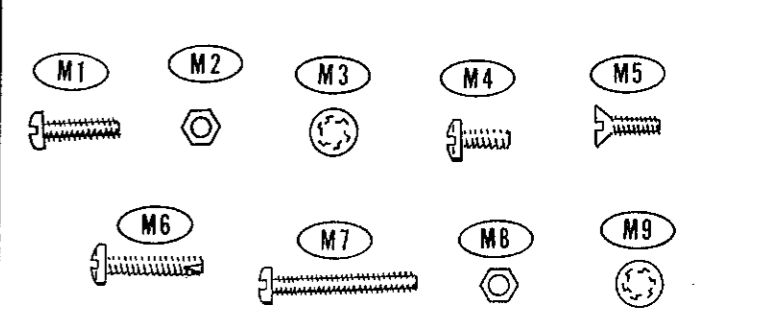
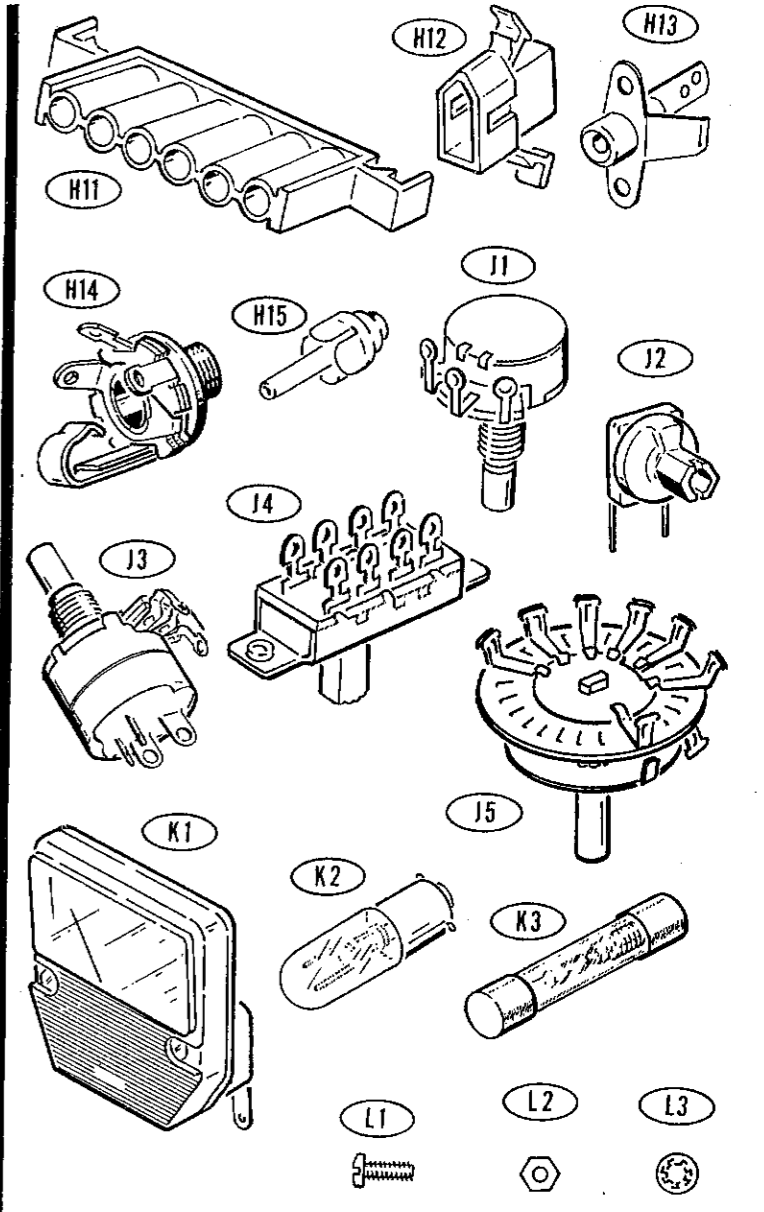
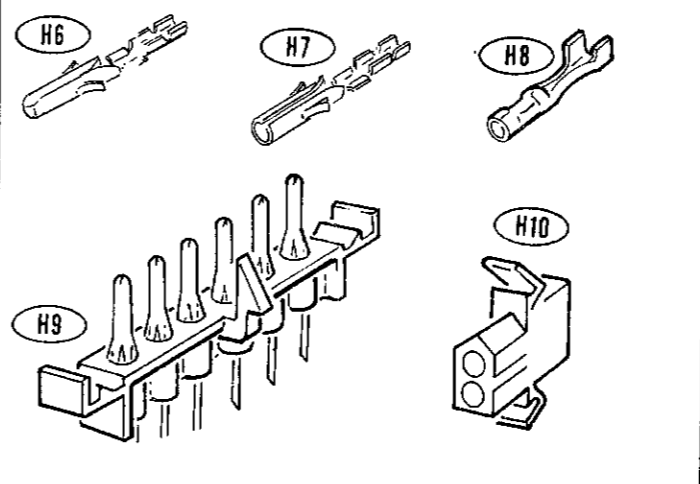
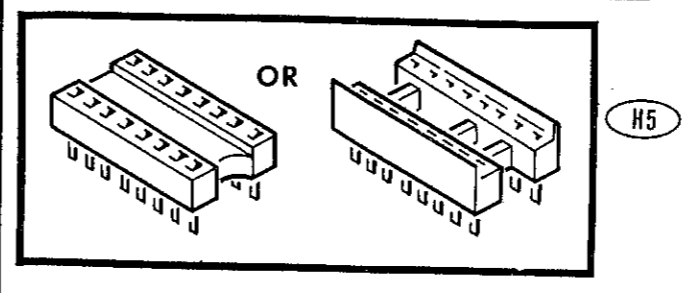
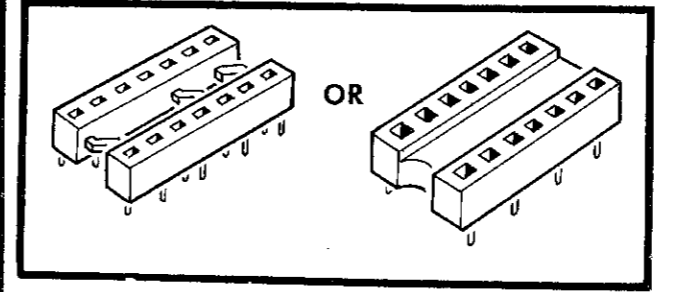
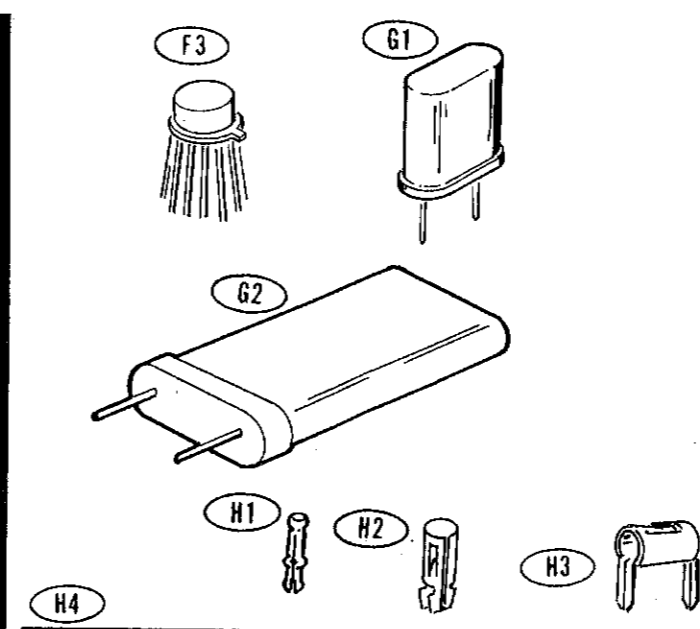
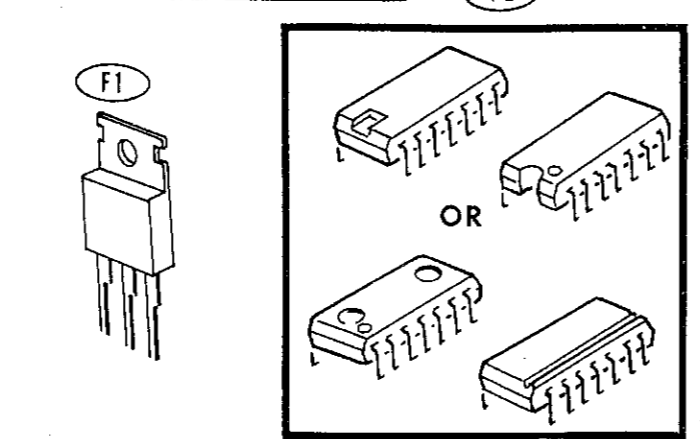
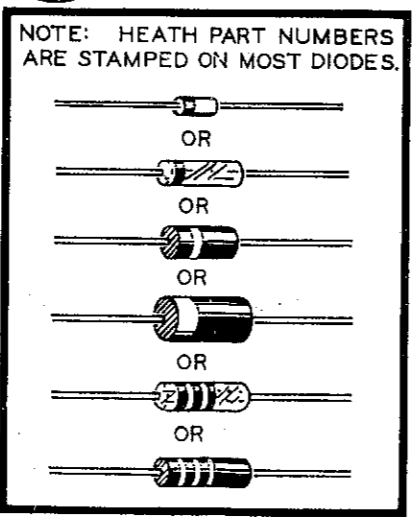
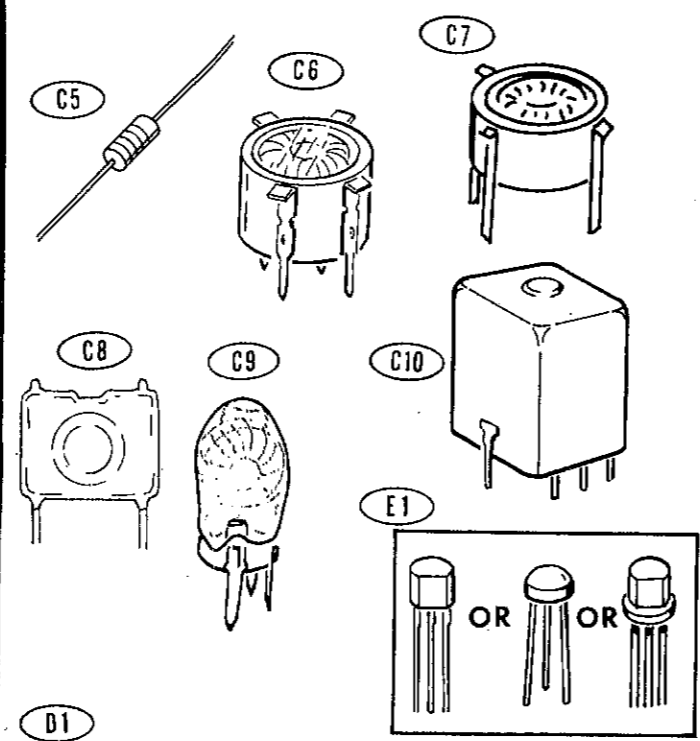
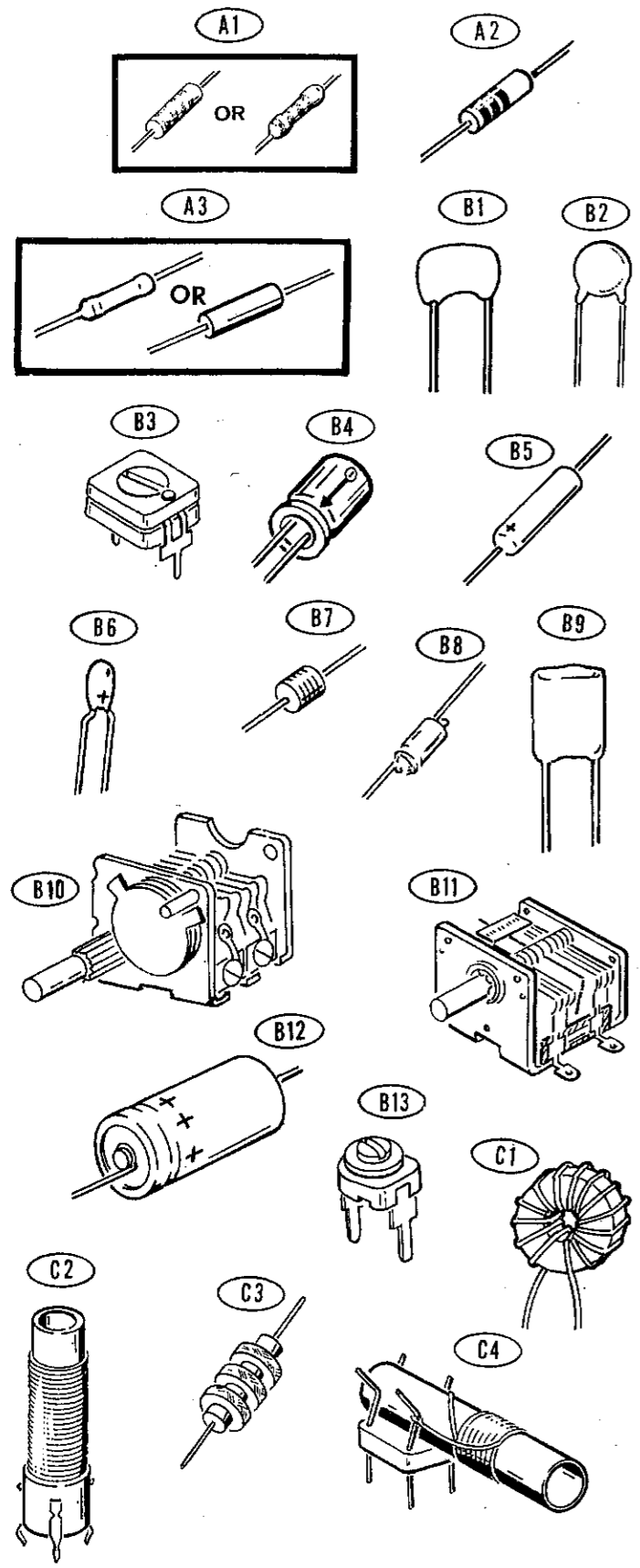
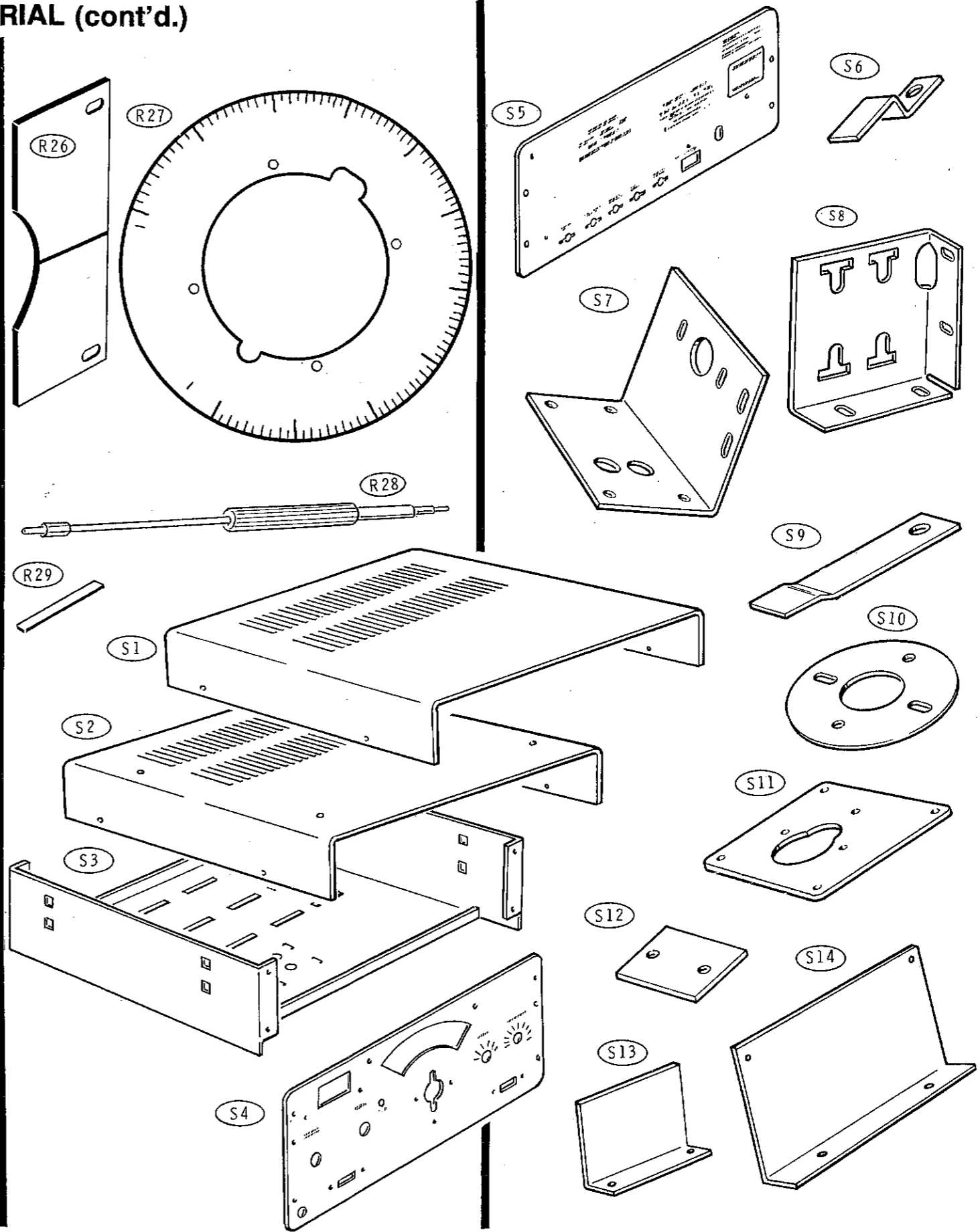
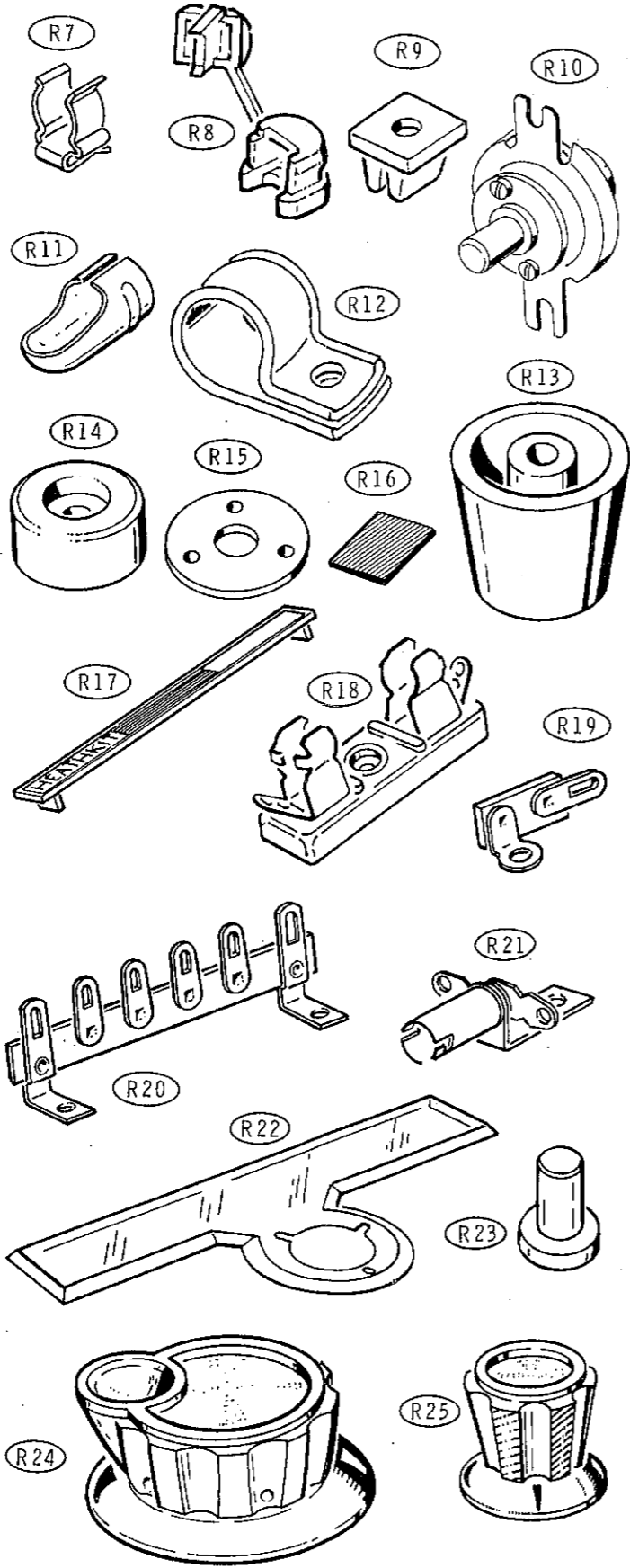
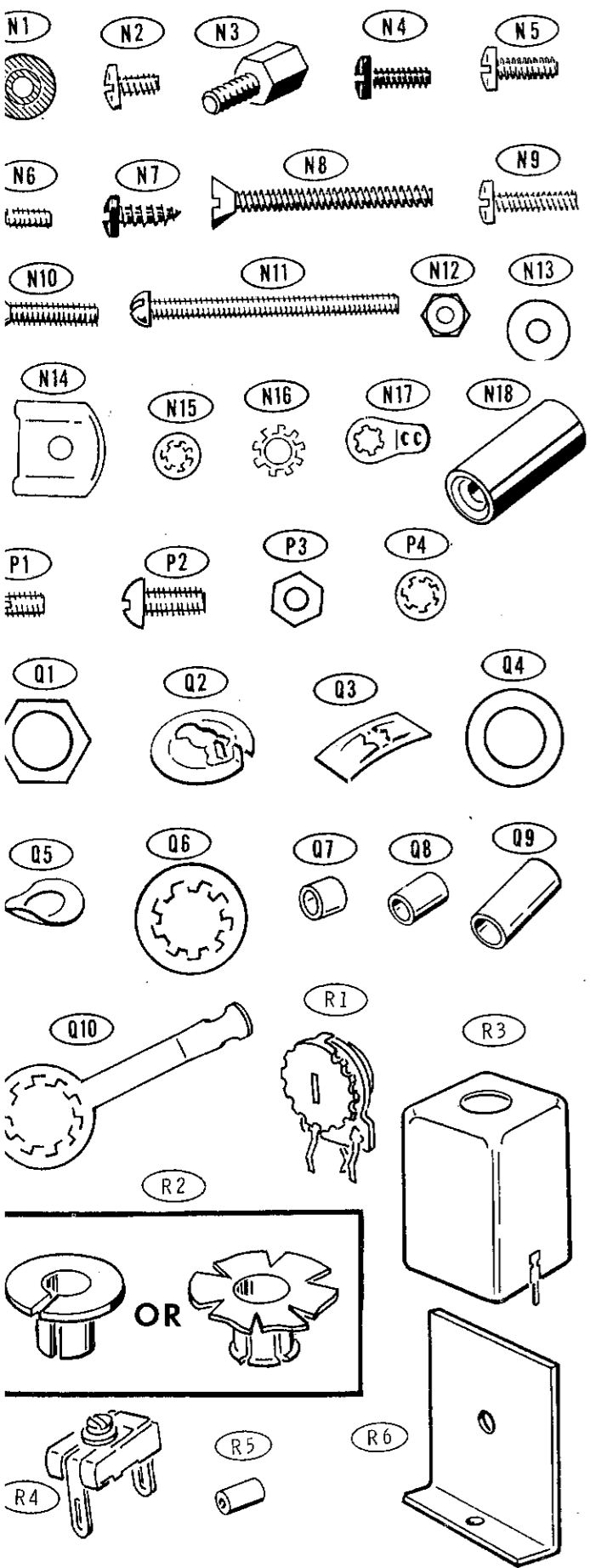


