

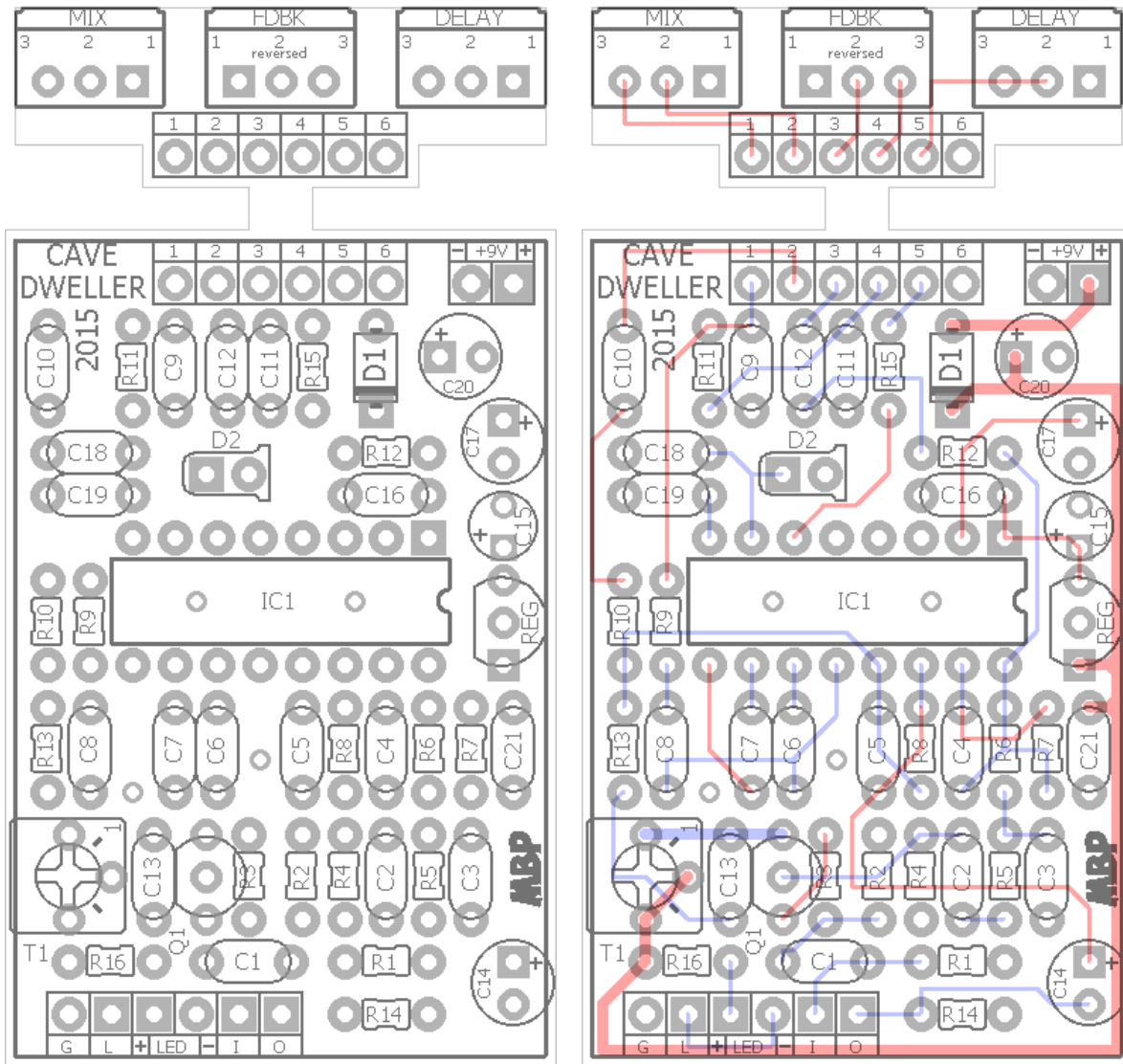
# CAVE DWELLER

2015 edition

FX Type: Delay

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1.3" W x 1.975" H (main board)



