SPECIFICATIONS

Output Voltage	13.8 VDC regulated (adjustable).
Maximum Output Current	20 amperes intermittent. 8 amperes continuous.
Power Requirements	110 to 130 VAC, 6 amperes; or 220 to 260 VAC, 3 amperes; 50/60 Hz maximum.
Over Voltage Protection	Crow bar circuit will blow 20-ampere fuse if the output exceeds 15.5 volts.
Regulation	Less than 2% from no load to 20 amperes.
Ripple	Less than 1% at 20 amperes.
Fuses	7-amp, 3 AG, slow-blow primary. 20-amp, 3 AG, output.
Dimensions	5-1/2" high × 9-1/4" wide × 10-1/4" deep. (13.97 cm H × 23.49 cm W × 26.03 cm D).
Net Weight	23 lbs. (10.4 kg).

The Heath Company reserves the right to discontinue products and to change specifications at any time without incurring any obligation to incorporate new features in products previously sold.

CIRCUIT DESCRIPTION

The line voltage is coupled through fuse F1 and the power switch in your transceiver to the power transformer. The power transformer steps the voltage down from 120 VAC (or 240 VAC) to approximately 14 volts AC. This voltage is then rectified by bridge rectifier BR1 and filtered by capacitors C1 and C2 to provide a DC voltage. This voltage is then coupled through Fuse F2 to the regulator circuit.

Transistors Q1, Q2, and Q3 form a Darlington-type regulation circuit that provides high gain. Q1 and Q2 are in parallel in a series regulation circuit. The output voltage from this circuit is controlled by the base bias to Q3, which is provided by integrated circuit U1.

U1 has a zener reference diode built into it. This integrated circuit samples the output voltage which is coupled back through resistors R6, R5, R3, and R4, and compares it to the internal reference voltage. Then U1 automatically adjusts the bias voltage to Q3 so the output voltage will remain fixed. The sensing voltage is taken from the load end of the power cable so any voltage that is lost due to cable length is accounted for.