ILLUSTRATION BOOKLET

PARTS PICTORIAL



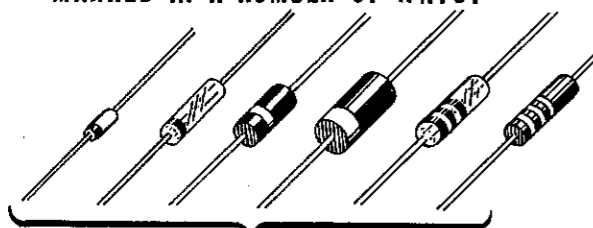
PARTS PICTORIAL (cont'd.)



CIRCUIT BOARD DETAILS

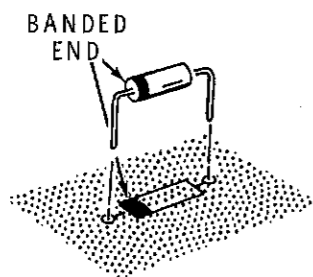
When you install a diode, first locate the banded end of the diode.

THE BANDED END OF DIODES CAN BE MARKED IN A NUMBER OF WAYS.



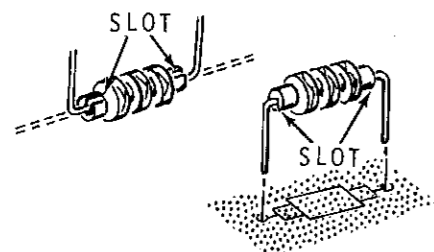
BANDED END

Match the banded end of the diode with the band mark on the circuit board. Then install the diode. **A DIODE WILL NOT WORK IF INSTALLED BACKWARD.**



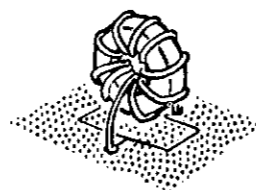
Detail A

When you install a choke, bend the leads toward the slot in the choke body to avoid placing any strain on the leads of the choke winding. Then install the choke as shown.



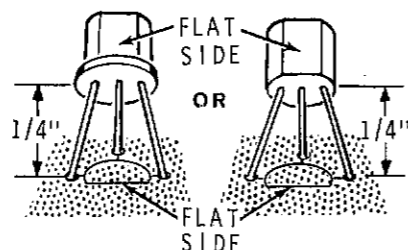
Detail B

When you install a toroid coil, do not remove the coil from its envelope until you are ready to mount it. Then start the leads through their holes in the top of the board. Grasp the lead ends on the foil side of the board and pull the coil down onto the board. Solder the leads as you install each coil. Then cut off the excess lead lengths.



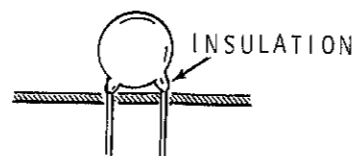
Detail C

When you install this transistor, first line up the flat on the transistor with the outline of the flat on the circuit board. (The transistor may be either of the two types shown below.) Bend the center lead of the transistor forward or backward as required; then insert the transistor leads into the corresponding holes in the circuit board. Solder the leads to the foil and cut off the excess lead lengths.



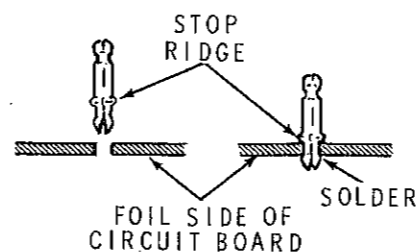
Detail D

When you install a disc capacitor, do not push the insulated portion of the leads into the circuit board holes. This could make it difficult to solder the leads to the foil.



Detail E

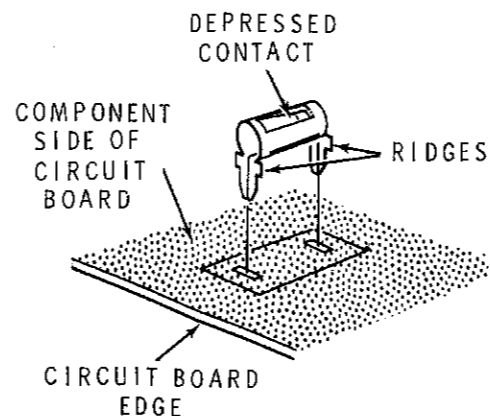
When you install a PCB pin (#432-121), push the pin down firmly against the top of the circuit board. Solder each pin as you install it.



Detail F

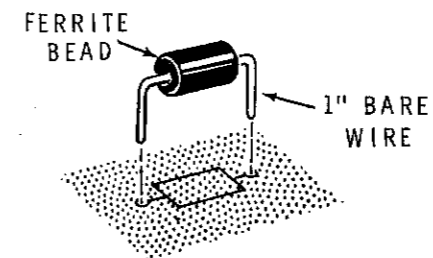
Install circuit board connectors in the following manner:

- Note that inside each connector the spring contact is depressed on one end. This depressed end of the connector should face away from the edge of the circuit board.
- Insert the mounting tabs through the circuit board until the ridges of the connector are firmly against the circuit board.
- Look at the row of connectors to make sure the depressed end of the contact of each connector is toward the center of the circuit board.
- Solder the tabs to the foil.



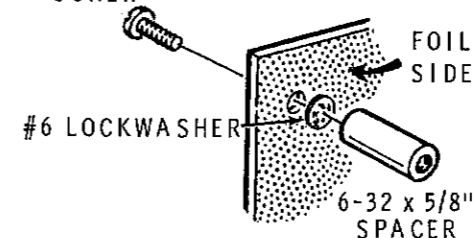
Detail G

When you install a ferrite bead, use a 1" length of small bare wire to mount the bead to the circuit board.



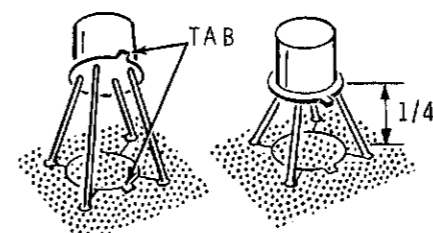
Detail H

6-32 x 1/4" SCREW



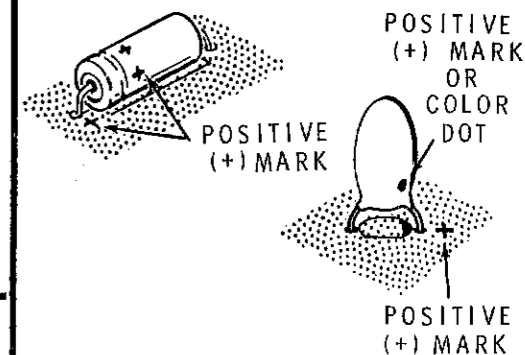
Detail J

When you install this type of transistor, first line up the tab on the transistor with the tab outline on the circuit board. Insert the transistor leads into the corresponding holes in the circuit board. Solder each lead to the foil and cut off the excess lead lengths.



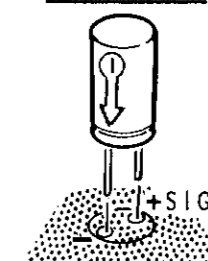
Detail K

When you install electrolytic and tantalum capacitors be sure to match the positive (+) mark or color dot on the capacitor with the positive (+) mark on the circuit board as shown. If your capacitor has a negative (-) mark, position it away from the positive mark on the circuit board.

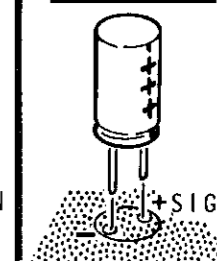


Detail L

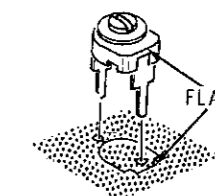
IDENTIFIED LEAD IS NEGATIVE (-)



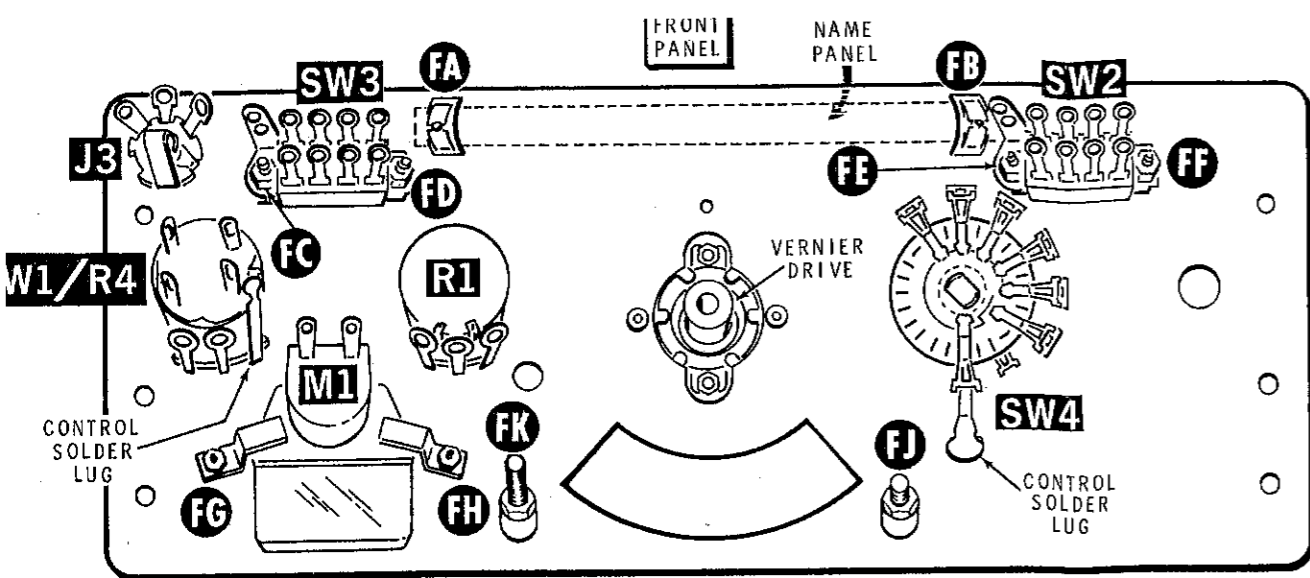
IDENTIFIED LEAD IS POSITIVE (+)



