IN # 274

SUPPLEMENT TO TECHNICAL MANUAL

for

DUAL-DIVERSITY RECEIVER TERMINAL DDR-6E

THE TECHNICAL MATERIEL CORP.

Mamaroneck, N. Y. Ottawa, Ontario

MERCURY PROJECT

UNCLASSIFIED

SUPPLEMENT TO

TECHNICAL MANUAL

for

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RECEIVER TERMINAL DDR-6E

THE TECHNICAL MATERIEL CORPORATION

MAMARONECK, N.Y. OTTAWA, CANADA

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MERCURY PROJECT

Supplement to Technical Manual for Dual-Diversity
Receiver Terminal DDR-6E

Introduction

This supplement modifies the data in the technical manual so that it applies to the B models of Single Sideband Converter MSR-6 and Automatic Frequency Control Unit AFC-1. In addition, test specifications are included for both these items of equipment. Complete parts lists for the MSK-6B and AFC-1B are included together with revised overall and simplified schematics.

Description of Changes

General: In the MSR-6B, the second oscillator V5A has been replaced by a 17-kc amplifier which receives its input from a redesigned 17-kc oscillator in the AFC-1B. In addition, the input circuit to reactance modulator V8 has been redesigned to operate through contacts on sideband switching relay K2, permitting independent reactance control for either upper or lower sideband operation.

In the AFC-1B, the crystal oscillator has been replaced by a unique Hartley oscillator whose fine frequency is controlled through a secondary control loop via the phase detector. The reference oscillator output is also cabled to the MSR-6B as the BFO source. The 17-kc amplifier V4B has been removed from the reference oscillator path and placed in the carrier amplifier chain. Other modifications in circuit constants are reflected in both the MSR-6B and AFC-1B as a result of extensive field testing and application.

Section 1:

Page 1-2. Paragraph 1-2d. Second paragraph.
Change "crystal-controlled" to: highly stable.

Page 1-2. Paragraph 1-2e. Lines five to seven.
Change "crystal-controlled" to: reference.

Page 1-2. Paragraph 1-2e.
Change lines 8 through 10 to read:

Should the carrier drift as a result of the distant transmitter, the receiver, or the first oscillator in the MSR-6B, the AFC-1B circuits develop a DC level whose amplitude corresponds to the amount of frequency change.

Page 1-6. Delete table 1-3 and substitute the following:

TABLE 1-3. ELECTRON TUBE COMPLEMENT

MSR-6B	AFC-1B	GPR-90RXD	VOX-3	TUBE
2	1			12AU7
1	1			12AT7
1				6J6
1		5		6BA6
2		1	1	6BE6
	1	1		6AL5
1	1	3	6	6AG5
1				5Y3
1	2	1	1	OA2
1				6AQ5
	2	1		6AU6
	1	1		12AX7
	1			6U8
	1		1	6AB4
		1		6DC6
		1		6V6
		1		6CB6
		1		5U4G
			1	6C4
			1	5V4G

Section 2:

Page 2-2. Delete paragraphs 2-5d, (1) through (4), and substitute the following:

(1) Set CARRIER COMPENSATOR switch S1 on the AFC-1B to 20 DB.

(2) Connect an rf signal generator to the antenna input jack on the rear apron of the associated GPR-90RXD. Set the generator to 1000 kc, with an rf output of 50 uv.

(3) Set A.G.C. SELECTOR switch S2 on the AFC-1B to MANUAL.

(4) Set the AVC ON-OFF switch on the MSR-6B to ON.

(5) Tune the GPR-90RXD to the input signal. Be sure that the AVC switch on the receiver is in the on position.

(6) Note the reading on the S-meter of the GPR-90RXD.

(7) Set A.G.C. SELECTOR switch S2 on the AFC-1B to FAST.

(8) Set AVC ON-OFF switch on the MSR-6B to OFF.

(9) Adjust AGC LEVEL control R45 on the AFC-1B until the S-meter reading on the GPR-90RXD is the same as that observed in step 6.

(10) Repeat steps (1) through (9) for the other AFC-1B, MSR-6B, and GPR-90RXD.

Section 4:

Page 4-6. Paragraph 4-5a. Second paragraph. Change to read:

As shown in figure 4-19, the MSR-6B contains its own IF amplifier, local oscillator, demodulators, AVC, and audio circuits, all of which operate from a self-contained power supply. Sideband selection is achieved by varying the frequency of first oscillator V7 which may be either manually or crystal controlled. Sideband carrier drift is minimized during "manual" oscillator control by referencing the nominal 17-kc carrier frequency of first mixer V3 to that of a highly stable oscillator in the AFC-1B. If frequency drift occurs in the MSR-6B, in the associated GPR-90RXD, or in the distant transmitter, the output of first mixer V3 shifts in frequency. The AFC-1B, in conjunction with reactance control V8 in the MSR-6B, comprises a feedback loop which detects such drift and shifts the frequency of first oscillator V7 in the MSR-6B, correcting the original frequency drift as detected at the output of first mixer V3. The reference oscillator in the AFC-1B is also used as the BFO source for reinserting the carrier during single sideband reception, and permits reception of CW and frequency-shift signals. 17-kc amplifier V5A is enabled by BFO relay K1 during BFO operation, amplifying the 17-kc signal and applying it to second mixer V4. Sideband switching and BFO selection can be controlled remotely from the MSR-6B when so desired. The audio circuits in the MSR-6B provide high- or low-power audio outputs which may be matched to loudspeakers or headphones as required.

Page 4-7. Paragraph 4-5d. Second paragraph. Change to read:

Reactance control V8 is connected across the tank circuit of first oscillator V7. The dual triode introduces either an inductive or capacitive reactive impedance for lower or higher sideband reception, respectively. The required reactance is produced by switching either triode stage into the circuit, as determined by the status of sideband selector relay K2. A frequency shift in excess of ±1.5 kc is produced when a DC control voltage of ±0.5 volts is applied from the AFC-1B. If the frequency of the reference oscillator in the AFC-1B changes, the DC input to V8 shifts, causing the reactance of V8 to change, and shifting the frequency of oscillator V7 accordingly. This arrangement further ensures that the sideband carrier will not drift.

Page 4-7. Paragraph 4-5f. Change to read:

f. SECOND MIXER (See figure 4-24.) - The purpose of the second mixer stage is to provide reinsertion of the carrier during SSB reception, and to provide an audible beat note for CW and frequency-shift signals. The output of bandpass filter Z1 is applied to second mixer V4 via BFO relay K1. Relay K1 may be energized by setting BFO switch S5 to ON or by reception of a remote ground signal. When S5 is in the OFF position, relay K1 is deenergized and zero plate voltage is applied to 17-kc amplifier V5A. Mixer V4 normally detects AM signals and passes its output to audio filter Z2. When a beat frequency is desired, or a carrier must be reinserted during SSB reception, BFO relay K1 switches the incoming signal to the control grid of second mixer V4, and applies plate voltage to 17-kc amplifier V5A. The output of the stable 17-kc reference oscillator in the AFC-1B is then amplified by V5A and applied to the mixer grid of V4.

Page 4-8. Paragraph 4-6a. Delete second paragraph and add between first and third paragraphs:

Frequency control of the MSR-6B oscillator by the AFC-1B is accomplished by comparing the frequency of the 17-kc carrier output of the MSR-6B to a closely-controlled 17-kc signal generated by oscillator V9. These signals are compared in the phase detector of the AFC-1B.

If the two frequencies do not coincide, a reactance control voltage developed in the AFC-1B is fed back to the reactance control in the MSR-6B. The reactance control then shifts the frequency of the first oscillator in the MSR-6B, thereby maintaining the desired 17-kc IF frequency in the MSR-6B.

Oscillator V9 in the AFC-1B is connected within a secondary control loop. When the phase detector detects an off-frequency condition in its inputs, it applies another control voltage to oscillator V9, quickly shifting its frequency to compensate for the detected frequency increment. Since V9 is also used as the BFO source for the MSR-6B during BFO operation, this action further stabilizes reception of single sideband, CW, or frequency-shift signals.

The AFC-1B continues to maintain frequency control of the MSR-6B when a loss of carrier signal occurs due to fading caused by atmospheric conditions. This is accomplished by continuous monitoring of the carrier signal level. When signal fade is detected, the reactance tube control voltage is supplied by memory follower V5 which is switched into operation, providing a signal corresponding to that produced just prior to fading. By providing this function, the AFC-1B eliminates the necessity for continuous retuning of the MSR-6B each time the carrier signal fades. The AFC-1B corrects the 17-kc carrier developed in the MSR-6B for variations in frequency as high as 500 cps.

Page 4-8. Paragraph 4-6b. Third line. Change "TF 138" to: T1.

Page 4-8. Paragraph 4-6c. Change to read:

c. LIMITER AND 17-KC AMPLIFIER. (See figure 4-28.) - Limiter V3 is a dual-triode cathode-coupled limiter. Its function is to limit the amplitude of the carrier signal to a predetermined level to provide a near-constant carrier level and to remove noise pulses. The relatively constant output of limiter V3 is amplified by 17-kc amplifier V4B, an RC-coupled triode stage, then applied to the phase detector.

Page 4-9. Paragraph 4-6f. Change to read:

f. 17-KC OSCILLATOR AND CATHODE FOLLOWER. (See figure 4-30.) - Oscillator V9A provides a highly stable 17-kc output to which the MSR-6B carrier output frequency is compared. The oscillator is essentially a free-running Hartley type, the fine frequency of which is determined by semiconductor variable capacitances CR7 and CR8, located in Z3. A DC voltage, tapped from the plate of constant current pentode V8, is applied to CR7 and CR8 as back bias, inhibiting conduction on peaks. Fine frequency control of V9A is effected by a DC error voltage (±2 volts maximum) which is delivered by the phase detector.

The oscillator is connected within a secondary loop. The 17-kc voltage developed across cathode resistor R31 is applied through cathode follower V9B to phase detector amplifier V4A, and then to the phase detector. The phase detector generates a DC control voltage which is cabled to the MSR-6B for AFC control of its first oscillator. In addition, a DC control voltage is applied to CR7 and CR8, quickly shifting the frequency of V9A in such a direction to reduce the error output of the phase detector. The output of V9A is maintained at 17 kc ± 10 cps.

Page 4-9. Paragraph 4-6g. Change to read:

g. PHASE DETECTOR. (See figure 4-31.) - The 17-kc carrier output of amplifier V4B is applied to the phase detector. The phase detector diodes and associated resistors and capacitors comprise a Wheatstone bridge. The bridge configuration is balanced out by means of BALANCE potentiometer R27. The phase detector provides a means by which a phase or frequency difference can be detected between the carrier signal from the MSR-6B and the 17-kc reference signal generated by oscillator V9. If both signals are in phase coincidence, no phase difference is detected, and a zero-volt condition exists at the output of the phase detector. If a phase difference occurs, the phase shift is sensed by the phase detector, the bridge becomes unbalanced, and a DC voltage is developed at the center-tap of transformer T2. This voltage is cabled to the MSR-6B as an AFC signal. Simultaneously, the DC voltage at the arm of BALANCE potentiometer R27 is applied as a frequency correction signal to oscillator V9, and through closed contacts of relay K1 to the grid of memory follower V5A.

Page 4-10. Lines 8, 9, and 10. Change to read:

(1) Green - 0 to 700 cps

(2) Yellow - 700 to 1250 cps

(3) Red - 1250 to 1500 cps

Section 5:

Page 5-2. Paragraph 5-6. Change last paragraph to read:

To ascertain that first oscillator V7 and 17-kc amplifier V5A (the amplifier for the 17-kc reference oscillator in the associated AFC-1B) are operating properly in conjunction with the AFC-1B, apply the signal voltage at pin 2 of filter Z1 to the vertical terminals of a CRO and the signal voltage at pin 1 of V5A to the horizontal terminals. (Be sure that BFO switch is set to ON.) Set the BANDSPREAD control to zero. A Lissajous figure indicating zero beat should be observed. If the Lissajous figure indicates a large deviation from zero beat, check tube V8 and the phase detector circuit in the associated AFC-1B. If the pattern indicates that zero beat is close, check the alignment of the bandspread oscillator as described in paragraph 6-4. If the vertical component is missing from the CRO pattern, check tubes V2, V3, and V7. If there is no horizontal component, check tube V5A, and check that a 17-kc signal is applied to J7 from the associated AFC-1B. Check tube V4 if instability persists. If the trouble is not one of operational stability, check tubes V1 and V2.

Section 6:

Page 6-5. Paragraph 6-4c(1). Third line.

Change "17-kc oscillator" to: 17-kc amplifier.

Page 6-5. Paragraph 6-4c(2)(a). Change step 4 to read:

4. Short terminals 11 and 12 on terminal board E1 and place REACT BAL control R48 in its midposition.

Page 6-5. Paragraph 6-4c(2)(b).

In step 3, change "C28" to: C29.

Page 6-5. Change paragraph 6-4c(2)(c) to read:

(c) ALIGNMENT OF REACTANCE CONTROL.

1. With ±1.5 volts dc applied between terminals 12 and 11 of terminal board E1, the upper sideband should increase 4.6 kc ±15% and the lower sideband should increase 4.0 kc ±15%.

2. Adjust REACT BAL control R48 to best obtain the results specified in 1 above.

3. Repeat step 1. If necessary, repeat step 2.

Page 6-6. Change paragraph 6-4c(2)(d) to read:

(d) ALIGNMENT OF 17-KC AMPLIFIER.

1. Connect 17-kc signal to J7.

2. Connect oscilloscope to pin 1 of V5.

3. Set BFO switch S5 to ON.

4. Tune Z4 for maximum indication on oscilloscope.

Page 6-6. Paragraph 6-4c(3). Change heading to read:

(3) ALIGNMENT WITH GPR-90RXD AND AFC-1B.

Page 6-7. Change paragraph 6-5c to read:

c. CORRECTIVE MAINTENANCE

(1) GENERAL. - Corrective maintenance is limited to alignment of the 17-kc reference oscillator and the second carrier amplifier, and adjustment of the BALANCE and DRIFT ADJ. controls. All alignments and adjustments have been made at the factory. Alignment of the oscillator and second carrier amplifier should be checked when the associated tubes have been replaced. Readjustment of the BALANCE control may be necessary to correct for aging of the phase detector components. The DRIFT ADJ. control may need readjustment when the memory follower tube or constant current pentode is replaced.

(2) ALIGNMENT AND ADJUSTMENT PROCEDURES.

(a) ALIGNMENT OF REFERENCE OSCILLATOR AND CARRIER AMPLIFIER.

1. Set A.G.C. SELECTOR switch S2 to FAST.

2. Set CARRIER COMPENSATOR switch S1 to 20 DB.

3. With an AC VTVM connected to J4, adjust trimmer Z3 for maximum indication on meter.

4. Connect a frequency counter to J4. It should read 17 kc ± 1 cps. (See note.)

5. Connect an RF cable between J1 and J4. Adjust trimmer in Z2 for a maximum indication on CARRIER LEVEL meter M2.

6. Remove RF cable used in step 4.

(b) ADJUSTMENT OF DRIFT ADJ. CONTROL.

1. With no signal input to the AFC-1B, check that the FADE ALARM LEVEL lamp glows.

2. Depress the A.F.C. RESET pushbutton and adjust the DRIFT ADJ. control until the A.F.C. INDICATOR meter indicates center scale.

3. Release the A.F.C. RESET pushbutton and observe the A.F.C. INDICATOR meter.

4. If drift is observed, replace V5 and V8 with pre-aged tubes and repeat steps 2 and 3.

(c) ADJUSTMENT OF BALANCE CONTROL.

1. With MSR-6B connected to AFC-1B, connect a signal generator to the IF input (J1) of the MSR-6B. Tune the generator to 455 kc, but set its output level to zero.

2. Connect a VTVM between the arm of BALANCE control R27 on the AFC-1B and ground. Set the VTVM to the zero-center scale.

3. Set CARRIER COMPENSATOR switch S1 on the AFC-1B to 0 DB, and the BFO switch on the MSR-6B to OFF.

4. With A.F.C. RESET pushbutton S3 depressed, adjust BALANCE control R27 for a zero reading on the VTVM, using the lowest meter scale possible.

5. With the frequency counter connected to output jack J4 on the AFC-1B, adjust trimmer in Z3 for a reading of 17 kc ± 1/2 cycle.

NOTE

In some cases, it may be necessary to connect frequency counter to terminal 1 of T3, rather than to J4.

6. Repeat step 4.

7. Remove VTVM, set CARRIER COMPENSATOR switch S1 to 30 DB and set BFO switch on MSR-6B to ON.

8. Turn up 455-kc input to MSR-6B, connect frequency counter to test point J2 on AFC-1B, and adjust Z2 on AFC-1B for reading of 17 kc ± 1/2 cycle on frequency counter.

Test Specifications

General

The following paragraphs contain test specifications for the MSR-6B and the AFC-1B. These tests augment the alignment procedures presented in section 6 of the technical manual and can be used to measure the performance capability of repaired units.

MSR-6B

a. Audio Channel Check:

(1) Set BFO switch to OFF, turn AUDIO GAIN control maximum clockwise, and set OUTPUT LEVEL switch to HIGH. Connect a 600-ohm 10-watt resistor across terminals 5 and 6 of E1, and an AC VTVM across the resistor.

(2) Apply a 1-kc signal to pin 7 of V4. Adjust the audio input to V4 for an output of 36.0 volts. The output waveform should just start to clip at this point.

(3) Measure the following AC voltages:

Pin 7 of V6	6.5 to 8.0 volts
Pin 7 of V5	0.2 to 0.25 volt
Pin 7 of V4	0.03 to 0.04 volt

(4) Adjust 1-kc audio signal at pin 7 of V4 to 0.07 volt. Rotate AUDIO GAIN control until VTVM connected across 600-ohm load reads 36.0 volts.

(5) Tune the audio oscillator to 17 kc, maintaining its output at 0.07 volt. The output voltage across the 600-ohm resistor should decrease 55 db or more.

(6) Retune the audio oscillator to 1 kc and adjust its output for 36.0-volt audio output across terminals 2 and 3 of E1.

(7) Place OUTPUT LEVEL switch in LOW position. Output should drop to 8 or 9 volts.

