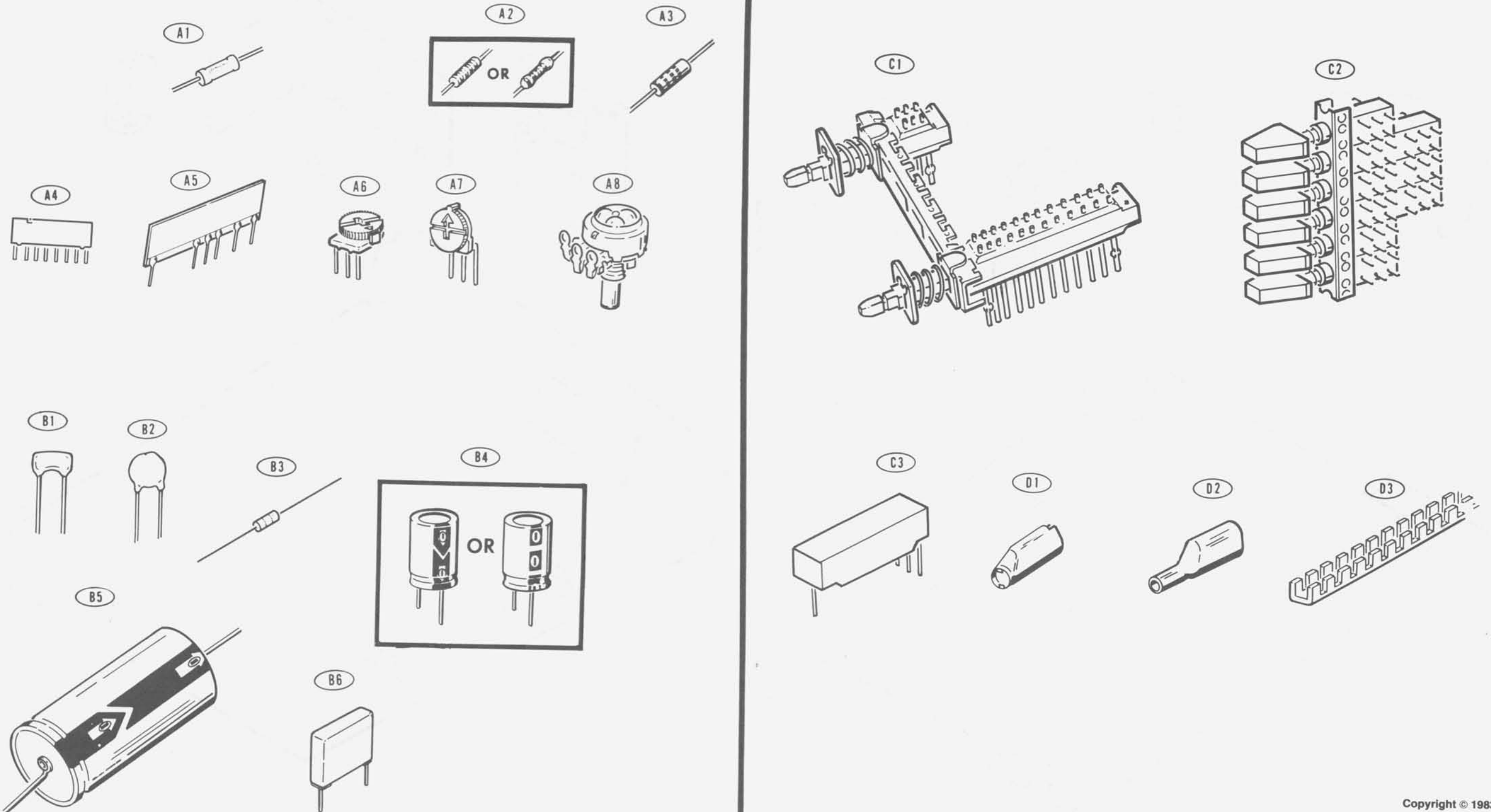
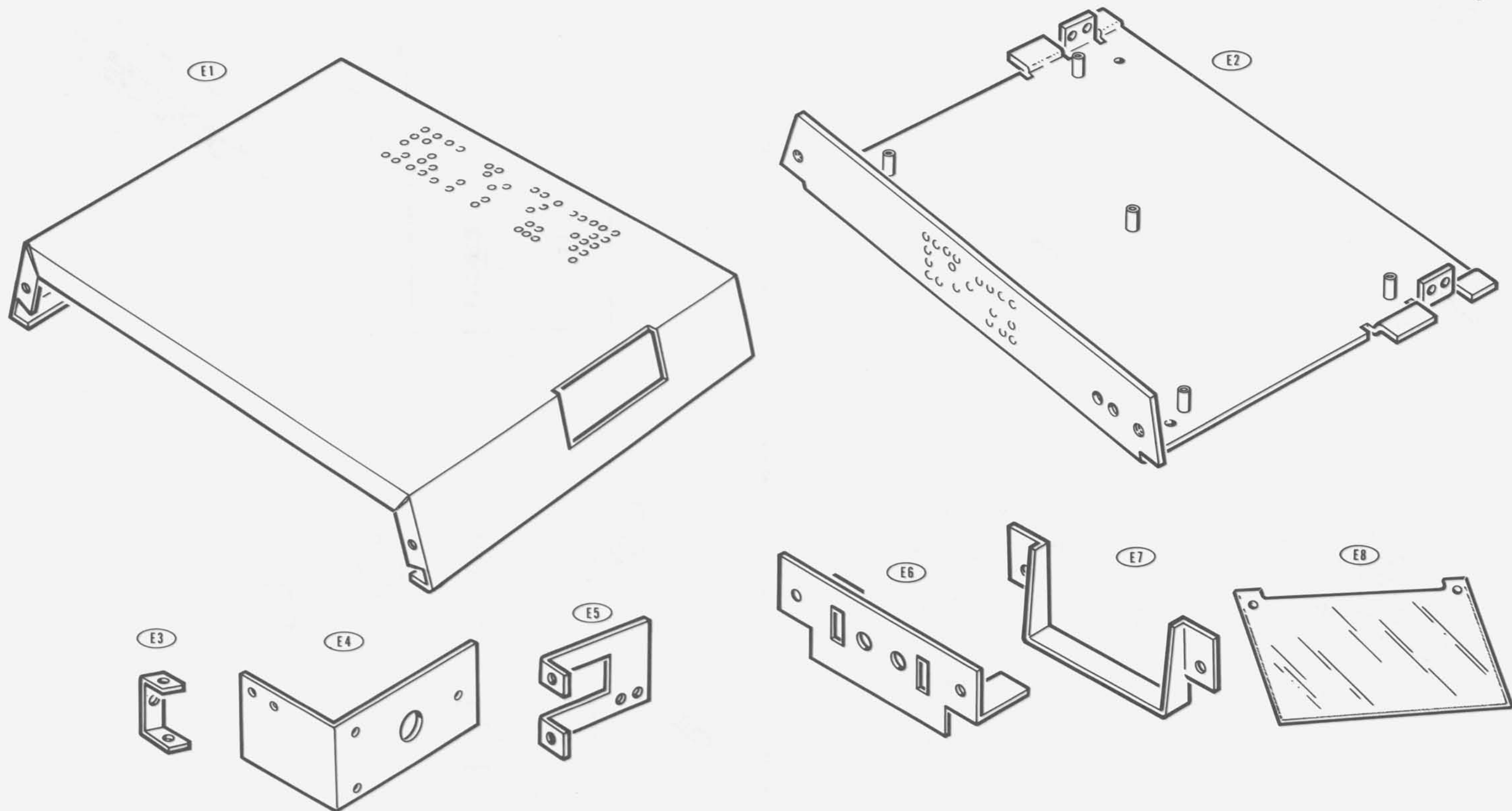
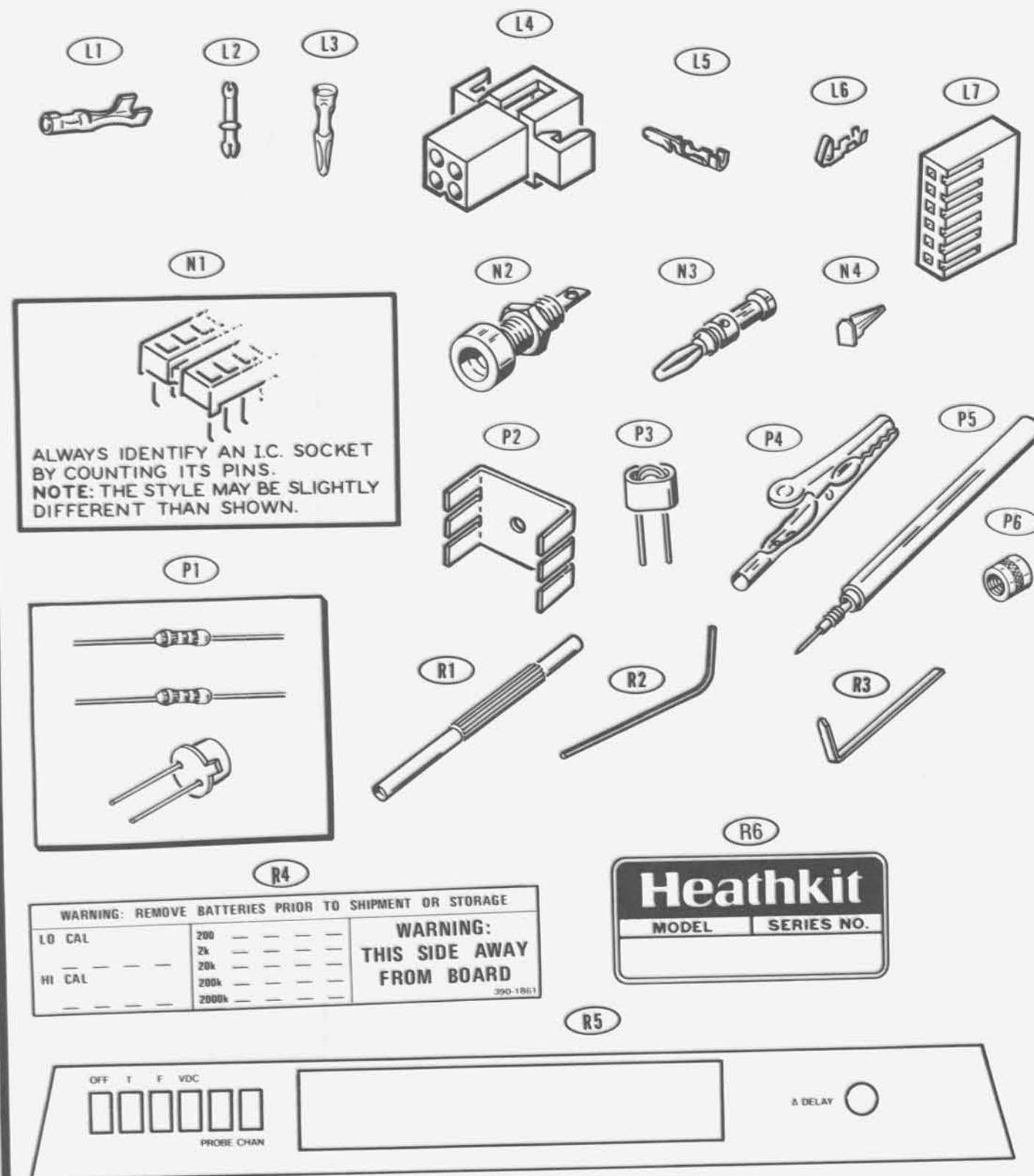
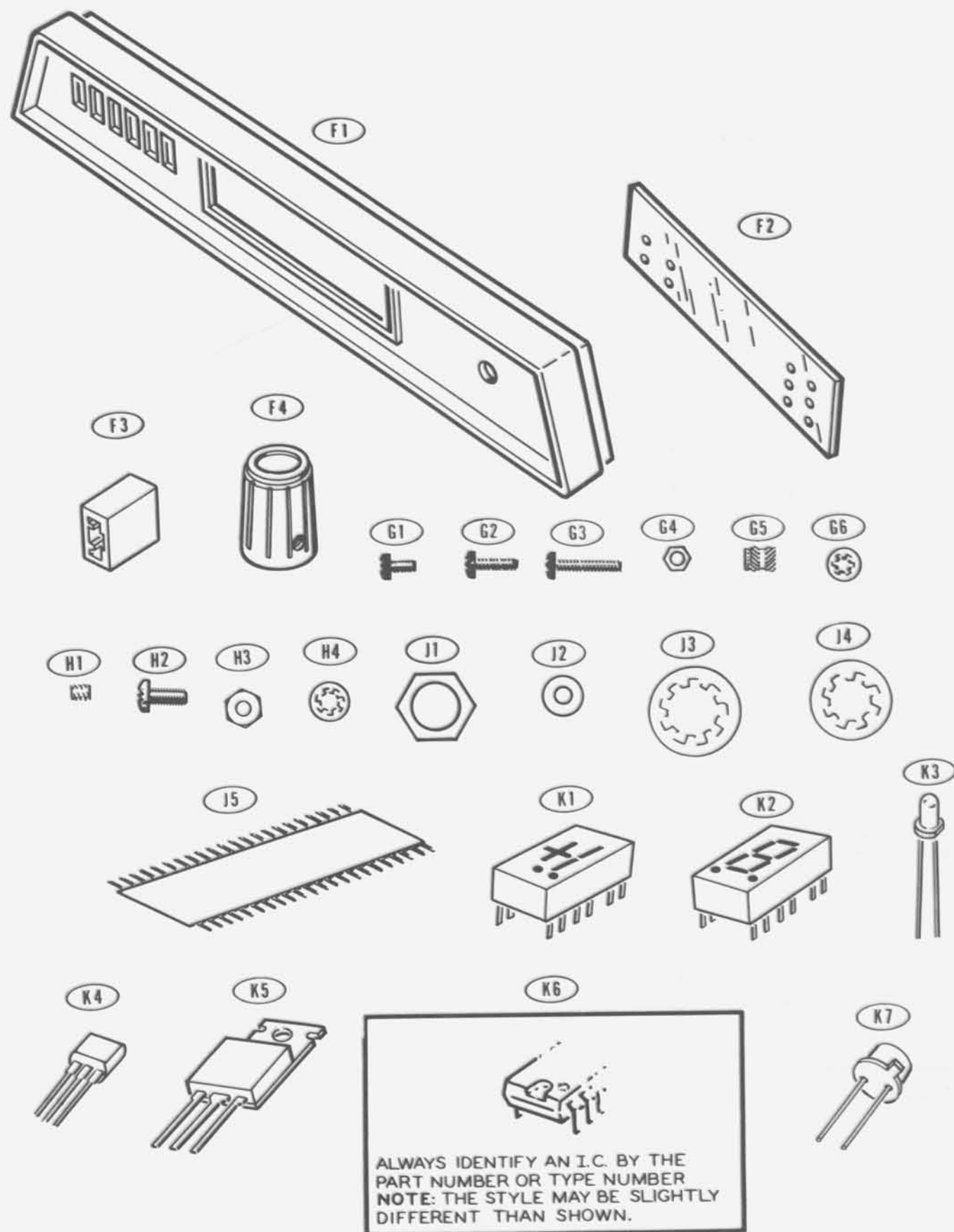


ILLUSTRATION BOOKLET

PARTS PICTORIAL







IC INSTALLATION

CAUTION: Integrated Circuits (IC's) are complex electronic devices that perform many complicated functions in the circuit. However, these devices can be damaged during installation. Read all of the following information before you install any IC's.

