

Fender Vibr-O-Dee Mod – by Smitty

This post describes how to convert the normal channel and vibrato circuitry of a typical Fender reverb-style amplifier to a simplified overdrive channel. The goal is to come as close to the architecture of the non-HRM circuitry as possible without adding eyelets to the preamp board or drilling holes in the chassis.

This thread will have multiple posts. Each post will contain one or two pics of a recent mod I have done to a Twin Reverb with a brief explanation. I hope it will encourage those who have some ability but are not ready to tackle a scratch build to create a usable two channel amp with, IMHO, convincing D-style tone.

This first pic is the heart of the mod. Using the area of the circuit board originally built for vibrato I installed the overdrive circuitry. Plate resistors and coupling caps as found in clones. Notice the large 2 watt metal oxide dropping resistor. For this mod I used a 68K to get the desired voltage. The 10Uf 450V decouples to the phase inverter ground. I did not notice any hum from this shortcut.

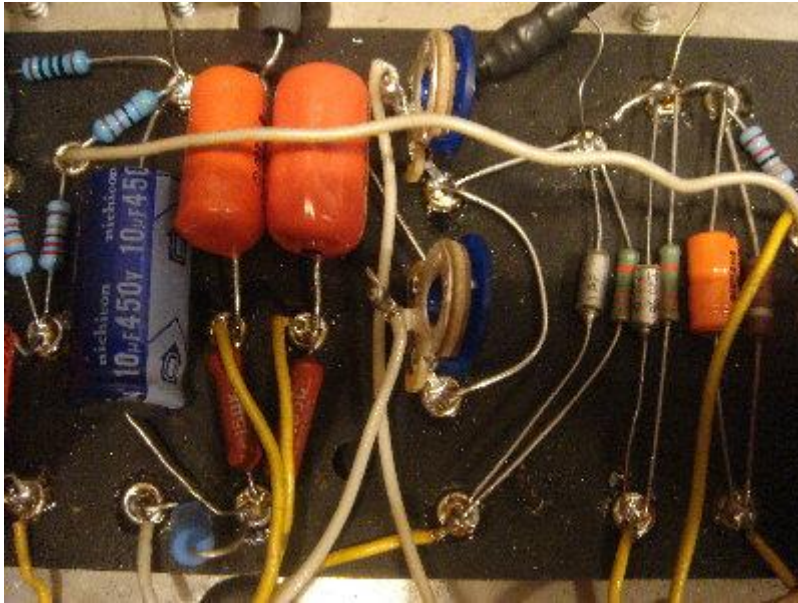
OD entrance has been simplified as has been the grid circuitry for OD2. At the top of the pic notice the coax cable coming from CL2 (tone stack recovery stage of the normal channel) and attaching to the hot side of a CTS X201 250K trim pot (mouser 774-201XR254B). This approximates the OD entrance on several known OD amps.

For the grid I skip the coax because it's such a short run and use regular hookup wire (I like to use wire original to the amp for extra mojo) wrapped around the wiper leg of the pot. Not bullet proof but should last a long time. The other end of the hookup wire has a grid stopper attached (typical value is 68K) and that resistor is attached to pin 2 of V6. Pic in next post.

You will notice that the coupling cap of OD1 has a short piece of buss wire going to the second 250K trim pot. Additional buss wire to the ground node. The old Mullard cathode resistors and Kemet tantalum bypass caps attach to the same node. The large Siemens electrolytic cathode bypass cap is for V4-part of the original vibrato channel.

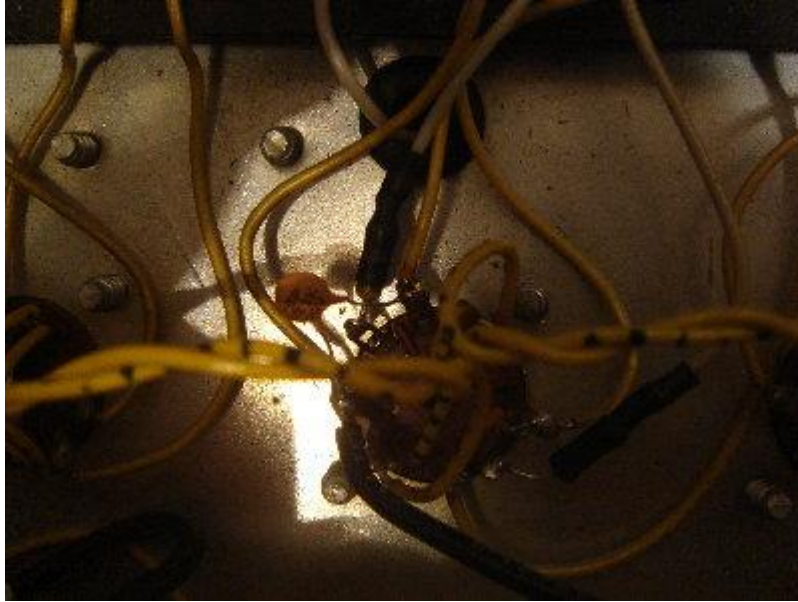
At the top of the OD2 coupling cap there is a piece of coax that goes to the master volume.