F1
7-AMPERE
SLOW-BLOW

T1

BR1
57-88

120 VAC
WIRING

26

R13
1500
2-WATT

C1
10,000

C2
10,000

F2
20 AMPERE
REGULAR

Q1
417-254

13.8 *

R1
.0825
20W

SEE NOTE
#2

13.8 *

13.8 *

R2
.0825
20W

Q2
417-254

C3
.1

14.2

C

B

E

D2
57-65

COMMON
GROUND
BUS

Q3
417-215

D1
57-65

Q4
57-86

14.8

2

R7
22

C4
10

C5
.1

4

1

25

U1
442-626

3

C6
1200

D3
56-56

R8
1000

R4
10K

R3
511
1%

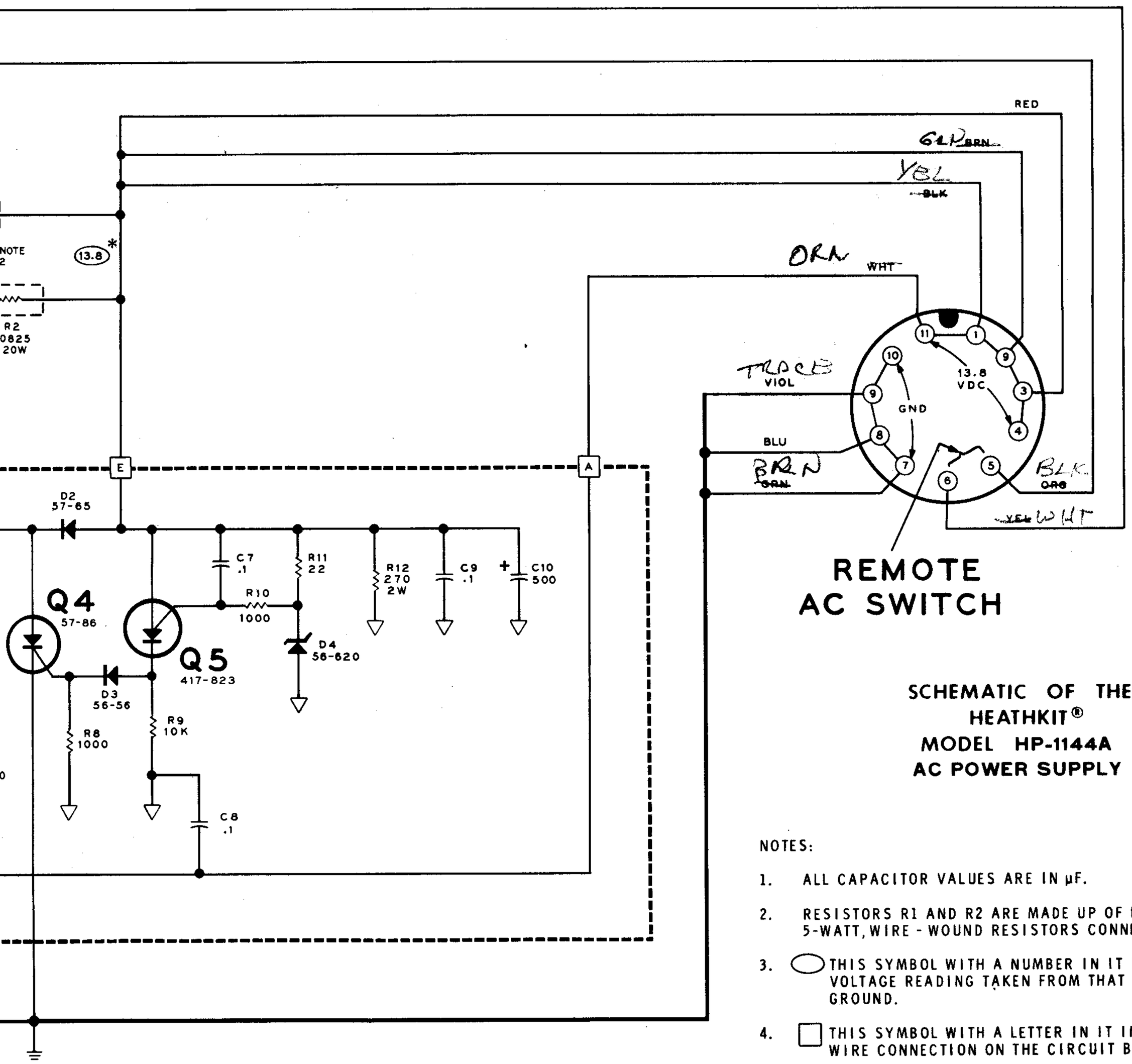
R5
68.1
1%

R6
909
1%

F1
4-AMPERE
SLOW-BLOW

T1

240 VAC WIRING



SCHEMATIC OF THE HEATHKIT® MODEL HP-1144A AC POWER SUPPLY

NOTES:

1. ALL CAPACITOR VALUES ARE IN µF.
2. RESISTORS R1 AND R2 ARE MADE UP OF FOUR .33Ω, 5-WATT, WIRE - WOUND RESISTORS CONNECTED IN PARALLEL.
3. ⬭ THIS SYMBOL WITH A NUMBER IN IT INDICATES A DC VOLTAGE READING TAKEN FROM THAT POINT TO CHASSIS GROUND.
4. ☐ THIS SYMBOL WITH A LETTER IN IT INDICATES A WIRE CONNECTION ON THE CIRCUIT BOARD.
5. * VOLTAGE ADJUSTABLE

IN CASE OF DIFFICULTY

CAUTION: When the line cord is connected to an AC outlet, AC voltage will be present at several places on the chassis. Be careful you do not contact this voltage or an electrical shock can result.

NOTE: Refer to the "X-Ray View" (Page 14) for the physical location of parts on the circuit board.

1. Recheck the wiring. Trace each lead in color pencil on the Pictorial as it is checked. It is frequently helpful to have a friend check your work. Someone who is not familiar with the unit may notice something you have consistently overlooked.