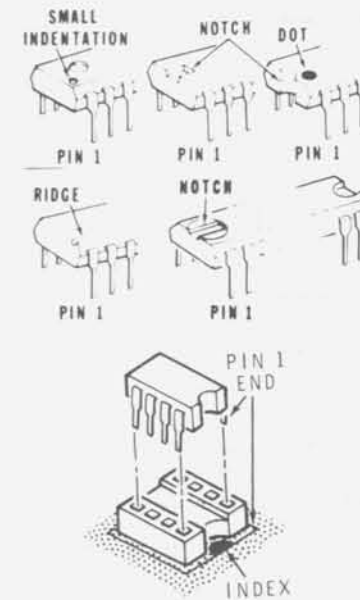
The pins on the IC's are bent out at an angle so they do not line up with the holes in the IC socket. DO NOT try to install the IC without first bending the pins. To do so may damage the IC pins or the socket, causing intermittent contact.



Before you install an IC, lay it down on its side as shown and very carefully roll it toward the pins to bend the lower pins into line. Then turn the IC over and bend the pins to the other side in the same manner.



Make sure that the pin 1 end of the IC is positioned over the index mark on the circuit board. Also make sure that all of the pins are started into the socket. Then press the IC firmly into the socket. NOTE: An IC pin can become bent under the IC and it will appear as though it is correctly installed in the socket.



An IC lifter is supplied for removing IC's from their sockets.

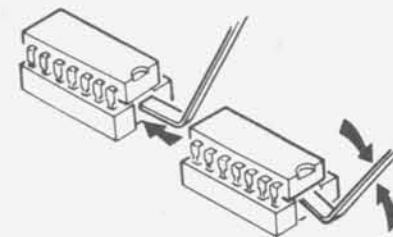
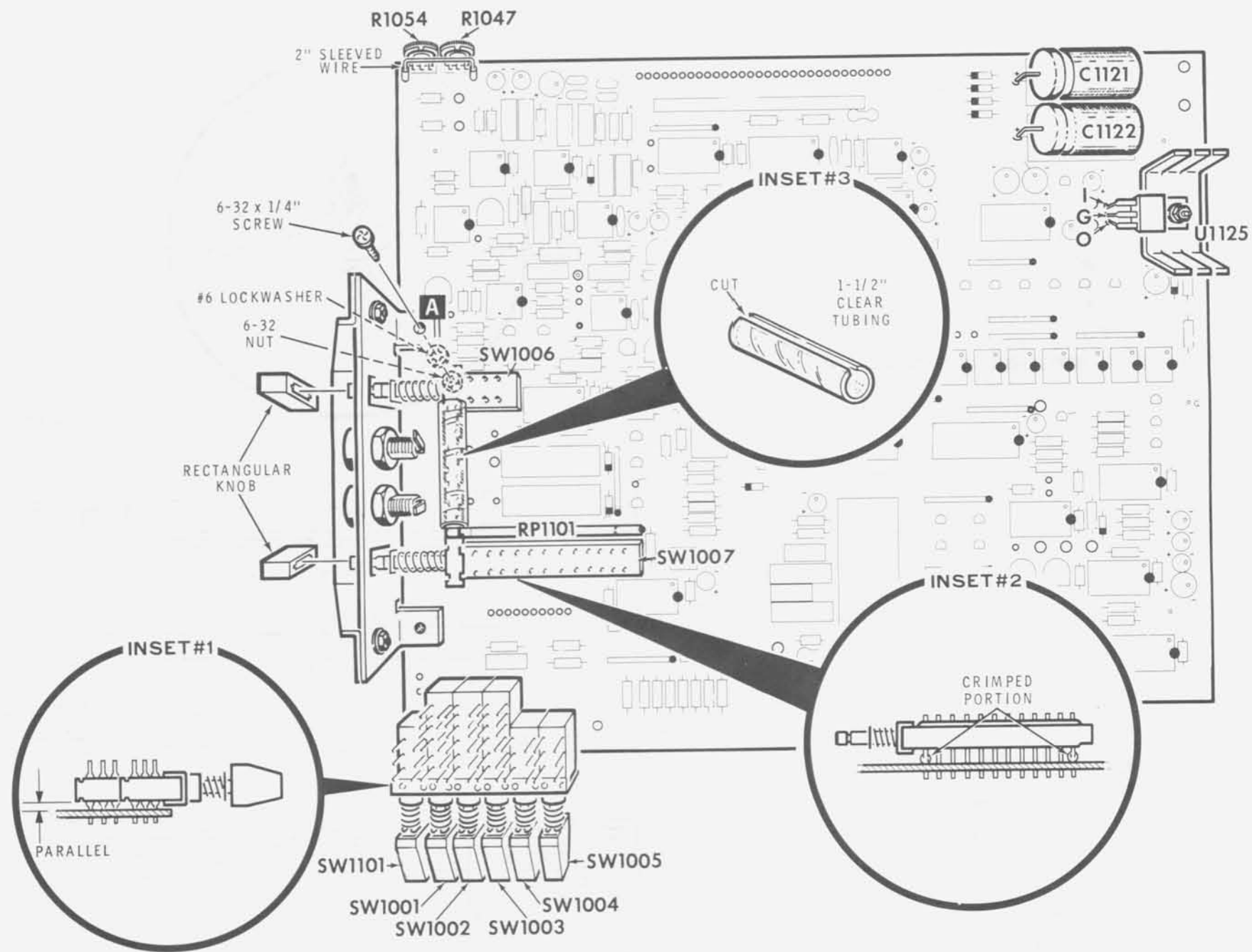
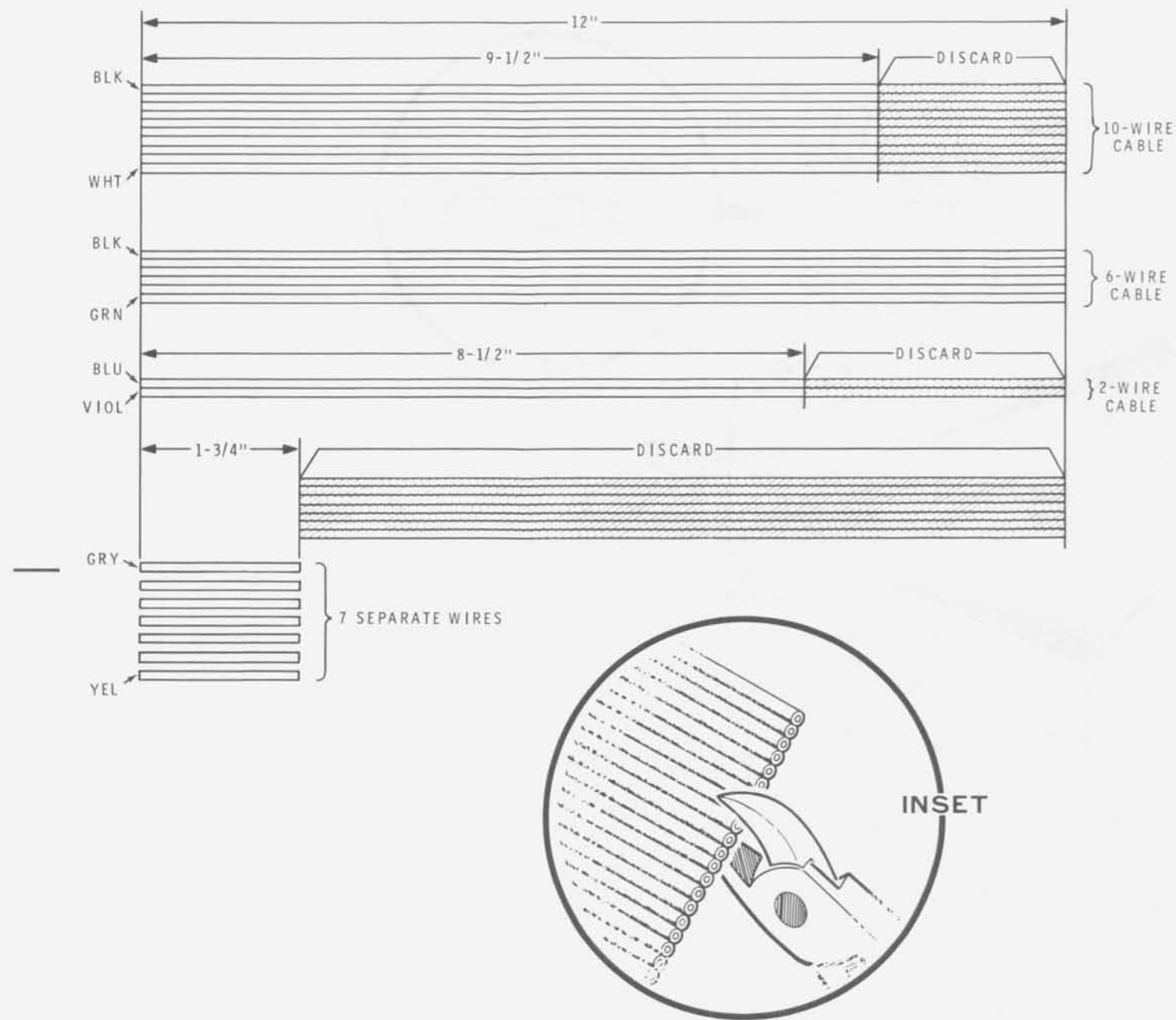


