POWER SUPPLY CIRCUIT BOARD

1845

PARTS LIST

Open the pack marked #3 and check each part against the following list. The key numbers correspond to the numbers on the Power Supply Circuit Board Parts Pictorial (Illustration Booklet, Page 8).

To order a replacement part, see "Replacement Parts" inside the rear cover. For prices, refer to the separate "Heath Parts Price List."

RESISTORS

All resistors are 5% (fourth band gold) unless designated 10% (fourth band silver).

NOTE: The resistors may be packed in more than one envelope (stamped RES). Open all the resistor envelopes in this pack before you check the resistors against the Parts List.

1/2-Watt

KEY No.	HEATH Part No.	QTY.	DESCRIPTION	CIRCUIT Comp. No.
A1	6-510	1	51 Ω (Grn-Brn-Blk)	R322
A1	6-471	1	470 Ω (Yel-Viol-Brn)	R332
A1	6-511	1	510 Ω (Grn-Brn-Brn)	R325
A1	6-561	1	560 Ω (Grn-Blu-Brn)	R307
A1	6-102	3	1000 Ω (Brn-Blk-Red)	R311, R314, R320
A1	6-152	1	1500 Ω (Brn-Grn-Red)	R341
A1	6-182	3	1800 Ω (Brn-Gry-Red)	R312, R313, R342
A1	6-222	1	2200 Ω (Red-Red-Red)	R317
A1	6-432	1	4300 Ω (Yel-Org-Red)	R334
A1	6-472	1	4700 Ω (Yel-Viol-Red)	R315
A1	6-562	1	5600 Ω (Grn-Blu-Red)	R316
A1	6-682	2	6800 Ω (Blu-Gry-Red)	R335, R336
A1	6-103	1	10 kΩ (Brn-Blk-Org)	R331
A1	6-123	1	12 kΩ (Brn-Red-Org)	R326
A1	6-153	2	15 kΩ (Brn-Grn-Org)	R328, R329
A1	6-183	1	18 kΩ (Brn-Gry-Org)	R321
A1	6-273	1	27 kΩ (Red-Viol-Org)	R327
A1	6-473	2	47 kΩ (Yel-Viol-Org)	R318, R338

Resistors (Cont'd.)

KEY No.	HEATH Part No.	QTY.	DESCRIPTION	CIRCUIT Comp. No.
A1	6-104	3	100 kΩ (Brn-Blk-Yel)	R319, R333, R339
A1	6-474	1	470 kΩ (Yel-Viol-Yel)	R324
A1	6-105	1	1 MΩ (Brn-Blk-Grn)	R323

Other Resistors

KEY No.	HEATH Part No.	QTY.	DESCRIPTION	CIRCUIT Comp. No.
A2	1-30-1	1	220 kΩ, 1-watt, 10% (Red-Red-Yel)	R308
A2	1-32-1	3	470 kΩ, 1-watt, 10% (Yel-Viol-Yel)	R301, R309, R310
A2	3-5-2	1	2.2 Ω, 2-watt, 10% (Red-Red-Gold)	R302
A2	3-11-2	1	3.9 Ω, 2-watt, 10% (Org-Wht-Gold)	R303
A3	5-1-3	1	2700 Ω (2.7 kΩ), 3-watt, 10%	R306

CAPACITORS

Ceramic

KEY No.	HEATH Part No.	QTY.	DESCRIPTION	CIRCUIT Comp. No.
B1	21-33	1	3.3 pF	C317
B1	21-120	2	500 pF	C314, C315
B1	21-141	1	.0033 μF	C319
B1	21-16	1	.01 μF	C318

Other Capacitors

KEY No.	HEATH Part No.	QTY.	DESCRIPTION	CIRCUIT Comp. No.
B2	28-2	1	1 pF phenolic (Brn-Blk-Wht)	C312
B3	27-47	1	.1 μF Mylar	C316
B4	23-115	3	.1 μF paper	C301, C302, C303
B5	25-837	3	1.5 μF Tantalum	C309, C310, C311
B6	25-288	1	25 μF electrolylic	C320
B7	25-241	4	1200 μF electrolytic	C304, C305, C306, C307

DIODES

C1	56-26	1	1N191 (Brn-Wht-Brn)	D314
C1	56-56	7	1N4149	D312, D315, D316, D318 D319, D320, D321
C1	56-89	1	GD510	D313
C1	56-634	2	2EZ82D5	D311, D317
C1	57-27	8	IN2071	D303, D304, D305, D306 D307, D308, D309, D310
C1	57-52	2	D07	D301, D302

TRANSISTORS—INTEGRATED CIRCUITS (IC's)

NOTE: Transistors and integrated circuits are marked for identification in one of the following four ways.

