StewMac®

Disaster Transport Jr.

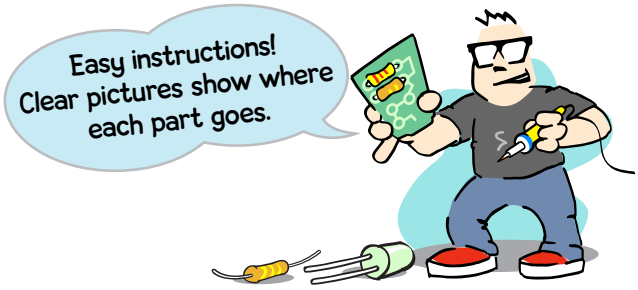
CLASSIC PEDAL KIT

Kit case is unpainted

IN COLLABORATION WITH
EarthQuakerDevices™

Assembly Instructions

The **Disaster Transport Jr.** is an analog voiced digital delay with 625ms delay time with an all analog dry signal path and true bypass switching. It was designed as an anti-modern delay for those who appreciate a nice vintage tape echo with all its peculiarities. Its unique tone control doubles as a noise filter on longer delay settings and really helps the delay shine with a dirty signal. The mix control allows you to boost the effected signal to nearly 4x the original signal level and the repeats control goes from one signal repeat to near infinite repeats all the way through to self oscillation.



RARE / VINTAGE / HARD TO GET

WHEN YOU CAN'T BUY IT BUILD IT

An EarthQuaker Devices original, the **Disaster Transport Jr.** has been out of production for some time, but now you can build your own!

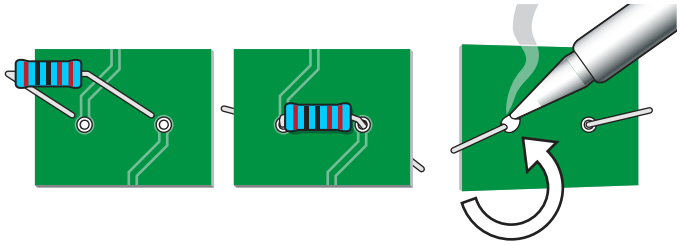
Tools and supplies

Required:	Soldering iron with fine point tip
	Solder
	Wire cutter/stripper
	3/8" nut driver or socket
	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.

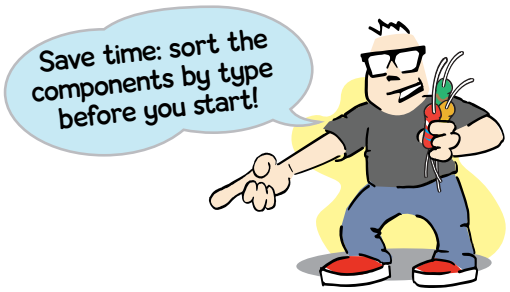
Give your pedal a custom paint job!

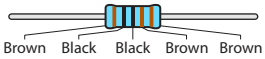
Any paint sold for use on metal will work well on the kit case. Spray paints like Rustoleum® or Krylon® are a durable finish. You might want to paint the case before building the kit, so you won't need to take the parts back out for painting.

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.

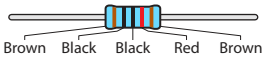
Parts list

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.

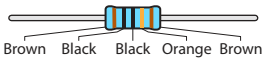




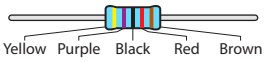
1KΩ resistor (1) #7357



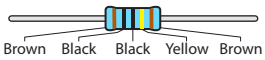
10KΩ resistors (9) #7362



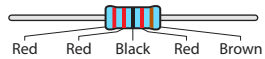
100KΩ resistor (1) #7365



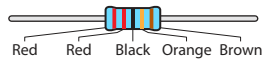
47KΩ resistors (3) #7369



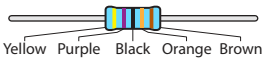
1MΩ resistor (1) #7367



22KΩ resistors (4) #7379

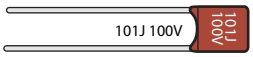


220KΩ resistors (2) #7381

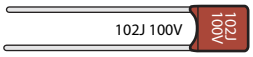


470KΩ resistors (2) #7382

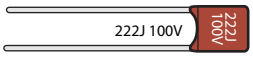
1µF capacitors (5) #7314



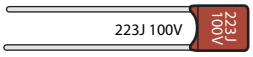
100pF capacitor (1) #7326



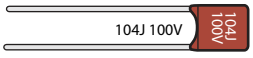
.001µF capacitor (1) #7329



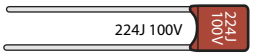
.0022µF capacitor (1) #7330



.022µF capacitors (6) #7332



.1µF capacitors (6) #7334



.22µF capacitor (1) #7335

10µF capacitors (2) #7338

100µF capacitors (3) #7339

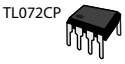
1N4001 rectifier diode (1) #7404

1N4148 rectifier diodes (2) #7470

5mm white LED (1) #7422

5mm LED mounting bezel (1) #7432

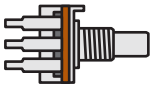
Linear voltage regulator (1) #7495



TL072CP low noise op-amp (1) #7444

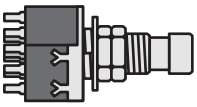
PT2399 echo audio processor (1) #7490

24" of lead wire (1) #5960

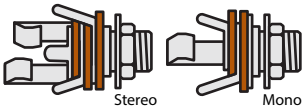


B25KΩ linear taper pot (1) #7461
B50KΩ linear taper pot (1) #7462
B5KΩ linear taper pots (2) #7452