(8) Connect another 600-ohm resistor between terminals 2 and 3 of E1. The measured voltage between these points should be 0.7 and 0.8 volt.

(9) Place OUTPUT LEVEL switch in HIGH position. Voltage should drop to zero.

b. First Mixer Check (as Amplifier):

(1) Connect audio oscillator through 0.01 uf capacitor to pin 7 of V3. Connect an AC VTVM to pin 1 of V4.

(2) Tune audio oscillator for peak reading on VTVM between 17 kc and 21 kc.

(3) Adjust audio signal input level for 1.0-volt reading on VTVM. Audio oscillator output should be approximately 0.5 to 0.6 volt

(4) Vary audio oscillator frequency, checking the db drop introduced by filter Z1 as follows:

17.4 and 20.5 kc	3 db
17.2 and 20.8 kc	6 db
16.6 and 21.85 kc	45 db

c. Crystal Oscillator Check:

(1) Place crystals Y1 (438 kc) and Y2 (472 kc) in their sockets.

(2) Set MANUAL-XTAL switch to XTAL.

(3) Measure bias at pin 1 of V8. It should be between 5.0 and 5.5 volts DC for either upper or lower sideband operation.

(4) Apply a 472.00-kc signal to jack J1, connect a CRO to pin 5 of V3, and check for zero beat with crystal oscillator set for upper sideband reception. Crystal oscillator frequency should be 472,000 cps ± 50 cps.

(5) Repeat step 4 for lower sideband (438 kc) operation. Crystal oscillator frequency should be 438,000 cps ± 50 cps.

d. IF Amplifier and First Mixer Check.

(1) Connect signal generator to J1 and AC VTVM to pin 7 of V3.

(2) With AVC switch set to OFF, set signal generator to 450 kc and check readings as follows:

IF Input Signal	IF Output Signal
0.20 volt	1.1 volts
0.50 volt	3.4 volts
1.0 volt	7.0 volts
2.0 volts	13.0 volts

(3) Set AVC switches to ON and FAST. Check readings as follows:

IF Input Signal	IF Output Signal
0.20 volt	0.8 volt
0.50 volt	1.8 volts
1.0 volt	3.7 volts

(4) Turn AVC switch to OFF and increase generator input to 1.0 volt.

(5) Set AVC switches to ON and FAST. Note rate of output drop.

(6) Set AVC switches to OFF and SLOW. Set AVC switch to ON. The output should now drop at a slower rate than that observed in step 5.

e. Sensitivity Check:

(1) Set AVC switch to OFF.

(2) Turn BFO switch to ON position. Apply 17-kc input to J7 from AFC-1B.

(3) Apply a 454-kc unmodulated signal to J1.

(4) Check sensitivity of MSR-6B in manual and crystal operation, and for both sidebands. With less than 0.1 volt applied to J1, a 1-kc signal of 36 volts should be delivered to the 600-ohm load.

(5) Check the 17-kc signal amplitude at J8 with an AC VTVM. It should be more than 0.1 volt.

f. Bandspread Control:

With terminal 12 of E1 grounded, check the effect of the BANDSPREAD control on lower and upper sidebands. The BANDSPREAD dial readings and the corresponding frequency shifts to be observed are listed below:

Dial Reading	Upper Sideband Shift (kc)	Lower Sideband Shift (kc)
-3	-2.9 to -3.5	-2.2 to -2.8
-2	-2.1 to -2.5	-1.6 to -3.0
-1	-1.0 to -1.2	-0.8 to -1.0
0	0	0
+1	1.1 to 1.3	0.9 to 1.1
+2	2.2 to 2.6	1.8 to 2.2
+3	2.9 to 3.3	2.5 to 3.1

g. Over-all Check of MSR-6B:

(1) Connect speaker across terminals 4 and 5 of E1.

(2) Connect 17-kc input to J7 and set BFO switch to ON.

(3) Apply a 455.00-kc signal to IF input jack J1.

(4) With MSR-6B set for upper sideband reception and MANUAL-XTAL switch set to MANUAL position, tune BANDSPREAD control to + position, and turn up AUDIO GAIN control.

An audio note should be produced.

(5) Repeat step 4 with BANDSPREAD control set to - position.

(6) Depress SIDEBAND switch and repeat steps 4 and 5.

(7) With MSR-6B set for upper sideband reception, set MANUAL-XTAL switch to XTAL and shift frequency of test signal at J1 slightly above 455 kc. An audio note should be produced.

(8) Repeat step 7 with the test signal set slightly less than 455 kc.

(9) Depress SIDEBAND switch and repeat steps 7 and 8.

(10) With MSR-6B set for upper sideband reception, and MANUAL-XTAL switch in MANUAL, tune input test signal for zero beat at speaker.

(11) Depress SIDEBAND switch. Zero beat should still be obtained.

AFC-1B

a. FADE ALARM Check:

(1) Apply a 17-kc signal to J1 and adjust signal level for a reading of 5 on the CARRIER LEVEL meter.

(2) Connect an AC VTVM between terminals 7 and 8 of E1.

(3) Rotate FADE ALARM LEVEL control fully clockwise. The FADE ALARM indicator should light. The VTVM should now read 6.3 volts.

(4) Rotate FADE ALARM LEVEL control fully counterclockwise. The FADE ALARM indicator should go out. The VTVM should read zero.

NOTE

Prior to actual operation of the AFC-1B in the DDR-6E Receiver Terminal, be sure to readjust the FADE ALARM LEVEL control as described in paragraph 3-3a of the technical manual.

b. Over-all Check of AFC-1B:

(1) Make the following connections:

(a) J1 on AFC-1B to J8 on MSR-6B.

(b) J4 on AFC-1B to J7 on MSR-6B.

(c) E1-5 on AFC-1B to E1-12 on MSR-6B (using shielded lead).

(d) Connect shields to E1-6 on AFC-1B and E1-12 on MSR-6B.

(e) Connect signal generator output to IF input jack J1 on MSR-6B.

(2) Set controls as follows:

(a) On MSR-6B, set MANUAL-XTAL switch to MANUAL, sideband to U (upper), BANDSPREAD control to 0, BFO switch to ON, and AVC switches to OFF and SLOW.

(b) On AFC-1B, set A.G.C. SELECTOR switch to MANUAL, CARRIER COMPENSATOR to 30 DB, and FADE ALARM LEVEL to the center of its rotation.

(3) Perform test as follows:

(a) Set IF input signal at J1 of MSR-6B to 455 kc, with an output level of 100,000 microvolts.

(b) Tune BANDSPREAD control on MSR-6B for carrier lock-in. Adjust for maximum indication on CARRIER LEVEL meter.

(c) Rotate BANDSPREAD control very slowly. The A.F.C. INDICATOR meter on the AFC-1B should follow the rotation of the BANDSPREAD control.

(d) Continue rotating the BANDSPREAD control until the pointer on the A.F.C. INDICATOR meter is superimposed on the line between the yellow and red areas.

(e) Measure the DC voltage between terminal 5 on E1 and ground with a VTVM. It should be 0.4 volt ± 10%.

(f) Decrease the signal generator output of J1 of the MSR-6B. The FADE ALARM indicator should light.

(g) Increase the signal generator output to 100,000 microvolts. The FADE ALARM indicator should go out and the AFC-1B should remain locked on the carrier.

SYM	DESCRIPTION	FUNCTION	TMC PART NO.
C1	CAPACITOR, fixed: ceramic; .01 uf, ±80 -20%; 500 wvdc.	Input Coupling P1	CC-100-16
C2	Same as C1.	AVC Blocking	
C3	Same as C1.	Decoupling; V1A	
C4	Same as C1.	Cathode Bypass; V1A	
C5	Same as C1.	RF Bypass; V2	
C6	CAPACITOR, fixed: ceramic; 120 uuf, ±20%; 500 wvdc.	Coupling; V3	CC-101-4
C7	CAPACITOR, fixed: ceramic; 47 uuf, ±10%; 500 wvdc.	Coupling; V7	CC21SL470K
C8	Same as C1.	Decoupling; V3	
C9	CAPACITOR, fixed: paper, .01 uf, +40 -20%; 400 wvdc; plastic tubular case.	Coupling; V1A	CN-100-1
C10	Same as C1.	Decoupling; V1A	
C11	Same as C1.	Cathode Bypass; V3	
C12	Same as C1.	RF Bypass; V3	
C13	CAPACITOR, fixed: ceramic; .001 uf, ±200 uuf; 500 wvdc, disc type.	RF Bypass; V1B	CC-100-9
C14	CAPACITOR, fixed: mylar; .1 uf, ±5%, 200 wvdc, char. C.	AVC Filter; V1B	CN108C1003J
C15	Same as C7.	Coupling; V4	
C16	CAPACITOR, fixed: ceramic; 82 uuf, ±5%; 500 wvdc.	Coupling; V4	CC26SL820J
C17	Same as C1.	Decoupling; V4	
C18	Same as C1.	Cathode Bypass; V4	
C19	Same as C1.	RF Bypass; V4	
C20	Same as C9.	Coupling; V4	
C21	CAPACITOR, fixed: mica; .001 uf, ±5%; 500 wvdc.	Coupling; V4	CM20D102J
C22	Same as C1.		
C23	CAPACITOR, fixed: paper; .1 uf, +40%, -10%; 400 wvdc; plastic tubular case.	Coupling; V6	CN-100-4
C24	Same as C9.	Coupling; V5B	
C25	CAPACITOR, fixed: plastic; 2 uf, ±10%; 200 wvdc.	Cathode Bypass; V6	CN108C2004K

SYM	DESCRIPTION	FUNCTION	TMC PART NO.
C26	Same as C13.	Audio Bypass	
C27	CAPACITOR, fixed: electrolytic; 10 uf, 300 wvdc.	PS Filter; V6	CE64C100N
C28	CAPACITOR, variable: air; 2.8-16 uuf; 1200 V rms.	Bandspread Adj.	CB-135-4
C29	CAPACITOR, variable: ceramic; 7-45 uuf; char. C; 500 wvdc.	Bandspread Comp.	CV11C450
C30	CAPACITOR, fixed: ceramic; 100 uufd, ±5%; 500 wvdc.	Feedback; V8	CC32CH101J
C31	CAPACITOR, fixed: mica; 51 uuf, ±5%; 500 wvdc.	Bandspread Comp.	CM20E510J
C32	CAPACITOR, fixed: mica; 430 uuf, ±2%; 500 wvdc. Not a replaceable item. Part of Z3.	P/O Bandpass Filter Z3	CM20D431G
C33	CAPACITOR, fixed: ceramic.	Coupling; S4	CC32CH470J
C34	CAPACITOR, fixed: ceramic; 30 uuf, ±5%; 500 wvdc.	Grid Bypass; S4	CC21SL300J
C35	Same as C1.	Cathode Bypass; V7	
C35	Same as C1.	Feedback; V7	
C37	CAPACITOR, fixed: ceramic; 150 uuf, ±10%; 500 wvdc.	B+ Bypass; V7	CC-101-2
C38	CAPACITOR, fixed: mica; .001 uf, ±2%; 500 wvdc. Part of Z4.	P/O 17 Kc Osc. Tank Z4	CM20D102G
C39	CAPACITOR, fixed: mica; 1500 uuf, ±2%; 500 wvdc. Part of Z4.	Tank; Z4	CM20D152G
C40	CAPACITOR, variable: mica; 100-550 uuf; 250 wvdc; 4 slates. Part of Z4.	Trimmer, Z4	CV-100-304
C41	CAPACITOR, fixed: ceramic; .01 uf.	Decoupling; V5A	CC-100-32
C42	NOT USED.		
C43	NOT USED.		
C44	Same as C13.	Feedback; V8	
C45	CAPACITOR, fixed: ceramic; 22 uuf, ±5%; 500 wvdc.	Grid Bypass; V8	CC21SL220J
C46	CAPACITOR, fixed: ceramic; .005 uf, G.M.V., 500 wvdc; disc type.	RF Bypass; V8	CC-100-15
C47A,B	CAPACITOR, fixed: ceramic; two sections; .01 uf, 500 wvdc; ea, disc type.	Line Filter	CC-100-23

SYM	DESCRIPTION	FUNCTION	TMC PART NO.
C48	CAPACITOR, fixed: paper; 4 uf, ±10%; char. F; 600 wvdc; oil filled and impregnated.	Filter; V10	CP41B1FF405V
C49A, B	CAPACITOR, fixed: dry electrolytic; polarized; 35 uf ea. section, 450 wvdc; char. F.	Filter; V10	CE52F350R
C50	Same as C38.	Coupling; Z4	
C51	NOT USED.		
C52	Same as C21.	Coupling; V9B	
C53	CAPACITOR, fixed: mica; 820 uuf, ±2%; 500 wvdc. Part of Z5.	Tank; Z5	CM20D821G
C54	Same as C1.	Bypass; Z5	
C55	CAPACITOR, variable: mica; 100-550 uuf; 250 wvdc, 6 slates. Part of Z5.	Trimmer, Z5	CV-100-306
C56	Same as C9.	Coupling; V3	
C57	Same as C1.	Decoupling; V7	
E1	TERMINAL BOARD, barrier type: plastic; 12 terminals, screw w/feed thru solder lug type.	Input Terminal Board	TM-100-12
E2	TERMINAL BOARD, barrier type; eight 6-32 screws and solder lug terminals.	Internal Terminal Board	TM-100-8
E3	NOT USED.		
E4	TERMINAL BOARD, phenolic: 12 terminals; right angle spread lug type (supplied as a loose item).	Fanning Strip	TM-105-12-AL
F1	FUSE, cartridge: 3 amps; 250 V; instantaneous.	Main Power	FU-100-3
I1	LAMP, incandescent: 6-8V; 150 ma; T-3-1/4 clear bulb; bayonet base.	Lower Band Ind.	BI-101-47
I2	Same as I1.	Upper Band Ind.	
I3	Same as I1.	Power ON/OFF	
J1	CONNECTOR, receptacle: electrical; one female contact; 52 ohms; BNC type.	IF Input	UG-625/U
J2	CONNECTOR, receptacle: electrical; 3 contacts, male.	Power Input	MS3102A165-5P
J3	JACK, telephone: tip and sleeve; bushing mounted; fits plug J-055.	Phone	JJ-034

SYM	DESCRIPTION	FUNCTION	TMC PART NO.
J4	NOT USED.		
J5	NOT USED.		
J6	NOT USED.		
J7	Same as J1.	17 Kc Input	
J8	Same as J1.	1st Mixer Output	
K1	RELAY, armature: DPDT; .32 w, 20,000 ohms.	BFO	RL-105
K2	RELAY, armature: impulse type; 4 PDT; 115 VAC, 60 cps.	Sideband Switching	RL-118-17A115-60A
K3	Same as K1.	Auto. Sideband Switching	
L1	REACTOR, fixed; 15 henries; 85 ma. DC; 285 ohms; 2500 VRMS, test.	Filter Choke; V10	TF5000
L2	Same as L1.	Filter Choke; V10	
P1	CONNECTOR, coaxial: male contact; BNC type.	IF Input	UG-260/U
P2	CONNECTOR, plug: electrical; 3 contacts.	Mates w/J2	MS3106A16S-5S
P3	Not a replaceable item. Part of W1.	Input Power	P/O W1
P4	NOT USED.		
P5	NOT USED.		
P6	NOT USED.		
P7	Same as P1.	17 Kc Input	
P8	Same as P1.	1st Mixer Output	
R1	RESISTOR, fixed: composition; 100,000 ohms, ±10%; 1/2 watt.	Grid Limiter; V2	RC20GF104K
R2	RESISTOR, fixed: composition; 470,000 ohms, ±10%, 1/2 watt.	Grid Return; V1A	RC20GF474K
R3	Same as R1.	Voltage Dropping; V2	
R4	RESISTOR, fixed: composition; 22,000 ohms, +10%; 1 watt.	Plate Load; V2	RC32GF223K
R5	RESISTOR, fixed: composition; 330 ohms, ±10%; 1/2 watt.	Cathode Bias; V2	RC20GF331K
R6	RESISTOR, fixed: composition; 68,000 ohms, ±10%; 1/2 watt.	Screen Load; V2	RC32GF683K
R7	RESISTOR, fixed: composition; 470 ohms, ±10%; 1/2 watt.	Cathode Bias; V1A	RC20GF471K

SYM	DESCRIPTION	FUNCTION	TMC PART NO.
R8	RESISTOR, fixed: composition; 2200 ohms, ±10%; 1/2 watt.	Voltage Dropping; V2	RC20GF222K
R9	Same as R2.	Grid Return, V3	
R10	Same as R4.	Plate Load; V1A	
R11	Same as R4.	Voltage Dropping; V1A	
R12	RESISTOR, fixed: composition; 22,000 ohms, ±10%; 1/2 watt.	Grid Return, V3	RC20GF223K
R13	RESISTOR, fixed: composition; 150,000 ohms, ±10%; 1/2 watt.	Cathode Bias; V1B	RC20GF154K
R14	RESISTOR, fixed: composition; 68,000 ohms, ±10%; 1/2 watt.	Afc Load; V8	RC20GF683K
R15	RESISTOR, fixed: composition; 220 ohms, ±10%; 1/2 watt.	Cathode Bias; V3	RC20GF221K
R16	Same as R8.	Voltage Dropping; V3	
R17	RESISTOR, fixed: composition; 1.5 megohms, ±10%; 1/2 watt.	AVC Load; V1B	RC20GF155K
R18	RESISTOR, fixed; composition; 10 megohms, ±10%; 1/2 watt.	AVC Time Constant	RC20GF106K
R19	RESISTOR, fixed: composition; 20,000 ohms, ±5%; 1/2 watt.	Filter Load; Z1	RC20GF203J
R20	Same as R1.	Grid Return; V4	
R21	Same as R19.	Grid Return; V4	
R22	Same as R1.	Plate Load; V4	
R23	RESISTOR, fixed: composition; 120 ohms, ±10%; 1/2 watt.	Cathode Bias; V4	RC20GF121K
R24	RESISTOR, fixed: composition; 47,000 ohms, ±10%; 2 watts.	Screen Load; V4	RC42GF473K
R25	RESISTOR, fixed: composition; 10,000 ohms, ±10%; 1 watt.	Voltage Dropping, V4	RC32GF103K
R26	RESISTOR, fixed: composition; 12,000 ohms, ±10%; 1/2 watt.	Filter Load; Z2	RC20GF123K
R27	Same as R12.	Afc Time Constant; V8	
R28	RESISTOR, fixed: composition; 270 ohms, ±10%; 1/2 watt.	Cathode Bias; V5A	RC20GF271K
R29	Same as R1.	Damping; T7	
R30	RESISTOR, variable: composition; 1 megohm, ±20%; 2 watt; audio taper.	Audio Gain	RV4ATRD105D

