StewMac®

StewMac®

INTERVAL FUZZ
PEDAL KIT
INSTRUCTION GUIDE

HIT THE SWITCH AND GET YOUR PURPLE HAZE ON!

This pedal doesn't need any knobs to send your signal into over-the-top fuzz and octave up tones. Although this no-knob fuzz doesn't have any controls on the pedal, it's easy to coax different effects out of it. The pedal is very responsive to different pickups. Humbuckers will produce a more saturated fuzz than single-coil pickups will.

POWER

This pedal requires a standard 9V DC center-negative power supply (not included) and consumes less than 100mA. There's no battery option.

TECHNICAL SUPPORT

If you have any questions at all, our Tech Support Team is here to help. Email us at service@stewmac.com, and we'll respond quickly!

TOOLS AND SUPPLIES (REQUIRED)

Guitar Tech Screwdriver and Wrench Set #3693

Soldering Iron #0502
Solder Wick #0504
Solder #0505

Fine-gauge Wire Stripper #1606

Wire Cutter #1607

TOOLS AND SUPPLIES (HELPFUL)

PC Board Holder #0500

Multimeter #3607

Soldering Aids #0521

Magnifying glass or OptiVISOR #1685

3M Gold Fre-Cut Sandpaper (220-grit) #5097

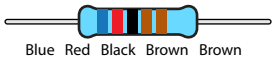
Not pictured:
Clear silicone adhesive and spray finish

PARTS LIST

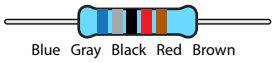
Resistor values are indicated by colored bands, read from left to right.
The first color in the code is usually the one painted closest to a lead wire.
See more about resistor color codes on page 5.

4.7K resistor (1) #7359

47K resistor (1) #7369



6.2K resistor (1) #7390



68K resistor (2) #7380

10K resistor (3) #7362

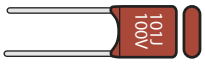
160K resistor (1) #7415

18K resistor (1) #7396

560K resistor (1) #7420

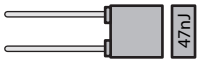
22K resistor (2) #7379

2.2M resistor (1) #7368



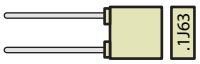
100pF capacitor (1)
#7326

1N5817 rectifier diode (1)
#7522



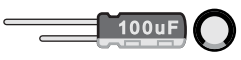
47nF capacitor (3)
#7307

1N4148 rectifier diode (2)
#7470



100nF capacitor (1)
#7304

2N5089 transistor (2)
#7514

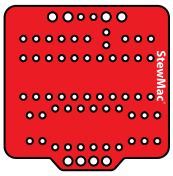


100µF capacitor (1)
#7339

2N3906 transistor (1)
#7511

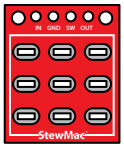
PARTS LIST (CONT)

24" of lead wire (1)
#5960



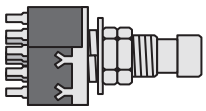
Printed circuit board (1)

5mm white LED (1)
#7422



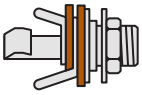
Breakout board (1)

5mm LED mounting bezel (1)
#7432

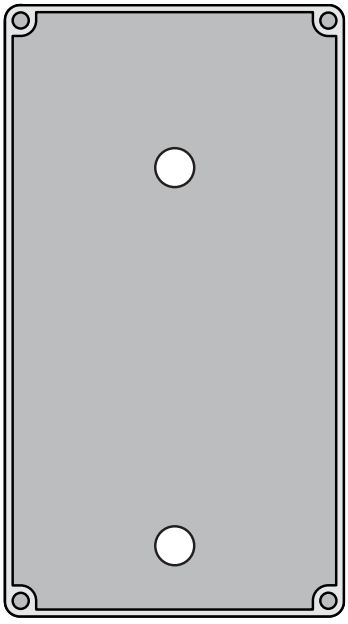


3PDT latching footswitch (1)
#1611

2.1mm DC power jack (1)
#7468



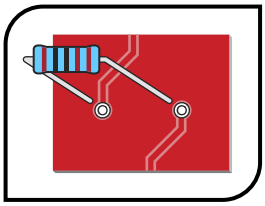
1/4" mono jack (2)
#4652

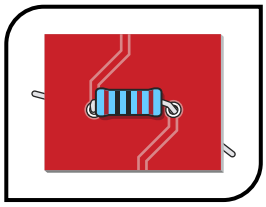


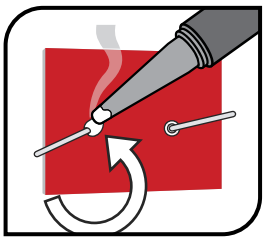
Pre-drilled enclosure top (1)
Pre-drilled enclosure bottom - not pictured (1)
Screws - not pictured (4)

Pedal sticker sheet (1)

SOLDERING



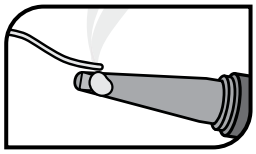




The solder joints you'll make on the printed circuit board are very small, and too much heat can damage the board. The idea is to make joints quickly, without scorching the eyelets.

1. Hold components in place for soldering by threading the leads through the board and bending them apart on the reverse side. You will be making your solder joints on the reverse side of the board.

2. Melt a small amount of solder onto the tip of the iron ("tinning" the iron).



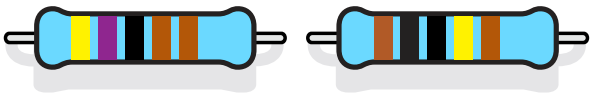
3. Insert the tip into the eyelet and let it heat for 4-5 seconds before touching it with solder. This heats the contact enough for the solder to flow nicely without damage. Feed the solder to the eyelet, not the iron, and you don't need much solder, just enough to fill the eyelet. Keep the iron on the connection for a second longer; this pause gives time for all of the flux to cook out of the joint. After the joint has cooled, trim away the excess lead wire.

