WEENER WAH

FX TYPE: Wah Wah
Based on the Clyde McCoy®
2016 edition © *madbeanpedals*

1.95" W x 2.275" H
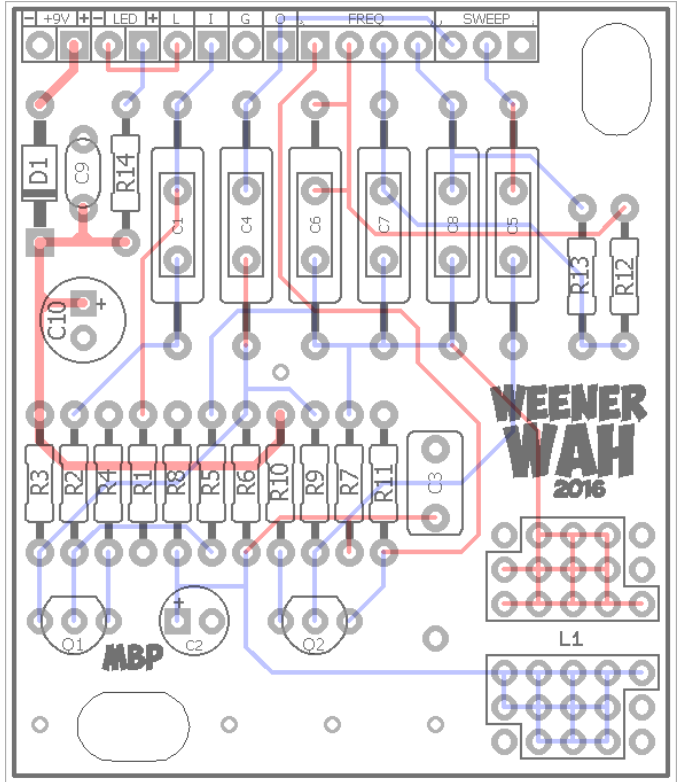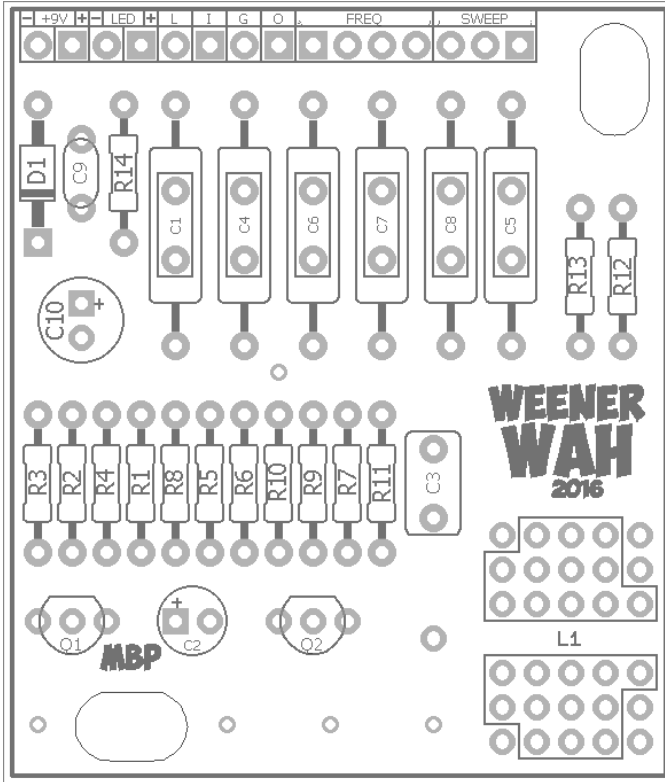
B.O.M.

