

TM-9187530155

OPERATION AND MAINTENANCE MANUAL

HF PRE/POSTSELECTOR

GSR-921



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**OPERATION AND
MAINTENANCE MANUAL**

HF PRE/POSTSELECTOR

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ADDENDUM

TO SUNAIR ELECTRONICS, INC. MANUAL

PART NUMBER 9187530155

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<u>FEDERAL ITEM NAME</u>	<u>SUNAIR ELECTRONICS NAME</u>	<u>DESCRIPTION/PART NUMBER</u>
F-1606/U	GSR-921	HF Pre/Postselector, Sunair part number 9187530961.



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SECTION I

GENERAL INFORMATION

1.1 SCOPE

This instruction manual contains the necessary information to install, operate and service the GSR-921 HF Pre/Post-selector.

1.2 DESCRIPTION

1.2.1 GENERAL

The GSR-921 is a high quality pre/post-selector covering the frequency range of 2-30 MHz. It greatly increases the front end selectivity of an associated receiver and reduces off-frequency radiation from a transmitter. The use of the pre/post-selector is recommended when the receiver will be installed at a site with transmitters that are operating in the HF band. The preselector increases the receiver's ability to discriminate against strong interfering signals that would otherwise result in cross modulation or intermodulation products and desensitization of the receiver. The use of a postselector is recommended when the transmitter radiation at other than the desired frequency is excessive. The pre/postselector is designed to meet stringent military specifications for shock. It can operate over wide temperature extremes and up to 100% relative humidity (-30° to +65°C.)

The GSR-921 is composed of seven major subassemblies: (1) Chassis 1A1, (2) Relay/ALC 1A2, (3) Preselector 1A3, (4) 12 VDC Power Supply 1A4, (5) 26 VDC Power Supply 1A5, (6) Power Amplifier 1A6, (7) Filter Module 1A7. See Figure 1.1 for major assembly locations.

1.2.2 CHASSIS 1A1

1.2.2.1 Front Panel 1A1A1

The front panel contains all controls necessary to operate the pre/postselector.

1.2.2.2 Rear Panel 1A1A2

The rear panel contains the RF input and output connectors, the power input and keyline connector, and the AC line fuse.

1.2.3 RELAY/ALC ASSEMBLY 1A2

The Relay/ALC Assembly contains the 32 db input pad, used for receive and transmit, the bypass relays, the transmit/receive relays, the ALC amplifier, and the preselector input protection pin diodes.

1.2.4 PRESELECTOR ASSEMBLY 1A3

The preselector assembly consists of two modules in a tandem configuration.

1.2.4.1 Input Preselector Module 1A3A1

This module contains the band switching circuitry, filter components, and an amplifier.

1.2.4.2 Input Band Gain Module 1A3A2

This module contains gain adjusting potentiometers for each frequency band.

1.2.4.3 Output Preselector Module 1A3A3

This module contains the band switching circuitry, filter components, and an amplifier. NOTE: Preselectors A1 and A3 are not interchangeable due to output protection pin diodes in the A3 only.

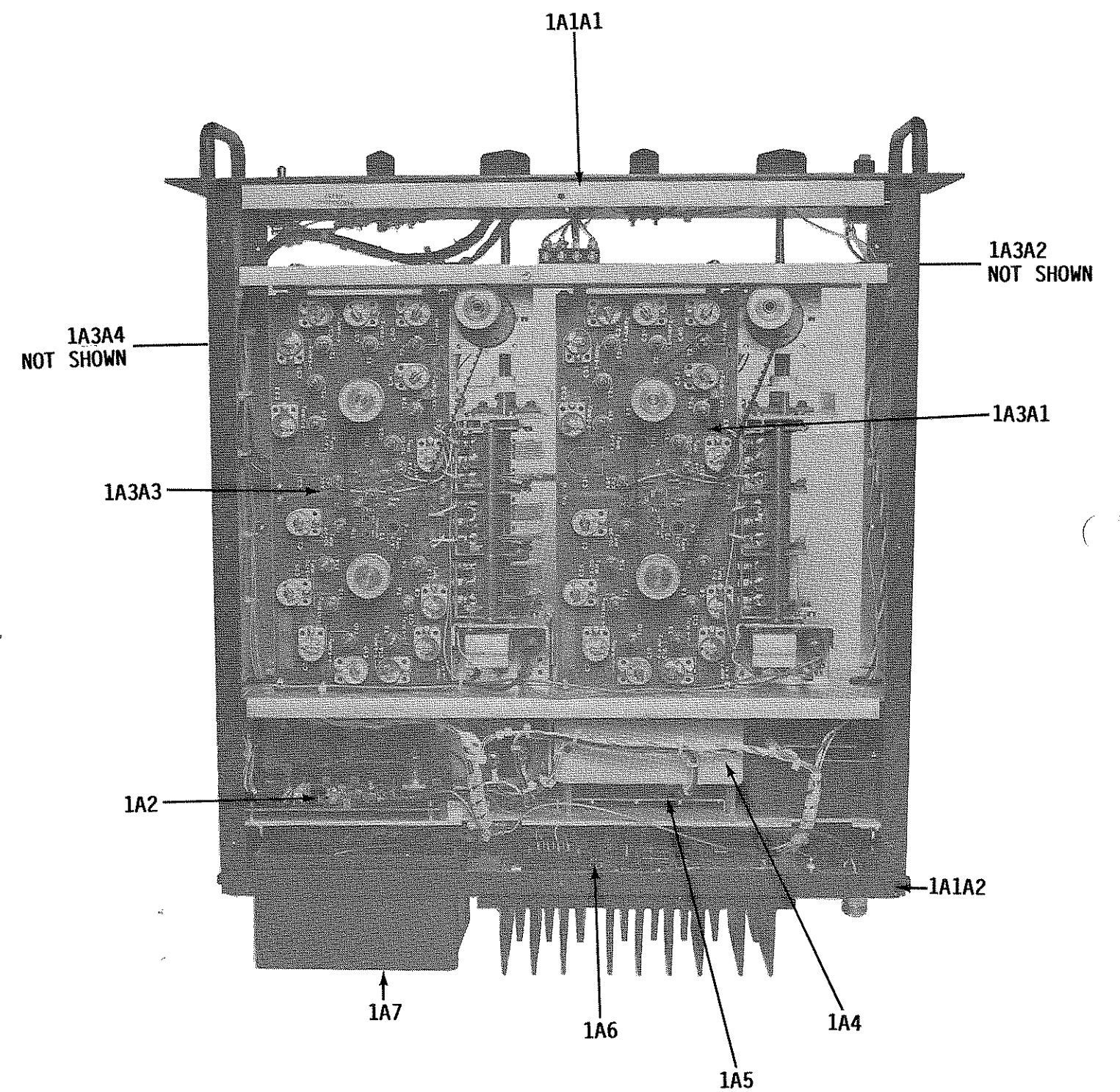


FIGURE 1.1 GSR-921 ASSEMBLY LOCATIONS

1.2.4.4 Output Band Gain Module 1A3A4

This module contains gain adjusting potentiometers for each frequency band.

1.2.5 12 VDC POWER SUPPLY 1A4

The power supply operates from a power source of 105 to 126 VAC, 47 to 440 Hz, and delivers 12 VDC at 1.7 amps. The supply is fully modularized for ease of maintenance.

1.2.6 26 VDC POWER SUPPLY 1A5

The power supply operates from a power source of 105 to 126 VAC, 47 to 440 Hz, and delivers 26 VDC at 6.0 amps.

1.2.7 RF POWER AMPLIFIER 1A6

The power amplifier is an all solid state broadband amplifier which will accept 50 ohm loads with VSWR under 2:1 over the entire frequency range of the pre/post-selector. Adequate cooling is provided by a conservatively rated heatsink at the rear of the unit. The power amplifier is rated at 40 watts peak envelope power (PEP) at 100% duty cycle over the entire frequency range.

1.2.8 FILTER MODULE 1A7

The filter module is contained on three PC boards and is housed in a removable unit. Filter selection is automatically accomplished by the front panel band switch. High power low pass filters are used in the transmit mode to remove all unwanted harmonics from the power amplifier output. This module also contains circuitry for control of the ALC amplifier.

1.3 TECHNICAL SPECIFICATIONS

Electrical and physical specifications of the GSR-921 Pre/Postselector are listed below.

1.3.1 GENERAL

FREQUENCY RANGE: 2 to 30 MHz

RF INPUT/OUTPUT IMPEDANCE: 50 ohms nominal, unbalanced

DUTY CYCLE: continuous

TEMPERATURE: -30° to +65°C

HUMIDITY: 100% at +50°C

SHOCK: Per MIL-STD-810C, Method 516.2, Procedure 1

POWER INPUT: 115 VAC + 10%, 47 to 440 Hz, at 150 watts maximum.

DIMENSIONS: (CM) 13.34H x 48.26W x 50.1L
(INCHES) 5.25H x 19W x 20.0L

WEIGHT: 40 LBS

MOUNTING: 5.25 inch EIA rack mounting with provisions for rack slides

MTBF: 7,500 hours.

1.3.2 RECEIVING

OVERALL GAIN: Selectable at 8 db or -24 db nominal

-3 DB POINTS: 3% or less removed from the tuned frequency

-60 DB POINTS: 10% or less removed from the tuned frequency

NOISE FIGURE: Less than 15 db nominal

TUNING ACCURACY: At least 1%

DESENSITIZATION: 1 db or less due to a 0.5 volt signal within the passband

THIRD ORDER IMD: At least 60 db down due to two 100 MV signals within the passband

CROSS MODULATION: Down at least 60 db with a 3 volt, 30% modulated signal 10% removed in frequency from a 100 MV signal in the passband

1.3.3 TRANSMITTING

OVERALL GAIN: 3db or more for an input
of 5-20 watts PEP

-40 DB POINTS: No more than 5% removed
from operating frequency

THIRD ORDER IMD: At least 33db below PEP

KEYLINE CONTROL: Externally provided
ground

SECTION II

INSTALLATION

2.1 GENERAL

Section II contains all necessary instructions for the unpacking, inspection, and if necessary, reshipping of damaged equipment or parts. In addition, information regarding location and mounting considerations and power requirements is also provided.

2.2 UNPACKING AND INSPECTION

As soon as you have received your unit(s), unpack and inspect all components. Check the packing list to be sure you have received all items ordered.

NOTE

Be sure to retain the carton and its associated packing materials should it be necessary to reship damaged equipment.

Do not accept a shipment when there are visible signs of damage to the cartons until a complete inspection is made. If there is a shortage of items or any evidence of damage, insist on a notation to that effect on the shipping papers before signing the receipt from the carrier. If concealed damage is discovered after the shipment has been accepted, notify the carrier immediately in writing and await his inspection before making any disposition of the shipment. A full report of the damage should also be forwarded to Sunair's Product Services Department. Include the following:

- a) order number
- b) model and serial number
- c) name of transportation agency
- d) applicable dates.

When Sunair receives this information, arrangements will be made for repair or replacement.

2.3 RETURN OF EQUIPMENT TO FACTORY

The shipping container for the GSR-921 has been carefully designed to protect the equipment during shipment. The container and its associated packing materials should be used to reship the unit. When necessary to return equipment to Sunair for warranty or non-warranty repair, an authorization number is required. This number can be obtained from our Product Services Department, Telephone: 305-525-1505, Telex: 51-4443, Cable: SUNAIR, FAX: 305-765-1322.

If the original shipping carton is not available, be sure to carefully pack each unit separately, using suitable cushioning material where necessary. Very special attention should be given to providing enough packing material around connectors and other protrusions from the pre/postselector. Rigid cardboard should be placed at the corners of the equipment to protect against denting.

When returning subassemblies or components for repair or replacement, be sure to pack each separately, using suitable cushioning material.

Shipment to be made prepaid consigned to:

SUNAIR ELECTRONICS, INC.
PRODUCT SERVICES DEPARTMENT
3101 SW Third Avenue
Fort Lauderdale, Florida 33315-3389
U.S.A.

Plainly mark with indelible ink all mailing documents as follows:

U.S. GOODS RETURNED FOR REPAIR
VALUE FOR CUSTOMS - \$100.00

Mark all sides of the package:

FRAGILE - ELECTRONIC EQUIPMENT

NOTE

Before shipping, carefully inspect the package to be sure it is marked properly and is securely wrapped.

2.4 GENERAL INSTALLATION AND MOUNTING INFORMATION

Refer to Figure 2.1

The GSR-921 is designed for mounting in a standard 19 inch relay rack or cabinet with 1.75 inch incremental spacing. The unit occupies 5.25 inches (3 units) of panel space. Provisions have been made for equipment slide mounts if desired.

2.5 POWER REQUIREMENTS

The GSR-921 requires 103 to 126 VAC, 47 to 440 Hz, single phase power, and consumes a maximum of 150 watts. When connecting the AC source to 1A1J3, use pin A for the hot lead, pin B for the neutral, pin C for the protective ground, and pin D for keyline control.

TABLE 2.1
MATING CONNECTORS TO GSR-921

DESCRIPTION	DESIGNATOR	CONNECTOR	SUNAIR PART NUMBER
ANTENNA	1A1A2J1	UG-21()/U	0754140008
TRANSCEIVER	1A1A2J2	UG-88 ()/U	0744030005
AC POWER AND KEYLINE	1A1A2J3	MS3106()/14S-2P	Government Furnished Equipment

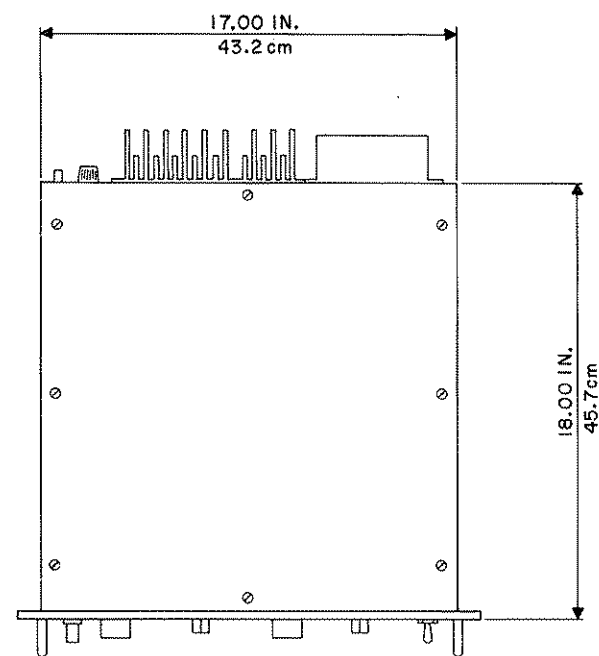
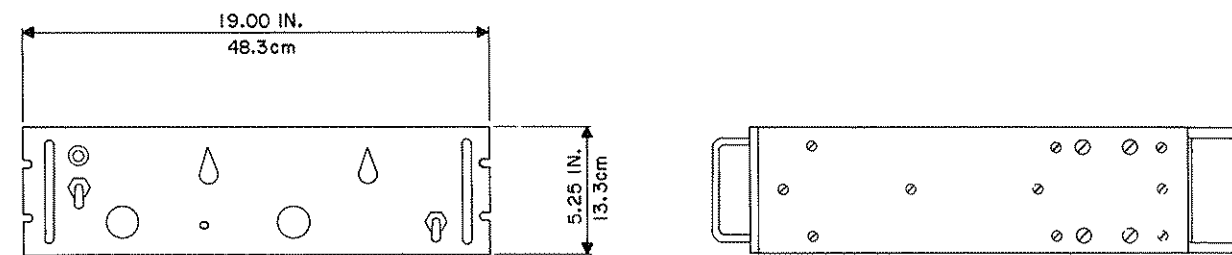


FIGURE 2.1 GSR-921 OUTLINE DIMENSIONS

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SECTION III

OPERATION

3.1 GENERAL

This section provides information and instructions required for proper operation of the GSR-921 Pre/Postselector.

3.2 FRONT PANEL OPERATING CONTROLS

3.2.1 DESCRIPTION

Description of all controls located on the front panel of the GSR-921 Pre/Post-selector are described below. They are illustrated in Figure 3.1.

CONTROLS	SWITCH POSITION	EQUIPMENT RESPONSE
POWER	OFF	Disconnects primary power.
	ON	Applies primary power.
MODE SWITCH	COARSE TUNE	Disables and bypasses input preselector section and enables output section.
	BYPASS	Disables and bypasses both preselector sections and pad assembly.
	FINE TUNE	Enables both preselector sections.
COARSE TUNE		Tunes preselector output section to desired frequency.
FINE TUNE		Tunes preselector input section to desired frequency.
BAND SWITCH		Selects desired operating frequency band.
GAIN SWITCH	LOW	Provides nominal -24 db overall preselector gain.
	HIGH	Provides nominal 8 db overall preselector gain.

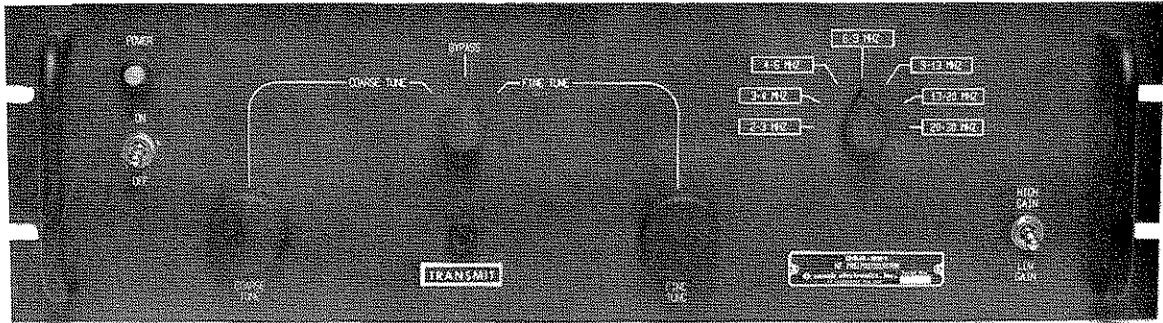


FIGURE 3.1 GSR-921 FRONT PANEL

3.3 REAR APRON FUSES AND CONNECTORS

Refer to Figure 3.2 for location.

ANTENNA	1A1A2J1	R.F. input of unit. Mates with UG-21/U connector.
RADIO	1A1A2J2	R.F. output of unit. Mates with UG-88/U connector.
POWER AND KEYLINE	1A1A2J3	Power input connector: for connection of AC power to the pre/postselector. Mates with MS3106A-14S-2S connector.
FUSE	1A1A2F1	AC input line fuse.

3.4 OPERATING THE GSR-921**A. RECEIVE MODE**

- 1) Turn power on and set gain switch to high.
- 2) Set receiver to the desired frequency.
- 3) Set GSR-921 mode switch to coarse tune.
- 4) Adjust the coarse tune control until the noise or signal level in the receiver speaker or headphones is maximum. If a deflection can be seen on the receiver's "S" meter this can be used as a tuning indicator.
- 5) Set the GSR-921 mode switch to fine tune and adjust the fine tune control for maximum signal level in the same manner.
- 6) The GSR-921 is now properly tuned to the operating frequency and is ready to use. If extremely strong signals are being received, the gain switch may be placed in low if it is so desired. The GSR-921 is ready to operate in transmit as well as receive on this frequency.

B. TRANSMIT MODE

- 1) Turn power on and set band switch to

the proper frequency band.

- 2) Set the GSR-921 mode switch to coarse tune.
- 3) Set the exciter so as to provide an RF signal from 5-20 watts and key the exciter and GSR-921. The green transmit light will indicate the GSR-921 is keyed.
- 4) Set the mode switch to coarse tune and adjust the coarse tune control until the power out of the GSR-921 is maximum, as indicated on any type of RF power indicator.
- 5) Set the mode switch to fine tune and adjust the fine tune control until the power out is maximum. This step completes the tuning of the GSR-921 and the transmitter may now be operated normally.

C. BYPASS MODE

- 1) If the GSR-921 mode switch is placed in the bypass position, the antenna connector is connected directly to the radio connector. This condition occurs automatically in the absence of a power source. In this mode no tuning is necessary.

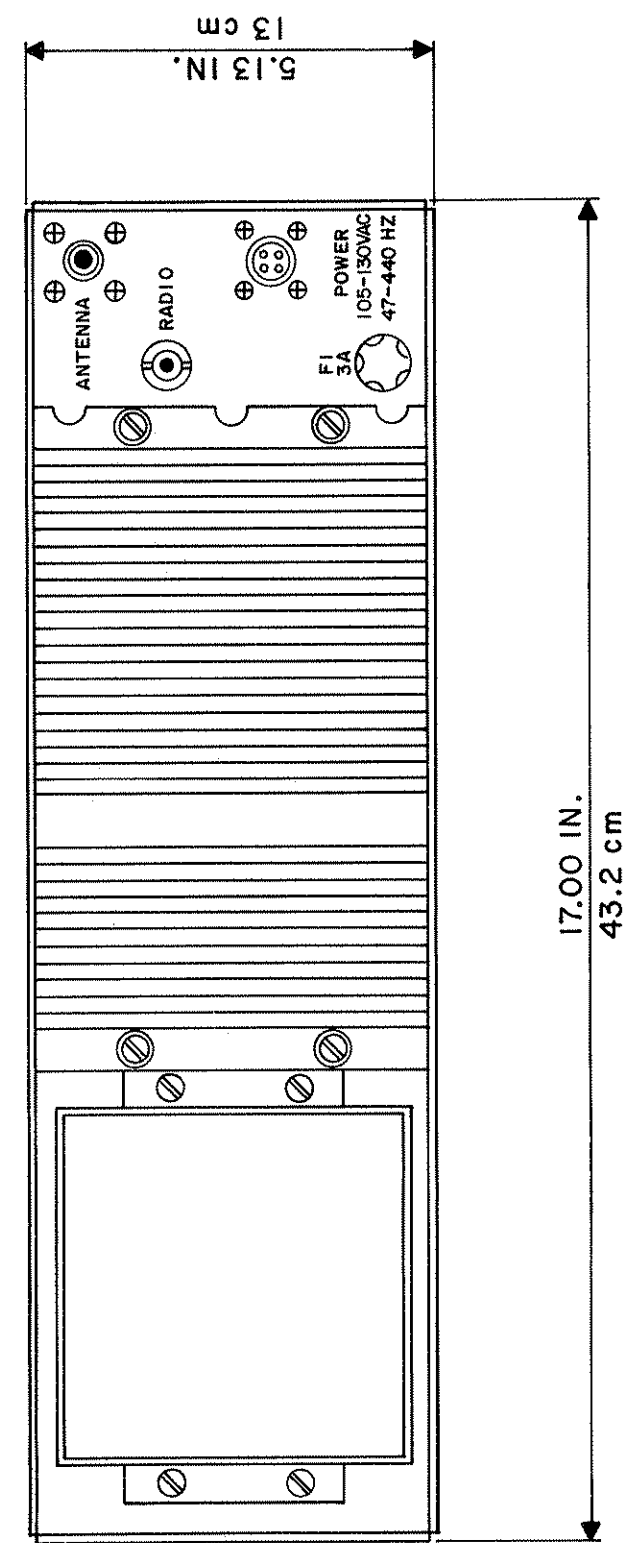


FIGURE 3.2 GSR-921 REAR PANEL

SECTION IV

THEORY OF OPERATION

4.1 GENERAL

The discussion of the theory of operation of the GSR-921 will be presented in six parts: Relay/ALC Assembly 1A2, Preselector Assembly 1A3, 12V Power Supply 1A4, 26V Power Supply 1A5, Power Amplifier Assembly 1A6, and Filter Module Assembly 1A7.

4.1.1 OVERALL BLOCK DIAGRAM

Figure 4.1 shows an overall block diagram of the GSR-921. Discussion of the various functions and circuits is presented in the following sections.

4.2 RELAY/ALC ASSEMBLY 1A2

Refer to Figure 5.4

This assembly contains the relays which are necessary to switch from receive to transmit, to insert a 32db attenuator in the received signal path and to completely bypass the pre/postselector. It also contains a gain-controlled amplifier which acts to limit the power out of the power amplifier.

4.2.1 BYPASS RELAYS

K1 and K6 perform the bypass function. In their deenergized state, the transceiver RF is connected from J1 to K1-4. K1-4 is connected to K1-13 and from this point to K6-4. K6-4 is connected to K6-13 and then to J2. In the energized state, K1-4 connects to K1-8 and K6-13 to K6-9.

4.2.2 HIGH/LOW GAIN RELAYS

High/Low gain control in receive mode is performed by K3 and K9. This is done by connecting a 32db pad consisting of R16,

R17 and R18 in the signal path to reduce the gain. In receive mode, received RF is connected to K3-4. K3 and K9 are deenergized for high gain and energized for low.

In the high gain mode, RF is connected from K3-4 to K3-13 and K9-13. It is further connected through K9's contacts to K9-4 and then to the preselector input.

When K3 and K9 are energized, the connection is from K3-4 to K3-8, through the attenuator to K9-8, to K9-4 and to the preselector input. CR6 and CR7 are high power pin diodes whose function is to protect the preselector input from burn-out caused by excessive receive signal levels.

K3 and K9 are always energized in transmit.

4.2.3 T/R RELAYS

K2, K4, K5, K7 and K8 switch between receive and transmit. They are deenergized in the receive mode.

4.2.3.1 Receive Signal Path

In receive mode, RF is connected from J2, through bypass relay K6 to K5-4. K5-4 is connected through K5's contacts to K5-11 and thence to K3-4 and K8-9. K8-9 is open in receive, and the signal is then connected through the High/Low gain relays K3 and K9 to K9-4 and the preselector input.

The preselector output is connected to K4-13, through K4's contacts to K4-4 and then to K2-4. K2-4 is in turn connected through K2's contacts to K2-13, to K1-8, to K1-4 and to J1.

4.2.3.2 Transmit Signal Path

In transmit mode, RF input is from J1, through K1 bypass relay to K2-13. Connection is to K2-9, then to the transmit 30db attenuator.

From the transmit attenuator, the signal is connected to K8-13 and through K8's contacts to K8-9. Connection is made to K5-11, which is open and to K3-4.

Since K3 and K9 are energized, the signal is connected to K3-8, through the 32db attenuator to K9-8 and through K9 to the preselector input.

The preselector output is connected to K4-13 and through K4 to the input circuit of Q3. Q3 is a gain controlled stage whose output is connected to the power amplifier input.

Output of the low pass filter is connected to K5-8, and through K5 to K6-13 and then to the antenna.

Relay K7 applies 12V to Q3 in transmit and supplies 24 volts bias to the power amplifier in transmit.

4.2.4 ALC AMPLIFIER AND CONTROL

Q3 amplifies the signal from the preselectors and provides drive to the power amplifier. Q2 acts as a variable emitter resistance for Q3 and controls the gain of Q3 as its base voltage varies.

The base voltage of Q2 is determined by the emitter voltage of Q1 which is an emitter follower whose input is supplied by the detector on the power detector board of the filter module. R2 and CR1 adjust the ALC level so that the output of the PA can be adjusted to limit at 40 watts.

4.3 PRESELECTOR ASSEMBLY 1A3

The preselector assembly consists of four modules; the input preselector section 1A3A1, the input band gain assembly

1A3A2, the output preselector section 1A3A3, and the output band gain assembly 1A3A4. Both band gain assemblies are identical. Both preselector sections are identical except for 1A3A3CR5 and CR6, a pair of high power pin diodes whose function is to protect preselector 1A3A3 from having transmit power sent into its output due to a failure in the GSR-921 KEYLINE circuits.

4.3.1 INPUT AND OUTPUT PRESELECTOR ASSEMBLIES 1A3A1 AND 1A3A3

Refer to Figure 5.5

The preselector section is basically composed of three sets of parallel tuned circuits and a dual gate MOSFET RF amplifier. The coils are wound on large forms for HI-Q and configured as transformers to maintain 50 ohm interface at the input, interstage, and output of the preselector section.

The tuned circuits are divided into seven bands; 2 to 3, 3 to 4, 4 to 6, 6 to 9, 9 to 13, 13 to 20, and 20 to 30 MHz. Selection of the correct band is accomplished by band change motor B1, which in turn is controlled by front panel band switch 1A1A1S2. Since the selected band covers a range of frequencies, the tuned circuits must be peaked to the incoming signal. This is accomplished by the COARSE TUNE (in the case of the 1A3A2 output section) and the FINE TUNE control (for the 1A3A1 input section). A tuned or peaked condition is determined by monitoring the associated receiver signal strength meter, or by listening to the receiver audio output. The preselector section may also be switched out and the signal routed directly to the RF OUTPUT J2. When this section is enabled, +12V is applied to relay coil K1, band switch motor B1 and the RF amplifier. With K1 energized, the incoming signal is routed through the preselector section. The relay poles that route the signal around the preselector section, when in the unenergized position, are shorted to ground to prevent a strong signal from bypassing the preselector section.

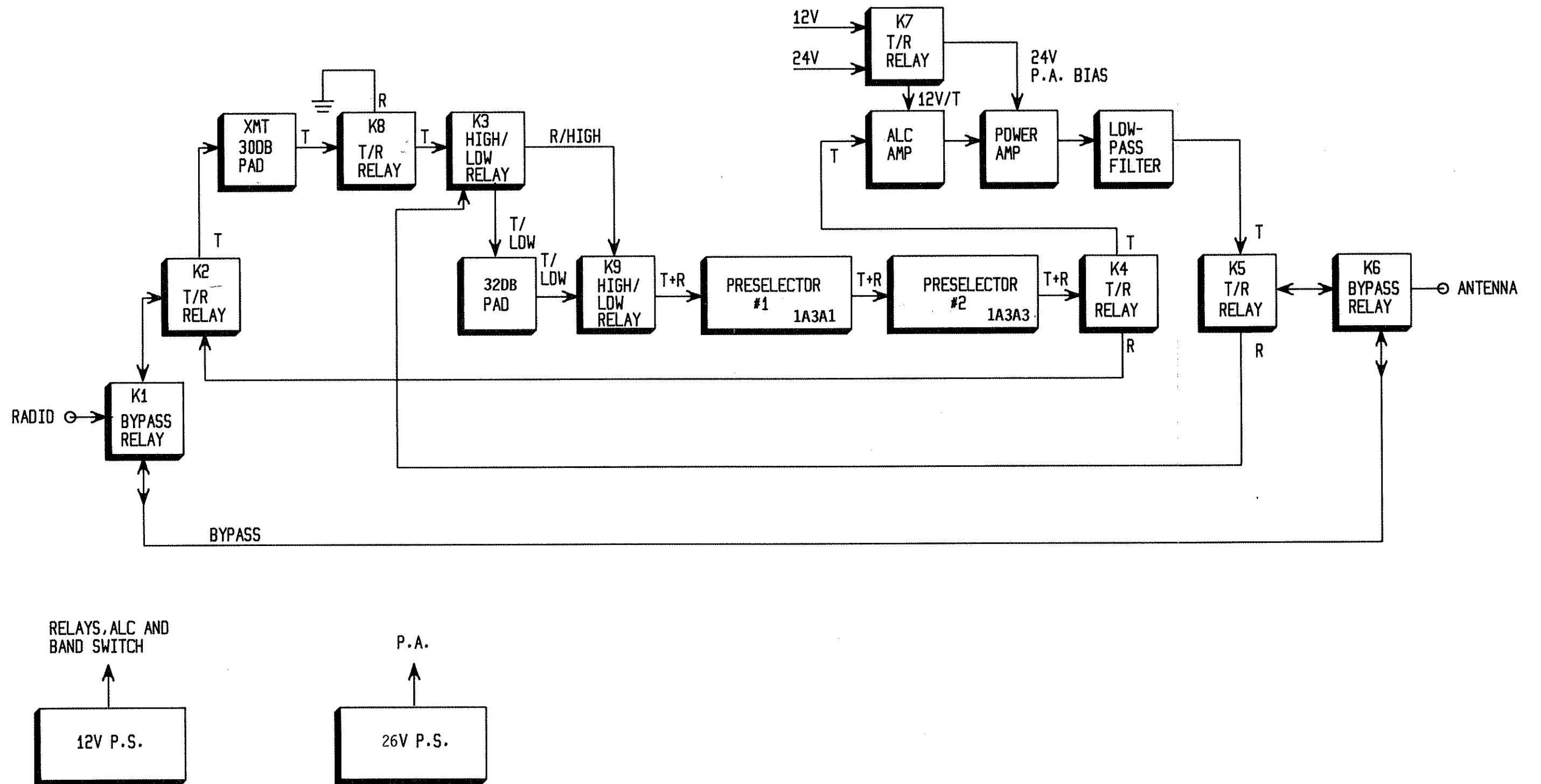


FIGURE 4.1 GSR-921 PRE/POSTSELECTOR BLOCK DIAGRAM

The air variable peaking capacitor, C1, is a three gang six section capacitor. Each of the sets of tuned circuits is connected to one of the gangs. Each gang is divided into two sections. The small section varies from approximately 7 pf to 75 pf, and remains connected to the tuned circuits via section F2 of each rotary switch throughout the frequency range. The larger section varies from approximately 8 pf to 250 pf and is connected to the tuned circuits via section R1 of each rotary switch for the first three bands only, 2 - 6 MHz.

The signal, after passing through the two tuned circuits, is amplified by Q1, the dual gate MOSFET.

Gain control is provided on gate G2 by a positive voltage provided from the associated band gain assembly (1A3A2 or 1A3A4) via E8. The gain of the amplifier is set at 4 db. A wire terminal, labeled E4 located on the PC Board may be monitored with an oscilloscope or RF voltmeter to check for correct operation.

The output of the amplifier is routed to switch S3F2, which is driven by the band change motor B1, and selects the correct tuned circuit. S3F1 selects the correct tuned circuit output which is then routed to relay K1 and then to the output connector J3.

4.3.2 BAND GAIN ASSEMBLIES 1A3A2 AND 1A3A4

Refer to Figure 5.6

The band gain assembly serves two purposes, providing a discrete, adjustable voltage to control the amplifier gain of 1A3A1Q1 (or 1A3A3Q1), and as an interface between the front panel band switch 1A1A1S2 (or 1A3A3S2) and the preselector section band change meter switch wafer 1A3A1S4 (or 1A3A3S4). Diodes CR1 through CR7 provide isolation between contacts on the wafers.

4.4 12 VDC POWER SUPPLY 1A4

Power supply 1A4 operates from 105 to 126 VAC, 47 to 440 Hz and provides +12 VDC to the preselector sections and to all switching circuits and to the ALC amplifier. The supply has automatic current limiting and foldback protection.

4.5 26 VDC POWER SUPPLY 1A5

Refer to Figure 5.7

Power supply 1A5 operates from the AC line input and provides 26V at 6 Amps to the power amplifier. AC from transformer T1 is rectified by bridge rectifier CR2-5 and supplied to 1A5A1 Regulator Assembly.

4.5.1 REGULATOR ASSEMBLY 1A5A1

Unregulated voltage from the 26V bridge rectifier is supplied to E3 of 1A5A1. From E3 the unregulated voltage is connected to the collectors of Q2, Q3 and Q4, the series pass elements. The emitters of these three transistors are connected through current balancing resistors R8, R9 and R10 to provide the regulated 26V output.

