


# section 7

## illustrations

### Note

The period covered by this instruction book is April 1963 to the date on the book title page.

Each equipment that had circuit changes made during the period of time covered by this instruction book has the changes identified on the applicable sheet of the schematic diagram and in the parts list. Circuit changes are flagged

on the schematic with a change identifier 

pointed at the component, group of components, or a circuit enclosed by a broken line. The identifier indicates that the component or circuit has been changed, and the number in the identifier indexes the specific change. If several components are affected by the same equipment change, there may be more than one identifier with the same index number.

The indexed changes are listed on schematic changes and equipment differences sheets inserted in front of the schematic sheet to which they are indexed.


The identifier-description describes the differences and reasons for changes and includes a recommendation as to what action should be followed during repair or maintenance.

The reason for identifying changes in this manner is that the manufacturer has "scrambled" serial numbers on his amateur products during the period covered by this instruction

book. Therefore, changes cannot be identified by conventional methods.

### Caution

None of the changes have been made because the equipment has failed to meet the equipment specifications and are not recommended changes for all units. Equipment changes have been made to improve performance or reliability of radios that are built using different fabrication processes. These changes will not necessarily improve the operation of your equipment and in some instances, if changes are made, will degrade the performance or possibly damage the radio.

The change identifier number is also used in the parts list section of this instruction book. However, in the parts list the identifier is enclosed in slashes (for example, /6/) instead of the  symbol.

Voltage and resistance measurements for the KWM-2/2A Transceiver are located in the service instructions section of this instruction book.

Below are listed service bulletins that have been written against the KWM-2 and KWM-2A Transceivers. These service bulletins were factory installed in units about the time the bulletins were issued and have been installed in all units since that date.

<u>SERVICE BULLETIN NO</u>	<u>DESCRIPTION</u>	<u>DATE ISSUED</u>
1	Not issued (SB 1 was issued against KWM-1 Transceiver)	
2	Addition of VOX relay time constant control	10-1-60 (1st revision)

<u>SERVICE BULLETIN NO</u>	<u>DESCRIPTION</u>	<u>DATE ISSUED</u>
3 (REISSUE)	Correlation between frequencies on different bands	10-1-71
4	Improvement of ALC action and elimination of ALC overshoot	9-2-60
5	Improvement of transmit-receive exciter tuning coincidence	1-3-61 (1st revision)
6	Elimination of delay in operation when switching from transmit to receive function	1-11-62
7 (REISSUE)	Replacement of relays K2 and K4 with enclosed type	2-1-70
8	A. Elimination of AGC overshoot on noise pulses and provide dual time-constant action  B. Change source of delay bias to the AGC rectifier  C. Addition of delayed-decay AGC to the rf amplifier	9-1-70
9 (REISSUE)	Addition of Modification Kit 744H-1 to convert KWM-2 to KWM-2A, Collins part number 622-0803-001	10-15-75
10	Elimination of vhf parasitic oscillations in tone oscillator V2B	4-15-74

# SCHEMATIC CHANGES AND EQUIPMENT DIFFERENCES

SCHEMATIC CHANGES AND EQUIPMENT DIFFERENCES		REFER TO SCHEMATIC SHEET
<div>1 through 11C</div> <div>12 through 20B</div> <div>21 through 27D</div> <div>28 through 36C</div> <div>36 through 39</div>		<div>1</div> <div>2</div> <div>3</div> <div>4</div> <div>5</div>
IDENTIFIER	DESCRIPTION	
1	<p>R51 and R52, 330 k<math>\Omega</math>, were 390 k<math>\Omega</math> and R53, 27 k<math>\Omega</math>, was 18 k<math>\Omega</math>. R51 and R52 can be either 330 k<math>\Omega</math> or 390 k<math>\Omega</math>, but must be the same. If R51 and R52 are 330 k<math>\Omega</math>, R53 should be 27 k<math>\Omega</math>; if R51 and R52 are 390 k<math>\Omega</math>, R53 should be 18 k<math>\Omega</math>. This change provides a 1750-Hz tone oscillator frequency. If replacing one or more of these resistors, recommend replacing with values shown on schematic and also replace R50 as noted in 2.</p>	
2	<p>R50, 47 k<math>\Omega</math> 1 watt, was 47 k<math>\Omega</math> 1/2 watt. This change gives longer resistor life at existing power dissipation level. Recommend that R50 be inspected when the unit is being repaired for any reason, and if R50 is 1/2 watt, replace it with a 1-watt resistor.</p>	
3	<p>L38 and L41, 1 mH, were added; C6, 1 <math>\mu</math>F, was 0.47 <math>\mu</math>F; C264, 20 <math>\mu</math>F, was 4 <math>\mu</math>F; CR10, 1N1490, was added; and R208, 470 ohms, was added as 100 ohms, then changed to 470 ohms. These changes block rf feedback that may cause audio distortion. If these components are not in the unit, they do not have to be added. If replacing any of these components, recommend replacing with values shown on schematic.</p>	
4	<p>Some early units have a balanced modulator circuit as shown below. Recommend that modification to the circuit shown on the schematic not be attempted. If repairing a balanced modulator circuit as shown below, replace components with values shown here and in the parts list.</p>	

KWM-2 and KWM-2A Transceivers, Schematic Diagram  
Figure 7-1 (Sheet A)

# SCHEMATIC CHANGES AND EQUIPMENT DIFFERENCES

IDENTIFIER	DESCRIPTION
<p>4A</p> <p>5</p> <p>(Cont)</p>	<div data-bbox="324 346 1396 798"> <p><b>BALANCED MODULATOR</b></p> </div> <p>Some early units have a balanced modulator circuit as shown below. If replacing any of these components, recommend replacing with values shown here and in parts list. Incorporating the changes in 5 produces the circuit shown on the schematic. However, these changes are not required and the balanced modulator can remain in the configuration shown below. If the changes in 5 are incorporated, all of change 5 must be incorporated.</p> <div data-bbox="324 1113 1396 1533"> <p><b>BALANCED MODULATOR</b></p> </div> <p>R204 and R205, 220 ohms, added; R203 and R206, 180 ohms, added; R14 and R16, 47 ohms, were 180 ohms; and R15, 250 ohms, was 1 kΩ. The changes to the balanced modulator circuit shown in 4A produces the circuit shown on the schematic. If these changes have not been made in the unit, recommend the existing configuration be maintained. These changes</p>

KWM-2 and KWM-2A Transceivers, Schematic Diagram  
Figure 7-1 (Sheet B)

# SCHEMATIC CHANGES AND EQUIPMENT DIFFERENCES

IDENTIFIER	DESCRIPTION
5 (Cont)	do not apply to the circuit shown in 4 above. If replacing any of these components, recommend replacing with values shown on schematic.
6	<p>C10 is a test select component; 10 to 150 pF for balanced modulator circuit shown on schematic and 10 to 75 pF for circuit shown in 4 above. The value is selected in manufacturing test to balance C9 range. It is selected to provide not more than 0.2 Vac rms rf output after carrier balancing (refer to paragraph 4.7 for procedure).</p> <p>In some early units (configuration 4, 4A, and 5), C10 may be connected in parallel to C9.</p> <p>R140 is a test select component, 390 ohms to 27 kΩ. The value is selected in manufacturing test to provide ALC threshold of 2 to 5 mV (refer to paragraph 4.7 for procedure).</p>
7	R201, 220 kΩ, added. This change isolates VOX amplifier V14B from VOX GAIN control R39. If this component is not in the unit, it does not have to be added.
8	R199, 2.2 megohms, added. This change improves the VOX TIME CONST control R43 range. If this component is not in the unit, it does not have to be added.
9	<p>R202 was added to limit relay K2 energizing current. On some units it was 330 ohms and was located in the cathode circuit of V4B (see circuit below). On later units, the value was changed to 12 kΩ and relocated in the plate circuit of V4B as shown on the schematic. If replacing this component, recommend replacing with a 12-kΩ resistor in the plate circuit of V4B. (If R202 was in the cathode circuit of V4B, install a Winchester standoff terminal near pin 5 of XV4 to provide a tie point for R202 and the red-white wire disconnected from pin 8 of XV4.) If R202 is not in the unit, check to see if relay K2 is an open-telephone or enclosed type. If K2 is an open-telephone type, do not add R202; if it is an enclosed type, add R202, 12 kΩ, in the plate circuit of V4B.</p> <p>R46, 2200 ohms, was 3300 ohms on some units. If replacing this component, recommend replacing with 2200 ohms.</p>
9A	<p>L22 was changed to a shielded type to reduce bfo leakage, effective CI 72165. When replacing L22, recommend replacing with the shielded type.</p>

KWM-2 and KWM-2A Transceivers, Schematic Diagram  
Figure 7-1 (Sheet C)

# SCHEMATIC CHANGES AND EQUIPMENT DIFFERENCES

IDENTIFIER	DESCRIPTION
10	R195, 47 ohms, added. This change helps prevent spurious oscillation. If this component is not in the circuit, it does not have to be added. C55, 180 pF, was 100 pF. This change decreases oscillator feedback. If replacing this component, recommend replacing with 180 pF.
10A	EXT VFO POWER connector J17 was changed from Amphenol type to a Collins type. When replacing this connector, recommend replacing with the Collins type.
11	C47, 0.068 $\mu$ F, has changed value and type. It has changed in value (was 0.047 $\mu$ F) to increase the VOX time constant. It has changed in type (to a polycarbonate dielectric) to reduce electrical leakage that could result in the VOX relay circuit staying activated. If replacing this component, recommend replacing with the 0.068- $\mu$ F polycarbonate dielectric.
11A	External power connections made to the KWM-2/2A are as follows:
11B	Deleted 33-k $\Omega$ resistor R131. Added 0.1- $\mu$ F capacitor C278, 0.02- $\mu$ F capacitor C279; 2-mH coil L42; and 1N5383B zener diode CR12. This change improves frequency stability for +12-, +24-, and +28-V dc remote or vehicular operation.
11C	Added USB and LSB reference designators to crystals Y17 and Y16.
<div> <div> <div>EXTERNAL SWITCHING CIRCUITS AC SWITCHED</div> <div>6-VOLT POWER PLUG (516F-2 OR 516F-1)</div> </div> <div> <div>EXTERNAL SWITCHING CIRCUITS AC SWITCHED</div> <div>12 VOLT POWER PLUG (MP-1)</div> </div> <div> <div>EXTERNAL SWITCHING CIRCUITS (IF DESIRED) AC SWITCHED (PWR SUPPLY)</div> <div>24 VOLT POWER PLUG (516E-2)</div> </div> </div>	
12	L2, 10 mH, added; R207, 680 ohms, was added as 470 ohms, then changed to 680 ohms; and C216, 0.02 $\mu$ F, has changed location (previously located between junction of R18-R141 and chassis). These changes improve decoupling. If L2 and R207 are not in the unit, they do not have to be added; C216 would then be located between junction of R18-R144 and chassis. If replacing any of these components, recommend replacing with values shown on schematic. R38, 220 ohms, added as 68 ohms, then changed to 220 ohms when R18, 18 k $\Omega$ , was changed from 47 to 18 k $\Omega$ . R38 was added to improve the range of ALC ZERO control R30. R18 was changed to increase transmitter if amplifier V4A gain. R38 was changed to maintain proper circuit voltage levels. If R38 is not in the unit, it does not have to be added. If R18 is 47 k $\Omega$ , R38 should be 68 ohms; if R18 is 18 k $\Omega$ , R38 should be 220 ohms. If replacing R18, recommend replacing with 18 k $\Omega$ and at the same time replace R38, if necessary, with 220 ohms.
13	R198, 27 k $\Omega$ , is in some units. This resistor was added to reduce if leakage, but then removed to improve if gain. If this component is in the unit, it need not be removed. Some early units have mechanical filter FL1 (part number 526-9337-00). Later units have mechanical filter FL1 (part number 526-9427-000). The two types of mechanical filters are electrically the same but physically different. It is recommended that this component be replaced with same part numbered component. To replace the older mechanical filter (part number 526-9337-00) with the newer one (part number 526-9427-000) bracket having part number 544-9714-002 must be replaced with a bracket having a part number 606-9731-001. Bracket part number 606-9731-001 has a clip to hold the mechanical filter.
(Cont)	

