

INTRODUCTION

The Heathkit Model SB-301 Receiver is capable of receiving SSB, AM, CW, and RTTY signals on all amateur bands from 3.5 to 30 megahertz*. Separate AM and CW crystal filters can be obtained. These crystal filters are switch selected from the front panel for these modes of operation to assure optimum selectivity and performance. If these optional filters are not obtained, AM signals are received using the exalted carrier method, and CW may be received in either SSB mode.

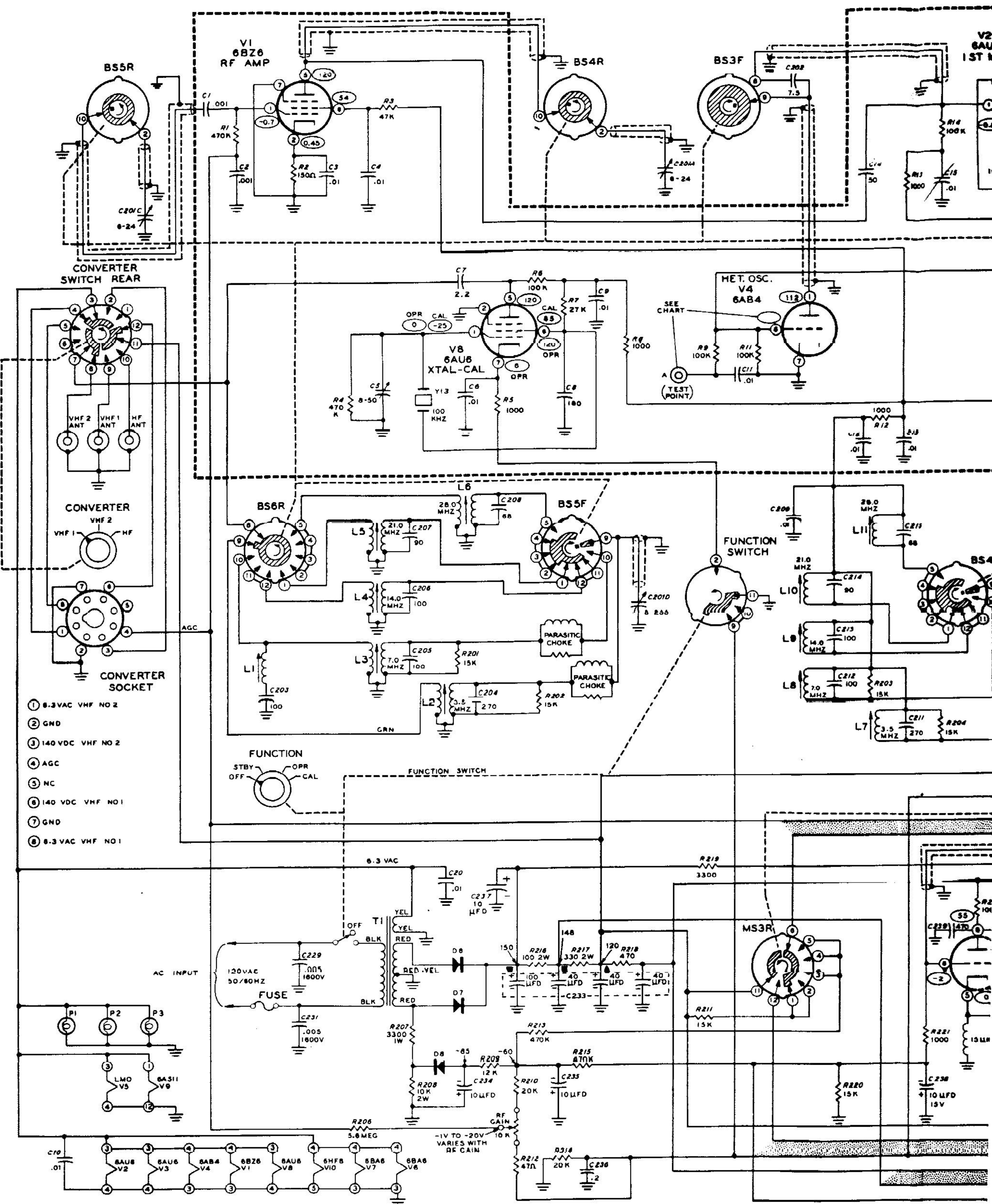
The preassembled, prealigned LMO (linear master oscillator) and crystal-controlled heterodyne oscillators assure highly accurate and stable operation. The use of circuit boards and a wiring harness provide a clean chassis layout.