IC1 is a linear voltage regulator device. The 26V output is connected to pin 2 of IC1. An increase in the voltage at pin 2 causes an increase in the voltage at pin 7. This increase causes Q1 to conduct less, lowering its collector voltage. This, in turn, causes the output voltage to decrease. R14 provides a means of adjusting the output voltage. As the current increases, an increase in the base voltage to the pass elements is coupled through R15 to pin 10 of IC1. This provides current limiting, which can be adjusted by R15.

4.6 RF POWER AMPLIFIER 1A6

Refer to Figure 5.8

4.6.1 GENERAL

The power amplifier consists of three push-pull stages: predriver, driver, and output. The predriver amplifies the 10 milliwatt output from the exciter to the 1 watt level; the driver amplifies this to the ten to fifteen watt level, and the output stage amplifies this to the 40 watt level.

4.6.2 PREDRIVER, DRIVER AND POWER AMPLIFIER

Input from the exciter is connected to 1A6J1. Transformer T1 converts the single ended exciter input to push-pull to drive the predriver Q1 and Q2. Bias for the predriver (for AB2 operation) is taken from CR1, which is in a forward conduction state. C2, R4 and C3, R5 are feedback networks for gain stabilization. The driver, Q3 and Q4, is driven push-pull through T2, and obtains its bias from CR2. The output stage, Q5 and Q6, is fed push-pull through T4 and obtains its bias from CR3. Note that all bias lines are tied together and are not energized during receive. This minimizes the receive current drain for the exciter. The single ended output is taken at 1A6J2 from T6.

4.7 FILTER MODULE 1A7

Refer to Figure 4.2

4.7.1 ODD AND EVEN CHANNEL FILTER BOARDS

Refer to Figures 5.9 and 5.10

The filters are arranged to provide low pass filtering in the transmit mode. The filters are all dual section elliptical design with an ultimate attenuation of 40 db. This attenuation is added to that normally present in the RF power

amplifier to give excellent harmonic attenuation. Because of the required size of the transmit filter inductors, these filters have been divided among two boards: odd channel filters 3, 5, and 7 and even channel filters 2, 4, 6, and 8. The bands are selected by the front panel bandswitch.

The filters are switched by special high voltage reed relays energized by +12 VDC on the selected band line. The appropriate filter is selected by +12VDC on the selected band line.

4.7.2 POWER DETECTOR ASSEMBLY 1A7A3

Refer to Figure 5.11

The forward power detector consists of T1, C1, C2, R1, CR1, L1 and C3. C1 and C2 comprise a voltage divider across the RF output line. T1 is a current transformer which senses the RF current. RF converts the current in T1 to a voltage in series with the voltage divider C1 and C2.

The vector sum of these two voltages is rectified by CR1 and this DC is the control input to the Relay/ALC assembly. L1 and C3 compose a low pass filter for the control voltage.

Other connections to 1A7A3 are simply passed through to other assemblies.

4.8 CHASSIS ASSEMBLY 1A1

Refer to Figure 5.3

4.8.1 FRONT PANEL 1A1A1

The function of each front panel control is explained in Section 3.2. All control functions from the front panel are electrical except for the COARSE TUNE and FINE TUNE controls which are mechanical shafts to 1A3A1C1 and 1A3A3C1.

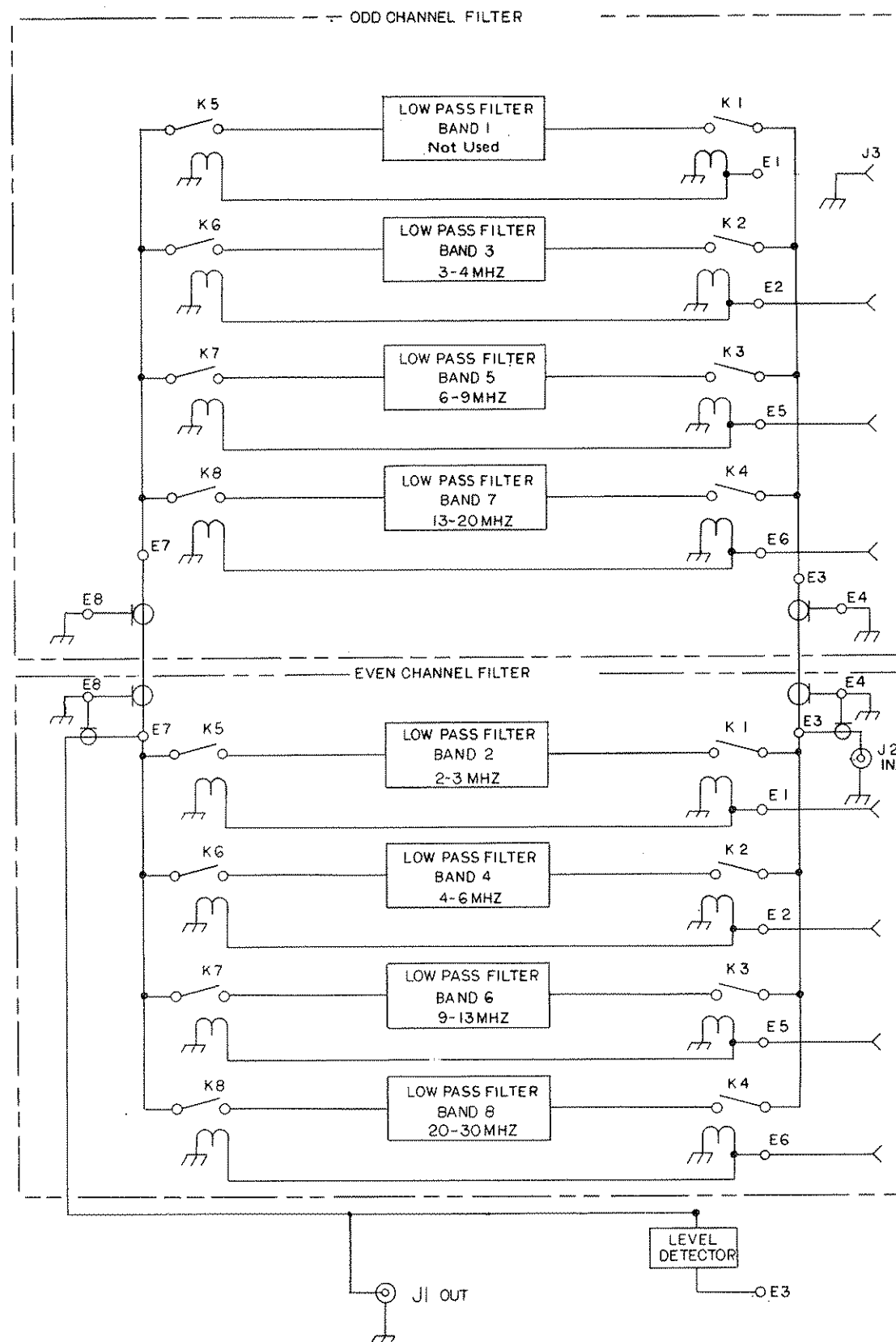


FIGURE 4.2 FILTER MODULE 1A7 BLOCK DIAGRAM

SECTION V

MAINTENANCE AND REPAIR

5.1 GENERAL

This section provides test procedures for routine maintenance and evaluation of overall performance. A fault analysis table is included to aid the repairman in isolating a fault to the defective module or subassembly.

5.2 MAINTENANCE

The equipment should be periodically inspected internally for loose or damaged components, kinked, frayed, or broken wires and loose hardware. All cable connections should be checked for proper mating.

CAUTION

115VAC is present at the power switch on the front panel, and on the power connector, whenever the GSR-921 is connected to a source of power. Exercise caution when servicing the GSR-921 without covers.

5.2.1 INSPECTION

If the GSR-921 has its case removed for maintenance, a visual inspection should be performed and the resultant corrective action should be taken as follows:

1. Inspect chassis for loose or missing mounting hardware, deformation, damaged fasteners, or damaged connectors. Replace all damaged parts.
2. Inspect connectors for broken parts; check insulation for cracks; and check the pins for damage, misalignment, or bad plating. Carefully realign pins when possible, or, if connectors are otherwise severely damaged, replace

connector. Check for loose, or poorly soldered connections to terminals for connectors. Tighten or solder as required.

3. Inspect wiring of chassis and sub-assemblies for any signs of physical damage or charring. Any damaged wires must be replaced.
4. Inspect for leaky, blistered, charred, or cracked capacitors, resistors, or diodes. Check for loose or corroded terminal connections. Obviously damaged components should be replaced.
5. Inspect for cold soldered or resin joints. Bad joints can be recognized by a dull, porous appearance. Resolder.

5.2.2 REPAIR OR REPLACEMENT

The repair or replacement of damaged and defective parts usually involves standard service techniques. Carefully examine the equipment to determine the correct technique required to effect the repair.

5.2.2.1 General Precautions

- a) Perform repairs and replace components with power disconnected from unit.
- b) Replace connectors, shielded conductors, and twisted pairs only with identical items.
- c) Reference to component side of a printed circuit board means the side on which the majority of components are located; solder or circuit side refers to the other side.
- d) When repairing circuits, carefully observe lead dress and component orientation. Keep leads as short as

- possible and observe correct repair techniques.
- e) Observe cable routing prior to disassembly, to enable the proper reinstallation of cabling during reassembly procedures.
 - f) If component is defective beyond any reasonable doubt, remove and replace it according to the procedures given in paragraphs 5.2.2.2 and 5.2.2.3. If there is some doubt about the condition of a component, or if it is being removed for troubleshooting, remove it according to the procedures in paragraph 5.2.2.4.

5.2.2.2 Circuit Card Assembly, Two-Lead Component Removal (Resistors, Capacitors, Diodes, ETC.)

- a) Inspect solder side of component to determine if the leads were bent over prior to soldering. If they weren't, proceed with Step b. If they were, melt the solder and remove it with a desoldering tool, then straighten the leads and remove the component.
- b) Heat one lead from component side of board until solder flows and lift one lead from board; repeat for other lead and remove component (note orientation).
- c) Melt solder in each hole and using desoldering tool remove solder from each hole.
- d) Dress and form leads of replacement component; insert leads into correct holes.
- e) Solder in place and clip leads on solder side of boards.

5.2.2.3 Circuit Card Assembly, Multi-Lead Component Removal (IC's etc.)

- a) Remove component by clipping each lead along both sides. Clip off lead as close to component as possible. Discard component.
- b) Heat hole from solder side and remove clipped lead from each hole.
- c) Melt solder in each hole and using a desoldering suction tool remove solder from each hole.

- d) Insert replacement component observing correct orientation.
- e) Solder component in place from solder side of board. Avoid solder runs. No solder is required on contacts where no track exists.

5.2.2.4 Removal of Components of Doubtful Condition

- a) To remove components that are not heat-sensitive, melt the solder and remove it with a desoldering tool, then remove the component.
- b) To remove components that are heat-sensitive, such as diodes, transistors, and IC's, connect a heatsink to the lead between the body of the component and the solder joint, melt and remove the solder. Repeat for all leads of the component, then remove the component. Apply heat to the lead for the minimum amount of time necessary to remove the solder. When working with IC's, start at one corner, then go to the lead farthest away, then back to where you started, etc...(Example: pin 1, 8, 14, 7, ...). This is to keep heat buildup to a minimum. Remember that some solid state devices are extremely heat-sensitive, and even though maximum care is exercised during their removal, they may still be destroyed by the removal procedure.
- c) To install a heat-sensitive component, use a heatsink and the sequence outline above to prevent heat from destroying the component.

5.3 DISASSEMBLY INSTRUCTIONS

Refer to Figure 5.1

WARNING

ALL DISASSEMBLY IS TO BE ACCOMPLISHED WITH ALL POWER REMOVED FROM THE GSR-921.

5.3.1. TOP COVER

Remove eight (8) #6 x $\frac{1}{4}$ flat head screws.

5.3.2. BOTTOM COVER

Remove eight (8) #6 x $\frac{1}{4}$ flat head screws.
NOTE: If removal of a Preselector(s) is to be accomplished proceed as follows: with GSR-921 in upside down position, loosen the bristol set screw that secures the front collar to the capacitor gear drive shaft and slide the shaft forward, disengaging it from the rear bearing, taking care not to lose the teflon and felt washers. Remove one (1) #4 x $\frac{7}{16}$ pan head screw that secures 1A1P3 or 1A1P4 to Preselector. Disconnect 1A1P3 or 1A1P4. Return GSR-921 to upright position.

5.3.3. POWER AMPLIFIER ASSEMBLY 1A6

Remove four (4) #8 x $\frac{3}{8}$ pan head screws and two (2) #8 x $\frac{5}{16}$ flat head screws that secure the rear panel to the side panels. Slide and rotate rear panel rearward taking care not to break any wires. Remove the two (2) #4 x $\frac{3}{16}$ AF nuts, split and flat washers that secure 1A1P5 to 1A6J3. Disconnect 1A1P5. Disconnect 1A7P1 from 1A6J2. Disconnect 1A2P2 from 1A6J1. Remove four (4) #6 x $\frac{1}{2}$ pan head screws that secure the power amplifier assembly to the rear panel. Slide the Power Amplifier Assembly rearward to remove from rear panel.

5.3.4. FILTER MODULE ASSEMBLY 1A7

Disconnect 1A1P2 from 1A7J1. Unsolder the white/violet ALC wire from 1A7E3. Unsolder the small RG-178 RF Output Coaxial cable from 1A7E13 and 1A7E14 ground. Remove four (4) #6 x $\frac{3}{8}$ pan head screws that secure the Filter Module Assembly to the rear panel. Slide the Filter Module Assembly rearward to remove.

5.3.5. 12V POWER SUPPLY 1A4

Remove six (6) #10 x $\frac{1}{2}$ flat head screws

and two (2) #10 x $\frac{5}{16}$ flat head screws that secure the Power Supply/Relay Assembly to the side panels. Remove the Coarse and Fine Tuning knobs. Slide the Preselector Assembly as far forward as possible taking care not to break any wires. Tilt the Power Supply/Relay Assembly to about a 45° angle toward the rear of the GSR-921, slightly spreading the side panels to clear the PEM nuts. Remove four (4) #6 x $\frac{3}{8}$ pan head screws that secure the 12V Power Supply Assembly to the Power Supply/Relay Assembly. Lift 12V Power Supply straight up being careful not to break any wires. Unsolder the two (2) orange/white AC wires from terminals 1 and 2 of the transformer. Unsolder the two (2) red positive 12 volt wires and the three (3) black negative (ground) wires from the supply.

5.3.6. 26V POWER SUPPLY REGULATOR ASSEMBLY 1A5A1

Tilt the Power Supply/Relay Assembly back to an upright position. Remove two (2) #6 x $\frac{1}{2}$ pan head screws from each 2N3772 pass element. Remove the four (4) 2N3772 pass elements and mica insulators. Tilt the Power Supply/Relay Assembly to about a 45° angle toward the rear of the GSR-921, slight spreading the side panels to clear the PEM nuts. Remove four (4) #4 x $\frac{1}{2}$ pan head screws that secure the 26V Power Supply Regulator Assembly to the Power Supply/Relay Assembly. Unsolder the orange wire from 1A5A1-E1. Unsolder the red wire from 1A5A1-E3. Unsolder the black wire from 1A5A1-E4. Unsolder the white/black wire from 1A5A1-E2. Remove the 26V Power Supply Regulator Assembly taking care not to loose any of the insulating shoulder washers on the Power Supply/Relay Assembly.

5.3.7. RELAY/ALC ASSEMBLY 1A2

Disconnect 1A1A2P2 from 1A2J2. Disconnect 1A1A2P1 from 1A2J1. Discount 1A1P1 from 1A2J3. Remove four (4) #4 x $\frac{1}{2}$ pan head screws that secure the Relay/ALC Assembly to the Power Supply/Relay Assembly. Disconnect 1A2P3 from Input Pre-

selector 1A3A1-J2. Disconnect 1A2P1 from Output Preselector 1A3A3-J3. Slide Relay/ALC printed circuit assembly out from under Pad Assembly. Unsolder 30 db Pad output coaxial cable from 1A2-E2 and 30 db Pad input coaxial cable from 1A2-E1.

5.3.8. PRESELECTOR FINE TUNING 1A3A1 or COARSE TUNING 1A3A3

Disconnect the RF input coaxial cable from preselector. Disconnect the RF Output coaxial cable from preselector. Rotate Power Supply/Relay Assembly to its upright position. Slide the Preselector Assembly as far forward as possible taking care not to break any wires. Slide the Power Supply/Relay Assembly as far rearward as possible, spreading side panels, if necessary to clear PEM nuts, taking care not to break any wires. Using an offset Phillips screwdriver remove four (4) #6 x 5/16 pan head screws that secure the preselector to rear brace from BOTH preselector modules. Slide preselector assembly as far rearward as possible taking care not to break any wires. Using an offset Phillips screwdriver remove four (4) #6 x 5/16 pan head screws that secure the preselector module to the front brace. Lift preselector out of preselector assembly. NOTE: The preselector 1A3A3 has pin diodes protecting its RF OUTPUT circuit against a keyline circuit failure, therefore, preselector 1A3A1 and 1A3A3 must be replaced in their respective place in the Chassis Assembly 1A1.

5.4 PERFORMANCE TEST

The following tests will provide overall performance data on this equipment as well as aid in determining specific problems, or a deterioration in performance.

5.4.1 TEST EQUIPMENT

The following test equipment or equivalent is required to perform the following procedures:

- a. Signal Generator: Wavetek Model 3000
- b. BNC "TEE" connector UG-274/U (2 required)
- c. RF Voltmeter: Boonton Model 91H with 50 ohm BNC probe
- d. Alignment Tool: Midland Ross (Cambion) 435-2033-01
- e. Coax Cable: Approximately 4 feet, type RG-178/U terminated at one end in a male BNC connector and at the other end in a male JCM connector
- f. Coax Cable: Approximately 4 feet, type RG58/U terminated at both ends in UG-88/U connectors. (4 required)
- g. Exciter or other source of 5 to 20 watts PEP of RF in 2 to 30 MHz range.
- h. RF wattmeter, Bird Model 43
- i. 50 watt, 2-30 MHz element for Bird Model 43
- j. 50 ohm 150 watt RF load, Bird Model 8166
- k. RF voltmeter, HP Model 410C
- l. Coaxial Adapter, HP No. 11042A
- m. Coaxial connector adapters
- n. Oscilloscope, Tektronix 462 with 10X probe
- o. Audio Oscillator, HP-200CD to modulate item g.

5.4.2 PRELIMINARY SETUP

Connect GSR-921 and test equipment as shown in Figure 5.2.

5.4.3 ALIGNMENT AND TEST

Test and alignment of each preselector tuning module is identical. Either preselector may be disabled and placed into bypass mode by removing the rectangular power connector (1A1P3/1A1P4) from the band gain control assembly of the appropriate module. In this manner, either preselector may be aligned and tested independently of the other.

5.4.3.1 Alignments

5.4.3.1.1 Receive Alignment

- a) Connect equipment as shown in Figure 5.2.