Adhesive foam tape squares (4) #7560



3PDT latching footswitch (1) #1611



1/4" stereo jack (1) #4653
1/4" mono jack (1) #4652

2.1mm DC power connector (1) #7467

Control knobs (4) #7506

(Not pictured) Circuit board (1)

(Not pictured) Metal case with 4 screws (1) #7601

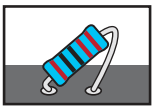
Step 1: Install twenty-three resistors

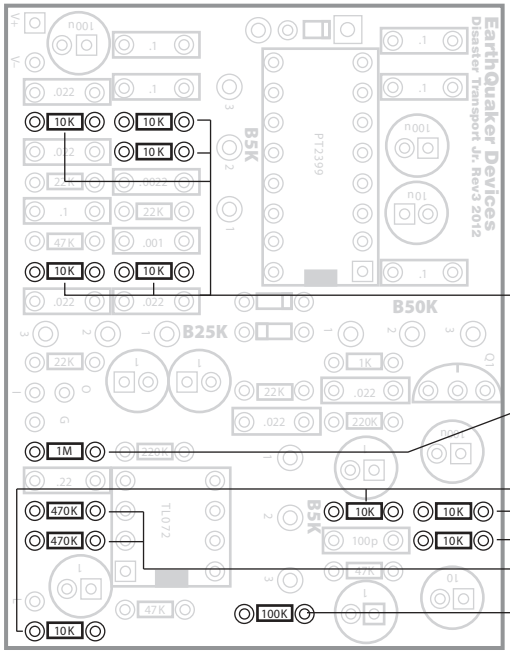
As you get started, note that the values of each component are printed in their proper location on the circuit board unless otherwise noted.

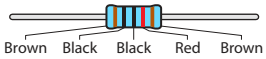
Resistors have a low profile, sitting closer to the board than taller components, so install them first. Their locations are marked on the board with the value of the part.

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

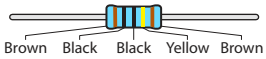
Larger resistors will need to be placed on the board at an angle due to their size.



