

Marshall DSL201/401

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Marshall DSL201/401 - SOLD!

Fixing the infamous bridge rectifier / heater wire problem Biasing Installing a cooling fan for the power tubes

Download the schematics for the DSL 201 (256KB PDF) or DSL 401 (269KB PDF)

Official Marshall JCM2000 page

My DSL 201 was built in 2001. I bought it in summer of 2002 from a music store that had used it as a demo unit. I changed the stock Celestion speaker for a Celestion Greenback for a better and more vintage sound. DSL401 owners might consider a Celestion Vintage 30 or G12T-75.

This 20W model is now going to be discontinued by Marshall, only the 40W DSL 401 will still be in production.

In November 2002 I met Jim Marshall at the Marshall 40th anniversary party in Vienna for the first time and he was so kind to sign the backplate of my amplifier. Click on the "Mode Four" link on the previous page for my second encounter with the "Guv'nor".

I got lucky and found a great supply of vintage NOS tubes and equipped my Marshall with hot 1960's Philips/Miniwatt tubes.

After a few months, my amp started to develop a problem that seems to be very common with this series: Preamp tubes go dark and the amp produces no output anymore. After some time, kicks, or power switch cycles everything works again. I did a lot of research on the web, especially on the Marshall Arts forum at Blamepro and on alt.guitar.amps.

Thanks to Lord Valve, JH, Count Zero and others for getting me onto the right track. The problem lies in a bridge rectifier that gets too hot and weakens the solder joints (most of the time loosening the heater wire). Did you notice that the front panel gets extremely hot on the right side?

UPDATE: Marshall changed the bridge rectifier and some other details in August 2003 and the newer Amps are much more reliable. The serial number on the back of the amp tells you when it was made. The first four digits are the year (2003) and the last two digits are the month (08=August).

Here is my photo story for fixing the bridge rectifier / heater wire problem (it took me about 2 hours): DANGER! There may be high voltage in your amp (about 400V in the capacitors) even when it was unplugged for some time. Be sure you know what you are doing! Drain the capacitors and check their charge with a multimeter.

Remove the top grill on the back and unplug the speaker and the reverb (white and red phono jacks behind the output transformer). After removing the 8 black screws from the cabinet, pull the chassis out to the back. Mine got tangled up a bit in the tolex cover coming around the side, so be careful.

While you have the back open, check the screws of the reverb tank. Marshall uses very short screws and many DSL combos have their reverb tank stuck to the speaker magnet...

Let's begin. Twist the cover on the first preamp tube until it pops out, remove the guard over the power tubes. Then pull out all the tubes.

Remove the three little black screws on the bottom of the front panel and remove the plastic nuts from the output jacks. Unplug the reverb board and loosen the screws holding down the circuit board.

I wanted to flip the board over but found that the cables are a bit short, so I labeled them all and unplugged them.

When I got the board free, I went looking for bad solder joints. The four legs of the bridge rectifier did not look bad, but I gave them a good once over with the soldering iron.

Note the ugly joint on the right. This is the filament heater at V3 which goes to V2 and V1 on the other side of the board with flying leads. I resoldered it completely.

Finally I took an old computer CPU heatsink which I cut to size and mounted it onto the bridge rectifier with cooling paste glue. The sink is pretty big on top but has a small footprint. If you want to do this mod yourself, be sure that the sink does not touch any other parts.

I reassembled my amp in reverse order and it worked like a charm. The front panel and top of the amp don't heat up so quickly now!

Note: The two additional power tubes in the DSL 401 make this model run even hotter.

John LaGrassa has installed a fan for the power tubes of his DSL 401.

Setting the bias on Marshall JCM 2000 DSL 201 / 401 amps: It makes sense to check the bias once in a while and after you changed the power tubes. You should especially do it if you purchased a used amplifier, you never know who had his greasy fingers on it before. Most new amps come biased on the "cold side" (mine was), so it is never a bad idea to check the bias - and it is very easy to do on this series.

Note: You do not need to do the full disassembly as described above to check and set the bias. Just get the chassis out of the cabinet. But remember to NEVER run your amp without a speaker load, you'll fry your output tranny!

- If you want to change your power tubes, replace the old EL84 tubes with matched pairs or quads before proceeding. Even if only one tube went bad you should change all power tubes at once.

Note: The DSL 201 only has two power tubes, therefore on the picture above you see empty spots on the circuit board where the other two tube sockets are in the DSL 401.

- Turn the amp on, leave it on standby for a couple of minutes and don't touch anything inside ;-)

- Look for a 3 pin connector labeled CON 5 on the circuit board (circled).

Note: I cut a power cable from an old computer power supply which fits perfectly onto that connector. I can connect my DMM alligator clips much easier that way.

- Locate the bias pot PR1 (circled).

- Once the amp is warmed up, turn off the standby switch.

- Set your DigitalMultiMeter to read 1000mV (milli Volts) DC

Note: If your DMM does not have a 1000mV setting, try the next lower or higher setting. Remember: 1V=1000mV

- Connect the DMM's negative lead to the center pin of CON 5 using an alligator clip.

- Connect the DMM's positive lead to either of the two outer pins of CON 5.

- Check your reading, and gently (!) adjust the bias pot until you get a reading of 675mV on a DSL 201 or 1375mV on a DSL 401.

- Double check the reading by connecting the positive lead to the other outer pin while keeping your ground lead on the center pin of CON5. Give your amp a couple of seconds to let the voltage rise.