SYM	DESCRIPTION	FUNCTION	TMC PART NO.
R31	RESISTOR, fixed: composition; 390 ohms, ±10%; 1/2 watt.	Cathode; V5B	RC20GF391K
R32	Same as R2.	Grid Return; V6	
R33	Same as R1.	Plate Load; V5B	
R34	RESISTOR, fixed: composition; 560 ohms, ±10%; 2 watts.	Cathode Bias, V6	RC42GF561K
R35	RESISTOR, fixed: composition; 3900 ohms, ±10%; 1/2 watt.	Impedance Match; J3	RC20GF392K
R36	RESISTOR, fixed: composition; 33,000 ohms, ±10%; 1 watt.	Voltage Dropping; V6	RC32GF333K
R37	Same as R12.	Grid Return; V7	
R38	Same as R23.	Cathode Bias; V7	
R39	RESISTOR, fixed: composition; 39,000 ohms, ±10%; 1/2 watt.	Plate Load; V7	RC20GF393K
R40	Same as R39.	Screen Load; V7	
R41	RESISTOR, fixed: composition; 100,000 ohms, ±10%; 1/2 watt. Part of Z4.	Cathode Bias; V5A	RC20GF104K
R42	Same as R12.	Plate Load; V5A	
R43	NOT USED.		
R44	NOT USED.		
R45	Same as R2.	Grid Return; V8	
R46	RESISTOR, fixed: composition; 120,000 ohms, ±10%; 1/2 watt.	Grid Limiter; V8	RC20GF124K
R47	RESISTOR, fixed: composition; 82,000 ohms, ±10%; 1/2 watt.	Voltage Dropping; V8	RC20GF823K
R48	RESISTOR, variable: composition; 2500 ohms, ±10%; 2 watts, linear taper.	Reactance Balance	RV4ATSA252A
R49	RESISTOR, fixed: composition; 180 ohms, ±10%; 1/2 watt.	Cathode Degen; V8	RC20GF181K
R50	RESISTOR, fixed: composition; 1000 ohms, ±10%; 1/2 watt.	Cathode Bias; V8	RC20GF102K
R51	RESISTOR, fixed: composition; 33,000 ohms, ±10%; 1/2 watt.	Grid Limiter; V8	RC20GF333K
R52	RESISTOR, fixed: composition; 56,000 ohms, ±10%; 1/2 watt.	Plate Load; V8	RC20GF563K
R53	Same as R31.	Cathode Bias; V9A	
R54	RESISTOR, variable: composition; 1 megohm, ±20%; 2 watts.	Relay Threshold	RV4ATXA105B

SYM	DESCRIPTION	FUNCTION	TMC PART NO.
R55	RESISTOR, fixed: wire wound; 4500 ohms, ±5%; 10 watts.	Voltage Dropping; V11	RW-109-47
R56	RESISTOR, fixed: composition; 56,000 ohms, ±10%; 2 watts.	Voltage Dropping; S5	RC42GF563K
R57	RESISTOR, fixed: composition; 1 megohm, ±10%; 1/2 watt.	AVC TC; V1B	RC20GF105K
R58	RESISTOR, fixed: composition; 47,000 ohms, ±10%; 1/2 watt.	Plate Load; V9B	RC20GF473K
R59	Same as R2.	Grid Return; V9B	
R60	RESISTOR, variable: composition; 100,000 ohms, ±10%; 2 watts, linear taper.	Tone Threshold	RV4ATSA104B
R61	Same as R2.	Plate Load; V9A	
R62	RESISTOR, fixed: composition; 22,000 ohms, ±10%; 2 watts.	Screen Load; V3	RC42GF223K
R63	Same as R58.	Audio Feedback; V5B	
R64	RESISTOR, fixed: composition; 680 ohms, ±10%; 1/2 watt.	Audio Trans Load	RC20GF681K
R65	RESISTOR, fixed: composition; 2700 ohms, ±10%; 1/2 watt.	30 db Pad; T1	RC20GF272K
R66	Same as R64.	30 db Pad; T1	
R67	Same as R57.	Grid Return; V9A	
R68	NOT USED.		
R69	Same as R19.	Filter Load; Z1	
S1	SWITCH, toggle: SPST; 6 amps; 125 VAC, 28° angle of throw; solder lug terminals.	AVC	ST12A
S2	Same as S1.	AVC ON/OFF	
S3	NOT USED.		
S4	SWITCH, rotary: 1 section; 2 position; 2 moving contacts; 6 fixed contacts.	Manual-Xtal	SW-226
S5	SWITCH, rotary: 1 section; 2 position; 1 moving contact; 2 fixed contacts.	BFO	SW-194
S6	SWITCH, push: SPST; 1 amp at 250 V, normally open.	Sideband	SW168SPST 2N0BB
S7	SWITCH, toggle.	Main Power	ST22K
S8	Same as S7.	Output Level	

SINGLE SIDEBAND CONVERTER MSR-6B

SYM	DESCRIPTION	FUNCTION	TMC PART NO.
T1	TRANSFORMER, audio frequency: plate coupling type; primary = 500 Ω , 35 ma; secondary = 600 Ω , 5 watts max.	Output audio	TF-100
T2	Not a replaceable item. Part of Z3.	P/O Bandpass Filter	P/O Z3
T3	TRANSFORMER, AF: total inductance = 42.5 - 44.5 mhy; Q = 20; unit encapsulated in plastic. Part of Z4.	Oscillator Tank	TF-177
T4	TRANSFORMER, AF: total inductance = 42.5 - 44.5 mhy. Part of Z5.	Oscillator Tank	TF-178
T5	TRANSFORMER, power: primary; 105V, 115V, 125V, 210V, 230V, 50/60 cps, single phase; hermetically sealed.	Main Power	TF-196
T6	TRANSFORMER, audio: primary 20,000 ohms CT; secondary 150,600 ohms; 4 ma DC in pri ±2 db 200 to 10,000 cps.	Mixer Output	TF-138
T7	Same as T6.		
V1	TUBE, electron: medium - mu duo - triode; 9 pin miniature.	AVC AMP/RECT.	12AU7
V2	TUBE, electron: remote cutoff RF pentode; 7 pin miniature.	IF AMP	6BA6
V3	TUBE, electron: lepode converter; 7 pin miniature.	1st Mixer	6BE6
V4	Same as V3.	2nd Mixer	
V5	TUBE, electron: duo triode; 9 pin miniature.	2nd Osc. Audio Amp.	12AT7
V6	TUBE, electron: beam power amplifier; 7 pin miniature.	Audio Output	6AQ5
V7	TUBE, electron: sharp cutoff RF pentode; 7 pin miniature.	1st Osc.	6AG5
V8	TUBE, electron: duo - triode; 7 pin miniature.	React. Mod.	6J6
V9	Same as V1.	Relay Driver Sideband Tone Gen.	
V10	TUBE, electron: full-wave rectifier; octal base.	Power Rect.	5Y3GT
V11	TUBE, electron: voltage regulator.	Voltage Regulator	0A2
W1	POWER CABLE, AC: 3 wire; c/o P2, 3.	Power Input	CA-385
XC49	SOCKET, electron tube: octal.	Socket for C49	TS-101-P01

SYM	DESCRIPTION	FUNCTION	TMC PART NO.
XF1	FUSEHOLDER, extractor post type: 250V, 15 amp.	Socket for F1	FH-100-2
XI1	SOCKET, lamp: T-3-1/4 bayonet base.	Socket for I1	TS-133
XI2	Same as XI1.	Socket for I2	
XI3	LIGHT, indicator: w/red frosted lens; for miniature bayonet base T-3-1/4 bulb.	Socket for I3	TS-106-1
XV1	SOCKET, electron tube: 9 pin miniature.	Socket for V1	TS-103-P01
XV2	SOCKET, electron tube: 7 pin miniature.	Socket for V2	TS-102-P01
XV3	Same as XV2.	Socket for V3	
XV4	Same as XV2.	Socket for V4	
XV5	Same as XV1.	Socket for V5	
XV6	Same as XV2.	Socket for V6	
XV7	Same as XV2.	Socket for V7	
XV8	Same as XV2.	Socket for V8	
XV9	Same as XV1.	Socket for V9	
XV10	Same as XC49.	Socket for V10	
XV11	Same as XV2.	Socket for V11	
XY1	SOCKET, crystal: .486" spacing for .050" pin dia.	Socket for Y1	TS-104-1
XY2	Same as XY1.	Socket for Y2	
Y1	CRYSTAL UNIT, quartz: 438 Kc, +0.01%; includes holder HC-6/U.	Frequency Devise	CR-46/U-.4380-P
Y2	CRYSTAL UNIT, quartz: 472 Kc, +0.01%; includes holder HC-6/U.	Frequency Devise	CR-47/U-.4720-P
Z1	FILTER, low-pass: 3500 cps; cut-off freq.	Filter	FX-152
Z2	FILTER, bandpass: 19.1 Kc; 3.4 Kc bandwidth; 10,000 ohms impedance.	Filter	FX-153
Z3	TRANSFORMER, RF: 790 Kc; c/o C32; T2.	Filter	A-1387
Z4	OSCILLATOR NETWORK, AF: 17 Kc; c/o C38, 39, 40, 50; R41; T3.	Oscillator	A-1381
Z5	OSCILLATOR NETWORK, AF: 43.5 mhy; c/o C33; 55; T4.	Oscillator	A-1384

AUTOMATIC FREQUENCY CONTROL AFC-1B

SYM	DESCRIPTION	FUNCTION	TMC PART NO.
C1	CAPACITOR, fixed: ceramic; .1 uf +80, -20%; 500 wvdc.	Audio Filter	CC-100-28
C2	Same as C1.	Cathode Bypass	
C3	CAPACITOR, fixed: ceramic; .01 uf, +80, -20%; 500 wvdc.	RF Bypass	CC-100-16
C4	Same as C3.	Coupling V2	
C5	Same as C1.	Cathode Bypass V2	
C6	CAPACITOR, fixed: mica; 820 uuf, ±2%; char. D, 500 wvdc.	P/O Z2	CM20D821G
C7	CAPACITOR, fixed: ceramic; 0.1 uf, ±10%; 200 wvdc.	Voltage Divider V2	CC-100-32
C8	CAPACITOR, fixed: mica; 5 uuf; 500 wvdc.	Test Point Coupling	CM15C050J
C9	CAPACITOR, fixed: ceramic; 0.001 uf, ±200 uuf; 500 wvdc disc.	Coupling V3	CC-100-9
C10	Same as C7.	RF Bypass V3	
C11	Same as C3.	Coupling V4B	
C12	CAPACITOR, fixed: electrolytic; 10 uf; 300 wvdc.	Dc Filter V4A	CE64C100N
C13	Same as C3.	Voltage Divider T2	
C14	CAPACITOR, fixed: paper; 0.47 uf, ±10%; 200 wvdc.	RF Bypass T2	CP-106C474-2
C15	CAPACITOR, fixed: paper; 4 uf; 200 wvdc.	RF Bypass V5	CP-110-1
C16	Same as C3.	Coupling V4B	
C17	CAPACITOR, fixed: electrolytic; 25 uf, 50 wvdc.	Output Filter V4A	CE-105-25-50
C18	Same as C17.	Output Filter V4A	
C19	Same as C7.	RF Bypass V4B	
C20	Same as C14.	RF Bypass S1	
C21	Same as C12.	Dc Filter S1	
C22	Same as C14.	RF Bypass V6	
C23	CAPACITOR, fixed: ceramic; 100 uuf, ±20 uuf; 500 wvdc disc.	Coupling V6	C-100-3
C24	Same as C23.	Coupling V6	

SYM	DESCRIPTION	FUNCTION	TMC PART NO.
C25	Same as C3.	RF Bypass V6	
C26	Same as C1.	Voltage Divider V6	
C27	Same as C7.	RF Bypass V9	
C28	Same as C17.	Cathode Bypass V4B	
C29	Same as C1.	Cathode Bypass V9	
C30	Part of Z3.	P/O Z3	
C31	Same as C7.	RF Bypass V9	
C32	Same as C3.	Coupling V4A	
C33A, B	CAPACITOR, fixed: ceramic, two section; 0.01 uf; 500 wvdc; ea. disc.	Line Filter	CC-100-23
C34A, B	CAPACITOR, fixed: dry electrolytic polarized; 35 uf, each section; 450 wvdc; char. F.	Line Filter	CE52F350R
C35	CAPACITOR, fixed: electrolytic; polarized; 45 uf; 350 wvdc.	Filter V11	CE51F450P
C36	Same as C35.	Filter V11	
C37	Same as C3.	Output Filter Z3	
C38	CAPACITOR, fixed: mica; 0.001 uf.	Coupling V9	CM20E102G
C39	Same as C6. Part of Z3.	Osc. Tuning	
C40	Part of Z2.	Tank Tuning L4	
C41	CAPACITOR, fixed: mica; 0.01 uf.	Voltage Divider	CM35B103K
C42	Same as C17.	Cathode Bypass V4A	
C43	Part of Z3.	P/O Z3	
C44	Part of Z3.	P/O Z3	
C45	Same as C7.	RF Bypass	
C46	Part of Z3.	P/O Z3	
C47	Part of Z3.	P/O Z3	
CR1	DIODE, germanium.	Rectifier	1N-100
CR2	Same as CR1.	Rectifier	
CR3	DIODE, silicon: rectifier.	Rectifier Power Supply	DD-101-1
CR4	Same as CR3.	Rectifier Power Supply	
CR5	Same as CR3.	Rectifier Power Supply	

AUTOMATIC FREQUENCY CONTROL AFC-1B

SYM	DESCRIPTION	FUNCTION	TMC PART NO.
CR6	Same as CR3.	Rectifier Power Supply	
CR7	Part of Z3.	P/O Z3	
CR8	Part of Z3.	P/O Z3	
E1	TERMINAL BOARD, barrier type: plastic; 8 terminals; screw w/feed thru solder type lug.	Terminal Board Receiver	TM-100-8
E2	Same as E1.	Terminal Board Power Supply	
F1	FUSE, cartridge: time lag; 1 amp.	Line Fuse	FU-102-1
I1	LAMP, incandescent: 6-8V; 150 ma.	Power Ind. Fil.	BI-101-47
I2	Same as I1.	Fade Alarm	
J1	CONNECTOR, receptacle: electrical; one female contact; 52 ohms; BNC type.	17 Kc Carrier Input	UG-625/U
J2	JACK, receptacle: red body; silver plated contact; for 0.081" diam. pin; 7/8" long x 3/8" diam. O/A dimensions.	Carrier Test	JJ-114-2
J3	Same as J2.	17 Kc Test Point	
J4	Same as J1.	17 Kc Output	
J5	CONNECTOR, receptacle: male.	Power Input	MS3102A16S-5P
K1	RELAY, armature: octal; plug in type DPDT; 10,000 Ω ; coil current 5 ma.	Memory Lock/Fade Alarm Rly.	RL-140
L1	TRANSFORMER, AF: inductance; 42.5 - 44.5 mh; 9.5 - 11.5 Ω . Part of Z3.	17 Kc Osc. Coil	TF-178
L2	REACTOR, filter: 10 hy 70 ma; 280 Ω max; 1500 VRMS test.	Filter Choke	TF-5006
L3	Same as L2.	Filter Choke	
L4	Same as L1. Part of Z2.	P/O 17 Kc Network	
M1	METER, 25-0-25 ma: approximate res. 2000 Ω .	AFC Indicator	MR-143
M2	METER, 0-50 ma: approximate res. 2000 Ω .	Carrier Level	MR-141
P1	CONNECTOR, coaxial: male contact; BNC type.	17 Kc Carrier Input	UG-260/U
P2	Same as P1.	17 Kc Output	
P3	Part of W1.	Power Supply	
P4	CONNECTOR, plug: female. Part of W1.	Power Supply	MS3106A16S-5S

SYM	DESCRIPTION	FUNCTION	TMC PART NO.
R1	RESISTOR, fixed: composition; 470,000 Ω, ±10%; 2 watts.	Imped. Load T1	RC20GF474K
R2	RESISTOR, fixed: composition; 68,000 Ω, ±10%; 2 watts.	Voltage Divider S1	RC20GF683K
R3	RESISTOR, fixed: composition; 22,000 Ω, ±10%; 2 watts.	Voltage Divider S1	RC20GF223K
R4	RESISTOR, fixed: composition; 6800 Ω, ±10%; 2 watts.	Voltage Divider S1	RC20GF682K
R5	RESISTOR, fixed: composition; 2200 Ω, ±10%; 2 watts.	Voltage Divider S1	RC20GF222K
R6	RESISTOR, fixed: composition; 1000 Ω, ±10%; 2 watts.	Voltage Divider S1	RC20GF102K
R7	RESISTOR, fixed: composition; 10,000 Ω, ±10%; 2 watts.	Voltage Divider V1	RC20GF103K
R8	RESISTOR, fixed: composition; 100 Ω, ±10%; 2 watts.	Screen Load V1	RC20GF101K
R9	RESISTOR, fixed: composition; 150 Ω, ±10%; 2 watts.	Cathode Res. V1	RC20GF151K
R10	RESISTOR, fixed: composition; 100,000 Ω, ±10%; 2 watts.	Voltage Divider V1	RC20GF104K
R11	RESISTOR, fixed: composition; 220,000 Ω, ±10%; 2 watts.	Voltage Divider V1	RC20GF224K
R12	RESISTOR, fixed: composition; 27,000 Ω, ±10%; 2 watts.	Current Limiting V2	RC20GF273K
R13	RESISTOR, fixed: composition; 47,000 Ω, ±10%; 2 watts.	Bias Load V2	RC20GF473K
R14	Same as R9.	Cathode Res. V2	
R15	Same as R8.	Screen Load V2	
R16	Same as R4.	Current Limiting Z2	
R17	Same as R4.	Current Limiting V1	
R18	Same as R11.	Voltage Divider V3	
R19	Same as R10.	Grid Return V3	
R20	RESISTOR, fixed: composition; 5600 Ω, ±10%; 2 watts.	Plate Load V3	RC20GF562K
R21	RESISTOR, fixed: composition; 330,000 Ω, ±10%; 2 watts.	Cathode Res. V3	RC20GF334K
R22	RESISTOR, fixed: composition; 120,000 Ω, ±10%; 2 watts.	Current Limiting V3	RC20GF124K

