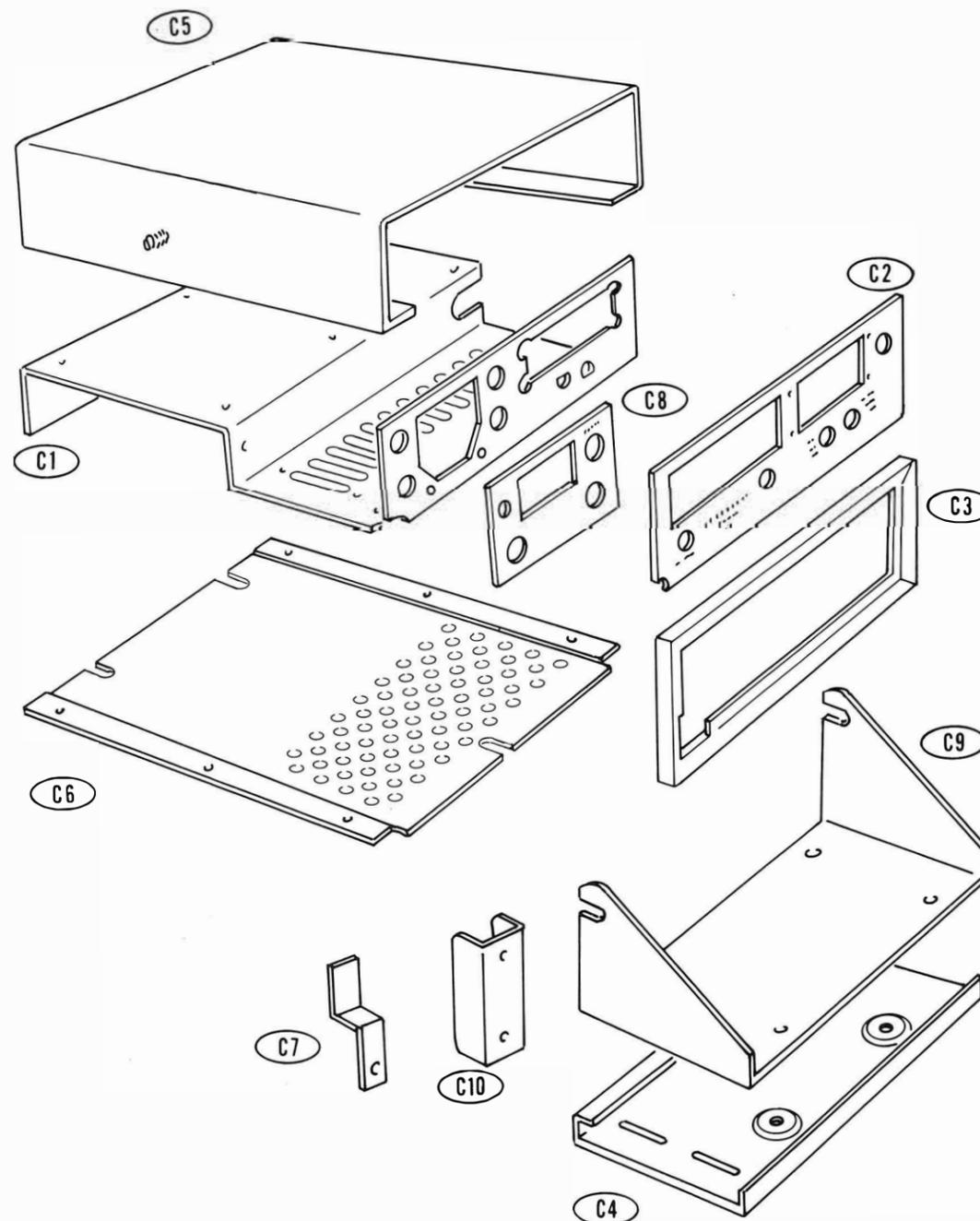
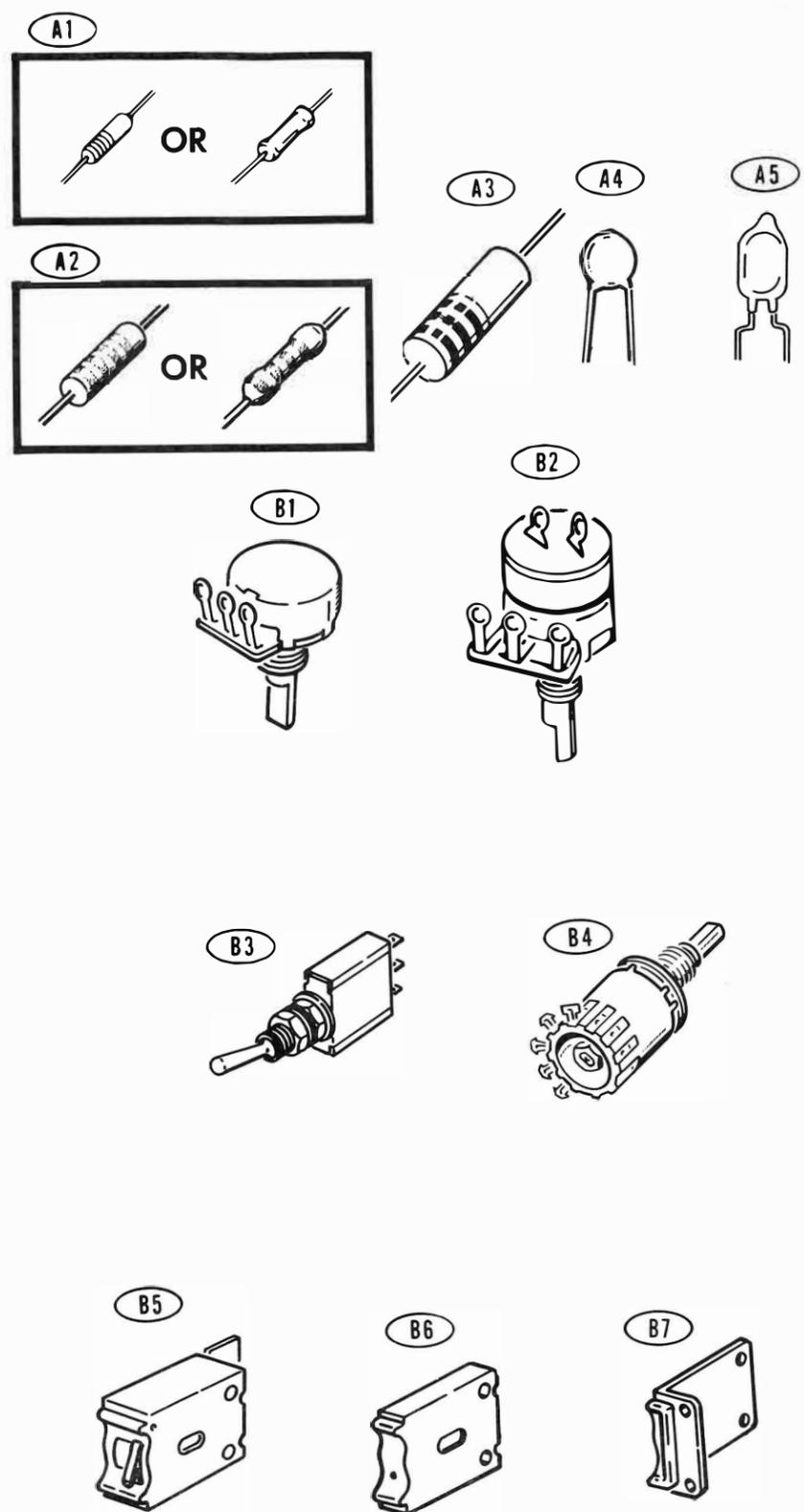
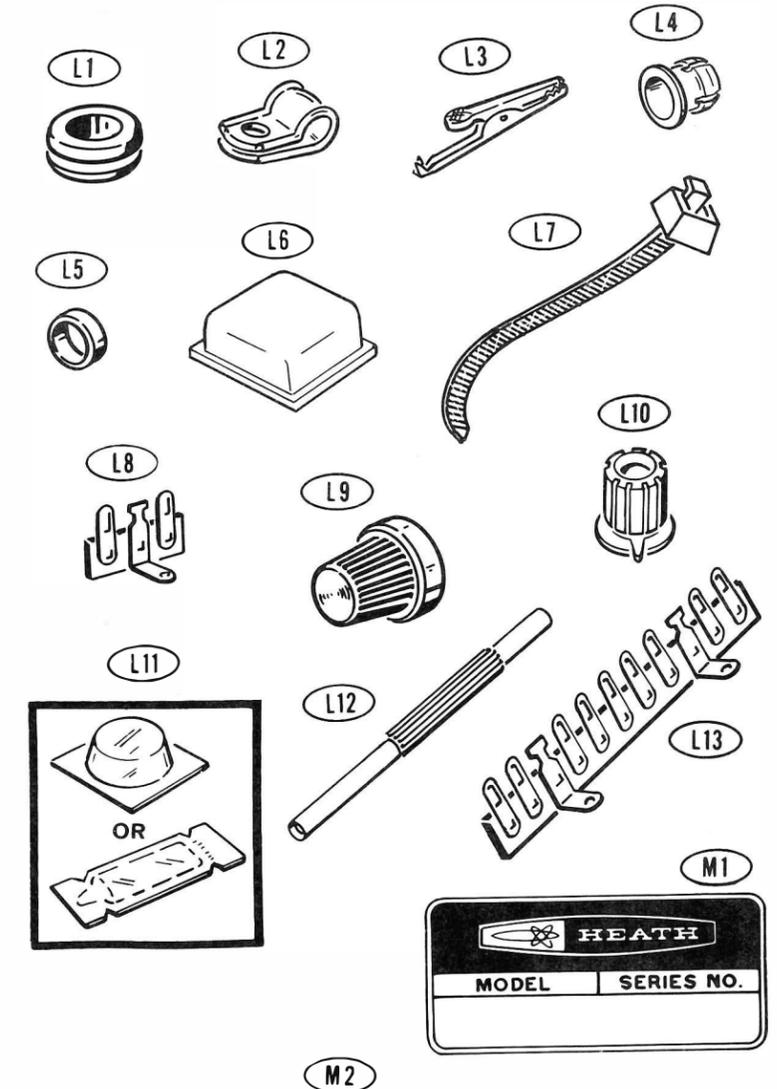
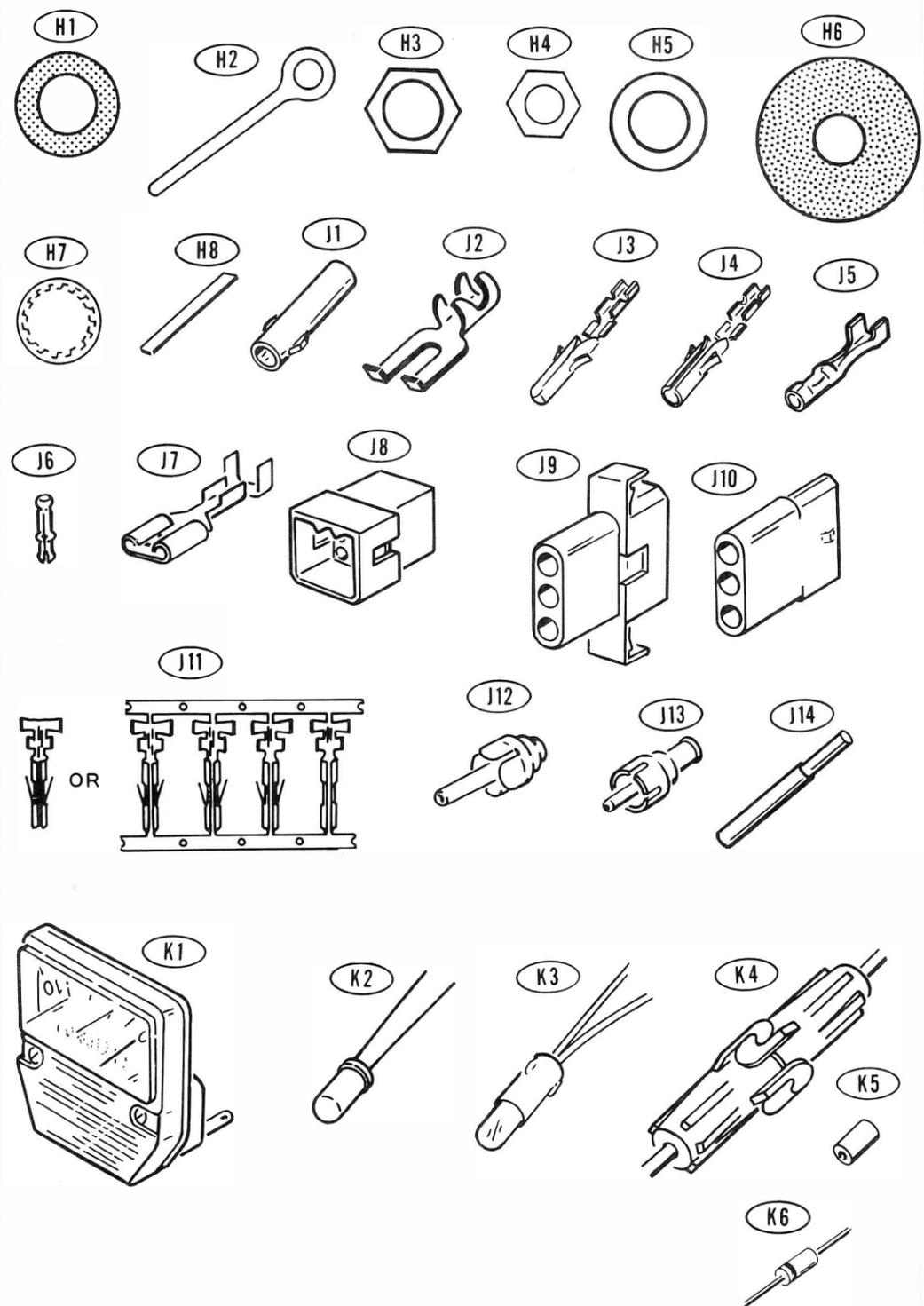
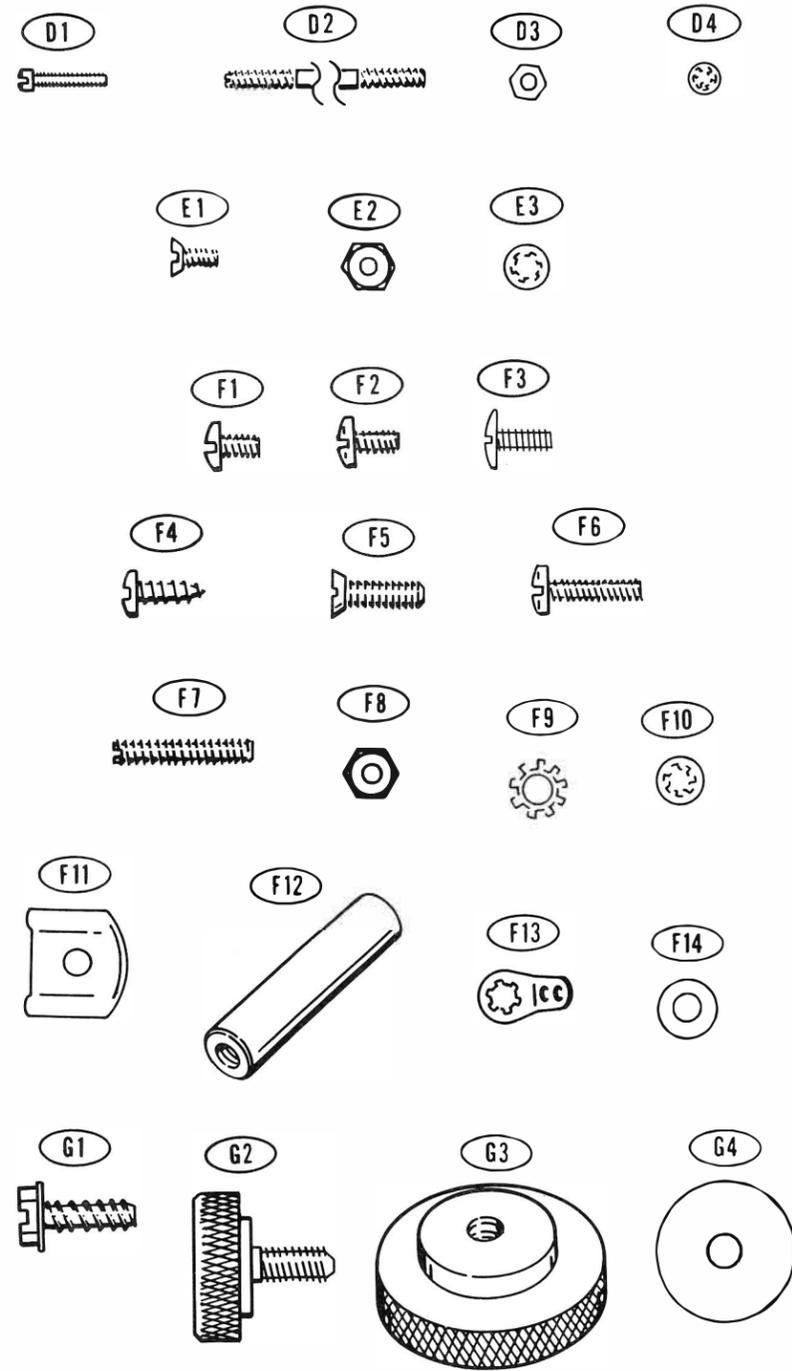


# ILLUSTRATION BOOKLET

## CHASSIS PARTS PICTORIAL



Chassis Parts Pictorial (Cont'd.)