I also request that if this information is redistributed that you give credit to Bluetron Amplifiers.



This pic below shows grid stoppers spliced to the grid wire and attached to the grid pins of V4. Heat shrink provides insulation and support. Again not bullet proof but sturdy enough for a modded old Fender.

Notice the snubbers and a wire coming off of pin 6. It feeds the reverb driver. More on that in a later post.



This pic below shows the modified power supply wiring. I relocated the vibrato wire to the phase inverter node. Dropping resistors are 2K2 and 18K. I have had good results with the F&T caps from Antique Electronic Supply.

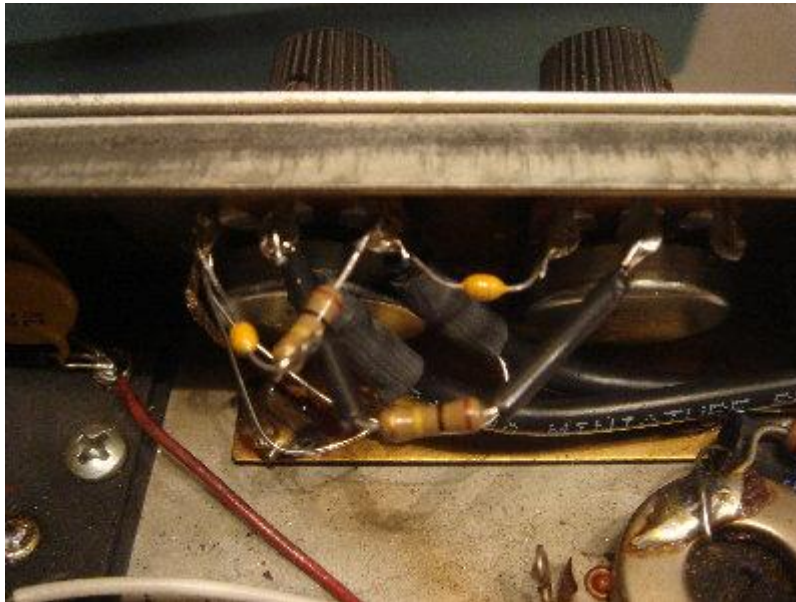


Here below is my two knob master volume. The master volume pot on the left is a 250K audio in the Intensity hole. Never really gets turned up that much because it is approximating two pots and a resistor from a traditional amp.

The 100K resistor and 470pF cap from lug 3 to lug 1 on the master volume is a Gil Ayan treble bleed.

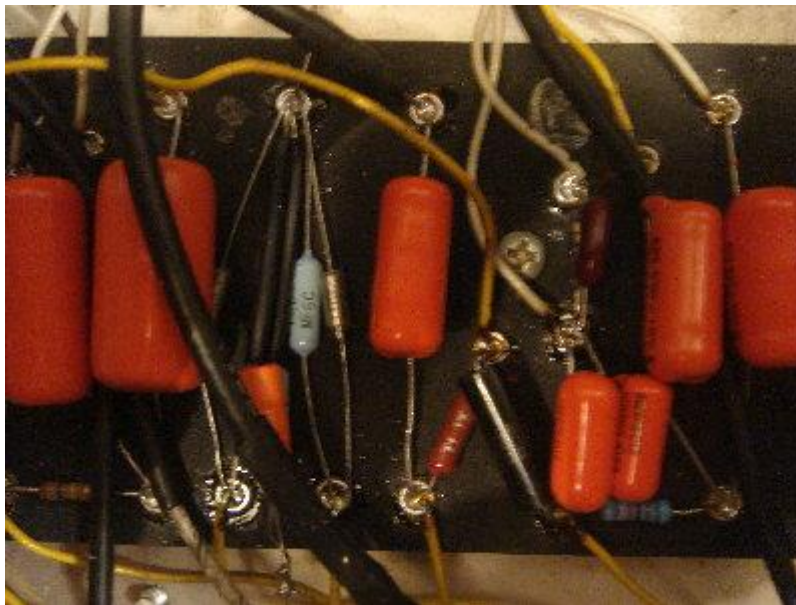
The 250KA pot on the right is to adjust the effect of the 470uF bright cap which runs from lug 3 on the master to lug 1 on the adjuster. The 100K resistor from lug 2 to lug 2 limits the effect of the waay big bright cap . It works backwards but has nice sweep. Turn up for less bright. As you run the amp at higher master volume settings you want more bright cap. This lets you do that. Also, attenuating a larger bright cap gives a different (lower) filter with less overall effect.