2. About 90% of the kits that are returned for repair do not function properly due to poor connections and soldering. Therefore, you can eliminate many troubles by carefully inspecting the connections to make sure they are soldered. Reheat any doubtful connections. Be sure all the wires are soldered at places where several wires are connected.

3. Be sure the transistors and the integrated circuit are in the proper locations (correct part number and type number). Be sure that each transistor lead is in the right hole and has a good solder connection. Check the integrated circuit for proper positioning and for good contact at each pin connection.

4. Check capacitor values carefully. Be sure the proper part is wired into the circuit at each capacitor location. Check each electrolytic capacitor to be sure the lead near the positive (+) marking is at the correct position.

5. Check each resistor value carefully.

6. Be sure the correct diode is installed and that the banded end is positioned correctly.

7. Check all component leads connected to the circuit board.

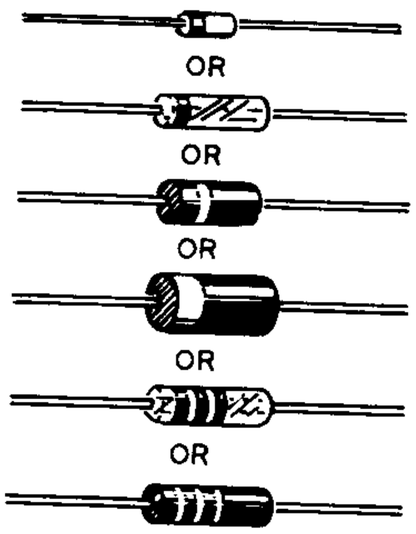
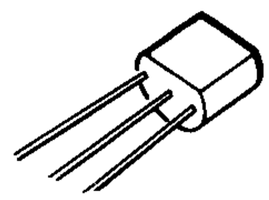
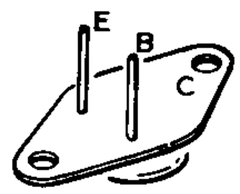
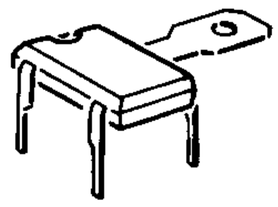
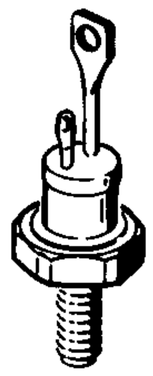
8. Make sure bare wires do not touch the chassis or other lugs and make sure all wires are properly soldered.

