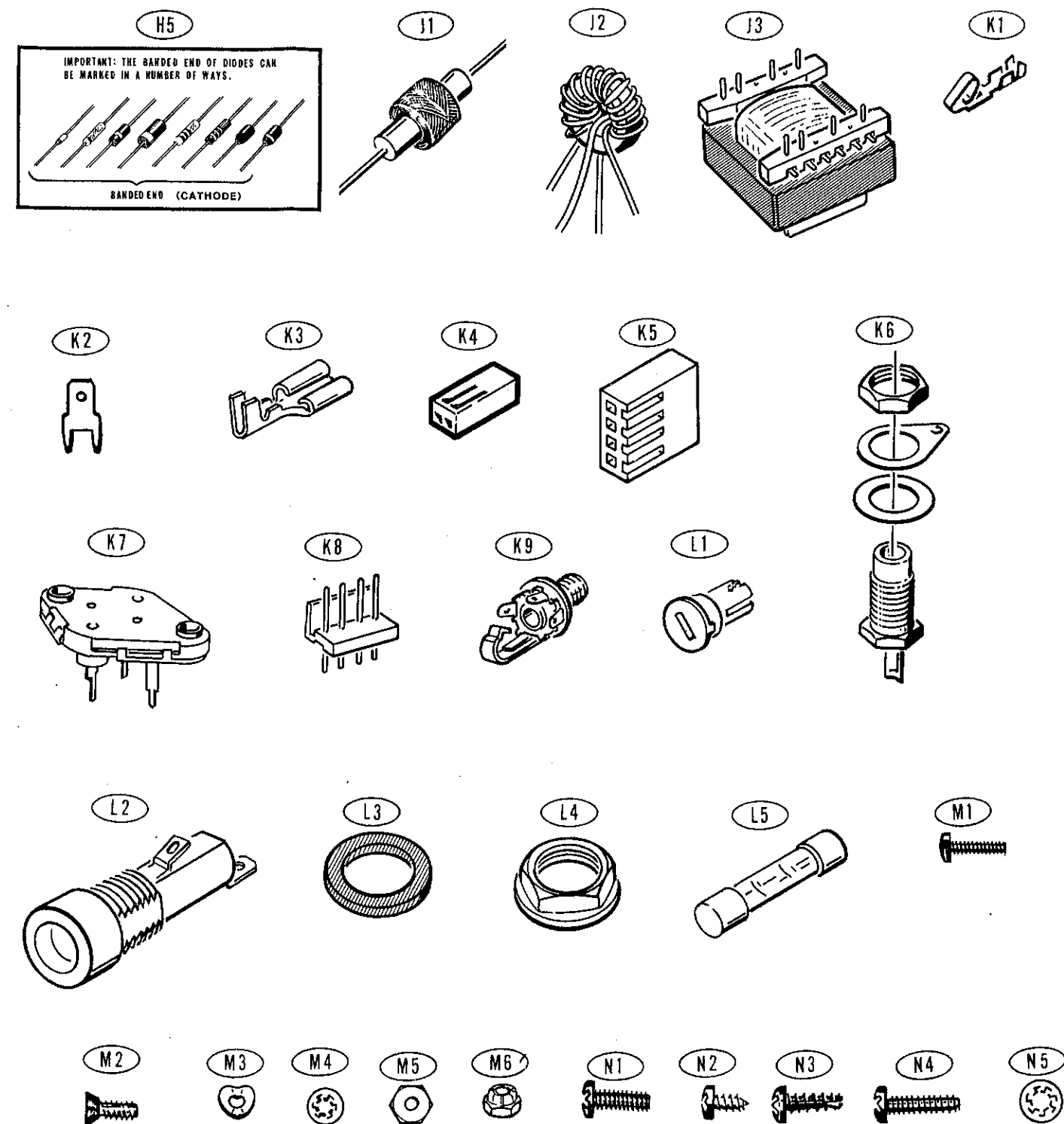
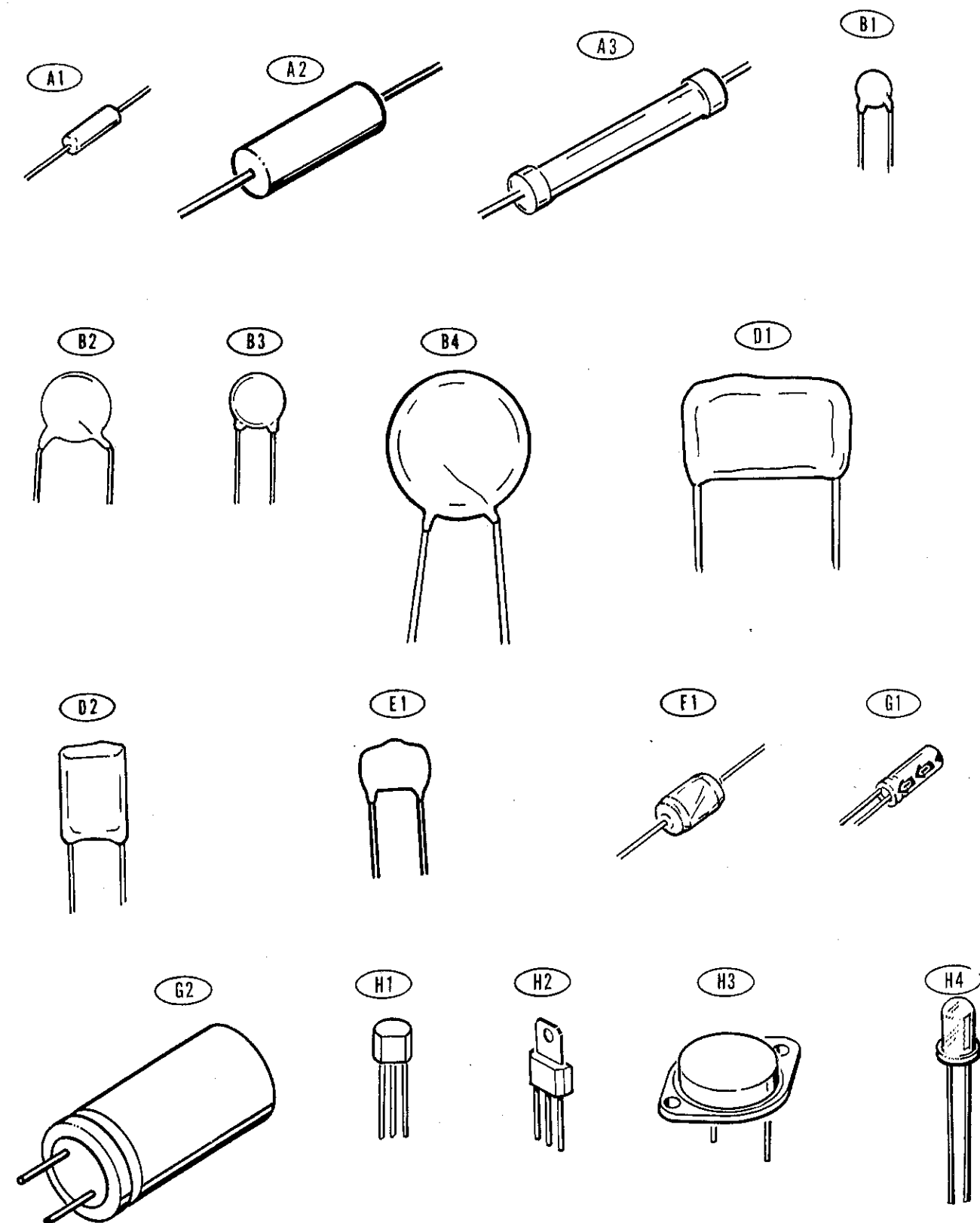


