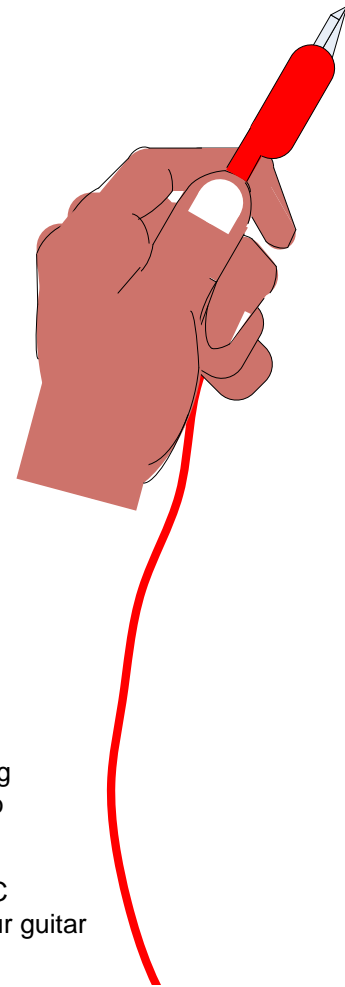


## The MOD 102+ Troubleshooting Supplement

After thoroughly double-checking your connections, the next step is to take DC voltage measurements to help locate problem areas.

Using a volt meter, connect the ground side lead of the meter to any ground point on the amp. One ground point would be the ground terminal of a terminal strip like T2(7). The other volt meter lead will be used to measure DC voltage at the test points listed here.



DC Test Points	Measurement
HV (power supply)	251 VDC
B1 (power supply)	249 VDC
B2 (power supply)	198 VDC
V1 pin 1 (plate)	126 VDC
V1 pin 2 (grid)	0 VDC
V1 pin 3 (cathode)	1.1 VDC
V1 pin 6 (plate)	132 VDC
V1 pin 7 (grid)	0 VDC
V1 pin 8 (cathode)	1.0 VDC
V2 pin 7 (plate)	242 VDC
V2 pin 9 (screen grid)	197 VDC
V2 pin 2 (control grid)	0 VDC
V2 pin 3 (cathode)	5.3 VDC

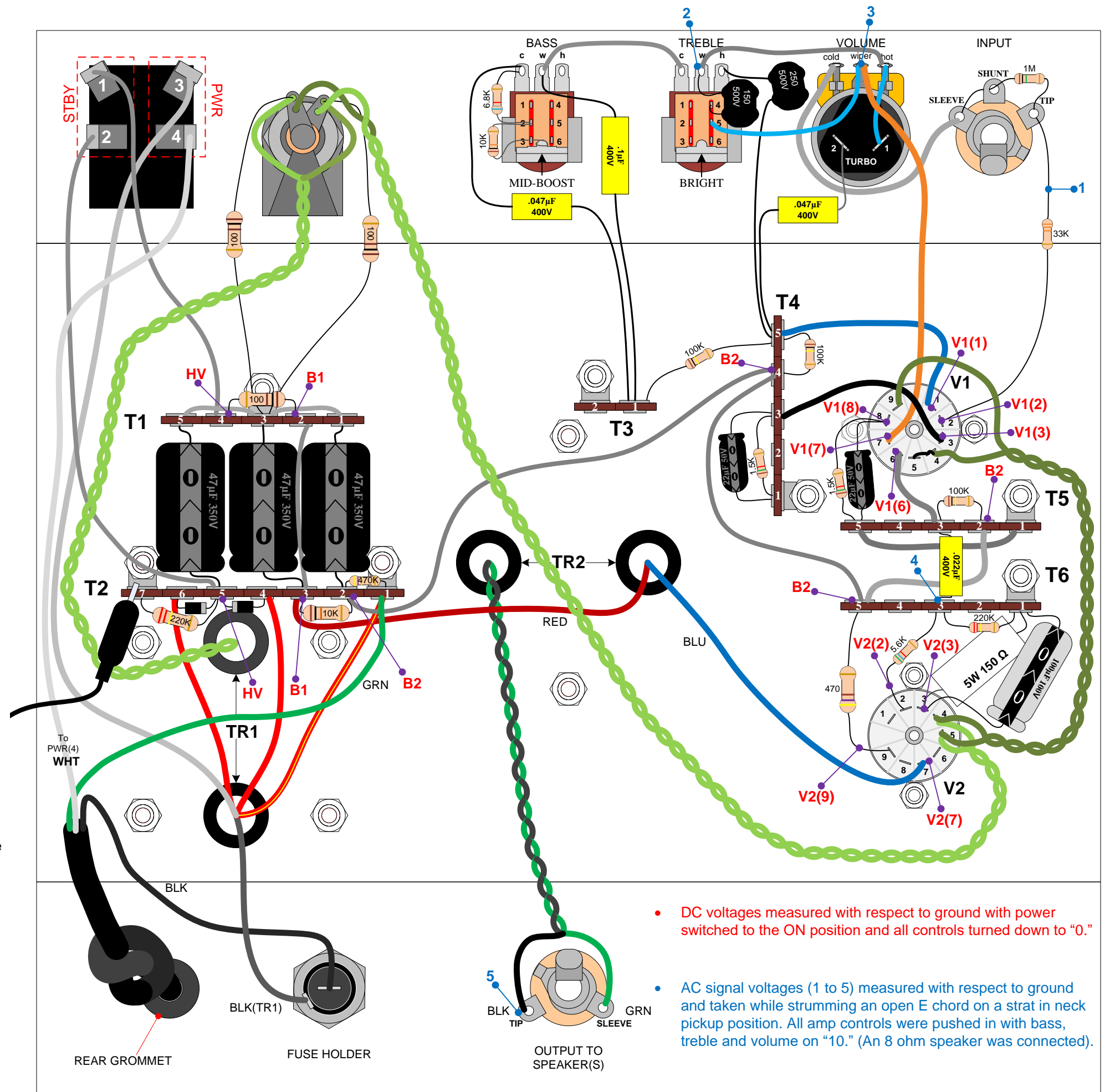
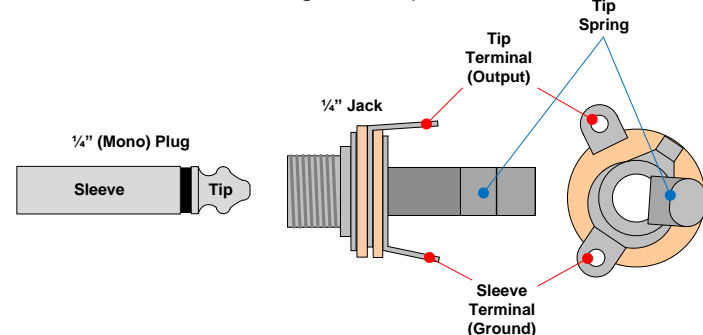
## Measuring AC Voltages from the Guitar Signal

Once your DC voltages are in order, if your kit is still not working properly, you can measure AC voltages along the signal path to troubleshoot further.

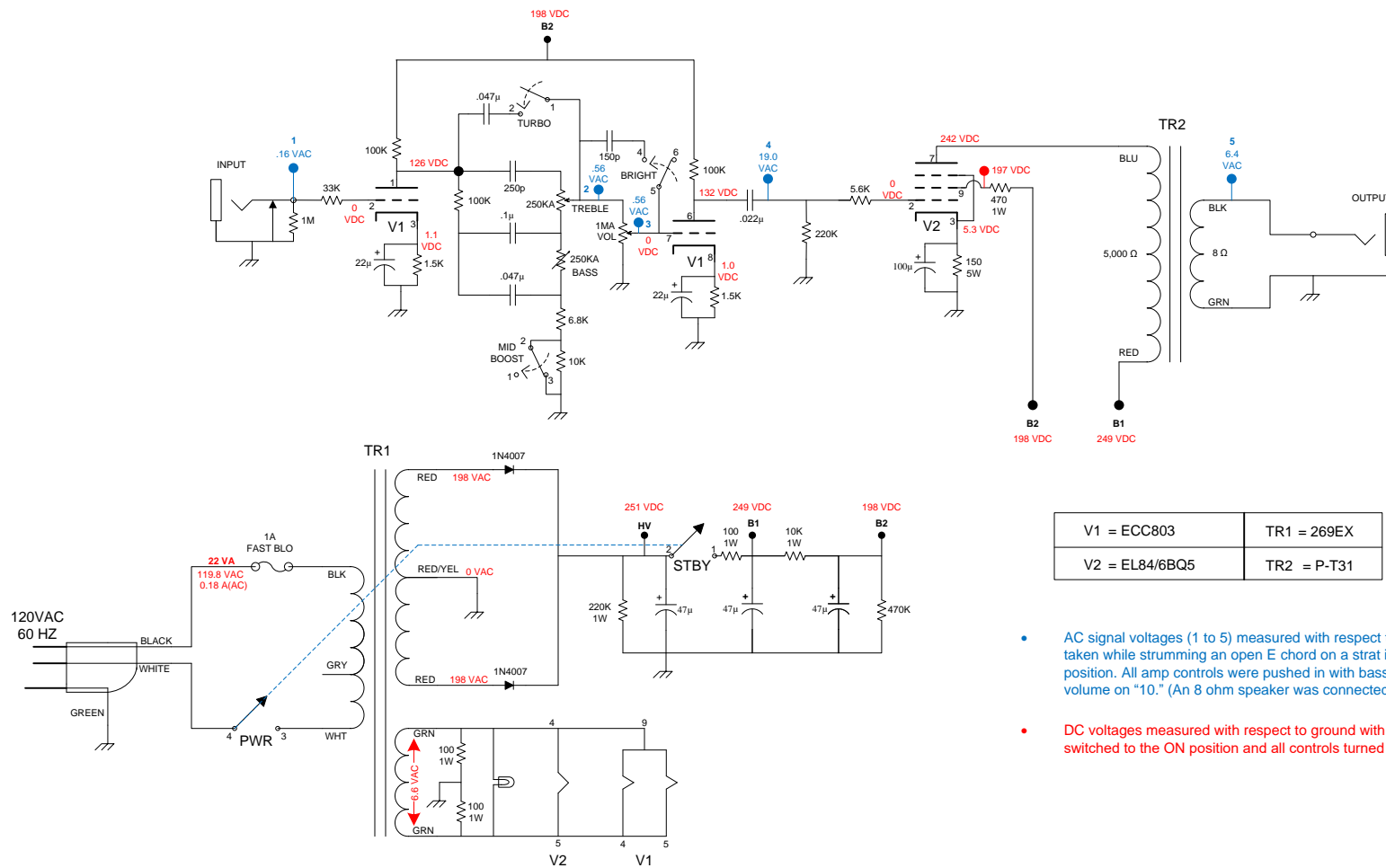
You will need a volt meter that can measure the small signal AC voltages that electric guitars put out. The output signal from your guitar will likely be less than 1 V.