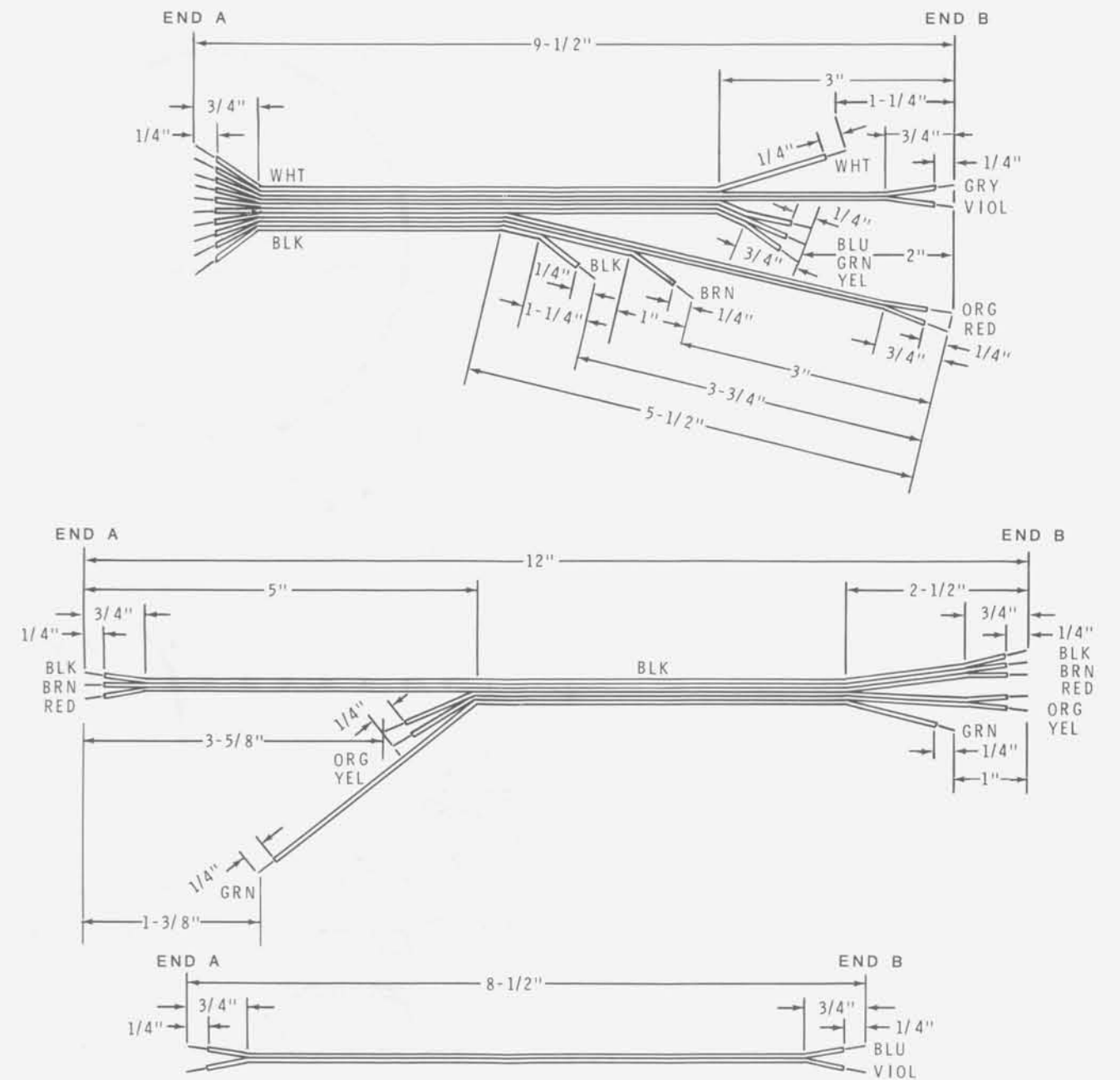
Figure 1



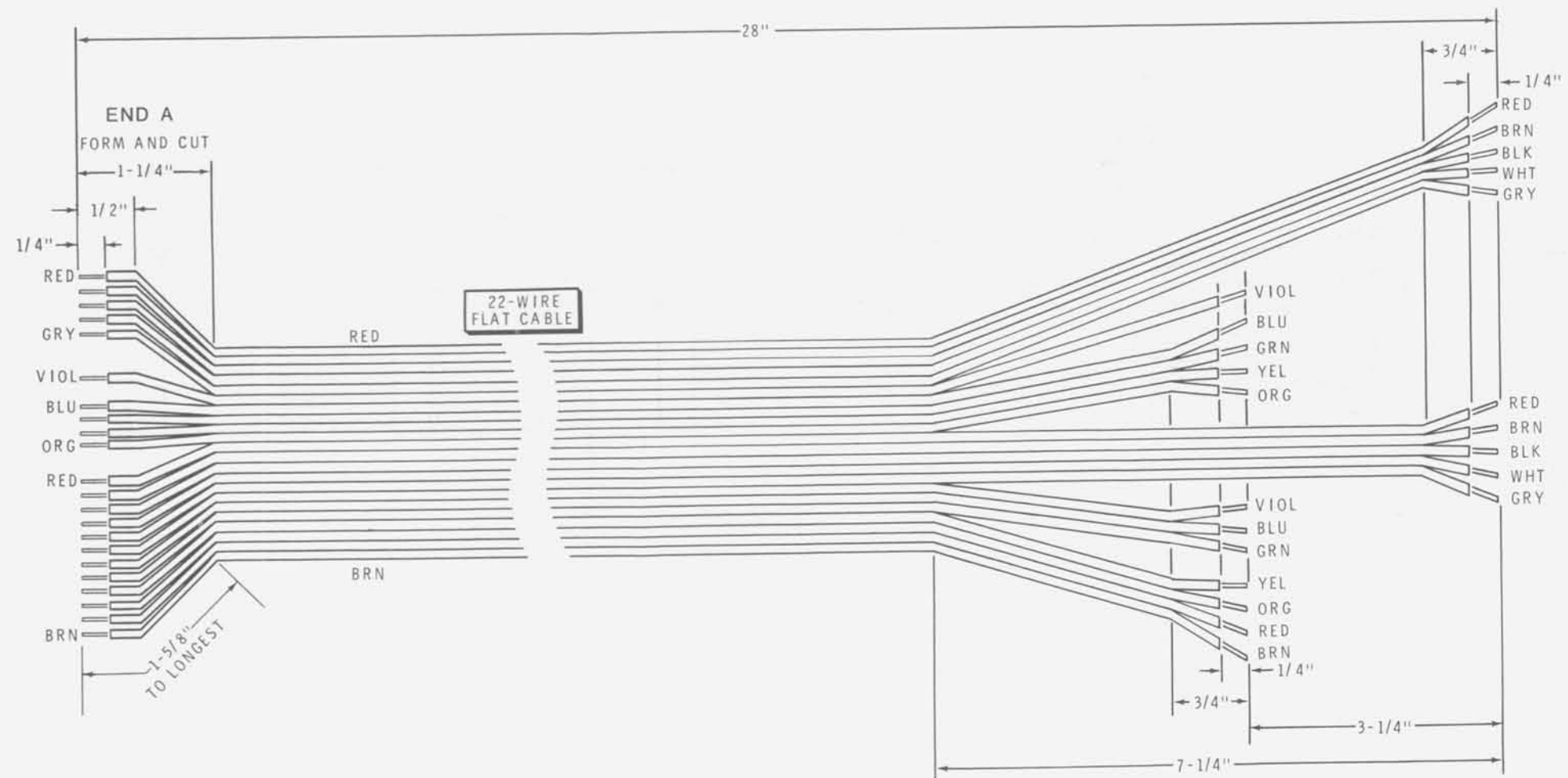
PICTORIAL 1-27



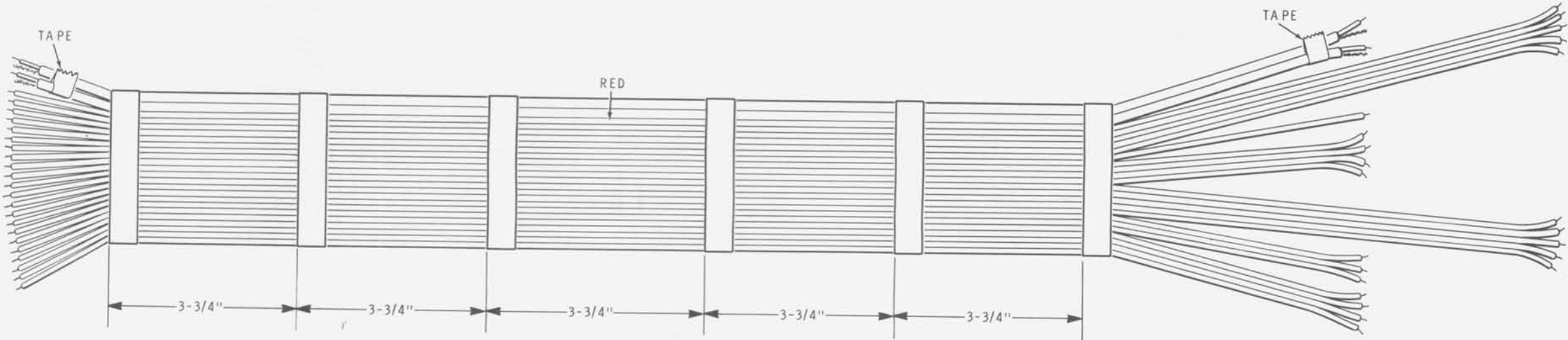
PICTORIAL 1-28



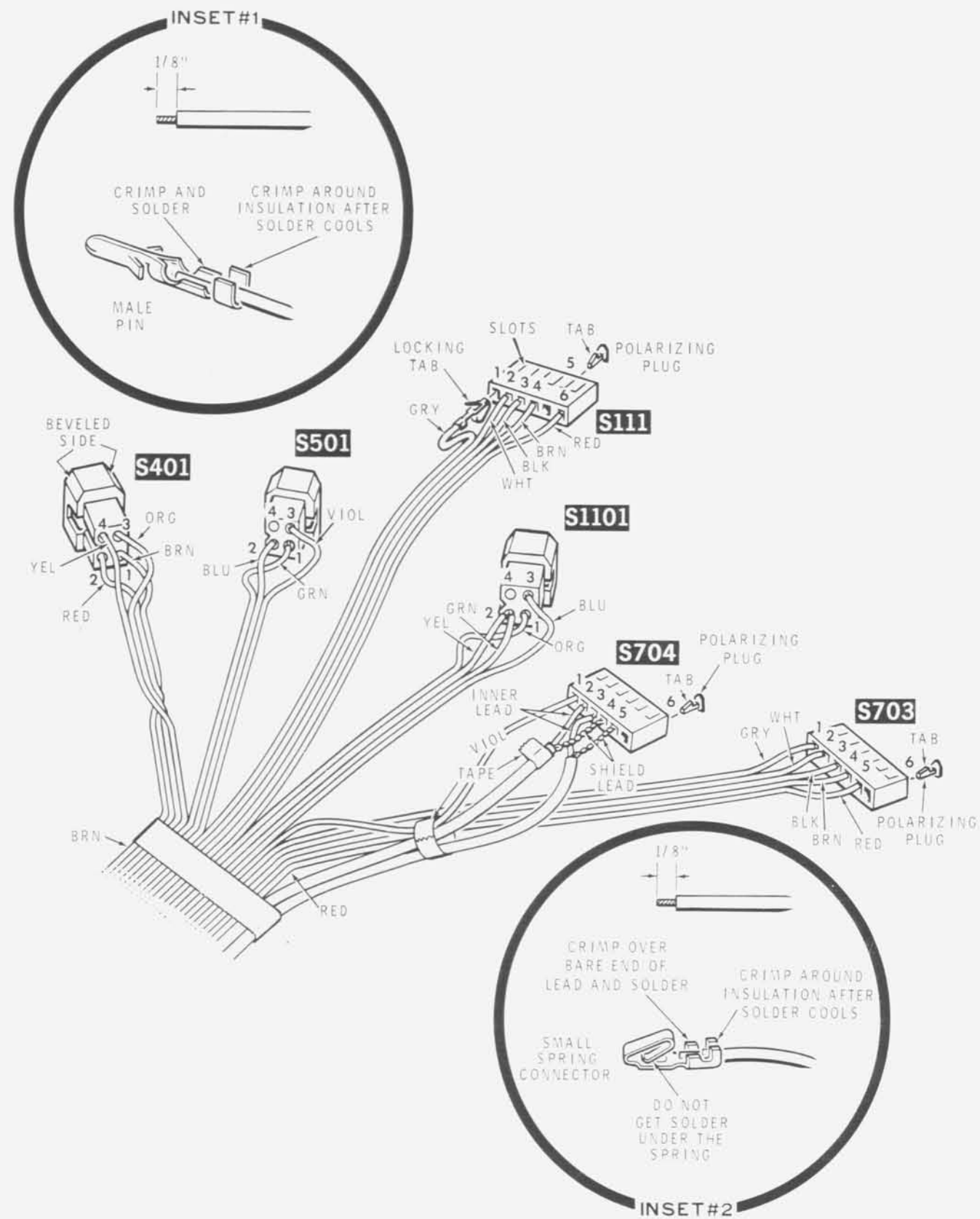
PICTORIAL 1-29



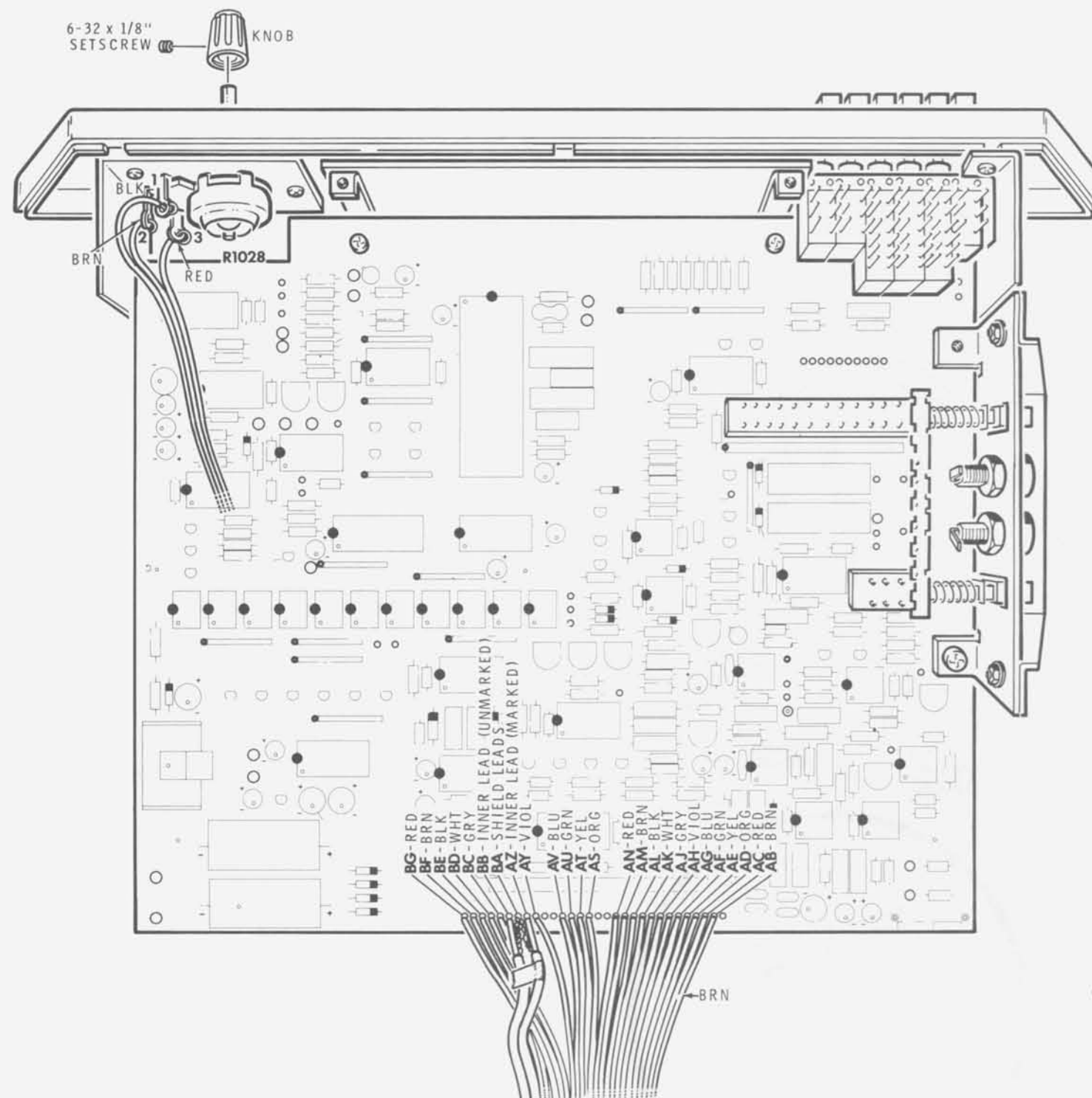
PICTORIAL 1-30



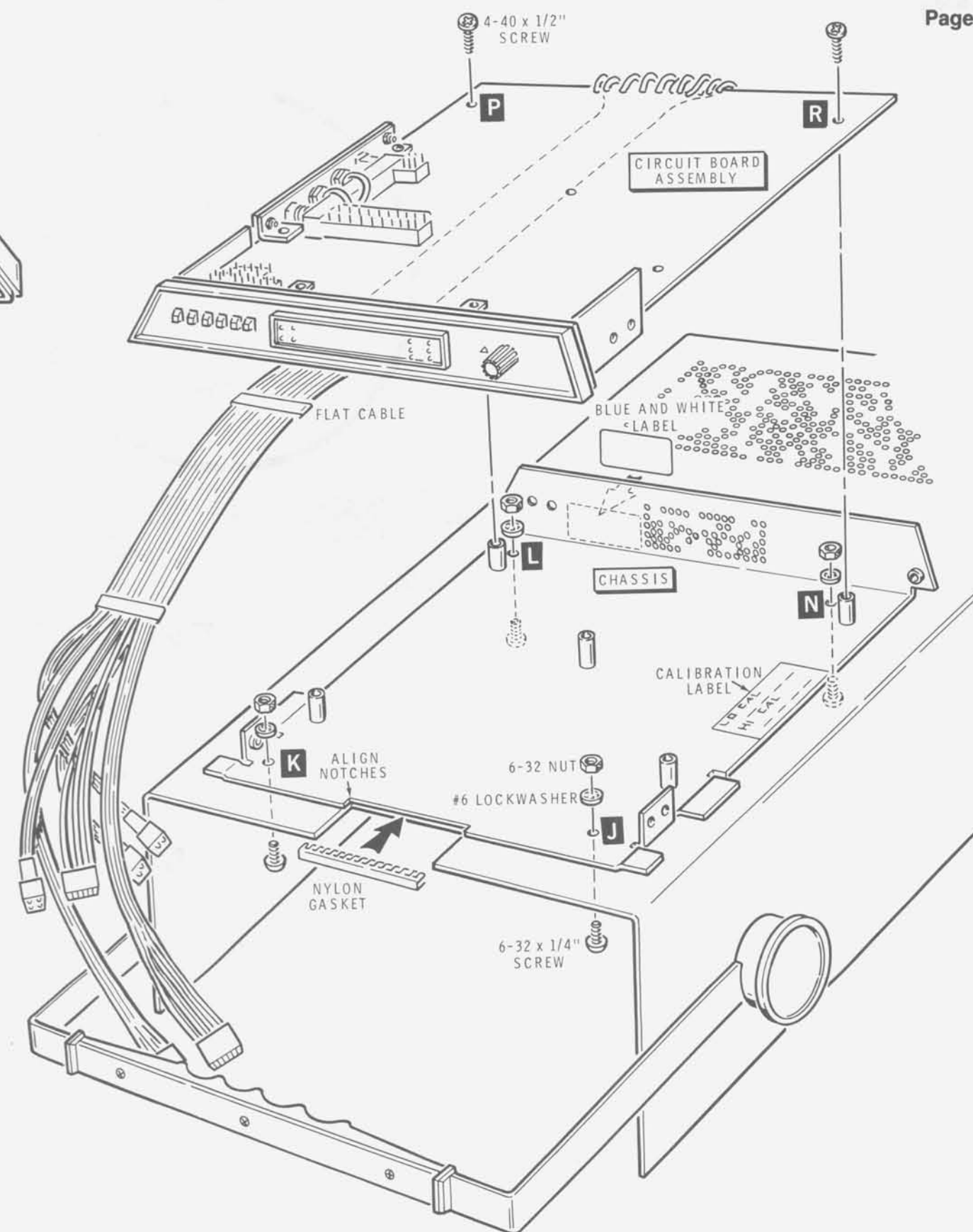
PICTORIAL 1-31



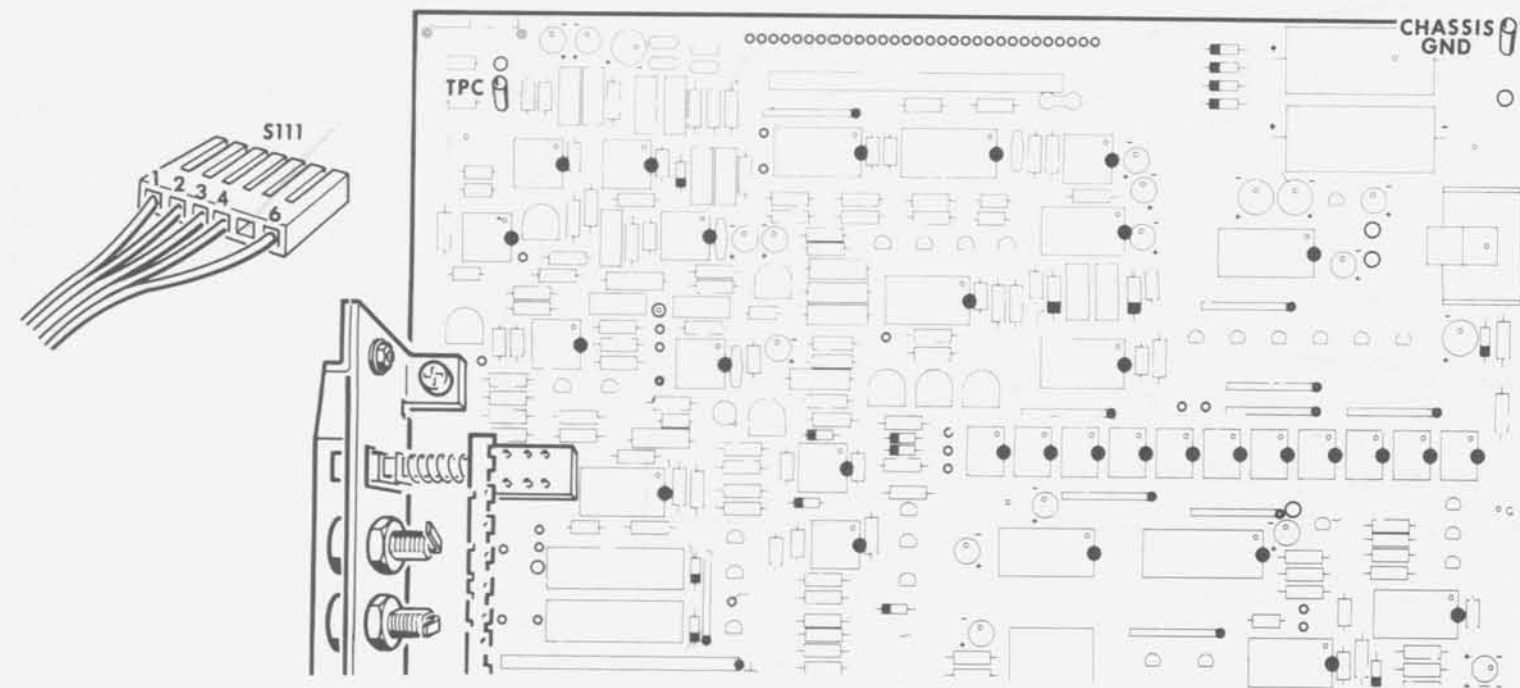
PICTORIAL 1-32



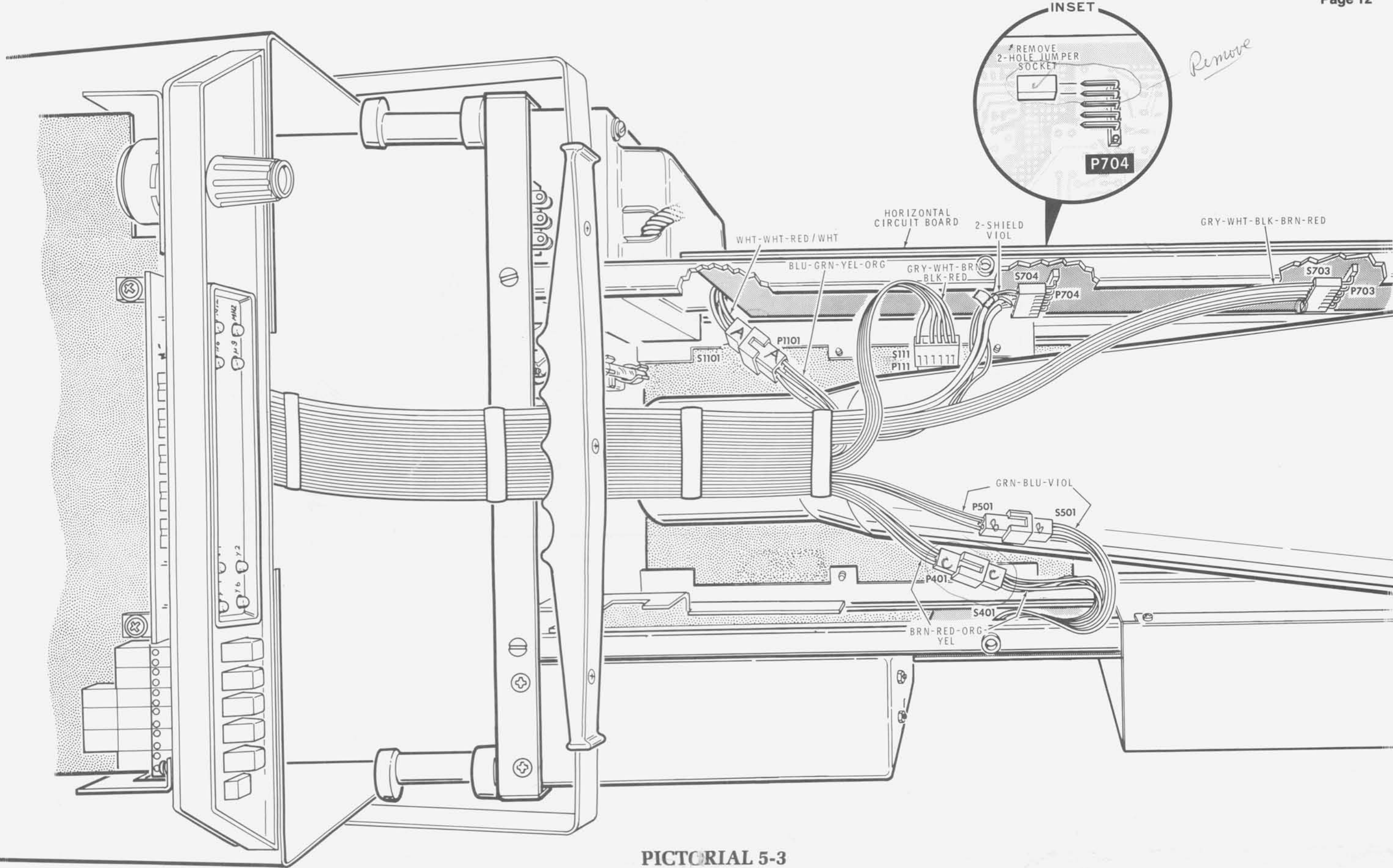
PICTORIAL 3-8



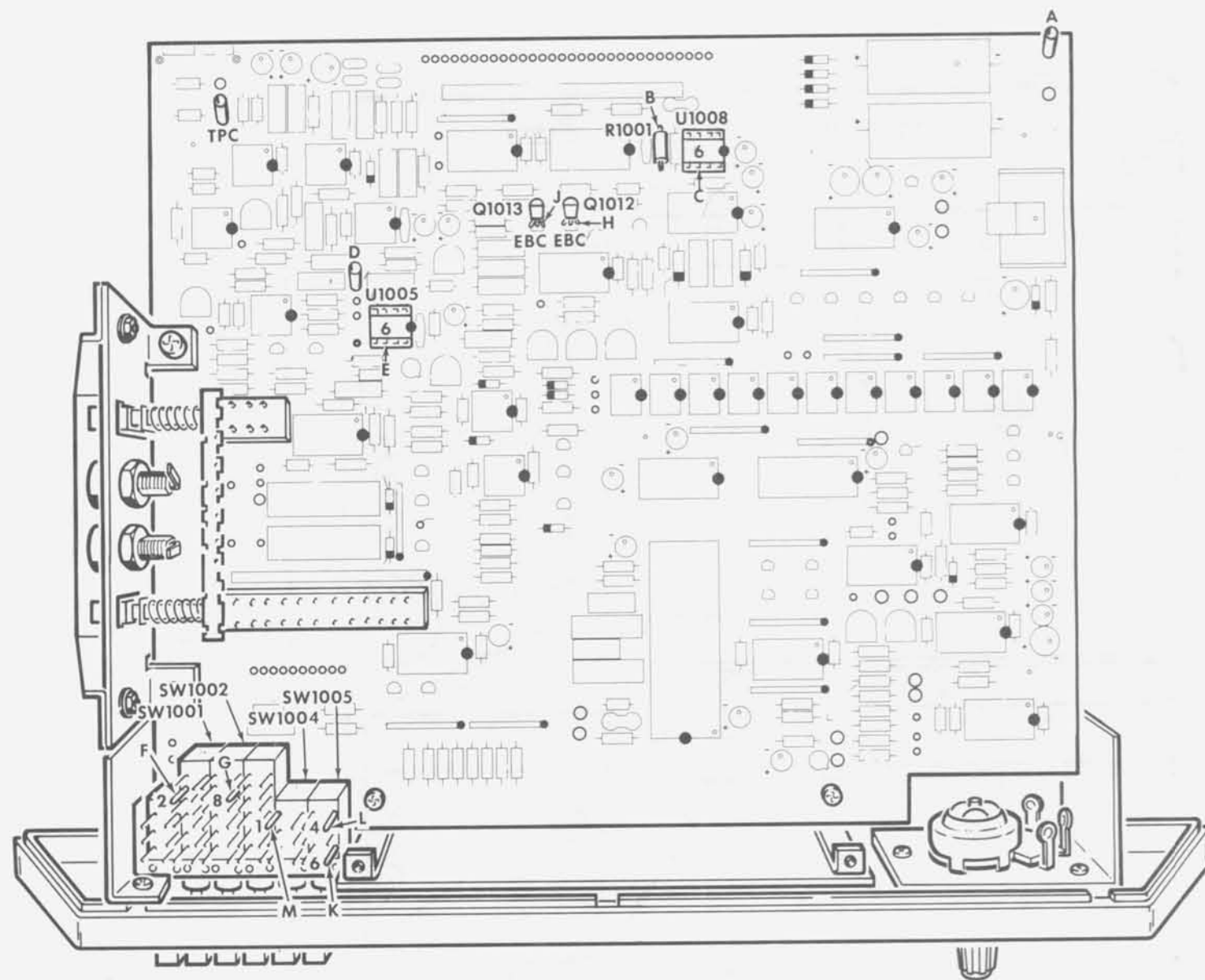
PICTORIAL 4-2



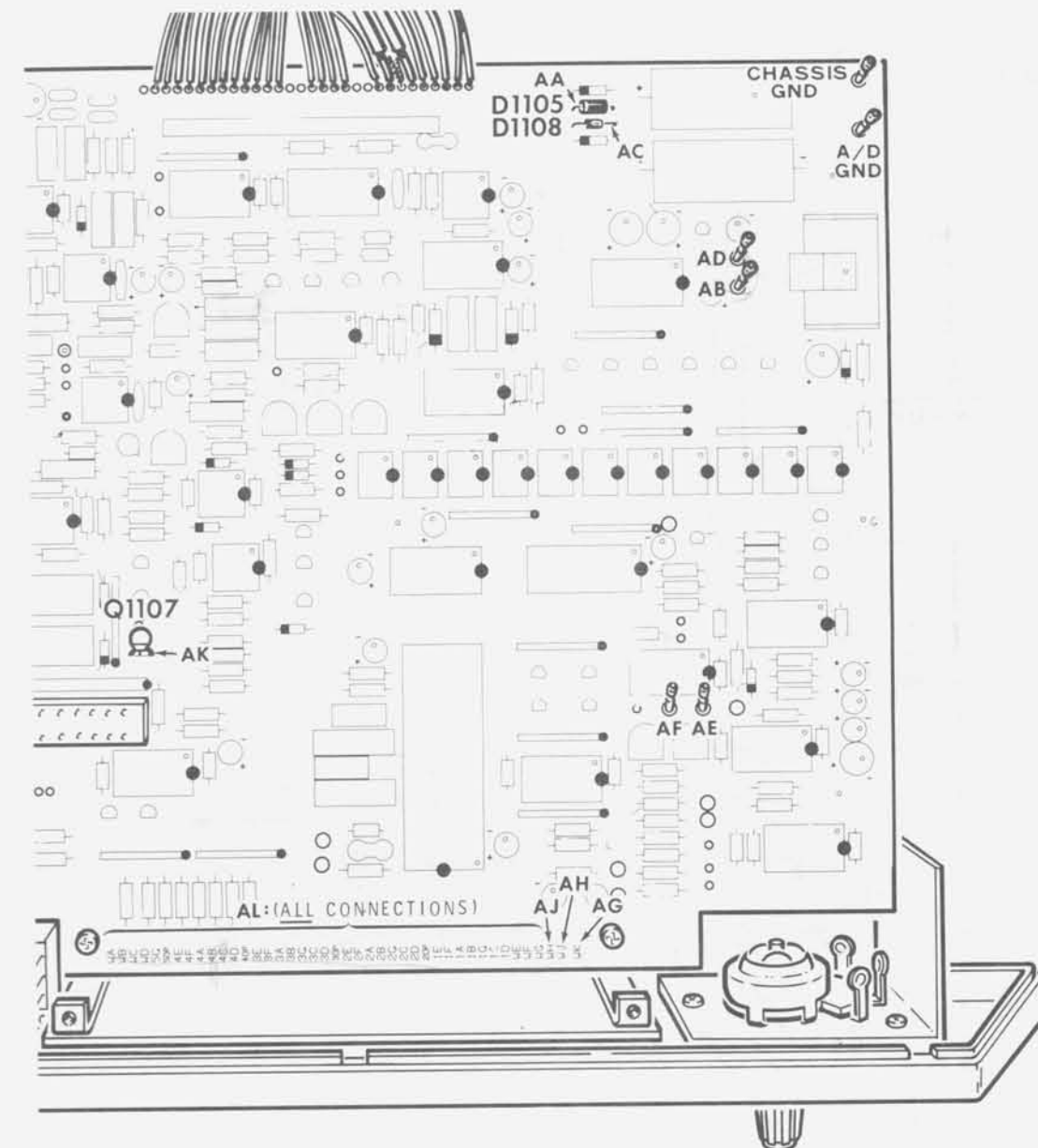
PICTORIAL 5-2



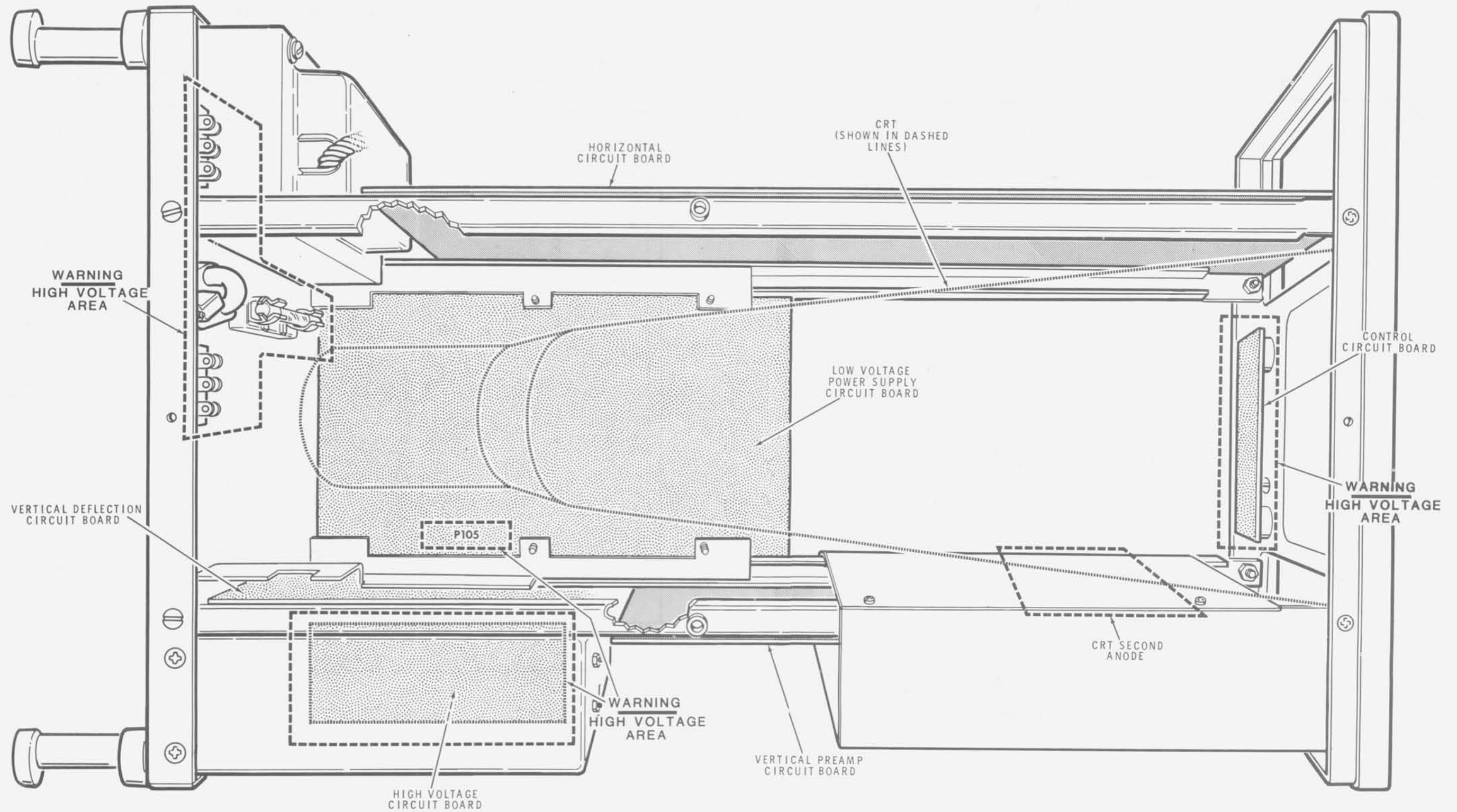
PICTORIAL 5-3



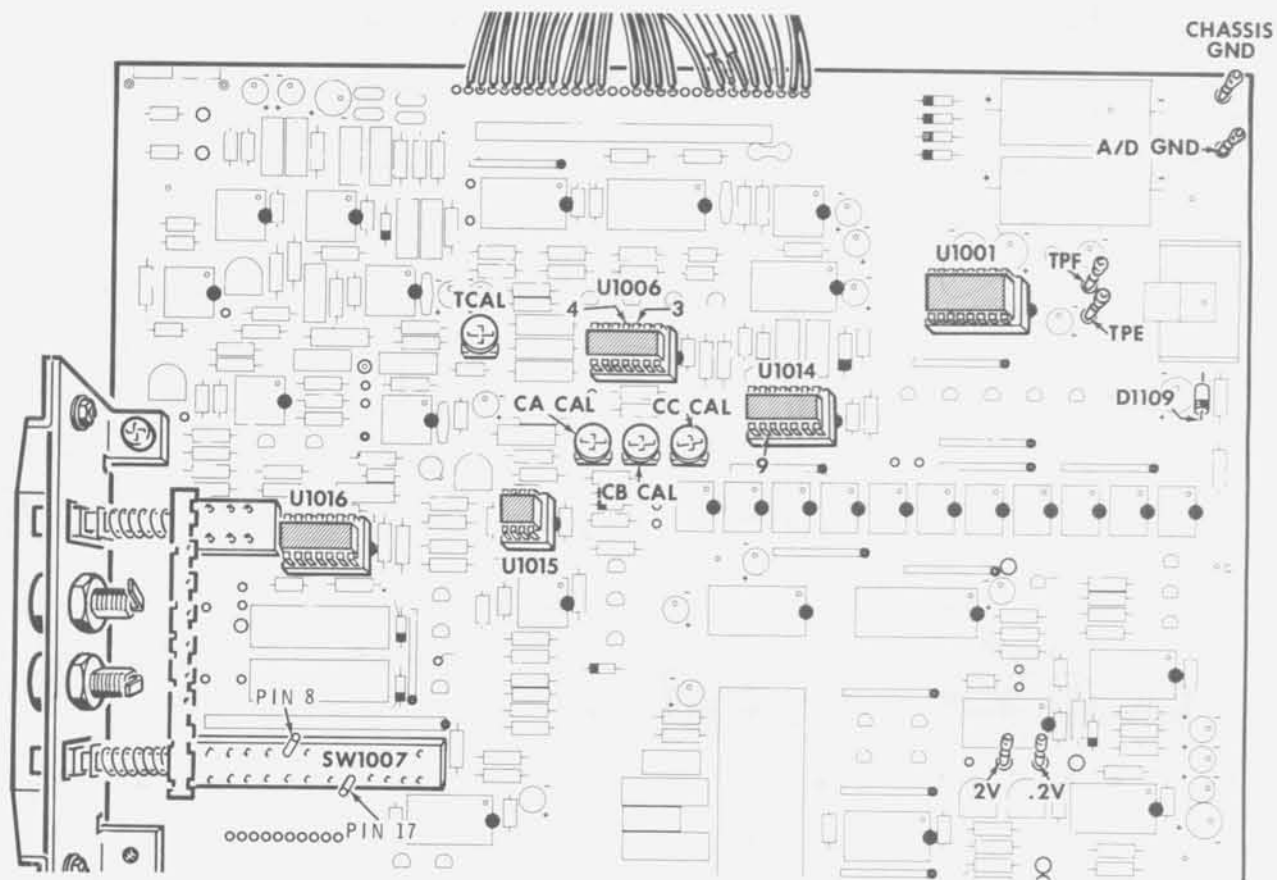
PICTORIAL 5-5