**HEATHKIT** 390-1302

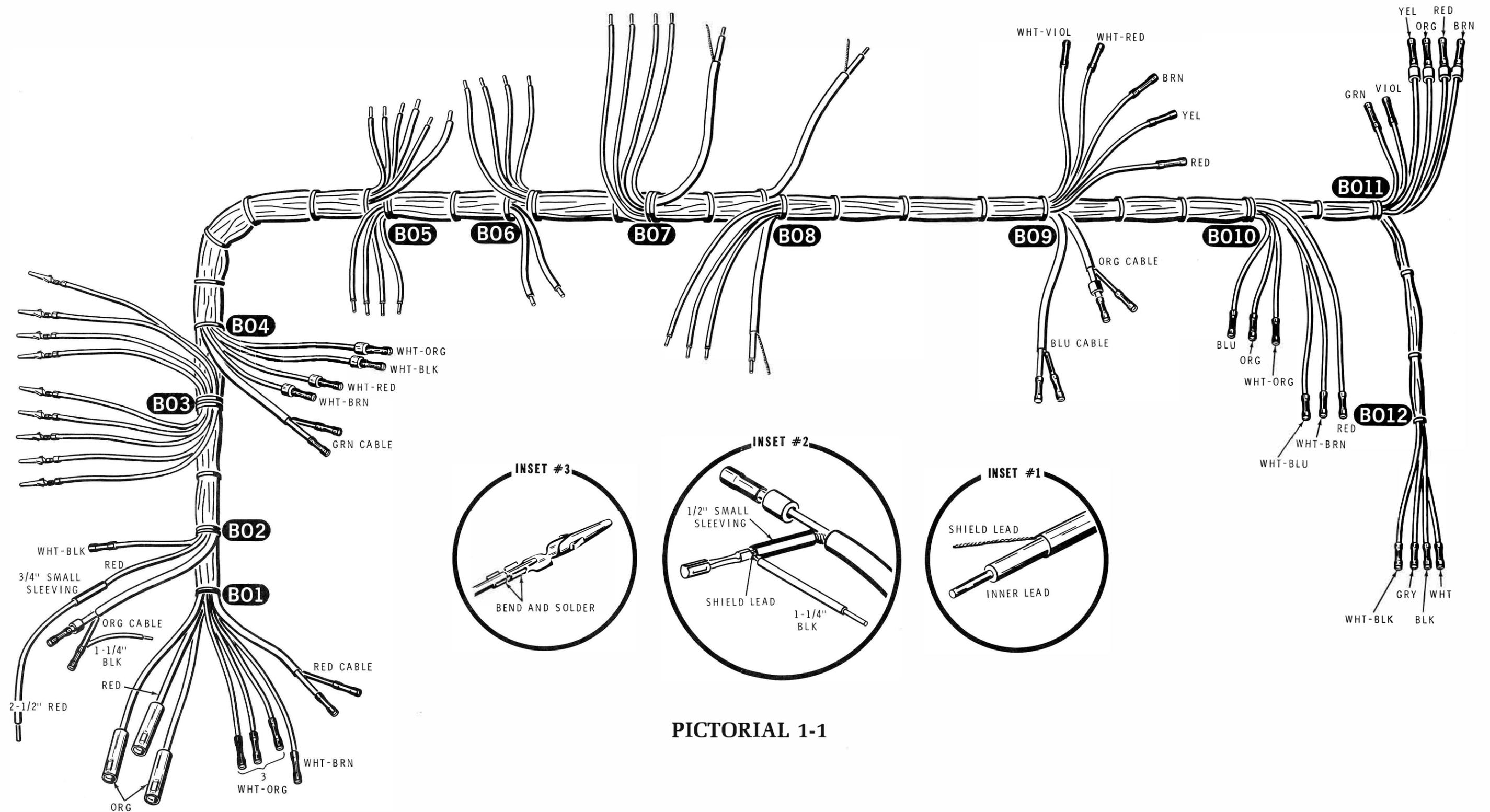
CERTIFICATION OF COMPLIANCE WITH FEDERAL COMMUNICATIONS COMMISSION REGULATIONS, PART 15.

The Heath Company certifies that this Receiver can be expected to comply with the requirements of Part 15 Subpart C of the Subject regulations when assembled in strict accordance with the instructions contained in the applicable Heath Company Construction Manual, using only components and materials supplied with the kit or the exact equivalent thereof.

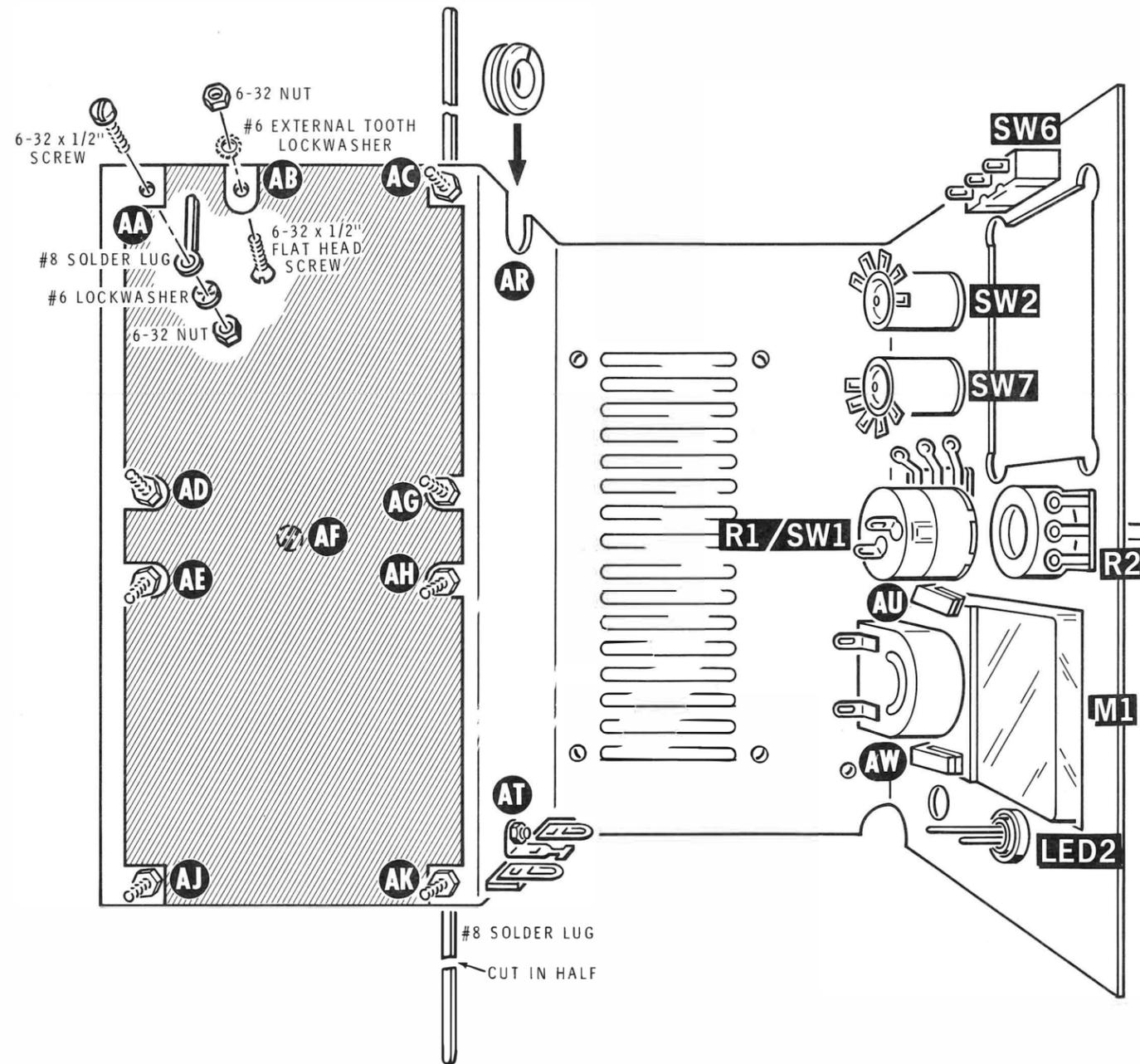
MODEL NO. \_\_\_\_\_ *William H. Hannah* V.P., Eng.  
Heath Company, Benton Harbor, Mich.

I hereby certify that I have constructed this receiver in accordance with the above mentioned instructions.