1. Part number.
2. Type number. (On integrated circuits this refers only to the numbers and letters listed. Any additional letters or numbers on an IC are not significant.)
3. Part number and type number.
4. Part number with a type number other than the one listed.

D1	417-237	2	SE6020 transistor	Q301, Q302
D1	417-295	1	MPSL51 transistor	Q305
D1	417-811	4	MPSL01 transistor	Q303, Q304, Q306, Q307
D2	442-617	2	UA78	U301, U302
D2	442-618	1	UA79	U303

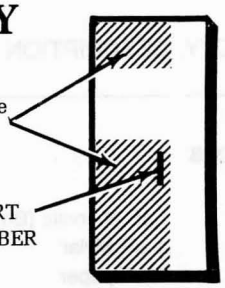
MISCELLANEOUS

E1	10-312	1	10 kΩ control	R340
E1	10-941	1	100 kΩ control	R330
E2	215-629	3	Heat sink	
E3	250-49	6	3-48 $\times$ 1/4" screw	
E4	252-1	6	3-48 nut	
E5	254-7	6	#3 lockwasher	

PART FROM FINAL PACK

	85-2045-1	1	Power supply circuit board	
E6	354-7	6	Cable tie	

STEP-BY-STEP ASSEMBLY



The steps performed in this Pictorial are in this area of the circuit board.

START

( ) R311: 1000 Ω (Brn-Blk-Red).

( ) R314: 1000 Ω (Brn-Blk-Red).

( ) R313: 1800 Ω (Brn-Gry-Red).

( ) R312: 1800 Ω (Brn-Gry-Red).

( ) R315: 4700 Ω (Yel-Viol-Red).

NOTE: When you install a diode, always match the band on the diode with the band on the circuit board.

( ) D315: 1N4149 diode (#56-56).

( ) D314: 1N191 diode (Brn-Wht-Brn, #56-26).

( ) Solder the leads to the foil and cut off the excess lead lengths.

( ) 1-1/4" Brn wire.

( ) D311: 2EZ82D5 zener diode (#56-634).

( ) R339: 100 kΩ (Brn-Blk-Yel).

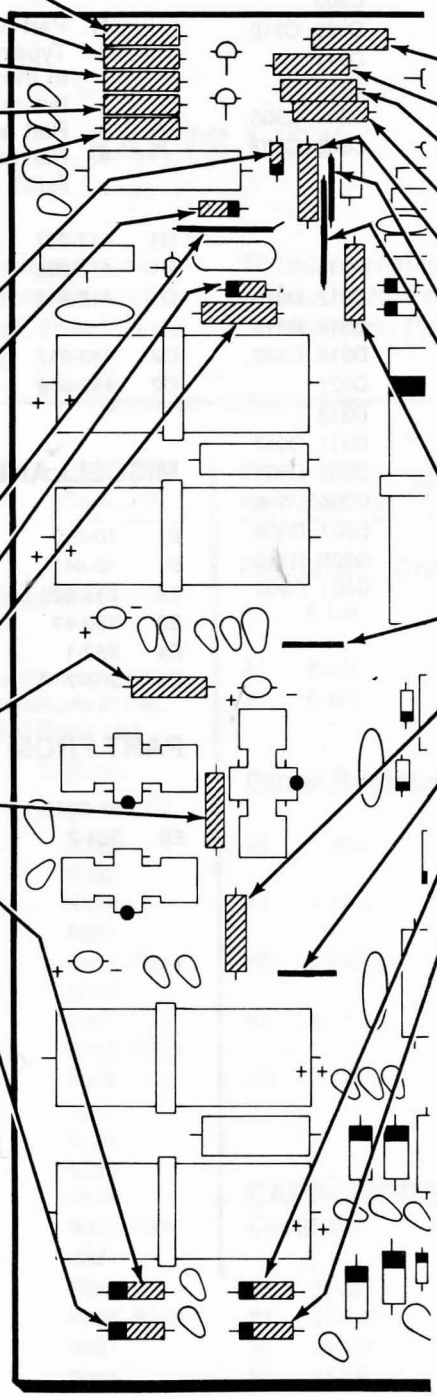
( ) R336: 6800 Ω (Blu-Gry-Red).