First, measure the output signal directly from your guitar. You can do this by plugging your guitar cable into the guitar and leaving the other end of the cable disconnected. Connect your meter across the disconnected ¼" plug's "tip" and "sleeve" sections. Make sure your guitar's volume and tone controls are turned up and strum a chord. When you strum, you should see the AC voltage reading on the meter quickly rise to some maximum value and then fall back to 0 VAC when you stop strumming and the strings are at rest.

Once you are able to measure the output signal from your guitar directly, plug the guitar into the input jack of your kit and use the numbered **AC test points** to measure the guitar signal along the signal path. Start with test point one and move along in order. You should be looking to identify the last test point where the signal seems normal and the first test point where the signal seems unusual or where it is no longer even present.



- DC voltages measured with respect to ground with power switched to the ON position and all controls turned down to "0."
- AC signal voltages (1 to 5) measured with respect to ground and taken while strumming an open E chord on a strat in neck pickup position. All amp controls were pushed in with bass, treble and volume on "10." (An 8 ohm speaker was connected).



V1 = ECC803	TR1 = 269EX
V2 = EL84/6BQ5	TR2 = P-T31

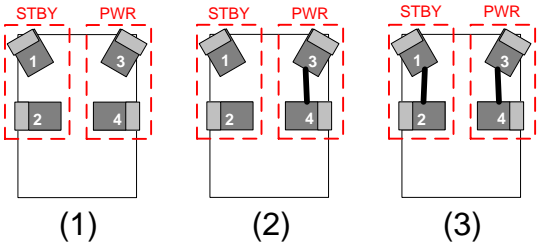
- AC signal voltages (1 to 5) measured with respect to ground and taken while strumming an open E chord on a strat in neck pickup position. All amp controls were pushed in with bass, treble and volume on "10." (An 8 ohm speaker was connected).
- DC voltages measured with respect to ground with power switched to the ON position and all controls turned down to "0."

### P-H520

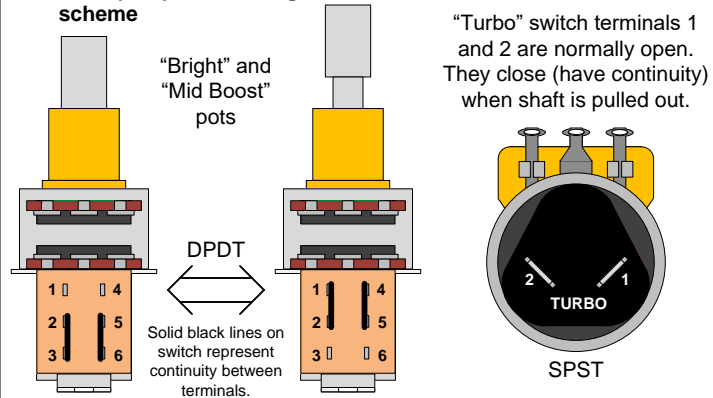
#### 3 Position Progressive Toggle Switch

- 1) Toggle Handle OFF: PWR = open, STBY = open
- 2) Toggle Handle STANDBY: PWR = closed, STBY = open
- 3) Toggle Handle ON: PWR = closed, STBY = closed

Solid black lines on switch represent continuity between terminals.



#### Push-pull pot switching scheme



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