NAVSHIPS 0967-032-0010

VOLUME I

TECHNICAL MANUAL

for

RADIO TRANSMITTER T-827/URT

DEPARTMENT OF THE NAVY
BUREAU OF SHIPS

Publication: 15 August 1966

LIST OF EFFECTIVE PAGES

PAGE NUMBERS	CHANGE IN EFFECT	PAGE NUMBERS	CHANGE IN EFFECT
Title Page	Original	4-1 to 4-138	Original
ii to iii	Original	5-1 to 5-200	Original
1-0 to 1-14	Original	6-1 to 6-80	Original
2-1 to 2-8	Original	i-0 to i-6	Original
3-1 to 3-2	Original		

GENERAL DYNAMICS
Electronics Division

1400 N. GOODMAN ST.
ROCHESTER 1, N.Y.

CONTRACT NO.
NObsr 93015

Errors found in this publication (other than obvious typographical errors), which have not been corrected by means of Temporary Corrections or Permanent Changes should be reported. Such report should include the complete title of the publication and the publication number (short title); identify the page and line or figure and location of the error; and be forwarded to the Electronics Publications Section of the Bureau of Ships.

All Navy requests for NAVSHIPS electronics publications listed in the current issue of NAVSANDA Publication 2002 "Requisitioning Guide and Index of Forms and Publications", Cognizance Symbol I, or in a subsequent issue of the Electronics Information Bulletin, should be directed to the appropriate Forms and Publications Supply Point.

TABLE OF CONTENTS

TABLE OF CONTENTS (Cont)

TABLE OF CONTENTS (Cont)

TABLE OF CONTENTS (Cont)

TABLE OF CONTENTS (Cont)

LIST OF ILLUSTRATIONS

LIST OF ILLUSTRATIONS (Cont)

LIST OF ILLUSTRATIONS (Cont)

LIST OF ILLUSTRATIONS (Cont)

LIST OF ILLUSTRATIONS (Cont)

LIST OF TABLES

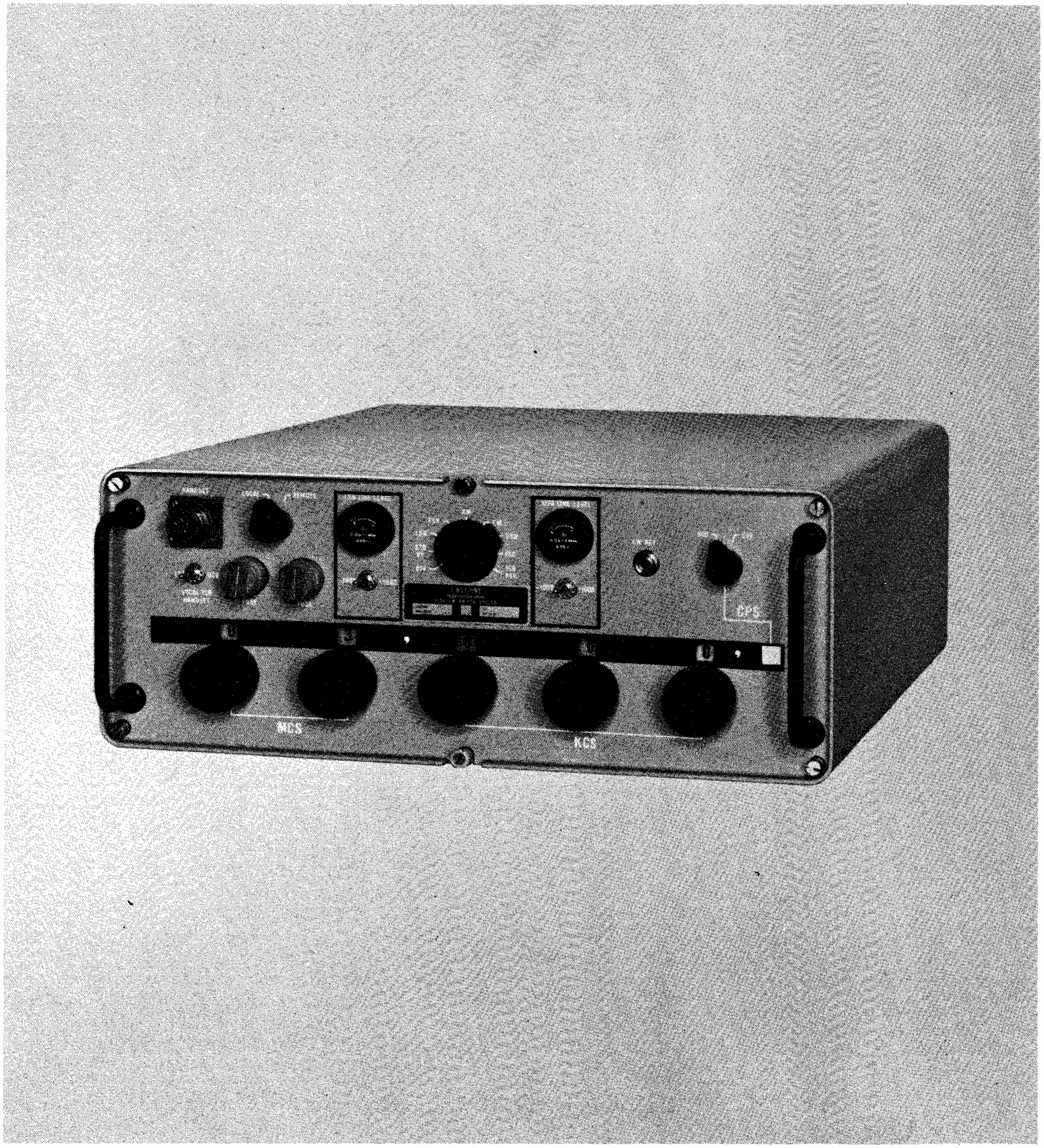


Figure 1-1. Radio Transmitter T-827/URT

SECTION 1

GENERAL INFORMATION

1-1. SCOPE.

1-2. This Technical Manual is in effect upon receipt. Extracts from this publication may be made to facilitate the preparation of other Department of Defense publications.

1-3. Volume I of this Technical Manual describes Radio Transmitter T-827/URT and covers installation, troubleshooting procedures, maintenance procedures and a parts list for these equipments. Operating procedures are contained in Volume II of this Technical Manual.

1-4. GENERAL DESCRIPTION.

1-5. The Radio Transmitter T-827/URT (T-827/URT) is a digitally tuned, single sideband (SSB) transmitter capable of transmitting on any one of 56,000 frequencies, spaced in 0.5 kilocycle (kc) increments, in the 2.0 to 29.9995-megacycle (mc) frequency range. The T-827/URT is capable of transmitting upper sideband (USB), lower sideband (LSB), continuous wave (CW), compatible amplitude modulated (compatible AM), frequency shift keyed (FSK), and independent sideband (ISB) signals. The ISB mode of operation allows two different types of intelligence to be transmitted simultaneously. The FSK mode is obtained by using suitable ancillary teletypewriter equipment. Tone modulated continuous wave (MCW) and and facsimile transmissions may also be made with the T-827/URT.

1-6. The T-827/URT is intended primarily for use as a driver for a linear radio frequency power amplifier for ship and shore installations. The T-827/URT may be mounted in a standard 19-inch rack or may be stack mounted with other equipment. For shipboard installations, the T-827/URT must be provided with appropriate shock and vibration isolation mounting.

1-7. REFERENCE DESIGNATIONS.

1-8. Table 1-1 lists the reference designations for all electronic assemblies and subassemblies contained in the T-827/URT.

1-9. DESCRIPTION OF T-827/URT.

1-10. FUNCTION. The function of the T-827/URT is to provide a USB, ISB, LSB, CW, FSK, or a compatible AM rf signal of sufficient power to drive a power amplifier such as the AM-3924/URT or the AM-3007/URT. The operating frequency range of the T-827/URT is from 2.0 to 29.9995 mc.

1-11. PHYSICAL CHARACTERISTICS. The T-827/URT (figure 1-1) is housed in a metal case. The front panel is secured to the case by six (6) captive screws. The chassis is mounted to the case on two (2) roller-type slides (one on each side) to facilitate withdrawal from the case. When fully extended from the case, the chassis may be tilted upward 90 degrees for inspection or servicing. All operating controls and indicators are mounted on the front panel. Handles, one on each side, are secured to the front panel to facilitate the withdrawal of the chassis from the case and for transporting the equipment. The chassis contains the chain drive mechanism for tuning, the receptacles for connection of the plug-in electronic assemblies, and a power supply (see figures 1-2 and 1-3).

1-12. ELECTRICAL CHARACTERISTICS. The T-827/URT is a low level transmitter, which produces a nominal 0.1 watt rf output, making it capable of driving a power amplifier such as the AM-3924/URT or the AM-3007/URT. The T-827/URT employs a digital tuning scheme for automatically tuning to any one of 56,000 frequencies in 500 cps steps in the 2.0 to 29.9995 mc frequency range. All circuits of the T-827/URT (except two rf amplifier stages) use solid-state devices. These circuits are assembled into plug-in electronic assemblies. The frequency generation circuits, which are referenced to an ultra-stable master frequency standard with a stability better than 1 part 10^8 per day provide an extremely stable transmitter output.

TABLE 1-1. RADIO TRANSMITTER T-827/URT, REFERENCE DESIGNATIONS

ELECTRONIC ASSEMBLY OR SUBASSEMBLY	DESIGNATIONS
Case	A1
Chassis and Front Panel	A2
Transmitter Mode Selector	A2A1
Transmitter Audio Amplifier	A2A2 and A2A3
RF Amplifier	A2A4
Frequency Standard	A2A5
Translator/Synthesizer	A2A6
MC Synthesizer	A2A6A1
100 KC Synthesizer	A2A6A2
1 and 10 KC Synthesizer	A2A6A3
500 CPS Synthesizer	A2A6A4
Spectrum Generator	A2A6A5
RF Translator	A2A6A6
Code Generator	A2A7
Power Supply	A2A8
FSK Tone Generator	A2A9
Transmitter IF. Amplifier	A2A12

1-13. REFERENCE DATA.

1-14. The following data are the electrical characteristics of the T-827/URT:

a. Frequency range: 2.0000 to 29.9995 mc, in 0.5 kc increments.

b. Frequency stability: 1 part in 10^8 per day.

c. Modes of operation: USB, LSB, ISB, FSK, ISB/FSK (ISB with FSK on USB) CW, and compatible AM.

d. Type of frequency control: crystal controlled synthesizers referenced to a 5 mc internal or external frequency standard.

e. Intermodulation distortion: -35 db maximum at 0.1 watt output.

f. Carrier suppression: -50 db.

g. Power output: 0.25 watt minimum.

h. Power consumption: 65 watts.

i. CW mode: on carrier.

j. FSK mode: 850 cps total shift on a selectable center frequency (2000 or 2550 cps).

k. Primary power requirements: 115 vac $\pm$ 10 percent, single phase, 48 to 450 cps.

l. Output impedance: 50 ohms.

1-15. CRYSTAL COMPLEMENT.

1-16. Table 1-2 lists the crystal complement of the T-827/URT.

1-17. EQUIPMENT SUPPLIED.

1-18. The equipment supplied with the T-827/URT is listed in table 1-3.

1-19. EQUIPMENT AND PUBLICATIONS REQUIRED BUT NOT SUPPLIED.

1-20. The equipment and publications required but not supplied with the T-827/URT are listed in table 1-4.

1-21. EXTENDER TEST CABLE DATA.

1-22. Table 1-5 is a list of pertinent extender test cable data for the T-827/URT.

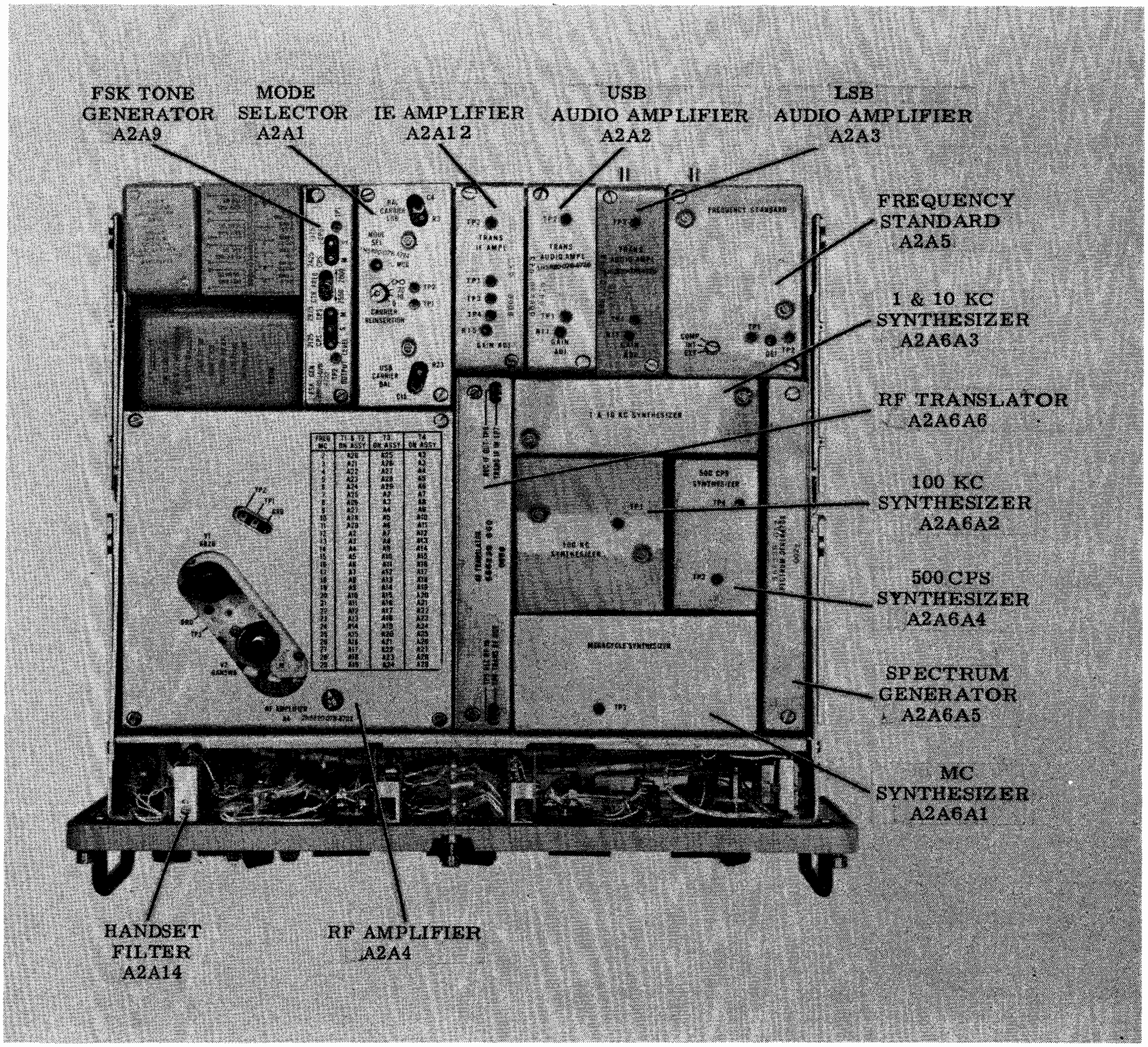


Figure 1-2. Radio Transmitter T-827/URT, Top View, Case Removed

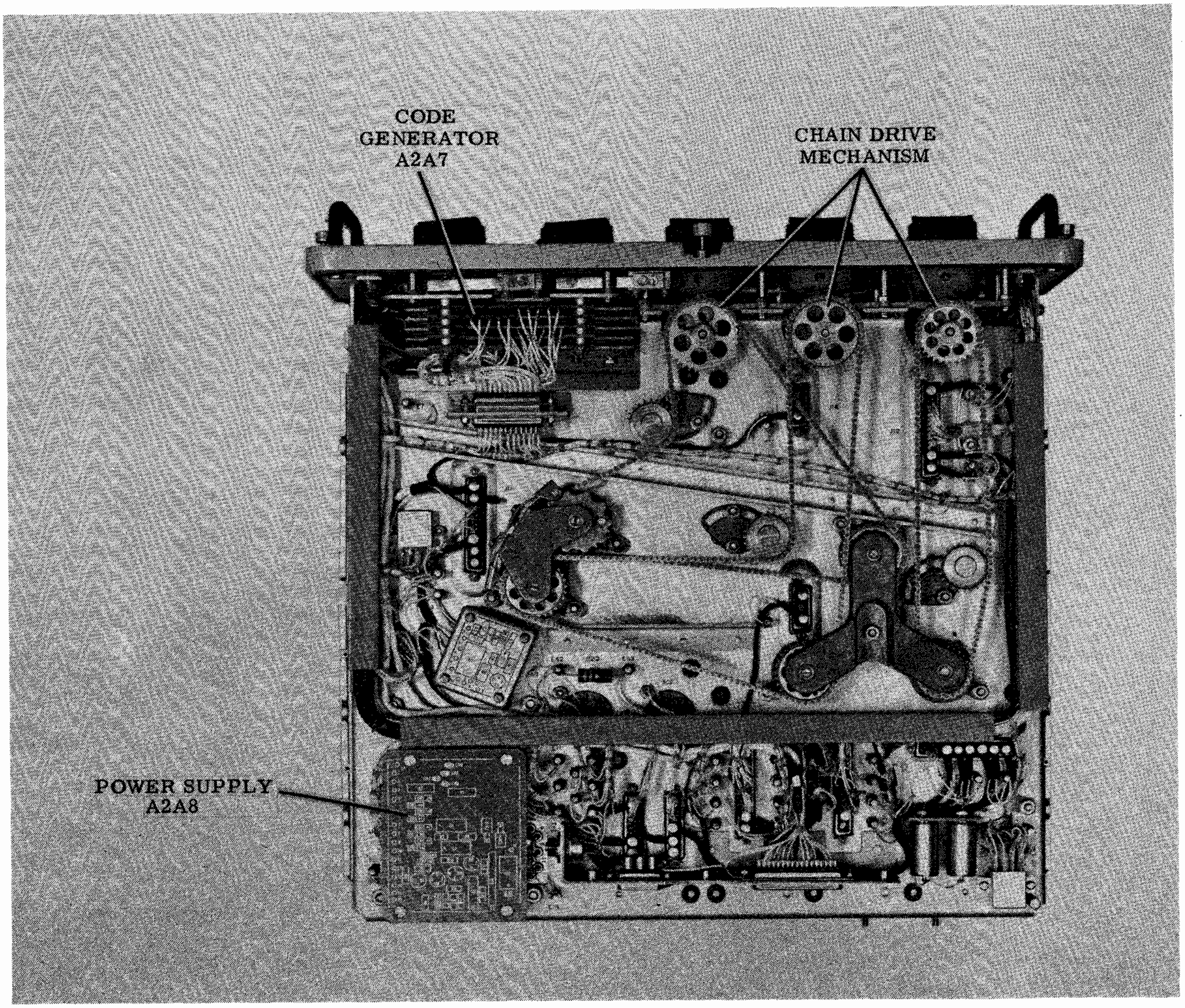


Figure 1-3. Radio Transmitter T-827/URT, Bottom View, Case Removed

TABLE 1-2. RADIO TRANSMITTER T-827/URT, CRYSTAL COMPLEMENT

REF DESIG	TYPE OF CUT	CRYSTAL OSC FREQ (MC)	OPERATING TEMP RANGE	TOLERANCE (PERCENT)
A2A5A3Y1	AT	5.000000	84.5°C to 85.5°C	0.001
A2A6A1Y1	AT	2.498850	0°C to 75°C	0.003
A2A6A1Y2	AT	3.499720	0°C to 75°C	0.003
A2A6A1Y3	AT	4.499640	0°C to 75°C	0.003
A2A6A1Y4	AT	5.499640	0°C to 75°C	0.003
A2A6A1Y5	AT	7.499400	0°C to 75°C	0.003
A2A6A1Y6	AT	8.499320	0°C to 75°C	0.003
A2A6A1Y7	AT	9.499160	0°C to 75°C	0.003
A2A6A1Y8	AT	10.499160	0°C to 75°C	0.003
A2A6A1Y9	AT	11.499080	0°C to 75°C	0.003
A2A6A1Y10	AT	12.499000	0°C to 75°C	0.003
A2A6A1Y11	AT	14.498840	0°C to 75°C	0.003
A2A6A1Y12	AT	15.498760	0°C to 75°C	0.003
A2A6A1Y13	AT	16.498690	0°C to 75°C	0.003
A2A6A1Y14	AT	17.498600	0°C to 75°C	0.003
A2A6A1Y15	AT	18.498440	0°C to 75°C	0.003
A2A6A1Y16	AT	20.498360	0°C to 75°C	0.003
A2A6A1Y17	AT	23.498120	0°C to 75°C	0.003
A2A6A2Y1	AT	4.553	0°C to 75°C	0.003
A2A6A2Y2	AT	4.653	0°C to 75°C	0.003
A2A6A2Y3	AT	4.753	0°C to 75°C	0.003
A2A6A2Y4	AT	4.853	0°C to 75°C	0.003
A2A6A2Y5	AT	4.953	0°C to 75°C	0.003
A2A6A2Y6	AT	5.053	0°C to 75°C	0.003
A2A6A2Y7	AT	5.153	0°C to 75°C	0.003

TABLE 1-2. RADIO TRANSMITTER T-827/URT, CRYSTAL COMPLEMENT (Continued)

REF DESIG	TYPE OF CUT	CRYSTAL OSC FREQ (MC)	OPERATING TEMP RANGE	TOLERANCE (PERCENT)
A2A6A2Y8	AT	5.253	$0^{o}C$ to $75^{o}C$	0.003
A2A6A2Y9	AT	5.353	$0^{o}C$ to $75^{o}C$	0.003
A2A6A2Y10	AT	5.453	$0^{o}C$ to $75^{o}C$	0.003
A2A6A3Y1	AT	5.25	$0^{o}C$ to $75^{o}C$	0.003
A2A6A3Y2	AT	5.24	$0^{o}C$ to $75^{o}C$	0.003
A2A6A3Y3	AT	5.23	$0^{o}C$ to $75^{o}C$	0.003
A2A6A3Y4	AT	5.22	$0^{o}C$ to $75^{o}C$	0.003
A2A6A3Y5	AT	5.21	$0^{o}C$ to $75^{o}C$	0.003
A2A6A3Y6	AT	5.20	$0^{o}C$ to $75^{o}C$	0.003
A2A6A3Y7	AT	5.19	$0^{o}C$ to $75^{o}C$	0.003
A2A6A3Y8	AT	5.18	$0^{o}C$ to $75^{o}C$	0.003
A2A6A3Y9	AT	5.17	$0^{o}C$ to $75^{o}C$	0.003
A2A6A3Y10	AT	5.16	$0^{o}C$ to $75^{o}C$	0.003
A2A6A3Y11	AT	1.850	$0^{o}C$ to $75^{o}C$	0.003
A2A6A3Y12	AT	1.851	$0^{o}C$ to $75^{o}C$	0.003
A2A6A3Y13	AT	1.852	$0^{o}C$ to $75^{o}C$	0.003
A2A6A3Y14	AT	1.853	$0^{o}C$ to $75^{o}C$	0.003
A2A6A3Y15	AT	1.854	$0^{o}C$ to $75^{o}C$	0.003
A2A6A3Y16	AT	1.855	$0^{o}C$ to $75^{o}C$	0.003
A2A6A3Y17	AT	1.856	$0^{o}C$ to $75^{o}C$	0.003
A2A6A3Y18	AT	1.857	$0^{o}C$ to $75^{o}C$	0.003
A2A6A3Y19	AT	1.858	$0^{o}C$ to $75^{o}C$	0.003
A2A6A3Y20	AT	1.859	$0^{o}C$ to $75^{o}C$	0.003

TABLE 1-3. RADIO TRANSMITTER T-827/URT, EQUIPMENT SUPPLIED

QTY PER EQUIP	NOMENCLATURE		OVER-ALL DIMENSIONS (IN.)			VOLUME (CU FT)	WEIGHT (LB)
	NAME	DESCRIPTION	HEIGHT	WIDTH	DEPTH		
1	Radio Transmitter	T-827/URT	7.0	17.38	18.9	1.33	70
1	Handset (including cord and plug assembly)	H-169/U (with CX-1846A/U)					
1	Kit, Extender Test Cables	W1 thru W5					
2	Technical Manual for Radio Transmitter T-827/URT Vol. 1	NAVSHIPS 0967-032-0010					
2	Technical Manual for Radio Transmitter T-827/URT Vol. II	NAVSHIPS 0967-032-0020					
1	Maintenance Standards Book for Radio Transmitter T-827/URT	NAVSHIPS 0967-032-0030					

TABLE 1-4. RADIO TRANSMITTER T-827/URT, EQUIPMENT AND PUBLICATIONS REQUIRED BUT NOT SUPPLIED

QTY PER EQUIP	NOMENCLATURE		REQUIRED USE	EQUIPMENT CHARACTERISTICS
	NAME	DESCRIPTION		
1	Cable Set		Interconnection	
1	CW Key		Local keying for CW operation	
1	Teletypewriter Panel	TT-23/SG (or equiv)	FSK operation	
1	Teletypewriter Control Panel	C-1004/SG (or equiv)	FSK operation	

TABLE 1-4. RADIO TRANSMITTER T-827/URT, EQUIPMENT AND PUBLICATIONS REQUIRED BUT NOT SUPPLIED (Continued)

QTY PER EQUIP	NOMENCLATURE NAME	NOMENCLATURE DESIGNATION	REQUIRED USE	EQUIPMENT CHARACTERISTICS
1	Teletypewriter Power Supply	PP-3494/U (or equiv)	FSK operation	
1	Radio Remote Control	C-1138/UR (or equiv)	Shipboard remote control operation	
1	Key Control Panel	SB-315/U (or equiv)	Keying for CW operation	
1	RF Amplifier	Such as AM-3007/URT or AM-3924/URT	RF power amplification	
1	Multimeter	AN/PSM-4 (or equiv)	Trouble-shooting and maintenance procedures	Ranges: 0 to 1000 vdc, 9 ranges, 20,000 ohms/volt 0 to 250 vac, 8 ranges, 5,000 ohms/volt 0 to 20 mego, 5 ranges, Accuracy: ±3% full scale
1	Multimeter Electronic	AN/USM-116 (or equiv)	Trouble-shooting and maintenance procedures	Frequency range: 2 to 30 mc Input impedance: 100,000 ohms/volt Accuracy: 2% Ranges: 0 to 10v, 0 to 30v, 0 to 100v

TABLE 1-4. RADIO TRANSMITTER T-827/URT, EQUIPMENT AND PUBLICATIONS REQUIRED BUT NOT SUPPLIED (Continued)

QTY PER EQUIP	NOMENCLATURE NAME	DESIGNATION	REQUIRED USE	EQUIPMENT CHARACTERISTICS
1	Coaxial T Connector	HP 11042A	Trouble-shooting and maintenance procedures	50 ohms
1	RF Voltmeter (or equiv)	AN/URM-155 (or CAQI-411)	Trouble-shooting and maintenance procedures	Input impedance: 20,000 ohms/ volt at 500 kc Ranges: 0 to 1 mv 0 to 3 mv 0 to 10 mv 0 to 100 mv 0 to 300 mv 0 to 1000 mv 0 to 3000 mv
1	Multimeter, Electronic	ME-6( )/U (or equiv)	Trouble-shooting and maintenance procedures	Frequency: 20 cps to 5 kc Input impedance: 100,000 ohms/ volt Ranges: 0 to 0.1v 0 to 0.3v
1	Voltmeter, Heterodyne	CDAN-2005*	Trouble-shooting and maintenance procedures	Frequency range: 20 kc to 30 mc, 4 ranges Voltage range: 15 μv to 15 volts, 7 ranges

TABLE 1-4. RADIO TRANSMITTER T-827/URT, EQUIPMENT AND PUBLICATIONS REQUIRED BUT NOT SUPPLIED (Continued)

QTY PER EQUIP	NOMENCLATURE		REQUIRED USE	EQUIPMENT CHARACTERISTICS
	NAME	DESIGNATION		
				Input impedance: 5,000,000 ohms at 100 kc 90,000 ohms at 30 mc (in parallel with 5.5PF) Frequency accuracy: 2% ±2 kc Voltage accuracy: 0.5 db Built-in loud-speaker
1	RF Signal Generator	CAQI-606A (or equiv)	Trouble-shooting and maintenance procedures	Output impedance: 50 ohms Frequency range: 2 to 30 mc Output: 0 to 3 volts
1	Frequency Standard	AN/URQ-9 (or equiv)	Trouble-shooting and maintenance procedures	Outputs: 100 kc, 500 kc, and 5 mc Stability: 1 part in 10^8 Output: 0.5 volt
1	Oscilloscope	AN/USM-117 (or equiv)	Trouble-shooting and maintenance procedures	Frequency: Dc to 15 mc Frequency response: 100 kc Ranges: 0.5v peak-to-peak 3v peak-to-peak 10v peak-to-peak 2500v peak-to-peak

TABLE 1-4. RADIO TRANSMITTER T-827/URT, EQUIPMENT AND PUBLICATIONS REQUIRED BUT NOT SUPPLIED (Continued)

QTY PER EQUIP	NOMENCLATURE NAME	NOMENCLATURE DESIGNATION	REQUIRED USE	EQUIPMENT CHARACTERISTICS
				Sensitivity: 2 to 10 vdc Impedance: 50 ohms
1	Electrical Dummy Load	DA-91( )/U	Trouble-shooting and maintenance procedures	50 ohms
	(or Resistor)	RC42GF510J (or equiv)	NOTE DA-91( )/U recommended due to normal availability; however listed resistor will satisfy requirements.	51 ohms, $\pm 5\%$, 2 watt, non-inductive
1	Analyzer Test Set	TS-1379/U	Trouble-shooting and maintenance procedures	Frequency: 2 to 30 mc Resolution: 100 cps
	Spectrum Analyzer	TS-1379/U		Sensitivity: 2uv full scale
	Tuning Head	CPN-REC-1		Sweep width: 7 kc
	Two-Tone Audio Signal Generator	SG-376/U (or equiv)		
1	Frequency Meter	AN/USM-207 (or equiv)	Trouble-shooting and maintenance procedures	Frequency range: 0 to 30 mc Accuracy: ± 1 cps
1	Test Set, Amplifier	TS-2132/ WRC-1*	Testing RF Amplifier Electronic Assembly	Simulates actual operating conditions
1	Test Set, Translator/ Synthesizer	TS-2133/ WRC-1*	Testing Translator/ Synthesizer Electronic Assembly	Simulates actual operating conditions

TABLE 1-4. RADIO TRANSMITTER T-827/URT, EQUIPMENT AND PUBLICATIONS REQUIRED BUT NOT SUPPLIED (Continued)

QTY PER EQUIP	NOMENCLATURE NAME	NOMENCLATURE DESIGNATION	REQUIRED USE	EQUIPMENT CHARACTERISTICS
1	Test Set, Frequency Standard	TS-2134/ WRC-1*	Testing Frequency Standard Electronic Assembly	Simulates actual operating conditions
1	Test Set, Electronic Circuit Plug-In Unit	TS-2135/ WRC-1*	Testing common electronic assemblies	Simulates actual operating conditions
1	Repair Book for AN/WRC-1 and R-1051/URR 2N Modules	NAVSHIPS 0967-034-2000	Trouble-shooting and maintenance procedures	
1	AN/PSM-4 Technical Manual	NAVSHIPS 91583	Trouble-shooting and maintenance procedures	
1	AN/USM-116 Technical Manual		Trouble-shooting and maintenance procedures	
1	AN/URM-155 Technical Manual		Trouble-shooting and maintenance procedures	
1	ME-6( )/U Technical Manual	NAVSHIPS 92423	Trouble-shooting and maintenance procedures	
1	CDAN-2005* Technical Manual		Trouble-shooting and maintenance procedures	
1	AN/USM-117 Technical Manual		Trouble-shooting and maintenance procedures	
1	TS-1379/U CPN-REC-1 SG-376/U Technical Manual		Trouble-shooting and maintenance procedures	
1	AN/USM-207 Technical Manual		Trouble-shooting and maintenance procedures	

TABLE 1-4. RADIO TRANSMITTER T-827/URT, EQUIPMENT AND PUBLICATIONS REQUIRED BUT NOT SUPPLIED (Continued)

QTY PER EQUIP	NOMENCLATURE NAME	NOMENCLATURE DESIGNATION	REQUIRED USE	EQUIPMENT CHARACTERISTICS
1	CAQI-606A Technical Manual		Trouble-shooting and maintenance procedures	
1	AN/URQ-9 Technical Manual		Trouble-shooting and maintenance procedures	
1	TS-2132/ WRC-1 Test Data Booklet	NAVSHIPS 0967-004-2000*	Testing RF Amplifier Electronic Assembly	
1	TS-2133/ WRC-1 Test Data Booklet	NAVSHIPS 0967-004-3000*	Testing Translator/ Synthesizer Electronic Assembly	
1	TS-2134/ WRC-1 Test Data Booklet	NAVSHIPS 0967-004-4000*	Testing Frequency Standard Electronic Assembly	
1	TS-2135/ WRC-1 Test Data Booklet	NAVSHIPS 0967-004-5000*	Testing Common Electronic Assemblies	

*NOTE: Required for use only at ELECTRONIC ASSEMBLY REPAIR FACILITIES

TABLE 1-5. RADIO TRANSMITTER T-827/URT, EXTENDER TEST CABLE DATA

REF DESIG	NAME	MATES WITH
W1	Cable Assembly	P2 on Mode Selector Electronic Assembly A2A1
W2	Cable Assembly	P1 on IF. Amplifier Electronic Assembly A2A12
W3	Cable Assembly	P1 on Audio Amplifier Electronic Assembly A2A2 or A2A3
W4	Cable Assembly	P1 on Mode Selector Electronic Assembly A2A1
W5	Cable Assembly	P1 on FSK Tone Generator Electronic Assembly A2A9

1-23. FIELD CHANGES.

1-24. Table 1-6 is a list of the pertinent field changes applicable to the T-827/URT.

1-25. PREPARATION FOR RESHIPMENT.

1-26. To prepare the T-827/URT for reshipment, proceed as follows:

a. Ensure that all electronic assemblies are firmly seated.

b. Ensure that all vacuum tubes are mounted properly using vibration-proof shields provided.

c. Set Mode Selector switch at OFF.

d. For reshipment, use containers and packing materials similar to those originally used to ship the units.

TABLE 1-6. RADIO TRANSMITTER T-827/URT, FIELD CHANGES

FIELD CHANGE NUMBER	FIELD CHANGE TITLE AND PURPOSE	SERIAL NUMBER AFFECTED	INDICATION OF ACCOMPLISHED
AN/WRC-1 NO. 1	Changes to Transmitter T-827/URT wiring for improved AM-3007/URT turret coding.	A5 thru A8, A14, A18, A19, A20, A22 thru A25; B1, B2, B3, B5 thru B25.	

SECTION 2

INSTALLATION

2-1. UNPACKING AND HANDLING.

2-2. Extreme caution must be taken when removing the T-827/URT from its packing container to prevent damage to the controls and connectors. Since the transmitter is an accurately calibrated precision equipment, rough handling must be avoided. Aside from exercising extreme caution, no special procedures need be followed when unpacking the transmitter.

2-3. POWER REQUIREMENTS.

2-4. The T-827/URT is designed to operate from a nominal 115-vac, single phase, 48 to 450 cps. See figure 5-14 for the primary power distribution diagram.

2-5. SITE SELECTION.

2-6. In selecting an installation site, adequate consideration must be given to the space required. This requirement will include space for servicing the slide-mounted equipment when extended from the case, shockmount deflection (when shockmounts are used). and cable bends, as well as considerations of proximity to associated equipment . See figure 2-1. for the dimensions of the T-827/URT.

2-7. INSTALLATION REQUIREMENTS.

2-8. CONSIDERATIONS.

2-9. The following factors should be considered when determining the proper location of the T-827/URT:

a. Best operating conditions.

b. Ease of maintenance, adjustment of equipment, and replacement and repair of defective parts or complete units.

c. Possibility of interaction between units and other electronic equipment in the vicinity.

d. Critical and minimum cable length requirements.

e. Adequate heat dissipation.

f. Availability of an adequate ground.

2-10. INSTALLATION.

2-11. The T-827/URT is designed to operate from a nominal 115-vac supply. The power input is connected to the 115-v tap on the primary of the power transformer (A2T1) in the T-827/URT when shipped. If the supply voltage is not 115-vac, the input connection must be changed to the appropriate tap (see figure 5-1). To change the connection to the transformer tap, proceed as follows:

a. Loosen the front panel screws and slide the T-827/URT chassis out from the case until the slides lock.

b. Tilt the chassis up 90 degrees to expose the bottom. Remove the four flat head machine screws fastening the silk screened transmitter power supply component board protective plate at A2A8 in the lower left corner of the chassis. Remove the protective plate, unscrew the four hex spacers, and swing the component board up to expose the bottom of the power transformer.

c. Unsolder the wire connected to terminal number 1 of the power transformer and resolder to the appropriate tap (terminal numbers 2, 3, 4, or 5). Do not unsolder the common lead (connected to terminal number 6).

d. Replace the power supply component board, threaded hex spacers, component board protective plate, and the flat head screws.

e. Tilt chassis back to horizontal, release the slide locks, slide chassis back into case and secure it.

2-12. The T-827/URT may be stack mounted with its associated RF power amplifier, using proper shock and vibration isolation for shipboard installations or mounted in a standard 19-inch rack. Refer to the installation section in the technical manual for the associated RF power amplifier for stack mounting and shock isolation requirements. Adapter plates are used for mounting the T-827/URT in a standard 19-inch rack. For all required installation dimensions, see figure 2-1. For fabrication of the rack mounting adapter plates, see figure 2-2 for dimensional requirements. Dimensional requirements for mounting brackets, which can be used for stack mounting with associated equipment on a shockmount, or for bolting to any horizontal surface, are shown in figure 2-3.

WARNING

To avoid injury to personnel, do not overstress mounting bolts, since shock may cause them to shear.

2-13. INTERCONNECTION

2-14. All connections are made at the rear of the T-827/URT (see figure 5-16), with the exception of the local handset and the local CW key (if used). The handset is connected to the HANDSET connector on the front panel, and the CW key is connected to the CW KEY connector, also on the front panel. Connect the T-827/URT case to ground; a ground strap is provided at the rear of the case for connecting to either a shockmount, if used, or to a stack mounted unit. Connect a ground lead to the base of the shockmount if used.

CAUTION

Ensure good metal-to-metal grounds.

2-15. Specific interconnections to the T-827/URT depend upon the type of rf power amplifier and other associated equipment to be used in conjunction with the T-827/URT. If the T-827/URT is to be used with RF Amplifier AM-3007/URT, refer to the Technical Manual for the AN/WRC-1 Radio Set (NAVSHIPS 94840(A)) for interconnection instructions. If the T-827/URT is to be used with RF Amplifier AM-3924/URT, refer to the Technical Manual for the AN/URT-23 Radio Set for interconnection instructions. If the T-827/URT is to be used with any rf power amplifier other than the AM-3007/URT or AM-3924/URT, several unique interconnection requirements must be made in addition to the usual interconnection for power control, interlock circuitry, key lines, audio and teletypewriter inputs, etc. See the overall schematic diagram for the T-827/URT (figure 5-1) for complete interconnection requirements; refer to the technical manual for the rf amplifier to be used for available interconnections.

2-16. If local FSK transmission is required, proceed as follows:

a. Connect teletypewriter loop and key lines to connector J7 (LOCAL FSK IN) on the rear of the T-827/URT.

b. Loosen front panel screws and pull T-827/URT chassis out from case. Set CRT FREQ switch on top of FSK Tone Generator Electronic Assembly at desired center frequency (2000 cps or 2550 cps).

c. See figure 5-1 and jumper E4 to E7 (note 7, figure 5-1) to increase loop current, if required.

d. Slide chassis back into case and secure it.

e. Set Mode Selector switch at ISB/FSK or at FSK, and set LOCAL/REMOTE switch at LOCAL.

2-17. If remote FSK transmission is required, proceed as follows:

a. Loosen front panel screws and pull T-827/URT chassis out from case. Set CRT FREQ switch on top of the FSK Tone Generator Electronic Assembly at desired center frequency (2000 cps or 2550 cps).

b. Slide chassis back into case and secure it.

c. Set Mode Selector switch at ISB/FSK or FSK, and set LOCAL/REMOTE switch at REMOTE.

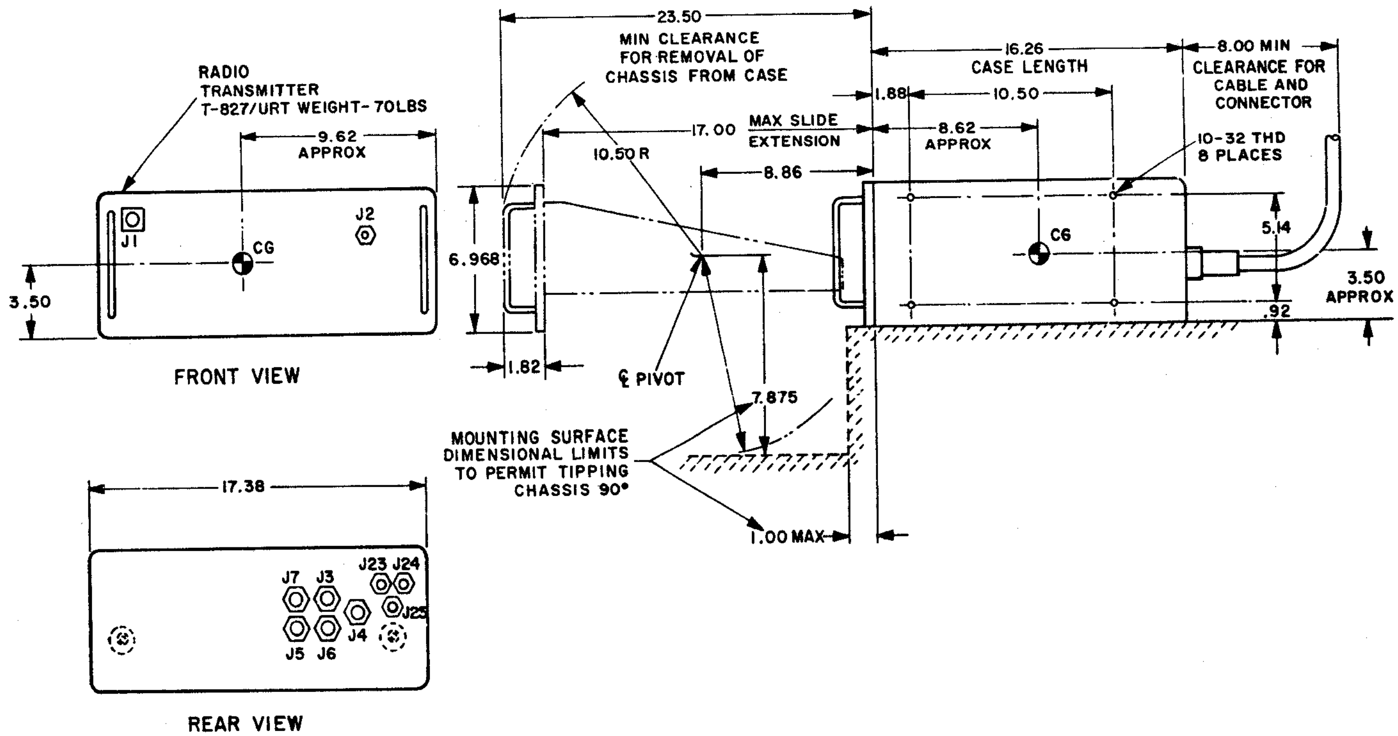


Figure 2-1. Radio Transmitter T-827/URT, Dimensions

d. Further instructions depend upon the equipment to be used with the T-827/URT and are therefore beyond the scope of this publication. Refer to the technical manuals of the associated equipment.

2-18. The T-827/URT is shipped by the manufacturer with the internal frequency standard set at INT. If the setting has been changed subsequent to receipt from the manufacturer, and if the internal frequency standard of the T-827/URT is to be used, proceed as follows:

a. Loosen front panel screws and slide chassis out from case.

b. Set switch S1 (EXT/INT/COMP) on top of Frequency Standard Electronic Assembly at INT. This electronic assembly is located at right rear of chassis.

c. Slide chassis back into case and secure it.

2-19. If it is required to use the ship's frequency standard for operation, proceed as follows:

a. Connect the ship's frequency standard output to connector J25 (EXT 5 MC IN) on the rear of the T-827/URT.

b. Loosen front panel screws and slide the chassis from its case.

c. Set switch S1 (EXT/INT/COMP) on top of Frequency Standard Electronic Assembly at EXT. This electronic assembly is located at the right rear of the chassis.

d. Slide chassis back into the case and secure it.

2-20. If it is required to use the output from the T-827/URT internal Frequency Standard Electronic Assembly to operate another unit, proceed as follows:

a. Loosen the front panel screws and slide the T-827/URT chassis out from the case.

b. Set switch S1 (EXT/INT/COMP) on top of the Frequency Standard Electronic Assembly at COMP. This electronic assembly is located at the right rear of the chassis.

c. Slide chassis back into case and secure it.

d. Connect cable between connector J24 (INT 5 MC OUT) on the rear of the T-827/URT and the frequency standard input connector of the other unit.

2-21. If it is required to use an external frequency for calibration of the T-827/URT, proceed to paragraph 5-49, Frequency Standard Electronic Assembly A2A5, and perform the procedures listed under Method A, steps a. through k. (Substitute appropriate frequency standard source for AN/URQ-9.)

2-22. If the use of auxiliary power is required, proceed as follows:

a. Using a type MS-3186-5S connector, connect the auxiliary power to connector J3 (AUX AC PWR IN) on the rear of the T-827/URT.

b. Loosen the front panel screws and slide the T-827/URT chassis from the case.

c. Set switch S7 (AUX/NORM) at AUX. This switch is located just behind the front panel on the left.

d. Slide chassis back into the case and secure it.

2-23. The audio transformers in the T-827/URT (located in the Audio Amplifier Electronic Assemblies) do not have grounded center taps as supplied. If it is required that these transformers work into a balanced grounded center tap circuit, proceed as follows:

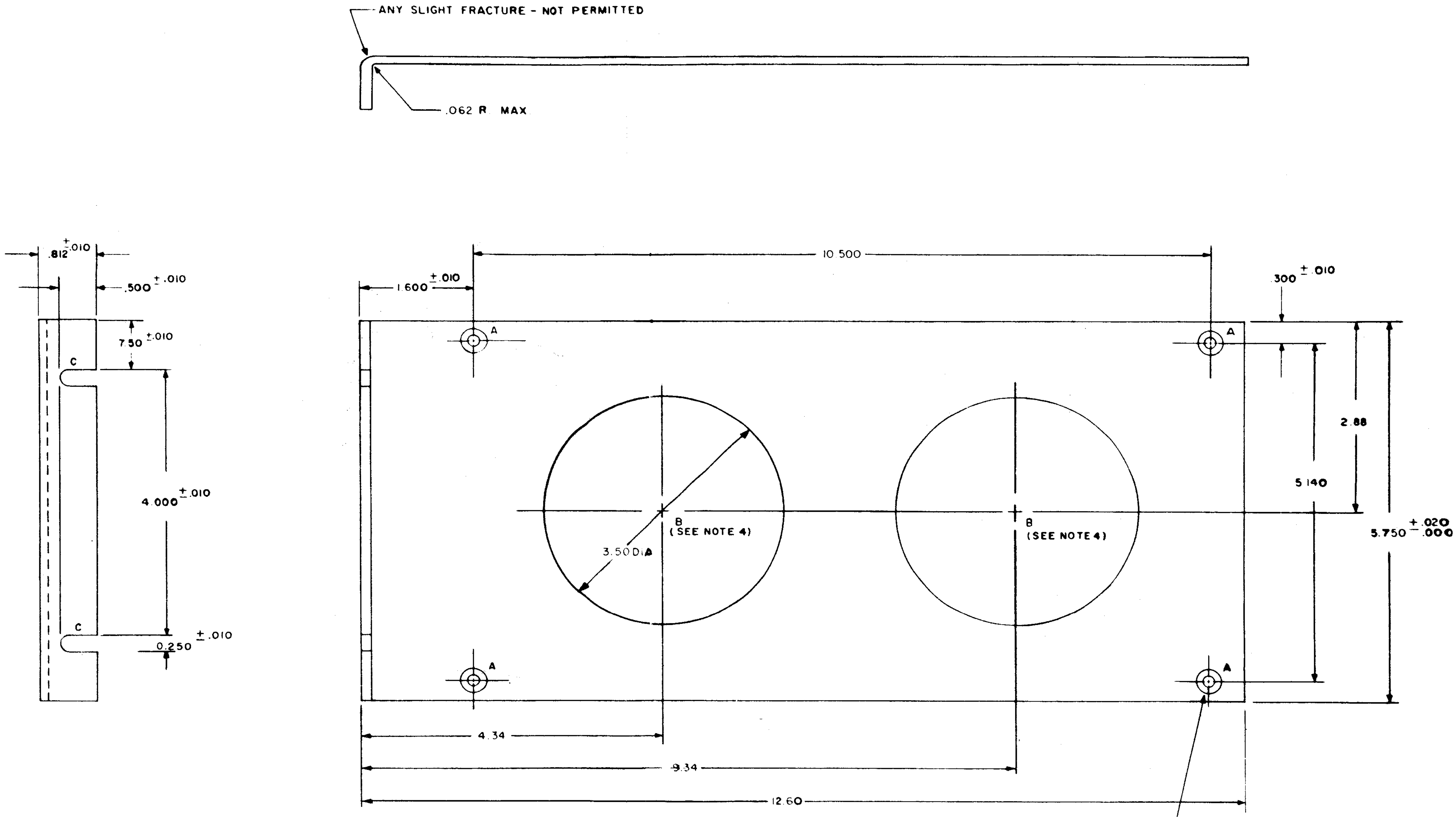
CAUTION

Do not ground center taps if working into an unbalanced circuit.

a. Loosen the front panel screws and slide the T-827/URT chassis from the case.

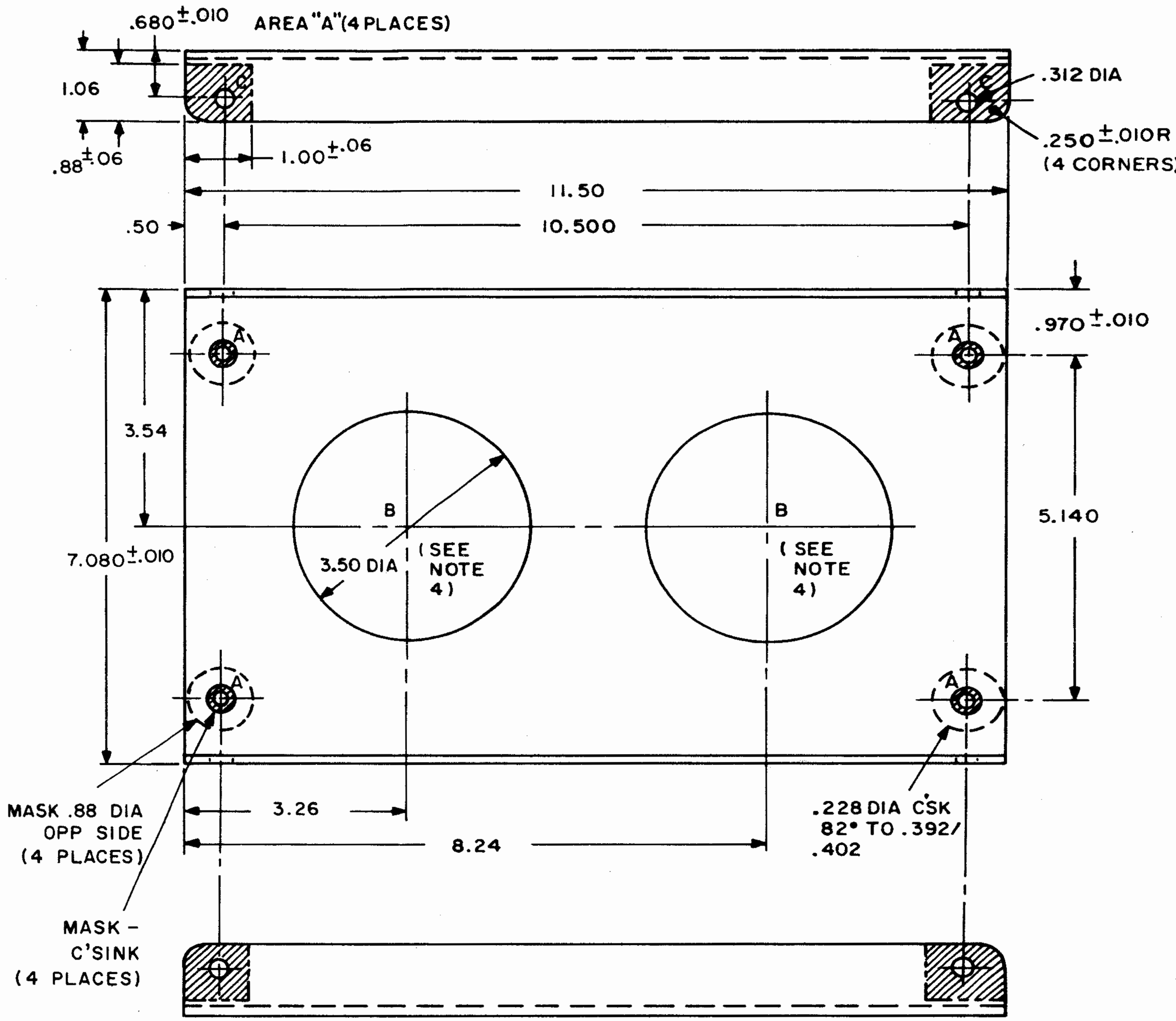
b. Tilt chassis up 90 degrees to expose bottom. See figure 5-18 and locate J18 and J19.

c. See figure 5-1 and perform the steps outlined in note 6 on that schematic.



NOTES
1 FINISH IRIDITE NO. 14 PER MIL C-5541
PAINT PER MIL-E-15090 ENAMEL
EQUIPMENT, LIGHT GRAY (FORMULA NO 11)
2 MATERIAL 125" THICK ALUMINUM ALLOY
5052-H32 PER QQ-A-318
3 NOT SUPPLIED. IF REQUIRED, INSTALLATION
ACTIVITY MUST FABRICATE
4 B HOLES ARE OPTIONAL, FOR WEIGHT REDUCTION ONLY

Figure 2-2. Radio Transmitter T-827/URT,
Mounting Bracket for Rack Mounting



NOTES:

1. FINISH: IRIDATE NO. 14 PER MIL-C-5541
   PAINT PER MIL-E-15090 ENAMEL
   EQUIPMENT, LIGHT GRAY (FORMULA NO.11)
2. MATERIAL: .125" THICK ALUMINUM ALLOY 5052-H32
   PER QQ-A-318
3. NOT SUPPLIED: IF REQUIRED, INSTALLATION ACTIVITY
   MUST FABRICATE
4. "B" HOLES ARE OPTIONAL, FOR WEIGHT REDUCTION
   ONLY

Figure 2-3. Radio Transmitter T-827/URT, Suggested Mounting Bracket for Stack Mounting on Shock Mounted Horizontal Surface

d. Tile chassis back to horizontal, release slide locks, slide chassis back into case and secure it.

2-24. INSPECTION AND ADJUSTMENT.

2-25. INSPECTION.

2-26. The T-827/URT should be carefully checked for damage to indicators and switches and for loose hardware and knobs. Make sure that all electronic assemblies are firmly seated and that tubes are properly secured in tube sockets. Check connectors for dirt, damage to pins, and broken insulators. Replace or repair as necessary.

2-27. ADJUSTMENT.

2-28. The T-827/URT must be installed as part of a system. Refer to the system technical manual (i.e., AN/WRC-1) for post installation checkout procedure to ensure proper operation of the T-827/URT. Should any adjustments be found necessary, refer to the applicable procedures in Section 5 of this manual.

2-29. Check that all cables are properly connected and that all fuses are in place.

2-30. PERFORMANCE CHECKS.

2-31. Perform the applicable operating procedures described in Section 3 to ensure proper installation.

2-32. INTERFERENCE REDUCTION.

2-33. As a precaution against interference, operate the T-827/URT chassis and panel bolted securely to its case. Check that proper ground connections have been made in the system.

SECTION 3

OPERATION

Note

This section is bound as volume II. Refer to volume II, Operator's Handbook, for Radio Transmitter T-827/URT, NAVSHIPS 0967 032 0020, for operation of this equipment.

SECTION 4

TROUBLE SHOOTING

4-1. LOGICAL TROUBLE SHOOTING.

4-2. The topics discussed in the following six paragraphs should be followed when trouble shooting Radio Transmitter T-827/URT (T-827/URT).

4-3. SYMPTOM RECOGNITION.

4-4. Symptom recognition is the first step in the trouble-shooting procedure and is based on complete knowledge and understanding of equipment operating characteristics. All equipment troubles are not the direct result of component failure; therefore, a trouble in the equipment is not always easy to recognize since all conditions of less than peak performance are not always apparent. This type of equipment trouble is usually discovered while accomplishing preventive maintenance procedures, such as the Performance Operation and Maintenance Standards of Electronic Equipment (POMSEE) checks. It is important that the "not so apparent" troubles, as well as the apparent troubles, be recognized.

4-5. SYMPTOM ELABORATION.

4-6. After an equipment trouble has been recognized, all the available aids designed into the equipment should be used to elaborate further on the original trouble symptom. Use of front panel controls and other built-in indicating or testing aids should provide better identification of the original trouble symptom. Also, checking or otherwise manipulating the operating controls may eliminate the trouble.

4-7. LISTING PROBABLE FAULTY FUNCTION.

4-8. The next step in logical trouble shooting is to formulate a number of "logical choices" as to the cause and the probable location (functional section) of the trouble. The "logical choices" are decisions based on knowledge of equipment operation, full identification of the trouble symptom, and information contained in this manual. The overall functional description and functional block diagram should be referred to when selecting possible faulty functional sections.

4-9. LOCALIZING THE FAULTY FUNCTION.

4-10. For the greatest efficiency in localizing trouble, the functional sections selected by the "logical choices" method should be tested in the order that will require the least time. This requires a selection to determine which section to test first. The selection should be based on validity of the "logical choice" and the difficulties involved in making the necessary tests. If the tests do not prove that one functional section is at fault, the next selection should be tested, and so on until the faulty functional description and functional block diagram for each functional section as aids to this selection process. Waveforms are included at significant check points on functional block diagrams to aid in isolating the faulty section. Also, test data (such as information on control settings, critical adjustments and required test equipment) are supplied to augment the functional description and functional diagram for each functional section.

4-11. LOCALIZING TROUBLE IN THE CIRCUIT.

4-12. After the faulty functional section has been isolated, it is often necessary to make additional "logical choices" as to which group of circuits or circuit (within the functional section) is at fault. Servicing block diagrams for individual functional circuit groups provide the signal flow and test location information needed to bracket and isolate the faulty circuit. Functional descriptions, simplified schematics, and pertinent test data for individual circuits or groups of circuits comprising the functional section are all placed together in one area of the manual. Insofar as is practicable, this information is contained on facing pages. Information that is too lengthy to be included in this arrangement is readily referenced from the test data portion of the trouble shooting information.

4-13. FAILURE ANALYSIS.

4-14. After the trouble (faulty component, misalignment, etc) has been located (but prior to performing corrective action), the procedures followed up to this point should be reviewed to determine exactly why the fault affected the equipment in the manner it did. This review is usually necessary to make certain that the fault discovered is actually the cause of the malfunction, and not just the result of the malfunction.

4-15. OVERALL FUNCTIONAL DESCRIPTION.

4-16. Radio Transmitter T-827/URT accepts audio or coded intelligence and converts it to one of 56,000 possible operating radio frequencies in the 2.0 to 29.9995 mc frequency range. It is capable of operating in any of LSB, USB, ISB, CW, FSK and compatible AM modes of operation. Tuning is accomplished digitally by means of five control knobs (MCS and KCS) and a switch (CPS) located on the front panel, and may be changed in 0.5-kc increments. The T-827/URT has a minimum output level of at least 0.25 watt, and is designed to be used with an associated rf power amplifier such as the AM-3007/URT or the AM-3924/URT.

4-17. In AM and SSB transmit modes of operation, the output from a microphone is applied to the T-827/URT. The voice signals are amplified and are used to modulate a 500-kc local carrier, providing a 500-kc if. The resulting double sideband signal is filtered according to the mode of operation amplified, and converted by a triple-conversion process to the desired rf operating frequency. The rf signal is power amplified to a nominal 0.1-watt level. In CW operation, the 500-kc local carrier is inserted directly into the if. amplifiers at a coded rate. The signal is further processed in the same manner as the voice signals in the AM or SSB modes of operation. In FSK operation, the coded application of loop current is converted to audio frequencies representing marks and spaces. These audio signals are applied to the audio circuits of the T-827/URT. Thereafter, these signals are processed in the same manner as the voice signals in AM or SSB modes of operation.

4-18. Tuning the T-827/URT to an operating frequency also generates a tuning code within the T-827/URT which is used externally to tune the associated rf power amplifier (such as the AM/3007/URT or the AM-3924/URT) to the same operating frequency as the T-827/URT.

4-19. The associated rf power amplifier feeds two dc control levels to the T-827/URT to prevent its rf output from exceeding the predetermined level.

4-20. The T-827/URT consists of nine plug-in electronic assemblies and a power supply. These assemblies are: Mode Selector Electronics Assembly A2A1, Audio Amplifier Electronic Assemblies A2A2 and A2A3, RF Amplifier Electronic Assembly A2A4, Frequency Standard Electronic Assembly A2A5, Translator/Synthesizer Electronic Assembly A2A6, Code Generator Assembly A2A7, FSK Tone Generator Electronic Assembly A2A9 and IF Amplifier Electronic Assembly A2A12. (Assembly A2A6 consists of six electronic subassemblies.) Figure 4-1 illustrates the functional groups comprising the T-827/URT.

4-21. FUNCTIONAL SECTION DESCRIPTION.

4-22. OVERALL FUNCTIONAL SECTION DESCRIPTION.

4-23. MAIN SIGNAL FLOW. The main signal flow in the T-827/URT originates in the 5-mc frequency standard. This circuit is housed in an oven assembly maintained at a nearly constant temperature of 85°C by the oven control circuit. The 5-mc frequency standard produces an accurate, stable reference frequency, upon which all frequencies used in the T-827/URT are based. The accurate output from the 5-mc frequency standard is applied to a switching and compare circuit. An external

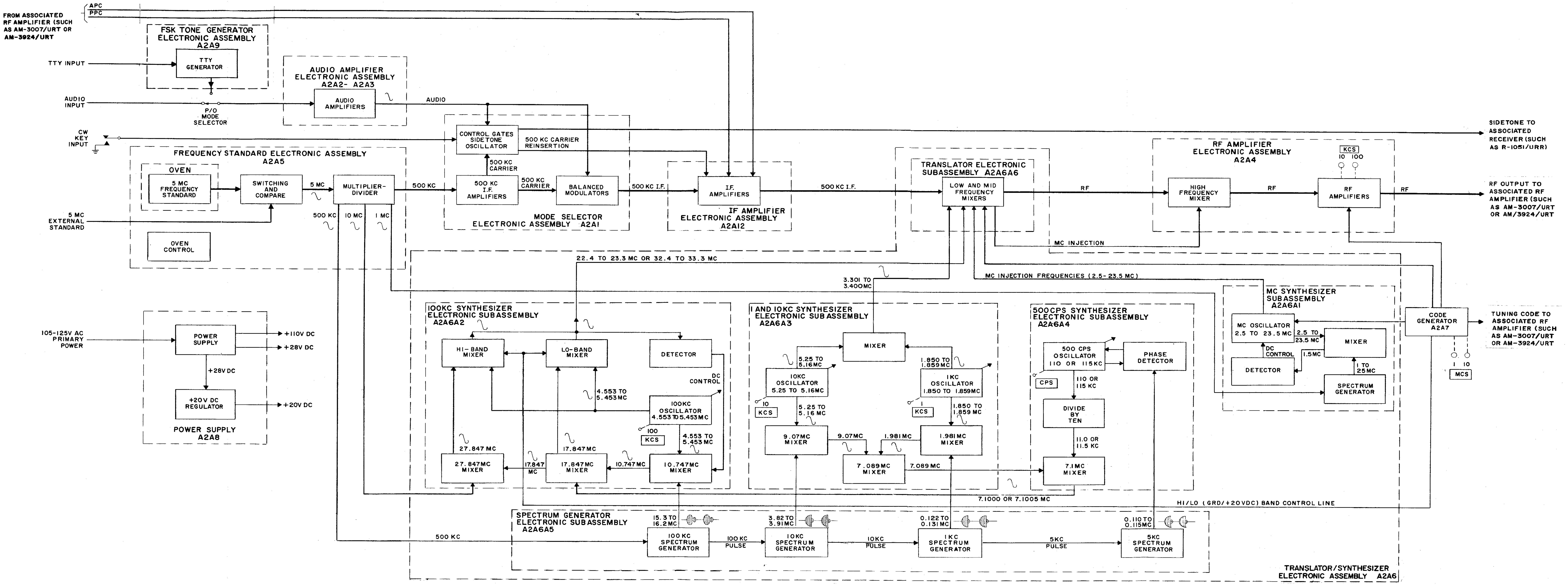


Figure 4-1. Radio Transmitter T-827/URT, Functional Block Diagram

5-mc frequency may also be applied to this circuit. The switching and compare circuit routes the internal or external 5-mc signal to the multiplier-divider circuits or to the compare circuit. The compare circuit compares the internal 5-mc frequency with the external 5-mc frequency for an indication of the internal frequency accuracy. The 5-mc output from the switching and compare circuit is applied to the multiplier-divider circuit, where it is converted to frequencies of 500 kc, 1 mc, and 10 mc. All three frequencies are used in the mixing processes required to produce the injection frequencies used in the rf conversion process. The 500-kc frequency output from the multiplier-divider circuit also serves as the local carrier for the T-827/URT. The 5-mc frequency standard, oven control, switching and compare, and multiplier-divider circuits comprise Frequency Standard Electronic Assembly A2A5.

4-24. The 500-kc local carrier output from the multiplier-divider circuit is applied to the 500 kc if. amplifiers. These circuits amplify the 500-kc local carrier to a level suitable for use in the balanced modulators. There are two balanced modulators, identical except for output filtering. The balanced modulator used is selected according to the mode of operation. One balanced modulator is used in the USB, FSK, AM, and ISB modes of operation. The other balanced modulator is used during the LSB and ISB modes of operation. Neither balanced modulator is used during the CW mode of operation. Audio intelligence from the audio amplifier is applied to the appropriate balanced modulator to modulate the 500-kc local carrier, resulting in a double sideband signal without a carrier. The double sideband signal is filtered according to the mode of operation to remove either the LSB or USB portion of the signal. The 500 kc if. amplifiers and the balanced modulators circuits comprise a part of Mode Selector Electronic Assembly A2A1. The other portion of this assembly is the control gates-sidetone oscillator circuit, which is functionally explained in paragraphs 4-28 and 4-31.

4-25. The 500-kc if. output from the balanced modulators is applied to the if. amplifiers. The if. amplifiers, which comprise IF. Amplifier Electronic Assembly A2A12, provide a 500-kc if. output at a level suitable for use in the low and mid-frequency mixers circuit. The level of the 500-kc if. output from the if. amplifiers is prevented from exceeding a predetermined peak and average power level by application of the average power control (apc) and the peak power control (ppc) signals produced in the associated rf power amplifier. (Such as AM/3007/URT or AM-3924/URT.) The 500-kc local carrier is re-inserted into the 500-kc if. signal during the AM mode of operation in the if. amplifiers circuit. The unmodulated 500-kc if. signal for CW mode of operation is also produced by this circuit. The 500-kc carrier required in both the AM and CW modes of operation is applied to the if. amplifiers circuit by the control gates-sidetone oscillator circuit contained in Mode Selector Assembly A2A1.

4-26. The output from the if. amplifier circuit is applied to the low and mid-frequency mixers. These two mixer circuits, which comprise a part of Translator Electronic Subassembly A2A6A6, in conjunction with the high frequency mixer circuit portion of RF Amplifier Electronic Assembly A2A4, convert the 500-kc if. signal to the desired rf frequency by a triple conversion process. The 500-kc if. signal is mixed with the 1- and 10-kc injection frequency by the low frequency mixer to produce a second if. frequency between 2.8 and 2.9 mc. (Refer to paragraph 4-36.) This frequency is filtered and applied to the mid-frequency mixer. The second if. is mixed with the 100-kc injection frequency by the mid-frequency mixer to produce a third if. between 19.5 and 20.5 mc or between 29.5 and 30.5 mc. (Refer to paragraph 4-36.) The third if. used is determined by the hi/lo band control signal.

4-27. The output from the mid-frequency mixer is filtered and applied to the high frequency mixer. The third if. is mixed with the mc injection frequency by the high frequency mixer to produce the desired rf output frequency. The mc injection frequency is determined by the position at which the mc frequency generator is set by the code from the code generator. The output from the high frequency mixer is applied to the rf amplifiers, which amplify the rf frequency to a level suitable to drive the associated rf power amplifier. The input and output circuits of the rf amplifiers are automatically tuned by the tuning code produced by the code generator, according to the frequency of the desired operating channel. The high frequency mixer and the rf amplifiers comprising RF Amplifier Electronic Assembly A2A4.

4-28. AUDIO SIGNAL FLOW. The intelligence applied to the T-827/URT is either the coded keying for CW, the coded keying for FSK, or the audio for all other modes of operation. The coded CW keying turns a gating circuit on and off in the control gates-sidetone oscillator circuit. Each time the key is pressed, the gate is turned on, allowing the 500-kc local carrier to pass from the 500-kc amplifiers to the if. amplifiers. Also, each time the CW key is pressed, the output of a sidetone oscillator is gated through to the sidetone line. This sidetone signal is applied to the associated receiver (such as R-1051/URR) enabling the operator to monitor the CW keying. The audio output from the microphone is applied to the audio amplifiers in Audio Amplifier Electronic Assemblies A2A2 and A2A3. When operating in the USB, ISB, AM, or FSK modes of operation, the audio input is amplified by assembly A2A2 and is applied to the appropriate balanced modulator. When operating in the LSB and ISB modes of operation, the audio is amplified by assembly A2A3 and is applied to the appropriate balanced modulator. A gate for each assembly is turned on in the control gates sidetone oscillator, when the corresponding assembly is turned on. This gate allows the audio to pass as a sidetone signal to the associated receiver (Such as R-1051/URR), enabling the operator to monitor the respective transmission. When operating in the FSK mode of operation, the coded TTY input is applied to the TTY generator in FSK Tone Generator Electronic Assembly A2A9. The TTY generator produces the required mark and space frequencies and applies them to Audio Amplifier Electronic Assembly A2A2. The gate for re-inserting the 500-kc carrier into the if. signal during AM operation is also contained in the control gates sidetone oscillator circuit. This circuit also has a gating network for re-inserting a pilot local carrier into the if. signals during LSB, USB, or ISB operation. The pilot carrier is used when operating with radio sets less stable than the AN/WRC-1, providing them with a carrier for frequency locking and demodulating.

4-29. FREQUENCY GENERATION. The injection frequencies used in the first frequency conversion in the mixers circuit are generated within the 1 and 10-KC Synthesizer Electronic Subassembly A2A6A3. This circuit consists of two crystal oscillators, each of which has ten possible output frequencies. The output from the 1-kc oscillator (1.850 mc to 1.859 mc, in 1-kc steps) is determined by the setting of the front panel 1-kc (KCS) control, and the output from the 10-kc oscillator (5.25 mc to 5.16 mc, in 10 kc steps) is determined by the setting of the front panel 10-kc (KCS) control. The outputs from the two oscillators are subtractively mixed to produce one of 100 possible frequencies spaced at the 1-kc intervals between 3.301 and 3.400 mc. The output is applied to the low frequency mixer.

4-30. The injection frequencies used in the second frequency conversion in the mixers circuit are generated within the 100-KC Synthesizer Electronic Subassembly A2A6A2. This circuit consists of a crystal oscillator, the output from which is one of ten frequencies spaced at 100-kc intervals between 4.553 and 5.453 mc. The output frequency is determined by the setting of the front panel 100 kc (KCS) control. If a lo-band injection frequency is required (refer paragraph 4-36) the 17.847 mc output from the 17.847-mc mixer is additively mixed in the hi-band mixer with the output from the 100 kc oscillator (4.553 mc to 5.453 mc, in 100-kc steps) to provide a frequency in the 22.4 to 23.3 mc range. If a hi-band injection is required (refer to paragraph 4-36) the 27.847-mc output from the 27.847-mc mixer is additively mixed in the hi-band mixer with the output from the 100-kc oscillator (4.553 mc to 5.453 mc, in 100-kc steps) to provide a frequency in the 32.4 to 33.3 mc range. In either case, the resultant frequency is applied to the mid-frequency mixer.

4-31. The injection frequencies used in the third frequency conversion in the mixers circuit are generated within the MC Synthesizer Electronic Subassembly A2A6A1. This circuit consists of a phase-locked crystal oscillator that is automatically tuned to produce one of seventeen frequencies between 2.5 mc and 23.5 mc. The output is applied to the high frequency mixer. The output frequency is determined by the setting of the front panel MCS controls.

4-32. ERROR CANCELLATION. A combination of error cancelling loops and phase-locked loops is used in the frequency synthesizer circuits of the T-827/URT to ensure that the injection frequencies applied to the mixers are correct. The MC Synthesizer Electronic Subassembly (A2A6A1) employs a phase-locked loop to ensure the accuracy of the mc injection frequencies. The 1-mc output from the multiplier-divider in the Frequency Standard Electronic Assembly (A2A5) is applied to the spectrum generator to produce a spectrum of frequencies spaced at 1-mc intervals between 1 mc and 25 mc. The output from the spectrum generator and the output from the mc oscillator are mixed. Any error in output from the mc oscillator is detected and an error voltage is produced. This error signal is applied to the mc oscillator to lock it to the correct frequency. The accuracy of the oscillator output is the same as that of the 5-mc frequency standard.

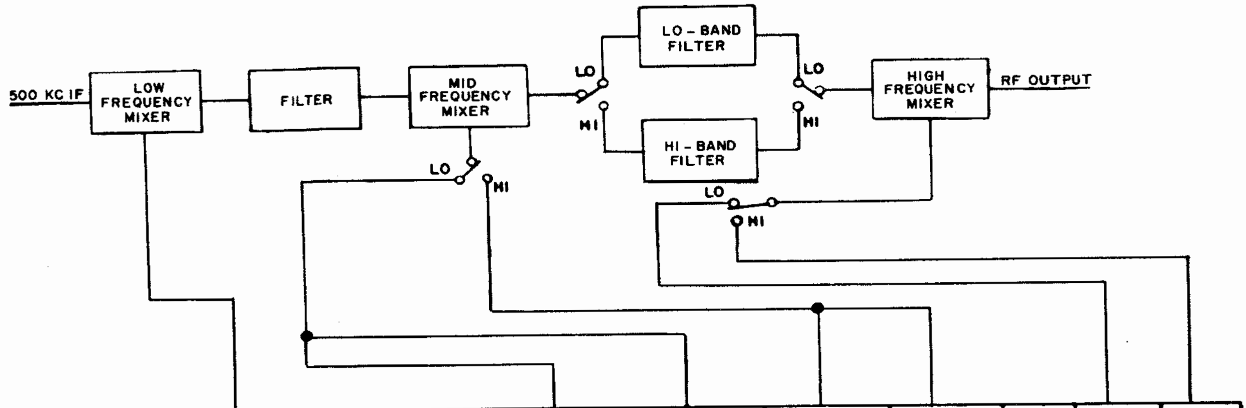
4-33. The 100-KC Synthesizer Electronic Subassembly (A2A6A2) employs an error cancelling loop to ensure the accuracy of the 100-kc injection frequencies. The 600-kc output from the multiplier-divider is applied to the 100-kc spectrum generator to produce a spectrum of frequencies spaced at 100-kc intervals between 15.3 mc and 16.2 mc. The output from the 100-kc oscillator (4.553 mc to 5.453 mc, in 100-kc steps) is applied to the 10.747-mc mixer, where it is mixed with that spectrum point of the 100-kc spectrum which will result in an output of 10.747-mc. The 10.747-mc signal is additively mixed with the 7.1-mc output from the 7.1-mc mixer to produce the 17.847-mc signal, which is used in one of two mixing processes. It is mixed with the 100-kc oscillator output to cancel any oscillator frequency error and produce the lo-band injection frequencies, or it is mixed with the 10-mc output from the multiplier-divider. This mixing produces a 27.847-mc signal, which is mixed with the 100-kc oscillator output to cancel any oscillator frequency error and produce the hi-band injection frequencies. The hi or lo-band of injection frequencies is determined by the voltage level on the hi/lo band control line output from the code generator. If an error were present in the 100-kc oscillator output, it would be cancelled in this mixing scheme. This is accomplished as follows. Assume that the output from the oscillator should be 4.553 mc, but is 200 cycles high (4.5532-mc), and that the desired frequency output is 22.4 mc (in the lo-band). The subtractive mixing of the oscillator output with whichever 100-kc spectrum point will produce an output as close as possible to 10.747 mc, results in a 10.7468-mc output (15.3 mc - 4.5532 = 10.7468 mc). This signal is then additively mixed with the 7.1-mc signal, producing a 17.8468-mc output. The 17.8468-mc signal is then additively mixed with the oscillator output (17.8468 + 4.5532 mc = 22.4 mc), resulting in the desired 22.4-mc output. Assume that the output from the oscillator should be 4.953 mc, but is 300 cycles low (4.9527 mc), and that the desired frequency output should be 32.8 mc (in the hi-band). Subtractively mixing the 100-kc spectrum point (15.7 mc) with the 4.9527-mc signal results in an output of 10.7473 mc. This signal is then mixed with the 7.1-mc signal, resulting in a frequency of 17.8473 mc. The 17.8473-mc signal is further mixed with the 10-mc signal to obtain a frequency of 27.8473 mc, which is additively mixed with the 4.9527-mc output from the oscillator to obtain the required 32.8-mc output. Therefore, it can be seen that any error existing in the output from the 100 kc oscillator will be cancelled, resulting in the exact 100-kc injection frequency required.

4-34. Any error existing in the 1 and 10 kc oscillator is cancelled in the following manner. The 100-kc pulses from the 100-kc spectrum are applied to the 10-kc spectrum generator producing an output from 3.82 to 3.91 mc in 10-kc increments. The 10-kc spectrum generator also produces 10-kc pulses which are applied to the 1-kc spectrum generator to produce a spectrum of frequencies spaced at 1 kc intervals between 0.122 mc and 0.131 mc. The output from the 10-kc oscillator (5.25 mc to 5.16 mc, in 10-kc steps) is additively mixed with whichever spectrum point of the 10-kc spectrum will result in a frequency of 9.07 mc. The output from the 1-kc oscillator (1.850 mc to 1.859 mc, in 1 kc steps) is additively mixed with whichever spectrum point of the 1-kc spectrum will result in a frequency of 1.981 mc. The 1.981-mc and the 9.07-mc signals are then subtractively mixed, producing the 7.089-mc signal, which contains the errors of both oscillators. The 1-kc spectrum generator also produces 5-kc pulses, which are applied to the 5-kc spectrum generator to produce an output consisting of two spectrum points, 110 kc and 115 kc. These spectrum points are used to lock the output frequency of the 500-cps phase-locked oscillator to 110 kc or 115 kc, when desired. With the front panel CPS switch in the 000 position, the output from the phase-locked oscillator is 110 kc and is locked to that exact frequency by the 100-kc spectrum point applied to the phase detector. This 110-kc signal is divided by ten and applied to the 7.1 mc mixer, where it is additively mixed with the 7.089-mc output from the 7.089-mc mixer. The resulting 7.1-mc signal is then applied to the error loop of the 100-KC Synthesizer Electronic Subassembly (A2A6A2). Therefore, if an error exists in the 1 or 10 kc oscillators, the same error will exist in the 100-kc injection frequencies. This error is then cancelled in the low and mid frequency mixers of the mixers circuit in the following manner. Assume that the output from the 10-kc oscillator should be 5.25 mc, but is actually 5.2502. Also assume that the output from the 1-kc oscillator should be 1.852 mc but is actually 1.8521 mc. Subtractively mixing these two frequencies results in an injection frequency to the low frequency mixer of 3.3981 mc, rather than the desired 3.3980 mc. Therefore, a 100 cycle error exists in the injection signal. The additive mixing of the 5.2502-mc signal and the 10-kc spectrum point (3.82 mc) results in a frequency of 9.0702 mc. The additive mixing of the 1.8521-mc signal and the 1-kc spectrum point (0.129) results in a frequency of 1.9811 mc. Subtractively mixing the 9.0702-mc and the 1.9811-mc signals results in a frequency of 7.0891 mc. The 7.0891-mc signal is mixed with the 11-kc signal from the divide-by-ten circuits resulting in a frequency of 7.1001 mc, which is mixed with the 10.747-mc signal to produce a frequency of 17.8471 mc. If the output from the 100-kc oscillator is assumed to be 4.553 mc, then the 100-kc injection frequency would be 22.4001 mc. The 100-kc injection is then also 100 cycles high. Therefore, when the 1 and 10 kc injection frequency of 3.3981 mc (which is 100 cycles high) is substractively mixed in the low frequency mixer with the output from the mid frequency mixer (which is 100 cycles high), the error will be cancelled. Therefore, since any error that exists in the 1 and 10 kc injection also exists in the 100-kc injection, the error is cancelled during the translation process.

4-35. The T-827/URT can be tuned in 0.5-kc increments. This is accomplished by locking the output of the 500-cps oscillator to 115 kc. Therefore, when the 11.5 kc (after division by ten) is mixed with the 7.089-mc error frequency, a frequency of 7.1005 mc is obtained. Therefore, the 100-kc injection frequency will be 500 cps high. Thus, the output from the mid frequency mixer may be varied in 500 cps increments. The 115-kc output from the 500 cps oscillator is obtained with the CPS switch is placed in the 500 position.

4-36. The 500-kc if. is converted to the desired rf as follows. Assume that the front panel controls are set for a frequency output of 13,492,500 cps. (See figure 4-2 for the frequency scheme for the T-827/URT.) The 1- and 10-kc injection is that frequency of the 10 kc oscillator corresponding to the 10-kc digit (9) minus that frequency of the 1 kc oscillator corresponding to the 1-kc digit (2). As shown on figure 4-2, this results in an injection frequency (5.16 mc minus 1.852 mc) of 3.308 mc. The 3.308 mc is subtractively mixed with the 500-kc if. in the low frequency mixer producing a second if. of 2.808 mc. This signal is filtered and applied to the mid frequency mixer to be subtractively mixed with the 100-kc injection. To determine the 100-kc injection frequency, it must be first noted whether the mc digit to be used results in a hi or lo frequency. In this case, the selected mc digits (13) are in the hi-band. Therefore, the 100-kc injection must correspond. It also must be noted that the CPS switch is in the 500 position. Therefore, the correct 100-kc injection frequency is 32.8005 mc. When the 2.808 mc is subtractively mixed with the 32.0005 mc in the mid frequency mixer, the resulting third if. is 29.9925 mc. This frequency is filtered and applied to the high frequency mixer, where it is subtractively mixed with the mc injection corresponding to the selected mc digits (13). This results in the desired output frequency of 13.4925 mc (29.9925 - 16.5 = 13.4925). Similarly, the 500-kc if. frequency can be translated to any one of the possible 56,000 operating frequencies.

4-37. POWER SUPPLY. The operating voltages for all circuits in the T-827/URT are produced by Power Supply Assembly A2A8 (see figure 4-1). The 105 to 125 vac primary power is converted to dc voltages of 110 vdc (rf amplifier tubes plate and screen supply), -30 vdc (rf amplifier tubes bias), and 28-vdc (general use). The 28 vdc is also regulated to 20 vdc. The 20 vdc is used for operating voltage in the semiconductor circuits of the T-827/URT.



1 KCS	1 KC OSC	10 KCS	10 KC OSC	1 AND 10 KC INJ.	100 KCS	100 KC OSC	LO 000 CPS	LO 500 CPS	HI 000 CPS	HI 500 CPS	MCS	LO	HI
0	1.850	0	5.25	3.400 TO 3.391	0	4.553	22.4000	22.4005	32.4000	32.4005	2	17.5	
1	1.851	1	5.24	3.390 TO 3.381	1	4.653	22.5000	22.5005	32.5000	32.5005	3	16.5	
2	1.852	2	5.23	3.380 TO 3.371	2	4.753	22.6000	22.6005	32.6000	32.6005	4	15.5	
3	1.853	3	5.22	3.370 TO 3.361	3	4.853	22.7000	22.7005	32.7000	32.7005	5	14.5	
4	1.854	4	5.21	3.360 TO 3.351	4	4.953	22.8000	22.8005	32.8000	32.8005	6		23.5
5	1.855	5	5.20	3.350 TO 3.341	5	5.053	22.9000	22.9005	32.9000	32.9005	7	12.5	
6	1.856	6	5.19	3.340 TO 3.331	6	5.153	23.0000	23.0005	33.0000	33.0005	8	11.5	
7	1.857	7	5.18	3.330 TO 3.321	7	5.253	23.1000	23.1005	33.1000	33.1005	9		20.5
8	1.858	8	5.17	3.320 TO 3.311	8	5.353	23.2000	23.2005	33.2000	33.2005	10		19.5
9	1.859	9	5.16	3.310 TO 3.301	9	5.453	23.3000	23.3005	33.3000	33.3005	11	8.5	
											12	7.5	
											13		16.5
											14	5.5	
											15	4.5	
											16	3.5	
											17		12.5
											18		11.5
											19		10.5
											20		9.5
											21		8.5
											22	2.5	
											23	3.5	
											24		5.5
											25		4.5
											26		3.5
											27	7.5	
											28	8.5	
											29	9.5	

Figure 4-2. Frequency Translation, Functional Block Diagram

4-38. RADIO TRANSMITTER T-827/URT, TEST DATA.

4-39. Pertinent references and applicable test data for the T-827/URT are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. Radio Transmitter T-827/URT, Overall Servicing Block Diagram, figure 4-57.

c. Required test equipment:

(1) Oscilloscope, AN/USM-117.

(2) RF Signal Generator, CAQI-606A.

(3) Audio Signal Generator, SG-376/U.

(4) Electronic Multimeter, AN/USM-116.

(5) Electronic Multimeter, ME-6 ( )/U.

(6) Multimeter, AN/PSM-4.

(7) Analyzer Test Set, TS-1379/U.

(8) Frequency Meter, AN/USM-207.

(9) RF Voltmeter, AN/URM-155.

(10) Dummy Load, DA-91( )/U.

(11) Amplifier Test Set, TS-2132/WRC-1. (Refer to note in table 1-4.)

(12) Translator/Synthesizer Test Set, TS-2133/WRC-1. (Refer to note in table 1-4.)

(13) Frequency Standard Test Set, TS-2134/WRC-1. (Refer to note in table 1-4.)

(14) Electronic Circuit Plug-in Unit Test Set, TS-2135/WRC-1. (Refer to note in table 1-4.)

(15) Frequency Standard, AN/URQ-9.

(16) Heterodyne Voltmeter, CDAN-2005. (Refer to note in table 1-4.)

(17) Coaxial T-connector, UG-107B/U.

d. Power supply A2A8 voltages:

(1) +19.9 to +20.1 vdc.

(2) +27 to +32 vdc.

(3) +105 to +115 vdc.

e. Power output: 2.25 vac (represents 0.1 watt, with 150 mv in).

f. Carrier suppression: -50 db SSB, 0 db AM.

g. Adjustments:

(1) Audio gain (paragraph 5-9).

(2) IF. gain (paragraph 5-14).

(3) 5 mc (part of paragraph 5-49).

(4) 500 cps lock (paragraph 5-29).

(5) AM modulation percentage adjustment and carrier reinsertion check (paragraph 5-24).

(6) Carrier balance (paragraph 5-19).

(7) +20 vdc regulator (paragraph 5-4).

h. Components and test point locations:

(1) Radio Transmitter T-827/URT, top view, case removes, figure 5-17.

(2) Radio Transmitter T-827/URT, bottom view, figure 5-19.

i. Refer to Maintenance Standards Book for Radio Transmitter T-827/URT, NAVSHIPS 0967-032-0030 for all test information.

4-40. CIRCUIT DESCRIPTIONS.

4-41. 5 MC FREQUENCY STANDARD, FUNCTIONAL CIRCUIT DESCRIPTION. The 5-mc frequency standard (figure 4-3) consists of an oscillator (Q5) and a buffer amplifier (Q6). These circuits, which form a part of Frequency Standard Electronic Assembly A2A5, provide an accurate 5.000000-mc signal used as a standard throughout the T-827/URT. Assembly A2A5A3 is housed in an oven maintained at a constant 85°C temperature by the oven control circuit. The 5-mc frequency standard circuit is used during all modes of operation. The following paragraphs describe the operation of this circuit in detail.

4-42. The frequency of oscillator Q5 is 5.000000 mc as determined by the parallel resonant tuned circuit consisting of capacitor C7 and the primary of transformer T2. Oscillator frequency is controlled by the series resonant circuit consisting of parallel capacitors A2A5C1 and C10, and crystal Y1. To sustain oscillation, feedback for oscillator Q5 is obtained from a tap on the primary of transformer T2 and passed through trimmer capacitor A2A5C1, capacitors C10 and C9, and crystal Y1 to the emitter of oscillator Q5. The series resonant circuit allows only a 5.000000-mc signal to pass, holding oscillator Q5 to oscillations at exactly 5 mc. The amplitude of oscillator Q5 output is limited by diodes CR5 and CR6. Stable operating voltages of 15 vdc and 7.5 vdc are assured by resistor R12 and two 7.5-volt Zener diodes CR3 and CR4 in series across the 28-vdc supply. Base bias for oscillator Q5 is taken from the junction of Zener diodes CR3 and CR4 and is applied through resistor R14 to the base of oscillator Q5. Capacitor C8 is the bypass capacitor. Resistor R16 is the emitter load resistor.

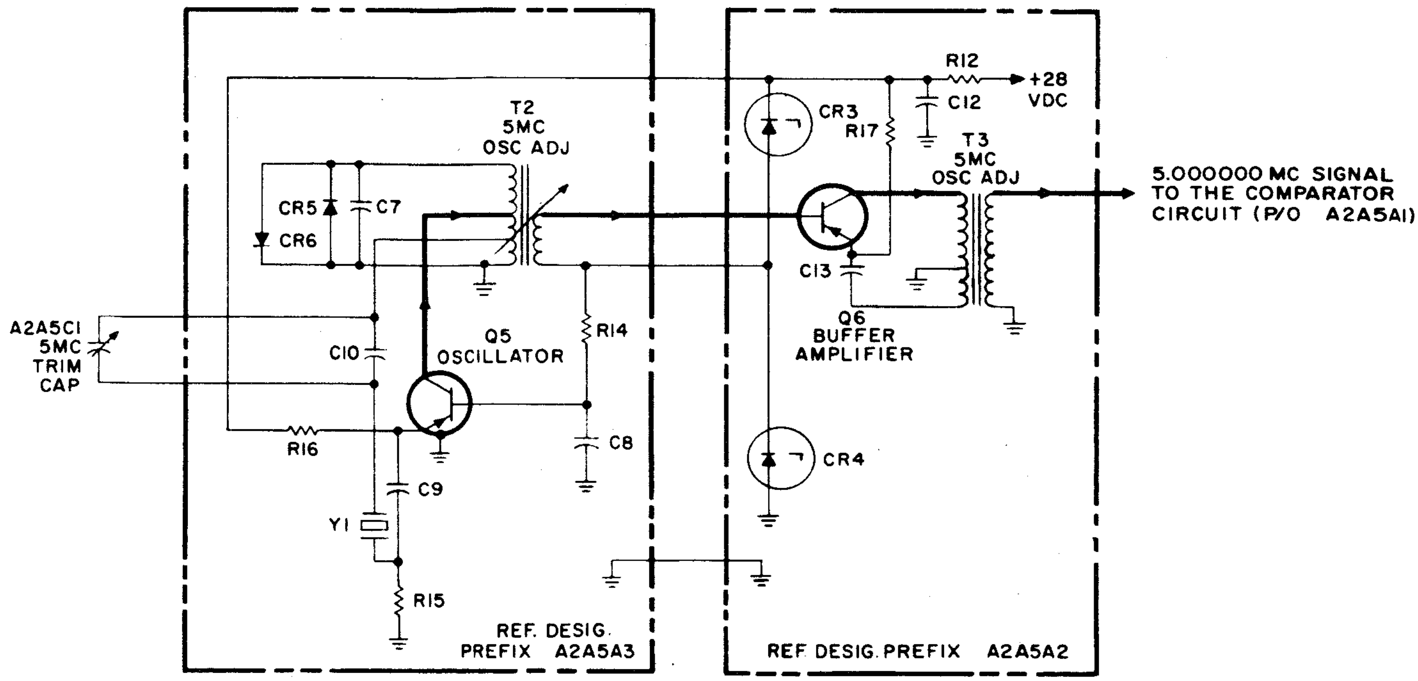


Figure 4-3. 5 MC Frequency Standard, Simplified Schematic Diagram

4-43. The output from oscillator Q5 is coupled by transformer T2 to the base of buffer amplifier Q6, where it is amplified. The output load for buffer amplifier Q6 is tuned to transformer T3. A tap on the primary of transformer T3 supplies negative feedback to the emitter circuit of buffer amplifier Q6, assuring amplifier stability.

4-44. 5 MC FREQUENCY STANDARD, TEST DATA. Pertinent references and applicable test data for the 5-mc frequency standard are as follows:

a. Radio Transmitter T-827/URT, chassis and Main Frame, Schematic Diagram, figure 5-1.

b. Frequency Standard Electronic Assembly, Servicing Block Diagram, figure 4-58.

c. Frequency Standard Electronic Assembly, Schematic Diagram, figure 5-5.

d. Refer to paragraph 2-29 in Technical Manual for Repair of AN/WRC-1 and R-1051/URR 2N Modules, NAVSHIPS 0967-034-2000 for 5-mc oscillator circuit alignment.

e. Required Test Equipment:

(1) Frequency Standard, AN/URQ-9.

(2) RF Voltmeter, AN/URM-155.

(3) Frequency Meter, AN/USM-207.

(4) Multimeter, AN/PSM-4.

(5) Frequency Standard Test Set, TS-2134/WRC-1. (Refer to note in table 1-4.)

f. Output frequency: 5,000,000.1 to 4,999,999.1 cps.

g. 5 MC Oscillator, (Foil Side Up) Component Location, figure 5-48.

h. Oven Control and Buffer Amplifier (Foil Side Up) Component Location,

4-45. OVEN CONTROL, FUNCTIONAL CIRCUIT DESCRIPTION. The oven control (figure 4-4) consists of an oscillator (Q1, Q2), an emitter follower (Q3), a dc power amplifier A2A5Q1, and an oven heater (A2A5HR1). These circuits, which form a part of Frequency Standard Electronic Assembly A2A5, maintain the 5-mc crystal oven at a constant 85°C (185°F) temperature. The oven control circuit is used during all modes of operation. The following paragraphs describe the operation of this circuit in detail.

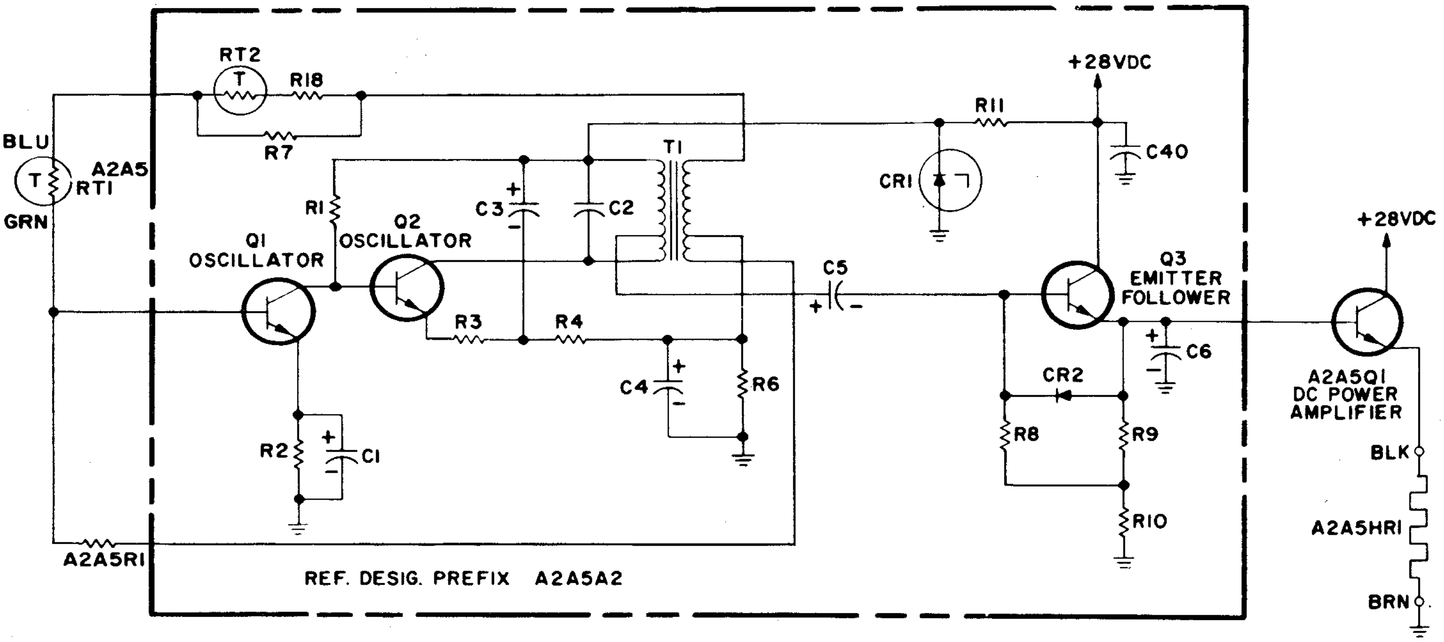


Figure 4-4. Oven Control, Simplified Schematic Diagram

4-46. The frequency of oscillator Q1, Q2 is approximately 18 kc, as determined by the tuned circuit consisting of capacitor C2 and the primary of transformer T1. The feedback for oscillator Q1, Q2 is produced by a bridge consisting of the center-tapped secondary of transformer T1 acting as two of the bridge legs. Resistor A2A5R1 and thermistor A2A5RT1, thermistor RT2, resistor R18, resistor R7 act as the other two legs. This bridge is designed to balance when thermistor A2A5RT1 is at 85°C. Thermistor A2A5RT1 is physically mounted underneath heater A2A5HR1. The bridge will never become balanced due to heat lost to the surroundings; therefore, the oscillator will never stop oscillating. Emitter resistor R2 provides self bias for oscillator Q1. Capacitor C1 functions as an emitter bypass capacitor. Emitter resistors R3, R4, and R6 provide self bias for oscillator Q2. The dc bias is also taken from the junction of resistors R4 and R6 and applied through the secondary of transformer T1 and resistor A2A5R1 to the base of oscillator Q1. Capacitors C3 and C4 are emitter bypass capacitors.

4-47. The 18-kc signal is taken from a tap on the primary of transformer T1 and coupled through capacitor C5 to the base of emitter follower Q3, where it is rectified. Capacitor C6 smoothes the rectified signal. Diode CR2 protects emitter follower Q3 against excessive reverse-bias on the base-emitter junction. When the base voltage attempts to go more negative than the emitter voltage, diode CR2 will be forward-biased, thereby keeping the base voltage at the same level as the emitter voltage. From the emitter of emitter follower Q3, the dc signal is applied to the base of dc power amplifier A2A5Q1 to control current through heater A2A5HR1 in the emitter circuit of dc power amplifier A2A5Q1, and thereby, the temperature of the oven. The current is directly proportional to the unbalance caused in the bridge circuit, which determines the output signal amplitude of oscillator Q1, Q2.

4-48. Stable operating voltages for oscillator Q1, Q2 are provided by resistor R11 and Zener diode CR1.

4-49. OVEN CONTROL, TEST DATA. Pertinent references and applicable test data for the oven control circuit are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. Frequency Standard Electronic Assembly, Servicing Block Diagram, figure 4-58.

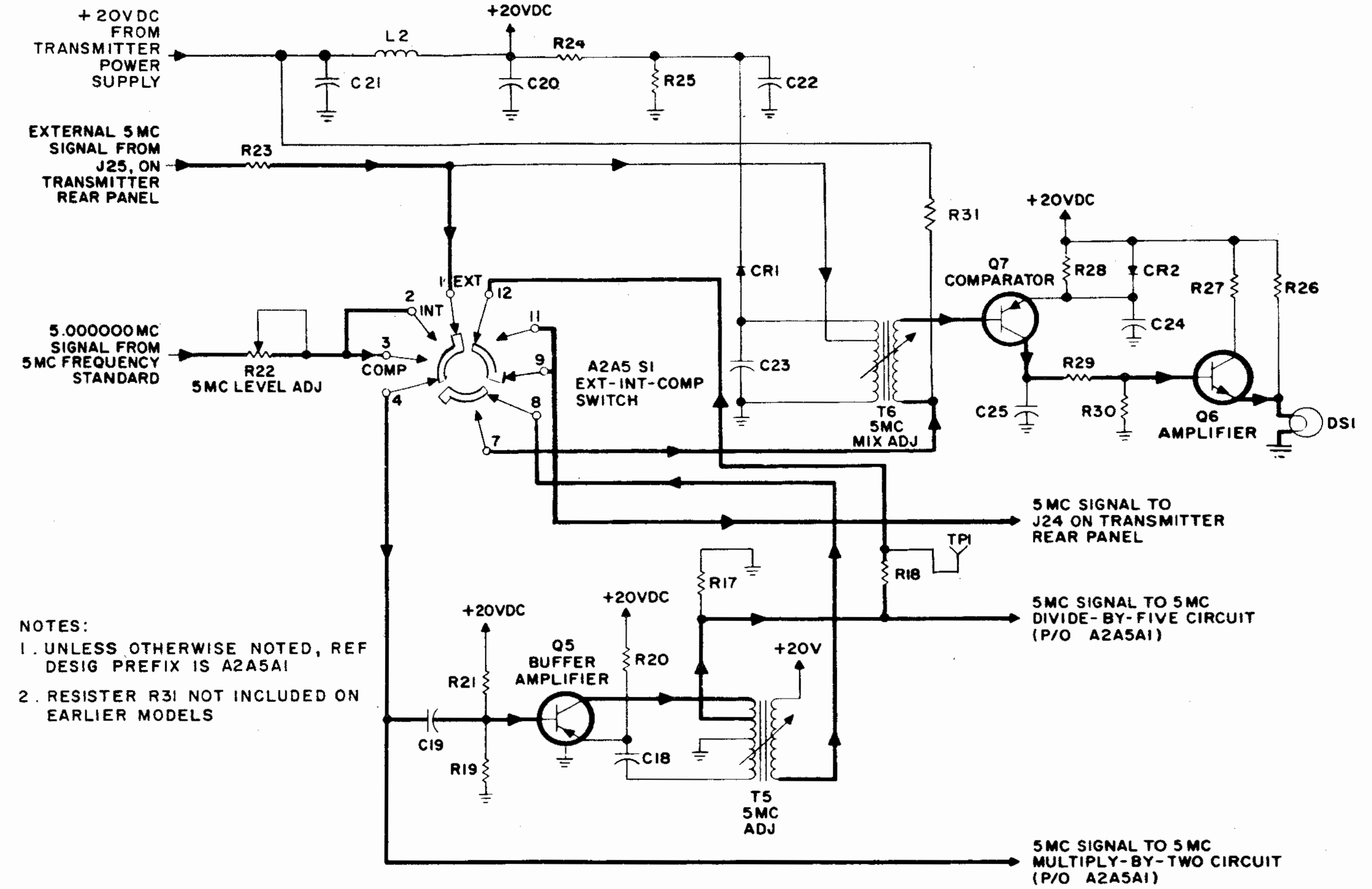


Figure 4-5. Comparator, Simplified Schematic Diagram

c. Frequency Standard Electronic Assembly, Schematic Diagram, figure 5-5.

d. Required Test Equipment:

(1) RF Voltmeter, AN/URM-155.

(2) Multimeter, AN/PSM-4.

(3) Frequency Standard Test Set, TS-2134/WRC-1. (Refer to note in table 1-4.)

e. Oven Control and Buffer Amplifier, (Foil Side Up) Component Location, figure 5-47.

f. Refer to paragraph 2-27 in Technical Manual for Repair of AN/WRC-1 and R-1051/URR 2N Modules NAVSHIPS 0967-034-2000 for temperature adjustment procedure.

4-50. COMPARATOR, FUNCTIONAL CIRCUIT DESCRIPTION. The comparator (figure 4-5) consists of a buffer amplifier (Q5), a comparator stage (Q7), and an amplifier (Q6). These circuits, which form a part of Frequency Standard Electronic Assembly A2A5, compare the 5.000000-mc signal received from the 5 mc frequency standard circuit with an accurate external 5-mc signal. This function is required to determine and maintain the accuracy of the internal 5 mc frequency standard signal. The following paragraphs describe the operation of this circuit in detail.

4-51. In the INT position of switch A2A5S1, the 5-mc signal from the 5 mc frequency standard is applied to buffer amplifier Q5 through 5 MC LEVEL ADJ potentiometer R22, contacts 2 and 4 of switch A2A5S1, and coupling capacitor C19. The amplified 5-mc signal output from this stage is applied to the 5-mc divide-by-five circuit through a portion of the primary winding of 5 MC ADJ transformer T5. With switch A2A5S1 in the INT position, the 5-mc signal is also applied to the 5 mc multiply-by-two circuit. Base-bias for buffer amplifier Q5 is provided by voltage divider R19, R21. Negative feedback to the emitter of buffer amplifier Q5 is provided by transformer coupling the 5-mc output through the center tapped primary winding of 5 MC ADJ transformer T5 and capacitor C18. This feedback provides frequency stability for this amplification stage. No 5 mc signal is applied to comparator Q7 and the subsequent amplifier Q6 when switch A2A5S1 is set at the INT position since contacts 7-8 of that switch are open. Resistor R17 is the output load resistor for the 5 mc signal. Resistor R20 is the emitter resistor.

4-52. When switch A2A5S1 is in the EXT position, the externally supplied 5-mc signal is amplified by buffer amplifier Q5 and applied to connector J24 on the rear panel of the transmitter and to the 5 mc divide-by-five circuits in the same manner as described in paragraph 4-51. In a similar manner, the signal is directly coupled to the 5 mc multiply-by-two circuit through contacts 1 and 4 of switch A2A5S1. Since contacts 7-8 are not closed, comparator Q7 and its associated amplifier Q6 are not operative. The internally generated 5-mc signal is compared with an externally supplied 5-mc standard when switch A2A5S1 is set at the COMP position. In this condition of operation, the 5-mc external signal is applied to the primary winding of transformer T6 from connector J25 on the rear panel of the transmitter, through isolating resistor R23. Comparator Q7 and associated amplifier Q6 become operative since both the internal and external 5 mc signal are available to the circuit. The amplitude of the externally applied signals is limited to approximately 300 millivolts peak by the voltage divider network consisting of resistors R24, R25, and diode CR1. In the event that the frequencies of the two signals are different, the resulting difference frequency is coupled to the base of comparator Q7. A portion of the output from comparator Q7 is dc coupled to the base of amplifier Q6 by voltage divider-collector load resistors R29 and R30. The output of amplifier Q6 is developed across lamp DS1 in its emitter circuit, causing the lamp to flash at the difference frequency. Resistor R31 maintains comparator Q7 at cutoff when switch A2A5S1 is at either the INT or EXT positions. Resistor R28 is the emitter bias resistor, which is rf bypassed by capacitor C24. Diode CR2 in the emitter circuit of comparator Q7 keeps the gain of the stage constant in spite of temperature variations. This control occurs because the resistance of diode CR2 varies with temperature change. Capacitor C25 bypasses all mixing products except the difference frequency to ground. Resistor R27 is the collector dropping resistor for amplifier Q6. Resistor R26 is a bleeder resistor for stablizing the quiescent emitter bias for dc amplifier Q6.

4-53. COMPARATOR, TEST DATA. Pertinent references and applicable test data for the comparator circuit are as follows:

a. Radio Transmitter T-827/URT, Main Frame, Schematic Diagram, figure 5-1.

b. Frequency Standard Electronic Assembly, Servicing Block Diagram, figure 4-58.

c. Frequency Standard Electronic Assembly, Schematic Diagram, figure 5-5.

d. Refer to paragraph 2-25 in Technical Manual for Repair of AN/WRC-1 and R-1051/URR 2N Modules, NAVSHIPS 0967-034-2000 for comparator alignment procedures.

e. Required Test Equipment:

(1) RF Voltmeter, AN/URM-155.

(2) Multimeter, AN/PSM-4.

(3) RF Signal Generator, CAQI-606A.

(4) Frequency Standard Test Set, TS-2134/WRC-1. (See note in table 1-4.)

f. 5 MC Multiplier, Dividers and Comparator, (Component Side Down) Component and Test Point Location. Figure 5-46.

4-54. 5 MC DIVIDE-BY-FIVE, FUNCTIONAL CIRCUIT DESCRIPTION. The 5-mc divide-by-five circuit (figure 4-6) consists of a 4 mc amplifier (Q2) and a 1 mc amplifier (Q3). These circuits, which form a part of the multiplier-divider circuit group of Frequency Standard Electronic Assembly A2A5, derive a 1-mc signal for use in the spectrum generator mixer circuit of MC Synthesizer Electronic Subassembly A2A6A1 from the 5-mc signal from the comparator circuit. (Refer to paragraph 4-50.) The following paragraphs describe the operation of the circuits in detail.

4-55. Amplifiers Q2 and Q3 form a regenerative closed loop to provide a 1-mc output. At the instant power is applied, some circuit dis-

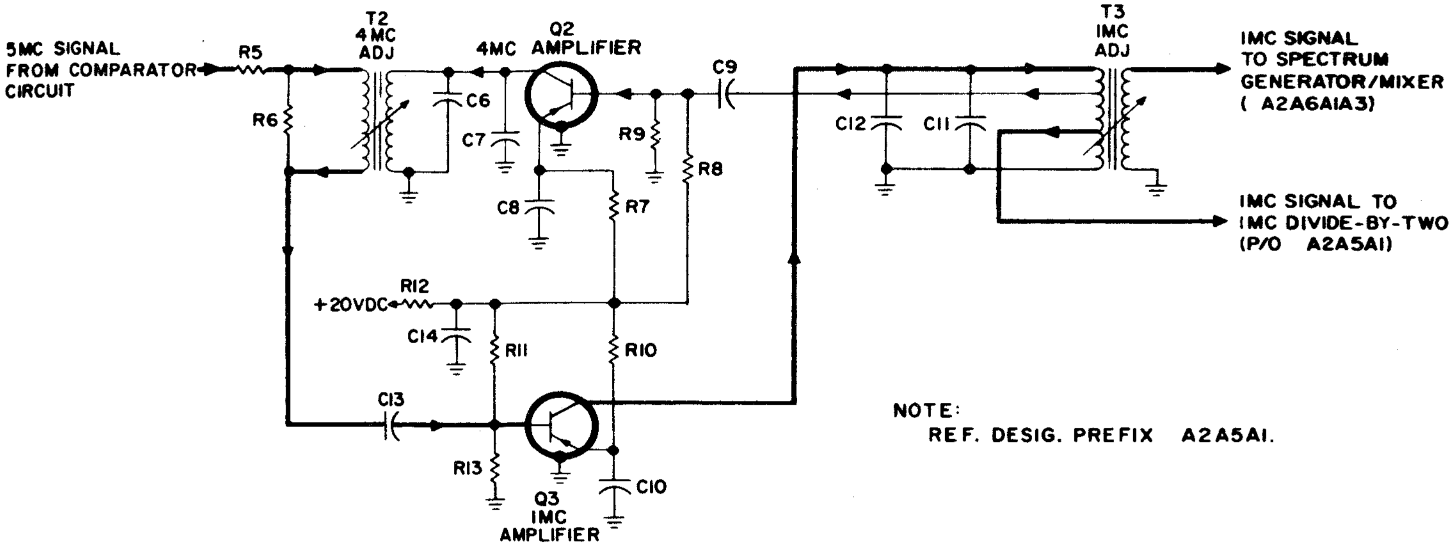


Figure 4-6. 6 MC Divide-By-Five, Simplified Schematic Diagram

turbance causes noise to be produced in the tuned outputs of amplifiers Q3 and Q2. The tuned output of amplifier Q3 allows only the 1-mc portion of the noise to pass. This low level 1-mc is applied to 4-mc amplifier Q2. Amplifier Q2 is biased in a non-linear condition so that the fourth harmonic of the 1-mc is amplified. The 4 mc is mixed with the 5-mc input, providing a 1-mc input to amplifier Q3. The 1 mc is amplified and applied to amplifier Q2. This flywheel effect is repeated until a stable 1-mc output is produced, which is locked to the 5-mc frequency standard.

4-56. The 5-mc signal, applied to the primary of transformer T2, is mixed with the 4-mc signal from the secondary, producing a 1-mc difference frequency. The 1-mc signal is coupled by capacitor C13 to the base of 1 mc amplifier Q3. The base bias for amplifier Q3 is provided by voltage divider R12, R11, R13. The output load for 1 mc amplifier Q3 consists of the primary of transformer T3 and capacitors C11 and C12. This output circuit is tuned to 1 mc. Capacitor C12 is a negative temperature coefficient to compensate for changes in the 1 mc amplifier caused by temperature changes. The 1-mc signal is taken from a tap on the primary of transformer T3 and coupled to the base of 4 mc amplifier Q2 by capacitor C9. Base bias for amplifier Q2 is provided by voltage divider R8, R9, R12. The output load for 4 mc amplifier Q2 consists of the primary of transformer T2 and capacitors C6 and C7. This output circuit is tuned to 4 mc. Capacitor C7 has a negative temperature coefficient to compensate for changes in the 4-mc amplifier output caused by temperature changes. Resistors R7 and R10 are emitter bias resistors, which are rf bypassed by capacitors C8 and C10, respectively. Resistor R12 and capacitor C14 provide decoupling for amplifiers Q2 and Q3. The two 1 mc outputs from the 5 mc divide-by-five circuits are taken from the primary and secondary of transformer T3 and applied to the 1 mc divide-by-two circuit and to the spectrum generator/mixer circuit in MC Synthesizer Electronic Subassembly A2A6A1.

4-57. 5 MC DIVIDE-BY-FIVE, TEST DATA. Pertinent references and applicable test data for the 5 mc divide-by-five circuit are as follows:

a. Radio Transmitter T-827/URT, Ch Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. Frequency Standard Electronic Assembly, Servicing Block Diagram, figure 4-58.

c. Frequency Standard Electronic Assembly, Schematic Diagram, figure 5-5.

d. Refer to paragraph 2-25 in Technical Manual for Repair of AN/WRC-1 and R-1051/URR 2N Modules, NAVSHIPS 0967-034-2000 for 5 mc divide-by-five alignment procedures.

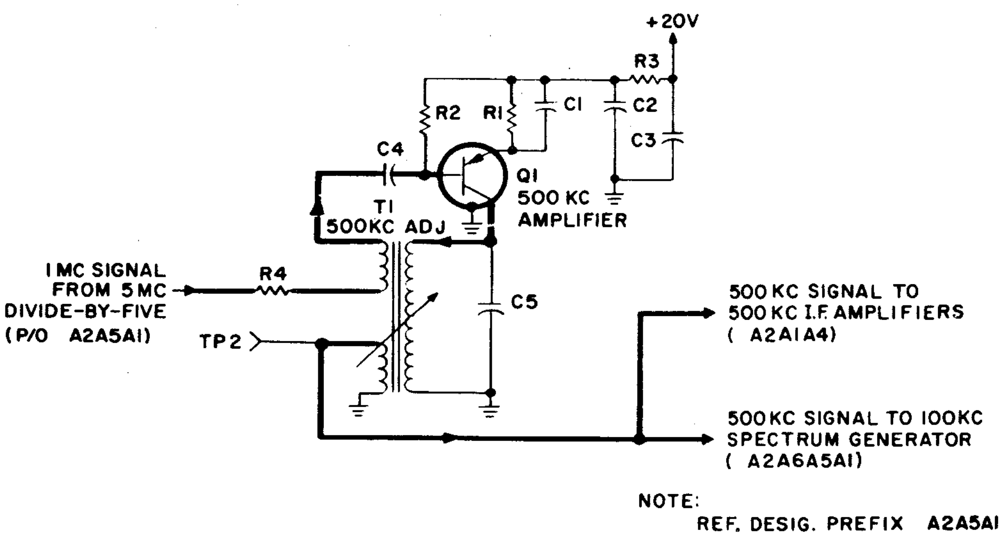


Figure 4-7. 1 MC Divide-By-Two, Simplified Schematic Diagram

e. Required Test Equipment:

(1) RF Voltmeter, AN/URM-155.

(2) Multimeter, AN/PSM-4.

(3) RF Signal Generator, CAQI-606A.

(4) Frequency Standard Test Set, TS-2134/WRC-1. (Refer to note in table 1-4.)

f. 5 MC Multiplier, Divider and Comparator, (Component Side Down) Component and Test Point Location, figure 5-46.

4-58. 1 MC DIVIDE-BY-TWO, FUNCTIONAL CIRCUIT DESCRIPTION. The 1 mc divide-by-two circuit produces a locked 500-kc signal from the locked 1-mc signal from the 5 mc divide-by- five circuit. The circuit consists of 500 kc amplifier Q1, in a regenerative oscillator configureation (figure 4-7) and forms a part of the multiplier-divider circuit group of Frequency Standard Electronic Assembly A2A5. The 500-kc signal is the local carrier used in the 500 kc if. amplifiers circuit A2A1A4 and triggers 100 kc spectrum generator circuit A2A6A5A1. The following paragraph describes the operation of the 1 mc divide-by-two circuit in detail.

4-59. With no 1-mc input, the 1 mc divide-by-two circuit will not oscillate. When the 1-mc signal is applied through isolating resistor R4, the feedback winding of transformer T1, and coupling capacitor C4 and appears at the base of 500 kc oscillator Q1, the transistor will be biased on. At this time, noise is produced due to the transistor being turned on. Since transformer T1 is tuned to 500 kc, the 500-kc portion of this noise passes through transformer T1 and mixes with the 1-mc signal producing a 500 kc difference frequency. This difference is amplified by 500 kc amplifier Q1 and again applied to transformer T1, thereby sustaining oscillations. Resistor R2 is the base bias resistor. Resistor R1 is the emitter resistor, which is rf bypassed by capacitor C1. Resistor R3 and capacitors C2 and C3 provide decoupling for 500 kc amplifier Q1. The 500 kc output is taken from the secondary of transformer T1 and applied to the 500 kc if. amplifiers circuit A2A1A4 and to the 100 kc spectrum generator circuit A2A6A5A1.

4-60. 1 MC DIVIDE-BY-TWO, TEST DATA. Pertinent references and applicable test data for the 1 mc divide-by-two circuit are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. Frequency Standard Electronic Assembly, Servicing Block Diagram, figure 4-58.

c. Frequency Standard Electronic Assembly, Schematic Diagram, figure 5-5.

d. Refer to paragraph 2-25 in Technical Manual for Repair of AN/WRC-1 and R-1051/URR 2N Modules, NAVSHIPS 0967-034-2000 for 1 mc divide-by-two alignment procedures.

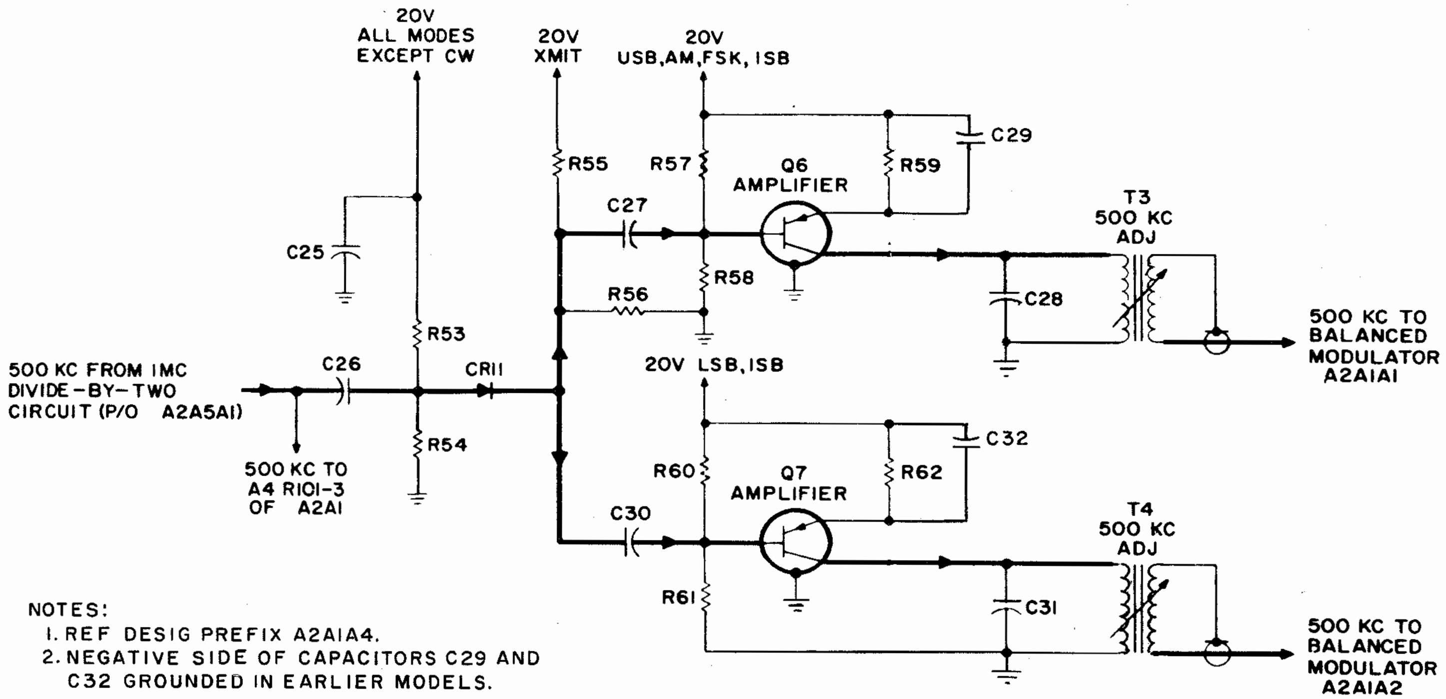


Figure 4-8. 500 KC Amplifiers, Simplified Schematic Diagram

e. Required Test Equipment:

(1) RF Voltmeter, AN/URM-155.

(2) Multimeter, AN/PSM-4.

(3) RF Signal Generator, CAQI-606A.

(4) Frequency Standard Test Set, TS-2134/WRC-1. (Refer to note in table 1-4.)

f. 5 MC Multiplier, Dividers and Comparator, (Component Side Down) Component and Test Point Locations, figure 5-46.

4-61. 500 KC AMPLIFIER, FUNCTIONAL CIRCUIT DESCRIPTION. The 500 kc amplifier (figure 4-8) consists of a diode gating circuit (CR11) and two amplifiers (Q6 and Q7). These circuits, which form a part of Mode Selector Electronic Assembly A2A1, amplify the 500-kc output from the 1 mc divide-by-two circuit in Frequency Standard Electronic Assembly A2A5 to a level suitable for use in balanced modulators A2A1A1 and A2A1A2. The gating circuit prevents application of the 500-kc signal to the amplifiers during CW operation. Amplifier Q6 is used during the USB, AM, and FSK modes of operation, and amplifier Q7 is used during the LSB mode of operation. Both amplifiers are used during the ISB mode of operation. The following paragraphs described in detail the operation of these circuits for each indicated operation mode.

4-62. ISB Operation. The 500-kc signal is coupled to the anode of gating diode CR11 by capacitor C26. This gate is forward-biased as a result of the positive 18 vdc on the anode and the positive 10 vdc on the cathode. The two biases are instantaneous voltages, developed for all modes of operation except CW by voltage dividers R53, R54, and R55, R56. Positive 20 vdc is applied to the dividers from the front panel Mode Selector switch. When gate CR11 is conducting, both biases are approximately the same. The difference is the voltage drop caused by the forward resistance of the diode. Since gate CR11 is forward-biased, it will conduct, allowing the 500-kc signal to pass and be coupled by capacitors C27 and C30 to the bases of amplifiers Q6 and Q7, respectively. Operating voltage for amplifier Q6 is developed from the positive 20 vdc applied to voltage divider R57, R58 and emitter resistor R59 from the Mode Selector switch on the front panel. The amplified 500-kc output from amplifier Q6 is developed across the tuned tank circuit consisting of capacitor C28 and the primary of transformer T3. The 500-kc signal is coupled to balanced modulator A2A1A1 by transformer T3. Operating voltage for amplifier Q7 is developed from the positive 20 vdc applied to voltage divider R60, R61, and emitter resistor R62 from the Mode Selector switch on the front panel. The amplified 500-kc output from amplifier Q7 is developed across the tuned tank circuit consisting of capacitor C31 and the primary of transformer T4. The 500-kc signal is coupled to balanced modulator A2A1A2 by transformer T4.

4-63. USB, AM, FSK Operation. When the Mode Selector switch on the front panel is set at USB, AM, or FSK position, the positive 20 vdc operating voltage for Q7 is removed. The remaining circuits function as described in paragraph 4-62.

4-64. LSB Operation. When the Mode Selector switch on the front panel is set at the LSB position, the positive 20 vdc operating voltage for amplifier Q6 is removed. The remaining circuits function as described in paragraph 4-62.

4-65. CW Operation. When the Mode Selector switch on the front panel is set at the CW position, the operating voltage for the amplifiers and the anode bias for gate CR11 is removed. The 10 vdc cathode bias on CR11 is still applied. Therefore, CR11 will be reverse-biased.

4-66. 500 KC AMPLIFIER, TEST DATA. Pertinent references and applicable test data for the 500 kc amplifier circuit are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. Mode Selector Electronic Assembly, Servicing Block Diagram, figure 4-59.

c. Mode Selector Electronic Assembly, Schematic Diagram, figure 5-2.

d. Mode Selector Electronic Assembly, Adjustments, paragraph 5-74.

e. Required Test Equipment:

(1) RF Signal Generator, CAQI-606A.

(2) RF Voltmeter, AN/URM-155.

(3) Multimeter, AN/PSM-4.

(4) Cable Assembly, W1 and W4.

(5) Electronic Circuit Plug-in Unit Test Set, TS-2135/WRC-1. (Refer to note in table 1-4.)

f. 500 KC Amplifiers/Gates and Sidetone Oscillator/Gates, Component and Test Point Location, figure 5-32.

4-67. BALANCED MODULATOR, FUNCTIONAL CIRCUIT DESCRIPTION. The balanced modulator (figure 4-9) consists of a balanced resistive input network (R21, R22, R23, R24, R25), diode bridge (R27, CR5; R29, CR6; R28, CR7; R30, CR8), and a balanced reactive output network (C13, C14, C15, C16, C17, R31, R32, R33, R34, and the primary of T2). There are two balanced modulator circuits used; A1 and A2 (figure 5-2). These circuits, which form a part of Mode Selector Electronic Assembly A2A1, modulate the 500-kc if. carrier with the desired intelligence. A balanced modulator is a device for obtaining the sideband components of modulation without passing the carrier. Balanced modulator A1 is used during the USB, AM, and FSK modes of operation. Balanced modulator A2 is used during the LSB mode of operation. Both balanced modulators are used during the ISB mode of operation. The following paragraphs describe the operation of the balanced modulator circuit in detail.

4-68. The 500-kc output from 500 kc amplifier A4Q6 is applied to the center of the balanced resistive input network. Balancing resistor R23 is adjusted to compensate for the tolerance of fixed resistors R21, R22, R24, and R25. Proper Adjustment of resistor R23 insures that the resistance from the center to either side of the resistive input network will be equal (balanced). The output from this network is applied to one side of the diode bridge and the intelligence is applied to the other side. Each arm of the diode bridge has a 100-ohm precision resistor in series with the respective diode. Since the forward resistance of the diode is small, the resistance of each arm will be effectively 100 ohms, thereby balancing

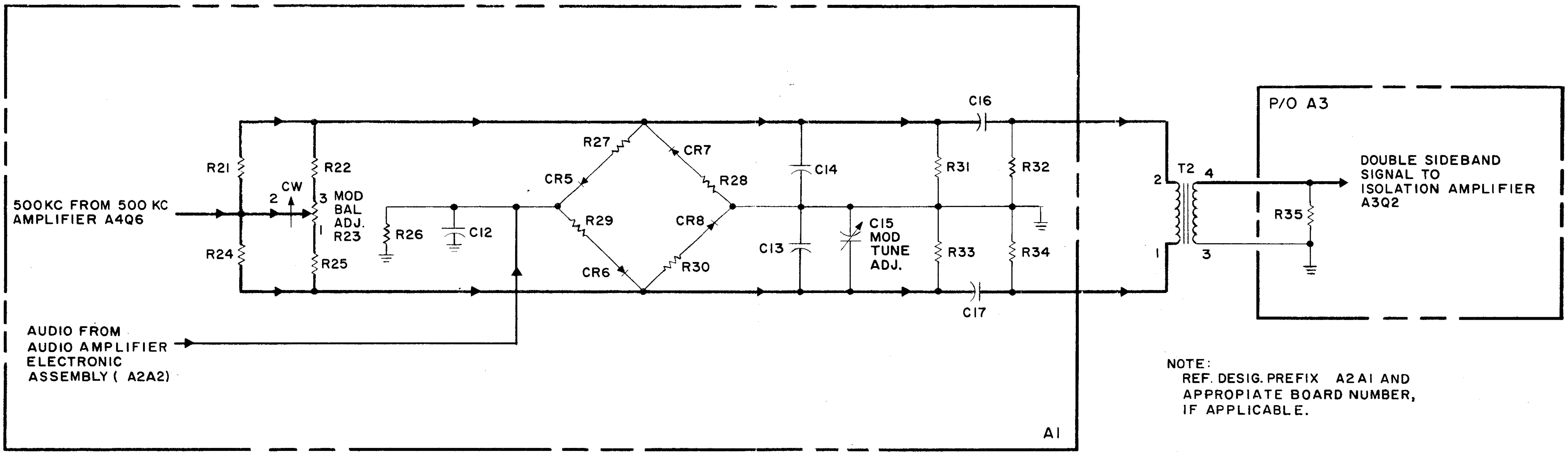


Figure 4-9. Balanced Modulator, Simplified Schematic Diagram

the bridge. The audio voltage across the bridge varies in frequency and amplitude. When the instantaneous polarity of the audio signal is positive, diode CR6 conducts; when the audio signal goes instantaneously negative, diode CR5 conducts. Therefore, the output from the diode bridge will consist of two sidebands with a suppressed carrier. The two sidebands are coupled to the primary of transformer T2 by capacitors C16 and C17. Resistors R31, R32, R33, and R34 provide resistive balance from the center to either side of the output of the balanced modulator circuit. Capacitors C13, C14, and C15 tune the primary of transformer T2. Balancing resistor R23 and tuning capacitor C15 provide resistive and reactive balance in the balanced modulator circuit, insuring a high degree of carrier suppression. Transformer T2 couples the double sideband signal to isolation amplifier A3Q2. Resistor A3R35 is the terminating resistor for transformer T2.

4-69. Balanced modulator A2 is identical to balanced modulator A1. The 500-kc signal is applied to balanced modulator A2 from 500 kc amplifier A4Q7. The output from balanced modulator A2 is developed across transformer T1, which also couples it to isolation amplifier A3Q1. Resistor A3R15 is a damping resistor for transformer T1.

4-70. BALANCED MODULATOR, TEST DATA. Pertinent references and applicable test data for the balanced modulators are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. Mode Selector Electronic Assembly, Servicing Block Diagram, figure 4-59.

c. Mode Selector Electronic Assembly, Schematic Diagram, figure 5-2.

d. Mode Selector Electronic Assembly, Adjustments, paragraph 5-74.

e. Required Test Equipment:

(1) RF Signal Generator, CAQI-606A.

(2) Audio Signal Generator, SG-376/U.

(3) RF Voltmeter, AN/USM-155.

(4) Analyzer Test Set, TS-1379/U.

(5) Cable Assembly, W1 and W4.

(6) Electronic Circuit Plug-in Unit Test Set, TS-2135/WRC-1. (Refer to note in table 1-4.)

f. LSB Balanced Modulator (Foil Side Up), Component and Test Point Location, figure 5-29.

g. USB Balanced Modulator (Foil Side Up), Component and Test Point Location, figure 5-28.

4-71. ISOLATION AMPLIFIER/FILTER, FUNCTIONAL CIRCUIT DESCRIPTION. The isolation amplifier/filter (figure 4-10) consists of an isolation amplifier (Q2) and a filter (FL2). A similar circuit (Q1 and FL1) is also used (figure 5-2). These circuits, which form a part of Mode Selector Electronic Assembly A2A1, isolate the balanced modulator from the filter, provide amplification for the output of the balanced modulator, filter the undesired sideband from the double sideband output from the balanced modulator, and provide additional suppression of the 500-kc carrier. The carrier should be 50-db below the desired sideband at the output of the filter. Isolation amplifier Q2 and filter FL2 are used during the FSK, USB, and AM modes of operation. Isolation amplifier Q1 and filter FL1 are used during the LSB mode of operation. Both amplifiers and filters are used during the ISB mode of operation. The following paragraphs describe the operation of the isolation amplifier/filter circuit in detail.

4-72. The output from balanced modulator A1 is coupled to the base of isolation amplifier Q2 by capacitor C18. Operating voltage for amplifier Q2 is developed from the 20 vdc applied to voltage divider R36, R37 and emitter resistor R38 by the Mode Selector switch on the front panel (USB, ISB, AM, and FSK positions). Unbypassed emitter resistor R39 provides a small amount of degeneration to improve the stability of the circuit. Isolation amplifier Q2 provides amplification for the double sideband output from the balanced modulator. This amplification is required because of the insertion loss of the filter. The output from isolation amplifier Q2 is coupled to the input of filter FL2 by capacitor C21.

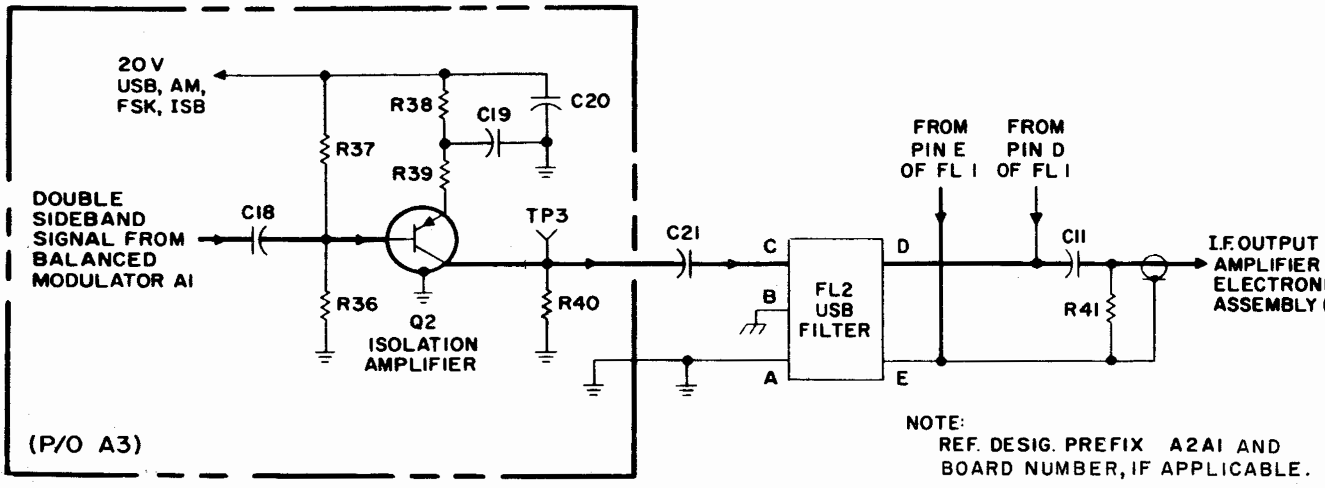


Figure 4-10. Isolation Amplifier/Filter, Simplified Schematic Diagram

4-73. Filter FL2 is a mechanical filter that passes only the upper sideband portion of the double sideband output of isolation amplifier Q2. During FSK operation, the square wave used to modulate the 500-kc carrier is filtered so that only that portion of the if. that is modulated by the fundamental frequency of the square wave passes. Coupler capacitor C21 is selected to provide a 500-kc series resonant input circuit for the filter.

4-74. Isolation amplifier Q1 (figure 5-2) is identical to isolation amplifier Q2. The operating voltage for Q1 is only applied during LSB or ISB modes of operation. The 500-kc if. output from balanced modulator A2 is applied to isolation amplifier Q1, which provides the amplification required to drive filter FL1. Filter FL1 passes only the lower sideband portion of the double sideband output from isolation amplifier Q1. The output from filter FL1 or FL2, or from both filters, is coupled to the if. amplifiers in IF. Amplifier Electronic Assembly A2A12 by capacitor C11. Resistor R41 provides the necessary resistive termination for the two filters.

4-75. ISOLATION AMPLIFIER/FILTER, TEST DATA. Pertinent references and applicable test data for the isolation amplifier/filter circuit are as follows:

a. Radio Transmitter T-827/URT Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. Mode Selector Electronic Assembly, Servicing Block Diagram, figure 4-59.

c. Mode Selector Electronic Assembly, Schematic Diagram, figure 5-2.

d. Required Test Equipment:

(1) RF Signal Generator, CAQI-606A.

(2) Audio Signal Generator, SG-376/U.

(3) Analyzer Test Set, TS-1379/U.

(4) Multimeter, AN/PSM-4.

(5) Cable Assembly, W1.

(6) Electronic Circuit Plug-in Unit Test Set, TS-2135/WRC-1. (Refer to note in table 1-4.)

e. Isolation Amplifiers (Foil Side Up), Component and Test Point Location, figure 5-30.

f. Mode Selector Electronic Assembly, Right Side, Component and Test Point Location, figure 5-27.

4-76. PEAK POWER CONTROLLED IF. AMPLIFIER, FUNCTIONAL CIRCUIT DESCRIPTION. The peak power controlled if. amplifier (figure 4-11) consists of an emitter follower (Q1) and an if. amplifier (Q2). These circuits, which form a part of IF. Amplifier Electronic Assembly A2A12, prevent the peak power of the if. amplifier from exceeding a predetermined level and thereby limit the peak power of the associated rf power amplifier

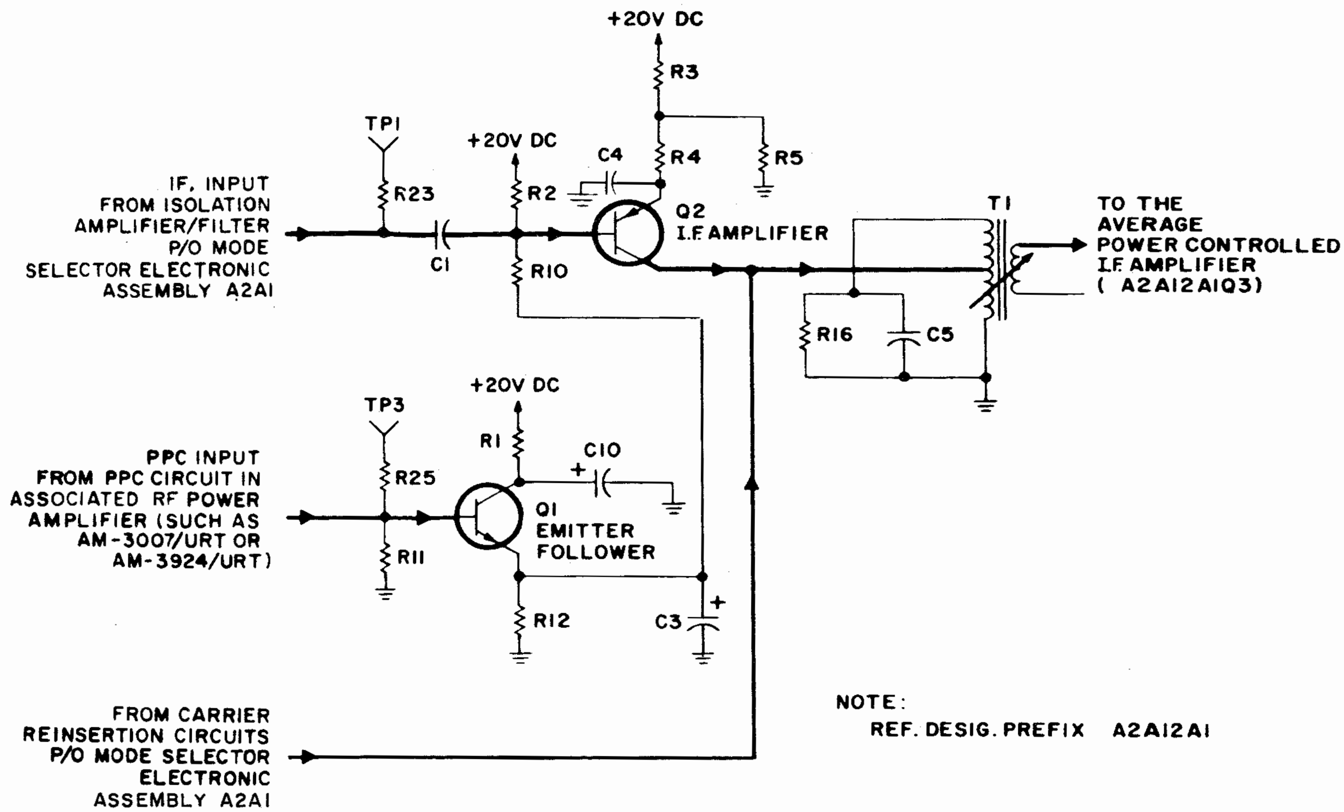


Figure 4-11. Isolation Amplifier/Filter, Simplified Schematic Diagram

(such as AM-3007/URT or AM-3924/URT). The following paragraphs describe the operation of this circuit in detail.

4-77. The if. signal from the isolation amplifier/filter circuit in Mode Selector Electronic Assembly A2A1 is coupled through capacitor C1 to the base of if. amplifier Q2. The base bias for if. amplifier Q2 is provided by 20 vdc applied to voltage divider R2, R10, R12. Since resistor R12 is also in the emitter circuit of emitter follower Q1, any increase in the emitter current of emitter follower Q1 increases the voltage across resistor R12. This increases the base voltage on if. amplifier Q2, which decreases the forward bias from emitter to base of if. amplifier Q2, thereby decreasing the gain of the stage. Emitter current in emitter follower Q1 will flow when voltages of 5 vdc ± 5 vdc are received at the PPC input. These voltages are supplied by the PPC circuit in the associated rf power amplifier. The PPC voltages are applied to the base of emitter follower Q1, forward-biasing it and causing emitter current to charge capacitor C3. This action raises the voltage level on the base of if. amplifier Q2, decreasing its forward bias, and therefore the gain of the stage. The output from if. amplifier Q2 is developed across a 500-kc tuned circuit consisting of the primary of transformer T1 and capacitor C5.

4-78. When the T-827/URT is operating in the compatible AM or CW mode, a 500-kc carrier signal from the carrier re-insertion circuits in Mode Selector Electronic Assembly A2A1 is reinserted into the if. signal at the collector of if. amplifier Q2. The pilot carrier, when used, is also applied to the collector of if. amplifier Q2 for reinsertion.

4-79. PEAK POWER CONTROLLED IF. AMPLIFIER, TEST DATA. Pertinent references and applicable test data for the peak power controlled if. amplifier circuit are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. IF. Amplifier Electronic Assembly, Servicing Block Diagram, figure 4-60.

c. IF. Amplifier Electronic Assembly, Schematic Diagram, figure 5-13.

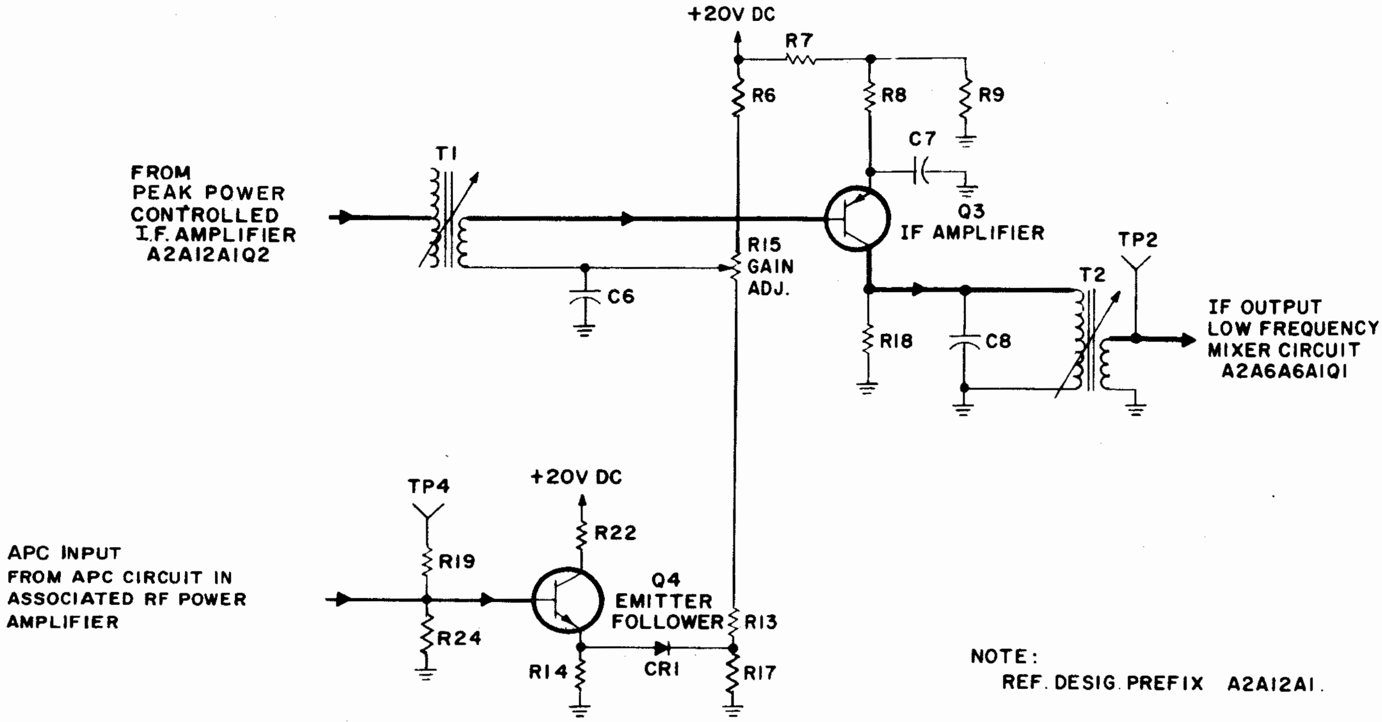


Figure 4-12. Average Power Controlled IF. Amplifier, Simplified Schematic Diagram

d. IF. Amplifier Electronic Assembly A2A12, Adjustments, paragraph 5-68.

e. Required Test Equipment:

(1) Multimeter, AN/PSM-4.

(2) RF Voltmeter, AN/URM-155.

(3) Cable Assembly, W2.

(4) Electronic Circuit Plug-in Unit Test Set, TS-2135/WRC-1. (Refer to note in table 1-4.)

f. IF. Amplifier, (Foil Side Up), Component and Test Point Location, figure 5-89.

4-80. AVERAGE POWER CONTROLLED IF. AMPLIFIER, FUNCTIONAL CIRCUIT DESCRIPTION. The average power controlled if. amplifier (figure 4-12) consists of emitter follower (Q4) and an if. amplifier (Q3). These circuits, which form a part of IF. Amplifier Electronic Assembly A2A12, control the amplitude of the 500-kc if. signal in accordance with the average power of the output signal of the associated rf power amplifier (such as the AM-3007/URT or AMT 3924/URT). The following paragraphs describe the operation of this circuit in detail.

4-81. The if. signal from the peak power controlled if. amplifier Q2 is applied to the base of if. amplifier Q3 through transformer T1. The base bias for if. amplifier Q3 is provided by 20 vdc applied to voltage divider R6, R15, R13, R17. The bias may be manually adjusted with potentiometer R15. The emitter current in emitter follower Q4 will flow when voltages of approximately 5 vdc are received at the APC input. These voltages are supplied by the APC circuit in the associated if. power amplifier. The APC voltages are applied to the base of emitter follower Q4, forward-biasing transistor and causing emitter current to flow through resistor R14. The APC input signal will not affect if. amplifier Q3 until the magnitude of the signal is sufficient to cause enough emitter current to flow through resistor R14 so that the voltage across resistor R14 will exceed the voltage across resistor R17. This condition will forward-bias diode CR1, causing the voltage across resistor R17 to rise to nearly the same level as the voltage across resistor R14. Raising the voltage across resistor R17 causes the base bias voltage on if. amplifier Q3 to rise, thereby

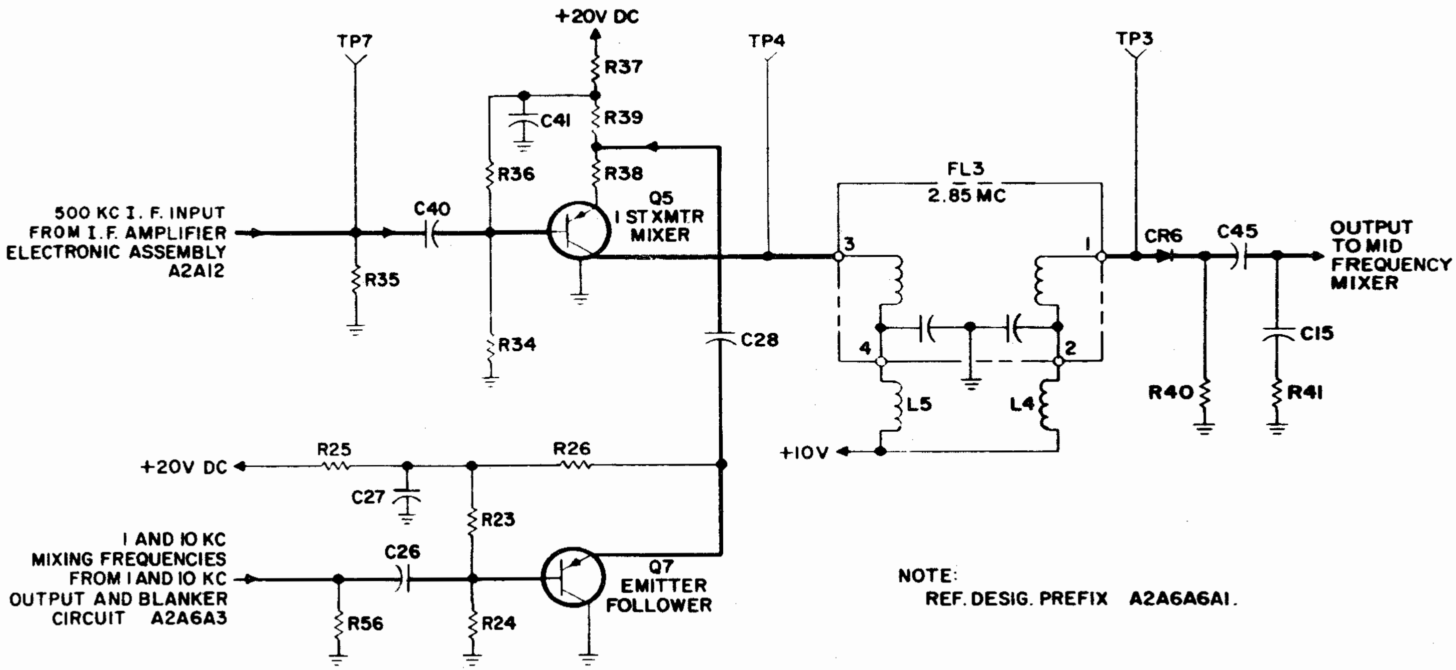


Figure 4-13. Low Frequency Mixer, Simplified Schematic Diagram

reducing the base-to-emitter forward bias, resulting in a decrease in gain for the stage. The output from if. amplifier Q3 is developed across the 500-kc tuned circuit consisting of the primary of transformer T2 and capacitor C8.

4-82. AVERAGE POWER CONTROLLED IF. AMPLIFIER, TEST DATA. Pertinent references and applicable test data for the average power controlled if. amplifier circuit are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. IF. Amplifier Electronic Assembly, Servicing Block Diagram, figure 4-60.

c. IF. Amplifier Electronic Assembly, Schematic Diagram, figure 5-13.

d. IF. Amplifier Electronic Assembly A2A12, Adjustment, paragraph 5-68.

e. Required Test Equipment:

(1) Multimeter, AN/PSM-4.

(2) RF Voltmeter, AN/URM-155.

(3) Cable Assembly, W2.

(4) Electronic Circuit Plug-in Unit Test Set, TS-2135/WRC-1. (Refer to note in table 1-4.)

f. IF. Amplifier, (Foil Side Up) Component and Test Point Location, figure 5-89.

4-83. LOW FREQUENCY MIXER, FUNCTIONAL CIRCUIT DESCRIPTION. The low frequency mixer (figure 4-13) consists of the first transmitter mixer (Q5) and an emitter follower (Q7). These circuits, which form a part of RF Translator Electronic Subassembly A2A6A6, mix the 500-kc if. signal from the average power controlled if. amplifier in IF. Amplifier Electronic Assembly A2A12 with the 1 and 10-kc injection from 1 and 10 kc output and blanker circuit A2A6A3A3, producing a second intermediate frequency between 2.8 and 2.9 mc. The following paragraphs describe the operation of this circuit in detail.

4-84. The 1 and 10-kc injection signal is coupled through capacitor C26 to the base of emitter follower Q7. The base bias for emitter follower Q7 is produced from the 20 vdc applied to voltage divider R25, R23, R24. The emitter follower isolates the 1 and 10 kc output and blanker circuit from first transmitter mixer Q5 and provides a low impedance source to the emitter circuit of the mixer. The 1 and 10-kc injection signal covers the range of 3.301

to 3.400 mc in 1 kc steps. The output from emitter follower Q7 is coupled through capacitor C28 and resistor R38 to the emitter of first transmitter mixer Q5. The 500-kc if. input signal is coupled through capacitor C40 to the base of first transmitter mixer Q5. The base bias for first transmitter mixer Q5 is provided by 20 vdc applied to voltage divider R34, R36, R37. Filter FL3, which has a bandwidth from 2.8 to 2.9 mc, is in the output circuit of first transmitter mixer Q5. This filter will reject all the products from the mixer except the desired difference frequency. Inductcrs L4 and L5 decouple the 10-vdc line. Diode CR6 is forward-biased through resistor R40, inductor L4, and filter FL3. The output from filter FL3 passes through diode CR6 and is coupled through capacitor C45 to the mid frequency mixer circuit. Resistor R41 supplies the ac load required for filter FL3. Capacitor C15 dc isolates resistor R41.

4-85. LOW FREQUENCY MIXER, TEST DATA. Pertinent references and applicable test data for the low frequency mixer are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. RF Translator Electronic Subassembly, Servicing Block Diagram, figure 4-61.

c. RF Translator Electronic Subassembly, Schematic Diagram, figure 5-11.

d. RF Translator (Component Side Down), Component and Test Point Location, figure figure 5-85.

e. Required Test Equipment:

(1) RF Signal Generator, CAQI-606A.

(2) Translator/Synthesizer Test Set, TS-2133/WRC-1. (Refer to note in table 1-4.)

(3) Heterodyne Voltmeter, CDAN-2005. (Refer to note in table 1-4.)

(4) Multimeter, AN/PSM-4.

f. Refer to paragraph 3-38 in Technical Manual for Repair of AN/WRC-1 and R-1051/URR 2N Modules, NAVSHIPS 0967-034-2000 for low frequency mixer alignment procedures.

4-86. MID FREQUENCY MIXER, FUNCTIONAL CIRCUIT DESCRIPTION. The mid frequency mixer (figure 4-14) consists of the second transmitter mixer (Q4) and two emitter followers (Q1 and Q9). These circuits, which form a part of RF Translator Electronic Subassembly A2A6A6, mix the signal from the low frequency mixer with the 100-kc injection from hi-band/lo-band mixer/amplifier in 100 KC Synthesizer Electronic Subassembly A2A6A2. The following paragraphs describe the operation of this circuit in detail.