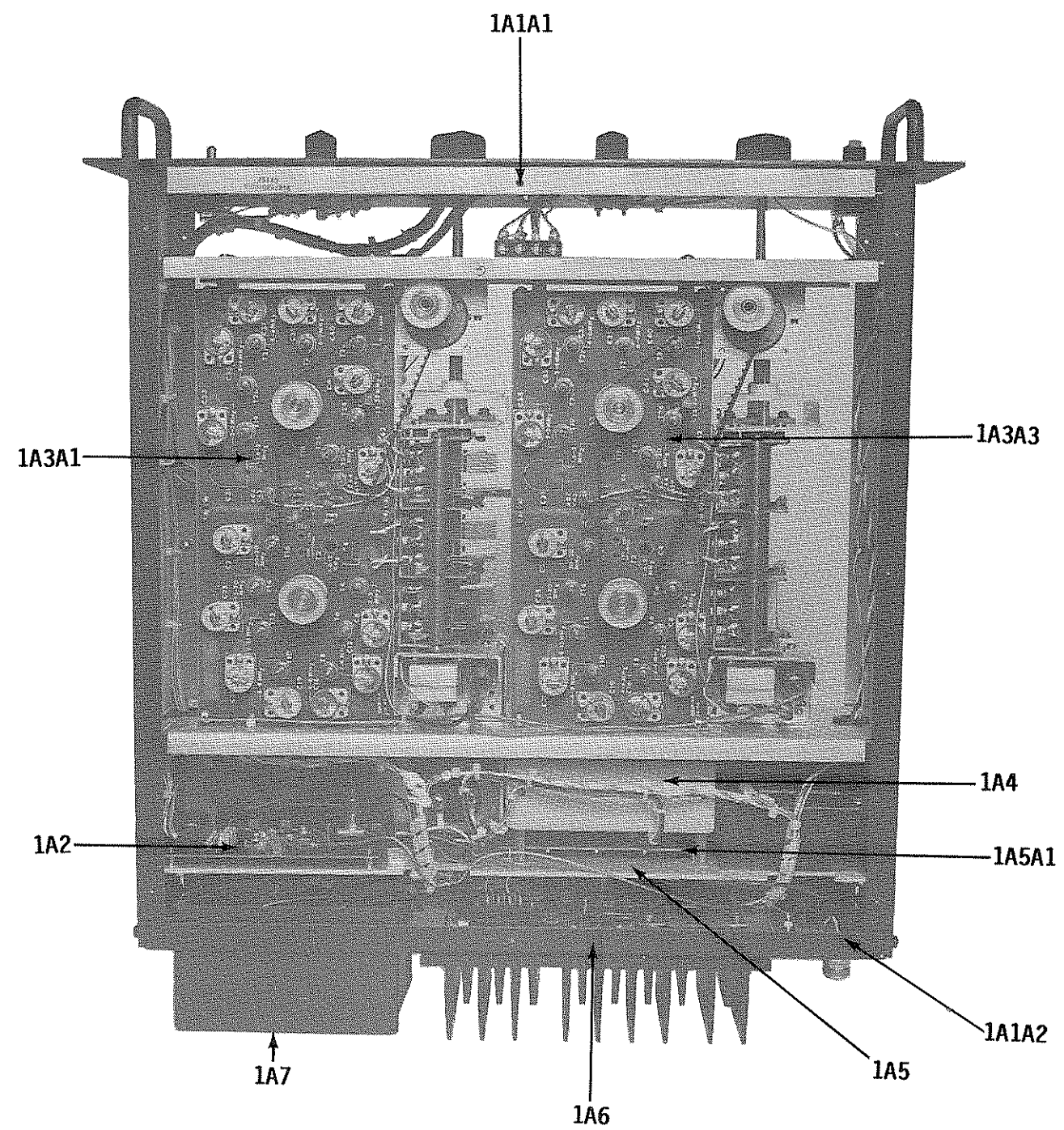


FIGURE 5.1 SHEET 1 of 19, TOP COVER REMOVED

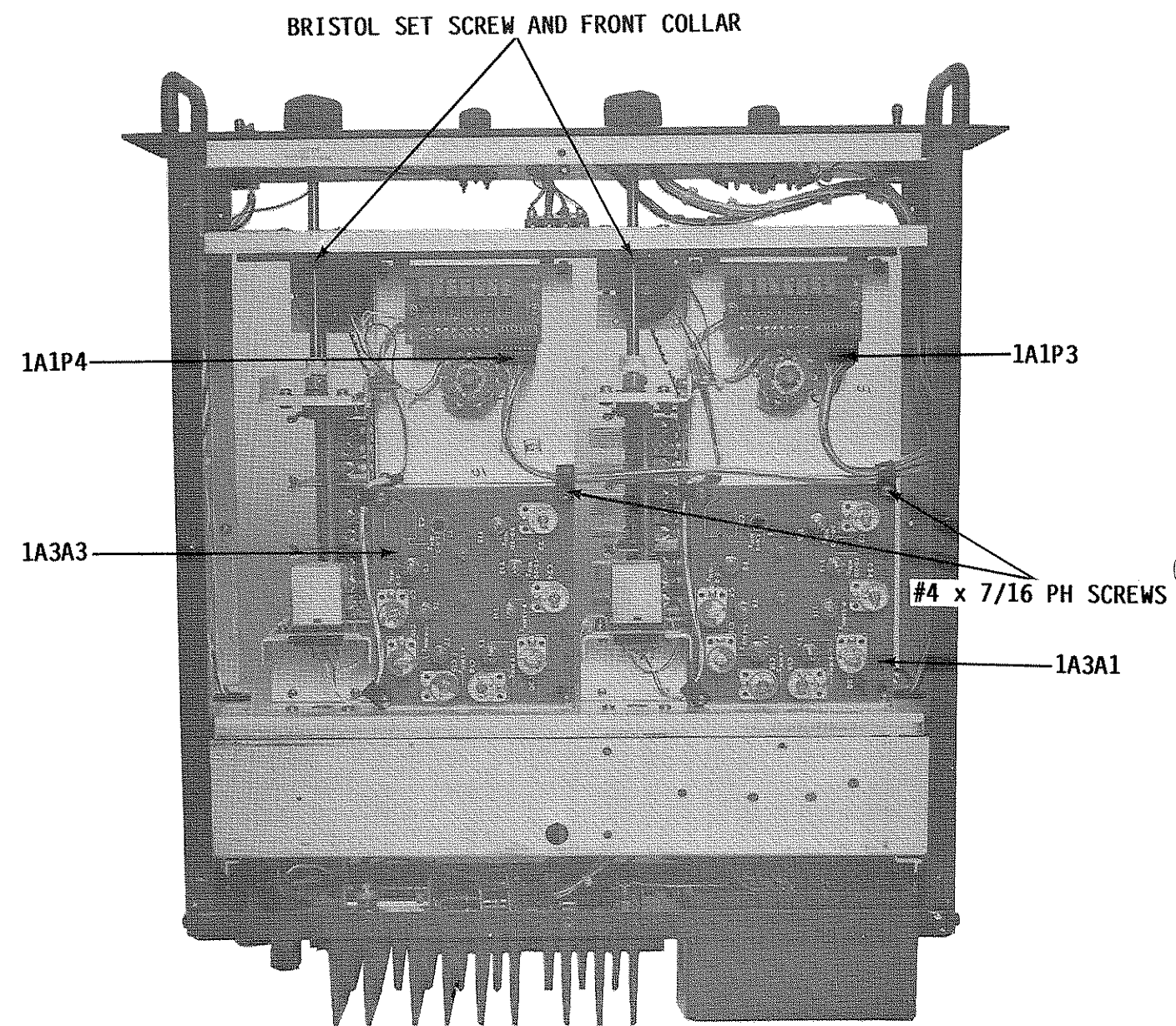


FIGURE 5.2 SHEET 2 of 19, BOTTOM COVER REMOVED

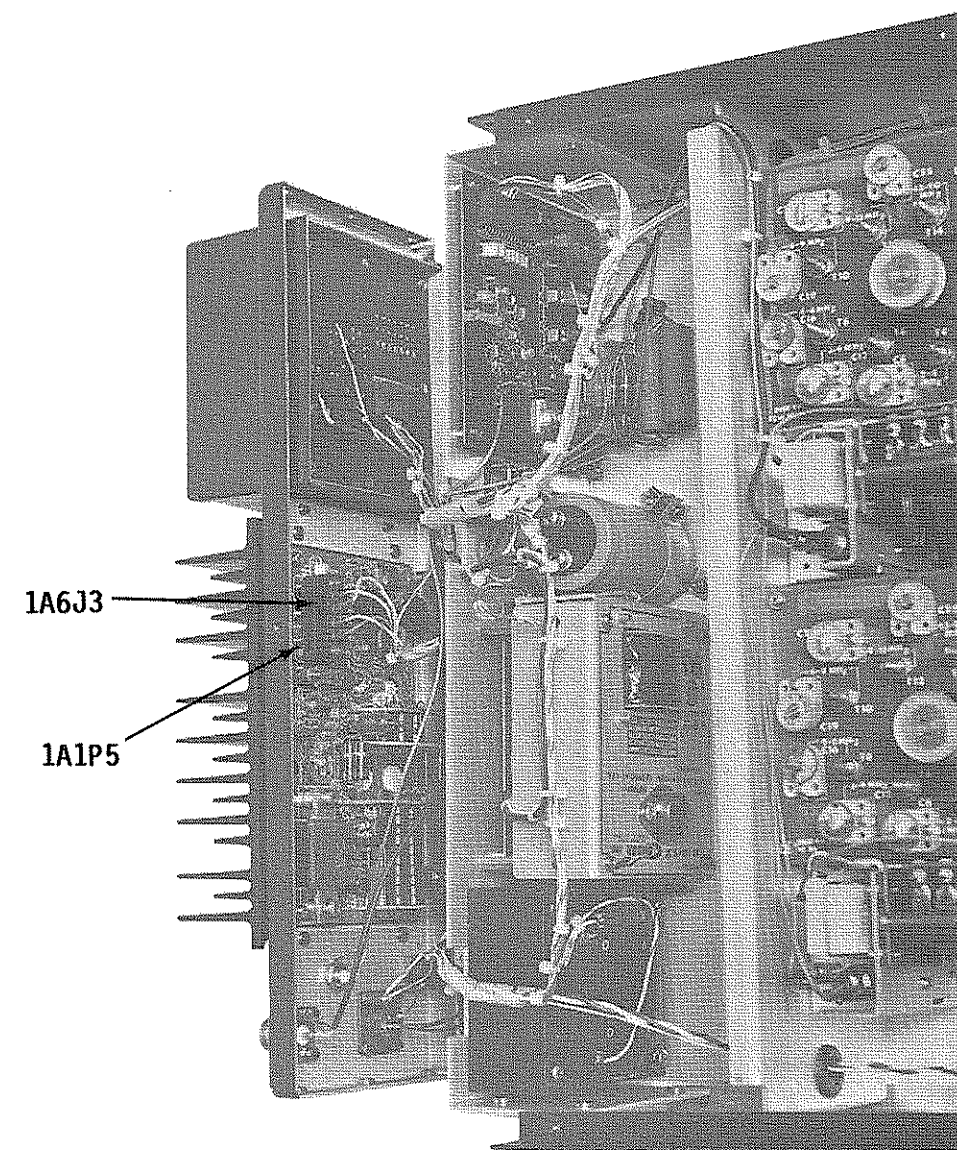


FIGURE 5.1 SHEET 3 of 19, POWER AMPLIFIER DISASSEMBLY

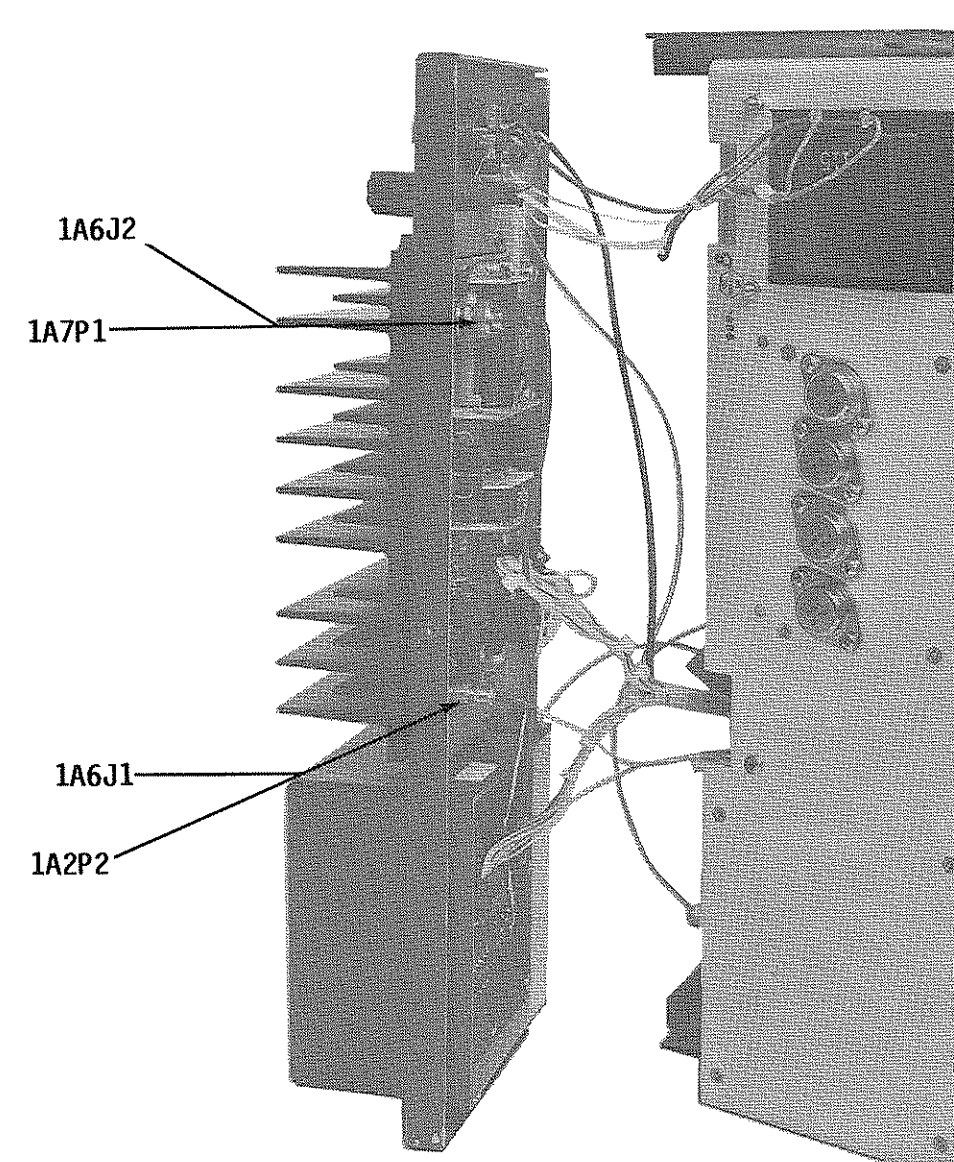


FIGURE 5.1 SHEET 4 of 19, POWER AMPLIFIER DISASSEMBLY

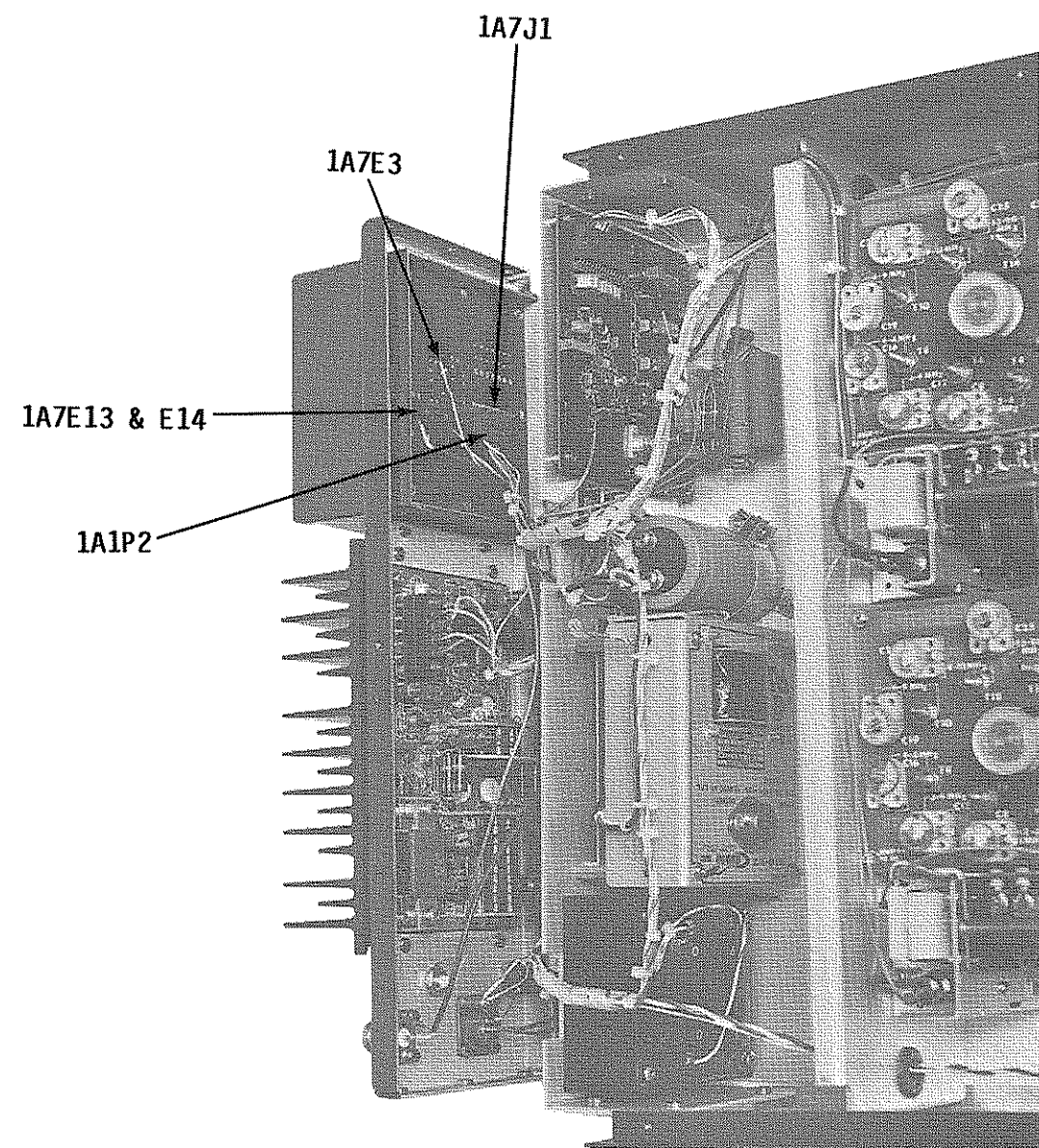


FIGURE 5.1 SHEET 5 of 19, FILTER MODULE DISASSEMBLY

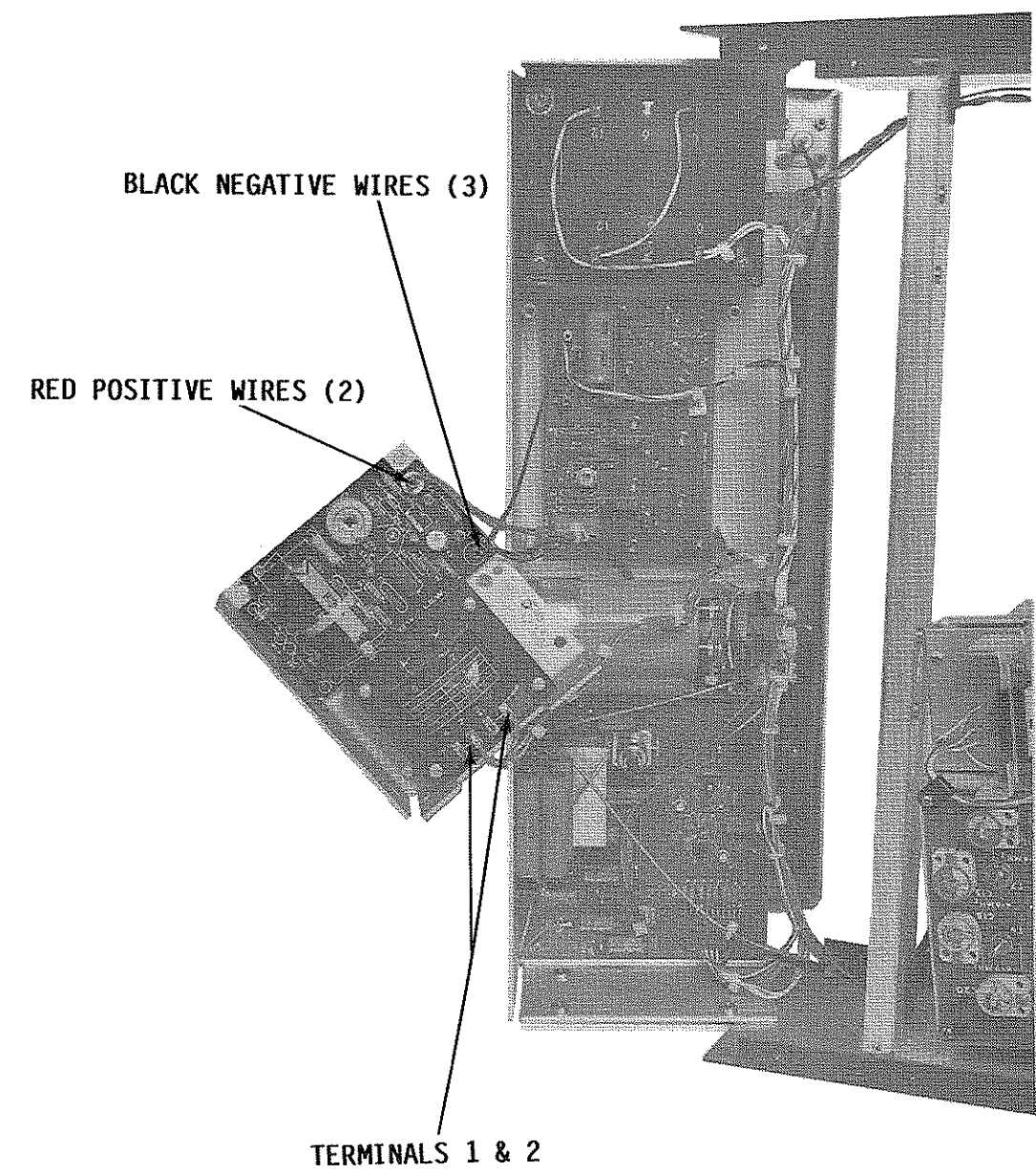


FIGURE 5.1 SHEET 6 of 19, 12V POWER SUPPLY DISASSEMBLY

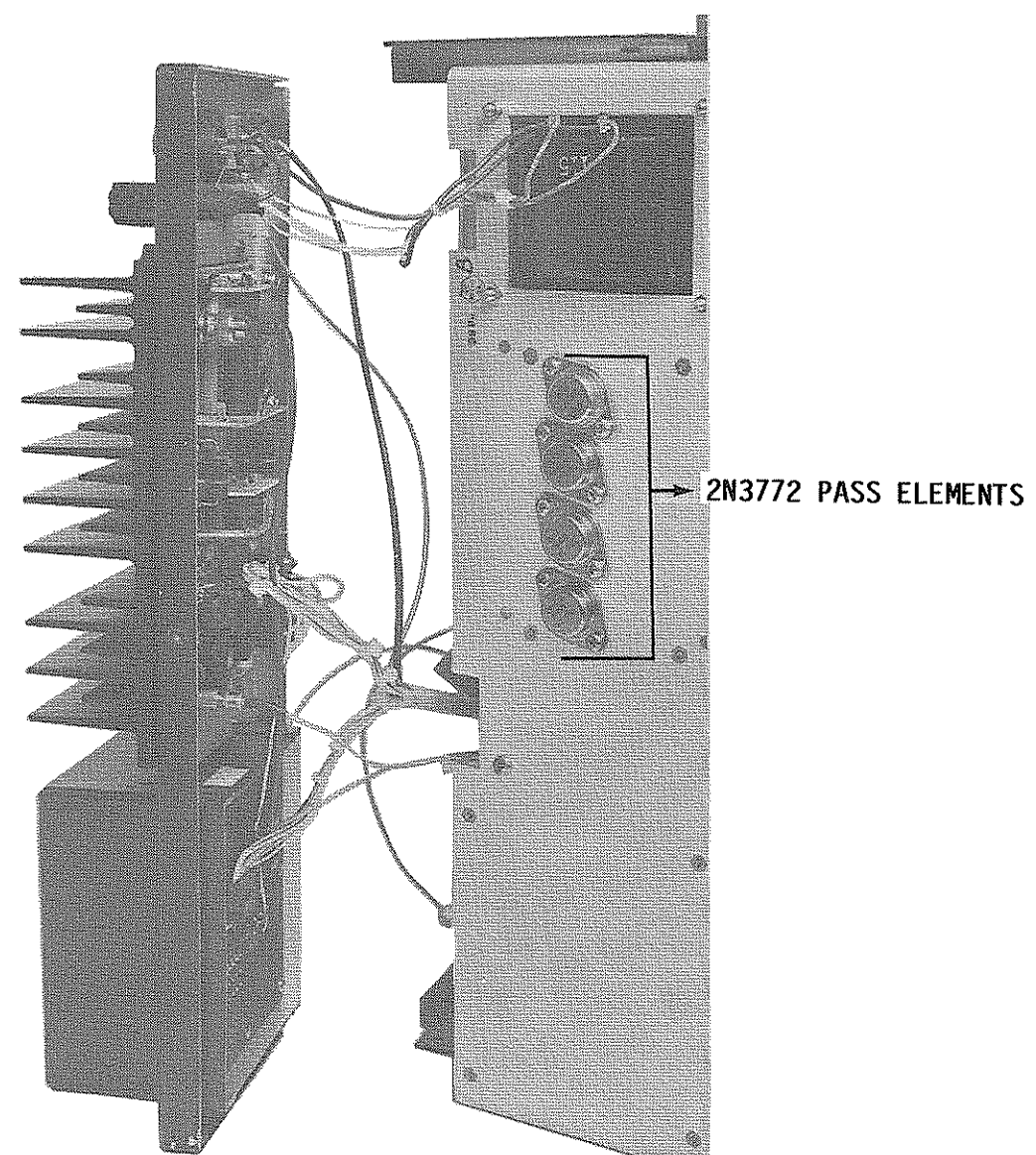


FIGURE 5.1 SHEET 7 of 19, 26V POWER SUPPLY DISASSEMBLY

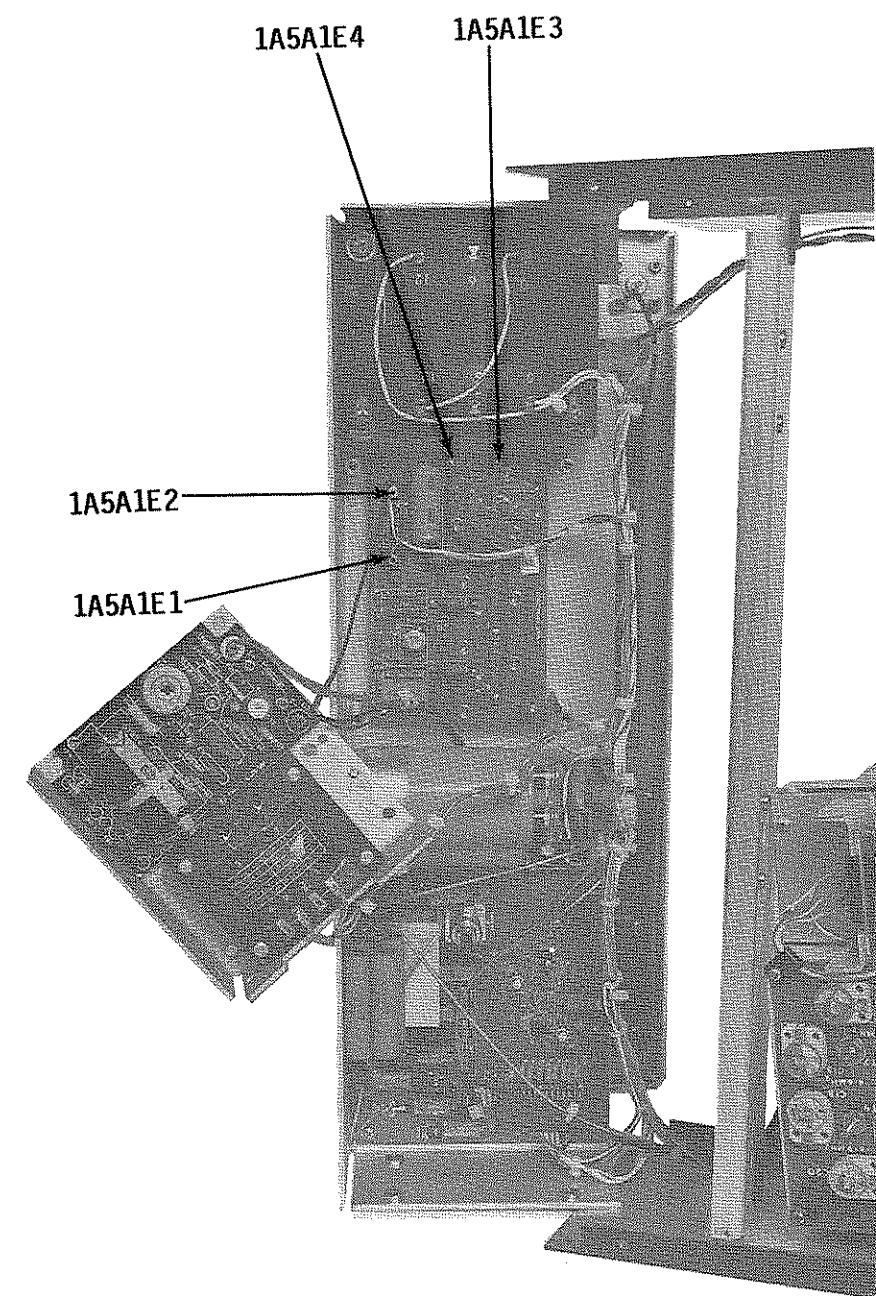


FIGURE 5.1 SHEET 8 of 19, 26V POWER SUPPLY DISASSEMBLY

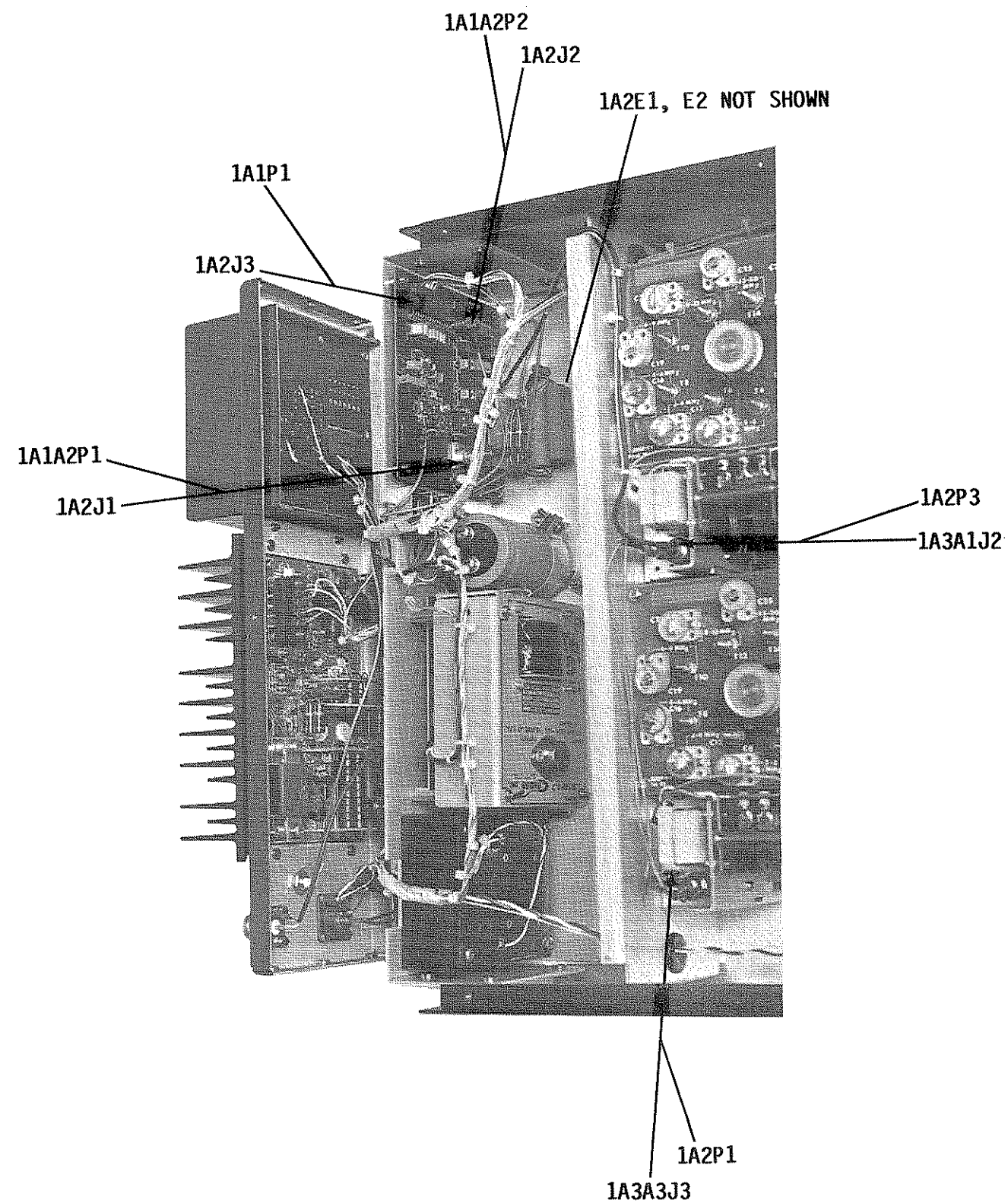


FIGURE 5.1 SHEET 9 of 19, RELAY/ALC ASSEMBLY, DISASSEMBLY

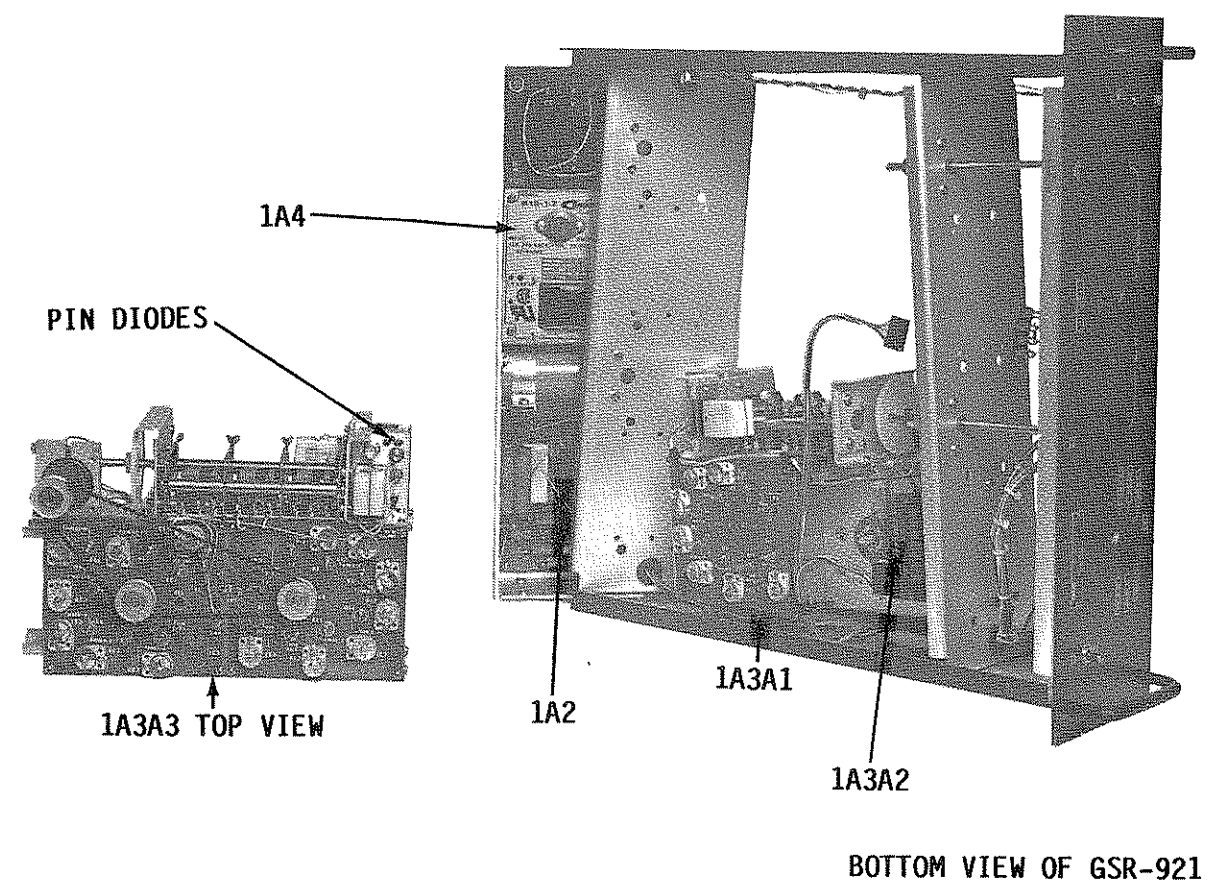
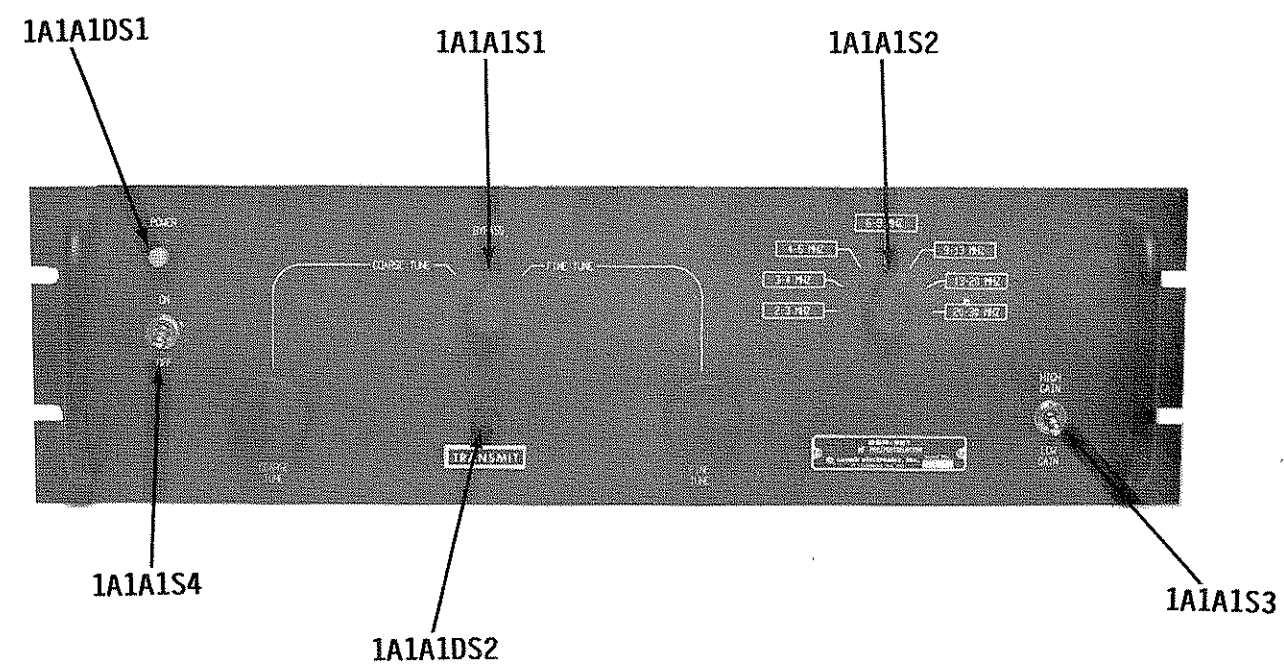