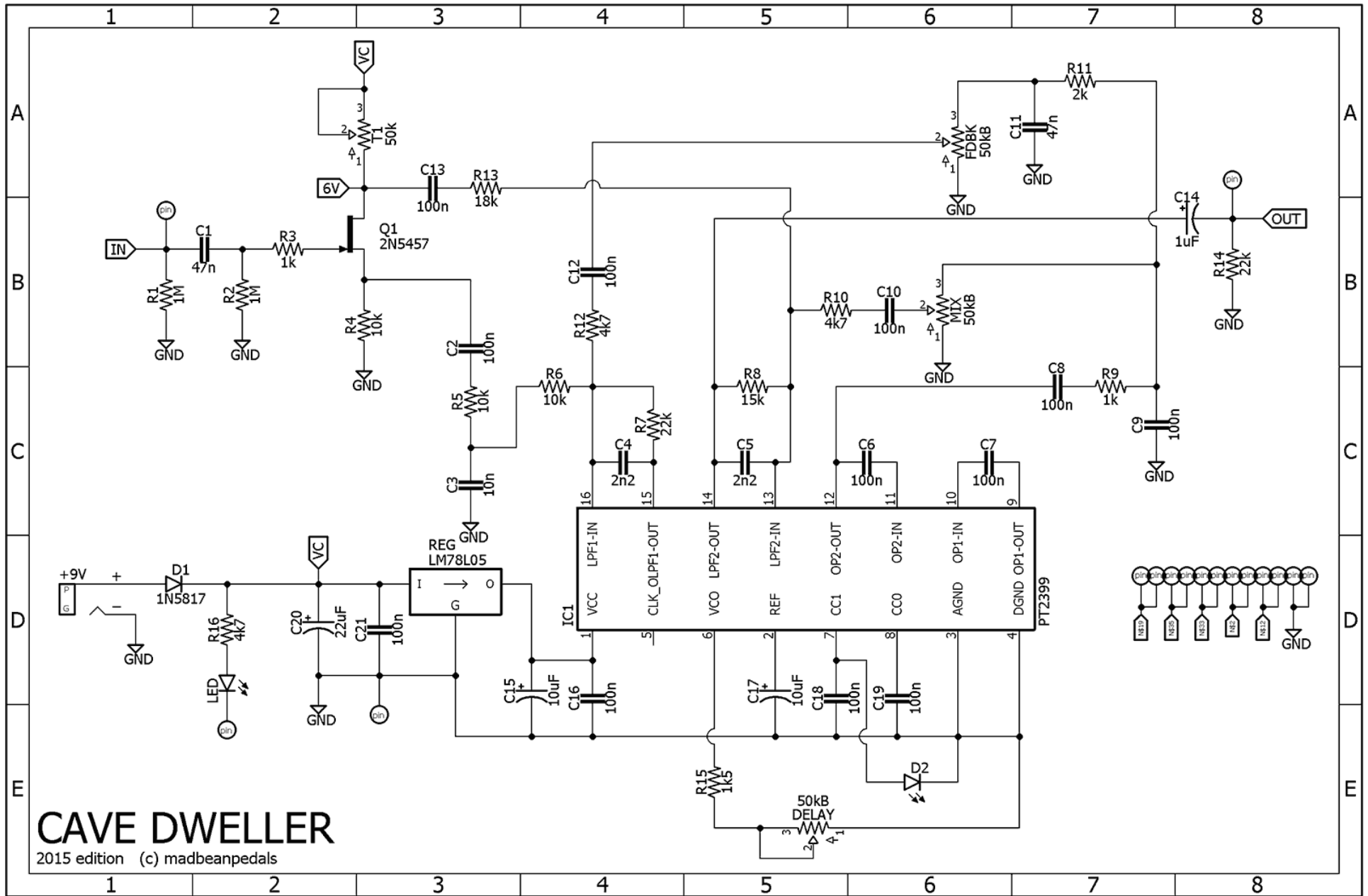
Previous Version: [http://www.madbeanpedals.com/projects/CaveDweller/CaveDweller\\_DRILL.zip](http://www.madbeanpedals.com/projects/CaveDweller/CaveDweller_DRILL.zip)

**Terms of Use:** You are free to use purchased **CaveDweller** circuit boards for both DIY and small commercial operations. You may not offer **CaveDweller** PCBs for resale or as part of a "kit" in a commercial fashion. Peer to peer re-sale is, of course, okay.