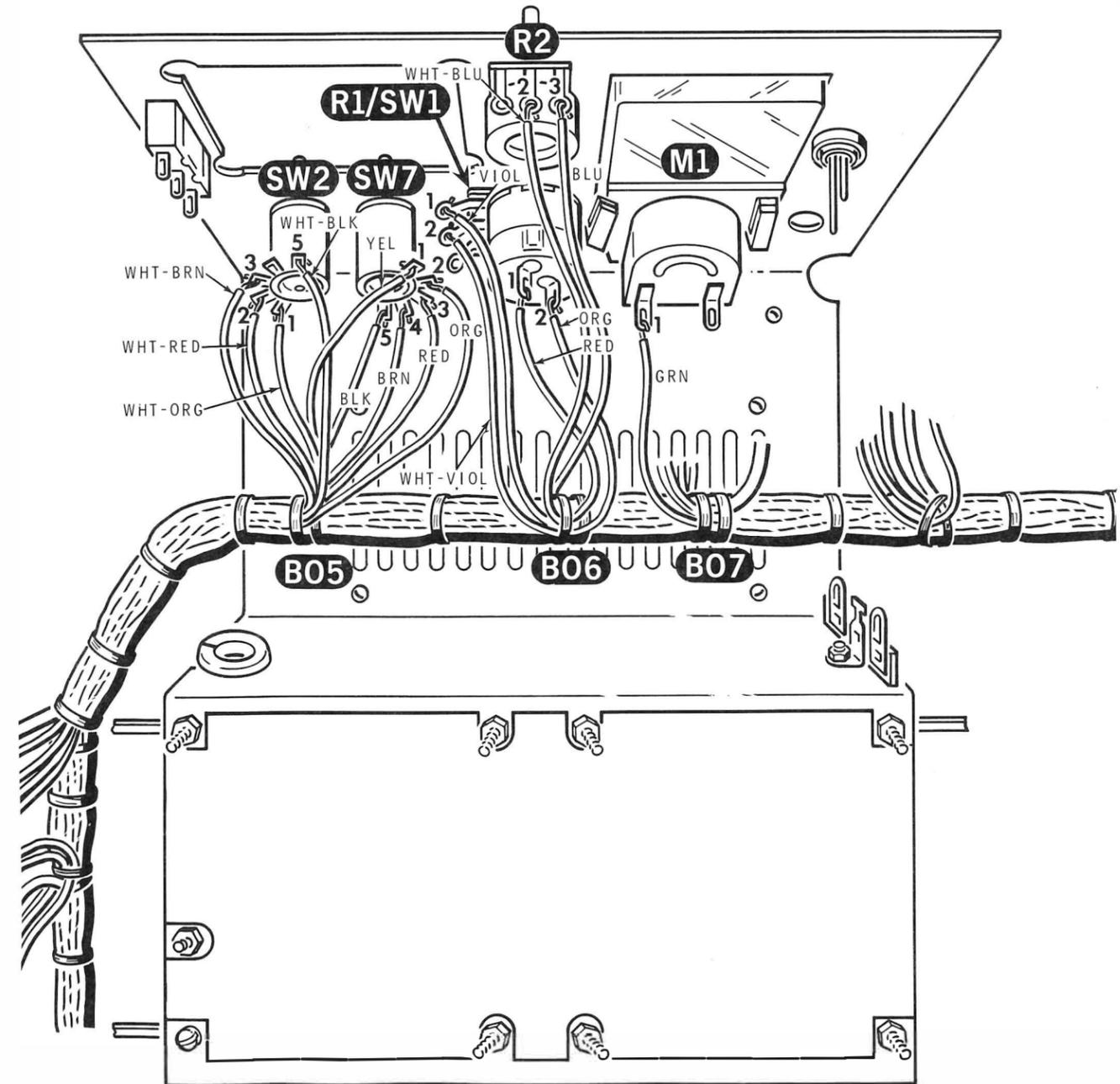
Date \_\_\_\_\_ Signature \_\_\_\_\_



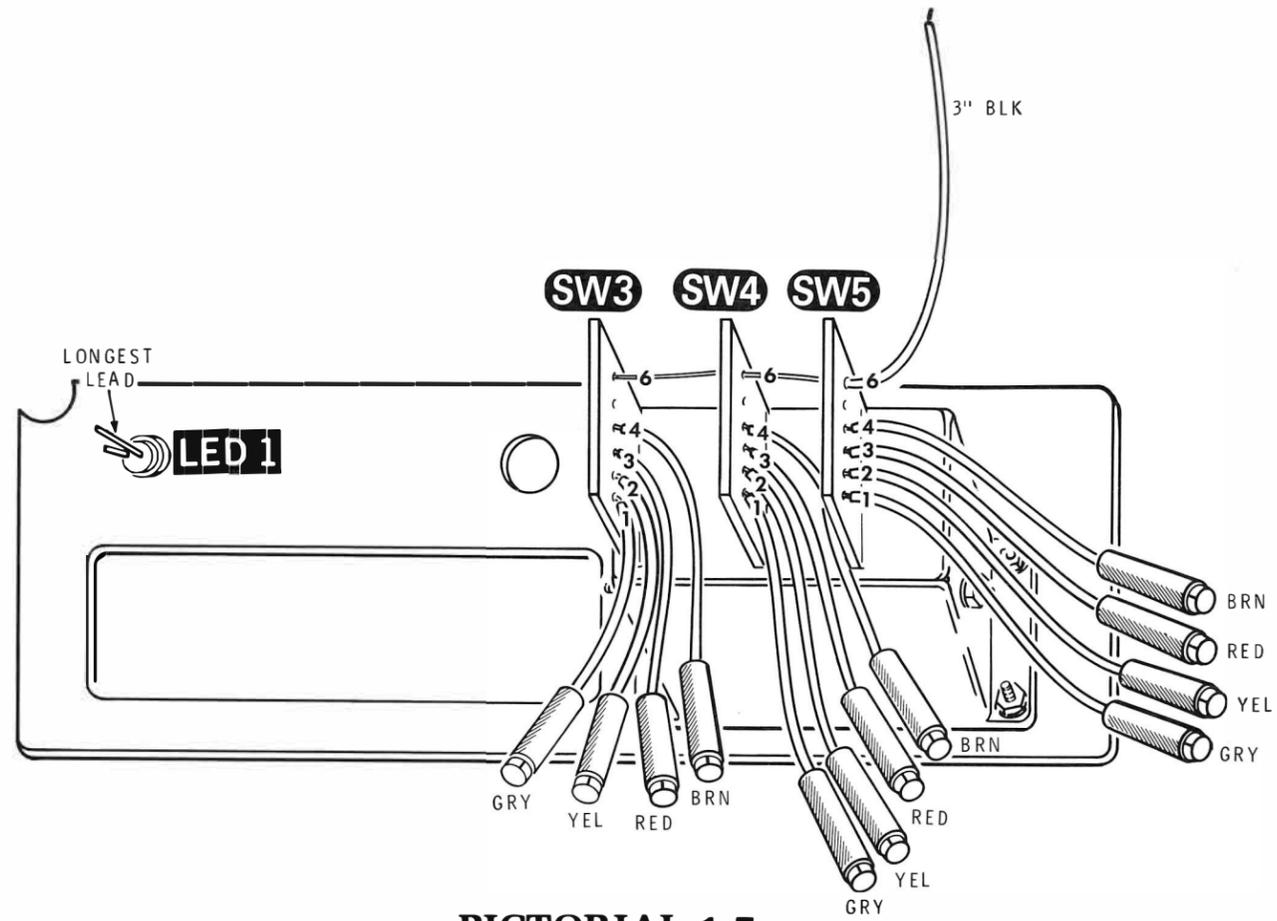
PICTORIAL 1-1



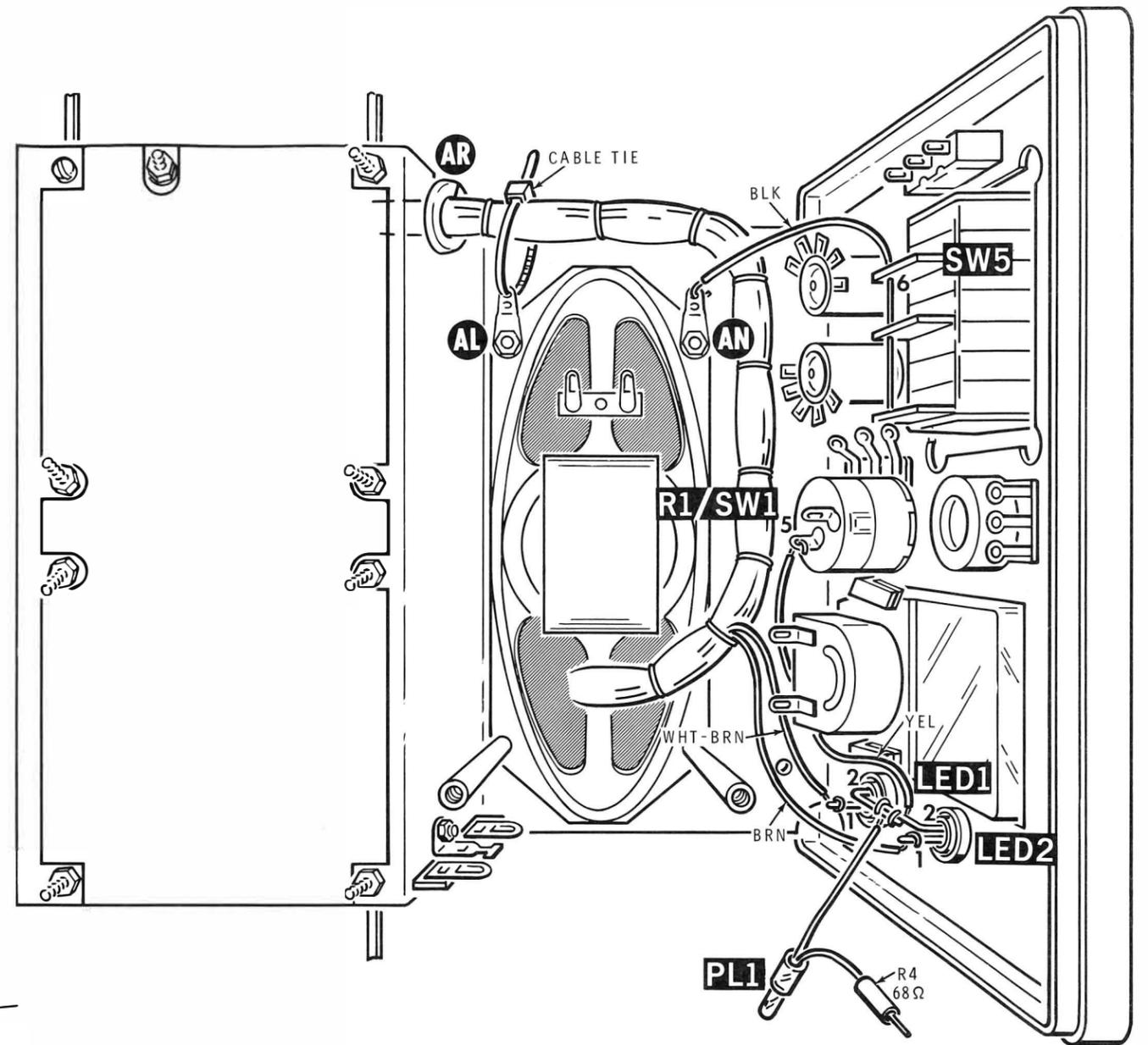
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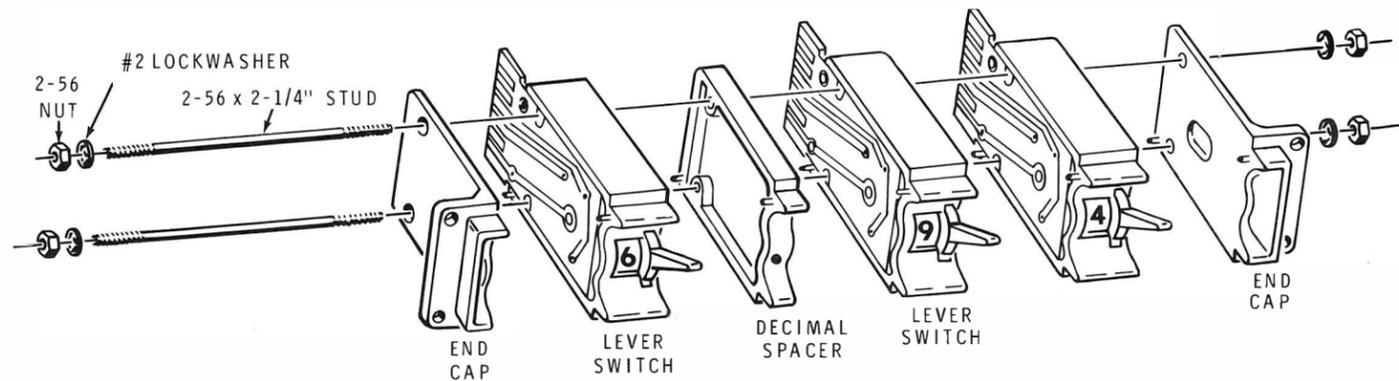
PICTORIAL 1-5



PICTORIAL 1-7

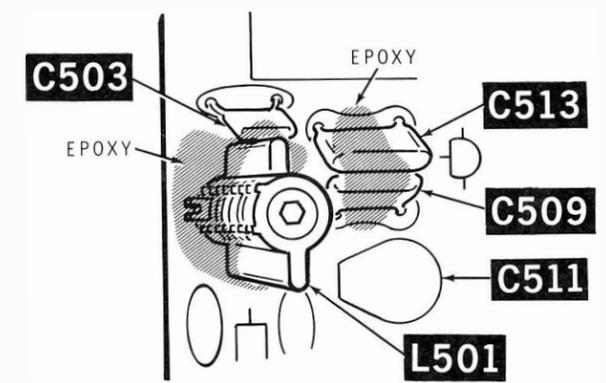
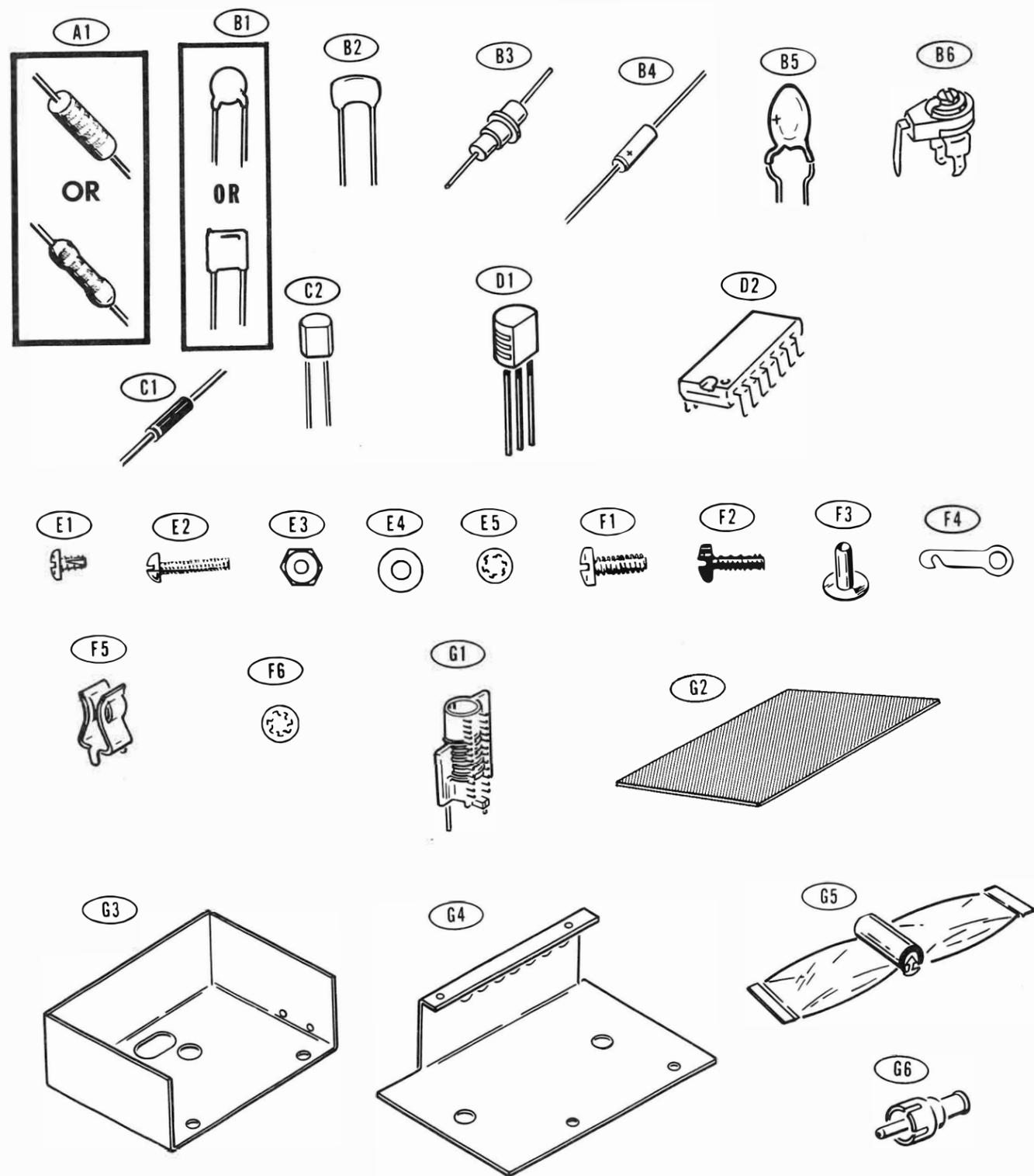