FIGURE 5.1 SHEET 10 of 19, 1A3A3 PRESELECTOR REMOVED



FRONT PANEL 1A1A1

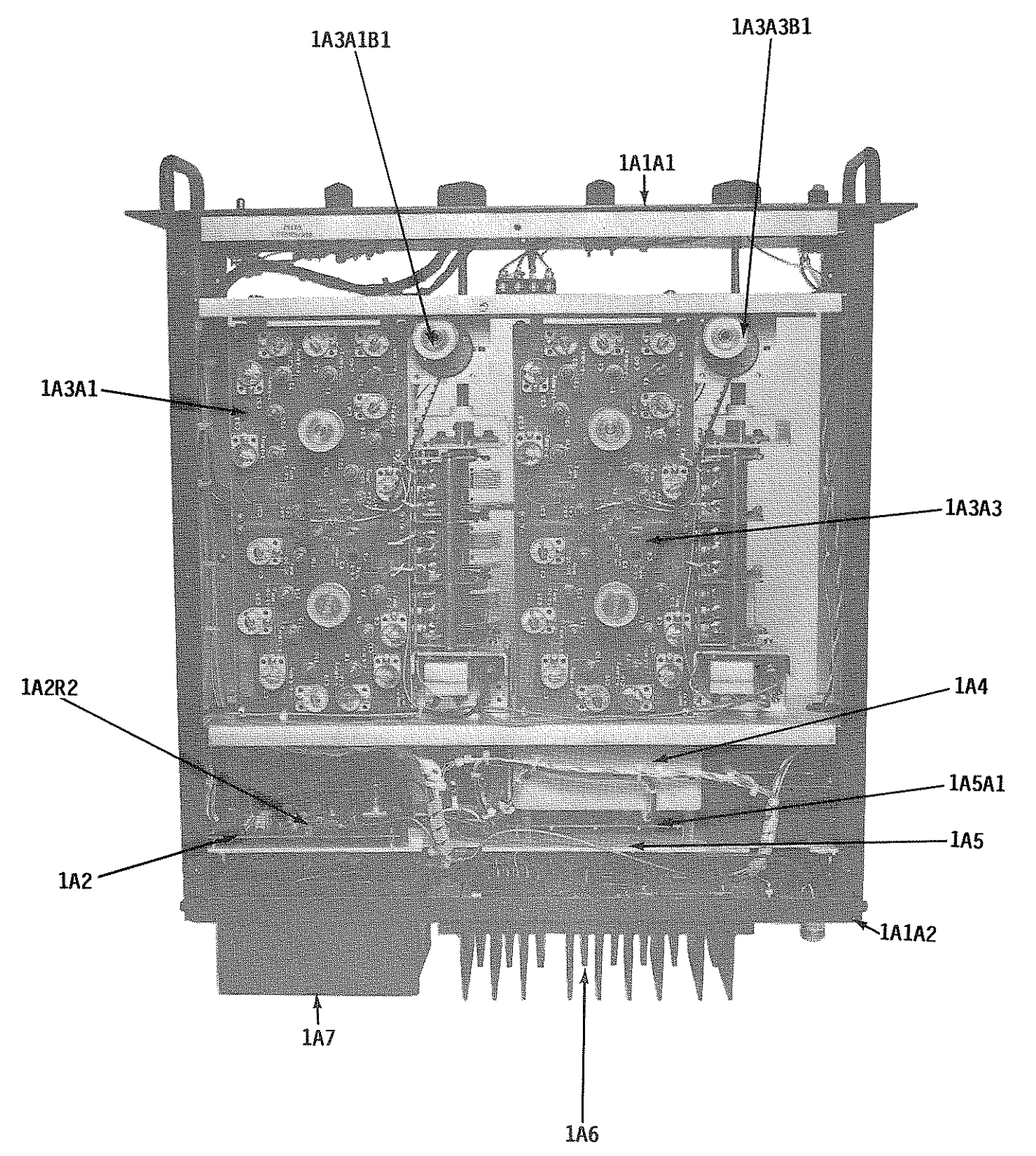


FIGURE 5.1 SHEET 12 of 19, LOCATORS

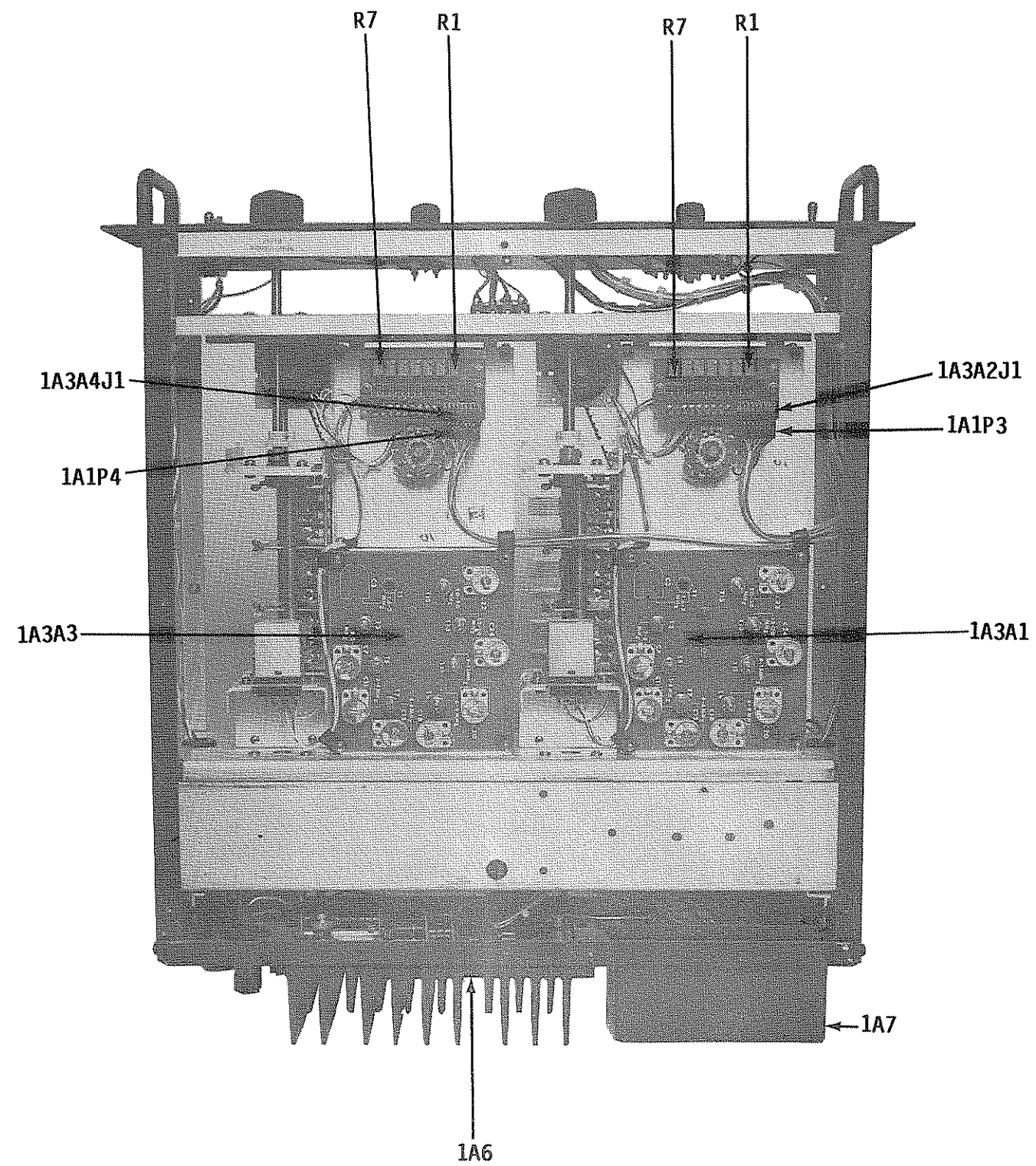


FIGURE 5.1 SHEET 13 of 19, LOCATORS

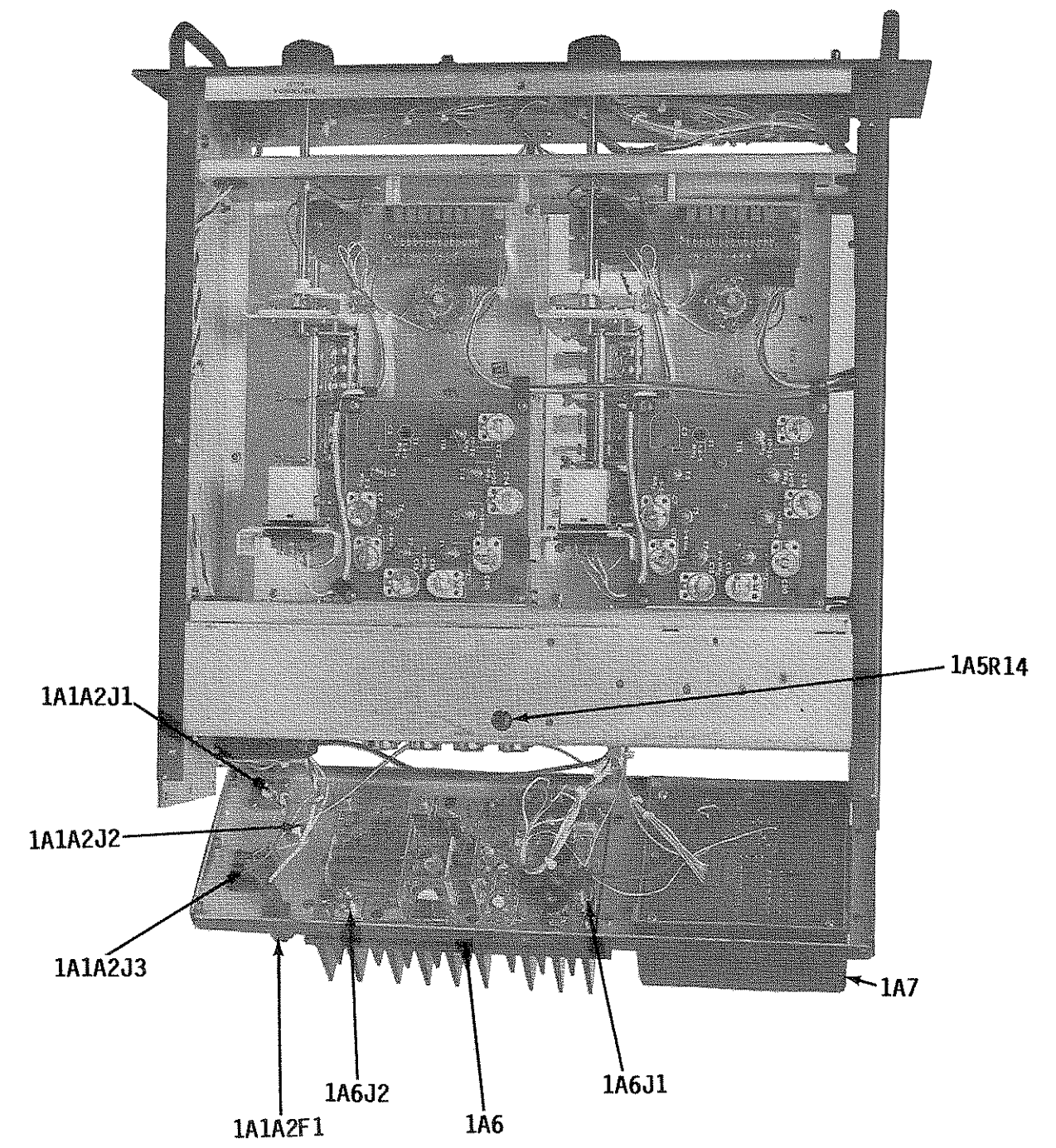


FIGURE 5.1 SHEET 14 of 19, LOCATORS

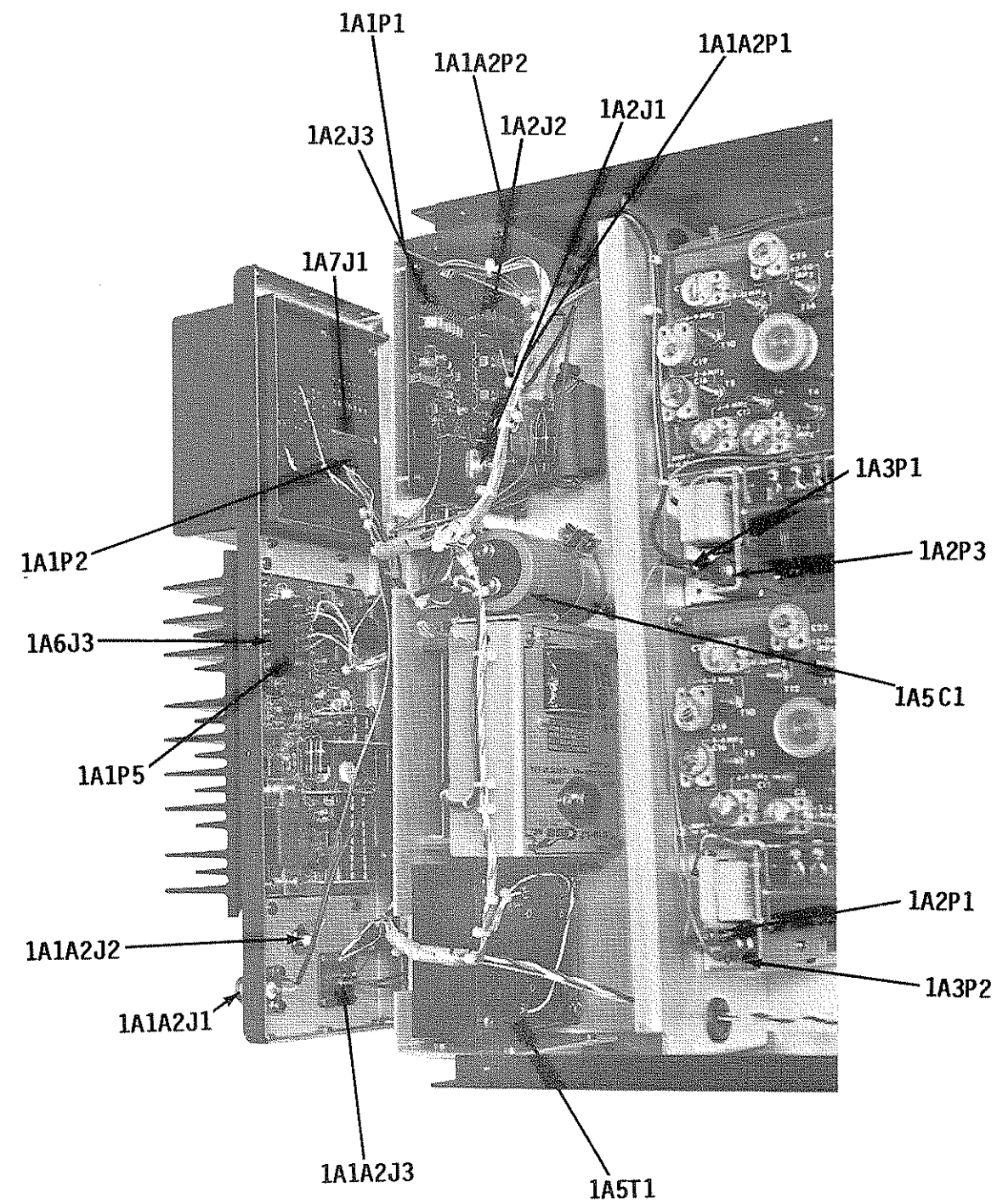


FIGURE 5.1 SHEET 15 of 19, LOCATORS

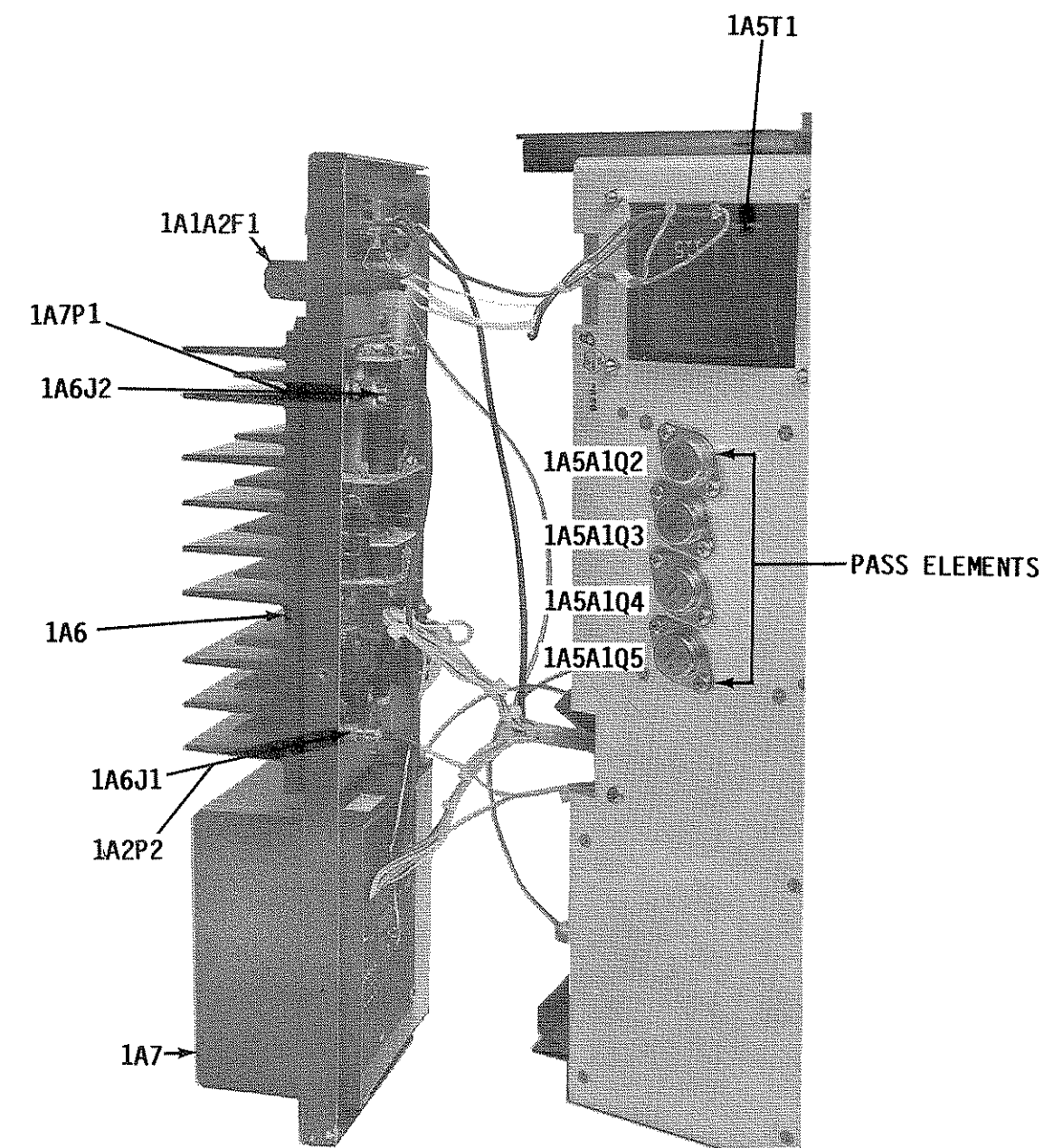


FIGURE 5.1 SHEET 16 of 19, LOCATORS

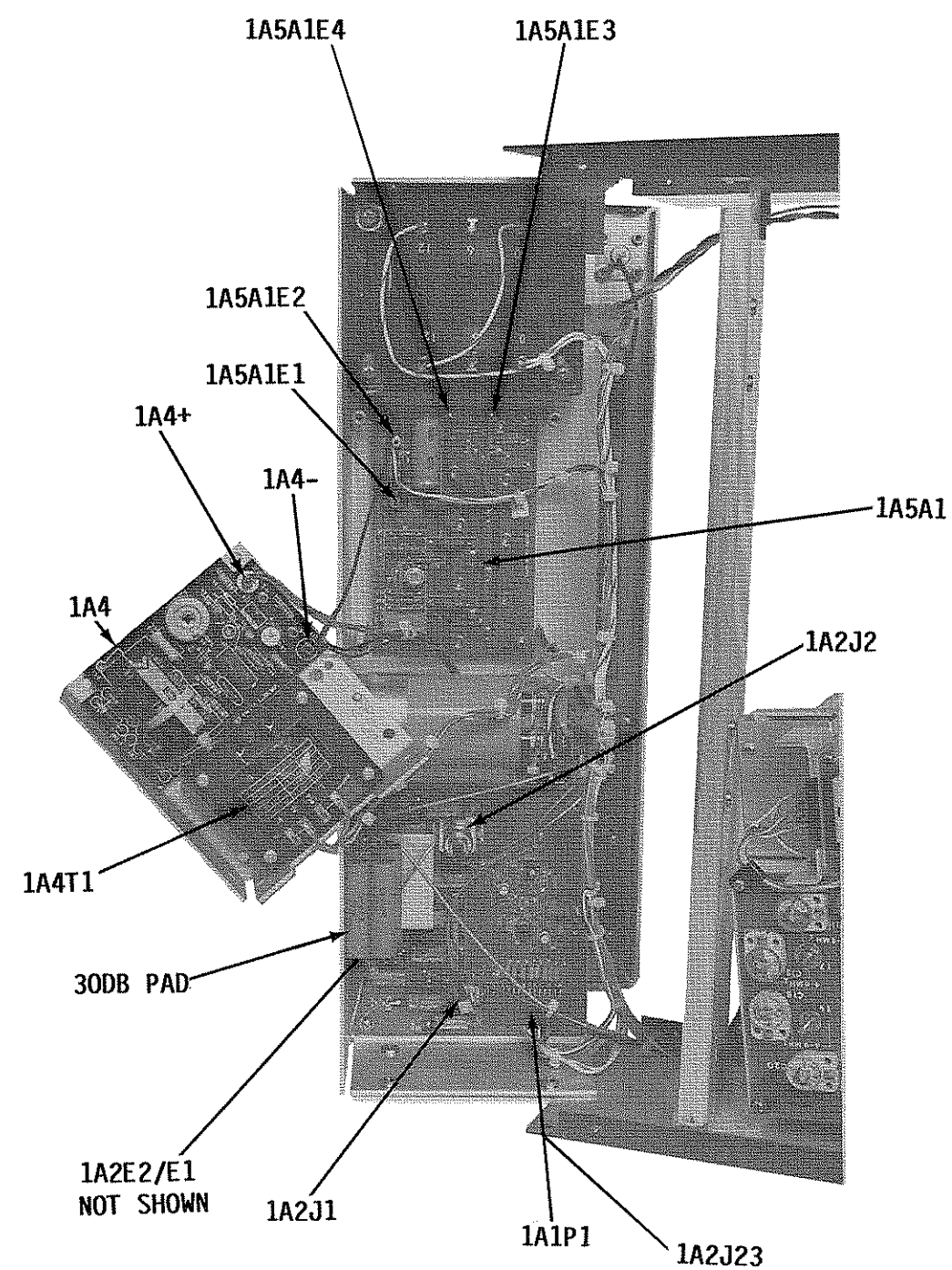


FIGURE 5.1 SHEET 17 of 19, LOCATORS

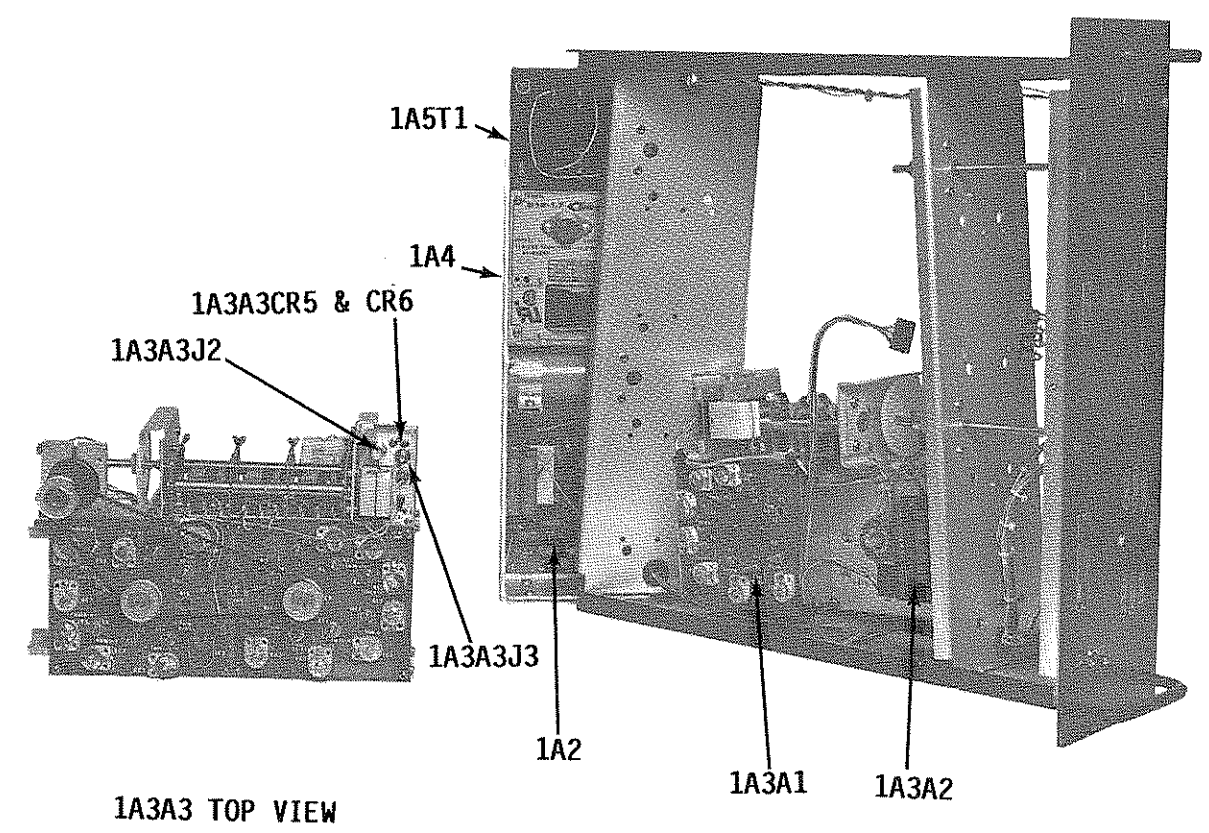


FIGURE 5.1 SHEET 18 of 19, LOCATORS

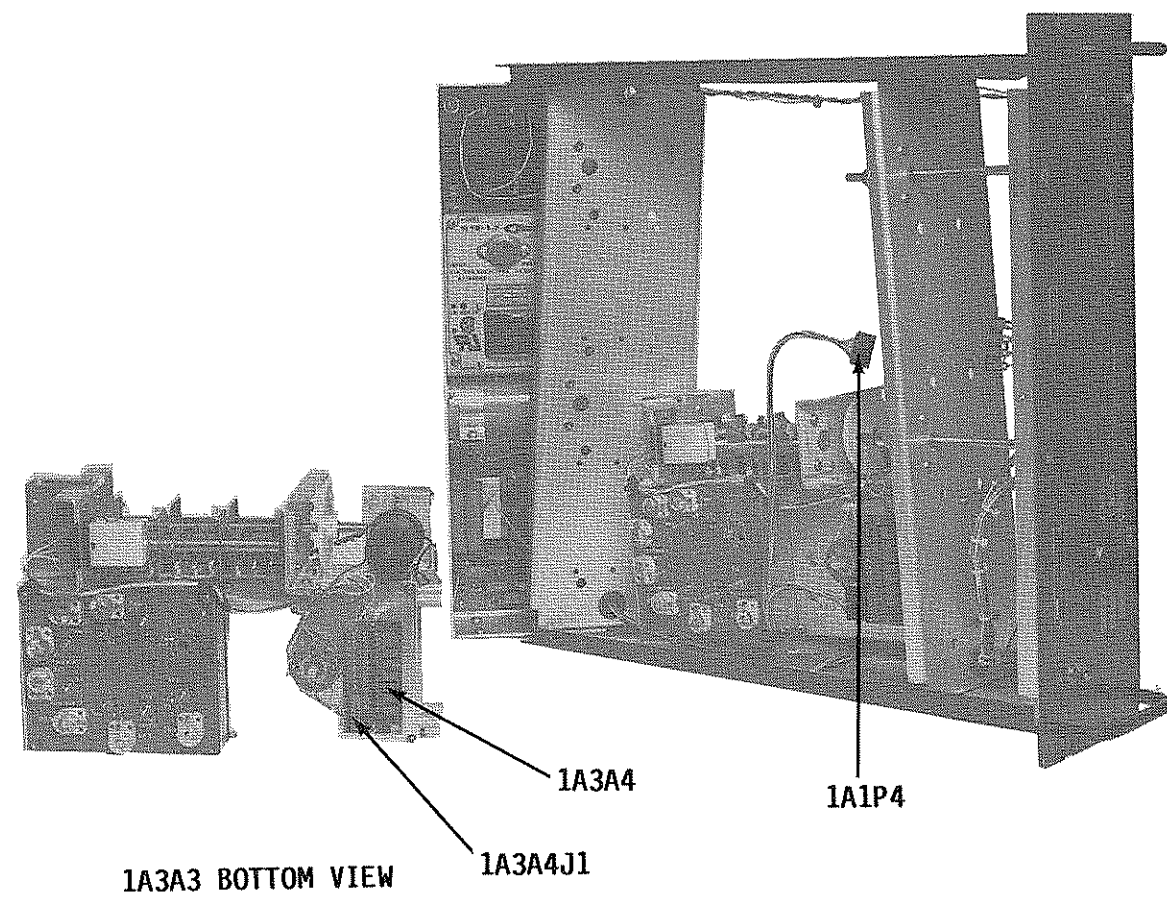
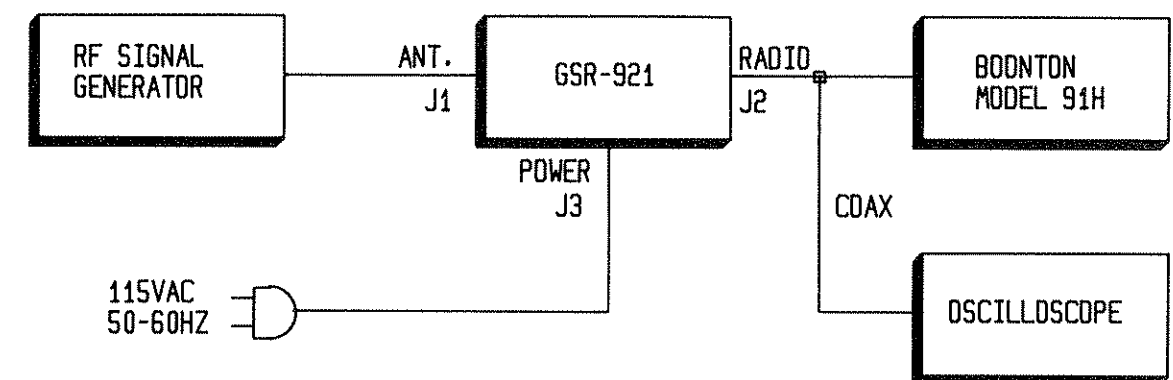
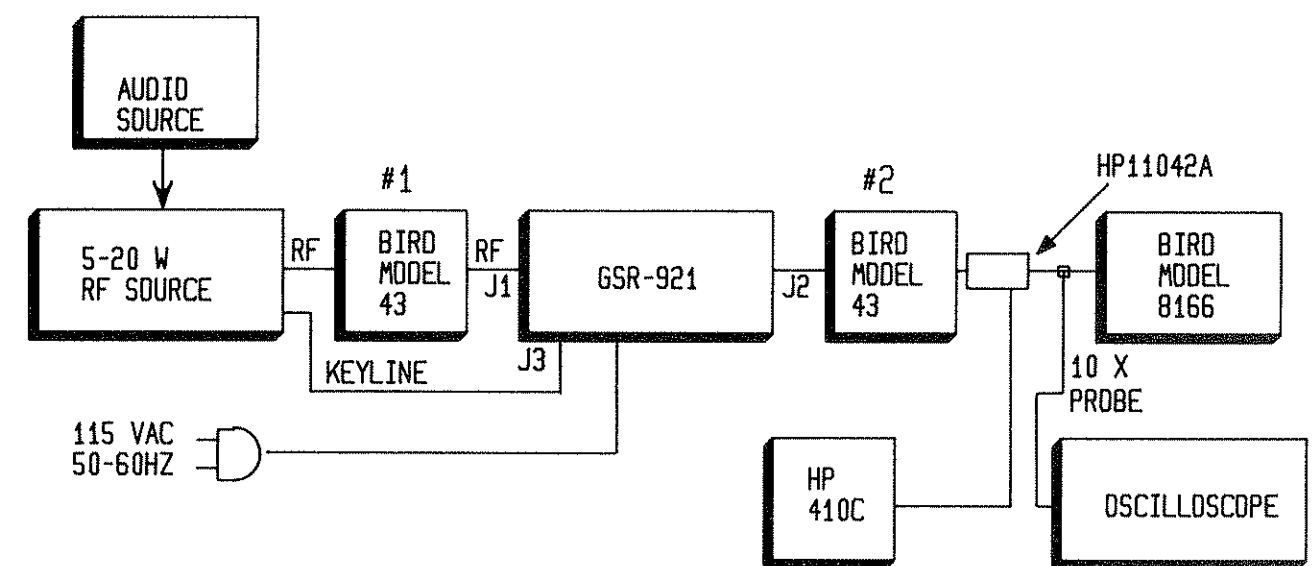


FIGURE 5.1 SHEET 19 of 19, LOCATORS



RECEIVE ALIGNMENT AND TEST



TRANSMIT ALIGNMENT AND TEST

FIGURE 5.2 TEST EQUIPMENT SETUP

- b) Set signal generator frequency to 2.5 MHz and level to 10 millivolts.
- c) Turn GSR-921 power on and set band selector switch to 2-3 MHz band.
- d) Set mode switch on GSR-921 to bypass.
- e) Set Boonton 91H to 10mv range and adjust signal generator output to -1 b on this scale.
- f) Set mode switch on GSR-921 to coarse tune and adjust coarse tuning control until indication on Model 91H is maximum.
- g) Adjust R1 on the coarse gain adjust board until indication on Model 91H is 4 db higher than it was in step e (+3 db).
- h) Reduce signal generator level until indication on 91H is -1 db.
- i) Set mode switch on GSR-921 to fine tune and adjust fine tuning control until indication on 91H is maximum.
- j) Adjust R1 on the fine gain adjust board until indication on 91H is 4 db higher than it was in step h (+3 db).
- k) Set signal generator frequency to 3.5 MHz and set band selector to 3-4 MHz.
- l) Repeat steps d thru j at this frequency, adjusting R2 instead of R1 on the gain adjust boards.
- m) Adjust gain of all bands of the GSR-921 by selecting the band and frequency, and adjusting the appropriate control as specified below:

BAND	FREQUENCY	CONTROL
4-6 MHz	5.0 MHz	R3
6-9 MHz	7.5 MHz	R4
9-13 MHz	11.0 MHz	R5
13-20 MHz	16.5 MHz	R6
20-30 MHz	25.0 MHz	R7

5.4.3.1.2 Transmit Alignment

- a) Connect equipment as shown in Figure 5.2.
- b) Set frequency of RF source to 4 MHz.
- c) Set mode switch of GSR-921 to bypass.
- d) Set band selector of GSR-921 to 3-4 MHz.
- e) Key modulated RF source and GSR-921 and adjust output for 20 watts PEP on Bird wattmeter #1 and #2 (33 VRMS on 410C).

- f) Set mode switch on GSR-921 to coarse tune and adjust coarse tuning control until output power is maximum.
- g) Set mode switch on GSR-921 to fine tune and adjust fine tuning control until output power is maximum.
- h) Adjust R2 gain control on Relay/ALC board until output (wattmeter #2) is no higher than 40 watts PEP (45 VRMS on 410C) and is not flat-topping on oscilloscope.

5.4.3.1.3 Receive Tests

- a) Connect equipment as shown in Figure 5.2.
- b) Set Mode switch to BYPASS and Band selector to 2-3 MHz. Set power switch to ON.
- c) Set signal generator frequency to 2.5 MHz.
- d) Set oscilloscope sensitivity to 5 mv/cm and set signal generator output level so that the indication on the oscilloscope is one centimeter p-to-p.
- e) Set the Mode switch to COARSE tune and adjust the coarse tuning control until the indication on the oscilloscope is maximum.
- f) Set the Mode switch to FINE tune and adjust the fine tuning control until the indication on the oscilloscope is maximum.
- g) Readjust the signal generator level until the oscilloscope indication is 5 mv p-to-p.
- h) Set the signal generator to 2.25 MHz and increase the level 60 db. The amplitude of the oscilloscope indication should not exceed 5 mv p-to-p.
- i) Set the signal generator to 2.75 MHz. the amplitude of the oscilloscope indication should not exceed 5 mv p-to-p. Restore the signal generator level to its original setting.
- j) Set the signal generator frequency to 3.5 MHz. Set band selector to 3-4 MHz and the Mode switch to COARSE tune.
- k) Adjust the coarse tuning control until the indication on the oscilloscope is maximum.

- l) Set the Mode switch to FINE tune and adjust fine tuning control until the indication on the oscilloscope is maximum.
- m) Adjust the signal generator level until the oscilloscope indication is 5 mv p-to-p.
- n) Set the signal generator frequency to 3.15 MHz and increase the level 60 db. The amplitude of the oscilloscope indication should not exceed 5 mv p-to-p.
- o) Set the signal generator frequency to 3.85 MHz. The amplitude of the oscilloscope indication should not exceed 5 mv p-to-p. Restore the signal generator level to its original setting.
- p) In each band, repeat steps j) thru o), tuning the preselector to the frequency specified in Table 5.1, and then offsetting the signal generator as specified. In each case, an increase of 60 db in the signal level at the offset frequency should result in an oscilloscope indication of no more than 5 mv p-to-p.

5.4.3.1.4 Transmit Test

- a) Connect GSR-921 and test equipment as shown in Figure 5.2.
- b) Set exciter frequency to 2.5 MHz.
- c) Set GSR-921 Band selector to 2-3 MHz.
- d) Set GSR-921 Mode switch to BYPASS. Set power switch to ON.
- e) Key exciter and GSR-921. Green transmit light is lit, indicating the GSR-921 is keyed.
- f) Adjust power out of exciter to 5 watts. Power loss from input to output of GSR-921 should not exceed 1 db in BYPASS mode.
- g) Set Mode switch of GSR-921 to COARSE tune. Adjust coarse tuning control until power indication at output of GSR-921 is maximum.
- h) Set Mode switch to FINE tune. Adjust fine tuning control until power indication at output of GSR-921 is maximum. Power output should be at least 9 watts on wattmeter #1. The indication on the HP-410C should be at least 21 VRMS.

- i) Set the exciter frequency to 2.375 MHz. The RF output level should be no higher than 40 db below the level measured in step h).
- j) Set the exciter frequency to 2.625 MHz. The RF output level should be no higher than 40 db below that measured in step h).
- k) In each band, check gain and selectivity by repeating steps g) thru j). In each case, gain should be at least 3 db and skirt attenuation at 5% offset should be at least 40 db. Test at the frequencies listed in Table 5.2.
- l) Set exciter frequency to 25 MHz and increase exciter output to 20 watts. Power output should be not more than 40 watts on wattmeter #2. The indication on the HP-410C should be not more than 45 VRMS.

5.4.3.2 Mechanical Alignment

Mechanical alignment of the preselector is not necessary unless it has been necessary to replace one or more of the band switch wafers, or if the drive belt has been replaced. In this event, accomplish the following procedures.

- a) Remove the rear cover of the preselector (opposite tuning capacitor).
- b) Loosen the set screw securing the cog pulley to the motor. Manually rotate the pulley until the switches are indexed in position #7 (T13, T14 and T24 connected in circuit).
- c) Loosen the set screw on the bottom of the coupling driving S4 (motor control waf er) and manually rotate the G-10 shaft (while holding the motor pulley) until S4 is indexed to the position #7). Temporarily tighten the set screw on the coupling.
- d) Check belt tension with moderate pressure between motor and S2 pulleys; belt should deflect approx. 3/8 inch.
- e) Apply 115 VAC to the preselector and place the BAND switch in 13-20 MHz (if the switch is already in 13-20 MHz, first rotate to another band). Observe the indexing of S2. The blade of S2 should be centered with respect

to the position #7 clip. If a position error exists, loosen the coupling set screw and rotate the G-10 shaft in the proper direction to correct the error. NOTE: Because of inertia in the motor and switch, a slight difference in positioning will be found between advancing one position CW and one position CCW. Therefore, to obtain a final setting, advance first from band 6 to 7 and then from band 8 to 7 and adjust for the best compromise setting. When adjustment is complete, carefully check the torque on all set screws and apply liquid staking. Replace rear cover.

5.4.3.3 Electrical Alignment

- a) Connect the signal generator to the preselector using the coax cable RG-58. Connect the RF voltmeter terminated in a 50 ohm dummy load to the preselector output using the coax cable RG-178.
- b) Connect a source of 115VAC and set POWER switch to ON.
- c) Band #1 alignment.
 1. Set the RF voltmeter to the 30 mv range.
 2. Set the BAND switch to its 2-3 MHz position.
 3. Rotate the tune capacitor to its full mesh position (maximum C).
 4. Set the signal generator frequency to 1.8 MHz and increase the generator level until a noticeable deflection of the RF voltmeter occurs. Tune T3, T4 and T19 for maximum indication on the RF voltmeter (NOTE: adjustments interact slightly and must be repeated, in sequence, until no further increase in output occurs). As the alignment proceeds, reduce the signal generator output so that the RF voltmeter reading stays below 30 mv.
 5. Rotate the tune capacitor to its full open position (minimum C).
 6. Set the signal generator frequency to 3.3 MHz. Increase the generator level until a noticeable RF voltmeter deflection occurs. Tune C7, C8 and C33 for maximum RF voltmeter indica-

tion (NOTE: adjustments interact slightly). As the alignment proceeds, reduce the generator level to keep the RF voltmeter reading below 30 mv.

7. Repeat steps 3. thru 6. until all adjustments are set to their optimum adjustment, and no further increase in voltmeter deflection can be obtained at either of the adjustment frequencies. This may require many repetitions of the adjustments.

- d) Bands #2 thru #7. In a similar manner to step c) 1. thru 7. above, follow Table 5.3 and align the other bands.

NOTE

If it should happen that the transformer adjustments at 18 MHz in Band 7 are all the way out, then tune these adjustments at 17.5 MHz for this pre-selector.

5.4.4 FAULT ANALYSIS AND TROUBLESHOOTING

If the GSR-921 Pre/Postselector should not operate properly, follow the test and alignment procedures starting with paragraph 5.4.3. When a test or an alignment cannot be accomplished properly, follow either Table 5.4 or 5.5. If problem is isolated to the 26V Power Supply, follow section 5.4.4.1. If problem is isolated to the Power Amplifier Assembly, follow section 5.4.4.2.

TABLE 5.1

<u>BAND</u>	<u>NOMINAL FREQUENCY</u>	<u>OFFSET LOW</u>	<u>OFFSET HIGH</u>
4-6	5.0	4.5	5.5
6-9	7.5	6.75	8.25
9-13	11.0	10.0	12.0
13-20	16.5	14.85	18.15
20-30	25.0	22.5	27.5

TABLE 5.2

<u>BAND</u>	<u>NOMINAL FREQUENCY</u>	<u>OFFSET LOW</u>	<u>OFFSET HIGH</u>
3-4	3.5	3.325	3.675
4-6	5.0	4.75	5.25
6-9	7.5	7.125	7.875
9-13	11.0	10.45	11.55
13-20	16.5	15.675	17.325
20-30	25.0	23.75	26.25

TABLE 5.3

STEP#	BAND	FREQ.(MHZ)	TUNE CONTROL	ADJUST (FOR MAX OUTPUT)
4	3-4	2.7	Maximum C	T5, T6, T20
5	3-4	4.4	Minimum C	C11, C12, C35
6	3-4	*Repeat steps 4 & 5 until both conditions are satisfied*		
7	4-6	3.6	Maximum C	T7, T8, T21
8	4-6	6.6	CW End Limit	C15, C16, C37
9	4-6	*Repeat steps 7 & 8 until both conditions are satisfied*		
10	6-9	5.4	Maximum C	T9, T10, T22
11	6-9	9.9	Minimum C	C18, C19, C39
12	6-9	*Repeat steps 10 & 11 until both conditions are satisfied*		
13	9-13	8.1	Maximum C	T11, T12, T23
14	9-13	14.3	Minimum C	C20, C21, C40
15	9-13	*Repeat steps 13 & 14 until both conditions are satisfied*		
16	13-20	11.7	Maximum C	T13, T14, T24
17	13-30	22.0	Minimum C	C24, C25, C41
18	13-20	*Repeat steps 16 & 17 until both conditions are satisfied*		
19	20-30	18.0	Maximum C	T15, T16, T25
20	20-30	33.0	Minimum C	C22, C23, C42
21	20-30	*Repeat steps 19 & 20 until both conditions are satisfied*		

TABLE 5.4 FAULT ANALYSIS AND TROUBLESHOOTING, RECEIVE

SYMPTOM	INSTRUCTIONS	CHECKS & CORRECTIVE ACTION
No power light and band motors fail to run	a. Blown fuse. b. 12V Power Supply 1A4 defective.	a. Check F1 and replace as required. b. Replace 12V Power Supply 1A4 as required.
Weak or no receive signal in Coarse Tune Mode (all bands)	a. High Gain/Low Gain switch in Low Gain position. b. Relay 1A3A3-K1 of Output Preselector inoperative. c. Open contact or misaligned wafer on 1A3A3-S1, 1A3A3-S2 or 1A3A3-S3 of Output Preselector. d. Faulty band gain RF amplifier 1A3A3-Q1 of Output Preselector. e. Relay 1A2-K1 or 1A2-K6 on Relay/ALC Assembly inoperative. f. Open contact on relays 1A2-K2, 1A2-K3, 1A2-K4, 1A2-K5, or 1A2-K9 on Relay/ALC assembly. g. Impedance matching pad of 1A3A3 preselector open. h. Protection diodes shorted.	a. Place switch 1A1A1-S3 in High Gain position. b. Check relay and associated wiring. Repair or replace as required. c. Trace RF path; check switch alignment per Section 5.4.3.2. Realign or repair as required. d. Check gain voltage; check Q1 and associated circuitry. Repair or replace as required. e. Check relays and associated wiring. Repair or replace as required. f. Check continuity of relay contacts. Repair or replace as required. See Section 4.2.3.1. g. Check 1A3A3R13, R14, and R15 for damage and/or severe discoloration. Replace as required. h. Check 1A2CR6 and 1A2CR7 on 1A2 Relay/ALC Board. Check 1A3A3CR5 and 1A3A3CR6 on 1A3A3 Output Preselector Assembly. Replace as required.
Weak or no receive signal on Fine Tune Mode (all bands). Signal good in Coarse Tune Mode.	a. Relay 1A3A1-K1 of Input Preselector inoperative.	a. Check relay and associated circuitry. Repair or replace as required.

	b. Open contact or misaligned wafers on 1A3A1-S1, 1A3A1-S2, or 1A3A1-S3 of Input Preselector.	b. Trace RF path; check switch alignment per Section 5.4.3.2. Realign or repair as required.
	c. Faulty Band Gain RF amplifier 1A3A1-Q1 of Input Preselector.	c. Check gain voltage; check 1A3A1-Q1 and associated circuitry. Repair or replace as required.
	d. Impedance matching pad of 1A3A1 Input Preselector open.	d. Check 1A3A1R13, R14, and R15 for damage and/or severe discoloration. Replace as necessary.
Weak or no receive signal output, with strong signal input and in Low Gain Mode (Coarse or Fine Tune Mode).	a. Relay 1A2-K9 or 1A2-K3 on Relay/ALC Assembly inoperative.	a. Check relays and associated circuitry. Repair or replace as required.
	b. Defective secondary 32 db pad on Relay/ALC Assembly.	b. Check 1A2R16, R17 and R18 for damage and/or severe discoloration. Replace as required.
Coarse Tune band motor operates in Coarse Tune mode but not in Fine Tune mode.	a. 1A1A1-CR1 open.	a. Check 1A1A1-CR1 for damage and/or severe discoloration. Replace as required.
Cannot tune preselector in Coarse Tune Mode (all bands).	a. 1A3A3 Output Preselector "Bypassed".	a. Check 1A1A1-CR3, 1A3A3-K1 and associated circuitry. Repair or replace as required.
	b. 1A3A3-C1 plates shorted.	b. Check 1A3A3-C1. Repair or replace as required.
Cannot tune preselector in Fine Tune mode (all bands).	a. 1A3A1 Input Preselector "Bypassed".	a. Check 1A3A1-K1 and associated circuitry. Repair or replace as required.
	b. 1A3A1-C1 plates shorted.	b. Check 1A3A1-C1. Repair or replace as required.
Coarse Tune band motor will not operate.	a. Relay 1A3A3-K2 inoperative.	a. Check 1A3A3-K2 and associated circuitry. Repair or replace as required.
	b. Defective motor 1A3A3-B1.	b. Check 1A3A3-B1, repair or replace as required.
	c. Open contact 1A3A3-S4	c. Check contacts of 1A3A3-S4, repair or replace as required.