( ) R335: 6800 Ω (Blu-Gry-Red).

( ) D304: 1N2071 diode (#57-27).

( ) D303: 1N2071 diode (#57-27).

( ) Solder the leads to the foil and cut off the excess lead lengths.



CONTINUE

( ) R320: 1000 Ω (Brn-Blk-Red).

( ) R319: 100 kΩ (Brn-Blk-Yel).

( ) R316: 5600 Ω (Grn-Blu-Red).

( ) R317: 2200 Ω (Red-Red-Red).

( ) R318: 47 kΩ (Yel-Viol-Org).

( ) 1" Brn wire.

( ) 1-1/4" Brn wire.

( ) Solder the leads to the foil and cut off the excess lead lengths.

( ) R328: 15 kΩ (Brn-Grn-Org).

( ) 1" bare wire.

( ) R334: 4300 Ω (Yel-Org-Red).

( ) 1" bare wire.

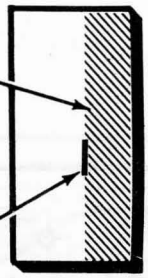
( ) D306: 1N2071 diode (#57-27).

( ) D305: 1N2071 diode (#57-27).

( ) Solder the leads to the foil and cut off the excess lead lengths.

PICTORIAL 3-1

The steps performed in this Pictorial are in this area of the circuit board.

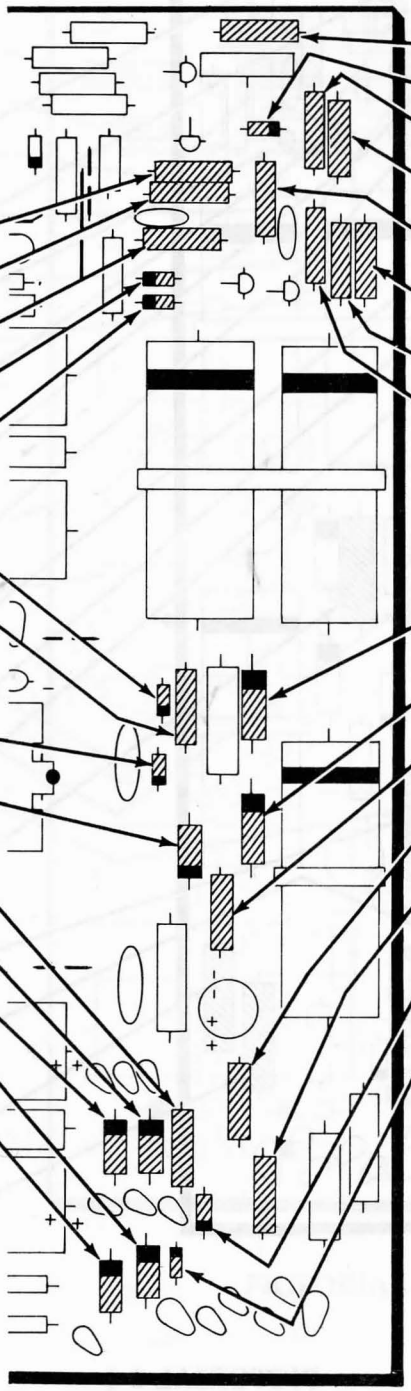


IDENTIFICATION DRAWING

PART NUMBER

START

- ( ) R321: 18 kΩ (Brn-Gry-Org).
- ( ) R326: 12 kΩ (Brn-Red-Org).
- ( ) R327: 27 kΩ (Red-Viol-Org).
- ( ) D318: 1N4149 diode (#56-56).
- ( ) D319: 1N4149 diode (#56-56).
- ( ) D316: 1N4149 diode (#56-56).
- ( ) R323: 1 MΩ (Brn-Blk-Grn).
- ( ) Solder the leads to the foil and cut off the excess lead lengths.
- ( ) D320: 1N4149 diode (#56-56).
- ( ) D317: 2EZ82D5 zener diode (#56-634).
- ( ) R307: 560 Ω (Grn-Blu-Brn).
- ( ) D310: 1N2071 diode (#57-27).
- ( ) D309: 1N2071 diode (#57-27).
- ( ) D308: 1N2071 diode (#57-27).
- ( ) D307: 1N2071 diode (#57-27).
- ( ) Solder the leads to the foil and cut off the excess lead lengths.