Other features of this Receiver are special antenna and power connections for VHF converters, a 100 kilohertz crystal calibrator, provisions for 15 MHz WWV reception, for transceiver operation with the SB-401 companion Transmitter, and a smooth, virtually backlash-free, dial tuning mechanism. The transformer-operated silicon diode power supply is a long-life, low-heat power source.

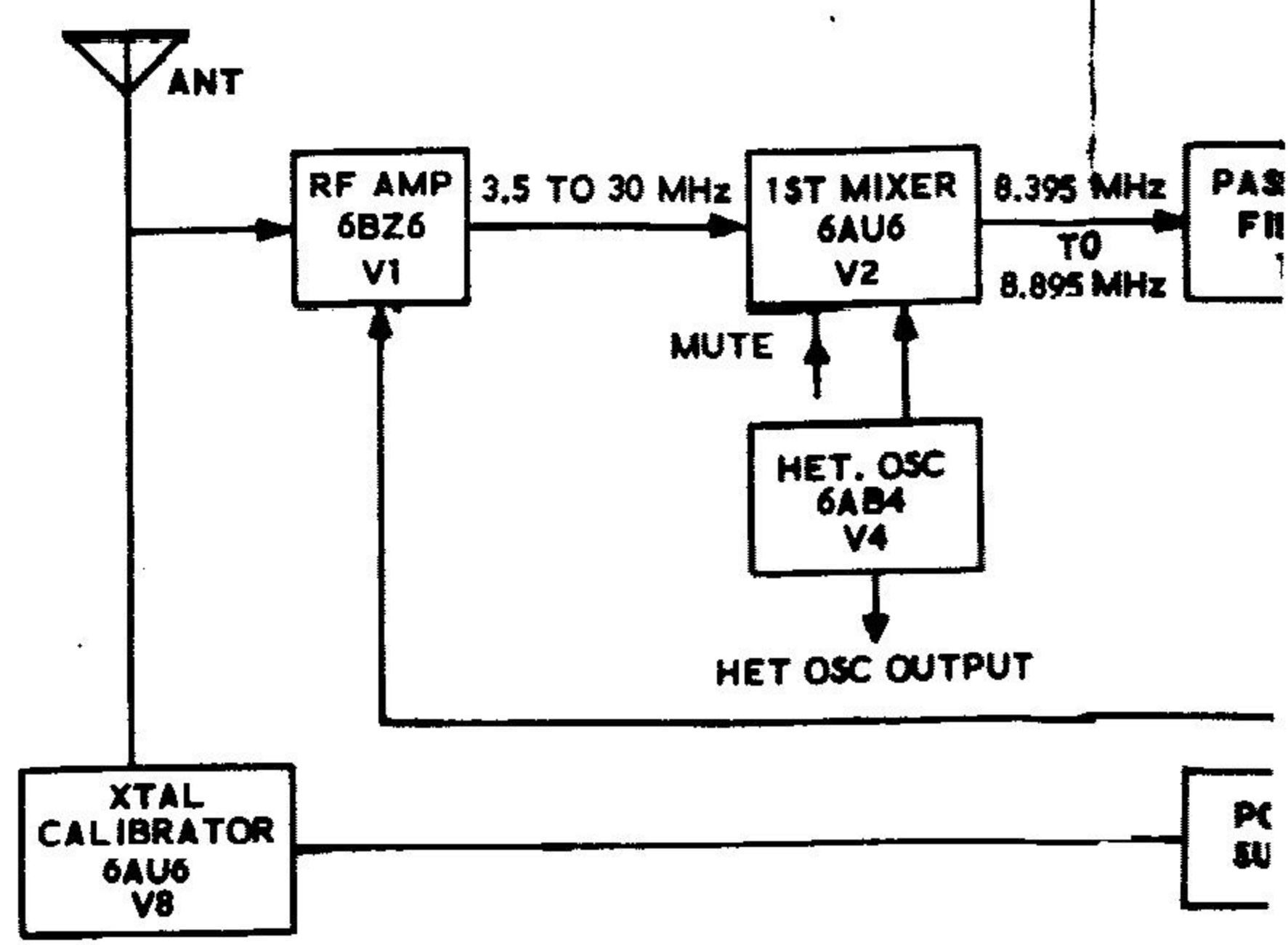
*This Manual uses the new IEEE (Institute of Electrical and Electronic Engineers) international standard term "hertz" as the basic unit of frequency. The terms are used as follows:

Hz (hertz) = cps (cycles per second).
kHz (kilohertz) = kc (kilocycles per second).
MHz (megahertz) = mc (megacycles per second).