Fine Tune band motor will not operate

- a. Relay 1A3A1-K2 inoperative.
- b. Defective motor 1A3A1-B1.
- c. Open contact 1A3A1-S4.

- a. Check 1A3A1-K2 and associated circuitry. Repair or replace as required.
- b. Check motor 1A3A1-B1. Replace as required.
- c. Check contacts of 1A3A1-S4. Repair or replace as required.

Weak or no receive signal in Coarse Tune mode (specific band).

- a. Open contact or misaligned wafer 1A3A3-S1, S2, S3 or S4.
- b. Band out of electrical alignment.
- c. Defective filter section.
- d. Defective 1A3A3 Preselector.

- a. Trace RF path. Check switch mechanical alignment per Section 5.4.3.2.
- b. Electrical alignment of band per Section 5.4.3.3.
- c. Repair or replace.
- d. Repair or replace as required.

Weak or no receive signal in Fine Tune mode (specific band). OK in Coarse Tune mode.

- a. Open contact or misaligned wafer 1A3A1-S1, S2, S3, or S4.
- b. Band out of electrical alignment.
- c. Defective filter section.
- d. Defective 1A3A1 Preselector.

- a. Trace RF path; check switch mechanical alignment per section 5.4.3.2.
- b. Electrical alignment of band per Section 5.4.3.3.
- c. Repair or replace as required.
- d. Repair or replace as required.

TABLE 5.5 FAULT ANALYSIS AND TROUBLESHOOTING, TRANSMIT

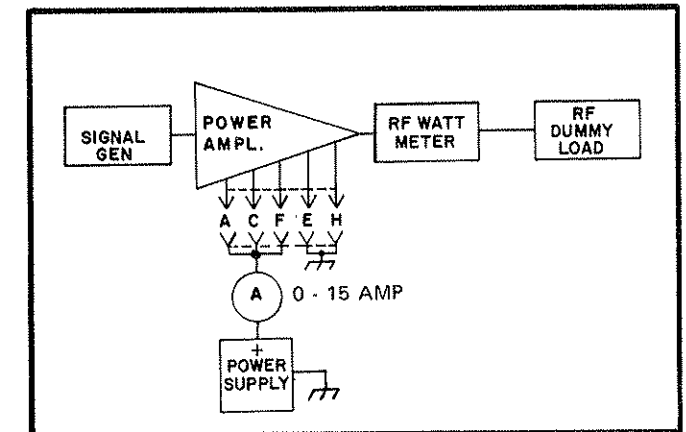
SYMPTOM	POSSIBLE TROUBLE	CHECKS & CORRECTIVE ACTION
Low or no output power in Coarse Tune mode (all bands).	a. External keyline not connected.	a. Connect keyline. Check 1A3A3R13, R14, R15, CR5 and CR6 for damage and or severe discoloration. Replace as required.
	b. 24V Power Supply 1A5 defective.	b. Repair or replace as required. See Section 5.4.4.1.
	c. Defective relay in RF path.	c. Check relays 1A2-K1, K2, K3, K4, K5, K6, K8 and K9 and associated circuitry. Repair or replace as required. See Section 4.2.3.2.
	d. Defective Power 30db Pad.	d. Check 1A2A1R1, R2 and R3 for damage and/or severe discoloration. Replace as required.
	e. Defective secondary pad.	e. Check 1A2R16, R17 and R18 for damage and/or severe discoloration. Replace as required.
	f. Defective Preselector Assembly 1A3A3.	f. Check preselector 1A3A3 in receive mode. See Section 5.4.3. Repair or replace as required.
	g. Defective ALC circuit on 1A2 assembly.	g. Check 1A2Q1, Q2, Q3 and associated circuitry. Repair or replace as required. See Section 4.2.4.
	h. Defective Power Amplifier Module 1A6.	h. Repair or replace as required. See Section 5.4.4.2.
	i. Defective Filter Module Assembly 1A7.	i. Check ALC circuitry on Power Detector Assembly. Repair or replace as required. See Section 4.7.
Low or no output power in Coarse Tune mode in specific band.	a. Defective Preselector Assembly 1A3A3.	a. Check associated circuitry used in specific band. Check Preselector 1A3A3 in receive mode. See Section 5.4.3. Repair or replace as required.
	b. Defective Filter Module 1A7.	b. Check associated circuitry used in specific band. Repair or replace as required. See Section 4.7.
Low or no output power in Fine Tune mode. All bands or a specific band. Coarse Tune mode output power good.	a. Defective Preselector Assembly 1A3A1.	a. Check Preselector Assembly 1A3A1 in receive mode. See Section 5.4.3. Repair or replace as required.

5.4.4.1 26V POWER SUPPLY 1A5

- a) Remove 12V Power Supply 1A4. See Section 5.3 Disassembly Instructions. NOTE: It is not necessary to remove the Filter Module Assembly 1A7 or the Power Amplifier Assembly 1A6. DO NOT unsolder any wires from the 12V Power Supply 1A4.
- b) Check voltage at E1. Reading should be 26.0 VDC. If not adjust R14. R14 is adjustable between 20 and 30 VDC. If unable to adjust, or no output voltage is present, troubleshoot using the following steps.
- c) Measure voltage on pins 3 and 4 of IC1-LM723. Voltages should be equal and between 7.0 and 8.0 volts DC. If not, replace IC1-LM723.
- d) Check voltage at E3. Reading should be between 35VDC and 40VDC. If voltage is low or zero volts, check full-wave bridge CR5 and associated circuitry. Replace as required.
- e) Check the voltage at base of Q5. Reading should be between 24VDC and 30 VDC. If not, check Q1 and associated circuitry. Replace as required.
- f) Check voltage at bases of Q2, Q3, and Q4. Reading should be between 23.5VDC and 30VDC. If not, check Q5, Q2, Q3 and Q4 and associated circuitry. Replace as required.

5.4.4.2 Power Amplifier Module 1A6

- a) Remove Power Amplifier Module 1A6. See section 5.3 Disassembly Instructions.
- b) For servicing the power amplifier, it is desirable to use an external power source capable of 28 VDC at 8 amperes, continuously variable from 0 to 28 VDC. If such a power source is not available, the GSR-921 power supply can be used. A typical test set up is shown.

**CAUTION**

When using a HP 606 or other RF signal generator to test the power amplifier, extreme caution should be exercised to prevent overdriving the unit and needlessly destroying transistors. Remember, the protection circuits are disconnected during tests of this type.

- c) Before applying D.C. power, make sure the signal generator output is at zero. Then slowly increase the power supply voltage, observing the ammeter, until +26V is reached. At this point the ammeter should be reading approximately 1 ampere. If, during the increasing of the source voltage, the current rises well beyond the 1 ampere level, a short circuit exists on the line, or one or both output transistors have failed. To determine which output transistor is defective, allow the current to remain at approximately 3 amperes for 30 seconds. Then feel both transistors. The defective one will be much hotter than the good one.

STEP 1

Set signal generator to 1.6000 MHz and RF output zero. Apply D.C. power and slowly bring up RF output until 50 watts is shown on RF wattmeter. At this point the ammeter should be reading approximately 6 amperes. Allow amplifier output to remain at 50 watts for two (2) minutes. Turn the RF output of signal generator down to zero. The RF wattmeter will drop to zero and the ammeter will drop to approximately 1 ampere. If power output is low, the defective stage can be readily determined by observing with an oscilloscope the wave from at the input center tap of T2 (the 10 turn side) for the predriver. T3 for the driver, or T5 for the output stage. Under normal operation conditions, these points will show primarily second harmonic energy, so if a large amount of fundamental frequency energy is present, it means only half of the push pull stage is operational. Now that the defective stage has been located, an observation of the respective collector wave forms will determine the failed transistor. The collector wave form on the good transistor will be much greater in amplitude than that of the defective one.

STEP 2

Set signal generator to 2.9999 MHz and follow procedure in Step 1. Then set the signal generator to the following frequencies and follow the procedure in Step 1.

- a. 3.9999 MHz
- b. 5.9999 MHz
- c. 8.9999 MHz
- d. 12.9999 MHz
- e. 19.9999 MHz
- f. 29.9999 MHz

- d) While it is necessary to remove the printed circuit board from the heat-sink to replace 1A6Q1 or Q2, it is NOT necessary to remove the board to replace 1A6Q3, Q4, Q5 or Q6. Transis-

tors Q3 and Q4 may be removed by unscrewing the two nuts from the studs on these components and unsoldering four connections on the top of the board for each transistor. The transistors may be removed from the top of the board. Transistors Q5 and Q6 may be removed by unscrewing the four hold down screws (two per transistor) and unsoldering four connections for each transistor. These transistors also remove from the top of the board.

- e) Before replacing any or all of the four high power transistors, Q3, Q4, Q5 and Q6, clean the heatsink area thoroughly around each transistor making sure no foreign particles can come between the transistor and the heatsink. Apply a fresh coat of heatsink compound to the transistor and mount the transistor solidly to the heatsink before soldering. Make sure all collector leads point toward the output connector, 1A6J2. Trim the leads to convenient lengths and solder to the printed circuit board.
- f) When transistor replacement is complete, test the power amplifier per test setup shown, apply DC power and slowly increase signal generator drive until 50 watts is shown on the wattmeter. The ammeter should indicate approximately 6 amperes. Allow the amplifier output to remain at 50 watts for one or two minutes. Remove the signal drive. The ammeter should drop to 1 ampere or slightly greater. If the current drops to 2 amperes or higher and slowly decays toward the 1 ampere level, this means that one or both output transistors has not been properly seated to the heatsink. They should be removed, examined for foreign particles and replaced carefully. Repeat the above test to insure proper installation.

9187531801B POWER SUPPLY/RELAY ASSY

REF SYMBOL	DESCRIPTION	SUNAIR PART NO.
	POWER SUPPLY/RELAY ASSY	9187531801
1A2	PC Assy. Relay/ALC Assy	9187530856
1A2A1C1	Capacitor, 27pf, 500V, DM15, 2%	0282320008
1A5	PC Assy. 28V Power, Supply	9187531909
1A5C1	Capacitor, 10000µF, 50V	1001120027
CR2-5	Diode, Bridge SCBA-2	1002650020
PS1	Power Supply, 12V Out, 1.7 AMP	9187532000
Q2	Transistor, NPN, SI. 2N3772	0448370000
Q3	Transistor, NPN, SI. 2N3772	0448370000
Q4	Transistor, NPN, SI. 2N3772	0448370000
Q5	Transistor, NPN, SI. 2N3772	0448370000
R1(1-4)	Resistor, 200, 5%, 14W	0197410006
R2(1-3)	Resistor, 10, 10%, 1W	0187720002
R3	Resistor, 47, 10%, 2W	0163720002
T1	Transformer, 115VAC-24VAC	1007440031
	MISCELLANEOUS	
	Chassis, Power Supply, Relay	9187531810
	Ferrite Bead	1007490039
	Mica Ins. 10-3 Transistor	0440940001
	Mounting Ring, Cap	0282130004
	Shield, Pad	9187530333
	Standoff, F-F, 6-32 2.375L	1003940021
	Terminal, Insul. 4-40 Female	0506390004
	Terminal Strip, 8 Term. 2 GND	0859070000

9187531232B FILTER MODULE ASSY 1A7

REF SYMBOL	DESCRIPTION	SUNAIR PART NO.
	FILTER MODULE ASSY	9187531232
	Filter Enclosure	9187531241
1A7A1	PC Assy Odd Channel Filter	5024057490
1A7A2	PC Assy Even Channel Filter	5024057791
1A7A3	PC Assy Power Detector	9187531216

9187530902G FINAL ASSY, POSTSELECTOR

REF SYMBOL	DESCRIPTION	SUNAIR PART NO.
	FINAL ASSY, POSTSELECTOR	9187530902
1A1A1CR1	Diode, Rectifier 1N4004	0405180004
1A1A1CR2	Diode, Rectifier 1N4004	0405180004
1A1A1CR3	Diode, Rectifier 1N4004	0405180004
1A1A1CR4	Diode, Rectifier 1N4004	0405180004
1A1A1DS1	Lamp Assy. Amber	0841500002
1A1A1DS2	Lamp Assy, Green	0841480001
1A1A1S1	Switch, Toggle, DPST	0346430003
1A1A1S4	Switch, Toggle, DPST	0346430003
1A1A2J1	Connector, RF, N UG-58/U	0746970005
1A1A2J2	Connector, RF, BNC UG-1094/U	0743740009
1A1A2J3	Connector, Power, 4 Pin Round	1007370025
1A1A2P1	Connector, RF, Subminiature	0753700000
1A1A2P2	Connector, RF, BNC	0753710005
1A1P1	Connector, PC, 15 Pin Housing	1007460024
1A1P2	Connector, PC, 8 Pin Housing	1008050032
1A1P3	Connector, PC, 18 Pin Female	1003321305
1A1P4	Connector, PC, 18 Pin Female	1003221305
1A1P5	Connector, Power 7 Pin RECT	0753530007
1A3A1	Preselector Assy	9187530759
1A3A3	Preselector Assy	9187530759
1A3A3CR5	Diode, Pin UM4001C	0405430001
1A3A3CR6	Diode, Pin UM4001CR	0405440006
1A3P1	Connector, RF, Miniature	0753720001
1A3P2	Connector, RF, BNC	1007480009
1A6	Power Amplifier Assy.	5024030095
1A7	Filter Module Assy.	9187531232
1A7P1	Connector, RF, BNC	0753710005
C1	Capacitor, 1000µF, 35V	1004280025
F1	Fuse, AGC, 3 AMP, 250V	1002550009
S1	Switch, Rotary	6028041602
S2	Switch, Wafer 30 Deg	5026031404
	MISCELLANEOUS	
	Collar	0878900004
	Connector, RF, Miniature	0753720001
	Fuseholder, Panel Mount	0849030005
	Handle, Black, 4 I.G. 1.5HT	9187530686
	Gear, Spur 26T	6029020501
	Key, Polarizing, Connector	1003322107
	Knob, .70D, BLK, Pointer (BAND)	1005060011
	Knob, .70D, BLK, Pointer (BYPASS)	1005060011
	Knob, 1.25D, BLK (COARSE TUNE)	9187531313
	Knob, 1.25D, BLK (FINE TUNE)	9187531313
	Panel, Front	9187530651
	Panel, Side	9187530716
	Plate, Bearing	9187530694
	Power Supply/Relay Assy	9187531801
	Socket, Cartridge Lamp	1003322000
	Support, Cover	9187530660
	Support, Preselector	9187530643
	Switch, Detent, 12 Pos	5025150507

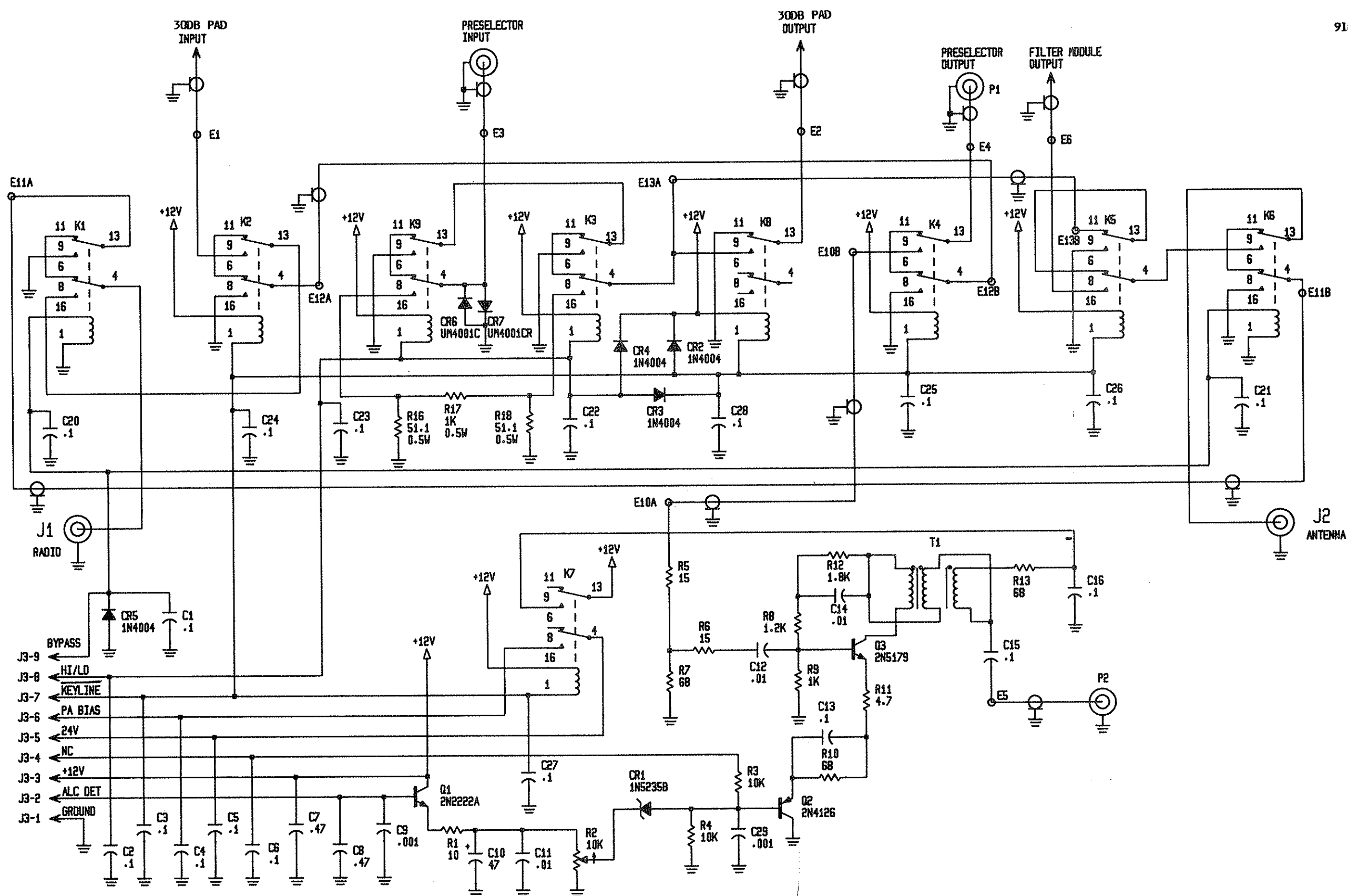
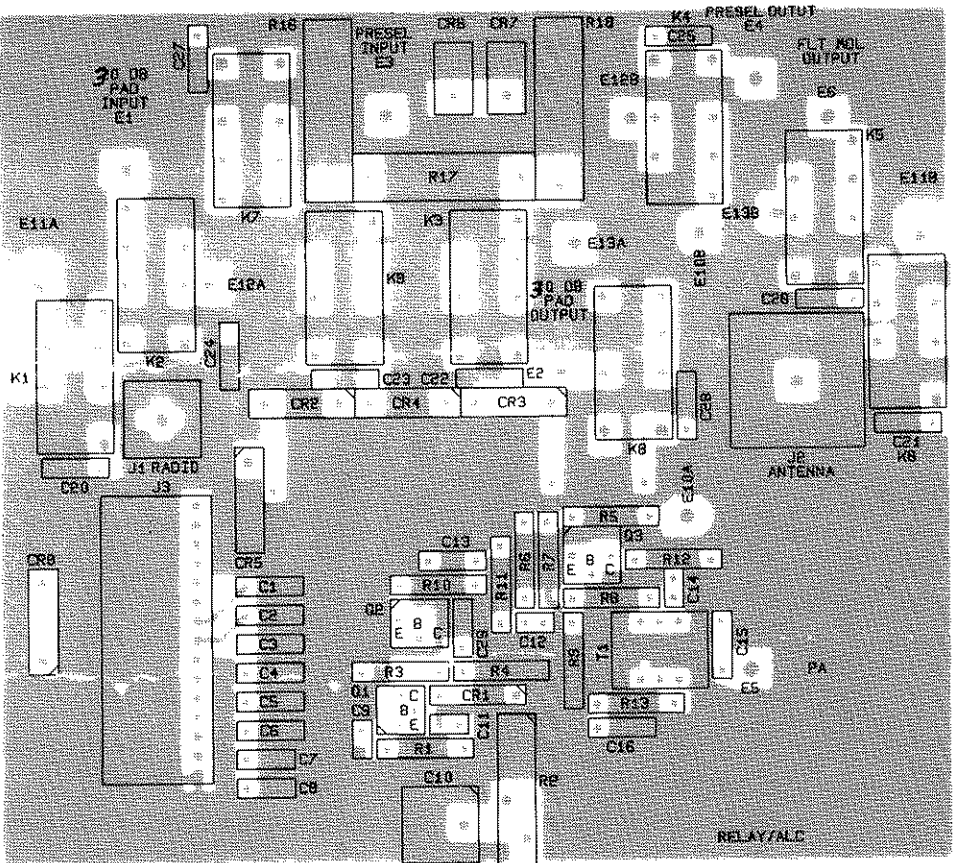


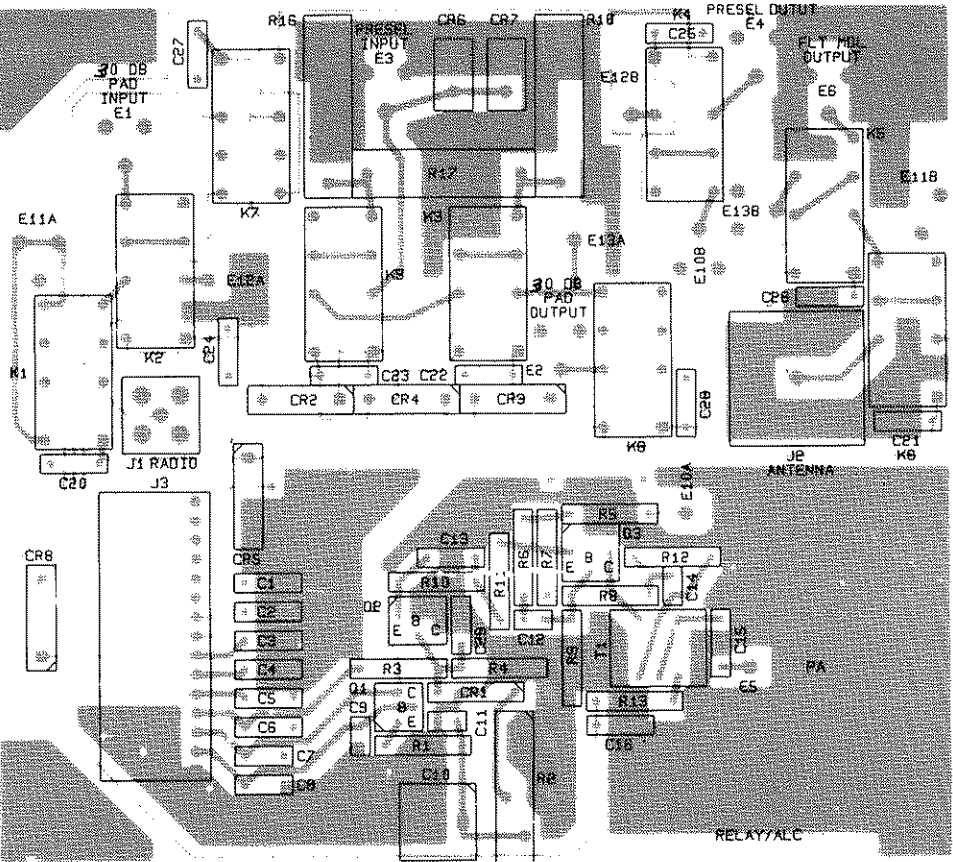
FIGURE 5.4 RELAY/ALC ASSEMBLY 1A2

REF SYMBOL	DESCRIPTION	SUNAIR PART NO.
	PC ASSY. RELAY/ALC	9187530856
C1	Capacitor, 0.1µf, 50V, X7R, 20%	0281610002
C2	Capacitor, 0.1µf, 50V, X7R, 20%	0281610002
C3	Capacitor, 0.1µf, 50V, X7R, 20%	0281610002
C4	Capacitor, 0.1µf, 50V, X7R, 20%	0281610002
C5	Capacitor, 0.1µf, 50V, X7R, 20%	0281610002
C6	Capacitor, 0.1µf, 50V, X7R, 20%	0281610002
C7	Capacitor, .47µf, 50V, X7R, 20%	0283377771
C8	Capacitor, .47µf, 50V, X7R, 20%	0283377771
C9	Capacitor, 0.001µf, 100V, X7R, 20%	0281630003
C10	Capacitor, 47µf, 20V, 196D	0281700001
C11	Capacitor, .01µf, 50V, X7R, 20%	0281730008
C12	Capacitor, .01µf, 50V, X7R, 20%	0281730008
C13	Capacitor, 0.1µf, 50V, X7R, 20%	0281610002
C14	Capacitor, .01µf, 50V, X7R, 20%	0281730008
C15	Capacitor, 0.1µf, 50V, X7R, 20%	0281610002
C16	Capacitor, 0.1µf, 50V, X7R, 20%	0281610002
C20	Capacitor, 0.1µf, 50V, X7R, 20%	0281610002
C21	Capacitor, 0.1µf, 50V, X7R, 20%	0281610002
C22	Capacitor, 0.1µf, 50V, X7R, 20%	0281610002
C23	Capacitor, 0.1µf, 50V, X7R, 20%	0281610002
C24	Capacitor, 0.1µf, 50V, X7R, 20%	0281610002
C25	Capacitor, 0.1µf, 50V, X7R, 20%	0281610002
C26	Capacitor, 0.1µf, 50V, X7R, 20%	0281610002
C27	Capacitor, 0.1µf, 50V, X7R, 20%	0281610002
C28	Capacitor, 0.1µf, 50V, X7R, 20%	0281610002
C29	Capacitor, 0.001µf, 100V, X7R, 20%	0281630003
CR1	Diode, Zener 1N5235B	0405200005
CR2	Diode, Rectifier 1N4004	0405180004
CR3	Diode, Rectifier 1N4004	0405180004
CR4	Diode, Rectifier 1N4004	0405180004
CR5	Diode, Rectifier 1N4004	0405180004
CR6	Diode, Pin UM4001C	0405430001
CR7	Diode, Pin UM4001CR	0405440006
J1	Connector, RF, Snap-On	1000170012
J2	Connector, RF, BNC	0753490005
J3	Connector, PC, 15 Pin	1007460016
K1	Relay, DPDT, 12 VDC	1005090009
K2	Relay, DPDT, 12 VDC	1005090009
K3	Relay, DPDT, 12 VDC	1005090009
K4	Relay, DPDT, 12 VDC	1005090009
K5	Relay, DPDT, 12 VDC	1005090009
K6	Relay, DPDT, 12 VDC	1005090009
K7	Relay, DPDT, 12 VDC	1005090009
K8	Relay, DPDT, 12 VDC	1005090009
K9	Relay, DPDT, 12 VDC	1005090009
P1	Connector, RF, Miniature	0753720001
P2	Connector, RF, Miniature	0753720001
P3	Connector, RF BNC	0753710005
Q1	Transistor, NPN, SIL 2N2222A	0448580004
Q2	Transistor, PNP, SI 2N4126	0448020009
Q3	Transistor, NPN, SI 2N5179	0445130008
R1	Resistor, 10, 5%, 1/4W	0177160004
R2	Pot. 10K, 10%, 1/4W, 15 Turns	0338490043
R3	Resistor, 10K, 10%, 1/4W	0170410005
R4	Resistor, 10K, 10%, 1/4W	0170410005
R5	Resistor, 15, 10%, 1/4W	0181740001
R6	Resistor, 15, 10%, 1/4W	0181740001
R7	Resistor, 68, 10%, 1/4W	0187960003
R8	Resistor, 1.2K, 10%, 1/4W	0181860007
R9	Resistor, 1K, 10%, 1/4W	0171560001
R10	Resistor, 68, 10%, 1/4W	0187960003
R11	Resistor, 4.7, 5%, 1/4W	1001060024
R12	Resistor, 1.8K, 10%, 1/4W	0178190004
R13	Resistor, 68, 10%, 1/4W	0187960003
R16	Resistor, 51.1, 1%, 1/4W	1007370017
R17	Resistor, 1000, 1%, 1/4W	0197460003
R18	Resistor, 51.1, 1%, 1/4W	1007370017
T1	Transformer, ALC	1007470020

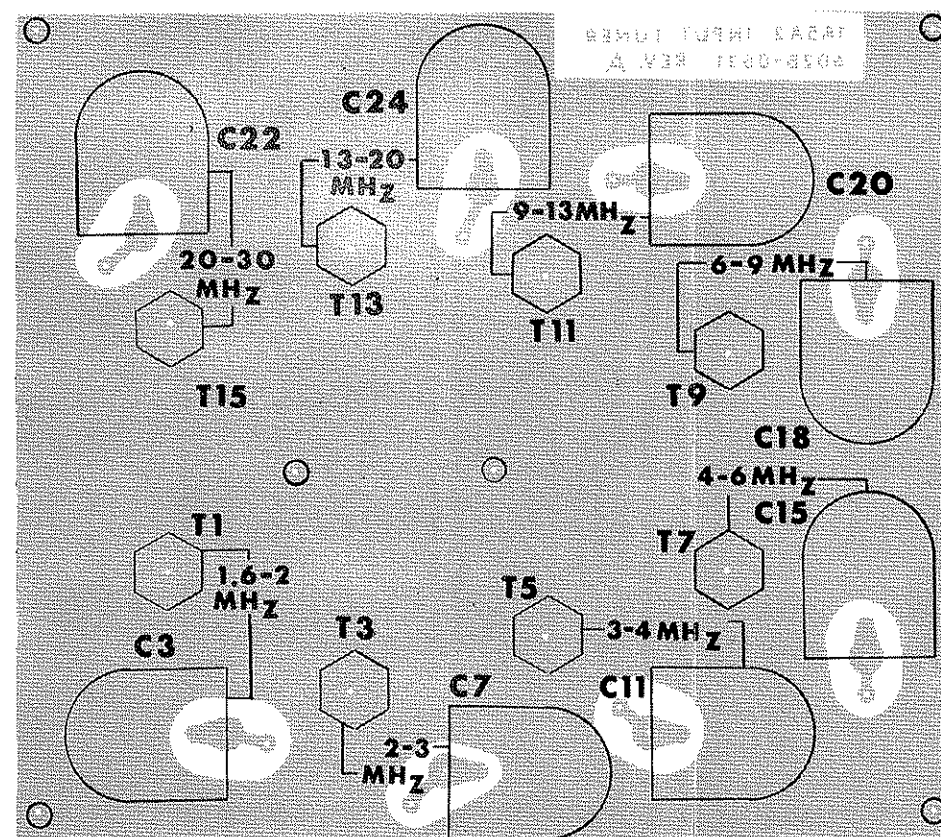
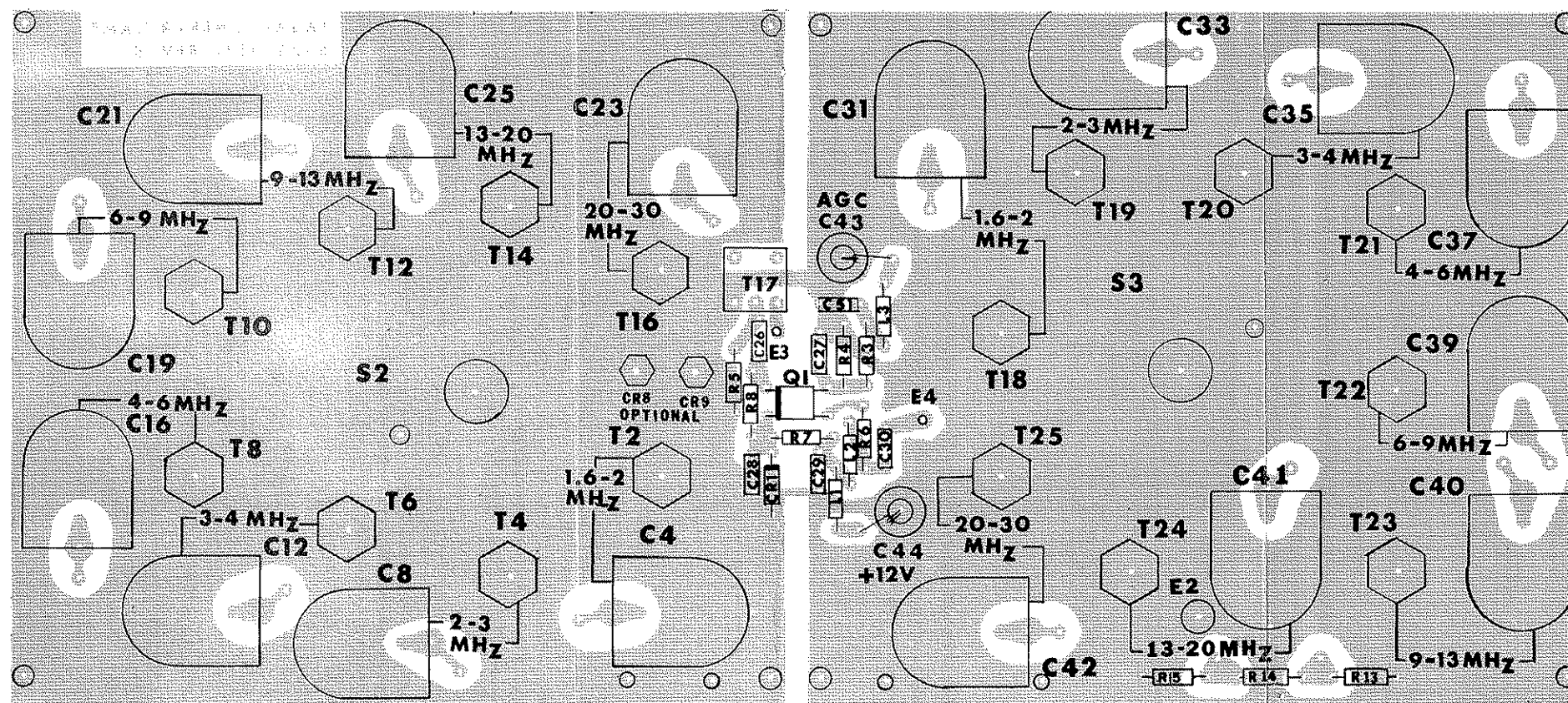
FOR PART NUMBER COMMERCIAL SOURCES, SEE SECTION VI, ADDENDUM