KWM-2 and KWM-2A Transceivers, Schematic Diagram  
Figure 7-1 (Sheet D)

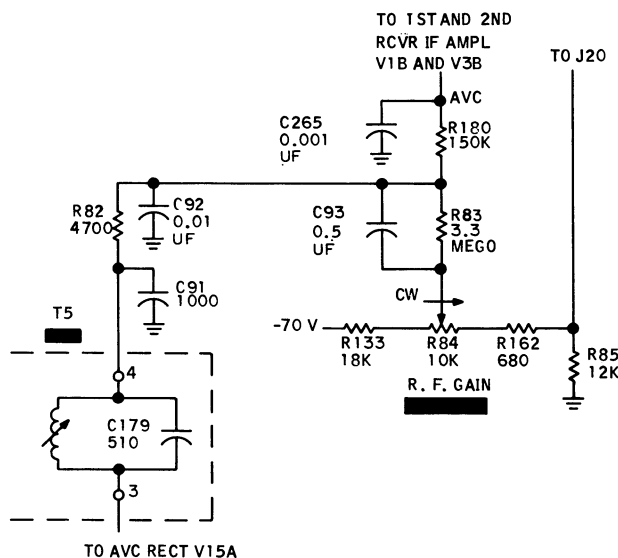
# SCHEMATIC CHANGES AND EQUIPMENT DIFFERENCES

IDENTIFIER	DESCRIPTION
13A	C311, 10 pF, was added. This change eases oscillator adjustment at factory. If this component is not in your unit, do not add it.
13B	CR301, 1N4454, was 1N34A. This change uses a newer, improved diode. Either diode can be used in this application. When stock is depleted, recommend using 1N4454 diodes.
14	R212, 1 megohm, added. This change reduces first transmitter mixer bias in receive operation. If this component is not in the unit, it does not have to be added.
15	C219, 100 pF, was 1000 pF. This change improves decoupling between first transmitter mixer and first receiver mixer. If replacing this component, recommend replacing with 100 pF.
16	R197, 2200 ohms, replaced L3, 2 mH. This change improves decoupling. If the circuit contains L3, it does not have to be replaced with R197. If L3 requires replacement, recommend replacing with R197.
16A	C238, 0.1 $\mu$ F, was 0.01 $\mu$ F. This change improves decoupling. If replacing this component, recommend replacing with 0.1 $\mu$ F.
17	R22, 100 ohms, was 56 ohms and R196, 100 ohms, was added. These changes isolate the external vfo from the internal vfo. If R196 is not in the unit, it does not have to be added. In this case, R22 should remain at 56 ohms. If replacing these components, recommend replacing with 100 ohms.  R162 is a test select component; 47 ohms to 100 ohms. The value is selected in manufacturing test to provide 1.25 Vac at pin 9 of V2A when EMISSION switch is set to LSB (refer to paragraph 4.7 for procedure) and vfo dial setting to 100.
18	C60, 10 pF, was 20 pF. This change improves decoupling between transmit and receive circuits. If replacing this component, recommend replacing with 10 pF.
19	CR9, 1N458, added; R193, 1 megohm, was added as 220 k $\Omega$ , then changed to 1 megohm; and R194, 470 k $\Omega$ , was added as 100 k $\Omega$ , then changed to 470 k $\Omega$ . These changes help isolate second receiver mixer from first transmitter mixer. If these components are not in the unit, they do not have to be added. If replacing any of these components, recommend replacing with values shown on schematic.
20	R145, 82 k $\Omega$ , was 150 k $\Omega$ , 68 k $\Omega$ , or 47 k $\Omega$ on some units. If R145 is 82 k $\Omega$ , C262 (second receiver if amplifier cathode bypass capacitor) should not be in the unit. This change reduces receiver if gain. If replacing R145, recommend replacing with 82 k $\Omega$ . At the same time, check for presence of C262; if C262 is in the unit, remove it. If C262 fails, recommend deleting it from the unit and replacing R145, if necessary with 82 k $\Omega$ . If the circuit configuration is changed, recheck the receiver gain.  R158 is normally 220 ohms. However, an additional resistor of 56 to 220 ohms may be connected in parallel with the 220-ohm component to give an S-meter reading of S8 to S9 +10 with a receiver input signal of 100 hard microvolts (refer to paragraph 4.7 for procedure).

KWM-2 and KWM-2A Transceivers, Schematic Diagram  
Figure 7-1 (Sheet E)

# SCHEMATIC CHANGES AND EQUIPMENT DIFFERENCES

IDENTIFIER	DESCRIPTION
20A	R132, 2500-ohm variable resistor, was 1000-ohm variable resistor. This change allows a greater range of receiver if gain adjustment. If replacing this component, recommend replacing with 2500-ohm variable resistor.
20B	Changed capacitor C304 from 200 pF to 50 pF, and resistor R301 from 100 kΩ to test select to improve 70K-2 vfo tracking and frequency stability.
21	R200, 1 megohm, added. This change back-biases second transmitter mixer to cutoff during receive. If this component is not in the unit, it does not have to be added.
22	R143, 2200 ohms, was 1500 ohms. This change improves decoupling. If replacing this component, recommend replacing with 2200 ohms.
23	C69, 240 pF, was 220 pF. This change provides greater crystal oscillator plate tuning range for 3.8 band. If replacing this component, recommend replacing with 240 pF.  C274, 0.01 μF and L40, 220 ohms, added. These changes improve decoupling. If these components are not in the unit, they do not have to be added.
24	R82, 4700 ohms, 1/2 watt, was 4700 ohms, 1/4 watt. This change gives longer resistor life at existing power dissipation level. If replacing this component, recommend replacing with 1/2-watt resistor.
25	Some early units have an AVC time constant circuit as shown below. This circuit has been changed to the configuration shown on the schematic to eliminate AVC overshoot on noise pulses and to provide dual time-constant action. If repairing the circuit shown below, recommend that existing configuration be maintained. Reference part A of service bulletin no 8.

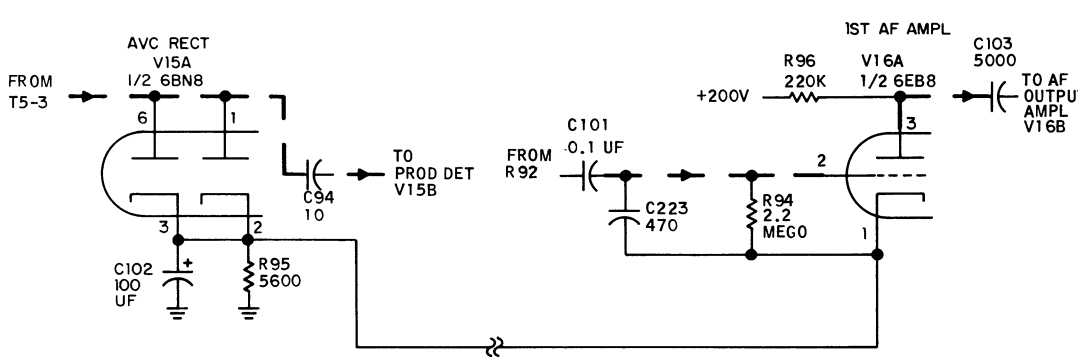
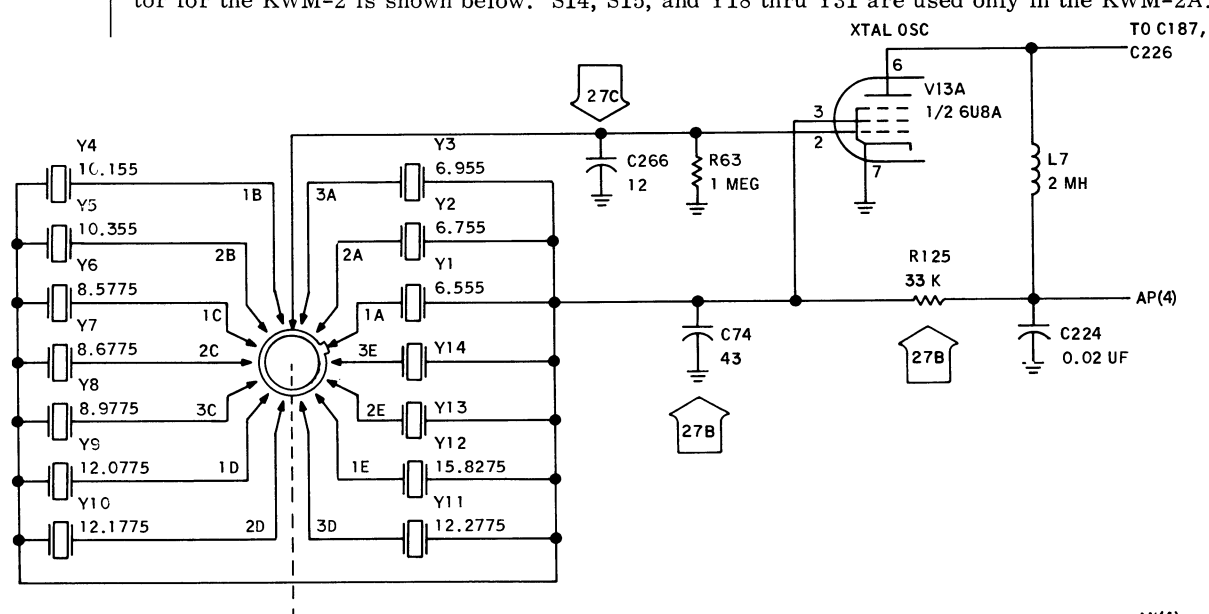


Changes made to the circuit above to produce the circuit shown on the schematic are as follows: C265, 0.01 μF and connected in parallel with R180, was 0.001 μF and connected between the AVC side of R180 and ground; C93, 0.47 μF, was 0.05 μF; R180, 680 kΩ, was 150 kΩ; R83, 1.5 megohms, was 3.3 megohms; and R82-C92 were disconnected from junction of R180-R83 and reconnected to AVC side of R180.