4-87. The 100-kc mixing frequencies signal is coupled by capacitor C23 to the base of emitter follower Q9. The base bias for emitter follower Q9 is provided by 20 vdc applied to voltage divider R14, R15, R17. The emitter follower isolates the hi-band/lo-band mixer/amplifier circuit from second transmitter mixer Q4 and provides a low impedance source to the mixer. The frequency of the 100-kc mixing frequencies signal is in 100-kc steps between 22.4 to 23.3 mc or 32.4 to 33.3 mc, depending on the potential on the hi/lo band control line. The output from emitter follower Q9 is coupled through capacitor C24 and resistor R46 to the emitter of second transmitter mixer Q4. The input from the low frequency mixer (2.8 to 2.9 mc) is applied to the base of second transmitter mixer Q4. The base bias for second transmitter mixer Q4 is provided by 20 vdc applied to voltage divider R44, R43, R42. The output circuit of second transmitter mixer Q4 consists of 20 mc filter FL1 and 30 mc filter FL2; each has a bandwidth of 1 mc (19.5 to 20.5 mc and 29.5 to 30.5 mc, respectively). When the hi/lo band control line is at ground potential (as determined by the code generator),diode CR7 is forward-biased by the 10 vdc applied through inductor L3 and resistor R50. Diode CR2 is also forward-biased by 10 vdc applied through inductor L2 and resistor R49. In this condition, the output from the second transmitter mixer is coupled through capacitor C12 to 30 mc filter FL2, where all mixing products except the desired difference frequency are rejected. The output from 30 mc filter FL2 is coupled through capacitor C10 to the base of emitter follower Q1 since diode CR1 is forward-biased by 20 vdc applied through resistor R2 and inductor L2. When the hi/lo band control line is at 20 vdc, diode CR4 is forward-biased by 20 vdc applied through inductor L1 and resistor R47. Diode CR3 is also forward-biased by 20 vdc applied through

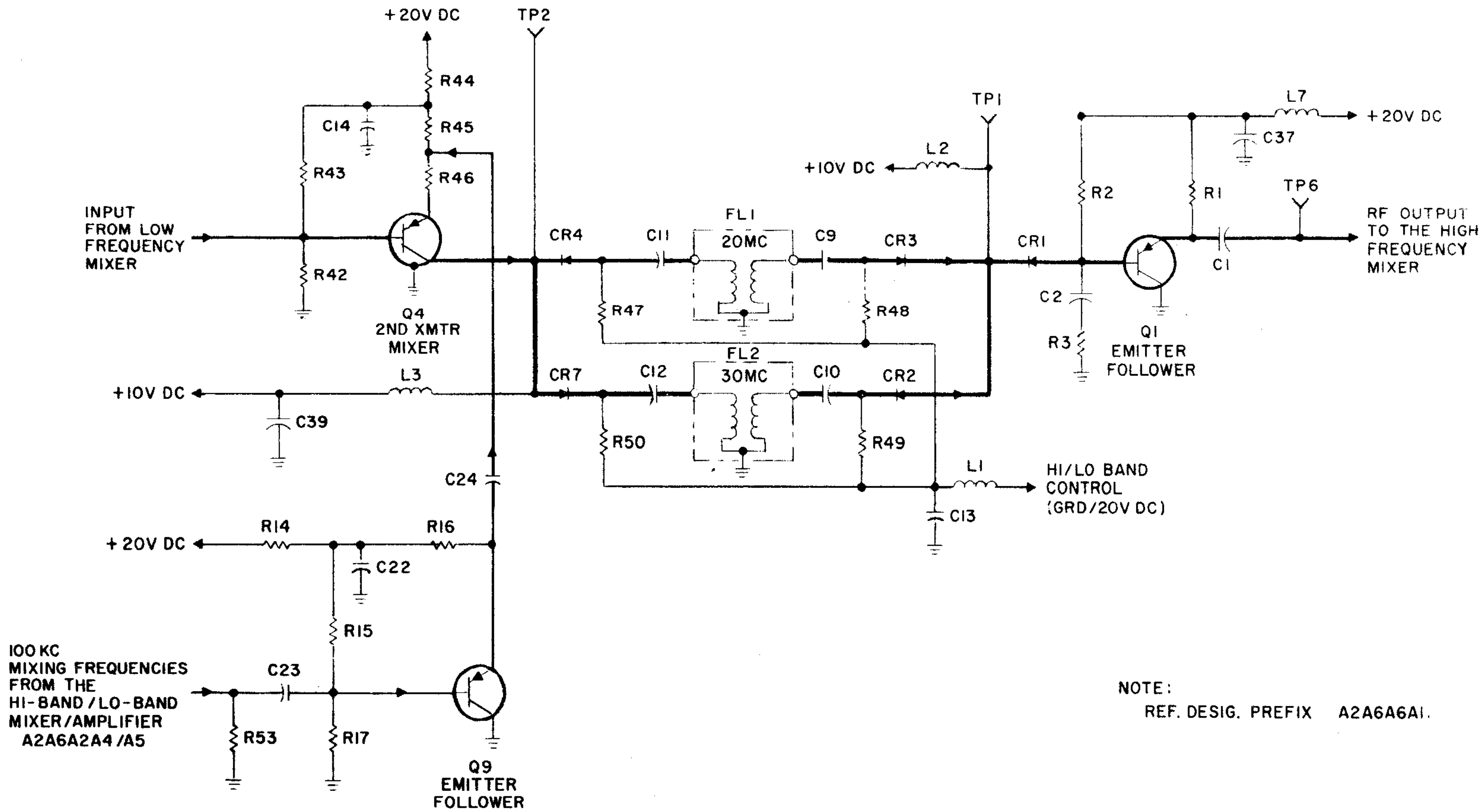


Figure 4-14. High Frequency Mixer, Simplified Schematic Diagram

inductor L1 and resistor R48. In this condition, the output from the second transmitter mixer is coupled through capacitor C11 to 20 mc filter FL1, where all mixing products except the desired difference frequency are rejected. The output from 20 mc filter FL1 is coupled through capacitor C9 to the base of emitter follower Q1 since diode CR1 is forward-biased by 20 vdc applied through resistor R2. Resistor R3 supplies the ac load that is required by filters FL1 and FL2. Capacitor C2 dc isolates resistor R3. The output from emitter follower Q1 is coupled through capacitor C1 to the high frequency mixer in RF Amplifier Electronic Assembly A2A4.

4-88. MID FREQUENCY MIXER, TEST DATA. Pertinent references and applicable test data for the mid frequency mixer are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. RF Translator Electronic Subassembly, Servicing Block Diagram, figure 4-61.

c. RF Translator Electronic Subassembly, Schematic Diagram, figure 5-11.

d. RF Translator (Component Side Down), Component and Test Point Location, figure 5-85.

e. Required Test Equipment:

(1) RF Signal Generator, CAQI-606A.

(2) Translator/Synthesizer Test Set, TS-2133/WRC-1. (Refer to note in table 1-4.)

(3) Multimeter, AN/PSM-4.

4-89. HIGH FREQUENCY MIXER/AMPLIFIER, FUNCTIONAL CIRCUIT DESCRIPTION. The high frequency mixer/amplifier (figure 4-15) consists of an amplifier (A2A4A38Q1), a mixer (A2A4A38Q2) and an emitter follower (A2A6A6A1Q8). These circuits, which form a part of RF Amplifier Electronic Assembly A2A4 and RF Translator Electronic Subassembly A2A6A6, mix the signal from the mid frequency mixer circuit with the mc injection from the mc oscillator circuit in MC Synthesizer Electronic Subassembly A2A6A1. The following paragraphs describe the operation of this circuit in detail.

4-90. The reference designator prefix for the components named in this paragraph is A2A6A6A1, unless otherwise noted. The mc mixing frequencies signal is coupled through capacitor C21 to the base of emitter follower Q8. Resistor R55 is the load for the mc mixing frequencies. Base bias is provided by 20 vdc applied to voltage divider R10, R11, R13. The emitter follower isolates the mc oscillator circuit (A2A6A1A1) from mixer A2A4A38Q2 and provides a low impedance source for the emitter circuit of the mixer. The mc mixing frequencies signal consists of a frequency in the 2.5 to 23.5-mc range. The output from emitter follower Q8 is coupled through capacitors C7 and A2A4A38C4 to the base of mixer A2A4A38Q2.

4-91. The reference designator prefix for the components named in this paragraph is A2A4A38, unless otherwise noted. The input signal from the mid frequency mixer circuit is coupled to the base of amplifier Q1 by capacitor C1. Base bias is provided by 20 vdc applied to voltage divider R2, R3. The output from amplifier Q1 is coupled to the base of mixer Q2 by capacitor C3. The mc injection signal and the signal from amplifier Q1 are subtractively mixed and applied to the rf amplifier A2A4V1 circuit. The base bias is provided by 20 vdc applied to voltage divider R7, R8.

4-92. HIGH FREQUENCY MIXER/AMPLIFIER, TEST DATA. Pertinent references for the high frequency mixer/amplifier are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. RF Amplifier Electronic Assembly, Servicing Block Diagram, figure 4-62.

c. RF Translator Electronic Subassembly, Servicing Block Diagram, figure 4-61.

d. RF Amplifier Electronic Assembly, Schematic Diagram, figure 5-4.

e. RF Translator Electronic Subassembly, Schematic Diagram, figure 5-11.

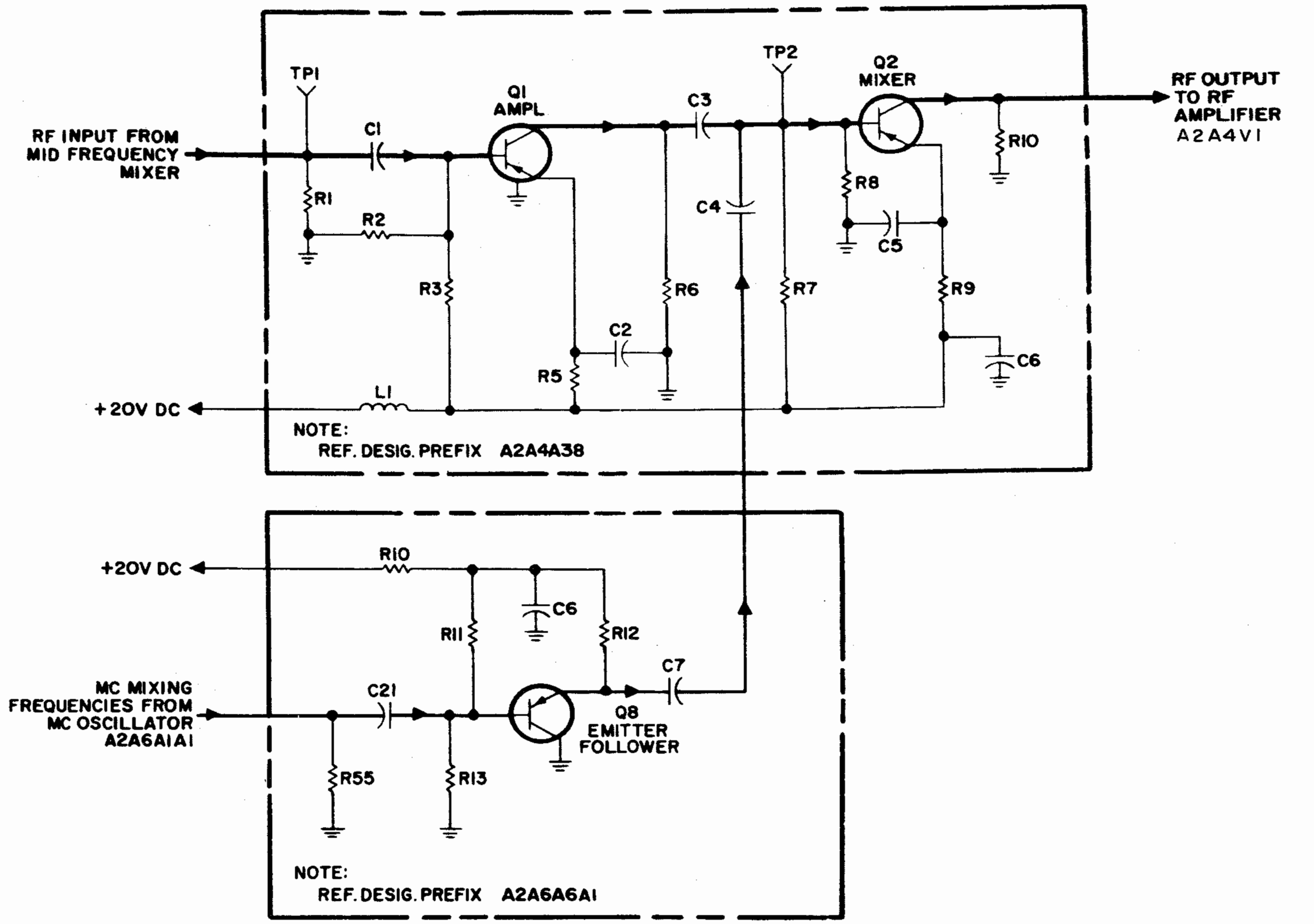


Figure 4-15. High Frequency Mixer, Simplified Schematic Diagram

f. HF Mixer/Amplifier (Foil Side Up), Component and Test Point Location, figure 5-44.

g. RF Translator (Component Side Down), Component and Test Point Location, figure 5-85.

h. Required Test Equipment:

(1) RF Signal Generator, CAQI-606A.

(2) Translator/Synthesizer Test Set, TS-2133/WRC-1. (Refer to note in table 1-4.)

(3) Heterodyne Voltmeter, CDAN-2005. (Refer to note in table 1-4.)

(4) Multimeter, AN/PSM-4.

i. Refer to paragraphs 1-17 and 3-38 in Technical Manual for Repair of AN/WRC-1 and R-1051/URR 2N Modules, NAVSHIPS 0967-034-2000 for high frequency mixer alignment procedures.

4-93. RF AMPLIFIER V1, FUNCTIONAL CIRCUIT DESCRIPTION. RF Amplifier V1 (figure 4-16), which forms a part of RF Amplifier Electronic Assembly A2A4, amplifies the rf signal from the high frequency mixer/amplifier circuit for application to rf amplifier V2. The following paragraphs describe the operation of this circuit in detail.

4-94. The signal from the high frequency mixer/amplifier circuit passes through contacts 2 and 5 of relay A38K1 and is applied to the secondary of transformer T1 in the megacycle assembly. The megacycle assembly is made up of a double-tuned circuit with capacity coupling. The secondary of transformer T1 forms part of a parallel tuned circuit. The other part consists of capacitor C2 in series with a capacitance network composed of capacitors C19 and C20 and the capacitors on circuit board assemblies A30 and A31. The signal is coupled from transformer T1 to inductor T2 by capacitor C1. Inductor T2 forms part of a parallel tuned circuit.

The other part consists of capacitor C3 in series with a capacitance network composed of capacitors C8 and C9 and the capacitors on circuit board assemblies A32 and A33.

4-95. A separate megacycle assembly (A2 through A29) is automatically switched into the circuit for each setting of the front panel MCS controls (2 through 29 mc). The values of the components of these assemblies are shown in chart C on figure 5-4. For each of the ten settings of the 100 kc (KCS) control, different combinations of capacitors on the A30 and A33 assemblies (C1 through C9 and C10 through C19, respectively) are switched into the circuit. The values of these components are shown in chart B on figure 5-4. Also, for each of the ten settings of the 10 kc (KCS) control, different capacitors on assemblies A31 and A32 (C1 through C9) are switched into the circuit. The values of these components are shown in chart A on figure 5-4.

4-96. From the megacycle assembly, the signal passes through parasitic suppressor FL1 and is coupled through capacitor C1 to the control grid of rf amplifier V1. Screen voltage (110 vdc) for rf amplifier V1 is applied through decoupling resistor A1R4. Plate voltage (110 vdc) for rf amplifier V1 is applied through decoupling resistor A1R4 and transformer T3. The cathode bias for rf amplifier V1 is developed across resistors R2 and A1R3.

4-97. The output circuit for rf amplifier V1 consists of inductor T3 and capacitor C4 in series with a capacitance network comprised of capacitors C11 and C12 and the capacitors on circuit board assemblies A34 and A35. These components form a parallel tuned circuit. Refer to paragraph 4-93 for a discussion of this tuned circuit, except note that the 100 kc capacitors are located on assembly A34 and the 10 kc capacitors are located on assembly A35.

4-98. When transmit/receive relay A2K3 is deenergized (receive mode), the negative lead of capacitor A2A8C7 is connected through resistor A2A8R13 and through contacts 13 and 6 of the relay to ground. When transmit/receive relay A2K3 is energized (transmit mode), the negative lead of capacitor A2A8C7 is connected through resistor A2A8R13 and through contacts 13 and 5 of the relay to -30 vdc. At the instant of energizing capacitor A2A8C7 will present a short circuit (due to the fact there was no previous charge); therefore, the -30 vdc will be applied through voltage divider A1R1, A1R2 and resistor R1 to the grid of rf amplifier V1, which cuts off the stage. As the charge on capacitor A2A8C7 builds up through resistors A2A8R12 and A2A8R13, the dc voltage on the grid of rf amplifier V1 will approach zero, thereby permitting the stage to function. The reason for this action is that the controlled build up of excitation to the associated rf power amplifier (such as AM-3007/URT or AM-3924/URT) matches the response time of the system feedback loop controlling transmitted power and thereby prevents large bursts of output at the first instant of transmit operation.

4-99. The signal, after being amplified by rf amplifier V1, is applied to the second rf amplifier V2 circuit.

4-100. RF AMPLIFIER V1, TEST DATA. Pertinent reference and applicable test data for rf amplifier V1 are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. RF Amplifier Electronic Assembly, Servicing Block Diagram, figure 4-62.

c. RF Amplifier Electronic Assembly, Schematic Diagram, figure 5-4.

d. RF Amplifier Bias Circuit, (Foil Side Up), Component Location, figure 5-40.

e. Megacycle Assemblies (Foil Side Up), Component Location, figure 5-41.

f. 100 KC Rotor Assemblies (Component Side Down), Component Location, figure 5-42.

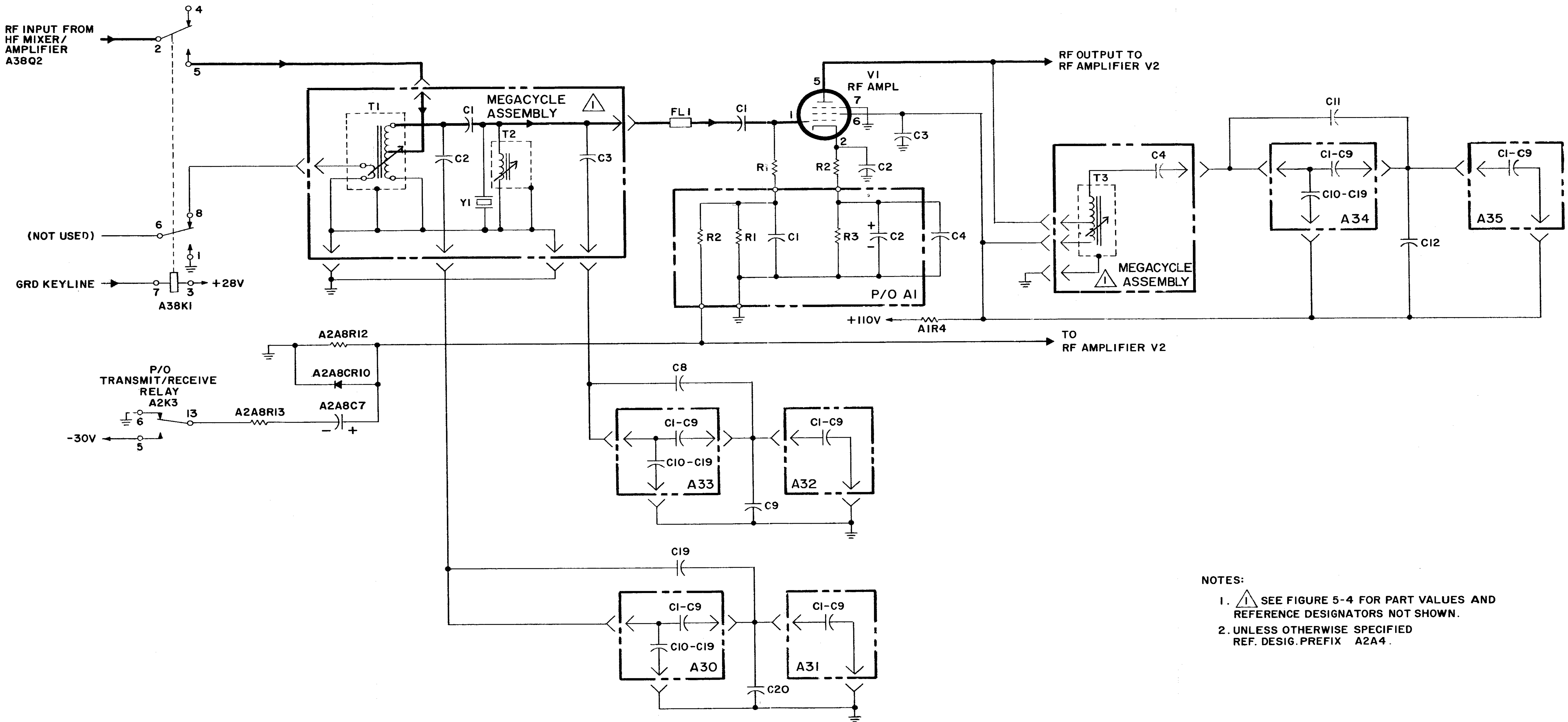


Figure 4-16. RF Amplifier V1, Simplified Schematic Diagram

g. 10 KC Rotor Assemblies (Component Side Down), Component Location, figure 5-43.

h. Required Test Equipment:

(1) RF Signal Generator, CAQI-606A.

(2) RF Voltmeter, AN/URM-155.

(3) Amplifier Test Set, TS-2132/WRC-1. (Refer to note in table 1-4.)

(4) Electronic Multimeter, AN/USM-116.

(5) Multimeter, AN/PSM-4.

i. Refer to paragraph 1-17 in Technical Manual for Repair of AN/WRC-1 and R-1051/URR 2N Modules, NAVSHIPS 0967-034-2000, for rf amplifier megacycle assembly alignment.

4-101. RF AMPLIFIER V2, FUNCTIONAL CIRCUIT DESCRIPTION. RF amplifier V2 circuit (figure 4-17), which forms a part of RF Amplifier Electronic Assembly A2A4, amplifies the rf signal from rf amplifier V1 to a level suitable for driving the associated rf power amplifier (such as AM-3007/URT or AM-3924/URT). The following paragraphs describe the operation of this circuit in detail.

4-102. The signal from rf amplifier V1 is coupled through capacitor C5, passes through parasitic suppressor FL2, and is applied to the control grid of rf amplifier V2. Screen voltage (110 vdc) for rf amplifier V2 is applied through decoupling resistor A1R6. Plate voltage (110 vdc) for rf amplifier V2 is applied through decoupling resistor A1R6, the primary rf transformer T4, and parasitic suppressor FL3. Capacitor C7 is an RF bypass. The cathode bias for rf amplifier V2 is developed across resistor A1R5. The output circuit for rf amplifier V2 consists of transformer T4 and capacitor C5 in series with a capacitance network comprised of capacitors C13 and C14 and the capacitors on circuit board assemblies A37 and A36. These components form a parallel tuned circuit. See paragraph 4-95 for a discussion of this tuned circuit, except note that the 100 kc capacitors are located on assembly A37 and the 10 kc capacitors are located on assembly A36.

4-103. The negative bias pulse (-30 vdc), whose origin and duration is described in paragraph 4-98, is also applied to the control grid of rf amplifier V2 through dropping resistor R3. The purpose of the -30 vdc pulse is the same for rf amplifier V2 as for rf amplifier V1. Refer to paragraph 4-98 for a more detailed description of this circuit.

4-104. The rf signal, amplified by rf amplifier V2, is applied to the associated rf power amplifier.

4-105. RF AMPLIFIER V2, TEST DATA. Pertinent references for the rf amplifier V2 circuit are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. RF Amplifier Electronic Assembly, Servicing Block Diagram, figure 4-62.

c. RF Amplifier Electronic Assembly, Schematic Diagram, figure 5-4.

d. RF Amplifier Bias Circuit (Foil Side Up), Component Location, figure 5-40.

e. Megacycle Assemblies (Foil Side Up), Component Location, figure 5-41.

f. 10 KC Rotor Assemblies (Component Side Down), Component Location, figure 5-43.

g. 100 KC Rotor Assemblies (Component Side Down), Component Location, figure 5-42.

h. Required Test Equipment:

(1) RF Signal Generator, CAQI-606A.

(2) RF Voltmeter, AN/URM-155.

(3) Amplifier Test Set, TS-2132/WRC-1. (Refer to note in table 1-4.)

(4) Electronic Multimeter, AN/USM-116.

(5) Multimeter, AN/PSM-4.

i. Refer to paragraph 1-17 in Technical Manual for Repair of AN/WRC-1 and R-1051/URR 2N Modules, NAVSHIPS 0967-034-2000, for rf amplifier megacycle assembly alignment.

4-106. TTY MARK GENERATOR AND LINE ISOLATION OSCILLATOR, FUNCTIONAL CIRCUIT DESCRIPTION. The TTY mark generator and line isolation oscillator (figure 4-18) consists of a modified Colpitts oscillator (Q1) and an input polarity protection diode (CR1). This circuit, which forms a part of FSK Tone Generator Electronic Assembly A2A9, provides a burst of frequency representative of the presence of a "mark" at the input terminals. This circuit also provides line isolation between the external teletype equipment and FSK Tone Generator Electronic Assembly A2A9. The following paragraph describes the operation of the TTY mark generator and line isolation oscillator in detail.

4-107. The TTY mark generator and line isolation oscillator input is either a "space" (0 ma) or a "mark" (no less than 5 ma.). In order for this circuit to operate, the positive output ffom the teletype equipment must be connected to the anode of diode CR1. When a "mark" is applied to the input of the TTY mark generator the voltage used to produce the "mark" is held at a constant 18-vdc level by Zener diode CR2, which draws enough current to drop the remaining applied voltage across resistor A2A9R1. When high TTY loop currents (up to 75 ma.) are required, for local operation, resistor A2R4 on the transmitter main frame must be shunted across the input terminals. This resistor enables the TTY loop to operate at the highest current levels. The regulated 18 vdc is applied to voltage divider network R2, R3 which develops the base bias voltage to tune on modified Colpitts oscillator Q1. When a "mark" is applied transistor Q1 will turn on, allowing the tank circuit, which consists of capacitors C1, C2, and the primary of transformer T1 to oscillate at a 50-to-80 kc rate. This signal is coupled to the TTY pulse generator by transformer T1. The positive feedback (collector to emitter) required to sustain oscillation for the period during which a "mark" is present at the input terminals, is developed by voltage divider network C1, C2. When a "space" (0 ma.) is present at the input to the TTY mark generator and isolation oscillator, transistor Q1 is turned off.

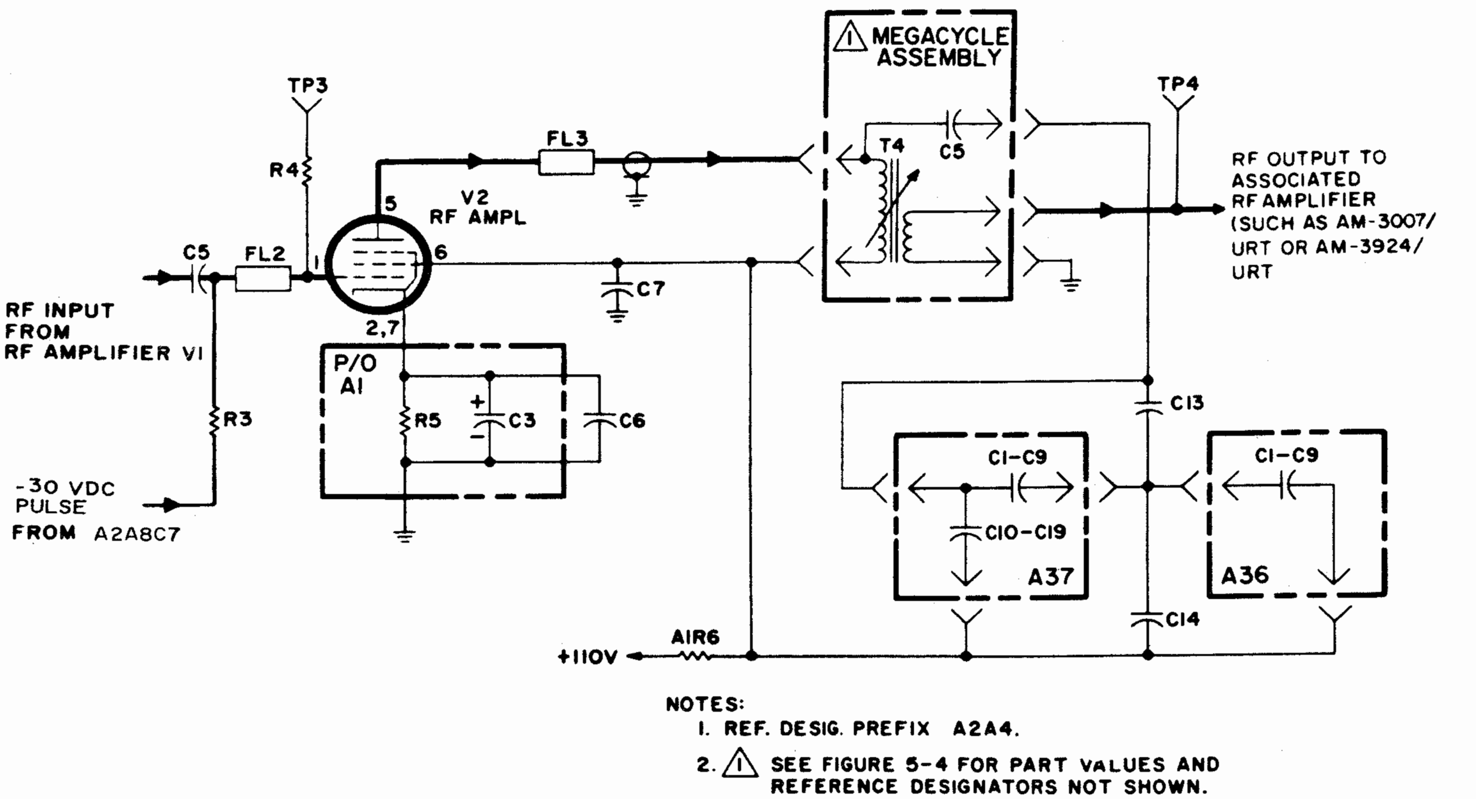


Figure 4-17. RF Amplifier V2, Simplified Schematic Diagram

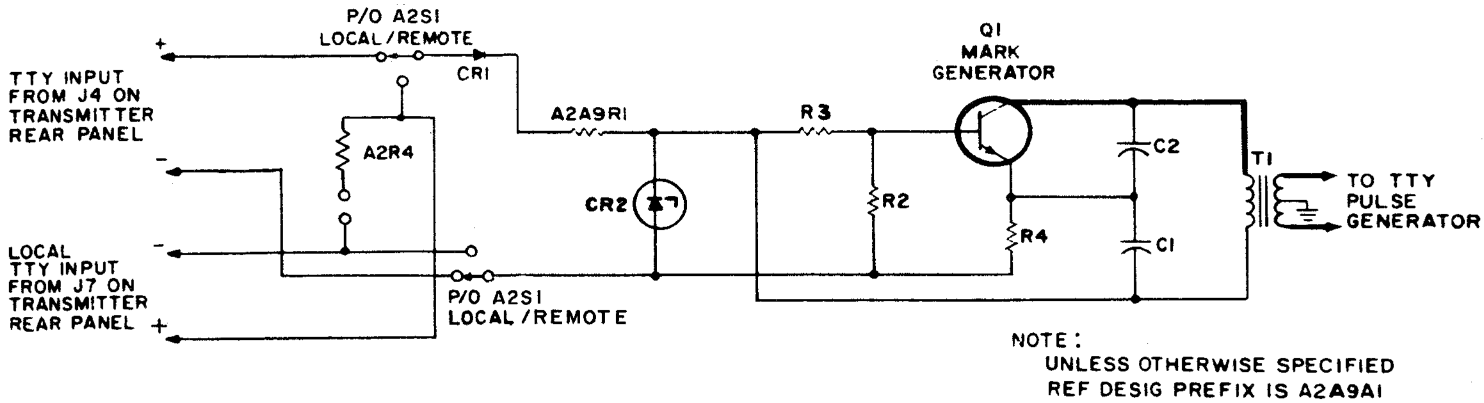


Figure 4-18. TTY Mark Generator and Line Isolator Oscillator, Simplified Schematic Diagram

4-108. TTY MARK GENERATOR AND LINE ISOLATION OSCILLATOR, TEST DATA. Pertinent references and applicable test data for the TTY mark generator are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. FSK Tone Generator Electronic Assembly, Schematic Diagram, figure 5-12.

c. FSK Tone Generator Electronic Assembly Servicing Block Diagram, figure 4-63.

d. FSK Tone Generator (Foil Side Up), Component and Test Point Location, figure 5-87.

e. Required Test Equipment:

(1) Oscilloscope, AN/USM-117.

(2) Frequency Meter, AN/USM-207.

(3) Multimeter, AN/PSM-4.

(4) Cable Assembly, W5.

(5) Electronic Circuit Plug-in Unit Set, TS-2135/WRC-1. (Refer to note in table 1-4.)

4-109. TTY PULSE GENERATOR, FUNCTIONAL CIRCUIT DESCRIPTION. The TTY pulse generator (figure 4-19) consists of a switch (Q2) and a relaxation oscillator (Q3, Q4). This circuit, which forms a part of FSK Tone Generator Electronic Assembly A2A9, produces two series of trigger pulses to the TTY frequency divider, the repetition rates of which are representative of either a "space" or a "mark". Each series is generated around a different discrete center frequency. The following paragraphs describe the operation of the TTY pulse generator in detail.

4-110. The positive 20 vdc applied to the TTY pulse generator from the Mode Selector switch on the front panel is regulated to 18 vdc by Zener diode CR5, which draws enough current in addition to the load current to maintain a 2-volt drop across resistor R6. Capacitor C4 maintains a nearly constant charge, thereby providing additional regulation for the 18 vdc. Voltage divider R16, R17 develops the base bias for pulse generator Q3 from the regulated 18 vdc output from Zener diode CR5. Voltage divider R14, R15 develops the base bias for pulse generator Q4 from the regulated 18 vdc output from Zener diode CR5.

4-111. With switch S1 in the 2550 cps position, relaxation oscillator Q3, Q4 is free-running at the "space" repetition rate of 4250 pps. When transistor Q3 is conducting, transistor Q4 is also conducting, charging capacitor C5 until the voltage across it equals the base voltage of transistor Q3. At this time, transistor Q3 is back-biased and turns off. When transistor Q3 turns off, the base voltage on transistor Q4 will increase to the same level as the voltage on the emitter, turning it off. With both transistors Q3 and Q4 turned off, capacitor C5 discharges through resistors R13 and R11. When the voltage across capacitor C5 decreases to less than the base voltage of transistor Q3, transistor Q3 will turn back on. When tran-

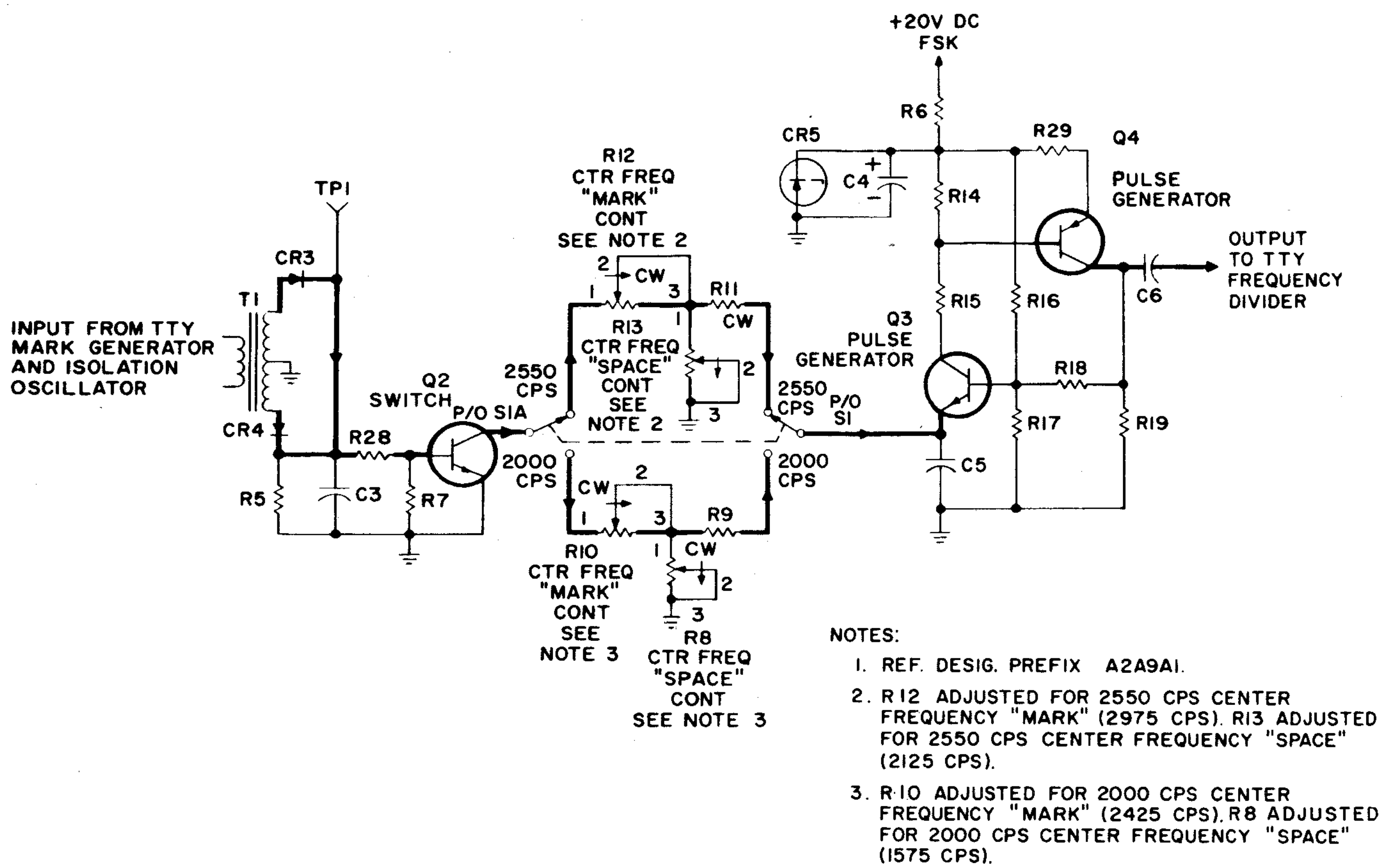


Figure 4-19. TTY Pulse Generator, Simplified Schematic Diagram

sistor Q3 turns back on, the voltage on the base of transistor Q4 will decrease to less than the emitter voltage, and it will turn on. The output at the collector of transistor Q4 is applied to the base of transistor Q3 through voltage divider R17, R18. Therefore, this turn-on/turn-off procedure is sustained at the desired 4250-pps rate.

4-112. When a "mark" is applied to the input, the a-c output from the TTY mark generator and line isolation oscillator is coupled to diodes CR3 and CR4 by transformer T1. Regardless of signal polarity, the signal is rectified by either diode CR3 or CR4, and the resulting dc voltage is developed across resistor R5. Capacitor C3 smoothes the rectified voltage output from diode CR3 or CR4. The voltage developed across resistor R5 is applied to voltage divider R28, R7, which develops the base bias for switch Q2. With this voltage on the base of switch Q2, it is forward-biased and conducts, effectively placing ground on one side of resistor R12. This ground parallels resistors R12 and R13, and the resulting change in the discharge time constant for capacitor C5 shifts the repetition rate of relaxation oscillator Q3, Q4 to 5950 pps. As soon as the "mark" is removed from the base of transistor Q2, the frequency of oscillator Q3, Q4 returns to the "space" repetition rate of 4250 pps.

4-113. With switch S1 in the 2000-cps position, the "space" repetition rate of relaxation oscillator Q3, Q4 is 3150 pps. When a "mark" is applied to the base of switch Q2, the repetition rate is shifted to 4850 pps. When the "mark" is removed from the base of switch Q2, the repetition rate of relaxation oscillator Q3, Q4 returns to 3150 pps. The negative sawtooth pulses present at the collector of transistor Q4 are coupled to the TTY frequency divider by capacitor C6.

4-114. TTY PULSE GENERATOR, TEST DATA. Pertinent references and applicable test data for the TTY pulse generator are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. FSK Tone Generator Electronic Assembly, Schematic Diagram, figure 5-12.

c. FSK Tone Generator Electronic Assembly, Servicing Block Diagram, figure 4-63.

d. FSK Tone Generator (Foil Side Up), Component and Test Point Location, figure 5-87.

e. Required Test Equipment:

(1) Oscilloscope, AN/USM-117.

(2) Frequency Meter, AN/USM-207.

(3) Multimeter, AN/PSM-4.

(4) Cable Assembly, W5.

(5) Electronic Circuit Plug-in Unit Test Set, TS-2135/WRC-1. (Refer to note in table 1-4.)

f. FSK Tone Generator Electronic Assembly, Adjustments, paragraph 5-86.

4-115. TTY FREQUENCY DIVIDER, FUNCTIONAL CIRCUIT DESCRIPTION. The TTY frequency divider (figure 4-20) is a bistable multivibrator consisting of two transistors (Q5 and Q6). This circuit, which forms a part of FSK Tone Generator Electronic Assembly A2A9, divides the output from the TTY pulse generator by two, producing a series of pulses having a 50 per cent duty cycle. The 50 per cent duty cycle is required to ensure that the even harmonics are not generated in the FSK tone output. The following paragraph describes the operation of the TTY frequency divider in detail.

4-116. The output from the TTY pulse generator is coupled to steering diodes CR7 and CR8 by capacitor C6. Assuming that transistor Q6 is turned on and transistor Q5 is turned off, the negative portion of the input pulse applied to the base of transistor Q6 (through diode CR8, resistor R24, and capacitor C8) will turn off transistor Q6. With transistor Q6 turned off, the voltage on the base of transistor Q5 becomes more positive, thus turning on transistor Q5. Capacitor C7 discharges through diodes CR7 and CR6. When the next negative pulse is applied, it is coupled through diode CR7, resistor R21, and capacitor C7 to the base of transistor Q5, turning the transistor off. Capacitor C8 will now discharge through diodes CR8 and CR6. Therefore, transistor Q5 provides one output pulse for every two pulses applied to the input of the TTY frequency divider. The pulsed out-

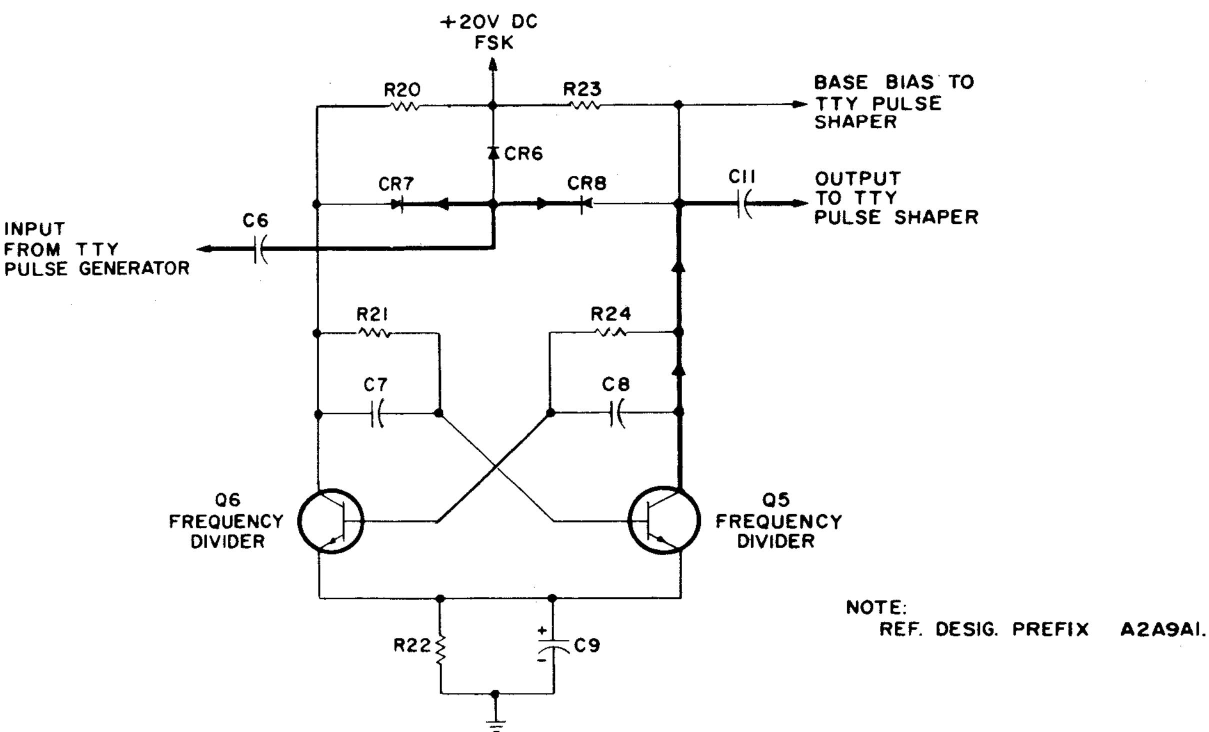


Figure 4-20. TTY Frequency Divider, Simplified Schematic Diagram

put at the collector of transistor Q5, which has a 50 per cent duty cycle, is coupled to the TTY pulse shaper by capacitor C11. Diode CR6 aids recovery of the circuit by providing a low resistance path through which capacitors C7 and C8 can discharge. The diode also prevents loading of the input pulses.

4-117. TTY FREQUENCY DIVIDER, TEST DATA. Pertinent references and applicable test data for the TTY frequency divider are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. FSK Tone Generator Electronic Assembly, Schematic Diagram, figure 5-12.

c. FSK Tone Generator Electronic Assembly, Servicing Block Diagram, figure 4-63.

d. FSK Tone Generator (Foil Side Up), Component and Test Point Location, figure 5-87.

e. Required Test Equipment:

(1) Oscilloscope, AN/USM-117.

(2) Frequency Meter, AN/USM-207.

(3) Multimeter, AN/PSM-4.

(4) Cable Assembly, W5.

(5) Electronic Circuit Plug-in Unit Test Set, TS-2135/WRC-1. (Refer to note in table 1-4.)

4-118. TTY PULSE SHAPER, FUNCTIONAL CIRCUIT DESCRIPTION. The TTY pulse shaper (figure 4-21) is a squaring amplifier consisting of one transistor (Q7). This circuit, which forms a part of FSK Tone Generator Assembly A2A9, shapes the pulsed output from the TTY frequency divider to form a good square wave output. The following paragraph describes the operation of the TTY pulse shaper in detail.

4-119. When the output from the TTY frequency divider is coupled to the base of squaring amplifier Q7 by capacitor C11, amplifier Q7 is driven into saturation, thus producing a square-wave output. The amplitude of the square wave is controlled by the setting of

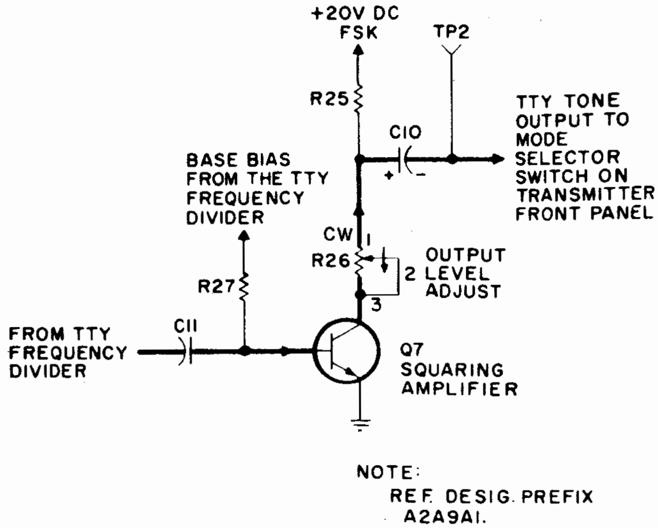


Figure 4-21. TTY Pulse Shaper, Simplified Schematic Diagram

potentiometer R26. The base bias for squaring amplifier Q7 is applied from the TTY frequency divider through resistor R27. The square-wave output is coupled by capacitor C10 to the Mode Selector switch on the front panel. The square-wave output is applied through the selector switch to Audio Amplfier Electronic Assembly A2A2, where it is amplified and applied to balanced modulator A1 in Mode Selector Electronic Assembly A2A1 to modulate the 500-kc carrier during the FSK mode of operation. The odd harmonics are eliminated from the FSK tone output by the sideband filter in the Mode Selector Electronic Assembly.

4-120. TTY PULSE SHAPER, TEST DATA. Pertinent references and applicable test data for the TTY pulse shaper are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. FSK Tone Generator Electronic Assembly, Schematic Diagram, figure 5-12.

c. FSK Tone Generator Electronic Assembly, Servicing Block Assembly, figure 4-63.

d. FSK Tone Generator (Foil Side Up), Component and Test Point Location, figure 5-87.

e. Required Test Equipment:

(1) Oscilloscope, AN/USM-117.

(2) Frequency Meter, AN/USM-207.

(3) Multimeter, AN/PSM-4.

(4) Cable Assembly, W5.

(5) Electronic Circuit Plug-in Unit Test Set, TS-2135/WRC-1. (Refer to note in table 1-4.)

f. FSK Tone Generator Electronic Assembly, Adjustments, paragraph 5-86.

4-121. AUDIO AMPLIFIERS, FUNCTIONAL CIRCUIT DESCRIPTION. The audio amplifiers (figure 4-22) consist of two audio amplification circuits (Q1 and Q4), two emitter follower isolation stages (Q3 and Q5) and a speech compression circuit (T2, CR1, RV1, RV2, and Q2). These circuits, which form a part of Audio Amplifier Electronic assemblies A2A2 and A2A3, provide a constant usable audio input signal to the balanced modulator circuits. The speech compression circuit reduces the peak-to-average ratio of voice signals to maintain a constant average percentage of modulation above 60 per cent. The emitter followers are used for isolation and impedance matching. The circuits of Audio Amplifier Electronic Assembly A2A2 are used during the USB, AM, and FSK modes of operation. The circuits of Audio Amplifier Electronic Assembly A2A3 are used during the LSB mode of operation. The circuits of both electronic assemblies are used during the ISB mode of operation. The following paragraphs describe the operation of these circuits in detail.

4-122. The remote audio signals are applied to the primary of transformer T1, which is a balanced (grounded center tap) or unbalanced (open center tap) 600-ohm line input. The local audio signals are applied to the secondary of transformer T1, which is an unbalanced input. Transformer T1 couples the audio to potentiometer R11, which establishes the level of the audio signals coupled to the base of amplifier Q1 by capacitor C2. The audio is also coupled to the USB LINE LEVEL meter switch or LSB LINE LEVEL meter switch for application to the corresponding meter amplifier circuit. The parallel-series combination of resistors R12, R1, and R11 provides an approximate 600-ohm terminating resistance for transformer T1. Resistor A2A8R15, which is bypassed by capacitor A2A8C9, limits the dc current flow through the microphone. The applied audio signals are raised in level by amplifier Q1 and are developed across the primary of transformer T2. A small amount of degeneration (produced by resistor R3) increases the stability of the circuit. The operating voltage for amplifier Q1 is developed by voltage divider R2, R13 and emitter resistors R3 and R4 from the positive 20 vdc applied from the Mode Selector switch on the front panel.

4-123. The amplified audio voltage at the output of amplifier Q1 is coupled to the base of agc amplifier Q2 by transformer T2. The audio voltage is detected by agc amplifier Q2 and the resulting dc voltage is developed across resistor R16 and varistors RV1 and RV2. (A varistor is a voltage-sensitive device, the resistance of which varies inversely with the applied voltage.) Diode CR1 protects the base-emitter junction of agc amplifier Q2 against excessive reverse bias. Filter C5 smoothes the compression effect of varistors RV1 and RV2 and also filters the dc voltage output from agc amplifier Q2. As the input audio voltage increases, the resistance of varistors RV1 and RV2 decreases, and as the input audio voltage decreases, the resistance of varistors RV1 and RV2 increases. Therefore, since the resistance of varistors RV1 and RV2 varies inversely with the input audio voltage, the output from voltage divider R15, RV1, and RV2 is maintained at a nearly constant level. As far as the audio signal is concerned, RV1 and RV2 are in parallel and constitutes the lower leg of the voltage divider. The operating voltage for emitter follower Q2 is applied directly from the Mode Selector switch on the front panel.

4-124. The audio output from voltage divider R15, RV1 and RV2 is coupled to the base of emitter follower Q3 by capacitor C4. Emitter follower Q3 is an isolation stage which prevents loading of voltage divider R15, RV1 and RV2. The operating voltage for emitter follower Q3 is developed by voltage divider R23, R5, R17 and emitter resistor R6 from the positive 20 vdc applied from the Mode Selector switch on the front panel.

4-125. The output audio signals from emitter follower Q3, developed across resistor R6, are coupled to the base of amplifier Q4 by capacitor C6. The applied signals are raised in level by amplifier Q4 and developed across collector resistor R19. A small amount of degeneration, produced by resistor R20, increases the stability of the circuit. The operating voltage for amplifier Q4 is developed by voltage divider R7, R18 and emitter resistors R8 and R20 from the positive 20 vdc applied from the Mode Selector switch on the front panel.

4-126. The amplified output signals from amplifier Q4 are coupled to the base of emitter follower Q5 by capacitor C7. Emitter follower Q5 provides the audio amplifier circuit with a low impedance output. The operating voltage for emitter follower Q5 is developed by voltage divider R9, R21 and emitter resistor R10 from the positive 20 vdc applied from the Mode Selector switch on the front panel.

4-127. The audio output signals from emitter follower Q5, developed across resistor R10, are coupled to one of the balanced modulator circuits by capacitor C9. The outputs from Audio Amplifier Electronic Assembly A2A2 are coupled to balanced modulator A1. The outputs from Audio Amplifier Electronic Assembly A2A3 are coupled to balanced modulator A2.

4-128. AUDIO AMPLIFIERS, TEST DATA. Pertinent references and applicable test data for the audio amplifiers circuit are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. Audio Amplifier Electronic Assembly, Servicing Block Diagram, figure 4-64.

c. Audio Amplifier Electronic Assembly, Schematic Diagram, figure 5-3.

d. Audio Gain Adjustment, paragraph 5-9.

e. Required Test Equipment:

(1) Audio Signal Generator, SG-376/U.

(2) Multimeter, AN/PSM-4.

(3) Electronic Multimeter, ME-6( )/U.

(4) Cable Assembly, W3.

(5) Electronic Circuit Plug-in Unit Test Set, TS-2135/WRC-1. (Refer to note in table 1-4.)

f. Audio Amplifier (Foil Side Up) Component and Test Point Location, figure 5-34.

4-129. CW CARRIER REINSERTION GATE. FUNCTIONAL CIRCUIT DESCRIPTION. The CW carrier reinsertion gate (figure 4-23) consists of three gating circuits (CR16, CR17, CR18). These circuits, which form a part of Mode Selector Electronic Assemby A2A1, gate the 500-kc local carrier into if. amplifiers for re-insertion during the CW mode of operation. In all modes of operation except CW, gate CR18 is biased on to prevent any leakage from this circuit. Gate CR17 controls the bias on gate CR16 each time the transmitter is keyed during the CW mode of operation. The following paragraphs describe the operation of the CW carrier reinsertion gate circuit in detail.

4-130. The 500-kc signal (from Frequency Standard Electronic Assembly A2A5) is coupled through capacitor C41 and isolating resistor R86 to the anode of gate CR16. A positive 13.3-vdc anode bias is developed on gate CR16 by voltage divider R85, R87 from the positive 20 vdc applied from the Mode Selector switch (set at CW position) on the front panel. The cathode of diode CR16 is biased at approximately 17 vdc until the transmitter is keyed. A ground is then applied through diode CR17 to resistor R89. This reduces the cathode bias instantaneously to 9.9 vdc as a result of the voltage divider action of resistors R115, R90, R89, and R88. When a gate is conducting both the biases are approximately the same; the difference is the voltage drop caused by the forward resistance of the diode. Thus, when the transmitter is keyed, gate CR16 is forward-biased and conducts, allowing the 500-kc signal to pass. The 500-kc signal is coupled by capacitor C44 to the primary of transformer T5. Transformer T5 couples the 500-kc signal to the peak power controlled if. amplifier circuit.

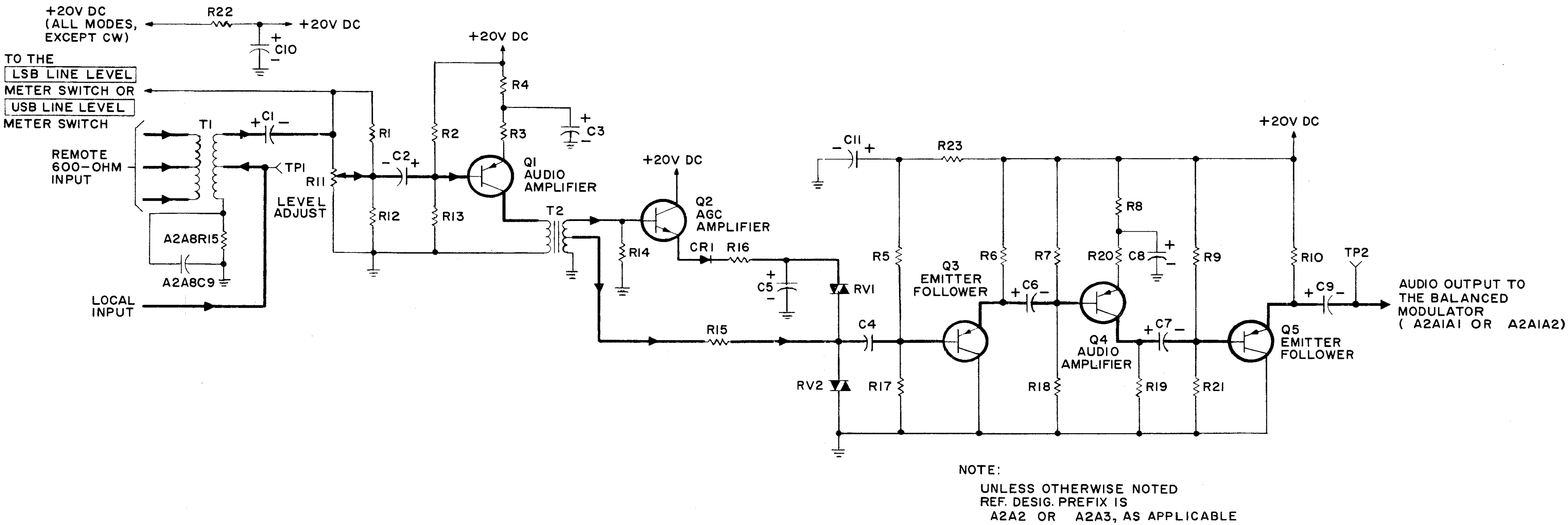


Figure 4-22. Audio Amplifier, Simplified Schematic Diagram

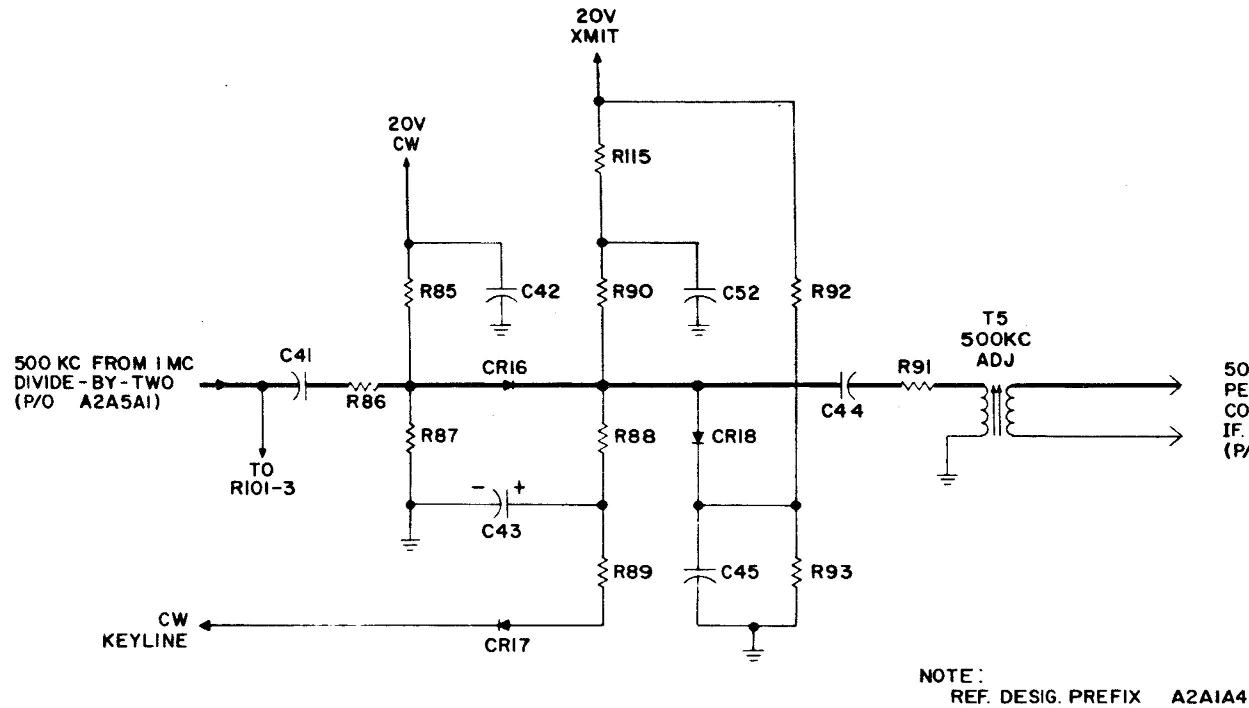


Figure 4-23. CW Carrier Reinsertion Gate, Simplified Schematic Diagram

4-131. In each mode of operation, except when the transmitter is keyed in the CW mode, the cathode of gate CR16 is biased at approximately 17 vdc, which is also the anode bias for gate CR18. The cathode of gate CR18 is biased at approximately 17 vdc also. This bias is developed by voltage divider R115, R92, R93 from the 20 vdc applied from the Mode Selector switch on the front panel. Therefore, gate CR18 will be forward-biased and will conduct, effectively shorting gate CR16 to ground through capacitor C45. This ensures that any leakage through gate CR16 will be bypassed to ground when the transmitter is not being keyed in the CW mode of operation. When the transmitter is keyed, the cathode bias of gate CR16 drops instantaneously to 9.9 vdc; consequently, the anode bias of gate CR18 is at the same level. Since the cathode of gate CR18 is still biased at approximately 17 vdc, gate CR18 is now reverse-biased, removing the short from gate CR16.

4-132. CW CARRIER REINSERTION GATE, TEST DATA. Pertinent references and applicable test data for the CW carrier reinsertion gate circuit are as follows:

a. Radio Transmitter T-827/URT, Chassis and Frame, Schematic Diagram, figure 5-1.

b. Mode Selector Electronic Assembly, Servicing Block Diagram, figure 4-59.

c. Mode Selector Electronic Assembly, Schematic Diagram, figure 5-2.

d. Mode Selector Electronic Assembly, Adjustments, paragraph 5-74.

e. Required Test Equipment:

(1) RF Signal Generator, CAQI-606A.

(2) RF Voltmeter, AN/URM-155.

(3) Multimeter, AN/PSM-4.

(4) Cable Assembly, W1.

(5) Electronic Circuit Plug-in Unit Test Set, TS-2135/WRC-1. (Refer to note in table 1-4.)

f. 500 KC Amplifiers/Gates and Sidetone Oscillator/Gates, (Foil Side Up) Component and Test Point Location, figure 5-32.

4-133. CW SIDETONE OSCILLATOR/GATE FUNCTIONAL CIRCUIT DESCRIPTION. The CW sidetone oscillator/gate (figure 4-24) consists of a phase shift oscillator (Q8) and a gating diode (CR13). These circuits, which

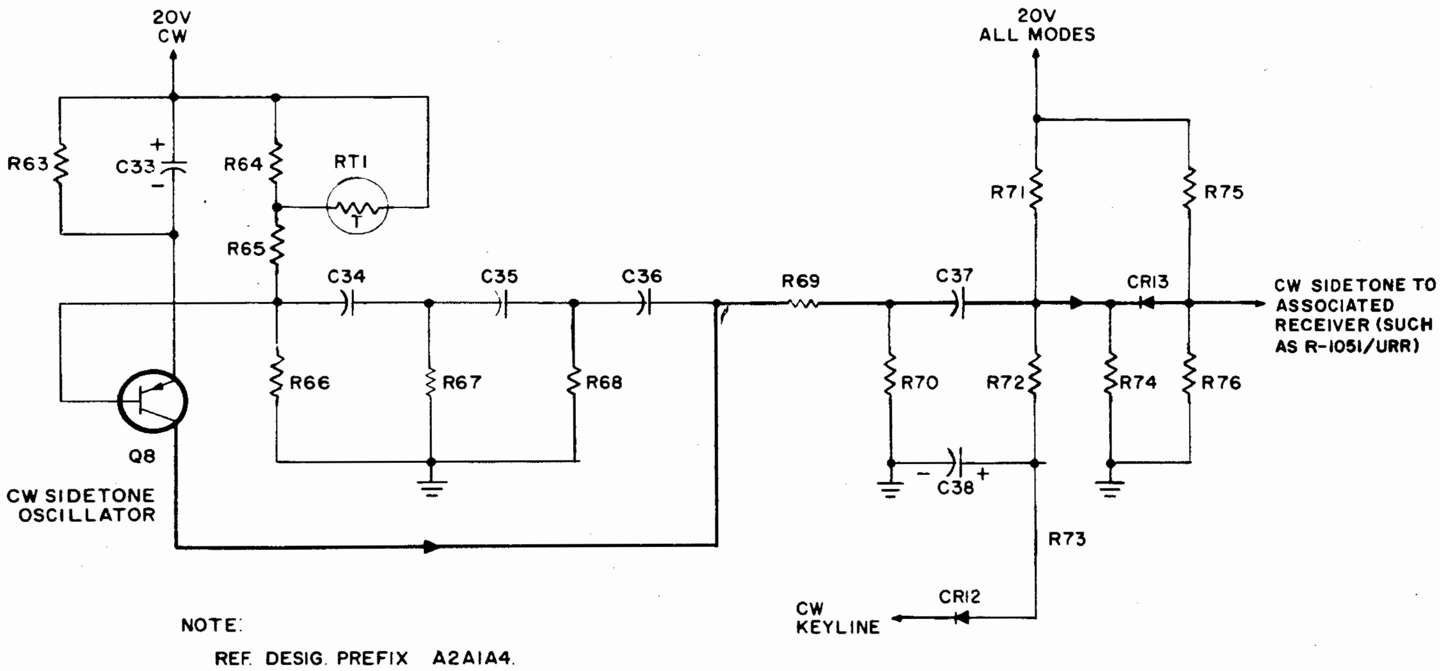


Figure 4-24. CW Sidetone Oscillator/Gates, Simplified Schematic Diagram

form a part of Mode Selector Electronic Assembly A2A1, produce an audio tone that is applied to the associated receiver, enabling the operator to monitor the keying when operating in the CW mode of operation. The following paragraphs describe the operation of the CW sidetone oscillator/gate circuit in detail.

4-134. Since the signal between base and collector is reversed 180 degrees in phase in a common emitter phase-shift oscillator, an additional 180-degree phase shift is necessary to keep the feed-back signal (from output to input) positive. The phase shift occurs in an RC network consisting of three sections, each contributing a 60-degree phase shift at the frequency of oscillation. In figure 4-24, the three RC sections are R68 and C36, R67, and C35, and R66 and C34. When operating in the CW mode, operating voltage for this circuit is developed from the 20 vdc applied to voltage divider R65, R64, RT1 and emitter resistor R63 from the Mode Selector switch on the front panel. Thermistor RT1 stablizes the circuit for any ambient temperature changes. Voltage divider R69, R70 determines the level of the audio tone (approximately 1 kc) produced by phase-shift oscillator Q8 and coupled to the cathode of gate CR13 by capacitor C37.

4-135. When the transmitter is not keyed for CW operation, gate CR13 is reverse-biased as a result of the positive 13.2 vdc on the cathode and the positive 10 vdc on the anode. The two biases are developed by voltage dividers R71, R74 and R75, R76 from the positive 20 vdc applied from the power supply on the main frame of the transmitter. Each time the CW key is depressed, ground is applied through diode CR12 to resistor R73. This causes the cathode bias to drop to 8.3 vdc. This instantaneous bias voltage is developed by the new voltage divider, consisting of R71 and the parallel combination of R72, R73 and R74. Since the anode of the diode is still biased at 10 vdc, gate CR13 becomes forward-biased and conducts allowing the audio output of phase-shift oscillator Q8 to pass. When gate CR13 conducts, both biases are approximately equal. The difference in biases is the voltage drop caused by the forward resistance of the diode. The audio tone is applied to the associated receiver (such as R-1051/URR) where it is amplified in the audio amplifiers and applied to the headset and the 600-ohm USB audio output line. This tone allows the operator to monitor the keying when operating in the CW mode of operation.

4-136. CW SIDETONE OSCILLATOR/GATE, TEST DATA. Pertinent references and applicable test data for the CW sidetone oscillator/gate circuit are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. Mode Selector Electronic Assembly, Servicing Block Diagram, figure 4-59.

c. Mode Selector Electronic Assembly, Schematic Diagram, figure 5-2.

d. Required Test Equipment:

(1) Rf Voltmeter, AN/URM-155.

(2) Frequency Meter, AN/USM-207.

(3) Multimeter, AN/PSM-4.

(4) Cable Assembly, W1.

(5) Electronic Circuit Plug-in Unit Test Set, TS-2135/WRC-1. (Refer to note in table 1-4.)

e. 500 KC Amplifiers/Gates and Sidetone Oscillator/Gates (Foil Side Up) Component and Test Point Location, figure 5-32.

4-137. SIDETONE GATES, FUNCTIONAL CIRCUIT DESCRIPTION. Sidetone gates CR14 and CR15 (figure 4-25), which form a part of Mode Selector Assembly A2A1, gate the audio intelligence to the associated receiver (such as R-1051/URR) to enable the operator to monitor the transmissions. Gate CR14 is used during the USB, AM and FSK modes of operation. Gate CR15 is used during the LSB mode of operation. Both gates are used during the ISB mode of operation. The following paragraphs describe the operation of the sidetone gate circuits in detail.

4-138. The USB audio applied to balanced modulator A1, from Audio Amplifier Electronic Assembly A2A2, is coupled to the anode of gate CR14 through coupling capacitor C39 and isolating resistor R77. This gate will be forward-biased in the USB, AM, FSK, or ISB modes of operation by the positive 16.7 vdc on the anode and the positive 10 vdc on the cathode. The two biases are instantaneous voltages, which are developed from the positive 20 vdc applied to the voltage dividers R78, R79 and R75, R76 by the Mode Selector switch on

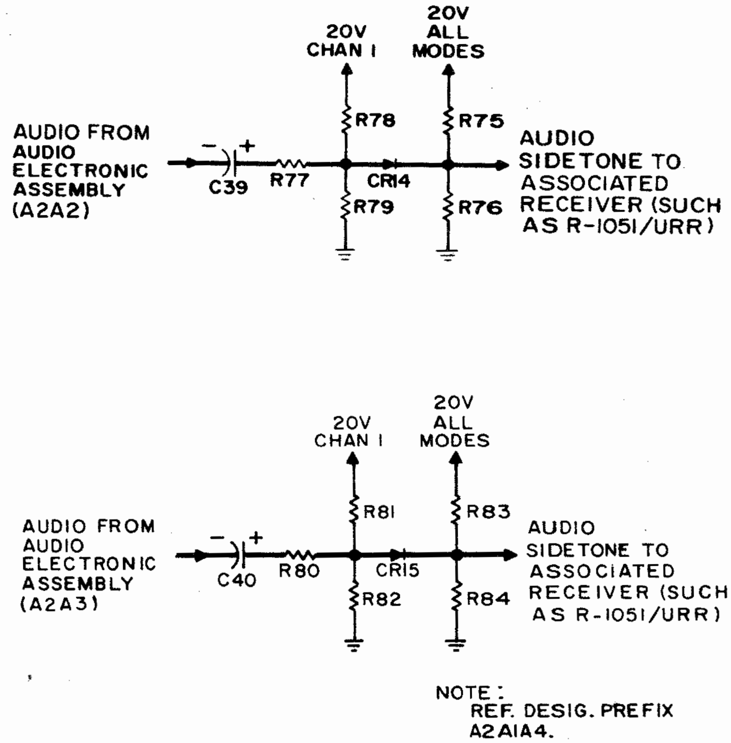


Figure 4-25. Sidetone Gates, Simplified Schematic Diagram

the front panel. When gate CR14 is conducting, both biases are approximately equal. The difference in biases is the voltage drop caused by the forward resistance of the of the diode. The gate is forward-biased and will conduct, allowing the audio to pass. This audio is applied to the associated receiver where it is amplified by the audio amplifier and applied to the headset and the USB 600-ohm audio output line. This tone allows the operator to monitor the USB audio intelligence being transmitted.

4-139. The LSB audio applied to balanced modulator A2, from Audio Amplifier Electronic Assembly A2A3, is coupled to the anode of gate CR15 through coupling capacitor C-40 and isolating resistor R80. This gate will be forward-biased in the LSB or ISB modes of operation by the positive 16.7 vdc on the anode and the positive 10 vdc on the cathode. The two biases are instantaneoud voltages, which are developed from the positive 20 vdc applied to the voltage dividers R81, R82 and R83, R84 by the Mode Selector switch on the front panel. When gate CR15 is conducting, both biases are approximately equal. The difference in biases is the voltage drop caused by the forward resistance of the

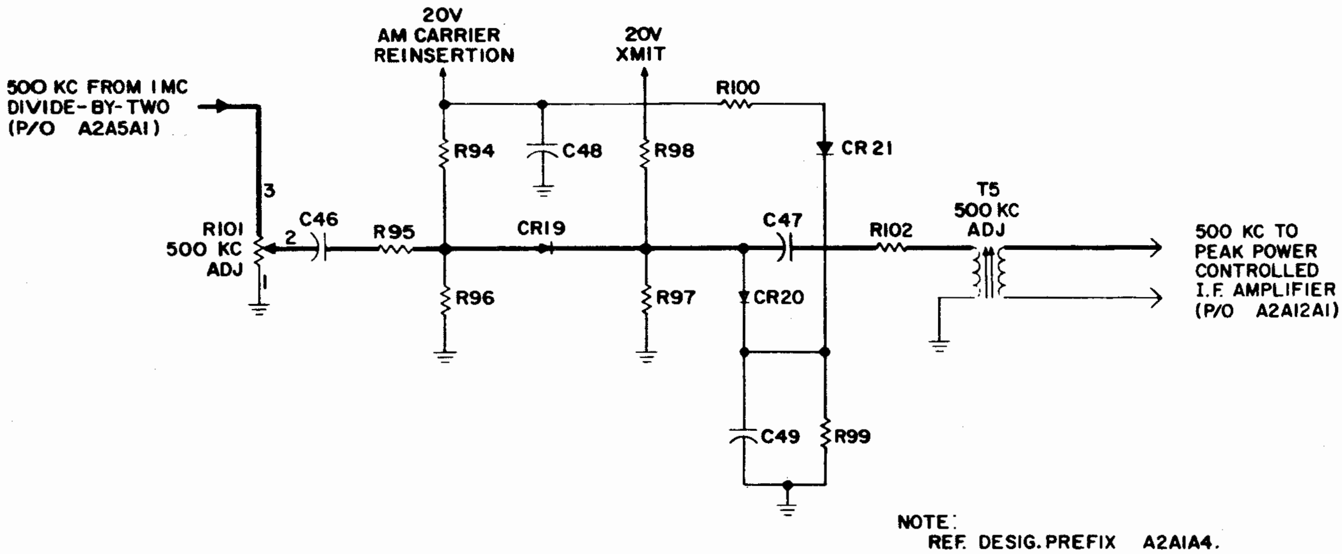


Figure 4-26. AM Carrier Reinsertion Gate, Simplified Schematic Diagram

diode. The gate is forward-biased and will conduct, allowing the audio to pass. This audio is applied to the associated receiver where it is amplified by the audio amplifier and applied to the headset and the LSB 600-ohm audio output line. This tone allows the operator to monitor the LSB audio intelligence being transmitted.

4-140. SIDETONE GATES, TEST DATA. Pertinent references and applicable test data for the sidetone gate circuit are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. Mode Selector Electronic Assembly, Servicing Block Diagram, figure 4-59.

c. Mode Selector Electronic Assembly, Schematic Diagram, figure 5-2.

d. 500 KC Amplifiers/Gates and Sidetone Oscillator/Gates (Foil Side Up) Component and Test Point Location, figure 5-32.

e. Required Test Equipment

(1) Miltimeter, AN/PSM-4.

(2) Cable Assembly, W1.

(3) Electronic Circuit Plug-in Unit Test Set, TS-2135/WRC-1. (Refer to note in table 1-4.)

4-141. AM CARRIER REINSERTION GATE, FUNCTIONAL CIRCUIT DESCRIPTION. The AM carrier reinsertion gate circuit (figure 4-26) consists of three gating circuits (CR19, CR20, CR21). These circuits, which form a part of Mode Selector Electronic Assembly A2A1, gate the 500-kc local carrier into the peak power controlled if. amplifier circuit for reinsertion into the if, signal during the AM mode of operation. Gate CR20 is biased on in all modes of operation except AM, to prevent any leakage from this circuit when it is not being used. Gate CR21 provides dc isolation between the two 20-vdc lines when gate CR20 is biased on. The following paragraphs describe the operation of the AM carrier reinsertion gate in detail.

4-142. The 500-kc signal from 1 mc divide-by-two circuit (part of A2A5A1) is applied to potentiometer R101. The potentiometer sets the percentage of modulation of the AM signal. The output from the potentiometer is coupled to voltage divider R95, R96 by capacitor C46. Gate CR19 is forward-biased during AM operation with an anode bias of 16.7 vdc and a cathode bias of 13.3 vdc. These two biases are instantaneous voltages which are developed by voltage dividers R94, R96 and R98, R97 from the positive 20 vdc applied from the Mode Selector switch on the front panel. When a gate is conducting, both biases are approximately equal. The difference in biases is the voltage drop caused by the forward resistance of the diode. Since gate CR19 is forward-biases, it will conduct, allowing the 500-kc signal to pass. The 500-kc signal is coupled to the primary of transformer T5 by capacitor C47. Transformer T5 couples the 500-kc carrier to the peak power controlled if. amplifiers for reinsertion into the if. signal.

4-143. In each mode of operation, the cathode of gate CR19 is biased at 13.3 vdc. This bias also serves as the anode bias for gate CR20. Since gate CR21 is forward-biased only in AM operation, the anode will be open during the other modes of operation. Therefore, the cathode of gate CR20 is at zero voltage. As a result, gate CR20 will be forward-biased and will conduct, effectively shorting gate CR19 to ground through capacitor C49. This ensures that any leakage through gate CR19 will be bypassed to ground whenever the transmitter is not being operated in the AM mode. When the transmitter is placed in the AM mode of operation, the anode of gate CR21 is biased at 20 vdc applied from the Mode Selector switch on the front panel. Since there is no voltage on the cathode of gate CR21, it is forward-biased and thus conducts. When gate CR21 conducts, the cathode of gate CR20 is biased at 16.5 vdc. This bias is developed by voltage divider R99, R100 from the positive 20 vdc applied from the Mode Selector switch on the front panel. Since the anode of gate CR20 is biased at 13.3 vdc, it will be reverse-biased and prevent the 500-kc signal from being shunted to ground.

4-144. AM CARRIER REINSERTION GATE, TEST DATA. Pertinent references and applicable test data for the AM carrier reinsertion gage circuit are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. Mode Selector Electronic Assembly, Servicing Block Diagram, figure 4-59.

c. Mode Selector Electronic Assembly, Schematic Diagram, figure 5-2.

d. Mode Selector Electronic Assembly, Adjustments, paragraph 5-74.

e. Required Test Equipment:

(1) RF Signal Generator, CAQI-606A.

(2) RF Voltmeter, AN/URM-155.

(3) Multimeter, AN/PSM-4.

(4) Cable Assembly, W1.

(5) Electronic Circuit Plug-in Unit Test Set, TS-2135/WRC-1. (Refer to note in table 1-4.)

f. 500 KC Amplifiers/Gates and Sidetone Oscillator/Gates (Foil Side Up) Component and Test Point Location, figure 5-32.

4-145. CARRIER REINSERTION LEVEL CONTROL, FUNCTIONAL CIRCUIT DESCRIPTION. The carrier reinsertion level control (figure 4-27) consists of a gating circuit (CR100) and a variable attenuator circuit (S1). These circuits, which form a part of Mode Selector Electronic Assembly A2A1, provide a pilot carrier for reinsertion into the rf. signal to enable other radio sets with less stability than the AN/WRC-1 to receive transmissions from the T-827/URT. This carrier is used in these receivers for frequency-locking and demodulating. These circuits provide a pilot carrier, when required, for the LSB, ISB, or USB modes of operation.

4-146. The 500-kc signal is coupled from the center of potentiometer R101 to voltage divider R110, R112 by capacitor C50. Potentiometer R101 is set so that the carrier is the same magnitude as the sideband when switch S1 is placed in the zero suppression position. The voltage divider limits the level of the 500-kc signal that is applied to the anode of gate CR100. During the USB, ISB, or LSB modes of operation, gate CR100 is forward-biased by the positive 16.7 vdc anode bias and the positive 13.3 vdc cathode bias. The two biases are instantaneous voltages, which are developed by voltage dividers R110, R111 and R108, R109 from the positive 20 vdc applied through contacts 11, and 10, 9, or 8 of switch S1. When gate CR100 is conducting, both biases are approximately equal. The difference in biases is the voltage drop caused by the forward resistance of the diode. Since gate CR100 is forward-biased, it will conduct, allowing the 500-kc signal to pass. The output from gate CR100 is coupled to one of three attenuator circuits by capacitor C51. The attenuator circuit used depends upon the position of switch S1. When switch S1 is set at the 0 DB, -10 DB, or -20 DB suppression position, the 500-kc signal is applied through the respective attenuator network and contacts 2, 3, or 4 and 5 of switch S1 to transformer T5. Transformer T5 couples

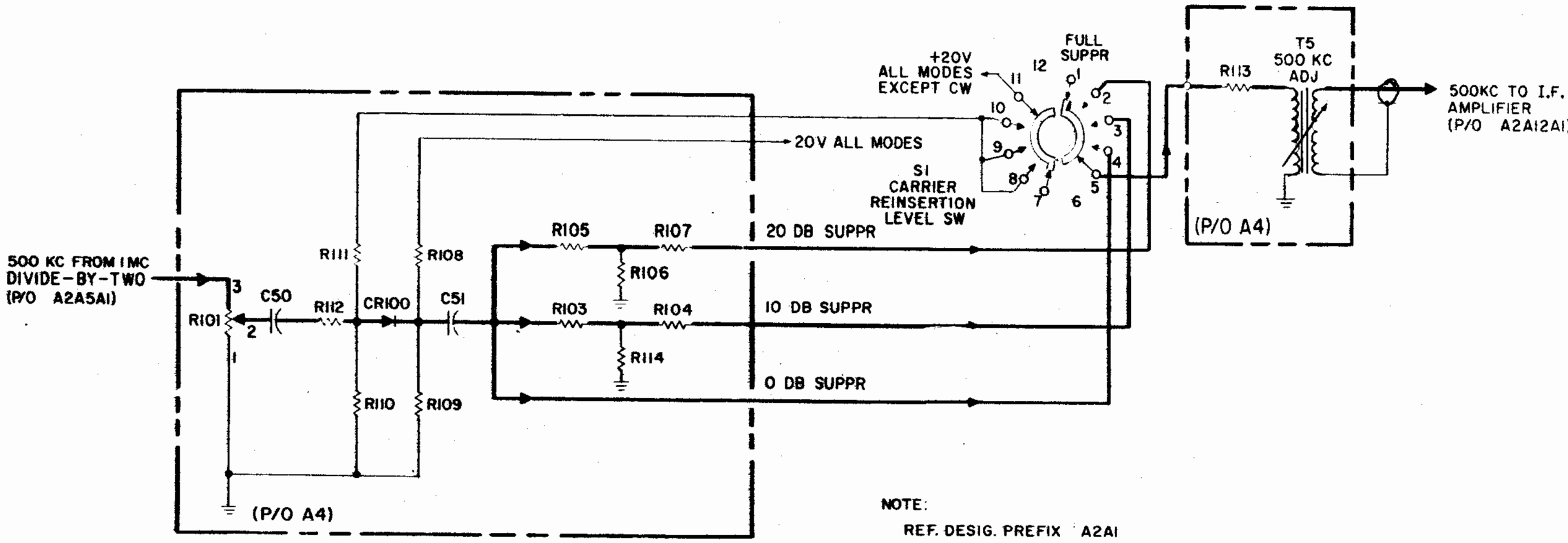


Figure 4-27. Carrier Reinsertion Level Control, Simplified Schematic Diagram

the 500-kc signal to the peak power controlled if. amplifier for reinsertion into the if. signal.

4-147. CARRIER REINSERTION LEVEL CONTROL, TEST DATA. Pertinent references and applicable test data for the carrier reinsertion level control circuit are as follows:

a. Radio Transmitter T-827/URT Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. Mode Selector Electronic Assembly, Servicing Block Diagram, figure 4-59.

c. Mode Selector Electronic Assembly, Schematic Diagram, figure 5-2.

d. Mode Selector Electronic Assembly, Adjustments, paragraph 5-74.

e. Required Test Equipment:

(1) RF Signal Generator, CAQ1-606A.

(2) RF Voltmeter, AN/URM-155.

(3) Multimeter, AN/PSM-4.

(4) Cable Assembly, W1.

(5) Electronic Circuit Plug-in Unit Test Set, TS-2135/WRC-1. (Refer to note in table 1-4.)

f. 500 KC Amplifiers/Gates and Sidetone Oscillator/Gates (Foil Side Up) Component and Test Point Location, figure 5-32.

g. Mode Selector Electronic Assembly, Left Side, Component Location, figure 5-31.

4-148. 5.16 TO 5.25 MC OSCILLATOR, FUNCTIONAL CIRCUIT DESCRIPTION. The 5.16 to 5.25 mc oscillator (figure 4-28) consists of 10 kc (KCS) crystal switch (A2A6A3S1), a limiter circuit (CR1, CR2), an oscillator (Q1), and a buffer amplifier (Q2). These circuits, which form a part of 1 and 10 KC Synthesizer Electronic Subassembly A2A6A3, produce one of ten outputs in 10-kc steps over the frequency range of 5.16 through 5.25 mc for use in 1 and 10 kc output and blanker A2A6A3A3, and the 9.07 mc error mixer (part of A2A6A3A4). These circuits function in all modes of operation. The following paragraphs describe the operation of the 5.16 to 5.25 mc oscillator in detail.

4-149. The operating frequency of the modified crystal-controlled Colpitts (Pierce) oscillator (Q1) is determined by the selection of any one ten crystals (A2A6A3Y1 through Y10) by switch A2A6A3S1. Selection is accomplished by positioning the 10 kc (KCS) control on the front panel. Operating voltage for the oscillator is derived from main frame power supply A2A8. Base bias for oscillator Q1 is developed by voltage divider R1, R2. The output of oscillator Q1 is controlled by diodes CR1 and CR2. The negative-going limit of the signal is established by the anode bias on diode CR1 (developed by voltage divider R3, R11, RT1), minus the drop of diode CR1. The positive-going limit of the signal is established by the cathode bias on diode CR2 (developed by voltage divider R12, R13) plus the drop of diode CR2. Therefore, the peak-to-peak amplitude of the signal is limited by the established dc reference levels. As the temperature of the circuit varies, the forward drop across diodes CR1 and CR2 varies. This would result in variations in the signal amplitude without temperature compensation. Thermistor RT1 varies the anode bias of CR1 in accordance with temperature changes. Therefore, the negative-going limit of the signal is shifted so that the limiting region is constant. This ensures that the amplitude of the signal does not vary with changes in temperature. Capacitors C5 and C8 are rf bypass capacitors. Capacitor C2 is used for dc blocking and is also used with capacitors C1, C3, and C4 to form the required feedback network. Resistor R7 provides degeneration to increase the stability of oscillator Q1. The output of oscillator Q1 is developed across emitter resistor R4 and is coupled to the base of buffer amplifier Q2 by capacitor C6.

4-150. Voltage divider R6, R8 develops the base bias for buffer amplifier Q2 from the positive 20 vdc. A resonant circuit consisting of the primary of transformer T1 and capacitor C10 provides the collector load for the amplifier. Resistor R5 is used to load the tank circuit to provide uniform gain over the range of frequencies developed by the oscillator. Resistor R9, in the emitter circuit, provides degenerative feedback to stabilize the gain and increase the input impedance of amplifier Q2, thereby preventing loading of oscillator Q1. Resistor R10 is the emitter bias resistor, which is rf bypassed by capacitor C9. Resistor

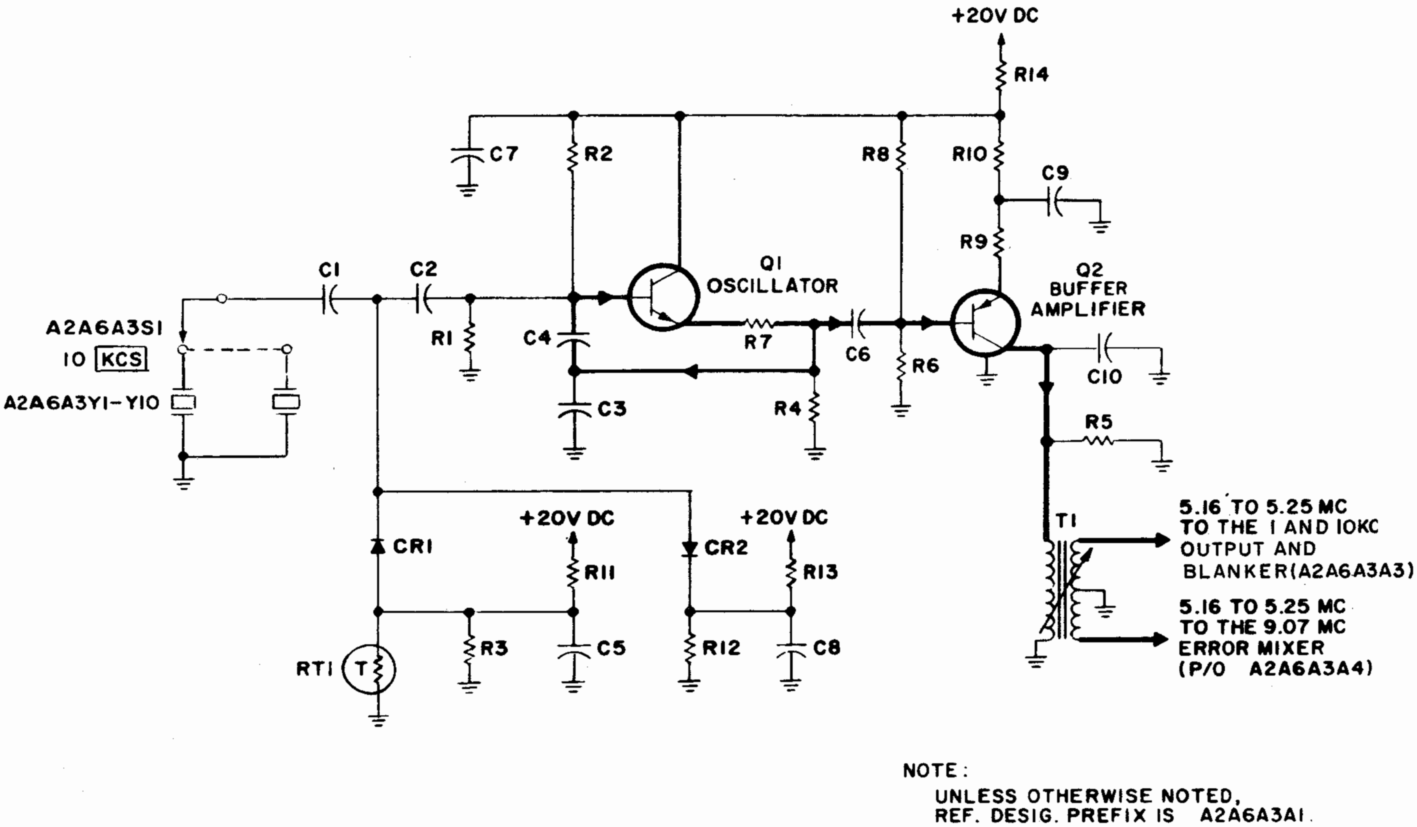


Figure 4-28. 5.16 to 5.25 MC Oscillator, Simplified Schematic Diagram

R14 and capacitor C7 provide decoupling for oscillator Q1 and buffer amplifier Q2. The output of amplifier Q2 is coupled to the 1 and 10 kc output and blanker circuit and to the 9.07 mc error mixer circuit by the secondary of transformer T1.

4-151. 5.16 TO 5.25 MC OSCILLATOR, TEST DATA. Pertinent references and applicable test data for the 5.16 to 5.25 mc oscillator are as follows:

a. Radio Transmitter T-827/URT Chassis and Main Frame, Schematic Diagram, figure 4-65

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 4-65.

b. 1 and 10 KC Synthesizer Electronic Subassembly, Servicing Block Diagram, figure 4-65.

c. 1 and 10 KC Synthesizer Electronic Subassembly, Schematic Diagram, figure 5-8.

d. 5.16 to 5.25 MC Oscillator (Foil Side Up), and Test Point Location, figure 5-66.

e. Required Test Equipment:

(1) Frequency Meter, AN/USM-207.

(2) RF Voltmeter, AN/URM-155.

(3) Oscilloscope, AN/USM-117.

(4) Multimeter, AN/PSM-4.

(5) Heterodyne Voltmeter, CDAN-2005. (Refer to note in table 1-4.)

(6) Translator/Synthesizer Test Set, TS-2133/WRC-1. (Refer to note in table 1-4.)

f. Refer to paragraph 3-30 in Technical Manual for Repair of AN/WRC-1 and R-1051/URR 2N Modules, NAVSHIPS 0967-034-2000 for 5.16 to 5.25 mc oscillator alignment procedure.

4-152. 1.850 TO 1.859 MC OSCILLATOR, FUNCTIONAL CIRCUIT DESCRIPTION. The 1.850 to 1.859 mc oscillator (figure 4-29) con-

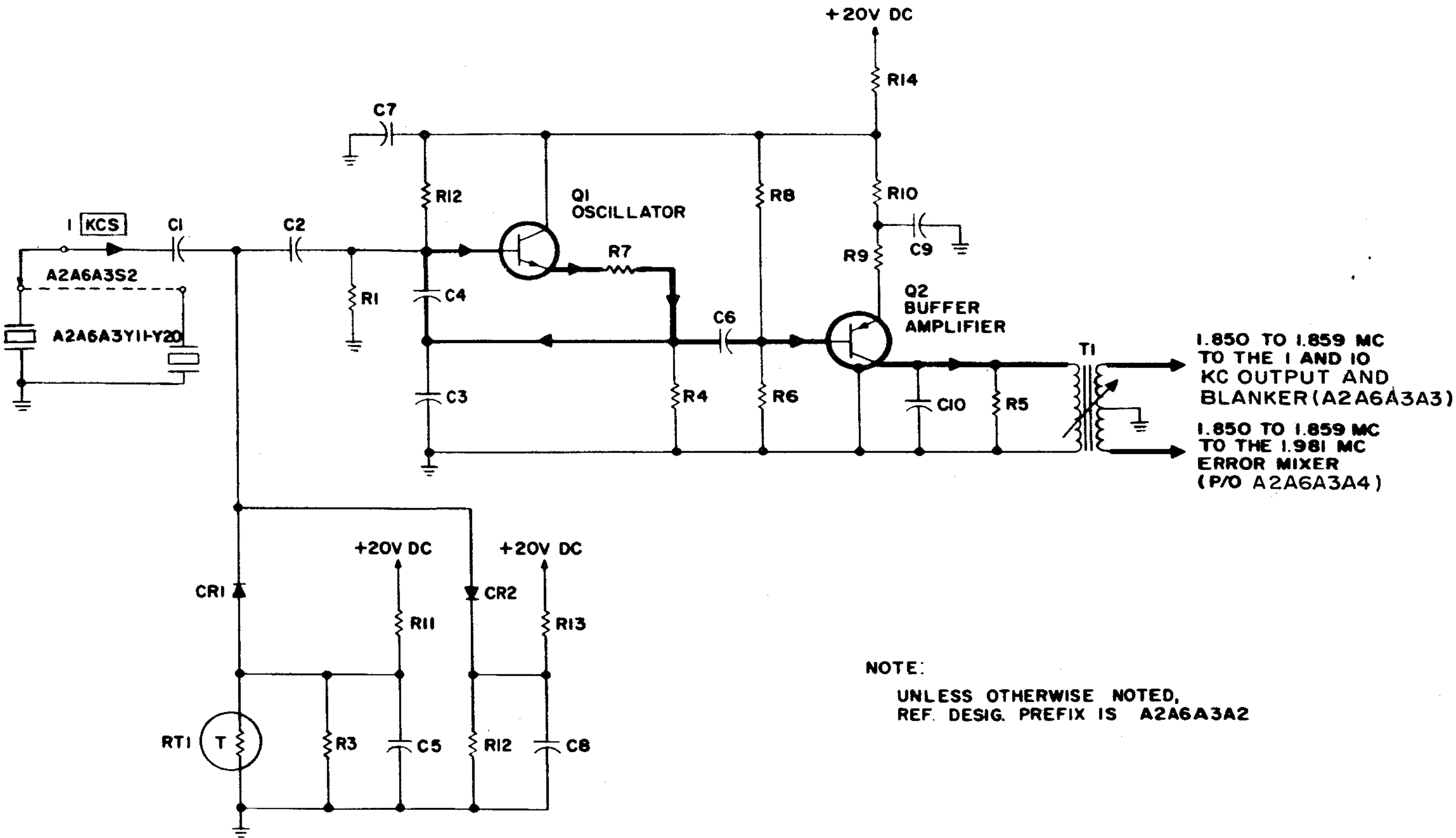


Figure 4-29. 1.850 to 1.859 MC Oscillator, Simplified Schematic Diagram

sists of 1 kc (KCS) crystal switch (A2A6A3S2), a limiter (CR1, CR2), an oscillator (Q1), and a buffer amplifier (Q2). These circuits, which form a part of 1 and 10 KC Synthesizer Electronic Subassembly A2A6A3, produce one of ten outputs, in 1-kc steps, over the frequency range of 1.850 through 1.859 mc for use in 1 and 10 kc output and blanker A2A6A3A3, and the 1.981 mc error mixer (part of A2A6A3A4). The operation of the 1.850 to 1.859 mc oscillator is identical to that of the 5.16 to 5.25 mc oscillator. (Refer to paragraphs 4-148 through 4-150 for details of circuit operation.)

a. Radio Transmitter T-827/URT Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. 1 and 10 KC Synthesizer Electronic Subassembly, Servicing Block Diagram, figure 4-65.

c. 1 and 10 KC Synthesizer Electronic Subassembly, Schematic Diagram, figure 5-8.

d. 1.850 to 1.859 MC Oscillator, (Foil Side Up) Component and Test Point Location, figure 5-67.

e. Required Test Equipment:

(1) Frequency Meter, AN/USM-207.

(2) RF Voltmeter, AN/URM-155.

(3) Oscilloscope, AN/USM-117.

(4) Multimeter, AN/PSM-4.

(5) Heterodyne Voltmeter CDAN-2005. (Refer to note in table 1-4.)

(6) Translator/Synthesizer Test Set, TS-2133/WRC-1. (Refer to note in table 1-4.)

f. Refer to paragraph 3-30 in Technical Manual for Repair of AN/WRC-1 and R-1051/URR 2N Modules, NAVSHIPS 0967-034-2000 for 1.850 to 1.859 mc oscillator alignment procedures.

4-153. 1.850 TO 1.859 MC OSCILLATOR, TEST DATA. Pertinent references and applicable test data for the 1.850 to 1.859 mc oscillator are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. 1 and 10 KC Synthesizer Electronic Subassembly, Servicing Block Diagram, figure 4-65.

c. 1 and 10 KC Synthesizer Electronic Subassembly, Schematic Diagram, figure 5-8.

4-154. 1 AND 10 KC MIXER, FUNCTIONAL CIRCUIT DESCRIPTION. The 1 and 10 kc mixer circuit (figure 4-30) consists of a mixer (Q11) and a four-section filter (C48-L5, C49-L6, C51-L7, and C54 and the primary of transformer T3 with coupling capacitors C56, C50 and C52). (A noise blanker control (Q12) is also included, but not used in the T-827/URT). These circuits, which form a part of 1 and 10 KC Synthesizer Electronic Subassembly A2A6A3, subtractively mix the signal from the 1.850 to 1.859 mc oscillator with the signal from the 5.16 to 5.25 mc oscillator, producing the 1 and 10 kc injection signal (3.301 to 3.400 mc in 1-kc steps) for use in the low frequency mixer. The following paragraphs describe the operation of this circuit in detail.

4-155. The signal from the 1.850 to 1.859 mc oscillator is applied through resistor A2A6A3A2R16 to resistor A2A6A3A1R16. The signal from the 5.16 to 5.25 mc oscillator is also applied to resistor A2A6A3A1R16 through capacitor A2A6A3A1C11. This capacitor provided a low impedance to the 5.16 to 5.25 mc signal and a high impedance to the 1.850 to 1.859 mc signal; therefore, the 5.16 to 5.25 mc oscillator will not load the 1.850 to 1.859 mc signal. The two input signals are coupled from resistor A2A6A3A1R16 through capacitor C55 to the base of mixer Q11. The base bias is provided by voltage divider R47, R54. Resistor R52 provides a small amount of degeneration to improve the stability of mixer Q11. Resistor R48 is the emitter bias resistor, which is rf bypassed by capacitor C47. Resistor R49 and capacitor C46 provide decoupling for mixer Q11. The output circuit of mixer Q11 is four-section filter. The filter has a bandwidth of 100 kc (3.3 to 3.4 mc) and sufficient selectivity to attenuate any frequency outside this band. Capacitors C56, C50, and C52 are an integral part of the filter and couple the signal between sections of the filter; therefore, the four section filter will pass only the difference of the 1.850 to 1.859 mc and 5.16 to 5.25 mc signals (3.301 to 3.400 mc, in 1 kc steps). The signal from the four-section filter is coupled through transformer T3 and applied to the low frequency mixer.

4-156. 1 AND 10 KC OUTPUT AND BLANKER TEST DATA. Pertinent references and applicable test data for the 1 and 10 kc output and blanker are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. 1 and 10 KC Synthesizer, Electronic Subassembly, Servicing Block Diagram, figure 4-65.

c. 1 and 10 KC Synthesizer Electronic Subassembly, Schematic Diagram, figure 5-8.

d. 1 and 10 KC Output and Blanker (Foil Side Up), Component and Test Point Location, figure 5-69.

e. Required Test Equipment:

(1) RF Signal Generator, CAQ1-606A.

(2) RF Voltmeter, AN/URM-155.

(3) Oscilloscope, AN/USM-117.

(4) Heterodyne Voltmeter, CDAN-2005. Refer to note in table 1-4.)

(5) Translator/Synthesizer Test Set, TS-2133/WRC-1. (Refer to note in table 1-4.)

(6) Multimeter, AN/PSM-4.

f. Refer to paragraph 3-30 in Technical Manual for Repair of AN/WRC-1 and R-1051/URR 2N Modules, NAVSHIPS 0967-034-2000 for 1 and 10 kc output and blanker alignment procedures.

4-157. 4.553 TO 5.453 MC OSCILLATOR, FUNCTIONAL CIRCUIT DESCRIPTION. The 4.553 to 5.453 mc oscillator (figure 4-31) con-

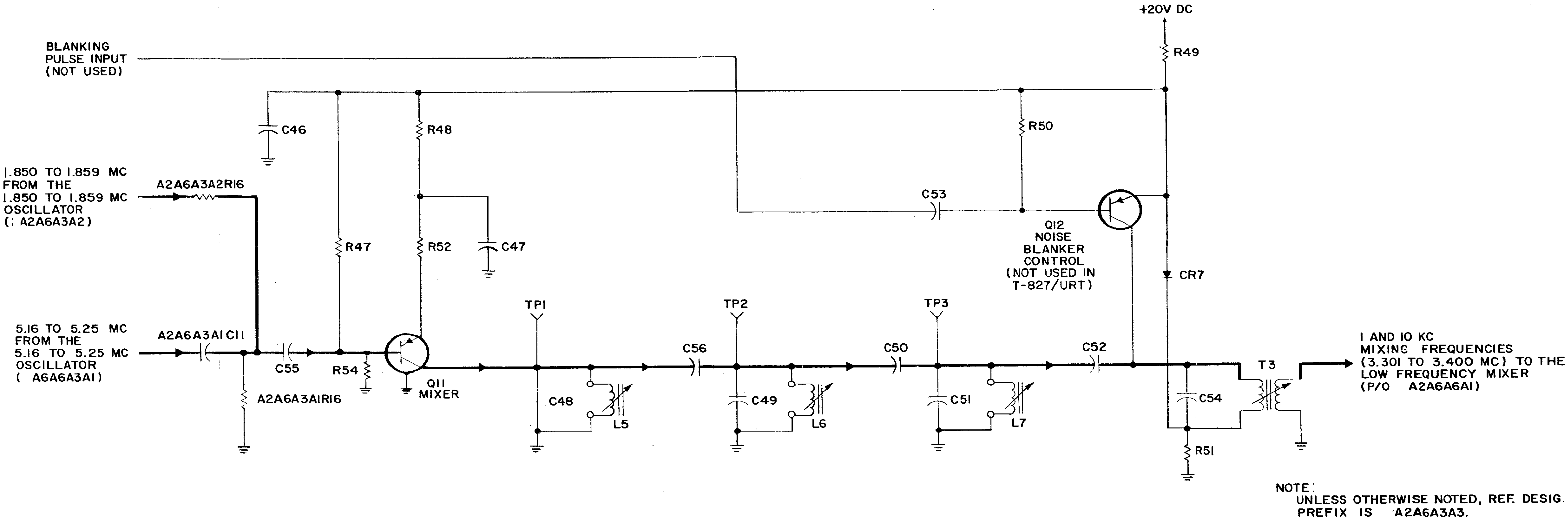


Figure 4-30. 1 and 10 KC Output and Blanker, Simplified Schematic Diagram

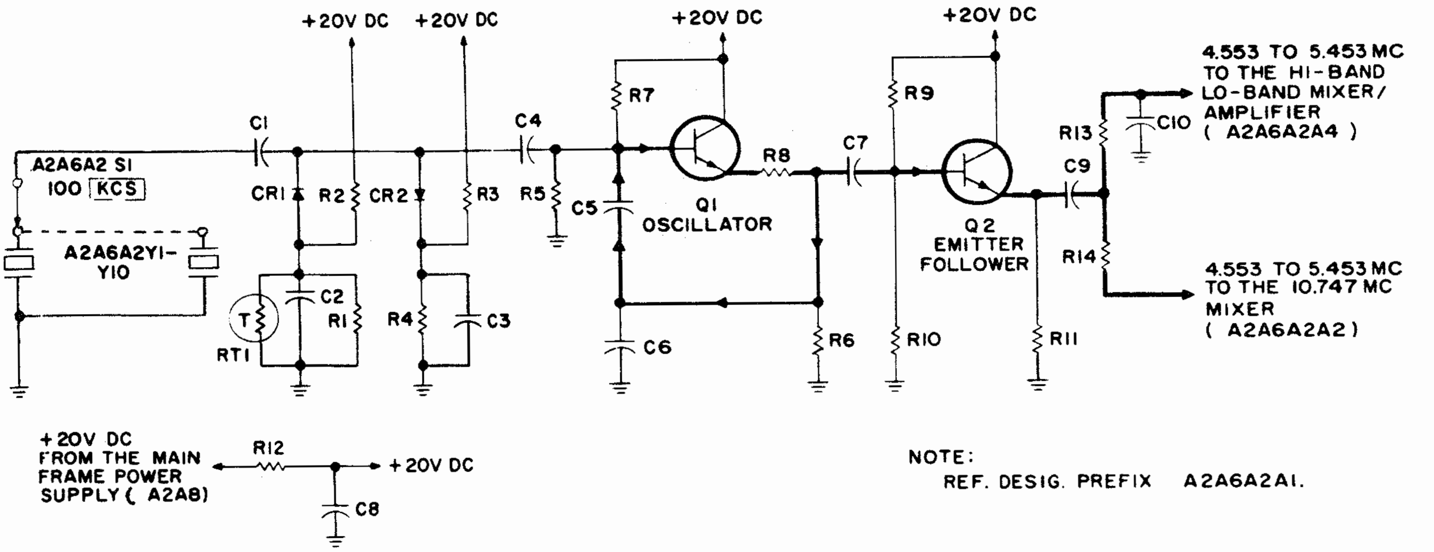


Figure 4-31. 4.553 to 5.453 MC Oscillator, Simplified Schematic Diagram

sists of 100 kc (KCS) crystal switch (A2A6A2S1), a limiter (CR1, CR2), an oscillator (Q1), and an emitter follower (Q2). These circuits, which form a part of 100 KC Synthesizer Electronic Subassembly A2A6A2, produce one of ten outputs in 100-kc steps over the frequency range of 4.553 through 5.453 mc for use in hi-band/lo-band mixer/amplifier A2A6A2A4 and 10.747 mc mixer A2A6A2A2. These circuits are used in all modes of operation. The following paragraphs describe the operation of the 4.553 to 5.453 mc oscillator in detail.

4-158. The operating voltage for the 4.553 to 5.453 mc oscillator is derived from main frame power supply A2A8. Resistor R12 and capacitor C8 provide decoupling to prevent any interaction with other circuits connected to the 20 vdc supply line. Base bias for oscillator Q1 is developed by voltage divider R5, R7. The output frequency of oscillator Q1 is determined by setting of the 100 kc (KCS) control (A2A6A2S1) on the front panel. This switch (A2A6A2S1) connects the correct crystal (A2A6A2Y1 through Y10) into the circuit of oscillator Q1 in accordance with the desired 100-kc digit of the operating frequency. The output of oscillator Q1 is controlled by diodes CR1 and CR2. The negative-going limit of the signal is established by the anode bias on diode CR1 (developed by voltage divider R1, R2, RT1) minus the drop of diode CR1. The positive-going limit of the signal is established by the cathode bias on diode CR2 (developed by voltage divider R3, R4) plus the drop of diode CR2. Therefore, the peak-to-peak amplitude of the signal is limited by the established dc reference levels. As the temperature of the circuit varies, the forward drop of diodes CR1 and CR2 varies. This would result in variations in the signal amplitude without temperature compensation. Thermistor RT1 varies the anode bias of diode CR1 in accordance with temperature changes. Therefore, the negative-going limit of the signal is shifted so that the limiting region is constant. This ensures that the amplitude of the signal does not vary with changes in temperature. Capacitors C2 and C3 are rf bypass capacitors. Capacitor C4 is used for dc blocking and is also used with capacitors C1, C5, and C6 to form the required feedback network. Resistor R8 provides degeneration to increase the stability of oscillator Q1. The output of oscillator Q1 is developed across emitter resistor R6 and is coupled to the base of emitter follower Q2 by capacitor C7.

4-159. The base bias for emitter follower Q2 is developed by voltage divider R9, R10 from the 20 vdc. Emitter follower Q2 is used to isolate the oscillator from the succeeding circuits. The output of emitter follower Q2 is developed across emitter resistor R11 and coupled to the hi-band/lo-band mixer/amplifier and to the 10.747 mc mixer by capacitor C9. Resistors R13 and R14 are isolating resistors. Capacitor C10 provides a low impedance to ground for the other signals used in the hi-band/lo-band mixer/amplifier, preventing these signals from being coupled into the 10.747 mc mixer.

4-160. 4.553 to 5.453 MC OSCILLATOR, TEST DATA. Pertinent references and applicable test data for the 4.553 to 5.453 mc oscillator are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. 100 KC Synthesizer Electronic Subassembly, Servicing Block Diagram, figure 4-66.

c. 100 KC Synthesizer Electronic Subassembly, Schematic Diagram, figure 5-7.

d. 4.553 MC to 5.453 MC Oscillator (Foil Side Up), Component Location, figure 5-56.

e. Required Test Equipment:

(1) Frequency Meter, CAQ1-524D.

(2) RF Voltmeter, AN/URM-155.

(3) Oscilloscope, AN/USM-117

(4) Heterodyne Voltmeter, CDAN-2005. (Refer to note in table 1-4.)

(5) Translator/Synthesizer Test Set, TS-2133/WRC-1. (Refer to note in table 1-4.)

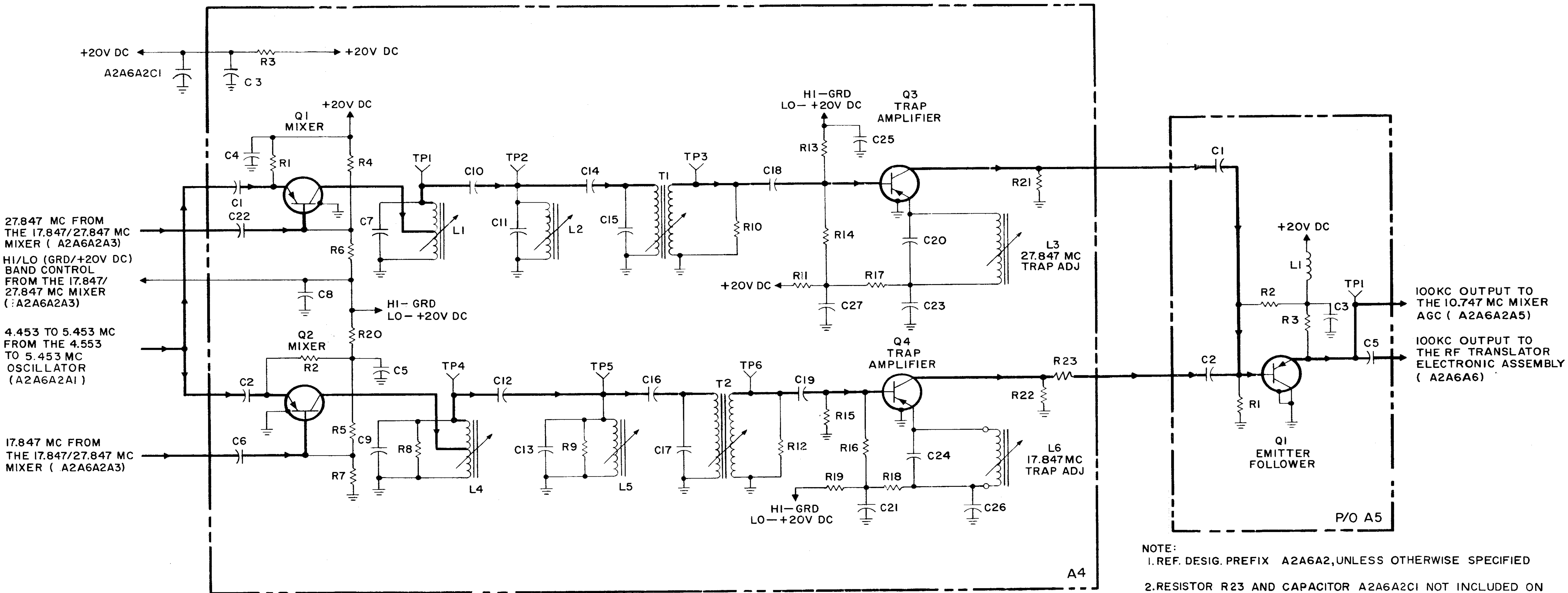
(6) Multimeter, AN/PSM-4.

4-161. HI-BAND/LO-BAND MIXER/AMPLIFIER FUNCTIONAL CIRCUIT DESCRIPTION. The hi-band/lo-band mixer/amplifier (figure 4-32) consists of two mixers (A4Q1 and A4Q2), two trap amplifiers (A4Q3 and A4Q4), and an emitter follower (A5Q1). These circuits, which form a part of 100 KC Synthesizer Electronic Subassembly A2A6A2, produce either a high (hi) band of injection frequencies (32.4 to 33.3 mc) or a low (lo) band of injection frequencies (22.4 to 23.3 mc), which is used in the mid-frequency mixer of RF Translator Electronic Subassembly A2A6A6. The output of these circuits is also used in 10.747 mc mixer agc circuit A2A6A2A5 to develop the agc voltage which controls the gain of 10.747 mc mixer A2A6A2A2. These circuits are used in all modes of operation. The following paragraphs describe the operation of the hi-band/lo-band mixer/amplifer in detail.

4-162. Only half of the hi-band/lo-band mixer/amplifier circuits are on at any one time, depending on whether the hi (32.4 to 33.3 mc) or lo (22.4 to 23.3 mc) band is required for mixing in RF Translator Electronic Subassembly A2A6A6. The hi-band circuits will be discussed first. Unless otherwise noted, all components referenced are located on the A4 assembly.

4-163. The 27.847 mc output from the 17.847/27.847 mc mixer is coupled to the base of mixer Q1 by capacitor C22. The output from the 4.553 to 5.453 mc oscillator is coupled to the emitter of mixer Q1 by capacitor C1. When the hi/lo band control line is at ground potential, base bias will be provided for mixer Q1 and trap amplifier Q3 by voltage divider R4, R6 and voltage divider R13, R14, respectively. Resistor R1 is the emitter resistor. Capacitor C4 is an rf bypass capacitor. At the same time, mixer Q2 and trap amplifier Q4 will be rendered inoperative by the ground potentials applied to the emitters and base bias circuits from the hi/lo band control line. The output of mixer Q1 is a frequency in the 32.4-to-33.3-mc band. All other products of the mixer, except for a small amount of the 27.847-mc component, are eliminated by the triple-tuned filter composed of inductors L1 and L2, transformed T1 and capacitors C7, C10, C11, C14, and C15. From the triple-tuned filter, the signal is coupled through capacitor C18 to the base of amplifier Q3. The emitter circuit of trap amplifier Q3 (capacitor C20 and inductor L3) is parallel-tuned to 27.847 mc. At 27.847 mc, the trap provides degeneration to effectively eliminate the 27.847-mc component from the output signal. Resistor R11 and capacitor C27 provide decoupling for trap amplifier Q3. Resistor R17 is the emitter bias resistor, which is rf bypassed by capacitor C23. The output of trap amplifier Q3 is coupled by capacitor A5C1 to the base of emitter follower A5Q1. The output of emitter follower A5Q1 is also applied to 10.747 mc mixer agc A2A6A2A5.

4-164. The lo-band circuits are identical to the hi-band circuits. When the hi/lo band control line is at 20 vdc, operating voltages are applied to the emitter and bases of mixer Q2 and trap amplifier Q4. At the same time, the



NOTE:
1. REF. DESIG. PREFIX A2A6A2, UNLESS OTHERWISE SPECIFIED
2. RESISTOR R23 AND CAPACITOR A2A6A2C1 NOT INCLUDED ON EARLIER MODELS

Figure 4-32. Hi-band/Lo-band Mixer/Amplifier, Simplified Schematic Diagram

20 vdc is applied to the bases of mixer Q1 and trap amplifier Q3, thereby providing back bias for the transistors, since the emitters are also at 20 vdc. The 17.847-mc output from the 17.847 mc mixer is coupled to the base of mixer Q2 by capacitor C6. The output from the 4.553 to 5.453 mc oscillator is coupled to the emitter of mixer Q2 by capacitor C2. The output of mixer Q2 is a frequency in the 22.4-to-23.3-mc band. All other products of the mixer, except for a small amount of 17.847-mc component, are eliminated by the triple-tuned filter composed of inductors L4 and L5, transformer T2, and capacitors C9, C12, C13 and C16, and C17. From the triple-tuned filter, the signal is coupled by capacitor C19 to the base of trap amplifier Q4. The emitter circuit of trap amplifier Q4 is parallel-tuned to 17.847 mc to eliminate the 17.847-mc signal. The output of trap amplifier Q4 is isolated by resistor R23, and is coupled by capacitor A5C2 to the base of emitter follower A5Q1. The output of emitter follower A5Q1 is applied to 10.747 mc mixer agc A2A6A2A5 and the mid-frequency mixer in the RF Translator Electronic Subassembly A2A6A6.

4-165. HI-BAND/LO-BAND MIXER/AMPLIFIER, TEST DATA. Pertinent references and applicable test data for the hi-band/lo-band mixer/amplifier circuit are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, figure 5-1.

b. 100 KC Synthesizer Electronic Subassembly, Servicing Block Diagram, figure 4-66.

c. 100 KC Synthesizer Electronic Subassembly, Schematic Diagram, figure 5-7.

d. Hi-Band/Lo-Band Mixer/Amplifier (Foil Side Up), Component and Test Point Location, figure 5-62.

e. 10.747 MC Mixer AGC (Foil Side Up) Component and Test Point Location figure 5-64.

f. Required Test Equipment:

(1) RF Signal Generator, CAQI-606A.

(2) RF Voltmeter, AN/URM-155.

(3) Oscilloscope, AN/USM-117.

(4) Heterodyne Voltmeter, CDAN-2005. (Refer to note in table 1-4.)

(5) Translator/Synthesizer Test Set. TS-2133/WRC-1. (Refer to note in table 1-4.)

(6) Multimeter, AN/PSM-4.

g. Refer to paragraph 3-34 in Technical Manual for Repair of AN/WRC-1 and R-1051/URR 2N Modules, NAVSHIPS 0967-034-2000 for hi-band/lo-band mixer/amplifier alignment procedures.

4-166. MC OSCILLATOR, FUNCTIONAL CIRCUIT DESCRIPTION. The mc oscillator (figure 4-33) consists of an oscillator (Q1), a wideband amplifier (Q2) and two emitter followers (Q3 and Q4). These circuits, which form a part of MC Synthesizer Electronic Subassembly A2A6A1, provide 17 discrete frequencies (2.5 to 23.5 mc) for use in the high frequency mixer. The following paragraphs describe the operation of the mc oscillator in detail.

4-167. Oscillator Q1 is a modified, crystal-controlled Colpitts (Pierce) oscillator used with crystals A2A6A1Y1 through A2A6A1Y17 to cover a frequency range from 2.5 to 23.5 mc in 17 discrete steps. Due to the wide frequency range required, it is necessary to select a capacitor (A2A6A1C1 through A2A6A1C17) in the feedback network for each crystal and thus provide a uniform output level. The oscillator feedback network consists of capacitors C21, C24, and A2A6A1C1 through A2A6A1C17, voltage-variable capacitor CR3 and a crystal (A2A6A1Y1 through A2A6A1Y17). Voltage-variable capacitor CR3 provides the necessary control for correcting any error in the frequency of oscillator Q1. Resistor R2 references voltage variable capacitor CR3 to 20 vdc. The error voltage from the error detector/amplifier passes through resistor R1 to voltage variable capacitor CR3, where it changes the capacity and the resonant frequency of the circuit until the circuit resonates at the correct frequency. Capacitor C21 compensates for variations in the oscillator frequency caused by temperature changes. Since capacitor C21 is in the oscillator feedback path, the temperature coefficient of C24 will affect the output amplitude of oscillator Q1. To compensate for this, a temperature-compensating capacitor is used as capacitor C24. Base bias for oscillator Q1

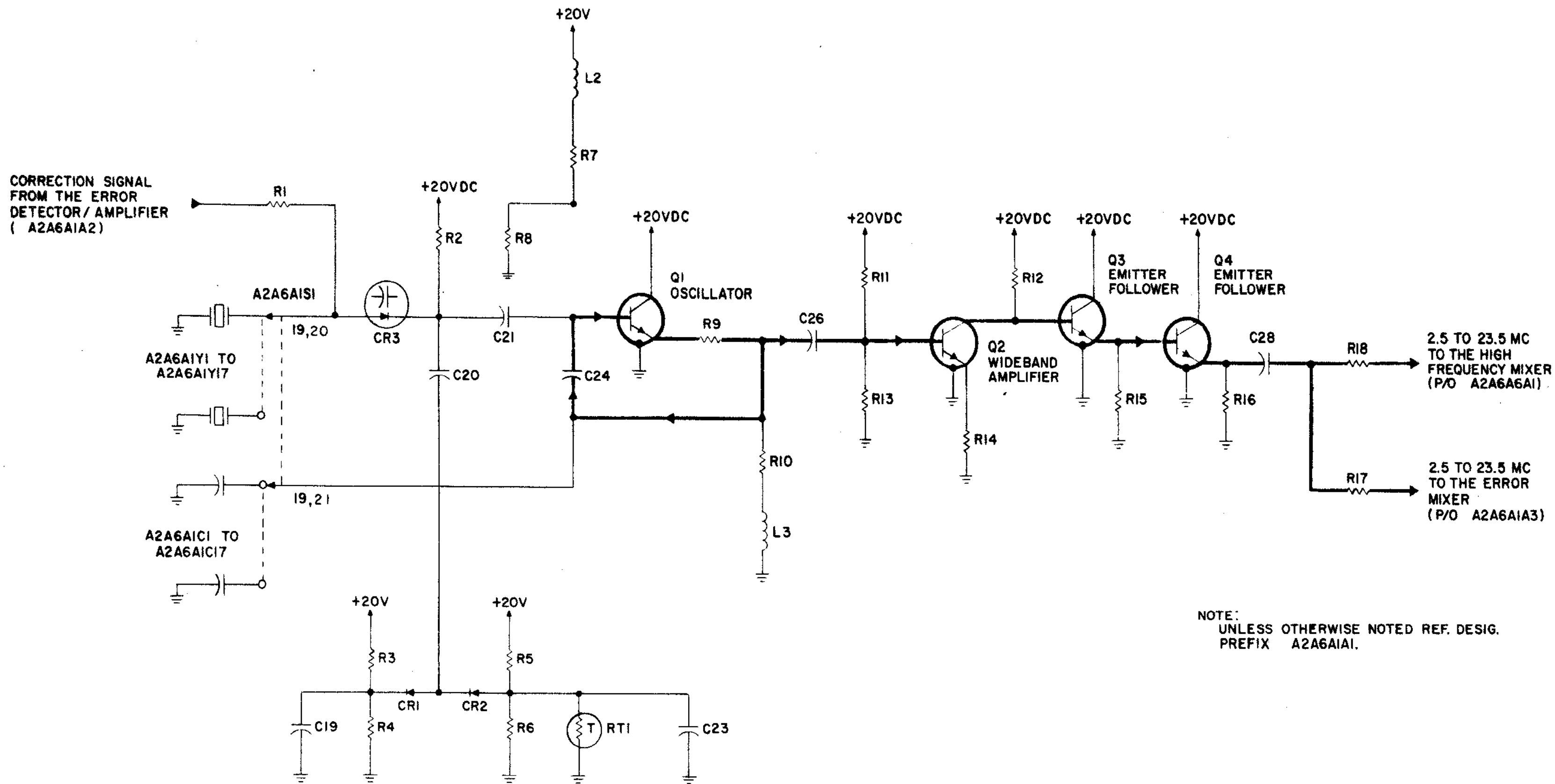


Figure 4-33. MC Oscillator, Simplified Schematic Diagram

Figure 4-33. MC Oscillator, Simplified Schematic Diagram is developed by voltage divider L2, R7, R8. The output of oscillator Q1 is controlled by diodes CR1 and CR2. The positive-going limit of the signal is established by the cathode bias on diode CR1 (developed by voltage divider R3, R4) plus the drop of diode CR1. The negative-going limit of the signal is established by the anode bias on diode CR2 (developed by voltage divider R5, R6, RT1) minus the drop of diode CR2; therefore, the peak-to-peak amplitude of the signal is limited by the established dc reference levels. As the temperature of the circuit varies, the forward drop of diodes CR1 and CR2 varies. This would result in variations in the signal amplitude without temperature compensation. Thermistor RT1 varies the anode bias of diode CR2 in accordance with the temperature changes and the negative-going limit for the signal is shifted so that the limiting region is constant. This action ensures that the amplitude of the signal does not vary with changes in temperature. Capacitors C19 and C23 are rf bypass capacitors. Resistor R10 provides degeneration to improve the stability of oscillator Q1. The output of oscillator Q1 is developed across emitter resistor R10 and inductor L3. The output of oscillator Q1 is coupled to the base of wideband amplifier Q2 by capacitor C26.

4-168. The base bias for wideband amplifier Q2 is developed by voltage divider R11, R13, from the 20 vdc. Emitter resistor R14 is unbypassed to provide the necessary degeneration, producing wide bandwidth, and uniform gain for this stage. Stages Q3 and Q4 are cascaded, direct-coupled emitter followers that provide the required low source impedance for driving the error loop and the high-frequency mixer. Capacitor C28 couples the signal from emitter resistor R16 to the high-frequency mixer. Resistors R17 and R18 are isolation resistors.

4-169. MC OSCILLATOR, TEST DATA. Pertinent references and applicable test data for the mc oscillator are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. MC Synthesizer Electronic Subassembly, Servicing Block Diagram, figure 4-67.

c. MC Synthesizer Electronic Subassembly, Schematic Diagram, figure 5-6.

d. MC Oscillator (Foil Side Up), Component and Test Point Location, figure 5-51.

e. Required Test Equipment:

(1) Frequency Meter, AN/USM-207.

(2) RF Voltmeter, AN/URM-155.

(3) Oscilloscope, AN/USM-117.

(4) Heterodyne Voltmeter, CDAN-2005. (Refer to note in table 1-4.)

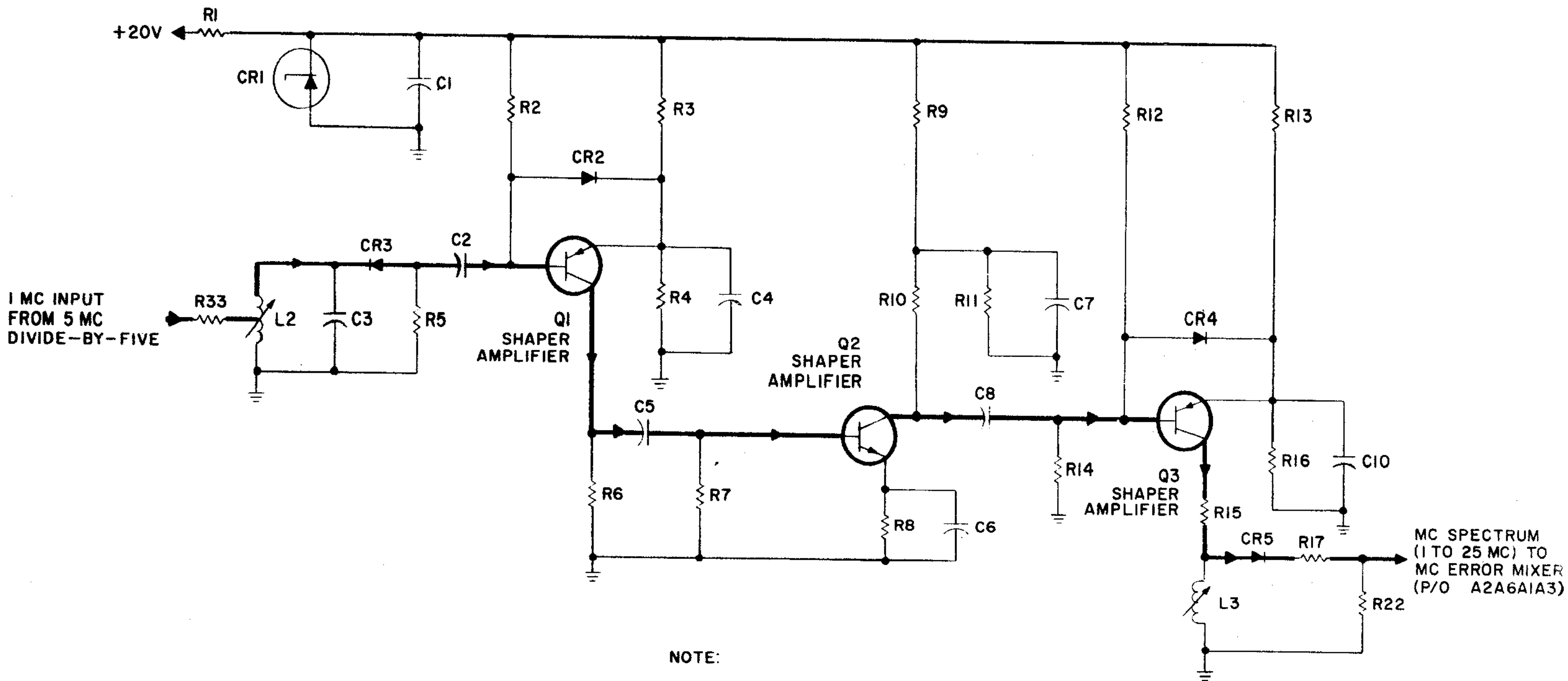
(5) Translator/Synthesizer Test Set, TS-2133/WRC-1. (Refer to note in table 1-4.)

(6) Multimeter, AN/PSM-4.

4-170. MC SPECTRUM GENERATOR, FUNCTIONAL CIRCUIT DESCRIPTION. The mc spectrum generator (figure 4-34) consists of three shaper amplifiers (Q1, Q2, and Q3). These circuits, which form a part of 1 MC Synthesizer Electronic Subassembly A2A6A1, provide a spectrum of frequencies from 1 to 25 mc in 1-mc steps for use in the mc error mixer. The following paragraphs describe the operation of the circuits in detail.

4-171. These circuits operate from the positive 10 vdc derived by Zener diode CR1 and series resistor R1 from the positive 20 vdc. The 1-mc input is applied to inductor L2 through resistor R33. Resistor R33 prevents loading of the 5 mc divide-by-five circuit. Inductor L2 functions as an autotransformer, raising the level of the 1-mc signal and applying it to the diode clipper consisting of diode CR3 and resistor R5. Inductor L2 is tuned to 1 mc by capacitor C3. The diode clipper removes the positive portion of the 1-mc signal. The remaining negative portion is coupled through capacitor C2 to the base of shaper amplifier Q1, driving it into saturation. Diode CR2 protects shaper amplifier Q1 against excessive reverse bias on the base-emitter junction. When the base voltage attempts to go more positive than the emitter voltage, diode CR2 will be forward-biased, thereby clamping the base voltage. The emitter voltage is determined by voltage divider R3, R4 and by the average current drawn by shaper amplifier Q1. The output of shaper amplifier Q1 is a positive-going waveform with a fast rise time. This output is developed across collector resistor

Figure 4-34. MC Spectrum Generator, Simplified Schematic Diagram



NOTE:

REF. DESIG. PREFIX A2A6A1A3.

Figure 4-34. MC Spectrum Generator, Simplified Schematic Diagram

R6 and applied through capacitor C5 to the base of shaper amplifier Q2. The positive-going waveform drives shaper amplifier Q2 into saturation, producing a negative-going waveform at the collector of Q2. Capacitor C6 provides emitter peaking, which results in an overshoot on the output waveform. The output of shaper amplifier Q2 is coupled through capacitor C8 to the base of shaper amplifier Q3. The output of shaper amplifier Q2 is differentiated at the base of shaper amplifier Q3 by the time constant formed by the output impedance of shaper amplifier Q2, capacitor C8, and the input impedance of shaper amplifier Q3. The negative-going portion of this signal drives shaper amplifier Q3 into saturation. Diode CR4, like diode CR2, is a protective device which is also used to clamp the positive portions of the input signal. Resistor R15 limits the collector current of shaper amplifier Q3 and minimizes the variations in the saturation characteristics of the amplifier. The output of shaper amplifier Q3 is developed across an LR differentiating network consisting of resistor R15 and inductor L3. The output of shaper amplifier Q3 is taken across inductor L3. The network consisting of diode CR5, resistor R17 and resistor R22 forms a diode clipper circuit that eliminates the negative portion of the output across inductor L3. Resistors R17 and R22 also form an attenuator with the output taken across resistor R22. The output obtained is a positive pulse that provides a uniform spectrum from 1 mc to 25 mc. This output is applied to the mc error mixer.

4-172. MC SPECTRUM GENERATOR, TEST DATA. Pertinent references and applicable test data for the mc spectrum generator are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. MC Synthesizer Electronic Subassembly, Servicing Block Diagram, figure 4-67.

c. MC Synthesizer Electronic Subassembly, Schematic Diagram, figure 5-6.

d. Spectrum Generator/Mixer (Foil Side UP), Component and Test Point Location, figure 5-54.

e. Required Test Equipment:

(1) RF Signal Generator, CAQI-606A.

(2) RF Voltmeter, AN/URM-155.

(3) Oscilloscope, AN/USM-117.

(4) Multimeter, AN/PSM-4.

(5) Heterodyne Voltmeter, CDAN-2005. (Refer to note in table 1-4.)

(6) Translator/Synthesizer Test Set, TS-2133/WRC-1. (Refer to note in table 1-4.)

f. Refer to paragraph 3-36 in Technical Manual for Repair of AN/WRC-1 and R-1051/URR 2N Modules, NAVSHIPS 0967-034-2000 for mc spectrum generator alignment procedures.

4-173. MC ERROR MIXER, FUNCTIONAL CIRCUIT DESCRIPTION. The mc error mixer (figure 4-35) consists of an isolation amplifier (Q5), an emitter follower (Q6) and a mixer (Q4). These circuits, which form a part of MC Synthesizer Electronic Subassembly A2A6A1, mix the signal from the mc oscillator with the signal from the mc spectrum generator. An error signal is produced that, in the locked condition, is proportional to the phase relationship between the spectrum and the oscillator output. The following paragraphs describe the operation of the circuits in detail.

4-174. The input from the mc oscillator is coupled through capacitor C18 to the emitter of isolation amplifier Q5. Isolation amplifier Q5 is used in a grounded-base amplifier configuration, which provides high reverse attenuation to the output products of mixer Q4, preventing them from appearing in the output from the mc oscillator. Base bias for isolation amplifier Q5 is provided by voltage divider R27, R28. Resistor R30 and capacitor C20 are used for decoupling. The output of isolation amplifier Q5 is taken across collector resistor R29 and is coupled through capacitor C14 to the base of emitter follower Q6. Base bias for emitter follower Q6 is provided by voltage divider R23, R24. Resistor R31 and capacitor C12 are used for decoupling. Emitter follower Q6 provides a low source impedance to mixer Q4 and prevents loading of isolation amplifier Q5. The output of emitter follower Q6 is coupled through capacitor C13 to the emitter of mixer Q4. The

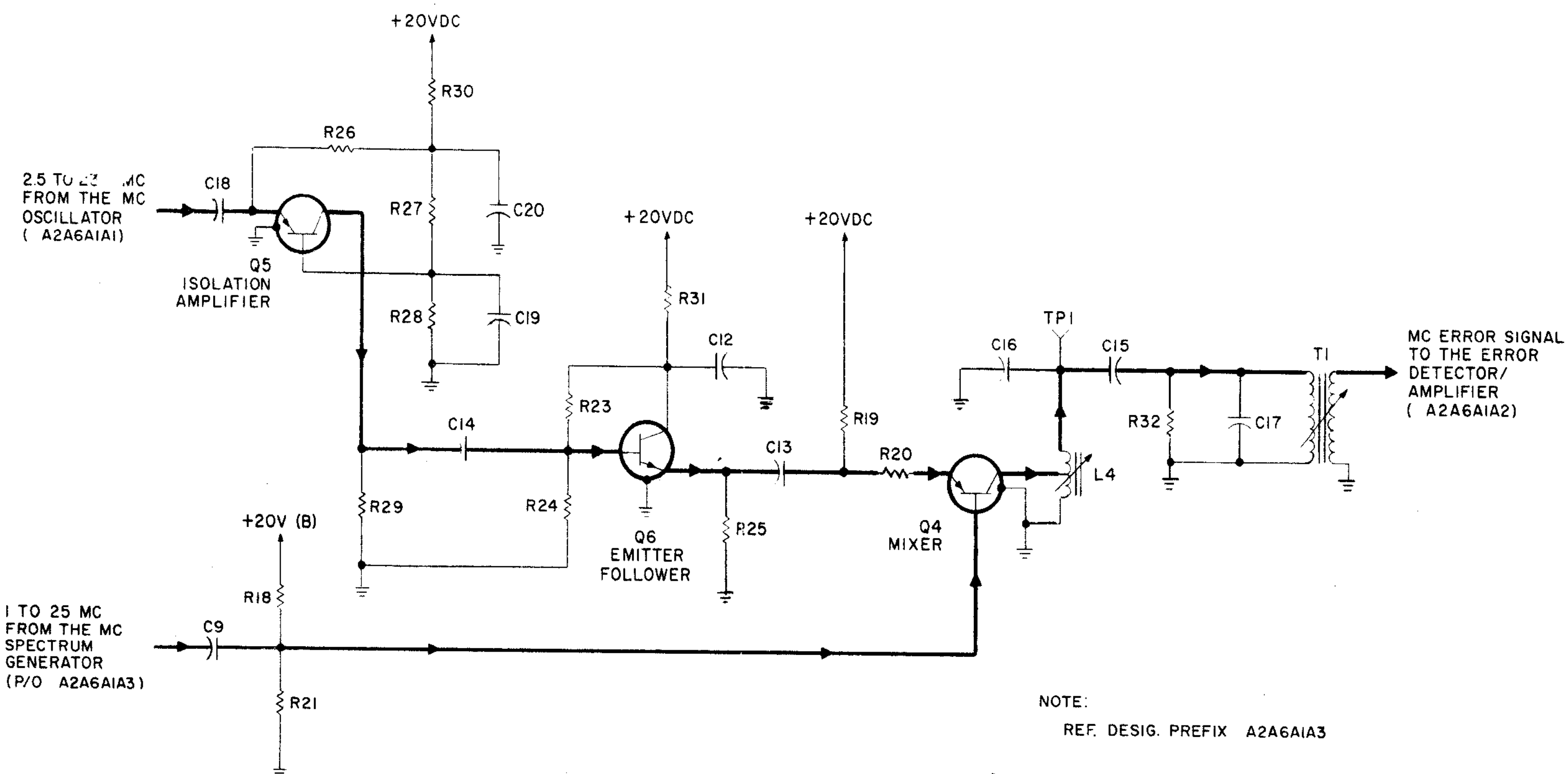


Figure 4-35. MC Error Mixer, Simplified Schematic Diagram

Figure 4-35. MC Error Mixer, Simplified Schematic Diagram

signal from the mc spectrum generator is coupled through capacitor C9 to the base of mixer Q4. Base bias for mixer Q4 is provided by voltage divider R18, R21. Resistor R20 provides a small amount of degeneration to stabilize mixer Q4. The output circuit of mixer Q4 is a double-tuned circuit consisting of inductor L4, capacitors C16, C15 and C17, resistor R32, and transformer T1, which is tuned to 1.5 mc. When there is a frequency error, the signal from the mc oscillator is mixed with the two spectrum points that are within approximately ±1.5 mc of the oscillator frequency. The output of mixer Q4 includes two frequencies (one less than 1.5 mc and one more than 1.5 mc) if the mc oscillator has an error. When the mc oscillator is locked, only one frequency is present, since the frequency of the oscillator, ± the spectrum points, is 1.5 mc. For example, assume that the mc oscillator frequency is 11.499 mc; therefore, the two closest spectrum points will be 10 and 13 mc. These frequencies, when mixed, produce difference frequencies of 1.499 and 1.501 mc. It can be seen that when the mc oscillator is exactly 11.5 mc, the two difference frequencies will be identical (1.5 mc). The double-tuned circuit attenuates all mixer products except the difference frequencies. The output of the double-tuned filter is coupled through transformer T1 to the error detector/amplifier.

4-175. MC ERROR MIXER, TEST DATA. Pertinent references and applicable test data for the mc error mixer are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. MC Synthesizer Electronic Subassembly, Servicing Block Diagram, figure 4-67.

c. MC Synthesizer Electronic Subassembly, Schematic Diagram, figure 5-6.

d. Spectrum Generator/Mixer (Foil Side Up), Component and Test Point Location, figure 5-54.

e. Required Test Equipment:

(1) RF Signal Generator, CAQI-606A.

(2) RF Voltmeter, AN/URM-155.

(3) Oscilloscope, AN/USM-117.

(4) Multimeter, AN/PSM-4.

(5) Heterodyne Voltmeter, CDAN-2005. (Refer to note in table 1-4.)

(6) Translator/Synthesizer Test Set, TS-2133/WRC-1. (Refer to note in table 1-4.)

f. Refer to paragraph 3-36 in Technical Manual for Repair of Radio Set AN/WRC-1 and Radio Receiver R-1051/URR 2N Modules, NAVSHIPS 0967-034-2000 for mc error mixer alignment procedure.

4-176. ERROR DETECTOR/AMPLIFIER, FUNCTIONAL CIRCUIT DESCRIPTION. The error detector/amplifier (figure 4-36) consists of two if. amplifiers (Q1 and Q2) and a dc amplifier (Q3). These circuits, which form a part of MC Synthesizer Electronic Subassembly A2A6A1, amplify and detect the mc error signal, producing a correction signal for subsequent application to the mc oscillator. The following paragraphs describe the operation of the error detector/amplifier circuit in detail.

4-177. The signal from the error mixer is coupled through capacitor C1 to the base of if. amplifier Q1. The base bias for amplifier Q1 is provided by voltage divider R1, R2. Resistor R22 and capacitor C14 are used for decoupling. Resistor R4 provides a small amount of degeneration to add to the stability of if. amplifier Q1. The output load of if. amplifier Q1 is a 1.5-mc tuned circuit consisting of capacitor C3 and transformer T1. Resistor R5 loads the tank circuit sufficiently to insure uniformity. The output signal of if. amplifier Q1 is coupled through transformer T1 to potentiometer R6, which is used to adjust the gain of the phase lock loop. The output from the wiper of this potentiometer is coupled through capacitor C12 to the base of if. amplifier Q2. The base bias for if. amplifier Q2 is provided by voltage divider R7, R8. Resistor R10 provides a small amount of degeneration to add to the stability of if. amplifier Q2. The output load of if. amplifier Q2 is a 1.5-mc tuned circuit consisting of capacitor C6 and transformer T2. Resistor R11 loads the tank circuit sufficiently to insure uniformity. The output signal of if. amplifier Q2 is coupled through transformer T2 and applied to a diode detector circuit. The diode detector circuit consists of diode CR1, resistor

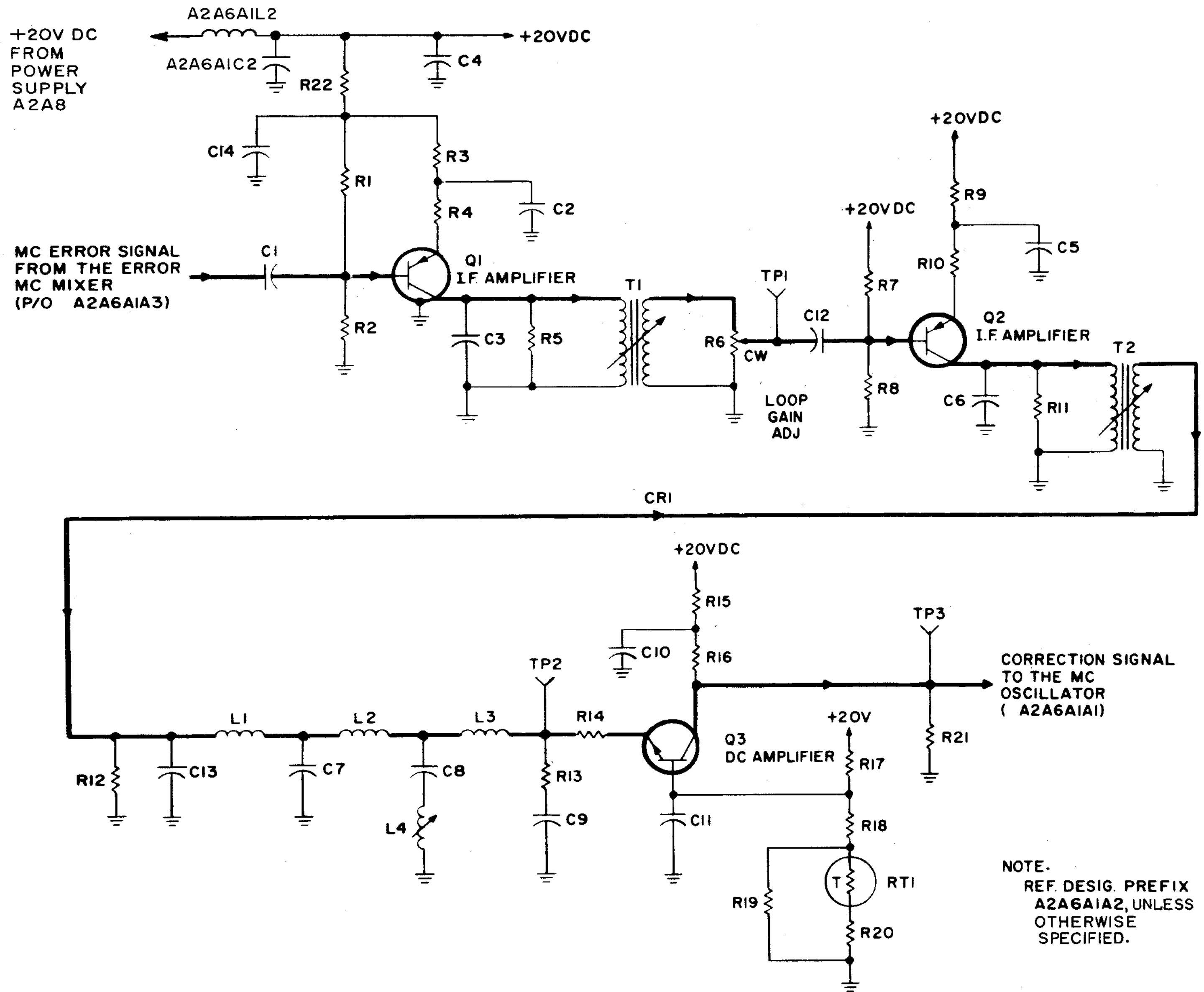


Figure 4-36. Error Detector/Amplifier, Simplified Schematic Diagram

R12, and capacitor C13. The output of the diode detector is filtered by a network consisting of a composite of a constant-k section and an m-derived section. The constant-k section consists of capacitor C7, inductor L1, and a portion of inductor L2. The m-derived section consists of inductors L3 and L4, capacitor C8, and the remaining portion of inductor L2. Variable inductor L4 compensates for the tolerance of the components used in the m-derived section. Resistor R13 and capacitor C9 form the termination of the filter. The output of this filter is applied to the emitter of dc amplifier Q3. Resistor R14 provides a small amount of degeneration to add to the stability of dc amplifier Q3. Base bias for dc amplifier Q3 is provided by voltage divider R17, R18, R19, R20, RT1. Thermistor RT1 varies the bias with temperature to compensate for changes in the base-to-emitter voltage of dc amplifier Q3 which result from temperature changes. The network consisting of resistors R15 and R16, and capacitor C10 serves as the collector load for dc amplifier Q3 and is used as a lag network for the phase-locked loop, which decreases the noise output and increases the stability. Resistor R21 prevents the collector voltage of dc amplifier Q3 from rising above 19 vdc and forward-biasing voltage-variable capacitor A2A6A1A1CR3. The error voltage taken from the collector of dc amplifier Q3 is applied to the mc oscillator.

4-178. ERROR DETECTOR/AMPLIFIER, TEST DATA. Pertinent references and applicable test data for the error detector/amplifier are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. MC Synthesizer Electronic Subassembly, Schematic Diagram, figure 5-6.

c. MC Synthesizer Electronic Subassembly, Servicing Block Diagram, figure 4-67.

d. Error Detector/Amplifier (Foil Side Up), Component and Test Point Location, figure 5-52.

e. Required Test Equipment:

(1) RF Signal Generator, CAQI-606A.

(2) RF Voltmeter, AN/URM-155.

(3) Oscilloscope, AN/USM-117.

(4) Multimeter, AN/PSM-4.

(5) Heterodyne Voltmeter, CDAN-2005. (Refer to note in table 1-4.)

(6) Translator/Synthesizer Test Set, TS-2133/WRC-1. (Refer to note in table 1-4.)

f. Refer to paragraph 3-36 in Technical Manual for Repair of AN/WRC-1 and R-1051/URR 2N Modules, NAVSHIPS 0967-034-2000, for error detector/amplifier alignment procedure.

4-179. 100 KC SPECTRUM GENERATOR, FUNCTIONAL CIRCUIT DESCRIPTION. The 100-kc spectrum generator (figure 4-37) consists of a trigger amplifier (Q1), a divide-by-five multivibrator (Q2 and Q3), a gate amplifier (Q4), a keyed oscillator (Q5), an amplifier (Q6), and a double-tuned filter (L5 and T2). This circuit, which forms a part of Spectrum Generator Electronic Subassembly A2A6A5, produces a spectrum of frequencies between 15.3 and 16.2 mc. This spectrum is applied to 10.747 mc mixer A6A2A2 to produce the 10.747 mc reference frequency used for error cancellation in the 100 kc mixing frequency scheme. This circuit also provides the 100 kc trigger pulses to 10-kc spectrum generator A6A5A2. The 100-kc spectrum generator is used in all modes of operation. The following paragraphs describe the operation of the 100-kc spectrum generator in detail.

4-180. The input to the 100-kc spectrum generator is the 500-kc sinusoidal output from 1 mc divide-by-two circuit A2A5A1. This signal is applied to autotransformer L2, where it is stepped up and in turn coupled to the base of trigger amplifier Q1 by capacitor C3. A positive 20 vdc is applied to the 100-kc spectrum generator in all modes of operation from power supply A2A8 (located on the main frame). The positive 20 vdc is regulated to 10 vdc by Zener diode CR1, which draws enough current in addition to the current drawn by the load to maintain a 10 vdc drop across R1. This regulated 10 vdc is used to provide a stable supply for trigger amplifier Q1 and multivibrator Q2, Q3. The negative halves of the 500 kc signal, applied to the base of trigger amplifier Q1, are of sufficient magnitude to drive it into saturation. This results in the collector of trigger amplifier Q1 being switched between zero (nonconducting) and 9.0 vdc (saturated). The small drop (1 volt) is caused by the small forward resistance of the diode and the collector-to-emitter resistance of the transistor. Diode CR2 provides temperature compensation for trigger amplifier Q1 and aids in the shaping of the positive output triggers. Resistor R2 is the base-return resistor, providing capacitor C3 with a discharge path. The output pulses of trigger amplifier Q1 are developed across resistor R3 and are differentiated by capacitor C4 and the input impedance of divide-by-five multivibrator Q2, Q3. This results in a series of 500-kc positive and negative triggers to multivibrator Q2, Q3.

4-181. Divide-by-five multivibrator Q2, Q3 is an astable multivibrator, which is locked at a 500-kc rate. Refer to timing diagram, figure 4-38, for the following detailed discussion of multivibrator Q2, Q3. Multivibrator Q2, Q3 is free-running until locked by the 500-kc input trigger pulses from trigger amplifier Q1. Assume that a positive trigger pulse is applied to the base of transistor Q2 and that transistors Q2 and Q3 are cutoff. The collector of transistor Q2 and the base of transistor Q3 are at

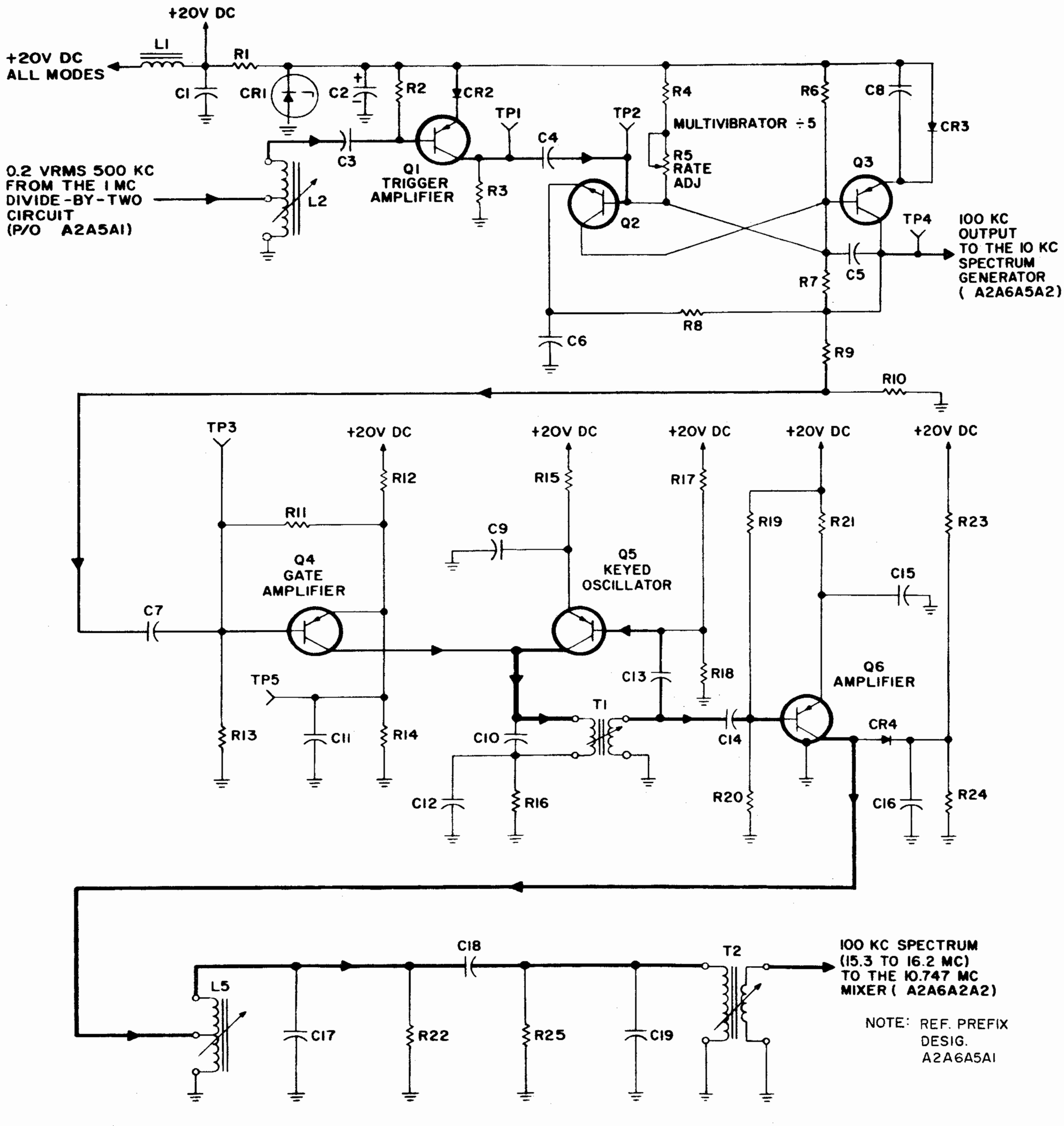


Figure 4-37. 100 KC Spectrum Generator, Simplified Schematic Diagram

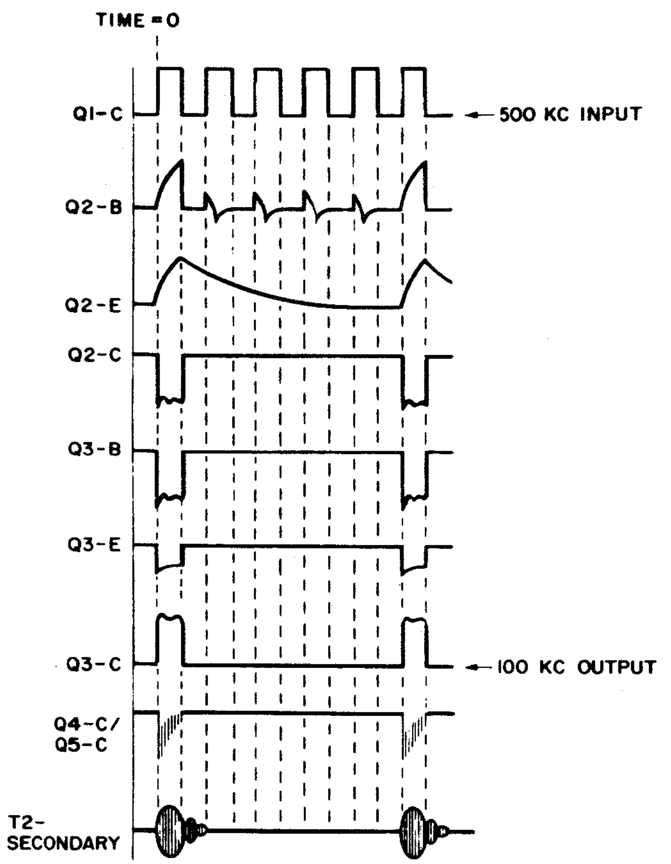


Figure 4-38. Divide-by-Five Multivibrator, Timing Diagram

the voltage supply level (10 kc) at this time. When the input pulse causes transistor Q2 to conduct, a voltage drop is developed across resistor R6, decreasing the voltage on the base of transistor Q3. Since the emitter of transistor Q3 is essentially at the supply voltage level (when it is cutoff), it becomes forward-biased and conducts. This causes the collector of transistor Q3 to go from 0 volts (no conduction) to approximately 9 volts. The 1 volt drop from the 10 vdc supply voltage level is caused by the small forward drop of diode CR3 and the collector-to-emitter drop of transistor Q3. The base-voltage divider for transistor Q2 (R4, R5, R7) now has the 9 vdc (collector voltage of transistor Q3) on one end and the 10 vdc supply voltage on the other end. This causes transistor Q2 to become saturated. Therefore, transistors Q2 and Q3 are both conducting and are in saturation. Capacitor C6 now charges through two paths. One path is through transistor Q2 and resistors R4, R5, and R6. The other path is through resistor R8, transistor Q3, and diode CR3. As capacitor C6 charges, the emitter voltage of transistor Q2 increases, resulting in a decrease of forward bias on transistor Q2. This reduces the collector current of transistor Q2, resulting in a decreased drop across resistor R6. Therefore, the base voltage on transistor Q3 will start to go positive, resulting in a decrease of its forward bias. The collector current of transistor Q3 then begins to decrease as the forward bias decreases. Therefore, the collector voltage of transistor Q3 begins to decrease, increasing the voltage across the base voltage divider of transistor Q2. This reduces the forward bias of transistor Q2 even more. This regeneration brings transistors Q2 and Q3 out of saturation and continues until they are both cut off. Capacitor C6 now starts to discharge through resistors R10, R9, and R8. During this discharge period, the positive and negative trigger pulses are still applied to the base of transistor Q2, but are not of sufficient amplitude to forward-bias and turn on transistor Q2. When transistors Q2 and Q3 are cut off, the base bias of transistor Q2 is determined by voltage divider R4, R5, R7, R9, R10. The emitter voltage of transistor Q2 is the charge on capacitor C6. Therefore, capacitor C6 has to discharge to such a level that when a positive trigger pulse is applied to the base of transistor Q2, it starts conducting. The time constant of the RC network consisting of C6, R8, R9, and R10 is fixed such that resistor R5 can be used to adjust the bias on transistor Q2, allowing every sixth positive trigger pulse, after the initial trigger pulse, to turn transistor Q2 on. When this occurs, the collector voltage on transistor Q2 will again drop, and the regeneration process described above will be repeated. Thus, the process of regeneration occurs before the natural period has been completed as the result of every sixth positive trigger pulse on the base of transistor Q2. This results in an output (collector of transistor Q3) that is exactly one-fifth of the input trigger pulse rate. The 100-kc signal present on the collector of transistor Q3 is applied to the 10 kc spectrum generator. Capacitor C8 prevents any degeneration in the circuit as a result of the small forward resistance of diode CR3. Capacitor C5 speeds up the application of the pulses from the collector of transistor Q3 to the base of transistor Q2. The 100-kc output signal of multivibrator Q2, Q3, which is developed across voltage divider R9, R10, is coupled to the base of gate amplifier Q4 by capacitor C7.