COMPONENT SIDE



CIRCUIT SIDE



9187530309A PC ASSY INPUT TUNER

REF SYMBOL	DESCRIPTION	SUNAIR PART NO.
	PC ASSY INPUT TUNER	9187530309
C6	Capacitor, 56pf, 300V, CD6, 5%	0281290008
C7	Capacitor, 11-110pf, 500V, N1500	0282880003
C10	Capacitor, 120pf, 300V, CD6, 5%	0280880006
C11	Capacitor, 11-110pf, 500V, N1500	0282880003
C14	Capacitor, 56pf, 300V, CD6, 5%	0281290008
C15	Capacitor, 11-110pf, 500V, N1500	0282880003
C18	Capacitor, 7-45pf, 500V, N650	0282890009
C20	Capacitor, 7-45pf, 500V, N650	0282890009
C22	Capacitor, 7-45pf, 500V, N650	0282890009
C24	Capacitor, 7-45pf, 500V, N650	0282890009
R2	Resistor, 22, 10%, 1/4W	0192690001
S1	Switch, Wafer	6028052604
T3	Transformer, RF Band 2	6028051209
T5	Transformer, RF Band 3	6028051306
T7	Transformer, RF Band 4	6028051403
T9	Transformer, RF Band 5	6028051501
T11	Transformer, RF Band 6	6028051608
T13	Transformer, RF Band 7	6028051705
T15	Transformer, RF Band 8	6028051802

FOR PART NUMBER COMMERCIAL SOURCES, SEE SECTION VI, ADDENDUM

9187530201A PC ASSY. TUN./RF AMP

REF SYMBOL	DESCRIPTION	SUNAIR PART NO.
	PC ASSY. TUN./RF AMP	9187530201
C8	Capacitor, 11-110pf, 500V, N1500	0282880003
C9	Capacitor, 56pf, 300V, CD6, 5%	0281290008
C12	Capacitor, 11-110pf, 500V, N1500	0282880003
C13	Capacitor, 120pf, 300V, CD6, 5%	0280880006
C16	Capacitor, 11-110pf, 500V, N1500	0282880003
C17	Capacitor, 56pf, 300V, CD6, 5%	0281290008
C19	Capacitor, 7-45pf, 500V, N650	0282890009
C21	Capacitor, 7-45pf, 500V, N650	0282890009
C23	Capacitor, 7-45pf, 500V, N650	0282890009
C25	Capacitor, 7-45pf, 500V, N650	0282890009
C26	Capacitor, 0.001μf, 100V, X7R, 20%	0281630003
C27	Capacitor, .01μf, 25V, X55/Y5P	0281627771
C28	Capacitor, 0.1μf, 50V, X7R, 20%	0281610002
C29	Capacitor, 0.1μf, 50V, X7R, 20%	0281610002
C30	Capacitor, 0.001μf, 100V, X7R, 20%	0281630003
C33	Capacitor, 11-110pf, 500V, N1500	0282880003
C34	Capacitor, 56pf, 300V, CD6, 5%	0281290008
C35	Capacitor, 11-110pf, 500V, N1500	0282880003
C36	Capacitor, 120pf, 300V, CD6, 5%	0280880006
C37	Capacitor, 11-110pf, 500V, N1500	0282880003
C38	Capacitor, 56pf, 300V, CD6, 5%	0281290008
C39	Capacitor, 7-45pf, 500V, N650	0282890009
C40	Capacitor, 7-45pf, 500V, N650	0282890009
C42	Capacitor, 7-45pf, 500V, N650	0282890009
C43	Capacitor, 1000pf, 500V	0286270005
C44	Capacitor, 1000pf, 500V	0286270005
C51	Capacitor, .01μf, 25V, X55/Y5P	0281627771
CR1	Diode, Zener 1N5227B	0405250002
L1	Inductor, Molded, 220μh, 5%	0650500008
L2	Inductor, Molded, 220μh, 5%	0650500008
L3	Inductor, Molded, 220μh, 5%	0650500008
Q1	Transistor, N-CH, FET 40673	0447450000
R1	Resistor, 22, 10%, 1/4W	0192690001
R3	Resistor, 2.2K, 5%, 1/4W	0178070009
R4	Resistor, 10K, 10%, 1/4W	0170410005
R6	Resistor, 27, 10%, 1/4W	0172590001
R7	Resistor, 820, 10%, 1/4W	0178210005
R8	Resistor, 100K, 10%, 1/4W	0170390004
R9	Resistor, 22, 10%, 1/4W	0192690001
R13	Resistor, 220, 10%, 1/4W	0171320000
R14	Resistor, 22, 10%, 1/4W	0192690001
R15	Resistor, 220, 10%, 1/4W	0171320000
S2	Switch, Rotary	6028052507
S3	Switch, Wafer	6028052701
T4	Transformer, RF Band 2	6028051209
T6	Transformer, RF Band 3	6028051306
T8	Transformer, RF Band 4	6028051403
T10	Transformer, RF Band 5	6028051501
T12	Transformer, RF Band 6	6028051608
T14	Transformer, RF Band 7	6028051705
T16	Transformer, RF Band 8	6028051802
T17	Transformer, Input	5024110706
T19	Transformer, RF Band 2	6028051209
T20	Transformer, RF Band 3	6028051306
T21	Transformer, RF Band 4	6028051403
T22	Transformer, RF Band 5	6028051501
T23	Transformer, RF Band 6	6028051608
T24	Transformer, RF Band 7	6028051705
T25	Transformer, RF Band 8	6028051802
	MISCELLANEOUS	
	Coupling, Solid 1-1 ID	0526620005
	Shaft, .24900 1.000L	6028053406

9187530422B CHASSIS ASSEMBLY

REF SYMBOL	DESCRIPTION	SUNAIR PART NO.
C1	CHASSIS ASSEMBLY	9187530422
	Cap. 3 Gang Tuning	6028050105
	MISCELLANEOUS	
	Block, Motor Mount	6028050504
	Bracket, Tuning Cap. Front	9187530538
	Bracket, Tuning Cap. Rear	9187530520
	Bracket Relay Assy	9187530376
	Chassis Relay Assy	9187530457
	Cover, Relay Chassis	6028054704
	Gasket, EMI 3/8 W x 1/8 THK	0849650003
	Gear, Spur, 108 Teeth, .250 Bore	1000120023
	Plate, Cap. Mount	6028050709
	Post, Support	6028050407
	Post, Support	6028052302
	Shield, Center	6028050806
	Shield, Front	9187530554
	Shield, Rear	9187530546

9187530759D PRESELECTOR ASSY 1A3A1 or 1A3A3

REF SYMBOL	DESCRIPTION	SUNAIR PART NO.
1A3AX P/O 1A3AX P/O 1A3A2 B1 C50 K1 K2 S4	PRESELECTOR ASSY 1A3	9187530759
	PC Assy. Tun./RF Amp	9187530201
	PC Assy. Input Tuner	9187530309
	PC Assy. Band Gain	9187531119
	Motor, 12VDC, 96.7/1 Gear/Red	5024053508
	Capacitor, 1 µf, 35V, T368	0283630001
	Relay, 4PDT, 12V, Sensitive	0666640009
	Relay, 4PDT, 12V, Sensitive	0666640009
	Switch, Wafer	6028052809
	MISCELLANEOUS	
	Belt, Timing 1/5 Pitch 1/4 W	0841390002
	Pulley, Timing 1/4 Belt	0841380007
	Pulley, Timing 1/4 Belt	0841410003
	Sleeve Adapter	6028054101

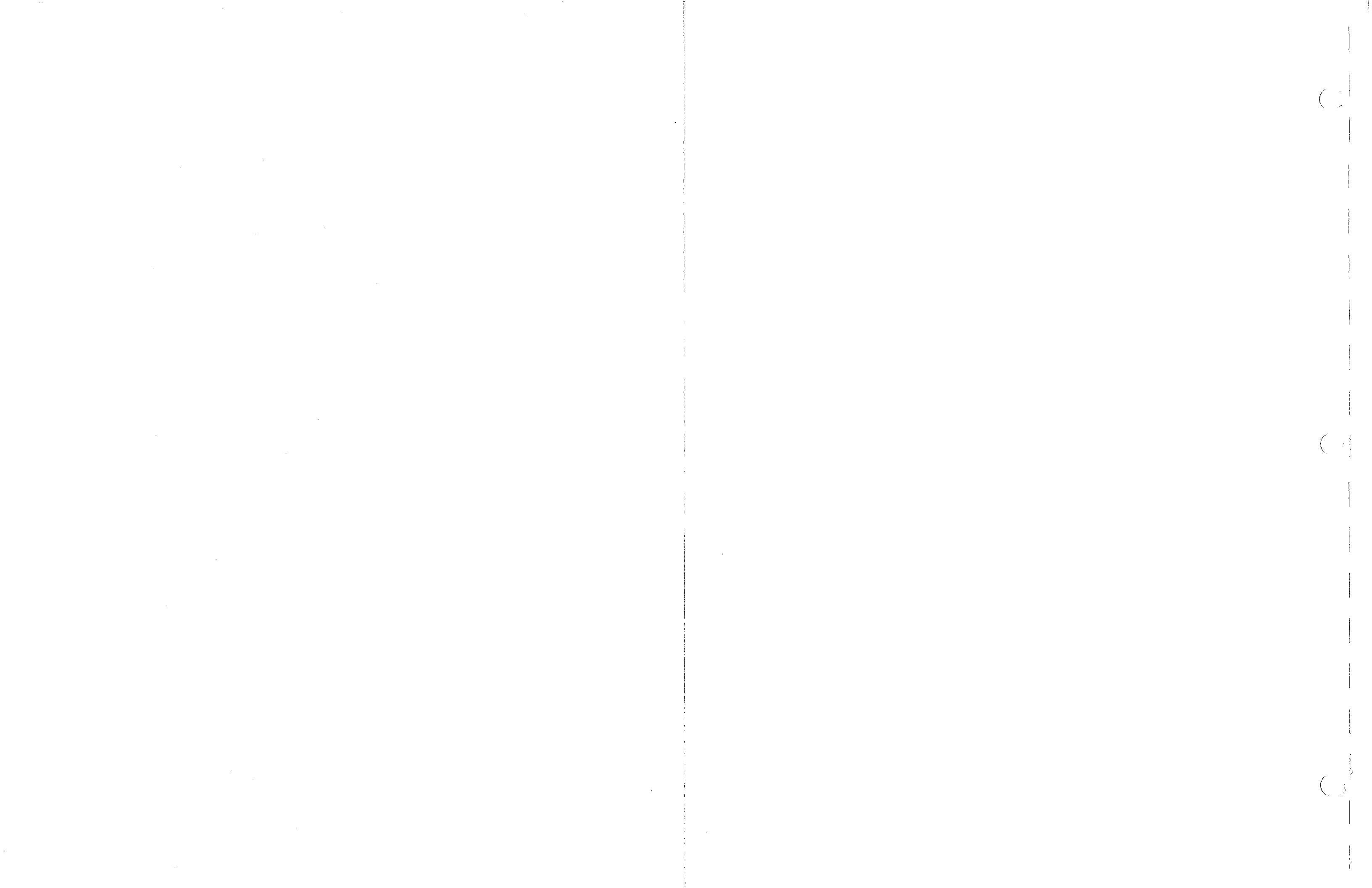
9187530457A CHASSIS RELAY ASSY

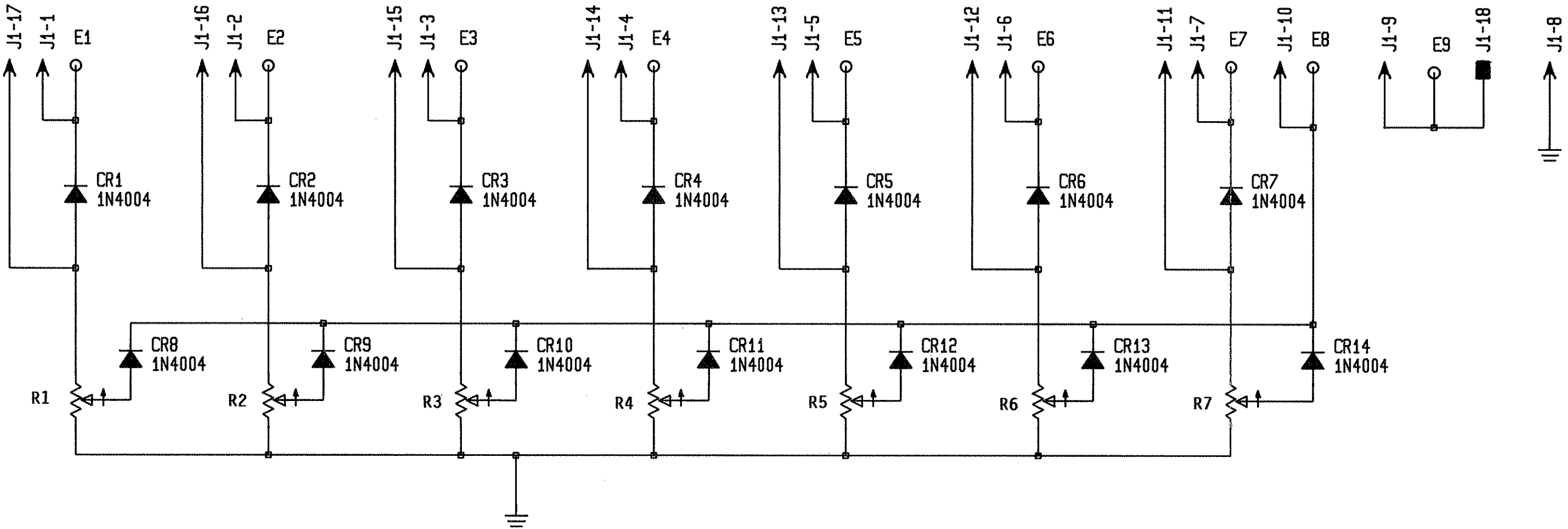
REF SYMBOL	DESCRIPTION	SUNAIR PART NO.
C45 C46 CR2 E1 F2 L4 J2 J3 XK1 XK1 XK1	CHASSIS RELAY ASSY	9187530457
	Capacitor, 0.01µf, 25V, X5S	0281620008
	Capacitor, 1000pf, 500V	0286270005
	Diode, Rectifier 1N4004	0405180004
	Connector, RF, Coax Feedthru	0753690004
	Connector, RF, Coax Feedthru	0755120001
	Inductor, Molded, 47µh, 5%	0652680003
	Connector, RF, BNC UG-1094/U	0743740009
	Connector, RF, JCM	0754440001
	Retainer, Relay Socket	0767500008
	Socket, Relay, 4PDT Contacts	0767000005
	Spring, Relay Hold-Down	0878260005

9187530376A BRACKET RELAY ASSY

REF SYMBOL	DESCRIPTION	SUNAIR PART NO.
R11 R12 CR7 XK2 XK2 XK2	BRACKET RELAY ASSY	9187530376
	Resistor, 27, 10%, 1/4 W	0172590001
	Resistor, 390, 10%, 1/4 W	0178330001
	Diode, Rectifier 1N4004	0405180004
	Retainer, Relay Socket	0767500008
	Socket, Relay, 4PDT Contacts	0767000005
	Spring, Relay Hold-Down	0878260005
	MISCELLANEOUS	
	Bracket, Relay Mtg.	6035145001

FOR PART NUMBER COMMERCIAL SOURCES, SEE SECTION VI, ADDENDUM



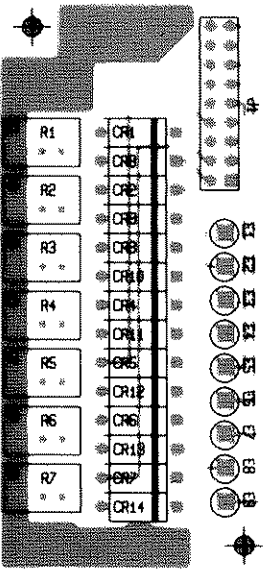


REFERENCE DESIGNATORS	
LAST USED	NOT USED
CR14	
R7	
E9	
J1	

FIGURE 5.6 BAND GAIN ADJUST ASSEMBLY (1A3A2 or 1A3A4)

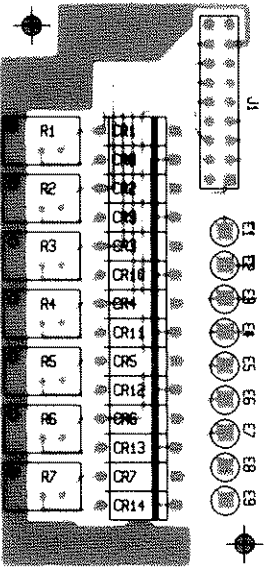
9187531119A PC ASSY BAND GAIN

REF SYMBOL	DESCRIPTION	SUNAIR PART NO.
	PC ASSY BAND GAIN	9187531119
CR1	Diode, Rectifier 1N4004	0405180004
CR2	Diode, Rectifier 1N4004	0405180004
CR3	Diode, Rectifier 1N4004	0405180004
CR4	Diode, Rectifier 1N4004	0405180004
CR5	Diode, Rectifier 1N4004	0405180004
CR6	Diode, Rectifier 1N4004	0405180004
CR7	Diode, Rectifier 1N4004	0405180004
CR8	Diode, Rectifier 1N4004	0405180004
CR9	Diode, Rectifier 1N4004	0405180004
CR10	Diode, Rectifier 1N4004	0405180004
CR11	Diode, Rectifier 1N4004	0405180004
CR12	Diode, Rectifier 1N4004	0405180004
CR13	Diode, Rectifier 1N4004	0405180004
CR14	Diode, Rectifier 1N4004	0405180004
R1	Pot. 5K, 10%, 1/4W, 25 Turns	1004720025
R2	Pot. 5K, 10%, 1/4W, 25 Turns	1004720025
R3	Pot. 5K, 10%, 1/4W, 25 Turns	1004720025
R4	Pot. 5K, 10%, 1/4W, 25 Turns	1004720025
R5	Pot. 5K, 10%, 1/4W, 25 Turns	1004720025
R6	Pot. 5K, 10%, 1/4W, 25 Turns	1004720025
R7	Pot. 5K, 10%, 1/4W, 25 Turns	1004720025
	MISCELLANEOUS	
	Connector, Strip, 9 Pin Dual	1006630023



COMPONENT SIDE

FOR PART NUMBER COMMERCIAL SOURCES, SEE SECTION VI, ADDENDUM



CIRCUIT SIDE

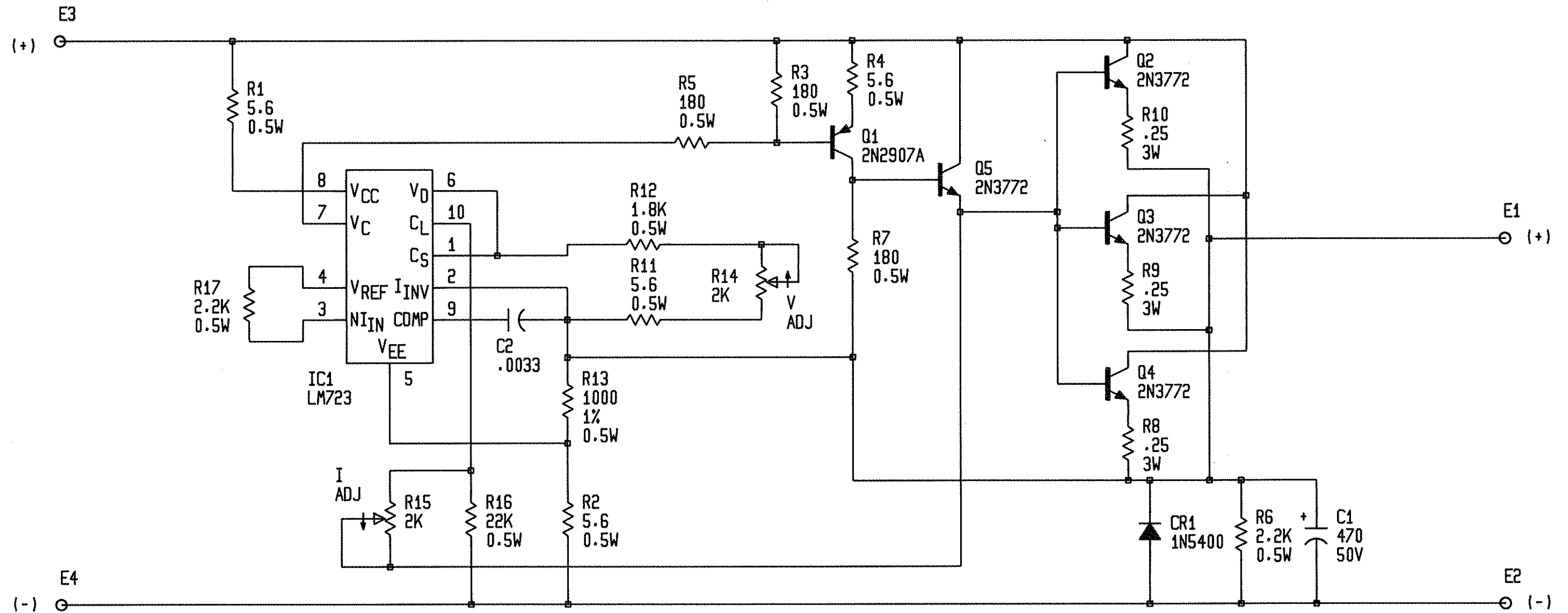
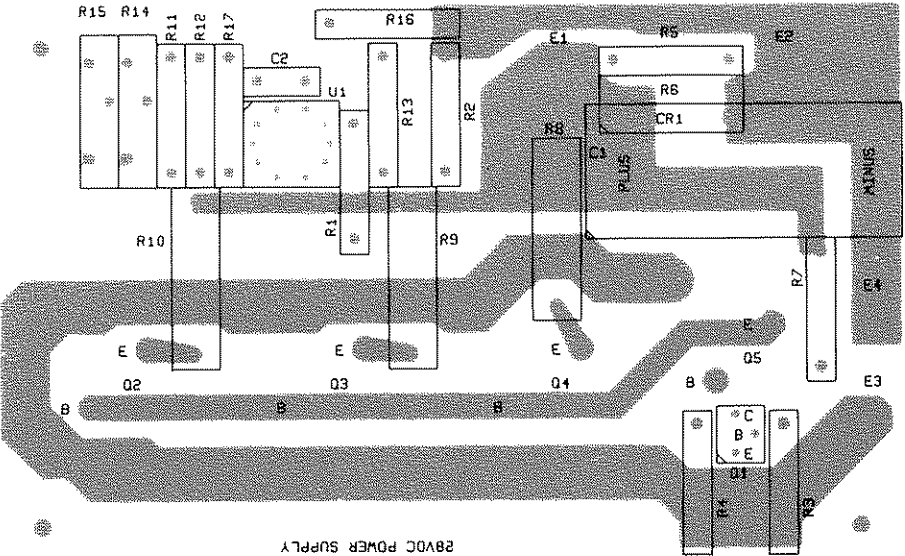


FIGURE 5.7 26V POWER SUPPLY 1A5A1

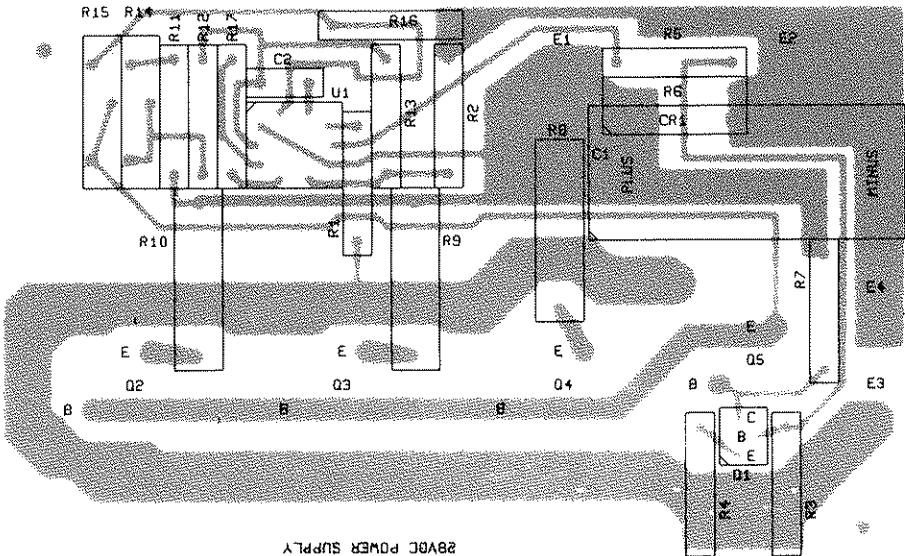
9187531909A PC ASSY. 28V POWER SUPPLY

REF SYMBOL	DESCRIPTION	SUNAIR PART NO.
	PC ASSY 28V POWER SUPPLY	9187531909
C1	Capacitor, 470µf, 50V, TAL	0280890001
C2	Capacitor, 0.0033µf, 100V, NPO, 10%	0282580000
CR1	Diode, Rectifier 1N5400	0403970008
Q1	Transistor, PNP, SI. 2N2907A	0448390001
R1	Resistor, 5.6, 10%, 1/4W	0168030004
R2	Resistor, 5.6, 10%, 1/4W	0168030004
R3	Resistor, 180, 10%, 1/4W	0173640001
R4	Resistor, 5.6, 10%, 1/4W	0168030004
R5	Resistor, 180, 10%, 1/4W	0173640001
R6	Resistor, 2.2K, 10%, 1/4W	0167360001
R7	Resistor, 180, 10%, 1/4W	0173640001
R8	Resistor, 0.25, 10%, 3W	0169320006
R9	Resistor, 0.25, 10%, 3W	0169320006
R10	Resistor, 0.25, 10%, 3W	0169320006
R11	Resistor, 5.6, 10%, 1/4W	0168030004
R12	Resistor, 1.8K, 5%, 1/4W	0184970008
R13	Resistor, 1000, 1%, 1/4W	0197460003
R14	Pot, 2K, 10%, 1/4W, 15 Turns	0338490060
R15	Pot, 2K, 10%, 1/4W, 15 Turns	0338490060
R16	Resistor, 22K, 10%, 1/4W	0167120000
R17	Resistor, 2.2K, 10%, 1/4W	0167360001
U1	IC, Linear MC1723G	0448190001
	MISCELLANEOUS	
	Jack, PCB, Press-in	0754100006

FOR PART NUMBER COMMERCIAL SOURCES, SEE SECTION VI, ADDENDUM

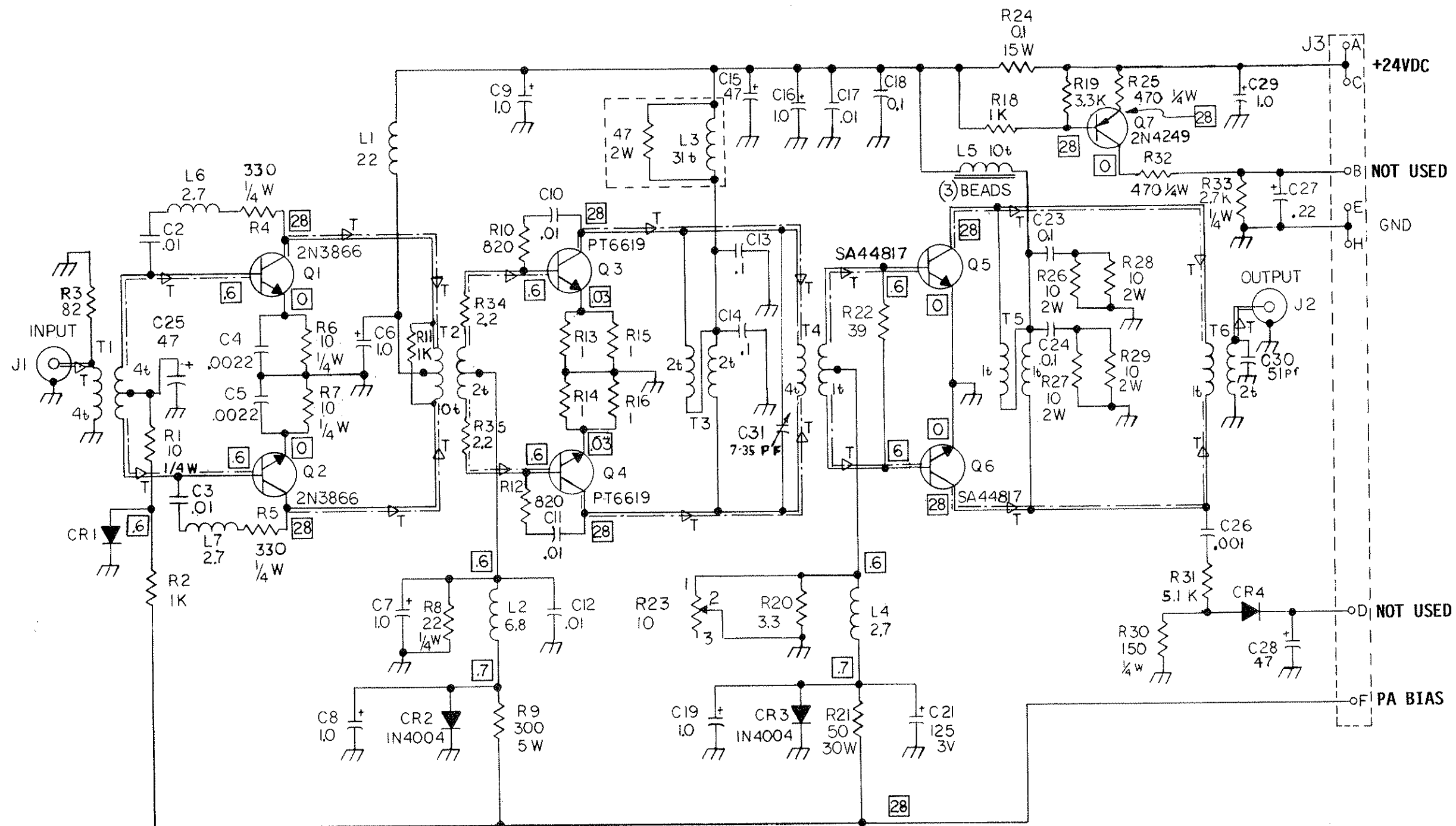


COMPONENT SIDE



CIRCUIT SIDE

5024030079



UNLESS OTHERWISE SPECIFIED :