PICTORIAL 1-8

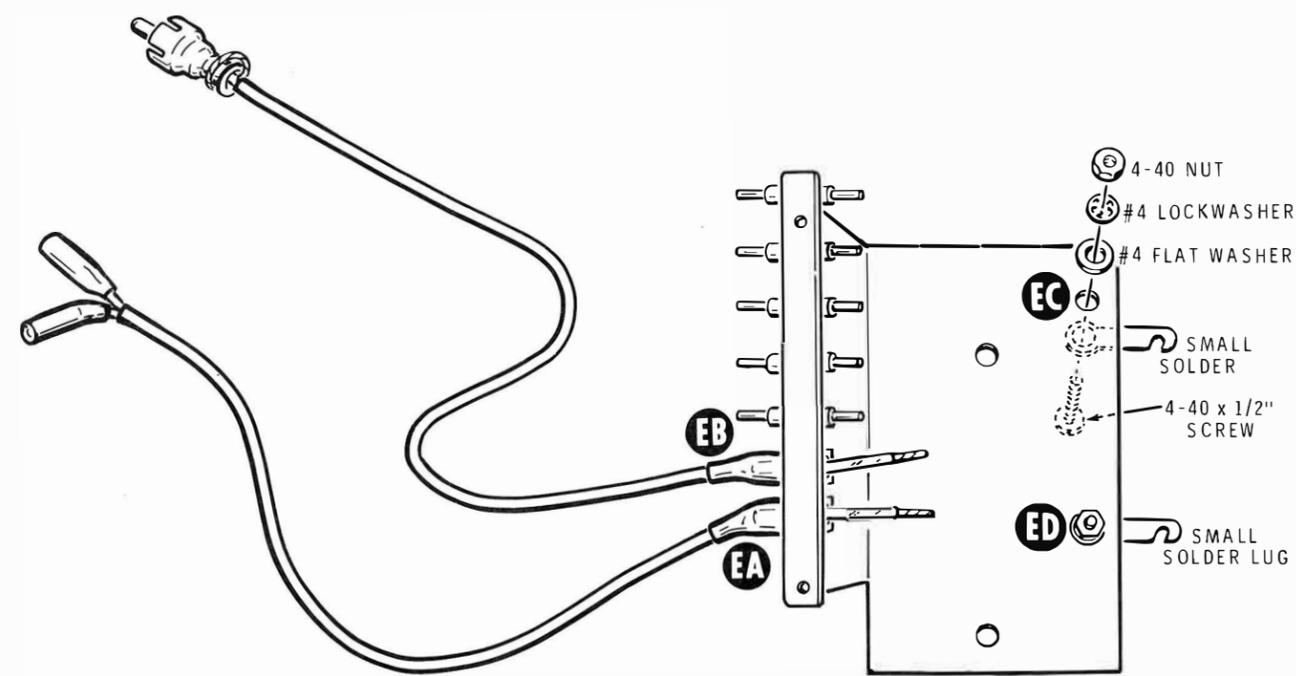


Detail 1-7A

VCO CIRCUIT BOARD PARTS PICTORIAL

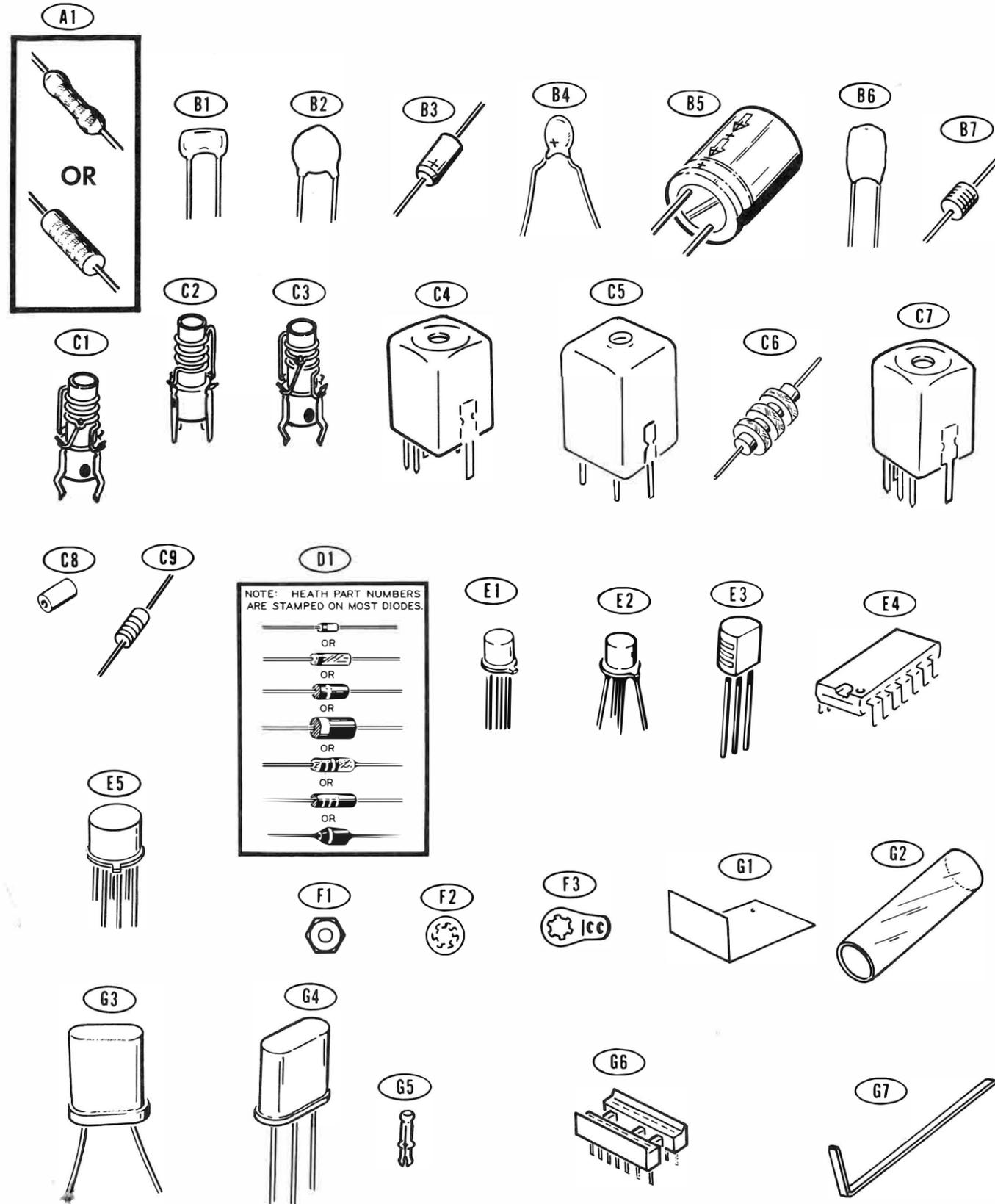


PICTORIAL 2-6

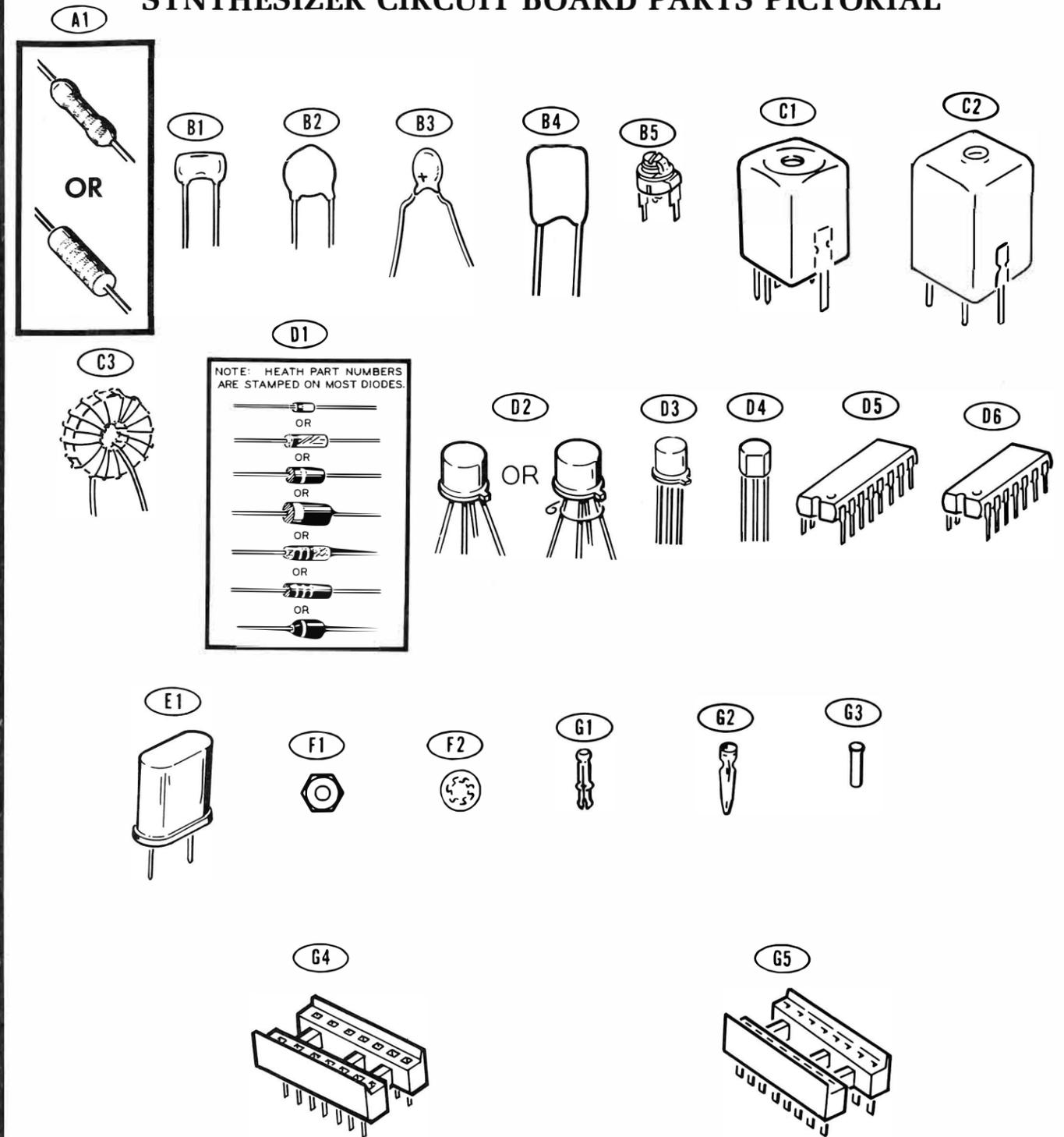


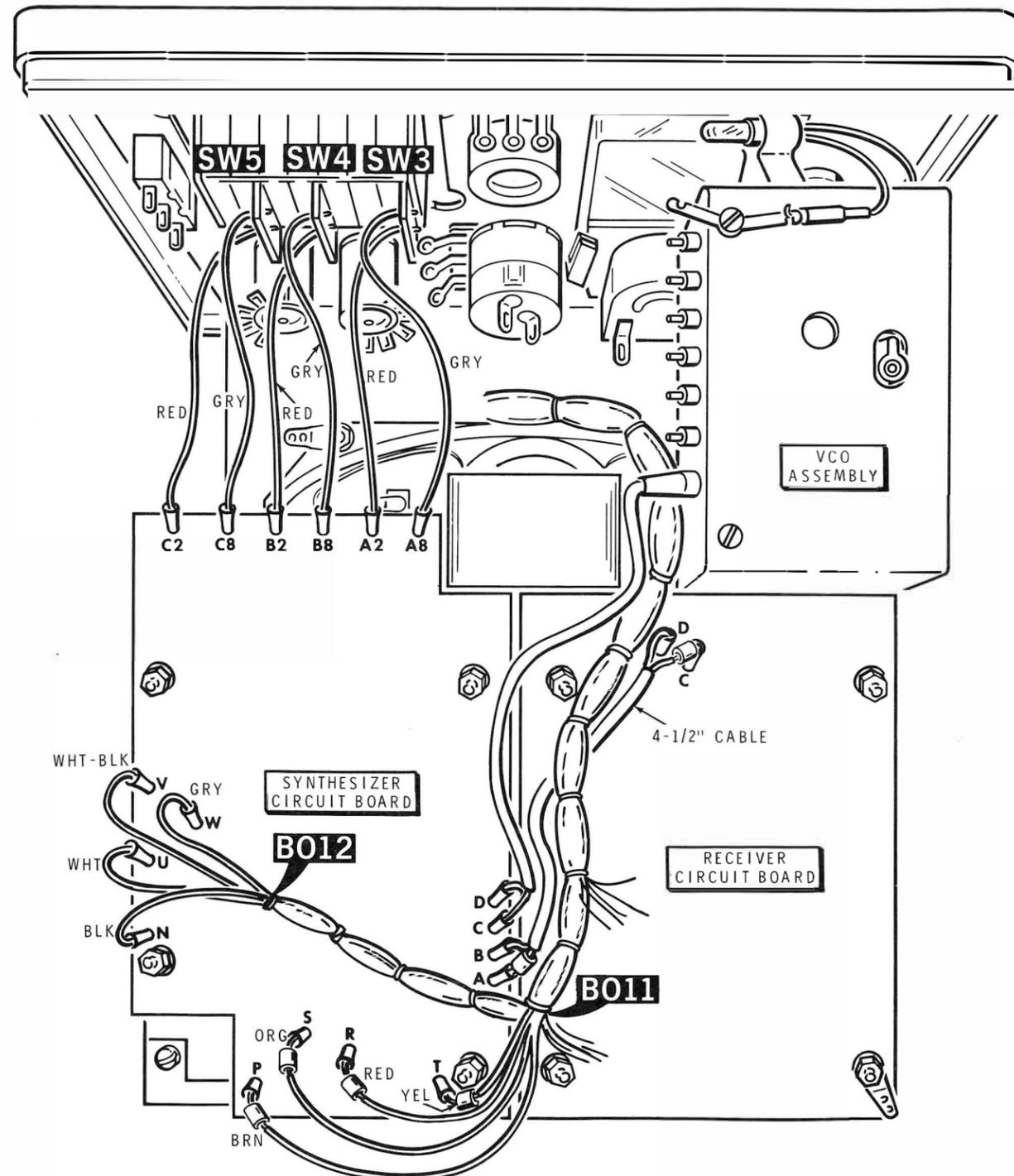
PICTORIAL 2-7

### RECEIVER CIRCUIT BOARD PARTS PICTORIAL

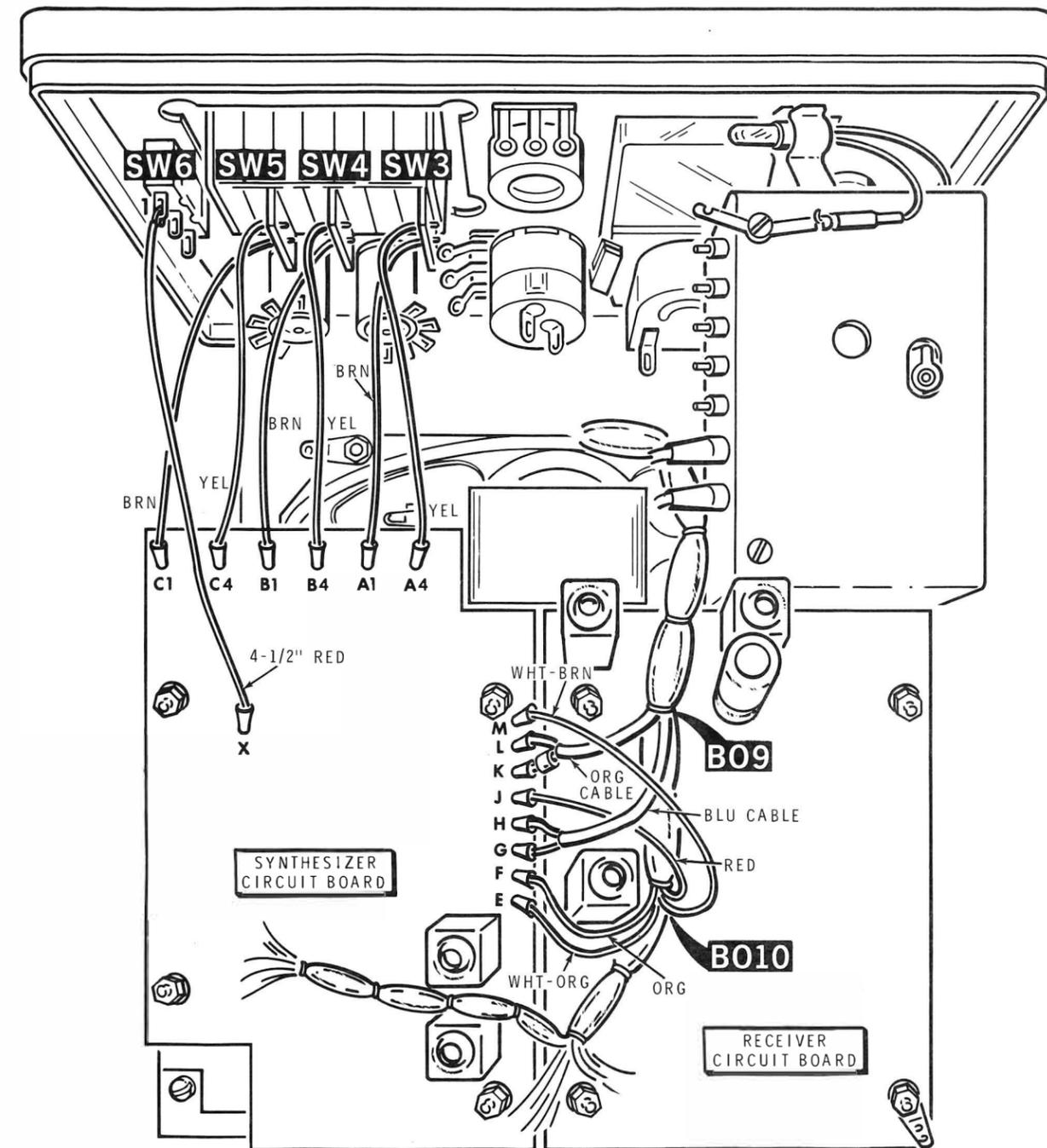


### SYNTHESIZER CIRCUIT BOARD PARTS PICTORIAL



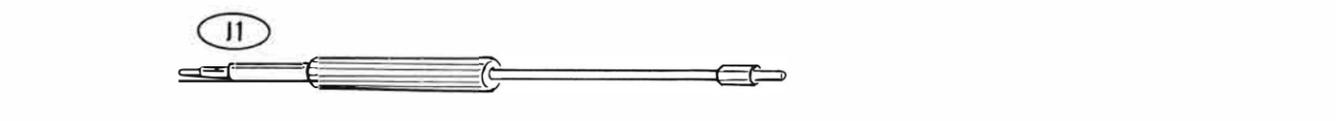