<b>B.O.M.</b>					
<b>Resistors</b>		<b>Caps</b>		<b>Diodes</b>	
R1	1M	C1	47n	D1	1N5817
R2	1M	C2	100n	D2	Green
R3	1k	C3	10n	<b>Transistors</b>	
R4	10k	C4	2n2	Q1	2N5457
R5	10k	C5	2n2	<b>Regulators</b>	
R6	10k	C6	100n	REG	LM78L05
R7	22k	C7	100n	<b>IC</b>	
R8	15k	C8	100n	IC1	PT2399
R9	1k	C9	100n	<b>Trimmer</b>	
R10	4k7	C10	100n	T1	50k
R11	2k	C11	47n	<b>Pots</b>	
R12	4k7	C12	100n	DELAY	50kB
R13	18k	C13	100n	FDBK	50kB
R14	22k	C14	1uF	MIX	50kB
R15	1k5	C15	10uF		
R16	4k7	C16	100n		
		C17	10uF		
		C18	100n		
		C19	100n		
		C20	22uF		
		C21	100n		

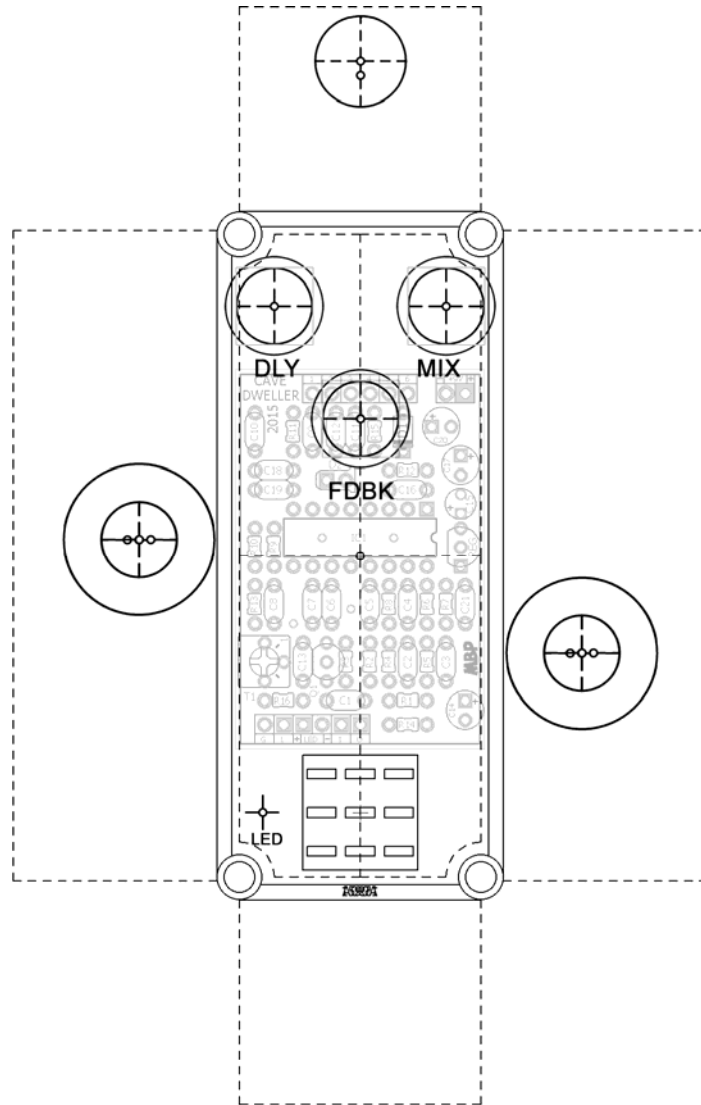
<b>Shopping List</b>			
<b>Value</b>	<b>QTY</b>	<b>Type</b>	<b>Rating</b>
1k	2	Metal / Carbon Film	1/8W
1k5	1	Metal / Carbon Film	1/8W
2k	1	Metal / Carbon Film	1/8W
4k7	3	Metal / Carbon Film	1/8W
10k	3	Metal / Carbon Film	1/8W
15k	1	Metal / Carbon Film	1/8W
18k	1	Metal / Carbon Film	1/8W
22k	2	Metal / Carbon Film	1/8W
1M	2	Metal / Carbon Film	1/8W
2n2	2	Film	16v min.
100n	12	Film	16v min.
47n	2	Film	16v min.
1uF	1	Electrolytic	16v min.
10uF	2	Electrolytic	16v min.
22uF	1	Electrolytic	16v min.
1N5817	1		
LED	1	Green, diffused	5mm
MPF102	1	or, J201, 2N5457	
LM78L05	1	TO-92 style	
PT2399	1		
50k	1	Bourns 3362P	
50kB	3	PC Mount	9mm

Pots: <http://smallbear-electronics.mybigcommerce.com/alpha-single-gang-9mm-pc-mount/>