1. ALL -RESISTORS IN OHMS, $\frac{1}{2}$ W
-CAPACITORS IN μ F
-INDUCTORS IN μ H
-DIODES ARE IN4454

2. PREFIX ALL DESIGNATORS WITH "1A7A1

3. UNUSED DESIGNATORS :

R17, C1, C20, C22

4. VOLTAGES ARE GIVEN WITH XMTR KEYED IN
SSB AND NO
MODULATION

FIGURE 5.8 RF POWER AMPLIFIER 1A6

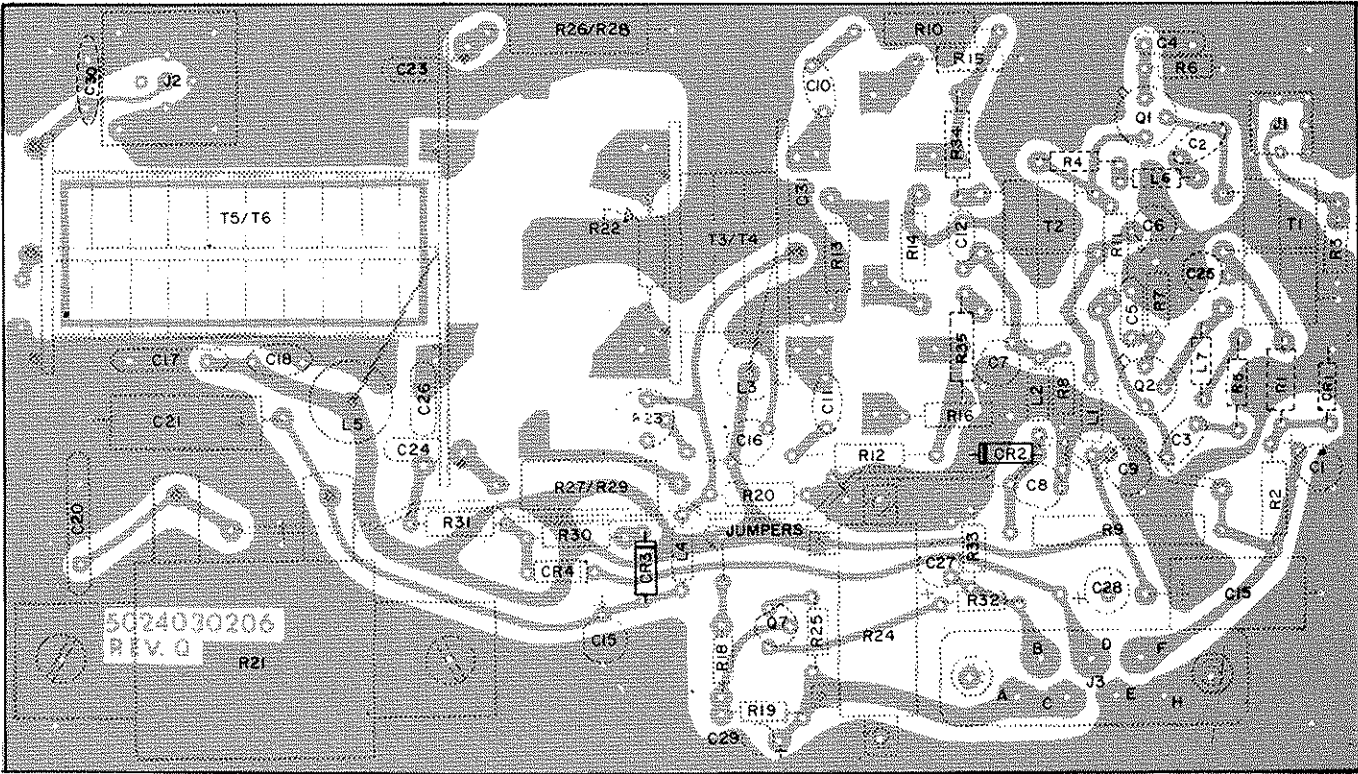
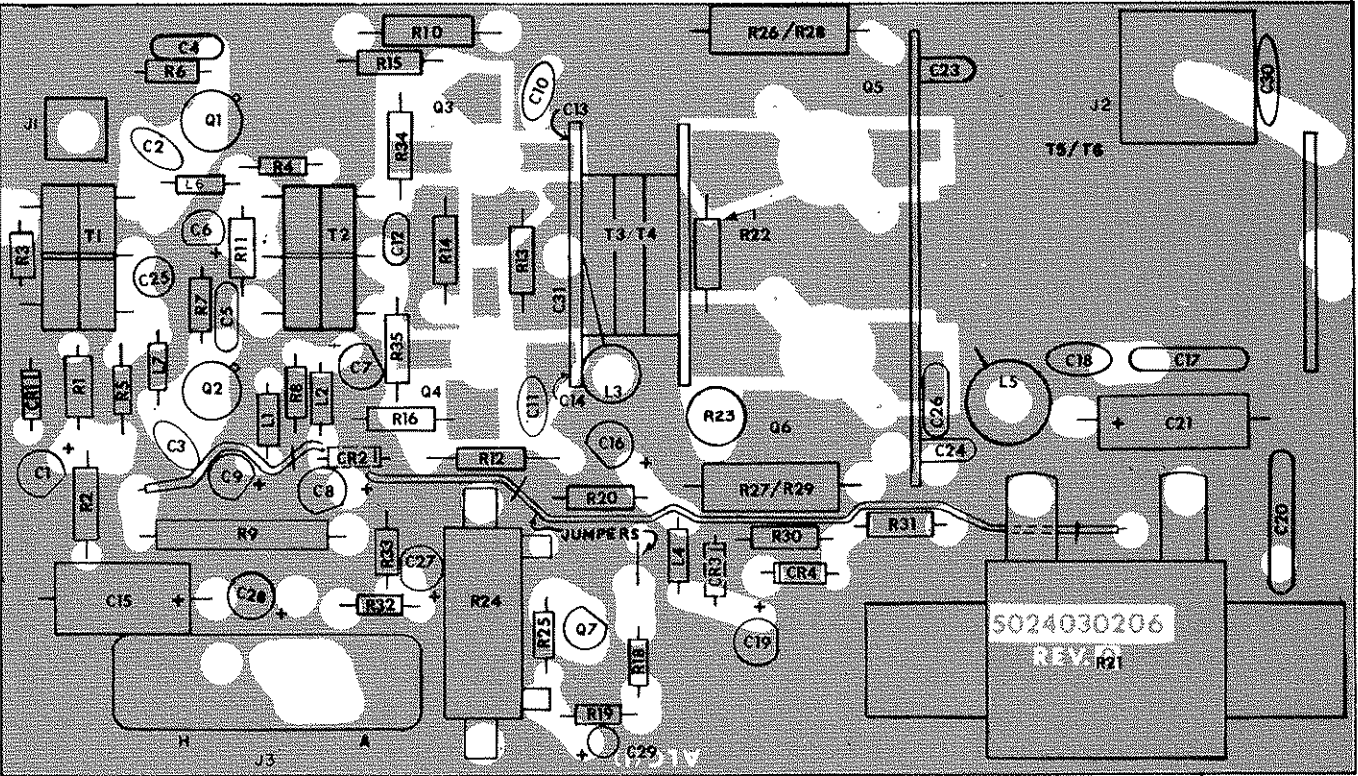
REF SYMBOL	DESCRIPTION	SUNAIR PART NO.
POWER AMPLIFIER ASSY		5024030095
C2	Capacitor, 0.01 UF, 50 V, W5 R, 20%	0281730008
C3	Capacitor, 0.01 UF, 50 V, W5 R, 20%	0281730008
C4	Capacitor, 0.0022 UF, 200 V, Z5 F, 10%	0272780006
C5	Capacitor, 0.0022 UF, 200 V, Z5 F, 10%	0272780006
C6	Capacitor, 1 UF, 50 V, 198 D	0280910002
C7	Capacitor, 1 UF, 50 V, 198 D	0280910002
C8	Capacitor, 1 UF, 50 V, 198 D	0280910002
C9	Capacitor, 1 UF, 50 V, 198 D	0280910002
C10	Capacitor, 0.01 UF, 50 V, W5 R, 20%	0281730008
C11	Capacitor, 0.01 UF, 50 V, W5 R, 20%	0281730008
C12	Capacitor, 0.01 UF, 25 V X55/X5P	0281627771
C13	Capacitor, 0.1 UF, 50 V, X7 R, 20%	0281610002
C14	Capacitor, 0.1 UF, 50 V, X7 R, 20%	0281610002
C15	Capacitor, 47 UF, 50 V, CL65 B	0245750002
C16	Capacitor, 1 UF, 50 V, 198 D	0280910002
C17	Capacitor, 0.01 UF, 250 V, Z5 R, 10%	0280950004
C18	Capacitor, 0.1 UF, 50 V, X7 R, 20%	0281610002
C19	Capacitor, 1 UF, 50 V, 198 D	0280910002
C20	Not used	
C21	Capacitor, 125 UF, 3 V	0266020003
C22	Not used	
C23	Capacitor, 0.1 UF, 50 V, X7 R, 20%	0281610002
C24	Capacitor, 0.1 UF, 50 V, X7 R, 20%	0281610002
C25	Capacitor, 47 UF, 20 V, 196 D	0281700001
C26	Capacitor, 0.001 UF, 250 V, X5 R, 10%	0286260000
C27	Capacitor, .22 UF, 35 V, T368	0283510005
C28	Capacitor, 47 UF, 20 V, 196 D	0281700001
C29	Capacitor, 1 UF, 50 V, 198 D	0280910002
C30	Capacitor, 51 PF, 500 V, DM15, 2%	0281350001
C31	Capacitor, 7-35 PF, 160 V, N1500	0287390004
CR1	Diode, Signal, Sil. 1 N4454	0405270003
CR2	Diode, Rectifier, 1N4004	0405180004
CR3	Diode, Rectifier, 1N4004	0405180004
CR4	Diode, Signal, Sil. 1 N4454	0405270003
J1	Connector, RF, JCM	0753600005
J2	Connector, RF, BNC	0753490005
J3	Connector, Power, 7 Pin Rect.	0753590000
L1	Inductor, Molded, 22 UH, 5%	0650000005
L2	Inductor, Molded, 6.8 UH, 5%	0659210002
L3	Choke, RF	5024030606
L4	Inductor, Molded, 2.7 UH, 5%	0652180001
L5	Choke, RF	5024030702
L6	Inductor, Molded, 2.7 UH, 5%	0652180001
L7	Inductor, Molded, 2.7 UH, 5%	0652180001
Q1	Transistor, NPN, Si. 2N3866	0448140004
Q2	Transistor, NPN, Si. 2N3866	0448140004
Q3	Transistor, NPN, Si	0448150000
Q4	Transistor, NPN Si	0448150000
Q5	Transistor, NPN Si	0448170001
Q6	Transistor, NPN Si	0448170001
Q7	Transistor, PNP, Si. 2N4249	0446780006
R1	Resistor, 10, 5%, 1/4 W	0177160004
R2	Resistor, 1 K, 10%, 1/2 W	0167480006
R3	Resistor, 82, 10%, 1/4 W	0184610001
R4	Resistor, 330, 5%, 1/4 W	0170910008
R5	Resistor, 330, 5%, 1/4 W	0170910008
R6	Resistor, 10, 5%, 1/4 W	0177160004
R7	Resistor, 10, 5%, 1/4 W	0177160004
R8	Resistor, 22, 10%, 1/4 W	0192690001
R9	Resistor, 300, 5%, 5 W	0161140009
R10	Resistor, 820, 10%, 1/2 W	0175600007
R11	Resistor, 1 K, 10%, 1/2 W	0167480006
R12	Resistor, 820, 10%, 1/2 W	0175600007
R13	Resistor, 1, 10%, 1/2 W	0194770001
R14	Resistor, 1, 10%, 1/2 W	0194770001
R15	Resistor, 1, 10%, 1/2 W	0194770001
R16	Resistor, 1, 10%, 1/2 W	0194770001
R17	Not used	
R18	Resistor, 1 K, 10%, 1/2 W	0167480006
R19	Resistor, 3.3 K, 5%, 1/2 W	0184090008
R20	Resistor, 3.3, 10%, 1/2 W	0186050003
R21	Resistor, 50, 10%, 30 W	0193240009
R22	Resistor, 39, 10%, 1/2 W	0165920009

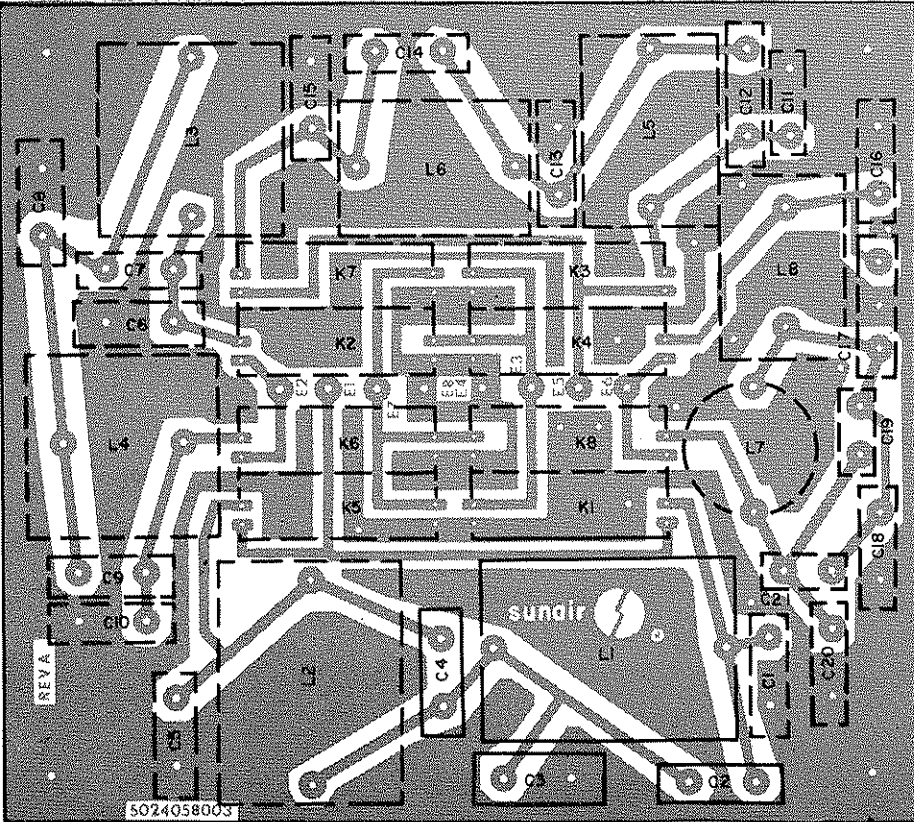
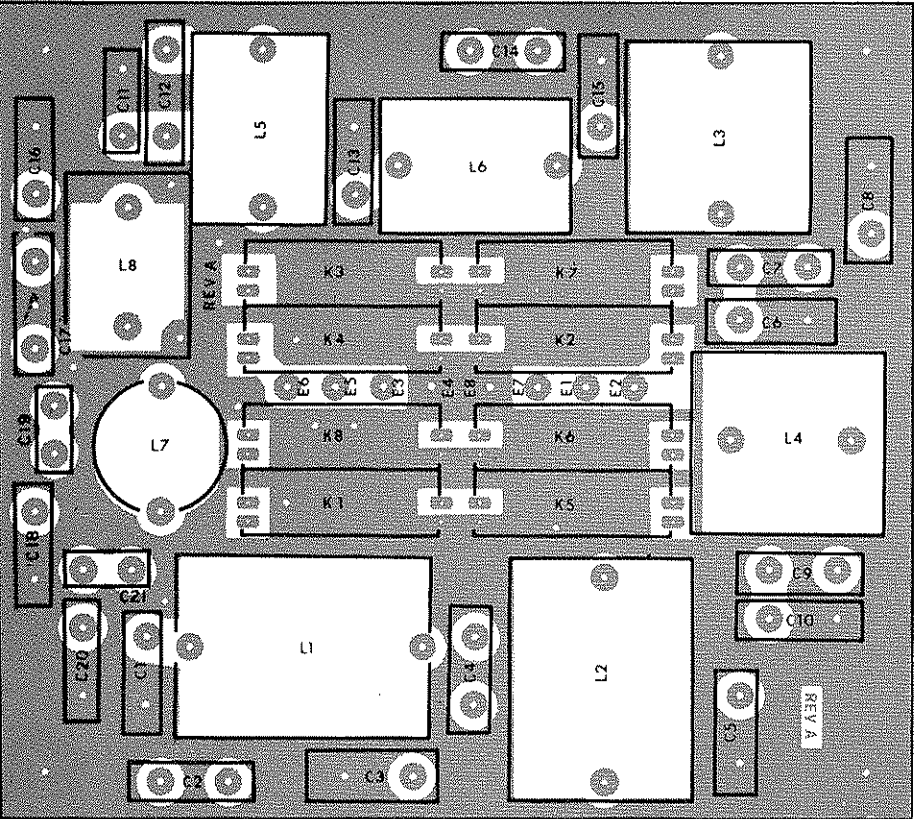
REF SYMBOL	DESCRIPTION	SUNAIR PART NO.
R23	Pot., 10, 5%, 1/2 W, PC Mount	0346380006
R24	Resistor, 0.1, 10%, 15 W	0193360004
R25	Resistor, 470, 5%, 1/4 W	0184110009
R26	Resistor, 10, 10%, 2 W	0163840008
R27	Resistor, 10, 10%, 2 W	0163840008
R28	Resistor, 10, 10%, 2 W	0163840008
R29	Resistor, 10, 10%, 2 W	0163840008
R30	Resistor, 150, 10%, 1/4 W	0172730007
R31	Resistor, 5.1 K, 5%, 1/2 W	0183700007
R32	Resistor, 470, 5%, 1/4 W	0184110009
R33	Resistor, 2.7 K, 10%, 1/4 W	0186670001
R34	Resistor, 2.2, 10%, 1/2 W	0178690007
R35	Resistor, 2.2, 10%, 1/2 W	0178690007
T1	Transformer Input	5024030401
T2	Transformer Interstage	5024030508

MISCELLANEOUS

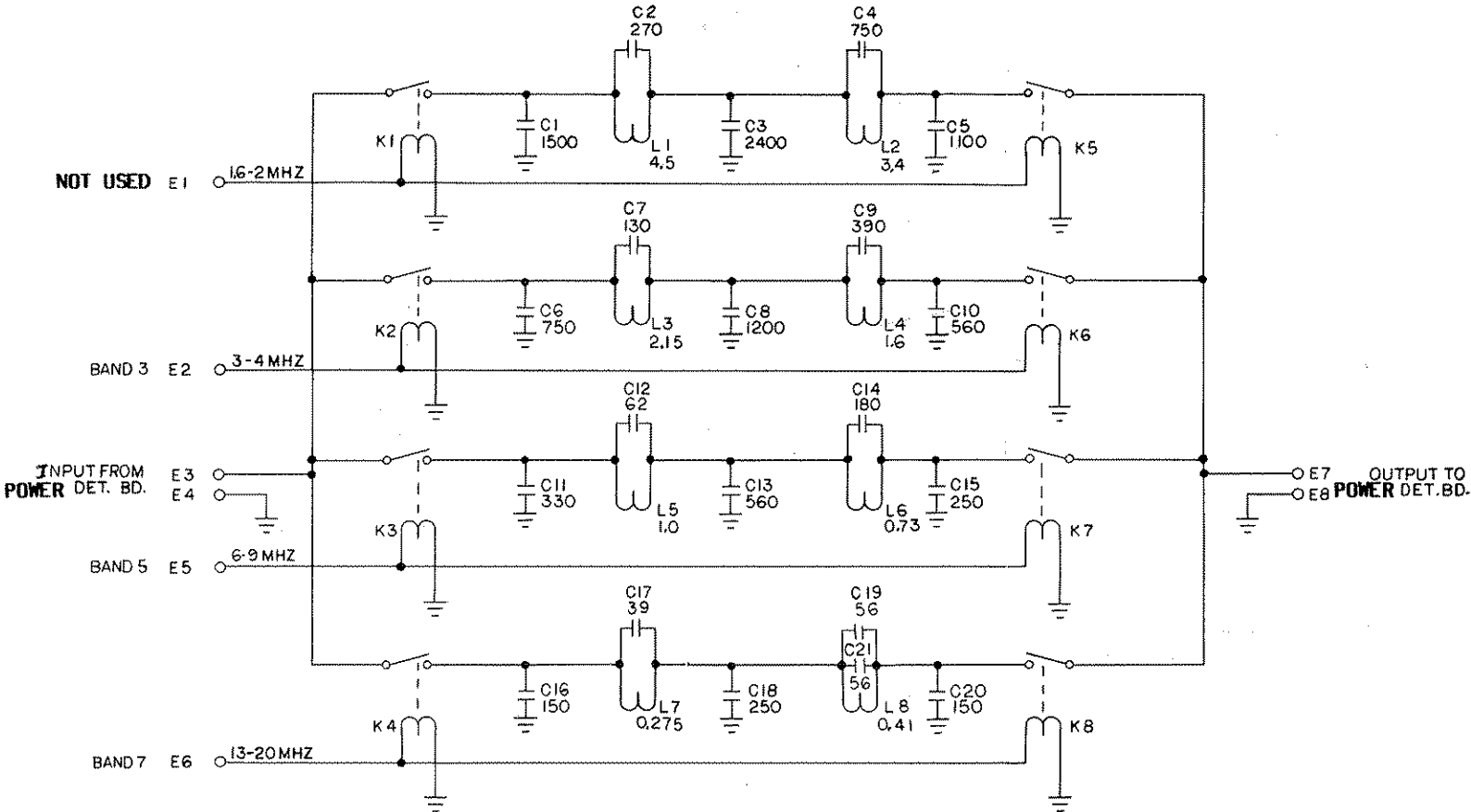
Driver, Transformer Assy	5024030893
Heatsink	0840730004
Mounting Pad, Transistor	0502710004
Output, Transformer Assy	5024031199

FOR PART NUMBER COMMERCIAL SOURCES, SEE SECTION VI, ADDENDUM





5024057473B



NOTES:
UNLESS OTHERWISE SPECIFIED:
1. CAPACITORS ARE IN PICOFARADS.
2. INDUCTANCE VALUES ARE IN MICROHENRIES.

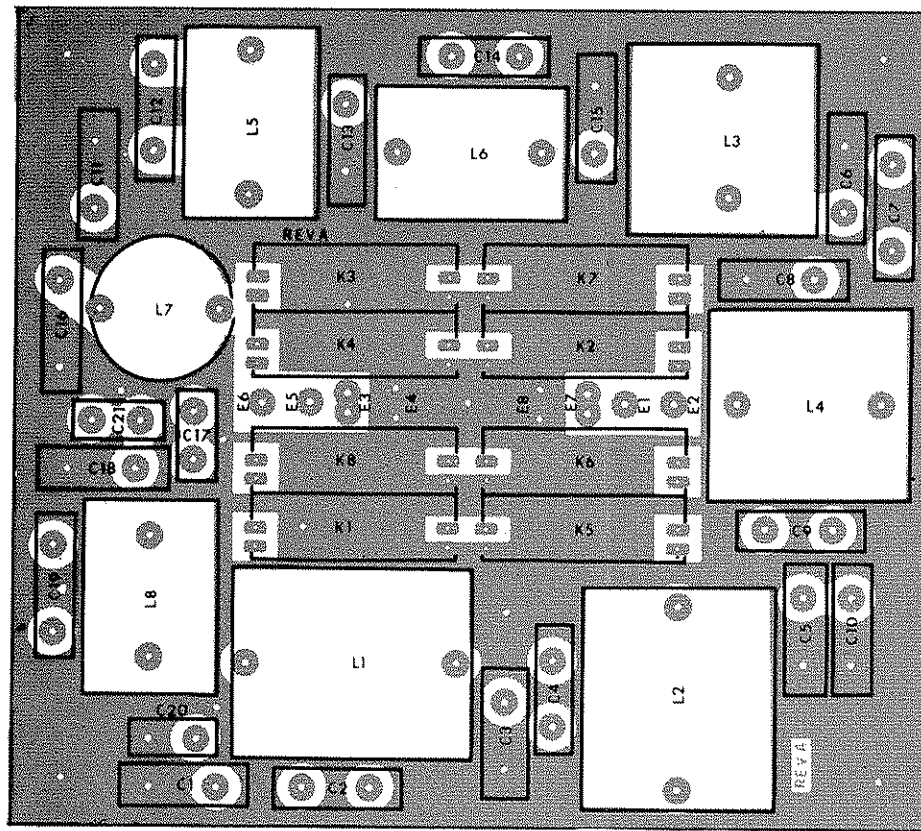
FOR PART NUMBER COMMERCIAL SOURCES, SEE SECTION VI, ADDENDUM

5024057490A PC ASSY ODD CHANNEL FILTER

REF SYMBOL	DESCRIPTION	SUNAIR PART NO.
	PC ASSY ODD CHANNEL FILTER	5024057490
C1	Capacitor, 1500 PF, 500 V, DM19, 2%	0281270007
C2	Capacitor, 270 PF, 500 V, DM19, 2%	0282670009
C3	Capacitor, 2400 PF, 500 V, DM19, 2%	0280980001
C4	Capacitor, 750 PF, 500 V, DM19, 2%	0280990006
C5	Capacitor, 1100 PF, 500 V, DM19, 2%	0281000000
C6	Capacitor, 750 PF, 500 V, DM19, 2%	0280990006
C7	Capacitor, 130 PF, 500 V, DM19, 2%	0282740007
C8	Capacitor, 1200 PF, 500 V, DM19, 2%	0281030006
C9	Capacitor, 390 PF, 500 V, DM19, 2%	0282640002
C10	Capacitor, 560 PF, 500 V, DM19, 2%	0281060002
C11	Capacitor, 330 PF, 500 V, DM19, 2%	0282660003
C12	Capacitor, 62 PF, 500 V, DM20, 2%	0282810005
C13	Capacitor, 560 PF, 500 V, DM19, 2%	0281060002
C14	Capacitor, 180 PF, 500 V, DM19, 2%	0282700005
C15	Capacitor, 250 PF, 500 V, DM19, 2%	0282680004
C16	Capacitor, 150 PF, 500 V, DM19, 2%	0282730001
C17	Capacitor, 39 PF, 500 V, DM20, 2%	0282830006
C18	Capacitor, 250 PF, 500 V, DM19, 2%	0282680004
C19	Capacitor, 56 PF, 500 V, DM15, 2%	0282360000

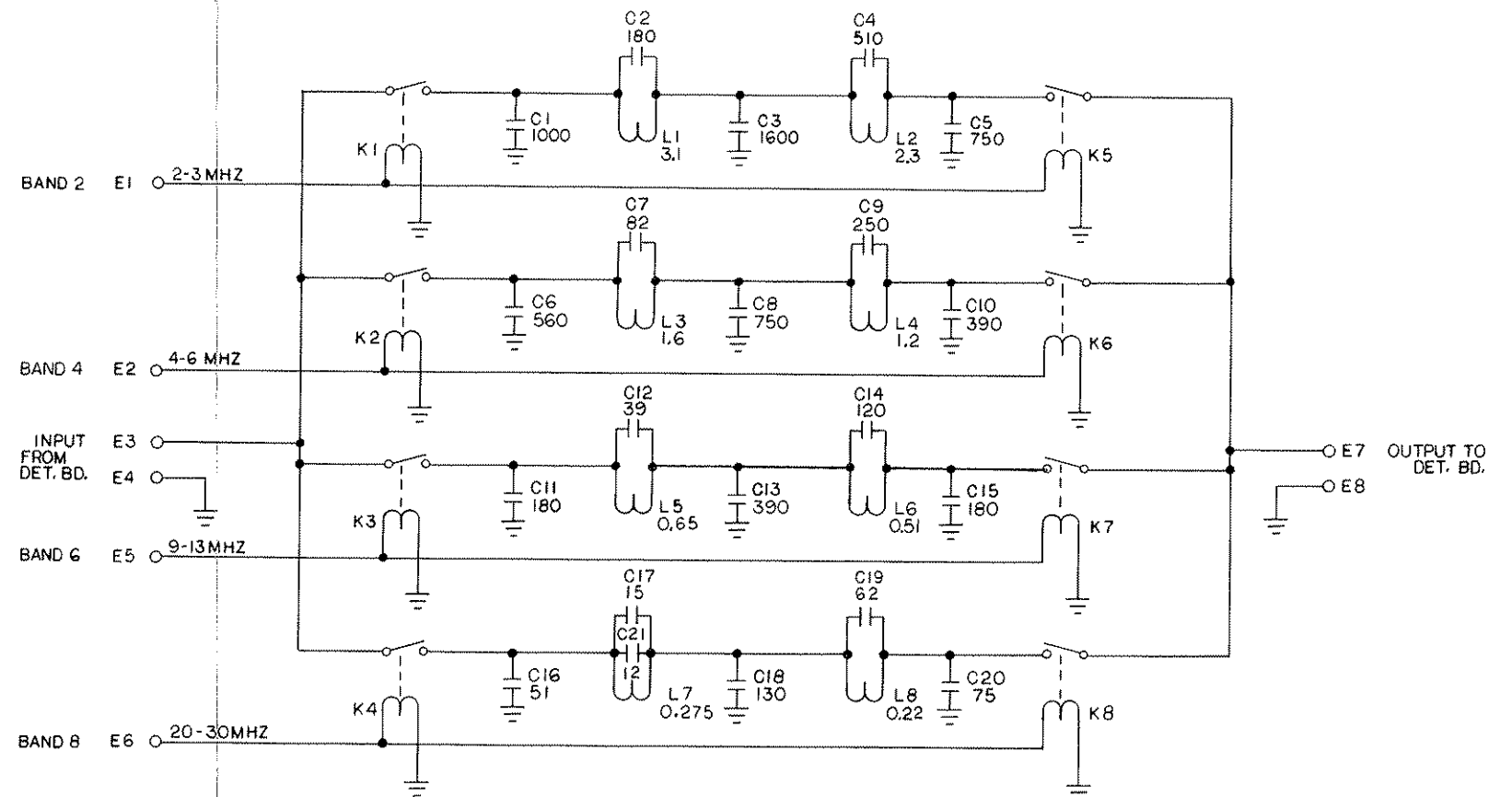
REF SYMBOL	DESCRIPTION	SUNAIR PART NO.
C20	Capacitor, 150 PF, 500 V, DM19, 2%	0282730001
C21	Capacitor, 56 PF, 500 V, DM15, 2%	0282360000
K1	Relay, SPST, 12 V, Reed	1005330000
K2	Relay, SPST, 12 V, Reed	1005330000
K3	Relay, SPST, 12 V, Reed	1005330000
K4	Relay, SPST, 12 V, Reed	1005330000
K5	Relay, SPST, 12 V, Reed	1005330000
K6	Relay, SPST, 12 V, Reed	1005330000
K7	Relay, SPST, 12 V, Reed	1005330000
K8	Relay, SPST, 12 V, Reed	1005330000
L1	Inductor, Filter, 4.5 UH Blk	5024050801
L2	Inductor, Filter, 3.4 UH Brn	5024050908
L3	Inductor, Filter, 2.15 UH Red	5024051009
L4	Inductor, Filter, 1.60 UH Orn	5024051106
L5	Inductor, Filter, 1.00 UH Yel	5024051203
L6	Inductor, Filter, 0.73 UH Grn	5024051301
L7	Inductor, Filter, 0.275 UH Vlo	5024051505
L8	Inductor, Filter, 0.41 UH Blu	5024051408

FIGURE 5.9 ODD CHANNEL FILTER BOARD 1A7A1



SUNAIR GSR-921

5024057775B



- NOTES:
UNLESS OTHERWISE SPECIFIED:
1. CAPACITORS ARE IN PICOFARADS.
2. INDUCTANCE VALUES ARE IN MICROHENRIES

FOR PART NUMBER COMMERCIAL SOURCES, SEE SECTION VI, ADDENDUM

5024057791 PC ASSY EVEN CHANNEL FILTER

REF SYMBOL	DESCRIPTION	SUNAIR PART NO.
C1	PC ASSY EVEN CHANNEL FILTER	5024057791
C2	Capacitor, 1000 PF, 500 V, DM19, 2%	0281210004
C3	Capacitor, 180 PF, 500 V, DM19, 2%	0282700005
C4	Capacitor, 1600 PF, 500 V, DM19, 2%	0281220000
C5	Capacitor, 510 PF, 500 V, DM19, 2%	0282630007
C6	Capacitor, 750 PF, 500 V, DM19, 2%	0280990006
C7	Capacitor, 560 PF, 500 V, DM19, 2%	0281060002
C8	Capacitor, 82 PF, 500 V, DM20, 2%	0282790004
C9	Capacitor, 250 PF, 500 V, DM19, 2%	0282680004
C10	Capacitor, 390 PF, 500 V, DM19, 2%	0282640002
C11	Capacitor, 180 PF, 500 V, DM19, 2%	0282700005
C12	Capacitor, 39 PF, 500 V, DM20, 2%	0282830006
C13	Capacitor, 390 PF, 500 V, DM19, 2%	0282640002
C14	Capacitor, 120 PF, 500 V, DM19, 2%	0282750002
C15	Capacitor, 180 PF, 500 V, DM19, 2%	0282700005
C16	Capacitor, 51 PF, 500 V, DM20, 2%	0282820001
C17	Capacitor, 15 PF, 500 V, DM15	1005320021
C18	Capacitor, 160 pf, 500V, DM15, 2%	0281340005

REF SYMBOL	DESCRIPTION	SUNAIR PART NO.
C19	Capacitor, 62 PF, 500 V, DM20, 2%	0282810005
C20	Capacitor, 75 PF, 500 V, DM15, 2%	0281110000
C21	Capacitor, 12 PF, 500 V, DM15	1005320039
K1	Relay, SPST, 12 V, Reed	1005330000
K2	Relay, SPST, 12 V, Reed	1005330000
K3	Relay, SPST, 12 V, Reed	1005330000
K4	Relay, SPST, 12 V, Reed	1005330000
K5	Relay, SPST, 12 V, Reed	1005330000
K6	Relay, SPST, 12 V, Reed	1005330000
K7	Relay, SPST, 12 V, Reed	1005330000
K8	Relay, SPST, 12 V, Reed	1005330000
L1	Inductor, Filter, 3.10 UH Gry	5024051904
L2	Inductor, Filter, 2.32 UH Wht	5025052005
L3	Inductor, Filter, 1.60 UH Orn	5024051106
L4	Inductor, Filter, 1.20 UH Wh/Red	5024052102
L5	Inductor, Filter, 0.65 UH Wh/Orn	5024052200
L6	Inductor, Filter, 0.51 UH Wh/Yel	5024052307
L7	Inductor, Filter, 0.275 UH, Vio	5025051505
L8	Inductor, Filter, 0.22 UH Wh/Grn	5024052501

FIGURE 5.10 EVEN CHANNEL FILTER BOARD 1A7A2

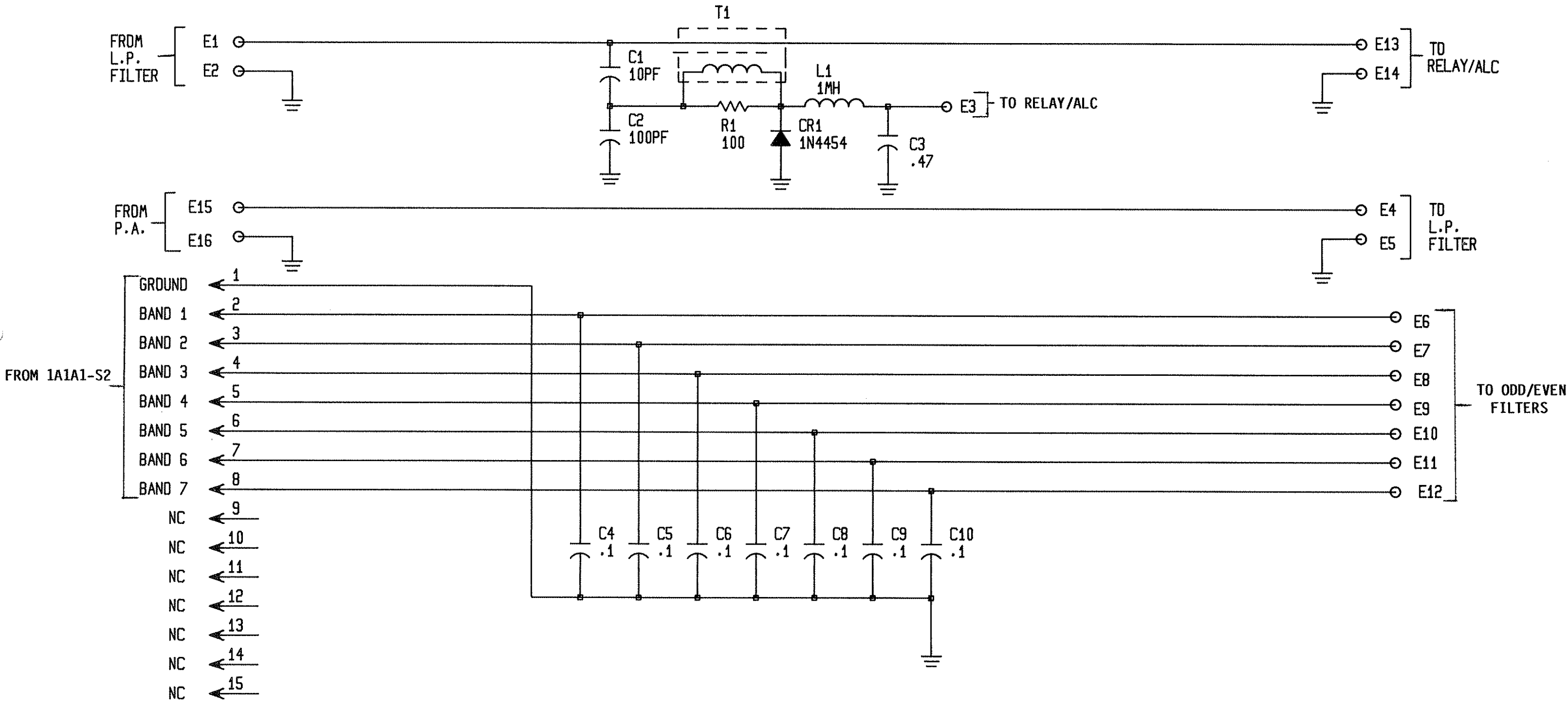
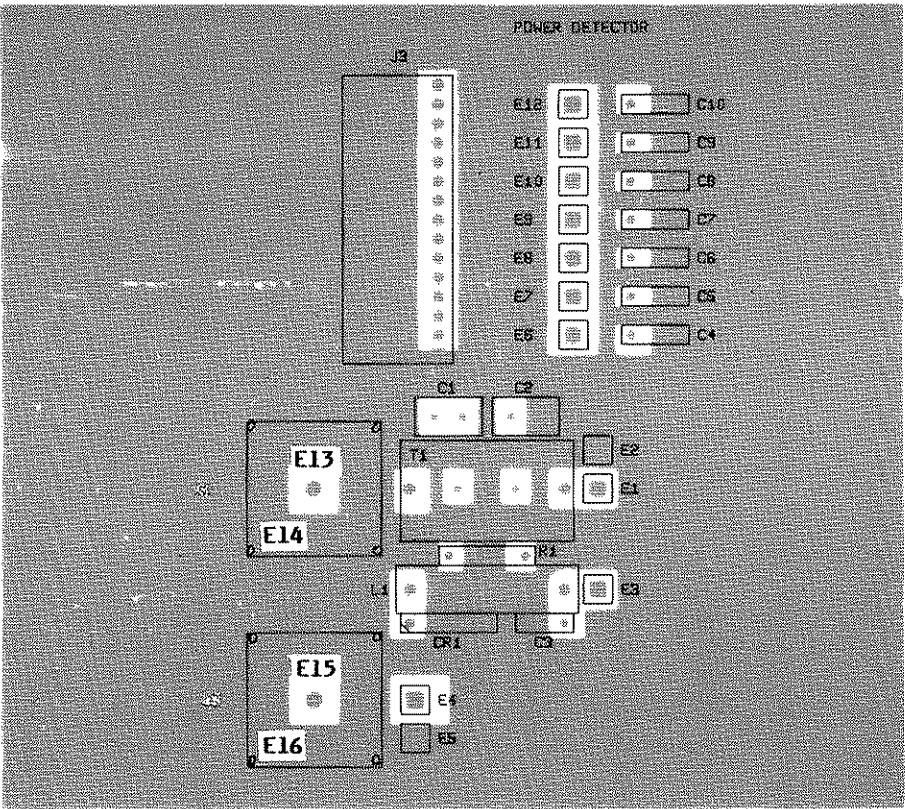