# ILLUSTRATION BOOKLET

## PARTS PICTORIAL

Part of 595-3317-04

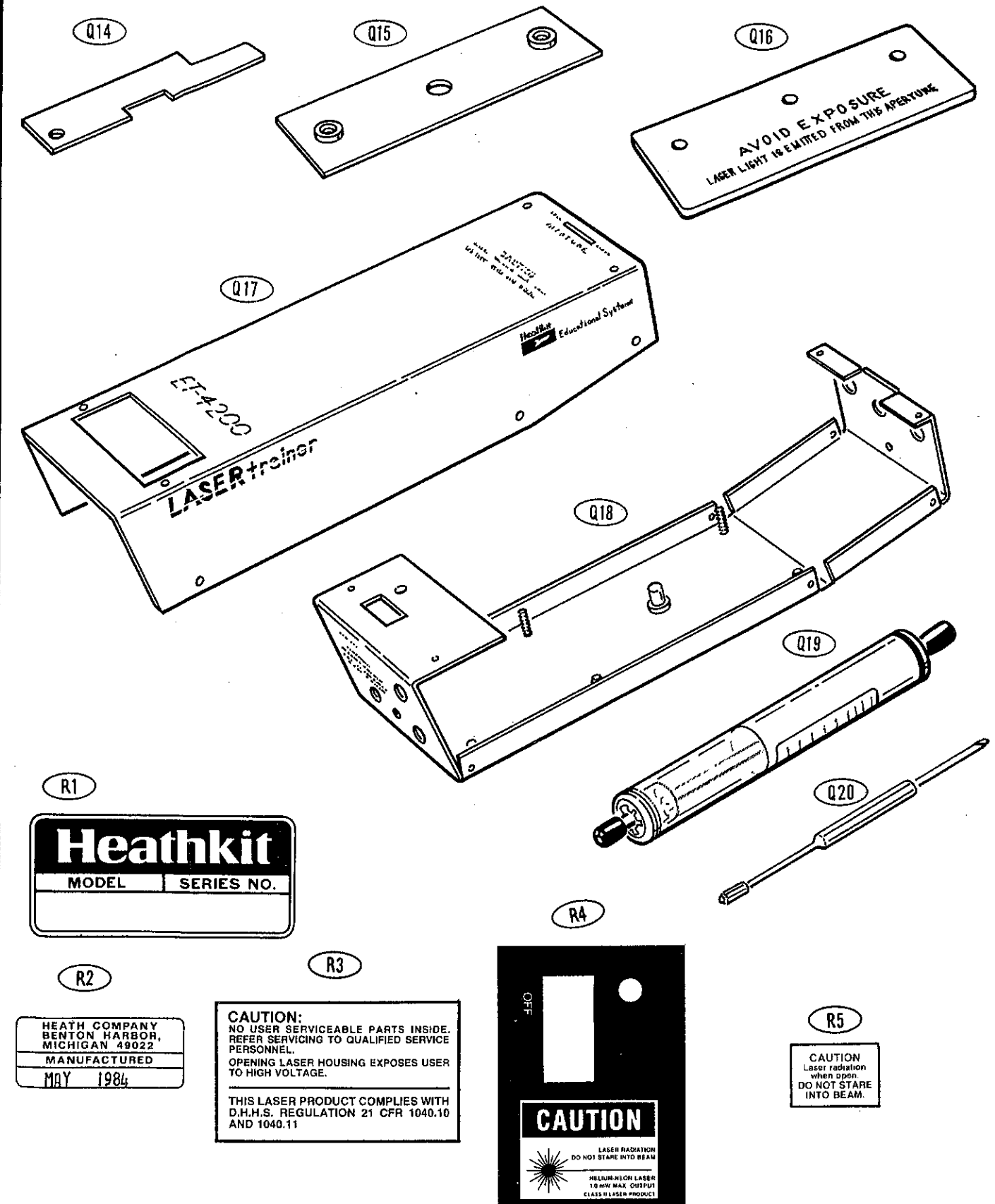
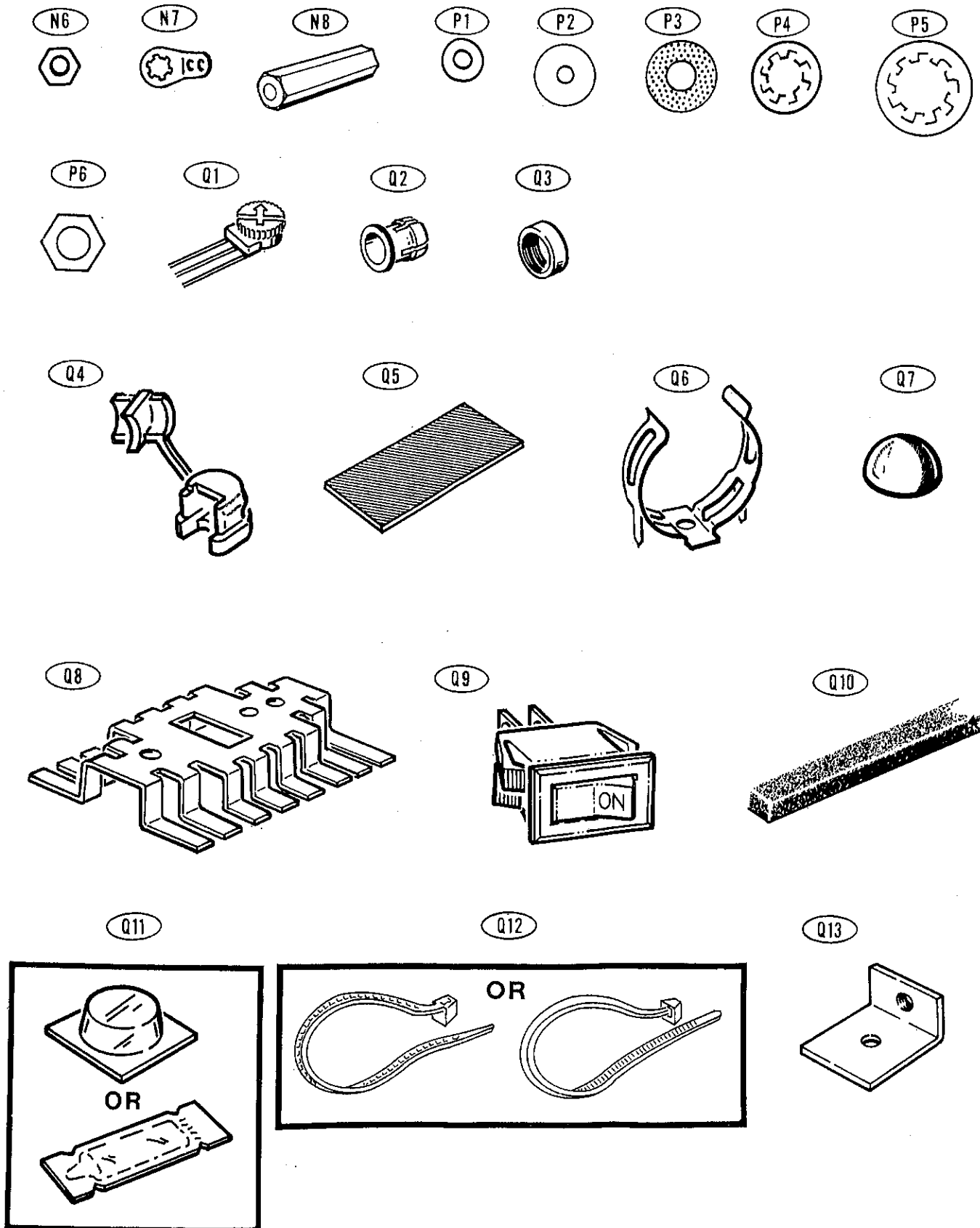


Model ET/ETW-4200

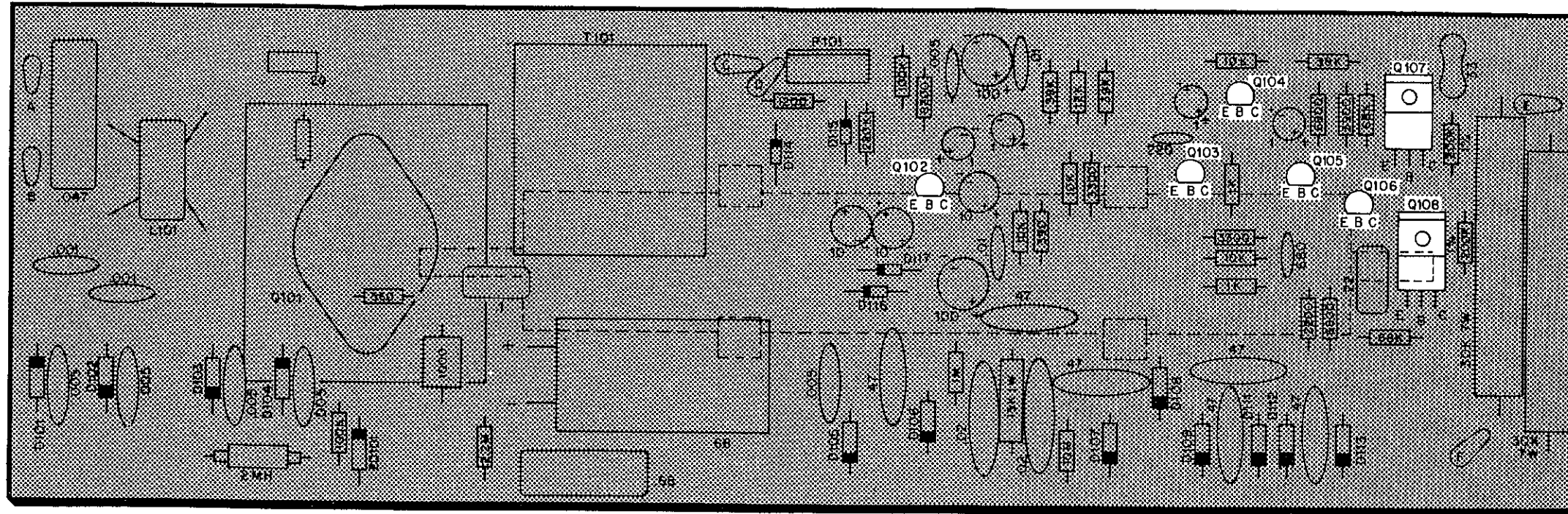
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# PARTS PICTORIAL (Cont'd)

