

The following is a transcript of an anonymous conversation dealing with the construction of a Dumb Bell amp.

(Edits have been made to the original transcript to ensure anonimity...)

I built the Dumb Bell clone, and put the Dumb-Bell-ator in the chassis with it. The thing sounds great in a combo with a Weber-reconed D130 JBL.

My friend with a recent Dumb Bell OD 100 has agreed to let me see and measure inside next week. It has the Skyline EQ and the Precision Power Amp sections. I will not be allowed to cross the "goop boundary". I don't have a digital camera, but intend to shoot some photos.

I'm only going to have a few hours with this thing, but I can get a lot done, I think. This amp has the multiple trim pots inside, and I hope the owner will let me fiddle with them. He is a touring guitarist/guitar tech and has it set up for himself, but he's a great guy and hopefully won't mind.

Just a taste:

**S/N higher than 200!
EL34 output tubes (must be rare)
All teflon 20ga mil-spec solid core wire
Has a choke**

Late '97 model (date codes from transformers/choke)

Here's more

Transformer codes:

Output: TF-170 1052 9716

Mains: TF-130 1052 9716

Choke: TF-155 1052 9640

The TF-130 transformer can be had from Triode Electronics and I understand it costs like \$200+ or so..." "By the way the Dumb Bell transformers are right here in my Magic Parts catalogue: TF170, Marshall 100w output transformer, 4, 8, 16 ohm, 4 x EL34, 4 x 6550 Primary 1730 ohms, 20-20K HZ, \$65. TF130 Fender Twin Reverb, Showman, Dual Showman, Quad Reverb, Bassman 100, power transformer 4 x 6L6 \$58.50. TF155, Choke, Super Reverb, Twin Reverb, etc. 3 Henries, 90 ohms dc resistance, \$9.75."

Volume=1megA

Treble=B250kA

Middle=250kA

Bass=500kA with a 105k disc across the top and bottom lugs(is this 1microfarad?)I used 0.01ufd with good results.

Master=1megA with a 47pfd in a "brite" type arrangement(wiper to top)

Pre-PI:

OD tone trim pot on top the goo: Treble=250k Mid=20k Bass=1meg

OD drive=250kA OD level=1megA (couldn't get to the input trim)

Voltages:

V1pins 1=209.6 3=1.716 6=206.0 8=1.788

V2pins 1=229 3=2.03 6=227.5 8=2.03

V3pins 1=303 2=39.8 3=60.9 6=317 7=36.6 8=60.9

V4-7pins 3=465 4=457 5=-40.7 6=465

Power Supply:

Best to fax it to you....

Phase inverter:

.05 ufd 630v NTE film coupling caps to grids

0.1 cap on bottom of PI input

Missed the FB resistor...

(The 93 ohm FB resistor on the 100w bass amp posted is wrong! (Those resistors cannot be measured in circuit)

Presence is 1ufd with 2k pot in parallel with ground ref resistor

1k screen resistors (EL34)

Chinese preamp tubes (all 12AX7, including PI)

Measured the following resistors (?accuracy - under goo):

V1 pin1 to PS=150K pin6 to PS=220K pin3 to GND=2.2k pin8 to GND=3.3k pin2 series=220k with 500pfd cap pin7=22k series

V2 pin1 to PS=120k pin6 to PS=180k pin3 to GND=1.8k pin8 to GND=3.3k pin2 series=181k pin7 series=68k

Bottom of bass pot to gnd = 9.8k

I've never seen workmanship like this before. Most resistors metal film, but some carbon film, and wirewound in the power supply...

Here's a description of the power supply:

690 vac from transformer

I think it is full wave rectified with 103Z disc capacitors across the 4 diodes(also one

across the standby switch).

1st stage: series 200ufd@300v each paralleled with a 470k res - 465volts

2nd stage: series choke

3rd stage: series 47mfd@350v each paralleled with a 470k - 458 volts

4th stage: series wirewound 2980ohm resistor

5th stage: series 47ufd@250v with 470k - 433 volts

6th stage: series 12k resistor carbon film?

7th stage: series 47ufd@250v with 470k - 361 volts

8th stage: series 10k resistor metal film

9th stage: series 47ufd@250v with 470k - 323 volts

What do you think about the cathode and plate resistor values I sent you? What does this do compared to the typical 100k plate and 1.5k cathode values you see on typical Fender based designs? My clone uses a 3.9k FB and a 390 ohm PI reference to ground as does the one I saw and the 50w that is posted. It also had the 1mfd (electrolytic)cap with a 2k presence control. The PI is exactly like the posted 50w schematic, except the plate resistors are 91k and 110k. The balance pot is a 10k. I missed the output grid feed resistors. The 12v relay supply is fed by a Radio Shack transformer mounted inside. It is regulated by a NTE 966 3pin. Filament ground reference resistors are 75 ohm. Bias supply is typical blackface with 2 x 47ufd@160v caps, 10k pot.... There was a relay actuated boost circuit, but I couldn't get to it. I didn't investigate the FET circuit. This amp had the 1.0uF cap mounted across the top to bottom. Of course the wiper is connected to the top or bottom anyway. I have some 0.1ufd's that are marked 104J. The 220k resistor feeding the 2nd stage of the preamp is bypassed with a 501k capacitor.(550pfd?) [Ed. note: 501k = 500pF] Of course, the entire preamp tone section, OD section, and OD tone section were covered in goo, but I measured the various plate and cathode resistors from the tube pins (sent you that already).