AUTOMATIC FREQUENCY CONTROL AFC-1B

SYM	DESCRIPTION	FUNCTION	TMC PART NO.
R23	Same as R13.	Return V4B	
R24	Same as R9.	Cathode Res. V4A	
R25	Same as R8.	Screen Load V4A	
R26	RESISTOR, fixed: composition; 2200 Ω , ±10%; 1 watt.	Current Limiting	RC32GF222K
R27	RESISTOR, variable: composition; 2500 Ω , ±10%; 2 watts.	Balance Adj.	RV4ATXA252A
R28	Same as R3.	Current Limiting	
R29	Same as R1.	Voltage Divider	
R30	RESISTOR, fixed: composition; 120 Ω , ±10%; 2 watts.	Phase Voltage Divider	RC20GF121K
R31	RESISTOR, fixed: composition; 560 Ω , ±10%; 2 watts.	Cathode Res. V9	RC20GF561K
R32	Same as R7.	Voltage Divider V4B	
R33	Same as R6.	Grid Limiter V5	
R34	RESISTOR, fixed: composition; 330 Ω , ±10%; 2 watts.	Voltage Divider V5	RC20GF331K
R35	Same as R1.	Current Limiting M1	
R36	RESISTOR, variable: composition; 1000 Ω , ±20%; 2 watts.	Drift Adjust. V5	RV4ATXA102B
R37	Same as R6.	Current Limiting K1	
R38	RESISTOR, fixed: composition; 47 Ω , ±10%; 2 watts.	Cathode Res. V9	RC20GF470K
R39	Same as R10.	Isolation T3	
R40	RESISTOR, fixed: composition; 220 Ω , ±10%; 2 watts.	Cathode Res. V4B	RC20GF221K
R41	Same as R5.	Voltage Divider V4B	
R42	RESISTOR, fixed: composition; 3300 Ω , ±10%; 2 watts.	Voltage Divider V4B	RC20GF332K
R43	Same as R35.	Phase Voltage Divider E1	
R44	Same as R3.	Phase Voltage Divider E1	
R45	RESISTOR, variable: composition; 1 meg Ω , ±20%; 2 watts.	A.G.C. Level V6	RV4ATXA105B
R46	RESISTOR, fixed: composition; 1.5 meg Ω , ±10%; 2 watts.	Current Limiting V6	RC20GF155K

SYM	DESCRIPTION	FUNCTION	TMC PART NO.
R47	RESISTOR, fixed: composition; 180,000 Ω, ±10%; 2 watts.	Voltage Divider V6	RC20GF184K
R48	Same as R22.	Voltage Divider V6	
R49	Same as R46.	Coupling V6 to V7	
R50	Same as R35.	Grid Load V7	
R51	RESISTOR, fixed: composition; 4700 Ω, ±10%; 2 watts.	Plate Loading V7	RC20GF472K
R52	Same as R21.	Voltage Divider V7	
R53	RESISTOR, variable: composition; 100,000 Ω, ±20%; 2 watts.	Alarm Adjust V7	RV4ATRD104B
R54	RESISTOR, fixed: composition; 270,000 Ω, ±10%; 1/2 watt.	Voltage Divider V7	RC20GF274K
R55	RESISTOR, fixed: composition; 22,000 Ω, ±10%; 2 watts.	Cathode Res. V7	RC42GF223K
R56	Same as R10.	Voltage Divider V8	
R57	Same as R13.	Grid Load V8	
R58	RESISTOR, fixed: composition; 8200 Ω, ±10%; 1 watt.	Cathode Resistor V8	RC32GF822K
R59	Same as R8.	Voltage Divider V8	
R60	Same as R10.	Voltage Divider V9	
R61	RESISTOR, fixed: composition; 470 Ω, ±10%; 2 watts.	Decoupling V9	RC20GF471K
R62	Same as R10.	Grid Load V9	
R63	RESISTOR, fixed: composition; 1800 Ω, ±10%; 1 watt.	Plate Load V9	RC32GF182K
R64	Same as R51.	Decoupling V9	RC20GF823K
R65	Same as R35.	Voltage Divider S2	
R66	Same as R5.	Cathode Bias V9	
R67	RESISTOR, wire wound: 1000 Ω, 70 ma; 5 watts.	Current Limiting V10	RW-107-34
R68	RESISTOR, wire wound: 2250 Ω, 47 ma; 5 watts.	Current Limiting V11	RW-107-41
R69	RESISTOR, fixed: composition; 2000 Ω, ±10%; 2 watts.	Cathode Res. V9	RC20GF202K
S1	SWITCH, rotary: oak type F; one section; SP4T; contacts shorting silver plated brass.	Carrier Compensator	SW-277

AUTOMATIC FREQUENCY CONTROL AFC-1B

SYM	DESCRIPTION	FUNCTION	TMC PART NO.
S2	SWITCH, rotary: oak type F; one section; 2P4T.	A.G.C. Comp.	SW-120
S3	SWITCH, snap on button: momentary contact; SPST, 1 amp at 250 V; 3 amps at 125 V.	AFC Reset	SW168SPST 2N0BR
S4	SWITCH, toggle.	Power ON/OFF	ST22K
T1	TRANSFORMER, audio: primary, 20,000 Ω ct; secondary, 150/600 Ω , ±2 db.	Audio XFMR	TF-138
T2	TRANSFORMER, audio frequency: plate coupling type; primary, 30,000 Ω ct; secondary, 50, 125, 200 or 500 Ω ; +19 dbm maximum operating level; response ±2 db from 30-20,000 cps.	Audio XFMR	TF-154
T3	Same as T1.	Audio XFMR	
T4	TRANSFORMER, power: primary; 105v/115v/125v/210v/230v/50-60 cps.; secondary; 175v/0/175v and 6.3v/6.3v ct.	Power XFMR	TF-225
V1	TUBE, electron: sharp cut-off pentode: miniature; 7 pin.	1st Carrier Amp.	6AU6
V2	Same as V1.	2nd Carrier Amp.	
V3	TUBE, electron: high mu twin triode; miniature; 9 pin.	Limiter	12AX7
V4A	TUBE, electron: triode - pentode converter; miniature; 9 pin.	Phase Det. Amp.	6U8
V4B	Part of V4A.	17 Kc Amp.	
V5	TUBE, electron: high mu triode; miniature; 7 pin.	Memory Follower	6AB4
V6	TUBE, electron: twin diode, miniature; 7 pin.	Carrier Rect.	6AL5
V7	TUBE, electron: med. mu twin triode; miniature; 9 pin.	Memory Lock & Fade Alarm	12AU7
V8	TUBE, electron: sharp cut-off pentode; miniature; 7 pin.	Constant Current	6AG5
V9	TUBE, electron: high mu twin triode; miniature; 9 pin.	17 Kc Oscillator	12AT7
V10	TUBE, electron: voltage regulator; miniature; 7 pin.	+150 Voltage Regulator	0A2
V11	Same as V10.	-150 Voltage Regulator	
W1	CABLE, AC: 3 wire; consists of P3 & P4.	Power Supply	CA-385

SYM	DESCRIPTION	FUNCTION	TMC PART NO.
XC34	SOCKET, octal: 8 pin.	For C34A, B	TS-101-P01
XC35	Same as XC34.	For C35	
XC36	Same as XC34.	For C36	
XF1	FUSEHOLDER, extractor post type: 250v; at 15 amp.	Holder F1	FH-100-2
XI1	LIGHT, indicator: w/red frosted lens; for miniature bayonet base T3-1/4 bulb.	Socket for I1	TS-106-1
XI2	Same as XI1.	Socket for I2	
XK1	Same as XC34.	Socket for Relay K1	
XV1	SOCKET, 7 pin: miniature.	For 6AU6 V1	TS-102-P01
XV2	Same as XV1.	For 6AU6 V2	
XV3	SOCKET, 9 pin; miniature.	For 12AX7 V3	TS-103-P01
XV4	Same as XV3.	For 6U8 V4A, B	
XV5	Same as XV1.	For 6AB4 V5	
XV6	Same as XV1.	For 6AL5 V6	
XV7	Same as XV3.	For 12AU7 V7	
XV8	Same as XV1.	For 6AG5 V8	
XV9	Same as XV3.	For 12AT7 V9	
XV10	Same as XV1.	For 0A2 V10	
XV11	Same as XV1.	For 0A2 V11	
Z1	FILTER, bandpass: 17 Kc crystal; input/output impedance, 75K.	Carrier Filter	FX-163
Z2	NETWORK, 17 Kc: c/o C6, 40, L4.	17 Kc Tank Circuit	A-1384
Z3	NETWORK, 17 Kc Osc: C/o C30, 39, L1, C43, C44, C29, C37, C46, C47, CR7, CR8, R60.	17 Kc Tuned Circuit	NW-102

SYM	DESCRIPTION	FUNCTION	TMC PART NO.
CB1	BREAKER, circuit: 110/230 VAC; 10 amps, double pole.	Power ON-OFF	SW-251
E1	TERMINAL, strip: barrier type; 3 terminals.	Input DCP-1	TM-118-2
E2	Same as E1.	Output DCP-1	TM-118-2
I1	LAMP, incandescent: double contact; 115-125 V, 6 watts; 5-6 clear bulb; bayonet base.	Power Indicator	BI-102-2
J1	CONNECTOR, receptacle: female; polarizes; 125 V, 15 amps; 250 V, 10 amps.	AC Outlet	JJ-130
R1	RESISTOR, fixed: wire wound; 2500 ohms, 25 watts.	Dropping Resistor for I1	RW-111-25
XI1	INDICATOR, light: with lens; 2-3/4" lg.	Socket, I1	TS-114-11

SYM	DESCRIPTION	FUNCTION	TMC PART NO.
E101 thru E109	TERMINAL BOARD, barrier type: twelve 6-32 screws and solder lug terminals; 2-7/8" lg. x 7/8" wd. x 3/4" h. 0/a; four 11/64" mtg. holes on 2-5/8" x 5/16" mtg. centers.	Power Connections	TM-100-12
J1 thru J26	JACK, connector: integral; P/O J101, 102, 103.	Telephone	P/O JP-100
J101	JACK, assembly: audio type; c/o J1 thru J26.	Row 1, "IN" Jack Panel	JP-100
J102	Same as J101.	Row 2, "IN" Jack Panel	
J103	Same as J101.	Row 3, "IN" Jack Panel	
W101	CABLE ASSEMBLY, audio patch: single; c/o two plugs, PJ-DS1 equivalent, 2 feet of insulated shielded cable.	Audio Patch	CA-566-2
W102	Same as W101.		
W103	Same as W101.		
W104	Same as W101.		
W105	Same as W101.		
W106	Same as W101.		

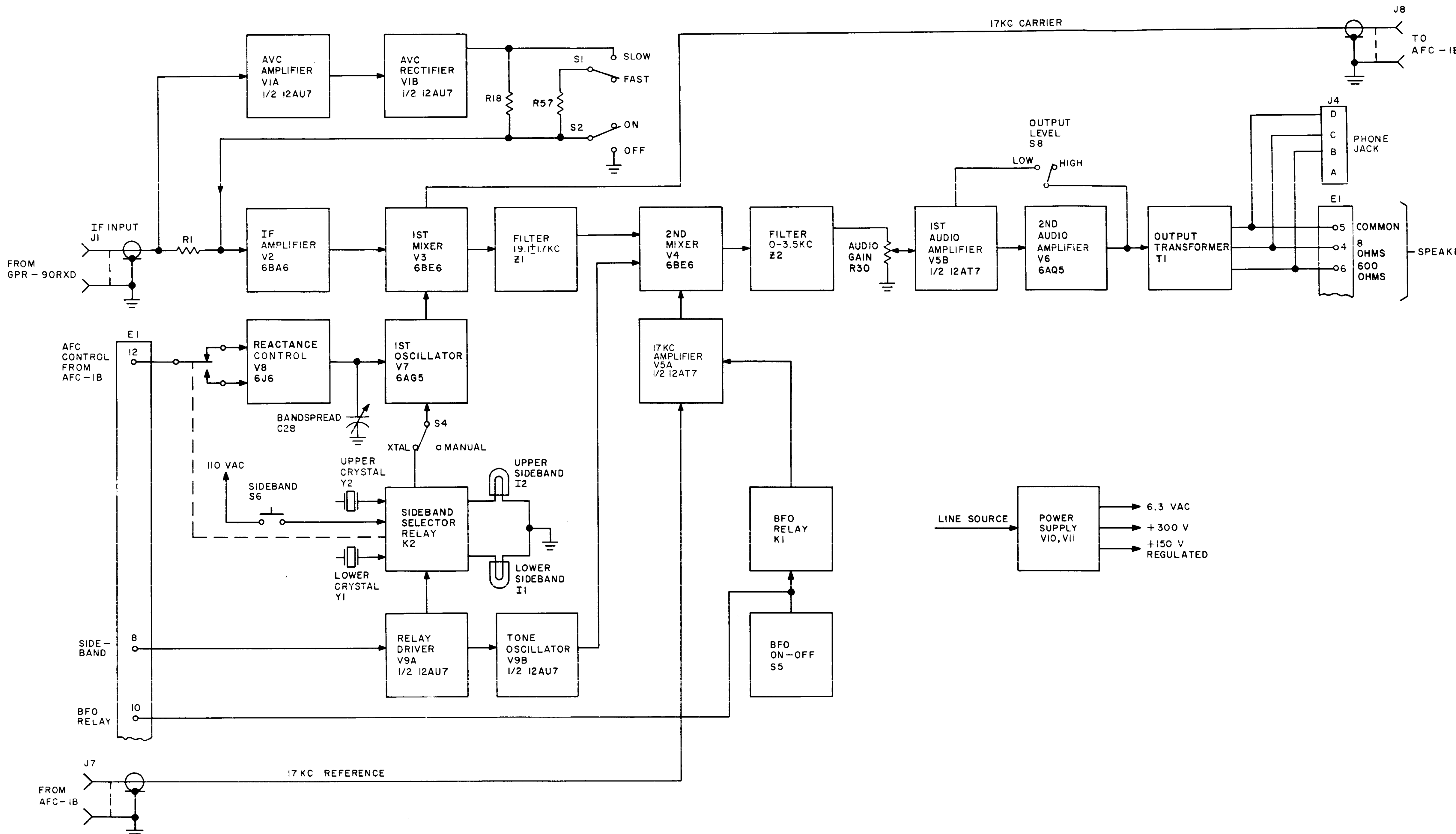


Figure 4-19. Block Diagram, MSR-6B

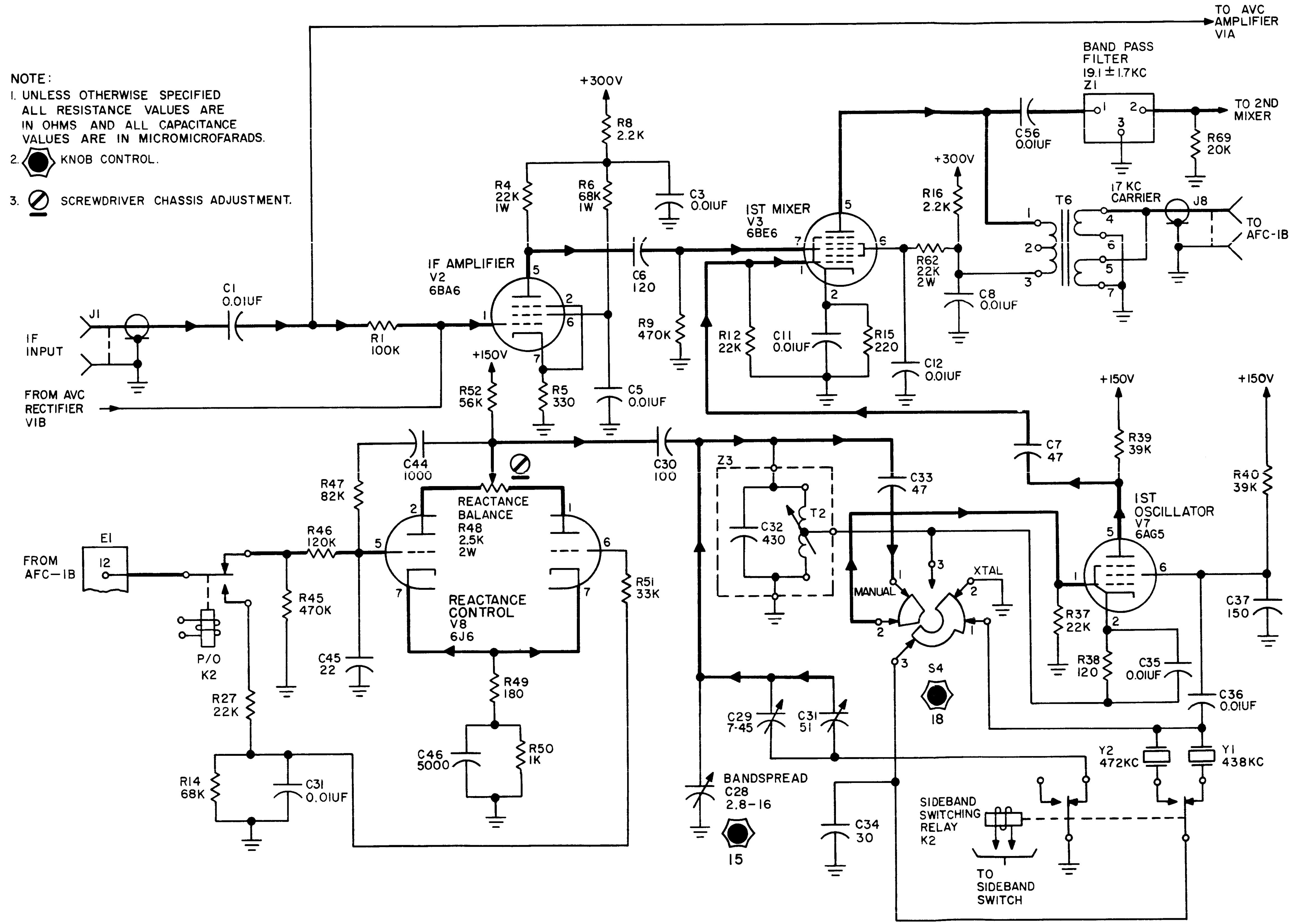


Figure 4-22. Schematic Diagram, MSR-6B, Reactance Control, First Mixer and Oscillator