MORE HELPFUL SOLDERING TIPS AND TRICKS

- *Keep your soldering tip clean by wiping it often on a damp sponge.*
- *Also keep it tinned by occasionally melting a little solder onto it.*
- *Don't blow on the hot solder or touch anything until the joint has cooled completely. A good solder joint is shiny—a sign that it was left to cool undisturbed.*
- *Plan so each joint is only soldered once. Resoldered joints are messy and more likely to fail.*

UNDERSTANDING ELECTRONIC COMPONENTS

A number of different components are used to make an effects pedal. Here is a look at the components used in this kit:

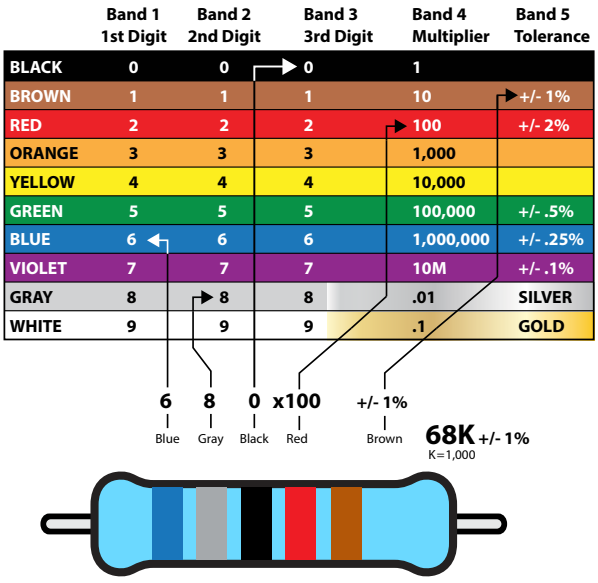


RESISTORS

A resistor does exactly what it says—it resists the flow of current. The designated value of the resistor corresponds to how much resistance there is on the flow of electrons.

A resistor's value—the amount of resistance it creates—is rated in ohms (Ω). Larger ohm values mean more resistance. For example, a 100Ω resistor creates ten times as much resistance as a 10Ω resistor.

Resistor values are indicated by color 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. If you're having trouble reading the color bands, try using a multimeter to read the resistor's value. Just set your multimeter to ohms and connect its test leads to each side of the resistor.

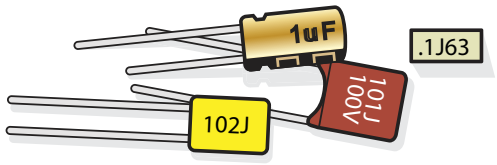


UNDERSTANDING ELECTRONIC COMPONENTS

CAPACITORS

The two main uses of capacitors are to store electricity and to block the flow of DC current.

Capacitor values are typically printed on the component. The key values with caps are their voltage and capacitance.



The voltage spec for a cap refers to how much DC voltage it can handle at any given time. If this rating is exceeded, the capacitor will fail.

Capacitance, measured in farads, refers to how much electricity a capacitor can hold. One farad (1F) would be much too large for use in a pedal. Caps for pedals are rated between millionths of a farad, called microfarads (µF), billionths of a farad, called nanofarads (nF), or trillionths of a farad, called picofarads (pF). **.001µF = 1nF = 1,000pF**.

Resistors and capacitors may also be referred to with shorthand notation on the printed circuit board when there is a decimal in the value. For example, the place on the printed circuit board for the 4.7K resistor will read 4K7 and the spot for a 2.2nF capacitor will read 2n2. This is done to save space on the board and make the labels as clear as possible.

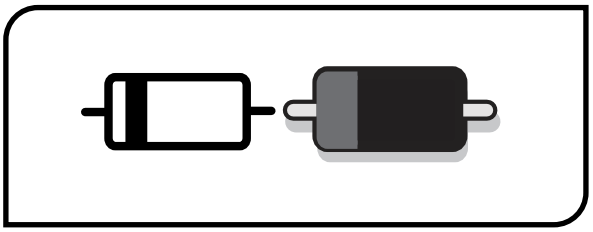
Some capacitors have polarity and some don't. It's extremely important to install polarized caps correctly in a circuit. The negative lead will often be indicated by a stripe on the negative lead's side (often with arrows) and will be shorter than the positive lead. The positive lead of an electrolytic cap will be longer and won't have the stripe on that side.

Installing capacitors with the polarity backwards will make the circuit malfunction and quickly destroy the capacitor—even causing it to explode.

DIODES

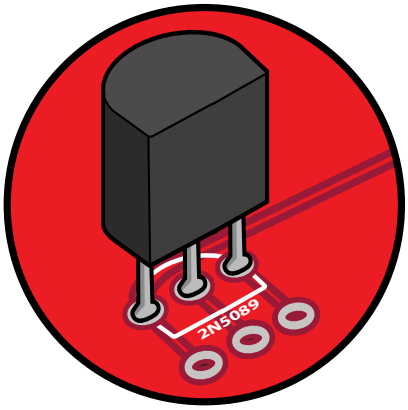
Diodes are used where you want electricity to flow in only one direction, such as power rectification, and also to limit how much current can flow, to create "clipping" distortion.

Diodes are also polarized, so they need to be installed in the correct orientation. The stripe around one end marks the negative (–) lead of the diode. On the printed circuit board, the printed outline of the diodes also shows this stripe. Install each diode so that its stripe matches the direction shown on the printed circuit board.



TRANSISTORS

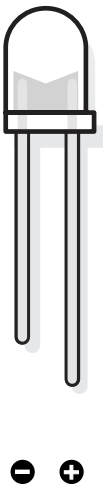
Transistors are used to amplify electrical signals. They have a flat side and a round side. The location on the printed circuit board also has a flat side and a round side. Match the orientation of the component to this outline.