This is an area that you should experiment.



The normal channel really lends itself to this mod. Specific attention is paid to the treble caps here. Remove the buss wire that runs from the junction of the plate resistor and slope resistor to the treble cap and install your 2200pF mid boost cap (I have installed two 1200pF caps in parallel here). Under your 390pF run a 10M resistor in parallel. This replaces the 4K7 cap to ground between the two treble caps.

You should add a third cathode resistor and cathode bypass cap to break up the common resistor cap shared between V1 and V2 in the Fender design. Flying the positive end all the way to the tube socket is the method I have chosen. Partially hidden under coax in this pic.



Utilize a DPDT slide switch to provide switching for the preamp boost and the mid boost.

For the PAB function top lug goes to the wiper of the Bass pot and the Middle lug goes to the bass side of the treble pot (lug 1). 10M resistor to top and bottom lugs of switch.

For the Mid boost function the top lug goes to the eyelet on the 390pF cap nearest the switch and the bottom lug goes to the other side of the 390pF cap. Middle lug goes to the treble side of the treble pot (lug 3). 10M resistor to top and bottom lugs of switch.

We will add another resistor to reduce the boost of the PAB in another post.

I use a cap and a resistor in series from lug 2 to 3 in place of a bright cap. Heat shrink protect the splice and adds support. Experiment to find values that you like. One quarter to one half the value of the volume pot for the resistor is a good starting point. Larger than expected caps can work well.

The second pic shows the 220K 470pf grid filter for CL2 is flown from the coax and hidden beneath heat shrink. Because this is a dedicated overdrive channel I have installed a snubber on CL2.

You want OD2 to overdrive just before OD1 which in turn overdrives just before CL2. That way the volume control sets up three stages of really smooth cascading overdrive. If you hit the input stage with an EP booster or something then you've got four cascading stages in overdrive. Very nice.

Then back to the Vibrato channel for a completely independent clean channel with it's own dedicated and voiced for clean tone stack. In some ways this is a more attractive two channel option than the traditional ODS.



Pick your favorite tone stack. Things to notice here are a cap shunting highs to ground on the middle cap as well as the bass cap.

The 100K resistor running from the wiper of the bass pot to the bass side of the treble pot limits the amount of preamp boost when you throw the slide switch down.

I prefer a Fender style bass pot where lugs 2 and 3 are tied together. This works really well because this is a dedicated overdrive channel.