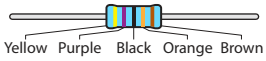




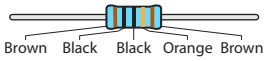
10KΩ resistors (9) #7362



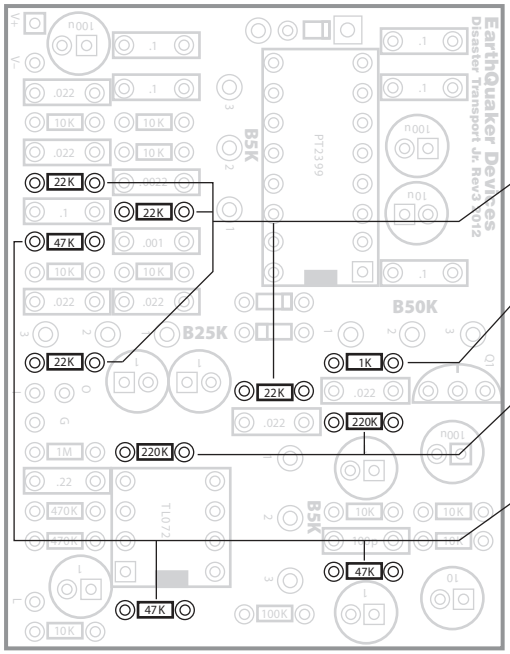
1MΩ resistor (1) #7367

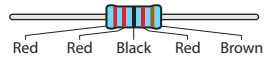


470KΩ resistors (2) #7382

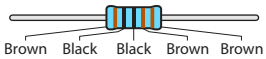


100KΩ resistor (1) #7365

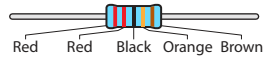




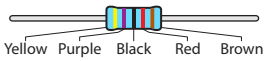
22KΩ resistors (4) #7379



1KΩ resistor (1) #7357

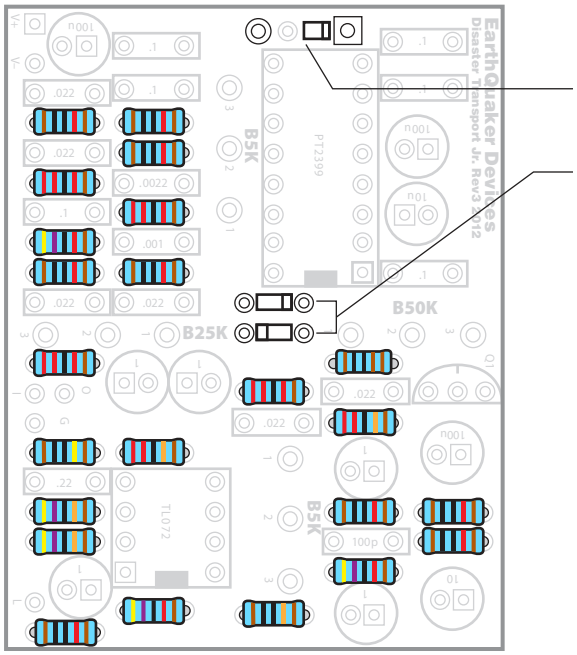


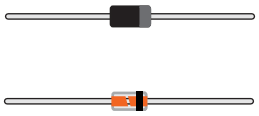
220KΩ resistors (2) #7381



47KΩ resistors (3) #7369

Step 2: Install three diodes





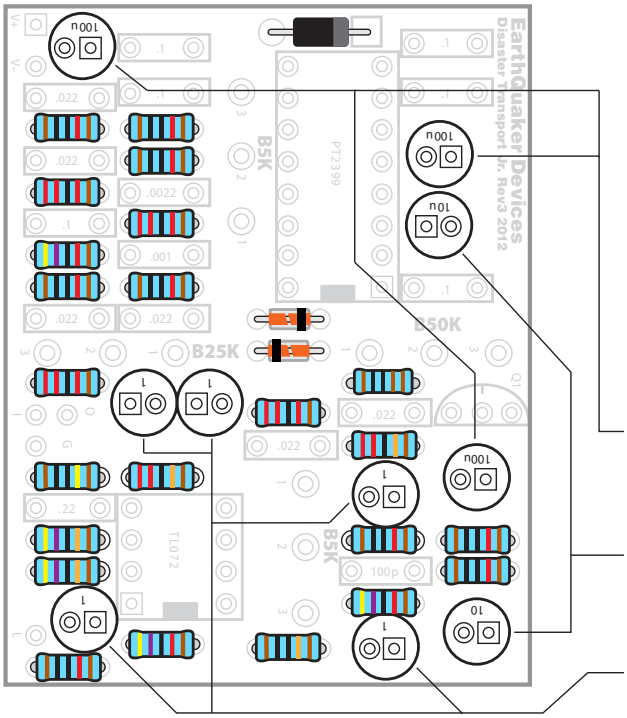
1N4001 rectifier diode (1) #7404
Either round eyelet can be used here

1N4148 rectifier diodes (2) #7470

Diodes are polarized, so they need to be installed in the correct orientation.

Note the stripe around one end: this marks the negative (minus) lead of the diode. On the 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 circuit board.

Step 3: Install twenty-six capacitors



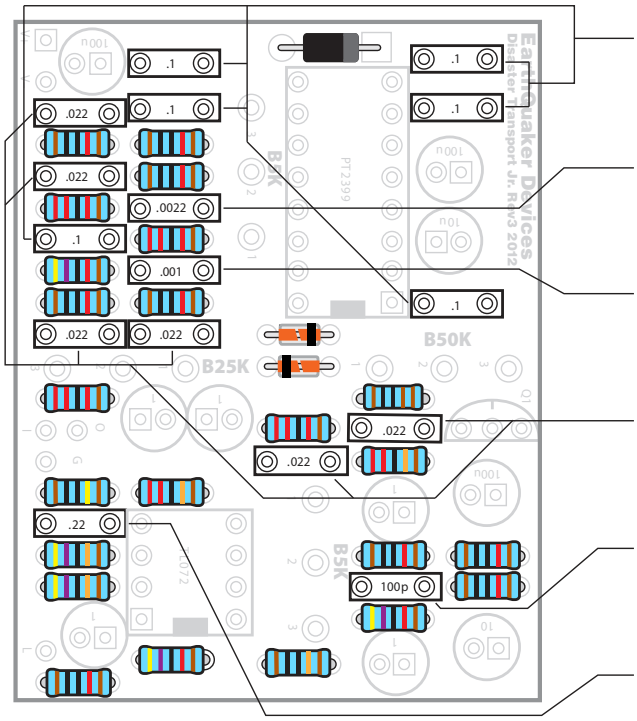
The three types of capacitors shown below are polarized, and have to be installed in the correct orientation. Note the stripe running the length of each cap; this identifies the negative (minus) lead. On the circuit board, the circle for this cap's location has a round through hole on one side, and a square through hole on the other: insert the capacitors with their stripe facing the round hole 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.)

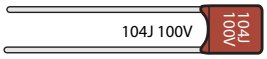
100µF capacitors (3) #7339

10µF capacitors (2) #7338

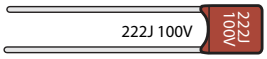
1µF capacitors (5) #7314

The remaining capacitors below are not polarized. Solder these caps in place facing either direction.

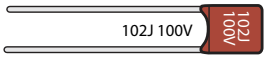




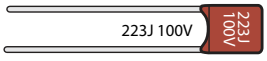
.1µF capacitors (6) #7334



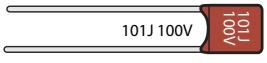
.0022µF capacitor (1) #7330



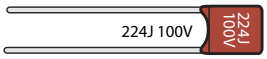
.001µF capacitor (1) #7329



.022µF capacitors (6) #7332

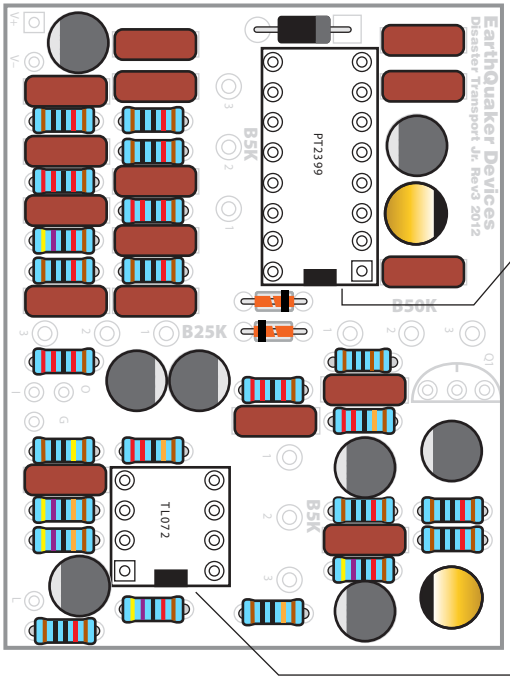


100pF capacitor (1) #7326



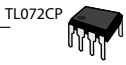
.22µF capacitor (1) #7335

Step 4: Install one echo audio processor and one op-amp



The op-amps and echo audio processor have to be oriented correctly in order to function properly. There are two indicators to guide you in positioning it:

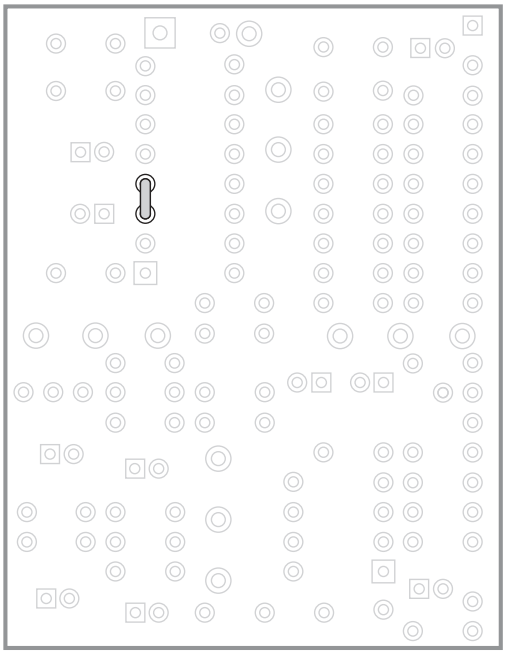
PT2399 echo audio processor (1) #7490



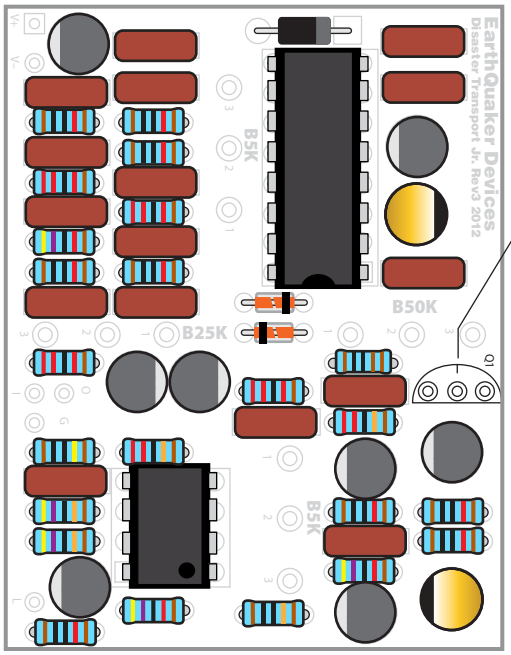
TL072CP low noise op-amp (1) #7444

The op-amp has a dot molded into the corner of the top side. The location on the circuit board has a solid rectangle marked inside the outline for the component. The molded dot on the op-amp needs to be oriented in the same direction as the solid rectangle.

The echo audio processor has a small divot on one end. This should be oriented with the solid rectangle in its location on the circuit board.



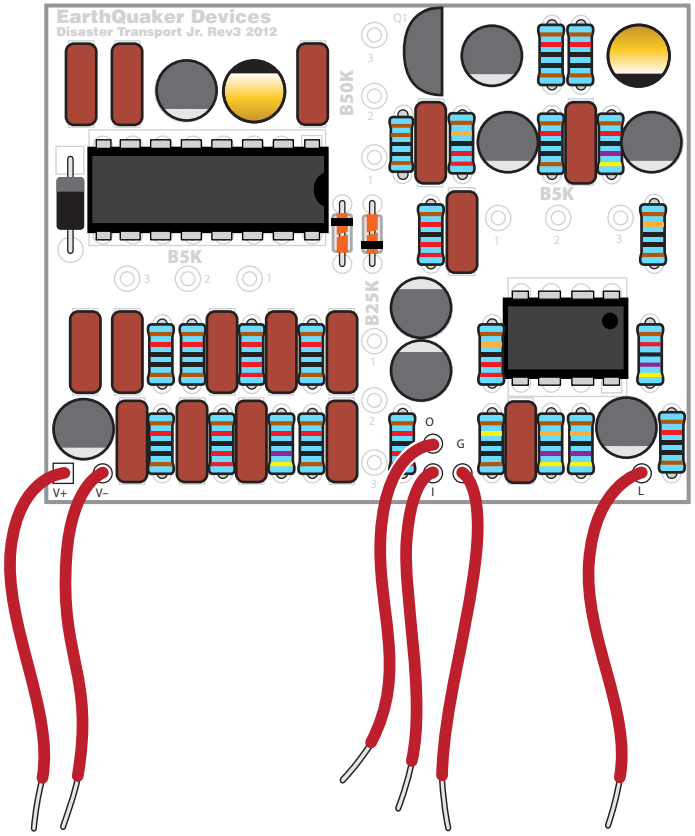
Flip the board over and link the two lugs of the Echo audio processor shown to the left. There should be enough of the lugs sticking through the board to allow you to fold them together so that they are touching. Then place a small dab of solder on them.