UNDERSTANDING ELECTRONIC COMPONENTS

LEDs

LED stands for Light Emitting Diode, and functionally LEDs are very similar to regular diodes. LEDs are most often used as indicator lights in pedals. They are polarized just like diodes and electrolytic capacitors and must be installed in the correct orientation to work. The positive (anode) lead of the LED will be longer and the anode side of the LED housing will be round. The negative (cathode) lead of the LED will be shorter and the cathode side of the LED housing will be flat. LEDs are mounted inside of a bezel, which protects the LED and insulates the leads from shorting against the enclosure or any internal components.



1 PAINTING YOUR PEDAL ENCLOSURE

You're creating a pedal from the ground up, so add your own custom paint job too! Painting your pedal and adding the stickers provided in this kit (or custom decals that you can create on your own) in advance is not only fun, but it's much easier than disassembling the pedal to paint it once you have put it together.

1. To minimize redoing steps, make sure you have a solid idea of the look and feel you're going for.

2. Lightly sand the outside of the enclosure with 220-grit sandpaper and wipe clean any debris.

3. Cover the holes from the inside with masking tape.

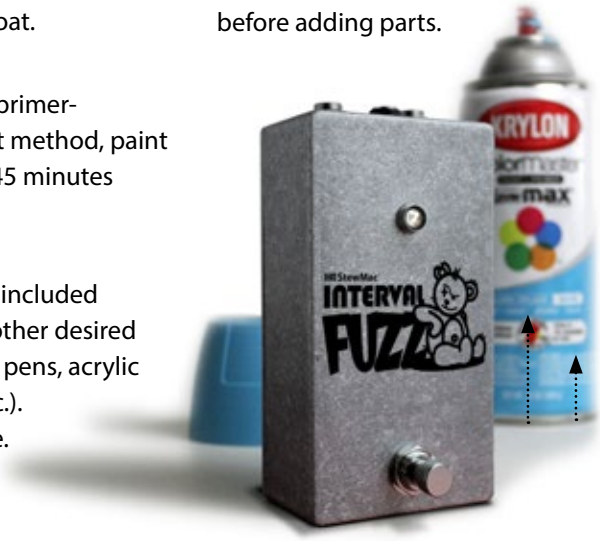
4. On a piece of cardboard, place the enclosure and bottom cover on scraps of wood to lift them off the cardboard when spraying.

5. With long, even strokes, spray a light coat of primer or paint. Allow 45 minutes of drying time before the next coat.

6. If you're using primer-followed-by-paint method, paint three coats with 45 minutes between coats.

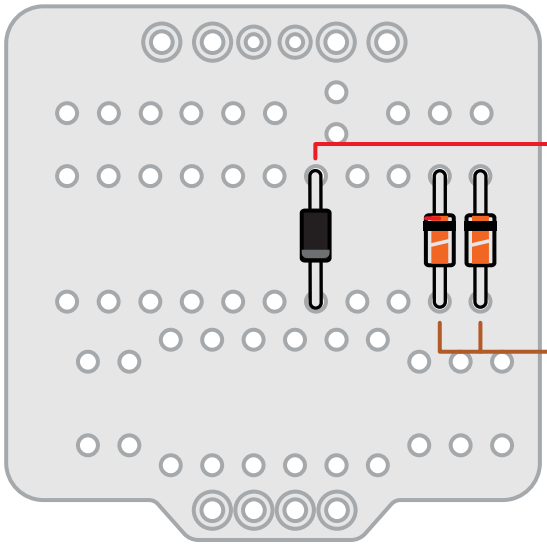
7. Now, add your included stickers and any other desired decoration (paint pens, acrylic paint, Sharpie, etc.). Allow drying time.

8. Add three coats of clear-coat glaze with 45 minutes between coats. Wait at least two hours before adding parts.



2 INSTALL 3 DIODES

It's time to install your parts! Before soldering the diodes to your printed circuit board, make sure you thread the leads through the correct side. The side of the printed circuit board that has white values and outlines of the components is the correct side. In some cases, components must insert into the printed circuit board in a specific direction due to their polarity, so follow the graphics carefully.



Note the stripe around one end of each diode. This marks the negative (–) lead. On the printed circuit board, the printed outline of the diodes also shows this stripe. Install each diode to match the direction shown, and solder in place.