4-182. During the off time of multivibrator Q2, Q3, gate amplifier Q4 is forward-biased and in saturation. Forward-bias voltage for gate amplifier Q4 is developed by voltage dividers R12, R14, and R12, R11, R13 from the positive 20 vdc applied from main frame power supply A2A8. Capacitor C11 is the emitter bypass capacitor. When gate amplifier Q4 conducts, the base is at approximately 10.1 vdc and the emitter is at approximately 10.3 vdc, the drop being caused by the small emitter-to-base resistance. With gate amplifier Q4 in saturation, the tank circuit (capacitor C10 and the primary of transformer T1) of keyed oscillator Q5 will be heavily loaded by the small collector-to-emitter resistance of gate amplifier Q4, preventing regeneration. When a positive pulse is coupled to the base of gate amplifier Q4, it is reversed-biased and cut off for the duration of the pulse. This removes the load from the tank circuit of keyed oscillator Q5, permitting it to oscillate at its natural frequency. Resistor R16 limits the current flow through gate amplifier Q4 when it is in saturation.

4-183. Voltage divider R17, R18 and emitter resistor R15 develop bias voltage for oscillator Q5 from the positive 20 vdc applied from the power supply on the main frame. Capacitor C9 is the emitter bypass capacitor. When the load created by the conduction of gate amplifier Q4 is removed from the tank circuit of keyed oscillator Q5, the tank circuit will produce an 0.8-microsecond sinusoidal burst of frequencies. This results in a spectrum of frequencies centered around the free-running frequency of keyed oscillator Q5. The desired spectrum consists of ten spectrum points, which are below the free-running (center) frequency of keyed oscillator Q5, separated by the 100-kc keying rate. The secondary of transformer T1 and capacitor C13 provide the required feedback path for keyed oscillator Q5, so that the necessary loop gain can be developed to sustain oscillations. Capacitor C12 is an rf bypass for resistor R16 at the output frequency of keyed oscillator Q5.

4-184. The spectrum output of the tank circuit is coupled to the base of amplifier Q6 by capacitor C14. Operating voltage for amplifier Q6 is developed by voltage divider R19, R20 and emitter resistor R21 from the positive 20 vdc applied from the power supply on the main frame. The output of amplifier Q6 is limited by diode CR4. The amount of limiting is adjusted by selecting the value of resistor R24. Resistors R23 and R24 form a voltage divider for developing the cathode bias on limiter CR4. Capacitors C15 and C16 are bypass capacitors. The output of amplifier Q6 is developed across a tuned circuit consisting of capacitor C17 and inductor L5. Resistor R22 increases the bandwidth of the tuned circuit and ensures uniformity. The output of tuned circuit L5, C17 is coupled by capacitor C18 to another tuned circuit consisting of capacitor C19 and the primary of transformer T2. Resistor R25 increases the bandwidth of this tuned circuit. The passband of these two tuned filters is sufficient to pass the desired 15.3-to-16.2-mc spectrum, but has sufficient selectivity to eliminate all the undesired harmonics and products produced by keyed oscillator Q5. The output of the 100 kc spectrum generator is coupled to 10.747 mc mixer A2A6A2A2.

4-185. 100 KC SPECTRUM GENERATOR, TEST DATA. Pertinent references and applicable test data for the 100 kc spectrum generator are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1

b. Spectrum Generator Electronic Subassembly, Servicing Block Diagram, figure 4-68.

c. Spectrum Generator Electronic Subassembly, Schematic Diagram, figure 5-10.

d. 100 KC Spectrum Generator (Foil Side Up), Component and Test Point Location, figure 5-80.

e. Required Test Equipment:

(1) RF Signal Generator, CAQI-606A.

(2) Oscilloscope, AN/USM-117.

(3) RF Voltmeter, AN/URM-155.

(4) Multimeter, AN/PSM-4.

(5) Translator/Synthesizer Test Set, TS-2133/WRC-1. (Refer to note in table 1-4.)

f. Refer to paragraph 3-28 in Technical Manual for Repair of AN/WRC-1 and R-1051/URR 2N Modules, NAVSHIPS 0967-034-2000, for 100kc spectrum generator alignment procedure.

4-186. 10.747 MC MIXER, FUNCTIONAL CIRCUIT DESCRIPTION. The 10.747 mc mixer (figure 4-39) consists of an isolation

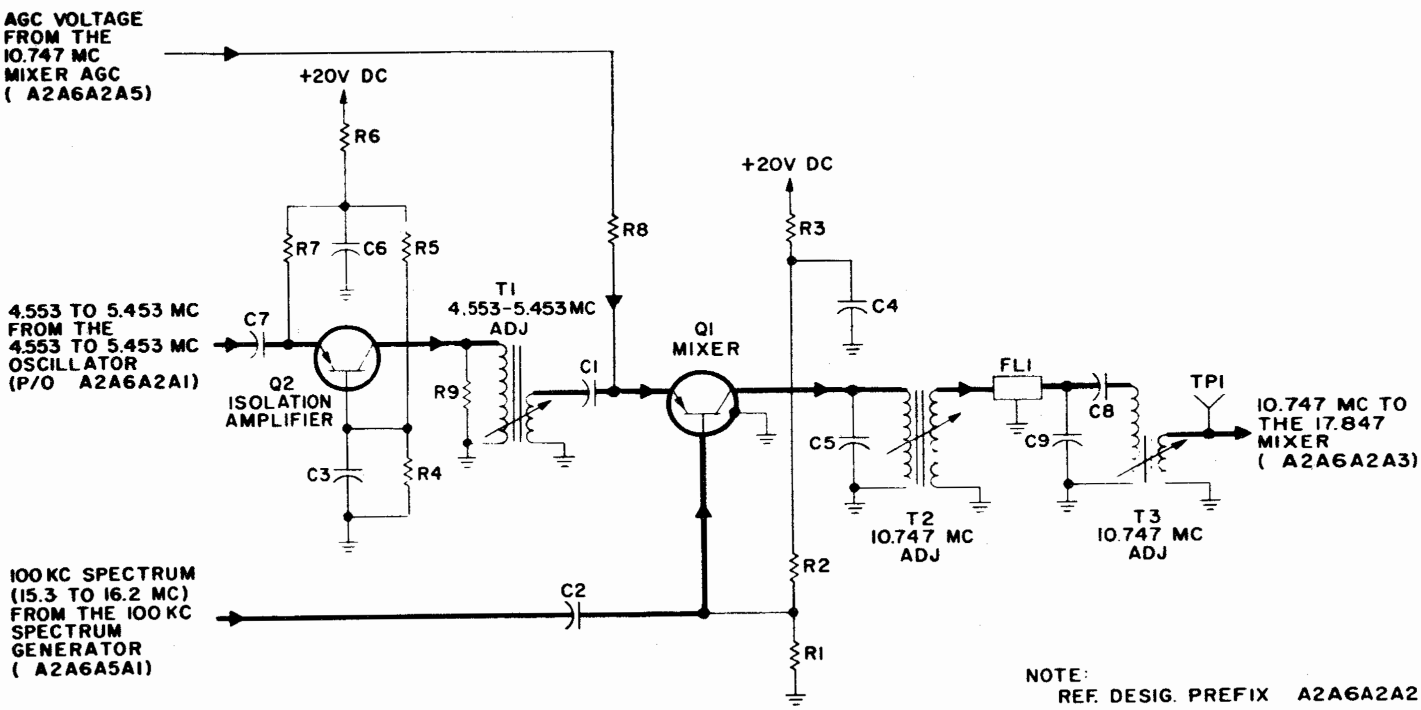


Figure 4-39. 10.747 MC Mixer, Simplified Schematic Diagram

amplifier (Q2), a mixer (Q1), and a 10.747 mc crystal filter (FL1). These circuits, which form a part of 100 KC Synthesizer Electronic Subassembly A2A6A2, produce a 10.747-mc output at a level suitable for use in 17.847/27.848 mc mixer A2A6A2A3. These circuits are used in all modes of operation. The following paragraphs describe the operation of the 10.747 mc mixer in detail.

4-187. The 4.553 to 5.453 mc output from the 4.553 to 5.453 mc oscillator is coupled to the emitter of isolation amplifier Q2 by capacitor C7. Voltage divider R4, R5 and emitter resistor R7 derive operating voltage for isolation amplifier Q2 from the positive 20-vdc supply line. Resistor R6 and capacitor C6 provide decoupling to prevent any interaction with other circuits connected to the positive 20-vdc supply line. Capacitor C3 is an rf bypass capacitor. Isolation amplifier Q2 is a grounded-base amplifier, which prevents the spectrum frequencies and mixer products in mixer Q1 from being fed back into the hi-band/lo-band mixer/amplifier circuits via the 4.553 to 5.453 mc oscillator circuits. The output of isolation amplifier Q2 is developed across the primary of transformer T1. Resistor R9 ensures the uniformity of the signal developed across transformer T1.

4-188. The 4.553 to 5.453 mc output of isolation amplifier Q2 is coupled to the emitter of mixer Q1 by capacitor C1. The 100-kc spectrum (15.3 to 16.2 mc) from the 100 kc spectrum generator is coupled to the base of mixer Q1 by capacitor C2. Voltage divider R1, R2 derives base bias for mixer Q1 from the positive 20-vdc supply line. Resistor R3 and capacitor C4 provide decoupling to prevent any interaction with the other circuits connected to the positive 20-vdc supply line. The emitter bias for mixer Q1 is developed from the output of the 10.747 mc mixer agc circuit by emitter resistor R8. The agc voltage is a variable voltage that controls the amount of forward-biasing, and thereby, the gain of mixer Q1. The frequency from the 4.553 to 4.453 mc oscillator is mixed with each of the ten spectrum points applied by the 100 kc spectrum generator. The resulting mixing products are developed across a tuned circuit consisting of capacitor C5 and the primary of transformer T2. This circuit is tuned to 10.747 mc, the desired mixer product. Transformer T2 couples the output of mixer Q1 to filter FL1. Filter FL1 is a 10.747-mc crystal lattice filter which eliminates all other mixing products. The 10.747 mc output of filter FL1 is developed across the tuned circuit consisting of capacitors

C8 and C9 and the primary of transformer T3. The output of the 10.747 mc mixer circuit is coupled to 17.847/27.847 mc mixer A2A6A2A3 by transformer T3.

4-189. 10.747 MC MIXER, TEST DATA. Pertinent references and applicable test data for the 10.747 mc mixer are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. 100 KC Synthesizer Electronic Subassembly, Servicing Block Diagram, figure 4-66.

c. 100 KC Synthesizer Electronic Subassembly, Schematic Diagram, figure 5-7.

d. 10.747 MC Mixer (Foil Side Up), Component and Test Point Location, figure 5-58.

e. Required Test Equipment:

(1) RF Signal Generator, CAQI-606A.

(2) RF Voltmeter, AN/URM-155.

(3) Oscilloscope, AN/USM-117.

(4) Multimeter, AN/PSM-4.

(5) Translator/Synthesizer Test Set, TS-2133/WRC-1. (Refer to note in table 1-4.)

f. Refer to paragraph 3-34 in Technical Manual for Repair of AN/WRC-1 and R-1051/URR 2N Modules, NAVSHIPS 0967-034-2000, for 10.747 mc mixer alignment procedure.

4-190. 10.747 MC MIXER AGC, FUNCTIONAL CIRCUIT DESCRIPTION. The 10.747 mc mixer AGC (figure 4-40) consists of two agc amplifiers (Q2 and Q3) and a detector (Q4). These circuits, which form a part of 100 KC Synthesizer Electronic Subassembly A2A6A2, produce an agc voltage which is used to control the gain of mixer Q1 in the 10.747 mc mixer (A2A6A2A2). These circuits are used in all modes of operation. The following paragraphs describe the operation of the 10.747 mc mixer agc circuit in detail.

4-191. The 22.4 to 23.3 mc or 32.4 to 33.3 mc output from the hi-band/lo-band mixer/amplifier is coupled to the base of agc amplifier Q2 by capacitor C4. Voltage divider R4, R5 derives bias voltage for agc amplifier Q2 from the positive 20-vdc supply line. Inductor L2 is a peaking coil which compensates for high frequency roll-off, and provides for uniform output for both the hi-band and lo-band mixing frequencies. Resistor R7 develops enough degeneration to flatten the frequency response and provide stability. Resistor R8 is the emitter resistor, which is rf bypassed by capacitor C6. The output of agc amplifier Q2 is developed across resistor R6 and inductor L2 and is coupled to the base of agc amplifier Q3 by capacitor C7.

4-192. Voltage divider R9, R10 derives bias voltage for agc amplifier Q3 from the positive 20-vdc supply line. Resistors R12 and R13 develop degeneration for increasing stability and controlling the agc loop gain. The gain of agc amplifier Q3 is set by adjusting potentiometer R13. Resistor R14 is the emitter resistor, which is rf bypassed by capacitor C9. The output of agc amplifier Q3 is developed across resistor R11 and is coupled to the base of detector Q4 by capacitor C8.

4-193. Resistor R15, inductor L3, and diode CR1 derive bias voltage for detector Q4 from the positive 20-vdc supply line. Inductor L3 provides a high ac input impedance and a low dc resistance. This prevents any output loading of agc amplifier Q3. Diode CR1 compensates for temperature variations in the base-to-emitter circuit of detector Q4. Resistor R17 provides a small amount of degeneration to improve the stability of detector Q4. With no signal applied, detector Q4 is non-conducting. The positive portions of the applied signal forward-bias the base-to-emitter diode of detector Q4, causing current to flow. Capacitor C11 starts to charge to the 20 vdc when there is no collector current in detector Q4. When collector current starts to flow, the collector voltage drops, causing capacitors C10 and C11 to discharge through transistor Q4. Once the output of agc amplifier Q3 reaches a steady-state condition, each input cycle sustains the charge on capacitors C10 and C11, preventing fluctuations in the dc output voltage. Since this circuit forms a closed loop with all the other circuits of the 100 KC Synthesizer Electronic Subassembly, the gain of all circuits will reach a steady state condition, thus maintaining constant outputs from detector Q4, and hi-band/lo-band mixer/amplifier A2A6A2A4/A5, respectively.

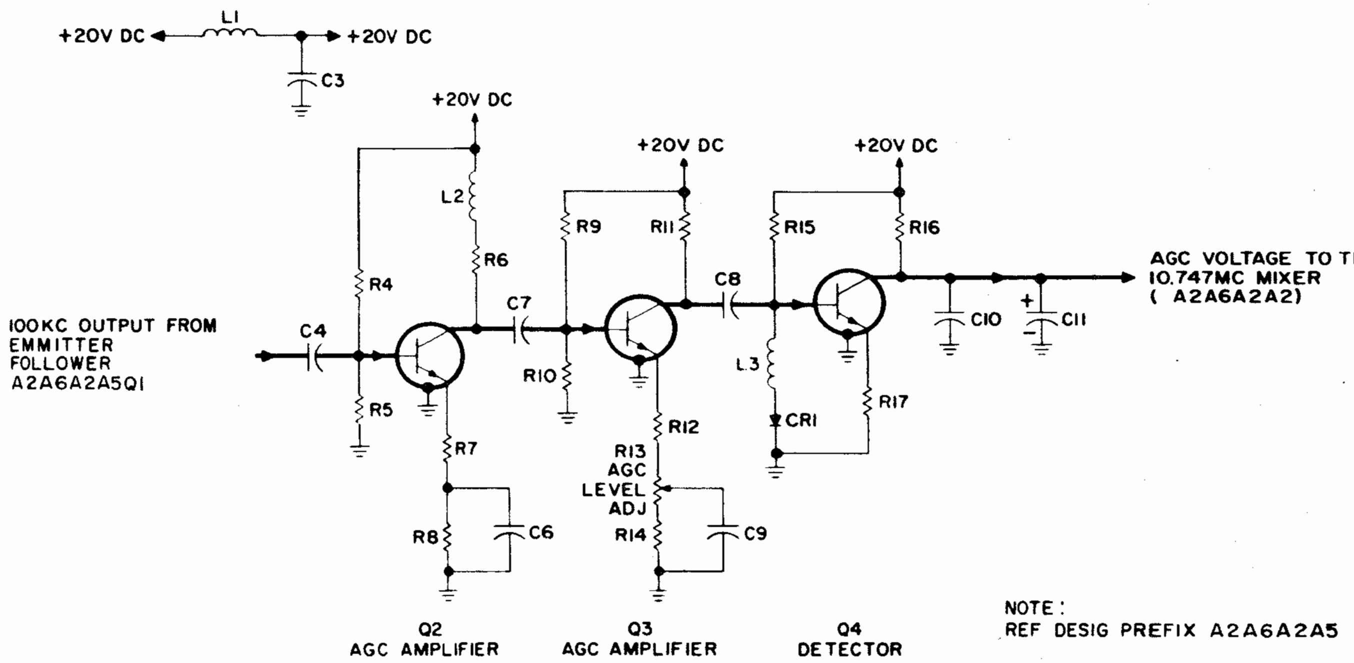


Figure 4-40. 10.747 MC Mixer AGC, Simplified Schematic Diagram

4-194. 10.747 MC MIXER AGC, TEST DATA. Pertinent references and applicable test data for the 10.747 mc mixer are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. 100 KC Synthesizer Electronic Subassembly, Schematic Diagram, figure 5-1.

c. 100 KC Synthesizer Electronic Subassembly, Schematic Diagram, figure 5-7.

d. 10.747 MC Mixer AGC (Foil Side Up), Component and Test Point Location, figure 5-64.

e. Required Test Equipment:

(1) RF Signal Generator, CAQI-606A.

(2) Oscilloscope, AN/USM-117.

(3) Multimeter, AN/PSM-4.

(4) Translator/Synthesizer Test Set TS-2133/WRC-1. (Refer to note in table 1-4.)

f. Refer to paragraph 3-34 in Technical Manual for Repair of AN/WRC-1 and R-1051/URR 2 N Modules, NAVSHIPS 0967-034-2000, for 10.747 mc mixer agc alignment procedures.

4-195. 5 MC MULTIPLY-BY-TWO, FUNCTIONAL CIRCUIT DESCRIPTION. The 5 mc multiply-by-two circuit (figure 4-41) doubles the frequency of the 5-mc input signal obtained from switch A2A5S1 in the comparator circuit for subsequent use in 17.847/27.847 mc mixer A2A6A2A3. This circuit consists of a 10 mc amplifier (Q4), which forms a part of Frequency Standard Electronic Assembly A2A5. The following paragraph describes the operation of the circuit in detail.

4-196. The 5-mc input signal from the comparator circuit is coupled to the base of 10 mc amplifier Q4 by capacitor C17. Bias for the base of amplifier Q4 is provided by voltage divider R15, R16. Resistor R14 is the emitter resistor, which is rf bypassed by capacitor C15. The output tuned circuit consisting of the primary of transformer T4 and capacitor C16, is tuned to 10 mc. Since this stage is biased to produce non-linear amplification, the second harmonic (10 mc) of the 5-mc signal is produced and amplified. The 10-mc signal is coupled through transformer T4 and applied to the 17.847/27.847 mc mixer.

4-197. 5-MC MULTIPLY-BY-TWO, TEST DATA. Pertinent references and applicable test data for the 5 mc multiply-by-two circuit are as follows:

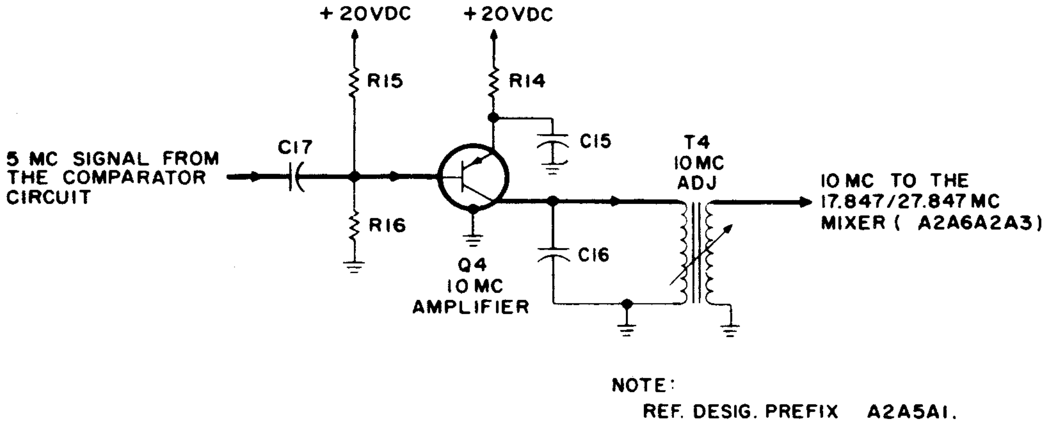


Figure 4-41. MC Multiply-by-Two, Simplified Schematic Diagram

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. RF Translator Electronic Subassembly, Servicing Block Diagram, figure 4-61.

c. Frequency Standard Electronic Assembly, Schematic Diagram, figure 5-5.

d. Refer to paragraph 2-25 in Technical Manual for Repair of AN/WRC-1 and R-1051/URR 2N Modules, NAVSHIPS 0967-034-2000, for 5 mc multiply-by-two alignment procedures.

e. Required Test Equipment:

(1) RF Voltmeter, AN/URM-155.

(2) Multimeter, AN/PSM-4.

(3) RF Signal Generator, CAQI-606A.

(4) Frequency Standard Test Set, TS-2134/WRC-1. (Refer to note in table 1-4.)

f. 5MC Multiplier, Divider, and Comparator, (Component Side Down) Component and Test Point Location, figure 5-46.

4-198 17.847/27.847 MC MIXER, FUNCTIONAL CIRCUIT DESCRIPTION. The 17.847/27847 mc mixer (figure 4-42) consists of two mixers (Q1 and Q2), a gating circuit (CR1, CR3), a 17.847 mc filter (Y1), and a 27.847 mc filter (Y2). These circuits, which form a part of 100 KC Synthesizer Electronic Subassembly A2A6A2, produce either a 17.847 mc or 27.847 mc frequency for use in the mixing circuits of the hi-band/lo-band mixer/amplifier. These circuits are used in all modes of operation. The following paragraphs describe the operation of the 17.847/27.847 mc mixer in detail.

4-199. The 7.1-mc output from the 7.1 mc mixer is coupled to the emitter of mixer Q1 by capacitor C5. The 10.747-mc output from 10.747 mc mixer A2A6A4A1 is coupled to the base of mixer Q1 by capacitor C1. Voltage divider R1, R2 and emitter resistor R4 derive operating voltage for mixer Q1 from the positive 20-vdc supply line. Resistor R3 and capacitor C6 provide decoupling to prevent interaction with the other circuits connected to the 20 vdc supply line. Resistor R16 is the terminating resistor the the 7.1-mc input signal. Mixer Q1 mixes the two input signals and develops the resulting mixing products across the tuned circuit consisting of capacitor C7 and the primary of transformer T1. The circuit is tuned to 17.847 mc, the desired additive product.

4-200. The output of mixer Q1 is coupled to a crystal filter consisting of transformers T1 and T2, capacitors C8 and C9, and crystal Y1. Crystal Y1, series-resonant at 17.847 mc, passes the desired additive mixing product. Since the crystal can also be parallel resonated with its own shunt capacitance, capacitor C8 and the bottom half of the primary of transformer T2 are adjusted to cancel the effect of this shunt capacitance. The output of the filter is coupled to the hi-band/lo-band mixer/amplifier (when the lo-band of mixing frequencies is required) and to the base of mixer Q2 (when the hi-band of mixing frequencies is required) by transformer T2. Resistor R5 terminates the crystal filter.

4-201. The 10-mc signal from the 5 mc multiply-by-two circuit (part of A2A5A1) is

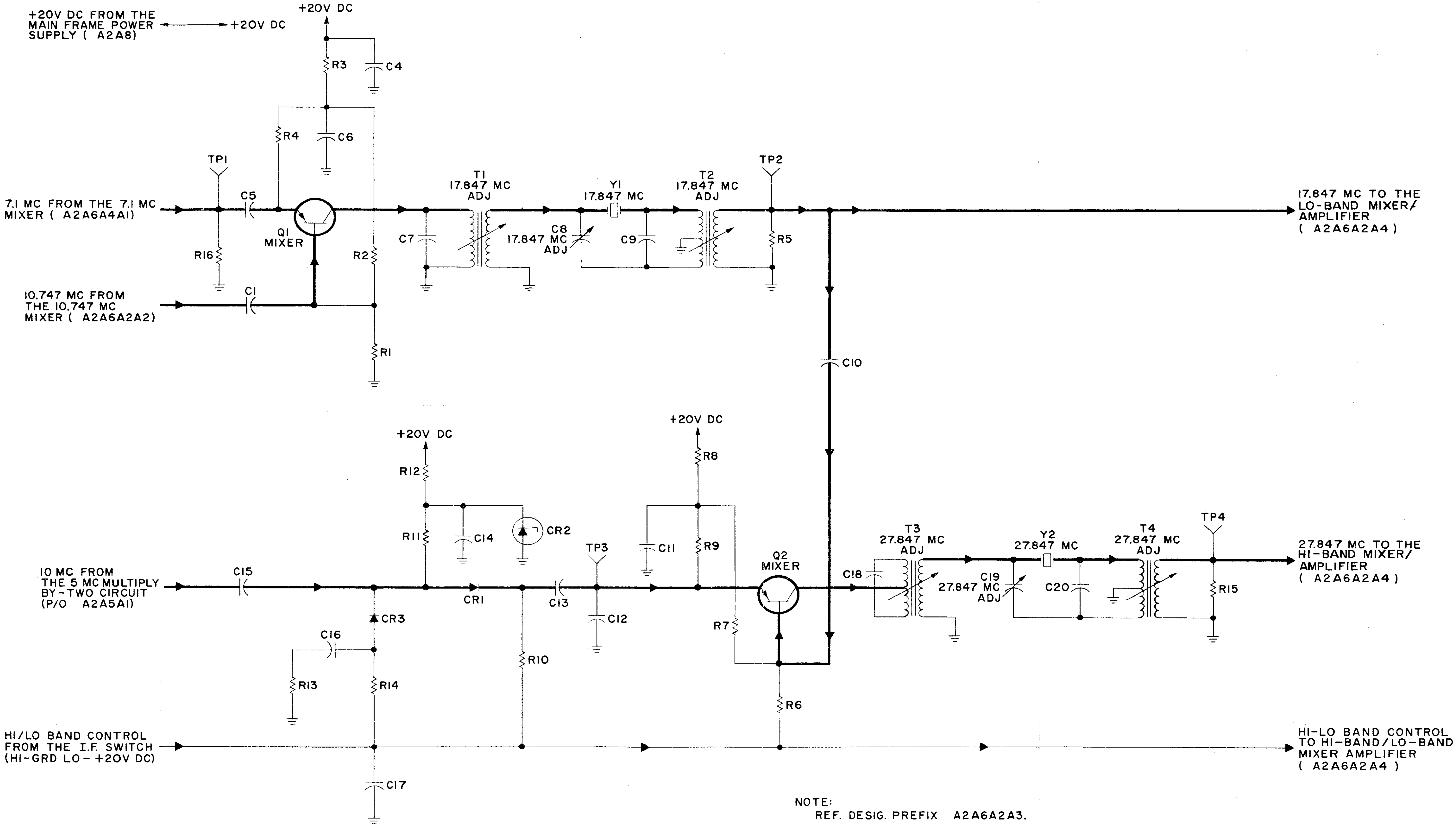


Figure 4-42. 17.847/27.847 MC Mixer, Simplified Schematic Diagram

coupled to the anode of diode CR1 by capacitor C15. Zener diode CR2 regulates the positive 20 vdc to 10 vdc by drawing enough current in addition to the load current to maintain a 10 vdc drop across resistor R12. This 10 vdc is applied to the cathode of diode CR3 and to the anode of diode CR1 through isolating resistor R11. When the lo-band output from the hi-band mixer/amplifier is required, 20 vdc is applied to resistors R6, R10 and R14. Voltage divider R6, R7 which produces the base bias, on mixer Q2, then has 20 vdc applied to both ends. Thus, mixer Q2 is biased off when the lo-band of frequencies is being used. The lo-band positive 20 vdc is also applied through resistor R10 to the cathode of diode CR1. Therefore, when the lo-band of frequencies is being used, diode CR1 is back-biased, preventing the 10 mc signal from passing. The lo-band positive 20 vdc is also applied to the anode of diode CR3 through resistor R14. Consequently, diode CR3 is forward-biased and conducts. The 10 mc signal is then allowed to pass through capacitor C16 to load resistor R13. Therefore, resistor R13 loads the 10 mc signal when the lo-band mixing frequencies are required.

4-202. When the hi-band mixing frequencies are required, a ground is applied to resistors R14, R10, and R6. The ground is applied through isolating resistors R14 and R10 to diodes CR3, and CR1, respectively. This back-biases diode CR3 and forward-biases diode CR1. When diode CR1 is forward-biased, it conducts, allowing the 10 mc signal to pass. The 10 mc signal is coupled to the emitter of mixer Q2 by capacitor C13.

4-203. Voltage divider R6, R7 and emitter resistor R9 derive operating voltage for mixer Q2 from the positive 20-vdc supply line. Resistor R8 and capacitor C11 provide decoupling to prevent interaction with other circuits connected to the positive 20 vdc supply line. Capacitor C12 is the emitter bypass capacitor. The 17.847-mc output of the crystal filter is coupled to the basw of mixer Q2 by capacitor C10. The 17.847-mc and 10-mc signals are mi mixed, and the resulting products are developed across the tuned circuit consisting of capacitor C18 and the primary of transformer T3. This circuit is tuned to 27.847 mc, which is the desired additive mixer product. Transformer T3 couples the output of mixer Q2 to a crystal filter, consisting of crystal Y2, transformers T3 and T4, and capacitors C19 and C20. Each of these components has the same function as its corresponding component in the 17.847 mc crystal filter. Resistor R15 is the termination for the crystal filter. The output of this crystal filter is coupled to the hi-band/lo-band mixer/amplifier by transformer T4.

4-204. 17.847/27.847 MC MIXER, TEST DATA. Pertinent references and applicable test data for the 17.847/27.847 mc mixer are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. 100 KC Synthesizer Electronic Subassembly, Servicing Block Diagram, figure 4-66.

c. 100 KC Synthesizer Electronic Subassembly, Schematic Diagram, figure 5-7.

d. 17.847/27/847 MC Mixer (Foil Side Up), Component and Test Point Location, figure 5-60.

(1) Required Test Equipment:

(2) RF Voltmeter, AN/URM-155.

(3) Frequency Meter, AN/URM-207.

(4) Multimeter, AN/PSM-4.

(5) Translator/Synthesizer Test Set, TS-2133/WRC-1. (Refer to note in table 1-4.)

f. Refer to paragraph 3-34 in Technical Manual for Repair of AN/WRC-1 and R-1051/URR 2N Modules, NAVSHIPS 0957-034-2000 for 17.847/27.847 mc alignment procedures.

4-205. 10 KC SPECTRUM GENERATOR, FUNCTIONAL CIRCUIT DESCRIPTION. The 10 kc spectrum generator (figure 4-43) consists of a divide-by-two multivibrator (Q1, Q2), a divide-by-five multivibrator (Q3, Q4), a gate amplifier (Q5), and a keyed oscillator (Q6). These circuits, which form a part of Spectrum Generator Electronic Subassembly A2A6A5, produce a spectrum of frequencies between 3.82 and 3.91 mc. This frequency spectrum is applied to the 9.07 mc error mixer (part of A2A6A3A4) to produce the reference frequencies used in the error cancelling scheme. These circuits also provide the 10-kc trigger pulses to the 1 kc spectrum generator. The 10 kc spectrum generator is used in all modes of operation. The following paragraphs describe the operation of the 10 kc spectrum generator in detail.

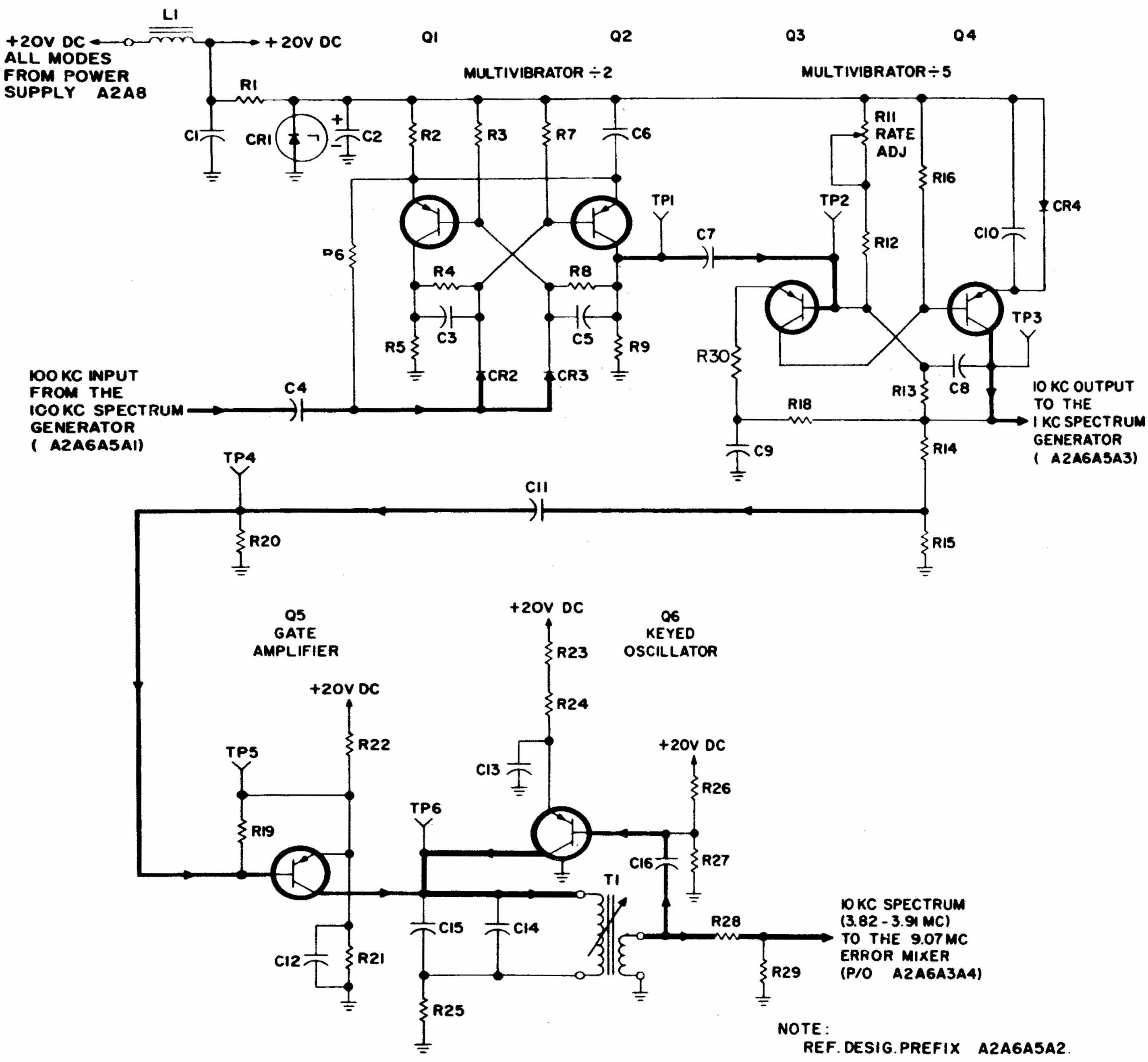


Figure 4-43. 10 KC Spectrum Generator, Simplified Schematic Diagram

4-206. The input to the 10 kc spectrum generator is the 100-kc pulsed output of the 100 kc spectrum generator. Positive 20 vdc from main frame power supply A2A8 is applied to the 10 kc spectrum generator in all modes of operation. The positive 20 vdc is regulated to 10 vdc by Zener diode CR1, which draws enough current in addition to the current drawn by the load to maintain a 10-vdc drop across resistor R1. This 10 vdc is used to provide a stable supply voltage for divide-by-two multivibrator Q1, Q2 and divide-by-five multivibrator Q3, Q4.

4-207. Divide-by-two multivibrator Q1, Q2 is a conventional bistable multivibrator that produces one output pulse for every two input pulses. The 100-kc input pulses are differentiated by capacitor C4 and the input impedance of multivibrator Q1, Q2. The resulting positive triggers are directed to the saturated transistor of divide-by-two multivibrator Q1, Q2 by steering diodes CR2 and CR3. This cuts off the saturated transistor and starts the process of regeneration. Resistor R6 references the anodes of steering diodes CR2 and CR3 at the same potential as the emitters of transistors Q1 and Q2 and provides the return path for capacitor C4.

4-208. The output of divide-by-two multivibrator Q1, Q2 is a 50-kc square wave. This signal is differentiated by capacitor C7 and the input impedance of divide-by-five multivibrator Q3, Q4. The resulting positive pulses are used to trigger divide-by-five multivibrators Q3, Q4, Divide-by-five multivibrator Q3, Q4 is identical to divide-by-five multivibrator Q2, Q3 in the 100 kc spectrum generator (refer to paragraph 4-181), except for circuit time constants. The 10-kc output signal of divide-by-five multivibrator Q3, Q4 is applied directly to the 1 kc spectrum generator. The 10-kc output signal of divide-by-five multivibrator Q3, Q4 is divided by resistors R14 and R15 and coupled to the base of gate amplifier Q5 by capacitor C11. Gate Amplifier Q5 is identical to the gate amplifier in the 100 kc spectrum generator (refer to paragraph 4-182). Gate amplifier Q5 turns keyed oscillator Q6 on and off at a 10-kc repetition rate. Keyed oscillator Q6 is identical to keyed oscillator Q5 in the 100 kc spectrum generator (refer to paragraph 4-183). The output of keyed oscillator Q6 is a 0.7-microsecond sinusoidal burst of frequencies with a 10-kc repetition rate. This results in a 3.82-to-3.91-mc frequency spectrum with a 10-kc separation between spectrum points. The output of keyed oscillator Q6 is divided by resistors R28 and R29 and applied to the 9.07 mc error mixer (part of A2A6A3A4).

4-209. 10KC SPECTRUM GENERATOR, TEST DATA. Pertinent references and applicable test data for the 10 kc spectrum generator are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. Spectrum Generator Electronic Subassembly, Servicing Block Diagram, figure 4-68.

c. Spectrum Generator Electronic Subassembly, Schematic Diagram, figure 5-10.

d. 10 KC Spectrum Generator (Foil Side Up), Component and Test Point Location, figure 5-81.

e. Required Test Equipment:

(1) RF Signal Generator, CAQI-606A.

(2) RF Voltmeter, AN/URM-155.

(3) Oscilloscope, AN/USM-117.

(4) Frequency Meter, AN/USM-207.

(5) Multimeter, AN/PSM-4.

(6) Translator/Synthesizer Test Set, TS-2133/WRC-1. (Refer to note in table 4-1.)

f. Refer to paragraph 3-28 in Technical Manual for Repair of AN/WRC-1 and R-1051/URR 2N Modules, NAVSHIPS 0967-034-2000 for 10 kc spectrum generator alignment procedure.

4-210. 1 KC SPECTRUM GENERATOR, FUNCTIONAL CIRCUIT DESCRIPTION. The 1 kc spectrum generator (figure 4-44) consists of a divide-by-two multivibrator (Q1, Q2), a divide-by-five multivibrator (Q3, Q4), a gate amplifier (Q5), and a keyed oscillator (Q6). These circuits which form a part of Spectrum Generator Electronic Subassembly A2A6A5, produce a spectrum of frequencies between 0.122 and 0.131 mc. This frequency spectrum is applied to the 1.981 mc error mixer (part of A2A6A3A4) to produce the reference frequencies used in the error cancellation scheme. These circuits also provide the 5-kc trigger frequency to the 5 kc spectrum generator for producing the 5-kc spectrum. The 1 kc spectrum generator is used in all modes of operation. The following paragraphs describe the operation of the 1 kc spectrum generator in detail.

4-211. The input to the 1 kc spectrum generator is the 10-kc pulse output of the 10 kc spectrum generator. This input signal is differentiated by capacitor C4 and the input impedance of divide-by-two multivibrator Q1, Q2. The resulting positive pulses are used to trigger divide-by-two multivibrator Q1, Q2. Divide-by-two multivibrator Q1, Q2 is identical to divide-by-two multivibrator Q1, Q2 in the 10 kc spectrum generator (refer to paragraph 4-207), except for the additional output. The 5-kc pulsed output of the divide-by-two multivibrator is divided by voltage divider R9, R10 and applied to the 5 kc spectrum generator as trigger pulses. The 5-kc pulse output of divide-by-two multivibrator Q1, Q2 is differentiated by capacitor C7 and the input impedance of divide-by-five multivibrator Q3, Q4.

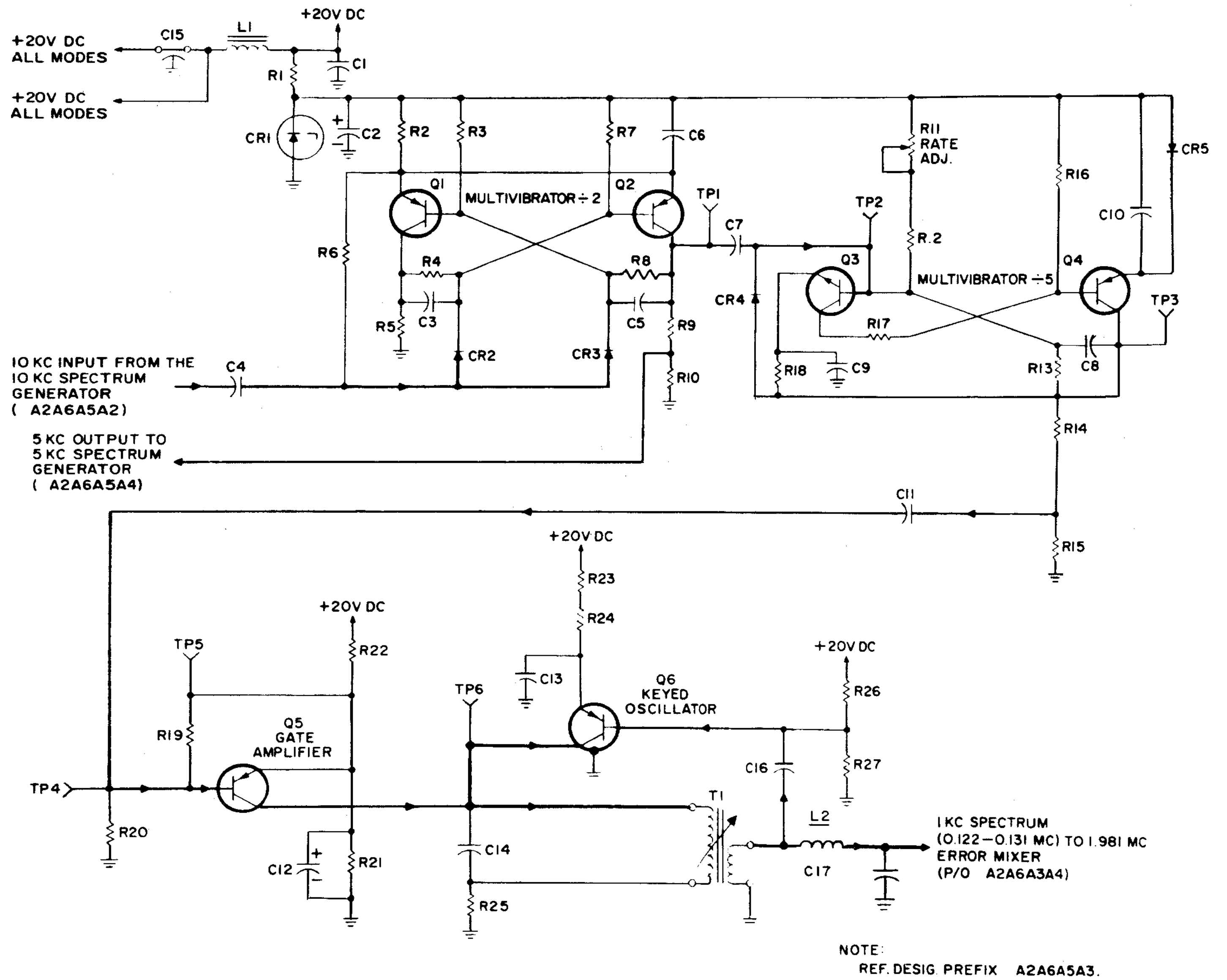


Figure 4-44. 1 KC Spectrum Generator, Simplified Schematic Diagram

Diode CR4 provides a fast turn-on time for transistor Q3 and holds transistor Q3 in saturation during its conduction period. Divide-by-five multivibrator Q3, Q4 is identical to divide-by-five multivibrator Q3, Q4 in the 100 kc spectrum generator (refer to paragraph 4-181), except for circuit time constants. The 1-kc pulse output of divide-by-five multivibrator Q3, Q4 is coupled to the base of gate amplifier Q5. Gate amplifier Q5 is identical to gate amplifier Q4 in the 100 kc spectrum generator (refer to paragraph 4-182). Gate amplifier Q5 turns keyed oscillator Q6 on and off at a 1-kc repetition rate. Keyed oscillator Q6 is identical to keyed oscillator Q5 in the 100 kc spectrum generator (refer to paragraph 4-183). The output of keyed oscillator Q6 is a 10-microsecond sinusoidal burst of frequencies filtered by L2 and C17. This results in a 0.122-to-0.131-mc frequency spectrum with a 1-kc separation between spectrum points.

4-212. 1 KC SPECTRUM GENERATOR, TEST DATA. Pertinent references and applicable test data for the 1 kc spectrum generator are as follows:

a. Radio Transmitter T-827/URT Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. Spectrum Generator Electronic Subassembly, Servicing Block Diagram, figure 4-68.

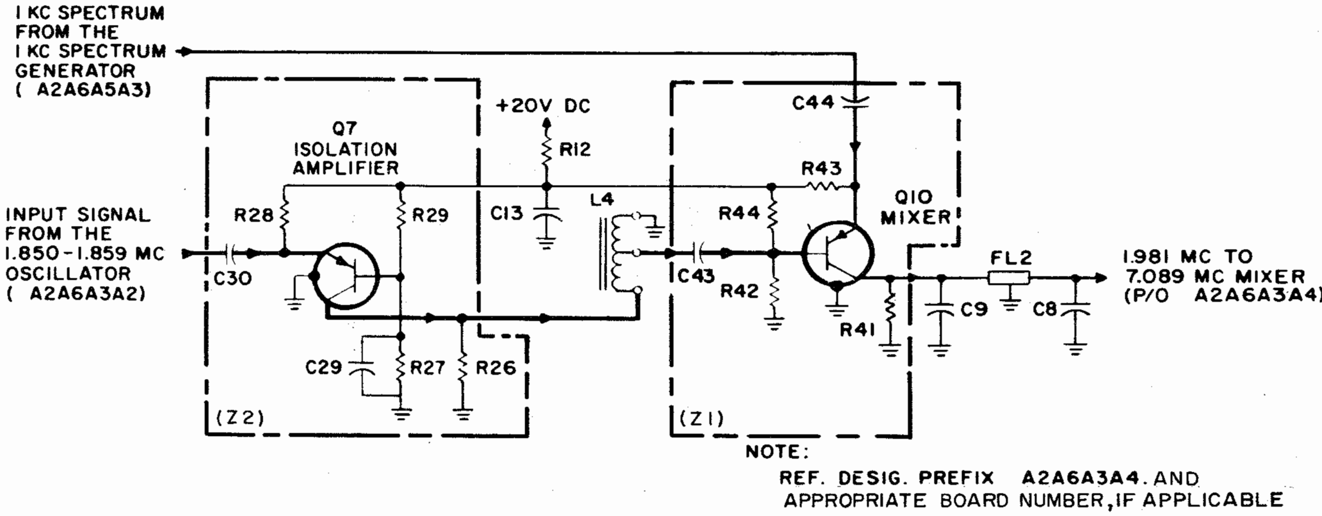


Figure 4-45. 1.981 MC Error Mixer, Simplified Schematic Diagram

c. Spectrum Generator Electronic Subassembly, Schematic Diagram, figure 5-10.

d. 1 KC Spectrum Generator (Foil Side Up), Component and Test Point Location, figure 5-82.

e. Required Test Equipment:

(1) RF Signal Generator, CAQI-606A.

(2) RF Voltmeter, AN/URM-155.

(3) Oscilloscope, AN/USM-117.

(4) Frequency Meter, AN/USM-207.

(5) Multimeter, AN/PSM-4.

(6) Translator/Synthesizer Test Set, TS-2133/WRC-1. (Refer to note in table 1-4.)

f. Refer to paragraph 3-28 in Technical Manual for Repair of AN/WRC-1 and R-1051/URR 2N Modules, NAVSHIPS 0967-034-2000 for 1 kc spectrum generator alignment procedures.

4-213. 1.981 MC ERROR MIXER, FUNCTIONAL CIRCUIT DESCRIPTION. The 1.981 mc error mixer (figure 4-45) consists of an isolation amplifier (Q7), a mixer (Q10), and a 1.981 mc filter (FL2). These circuits, which form a part of the 1 and 10 KC Synthesizer Electronic Subassembly A2A6A3, mix the output signal from the 1.850 to 1.859 mc oscillator with one of the 1-kc spectrum points to produce the 1.981-mc product signal for use in the 7.089 mc mixer. The following paragraphs describe the operation of the circuits in detail.

4-214. The signal from the 1.850 to 1.859 mc oscillator is coupled through capacitor C30 to the emitter of isolation amplifier Q7. The grounded base configuration of isolation amplifier Q7 provides high reverse attenuation to the spectrum and mixer products present in mixer Q10. Base bias is provided by voltage divider R29, R27. Resistor R12 and capacitor C13 provide decoupling for isolation amplifier Q7. Capacitor C29 provides ac ground to the base of isolation amplifier Q7. The output of isolation amplifier Q7 is applied to inductor L4. Inductor L4 provides the impendance transformation necessary to drive mixer Q10. The output of inductor L4 is coupled through capacitor C43 to the base of mixer Q10. Resistor R26 is used to ensure uniformity of the signal developed across inductor L4. Base bias is divided by voltage divider R44, R42. Resistor R12 and capacitor C13 also provide decoupling for mixer Q10. The 1-kc spectrum is coupled through capacitor C44 to the emitter of mixer Q10. The mixing products on the collector of mixer Q10 are applied to crystal filter FL2 where all products except the sum (1.981 mc) are attenuated. Resistor R41 and capacitor C9 form the input termination of crystal filter FL2 while capacitor C8 forms a part of the filter output termination. The output of crystal filter FL2 is applied to the 7.089 mc mixer.

4-215. 1.981 MC ERROR MIXER, TEST DATA. Pertinent references and applicable test data for the 1.981 mc error mixer are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

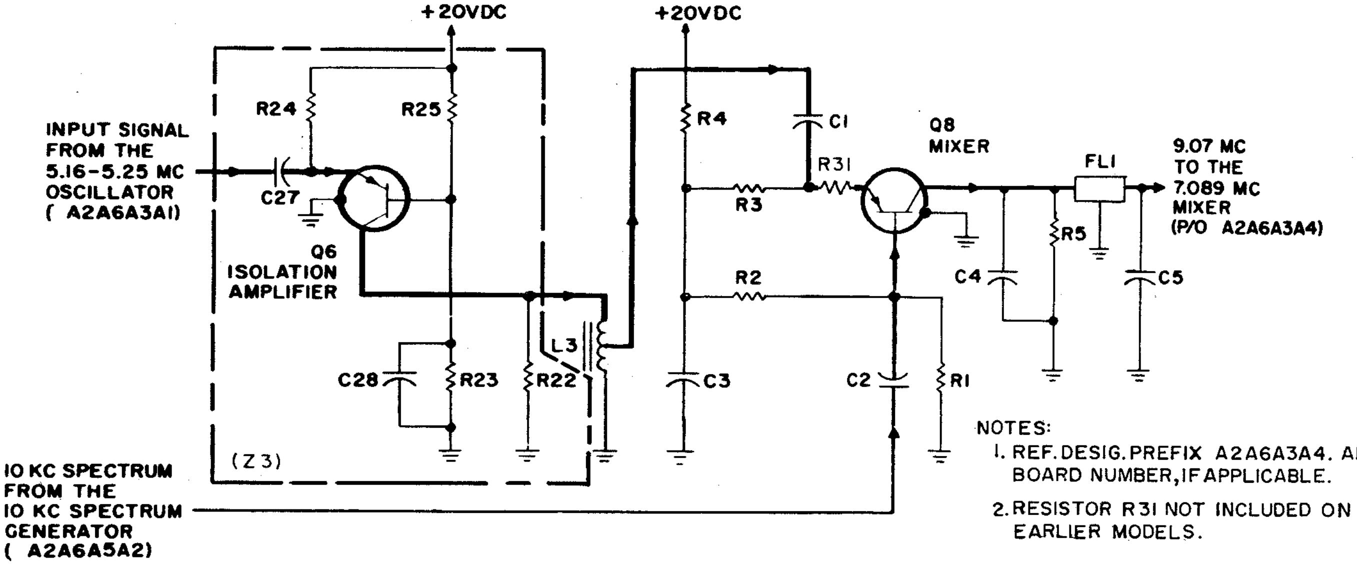


Figure 4-46. 9.07 MC Error Mixer, Simplified Schematic Diagram

b. 1 and 10 KC Synthesizer Electronic Subassembly, Servicing Block Diagram, figure 4-65.

c. 1 and 10 KC Synthesizer Electronic Subassembly, Schematic Diagram, figure 5-8.

d. 1 and 10 KC Error Mixer, (Component Side Down), Component and Test Point Location, figure 5-71.

e. Required Test Equipment:

(1) RF Signal Generator, CAQI-606A.

(2) RF Voltmeter, AN/URM-155.

(3) Frequency Meter, AN/USM-207.

(4) Multimeter, AN/PSM-4.

(5) Translator/Synthesizer Test Set, TS-2133/WRC-1. (Refer to note in table 1-4.)

4-216. 9.07 MC ERROR MIXER, FUNCTIONAL CIRCUIT DESCRIPTION. The 9.07 mc error mixer (figure 4-46) consists of an isolation amplifier (Q6), a mixer (Q8), and a 9.07 mc filter (FL1). These circuits, which form a part of 1 and 10 KC Synthesizer Electronic Subassembly A2A6A3, mix the output signal from the 5.16 to 5.25 mc oscillator with one of the 10-kc spectrum points to produce the 9.07-mc product signal for use in the 7.089 mc mixer. This circuit is identical (except for a few component values and degeneration resistor R31) to the 1.981 mc error mixer. Refer to paragraph 4-213 for details of circuit operation.

4-217. 9.07 MC ERROR MIXER, TEST DATA. Pertinent references and applicable test data for the 9.07 mc error mixer are as follows:

a. Radio Transmitter T-827/URT Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. 1 and 10 KC Synthesizer Electronic Subassembly, Servicing Block Diagram, figure 4-65.

c. 1 and 10 KC Synthesizer Electronic Subassembly, Schematic Diagram, figure 5-8.

d. 1 and 10 KC Error Mixer (Component Side Down), Component and Test Point Location, figure 5-71.

e. Required Test Equipment:

(1) RF Signal Generator, CAQI-606A.

(2) RF Voltmeter, AN/URM-155.

(3) Frequency Meter, AN/USM-207.

(4) Multimeter, AN/PSM-4.

(5) Translator/Synthesizer Test Set TS-2133/WRC-1. (Refer to note in table 1-4.)

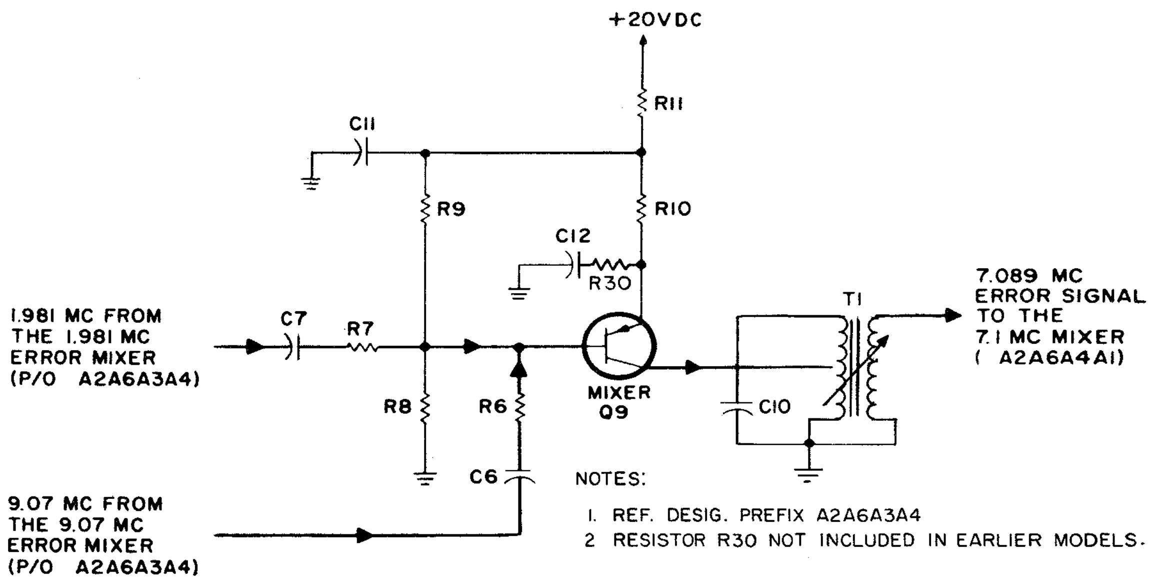


Figure 4-47. .7.089 MC Mixer, Simplified Schematic Diagram

4-218. 7.089 MC MIXER, FUNCTIONAL CIRCUIT DESCRIPTION. Mixer Q9 circuit (figure 4-47), which forms a part of 1 and 10 KC Synthesizer Electronic Subassembly A2A6A3, mixes the 1.981-mc signal from the 1.981 mc error mixer with the 9.07-mc signal from the 9.07 error mixer to produce the 7.089 mc error signal for use in the 7.1 mc mixer of 500 CPS Synthesizer Electronic Subassembly A2A6A4. The following paragraphs describe the operation of the circuit in detail.

4-219. The 1.981-mc signal is coupled through capacitor C7 and isolating resistor R7 to the base of mixer Q9. The 9.07-mc signal is coupled through capacitor C6 and isolating resistor R6 to the base of mixer Q9. Since the outputs of the 1.981 mc error mixer and the 9.07 mc error mixer are combined at the base of mixer Q9, the output termination for the corresponding mixer filters is located in the 7.089 mc mixer. This termination consists of resistors R6 and R7, capacitors C5 (figure 4-46), C6, C7, and C8 (figure 4-45), and the input impedance of mixer Q9, and the output impedance of the respective filters. Voltage divider R9, R8 provides base bias for mixer Q9. Resistor R11 and capacitor C11 provide decoupling for mixer Q9. The output circuit of mixer Q9 is a 7.089-mc tuned circuit consisting of capacitor C10 and transformer T1. All mixing products except the difference frequency (7.089) mc) are attenuated by the output circuit of mixer Q9. The 7.089-mc signal is coupled through transformer T1 to the 7.1 mc mixer circuit in 500 CPS Synthesizer Electronic Subassembly A2A6A4.

4-220. 7.089 MC MIXER, TEST DATA. Pertinent references and applicable test data for the 7.089 mc mixer are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. 1 and 10 KC Synthesizer Electronic Subassembly, Servicing Block Diagram, figure 4-65.

c. 1 and 10 KC Synthesizer Electronic Subassembly, Schematic Diagram, figure 5-8.

d. 1 and 10 KC Error Mixer (Component Side Down), Components and Test Point Location, figure 5-71.

e. Required Test Equipment:

(1) RF Signal Generator, CAQI-606A.

(2) RF Voltmeter, AN/URM-155.

(3) Frequency Meter, AN/USM-207.

(4) Multimeter, AN/PSM-4.

(5) Translator/Synthesizer Test Set, TS-2133/WRC-1. (Refer to note in table 1-4.)

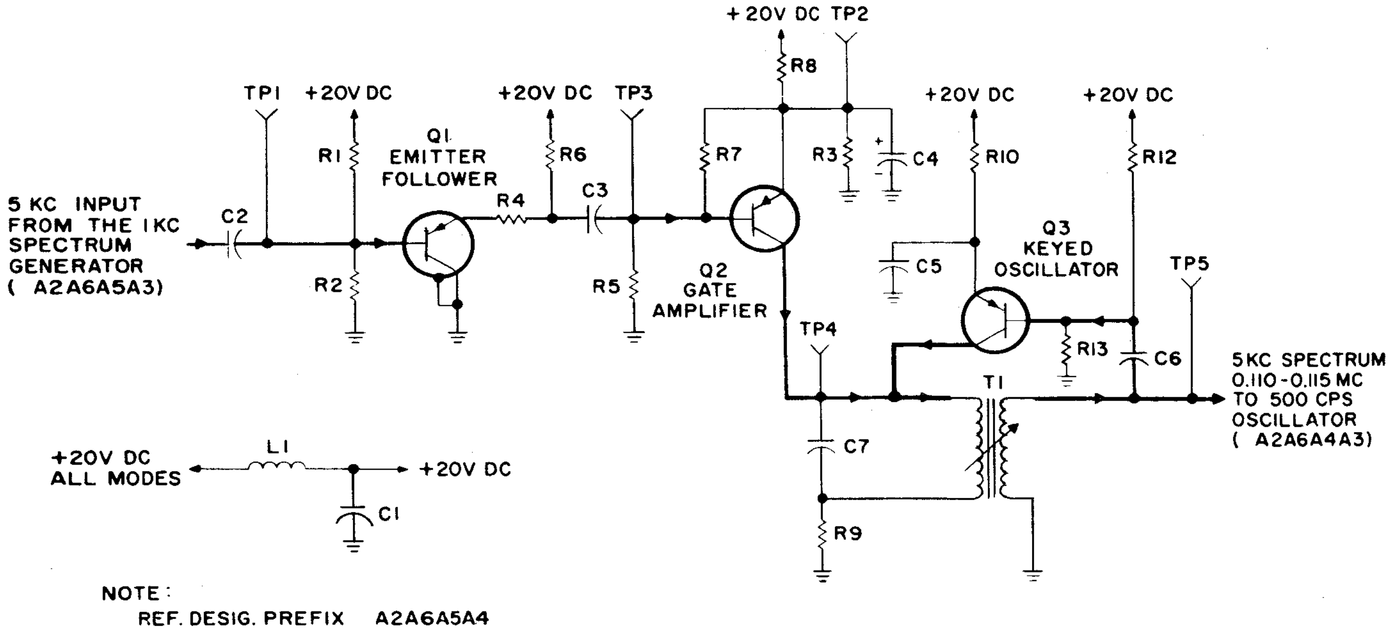


Figure 4-48. 5 KC Spectrum Generator, Simplified Schematic Diagram

f. Refer to paragraph 3-30 in Technical Manual for Repair of AN/WRC-1 and R-1051/URR 2N Modules, NAVSHIPS 0967-034-2000 for 7.089 mc error mixer alignment procedures.

4-221. 5 KC SPECTRUM GENERATOR, FUNCTIONAL CIRCUIT DESCRIPTION. The 5 kc spectrum generator (figure 4-48) consists of an emitter follower (Q1), a gate amplifier (Q2), and a keyed oscillator (Q3). These circuits, which form a part of Spectrum Generator Electronic Subassembly A2A6A5, produce a 0.110-to-0.115 mc frequency spectrum which is supplied to 500 cps oscillator A2A6A4A3 for use in the automatic phase-lock loop. The 5 kc spectrum generator is used in all modes of operation. The following paragraphs describe the operation of the 5 kc spectrum generator in detail.

4-222. The input to the 5 kc spectrum generator is the 5-kc pulsed output of the 1 kc spectrum generator. The 5-kc input signal is coupled to the base of emitter follower Q1. Voltage divider R1, R2 and emitter resistors R4 and R6 develop bias voltage for emitter follower Q1 from the positive 20 vdc obtained from main frame power supply A2A8. Emitter follower Q1 prevents loading of the multivibrator in 1 kc spectrum generator assembly A2A6A5A3 and provides a low-impedance source for gate amplifier Q2. The output of emitter follower Q1 is coupled to the base of gate amplifier Q2 by capacitor C3. Gate amplifier Q2 is identical to gate amplifier Q4 in the 100 kc spectrum generator (refer to paragraph 4-181). Gate amplifier Q2 turns keyed oscillator Q3 on and off at a 5-kc repetition rate. Keyed oscillator Q3 is identical to keyed oscillator Q5 in the 100 kc spectrum generator (refer to paragraph 4-183). The output of keyed oscillator Q3 is a 100-micro second sinusoidal burst of frequencies with a 5-kc repetition rate. This results in a 0.110-to-0.115-mc frequency spectrum. The output of keyed oscillator Q3 is applied to 500 CPS Synthesizer Electronic Subassembly A2A6A4.

4-223. 5 KC SPECTRUM GENERATOR, TEST DATA. Pertinent references and applicable test data for the 5 kc spectrum generator are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. Spectrum Generator Electronic Subassembly, Servicing Block Diagram, figure 4-68.

c. Spectrum Generator Electronic Subassembly, Schematic Diagram, figure 5-10.

d. 5 KC Spectrum Generator (Foil Side Up), Component and Test Point Location, figure 5-83.

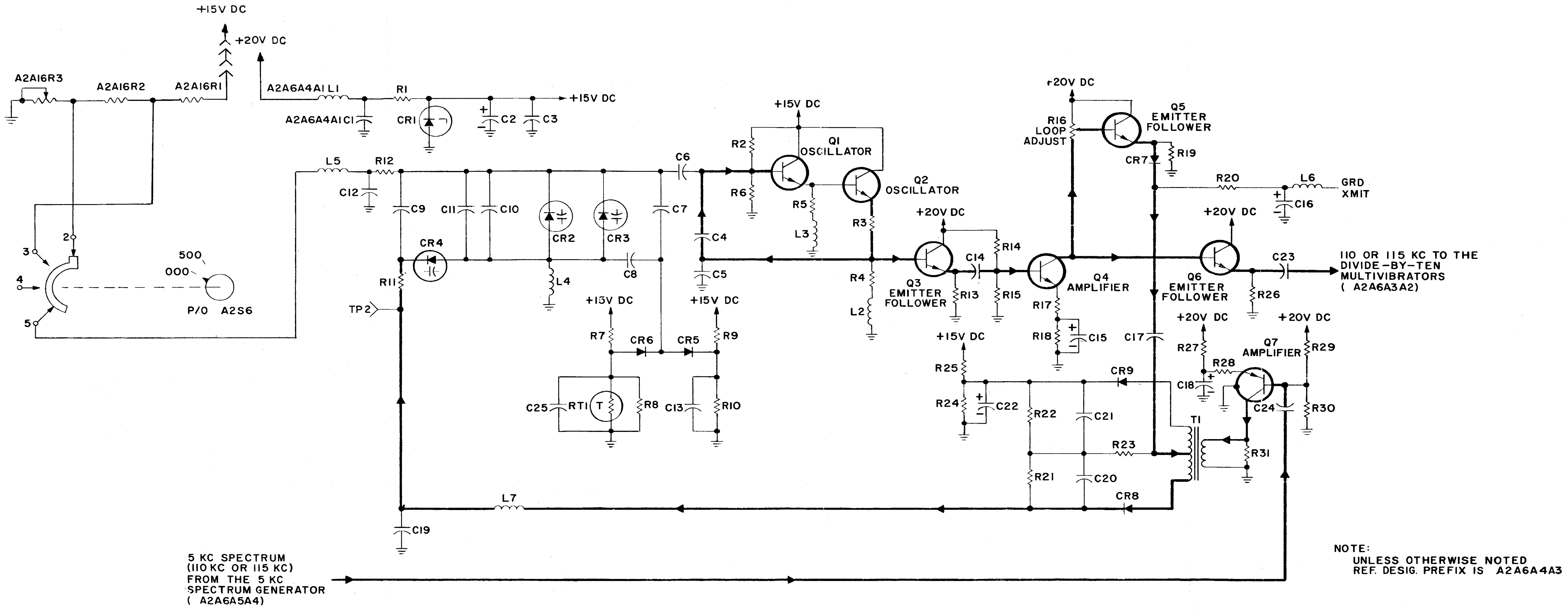


Figure 4-49. 500 CPS Oscillator,
Simplified Schematic Diagram

e. Required Test Equipment:

(1) RF Signal Generator, CAQI-606A.

(2) RF Voltmeter, AN/USM-155.

(3) Oscilloscope, AN/USM-117.

(4) Frequency Meter, AN/USM-207.

(5) Multimeter, AN/PSM-4.

(6) Translator/Synthesizer Test Set, TS-2133/WRC-1. (Refer to note in table 1-4.)

f. Refer to paragraph 3-28 in Technical Manual for Repair of AN/WRC-1 and R-1051/URR 2N Modules, NAVSHIPS 0967-034-2000 for 5 kc spectrum generator alignment procedures.

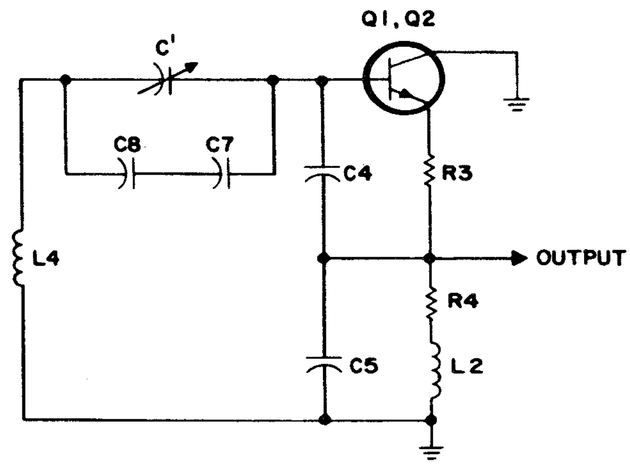


Figure 4-50. 500 CPS Oscillator, AC Equivalent Circuit Schematic Diagram

4-224. 500 CPS OSCILLATOR, FUNCTIONAL CIRCUIT DESCRIPTION. The 500 cps oscillator (figure 4-49) consists of a Clapp oscillator (Q1, Q2), three emitter followers (Q3, Q5 and Q6), two amplifiers (Q4 and Q7), and a phase detector (CR8, CR9 and T1). The 500 cps oscillator, which forms a part of 500 CPS Synthesizer Electronic Subassembly A2A6A4, produces either a locked 110-kc or a locked 115-kc signal for driving the divide-by-ten multivibrators (A2A6A4A2). These circuits are used in all modes of operation. The following paragraphs describe the operation of the 500 cps oscillator in detail.

4-225. The positive 20-vdc supply voltage for all circuits of the 500 cps oscillator is obtained from main frame power supply A2A8. Zener diode CR1 regulates this 20 vdc to 15 vdc for use in the circuit by drawing enough current in addition to the load current to maintain a 5 vdc drop across resistor R1. Capacitors C2 and C3 filter the regulated 15-vdc output of Zener diode CR1.

4-226. The tank circuit of Clapp oscillator Q1, Q2 consists of capacitors C4, C5, and C7 through C11, inductor L4, and voltage-variable capacitors CR2, CR3, and CR4. Voltage-variable capacitors (VVC) CR2 and CR3 are the main tuning elements of oscillator Q1, Q2. Capacitor C10 is selected to adjust the initial frequency of oscillator Q1, Q2. VVC CR4 provides the required pulling range for the phase-lock loop. Capacitor C9 compensates for the non-linear tuning characteristics of VVC CR4. Capacitor C11 has a negative temperature coefficient to compensate for temperature changes in oscillator Q1, Q2. The parallel and series combination of the aforementioned capacitances results in a single variable capacity, which is designated C'. A simplified ac equivalent circuit of oscillator Q1, Q2 is included in figure 4-50 as an aid in analyzing the oscillator tank circuit. Figure 4-50 makes it readily evident that capacitors C4, C5, C7, C8, and C' and inductor L4 form the parallel-resonant tank circuit of oscillator Q1, Q2.

4-227. The regulated 15 vdc present at Zener diode CR1 is filtered by A2A6A4A1L1, A2A6A4A1C1 and applied to a voltage divider (A2A16R1, A2A16R2, A2A16R3) located on the main frame. The voltage developed across this voltage divider is tapped on one of two places, depending on the setting of CPS switch (A2S6). When the CPS switch is in the 000 position, the voltage applied through isolating resistor R12 sets the capacitance of VVC CR2 and VVC CR3 to a value which tunes the output of oscillator Q1, Q2 to approximately 110 kc (when the phase-lock loop is open) or to exactly 110 kc (when the phase-lock loop is closed). When the CPS switch is in the 500 position, the voltage applied through isolating resistor R12 sets the capacitance of VVC CR2 and VVC CR3 to a value which tunes the output of oscillator Q1, Q2 to 115 kc. Filter L5, C12, removes any spurious ac signals present on the 15-vdc line.

4-228. When operating voltage is applied to oscillator Q1, Q2, the oscillator produces an output of approximately 110 kc or 115 kc, depending on the setting of the CPS switch. These output frequencies will only approximate the desired operating frequencies until the phase-lock loop is closed. Resistors R2 and R6 form a voltage divider which develops the base bias for transistor Q1. Resistors R5, R3, R4 are the emitter resistors for transistors Q1 and Q2, respectively. Inductors L2 and L3 provide a ground path for dc voltages and a high impedance for ac voltages. Capacitor C6 is a dc blocking capacitor. The output of oscillator Q1, Q2 is limited by diodes CR5 and CR6. The negative-going limit of the signal is established by the anode bias (developed by voltage divider R7, R8, RT1) minus the forward drop across diode CR6. The positive-going limit of the signal is established by the cathode bias (developed by voltage divider R9, R10) plus the forward drop across diode CR5. Therefore, the peak-to-peak amplitude of the signal is limited by the two established dc reference levels. The bias on diodes CR5 and CR6 is nearly equal at room temperature. As the temperature of the circuit varies, the forward drop of diodes CR5 and CR6 varies. This would result in variations in the output signal amplitude without temperature compensation. Thermistor RT1 varies the anode bias of diode CR6 in accordance with temperature changes. Therefore, the negative-going limit of the signal is shifted so that the difference between the two dc references remains constant. This ensures that the amplitude of the signal does not vary with changes in temperature. Capacitors C13 and C25 are rf bypass capacitors.

4-229. The output of oscillator Q1, Q2 is applied directly to the base of emitter follower Q3, which in turn develops the signal across resistor R13. Emitter follower Q3 provides isolation for oscillator Q1, Q2, preventing succeeding stages from adversely loading the oscillator. The output of emitter follower Q3 is coupled to the base of amplifier Q4 by capacitor C14. Bias voltage for amplifier Q4 is developed by voltage divider R14, R15. A small amount of degeneration is developed by unbypassed emitter resistor R17 to increase the stability of amplifier Q4. The output of amplifier Q4 is applied directly to the base of emitter follower Q6 which develops the signal across resistor R26. Emitter follower Q6 provides a low-impedance source for the divide-by-ten multivibrators. The output of emitter follower Q6 is coupled to the divide-by-ten multivibrators by capacitor C23.

4-230. The output of amplifier Q4 is also applied to the base of emitter follower Q5. Potentiometer R16 establishes the signal level at the base of emitter follower Q5 and also serves as a voltage divider for developing the base bias, thereby setting the gain of the phase-lock loop. Emitter follower Q5 provides a low-impedance source for phase-detector circuit CR8, CR9, and T1. During transmit operation, a ground potential is applied through filter L6, C16 to resistor R20. Therefore, diode CR7 is forward-biased, allowing the signals developed across resistor R19 by emitter follower Q5 to pass. This signal is coupled to the center-tapped secondary of transformer T1 by capacitor C17.

4-231. The 5-kc spectrum output of the 5 kc spectrum generator is coupled to the base of amplifier Q7 by capacitor C24. Voltage Divider R29, R30 and emitter resistors R27, R28 develop operating voltages for amplifier Q7 from the positive 20-vdc supply. A small amount of degeneration is developed by resistor R28 to increase the stability of amplifier Q7. The output of amplifier Q7 is developed across the primary of transformer T1. Resistor R31 ensures that a uniform signal is developed across the primary of transformer T1.

4-232. The phase detector circuit compares the output of oscillator Q1, Q2 with the 5-kc spectrum reference frequency when the CPS switch is in the 000 or 500 position. If a difference exists between the two, the output of the phase detector circuit will be an ac function that varies about the circuit dc reference. This ac function varies the capacitance of VVC CR4, causing the oscillator frequency to sweep. As the oscillator output sweeps through the reference frequency, the output frequency of the phase detector decreases with each sweep and eventually diminishes to zero. The output of the phase detector is then a dc level which locks the output of the oscillator to the frequency standard. Whenever the oscillator begins to drift, the phase difference is detected by the phase detector and the dc potential applied to VVC CR4 is shifted accordingly to hold the oscillator on frequency.

4-233. The phase detector circuit is referenced at a dc potential which is developed by voltage divider R25, R24. This dc reference (voltage across resistor R24) is applied to the cathode of diode CR9. Since there is no other dc path in the phase detector circuit, this level references the output at the cathode of diode CR8 to the same dc potential. Capacitor C22 serves as a bypass for resistor R24. The oscillator output signal is developed across resistor R23. The 5-kc spectrum output of amplifier Q7 is induced into the secondary of transformer T1. The secondary of transformer T1 provides a balanced output from amplifier Q7 and also forms part of the phase-detector circuit. Each half of the balanced output is composed of a diode (CR8 or CR9), a resistor (R21 or R22), and a capacitor (C21 or C20) with a common path through resistor R23. The center-tapped secondary of transformer T1 is the common path for the signals in the circuit. Since the output of transformer T1 is balanced, the net dc current through resistor R23 is zero. In the absence of an oscillator signal, the net voltage from the cathode of diode CR8 to the cathode of diode CR9 is also zero. With an oscillator signal present, this net voltage remains at approximately zero, unless the oscillator frequency is nearly coincident with the 5-kc spectrum reference frequency. When the oscillator and 5 kc spectrum frequencies are nearly coincident, the net output voltage across resistors R21 and R22 becomes a time-varying function with a frequency equal to the difference between the oscillator frequency and the 5-kc spectrum frequency. In order for oscillator Q1, Q2 to be locked, the difference between the oscillator frequency and the 5-kc spectrum reference frequency must be zero.

4-234, Assume that the output of the oscillator is 110.4 kc. The desired oscillator output is 110 kc. The 5-kc spectrum contains the two spectrum points, 110 kc and 115 kc. The 110.4 kc and 115 kc are not coincident enough to materially change the net voltage between diodes CR8 and CR9. However, the 110.4 kc is in close coincidence with the 110-kc spectrum point. This causes a 400-cps ac output from the phase detector circuit. The ac output of the phase detector varies the capacity of VVC CR4 by varying the applied voltage above and below the dc reference, thus sweeping the oscillator accordingly. Since the loop is closed, this frequency decreases with time due to the decrease of the oscillator output frequency as it is being swept. After this sweep frequency has been decreased to a frequency within the pull-in range of the oscillator, the oscillator pulls in and locks at the desired 110 kc. At this time the output of phase detector CR8 and CR9 is the dc reference level. If the phase of the oscillator begins to drift, the phase difference is detected by the phase detector circuit and the dc output is shifted accordingly to correct the oscillator frequency. The network composed of inductor L7 and capacitor C19 serves as a filter for the output of the phase-detector circuit.

4-235, A vector diagram of the operation of the phase detector circuit is shown in figure 4-51. Consider first the series circuit composed of R23, C21, and C22, across which oscillator Q1, Q2 develops its output (see figure 4-51a). At frequencies near 110 kc, the reactance of capacitor C21 is approximately 145 ohms and the reactance of capacitor C22 is approximately 0.65 ohms. Therefore, nearly all the signal from oscillator Q1, Q2 is developed across resistor R23. Next, consider the situation when the oscillator frequency equals the 110-kc spectrum point. Potentials E_{ao} and E_{bo} then have amplitudes and phases similar to those illustrated in figure 4-51b. Since $E_{ao} = E_{bo}$, then $E_{a'o} = E_{b'o}$. Therefore, $E_{a'b'}$ O. When the phase difference between the oscillator and the 110-kc spectrum points is positive, (oscillator output greater than the spectrum point), E_{ao} and E_{bo} have amplitudes and phases as illustrated in figure 4-51c. Since $E_{ao} > E_{bo}$, then $E_{a'o} > E_{b'o}$. Therefore, $E_{a'b'}$ is positive. When the phase difference between the oscillator and the 110-kc spectrum point is negative (oscillator output less than the spectrum point), E_{ao} and E_{bo} have amplitudes and phases as illustrated in figure 4-51d. Since $E_{ao} < E_{bo}$, then $E_{a'o} < E_{b'o}$. Therefore, $E_{a'b'}$ is negative. The preceeding discussion also holds true if the desired oscillator output is 115 kc.

4-236, 500 CPS OSCILLATOR, TEST DATA. Pertinent references and applicable test data for the 500 cps oscillator are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. 500 CPS Synthesizer Electronic Subassembly, Servicing Block Diagram, figure 4-69.

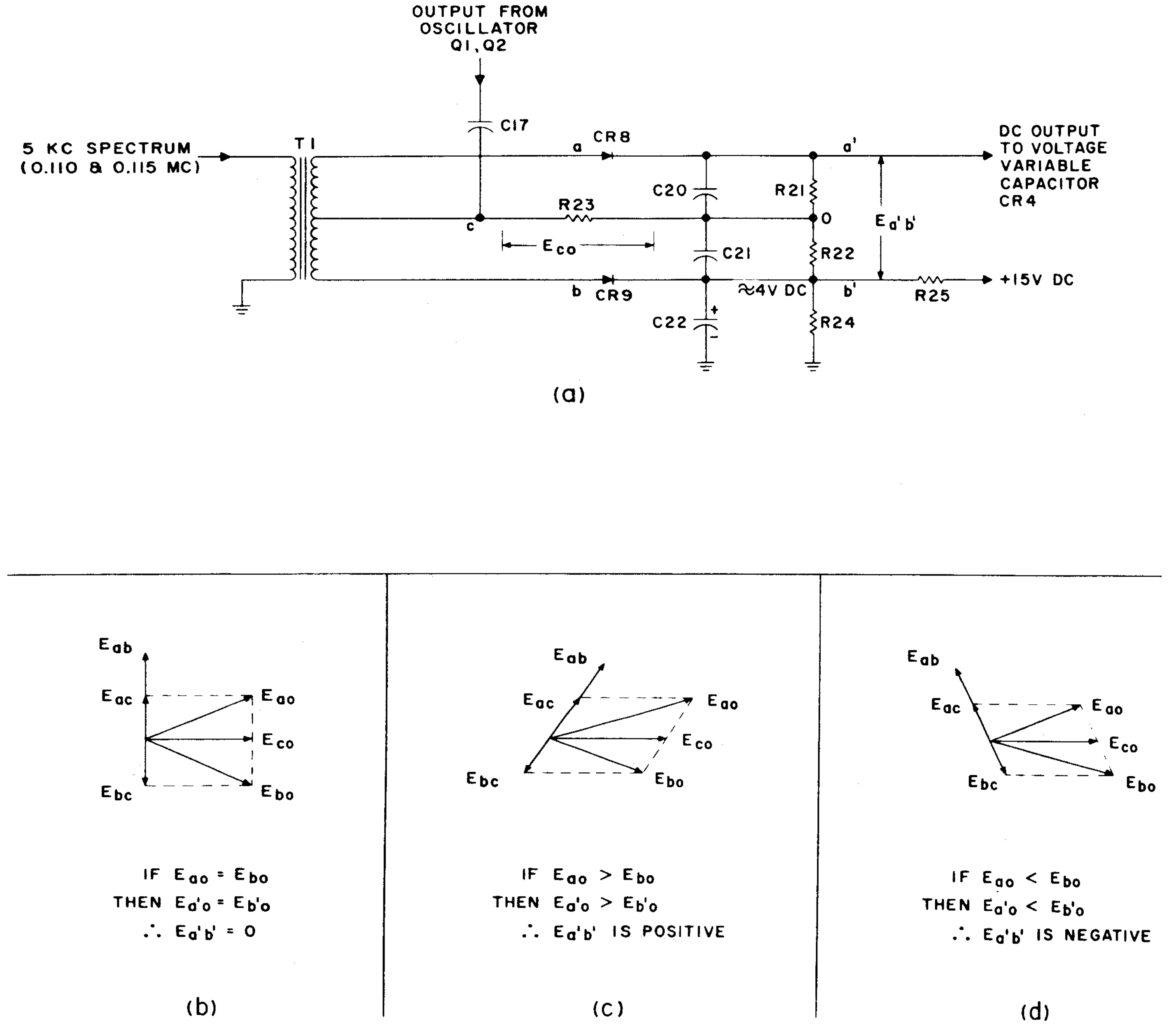


Figure 4-51. Phase Detector, Vector Diagram

c. 500 CPS Synthesizer Electronic Subassembly, Schematic Diagram, figure 5-9.

d. 500 CPS Oscillator (Foil Side Up), Component and Test Point Location, figure 5-78.

e. 500 CPS Control (Foil Side Up), Component Location, figure 5-26.

f. Required Test Equipment:

(1) Frequency Meter, AN/USM-207.

(2) Oscilloscope, AN/USM-117.

(3) Heterodyne Voltmeter, CDAN-2005. (Refer to note in table 1-4.)

(4) Multimeter, AN/PSM-4.

(5) Translator/Synthesizer Test Set, TS-2133/WRC-1. (Refer to note in table 1-4.)

g. Refer to paragraph 3-32 in Technical Manual for Repair of AN/WRC-1 and R-1051/URR 2N Modules, NAVSHIPS 0967-034-2000 for 500 cps oscillator alignment procedures.

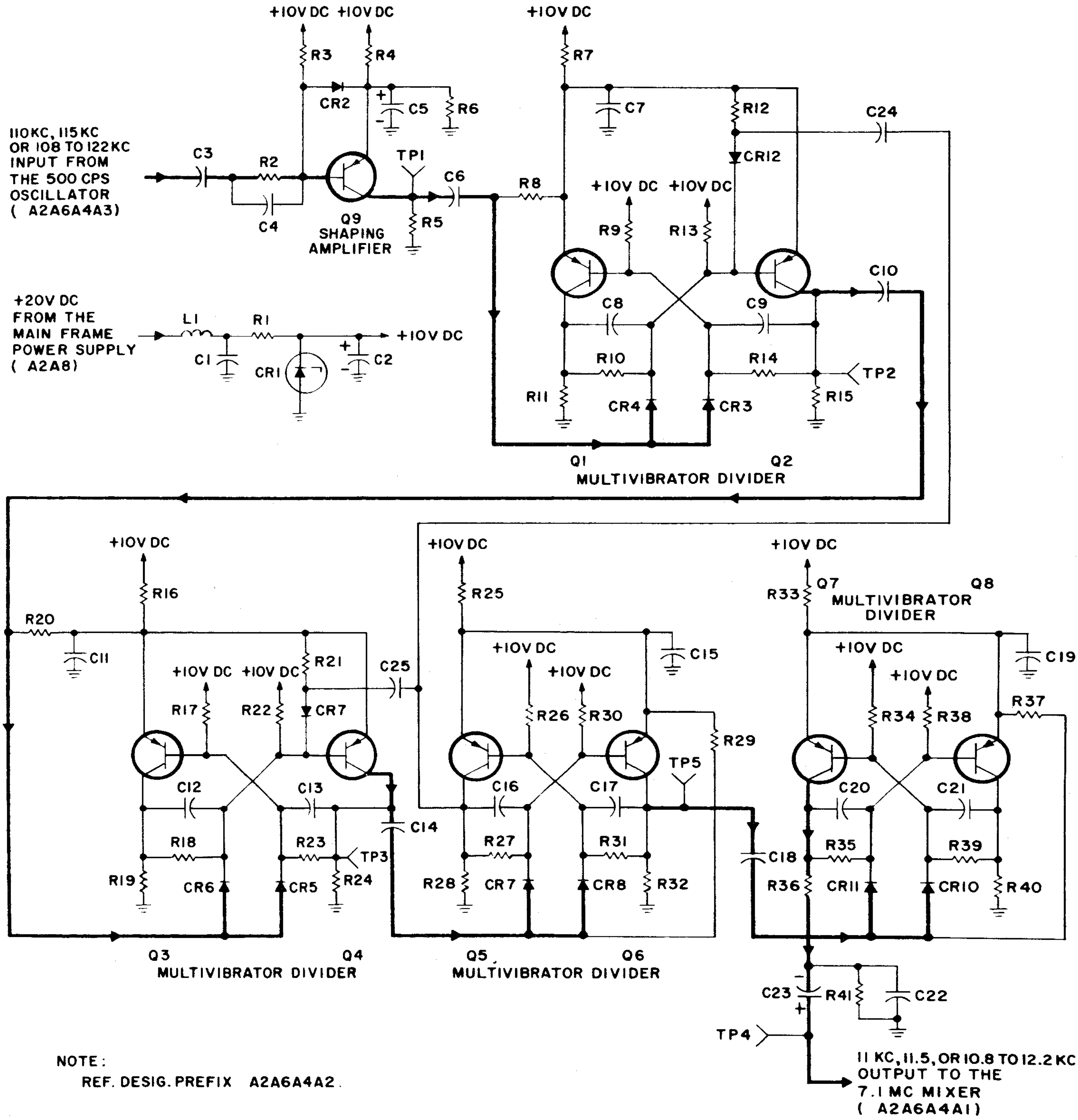


Figure 4-52. Divide-by-Ten Multivibrator, Simplified Schematic Diagram

4-237. DIVIDE-BY-TEN MULTIVIBRATORS, FUNCTIONAL CIRCUIT DESCRIPTION. The divide-by-ten multivibrators circuit (figure 4-52) consists of a shaping amplifier (Q9), a divide-by-five circuit (Q1, Q2, Q3, Q4, Q5, and Q6), and a divide-by-two circuit (Q7 and Q8). These circuits, which form a part of 500 CPS Synthesizer Electronic Subassembly A2A6A4, divide the 110-kc or 115-kc output from 500 cps oscillator A2A6A4A3 by ten to provide the 11-kc or 11.5-kc signal required for mixing in 7.1 mc mixer A2A6A4A1. These circuits are used in all modes of operation. The following paragraphs describe the operation of the divide-by-ten multivibrators in detail.

4-238. The operating voltage for the divide-by-ten multivibrators is the positive 10-vdc output from Zener diode CR1. Zener diode CR1 regulates the positive 20-vdc output from main frame power supply A2A8 to 10 vdc by drawing enough current in addition to the load current to maintain a 10-vdc drop across resistor R1. Capacitor C1 and inductor L1 filter the 20-vdc input to Zener diode CR1 and capacitor C2 filters the positive 10-vdc output from Zener diode CR1.

4-239. The locked 110-kc or 115-kc sinusoidal output from the 500 cps oscillator is the input signal for the divide-by-ten multivibrators. This signal is coupled to the base of shaping amplifier Q9 by capacitor C3. Resistors R3, R4, and R6 comprise a resistive network for developing the required operating voltages for shaping amplifier Q9. With no signal input, diode CR2 holds amplifier Q9 at cutoff. As a result, a small input signal overdrives shaping amplifier Q9. Diode CR2 clamps the positive portions of the input signal. Resistor R2 provides isolation for the input signal and capacitor C4 reduces the transistor storage time, thus, increasing the switching speed. Due to the clamping action of diode CR2, the negative portions of the input signal will drive shaper amplifier Q9 into saturation. The resulting negative-going pulses are inverted by shaping amplifier Q9, and are developed across resistor R5. These positive pulses are coupled to steering diodes CR3 and CR4 by capacitor C6.

4-240. Transistors Q1, Q2, Q3, Q4, Q5, and Q6 comprise three standard bistable multivibrators, which are connected in a configuration employing a feedback loop, to divide the input signal by five. Bistable multivibrator Q7, Q8 divides the output from this circuit by two. See figure 4-53 and table 4-1 during the following discussion.

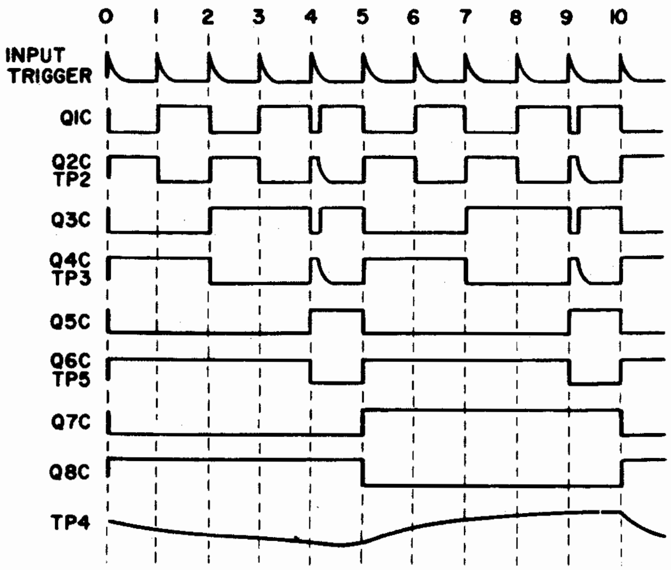


Figure 4-53. Divide-by-Ten Multivibrator, Timing Diagram

4-241. Assume that transistors Q1 through Q8 are in the condition shown in the start condition line of table 4-1. The first input pulse from shaping amplifier Q9 is differentiated by capacitor C6 and the input impedance of multivibrator Q1, Q2. The resulting positive trigger pulse switches transistor Q2 to cutoff and transistor Q1 to saturation, producing a negative pulse on the collector of transistor Q2. This pulse is differentiated by capacitor C10 and the input impedance of multivibrator Q3, Q4. This back-biases steering diodes CR5 and CR6, preventing any input to multivibrator Q3, Q4. Therefore, the remaining transistors of the divide-by-ten multivibrators circuit do not change condition (pulse 1 line of table 4-1). The second input pulse to multivibrator Q1, Q2 is differentiated, and the resulting positive trigger pulse switches transistor Q1 to cutoff and transistor Q2 back into saturation, producing a positive pulse on the collector of transistor Q2. This pulse is differentiated, producing a positive trigger pulse, which switches transistor Q4 to cutoff and transistor Q3 to saturation. The negative pulse on the collector of transistor Q4 is differentiated by capacitor C14 and the input impedance of multivibrator Q5, Q6. This back-biases steering

TABLE 4-1. DIVIDE-BY-TEN MULTIVIBRATORS, TIMING CHART

PULSE NUMBER	TRANSISTOR							
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
START CONDITION	OFF	ON	OFF	ON	OFF	ON	OFF	ON
1	ON	OFF	OFF	ON	OFF	ON	OFF	ON
2	OFF	ON	ON	OFF	OFF	ON	OFF	ON
3	ON	OFF	ON	OFF	OFF	ON	OFF	ON
4	OFF	ON	OFF	ON	ON	OFF	OFF	ON
FEEDBACK	ON	OFF	ON	OFF	ON	OFF	OFF	ON
5	OFF	ON	OFF	ON	OFF	ON	ON	OFF
6	ON	OFF	OFF	ON	OFF	ON	ON	OFF
7	OFF	ON	ON	OFF	OFF	ON	ON	OFF
8	ON	OFF	ON	OFF	OFF	ON	ON	OFF
9	OFF	ON	OFF	ON	ON	OFF	ON	OFF
FEEDBACK	ON	OFF	ON	OFF	ON	OFF	ON	OFF
10	OFF	ON	OFF	ON	OFF	ON	OFF	ON

ON indicates saturation   OFF indicates cutoff

diodes CR8 and CR9. Therefore, the remaining transistors of the divide-by-ten multivibrators do not change condition (pulse 2 line of table 4-1). The third input pulse to multivibrator Q1, Q2 switches transistor Q2 to cutoff and transistor Q1 to saturation, producing another negative pulse on the collector of transistor Q2. Therefore, there is no further change in the remaining transistors of the divide-by-ten multivibrators (pulse 3 line of table 4-1). The fourth input pulse to multivibrator Q1, Q2 switches transistor Q1 to cutoff and transistor Q2 to saturation. The positive pulse on the collector of transistor Q2 is differentiated, and the resulting positive trigger pulse switches transistor Q3 to cutoff and transistor Q4 to saturation. The positive pulse on the collector of transistor Q4 is differentiated, and the resulting positive trigger pulse switches transistor Q6 to cutoff and transistor Q5 to saturation. The negative pulse on the collector of transistor Q6 is differentiated by capacitor C18 and the input impedance of multivibrator Q7, Q8. This back-biases steering diodes CR10 and CR11. Therefore, transistors Q7 and Q8 do not change condition (pulse 4 line of table 4-1). When the fourth input pulse is applied to the multivibrator Q1, Q2 transistor, Q5 is switched to saturation. The positive pulse on the collector of transistor Q5 is differentiated by capacitor C25 and the input impedance of multivibrator Q3, Q4. The resulting positive trigger pulse is applied through diode CR7 to the base of transistor Q4, switching transistor Q4 to cutoff and transistor Q3 to saturation. The positive-going pulse on the collector of transistor Q5 is also differentiated by capacitor C24 and the input impedance of multivibrator Q1, Q2. The resulting positive trigger pulse is applied through diode CR12 to the base of transistor Q2, switching transistor Q2 to cutoff and transistor Q1 to saturation. Transistors Q1 through Q8 are now in the conditions shown in the feedback line of table 4-1. The fifth pulse applied to multivibrator Q1, Q2 causes changes in all four of the multivibrators as shown in the fifth line of table 4-1. Transistors Q1 through Q6 are now in the same condition they were in prior to the application of the input pulses. Thus, the input signal is divided by five by transistors Q1 through Q6. The sixth, seventh, eighth, and ninth input pulses to multivibrator Q1, Q2 causes the same changes in circuit conditions for transistors Q1 through Q6 as previously explained for input pulses 1 through 4, respectively (lines 6, 7, 8, 9, and feedback of table 4-1). The tenth input pulse to multivibrator Q1, Q2 (like the fifth input pulse) switches transistors Q1 through Q6 back to the starting position. The positive pulse on the collector of transistor Q6 is differentiated; the resulting positive trigger pulse switches transistor Q7 to cutoff and transistor Q8 to saturation. Therefore, for each ten input pulses applied to multivibrator Q1, Q2, transistors Q7 and Q8 produce one complete output cycle.

4-242. Resistors R36 and R41 and capacitor C22 serve as the collector load and also form an integrating network to integrate the square-wave output at the collector of transistor Q7. The resulting sawtooth output from multivibrator Q7, Q8 is coupled to the 7.1 mc mixer by capacitor C23. Resistor R41 provides a d-c conduction path to ground for transistor Q7.

4-243. DIVIDE-BY-TEN MULTIVIBRATORS, TEST DATA. Pertinent references and applicable test data for the divide-by-ten multivibrators are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. 500 CPS Synthesizer Electronic Subassembly, Servicing Block Diagram, figure 4-69.

c. 500 CPS Synthesizer Electronic Subassembly, Schematic Diagram, figure 5-9.

d. Divide-by-Ten Multivibrators (Foil Side Up), Component and Test Point Location, figure 5-76.

e. Required Test Equipment:

(1) RF Signal Generator, CAQI-606A.

(2) RF Voltmeter, AN/URM-155.

(3) Frequency Meter, AN/USM-207.

(4) Multimeter, AN/PSM-4.

(5) Translator/Synthesizer Test Set, TS-2133/WRC-1. (Refer to note in table 1-4.)

4-244. 7.1 MC MIXER, FUNCTIONAL CIRCUIT DESCRIPTION. The 7.1 mixer (figure 4-54) consists of two amplifiers (Q3 and Q5), a mixer (Q1), two emitter followers (Q2 and Q4), and a 7.1 mc crystal filter (FL1). These circuits, which form a part of 500 CPS Synthesizer Electronic Subassembly A2A6A4, mix the 11-kc or 11.5-kc output from divide-by-ten multivibrator A2A6A4A2 with the 7.089-mc output from 7.089 mc mixer A2A6A3A4 to produce a nominal 7.1-mc output with the level suitable for use in 17.847/27.847 mixer A2A6A2A3. These circuits are used in all of the modes of operation. The following paragraphs describe the operation of the 7.1 mc mixer in detail.

4-245. The 11-kc or 11.5-kc output from the divide-by-ten multivibrator is coupled to the base of amplifier Q5 by capacitor C20. The operating voltage for amplifier Q5 is developed by voltage divider R25, R26 and emitter resistors R23 and R24 from the positive 20 vdc supply line. Decoupling is provided by capacitor C19 and resistor R21 to prevent interaction with the other circuits connected to the positive 20 vdc supply line. Capacitor C18 is the emitter bypass capacitor of amplifier Q5. The amplified output signals from amplifier Q5 are developed across a tuned circuit consisting of capacitor C17 and the primary of transformer T2. Resistor R22 increases the bandwidth of transformer T2.

4-246. The sinusoidal output from amplifier Q5 is coupled to the base of emitter follower Q4 by capacitor C16. The operating voltage for emitter follower Q4 is developed by voltage divider R19, R20. Resistor R18 and capacitor C15 provide decoupling to prevent interaction

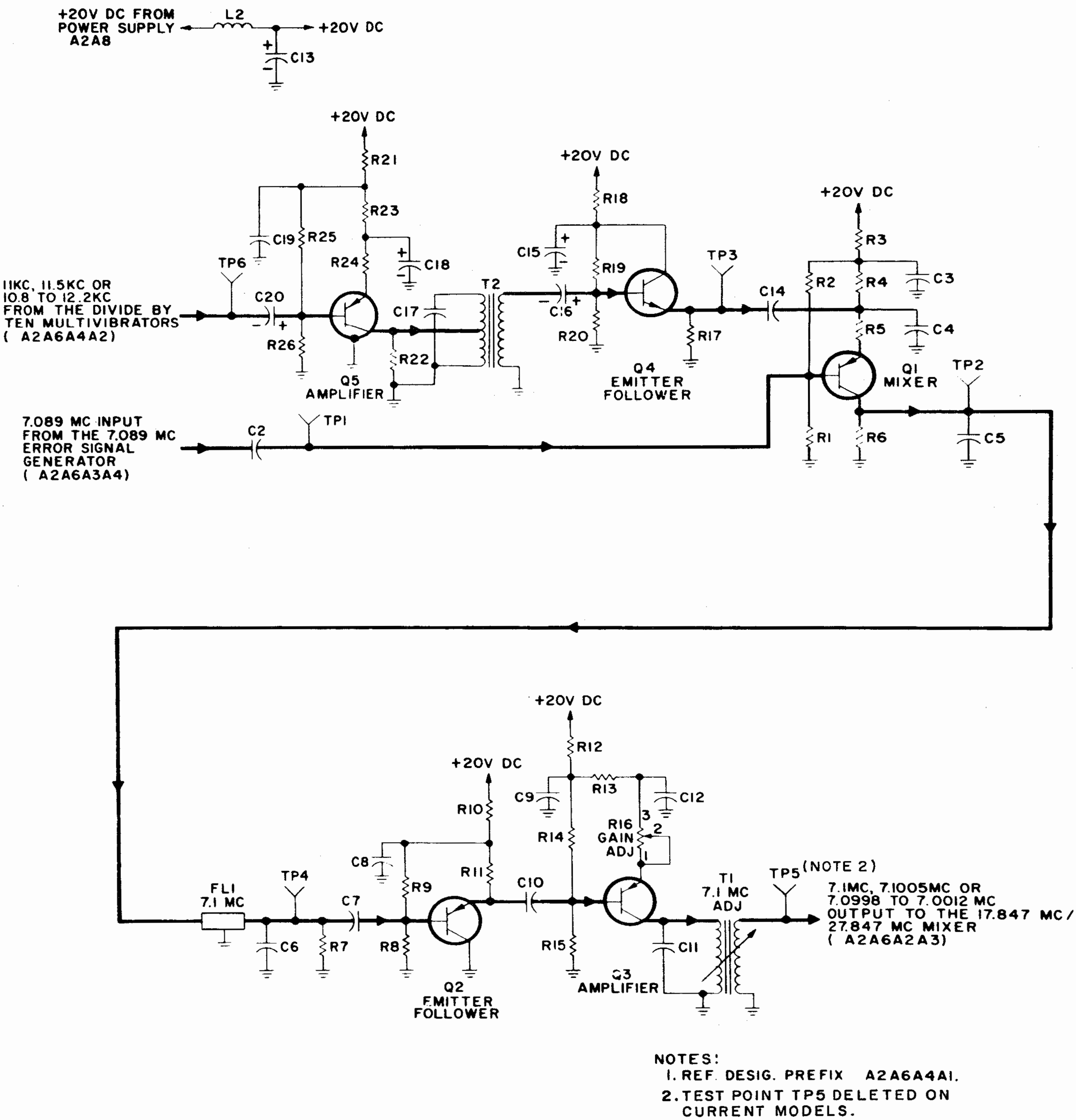


Figure 4-54. 7.1 MC Mixer, Simplified Schematic Diagram

with the other circuits connected to the positive 20 vdc supply line. Emitter follower Q4 provides a low impedance source for mixer Q1. The output from emitter follower Q4 is developed across resistor R17 and coupled to the emitter of mixer Q1 by capacitor C14.

4-247. The operating voltage for mixer Q1 is developed from the positive 20 vdc supply line by emitter resistor R4 and voltage divider R1, R2. Resistor R3 and capacitor C3 provide decoupling to prevent interaction with the other circuits connected to the positive 20 vdc supply line. Capacitor C4 is the emitter bypass capacitor. Due to the large difference in frequency between the two inputs, resistor R5 develops a small amount of degeneration to increase the stability of mixer Q1. The 7.089-mc output from 7.089 mc mixer A2A6A3A4 is coupled to the base of mixer Q1. by capacitor C2. Transistor Q1 mixes the 11-kc or 11.5-kc signal with the 7.089-mc signal, providing one of two outputs. If the 11 kc is used, the mixing products are 11 kc, 7.089 mc, 7.078 mc, and 7.1 mc. If the 11.5 kc is used, the mixing products are 11.5 kc 7.089 mc, 7.0775 mc, and 7.1005 mc. One of these two groups of mixing products is developed across resistor R6. The signals developed across resistor R6 are applied to filter FL1. Filter FL1 is very selective, allowing only the 7.1 mc, or the 7.1005 mc to pass. Capacitor C5 and resistor R6, and capacitor C6 and resistor R7 form the input and output terminations, respectively, for crystal filter FL1. The output from filter FL1 is coupled to the base of emitter follower Q2 by capacitor C7.

4-248. The operating voltage for emitter follower Q2 is developed from the positive 20 vdc supply line by voltage divider R8, R9 and emitter resistor R11. Resistor R10 and capacitor C8 provide decoupling to prevent interaction with the other circuits connected to the positive 20 vdc supply line. Emitter follower Q2 isolates filter FL1 to prevent it from being adversely loaded by amplifier Q3. The output from emitter follower Q2 is developed across resistor R11 and is coupled to the base of amplifier Q3 by capacitor C10.

4-249. The operating voltage for amplifier Q3 is developed by voltage divider R14, R15 and emitter resistor R13. Resistor R12 and capacitor C9 provide decoupling to prevent interaction with the other circuits connected to the positive 20 vdc supply line. Capacitor C12 is the emitter bypass capacitor. The amount of gain provided by amplifier Q3 is controlled by adjusting the amount of degeneration developed by potentiometer R16. The amplified output from amplifier Q3 is developed across the tuned circuit consisting of capacitor C11 and the primary of transformer T1 and is applied to 17.847/27.847 mixer A2A6A2A3.

4-250. 7.1 MC MIXER, TEST DATA. Pertinent references and applicable test data for the 7.1 mc mixer are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. 500 CPS Synthesizer Electronic Subassembly, Servicing Block Diagram, figure 4-69.

c. 500 CPS Synthesizer Electronic Subassembly, Schematic Diagram, figure 5-9.

d. 7.1 MC Mixer (Foil Side Up), Components and Test Panel Location, figure 5-74.

e. Required Test Equipment:

(1) RF Signal Generator, CAQI-606A.

(2) RF Voltmeter, AN/URM-155.

(3) Frequency Meter, AN/USM-207.

(4) Multimeter, AN/PSM-4.

(5) Translator/Synthesizer Test Set, TS-2133/WRC-1. (Refer to note in table 1-4.)

f. Refer to paragraph 3-32 in Technical Manual for Repair of AN/WRC-1 and R-1051/URR 2N Modules, NAVSHIPS 0967-034-2000 for 7.1 mc mixer alignment procedures.

4-251. POWER SUPPLY, FUNCTIONAL CIRCUIT DESCRIPTION. The power supply (figure 4-55) consists of the +110 vdc supply, the +28 vdc supply, and the regulated +20 vdc supply. These circuits, which form a part of the Main Frame A2, supply operating power to all the circuits in the T-827/URT. The following paragraphs describe the operation of the power supply in detail.

4-252. All power is derived from the nominal 115 vac line, which is applied through switches A2S7, A2S8, A2S2 and fuses A2F1, A2F2 to the primary of power transformer A2T1. Indicator lamps A2DS1 and A2DS2 will light if respective fuses, A2F1 and A2F2, open. The primary of transformer A2T1 is tapped so that in locations where line voltages differ slightly from the normal 115 vac on a reasonably permanent basis, the difference can be compensated by reconnecting to a new tap. The 6.3 vac from terminals 13 and 14 on the secondary of transformer A2T1 powers the filaments of rf amplifiers V1 and V2 in RF Amplifier Electronic Assembly A2A4. The output from terminals 7 and 8 of A2T1 is applied to a bridge rectifier consisting of diodes CR1 through CR4. The rectifier output is applied to a choke input filter consisting of choke A2L1 and capacitor A2C1. The output from the choke input filter (+110 vdc) is used as the plate and screen voltage supply in the RF Amplifier Electronic Assembly A2A4. Resistor A2R1 is a bleeder load for the +110 vdc. The output from terminals 9 and 10 of transformer A2T1 is applied to a bridge rectifier consisting of diodes CR5 through CR8. The rectifier output is applied to a choke input filter consisting of ;choke A2L2 and capicitors C1 and C2. The output from the choke input filter (+28 vdc) is used in the RF Amplifier Frequency Standard, LSB and USB Audio amplifiers, and Translator/Synthesizer Electronic Assembly. The regulated +20-vdc supply is derived from the +28-volt source. Resistor A2R2 is the bleeder load for the +28 vdc.

4-253. The regulated +20 vdc supply (figure 4-55) consists of series regulator A2Q1, dc amplifiers Q1 and Q2, comparators Q3 and Q4, 12 vdc Zener diode CR12 and 4.7 vdc Zener diode CR13. This circuit provides a constant +20 vdc regardless of the load. The input voltage of +28 vdc is applied to the collector of series regulator A2Q1 through contacts 7 and 6 on front of section C of switch A2S2 (set to any position other than OFF or STD BY) and contacts 8 and 6 of relay A2K1. If the MCS controls are set to the 00 or 01 position, a ground is applied to relay A2K1. The relay is energized and thereby inhibits the output of the regulated 20 vdc supply unless the operating frequency is 2.0 to 30.0 mc. The collector-to-emitter resistance is inversely proportional to the amount of base-to-emitter current. The +20 vdc output voltage is selected by adjusting Output Voltage Control R10, which controls the bias voltage on comparator Q4. The bias voltage determines the amount of emitter current flow, thereby determining the voltage across the emitter resistor R8. Since the bias voltage on the base of comparator Q3 is held constant by Zener diode CR13, the collector current flow will be determined by the emitter voltage. The emitter of comparator Q3 is connected to the emitter of comparator Q4; therefore, the collector current of comparator Q3 will be controlled by the bias voltage on comparator Q4. The collector current flow of dc amplifier Q2 is controlled by the collector voltage on comparator Q3 since the base voltage is held constant by Zener diode CR12. The collector current of dc amplifier Q1 is controlled by the collector current of dc amplifier Q2. The collector current through resistor R2 determines the bias voltage on the base of series regulator A2Q1 which determines the emitter-to-collector resistance.

4-254. To understand fully the operation of the regulated +20 vdc supply, assume that some of the load on the +20 vdc has been removed. This condition causes the +20 vdc to rise. This rise increases the base-bias voltage of comparator Q4, thereby increasing the voltage across resistor R8. This increase results in a decrease in the base-to-emitter voltage of comparator Q3, thereby causing an increase in collector voltage. Since the emitter of dc amplifier Q2 is connected to the collector of comparator Q3 and the base voltage is held constant by Zener diode CR12, the increase in collector voltage in comparator Q3 causes the collector current to decrease in dc amplifier Q2. Since the collector of dc amplifier Q2 is connected to the base of dc amplifier Q1, the decrease in collector current in dc amplifier Q2 causes a decrease in collector current in dc amplifier Q1. Since the collector of dc amplifier Q1 is connected to the base of series regulator A2Q1 through resistor R2, a decrease in collector current in dc amplifier Q1 causes the collector-to-emitter resistance to increase, thereby causing the voltage to fall back to +20 vdc. Resistor R2 acts as a parasitic suppressor. Diode CR11 provides circuit protection in the event the +20 vdc line becomes grounded. Normally, diode CR11 is back-biased due to the +20 vdc on its anode and +12 vdc on its cathode. If the +20 vdc line becomes grounded, the diode will become forward-biased, dropping the base of dc amplifier Q2 to ground potential and preventing damaging current flow in dc amplifiers Q1 and Q2.

4-255. POWER SUPPLY, TEST DATA. Pertinent references and applicable test data for the power supply are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. Required Test Equipment:

(1) Multimeter, AN/PSM-4.

(2) Oscilloscope, AN/USM-117.

c. Power Supply (Foil Side Up), Component and Test Point Location, figure 5-22.

d. 20-Volt Regulator Circuit adjustment, paragraph 5-4.

4-256. TUNING, FUNCTIONAL CIRCUIT DESCRIPTION. The tuning circuit (figure 4-56) consists of code generator A2A7; turret decoder switch S1, motor B1, and relay K1 in RF Amplifier Electronic Assembly A2A4; crystal switch S1, motor B1, and relay K1 in MC Synthesizer Electronic Subassembly A2A6A1; hi/lo filter relay A2K2; and tune relay A2K1. Code generator A2A7 provides the source for coding schemes based on frequency tuned, by which the balance of the tuning circuit functions. (Refer to table 4-2 for all pertinent tuning codes.) For each frequency tuned, A2A7 provides three separate five-line coded tuning circuits, a hi/lo filter relay control line, and a tune relay control line. One of the five-line tuning circuits is used to position the turret assembly in RF Amplifier Electronic Assembly A2A4, one is used to position the crystal switch in MC Synthesizer Subassembly A2A6A1, and one is used to position the turret in the associated rf power amplifier (such as the AM-3007/URT or the AM-3924/URT). The following paragraphs describe the tuning circuits of the T-827/URT in detail.

4-257. Switches S3, S4 in A2A7 are controlled by the 10 MCS and 1 MCS controls on the front panel of the T-827/URT. Adjusting the 10 MCS and 1 MCS controls arranges switches S3, S4 in a corresponding configuration which provides code generator outputs for three separate five-line coded circuits and the control lines for the hi/lo filter relay and the tune relay. In addition, any adjustment of the 10 MCS or 1 MCS controls provides a momentary ground pulse on an output line for external control purposes (not used in WRC-1 system). The five-line coding schemes consist of the presence of a ground or an open circuit of each of the five code lines, with the individual condition being dependent on frequency.

4-258. If the frequency is set at 2 mc, for example, a "master" circuit in switches S3, S4 produces the five-line code of 10100 for tuning the turret assembly of RF Amplifier Electronic A2A4. (The "1" represents ground and the "0" represents an open circuit.) Code 10100 is applied to the "master" of switch S1 in A2A4, which in turn provides a path for code grounds to be used to energize relay K1. With relay K1 energized, +28 vdc is applied to motor B1, which rotates switch S1 until the "master" of S1 reaches a position that produces the complement of the applied code (that is, 01011). When the complementary position is reached, the ground path through the "master" of S1 is broken and relay K1 deenergizes. With relay K1 deenergized, a ground is applied to motor B1 in place of the +28 vdc and the motor is braked.

4-259. The manner in which the MC Synthesizer Electronic Subassembly five-line code is generated and used to position the crystal switch is similar to that described above for the RF Amplifier Electronic Assembly. The five-line code used for positioning the turret in the associated rf power amplifier is also generated in a manner similar to the other five-line codes, with the following exception. For frequency settings of 2 mc or 3 mc only, the "master" of switches S3, S4 (associated rf power amplifier circuit) is so arranged as to provide a change in the output code when the 100 KCS control is set at 5 or above. That is, the code will change from 00001 (for 2 mc) to 00011 (for 2.5 mc) or from 00111 (for 3 mc) to 01111 (for 3.5 mc). This change is due to a ground being established by the digit 5 (or above) at switch S5 and routed through switches S3, S4 to output code line 4 (for 2.5 mc) or to code line 2 (for 3.5 mc). (Refer to the technical manual of the associated rf power amplifier for further information concerning the turret assembly.)

4-260. The "image" portions of switches S3, S4 in A2A7, switch S1 in A2A4 and switch S1 in A2A6A1 are the opposite configurations of their "master" portions that is, all contacts appearing as opens or grounds at the "master" appear as grounds or opens, respectively, at the "image". The use of "images" provide the overall tuning circuit with supplemental ground paths to permit expanded useable code combinations.

4-261. Hi/lo filter relay A2K2 controls hi/lo band circuits in RF Translator Electronic Subassembly A2A6A6 and 100 KC Synthesizer Electronic Subassembly A2A6A2. The code for control of relay A2K2 is generated by portions of switches S3, S4 in A2A7 when the frequency is set at 6, 9, 10, 13, 17, 18, 19, 20, 21, 24, 25 or 26 mc. At any of these frequencies, a ground is applied from switches S3, S4 to relay A2K2 causing A2K2 to become energized. With relay A2K2 energized, a ground is placed on the hi/lo band control line for use in the hi circuits. In the unenergized condition, relay A2K2 provides +20 vdc to the hi/lo band control line for use in the lo circuits.

4-262. Tune relay A2K1 disables the regulated +20 vdc source when the 10 MCS and 1 MCS controls are set in the 00 or 01 positions. The code for controlling relay A2K1 is generated by switches S3, S4 in A2A7. These positions (00 or 01) establish a ground path which is used to energize relay A2K1. With relay A2K1 energized, the +28 vdc source to series regulator transistor A2Q1 is broken, with the result that the regulated +20 vdc source is disabled and transmission cannot take place.

TABLE 4-2. TUNING CODE CHART

MCS and 100 KCS CONTROLS SETTING	A2A4 CODE LINES					A2A6A1 CODE LINES					ASSOCIATED RF POWER AMPLIFIER (SUCH AS AM-3007/URT OR AM-3924/URT)					
											PASS BAND	CODE LINES				
	1	2	3	4	5	1	2	3	4	5		1	2	3	4	5
2	1	0	1	0	0	1	1	1	0	1	2.0 - 2.4995	0	0	0	0	1
2.5											2.5 - 2.9995	0	0	0	1	1
3	0	1	0	0	0	1	0	1	1	1	3.0 - 3.4995	0	0	1	1	1
3.5											3.5 - 3.9995	0	1	1	1	1
4	1	0	0	0	1	1	1	0	1	1	4.0 - 4.9995	1	1	1	1	0
5	0	0	0	1	1	0	1	1	0	1	5.0 - 5.9995	1	1	1	0	1
6	0	0	1	1	0	0	1	0	0	0	6.0 - 6.9995	1	1	0	1	1
7	0	1	1	0	1	1	0	0	1	1	7.0 - 7.9995	1	0	1	1	1
8	1	1	0	1	1	1	1	0	0	1	8.0 - 9.9995	0	1	1	1	0
9	1	0	1	1	0	1	0	1	0	0						
10	0	1	1	0	0	1	1	0	1	0	10.0 - 11.9995	1	1	1	0	0
11	1	1	0	0	0	0	0	1	1	1						
12	1	0	0	0	0	0	0	0	1	1	12.0 - 13.9995	1	1	0	0	1
13	0	0	0	0	1	1	0	1	1	1						
14	0	0	0	1	0	0	1	1	1	0	14.0 - 15.9995	1	0	0	1	0
15	0	0	1	0	1	0	0	1	1	0						
16	0	1	0	1	1	1	1	1	1	0	16.0 - 17.9995	0	0	1	0	0
17	1	0	1	1	1	1	0	0	1	1						
18	0	1	1	1	1	1	1	0	0	1	18.0 - 19.9995	0	1	0	0	1
19	1	1	1	1	0	1	1	1	0	0						
20	1	1	1	0	0	0	1	1	1	1	20.0 - 21.9995	1	0	0	1	1
21	1	1	0	0	1	0	0	1	1	1						
22	1	0	0	1	0	0	0	0	0	1	22.0 - 23.9995	0	0	1	1	0
23	0	0	1	0	0	1	1	1	1	0						
24	0	1	0	0	1	0	1	1	1	0	24.0 - 25.9995	0	1	1	0	0
25	1	0	0	1	1	0	0	1	1	0						
26	0	0	1	1	1	1	1	1	1	0	26.0 - 27.9995	1	1	0	0	0
27	0	1	1	1	0	0	0	0	1	1						
28	1	1	1	0	1	0	0	1	1	1	28.0 - 29.9995	1	0	0	0	0
29	1	1	0	1	0	0	1	1	1	1						

0 indicates open 1 indicates ground

4-263. TUNING, TEST DATA. Pertinent references and applicable test data for the tuning circuits are as follows:

a. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram, figure 5-1.

b. RF Amplifier Electronic Assembly, Schematic Diagram, figure 5-4.

c. MC Synthesizer Electronic Subassembly, Schematic Diagram, figure 5-6.

d. RF Amplifier Electronic Assembly, Front and Left Side, Component Location, figure 5-35.

e. RF Amplifier Electronic Assembly, Rear and Right Side, Component Location, figure 5-36.

f. RF Amplifier Electronic Assembly, Turret Removed, Front and Left Side, Component and Test Point Location, figure 5-37.

g. RF Amplifier Electronic Assembly, Turret Removed, Rear and Right Side, Component Location, figure 5-38.

h. MC Synthesizer Electronic Subassembly, Front View, Component Location, figure 5-50.

i. MC Synthesizer Electronic Subassembly, Rear View, Component Location, figure 5-53.

j. Code Generator Electronic Assembly, Component Location, figure 5-21.

k. Required Test Equipment: Multimeter, AN/PSM-4.

4-264. CONTROL SWITCHING, FUNCTIONAL DESCRIPTION. The control switching circuits (see figure 5-1) consist of switches S1, S2, S7, S8, and S9 and relays K1, K3, K4, and K5. These circuits, which form a part of Main Frame A2, energize and key the circuits required for each mode of operation. The following paragraphs describe the control switching circuits in detail. All components described in the following paragraphs have the reference designation prefix A2.

4-265. Primary power (115 vac) for the T-827/URT is normally received, via the associated rf power amplifier (such as AM-3007/URT or AM-3924/URT) or interconnection box, at pins R and S at the rear of the unit. In the NORM position of AUX/NORM switch (S7), the 115 vac is routed in interlock switch S8. If desired, primary power may be routed directly to the T-827/URT by setting the AUX/NORM switch (S7) to the AUX position and connecting the primary power to pins A and C of connector J3 on the rear of the T-827/URT, thus bypassing the associated rf power amplifier or interconnection box. From interlock switch S8, one side of the 115-vac line (J4-S) is passed through fuse F1 and from there goes to contact 6 on the front part of Section A of Mode Selector switch (S2), which is an open circuit in the OFF position. The other side of the 115-vac line (J4-R) is routed from interlock switch S8 to contact 10 on the front part of section B of Mode Selector switch (S2), which is also an open circuit in the OFF position.

4-266. In the STD-BY position of Mode Selector switch (S2), the one side of the 115 vac line J4-S is routed to terminal 6 of power transformer T1. The other side of the 115-vac line, which is switched through section B of switch (S2), is routed from contact 11 through fuse F2 and to terminal 1 of transformer T1, thus completing the power input circuit of the T-827/URT and energizing transformer T1.

4-267. In the following positions of Mode Selector switch (S2), the T-827/URT is energized and ready for operation. In any "ON" position of switch S2, such as USB or CW, one side of the 115 vac line is routed through contacts 10 and 12 of the front part of section B of switch S2 to contact 10 of the rear part of section B of LOCAL/REMOTE switch (S1), and also to pin n of connector J4 on the rear of the T-827/URT. The 115-vac signal at pin n of connector J4 may be used, if required, to turn on operate circuits in association equipment such as the rf power amplifier. In the REMOTE position of the LOCAL/REMOTE switch (S1), the 115 vac is routed through contact 8 to pin U of connector J4 on the rear of the T-827/URT where it may beused if required, to turn on remote control equipment.

NOTE

Do not use pins n or U as sources to provide operating power for associated equipment with high current requirement, since exceeding the current limitations (maximum 1 ampere) of the associated T-827/URT switches may cause damage to the T-827/URT.

4-268. In the STD-BY position of Mode Selector switch (S2), the 6.3-vac, the 110-vdc, and the 28-vdc power supplies are energized. (Refer to paragraph 4-253). The 28 vdc is routed to Frequency Standard Electronic Assembly A2A5 where the 5 mc oscillator and its associated oven and temperature control circuits are energized. The +28 vdc is routed to ground pulse relay K6 and to contacts 1, 4, 7, and 9 on the front part of section C of switch S2. Ground pulse relay K6 provides a ground signal at pin P of connector J4 on the rear of the T-827/URT whenever the T-827/URT tuning frequency is changed from one power amplifier band to another (see "PASS-BAND COLUMN" of table 4-2). This ground pulse may be used, if required, by associated equipment such as the rf power amplifier or the antenna coupler. (Pin P of connector J4 is not used in the AN/WRC-1 system.) In the OFF and STD-BY positions of Mode Selector switch (S2), the +28 vdc is not switched; however, in the "ON" position of switch S2, the 28 vdc is routed to the remaining 28-vdc relays and also to contact 8 of tune relay K1. When tune relay K1 is de-energized, the 28 vdc is fed via contacts 8 and 6 to the 20 vdc regulator (refer to paragraph 4-253), which produces the 20-vdc B+ supply used in most of the electronic assemblies. Tune relay K1 is energized by placing a ground on pin 3. The purpose of tune relay K1 is two-fold. If either the motor in RF Amplifier Electronic Assembly A2A4 or the motor in MC Synthesizer Electronic Subassembly A2A6A1 is energized, indicating a frequency change, a ground is applied to pin 3 of tune relay K1 from the energized motor relay. This energizes tune relay K1, removing the 28 vdc from the regulator circuit and consequently removing the +20 vdc from the electronic assemblies. The ground key line is also routed through normally closed contacts 4 and 2 of tune relay K1. These contacts are broken during the tuning time, so that transmit/receive relay K3 cannot be energized while the motors are tun tuning. If the MCS controls are placed in the 00 or 01 mc position, the code generator applies a ground to pin 3, energizing tune relay K1, making the T-827/URT inoperative.

4-269. From the power supply, the 6.3-vac line is routed directly to RF Amplifier Electronic Assembly A2A4, where it is used as heater voltage for rf amplifier tubes V1 and V2. The +110-vdc power supply is used as a plate supply for rf amplifier tubes V1 and V2 in RF Amplifier Electronic Assembly A2A4, and is routed through contacts 14 and 7 of t transmit/receive relay K3. Transmit/receive relay K3 is energized, when the T-827/URT is keyed from any of the various key lines, by grounding pin 9. The circuitry of transmit/receive relay K3 is designed to normally operate via an interlock circuit which ties in associated equipment such as a receiver or an antenna coupler (such as the CU-937). Thus, 28 vdc is applied to transmit/receive relay K3 via pin J of connector J4 on the rear of the T-827/URT. In simplex mode of operation, a transmit/receive relay in the associated receiver can be used to mute the receiver during transmit periods. Transmit/receive relay K3 is energized by a ground signal at pin 9 whenever the T-827/URT is keyed from any of the various lines. If the associated antenna coupler id disconnected, the power source for transmit/receive relay K3 is broken and K3 cannot operate. This feature prevents accidental keying of the T-827/URT without a tuned load terminating the associated rf power amplifier. (If the AM-3007/URT is used, the interlock circuit for transmit/receive relay K3 may be disabled when it is desired to operate the system into a 50-ohm load or directly into a 50-ohm antenna. In this case, the 28 vdc is provided at pin J of connector J4 when the Antenna Interlock/Override switch in the AM-3007/URT is set at Override.)

4-270. In addition to switching the +110 vdc to RF Amplifier Electronic Assembly A2A4, transmit/receive relay K3 also switches 20 vdc to Translator/Synthesizer Electronic Assembly A2A6 in the key down position. This 20 vdc is routed via contacts 4 and 12 to pin 16 of connector J12, placing the various circuits in Translator/Synthesizer Electronic Assembly A2A6 in the transmit mode. This transmit control 20 vdc is also routed from contact 12 of transmit/receive relay K3 to RF Amplifier Electronic Assembly A2A4 and Mode Selector Electronic Assembly A1 to energize diode gates and other circuits used only when the T-827/URT is keyed.

4-271. SWITCHING FUNCTIONS FOR LOCAL/REMOTE SWITCH S1. Paragraphs 4-271 thru 4-276 contain the information on the switching functions for LOCAL/REMOTE switch S1. All components in the following tables have the reference designation prefix A2. Switch parts are abbreviated in the following tables, for example: S1-A-F means the front part of section A of switch S1 and S1-B-R means the rear part of section B of switch S1.

4-272. LOCAL Position of LOCAL/REMOTE Switch S1. Table 4-3 contains information concerning voltage routing through LOCAL/REMOTE switch S1 in LOCAL.

TABLE 4-3. LOCAL/REMOTE SWITCH S1, LOCAL POSITION

FUNCTION	FROM	THROUGH		TO
		SWITCH	CONTACTS	
Local TTY Input (+)	J7-B	S1-A-F	2 and 5	J20-2
Local TTY Input (-)	J7-C	S1-A-F	10 and 1	J20-3
+12 vdc Keyline Input	J1-E	S1-B-F	2 and 5	K4-7
Mike Audio Input	J1-C	S1-B-F	1 and 10	S2-B-R-10 and S2-A-R-8
+28 vdc	S2-C-F-3 and S2-C-F-11	S1-B-F	9 and 6	E11 (R3)
Local FSK Key Input	J7-A	S1-B-R	3 and 6	S2-B-R-2
CW Key	J2-3	S1-B-R	11 and 2	S2-C-R-9

TABLE 4-4. LOCAL/REMOTE SWITCH S1, REMOTE POSITION

FUNCTION	FROM	THROUGH		TO
		SWITCH	CONTACTS	
Remote TTY Input (+)	J4-BB	S1-A-F	3 and 5	J20-2
Remote TTY Input (-)	J4-t	S1-A-F	11 and 1	J20-3
Remote 600 ohm LSB/ISB Input	J4-g	S1-A-F	7 and 9	J19-20
Remote 600 ohm LSB/ISB Input	J4-f	S1-A-R	12 and 2	J19-9
Remote 600 ohm USB/AM/ISB Input	J4-q	S1-A-R	4 and 6	S2-C-R-10
Remote 600 ohm USB/AM/ISB Input	J4-r	S1-A-R	8 and 10	S2-D-F-5 and 6
PTT +12 vdc Keyline	J4-k	S1-B-F	3 and 5	K4-7
CW/FSK Keyline Input				
(FSK)	J4-c	S1-B-R	4 and 6	S2-B-R-2
(CW)	J4-c	S1-B-R	12 and 2	S2-C-R-9
Remote 115 vac	J4-U	S1-B-R	8 and 10	S2-B-F-12

4-273. REMOTE Position of LOCAL/REMOTE Switch S1. Table 4-4 contains information concerning voltage routing through LOCAL/REMOTE switch S1 in the REMOTE position.

4-274. SWITCHING FUNCTIONS FOR MODE SELECTOR SWITCH S2. Paragraph 4-274 through 4-281 contain switching functions information for Mode Selector switch S2. All components in the following tables have the reference designation prefix A2. Switch parts are abbreviated in the following tables, for example: S2-A-R means the rear part of section A of switch S2 and S2-C-F means the front part of Section C of switch S2.

4-275. LSB Position of Mode Selector Switch S2. Table 4-5 contains information concerning voltage routing through Mode Selector switch S2 in the LSB mode of operation.

4-276. FSK Position of Mode Selector Switch S2. Table 4-6 contains information concerning voltage routing through Mode Selector switch S2 in the FSK mode of operation.

4-277. AM Position of Mode Selector Switch S2. Table 4-7 contains information concerning voltage routing through Mode Selector switch S2 in the AM mode of operation.

4-278. CW Position of Mode Selector Switch S2. Table 4-8 contains information concerning voltage routing through Mode Selector switch S2 in the CW mode of operation.

4-279. USB Position of Mode Selector Switch S2. Table 4-9 contains information concerning voltage routing through Mode Selector switch S2 in the USB mode of operation.

4-280. IBS Position of Mode Selector Switch S2. Table 4-10 contains information concerning voltage routing through Mode Selector switch S2 in the ISB mode of operation.

4-281. ISB/FSK Position of Mode Selector Switch S2. Table 4-11 contains information concerning voltage routing through MODE SELECTOR Switch S2 in the ISB/FSK mode of operation.

TABLE 4-5. MODE SELECTOR SWITCH S2, LSB POSITION

FUNCTION	FROM	THROUGH SWITCH	THROUGH CONTACTS	TO
Xmit +20 vdc	K3-12 (E 13)	S2-A-R	3 and 2	J17-2, J16-2 & J19-17
			3 and 4	J17-7
Mike Audio Input	S1-B-F-10	S2-A-R	8 and 9	J19-12
+28 vdc	+28 vdc supply	S2-C-F	9 and 11	S1-B-F-9 and E23
GRD Keyline	K1-2	S2-D-R	3 and 12	J4-K

TABLE 4-6. MODE SELECTOR SWITCH S2, FSK POSITION

FUNCTION	FROM	THROUGH		TO
		SWITCH	CONTACTS	
Xmit +20 vdc	K3-12 (E13)	S2-A-F	12 and 10	J20-1
Xmit +20 vdc	K3-12 (E13)	S2-A-R	3 and 4	J17-7
			3 and 5	J17-8, J16-5 and J18-17
Local/Remote FSK Key	S1-B-R-6	S2-B-R	2 and 4	K4-4
GRD	ground	S2-C-R	2, 3 and 6	J4-G and J18-9
FSK Audio	J20-4	S2-D-F	2 and 4	J18-20

TABLE 4-7. MODE SELECTOR SWITCH S2, AM POSITION

FUNCTION	FROM	THROUGH		TO
		SWITCH	CONTACTS	
Xmit +20 vdc	K3-12 (E13)	S2-A-F	1 and 11	J17-4
Xmit +20 vdc	K3-12 (E13)	S2-A-R	3 and 4	J17-7
			3 and 5	J17-8, J16-5 and J18-17
Mike Audio Input	S1-B-F-10	S2-B-R	10 and 11	J18-12
+28 vdc	+28 vdc supply	S2-C-F	1 and 11	S1-B-F-9 and E23
Remote Audio Input	S1-A-R-6	S2-C-R	10 and 8	J18-9
Remote Audio Input	S1-A-R-10	S2-D-F	5 and 3	J18-20
GRD Keyline	K1-2 (E35)	S2-D-R	5 and 12	J4-K

TABLE 4-8. MODE SELECTOR SWITCH S2, CW POSITION

FUNCTION	FROM	THROUGH		TO
		SWITCH	CONTACTS	
Xmit +20 vdc	K3-12 (13)	S2-A-F	12 and 2	J17-10
CW/FSK GRD	S2-C-R-4	S2-B-R	6 and 4	K4-4
CW/FSK GRD	K5-6	S2-C-R	3, 4 and 8	S2-B-R-6 and J18-9
Local/Remote CW Key	S1-B-R-2	S2-C-R	9 and 11	J17-5 and A8-11
Remote Audio Input	S1-A-R-10	S2-D-F	6 and 4	J18-20

TABLE 4-9. MODE SELECTOR SWITCH S2, USB POSITION

FUNCTION	FROM	THROUGH		TO
		SWITCH	CONTACTS	
Xmit +20 vdc	K3-12 (E13)	S2-A-R	3 and 4	J17-7
Xmit +20 vdc	K3-12 (E13)	S2-A-R	6 and 5	J17-8, J16-5 and J18-17
Mike Audio Input	S1-B-F-10	S2-B-R	10 and 11	J18-12
+28 vdc	+28 vdc supply	S2-C-F	1 and 3	S1-B-F-9 and E23
Remote Audio Input	S1-A-R-6	S2-C-R	10 and 12	J18-9
Remote Audio Input	S1-A-R-10	S2-D-F	5 and 7	J18-20
GRD Keyline	K1-2 (E 35)	S2-D-R	9 and 12	J4-K

TABLE 4-10. MODE SELECTOR SWITCH S2, ISB POSITION

FUNCTION	FROM	THROUGH		TO
		SWITCH	CONTACTS	
Xmit +20 vdc	K3-12 (E13)	S2-A-R	3 and 2	J17-10
			3 and 4	J17-7
			3 and 5	J17-8, J16-5 and J18-17
Mike Audio Input	S1-B-F-10	S2-B-R	10 and 12	S9-6
+28 vdc	+28 vdc supply	S2-C-F	4 and 3	S1-B-F-9 and E23
Remote Audio Input	S1-A-R-6	S2-C-R	10 and 6	J18-9
Remote Audio Input	S1-A-R-10	S2-D-F	6 and 8	J18-20
GRD Keyline	K1-2 (E 35)	S2-D-R	10 and 12	J4-K

TABLE 4-11. MODE SELECTOR SWITCH S2, ISB/FSK POSITION

FUNCTION	FROM	THROUGH		TO
		SWITCH	CONTACTS	
Xmit +20 vdc	K3-12 (E13)	S2-A-F	3 and 5	J20-1
Mike Audio Input	S1-B-F-10	S2-A-R	8 and 9	J19-12
Xmit +20 vdc	K3-12 (E13)	S2-A-R	3 and 2	J17-10
			3 and 4	J17-7
			3 and 5	17-8, J16-5 and J18-17
Local/Remote FSK Key	S1-B-R-6	S2-B-R	2 and 4	K4-4
+28 vdc	+28 vdc supply	S2-C-F	4 and 3	S1-B-F-9 and E23
GRD	ground (E 39)	S2-C-R	2 and 12	J18-9
FSK Audio	J20-4	S2-D-F	9 and 7	J18-20
GRD Keyline	K1-2 (E35)	S2-D-R	11 and 12	J4-K

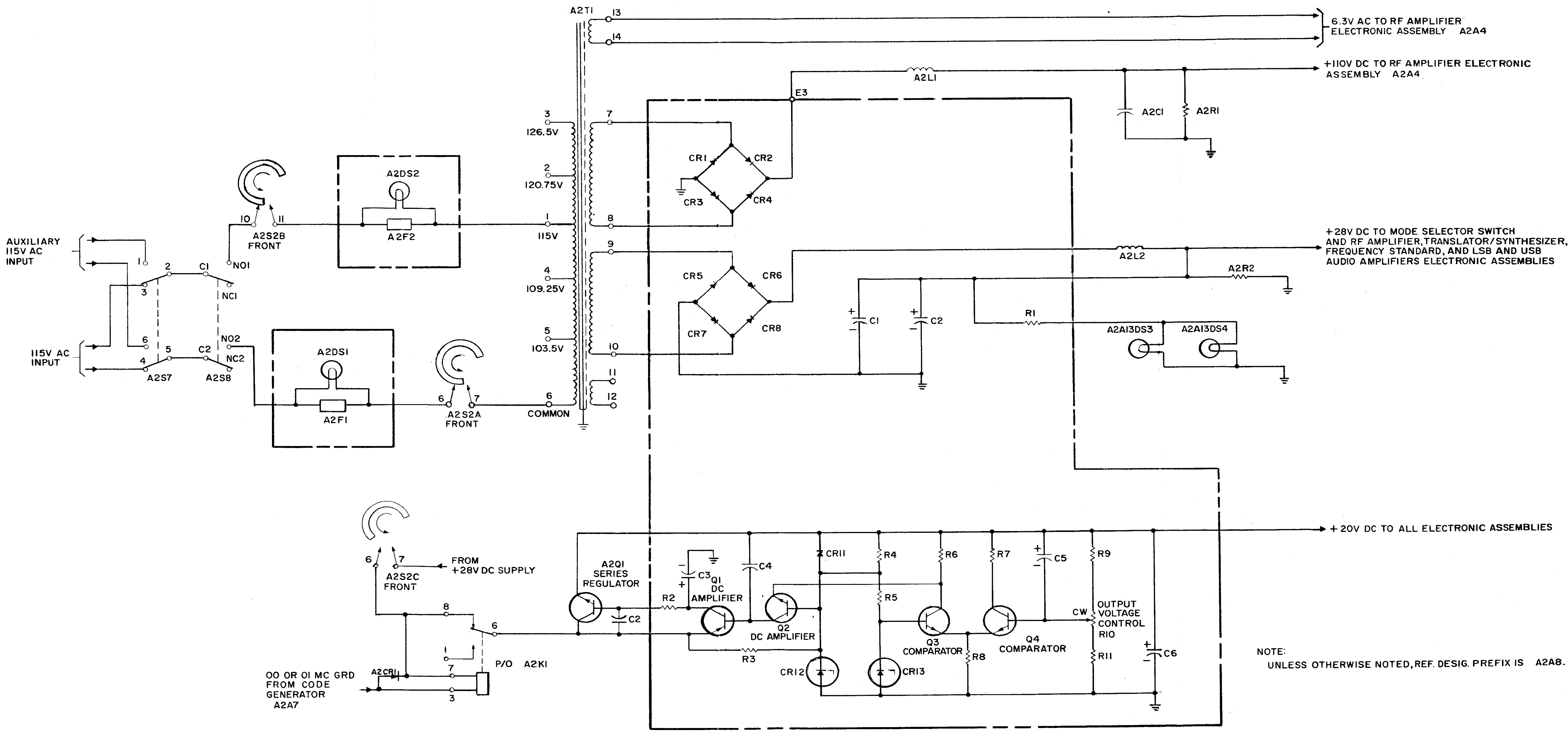
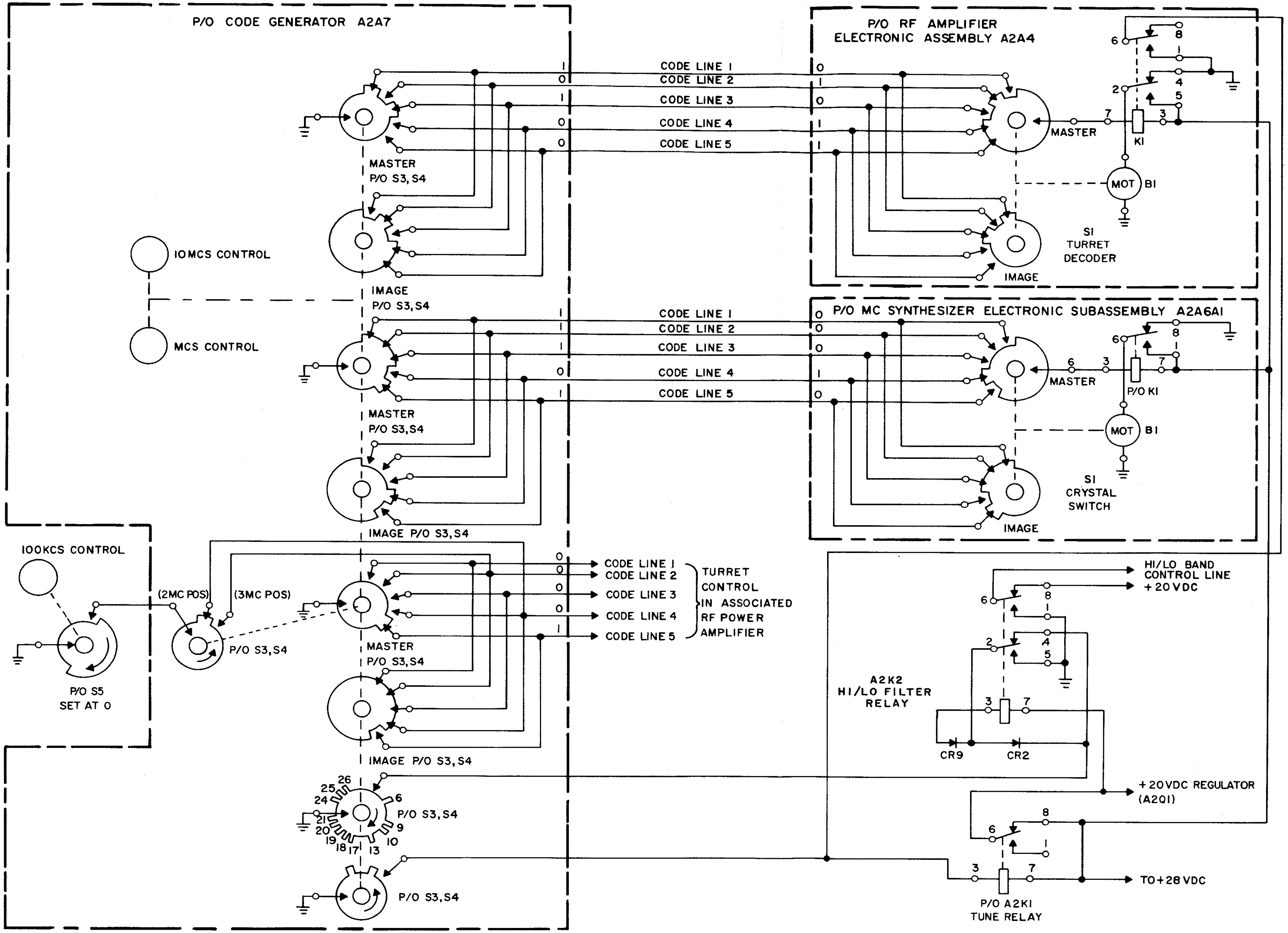
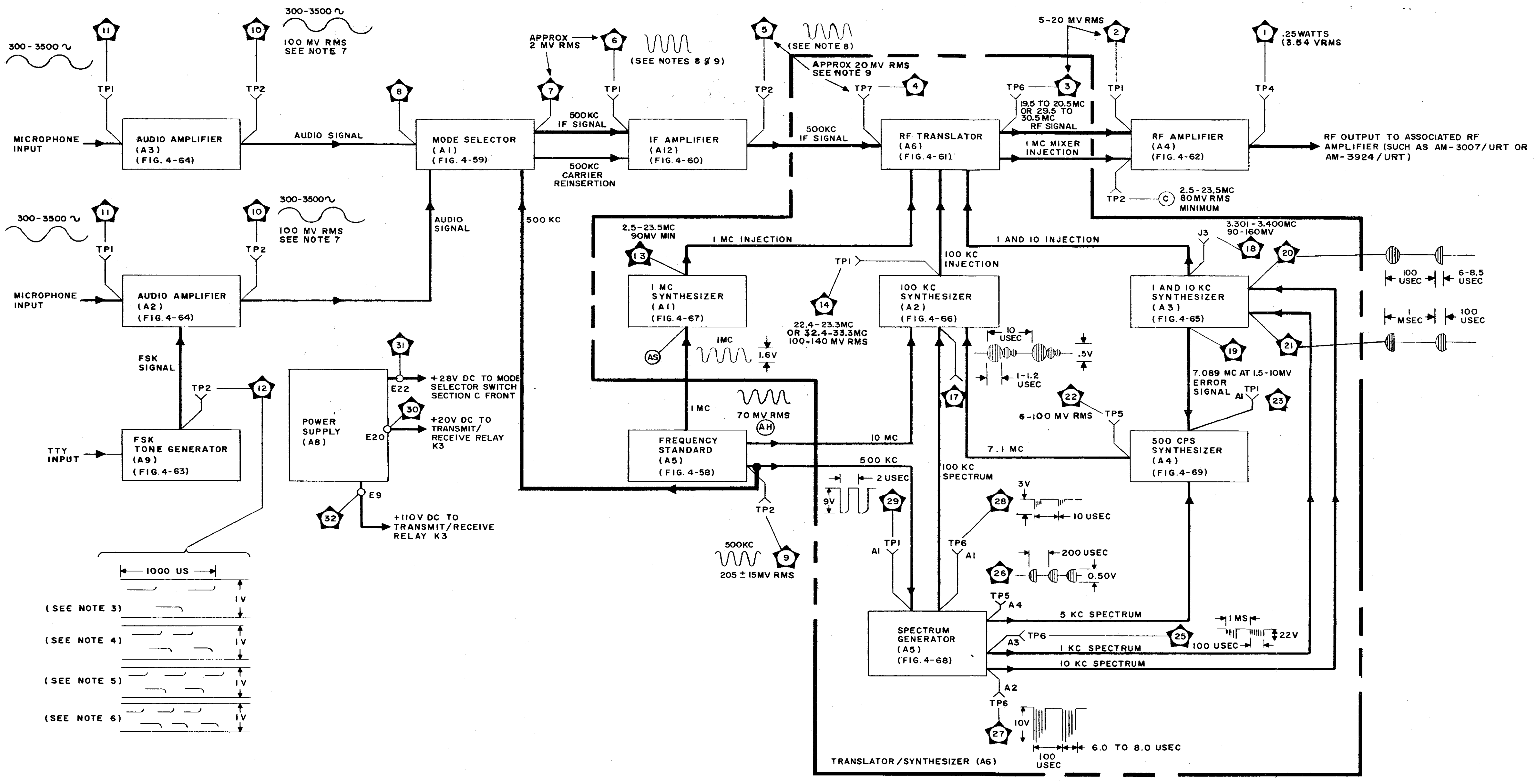


Figure 4-55. Power Supply, Simplified Schematic Diagram



NOTE:
1. CODE GENERATOR, RF AMPLIFIER ELECTRONIC ASSEMBLY, AND MC SYNTHESIZER ELECTRONIC SUBASSEMBLY SWITCHES SHOW CONFIGURATION FOR 2MC POSITION ONLY AND DO NOT SHOW ACTUAL SWITCH ARRANGEMENT.
2. SEE TABLE 4-2 FOR TUNING CODE CHART.

Figure 4-56. Radio Transmitter T-827/URT, Tuning, Simplified Schematic Diagram



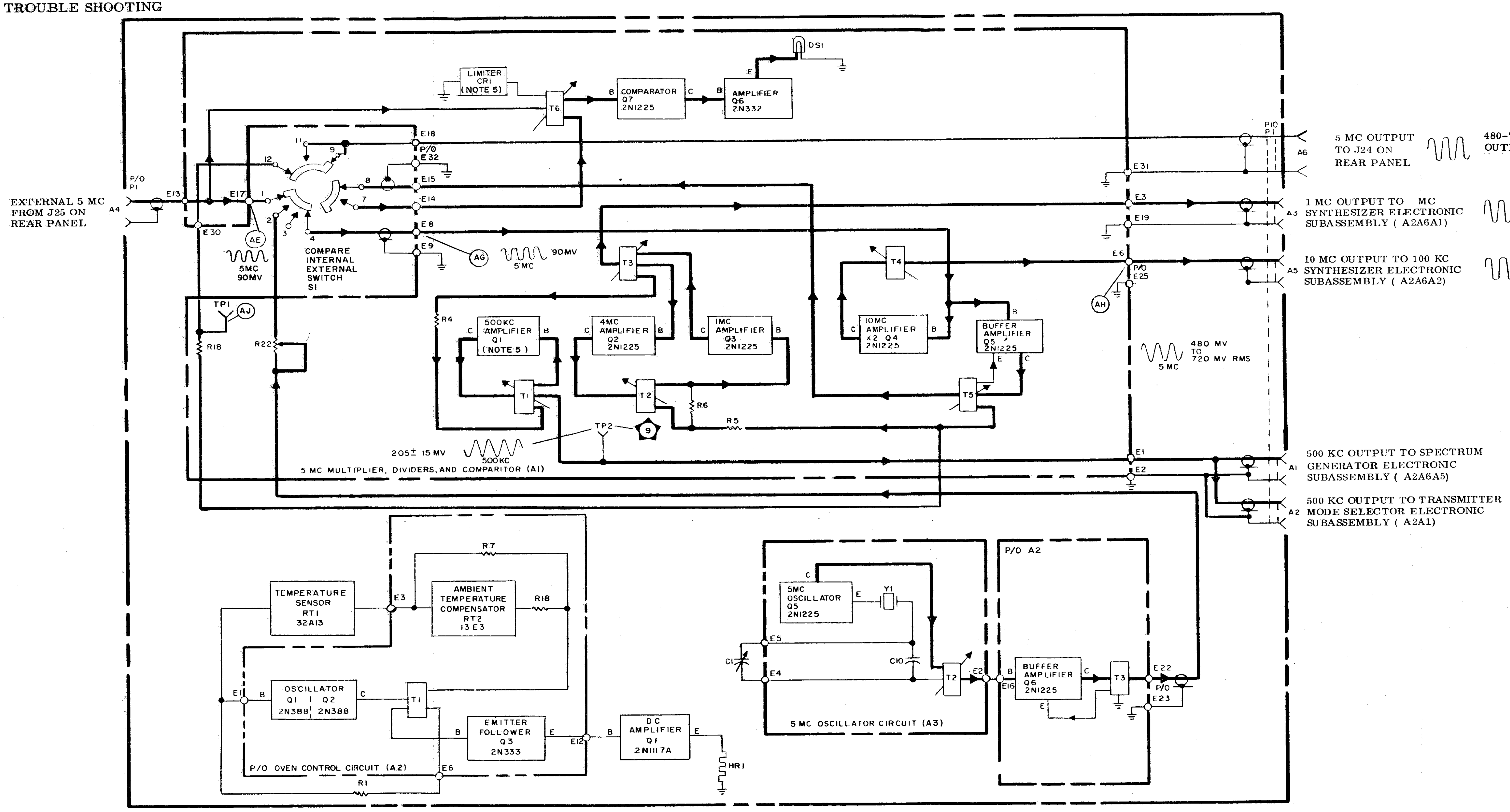
CAUTION

WHEN MAKING RESISTANCE CHECKS AT SEMI-CONDUCTOR DEVICES, USE ONLY THE HIGHER SCALES OF THE MULTI-METER SO AS TO AVOID UNINTENTIONAL DAMAGE TO THE SEMI-CONDUCTOR DEVICE DUE TO THE METERS INTERNAL VOLTAGE.