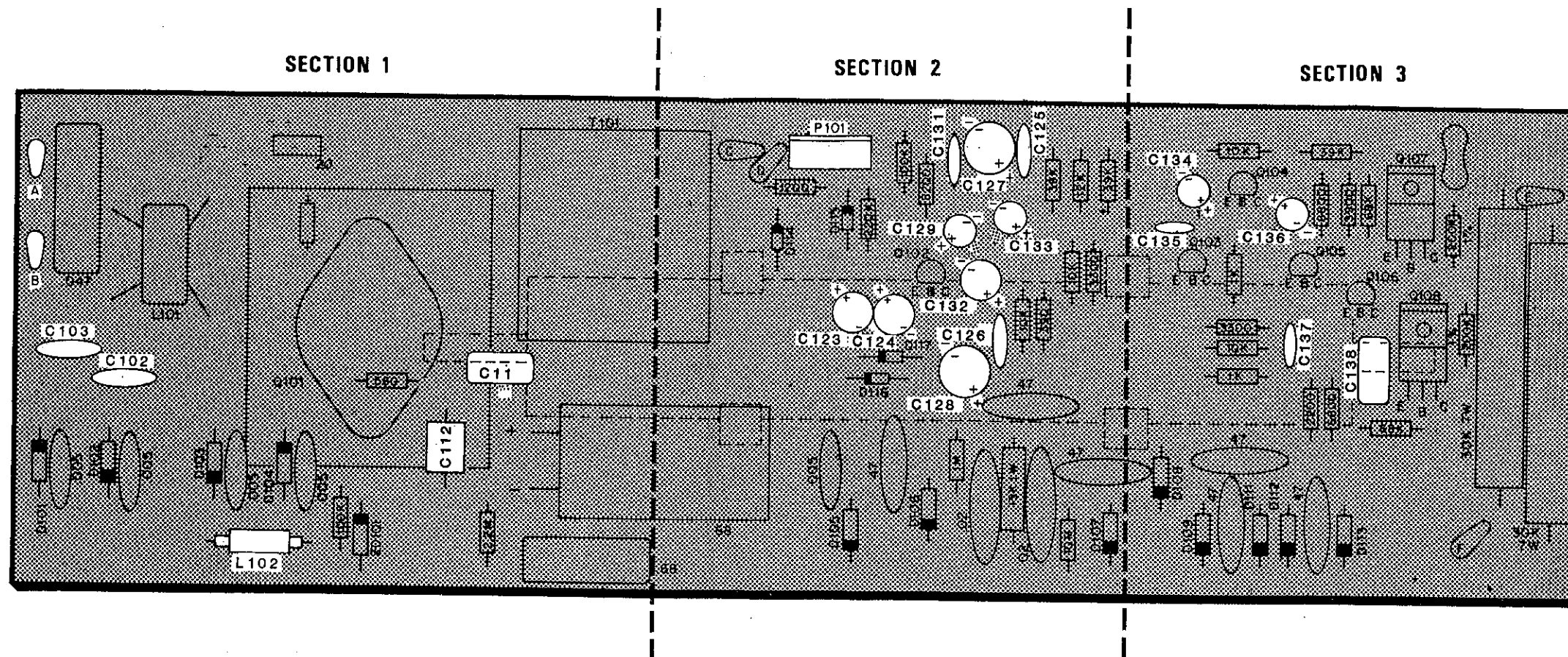
Page 2





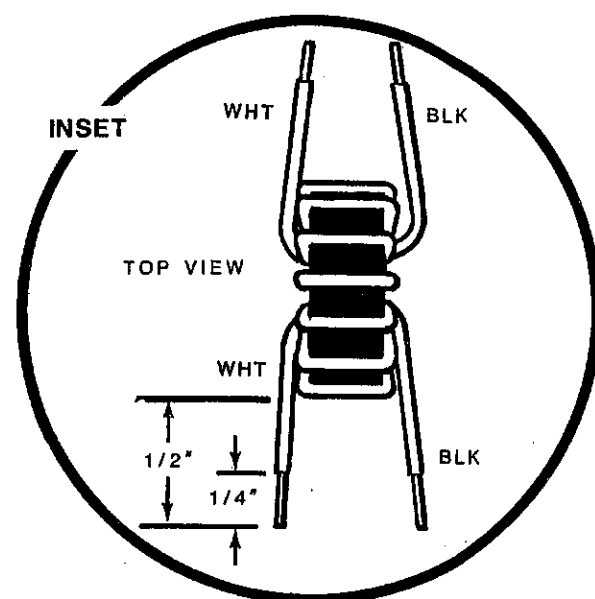


PICTORIAL 1-2



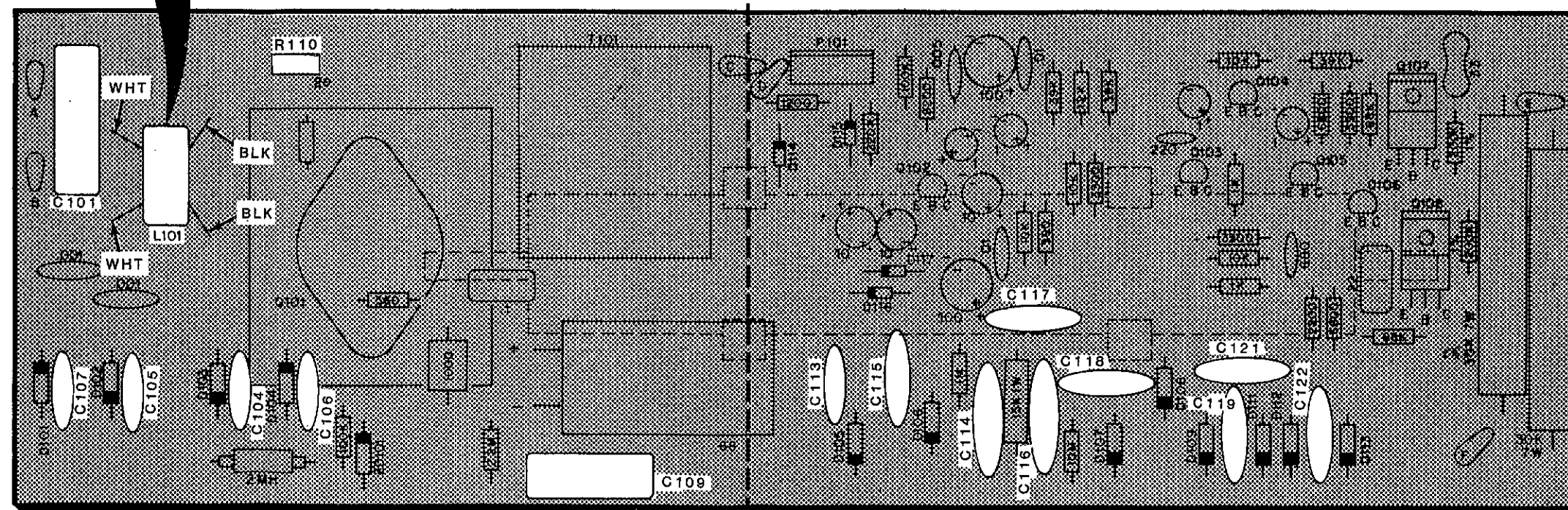
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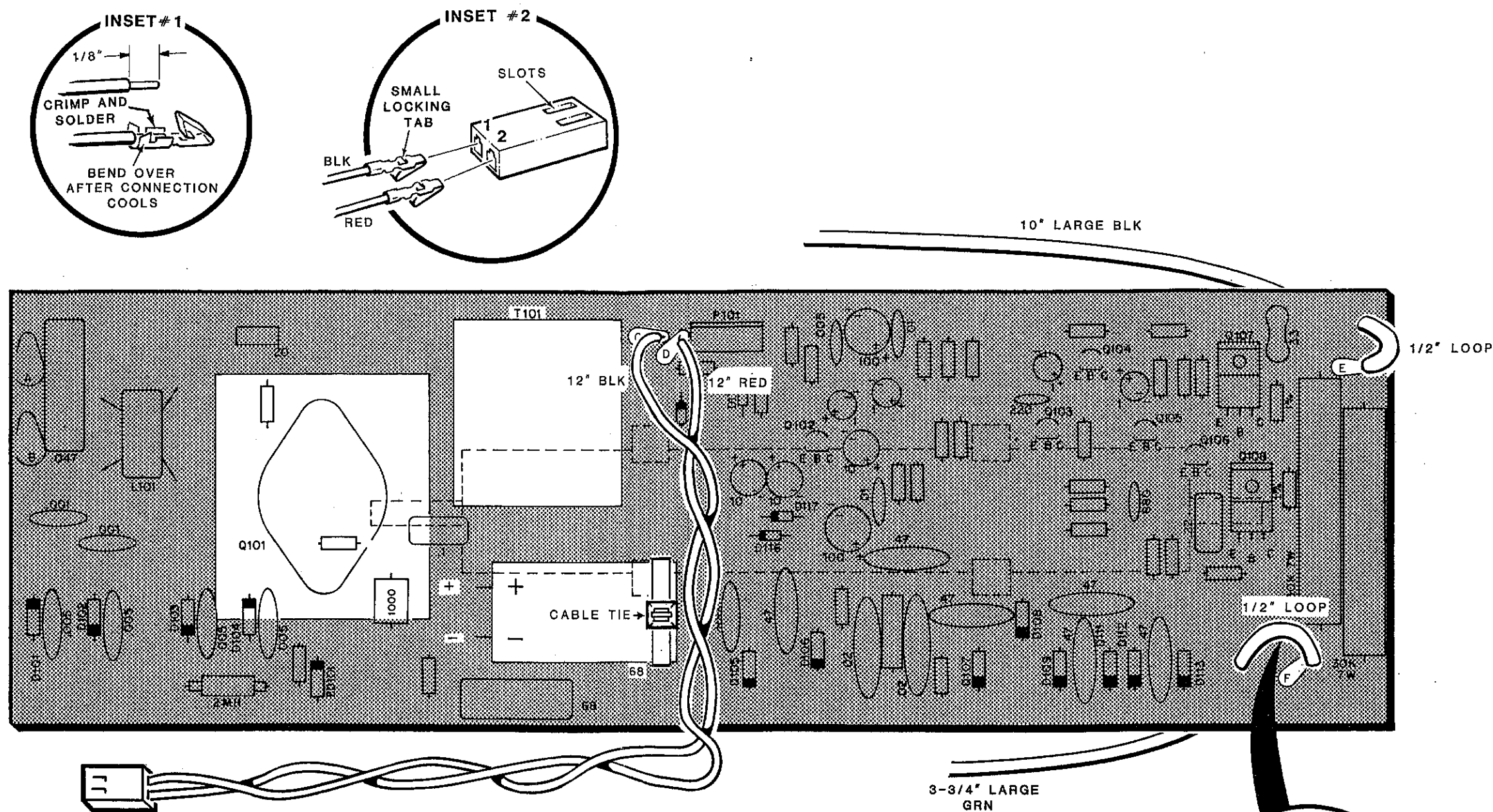


SECTION 1

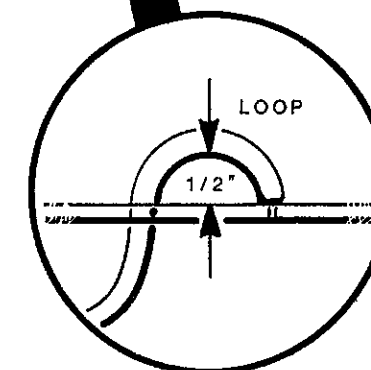
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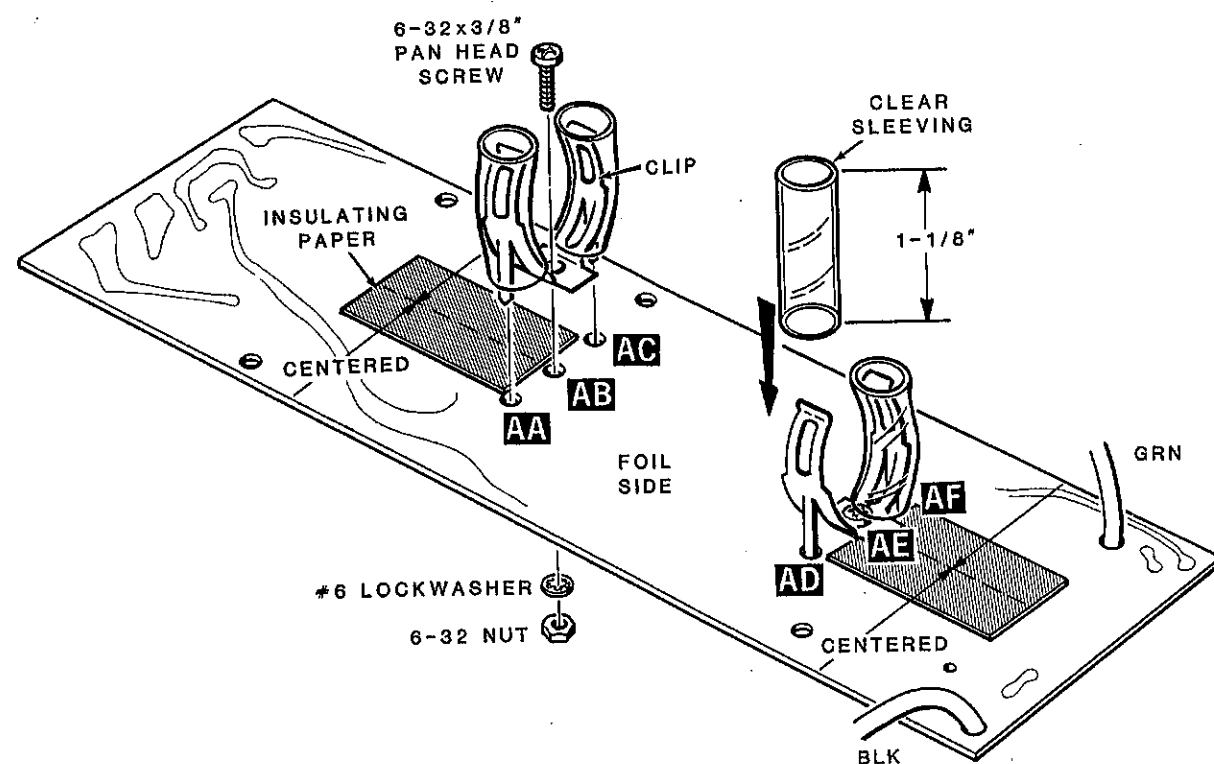