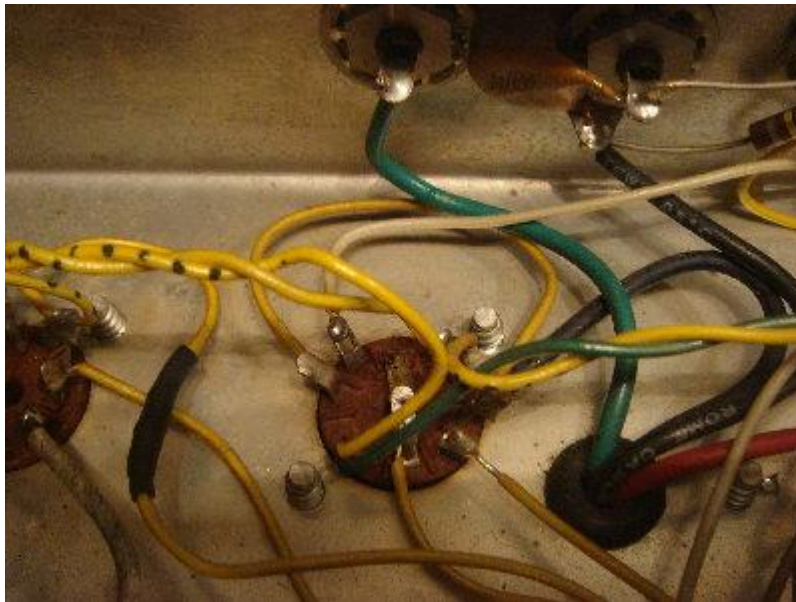
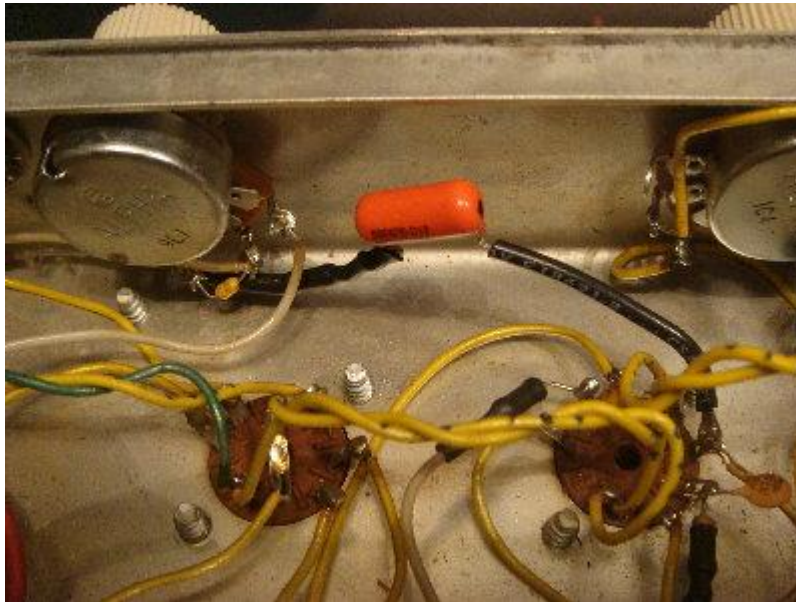


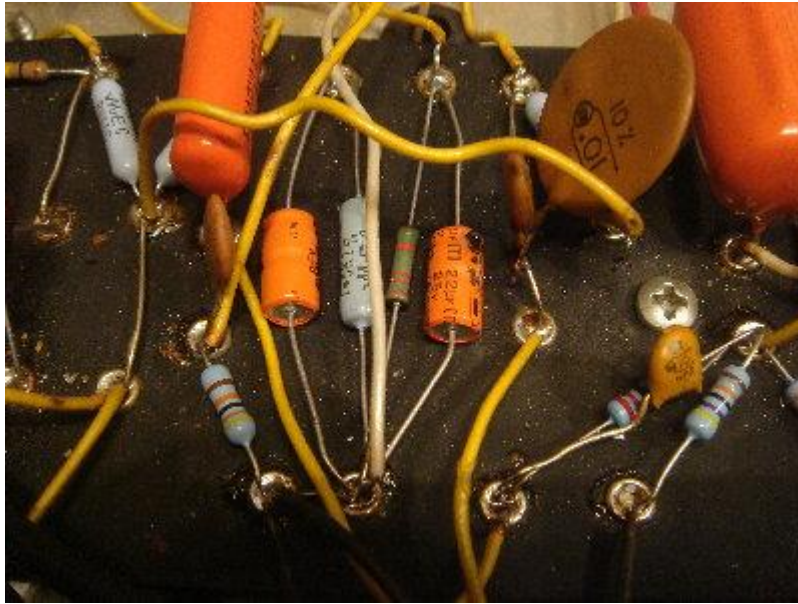
I've spliced a 1M resistor to a 1n2 600V cap and connected it to the plate of the second overdrive stage (pin 6 on V5) and lug 3 of a 1M pot the resides in the old vibrato pedal jack. 47pF bright cap. Lug 1 to the ground node for the reverb driver cathode and wiper lug to pin 2 of the reverb driver (white wire in second pic). Remember to cut the wire joining pin 2 to pin 6 first. You're creating a mixer/driver here.

Use the pot to adjust the dwell for the OD channel reverb. It sounds pretty good to my ears. The reverb control for the Vibrato channel adjusts the returning signal so if it is turned down you won't hear any reverb on your OD channel (or your clean channel).

You may also notice that there is a .01 ceramic cap (left over from the vibrato circuitry) paralleling the .005 reverb input cap. This adds a little more low end to the reverb recovery stage. I also bump up the reverb input cap on the vibrato channel to .001 for the same reason.

You will also note that the 3M3 10pF filter from the coupling cap of the tone stack recovery stage of the vibrato channel to the grid of the reverb mixer stage has been changed to 2M2 10pF.





Below I like to install .01 caps across the rectifiers.