NOTES:

1. HEAVY LINES INDICATE MAIN SIGNAL PATH; LIGHT LINES INDICATE AUXILIARY OR SECONDARY SIGNAL PATHS.
2. WAVEFORMS RECORDED ON OSCILLOSCOPE AN/USM-117.
3. FREQ - 1575 CPS, FUNCTION - SPACE, CENTER FREQ - 2000 CPS.
4. FREQ - 2125 CPS, FUNCTION - SPACE, CENTER FREQ - 2550 CPS.
5. FREQ - 2425 CPS, FUNCTION - MARK, CENTER FREQ - 2000 CPS.
6. FREQ - 2975 CPS, FUNCTION - MARK, CENTER FREQ - 2550 CPS.
7. NOMINAL OUTPUT 100 MV RMS - SINGLE TONE 150 MV INPUT AT PINS 20 AND 9 OF CONNECTOR P1, MEASURED WITH ELECTRONIC MULTIMETER ME-6( )/U.
8. AM MODE, CARRIER, WITH MODULATION AS PER NOTE 7.
9. GAIN SUBJECT TO CHANGE WITH SETTING OF GAIN ADJ. A2A12R15 (REFER TO PARA 5-14.)
10. UNLESS OTHERWISE SPECIFIED, ALL RMS VOLTAGES MEASURED WITH RF VOLTMETER AN/URM-155.
11. REF. DESIG. PREFIX A2 AND APPROPRIATE BOARD NUMBER.

Figure 4-57. Radio Transmitter T-827/URT, Overall Servicing Block Diagram



CAUTION

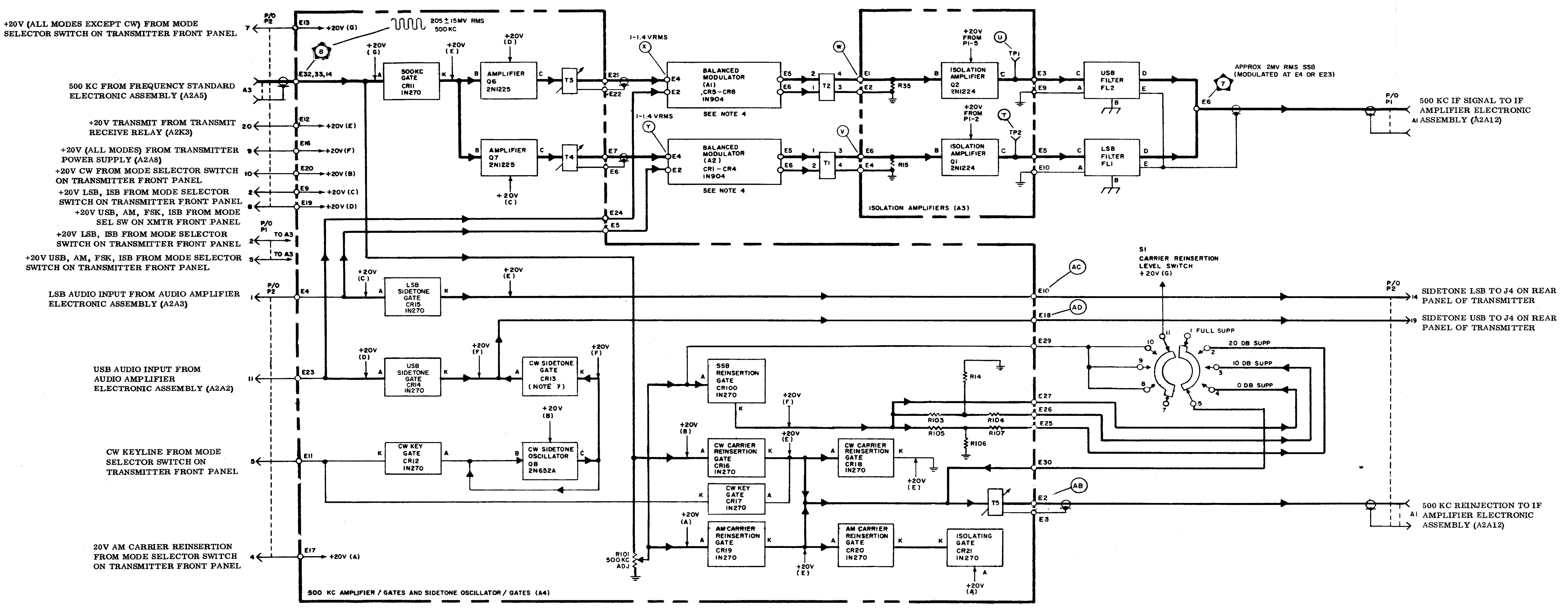
WHEN MAKING RESISTANCE CHECKS AT SEMI-CONDUCTOR DEVICES, USE ONLY THE HIGHER SCALES OF THE MULTI-METER SO AS TO AVOID UNINTENTIONAL DAMAGE TO THE SEMI-CONDUCTOR DEVICE DUE TO THE METERS INTERNAL VOLTAGE.

NOTES:

1. HEAVY LINES INDICATE MAIN SIGNAL PATHS; LIGHT LINES INDICATE AUXILIARY OR SECONDARY SIGNAL PATH.
2. LETTERS OUTSIDE TRANSISTOR AND DIODE BLOCKS INDICATE ELEMENTS, NUMBERS ON TRANSFORMERS INDICATE TERMINAL NUMBERS.
3. WAVEFORMS RECORDED USING OSCILLOSCOPE AN/USM-117.
4. REF. DESIG. PREFIX A2A5 AND APPROPRIATE BOARD NUMBER.
5. VARIATIONS EXIST FOR THE COMPONENTS LISTED BELOW DUE TO EQUIPMENT DESIGN CHANGES. USE EXISTING COMPONENT TYPES FOR REPLACEMENT PURPOSES.

COMPONENT	CURRENT MODEL	EARLIER MODELS
DIODE A1CR1	IN3063	IN816
TRANSISTOR A1Q1	2N1225	2N1224

Figure 4-58. Frequency Standard Electronic Assembly, Servicing Block Diagram



CAUTION

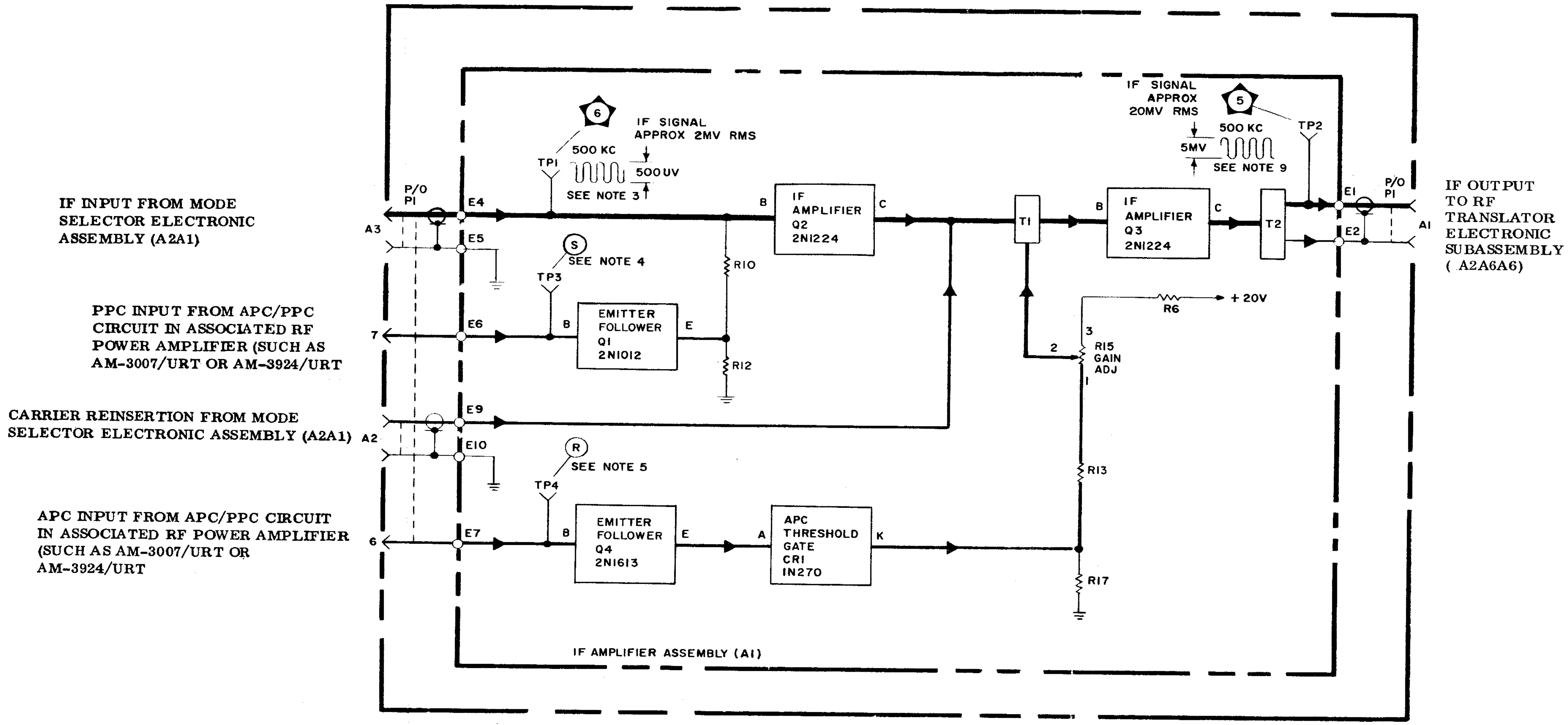
WHEN MAKING RESISTANCE CHECKS AT SEMI-CONDUCTOR DEVICES, USE ONLY THE HIGHER SCALES OF THE MULTI-METER SO AS TO AVOID UNINTENTIONAL DAMAGE TO THE SEMI-CONDUCTOR DEVICE DUE TO THE METERS INTERNAL VOLTAGE.

NOTES:

1. HEAVY LINES INDICATE MAIN SIGNAL PATHS; LIGHT LINES INDICATE AUXILIARY OR SECONDARY SIGNAL PATHS.
2. LETTERS OUTSIDE TRANSISTOR AND DIODE BLOCKS INDICATE ELEMENT. NUMBERS ON TRANSFORMERS INDICATE TERMINAL NUMBERS.
3. THE INPUT AT P1-2, 5 AND P2-2, 4, 7, 8, 9, 10, AND 20 ARE GATE CONTROL SIGNALS. THE APPLICATIONS OF THESE ARE INDICATED ON THIS DIAGRAM BY →
4. SEE FIGURE 5-2 FOR A DETAILED SCHEMATIC OF BALANCED MODULATOR.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE SPECIFIED.
6. REF. DESIG. PREFIX A2A1 AND APPROPRIATE BOARD NUMBER.
7. VARIATIONS EXIST FOR THE COMPONENTS LISTED BELOW DUE TO EQUIPMENT DESIGN CHANGES. USE THE EXISTING COMPONENT TYPE FOR REPLACEMENT PURPOSES.

COMPONENT	CURRENT MODEL	EARLIER MODELS
DIODE A4CR13	IN3064	IN270

Figure 4-59. Mode Selector Electronic Assembly, Servicing Block Diagram



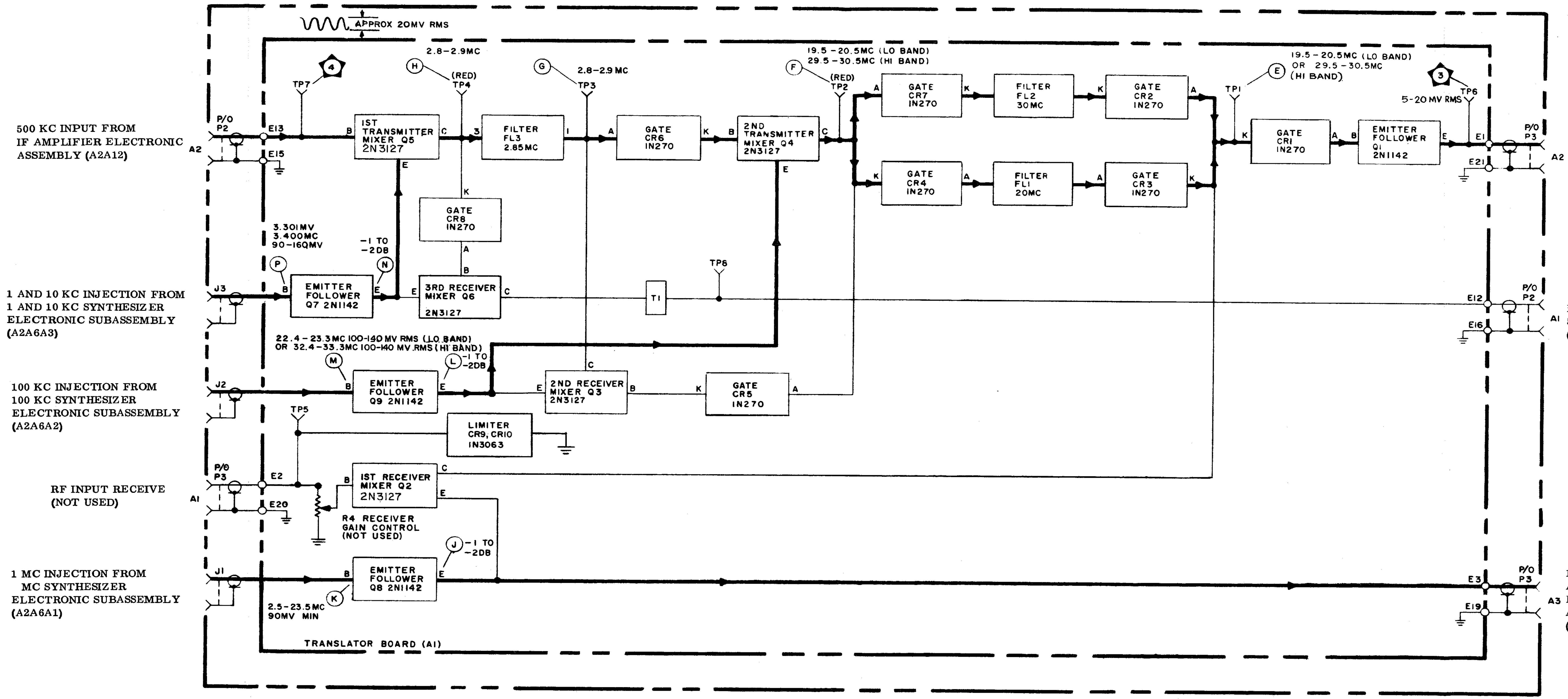
CAUTION

WHEN MAKING RESISTANCE CHECKS AT SEMI-CONDUCTOR DEVICES, USE ONLY THE HIGHER SCALES OF THE MULTI-METER SO AS TO AVOID UNINTENTIONAL DAMAGE TO THE SEMI-CONDUCTOR DEVICE DUE TO THE METERS INTERNAL VOLTAGE.

NOTES:

1. HEAVY LINES INDICATE MAIN SIGNAL PATHS; LIGHT LINES INDICATE AUXILIARY OR SECONDARY SIGNAL PATHS.
2. LETTERS OUTSIDE TRANSISTOR AND DIODE BLOCKS INDICATE ELEMENT.
3. AM MODE, CARRIER, WITH MODULATION.
4. VOLTAGE AT THIS POINT (TP3) IS A FUNCTION OF THE APC/PPC CIRCUIT IN THE ASSOCIATED RF POWER AMPLIFIER (SUCH AS AM-3007/URT OR AM-3924/URT). WHEN THE EXTERNAL PPC CIRCUIT IS ENABLED, POSITIVE VOLTAGES OF 5 VDC ± 5 VDC WILL APPEAR AT TP3.
5. VOLTAGE AT THIS POINT (TP4) IS A FUNCTION OF APC/PPC CIRCUIT IN THE ASSOCIATED RF POWER AMPLIFIER. WHEN THE EXTERNAL APC IS ENABLED, POSITIVE VOLTAGES OF APPROXIMATELY 5 VDC WILL APPEAR AT TP4.
6. WAVEFORMS RECORDED USING OSCILLOSCOPE AN/USM-117.
7. ALL VOLTAGES DC UNLESS OTHERWISE SPECIFIED.
8. REF. DESIG PREFIX A2A12 AND BOARD NUMBER, IF APPLICABLE.
9. GAIN SUBJECT TO CHANGE ACCORDING TO SETTING OF GAIN ADJ. R15.

Figure 4-60. IF. Amplifier Electronic Assembly, Servicing Block Diagram



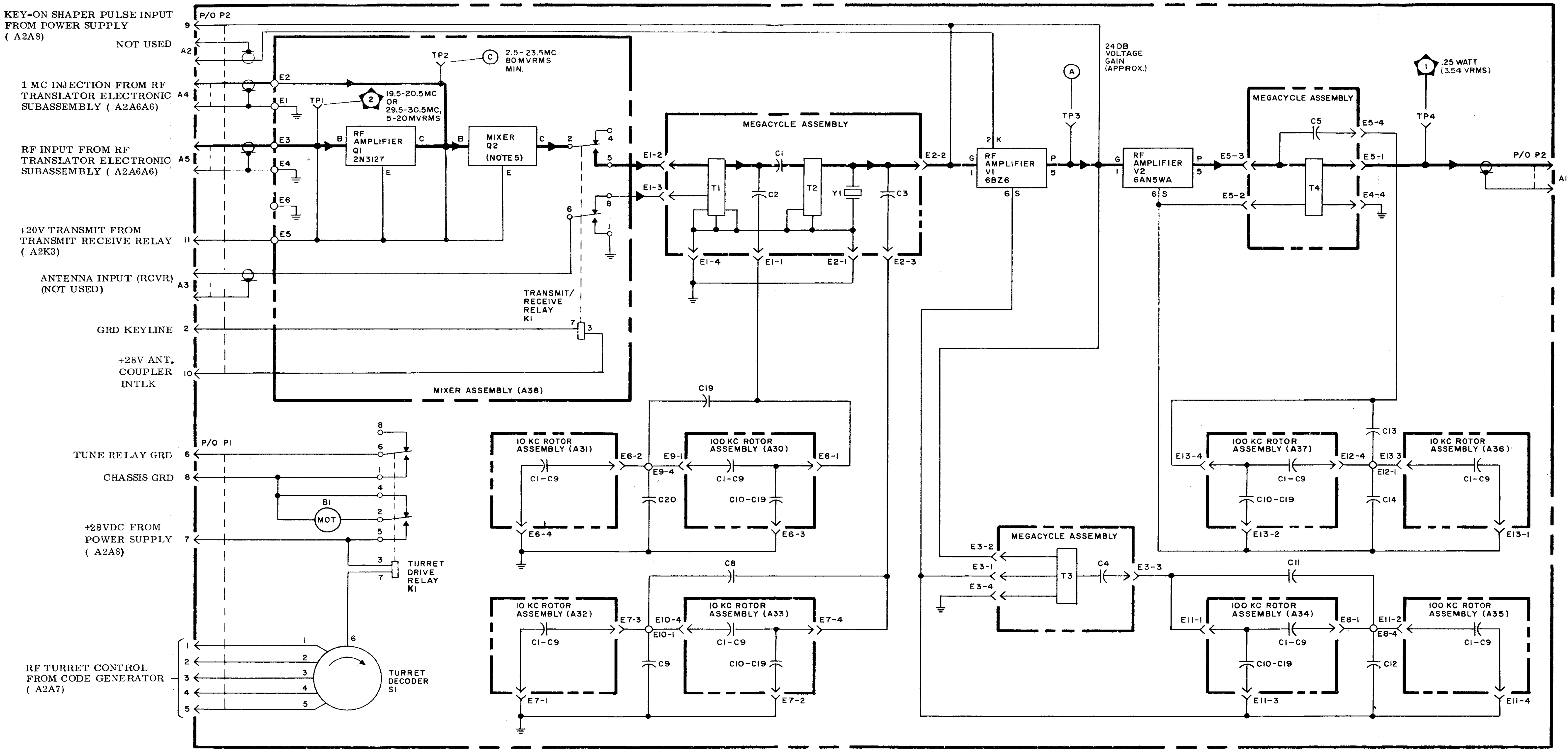
CAUTION

WHEN MAKING RESISTANCE CHECKS AT SEMI-CONDUCTOR DEVICES, USE ONLY THE HIGHER SCALES OF THE MULTIMETER SO AS TO AVOID UNINTENTIONAL DAMAGE TO THE SEMI-CONDUCTOR DEVICE DUE TO THE METERS INTERNAL VOLTAGE.

NOTES:

1. HEAVY LINES INDICATE MAIN SIGNAL PATHS; LIGHT LINES INDICATE AUXILIARY OR SECONDARY SIGNAL PATHS.
2. LETTERS OUTSIDE TRANSISTOR AND DIODE BLOCKS INDICATE ELEMENTS.
3. REF. DESIG. PREFIX A2A6A6 AND BOARD NUMBER, IF APPLICABLE.

Figure 4-61. RF Translator Electronic Subassembly, Servicing Block Diagram



CAUTION

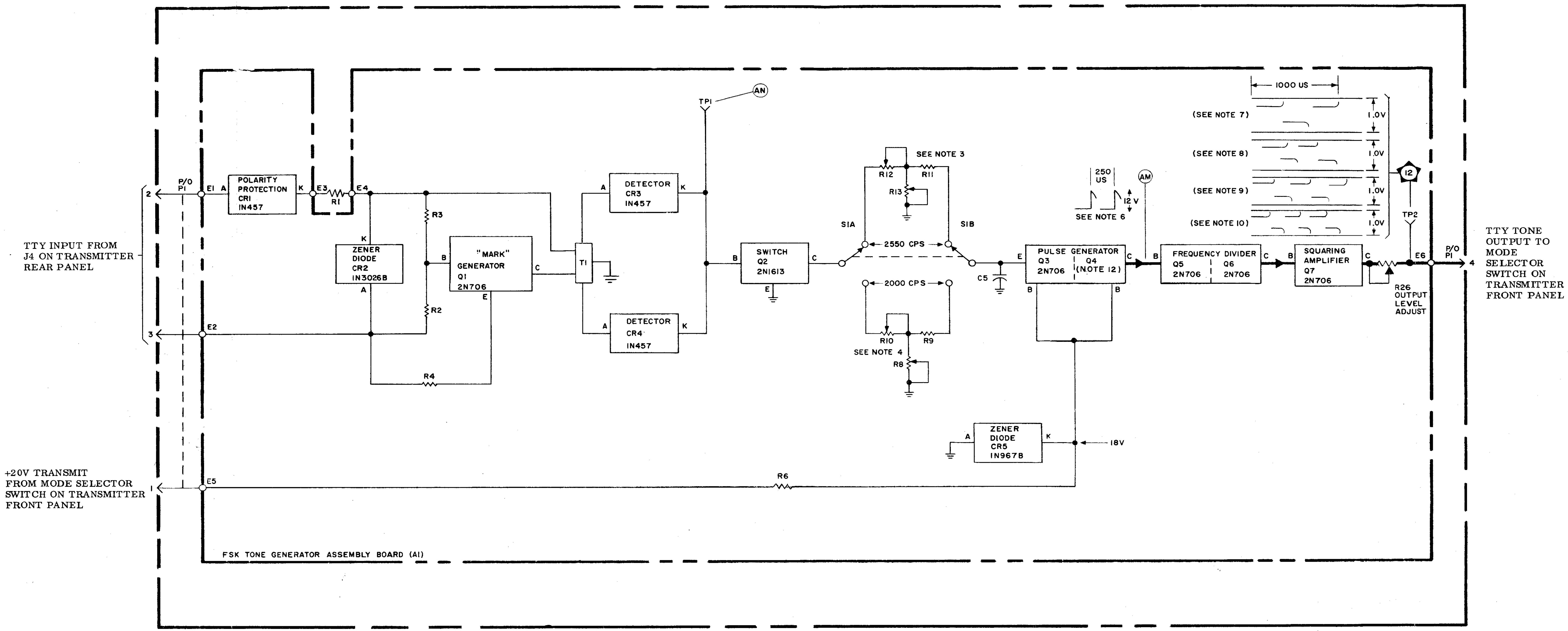
WHEN MAKING RESISTANCE CHECKS AT SEMI-CONDUCTOR DEVICES, USE ONLY THE HIGHER SCALES OF THE MULTI-METER SO AS TO AVOID UNINTENTIONAL DAMAGE TO THE SEMI-CONDUCTOR DEVICE DUE TO THE METERS INTERNAL VOLTAGE.

NOTES:

1. HEAVY LINES INDICATE MAIN SIGNAL PATHS; LIGHT LINES INDICATE AUXILIARY OR SECONDARY SIGNAL PATHS.
2. LETTERS OUTSIDE TRANSISTOR AND TUBE BLOCKS INDICATE ELEMENT.
3. ALL VOLTAGES ARE DC UNLESS OTHERWISE SPECIFIED.
4. REF. DESIG. PREFIX A2A4 AND APPROPRIATE BOARD NUMBER, IF APPLICABLE.
5. VARIATIONS EXIST FOR THE COMPONENTS LISTED BELOW DUE TO EQUIPMENT DESIGN CHANGES. USE EXISTING COMPONENT TYPES FOR REPLACEMENT PURPOSES.

COMPONENT	CURRENT MODEL	EARLIER MODELS
TRANSISTOR A38Q2	MOTOROLA SM 2437 OR TEXAS INSTRUMENTS GM-1151	2N1142

Figure 4-62. RF Amplifier Electronic Assembly, Servicing Block Diagram



NOTES:

1. HEAVY LINES INDICATE MAIN SIGNAL PATHS.
2. LETTERS OUTSIDE OF TRANSISTOR AND DIODE BLOCKS INDICATE ELEMENTS.
3. R-12 ADJUSTED FOR 2550 CPS CENTER FREQ."MARK" (2975 CPS).
   R-13 ADJUSTED FOR 2550 CPS CENTER FREQ."SPACE" (2125 CPS).
4. R-10 ADJUSTED FOR 2000 CPS CENTER FREQ."MARK" (2425 CPS).
   R-8 ADJUSTED FOR 2000 CPS CENTER FREQ."SPACE" (1575 CPS).
5. WAVEFORMS RECORDED ON OSCILLOSCOPE AN/USM-117.
6. COLLECTOR OF Q4 TTY FUNCTION: SPACE OSCILLOSCOPE SETTING: 0.5 V/CM X 10, 100 USEC/CM.

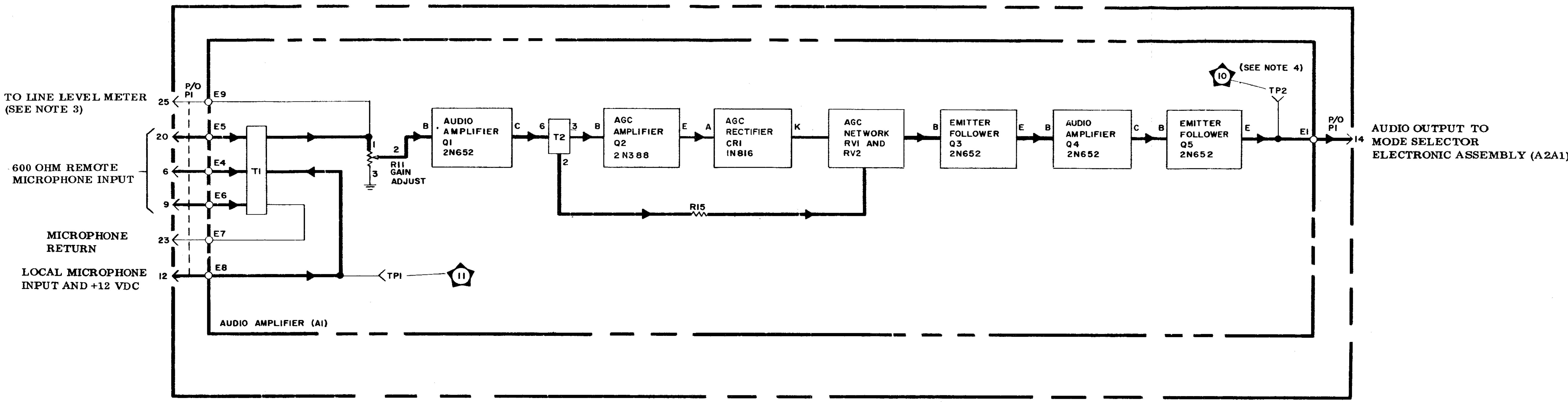
   NOTES 7, 8, 9, 10 APPLY TO WAVEFORM AT TP2. OSCILLOSCOPE SETTING: 0.5V/CM X 10, 100 USEC/CM.
7. FREQ.- 1575 CPS, FUNCTION - SPACE, CENTER FREQ.- 2000 CPS.
8. FREQ.- 2125 CPS, FUNCTION - SPACE, CENTER FREQ.- 2550 CPS.
9. FREQ.- 2425 CPS, FUNCTION - MARK, CENTER FREQ.- 2000 CPS.
10. FREQ.- 2975 CPS, FUNCTION - MARK, CENTER FREQ.- 2550 CPS.
11. REF. DESIG. PREFIX A2A9 AND BOARD NUMBER, IF APPLICABLE.
12. VARIATIONS EXIST FOR THE COMPONENTS LISTED BELOW DUE TO EQUIPMENT DESIGN CHANGES. CURRENT MODEL COMPONENTS MAY BE USED FOR REPLACEMENT PURPOSES.

COMPONENT	CURRENT MODEL	EARLIER MODELS
TRANSISTOR Q4	2N1131S	2N1131 (SELECTED)

CAUTION

WHEN MAKING RESISTANCE CHECKS AT SEMI-CONDUCTOR DEVICES, USE ONLY THE HIGHER SCALES OF THE MULTIMETER SO AS TO AVOID UNINTENTIONAL DAMAGE TO THE SEMI-CONDUCTOR DEVICE DUE TO THE METERS INTERNAL VOLTAGE.

Figure 4-63. FSK Tone Generator Electronic Assembly, Servicing Block Diagram



CAUTION

WHEN MAKING RESISTANCE CHECKS AT SEMI-CONDUCTOR DEVICES, USE ONLY THE HIGHER SCALES OF THE MULTI-METER SO AS TO AVOID UNINTENTIONAL DAMAGE TO THE SEMI-CONDUCTOR DEVICE DUE TO THE METERS INTERNAL VOLTAGE.

NOTES:

1. HEAVY LINES INDICATE MAIN SIGNAL PATHS; LIGHT LINES INDICATE AUXILIARY OR SECONDARY SIGNAL PATHS.

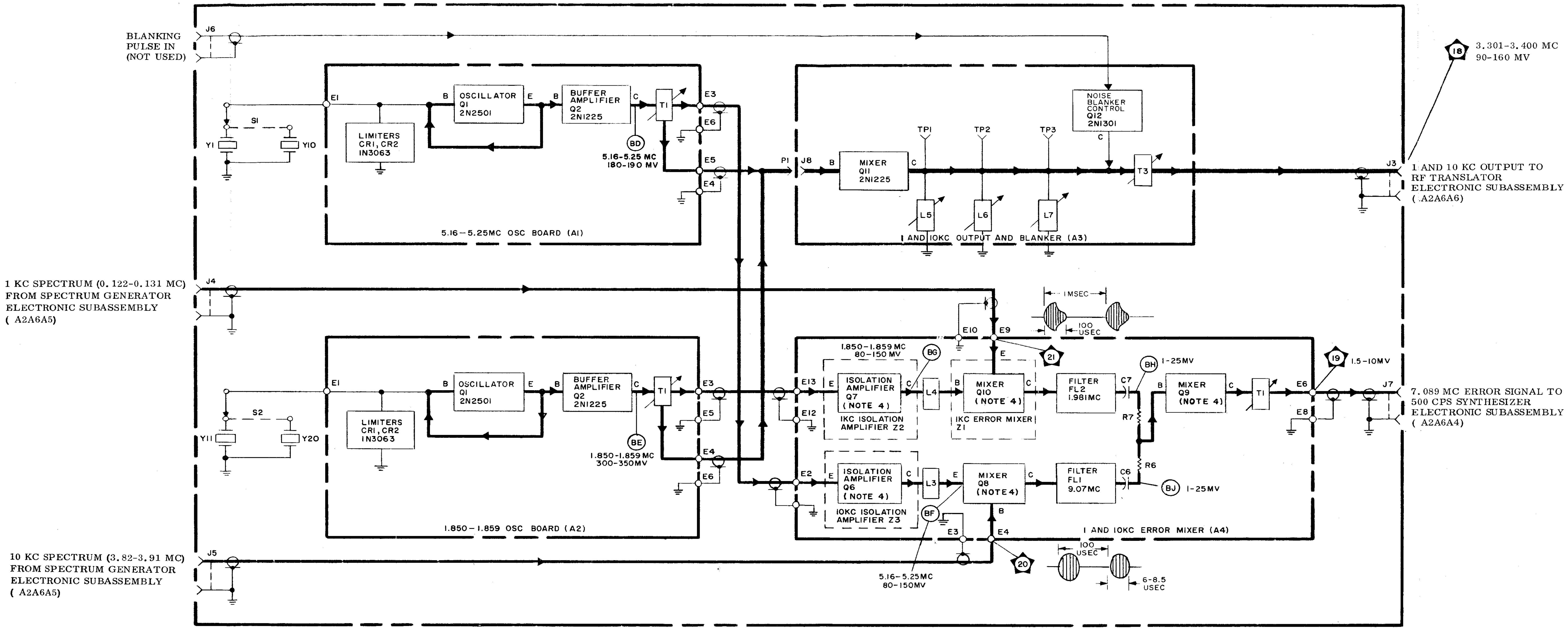
2. LETTERS OUTSIDE TRANSISTOR AND DIODE BLOCKS INDICATE ELEMENT. NUMBERS ON TRANSFORMERS INDICATE TERMINAL NUMBERS.

3. DURING LSB OPERATION THE AUDIO LEVEL AT P1-25 IS OBSERVED ON THE LSB LINE LEVEL METER (M1). DURING USB OPERATION THE AUDIO LEVEL AT P1-25 IS OBSERVED ON THE USB LINE LEVEL METER (M2).

4. NOMINAL OUTPUT 100MV RMS - SINGLE TONE 150MV INPUT AT PINS 20 AND 9 OF CONNECTOR P1.

5. REF. DESIG. PREFIX A2A2 AND A2A3.

Figure 4-64. Audio Amplifier Electronic Assembly, Servicing Block Diagram



NOTES:

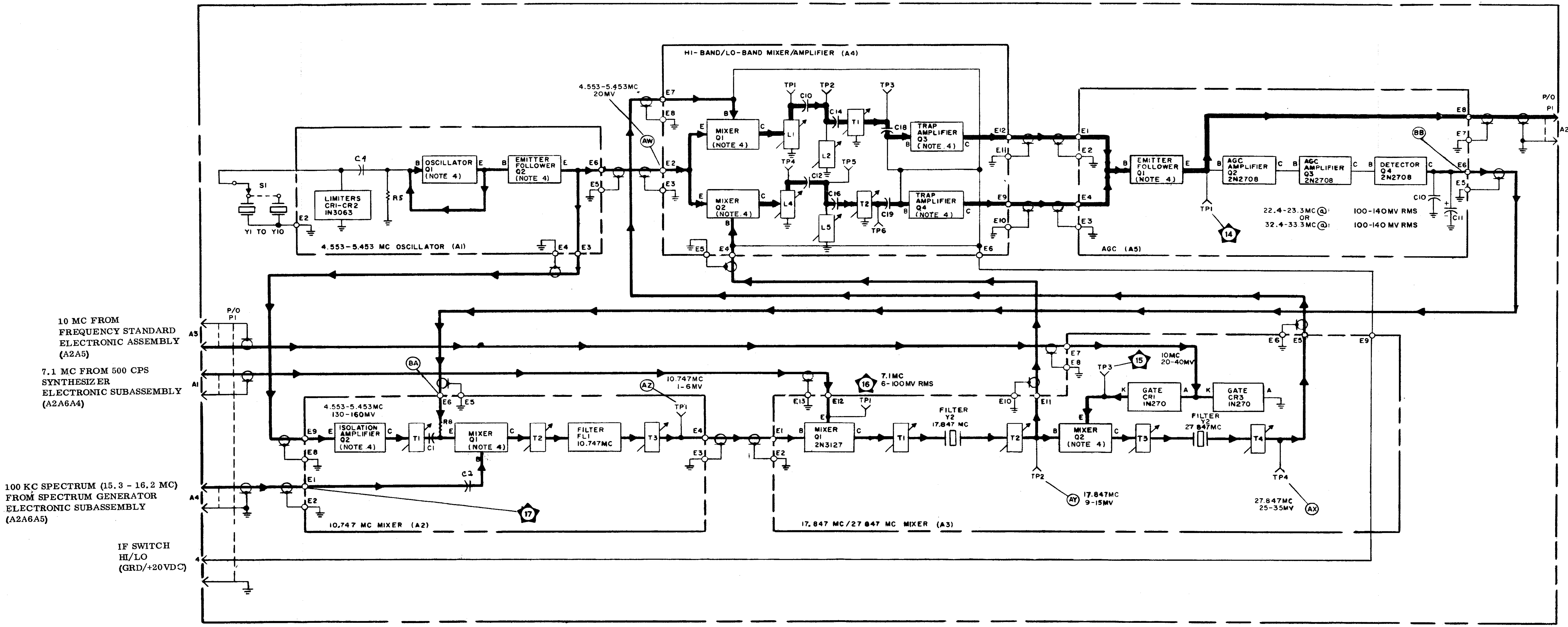
1. HEAVY LINES INDICATE MAIN SIGNAL PATHS; LIGHT LINES INDICATE AUXILIARY OR SECONDARY SIGNAL PATHS.
2. LETTERS OUTSIDE TRANSISTOR AND DIODE BLOCKS INDICATE ELEMENTS. NUMBERS ON TRANSFORMERS INDICATE TERMINAL NUMBERS.
3. REF. DESIG. PREFIX A2A6A3 AND APPROPRIATE BOARD NUMBER.
4. VARIATIONS EXIST FOR THE COMPONENTS LISTED BELOW DUE TO EQUIPMENT DESIGN CHANGES. USE EXISTING COMPONENT TYPES FOR REPLACEMENT PURPOSES.

COMPONENT	CURRENT MODEL	EARLIER MODELS
TRANSISTOR A4Q8	2N3127	EARLIER MODELS USED 2N700, UNMARKED BUT SELECTED FOR LOW GAIN; LATER MODELS USED 2N700 MARKED WITH BLUE DOT; STILL LATER MODELS USED SM2059.
TRANSISTOR A4Q9	2N3127	2N700
TRANSISTOR A4Z1Q10	2N3127	2N700
TRANSISTOR A4Z2Q7	2N3127	2N700
TRANSISTOR A4Z3Q6	2N3127	2N700

CAUTION

WHEN MAKING RESISTANCE CHECKS AT SEMI-CONDUCTOR DEVICES, USE ONLY THE HIGHER SCALES OF THE MULTIMETER SO AS TO AVOID UNINTENTIONAL DAMAGE TO THE SEMI-CONDUCTOR DEVICE DUE TO THE METERS INTERNAL VOLTAGE.

Figure 4-65. 1 and 10 KC Synthesizer Electronic Subassembly, Servicing Block Diagram



CAUTION

WHEN MAKING RESISTANCE CHECKS AT SEMI-CONDUCTOR DEVICES, USE ONLY THE HIGHER SCALES OF THE MULTI-METER SO AS TO AVOID UNINTENTIONAL DAMAGE TO THE SEMI-CONDUCTOR DEVICE DUE TO THE METERS INTERNAL VOLTAGE.

NOTES:

1. HEAVY LINES INDICATE MAIN SIGNAL PATHS; LIGHT LINES INDICATE AUXILIARY OR SECONDARY SIGNAL PATHS.
2. LETTERS OUTSIDE TRANSISTOR AND DIODE BLOCK INDICATE ELEMENTS.
3. REF. DESIG. PREFIX A2A6A2 AND APPROPRIATE BOARD NUMBER, IF APPLICABLE.
4. VARIATIONS EXIST FOR THE COMPONENTS LISTED BELOW DUE TO EQUIPMENT DESIGN CHANGES. USE EXISTING COMPONENT TYPES FOR REPLACEMENT PURPOSES.

COMPONENT	CURRENT MODEL	EARLIER MODELS
TRANSISTOR A1Q1	2N2222	2N2501
TRANSISTOR A1Q2	2N2222	2N2501
TRANSISTOR A2Q1	2N3127	2N700
TRANSISTOR A2Q2	2N3127	2N700
TRANSISTOR A3Q2	2N3127	2N700
TRANSISTOR A4Q1	2N3127	2N700
TRANSISTOR A4Q2	2N3127	2N700
TRANSISTOR A4Q3	2N3127	2N700
TRANSISTOR A4Q4	2N3127	2N700
TRANSISTOR A5Q1	2N3127	2N700

Figure 4-66. 100 KC Synthesizer Electronic Subassembly, Servicing Block Diagram

NOTES:

1. HEAVY LINES INDICATE MAIN SIGNAL PATHS; LIGHT LINES INDICATE AUXILIARY OR SECONDARY SIGNAL PATHS.
2. LETTERS OUTSIDE TRANSISTOR AND DIODE BLOCKS INDICATE ELEMENTS.
3. WAVEFORMS RECORDED USING OSCILLOSCOPE AN/USM-117.
4. REF. DESIG. PREFIX A2A6A1 AND APPROPRIATE BOARD NUMBER.
5. VARIATIONS EXIST FOR THE COMPONENTS LISTED BELOW DUE TO EQUIPMENT DESIGN CHANGES. USE CURRENT COMPONENT TYPES FOR REPLACEMENT PURPOSES.

COMPONENT	CURRENT MODEL	EARLIER MODELS
TRANSISTOR A3Q5	2N3127	2N700

CAUTION

WHEN MAKING RESISTANCE CHECKS AT SEMI-CONDUCTOR DEVICES, USE ONLY THE HIGHER SCALES OF THE MULTI-METER SO AS TO AVOID UNINTENTIONAL DAMAGE TO THE SEMI-CONDUCTOR DEVICE DUE TO THE METERS INTERNAL VOLTAGE.

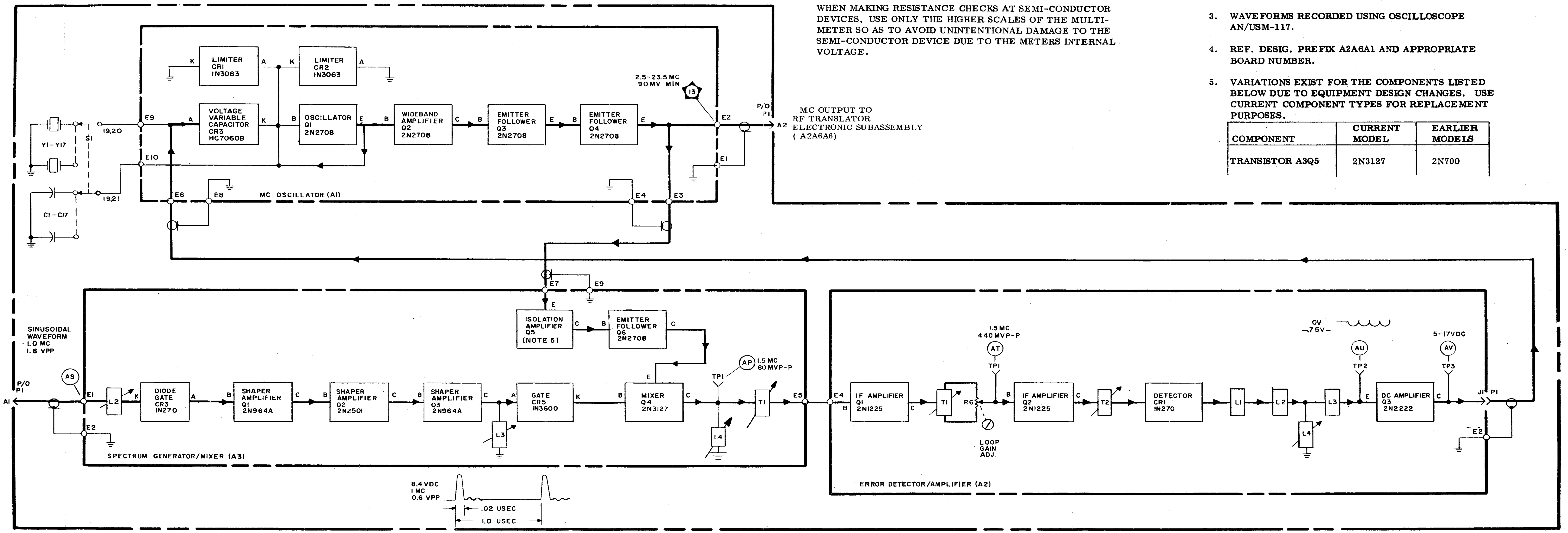
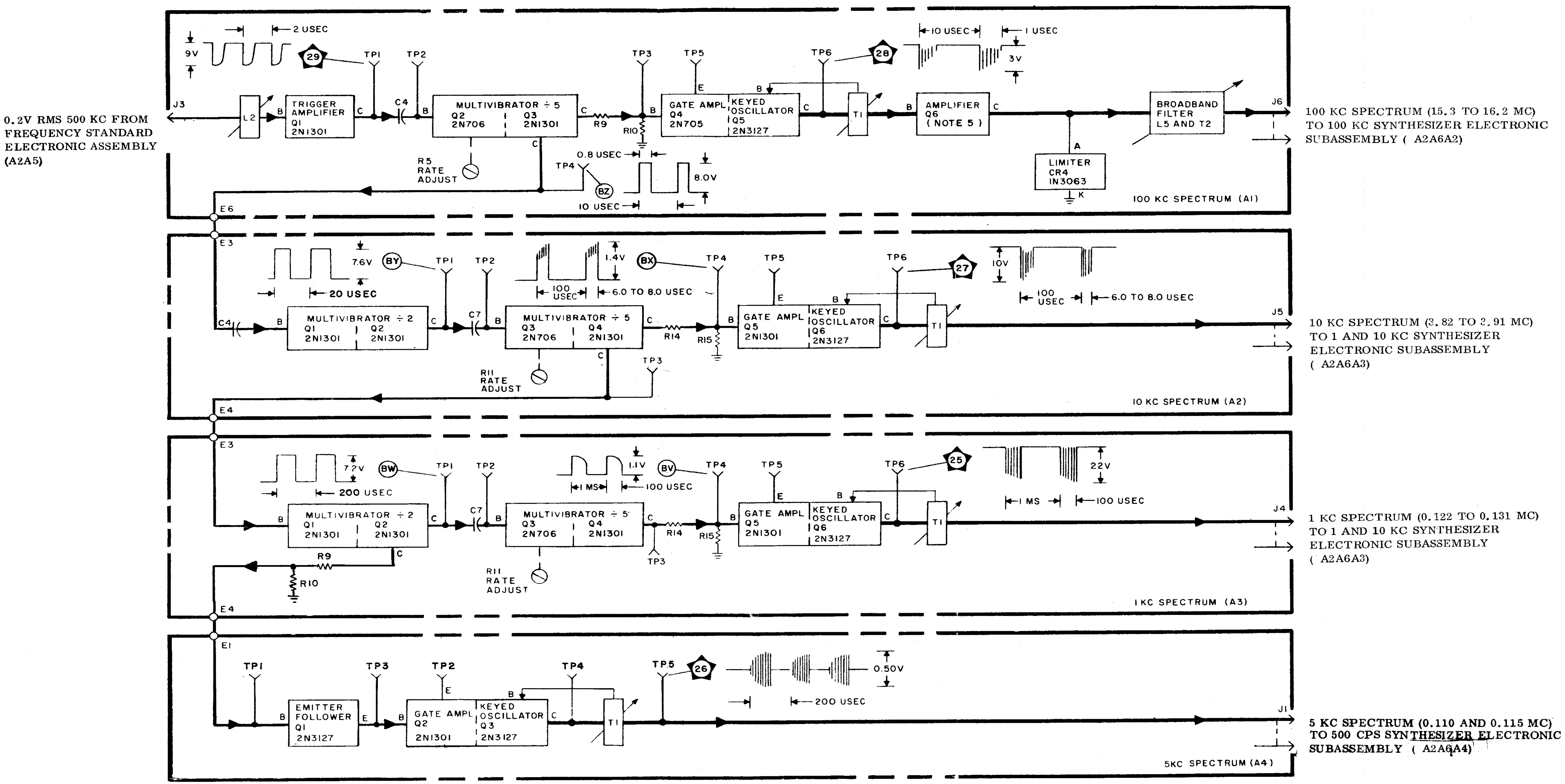


Figure 4-67. MC Synthesizer Electronic Subassembly, Servicing Block Diagram



CAUTION

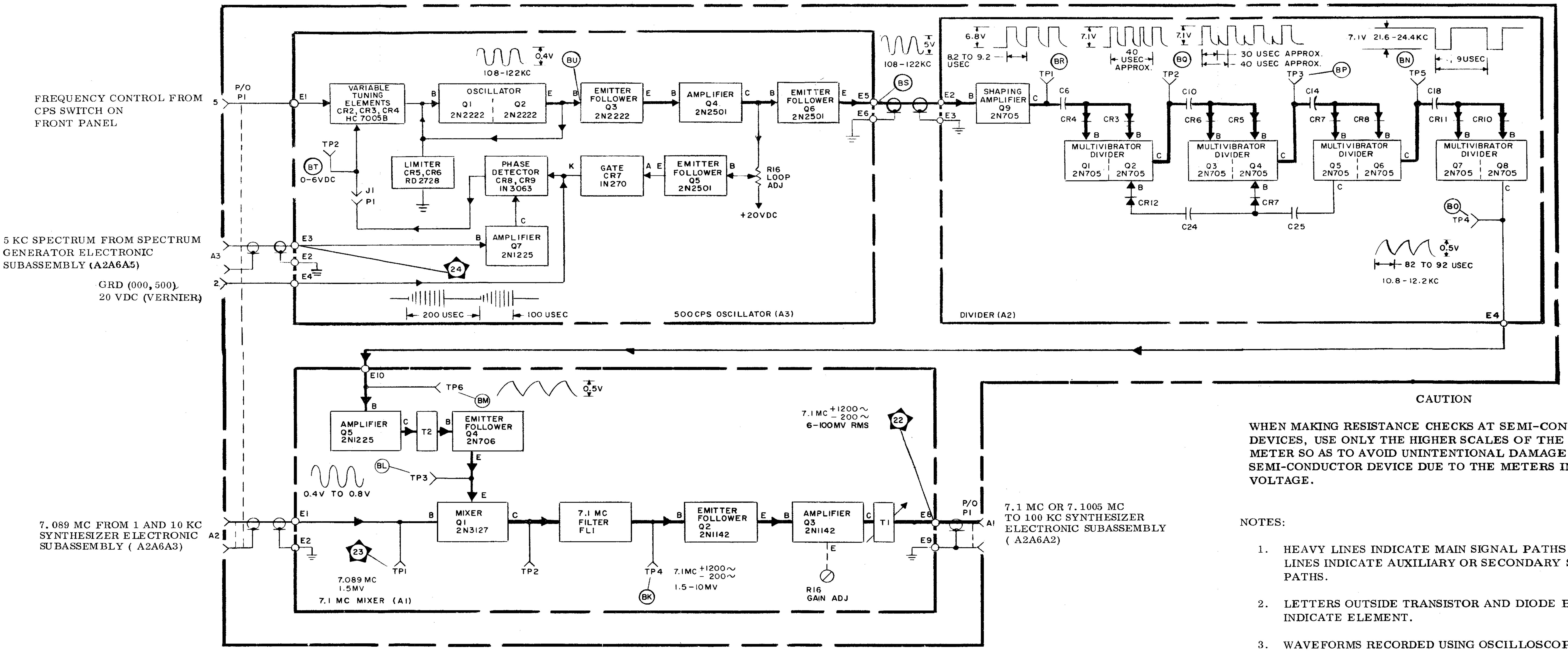
WHEN MAKING RESISTANCE CHECKS AT SEMI-CONDUCTOR DEVICES, USE ONLY THE HIGHER SCALES OF THE MULTI-METER SO AS TO AVOID UNINTENTIONAL DAMAGE TO THE SEMI-CONDUCTOR DEVICE DUE TO THE METERS INTERNAL VOLTAGE.

NOTES:

1. HEAVY LINES INDICATE MAIN SIGNAL PATHS; LIGHT LINES INDICATE AUXILIARY OR SECONDARY SIGNAL PATHS.
2. LETTERS OUTSIDE TRANSISTOR AND DIODE BLOCK INDICATE ELEMENTS.
3. WAVEFORMS RECORDED USING OSCILLOSCOPE AN/USM-117.
4. REF. DESIG. PREFIX A2A6A5 AND APPROPRIATE BOARD NUMBER.
5. VARIATIONS EXIST FOR THE COMPONENTS LISTED BELOW DUE TO EQUIPMENT DESIGN CHANGES. CURRENT MODEL COMPONENTS MAY BE USED FOR REPLACEMENT PURPOSES.

COMPONENT	CURRENT MODEL	EARLIER MODELS
TRANSISTOR A1Q6	2N3127	2N700

Figure 4-68. Spectrum Generator Electronic Subassembly, Servicing Block Diagram



CAUTION

WHEN MAKING RESISTANCE CHECKS AT SEMI-CONDUCTOR DEVICES, USE ONLY THE HIGHER SCALES OF THE MULTIMETER SO AS TO AVOID UNINTENTIONAL DAMAGE TO THE SEMI-CONDUCTOR DEVICE DUE TO THE METERS INTERNAL VOLTAGE.

NOTES:

1. HEAVY LINES INDICATE MAIN SIGNAL PATHS; LIGHT LINES INDICATE AUXILIARY OR SECONDARY SIGNAL PATHS.
2. LETTERS OUTSIDE TRANSISTOR AND DIODE BLOCKS INDICATE ELEMENT.
3. WAVEFORMS RECORDED USING OSCILLOSCOPE AN/USM-117.
4. REF. DESIG. PREFIX A2A6A4 AND APPROPRIATE BOARD NUMBER.

Figure 4-69. 500 CPS Synthesizer Electronic Subassembly, Servicing Block Diagram

SECTION 5

MAINTENANCE

5-1. FAILURE REPORTS, AND PERFORMANCE AND OPERATIONAL REPORTS.

NOTE

The Bureau of Ships no longer requires the submission of failure reports for all equipments. Failure Reports and Performance and Operational Reports are to be accomplished for designated equipments (refer to Electronics Installation and Maintenance Book NAVSHIPS 900,000) only to extent required by existing directives. All failures shall be reported for those equipments requiring the use of Failure Reports.

5-2. PREVENTIVE MAINTENANCE.

5-3. TUNING AND ADJUSTMENT.

5-4. 20-VOLT REGULATOR CIRCUIT ADJUSTMENT. Power Supply Electronic Assembly A8 (figure 5-19) provides a regulated 20-vdc output that must be adjusted if the voltage varies 0.1 volt above or below 20 vdc.

5-5. Test Equipment. Multimeter AN/PSM-4 (AN/PSM-4) is required to perform this adjustment.

5-6. Control Settings. Prior to adjusting the 20 vdc regulator circuit, set the T-827/URT front panel control as follows:

a. Mode Selector switch: STD BY.

b. Operating frequency: 02.000 mc.

c. LOCAL/REMOTE switch: LOCAL.

d. CPS switch: 000.

5-7. Test Set-up. Connect the equipment as follows:

a. Loosen the front panel screws on the Radio Transmitter T-827/URT (T-827/URT) and slide the chassis from the case. Tilt the chassis 90 degrees to expose the bottom.

b. Pull interlock switch up and back to defeat the chassis interlock.

c. Set associated rf amplifier (such as AM-3007/URT or AM-3924/URT) PRIMARY POWER switch at ON.

d. Set AN/PSM-4 at range suitable to indicate 20 $\pm$ .1 vdc.

NOTE

Multimeter AN/PSM-4 should be calibrated with a known voltage source of 20 $\pm$ .1 vdc for this procedure.

e. Connect the positive lead of the AN/PSM-4 to TP 31 on bottom of T-827/URT chassis (figure 5-19).

f. Connect the negative lead to chassis ground.

5-8. Instructions. To adjust the 20 vdc regulator circuit, proceed as follows:

a. Set the T-827/URT Mode Selector switch at AM.

b. Key the T-827/URT. Adjust potentiometer R10 (figure 5-22) for indication of 20 $\pm$ 0.1 vdc on the AN/PSM-4.

c. Unkey the T-827/URT. Set the Mode Selector switch at OFF.

d. Disconnect the AN/PSM-4. Set the associated rf amplifier PRIMARY POWER switch at OFF.

e. Tilt the chassis back to horizontal, slide it into the case, and tighten the front panel screws.

5-9. AUDIO GAIN ADJUSTMENT.

5-10. An audio level adjustment must be made to the Audio Amplifier Electronic Assemblies A2 and A3 (figure 5-17) to provide the proper audio output level to the balanced modulators.

5-11. Test Equipment. The following test equipment is required to adjust the audio gain.

a. Audio Signal Generator, SG-376/U (SG-376/U).

b. Electronic Multimeter, ME-6( )/U (ME-6( )/U).

c. Dummy Load, DA-91( )/U.

5-12. Control Settings. Set the T-827/URT front panel controls as follows:

a. Operating frequency: 29.000 mc

b. USB LINE LEVEL: +10 db

c. LOCAL/REMOTE switch: REMOTE

5-13. Instructions. To adjust the audio gain, proceed as follows:

a. Loosen T-827/URT front-panel screws and slide chassis out from case.

b. Disconnect rf output cable from connector J23 (RF OUT 50Ω) on the rear of the T-827/URT and connect the dummy load DA-91( )/U to J23 in its place. (See figure 5-16.)

c. Set up the SG-376/U for single-tone operation, and connect it to connector A1J5 (AUDIO IN 600Ω , USB) on the rear of the T-827/URT. (See figure 5-16.) Tune the audio signal generator to 1000 cps, and adjust its output level to 150 mv. (Use the ME-6( )/U (ME-6( )/U) for this purpose.)

d. Apply main power to equipment and set Mode Selector switch to USB.

e. Key the T-827/URT.

f. Connect the ME-6( )/U to TP 10 on the Audio Amplifier Electronic Assembly A2. (See figure 5-17.)

g. Adjust GAIN ADJ potentiometer A2R11 (figure 5-17) until the ME-6( )/U reads 100 mv.

h. Disconnect SG-376/U from connector A1J5 and connect it to connector A1J6 (AUDIO IN 600Ω , LSB) on the rear of the T-827/URT. (See figure 5-16.)

i. Set Mode Selector switch at LSB.

j. Connect the ME-6( )/U to TP 10 on Audio Amplifier Electronic Assembly A3. (See figure 5-17.)

k. Adjust GAIN ADJ potentiometer A3R11 (figure 5-17) until the ME-6( )/U reads 100 mv.

l. Set the Mode Selector switch at OFF. Disconnect the test equipment. Slide the chassis into the case and tighten the front panel screws on the T-827/URT.

m. Reconnect the rf input cable removed in step 5-13 b.

5-14. IF. GAIN ADJUSTMENT.

5-15. The if. gain must be adjusted in the IF Amplifier Electronic Assembly A12 (figure 5-17) in order to provide the proper 500 kc if. output level to the Translator Electronic Subassembly.

5-16. Test Equipment. The following test equipment is required to adjust the if. gain.

a. Audio Signal Generator,SG-376/U.

b. Electronic Multimeter, AN/USM-116.

c. Electronic Multimeter, ME-6( )/U.

d. Dummy Load, DA-91( )/U.

e. Coaxial T-Connector, HP11042A.

5-17. Control Settings. Set the T-827/URT front panel controls as follows:

a. Operating frequency: 26.000 mc

b. LOCAL/REMOTE switch: REMOTE

5-18. Instructions. To adjust the if. gain, proceed as follows:

a. Loosen T-827/URT front panel screws and slide chassis out from case.

b. Disconnect rf output cable from connector J23 (RF OUT 50Ω) on the rear of the T-827/URT. Connect coaxial-T connector to dummy load and connect the dummy load DA-91( )/U to connector J23. Connect the AN/USM-116 to the coaxial-T connector at the dummy load. Set the AN/USM-116 to indicate 10 volts full scale. (See figure 5-16.)

c. Set up the SG-376/U for single-Tone operation, and connect it to connector A1J5 (AUDIO IN 600Ω USB) on the rear of the T-827/URT. (See figure 5-16.) Tune the SG-376/U to 1000 cps and adjust its output level to 150 mv. (Use the ME-6( )/U for this purpose).

d. Apply main power to the equipment and set Mode Selector switch to USB.

e. Key the T-827/URT.

f. Adjust GAIN ADJ potentiometer A12R15 (figure 5-17) until the AN/USM-116 indicates 2.5 volts.

g. Tune the operating frequency of the T-827/URT from 26.00 to 26.900 mc in 100 kc steps by rotating the 100 kc (KCS) control to each setting from 0 to 9. Note the output level on the AN/USM-116 each time the frequency is changed. If an indication falls below 2.5 volts for any frequency or frequencies, repeat step f. for the weakest frequency.

h. Set the Mode Selector switch at OFF. Disconnect the test equipment. Slide the chassis into the case and tighten the front panel screws on the T-827/URT.

i. Reconnect the rf output cable removed in step b. above.

5-19. CARRIER BALANCE ADJUSTMENT.

5-20. Adjustments to USB CARRIER BAL controls (A1R23 and A1C15) and to LSB CARRIER BAL controls (A1R3 and A1C4) in the balanced modulator circuits of Mode Selector Electronic Assembly A1 (figure 5-17) are required in order to provide the proper resistive and reactive balances to secure a high degree of carrier suppression.

5-21. Test Equipment. The following test equipment is required to adjust the carrier balance.

a. Spectrum Analyzer, TS-1379/U (TS-1379/U).

b. Electronic Multimeter, AN/USM-116.

c. Electronic Multimeter, ME-6( )/U.

d. Audio Signal Generator, SG-376/U.

e. Coaxial T-Connector, HP11042A.

5-22. Control Settings. Set the T-827/URT front panel controls as follows:

a. Operating frequency: 02.100 mc

b. LOCAL/REMOTE switch: REMOTE

5-23. Instructions. To adjust the carrier balance, proceed as follows:

a. Loosen front panel screws of T-827/URT and slide chassis out from case.

b. Disconnect the rf output cable from connector J23 (RF OUT 50Ω) on the rear of the T-827/URT. (See figure 5-16.) Connect coaxial T-connector to J23 and reconnect the rf output cable (to coaxial T-connector).

c. Connect the AN/USM-116 to the coaxial T-connector at J23 and set it to read 3 volts full scale.

d. Set up the SG-376/U for single-tone operation and connect it to connector J5 (AUDIO IN 600Ω USB) on the rear of the T-827/URT. (See figure 5-16.) Tune the SG-376/U to 1000 cps and set its output to 150 mv. (Use ME-6( )/U for this purpose).

e. Apply main power to equipment and set Mode Selector switch to USB.

f. Key the T-827/URT, and check the rf output reading on AN/USM-116. The reading should be approximately 1 volt.

g. Disconnect the AN/USM-116 from the coaxial T-connector and connect the TS-1379/U in its place.

h. Tune the TS-1379/U to 02.100 mc.

i. Key the T-827/URT.

j. While observing the presentation on the CRT of the TS-1379/U, alternately adjust the USB CARRIER BAL controls (A1R23 and A1C15 (figure 5-17) until the carrier level is 50 db down from the USB component of the signal.

k. Set Mode Selector switch to LSB and connect SG-376/U to connector A1J6 on rear of T-827/URT.

l. Repeat steps i. and j. above substituting the adjustment of the LSB CARRIER BAL controls A1R3 and A1C4 (figure 5-17) in place of USB CARRIER BAL controls.

m. Set the Mode Selector switch at OFF. Disconnect the test equipment. Slide the chassis into the case and tighten the front panel screws on the T-827/URT.

5-24. AM MODULATION PERCENTAGE ADJUSTMENT AND CARRIER REINSERTION CHECK.

5-25. In Mode Selector Electronic Assembly A1 (figure 5-17), the % MOD potentiometer (A1R101) must be adjusted to establish the proper percentage of modulation of an am. signal, and the settings of CARRIER REINSERTION switch (A1S1) must be checked to determine that carrier reinsertion is at the proper level.

5-26. Test Equipment. The following test equipment is required to perform the am. modulation percentage adjustment and carrier reinsertion check.

a. Spectrum Analyzer, TS-1379/U.

b. Electronic Multimeter, AN/USM-116.

c. Electronic Multimeter, ME-6( )/U.

d. Audio Signal Generator, SG-376/U.

e. Coaxial T-connector, HP11042A.

5-27. Control Settings. Set the T-827/URT front panel controls as follows:

a. Operating frequency: 02.100 mc

b. LOCAL/REMOTE switch: REMOTE

5-28. Instructions. To perform the am. modulation percentage adjustment and the carrier reinsertion check, proceed as follows:

a. Loosen front panel screws of T-827/URT and slide chassis out from case.

b. Disconnect the rf output cable from connector J23 (RF OUT 50Ω) on the rear of the T-827/URT. Connect coaxial T-connector to J23 and reconnect the rf output cable (to coaxial T-connector). (See figure 5-16.)

c. Connect the AN/USM-116 to the coaxial T-connector at J23 and set it to read 3 volts full scale.

d. Set up the SG-376/U for single-tone operation, and connect it to connector A1J5 (AUDIO IN 600Ω USB) on the rear of the T-827/URT. (See figure 5-16.) Tune the SG-376/U to 1000 cps and adjust its output to 150 mv. (Use ME-6( )/U for this purpose.)

e. Apply main power to equipment and set Mode Selector switch to USB.

f. Key the T-827/URT and check that the rf reading on the AN/USM-116 is approximately 1 volt.

g. Disconnect the AN/USM-116 from the coaxial T-connector and connect the TS-1379/U in its place.

h. Tune the TS-1379/U to 02.100 mc.

i. Key T-827/URT and ensure that the CARRIER REINSERTION switch A1S1 (figure 5-17) is set at infinity ∞. Check that carrier level observed in the TS-1379/U is 50 db down from USB component in signal.

j. Set Mode Selector switch to AM.

k. Adjust % MOD potentiometer A1R101 (figure 5-17) until carrier level observed on spectrum and USB component level are equal in amplitude.

l. Set Mode Selector switch at USB and check that carrier disappears.

m. Set CARRIER REINSERTION switch A1S1 (figure 5-17) at 0 and check that carrier reappears with level equal in amplitude to USB component level, ±2 db.

n. Set CARRIER REINSERTION switch at -10 and check that carrier level is 10 db ±2 db down from the USB component level.

o. Set CARRIER REINSERTION switch at -20 and check that carrier level is 20 db ±2 db down from the USB component level of step m.

p. Return CARRIER REINSERTION switch to the ∞ position.

q. Set the Mode Selector switch at OFF. Disconnect the test equipment. Slide the chassis into the case and tighten the front panel screws on the T-827/URT.

r. Reconnect rf output cable removed in step b above.

5-29. 500 CPS LOCK ADJUSTMENT.

5-30. An adjustment to the 500 cps lock ADJ potentiometer A16R3 (figure 5-17) is required in order to establish the proper dc level at which the phase lock portion of the 500 cps oscillator (A2A4A6A3) will operate. The 500 cps oscillator is part of 500 cps Synthesizer Electronic Subassembly A2A6A4.

5-31. Test Equipment. Oscilloscope AN/USM-117 (AN/USM-117) is required to make the 500 cps lock adjustment.

5-32. Control Settings. Set the T-827/URT front panel controls as follows:

a. Mode Selector switch: USB

b. Operating Frequency: 02.100 mc

c. Cps switch: 000

d. LOCAL/REMOTE switch: LOCAL

5-33. Instructions. Perform the 500 cps lock adjustment as follows:

a. Loosen front panel screws on T-827/URT and slide chassis out from case. Check that the interlock switch is up.

b. Apply main power to equipment.

c. Connect probe of AN/USM-117 to test point TP BQ on top of the 500 cps Synthesizer Electronic Subassembly A2A6A4. (See figure 5-17.)

d. Set the AN/USM-117 controls as follows:

(1) sweep speed: 5 usec/cm

(2) vertical deflection: 1 v/cm

(3) trigger: internal.

(4) type input: DC

e. A dc voltage level of 2.3 to 2.6 volts should be present on the AN/USM-117, with no ac voltage waveform component. If not, adjust the 500 cps lock ADJ A16R3 (figure 5-17) located on the top front of the T-827/URT chassis, as follows:

(1) Rotate lock ADJ until an ac wave form appears on the AN/USM-117. Continue to rotate lock ADJ until the frequency of the ac waveform decreases to a point where it snaps into a dc level of 5 to 6 volts; then, continue to adjust until the dc level decreases to 2.5 volts.

(2) Set the front panel cps switch at 500. A dc level of 2.3 to 3.1 volts should be present on the AN/USM-117. If not, alternate the cps switch between 000 and 500, and adjust lock ADJ so that the dc level is 2.3 to 2.6 volts when set at 000 position, and 2.3 to 3.1 volts when set at 500 position.

NOTE

Improper adjustment of the lock ADJ may result unless the reader fully understands the adjustment requirements. Proper adjustment requires that the lock ADJ be adjusted at the point which is midway (2.5 vdc) between the range of approximately

NOTE (Cont)

1 vdc to approximately 5 vdc during which time the waveform is locked. However, locating the locking range can be confusing. It takes 20 turns to rotate the lock ADJ through its full range. At various points through the ADJ range, voltage levels may be encountered which are not related to the desired locking range. It is therefore suggested that the validity of the locking range be verified first by checking that waveform lock-in occurs throughout the entire range of approximately 1 vdc to 5 vdc and that waveform unlock occurs outside the extremes of the range. Only after locking range validity has been established should the midrange (2.5 vdc) adjustment be made.

f. Set Mode Selector switch at OFF. Disconnect test equipment. Slide the chassis into the case and tighten the front panel screws on the T-827/URT.

5-34. SHIPBOARD REPAIR.

5-35. GENERAL REPAIR INSTRUCTIONS.

5-36. The instructions in this portion of the maintenance section provide repair and adjustment procedures for Audio Amplifier Electronic assemblies A2A2 and A2A3, Mode Selector Electronic Assembly A2A1, IF. Amplifier Electronic Assembly A2A12 and FSK Tone Generator Electronic Assembly A2A9. Frequency Standard Electronic Assembly A2A5, Translator/Synthesizer Electronic Assembly A2A6, and RF Amplifier Electronic Assembly A2A4 are not repaired aboard ship. They are considered non-repairable assemblies.

5-37. SHIPBOARD NON-REPAIRABLE ELECTRONIC ASSEMBLIES.

5-38. RF AMPLIFIER ELECTRONIC ASSEMBLY A2A4.

5-39. OPERATIONAL CHECK. Use the following procedure to determine whether RF Amplifier Electronic Assembly A4 (figure 5-17) is operating properly.

5-40. Test Equipment.

a. Electronic Multimeter, AN/USM-116.

b. Dummy Load, DA-91( )/U.

c. Coaxial T-Connector, HP11042A.

5-41. Instructions.

a. Disconnect the rf output cable from connector J23 (RF OUT 50Ω) on the rear of the T-827/URT. Connect coaxial T-connector to dummy load and connect dummy load to J23. Connect the AN/USM-116 to the coaxial T-connector at the dummy load.(See figure 5-16.)

b. Apply main power to equipment and set Mode Selector switch on T-827/URT to AM.

c. Adjust operating frequency to each of the frequencies listed below and by T-827/URT.

5-42. Check that the indication on the AN/USM-116 is not less than 1.85 volts (67.5 mw) for any frequency.

In mc

2.010 and 2.990
3.010 and 3.990
4.010 and 4.990
5.010 and 5.990
6.010 and 6.990
7.010 and 7.990
8.010 and 8.990
9.010 and 9.990
10.910 and 10.990
11.010 and 11.990
12.010 and 12.990
13.010 and 13.990
14.010 and 14.990
15.010 and 15.990
16.010 and 16.990
17.010 and 17.990
18.010 and 18.990
19.010 and 19.990
20.010 and 20.990
21.010 and 21.990
22.010 and 22.990
23.010 and 23.990
24.010 and 24.990
25.010 and 25.990
26.010 and 26.990
27.010 and 27.990
28.010 and 28.990
29.010 and 29.990

a. Set Mode Selector switch at OFF.

b. If it is determined that the RF Amplifier Electronic Assembly is defective, proceed to paragraph 5-43, Replacement, below.

5-43. Replacement.

5-44. Aboard ship, replace a defective RF Amplifier Electronic Assembly A4 with a spare assembly in accordance with the following procedures. (See figures 5-17 and 5-18 for component locations.)

a. Check that T-827/URT Mode Selector switch is set at OFF.

b. Set the front panel KCS controls for 111.

c. Loosen the front panel screws on the T-827/URT and slide the chassis from the case.

d. The RF Amplifier Electronic Assembly is located in the front left corner of the T-827/URT chassis. Loosen the four fastening screws at the corners of the electronic assembly and lift it from the chassis.

e. The coupler slots on the chassis (figure 5-18) should be perpendicular to the front panel, with the 100 kc (KCS) and the 10 kc (KCS) controls on the front panel in the "1" position. If the slots are not aligned properly, refer to steps j. (5) and (7) below for the proper alignment procedures.

f. On the spare electronic assembly, position both shaft couplers on the bottom of the electronic assembly to the "1" position. (Coupler index pins pointing toward the front of the chassis when the module is in its normal installed position.)

g. Set the spare electronic assembly in position in the T-827/URT chassis (electronic assembly connectors plug into J10 and J11 on chassis).

h. Press lightly on top of the electronic assembly and rotate both the 100 kc (KCS) and the 10 kc (KCS) controls on the front panel to 9, and back to 0.

i. When it has been determined that the couplers on the bottom of the electronic assembly are fully engaged with the chassis couplers, tighten the four fastening screws at the corners of the electronic assembly.

j. Check for optimum shaft coupler adjustment as follows:

(1) Perform partial operational check specified in paragraph 5-45.

(2) With the T-827/URT keyed, rock the 100 kc (KCS) control back and forth through the normal detent position for "1". The rf output, as indicated on the AN/USM-116 should drop off on each side as the control is rocked away from the normal detent position.

(3) If, as the control is rocked back and forth, the rf output drops off on each side at points equidistant from the detent position, the shaft coupler adjustment is correct.

(4) If the indication on the AN/USM-116 drops off sooner on one side of the detent position than the other, release the control and turn off the T-827/URT.

(5) Tilt the T-827/URT chassis up 90 degrees to expose the bottom. Determine, by observing the action of the chaindrive, which way the coupler shaft should be rotated to correct the error.

(6) Loosen the setscrew on the hub clamp of the coupler gear nearest the front panel on the sprocket assembly directly underneath the RF Amplifier Electronic Assembly (figure 5-19).

(7) Insert a screwdriver into the coupler adjustment (slot at the end of the coupler shaft).

(8) Repeat steps (2) through (7) above, checking the operation of the 10 kc (KCS) control and making adjustments as necessary to the rear coupler of the sprocket assembly under the RF Amplifier Electronic Assembly.

k. Turn off the T-827/URT. Disconnect the test equipment and reconnect rf output cable from associated rf amplifier.

5-45. Partial Operational Check.

5-46. The following partial operational check is for use with paragraph 5-44j.

5-47. Test Equipment.

a. Electronic Multimeter AN/USM-116.

b. Dummy load, DA-91( )/U.

c. Coaxial T-Connector, HP 11042A.

5-48. Instructions.

a. Disconnect the rf output cable from connector J23 (RF OUT 50Ω) on the rear of the T-827/URT. Connect coaxial T-connector to dummy load and connect dummy load to J23. Connect the AN/USM-116 to the coaxial T-connector at the dummy load. (See figure 5-16.)

b. Set the operating frequency to 2.111 mc and set the Mode Selector switch at AM. Apply main power to equipment.

c. Key T-827/URT.

d. Check that the indication on the AN/USM-116 is not less than 1.85 volts.

5-49. FREQUENCY STANDARD ELECTRONIC ASSEMBLY A2A5.

5-50. OPERATIONAL CHECKS. Use either of the following procedures (method A or method B) to determine whether Frequency Standard Electronic Assembly A2A5 is operating properly and to make any required adjustments.

5-51. Method A is a check for the frequency accuracy of the 5 mc oscillator circuit; method B provides a more extensive check of Frequency Standard Electronic Assembly A2A5 and is therefore the preferred method.

5-52. Method A.

5-53. Test Equipment. Frequency Standard AN/URQ-9 (AN/URQ-9) is required to perform this method of adjustment.

5-54. Instructions.

a. Loosen front panel screws on T-827/URT and slide chassis out from case.

b. Connect the 5 MC OUTPUT connector on AN/URQ-9 to connector J25 (EXT 5 MC IN) on the rear of the T-827/URT. (See figure 5-16.)

c. Defeat interlock switch on T-827/URT by pushing back and pulling up.

d. Apply main power to equipment and set Mode Selector switch to STY BY. Allow a four-hour warm-up period for the T-827/URT and test equipment.

e. Set the EXT/INT/COMP switch A5S1 (figure 5-17) on top of the Frequency Standard Electronic Assembly to COMP.

f. Observe indicator lamp A5DS1 (figure 5-17) on top of the Frequency Standard Electronic Assembly A5. When the 5 mc oscillator circuit is properly adjusted, A5DS1 will not flicker but will change in brilliance at a rate no greater than once every 20 seconds. When the circuit is improperly adjusted, A5DS1 will flicker at a rate equal to the rate of error. The higher the frequency of the error the more difficult (the error detection by A5DS1 will become, due to the inability of A5DS1 to follow rapid fluctuation of the higher frequencies). If the circuit is properly adjusted, proceed to step j. If the circuit is improperly adjusted, proceed to step g.

g. Remove the dust cover from the Frequency Standard Electronic Assembly.

h. Adjust capacitor C1 (figure 5-45) on top of the Frequency Standard Electronic Assembly A5 until the indicator lamp remains lighted and changes brilliance at a rate no greater than once in 20 seconds.

i. Replace the dust cover.

j. Set the EXT/INT/COMP switch to the setting required for operation (EXT. or INT).

k. Set Mode Selector switch to OFF. Disconnect the test equipment. Slide the chassis into the case and tighten the front panel screws on the T-827/URT.

l. If it determined that the Frequency Standard Electronic Assembly A5 is defective, proceed to paragraph 5-58, Replacement.

5-55. Method B.

5-56. Test Equipment.

a. Frequency Standard AN/URQ-9.

b. Frequency Meter AN/USM-207 (AN/USM-207).

c. RF Voltmeter AN/URM-155 (AN/URM-155).

5-57. Instructions.

a. Loosen front panel screws on T-827/URT and slide chassis out from case.

b. Connect the 100-kc output from the AN/URQ-9 to the AN/USM-207 external frequency standard input jack.

c. Adjust operating frequency of T-827/URT to 02.000 mc or above. Set front panel CPS switch to 000.

d. Defeat interlock switch by pushing back and pulling up.

e. Apply main power to equipment and set Mode Selector switch to USB.

f. If the EXT/INT/COMP switch A5S1 (figure 5-17) on Frequency Standard Electronic Assembly A5 is not at the INT position, set this switch at INT.

g. Allow a four-hour warm-up period for the T-827/URT and the test equipment.

h. Connect the AN/USM-207 to test point TP AJ in Frequency Standard Electronic Assembly A5 (figure 5-17) and set frequency meter time base for 10-second intervals. Observe AN/USM-207 for ten counts. The frequency should be 5 mc, ± 0.1 cps.

i. Connect AN/USM-207 to test point TP 9 in Frequency Standard Electronic Assembly A5 (figure 5-17) and observe AN/USM-207 for ten counts. The frequency should be 500 kc.

NOTE

No error should be detectable in this reading.

j. If frequencies measured at test points TP AJ and TP 9 (steps h. and i.) are correct, proceed to step l. If frequencies measured at test points TP AJ and TP 9 are incorrect, proceed to step k.

k. Adjust the frequency as follows:

(1) Remove screws and lift off dust cover of frequency Standard Assembly A5. (See figure 5-17.)

(2) Adjust capacitor C1 on top of Frequency Standard Electronic Assembly A5 (figure 5-17) until the frequency, as read at test point TP AJ is 5 mc +0.0 cps, -0.1 cps. Recheck frequency at test point TP 9

(3) Replace dust cover.

l. Connect the AN/URM-155 to test point TP AJ and measure the voltage. The voltage should be a minimum of 480 mv.

m. Connect the AN/URM-155 to test point TP 9 and measure the voltage. The voltage should be between 150 and 250 mv.

n. Set the EXT/INT/COMP switch to the position required for operation (EXT or INT).

o. Set Mode Selector switch at OFF. Disconnect the test equipment. Slide the chassis into the case and tighten the front panel screws on the T-827/URT.

p. If it is determined that the Frequency Standard Electronic Assembly is defective, proceed to paragraph 5-58, Replacement, below.

5-58. Replacement.

5-59. Aboard ship, replace a defective Frequency Standard Electronic Assembly A5 with a spare assembly in accordance with the following procedures.

5-60. See figures 5-17 and 5-18 for component locations.

a. Check that T-827/URT Mode Selector switch is set at OFF.

b. Loosen the front panel screws on the T-827/URT and slide the chassis from the case.

c. The Frequency Standard Electronic Assembly is located in the right rear corner of the T-827/URT chassis. Loosen the two corner fastening screws on top of the Frequency Standard Electronic Assembly and lift it from the chassis.

d. Plug the spare Frequency Standard Electronic Assembly into J9 on the chassis (figure 5-18) by aligning the guide pin holes on the base of the Frequency Standard Electronic Assembly with the guide pins on the chassis and pushing it into place.

e. Tighten the two corner fastening screws on top.

f. Slide the chassis back into the case and tighten the front panel screws.

5-61. TRANSLATOR/SYNTHESIZER ELECTRONIC ASSEMBLY A2A6.

5-62. OPERATIONAL CHECK. Use the following procedure to determine whether Translator/Synthesizer Electronic Assembly A6 is operating properly. (See figure 5-17.)

5-63. Test Equipment.

a. RF Voltmeter, AN/URM-155.

b. Oscilloscope, AN/USM-117.

5-64. Instructions.

a. Loosen front panel screws on T-827/URT and slide chassis out from case.

b. Disconnect the rf output cable from connector J23 (RF OUT 50Ω) on the rear of the T-827/URT. (See figure 5-16.)

c. Apply main power and set Mode Selector switch at AM.

d. Check gain of translator as follows:

(1) Key T-827/URT.

(2) Establish a reference level by connecting the AN/URM-155 to test point TP 4 (figure 5-17) on RF Translator Electronic Subassembly, and noting the db indication.

(3) Connect the RF Voltmeter AN/URM-155 to test point TP 3 (figure 5-17) on the RF Translator Electronic Subassembly.

(4) Adjust the operating frequency of the T-827/URT to each of the frequencies listed below, and check that the db indication of each frequency is in accordance with the level specified.

(Indication should be not less than the db reference level for the frequencies listed below.)

In mc	In mc
5.000,000	5.333,000
5.111,000	5.444,000
5.222,000	6.555,500

(Indication should be not less than 1 db below reference level for the frequencies listed below.)

In mc
6.666,500
6.777,500
6.888,500
6.999,500

e. Proceed to step f. and g. below, conducting both steps simultaneously.

f. Check gain of megacycle synthesizer as follows:

(1) Do not key T-827/URT for this check.

(2) Connect the AN/URM-155 to test point TP C (figure 5-17) on RF Amplifier Electronic Assembly A4.

(3) Adjust the operating frequency sequentially from 2 mc through 29 mc (MCS digits only, not KCS digits). Check that the indication on the AN/URM-155 is a minimum of 80 mv for each frequency.

g. Check megacycle synthesizer phase locking as follows:

(1) Adjust the AN/USM-117 as listed below and connect to test point TP AV (figure 5-17) on Megacycle Synthesizer Electronic Subassembly.

Vertical amplifier: DC
Vertical positioning: 0 volts
Vertical gain: full deflection with +20 vdc input
Sweep: internal at 1 millisecond per centimeter

(2) Set EXT/INT/COMP switch A5S1 (figure 5-17) at EXT and check that the vertical trace on the AN/USM-117 rises to approximately 19 vdc. Set EXT/INT/COMP switch at INT and check that the trace drops to a level between +5 and +17 vdc.

(3) Adjust the operating frequency of the T-827/URT sequentially from 2 through 29 mc (MCS digits only, not KCS digits). For each frequency, check the AN/USM-117 trace for occurrence of normal phase locking between +5 and +17 vdc and random noise content of not more than $\pm$0.5 volts. If modulation appears on dc trace, it is an indication that the loop is unable to reach phase lock, and the subassembly is defective.

h. Check the 000 to 500 cps locking by performing procedure specified in paragraph 5-29, 500 CPS Lock Adjustment.

i. If it is determined that the Translator/Synthesizer Electronic Assembly A6 is defective, proceed to paragraph 5-65, below.

5-65. Replacement.

5-66. Aboard ship, replace a defective Translator/Synthesizer Electronic Assembly A6 with a spare assembly in accordance with the following procedures. (See figures 5-17 and 5-18 for component location.)

a. Loosen the front panel screws on the T-827/URT and slide the chassis from the case. Rotate KCS controls to 1.

b. The Translator/Synthesizer Electronic Assembly is located at the right front of the chassis. Loosen the four fastening screws at the corners of the electronic assembly and carefully lift it out.

c. Rotate KCS controls to 0. Check that slot in chassis couplers points toward and perpendicular to the rear chassis panel. If not, refer to paragraph 5-44j, step (6) and (7).

d. Rotate the couplers on the bottom of spare electronic assembly to 0 position.

e. Apply slight finger pressure on top of the electronic assembly and rotate the KCS controls to 9 and back to 0. When it has been determined that the couplers on the bottom of the electronic assembly are fully engaged with the chassis couplers, tighten the four fastening screws at the corners of the electronic assembly.

f. Slide the chassis back into the case and tighten the front panel screws.

5-67. SHIPBOARD REPAIRABLE ELECTRONIC ASSEMBLIES.

5-68. IF. AMPLIFIER ELECTRONIC ASSEMBLY A2A12. The following paragraphs provide instructions for removal, cleaning, repair and adjustment of the IF. Amplifier Electronic Assembly A2A12.

5-69. Removal. To remove the IF. Amplifier Electronic Assembly A12 (figure 5-17), proceed as follows:

a. Loosen the front panel screws on the T-827/URT and slide the chassis from the case.

b. The IF. Amplifier Electronic Assembly is located in the rear-center of the chassis. Loosen the two corner fastening screws on the top of the electronic assembly and lift it from the chassis.

c. Loosen the Dzus fastener on the side of the dust covers and lift off the dust covers.

5-70. Test Equipment. The following test equipment is required to adjust the IF. Amplifier Electronic Assembly after repair:

a. Dummy Load, DA-91( )/U.

b. Electronic Multimeter, AN/USM-116.

c. Cable Assembly W2.

d. Rf voltmeter, AN/URM-155.

e. Audio Signal Generator,SG-376/U.

f. Electronic Multimeter, ME-6( )/U.

g. Coaxial T-Connector HP 11042A

5-71. Repair. Clean the electronic assembly of dust and foreign matter with compressed air. Inspect the entire electronic assembly for defective components, frayed wiring, burned electrical components, loose connections or connectors. See figures 5-88 and 5-89 for component location.

5-72. Reassembly. After repair, replace any connections removed.

5-73. Adjustment. If any electrical components were replaced in the electronic assembly, adjust the electronic assembly as follows:

a. Connect cable assembly W2 to J15 on T-827/URT chassis (figure 5-18).

b. Connect cable assembly W2 to P1 on bottom of electronic assembly (dust covers removed).

c. Disconnect rf output cable from connector J23 (RF OUT 50Ω) on the rear of the T-827/URT. (See figure 5-17.)

d. Set Mode Selector switch at AM and LOCAL/REMOTE switch at REMOTE. Set MCS and KCS controls for 26.000 mc.

5 e. Connect the AN/URM-155 to TP on electronic assembly (figure 5-89).

f. Key T-827/URT.

g. Tune transformers T1 and T2 on electronic assembly (figure 5-89) for peak indication on the AN/URM-155 of approximately 10 mv.

h. Set Mode Selector switch at USB.

i. Connect the SG-376/U to connector A1J5 (USB AUDIO IN 600Ω) on rear of T-837/URT. (See figure 5-16.) Set up the SG-376/U for single-tone operation and tune it to 1000 cps at 150 mv. (Use the ME-6( )/U for this purpose.)

j. While observing AN/URM-155, adjust GAIN ADJ (R15) on electronic assembly (figure 5-89) until it is determined that 20 mv can be measured at TP 5 .

k. Set Mode Selector switch at OFF. Disconnect the AN/URM-155 but leave the SG-376/U connected. Disconnect extender cable from chassis and electronic assembly.

l. Replace dust cover on electronic assembly. Plug electronic assembly into connector J15 on chassis. (See figure 5-18.)

m. Perform if. gain adjustment specified in paragraph 5-14.

5-74. MODE SELECTOR ELECTRONIC ASSEMBLY A2A1. The following paragraphs contain the necessary information for the removal, cleaning, repair, and adjustment of the Mode Selector Electronic Assembly A2A1.

5-75. Removal. To remove the Mode Selector Electronic Assembly A1 (figure 5-17) proceed as follows:

a. Loosen the front panel screws on the T-827/URT and slide the chassis from the case.

b. The Mode Selector Electronic Assembly is located in the center-rear of the main chassis. Loosen the two corner fastening screws on top of the electronic assembly and lift the assembly from the chassis.

c. Remove the two screws from the top of the Mode Selector Electronic Assembly and lift the dust cover.

5-76. Test Equipment. The following test equipment is required to adjust the Mode Selector Electronic Assembly, after repair.

a. Cable assemblies W1 and W4.

NOTE

Due to the critical nature of the adjustments, the cable assemblies should not be used to adjust the balanced modulators.

b. Electronic Multimeter, AN/USM-116.

c. Audio Signal Generator, SG-376/U.

d. Spectrum Analyzer, TS-1379/U.

e. Rf voltmeter, AN/URM-155.

f. Electronic Multimeter, ME-6( )/U.

g. Coaxial T-Connector HP 11042A.

5-77. Repair. Clean the electronic assembly of dust and foreign matter with compressed air. Inspect the entire electronic assembly for defective components, frayed wiring, burned electrical components, and loose connections or connectors (see figures 5-27 through 5-32 for component location).

5-78. Reassembly. After repair, replace any connections removed.

5-79. Adjustment. After repair, adjust the Mode Selector Electronic Assembly as follows:

a. Connect cable assemblies W1 and W4 to J17 and J16 on chassis (figure 5-18), respectively.

b. Connect cable assembly W1 to P2 on the bottom of the electronic assembly (dust cover removed). Connect cable assembly W4 to P1 on the electronic assembly.

c. Apply main power to equipment. Set Mode Selector switch at ISB position and LOCAL/REMOTE switch to LOCAL.

d. Connect RF Voltmeter, AN/URM-155 to TP X on electronic assembly (figure 5-28). Tune transformer T3 (figure 5-32) for peak indication on rf voltmeter.

e. Connect rf voltmeter to TP Y on electronic assembly (figure 5-29). Tune transformer T4 (figure 5-32) for peak indication on rf voltmeter.

f. Set Mode Selector switch at AM.

g. Connect rf voltmeter to TP AB on electronic assembly (figure 5-32). Tune transformer T5 (figure 5-32) for peak indication on rf voltmeter.

h. Disconnect the AN/URM-115. Remove cable assemblies from chassis and electronic assembly.

i. Replace dust cover on electronic assembly.

j. Plug electronic assembly into J16 and J17 in chassis. (See figure 5-18.)

k. Perform the carrier balance adjustment specified in paragraph 5-19, and the AM modulation percentage adjustment and carrier reinsertion check specified in paragraph 5-24.

5-80. AUDIO AMPLIFIER ELECTRONIC ASSEMBLIES A2A2 and A2A3. The following paragraphs contain the necessary information for the removal, cleaning, repair, and adjustment of the Audio Amplifier Electronic Assemblies. There are two Audio Amplifier Electronic Assemblies mounted side-by-side on the rear of the T-827/URT main chassis. The two assemblies are identical and are interchangeable.

5-81. Removal. To remove either Audio Amplifier Electronic Assembly A2 or A3 (figure 5-17), proceed as follows:

a. Loosen the front panel screws on the T-827/URT and pull the chassis from the case.

b. Loosen the two corner fastening screws on the top of assembly and lift the assembly from the chassis.

c. Loosen the Dzus fastener on the bottom of each side dust cover and list the dust covers from the assembly.

5-82. Test Equipment. The following test equipment is required to adjust the Audio Amplifier Electronic Assembly, after repair.

a. Audio Signal Generator, SG-379/U.

b. Electronic Multimeter, ME-6( )/U.

c. Dummy Load, DA-91( )/U.

5-83. Repair. Clean the electronic assembly of dust and foreign matter with compressed air. Inspect the entire electronic assembly for defective components, frayed wiring, burned electrical components, loose connections or connectors (see figures 5-33 and 5-34 for component location).

5-84. Reassembly. After repair, replace any connections removed, then replace the dust covers. Plug the A2 electronic assembly into J18 (figure 5-18) on the T-827/URT chassis. Plug A3 into J19. Tighten the two corners fastening screws on the tops of the electronic assemblies.

5-85. Adjustment. If any electrical components were replaced in the electronic assembly, it will be necessary to adjust the circuits after repair. Perform audio gain adjustment as specified in paragraph 5-9.

5-86. FSK TONE GENERATOR ELECTRONIC ASSEMBLY A2A9. The following paragraphs contain the necessary information for the removal, cleaning, repair, and adjustment of FSK Tone Generator Electronic Assembly.

5-87. Removal. To remove the FSK Tone Generator Electronic Assembly A9 (figure 5-17), proceed as follows:

a. Loosen the front panel screws on the T-827/URT and pull the chassis from the case.

b. The FSK Tone Generator Electronic Assembly is located on the rear of the T-827/URT main chassis. Loosen the two corner fastening screws on the electronic assembly and lift it from the case.

c. Lay the FSK Tone Generator Electronic Assembly on its side, remove the three dust cover screws, and lift off the dust cover.

5-88. Test Equipment. The following test equipment is required to repair the FSK Tone Generator Electronic Assembly and for performing any necessary adjustments after repair.

a. Oscilloscope, AN/USM-117.

b. Frequency Meter, AN/USM-207.

c. Dummy Load, DA-91( )/U.

d. TTY Equipment.

5-89. Repair. Clean the electronic assembly of dust and foreign matter with compressed air. Inspect the entire electronic assembly for defective components, frayed wiring, burned electrical components, loose connections or connectors (see figures 5-86 and 5-87 for component location).

5-90. Reassembly. After repair, replace any connections removed, then replace the dust cover.

5-91. Adjustment. If electrical components were replaced in the electronic assembly, it is necessary to adjust the circuits. To adjust the circuits after repair, proceed as follows:

a. Place the FSK Tone Generator Electronic Assembly in the proper position in the T-827/URT chassis.

b. Disconnect rf output cable from connector J23 (RF OUT 50Ω) on the rear of the T-827/URT, and connect dummy load to connector J23 in its place. (See figure 5-16.)

c. Apply main power to the equipment. Set the T-827/URT controls as follows:

(1) Mode Selector switch: FSK.

(2) USB LINE LEVEL switch: ±10DB.

(3) Operating frequency: 02.000 mc.

(4) LOCAL/REMOTE switch: REMOTE.

(5) Interlock switch: pulled up.

d. Connect the TTY equipment to the system. Energize the TTY equipment.

e. Connect the AN/USM-117 to TP 12 (figure 5-17) on the FSK Tone Generator Electronic Assembly. Set oscilloscope as follows:

(1) Sweep speed: 5 usec/cm.

(2) Vertical deflection: 0.5 v/cm.

(3) Trigger: internal.

(4) Input: AC.

f. Set the potentiometers marked 2125 CPS (A9R13), 2975 CPS (A9R12), 2425 CPS (A9R10), and 1575 CPS (A9R8), on the top of electronic assembly (figure 5-17) at midrange.

g. Key the T-827/URT.

h. Adjust OUTPUT LEVEL potentiometer A9R26 (figure 5-17) on electronic assembly for an indication of 1.0 volts peak-to-peak ±0.1 volt on the AN/USM-117.

i. Disconnect AN/USM-117 from TP 12 (Figure 5-17).

j. Connect Frequency Meter AN/USM-207 to TP 12 (figure 5-17).

k. Set the CTR FREQ switch A9S1 (figure 5-17) on electronic assembly at 2000. Set the TTY equipment for a "mark" condition.

l. Adjust the 2425 CPS potentiometer A9R10 (figure 5-17) for an indication of 2425 $\pm$ 5 cps on the AN/USM-207 meter.

m. Depress the "break" button on the TTY equipment. Adjust the 1575 CPS potentiometer A9R8 (figure 5-17) for an indication of 1575 $\pm$ 5 cps on the frequency meter.

n. Set the CTR FREQ switch A9S1 on electronic assembly at 2550. Adjust the 2125 CPS potentiometer A9R13 (figure 5-17) for an indication of 2125 $\pm$ 5 cps on the AN/USM-207.

o. Set the TTY equipment for a "mark" condition.

p. Adjust the 2975 CPS potentiometer A9R12 (figure 5-17) for an indication of 2975 $\pm$ 5 cps.

q. Set Mode Selector switch at OFF. Disconnect the test equipment. Reconnect the RF output cable removed in step b. above. Slide chassis into the case and tighten the front panel screws on the T-827/URT.

5-92. EMERGENCY MAINTENANCE FOR ELECTRONIC ASSEMBLIES.

5-93. Audio Amplifier Electronic Assemblies A2A2 and A2A3 function identically and are interchangeable. If it is essential that the transmitter be operated in USB + AM, or FSK modes of operation and Audio Amplifier Electronic Assembly A2A2 malfunctions, replace it with Audio Amplifier Electronic Assembly A2A3.

5-94. If LSB mode of operation is desired and Audio Amplifier Electronic Assembly A2A3 malfunctions, replace it with Audio Amplifier Electronic Assembly A2A2. Both electronic assemblies must be functioning properly for ISB mode of operation.

5-95. If the 5 mc oscillator in the Frequency Standard Electronic Assembly malfunctions, refer to Section 2 for patching the 5 mc output from another source into the malfunctioning unit.

5-96. CHAIN, DRIVE MECHANISM. This paragraph provides instructions for removing the drive chains and for removing and disassembling the sprocket assemblies on the bottom of the T-827/URT chassis.

5-97. Removal. Removal of these components can be accomplished with the chassis in place on the slide mechanisms.

5-98. To remove the drive chains and sprocket assemblies, proceed as follows, using figure 5-19 as a guide:

a. Turn off power to T-827/URT. Loosen front panel screws and slide chassis out from case.

b. Remove RF Amplifier and Translator/Synthesizer Electronic Assemblies from chassis.

c. Tilt chassis 90 degrees to expose bottom.

d. To remove drive chains, proceed as follows:

(1) Loosen the three chain tension idler gears and slide away from chains.

(2) Locate keeper clip on each drive chain. Carefully remove keeper clips and unthread chains.

e. Remove four nuts securing dual and triple sprocket assemblies to chassis and lift off sprocket assemblies.

f. To disassemble the sprocket assemblies, remove the two retaining rings located inside the assembly housing and secured around shaft. Loosen coupler from end opposite coupler. Separate sprocket assembly parts as they clear shaft.

5-99. Repair. To repair a defective sprocket assembly, proceed as follows:

a. Wipe all disassembled parts with dry, lint-free cloth.

b. Inspect all parts for damage. Replace worn parts.

c. Replace metal springs if they no longer provide proper tension between associated parts.

d. Replace both coupler and shaft if shaft is scored.

e. Replace detent springs if bent so that too much or too little tension results.

f. Replace hub-clamp if it is evident during equipment operation that proper clamping action was not being maintained. This would be indicated by low output intermittent frequency selection (100, 10 or 1 kc digits) or off frequency.

5-100. Reassembly. To reassemble the sprocket assemblies, and to install the sprocket assemblies and drive chains onto bottom of chassis after repair, proceed as follows:

a. Reassemble sprocket assemblies using new retaining rings in place of those that were removed. Do not tighten hub-clamp setscrews.

b. Secure sprocket assemblies in their respective positions on chassis with the four appropriate nuts.

c. Thread drive chains onto gears. Fasten ends of each chain together with keeper clip.

5-101. ADJUSTMENTS. After reassembly, the chain drive mechanism must be adjusted to assure proper relationship between the front panel KCS controls, the couplers and their respective detent spring position in the sprocket assemblies.

5-102. DRIVE CHAIN ADJUSTMENT. To obtain proper positioning of the front panel KCS controls with respect to the full or "seated" position of the detent spring, adjust the position of the drive chain as follows:

a. Replace RF Amplifier and Translator/Synthesizer Electronic Assemblies. Make sure that all couplers are engaged properly.

b. For each KCS control, take slack out of associated drive chain by holding associated chain tension idler gear against chain. If digit is centered in window, tighten chain tension idler gear in that position and proceed to paragraph 5-103. If digit is not centered in window, proceed as follows:

(1) Release chain tension idler gear and slide away from chain.

(2) Lift drive chain away from gears and shift entire chain to a position where front panel control and digit above control, remain fairly stationary when chain is tightened. In most cases, the trial-and-error method must be used to determine the proper chain position.

(3) When the drive chain is positioned properly, tighten chain tension idler gear securely against chain.

c. The dual sprocket assembly provides a means for making a finer adjustment for the 100 kc (KCS) and 10 kc (KCS) controls. To make the fine adjustment, proceed as follows:

(1) Rotate the 100 kc (KCS) and 10 kc (KCS) controls and observe the detent action of the dual sprocket assembly. Proper detent action is displayed by relatively smooth rotation of controls with full detent or "seating" action. If necessary, remove a spacer from under detent spring to increase the spring tension or add a spacer to reduce spring tension.

(2) If digit is still not centered fully in window when detent spring is "seated" fully, loosen the two hex-head screws on wheel index engaged with detent spring. Wheel index provides the "seating" position for the detent spring.

(3) Press firmly on detent spring above roller. Do not allow wheel index to rotate.

(4) Rotate front panel control until digit is exactly centered in window as desired.

(5) Release front panel control and detent spring. If digit moves from center of window, repeat steps (3) through (5). When digit is centered exactly in window, tighten hex-head screws on wheel index.

5-103. COUPLER ADJUSTMENT. Once the drive chains have been adjusted to provide optimum detent positioning, the sprocket assembly couplers which are operated by the KCS controls, must be adjusted for proper electrical-mechanical alignment between the electronic assemblies and the chain drive mechanism. To adjust the couplers, proceed as follows:

a. Remove RF Amplifier and Translator/Synthesizer Electronic Assemblies from chassis.

b. Rotate 100 kc (KCS) and 10 kc (KCS) controls to 1. Insert screw-driver in coupler adjustments in dual sprocket assembly (figure 5-19) and rotate couplers so that each coupler points toward and is perpendicular to the front panel.

c. Tighten hub-clamp setscrews on dual sprocket assembly.

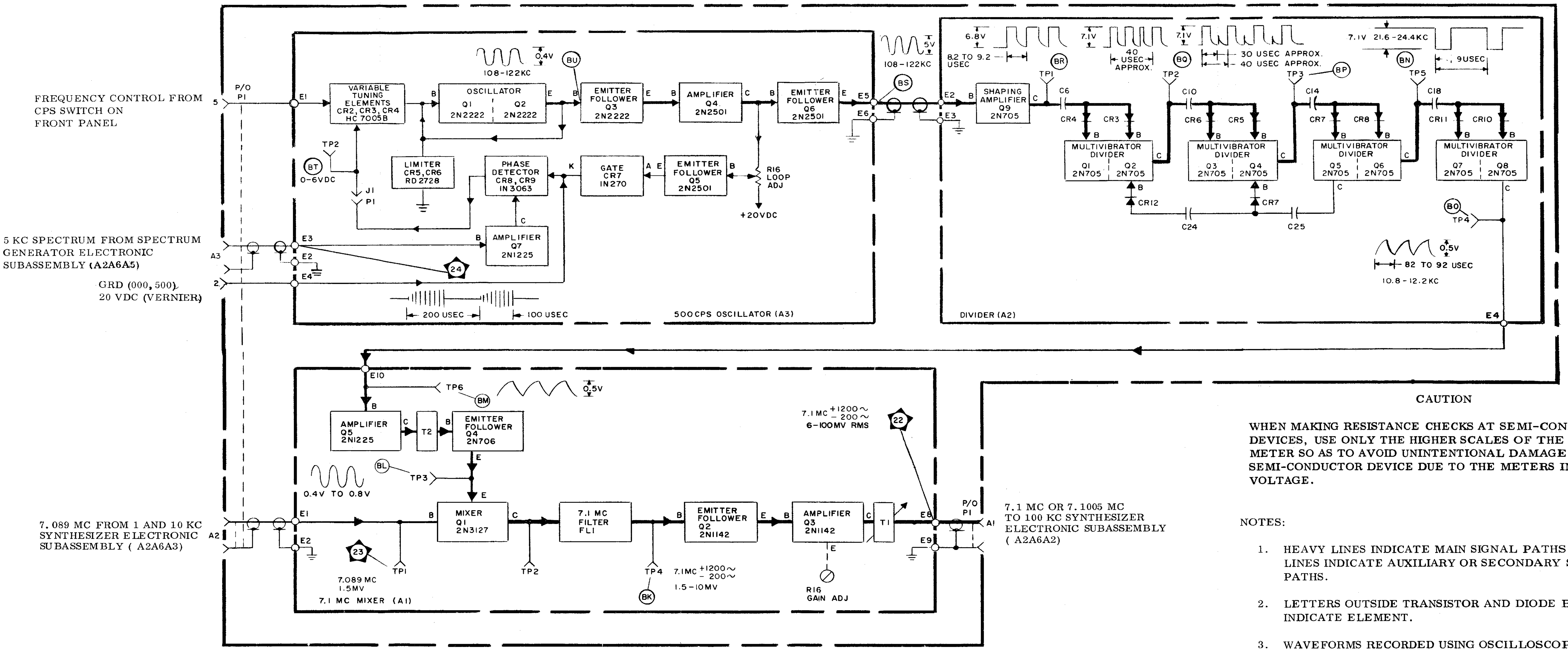
d. Rotate 100 kc (KCS), 10 kc (KCS) and 1 kc (KCS) controls to 0. Insert screw-driver in respective coupler adjustments in triple sprocket assembly (figure 5-19) and rotate couplers so that each coupler slot points toward and is perpendicular to the rear panel.

e. Tighten hub-lamp setscrews on triple sprocket assembly.

f. Rotate KCS controls to 1. Replace RF Amplifier and Translator/Synthesizer Electronic assemblies. Restore T-827/URT to normal operating condition.

5-104. SHORE REPAIR.

5-105. Instructions for repair of RF Amplifier Electronic Assembly A2A4, Translator/ Synthesizer Electronic Assembly A2A6, and Frequency Standard Electronic Assembly A2A5 are contained in Technical Manual for Repair of AN/WRC-1 and R-1051/URR 2N Modules, NAVSHIPS 0967-032-2000. Normally, repair and alignment of the above electronic assemblies is accomplished only by established electronic assembly repair facilities.



CAUTION

WHEN MAKING RESISTANCE CHECKS AT SEMI-CONDUCTOR DEVICES, USE ONLY THE HIGHER SCALES OF THE MULTIMETER SO AS TO AVOID UNINTENTIONAL DAMAGE TO THE SEMI-CONDUCTOR DEVICE DUE TO THE METERS INTERNAL VOLTAGE.

NOTES:

1. HEAVY LINES INDICATE MAIN SIGNAL PATHS; LIGHT LINES INDICATE AUXILIARY OR SECONDARY SIGNAL PATHS.
2. LETTERS OUTSIDE TRANSISTOR AND DIODE BLOCKS INDICATE ELEMENT.
3. WAVEFORMS RECORDED USING OSCILLOSCOPE AN/USM-117.
4. REF. DESIG. PREFIX A2A6A4 AND APPROPRIATE BOARD NUMBER.

Figure 4-69. 500 CPS Synthesizer Electronic Subassembly, Servicing Block Diagram

PART LOCATION INDEX

REF DESIG	LOC
1A1C37	36A
1A1C38	2H
1A1C40	2C
1A1C41	29C
1A1C43	29E
1A1C44	29G
1A1C45	29C
1A1C46	29D
1A1C47	2I
1A1C48	2H
1A1C49	2G
1A1C50	29H
1A1J3	28D, 28H
1A1J4	2C, 2D, 2E, 2F, 2G, 2H, 2I, 6I, 11B, 24C, 24D, 24E, 28A, 28B, 28C, 28D, 28E, 28G, 28H, 37A, 37E, 37F, 37G, 37H, 37I
1A1J5	2F
1A1J6	2D
1A1J7	2G, 2H, 2I, 28I
1	35C
2	33F
3	31I
4	4C
5	3C
R1	31E
R2	20G
R3	32C
R4	5G
R5	11F
R6	32G
R7	21C
R8	32I
R9	20G
S1	32D
S2	32D
1	32D
2	32C
	2E, 2F, 37A, 37B, 37I
	2I
	13A
	20E, 20F, 21E, 21F, 22E, 22F
	3B, 4B, 5B

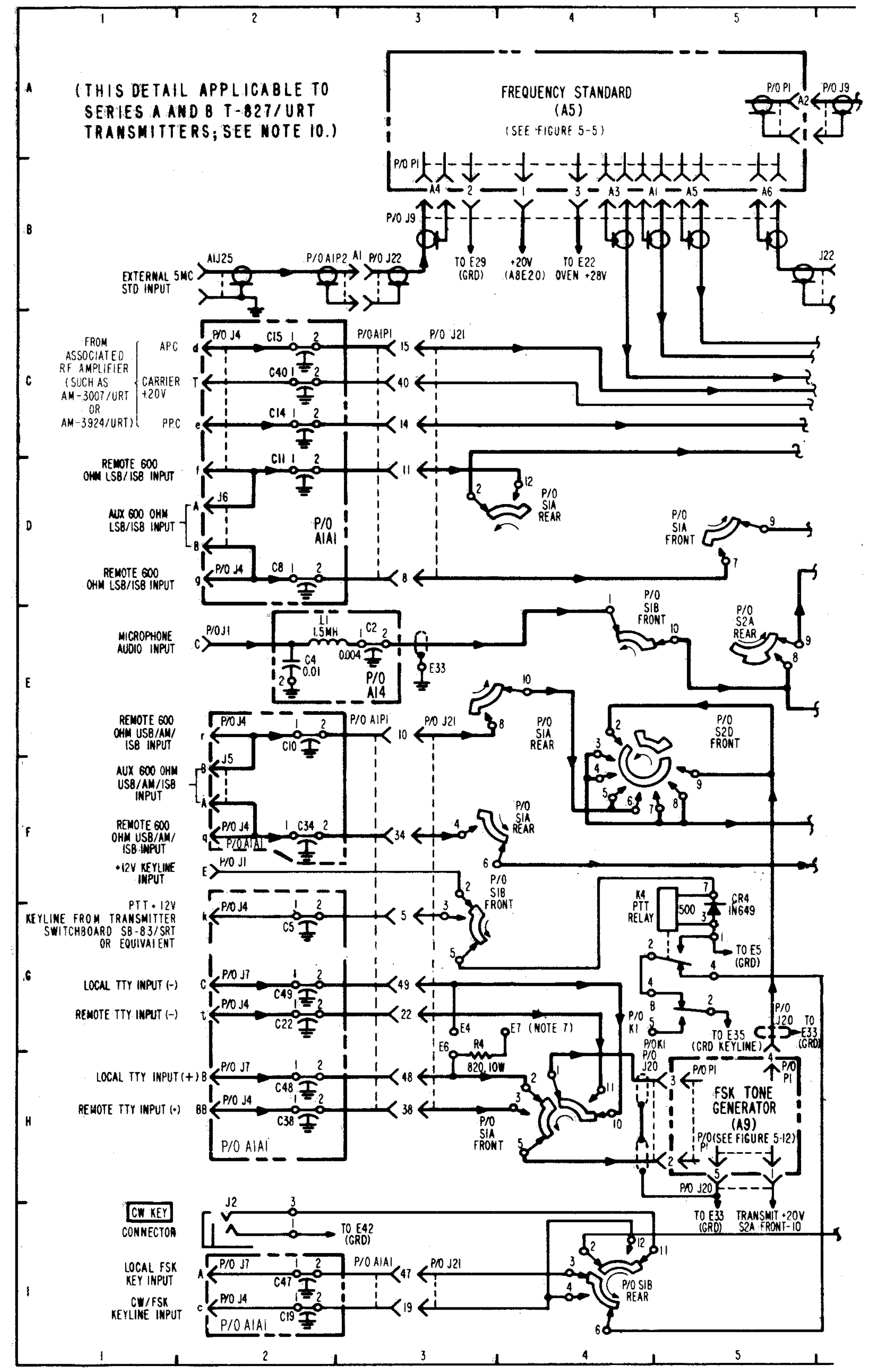
REF DESIG	LOC
J10	20B, 21B
J11	19A, 19B, 20B, 21B, 22A, 22B
J12	13D, 13F, 14C, 16F, 17F, 18C
J13	18D, 18E, 18F
J14	14A
J15	18A, 18B, 11A, 11B
J16	12B, 13B
J17	7B, 10A, 7A, 8B
J18	9B, 10B
J19	7F, 8F, 7D, 7E
J21	8D, 8E, 3C, 3D, 3E, 3F, 3G, 3H, 3I, 6H, 10B, 10C, 22C, 22D, 22E, 30A, 30B, 30C, 30D, 30F, 30G, 30H, 34A, 34H, 34I, 36E
J22	3B, 6B, 23A
K1	32E
K1A	32F
K1B	5G
K2	19G
K2A	19E
K2B	19G
K3	32C
K3 (A, B)	19C
K3C	31G
K3D	34C
K4	4G
K5	12F
K5A	6G
K6	32G
K6A	34I
L1	34C
L2	35D
M1	12G
M2	12H
Q1	33F
R1	35C
R2	36D
R3	31H
R4	3H

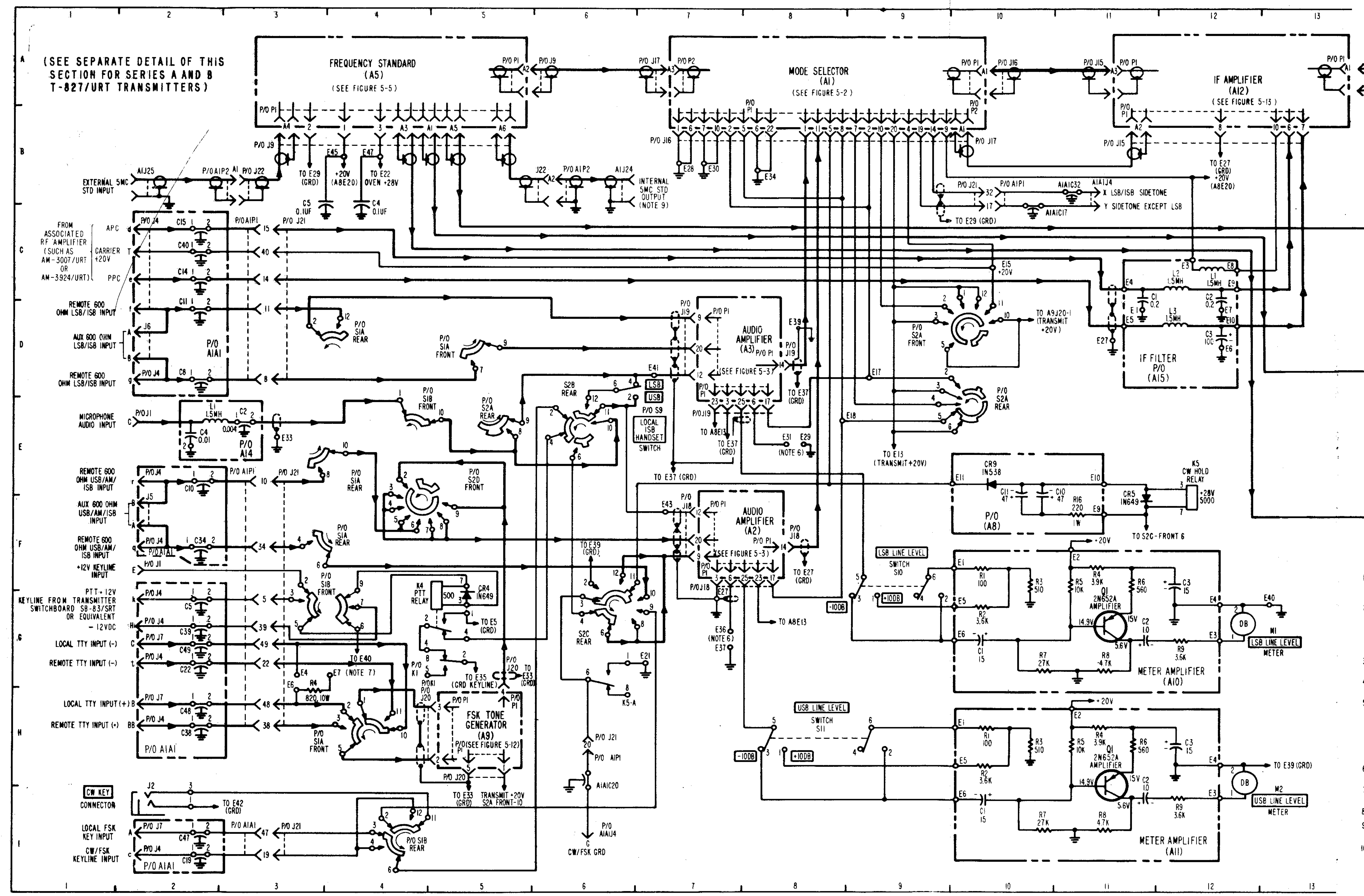
REF DESIG	LOC
S1	16I
S1A (Front)	4H, 5D
S1A(Rear)	3D, 3E, 3F
S1B(Front)	3G, 4E
S1B (Rear)	4I, 30C
S2	19H
S2A (Front)	10D, 32D
S2A (Rear)	5E, 10E
S2B (Front)	31D
S2B (Rear)	6E
S2C (Front)	32H
S2C (Rear)	6G
S2D (Front)	4F
S2D (Rear)	21C
S3	23F
S4	23F
S5 (Front)	22F
S5 (Rear)	21F
S6	16G
S7	30D
S8	31D
S9	32A
S10	9F
S11	8H
T1	33C
A1P1	7B, 10A
A1P2	7A, 8B, 9B, 10B
A2P1	7F, 8F
A3P1	7D, 8D
A4P1	20B, 21B
A4P2	19A, 19B, 20B, 21B, 22A, 22B
A5P1	3B, 4B, 5A, 5B
A6C1	18C
A6C2	16B
A6J4	17E, 17F, 18F
A6J5	16D, 16E
A6J6	16C, 16D, 17C
A6P1	13D, 13F, 14C, 16F, 17F, 18C, 18D, 18E, 18F
A6P2	14A, 15F, 18B
A6P3	14B, 18A, 18B
A6P7	16B
A6P8	17B
A6P9	17B
A6P10	17B

REF DESIG	LOC
A6P11	17B
A6P12	16B
A6P13	15B
A6P14	15D
A6P15	15D
A6P16	15D
A6P17	15D
A6P18	15D
A6P19	15C
A6P21	14D
A6P22	14E
A6P23	14C
A6P24	14D
A6P25	14D
A6P26	14E
A6A1P1	17E, 17F, 18F
A6A2P1	16C, 17C
A6A3J1	15D
A6A3J3	15D
A6A3J4	15D
A6A3J5	15D
A6A3J6	15D
A6A3J7	15D
A6A4P1	16E
A6A5J1	14E
A6A5J2	14E
A6A5J3	14D
A6A5J4	14D
A6A5J5	14D
A6A5J6	14D
A6A6J1	17B
A6A6J2	16B
A6A6J3	15B
A6A6J4	17B
A6A6J5	17B
A6A6J6	16B
A6A6J7	17B
A7P8	20E, 20F, 21E, 21F, 22E, 22F
A8C1	34D
A8C2	34D
A8C3	33E
A8C4	34E
A8C5	36E
A8C6	36E
A8C7	34G
A8C8	34G
A8C9	34C
A8C10	10F

REF DESIG	LOC
A8C11	10F
A8CR1	33C
A8CR2	34C
A8CR3	33C
A8CR4	34C
A8CR5	33D
A8CR6	34D
A8CR7	33D
A8CR8	34D
A8CR9	10E
A8CR10	34G
A9CR11	34F
A9CR12	34F
A8CR13	35F
A8Q1	34F
A8Q2	34F
A8Q3	35F
A8Q4	35F
A8R1	35D
A8R2	33F
A8R3	34F
A8R4	35E
A8R5	35F
A8R6	35E
A8R7	35E
A8R8	35F
A8R9	36E
A8R10	36F
A8R11	36F
A8R12	34F
A8R13	33G
A8R14	33G
A8R15	34C
A8R16	11F
A9J20	5G, 5H
A9P1	5H
A10C1	10G
A10C2	11G
A10C3	12F
A10Q1	11G
A10R1	10F
A10R2	10G
A10R3	10F
A10R4	11F
A10R5	11F
A10R6	11F
A10R7	10G
A10R8	11G

REF DESIG	LOC
A10R9	12G
A11C1	10I
A11C2	11I
A11C3	12H
A11Q1	11H
A11R1	10H
A11R2	10H
A11R3	10H
A11R4	11H
A11R5	11H
A11R6	11H
A11R7	10I
A11R8	11I
A11R9	12I
A12P1	11A, 11B, 12B, 13A, 13B
A13DS3	36D
A13DS4	37D
A14C1	32I
A14C2	3E
A14C3	33I
A14C4	2E
A14L1	2E
A15C1	11D
A15C2	12D
A15C3	12D
A15L1	12C
A15L2	12C
A15L3	12D
A15R1	19D
A16R1	14G
A16R2	15G
A16R3	14G





CAUTION

WHEN MAKING RESISTANCE CHECKS AT SEMI-CONDUCTOR DEVICES, USE ONLY THE HIGHER SCALES OF THE MULTIMETER SO AS TO AVOID UNINTENTIONAL DAMAGE TO THE SEMI-CONDUCTOR DEVICE DUE TO THE METERS INTERNAL VOLTAGE.

NOTES:

1. EXCEPT FOR CASE-MOUNTED ITEMS (BASIC PREFIX A1), PARTIAL REFERENCE DESIGNATIONS ARE SHOWN; FOR COMPLETE DESIGNATION PREFIX WITH A2 AND APPROPRIATE BOARD NUMBER WHERE APPLICABLE:
2. UNLESS OTHERWISE SPECIFIED:
   a. ALL RESISTANCE VALUES ARE IN OHMS K-INDICATES THOUSANDS OF OHMS.
   b. ALL RESISTORS ARE 1/4 WATT, ± 5% TOL.
   c. ALL CAPACITANCE VALUES ARE IN MICROFARADS.
3. NUMBERS ADJACENT TO WINDINGS AND COILS INDICATE DC RESISTANCE (VALUES LESS THAN ONE OHM ARE NOT SHOWN).
4. UNLESS OTHERWISE INDICATED ALL VOLTAGES ARE DC TAKEN WITH MULTIMETER AN/PSM-4.
5. PINS L AND m OF J4 ARE USED TO PROVIDE ENERGIZING VOLTAGES FOR REMOTE OPERATION OF TRANSMIT/RECEIVE RELAY K3 AND PTT RELAY K4 WHEN THE ASSOCIATED AMPLIFIER USED WITH THE TRANSMITTER DOES NOT SUPPLY THESE VOLTAGES. THESE CONNECTIONS AND THE ONES ON PINS n, F, AND P ARE NOT USED IF VOLTAGE IS REQUIRED ON PIN L IN THE REMOTE MODE OF OPERATION, JUMPER E11 TO E23.
6. TO CONNECT CENTER TAPS OF THE 600-OHM AUDIO TRANSFORMER WINDINGS TO GROUND, JUMPER E36, TO E37 AND E29 TO E31.
7. JUMPER E4 TO E7 IF NECESSARY FOR PROPER LOOP CURRENT ADJUSTMENT (5 TO 75MA). (LOCAL TTY OPERATION),
8. $\boxed{}$ INDICATES EQUIPMENT OPERATION MARKING (FRONT PANEL CONTROL).
9. FREQUENCY STANDARD ELECTRONIC ASSEMBLY SWITCH S1 MUST BE SET AT COMPARE TO OBTAIN 5-MC STANDARD OUTPUT.
10. THIS DRAWING IS APPLICABLE TO T-827/URT TRANSMITTERS HAVING SERIAL NUMBERS PREFIXED WITH LETTERS A, B, AND C. THE MAIN SCHEMATIC SHOWS THE SERIES C CONFIGURATION. SERIES A AND B T-827/URT CIRCUITS HAVING SERIES C CHANGES ARE SHOWN IN THEIR ORIGINAL CONFIGURATION IN SEPARATE DETAILS WHERE REQUIRED.

Figure 5-1. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram (Sheet 1 of 2)

Figure 5-1. Radio Transmitter T-827/URT, Chassis and Main Frame, Schematic Diagram (Sheet 2 of 2)

PART LOCATION INDEX

REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC
C10	19B	A2R2	10B	A4C38	14I	A4R71	14H
C11	21D	A2R3	10B	A4C39	13G	A4R72	14H
C21	19D	A2R4	10C	A4C40	12F	A4R73	14I
FL1	20B	A2R5	10C	A4C41	6E	A4R74	15H
FL2	20D	A2R6	11B	A4C42	6E	A4R75	15G
P1	3F, 3G, 16E	A2R7	12B	A4C43	7E	A4R76	15H
P2	3A, 3B, 3C,	A2R8	13B	A4C44	8E	A4R77	13G
	3D, 3E, 3I	A2R9	12B	A4C45	8E	A4R78	14G
	16F, 16H, 22D	A2R10	12C	A4C46	6F	A4R79	14G
R41	21D	A2R11	14B	A4C47	8F	A4R80	13F
S1	10G	A2R12	15B	A4C48	4B	A4R81	13F
T1	16B	A2R13	14B	A4C49	8G	A4R82	13F
T2	16D	A2R14	15B	A4C50	6H	A4R83	14F
A1C12	11D	A3C7	17B	A4C51	7H	A4R84	14F
A1C13	13D	A3C8	18B	A4C52	7E	A4R85	6E
A1C14	13D	A3C9	18A	A4CR11	6B	A4R86	6E
A1C15	14D	A3C18	17D	A4CR12	14I	A4R87	6E
A1C16	14C	A3C19	18C	A4CR13	15H	A4R88	7E
A1C17	14D	A3C20	18C	A4CR14	15G	A4R89	7E
A1CR5	12D	A3Q1	17B	A4CR15	14F	A4R90	7E
A1CR6	12D	A3Q2	17D	A4CR16	7E	A4R91	8E
A1CR7	12C	A3R15	16B	A4CR17	7F	A4R92	8E
A1CR8	13D	A3R16	17B	A4CR18	8E	A4R93	8E
A1R21	10C	A3R17	17B	A4CR19	7F	A4R94	6F
A1R22	10C	A3R18	17A	A4CR20	8G	A4R95	6F
A1R23	10D	A3R19	17B	A4CR21	7G	A4R96	6G
A1R24	10D	A3R20	18B	A4CR100	7H	A4R97	7G
A1R25	10D	A3R35	16D	A4Q6	7C	A4R98	7F
A1R26	11D	A3R36	17D	A4Q7	7B	A4R99	8G
A1R27	12C	A3R37	17C	A4Q8	13H	A4R100	7G
A1R28	13D	A3R38	17C	A4R53	6B	A4R101	5G
A1R29	12D	A3R39	17C	A4R54	6C	A4R102	8F
A1R30	12D	A3R40	18D	A4R55	6B	A4R103	8H
A1R31	14D	A3TP2	18B	A4R56	6C	A4R104	9H
A1R32	15D	A3TP3	18D	A4R57	7C	A4R105	8H
A1R33	14D	A4C25	5B	A4R58	7D	A4R106	8H
A1R34	15D	A4C26	5B	A4R59	8C	A4R107	9H
A2C1	11C	A4C27	7C	A4R60	7A	A4R108	7H
A2C2	13B	A4C28	8C	A4R61	7B	A4R109	7H
A2C3	13B	A4C29	8C	A4R62	8A	A4R110	6H
A2C4	14B	A4C30	7B	A4R63	13H	A4R111	6H
A2C5	14B	A4C31	8B	A4R64	13H	A4R112	6H
A2C6	14C	A4C32	8A	A4R65	13H	A4R113	9F
A2CR1	12B	A4C33	14H	A4R66	13H	A4R114	8H
A2CR2	12C	A4C34	13H	A4R67	13H	A4R115	7D
A2CR3	12B	A4C35	12H	A4R68	12H	A4RT1	13H
A2CR4	13B	A4C36	12H	A4R69	14H	A4RT3	9C, 9D
A2R1	10B	A4C37	14H	A4R70	14H	A4T3	9D
						A4T4	9B
						A4T5	15E

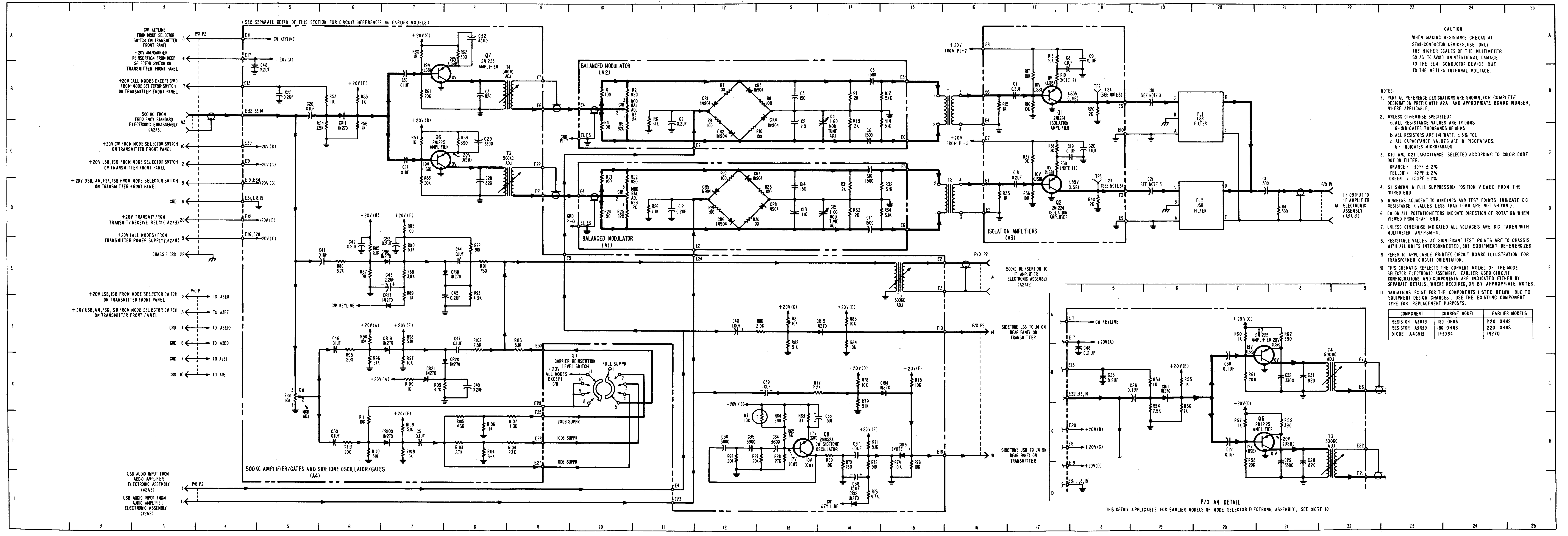
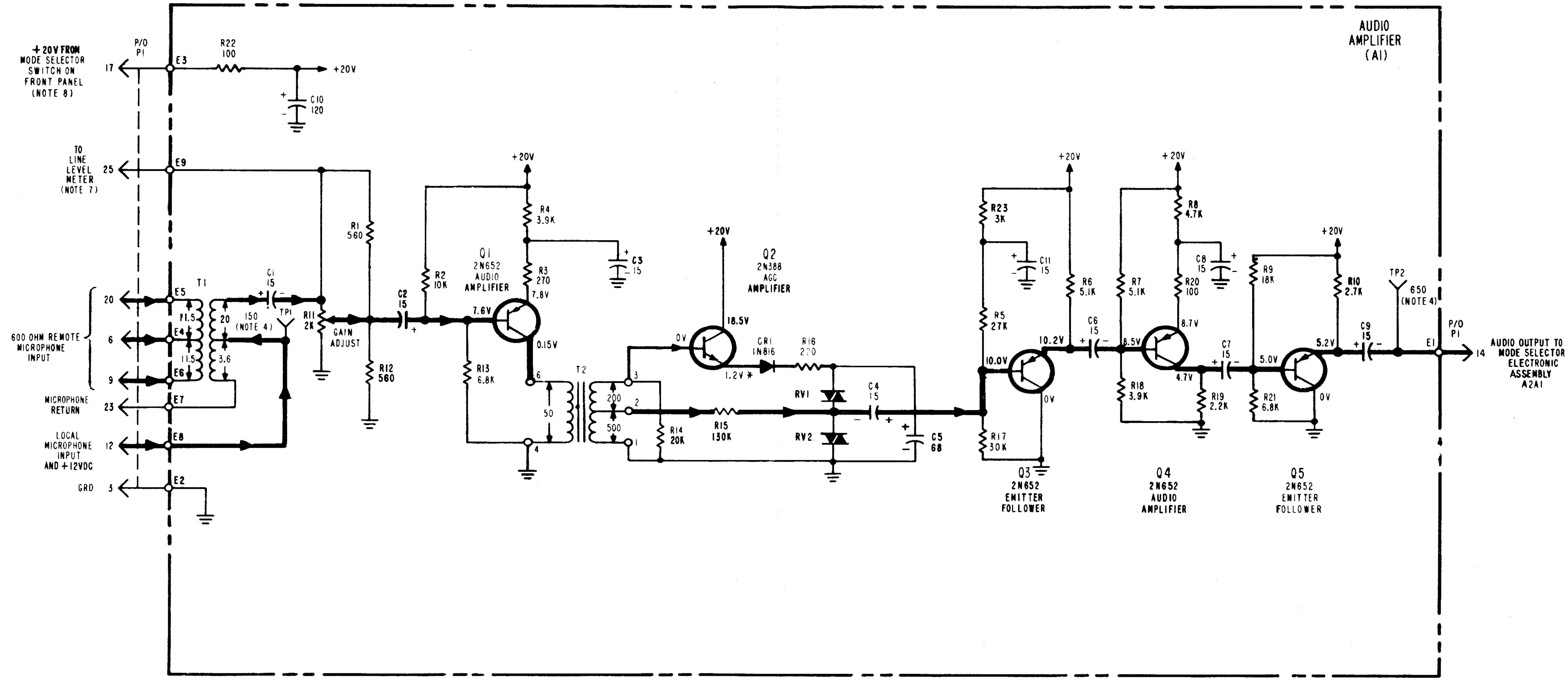


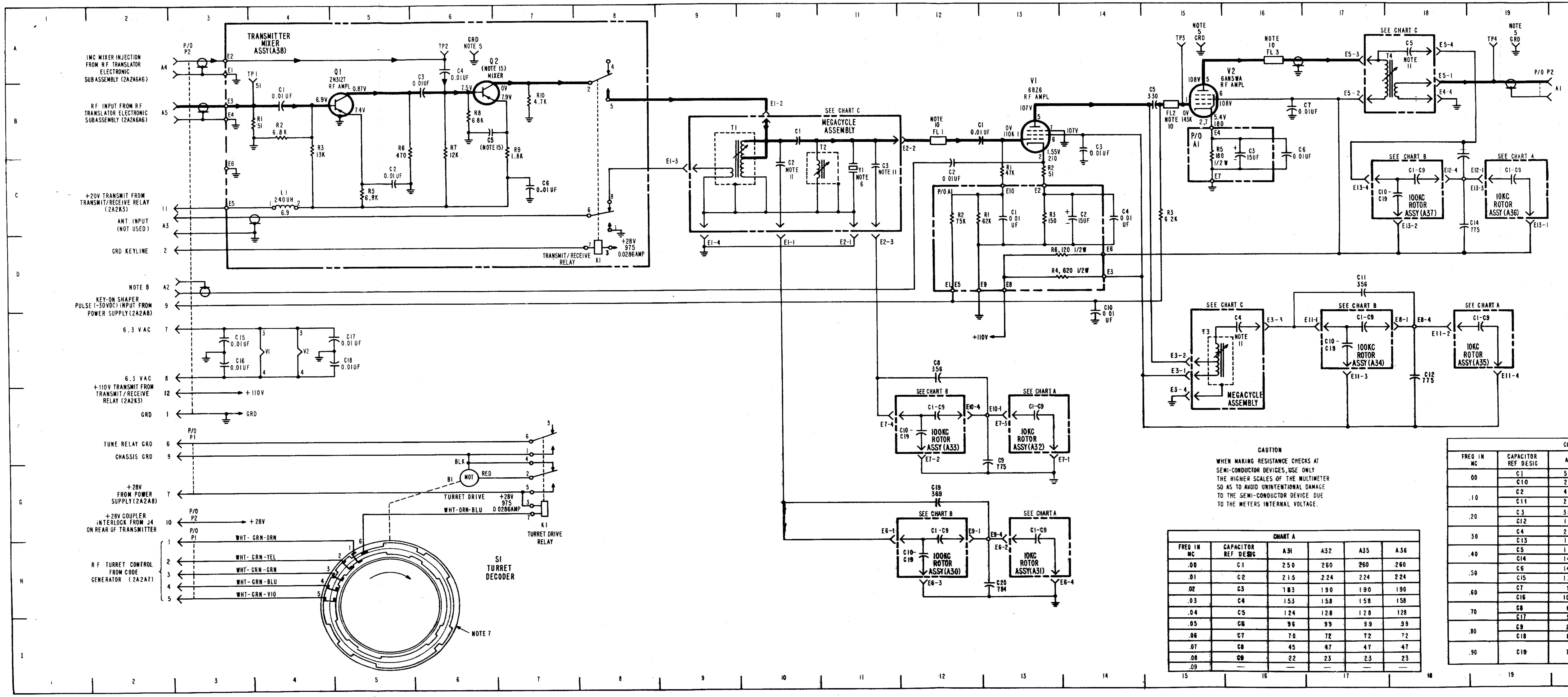
Figure 5-2. Mode Selector Electronic Assembly, Schematic Diagram



NOTES:

1. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN FOR COMPLETE DESIGNATION PREFIX WITH A2A2 OR A2A3
2. UNLESS OTHERWISE SPECIFIED:
   a. ALL RESISTANCE VALUES ARE IN OHMS K INDICATES THOUSANDS OF OHMS
   b. ALL RESISTORS ARE 1/4 WATT, ± 5% TOLERENCE
   c. ALL CAPACITANCE VALUES ARE IN MICROFARADS
3. NUMBERS ADJACENT TO WINDINGS AND TEST POINTS INDICATE DC RESISTANCE (VALUES LESS THAN ONE OHM ARE NOT SHOWN)
4. RESISTANCE VALUES AT SIGNIFICANT TEST POINTS ARE TO CHASSIS WITH ALL UNITS INTERCONNECTED BUT EQUIPMENT DE-ENERGIZED
5. * EMITTER VOLTAGE VARIES WITH INPUT A READING OF 1.2V OBTAINED WITH A 55MV INPUT AT PINS 12 AND 23
6. UNLESS OTHERWISE INDICATED ALL VOLTAGES ARE DC, TAKEN WITH MULTIMETER AN/PSM-4
7. DURING LSB OPERATION THE AUDIO LEVEL AT P1-25 IS OBSERVED ON THE LSB LINE LEVEL METER (M1) DURING USB OPERATION THE AUDIO LEVEL AT P1-25 IS OBSERVED ON THE USB LINE LEVEL METER (M2).
8. DURING LSB OPERATION +20V LSB/ISB IS PRESENT AT P1-17 DURING USB OPERATION +20V USB/AM/FSK/ISB IS PRESENT AT P1-17
9. REFER TO APPLICABLE PRINTED CIRCUIT BOARD ILLUSTRATION FOR TRANSFORMER CIRCUIT ORIENTATION.

Figure 5-3. Audio Amplifier Electronic Assembly, Schematic Diagram



NOTES:

1. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN: FOR COMPLETE DESIGNATION PREFIX WITH A2A4 AND APPROPRIATE BOARD NUMBER, WHERE APPLICABLE.
2. UNLESS OTHERWISE SPECIFIED:
   a. ALL RESISTANCE VALUES ARE IN OHMS K-INDICATES THOUSANDS OF OHMS.
   b. ALL RESISTORS ARE 1/4 WATT, ± 5% TOL
   c. ALL CAPACITANCE VALUES ARE IN PICOFARADS, UF INDICATES MICROFARADS.
3. NUMBERS ADJACENT TO COILS AND TEST POINTS INDICATE DC RESISTANCE (VALUES LESS THAN ONE OHM ARE NOT SHOWN).
4. ALL RESISTANCE READINGS TAKEN WITH RF AMPLIFIER ELECTRONIC ASSEMBLY REMOVED FROM CHASSIS AND REFERENCED TO GROUND.
5. DURING MEASUREMENT AT A TEST POINT USE GROUND MARKED ADJACENT TO TEST POINT.
6. CRYSTAL Y1 USED ONLY ON ASSEMBLIES A9, A10 AND A19.
7. S1 SHOWN IN 2MC POSITION.
8. P2-A2 IS WIRED BUT NOT USED IN AN/WRC-1 SYSTEM.
9. CAPACITORS IN CHARTS A,B, AND C WHICH ARE 100PF AND GREATER ARE 1/2%. CAPACITORS LESS THAN 100PF ARE 1%, EXCEPT C1 IN CHART C WHICH IS 5%.
10. FL1, FL2, AND FL3 ARE PARASITIC SUPPRESSORS.
11. NOT USED IN 2MC POSITION.
12. UNLESS OTHERWISE INDICATED ALL VOLTAGES ARE DC, TAKEN WITH MULTIMETER AN/PSM-4.
13. REFER TO APPLICABLE PRINTED CIRCUIT BOARD ILLUSTRATION FOR TRANSFORMER CIRCUIT ORIENTATION.
14. THIS SCHEMATIC REFLECTS THE CURRENT MODEL OF THE RF AMPLIFIER ELECTRONIC ASSEMBLY. EARLIER USED CIRCUIT CONFIGURATIONS AND COMPONENTS ARE INDICATED EITHER BY SEPARATE DETAILS, WHERE REQUIRED, OR BY APPROPRIATE NOTES.
15. VARIATIONS EXIST FOR THE COMPONENTS LISTED BELOW DUE TO EQUIPMENT DESIGN CHANGES. USE EXISTING COMPONENT TYPES FOR REPLACEMENT PURPOSES.

COMPONENT	CURRENT MODEL	EARLIER MODELS
CAPACITOR A38C5	0.0022 UF	0.01 UF
TRANSISTOR A38Q2	MOTOROLA SM 2437 OR TEXAS INSTRUMENTS GM-1151	2N1142

CAUTION

WHEN MAKING RESISTANCE CHECKS AT SEMI-CONDUCTOR DEVICES, USE ONLY THE HIGHER SCALES OF THE MULTIMETER SO AS TO AVOID UNINTENTIONAL DAMAGE TO THE SEMI-CONDUCTOR DEVICE DUE TO THE METERS INTERNAL VOLTAGE.