KWM-2 and KWM-2A Transceivers, Schematic Diagram  
Figure 7-1 (Sheet F)



# SCHEMATIC CHANGES AND EQUIPMENT DIFFERENCES

IDENTIFIER	DESCRIPTION
26	<p>Many units have an AVC rectifier bias circuit as shown below. This circuit has been changed to the configuration shown on the schematic to prevent low-frequency audio detection by the AVC rectifier, therefore an audio output, when the AF GAIN control is set at minimum. If repairing the circuit shown below, recommend that same configuration be maintained.</p>  <p>Changes made to the circuit above to produce the circuit shown on the schematic are as follows: R210, 620 k<math>\Omega</math>, added; C275, 0.01 <math>\mu</math>F, added; and cathode of V16A disconnected from cathode V15A and grounded. Reference part B of service bulletin no 8.</p> <p>27</p> <p>R213, 2.2 megohms; CR11, 1N458; and C276, 0.05 <math>\mu</math>F, added. These changes reduce effects of strong adjacent channel SSB signals. If these components are not in the unit, they do not have to be added. Reference part C of service bulletin no 8.</p> <p>27A</p> <p>Y13, Y14, and Y18 thru Y31 are not furnished. These crystals are to be selected by the user.</p> <p>Schematic diagram shows the KWM-2A crystal oscillator configuration. The crystal oscillator for the KWM-2 is shown below. S14, S15, and Y18 thru Y31 are used only in the KWM-2A.</p> 

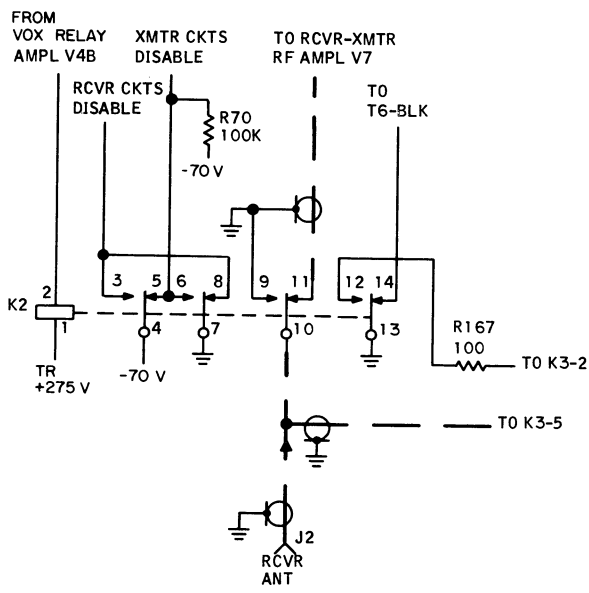
KWM-2 and KWM-2A Transceivers, Schematic Diagram  
Figure 7-1 (Sheet G)

### SCHEMATIC CHANGES AND EQUIPMENT DIFFERENCES

IDENTIFIER	DESCRIPTION
None	Schematic correction, V12B, 6U8A was 6U8.
27B	C74, 43 pF, was 47 pF and R125, 33 kilohms, was 47 kilohms. These changes increase the gain and the feedback of the crystal oscillator. If replacing these components, recommend replacing with the same values removed from your unit. Reference service bulletin no 3 (reissue).
27C	R214, 4700 ohms, was added and R151, 2700 ohms, was 3900 ohms. These changes help equalize crystal oscillator output on all frequency bands. If replacing these components, recommend replacing with the same value removed from your unit.
(see 27A )	C266, 12 pF, was 27 pF. This component found only in KWM-2. This change increases feedback of the crystal oscillator. If replacing this component, recommend replacing with the same value removed from your unit. Reference service bulletin no 3 (reissue).
27D	Changed resistor R125 from 33 k $\Omega$ to 12 k $\Omega$ . Added capacitors: 0.02- $\mu$ F C280, 0.1- $\mu$ F C281; coils: 1-mH L43, 2.2-mH L44; and 1N5383B zener diode CR13. Relocated resistor R125 and capacitor C224 as shown on the schematic diagram. This change improves frequency stability for +12-, +24-, and +28-V dc remote or vehicular operation.
28	C76, 5 to 25 pF, was 3 to 12 pF, 5 to 12 pF, or 2 to 3 pF in some units. This change provides additional tuning range. If replacing this component, recommend replacing with 5 to 25 pF.
29	C267, 5 pF, was 10 pF. This change improves crystal calibration. If replacing this component, recommend replacing with 5 pF.
30	C119, 10 pF, was 2 pF. This change increases crystal calibration output signal. If replacing this component, recommend replacing with 10 pF.
31	C272, 7.5 pF, was 10 pF. This change maintains the same receiver/transmitter rf amplifier plate tuning for receive or transmit operation. If replacing this component, recommend replacing with 7.5 pF.
32	R105, 12 k $\Omega$ , was 22 k $\Omega$ ; C134, 1.5 to 7.0 pF, was 5 to 25 pF; C135, 20 pF, was 33 pF; and C133, 110 pF, was 130 pF. These changes improve the input tuning range of the power amplifier. If replacing any of these components, recommend that same configuration be maintained. If one of these components is replaced with the value shown on the schematic, make sure the value of the remaining three components are those shown on schematic. Replace if necessary.
33	C97, 39 pF, was 27 pF and C121, 270 pF, was 220 pF. These changes improve the neutralization range. If replacing either of these components, recommend that same configuration be maintained. If replacing one of these components with value shown on the schematic, make sure value of the other component is same as shown on the schematic. Replace if necessary.
34	C270, 5 pF, is in a few units. It is selected in manufacturing test for minimum intermodulation distortion. If this component is not in the unit, it does not have to be added.
	C180, 15 pF, was 10 pF. This change helps minimize intermodulation distortion. If replacing this component, recommend replacing with the same value removed from your unit.
	R161 is a test select component; 2200 ohms to 12 k $\Omega$ . The value is selected in manufacturing to calibrate the pa plate current meter (refer to paragraph 4.7 for procedure).

KWM-2 and KWM-2A Transceivers, Schematic Diagram  
Figure 7-1 (Sheet H)

# SCHEMATIC CHANGES AND EQUIPMENT DIFFERENCES

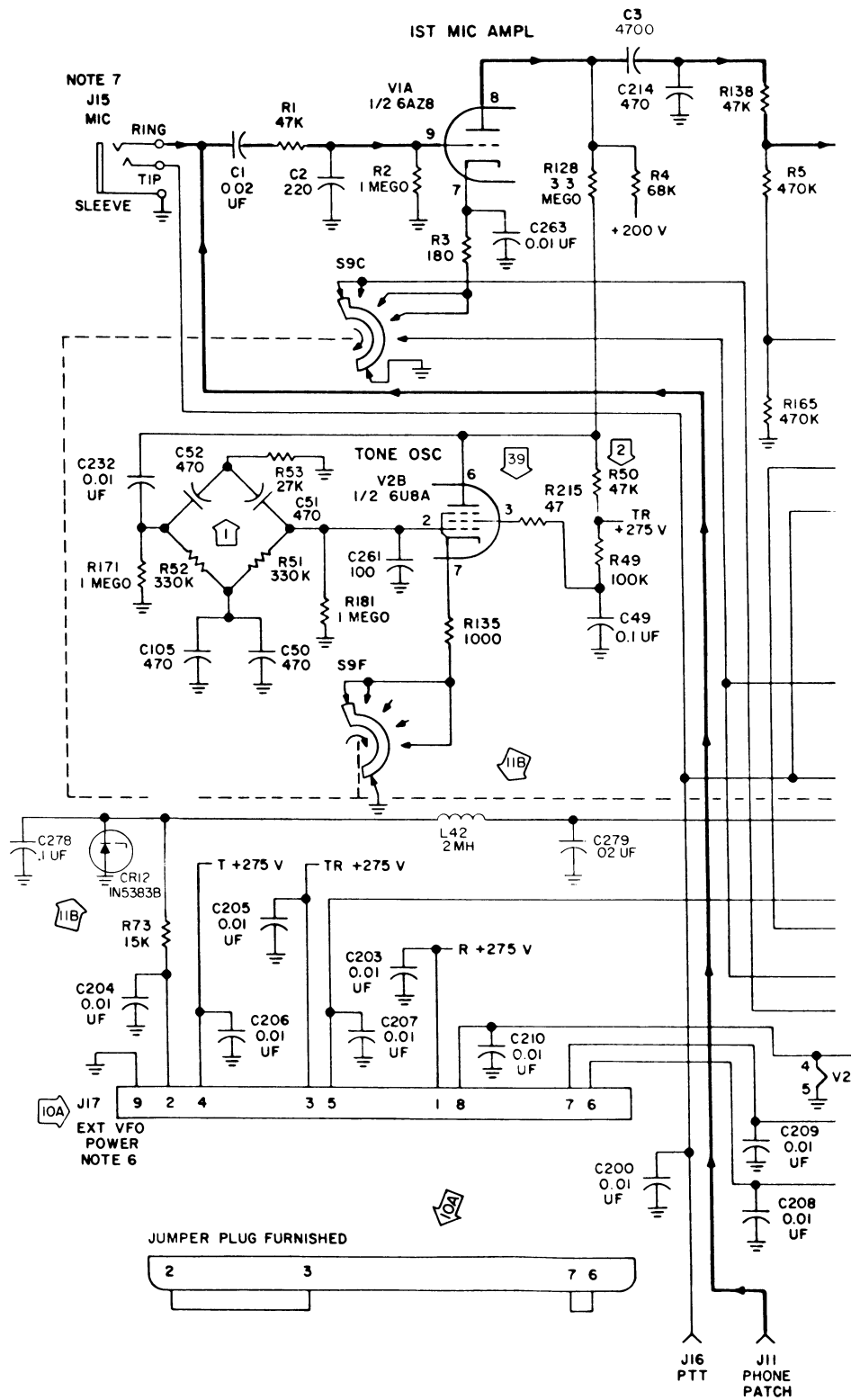
IDENTIFIER	DESCRIPTION
35	R209, 100 ohms, added. This change improves isolation between af output and the antiVOX circuits. If this component is not in the unit, it does not have to be added.
35A	R182, 47 ohms, was 68 ohms. This change was made to prevent af output amplifier from oscillating, effective CI 72196. When replacing R182, recommend replacing with 47-ohm resistor.
36	<p>K2 and K4, enclosed type, were open-telephone type relays. The circuits for the enclosed type are shown on the schematic. The open-telephone relay circuits are shown below for K2 and on the following page for K4. This change reduces relay failure in severe environment. The two types of relays are not interchangeable. If repairing relay K2 or K4 circuits, check the relay type; and if old relays are used, install service bulletin no 7 (reissue).</p> 
None	Schematic corrections; R170, 100 kΩ, was R70, 100 kΩ; V8-3 was V8-8; and V8-8 was V8-3.
36A	Ungrounded receive antenna shield at K2-9. This change eliminates oscillations on the receive antenna line when the KWM-2/2A is operated around 28 MHz. If your unit is operated around the above frequency and you encounter the oscillations, unground the shield at the K2-9 end of the receive antenna line. If this problem does not pertain to your unit, do not make the change.
36B	C227, 0.01 μF, was added. This change provides a high-frequency bypass and eliminates ultrasonic oscillations that cause increased noise and audio distortion. If this component is not in your unit, it is recommended that you add it.
36 (Cont)	Refer to 36 above for a description of the change in K4 relay from open telephone (shown on next page) to enclosed (shown on the schematic).