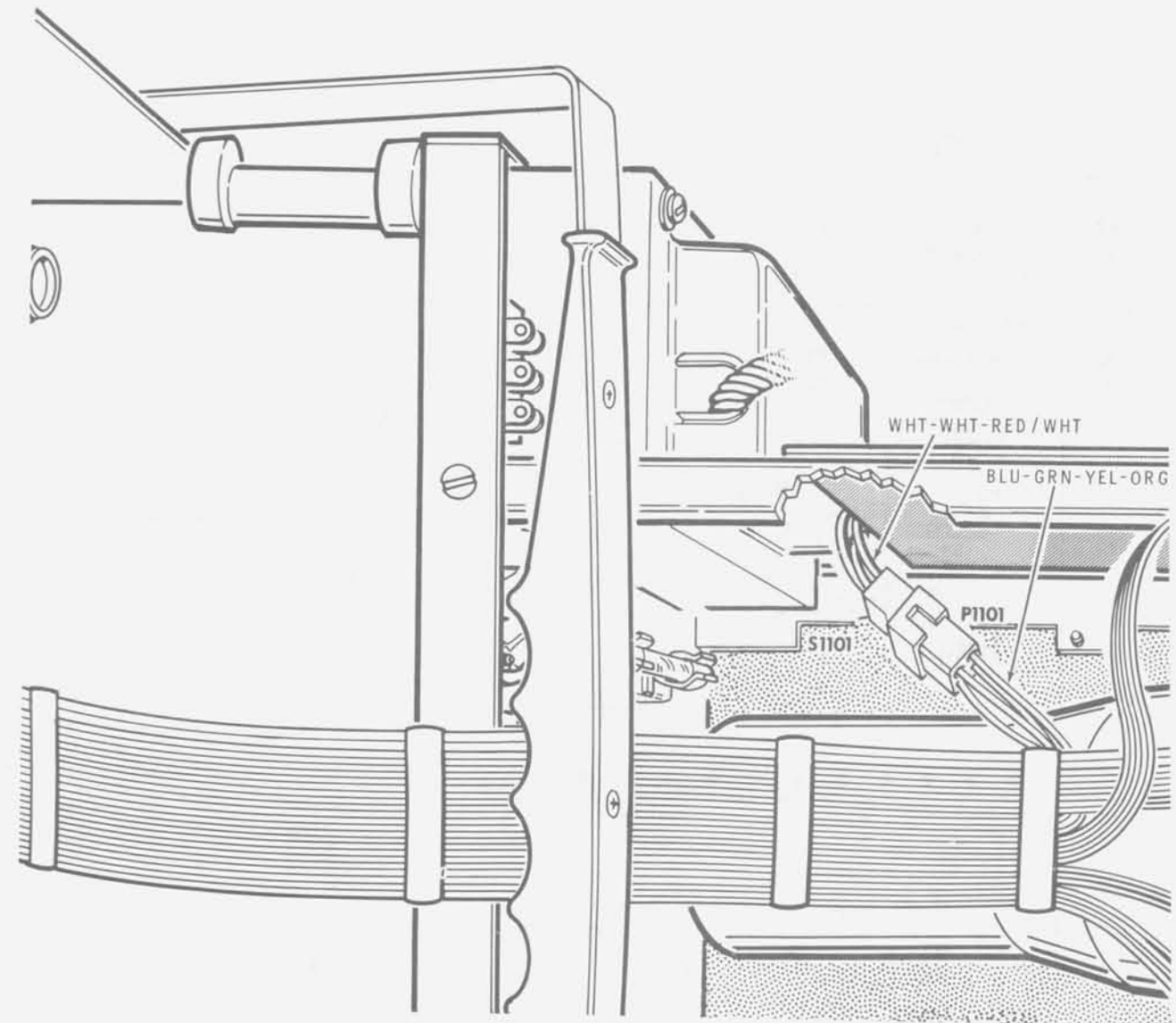
PICTORIAL 5-6



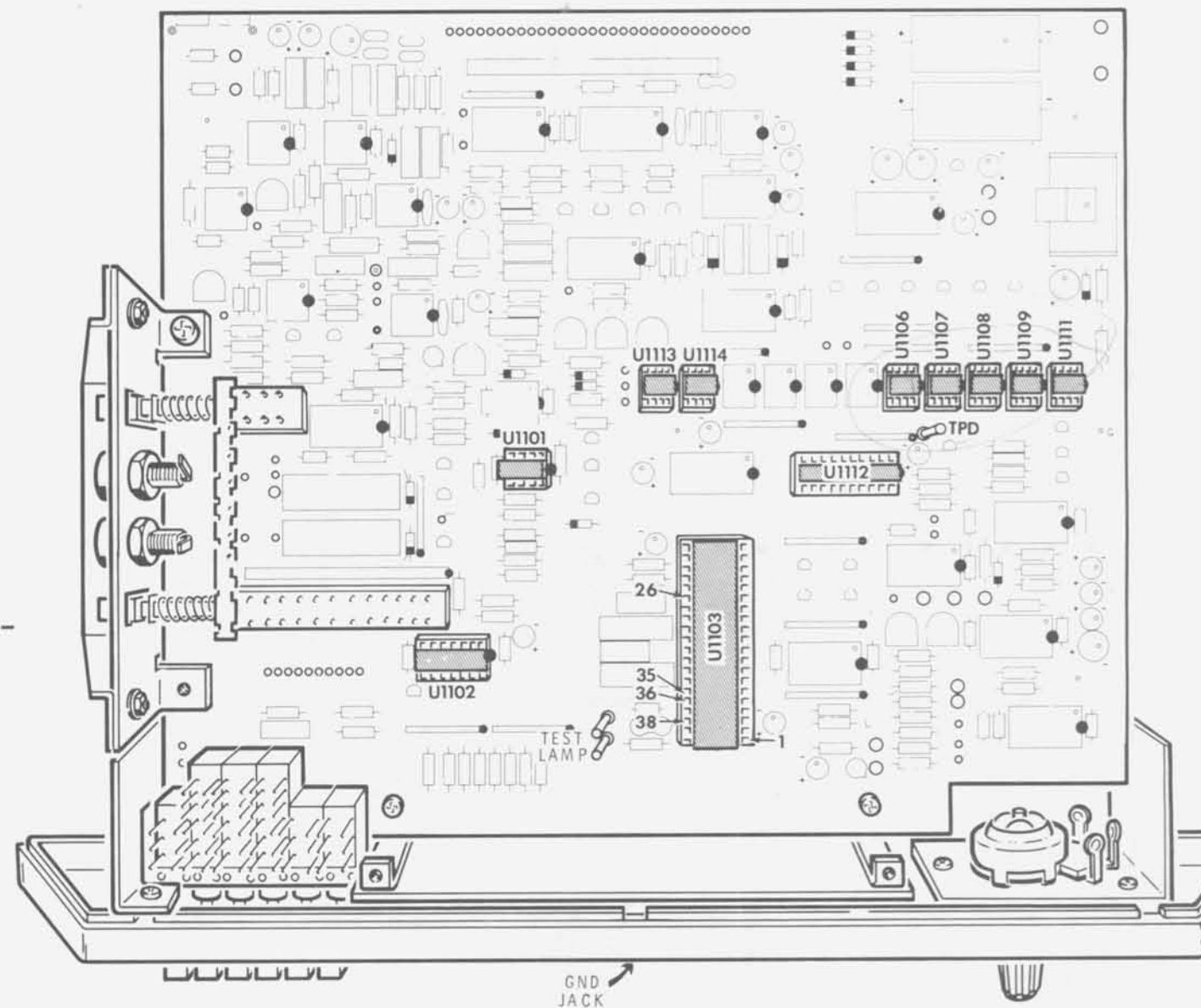
PICTORIAL 5-7



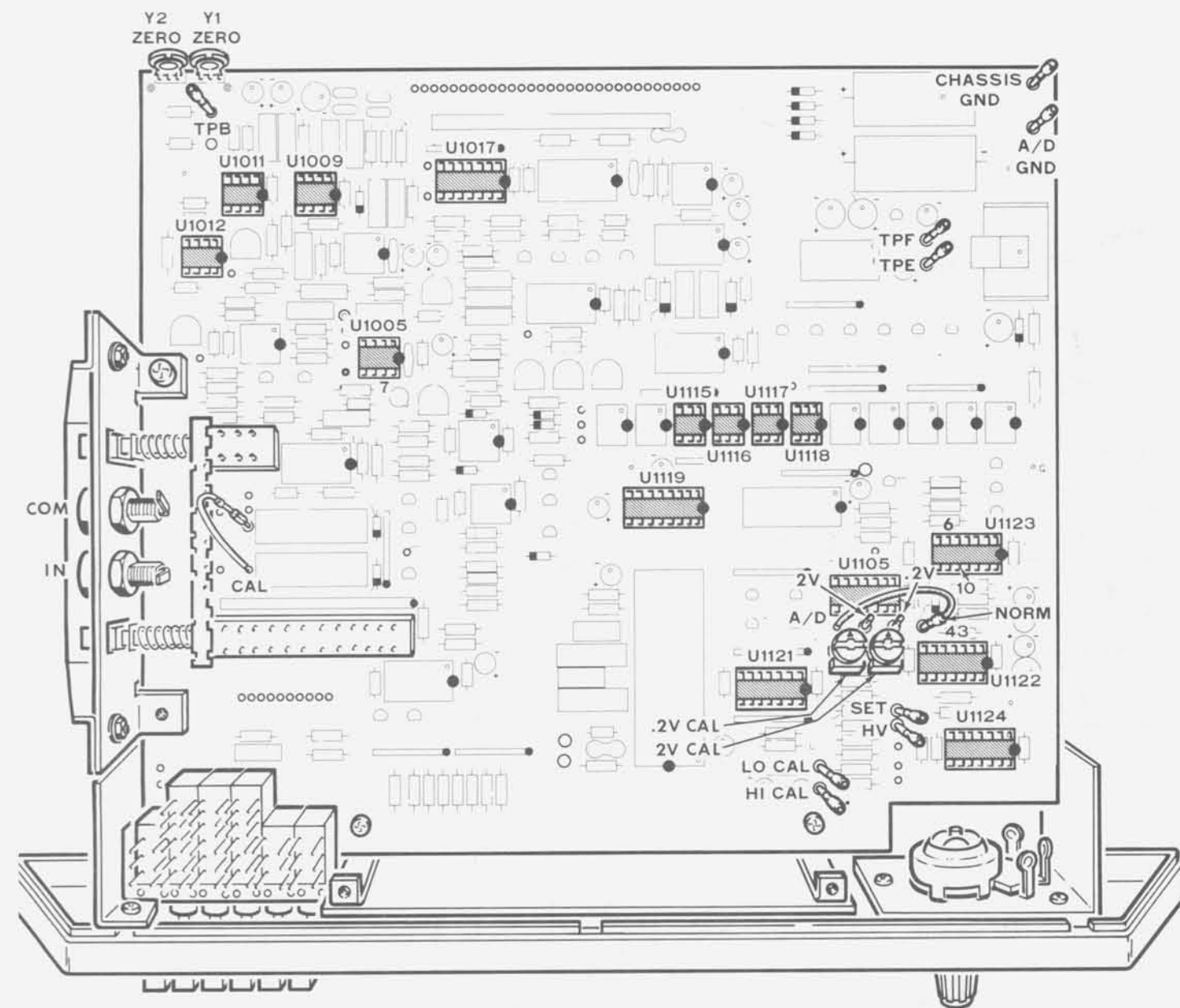
PICTORIAL 5-9



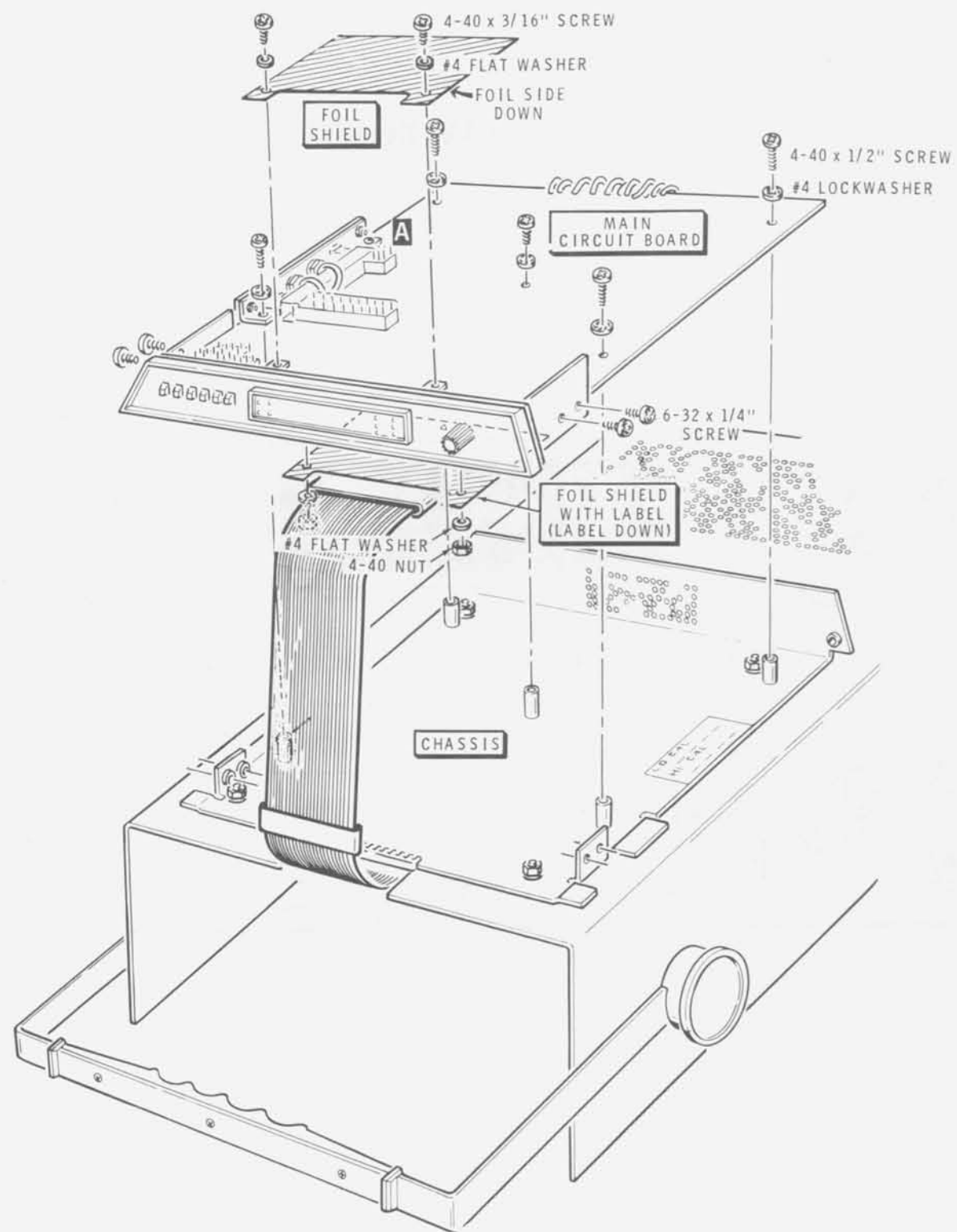
PICTORIAL 5-10



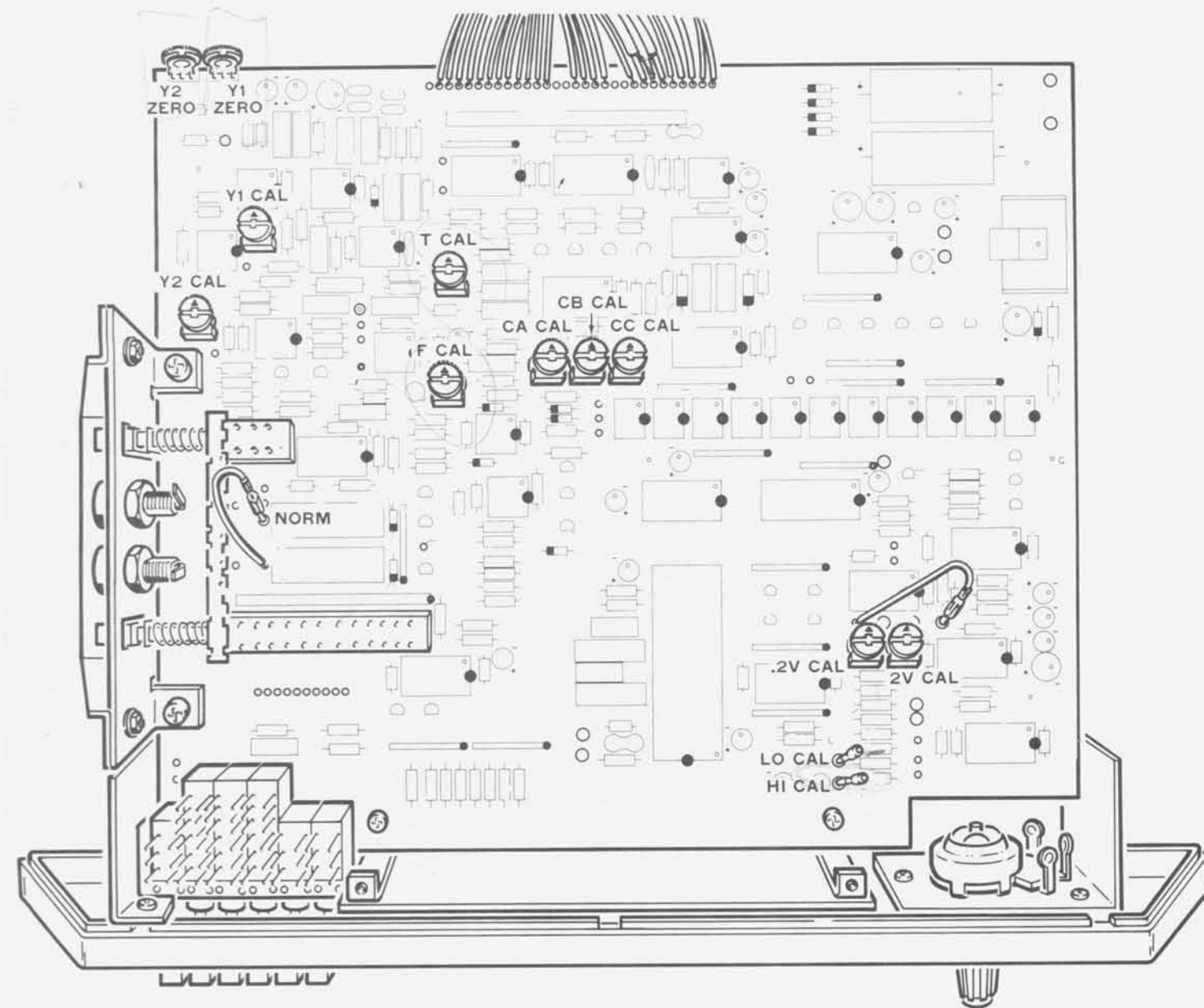
PICTORIAL 5-12



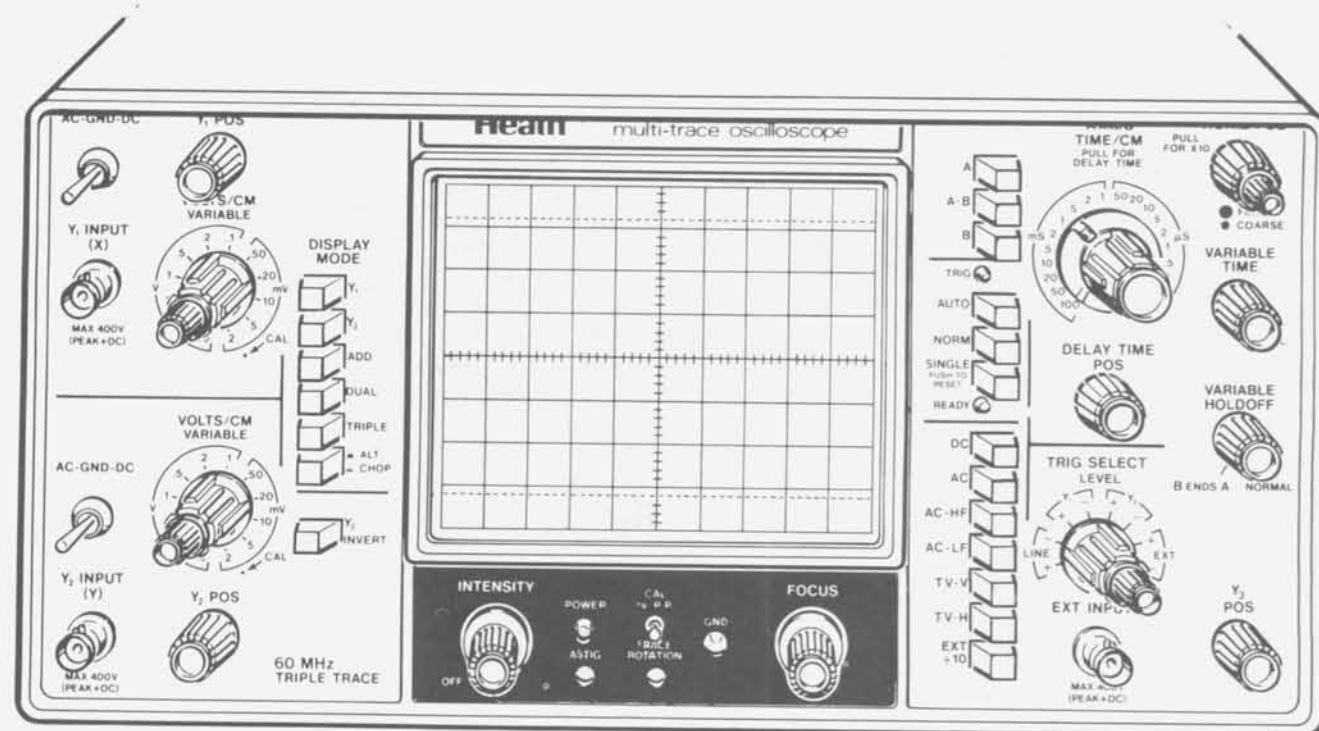
PICTORIAL 5-13



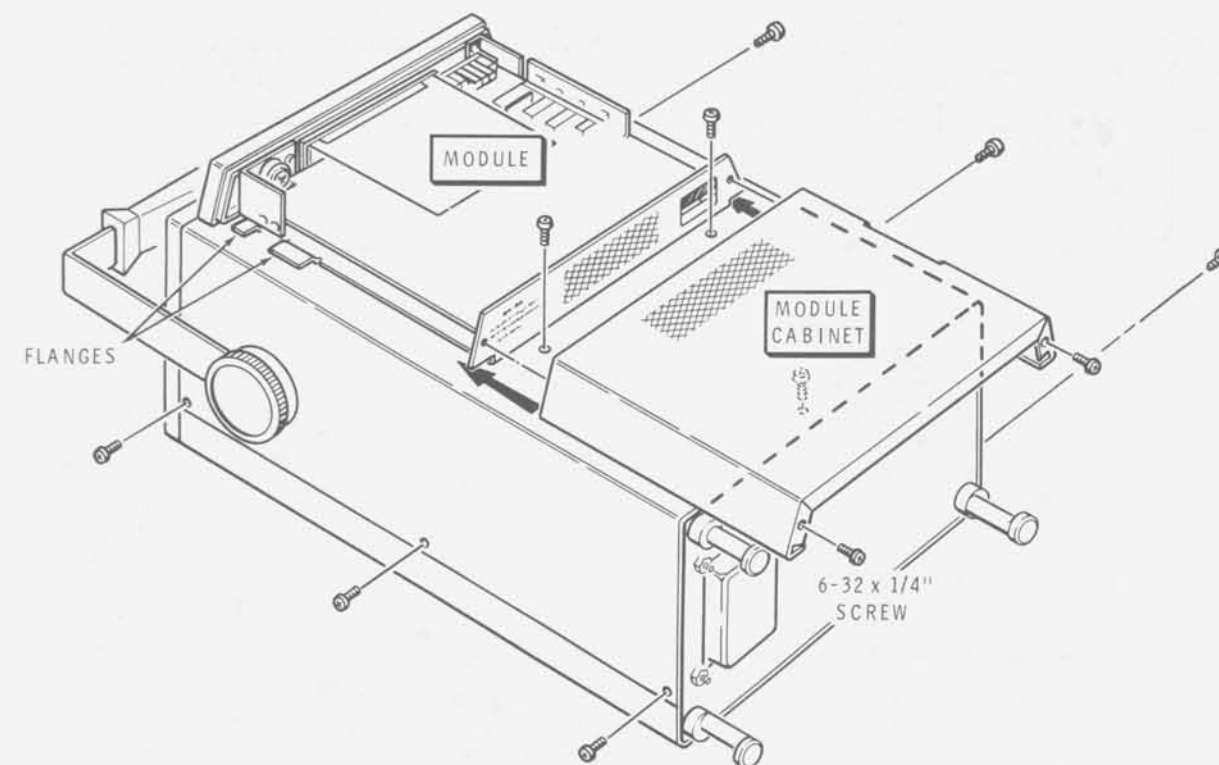
PICTORIAL 5-14



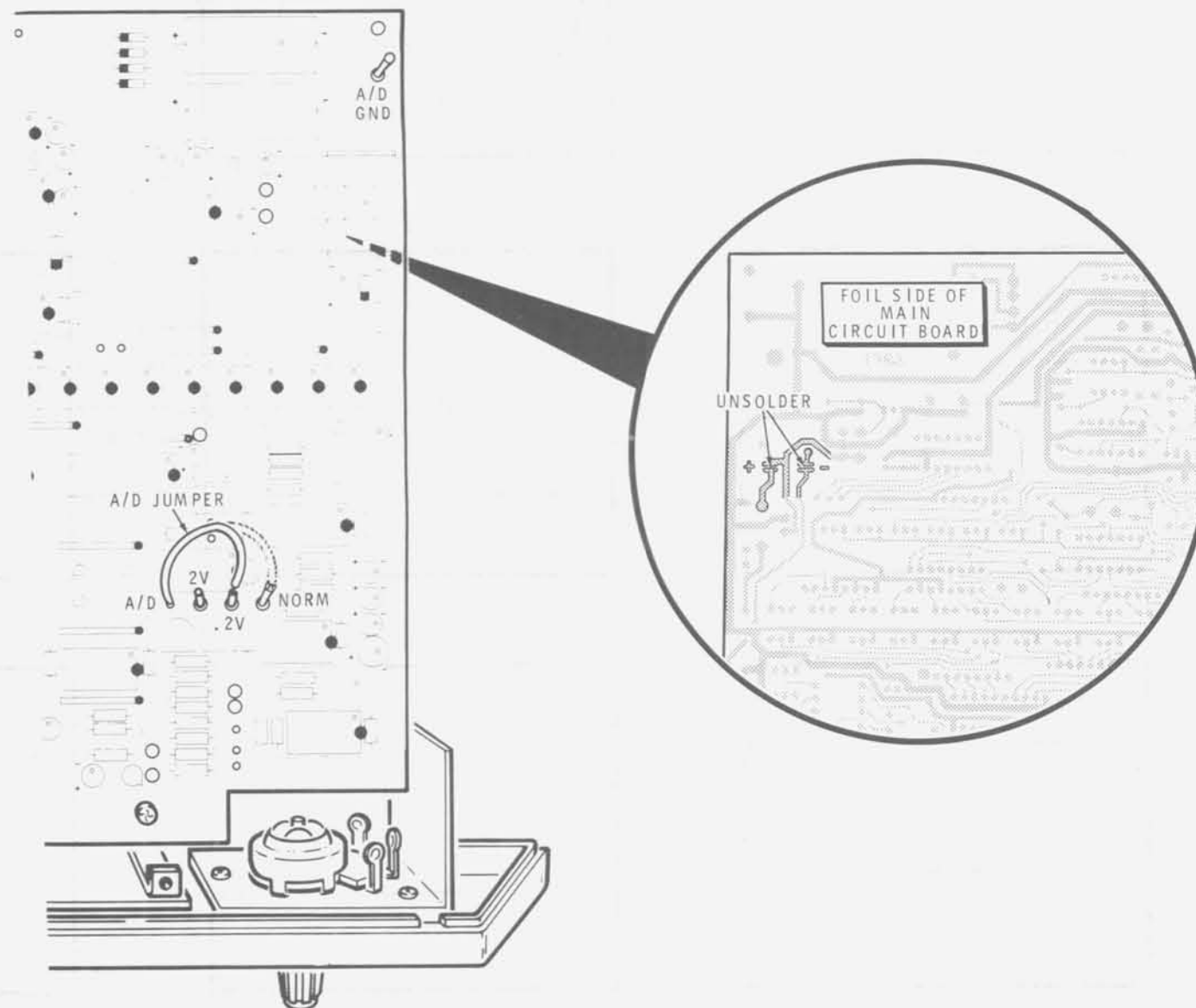
PICTORIAL 6-2



PICTORIAL 6-3

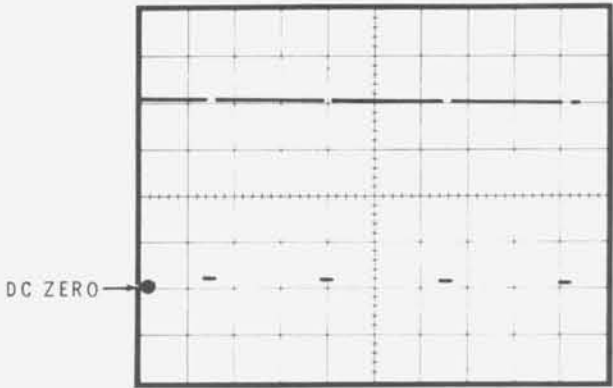


PICTORIAL 6-4

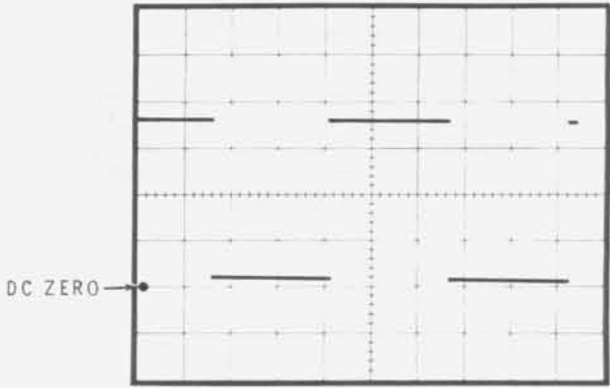


PICTORIAL 8-1

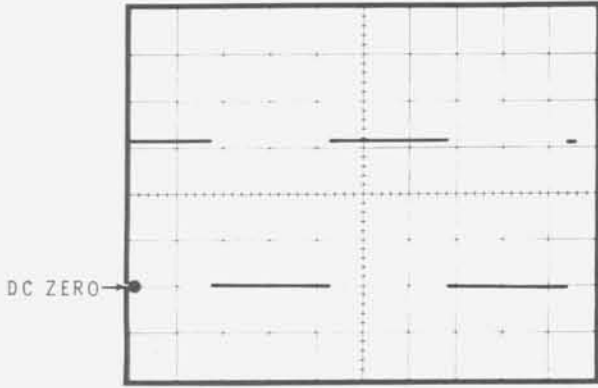
WAVEFORMS



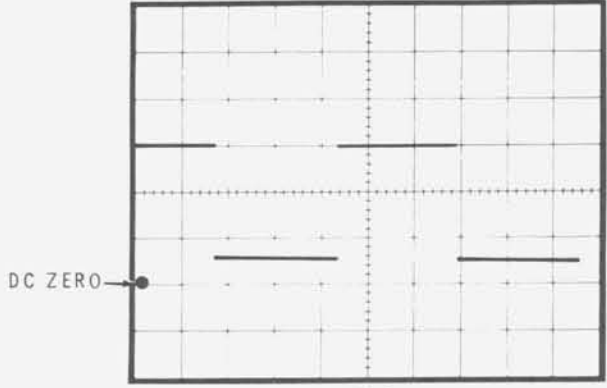
I



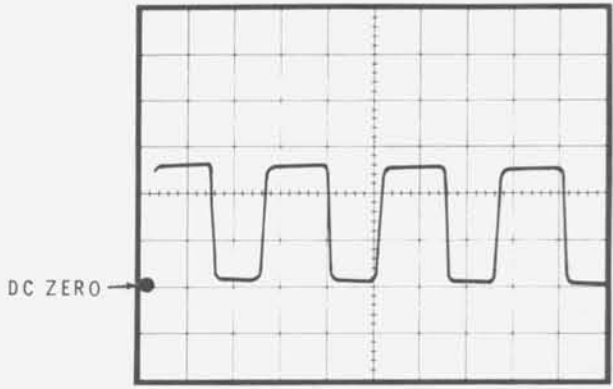