CHART A

FREQ IN MC	CAPACITOR REF DESIG	A31	A32	A35	A36
.00	C1	250	260	260	260
.01	C2	215	224	224	224
.02	C3	183	190	190	190
.03	C4	153	158	158	158
.04	C5	124	128	128	128
.05	C6	96	99	99	99
.06	C7	70	72	72	72
.07	C8	45	47	47	47
.08	C9	22	23	23	23
.09	—	—	—	—	—

CHART B

FREQ IN MC	CAPACITOR REF DESIG	A30	A33	A34	A37
00	C1	545	517	517	517
	C10	253	257	257	257
.10	C2	426	405	405	405
	C11	219	222	222	222
.20	C3	332	316	316	316
	C12	190	193	193	193
30	C4	257	245	245	245
	C13	165	167	167	167
.40	C5	195	186	186	186
	C14	144	146	146	146
.50	C6	143	137	137	137
	C15	125	127	127	127
.60	C7	99	95	95	95
	C16	109	110	110	110
.70	C8	61	59	59	59
	C17	95	96	96	96
.80	C9	29	28	28	28
	C18	83	83	83	83
.90	C19	74	74	74	74

CHART C

FREQ IN MC	ON ASSY	C1	ON ASSY	C2	ON ASSY	C3	ON ASSY	C4	ON ASSY	C5
2	A20	9 1	A20	SHORT	A20	SHORT	A25	SHORT	A2	SHORT
3	A21	6.2	A21	1247	A21	1253	A26	1247	A3	1253
4	A22	5.6	A22	623	A22	629	A27	623	A4	629
5	A23	5.1	A23	416	A23	422	A28	416	A5	422
6	A24	3.9	A24	312	A24	318	A29	312	A6	318
7	A25	3.3	A25	250	A25	256	A2	250	A7	256
8	A26	3 0	A26	208	A26	214	A3	208	A8	214
9	A27	2 7	A27	179	A27	185	A4	179	A9	185
10	A28	2.7	A28	157	A28	163	A5	157	A10	163
11	A29	2.4	A29	140	A29	146	A6	140	A11	146
12	A2	2.2	A2	126	A2	132	A7	126	A12	132
13	A3	2 0	A3	115	A3	120	A8	115	A13	120
14	A4	2 0	A4	105	A4	111	A9	105	A14	111
15	A5	2 0	A5	97	A5	103	A10	97	A15	103
16	A6	2.0	A6	91	A6	96	A11	91	A16	96
17	A7	2.0	A7	85	A7	90	A12	85	A17	90
18	A8	1.8	A8	80	A8	85	A13	80	A18	85
19	A9	1.8	A9	75	A9	80	A14	75	A19	80
20	A10	1.8	A10	71	A10	76	A15	71	A20	76
21	A11	2.0	A11	67	A11	73	A16	67	A21	73
22	A12	2 0	A12	64	A12	68	A17	64	A22	68
23	A13	2.0	A13	61	A13	66	A18	61	A23	66
24	A14	2.0	A14	58	A14	63	A19	58	A24	63
25	A15	2.0	A15	56	A15	61	A20	56	A25	61
26	A16	2.0	A16	54	A16	59	A21	54	A26	59
27	A17	2.0	A17	52	A17	57	A22	52	A27	57
28	A18	2 0	A18	50	A18	55	A23	50	A28	55
29	A19	2.0	A19	48	A19	53	A24	48	A29	53

Figure 5-4. RF Amplifier Electronic Assembly, Schematic Diagram

PART LOCATION INDEX

REF DESIG	LOC
C1	5D
HR1	10D
P1	4B, 4C, 4F, 21D, 21E, 21G, 21H
Q1	11H
R1	5I
RT1	5G
S1	12C
A1C1	19F
A1C2	19F
A1C3	20F
A1C4	18F
A1C5	19G
A1C6	16E
A1C7	16E
A1C8	16F
A1C9	17E
A1C10	16G
A1C11	18E
A1C12	17E
A1C13	15G
A1C14	16F
A1C15	13G
A1C16	13H
A1C17	12H
A1C18	13F
A1C19	12F
A1C20	12B
A1C21	11B
A1C22	14B
A1C23	14C
A1C24	16C
A1C25	15D
A1C26	11F
A1CR1	14C
A1CR2	16C
A1DS1	17D
A1L1	11F
A1L2	11A
A1Q1	19F
A1Q2	16E
A1Q3	16G
A1Q4	13H

REF DESIG	LOC
A1Q5	13F
A1Q6	16D
A1Q7	15C
A1R1	19F
A1R2	18F
A1R3	19F
A1R4	18F
A1R5	15E
A1R6	15E
A1R7	16F
A1R8	17E
A1R9	16E
A1R10	16F
A1R11	16F
A1R12	15F
A1R13	16G
A1R14	13G
A1R15	12G
A1R16	12H
A1R17	13E
A1R18	13D
A1R19	12F
A1R20	13E
A1R21	12E
A1R22	11C
A1R23	11B
A1R24	13B
A1R25	13B
A1R26	16C
A1R27	16C
A1R28	15C
A1R29	15D
A1R30	16D
A1R31	14B
A1T1	18G
A1T2	15E
A1T3	18E
A1T4	14H
A1T5	14F
A1T6	14C
A1TP1	14C
A1TP2	18G
A2C1	6H
A2C2	7G

REF DESIG	LOC
A2C3	7G
A2C4	8H
A2C5	8G
A2C6	10H
A2C12	9C
A2C13	9D
A2C40	10G
A2CR1	9G
A2CR2	10H
A2CR3	8C
A2CR4	8E
A2Q1	6G
A2Q2	7G
A2Q3	10G
A2Q6	9D
A2R1	6G
A2R2	6H
A2R3	7H
A2R4	7H
A2R6	8H
A2R7	6G
A2R8	9H
A2R9	10H
A2R10	10H
A2R11	9G
A2R12	9C
A2R17	9C
A2R18	6F
A2RT2	6F
A2T1	8G
A2T3	9D
A3C7	6C
A3C8	7E
A3C9	6E
A3C10	6D
A3CR5	6C
A3CR6	6D
A3Q5	7D
A3R14	7D
A3R15	6E
A3R16	6E
A3T2	7C
A3Y1	6E

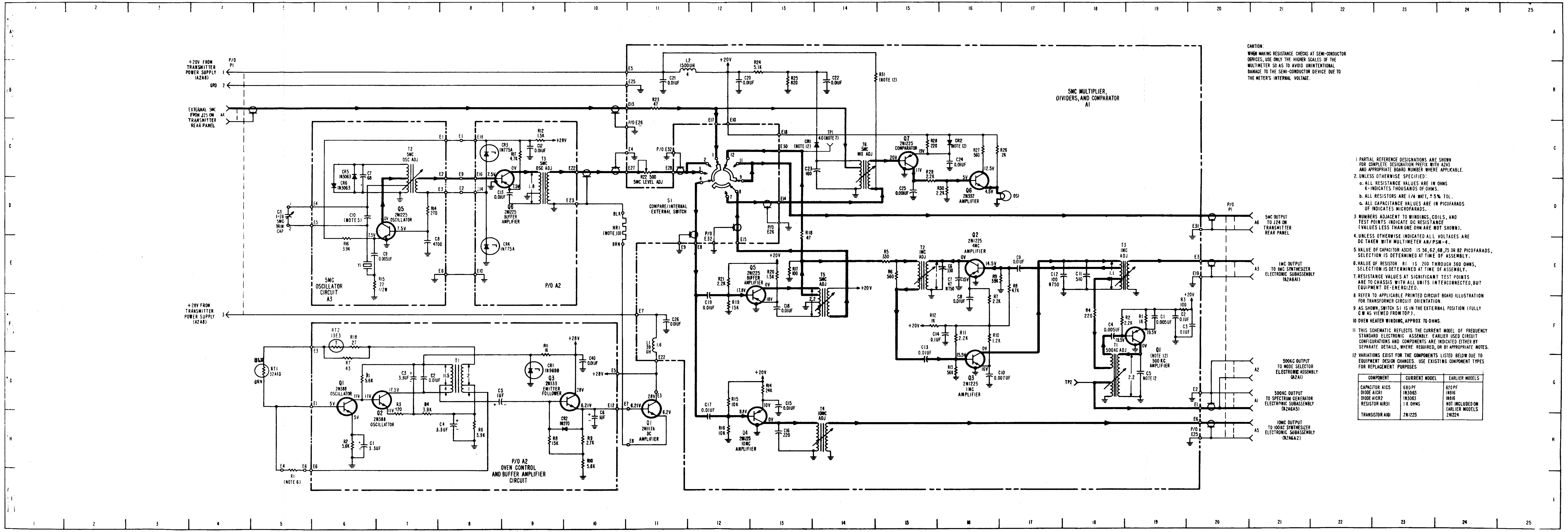


Figure 5-5. Frequency Standard Electronic Assembly, Schematic Diagram

PART LOCATION INDEX

REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC
B1	3F	A1R14	9C	A2R13	21G	A3L3	9H
C1 thru C17	4C	A1R15	10C	A2R14	22G	A3L4	13G
C1	4G	A1R16	11C	A2R15	22F	A3Q1	7G
C2	16E	A1R17	11C	A2R16	22G	A3Q2	8G
K1	3E, 3D	A1R18	12C	A2R17	22G	A3Q3	9G
L1	4G	A1RT1	6B	A2R18	22H	A3Q4	13G
L2	15E	A2C1	15G	A2R19	22H	A3Q5	10F
P1	2D, 2E, 4G,	A2C2	16F	A2R20	22H	A3Q6	11G
	12C	A2C3	16G	A2R21	23G	A3R1	5F
S1	3E, 4C, 4E	A2C4	16F	A2R22	15F	A3R2	6F
Y1 thru Y17	4C	A2C5	19G	A2RT1	22H	A3R3	7F
A1C18	11B	A2C6	19G	A2T1	18G	A3R4	7G
A1C19	5B	A2C7	21G	A2T2	19G	A3R5	6G
A1C20	6B	A2C8	21G	A2TP1	18G	A3R6	7G
A1C21	7C	A2C9	21H	A2TP2	21G	A3R7	7G
A1C23	7B	A2C10	21F	A2TP3	23F	A3R8	8H
A1C24	8C	A2C11	22H	A3C1	6F	A3R9	8G
A1C25	11B	A2C12	18G	A3C2	6G	A3R10	8G
A1C26	9C	A2C13	20G	A3C3	5G	A3R11	8G
A1C27	10B	A2C14	15F	A3C4	7G	A3R12	9F
A1C28	11C	A2CR1	20G	A3C5	7G	A3R13	9F
A1CR1	6A	A2J1	23G	A3C6	8H	A3R14	9G
A1CR2	6A	A2J2	22F	A3C7	8G	A3R15	9G
A1CR3	5C	A2L1	20G	A3C8	8G	A3R16	9G
A1L1	11A	A2L2	21G	A3C9	10H	A3R17	10H
A1L2	8B	A2L3	21G	A3C10	10G	A3R18	11G
A1L3	9C	A2L4	21H	A3C11	5F	A3R19	12G
A1Q1	8C	A2P1	23G	A3C12	12G	A3R20	12G
A1Q2	9C	A2P2	22F	A3C13	12G	A3R21	11H
A1Q3	10C	A2Q1	16G	A3C14	11G	A3R22	10H
A1Q4	11C	A2Q2	19G	A3C15	13G	A3R23	11G
A1R1	5D	A2Q3	22G	A3C16	13G	A3R24	11G
A1R2	5B	A2R1	16F	A3C17	14G	A3R25	12G
A1R3	5A	A2R2	16G	A3C18	10F	A3R26	10F
A1R4	6B	A2R3	16F	A3C19	11G	A3R27	10F
A1R5	7A	A2R4	16F	A3C20	11F	A3R28	10G
A1R6	7B	A2R5	16G	A3CR1	5F	A3R29	10G
A1R7	8B	A2R6	17G	A3CR2	7G	A3R30	10F
A1R8	7B	A2R7	18G	A3CR3	6G	A3R31	11F
A1R9	8C	A2R8	18G	A3CR4	9G	A3R32	14G
A1R10	9C	A2R9	19F	A3CR5	10H	A3R33	5G
A1R11	9B	A2R10	19G	A3L1	5F	A3T1	13G
A1R12	10B	A2R11	19G	A3L2	5G	A3TP1	13F
A1R13	9C	A2R12	20G				

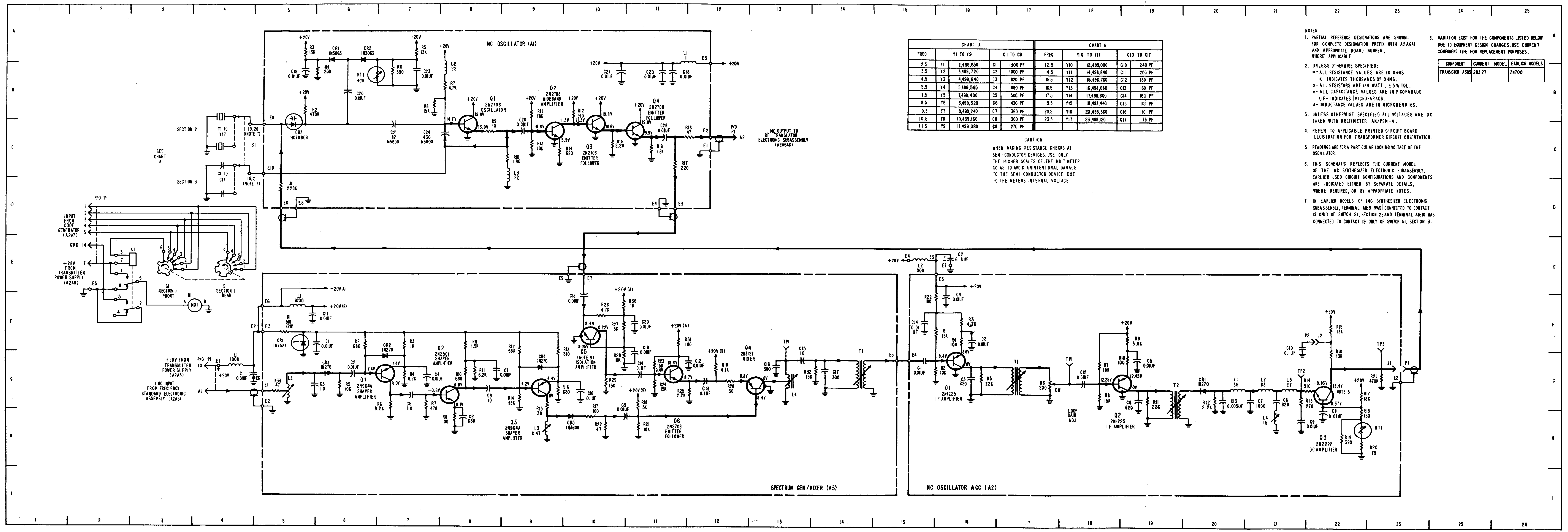


Figure 5-6. MC Synthesizer Electronic Subassembly, Schematic Diagram

PART LOCATION INDEX

C	REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC
	A2R2	7H	A3R11	18H	A4L5	12D	A5C8	20C
2F	A2R3	7H	A3R12	18H	A3L6	15D	A5C9	20D
2I,	A2R4	5G	A3R13	19H	A4Q1	10B	A5C10	21C
	A2R5	4G	A3R14	19G	A4Q2	10D	A5C11	21C
	A2R6	4G	A3R15	21G	A4Q3	14B	A5CR1	20D
	A2R7	4G	A3R16	12G	A4Q4	14D	A5L1	21B
	A2R8	6F	A3T1	13H	A4R1	9B	A5L2	19C
	A2R9	5G	A3T2	15H	A4R2	10C	A5L3	20C
	A2T1	6G	A3T3	19G	A4R3	9A	A5Q1	17D
	A2T2	8G	A3T4	21G	A4R4	10B	A5Q2	18C
	A2T3	9G	A3TP1	12G	A4R5	10D	A5Q3	19C
	A2TP1	9G	A3TP2	15G	A4R6	10B	A5Q4	20C
	A3C1	11H	A3TP3	17G	A4R7	10D	A5R1	17D
	A3C2	21I	A3TP4	21F	A4R8	10D	A5R2	17C
	A3C3	20I	A3Y1	14G	A4R9	12D	A5R3	17C
	A3C4	11H	A3Y2	20F	A4R10	13B	A5R4	18C
	A3C5	12G	A4C1	9B	A4R11	13C	A5R5	18D
	A3C6	12H	A4C2	9D	A4R12	13D	A5R6	19C
	A3C7	13H	A4C3	9A	A4R13	14B	A5R7	19D
	A3C8	14H	A4C4	9B	A4R14	14B	A5R8	19D
	A3C9	14H	A4C5	10C	A4R15	14D	A5R9	19C
	A3C10	16G	A4C6	9D	A4R16	14D	A5R10	19D
	A3C11	17H	A4C7	10B	A4R17	14C	A5R11	20C
	A3C12	17H	A4C8	10C	A4R18	14E	A5R12	19D
	A3C13	17G	A4C9	10D	A4R19	13E	A5R13	19D
	A3C14	18H	A4C10	11B	A4R20	10C	A5R14	19D
	A3C15	18G	A4C11	11B	A4R21	15B	A5R15	20C
	A3C16	19H	A4C12	11D	A4R22	15D	A5R16	21C
	A3C17	20G	A4C13	11D	A4R23	15C	A5R17	20D
	A3C18	19G	A4C14	12B	A4T1	12B	A5TP1	18D
	A3C19	20G	A3C15	12B	A4T2	13D		
	A3C20	20G	A4C16	12D	A4TP1	10B		
	A3CR1	18H	A4C17	12D	A4TP2	11B		
	A3CR2	18H	A4C18	13B	A4TP3	13B		
	A3CR3	19H	A4C19	13D	A4TP4	11D		
	A3Q1	12H	A4C20	14B	A4TP5	12D		
	A3Q2	16G	A4C21	14E	A4TP6	13D		
	A3R1	11H	A3C22	9B	A5C1	17B		
	A3R2	12H	A4C23	14C	A5C2	17D		
	A3R3	11H	A4C24	14D	A5C3	21C		
	A3R4	12H	A4C25	14C	A5C4	18C		
	A3R5	15H	A4C26	15E	A5C5	18B		
	A3R6	16G	A4C27	14C	A5C6	19D		
	A3R7	16H	A4L1	11B	A5C7	19C		
	A3R8	16H	A4L2	11B				
	A3R9	17H	A4L3	15B				
	A3R10	18G	A4L4	11D				

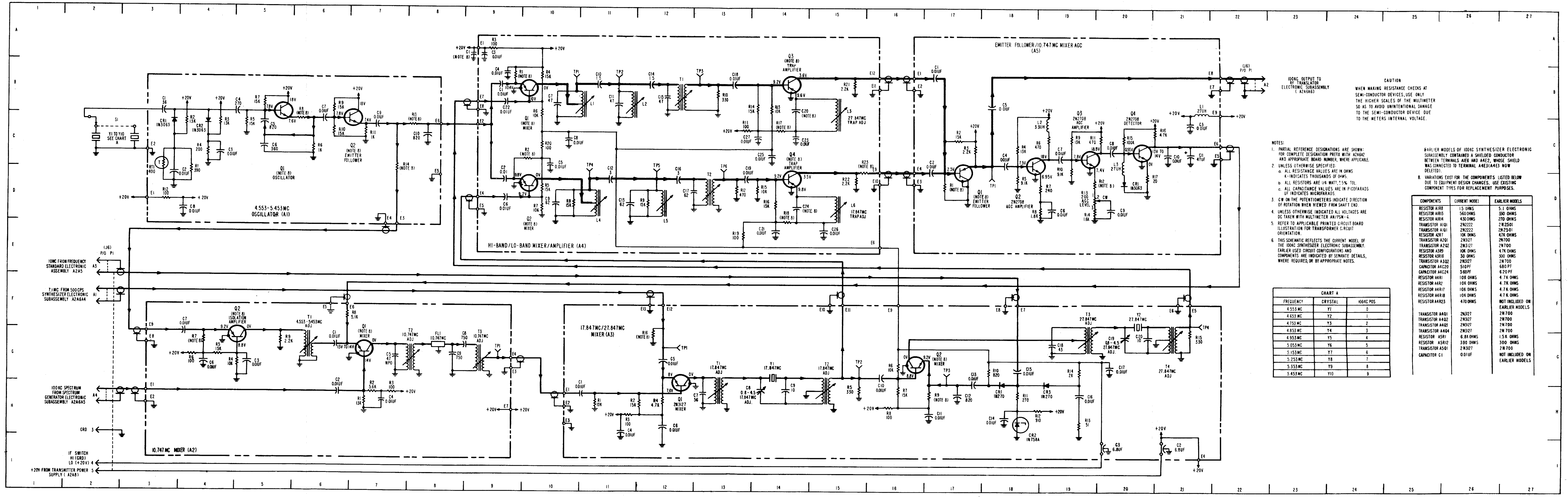


Figure 5-7. 100 KC Synthesizer Electronic Subassembly, Schematic Diagram

PART LOCATION INDEX

	LOC	REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC
	3E	A1RT1	4D	A3CR7	13C	A4R7	18G
	3E	A1T1	8C	A3J8	9C	A4R8	18G
	3D	A2C1	4G	A3J9	9A	A4R9	18F
	15C	A2C2	4G	A3J10	9D	A4R10	19F
	3E	A2C3	5G	A3L5	11C	A4R11	19F
	3I	A2C4	5G	A3L6	12C	A4R12	12F
	3A	A2C5	4H	A3L7	12C	A4R30	19F
	21G	A2C6	6G	A3Q11	10C	A4R31	16H
	9C	A2C7	4F	A3Q12	13B	A4T1	20G
	9A	A2C8	5H	A3R47	10B	A4Z1C43	13G
	2B	A2C9	7F	A3R48	10B	A4Z1C44	13F
	2G	A2C10	7G	A3R49	13B	A4Z1Q10	13G
u Y10	2C, 3C	A2CR1	4H	A3R50	12B	A4Z1R41	13G
u Y20	2G, 3G	A2CR2	5H	A3R51	13D	A4Z1R42	13G
	4B	A2Q1	5G	A3R52	10C	A4Z1R43	13F
	4B	A2Q2	6G	A3R54	10C	A4Z1R44	13G
	5C	A2R1	4G	A3T3	14C	A4Z2C29	11H
	5C	A2R2	5F	A3TP1	10C	A4Z2C30	10G
	4D	A2R3	4H	A3TP2	11C	A4Z2Q7	10G
	6B	A2R4	6G	A3TP3	12C	A4Z2R26	11G
	4B	A2R5	7G	A4C1	16G	A4Z2R27	10H
	5D	A2R6	6G			A4Z2R28	10G
	7B	A2R7	5G	A4C2	17I	A4Z2R29	11G
	7C	A2R8	6F	A4C3	16I	A4Z3C27	14F
	8C	A2R9	7F	A4C4	17H	A4Z3C28	15F
1	4C	A2R10	7F	A4C5	19H	A4Z3Q6	15F
2	5C	A2R11	4H	A4C6	19H	A4Z3R22	16F
	5B	A2R12	5H	A4C7	17G	A4Z3R23	15F
	6B	A2R13	5H	A4C8	15G	A4Z3R24	15F
	4B	A2R14	7F	A4C9	14G	A4Z3R25	15F
	5B	A2R15	8G	A4C10	19G		
	4D	A2R16	8G	A4C11	18F		
	6C	A2RT1	4H	A4C12	19G		
	7C	A2T1	8G	A4C13	12G		
	6C	A3C46	10B	A4FL1	18H		
	5B	A3C47	10C	A4FL2	15G		
	6B	A3C48	10C	A4L3	17F		
	7B	A3C49	11C	A4L4	12G		
	7B	A3C50	12C	A4Q8	17H		
	4D	A3C51	12C	A4Q9	19G		
	5D	A3C52	13C	A4R1	17I		
	5C	A3C53	13A	A4R2	16H		
	7A	A3C54	13C	A4R3	16H		
	8C	A3C55	10C	A4R4	16H		
	8C	A3C56	11C	A4R5	17H		
				A4R6	19H		

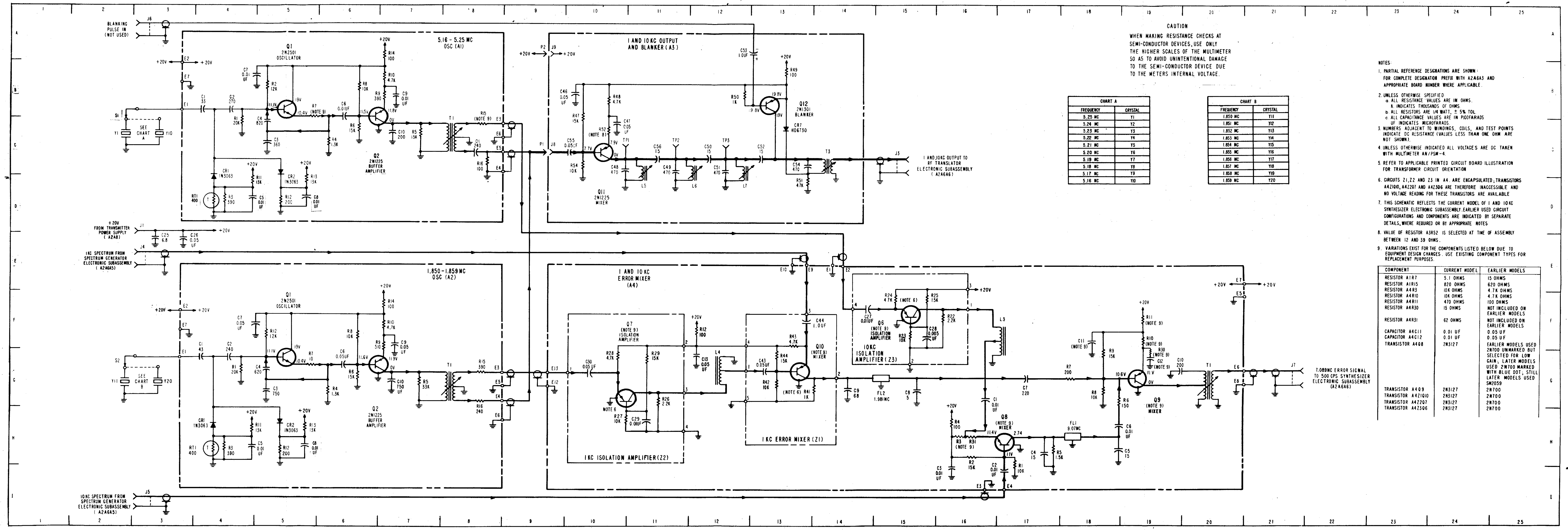


Figure 5-8. 1 and 10 KC Synthesizer Electronic Subassembly, Schematic Diagram

PART LOCATION INDEX

REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC
A1R14	11G	A2C24	18B	A2R21	19C	A3C19	4E	A3R13	9C
A1R15	11H	A2C26	20C	A2R22	19C	A3C20	10E	A3R14	9C
A1R16	12G	A2CR1	14D	A2R23	19D	A3C21	10D	A3R15	9C
A1R17	7H	A2CR2	14B	A2R24	20D	A3C22	9D	A3R15	10B
A1R18	6G	A2CR3	17D	A2R25	21C	A3C23	12C	A3R17	10C
A1R19	6G	A2CR4	16D	A2R26	21C	A3C24	12D	A3R18	10D
A1R20	6G	A2CR5	19D	A2R27	21D	A3C25	6D	A3R19	11B
A1R21	5F	A2CR6	19D	A2R28	21D	A3CR1	5B	A3R20	11B
A1R22	5H	A2CR7	19C	A2R29	22C	A3CR2	6B	A3R21	10E
A1R23	5G	A2CR8	21D	A2R30	21C	A3CR3	6B	A3R22	10D
A1R24	5G	A2CR9	21D	A2R31	22D	A3CR4	5C	A3R23	10E
A1R25	4G	A2CR10	24D	A2R32	22D	A3CR5	7D	A3R24	9D
A1R26	4H	A2CR11	23D	A2R33	23C	A3CR6	6D	A3R25	9D
A1T1	12H	A2CR12	17C	A2R34	23C	A3CR7	11B	A3R26	11C
A1T2	6G	A2L1	13D	A2R35	23D	A3CR8	10E	A3R27	11D
A1TP1	4H	A2Q1	16D	A2R36	23D	A3CR9	10D	A3R28	11D
A1TP2	9H	A2Q2	17D	A2R37	24C	A3J1	4D	A3R29	12D
A1TP3	7G	A2Q3	18D	A2R38	24C	A3L1	4A	A3R30	12D
A1TP4	9H	A2Q4	19D	A2R39	24D	A3L2	8C	A3R31	11E
A1TP5	(NOTE 7)	A2Q5	21D	A2R40	24D	A3L3	8C	A3RT1	6D
A1TP6	4G	A2Q6	22D	A2R41	23E	A3L4	6C	A3T1	11D, 11E
A2C1	14D	A2Q7	23D	A2TP1	15C	A3L5	4B	A3TP2	4C
A2C2	14D	A2Q8	24D	A2TP2	17D	A3L6	12B		
A2C3	13C	A2Q9	14C	A2TP3	20D	A3L7	5E		
A2C4	14C	A2R1	14D	A2TP4	23E	A3P1	4D		
A2C5	15C	A2R2	14C	A2TP5	22D	A3Q1	8B		
A2C6	15C	A2R3	14B	A3C1	4B	A3Q2	8B		
A2C7	16B	A2R4	15B	A3C2	5B	A3Q3	9C		
A2C8	16D	A2R5	15C	A3C3	6B	A3Q4	10C		
A2C9	17D	A2R6	15C	A3C4	7C	A3Q5	10B		
A2C10	18D	A2R7	16B	A3C5	7C	A3Q6	11C		
A2C11	18C	A2R8	16C	A3C6	7B	A3Q7	11D		
A2C12	18D	A2R9	16C	A3C7	7B	A3R1	4A		
A2C13	19D	A2R10	16D	A3C8	6C	A3R2	7B		
A2C14	20D	A2R11	16D	A3C9	4B	A3R3	8C		
A2C15	22C	A2R12	17B	A3C10	5B	A3R4	8C		
A2C16	21D	A2R13	17C	A3C11	5B	A3R5	8B		
A2C17	22D	A2R14	17D	A3C12	4B	A3R6	7B		
A2C18	22D	A2R15	17D	A3C13	7D	A3R7	5D		
A2C19	24C	A2R16	18C	A3C14	9C	A3R8	5D		
A2C20	23D	A2R17	19C	A3C15	10D	A3R9	7D		
A2C21	24D	A2R18	18D	A3C16	12B	A3R10	7D		
A2C22	24E	A2R19	18D	A3C17	11D	A3R11	4C		
A2C23	23E	A2R20	18C	A3C18	11D	A3R12	4B		

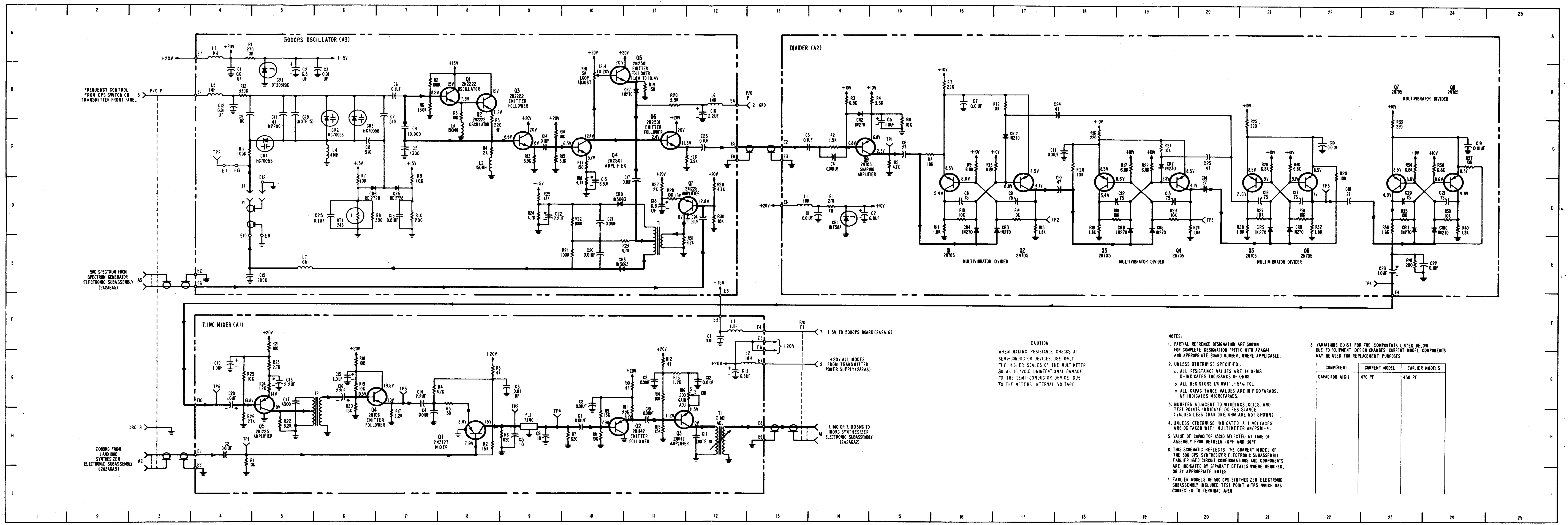


Figure 5-9. 500 CPS Synthesizer Electronic Subassembly, Schematic Diagram

PART LOCATION INDEX

EF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC	DESIG	LOC
C1	3D	A1R12	7G	A2Q2	8B	A3C5	13E	A3R17	15E	A4TP3	16G
C2	4D	A1R13	7H	A2Q3	11B	A3C6	13D	A3R18	15F	A4TP4	17G
C3	4E	A1R14	7H	A2Q4	10B	A3C7	13E	A3R19	16E	A4TP5	19H
C4	5E	A1R15	8G	A2Q5	12B	A3C8	14E	A3R20	16F		
C5	6E	A1R16	8H	A2Q6	13B	A3C9	15F	A3R21	16E		
C6	7F	A1R17	9G	A2R1	7A	A3C10	14D	A3R22	16D		
C7	7H	A1R18	9G	A2R2	7A	A3C11	15F	A3R23	18D		
C8	6D	A1R19	9G	A2R3	8A	A3C12	16E	A3R24	17D		
C9	8G	A1R20	9H	A2R4	8B	A3C13	17D	A3R25	17F		
C10	8H	A1R21	9G	A2R5	7C	A3C14	17E	A3R26	18D		
C11	8H	A1R22	11I	A2R6	7B	A3C15	11D	A3R27	19E		
C12	8H	A1R23	10G	A2R7	8A	A3C16	18E	A3T1	18E		
C13	9H	A1R24	10I	A2R8	8B	A3C17	19F	A3TP1	13E		
C14	9H	A1R25	11I	A2R9	9B	A3CR1	11D	A3TP2	14E		
C15	9H	A1T1	8H	A2R11	10A	A3CR2	12F	A3TP3	14E		
C16	9I	A1T2	12H	A2R12	10B	A3CR3	13F	A3TP4	16F		
C17	11I	A1TP1	5E	A2R13	10B	A3CR4	15F	A3TP5	16D		
C18	11H	A1TP2	6E	A2R14	10C	A3CR5	14E	A3TP6	17E		
C19	12I	A1TP3	7G	A2R15	10C	A3J2	10D	A4C1	14G		
CR1	4D	A1TP4	7F	A2R16	10A	A3J4	19E	A4C2	14H		
CR2	5D	A1TP5	7H	A2R18	10C	A3L1	11D	A4C3	15H		
CR3	5D	A1TP6	8G	A2R19	11B	A3L2	18E	A4C4	17G		
CR4	9H	A2C1	6A	A2R20	11C	A3Q1	12E	A4C5	17G		
J3	3E	A2C2	7A	A2R21	12B	A3Q2	13E	A4C6	18H		
J6	13I	A2C3	8B	A2R22	12A	A3Q3	15E	A4C7	17H		
L1	3D	A2C4	8C	A2R23	13A	A3Q4	14E	A4J1	19H		
L2	4E	A2C5	8B	A2R24	13A	A3Q5	16E	A4L1	14G		
L5	10H	A2C6	9A	A2R25	12C	A3Q6	17E	A4Q1	15H		
Q1	5E	A2C7	9B	A2R26	14E	A3R1	11D	A4Q2	16H		
Q2	7E	A2C8	10B	A2R27	14B	A3R2	12D	A4Q3	18G		
Q3	6E	A2C9	11C	A2R28	14B	A3R3	12D	A4R1	14H		
Q4	7H	A2C10	9A	A2R29	14B	A3R4	12E	A4R2	14H		
Q5	8G	A2C11	10C	A2R30	11B	A3R5	12F	A4R3	16G		
Q6	9H	A2C12	12B	A2T1	13B	A3R6	12E	A4R4	15H		
R1	3D	A2C13	13A	A2TP1	9B	A3R7	13D	A4R5	16H		
R2	4D	A2C14	13B	A2TP2	9B	A3R8	13E	A4R6	15G		
R3	5E	A2C15	12B	A2TP3	9B	A3R9	13F	A4R7	16G		
R4	7D	A2C16	14B	A2TP4	11C	A3R10	13F	A4R8	16G		
R5	7D	A2CR1	7A	A2TP5	11A	A3R11	15D	A4R9	17H*		
R6	6D	A2CR2	8C	A2TP6	12B	A3R12	15E	A4R10	18G		
R7	6E	A3CR3	8C	A3C1	12D	A3R13	14F	A4R11	18G		
R8	7F	A2CR4	9A	A3C2	12D	A3R14	14F	A4R12	18G		
R9	6G	A2J5	15B	A3C3	12F	A3R15	14F	A4R13	19H		
R10	6H	A2L1	6A	A3C4	11F	A3R16	14E	A4T1	18H		
R11	7G	A2Q1 .	7B					A4TP1	14G		
								A4TP2	16G		

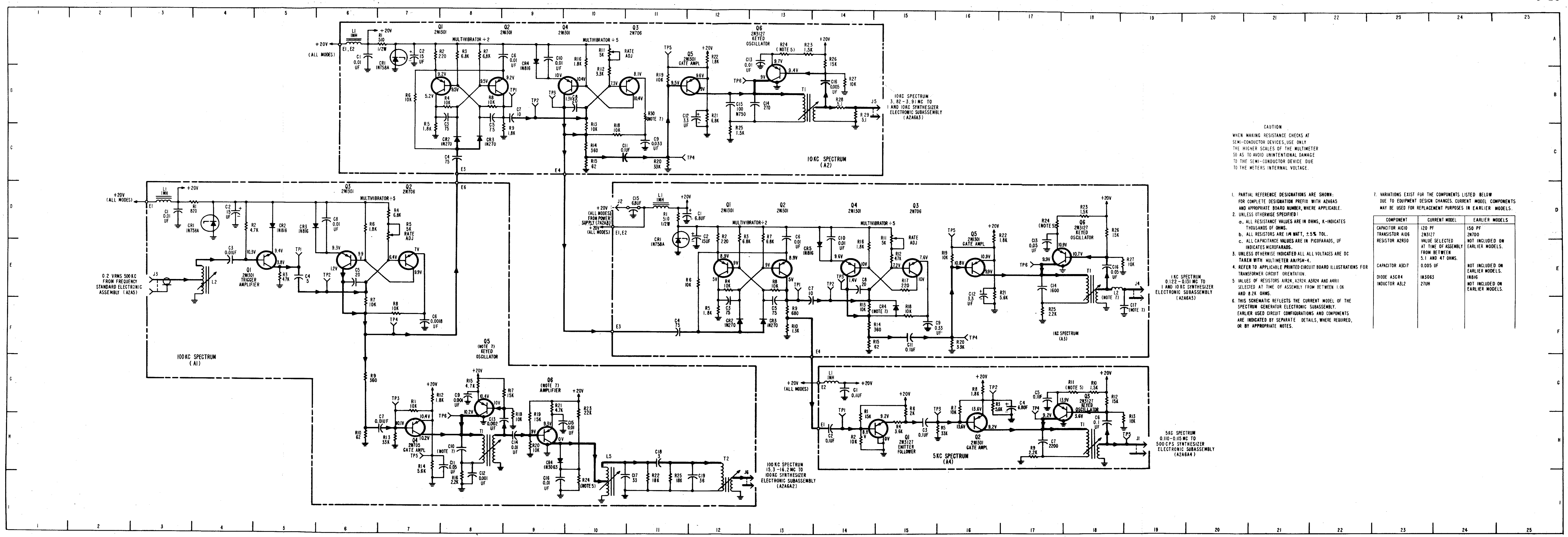


Figure 5-10. Spectrum Generator Electronic Subassembly, Schematic Diagram

PART LOCATION INDEX

REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC
C1	18B	CR4	13B	R15	11E
C2	17C	CR5	11C	R16	12E
C3	17B	CR6	9B	R17	10G
C4	14F	CR7	13C	R18	10E
C5	17F	CR8	6C	R19	10E
C6	8E	CR9	18E	R20	11D
C7	16G	CR10	17E	R21	11D
C8	15G	CR11	16H	R22	11E
C9	14B	FL1	14B	R23	5G
C10	14C	FL2	14C	R24	5H
C11	13B	FL3	7B	R25	4G
C12	13C	J1	3F	R26	5G
C13	18D	J2	3G	R27	16H
C14	11B	J3	3G	R28	6E
C15	10B	J4	18D	R29	5E
C16	5D	J5	18B	R30	5E
C17	9D	J6	18H	R31	5D
C18	10E	J7	23C	R32	5D
C19	11D	L1	18D	R33	5C
C20	11F	L2	16E	R34	5C
C21	4F	L3	10C	R35	4B
C22	11E	L4	8C	R36	5B
C23	10G	L5	7C	R37	6A
C24	12D	L6	3C	R38	6B
C25	12E	L7	18B	R39	6B
C26	5G	L8	18H	R40	9B
C27	5G	L9	11F	R41	10C
C28	6D	P2	2B, 2E	R42	10B
C29	6E	P3	19B, 19F, 19H	R43	11B
C30	6E	Q1	17B	R44	12A
C31	5E	Q2	16E	R45	12B
C32	4E	Q3	11E	R46	12B
C33	17H	Q4	12B	R47	13C
C34	17H	Q5	5B	R48	14C
C35	17H	Q6	5E	R49	14C
C36	17H	Q7	5G	R50	13C
C37	18B	Q8	8F	R51	11D
C38	4D	Q9	12F	R52	18F
C39	10C	R1	18B	R53	10G
C40	5B	R2	17B	R54	10E
C41	5B	R3	17C	R55	3F
C42	17D	R4	17F	R56	4H
C43	17D	R5	17F	T1	4E
C45	10B	R6	14E	TP1	16B
C46	3D	R7	15E	TP2	12B
CR1	17B	R8	14E	TP3	9B
CR2	16C	R9	15F	TP4	6B
CR3	16B	R10	7E	TP5	18B
		R11	7E	TP6	18B
		R12	8E	TP7	4B
		R13	4F	TP8	3E
		R14	11D		

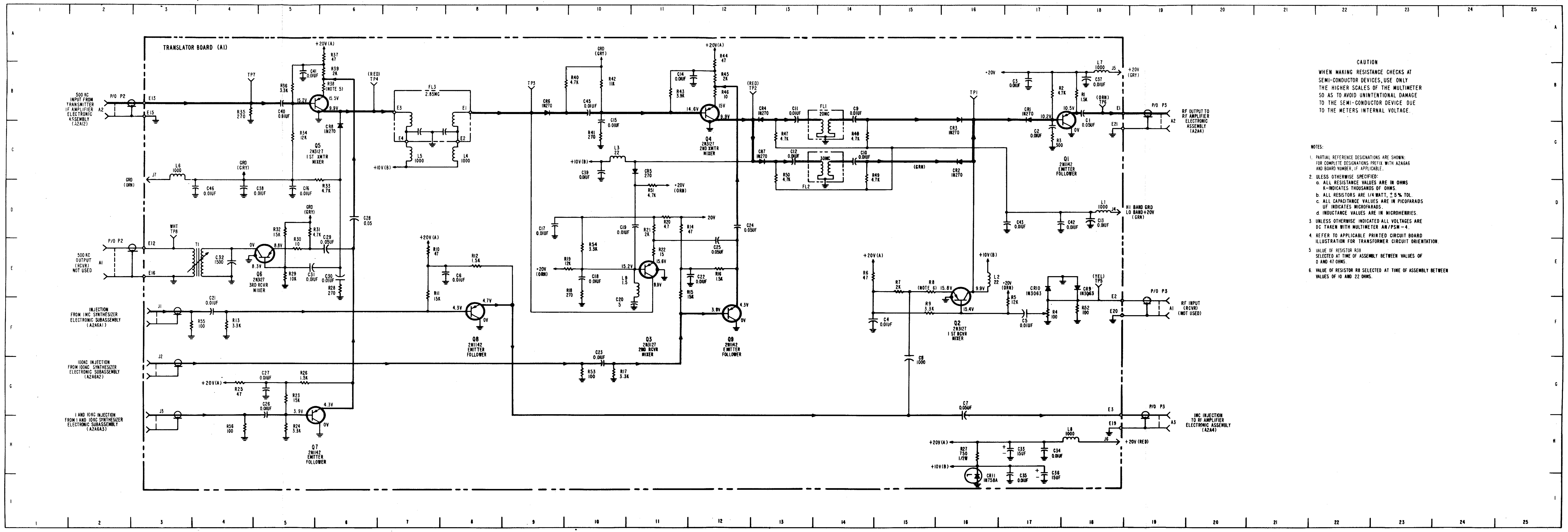
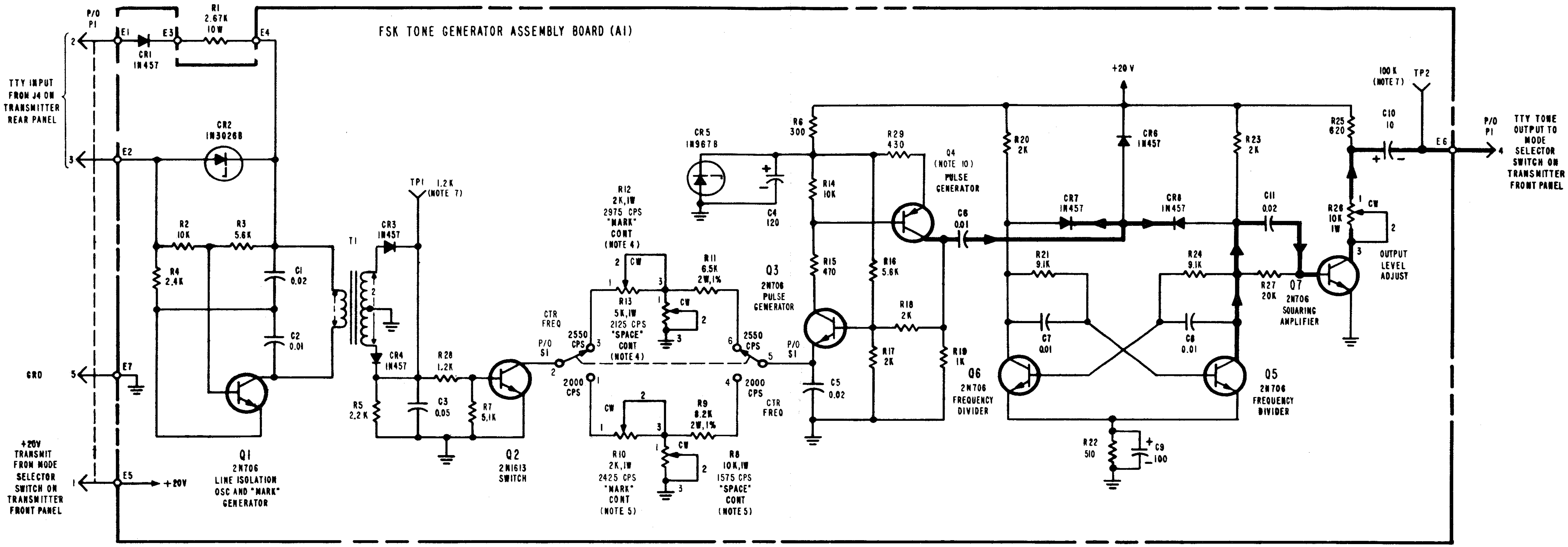


Figure 5-11. RF Translator Electronic Subassembly, Schematic Diagram



CAUTION

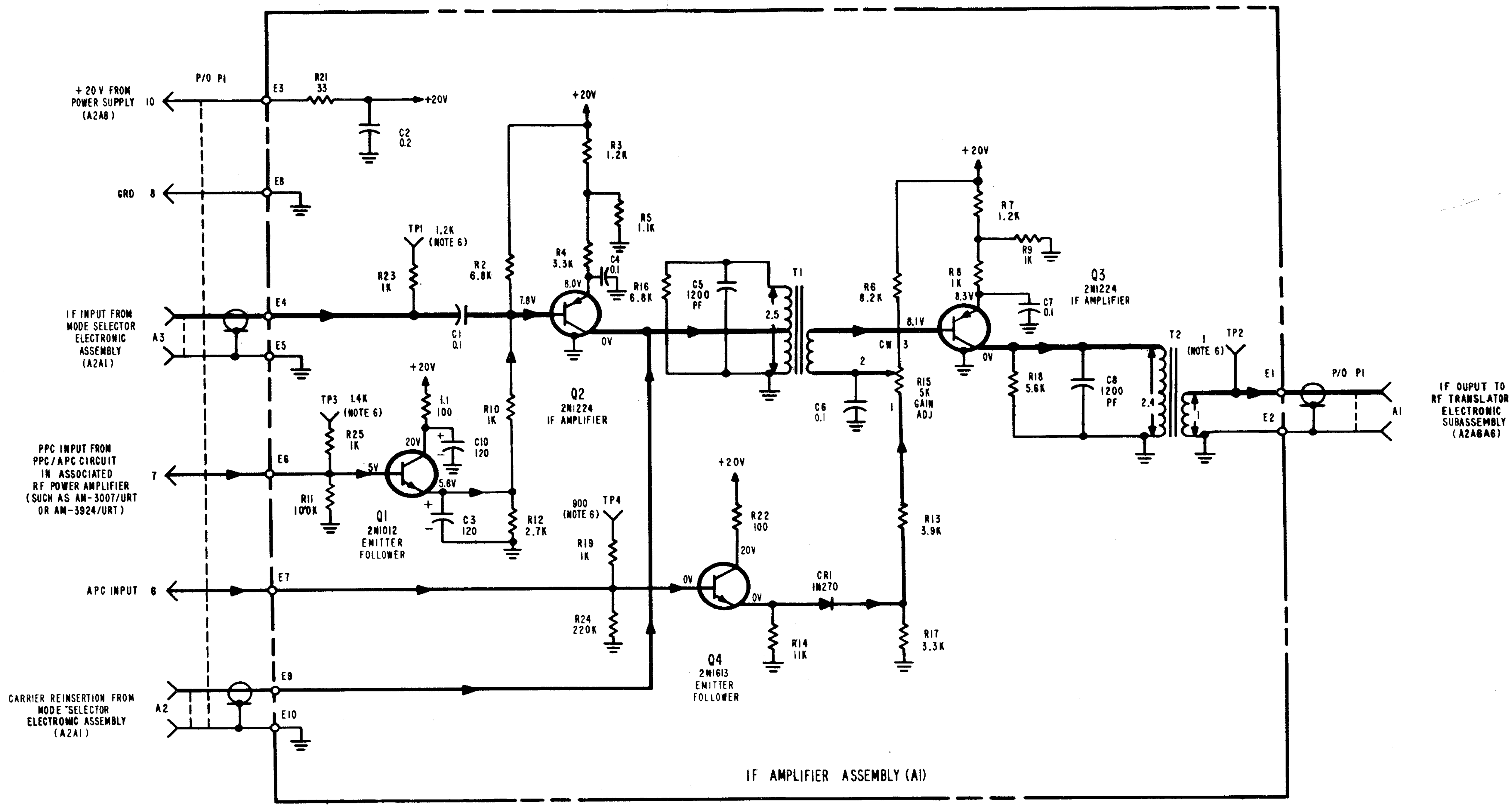
WHEN MAKING RESISTANCE CHECKS AT SEMI-CONDUCTOR DEVICES, USE ONLY THE HIGHER SCALES OF THE MULTIMETER SO AS TO AVOID UNINTENTIONAL DAMAGE TO THE SEMI-CONDUCTOR DEVICE DUE TO THE METERS INTERNAL VOLTAGE.

NOTES:

1. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN: FOR COMPLETE DESIGNATION PREFIX WITH 2A2A9 AND BOARD NUMBER, IF APPLICABLE.
2. UNLESS OTHERWISE SPECIFIED:
   A. ALL RESISTANCE VALUES ARE IN OHMS. K-INDICATES THOUSANDS OF OHMS.
   B. ALL RESISTORS ARE 1/4 WATT, ±5% TOL
   C. ALL CAPACITANCE VALUES ARE IN MICROFARADS
3. CW ON ALL POTENTIOMETERS INDICATE DIRECTION OF ROTATION WHEN VIEWED FROM SHAFT END.
4. R12 ADJUSTED FOR 2550 CPS CENTER FREQ "MARK" (2975 CPS)
   R13 ADJUSTED FOR 2550 CPS CENTER FREQ "SPACE" (2125 CPS)
5. R10 ADJUSTED FOR 2000 CPS CENTER FREQ "MARK" (2425 CPS)
   R8 ADJUSTED FOR 2000 CPS CENTER FREQ "SPACE" (1575 CPS)
6. NUMBERS ADJACENT TO WINDINGS AND TEST POINTS INDICATE DC RESISTANCE
7. RESISTANCE VALUES AT SIGNIFICANT TEST POINTS ARE TO CHASSIS WITH ALL UNITS INTERCONNECTED, BUT EQUIPMENT DE-ENERGIZED
8. REFER TO APPLICABLE PRINTED CIRCUIT BOARD ILLUSTRATION FOR TRANSFORMER CIRCUIT ORIENTATION
9. THIS SCHEMATIC REFLECTS THE CURRENT MODEL OF THE FSK TONE GENERATOR ELECTRONIC ASSEMBLY. EARLIER USED CIRCUIT CONFIGURATIONS AND COMPONENTS ARE INDICATED BY SEPARATE DETAILS, WHERE REQUIRED, OR BY APPROPRIATE NOTES.
10. VARIATIONS EXIST FOR THE COMPONENTS LISTED BELOW DUE TO EQUIPMENT DESIGN CHANGES. CURRENT MODEL COMPONENTS MAY BE USED FOR REPLACEMENT PURPOSES.

COMPONENT	CURRENT MODEL	EARLIER MODELS
TRANSISTOR Q4	2N1131S	2N1131 (SELECTED)

Figure 5-12. FSK Tone Generator Electronic Assembly, Schematic Diagram



CAUTION

WHEN MAKING RESISTANCE CHECKS AT SEMI-CONDUCTOR DEVICES, USE ONLY THE HIGHER SCALES OF THE MULTIMETER SO AS TO AVOID UNINTENTIONAL DAMAGE TO THE SEMI-CONDUCTOR DEVICE DUE TO THE METERS INTERNAL VOLTAGE.

NOTES:

1. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN: FOR COMPLETE DESIGNATION PREFIX WITH A2A12 AND BOARD NUMBER, IF APPLICABLE.
2. UNLESS OTHERWISE SPECIFIED:
   a- ALL RESISTANCE VALUES ARE IN OHMS
   K- INDICATES THOUSANDS OF OHMS.
   b- ALL RESISTORS ARE 1/4 WATT, ±5% TOL.
   c- ALL CAPACITANCE VALUES ARE IN MICROFARADS, PF INDICATES PICOFARADS.
3. NUMBERS ADJACENT TO WINDINGS AND TEST POINTS INDICATE DC RESISTANCE (VALUES LESS THAN ONE OHM ARE NOT SHOWN).
4. CW ON ALL POTENTIOMETERS INDICATE DIRECTION OF ROTATION WHEN VIEWED FROM SHAFT END.
5. UNLESS OTHERWISE INDICATED ALL VOLTAGES ARE DC TAKEN WITH MULTIMETER AN/PSM-4
6. RESISTANCE VALUES AT SIGNIFICANT TEST POINTS ARE TO CHASSIS WITH ALL UNITS INTERCONNECTED, BUT EQUIPMENT DE-ENERGIZED.
7. REFER TO APPLICABLE PRINTED CIRCUIT BOARD ILLUSTRATION FOR TRANSFORMER CIRCUIT ORIENTATION.

Figure 5-13. IF. Amplifier Electronic Assembly, Schematic Diagram

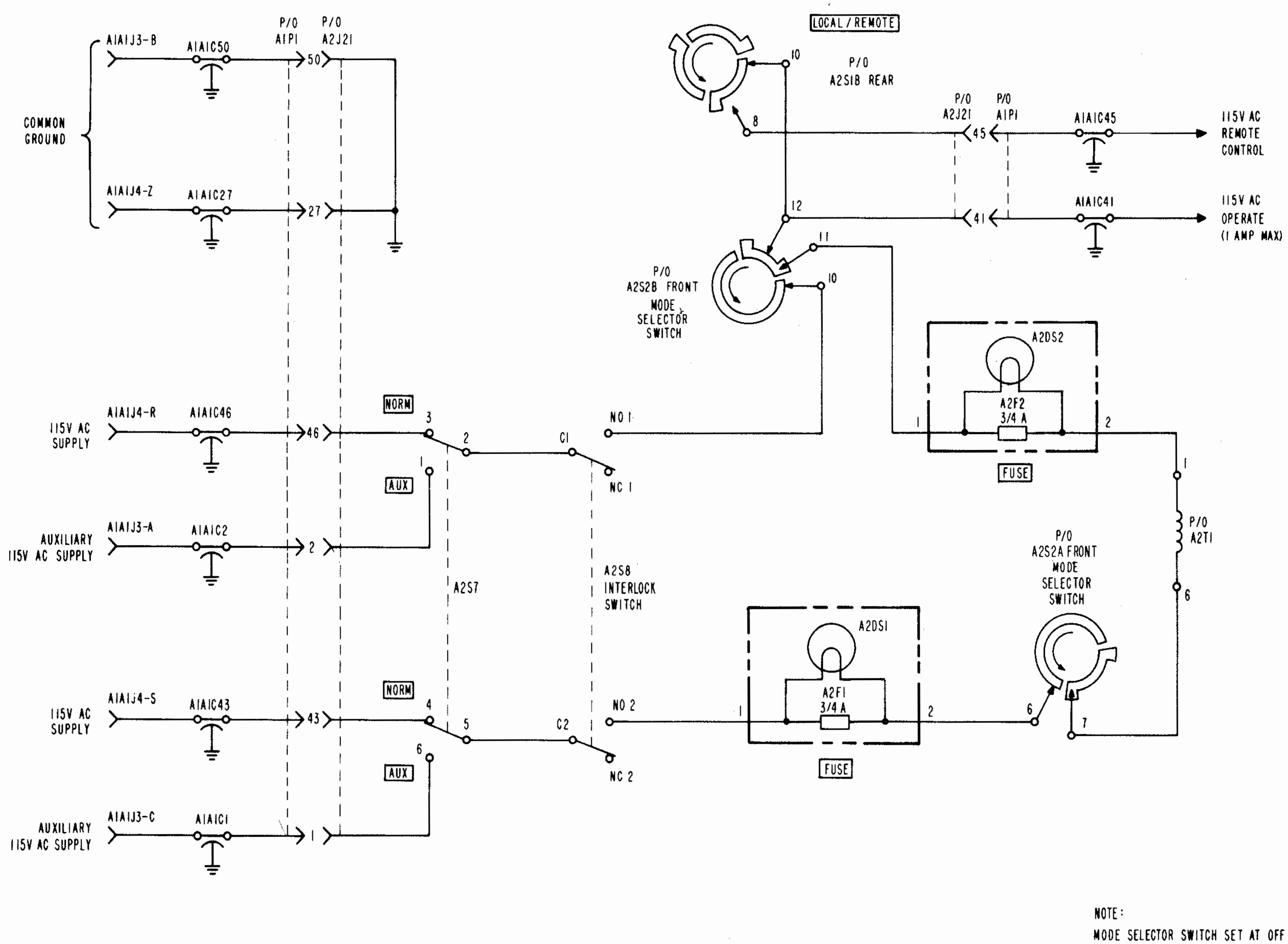


Figure 5-14. Radio Transmitter T-827/URT, Primary Power Distribution Diagram

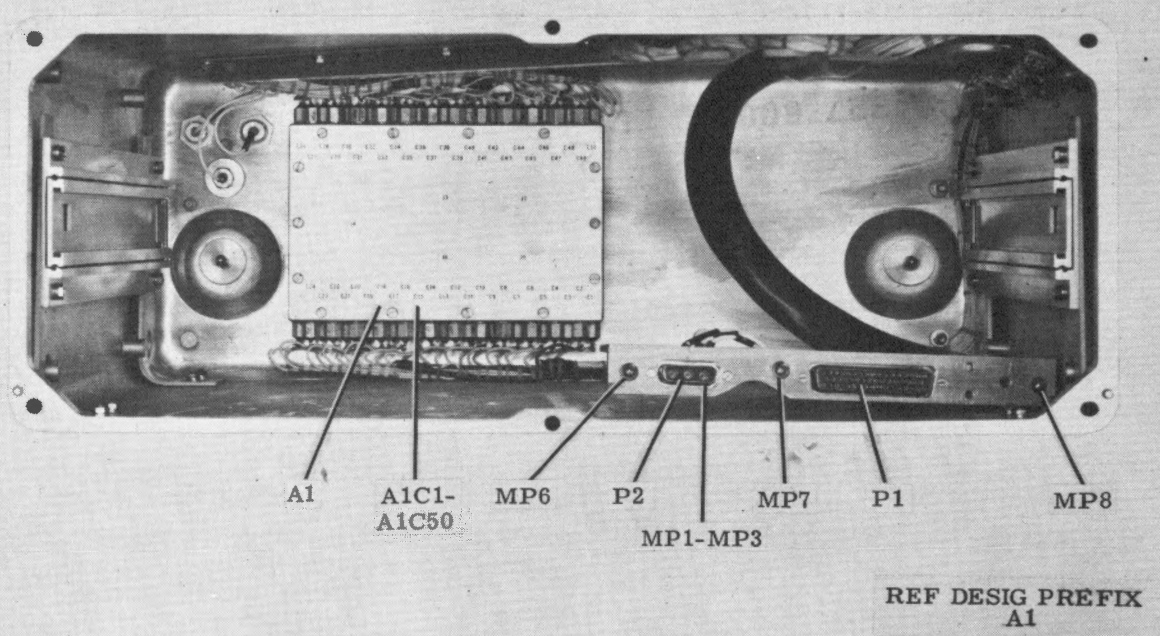


Figure 5-15. Radio Transmitter T-827/URT, Case, Inside View, Component Location

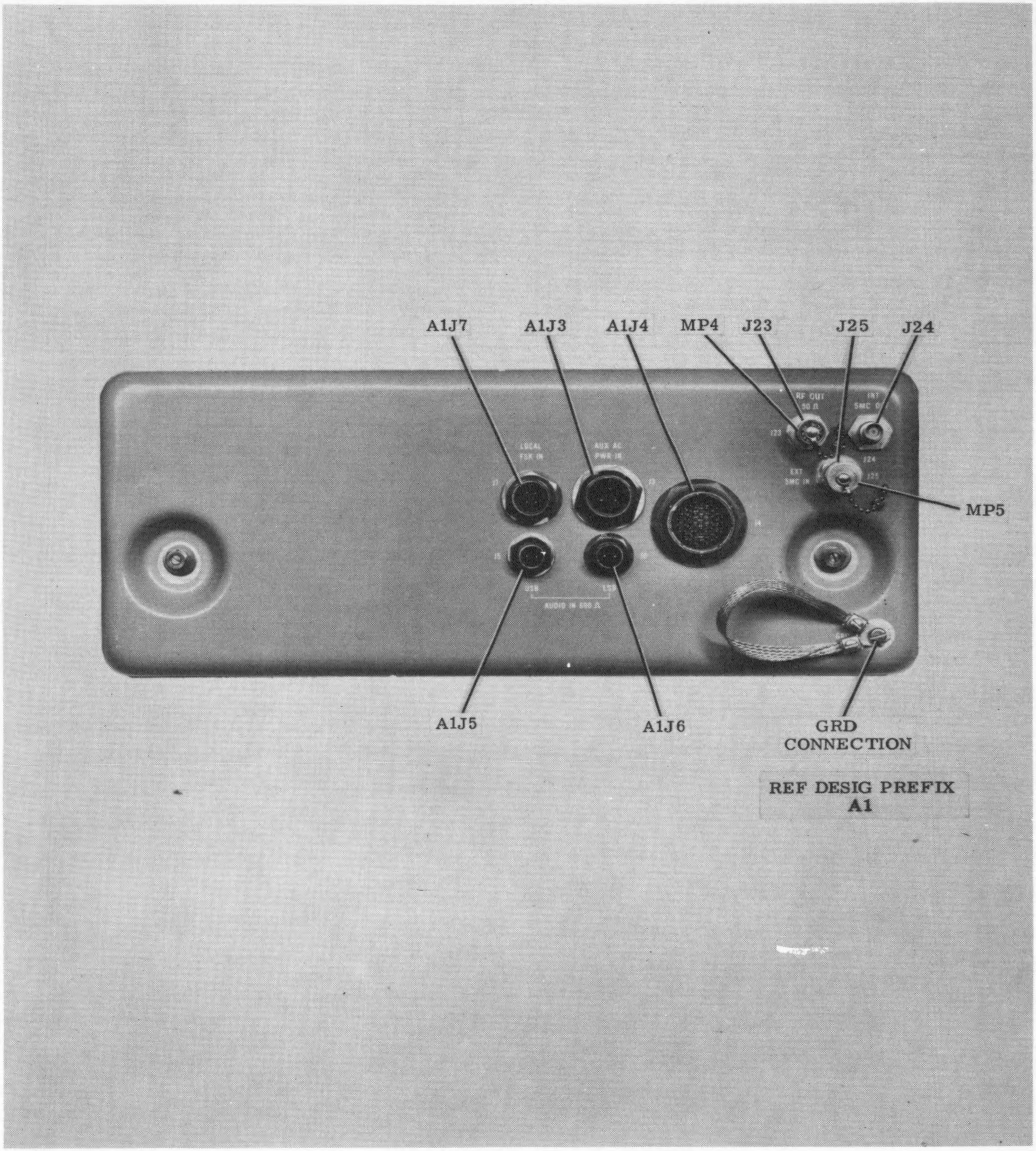


Figure 5-16. Radio Transmitter T-827/URT, Case, Rear View, Component Location

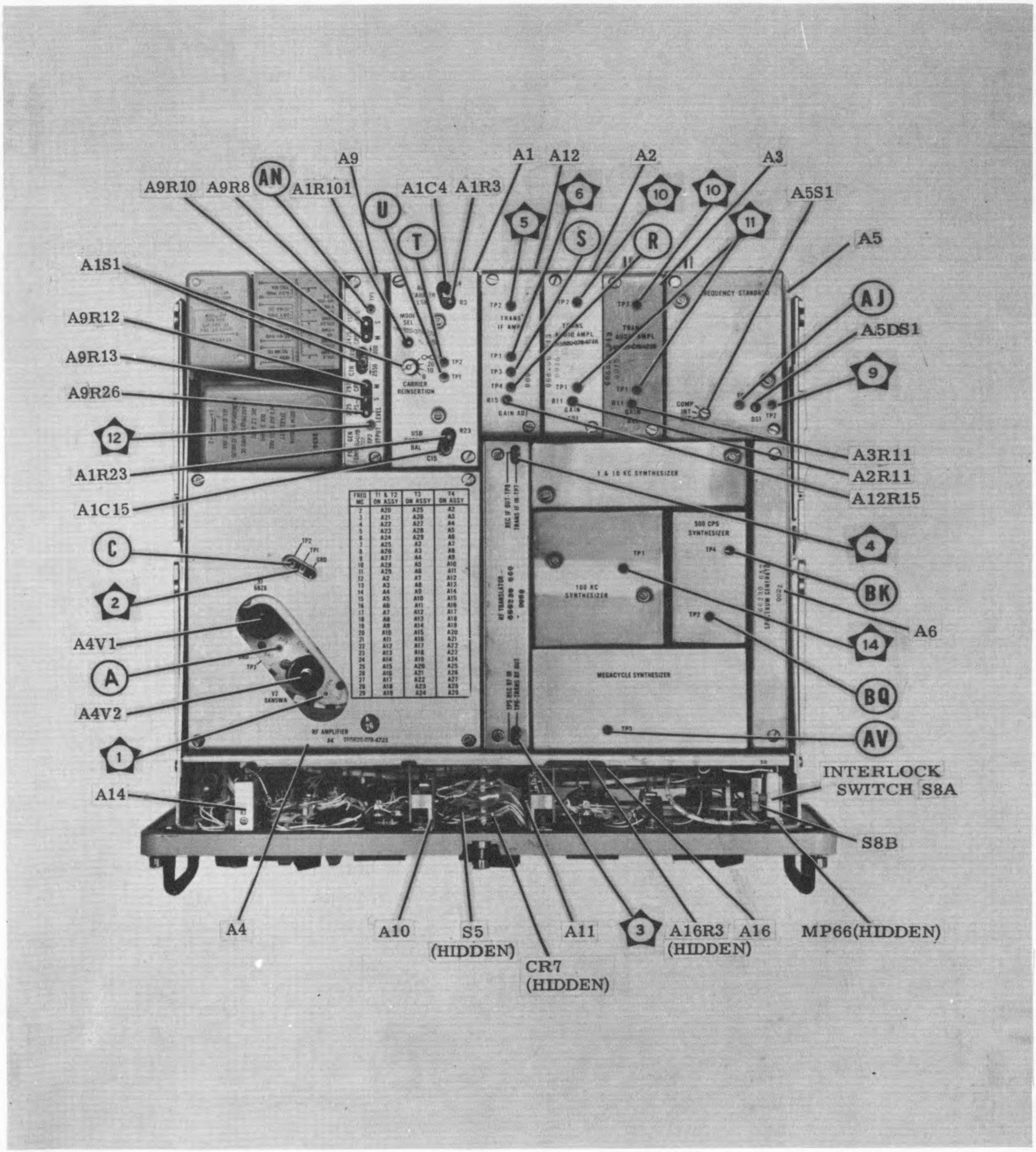


Figure 5-17. Radio Transmitter T-827/URT, Top View, Case Removed, Component And Test Point Location

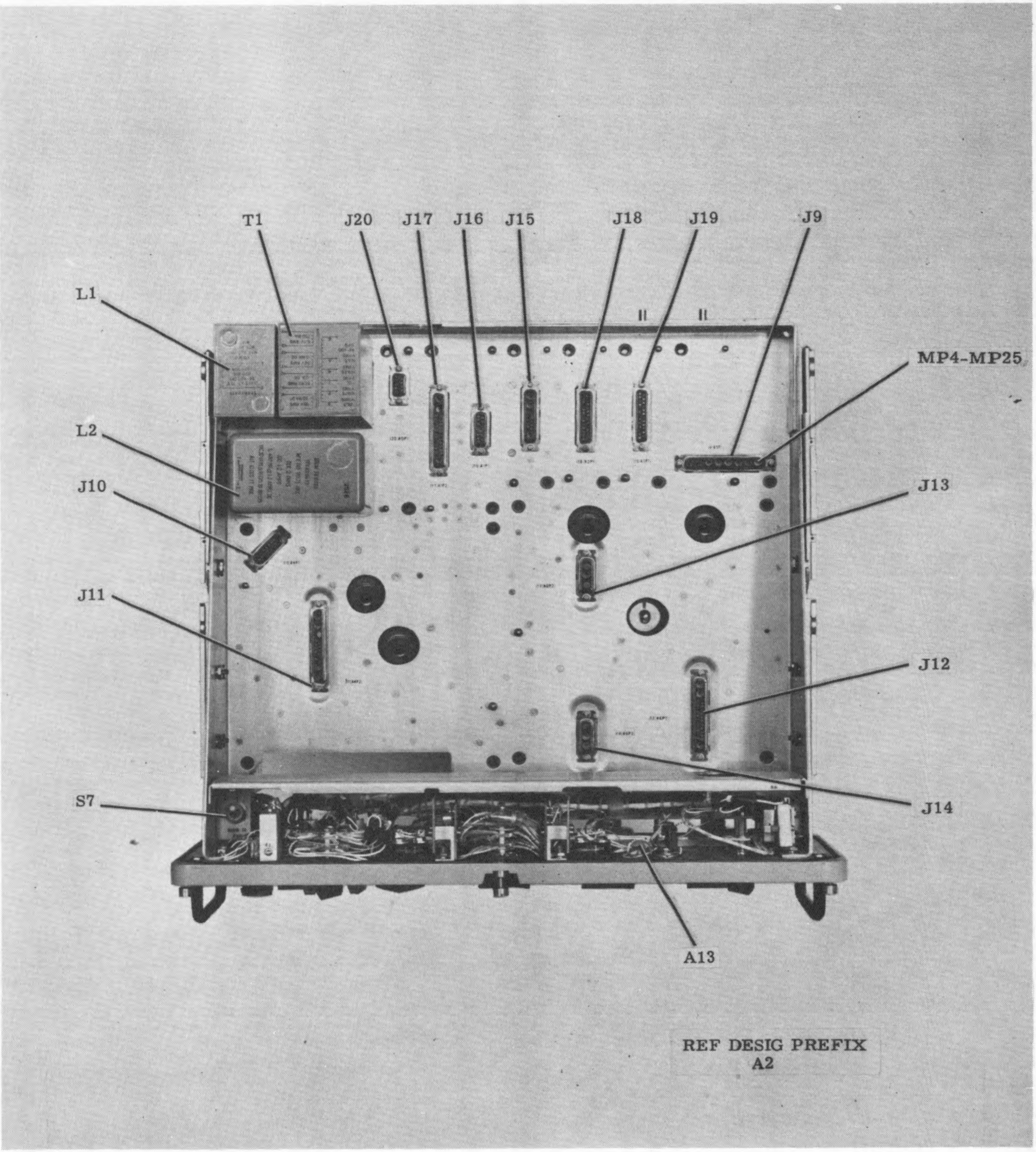


Figure 5-18. Radio Transmitter T-827/URT, Chassis, Top View

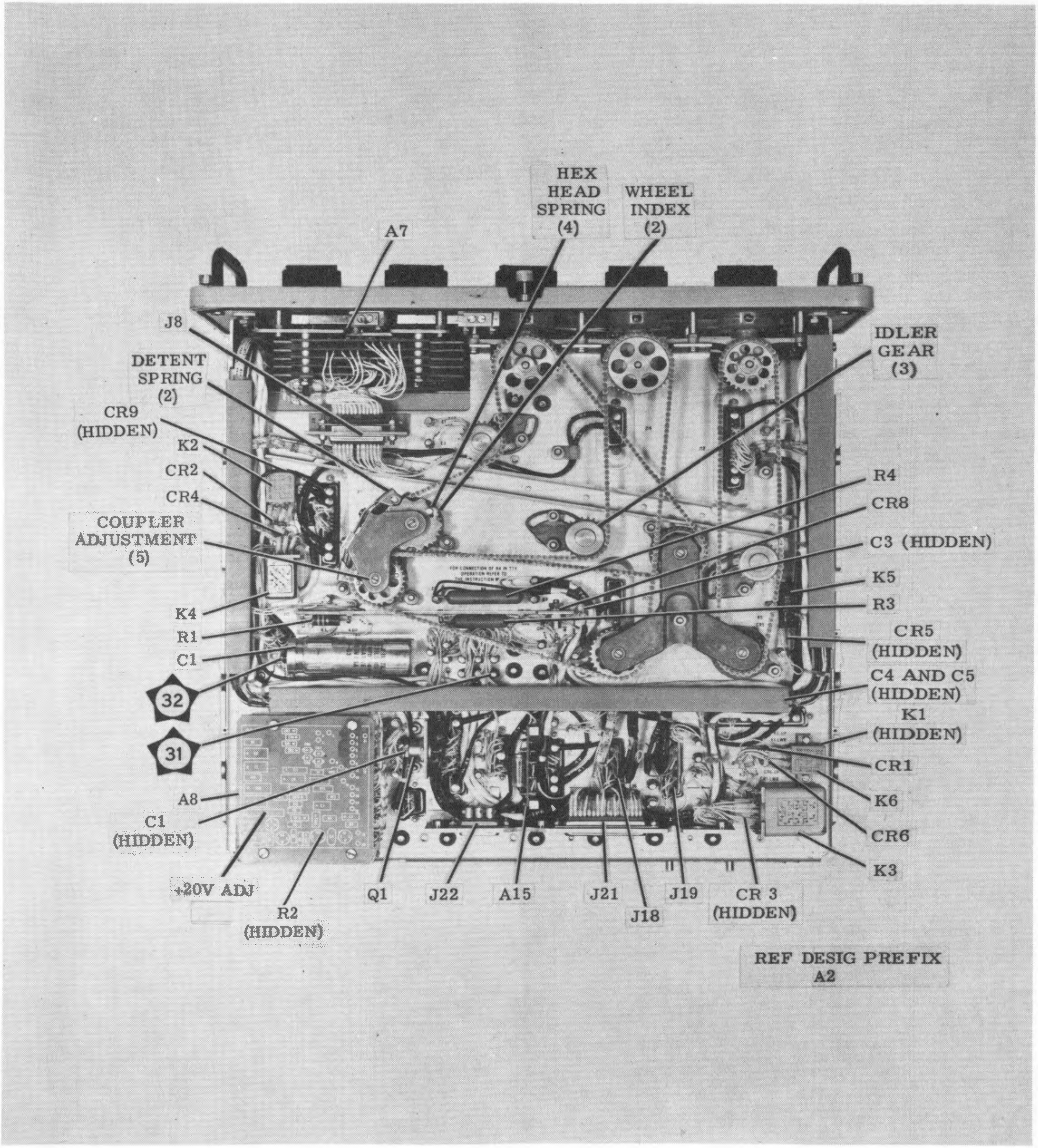


Figure 5-19. Radio Transmitter T-827/URT, Bottom View, Component and Test Point Location (Sheet 1 of 2)

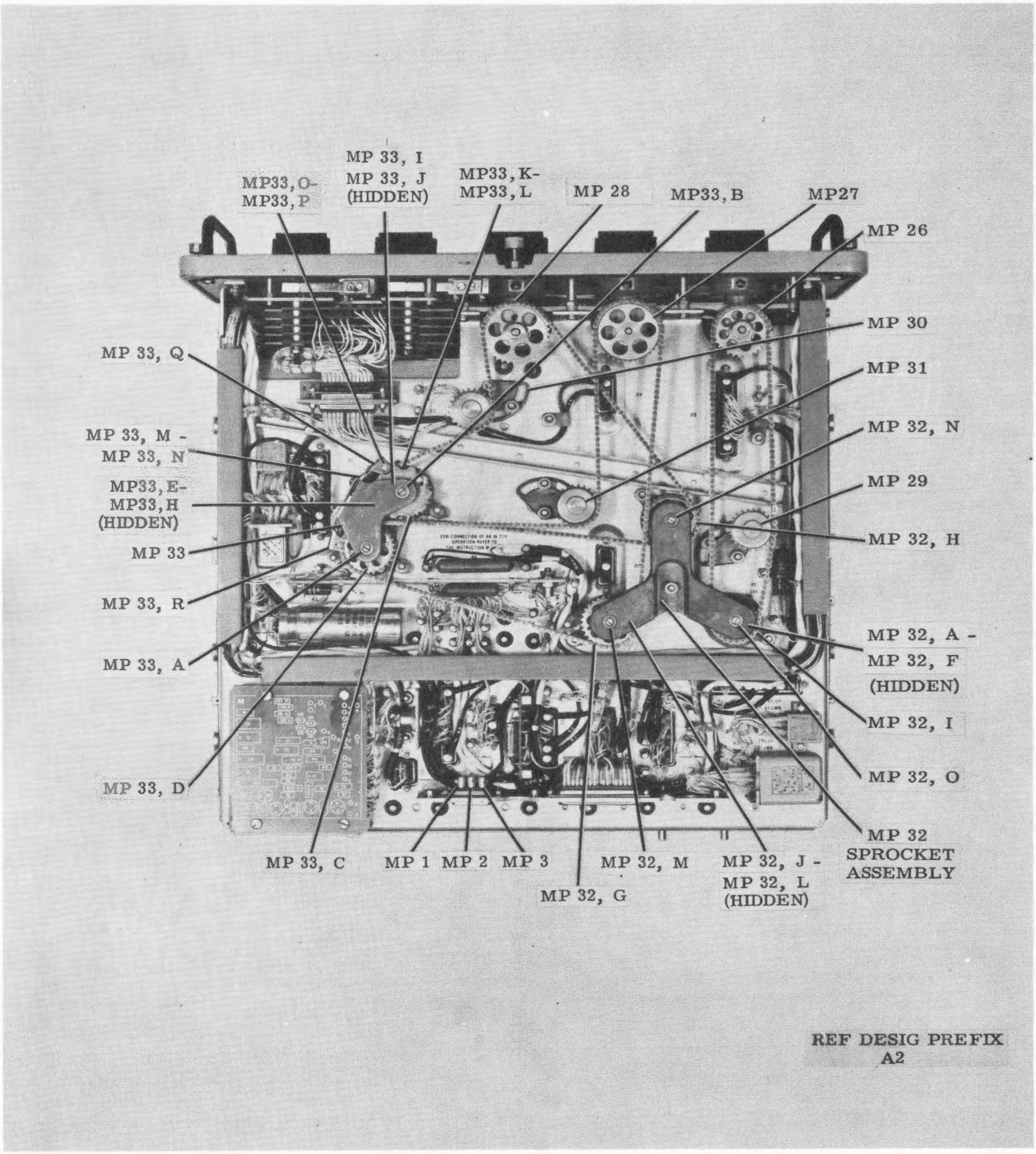


Figure 5-19. Radio Transmitter T-827/URT, Bottom View, Component and Test Point Location (Sheet 2 of 2)

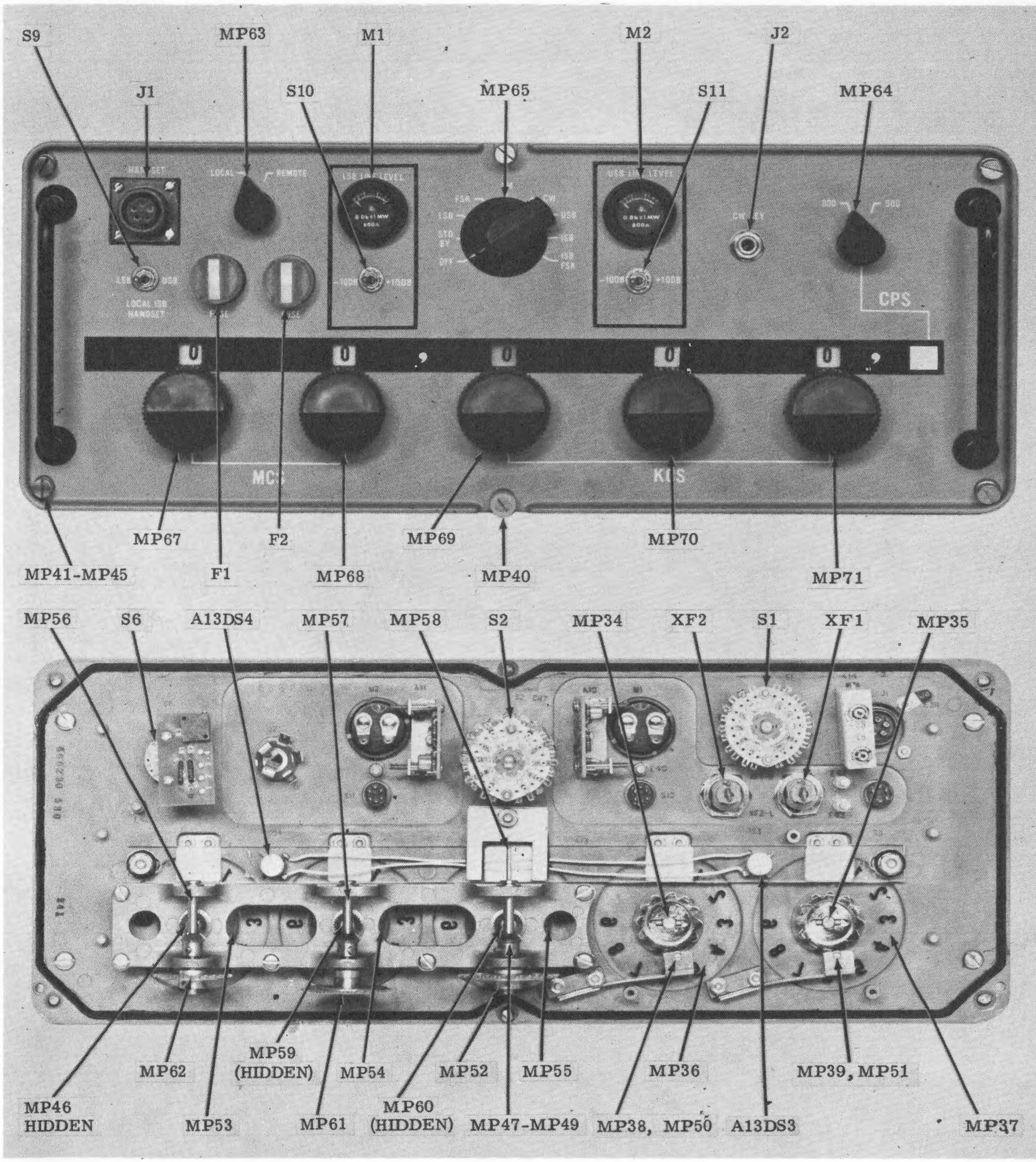


Figure 5-20. Radio Transmitter T-827/URT, Front Panel Assembly, Component Location

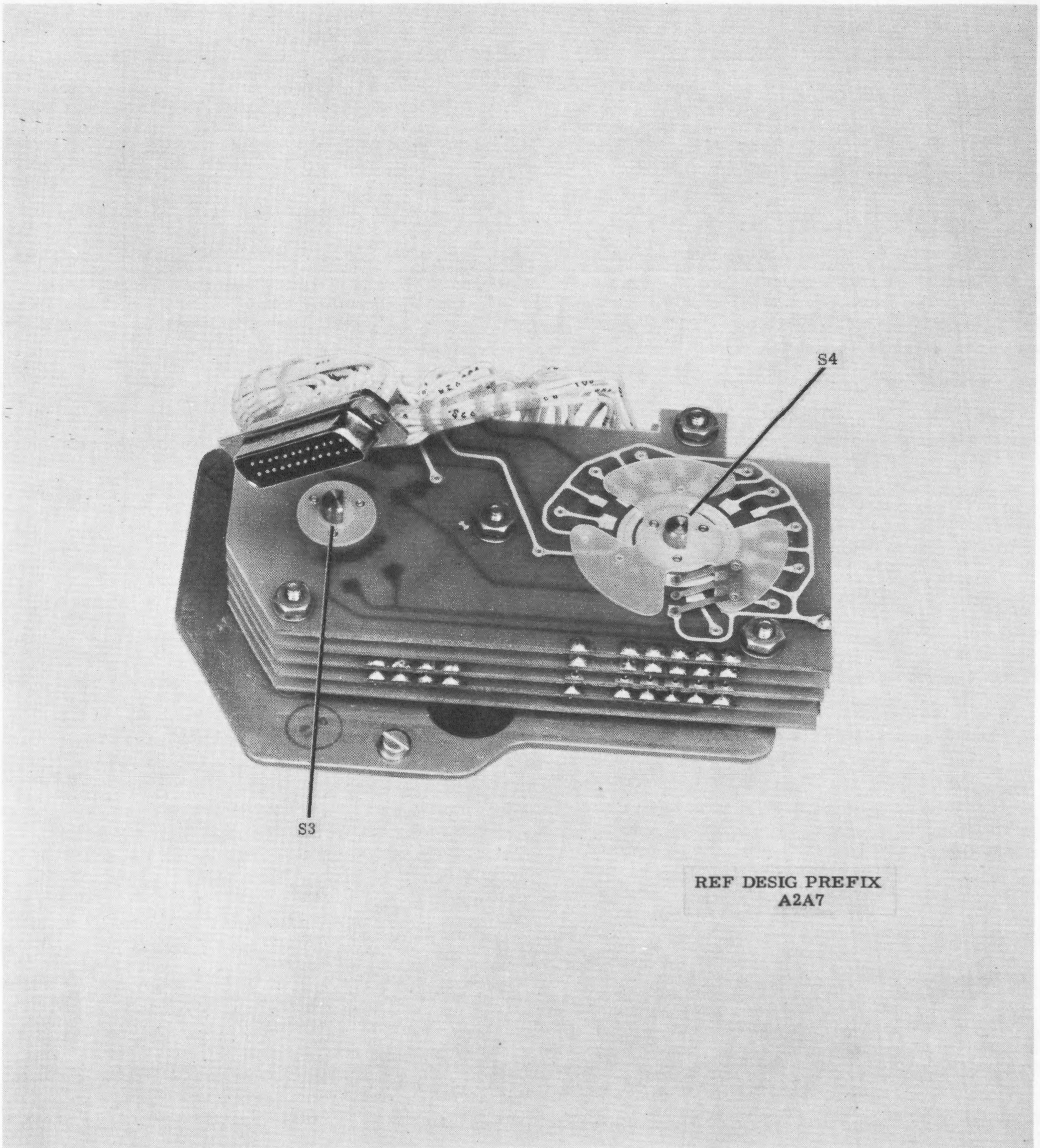


Figure 5-21. Code Generator Electronic Assembly, Component Location

NOTE:

1. COMPONENT REF. DESIG. PREFIX A2A8

PARTS LOCATION INDEX

REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.
C1	5B	CR12	8E	E21	2H
C2	4B	CR13	9D	Q1	9F
C3	9G	E1	3F	Q2	9E
C4	9E	E2	2F	Q3	9C
C5	9B	E3	2F	Q4	9C
C6	7B	E4	3H	R1	4B
C7	7F	E5	3H	R2	9G
C8	7D	E6	4H	R3	8F
C9	6D	E7	4H	R4	9D
C10	6B	E8	5H	R5	9D
C11	5D	E9	5G	R6	9D
CR1	3E	E10	5G	R7	9C
CR2	3E	E11	6H	R8	8D
CR3	3E	E12	5H	R9	9A
CR4	3E	E13	6H	R10	8B
CR5	5F	E14	7G	R11	8C
CR6	5F	E15	7H	R12	8D
CR7	4F	E16	7H	R13	7G
CR8	4E	E17	8H	R14	6F
CR9	6G	E18	8H	R15	6F
CR10	8D	E19	9H	R16	6B
CR11	9D	E20	10H		

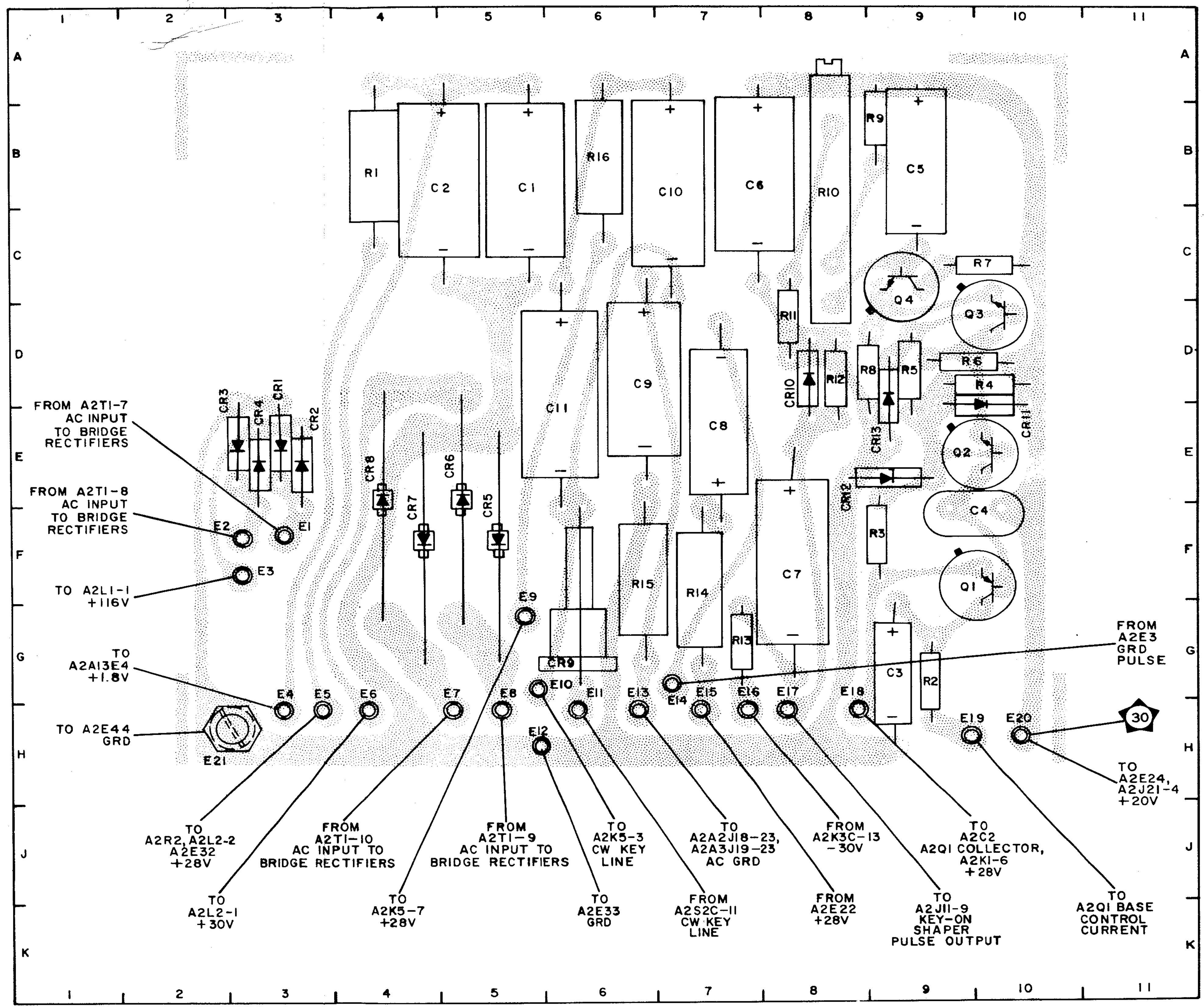
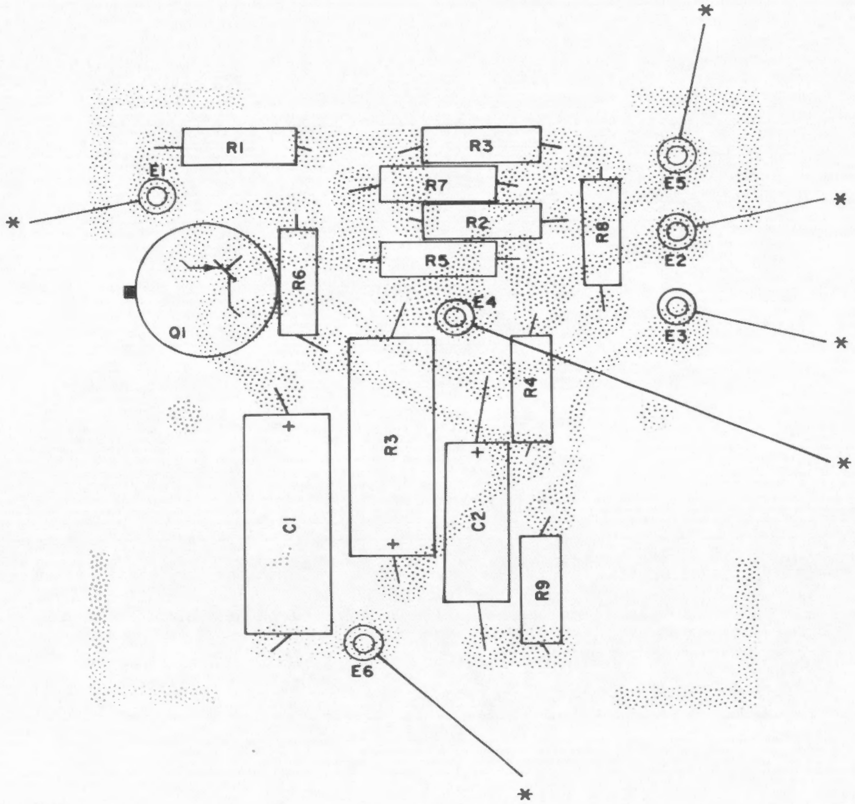


Figure 5-22. Power Supply (Foil Side Up), Component and Test Point Location



NOTES:

1. COMPONENT REF. DESIG. PREFIX A2A10 OR A2A11, AS APPLICABLE.
2. THIS DRAWING REFLECTS FOIL PATTERN OF EARLIER MODELS. CURRENT MODEL CONTAINS SLIGHT ALTERATIONS IN FOIL PATTERN BUT IS ELECTRICALLY IDENTICAL.
3. * REFER TO TABLE BELOW FOR THESE CONNECTIONS.

A2A10	ORIGIN/DESTINATION	A2A11	ORIGIN/DESTINATION
E1	LSB AUDIO OUTPUT TO A2S10-6	E1	USB AUDIO OUTPUT TO A2S11-6
E2	+ 20V FROM A2A8E20	E2	+ 20V FROM A2A8E20
E3	OUTPUT TO A2M1-1, 0.744VRMS FOR METER FULL SCALE DEFLECTION	E3	OUTPUT TO A2M2-1, 0.744VRMS FOR METER FULL SCALE DEFLECTION
E4	TO A2E40 GROUND	E4	TO A2E37 GROUND
E5	LSB AUDIO INPUT FROM A2S10-1	E5	USB AUDIO INPUT FROM A2S11-1
E6	LSB AUDIO INPUT FROM A2S10-3	E6	USB AUDIO INPUT FROM A2S11-3

Figure 5-23. Meter Amplifier (Foil Side Up), Component Location

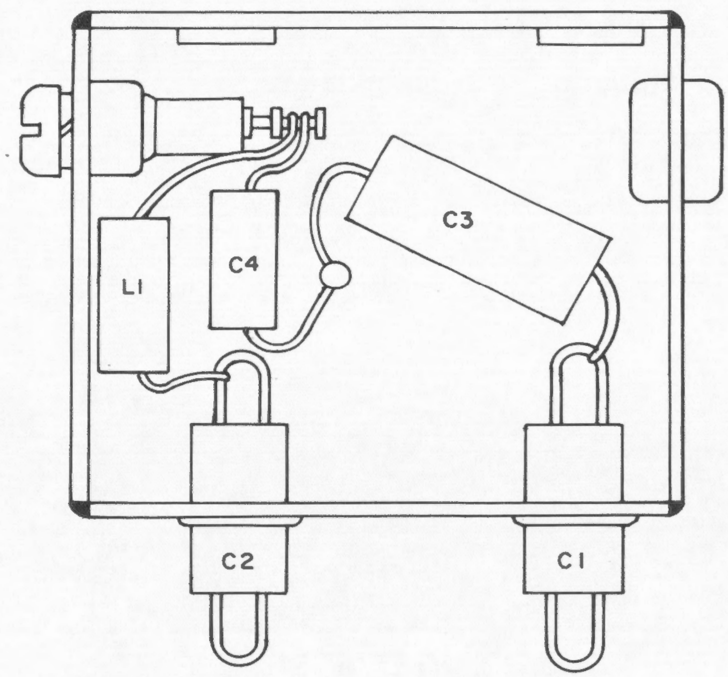


Figure 5-24. Handset Filter Box Assembly, Component Location

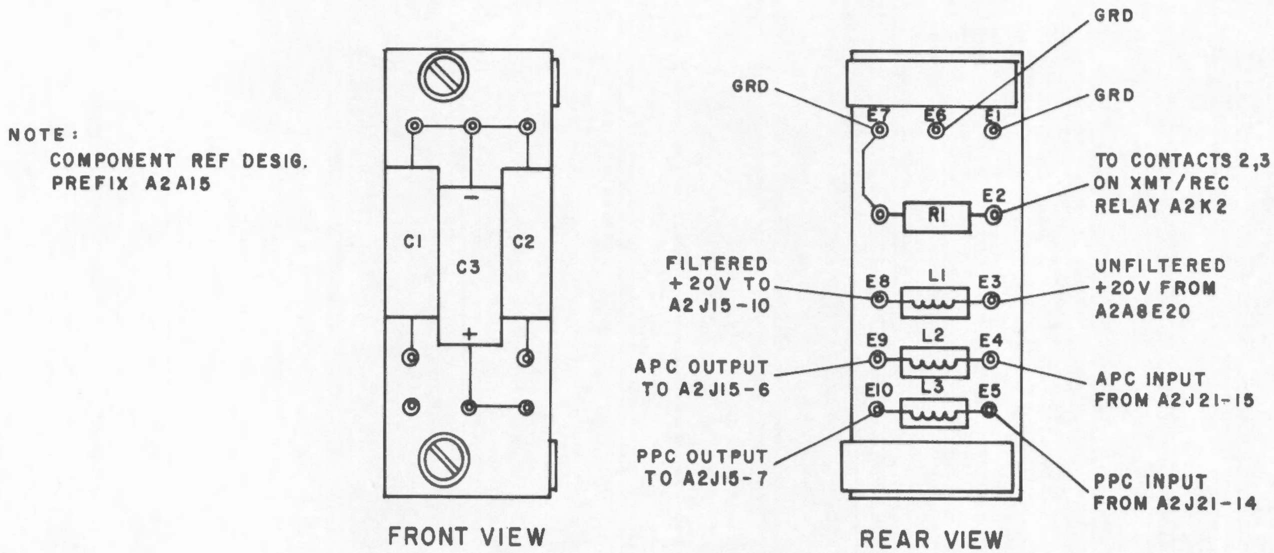


Figure 5-25. IF. Filter, Component Location

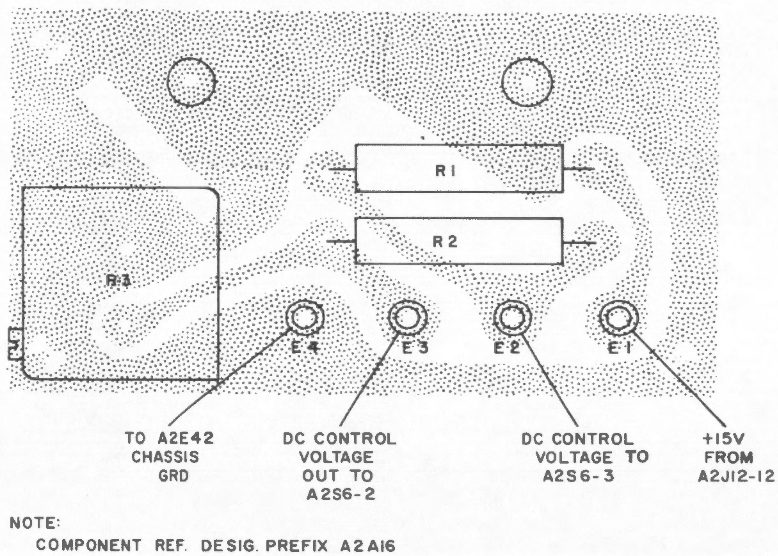


Figure 5-26. 500 CPS Control (Foil Side Up), Component Location

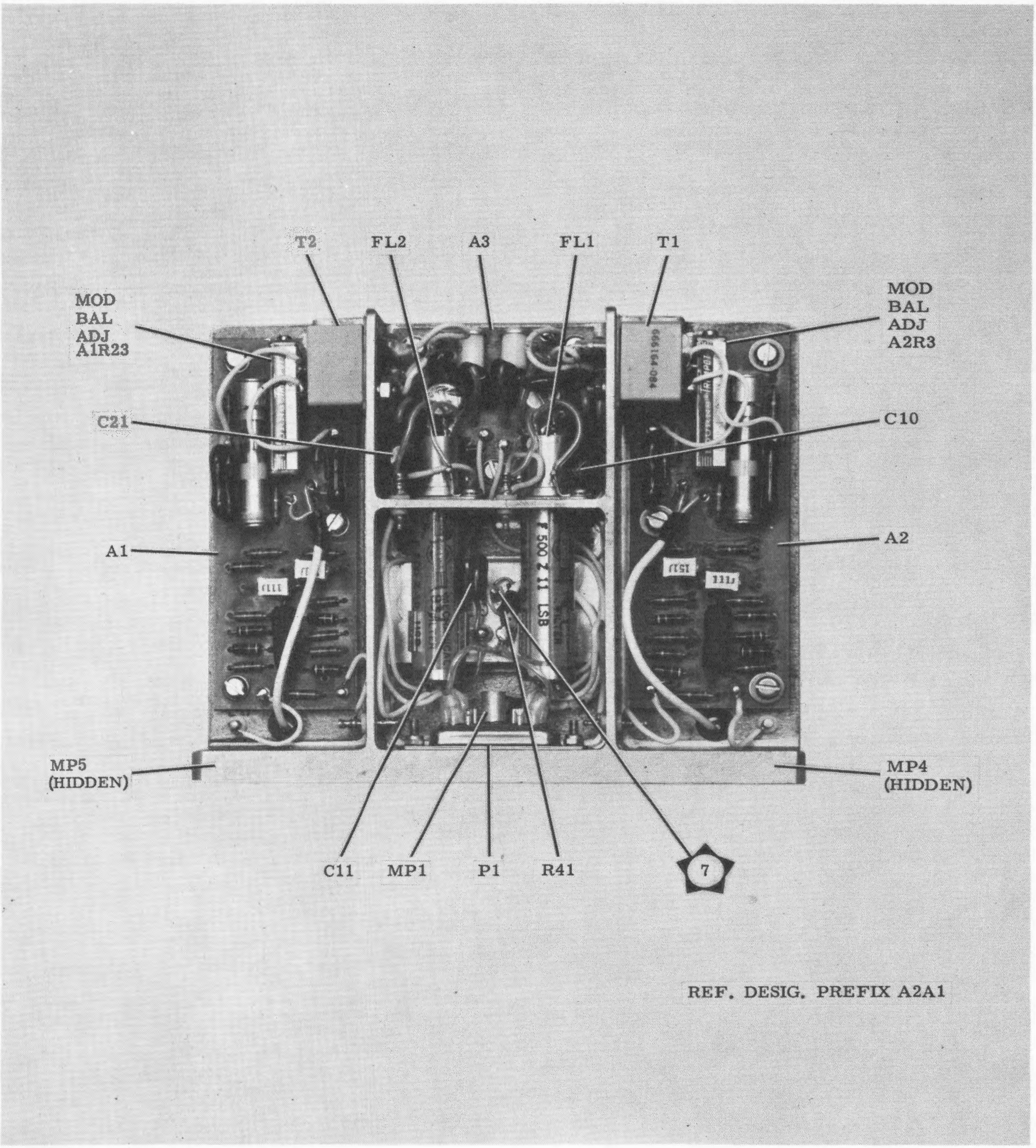
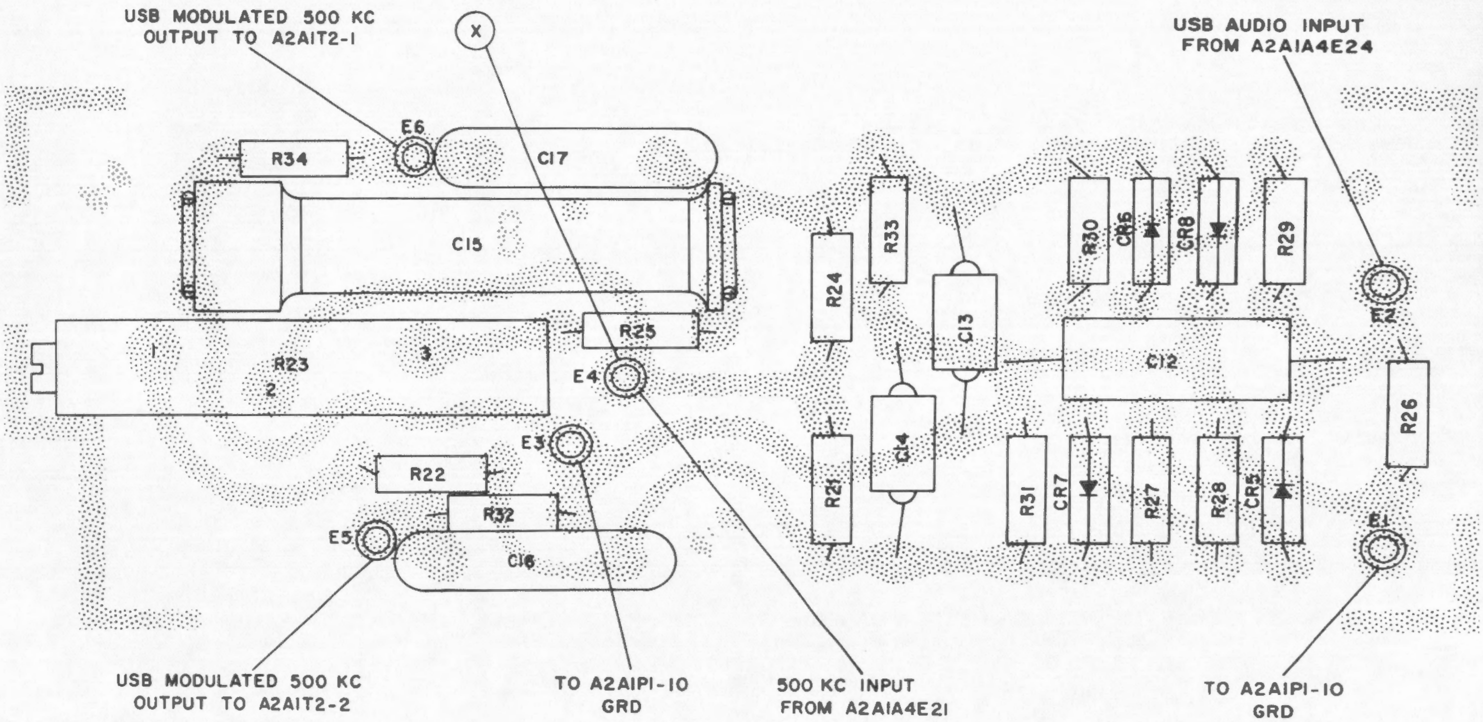


Figure 5-27. Mode Selector Electronic Assembly, Right, Side, Component and Test Point Location



NOTE:
COMPONENT REF. DESIG. PREFIX A2A1A1

Figure 5-28. USB Balanced Modulator (Foil Side Up), Component and Test Point Location

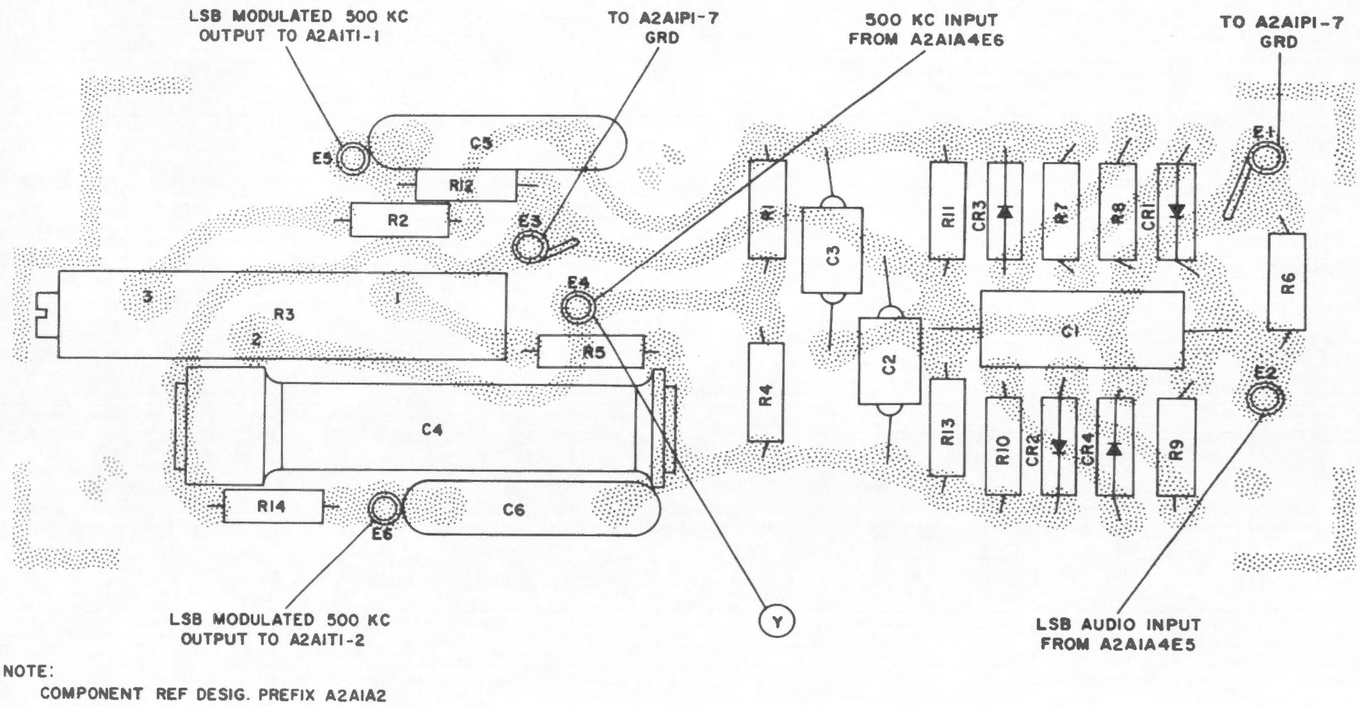
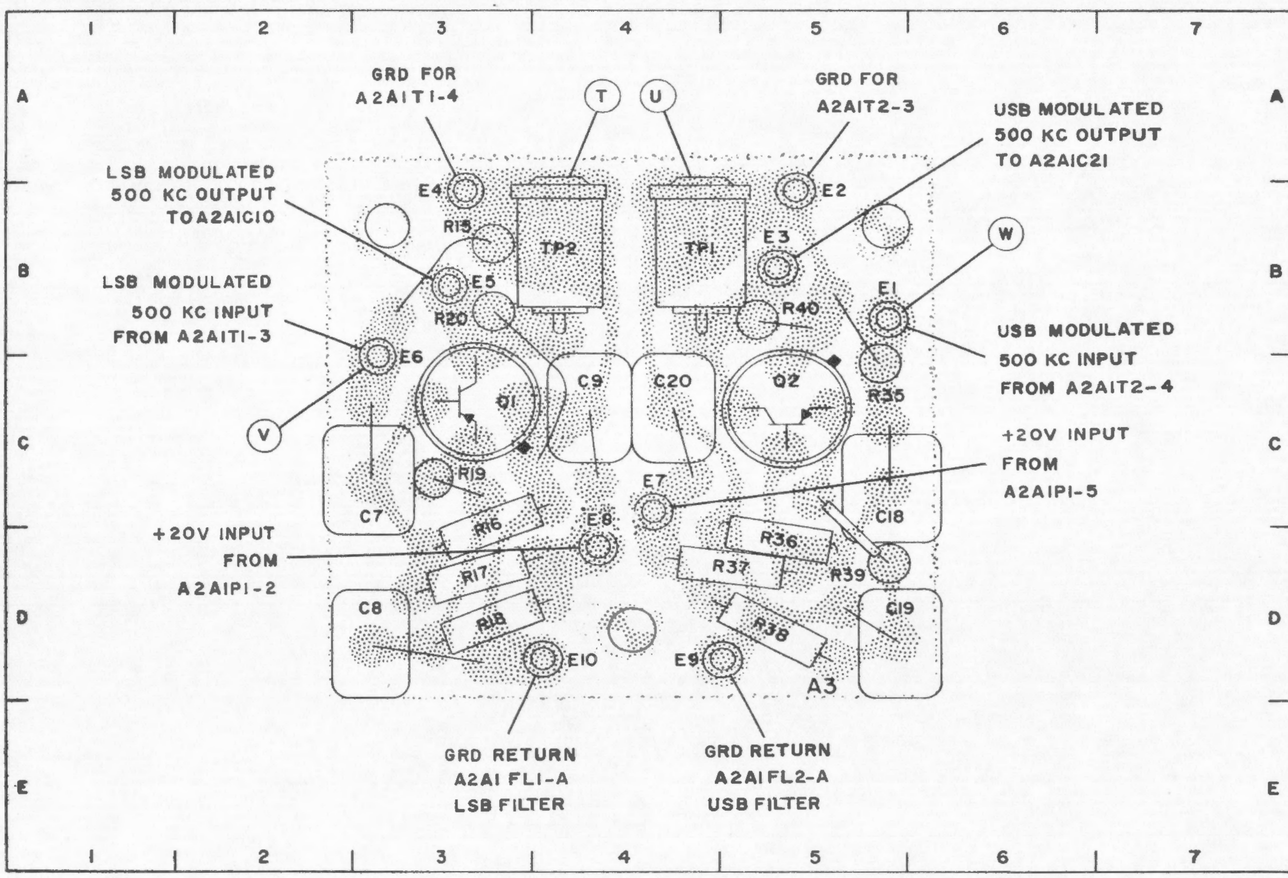


Figure 5-29. LSB Balanced Modulator (Foil Side Up), Component and Test Point Location



NOTE:
COMPONENT REF. DESIG. PREFIX A2A1A3.

PARTS LOCATION INDEX

REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC
C7	3C	E3	5B	Q1	3C	R35	5C
C8	3D	E4	3B	Q2	5C	R36	5D
C9	4C	E5	3B	R15	3B	R37	5D
C18	6C	E6	3C	R16	3D	R38	5D
C19	6D	E7	4C	R17	3D	R39	5D
C20	4C	E8	4D	R18	3D	R40	5B
E1	5B	E9	5D	R19	3C	TP1	4B
E2	5B	E10	4D	R20	3B	TP2	4B

Figure 5-30. Isolation Amplifiers (Foil Side Up), Component and Test Point Location

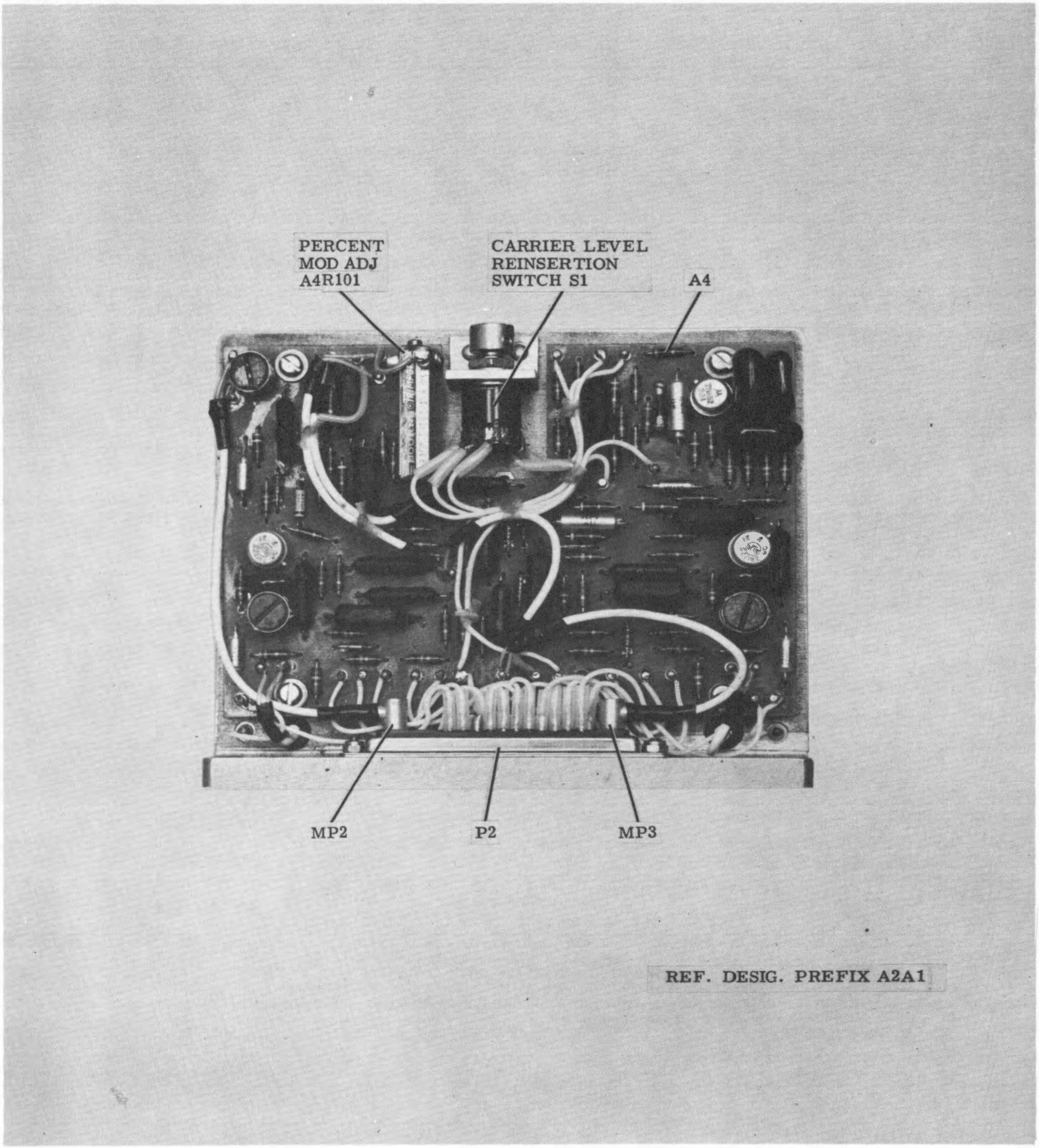


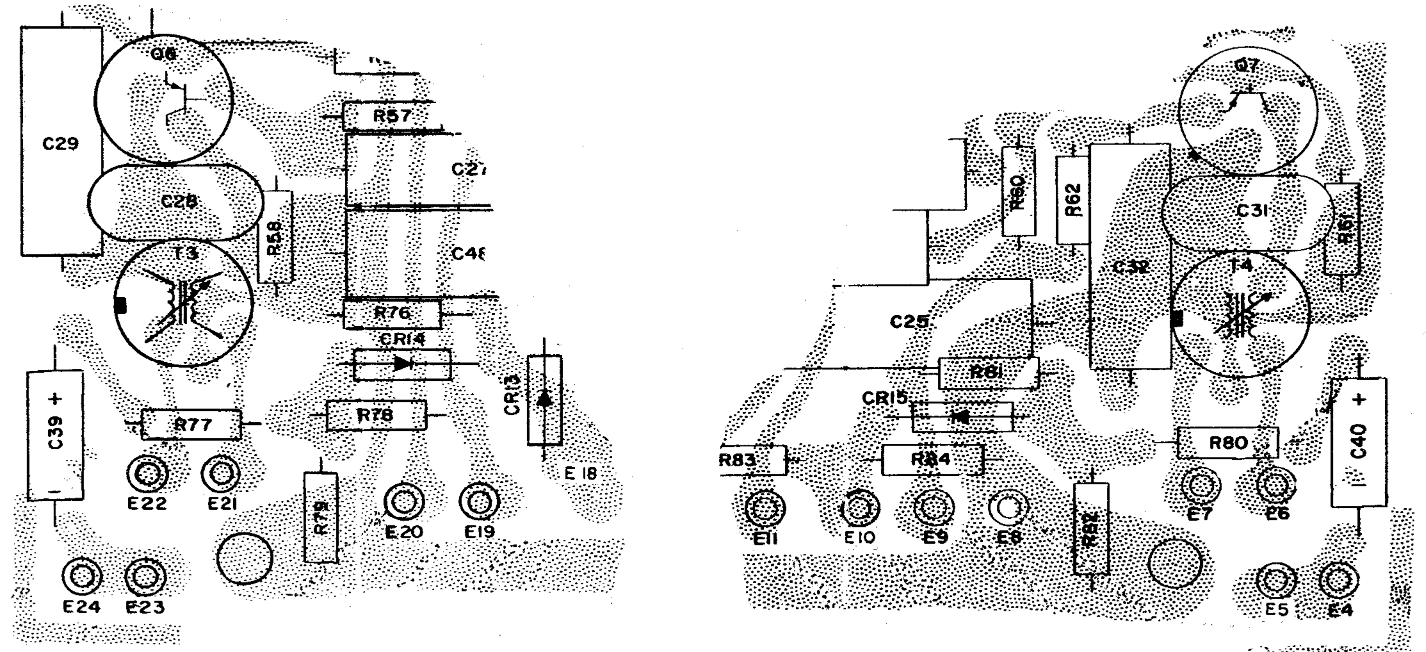
Figure 5-31. Mode Selector Electronic Assembly, Left Side, Component Location

NOTES:

1. COMPONENT REF. DESIG. PREFIX A2A1A4.
2. THIS DRAWING REFLECTS THE CURRENT MODEL OF THE 500 KC AMPLIFIERS/GATES AND SIDETONE OSCILLATOR/GATES. EARLIER CIRCUITS WHERE ALTERATIONS HAVE OCCURRED ARE SHOWN IN THEIR ORIGINAL FORM IN SEPARATE DETAILS.

PARTS LOCATION INDEX

REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.
C25	9F	CR18	9C	E33	7E	R85	8E
C26	8F	CR19	6E	Q6	2E	R86	10E
C27	4E	CR20	6D	Q7	10E	R87	10D
C28	3F	CR21	5E	Q8	3B	R88	10C
C29	2E	E1	8A	R53	7F	R89	10C
C30	8F	E2	11B	R54	7F	R90	9C
C31	10F	E3	11B	R55	7F	R91	9B
C32	10F	E4	11H	R56	6G	R92	9D
C33	4C	E5	10H	R57	4E	R93	9D
C34	3C	E6	10G	R58	3F	R94	6F
C35	2B	E7	10G	R59	4E	R95	7E
C36	3B	E8	9G	R60	9E	R96	5E
C37	4D	E9	9G	R61	11F	R97	6D
C38	5E	E10	8G	R62	9E	R98	8E
C39	2G	E11	8G	R63	3C	R99	5E
C40	11G	E12	7G	R64	3C	R100	5F
C41	8F	E13	7G	R65	4A	R101	8C
C42	3E	E14	6G	R66	3D	R102	8C
C43	11D	E15	6G	R67	2D	R103	4B
C44	10C	E16	5G	R68	2D	R104	4C
C45	9B	E17	5G	R69	3D	R105	5B
C46	7E	E18	5G	R70	2D	R106	5C
C47	8D	E19	4G	R71	5G	R107	5C
C48	4F	E20	4G	R72	4D	R108	5B
C49	6F	E21	3G	R73	5D	R109	5C
C50	7D	E22	3G	R74	4D	R110	5D
C51	5C	E23	3H	R75	5G	R111	6B
C52	9D	E24	2H	R76	4F	R112	6C
CR10	5C	E25	5D	R77	3G	R113	9B
CR11	6F	E26	4D	R78	4G	R114	4C
CR12	8E	E27	4B	R79	3G	R115	8C
CR13	5G	E28	5B	R80	10G	RT1	4B
CR14	4G	E29	5B	R81	9F	T3	3F
CR15	9G	E30	9B	R82	9G	T4	10F
CR16	10D	E31	9B	R83	8G	T5	10B
CR17	10D	E32	8B	R84	9G		



EARLIER MODEL DETAILS
(NOTE 2)

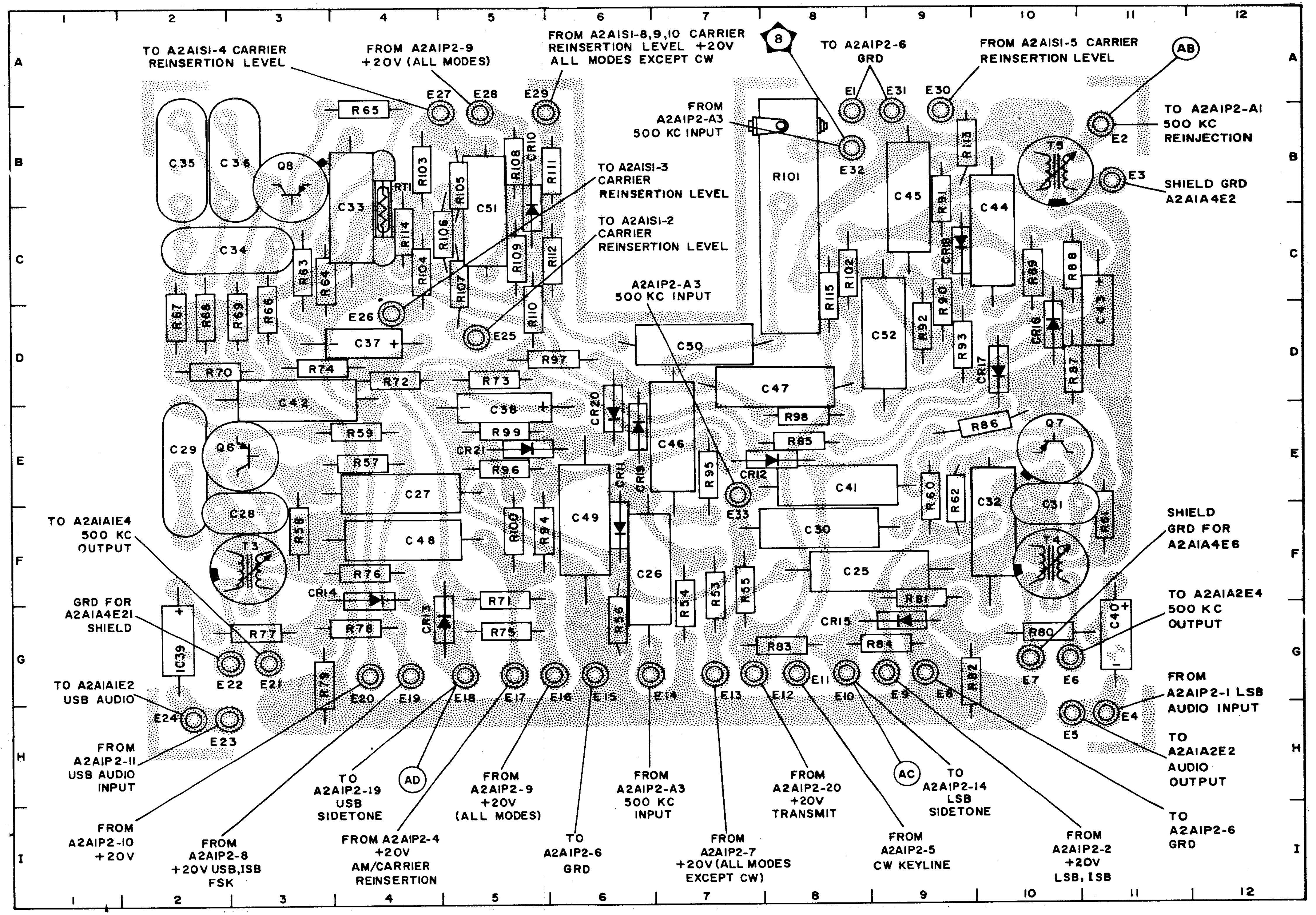


Figure 5-32. 500 KC Amplifiers/Gates and Sidetone Oscillator/Gates (Foil Side Up), Component and Test Point Location

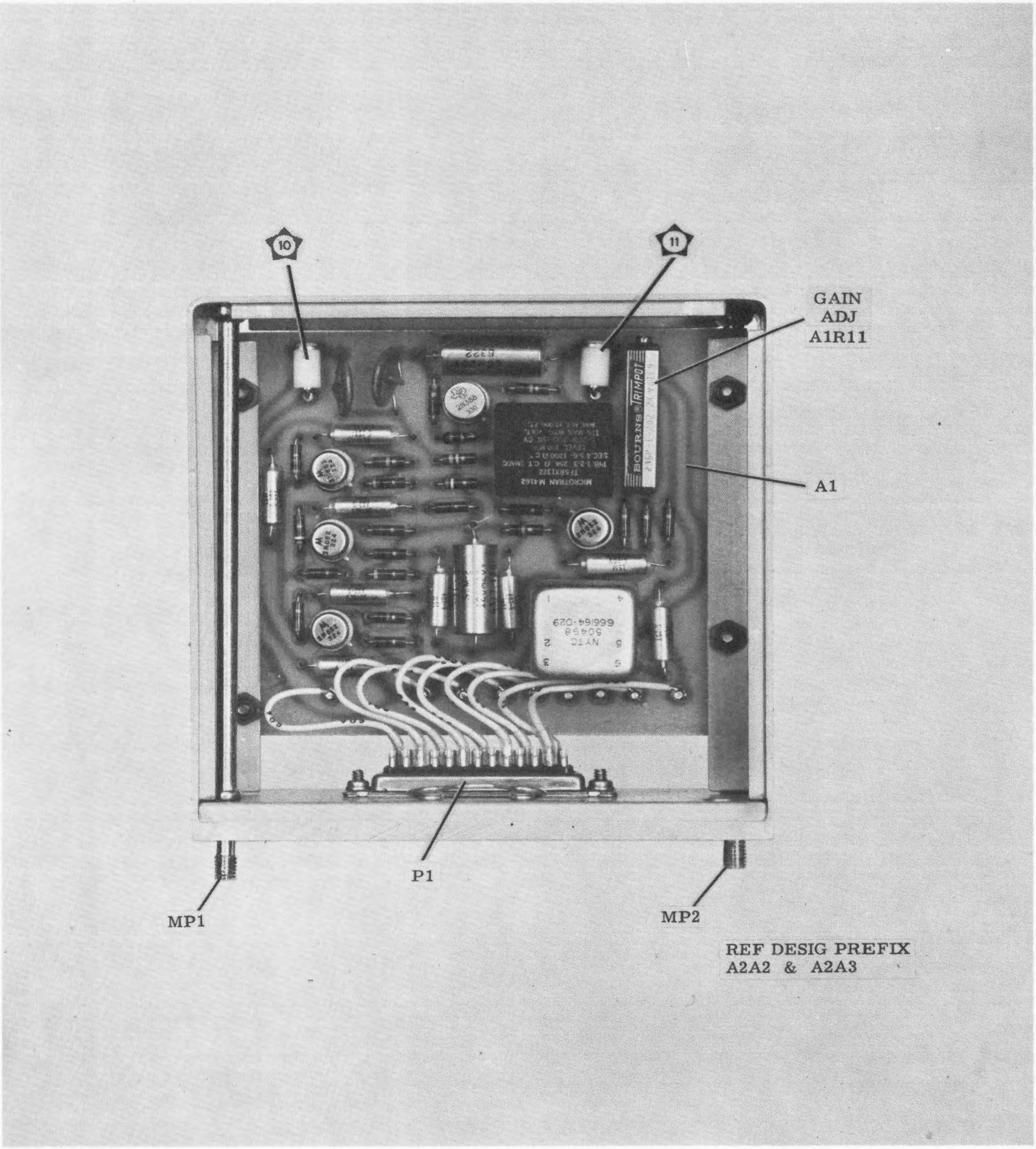


Figure 5-33. Audio Amplifier Electronic Assembly, Component and Test Point Location

NOTES:
1. COMPONENT REF. DESIG. PREFIX A2A2A1 OR A2A3A1, AS APPLICABLE.
2. 1 THESE TEST POINTS ARE THE SAME FOR BOTH A2A2A1 AND A2A3A1.

PARTS LOCATION INDEX

REF. DESIG.	LOC.	REF. DESIG.	LOC.
C1	4F	R3	6D
C2	4E	R4	7D
C3	6F	R5	8G
C4	9C	R6	7D
C5	7A	R7	8D
C6	9D	R8	8E
C7	9F	R9	8F
C8	8F	R10	9F
C9	9G	R11	4B
C10	7E	R12	4D
C11	11D	R13	5D
CR1	7C	R14	6B
E1	10G	R15	7C
E2	8G	R16	8B
E3	7G	R17	10C
E4	7G	R18	10D
E5	6G	R19	10E
E6	6G	R20	9E
E7	5G	R21	10F
E8	4G	R22	8G
E9	5G	R23	8D
Q1	5D	RV1	8B
Q2	7B	RV2	9B
Q3	9C	T1	5F
Q4	9E	T2	6C
Q5	9F	TP1	5A
R1	4E	TP2	10A
R2	6E		

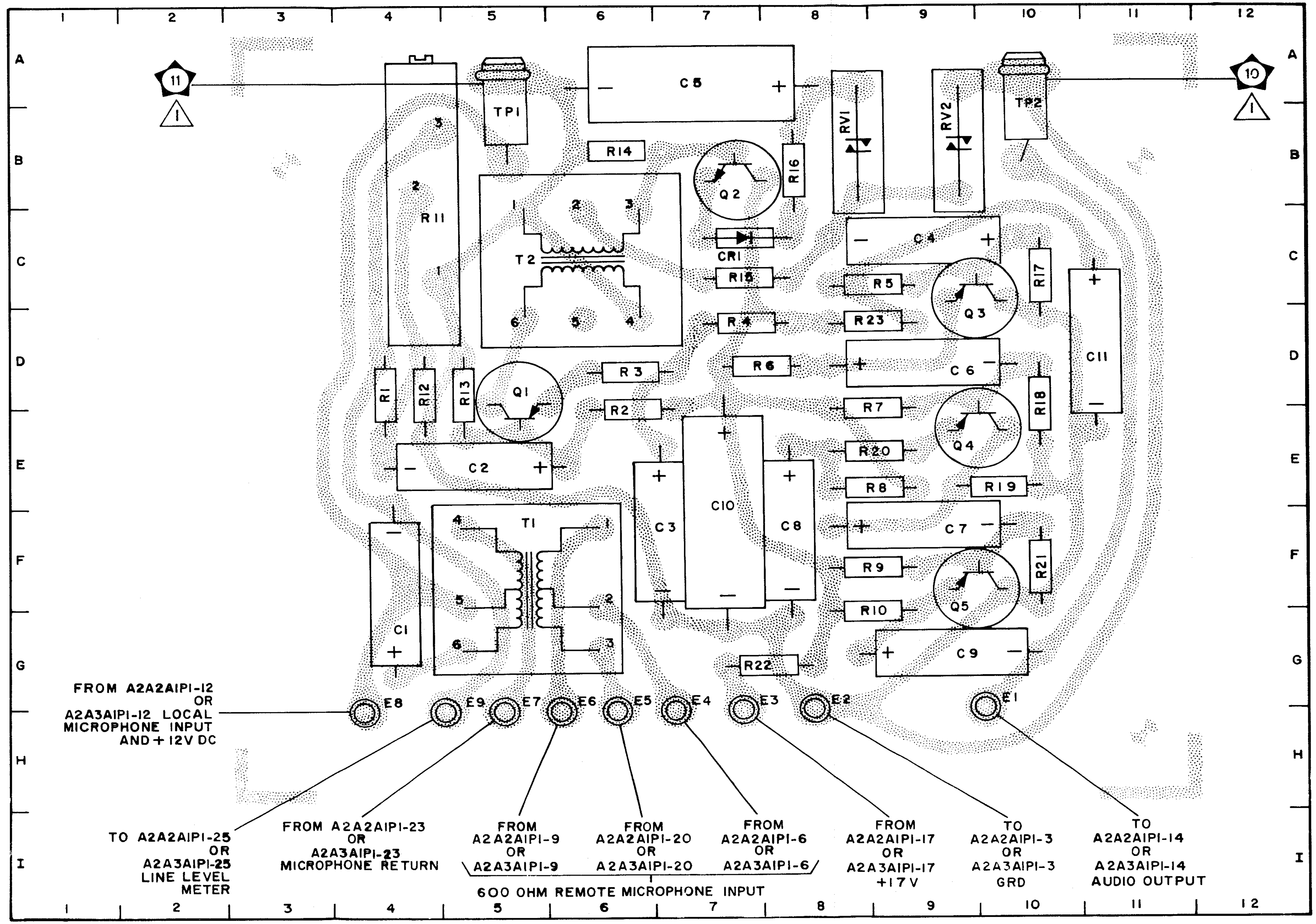


Figure 5-34. Audio Amplifier (Foil Side Up), Component and Test Point Location

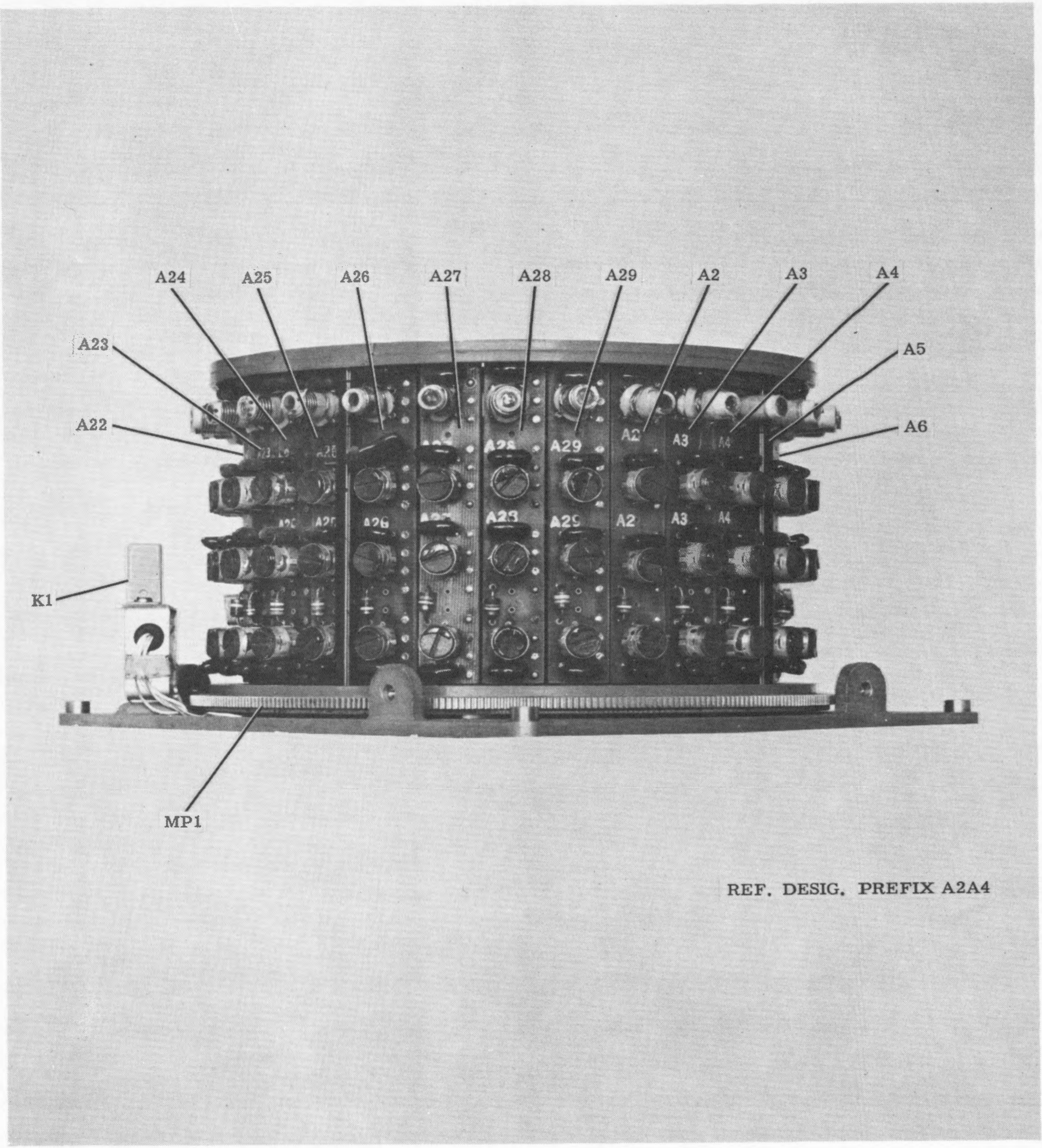


Figure 5-35. RF Amplifier Electronic Assembly,
Front and Left Side, Component Location

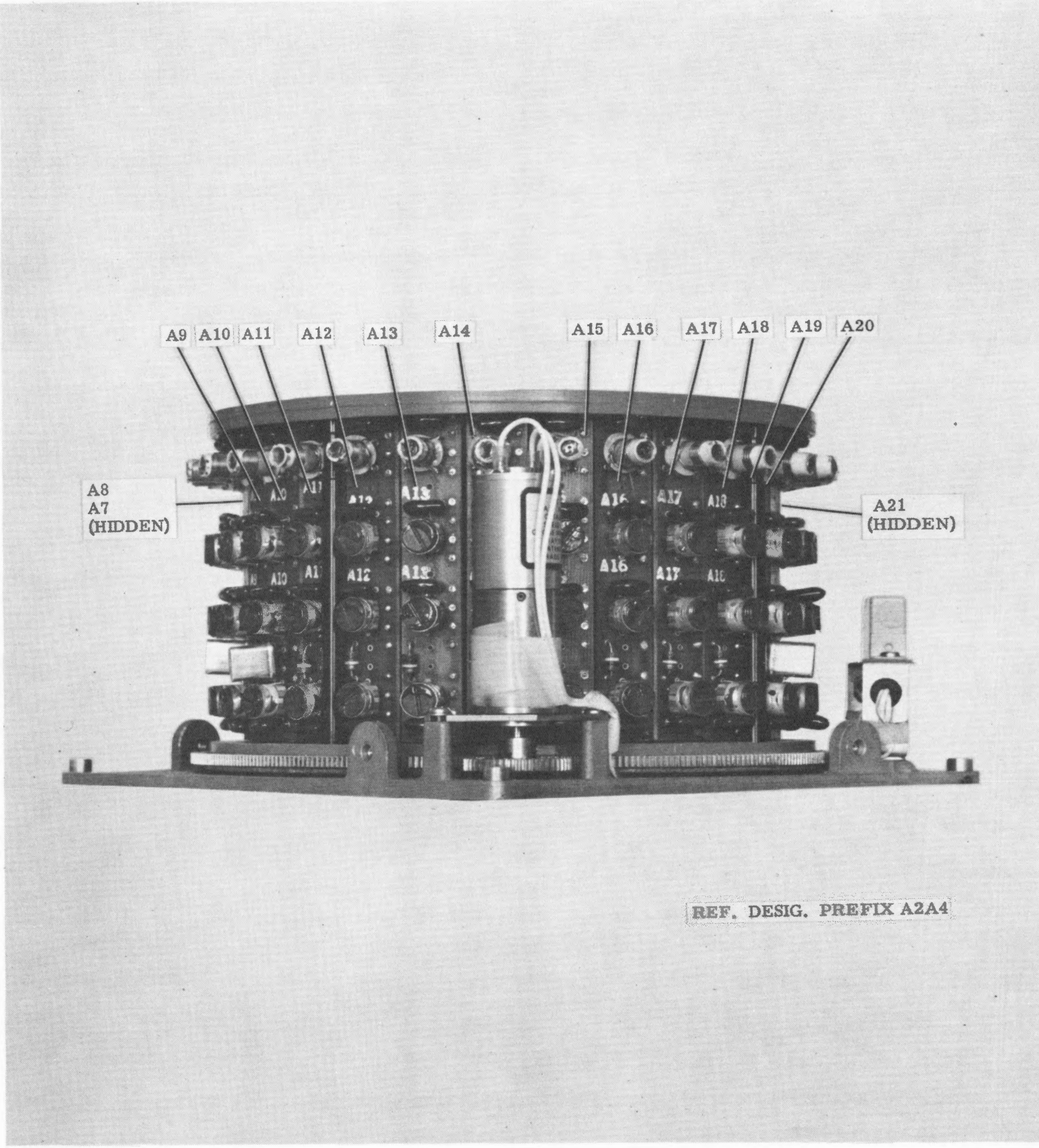


Figure 5-36. RF Amplifier Electronic Assembly, Rear And Right Side, Component Location

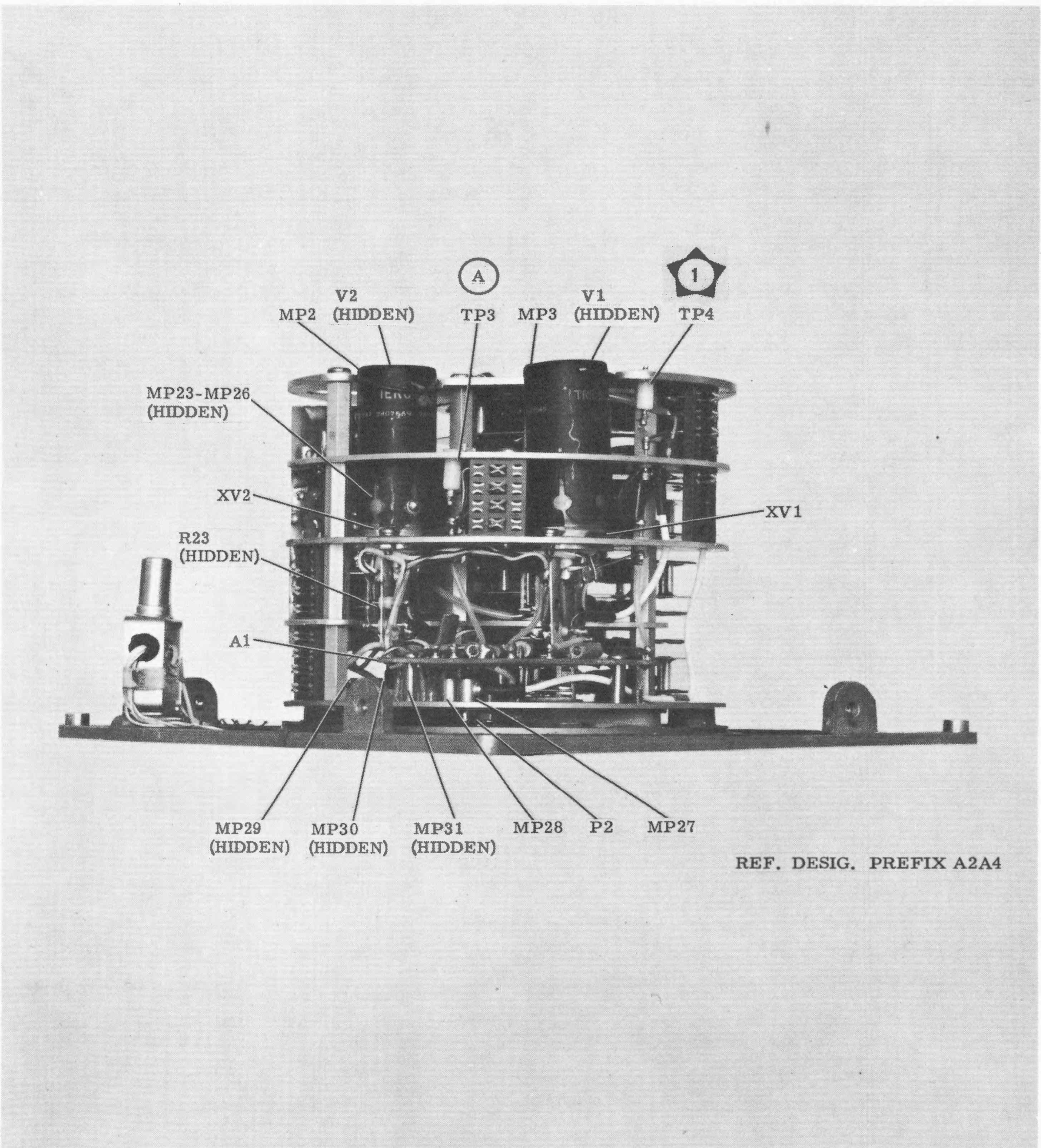


Figure 5-37. RF Amplifier Electronic Assembly, Rear and Right Side, Component Location

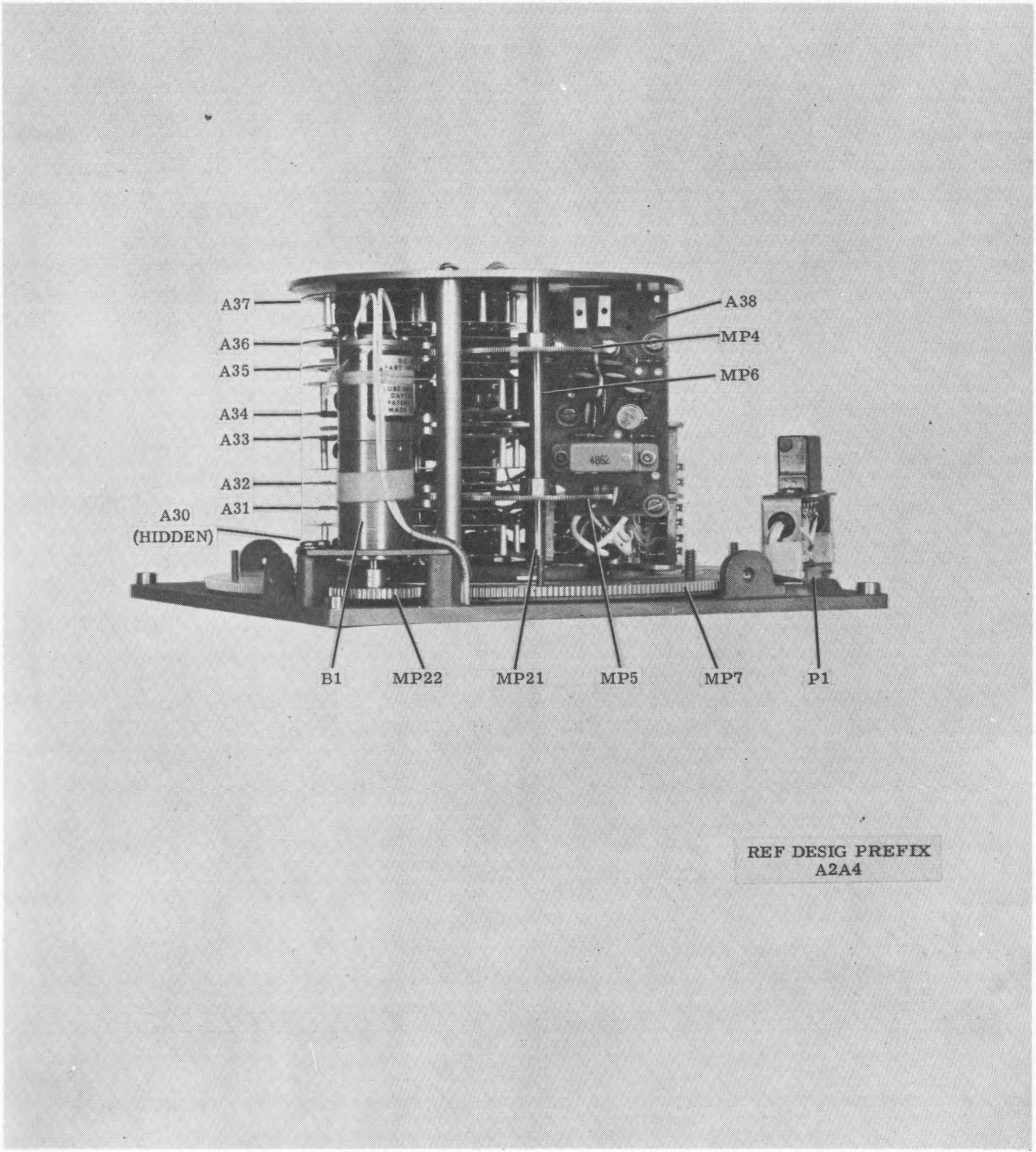


Figure 5-38. RF Amplifier Electronic Assembly, Turret Removed, Rear and Right Side, Component Location

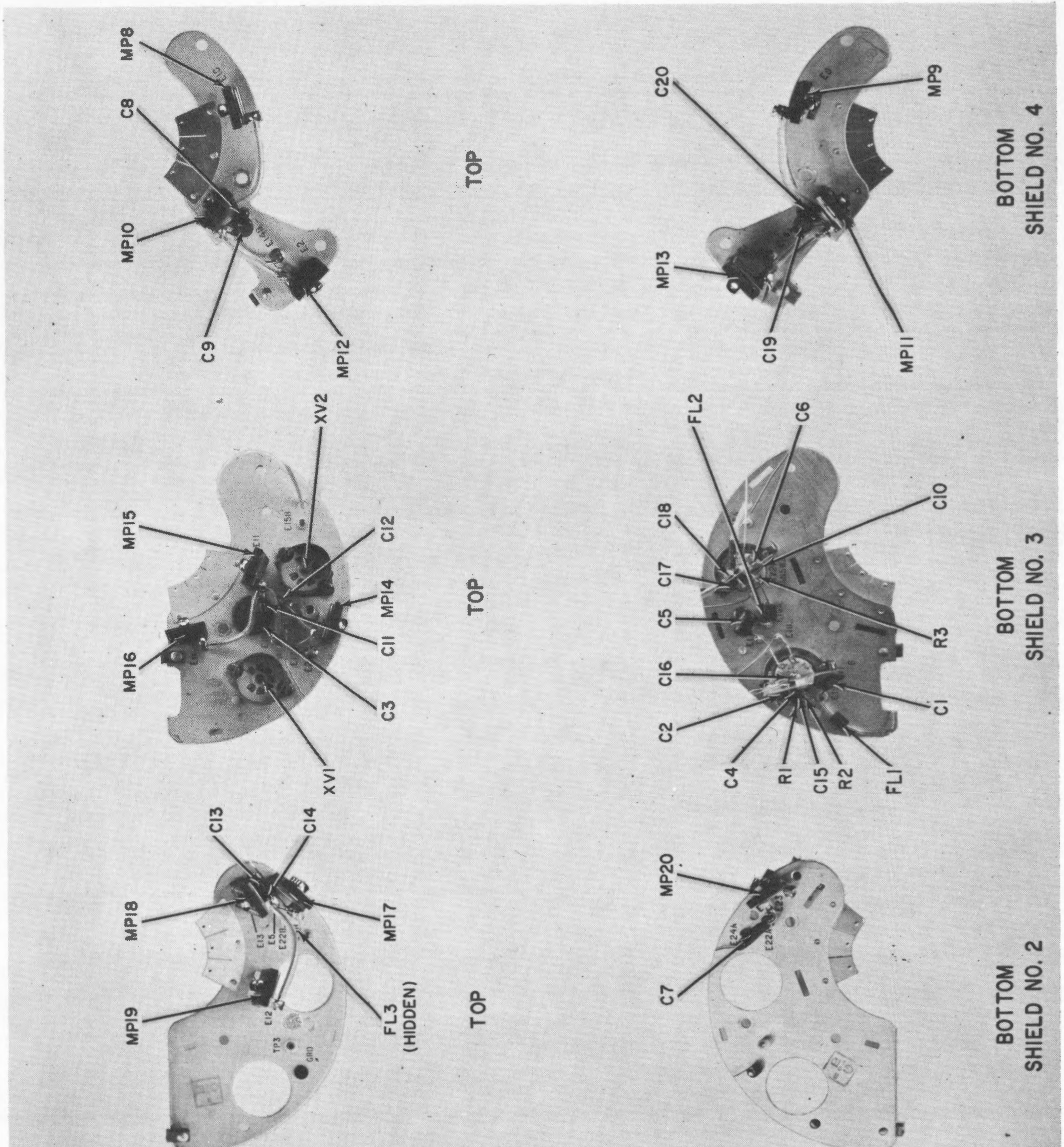
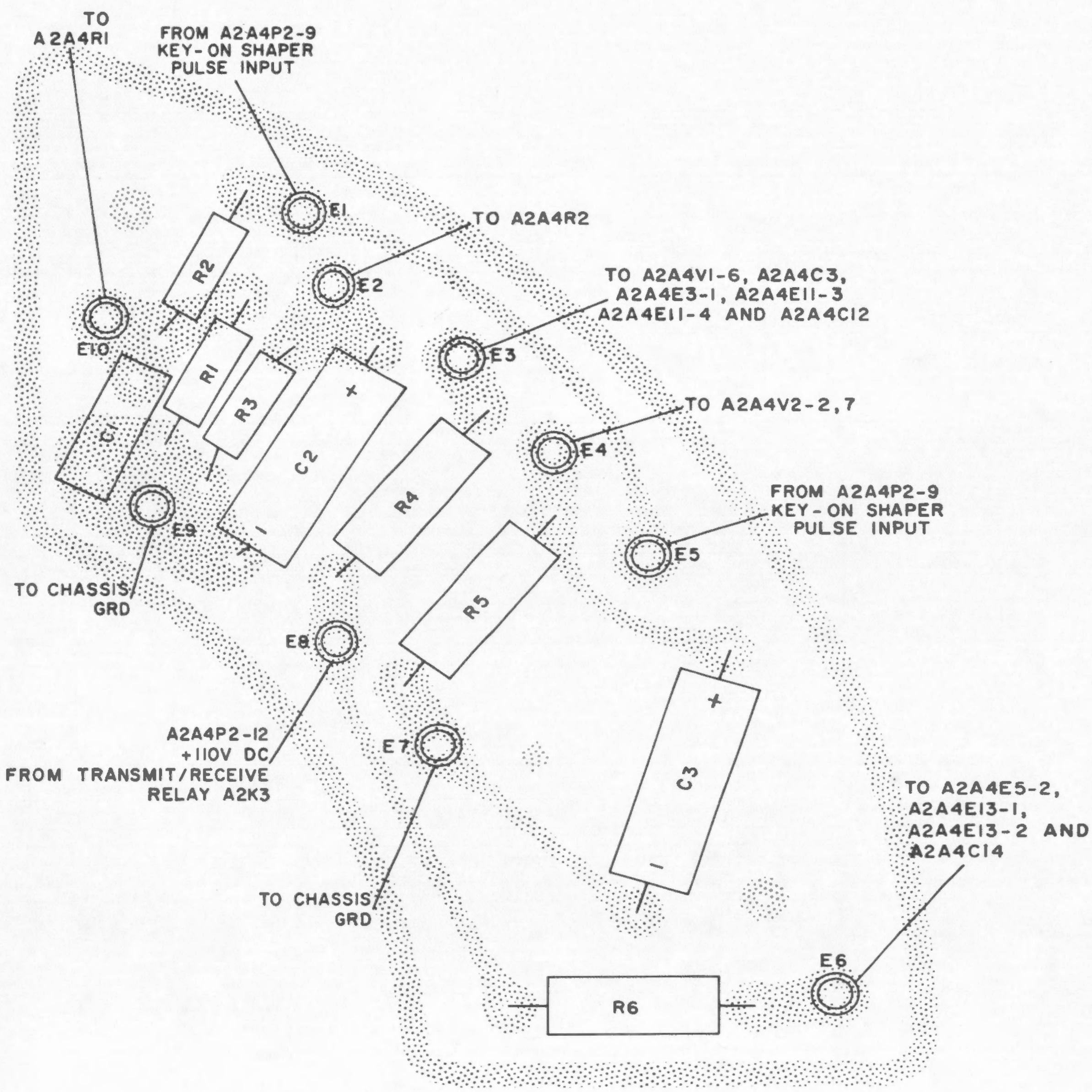


Figure 5-39. RF Amplifier Electronic Assembly, Internal Shields, Component Location



NOTE:
COMPONENT REF. DESIG. PREFIX A2A4A1.

Figure 5-40. RF Amplifier Bias Circuit (Foil Side Up), Component Location

NOTES:

1. COMPONENT REF. DESIG. PREFIX A2A4 AND APPROPRIATE MEGACYCLE ASSEMBLY NUMBER.
2. ILLUSTRATION TYPES ARE APPLICABLE FOR SPECIFIC MEGACYCLES ASSEMBLIES. REFER TO TABLE BELOW FOR APPROPRIATE MEGACYCLE ASSEMBLY AND ILLUSTRATION TYPE.

MEGACYCLE ASSEMBLY (A2A4)	ILLUSTRATION TYPE
A2	1
A3	2
A4	3
A5	3
A6	3
A7	3
A8	3
A9	4
A10	4
A11	3
A12	3
A13	3
A14	3
A15	3
A16	3
A17	3
A18	3
A19	4
A20	5
A21	6
A22	3
A23	3
A24	3
A25	7
A26	8
A27	3
A28	3
A29	3

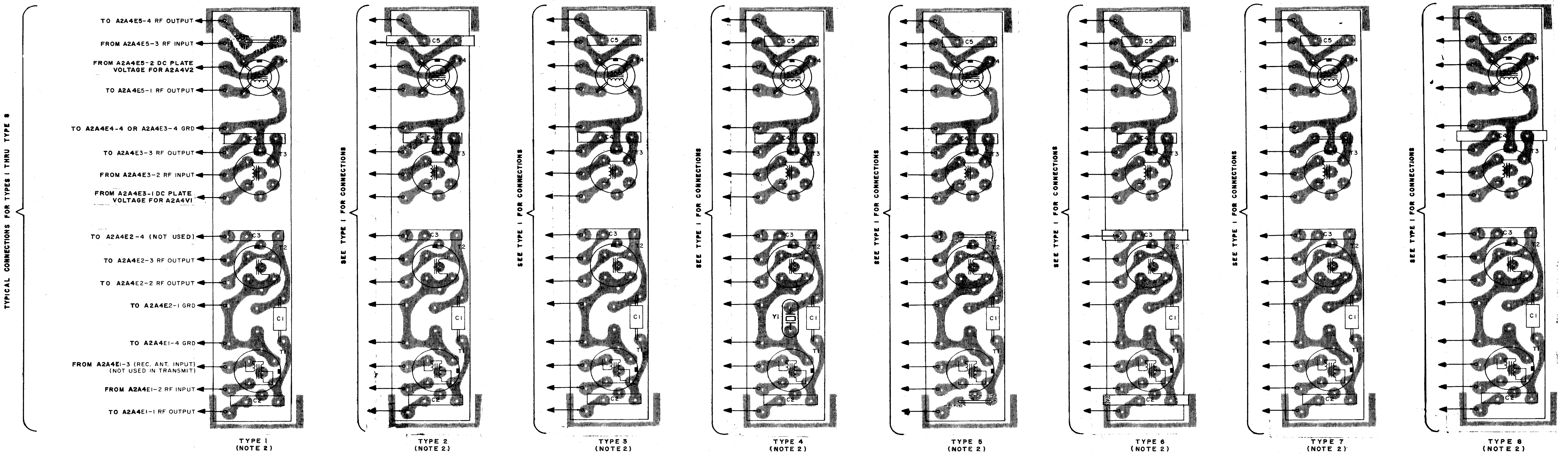
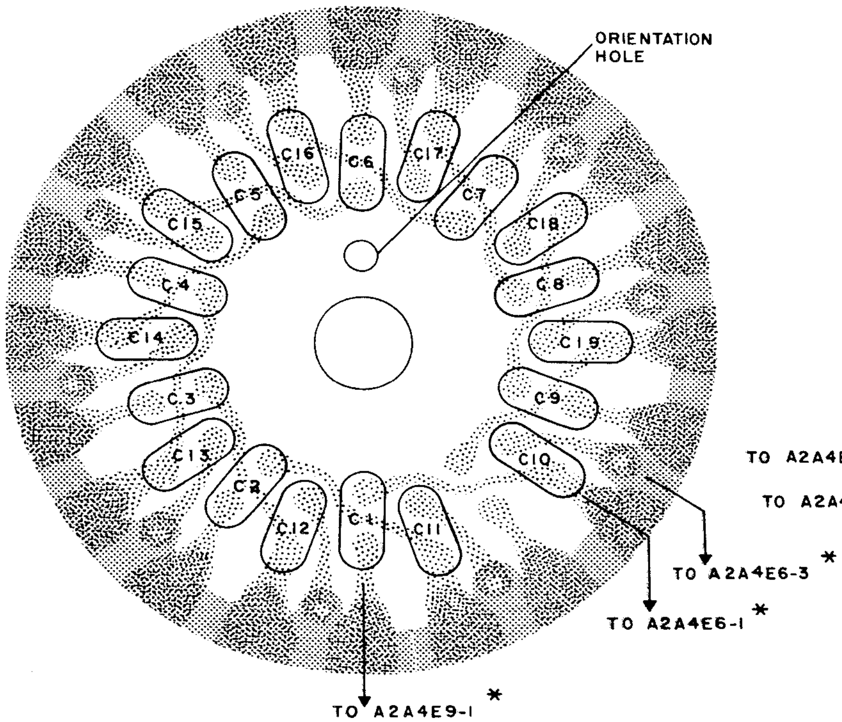
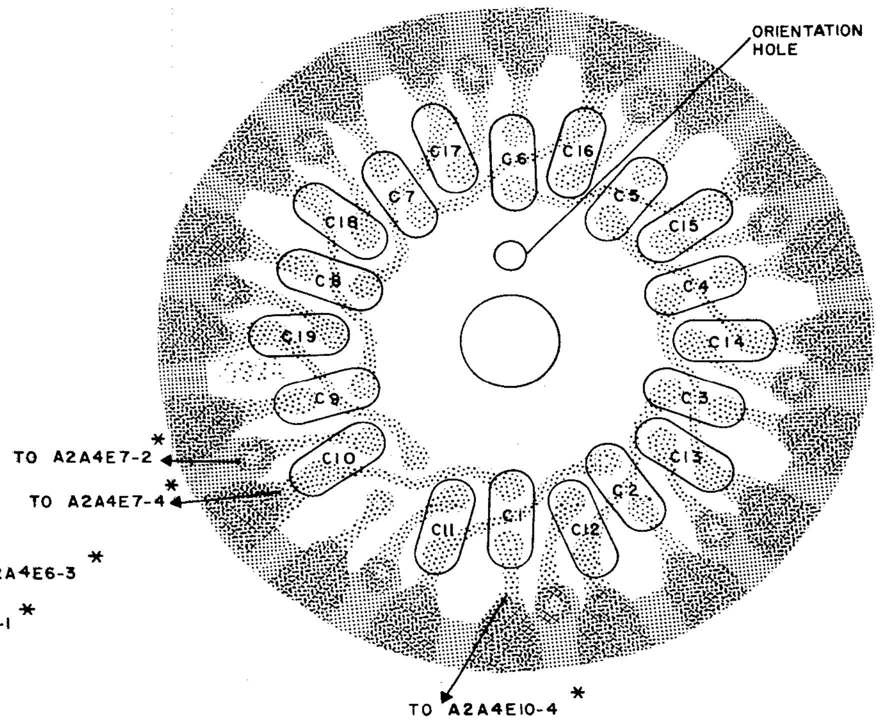


Figure 5-41. Megacycle Assemblies (Foil Side Up), Component Location



100 KC ROTOR ASSEMBLY A30



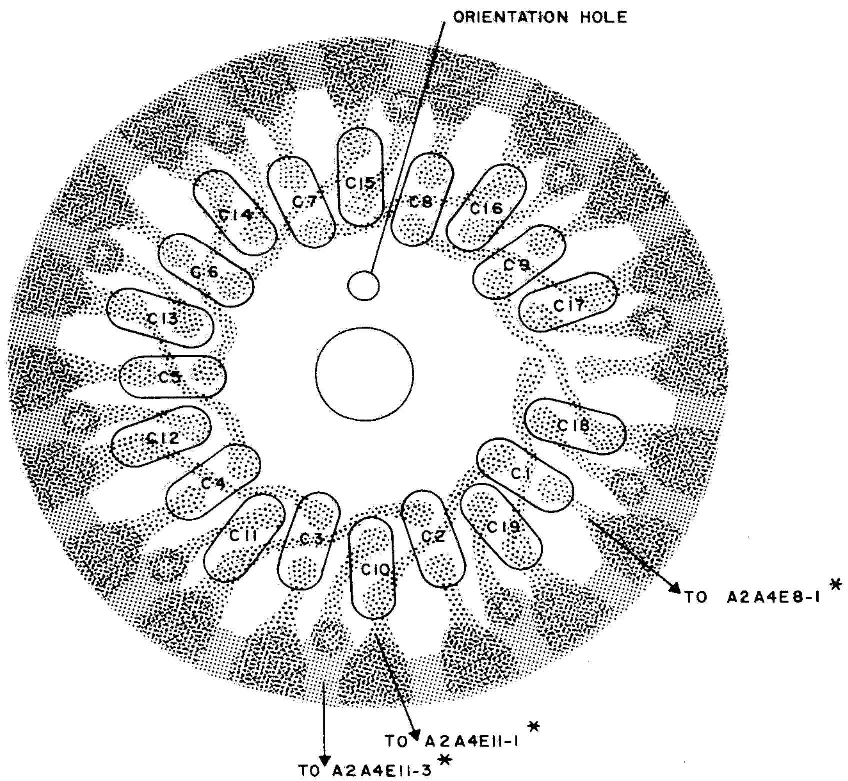
100 KC ROTOR ASSEMBLY A33

NOTES:

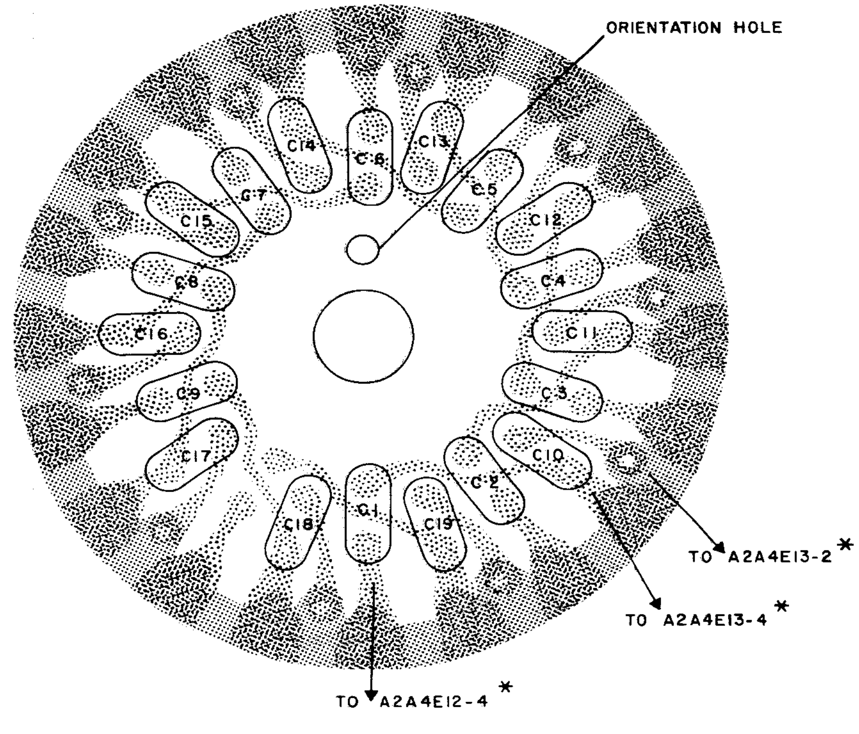
1. COMPONENT REF. DESIG. PREFIX A2A4 AND APPROPRIATE ROTOR ASSEMBLY NUMBER.

