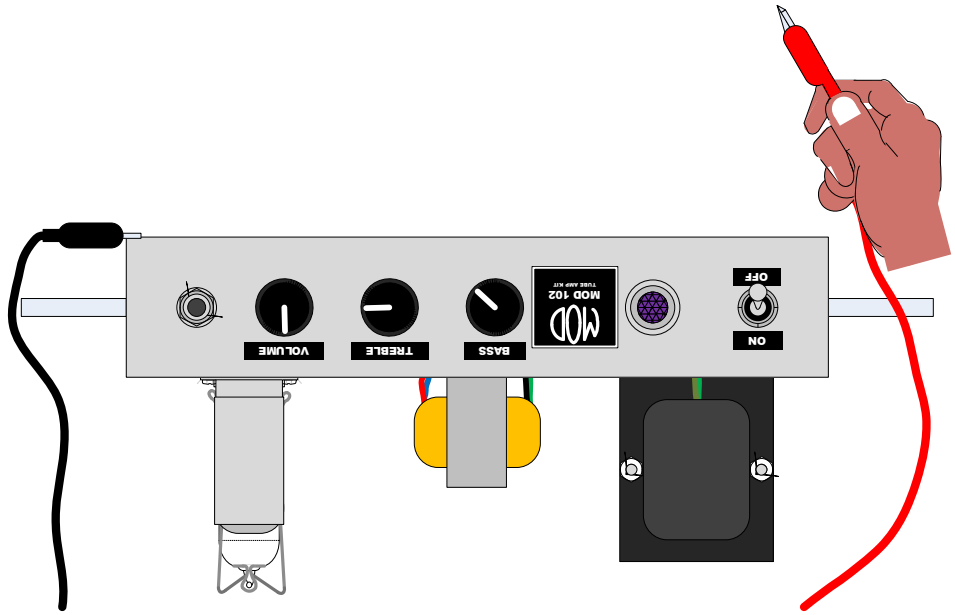
(K-MOD102) TROUBLESHOOTING SUPPLEMENT



Use this supplement to help:

- Measure voltage test points to identify major discrepancies and locate problem areas.

(Keep in mind that the voltage measurements will vary slightly from amp to amp. The voltages you measure should be in the same ballpark, but do not expect to get the exact same value.)

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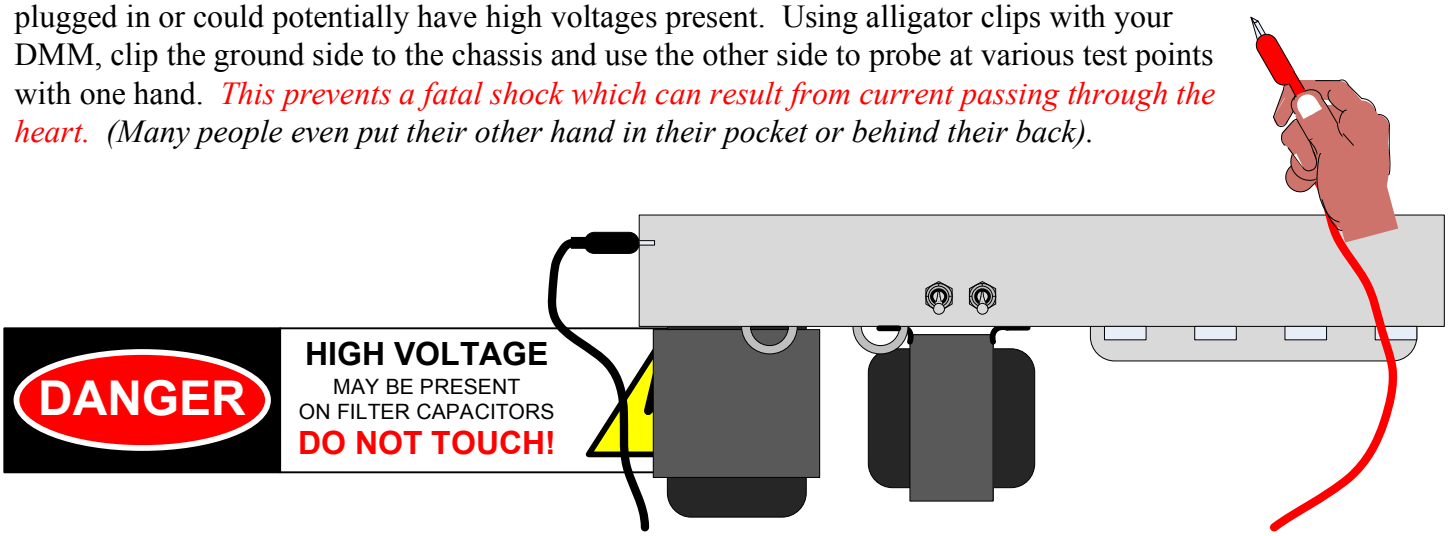
SAFETY

Tube amps operate at high voltages that have the potential to injure and kill. Please remember the following when troubleshooting this project.

- Only work on the amp when you are wide awake and sober.
- Do not plug the amp in until you have gone through all of the instructions, checking and re-checking each step.
- Do not turn the amp on until you have connected it to a speaker cabinet or dummy load.
- Be aware that tubes become very hot when the amp is on and can take up to 10 minutes to cool down after power is turned off.
- Always follow the one hand rule when working with an amp that is connected to power or may have voltage present. *(Any amp that has been plugged in at one time, may have high voltage present).*

The one hand rule (pictured below): is a safety precaution for working on an amp that is plugged in or could potentially have high voltages present. Using alligator clips with your DMM, clip the ground side to the chassis and use the other side to probe at various test points with one hand. *This prevents a fatal shock which can result from current passing through the heart. (Many people even put their other hand in their pocket or behind their back).*



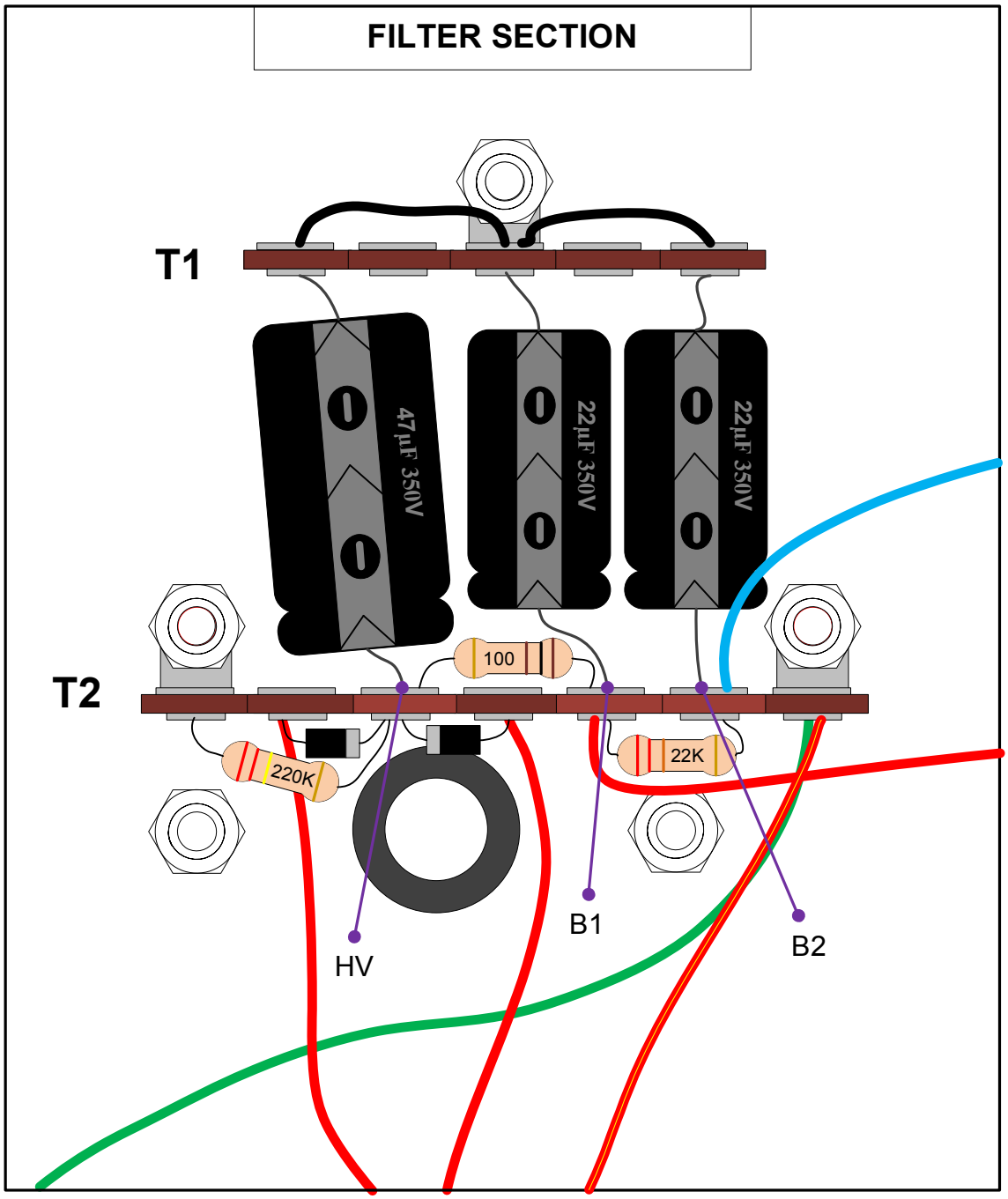
Test point sections included in this supplement include:

Test Point	DC Voltage	AC Voltage
“HV”	264 VDC	2.5 VAC
“B1”	261 VDC	2.4 VAC
“B2”	178 VDC	0.16 VAC

Give the power tube at least 30 seconds to warm up before taking voltage measurements.

Voltages measured from test point to ground with **no signal** and the following front panel settings:

POWER: ON
BASS: “0”
TREBLE: “0”
VOLUME: “0”

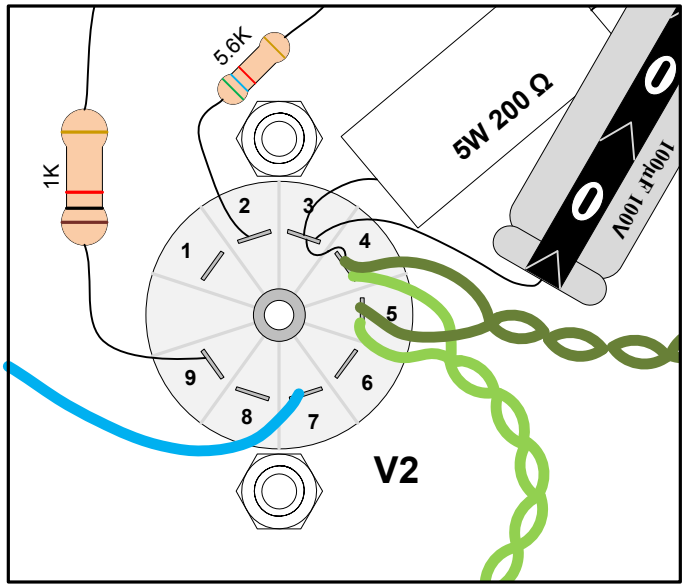


POWER TUBE ELECTRODES

Test Point	Name	DC Voltage
V2 (pin 7)	V2 plate	258 VDC
V2 (pin 9)	V2 screen grid	177 VDC
V2 (pin 2)	V2 control grid	0 VDC
V2 (pin 3)	V2 cathode	5.5 VDC

Voltages measured from test point to ground with **no signal** and the following front panel settings:

POWER: ON
BASS: “0”
TREBLE: “0”
VOLUME: “0”

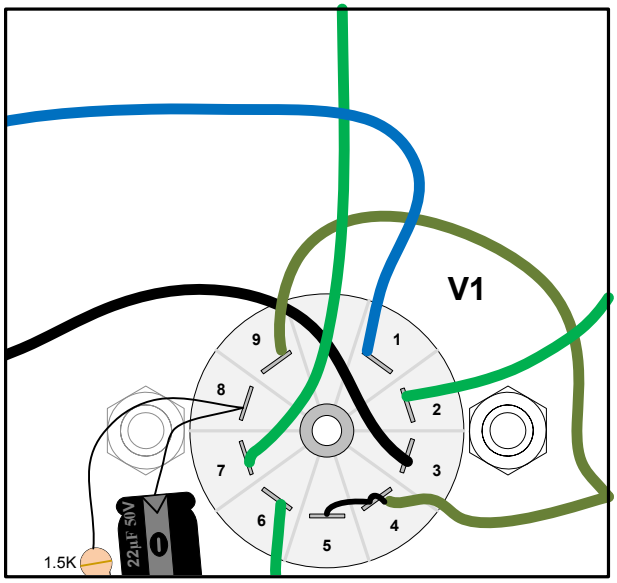


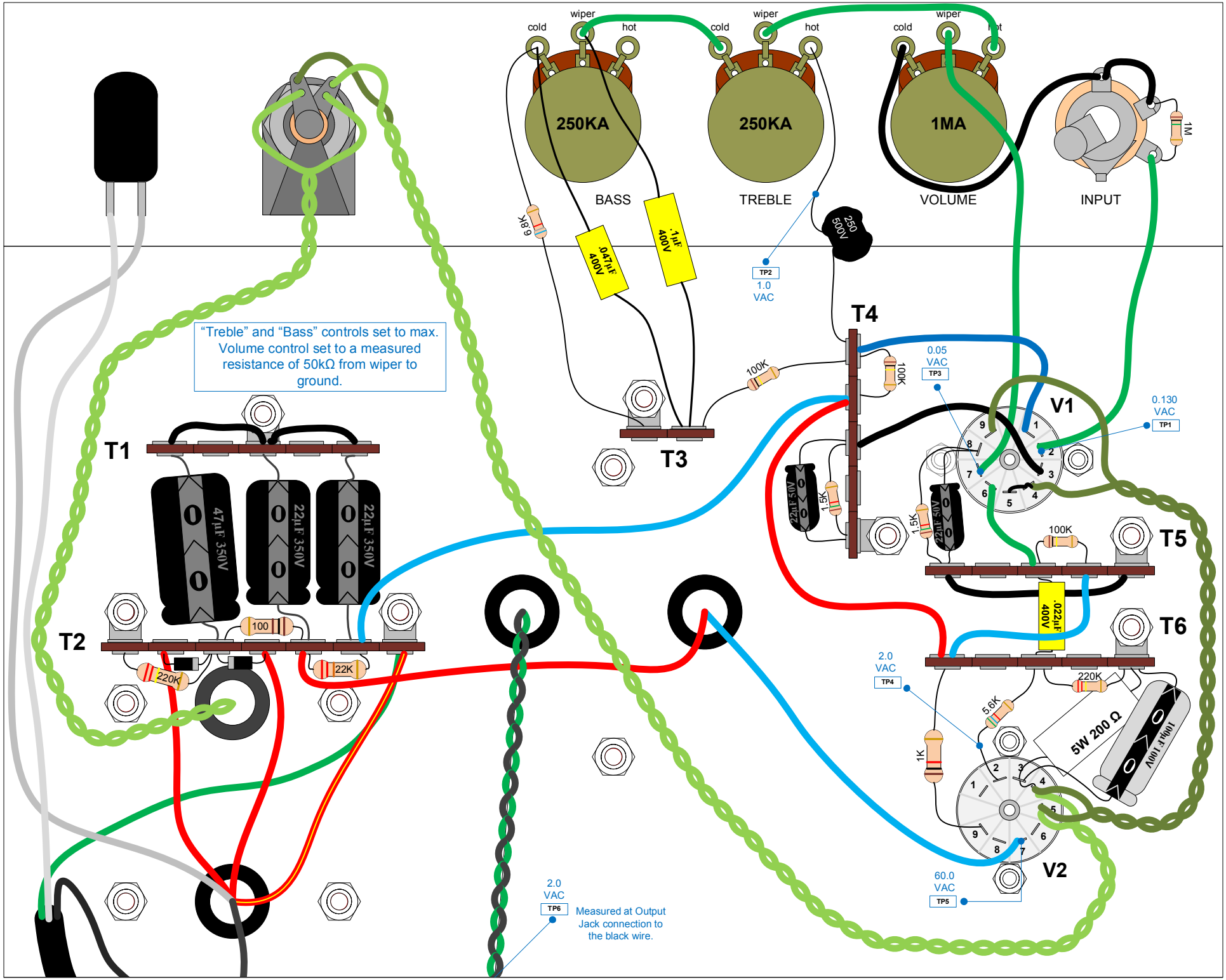
PREAMP TUBE ELECTRODES

Test Point	Name	DC Voltage
V1 (pin 1)	V1 plate 1	121 VDC
V1 (pin 2)	V1 grid 1	0 VDC
V1 (pin 3)	V1 cathode 1	0.90 VDC
V1 (pin 6)	V1 plate 2	116 VDC
V1 (pin 7)	V1 grid 2	0 VDC
V1 (pin 8)	V1 cathode 2	0.97 VDC

Voltages measured from test point to ground with **no signal** and the following front panel settings:

POWER: ON
BASS: “0”
TREBLE: “0”
VOLUME: “0”

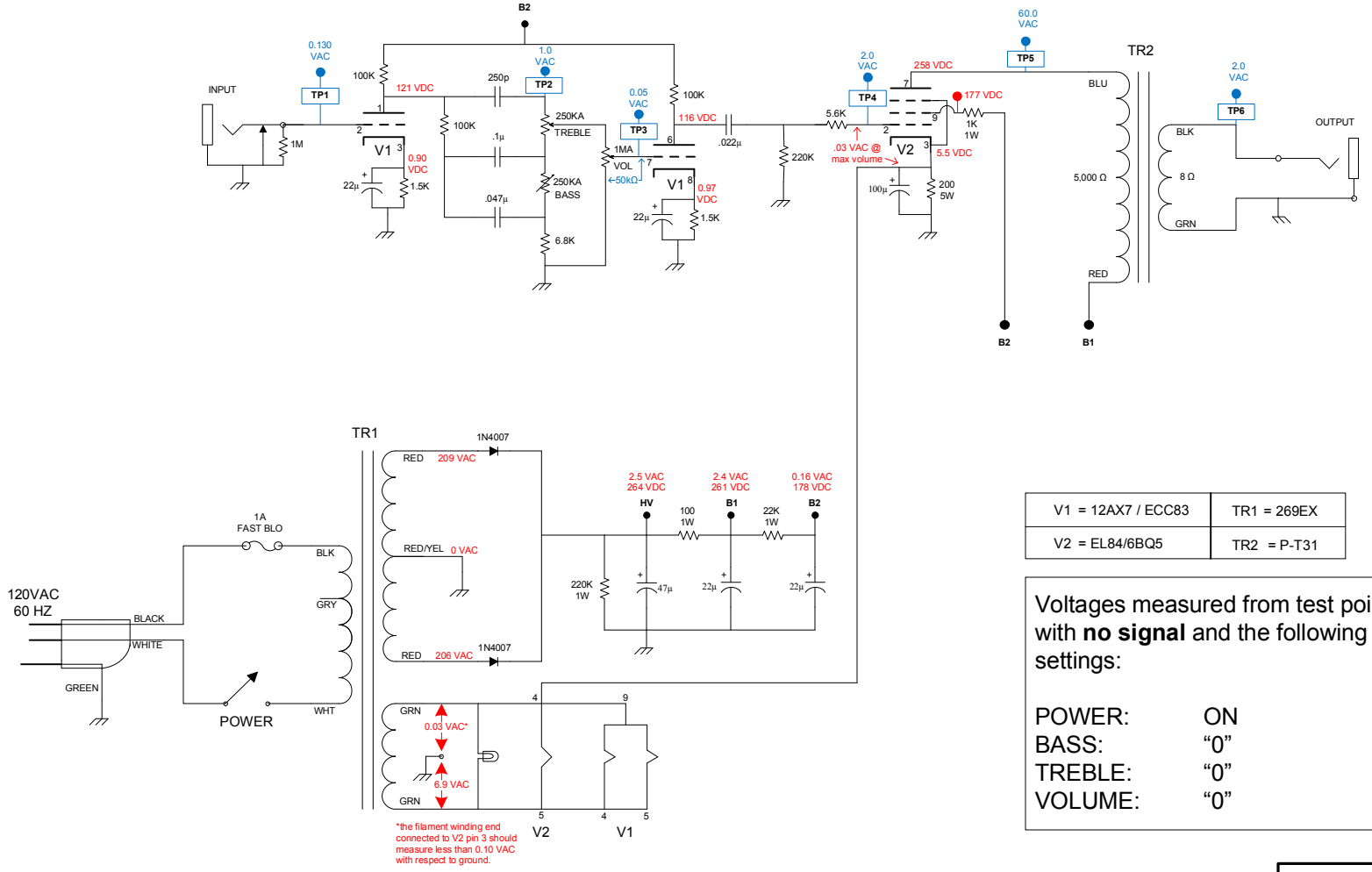



cold
wiper
hot
250KA
BASS
250KA
TREBLE
1MA
VOLUME
INPUT
1M
6.8K
.047µF 400V
.1µF 400V
250 500V
TP2
1.0
VAC
"Treble" and "Bass" controls set to max. Volume control set to a measured resistance of 50kΩ from wiper to ground.
T1
47µF 350V
22µF 350V
22µF 350V
T2
100
220K
22K
T3
T4
100K
0.05
VAC
TP3
V1
0.130
VAC
TP1
22µF 50V
1.5K
22µF 50V
1.5K
100K
T5
.022µF 400V
T6
2.0
VAC
TP4
220K
5.6K
1K
5W 200 Ω
100µF 100V
V2
60.0
VAC
TP5
2.0
VAC
TP6
Measured at Output Jack connection to the black wire.

AC Voltages measured with respect to chassis ground. “Treble” and “Bass” controls set to max and “Volume” set to a resistance of 50kΩ from “wiper” to ground.

Signal: Mexican Strat played with open “E” strumming. All controls at max and set to Neck pickup (position 5).

V2 socket measurements with no tube installed:
Pin 7 (plate) = 280 VDC
Pin 9 (screen grid) = 242 VDC
Pin 2 (control grid) = 0 VDC
Pin 3 (cathode) = 0 VDC
Pin 5 (filament) = 6.7 VAC



V1 = 12AX7 / ECC83	TR1 = 269EX
V2 = EL84/6BQ5	TR2 = P-T31

Voltages measured from test point to ground with **no signal** and the following front panel settings:

POWER:	ON
BASS:	“0”
TREBLE:	“0”
VOLUME:	“0”

269EX Resistance Measurments

Red(1) – Red(2): 270 Ω
Red(1) – Red/Yel: 129 Ω
Red(2) – Red/Yel: 141 Ω

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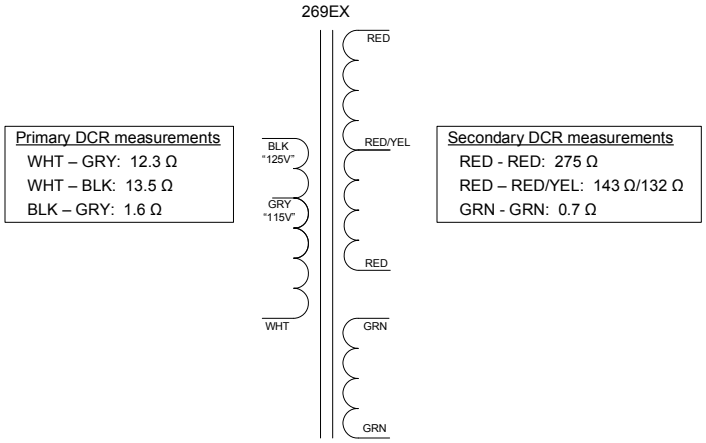
K-MOD102 Schematic

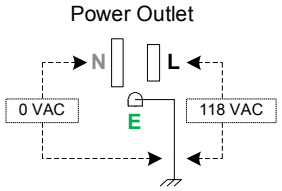
Open Circuit (No Load) Resistance Measurements

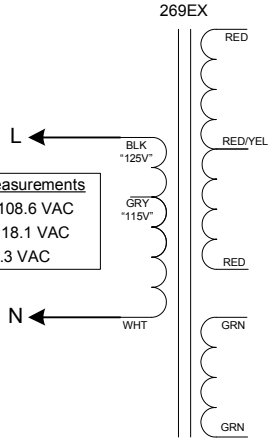


Primary DCR measurements
- WHT – GRY: 12.3 Ω
- WHT – BLK: 13.5 Ω
- BLK – GRY: 1.6 Ω

Secondary DCR measurements
- RED - RED: 275 Ω
- RED – RED/YEL: 143 Ω/132 Ω
- GRN - GRN: 0.7 Ω

Open Circuit (No Load) Voltage Measurements





Primary VAC measurements
- WHT – GRY: 108.6 VAC
- WHT – BLK: 118.1 VAC
- BLK – GRY: 9.3 VAC

Secondary VAC measurements
- RED - RED: 403 VAC
- RED – RED/YEL: 200 VAC
- GRN - GRN: 6.6 VAC