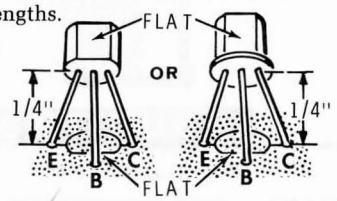
CONTINUE

- ( ) R322: 51 Ω (Grn-Brn-Blk).
- ( ) D321: 1N4149 diode (#56-56).
- ( ) R341: 1500 Ω (Brn-Grn-Red).
- ( ) R342: 1800 Ω (Brn-Gry-Red).
- ( ) R329: 15 kΩ (Brn-Grn-Org).
- ( ) R332: 470 Ω (Yel-Viol-Brn).
- ( ) R331: 10 kΩ (Brn-Blk-Org).
- ( ) R333: 100 kΩ (Brn-Blk-Yel).
- ( ) Solder the leads to the foil and cut off the excess lead lengths.
- ( ) D301: DO7 diode (#57-52).
- ( ) D302: DO7 diode (#57-52).
- ( ) R338: 47 kΩ (Yel-Viol-Org).
- ( ) R324: 470 kΩ (Yel-Viol-Yel).
- ( ) R325: 510 Ω (Grn-Brn-Brn).
- ( ) D313: GD510 diode (#56-89).
- ( ) D312: 1N4149 diode (#56-56).
- ( ) Solder the leads to the foil and cut off the excess lead lengths.

PICTORIAL 3-2

START

NOTE: When you install a transistor, align its flat with the flat on the board. Insert the leads into their correct E, B, and C holes. Position the transistor 1/4" above the board. Then solder the leads to the foil and cut off the excess lead lengths.



( ) Q303: MPSL01 transistor (#417-811).

( ) Q306: MPSL01 transistor (#417-811).

( ) Q305: MPSL51 transistor (#417-295).

( ) Q304: MPSL01 transistor (#417-811).

( ) Q302: SE6020 transistor (#417-237).

( ) Q301: SE6020 transistor (#417-237).

( ) Q307: MPSL01 transistor (#417-811).

( ) R306: 2700 Ω (2.7 k) 3-watt.

( ) R303: 3.9 Ω, 2-watt (Org-Wht-Gold).

( ) R301: 470 kΩ, 1-watt (Yel-Viol-Yel).

( ) R308: 220 kΩ, 1-watt (Red-Red-Yel).

( ) R302: 2.2 Ω, 2-watt (Red-Red-Gold).

( ) R310: 470 kΩ, 1-watt (Yel-Viol-Yel).

( ) R309: 470 kΩ, 1-watt (Yel-Viol-Yel).

( ) Solder the leads to the foil and cut off the excess lead lengths.

START

NOTE: Solder the pins of a control to the foil as it is installed.

( ) R340: 10 kΩ control (#10-312).

( ) R330: 100 kΩ control (#10-941).

( ) C318: .01 μF ceramic.

( ) C316: .1 μF Mylar.

( ) C312: 1 pF phenolic (Brn-Blk-Wht).

( ) C317: 3.3 pF ceramic.

( ) C319: .0033 μF ceramic.

NOTE: When you install a tantalum capacitor, match the positive (+) mark or color dot on the capacitor with the positive (+) mark on the circuit board.

( ) C311: 1.5 μF tantalum.