Step 5: Install one linear voltage regulator

Linear voltage regulator (1) #7495

The linear voltage regulator is directional, and needs to be installed in a specific orientation. Note that it has a flat side. On the circuit board, their location outlines also have a flat side. Install the transistors to match this outline.



Step 6: Install six lead wires

24" of lead wire (1) #5960

The kit comes with 24” of lead wire. Cut the wire into 2" sections. This will give you twelve 2" sections.

Strip around 3/32” off both ends of all wires. Strip 1/4" off of the end of one wire. This allows it to jump lugs on the footswitch.

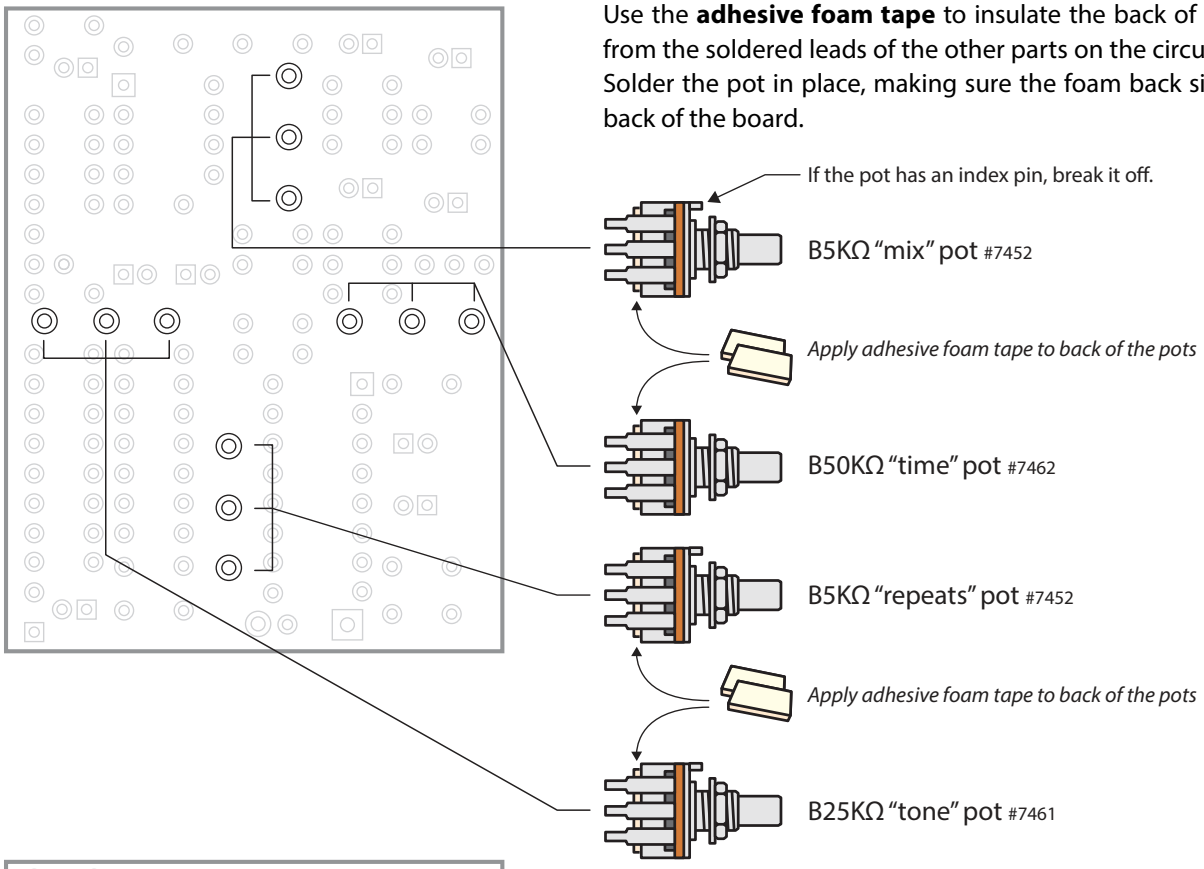
Solder the leads onto the board. The wire with the longer lead should be set aside for later use.

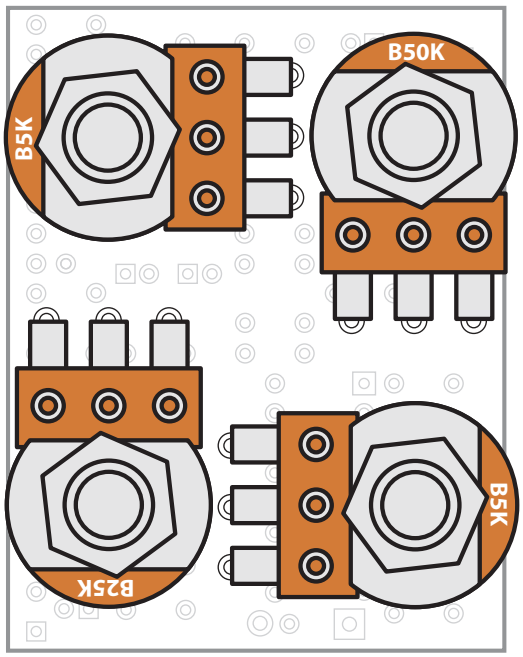
Step 7: Install four control pots

The last components to go onto the circuit board are the four control pots. They install on the **back of the board**. Each pot has three connecting lugs, refer to the below left graphic to be sure your orientation is correct when installing the pots.