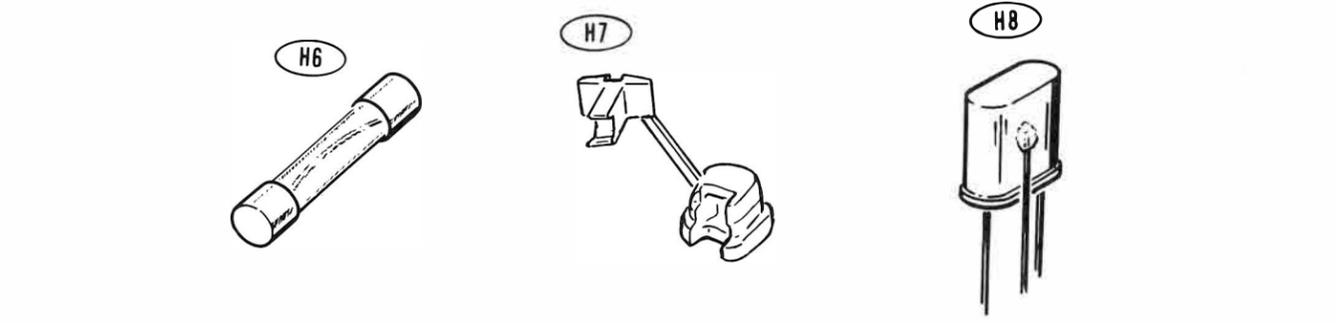
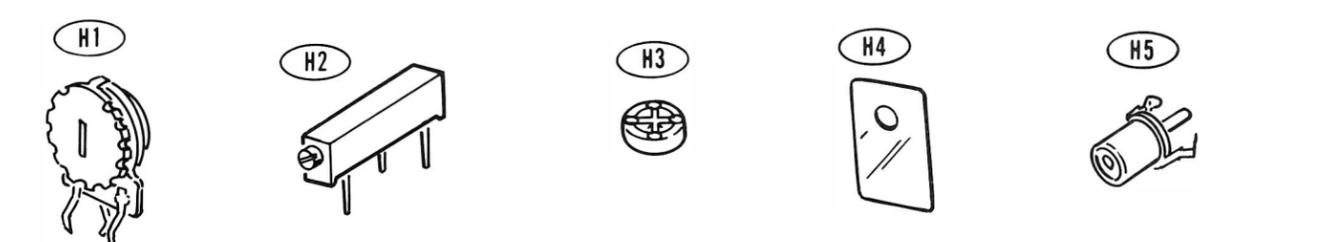
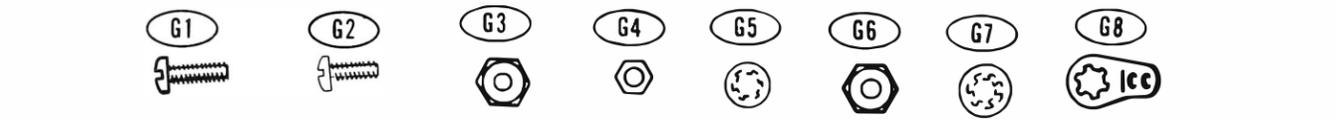
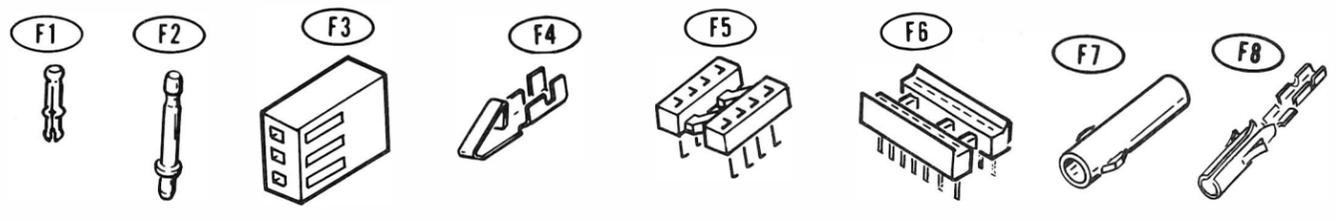
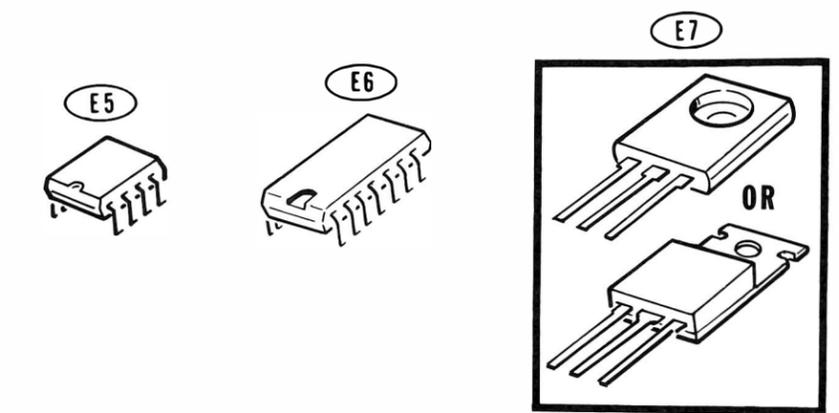
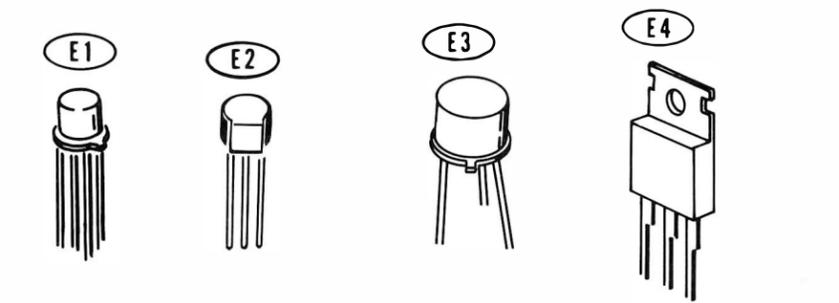
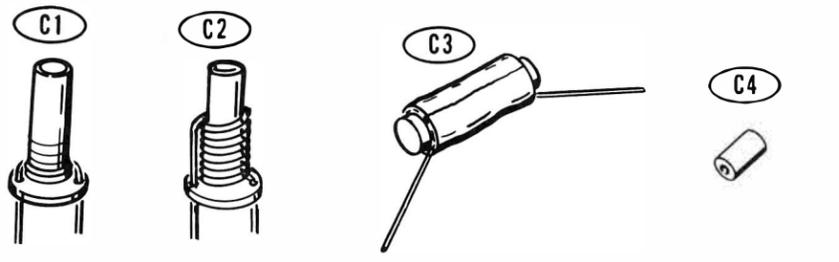
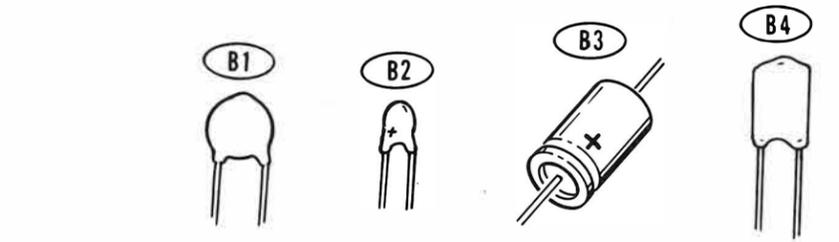
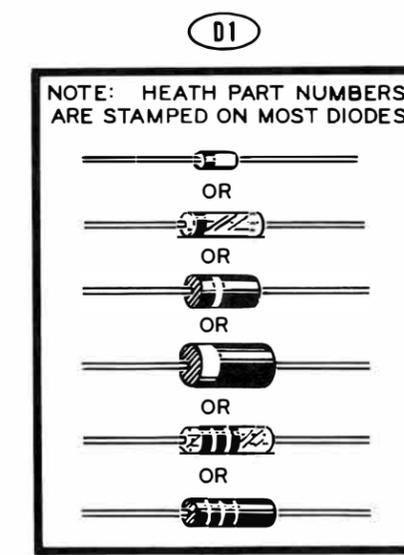
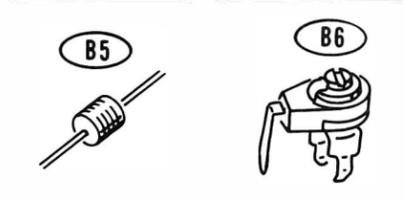
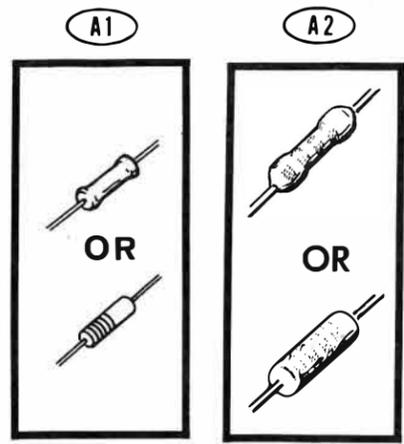