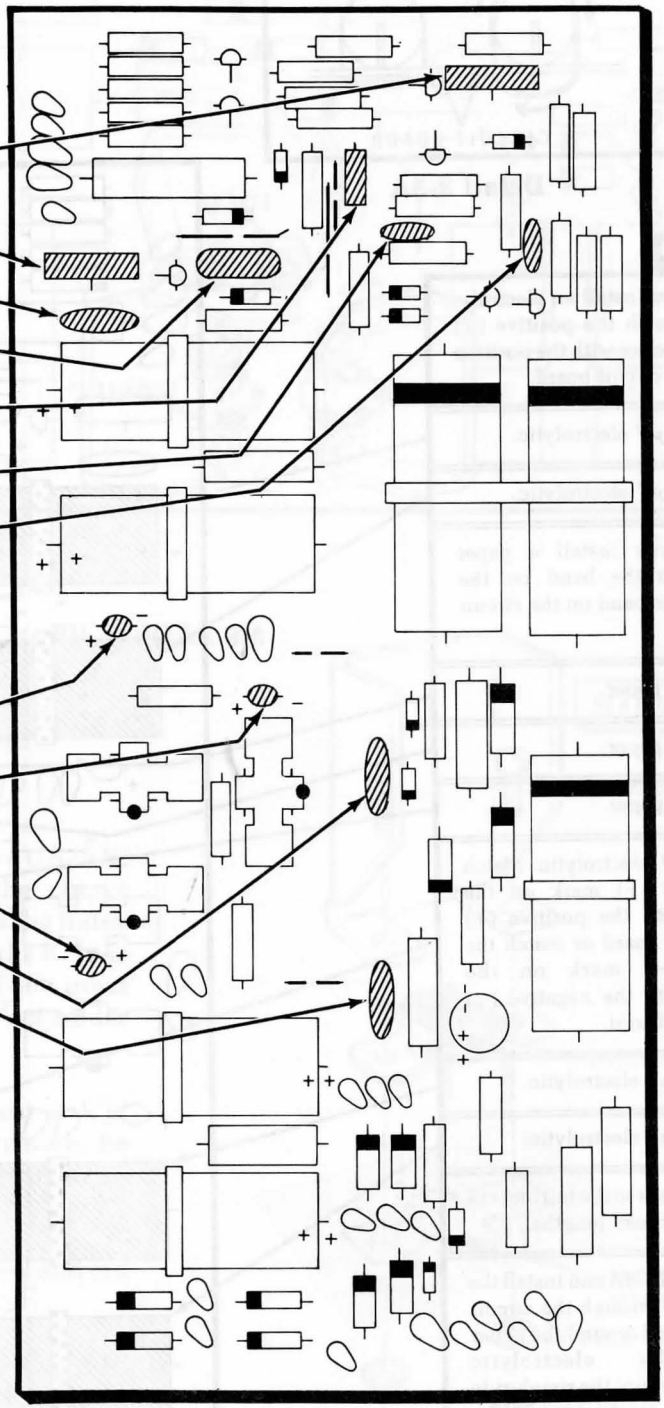
( ) C309: 1.5 μF tantalum.

( ) C310: 1.5 μF tantalum.

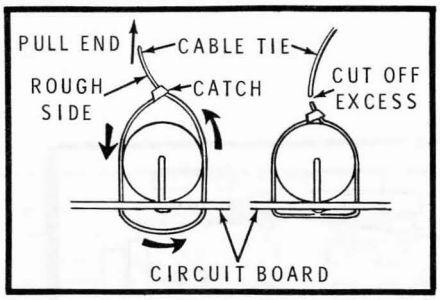
( ) C314: 500 pF ceramic.

( ) C315: 500 pF ceramic.

( ) Solder the leads to the foil and cut off the excess lead lengths.



PICTORIAL 3-4



Detail 3-5A

START

NOTE: When you install an electrolytic capacitor, match the positive (+) mark on the capacitor with the positive (+) mark on the circuit board.

( ) C305: 1200 μF electrolytic.

( ) C307: 1200 μF electrolytic.

NOTE: When you install a paper capacitor, match the band on the capacitor with the band on the circuit board.

( ) C303: .1 μF paper.

( ) C302: .1 μF paper.

( ) C301: .1 μF paper.