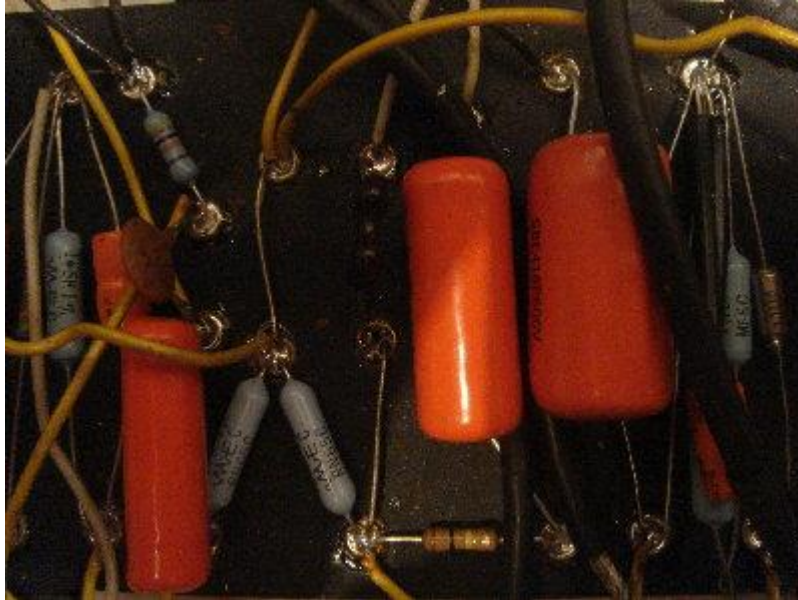
I also like to install a 47uF 63V cap from the bias wiper to ground. Helps quiet down the output section by reducing the hum from the bias supply.



This pic below shows the phase inverter. The clean side of the 220K resistive mixer (white wire) requires a 47K shunt resistor to ground to replace the 50K vibrato intensity pot. You will also notice I like to use lower voltage caps for the grid circuitry on the phase inverter. 200 volts is just fine here.



I rebuilt the vibrato channel with nice components...stock values.

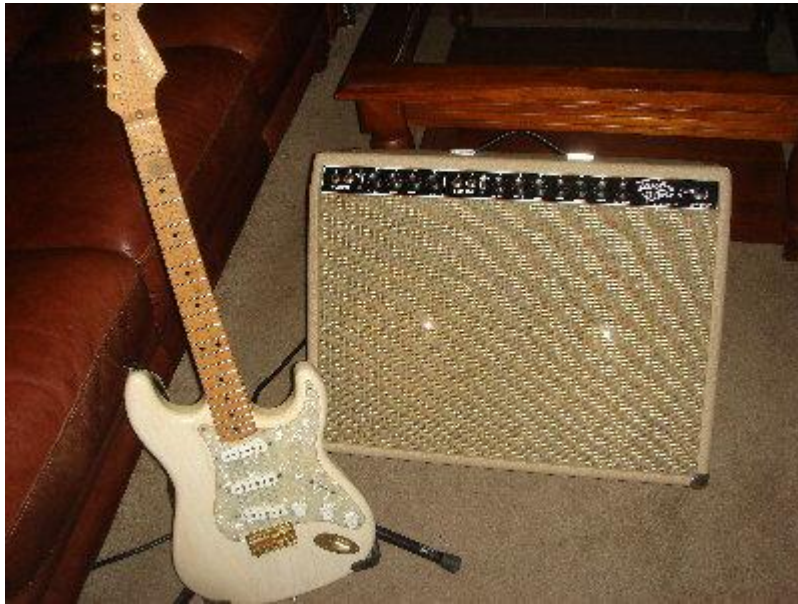


I love soul controls. Completely non destructive mod for old Fenders. Goes right in the extension speaker jack. 10K or 25K audio pot.



Enough of the amp porn. Here's a glam shot below. After I spotted it on eBay my customer snagged it for \$475. Aftermarket cab and CTS ceramics. That's my hard tail repro. Warmoth lumber. Very cool sounding axe. Gets

the Live at El Mocambo Mary Had a Little Lamb tone. Real honky, quacky and alive



Thanks for the kind words.

I took one of the gif files laying around here and edited it in paint.

The dedicated overdrive channel is right except for the snubbers. The values are more traditional than what is in the Twin I modded and should yield more traditional results

The phase inverter and power supply are unfinished but show the new node for B+4. One can get most of the rest of the schematic elements from a Twin Reverb schematic. The main thing that will be missing are the reverb mods.

The two 10M resistors on the switch in my pics can be eliminated. They are redundant.