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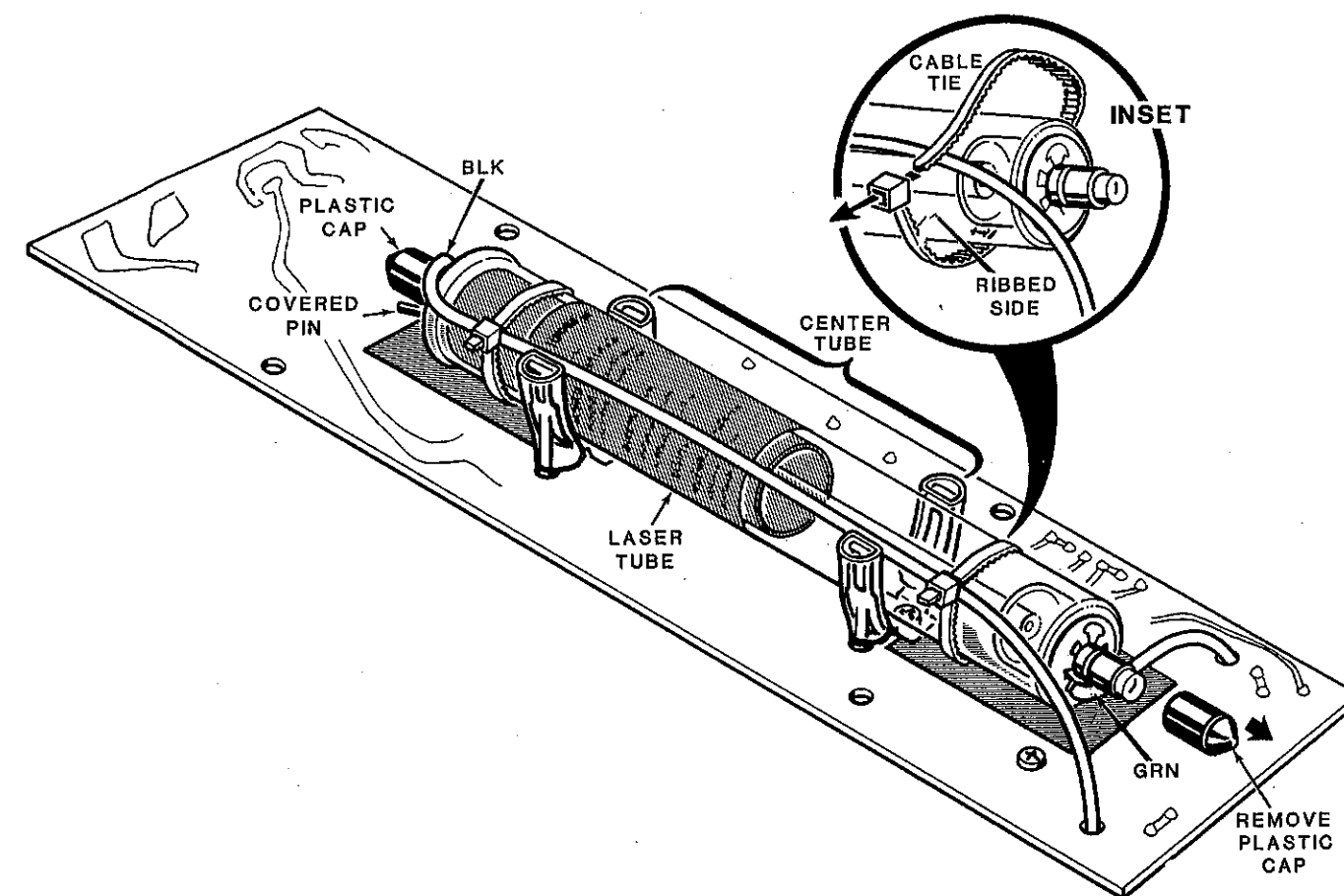


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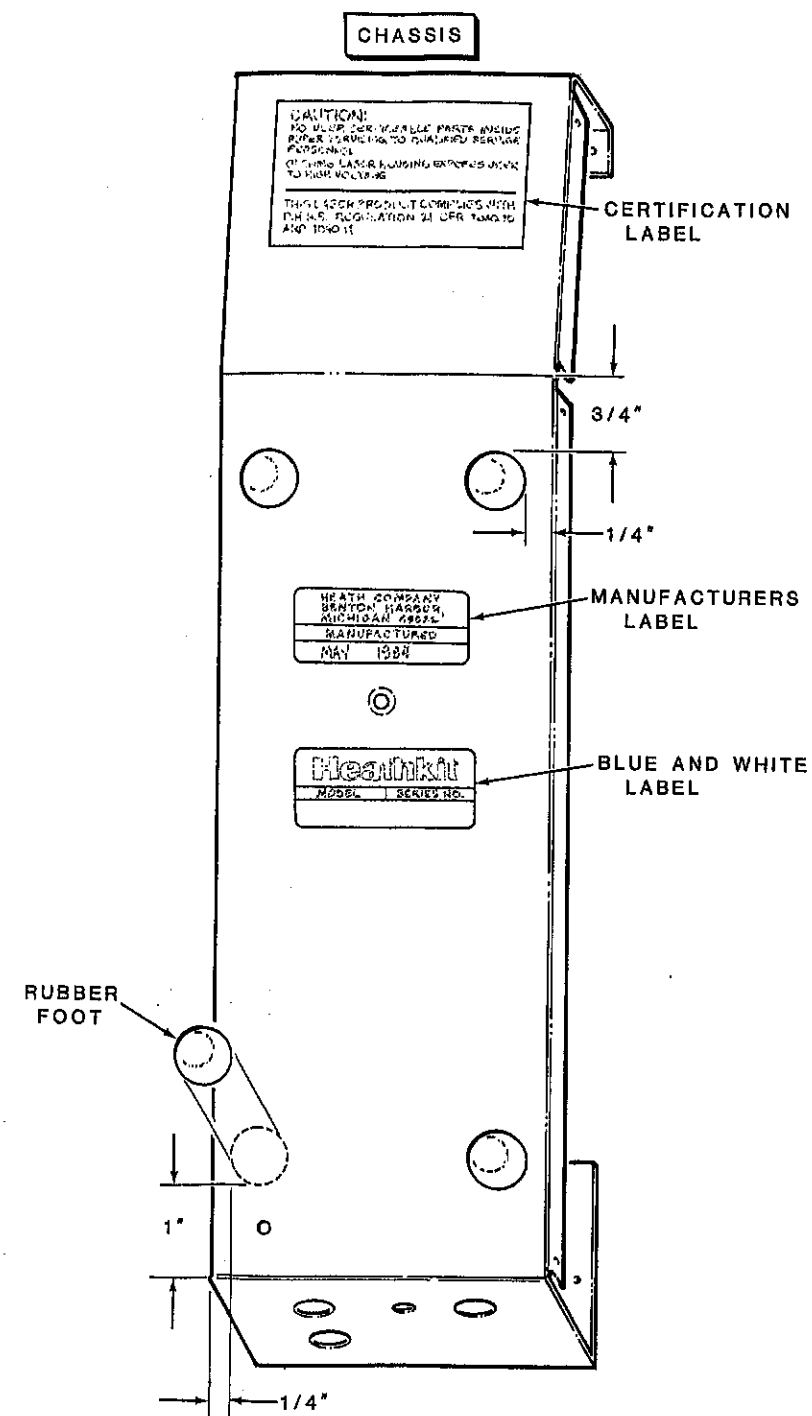