II



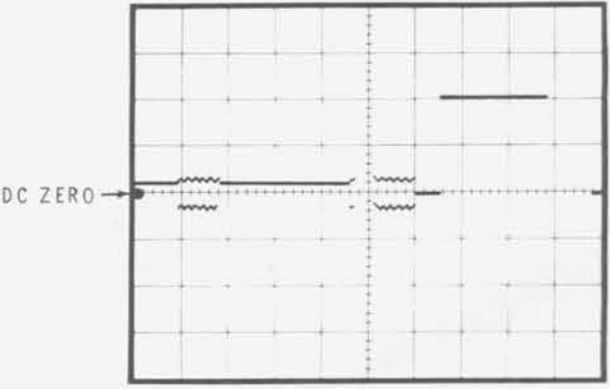
III



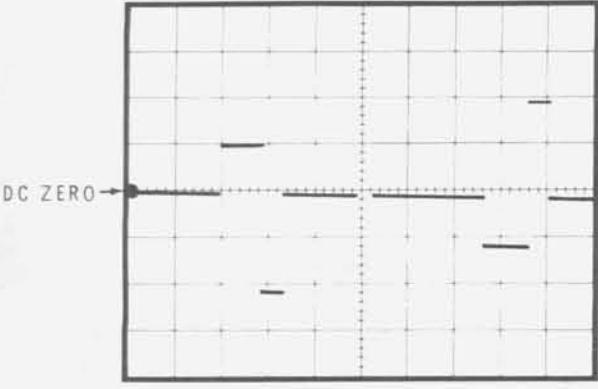
IV



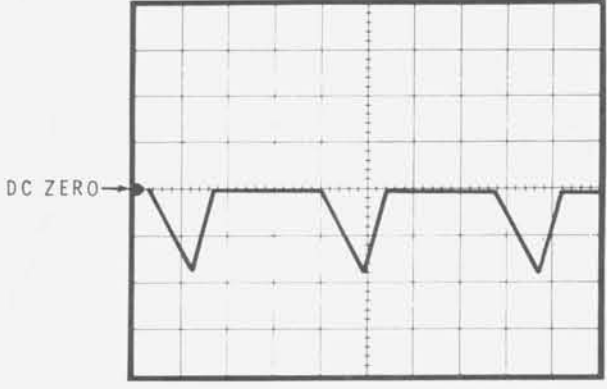
V



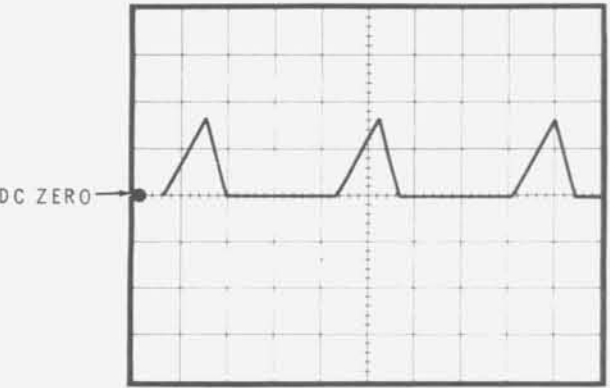
VI



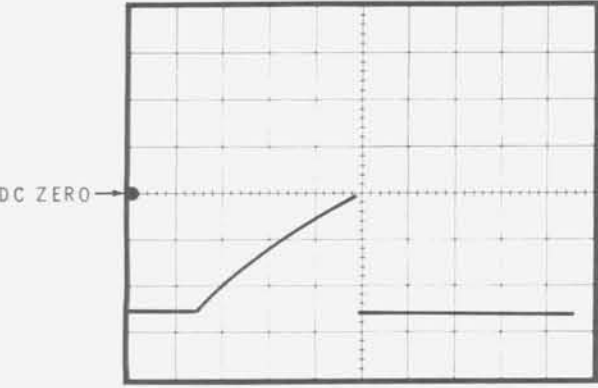
VII



VIII



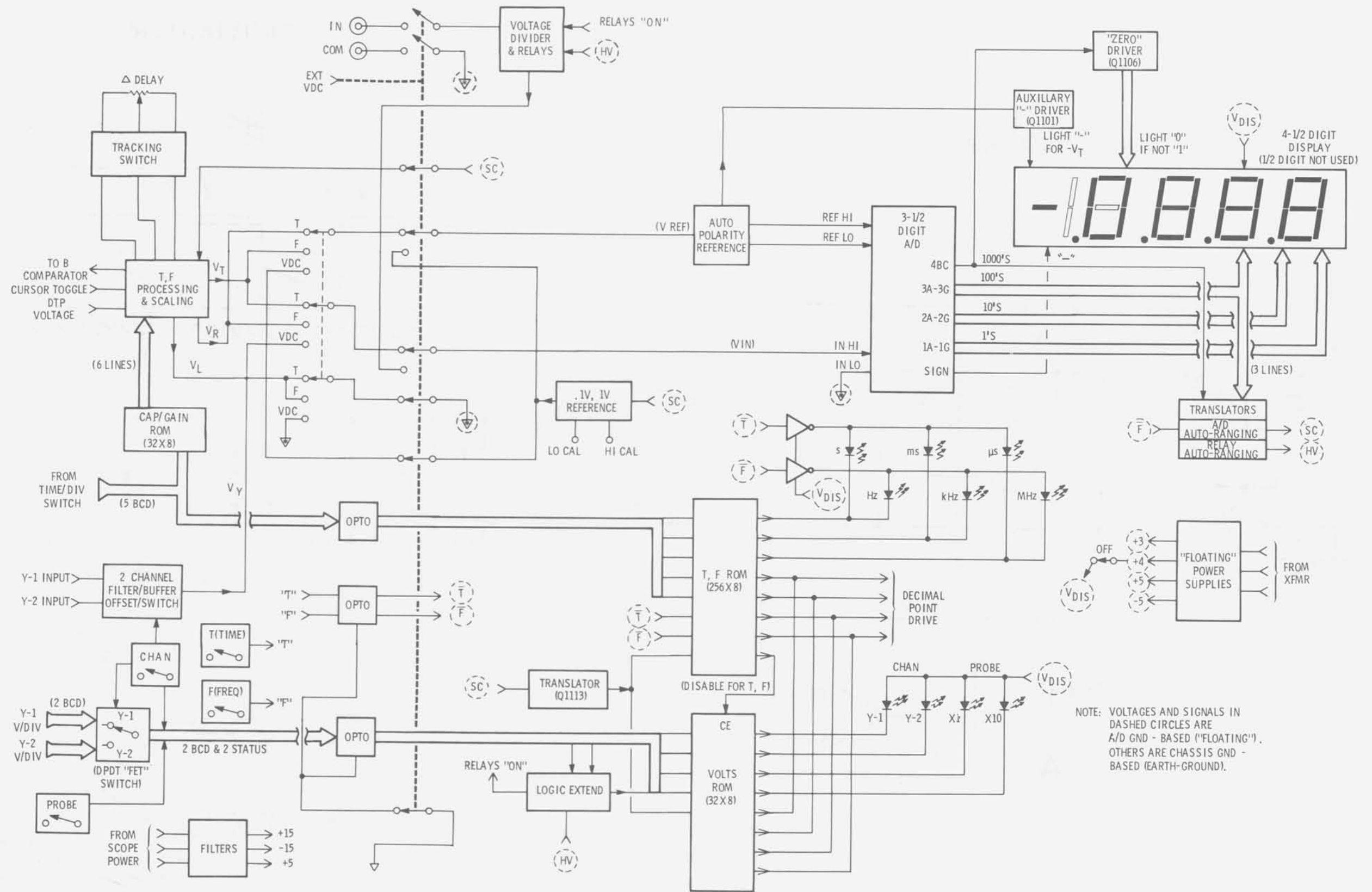
IX



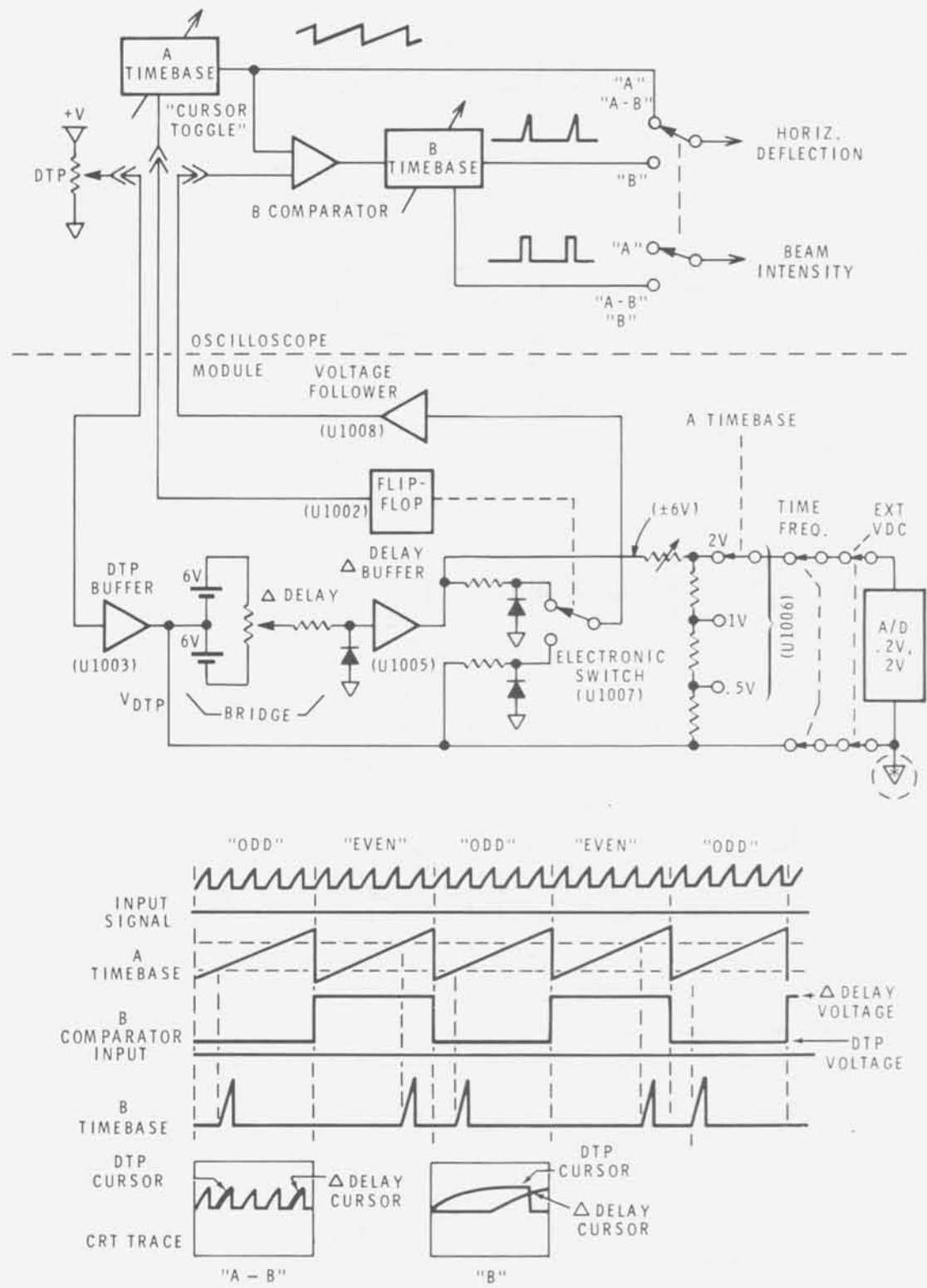
X

WAVE FORM	OSCILLOSCOPE SETTINGS		PROBE "GND"	TEST POINT LOCATION	MODULE FUNCTION	COMMENTS
	VERTICAL	HORIZONTAL				
I	1 V/div	5 ms/div	CHASSIS	Hole BB (end of R1001)	TIME	Confirms toggle wiring to Module.
II	1 V/div	5 ms/div	CHASSIS	Pin 14 or 15 of U1002	TIME	Confirms toggle operation of U1002 and enable at pin 3.
III	5 V/div	5 ms/div	CHASSIS	C (collector) of Q1007, Q1008	TIME	Confirms Q1007, Q1008 circuitry.