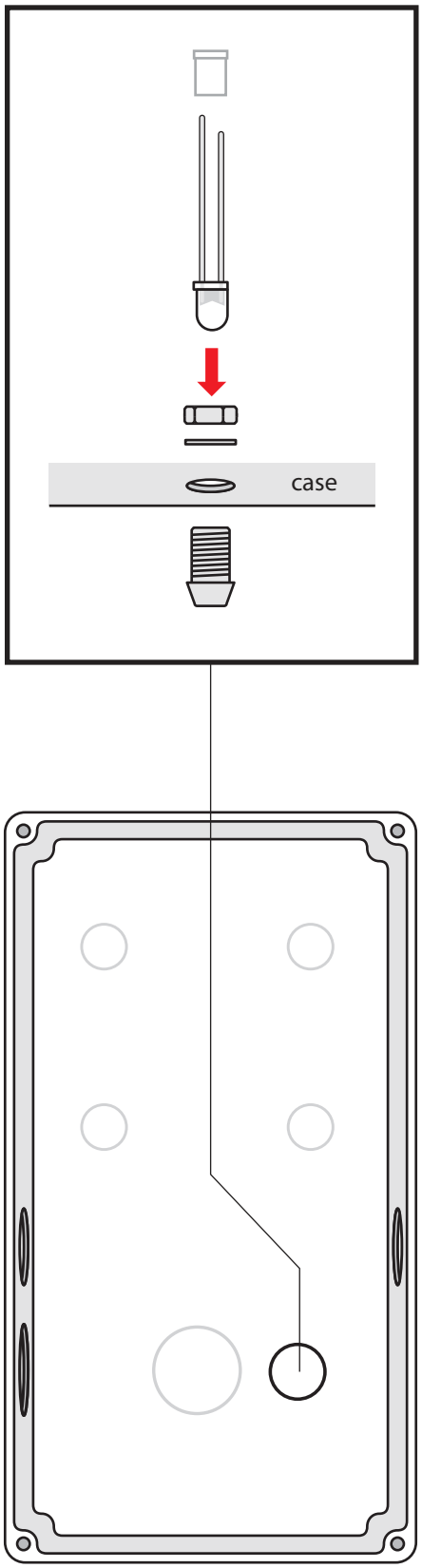
If any pot has an index pin protruding from the case, break it off before installation, so the pot will mount flush against the pedal case. Needle nose pliers work well for removing the pins.

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





Refer to the left graphic to be sure your orientation is correct when installing the pots.



Step 8: Install one LED indicator light

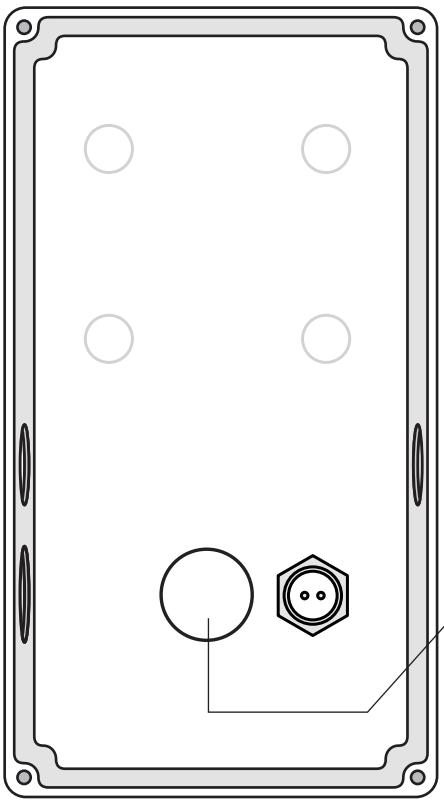
The LED mounting bezel consists of two main parts: A ring that the LED fits into, and a plastic plug that goes over the LED from the back side to keep it in place.

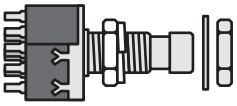

5mm white LED (1) #7422


5mm LED mounting bezel (1) #7432

Like some of the caps and diodes, the 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.

Install the mounting bezel through the front 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 (short lead) faces the hole for the footswitch. Feed the leads through the plastic plug, 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 circuit board. For a more secure mount, you can run a bead of clear silicone adhesive around the plastic plug.

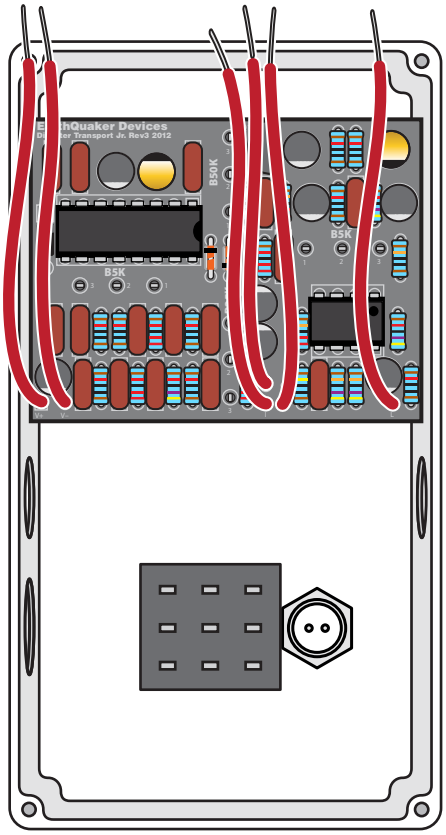




3PDT latching footswitch (1) #1611

Step 9: Install one footswitch

Install the footswitch so the part number printed on the side faces the bottom of the enclosure. Use a **14mm wrench** to tighten it up. The footswitch is the effect bypass switch that turns on the pedal.