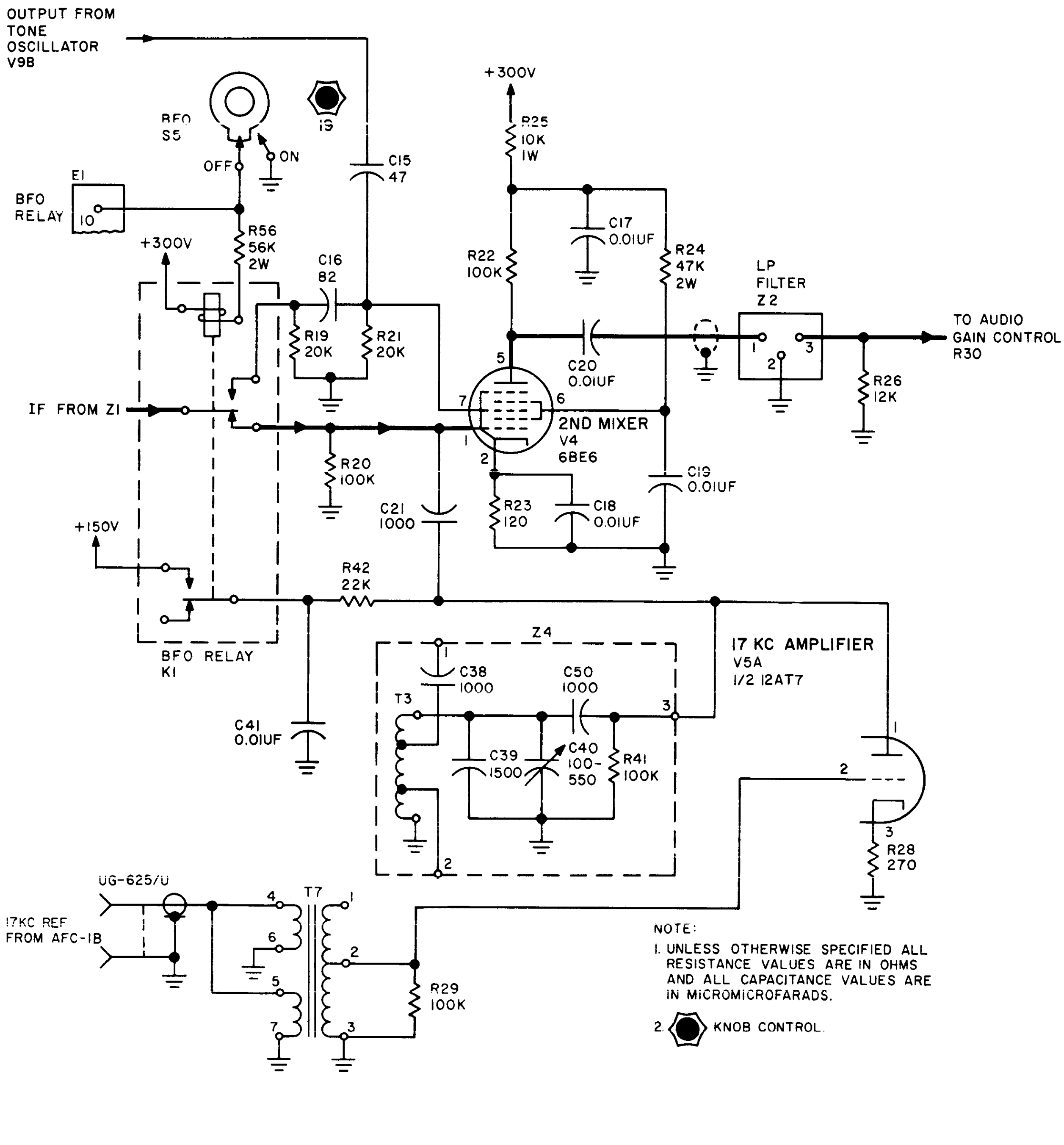


Figure 4-24. Schematic Diagram, MSR-6B, Second Mixer

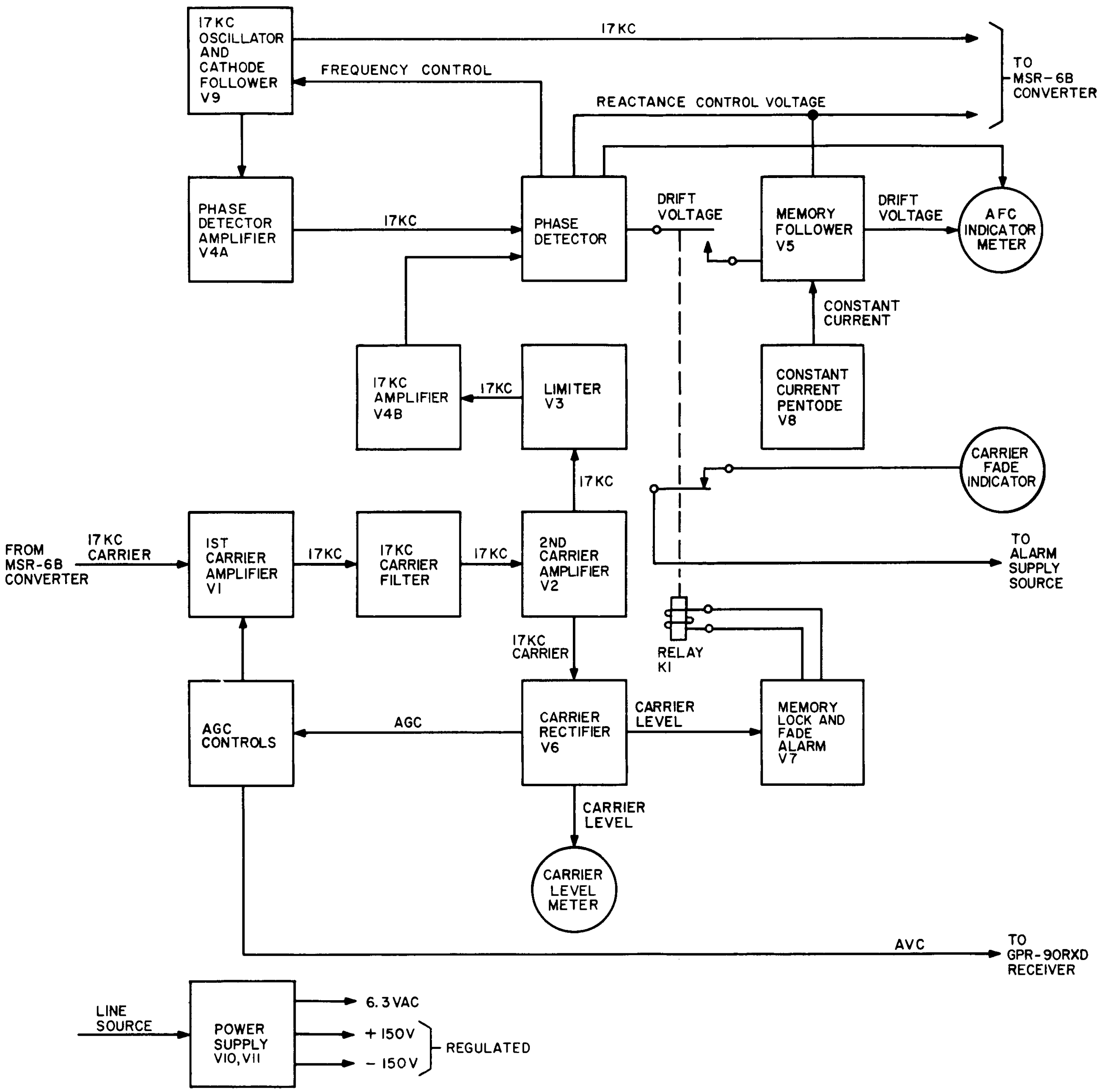


Figure 4-27. Block Diagram, AFC-1B

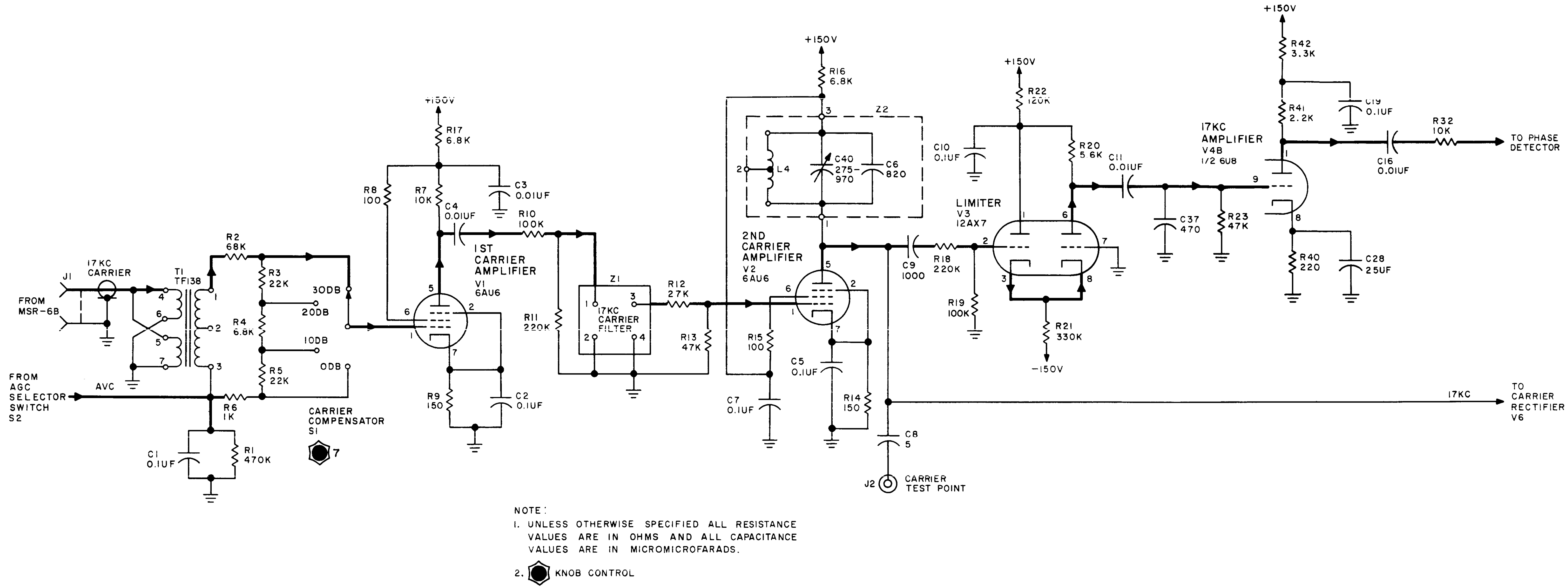


Figure 4-28. Schematic Diagram, AFC-1B, Carrier Amplifiers, Limiter, and 17-kc Amplifier

