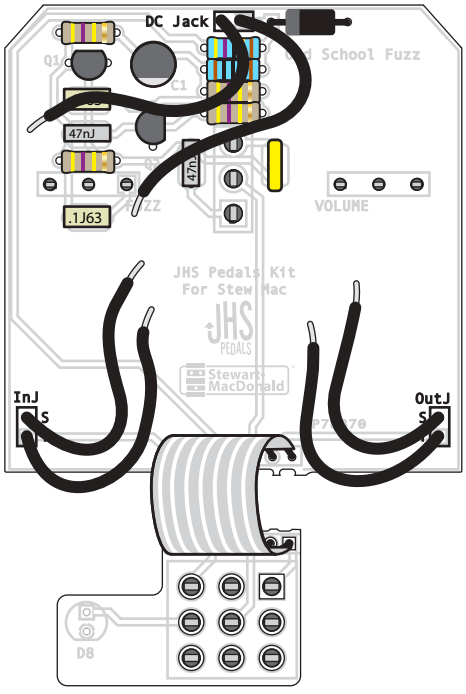
Install the **footswitch** on the back of the circuit board. The switch lugs will fit in only one of two directions; either orientation works fine. Insert the lugs through the nine eyelets so the switch sits flush, making contact all around.

Solder one lug and let it cool. This holds the switch in place while you solder the remaining lugs.

Next, install the **ribbon cable**. Insert the cable leads through the front of the board, and solder them in place on the back.

Step 8: Install the lead wires, cut the board

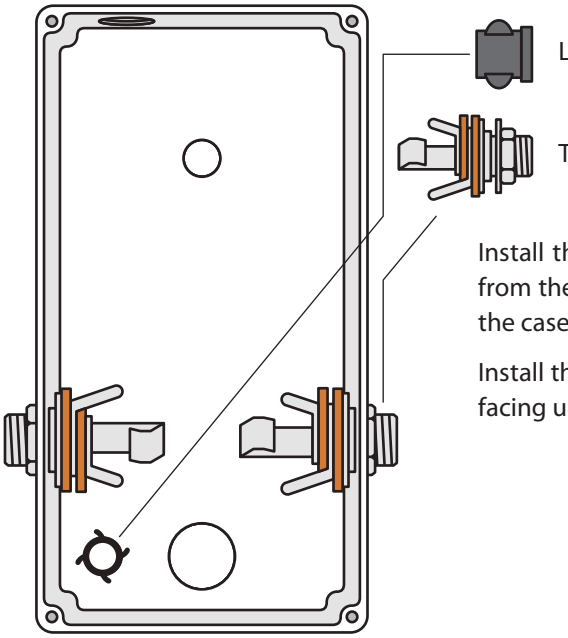
Lead wire, cut into six 2" lengths



Cut the **lead wire** into six 2" lengths for the input, output, and power jacks. Strip the insulation on the ends and thread them through the front of the board. Solder them on the back of the board.

Now you can cut the switch portion of the board away from the main board. Small wire cutters make quick work of this, and a small saw also works.

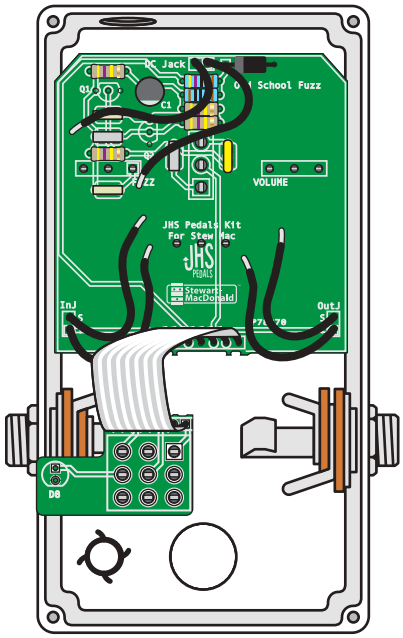
Step 9: Install the LED mounting bezel and the two jacks



Install the plastic **mounting bezel** for the LED indicator by pressing it in from the outside, through the top of the case. Spread the tabs open inside the case to hold it in place.

Install the **input and output jacks** on the sides of the case. Keep the lugs facing up so you'll have easy access when it's time to solder them.

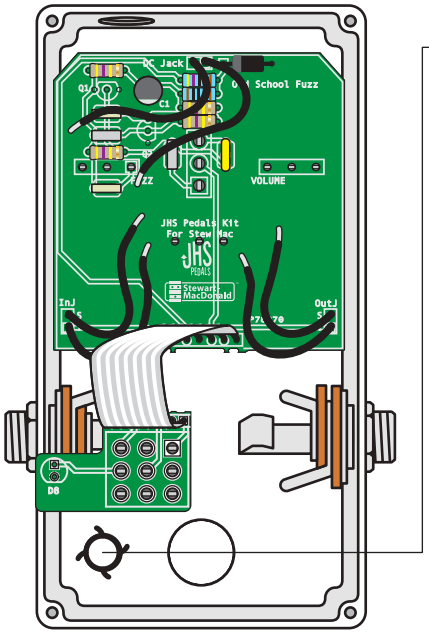
Step 10: Mount the circuit board in the case



The **main circuit board** is held in place by the volume control pot.