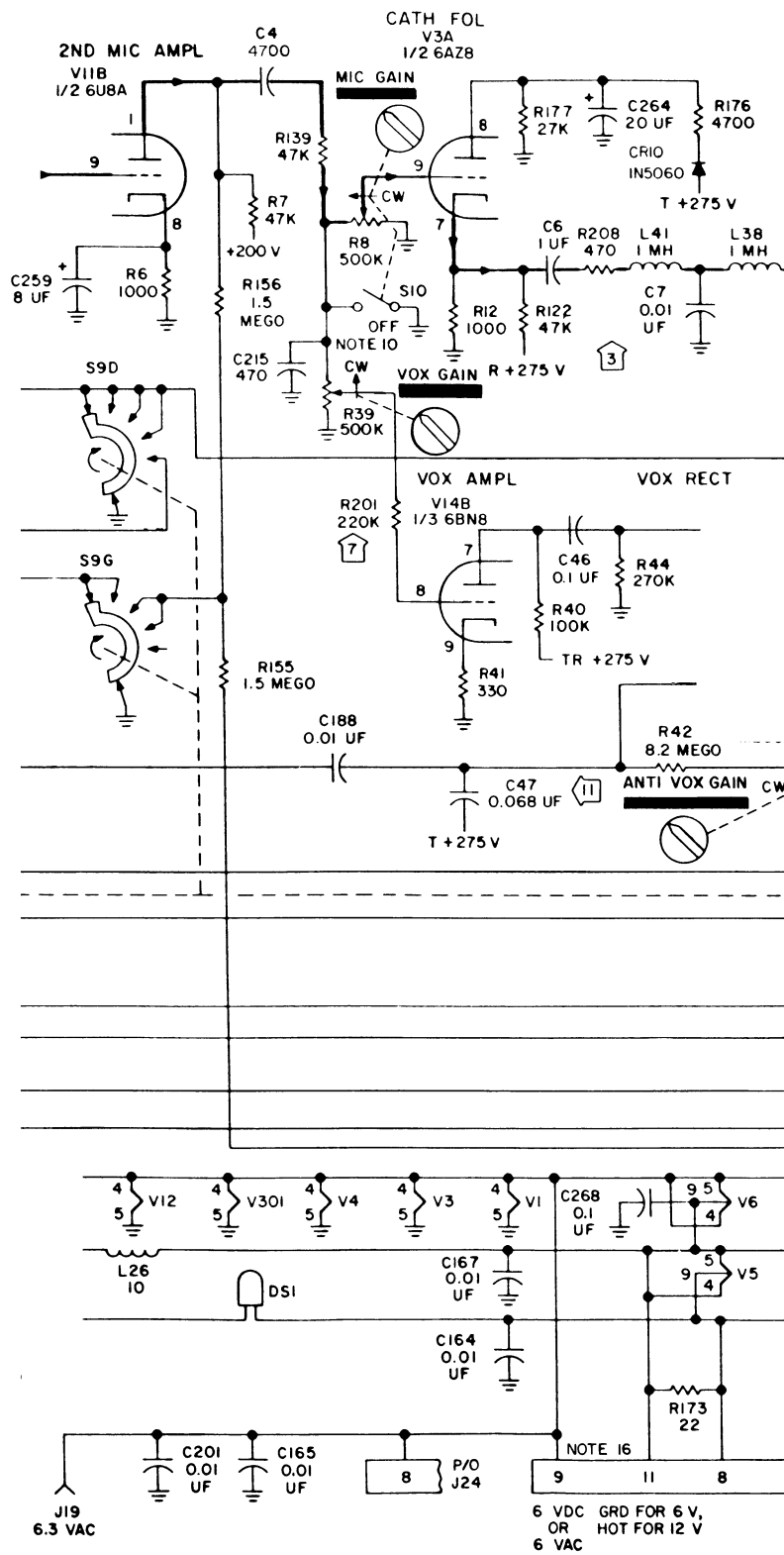
KWM-2 and KWM-2A Transceivers, Schematic Diagram  
Figure 7-1 (Sheet I)

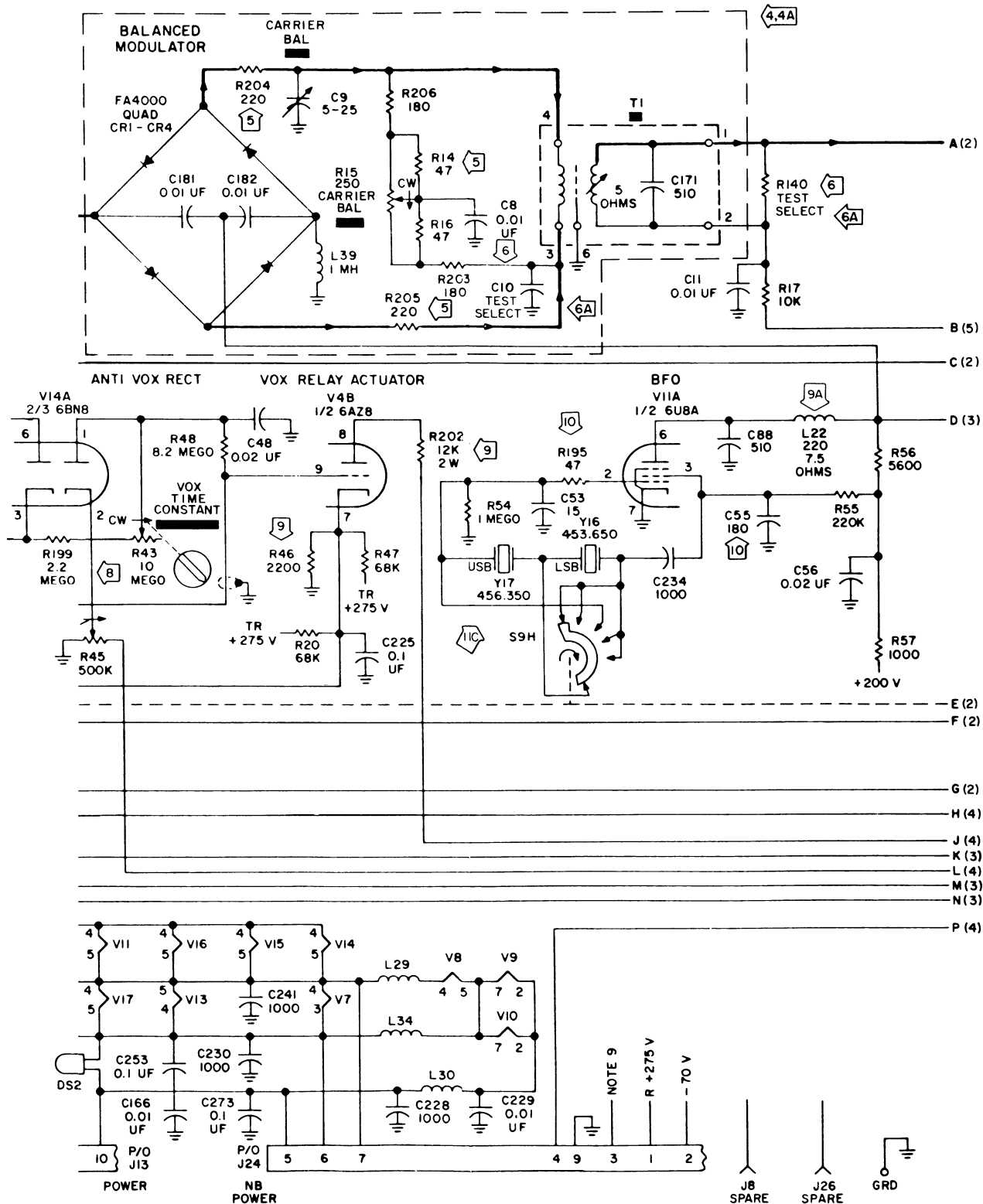
## SCHEMATIC CHANGES AND EQUIPMENT DIFFERENCES

IDENTIFIER	DESCRIPTION
<div data-bbox="139 308 193 405">36 (Cont)</div>	<p>VFO FROM V2A VFO FROM V17B</p> <p>AVC OR ALC TO V7</p> <p>ALC LINE</p> <p>METER SHUNT R158</p> <p>ALC-GRID-PLATE SW S12 METER SHUNT R158</p> <p>ALC-GRID-PLATE SW S12 TO K3-1</p> <p>TO K3-2</p> <p>C211 0.1 UF</p> <p>R157 68</p> <p>R86 2500</p> <p>C106B 30</p> <p>+200 V</p> <p>C108 0.01 UF</p> <p>R101 47</p> <p>T0 J13-7</p> <p>T0 J13-6</p> <p>Corrected schematic diagram error. Connector J26 was inadvertently called J28.</p> <p>R211, 470 ohms, added and R190, 1500 ohms, was 2200 ohms. These changes shift the ALC line bias to reduce transmit gain variations between LSB, USB, and CW positions versus TUNE and LOCK positions of the EMISSION control. If repairing this circuit, recommend that same configuration be maintained.</p>
None	Restated all notes.
38	C155, 63- to 320 pF variable capacitor, was 15- to 120-pF variable capacitor. This change improves pa output loading on 15- and 10-meter bands. If replacing this component, recommend replacing with 63- to 320-pF variable capacitor.
39	R215, 47 ohms, is added in series with the screen grid of tone oscillator V2B to act as a parasitic suppressor.