IV	2 V/div	5 ms/div	CHASSIS	Pin 6 of U1008	TIME	Confirms U1002, U1004 to U1008 circuitry.
V	2 V/div	10 μ s/div	A/D	Pin 38 of U1103	EXT VDC w/short at IN/COM	Confirms operation of U1103 "clock" and power supply circuit.
VI	.5 V/div	100 ms/div	A/D	Pin 34 of U1103	EXT VDC; See comment	Confirms operation of "reference" portion of A/D circuitry. a. Left side is for short at IN/COM. b. Right side is for + 5 V at IN/COM. c. Readout may vary with probe "loading."
VII	.5 V/div	100 ms/div	A/D	Pin 28 of U1103	EXT VDC; See comment	Confirms operation of "buffer" portion of A/D circuitry. a. Left side is for + 5 V at IN/COM. b. Right side is for - 5 V at IN/COM.
VIII IX	.5 V/div	100 ms/div	A/D	Pin 27 of U1103	EXT VDC; See comment	Confirms operation of "integrator" portion of A/D circuitry. a. VIII is for + 5 V at IN/COM. b. IX is for - 5 V at IN/COM.
X	2 V/div	200 ms/div	A/D	Pin 1 of U1122	EXT VDC; See comment	Confirms operation of auto-ranging and relay circuitry. a. Waveform is for a "step" of 30 V at IN/COM. b. Waveform is similar at pin 11 for 30 V to 0 V "step."

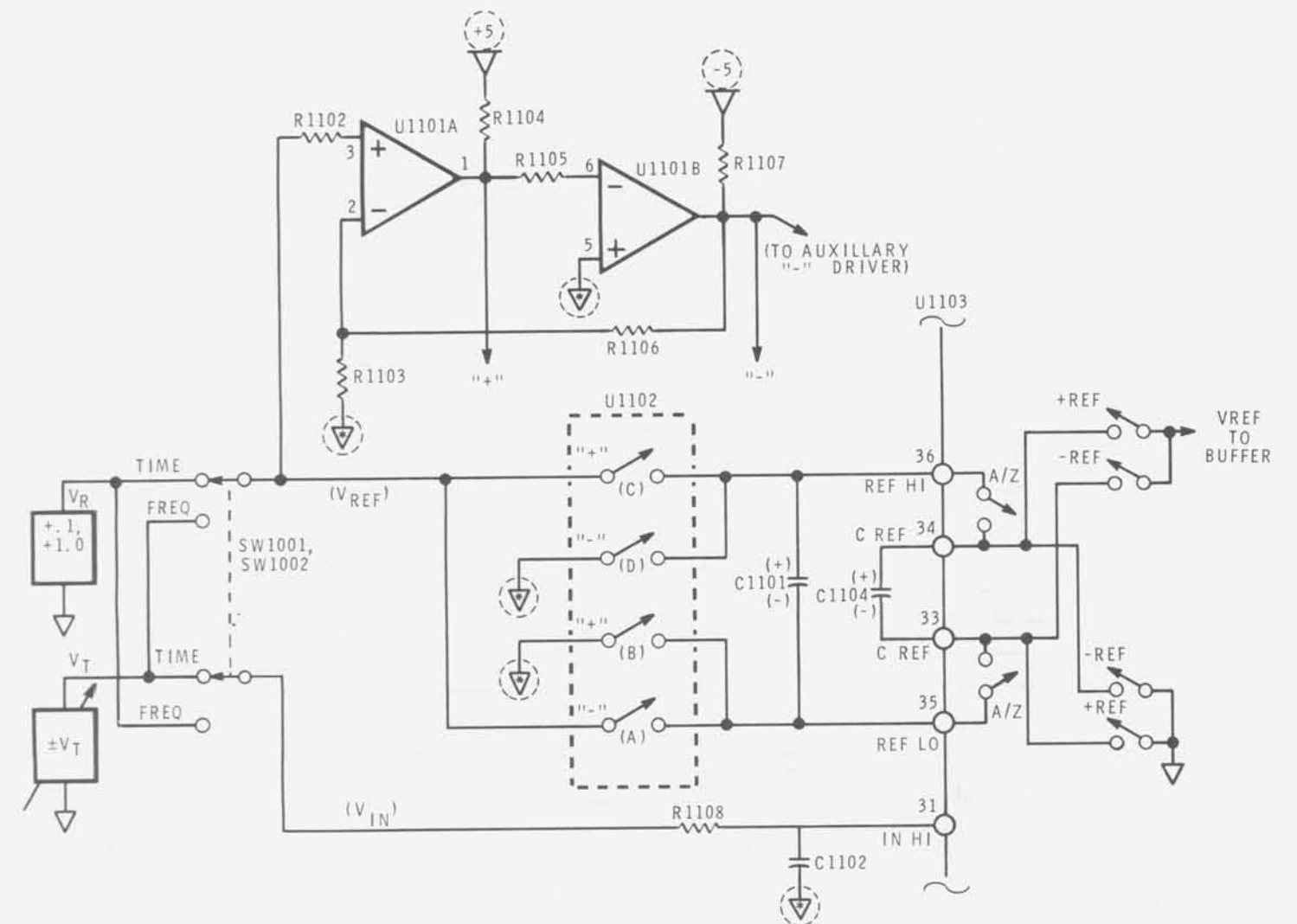
Table A



BLOCK DIAGRAM



PICTORIAL 9-2



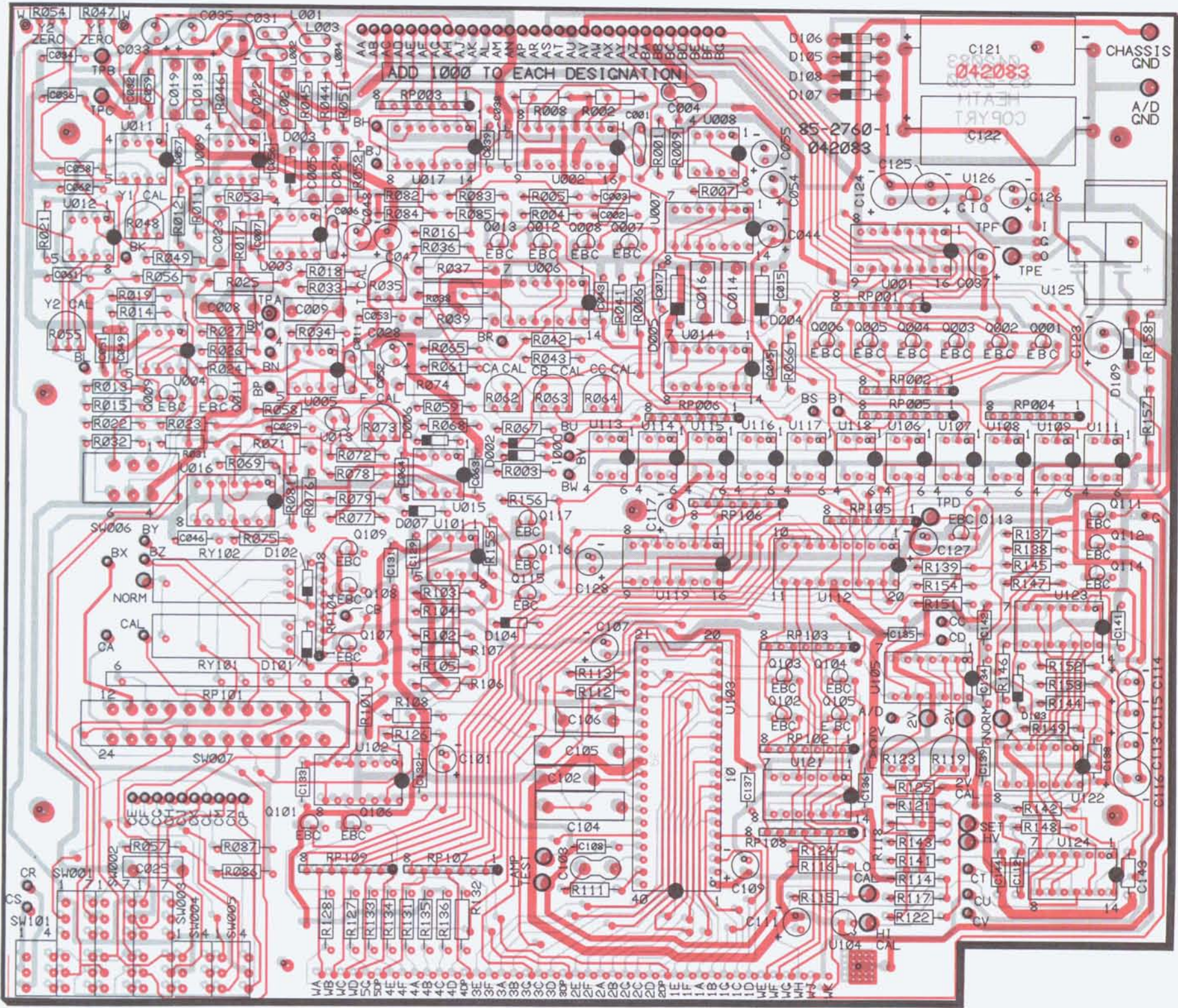
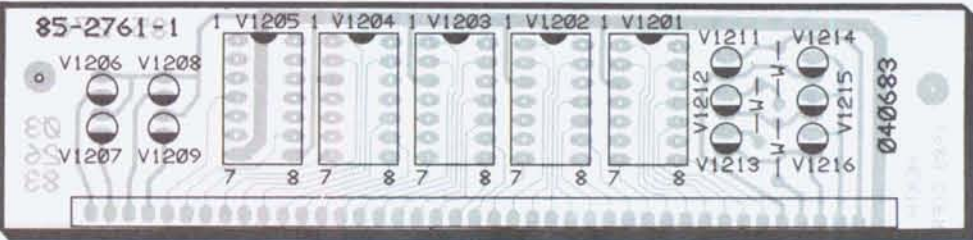
PICTORIAL 9-8

NOTES:

- To find the PART NUMBER of a component for the purpose of ordering a replacement part:
 - Find the circuit component part number (R001, C004, D104, etc.)* on the X-Ray View.
 - Locate the same number* in the "Circuit Component Number" column of the "Parts List" in the back of the Manual.
 - Adjacent to the circuit component number, you will find the PART NUMBER and DESCRIPTION which must be supplied when you order a replacement part.
- On this X-Ray View, two foil patterns are shown. Those in red are component-side foils; those in gray are on the opposite side of the circuit board.

* All of the components on this circuit board are in the 1000- and 1100- series: Thus; R001 = R1001, R102 = R1102; C008 = C1008, C103 = C1103, etc...

CIRCUIT BOARD X-RAY VIEW



(Shown from the component side.)
(Foil on component side shown in red.)