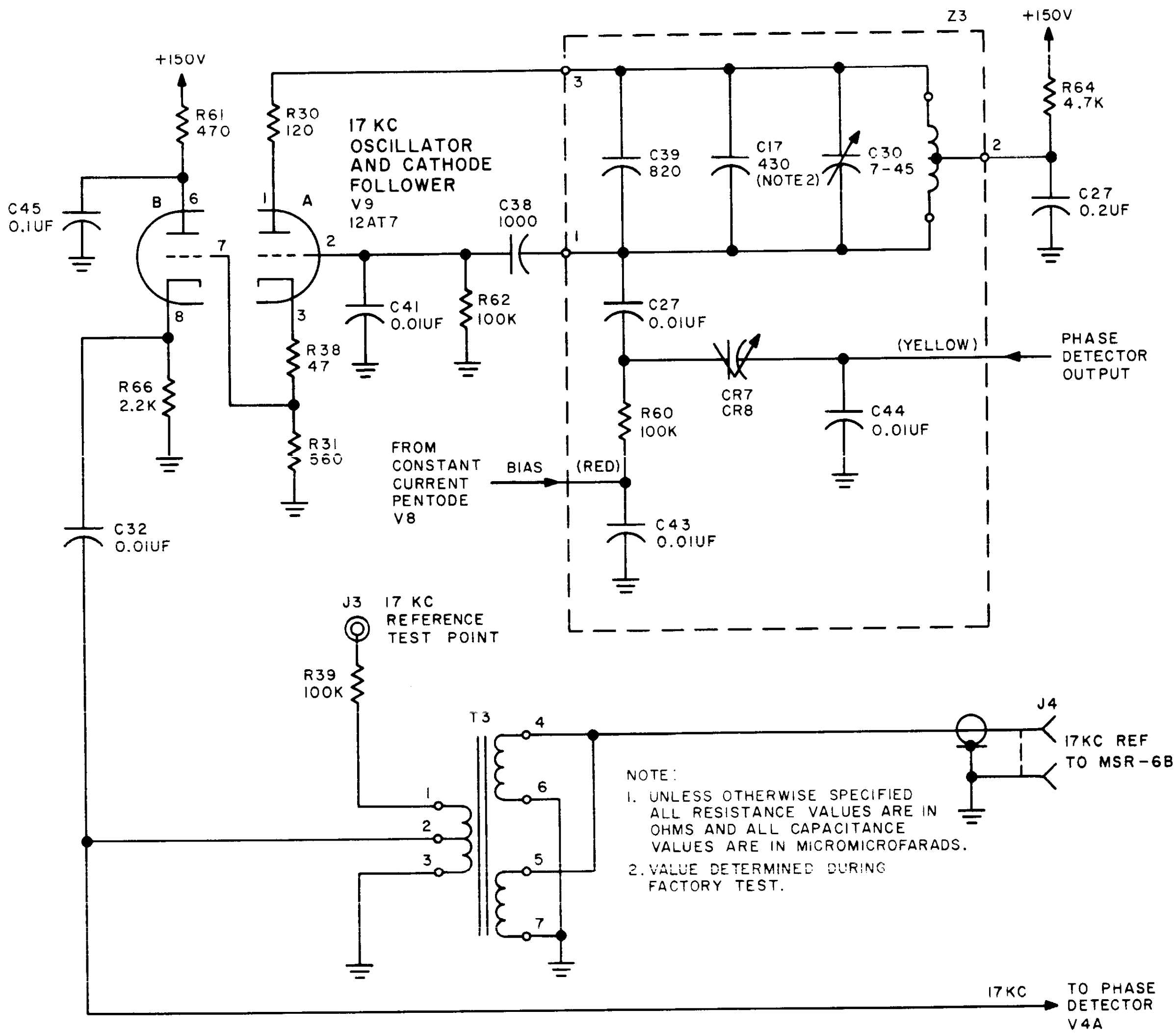


Figure 4-30. Schematic Diagram, AFC-1B, 17-kc Oscillator

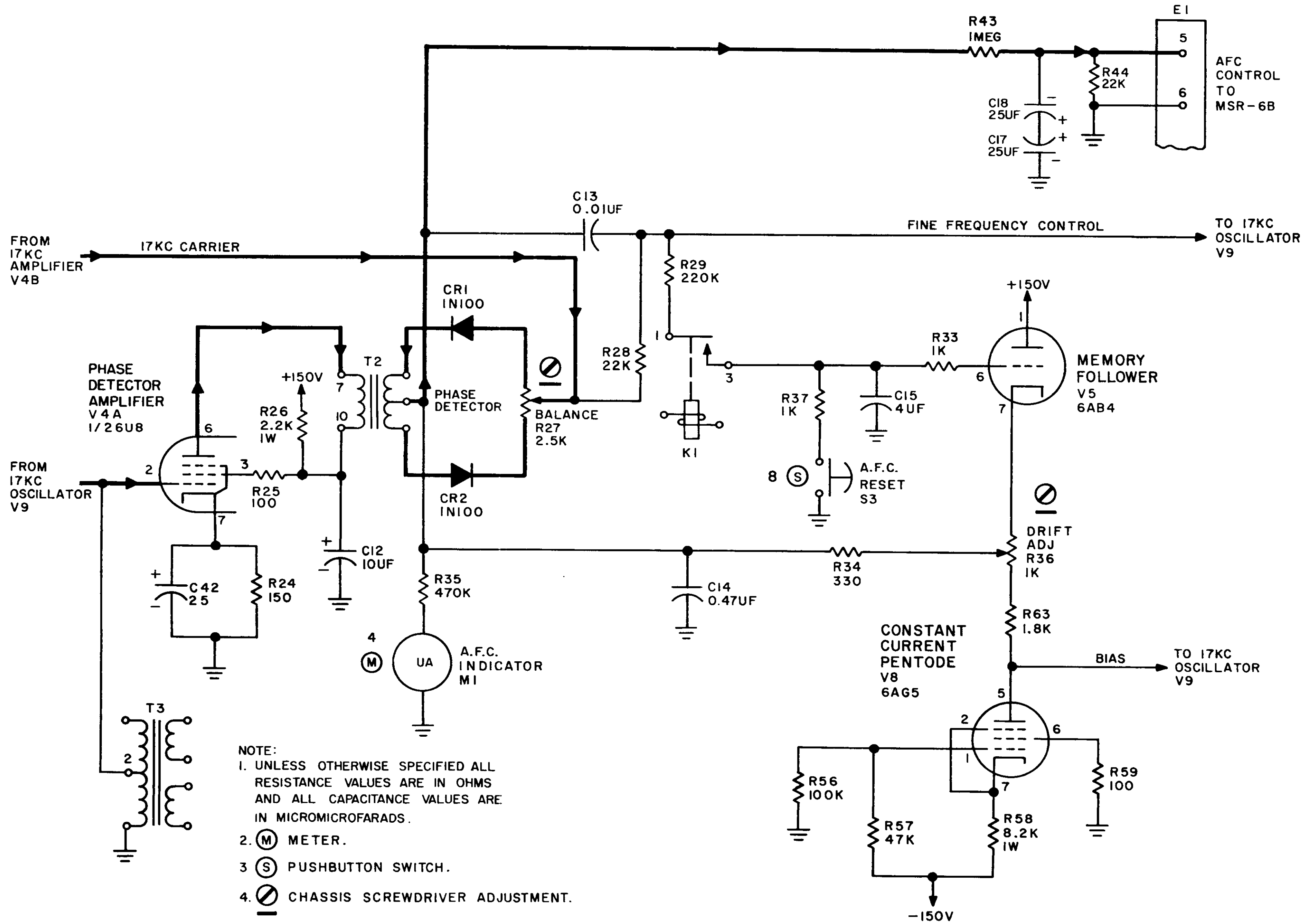
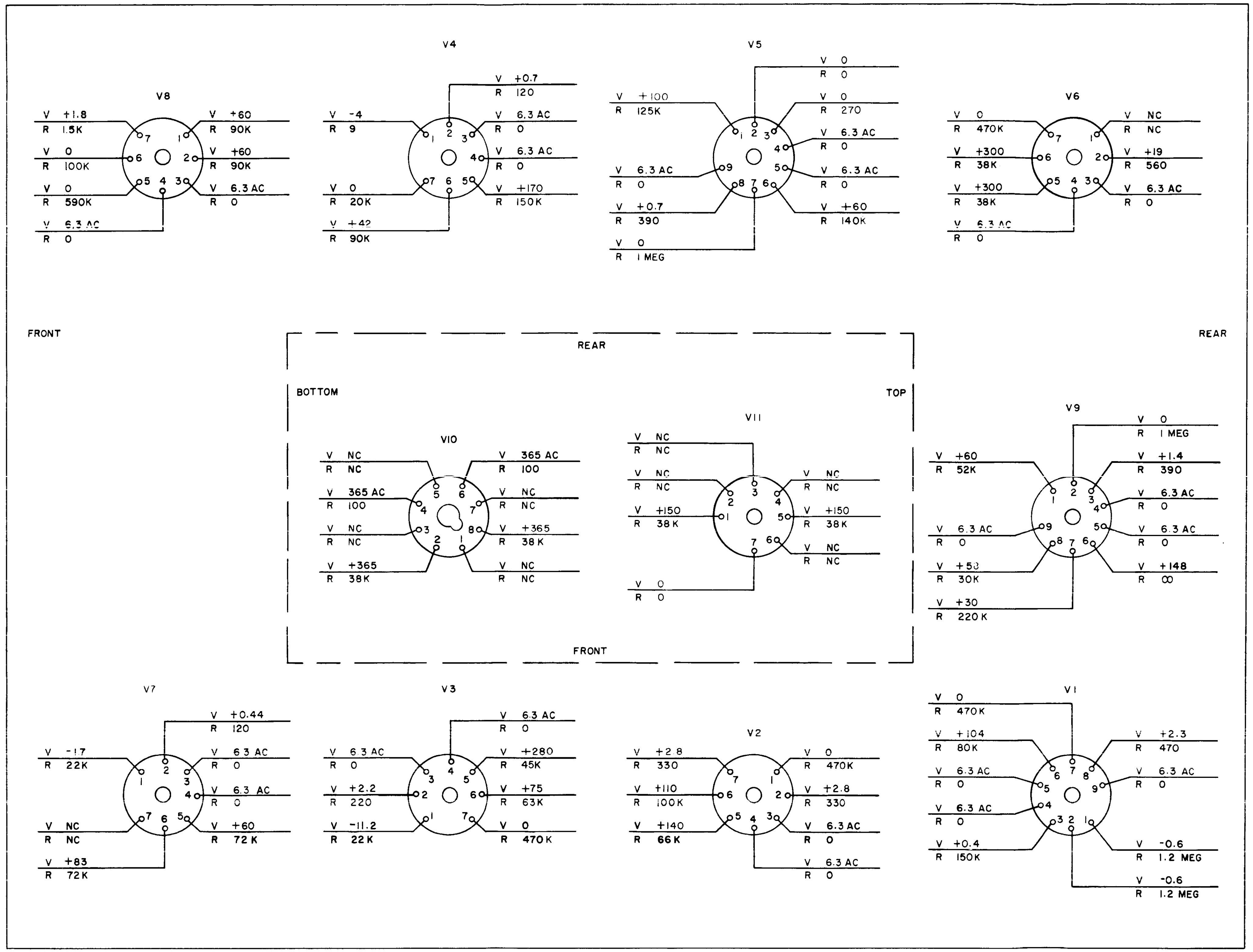


Figure 4-31. Schematic Diagram, AFC-1B, Phase Detector and Memory Follower



CONDITIONS:

VOLTAGE MEASUREMENTS;

1. LINE VOLTAGE IS 115 VAC 60 CPS
2. USE A VTVM FOR THESE MEASUREMENTS
3. BFO ON
   SIDEBAND MANUAL
   AUDIO GAIN CLOCKWISE
   AVC OFF
4. NO SIGNAL
5. ALL MEASUREMENTS MADE TO CHASSIS GROUND EXCEPT FILAMENTS, FILAMENT VOLTAGES MEASURED ACROSS FILAMENTS.

RESISTANCE MEASUREMENTS:

1. ALL POWER OFF.
2. PRIMARY POWER REMOVED.
3. ALL MEASUREMENTS MADE TO CHASSIS GROUND.
4. UNLESS OTHERWISE SPECIFIED ALL RESISTANCE VALUES ARE IN OHMS.
5. ∞ INDICATES INFINITY.

Figure 5-6. Voltage and Resistance Diagram, MSR-6B

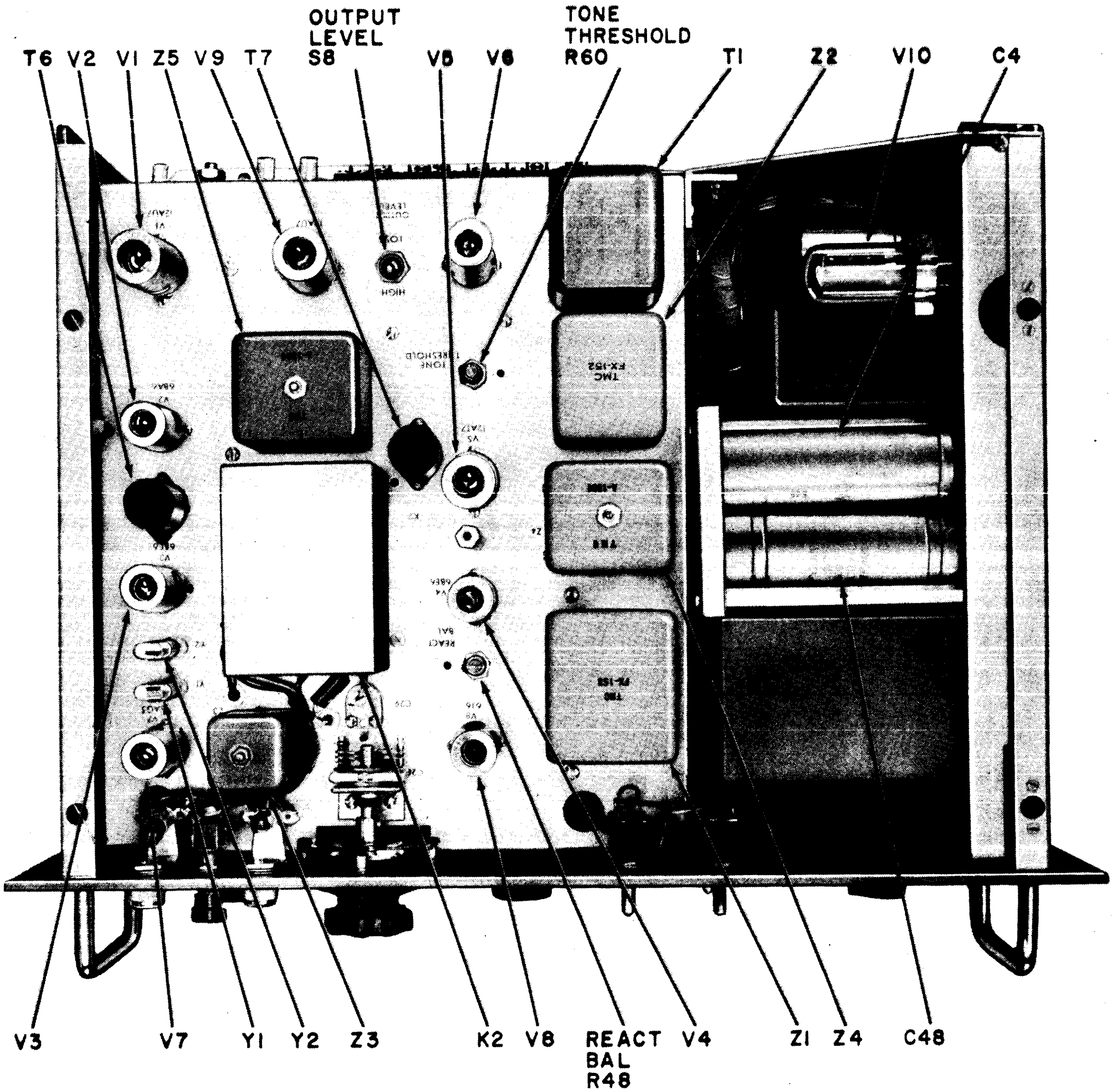


Figure 5-7-a. Location of Major Electronic Components, MSR-6B, Top View

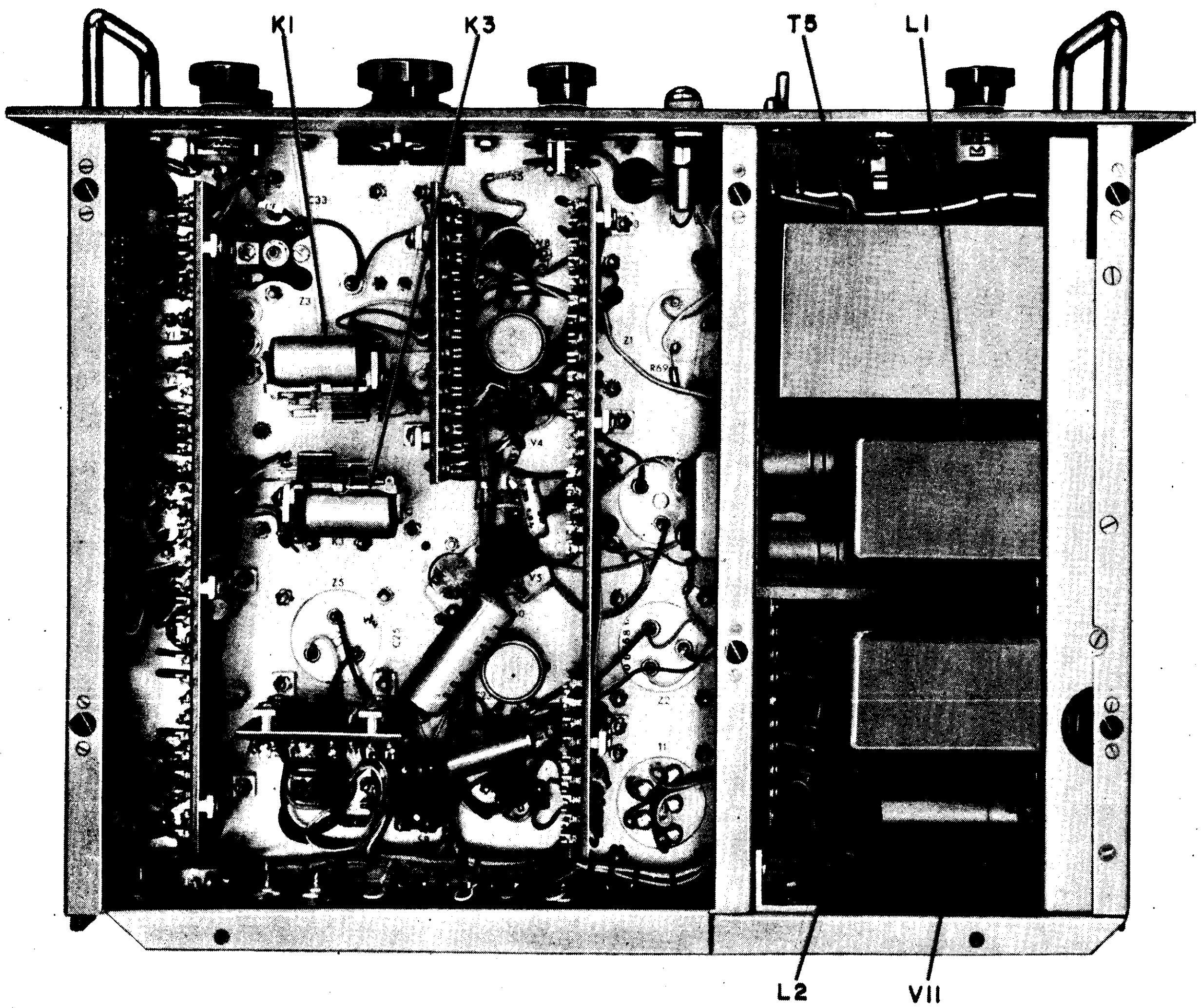


Figure 5-7-b. Location of Major Electronic Components, MSR-6B, Bottom View

CONDITIONS:

1. A.G.C. SELECTOR SWITCH SET TO FAST.
2. CARRIER COMPENSATOR SWITCH SET TO ODB.
3. FADE ALARM LEVEL CONTROL SET TO FULL CLOCKWISE POSITION.
4. READINGS MADE WITH VTVM
5. VOLTAGES AND RESISTANCES MEASURED TO GROUND.