*KWM-2 and KWM-2A Transceivers, Schematic Diagram  
Figure 7-1 (Sheet J)*

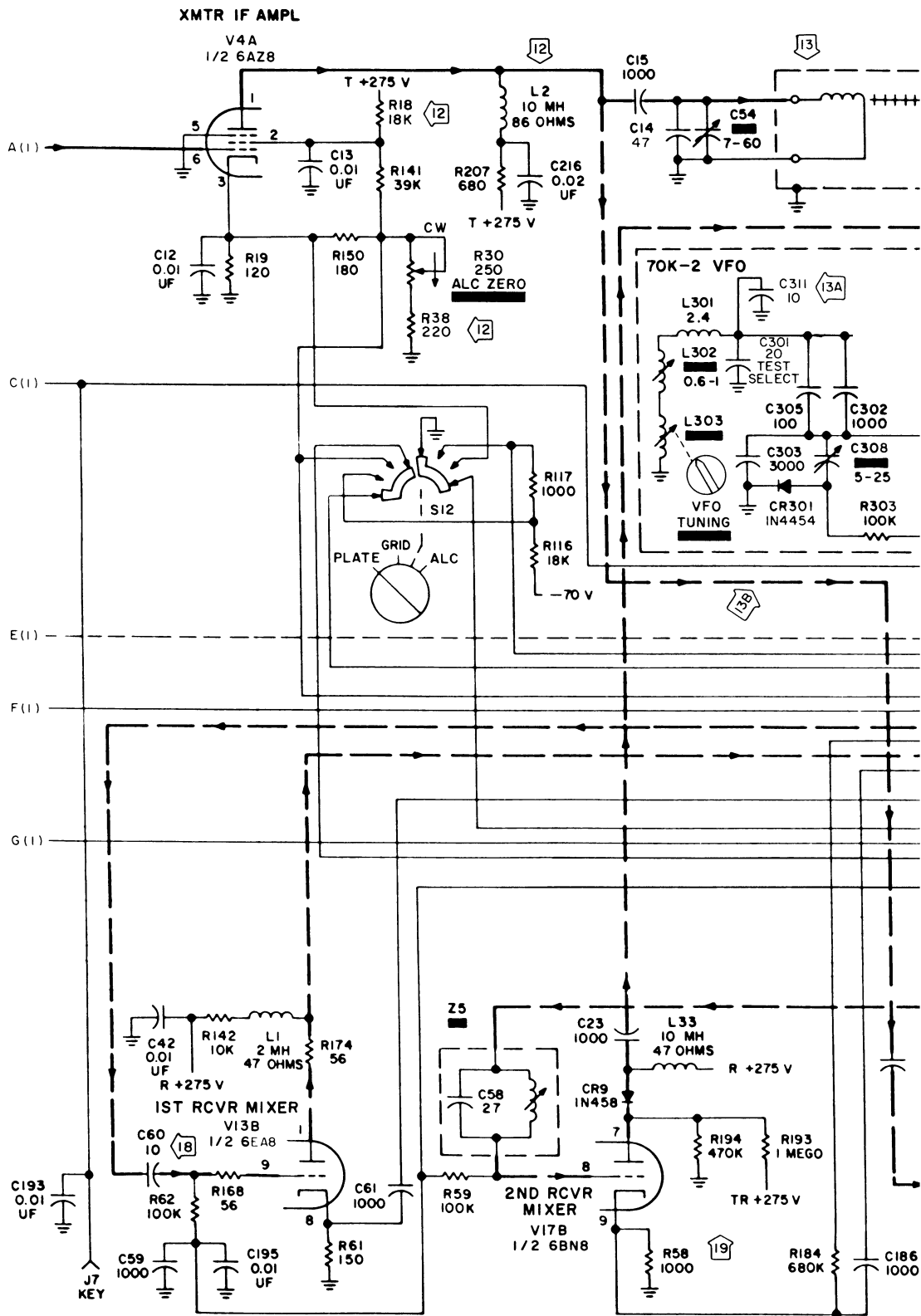




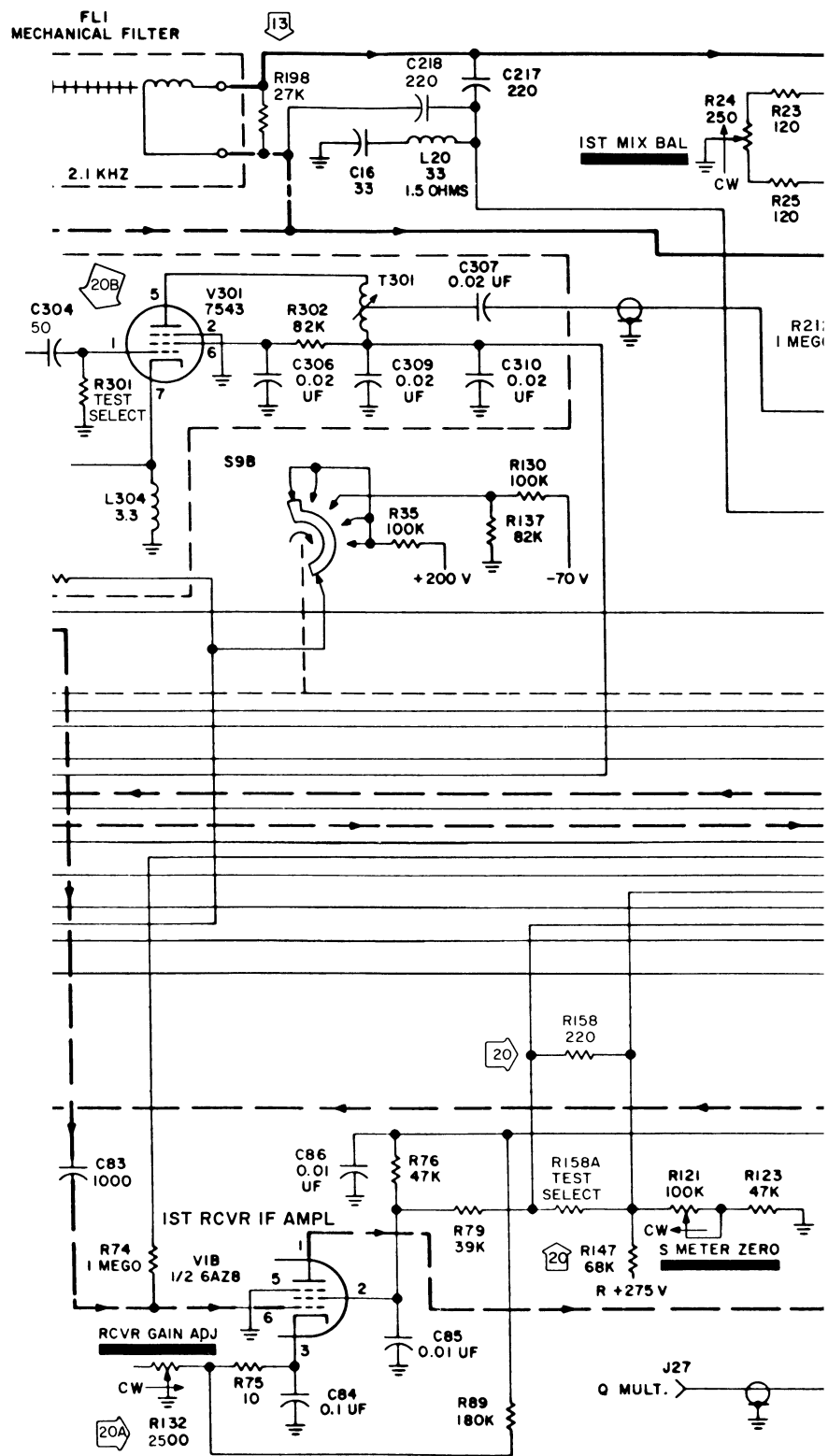


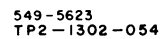
549-5623  
TP2-1302 054

KWM-2 and KWM-2A Transceivers, Schematic Diagram  
Figure 7-1 (Sheet 1 of 5)

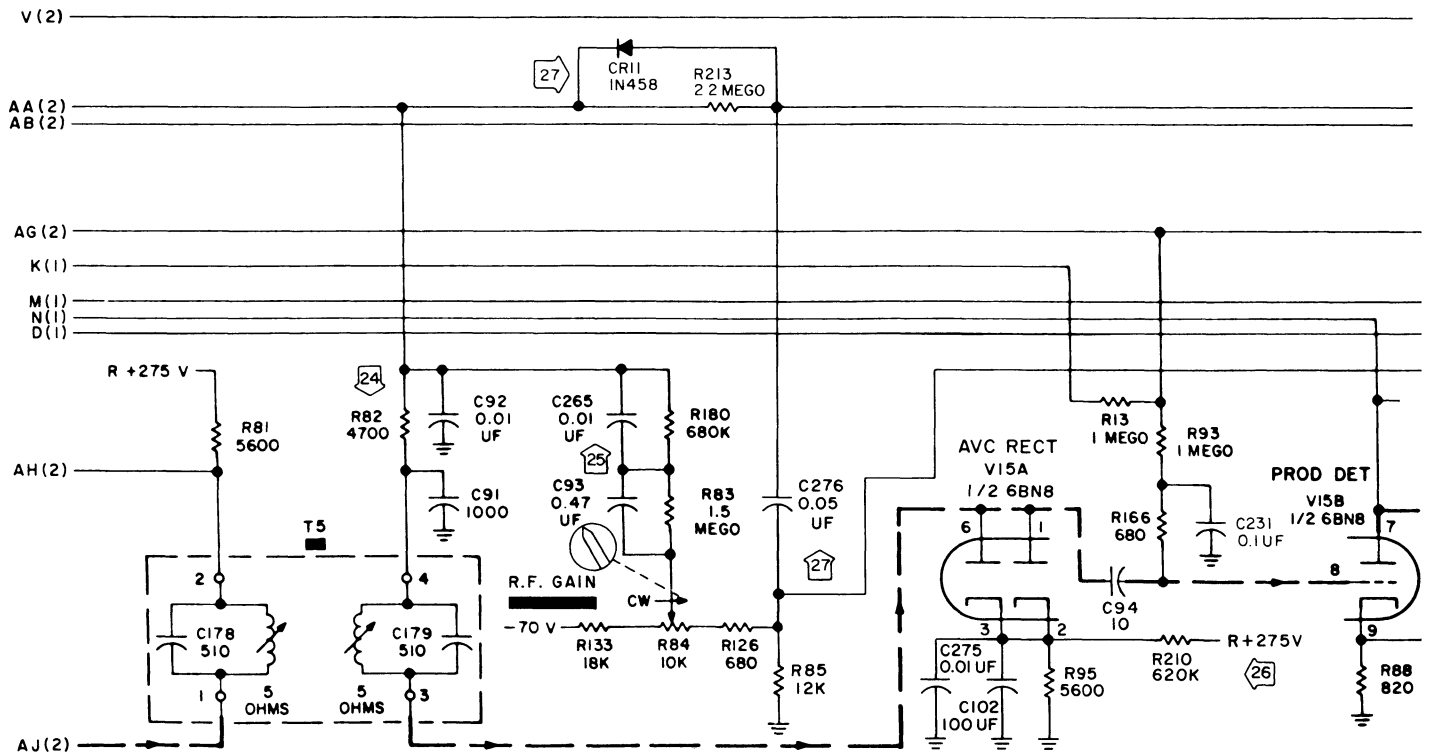
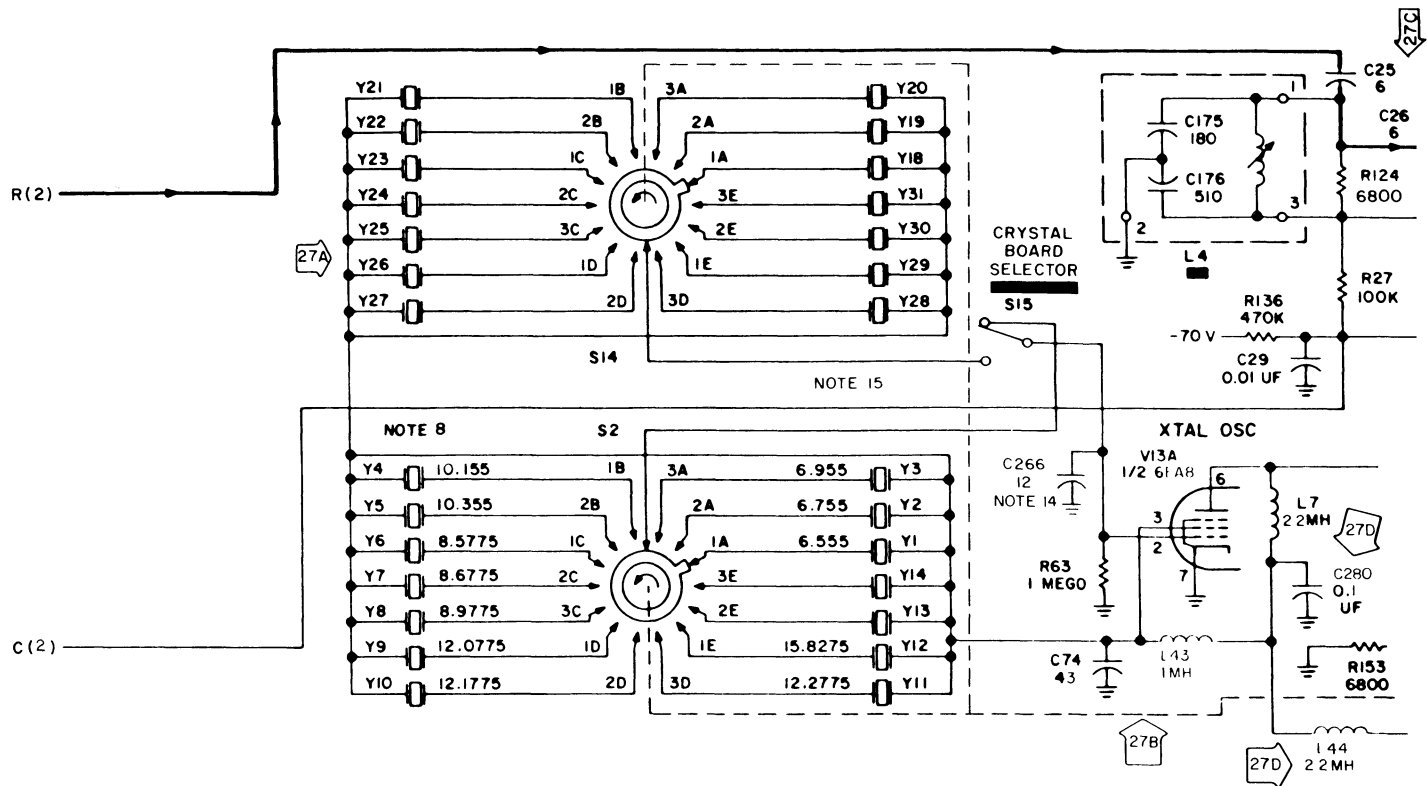