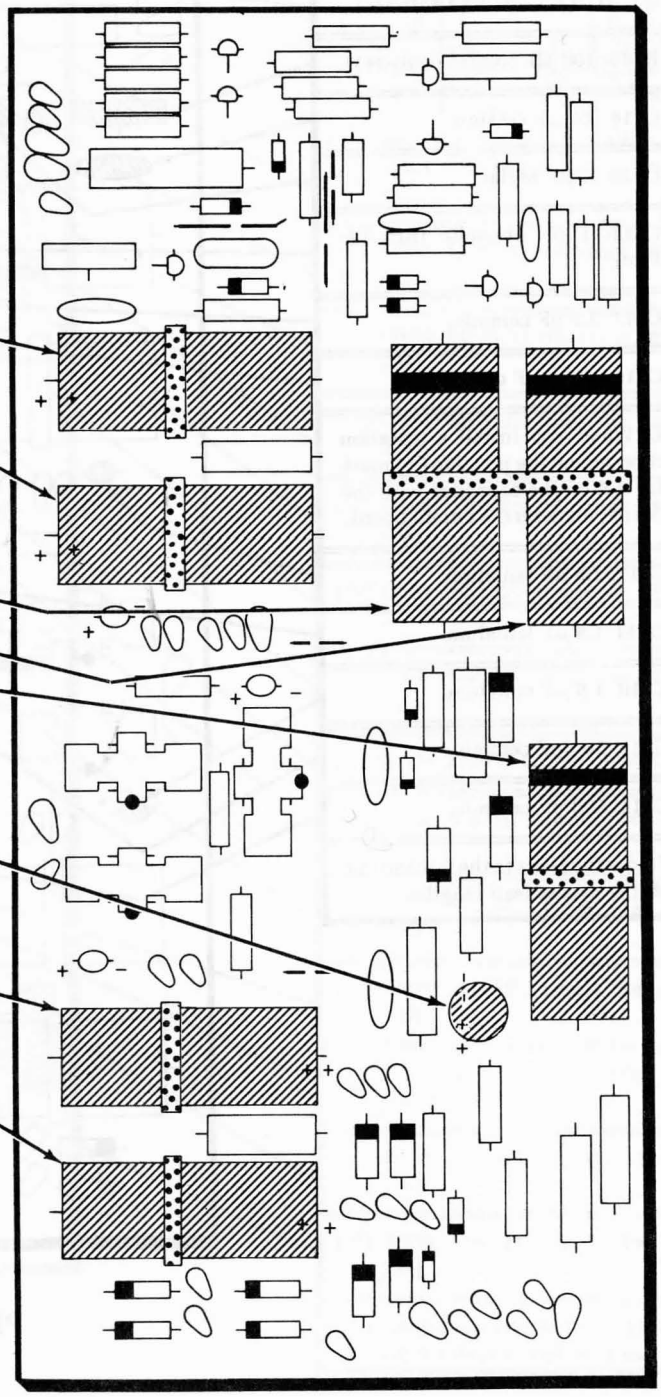
( ) C320: 25 μF electrolytic. Match the positive (+) mark on the capacitor with the positive (+) mark on the board **or** match the negative (−) mark on the capacitor with the negative (−) mark on the board.

( ) C306: 1200 μF electrolytic.

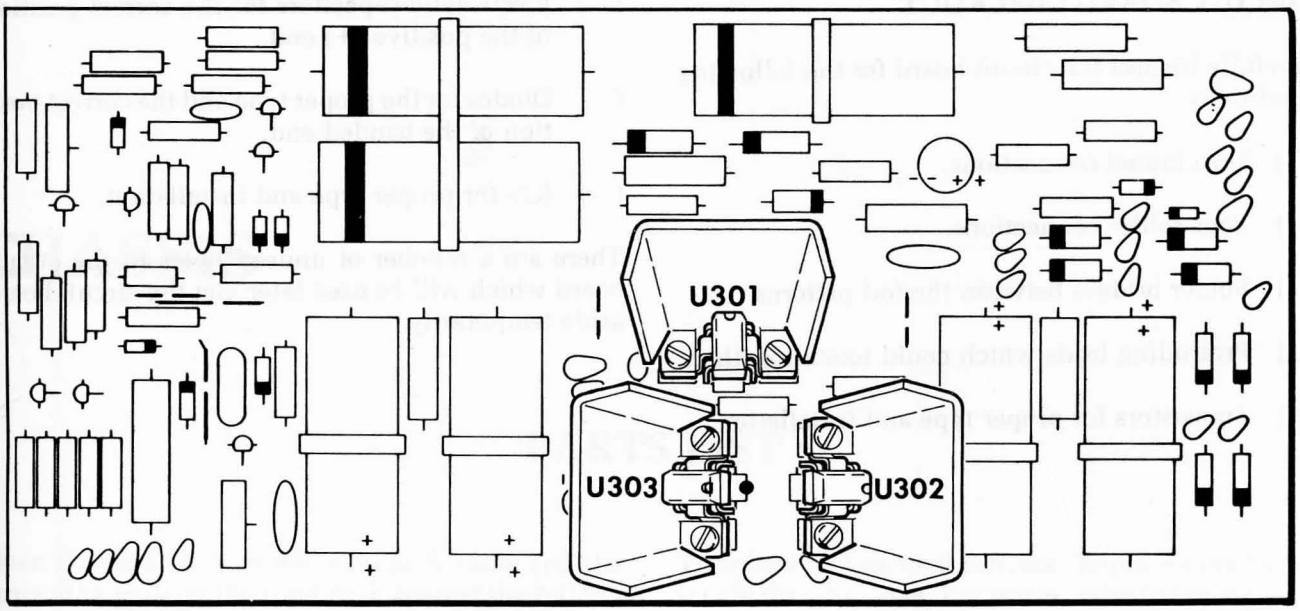
( ) C304: 1200 μF electrolytic.