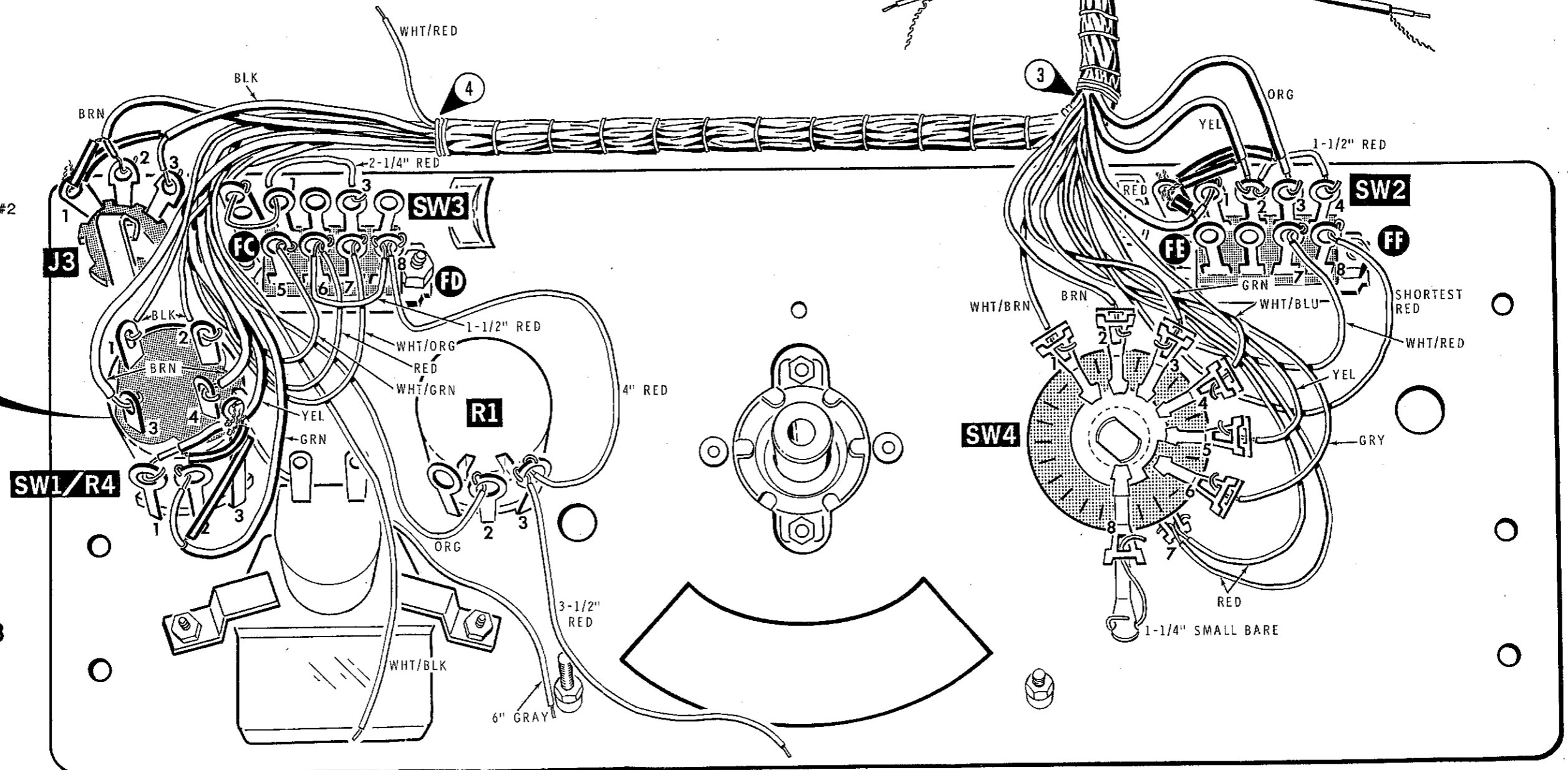
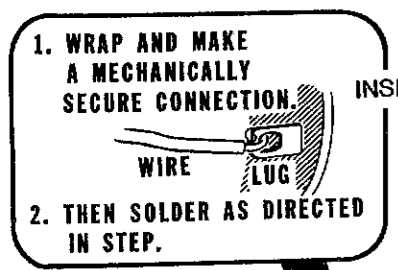
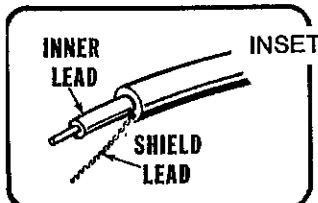
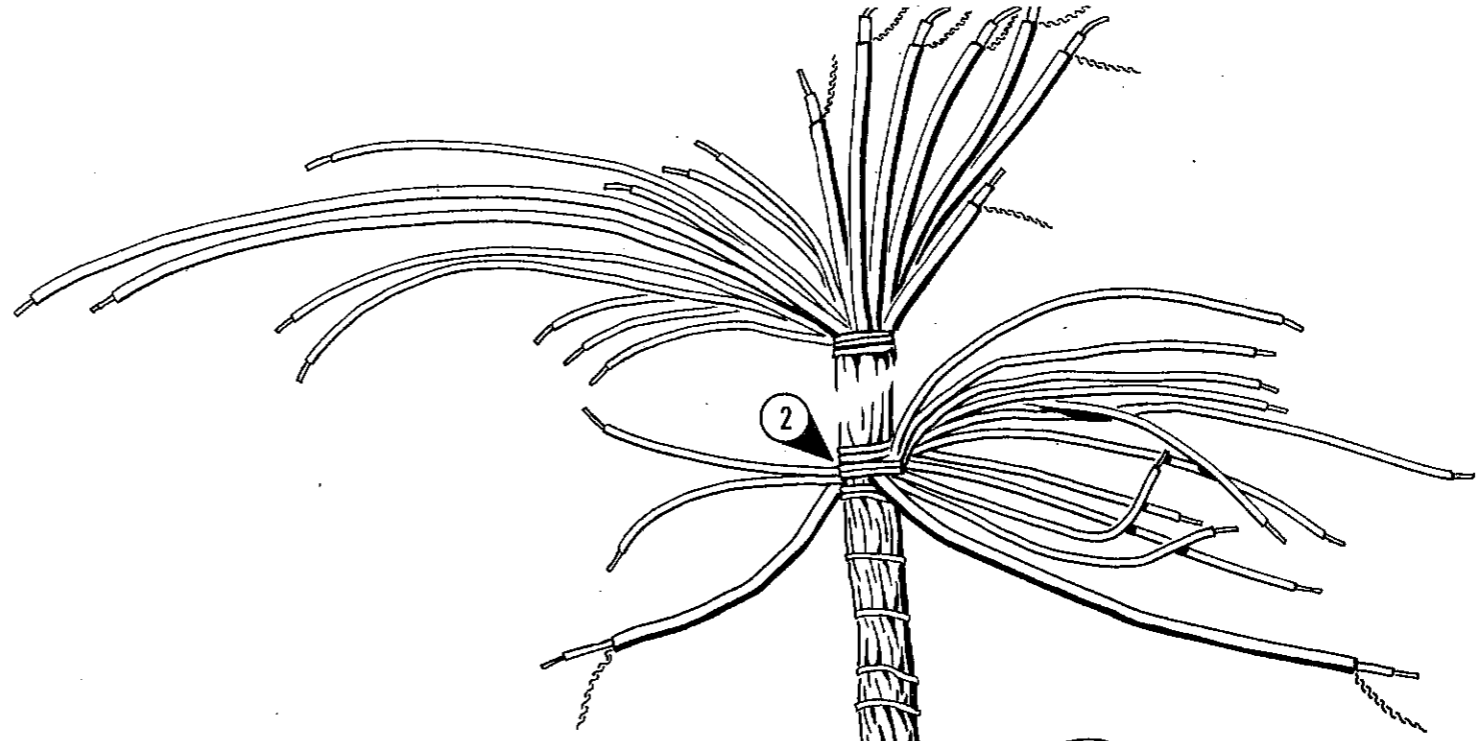
When you install this type of trimmer capacitor, be sure to line up the flat on the capacitor with the outline of the flat on the circuit board. Then insert the lugs into the corresponding holes in the circuit board and solder them to the foil.



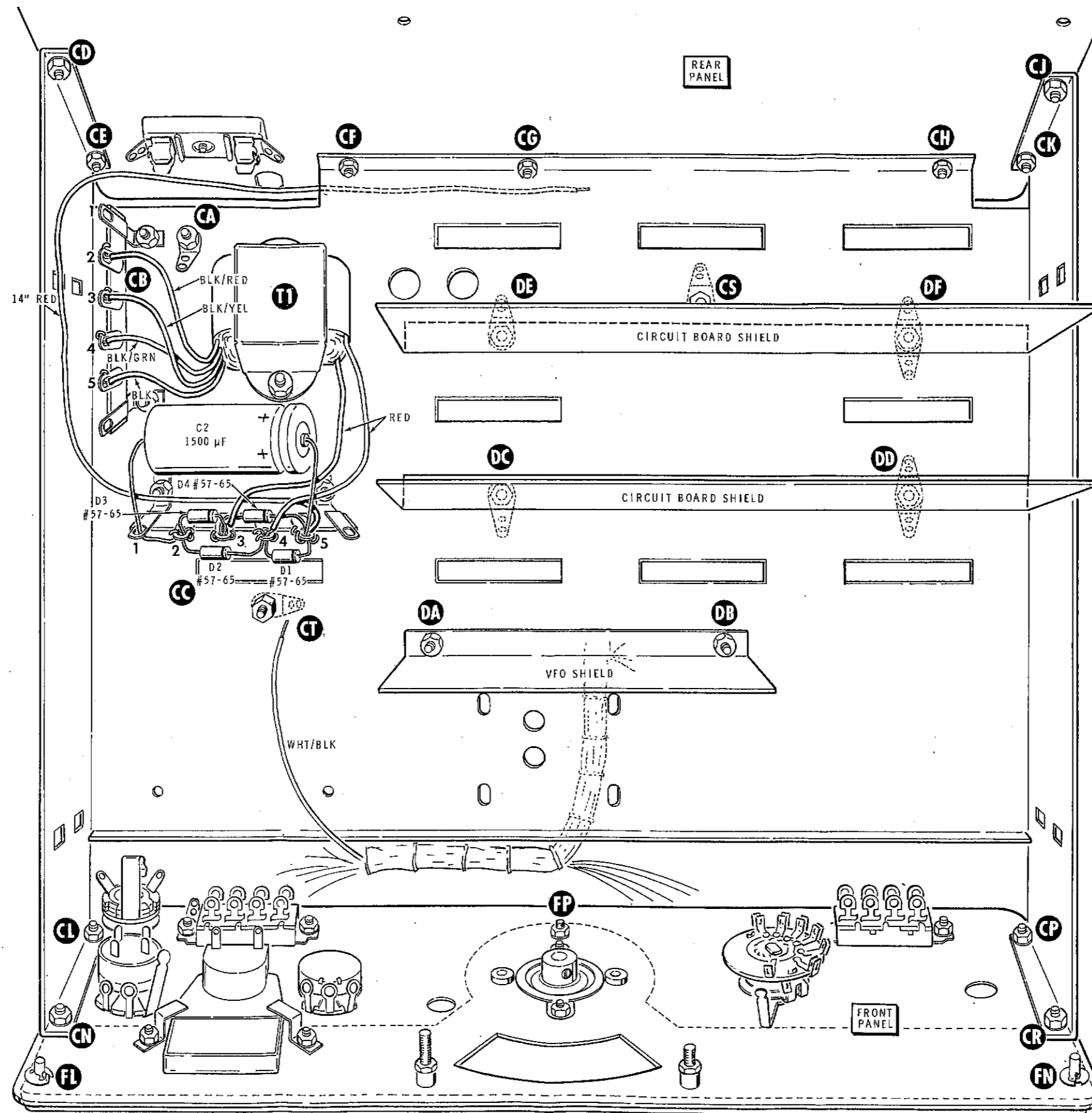
Detail M



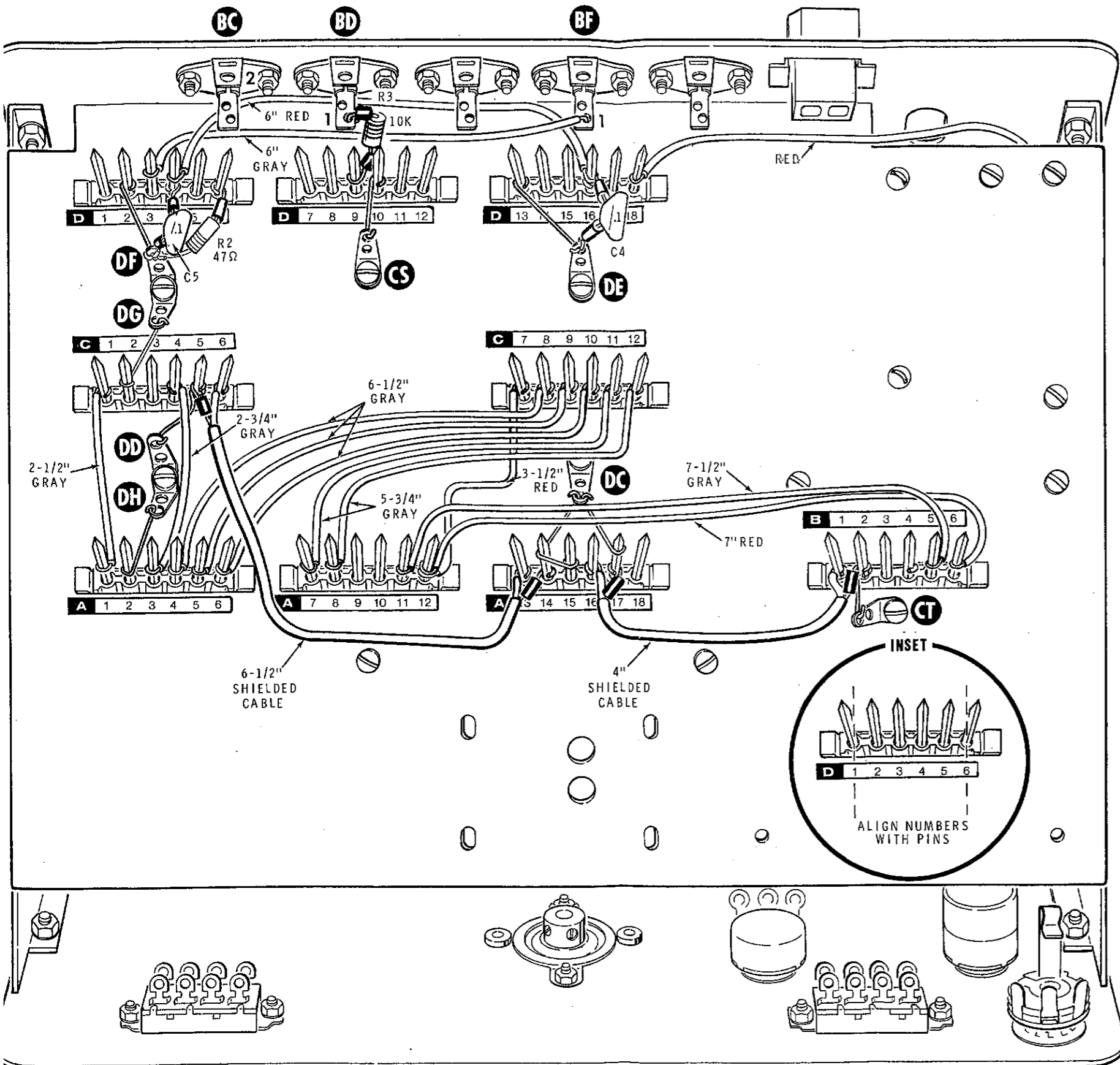
PICTORIAL 5-2



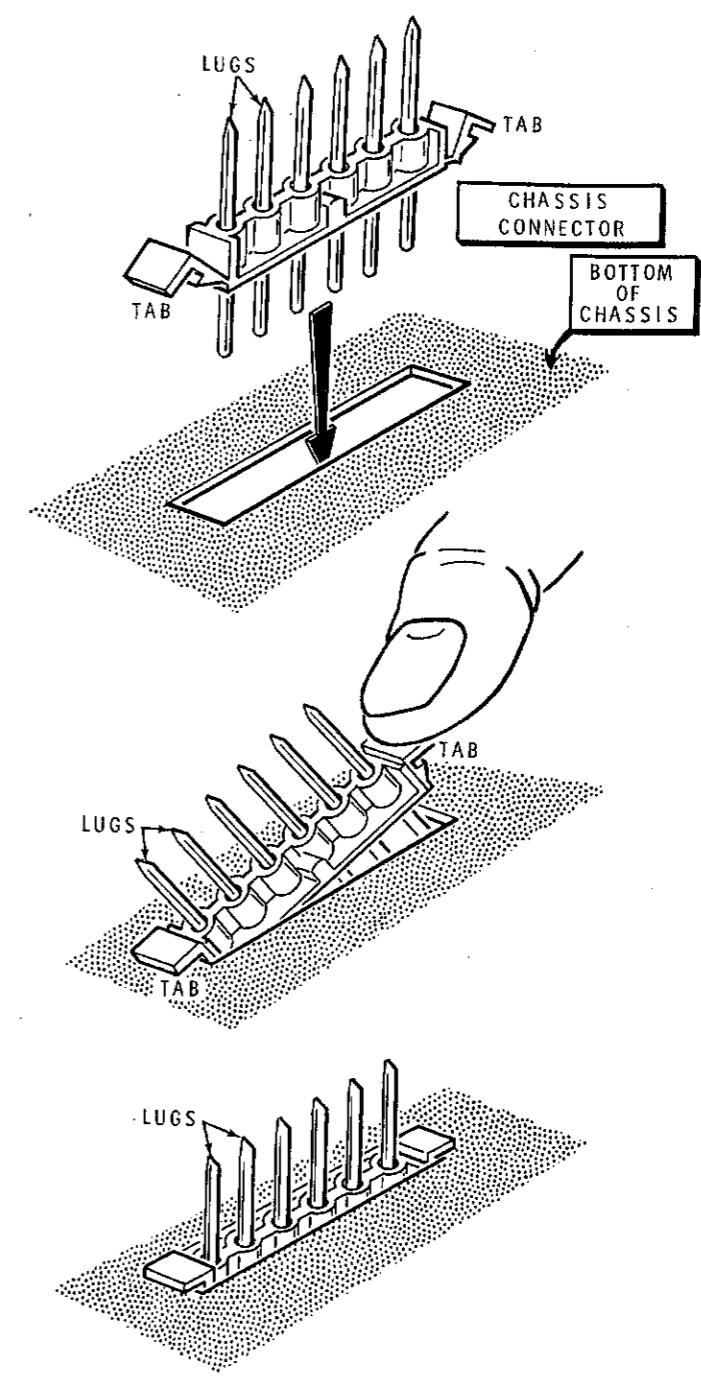
PICTORIAL 5-3



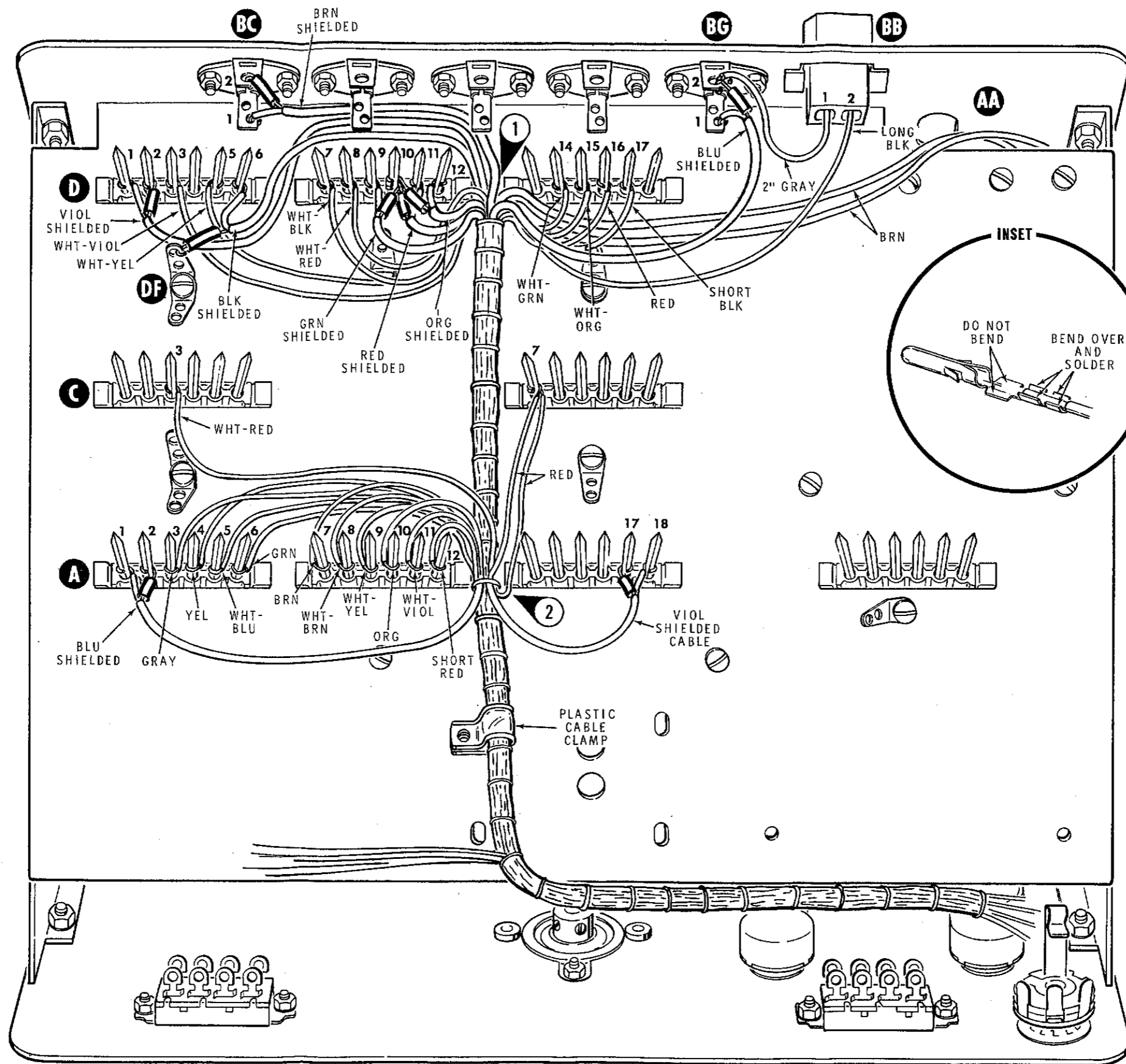
PICTORIAL 5-4



PICTORIAL 5-5

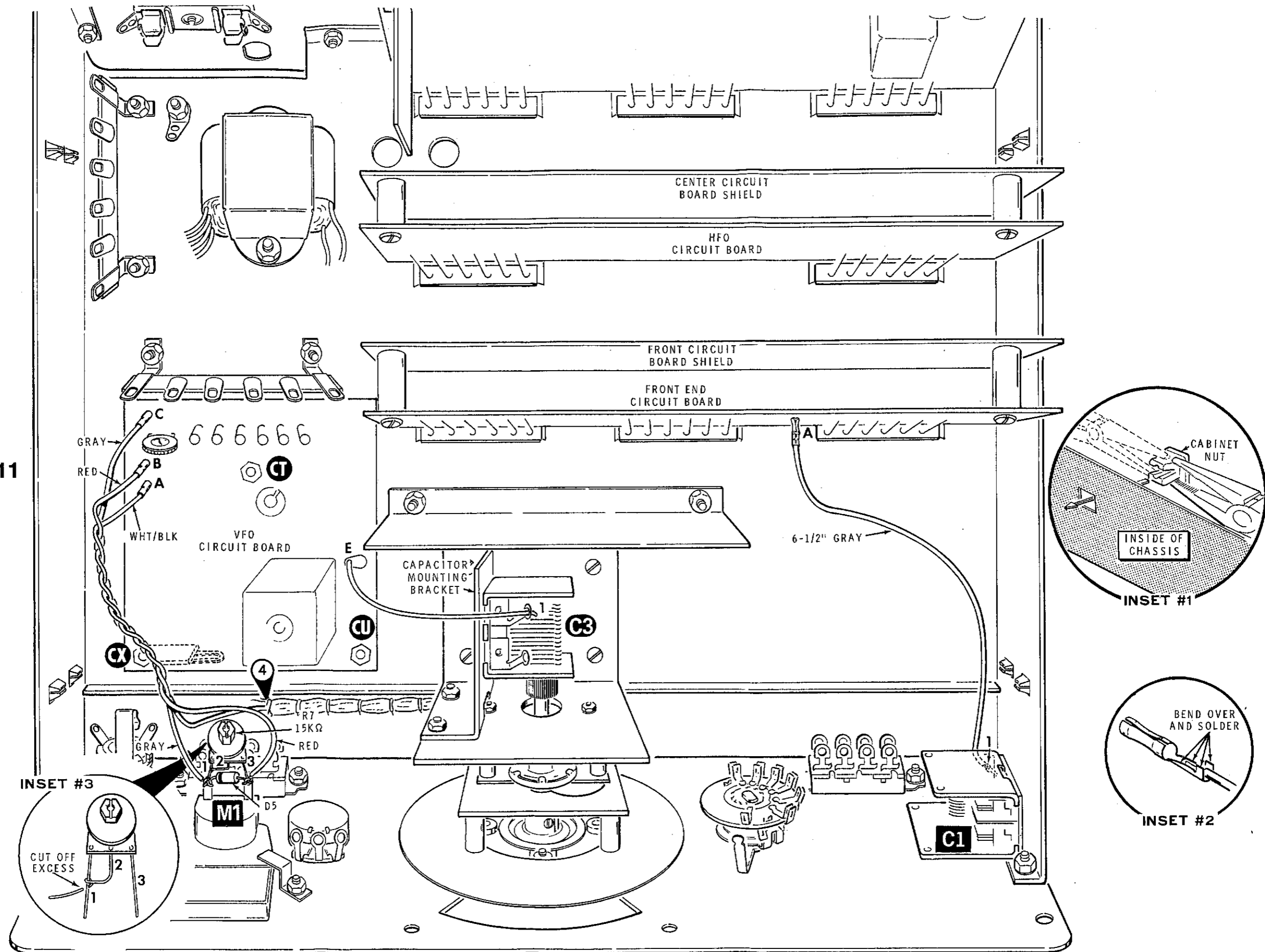


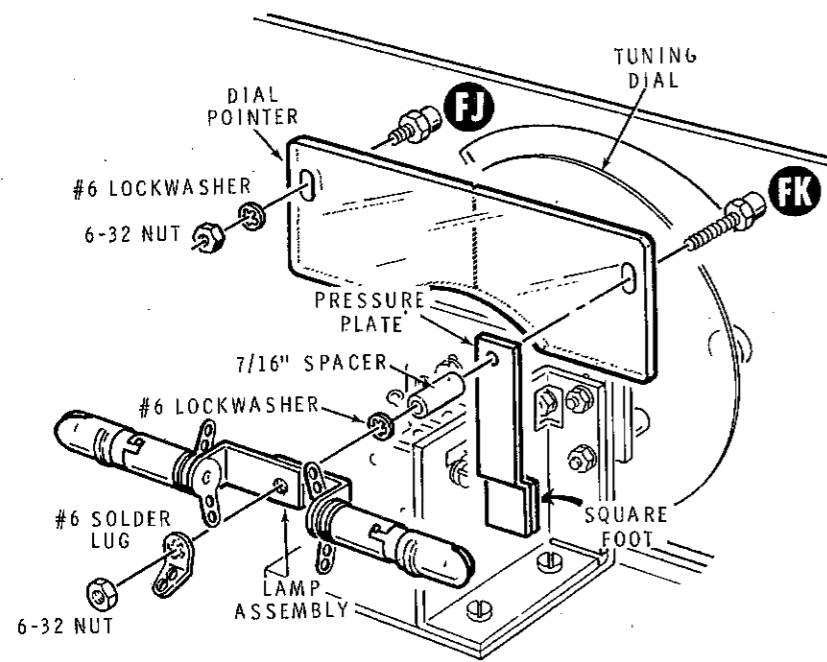
Detail 5-5B



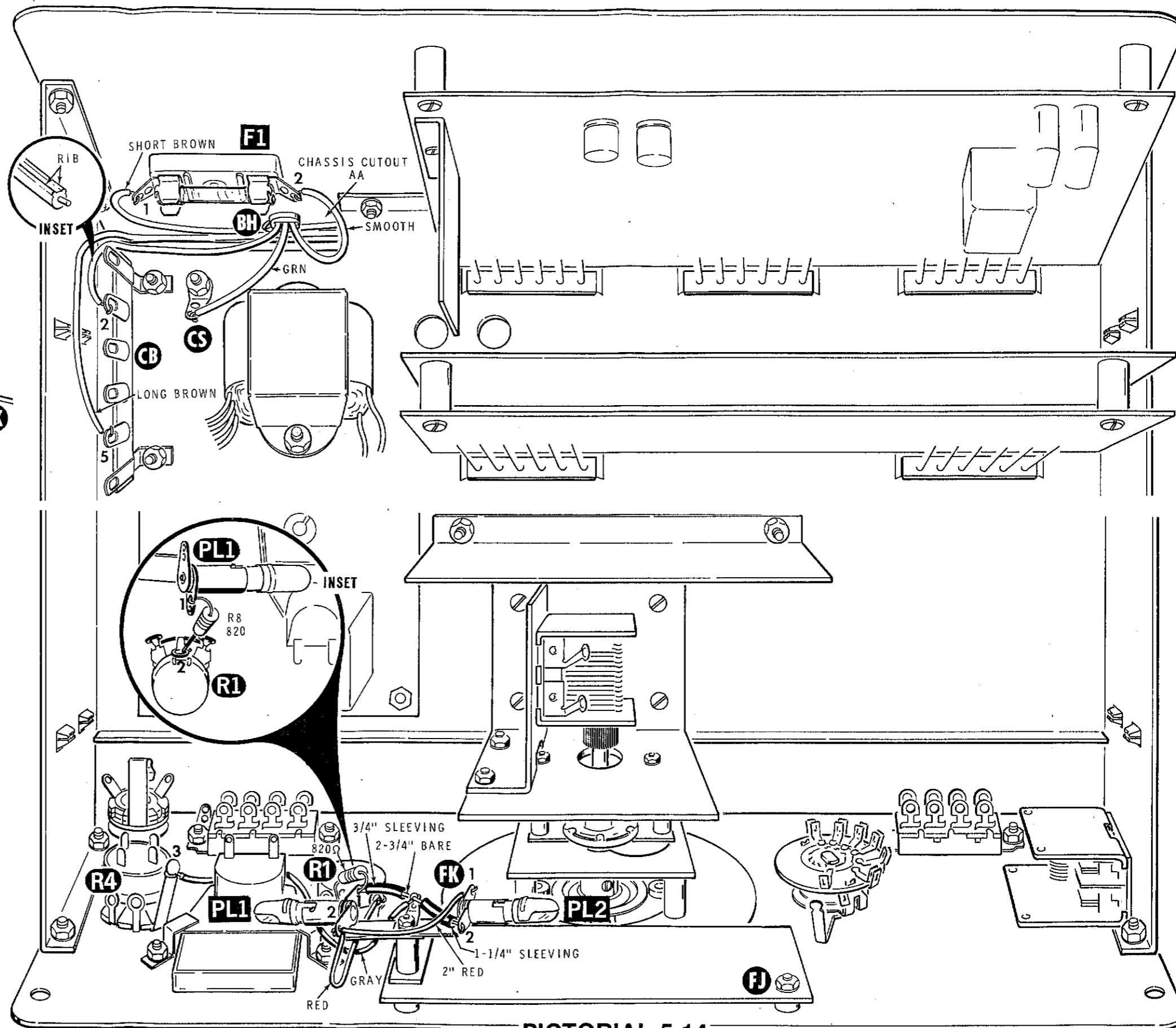
PICTORIAL 5-6

PICTORIAL 5-11





PICTORIAL 5-13



PICTORIAL 5-14

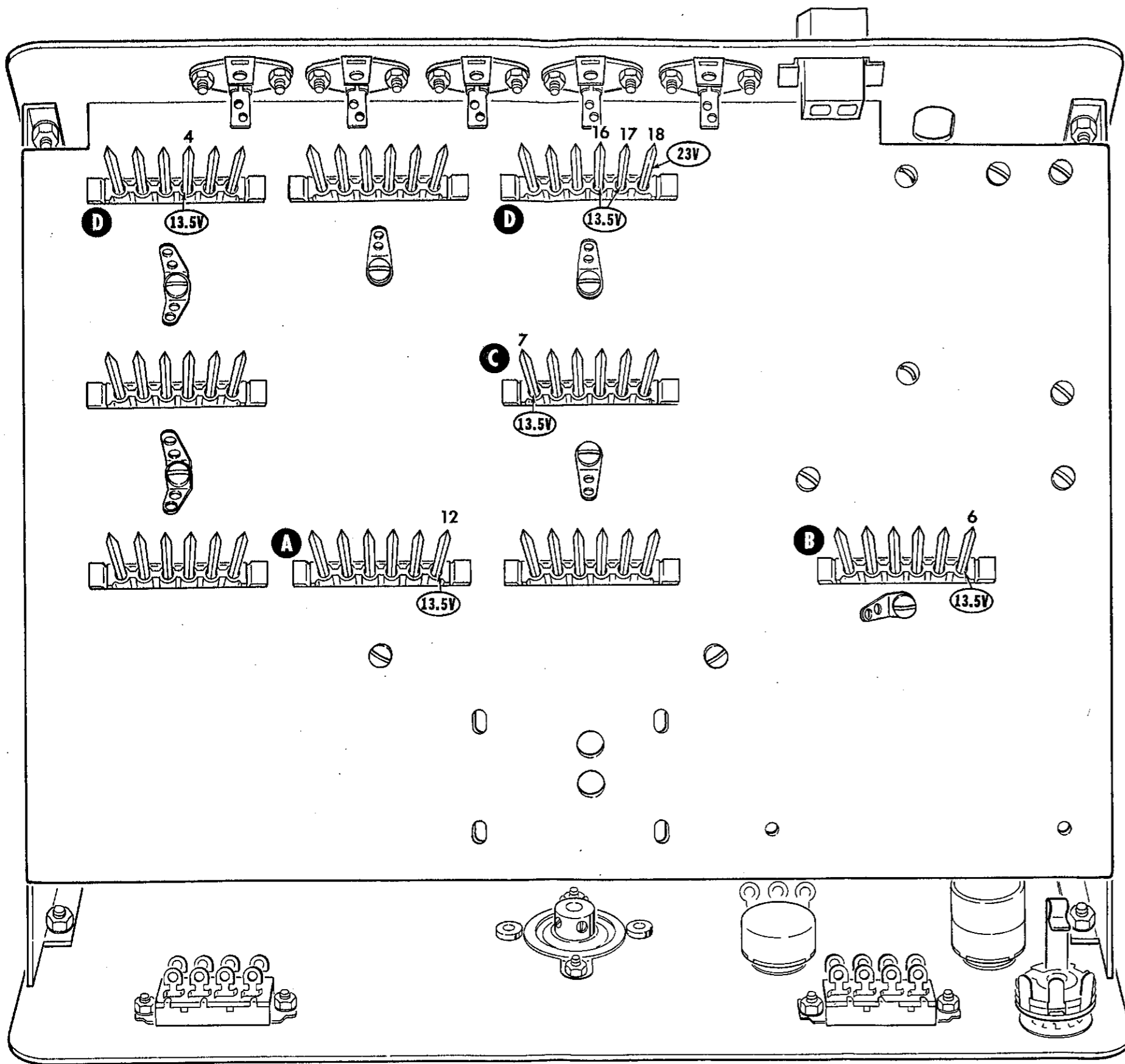


Figure 1-1

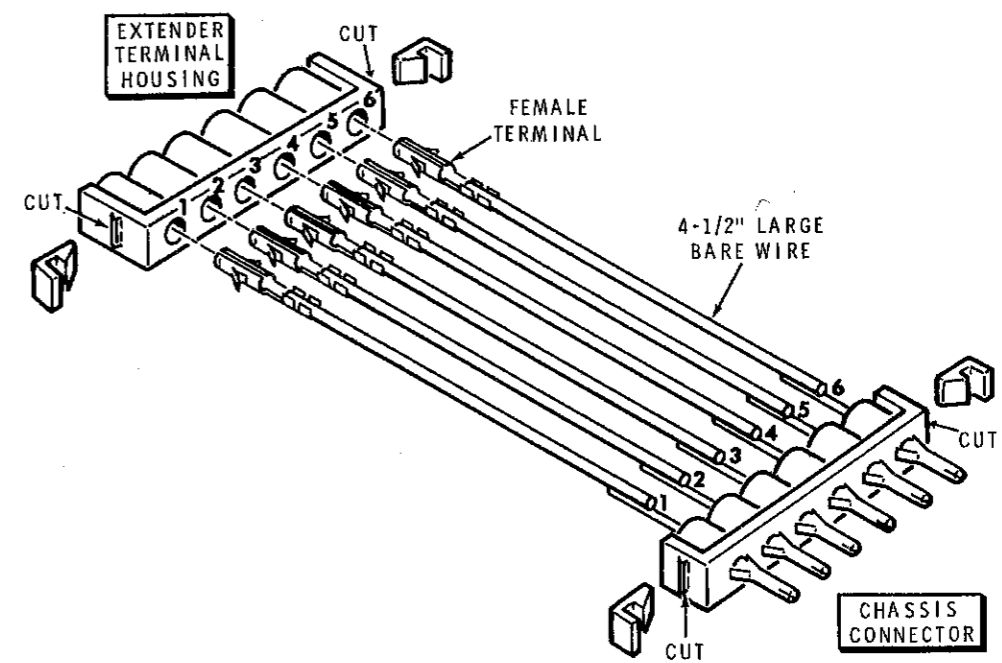


Figure 2-3

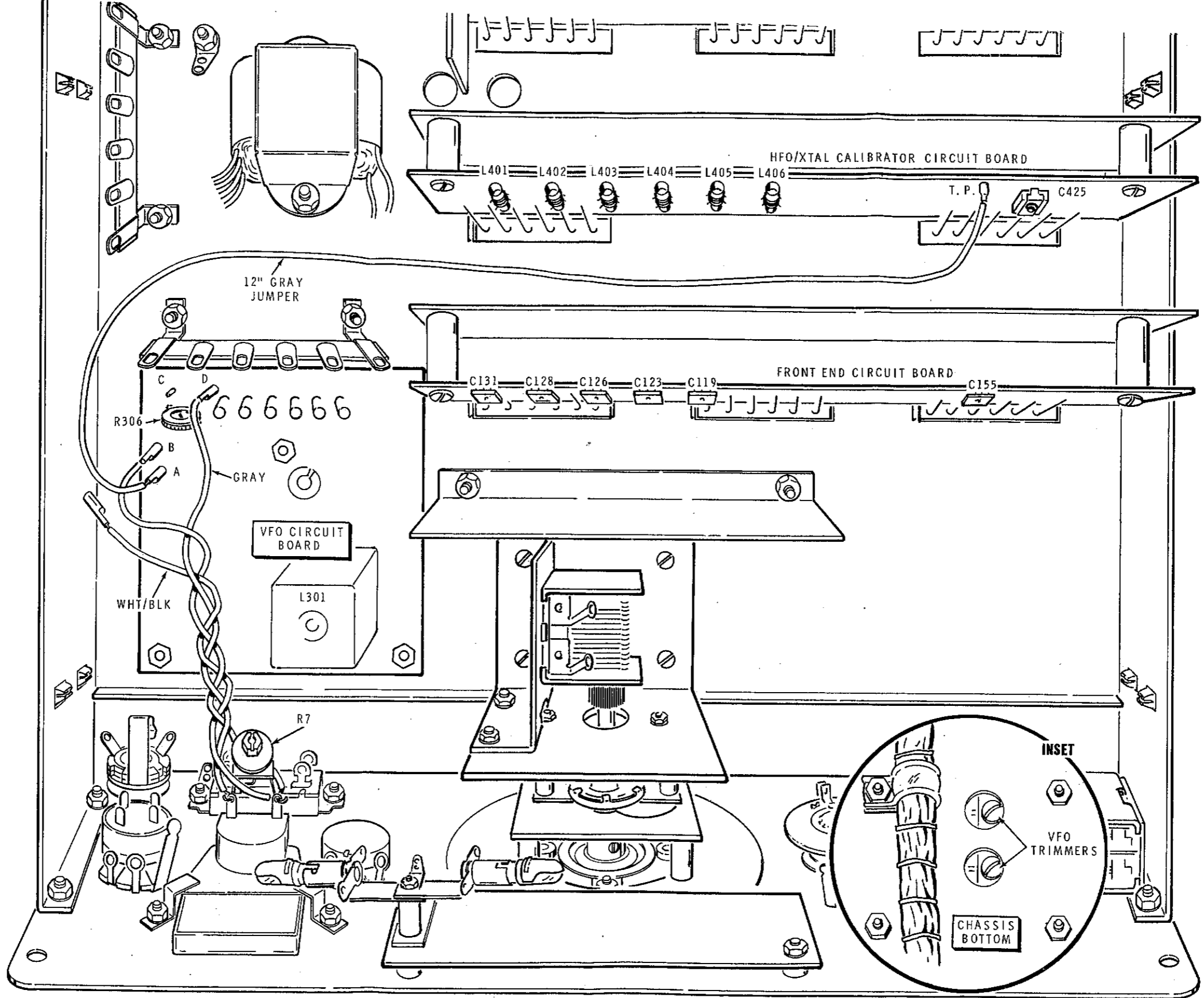


Figure 2-4

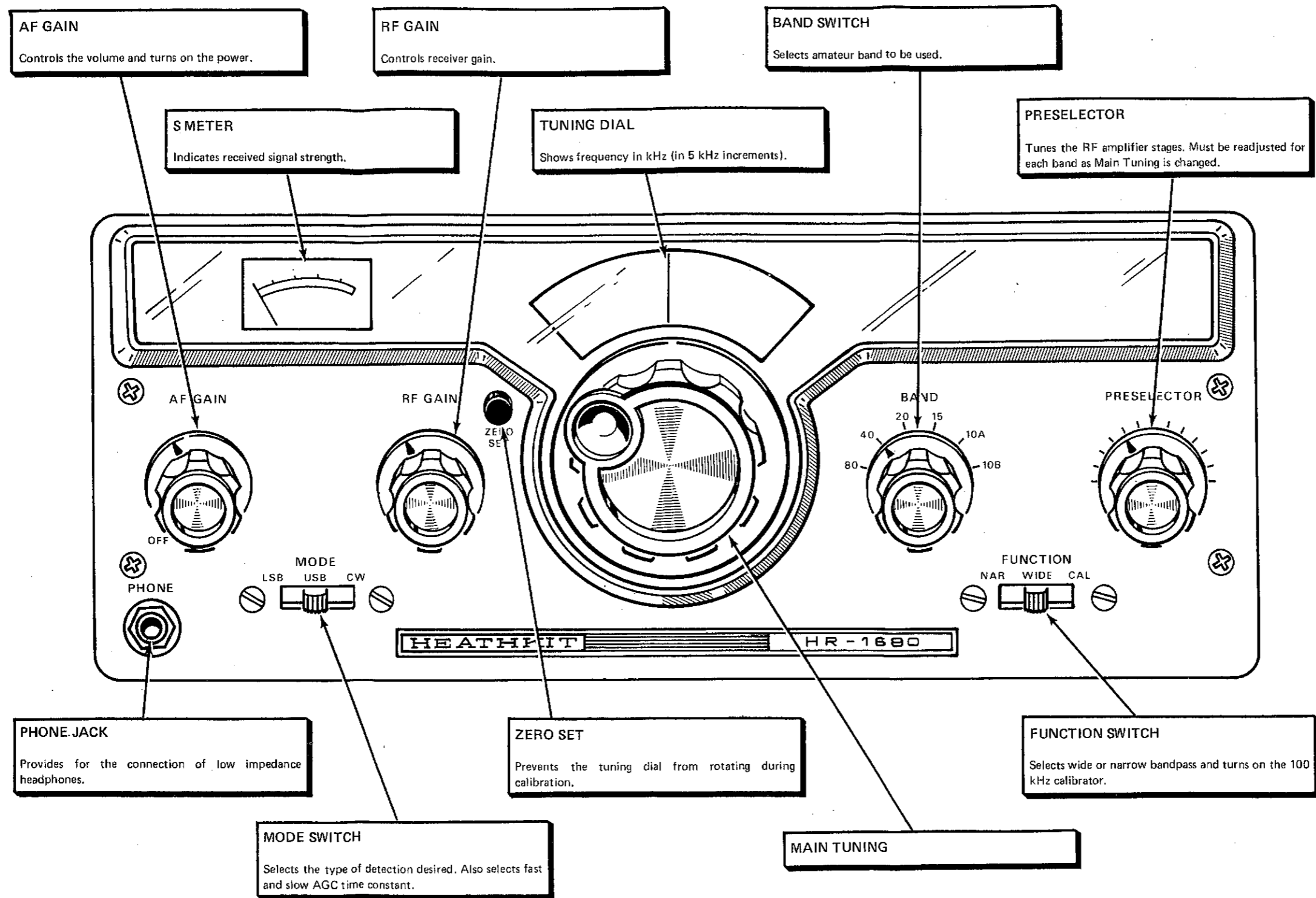
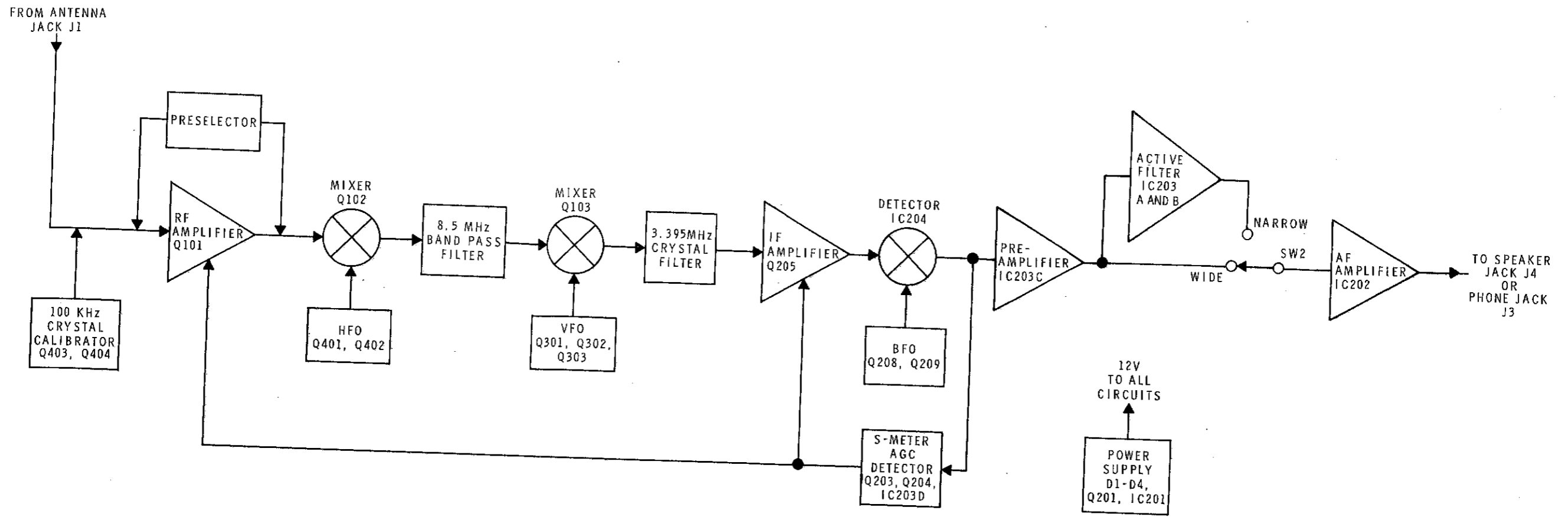
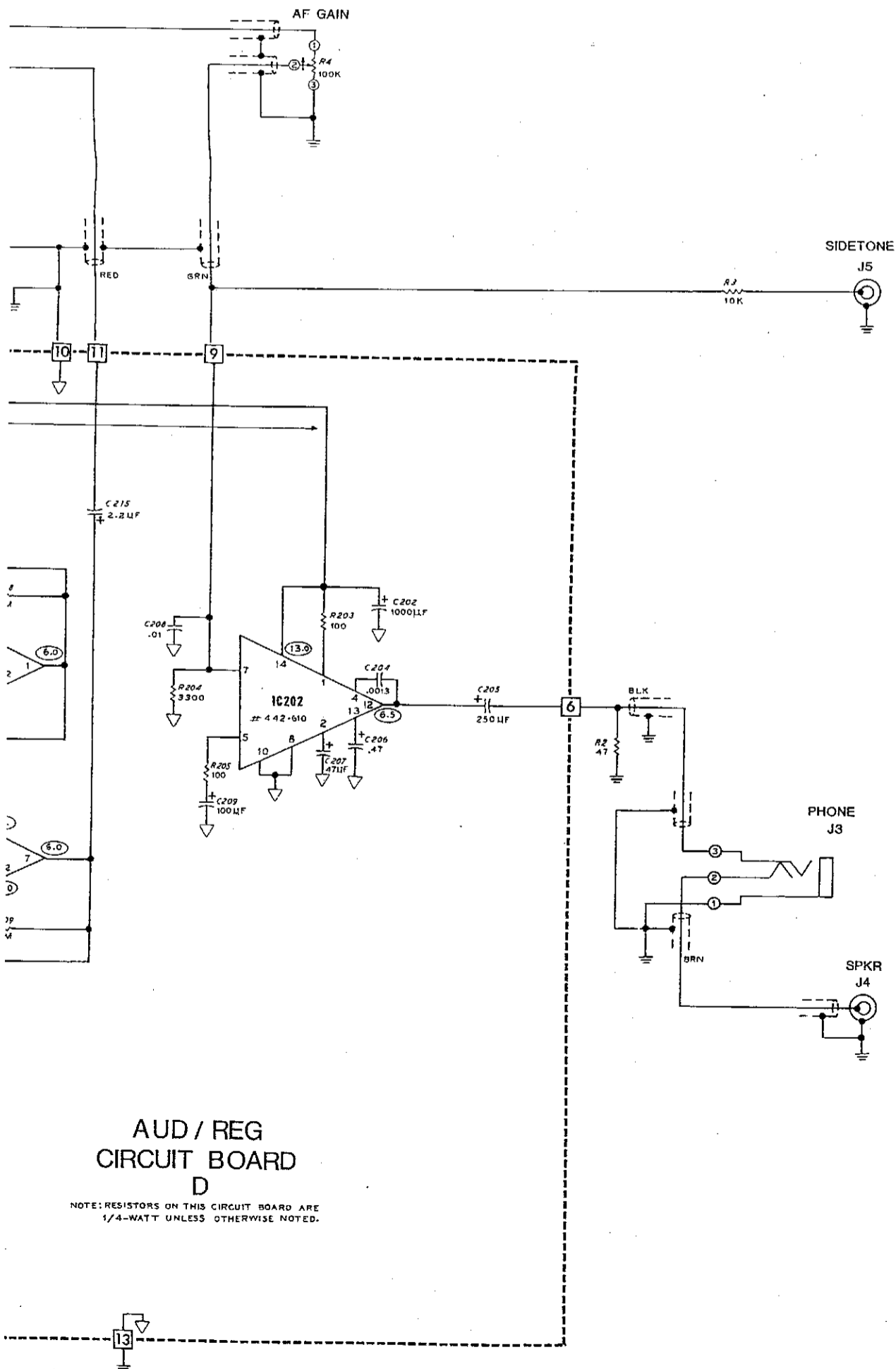
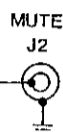
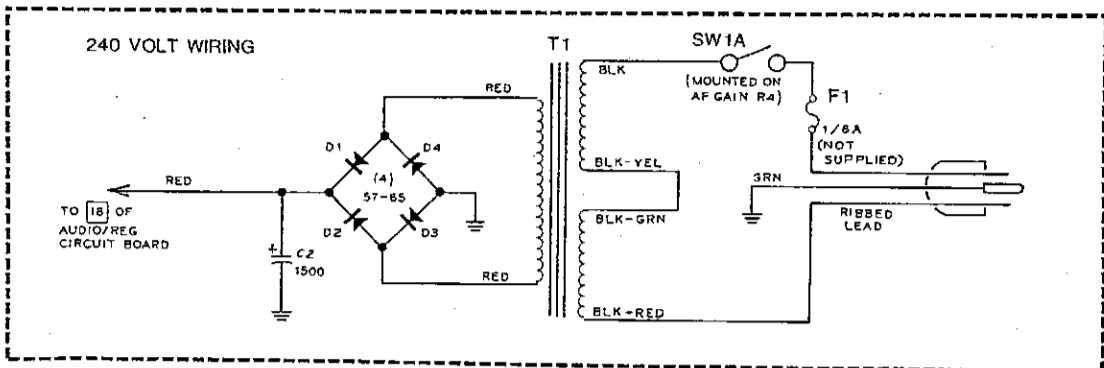
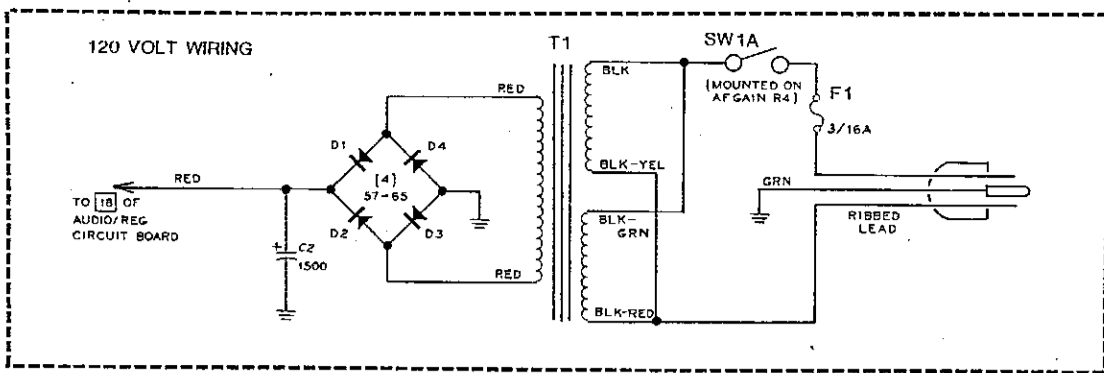


Figure 4-1



BLOCK DIAGRAM

POWER SUPPLY



AUD / REG
CIRCUIT BOARD
D

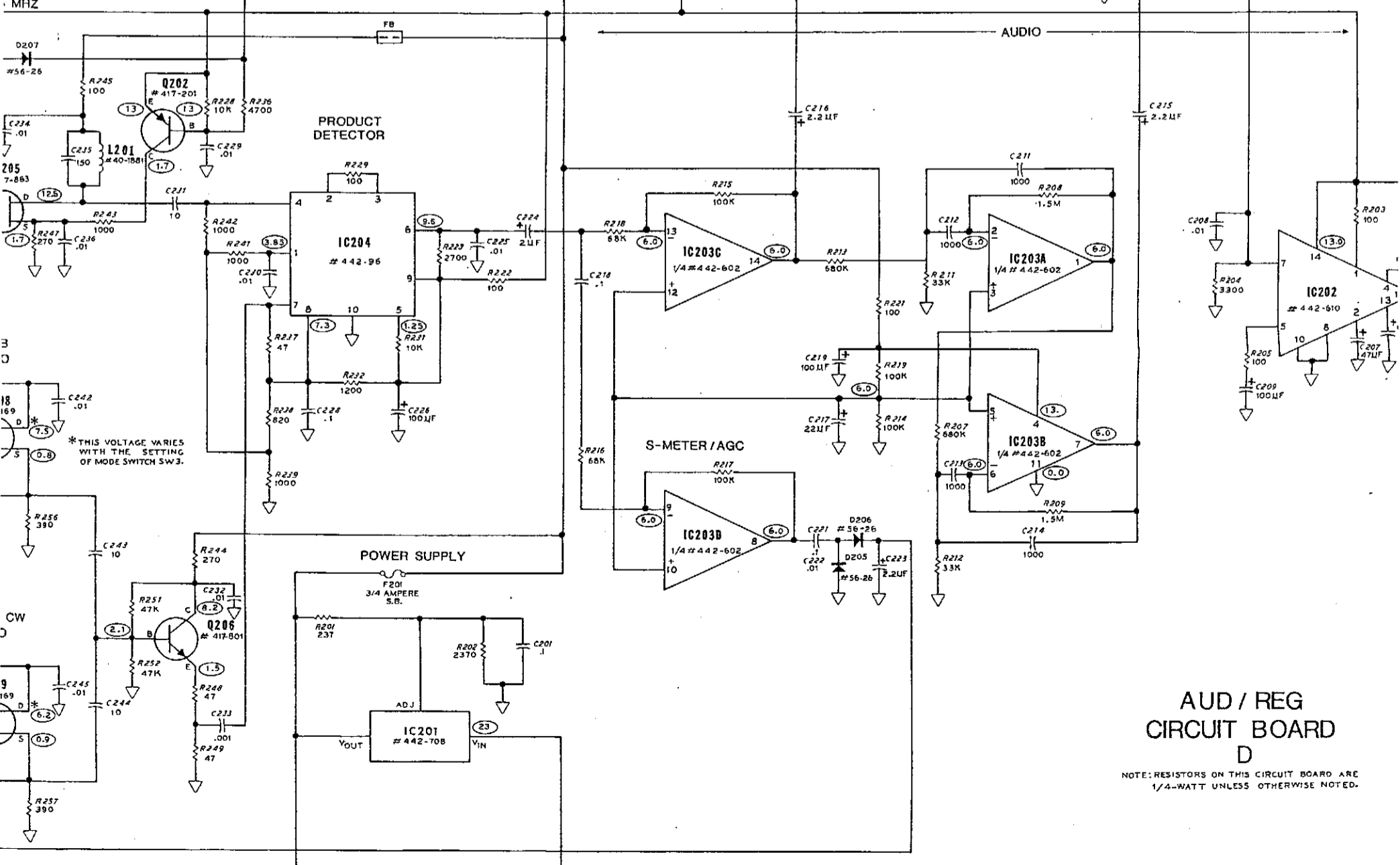
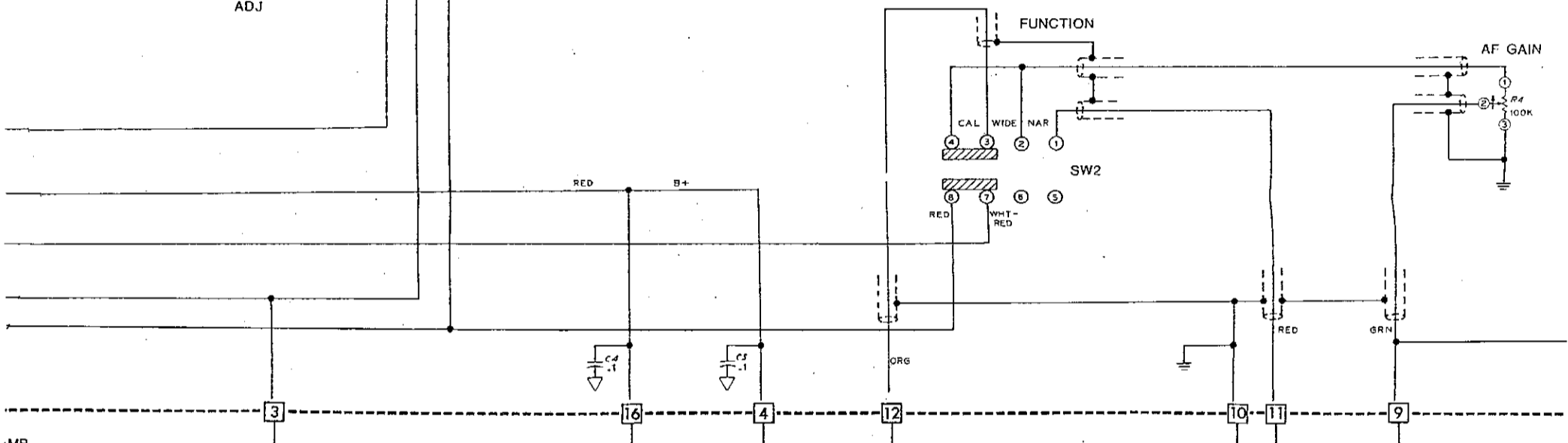
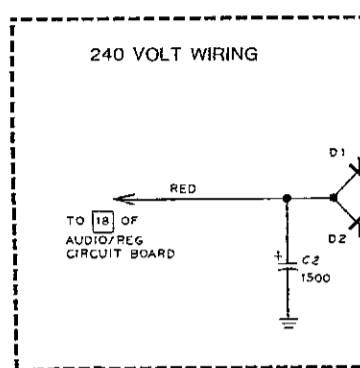
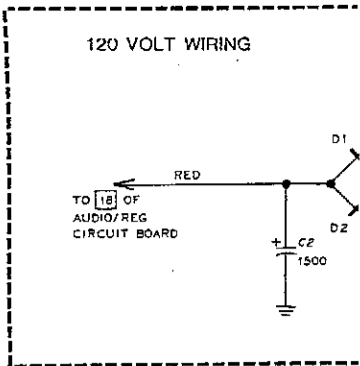
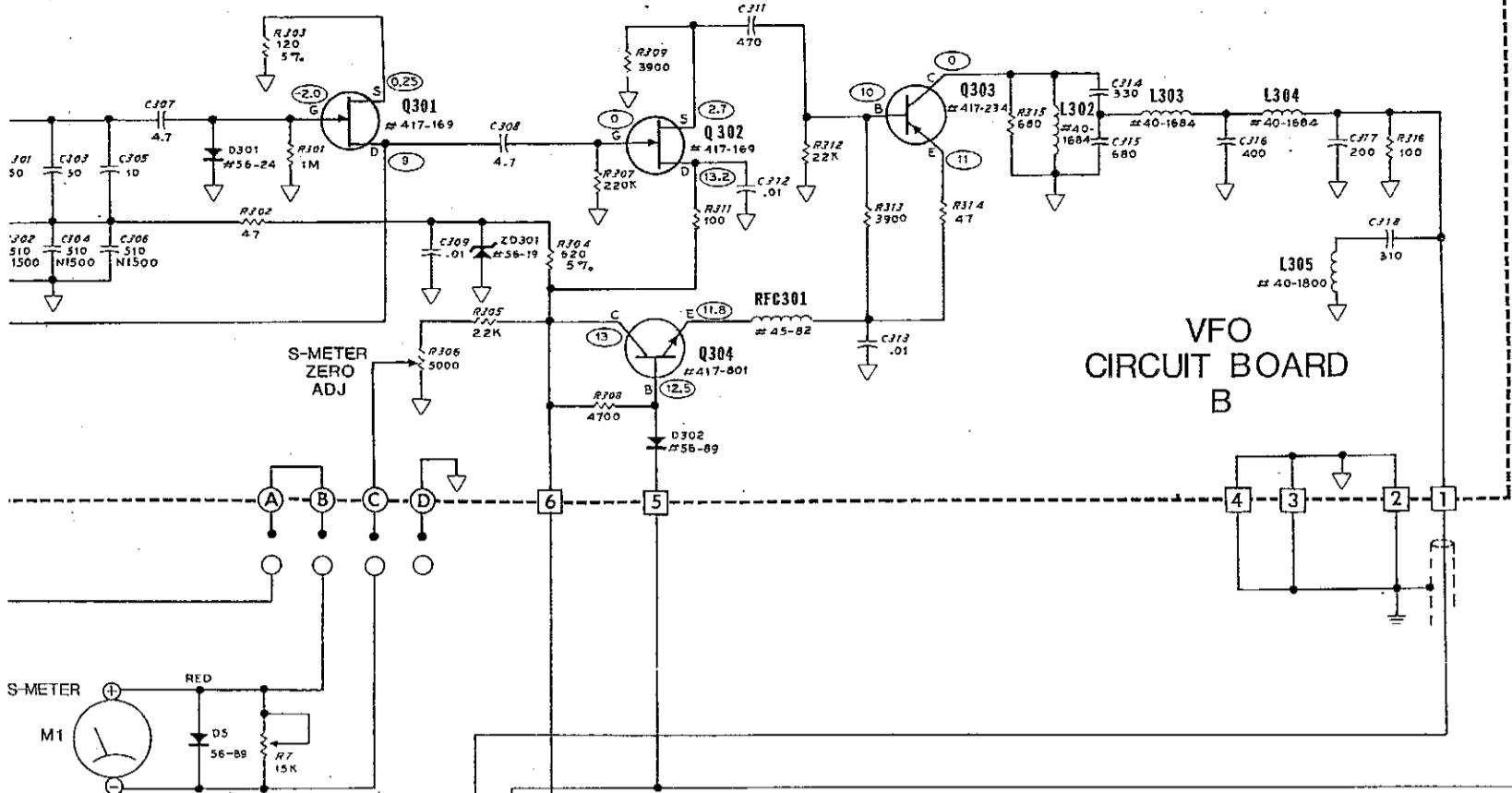
NOTE: RESISTORS ON THIS CIRCUIT BOARD ARE 1/4-WATT UNLESS OTHERWISE NOTED.

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MODEL HR-1680

NOTES:

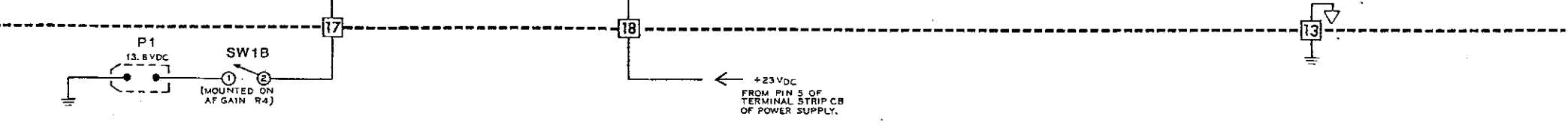
1. COMPONENT NUMBERS ARE IN THE FOLLOWING GROUPS:
1-99 PARTS MOUNTED ON THE CHASSIS.
100-199 PARTS MOUNTED ON THE FRONT END CIRCUIT BOARD.
200-299 PARTS MOUNTED ON THE AUD/REG CIRCUIT BOARD.
300-399 PARTS MOUNTED ON THE VFO CIRCUIT BOARD.
400-499 PARTS MOUNTED ON THE HFO/XTAL CALIBRATOR CIRCUIT BOARD.
2. ALL RESISTORS ARE 1/2 WATT, 10% TOLERANCE UNLESS OTHERWISE NOTED. RESISTOR VALUES ARE IN OHMS; K=1000, M=1,000,000.
3. CAPACITORS LESS THAN 1 ARE IN µF (MICROFARADS), ALL OTHER CAPACITORS ARE IN pF (PICOFARADS) UNLESS OTHERWISE NOTED.
4. ARROWS AT CONTROLS INDICATE CLOCKWISE ROTATION, VIEWED FROM THE SHAFT END OF THE CONTROL.
5. ○ THIS SYMBOL INDICATES A POSITIVE DC VOLTAGE MEASURED WITH A HIGH INPUT IMPEDANCE VOLTMETER FROM THE POINT INDICATED TO CHASSIS GROUND. VOLTAGES ARE ±20%.
6. ▽ THIS SYMBOL INDICATES A CIRCUIT BOARD GROUND.
7. ⊥ THIS SYMBOL INDICATES CHASSIS GROUND.
8. □ THIS SYMBOL WITH A NUMBER INDICATES A CIRCUIT BOARD EDGE CONNECTOR.
9. ○ THIS SYMBOL WITH A LETTER INDICATES A PCB PIN.
10. TP= TEST POINT
FB= FERRITE BEAD
11. SWITCHES ARE SHOWN IN THE FOLLOWING POSITIONS:
MODE: USB
FUNCTION: CAL
BAND: 20

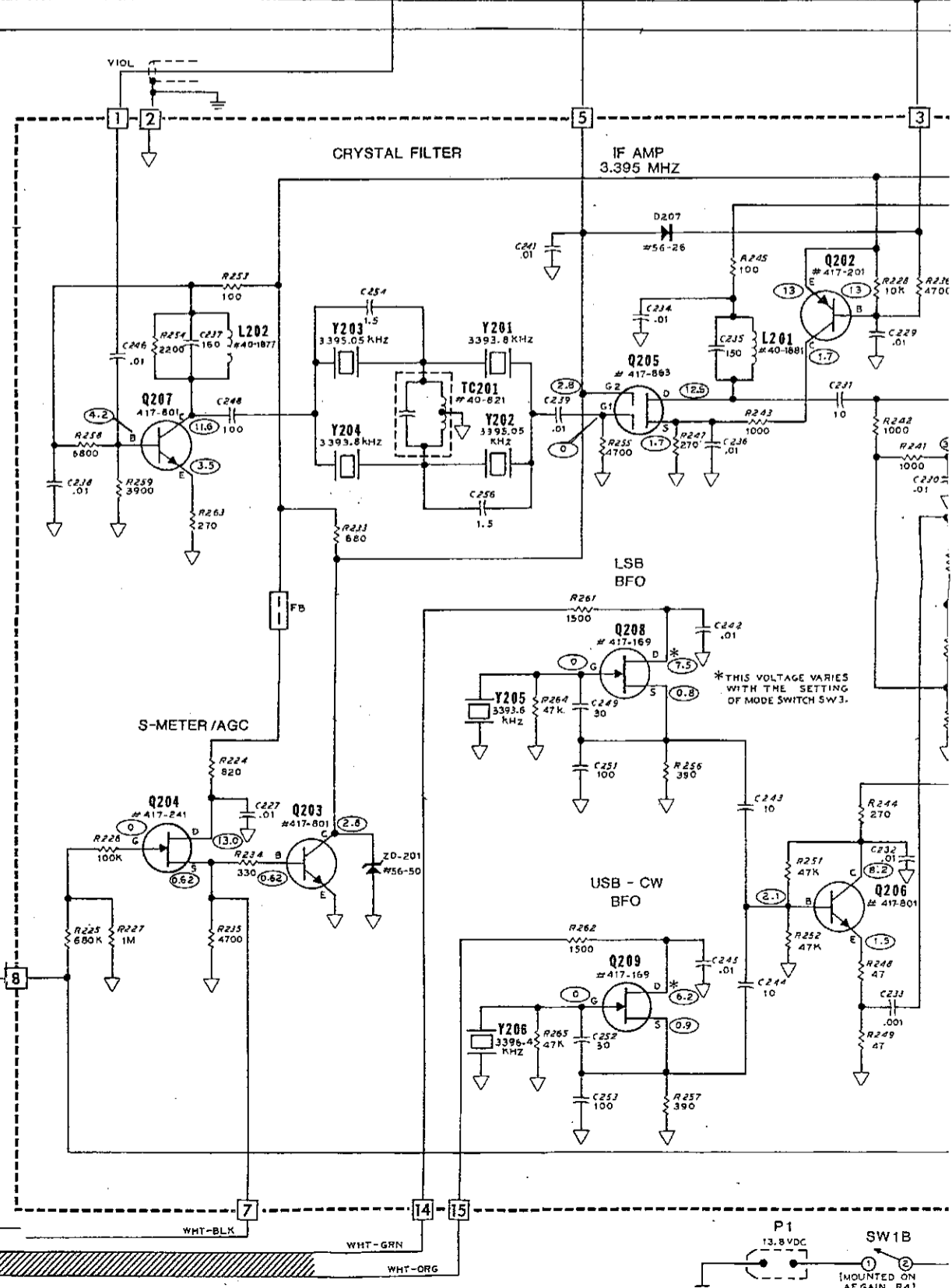
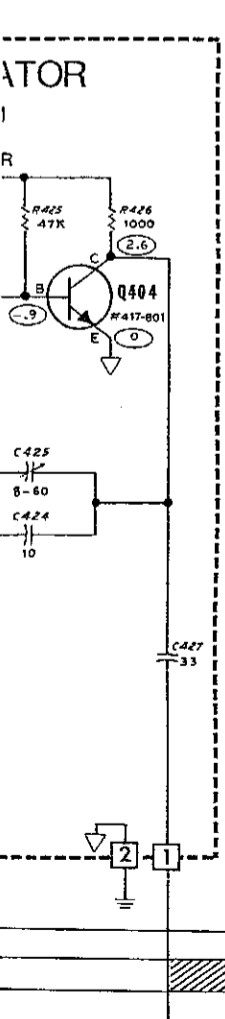
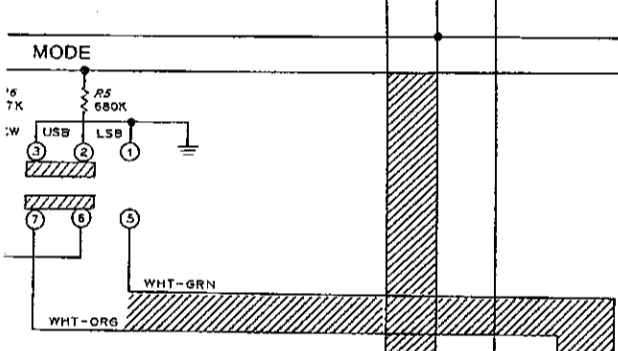
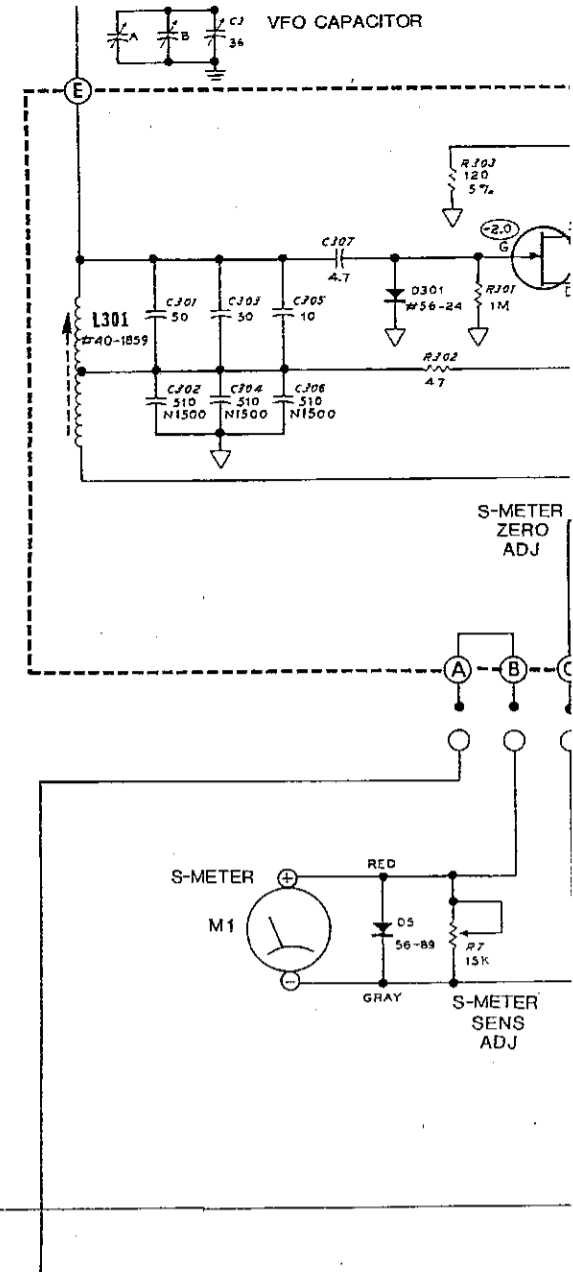
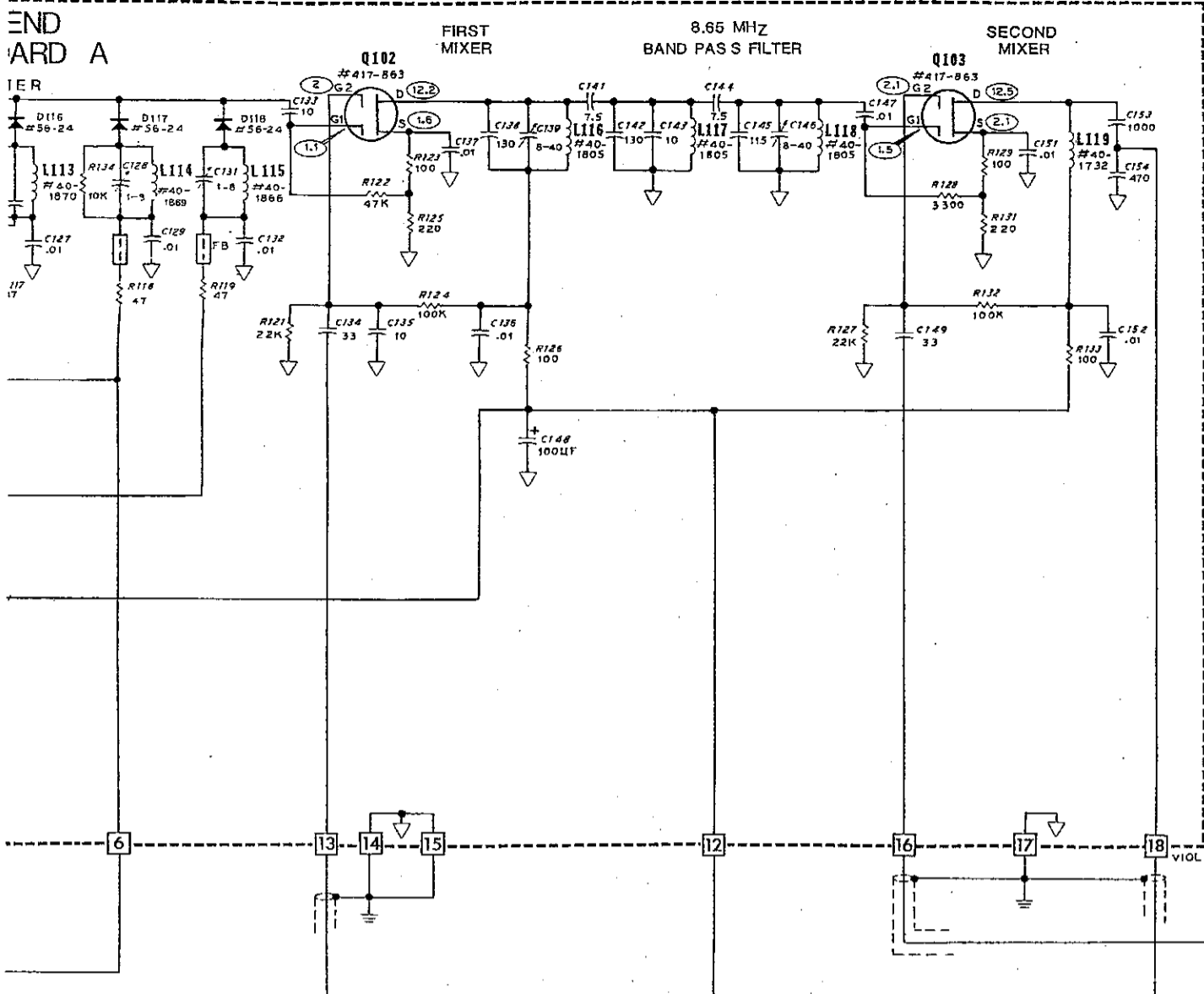
VFO CAPACITOR



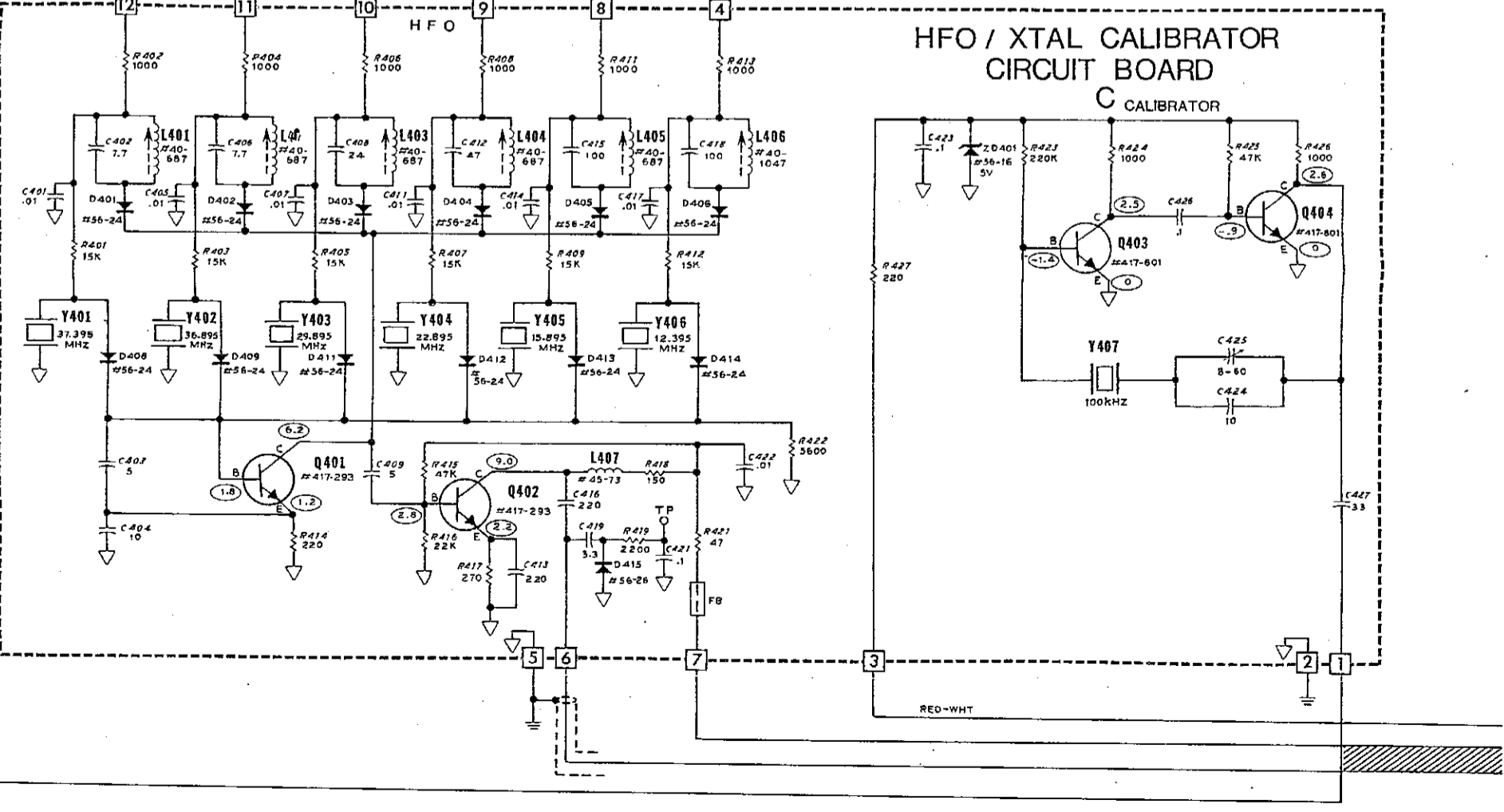
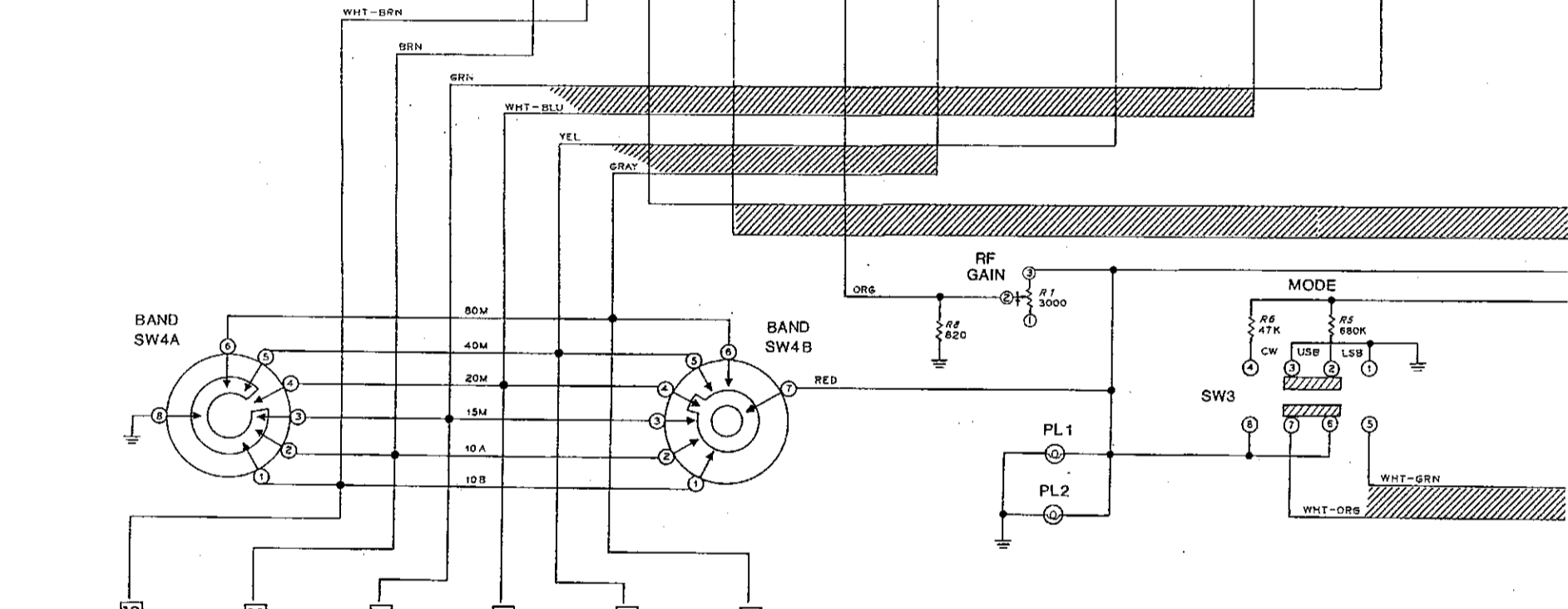
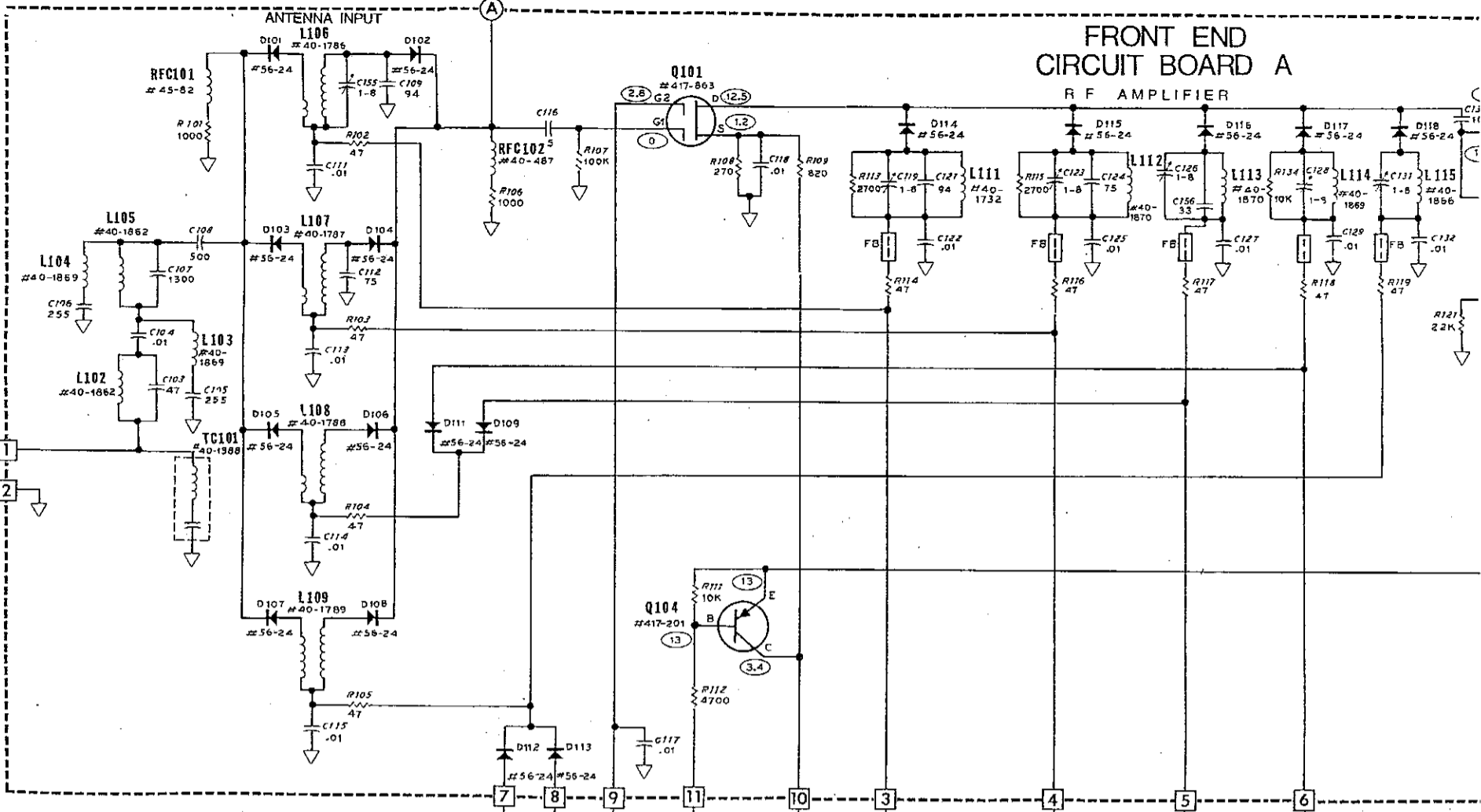
AUD / REG CIRCUIT BOARD D

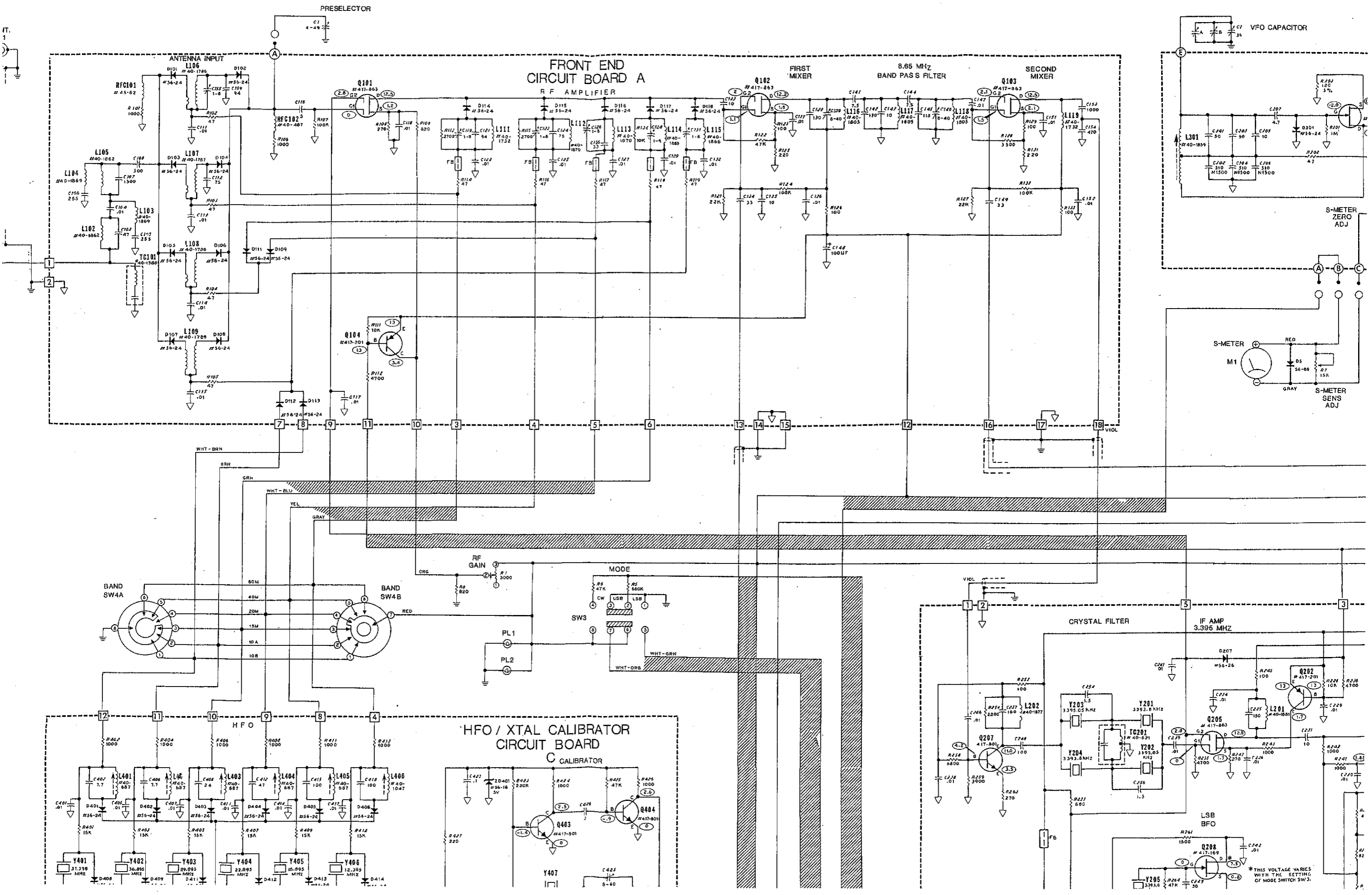
NOTE: RESISTORS ON THIS CIRCUIT BOARD ARE 1/4-WATT UNLESS OTHERWISE NOTED.





ANT. J1





PRESELECTOR

**FRONT END
CIRCUIT BOARD A**

RF AMPLIFIER

FIRST MIXER

8.65 MHz
BAND PAS S FILTER

SECOND MIXER

VFO CAPACITOR

S-METER
ZERO
ADJ

S-METER
M1
RED
GRAY
S-METER
SENS
ADJ

BAND SW4A

BAND SW4B

RF GAIN

MODE

SW3

**HFO / XTAL CALIBRATOR
CIRCUIT BOARD**

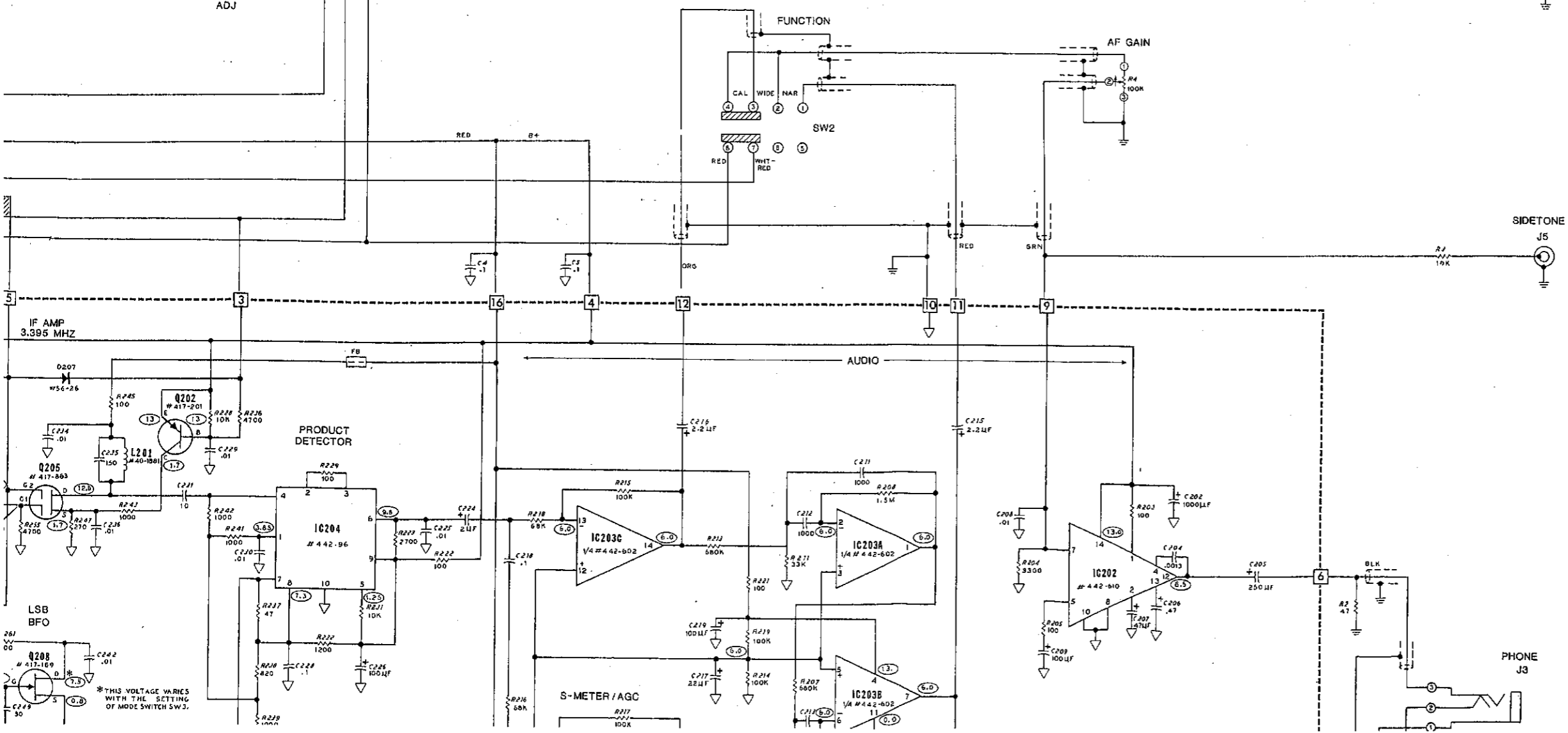
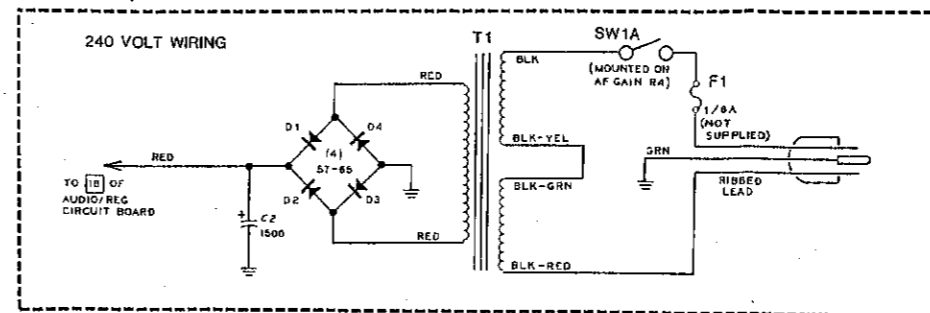
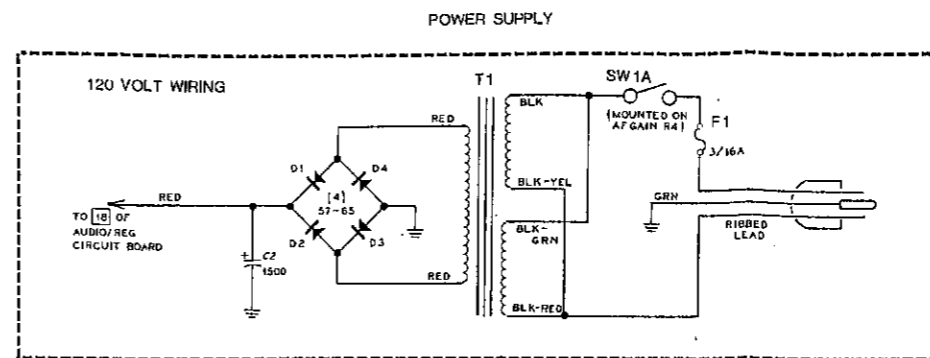
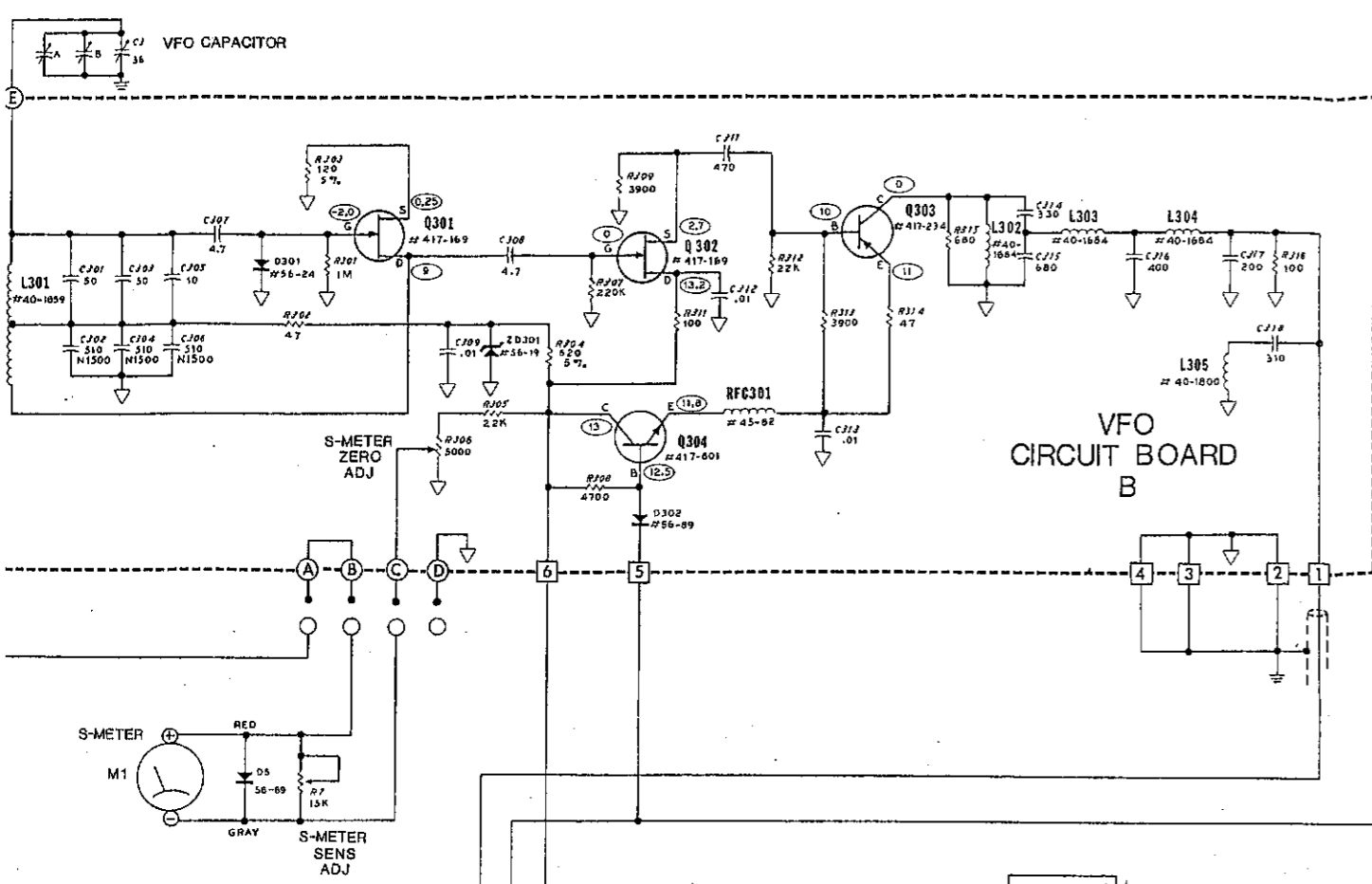
CALIBRATOR

CRYSTAL FILTER

IF AMP
3.395 MHz

LSB
BFO

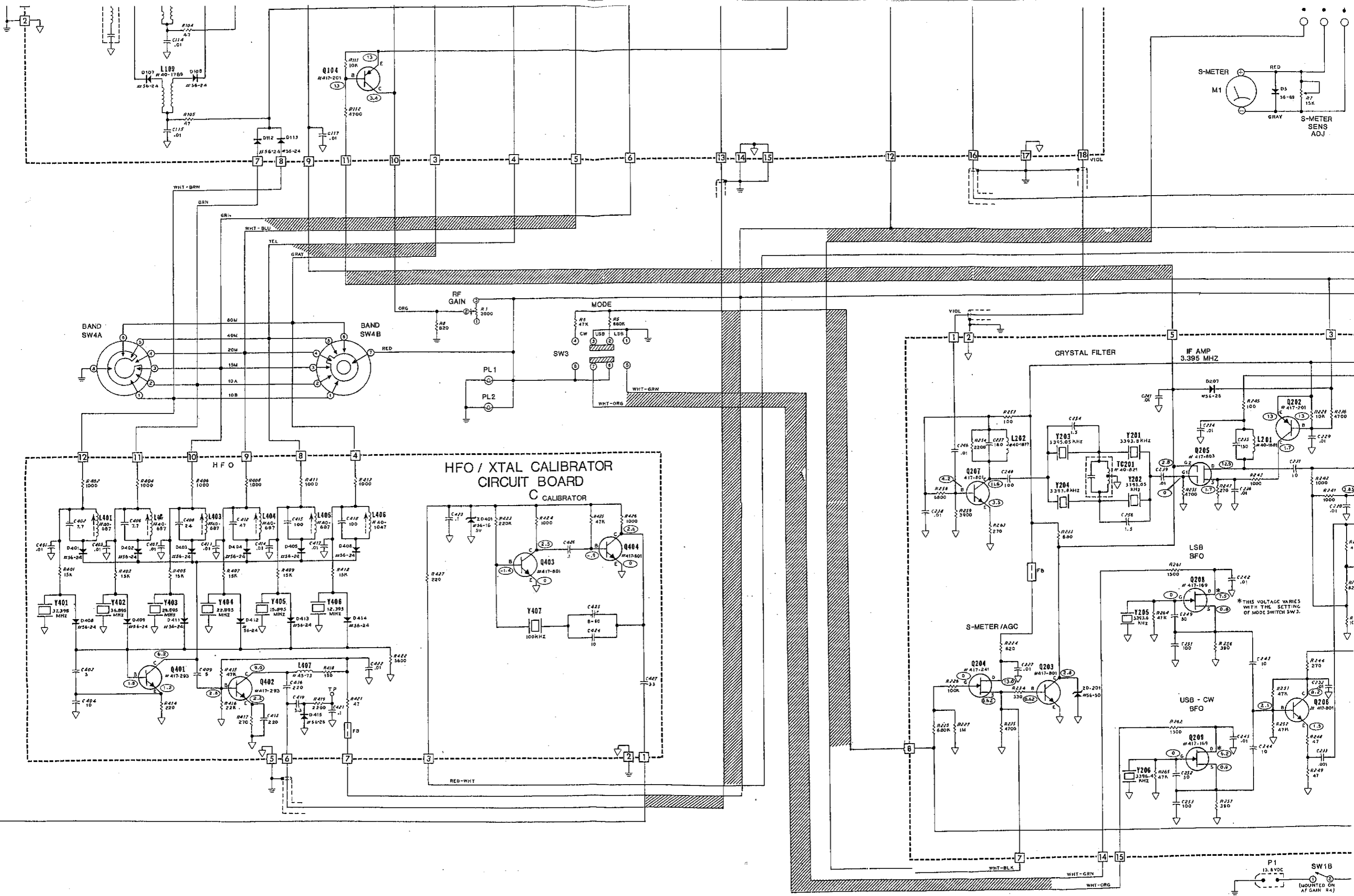
*THIS VOLTAGE VARIES
WITH THE SETTING
OF MODE SWITCH SW3.

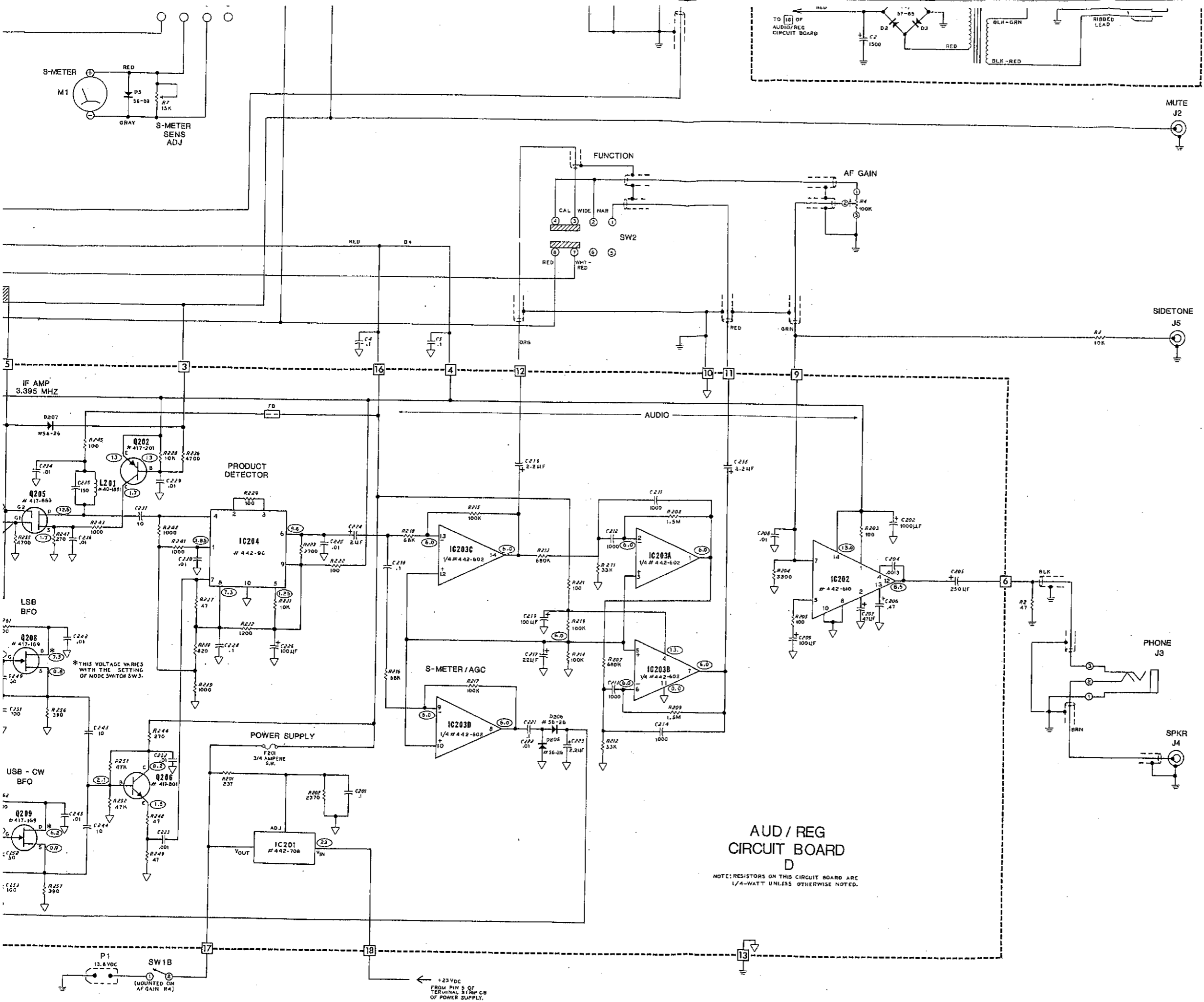


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2. ALL RESISTORS ARE 1/2 WATT, 10% TOLERANCE UNLESS OTHERWISE NOTED. RESISTOR VALUES ARE IN OHMS; K-1,000, M-1,000,000.
3. CAPACITORS LESS THAN 1 ARE IN µF (MICROFARADS). ALL OTHER CAPACITORS ARE IN pF (PICOFARADS) UNLESS OTHERWISE NOTED.
4. ARROWS AT CONTROLS INDICATE CLOCKWISE ROTATION, VIEWED FROM THE SHAFT END OF THE CONTROL.
5. ○ THIS SYMBOL INDICATES A POSITIVE DC VOLTAGE MEASURED WITH A HIGH INPUT IMPEDANCE VOLTMETER FROM THE POINT INDICATED TO CHASSIS GROUND. VOLTAGES ARE ±20%.
6. ▽ THIS SYMBOL INDICATES A CIRCUIT BOARD GROUND.
7. ⊥ THIS SYMBOL INDICATES CHASSIS GROUND.
8. □ THIS SYMBOL WITH A NUMBER INDICATES A CIRCUIT BOARD EDGE CONNECTOR.
9. ○ WITH A LETTER INDICATES A PCB PIN.
10. TP= TEST POINT
FB= FERRITE BEAD
11. SWITCHES ARE SHOWN IN THE FOLLOWING POSITIONS:

MODE: USB
FUNCTION: CAL
BAND: 20