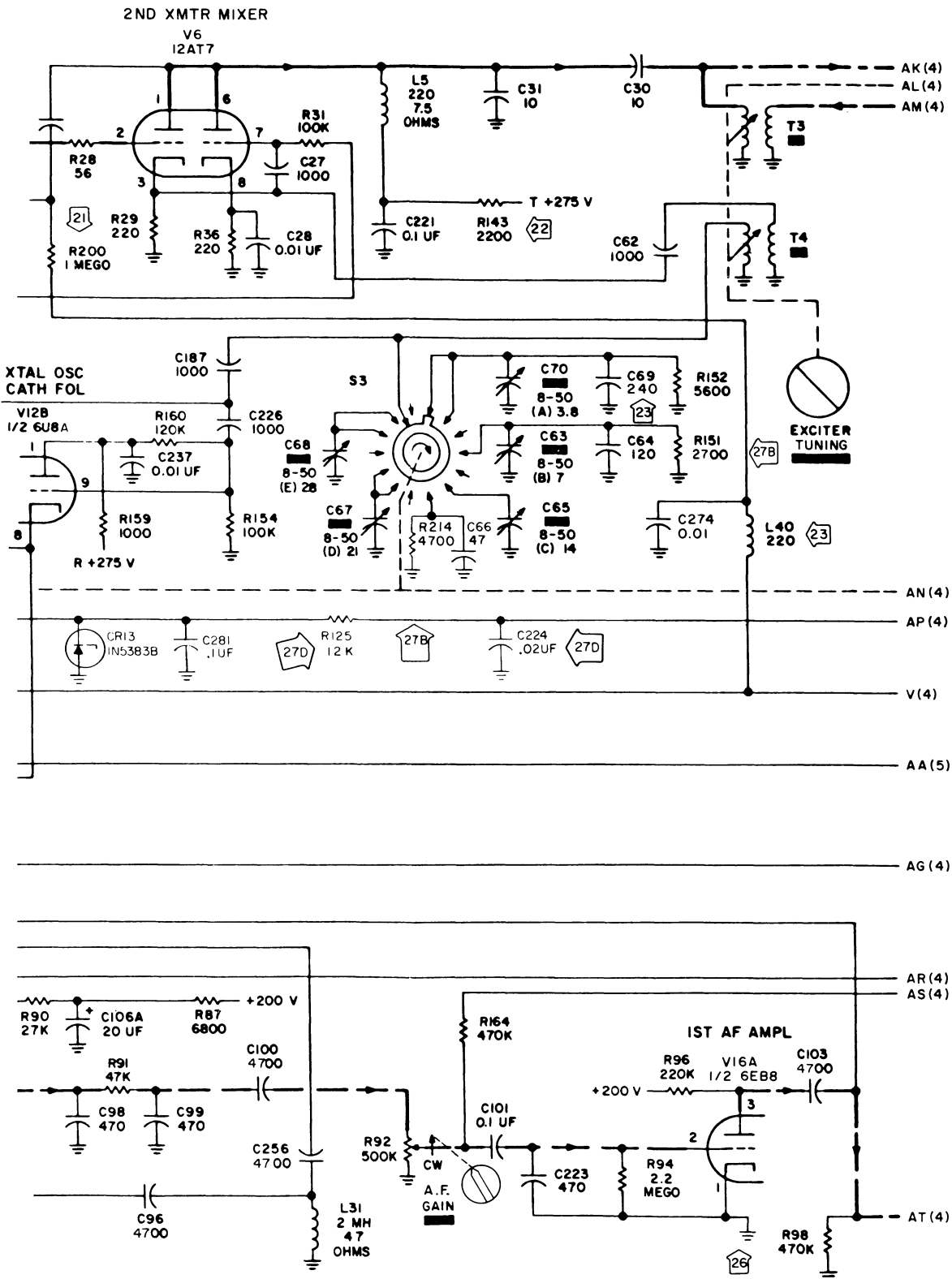






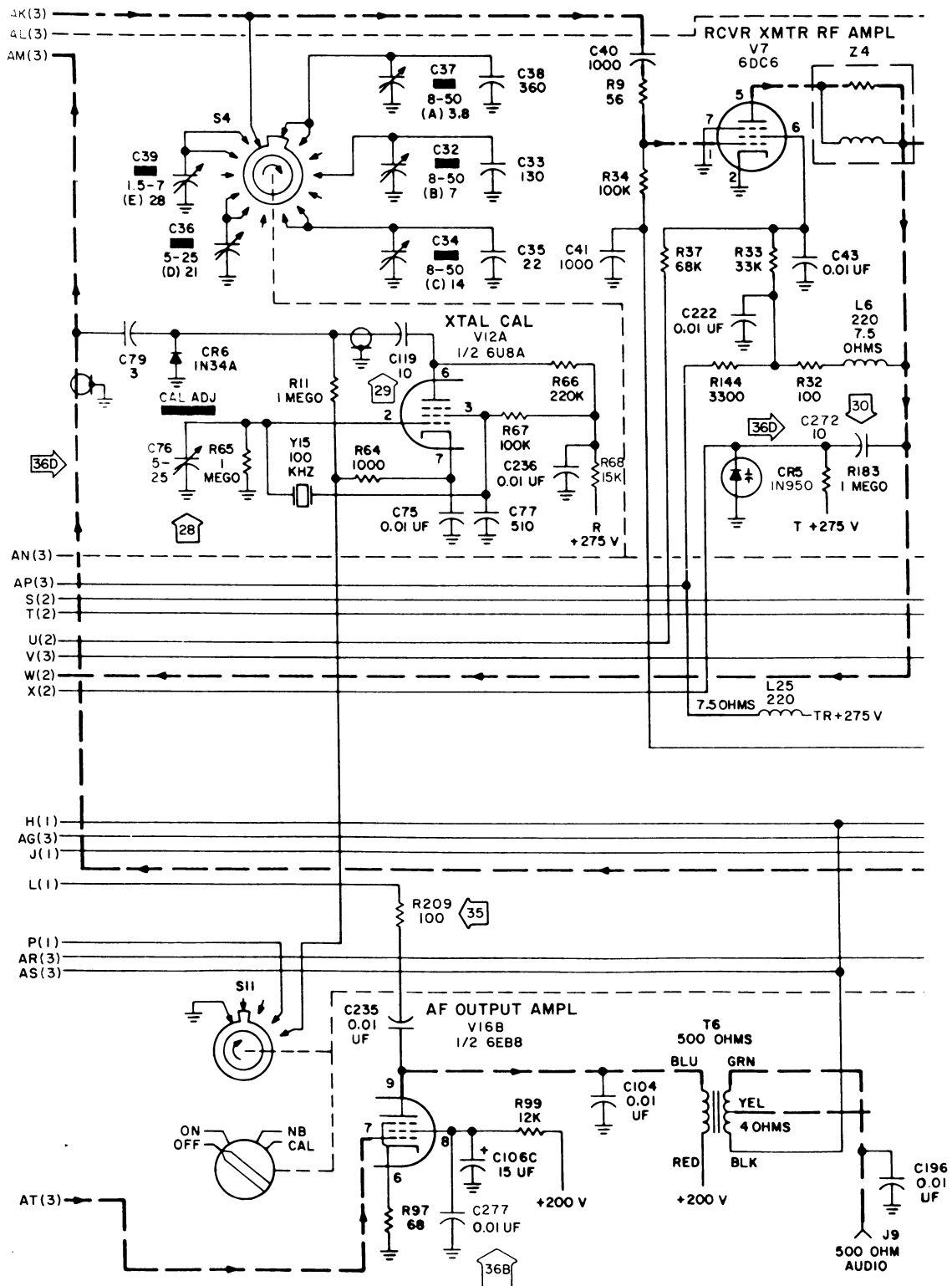
*KWM-2 and KWM-2A Transceivers, Schematic Diagram*  
*Figure 7-1 (Sheet 2)*