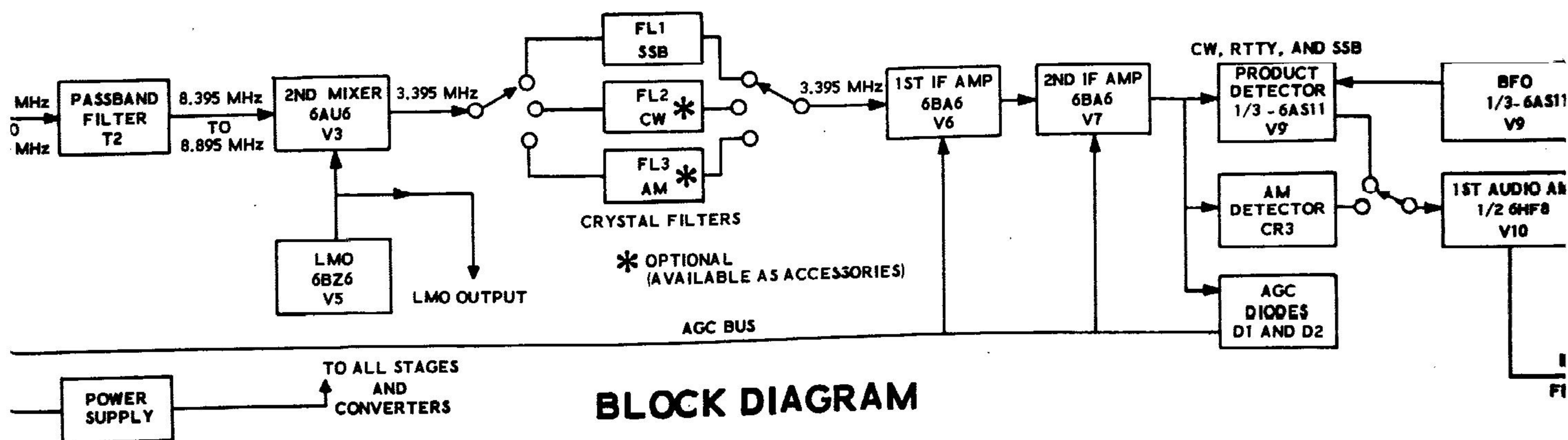
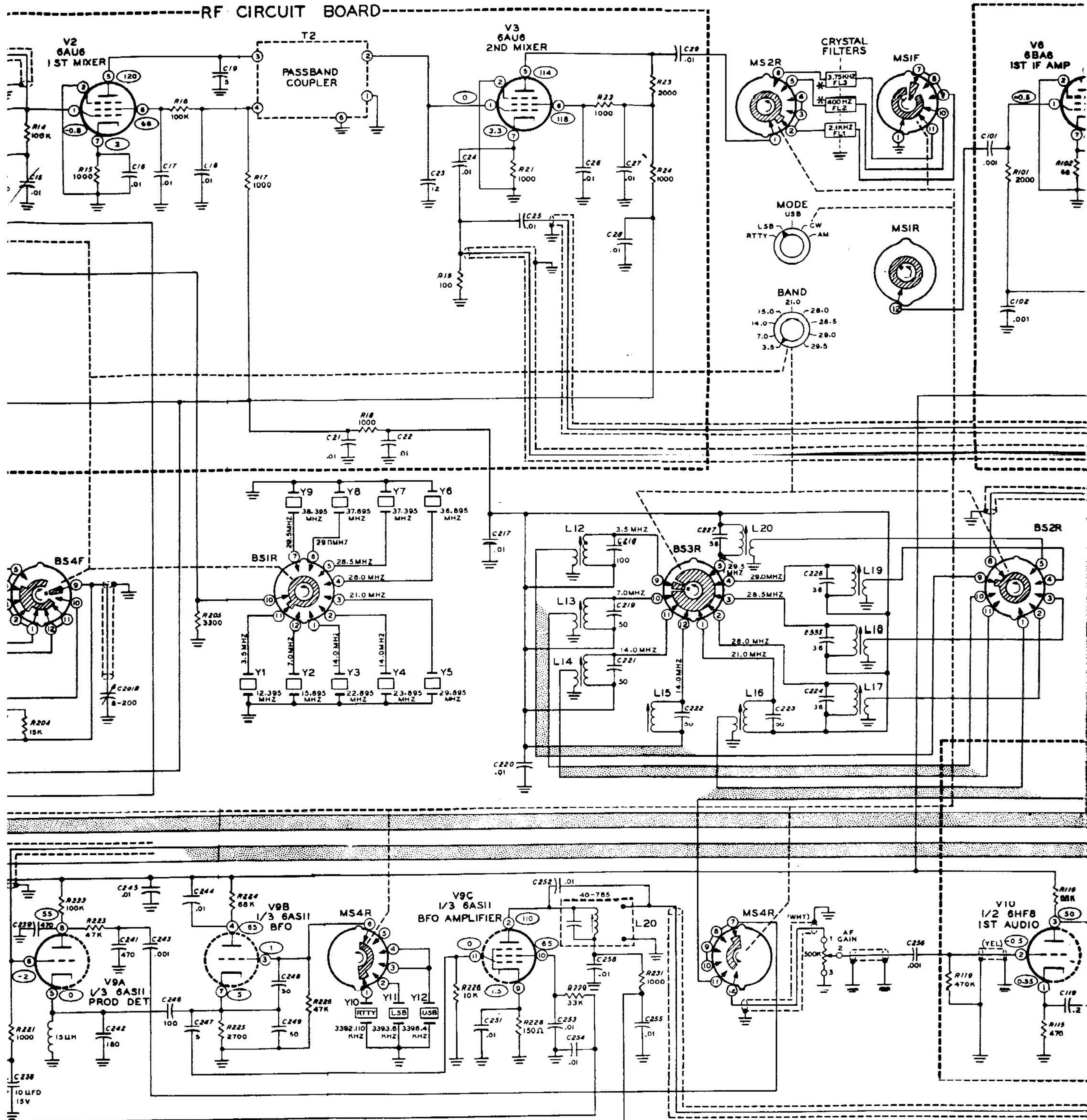
BAND	HETERODYNE OSCILLATOR FREQUENCY (CRYSTAL FIXED)	RECEIVED SIGNAL FREQUENCY	PASSBAND SIGNAL FREQUENCY (BETWEEN 8.395-AND 8.895)	LMO MIXER OUTPUT CRYSTAL FILTERS AND IF (FIXED)	LMO (BETWEEN 5 AND 5.5 MC)
3.5 to 4	12.395	3.895	8.5	3.395	5.105
7 to 7.5	15.895	7.2	8.695	3.395	5.3
14 to 14.5	22.895	14.2	8.895	3.395	5.3
15.0 to 15.5	23.895	15.2	8.895	3.395	5.3
21 to 21.5	29.895	21.3	8.595	3.395	5.2
28 to 28.5	36.895	28.1	8.795	3.395	5.4
28.5 to 29	37.395	28.7	8.695	3.395	5.3
29 to 29.5	37.895	29.2	8.695	3.395	5.3
29.5 to 30	38.395	29.6	8.795	3.395	5.4