PICTORIAL 1-6

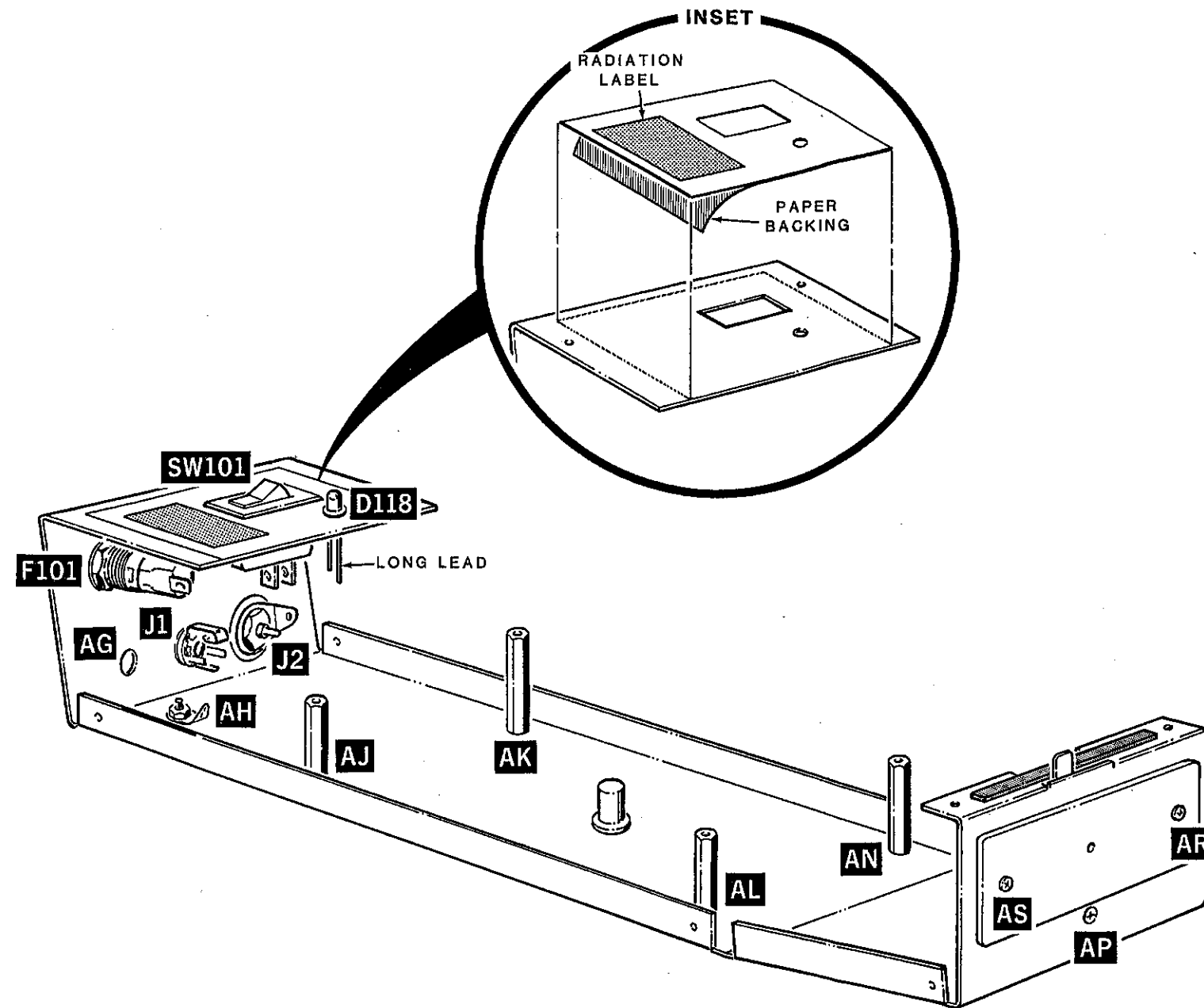


PICTORIAL 1-7

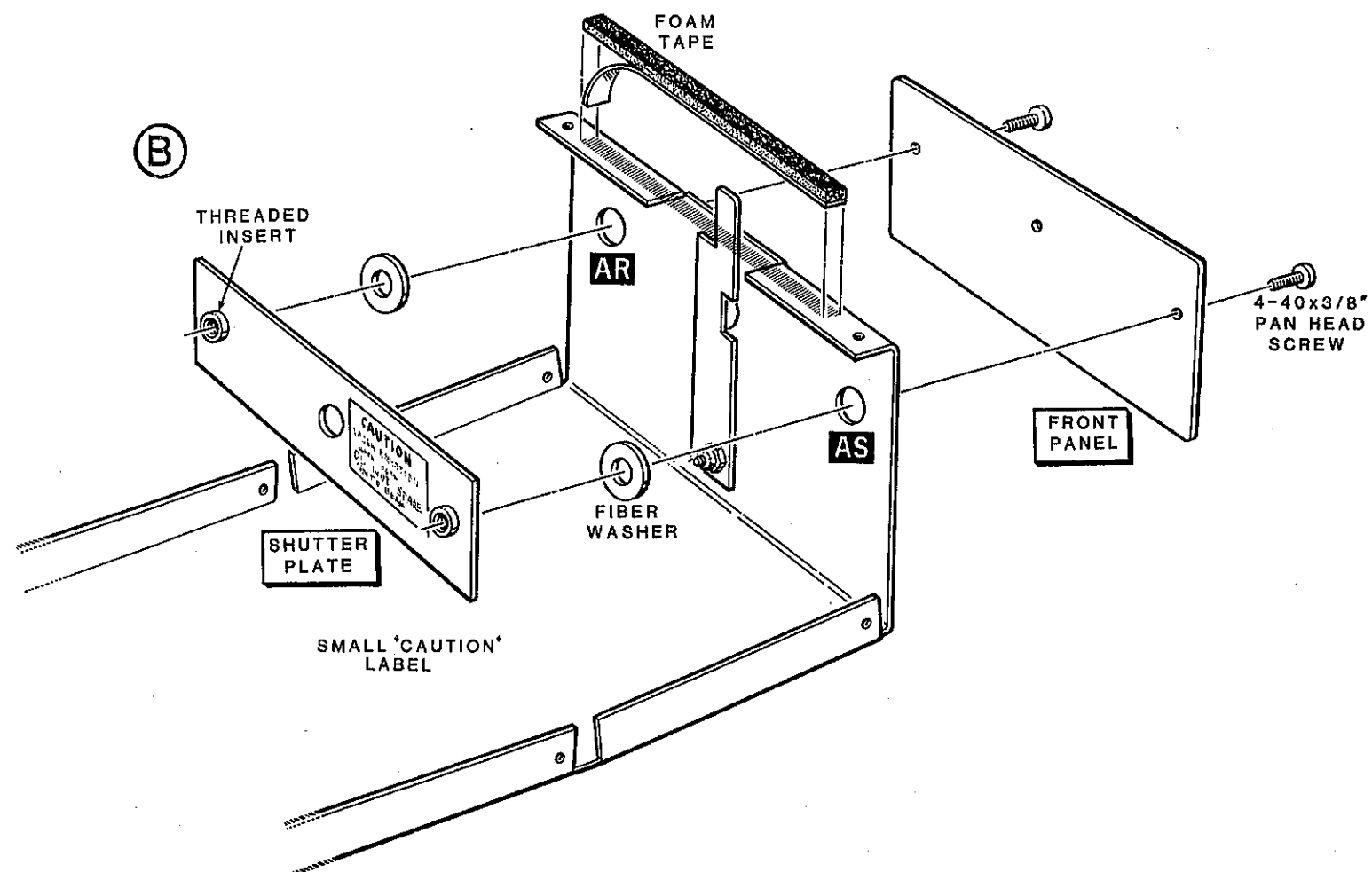
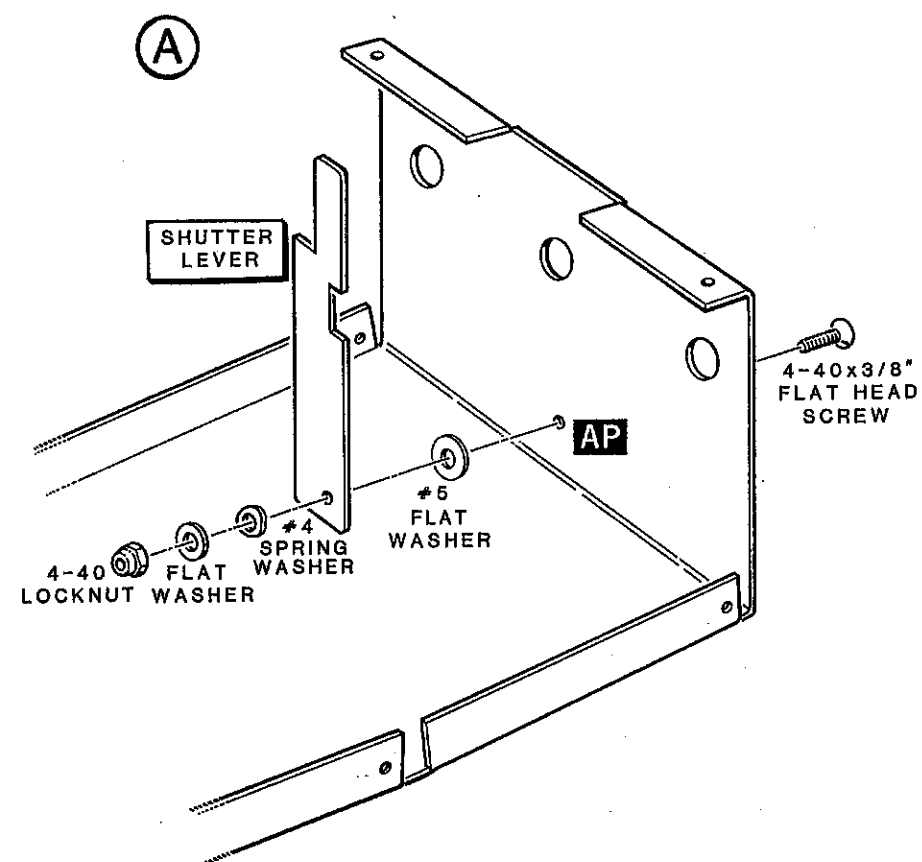