2.* TURRET CONTACT TERMINATIONS FOR C1/C10 ONLY, TYPICAL OF EACH OF THE 10 POSITIONS OF THE TURRET. SEE CHART BELOW FOR TURRET POSITION AND CAPACITOR SELECTION.

C1/C10	.00 MC
C2/C11	.10 MC
C3/C12	.20 MC
C4/C13	.30 MC
C5/C14	.40 MC
C6/C15	.50 MC
C7/C16	.60 MC
C8/C17	.70 MC
C9/C18	.80 MC
C19	.90 MC

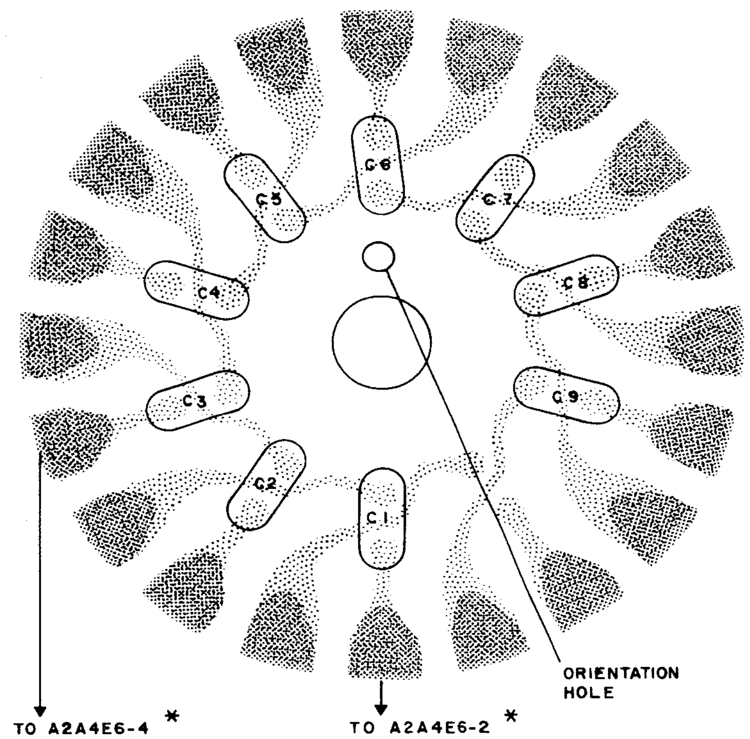


100 KC ROTOR ASSEMBLY A34

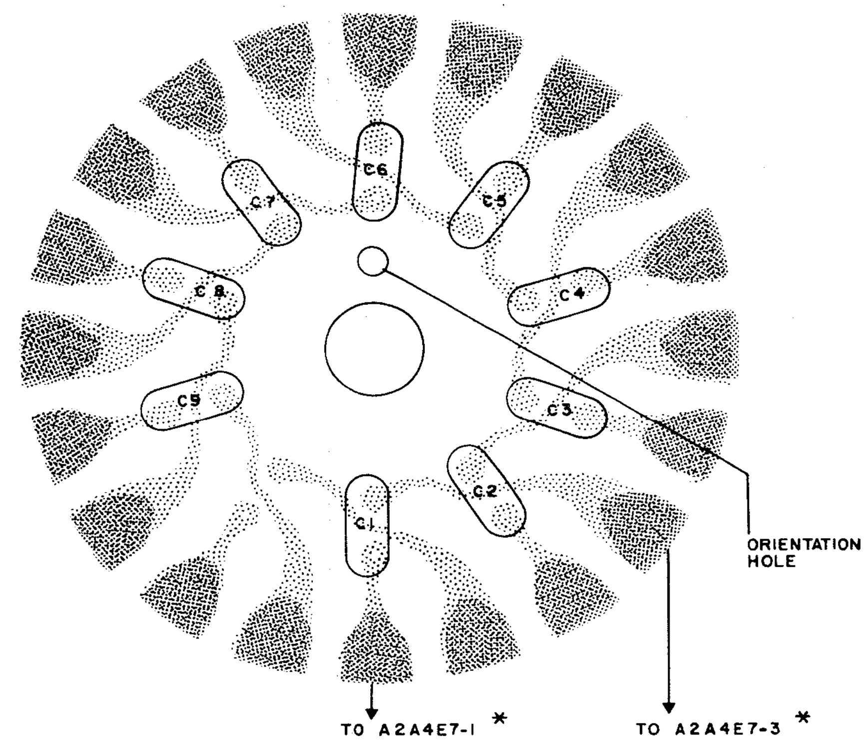


100 KC ROTOR ASSEMBLY A37

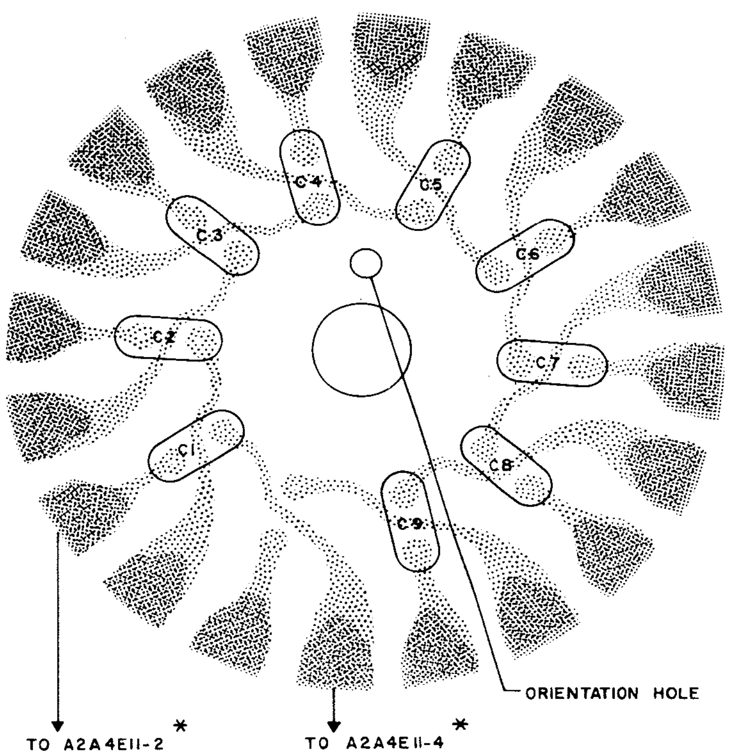
Figure 5-42. 100 KC Rotor Assemblies (Component Side Down), Component Location



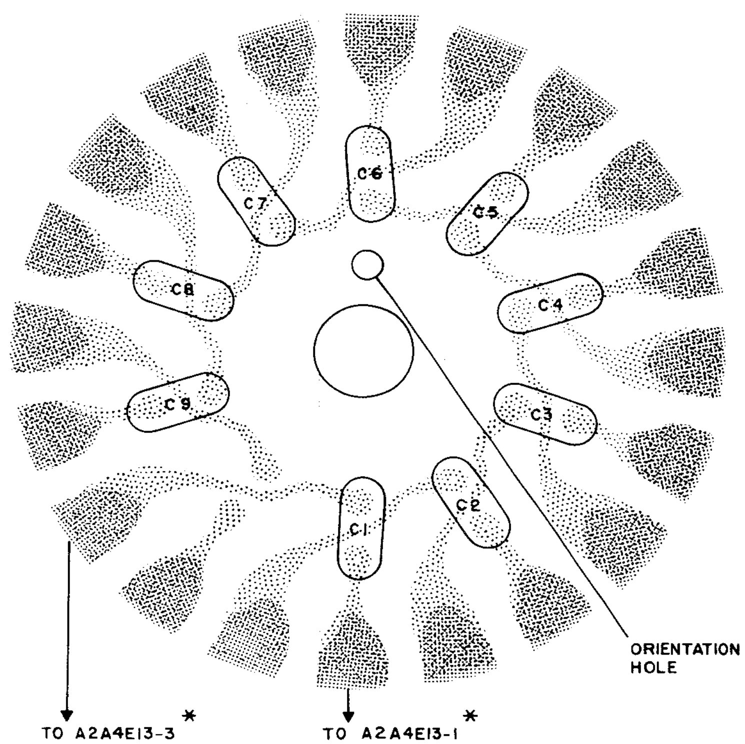
10 KC ROTOR ASSEMBLY A31



10 KC ROTOR ASSEMBLY A32



10 KC ROTOR ASSEMBLY A35



10 KC ROTOR ASSEMBLY A36

NOTES:

1. COMPONENT REF. DESIG PREFIX A2A4 AND APPROPRIATE ROTOR ASSEMBLY NUMBER

2. * TURRET CONTACT TERMINATIONS FOR C1 ONLY, TYPICAL OF EACH OF THE 10 POSITIONS OF THE TURRET. SEE CHART BELOW FOR TURRET POSITION AND CAPACITOR SELECTION.

C1	.00MC
C2	.01MC
C3	.02MC
C4	.03MC
C5	.04MC
C6	.05MC
C7	.06MC
C8	.07MC
C9	.08MC

Figure 5-43. 10 KC Rotor Assemblies (Component Side Down), Component Location

NOTES:

1. COMPONENT REF. DESIG. PREFIX A2A4A38.
2. △1 NOT USED IN R-1051/URR RECEIVER.
3 * REFER TO TABLE BELOW FOR THESE CONNECTIONS.

REF. DESIG. (A2A4A38)	END USE	
	T-827/URT TRANSMITTER	R-1051/URR RECEIVER
E2	FROM A2A4P2-A4 1 MC MIXER INJECTION INPUT FROM RF TRANSLATOR A2A6A6	FROM A2A4P2-A4 (NOT USED)
E3	FROM A2A4P2-A5 RF INPUT FROM RF TRANSLATOR A2A6A6	FROM A2A4P2-A5 (NOT USED)
E5	FROM A2A4P2-11 +20 V FROM RELAY A2K3	FROM A2A4P2-11 (NOT USED)
E9	TO A2A4A38K1-2 RF OUTPUT FROM A2A4A38Q2	TO A2A4A38K1-2 (NOT USED)
K1-2	FROM A2A4A38E9 RF OUTPUT	FROM A2A4A38E9 (NOT USED)
K1-3	FROM A2A4P2-10 + 28 V COUPLER INTERLOCK	FROM A2A4P2-10 (NOT USED)
K1-4	(NOT USED)	(NOT USED)
K1-5	TO A2A4E1-2 RF OUTPUT	TO A2A4E1-2 (NOT USED)
K1-6	FROM A2A4P2-A3 (NOT USED)	FROM A2A4P2-A3 ANTENNA INPUT
K1-7	FROM A2A4P2-2 (GRD KEYLINE)	FROM A2A4P2-2 (NOT USED)
K1-8	TO A2A4E1-3 (NOT USED)	TO A2A4E1-3 (ANTENNA INPUT LINE)

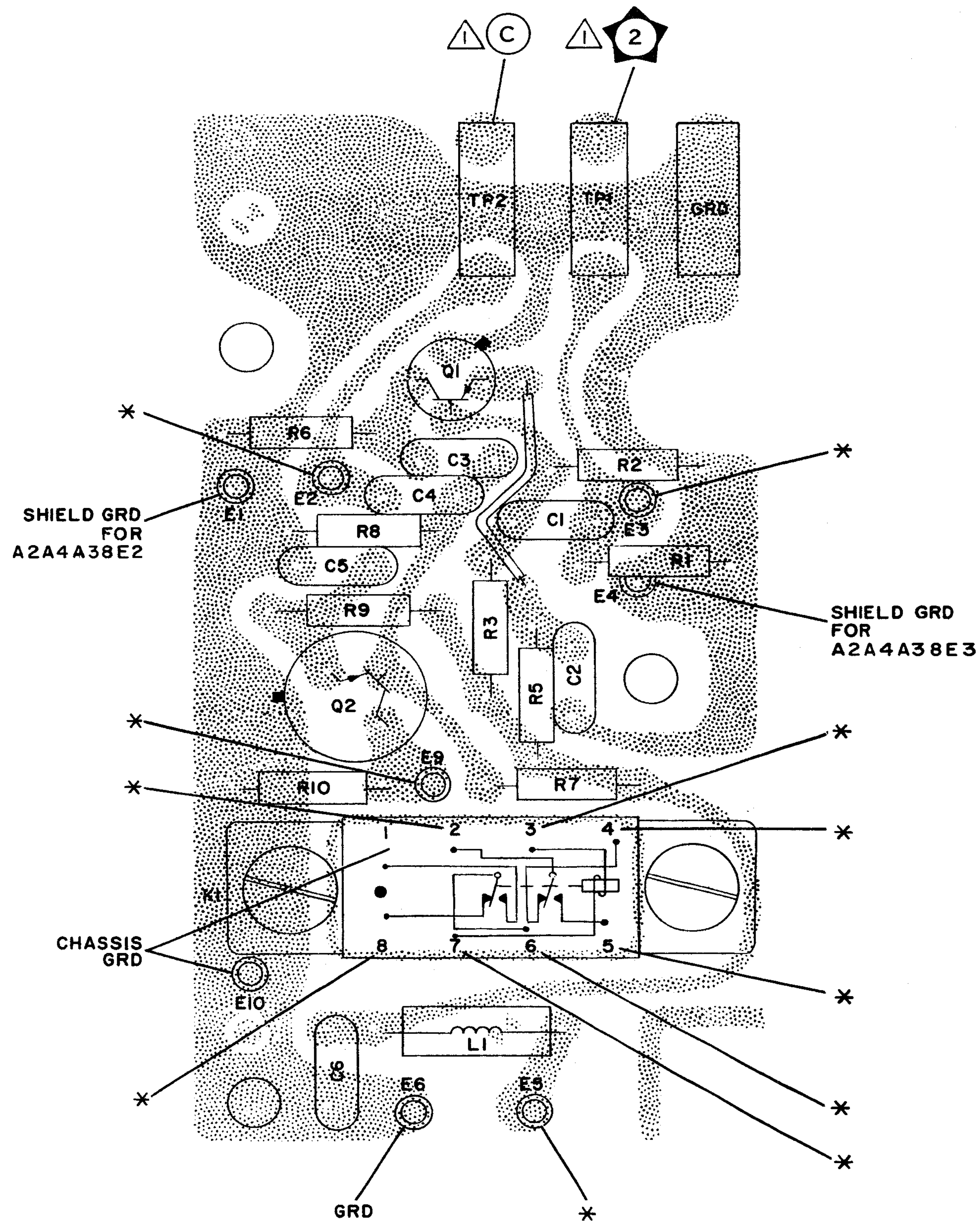


Figure 5-44. HF Mixer/Amplifier (Foil Side Up), Component and Test Point Location

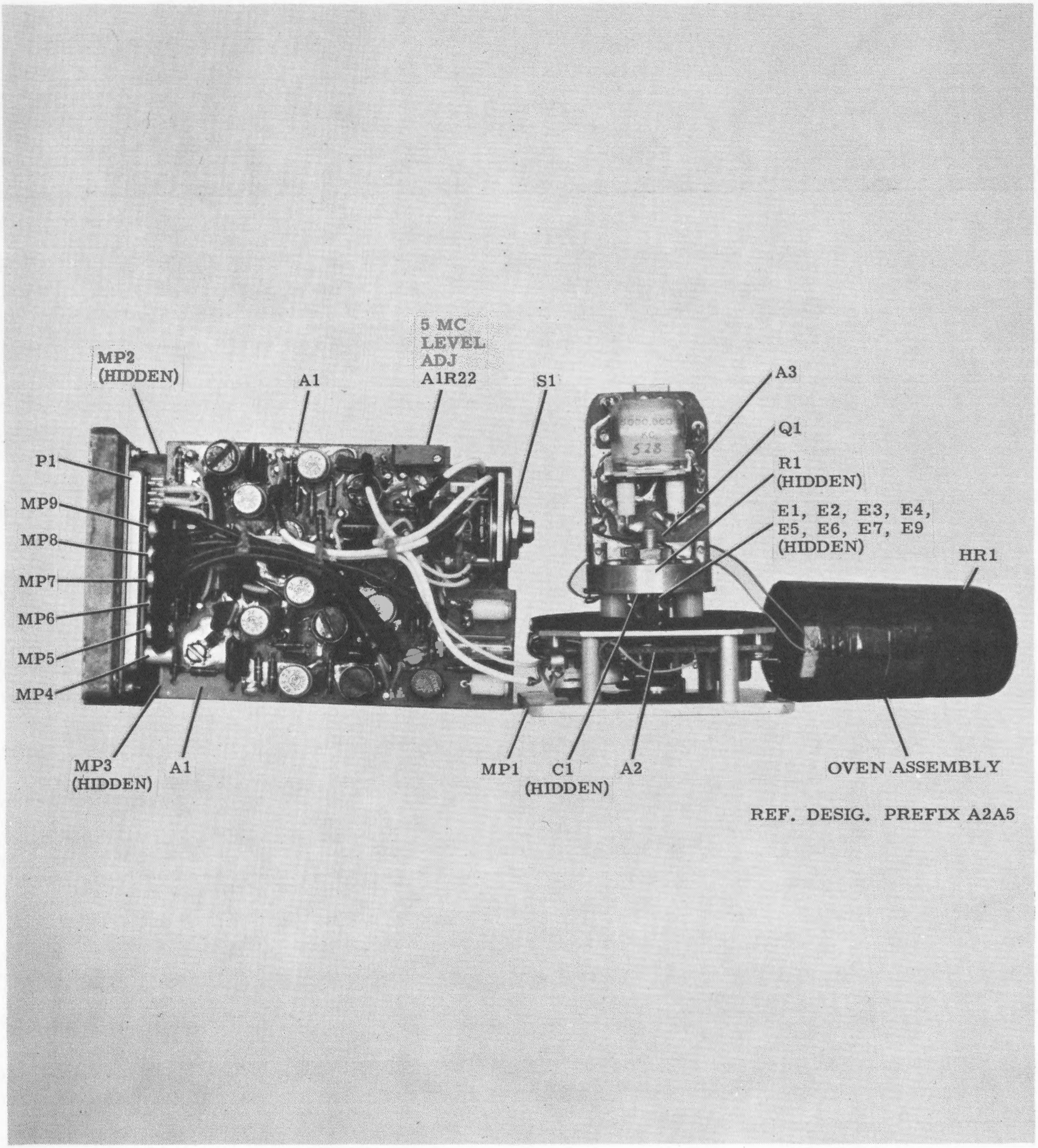


Figure 5-45. Frequency Standard Electronic Assembly, Front View, (Oven Disassemblied), Component Location

NOTES:

1. COMPONENT REF. DESIG. PREFIX A2A5A1.
2. THIS DRAWING REFLECTS THE CURRENT MODEL OF 5MC MULTIPLIER, DIVIDERS, AND COMPARATOR. EARLIER MODEL DIFFERENCES APPLICABLE TO THIS DRAWING ARE DESCRIBED BELOW.

COMPONENT	MODEL DIFFERENCES
RESISTOR R31	NOT INCLUDED ON EARLIER MODELS

PARTS LOCATION INDEX

REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.
C1	6D	E6	4C	R7	6B
C2	6C	E7	6B	R8	6B
C3	4C	E8	3D	R9	5B
C4	7E	E9	3D	R10	8B
C5	6E	E10	4G	R11	7B
C6	4D	E13	5E	R12	5B
C7	4D	E14	5E	R13	7C
C8	6C	E15	4F	R14	4B
C9	6D	E17	E5	R15	4B
C10	7C	E18	6G	R16	3A
C11	6E	E19	7F	R17	3E
C12	6E	E20	7B	R18	4F
C13	6D	E22	5C	R19	3D
C14	5C	E25	3B	R20	4D
C15	3C	E26	4E	R21	4D
C16	3C	E28	3G	R22	3G
C17	3D	E30	6H	R23	5E
C18	3E	E31	6G	R24	4G
C19	4D	L1	5B	R25	5G
C20	5F	L2	4F	R26	7H
C21	5F	Q1	8D	R27	7F
C22	5G	Q2	6D	R28	6G
C23	6G	Q3	6C	R29	7F
C24	6G	Q4	4C	R30	7G
C25	7F	Q5	3D	R31	5E
C26	6B	Q6	8G	T1	8F
CR1	5G	Q7	6F	T2	5D
CR2	6G	R1	7D	T3	7E
DS1	7H	R2	7D	T4	3B
E1	8F	R3	5A	T5	4F
E3	7F	R4	8E	T6	5F
E4	3F	R5	4E	TP1	6H
E5	4E	R6	5E	TP2	7H

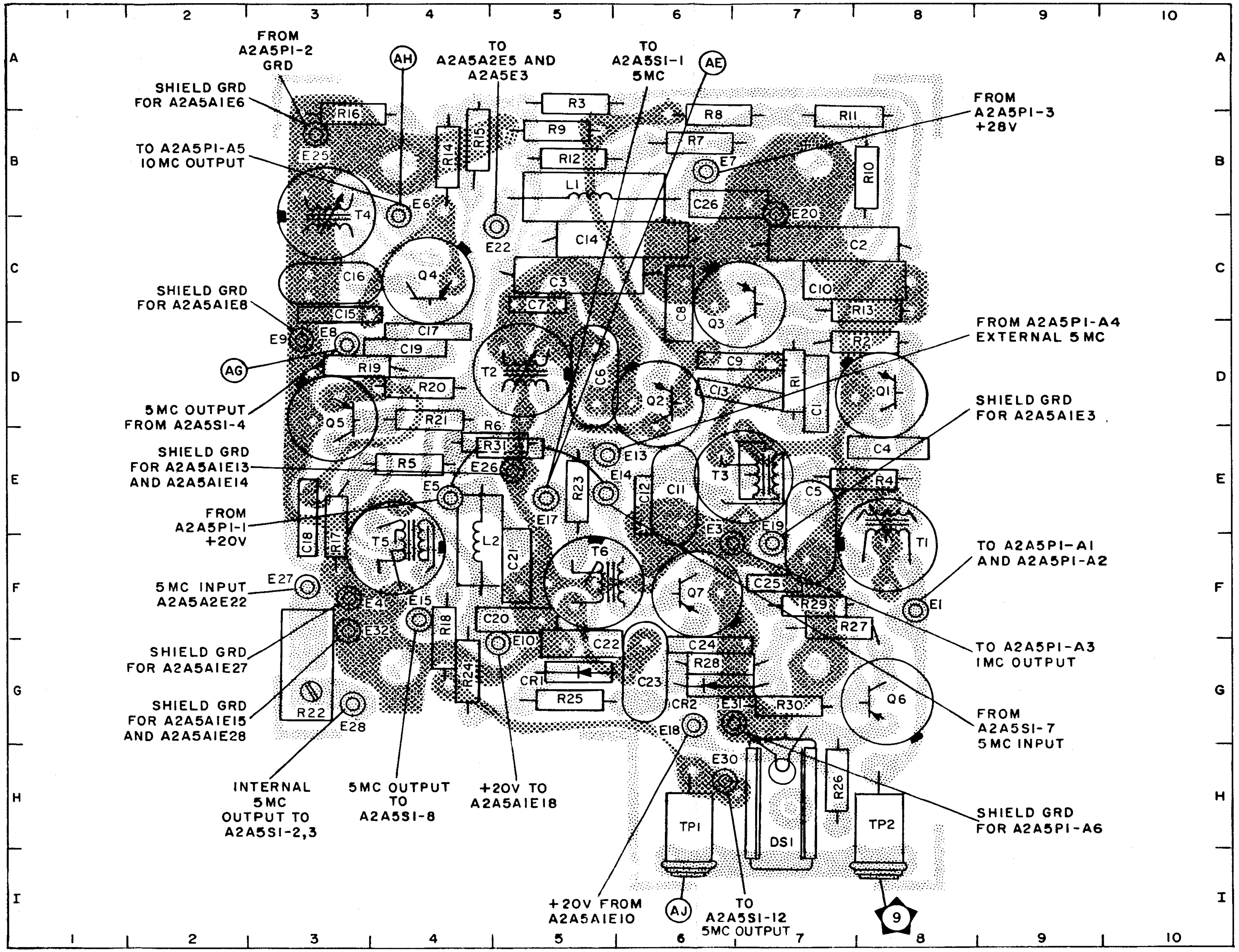
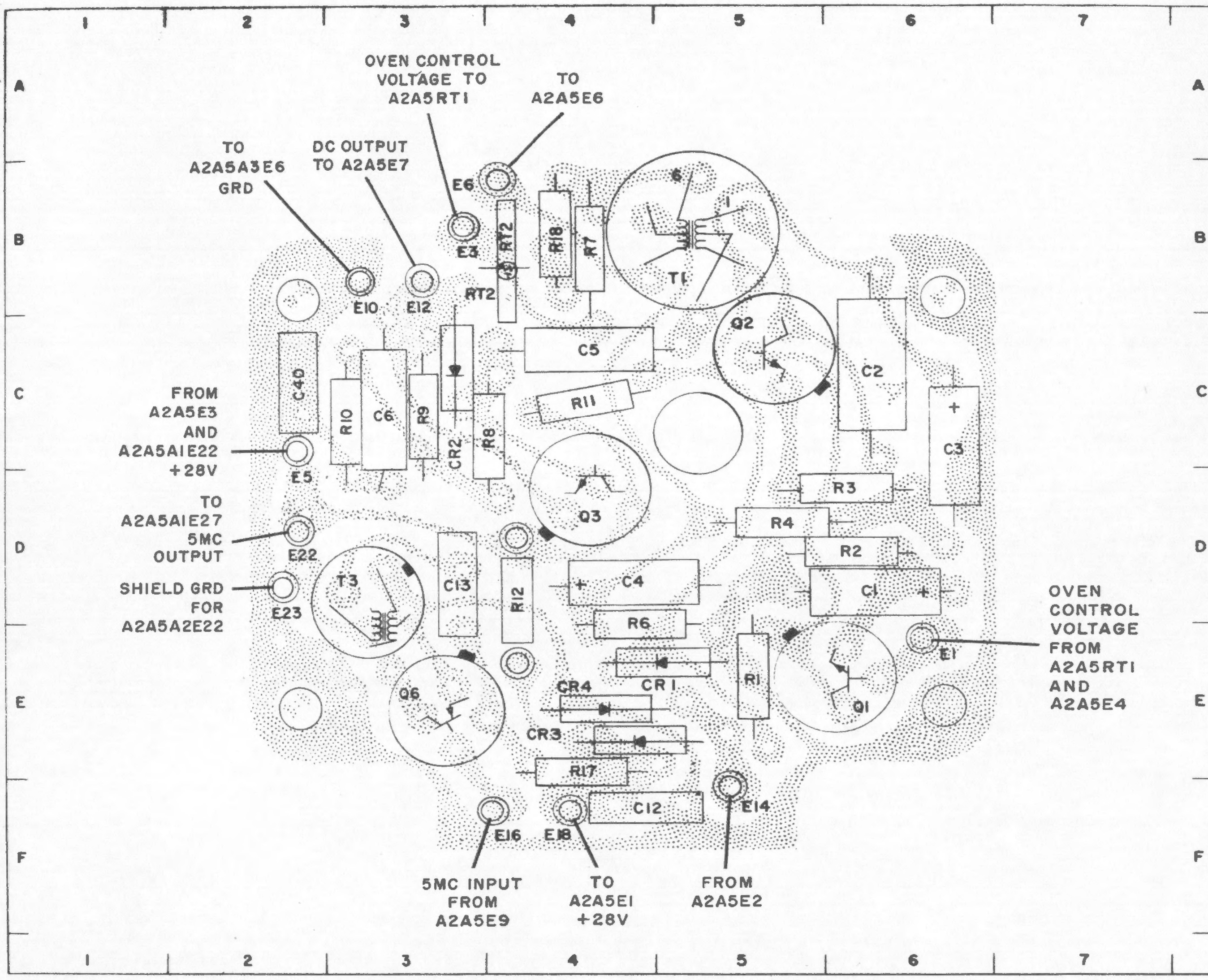


Figure 5-46. 5 MC Multiplier, Dividers, and Comparator (Component Side Down), Component and Test Point Location



NOTE:

COMPONENT REF. DESIG. PREFIX A2A5A2.

PARTS LOCATION INDEX

REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC
C1	6D	CR3	4E	E22	2D	R7	4B
C2	6C	CR4	4E	E23	2D	R8	3C
C3	6C	E1	6E	Q1	5E	R9	3C
C4	4D	E3	3B	Q2	5C	R10	3C
C5	4C	E5	2C	Q3	4D	R11	4C
C6	3C	E6	4B	Q6	3E	R12	4D
C12	4F	E10	3B	R1	5E	R17	4E
C13	3D	E12	3B	R2	6D	R18	4B
C40	2C	E14	5F	R3	6D	RT2	4B
CR1	4E	E16	4F	R4	5D	T1	5B
CR2	3C	E18	4F	R6	4D	T3	3D

Figure 5-47. Oven Control and Buffer Amplifier (Foil Side Up), Component Location

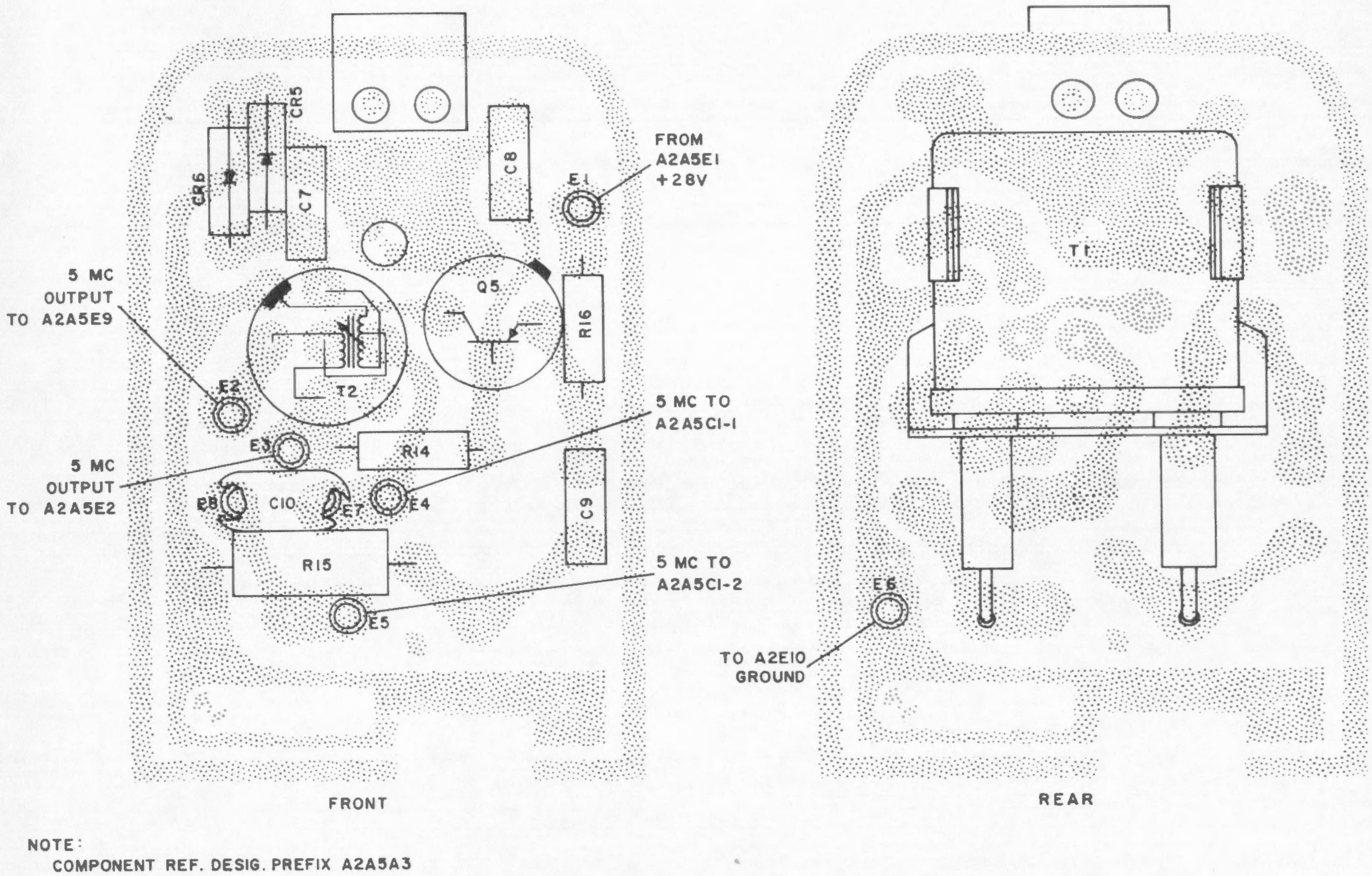


Figure 5-48. 5 MC Oscillator (Foil Side Up), Component Location

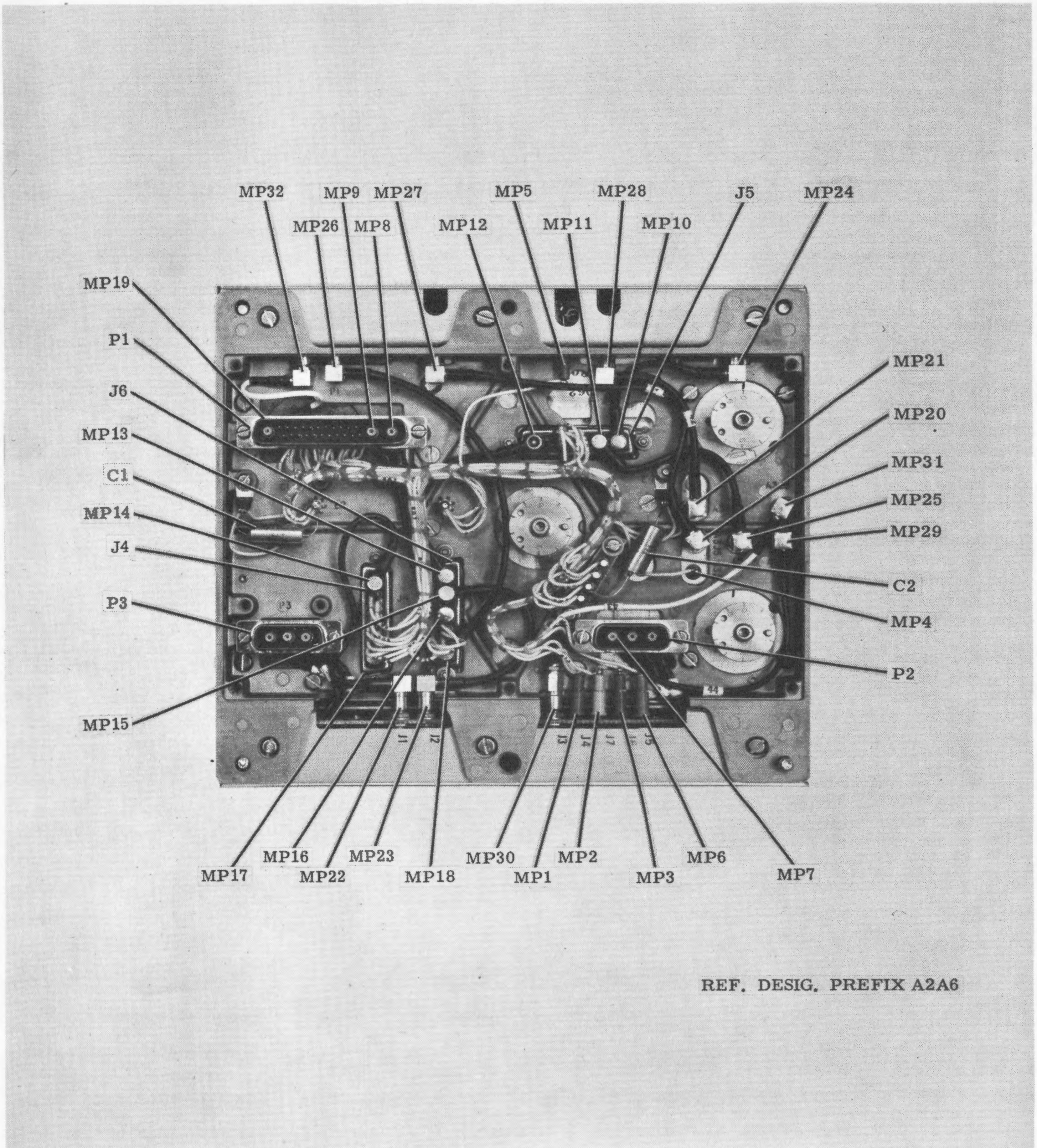


Figure 5-49. Translator/Synthesizer Electronic Assembly
Bottom View, Component Location

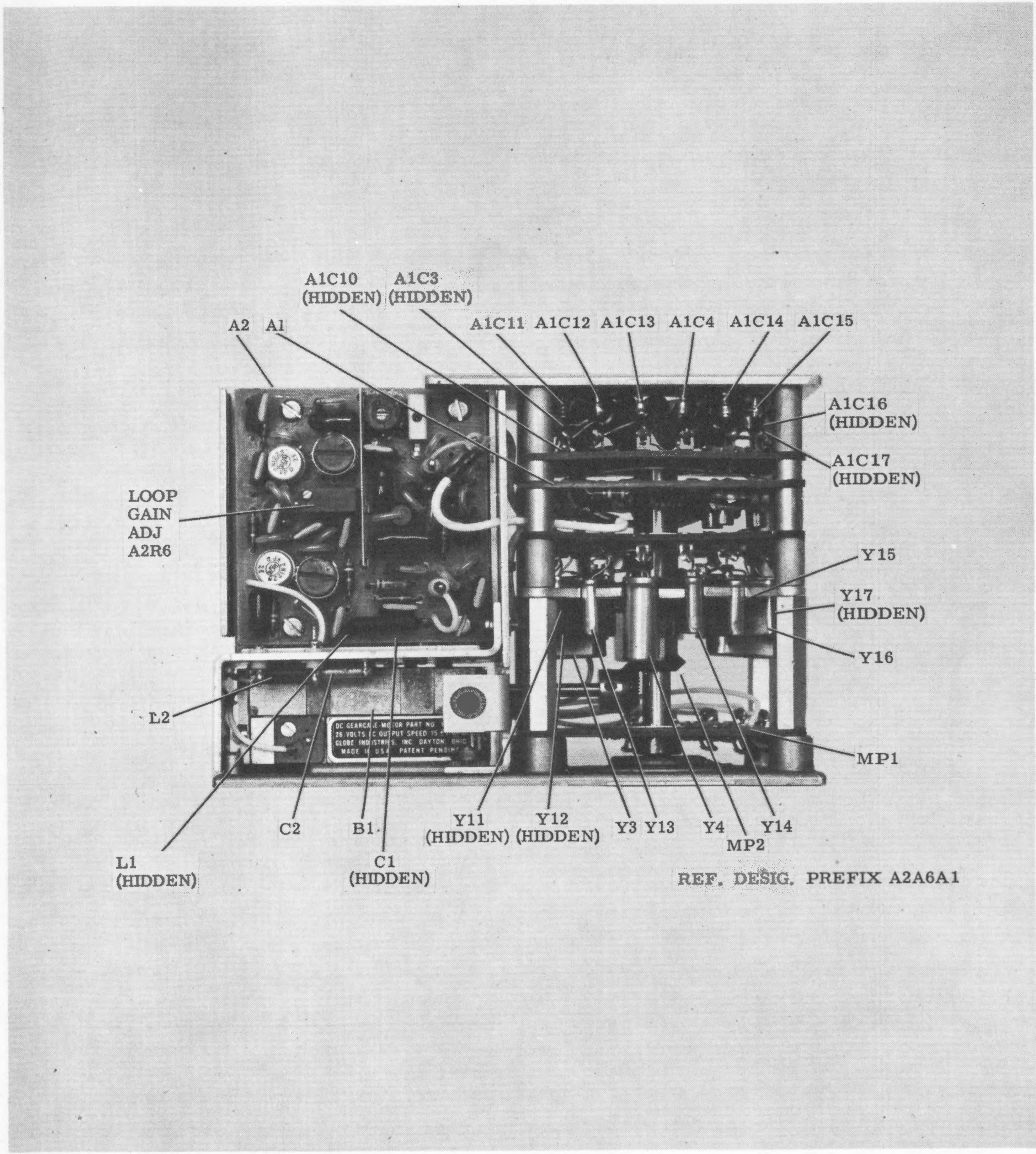


Figure 5-50. MC Synthesizer Electronic Subassembly, Front View, Component Location

NOTE:
COMPONENT REF. DESIG. PREFIX A2A6A1A1.

PARTS LOCATION INDEX

REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.
C18	6E	C27	2C	E4	6E	L3	3B	R4	5D	R12	3D
C19	5C	C28	4E	E5	6E	Q1	3C	R5	5D	R13	2C
C20	5B	CR1	5C	E6	6A	Q2	2D	R6	6C	R14	2D
C21	4B	CR2	5C	E8	6B	Q3	3D	R7	4B	R15	2D
C23	6C	CR3	5B	E9	6B	Q4	4D	R8	3B	R16	3E
C24	3B	E1	2E	E10	2B	R1	6B	R9	2B	R17	4E
C25	4E	E2	3E	L1	6E	R2	4B	R10	2B	R18	3E
C26	2C	E3	5E	L2	4C	R3	5D	R11	3C	RT1	6D

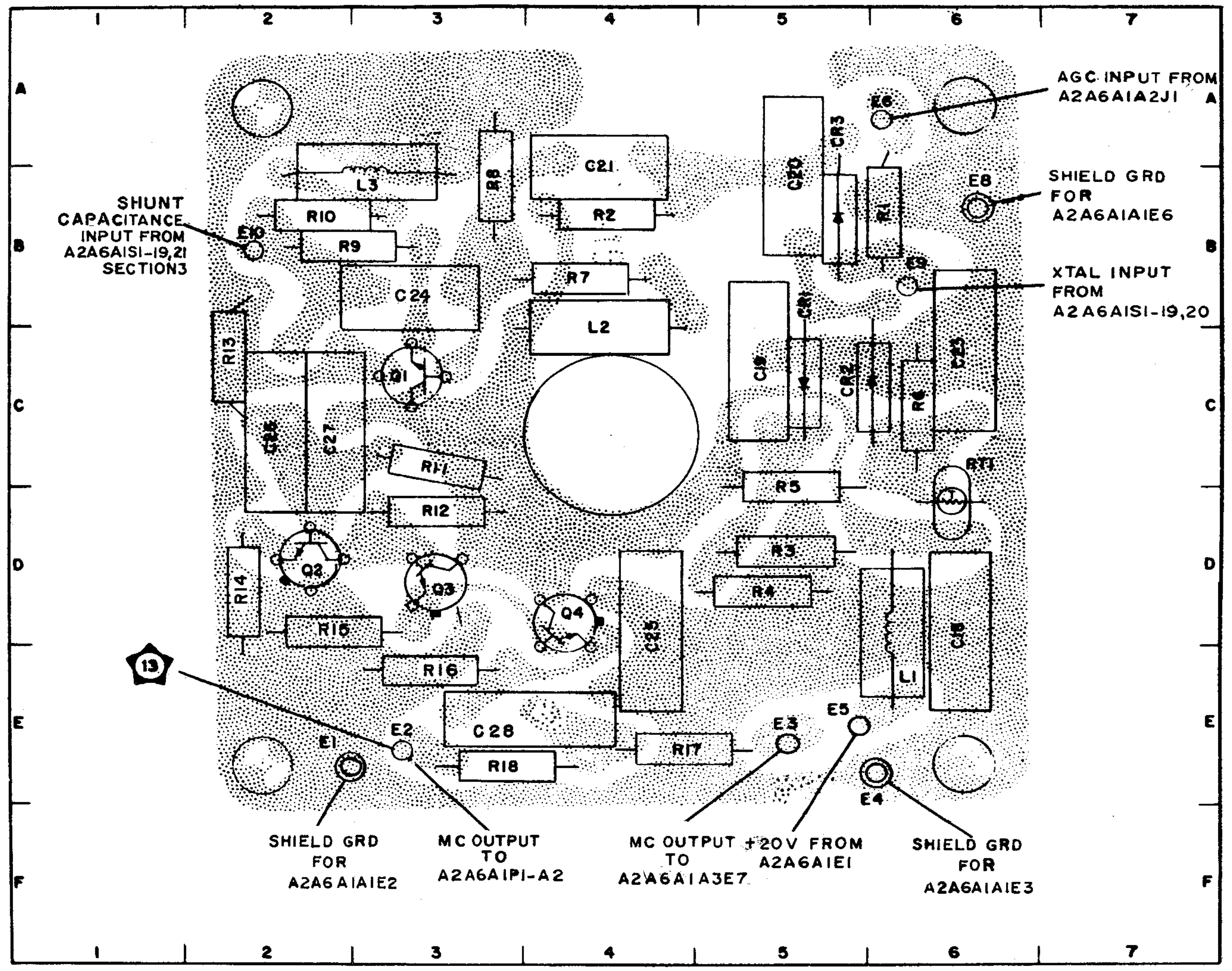


Figure 5-51. MC Oscillator (Foil Side Up), Component and Test Point Location

PARTS LOCATION INDEX

REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC
C1	6C	C11	2E	L1	3D	R3	5C	R13	3C	RT1	2C
C2	6B	C12	5D	L2	3D	R4	5B	R14	3C	T1	4B
C3	4B	C13	3E	L3	3C	R5	5A	R15	2E	T2	5E
C4	4E	C14	6D	L4	4B	R6	4C	R16	3D	TP1	5D
C5	4D	CR1	2E	P2	3G	R7	5D	R17	2D	TP2	3C
C6	6E	E2	2B	Q1	5B	R8	5D	R18	2C	TP3	3B
C7	3D	E3	6E	Q2	5E	R9	4E	R19	2C		
C8	4C	E4	6C	Q3	2D	R10	4D	R20	2C		
C9	3B	J1	3C	R1	5C	R11	5E	R21	3B		
C10	3F	J2	3E	R2	6B	R12	3E	R22	6D		

NOTES:
1. COMPONENT REF. DESIG. PREFIX A2A6A1A2.
2. △1 VERTICALLY MOUNTED COMPONENTS.

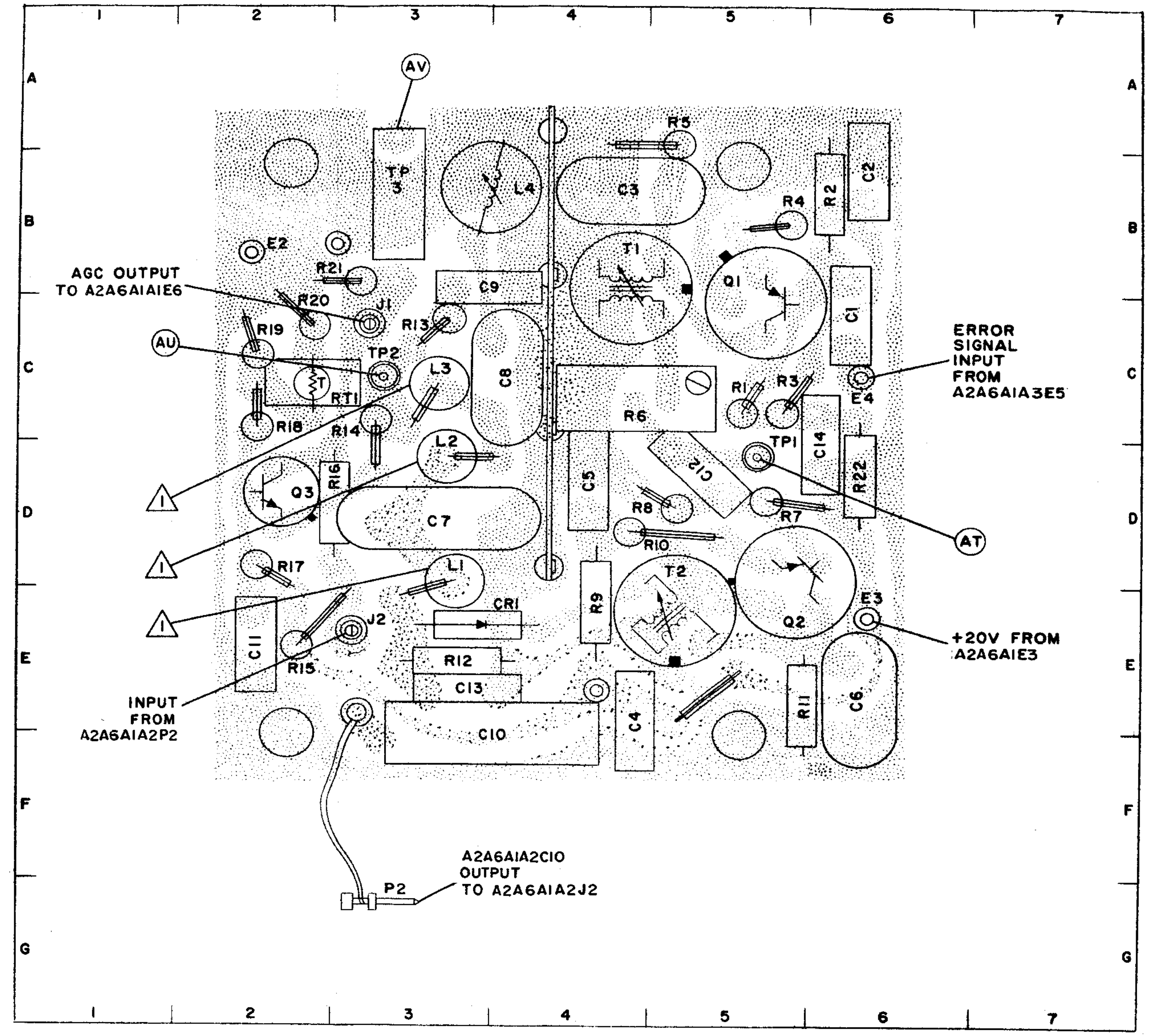


Figure 5-52. Error Detector/Amplifier (Foil Side Up), Component and Test Point Location

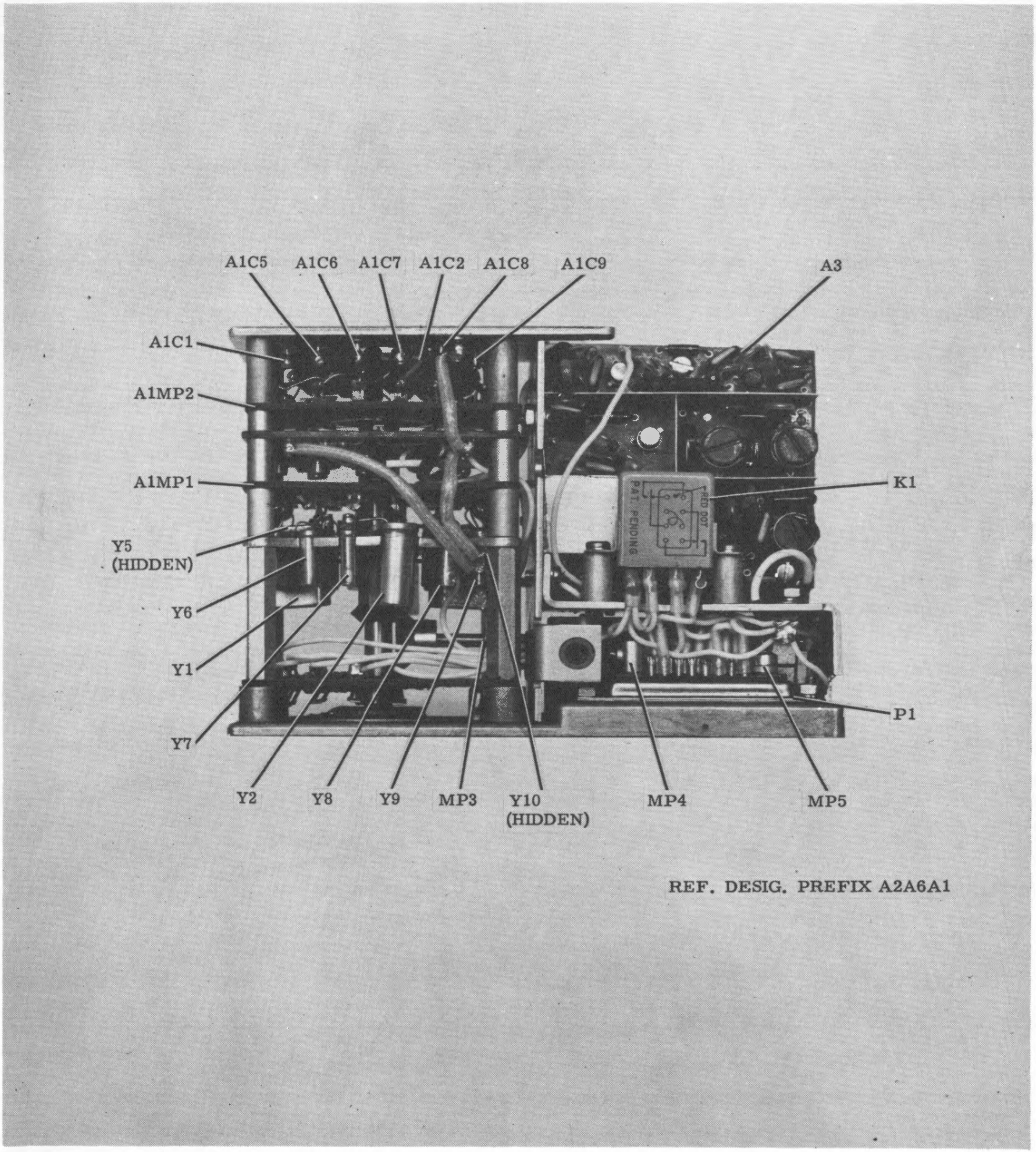


Figure 5-53. MC Synthesizer Electronic Subassembly, Rear View, Component Location

NOTES:

1. COMPONENT REF. DESIG. PREFIX A2A6A1A3.
2. 1 CR5 ANODE CONNECTION ON FOIL SIDE, VERTICALLY MOUNTED.
   2 L1 VERTICALLY MOUNTED.

PARTS LOCATION INDEX

REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.
C1	5B	C12	3F	CR3	5C	L2	6C	R3	4B	R14	3C	R25	2F
C2	5C	C13	2F	CR4	2C	L3	3D	R4	4B	R15	2C	R26	5F
C3	6D	C14	4F	CR5	2D	L4	5D	R5	5D	R16	2C	R27	5F
C4	4C	C15	5E	E1	6B	Q1	5C	R6	5C	R17	2C	R28	6F
C5	4C	C16	4D	E2	6B	Q2	3C	R7	3C	R18	3E	R29	5F
C6	4D	C17	5D	E3	2B	Q3	2C	R8	3D	R19	2E	R30	4F
C7	4B	C18	6F	E5	6E	Q4	3E	R9	4B	R20	3E	R31	2F
C8	3B	C19	6F	E6	3F	Q5	5F	R10	3B	R21	3D	R32	6E
C9	3D	C20	5F	E7	6F	Q6	3F	R11	4B	R22	2D	R33	6B
C10	2B	CR1	5B	E9	6F	R1	2B	R12	3B	R23	3F	T1	6D
C11	2E	CR2	5B	L1	2F	R2	5B	R13	2B	R24	4F	TP1	5E

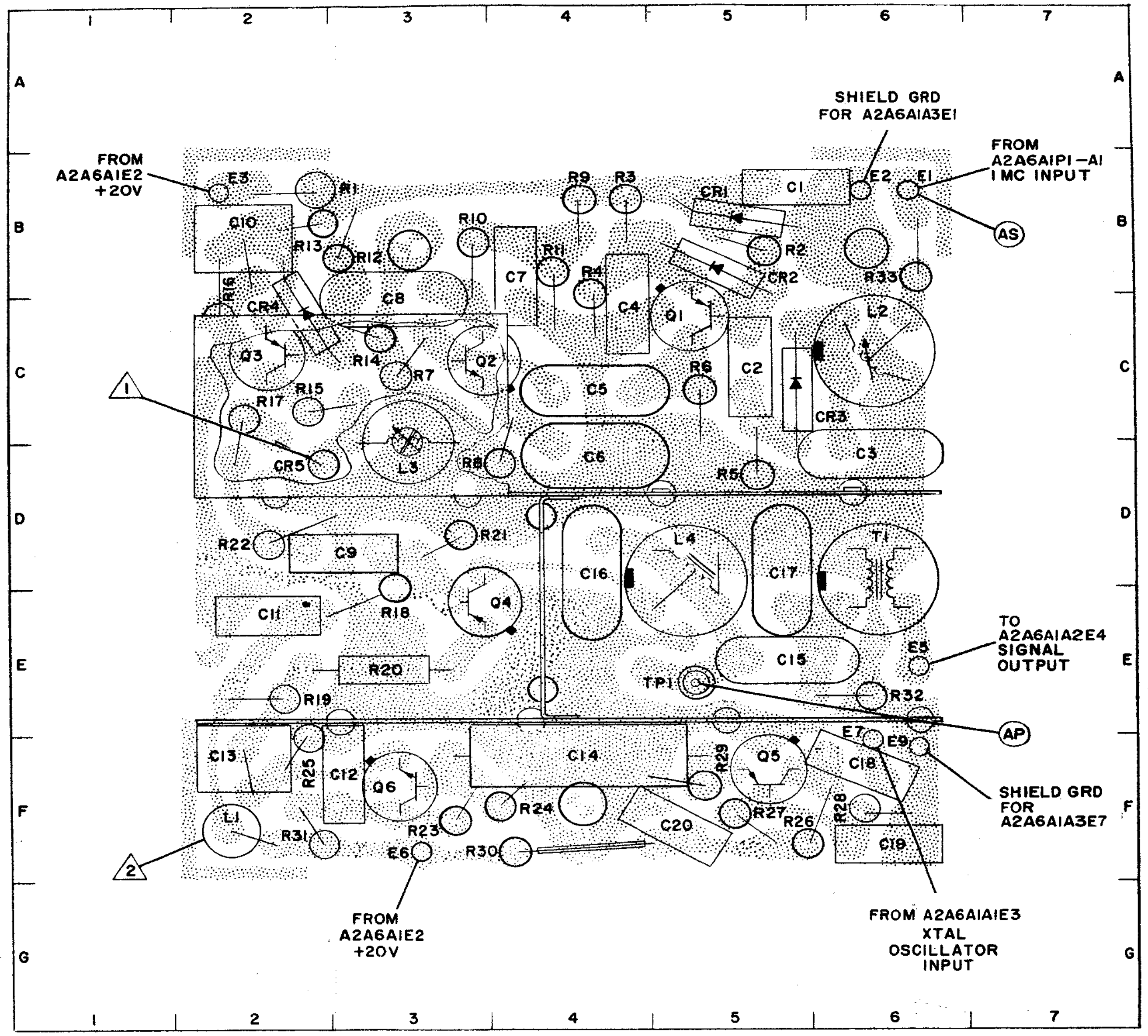


Figure 5-54. Spectrum Generator/Mixer (Foil Side Up), Component and Test Point Location

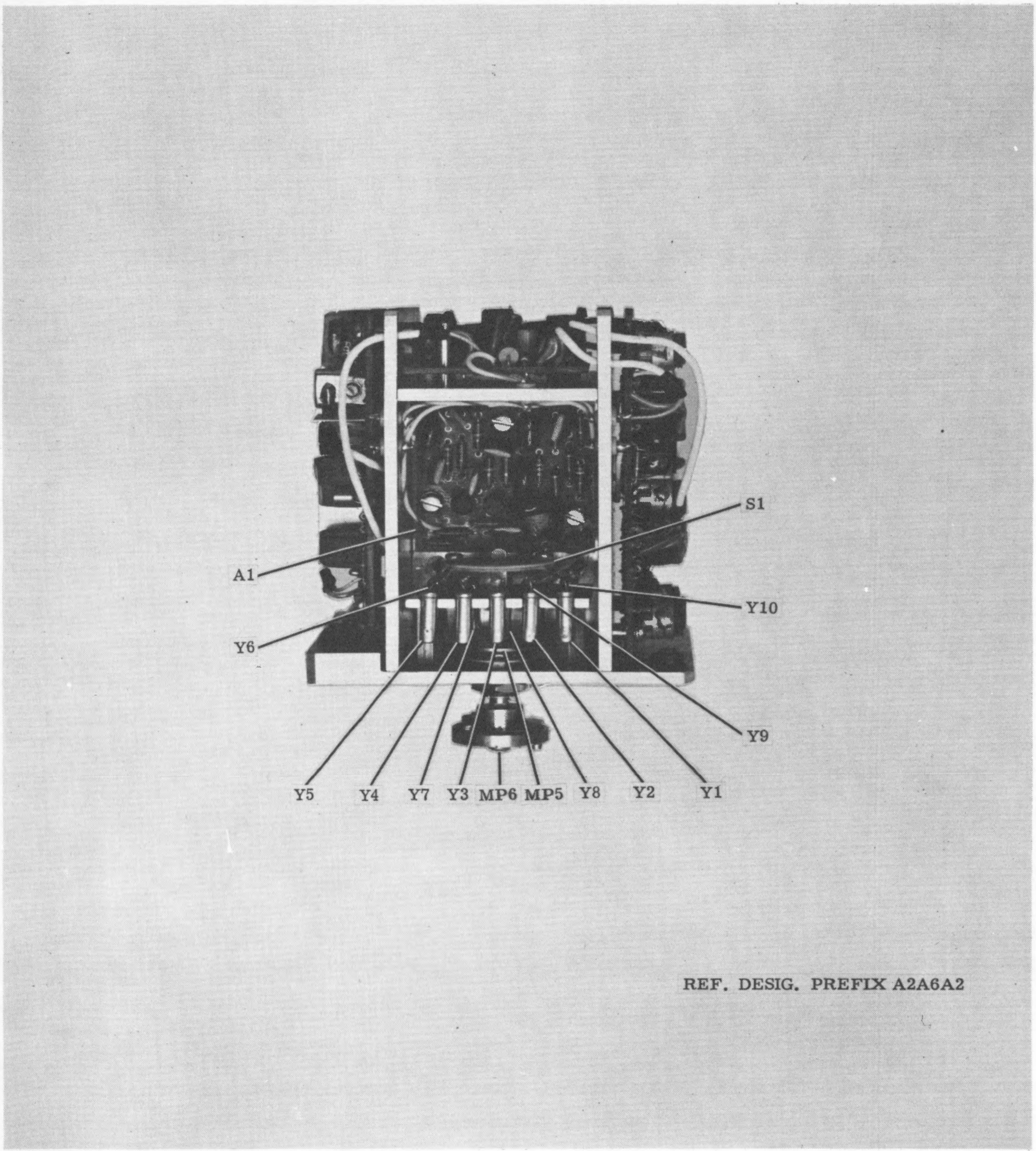
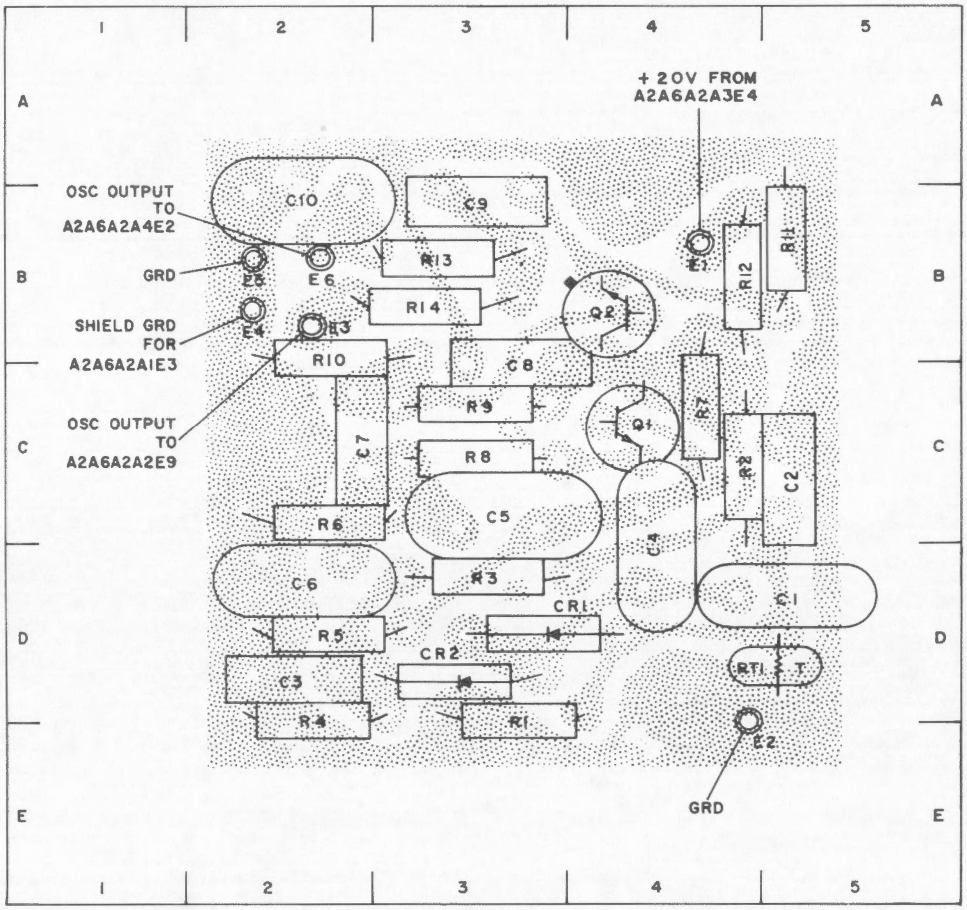


Figure 5-55. 100 KC Synthesizer Electronic Subassembly, Right Side, Component Location



NOTE:
1. COMPONENT REF. DESIG. PREFIX A2A6A2A1

PARTS LOCATION INDEX

REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.
C1	5D	E1	4B	R5	2D
C2	5C	E2	4D	R6	2C
C3	2D	E3	2B	R7	4C
C4	4C	E4	2B	R8	3C
C5	3C	E5	2B	R9	3C
C6	2D	E6	2B	R10	2B
C7	2C	Q1	4C	R11	5B
C8	3B	Q2	4B	R12	4B
C9	3B	R1	3D	R13	3B
C10	2B	R2	4C	R14	3B
CR1	3D	R3	3D	RT1	5D
CR2	3D	R4	2D		

Figure 5-56. 4.553 MC to 5.453 MC Oscillator (Foil Side Up), Component Location

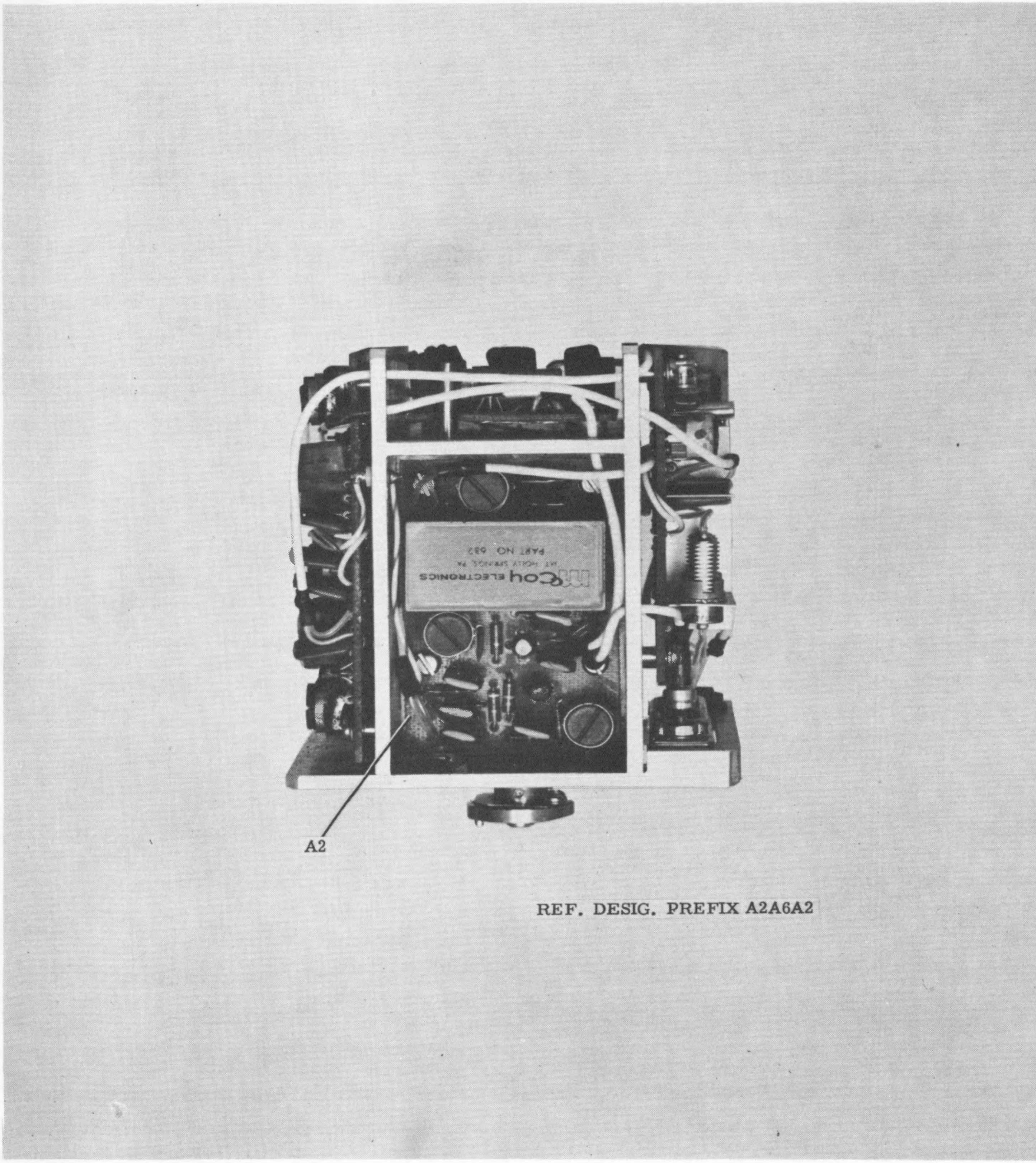


Figure 5-57. 100 KC Synthesizer Electronic Subassembly, Left Side, Component Location

NOTE:
COMPONENT REF. DESIG. PREFIX A2A6A2A2.

PARTS LOCATION INDEX

REF. DESIG.	LOC.	REF. DESIG.	LOC.
C1	4C	E9	3A
C2	4C	FL1	4D
C3	4A	Q1	4C
C4	3B	Q2	4B
C5	3C	R1	4C
C6	3B	R2	4C
C7	3A	R3	3B
C8	4F	R4	4A
C9	4E	R5	4B
E1	5C	R6	3B
E2	5C	R7	4B
E3	2E	R8	5C
E4	3E	R9	4B
E5	5C	T1	5A
E6	5C	T2	3C
E7	2B	T3	3E
E8	2A	TP1	3E

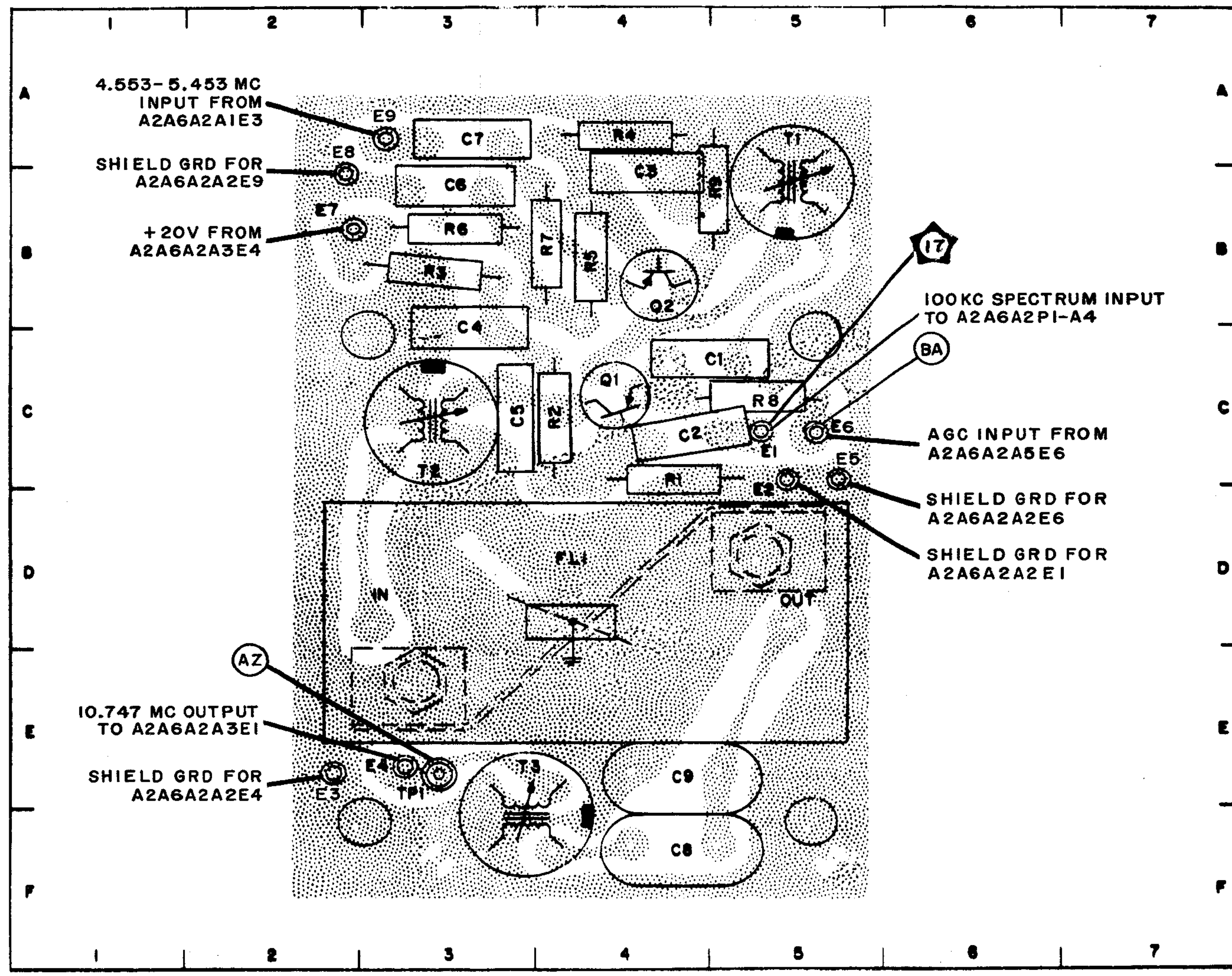


Figure 5-58. 10.747 MC Mixer (Foil Side Up), Component and Test Point Location

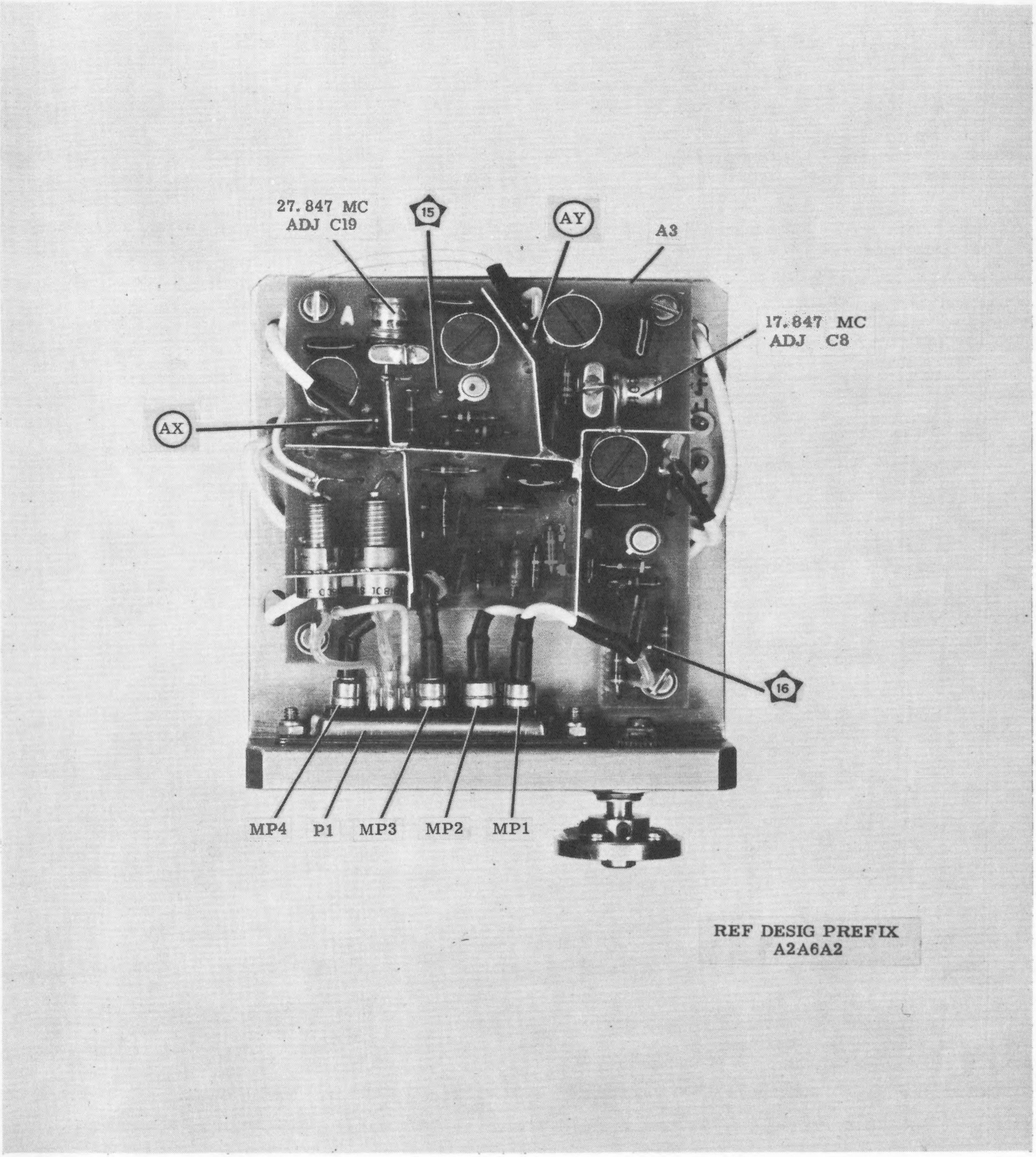


Figure 5-59. 100 KC Synthesizer Electronic Subassembly, Front View, Component and Test Point Location

NOTE:
COMPONENT REF. DESIG. PREFIX A2A6A2A3.

PARTS LOCATION INDEX

REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.
C1	6D	C12	5D	CR3	4C	E11	5F	R7	4E	T2	5F
C2	2C	C13	5D	E1	7D	E12	6B	R8	4D	T3	4F
C3	3C	C14	5C	E2	7E	E13	6A	R9	3E	T4	2E
C4	6C	C15	4C	E3	3B	Q1	6C	R10	4D	TP1	6B
C5	6B	C16	4C	E4	2D	Q2	4E	R11	5C	TP2	5F
C6	6B	C17	2D	E5	3E	R1	7B	R12	5C	TP3	4E
C7	6D	C18	4F	E6	2E	R2	6C	R13	5D	TP4	3E
C8	6E	C19	3F	E7	4C	R3	6C	R14	4C	Y1	6E
C9	6F	C20	2F	E8	4C	R4	6C	R15	2E	Y2	3F
C10	5E	CR1	4D	E9	2D	R5	5E	R16	6A		
C11	3E	CR2	5C	E10	5F	R6	4E	T1	6D		

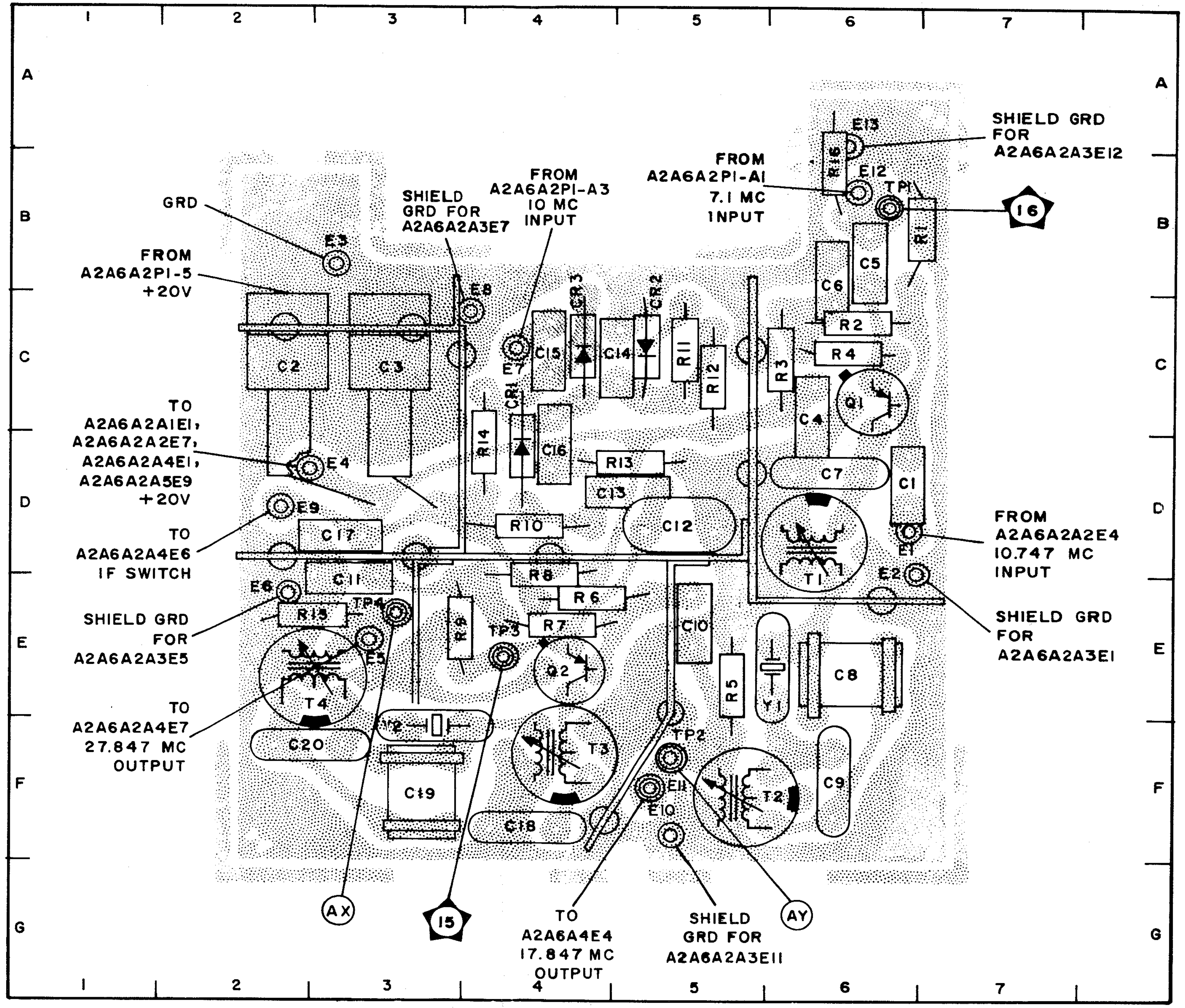


Figure 5-60. 17.847/27.847 MC Mixer (Foil Side Up), Component and Test Point Location

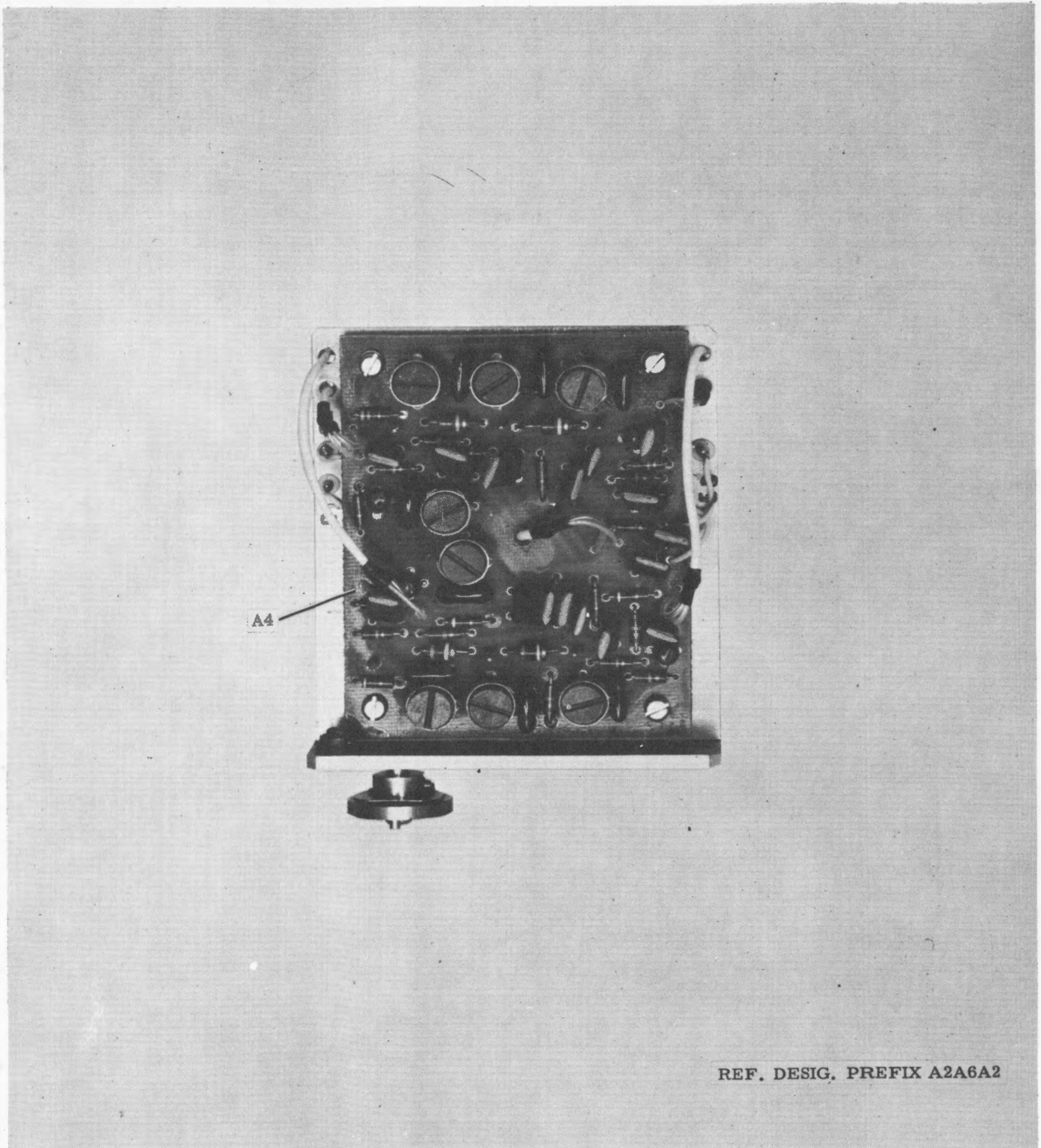
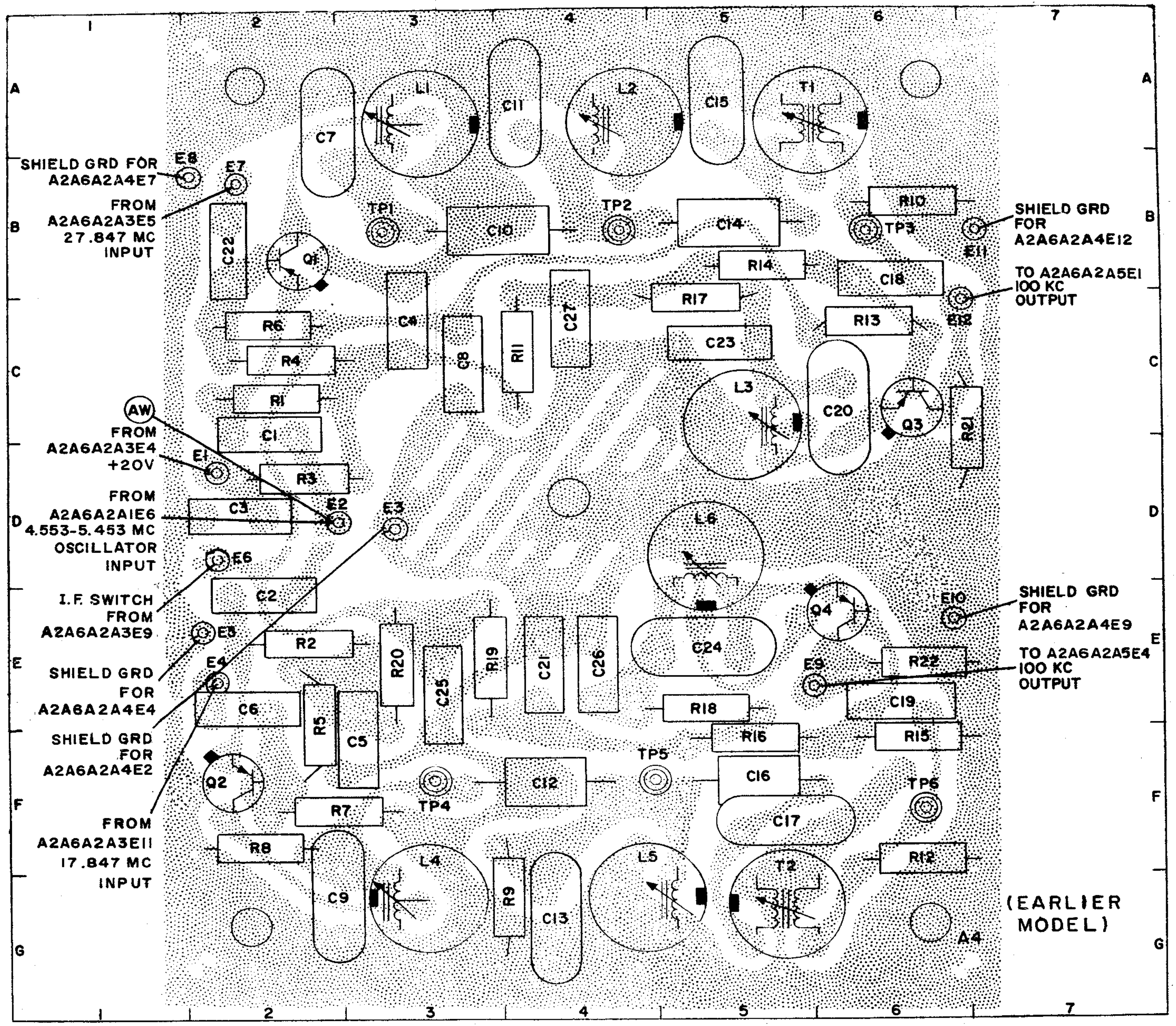
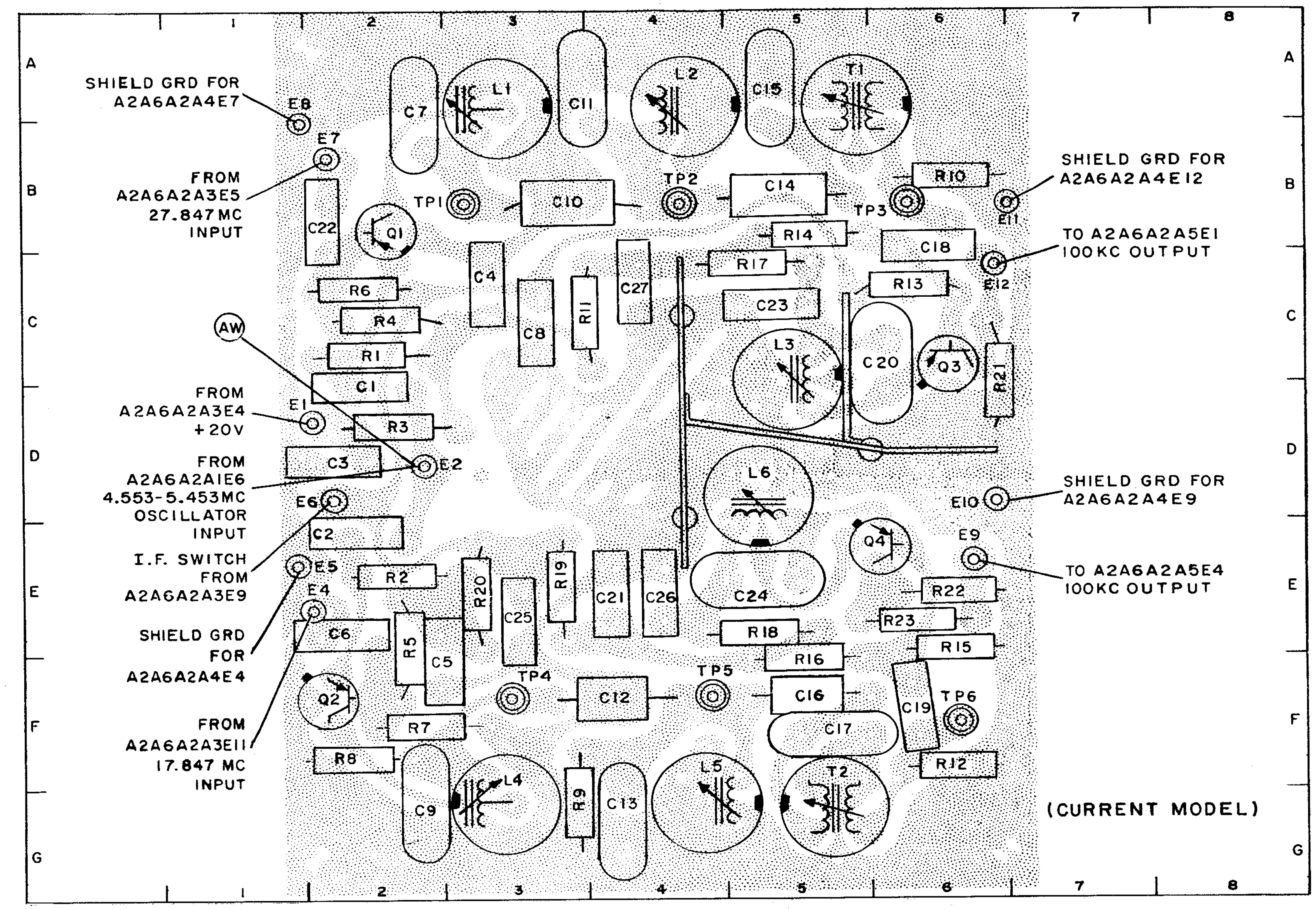


Figure 5-61. 100 KC Synthesizer Electronic Subassembly, Rear View, Component Location





PARTS LOCATION INDEX

REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.
C1	2C	C11	4A	C21	4E	E4	2E	L2	4A	R2	2E	R12	6F	R22	6E
C2	2E	C12	4F	C22	2B	E5	2E	L3	5C	R3	2D	R13	6C	R23	6E
C3	2D	C13	4G	C23	5C	E6	2D	L4	3G	R4	2C	R14	5B	T1	6A
C4	3C	C14	5B	C24	5E	E7	2B	L5	4G	R5	2E	R15	6F OR 6E	T2	5G
C5	3F	C15	5A	C25	3E	E8	2B	L6	5D	R6	2C	R16	5F OR 5E	TP1	3B
C6	2E	C16	5F	C26	4E	E9	6E	Q1	2B	R7	2F	R17	5C	TP2	4B
C7	2A	C17	5F	C27	4C	E10	6E	Q2	2F	R8	2F	R18	5E	TP3	6B
C8	3C	C18	6B	E1	2D	E11	7B	Q3	6C	R9	4G	R19	3E	TP4	3F
C9	2F	C19	6E OR 6F	E2	2D	E12	6C	Q4	6E	R10	6B	R20	3E	TP5	4F
C10	4B	C20	6C	E3	3D	L1	3A	R1	2C	R11	4C	R21	7C	TP6	6F

NOTE:
1. COMPONENT REF. DESIG. PREFIX A2A6A2A4.
2. VARIATIONS OF HI-BAND/LO-BAND MIXER/AMPLIFIER EXIST DUE TO DESIGN CHANGES. CURRENT MODELS AND EARLIER MODELS ARE INTERCHANGEABLE ON UNIT BASIS. MAJOR CHANGES FOR CURRENT MODEL INCLUDE FOIL PATTERN ALTERATIONS, ADDITION OF RESISTOR R23 AND DELETION OF E3.

Figure 5-62. Hi-band/Lo-band Mixer Amplifier (Foil Side Up), Component and Test Point Location

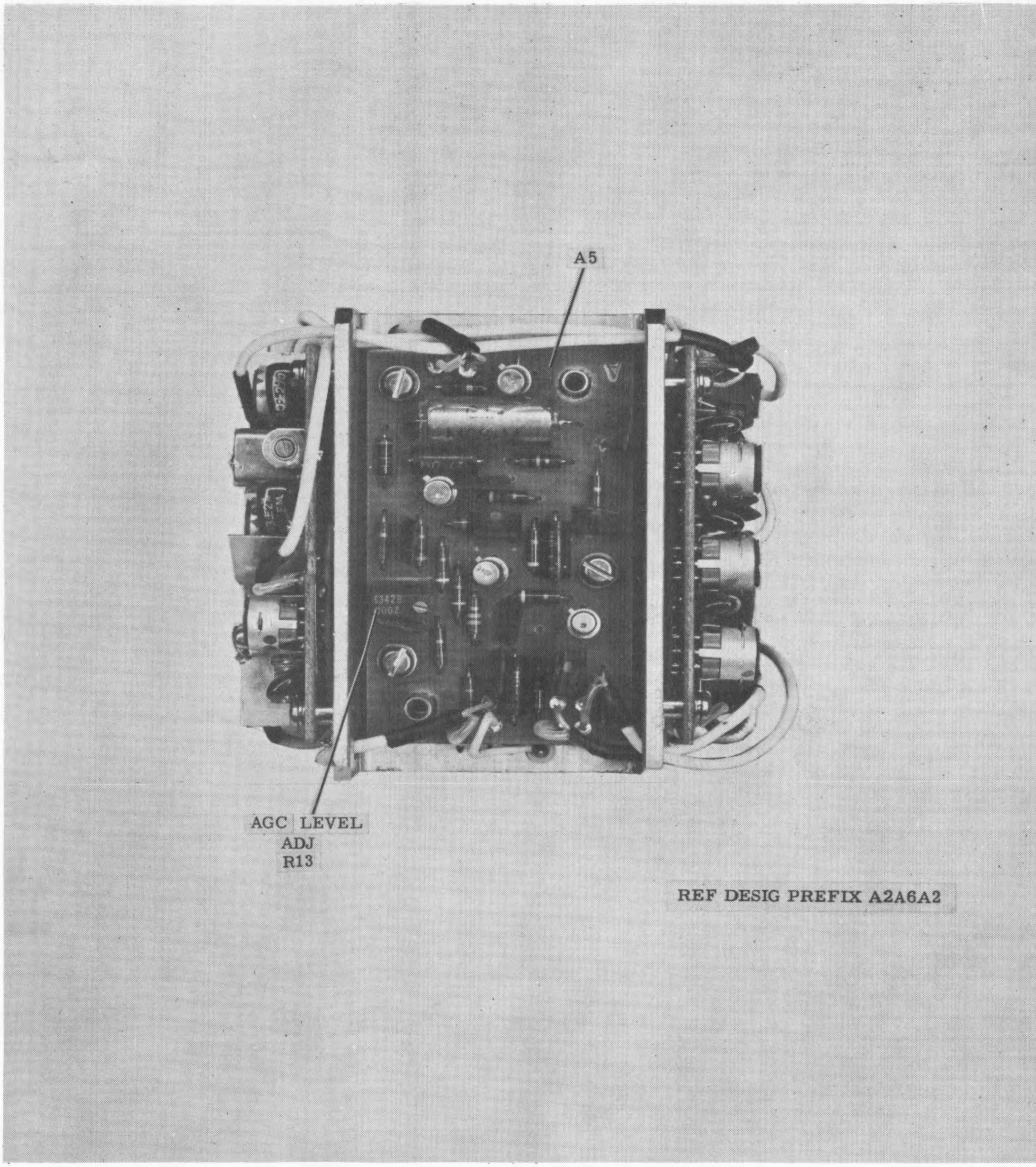
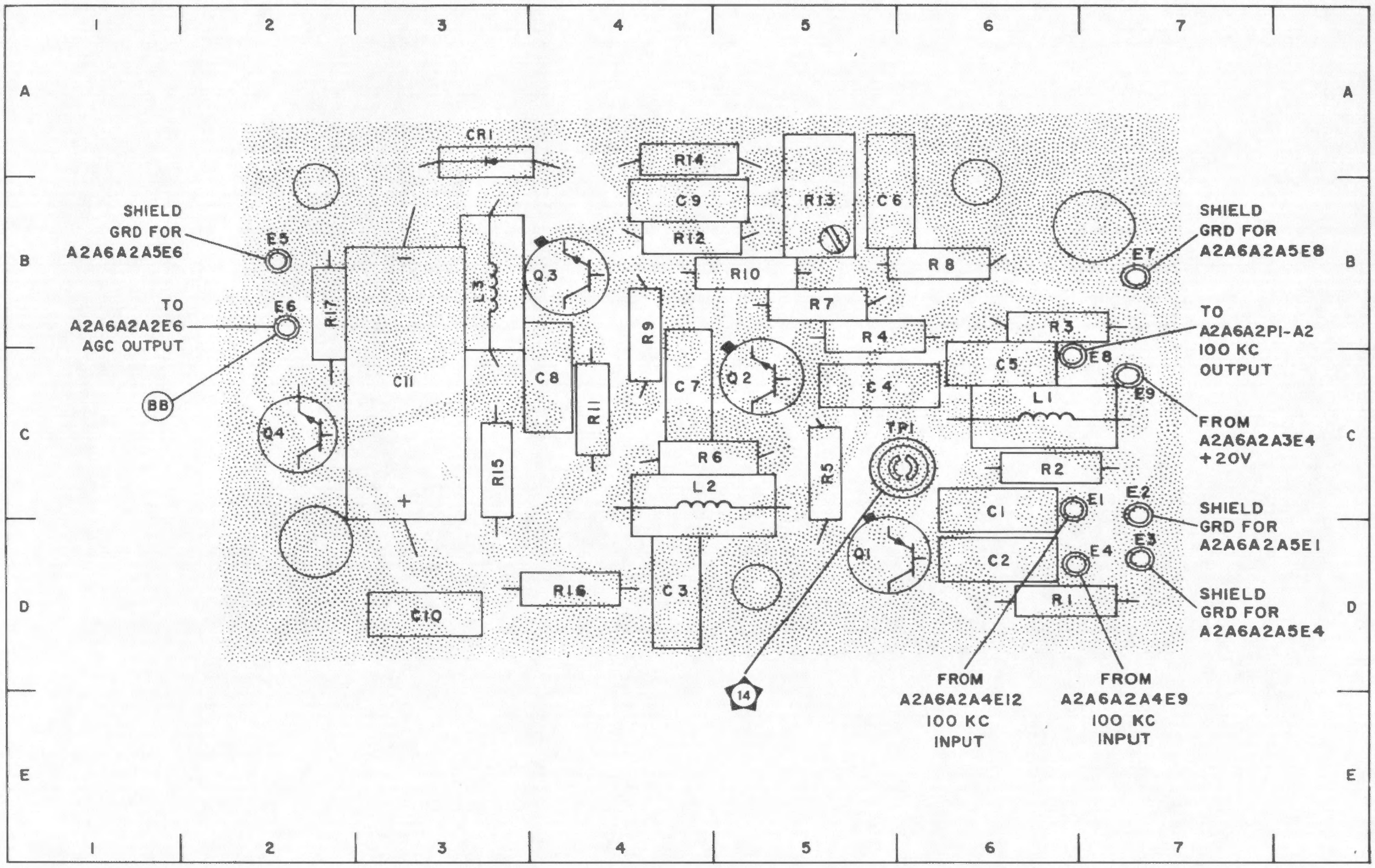


Figure 5-63. 100 KC Synthesizer Electronic Subassembly, Top View, Component Location



NOTE:

COMPONENT REF. DESIG. PREFIX A2A6A2A5

PARTS LOCATION INDEX

REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.
C1	6C	C11	3C	E9	7C	R3	6B	R13	5B
C2	6D	CR1	3A	L1	6C	R4	5B	R14	4A
C3	4D	E1	6C	L2	4C	R5	5C	R15	3C
C4	5C	E2	7C	L3	3B	R6	4C	R16	4D
C5	6C	E3	7D	Q1	5D	R7	5B	R17	2B
C6	5B	E4	6D	Q2	5C	R8	6B	TP1	5C
C7	4C	E5	2B	Q3	4B	R9	4B		
C8	4C	E6	2B	Q4	2C	R10	5B		
C9	4B	E7	7B	R1	6D	R11	4C		
C10	3D	E8	6C	R2	6C	R12	4B		

Figure 5-64. 10.747 MC Mixer AGC (Foil Side Up), Component and Test Point Location

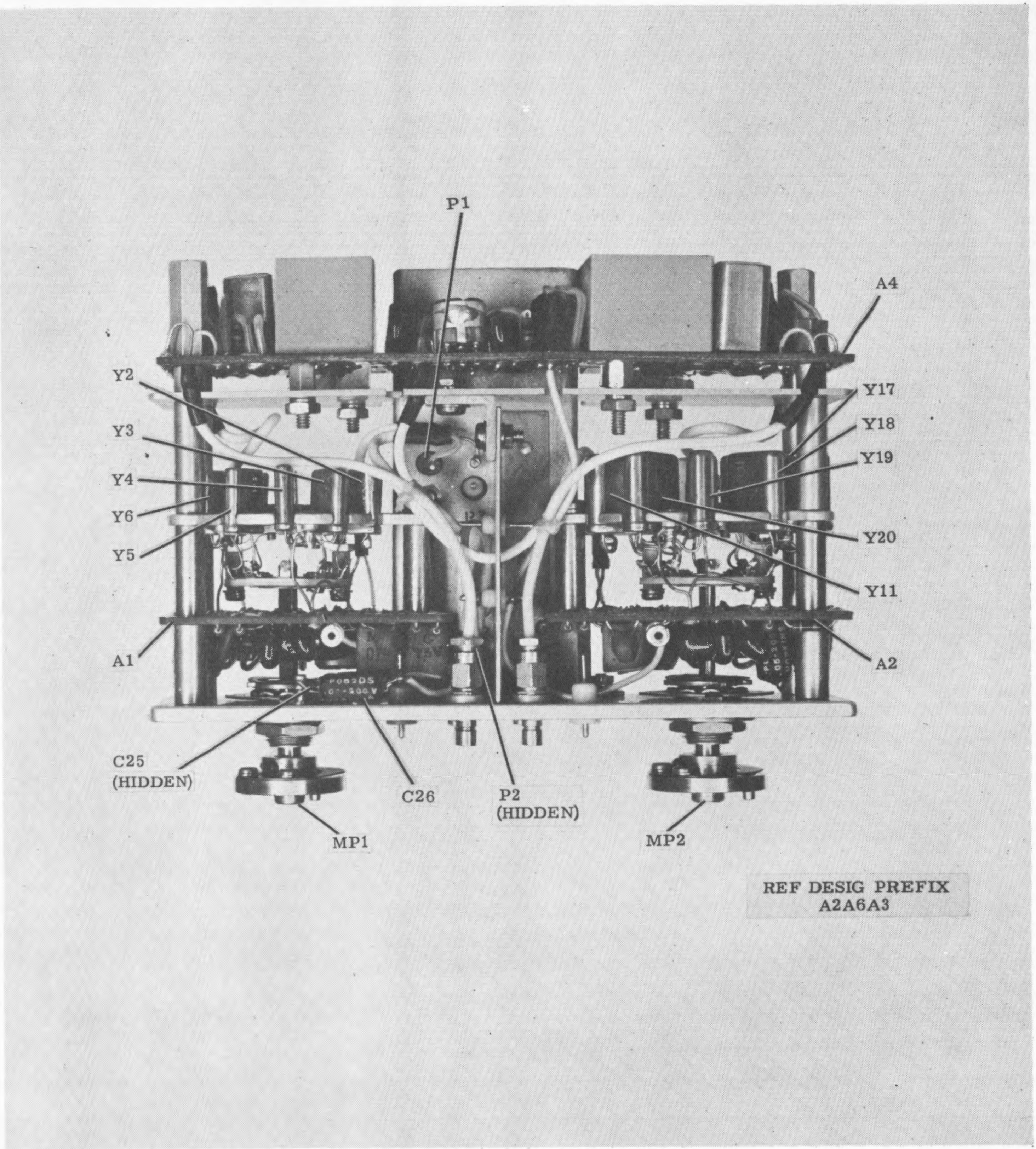
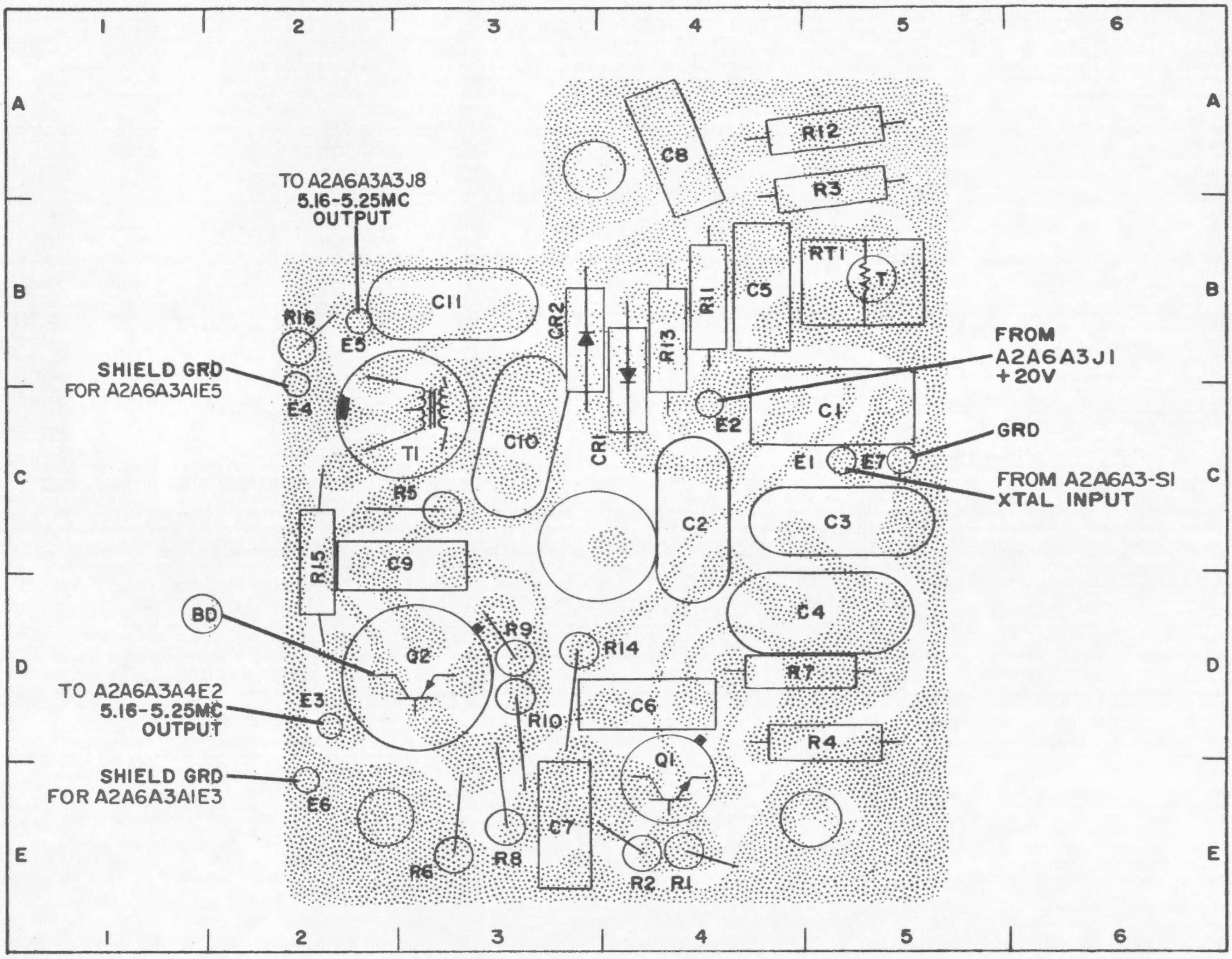


Figure 5-65. 1 and 10 KC Electronic Subassembly, Front View, Component Location

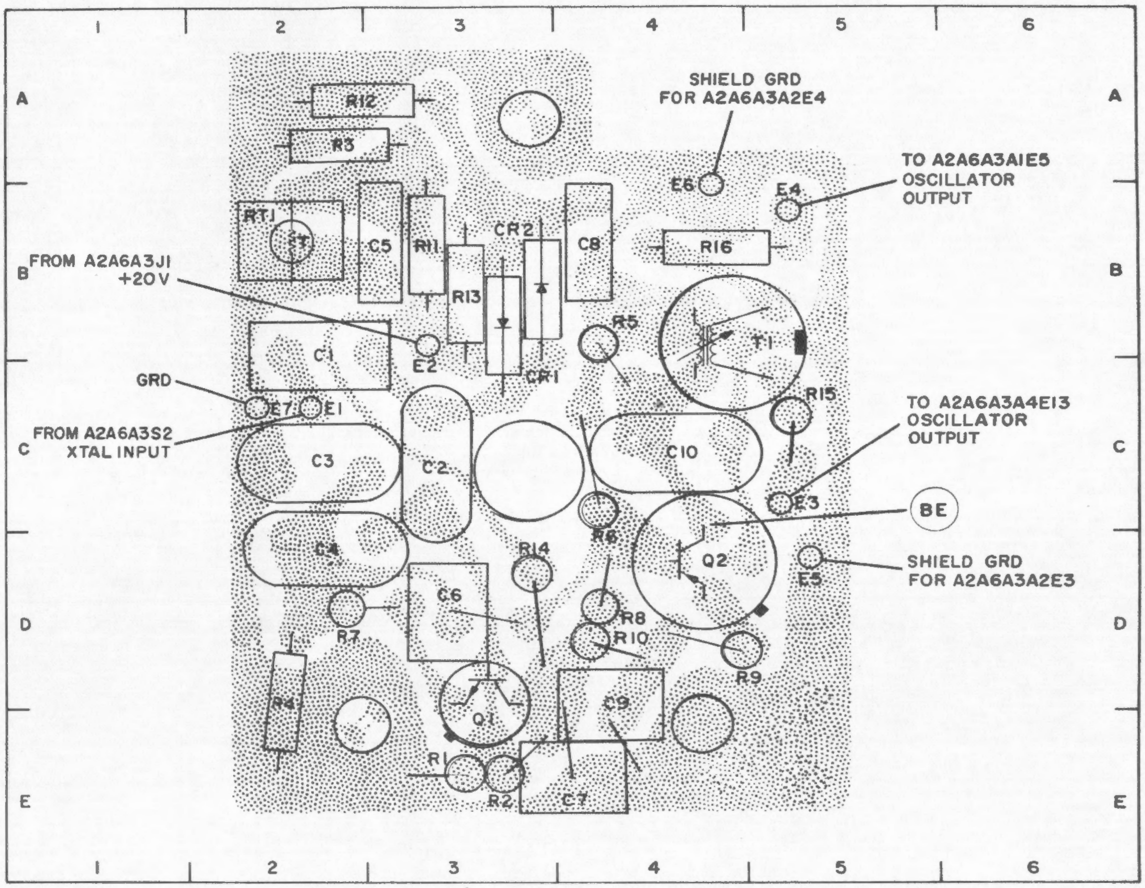


NOTE:
COMPONENT REF. DESIG. PREFIX A2A6A3A1.

PARTS LOCATION INDEX

REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC
C1	5C	C11	3B	Q1	4E	R9	3D
C2	4C	CR1	4C	Q2	3D	R10	3D
C3	5C	CR2	3B	R1	4E	R11	4B
C4	5D	E1	5C	R2	4E	R12	5A
C5	4B	E2	4C	R3	5A	R13	4B
C6	4D	E3	2D	R4	5D	R14	3D
C7	3E	E4	2C	R5	3C	R15	2C
C8	4A	E5	2B	R6	3E	R16	2B
C9	3D	E6	2E	R7	5D	RT1	5B
C10	3C	E7	5C	R8	3E	T1	3C

Figure 5-66. 5.16 MC to 5.25 MC Oscillator (Foil Side Up), Component and Test Point Location



PARTS LOCATION INDEX

REF DESIG	LOC	REF DESIG	LOC
C1	2B	Q2	4D
C2	3C	R1	3E
C3	2C	R2	3E
C4	2D	R3	2A
C5	3B	R4	2E
C6	3D	R5	4C
C7	4E	R6	4C
C8	4B	R7	2D
C9	4E	R8	4D
C10	4C	R9	4D
CR1	3B	R10	4D
CR2	3B	R11	3B
E1	2C	R12	2A
E2	3B	R13	3B
E3	5C	R14	3D
E4	5B	R15	5C
E5	5D	R16	4B
E6	4B	RT1	2B
E7	2C	T1	4B
Q1	3E		

NOTE:
COMPONENT REF. DESIG. PREFIX A2A6A3A2

Figure 5-67. 1.850 MC to 1.859 MC Oscillator (Foil Side Up), Component and Test Point Location

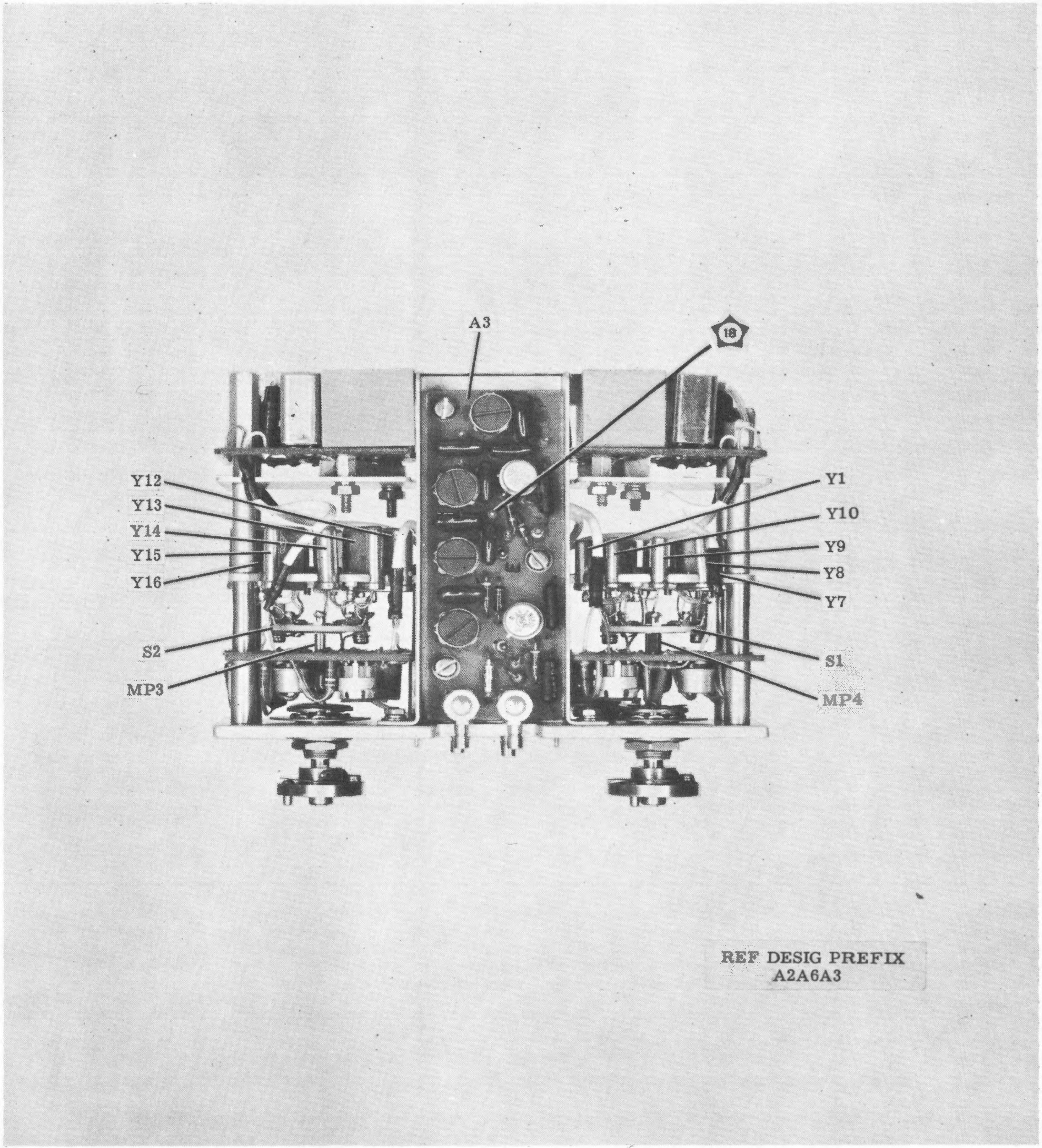
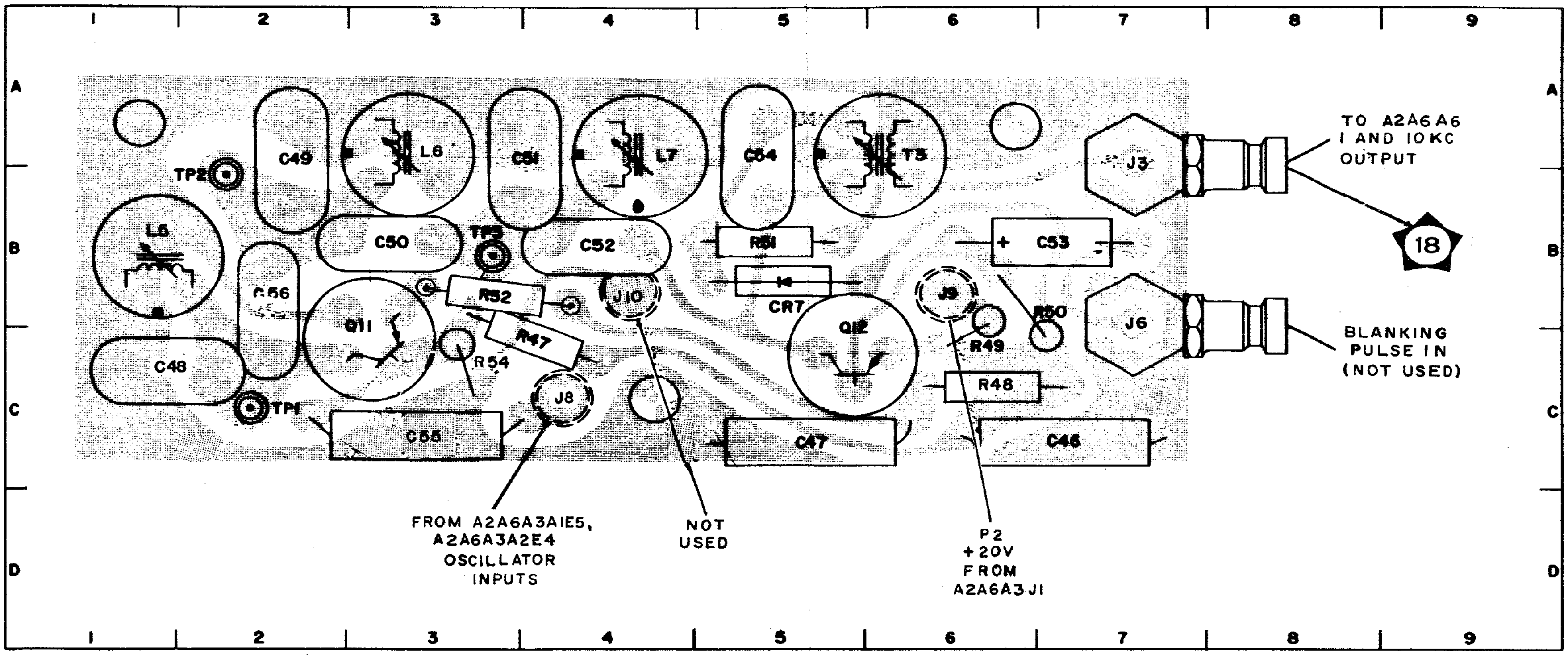


Figure 5-68. 1 and 10 KC Synthesizer Electronic Subassembly, Rear View, Component and Test Point Location



PARTS LOCATION INDEX

REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC
C46	7C	CR7	5B	R47	4C
C47	5C	J3	7A	R48	6C
C48	1C	J6	7B	R49	6B
C49	2A	J8	4C	R50	7C
C50	3B	J9	6B	R51	5B
C51	4A	J10	4B	R52	3B
C52	4B	L5	1B	R54	3C
C53	7B	L6	3A	T3	6A
C54	5A	L7	4A	TP1	2C
C55	3C	Q11	3C	TP2	2B
C56	2B	Q12	5C.	TP3	3B

NOTES:
1. COMPONENT REF. DESIG. PREFIX A2A6A3A3.
2. TERMINALS AT RESISTOR R52 ADDED TO LATER MODELS TO FACILITATE RESISTOR SELECTIVITY.

Figure 5-69. 1 and 10 KC Output and Blanker (Foil Side Up), Component and Test Point Location

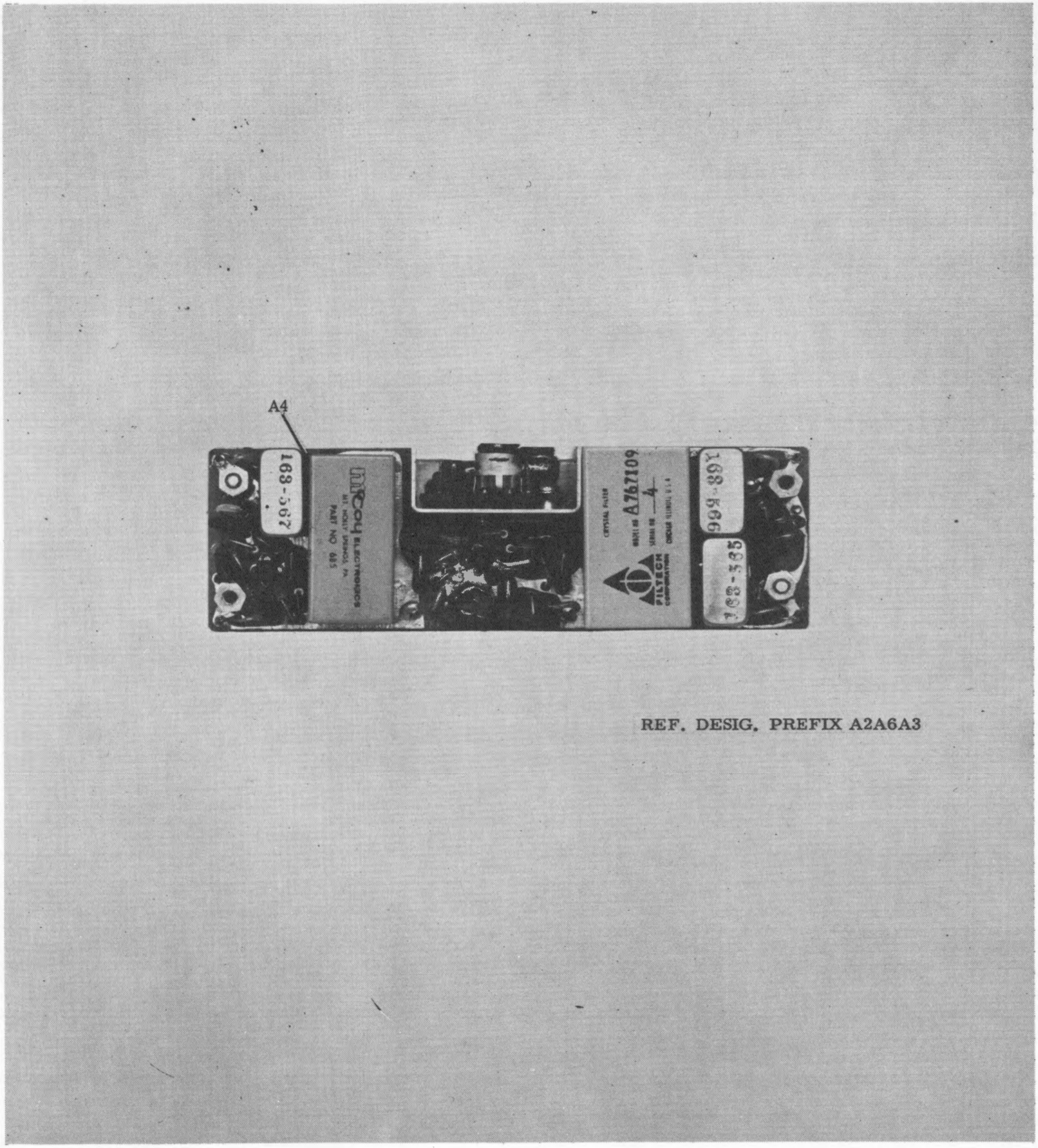
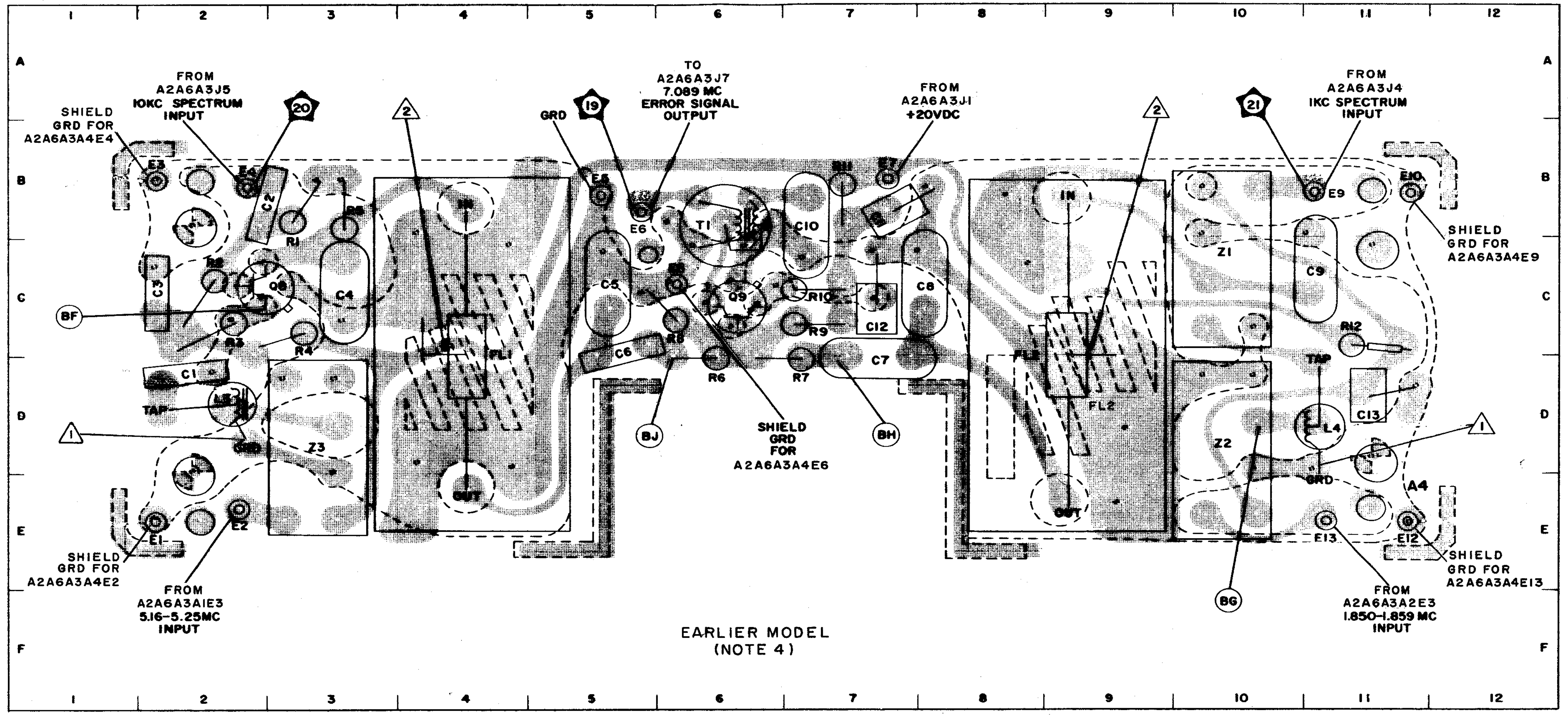
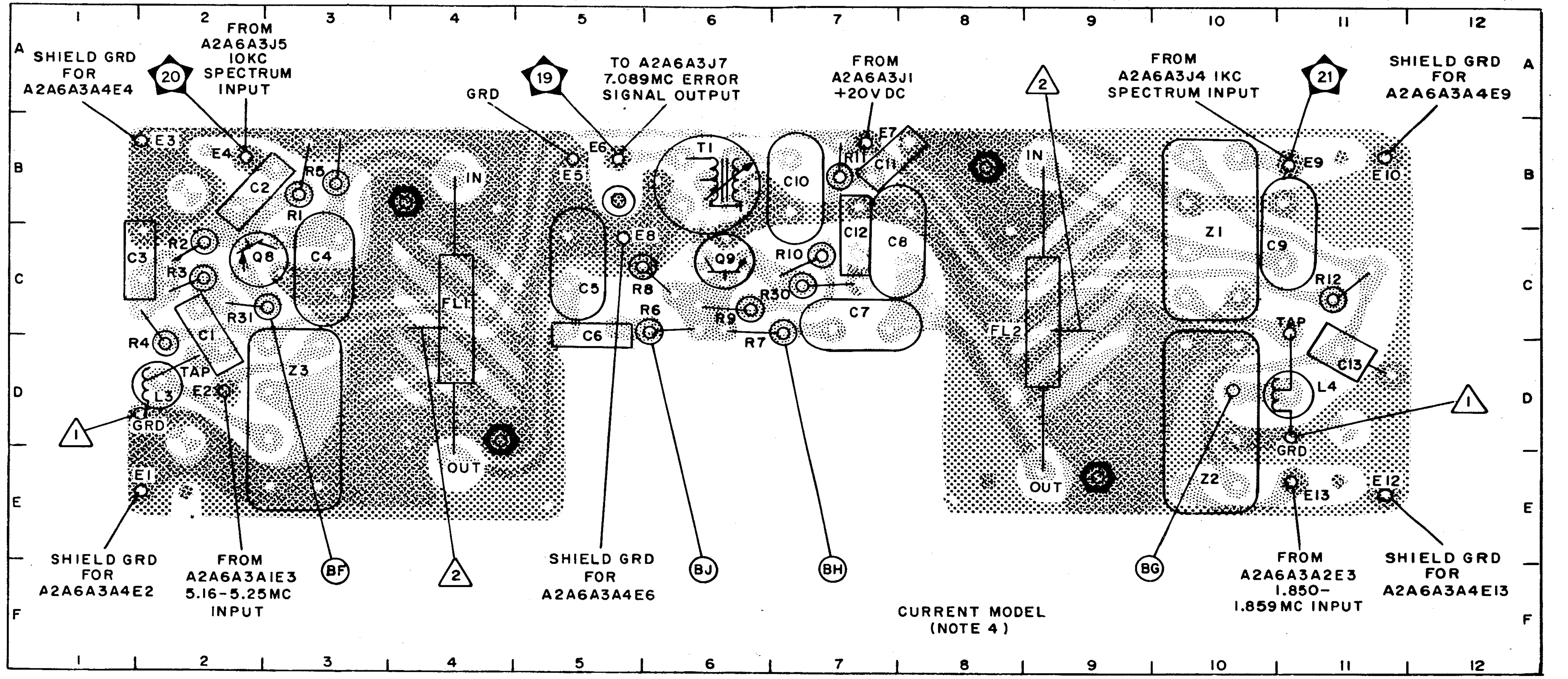


Figure 5-70. 1 And 10 KC Synthesizer Electronic Subassembly, Top View, Component Location





PARTS LOCATION INDEX

REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.
C1	2D	C9	11C	E4	2B	E13	10E	R2	2C	R10	7C
C2	2B	C10	7B	E5	5B	FL1	4C	R3	2C	R11	7B
C3	2C	C11	7B	E6	5B	FL2	9C	R4	3C	R12	11C
C4	3C	C12	7C	E7	7B	L3	2D	R5	3B	T1	6B
C5	5C	C13	11D	E8	6C	L4	11D	R6	6D	Z1	10C
C6	5C	E1	2E	E9	11B	Q8	3C	R7	7D	Z2	10D
C7	7D	E2	2E	E10	11B	Q9	6C	R8	6C	Z3	3D
C8	8C	E3	2B	E12	11E	R1	3B	R9	7C		

NOTES:

1. COMPONENT REF. DESIG. PREFIX A2A6A3A4.
2. △1 THIS CONNECTION IS ON OPPOSITE SIDE OF BOARD.
3. △2 GROUNDED SHIELD BETWEEN INPUT AND OUTPUT.
4. VARIATIONS OF 1 AND 10 KC ERROR MIXER EXIST DUE TO EQUIPMENT DESIGN CHANGES. CURRENT MODEL AND EARLIER MODEL ARE INTERCHANGEABLE ON UNIT BASIS BUT INDIVIDUAL COMPONENTS ARE NOT NECESSARILY INTERCHANGEABLE. MAJOR CHANGES FOR CURRENT MODEL INCLUDE FOIL PATTERN ALTERATIONS AND ADDITION OF RESISTORS R30 AND R31.

PARTS LOCATION INDEX

REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.
C1	2D	E3	2B	Q9	6C	T1	6B
C2	2B	E4	2B	R1	3B	Z1	10C
C3	2C	E5	5B	R2	2C	Z2	10D
C4	3C	E6	5B	R3	2C	Z3	3D
C5	5C	E7	7B	R4	2D		
C6	5D	E8	5C	R5	3B		
C7	7C	E9	11B	R6	5C		
C8	7C	E10	11B	R7	7C		
C9	10C	E12	11E	R8	5C		
C10	7B	E13	11E	R9	6C		
C11	7B	FL1	4C	R10	7C		
C12	7C	FL2	8C	R11	7B		
C13	11D	L3	2D	R12	11C		
E1	2E	L4	11D	R30	7C		
E2	2D	Q8	2C	R31	2C		

Figure 5-71. 1 and 10 KC Error Mixer (Component Side Down), Component and Test Point Location

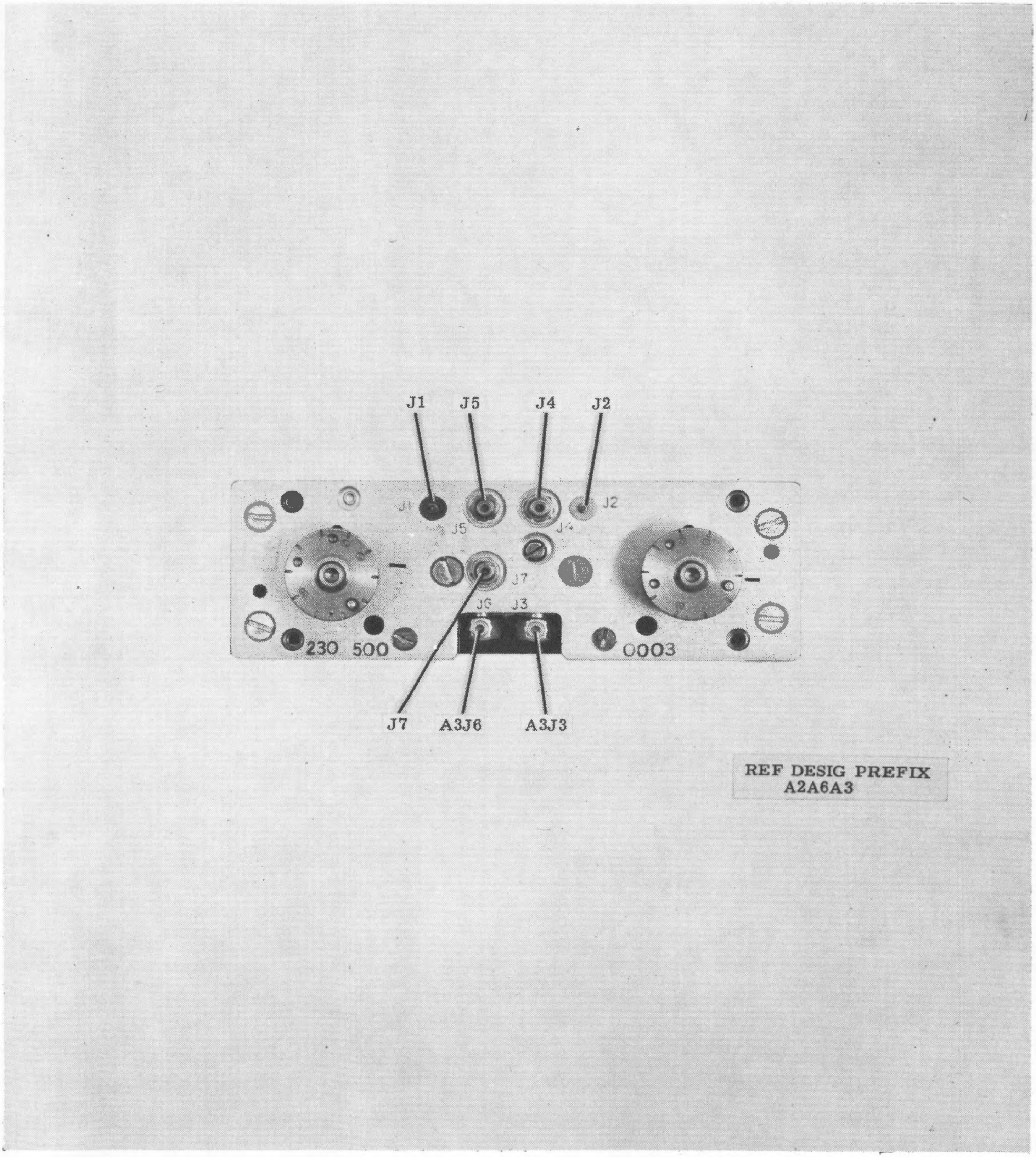


Figure 5-72. 1 and 10 KC Synthesizer Electronic Subassembly, Bottom View, Component Location

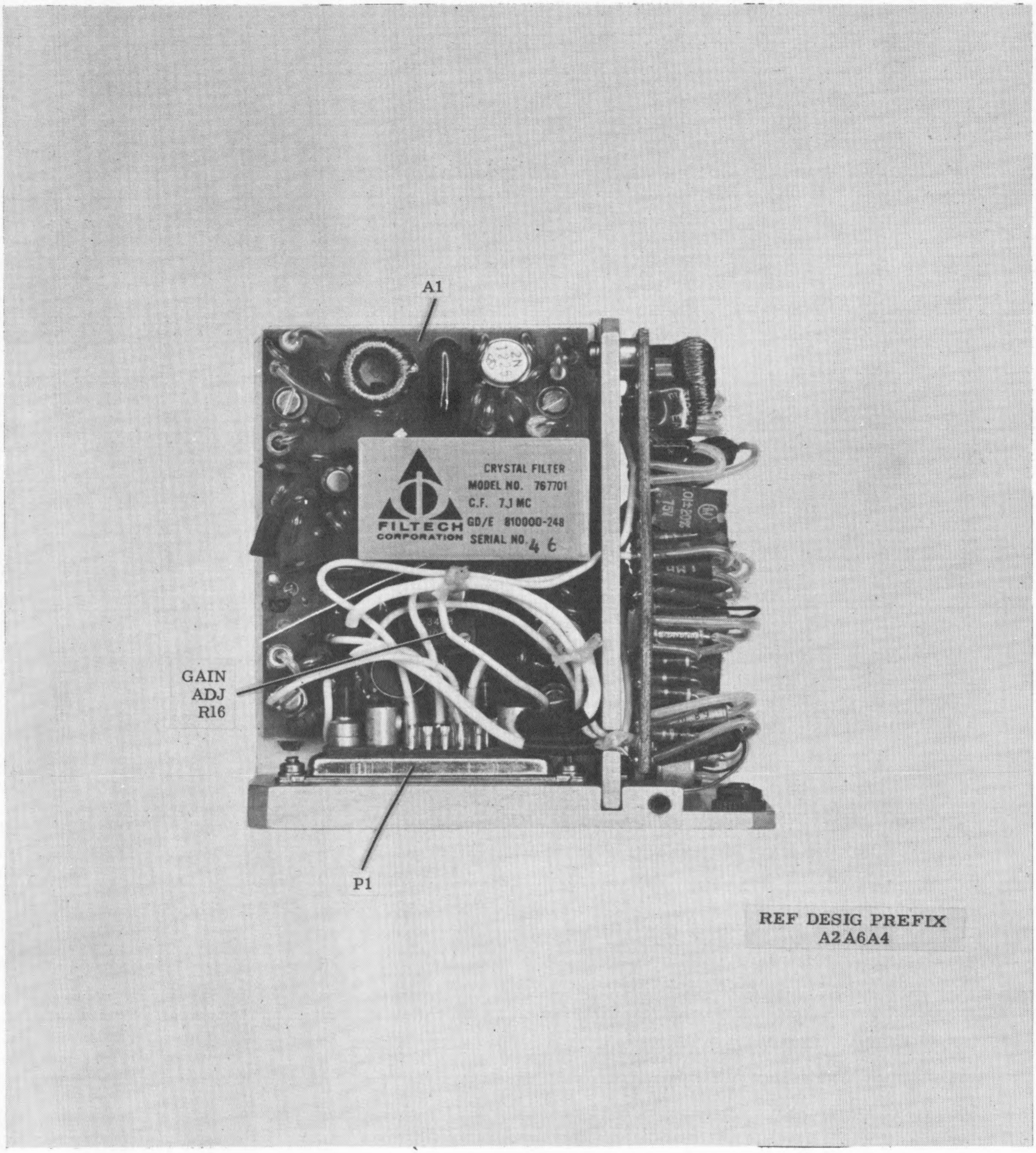


Figure 5-73. 500 CPS Synthesizer Electronic Subassembly, Left Side, Component Location

PARTS LOCATION INDEX

REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC
C1	5G	E5	5F	R11	3F
C2	6E	E6	3G	R12	4G
C3	6D	E7	5F	R13	4F
C4	6C	E8	5F	R14	3E
C5	5E	E9	5F	R15	3E
C6	2E	E10	2B	R16	4F
C7	2E	FL1	3D	R17	6C
C8	3F	L1	4G	R18	4C
C9	3F	L2	5F	R19	5B
C10	3E	Q1	5C	R20	6A
C11	5E	Q2	2F	R21	3B
C12	4E	Q3	4E	R22	3A
C13	6F	Q4	5B	R23	3C
C14	6C	Q5	3B	R24	3B
C15	6B	R1	5D	R25	3B
C16	6A	R2	5D	R26	3A
C17	4B	R3	6D	T1	4F
C18	2C	R4	6D	T2	5B
C19	3C	R5	5C	TP1	5D
C20	2B	R6	5D	TP2	5E
E1	6E	R7	2E	TP3	6C
E2	6E	R8	2E	TP4	3E
E3	5G	R9	2F	TP6	2A
E4	4G	R10	3G		

NOTES:

1. COMPONENT REF. DESIG. PREFIX A2A6A4A1.
2. THIS DRAWING REFLECTS CURRENT MODEL OF 7.1 MC MIXER. EARLIER MODELS CONTAINED TEST POINT TP5 INSTALLED ADJACENT TO AND CONNECTED IN PARALLEL WITH TERMINAL E8.

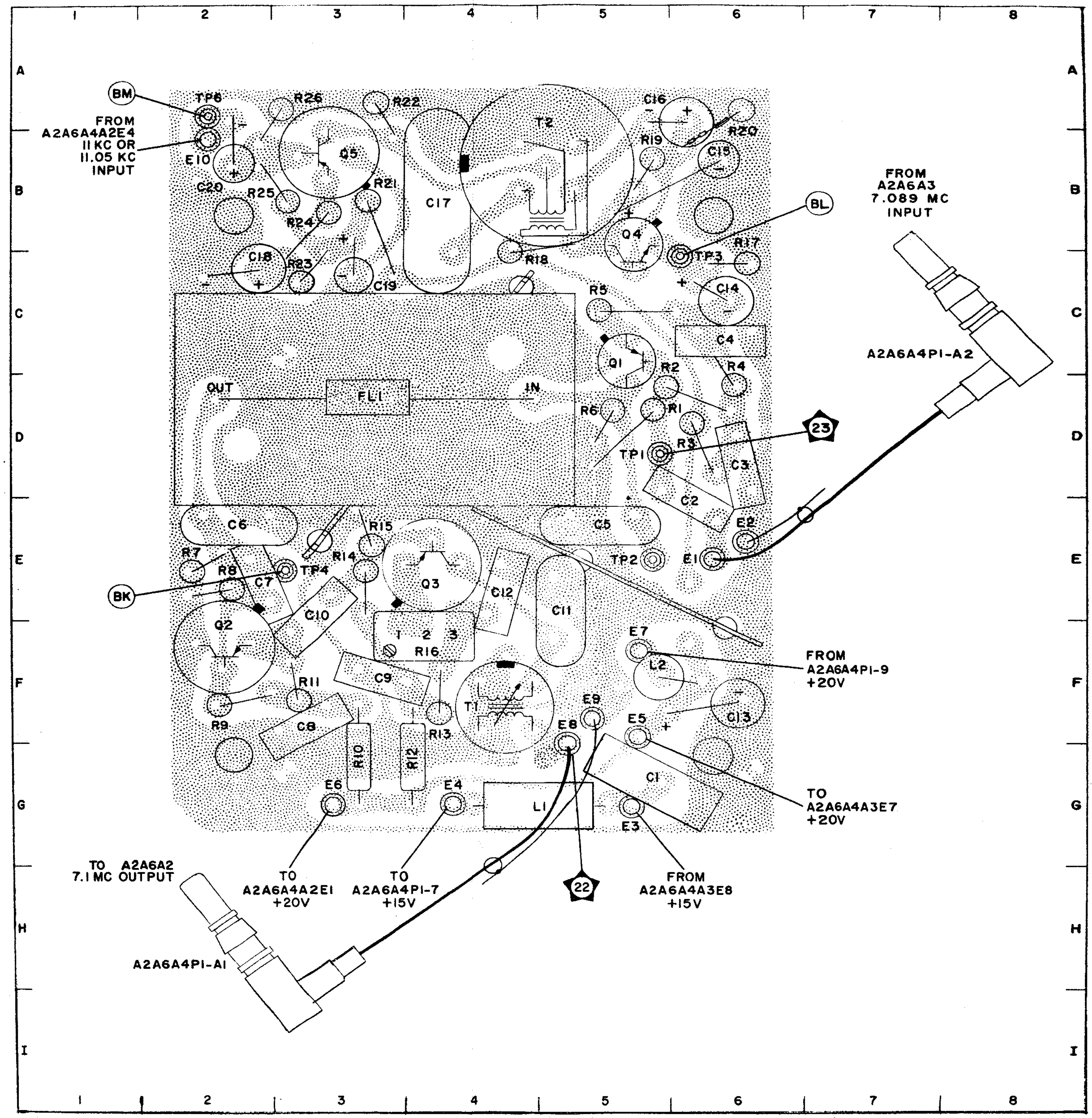


Figure 5-74. 7.1 MC Mixer (Foil Side Up), Component and Test Point Location

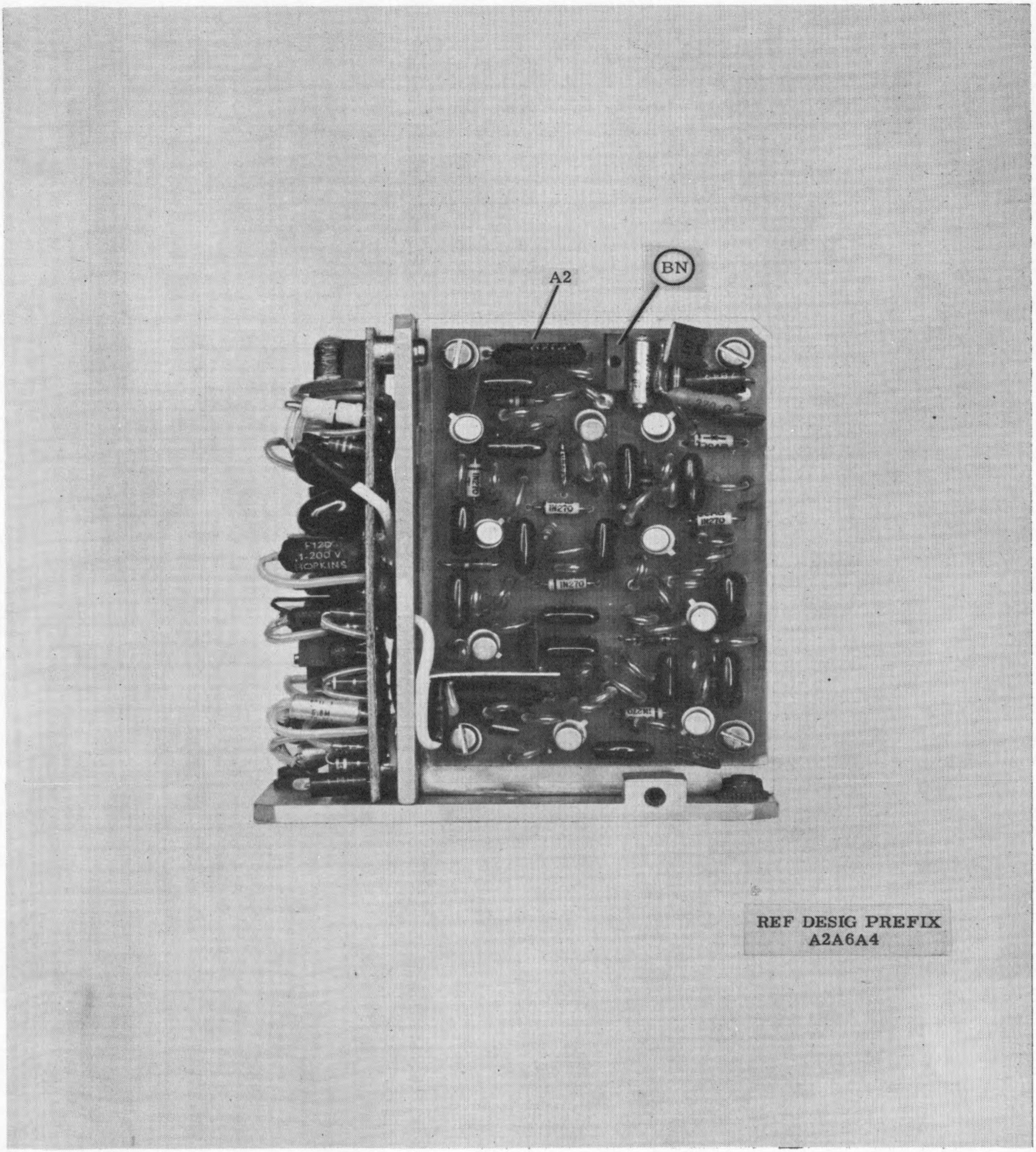


Figure 5-75. 500 CPS Synthesizer Electronic Subassembly, Right Side, Component and Test Point Location

PARTS LOCATION INDEX

REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC
C1	8C	CR1	7C	Q9	2D	R25	4E
C2	7C	CR2	2E	R1	7C	R26	3E
C3	2E	CR3	2C	R2	2F	R27	4F
C4	2E	CR4	3C	R3	3D	R28	3F
C5	3D	CR5	6B	R4	3D	R29	5D
C6	2D	CR6	5B	R5	2E	R30	6E
C7	2C	CR7	4D	R6	2D	R31	4E
C8	3C	CR8	4D	R7	4C	R32	4F
C9	3B	CR9	5E	R8	3C	R33	6D
C10	4B	CR10	6D	R9	2D	R34	6D
C11	6B	CR11	6F	R10	3C	R35	7E
C12	6C	CR12	4C	R11	2C	R36	7D
C13	6D	E1	7B	R12	4C	R37	6E
C14	5D	E2	2F	R13	4D	R38	6F
C15	3E	E3	2F	R14	3B	R39	6E
C16	4F	E4	7C	R15	3B	R40	6E
C17	5E	L1	7C	R16	5B	R41	7D
C18	5F	Q1	2C	R17	6C	TP1	2D
C19	7F	Q2	4C	R18	5C	TP2	3B
C20	7E	Q3	6C	R19	6C	TP3	5D
C21	6E	Q4	5C	R20	6B	TP4	7D
C22	7E	Q5	3F	R21	4B	TP5	5E
C23	7D	Q6	5E	R22	5C		
C24	3D	Q7	6D	R23	6C		
C25	4D	Q8	6F	R24	5D		

NOTES:
1. COMPONENT REF. DESIG. PREFIX A2A6A4A2
2. ⚠ VERTICALLY MOUNTED DIODES CR2, CR7, CR12 HAVE ANODE CONNECTIONS TO BOARD, CATHODE CONNECTIONS UP.