# 1590A Drill Guide

3.63" W x 5.72" H

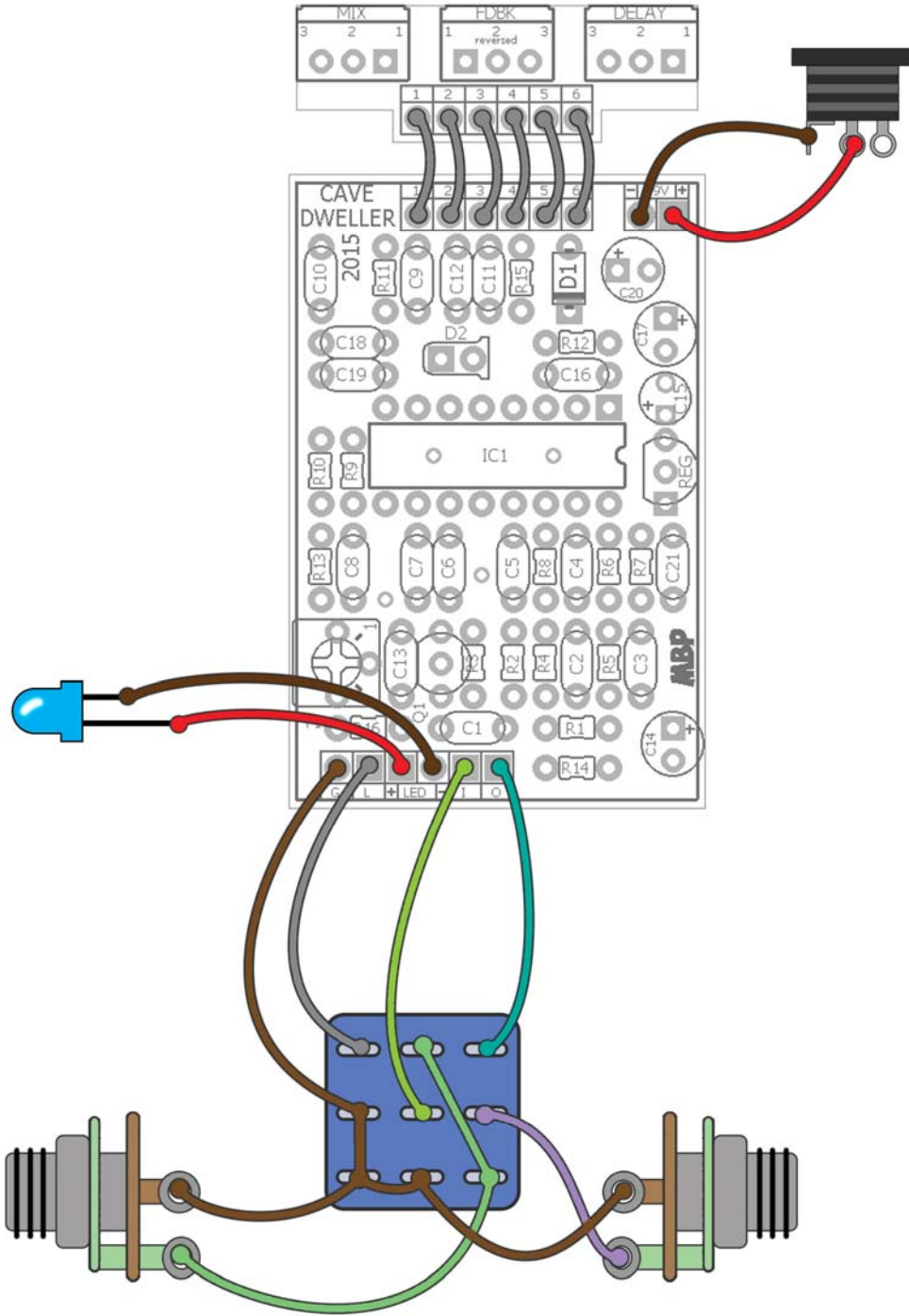


This template is approximate.

Download the Photoshop file here:

[http://www.madbeanpedals.com/projects/CaveDweller/CaveDweller\\_DRILL.zip](http://www.madbeanpedals.com/projects/CaveDweller/CaveDweller_DRILL.zip)

# Wiring Guide



The **Cave Dweller 2015** is a total re-design of the Cave Dweller project from 2012, one of the first "Baby Board" projects for the 1590A enclosure on madbeanpedals. While the original Cave Dweller was a simple and colorful sounding delay it had a few drawbacks; it was pretty lo-fi, and darkened the dry guitar tone somewhat. This was due to the limitation of using only the PT2399 for both dry signal and delay signal processing. The objectives for the re-design were to improve the quality of delay and dry guitar signal without requiring as many parts as a full-fledged delay circuit such as the MBP ZP Micro. This is accomplished by introducing a new input stage for dry signal processing and also by adding additional filtering to the delay signal. The result remains fairly low in parts count without compromising on the delay tone.