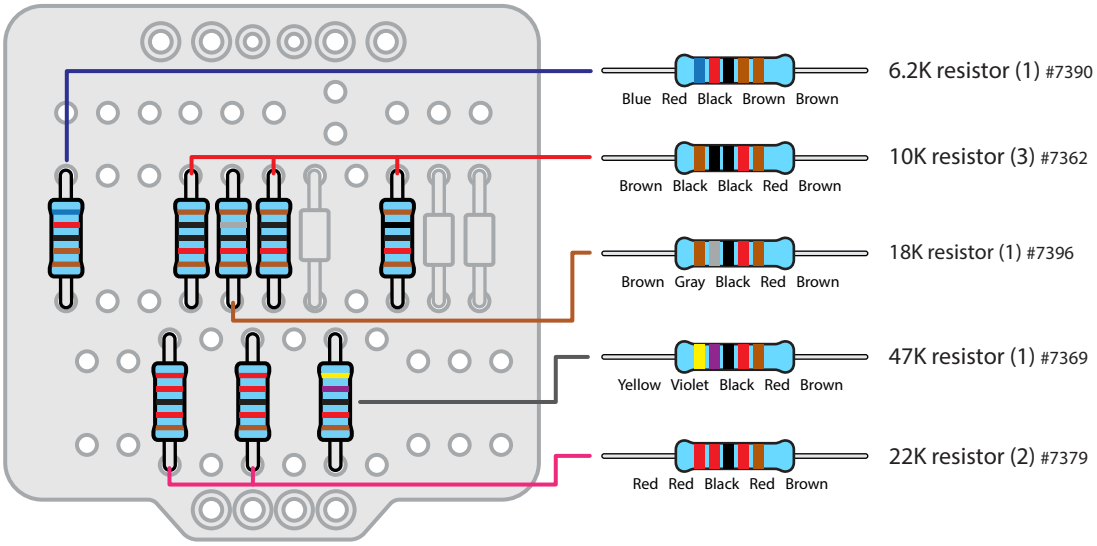
1N5817 rectifier diode (1)
#7522

1N4148 rectifier diode (2)
#7470

3 INSTALL 8 RESISTORS

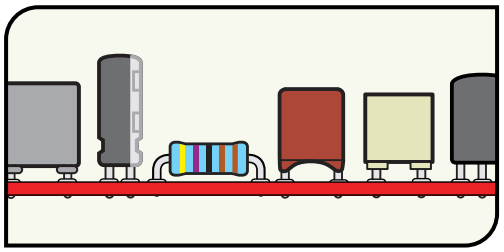
Next, we're going to add a bunch of resistors to our printed circuit board. As in the previous step, you'll find an outline of each resistor and its value printed in their proper location on the printed circuit board. Match resistors to the values on the printed circuit board and solder in place.

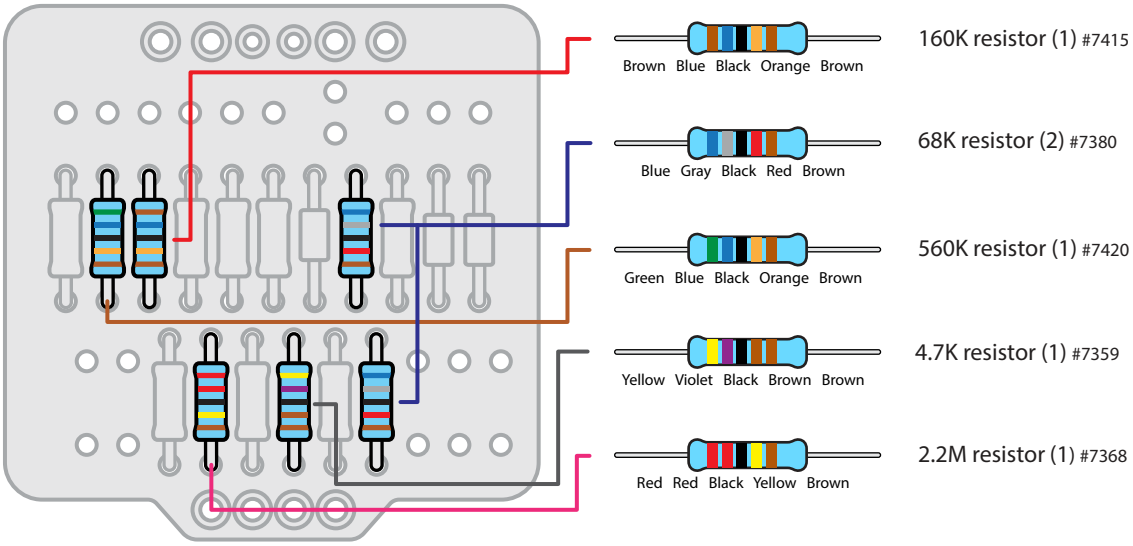
Resistors are not polarized, so it doesn't matter which lead goes in which eyelet. They can be installed in either direction.



4 INSTALL 6 MORE RESISTORS

Resistors have a low profile, sitting closer to the board than taller components, so installing these now will make installing other parts easier later on.

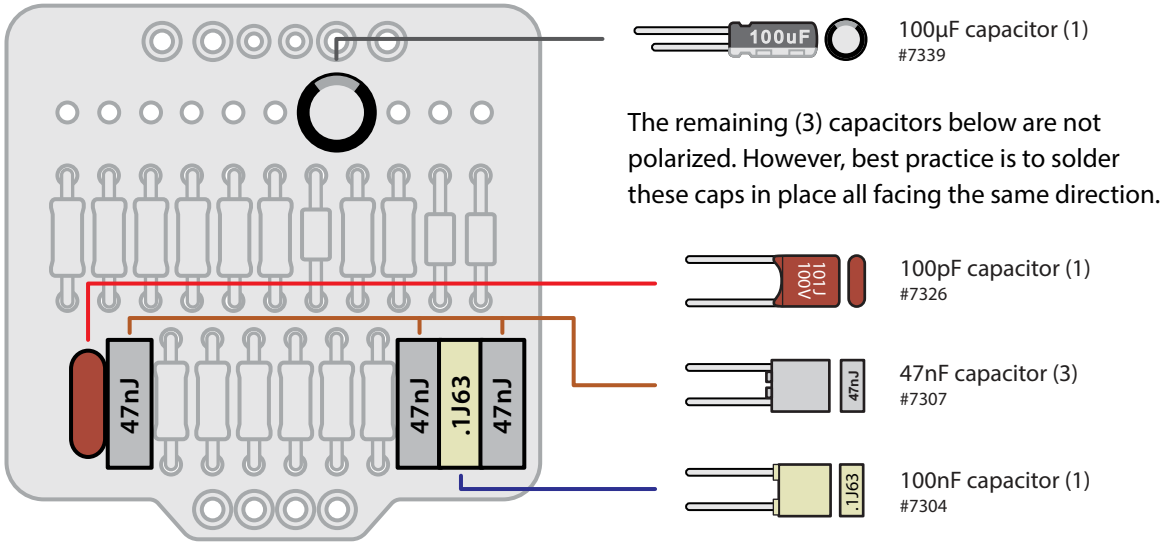




5 INSTALL 6 CAPACITORS

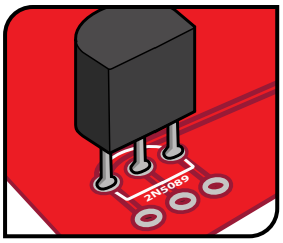
The 100µF capacitor shown below is polarized and must be installed in the correct orientation. Note the stripe running the length of the cap; this identifies the negative (–) lead (the negative lead is also shorter).