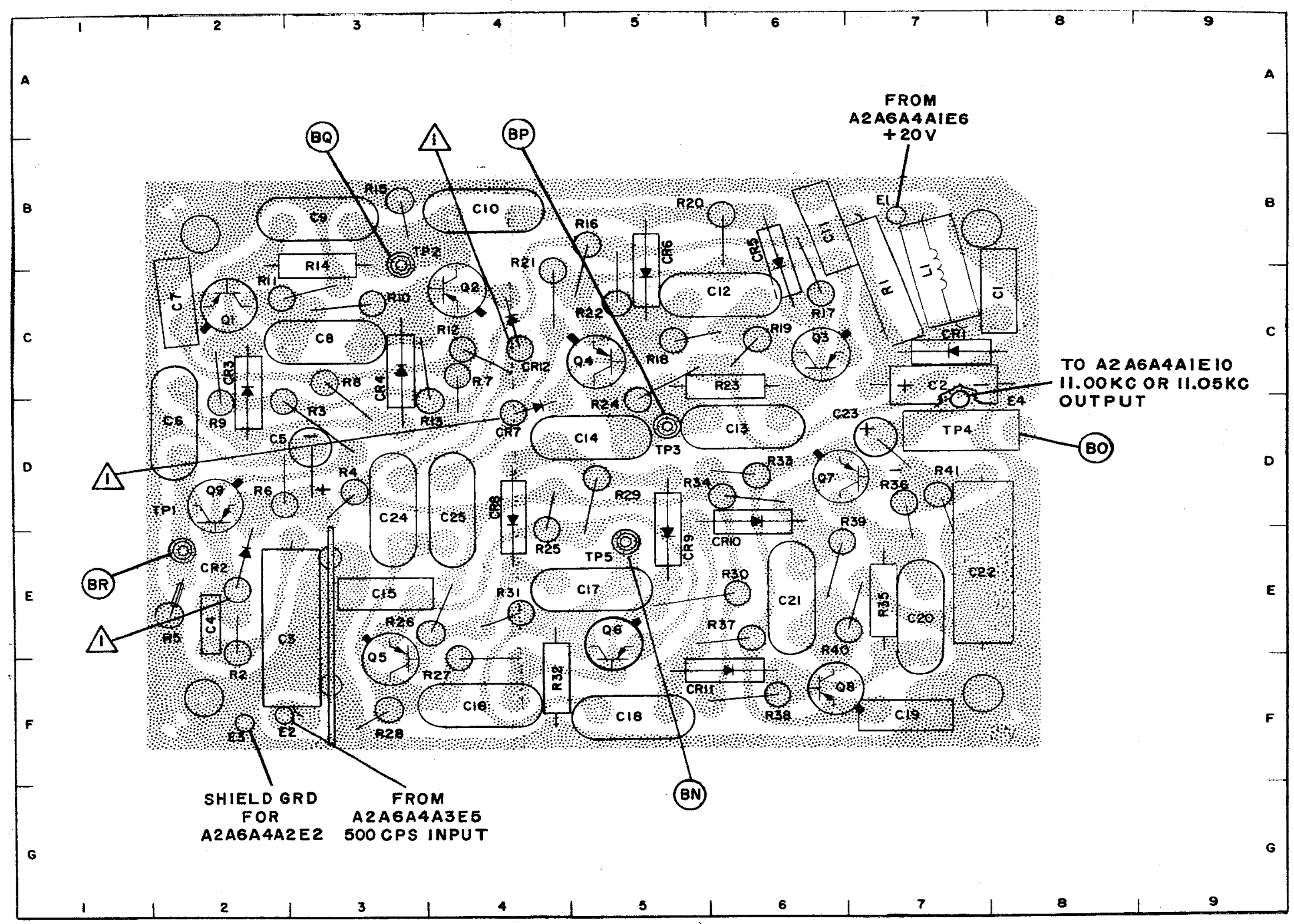


Figure 5-76. Divide-by-Ten Multivibrators (Foil Side Up), Component and Test Point Location

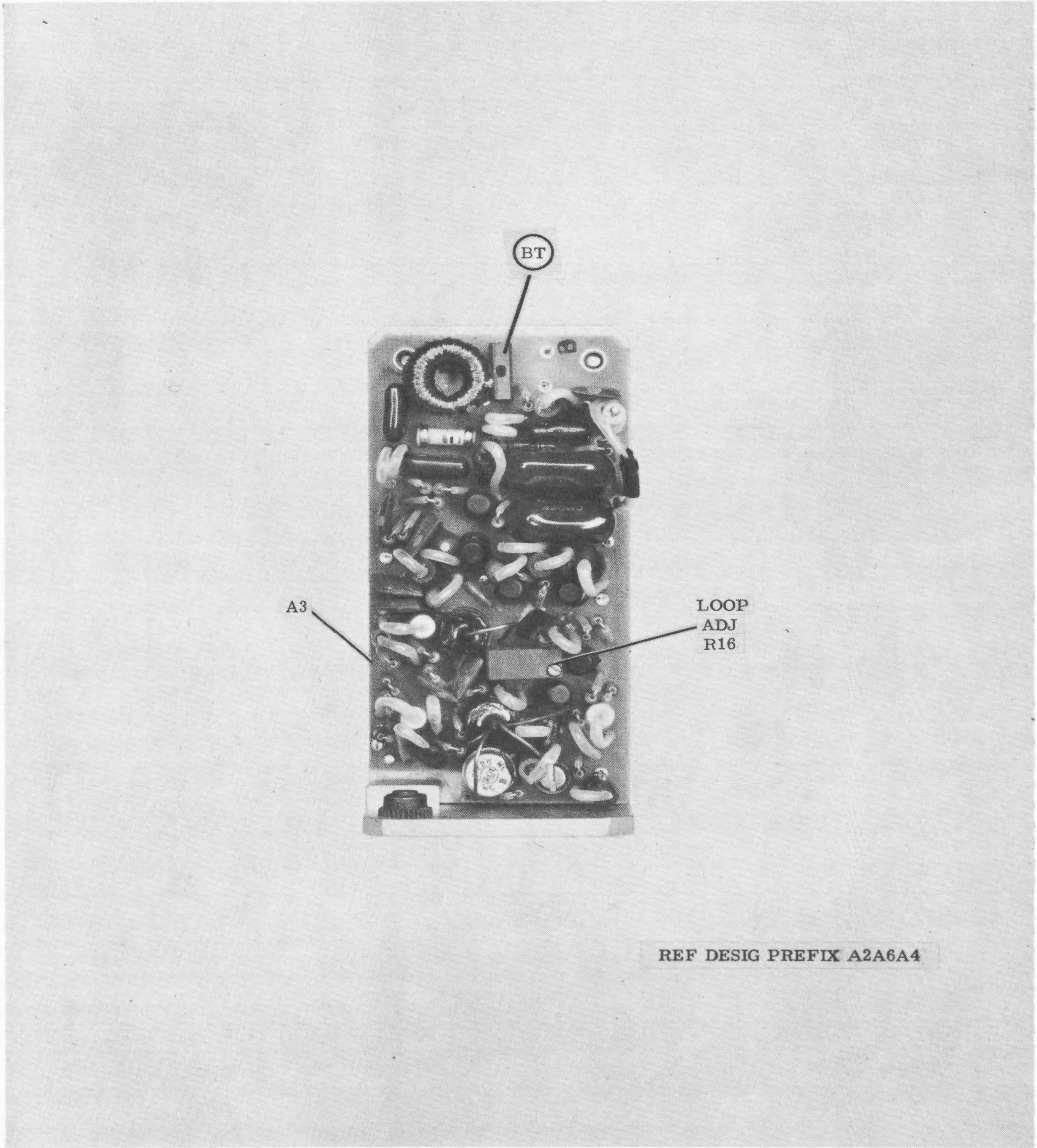


Figure 5-77. 500 CPS Synthesizer Electronic Subassembly, Front View, Component and Test Point Location

PARTS LOCATION INDEX

REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC
C1	6C	CR1	6D	L4	3D	R15	6F
C2	6D	CR2	4E	L5	3F	R16	7E
C3	6C	CR3	4E	L6	9F	R17	7F
C4	4E	CR4	4E	L7	6D	R18	7F
C5	5E	CR5	4C	Q1	5D	R19	8F
C6	4E	CR6	4C	Q2	5D	R20	9F
C7	4D	CR7	8F	Q3	6E	R21	7E
C8	3C	CR8	7E	Q4	7F	R22	7D
C9	4E	CR9	8D	Q5	7E	R23	8D
C10	3E	E1	3F	Q6	6F	R24	7C
C11	4D	E2	8C	Q7	9E	R25	7D
C12	3F	E3	8C	R1	6D	R26	6F
C13	5C	E4	9F	R2	4D	R27	7C
C14	6E	E5	6F	R3	6E	R28	8D
C15	8F	E6	5F	R4	6E	R29	7C
C16	8E	E7	5C	R5	5E	R30	8C
C17	8F	E8	6E	R6	4F	R31	9E
C18	8D	E9	6C	R7	5D	RT1	5D
C19	6D	E10	7D	R8	5C	T1	8E
C20	7D	E11	3D	R9	5D	TP2	3E
C21	7D	J1	4F	R10	5C		
C22	7C	L1	6D	R11	4F		
C23	5F	L2	6E	R12	3E		
C24	8D	L3	5E	R13	6E		
C25	5D			R14	7F		

NOTES:

1. COMPONENT REF. DESIG. PREFIX A2A6A4A3.
2. THIS DRAWING REFLECTS CURRENT MODEL OF 500 CPS OSCILLATOR. EARLIER MODELS CONTAINED TERMINAL E12 INSTALLED IN GROUND AREA BETWEEN CAPACITOR C12 AND CONNECTOR J1.
3. △1 ALL CONNECTIONS ARE FROM TOP END OF COMPONENT.
4. △2 VERTICALLY MOUNTED DIODES. CR5, CR9, ANODE CONNECTIONS TO BOARD, CATHODE ON TOP. CR6, CR7, CR8 CATHODE CONNECTIONS TO BOARD, ANODE ON TOP.
5. △3 VERTICALLY MOUNTED VOLTAGE VARIABLE CAPACITOR. CR2 AND CR3 ANODE CONNECTIONS ARE ON TOP END OF COMPONENTS.
6. △4 VERTICALLY MOUNTED COIL. ONE CONNECTION ON TOP AND ONE ON BOTTOM OF EACH COMPONENT.
7. △5 VERTICALLY MOUNTED ZENER DIODE.

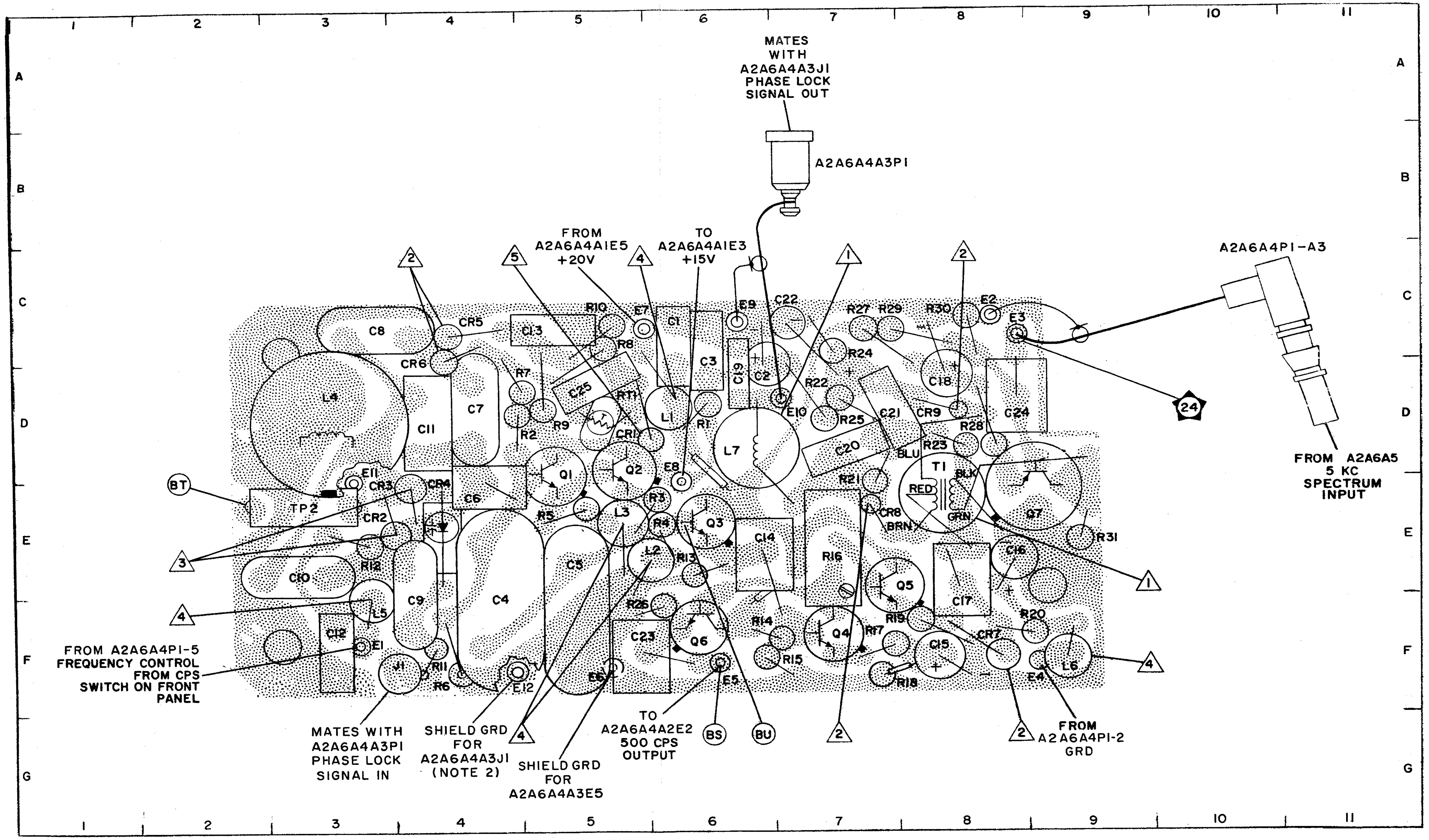


Figure 5-78. 500 CPS Oscillator (Foil Side Up), Component and Test Point Location

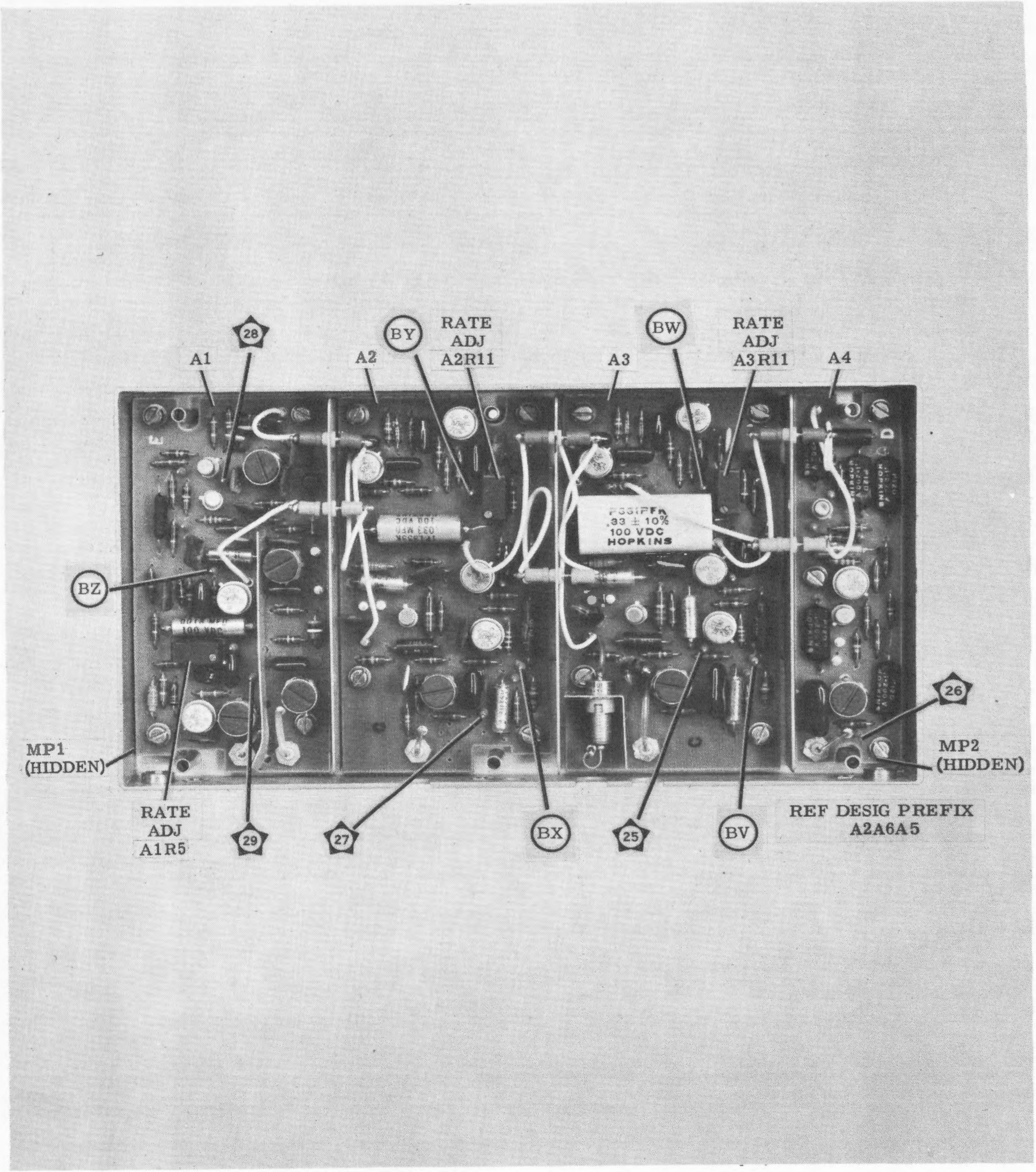


Figure 5-79. Spectrum Generator Electronic Subassembly, Component and Test Point Location

NOTES:

1. COMPONENT REF. DESIG. PREFIX A2A6A5A1.
2. THIS DRAWING REFLECTS CURRENT MODEL OF 100KC SPECTRUM GENERATOR. IN EARLIER MODELS RESISTOR R24 WAS POTENTIOMETER.

PARTS LOCATION INDEX

REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.
C1	8D	C10	8E	C19	4C	L1	10D	R1	6G	R10	7F	R19	8D	TP1	4D
C2	7E	C11	8F	CR1	4G	L2	3E	R2	4F	R11	8F	R20	7D	TP2	5E
C3	3E	C12	7D	CR2	4F	L5	7C	R3	4E	R12	9F	R21	9C	TP3	7F
C4	4E	C13	9D	CR3	6F	Q1	3E	R4	5G	R13	7E	R22	5C	TP4	6E
C5	6E	C14	8C	CR4	7C	Q2	4E	R5	5E	R14	8F	R23	7C	TP5	9F
C6	5E	C15	9C	E1	11D	Q3	6E	R6	4F	R15	9E	R24	6C	TP6	8E
C7	7F	C16	7C	E6	6A	Q4	8E	R7	6E	R16	7D	R25	5C		
C8	6F	C17	6C	J3	2D	Q5	9E	R8	6F	R17	9F	T1	9D		
C9	9E	C18	5C	J6	2C	Q6	8C	R9	7E	R18	10E	T2	4C		

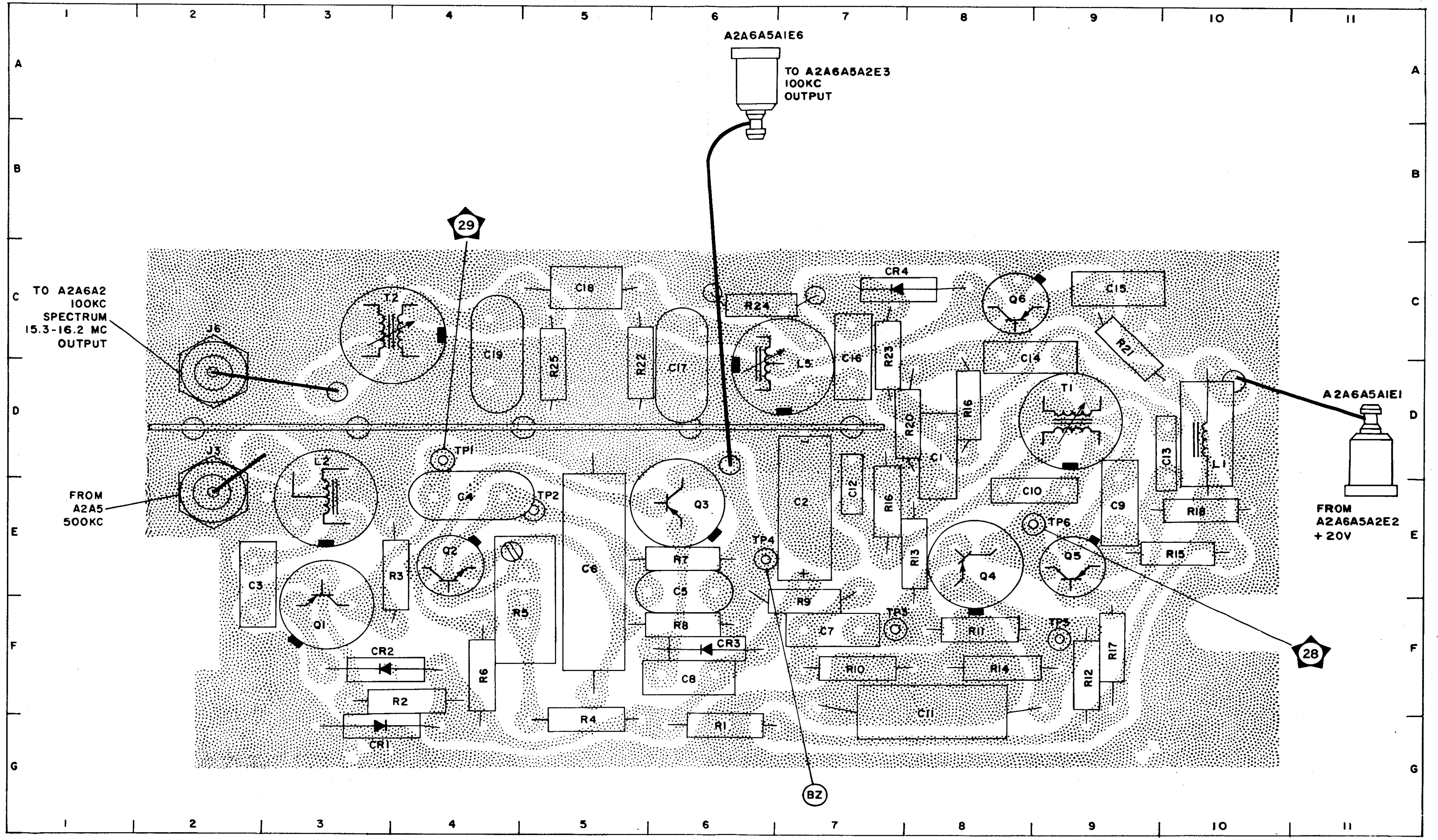


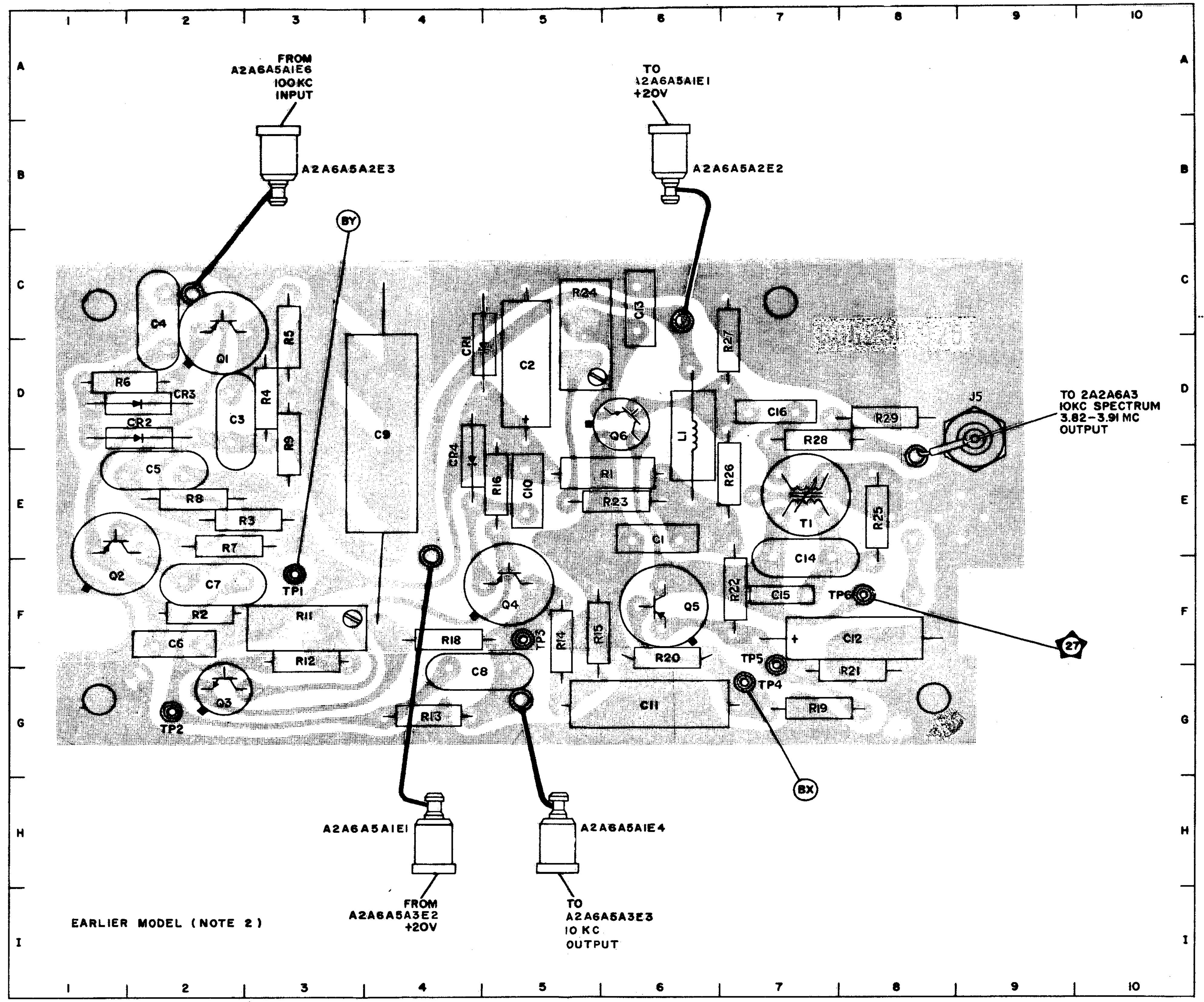
Figure 5-80. 100 KC Spectrum Generator (Foil Side Up), Component and Test Point Location

NOTES:

1. COMPONENT REF. DESIG. PREFIX A2A6A5A2.
2. VARIATIONS EXIST FOR 10 KC SPECTRUM GENERATOR DUE TO EQUIPMENT DESIGN CHANGES. CURRENT MODELS AND EARLIER MODELS ARE INTERCHANGEABLE. MAJOR DIFFERENCES INCLUDE FOR PATTERN ALTERATIONS AND ADDITION OF RESISTOR R30 TO CURRENT MODEL.

PARTS LOCATION INDEX

REF. DESIG.	LOC.	REF. DESIG.	LOC.
C1	6E	R2	2F
C2	5D	R3	2E
C3	2D	R4	3D
C4	2C	R5	3D
C5	2E	R6	1D
C6	2F	R7	2F
C7	2F	R8	2E
C8	4G	R9	3D
C9	4D	R11	3F
C10	5E	R12	3F
C11	6G	R13	4G
C12	8F	R14	5F
C13	6C	R15	5F
C14	7F	R16	5E
C15	7F	R18	4F
C16	7D	R19	7G
CR1	4D	R20	6F
CR2	2D	R21	8G
CR3	2D	R22	7F
CR4	4E	R23	6E
E1	4H	R24	5C
E2	6B	R25	8E
E3	3B	R26	7E
E4	5H	R27	7D
J5	9D	R28	7D
L1	6D	R29	8D
Q1	2D	T1	7E
Q2	1F	TP1	3F
Q3	2G	TP2	2G
Q4	5F	TP3	5F
Q5	6F	TP4	7G
Q6	6D	TP5	7F
R1	6E	TP6	8F



PARTS LOCATION INDEX

REF. DESIG.	LOC.	REF. DESIG.	LOC.
C1	6E	R2	2F
C2	5D	R3	2E
C3	3D	R4	3D
C4	2C	R5	3D
C5	2E	R6	1D
C6	2F	R7	2F
C7	2F	R8	2E
C8	4G	R9	3D
C9	4D	R11	3F
C10	5E	R12	3G
C11	6G	R13	4G
C12	8F	R14	5F
C13	6C	R15	6F
C14	7F	R16	5E
C15	7F	R18	4F
C16	7D	R19	8G
CR1	5C	R20	6G
CR2	2D	R21	8G
CR3	2D	R22	7F
CR4	5E	R23	6E
E1	4H	R24	6D
E2	6B	R25	8E
E3	3B	R26	7E
E4	5H	R27	7D
J5	9D	R28	7D
L1	7D	R29	8D
Q1	2D	R30	4G
Q2	1F	T1	8E
Q3	2G	TP1	3F
Q4	5F	TP2	2G
Q5	6F	TP3	5F
Q6	6D	TP4	7G
R1	6E	TP5	7G
		TP6	8F

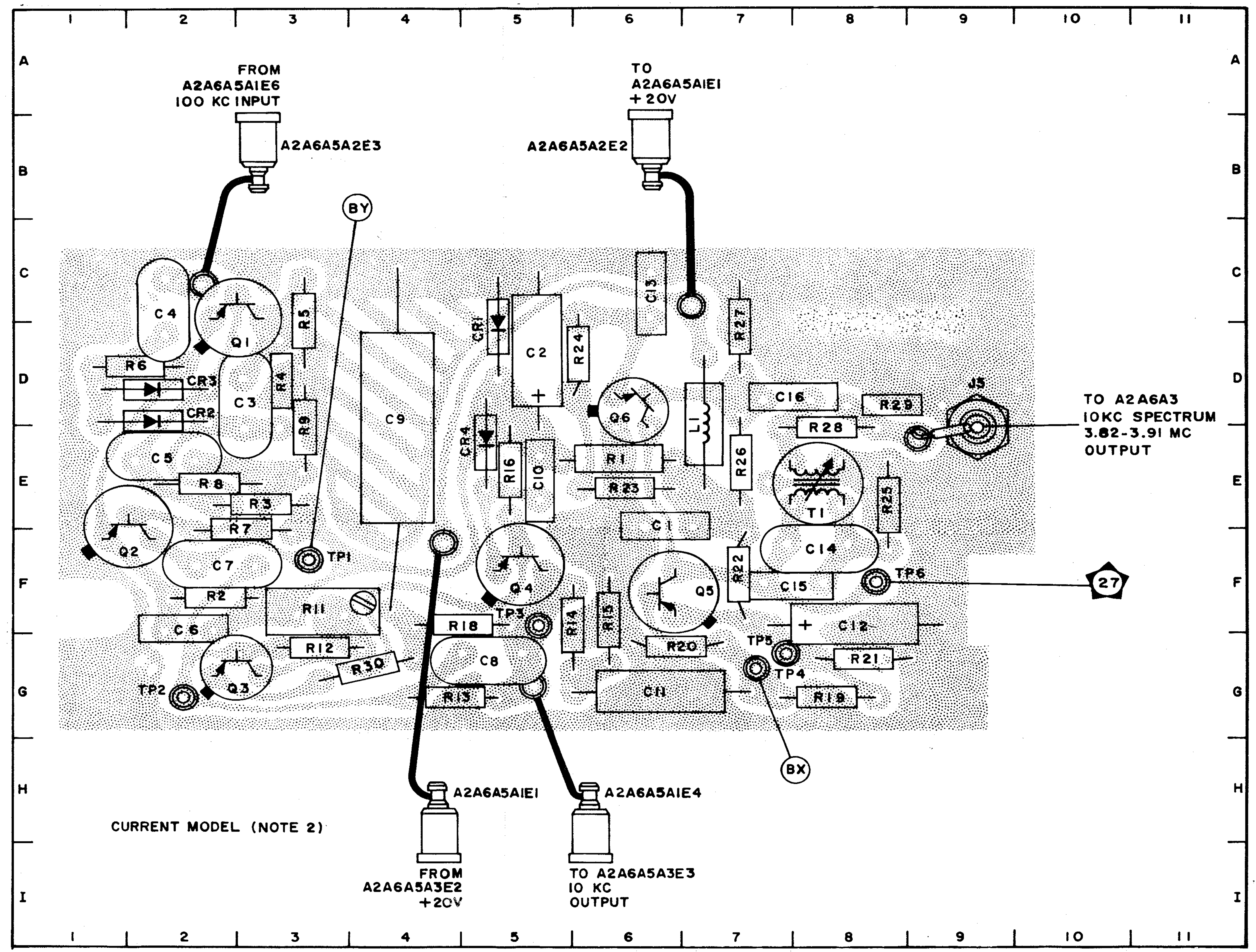
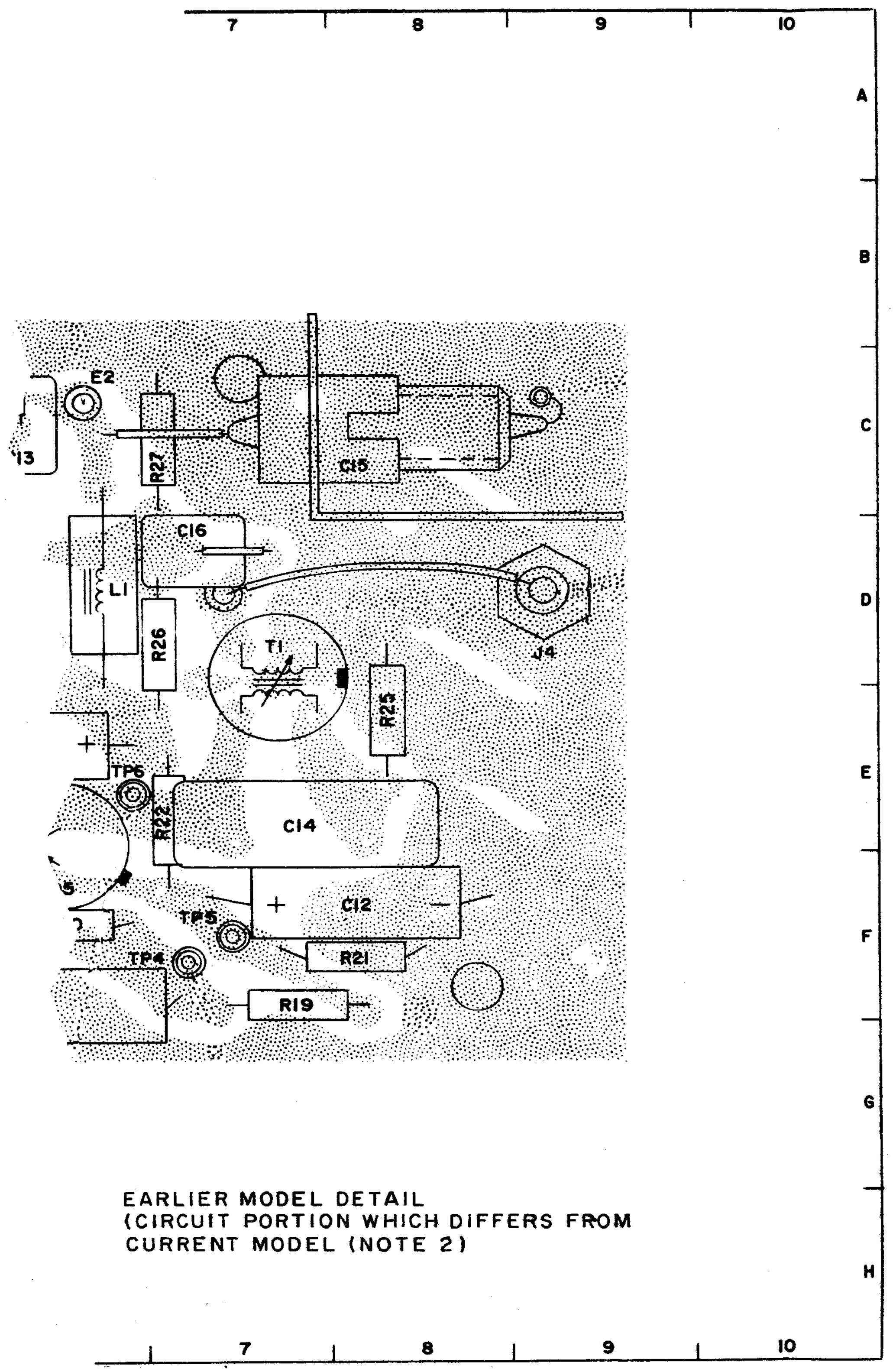


Figure 5-81. 10 KC Spectrum Generator (Foil Side Up), Component and Test Point Location

NOTE:
1. COMPONENT REF. DESIG. PREFIX A2A6A5A3
2. VARIATIONS EXIST FOR 1 KC SPECTRUM GENERATOR DUE TO EQUIPMENT DESIGN CHANGES. CURRENT MODELS AND EARLIER MODELS ARE INTERCHANGEABLE ON UNIT BASIS. MAJOR DIFFERENCES INCLUDE FOIL PATTERN ALTERATIONS AND ADDITION OF CAPACITOR C17 AND INDUCTOR L2 TO CURRENT MODEL.

PARTS LOCATION INDEX

REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.
C1	6E	E2	6B	R13	4G
C2	5C	E3	2B	R14	5F
C3	2D	J2	9C	R15	5F
C4	2C	J4	9D	R16	5D
C5	2D	L1	6D	R17	3F
C6	2F	L2	8D	R18	4F
C7	2E	Q1	2C	R19	7F
C8	4F	Q2	1E	R20	6F
C9	4D	Q3	2F	R21	8F
C10	5D	Q4	5E	R22	7E
C11	6F	Q5	6F	R23	6E
C12	8F	Q6	6D	R24	5C
C13	6C	R1	6D	R25	8E
C14	7E	R2	2F	R26	7D
C15	8C	R3	3E	R27	7C
C16	7D	R4	3D	T1	7D
C17	9E	R5	3C	TP1	3E
CR1	4C	R6	1C	TP2	2F
CR2	2D	R7	2E	TP3	5F
CR3	2D	R8	2D	TP4	7F
CR4	4F	R9	3D	TP5	7F
CR5	4D	R10	3C	TP6	6E
E1	3H	R11	3F		
		R12	3F		



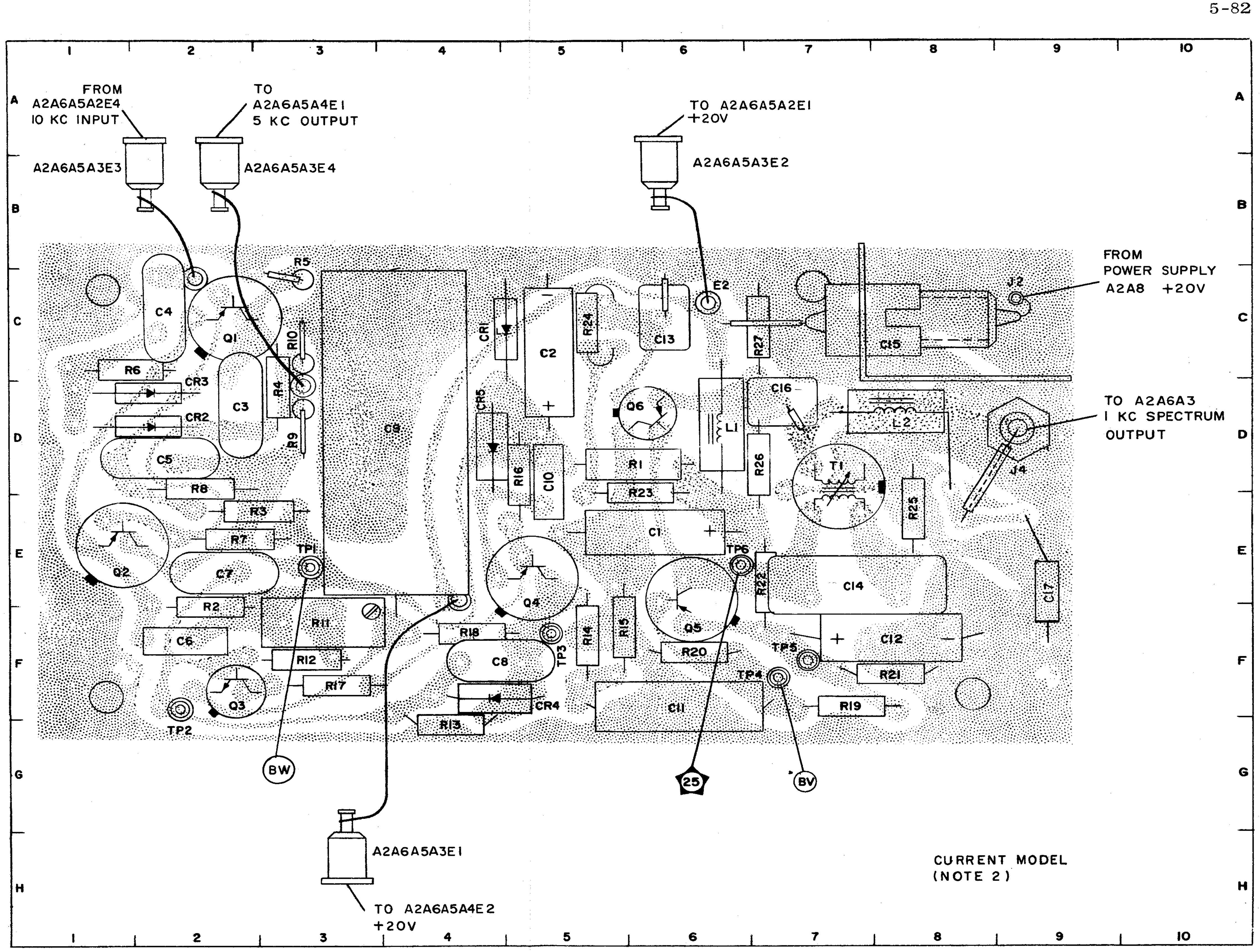
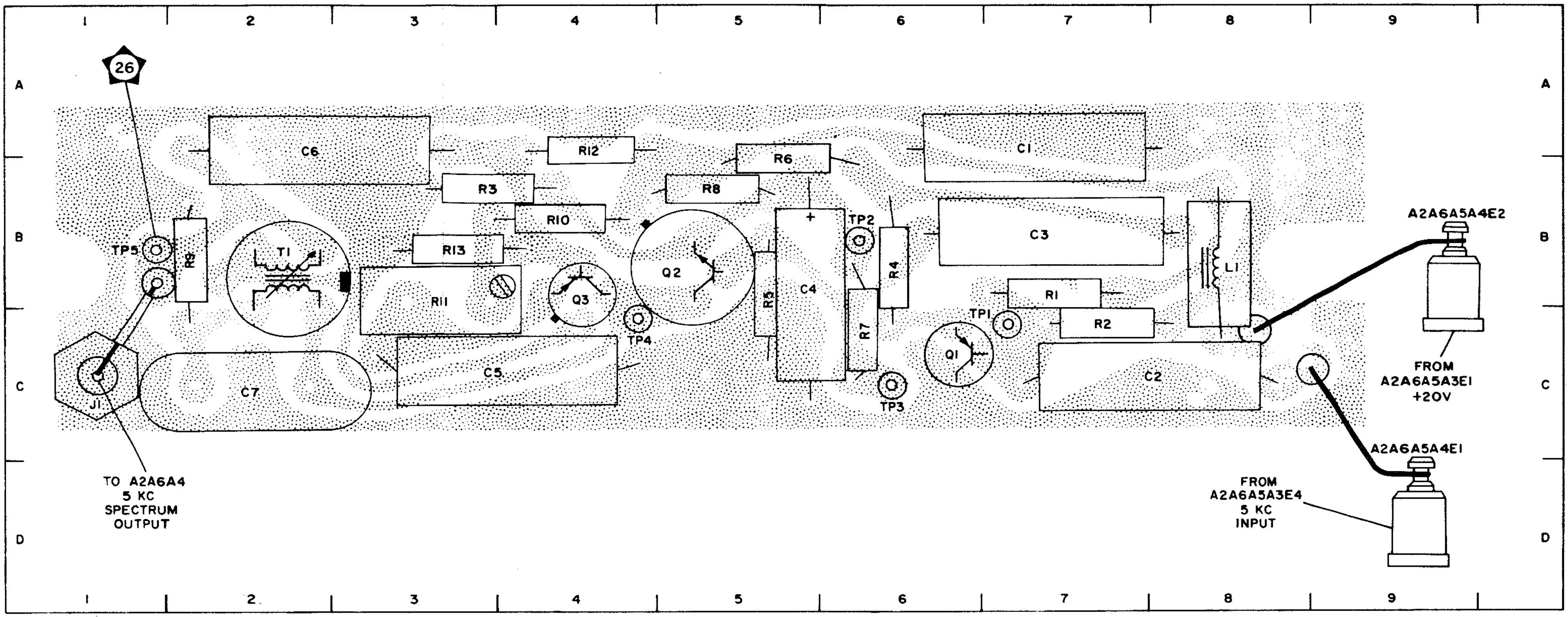


Figure 5-82. 1 KC Spectrum Generator (Foil Side Up), Component and Test Point Location



NOTE:
COMPONENT REF. DESIG. PREFIX A2A6A5A4

PARTS LOCATION INDEX

REF. DESIG.	LOC.	REF. DESIG.	LOC.	REF. DESIG.	LOC.
C1	7A	Q1	6C	R9	2B
C2	8C	Q2	5B	R10	4B
C3	7B	Q3	4B	R11	3C
C4	6B	R1	7B	R12	4A
C5	4C	R2	7C	R13	3B
C6	3B	R3	4B	T1	2B
C7	2C	R4	6B	TP1	7C
E1	9D	R5	5C	TP2	6B
E2	9B	R6	5B	TP3	6C
J1	1C	R7	6C	TP4	4C
L1	8B	R8	5B	TP5	2B

Figure 5-83. 5 KC Spectrum Generator (Foil Side Up), Component and Test Point Location

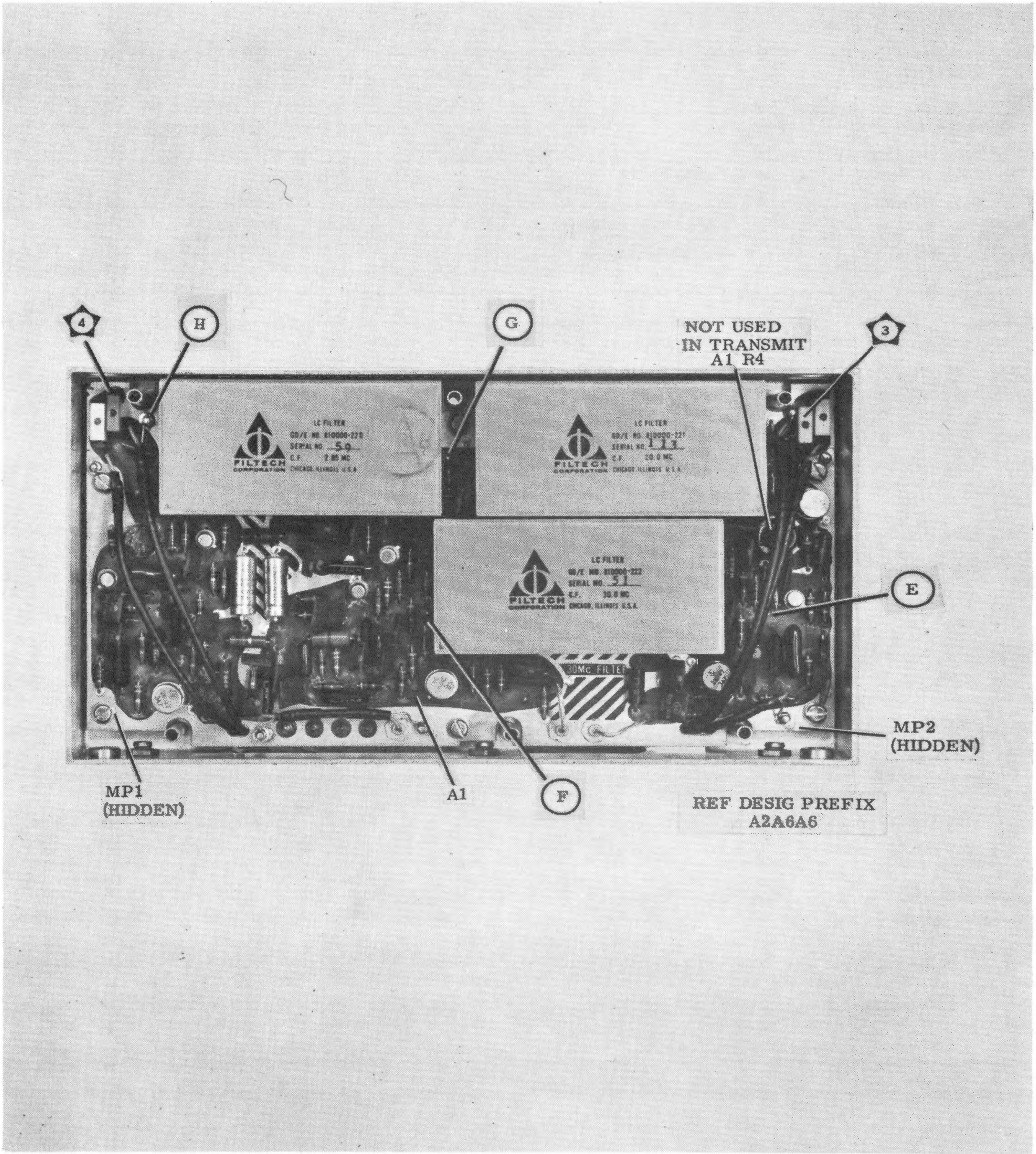


Figure 5-84. RF Translator Electronic Subassembly, Component and Test Point Location

NOTE:
REF. DESIG. PREFIX 2A2A6A6.

PARTS LOCATION INDEX

REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC
C1	6C	CR11	16H	R13	[illegible]
C2	5E	E2	5C	R14	12H
C3	15E	E3	6H	R15	12H
C4	5H	E12	20C	R16	12H
C5	6F	E13	[illegible]	R17	11H
C6	6H	E15	19C	R18	14H
C7	6H	E16	20D	R19	16G
C8	5H	E19	6I	R20	14H
C9	6E	E20	5C	R21	15H
C10	7G	E21	6B	R22	15H
C11	13E	FL1	9C	R23	18I
C12	13H	FL2	10F	R24	19I
C13	7G	FL3	16C	R25	18H
C14	14H	J1	10I	R26	18H
C15	12D	J2	10I	R27	17G
C16	15E	J3	14I	R28	20H
C17	16I	J4	14I	R29	20E
C18	15H	J5	16I	R30	20F
C19	15G	J6	16I	R31	19H
C20	16H	J7	15I	R32	20G
C21	8I	L1	9H	R33	20G
C22	11H	L2	7F	R34	18E
C23	11I	L3	15F	R35	19C
C24	14G	L4	16E	R36	18E
C25	15I	L5	17E	R37	18G
C26	17I	L6	19H	R38	18F
C27	18I	L7	17I	R39	18F
C28	19G	L8	18H	R40	14E
C29	20H	L9	15G	R41	12C
C30	20H	P2-A1	22E	R42	14E
C31	20G	P2-A2	22C	R43	14F
C32	19F	P3-A1	3C	R44	14H
C33	17F	P3-A2	3B	R45	14G
C34	18G	P3-A3	3H	R46	13F
C35	17H	Q1	5D	R47	13G
C36	16F	Q2	5G	R48	6F
C37	7E	Q3	15F	R49	7G
C38	16H	Q4	14E	R50	13H
C39	16F	Q5	18E	R51	16G
C40	19D	Q6	20F	R52	6C
C41	18F	Q7	19I	R53	11I
C42	14G	Q8	7H	R54	15H
C43	8H	Q9	13H	R55	8I
C45	13D	R1	6D	R56	17H
C46	19F	R2	5E	T1	19E
CR1	6F	R3	5E	TP1	6G
CR2	6G	R4	6E	TP2	13G
CR3	6F	R5	6F	TP3	13C
CR4	13F	R6	5H	TP4	19D
CR5	14F	R7	5H	TP5	5B
CR6	13D	R8	5G	TP6	5C
CR7	13G	R9	5G	TP7	20B
CR8	19E	R10	6I	TP9	20C
CR9	6C	R11	7H		
CR10	6D	R12	7I		

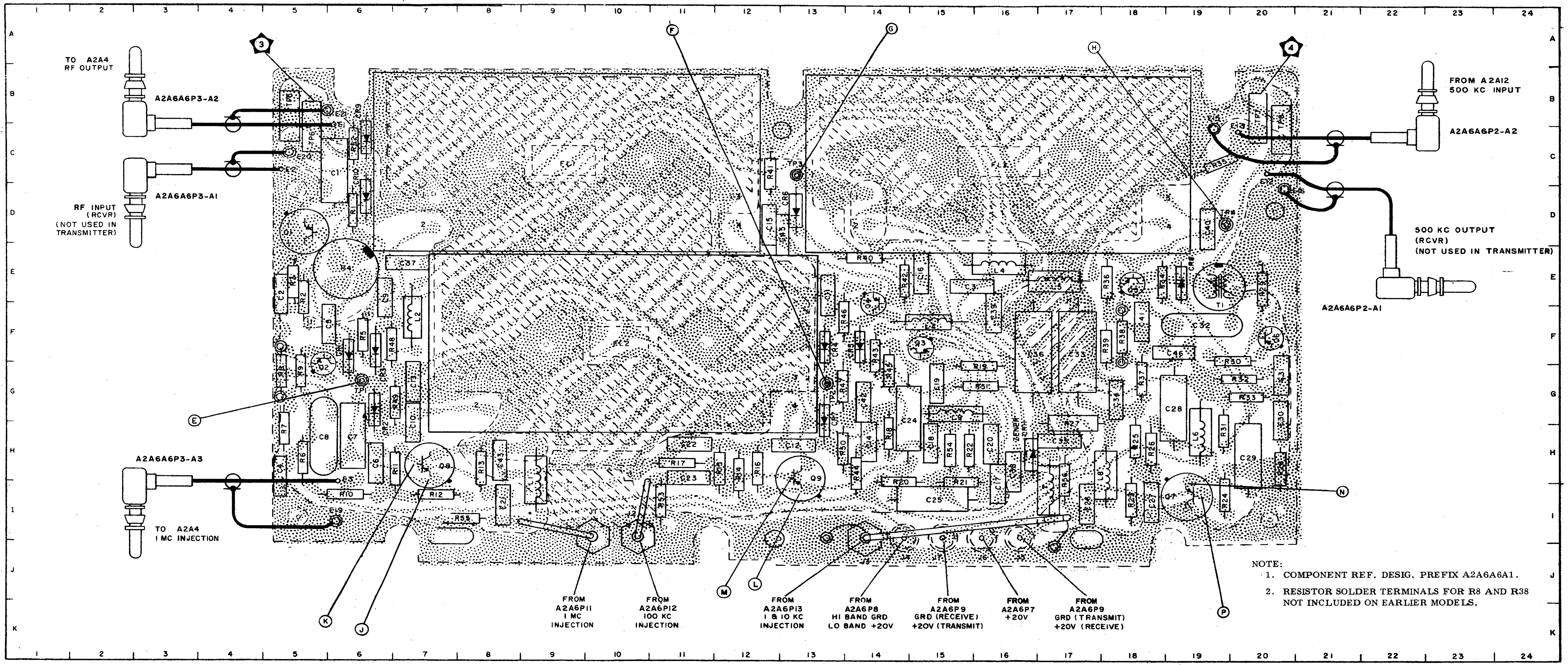


Figure 5-85. RF Translator (Component Side Down), Component Test Point and Location

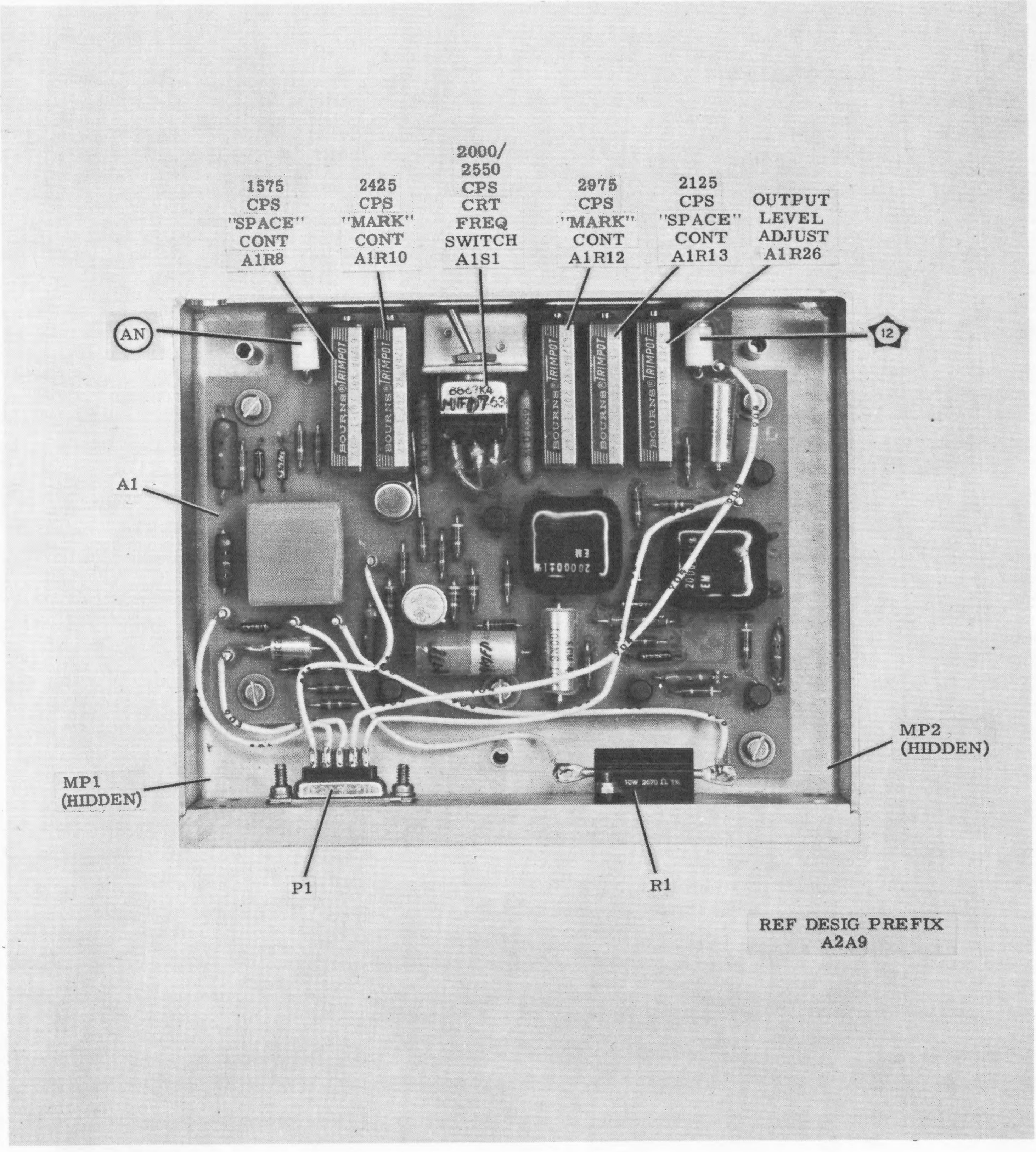


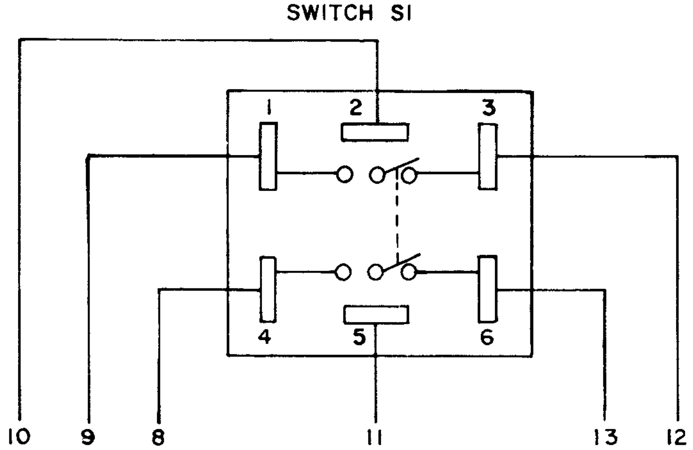
Figure 5-86. FSK Tone Generator Electronic Assembly, Component and Test Point Location

NOTE:
COMPONENT REF. DESIG. PREFIX A2A9A1.

PARTS LOCATION INDEX

REF. DESIG.	LOC.	REF. DESIG.	LOC.
C1	11E	R2	9H
C2	8G	R3	9H
C3	11D	R4	9H
C4	7G	R5	10D
C5	5E	R6	8F
C6	4G	R7	9D
C7	3H	R8	9C
C8	2G	R9	7C
C9	5G	R10	8C
C10	2C	R11	6C
C11	2F	R12	5C
CR1	10G	R13	4C
CR2	9G	R14	7F
CR3	10D	R15	7E
CR4	10D	R16	7E
CR5	6G	R17	6F
CR6	4G	R18	7E
CR7	4H	R19	8F
CR8	4F	R20	4G
E1	11F	R21	3H
E2	11G	R22	5H
E3	10G	R23	4E
E4	9G	R24	2G
E5	8F	R25	3D
E6	2B	R26	3C
E7	2E	R27	3E
Q1	8H	R28	9C
Q2	8D	R29	7F
Q3	6E	S1	6C
Q4	7F	T1	10E
Q5	4H	TP1	9B
Q6	2H	TP2	3B
Q7	2D		

CONTACT DETAIL
SWITCH S1



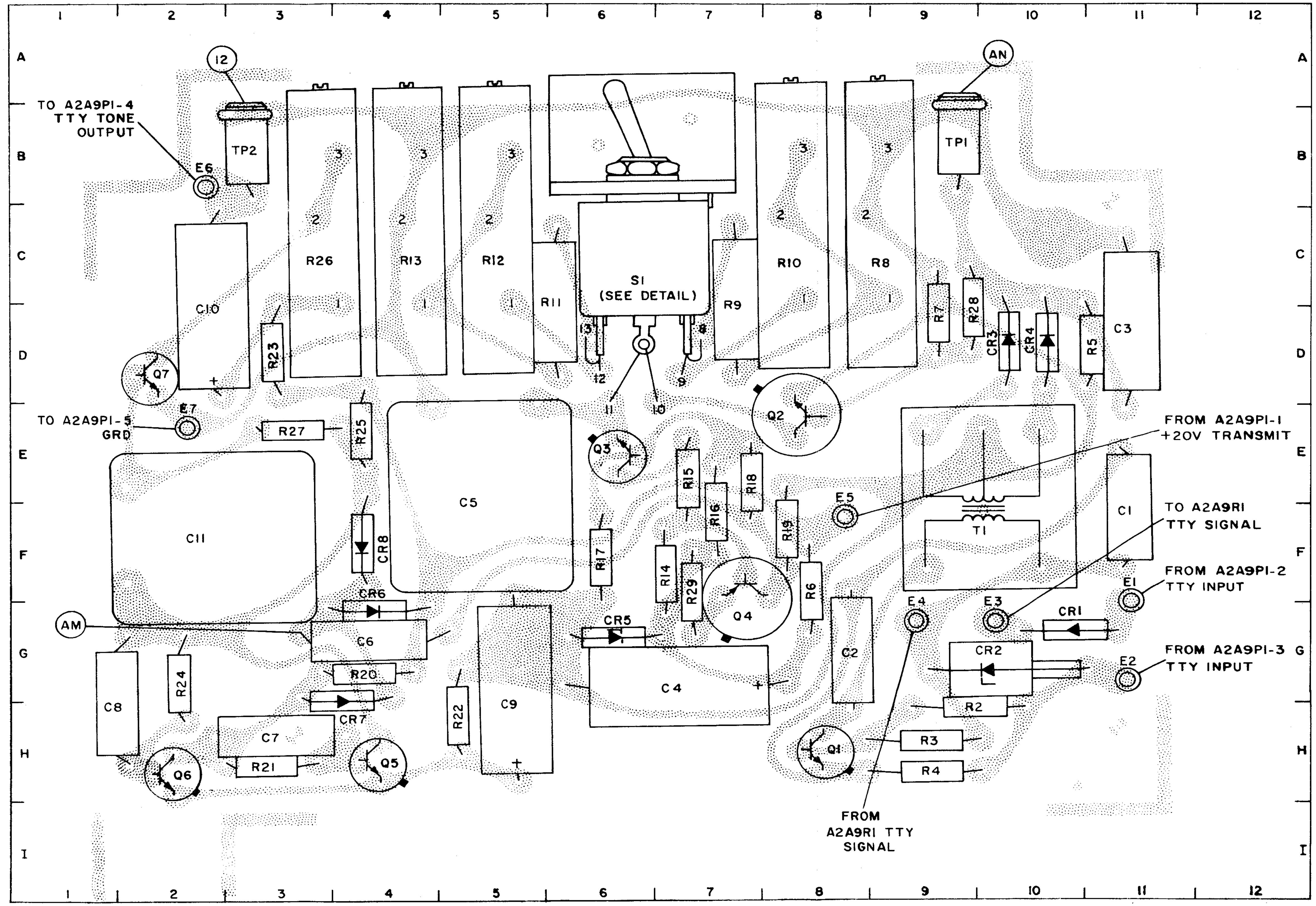


Figure 5-87. FSK Tone Generator (Foil Side Up), Component and Test Point Location

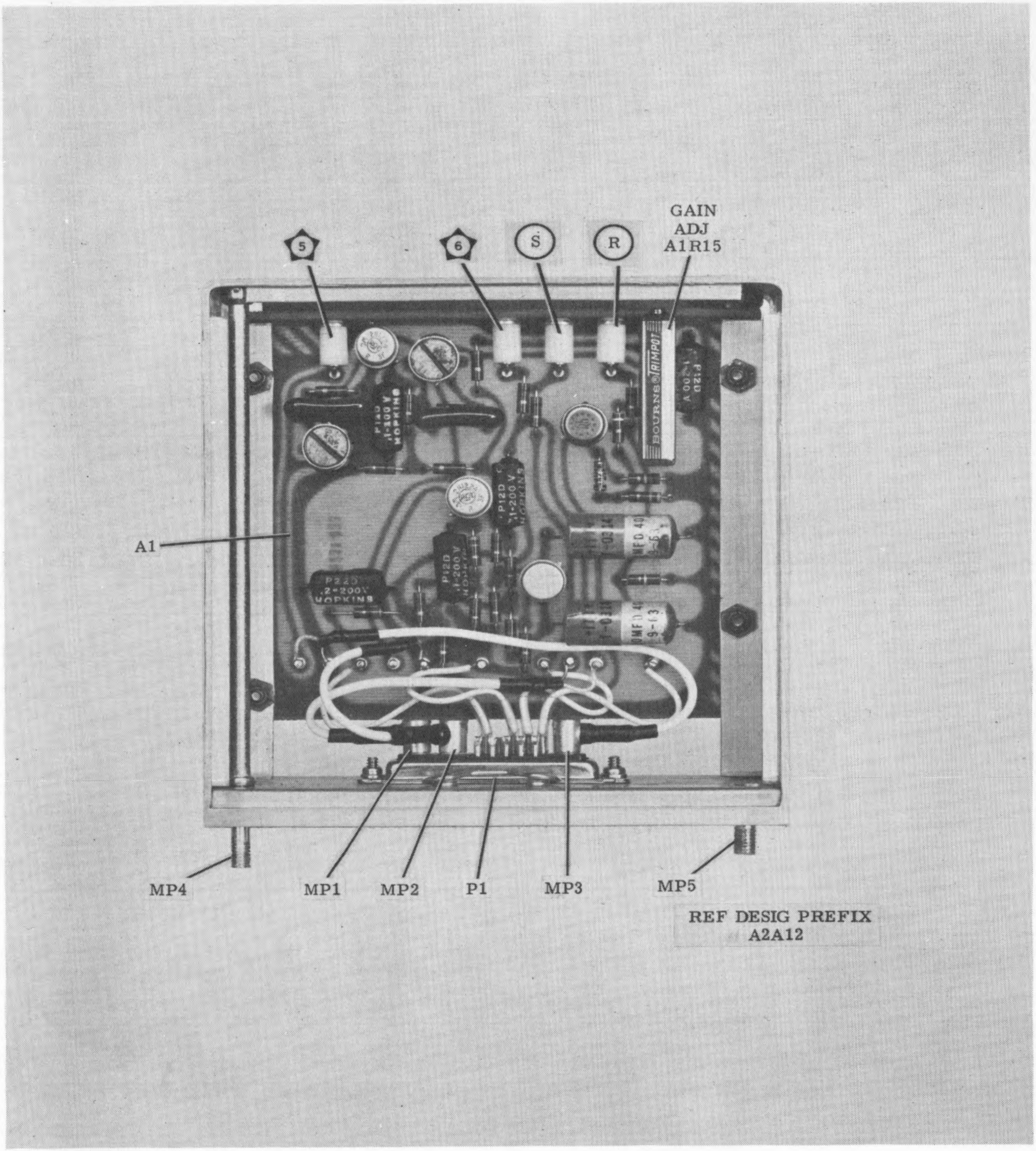
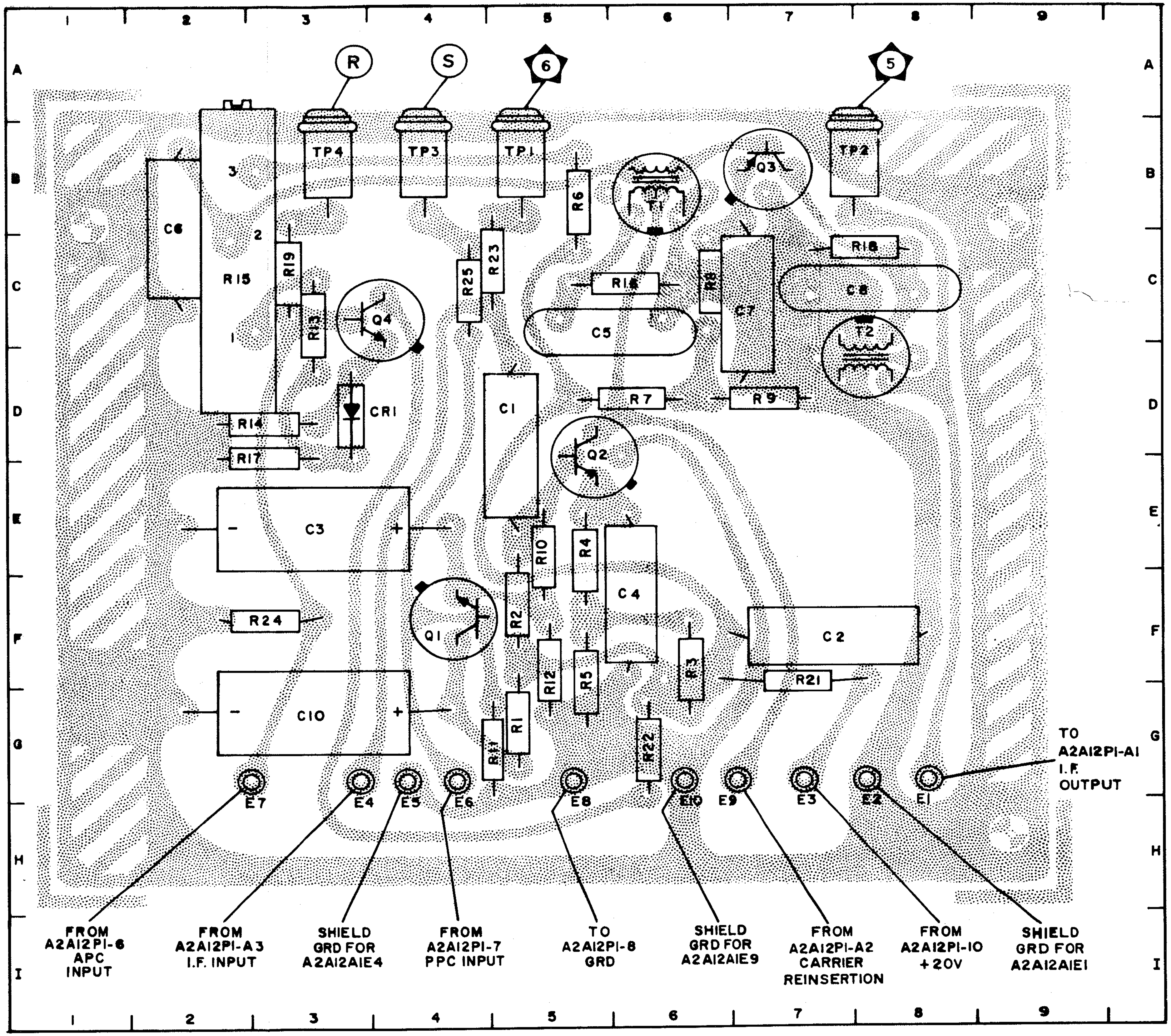


Figure 5-88. IF. Amplifier Electronic Assembly, Component and Test Point Location

NOTE:
1. COMPONENT REF. DESIG. PREFIX A2A12A1

PARTS LOCATION INDEX

REF. DESIG.	LOC.	REF. DESIG.	LOC.
C1	5D	R4	5E
C2	7F	R5	5F
C3	3E	R6	5B
C4	6F	R7	6D
C5	6C	R8	6C
C6	2B	R9	7D
C7	7C	R10	5E
C8	8C	R11	5G
C10	3G	R12	5F
CR1	3D	R13	3C
E1	8G	R14	3D
E2	8G	R15	3C
E3	7G	R16	6C
E4	3G	R17	3D
E5	4G	R18	8C
E6	4G	R19	3C
E7	3G	R21	7F
E8	5G	R22	6G
E9	7G	R23	5C
E10	6G	R24	3F
Q1	4F	R25	4C
Q2	6D	T1	6B
Q3	7B	T2	8D
Q4	4C	TP1	5B
R1	5G	TP2	8B
R2	5F	TP3	4B
R3	6F	TP4	3B



5-89. IF. Amplifier (Foil Side Up), Component and Test Point Location

SECTION 6

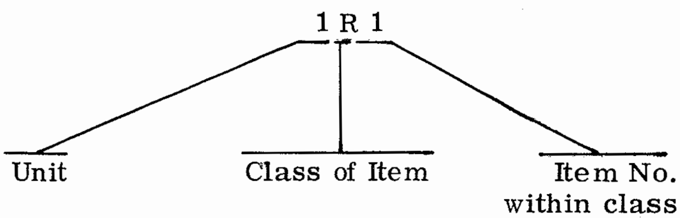
PARTS LIST

6-1. INTRODUCTION.

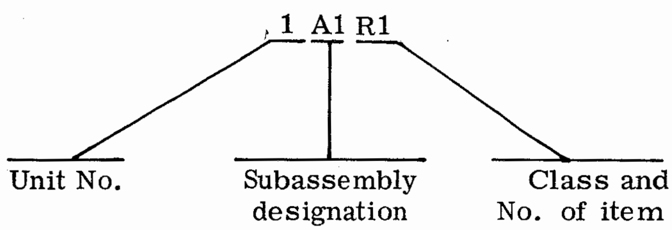
6-2. REFERENCE DESIGNATIONS.

6-3. The unit numbering method of assigning reference designations has been used to identify units, assemblies, subassemblies, and parts. This method has been expanded as much as necessary to adequately cover the various degrees of subdivision of the equipment. Examples of this unit numbering method and typical expansions of the same are illustrated by the following:

Example 1:

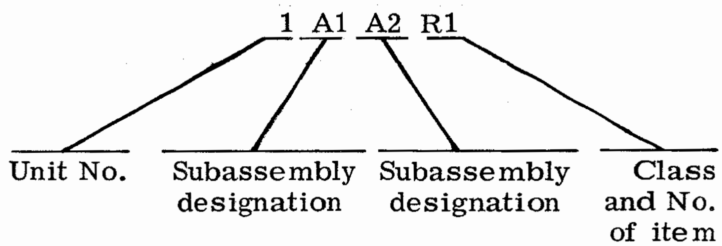


Example 2:



Read as: First (1) resistor (R) of first (1) subassembly (A) of fourth (4) unit.

Example 3:



Read as: First (1) resistor (R) of second (2) subassembly (A) of first (1) subassembly (A) of third (3) unit.

6-4. REF DESIG PREFIX.

6-5. Partial reference designations are used on the equipment and illustrations. The partial reference designations consist of the class letter (s) and the identifying item number. The complete reference designations may be obtained by placing the proper prefix before the partial reference designations. Prefixes are provided on illustrations following the notation "REF DESIG PREFIX".

6-6. LIST OF UNITS.

6-7. Table 6-1 is a listing of the units comprising the equipment. The units are listed by unit numbers in numerical order. Thus when the complete reference designation of a part is known, this table will furnish the identification of the unit in which the part is located, since the first number of a complete reference designation identifies the unit. Table 6-1 also provides the following information for each unit listed: (1) quantity per equipment, (2) official name, (3) designation, (4) colloquial name, and (5) location of the first page of its parts listing in table 6-1.

6-8. MAINTENANCE PARTS LIST.

6-9. Table 6-2 lists all units and their maintenance parts. The units are listed in numerical sequence. Maintenance parts for each unit are listed alphabetically-numerically by class of part following the unit designation. Thus the parts for each unit are grouped together. Table 6-2 provides the following information: (1) the complete reference designation of each unit, assembly, subassembly, or part, (2) reference to explanatory notes in paragraph 6-6, (3) noun name and brief description, and (4) identification of the illustration which pictorially locates the part.

6-10. Printed circuit boards, assembly boards modules, etc., are listed first as individual items in the maintenance parts list. In addition, at the completion of a parts listing for each unit, the individual circuit board, assembly board, module, etc., is then broken down by components into separate parts listings. When there is a redundancy of such electronic assemblies in subsequent units, reference is made to the parts breakdown previously listed.

6-11. LIST OF MANUFACTURERS.

6-12. Table 6-3 lists the manufacturers of parts used in the equipment. The table includes the manufacturer's code used in table 6-2 to identify the manufacturers. The code is contained in Federal Supply Code for Manufacturers, H4-1.

6-13. STOCK NUMBER IDENTIFICATION.

6-14. Allowance Parts List (APL) issued by the Electronics Supply Office (ESO) include Federal Stock Numbers and Source Maintenance and Recoverability Codes. Therefore, reference should be made to the APL prepared for the equipment for stock numbering information.

6-15. NOTES.

6-16. Note Column. Parts variation within each article are identified by a Letter Symbol in the Notes Column. The absence of a Letter Symbol in the Notes Column indicates that the part is used on all articles covered by this Manual. The codes are assigned as follows:

Master Usable On Coding List

Usable On Code	Equipments
A, B	Units built under orginal contracts
C	Units built under current contract

TABLE 6-1. LIST OF UNITS

UNIT NO.	QTY	NAME OF UNIT	DESIGNATION	COLLOQUIAL NAME	PAGE
	1	Radio Transmitter	T-827/URT	Transmitter	6- 3
A1	1	Case Assembly, Transmitter			6- 3
A2	1	Chassis, Transmitter			6- 3
A2A1	1	Mode Selector Assembly			6- 6
A2A2	2	Audio Assembly, Transmitter			6-11
A2A3		Same as A2A2			6-13
A2A4	1	Amplifier, Radio Frequency			6-14
A2A5	1	Module Assy, Frequency Stnd.			6-31
A2A6	1	Translator-Synthesizer Subassembly			6-36
A2A7	1	Code Generator			6-70
A2A8	1	Power Supply, Transmitter			6-70
A2A9	1	Frequency Shift Keyer Module			6-72
A2A10	2	Amplifier, Meter			6-73
A2A11		Same as A2A10			6-74
A2A12	1	IF Amplifier Assembly			6-74
A2A13	1	Panel Subassembly, Light			6-76
A2A14	1	Filter Box, Handset			6-76
A2A15	1	Filter Assy, IF Transmitter			6-76
A2A16	1	Frequency Control, 500 Cycle			6-76

TABLE 6-2. MAINTENANCE PARTS LIST

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
	A,B	TRANSMITTER, T-827/URT, MFR 58189, P/N 666230-031	
	C	TRANSMITTER, T-827/URT, MFR 58189, P/N AC9500-001	
A1		CASE SUBASSEMBLY, TRANSMITTER, MFR 58189, P/N 666230-034	5- 15
A1J1-J22		NOT USED	
A1J23-J24		CONNECTOR, RECEPTACLE, ELECTRICAL, MFR 91146, P/N BNCJBF21	5-16
A1J25		CONNECTOR, RECEPTACLE, ELECTRICAL, MFR 91146, P/N NJBF21	5-16
A1MP1-MP3		CONNECTOR, PLUG, ELECTRICAL, MFR 91146, P/N DM53743-5000	5-15
A1MP4		COVER, MIL TYPE MS35186-123A	5-16
A1MP5		COVER, MIL TYPE MX913U	5-16
A1MP6-MP8		SCREW, EXTERNALLY RELIEVED BODY, MFR 58189, P/N 666163-860	5-15
A1P1		CONNECTOR, RECEPTACLE, ELECTRICAL, 2.635 IN. LG X 0.605 IN. W X 0.563 IN. H, MFR 71468, P/N DDSMF50S	5-15
A1P2		CONNECTOR, RECEPTACLE, ELECTRICAL, 1.541 IN. LG X 0.494 IN. W X 0.664 IN. H, MFR 91146, P/N DAMF3W3SC31	5-15
A1A1		FILTER BOX SUBASSEMBLY, TRANSMITTER, MFR 58189, P/N 666230-740	5-15
A1A1C1-C50		CAPACITOR, MIL TYPE CK70AW102M	5-15
A1A1J1-J2		NOT USED	
A1A1J3		CONNECTOR, RECEPTACLE, ELECTRICAL, 1.375 IN. LG X 1.375 IN. W X 1.093 IN. H, MFR 77820, P/N 71-74116-5P	5-16
A1A1J4		CONNECTOR, RECEPTACLE, ELECTRICAL, 1.938 IN. LG X 1.938 IN. W X 1.105 IN. H, MFR 77820, P/N PT07A22-55P	5-16
A1A1J5-J6		CONNECTOR, RECEPTACLE, ELECTRICAL, 1.000 IN. LG X 1.000 IN. W X 1.093 IN. H, MFR 77820, P/N 71-74111-4P	5-16
A1A1J7		CONNECTOR, RECEPTACLE, ELECTRICAL, 1.250 IN. LG X 1.250 IN. W X 1.093 IN. H, MFR 77820, P/N 71-74114P	5-16
A2	A,B	CHASSIS, TRANSMITTER, MFR 58189, P/N 666230-035	
A2		FRONT PANEL SUBASSEMBLY, MFR 58189, P/N 666230-530	
A2	C	CHASSIS, TRANSMITTER, MFR 58189, P/N AC9498-001	
A2		FRONT PANEL SUBASSEMBLY, MFR 58189, P/N 666230-531	
A2C1		CAPACITOR, MIL TYPE CE31C900J	5-19
A2C2		CAPACITOR, FIXED, METALIZED PAPER DIELECTRIC, 0.01 UF PORM 20 PCT, 200 WVDC, MFR 02777, P/N T2900-2	5-19
A2C3-C5		CAPACITOR, FIXED, METALIZED PAPER DIELECTRIC, 0.1 UF PORM 20 PCT, 200 WVDC, MFR 02777, P/N T2900-4	5-19
A2CR1-CR6		SEMICONDUCTOR DEVICE, DIODE, MFR 80131, P/N 1N649	5-19
A2CR7		SEMICONDUCTOR DEVICE, DIODE, MFR 80131, P/N 1N538	5-17
A2CR8		SEMICONDUCTOR DEVICE, DIODE, MFR 80131, P/N 1N1594	5-19
A2CR9		SAME AS A2CR1-CR6	5-19
A2F1-F2		FUSE, MIL TYPE F02B250V3-4AS	5- 20
A2J1		CONNECTOR, MIL TYPE MS3102R14S5S	5-20
A2J2		JACK, MIL TYPE JJ033	5- 20

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2J3-J7		NOT USED	
A2J8		CONNECTOR, RECEPTACLE, ELECTRICAL, 2.088 IN. LG X 0.494 IN. W X 0.663 IN. H, MFR 91146, P/N DBSM25S	5-19
A2J9		CONNECTOR, RECEPTACLE, ELECTRICAL, 2.729 IN. LG X C.494 IN. W X C.660 IN. H, MFR 91146, P/N DCMF13W6S1C31	5-18
A2J1C		CONNECTOR, RECEPTACLE, ELECTRICAL, 1.541 IN. LG X C.494 IN. W X 0.663 IN. H, MFR 91146, P/N DASM15S2	5-18
A2J11		CONNECTOR, RECEPTACLE, ELECTRICAL, 2.729 IN. LG X 0.494 IN. W X 0.660 IN. H, MFR 91146, P/N DCMF17W5S1C31	5-18
A2J12		CONNECTOR, RECEPTACLE, ELECTRICAL, 2.729 IN. LG X C.494 IN. W X 0.660 IN. H, MFR 91146, P/N DCMF25W3S1C31	5-18
A2J13-J14		CONNECTOR, RECEPTACLE, ELECTRICAL, 1.541 IN. LG X 0.494 IN. W X 0.656 IN. H, MFR 91146, P/N DAMF3W3S2C31	5-18
A2J15		CONNECTOR, RECEPTACLE, ELECTRICAL, 2.088 IN. LG X C.494 IN. W X 0.663 IN. H, MFR 91146, P/N DBMF13W3S2C31	5-18
A2J16		CONNECTOR, RECEPTACLE, ELECTRICAL, 1.541 IN. LG X 0.494 IN. W X 0.656 IN. H, MFR 91146, P/N DAMF11W1S2C31	5-18
A2J17		SAME AS A2J12	5-18
A2J18-J19		CONNECTOR, RECEPTACLE, ELECTRICAL, 2.088 IN. LG X C.494 IN. W X 0.663 IN. H, MFR 91146, P/N DBSM25S2	5-18
A2J2C		CONNECTOR, RECEPTACLE, ELECTRICAL, 1.213 IN. LG X C.494 IN. W X 0.663 IN. H, MFR 91146, P/N DESM9S2	5-18
A2J21		CONNECTOR, RECEPTACLE, ELECTRICAL, 2.635 IN. LG X 0.605 IN. W X 0.692 IN. H, MFR 91146, P/N DDSM5CP	5-19
A2J22		CONNECTOR, RECEPTACLE, ELECTRICAL, 1.541 IN. LG X C.494 IN. W X C.656 IN. H, MFR 91146, P/N DAM3W3PC31	5-19
A2K1-K2		RELAY, ARMATURE, 3 AMPS AT 28VDC, 1.330 IN. LG X 0.427 IN. W X 1.085 IN. H, MFR C2289, P/N 2F2427	5-19
A2K3		RELAY, ARMATURE, 3 AMPS AT 32VDC, C.89C IN. LG X 0.890 IN. W X 1.14C IN. H, MFR 82768, P/N TQ7C47	5-19
A2K4		RELAY, ARMATURE, 5 AMPS AT 32VDC, C.89C IN. LG X 0.890 IN. W X 1.14C IN. H, MFR 82768, P/N VG7C31	5-19
A2K5		RELAY, ARMATURE, 2 AMPS AT 32 VDC, 1.45C IN. LG X C.445 IN. W X 1.465 IN. H, MFR C2289, P/N 2BC1971	5-19
A2K6		SAME AS A2K1-K2	5-19
A2L1		REACTOR, 2.625 IN. LG X 1.688 IN. W X 4.875 IN. H, MFR 70674, P/N A14514	5-18
A2L2		REACTOR, 4.125 IN. LG X 2.5C0 IN. W X 4.750 IN. H, MFR 17637, P/N TB1022	5-18
A2M1-M2		METER, AUDIO LEVEL, 1.251 IN. H X 1.25C IN. DIA, MFR 81C3C, P/N 3201-210	5-20
A2MP1-MP3		CONNECTOR, PLUG, ELECTRICAL, MFR 91146, P/N DM53741-5012	5-19
A2MP4-MP25		CONNECTOR, RECEPTACLE, ELECTRICAL, MFR 91146, P/N DM53743-5014	5-18
A2MP26		CHAIN, MFR 58189, P/N 666273-066	5-19
A2MP27		CHAIN, MFR 58189, P/N 666162-201	5-19
A2MP28		CHAIN, MFR 58189, P/N 666162-202	5-19
A2MP28A-28C		MASTER LINK, CHAIN, MFR 58189, P/N 666162-228	5-19

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2MP29-MP30		BLOCK, ADJUSTABLE IDLER ASSEMBLY, MFR 58189, P/N 666162-094	5-19
A2MP31		BLOCK, ADJUSTABLE IDLER ASSEMBLY, MFR 58189, P/N 666162-095	5-19
A2MP32		SPROCKET ASSEMBLY, MFR 58189, P/N 666162-221	5-19
A2MP32A-MP32F		BEARING, BALL, ANNULAR, 0.422 IN. DIA. X 0.141 IN. THK, MFR 40920, P/N S6632FCEB972	5-19
A2MP32G		SPROCKET, DRIVE, 25 TEETH, MFR 58189, P/N 666162-065	5-19
A2MP32H-MP32I		SPROCKET, DRIVE, 30 TEETH, MFR 58189, P/N 666273-099	5-19
A2MP32J-MP32L		DISK, COUPLING, 0.875 IN. DIA X 0.390 IN. LG, MFR 58189, P/N 666231-631	5-19
A2MP32M		SHAFT, STRAIGHT, 0.1874 IN. DIA X 1.328 IN. LG, MFR 58189, P/N 666231-617	5-19
A2MP32N-MP32O		SHAFT, STRAIGHT, 0.1874 IN. DIA X 1.062 IN. LG, MFR 58189, P/N 666231-619	5-19
A2MP33		SPROCKET ASSEMBLY, MFR 58189, P/N 666162-222	5-19
A2MP33A-MP33B		SAME AS A2MP32M	5-19
A2MP33C-MP33D		SPROCKET, DRIVE, 30 TEETH, MFR 58189, P/N 666162-066	5-19
A2MP33E-MP33H		SAME AS A2MP32A-MP32F	5-19
A2MP33I-MP33J		SAME AS A2MP32J-MP32L	5-19
A2MP33K-MP33L		WHEEL, INDEX, 1.500 IN. DIA X 0.062 IN. THK, MFR 58189, P/N 666163-115	5-19
A2MP33M-MP33N		BEARING, ROLLER, NEEDLE, MFR 60380, P/N B34	5-19
A2MP33O-MP33P		PIN, ROLLER, 0.1875 IN. DIA X 0.4000 IN. LG, MFR 58189, P/N 666163-114	5-19
A2MP33Q-MP33R		ARM, SPRING DETENT, MFR 58189, P/N 666163-199	5-19
A2MP34-MP35		SHAFT, CONTROL KNOB, MFR 58189, P/N 666230-171	5-20
A2MP36-MP37		DIAL, MC, MFR 58189, P/N 666230-177	5-20
A2MP38-MP39		PIN, BEARING, 0.1562 IN. DIA X 0.4000 IN. LG, MFR 58189, P/N 666230-187	5-20
A2MP40		SCREW, CAPTIVE, MFR 58189, P/N 666231-671	5-20
A2MP41-MP45		SCREW, CAPTIVE, MFR 58189, P/N 666164-260	5-20
A2MP46		DETENT, SHAFT, MFR 58189, P/N 666231-003	5-20
A2MP47-MP49		GEAR SET, BEVEL, MATCHED, MFR 58189, P/N 666162-110	5-20
A2MP50-MP51		BEARING, ROLLER, NEEDLE, MFR 60380, P/N B2 1-2 4	5-20
A2MP52		SPROCKET, DRIVE, 36 TEETH, MFR 58189, P/N 666273-098	5-20
A2MP53-MP55		DIAL AND COLLAR ASSEMBLY, MFR 58189, P/N 666162-227	5-20
A2MP56-MP57		SHAFT, STRAIGHT, 0.312 IN. DIA X 2.122 IN. LG, MFR 58189, P/N 666162-100	5-20
A2MP58		SHAFT, STRAIGHT, 0.312 IN. DIA X 2.750 IN. LG, MFR 58189, P/N 666231-640	5-20
A2MP59-MP60		SHAFT, FEED THRU, MFR 58189, P/N 666163-194	5-20
A2MP61		SPROCKET, DRIVE, 36 TEETH, MFR 58189, P/N 666162-109	5-20
A2MP62		SPROCKET, DRIVE, 30 TEETH, MFR 58189, P/N 666162-067	5-20
A2MP63-MP64		KNOB, MFR 49956, P/N 70-5-2G	5-20
A2MP65		KNOB, MFR 49956, P/N 70-8WL2G	5-20

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2MP66		KNOB, MFR 58189, P/N 666230-745	5-17
A2MP67-MP71		KNOB, MFR 58189, P/N 666162-078	5-20
A2Q1		TRANSISTOR, MFR 80131, P/N 2N1209	5-19
A2R1		RESISTOR, MIL TYPE RC42GF133J	5-19
A2R2		RESISTOR, FIXED, WIREWOUND, 332 OHMS PORM 3 PCT, 5W, MFR 91637, P/N RH5-3320H	5-19
A2R3		RESISTOR, MIL TYPE RW55V101	5-19
A2R4		RESISTOR, MIL TYPE RW56G821	5-19
A2S1		SWITCH, ROTARY, 2 SECTIONS, 6 POLES PER SECTION, 2 POSITIONS, NON-SHORTING CONTACTS, MFR 58189, P/N 810001-463	5-20
A2S2		SWITCH, ROTARY, 4 SECTIONS, 17 TOTAL POLES, 9 POSITIONS, NON-SHORTING CONTACTS, MFR 58189, P/N 810001-462	5-20
A2S3-S4		NOT USED	
A2S5		SWITCH SUBASSEMBLY, TRANSMITTER, MFR 58189, P/N 666230-791	5-17
A2S6		SWITCH, ROTARY, 1 SECTION, 3 POLES, 2 POSITIONS, NON-SHORTING CONTACTS MFR 58189, P/N 810000-423	5-20
A2S7		SWITCH, MIL TYPE MS35059-23	5-18
A2S8A-S8B		SWITCH, INTERLOCK, MFR 58189, P/N 666230-716	5-17
A2S9-S11		SWITCH, TOGGLE, DPDT, MFR 81640, P/N TW2150	5-20
A2T1		TRANSFORMER, POWER, STEP-DOWN, 2.625 IN. LG X 2.250 IN. W X 4.875 IN. H, MFR 91574, P/N W5444	5-18
A2XF1-XF2		FUSEHOLDER, MIL TYPE FHL17G	5-20
A2A1		MODE SELECTOR ASSEMBLY, MFR 58189, P/N 666230-047	
A2A1C1-C9		NOT USED	
A2A1C10 SELECTED		CAPACITOR, FIXED, MICA DIELECTRIC, 130 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N DM15E131G300V	5-27
A2A1C10 SELECTED		CAPACITOR, FIXED, MICA DIELECTRIC, 142 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N DM15F142CG300V	5-27
A2A1C10 SELECTED		CAPACITOR, FIXED, MICA DIELECTRIC, 150 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N DM15E151G300V	5-27
A2A1C11		CAPACITOR, FIXED, MICA DIELECTRIC, 300 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N DM15E301G300V	5-27
A2A1C12-C20		NOT USED	
A2A1C21 SELECTED		SAME AS A2A1C10 SELECTED	5-27
A2A1C21 SELECTED		SAME AS A2A1C10 SELECTED	5-27
A2A1C21 SELECTED		SAME AS A2A1C10 SELECTED	5-27
A2A1FL1		FILTER, BAND PASS, 500KC, MFR 95105, P/N 526-9419-00	5-27
A2A1FL2		FILTER, BAND PASS, 500KC, MFR 95105, P/N 526-9420-00	5-27
A2A1MP1-MP3		CONNECTOR, PLUG, ELECTRICAL, MFR 91146, P/N DM53741-5000	5-27
A2A1MP4-MP5		SCREW, EXTERNALLY RELIEVED BODY, MFR 58189, P/N 666163-233	5-27

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A1P1		CONNECTOR, RECEPTACLE, ELECTRICAL, 1.541 IN. LG X 0.494 IN. W X 0.657 IN. H, MFR 91146, P/N DAM11W1PC31F115	5-27
A2A1P2		CONNECTOR, RECEPTACLE, ELECTRICAL, 2.729 IN. LG X 0.494 IN. W X 0.661 IN. H, MFR 91146, P/N DCM25W3PC31F115	5-31
A2A1R1-R40		NOT USED	
A2A1R41		RESISTOR, MIL TYPE RC07GF301J	5-27
A2A1S1		SWITCH, ROTARY, 1 SECTION, 2 POLES, 4 POSITIONS, NON-SHORTING CONTACTS, MFR 58189, P/N 81C000-205	5-31
A2A1T1-T2		TRANSFORMER, RADIO FREQUENCY, 750 UUF PORM 10 PCT AT 500 KC, 0.750 IN. LG X 0.750 IN. W X 0.911 IN. H, MFR 93928, P/N 11210	5-27
A2A1A1		CHANNEL 1 BALANCED MOD SUBASSEMBLY, COMPONENT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666164-C58	
A2A1A1C1-C11		NOT USED	
A2A1A1C12		CAPACITOR, FIXED, METALIZED PAPER DIELECTRIC, 0.2 UF PORM 20 PCT, 200 WVDC, MFR 02777, P/N T2900-5	5-28
A2A1A1C13		CAPACITOR, MIL TYPE CY13C111J	5-28
A2A1A1C14		CAPACITOR, MIL TYPE CY13C151J	5-28
A2A1A1C15		CAPACITOR, VARIABLE, AIR DIELECTRIC, 1.0 TO 60.0 UUF, 1000 WVDC, MFR 73899, P/N VCJ1079	5-28
A2A1A1C16-C17		CAPACITOR, FIXED, MICA DIELECTRIC, 1500 UUF PORM 2 PCT, 500 WVDC, MFR 72136, P/N DM20E152G500V	5-28
A2A1A1CR1-CR4		NOT USED	
A2A1A1CR5-CR8		SEMICONDUCTOR DEVICE SET, 4 MATCHED 1N904 DIODES, MFR 58189, P/N 666163-241	5-28
A2A1A1R1-R20		NOT USED	
A2A1A1R21		RESISTOR, MIL TYPE RC07GF101J	5-28
A2A1A1R22		RESISTOR, MIL TYPE RC07GF821J	5-28
A2A1A1R23		RESISTOR, VARIABLE, 2K OHMS PORM 10 PCT, 4/5W, MFR 80294, P/N 236P1-202	5-28
A2A1A1R24		SAME AS A2A1A1R21	5-28
A2A1A1R25		SAME AS A2A1A1R22	5-28
A2A1A1R26		RESISTOR, MIL TYPE RC07GF112J	5-28
A2A1A1R27- R30		SAME AS A2A1A1R21	5-28
A2A1A1R31		RESISTOR, MIL TYPE RC07GF202J	5-28
A2A1A1R32		RESISTOR, MIL TYPE RC07GF512J	5-28
A2A1A1R33		SAME AS A2A1A1R31	5-28
A2A1A1R34		SAME AS A2A1A1R32	5-28
A2A1A2		CHANNEL 2 BALANCED MOD SUBASSEMBLY, COMPONENT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666164-C66	5-29
A2A1A2C1		SAME AS A2A1A1C12	5-29
A2A1A2C2		SAME AS A2A1A1C13	5-29
A2A1A2C3		SAME AS A2A1A1C14	5-29

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A1A2C4		SAME AS A2A1A1C15	5-29
A2A1A2C5-C6		SAME AS A2A1A1C16-C17	5-29
A2A1A2CR1-CR4		SAME AS A2A1A1CR5-CR8	5-29
A2A1A2R1		SAME AS A2A1A1R21	5-29
A2A1A2R2		SAME AS A2A1A1R22	5-29
A2A1A2R3		SAME AS A2A1A1R23	5-29
A2A1A2R4		SAME AS A2A1A1R21	5-29
A2A1A2R5		SAME AS A2A1A1R22	5-29
A2A1A2R6		SAME AS A2A1A1R26	5-29
A2A1A2R7-R10		SAME AS A2A1A1R21	5-29
A2A1A2R11		SAME AS A2A1A1R31	5-29
A2A1A2R12		SAME AS A2A1A1R32	5-29
A2A1A2R13		SAME AS A2A1A1R31	5-29
A2A1A2R14		SAME AS A2A1A1R32	5-29
A2A1A3		ISOLATION AMPLIFIER, COMPONENT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666231-338	5-30
A2A1A3C1-C6		NOT USED	
A2A1A3C7		SAME AS A2A1A1C12	5-30
A2A1A3C8-C9		CAPACITOR, FIXED, METALIZED PAPER DIELECTRIC, 0.1 UF PORM 20 PCT, 200 WVDC, MFR 02777, P/N T2900-4	5-30
A2A1A3C10-C17		NOT USED	
A2A1A3C18		SAME AS A2A1A1C12	5-30
A2A1A3C19-C20		SAME AS A2A1A3C8-C9	5-30
A2A1A3Q1-Q2		TRANSISTOR, MFR 80131, P/N 2N1224	5-30
A2A1A3R1-R14		NOT USED	
A2A1A3R15		RESISTOR, MIL TYPE RC07GF102J	5-30
A2A1A3R16-R18		RESISTOR, MIL TYPE RC07GF103J	5-30
A2A1A3R19		RESISTOR, MIL TYPE RC07GF221J	5-30
A2A1A3R20		SAME AS A2A1A1R31	5-30
A2A1A3R21-R34		NOT USED	
A2A1A3R35		SAME AS A2A1A3R15	5-30
A2A1A3R36-R38		SAME AS A2A1A3R16-R18	5-30
A2A1A3R39		SAME AS A2A1A3R19	5-30
A2A1A3R40		SAME AS A2A1A1R31	5-30
A2A1A3TP1-TP2		JACK, TIP, MFR 98291, P/N SKT103PCWHITE	5-30
A2A1A3XQ1-XQ2		MOUNTING PAD, TRANSISTOR, 0.344 IN. DIA X 0.075 IN. THK, MFR 07047, P/N 10012	

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A1A4		500KC GATES, COMPONENT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666231-020	5-32
A2A1A4C1-C24		NOT USED	
A2A1A4C25		SAME AS A2A1A1C12	5-32
A2A1A4C26-C27		SAME AS A2A1A3C8-C9	5-32
A2A1A4C28		CAPACITOR, FIXED, MICA DIELECTRIC, 820 UUF PORM 5 PCT, 300 WVDC, MFR 72136, P/N DM15E821J3C0V	5-32
A2A1A4C29		CAPACITOR, MIL TYPE CM06F332G03	5-32
A2A1A4C30		SAME AS A2A1A3C8-C9	5-32
A2A1A4C31		SAME AS A2A1A4C28	5-32
A2A1A4C32		SAME AS A2A1A4C29	5-32
A2A1A4C33		CAPACITOR, FIXED, ELECTROLYTIC, 15 UF PORM 20 PCT, 20 WVDC, MFR 56289, P/N 150D156X0020R2	5-32
A2A1A4C34		CAPACITOR, FIXED, MICA DIELECTRIC, 3600 UUF PORM 2 PCT, 500 WVDC, MFR 72136, P/N DM20E362G500V	5-32
A2A1A4C35		CAPACITOR, FIXED, MICA DIELECTRIC, 3900 UUF PORM 2 PCT, 500 WVDC, MFR 72136, P/N DM20E392G500V	5-32
A2A1A4C36		SAME AS A2A1A4C34	5-32
A2A1A4C37		CAPACITOR, FIXED, ELECTROLYTIC, 1 UF PORM 20 PCT, 35 WVDC, MFR 56289, P/N 150D105X0035A2	5-32
A2A1A4C38		SAME AS A2A1A4C33	5-32
A2A1A4C39-C40		SAME AS A2A1A4C37	5-32
A2A1A4C41		SAME AS A2A1A3C8-C9	5-32
A2A1A4C42		SAME AS A2A1A1C12	5-32
A2A1A4C43		CAPACITOR, FIXED, ELECTROLYTIC, 2.2 UF PORM 20 PCT, 20 WVDC, MFR 56289, P/N 150D225X0020A2	5-32
A2A1A4C44		SAME AS A2A1A3C8-C9	5-32
A2A1A4C45		SAME AS A2A1A1C12	5-32
A2A1A4C46-C47		SAME AS A2A1A3C8-C9	5-32
A2A1A4C48-C49		SAME AS A2A1A1C12	5-32
A2A1A4C50-C51		SAME AS A2A1A3C8-C9	5-32
A2A1A4C52		SAME AS A2A1A1C12	5-32
A2A1A4CR1-CR10		NOT USED	
A2A1A4CR11-CR12		SEMICONDUCTOR DEVICE, DIODE, MIL TYPE 1N270	5-29
A2A1A4CR13		SEMICONDUCTOR DEVICE, DIODE, MFR 80131, P/N 1N3063	5-32
A2A1A4CR14-CR21		SAME AS A2A1A4CR11-CR12	5-32
A2A1A4CR22-CR99		NOT USED	
A2A1A4CR100		SAME AS A2A1A4CR11-CR12	5-32
A2A1A4Q1-Q5		NOT USED	

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A1A4Q6-Q7		TRANSISTOR, MFR 80131, P/N 2N1225	5-32
A2A1A4Q8		TRANSISTOR, MFR 80131, P/N 2N652	5-32
A2A1A4R1-R52		NOT USED	
A2A1A4R53		SAME AS A2A1A3R15	5-32
A2A1A4R54		RESISTOR, MIL TYPE RC07GF752J	5-32
A2A1A4R55-R57		SAME AS A2A1A3R15	5-32
A2A1A4R58		RESISTOR, MIL TYPE RC07GF203J	5-32
A2A1A4R59		RESISTOR, MIL TYPE RC07GF391J	5-32
A2A1A4R60		SAME AS A2A1A3R15	5-32
A2A1A4R61		SAME AS A2A1A4R58	5-32
A2A1A4R62		SAME AS A2A1A4R59	5-32
A2A1A4R63		RESISTOR, MIL TYPE RC07GF302J	5-32
A2A1A4R64		RESISTOR, MIL TYPE RC07GF242J	5-32
A2A1A4R65		SAME AS A2A1A4R63	5-32
A2A1A4R66		RESISTOR, MIL TYPE RC07GF273J	5-32
A2A1A4R67-R68		SAME AS A2A1A4R58	5-32
A2A1A4R69		SAME AS A2A1A3R16-R18	5-32
A2A1A4R70		RESISTOR, MIL TYPE RC07GF151J	5-32
A2A1A4R71		SAME AS A2A1A1R32	5-32
A2A1A4R72		RESISTOR, MIL TYPE RC07GF911J	5-32
A2A1A4R73		RESISTOR, MIL TYPE RC07GF472J	5-32
A2A1A4R74-R76		SAME AS A2A1A3R16-R18	5-32
A2A1A4R77		RESISTOR, MIL TYPE RC07GF222J	5-32
A2A1A4R78		SAME AS A2A1A3R16-R18	5-32
A2A1A4R79		RESISTOR, MIL TYPE RC07GF513J	5-32
A2A1A4R80		SAME AS A2A1A4R77	5-32
A2A1A4R81		SAME AS A2A1A3R16-R18	5-32
A2A1A4R82		SAME AS A2A1A4R79	5-32
A2A1A4R83-R84		SAME AS A2A1A3R16-R18	5-32
A2A1A4R85		SAME AS A2A1A1R32	5-32
A2A1A4R86		RESISTOR, MIL TYPE RC07GF822J	5-32
A2A1A4R87		SAME AS A2A1A3R16-R18	5-32
A2A1A4R88		RESISTOR, MIL TYPE RC07GF392J	5-32
A2A1A4R89		SAME AS A2A1A1R26	5-32
A2A1A4R90		SAME AS A2A1A1R32	5-32
A2A1A4R91		RESISTOR, MIL TYPE RC07GF751J	5-32

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A1A4R92		SAME AS A2A1A4R72	5-32
A2A1A4R93		RESISTOR, MIL TYPE RC07GF432J	5-32
A2A1A4R94		SAME AS A2A1A3R16-R18	5-32
A2A1A4R95		RESISTOR, MIL TYPE RC07GF201J	5-32
A2A1A4R96		SAME AS A2A1A4R79	5-32
A2A1A4R97		SAME AS A2A1A3R16-R18	5-32
A2A1A4R98		SAME AS A2A1A1R32	5-32
A2A1A4R99		SAME AS A2A1A4R73	5-32
A2A1A4R100		SAME AS A2A1A3R15	5-32
A2A1A4R101		RESISTOR, VARIABLE, 10K OHMS PORM 10 PCT, 4/5W, MFR 80294, P/N 236L1-103	5-32
A2A1A4R102		SAME AS A2A1A4R54	5-32
A2A1A4R103-R104		RESISTOR, MIL TYPE RC07GF272J	5-32
A2A1A4R105		SAME AS A2A1A4R93	5-32
A2A1A4R106		SAME AS A2A1A3R15	5-32
A2A1A4R107		SAME AS A2A1A4R93	5-32
A2A1A4R108		SAME AS A2A1A1R32	5-32
A2A1A4R109		SAME AS A2A1A3R16-R18	5-32
A2A1A4R110		SAME AS A2A1A4R79	5-32
A2A1A4R111		SAME AS A2A1A3R16-R18	5-32
A2A1A4R112		SAME AS A2A1A4R95	5-32
A2A1A4R113		SAME AS A2A1A1R32	5-32
A2A1A4R114		RESISTOR, MIL TYPE RC07GF362J	5-32
A2A1A4R115		SAME AS A2A1A1R21	5-32
A2A1A4RT1		RESISTOR, THERMAL, 10K OHMS PORM 10 PCT, MFR 02606, P/N QB41J1	5-32
A2A1A4T1-T2		NOT USED	
A2A1A4T3-T4		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-408	5-32
A2A1A4T5		TRANSFORMER, RADIO FREQUENCY, MFR 58189, P/N 809000-433	5-32
A2A1A4XQ6-XQ7		MOUNTING PAD, TRANSISTOR, 0.344 IN. DIA X 0.075 IN. THK, MFR 07047, P/N 10027	
A2A1A4XQ8		SAME AS A2A1A3XQ1-XQ2	
A2A2		AUDIO ASSEMBLY, TRANSMITTER, MFR 58189, P/N 666230-043	5-33
A2A2MP1-MP2		SCREW, EXTERNALLY RELIEVED BODY, MFR 58189, P/N 666163-233	5-33
A2A2P1		CONNECTOR, RECEPTACLE, ELECTRICAL, 2.088 IN. LG X 0.494 IN. W X 0.663 IN. H, MFR 91146, P/N DBM25PC31F115	5-33
A2A2A1		AMPLIFIER, AUDIO, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666231-015	5-34
A2A2A1C1-C4		CAPACITOR, FIXED, ELECTROLYTIC, 15 UF PORM 20 PCT, 20 WVDC, MFR 56289, P/N 150D156X0020R2	5-34

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A2A1C5		CAPACITOR, FIXED, ELECTROLYTIC, 68 UF PCRM 20 PCT, 20 WVDC, MFR 56289, P/N 150D686X0020R2	5-34
A2A2A1C6-C9		SAME AS A2A2A1C1-C4	5-34
A2A2A1C10		CAPACITOR, FIXED, ELECTROLYTIC, 120 UF PORM 10 PCT, 20 WVDC, MFR 01295, P/N SCM127HP020A2	5-34
A2A2A1C11		SAME AS A2A2A1C1-C4	5-34
A2A2A1CR1		SEMICONDUCTOR DEVICE, DIODE, MFR 80131, P/N 1N816	5-34
A2A2A1Q1		TRANSISTOR, MFR 80131, P/N 2N652	5-34
A2A2A1Q2		TRANSISTOR, MFR 80131, P/N 2N338	5-34
A2A2A1Q3-Q5		SAME AS A2A2A1Q1	5-34
A2A2A1R1		RESISTOR, MIL TYPE RC07GF561J	5-34
A2A2A1R2		RESISTOR, MIL TYPE RC07GF103J	5-34
A2A2A1R3		RESISTOR, MIL TYPE RC07GF271J	5-34
A2A2A1R4		RESISTOR, MIL TYPE RC07GF392J	5-34
A2A2A1R5		RESISTOR, MIL TYPE RC07GF273J	5-34
A2A2A1R6-R7		RESISTOR, MIL TYPE RC07GF512J	5-34
A2A2A1R8		RESISTOR, MIL TYPE RC07GF472J	5-34
A2A2A1R9		RESISTOR, MIL TYPE RC07GF183J	5-34
A2A2A1R10		RESISTOR, MIL TYPE RC07GF272J	5-34
A2A2A1R11		RESISTOR, VARIABLE, 2K OHMS PORM 10 PCT, 4/5W, MFR 80294, P/N 236P1-202	5-34
A2A2A1R12		SAME AS A2A2A1R1	5-34
A2A2A1R13		RESISTOR, MIL TYPE RC07GF682J	5-34
A2A2A1R14		RESISTOR, MIL TYPE RC07GF203J	5-34
A2A2A1R15		RESISTOR, MIL TYPE RC07GF134J	5-34
A2A2A1R16		RESISTOR, MIL TYPE RC07GF221J	5-34
A2A2A1R17		RESISTOR, MIL TYPE RC07GF303J	5-34
A2A2A1R18		SAME AS A2A2A1R4	5-34
A2A2A1R19		RESISTOR, MIL TYPE RC07GF222J	5-34
A2A2A1R20		RESISTOR, MIL TYPE RC07GF101J	5-34
A2A2A1R21		SAME AS A2A2A1R13	5-34
A2A2A1R22		SAME AS A2A2A1R20	5-34
A2A2A1R23		RESISTOR, MIL TYPE RC07GF302J	5-34
A2A2A1RV1-RV2		RESISTOR, VOLTAGE SENSITIVE, 125K OHMS AT 0.3 VDC, 12.5K PORM 10 PCT AT 3.0 VDC, MFR 10646, P/N 694BNR1252K	5-34
A2A2A1T1		TRANSFORMER, AUDIO FREQUENCY, 0.796 IN. LG X 0.796 IN. W X 1.062 IN. H, MFR 43543, P/N 50498	5-34
A2A2A1T2		TRANSFORMER, AUDIO FREQUENCY, 0.875 IN. LG X 0.781 IN. W X 0.531 IN. H, MFR 00348, P/N M4162	5-34

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A2A1TP1-TP2		JACK, TIP, MFR 98291, P/N SKT103PCWHITE	5-34
A2A2A1XQ1-XQ5		MOUNTING PAD, TRANSISTOR, 0.344 IN. DIA X 0.075 IN. THK, MFR 07047, P/N 10012	
A2A3		AUDIO ASSEMBLY, TRANSMITTER, MFR 58189, P/N 666230-043	5-33
A2A3MP1-MP2		SCREW, EXTERNALLY RELIEVED BODY, MFR 58189, P/N 666163-233	5-33
A2A3P1		CONNECTOR, RECEPTACLE, ELECTRICAL, 2.088 IN. LG X 0.494 IN. W X 0.663 IN. H, MFR 91146, P/N DBM25PC31F115	5-33
A2A3A1		AMPLIFIER, AUDIO, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666231-015	5-34
A2A3A1C1-C4		CAPACITOR, FIXED, ELECTROLYTIC, 15 UF PORM 20 PCT, 20 WVDC, MFR 56289, P/N 150D156X0020R2	5-34
A2A3A1C5		CAPACITOR, FIXED, ELECTROLYTIC, 68 UF PORM 20 PCT, 20 WVDC, MFR 56289, P/N 150D686X0020R2	5-34
A2A3A1C6-C9		SAME AS A2A3A1C1-C4	5-34
A2A3A1C10		CAPACITOR, FIXED, ELECTROLYTIC, 120 UF PORM 10 PCT, 20 WVDC, MFR 01295, P/N SCM127HP020A2	5-34
A2A3A1C11		SAME AS A2A3A1C1-C4	5-34
A2A3A1CR1		SEMICONDUCTOR DEVICE, DIODE, MFR 80131, P/N 1N816	5-34
A2A3A1Q1		TRANSISTOR, MFR 80131, P/N 2N652	5-34
A2A3A1Q2		TRANSISTOR, MFR 80131, P/N 2N338	5-34
A2A3A1Q3-Q5		SAME AS A2A3A1Q1	5-34
A2A3A1R1		RESISTOR, MIL TYPE RC07GF561J	5-34
A2A3A1R2		RESISTOR, MIL TYPE RC07GF103J	5-34
A2A3A1R3		RESISTOR, MIL TYPE RC07GF271J	5-34
A2A3A1R4		RESISTOR, MIL TYPE RC07GF392J	5-34
A2A3A1R5		RESISTOR, MIL TYPE RC07GF273J	5-34
A2A3A1R6-R7		RESISTOR, MIL TYPE RC07GF512J	5-34
A2A3A1R8		RESISTOR, MIL TYPE RC07GF472J	5-34
A2A3A1R9		RESISTOR, MIL TYPE RC07GF183J	5-34
A2A3A1R10		RESISTOR, MIL TYPE RC07GF272J	5-34
A2A3A1R11		RESISTOR, VARIABLE, 2K OHMS PORM 10 PCT, 4/5W, MFR 80294, P/N 236P1-202	5-34
A2A3A1R12		SAME AS A2A3A1R1	5-34
A2A3A1R13		RESISTOR, MIL TYPE RC07GF682J	5-34
A2A3A1R14		RESISTOR, MIL TYPE RC07GF203J	5-34
A2A3A1R15		RESISTOR, MIL TYPE RC07GF134J	5-34
A2A3A1R16		RESISTOR, MIL TYPE RC07GF221J	5-34
A2A3A1R17		RESISTOR, MIL TYPE RC07GF303J	5-34
A2A3A1R18		SAME AS A2A3A1R4	5-34
A2A3A1R19		RESISTOR, MIL TYPE RC07GF222J	5-34

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A3A1R20		RESISTOR, MIL TYPE RC07GF101J	5-34
A2A3A1R21		SAME AS A2A3A1R13	5-34
A2A3A1R22		SAME AS A2A3A1R20	5-34
A2A3A1R23		RESISTOR, MIL TYPE RC07GF302J	5-34
A2A3A1RV1-RV2		RESISTOR, VOLTAGE SENSITIVE, 125K OHMS AT 0.3 VDC, 12.5K PORM 10 PCT AT 3.0 VDC, MFR 10646, P/N 694BNR1252K	5-34
A2A3A1T1		TRANSFORMER, AUDIO FREQUENCY, 0.796 IN. LG X 0.796 IN. W X 1.062 IN. H, MFR 43543, P/N 50498	5-34
A2A3A1T2		TRANSFORMER, AUDIO FREQUENCY, 0.875 IN. LG X 0.781 IN. W X 0.531 IN. H, MFR 00348, P/N M4162	5-34
A2A3A1TP1-TP2		JACK, TIP, MFR 98291, P/N SKT103PCWHITE	5-34
A2A3A1XQ1-XQ5		MOUNTING PAD, TRANSISTOR, 0.344 IN. DIA X 0.075 IN. THK, MFR 07047, P/N 10012	5-34
A2A4		AMPLIFIER, RADIO FREQUENCY, MFR 58189, P/N 666230-019	
A2A4B1		MOTOR, DIRECT CURRENT, CONTINUOUS DUTY, 26 VDC, MFR 05106, P/N 43A333	5-38
A2A4C1-C2		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 0.01 UF, PORM 20 PCT, 75 WVDC, MFR 86335, P/N SSM01-88	5-39
A2A4C3		CAPACITOR, MIL TYPE CK63AW103M	5-39
A2A4C4		SAME AS A2A4C1-C2	5-39
A2A4C5		CAPACITOR, FIXED, MICA DIELECTRIC, 330 UUF PORM 5 PCT, 500 WVDC, MFR 72136, P/N DM15F331J500V	5-39
A2A4C6		SAME AS A2A4C1-C2	5-39
A2A4C7		SAME AS A2A4C3	5-39
A2A4C8		CAPACITOR, FIXED, MICA DIELECTRIC, 356 UUF PORM 1/2 PCT, 500 WVDC, MFR 72136, P/N DM15F3560D500V	5-39
A2A4C9		CAPACITOR, FIXED, MICA DIELECTRIC, 775 UUF PORM 1/2 PCT, 300 WVDC, MFR 72136, P/N DM15F775OD300V	5-39
A2A4C10		SAME AS A2A4C1-C2	5-39
A2A4C11		SAME AS A2A4C8	5-39
A2A4C12		SAME AS A2A4C9	5-39
A2A4C13		SAME AS A2A4C8	5-39
A2A4C14		SAME AS A2A4C9	5-39
A2A4C15-C18		SAME AS A2A4C1-C2	5-39
A2A4C19		CAPACITOR, FIXED, MICA DIELECTRIC, 369 UUF PORM 1/2 PCT, 500 WVDC, MFR 72136, P/N DM15F369OD500V	5-39
A2A4C20		CAPACITOR, FIXED, MICA DIELECTRIC, 784 UUF PORM 1/2 PCT, 300 WVDC, MFR 72136, P/N DM15F784OD300V	5-39
2A2A4FL1-FL3		FERRITE BEAD, 0.10 IN. ID, 0.20 IN. OD X 0.250 IN. LG, MFR 72656, P/N F754	
A2A4K1		RELAY, ARMATURE, 3 AMPS AT 28VDC, 1.320 IN. LG X 0.375 IN. W X 1.085 IN. H, MFR 02289, P/N 2F2426	5-35
A2A4MP1		GEAR ASSEMBLY, TURRET DRIVE, MFR 58189, P/N 666230-250	5-35

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A4MP2-MP3		SHIELD, ELECTRON TUBE, MFR 98978, P/N TR5-5020-21B	5-37
A2A4MP4-MP5		GEAR, SPUR, 170 TEETH, 96 DIAMETRAL PITCH, 20 DEGREE PRESSURE ANGLE, MFR 58189, P/N 666230-271	5-38
A2A4MP6		SHAFT, CONTROL KNOB, MFR 58189, P/N 666230-270	5-38
A2A4MP7		BEARING, MODIFIED, 5.500 IN. DIA X 0.250 IN. THK, MFR 58189, P/N 666162-739	5-38
A2A4MP8-MP9		PLATE, STATOR, MFR 58189, P/N 666230-615	5-39
A2A4MP10-MP11		PLATE, STATOR, MFR 58189, P/N 666230-614	5-39
A2A4MP12		PLATE, STATOR, MFR 58189, P/N 666230-616	5-39
A2A4MP13-MP14		PLATE, STATOR, MFR 58189, P/N 666162-666	5-39
A2A4MP15		SAME AS A2A4MP10-MP11	5-39
A2A4MP16		PLATE, STATOR, MFR 58189, P/N 666162-673	5-39
A2A4MP17		PLATE, STATOR, MFR 58189, P/N 666162-665	5-39
A2A4MP18		PLATE, STATOR, MFR 58189, P/N 666162-664	5-39
A2A4MP19		SAME AS A2A4MP8-MP9	5-39
A2A4MP20		PLATE, STATOR, MFR 58189, P/N 666230-617	5-39
A2A4MP21		COUPLING ASSEMBLY, MFR 58189, P/N 666230-240	5-38
A2A4MP22		GEAR, SPUR, MFR 58189, P/N 666162-728	5-38
A2A4MP23-MP26		SCREW, EXTERNALLY RELIEVED BODY, MFR 58189, P/N 666163-233	5-37
A2A4MP27-MP30		CONNECTOR, PLUG, ELECTRICAL, MFR 91146, P/N DM53741-5000	5-37
A2A4MP31		CONNECTOR, PLUG, ELECTRICAL, MFR 91146, P/N DM53740-5008	5-37
A2A4P1		CONNECTOR, RECEPTACLE, ELECTRICAL, 1.541 IN. LG X 0.494 IN. W X 0.656 IN. H, MFR 91146, P/N DAM15PC31	5-38
A2A4P2		CONNECTOR, RECEPTACLE, ELECTRICAL, 2.729 IN. LG X 0.494 IN. W X 0.660 IN. H, MFR 91146, P/N DCM17W5PC31F115	5-37
A2A4R1		RESISTOR, MIL TYPE RC07GF473J	5-39
A2A4R2		RESISTOR, MIL TYPE RC07GF510J	5-39
A2A4R3		RESISTOR, MIL TYPE RC07GF622J	5-39
A2A4V1		ELECTRON TUBE, MIL TYPE 6BZ6	5-37
A2A4V2		ELECTRON TUBE, MIL TYPE 6AN5WA	5-37
A2A4XV1-XV2		SOCKET, MIL TYPE TS102C01	5-37
A2A4A1		AMPLIFIER SUBASSEMBLY, RADIO FREQUENCY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-521	5-40
A2A4A1C1		SAME AS A2A4C1-C2	5-40
A2A4A1C2-C3		CAPACITOR, FIXED, ELECTROLYTIC, 15 UF PCRM 20 PCT, 20 WVDC, MFR 56289, P/N 150D156X0020R2	5-40
A2A4A1R1		RESISTOR, MIL TYPE RC07GF623J	5-40
A2A4A1R2		RESISTOR, MIL TYPE RC07GF753J	5-40
A2A4A1R3		RESISTOR, MIL TYPE RC07GF151J	5-40

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A4A1R4		RESISTOR, MIL TYPE RC20GF621J	5-40
A2A4A1R5		RESISTOR, MIL TYPE RC20GF181J	5-40
A2A4A1R6		RESISTOR, MIL TYPE RC20GF121J	5-40
A2A4A2		MEGACYCLE ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 66623C-286	5-41
A2A4A2C1		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 2.2 UUF PORM 5 PCT, 500 WVDC, MFR 78488, P/N GA2R2J500V	5-41
A2A4A2C2		CAPACITOR, FIXED, MICA DIELECTRIC, 126 UUF PORM 1/2 PCT, 500 WVDC, MFR 72136, P/N CM15F126CD500V	5-41
A2A4A2C3		CAPACITOR, FIXED, MICA DIELECTRIC, 132 UUF PORM 1/2 PCT, 500 WVDC, MFR 72136, P/N CM15F132CD50CV	5-41
A2A4A2C4		CAPACITOR, FIXED, MICA DIELECTRIC, 250 UUF PORM 1/2 PCT, 500 WVDC, MFR 72136, P/N CM15F251D500V	5-41
A2A4A2T1		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 12 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-264	5-41
A2A4A2T2		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 12 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-320	5-41
A2A4A2T3		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 7 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-287	5-41
A2A4A2T4		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 2 MC, 0.756 IN. LG X 0.535 IN. DIA, MFR 58189, P/N 809000-201	5-41
A2A4A3		MEGACYCLE ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 66623C-287	5-41
A2A4A3C1		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 2 UUF PORM 5 PCT, 500 WVDC, MFR 78488, P/N GA2R0J500V	5-41
A2A4A3C2		CAPACITOR, FIXED, MICA DIELECTRIC, 115 UUF PORM 1/2 PCT, 500 WVDC, MFR 72136, P/N CM15F115CD500V	5-41
A2A4A3C3		CAPACITOR, FIXED, MICA DIELECTRIC, 120 UUF PORM 1/2 PCT, 500 WVDC, MFR 72136, P/N CM15F121D500V	5-41
A2A4A3C4		CAPACITOR, FIXED, MICA DIELECTRIC, 208 UUF PORM 1/2 PCT, 500 WVDC, MFR 72136, P/N CM15F208CD500V	5-41
A2A4A3C5		CAPACITOR, FIXED, MICA DIELECTRIC, 1253 UUF PORM 1/2 PCT, 300 WVDC, MFR 72136, P/N CM20F1253CD300V	5-41
A2A4A3T1		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 13 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-265	5-41
A2A4A3T2		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 13 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-321	5-41
A2A4A3T3		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 8 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-308	5-41
A2A4A3T4		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 3 MC, 0.756 IN. LG X 0.535 IN. DIA, MFR 58189, P/N 809000-202	5-41
A2A4A4		MEGACYCLE ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 66623C-288	5-41
A2A4A4C1		SAME AS A2A4A3C1	5-41
A2A4A4C2		CAPACITOR, FIXED, MICA DIELECTRIC, 105 UUF PORM 1/2 PCT, 500 WVDC, MFR 72136, P/N CM15F105CD500V	5-41

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A4A4C3		CAPACITOR, FIXED, MICA DIELECTRIC, 111 UUF PORM 1/2 PCT, 500 WVDC, MFR 72136, P/N DM15F111OD500V	5-41
A2A4A4C4		CAPACITOR, FIXED, MICA DIELECTRIC, 179 UUF PORM 1/2 PCT, 500 WVDC, MFR 72136, P/N DM15F179OD500V	5-41
A2A4A4C5		CAPACITOR, FIXED, MICA DIELECTRIC, 629 UUF PORM 1/2 PCT, 300 WVDC, MFR 72136, P/N DM15F629OD300V	5-41
A2A4A4T1		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 14 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-266	5-41
A2A4A4T2		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 14 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-322	5-41
A2A4A4T3		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 9 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-288	5-41
A2A4A4T4		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 4 MC, 0.756 IN. LG X 0.535 IN. DIA, MFR 58189, P/N 809000-203	5-41
A2A4A5		MEGACYCLE ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-289	5-41
A2A4A5C1		SAME AS A2A4A3C1	5-41
A2A4A5C2		CAPACITOR, FIXED, MICA DIELECTRIC, 97 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N DM15F970F500V	5-41
A2A4A5C3		CAPACITOR, FIXED, MICA DIELECTRIC, 103 UUF PORM 1/2 PCT, 500 WVDC, MFR 72136, P/N DM15F1030D500V	5-41
A2A4A5C4		CAPACITOR, FIXED, MICA DIELECTRIC, 157 UUF PORM 1/2 PCT, 500 WVDC, MFR 72136, P/N DM15F1570D500V	5-41
A2A4A5C5		CAPACITOR, FIXED, MICA DIELECTRIC, 422 UUF PORM 1/2 PCT, 300 WVDC, MFR 72136, P/N DM15F4220D300V	5-41
A2A4A5T1		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 15 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-267	5-41
A2A4A5T2		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 15 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-323	5-41
A2A4A5T3		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 10 MC, 0.620 IN. LG X 0.442 IN. DIA, MFR 58189, P/N 809000-289	5-41
A2A4A5T4		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 5 MC, 0.756 IN. LG X 0.535 IN. DIA, MFR 58189, P/N 809000-204	5-41
A2A4A6		MEGACYCLE ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-290	5-41
A2A4A6C1		SAME AS A2A4A3C1	5-41
A2A4A6C2		CAPACITOR, FIXED, MICA DIELECTRIC, 91 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N DM15E910F500V	5-41
A2A4A6C3		CAPACITOR, FIXED, MICA DIELECTRIC, 96 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N DM15F960F500V	5-41
A2A4A6C4		CAPACITOR, FIXED, MICA DIELECTRIC, 140 UUF PORM 1/2 PCT, 500 WVDC, MFR 72136, P/N DM15F141D500V	5-41
A2A4A6C5		CAPACITOR, FIXED, MICA DIELECTRIC, 318 UUF PORM 1/2 PCT, 500 WVDC, MFR 72136, P/N DM15F318OD500V	5-41
A2A4A6T1		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 16 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-268	5-41
A2A4A6T2		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 16 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-324	5-41

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A4A6T3		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 11 MC, 0.620 IN. LG X 0.442 IN. DIA, MFR 58189, P/N 809000-290	5-41
A2A4A6T4		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 6 MC, 0.756 IN. LG X 0.535 IN. DIA, MFR 58189, P/N 809000-205	5-41
A2A4A7		MEGACYCLE ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-291	5-41
A2A4A7C1		SAME AS A2A4A3C1	5-41
A2A4A7C2		CAPACITOR, FIXED, MICA DIELECTRIC, 85 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N DM15F850F500V	5-41
A2A4A7C3		CAPACITOR, FIXED, MICA DIELECTRIC, 90 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N DM15F900F500V	5-41
A2A4A7C4		SAME AS A2A4A2C2	5-41
A2A4A7C5		CAPACITOR, FIXED, MICA DIELECTRIC, 256 UUF PORM 1/2 PCT, 500 WVDC, MFR 72136, P/N DM15F2560D500V	5-41
A2A4A7T1		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 17 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-269	5-41
A2A4A7T2		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 17 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-325	5-41
A2A4A7T3		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 12 MC, 0.620 IN. LG X 0.442 IN. DIA, MFR 58189, P/N 809000-291	5-41
A2A4A7T4		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 7 MC, 0.756 IN. LG X 0.535 IN. DIA, MFR 58189, P/N 809000-206	5-41
A2A4A8		MEGACYCLE ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-292	5-41
A2A4A8C1		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 1.8 UUF PORM 5 PCT, 500 WVDC, MFR 78488, P/N GA1R8J500V	5-41
A2A4A8C2		CAPACITOR, FIXED, MICA DIELECTRIC, 80 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N DM15E800F500V	5-41
A2A4A8C3		SAME AS A2A4A7C2	5-41
A2A4A8C4		SAME AS A2A4A3C2	5-41
A2A4A8C5		CAPACITOR, FIXED, MICA DIELECTRIC, 214 UUF PORM 1/2 PCT, 500 WVDC, MFR 72136, P/N DM15F2140D500V	5-41
A2A4A8T1		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 18 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-270	5-41
A2A4A8T2		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 18 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-326	5-41
A2A4A8T3		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 13 MC, 0.620 IN. LG X 0.442 IN. DIA, MFR 58189, P/N 809000-292	5-41
A2A4A8T4		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 8 MC, 0.756 IN. LG X 0.535 IN. DIA, MFR 58189, P/N 809000-207	5-41
A2A4A9		MEGACYCLE ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-293	5-41
A2A4A9C1		SAME AS A2A4A8C1	5-41
A2A4A9C2		CAPACITOR, FIXED, MICA DIELECTRIC, 75 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N DM15E750F500V	5-41
A2A4A9C3		SAME AS A2A4A8C2	5-41

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A4A9C4		SAME AS A2A4A4C2	5-41
A2A4A9C5		CAPACITOR, FIXED, MICA DIELECTRIC, 185 UUF PORM 1/2 PCT, 500 WVDC, MFR 72136, P/N DM15F185OD500V	5-41
A2A4A9T1		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 19 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-271	5-41
A2A4A9T2		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 19 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-327	5-41
A2A4A9T3		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 14 MC, 0.620 IN. LG X 0.442 IN. DIA, MFR 58189, P/N 809000-293	5-41
A2A4A9T4		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 9 MC, 0.756 IN. LG X 0.535 IN. DIA, MFR 58189, P/N 809000-208	5-41
A2A4A9Y1		CRYSTAL UNIT, QUARTZ, 21.000 MC, 0.418 IN. LG X 0.166 IN. W X 0.515 IN. H EXCLUDING LEADS, MFR 58189, P/N 666162-598	5-41
A2A4A10		MEGACYCLE ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-294	5-41
A2A4A10C1		SAME AS A2A4A8C1	5-41
A2A4A10C2		CAPACITOR, FIXED, MICA DIELECTRIC, 71 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N DM15E710F500V	5-41
A2A4A10C3		CAPACITOR, FIXED, MICA DIELECTRIC, 76 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N DM15E760F500V	5-41
A2A4A10C4		SAME AS A2A4A5C2	5-41
A2A4A10C5		CAPACITOR, FIXED, MICA DIELECTRIC, 163 UUF PORM 1/2 PCT, 500 WVDC, MFR 72136, P/N DM15F1630D500V	5-41
A2A4A10T1		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 20 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-272	5-41
A2A4A10T2		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 20 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-328	5-41
A2A4A10T3		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 15 MC, 0.620 IN. LG X 0.442 IN. DIA, MFR 58189, P/N 809000-294	5-41
A2A4A10T4		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 10 MC, 0.756 IN. LG X 0.535 IN. DIA, MFR 58189, P/N 809000-209	5-41
A2A4A10Y1		CRYSTAL UNIT, QUARTZ, 19.000 MC, 0.418 IN. LG X 0.166 IN. W X 0.515 IN. H EXCLUDING LEADS, MFR 58189, P/N 666162-597	5-41
A2A4A11		MEGACYCLE ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-295	5-41
A2A4A11C1		SAME AS A2A4A3C1	5-41
A2A4A11C2		CAPACITOR, FIXED, MICA DIELECTRIC, 67 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N DM15E670F500V	5-41
A2A4A11C3		CAPACITOR, FIXED, MICA DIELECTRIC, 73 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N DM15E730F500V	5-41
A2A4A11C4		SAME AS A2A4A6C2	5-41
A2A4A11C5		CAPACITOR, FIXED, MICA DIELECTRIC, 146 UUF PORM 1/2 PCT, 500 WVDC, MFR 72136, P/N DM15F1460D500V	5-41
A2A4A11T1		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 21 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-273	5-41
A2A4A11T2		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 21 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-329	5-41

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A4A11T3		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 16 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-295	5-41
A2A4A11T4		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 11 MC, 0.756 IN. LG X 0.535 IN. DIA, MFR 58189, P/N 809000-210	5-41
A2A4A12		MEGACYCLE ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-296	5-41
A2A4A12C1		SAME AS A2A4A3C1	5-41
A2A4A12C2		CAPACITOR, FIXED, MICA DIELECTRIC, 64 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N DM15E640F500V	5-41
A2A4A12C3		CAPACITOR, FIXED, MICA DIELECTRIC, 68 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N DM15E680F500V	5-41
A2A4A12C4		SAME AS A2A4A7C2	5-41
A2A4A12C5		SAME AS A2A4A2C3	5-41
A2A4A12T1		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 22 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-274	5-41
A2A4A12T2		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 22 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-330	5-41
A2A4A12T3		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 17 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-296	5-41
A2A4A12T4		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 12 MC, 0.756 IN. LG X 0.535 IN. DIA, MFR 58189, P/N 809000-211	5-41
A2A4A13		MEGACYCLE ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-297	5-41
A2A4A13C1		SAME AS A2A4A3C1	5-41
A2A4A13C2		CAPACITOR, FIXED, MICA DIELECTRIC, 61 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N DM15E610F500V	5-41
A2A4A13C3		CAPACITOR, FIXED, MICA DIELECTRIC, 66 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N DM15E660E500V	5-41
A2A4A13C4		SAME AS A2A4A8C2	5-41
A2A4A13C5		SAME AS A2A4A3C3	5-41
A2A4A13T1		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 23 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-275	5-41
A2A4A13T2		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 23 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-331	5-41
A2A4A13T3		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 18 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-297	5-41
A2A4A13T4		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 13 MC, 0.756 IN. LG X 0.535 IN. DIA, MFR 58189, P/N 809000-212	5-41
A2A4A14		MEGACYCLE ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-298	5-41
A2A4A14C1		SAME AS A2A4A3C1	5-41
A2A4A14C2		CAPACITOR, FIXED, MICA DIELECTRIC, 58 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N DM15E580F500V	5-41
A2A4A14C3		CAPACITOR, FIXED, MICA DIELECTRIC, 63 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N DM15E630F500V	5-41

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A4A14C4		SAME AS A2A4A9C2	5-41
A2A4A14C5		SAME AS A2A4A4C3	5-41
A2A4A14T1		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 24 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-276	5-41
A2A4A14T2		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 24 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-332	5-41
A2A4A14T3		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 19 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-298	5-41
A2A4A14T4		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 14 MC, 0.756 IN. LG X 0.535 IN. DIA, MFR 58189, P/N 809000-213	5-41
A2A4A15		MEGACYCLE ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-299	5-41
A2A4A15C1		SAME AS A2A4A3C1	5-41
A2A4A15C2		CAPACITOR, FIXED, MICA DIELECTRIC, 56 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N DM15E560F5C0V	5-41
A2A4A15C3		SAME AS A2A4A13C2	5-41
A2A4A15C4		SAME AS A2A4A10C2	5-41
A2A4A15C5		SAME AS A2A4A5C3	5-41
A2A4A15T1		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 25 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-277	5-41
A2A4A15T2		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 25 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-333	5-41
A2A4A15T3		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 20 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-299	5-41
A2A4A15T4		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 15 MC, 0.756 IN. LG X 0.535 IN. DIA, MFR 58189, P/N 809000-214	5-41
A2A4A16		MEGACYCLE ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-300	5-41
A2A4A16C1		SAME AS A2A4A3C1	5-41
A2A4A16C2		CAPACITOR, FIXED, MICA DIELECTRIC, 54 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N DM15E540F500V	5-41
A2A4A16C3		CAPACITOR, FIXED, MICA DIELECTRIC, 59 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N DM15E590F500V	5-41
A2A4A16C4		SAME AS A2A4A11C2	5-41
A2A4A16C5		SAME AS A2A4A6C3	5-41
A2A4A16T1		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 26 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-278	5-41
A2A4A16T2		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 26 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-334	5-41
A2A4A16T3		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 21 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-300	5-41
A2A4A16T4		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 16 MC, 0.756 IN. LG X 0.535 IN. DIA, MFR 58189, P/N 809000-215	5-41
A2A4A17		MEGACYCLE ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-301	5-41

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A4A17C1		SAME AS A2A4A3C1	5-41
A2A4A17C2		CAPACITOR, FIXED, MICA DIELECTRIC, 52 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N CM15E520F500V	5-41
A2A4A17C3		CAPACITOR, FIXED, MICA DIELECTRIC, 57 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N CM15E570F500V	5-41
A2A4A17C4		SAME AS A2A4A12C2	5-41
A2A4A17C5		SAME AS A2A4A7C3	5-41
A2A4A17T1		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 27 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-279	5-41
A2A4A17T2		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 27 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-335	5-41
A2A4A17T3		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 22 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-301	5-41
A2A4A17T4		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 17 MC, 0.756 IN. LG X 0.535 IN. DIA, MFR 58189, P/N 809000-216	5-41
A2A4A18		MEGACYCLE ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-302	5-41
A2A4A18C1		SAME AS A2A4A3C1	5-41
A2A4A18C2		CAPACITOR, FIXED, MICA DIELECTRIC, 50 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N CM15E500F500V	5-41
A2A4A18C3		CAPACITOR, FIXED, MICA DIELECTRIC, 55 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N CM15E550F500V	5-41
A2A4A18C4		SAME AS A2A4A13C2	5-41
A2A4A18C5		SAME AS A2A4A7C2	5-41
A2A4A18T1		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 28 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-280	5-41
A2A4A18T2		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 28 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-336	5-41
A2A4A18T3		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 23 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-302	5-41
A2A4A18T4		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 18 MC, 0.756 IN. LG X 0.535 IN. DIA, MFR 58189, P/N 809000-217	5-41
A2A4A19		MEGACYCLE ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-303	5-41
A2A4A19C1		SAME AS A2A4A3C1	5-41
A2A4A19C2		CAPACITOR, FIXED, MICA DIELECTRIC, 48 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N CM15E480F500V	5-41
A2A4A19C3		CAPACITOR, FIXED, MICA DIELECTRIC, 53 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N CM15E530F500V	5-41
A2A4A19C4		SAME AS A2A4A14C2	5-41
A2A4A19C5		SAME AS A2A4A8C2	5-41
A2A4A19T1		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 29 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-281	5-41
A2A4A19T2		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 29 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-337	5-41

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A4A19T3		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 24 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-309	5-41
A2A4A19T4		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 19 MC, 0.756 IN. LG X 0.535 IN. DIA, MFR 58189, P/N 809000-218	5-41
A2A4A19Y1		CRYSTAL UNIT, QUARTZ, 28.500 MC, 0.418 IN. LG X 0.166 IN. W X 0.515 IN. H EXCLUDING LEADS, MFR 58189, P/N 666162-599	5-41
A2A4A20		MEGACYCLE ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-304	5-41
A2A4A20C1		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 9.1 UUF PORM 5 PCT, 500 WVDC, MFR 78488, P/N GA9R1J500V	5-41
A2A4A20C2-C3		NOT USED	5-41
A2A4A20C4		SAME AS A2A4A15C2	5-41
A2A4A20C5		SAME AS A2A4A10C3	5-41
A2A4A20T1		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 2 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-254	5-41
A2A4A20T2		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 2 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-310	5-41
A2A4A20T3		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 25 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-303	5-41
A2A4A20T4		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 20 MC, 0.756 IN. LG X 0.535 IN. DIA, MFR 58189, P/N 809000-219	5-41
A2A4A21		MEGACYCLE ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-305	5-41
A2A4A21C1		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 6.2 UUF PORM 5 PCT, 500 WVDC, MFR 78488, P/N GA6R2J500V	5-41
A2A4A21C2		CAPACITOR, FIXED, MICA DIELECTRIC, 1247 UUF PORM 1/2 PCT, 300 WVDC, MFR 72136, P/N DM20F12470D300V	5-41
A2A4A21C3		SAME AS A2A4A3C5	5-41
A2A4A21C4		SAME AS A2A4A16C2	5-41
A2A4A21C5		SAME AS A2A4A11C3	5-41
A2A4A21T1		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 3 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-255	5-41
A2A4A21T2		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 3 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-311	5-41
A2A4A21T3		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 26 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-304	5-41
A2A4A21T4		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 21 MC, 0.756 IN. LG X 0.535 IN. DIA, MFR 58189, P/N 809000-220	5-41
A2A4A22		MEGACYCLE ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-306	5-41
A2A4A22C1		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 5.6 UUF PORM 5 PCT, 500 WVDC, MFR 78488, P/N GA5R6J500V	5-41
A2A4A22C2		CAPACITOR, FIXED, MICA DIELECTRIC, 623 UUF PORM 1/2 PCT, 300 WVDC, MFR 72136, P/N DM15F6230D300V	5-41
A2A4A22C3		SAME AS A2A4A4C5	5-41

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A4A22C4		SAME AS A2A4A17C2	5-41
A2A4A22C5		SAME AS A2A4A12C3	5-41
A2A4A22T1		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 4 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-256	5-41
A2A4A22T2		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 4 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-312	5-41
A2A4A22T3		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 27 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-305	5-41
A2A4A22T4		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 22 MC, 0.756 IN. LG X 0.535 IN. DIA, MFR 58189, P/N 809000-221	5-41
A2A4A23		MEGACYCLE ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-307	5-41
A2A4A23C1		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 5.1 UUF PORM 5 PCT, 500 WVDC, MFR 78488, P/N GA5R1J500V	5-41
A2A4A23C2		CAPACITOR, FIXED, MICA DIELECTRIC, 416 UUF PORM 1/2 PCT, 300 WVDC, MFR 72136, P/N DM15F4160D300V	5-41
A2A4A23C3		SAME AS A2A4A5C5	5-41
A2A4A23C4		SAME AS A2A4A18C2	5-41
A2A4A23C5		SAME AS A2A4A13C3	5-41
A2A4A23T1		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 5 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-257	5-41
A2A4A23T2		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 5 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-313	5-41
A2A4A23T3		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 28 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-306	5-41
A2A4A23T4		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 23 MC, 0.756 IN. LG X 0.535 IN. DIA, MFR 58189, P/N 809000-222	5-41
A2A4A24		MEGACYCLE ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-308	5-41
A2A4A24C1		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 3.9 UUF PORM 5 PCT, 500 WVDC, MFR 78488, P/N GA3R9J500V	5-41
A2A4A24C2		CAPACITOR, FIXED, MICA DIELECTRIC, 312 UUF PORM 1/2 PCT, 500 WVDC, MFR 72136, P/N DM15F3120D500V	5-41
A2A4A24C3		SAME AS A2A4A6C5	5-41
A2A4A24C4		SAME AS A2A4A19C2	5-41
A2A4A24C5		SAME AS A2A4A14C3	5-41
A2A4A24T1		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 6 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-258	5-41
A2A4A24T2		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 6 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-314	5-41
A2A4A24T3		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 29 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-307	5-41
A2A4A24T4		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 24 MC, 0.756 IN. LG X 0.535 IN. DIA, MFR 58189, P/N 809000-223	5-41
A2A4A25		MEGACYCLE ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-309	5-41

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A4A25C1		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 3.3 UUF PORM 5 PCT, 500 WVDC, MFR 78488, P/N GA3R3J500V	5-41
A2A4A25C2		SAME AS A2A4A2C4	5-41
A2A4A25C3		SAME AS A2A4A7C5	5-41
A2A4A25C4		NOT USED	
A2A4A25C5		SAME AS A2A4A13C2	5-41
A2A4A25T1		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 7 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-259	5-41
A2A4A25T2		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 7 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-315	5-41
A2A4A25T3		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 2 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-282	5-41
A2A4A25T4		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 25 MC, 0.756 IN. LG X 0.535 IN. DIA, MFR 58189, P/N 809000-224	5-41
A2A4A26		MEGACYCLE ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-310	5-41
A2A4A26C1		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 3 UUF PORM 5 PCT, 500 WVDC, MFR 78488, P/N GA3R0J500V	5-41
A2A4A26C2		SAME AS A2A4A3C4	5-41
A2A4A26C3		SAME AS A2A4A8C5	5-41
A2A4A26C4		SAME AS A2A4A21C2	5-41
A2A4A26C5		SAME AS A2A4A16C3	5-41
A2A4A26T1		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 8 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-260	5-41
A2A4A26T2		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 8 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-316	5-41
A2A4A26T3		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 3 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-283	5-41
A2A4A26T4		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 26 MC, 0.756 IN. LG X 0.535 IN. DIA, MFR 58189, P/N 809000-225	5-41
A2A4A27		MEGACYCLE ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-311	5-41
A2A4A27C1		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 2.7 UUF PORM 5 PCT, 500 WVDC, MFR 78488, P/N GA2R7J500V	5-41
A2A4A27C2		SAME AS A2A4A4C4	5-41
A2A4A27C3		SAME AS A2A4A9C5	5-41
A2A4A27C4		SAME AS A2A4A22C2	5-41
A2A4A27C5		SAME AS A2A4A17C3	5-41
A2A4A27T1		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 9 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-261	5-41
A2A4A27T2		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 9 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-317	5-41
A2A4A27T3		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 4 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-284	5-41

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A4A27T4		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 27 MC, 0.756 IN. LG X 0.535 IN. DIA, MFR 58189, P/N 809000-226	5-41
A2A4A28		MEGACYCLE ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-312	5-41
A2A4A28C1		SAME AS A2A4A27C1	5-41
A2A4A28C2		SAME AS A2A4A5C4	5-41
A2A4A28C3		SAME AS A2A4A10C5	5-41
A2A4A28C4		SAME AS A2A4A23C2	5-41
A2A4A28C5		SAME AS A2A4A18C3	5-41
A2A4A28T1		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 10 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-262	5-41
A2A4A28T2		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 10 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-318	5-41
A2A4A28T3		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 5 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-285	5-41
A2A4A28T4		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 28 MC, 0.756 IN. LG X 0.535 IN. DIA, MFR 58189, P/N 809000-227	5-41
A2A4A29		MEGACYCLE ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-313	5-41
A2A4A29C1		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 2.4 UUF PORM 5 PCT, 500 WVDC, MFR 78488, P/N GA2R4J500V	5-41
A2A4A29C2		SAME AS A2A4A6C4	5-41
A2A4A29C3		SAME AS A2A4A11C5	5-41
A2A4A29C4		SAME AS A2A4A24C2	5-41
A2A4A29C5		SAME AS A2A4A19C3	5-41
A2A4A29T1		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 11 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-263	5-41
A2A4A29T2		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 11 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-319	5-41
A2A4A29T3		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 6 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-286	5-41
A2A4A29T4		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 29 MC, 0.756 IN. LG X 0.535 IN. DIA, MFR 58189, P/N 809000-228	5-43
A2A4A30		ROTOR ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-585	5-42
A2A4A30C1		CAPACITOR, FIXED, MICA DIELECTRIC, 545 UUF PORM 1/2 PCT, 300 WVDC, MFR 72136, P/N DM15F545CD300V	5-42
A2A4A30C2		CAPACITOR, FIXED, MICA DIELECTRIC, 426 UUF PORM 1/2 PCT, 300 WVDC, MFR 72136, P/N DM15F426CD300V	5-42
A2A4A30C3		CAPACITOR, FIXED, MICA DIELECTRIC, 332 UUF PORM 1/2 PCT, 500 WVDC, MFR 72136, P/N DM15F332CD500V	5-42
A2A4A30C4		CAPACITOR, FIXED, MICA DIELECTRIC, 257 UUF PORM 1/2 PCT, 500 WVDC, MFR 72136, P/N DM15F257CD500V	5-42
A2A4A30C5		CAPACITOR, FIXED, MICA DIELECTRIC, 195 UUF PORM 1/2 PCT, 500 WVDC, MFR 72136, P/N DM15F195CD500V	5-42

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A4A30C6		CAPACITOR, FIXED, MICA DIELECTRIC, 143 UUF PORM 1/2 PCT, 500 WVDC, MFR 72136, P/N CM15F1430D50CV	5-42
A2A4A30C7		CAPACITOR, FIXED, MICA DIELECTRIC, 99 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N CM15F990F5C0V	5-42
A2A4A30C8		SAME AS A2A4A13C2	5-42
A2A4A30C9		CAPACITOR, FIXED, MICA DIELECTRIC, 29 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N CM15E290F5C0V	5-42
A2A4A30C10		CAPACITOR, FIXED, MICA DIELECTRIC, 253 UUF PORM 1/2 PCT, 500 WVDC, MFR 72136, P/N CM15F253CD50CV	5-42
A2A4A30C11		CAPACITOR, FIXED, MICA DIELECTRIC, 219 UUF PORM 1/2 PCT, 500 WVDC, MFR 72136, P/N CM15F219CD50CV	5-42
A2A4A30C12		CAPACITOR, FIXED, MICA DIELECTRIC, 190 UUF PORM 1/2 PCT, 500 WVDC, MFR 72136, P/N CM15F191D5C0V	5-42
A2A4A30C13		CAPACITOR, FIXED, MICA DIELECTRIC, 165 UUF PORM 1/2 PCT, 500 WVDC, MFR 72136, P/N CM15F165CD5CCV	5-42
A2A4A30C14		CAPACITOR, FIXED, MICA DIELECTRIC, 144 UUF PORM 1/2 PCT, 500 WVDC, MFR 72136, P/N CM15F144CD50CV	5-42
A2A4A30C15		CAPACITOR, FIXED, MICA DIELECTRIC, 125 UUF PORM 1/2 PCT, 500 WVDC, MFR 72136, P/N CM15F1250D50CV	5-42
A2A4A30C16		CAPACITOR, FIXED, MICA DIELECTRIC, 109 UUF PORM 1/2 PCT, 500 WVDC, MFR 72136, P/N CM15F109CD50CV	5-42
A2A4A30C17		CAPACITOR, FIXED, MICA DIELECTRIC, 95 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N CM15F950F5C0V	5-42
A2A4A30C18		CAPACITOR, FIXED, MICA DIELECTRIC, 83 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N CM15E830F5C0V	5-42
A2A4A30C19		CAPACITOR, FIXED, MICA DIELECTRIC, 74 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N CM15E740F5C0V	5-42
A2A4A31		ROTOR ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-588	5-43
A2A4A31C1		SAME AS A2A4A2C4	5-43
A2A4A31C2		CAPACITOR, FIXED, MICA DIELECTRIC, 215 UUF PORM 1/2 PCT, 500 WVDC, MFR 72136, P/N CM15F215CD5C0V	5-43
A2A4A31C3		CAPACITOR, FIXED, MICA DIELECTRIC, 183 UUF PORM 1/2 PCT, 500 WVDC, MFR 72136, P/N CM15F183CD50CV	5-43
A2A4A31C4		CAPACITOR, FIXED, MICA DIELECTRIC, 153 UUF PORM 1/2 PCT, 500 WVDC, MFR 72136, P/N CM15F153CD50CV	5-43
A2A4A31C5		CAPACITOR, FIXED, MICA DIELECTRIC, 124 UUF PORM 1/2 PCT, 500 WVDC, MFR 72136, P/N CM15F124CD50CV	5-43
A2A4A31C6		SAME AS A2A4A6C3	5-43
A2A4A31C7		CAPACITOR, FIXED, MICA DIELECTRIC, 70 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N CM15E700F5C0V	5-43
A2A4A31C8		CAPACITOR, FIXED, MICA DIELECTRIC, 45 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N CM15E450F5C0V	5-43
A2A4A31C9		CAPACITOR, FIXED, MICA DIELECTRIC, 22 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N CM15C220F5C0V	5-43
A2A4A32		ROTOR ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 66623C-591	5-43

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A432C1		CAPACITOR, FIXED, MICA DIELECTRIC, 260 UUF PCRM 1/2 PCT, 500 WVDC, MFR 72136, P/N CM15F261D5C0V	5-43
A2A4A32C2		CAPACITOR, FIXED, MICA DIELECTRIC, 224 UUF PCRM 1/2 PCT, 500 WVDC, MFR 72136, P/N CM15F2240D500V	5-43
A2A4A32C3		SAME AS A2A4A30C12	5-43
A2A4A32C4		CAPACITOR, FIXED, MICA DIELECTRIC, 158 UUF PCRM 1/2 PCT, 500 WVDC, MFR 72136, P/N CM15F1580D50CV	5-43
A2A4A32C5		CAPACITOR, FIXED, MICA DIELECTRIC, 128 UUF PCRM 1/2 PCT, 500 WVDC, MFR 72136, P/N CM15F1280D500V	5-43
A2A4A32C6		SAME AS A2A4A30C7	5-43
A2A4A32C7		CAPACITOR, FIXED, MICA DIELECTRIC, 72 UUF PCRM 1 PCT, 500 WVDC, MFR 72136, P/N CM15E720F5C0V	5-43
A2A4A32C8		CAPACITOR, FIXED, MICA DIELECTRIC, 47 UUF PCRM 1 PCT, 500 WVDC, MFR 72136, P/N CM15E470F5C0V	5-43
A2A4A32C9		CAPACITOR, FIXED, MICA DIELECTRIC, 23 UUF PCRM 1 PCT, 500 WVDC, MFR 72136, P/N CM15C230F5C0V	5-43
A2A4A33		ROTOR ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-595	5-42
A2A4A33C1		CAPACITOR, FIXED, MICA DIELECTRIC, 517 UUF PCRM 1/2 PCT, 300 WVDC, MFR 72136, P/N CM15F517CD3C0V	5-42
A2A4A33C2		CAPACITOR, FIXED, MICA DIELECTRIC, 405 UUF PCRM 1/2 PCT, 300 WVDC, MFR 72136, P/N CM15F4050D300V	5-42
A2A4A33C3		CAPACITOR, FIXED, MICA DIELECTRIC, 316 UUF PCRM 1/2 PCT, 500 WVDC, MFR 72136, P/N CM15F3160D500V	5-42
A2A4A33C4		CAPACITOR, FIXED, MICA DIELECTRIC, 245 UUF PCRM 1/2 PCT, 500 WVDC, MFR 72136, P/N CM15F2450D50CV	5-42
A2A4A33C5		CAPACITOR, FIXED, MICA DIELECTRIC, 186 UUF PCRM 1/2 PCT, 500 WVDC, MFR 72136, P/N CM15F1860D500V	5-42
A2A4A33C6		CAPACITOR, FIXED, MICA DIELECTRIC, 137 UUF PCRM 1/2 PCT, 500 WVDC, MFR 72136, P/N CM15F1370D500V	5-42
A2A4A33C7		SAME AS A2A4A30C17	5-42
A2A4A33C8		SAME AS A2A4A16C3	5-42
A2A4A33C9		CAPACITOR, FIXED, MICA DIELECTRIC, 28 UUF PCRM 1 PCT, 500 WVDC, MFR 72136, P/N CM15E280F500V	5-42
A2A4A33C10		SAME AS A2A4A30C4	5-42
A2A4A33C11		CAPACITOR, FIXED, MICA DIELECTRIC, 222 UUF PCRM 1/2 PCT, 500 WVDC, MFR 72136, P/N CM15F2220D500V	5-42
A2A4A33C12		CAPACITOR, FIXED, MICA DIELECTRIC, 193 UUF PCRM 1/2 PCT, 500 WVDC, MFR 72136, P/N CM15F1930D500V	5-42
A2A4A33C13		CAPACITOR, FIXED, MICA DIELECTRIC, 167 UUF PCRM 1/2 PCT, 500 WVDC, MFR 72136, P/N CM15F1670D500V	5-42
A2A4A33C14		SAME AS A2A4A11C5	5-42
A2A4A33C15		CAPACITOR, FIXED, MICA DIELECTRIC, 127 UUF PCRM 1/2 PCT, 500 WVDC, MFR 72136, P/N CM15F127CD500V	5-42
A2A4A33C16		CAPACITOR, FIXED, MICA DIELECTRIC, 110 UUF PCRM 1/2 PCT, 500 WVDC, MFR 72136, P/N CM15F111D500V	5-42