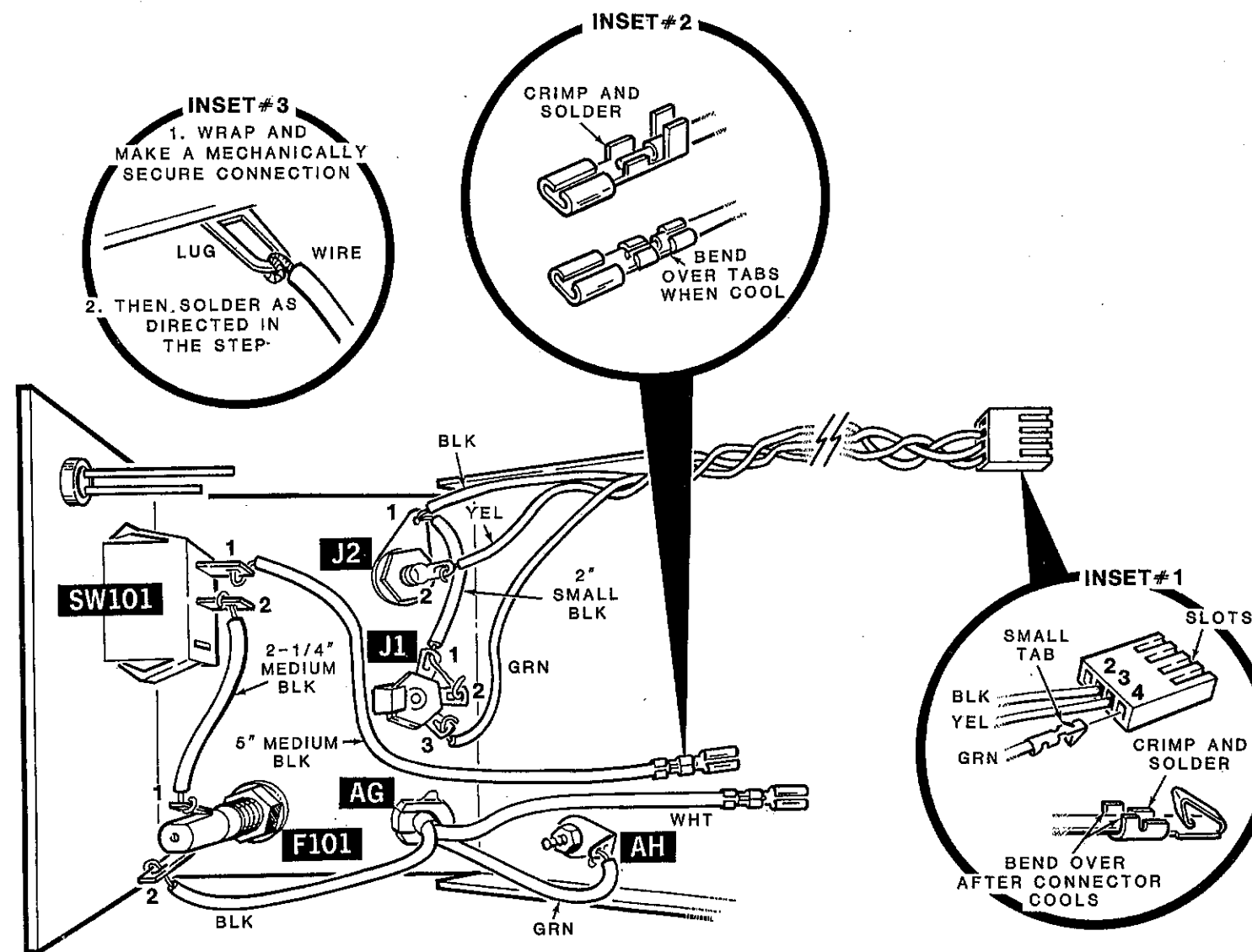
PICTORIAL 2-1



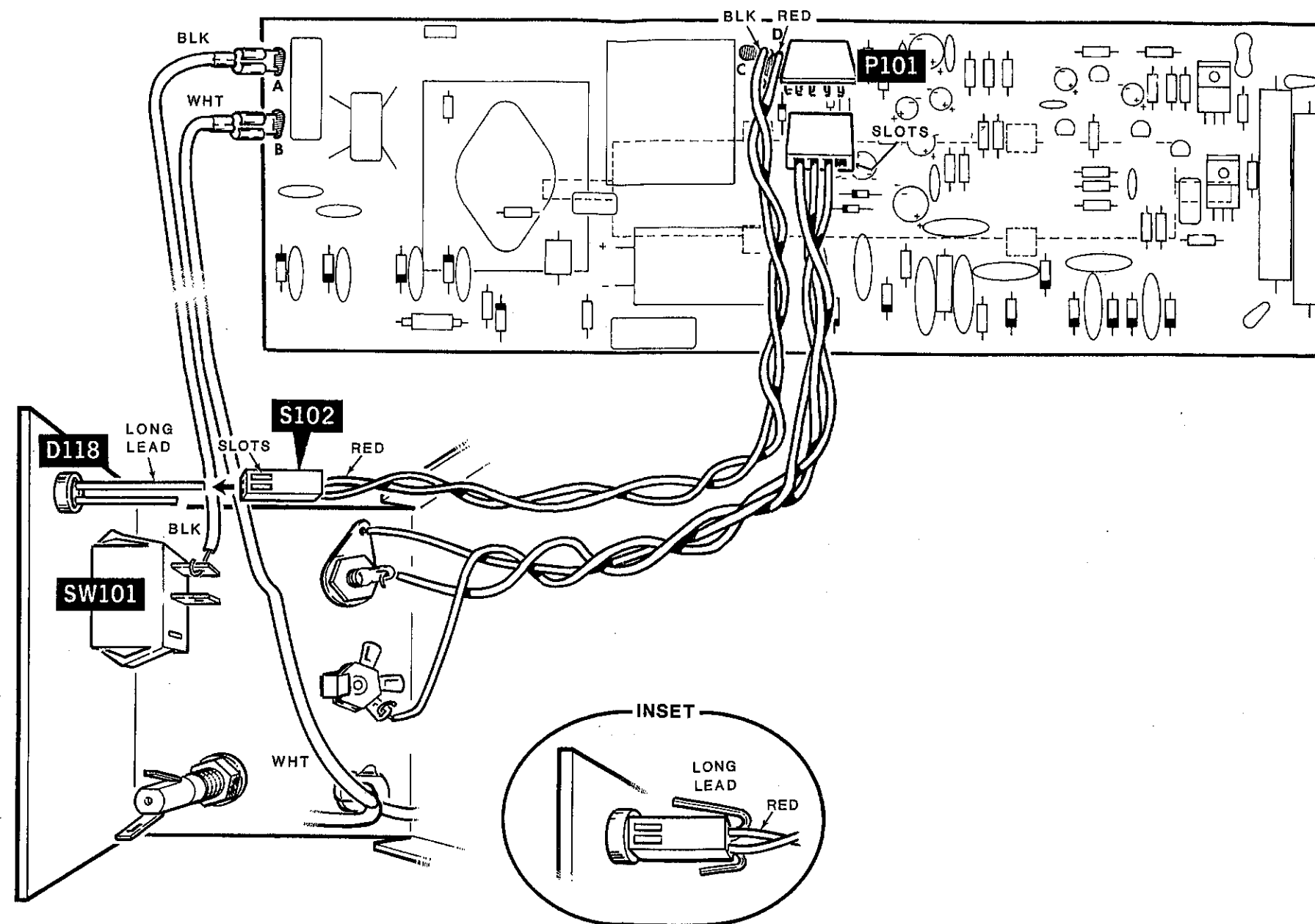
PICTORIAL 2-2



**Detail 2-2H**

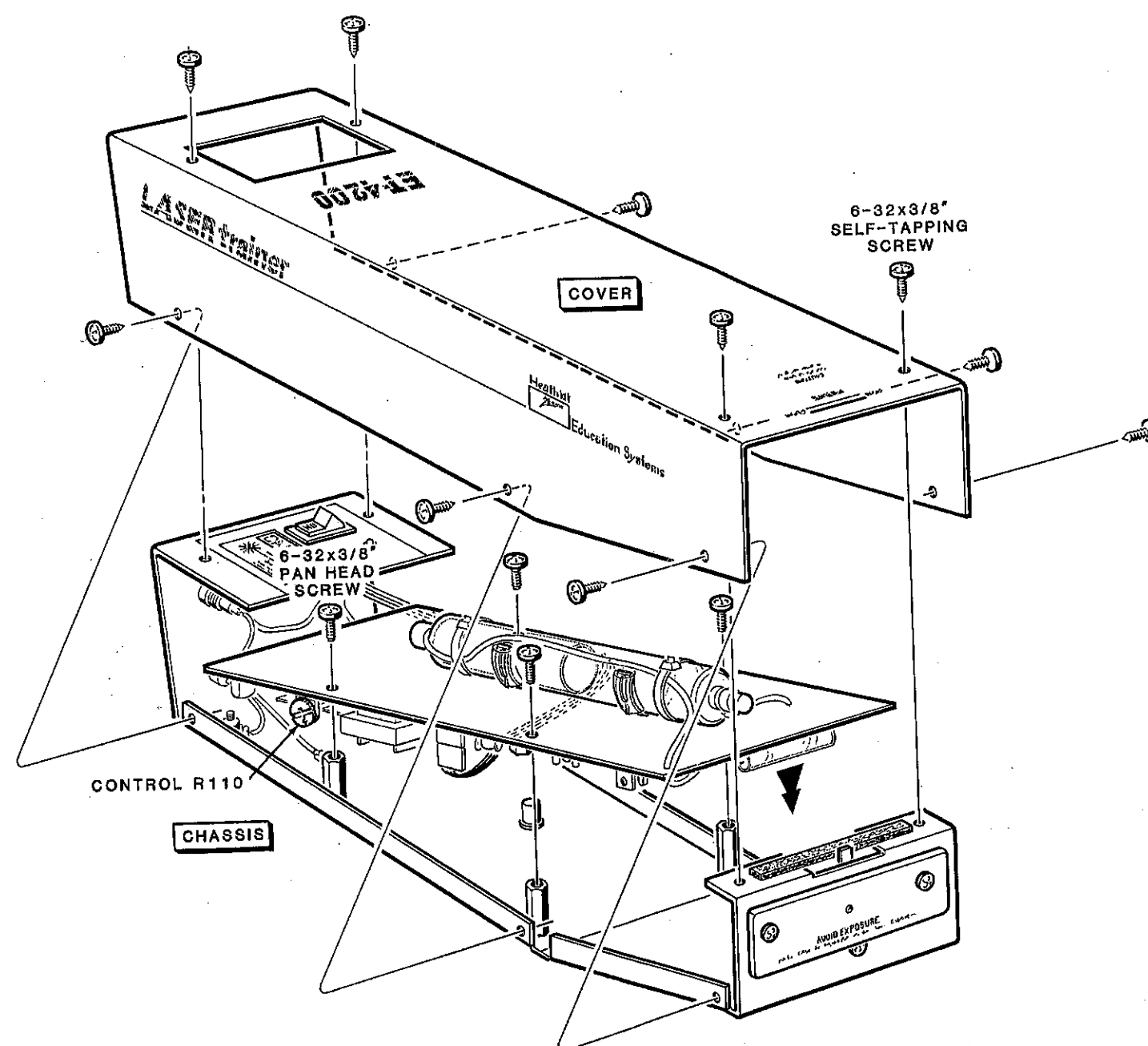


PICTORIAL 2-3



PICTORIAL 2-4





PICTORIAL 2-5

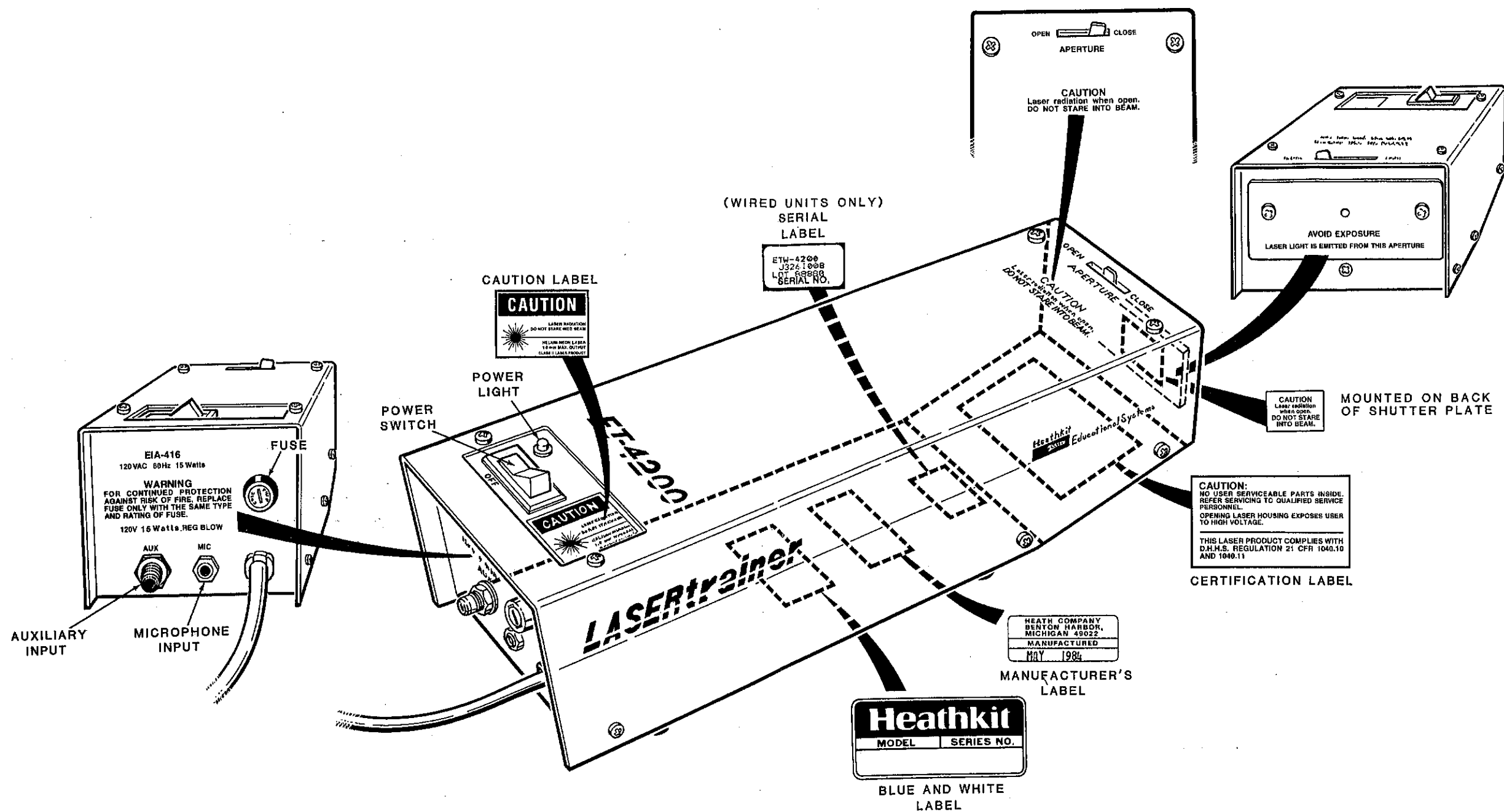
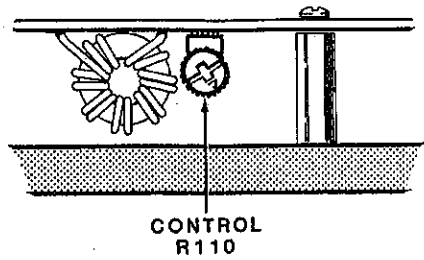
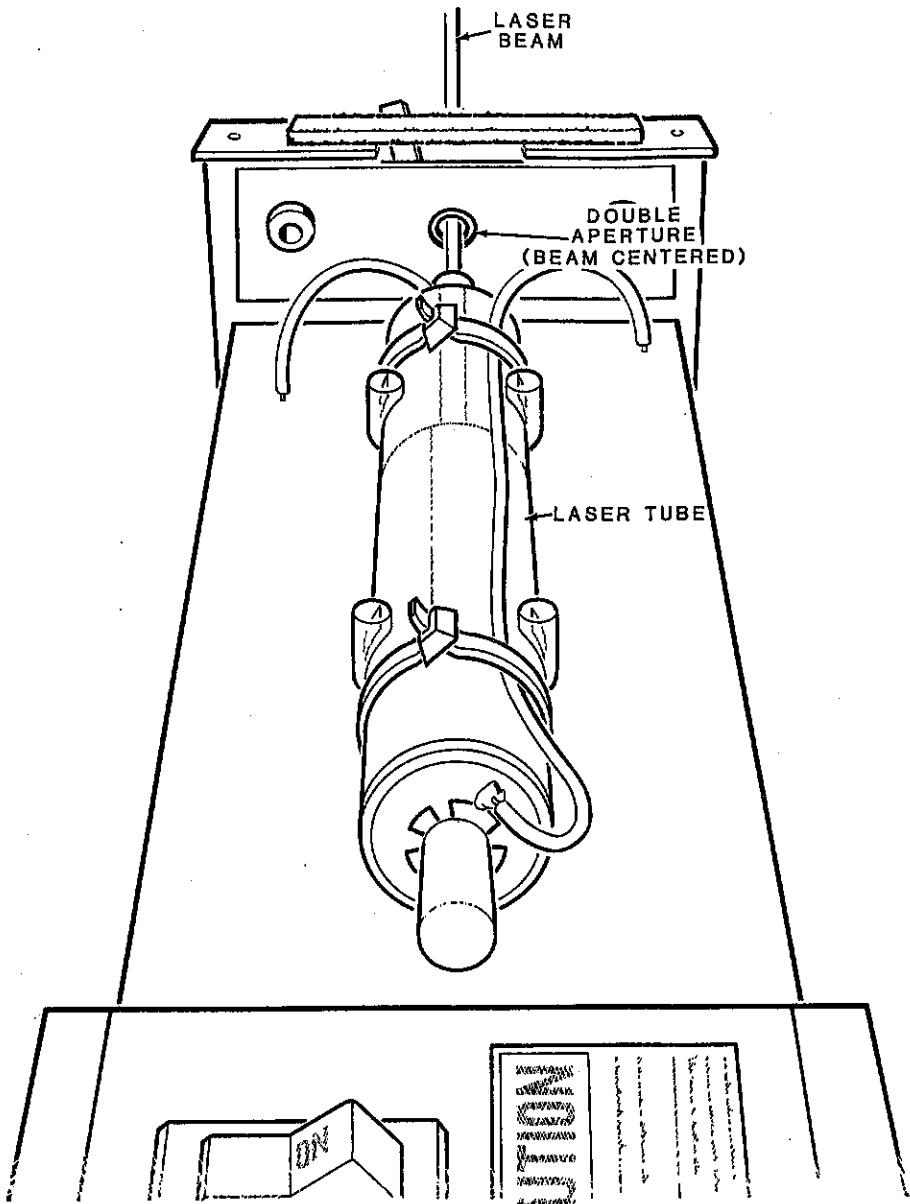