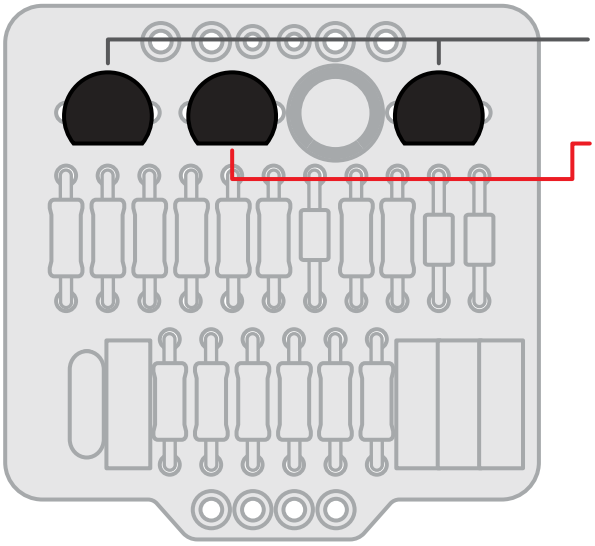
On the printed circuit board, each capacitor has a square-shaped eyelet marked positive (+). The negative lead's eyelet is round.



6 INSTALL 3 TRANSISTORS

Transistors are directional and need to be installed in a specific orientation. Note that each one has a flat side. On the printed circuit board the location outline also has a flat side. Install each transistor to match the outline.

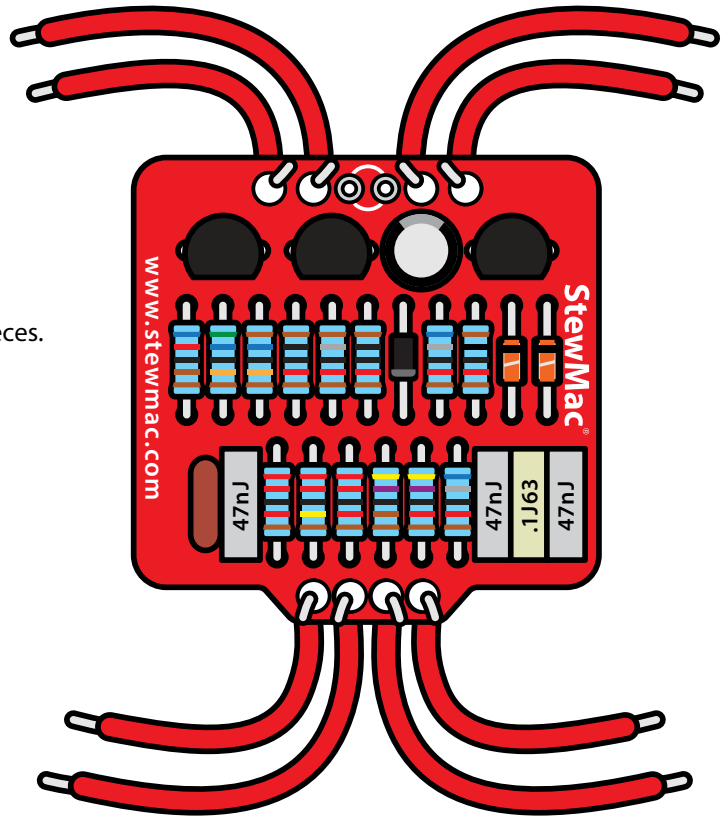




2N5089 transistor (2)
#7514

2N3906 transistor (1)
#7511

7 INSTALL 8 LEAD WIRES



The kit comes with 24" of lead wire.

Cut the wire into eight 2" sections and two 4" pieces.

Strip around 3/32" off both ends of all wires.

Solder the eight 2" leads onto the printed circuit board in the locations shown in the diagram.

TIP

We find it easiest to feed each lead through the bottom of the printed circuit board and solder it on the top of the board.

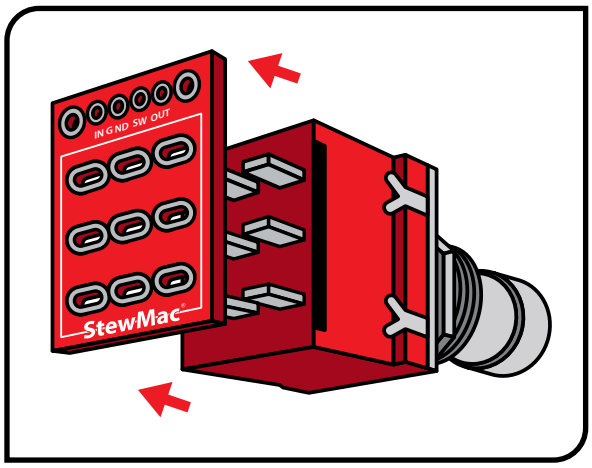
8 INSTALL FOOTSWITCH INTO BREAKOUT BOARD

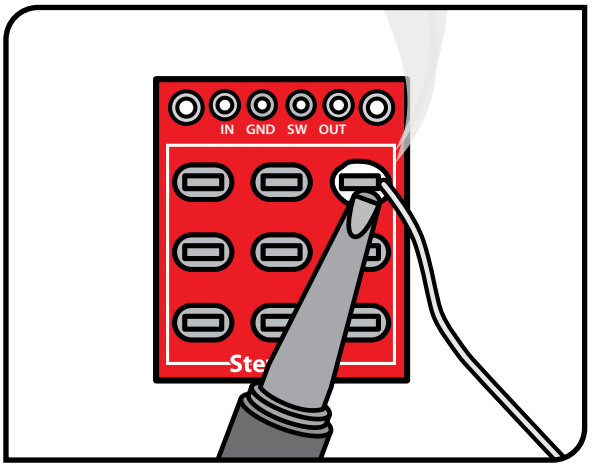
Orient the breakout board with the text facing up, reading left to right. Slide the lugs of the footswitch up through the bottom of the board.

Solder each lug to the breakout board around it. If the lugs of the footswitch don't quite fit in the breakout board, use a pair of pliers to gently bend the lugs of the footswitch until the breakout board slides over the lugs.