- ① 6.3VAC VHF NO 2
- ② GND
- ③ 140VDC VHF NO 2
- ④ AGC
- ⑤ NC
- ⑥ 140VDC VHF NO 1
- ⑦ GND
- ⑧ 6.3VAC VHF NO 1

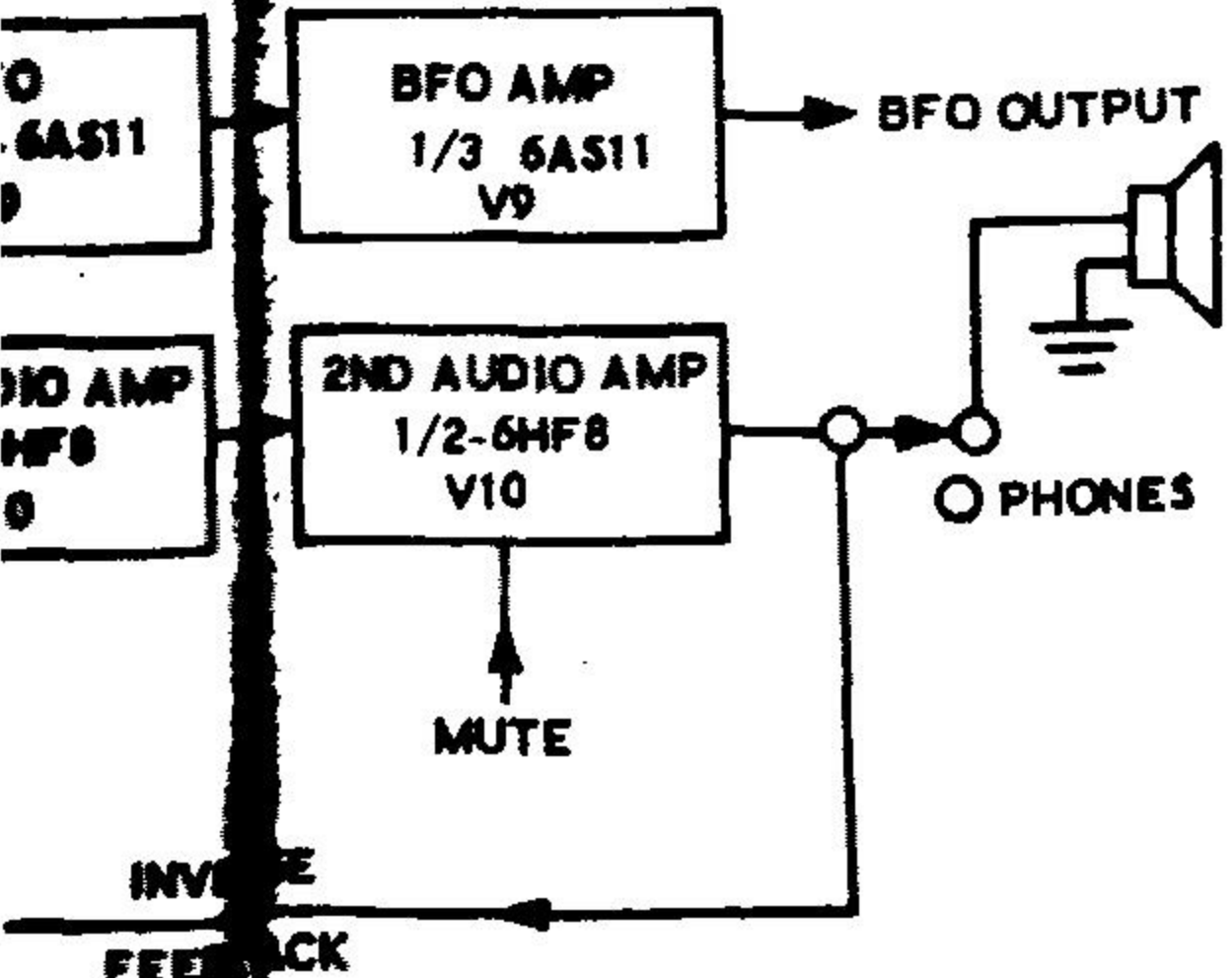
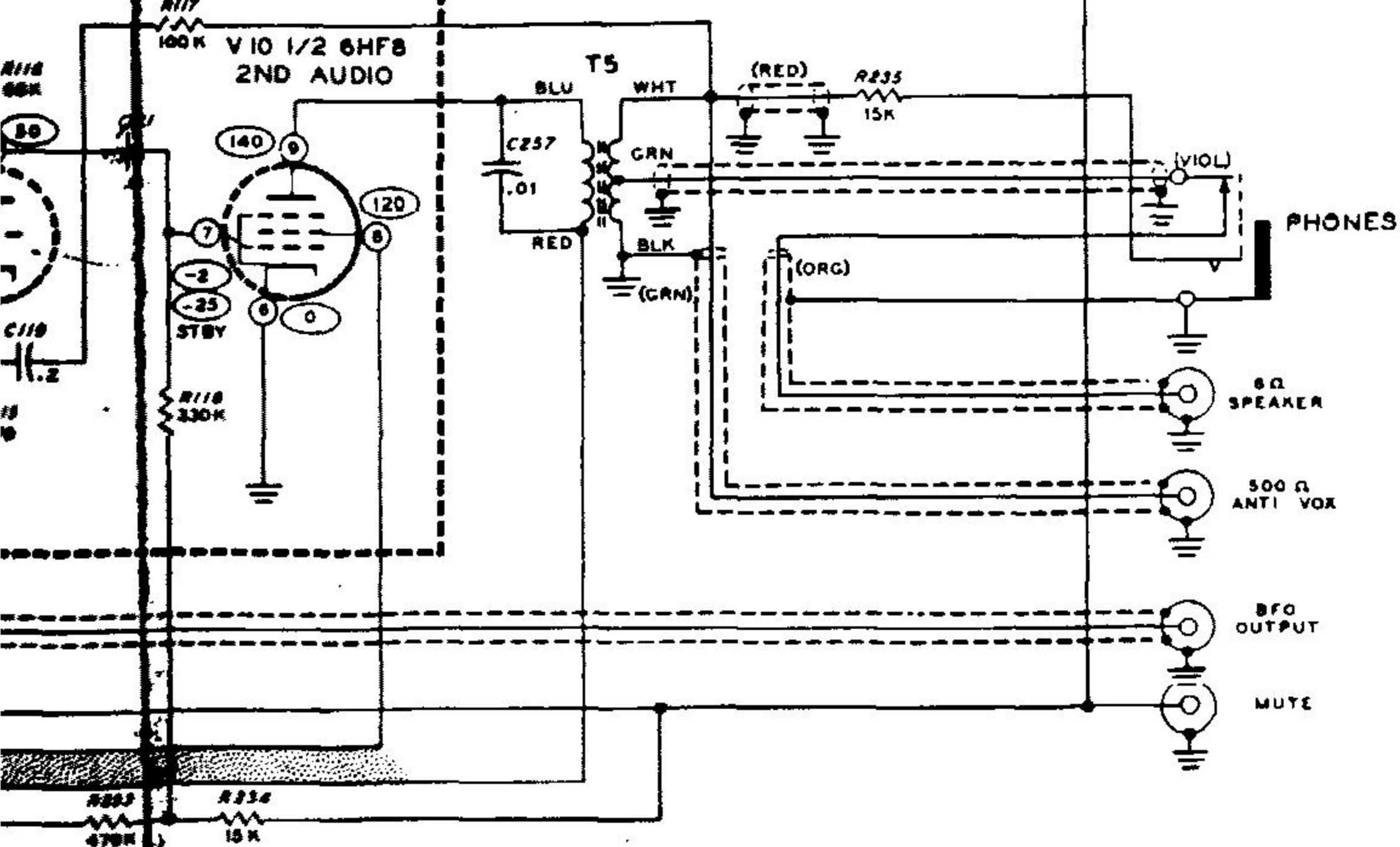
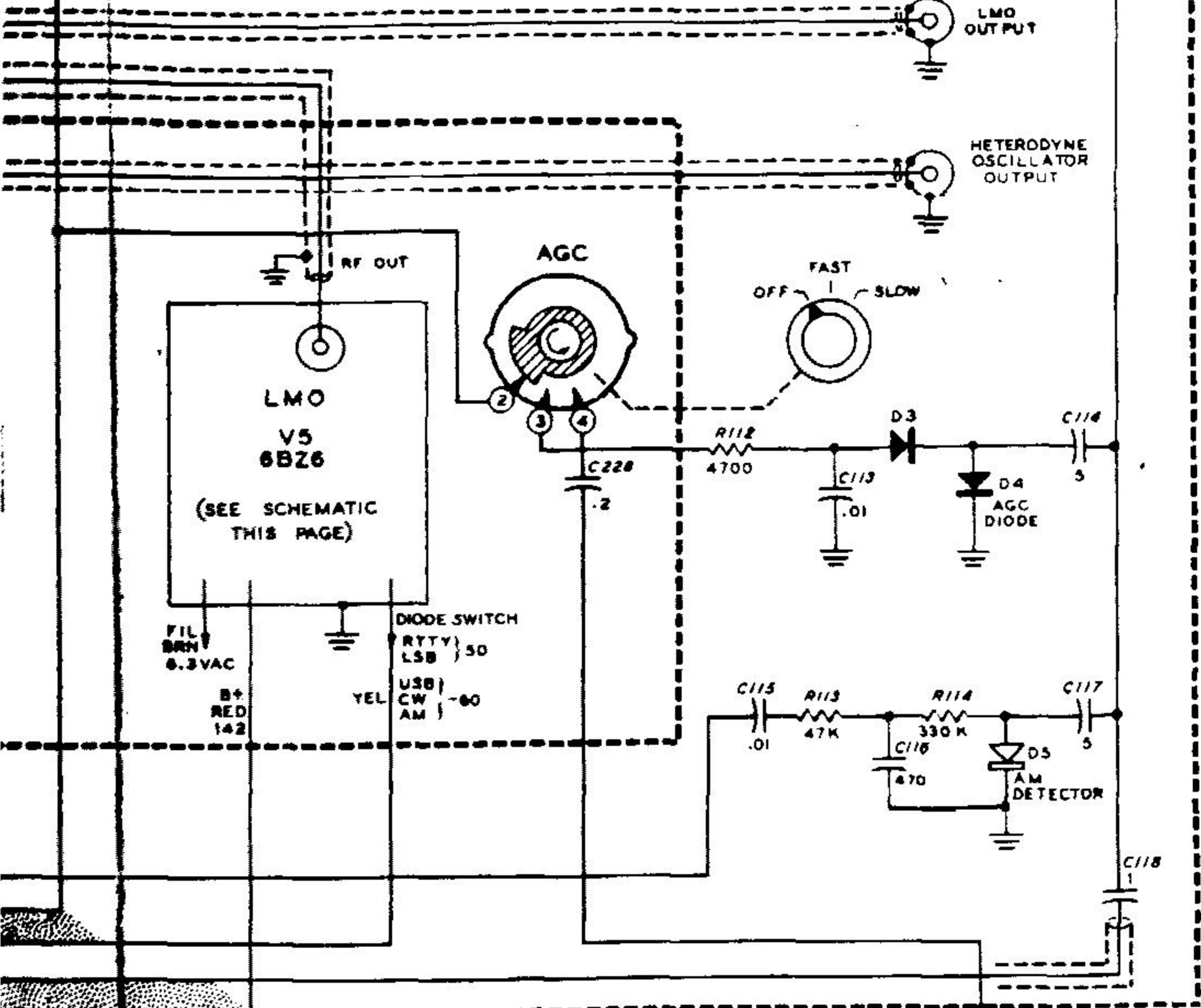
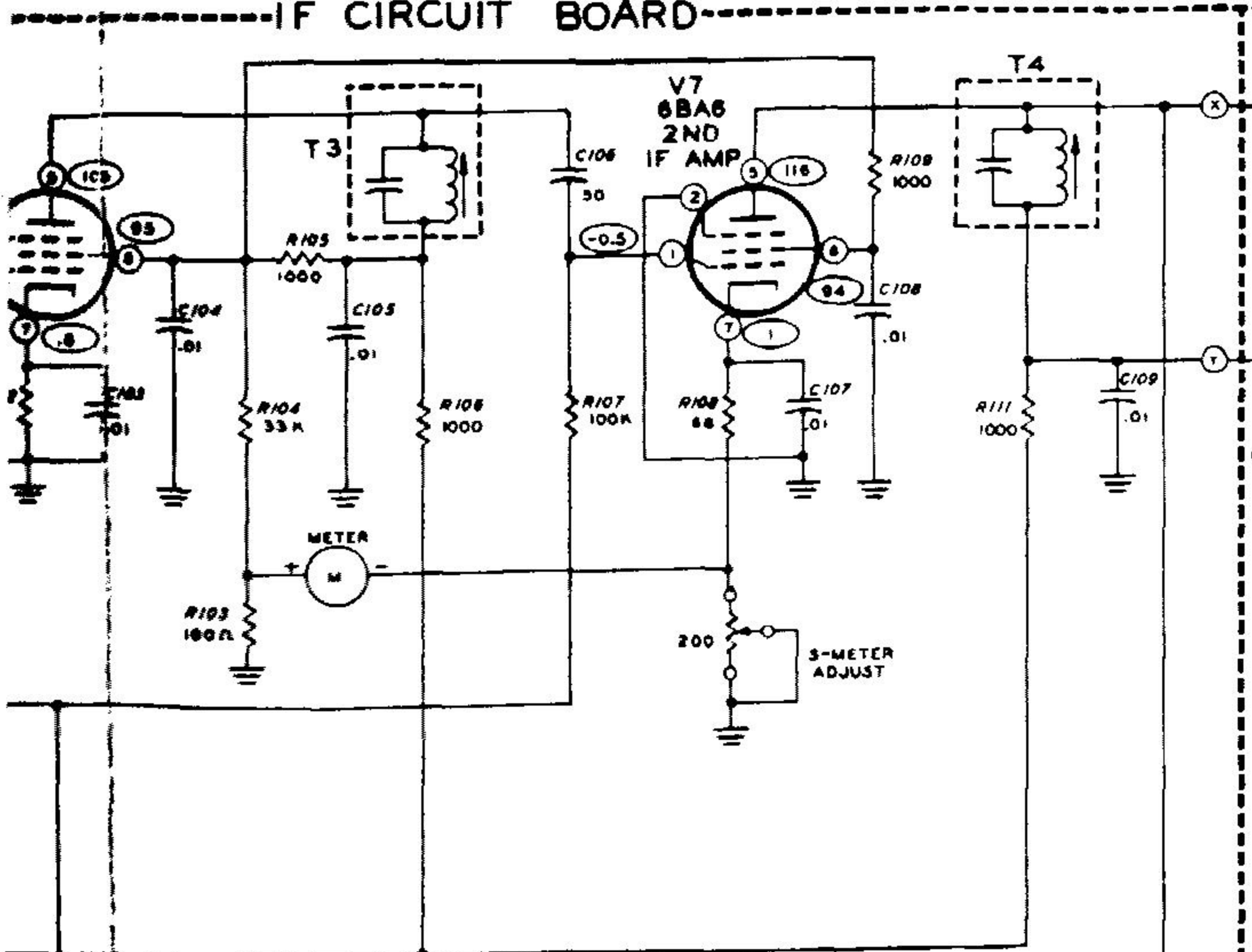