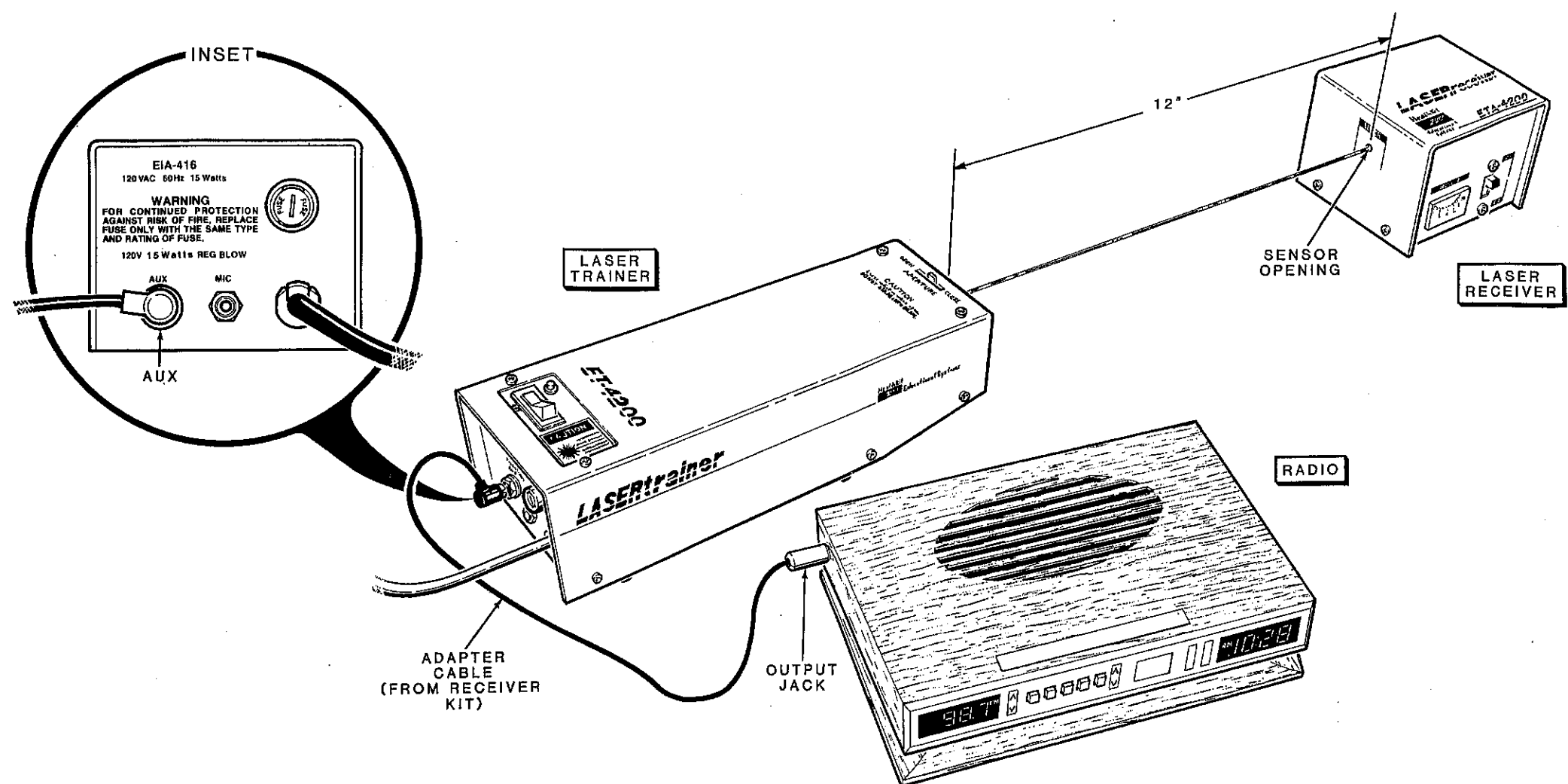
Figure 1



PICTORIAL 2-6



PICTORIAL 2-7



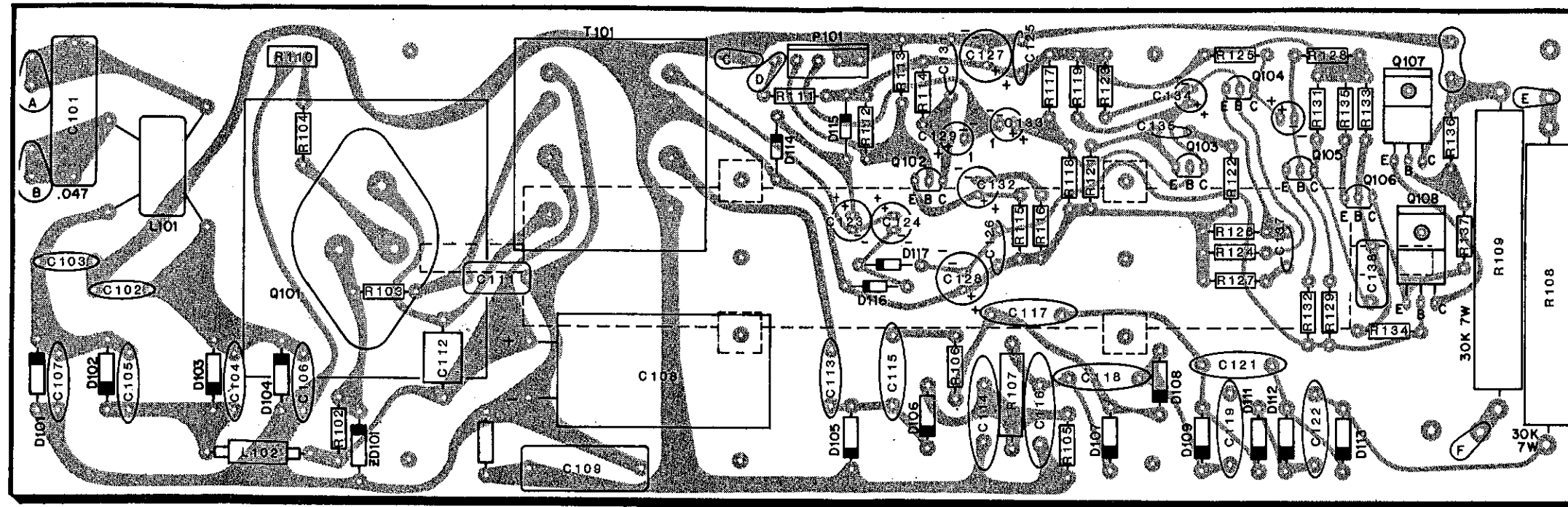
PICTORIAL 2-8

## CIRCUIT BOARD X-RAY VIEW

NOTE: To find the PART NUMBER of a component for the purpose of ordering a replacement part:

- A. Find the circuit component number (R5, C3, etc.) on the "X-Ray View."
- B. Locate the same number in the "Circuit Component Number" column of the "Parts List" in the front of this Manual.

- C. Adjacent to the circuit component number, you will find the PART NUMBER and DESCRIPTION which must be supplied when you order a replacement part.