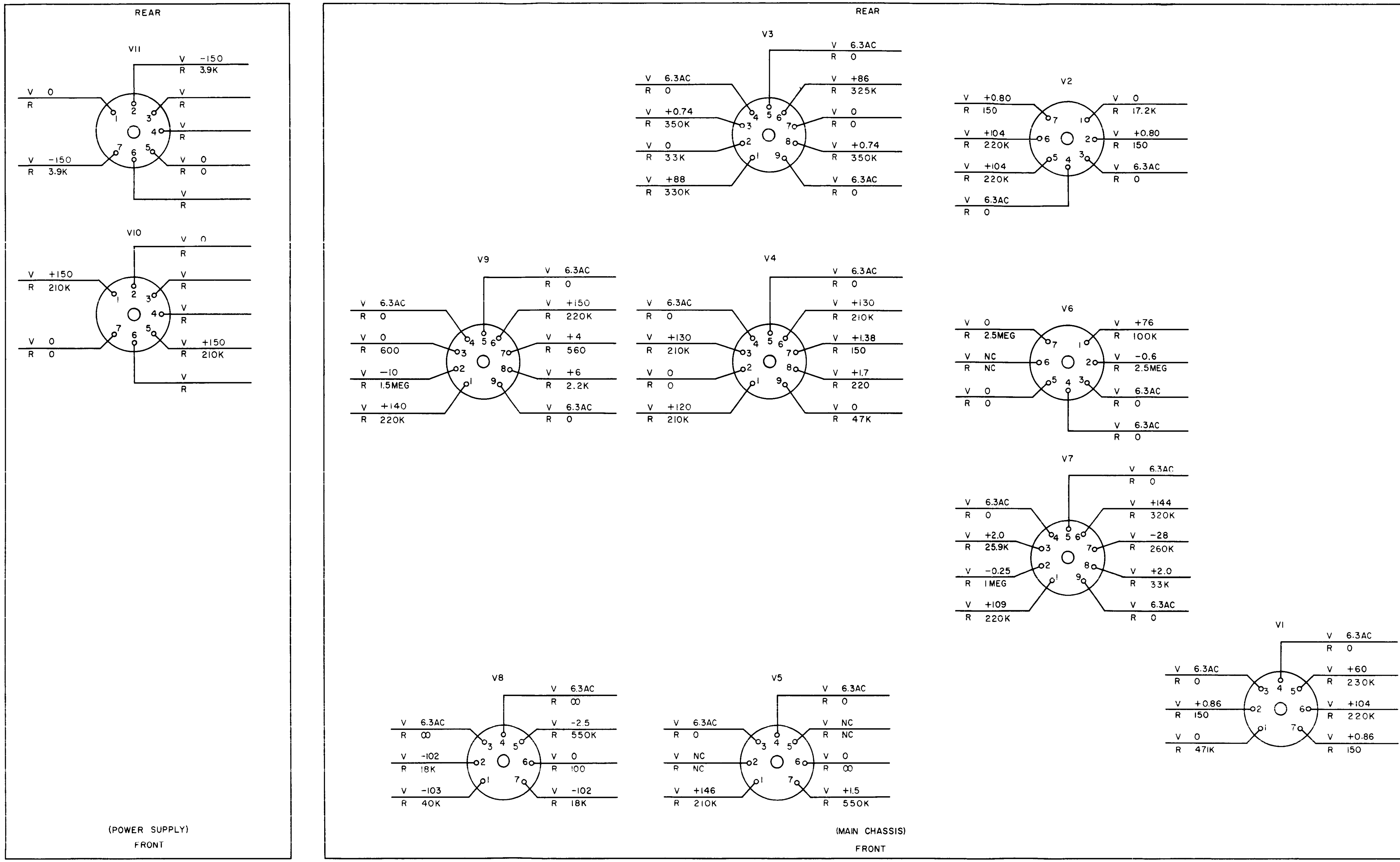


Figure 5-8. Voltage and Resistance Diagram, AFC-1B

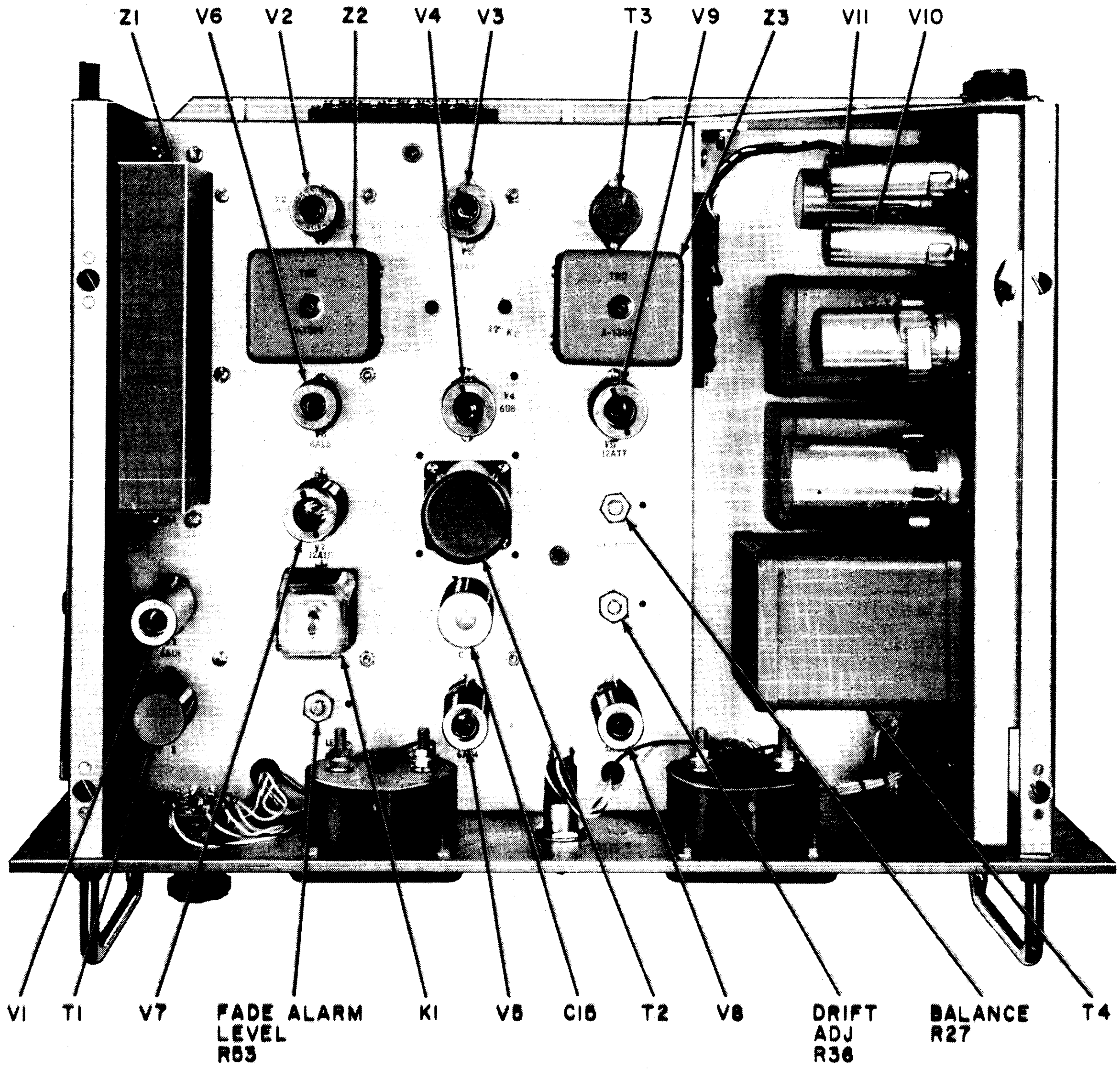


Figure 5-9-a. Location of Major Electronic Components, AFC-1B, Top View

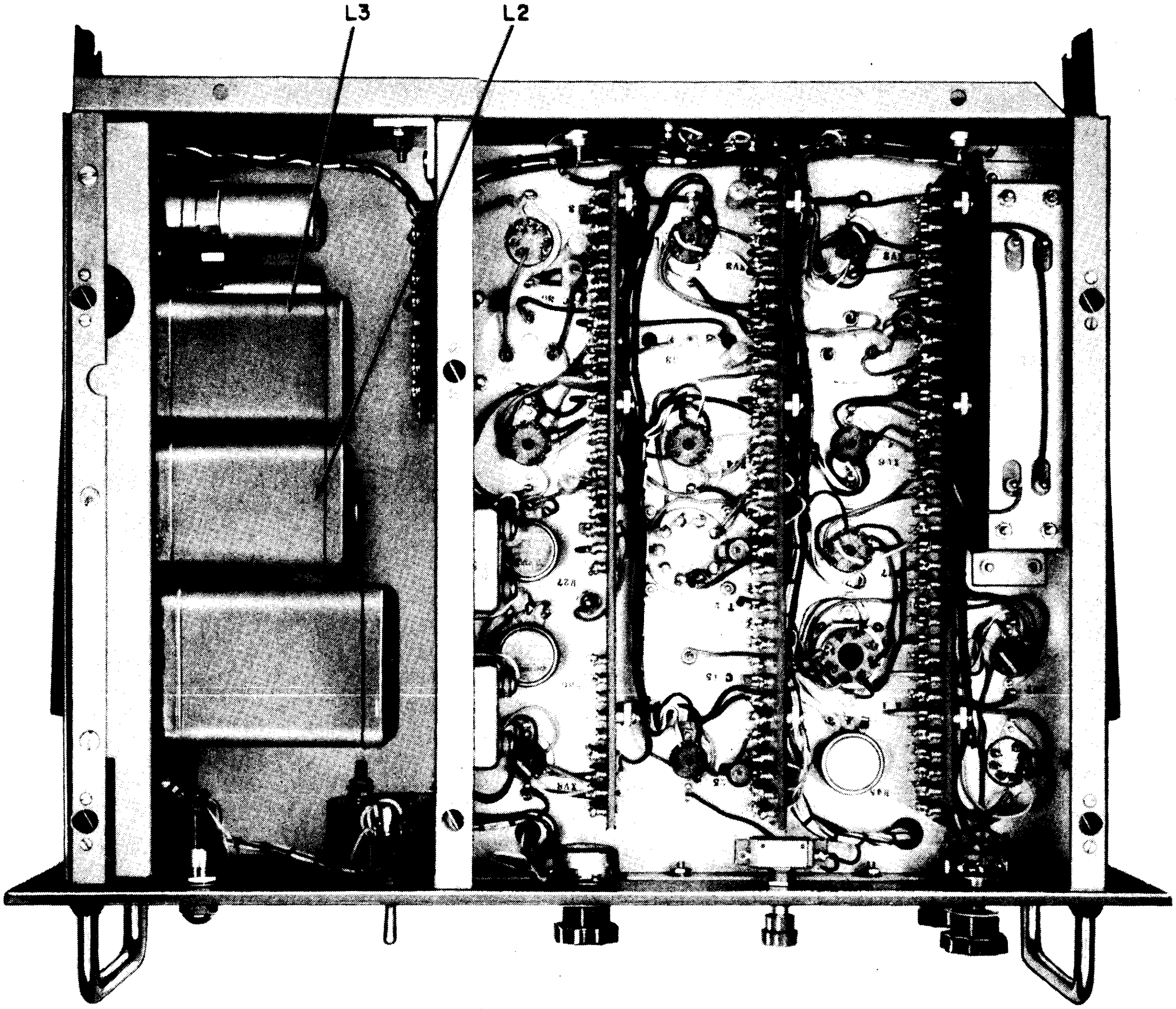


Figure 5-9-b. Location of Major Electronic Components, AFC-1B, Bottom View

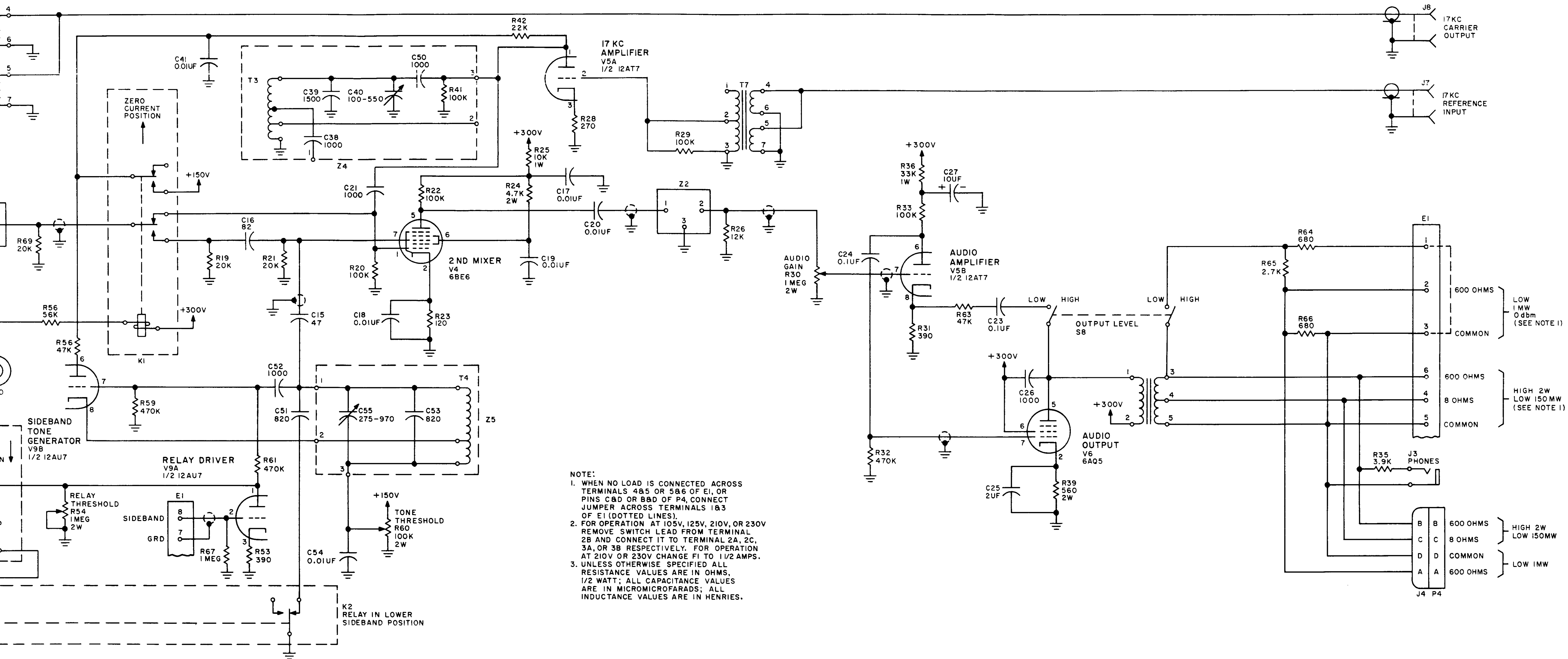
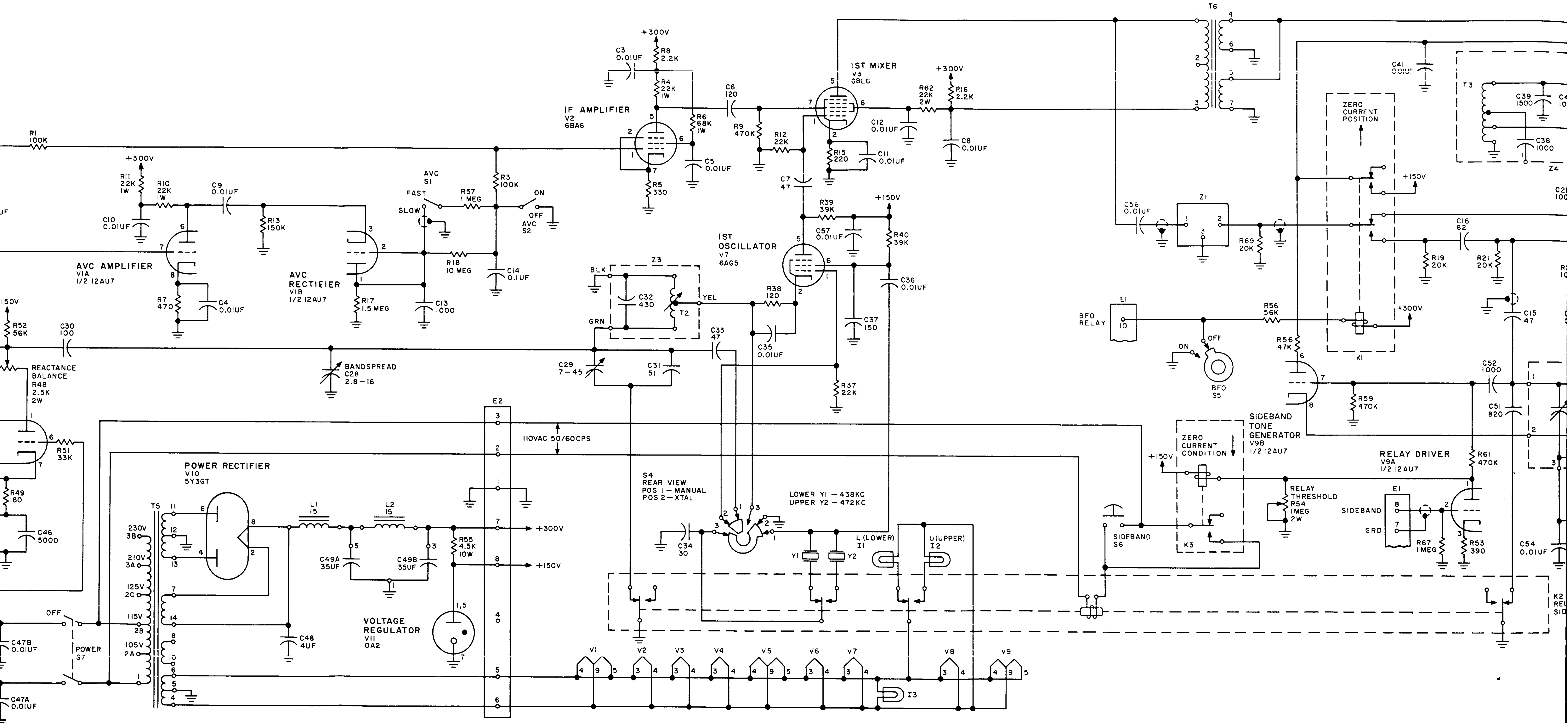
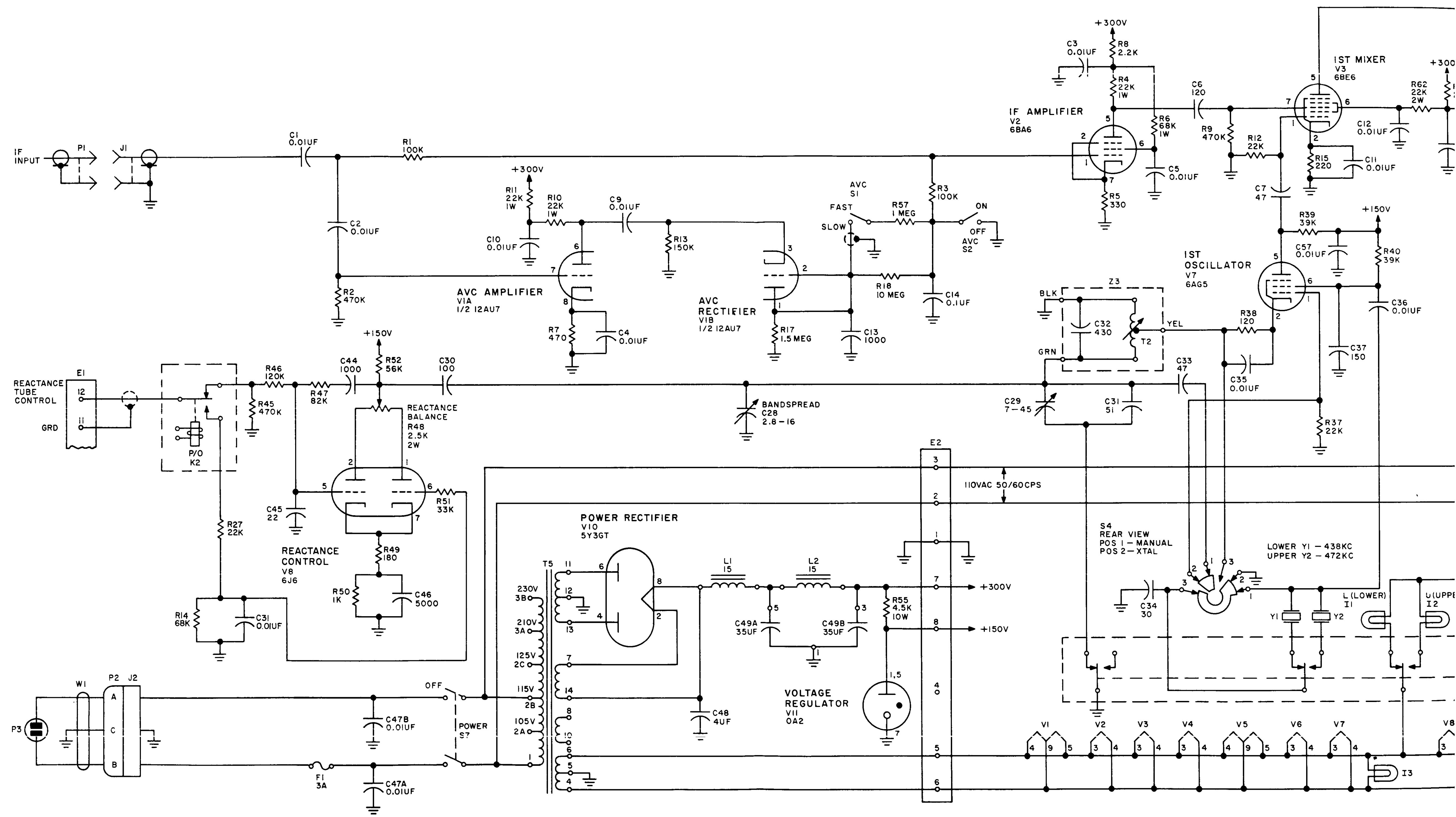