Thread one of the mounting nuts all the way down on the shaft of the pot, followed by the lock washer. Install the pot in the top of the case using the flat washer and remaining nut. Tighten the nut so it's good and snug, but take care not to overtighten.

Step 11: Install the LED in the mounting bezel

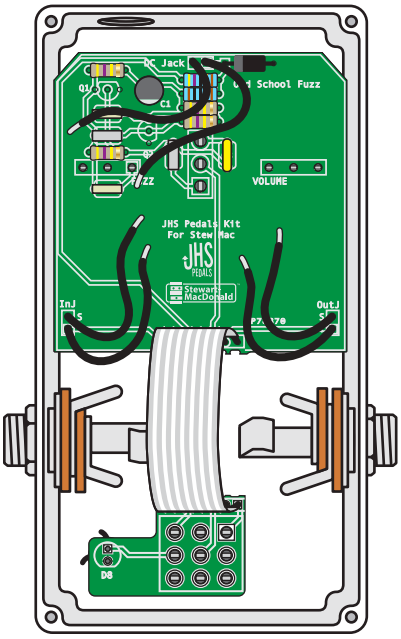


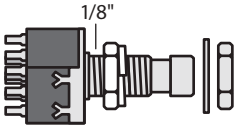
D8 LED (5mm)

Like some of the caps and diodes, the **D8** LED is polarized and has to be installed in a specific direction. One side of the diode has a flat edge, indicating the negative lead. Another indication is that the negative lead is shorter than the positive. The circle marking the **D8** location on the switch circuit board has a corresponding flat to indicate the mounting orientation.

Insert the LED into the bezel. It will be held in place by soldering it to the switch circuit board in **Step 12**, but for a more secure mount you can run a bead of clear silicone adhesive around the LED and bezel.

Step 12: Install the footswitch





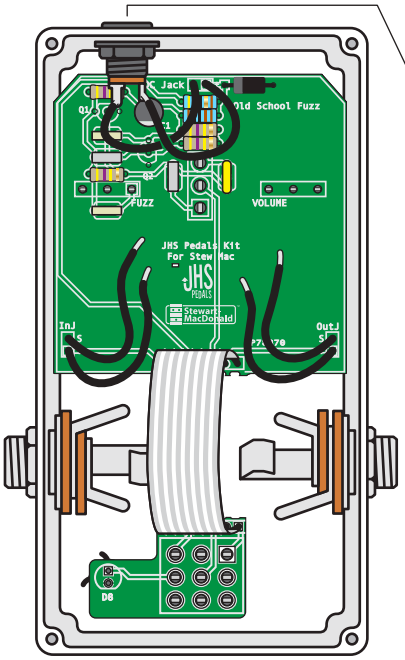
Thread one of the nuts onto the **footswitch**, leaving a 1/8" gap between it and the switch housing. Place the split lock washer on next.

Carefully install the switch so the legs of the diode feed through the **D8** holes on the switch circuit board.

Place the flat washer on the switch shaft on the top of the case. As you tighten the remaining nut on the switch, hold the switch circuit board inside the case so that it doesn't rotate.

Solder the **D8** LED and trim the leads.

Step 13: Install the DC power connector

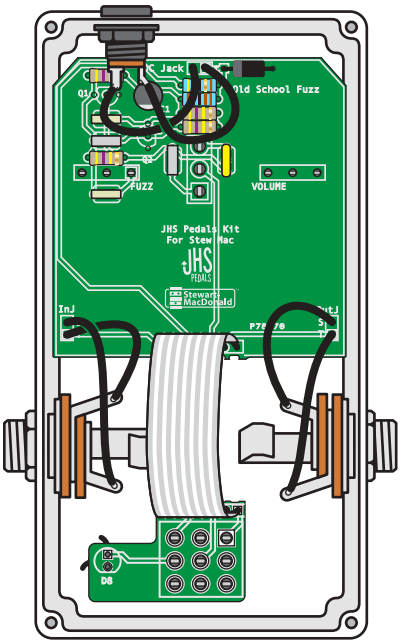


DC power connector

Insert the **DC power connector** so the negative lug is facing up, and tighten it in place. The negative lug is the one with the largest metal tab.

Solder the installed leads from the circuit board to the jack. Where they attach to the board, the positive lead is on the the right and the negative is on the left.

Step 14: Wire the input/output jacks



On the circuit board, the input and output jack leads are labeled **InJ** and **OutJ**. The leads are also labeled **T** for tip, and **S** for sleeve. Looking at a jack, you'll see that the sleeve lug is attached to the threaded shaft. The tip lug connects to the spring metal piece that contacts the tip of a guitar cord.

Solder these four leads as shown to finish the assembly.

Screw the bottom onto the case and add the control knobs.

Plug in and rock out!

Here's how to use the **OLD SCHOOL FUZZ**: