Adapting the Drake AC-4 to Power the Hallicrafters SR-150.

The following is the documentation to adapt the Drake AC-4 Power Supply to support the operation of the Hallicrafters SR-150 SSB/CW Transceiver.

As a bonus the power switch on the SR-150 is bypassed and controlling the AC power supply is done entirely at the adapter box. One of the most common problems is that the SR-150 power switch fails because of the excessive in rush currents that go through the switch contacts.

After carefully reviewing the power requirements of the SR-150, it was determined that there was a close match to the output of the Drake AC-4 Power Supply. The main differences were that the Bias supply of the AC-4 was in the range of –45 to – 65 volts and the High Voltage was 650 VDC. The bias circuit of the AC-4 is arranged so that any adjustment, of the bias level is by means of a 10K pot in series with a 10K ohm fixed resistor on one end and a 6.8K ohm fixed resistor on the other.

Thus the bias supply is capable of a higher voltage but with the circuitry the range was being set by the combination of the three resistors. Removing one of the fixed resistors (or making it a smaller value) would open up the bias range of adjustment. The higher plate voltage of the AC-4 under load is within about 10% of the total rated value of the SR-150 and thus should OK.

The adaptation involves three separate actions:

Modifying the AC-4 to provide a higher Bias voltage. This entails shorting out one resistor (the 6.8K) with a 10 ohm 1 watt resistor in the bias power supply. This is easily reversed (Simply unsolder the short).

Constructing an interface box to have the AC-4 plug into the box. Wire a two-foot pigtail with a 12 Pin Jones Plug that matches the SR-150 wiring. Connect that inside the box to a chassis mounted plug that is wired and mates with the AC-4.

Internal to the box the appropriate pins are connected so the output of the AC-4 is routed to the proper pins of the SR-150 plug. The eight-conductor rotor cable consists of two heavier gage wires and six wires of all the same smaller gage. Use the heavier gage wire for the filament and ground connections and the smaller gage wires for the HV, LV, Bias and Speaker. Originally and as shown on some of the subsequent wiring diagrams two wires were to be used for the AC on off (brown and blue wires). Since the box was fabricated these two wires have been clipped (and tied to the bundle) from the chassis mounted plug that interfaces with the AC-4 supply. The current configuration is the wiring from the chassis mounted plug that controls the AC is now wired to a 5 AMP 115 Volt mini SPST toggle switch.

The colors shown are those contained in the rotor cable I used. Other rotor cable colors may vary. Duplicate connections are made to five lugs of a terminal strip and include Ground, Speaker, HV, LV and Bias. The only purpose of this strip is to serve as a convenient location to take voltage measurements or output measurements. Since the chassis mount plug is vertical it is difficult to access all of the pins to check voltages or output. This was done for my convenience and can be eliminated. The filament pin on the

chassis mount plug is readily accessible and thus was not included.

Installing a 10 Ohm 3 Watt resistor across a pair of banana jacks that are in series with the High Voltage (+600 VDC). This is to enable monitoring of the plate current and for setting the final bias (70 Ma.)

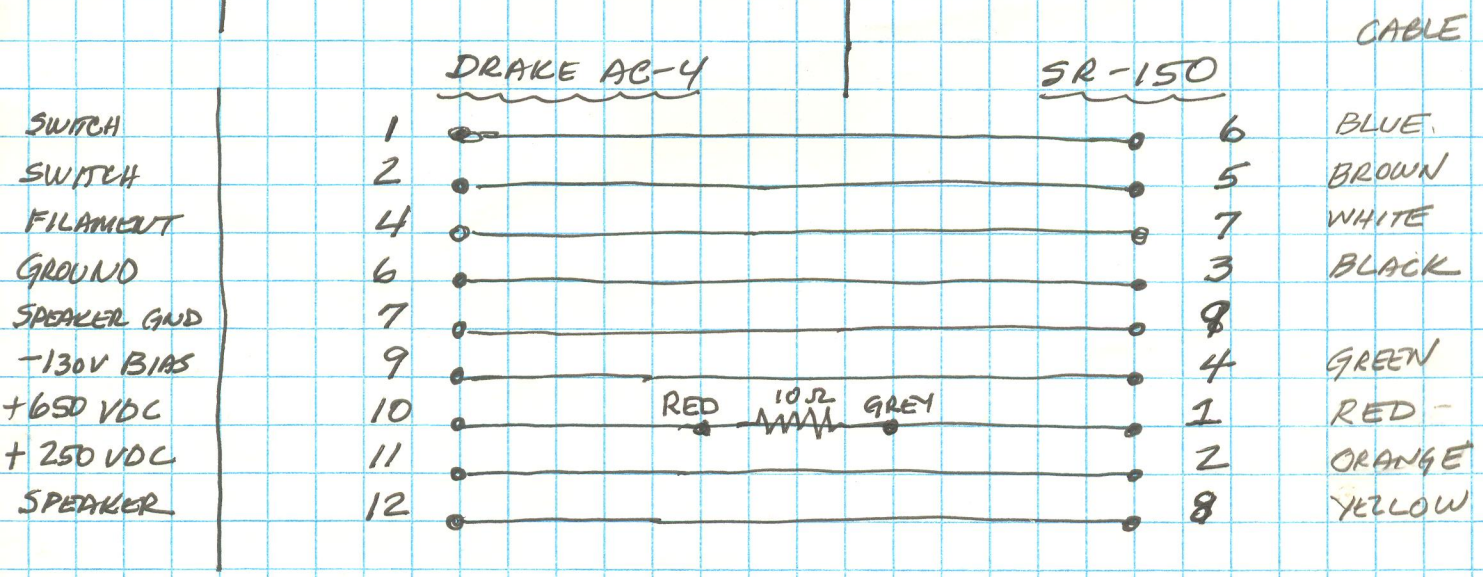
I am now looking to entirely eliminate this feature by including a 0 to 500 MA DC ammeter that would be mounted on the adapter box and essentially always inline with the HV. If you do this, don't forget a .01 MFd 3KV ac bypass cap across the meter terminals. The banana jacks would offer a convenient connection points for the meter. The 10 ohm 3 Watt resistor would then be eliminated. The idea of this feature was prompted comments from Walt Cates, (WD0GOF) regarding continuous monitoring of the plate current. If by some chance a Drake DC-4 supply would be used with the SR-150 the adapter box should be 100% compatible

Parts list:

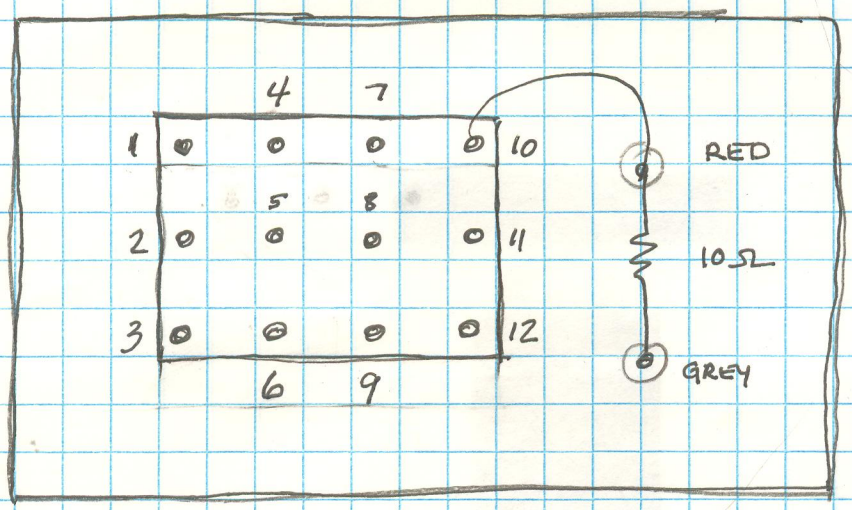
Radio Shack Aluminum Mini-Box 2x3X5 Inch
Two Chassis Mount Banana Plugs
0ne 10 Ohm 3 watt resistor
One 12 Pin Male Chassis Mount Jones Plug
One 12 Pin Female Jones Plug complete with Shell
On two foot length of 8 conductor rotor cable
One 5 lug terminal strip
One 5 AMP 115VAC SPST Mini Toggle Switch
Miscellaneous 6-32 hardware
Optional: 0-500 MA DC meter and 0.01 Mfd. 3KV Cap

INTERFACE ADAPTER BOX AC-4 → SR-150

PIN	DRAKE AC-4	SR-150
1	AC SWITCH	+575 VDC HV
2	AC SWITCH	+250 VDC LV
3	AGC	GROUND
4	12.6VAC FILAMENT	-130 VDC
5	AUXILIARY	POWER SWITCH
6	GROUND	POWER SWITCH
7	SPEAKER (GND)	12.6VAC FILAMENT
8	AUXILIARY	SPEAKER
9	-130 V BIAS	SPEAKER GROUND
10	+650 VDC HV	N/C
11	+250 VDC LV	N/C
12	SPEAKER	N/C



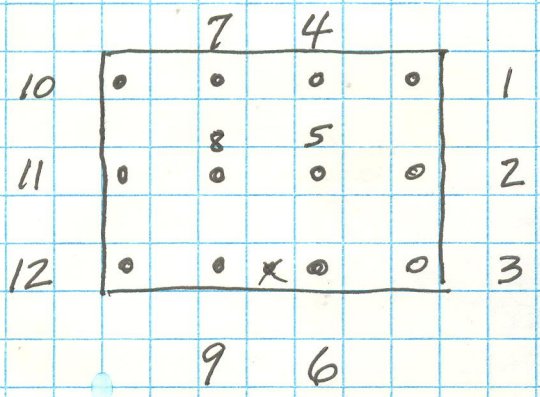
BACK SIDE OF MATING AC-4 PLUG



INSIDE VIEW OF ADAPTER BOX

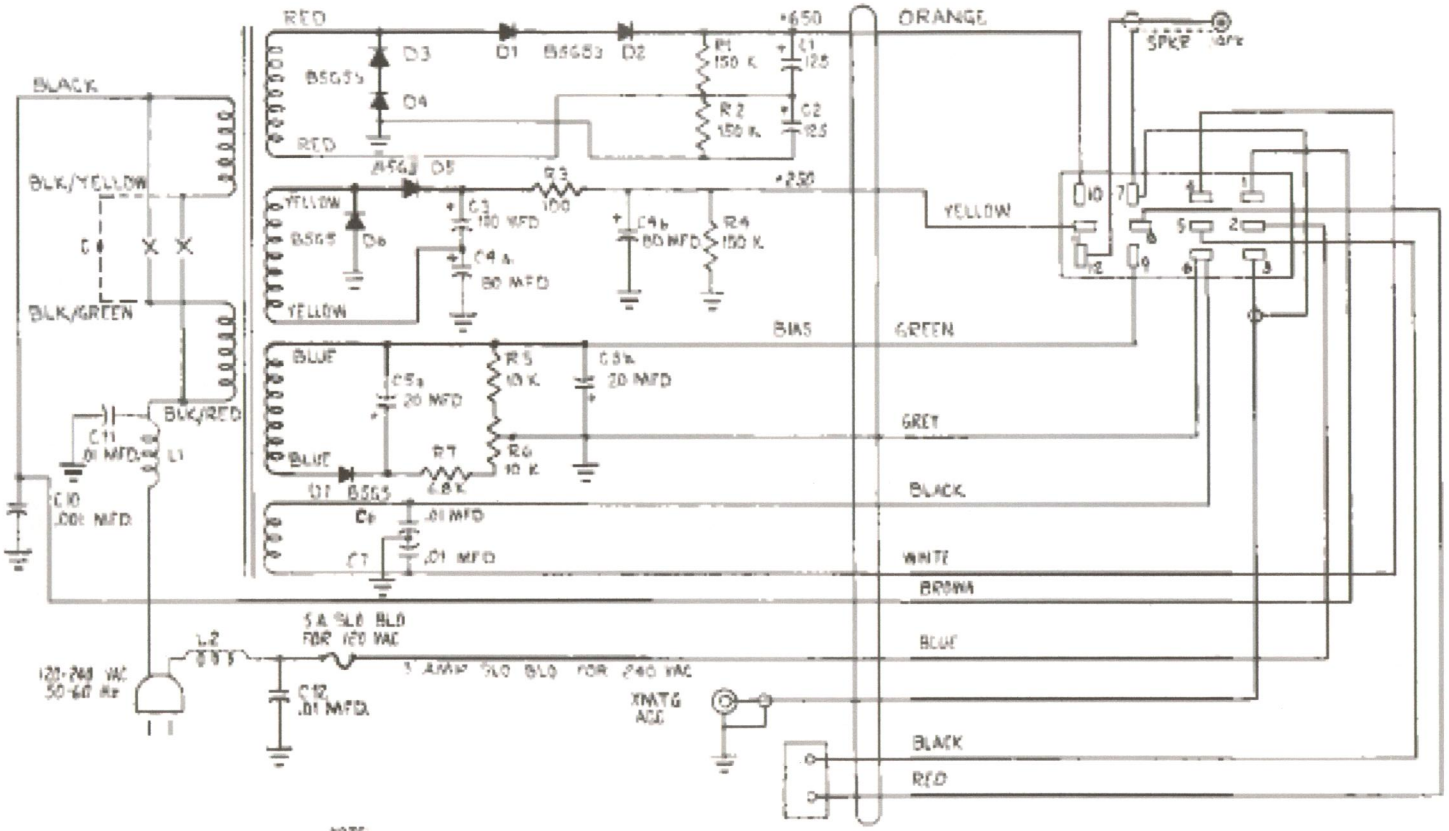
PIN 1	~ SWITCH	(BLUE)	PIN 9	-130VDC BIAS	(GREEN)
PIN 2	~ SWITCH	(BROWN)	PIN 10	+650VDC HV	(RED ON GREY TERM)
PIN 4	~ FILAMENT	(WHITE)	PIN 11	+250VDC LV	(ORANGE)
PIN 6	~ GROUND	(BLACK	PIN 12	SPEAKER	(YELLOW)

BACKSIDE OF PLUG GOING TO THE SR-150



PINS 10, 11, 12 ARE FOR AN EXTERNAL RELAY.

PIN 1	+650VDC	HV (RED)	PIN 5	SWITCH	(BLUE)
PIN 2	+250VDC	LV (ORANGE)	PIN 6	SWITCH	(BROWN)
PIN 3	GROUND	(BLACK)	PIN 7	FILAMENT	(WHITE)
PIN 4	-130VDC	BIAS (GREEN)	PIN 8	SPEAKER	(YELLOW)



NOTE:
FOR 240 VAC OPERATION DISCONNECT WIRES MARKED —x— AND CONNECT ------ AN EXTRA TERMINAL IS PROVIDED FOR CONNECTION C.

AC-4 Power Supply Schematic

PIN 1 SWITCH
PIN 2 SWITCH
PIN 3 AGC
PIN 4 12.6VAC
PIN 5 AUX
PIN 6 GROUND
PIN 7 SPEAKER GND
PIN 8 AUX
PIN 9 -130V BIAS
PIN 10 +650 VDC
PIN 11 +250 VDC
PIN 12 SPEAKER

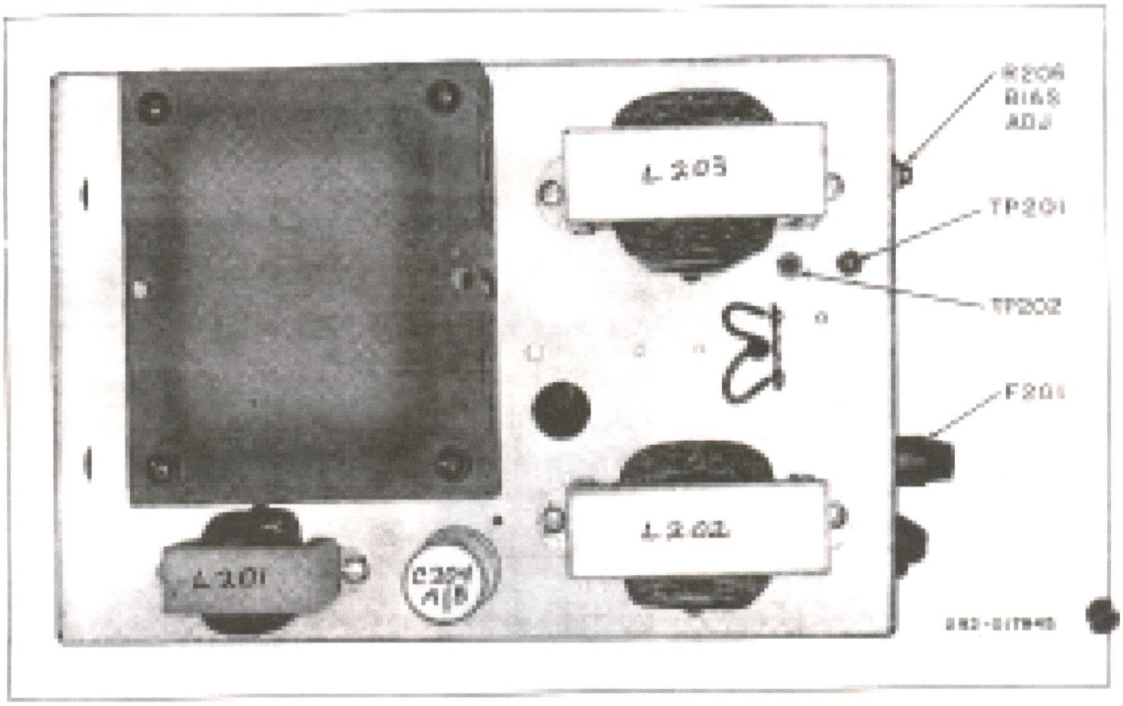


Figure 14. Top Chassis View of Model PS-130/135 AC Power Supply

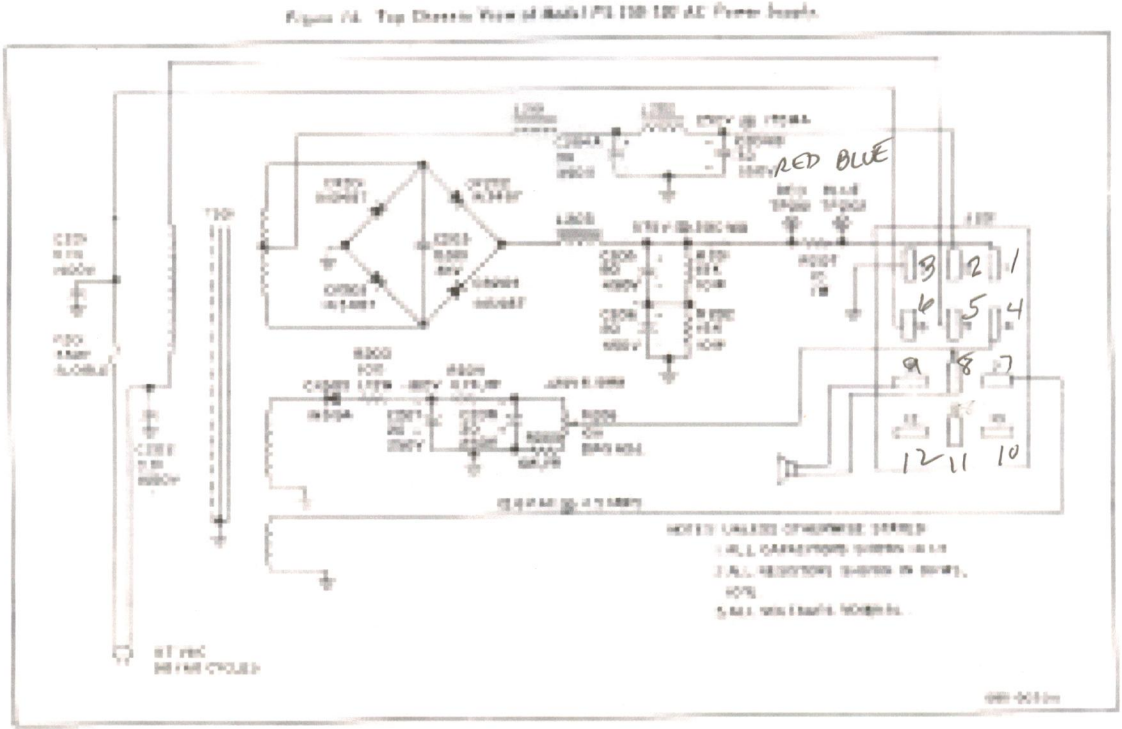


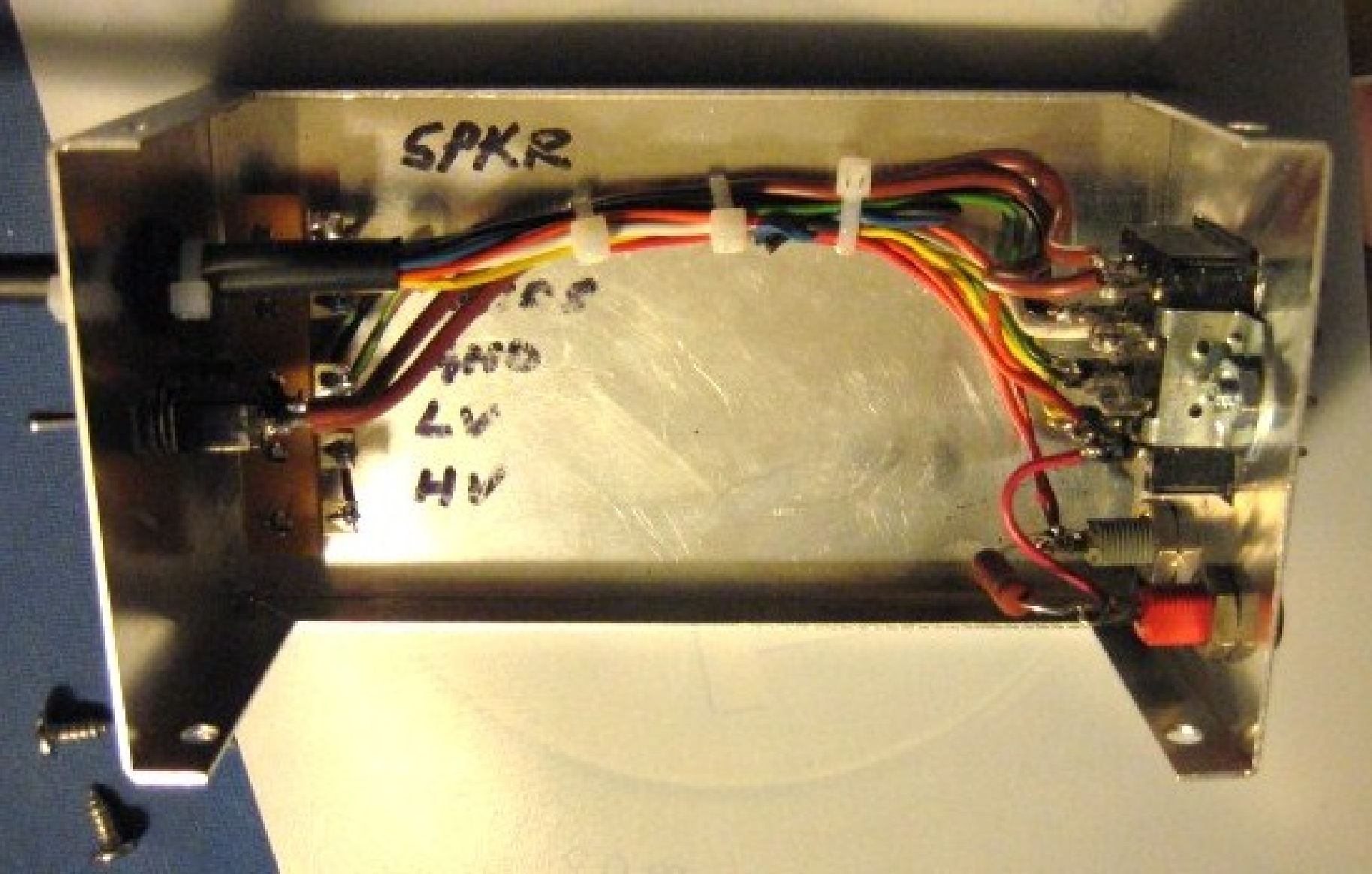
Figure 15. Schematic Diagram of Model PS-130/135 AC Power Supply

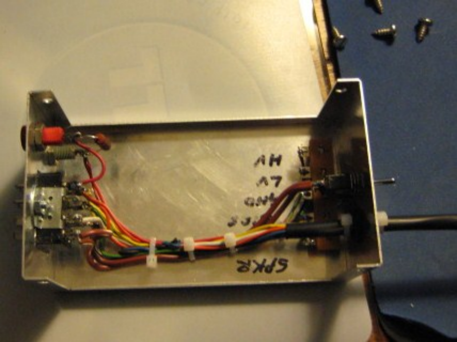
PIN 1 = +575V @ 200MA
PIN 2 = +250V @ 175MA
PIN 3 = GROUND
PIN 4 = -130V @ 5MA
PIN 5 = POWER SWITCH
PIN 6 = POWER SWITCH

PIN 7 = 12.6VAC @ 4.5 AMPS
PIN 8 = SPEAKER
PIN 9 = SPEAKER
PIN 10 = N/C
PIN 11 = N/C
PIN 12 = N/C


DELL
ON


AC4


SPKR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