TIP

You can use the pedal enclosure as a mount for the footswitch while you solder the breakout board to it. Just lay the enclosure face-up and drop the switch in its hole. No need to fasten it with a nut from the back if you don't want to.

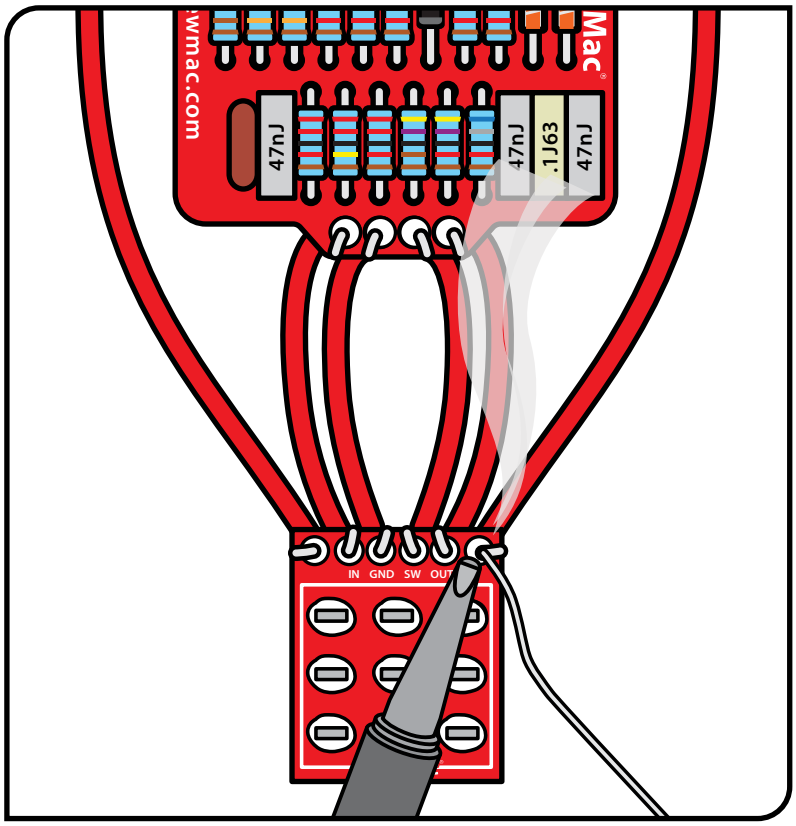




9 ATTACH 6 WIRES TO BREAKOUT BOARD

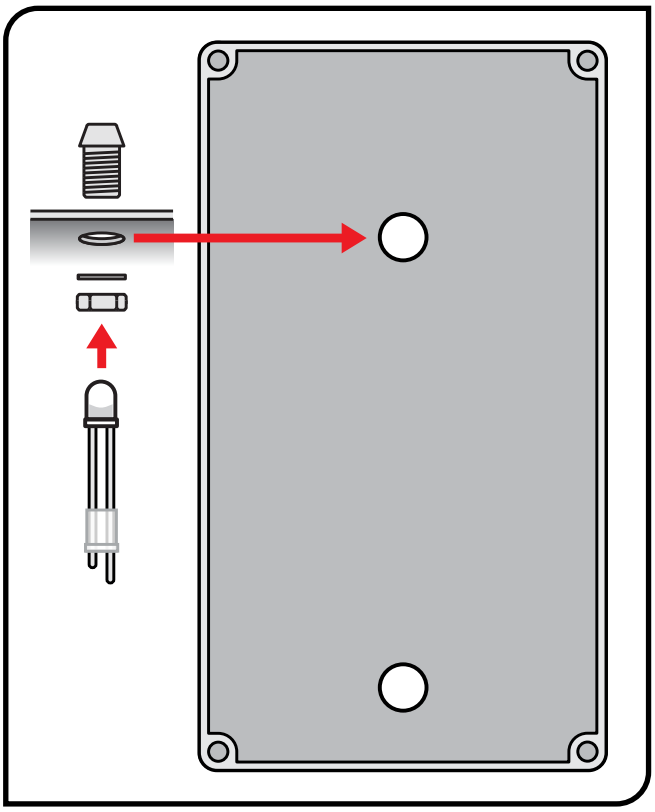
Solder the four wires from the bottom of the printed circuit board to eyelets in the breakout board as shown.

Solder one end of each 4" wire to the last two eyelets on the breakout board.



12 INSTALL LED INDICATOR LIGHT

Like some of the caps and diodes, the LED is polarized and has to be installed in a specific direction. The negative lead of the diode has a flat edge and is shorter than the positive.

