#### StewMac<sup>®</sup>







IN COLLABORATION WITH **EarthQuaker**Devices<sup>®</sup>

# Assembly Instructions

The **Disaster Transport** is an analog voiced digital delay with 625ms delay time, all analog dry signal path, true bypass and added modulation. It was designed as an anti-modern

Kit case is unpainted

delay for those who appreciate a nice 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 modulation can go from subtle pitch shifting warble to ultra fast tremolo speeds while the LED visually shows the rate.



## RARE / VINTAGE / HARD TO GET WHEN YOU CAN'T BUY IT BUILD IT

An EarthQuaker Devices original, the Disaster Transport 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 11mm 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<sup>®</sup> or Krylon<sup>®</sup> 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.

Brown Green Black Orange Brown	150KΩ resistor (1) #7373
Yellow Purple Black Red Brown	47KΩ resistors (3) #7369
Brown Black Black Yellow Brown	1MΩ resistor (1) #7367
Brown Black Black Orange Brown	100KΩ resistor (1) #7365
Brown Black Black Red Brown	10KΩ resistors (11) #7362
Brown Black Black Brown	100Ω resistors (2) #7352
Red Red Black Brown Brown	2K2Ω resistor (1) #7376
Brown Green Black Red Brown	15KΩ resistor (1) #7378
Red Red Black Red Brown	22KΩ resistors (4) #7379
Red Red Black Orange Brown	220KΩ resistors (3) #7381
Yellow Purple Black Orange Brown	470KΩ resistors (4) #7382
101J 100V	100pF capacitor (1) #732
	.001µF (1) capacitor (1)
223J 100V	.022 µF capacitors (6) #7
	.01µF capacitor (1) #733
222J 100V	.0022µF capacitor (1) #7
104J 100V	.1µF capacitors (5) #7334
224J 100V	.22µF capacitor (1) #7335
474J 100V	.47µF capacitor (1) #7336
	10µF capacitors (2) #7338

00pF capacitor (1) #7326

001µF (1) capacitor (1) #7329

**)22 µF capacitors (6)** #7332

01µF capacitor (1) #7331

022µF capacitor (1) #7330

22µF capacitor (1) #7335

**17µF capacitor (1)** #7336

10µF capacitors (2) #7338







#### **Step 2: Install three diodes**

1N4148 rectifier diodes (3) #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-nine capacitors

**IMPORTANT:** Below, one 10µF capacitor should be soldered into a spot labed "100u" on the board, and a 100pF capacitor should be soldered into the spot labled ".001" on the board. **Be sure to follow the guide lines carefully!** 



The three types of capacitors shown above 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.)







#### Step 5: Install one linear voltage regulator

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, its location outline also has a flat side, install the transistor to match this outline.



#### Step 6: Install sixteen lead wires

The kit comes with 24" of lead wire. Cut the wire into 1-1/4" sections. This will give you fifteen 1-1/4" sections and one that is approximately 1-1/2" long.

Strip around 3/32" off both ends of the 1-1/4" pieces. On the 1-1/2" piece, strip 3/32" off one end and 1/4" off of the other. This allows it to jump lugs on the footswitch.

Solder the leads onto the board. The longer lead goes into the through hole marked OJ.



#### Step 7: Install six control pots

The last components to go onto the circuit board are the six control pots. They install on the **back of the board**. Each pot has three connecting lugs; with the board in the orientation shown below, pots should be installed with their leads facing to the left.

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 three pots that lay over the circuit board from the soldered leads of the other parts. Solder the pot in place, making sure the foam back sits at the back of the board.





Pots should be installed with their leads facing to the left.

#### **Step 8: Install two LED indicator lights**

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 LEDs (2) #7422



5mm LED mounting bezels (2) #7432

Like some of the caps and diodes, the LEDs are polarized and have 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 bezels through the front of the enclosure. From the inside, slip a lock washer and nut on both and tighten them up using a **3/8" socket**. Insert the LEDs into the bezel so the flat side (short lead) faces the holes for the footswitches. Feed the leads through the plastic plug, press the plug down until it's tight in the bezel. The LEDs 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.





#### **Step 9: Install two footswitches**

Install the footswitches so the part number printed on the side faces the bottom of the enclosure. Use a **14mm wrench** to tighten them up. When looking at the back of the pedal the switch on the left is the effect bypass switch that turns on the pedal, the one on the right turns on the modulation when the main effect is engaged.

3PDT latching footswitches (2) #1611

## 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 two jacks



The input and output jacks are a tight fit in this enclosure and need to oriented in a specific way in order for the lugs to clear the control pots. Install the jacks with the positive lug facing up at you. A **1/2" wrench** is recommended.



## Step 12: Install one DC jack



2.1mm DC power connector (1) #7468

Install the DC jack using a **11mm wrench**.





The lugs on the footswitches are numbered as shown above.

#### Step 13: Final wire-up

With all of the components in place, it is time to wire it all up. Starting at the left hand top of the circuit board and working to the right, take the lead wire labeled I and solder it to the tip lug of the input jack. To identify, look for the lug that is attached to the spring metal piece that attaches to the tip of the guitar cord when it is plugged in.

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

Next, solder the lead labeled G to the center tip (short) lug of the DC jack. Then solder the lead labeled V+ to the sleeve (long) lug.

Continuing work to the right take lead labeled OG and solder it to the sleeve of the output jack. The solder the lead labeled OJ to the tip lug.

Working from the bottom left hand side of the circuit board and soldering to the bypass switch, solder the lead labeled IJ to lug #2. Solder the I lead to lug #1. Solder the O lead to lug #4. Solder the G lead to lug #7. Solder the OJ lead to lug #5 jumping to lug #3.

Continuing to work to the right, solder the L+ lead to the positive (long) lead of the bypass LED. Solder the negative (short) lead to lug #8 on the switch.

Moving on to the modulate switch, solder the L+ to the positive (long) lead of LED. Solder the negative (short) lead to lug #2 on the switch.

Solder the G lead to lug #1 on the switch. Solder the M lead to lug #5, and the F lead to lug #4.

Screw on the back panel and plug in!

**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 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.

**Depth:** Sets the depth of the modulation to the delay line. The modulation is true pitch-shifting vibrato, higher depth settings will give sea sick pitch bending, lower settings will yield a more natural chorus/leslie/tremolo setting depending on modulation rate and delay time. To achieve a more natural modulation, the depth should be reduced as the delay time is increased.

**Rate:** Sets the speed of the modulation. Goes from painfully slow to way-to-fast allowing several different modulation styles to reveal themselves.

Bypass: Turns the effect on/off.

**Modulate:** When activated, it emulates the decaying sound of a tape delay. This makes the Rate and Depth knobs affect that modulation as well. When the switch is turned off, the other four knobs are the only ones that affect the signal, and the delay sounds will repeat without decaying.

**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 35 mA.