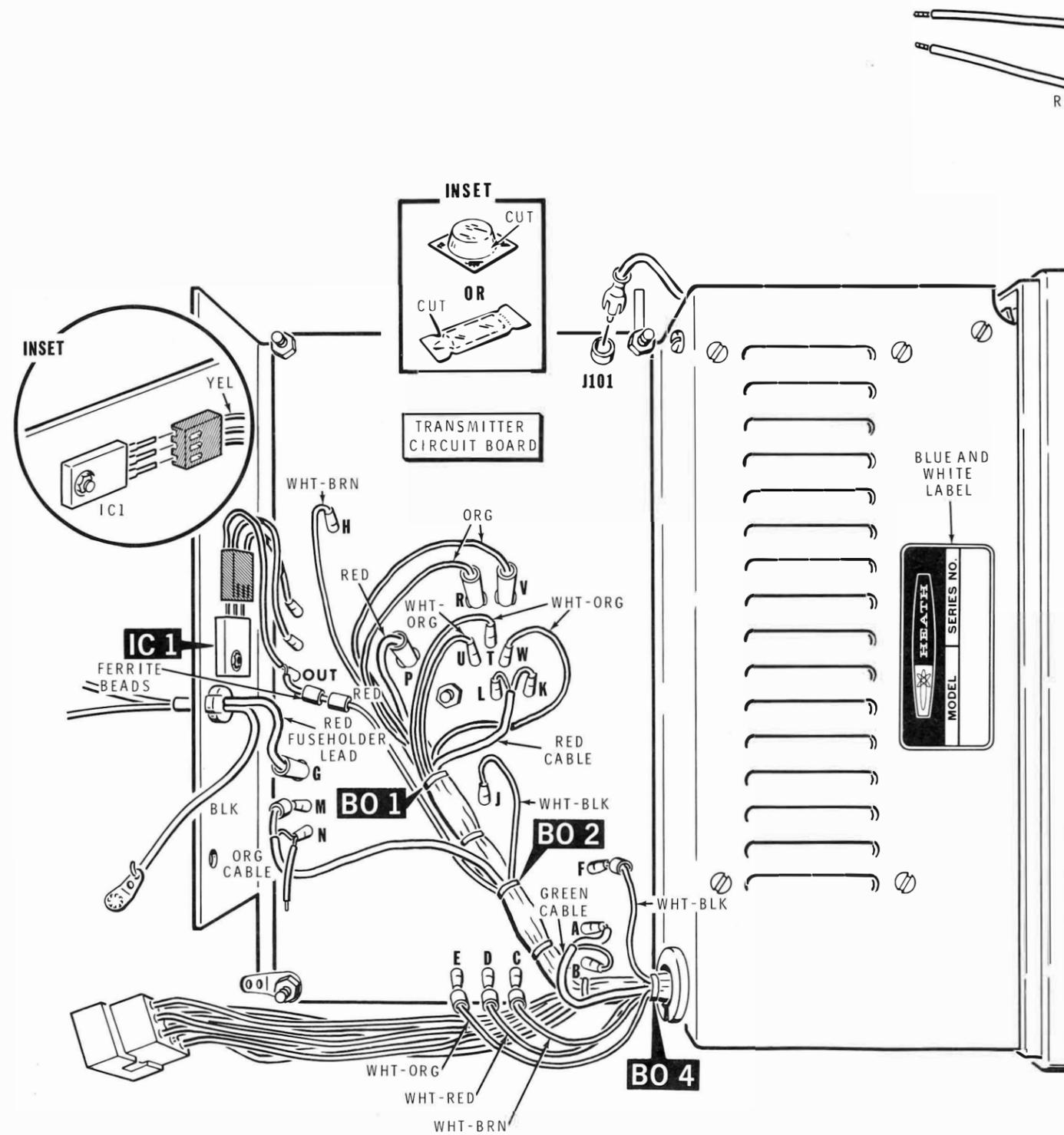
PICTORIAL 4-10



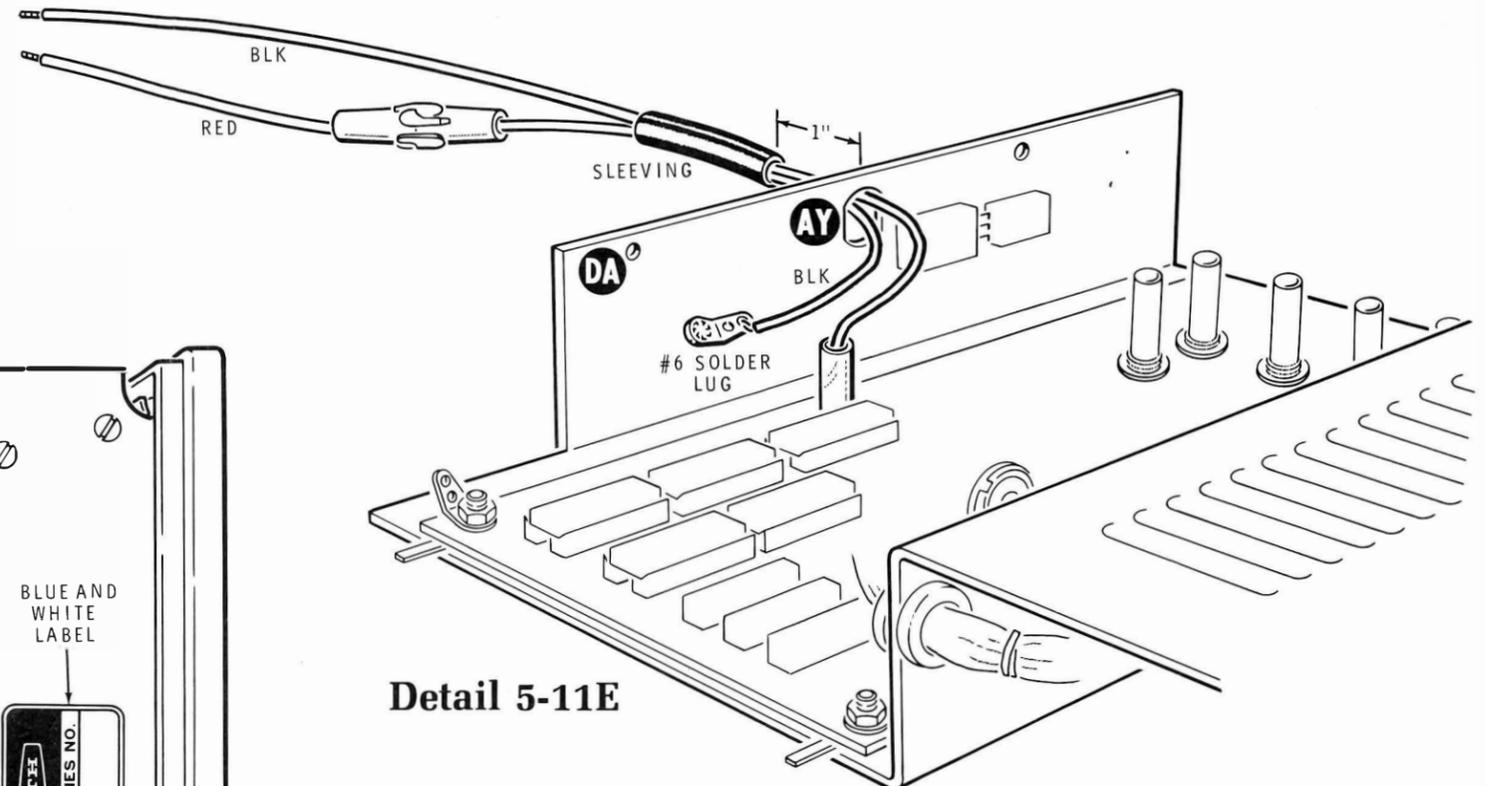
PICTORIAL 4-11

### TRANSMITTER CIRCUIT BOARD PARTS PICTORIAL

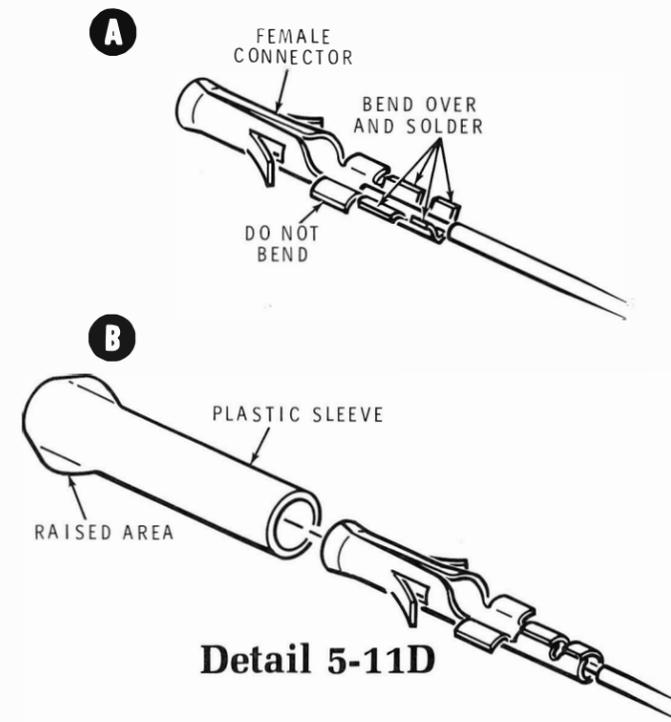




PICTORIAL 5-11

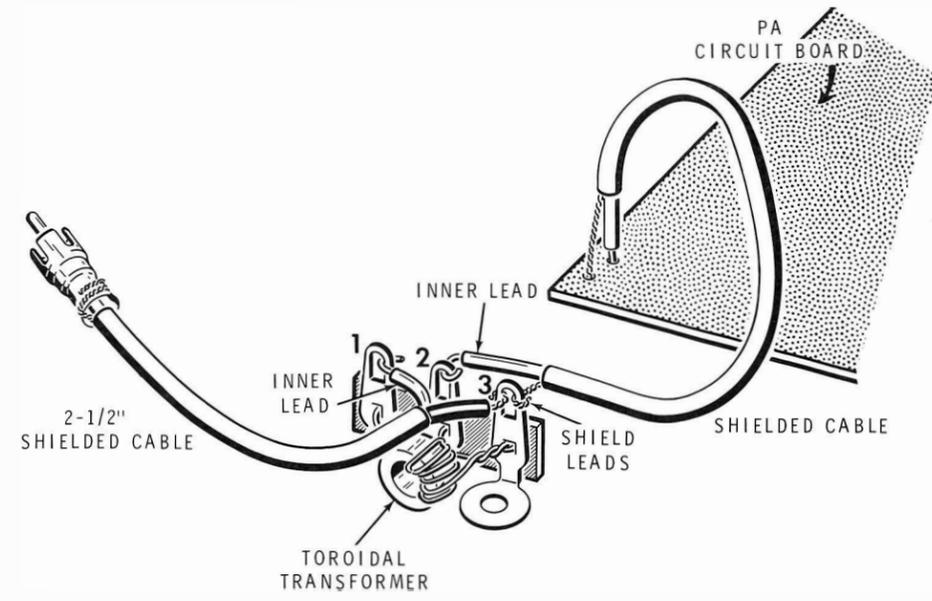
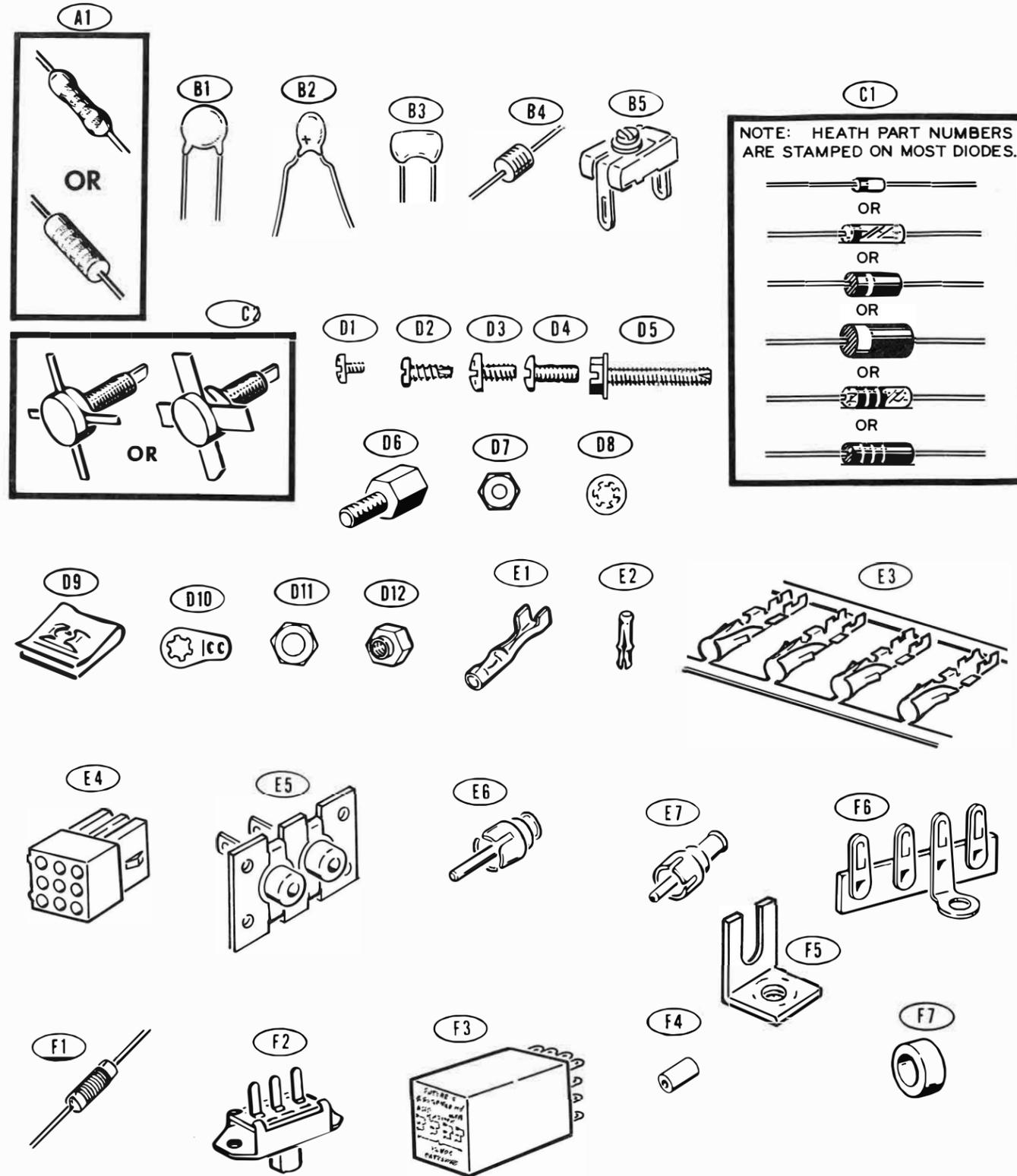


Detail 5-11E

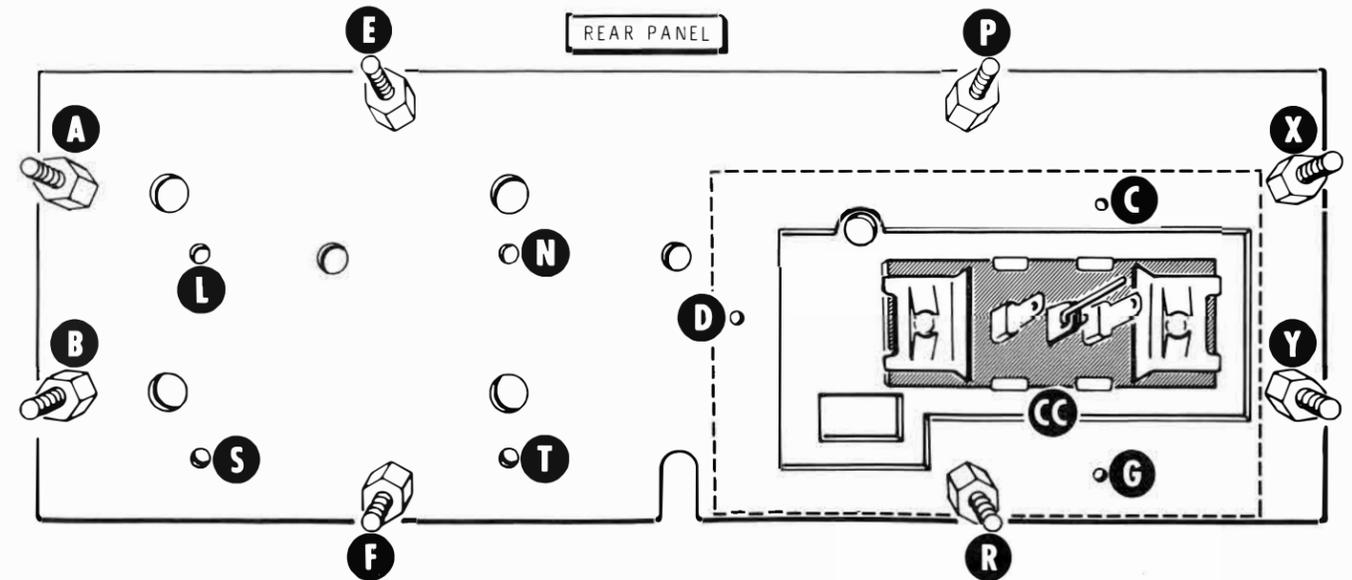


Detail 5-11D

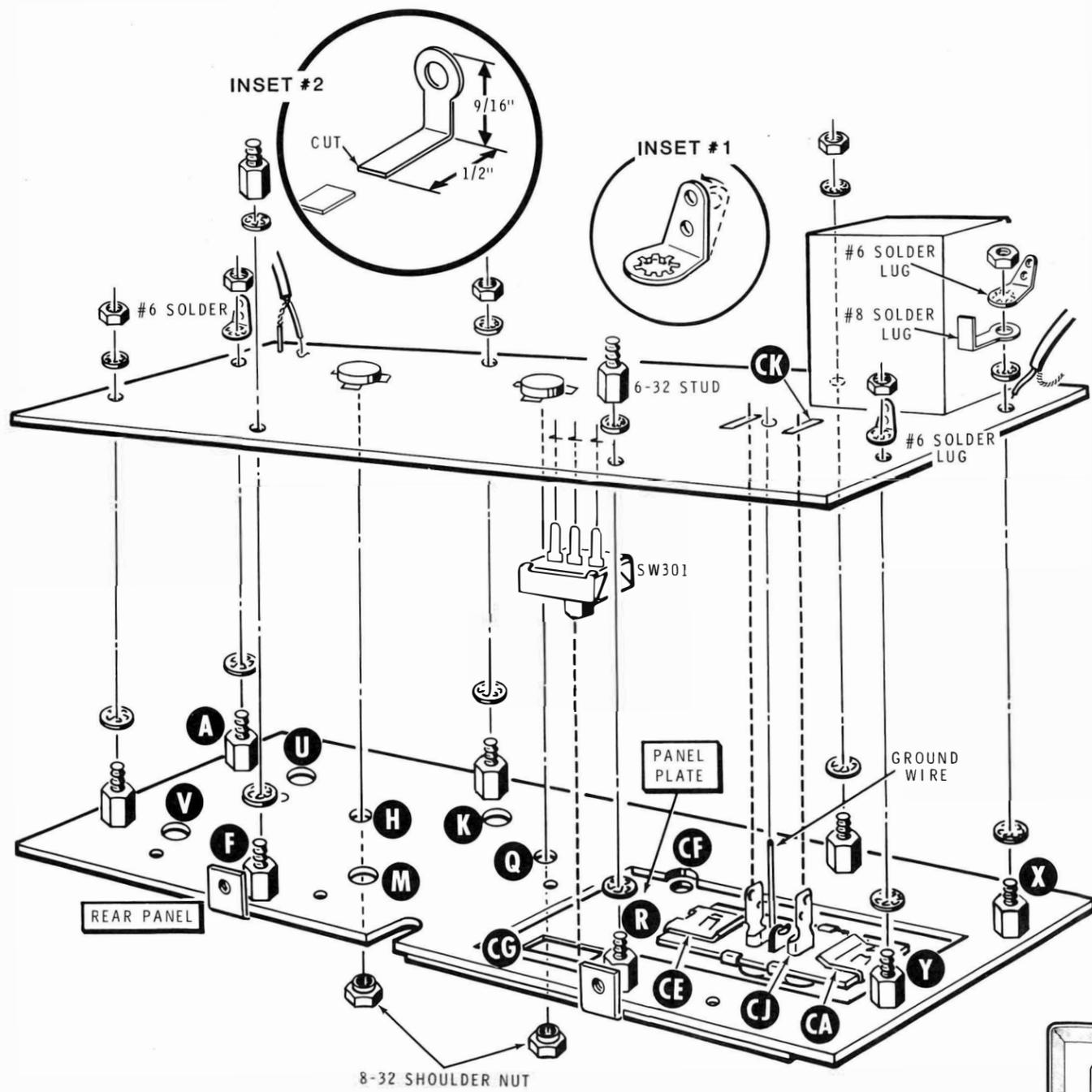
POWER AMPLIFIER CIRCUIT BOARD PARTS PICTORIAL



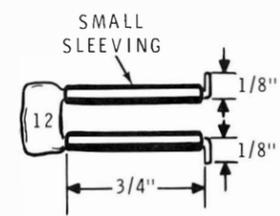
PICTORIAL 6-10



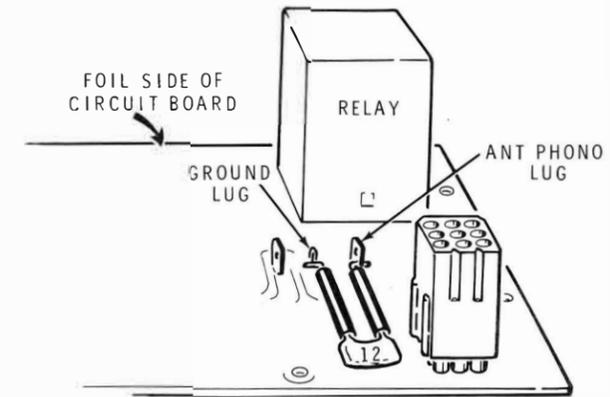
PICTORIAL 6-11



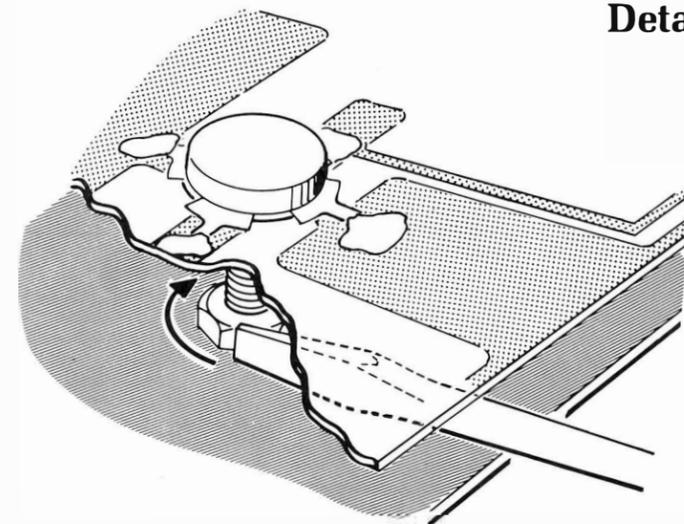
PICTORIAL 6-12



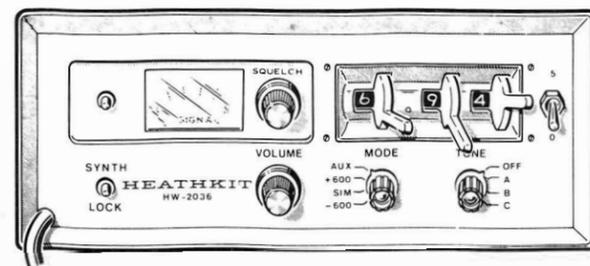
Detail 6-12C



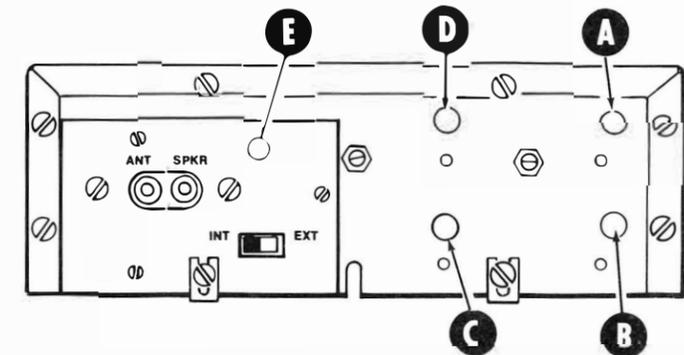
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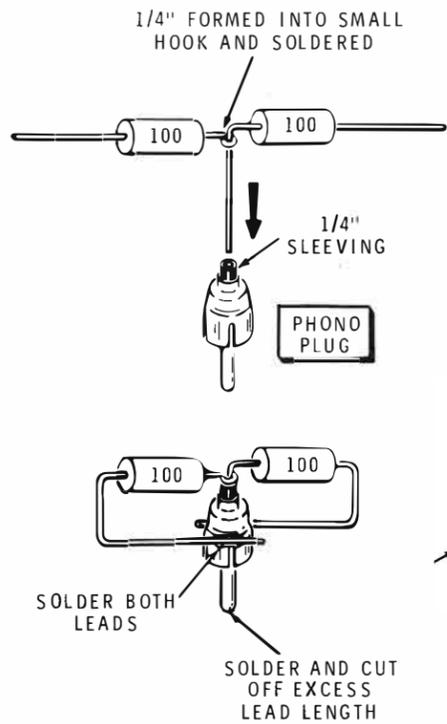
Detail 6-12E