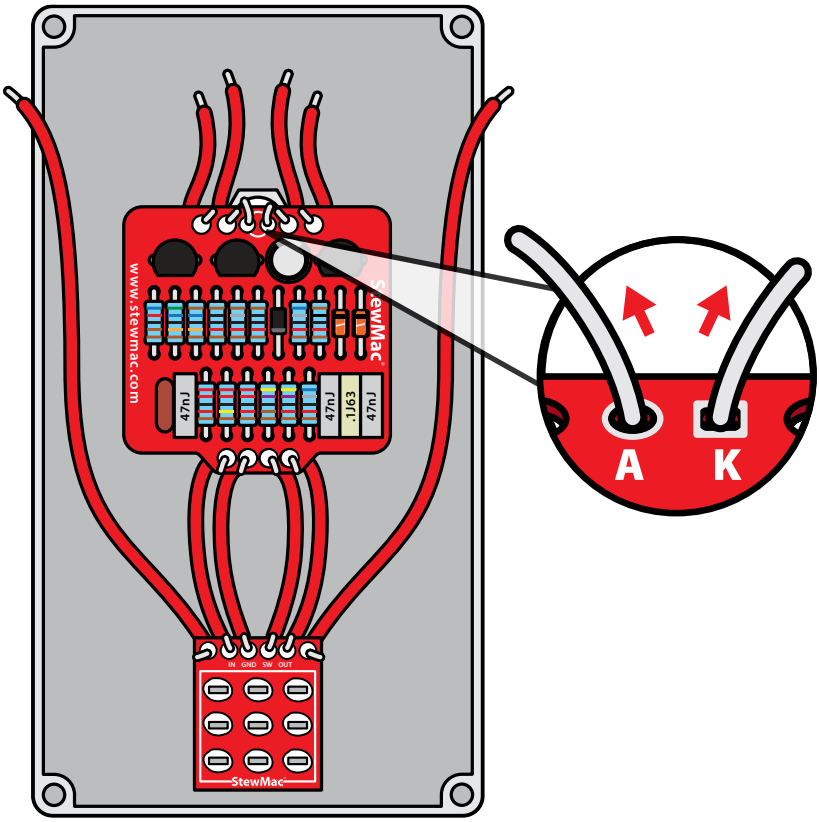


The LED mounting bezel consists of two main parts: A ring that the LED fits into and a plastic plug that goes over the LED from the back side to keep it in place.

Install the mounting bezel through the top of the enclosure from the inside. Slip a lock washer and nut on and tighten it up using a 3/8" socket. Insert the LED into the bezel so the flat side (the shorter lead) faces to the right side of the enclosure when seen from inside. Feed the leads through the plastic plug, and press the plug down until it's tight in the bezel. The LED will be held in place when you solder the leads to the switches and printed circuit board. For a more secure mount, you can run a bead of clear silicone adhesive around the plastic plug.

11 INSTALL PRINTED CIRCUIT BOARD

The printed circuit board is held in place by the LED leads and the leads to the footswitch.



Pass the longer positive lead of the LED through the eyelet marked "**A**" and the shorter negative lead through the eyelet marked "**K**". Solder these leads in place.

Install the footswitch through the top of the case and slide a washer onto it from the outside. Use a 14mm wrench to tighten it up. The footswitch is the effect bypass switch that turns the pedal on.

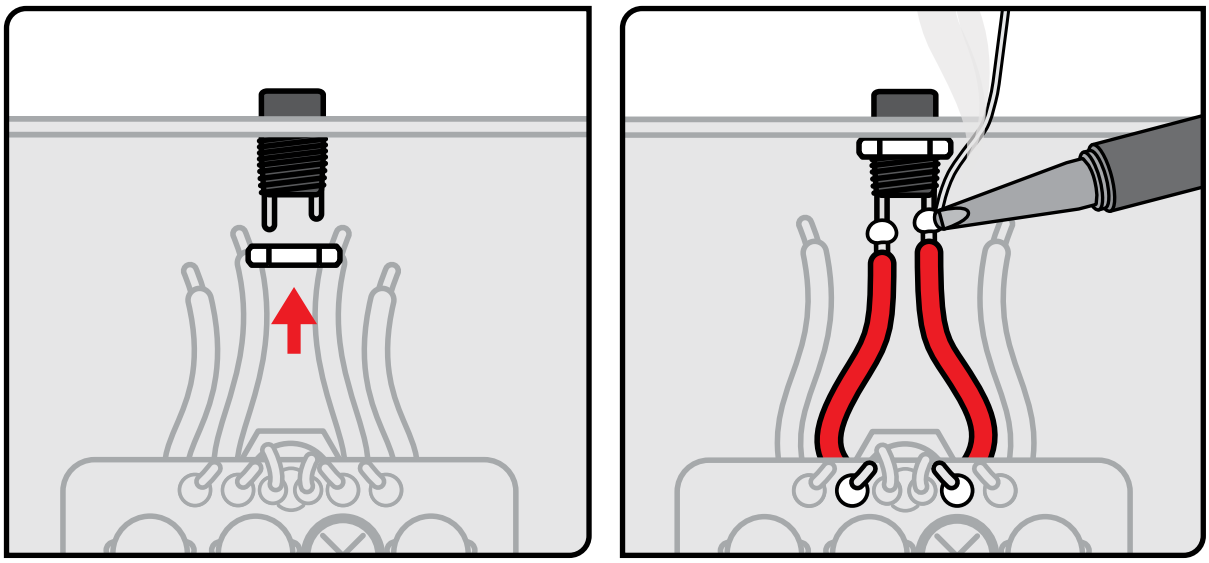
Do not connect any of the lead wires at this point.

12 INSTALL THE DC POWER JACK

Insert the DC power jack into the center hole in the top of the enclosure making sure the longer of the two lugs is on the left. Use a 14mm wrench on the included nut to secure the jack into the enclosure.

Solder the inside left wire to the longer lug of the DC jack.

Solder the inside right wire to the shorter lug of the DC jack.



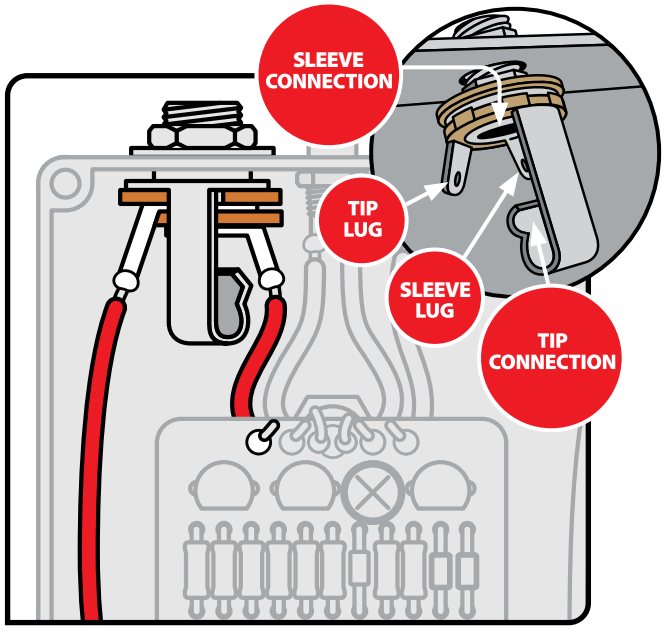
13 INSTALL THE INPUT JACK

Insert the input jack into the left side hole in the top of the enclosure with the tip connection facing down, as shown in the diagram. Add the washer, and thread the nut onto the shaft enough so that the jack can rotate freely. You may need to rotate the jack to provide easier access to setting the solder joints.