Resistors		Caps		Diodes	
R1	1M	C1	10n	D1	1N5817
R2	68k	C2	4u7	**Transistors**	
R3	22k	C3	***	Q1, Q2	BC109
R4	470R	C4	220n	**Inductor**	
R5	1k5	C5	220n	L1	*notes
R6	470k	C6	6n8	**Switch**	
R7	100k	C7	10n	FREQ	*notes
R8	100k	C8	15n	**Pot**	
R9	470k	C9	100n	SWEEP	100k ICAR
R10	1k	C10	100uF		
R11	10k				
R12	10M				
R13	10M				
R14	4k7				

Shopping List

Value	QTY	Type	Rating
470R	1	Metal / Carbon Film	1/4W
1k	1	Metal / Carbon Film	1/4W
1k5	1	Metal / Carbon Film	1/4W
4k7	1	Metal / Carbon Film	1/4W
10k	1	Metal / Carbon Film	1/4W
22k	1	Metal / Carbon Film	1/4W
68k	1	Metal / Carbon Film	1/4W
100k	2	Metal / Carbon Film	1/4W
1M	1	Metal / Carbon Film	1/4W
470k	2	Metal / Carbon Film	1/4W
10M	2	Metal / Carbon Film	1/4W
6n8	1	Film	16v min.
10n	2	Film	16v min.
15n	1	Film	16v min.
100n	1	Film	16v min.
220n	2	Film	16v min.
4u7	1	Electrolytic	16v min.
100uF	1	Electrolytic	16v min.
1N5817	1		
BC109	2	or, other NPN	
INDUCTOR	1	*see notes	
switch	1	*see notes	
100k ICAR	1		

The **Weener Wah 2016 ed.** is a departure from previous editions. It eliminates the optional boost from the previous version and is more of a straight-forward Clyde McCoy clone. The frequency selector mod is still included and the wiring diagrams will demonstrate different ways to utilize it (or not at all).

Notes

The 2016 ed. is a smaller PCB and requires only two mounting holes. These correspond to the screw mounts used on Crybaby and Vox wah shells (shown below).

I recommend using one of the "long bushing" footswitches available at smallbear. The normal 3PDT is a bit short to properly toggle on and off with the footplate (it can be done if you use some padding on the bottom of the footplate, though).
http://smallbear-electronics.mybigcommerce.com/alpha-sf17020f-0302-24r-l-3pdt-long-bushing/
http://smallbear-electronics.mybigcommerce.com/316-b-pp/

You can use a 3PDT is you want to wire an indicator LED, or a DPDT if you don't.

Transistors – These are listed as, but not limited to, BC109. The pinout of the transistors on the PCB is C-B-E (same as the 2N5088). Q1 is the most likely to benefit from trying different transistor types. Q2 is used as a buffer and most likely will produce minimal tonal difference.

Pots – There are many varieties of ICAR taper pots. The stock value is 100k, but you can experiment with higher values such as 200k or 250k for extended range.

C2 is listed as a 4u7 electrolytic cap and C3 does not list a value. The reason for this is that some vintage wah wahs used a 4uF cap instead of the more modern 4u7 value. 4uF caps are a lot harder to come by these days, but if you want to stick to the vintage spec, use a 3u3 for C2 and a 680n film cap for C3 to approximate the 4uF value. According to "The Technology of Wah Pedals" by R.G. Keen C2 is

[i]mportant that it be large enough to bypass all signal at its (+) terminal to ground. From 4.7uF on up, little effect on sound. As it gets smaller, the sound becomes more of a loudness variation and less of a wah. If this cap is defective, wah pedals sound like volume pedals.

In other words, the difference between 4uF and 4u7 is probably not a big deal.