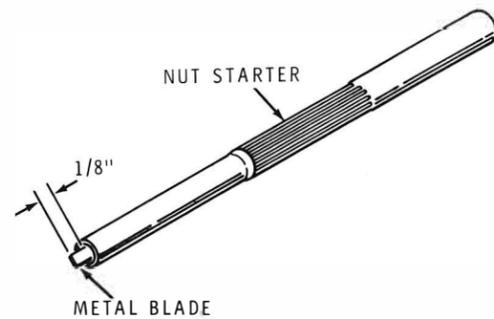
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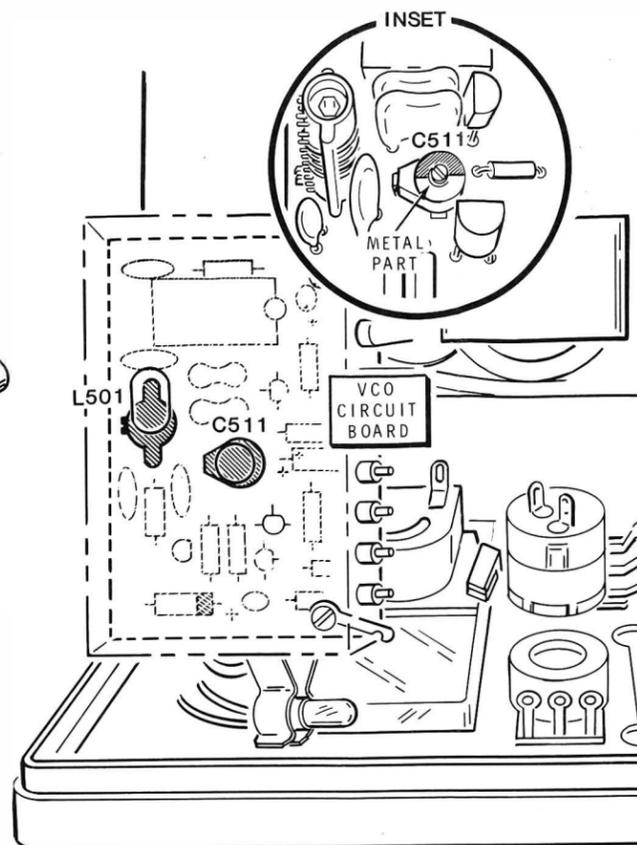
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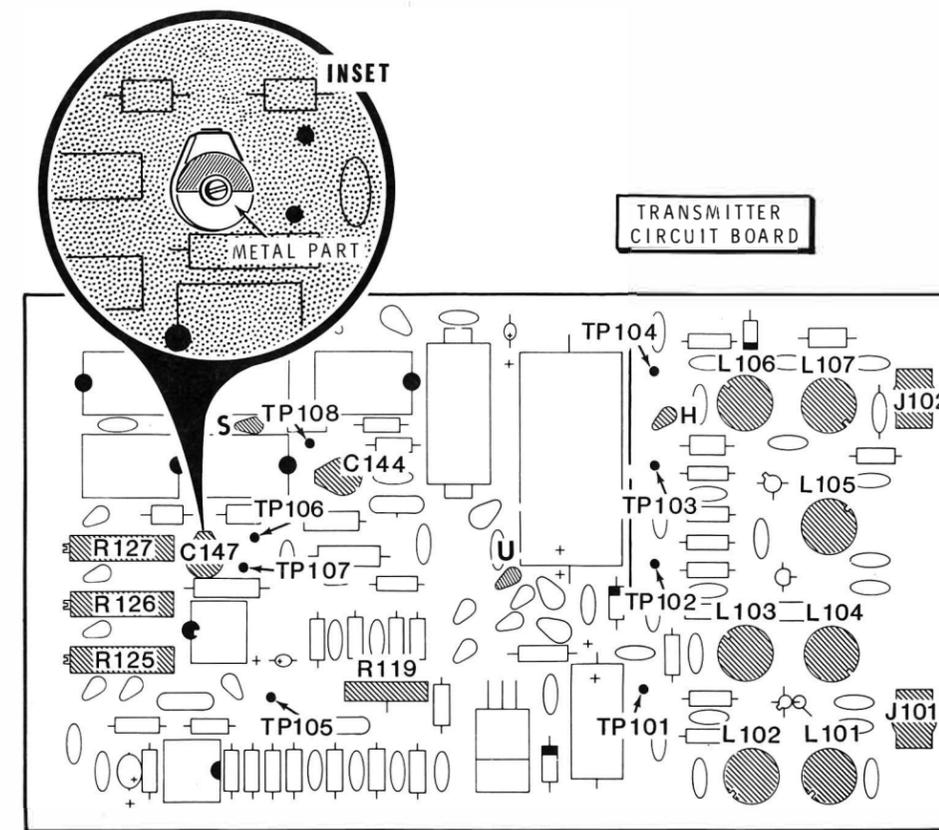
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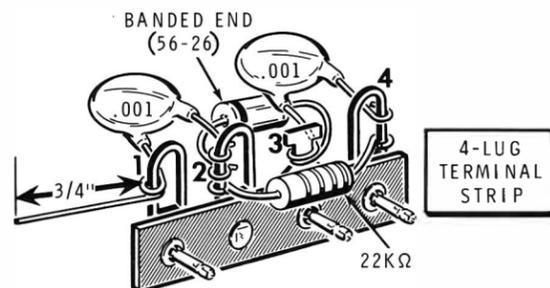
PICTORIAL 9-7



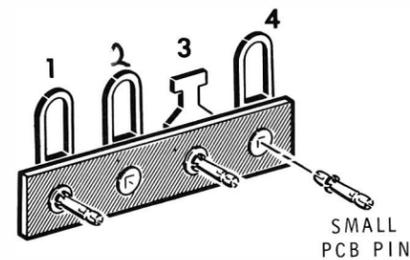
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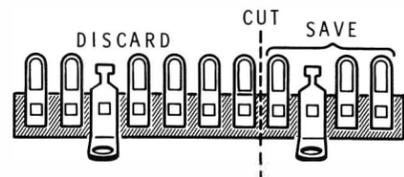
PICTORIAL 9-11



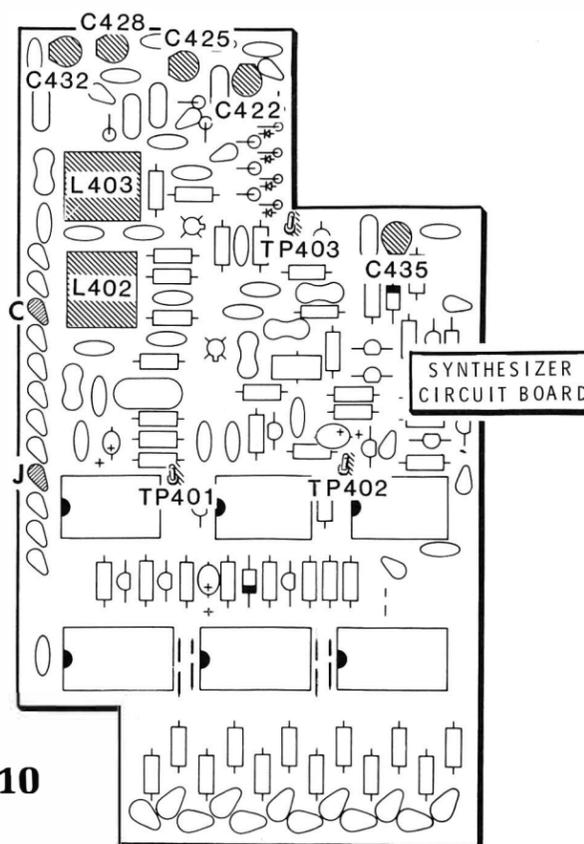
PICTORIAL 9-6



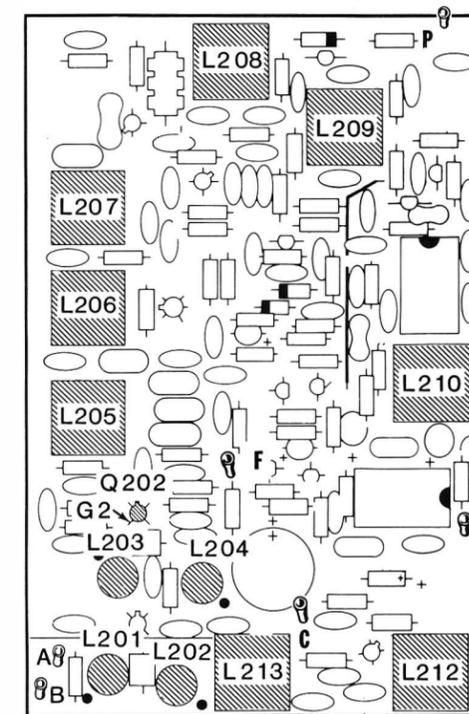
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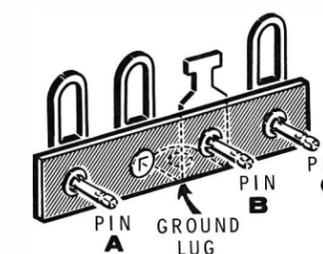
Detail 9-6A