Solder the left-most wire at the top of the printed circuit board to the input jack lug that corresponds with the sleeve connection. The sleeve lug should be the one closer to the DC jack.

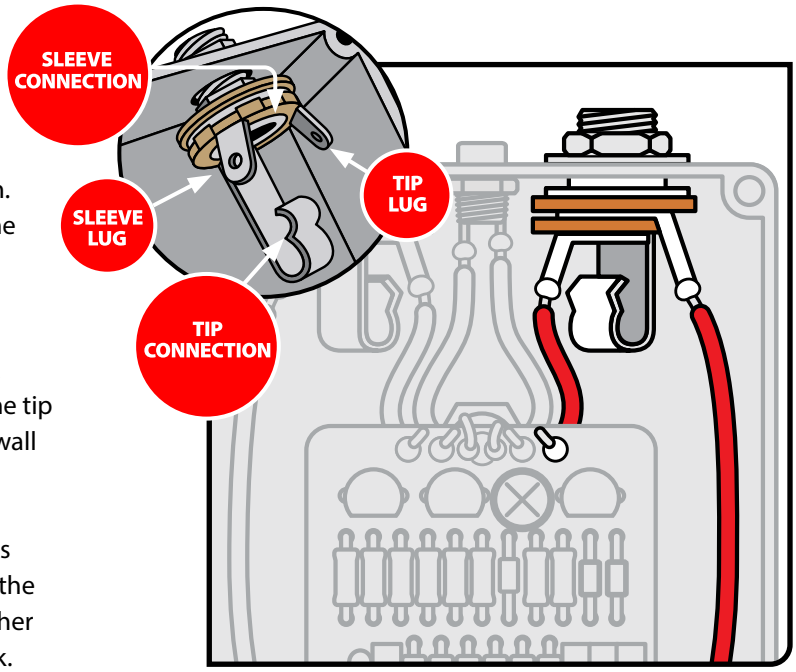
Solder the 4" wire on the left side of the breakout board to the lug of the input jack that corresponds with the tip connection. The tip lug should be the one closer to the outside wall of the enclosure.

Once the solder has cooled, orient the jack as shown in the diagram, making sure none of the connections on the jack are touching any other components, and tighten the nut on the jack.



14 INSTALL THE OUTPUT JACK

Insert the output jack into the right side hole in the top of the enclosure with the tip connection facing up, as shown in the diagram. Add the washer and thread the nut onto the shaft enough so that the jack can rotate freely. You may need to rotate the jack to provide easier access to setting the solder joints.

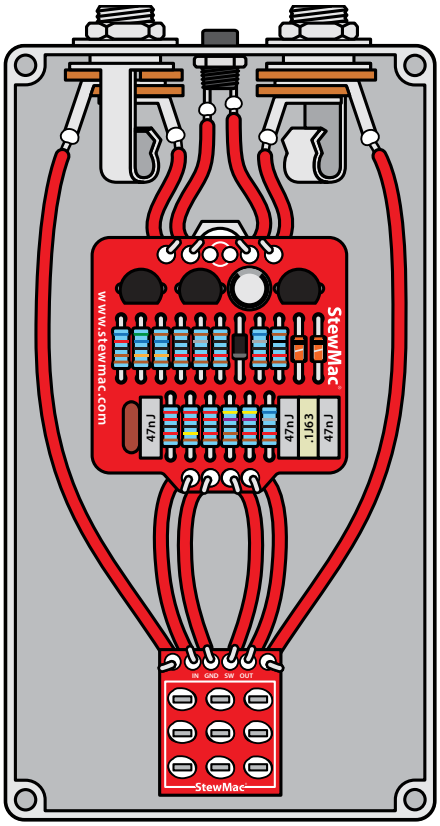


Solder the right-most wire at the top of the printed circuit board to the output jack lug that corresponds with the sleeve connection. The shield lug should be the one closer to the DC jack.

Solder the 4" wire on the right side of the breakout board to the lug of the output jack that corresponds with the tip connection. The tip lug should be the one closer to the outside wall of the enclosure.

Once the solder has cooled, orient the jack as shown in the diagram, making sure none of the connections on the jack are touching any other components, and tighten the nut on the jack.

15 COMPLETED VIEW



With the output jack secured, this is what your pedal should look like.

Congrats on a job well done.

Now, simply attach the bottom of the enclosure with the included screws, plug it in, and bend some tone!

HERE'S HOW THE PEDAL WORKS

POWER: Use a standard 9 volt DC power supply with a 2.1mm center-negative plug (not included). Do not run at higher voltages! We recommend using a separate dedicated power supply for each pedal. Switching-type power supplies, daisy chains, and power supplies not intended for pedals do not filter dirty power well, and can cause unwanted noise.

CONTROL: Although this no-knob fuzz doesn't have any controls on the pedal, it's easy to coax different effects out of it. The pedal is very responsive to different pickups. Humbuckers will produce a more saturated fuzz than single-coil pickups will. Similarly, placing a boost or distortion pedal in front of the Interval Fuzz will yield some amazingly dense and sputtering fuzz tones. If you're looking for a more subtle effect, try rolling the volume knob back on your guitar. Experiment with putting this pedal in different parts of your signal chain to find where it works best for you.

TRUE BYPASS: This pedal doesn't have a buffer amp, so when the pedal is switched off the signal passes straight through from input to output with no circuitry in between. This means it has the greatest possible fidelity to the original guitar signal; basically, when disengaged the pedal is no different than an extension of the guitar cable. Usually you see this feature in high-end boutique pedals.