Film caps – As in the previous Weener versions you can use either axial or radial caps. The radial caps are spaced at the standard 5mm (box caps). The axial caps are spaced at 18mm. When using box caps, be sure to solder them into the centered rectangle.
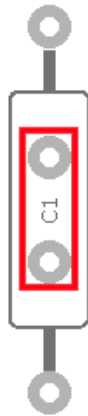
Inductors – Like the ICAR pots, there are also many varieties of inductors you can use with the Weener Wah. These include the Whipple, Halo, Stack of Dimes and so on. The Weener Wah includes a matrix of pads to accommodate different pin settings that you find on inductors.
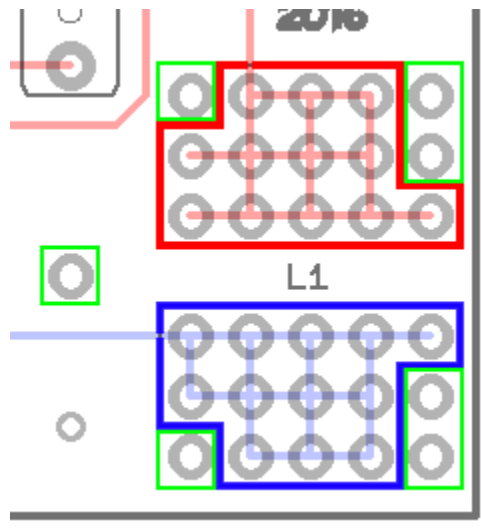

Wah inductors have at least two pins and sometimes more. You need to solder the pins that are connected to the two ends of the winding inside the inductor. The red and blue outlines above show all the connected pins you can use for a particular inductor (it doesn't matter which way you put the pins in as long as one goes in the red area and the other in the blue area). The green outlines are non-connected pads that can be used for mounting other pins included on some inductors (like the Whipple). Any extra pins you have on your inductor are not likely to be connected internally so it is safe to solder these into any of the colored areas shown above. You can always use a continuity checker to be sure.
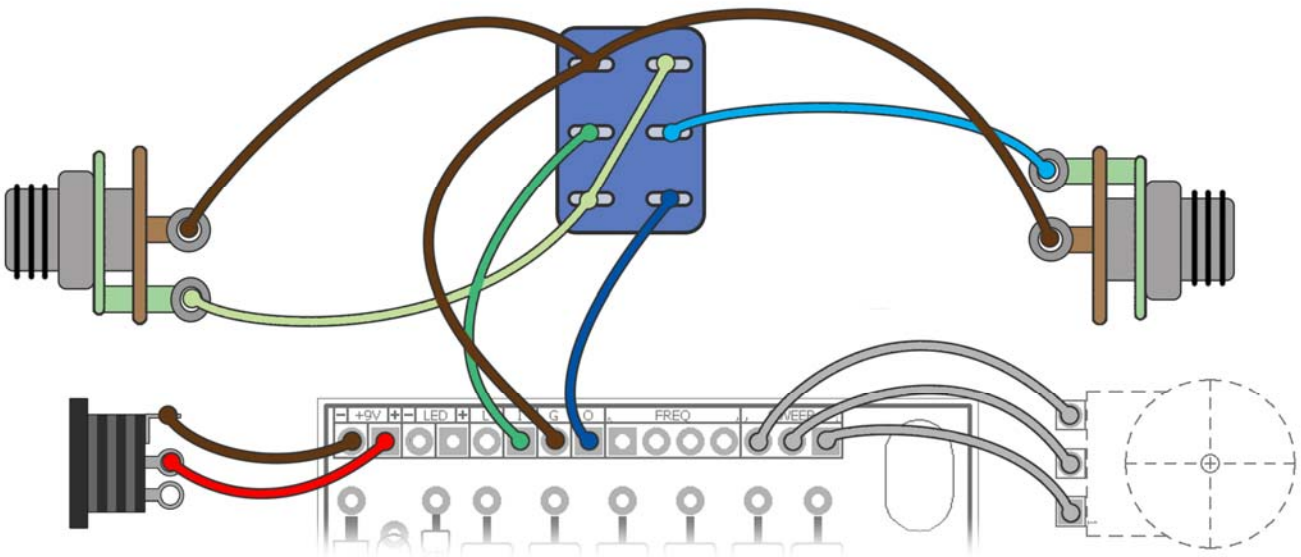

Mods

Reduce R2 to 39k for hotter input into Q1. Good for low-output single coil guitars or to increase overall effect output.
Reduce R4 to 390R or lower for more gain out of Q1.
Reduce R7 for a wider "Q" (but not lower than 33k).