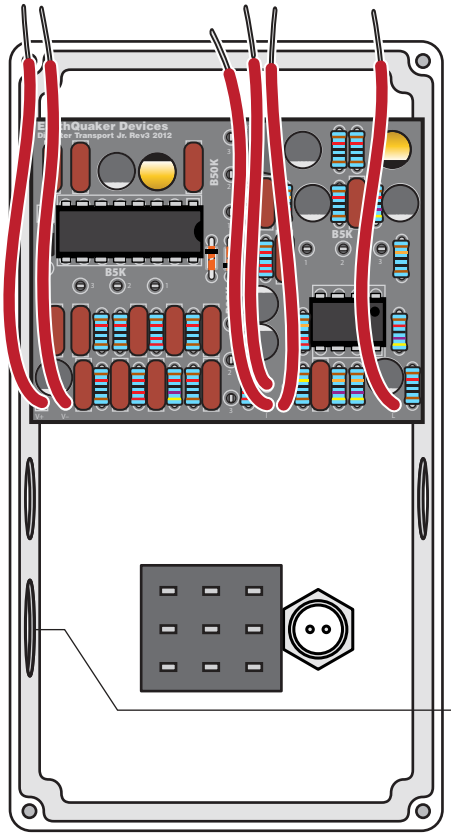


Step 10: Install the circuit board

The circuit board is held in place by the control pots.

Install their shafts through the top of the case, and thread washers onto them on the outside. Using a **10mm wrench** install the mounting nuts so they are good and snug, but take care not to overtighten.

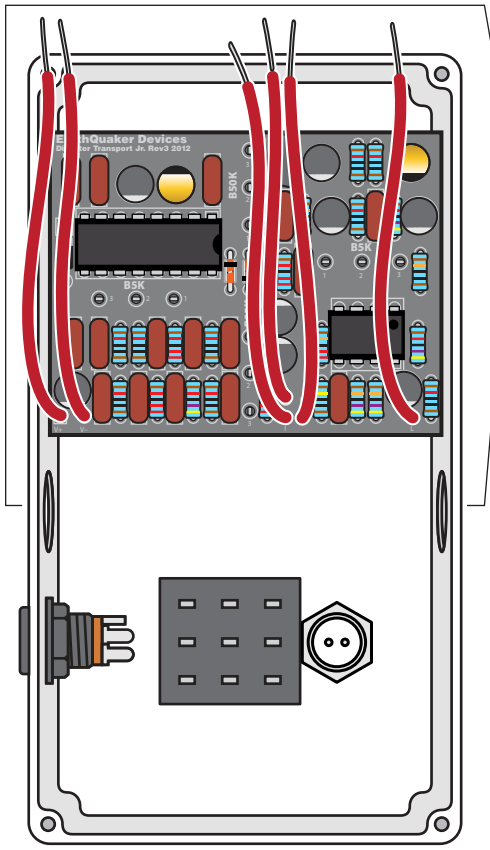
Do not connect any of the lead wires at this point.



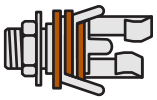
Step 11: Install one DC jack

Install the DC jack using a **14mm wrench**.

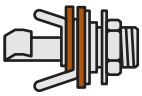
2.1mm DC power connector (1) #7467



Step 12: Install two jacks



1/4" stereo jack (1) #4653

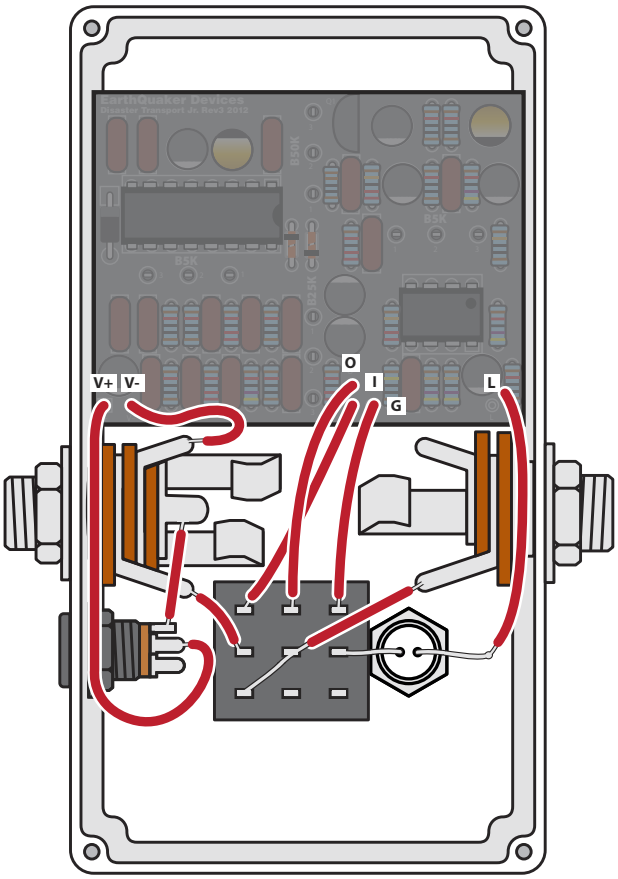


1/4" mono jack (1) #4652

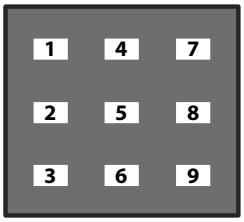
There are two different jacks for this kit, one stereo and one mono. The stereo jack is the input and the mono is the output. When looking at the back of the enclosure, the stereo jack will go on the left side and the mono on the right. Install the input and output jacks with the solder lugs facing up. This will make soldering easier later.