( ) Solder the leads to the foil and cut off the excess lead lengths.

( ) Refer to Detail 3-5A and install the six cable ties through the circuit board holes and around the paper and tubular electrolytic capacitors. Be sure the rough side of the cable tie is toward the capacitor. Fit the cable tie end through the catch and pull the cable tie tight. Then cut off the excess cable tie.



PICTORIAL 3-5



POWER SUPPLY CIRCUIT BOARD

PICTORIAL 3-6

Refer to Pictorial 3-6 for the following steps.

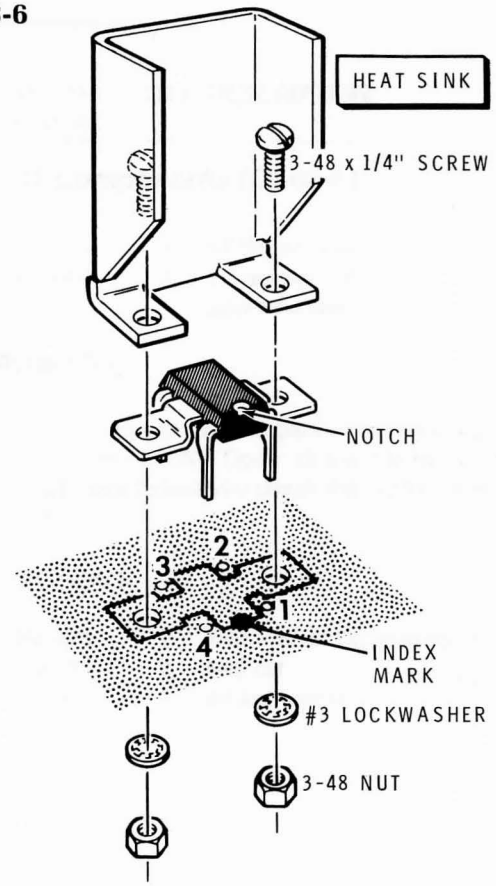
( ) U303: Refer to Detail 3-6A and install a UA79 IC (#442-618) at location U303 on the circuit board. Match the notch in the IC with the index mark on the circuit board and insert the IC pins in their holes in the circuit board. Then press the IC tight against the board but do not solder its pins at this time.

( ) Refer to Detail 3-6A and mount a heat sink at location U303 with 3-48 × 1/4" hardware. Be sure to position the heat sink as shown in Pictorial 3-6.

( ) Now solder the pins of the IC to the foil and cut off the excess pin lengths.

( ) U301: In the same manner, install a UA78 IC (#442-617) and a heat sink at location U301. Position the heat sink as shown.

( ) U302: In the same manner, install a U78 IC (#442-617) and a heat sink at location U302. Position the heat sink as shown.



Detail 3-6A

CIRCUIT BOARD CHECKOUT

Carefully inspect the circuit board for the following conditions.

( ) Unsoldered connections.

( ) Poor solder connections.

( ) Solder bridges between the foil patterns.

( ) Protruding leads which could touch together.

( ) Transistors for proper type and installation.

( ) Electrolytic capacitors for the correct position of the positive (+) end.

( ) Diodes for the proper type and the correct position of the banded end.

( ) IC's for proper type and installation.

There are a number of unused holes in the circuit board which will be used later. Set the circuit board aside temporarily.