RF CIRCUIT BOARD



BLOCK DIAGRAM

IF CIRCUIT BOARD



SCHEMATIC OF THE HEATHKIT® SSB AMATEUR RECEIVER MODEL SB-301

1. RESISTOR AND CAPACITOR NUMBERS ARE IN THE FOLLOWING GROUPS:
- | | |
|---------|---------------------------------------|
| 0-99 | PARTS MOUNTED ON THE RF CIRCUIT BOARD |
| 100-199 | PARTS MOUNTED ON THE IF CIRCUIT BOARD |
| 200-299 | PARTS MOUNTED ON THE CHASSIS |
2. ALL RESISTORS ARE 1/2 WATT UNLESS MARKED OTHERWISE. RESISTOR VALUES ARE IN OHMS (K = 1,000, MEG = 1,000,000).
3. CAPACITOR VALUES LESS THAN 1 ARE IN μ F. VALUES OF 1 AND ABOVE ARE IN pF UNLESS THEY ARE MARKED OTHERWISE.
4. ○ THIS SYMBOL INDICATES A DC VOLTAGE MEASUREMENT, TAKEN WITH AN 11 MEGOHM VTVM, FROM THE POINT INDICATED TO CHASSIS GROUND. VOLTAGES MAY VARY $\pm 10\%$.
5. ALL VOLTAGES ARE DC POSITIVE UNLESS MARKED OTHERWISE.
6. REFER TO THE CHASSIS PHOTOGRAPHS AND CIRCUIT BOARD X-RAY VIEWS FOR THE PHYSICAL LOCATION OF PARTS.
7. () INDICATES COLOR CODE OF COAXIAL CABLE.
8. DIODE SYMBOLS ARE AS FOLLOWS: ∇ FOR GERMANIUM DIODES, ∇ FOR SILICON DIODES.
9. SWITCH WAFERS ARE IDENTIFIED AS IN THE FOLLOWING EXAMPLE:
- | | | |
|-----------------------------|--|--|
| FRONT PANEL NAME OF SWITCH. | WAFER NUMBER, WITH THE SWITCH VIEWED FROM THE FRONT PANEL. | F = FRONT SIDE OF THE WAFER. R = REAR SIDE OF THE WAFER. |
|-----------------------------|--|--|
10. ARROW () INDICATES COUNTERCLOCKWISE ROTATION OF KNOB (VIEWED FROM KNOB END).
11. NC MEANS NO CONNECTION.
12. * INDICATES ACCESSORY CRYSTAL FILTERS.

VOLTAGE CHART PIN 6 OF HET OSC V4	
BAND	VOLTAGE
3.5	2.8
7.0	2.9
14.0	2.8
15.0	2.9
21.0	2.8
28.0	2.4
28.5	2.5
29.0	2.4
29.5	2.7

LMO SCHEMATIC