A **1/2" wrench** is recommended to tighten the jacks in place.

Step 13: Final wire-up



The lugs on the DC jack are as show above.



The lugs on the footswitch are numbered as shown above.

With all of the components in place, it is time to wire it all up. Starting at the left hand side of the circuit board and working to the right, take the lead wire labeled V+ and solder it to the +9V lug on the DC jack. Use the graphic at the lower left to identify the correct lug.

Solder the next lead, labeled V-, to the sleeve lug on the stereo jack. This is the lug that is attached to the threaded shaft of the jack.

The next group of leads solder to the footswitch. Refer to the graphic at the lower left to see how the footswitch lugs are numbered. Solder the lead labeled O to lug #4. Solder the lead labeled I to lug #1. Solder the lead labeled G to lug #7.

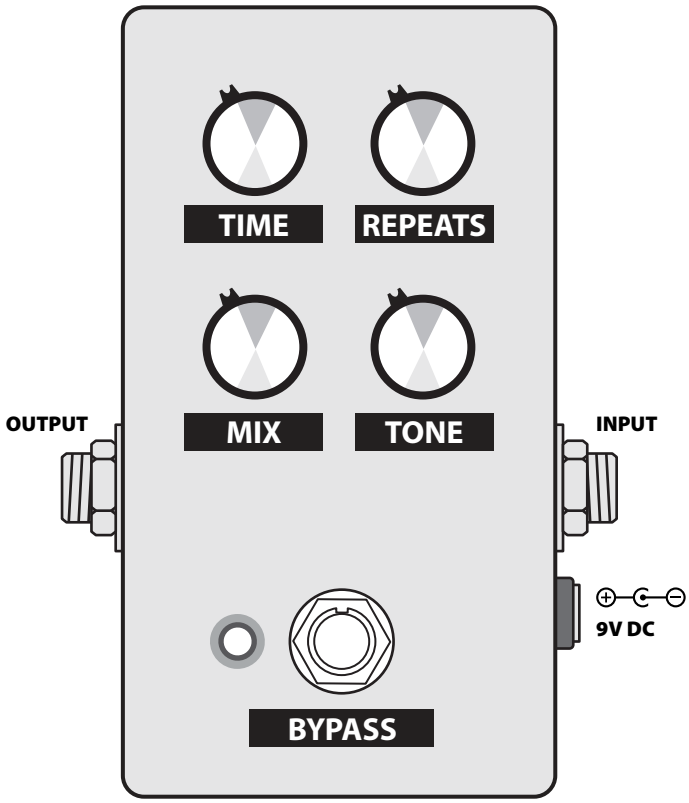
Solder the wire labeled L to the positive (long) lead of the LED. Then solder the negative (shorter) lead of the LED to the #8 lug on the footswitch.

Solder a lead from the ring lug of the stereo jack. This is the shorter lug of the remaining two. Solder it to the Masse (GND) lug on the DC jack. Again, use the graphic at the lower left to identify the correct lug.

Solder a lead from the longer lug of the stereo jack to lug #2 on the footswitch.

Take the wire where you stripped 1/4" and solder a lead from the mono jack longest lug to lug #5 and #3 on the footswitch.

Screw on the back panel and plug in!



Here's how the controls work:

Mix: Sets the output level of the effected signal. This should be treated as a gain control/master volume for the delay line. Unity is around noon and everything above noon will boost the delayed signal louder than the original. This is a gain control so, like any pedal with a lot of gain, a hint of noise and distortion at max setting is completely normal.

Tone: Most delay pedals are heavily filtered at the output to remove the clock noise and other unwanted hash that is common from extending the range of the delay time beyond the limit of the circuitry. This usually leaves the delay sounding dark and muddy, and disappears when hitting it with dirt. The Disaster Transport Jr. has done away with a lot of the heavy filtering and replaced it with a tone control which allows the user to choose their desired sound and results in more natural tape-like repeats. The tone control is at its darkest fully counterclockwise and brightens as you turn it clockwise. A good rule of thumb is to leave the tone control between off (fully counterclockwise) and noon at longer delay times. This will remove all the common noise from hyperextending the circuit.

Time: From about 30ms fully counterclockwise to about 625ms fully clockwise.

Repeats: Sets the regeneration of the delay line. From one single repeat fully counterclockwise, subtle repeats around 9 o'clock, strong naturally decaying repeats at noon, near infinite repeats around 2 o'clock and full on self oscillation fully clockwise.

Power: Use a standard 9 volt DC power supply with a 2.1mm negative-center barrel (not included). We always recommend pedal-specific, transformer-isolated wall-wart power supplies or supplies with separate isolated outputs. Pedals will make extra noise if there is ripple or unclean power. Switching-type power supplies, daisy chains, and non-pedal specific power supplies do not filter dirty power as well and let through unwanted noise. **Do not run at higher voltages!** Current draw is 25 mA.