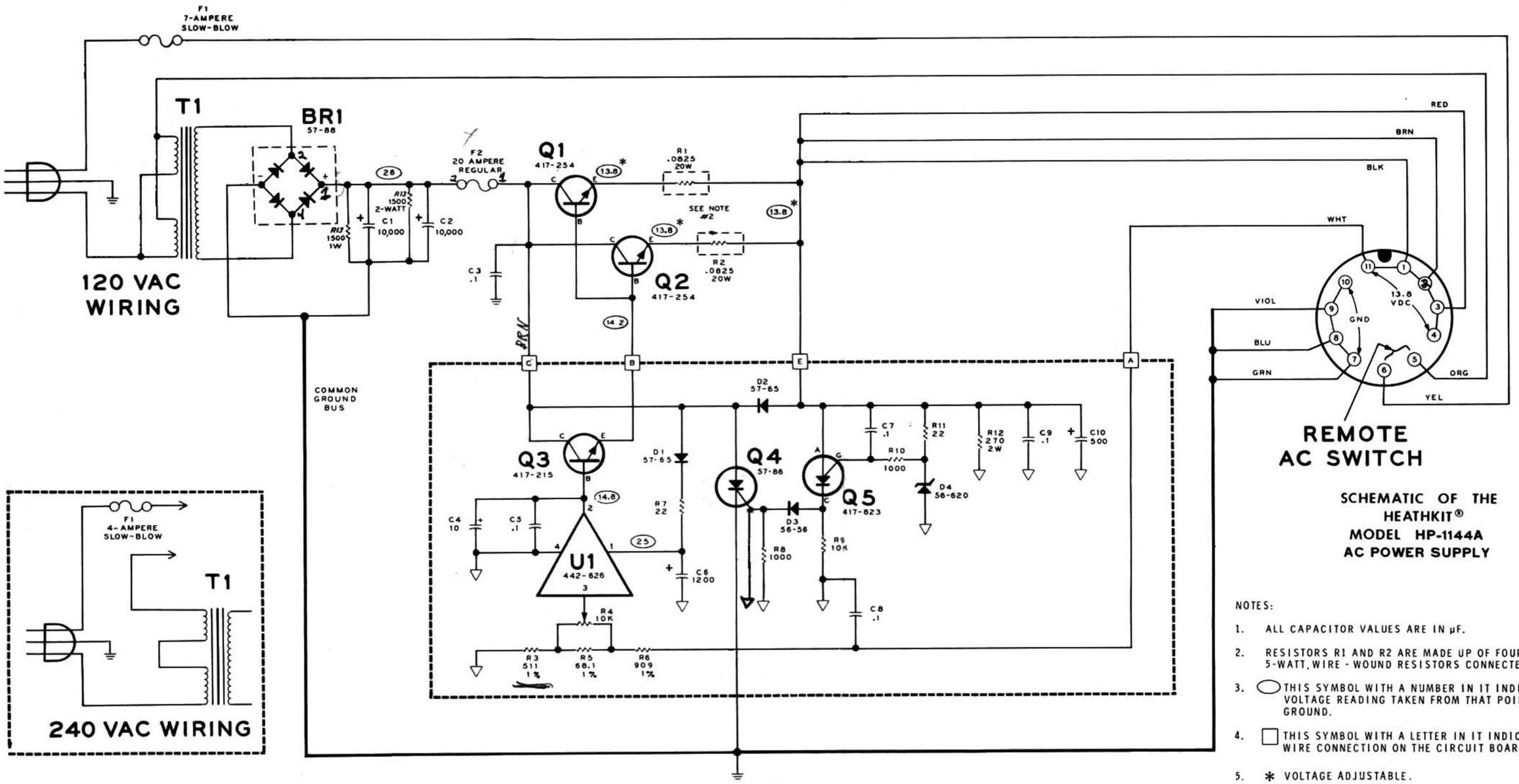
Troubleshooting Chart

PROBLEM	PROBABLE CAUSE
No output voltage.	1. F1. 2. F2.
Primary fuse F1 blows.	1. Bridge rectifier BR1. 2. Capacitor C1, C2.
Output fuse F2 blows.	1. Excessive loading (keydown). 2. Output shorted. 3. Q1, Q2. 4. U1. 5. Output voltage set too high. 6. D4 reversed.
Unable to obtain +13.8 VDC WITH Voltage Adjust control.	1. U1. 2. Q3. 3. R7. 4. D1.
Voltage drops significantly when transmitting.	1. U1. 2. Q1, Q2, Q3.

In an extreme case where you are unable to resolve a difficulty, refer to the "Customer Service" information inside the rear cover of the Manual. Your Warranty is located inside the front cover.

SEMICONDUCTOR IDENTIFICATION CHART

COMPONENT NUMBERS	HEATH PART NUMBER	REPLACED BY	DESCRIPTION	LEAD CONFIGURATION
D1, D2	57-65	1N4002	DIODE	NOTE: HEATH PART NUMBERS ARE STAMPED ON MOST DIODES. 
D3	56-56	1N4149	DIODE	
D4	56-620		15V ZENER DIODE	
Q5	417-823	MPU131	TRANSISTOR	
Q1, Q2	417-254	MJ802	TRANSISTOR	
Q3	417-215	2N3055		
U1	442-626	MFC6030 78MGT4	INTEGRATED CIRCUIT	
Q4	57-86	NL576A	SCR	



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