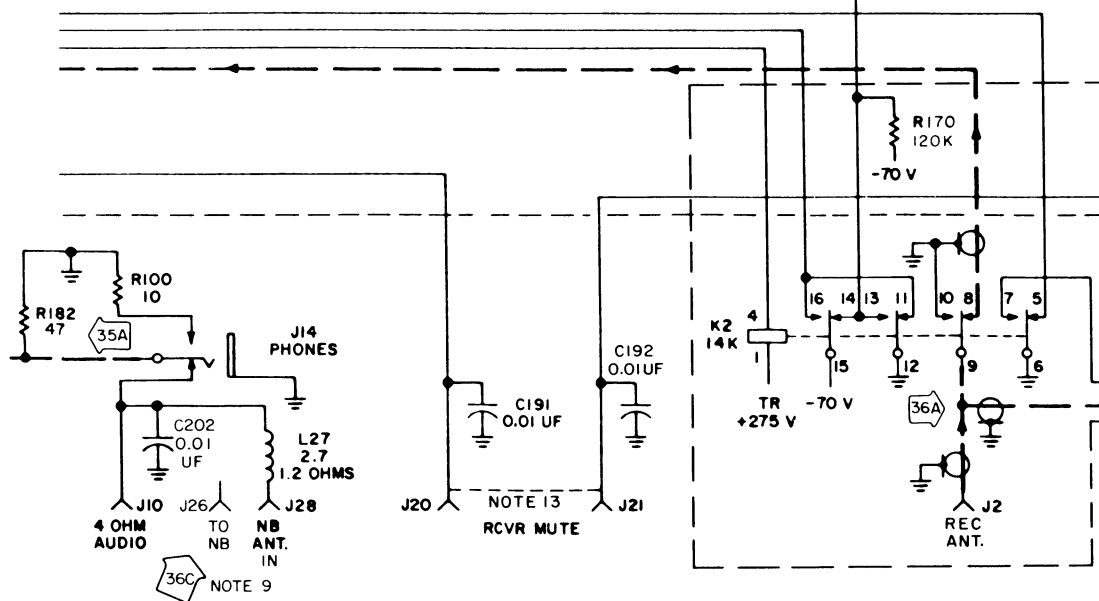
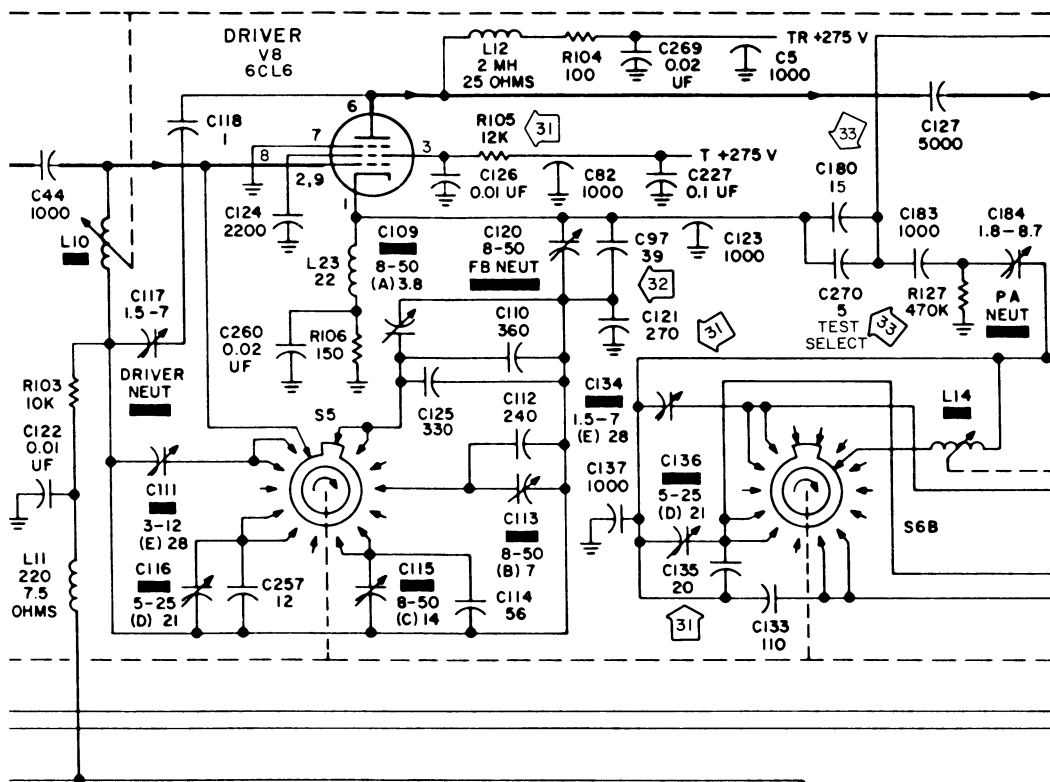


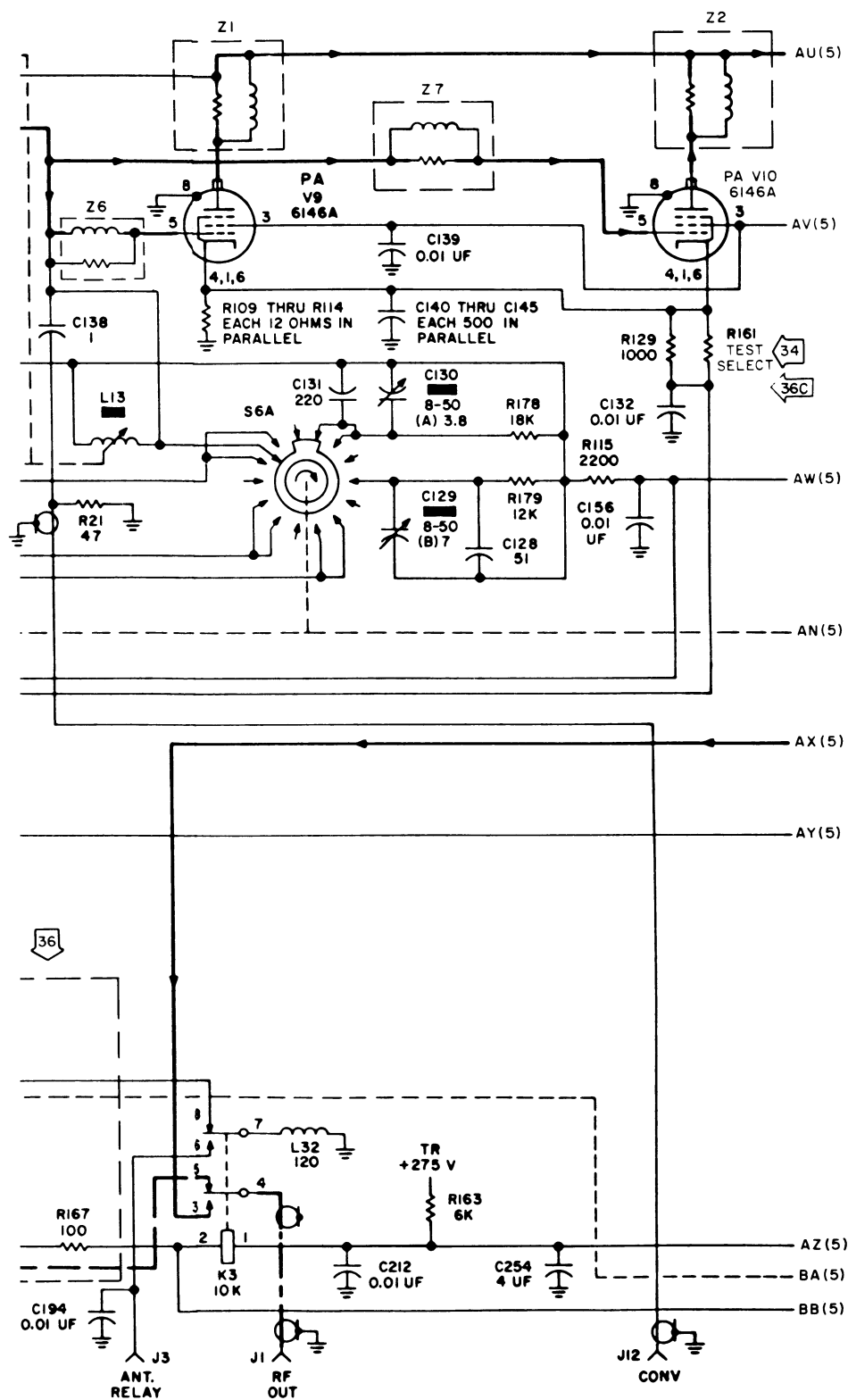


549-5623  
TP2-1302-054

KWM-2 and KWM-2A Transceivers, Schematic Diagram  
Figure 7-1 (Sheet 3)