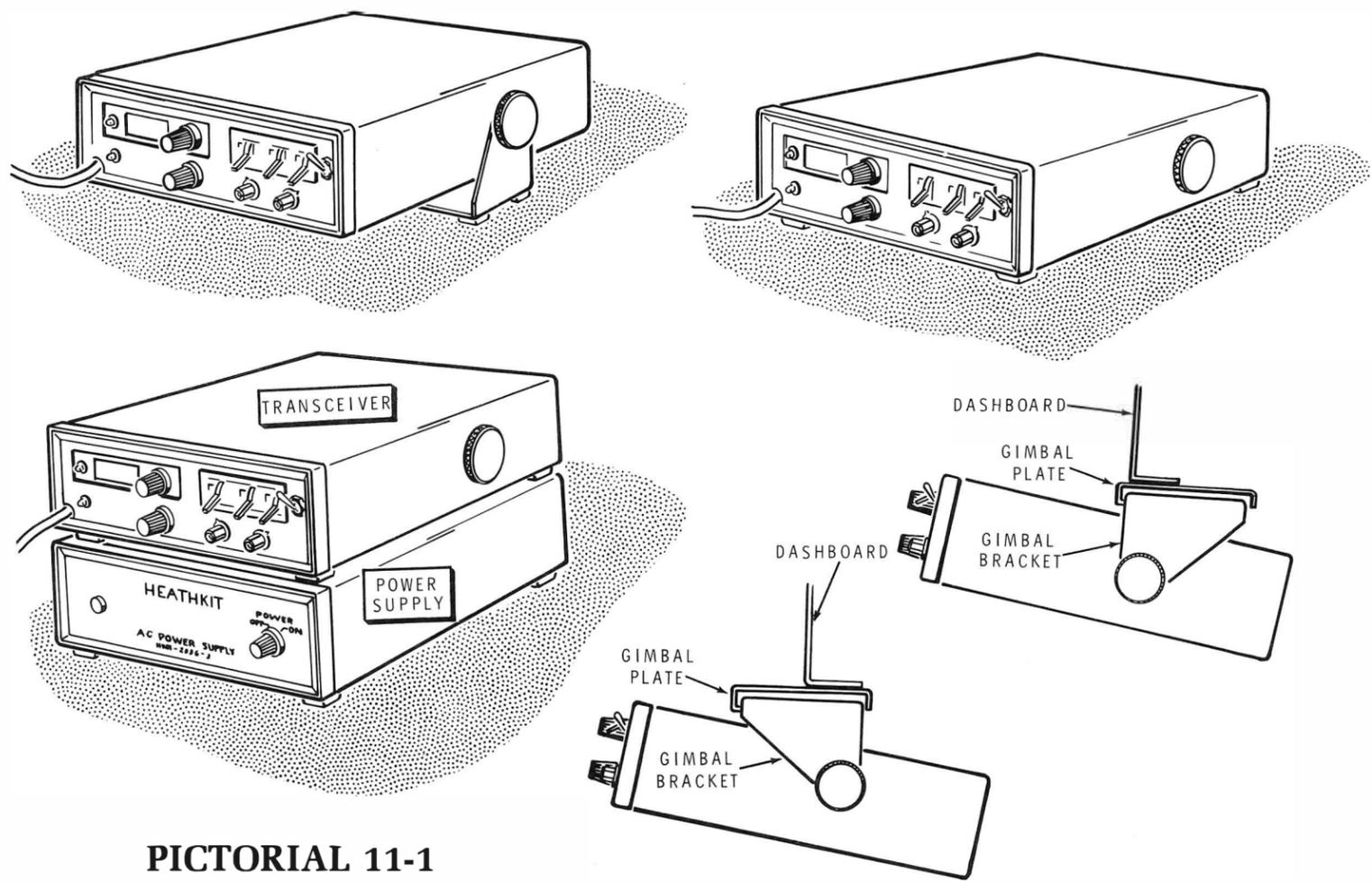
PICTORIAL 9-10



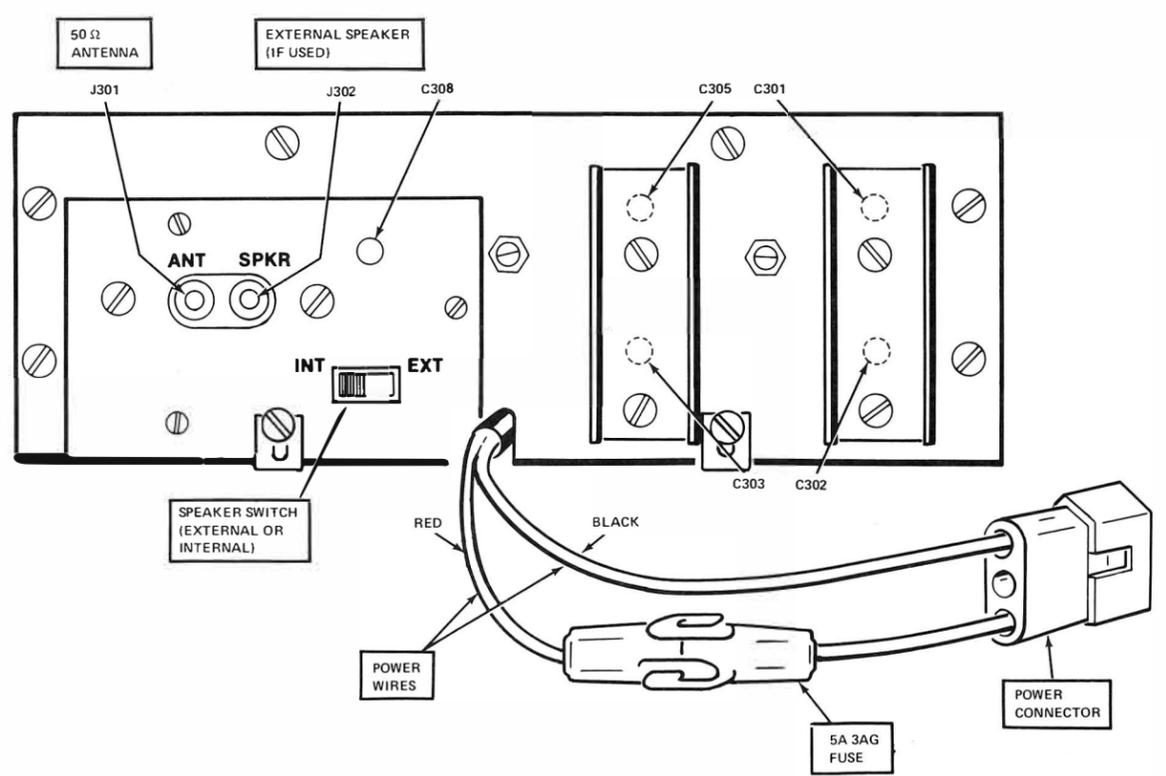
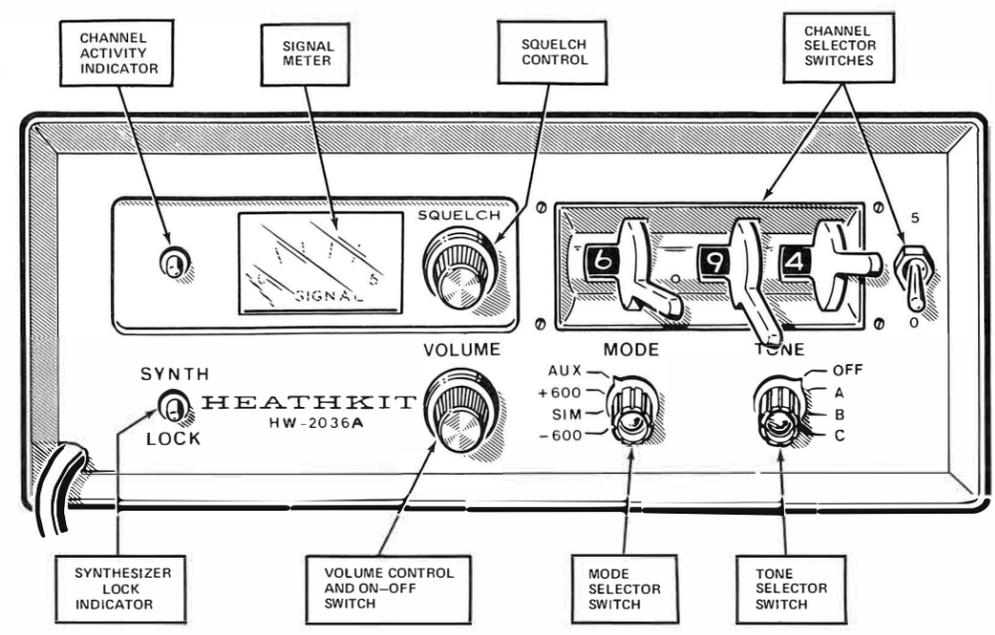
PICTORIAL 9-12



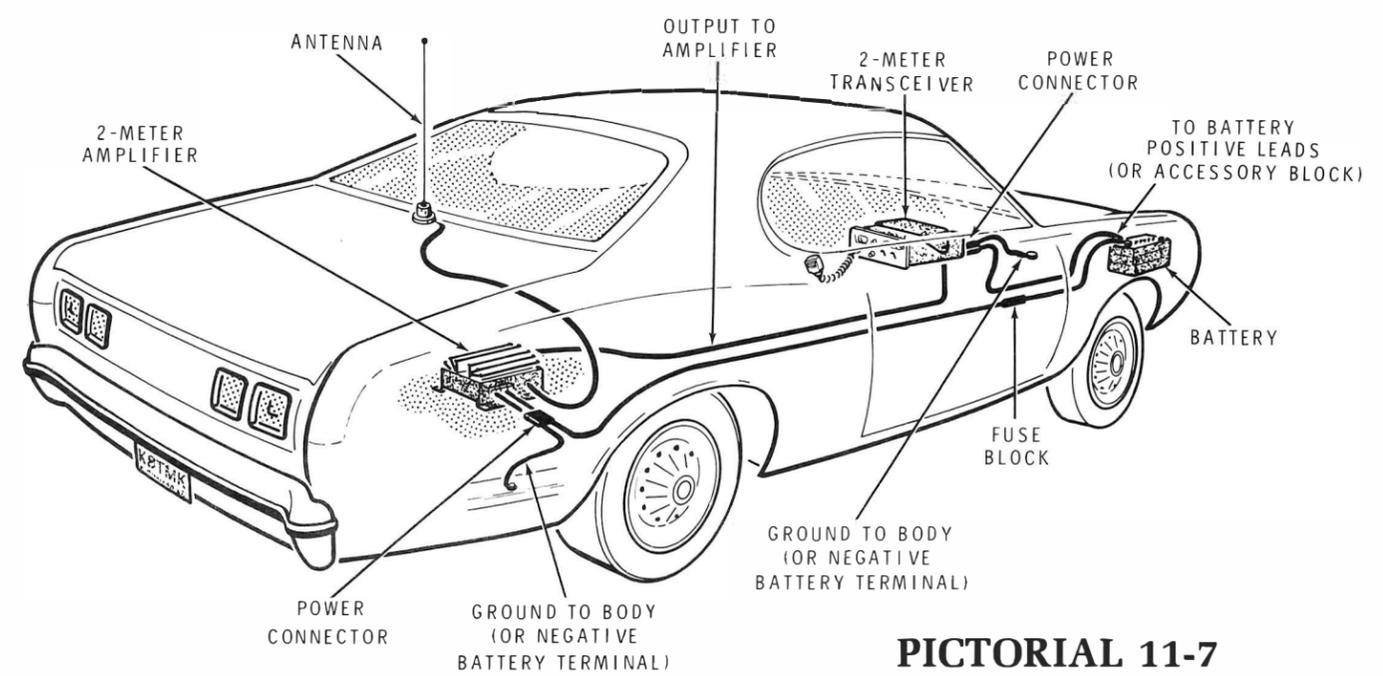
PICTORIAL 9-13



PICTORIAL 11-1



PICTORIAL 12-1

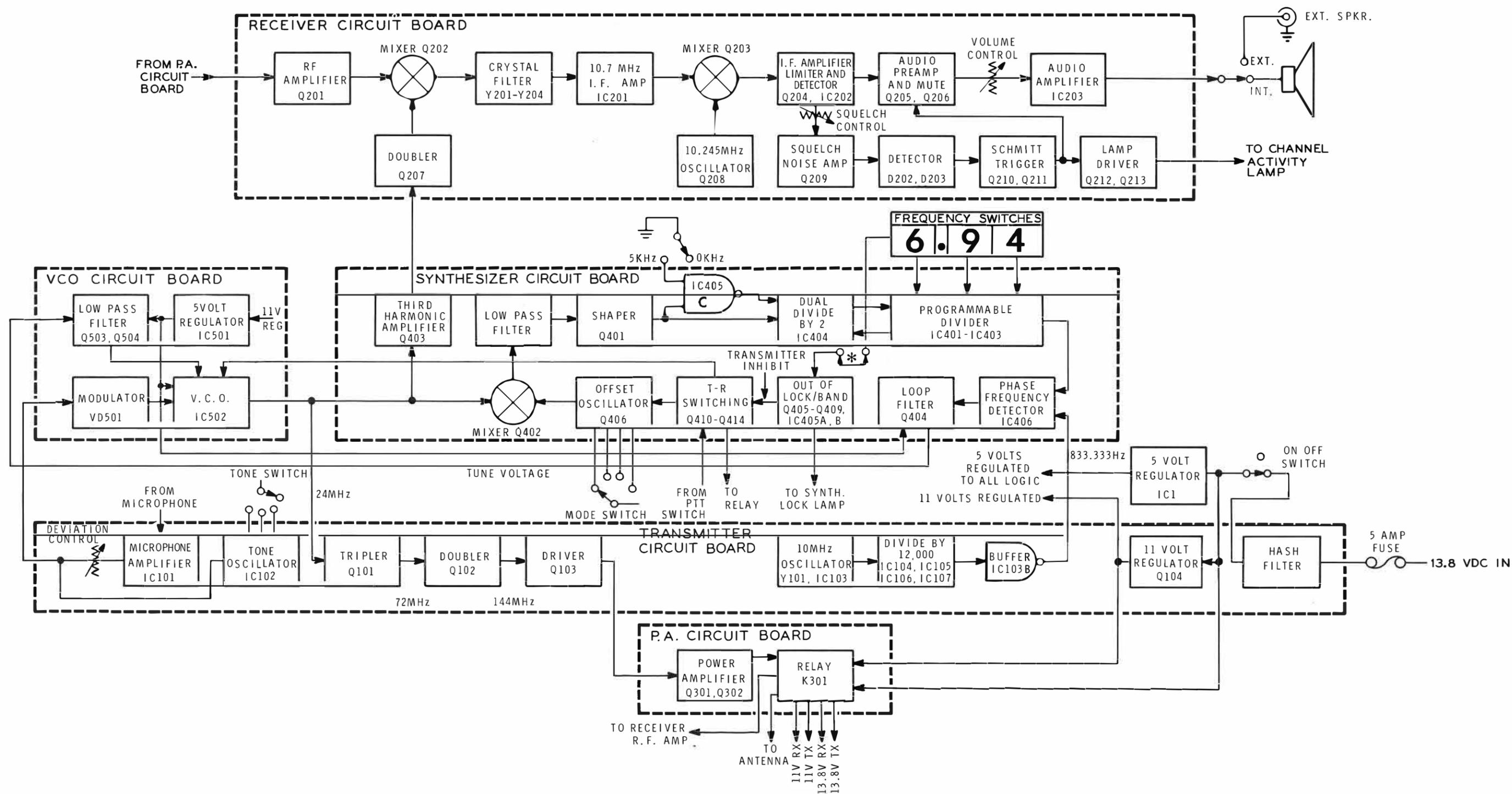


PICTORIAL 11-7

## SYNTHESIZER PROBLEMS

CONDITION	TROUBLESHOOTING PROCEDURE
<p><b>A.</b> Synthesizer will not lock (the red synth lock lamp will not go out when you adjust L501. Make sure the frequency selector switches are set to the center of your 4 MHz segment.)</p>	<pre> graph TD     Start([Start]) --&gt; C515[Check for 11 volts at C515 and synthesizer circuit board pin E.]     C515 -- NO --&gt; Wiring[Check wiring]     C515 -- YES --&gt; C514[Check for 5 volts at C514 and synthesizer circuit board pin F.]     C514 -- NO --&gt; Shorted[1. Shorted VCO output cable. 2. IC501. 3. Check wiring.]     C514 -- YES --&gt; TP401[Check the voltage at TP401 and slowly adjust coil L501 through its range. The voltage at TP401 changes between 4.9 and .9 volts at two slug positions.]     TP401 -- NO --&gt; RFProbe[Locate the RF probe that you assembled during "Alignment Preparation." Temporarily disconnect the violet wire from receiver circuit board pin H. Then push the connector on the end of the violet wire onto the PCB pin on the free end of the red wire (coming from the RF probe). Connect the alligator clip on the end of the RF probe's black wire to the chassis. Turn the volume control fully clockwise.]     TP401 -- YES --&gt; AdjustL501[Carefully adjust coil L501 through the uppermost position of the slug where the voltage at TP401 varies. You should be able to adjust the coil to any voltage between .9 and 4.9 volts.]     AdjustL501 -- NO --&gt; Q503[Q503, Q504]     AdjustL501 -- YES --&gt; Lamp[Does the synthesizer lamp go out when you perform the above check?]     Lamp -- NO --&gt; IC405[IC405, Q405, Q407.]     Lamp -- YES --&gt; VCO[Proceed to "VCO ADJUSTMENTS" on Page 115.]          TP401 -- CONTINUE --&gt; TP401_V[Check for 4.9 volts at TP401.]     TP401_V -- NO --&gt; TP401_09[Check for 0.9 volts at TP401.]     TP401_V -- YES --&gt; RF1[Touch the bare wire of the RF probe to IC406 pin 1. You should hear a tone in the speaker.]     RF1 -- YES --&gt; IC406[IC406, Q404.]     RF1 -- NO --&gt; RF8[Touch the bare wire of the RF probe to IC107 pin 8. You should hear a tone in the speaker.]     RF8 -- YES --&gt; IC103[1. IC103, 2. Check the orange cable.]     RF8 -- NO --&gt; IC107[IC107.]          RF8 -- CONTINUE --&gt; IC105_11[Check for 10 KHz at IC105 pin 11.]     IC105_11 -- YES --&gt; IC106[IC106.]     IC105_11 -- NO --&gt; IC105_11_100[Check for 100 KHz at IC105 pin 11.]     IC105_11_100 -- YES --&gt; IC105[IC105.]     IC105_11_100 -- NO --&gt; IC104_12[Check for 1 MHz at IC104 pin 12.]     IC104_12 -- YES --&gt; IC104[IC104.]     IC104_12 -- NO --&gt; TP108[Check for 10 MHz at TP108.]     TP108 -- YES --&gt; IC103_3[Check for 10 MHz at IC103 pin 3.]     TP108 -- NO --&gt; IC103_Y101[IC103, Y101.]     IC103_3 -- YES --&gt; IC103[IC103.]     IC103_3 -- NO --&gt; IC103_Y101          TP401_V -- YES --&gt; RF3[Touch the bare wire of the RF probe to IC406 pin 3. You should hear a tone in the speaker and the pitch should change when you adjust coil L501.]     RF3 -- YES --&gt; IC406[IC406]     RF3 -- NO --&gt; RF12[Touch the bare wire of the RF probe to IC405 pin 12. Watch the meter and adjust coil L501 through its range. Two peaks should be noted.]     RF12 -- YES --&gt; AdjustL501_Center[Adjust coil L501 to the center of the peak that occurs with the slug highest in the coil.]     AdjustL501_Center -- CONTINUE --&gt; RF5[Touch the bare wire of the RF probe to IC404 pin 5. Does the meter deflect upscale?]     RF5 -- NO --&gt; IC405[IC405]     RF5 -- YES --&gt; RF8_2[Touch the bare wire of the RF probe to IC404 pin 8. Does the meter deflect upscale?]     RF8_2 -- NO --&gt; IC404[IC404]     RF8_2 -- YES --&gt; IC401[IC401, IC402, IC403]          RF12 -- NO --&gt; RF403[Touch the bare wire of the RF probe to TP403. The meter should deflect just upscale.]     RF403 -- YES --&gt; RF_C[Touch the bare wire of the RF probe to synthesizer circuit board pin C. Does the meter deflect upscale?]     RF_C -- NO --&gt; IC502[IC502, VD502]     RF_C -- YES --&gt; Q401[Q401, Q402, IC405]     RF403 -- NO --&gt; Q406[Q406, D406, Y405, Q412]     </pre>
<p><b>B.</b> Synthesizer locks in receive but not in transmit.</p>	<ol style="list-style-type: none"> <li>1. Q501, Q502.</li> <li>2. Transmit offset crystal defective.</li> <li>3. D402, D403, D404, D405.</li> <li>4. Q410, Q411, Q412.</li> </ol>
<p><b>C.</b> Synthesizer will not stay locked over your 4 MHz range.</p>	<ol style="list-style-type: none"> <li>1. Frequency selector switches wired incorrectly.</li> <li>2. Q503, Q504.</li> <li>3. VCO not adjusted properly.</li> </ol>

### BLOCK DIAGRAM



\* REMOVE THIS JUMPER TO ALLOW OUT-OF-BAND TRANSMISSION.