## 3PDT wiring (includes LED indicator)
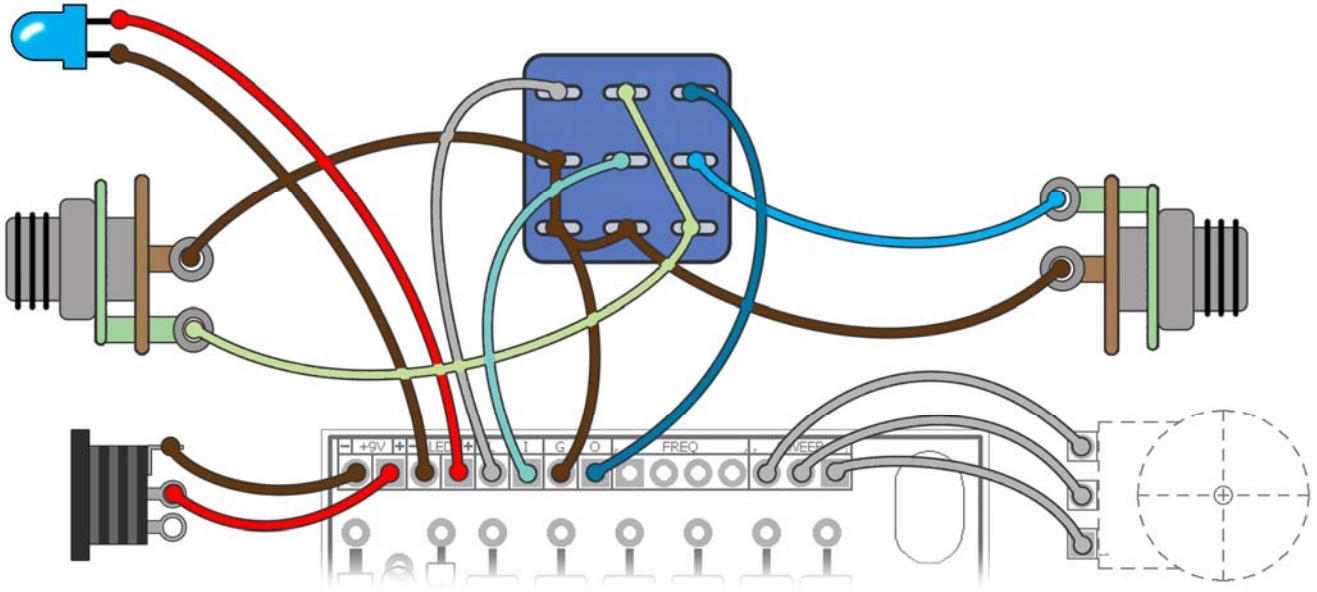
DPDT wiring (no LED indicator)

Freq Switch wiring

The Frequency switch allows you to select up to three different center frequencies for the Weener Wah. There are a variety of ways to utilize it which are shown below.
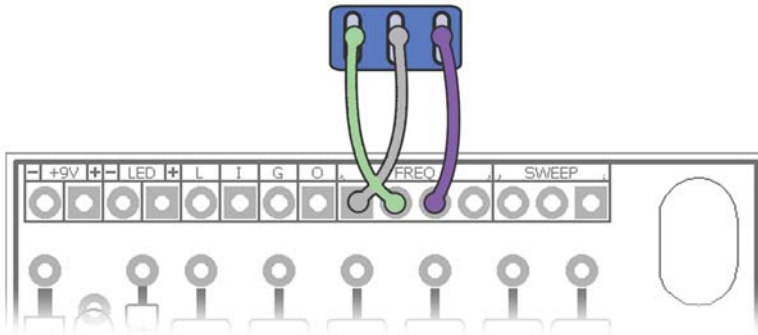

