

Wah Wah Mods

The mods on this page are primarily concerned with the Dunlop Crybaby and Vox V847 wahs, but they can be applied to most wahs that have an inductor. You can find out more in R.G. Keen's "Technology of Wah Pedals" article at [Geofex](#).

This page was conceived with the DIY community in mind, but if you're interested in having any mods done for you, or if you're looking for replacement parts, please visit my other site, wah-wah.co.uk.

True Bypass

For instructions and wiring diagrams, please go to the wah bypass page [here](#).

Mods to PCB

These mods are all fairly cheap to do and they're reversible, so it's not the end of the world if you don't like the results. Refer to the photos below if you're not sure which parts to change.

"Vocal Mod"

Replace the 33K resistor in parallel with the inductor with a 68K. This gives a more vocal quality to the wah. Some Vox Clyde McCoy wahs had 100K resistors here.

Gain and Bass Response

Replace the 470 ohm resistor (some have 390 or 510) at the emitter of Q1 with a lower value. This increases gain, which is useful if you've converted to true bypass. The bass response is also increased. Too low a value here may introduce some distortion and make the wah sound muddy. Try 270 - 330 ohms to start with.

Midrange

Replace the 1K5 resistor between the base of Q1 and the inductor with a larger value. This increases the midrange and helps if your wah sounds dull and muted when you rock the pedal back. Try 1K8 to 2K7. Higher values than stock also smooth out the bass-treble transition. Most people refer to the 33K as the "Q" resistor, but this resistor also affects the Q.

Sweep Range

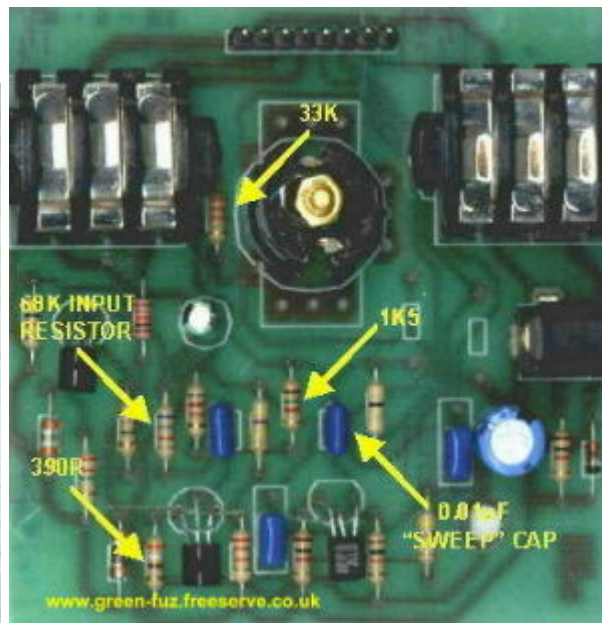
Change the sweep by swapping the 0.01 μ F cap between the emitter of Q2 and the inductor. A smaller value will make the wah sweep more trebly and vice-versa. If you're converting to or from a bass wah, this is the one to change. Try 0.068 μ F for a bass wah.

Volume

If you've converted to true bypass, replace the 68K series input resistor with a lower value, say 47K. This gives a slight increase in volume. Too low a value is likely to result in the pedal picking up radio interference. This can be addressed by adding small value (10 - 20pF) capacitors between the collector and base of each transistor.

Reference Photos

Vox V847 at left; Dunlop GCB95 on right.



Thanks to Abilio for the GCB95 picture.

Pots

If you want a cheap replacement pot, try a Bourns conductive plastic pot (100K linear, part number 91A1AB28B20). These are much cheaper than the specialised wah pots on the market. Conventional wah pots aren't exactly a linear taper, so the Bourns may give you a more gradual bass-treble sweep than you're used to. However, I've found linear works better than log taper.

For a "correct" wah pot, there are a few options, but they are relatively expensive. The better ones are modelled on the resistance taper of the ICAR pots found in '60s Vox wahs. Fulltone offers such a pot, as does [Tom Lanik](#). If you're in the UK, I can supply them.

I wouldn't recommend buying a Dunlop HotPotz, since they're generally more expensive and don't sound as good.

Inductors

Some of the Dunlop and Vox inductors aren't bad, but most of the recent ones I've seen have been well over 600mH, which makes the sweep too muddy for my liking. The above mods can offset this to some degree, but I recommend replacing the inductor if you want to get closer to the Page/Hendrix/Clapton/Beck wah sound. Fulltone sells a replacement inductor, modelled on the halo, but I haven't heard one to be able to comment on them. I make my own, also a copy of the halo, which I believe is as good as anything else you can buy.

In theory, you can use one side of a small transformer, but I've yet to hear any rave reviews from people who've tried one **[Update - I've now heard from one person:]** . If you can find the materials, it's quite feasible to wind your own inductor, but I wasted a lot of time before I was happy with my results.

The original halo and film can inductors used P18/11 pot cores (18mm diameter, 11mm tall). According to information on the web, there were a few different halos, using different ferrite materials. Fasel inductors in '70s Italian wahs and the Thomas Organ "stack of dimes" use smaller P14/8 pot cores. I've measured the inductance and DC resistance of a few inductors, which you can find [here](#). These data don't tell you anything about saturation or asymmetrical clipping (see [Geofex](#) again), but I can report that the older wahs are far superior to new ones. In particular, the '60s Vox wahs with halo inductors have greater clarity and a more complex sound at the treble end of the sweep.

Wah-Volume pedal mod

Lifting the earth connection of the 4.7 μ F capacitor will cancel the wah effect and leave you with a volume pedal. The '70s [Jen Wah-Volume](#) pedal also switches in a 4K7 resistor and 0.22 μ F cap in series across the 0.01 μ F "sweep cap", to prevent the tone becoming thin.

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