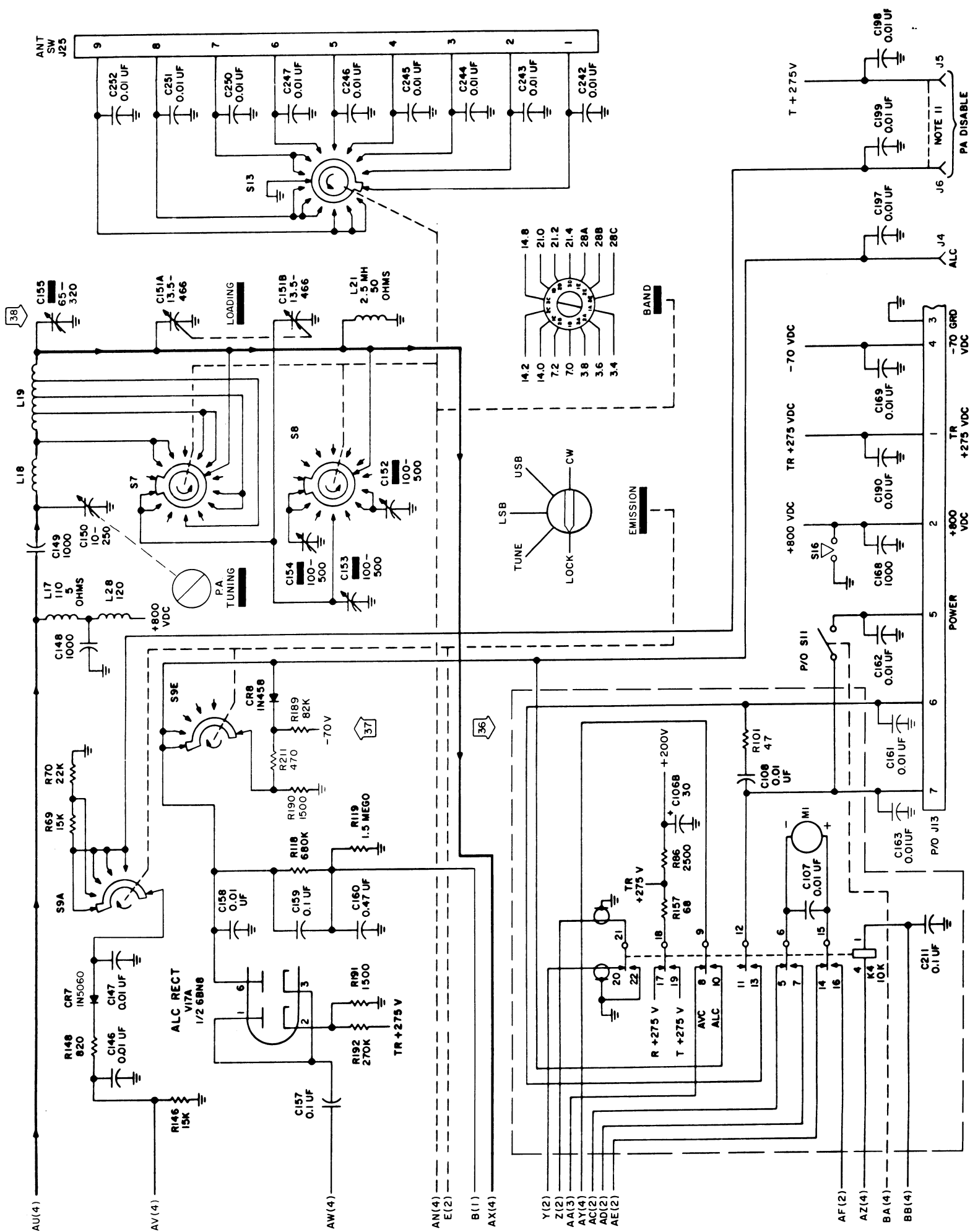






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KWM-2 and KWM-2A Transceivers, Schematic Diagram  
Figure 7-1 (Sheet 4)





NOTES:

1. READ WIRE DESTINATIONS AS FOLLOWS:

R (4)  
LINE        SCHEMATIC SHEET NO.

2. UNLESS OTHERWISE INDICATED, RESISTANCE VALUES ARE IN OHMS, CAPACITANCE VALUES ARE IN PICO FARADS, AND INDUCTANCE VALUES ARE IN MICROHENRYS.

3. T AND R DESIGNATIONS ON SUPPLY VOLTAGE LINES INDICATE THAT VOLTAGE IS PRESENT DURING TRANSMIT AND/OR RECEIVE.

4. INDUCTOR AND TRANSFORMER DC RESISTANCE VALUES LESS THAN 10HM ARE NOT SHOWN.

5. SIGNAL PATH LEGEND:

TRANSMIT —————  
RECEIVE -----  
TRANSMIT AND RECEIVE -----

6. WHEN EXTERNAL VFO IS NOT USED, JUMPER J17 PINS 2 AND 3, 6 AND 7.

7. MIKE JACK J15 MATES WITH PLUG PL-68 OR EQUIVALENT.

8. BAND SWITCHES ARE SHOWN AT 3.4 MHZ.

9. A. FOUR OHM AUDIO IS COUPLED TO NB ANT J28 FOR USE WITH 351D-1 MOBILE MOUNT.

B. REFER TO 136B-2 INSTRUCTION BOOK FOR CONNECTIONS REQUIRED AT J24-3 AND AT J26 WHEN NOISE BLANKER IS USED.

10. S10 CLOSED AT MAXIMUM CCW POSITION OF R8.

11. J5 AND J6 JUMPERED UNLESS VHF CONVERTERS ARE USED.

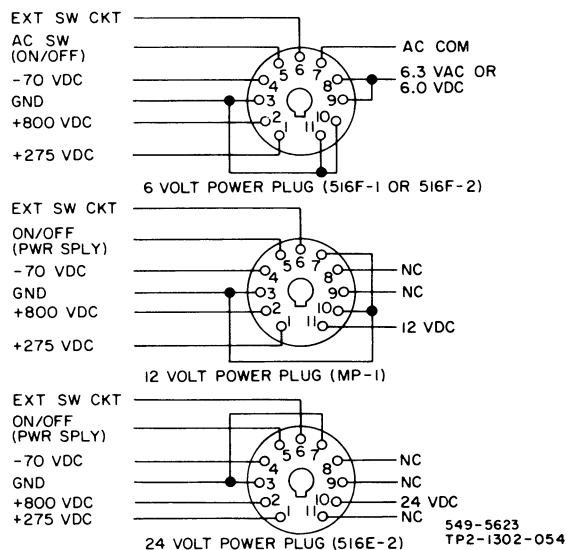
12. J22 AND J23 JUMPERED UNLESS NOISE BLANKER IS USED.

13. J20 AND J21 JUMPERED UNLESS EXTERNAL SWITCH IS USED TO MUTE RECEIVER.

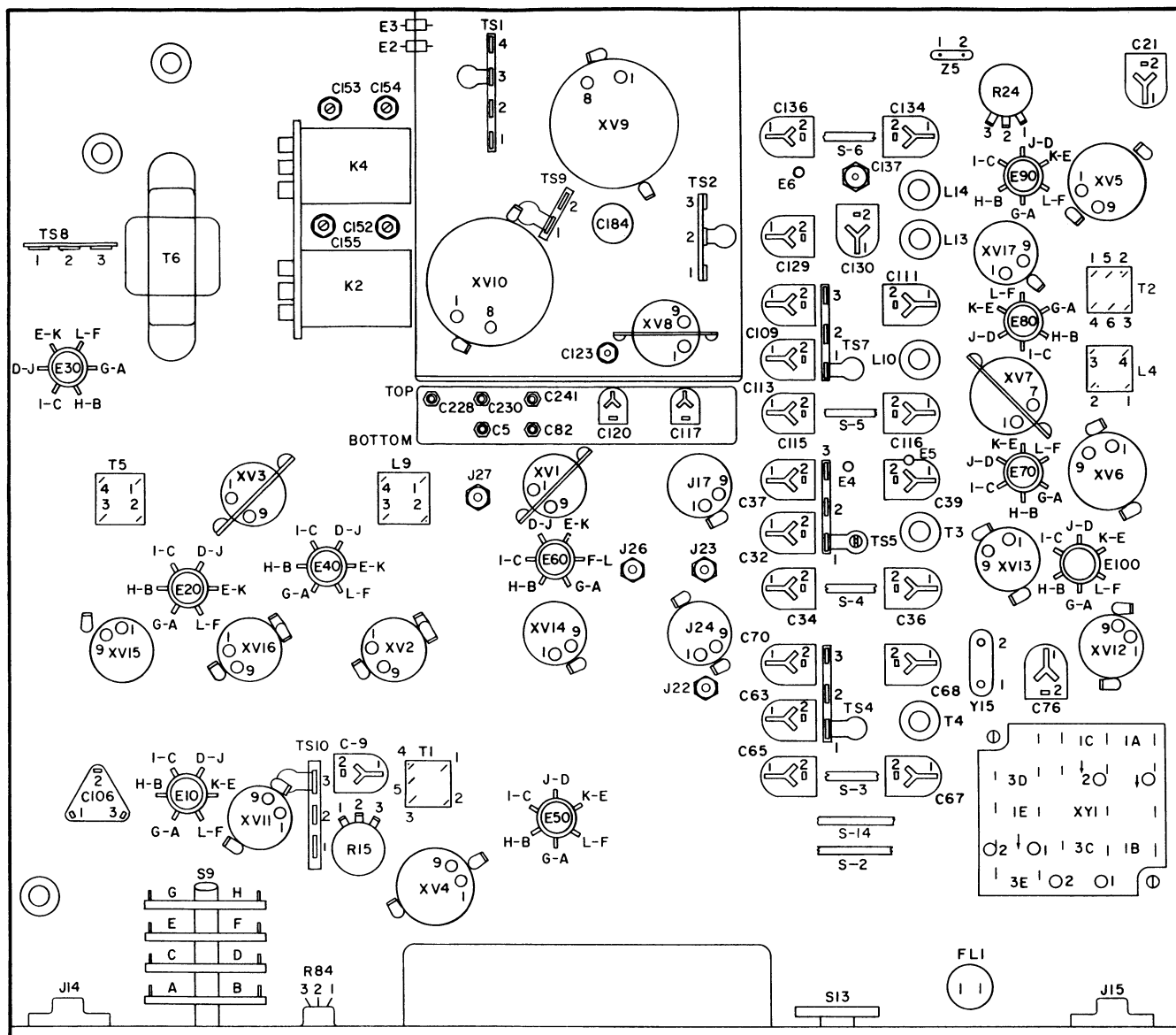
14. C266 IS INSTALLED IN KWM-2 ONLY.

15. S14, S15 AND HOLDERS FOR CRYSTALS Y18 THRU Y31 ARE INSTALLED IN KWM-2A ONLY.

16. EXTERNAL POWER CONNECTIONS MADE TO THE KWM-2/2A ARE AS FOLLOWS:



KWM-2 and KWM-2A Transceivers, Schematic Diagram  
Figure 7-1 (Sheet 5)

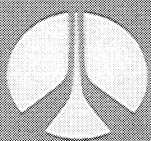


C 487-35-4

K4			
22	12	13	1 WHT-BLK-RED-GRN AND R167
20	21	11	2
19	9	10	3 WHT-RED-ORN AND R157
17	18	8	4 WHT-BRN-RED-GRN
16	6	7	5 WHT-ORN-BLU
14	15	5	6 WHT-BLK-BLU
4	3	1	7 WHT-BLK-RED-ORN
			8 WHT-GRN-BLU
			9 WHT-BLU
			10 WHT-BLK-RED (2)
			11 NO CONN
			12 WHITE AND C108
			13 BLACK AND R101
			14 WHT-ORN-GRN
			15 WHT-ORN-GRN-BLU
			16 WHT-RED-BLU
			17 WHT-ORN
			18 BUS TO TIE POINT
			19 WHT-RED (2)
			20 COAX, 75 OHMS
			21 COAX, 50 OHMS
			22 STRAP TO GRD AND BUS TO COAX SHIELD

	K2		
1 WHT-RED-ORN (3)	16	9	10
4 WHT-RED	14	15	8
5 WHT-BLK (2)	13	6	7
6 BUS TO GRD	11	12	5
7 R167			
8 COAX	4		1
9 COAX (2) VIOLET AND ORN DOTS			
10 STRAP TO GRD AND BUS TO COAX SHIELDS			
11 BUS TO PIN 16, WHT-BRN-ORN			
12 WHT TO GRD			
13 BUS TO PIN 14 AND TIE POINT			
14 BUS FROM PIN 13			
15 BUS TO TIE POINT			
16 BUS FROM PIN 11			

KWM-2 and KWM-2A, Location of Chassis Mounted Components, Bottom View  
Figure 7-2



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International