Figure 8-3. Schematic Diagram, MSR-6B



IF AMPLIFIER
V2
6BA6
IST MIXER
V3
6BE6
IST OSCILLATOR
V7
6AG5
AVC AMPLIFIER
VIA
1/2 12AU7
AVC RECTIFIER
VIB
1/2 12AU7
POWER RECTIFIER
V10
5Y3GT
VOLTAGE REGULATOR
V11
OA2
SIDEBAND TONE GENERATOR
V9B
1/2 12AU7
RELAY DRIVER
V9A
1/2 12AU7
REACTANCE BALANCE
R48
2.5K
2W
BANDSPREAD
C28
2.8-16
S4
REAR VIEW
POS 1 - MANUAL
POS 2 - XTAL
LOWER Y1 - 438KC
UPPER Y2 - 472KC
L (LOWER) I1
U (UPPER) I2
I3
110VAC 50/60CPS
ZERO CURRENT POSITION
ZERO CURRENT CONDITION
RELAY THRESHOLD
R54
1MEG
2W
BFO RELAY
BFO S5
SIDEBAND S6
SIDEBAND
GRD
AVC S1
FAST
SLOW
AVC S2
ON
OFF
POWER S7
+300V
+150V
T5
T6
T3
Z1
Z3
Z4
K1
K3
E1
E2
230V 3B
210V 3A
125V 2C
115V 2B
105V 2A
R1 100K
R3 100K
R4 22K 1W
R5 330
R6 68K 1W
R7 470
R8 2.2K
R9 470K
R10 22K 1W
R11 22K 1W
R12 22K
R13 150K
R15 220
R16 2.2K
R17 1.5MEG
R18 10 MEG
R19 20K
R21 20K
R37 22K
R38 120
R39 39K
R40 39K
R49 180
R51 33K
R52 56K
R53 390
R55 4.5K 10W
R56 56K
R56 47K
R57 1 MEG
R59 470K
R61 470K
R62 22K 2W
R67 1MEG
R69 20K
C3 0.01UF
C4 0.01UF
C5 0.01UF
C6 120
C7 47
C8 0.01UF
C9 0.01UF
C10 0.01UF
C11 0.01UF
C12 0.01UF
C13 1000
C14 0.1UF
C15 47
C16 82
C29 7-45
C30 100
C31 51
C32 430
C33 47
C34 30
C35 0.01UF
C36 0.01UF
C37 150
C38 1000
C39 1500
C41 0.01UF
C46 5000
C47A 0.01UF
C47B 0.01UF
C48 4UF
C49A 35UF
C49B 35UF
C51 820
C52 1000
C54 0.01UF
C56 0.01UF
C57 0.01UF
L1 15
L2 15
YEL
BLK
GRN
V1
V2
V3
V4
V5
V6
V7
V8
V9



IF INPUT
P1
J1
C1 0.01UF
R1 100K
C2 0.01UF
R2 470K
+300V
R11 22K 1W
R10 22K 1W
C10 0.01UF
C9 0.01UF
R13 150K
AVC AMPLIFIER
V1A
1/2 12AU7
R7 470
C4 0.01UF
AVC RECTIFIER
V1B
1/2 12AU7
R17 1.5 MEG
C13 1000
AVC S1
FAST
SLOW
R57 1 MEG
R18 10 MEG
R3 100K
ON
OFF
AVC S2
C14 0.1UF
IF AMPLIFIER
V2
6BA6
R8 2.2K
C3 0.01UF
R4 22K 1W
R6 68K 1W
C5 0.01UF
R5 330
C6 120
R9 470K
R12 22K
1ST MIXER
V3
6BE6
R62 22K 2W
C12 0.01UF
R15 220
C11 0.01UF
C7 47
R39 39K
C57 0.01UF
+150V
R40 39K
1ST OSCILLATOR
V7
6AG5
C36 0.01UF
C37 150
R38 120
C35 0.01UF
R37 22K
Z3
BLK
GRN
YEL
C32 430
T2
C33 47
C29 7-45
C31 51
BANDSPREAD
C28 2.8-16
REACTANCE TUBE CONTROL
E1
GRD
P/O K2
R46 120K
R45 470K
R47 82K
C44 1000
R52 56K
C30 100
REACTANCE BALANCE
R48 2.5K 2W
C45 22
R51 33K
REACTANCE CONTROL
V8
6J6
R49 180
R50 1K
C46 5000
R27 22K
R14 68K
C31 0.01UF
E2
110VAC 50/60CPS
S4
REAR VIEW
POS 1 - MANUAL
POS 2 - XTAL
LOWER Y1 - 438KC
UPPER Y2 - 472KC
C34 30
L (LOWER) I1
U(UPPER) I2
I3
POWER RECTIFIER
V10
5Y3GT
T5
230V 3B
210V 3A
125V 2C
115V 2B
105V 2A
L1 15
L2 15
C49A 35UF
C49B 35UF
R55 4.5K 10W
+300V
+150V
C48 4UF
VOLTAGE REGULATOR
V11
OA2
W1
P2
J2
P3
OFF
POWER S7
F1 3A
C47B 0.01UF
C47A 0.01UF
V1
V2
V3
V4
V5
V6
V7
V8

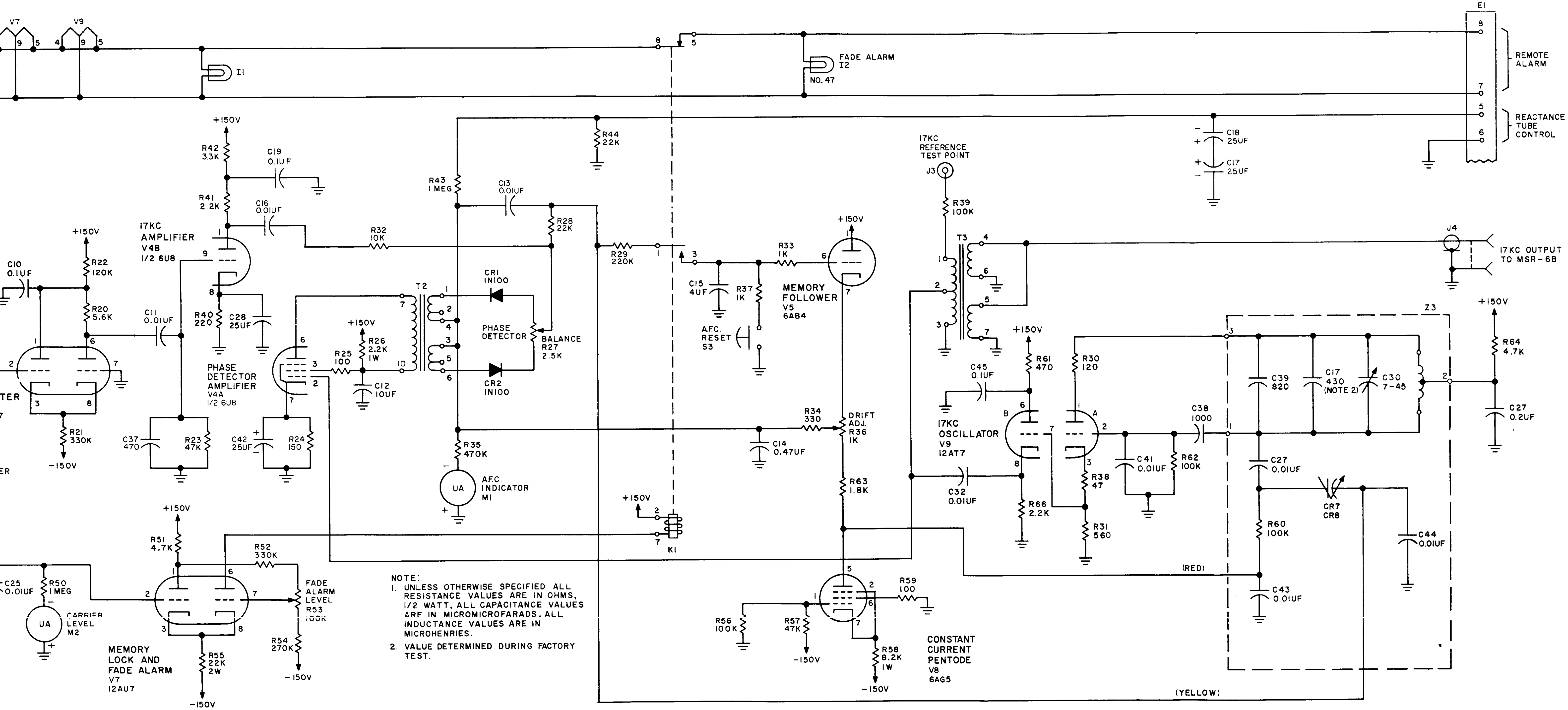
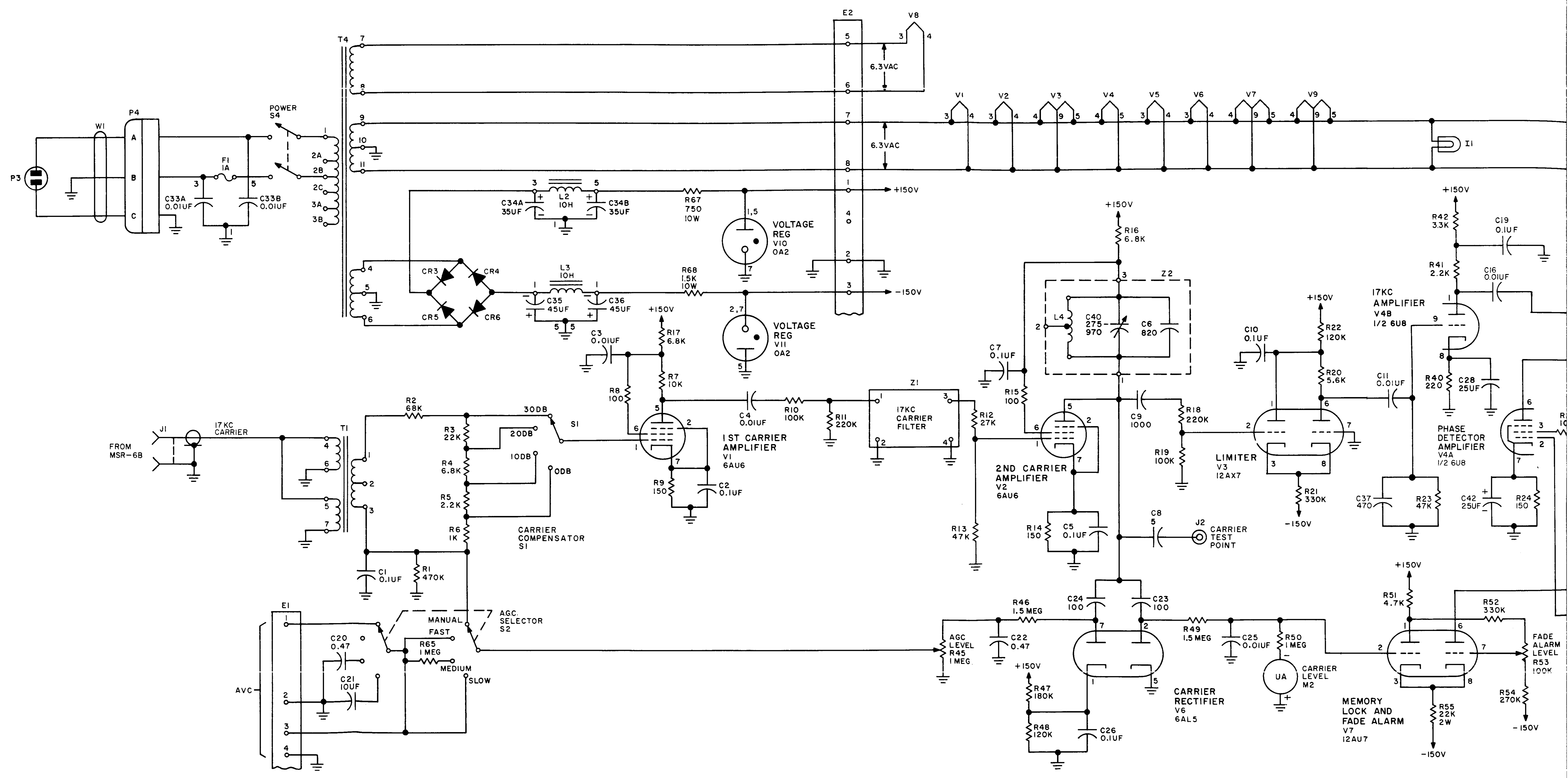
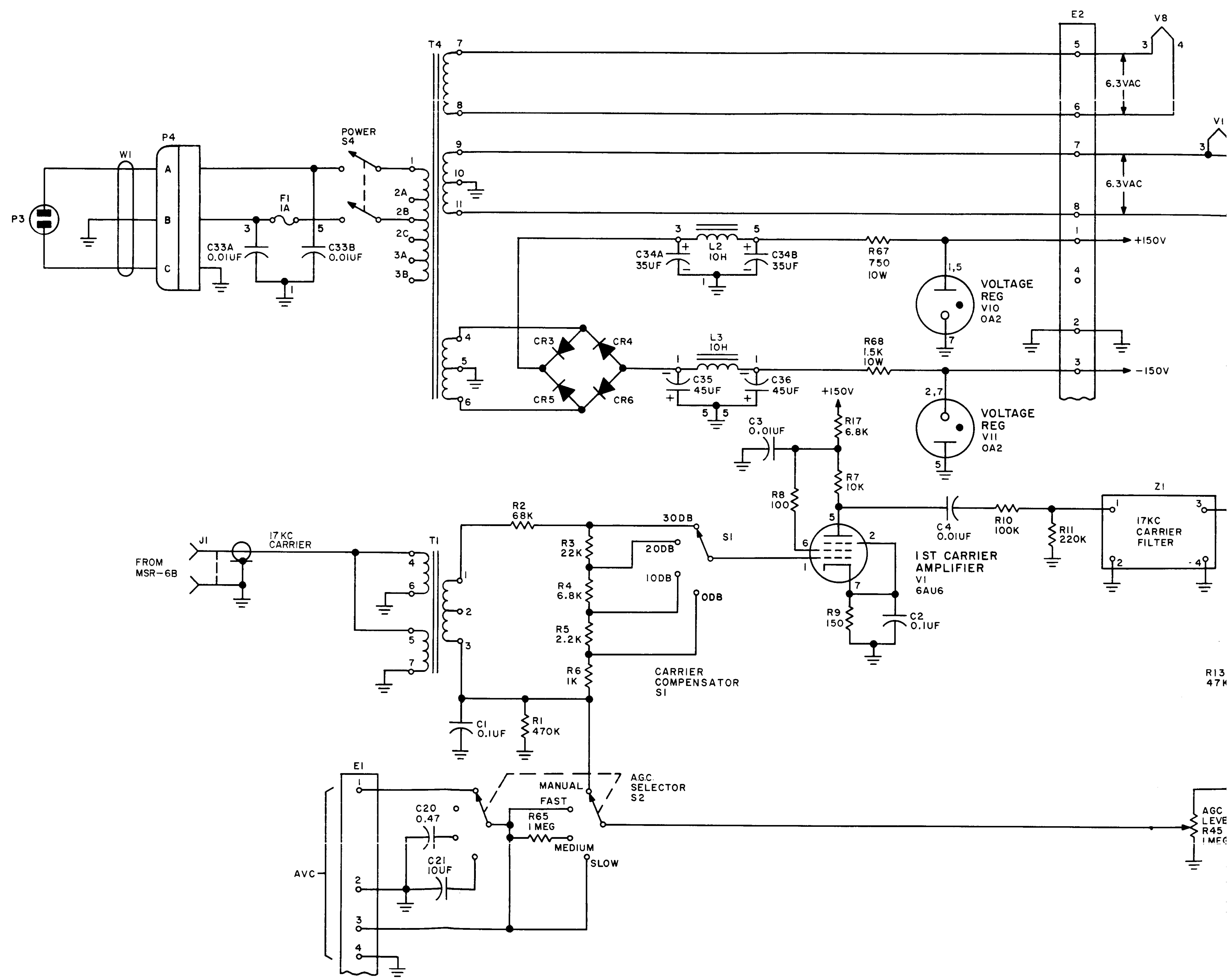


Figure 8-4. Schematic Diagram, AFC-1B



FROM MSR-6B
17KC CARRIER
POWER S4
VOLTAGE REG V10 OA2
VOLTAGE REG V11 OA2
6.3VAC
+150V
-150V
1ST CARRIER AMPLIFIER V1 6AU6
17KC CARRIER FILTER
2ND CARRIER AMPLIFIER V2 6AU6
LIMITER V3 12AX7
17KC AMPLIFIER V4B 1/2 6U8
PHASE DETECTOR AMPLIFIER V4A 1/2 6U8
CARRIER TEST POINT
CARRIER COMPENSATOR S1
AGC SELECTOR S2
MANUAL
FAST
MEDIUM
SLOW
AVC
AGC LEVEL R45 1 MEG
CARRIER RECTIFIER V6 6AL5
CARRIER LEVEL M2
MEMORY LOCK AND FADE ALARM V7 12AU7
FADE ALARM LEVEL R53 100K



E2
V8
V1
6.3VAC
6.3VAC
+150V
-150V
T4
POWER S4
P4
W1
P3
F1 1A
C33A 0.01UF
C33B 0.01UF
C34A 35UF
L2 10H
C34B 35UF
R67 750 10W
VOLTAGE REG V10 OA2
CR3
CR4
CR5
CR6
L3 10H
C35 45UF
C36 45UF
R68 1.5K 10W
VOLTAGE REG V11 OA2
+150V
R17 6.8K
C3 0.01UF
R8 100
R7 10K
C4 0.01UF
R10 100K
R11 220K
Z1
17KC CARRIER FILTER
1ST CARRIER AMPLIFIER V1 6AU6
R9 150
C2 0.1UF
FROM MSR-6B
J1
17KC CARRIER
T1
R2 68K
R3 22K
R4 6.8K
R5 2.2K
R6 1K
30DB
20DB
10DB
0DB
S1
CARRIER COMPENSATOR S1
C1 0.1UF
R1 470K
E1
AVC
C20 0.47
C21 10UF
MANUAL
FAST
R65 1MEG
MEDIUM
SLOW
AGC SELECTOR S2
R13 47K
AGC LEVE R45 1MEG