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A4A33C17		SAME AS A2A4A6C3	5-42
A2A4A33C18		SAME AS A2A4A3CC18	5-42
A2A4A33C19		SAME AS A2A4A3CC19	5-42
A2A4A34		ROTOR ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-599	5-42
A2A4A34C1		SAME AS A2A4A33C1	5-42
A2A4A34C2		SAME AS A2A4A33C2	5-42
A2A4A34C3		SAME AS A2A4A33C3	5-42
A2A4A34C4		SAME AS A2A4A33C4	5-42
A2A4A34C5		SAME AS A2A4A33C5	5-42
A2A4A34C6		SAME AS A2A4A33C6	5-42
A2A4A34C7		SAME AS A2A4A3CC17	5-42
A2A4A34C8		SAME AS A2A4A16C3	5-42
A2A4A34C9		SAME AS A2A4A33C9	5-42
A2A4A34C10		SAME AS A2A4A30C4	5-42
A2A4A34C11		SAME AS A2A4A33C11	5-42
A2A4A34C12		SAME AS A2A4A33C12	5-42
A2A4A34C13		SAME AS A2A4A33C13	5-42
A2A4A34C14		SAME AS A2A4A11C5	5-42
A2A4A34C15		SAME AS A2A4A33C15	5-42
A2A4A34C16		SAME AS A2A4A33C16	5-42
A2A4A34C17		SAME AS A2A4A6C3	5-42
A2A4A34C18		SAME AS A2A4A3CC18	5-42
A2A4A34C19		SAME AS A2A4A3CC19	5-42
A2A4A35		ROTOR ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-602	5-43
A2A4A35C1		SAME AS A2A432C1	5-43
A2A4A35C2		SAME AS A2A4A32C2	5-43
A2A4A35C3		SAME AS A2A4A3CC12	5-43
A2A4A35C4		SAME AS A2A4A32C4	5-43
A2A4A35C5		SAME AS A2A4A32C5	5-43
A2A4A35C6		SAME AS A2A4A3CC7	5-43
A2A4A35C7		SAME AS A2A4A32C7	5-43
A2A4A35C8		SAME AS A2A4A32C8	5-43
A2A4A35C9		SAME AS A2A4A32C9	5-43
A2A4A36		ROTOR ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-605	5-43

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A4A36C1		SAME AS A2A432C1	5-43
A2A4A36C2		SAME AS A2A4A32C2	5-43
A2A4A36C3		SAME AS A2A4A3CC12	5-43
A2A4A36C4		SAME AS A2A4A32C4	5-43
A2A4A36C5		SAME AS A2A4A32C5	5-43
A2A4A36C6		SAME AS A2A4A3CC7	5-43
A2A4A36C7		SAME AS A2A4A32C7	5-43
A2A4A36C8		SAME AS A2A4A32C8	5-43
A2A4A36C9		SAME AS A2A4A32C9	5-43
A2A4A37		ROTOR ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-609	5-42
A2A4A37C1		CAPACITOR, FIXED, MICA DIELECTRIC, 517 UUF PORM 1 PCT, 300 WVDC, MFR 72136, P/N DM15F517OF3COV	5-42
A2A4A37C2		SAME AS A2A4A33C2	5-42
A2A4A37C3		SAME AS A2A4A33C3	5-42
A2A4A37C4		SAME AS A2A4A33C4	5-42
A2A4A37C5		SAME AS A2A4A33C5	5-42
A2A4A37C6		SAME AS A2A4A33C6	5-42
A2A4A37C7		SAME AS A2A4A3CC17	5-42
A2A4A37C8		SAME AS A2A4A16C3	5-42
A2A4A37C9		SAME AS A2A4A33C9	5-42
A2A4A37C10		SAME AS A2A4A3CC4	5-42
A2A4A37C11		SAME AS A2A4A33C11	5-42
A2A4A37C12		SAME AS A2A4A33C12	5-42
A2A4A37C13		SAME AS A2A4A33C13	5-42
A2A4A37C14		SAME AS A2A4A11C5	5-42
A2A4A37C15		SAME AS A2A4A33C15	5-42
A2A4A37C16		SAME AS A2A4A33C16	5-42
A2A4A37C17		SAME AS A2A4A6C3	5-42
A2A4A37C18		SAME AS A2A4A3CC18	5-42
A2A4A37C19		SAME AS A2A4A3CC19	5-42
A2A4A38		MIXER, TRANSMITTER, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 66623C-517	5-44
A2A4A38C1-C4		SAME AS A2A4C1-C2	5-44
A2A4A38C5		CAPACITOR, MIL TYPE CK06CW122K	5-44

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A4A38C6		SAME AS A2A4C1-C2	5-44
A2A4A38K1		SAME AS A2A4K1	5-44
A2A4A38L1		COIL, RADIO FREQUENCY, 240 UH, MFR 99800, P/N 1537-94	5-44
A2A4A38Q1		TRANSISTOR, MIL TYPE 2N3127	5-44
A2A4A38Q2		TRANSISTOR, MFR 80131, P/N 2N1142	5-44
A2A4A38R1		SAME AS A2A4R2	5-44
A2A4A38R2		RESISTOR, MIL TYPE RC07GF682J	5-44
A2A4A38R3		RESISTOR, MIL TYPE RC07GF133J	5-44
A2A4A38R4		NOT USED	
A2A4A38R5		SAME AS A2A4A38R2	5-44
A2A4A38R6		RESISTOR, MIL TYPE RC07GF471J	5-44
A2A4A38R7		RESISTOR, MIL TYPE RC07GF123J	5-44
A2A4A38R8		SAME AS A2A4A38R2	5-44
A2A4A38R9		RESISTOR, MIL TYPE RC07GF182J	5-44
A2A4A38R10		RESISTOR, MIL TYPE RC07GF472J	5-44
A2A4A38TP1-TP2		JACK, TIP, MFR 74970, P/N 105-751	5-44
A2A4A38TP3		JACK, TIP, MFR 74970, P/N 105-753	5-44
A2A4A38XQ2		MOUNTING PAD, TRANSISTOR, 0.344 IN. DIA X 0.075 IN. THK, MFR 07047, P/N 10012	
A2A5		MODULE ASSEMBLY, FREQUENCY STANDARD, MFR 58189, P/N 809000-200	5-45
A2A5C1		CAPACITOR, VARIABLE, GLASS DIELECTRIC, 1.0 TO 28.0 UUF, 1000 WVDC, MFR 73899, P/N VCJ7118	5-45
A2A5HR1		OVEN HOUSING ASSEMBLY, MFR 58189, P/N 666163-058	5-45
A2A5MP1		COVER ASSEMBLY, MFR 58189, P/N 666163-085	5-45
A2A5MP2-MP3		SCREW, EXTERNALLY RELIEVED BODY, MFR 58189, P/N 666163-233	5-45
A2A5MP4-MP9		CONNECTOR, PLUG, ELECTRICAL, MFR 91146, P/N DM53741-5012	5-45
A2A5P1		CONNECTOR, RECEPTACLE, ELECTRICAL, 2.729 IN. LG X 0.494 IN. W X 0.660 IN. H, MFR 91146, P/N DCM13W6PC31F115	5-45
A2A5Q1		TRANSISTOR, MFR 80131, P/N 2N1117A	5-45
A2A5R1 SELECTED		RESISTOR, FIXED, WIREWOUND, 240 OHMS, PORM 1 PCT, 1/2W MFR 91637, P/N RS1-2 241F	5-45
A2A5R1 SELECTED		RESISTOR, FIXED, WIREWOUND, 255 OHMS, PORM 1 PCT, 1/2W, MFR 91637, P/N RS1-2 2550F	5-45
A2A5R1 SELECTED		RESISTOR, FIXED, WIREWOUND, 270 OHMS PORM 1 PCT, 1/2W, MFR 91637, P/N RS1-2 271F	5-45
A2A5R1 SELECTED		RESISTOR, FIXED, WIREWOUND, 285 OHMS PORM 1 PCT, 1/2W, MFR 91637, P/N RS1-2 2850F	5-45
A2A5R1 SELECTED		RESISTOR, FIXED, WIREWOUND, 300 OHMS PORM 1 PCT, 1/2W, MFR 91637, P/N RS1-2 301F	5-45
A2A5R1 SELECTED		RESISTOR, FIXED, WIREWOUND, 315 OHMS PORM 1 PCT, 1/2W, MFR 91637, P/N RS1-2 3150F	5-45

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A5R1 SELECTED		RESISTOR, FIXED, WIREWOUND, 330 OHMS, PCRM 1 PCT, 1/2W MFR 91637, P/N RS1-2 331F	5-45
A2A5R1 SELECTED		RESISTOR, FIXED, WIREWOUND, 345 OHMS, PCRM 1 PCT, 1/2W MFR 91637, P/N RS1-2 345CF	5-45
A2A5R1 SELECTED		RESISTOR, FIXED, WIREWOUND, 360 OHMS, PCRM 1 PCT, 1/2W MFR 91637, P/N RS1-2 361F	5-45
A2A5S1		SWITCH, ROTARY, 1 SECTION, 3 POLES, 3 POSITIONS, NON-SHORTING CONTACTS, MFR 58189, P/N 666163-057	5-45
A2A5A1		MULTIPLIER AND DIVIDER ASSEMBLY, 5 MC, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666231-C10	5-46
A2A5A1C1		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 0.005 UF PORM 20 PCT, 75 WVDC, MFR 86335, P/N SSMCC5-35	5-46
A2A5A1C2-C3		CAPACITOR, FIXED, METALIZED PAPER DIELECTRIC, 0.1 UF PORM 20 PCT, 50 WVDC, MFR 02777, P/N T29C1	5-46
A2A5A1C4		SAME AS A2A5A1C1	5-46
A2A5A1C5		CAPACITOR, FIXED, MICA DIELECTRIC, 681 UUF PORM 1 PCT, 300 WVDC, MFR 72136, P/N CM15F681CF3CCV	5-46
A2A5A1C6		CAPACITOR, FIXED, MICA DIELECTRIC, 330 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N CM15E331G3CCV	5-46
A2A5A1C7		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 47 UUF PORM 5 PCT, 75 WVDC, MFR 86335, P/N MINU47J	5-46
A2A5A1C8		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 0.01 UF, PORM 20 PCT, 75 WVDC, MFR 86335, P/N SSMC1-88	5-46
A2A5A1C9		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 0.01 UF PLUS 100 PCT MINUS 20 PCT, 75 WVDC, MFR 86335, P/N K400CN.01Z	5-46
A2A5A1C10		CAPACITOR, FIXED, METALIZED PAPER DIELECTRIC, 0.007 UF PORM 20 PCT, 200 WVDC, MFR 02777, P/N T290C-6	5-46
A2A5A1C11		CAPACITOR, FIXED, MICA DIELECTRIC, 510 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N CM15E511G3CCV	5-46
A2A5A1C12		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 100 UUF PORM 5 PCT, 75 WVDC, MFR 86335, P/N MINU100J	5-46
A2A5A1C13		SAME AS A2A5A1C9	5-46
A2A5A1C14		SAME AS A2A5A1C2-C3	5-46
A2A5A1C15		SAME AS A2A5A1C9	5-46
A2A5A1C16		CAPACITOR, FIXED, MICA DIELECTRIC, 220 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N CM15E221G3COV	5-46
A2A5A1C17-C19		SAME AS A2A5A1C9	5-46
A2A5A1C20-C22		SAME AS A2A5A1C8	5-46
A2A5A1C23		CAPACITOR, FIXED, MICA DIELECTRIC, 160 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N CM15E161G3CCV	5-46
A2A5A1C24		SAME AS A2A5A1C9	5-46
A2A5A1C25		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 0.001 UF PORM 20 PCT, 75 WVDC, MFR 86335, P/N K1200M.001M	5-46
A2A5A1C26		SAME AS A2A5A1C8	5-46
A2A5A1CR1-CR2		SEMICONDUCTOR DEVICE, DIODE, MFR 80131, P/N 1N3063	5-46

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A5A1DS1		LAMP, INCANDESCENT, 10V, MFR 58854, P/N 10ES	5-46
A2A5A1L1		COIL, RADIO FREQUENCY, 23 MC, MFR 82142, P/N 4422-11K	5-46
A2A5A1L2		COIL, RADIO FREQUENCY, 1,500 UF, MFR 99800, P/N 1537-746	5-46
A2A5A1Q1-Q3		TRANSISTOR, MIL TYPE 2N1225	5-46
A2A5A1Q4-Q5		TRANSISTOR, MFR 80131, P/N 2N1225	5-46
A2A5A1Q6		TRANSISTOR, MFR 80131, P/N 2N332	5-46
A2A5A1Q7		SAME AS A2A5A1Q4-Q5	5-46
A2A5A1R1		RESISTOR, MIL TYPE RC07GF102J	5-46
A2A5A1R2		RESISTOR, MIL TYPE RC07GF222J	5-46
A2A5A1R3		RESISTOR, MIL TYPE RC07GF101J	5-46
A2A5A1R4		RESISTOR, MIL TYPE RC07GF221J	5-46
A2A5A1R5		RESISTOR, MIL TYPE RC07GF331J	5-46
A2A5A1R6		RESISTOR, MIL TYPE RC07GF561J	5-46
A2A5A1R7		SAME AS A2A5A1R2	5-46
A2A5A1R8		RESISTOR, MIL TYPE RC07GF472J	5-46
A2A5A1R9		RESISTOR, MIL TYPE RC07GF393J	5-46
A2A5A1R10		RESISTOR, MIL TYPE RC07GF122J	5-46
A2A5A1R11		SAME AS A2A5A1R2	5-46
A2A5A1R12		SAME AS A2A5A1R1	5-46
A2A5A1R13		RESISTOR, MIL TYPE RC07GF563J	5-46
A2A5A1R14		RESISTOR, MIL TYPE RC07GF243J	5-46
A2A5A1R15-R16		RESISTOR, MIL TYPE RC07GF103J	5-46
A2A5A1R17		SAME AS A2A5A1R3	5-46
A2A5A1R18		RESISTOR, MIL TYPE RC07GF470J	5-46
A2A5A1R19		RESISTOR, MIL TYPE RC07GF153J	5-46
A2A5A1R20		RESISTOR, MIL TYPE RC07GF152J	5-46
A2A5A1R21		SAME AS A2A5A1R2	5-46
A2A5A1R22		RESISTOR, VARIABLE, 500 OHMS PORM 5 PCT, 1W, MFR 80294, P/N 3250W1-501	5-46
A2A5A1R23		SAME AS A2A5A1R18	5-46
A2A5A1R24		RESISTOR, MIL TYPE RC07GF512J	5-46
A2A5A1R25		RESISTOR, MIL TYPE RC07GF821J	5-46
A2A5A1R26		RESISTOR, MIL TYPE RC07GF202J	5-46
A2A5A1R27		SAME AS A2A5A1R6	5-46
A2A5A1R28		SAME AS A2A5A1R4	5-46
A2A5A1R29-R30		SAME AS A2A5A1R2	5-46
A2A5A1R31		SAME AS A2A5A1R1	5-46

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A5A1T1		TRANSFORMER, RADIO FREQUENCY, 0.500 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-398	5-46
A2A5A1T2		TRANSFORMER, RADIO FREQUENCY, 4 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-397	5-46
A2A5A1T3		TRANSFORMER, RADIO FREQUENCY, 1 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-396	5-46
A2A5A1T4		TRANSFORMER, RADIO FREQUENCY, 10 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-395	5-46
A2A5A1T5		TRANSFORMER, RADIO FREQUENCY, 2 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-394	5-46
A2A5A1T6		TRANSFORMER, RADIO FREQUENCY, 5 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-393	5-46
A2A5A1TP1-TP2		JACK, TIP, MFR 98291, P/N SKT103PCWHITE	5-46
A2A5A1XQ1-XQ5		MOUNTING PAD, TRANSISTOR, 0.344 IN. DIA X 0.075 IN. THK, MFR 07047, P/N 10027	
A2A5A1XQ7		SAME AS A2A5A1XQ1-XQ5	
A2A5A2		OVEN CONTROL CIRCUIT, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666231-936	5-47
A2A5A2C1		CAPACITOR, FIXED, ELECTROLYTIC, 3.3 UF PORM 20 PCT, 15 WVDC, MFR 56289, P/N 150D335X0015A2	5-47
A2A5A2C2		CAPACITOR, FIXED, METALIZED PAPER DIELECTRIC, 0.01 UF PORM 20 PCT, 200 WVDC, MFR 02777, P/N T2900-2	5-47
A2A5A2C3-C4		SAME AS A2A5A2C1	5-47
A2A5A2C5-C6		CAPACITOR, FIXED, ELECTROLYTIC, 1 UF PORM 10 PCT, 35 WVDC, MFR 56289, P/N 150D105X9035A2	5-47
A2A5A2C7-C11		NOT USED	
A2A5A2C12-C13		SAME AS A2A5A1C8	5-47
A2A5A2C14-C39		NOT USED	
A2A5A2C40		SAME AS A2A5A1C8	5-47
A2A5A2CR1		SEMICONDUCTOR DEVICE, DIODE, MFR 80131, P/N 1N969B	5-47
A2A5A2CR2		SEMICONDUCTOR DEVICE, DIODE, MIL TYPE 1N270	5-47
A2A5A2CR3-CR4		SEMICONDUCTOR DEVICE, DIODE, MFR 80131, P/N 1N755A	5-47
A2A5A2Q1-Q2		TRANSISTOR, MFR 80131, P/N 2N338	5-47
A2A5A2Q3		TRANSISTOR, MFR 80131, P/N 2N333	5-47
A2A5A2Q4-Q5		NOT USED	
A2A5A2Q6		SAME AS A2A5A1Q4-Q5	5-47
A2A5A2R1-R2		RESISTOR, MIL TYPE RC07GF562J	5-47
A2A5A2R3		RESISTOR, MIL TYPE RC07GF121J	5-47
A2A5A2R4		RESISTOR, MIL TYPE RC07GF392J	5-47
A2A5A2R5		NOT USED	
A2A5A2R6		SAME AS A2A5A2R4	5-47

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A5A2R7		RESISTOR, MIL TYPE RC07GF430J	5-47
A2A5A2R8		SAME AS A2A5A1R19	5-47
A2A5A2R9		RESISTOR, MIL TYPE RC07GF272J	5-47
A2A5A2R10		SAME AS A2A5A2R1-R2	5-47
A2A5A2R11		SAME AS A2A5A1R1	5-47
A2A5A2R12		SAME AS A2A5A1R20	5-47
A2A5A2R13-R16		NOT USED	
A2A5A2R17		SAME AS A2A5A1R8	5-47
A2A5A2R18		RESISTOR, MIL TYPE RC07GF270J	5-47
A2A5A2RT1		NOT USED	
A2A5A2RT2		RESISTOR, THERMAL, MFR 04239, P/N 2D404	5-47
A2A5A2T1		TRANSFORMER, AUDIO FREQUENCY, MFR 82068, P/N S71057	5-47
A2A5A2T2		NOT USED	
A2A5A2T3		TRANSFORMER, RADIO FREQUENCY, 2 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-399	5-47
A2A5A2XQ1-XQ3		MOUNTING PAD, TRANSISTOR, 0.344 IN. DIA X 0.075 IN. THK, MFR 07047, P/N 10012	
A2A5A2XQ6		SAME AS A2A5A1XQ1-XQ5	
A2A5A3		OSCILLATOR SUBASSEMBLY, COMPONENT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666163-081	5-48
A2A5A3C1-C6		NOT USED	
A2A5A3C7		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 68 UUF PORM 5 PCT, 75 WVDC, MFR 86335, P/N GTC75R68J	5-48
A2A5A3C8		CAPACITOR, MIL TYPE CK06CW472M	5-48
A2A5A3C9		SAME AS A2A5A1C1	5-48
A2A5A3C10	SELECTED	CAPACITOR, FIXED, MICA DIELECTRIC, 33 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N CM15E330G3C0V	5-48
A2A5A3C10	SELECTED	CAPACITOR, FIXED, MICA DIELECTRIC, 47 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N DM15E470G3C0V	5-48
A2A5A3C10	SELECTED	CAPACITOR, FIXED, MICA DIELECTRIC, 56 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N CM15E560G3C0V	5-48
A2A5A3C10	SELECTED	CAPACITOR, FIXED, MICA DIELECTRIC, 62 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N CM15E620G0C0V	5-48
A2A5A3C10	SELECTED	CAPACITOR, FIXED, MICA DIELECTRIC, 68 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N CM15E680G0C0V	5-48
A2A5A3C10	SELECTED	CAPACITOR, FIXED, MICA DIELECTRIC, 75 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N CM15E750G3C0V	5-48
A2A5A3C10	SELECTED	CAPACITOR, FIXED, MICA DIELECTRIC, 82 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N CM15E820G3C0V	5-48
A2A5A3CR1-CR4		NOT USED	
A2A5A3CR5-CR6		SAME AS A2A5A1CR1-CR2	5-48

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A5A3Q1-Q4		NOT USED	
A2A5A3Q5		SAME AS A2A5A1Q4-Q5	5-48
A2A5A3R1-R13		NOT USED	
A2A5A3R14		RESISTOR, MIL TYPE RC07GF271J	5-48
A2A5A3R15		RESISTOR, MIL TYPE RC20GF220J	5-48
A2A5A3R16		SAME AS A2A5A2R4	5-48
A2A5A3T1		NOT USED	
A2A5A3T2		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-392	5-48
A2A5A3XQ5		SAME AS A2A5A1XQ1-XQ5	
A2A5A3Y1		CRYSTAL UNIT, QUARTZ, 5 MC, MFR 58189, P/N 666163-049	5-48
A2A6	A,B	TRANSLATOR-SYNTHESIZER SUBASSEMBLY, MFR 58189, P/N 666230-027	5-49
A2A6	C	TRANSLATOR-SYNTHESIZER SUBASSEMBLY, MFR 58189, P/N A09496-001	5-49
A2A6C1-C2		CAPACITOR, MIL TYPE CS13BB470K	5-49
A2A6J1-J3		NOT USED	5-49
A2A6J4		CONNECTOR, RECEPTACLE, ELECTRICAL, 2.088 IN. LG X 0.494 IN. W X 0.664 IN. H, MFR 91146, P/N DBMF17W2S2C31	5-49
A2A6J5		CONNECTOR, RECEPTACLE, ELECTRICAL, 2.088 IN. LG X 0.494 IN. W X 0.663 IN. H, MFR 91146, P/N DBMF13W3S2C31	5-49
A2A6J6		CONNECTOR, RECEPTACLE, ELECTRICAL, 2.088 IN. LG X 0.494 IN. W X 0.663 IN. H, MFR 91146, P/N DBMF9W4S2C31	5-49
A2A6MP1		JACK, TIP, MFR 98291, P/N SKT14GREEN	5-49
A2A6MP2		JACK, TIP, MFR 98291, P/N SKT14ORANGE	5-49
A2A6MP3-MP5		JACK, TIP, MFR 98291, P/N SKT14RED	5-49
A2A6MP6		JACK, TIP, MFR 98291, P/N SKT14GRAY	5-49
A2A6MP7-MP9		CONNECTOR, PLUG, ELECTRICAL, MFR 91146, P/N DM53741-5012	5-49
A2A6MP10-MP18		CONNECTOR, RECEPTACLE, ELECTRICAL, MFR 91146, P/N DM53743-5014	5-49
A2A6MP19		CONNECTOR, PLUG, ELECTRICAL, MFR 91146, P/N DM53741-5000	5-49
A2A6MP20-MP29		CONNECTOR, PLUG, ELECTRICAL, MFR 98291, P/N 5754	5-49
A2A6MP30		CONNECTOR, PLUG, ELECTRICAL, MFR 98291, P/N 51-043-4300	5-49
A2A6MP31-MP32		CONNECTOR, PLUG, ELECTRICAL, MFR 98291, P/N 51-028-0029	5-49
A2A6P1		CONNECTOR, RECEPTACLE, ELECTRICAL, 2.729 IN. LG X 0.494 IN. W X 0.660 IN. H, MFR 91146, P/N DCM25W3PC31	5-49
A2A6P2-P3		CONNECTOR, RECEPTACLE, ELECTRICAL, 1.541 IN. LG X 0.494 IN. W X 0.656 IN. H, MFR 91146, P/N DAM3W3PC31	5-49
A2A6A1		SYNTHESIZER ASSEMBLY, 1 MC, MFR 58189, P/N 666230-767	5-50
A2A6A1B1		MOTOR, DIRECT CURRENT, 0.5 AMPS, 26 VDC, 3.494 IN. LG X 0.838 IN. W X 0.867 IN. H, MFR 25140, P/N 128A100	5-50
A2A6A1C1		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 0.01 UF, PORM 20 PCT, 75 WVDC, MFR 86335, P/N SSMC1-88	5-50

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A6A1C2		CAPACITOR, FIXED, ELECTROLYTIC, 6.8 UF PORM 20 PCT, 35 WVDC, MFR 56289, P/N 150D685X0035B2	5-50
A2A6A1K1		RELAY, ARMATURE, 3 AMPS AT 28VDC, 1.320 IN. LG X 0.375 IN. W X 1.085 IN. H, MFR 02289, P/N 2F2426	5-53
A2A6A1L1-L2		COIL, RADIO FREQUENCY, 1000 UH, MFR 99800, P/N 1537-744	5-50
A2A6A1MP1		SWITCH, ROTARY, 1 SECTION, 1 POLE, 18 POSITIONS, POSITIVE SHORTING CONTACTS, MFR 76854, P/N 806285-010	5-50
A2A6A1MP2		GEAR SET, BEVEL, MATCHED, MFR 58189, P/N 666230-138	5-50
A2A6A1MP3		PILOT BEARING, MOTOR SHAFT, MFR 58189, P/N 666231-887	5-53
A2A6A1MP4		SAME AS A2A6MP19	5-53
A2A6A1MP5		CONNECTOR, PLUG, ELECTRICAL, MFR 91146, P/N DM53740-5008	5-53
A2A6A1P1		CONNECTOR, RECEPTACLE, ELECTRICAL, 2.088 IN. LG X 0.494 IN. W X 0.422 IN. H, MFR 91146, P/N DBM17W2PC31	5-53
A2A6A1A1		SWITCH ASSEMBLY, SYNTHESIZER, MFR 58189, P/N 666231-126	5-51
A2A6A1A1		OSCILLATOR, PRINTED CIRCUIT BOARD, W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-158	5-51
A2A6A1A1C1		CAPACITOR, FIXED, MICA DIELECTRIC, 1300 UUF PORM 2 PCT, 500 WVDC, MFR 72136, P/N DM19F132G500V	5-51
A2A6A1A1C2		CAPACITOR, FIXED, MICA DIELECTRIC, 1000 UUF PORM 2 PCT, 500 WVDC, MFR 72136, P/N DM19F102G500V	5-51
A2A6A1A1C3		CAPACITOR, FIXED, MICA DIELECTRIC, 820 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N DM15E821G300V	5-51
A2A6A1A1C4		CAPACITOR, FIXED, MICA DIELECTRIC, 680 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N DM15E681G300V	5-51
A2A6A1A1C5		CAPACITOR, FIXED, MICA DIELECTRIC, 501 UUF PORM 1 PCT, 300 WVDC, MFR 72136, P/N DM15F501CF300V	5-51
A2A6A1A1C6		CAPACITOR, FIXED, MICA DIELECTRIC, 430 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N DM15E431G300V	5-51
A2A6A1A1C7		CAPACITOR, FIXED, MICA DIELECTRIC, 360 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N DM15E361G300V	5-51
A2A6A1A1C8		CAPACITOR, FIXED, MICA DIELECTRIC, 300 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N DM15E301G300V	5-51
A2A6A1A1C9		CAPACITOR, FIXED, MICA DIELECTRIC, 270 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N DM15E271G300V	5-51
A2A6A1A1C10		CAPACITOR, FIXED, MICA DIELECTRIC, 240 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N DM15E241G300V	5-51
A2A6A1A1C11		CAPACITOR, FIXED, MICA DIELECTRIC, 200 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N DM15E201G300V	5-51
A2A6A1A1C12		CAPACITOR, FIXED, MICA DIELECTRIC, 180 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N DM15E181G300V	5-51
A2A6A1A1C13-C14		CAPACITOR, FIXED, MICA DIELECTRIC, 160 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N DM15E161G300V	5-51
A2A6A1A1C15		CAPACITOR, FIXED, MICA DIELECTRIC, 115 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N DM15F1150F500V	5-51
A2A6A1A1C16		CAPACITOR, FIXED, MICA DIELECTRIC, 110 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N DM15E111G300V	5-51

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A6A1A1C17		CAPACITOR, FIXED, MICA DIELECTRIC, 75 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N CM15E750G3COV	5-51
A2A6A1A1C18-C20		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 0.01 UF GMV, 100 WVDC, MFR 96095, P/N C80R01GMV	5-51
A2A6A1A1C21		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 82 UUF PORM 2 PCT, 500 WVDC, MFR 15450, P/N 301N5600-82G	5-51
A2A6A1A1C22		NOT USED	
A2A6A1A1C23		SAME AS A2A6A1A1C18-C20	5-51
A2A6A1A1C24		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 430 UUF PORM 2 PCT, 500 WVDC, MFR 15450, P/N 301N5600-430G	5-51
A2A6A1A1C25-C28		SAME AS A2A6A1A1C18-C20	5-51
A2A6A1A1CR1-CR2		SEMICONDUCTOR DEVICE, DIODE, MFR 80131, P/N 1N3063	5-51
A2A6A1A1CR3		CAPACITOR, FIXED, SILICON, 56 UUF, 30 WVDC, MFR 73293, P/N HC7060B	5-51
A2A6A1A1L1		SAME AS A2A6A1L1-L2	5-51
A2A6A1A1L2-L3		COIL, RADIO FREQUENCY, MFR 99800, P/N 1537-724	5-51
A2A6A1A1MP1-MP2		SWITCH, ROTARY, 1 SECTION, 1 POLE, 18 POSITIONS, NON-SHORTING CONTACTS, MFR 76854, P/N 806274-001	5-51
A2A6A1A1Q1-Q4		TRANSISTOR, MFR 80131, P/N 2N2708	5-51
A2A6A1A1R1		RESISTOR, MIL TYPE RC07GF224J	5-51
A2A6A1A1R2		RESISTOR, MIL TYPE RC07GF474J	5-51
A2A6A1A1R3		RESISTOR, MIL TYPE RC07GF133J	5-51
A2A6A1A1R4		RESISTOR, MIL TYPE RC07GF201J	5-51
A2A6A1A1R5		SAME AS A2A6A1A1R3	5-51
A2A6A1A1R6		RESISTOR, MIL TYPE RC07GF391J	5-51
A2A6A1A1R7		RESISTOR, MIL TYPE RC07GF472J	5-51
A2A6A1A1R8		RESISTOR, MIL TYPE RC07GF153J	5-51
A2A6A1A1R9		RESISTOR, MIL TYPE RC07GF100J	5-51
A2A6A1A1R10		RESISTOR, MIL TYPE RC07GF182J	5-51
A2A6A1A1R11		RESISTOR, MIL TYPE RC07GF183J	5-51
A2A6A1A1R12		RESISTOR, MIL TYPE RC07GF911J	5-51
A2A6A1A1R13		RESISTOR, MIL TYPE RC07GF103J	5-51
A2A6A1A1R14		RESISTOR, MIL TYPE RC07GF621J	5-51
A2A6A1A1R15		RESISTOR, MIL TYPE RC07GF222J	5-51
A2A6A1A1R16		SAME AS A2A6A1A1R10	5-51
A2A6A1A1R17		RESISTOR, MIL TYPE RC07GF221J	5-51
A2A6A1A1R18		RESISTOR, MIL TYPE RC07GF470J	5-51
A2A6A1A1RT1		RESISTOR, THERMAL, 248 OHMS PORM 10 PCT, MFR 75263, P/N RL2012-248-73S3	5-51
A2A6A1A1Y1		CRYSTAL UNIT, QUARTZ, 2499.850 KC, MFR 58189, P/N 810000-393	5-51

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A6A1A1Y2		CRYSTAL UNIT, QUARTZ, 3499.720 KC, MFR 58189, P/N 810000-394	5-51
A2A6A1A1Y3		CRYSTAL UNIT, QUARTZ, 4499.640 KC, MFR 58189, P/N 810000-395	5-51
A2A6A1A1Y4		CRYSTAL UNIT, QUARTZ, 5499.560 KC, MFR 58189, P/N 810000-396	5-51
A2A6A1A1Y5		CRYSTAL UNIT, QUARTZ, 7499.400 KC, MFR 58189, P/N 810000-397	5-51
A2A6A1A1Y6		CRYSTAL UNIT, QUARTZ, 8499.320 KC, MFR 58189, P/N 810000-398	5-51
A2A6A1A1Y7		CRYSTAL UNIT, QUARTZ, 9499.240 KC, MFR 58189, P/N 810000-399	5-51
A2A6A1A1Y8		CRYSTAL UNIT, QUARTZ, 10499.160 KC, MFR 58189, P/N 810000-400	5-51
A2A6A1A1Y9		CRYSTAL UNIT, QUARTZ, 11499.080 KC, MFR 58189, P/N 810000-401	5-51
A2A6A1A1Y10		CRYSTAL UNIT, QUARTZ, 12499.000 KC, MFR 58189, P/N 810000-402	5-51
A2A6A1A1Y11		CRYSTAL UNIT, QUARTZ, 14498.840 KC, MFR 58189, P/N 810000-403	5-51
A2A6A1A1Y12		CRYSTAL UNIT, QUARTZ, 15498.760 KC, MFR 58189, P/N 810000-404	5-51
A2A6A1A1Y13		CRYSTAL UNIT, QUARTZ, 16498.680 KC, MFR 58189, P/N 810000-405	5-51
A2A6A1A1Y14		CRYSTAL UNIT, QUARTZ, 17498.600 KC, MFR 58189, P/N 810000-406	5-51
A2A6A1A1Y15		CRYSTAL UNIT, QUARTZ, 19498.440 KC, MFR 58189, P/N 810000-407	5-51
A2A6A1A1Y16		CRYSTAL UNIT, QUARTZ, 20498.360 KC, MFR 58189, P/N 810000-408	5-51
A2A6A1A1Y17		CRYSTAL UNIT, QUARTZ, 23498.120 KC, MFR 58189, P/N 810000-409	5-51
A2A6A1A2		AMPLIFIER ASSEMBLY, IF/DC, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-148	5-52
A2A6A1A2C1-C2		SAME AS A2A6A1C1	5-52
A2A6A1A2C3		CAPACITOR, FIXED, MICA DIELECTRIC, 620 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N CM15E621G300V	5-52
A2A6A1A2C4-C5		SAME AS A2A6A1C1	5-52
A2A6A1A2C6		SAME AS A2A6A1A2C3	5-52
A2A6A1A2C7		CAPACITOR, FIXED, MICA DIELECTRIC, 1000 UUF PORM 2 PCT, 500 WVDC, MFR 72136, CM20E102G500V	5-52
A2A6A1A2C8		SAME AS A2A6A1A2C3	5-52
A2A6A1A2C9		SAME AS A2A6A1C1	5-52
A2A6A1A2C10		CAPACITOR, FIXED, METALIZED PAPER DIELECTRIC, 0.1 UF PORM 20 PCT, 200 WVDC, MFR 02777, P/N T2900-4	5-52
A2A6A1A2C11-C12		SAME AS A2A6A1C1	5-52
A2A6A1A2C13		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 0.005 UF PORM 20 PCT, 75 WVDC, MFR 86335, P/N SSM005-35	5-52
A2A6A1A2C14		SAME AS A2A6A1C1	5-52
A2A6A1A2CR1		SEMICONDUCTOR DEVICE, DIODE, MIL TYPE 1N270	5-52
A2A6A1A2J1-J2		CONNECTOR, RECEPTACLE, ELECTRICAL, MFR 06776, P/N NS430-20	5-52
A2A6A1A2L1		COIL, RADIO FREQUENCY, 39 UH, MFR 99800, P/N 1537-727	5-52
A2A6A1A2L2		COIL, RADIO FREQUENCY, 68 UH, MFR 99800, P/N 1537-730	5-52
A2A6A1A2L3		COIL, RADIO FREQUENCY, 27 UH, MFR 99800, P/N 1537-725	5-52

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A6A1A2L4		REACTOR, 11 TO 18 UH, MFR 03550, P/N 64215-22	5-52
A2A6A1A2Q1-Q2		TRANSISTOR, MFR 80131, P/N 2N1225	5-52
A2A6A1A2Q3		TRANSISTOR, MFR 80131, P/N 2N2222	5-52
A2A6A1A2R1		SAME AS A2A6A1A1R8	5-52
A2A6A1A2R2		SAME AS A2A6A1A1R13	5-52
A2A6A1A2R3		SAME AS A2A6A1A1R7	5-52
A2A6A1A2R4		RESISTOR, MIL TYPE RC07GF101J	5-52
A2A6A1A2R5		RESISTOR, MIL TYPE RC07GF223J	5-52
A2A6A1A2R6		RESISTOR, VARIABLE, 200 OHMS PORM 5 PCT, 1W, MFR 80294, P/N 3250W1-201	5-52
A2A6A1A2R7		SAME AS A2A6A1A1R13	5-52
A2A6A1A2R8		SAME AS A2A6A1A1R8	5-52
A2A6A1A2R9		RESISTOR, MIL TYPE RC07GF392J	5-52
A2A6A1A2R10		SAME AS A2A6A1A2R4	5-52
A2A6A1A2R11		SAME AS A2A6A1A2R5	5-52
A2A6A1A2R12		SAME AS A2A6A1A1R15	5-52
A2A6A1A2R13		RESISTOR, MIL TYPE RC07GF271J	5-52
A2A6A1A2R14		RESISTOR, MIL TYPE RC07GF511J	5-52
A2A6A1A2R15-R16		SAME AS A2A6A1A1R3	5-52
A2A6A1A2R17		SAME AS A2A6A1A1R11	5-52
A2A6A1A2R18		RESISTOR, MIL TYPE RC07GF131J	5-52
A2A6A1A2R19		SAME AS A2A6A1A1R6	5-52
A2A6A1A2R20		RESISTOR, MIL TYPE RC07GF750J	5-52
A2A6A1A2R21		SAME AS A2A6A1A1R2	5-52
A2A6A1A2R22		SAME AS A2A6A1A2R4	5-52
A2A6A1A2RT1		SAME AS A2A6A1A1RT1	5-52
A2A6A1A2T1		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 1.5 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-238	5-52
A2A6A1A2T2		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 1.5 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-239	5-52
A2A6A1A2TP1-TP2		TERMINAL, FEED THRU, INSULATED, MFR 98291, P/N FTMM16L2RED	5-52
A2A6A1A2TP3		JACK, TIP, MFR 74970, P/N 105-760	5-52
A2A6A1A2XQ1-XQ2		MOUNTING PAD, TRANSISTOR, 0.344 IN. DIA X 0.075 IN. THK, MFR 07047, P/N 10027	
A2A6A1A3		GENERATOR AND MIXER ASSEMBLY, SPECTRUM, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-152	5-54
A2A6A1A3C1-C2		SAME AS A2A6A1C1	5-54
A2A6A1A3C3		SAME AS A2A6A1A1C16	5-54
A2A6A1A3C4		SAME AS A2A6A1C1	5-54

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A6A1A3C5		SAME AS A2A6A1A1C16	5-54
A2A6A1A3C6		SAME AS A2A6A1A1C4	5-54
A2A6A1A3C7		SAME AS A2A6A1C1	5-54
A2A6A1A3C8		CAPACITOR, FIXED, MICA DIELECTRIC, 10 UUF PORM 5 PCT, 500 WVDC, MFR 72136, P/N DM15C100J5C0V	5-54
A2A6A1A3C9		SAME AS A2A6A1C1	5-54
A2A6A1A3C10		SAME AS A2A6A1A2C10	5-54
A2A6A1A3C11-C12		SAME AS A2A6A1C1	5-54
A2A6A1A3C13-C14		SAME AS A2A6A1A2C10	5-54
A2A6A1A3C15		CAPACITOR, FIXED, MICA DIELECTRIC, 10 UUF PORM 5 PCT, 300 WVDC, MFR 72136, P/N DM15C100J3C0V	5-54
A2A6A1A3C16-C17		SAME AS A2A6A1A1C8	5-54
A2A6A1A3C18-C20		SAME AS A2A6A1C1	5-54
A2A6A1A3CR1		SEMICONDUCTOR DEVICE, DIODE, MFR 80131, P/N 1N758A	5-54
A2A6A1A3CR2-CR4		SAME AS A2A6A1A2CR1	5-54
A2A6A1A3CR5		SEMICODNCUTOR DEVICE, DIODE, MFR 80131, P/N 1N3600	5-54
A2A6A1A3L1		SAME AS A2A6A1L1-L2	5-54
A2A6A1A3L2		COIL, RADIO FREQUENCY, 790 KC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-417	5-54
A2A6A1A3L3		REACTOR, 0.38 TO 0.56 UH, MFR 03550, P/N 64047-22	5-54
A2A6A1A3L4		COIL, RADIO FREQUENCY, 2.5 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-420	5-54
A2A6A1A3Q1		TRANSISTOR, MFR 80131, P/N 2N964A	5-54
A2A6A1A3Q2		TRANSISTOR, MFR 80131, P/N 2N2501	5-54
A2A6A1A3Q3		SAME AS A2A6A1A3Q1	5-54
A2A6A1A3Q4-Q5		TRANSISTOR, MIL TYPE 2N3127	5-54
A2A6A1A3Q6		SAME AS A2A6A1A1Q1-Q4	5-54
A2A6A1A3R1		RESISTOR, MIL TYPE RC20GF511J	5-54
A2A6A1A3R2		RESISTOR, MIL TYPE RC07GF683J	5-54
A2A6A1A3R3		RESISTOR, MIL TYPE RC07GF102J	5-54
A2A6A1A3R4		RESISTOR, MIL TYPE RC07GF622J	5-54
A2A6A1A3R5		SAME AS A2A6A1A1R13	5-54
A2A6A1A3R6		RESISTOR, MIL TYPE RC07GF822J	5-54
A2A6A1A3R7		RESISTOR, MIL TYPE RC07GF473J	5-54
A2A6A1A3R8		SAME AS A2A6A1A2R4	5-54
A2A6A1A3R9		RESISTOR, MIL TYPE RC07GF152J	5-54
A2A6A1A3R10		RESISTOR, MIL TYPE RC07GF681J	5-54
A2A6A1A3R11		SAME AS A2A6A1A3R4	5-54

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A6A1A3R12		SAME AS A2A6A1A3R2	5-54
A2A6A1A3R13		SAME AS A2A6A1A2R14	5-54
A2A6A1A3R14		RESISTOR, MIL TYPE RC07GF333J	5-54
A2A6A1A3R15		RESISTOR, MIL TYPE RC07GF390J	5-54
A2A6A1A3R16		SAME AS A2A6A1A3R10	5-54
A2A6A1A3R17		SAME AS A2A6A1A2R4	5-54
A2A6A1A3R18		SAME AS A2A6A1A1R8	5-54
A2A6A1A3R19		SAME AS A2A6A1A1R7	5-54
A2A6A1A3R20		RESISTOR, MIL TYPE RC07GF300J	5-54
A2A6A1A3R21		SAME AS A2A6A1A1R13	5-54
A2A6A1A3R22		SAME AS A2A6A1A1R18	5-54
A2A6A1A3R23-R24		SAME AS A2A6A1A1R8	5-54
A2A6A1A3R25		SAME AS A2A6A1A1R15	5-54
A2A6A1A3R26		SAME AS A2A6A1A1R7	5-54
A2A6A1A3R27		SAME AS A2A6A1A1R8	5-54
A2A6A1A3R28		SAME AS A2A6A1A1R13	5-54
A2A6A1A3R29		RESISTOR, MIL TYPE RC07GF151J	5-54
A2A6A1A3R30		SAME AS A2A6A1A3R3	5-54
A2A6A1A3R31		SAME AS A2A6A1A2R4	5-54
A2A6A1A3R32		SAME AS A2A6A1A1R8	5-54
A2A6A1A3R33		SAME AS A2A6A1A1R18	5-54
A2A6A1A3T1		TRANSFORMER, RADIO FREQUENCY, 2.5 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-418	5-54
A2A6A1A3TP1		SAME AS A2A6A1A2TP1-TP2	5-54
A2A6A2		SYNTHESIZER ASSEMBLY, 100 KC, MFR 58189, P/N 666230-626	5-59
A2A6A2MP1-MP4		SAME AS A2A6A1MP5	5-59
A2A6A2MP5		DETENT, SWITCH, 10 POSITIONS EVERY 36 DEGREES, MFR 58189, P/N 666230-439	5-55
A2A6A2MP6		COUPLING ASSEMBLY, MFR 58189, P/N 666162-106	5-55
A2A6A2P1		CONNECTOR, RECEPTACLE, ELECTRICAL, 2.088 IN. LG X 0.494 IN. W X 0.663 IN. H, MFR 91146, P/N DBM9W4PC31	5-59
A2A6A2S1		SWITCH SECTION, ROTARY, MFR 58189, P/N 666163-515	5-55
A2A6A2Y1		CRYSTAL UNIT, QUARTZ, 4.553 MF, MFR 58189, P/N 666163-670	5-55
A2A6A2Y2		CRYSTAL UNIT, QUARTZ, 4.653 MC, MFR 58189, P/N 666163-671	5-55
A2A6A2Y3		CRYSTAL UNIT, QUARTZ, 4.753 MC, MFR 58189, P/N 666163-672	5-55
A2A6A2Y4		CRYSTAL UNIT, QUARTZ, 4.853 MC, MFR 58189, P/N 666163-673	5-55
A2A6A2Y5		CRYSTAL UNIT, QUARTZ, 4.953 MC, MFR 58189, P/N 666163-674	5-55
A2A6A2Y6		CRYSTAL UNIT, QUARTZ, 5.053 MC, MFR 58189, P/N 666163-675	5-55

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A6A2Y7		CRYSTAL UNIT, QUARTZ, 5.153 MC, MFR 58189, P/N 666163-676	5-55
A2A6A2Y8		CRYSTAL UNIT, QUARTZ, 5.253 MC, MFR 58189, P/N 666163-677	5-55
A2A6A2Y9		CRYSTAL UNIT, QUARTZ, 5.353 MC, MFR 58189, P/N 666163-678	5-55
A2A6A2Y10		CRYSTAL UNIT, QUARTZ, 5.453 MC, MFR 58189, P/N 666163-679	5-55
A2A6A2A1		OSCILLATOR ASSEMBLY, 4.553 TO 5.453 MC, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-859	5-56
A2A6A2A1C1		CAPACITOR, FIXED, MICA DIELECTRIC, 36 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N CM15E360G3C0V	5-56
A2A6A2A1C2-C3		SAME AS A2A6A1C1	5-56
A2A6A2A1C4		SAME AS A2A6A1A1C9	5-56
A2A6A2A1C5		SAME AS A2A6A1A1C3	5-56
A2A6A2A1C6		SAME AS A2A6A1A1C7	5-56
A2A6A2A1C7-C9		SAME AS A2A6A1C1	5-56
A2A6A2A1C10		SAME AS A2A6A1A1C3	5-56
A2A6A2A1CR1-CR2		SAME AS A2A6A1A1CR1-CR2	5-56
A2A6A2A1Q1-Q2		SAME AS A2A6A1A2Q3	5-56
A2A6A2A1R1		SAME AS A2A6A1A1R6	5-56
A2A6A2A1R2-R3		SAME AS A2A6A1A1R3	5-56
A2A6A2A1R4		SAME AS A2A6A1A1R4	5-56
A2A6A2A1R5		SAME AS A2A6A1A1R8	5-56
A2A6A2A1R6		SAME AS A2A6A1A3R3	5-56
A2A6A2A1R7		SAME AS A2A6A1A1R8	5-56
A2A6A2A1R8		RESISTOR, MIL TYPE RC07GF150J	5-56
A2A6A2A1R9-R10		SAME AS A2A6A1A1R8	5-56
A2A6A2A1R11		SAME AS A2A6A1A3R3	5-56
A2A6A2A1R12		SAME AS A2A6A1A2R4	5-56
A2A6A2A1R13		RESISTOR, MIL TYPE RC07GF561J	5-56
A2A6A2A1R14		RESISTOR, MIL TYPE RC07GF431J	5-56
A2A6A2A1RT1		SAME AS A2A6A1A1RT1	5-56
A2A6A2A2		MIXER, 10.747 MC, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-864	5-58
A2A6A2A2C1-C4		SAME AS A2A6A1C1	5-58
A2A6A2A2C5		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 47 UUF PORM 5 PCT, 75 WVDC, MFR 86335, P/N MINC47J	5-58
A2A6A2A2C6-C7		SAME AS A2A6A1C1	5-58
A2A6A2A2C8-C9		CAPACITOR, FIXED, MICA DIELECTRIC, 750 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N CM15E751G3C0V	5-58
A2A6A2A2FL1		FILTER, BAND PASS, 10.747 MC, MFR 88463, P/N 791100 7	5-58

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A6A2A2Q1-Q2		SAME AS A2A6A1A3Q4-Q5	5-58
A2A6A2A2R1		SAME AS A2A6A1A1R3	5-58
A2A6A2A2R2		RESISTOR, MIL TYPE RC07GF562J	5-58
A2A6A2A2R3		SAME AS A2A6A1A2R4	5-58
A2A6A2A2R4		SAME AS A2A6A1A1R13	5-58
A2A6A2A2R5		SAME AS A2A6A1A1R8	5-58
A2A6A2A2R6		SAME AS A2A6A1A2R4	5-58
A2A6A2A2R7		SAME AS A2A6A1A1R13	5-58
A2A6A2A2R8		RESISTOR, MIL TYPE RC07GF512J	5-58
A2A6A2A2R9		SAME AS A2A6A1A1R15	5-58
A2A6A2A2T1		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 2.5 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-245	5-58
A2A6A2A2T2		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 10.747 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-242	5-58
A2A6A2A2T3		TRANSFORMER, RADIO FREQUENCY, 25 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-385	5-58
A2A6A2A2TP1		SAME AS A2A6A1A2TP1-TP2	5-58
A2A6A2A3		MIXER, VARIABLE, 17.847 TO 27.847 MC, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-869	5-60
A2A6A2A3C1		SAME AS A2A6A1C1	5-60
A2A6A2A3C2-C3		CAPACITOR, FIXED, ELECTROLYTIC, 6.8 UF PORM 20 PCT, 35 WVDC, MFR 56289, P/N 180D685X0035RS	5-60
A2A6A2A3C4-C6		SAME AS A2A6A1C1	5-60
A2A6A2A3C7		CAPACITOR, FIXED, MICA DIELECTRIC, 56 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N DM15E560G300V	5-60
A2A6A2A3C8		CAPACITOR, MIL TYPE PC41J4R5	5-60
A2A6A2A3C9		SAME AS A2A6A1A3C15	5-60
A2A6A2A3C10-C11		SAME AS A2A6A1C1	5-60
A2A6A2A3C12		SAME AS A2A6A1A1C3	5-60
A2A6A2A3C13-C17		SAME AS A2A6A1C1	5-60
A2A6A2A3C18		CAPACITOR, FIXED, MICA DIELECTRIC, 43 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N DM15E430G300V	5-60
A2A6A2A3C19		SAME AS A2A6A2A3C8	5-60
A2A6A2A3C20		SAME AS A2A6A1A3C15	5-60
A2A6A2A3CR1		SAME AS A2A6A1A2CR1	5-60
A2A6A2A3CR2		SAME AS A2A6A1A3CR1	5-60
A2A6A2A3CR3		SAME AS A2A6A1A2CR1	5-60
A2A6A2A3Q1-Q2		SAME AS A2A6A1A3Q4-Q5	5-60
A2A6A2A3R1		SAME AS A2A6A1A1R13	5-60

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A6A2A3R2		SAME AS A2A6A1A1R8	5-6C
A2A6A2A3R3		SAME AS A2A6A1A2R4	5-60
A2A6A2A3R4		SAME AS A2A6A1A1R7	5-60
A2A6A2A3R5		RESISTOR, MIL TYPE RC07GF331J	5-60
A2A6A2A3R6		SAME AS A2A6A1A1R13	5-60
A2A6A2A3R7		SAME AS A2A6A1A1R8	5-6C
A2A6A2A3R8		SAME AS A2A6A1A2R4	5-60
A2A6A2A3R9		SAME AS A2A6A1A1R13	5-60
A2A6A2A3R10		RESISTOR, MIL TYPE RC07GF821J	5-6C
A2A6A2A3R11		SAME AS A2A6A1A2R13	5-60
A2A6A2A3R12		SAME AS A2A6A1A1R12	5-60
A2A6A2A3R13		RESISTOR, MIL TYPE RC07GF51CJ	5-6C
A2A6A2A3R14		RESISTOR, MIL TYPE RC07GF2C2J	5-6C
A2A6A2A3R15		SAME AS A2A6A2A3R5	5-60
A2A6A2A3R16		SAME AS A2A6A1A3R2C	5-6C
A2A6A2A3T1		TRANSFORMER, VARIABLE, RADIO FRECUENCY, 7.9 MC, 0.62C IN. LG X C.422 IN. DIA, MFR 58189, P/N 8C9CCC-245	5-60
A2A6A2A3T2		TRANSFORMER, RADIO FREQUENCY, 7.9 MC, C.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809CCC-388	5-6C
A2A6A2A3T3		TRANSFORMER, RADIO FREQUENCY, 25 MC, C.620 IN. LG X C.422 IN. DIA, MFR 58189, P/N 8C9CCC-389	5-6C
A2A6A2A3T4		TRANSFORMER, RADIO FREQUENCY, 7.9 MC, C.620 IN. LG X C.422 IN. DIA, MFR 58189, P/N 809CCC-390	5-6C
A2A6A2A3TP1-TP4		SAME AS A2A6A1A2TP1-TP2	5-6C
A2A6A2A3Y1		CRYSTAL UNIT, QUARTZ, 17.845 MC, MFR 58189, P/N 666163-642	5-6C
A2A6A2A3Y2		CRYSTAL UNIT, QUARTZ, 27.845 MC, MFR 58189, P/N 666163-643	5-60
A2A6A2A4		FILTER, TRIPLE TUNED, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 66623C-874	5-62
A2A6A2A4C1-C6		SAME AS A2A6A1C1	5-62
A2A6A2A4C7		CAPACITOR, FIXED, MICA DIELECTRIC, 47 UUF PCRM 2 PCT, 3CC WVDC, MFR 72136, P/N CM15E470G3C0V	5-62
A2A6A2A4C8		SAME AS A2A6A1C1	5-62
A2A6A2A4C9		CAPACITOR, FIXED, MICA DIELECTRIC, 62 UUF PCRM 2 PCT, 3CC WVDC, MFR 72136, P/N CM15E620GCCCV	5-62
A2A6A2A4C10		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 1.5 UUF PCRM 5 PCT, 5CC WVDC, MFR 78488, P/N GA1R5J50CV	5-62
A2A6A2A4C11		SAME AS A2A6A2A4C7	5-62
A2A6A2A4C12		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 3 UUF PCRM 5 PCT, 5C0 WVDC, MFR 78488, P/N GA3RCJ50CV	5-62
A2A6A2A4C13		SAME AS A2A6A2A4C9	5-62

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A6A2A4C14		SAME AS A2A6A2A4C10	5-62
A2A6A2A4C15		SAME AS A2A6A2A4C7	5-62
A2A6A2A4C16		SAME AS A2A6A2A4C12	5-62
A2A6A2A4C17		SAME AS A2A6A2A4C9	5-62
A2A6A2A4C18-C19		SAME AS A2A6A1C1	5-62
A2A6A2A4C20		CAPACITOR, FIXED, MICA DIELECTRIC, 510 UUF PCRM 2 PCT, 300 WVDC, MFR 72136, P/N CM15E511G3C0V	5-62
A2A6A2A4C21-C23		SAME AS A2A6A1C1	5-62
A2A6A2A4C24		CAPACITOR, FIXED, MICA DIELECTRIC, 560 UUF PCRM 2 PCT, 300 WVDC, MFR 72136, P/N CM15E561G3C0V	5-62
A2A6A2A4C25-C27		SAME AS A2A6A1C1	5-62
A2A6A2A4L1		COIL, RADIO FREQUENCY, 25 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-409	5-62
A2A6A2A4L2		COIL, RADIO FREQUENCY, 25 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-410	5-62
A2A6A2A4L3		COIL, RADIO FREQUENCY, 27.847 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-411	5-62
A2A6A2A4L4		TRANSFORMER, RADIO FREQUENCY, 25 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-412	5-62
A2A6A2A4L5		COIL, RADIO FREQUENCY, 25 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-413	5-62
A2A6A2A4L6		COIL, RADIO FREQUENCY, 25 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-409	5-62
A2A6A2A4Q1-Q4		SAME AS A2A6A1A3Q4-Q5	5-62
A2A6A2A4R1-R2		SAME AS A2A6A1A1R13	5-62
A2A6A2A4R3		SAME AS A2A6A1A2R4	5-62
A2A6A2A4R4-R5		SAME AS A2A6A1A1R8	5-62
A2A6A2A4R6-R7		SAME AS A2A6A1A1R13	5-62
A2A6A2A4R8-R9		SAME AS A2A6A1A1R8	5-62
A2A6A2A4R10		SAME AS A2A6A2A3R5	5-62
A2A6A2A4R11		SAME AS A2A6A1A2R4	5-62
A2A6A2A4R12		RESISTOR, MIL TYPE RC07GF471J	5-62
A2A6A2A4R13		SAME AS A2A6A1A1R13	5-62
A2A6A2A4R14		SAME AS A2A6A1A1R8	5-62
A2A6A2A4R15		SAME AS A2A6A1A1R13	5-62
A2A6A2A4R16		SAME AS A2A6A1A1R8	5-62
A2A6A2A4R17		SAME AS A2A6A1A1R7	5-62
A2A6A2A4R18		SAME AS A2A6A1A1R13	5-62
A2A6A2A4R19-R20		SAME AS A2A6A1A2R4	5-62
A2A6A2A4R21-R22		SAME AS A2A6A1A1R15	5-62

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A6A2A4R23		SAME AS A2A6A2A4R12	5-62
A2A6A2A4T1		TRANSFORMER, RADIO FREQUENCY, 25 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-382	5-62
A2A6A2A4T2		TRANSFORMER, RADIO FREQUENCY, 25 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-383	5-62
A2A6A2A4TP1-TP6		SAME AS A2A6A1A2TP1-TP2	5-62
A2A6A2A5		AGC ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-879	5-64
A2A6A2A5C1-C10		SAME AS A2A6A1C1	5-64
A2A6A2A5C11		CAPACITOR, FIXED, ELECTROLYTIC, 47 UF PORM 20 PCT, 35 WVDC, MFR 56289 P/N 150D476X0035S2	5-64
A2A6A2A5CR1		SAME AS A2A6A1A1CR1-CR2	5-64
A2A6A2A5L1		SAME AS A2A6A1A2L3	5-64
A2A6A2A5L2		COIL, RADIO FREQUENCY, 3.3 UF, MFR 99800, P/N 1537-714	5-64
A2A6A2A5L3		SAME AS A2A6A1A2L3	5-64
A2A6A2A5Q1		SAME AS A2A6A1A3Q4-Q5	5-64
A2A6A2A5Q2-Q4		SAME AS A2A6A1A1Q1-Q4	5-64
A2A6A2A5R1		RESISTOR, MIL TYPE RC07GF682J	5-64
A2A6A2A5R2		SAME AS A2A6A1A1R8	5-64
A2A6A2A5R3		SAME AS A2A6A1A1R15	5-64
A2A6A2A5R4		SAME AS A2A6A1A1R3	5-64
A2A6A2A5R5		RESISTOR, MIL TYPE RC07GF912J	5-64
A2A6A2A5R6		SAME AS A2A6A2A4R12	5-64
A2A6A2A5R7		RESISTOR, MIL TYPE RC07GF241J	5-64
A2A6A2A5R8		SAME AS A2A6A1A1R10	5-64
A2A6A2A5R9		SAME AS A2A6A1A1R3	5-64
A2A6A2A5R10		SAME AS A2A6A2A5R5	5-64
A2A6A2A5R11		SAME AS A2A6A2A4R12	5-64
A2A6A2A5R12		SAME AS A2A6A1A1R6	5-64
A2A6A2A5R13		RESISTOR, VARIABLE, 200 OHMS PORM 5 PCT, 1W, MFR 80294, P/N 3280W1-201	5-64
A2A6A2A5R14		RESISTOR, MIL TYPE RC07GF162J	5-64
A2A6A2A5R15		RESISTOR, MIL TYPE RC07GF104J	5-64
A2A6A2A5R16		SAME AS A2A6A1A1R7	5-64
A2A6A2A5R17		RESISTOR, MIL TYPE RC07GF200J	5-64
A2A6A2A5TP1		JACK, TIP, MFR 74970, P/N 105-851	5-64
A2A6A3	A,B	SYNTHESIZER ASSEMBLY, 1 AND 10 KC, MFR 58189, P/N 666230-635	
A2A6A3	C	SYNTHESIZER ASSEMBLY, 1 AND 10 KC, MFR 58189, P/N A09495-001	
A2A6A3C1-C24		NOT USED	

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A6A3C25		SAME AS A2A6A1C2	5-65
A2A6A3C26		CAPACITOR, FIXED, METALIZED PAPER DIELECTRIC, 0.05 UF PCRM 20 PCT, 200 WVDC, MFR 02777, P/N T290C-1	5-65
A2A6A3J1		JACK, TIP, MFR 98291, P/N FTM19RED	5-72
A2A6A3J2		JACK, TIP, MFR 98291, P/N FTM19WHITE	5-72
A2A6A3J3		NOT USED	
A2A6A3J4-J5		CONNECTOR, RECEPTACLE, ELECTRICAL, MFR 98291, P/N 3113	5-72
A2A6A3J6		NOT USED	
A2A6A3J7		SAME AS A2A6A3J4-J5	5-72
A2A6A3MP1-MP2		SAME AS A2A6A2MP6	5-65
A2A6A3MP3-MP4		DETENT, SWITCH, 10 POSITIONS AT EVERY 36 DEGREES, MFR 58189, P/N 666163-514	5-68
A2A6A3P1		SAME AS A2A6MP1	5-65
A2A6A3P2		SAME AS A2A6MP3-MP5	5-65
A2A6A3S1-S2		SAME AS A2A6A2S1	5-68
A2A6A3Y1		CRYSTAL UNIT, QUARTZ, 5.25 MC, MFR 58189, P/N 666163-689	5-68
A2A6A3Y2		CRYSTAL UNIT, QUARTZ, 5.24 MC, MFR 58189, P/N 666163-688	5-65
A2A6A3Y3		CRYSTAL UNIT, QUARTZ, 5.23 MC, MFR 58189, P/N 666163-687	5-65
A2A6A3Y4		CRYSTAL UNIT, QUARTZ, 5.22 MC, MFR 58189, P/N 666163-686	5-65
A2A6A3Y5		CRYSTAL UNIT, QUARTZ, 5.21 MC, MFR 58189, P/N 666163-68K	5-65
A2A6A3Y6		CRYSTAL UNIT, QUARTZ, 5.2 MC, MFR 58189, P/N 666163-684	5-65
A2A6A3Y7		CRYSTAL UNIT, QUARTZ, 5.19 MC, MFR 58189, P/N 666163-683	5-68
A2A6A3Y8		CRYSTAL UNIT, QUARTZ, 5.18 MC, MFR 58189, P/N 666163-68I	5-68
A2A6A3Y9		CRYSTAL UNIT, QUARTZ, 5.17 MC, MFR 58189, P/N 666163-681	5-68
A2A6A3Y10		CRYSTAL UNIT, QUARTZ, 5.16 MC, MFR 58189, P/N 666163-680	5-68
A2A6A3Y11		CRYSTAL UNIT, QUARTZ, 1850 KC, MFR 58189, P/N 666163-690	5-65
A2A6A3Y12		CRYSTAL UNIT, QUARTZ, 1.851 MC, MFR 58189, P/N 666163-691	5-68
A2A6A3Y13		CRYSTAL UNIT, QUARTZ, 1.852 MC, MFR 58189, P/N 666163-692	5-68
A2A6A3Y14		CRYSTAL UNIT, QUARTZ, 1.853 MC, MFR 58189, P/N 666163-693	5-68
A2A6A3Y15		CRYSTAL UNIT, QUARTZ, 1.854 MC, MFR 58189, P/N 666163-694	5-68
A2A6A3Y16		CRYSTAL UNIT, QUARTZ, 1.855 MC, MFR 58189, P/N 666163-695	5-68
A2A6A3Y17		CRYSTAL UNIT, QUARTZ, 1.856 MC, MFR 58189, P/N 666163-696	5-65
A2A6A3Y18		CRYSTAL UNIT, QUARTZ, 1.857 MC, MFR 58189, P/N 666163-697	5-65
A2A6A3Y19		CRYSTAL UNIT, QUARTZ, 1.858 MC, MFR 58189, P/N 666163-698	5-65
A2A6A3Y20		CRYSTAL UNIT, QUARTZ, 1.859 MC, MFR 58189, P/N 666163-699	5-65
A2A6A3A1		OSCILLATOR ASSEMBLY, 5.16 TO 5.25 MC, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-884	5-66

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A6A3A1C1		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 33 UUF PORM 2 PCT, 500 WVDC, MFR 15450, P/N 301N22C0-33G	5-66
A2A6A3A1C2		SAME AS A2A6A1A1C9	5-66
A2A6A3A1C3		SAME AS A2A6A1A1C7	5-66
A2A6A3A1C4		SAME AS A2A6A1A1C3	5-66
A2A6A3A1C5-C9		CAPACITOR, MIL TYPE CK06CW1C3M	5-66
A2A6A3A1C10		SAME AS A2A6A1A1C11	5-66
A2A6A3A1C11		SAME AS A2A6A1A1C1C	5-66
A2A6A3A1CR1-CR2		SAME AS A2A6A1A1CR1-CR2	5-66
A2A6A3A1Q1		SAME AS A2A6A1A3Q2	5-66
A2A6A3A1Q2		SAME AS A2A6A1A2Q1-Q2	5-66
A2A6A3A1R1		RESISTOR, MIL TYPE RC07GF203J	5-66
A2A6A3A1R2		RESISTOR, MIL TYPE RC07GF123J	5-66
A2A6A3A1R3		SAME AS A2A6A1A1R6	5-66
A2A6A3A1R4		RESISTOR, MIL TYPE RC07GF132J	5-66
A2A6A3A1R5-R6		SAME AS A2A6A1A1R8	5-66
A2A6A3A1R7		RESISTOR, MIL TYPE RC07GF5R1J	5-66
A2A6A3A1R8		SAME AS A2A6A1A1R13	5-66
A2A6A3A1R9		SAME AS A2A6A1A1R6	5-66
A2A6A3A1R10		SAME AS A2A6A1A1R7	5-66
A2A6A3A1R11		SAME AS A2A6A1A1R3	5-66
A2A6A3A1R12		SAME AS A2A6A1A1R4	5-66
A2A6A3A1R13		SAME AS A2A6A1A1R3	5-66
A2A6A3A1R14		SAME AS A2A6A1A2R4	5-66
A2A6A3A1R15		SAME AS A2A6A2A3R10	5-66
A2A6A3A1R16		SAME AS A2A6A1A2R4	5-66
A2A6A3A1RT1		SAME AS A2A6A1A1RT1	5-66
A2A6A3A1T1		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 7.9 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-240	5-66
A2A6A3A1XQ2		SAME AS A2A6A1A2XQ1-XQ2	
A2A6A3A2		OSCILLATOR ASSEMBLY, 1.850 TO 1.859 MC, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-889	5-67
A2A6A3A2C1		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 43 UUF PORM 2 PCT, 500 WVDC, MFR 15450, P/N 301N5600-43G	5-67
A2A6A3A2C2		SAME AS A2A6A1A1C10	5-67
A2A6A3A2C3		SAME AS A2A6A2A2C8-C9	5-67
A2A6A3A2C4		SAME AS A2A6A1A2C3	5-67
A2A6A3A2C5		SAME AS A2A6A3A1C5-C9	5-67

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A6A3A2C6-C7		SAME AS A2A6A3C26	5-67
A2A6A3A2C8		SAME AS A2A6A3A1C5-C9	5-67
A2A6A3A2C9		SAME AS A2A6A3C26	5-67
A2A6A3A2C10		SAME AS A2A6A2A2C8-C9	5-67
A2A6A3A2CR1-CR2		SAME AS A2A6A1A1CR1-CR2	5-67
A2A6A3A2Q1		SAME AS A2A6A1A3Q2	5-67
A2A6A3A2Q2		SAME AS A2A6A1A2Q1-Q2	5-67
A2A6A3A2R1		SAME AS A2A6A3A1R1	
A2A6A3A2R2		SAME AS A2A6A3A1R2	5-67
A2A6A3A2R3		SAME AS A2A6A1A1R6	5-67
A2A6A3A2R4		SAME AS A2A6A3A1R4	5-67
A2A6A3A2R5		SAME AS A2A6A1A3R14	5-67
A2A6A3A2R6		SAME AS A2A6A1A1R8	5-67
A2A6A3A2R7		SAME AS A2A6A1A1R9	5-67
A2A6A3A2R8		SAME AS A2A6A1A1R13	5-67
A2A6A3A2R9		SAME AS A2A6A1A2R14	5-67
A2A6A3A2R10		SAME AS A2A6A1A1R7	5-67
A2A6A3A2R11		SAME AS A2A6A1A1R3	5-67
A2A6A3A2R12		SAME AS A2A6A1A1R4	5-67
A2A6A3A2R13		SAME AS A2A6A1A1R3	5-67
A2A6A3A2R14		SAME AS A2A6A1A2R4	5-67
A2A6A3A2R15		SAME AS A2A6A1A1R6	5-67
A2A6A3A2R16		SAME AS A2A6A2A5R7	5-67
A2A6A3A2RT1		SAME AS A2A6A1A1RT1	5-67
A2A6A3A2T1		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 7.9 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809C0C-243	5-67
A2A6A3A2XQ2		SAME AS A2A6A1A2XQ1-XQ2	5-69
A2A6A3A3	A,B	OUTPUT AND BLANKER SUBASSEMBLY, 1 AND 10 KC, COMPONENT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666163-669	5-69
A2A6A3A3	C	OUTPUT AND BLANKER SUBASSEMBLY, 1 AND 10 KC, COMPONENT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N A09449-001	5-69
A2A6A3A3C1-C45		NOT USED	
A2A6A3A3C46-C47		SAME AS A2A6A3C26	5-69
A2A6A3A3C48-C49		CAPACITOR, FIXED, MICA DIELECTRIC, 470 UUF PORM 1 PCT, 300 WVDC, MFR 72136, P/N CM15E471F3C0V	5-69
A2A6A3A3C50		CAPACITOR, FIXED, MICA DIELECTRIC, 15 UUF PORM 3 PCT, 300 WVDC MFR 72136, P/N CM15C150H3C0V	5-69
A2A6A3A3C51		SAME AS A2A6A3A3C48-C49	5-69

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A6A3A3C52		SAME AS A2A6A3A3C50	5-69
A2A6A3A3C53		CAPACITOR, FIXED, ELECTROLYTIC, 1 UF PCRM 10 PCT, 35 WVDC, MFR 56289, P/N 150D105X9035A2	5-69
A2A6A3A3C54		SAME AS A2A6A3A3C48-C49	5-69
A2A6A3A3C55		SAME AS A2A6A3C26	5-69
A2A6A3A3C56		SAME AS A2A6A3A3C50	5-69
A2A6A3A3CR1-CR6		NOT USED	
A2A6A3A3CR7		SEMICODNUCTOR DEVICE, DIODE, MFR 03508, P/N DHD569	5-69
A2A6A3A3J1-J2		NOT USED	
A2A6A3A3J3		CONNECTOR, RECEPTACLE, ELECTRICAL, MFR 98291, P/N 3108	5-69
A2A6A3A3J4-J5		NOT USED	
A2A6A3A3J6		SAME AS A2A6A3A3J3	5-69
A2A6A3A3J7		NOT USED	
A2A6A3A3J8-J9		TERMINAL, FEED THRU, INSULATED, MFR 98291, P/N FTSMSWHITE	5-69
A2A6A3A3J10		SAME AS A2A6A3A3J8-J9	5-69
A2A6A3A3J10		NOT USED	
A2A6A3A3L1-L4		NOT USED	
A2A6A3A3L5		COIL, RADIO FREQUENCY, 3.35 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-425	5-69
A2A6A3A3L6-L7		COIL, RADIO FREQUENCY, 3.35 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-426	5-69
A2A6A3A3Q1-Q10		NOT USED	
A2A6A3A3Q11		SAME AS A2A6A1A2Q1-Q2	5-69
A2A6A3A3Q12		TRANSISTOR, MFR 80131, P/N 2N1301	5-69
A2A6A3A3R1-R46		NOT USED	
A2A6A3A3R47		SAME AS A2A6A1A1R8	5-69
A2A6A3A3R48		SAME AS A2A6A1A1R7	5-69
A2A6A3A3R49		SAME AS A2A6A1A2R4	5-69
A2A6A3A3R50		SAME AS A2A6A1A3R3	5-69
A2A6A3A3R51		SAME AS A2A6A1A1R7	5-69
A2A6A3A3R52	SELECT	RESISTOR, MIL TYPE RC07GF120J	5-69
A2A6A3A3R52	SELECT	SAME AS A2A6A2A1R8	5-69
A2A6A3A3R52	SELECT	RESISTOR, MIL TYPE RC07GF180J	5-69
A2A6A3A3R52	SELECT	SAME AS A2A6A2A5R17	5-69
A2A6A3A3R52	SELECT	RESISTOR, MIL TYPE RC07GF220J	5-69
A2A6A3A3R52	SELECT	RESISTOR, MIL TYPE RC07GF240J	5-69
A2A6A3A3R52	SELECT	RESISTOR, MIL TYPE RC07GF270J	5-69

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A6A3A3R52 SELECT		SAME AS A2A6A1A3R20	5-69
A2A6A3A3R52 SELECT		RESISTOR, MIL TYPE RC07GF330J	5-69
A2A6A3A3R52 SELECT		RESISTOR, MIL TYPE RC07GF360J	5-69
A2A6A3A3R52 SELECT		SAME AS A2A6A1A3R15	5-69
A2A6A3A3R53		NOT USED	
A2A6A3A3R54		SAME AS A2A6A1A1R13	5-69
A2A6A3A3T1-T2		NOT USED	
A2A6A3A3T3		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 3.35 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-428	5-69
A2A6A3A3TP1-TP3		SAME AS A2A6A1A2TP1-TP2	5-69
A2A6A3A3XQ11		SAME AS A2A6A1A2XQ1-XQ2	
A2A6A3A3XQ12		MOUNTING PAD, TRANSISTOR, 0.344 IN. DIA X 0.075 IN. THK, MFR 07047, P/N 10012	
A2A6A3A4	A,B	ERROR MIXER ASSEMBLY, 1 AND 10 KC, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-899	5-71
A2A6A3A4	C	ERROR MIXER ASSEMBLY, 1 AND 10 KC, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N A09493-001	5-71
A2A6A3A4C1-C3		SAME AS A2A6A1C1	5-71
A2A6A3A4C4-C5		CAPACITOR, FIXED, MICA DIELECTRIC, 15 UUF PORM 5 PCT, 500 WVDC, MFR 72136, P/N CM15C150J5C0V	5-71
A2A6A3A4C6		SAME AS A2A6A1C1	5-71
A2A6A3A4C7		CAPACITOR, FIXED, MICA DIELECTRIC, 220 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N CM15E221G3C0V	5-71
A2A6A3A4C8		CAPACITOR, FIXED, MICA DIELECTRIC, 5 UUF PORM 5 PCT, 500 WVDC, MFR 72136, P/N CM15C050J5C0V	5-71
A2A6A3A4C9		CAPACITOR, FIXED, MICA DIELECTRIC, 68 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N CM15E680G0C0V	5-71
A2A6A3A4C10		SAME AS A2A6A1A1C11	5-71
A2A6A3A4C11-C12	A,B	SAME AS A2A6A3C26	5-71
A2A6A3A4C11-C12	C	SAME AS A2A6A1C1	5-71
A2A6A3A4C13		SAME AS A2A6A3C26	5-71
A2A6A3A4FL1		FILTER, BAND PASS, 9.07 MC, MFR 19057, P/N 790900	5-71
A2A6A3A4FL2		FILTER, BAND PASS, 1.981 MC, MFR 19057, P/N 767109	5-71
A2A6A3A4L1-L2		NOT USED	
A2A6A3A4L3		TRANSFORMER, AUDIO FREQUENCY, 10 KC, MFR 58189, P/N 666163-544	5-71
A2A6A3A4L4		TRANSFORMER, AUDIO FREQUENCY, 1 KC, MFR 58189, P/N 666163-543	5-71
A2A6A3A4Q1-Q7		NOT USED	
A2A6A3A4Q8	A,B	TRANSISTOR, MFR 04713, P/N 2N700	5-71
A2A6A3A4Q8	C	SAME AS A2A6A1A3Q4-Q5	5-71
A2A6A3A4Q9		SAME AS A2A6A1A3Q4-Q5	5-71

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A6A3A4R1		SAME AS A2A6A1A1R13	5-71
A2A6A3A4R2		SAME AS A2A6A1A1R8	5-71
A2A6A3A4R3		SAME AS A2A6A1A1R7	5-71
A2A6A3A4R3		SAME AS A2A6A1A1R13	5-71
A2A6A3A4R4		SAME AS A2A6A1A2R4	5-71
A2A6A3A4R5		SAME AS A2A6A1A3R9	5-71
A2A6A3A4R6		SAME AS A2A6A1A3R29	5-71
A2A6A3A4R7		SAME AS A2A6A1A1R4	5-71
A2A6A3A4R8		SAME AS A2A6A1A1R13	5-71
A2A6A3A4R9		SAME AS A2A6A1A1R8	5-71
A2A6A3A4R10	A,B	SAME AS A2A6A1A1R7	5-71
A2A6A3A4R10	C	SAME AS A2A6A1A1R13	5-71
A2A6A3A4R11	A, B	SAME AS A2A6A1A2R4	5-71
A2A6A3A4R11	C	SAME AS A2A6A2A4R12	5-71
A2A6A3A4R12		SAME AS A2A6A1A2R4	5-71
A2A6A3A4R13-R29		NOT USED	
A2A6A3A4R30	A,B	NOT USED	
A2A6A3A4R30	C	SAME AS A2A6A2A1R8	5-71
A2A6A3A4R31	A,B	NOT US	
A2A6A3A4R31	C	RESISTOR, MIL TYPE RC07GF620J	5-71
A2A6A3A4T1		TRANSFORMER, RADIO FREQUENCY, 7.9 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-386	5-71
A2A6A3A4Z1		ERROR MIXER ASSEMBLY, 1 KC, MFR 58189, P/N 666163-565	5-71
A2A6A3A4Z2		ISOLATION AMPLIFIER, 1 KC, MFR 58189, P/N 666231-880	5-71
A2A6A3A4Z3		AMPLIFIER, ISOLATION 10 AND 100 KC, MFR 58189, P/N 666163-567	5-71
A2A6A4		SYNTHESIZER ASSEMBLY, 500CPS, MFR 58189, P/N 666230-643	
A2A6A4P1		CONNECTOR, RECEPTACLE, ELECTRICAL, 2.088 IN. LG X 0.494 IN. W X 0.663 IN. H, MFR 91146, P/N DBM13W3PC31F115	5-73
A2A6A4A1		MIXER ASSEMBLY, 7.1 MC, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-904	5-74
A2A6A4A1C1		SAME AS A2A6A1A1C18-C20	5-74
A2A6A4A1C2-C4		SAME AS A2A6A1C1	5-74
A2A6A4A1C5-C6		CAPACITOR, FIXED, MICA DIELECTRIC, 10 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N DM15C100F500V	5-74
A2A6A4A1C7-C10		SAME AS A2A6A1C1	5-74
A2A6A4A1C11		CAPACITOR, FIXED, MICA DIELECTRIC, 470 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N DM15E471G300V	5-74
A2A6A4A1C12		SAME AS A2A6A1C1	5-74

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A6A4A1C13		SAME AS A2A6A1C2	5-74
A2A6A4A1C14		CAPACITOR, FIXED, ELECTROLYTIC, 2.2 UF PORM 20 PCT, 35 WVDC, MFR 56289, P/N 150D225X0035B2	5-74
A2A6A4A1C15		CAPACITOR, FIXED, ELECTROLYTIC, 1 UF PORM 20 PCT, 35 WVDC, MFR 56289, P/N 150D105X0035A2	5-74
A2A6A4A1C16		SAME AS A2A6A4A1C14	5-74
A2A6A4A1C17		CAPACITOR, FIXED, MICA DIELECTRIC, 4300 UUF PORM 2 PCT, 100 WVDC, MFR 72136, P/N DM20F432G100V	5-74
A2A6A4A1C18		SAME AS A2A6A4A1C14	5-74
A2A6A4A1C19-C20		SAME AS A2A6A4A1C15	5-74
A2A6A4A1FL1		FILTER, BAND PASS, 7.1 MC, MFR 19057, P/N 767701	5-74
A2A6A4A1L1-L2		SAME AS A2A6A1L1-L2	5-74
A2A6A4A1MP1-MP2		SAME AS A2A6MP19	5-74
A2A6A4A1Q1		SAME AS A2A6A1A3Q4-Q5	5-74
A2A6A4A1Q2-Q3		TRANSISTOR, MFR 80131, P/N 2N1142	5-74
A2A6A4A1Q4		TRANSISTOR, MFR 80131, P/N 2N706	5-74
A2A6A4A1Q5		SAME AS A2A6A1A2Q1-Q2	5-74
A2A6A4A1R1		SAME AS A2A6A1A1R13	5-74
A2A6A4A1R2		SAME AS A2A6A1A1R8	5-74
A2A6A4A1R3		SAME AS A2A6A1A1R18	5-74
A2A6A4A1R4		SAME AS A2A6A1A1R7	5-74
A2A6A4A1R5		SAME AS A2A6A1A3R20	5-74
A2A6A4A1R6-R7		SAME AS A2A6A1A1R14	5-74
A2A6A4A1R8		SAME AS A2A6A1A1R13	5-74
A2A6A4A1R9		SAME AS A2A6A1A1R8	5-74
A2A6A4A1R10		SAME AS A2A6A1A1R18	5-74
A2A6A4A1R11		RESISTOR, MIL TYPE RC07GF332J	5-74
A2A6A4A1R12		SAME AS A2A6A1A1R18	5-74
A2A6A4A1R13		RESISTOR, MIL TYPE RC07GF122J	5-74
A2A6A4A1R14		SAME AS A2A6A1A1R13	5-74
A2A6A4A1R15		SAME AS A2A6A1A1R8	5-74
A2A6A4A1R16		SAME AS A2A6A2A5R13	5-74
A2A6A4A1R17		SAME AS A2A6A1A1R15	5-74
A2A6A4A1R18		SAME AS A2A6A1A2R4	5-74
A2A6A4A1R19		SAME AS A2A6A1A1R13	5-74
A2A6A4A1R20		SAME AS A2A6A1A1R8	5-74
A2A6A4A1R21		SAME AS A2A6A1A2R4	5-74

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A6A4A1R22		SAME AS A2A6A1A3R6	5-74
A2A6A4A1R23		RESISTOR, MIL TYPE RC07GF272J	5-74
A2A6A4A1R24		SAME AS A2A6A4A1R13	5-74
A2A6A4A1R25		SAME AS A2A6A1A1R13	5-74
A2A6A4A1R26		RESISTOR, MIL TYPE RC07GF273J	5-74
A2A6A4A1T1		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 7.9 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-244	5-74
A2A6A4A1T2		TRANSFORMER, RADIO FREQUENCY, 11.5 KC, 0.562 IN. LG X 0.625 IN. DIA, MFR 58189, P/N 809000-430	5-74
A2A6A4A1TP1-TP4		SAME AS A2A6A1A2TP1-TP2	5-74
A2A6A4A1TP5		NOT USE	
A2A6A4A1TP6		SAME AS A2A6A1A2TP1-TP2	5-74
A2A6A4A1XQ2-XQ3		SAME AS A2A6A3A3XQ12	
A2A6A4A1XQ5		SAME AS A2A6A1A2XQ1-XQ2	
A2A6A4A2		DIVIDER ASSEMBLY, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-909	5-76
A2A6A4A2C1		SAME AS A2A6A3A1C5-C9	5-76
A2A6A4A2C2		SAME AS A2A6A1C2	5-76
A2A6A4A2C3		SAME AS A2A6A1A2C10	5-76
A2A6A4A2C4		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 0.001 UF PORM 20 PCT, 75 WVDC, MFR 86335, P/N K1200M.001M	5-76
A2A6A4A2C5		CAPACITOR, FIXED, ELECTROLYTIC, 1 UF PORM 20 PCT, 20 WVDC, MFR 56289, P/N 150D105X0020A2	5-76
A2A6A4A2C6		CAPACITOR, FIXED, MICA DIELECTRIC, 27 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N DM15E270G300V	5-76
A2A6A4A2C7		SAME AS A2A6A3A1C5-C9	5-76
A2A6A4A2C8-C9		SAME AS A2A6A1A1C17	5-76
A2A6A4A2C10		SAME AS A2A6A2A4C7	5-76
A2A6A4A2C11		SAME AS A2A6A3A1C5-C9	5-76
A2A6A4A2C12-C13		SAME AS A2A6A1A1C17	5-76
A2A6A4A2C14		SAME AS A2A6A4A2C6	5-76
A2A6A4A2C15		SAME AS A2A6A3A1C5-C9	5-76
A2A6A4A2C16-C17		SAME AS A2A6A1A1C17	5-76
A2A6A4A2C18		SAME AS A2A6A4A2C6	5-76
A2A6A4A2C19		SAME AS A2A6A3A1C5-C9	5-76
A2A6A4A2C20-C21		SAME AS A2A6A1A1C17	5-76
A2A6A4A2C22		SAME AS A2A6A1A2C10	5-76
A2A6A4A2C23		SAME AS A2A6A4A1C15	5-76
A2A6A4A2C24-C25		SAME AS A2A6A2A4C7	5-76

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A6A4A2CR1		SAME AS A2A6A1A3CR1	5-76
A2A6A4A2CR2-CR12		SAME AS A2A6A1A2CR1	5-76
A2A6A4A2L1		SAME AS A2A6A1L1-L2	5-76
A2A6A4A2Q1-Q9		TRANSISTOR, MFR 8C131, P/N 2N705	5-76
A2A6A4A2R1		RESISTOR, FIXED, WIREWOUND, 270 OHMS PORM 3 PCT, 1W, MFR 91637, P/N RS1A271H	5-76
A2A6A4A2R2		SAME AS A2A6A1A3R9	5-76
A2A6A4A2R3		SAME AS A2A6A2A5R1	5-76
A2A6A4A2R4		SAME AS A2A6A4A1R11	5-76
A2A6A4A2R5		SAME AS A2A6A1A1R7	5-76
A2A6A4A2R6		SAME AS A2A6A1A1R13	5-76
A2A6A4A2R7		SAME AS A2A6A1A1R17	5-76
A2A6A4A2R8		SAME AS A2A6A1A1R13	5-76
A2A6A4A2R9		SAME AS A2A6A2A5R1	5-76
A2A6A4A2R10		SAME AS A2A6A1A1R13	5-76
A2A6A4A2R11		SAME AS A2A6A1A1R10	5-76
A2A6A4A2R12		SAME AS A2A6A1A1R13	5-76
A2A6A4A2R13		SAME AS A2A6A2A5R1	5-76
A2A6A4A2R14		SAME AS A2A6A1A1R13	5-76
A2A6A4A2R15		SAME AS A2A6A1A1R10	5-76
A2A6A4A2R16		SAME AS A2A6A1A1R17	5-76
A2A6A4A2R17		SAME AS A2A6A2A5R1	5-76
A2A6A4A2R18		SAME AS A2A6A1A1R13	5-76
A2A6A4A2R19		SAME AS A2A6A1A1R10	5-76
A2A6A4A2R20-R21		SAME AS A2A6A1A1R13	5-76
A2A6A4A2R22		SAME AS A2A6A2A5R1	5-76
A2A6A4A2R23		SAME AS A2A6A1A1R13	5-76
A2A6A4A2R24		SAME AS A2A6A1A1R10	5-76
A2A6A4A2R25		SAME AS A2A6A1A1R17	5-76
A2A6A4A2R26		SAME AS A2A6A2A5R1	5-76
A2A6A4A2R27		SAME AS A2A6A1A1R13	5-76
A2A6A4A2R28		SAME AS A2A6A1A1R10	5-76
A2A6A4A2R29		SAME AS A2A6A1A1R13	5-76
A2A6A4A2R30		SAME AS A2A6A2A5R1	5-76
A2A6A4A2R31		SAME AS A2A6A1A1R13	5-76
A2A6A4A2R32		SAME AS A2A6A1A1R10	5-76

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A6A4A2R33		SAME AS A2A6A1A1R17	5-76
A2A6A4A2R34		SAME AS A2A6A2A5R1	5-76
A2A6A4A2R35		SAME AS A2A6A1A1R13	5-76
A2A6A4A2R36		SAME AS A2A6A2A5R14	5-76
A2A6A4A2R37		SAME AS A2A6A1A1R13	5-76
A2A6A4A2R38		SAME AS A2A6A2A5R1	5-76
A2A6A4A2R39		SAME AS A2A6A1A1R13	5-76
A2A6A4A2R40		SAME AS A2A6A1A1R10	5-76
A2A6A4A2R41		SAME AS A2A6A1A1R4	5-76
A2A6A4A2TP1-TP3		SAME AS A2A6A1A2TP1-TP2	5-76
A2A6A4A2TP4		SAME AS A2A6A1A2TP3	5-76
A2A6A4A2TP5		SAME AS A2A6A1A2TP1-TP2	5-76
A2A6A4A3		OSCILLATOR, 500 CPS, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-970	5-78
A2A6A4A3C1		SAME AS A2A6A1C1	5-78
A2A6A4A3C2		SAME AS A2A6A1C2	5-78
A2A6A4A3C3		SAME AS A2A6A1C1	5-78
A2A6A4A3C4		CAPACITOR, FIXED, MICA DIELECTRIC, 0.01 UF PORM 2 PCT, 100 WVDC, MFR 72136, P/N DM20F103G100V	5-78
A2A6A4A3C5		CAPACITOR, MIL TYPE CM06F432G03	5-78
A2A6A4A3C6		SAME AS A2A6A1A2C10	5-78
A2A6A4A3C7-C8		SAME AS A2A6A2A4C20	5-78
A2A6A4A3C9		CAPACITOR, FIXED, MICA DIELECTRIC, 100 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N DM15E101G300V	5-78
A2A6A4A3C10	SELECT	SAME AS A2A6A4A1C5-C6	5-78
A2A6A4A3C10	SELECT	CAPACITOR, FIXED, MICA DIELECTRIC, 12 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N DM15C120F500V	5-78
A2A6A4A3C10	SELECT	CAPACITOR, FIXED, MICA DIELECTRIC, 15 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N DM15C150F500V	5-78
A2A6A4A3C10	SELECT	CAPACITOR, FIXED, MICA DIELECTRIC, 18 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N DM15C180F500V	5-78
A2A6A4A3C10	SELECT	CAPACITOR, FIXED, MICA DIELECTRIC, 20 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N DM15C200F500V	5-78
A2A6A4A3C10	SELECT	CAPACITOR, FIXED, MICA DIELECTRIC, 22 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N DM15C220F500V	5-78
A2A6A4A3C10	SELECT	CAPACITOR, FIXED, MICA DIELECTRIC, 24 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N DM15C240F500V	5-78
A2A6A4A3C10	SELECT	CAPACITOR, FIXED, MICA DIELECTRIC, 27 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N DM15E270F500V	5-78
A2A6A4A3C10	SELECT	CAPACITOR, FIXED, MICA DIELECTRIC, 30 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N DM15F300F500V	5-78

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A6A4A3C10	SELECT	CAPACITOR, FIXED, MICA DIELECTRIC, 33 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N CM15E33OF5COV	5-78
A2A6A4A3C10	SELECT	CAPACITOR, FIXED, MICA DIELECTRIC, 36 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N CM15E360F5COV	5-78
A2A6A4A3C10	SELECT	CAPACITOR, FIXED, MICA DIELECTRIC, 39 UUF PORM 1 PCT, 500 WVDC, MFR 72136, P/N CM15E39CF5COV	5-78
A2A6A4A3C11		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 47 UUF PORM 2 PCT, 500 WVDC, MFR 15450, P/N 301N220C-47G	5-78
A2A6A4A3C12-C13		SAME AS A2A6A1C1	5-78
A2A6A4A3C14		SAME AS A2A6A1A2C1C	5-78
A2A6A4A3C15		CAPACITOR, FIXED, ELECTROLYTIC, 6.8 UF PORM 20 PCT, 15 WVDC, MFR 56289, P/N 150D685X0C15B2	5-78
A2A6A4A3C16		SAME AS A2A6A4A1C14	5-78
A2A6A4A3C17		SAME AS A2A6A1A2C1C	5-78
A2A6A4A3C18		CAPACITOR, FIXED, ELECTROLYTIC, 6.8 UF PORM 20 PCT, 20 WVDC, MFR 56289, P/N 150D685X0C2CB2	5-78
A2A6A4A3C19		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 0.002 UF PORM 20 PCT, 75 WVDC, MFR 86335, P/N K12COM.OC2M	5-78
A2A6A4A3C20-C21		SAME AS A2A6A1C1	5-78
A2A6A4A3C22		CAPACITOR, FIXED, ELECTROLYTIC, 2.2 UF PORM 20 PCT, 20 WVDC, MFR 56289, P/N 150D225X002CA2	5-78
A2A6A4A3C23-C24		SAME AS A2A6A1A2C1C	5-78
A2A6A4A3C25		SAME AS A2A6A1C1	5-78
A2A6A4A3CR1		SEMICONDUCTOR DEVICE, DIODE, MFR 12954, P/N DT30319C	5-78
A2A6A4A3CR2-CR4		SEMICONDUCTOR DEVICE, DIODE, MFR 73293, P/N HC7C05B	5-78
A2A6A4A3CR5-CR6		SEMICONDUCTOR DEVICE, DIODE, MFR 07933, P/N RD2728	5-78
A2A6A4A3CR7		SAME AS A2A6A1A2CR1	5-78
A2A6A4A3CR8-CR9		SAME AS A2A6A1A1CR1-CR2	5-78
A2A6A4A3J1		SAME AS A2A6A3A3J8-J9	5-78
A2A6A4A3L1		SAME AS A2A6A1L1-L2	5-78
A2A6A4A3L2-L3		COIL, RADIO FREQUENCY, 150,000 UH, MFR 03550, P/N 7875	5-78
A2A6A4A3L4		TRANSFORMER, RADIO FREQUENCY, 110 KC, 0.562 IN. LG X 0.625 IN. DIA, MFR 58189, P/N 809CC0-429	5-78
A2A6A4A3L5-L6		SAME AS A2A6A1L1-L2	5-78
A2A6A4A3L7		REACTOR, MFR 80223, P/N EH734	5-78
A2A6A4A3MP1		SAME AS A2A6A1MP5	5-78
A2A6A4A3P1		JACK, TIP, MFR 98291, P/N SKT14WHITE	5-78
A2A6A4A3Q1-Q3		SAME AS A2A6A1A2Q3	5-78
A2A6A4A3Q4-Q6		SAME AS A2A6A1A3Q2	5-78
A2A6A4A3Q7		SAME AS A2A6A1A2Q1-Q2	5-78

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A6A4A3R1		SAME AS A2A6A4A2R1	5-78
A2A6A4A3R2		SAME AS A2A6A2A5R15	5-78
A2A6A4A3R3		RESISTOR, FIXED, WIREWOUND, 220 OHMS PCRM 3 PCT, 1W, MFR 91637, P/N RS1A221H	5-78
A2A6A4A3R4		SAME AS A2A6A2A3R14	5-78
A2A6A4A3R5		SAME AS A2A6A1A1R13	5-78
A2A6A4A3R6		RESISTOR, MIL TYPE RC07GF134J	5-78
A2A6A4A3R7		SAME AS A2A6A1A1R13	5-78
A2A6A4A3R8		SAME AS A2A6A1A1R6	5-78
A2A6A4A3R9		SAME AS A2A6A1A1R13	5-78
A2A6A4A3R10		SAME AS A2A6A1A1R4	5-78
A2A6A4A3R11		SAME AS A2A6A2A5R15	5-78
A2A6A4A3R12		RESISTOR, MIL TYPE RC07GF334J	5-78
A2A6A4A3R13		SAME AS A2A6A1A2R9	5-78
A2A6A4A3R14		SAME AS A2A6A1A1R13	5-78
A2A6A4A3R15		SAME AS A2A6A2A2R8	5-78
A2A6A4A3R16		RESISTOR, VARIABLE, 5K OHMS PCRM 5 PCT, 1W, MFR 80294, P/N 3250W1-502	5-78
A2A6A4A3R17		SAME AS A2A6A1A3R29	5-78
A2A6A4A3R18		SAME AS A2A6A1A1R7	5-78
A2A6A4A3R19		SAME AS A2A6A1A1R8	5-78
A2A6A4A3R20		SAME AS A2A6A1A2R9	5-78
A2A6A4A3R21-R22		SAME AS A2A6A2A5R15	5-78
A2A6A4A3R23-R24		SAME AS A2A6A1A1R7	5-78
A2A6A4A3R25		SAME AS A2A6A1A1R3	5-78
A2A6A4A3R26		SAME AS A2A6A1A2R9	5-78
A2A6A4A3R27		SAME AS A2A6A2A3R14	5-78
A2A6A4A3R28		SAME AS A2A6A1A2R4	5-78
A2A6A4A3R29		SAME AS A2A6A1A1R7	5-78
A2A6A4A3R30		SAME AS A2A6A1A1R13	5-78
A2A6A4A3R31		SAME AS A2A6A1A3R4	5-78
A2A6A4A3RT1		SAME AS A2A6A1A1RT1	5-78
A2A6A4A3T1		TRANSFORMER, AUDIO FREQUENCY, MFR 80223, P/N ER697	5-78
A2A6A4A3TP1		NOT USED	
A2A6A4A3TP2		SAME AS A2A6A1A2TP3	5-78
A2A6A4A3XQ1-XQ3		SAME AS A2A6A1A2XQ1-XQ2	
A2A6A4A3XQ7		SAME AS A2A6A1A2XQ1-XQ2	

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A6A5		SPECTRUM GENERATOR ASSEMBLY, MFR 58189, P/N 666230-652	
A2A6A5MP1-MP2		SCREW, EXTERNALLY RELIEVED BODY, MFR 58189, P/N 666163-233	5-79
A2A6A5A1		SPECTRUM GENERATOR ASSEMBLY, 100 KC, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-924	5-80
A2A6A5A1C1		SAME AS A2A6A1C1	5-80
A2A6A5A1C2		CAPACITOR, FIXED, ELECTROLYTIC, 15 UF PORM 20 PCT, 20 WVDC, MFR 56289, P/N 15CD156X002CR2	5-80
A2A6A5A1C3		SAME AS A2A6A1C1	5-80
A2A6A5A1C4		CAPACITOR, FIXED, MICA DIELECTRIC, 5 UUF PORM 10 PCT, 500 WVDC, MFR 72136, P/N DM15CC050K5COV	5-80
A2A6A5A1C5		CAPACITOR, FIXED, MICA DIELECTRIC, 20 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N DM15E200G3COV	5-80
A2A6A5A1C6		CAPACITOR, FIXED, PLASTIC DIELECTRIC, 1800 UUF PORM 10 PCT, 100 WVDC, MFR 02777, P/N 1P1182K	5-80
A2A6A5A1C7-C8		SAME AS A2A6A1C1	5-80
A2A6A5A1C9		SAME AS A2A6A4A2C4	5-80
A2A6A5A1C10		CAPACITOR, MIL TYPE CC64UH121G	5-80
A2A6A5A1C11		SAME AS A2A6A3C26	5-80
A2A6A5A1C12		SAME AS A2A6A4A2C4	5-80
A2A6A5A1C13		SAME AS A2A6A4A3C19	5-80
A2A6A5A1C14-C16		SAME AS A2A6A1C1	5-80
A2A6A5A1C17		CAPACITOR, FIXED, MICA DIELECTRIC, 33 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N DM15E330G3COV	5-80
A2A6A5A1C18		SAME AS A2A6A2A4C12	5-80
A2A6A5A1C19		SAME AS A2A6A2A1C1	5-80
A2A6A5A1CR1		SAME AS A2A6A1A3CR1	5-80
A2A6A5A1CR2-CR3		SEMICONDUCTOR DEVICE, DIODE, MFR 80131, P/N 1N816	5-80
A2A6A5A1CR4		SAME AS A2A6A1A1CR1-CR2	5-80
A2A6A5A1E1		SAME AS A2A6MP3-MP5	5-80
A2A6A5A1E2-E5		NOT USED	
A2A6A5A1E6		SAME AS A2A6MP2	5-80
A2A6A5A1J1-J2		NOT USED	
A2A6A5A1J3		CONNECTOR, RECEPTACLE, ELECTRICAL, MFR 98291, P/N 51-043-4300	5-80
A2A6A5A1J4-J5		NOT USED	
A2A6A5A1J6		SAME AS A2A6A5A1J3	5-80
A2A6A5A1L1		SAME AS A2A6A1L1-L2	5-80
A2A6A5A1L2		COIL, RADIO FREQUENCY, 250 KC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-422	5-80
A2A6A5A1L3-L4		NOT USED	

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A6A5A1L5		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 7.9 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809CCC-237	5-80
A2A6A5A1Q1		SAME AS A2A6A3A3Q12	5-80
A2A6A5A1Q2		SAME AS A2A6A4A1Q4	5-80
A2A6A5A1Q3		SAME AS A2A6A3A3Q12	5-80
A2A6A5A1Q4		SAME AS A2A6A4A2Q1-Q9	5-80
A2A6A5A1Q5-Q6		SAME AS A2A6A1A3Q4-Q5	5-80
A2A6A5A1R1		SAME AS A2A6A2A3R10	5-80
A2A6A5A1R2-R3		SAME AS A2A6A1A1R7	5-80
A2A6A5A1R4		SAME AS A2A6A2A5R1	5-80
A2A6A5A1R5		SAME AS A2A6A4A3R16	5-80
A2A6A5A1R6		SAME AS A2A6A1A1R10	5-80
A2A6A5A1R7-R8		SAME AS A2A6A1A1R13	5-80
A2A6A5A1R9		RESISTOR, MIL TYPE RC07GF361J	5-80
A2A6A5A1R10		SAME AS A2A6A3A4R31	5-80
A2A6A5A1R11		SAME AS A2A6A1A1R13	5-80
A2A6A5A1R12		SAME AS A2A6A1A1R10	5-80
A2A6A5A1R13		SAME AS A2A6A1A3R14	5-80
A2A6A5A1R14		SAME AS A2A6A2A2R2	5-80
A2A6A5A1R15		SAME AS A2A6A1A1R7	5-80
A2A6A5A1R16		SAME AS A2A6A1A1R15	5-80
A2A6A5A1R17		SAME AS A2A6A1A1R8	5-80
A2A6A5A1R18		SAME AS A2A6A1A1R13	5-80
A2A6A5A1R19		SAME AS A2A6A1A1R8	5-80
A2A6A5A1R20		SAME AS A2A6A1A1R13	5-80
A2A6A5A1R21		SAME AS A2A6A1A1R7	5-80
A2A6A5A1R22		SAME AS A2A6A1A1R11	5-80
A2A6A5A1R23		SAME AS A2A6A1A2R5	5-80
A2A6A5A1R24 SEL	ECT	SAME AS A2A6A4A1R13	5-80
A2A6A5A1R24 SEL	ECT	SAME AS A2A6A1A3R9	5-80
A2A6A5A1R24 SEL	ECT	SAME AS A2A6A1A1R10	5-80
A2A6A5A1R24 SEL	ECT	SAME AS A2A6A1A1R15	5-80
A2A6A5A1R24 SEL	ECT	SAME AS A2A6A4A1R23	5-80
A2A6A5A1R24 SEL	ECT	SAME AS A2A6A4A1R11	5-80
A2A6A5A1R24 SEL	ECT	SAME AS A2A6A1A3R3	5-80
A2A6A5A1R24 SEL	ECT	SAME AS A2A6A1A2R9	5-80

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A6A5A1R24	SELECT	RESISTOR, MIL TYPE RC07GF432J	5-80
A2A6A5A1R24	SELECT	SAME AS A2A6A1A1R7	5-80
A2A6A5A1R24	SELECT	SAME AS A2A6A2A2R8	5-80
A2A6A5A1R25		SAME AS A2A6A1A1R11	5-80
A2A6A5A1T1		TRANSFORMER, RADIO FREQUENCY, 25 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-423	5-80
A2A6A5A1T2		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 7.9 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-236	5-80
A2A6A5A1TP1-TP6		SAME AS A2A6A1A2TP1-TP2	5-80
A2A6A5A1XQ1		SAME AS A2A6A3A3XQ12	
A2A6A5A1XQ3		SAME AS A2A6A3A3XQ12	
A2A6A5A2		SPECTRUM GENERATOR ASSEMBLY, 10 KC, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-929	5-81
A2A6A5A2C1		SAME AS A2A6A1C1	5-81
A2A6A5A2C2		SAME AS A2A6A5A1C2	5-81
A2A6A5A2C3-C5		SAME AS A2A6A1A1C17	5-81
A2A6A5A2C6		SAME AS A2A6A1C1	5-81
A2A6A5A2C7		SAME AS A2A6A1A3C8	5-81
A2A6A5A2C8		SAME AS A2A6A5A1C5	5-81
A2A6A5A2C9		CAPACITOR, FIXED, PLASTIC DIELECTRIC, 0.033 UF PORM 10 PCT, 100 WVDC, MFR 02777, P/N 1P1333K	5-81
A2A6A5A2C10		SAME AS A2A6A1C1	5-81
A2A6A5A2C11		SAME AS A2A6A1A2C10	5-81
A2A6A5A2C12		CAPACITOR, FIXED, ELECTROLYTIC, 3.3 UF PORM 20 PCT, 35 WVDC, MFR 56289, P/N 150D335X0035B2	5-81
A2A6A5A2C13		SAME AS A2A6A1C1	5-81
A2A6A5A2C14		SAME AS A2A6A1A1C9	5-81
A2A6A5A2C15		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 100 UUF PORM 5 PCT, 75 WVDC, MFR 86335, P/N MINU100J	5-81
A2A6A5A2C16		SAME AS A2A6A1A2C13	5-81
A2A6A5A2CR1		SAME AS A2A6A1A3CR1	5-81
A2A6A5A2CR2-CR3		SAME AS A2A6A1A2CR1	5-81
A2A6A5A2CR4		SAME AS A2A6A5A1CR2-CR3	5-81
A2A6A5A2E1-E2		SAME AS A2A6MP3-MP5	5-81
A2A6A5A2E3-E4		SAME AS A2A6MP2	5-81
A2A6A5A2J1-J4		NOT USED	
A2A6A5A2J5		SAME AS A2A6A5A1J3	5-81
A2A6A5A2L1		SAME AS A2A6A1L1-L2	5-81
A2A6A5A2Q1-Q2		SAME AS A2A6A3A3Q12	5-81

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A6A5A2Q3		SAME AS A2A6A4A1Q4	5-81
A2A6A5A2Q4-Q5		SAME AS A2A6A3A3Q12	5-81
A2A6A5A2Q6		SAME AS A2A6A1A3Q4-Q5	5-81
A2A6A5A2R1		SAME AS A2A6A1A3R1	5-81
A2A6A5A2R2		SAME AS A2A6A1A1R17	5-81
A2A6A5A2R3		SAME AS A2A6A2A5R1	5-81
A2A6A5A2R4		SAME AS A2A6A1A1R13	5-81
A2A6A5A2R5		SAME AS A2A6A1A1R10	5-81
A2A6A5A2R6		SAME AS A2A6A1A1R13	5-81
A2A6A5A2R7		SAME AS A2A6A2A5R1	5-81
A2A6A5A2R8		SAME AS A2A6A1A1R13	5-81
A2A6A5A2R9		SAME AS A2A6A1A1R10	5-81
A2A6A5A2R10		NOT USED	
A2A6A5A2R11		SAME AS A2A6A4A3R16	5-81
A2A6A5A2R12		SAME AS A2A6A4A1R11	5-81
A2A6A5A2R13		SAME AS A2A6A1A1R13	5-81
A2A6A5A2R14		SAME AS A2A6A5A1R9	5-81
A2A6A5A2R15		SAME AS A2A6A3A4R31	5-81
A2A6A5A2R16		SAME AS A2A6A1A1R10	5-81
A2A6A5A2R17		NOT USED	
A2A6A5A2R18-R19		SAME AS A2A6A1A1R13	5-81
A2A6A5A2R20		SAME AS A2A6A1A3R14	5-81
A2A6A5A2R21		SAME AS A2A6A2A5R1	5-81
A2A6A5A2R22		SAME AS A2A6A1A1R10	5-81
A2A6A5A2R23		SAME AS A2A6A1A3R9	5-81
A2A6A5A2R24 SELECT		SAME AS A2A6A1A3R3	5-81
A2A6A5A2R24 SELECT		SAME AS A2A6A4A1R13	5-81
A2A6A5A2R24 SELECT		SAME AS A2A6A1A3R9	5-81
A2A6A5A2R24 SELECT		SAME AS A2A6A1A1R10	5-81
A2A6A5A2R24 SELECT		SAME AS A2A6A1A1R15	5-81
A2A6A5A2R24 SELECT		SAME AS A2A6A4A1R23	5-81
A2A6A5A2R24 SELECT		SAME AS A2A6A4A1R11	5-81
A2A6A5A2R24 SELECT		SAME AS A2A6A1A2R9	5-81
A2A6A5A2R24 SELECT		SAME AS A2A6A5A1R24	5-81
A2A6A5A2R24 SELECT		SAME AS A2A6A1A1R7	5-81
A2A6A5A2R24 SELECT		SAME AS A2A6A2A2R8	5-81

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A6A5A2R24	SELECT	SAME AS A2A6A2A2R2	5-81
A2A6A5A2R24	SELECT	SAME AS A2A6A1A3R4	5-81
A2A6A5A2R24	SELECT	SAME AS A2A6A2A5R1	5-81
A2A6A5A2R24	SELECT	RESISTOR, MIL TYPE RC07GF752J	5-81
A2A6A5A2R24	SELECT	SAME AS A2A6A1A3R6	5-81
A2A6A5A2R25		SAME AS A2A6A1A3R9	5-81
A2A6A5A2R26		SAME AS A2A6A1A1R8	5-81
A2A6A5A2R27		SAME AS A2A6A1A1R13	5-81
A2A6A5A2R28-R29		SAME AS A2A6A3A1R7	5-81
A2A6A5A2R30	SELECT	SAME AS A2A6A1A1R9	
A2A6A5A2R30	SELECT	SAME AS A2A6A2A1R8	
A2A6A5A2R30	SELECT	SAME AS A2A6A2A5R17	
A2A6A5A2R30	SELECT	SAME AS A2A6A1A3R20	
A2A6A5A2R30	SELECT	SAME AS A2A6A1A3R15	5-81
A2A6A5A2R30	SELECT	SAME AS A2A6A1A1R18	
A2A6A5A2T1		TRANSFORMER, RADIO FREQUENCY, 7.90 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-379	5-81
A2A6A5A2TP1-TP6		SAME AS A2A6A1A2TP1-TP2	5-81
A2A6A5A2XQ1-XQ2		SAME AS A2A6A3A3XQ12	
A2A6A5A2XQ4-XQ5		SAME AS A2A6A3A3XQ12	
A2A6A5A3		SPECTRUM GENERATOR ASSEMBLY, 1 KC, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-934	5-82
A2A6A5A3C1		SAME AS A2A6A1C2	5-82
A2A6A5A3C2		SAME AS A2A6A5A1C2	5-82
A2A6A5A3C3-C5		SAME AS A2A6A1A1C17	5-82
A2A6A5A3C6		SAME AS A2A6A1C1	5-82
A2A6A5A3C7		SAME AS A2A6A1A3C8	5-82
A2A6A5A3C8		SAME AS A2A6A5A1C5	5-82
A2A6A5A3C9		CAPACITOR, FIXED, PLASTIC DIELECTRIC, 0.33 UF PORM 10 PCT, 100 WVDC, MFR 02777, P/N P331PFK	5-82
A2A6A5A3C10		SAME AS A2A6A1C1	5-82
A2A6A5A3C11		SAME AS A2A6A1A2C10	5-82
A2A6A5A3C12		SAME AS A2A6A5A2C12	5-82
A2A6A5A3C13		SAME AS A2A6A3C26	5-82
A2A6A5A3C14		CAPACITOR, MIL TYPE CM06F162G03	5-82
A2A6A5A3C15		SAME AS A2A6A2A3C2-C3	5-82
A2A6A5A3C16		SAME AS A2A6A3C26	5-82

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A6A5A3C17		CAPACITOR, FIXED, METALIZED PAPER DIELECTRIC, 0.005 UF PORM 20 PCT, 200 WVDC, MFR 02777, P/N T2900-3	5-82
A2A6A5A3CR1		SAME AS A2A6A1A3CR1	5-82
A2A6A5A3CR2-CR3		SAME AS A2A6A1A2CR1	5-82
A2A6A5A3CR4		SAME AS A2A6A1A1CR1-CR2	5-82
A2A6A5A3CR5		SAME AS A2A6A5A1CR2-CR3	5-82
A2A6A5A3E1-E2		SAME AS A2A6MP3-MP5	5-82
A2A6A5A3E3-E4		SAME AS A2A6MP2	5-82
A2A6A5A3J1		SAME AS A2A6A3A3C1-C45	
A2A6A5A3J2		PROD, TEST, MFR 98291, P/N RFTM14RED	5-82
A2A6A5A3J3		SAME AS A2A6A3A3CR1-CR6	
A2A6A5A3J4		SAME AS A2A6A5A1J3	5-82
A2A6A5A3L1		SAME AS A2A6A1L1-L2	5-82
A2A6A5A3L2		COIL, MIL TYPE MS75008-45	5-82
A2A6A5A3Q1-Q2		SAME AS A2A6A3A3Q12	5-82
A2A6A5A3Q3		SAME AS A2A6A4A1Q4	5-82
A2A6A5A3Q4-Q5		SAME AS A2A6A3A3Q12	5-82
A2A6A5A3Q6		SAME AS A2A6A1A3Q4-Q5	5-82
A2A6A5A3R1		SAME AS A2A6A1A3R1	5-82
A2A6A5A3R2		SAME AS A2A6A1A1R17	5-82
A2A6A5A3R3		SAME AS A2A6A2A5R1	5-82
A2A6A5A3R4		SAME AS A2A6A1A1R13	5-82
A2A6A5A3R5		SAME AS A2A6A1A1R10	5-82
A2A6A5A3R6		SAME AS A2A6A1A1R13	5-82
A2A6A5A3R7		SAME AS A2A6A2A5R1	5-82
A2A6A5A3R8		SAME AS A2A6A1A1R13	5-82
A2A6A5A3R9		SAME AS A2A6A1A3R10	5-82
A2A6A5A3R10		SAME AS A2A6A3A1R4	5-82
A2A6A5A3R11		SAME AS A2A6A4A3R16	5-82
A2A6A5A3R12		SAME AS A2A6A1A1R7	5-82
A2A6A5A3R13		SAME AS A2A6A1A1R13	5-82
A2A6A5A3R14		SAME AS A2A6A5A1R9	5-82
A2A6A5A3R15		SAME AS A2A6A3A4R31	5-82
A2A6A5A3R16		SAME AS A2A6A1A1R10	5-82
A2A6A5A3R17		SAME AS A2A6A1A1R17	5-82
A2A6A5A3R18-R19		SAME AS A2A6A1A1R13	5-82

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A6A5A3R20		SAME AS A2A6A1A3R14	5-82
A2A6A5A3R21		SAME AS A2A6A2A2R2	5-82
A2A6A5A3R22		SAME AS A2A6A1A1R10	5-82
A2A6A5A3R23		SAME AS A2A6A1A3R9	5-82
A2A6A5A3R24 SELECT		SAME AS A2A6A1A3R3	5-82
A2A6A5A3R24 SELECT		SAME AS A2A6A4A1R13	5-82
A2A6A5A3R24 SELECT		SAME AS A2A6A1A3R9	5-82
A2A6A5A3R24 SELECT		SAME AS A2A6A1A1R10	5-82
A2A6A5A3R24 SELECT		SAME AS A2A6A1A1R15	5-82
A2A6A5A3R24 SELECT		SAME AS A2A6A4A1R23	5-82
A2A6A5A3R24 SELECT		SAME AS A2A6A4A1R11	5-82
A2A6A5A3R24 SELECT		SAME AS A2A6A1A2R9	5-82
A2A6A5A3R24 SELECT		SAME AS A2A6A5A1R24 SELECT	5-82
A2A6A5A3R24 SELECT		SAME AS A2A6A1A1R7	5-82
A2A6A5A3R24 SELECT		SAME AS A2A6A2A2R8	5-82
A2A6A5A3R24 SELECT		SAME AS A2A6A2A2R2	5-82
A2A6A5A3R24 SELECT		SAME AS A2A6A1A3R4	5-82
A2A6A5A3R24 SELECT		SAME AS A2A6A2A5R1	5-82
A2A6A5A3R24 SELECT		SAME AS A2A6A5A2R24 SELECT	5-82
A2A6A5A3R24 SELECT		SAME AS A2A6A1A3R6	5-82
A2A6A5A3R25		SAME AS A2A6A1A1R15	5-82
A2A6A5A3R26		SAME AS A2A6A1A1R8	5-82
A2A6A5A3R27		SAME AS A2A6A1A1R13	5-82
A2A6A5A3T1		COIL, RADIO FREQUENCY, 1000 UH, MFR 58189, P/N 809000-432	5-82
A2A6A5A3TP1-TP6		SAME AS A2A6A1A2TP1-TP2	5-82
A2A6A5A3XQ1-XQ2		SAME AS A2A6A3A3XQ12	
A2A6A5A3XQ4-XQ5		SAME AS A2A6A3A3XQ12	
A2A6A5A4		SPECTRUM GENERATOR ASSEMBLY, 5 KC, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-939	5-83
A2A6A5A4C1-C3		SAME AS A2A6A1A2C10	5-83
A2A6A5A4C4		SAME AS A2A6A1C2	5-83
A2A6A5A4C5-C6		SAME AS A2A6A1A2C10	5-83
A2A6A5A4C7		CAPACITOR, MIL TYPE CM06D222G03	5-83
A2A6A5A4E1		SAME AS A2A6MP2	5-83
A2A6A5A4E2		SAME AS A2A6MP3-MP5	5-83
A2A6A5A4J1		SAME AS A2A6A5A1J3	5-83

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A6A5A4L1		SAME AS A2A6A1L1-L2	5-83
A2A6A5A4Q1		SAME AS A2A6A1A3Q4-Q5	5-83
A2A6A5A4Q2		SAME AS A2A6A3A3Q12	5-83
A2A6A5A4Q3		SAME AS A2A6A1A3Q4-Q5	5-83
A2A6A5A4R1		SAME AS A2A6A1A1R8	5-83
A2A6A5A4R2		SAME AS A2A6A1A1R13	5-83
A2A6A5A4R3		SAME AS A2A6A2A2R2	5-83
A2A6A5A4R4		RESISTOR, MIL TYPE RC07GF362J	5-83
A2A6A5A4R5		SAME AS A2A6A1A3R14	5-83
A2A6A5A4R6		SAME AS A2A6A2A3R14	5-83
A2A6A5A4R7		SAME AS A2A6A1A1R13	5-83
A2A6A5A4R8		SAME AS A2A6A1A1R10	5-83
A2A6A5A4R9		SAME AS A2A6A1A1R15	5-83
A2A6A5A4R10		SAME AS A2A6A1A3R9	5-83
A2A6A5A4R11	SELECT	SAME AS A2A6A1A3R3	5-83
A2A6A5A4R11	SELECT	SAME AS A2A6A4A1R13	5-83
A2A6A5A4R11	SELECT	SAME AS A2A6A1A3R9	5-83
A2A6A5A4R11	SELECT	SAME AS A2A6A1A1R10	5-83
A2A6A5A4R11	SELECT	SAME AS A2A6A1A1R15	5-83
A2A6A5A4R11	SELECT	SAME AS A2A6A4A1R23	5-83
A2A6A5A4R11	SELECT	SAME AS A2A6A4A1R11	5-83
A2A6A5A4R11	SELECT	SAME AS A2A6A1A2R9	5-83
A2A6A5A4R11	SELECT	SAME AS A2A6A5A1R24	5-83
A2A6A5A4R11	SELECT	SAME AS A2A6A1A1R7	5-83
A2A6A5A4R11	SELECT	SAME AS A2A6A2A2R8	5-83
A2A6A5A4R11	SELECT	SAME AS A2A6A2A2R2	5-83
A2A6A5A4R11	SELECT	SAME AS A2A6A1A3R4	5-83
A2A6A5A4R11	SELECT	SAME AS A2A6A2A5R1	5-83
A2A6A5A4R11	SELECT	SAME AS A2A6A5A2R24	5-83
A2A6A5A4R11	SELECT	SAME AS A2A6A1A3R6	5-83
A2A6A5A4R12		SAME AS A2A6A1A1R8	5-83
A2A6A5A4R13		SAME AS A2A6A1A1R13	5-83
A2A6A5A4T1		SAME AS A2A6A5A3T1	5-83
A2A6A5A4TP1-TP5		SAME AS A2A6A1A2TP1-TP2	5-83
A2A6A5A4XQ2		SAME AS A2A6A3A3XQ12	
A2A6A6		TRANSLATOR ASSEMBLY, MFR 58189, P/N 666230-660	

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A6A6MP1-MP2		SAME AS A2A6A5MP1-MP2	5-84
A2A6A6A1		TRANSLATOR, PRINTED CIRCUIT BOARD W/ALL COMPCNENTS ASSEMBLED FOR OPERATICN, MFR 58189, P/N 66623C-944	5-85
A2A6A6A1C1		SAME AS A2A6A3C26	5-85
A2A6A6A1C2-C6		SAME AS A2A6A1C1	5-85
A2A6A6A1C7		SAME AS A2A6A3C26	5-85
A2A6A6A1C8		SAME AS A2A6A1A1C2	5-85
A2A6A6A1C9-C19		SAME AS A2A6A1C1	5-85
A2A6A6A1C20		SAME AS A2A6A3A4C8	5-85
A2A6A6A1C21-C23		SAME AS A2A6A1C1	5-85
A2A6A6A1C24-C25		SAME AS A2A6A3C26	5-85
A2A6A6A1C26-C27		SAME AS A2A6A1C1	5-85
A2A6A6A1C28-C29		SAME AS A2A6A3C26	5-85
A2A6A6A1C30-C31		SAME AS A2A6A1C1	5-85
A2A6A6A1C32		CAPACITOR, MIL TYPE CM06F152G03	5-85
A2A6A6A1C33		CAPACITOR, FIXED, ELECTROLYTIC, 15 UF PCRM 20 PCT, 35 WVDC, MFR 56289, P/N 150D156XC035R2	5-85
A2A6A6A1C34-C35		SAME AS A2A6A1C1	5-85
A2A6A6A1C36		SAME AS A2A6A6A1C33	5-85
A2A6A6A1C37-C43		SAME AS A2A6A1C1	5-85
A2A6A6A1C44		NOT USED	
A2A6A6A1C45-46		SAME AS A2A6A1C1	5-85
A2A6A6A1CR1-CR8		SEMICCNDUCTCR DEVICE, DIODE, MIL TYPE 1N270	5-85
A2A6A6A1CR9-CR10		SAME AS A2A6A1A1CR1-CR2	5-85
A2A6A6A1CR11		SAME AS A2A6A1A3CR1	5-85
A2A6A6A1FL1		FILTER, BAND PASS, 20 MC, MFR 19C57, P/N 7652000	5-85
A2A6A6A1FL2		FILTER, BAND PASS, 30 MC, MFR 19C57, P/N 7653CCC	5-85
A2A6A6A1FL3		FILTER, BAND PASS, 2.85 MC, MFR 19057, P/N 765208	5-85
A2A6A6A1J1-J3		SAME AS A2A6A5A1J3	5-85
A2A6A6A1J4		JACK, TIP, MFR 98291, P/N RFTM14GREEN	5-85
A2A6A6A1J5		PROD, TEST, MFR 98291, P/N RFTM14GRAY	5-85
A2A6A6A1J6		SAME AS A2A6A5A3J2	5-85
A2A6A6A1J7		PROD, TEST, MFR 98291, P/N RFTM14ORANGE	5-85
A2A6A6A1L1		SAME AS A2A6A1L1-L2	5-85
A2A6A6A1L2-L3		SAME AS A2A6A1A1L2-L3	5-85
A2A6A6A1L4-L8		COIL, RADIO FREQUENCY, 1,50C UF, MFR 99800, P/N 1537-746	5-85
A2A6A6A1L9		COIL, RADIO FREQUENCY, 190 MC, MFR 82142, P/N 4411-10K	5-85

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A6A6A1MP1-MP5		SAME AS A2A6MP7-MP9	5-85
A2A6A6A1Q1		SAME AS A2A6A4A1Q2-Q3	5-85
A2A6A6A1Q2-Q6		SAME AS A2A6A1A3Q4-Q5	5-85
A2A6A6A1Q7-Q9		SAME AS A2A6A4A1Q2-Q3	5-85
A2A6A6A1R1		SAME AS A2A6A1A3R9	5-85
A2A6A6A1R2		SAME AS A2A6A1A1R7	5-85
A2A6A6A1R3		RESISTOR, MIL TYPE RC07GF301J	5-85
A2A6A6A1R4		RESISTOR, VARIABLE, 100 OHMS PORM 20 PCT, 1/4W, MFR C1121, P/N FM101M	5-85
A2A6A6A1R5		SAME AS A2A6A3A1R2	5-85
A2A6A6A1R6		SAME AS A2A6A1A1R18	5-85
A2A6A6A1R7		SAME AS A2A6A2A3R14	5-85
A2A6A6A1R8	SELECT	SAME AS A2A6A1A1R9	5-85
A2A6A6A1R8	SELECT	SAME AS A2A6A3A3R52	5-85
A2A6A6A1R8	SELECT	RESISTOR, MIL TYPE RC07GF2R7J	5-85
A2A6A6A1R9		SAME AS A2A6A4A1R11	5-85
A2A6A6A1R10		SAME AS A2A6A1A1R18	5-85
A2A6A6A1R11		SAME AS A2A6A1A1R8	5-85
A2A6A6A1R12		SAME AS A2A6A1A3R9	5-85
A2A6A6A1R13		SAME AS A2A6A4A1R11	5-85
A2A6A6A1R14		SAME AS A2A6A1A1R18	5-85
A2A6A6A1R15		SAME AS A2A6A1A1R8	5-85
A2A6A6A1R16		SAME AS A2A6A1A3R9	5-85
A2A6A6A1R17		SAME AS A2A6A4A1R11	5-85
A2A6A6A1R18		SAME AS A2A6A1A2R13	5-85
A2A6A6A1R19		SAME AS A2A6A3A1R2	5-85
A2A6A6A1R20		SAME AS A2A6A1A1R18	5-85
A2A6A6A1R21		SAME AS A2A6A2A3R14	5-85
A2A6A6A1R22		SAME AS A2A6A2A1R8	5-85
A2A6A6A1R23		SAME AS A2A6A1A1R8	5-85
A2A6A6A1R24		SAME AS A2A6A4A1R11	5-85
A2A6A6A1R25		SAME AS A2A6A1A1R18	5-85
A2A6A6A1R26		SAME AS A2A6A1A3R9	5-85
A2A6A6A1R27		RESISTOR, MIL TYPE RC20GF751J	5-85
A2A6A6A1R28		SAME AS A2A6A1A2R13	5-85
A2A6A6A1R29		SAME AS A2A6A1A1R13	5-85
A2A6A6A1R30		SAME AS A2A6A1A1R9	5-85

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A6A6A1R31		SAME AS A2A6A1A1R7	5-85
A2A6A6A1R32		SAME AS A2A6A1A1R8	5-85
A2A6A6A1R33		SAME AS A2A6A1A1R7	5-85
A2A6A6A1R34		SAME AS A2A6A3A1R2	5-85
A2A6A6A1R35		SAME AS A2A6A1A2R13	5-85
A2A6A6A1R36		SAME AS A2A6A4A1R11	5-85
A2A6A6A1R37		SAME AS A2A6A1A1R18	5-85
A2A6A6A1R38	SELECT	RESISTOR, MIL TYPE RC07GF3R6J	5-85
A2A6A6A1R38	SELECT	SAME AS A2A6A3A1R7	5-85
A2A6A6A1R38	SELECT	SAME AS A2A6A1A1R9	5-85
A2A6A6A1R38	SELECT	SAME AS A2A6A2A1R8	5-85
A2A6A6A1R38	SELECT	SAME AS A2A6A2A5R17	5-85
A2A6A6A1R38	SELECT	SAME AS A2A6A1A3R20	5-85
A2A6A6A1R38	SELECT	SAME AS A2A6A1A1R18	5-85
A2A6A6A1R39		SAME AS A2A6A2A3R14	5-85
A2A6A6A1R40		SAME AS A2A6A1A1R7	5-85
A2A6A6A1R41		SAME AS A2A6A1A2R13	5-85
A2A6A6A1R42		RESISTOR, MIL TYPE RC07GF113J	5-85
A2A6A6A1R43		SAME AS A2A6A1A2R9	5-85
A2A6A6A1R44		SAME AS A2A6A1A1R18	5-85
A2A6A6A1R45		SAME AS A2A6A2A3R14	5-85
A2A6A6A1R46		SAME AS A2A6A1A1R9	5-85
A2A6A6A1R47-R51		SAME AS A2A6A1A1R7	5-85
A2A6A6A1R52-R53		SAME AS A2A6A1A2R4	5-85
A2A6A6A1R54		SAME AS A2A6A4A1R11	5-85
A2A6A6A1R55-R56		SAME AS A2A6A1A2R4	5-85
A2A6A6A1T1		TRANSFORMER, RADIO FREQUENCY, 2.50 MC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-381	5-85
A2A6A6A1TP1-TP4		SAME AS A2A6A1A2TP1-TP2	5-85
A2A6A6A1TP5		JACK, TIP, MFR 74970, P/N 105-757	5-85
A2A6A6A1TP6		JACK, TIP, MFR 74970, P/N 105-756	5-85
A2A6A6A1TP7		JACK, TIP, MFR 74970, P/N 105-752	5-85
A2A6A6A1TP8		JACK, TIP, MFR 74970, P/N 105-751	5-85
A2A6A6A1XQ1		SAME AS A2A6A3A3XQ12	
A2A6A6A1XQ7-XQ9		SAME AS A2A6A3A3XQ12	
A2A7		CODE GENERATOR, MFR 58189, P/N 809000-253	5-21
A2A8		POWER SUPPLY, TRANSMITTER, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-750	5-22

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A8C1-C2		CAPACITOR, FIXED, ELECTROLYTIC, 120 UF PLUS 75 PCT MINUS 15 PCT, 40 WVDC, MFR 02859, P/N T0314	5-22
A2A8C3		CAPACITOR, FIXED, ELECTROLYTIC, 6.8 UF PORM 20 PCT, 35 WVDC, MFR 56289, P/N 150D685XC035B2	5-22
A2A8C4		CAPACITOR, FIXED, MICA DIELECTRIC, 820 UUF PORM 2 PCT, 300 WVDC, MFR 72136, P/N DM15F821G3COV	5-22
A2A8C5		CAPACITOR, FIXED, ELECTROLYTIC, 15 UF PORM 20 PCT, 35 WVDC, MFR 56289, P/N 150D156X0035R2	5-22
A2A8C6		SAME AS A2A8C1-C2	5-22
A2A8C7		CAPACITOR, FIXED, ELECTROLYTIC, 47 UF PORM 20 PCT, 35 WVDC, MFR 56289 P/N 150D476XC035S2	5-22
A2A8C8		SAME AS A2A8C5	5-22
A2A8C9		SAME AS A2A8C1-C2	5-22
A2A8C10-C11		SAME AS A2A8C7	5-22
A2A8CR1-CR4		SEMICONDUCTOR DEVICE, DIODE, MFR 80131, P/N 1N649	5-22
A2A8CR5-CR8		SEMICCONCUTOR DEVICE, DIODE, MFR 80131, P/N 1N3612	5-22
A2A8CR9		SEMICONDUCTOR DEVICE, DIODE, MFR 80131, P/N 1N538	5-22
A2A8CR10-CR11		SEMICONDUCTOR DEVICE, DIODE, MIL TYPE 1N270	5-22
A2A8CR12		SEMICONDUCTOR DEVICE, DIODE, MFR 80131, P/N 1N963B	5-22
A2A8CR13		SEMICONDUCTOR DEVICE, DIODE, MFR 80131, P/N 1N750A	5-22
A2A8Q1		TRANSISTOR, MIL TYPE 2N1131	5-22
A2A8Q2-Q4		TRANSISTOR, MFR 80131, P/N 2N697	5-22
A2A8R1		RESISTOR, MIL TYPE RC32GF910J	5-22
A2A8R2		RESISTOR, MIL TYPE RC07GF470J	5-22
A2A8R3		RESISTOR, MIL TYPE RC07GF472J	5-22
A2A8R4		RESISTOR, MIL TYPE RC07GF821J	5-22
A2A8R5		RESISTOR, MIL TYPE RC07GF681J	5-22
A2A8R6-R7		SAME AS A2A8R3	5-22
A2A8R8		RESISTOR, MIL TYPE RC07GF102J	5-22
A2A8R9		RESISTOR, MIL TYPE RC07GF152J	5-22
A2A8R10		RESISTOR, VARIABLE, 500 OHMS PORM 5 PCT, 1W, MFR 80294, P/N 224P1-501	5-22
A2A8R11		RESISTOR, MIL TYPE RC07GF331J	5-22
A2A8R12		RESISTOR, MIL TYPE RC07GF822J	5-22
A2A8R13		RESISTOR, MIL TYPE RC07GF562J	5-22
A2A8R14		RESISTOR, MIL TYPE RC32GF181J	5-22
A2A8R15		RESISTOR, MIL TYPE RC32GF161J	5-22
A2A8R16		RESISTOR, MIL TYPE RC32GF221J	5-22
A2A8XQ2-XQ4		MOUNTING PAD, TRANSISTOR, 0.344 IN. DIA X 0.075 IN. THK, MFR 07047, P/N 10012	

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A9		FREQUENCY SHIFT KEYER MODULE, MFR 58189, P/N 666230-051	
A2A9MP1-MP2		SCREW, EXTERNALLY RELIEVED BODY, MFR 58189, P/N 666163-233	5-86
A2A9P1		CONNECTOR, RECEPTACLE, ELECTRICAL, 1.213 IN. LG X 0.494 IN. W X 0.688 IN. H, MFR 91146, P/N DESM9PF115	5-86
A2A9R1		RESISTOR, MIL TYPE RE65G2671	5-86
A2A9A1		GENERATOR, FSK TONE, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666231-025	5-87
A2A9A1C1		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 0.02 UF PORM 20 PCT, 100 WVDC, MFR 96095, P/N C80V203AM	5-87
A2A9A1C2		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 0.001 UF PORM 20 PCT, 100 WVDC, MFR 96095, P/N C80V103AM	5-87
A2A9A1C3		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 0.05 UF PORM 20 PCT, 100 WVDC, MFR 96095, P/N C80V503AM	5-87
A2A9A1C4		CAPACITOR, FIXED, ELECTROLYTIC, 120 UF PLUS 75 PCT MINUS 15 PCT, 40 WVDC, MFR 02859, P/N T0314	5-87
A2A9A1C5		CAPACITOR, FIXED, MICA DIELECTRIC, 0.02 UF PORM 1 PCT, 300 WVDC, MFR 72136, P/N DM30F203F300V	5-87
A2A9A1C6-C8		SAME AS A2A9A1C2	5-87
A2A9A1C9		CAPACITOR, FIXED, ELECTROLYTIC, 100 UF PORM 20 PCT, 10 WVDC, MFR 56289, P/N 150D107X0010R2	5-87
A2A9A1C10		CAPACITOR, FIXED, ELECTROLYTIC, 10 UF PORM 20 PCT, 35 WVDC, MFR 56289, P/N 150D106X0035R2	5-87
A2A9A1C11		SAME AS A2A9A1C5	5-87
A2A9A1CR1		SEMICONDUCTOR DEVICE, DIODE, MIL TYPE 1N457	5-87
A2A9A1CR2		SEMICONDUCTOR DEVICE, DIODE, MFR 80131, P/N 1N3026B	5-87
A2A9A1CR3-CR4		SAME AS A2A9A1CR1	5-87
A2A9A1CR5		SEMICONDUCTOR DEVICE, DIODE, MFR 80131, P/N 1N967B	5-87
A2A9A1CR6-CR8		SAME AS A2A9A1CR1	5-87
A2A9A1Q1		TRANSISTOR, MFR 80131, P/N 2N706	5-87
A2A9A1Q2		TRANSISTOR, MIL TYPE 2N1613	5-87
A2A9A1Q3		SAME AS A2A9A1Q1	5-87
A2A9A1Q4		TRANSISTOR, MIL TYPE 2N1131S	5-87
A2A9A1Q5-Q7		SAME AS A2A9A1Q1	5-87
A2A9A1R1		NOT USED	
A2A9A1R2		RESISTOR, MIL TYPE RC07GF103J	5-87
A2A9A1R3		RESISTOR, MIL TYPE RC07GF562J	5-87
A2A9A1R4		RESISTOR, MIL TYPE RC07GF242J	5-87
A2A9A1R5		RESISTOR, MIL TYPE RC07GF222J	5-87
A2A9A1R6		RESISTOR, MIL TYPE RC07GF301J	5-87

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A9A1R7		RESISTOR, MIL TYPE RC07GF512J	5-87
A2A9A1R8		RESISTOR, VARIABLE, 10K OHMS PORM 10 PCT, 4/5W, MFR 80294, P/N 236L1-103	5-87
A2A9A1R9		RESISTOR, FIXED, WIREWOUND, 8.2K OHMS PORM 1 PCT, 2W, MFR 58189, P/N 554586-822	5-87
A2A9A1R10		RESISTOR, VARIABLE, 2K OHMS PORM 10 PCT, 4/5W, MFR 80294, P/N 236P1-202	5-87
A2A9A1R11		RESISTOR, FIXED, WIREWOUND, 6.5K OHMS PORM 1 PCT, 2W, MFR 58189, P/N 562028-652	5-87
A2A9A1R12		SAME AS A2A9A1R10	5-87
A2A9A1R13		RESISTOR, VARIABLE, 5K OHMS PORM 10 PCT, 4/5W, MFR 80294, P/N 236P1-502	5-87
A2A9A1R14		SAME AS A2A9A1R2	5-87
A2A9A1R15		RESISTOR, MIL TYPE RC07GF471J	5-87
A2A9A1R16		SAME AS A2A9A1R3	5-87
A2A9A1R17-R18		RESISTOR, MIL TYPE RC07GF202J	5-87
A2A9A1R19		RESISTOR, MIL TYPE RC07GF102J	5-87
A2A9A1R20		SAME AS A2A9A1R17-R18	5-87
A2A9A1R21		RESISTOR, MIL TYPE RC07GF912J	5-87
A2A9A1R22		RESISTOR, MIL TYPE RC07GF511J	5-87
A2A9A1R23		SAME AS A2A9A1R17-R18	5-87
A2A9A1R24		SAME AS A2A9A1R21	5-87
A2A9A1R25		RESISTOR, MIL TYPE RC07GF621J	5-87
A2A9A1R26		SAME AS A2A9A1R8	5-87
A2A9A1R27		RESISTOR, MIL TYPE RC07GF203J	5-87
A2A9A1R28		RESISTOR, MIL TYPE RC07GF122J	5-87
A2A9A1R29		RESISTOR, MIL TYPE RC07GF431J	5-87
A2A9A1S1		SWITCH, MIL TYPE MS24656-23	5-87
A2A9A1T1		TRANSFORMER, RADIO FREQUENCY, 0.86 IN. LG X 0.76 IN. W X 0.63 IN. H, MFR 58189, P/N 809000-452	5-87
A2A9A1TP1-TP2		JACK, TIP, MFR 98291, P/N SKT103PCWHITE	5-87
A2A9A1XQ2		MOUNTING PAD, TRANSISTOR, 0.344 IN. DIA X 0.075 IN. THK, MFR 07047, P/N 10012	
A2A9A1XQ4		SAME AS A2A9A1XQ2	
A2A10		AMPLIFIER, METER, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-746	5-23
A2A10C1		CAPACITOR, FIXED, ELECTROLYTIC, 15 UF PORM 20 PCT, 20 WVDC, MFR 56289, P/N 150D156X0020R2	5-23
A2A10C2		CAPACITOR, MIL TYPE CS13AF010M	5-23
A2A10C3		SAME AS A2A10C1	5-23
A2A10Q1		TRANSISTOR, MFR 80131, P/N 2N652	5-23
A2A10R1		RESISTOR, MIL TYPE RC07GF101J	5-23

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A10R2		RESISTOR, MIL TYPE RC07GF362J	5-23
A2A10R3		RESISTOR, MIL TYPE RC07GF511J	5-23
A2A10R4		RESISTOR, MIL TYPE RC07GF392J	5-23
A2A10R5		RESISTOR, MIL TYPE RC07GF103J	5-23
A2A10R6		RESISTOR, MIL TYPE RC07GF561J	5-23
A2A10R7		RESISTOR, MIL TYPE RC07GF273J	5-23
A2A10R8		RESISTOR, MIL TYPE RC07GF472J	5-23
A2A10R9		SAME AS A2A10R2	5-23
A2A10XQ1		MOUNTING PAD, TRANSISTOR, 0.344 IN. DIA X 0.075 IN. THK, MFR 07047, P/N 10012	
A2A11		AMPLIFIER, METER, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-746	5-23
A2A11C1		CAPACITOR, FIXED, ELECTROLYTIC, 15 UF PORM 20 PCT, 20 WVDC, MFR 56289, P/N 150D156X0020R2	5-23
A2A11C2		CAPACITOR, MIL TYPE CS13AF010M	5-23
A2A11C3		SAME AS A2A11C1	5-23
A2A11Q1		TRANSISTOR, MFR 80131, P/N 2N652	5-23
A2A11R1		RESISTOR, MIL TYPE RC07GF101J	5-23
A2A11R2		RESISTOR, MIL TYPE RC07GF362J	5-23
A2A11R3		RESISTOR, MIL TYPE RC07GF511J	5-23
A2A11R4		RESISTOR, MIL TYPE RC07GF392J	5-23
A2A11R5		RESISTOR, MIL TYPE RC07GF103J	5-23
A2A11R6		RESISTOR, MIL TYPE RC07GF561J	5-23
A2A11R7		RESISTOR, MIL TYPE RC07GF273J	5-23
A2A11R8		RESISTOR, MIL TYPE RC07GF472J	5-23
A2A11R9		SAME AS A2A11R2	5-23
A2A11XQ1		MOUNTING PAD, TRANSISTOR, 0.344 IN. DIA X 0.075 IN. THK, MFR 07047, P/N 10012	5-23
A2A12		INTERMEDIATE FREQUENCY AMPLIFIER ASSEMBLY, TRANSMITTER, MFR 58189, P/N 666230-039	
A2A12MP1-MP3		CONNECTOR, PLUG, ELECTRICAL, MFR 91146, P/N DM53741-5000	5-88
A2A12MP4-MP5		SCREW, EXTERNALLY RELIEVED BODY, MFR 58189, P/N 666163-233	5-88
A2A12P1		CONNECTOR, RECEPTACLE, ELECTRICAL, 2.088 IN. LG X 0.494 IN. W X 0.663 IN. H, MFR 91146, P/N DBM13W3PC31F115	5-88
A2A12A1		AMPLIFIER, IF, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666231-030	5-89
A2A12A1C1		CAPACITOR, FIXED, METALIZED PAPER DIELECTRIC, 0.1 UF PORM 20 PCT, 200 WVDC, MFR 02777, P/N T2900-4	5-89
A2A12A1C2		CAPACITOR, FIXED, METALIZED PAPER DIELECTRIC, 0.2 UF PORM 20 PCT, 200 WVDC, MFR 02777, P/N T2900-5	5-89

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A12A1C3		CAPACITOR, FIXED, ELECTROLYTIC, 120 UF PLUS 75 PCT MINUS 15 PCT, 40 WVDC, MFR 02859, P/N T0314	5-89
A2A12A1C4		SAME AS A2A12A1C1	5-89
A2A12A1C5		CAPACITOR, FIXED, MICA DIELECTRIC, 1200 UUF PORM 5 PCT, 500 WVDC, MFR 72136, P/N CM20E122J500V	5-89
A2A12A1C6-C7		SAME AS A2A12A1C1	5-89
A2A12A1C8		SAME AS A2A12A1C5	5-89
A2A12A1C9		NOT USED	
A2A12A1C10		SAME AS A2A12A1C3	5-89
A2A12A1CR1		SEMICONDUCTOR DEVICE, DIODE, MIL TYPE 1N270	5-89
A2A12A1Q1		TRANSISTOR, MFR 80131, P/N 2N1012	5-89
A2A12A1Q2-Q3		TRANSISTOR, MFR 80131, P/N 2N1224	5-89
A2A12A1Q4		TRANSISTOR, MIL TYPE 2N1613	5-89
A2A12A1R1		RESISTOR, MIL TYPE RC07GF101J	5-89
A2A12A1R2		RESISTOR, MIL TYPE RC07GF682J	5-89
A2A12A1R3		RESISTOR, MIL TYPE RC07GF122J	5-89
A2A12A1R4		RESISTOR, MIL TYPE RC07GF332J	5-89
A2A12A1R5		RESISTOR, MIL TYPE RC07GF112J	5-89
A2A12A1R6		RESISTOR, MIL TYPE RC07GF822J	5-89
A2A12A1R7		SAME AS A2A12A1R3	5-89
A2A12A1R8-R10		RESISTOR, MIL TYPE RC07GF102J	5-89
A2A12A1R11		RESISTOR, MIL TYPE RC07GF104J	5-89
A2A12A1R12		RESISTOR, MIL TYPE RC07GF272J	5-89
A2A12A1R13		RESISTOR, MIL TYPE RC07GF392J	5-89
A2A12A1R14		RESISTOR, MIL TYPE RC07GF113J	5-89
A2A12A1R15		RESISTOR, VARIABLE, 5K OHMS PORM 10 PCT, 4/5W, MFR 80294, P/N 236P1-502	5-89
A2A12A1R16		SAME AS A2A12A1R2	5-89
A2A12A1R17		SAME AS A2A12A1R4	5-89
A2A12A1R18		RESISTOR, MIL TYPE RC07GF562J	5-89
A2A12A1R19		SAME AS A2A12A1R8-R10	5-89
A2A12A1R20		SAME AS A2A12A1C9	
A2A12A1R21		RESISTOR, MIL TYPE RC07GF330J	5-89
A2A12A1R22		SAME AS A2A12A1R1	5-89
A2A12A1R23		SAME AS A2A12A1R8-R10	5-89
A2A12A1R24		RESISTOR, MIL TYPE RC07GF224J	5-89
A2A12A1R25		SAME AS A2A12A1R8-R10	5-89
A2A12A1T1		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 500 KC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-376	5-89

TABLE 6-2. MAINTENANCE PARTS LIST (Continued)

RADIO TRANSMITTER T-827/URT

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
A2A12A1T2		TRANSFORMER, VARIABLE, RADIO FREQUENCY, 500 KC, 0.620 IN. LG X 0.422 IN. DIA, MFR 58189, P/N 809000-377	5-89
A2A12A1TP1-TP4		JACK, TIP, MFR 98291, P/N SKT103PCWHITE	5-89
A2A12A1XQ1		MOUNTING PAD, TRANSISTOR, 0.344 IN. DIA X 0.075 IN. THK, MFR 07047, P/N 10012	
A2A12A1XQ2-XQ3		MOUNTING PAD, TRANSISTOR, 0.344 IN. DIA X 0.075 IN. THK, MFR 07047, P/N 10027	
A2A12A1XQ4		SAME AS A2A12A1XQ1	
A2A13		PANEL SUBASSEMBLY, LIGHT, MFR 58189, P/N 666230-235	
A2A13DS1-DS2		NOT USED	
A2A13DS3-DS4		A2A13DS3-DS4 620 IN. LIGHT, INDICATOR, MFR 72914, P/N A9906-1 SAME AS A2A13DS3-DS4	
A2A14		FILTER BOX, HANDSET, MFR 58189, P/N 666230-458	
A2A14C1-C2		CAPACITOR, FIXED, CERAMIC DIELECTRIC, 4000 UUF, PORM 20 PCT, 500 WVDC, MFR 72982, P/N 2445-000	5-24
A2A14C3		CAPACITOR, FIXED, METALIZED PAPER DIELECTRIC, 0.2 UF PORM 20 PCT, 200 WVDC, MFR 02777, P/N T2900-5	5-24
A2A14C4		CAPACITOR, FIXED, METALIZED PAPER DIELECTRIC, 0.01 UF PORM 20 PCT, 200 WVDC, MFR 02777, P/N T2900-2	5-24
A2A14L1		COIL, RADIO FREQUENCY, 1,500 UF, MFR 99800, P/N 1537-746	5-24
A2A15		FILTER ASSEMBLY, IF, TRANSMITTER, COMPONENT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-459	5-25
A2A15C1-C2		CAPACITOR, FIXED, METALIZED PAPER DIELECTRIC, 0.2 UF PORM 20 PCT, 200 WVDC, MFR 02777, P/N T2900-5	5-25
A2A15C3		CAPACITOR, FIXED, ELECTROLYTIC, 100 UF PORM 20 PCT, 20 WVDC, MFR 56289, P/N 150D107X0020S2	5-25
A2A15L1-L3		COIL, RADIO FREQUENCY, 1,500 UF, MFR 99800, P/N 1537-746	5-25
A2A15R1		RESISTOR, MIL TYPE RC20GF100J	5-25
A2A16		FREQUENCY CONTROL, 500 CYCLE, PRINTED CIRCUIT BOARD W/ALL COMPONENTS ASSEMBLED FOR OPERATION, MFR 58189, P/N 666230-447	5-26
A2A16R1		RESISTOR, FIXED, WIREWOUND, 5.6K OHMS PORM 1 PCT, 1W, MFR 91637, P/N RS1A562F	5-26
A2A16R2		RESISTOR, FIXED, WIREWOUND, 1.4K OHMS PORM 1 PCT, MFR 91637, P/N RS1A142F	5-26
A2A16R3		RESISTOR, MIL TYPE RT22C2P202	5-26

TABLE 6-3. LIST OF MANUFACTURERS

MFR CODE	NAME	ADDRESS
00348	Microtran Co. Inc. 145 E Mineola Ave.	Valley Stream, N. Y. Zip Code 11582
01121	Allen-Bradley Co. 1201 South 2nd Street	Milwaukee, Wis.
01295	Texas Instruments Inc. Semiconductor-Components Division 13500 North Central Expressway	Dalas, Tex. Zip Code 75231
02289	Hi-G Inc. Spring St. at Route 75	Windsor Locks, Conn. Zip Code 06096
02606	Fenwal Laboratories	Morton Grove, Ill.
02777	Hopkins Engineering Co. 12900 Foothill Blvd.	San Fernando, Calif. Zip Code 91342
02859	International Telephone and Telegraph Corp. Industrial Products Division 15151 Bledsoe	San Fernando, Calif.
03508	General Electric Co. Semi-Conductor Products Dept. Electronics Park	Syracuse, N. Y. Zip Code 13201
03550	Vanguard Electronics Co. 930 W Hyde Park	Inglewood, Calif.
04239	General Electric Co. Mettallurgical Products Dept. P. O. Box 72	Edmore, Mich. Zip Code 48829
04713	Motorola Semiconductor Products Inc. 5005 Mc Dowell Road	Phoenix, Ariz. Zip Code 85008
05106	Globe Industries Inc. Electronics Division 1784 Stanley	Dayton, Ohio Zip Code 45404
06776	Nugent Electronics Co. Inc. 802 E 8th	New Albany, Ind. Zip Code 47150
07047	Ross Milton Co. The 511 Second Street Pike	Southampton, Pa. Zip Code 18966
07933	Raytheon Co. Components Division Semiconductor Operation 350 Ellis Street	Mountain View, Calif. Zip Code 94042
10646	Carborundum Co. Buffalo Ave.	Niagara Falls, N. Y. Zip Code 14302

TABLE 6-3. LIST OF MANUFACTURERS

MFR CODE	NAME	ADDRESS
12954	Dickson Electronics Corp. 302 S Wells Fargo Av	Scottsdale, Ariz.
15450	Erie Technological Products Inc. Electronics Division	Erie, Pa.
17637	Universal Toroid Coil Winding Inc. 171 Coit	Irvington, N. J. Zip Code 07111
19057	Filtech Corp. 604 W Randolph St.	Chicago, Ill.
25140	Globe Industries Inc.	Dayton, Ohio
40920	Miniature Precision Bearings Inc. Precision Park	Keene, N. H. Zip Code 03431
43543	Nytronics Inc. New York Transformer Co. Division Third Ave.	Alpha, N. J. Zip Code 08866
49956	Raytheon Co. Microwave and Power Tube Division Administration Bldg.	Waltham, Mass. Zip Code 02154
56289	Sprague Electric Co.	North Adams, Mass.
58854	Sylvania Electric Products Inc. Lighting Products Division 60 Boston	Salem, Mass. Zip Code 01971
60380	Torrington Co. The 59 Field	Torrington, Conn.
70674	ADC Products Inc. 6405 Cambridge St.	Minneapolis, Minn. Zip Code 55426
71468	ITT Cannon Electric Inc. 3208 Humbolt St.	Los Angeles, Calif. Zip Code 90031
72136	Electro Motive Mfg. Co. Inc. The South Park and John Streets	Willimantic, Conn. Zip Code 06226
72656	Indiana General Corp. Electronics Division	Keasby, N. J.
72914	Grimes Mfg. Co. 515 N Russell	Urbana, Ohio Zip Code 43078
72982	Erie Technological Products Inc. 644 W 12th St.	Erie, Pa. Zip Code 16512

TABLE 6-3. LIST OF MANUFACTURERS

MFR CODE	NAME	ADDRESS
73293	Hughes Aircraft Co. Hughes Components	Newport Beach, Calif.
73899	J F D Electronics Corp. 15th at 62nd St.	Brooklyn, N. Y.
74970	Johnson E. F. Co. 297 Tenth Ave. S W	Waseca, Minn. Zip Code 56093
75263	Keystone Carbon Co. Inc. 1935 State St.	St. Mary's, Pa.
76854	Oak Mfg. Co. S. Main	Crystal Lake, Ill.
77820	Bendix Corp. The Scintilla Division	Sidney, N. Y. Zip Code 13838
78488	Stackpole Carbon Co.	St. Mary's, Pa.
80131	Electronic Industries Association	Washington, D. C.
80223	United Transformer Co. 150 Varick St.	New York, N. Y.
80294	Bourns Inc. 6135 Magnolia Ave.	Riverside, Calif. Zip Code 92506
81030	International Instruments Inc. 88 Marsh Hill Road	Orange, Conn. Zip Code 06477
81640	Control Switch Division Controls Co. of American	Folcroft, Pa.
82068	Burnell and Co. Inc. 10 Pelham Parkway	Pelham Manor, N. Y. Zip Code 10803
82142	Jeffers Electronics Div. of Speer Carbon Co.	Du Bois, Pa.
82768	Phillips-Advance Control Co. Division of Phillips-Eckardt Electronic Corp. 59 West Washington St.	Joliet, Ill. Zip Code 60431
86335	Glenco Corp. 212 Durham Ave.	Metuchen, N. J. Zip Code 08841
88463	Filter Co. The	Chicago, Ill.
91146	ITT Cannon Electric Inc. Salem Division	Salem, Mass.

TABLE 6-3. LIST OF MANUFACTURERS

MFR CODE	NAME	ADDRESS
91574	Caledonia Electronics Division Electro Networks Inc.	Caledonia, N. Y.
91637	Dale Electronics Inc. P. O. Box 609	Columbus, Nebr. Zip Code 68601
93928	Forbes and Wagner Inc. 345 Central Ave.	Silver Creek, N. Y. Zip Code 14136
95105	Collins Radio Co. 19700 San Joaquin Road P. O. Box C	Newport Beach, Calif. Zip Code 92663
96095	Hi-Q Div. of Aerovox Corp. Seneca St.	Olean, N. Y.
98291	Sealectro Corp. 225 Hoyt	Mamaroneck, N. Y. Zip Code 10544
98978	International Electronic Research Corp. 151 West Magnolia Ave.	Burbank, Calif. Zip Code 91502
99800	Delevan Electronics Corp. 270 Quaker Rd.	East Aurora, N. Y.

INDEX

INDEX (Continued)

INDEX (Continued)

INDEX (Continued)

INDEX (Continued)

INDEX (continued)

NUMERICAL

INDEX (Continued)

NUMERICAL