SHOWN FROM COMPONENT SIDE



# **SCHEMATIC OF THE HEATHKIT® LASER TRAINER MODEL ET/ETW-4200**

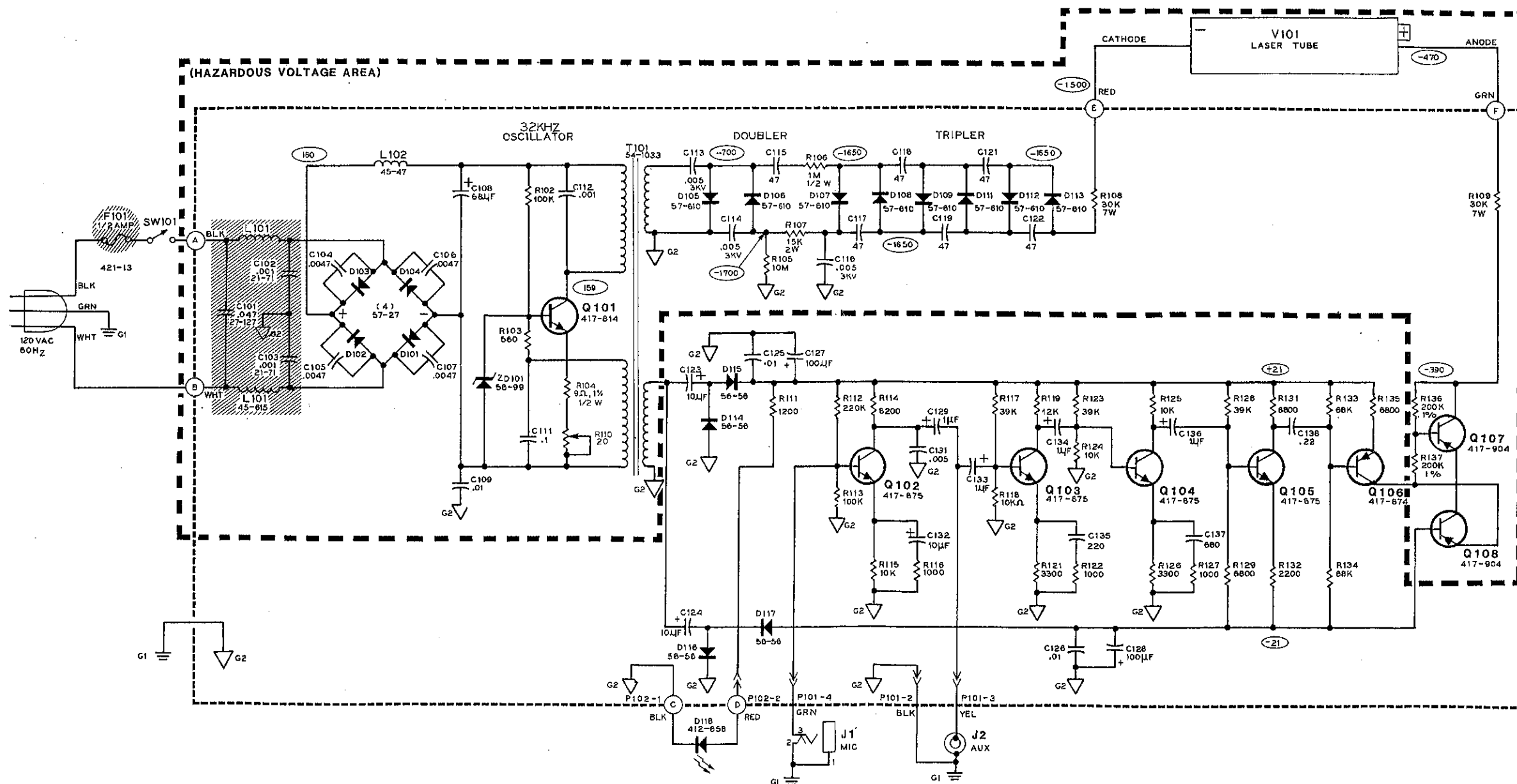
- NOTES:**
1. REFER TO THE "CIRCUIT BOARD X-RAY VIEW" (ILLUSTRATION BOOKLET PAGE 18) FOR THE PHYSICAL LOCATION OF PARTS.
  2. ALL RESISTORS ARE 1/4-WATT, 5% TOLERANCE UNLESS OTHERWISE SPECIFIED (K=10,000, M=1,000,000).
  3. ALL CAPACITORS LESS THAN 1 ARE IN UF (MICROFARADS), THOSE OF 1 OR GREATER ARE IN pF (PICOFARADS), UNLESS OTHERWISE SPECIFIED.
  4. MEASURED WITH A X100 HIGH-VOLTAGE PROBE TO KEEP CIRCUIT LOADING MINIMAL. NOT TO DO SO MAY DAMAGE THE CIRCUITRY.

5. THE FOLLOWING SYMBOLS ARE USED ON THIS SCHEMATIC DIAGRAM:

-  G2: CIRCUIT BOARD GROUND
-  G1: CHASSIS GROUND
-  A CIRCUIT BOARD WIRE CONNECTION.
-  A DC VOLTAGE READING TAKEN WITH A HIGH INPUT IMPEDANCE VOLTMETER FROM THE POINT INDICATED TO CHASSIS GROUND. VOLTAGES MAY VARY -20%. VOLTAGES WERE MEASURED WITH THE EXT TRIG BUTTON DEPRESSED, ZERO DC OFFSET VOLTAGE, WITH NO EXTERNAL TRIGGER VOLTAGE APPLIED.

SHADED AREAS:

SAFETY-CRITICAL PARTS. USE EXACT REPLACEMENT PARTS FROM HEATH COMPANY ONLY.



## TAPED COMPONENT CHART

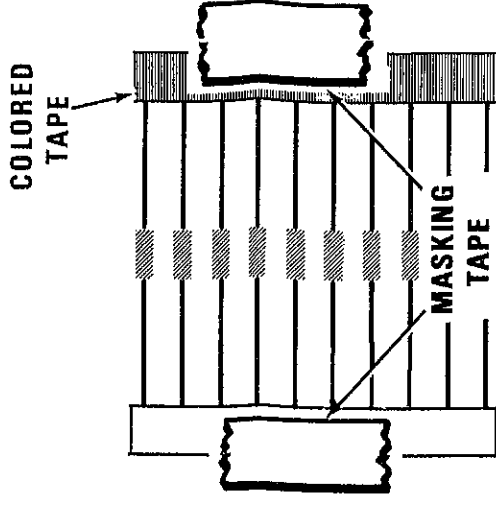
Read and Follow These Instructions  
Before You Install the First Component.

Locate the strips of components. These parts are equally spaced and held together as shown by two strips of tape. **DO NOT REMOVE ANY PARTS FROM THE STRIP UNTIL THEY ARE CALLED FOR IN THE ASSEMBLY INSTRUCTIONS.**

The taping detail at the right shows you how to tape the component strips on the chart below. Position the strip so the colored tape is toward your right. Then, starting with the left column, tape the side of the strip over its corresponding drawing on this sheet. Realign each section as you go, cutting the tape as needed. Make sure you place masking tape on each individual section.

Cut the tapes after the last component in the left column and, in the same manner, continue to tape the remaining component strip over the right column, starting at the top. Make sure the colored tape is on the right side.

**NOTE:** Never attempt to pull the components free from the tape; gum residue from the tape could cause an intermittent solder connection. Use diagonal cutters to remove each part as it is called for in the assembly instructions. Cut the leads at the inside edge of the tape as shown.



Taping Detail

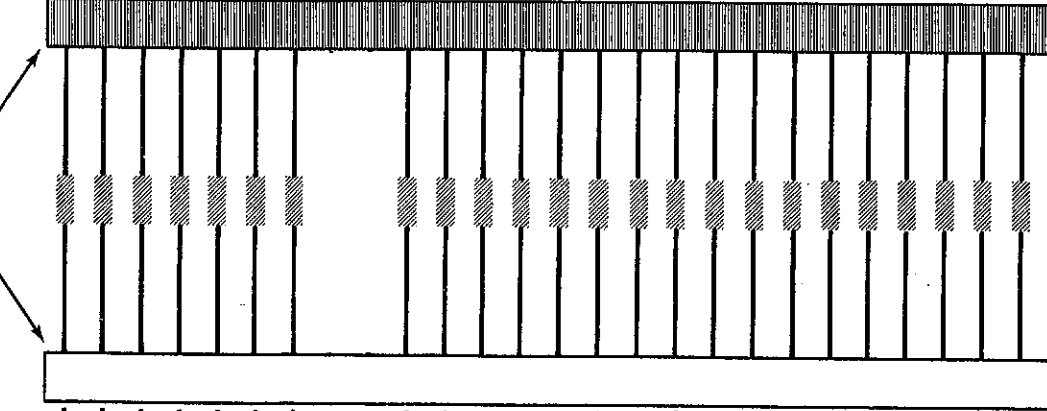
### SECTION 1

560  $\Omega$  (grn-blu-brn)  
1N2071 diode (#57-27)  
1N2071 diode (#57-27)  
1N2071 diode (#57-27)  
1N2071 diode (#57-27)  
100 k $\Omega$  (brn-blk-yel)  
1N5223B zener diode (#56-99)

### SECTION 2

1200  $\Omega$  (brn-red-red)  
100 k $\Omega$  (brn-blk-yel)  
8200  $\Omega$  (gry-red-red)  
39 k $\Omega$  (org-wht-org)  
12 k $\Omega$  (brn-red-org)  
39 k $\Omega$  (org-wht-org)  
1N4149 diode (#56-56)  
1N4149 diode (#56-56)  
220 k $\Omega$  (red-red-yel)  
10 k $\Omega$  (brn-blk-org)  
3300  $\Omega$  (org-org-red)  
10 k $\Omega$  (brn-blk-org)  
1000  $\Omega$  (brn-blk-red)  
1N4149 diode (#56-56)  
1N4149 diode (#56-56)  
1 M $\Omega$ , 1/2-watt (brn-blk-grn)  
10 M $\Omega$  (brn-blk-blu)

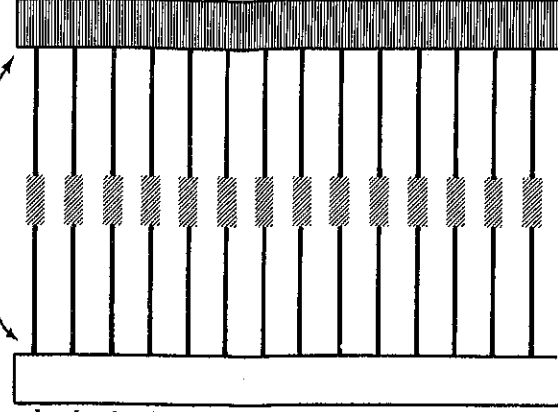
CUT HERE



### SECTION 3

10 k $\Omega$  (brn-blk-org)  
39 k $\Omega$  (org-wht-org)  
6800  $\Omega$  (blu-gry-red)  
4700  $\Omega$  (yel-viol-red)  
68 k $\Omega$  (blu-gry-org)  
200 k $\Omega$ , 1% (red-blk-blk-org)  
1000  $\Omega$  (brn-blk-red)  
3300  $\Omega$  (org-org-red)  
10 k $\Omega$  (brn-blk-org)  
1000  $\Omega$  (brn-blk-red)  
200 k $\Omega$ , 1% (red-blk-blk-org)  
2200  $\Omega$  (red-red-red)  
6800  $\Omega$  (blu-gry-red)  
68 k $\Omega$  (blu-gry-org)

CUT HERE



CUT HERE