I put the high frequency trim control using a 1 meg pot and 0.001 cap and like it much: more "meat". I don't use heavy distortion (Santana), but prefer a compressed overdrive sound like Clapton(Cream), Beck(Jeff), and Robben Ford. I also put a 1meg in series with the 100k pot on the output of the OD section, with good results. I found that I was running the overdrive output pot @ 2 and it was too sensitive. The mod made the pot much more usable(set on 4 to 7).

I wanted to clarify where the B+ voltages go:

Pre choke to CT output xformer

Post choke to screen resistors

Next stage to PI

Next stage to OD

Last stage to preamp/tone

There was some question about trim pots inside more recent Dumb Bells. The '97 model I saw had treble, mid, bass mounted on top of the goo on a small board(for the OD section). It also had the "trigger" trimpot for the OD, which I think is the input trim on the old schematic. Did you get anywhere with the Rp,Rk, and Ck values I gave you?

The caps I could see (phase inverter) were NTE brand an I'm sure they were polyester/mylar or most probably polypropylene. Whether they were film/foil or metalized film, I couldn't say. Most of the vintage guys prefer the metalized polyester (Weber/Kendrick used Mallory 150), and the HiFi guys like the polyprop. film/foil like the 715P. I use Siemens 600v polystyrene for pfd values(lots smoother than mica to my ears) (from Welborne Labs), and Xicon metalized PP (Doug Hoffman/Mouser) for the other stuff. I have a load of old stock orange drops. All the critical tone and OD caps were hidden by goo, I'm afraid.

I finally got around to looking over the notes on the 1997 OD-100 and comparing them to the older schematic . I'll try drawing up a schematic (with a lot of question marks!) but here are some preliminary observations:

The initial preamp stage (V1B!) is using a 220k plate resistor and a 3.3k cathode resistor so I doubt if the Clean sounds will be as nice as the older design (which uses 100k and 1.5k). I'd assume that he is using a 1.0uF to 5.0uF Ck cap here (I don't see why he would go back up to 22+uF).

He is using a 500k pot instead of a 250k bass pot and is adding in a 1.0uF cap from the cw to the ccw terminals, and is connecting the pot to ground with a 9.8k resistor instead of a 1.8k resistor.

He is using a 250kA pot for Mid instead of 100kB

The second stage (V1A!) is connected to the vol pot with the 220k resistor, only it is

bypassed with a 500pF cap for more high freqs.

The second stage uses a 150k plate resistor and 2.2k cathode resistor (instead of the 100k/1.5k resistors used on the earlier design).

There was no mention of that 0.05uF/22MEG combo going from the plate to the grid of the second stage. I would think that he would want to have that right on the tube pins but maybe it is hidden on the board under the "goo". So put a big question mark here...

The first OD stage (V2B!) uses a 180k plate resistor and a 3.3k cathode resistor (instead of the 100k/1.5k on the older design)

The 100kB Overdrive pot has been replaced with a 250kA pot.

The second OD stage (V2A!) uses a 120k plate resistor and 1.8k cathode resistor instead of the 100k/1.5k combination.

There is a second post-OD tone stack, probably before the OD level control. The treble pot trimmer is 250k, the bass pot is 1M and the mid pot is 20k so I would assume that Dumble is using a typical Marshall tone stack here. For starters I would try 330pF to 500pF for the treble, .022uF for the bass and mid caps and something like 56k for the slope resistor.

The front panel OD level control is 1MA with a 47pF bright cap from the wiper to the cw terminal.

Instead of the "Accent" control on the original schematic it sounds like a presence control with a 2k pot and a 1uF e-cap is used in parallel to the 390R resistor to ground.

Conclusions: it looks like Dumb Bell is voicing this amp more like a Marshall than a Fender.

Questions: What would be the signal loss through the post-OD tone stack? Would the hotter signal from the revised plate/cathode resistors make up for this signal loss, or do you think that the OD input trimmer would just be set higher to insure that the OD mode is as loud as the Clean mode? If the OD signal was not loud enough I suppose that you could remove the 100k resistor shown on the original schematic between the first OD stage and the Overdrive pot.

P.S. I haven't received the photos of this amp yet which might answer the remaining questions on the design.