Method 1 – No switching (stock wah)

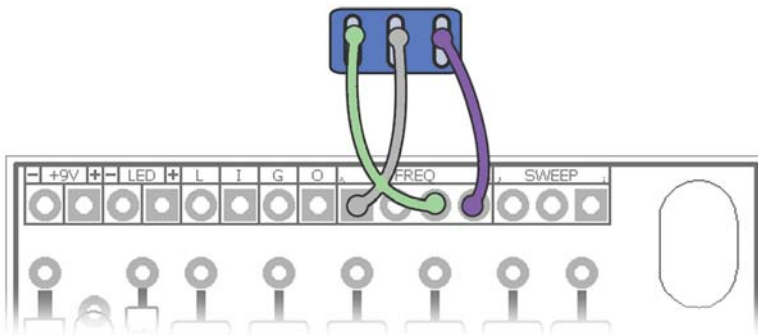Omit C6, C8, R12 and R13. Populate C7 with 10n (stock wah value). Jumper pin 2 to pin A on the Freq switch pads.
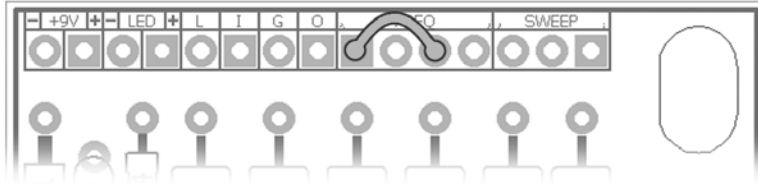
Method 2 – Switch between two caps (requires an On/On SPDT toggle switch)

To switch between C6 and C7, omit C8 and R13. Wire the toggle as shown below.

To switch between C7 and C8 omit C6 and R12. Wire the toggle as shown below.

Method 3a – Switch between all three caps (requires an On/On/On toggle switch)
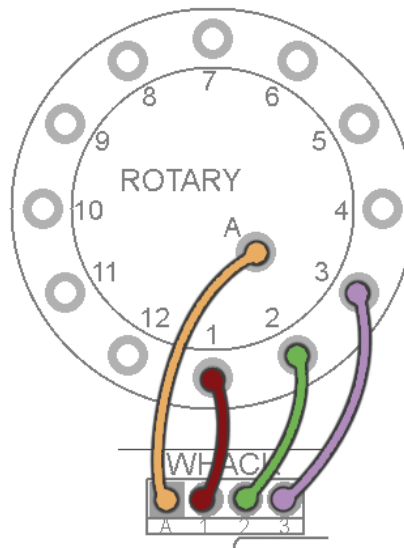
Populate C6, C7, C8, R12 and R13. This illustration is from the previous WeenerWah doc.

Method 3b – Switch between all three caps (requires a rotary)

Populate C6, C7, C8, R12 and R13. This illustration is from the previous WeenerWah doc.

You don't have to use a 1P12T rotary. You could use a 2P4T, or 4P3T…just wire one set of poles and terminals!

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2016 edition (c) madbeanpedals

Schematic components:

- IN
- R1 1M
- C1 10n
- R2 68k
- Q1 BC109
- R3 22k
- VC
- R4 470R
- R6 470k
- L1 INDUCTOR
- R5 1k5
- R7 100k
- R8 100k
- C2 4u7
- C3 ***
- R9 470k
- C4 220n
- OUT
- 100k ICAR SWEEP
- C5 220n
- Q2 BC109
- R10 1k
- VC
- R11 10k
- FREQ
- C6 6n8
- R12 10M
- C7 10n
- R13 10M
- C8 15n
- +9V
- D1 1N5817
- R14 4k7
- C9 100n
- C10 100uF
- VC
- LED
- GND