## Controls

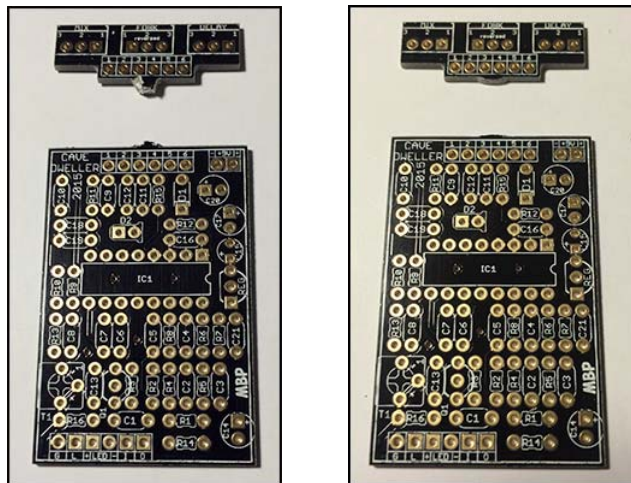
**MIX** - The volume of delay signal mixed with dry signal.

**FDBK** - The number of delay repeats, from one to "infinity".

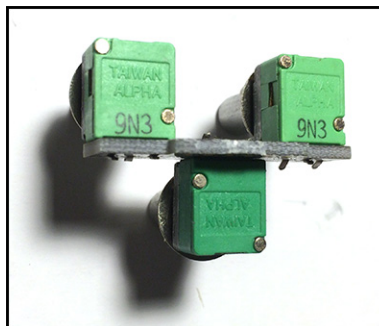
**DELAY** - The total delay time from slap-back to about 600ms.

## Notes

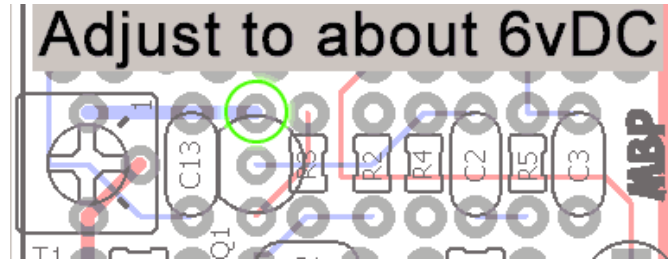
- Before you start populating, you need to separate the main PCB from the daughter PCB. The main PCB holds the components and the daughter holds the pots. Use a wire cutter to cut the bridge between the two boards, or an Xacto knife to score and snap them apart. Trim any excess but be careful not to overdo it. See below for an example.



- The three pots are soldered directly to the daughter board and wired to the main board as shown in the Wiring Guide. The MIX and DELAY pots are soldered to the top of the daughter board. **The FDBK pot must be soldered underneath the daughter board.**



- The T1 trimmer is used to set the bias point for Q1. Using your multi-meter adjust T1 until you read about 6v on the drain pin of Q1.



- The D2 LED is used to prevent clipping at the input of the PT2399 chip. You can use other LEDs than the suggested 5mm diffused green type, but I find that the suggested LED tends to color the delay output the least.

**Remember** - you need to use miniature electrolytic caps *if* you are putting this build in a 1590A. The regular electros are 11mm high and will not fit. You should use ones that are 5-7mm high. Please see the [Baby Board Build Guide](#) for more info on choosing parts.

### Mods

R10 sets the maximum output volume of the delay repeats. By default, the first repeat is about unity with the dry guitar signal. To increase this volume, lower R10 from 4k7 to 2k2.

R12 sets the total number of delay repeats. By default, the maximum repeats stop just short of self-oscillation. If you want self-oscillation, lower the value of R12 to 3k3 or 2k2.

### Voltages

9.42v Supply			
IC1	PT2399	Q1	2N5457
1	5.01v	D	6.03v
2	2.52	S	0.96
3	0.6mV	G	0.6mV
4	0.5mV		
5	2.98	REG	LM78L05
6	2.59	In	9.16
7	0.63	Gnd	0.7mV
8	0.66	Out	5.01v
9	2.52		
10	2.52		
11	2.52		
12	2.52		
13	2.52		
14	2.52		
15	2.52		
16	2.52		

## Build Pic