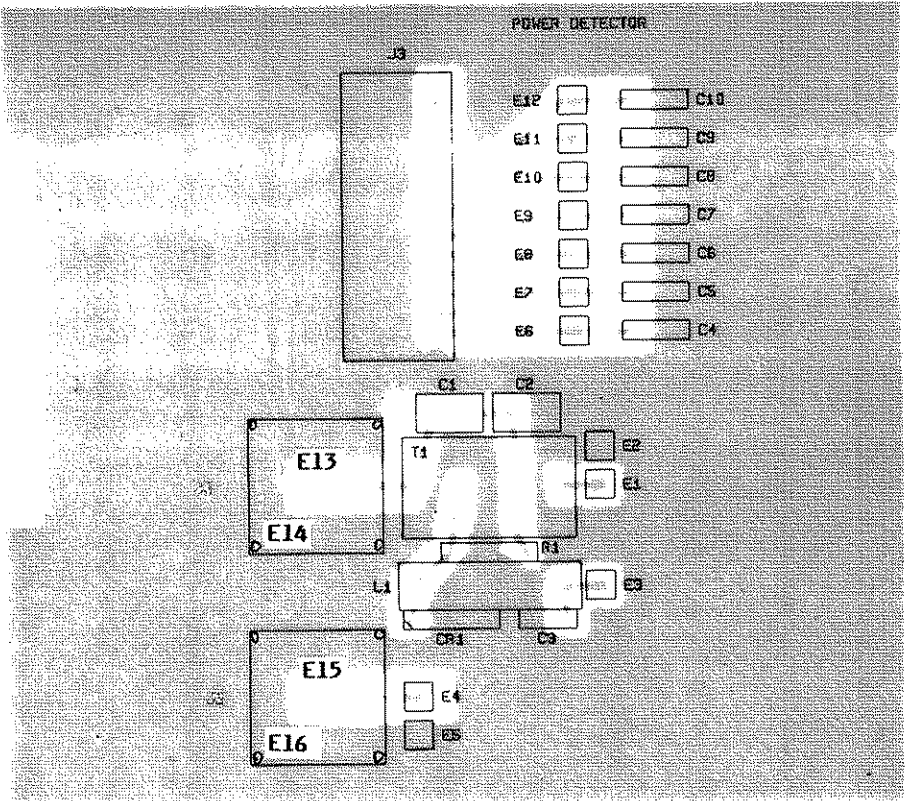
FIGURE 5.11 POWER DETECTOR ASSEMBLY 1A7A3

9187531216B PC ASSY POWER DETECTOR		
REF SYMBOL	DESCRIPTION	SUNAIR PART NO.
	PC ASSY POWER DETECTOR	9187531216
C1	Capacitor, 10pf, 500V, DM10	0259830003
C2	Capacitor, 100pf, 500V, DM10, 5%	0274740001
C3	Capacitor, .47μf, 50V, X7R, 20%	0283377771
C4	Capacitor, 0.1μf, 50V, X7R, 20%	0281610002
C5	Capacitor, 0.1μf, 50V, X7R, 20%	0281610002
C6	Capacitor, 0.1μf, 50V, X7R, 20%	0281610002
C7	Capacitor, 0.1μf, 50V, X7R, 20%	0281610002
C8	Capacitor, 0.1μf, 50V, X7R, 20%	0281610002
C9	Capacitor, 0.1μf, 50V, X7R, 20%	0281610002
C10	Capacitor, 0.1μf, 50V, X7R, 20%	0281610002
CR1	Diode, Signal, Sil. 1N4454	0405270003
J3	Connector, PC, 8 Pin	1008050024
L1	Inductor, Molded, 1000μh, 5%	0643310002
R1	Resistor, 100, 5%, 1/4W	0171180003
T1	Transformer, Current	5024055608

FOR PART NUMBER COMMERCIAL SOURCES, SEE SECTION VI, ADDENDUM



COMPONENT SIDE



CIRCUIT SIDE

SECTION VI

ADDENDUM

6.1 VENDOR PART NUMBERS

The following lists of Sunair part numbers, with corresponding vendor part

numbers, are placed in order by figure number. The lists themselves, are in numerical order to allow for easy cross referencing by Sunair part number.

FIGURE 5.3

SUNAIR P/N	DESCRIPTION	VENDOR P/N	COMMERCIAL SOURCES
9187530961	BUTTON UP, PRE/POST SELECTOR	9187530961	SUNAIR
9187530741	FINAL, TESTED, POSTSELECTOR	9187530741	SUNAIR
0522350429	SCREW, FH 6-32 x 1/4 LG. BLK	MS24693C-24B	ABBOT SCREW, VOI-SHAN
9187530732	COVER, POSTSELECTOR	9187530732	SUNAIR

FIGURE 5.3

SUNAIR P/N	DESCRIPTION	VENDOR P/N	COMMERCIAL SOURCES
9187530902	FINAL, ASSY, POSTSELECTOR	9187530902	SUNAIR
0346320003	SHAFT, .24900 7.000L	7X1-08070	STOCK DRIVE
0346430003	SWITCH, TOGGLE, DPST	8370K107	CUTLER-HAMMER
0405180004	DIODE, RECTIFIER	1N4004	MOTOROLA, INT'L RECTIFIER
0405430001	DIODE, PIN	UM4001C	UNITRODE
0405440006	DIODE, PIN	UM4001CR	UNITRODE
0500020001	WASHER, SPLIT #4	MS35338-135	ABBOTT SCREW, ANILLO INDS.
0500040001	WASHER, SPLIT #6	MS35338-136	ABBOTT SCREW, ANILLO INDS.
0500040028	WASHER, SPLIT #6 BLK	MS35338-136B	ABBOTT SCREW, ANILLO INDS.
0500060029	WASHER, SPLIT #8 BLK	MS35338-137B	ABBOTT SCREW, ANILLO INDS.
0500070008	WASHER, SPLIT #10	MS35338-138	ABBOTT SCREW, ANILLO INDS.
0500200009	WASHER, FLAT #6 .312 OD	96304	FEDERAL SCREW
0500200025	WASHER, FLAT # 6 BLK .312 OD	(Description only)	ELECTRONIC FASTNERS
0500760527	SCREW, FH 8-32 x 5/16 LG BLK	MS24693C-47B	COLUMBIA NUT & BOLD
0500850127	SCREW, PH 4-40 x 3/8 LG.	MS51957-19	ABBOTT SCREW, COLUMBIA NUT & BOLT
0500850623	SCREW, PH 4-40 x 3/8 LG. BLK.	MS51957-15B	ABBOTT SCREW, COLUMBIA NUT & BOLT
0500890056	SCREW, PH 6-32 x 5/16 LG.	MS51957-27	ABBOTT SCREW, COLUMBIA NUT & BOLT
0500890064	SCREW, PH 6-32 x 3/8 LG.	MS51957-28	ABBOTT SCREW, COLUMBIA NUT & BOLT
0500890625	SCREW, PH 6-32 x 3/8 LG. BLK.	MS51957-28B	ABBOTT SCREW, COLUMBIA NUT & BOLT
0500890820	SCREW, PH 6-32 x 1/2 LG. BLK	MS51957-30B	ABBOTT SCREW, COLUMBIA NUT & BOLT
0500910626	SCREW, PH 8-32 x 3/8 LG. BLK.	MS51957-43B	ABBOTT SCREW, COLUMBIA NUT & BOLT
0500950075	SCREW, FH 10-32 x 7/16 LG.	MS24693C-271	ABBOTT SCREW, VOI-SHAN
0500950521	SCREW, FH 10-32 x 5/16 LG. BLK.	MS24693C-271	COLUMBIA NUT & BOLT
0501790004	BEARING, FLANGED .250 ID	7B4-6F0808	STOCK DRIVE
0501840001	CLAMP, CABLE 1/4 ID, 3/8 W	F4NY-250BK	BRADY, WECKESSER
0501870008	NUT, HEX 4-40 x 1/4 AF	MS35649-244	ABBOTT SCREW, COLUMBIA NUT & BOLT
0501880003	NUT, HEX 4-40 x 3/16 AF	70202	FEDERAL SCREW
0501900004	NUT, HEX 6-32 x 5/16 AF	MS35649-264	ABBOTT SCREW, COLUMBIA NUT & BOLT

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0501940006	NUT, HEX 10-32 x 3/8 AF	MS35650-304	ABBOTT SCREW, COLUMBIA NUT & BOLT
0502010002	CLAMP, CABLE 3/8 ID, 3/8 W	NAS1397P6N	PR FASTNERS, WECKESSER
0502050004	LUG, SOLDER, IT NO. 6 ½L	MS77066-2	ZIERICK, SUPERIOR FUSE
0502180226	SCREW, SET 6-32, 1/8 L, CUP BLK	0502180226	SUNAIR
0502420006	LUG, SOLDER, PLAIN NO. 4	MS35431-2	SEASTROM, ZIERICK
0506390004	TERMINAL, INSUL. 4-40 FEMALE	2333-5-1	ELECTRONIC MOLDING
0517480000	SPACER, .112 ID, . 152 OD, .500L	3-5162-261	OAK
0522350623	SCREW, FH 6-32 x 3/8 LG. BLK	MS24693C-26B	ABBOTT SCREW, VOI-SHAN
0523640005	LUG, SOLDER, PLAIN .375 ID	1497	HH SMITH, ZIERICK
0532910001	TERMINAL STRIP, 4 TERM. 1 GND.	53-F	CINCH
0533180007	PIN, DRIVE NO. 0 x 1/8 LG.	7410	FEDERAL SCREW
0540410004	LUG, SOLDER, IT NO. 4 7/8 L	38-115	FEDERAL SCREW
0743740009	CONNECTOR, RF, BNC UG-1094/U	UG-1094/U	AMPHENOL, KINGS
0746970005	CONNECTOR, RF, N UG-58/U	UG-58/U	AMPHENOL, KINGS
0753530007	CONNECTOR, POWER, 7 PIN RECT.	126-017	AMPHENOL, WINCHESTER
0753700000	CONNECTOR, RF, SUBMINIATURE	5102831961A16	SELECTROL ONLY
0753710005	CONNECTOR, RF, BNC	31-315	AMPHENOL ONLY
0753720001	CONNECTOR, RF, MINIATURE	2031510200	OMNI SPECTRA ONLY
0841480001	LAMP ASSY. GREEN	CFO3GTS-2182	ELDEMA
0841500002	LAMP ASSY. AMBER	CFO3ATS-2182	ELDEMA
0849030005	FUSEHOLDER, PANEL MOUNT	342004AL	LITTLEFUSE
0878900004	COLLAR	7CS-RL-4932-3	STOCK DRIVE
1002550009	FUSE, AGC 3 AMP 250V	AGC-3	BUSSMAN, LITTLEFUSE
1003321305	CONNECTOR, PC, 18 PIN FEMALE	65043-028	BERG
1003322000	SOCKET, CARTRIDGE LAMP	CLH-B	IMLEC
1003322107	KEY, POLARIZING, CONNECTOR	65307-001	BERG
1004280025	CAP. 1000UF, 35V	AR108M35E	JARO
1005060011	KNOB, .70D, BLK, POINTER	70-4-2G	RAYTHEON
1007370025	CONNECTOR, POWER, 4 PIN ROUND	MS3102A-14S-2P	AMPHENOL, BENDIX
1007460024	CONNECTOR, PC, 15 PIN HOUSING	22-01-3157	MOLEX
1007480009	CONNECTOR, RF, BNC	15875	AMPHNEOL
1007500000	GROMMET, RUBBER .50ID, .875 OD	749	KEYSTONE
1008050032	CONNECTOR, PC, 8 PIN HOUSING	2695-22-01-3087	MOLEX
1008450031	SCREW, FH 10-32 x ½ LG. BLK	MS24693C-272B	ABBOTT SCREW, VOI-SHAN
5025150507	SWITCH, DETENT, 12 POS	5025150507	SUNAIR
5026031404	SWITCH, WAFER 30 DEG	5026031404	SUNAIR
6028041602	SWITCH, ROTARY, MODE	6028041602	SUNAIR
6029020501	GEAR, SPUR 26T	6029020501	SUNAIR
9187530643	SUPPORT, PRESELECTOR	9187530643	SUNAIR
9187530651	PANEL, FRONT	9187530651	SUNAIR
9187530660	SUPPORT, COVER	9187530660	SUNAIR
9187530686	HANDLE, BLACK, 4 LG. 1.5 HT	9187530686	SUNAIR
9187530694	PLATE, BEARING	9187530694	SUNAIR
9187530708	NAMEPLATE	9187530708	SUNAIR
9187530716	PANEL, SIDE	9187530716	SUNAIR
9187530724	PANEL, REAR	9187530724	SUNAIR
9187530783	LABEL, TRANSMIT	9187530783	SUNAIR
9187530911	WIRE KIT, FINAL ASSY.	9187530911	SUNAIR
0583940005	WIRE, NO. 24 WH/GRY	MIL-W-16878 TYPE E	ALPHA, BLEDEN
0587720000	WIRE, NO. 20 RED	MIL-W-16878 TYPE E	ALPHA, BLEDEN
0585520003	WIRE, NO. 24 RED	MIL-W-16878 TYPE E	ALPHA, BLEDEN
0587840005	WIRE, NO. 20 BLACK	MIL-W-16878 TYPE E	ALPHA, BLEDEN
0588800007	CABLE, COAX RG 174/U TYPE	RG 174/U	BELDEN, RAYCHEM

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0596090005	CABLE, COAX RG 178B/U	RG 178B/U	ALPHA, BELDEN
0601770005	WIRE, NO. 18 WH/BRN	MIL-W-16878 TYPE E	ALPHA, BELDEN
0602320003	WIRE, NO. 16 BROWN	MIL-W-16878 TYPE E	ALPHA, BELDEN
0605090009	WIRE, NO. 16 BRN/WH TWIST. PR.	MIL-W-16878 TYPE E	ALPHA BELDEN
9187530937	HARNESS ASSY, FINAL	9187530937	SUNAIR
9187530945	WIRE KIT, HARNESS, FINAL	9187530945	SUNAIR
0583700004	WIRE, NO. 24 WH/BLK/RED	MIL-W-16878 TYPE E	ALPHA, BELDEN
0584090005	WIRE, NO. 24 WH/VIO	MIL-W-16878 TYPE E	ALPHA, BELDEN
0584470002	WIRE, NO. 24 WH/ORN	MIL-W-16878 TYPE E	ALPHA, BELDEN
0584590008	WIRE, NO. 24 WH/RED	MIL-W-16878 TYPE E	ALPHA, BELDEN
0584610009	WIRE, NO. 24 WH/BRN	MIL-W-16878 TYPE E	ALPHA, BELDEN
0584970005	WIRE, NO. 24 GREY	MIL-W-16878 TYPE E	ALPHA, BELDEN
0585020001	WIRE, NO. 24 VIOLET	MIL-W-16878 TYPE E	ALPHA, BELDEN
0585140006	WIRE, NO. 24 BLUE	MIL-W-16878 TYPE E	ALPHA, BELDEN
0585260001	WIRE, NO. 24 GREEN	MIL-W-16878 TYPE E	ALPHA, BELDEN
0585380007	WIRE, NO. 24 YELLOW	MIL-W-16878 TYPE E	ALPHA, BELDEN
0585400008	WIRE, NO. 24 ORANGE	MIL-W-16878 TYPE E	ALPHA, BELDEN
0585520003	WIRE, NO. 24 RED	MIL-W-16878 TYPE E	ALPHA, BELDEN
0585640009	WIRE, NO. 24 BROWN	MIL-W-16878 TYPE E	ALPHA, BELDEN
0585760004	WIRE, NO. 24 BLACK	MIL-W-16878 TYPE E	ALPHA, BELDEN
0586170006	WIRE, NO. 20 WH/GRY	MIL-W-16878 TYPE E	ALPHA, BELDEN
0586550003	WIRE, NO. 20 WH/YEL	MIL-W-16878 TYPE E	ALPHA, BELDEN
0586790004	WIRE, NO. 20 WH/RED	MIL-W-16878 TYPE E	ALPHA, BELDEN
0586930001	WIRE, NO. 20 WH/BLK	MIL-W-16878 TYPE E	ALPHA, BELDEN
0587600004	WIRE, NO. 20 ORANGE	MIL-W-16878 TYPE E	ALPHA, BELDEN
0587720000	WIRE, NO. 20 RED	MIL-W-16878 TYPE E	ALPHA, BELDEN
0587840005	WIRE, NO. 20 BLACK	MIL-W-16878 TYPE E	ALPHA, BELDEN
0601910001	WIRE, NO. 18 WH/ORN	MIL-W-16878 TYPE E	ALPHA, BELDEN
0602180007	WIRE, NO. 18 WH/GRN	MIL-W-16878 TYPE E	ALPHA, BELDEN
1006730036	PIN CONNECTOR, FEMALE, REEL	75691-006	BERG
1008060003	TERMINAL, CRIMP, FEMALE	2759-08-550102	MOLEX
9187531313	KNOB, 1.25 D, BLACK	125-1-2G	RAYTHEON

FIGURE 5.3

SUNAIR P/N	DESCRIPTION	VENDOR P/N	COMMERCIAL SOURCES
9187531232	FILTER MODULE ASSY.	9187531232	SUNAIR
0500040001	WASHER, SPLIT #6	MS35338-136	ABBOTT SCREW, ANILLO INDUSTRIES
0500660425	SCREW, FH. 4-40 x 1/4 LG. BLK	MS51959-13B	ABBOTT SCREW, ANILLO INDUSTRIES
0500890307	SCREW, PH, 6-32 x 1 7/8 LG.	AN515C6-30	ABBOTT SCREW, ANILLO INDUSTRIES
0501910000	NUT, HEX 6-32 x 1/4 AF	70206	FEDERAL SCREW
0502270608	SPACER, .140 ID, .250 OD, .500L	0502270608	SUNAIR
0508160006	SPACER, .140 ID, .250 OS, 1.000L	9236-A-140	AMATOM
9187531241	FILTER ENCLOSURE	9187531241	SUNAIR
9187531267	WIRE KIT	9187531267	SUNAIR
0584970005	WIRE, NO. 24 GREY	MIL-W-16878 TYPE E	ALPHA, BELDEN
0585020001	WIRE, NO. 24 VIOLET	MIL-W-16878 TYPE E	ALPHA, BELDEN
0585140006	WIRE, NO. 24 BLUE	MIL-W-16878 TYPE E	ALPHA, BELDEN
0585260001	WIRE, NO. 24 GREEN	MIL-W-16878 TYPE E	ALPHA, BELDEN
0585380007	WIRE, NO. 24 YELLOW	MIL-W-16878 TYPE E	ALPHA, BELDEN
0585400008	WIRE, NO. 24 ORANGE	MIL-W-16878 TYPE E	ALPHA, BELDEN
0585520003	WIRE, NO. 24 RED	MIL-W-16878 TYPE E	ALPHA, BELDEN
0596090005	CABLE, COAX RG 178B/U	RG 178B/U	ALPHA, BELDEN

FIGURE 5.4

SUNAIR P/N	DESCRIPTION	VENDOR P/N	COMMERCIAL SOURCES
9187530856	PC ASSY. RELAY/ALC	9187530856	SUNAIR
0170410005	RESISTOR, 10K, 10%, 1/4W	RCR07G103JS	ALLEN BRADLEY, OHMITE
0171560001	RESISTOR, 1K, 10%, 1/4W	RCR07G102JS	ALLEN BRADLEY, OHMITE
0177160004	RESISTOR, 10, 5%, 1/4W	RCR07G100JS	ALLEN BRADLEY, OHMITE
0178190004	RESISTOR, 1.8K, 10%, 1/4W	RCR07G182JS	ALLEN BRADLEY
0181740001	RESISTOR, 15, 10%, 1/4W	RC07GF150K	ALLEN BRADLEY, OHMITE
0181860007	RESISTOR, 1.2K, 10%, 1/4W	RCR07G122JS	ALLEN BRADLEY, OHMITE
0187960003	RESISTOR, 68, 10%, 1/4W	RC07GF680K	ALLEN BRADLEY, OHMITE
0197460003	RESISTOR, 1000, 1%, 1/2W	RN65D100IF	CORNING GLASS, DALE ELECTRONICS
0281610002	CAP. 0.1UF, 50V, X7R, 20%	C331C104M5RCA	KEMERT, SPRAGUE
0281630003	CAP. 0.001UF, 100V, X7R, 20%	1C10X7R102M100B	SPRAGUE, ERIE
0281700001	CAP. 47UF, 20V, 196D	T362C476M020AS	KEMET, SPRAGUE
0281730008	CAP. .01UF, 50V, X7R 20%	C320C103M5R5CA	KEMET
0283377771	CAP. .47UF, 50V, X7R 20%	C330C474M5R5CA	KEMET
0338490043	POT. 10K, 10%, 3/4W, 15 TURNS	3006P-1-103	BOURNS, BECKMAN
0405180004	DIODE, RECTIFIER	1N4004	MOTOROLA, INT'L RECTIFIER
0405200005	DIODE, ZENER	1N5235B	MOTOROLA, AMERICAN POWER DEVICES
0405430001	DIODE, PIN	UM4001C	UNITRODE
0405440006	DIODE, PIN	UM4001CR	UNITRODE
0445130008	TRANSISTOR, NPN, SI	2N5179	MOTOROLA, RCA
0448020009	TRANSISTOR, PNP, SI	2N4126	MOTOROLA
0448580004	TRANSISTOR, NPN, SI	2N222N	FAIRCHILD, MOTOROLA
0500020001	WASHER, SPLIT #4	MS35338-135	ABBOTT SCREW, ANILLO INDUSTRIES
0501880003	NUT, HEX 4-40 x 3/16/ AF	70202	ABBOTT SCREW, COLUMBIA NUT & BOLT
0753490005	CONNECTOR, RF, BNC	18225	AMPHENOL, KINGS
0753710005	CONNECTOR, RF, BNC	31-315	AMPHENOL ONLY
0753720001	CONNECTOR, RF, MINIATURE	2031510200	OMNI ONLY
1000170012	CONNECTOR, RF, SNAP-ON	51-051-0000	SEAELECTRO
1001060024	RESISTOR, 4.7, 5%, 1/4W	CF 1/4	KOA SPEER
1005090009	RELAY, DPDT, 12VDC	T82S11D111-12	POTTER & BRUMFIELD
1007370017	RESISTOR, 51.1 1%, 1/4W	RN65D51R1F	CORNING GLASS, DALE ELECTRONICS
1007460016	CONNECTOR, PC, 15 PIN	7478-22-05-3151	MOLEX
1007470020	TRANSFORMER, ALC	1007470020	SUNAIR
9187530848	PCB. RELAY/ALC	9187530848	SUNAIR
9187530872	WIRE KIT, RELAY/ALC ASSY	9187530872	SUNAIR
0588800007	CABLE, COAX RG 174/U TYPE	RG 174B/U	ALPHA, BLEDEN
0596090005	CABLE, COAX RG 178B/U	RG 178B/U	ALPHA, BELDEN
9187531810	CHASSIS, POWER SUPPLY, RELAY	9187531810	SUNAIR

FIGURE 5.5

<u>SUNAIR P/N</u>	<u>DESCRIPTION</u>	<u>VENDOR P/N</u>	<u>COMMERCIAL SOURCES</u>
9187530201	PC ASSY. TUN./RF AMP	9187530201	SUNAIR
0170390004	RESISTOR 100K, 10%, 1/4W	RCR07G104JS	ALLEN BRADLEY
0170410005	RESISTOR 10K, 10%, 1/4W	RCR07G103JS	ALLEN BRADLEY, OHMITE
0171320000	RESISTOR 220, 10%, 1/4W	RCR07G221JS	ALLEN BRADLEY
0172590001	RESISTOR 27, 10%, 1/4W	RCR07G270JS	ALLEN BRADLEY
0178070009	RESISTOR 2.2K, 5%, 1/4W	RCR07G222JS	ALLEN BRADLEY, OHMITE
0178210005	RESISTOR 820, 10%, 1/4W	RCR07G821JS	ALLEN BRADLEY, OHMITE
0192690001	RESISTOR 22, 10%, 1/4W	RCR07G220JS	ALLEN BRADLEY
0280880006	CAP. 120PF, 300V, CD6, 5%	CD6FC121G03	CORNELL-DUBILIER
0281290008	CAP. 56PF, 300V, CD6, 5%	CD6ED560J03	CORNELL-DUBILIER
0281610002	CAP. 0.1UF, 50V, X7R, 20%	C331C104M5R5CA	KEMET, SPRAGUE
0281627771	CAP. .01UF, 25V, X55/Y5P	DD350B30Y5P103Z25V	MURATA ERIE
0281630003	CAP. 0.001UF, 100V, X7R, 20%	1C10X7R102M100B	SPRAGUE, ERIE
0282880003	CAP. 11-110PF, 500V, N1500	503-001F11-110	ERIE
0282890009	CAP. 7-45PF, 500V, N650	503-001D7-45	ERIE
0286270005	CAP. 1000PF, 500V,	357001X5U0102M	ERIE
0405250002	DIODE, ZENER	1N5227B	TEXAS INSTR., MOTOROLA
0447450000	TRANSISTOR, N-CH, FET 40673	40673	RCA ONLY
0502080001	LUG, SOLDER, IT .250 ID 3/4 L	1958	FEDERAL SCREW
0526620005	COUPLING, SOLID 1/4-1/4 ID	120	HH SMITH
0588990001	WIRE, BUSS NO. 20	MIL-W-16878 TYPE E	ALPHA, BELDEN
0650500008	INDUCTOR, MOLDED, 220UH, 5%	1025-76J	DEVELAN, JEFFERS
5024110706	TRANSFORMER, INPUT	5024110706	SUNAIR
6028051209	TRANSFORMER, RF BAND 2	6028051209	SUNAIR
6028051306	TRANSFORMER, RF BAND 3	6028051306	SUNAIR
6028051403	TRANSFORMER, RF BAND 4	6028051403	SUNAIR
6028051501	TRANSFORMER, RF BAND 5	6028051501	SUNAIR
6028051608	TRANSFORMER, RF BAND 6	6028051608	SUNAIR
6028051705	TRANSFORMER, RF BAND 7	6028051705	SUNAIR
6028051802	TRANSFORMER, RF BAND 8	6028051802	SUNAIR
6028052001	WIRE KIT, RF AMP. ASSY.	6028052001	SUNAIR
0586310002	WIRE NO. 20 WH/BLU	MIL-W-16878 TYPE E	ALPHA, BELDEN
0586550003	WIRE NO. 20 WH/YEL	MIL-W-16878 TYPE E	ALPHA, BELDEN
0586670009	WIRE NO. 20 WH/ORN	MIL-W-16878 TYPE E	ALPHA, BELDEN
0586930001	WIRE NO. 20 WH/BLK	MIL-W-16878 TYPE E	ALPHA, BELDEN
6028052108	PCB. TUNER, RF AMP. PRESELECTOR	6028052108	SUNAIR
6028052507	SWITCH, ROTARY, PRESELECTOR	6028052507	SUNAIR
6028052701	SWITCH, WAFER, PRESELECTOR	6028052701	SUNAIR
6028053406	SHAFT, .249 OD 1.000 L	6028053406	SUNAIR

FIGURE 5.5

SUNAIR P/N	DESCRIPTION	VENDOR P/N	COMMERCIAL SOURCES
9187530309	PC ASSY. INPUT TUNER	9187530309	SUNAIR
0192690001	RESISTOR 22, 10%, 1/4W	RCR07G220JS	ALLEN BRADLEY
0280880006	CAP. 120PF, 300V, CD6, 5%	CD6FC121J03	CORNELL-DUBILIER
0281290008	CAP. 56PF, 300V, CD6, 5%	CD6ED560J03	CORNELL-DUBILIER
0282880003	CAP. 11-110PF, 500V, N1500	503-001F11-110	ERIE
0282890009	CAP. 7-45PF, 500V, N650	503-001D7-45	ERIE
0500180008	WASHER, FLAT #4 .281 OD	96302	FEDERAL SCREW
0501880003	NUT, HEX 4-40 X 3/16 AF	70202	FEDERAL SCREW
0502080001	LUG, SOLDER, IT .250 ID 3/4 L	1958	FEDERAL SCREW
0540010006	SPACER, .112 ID, .187 OD .125 L	0540010006	SUNAIR
0588990001	WIRE, BUSS NO. 20	297	ALPHA
6028051209	TRANSFORMER, RF BAND 2	6028051209	SUNAIR
6028051306	TRANSFORMER, RF BAND 3	6028051306	SUNAIR
6028051403	TRANSFORMER, RF BAND 4	6028051403	SUNAIR
6028051501	TRANSFORMER, RF BAND 5	6028051501	SUNAIR
6028051608	TRANSFORMER, RF BAND 6	6028051608	SUNAIR
6028051705	TRANSFORMER, RF BAND 7	6028051705	SUNAIR
6028051802	TRANSFORMER, RF BAND 8	6028051802	SUNAIR
6028052604	SWITCH, WAFER, PRESELECTOR	6028052604	SUNAIR
6028053007	WIRE KIT, INPUT TUNER	6028053007	SUNAIR
0586430008	WIRE, NO. 20 WH/GRN	MIL-W-16878 TYPE E	ALPHA, BELDEN
0587340002	WIRE, NO. 20 BLUE	MIL-W-16878 TYPE E	ALPHA, BELDEN
6028053104	PCB. INPUT TUNER, PRESELECTOR	6028053104	SUNAIR

FIGURE 5.5

SUNAIR ELECTRONICS P/N	DESCRIPTION	VENDOR P/N
9187530376	BRACKET RELAY ASSY.	9187530376
0172590001	RESISTOR 27, 10%, 1/4W	RCR07G270JS
0178330001	RESISTOR 390, 10%, 1/4W	RCR07G391JS
0405180004	DIODE, RECTIFIER 1N4004, 400V, 1A	1N4004
0767000005	SOCKET, RELAY, 4 PDT CONTACTS	27E006
0767500008	RETAINER, RELAY SOCKET	24A032
0878260005	SPRING, RELAY HOLD-DOWN	20C217
6035145001	BRACKET, RELAY MTG.	60351450001
		SUNAIR
		ALLEN BRADLEY
		ALLEN BRADLEY, OHMITE
		MOTOROLA, INT'L RECTIFIER
		POTTER & BRUMFIELD
		POTTER & BRUMFIELD
		POTTER & BRUMFIELD

FIGURE 5.5

SUNAIR ELECTRONICS P/N		DESCRIPTION	VENDOR P/N
9187530422	CHASSIS ASSY., PRESEL.	9187530422	SUNAIR
0500020001	WASHER, SPLIT #4	MS35338-135	ABBOTT SCREW, ANILLO INDUSTRIES
0500040001	WASHER, SPLIT #6	MS35338-136	ABBOTT SCREW, ANILLO INDUSTRIES
0500180008	WASHER, FLAT #4 .281 OD	96302	FEDERAL SCREW
0500510008	GROMMET, RUBBER .125 ID .344 OD	113000	FEDERAL SCREW
0500660042	SCREW, FH 4-40 X 1/4 LG	MS51959-13	ABBOTT SCREW, COLUMBIA NUT & BOLT
0500850046	SCREW, PH 4-40 X 1/4 LG	MS51957-13	ABBOTT SCREW, COLUMBIA NUT & BOLT
0500850054	SCREW, PH 4-40 X 5/16 LG.	MS51957-24	ABBOTT SCREW, COLUMBIA NUT & BOLT
0500850062	SCREW, PH 4-40 X 3/8 LG.	MS51957-15	ABBOTT SCREW, COLUMBIA NUT & BOLT
0500850089	SCREW, PH 4-40 X 1/2 LG.	MS51957-17	ABBOTT SCREW, COLUMBIA NUT & BOLT
0500890056	SCREW, PH 6-32 X 5/16 LG.	MS51957-27	ABBOTT SCREW, COLUMBIA NUT & BOLT
0500890072	SCREW, PH 6-32 X 7/16 LG.	MS51957-29	ABBOTT SCREW, COLUMBIA NUT & BOLT
0501880003	NUT, HEX 4-40 X 3/16 AF	70202	FEDERAL SCREW
0502270322	SPACER, .146 ID, .218 OD, .128 LG.	108020	FEDERAL SCREW
0502420006	LUG, SOLDER, PLAIN NO. 4	38-215	FEDERAL SCREW
0502440007	LUG, SOLDER, PLAIN NO. 6	1902	FEDERAL SCREW
0527920002	SPACER, .145 ID, .187 OD, .187 LG.	0527920002	SUNAIR
0530210622	SCREW, RH 4-40 X 3/8 LG. BLK.	N-440-3/8B-RH	WECKESSER
0530211025	SCREW, RH 4-40 X 5/8 LG. BLK.	N-440-5/8B-RH	WECKESSER
0849650003	GASKET, EMI 3/8 W X 1/8 THK.	01-0601-1136	METEX
1000120023	GEAR, SPUR, 108 TEETH, .250 BORE	1T2RL4682-2	STOCK DRIVE
6028050105	CAP. 3 GANG TUNING	6028050105	SUNAIR
6028050407	POST. SUPPORT	6028050407	SUNAIR
6028050504	BLOCK, MOTOR MOUNT	6028050504	SUNAIR
6028050709	PLATE, CAP. MOUNT	6028050709	SUNAIR
6028050806	SHIELD, CENTER	6028050806	SUNAIR
6028052302	POST, SUPPORT	6028052302	SUNAIR
6028054704	COVER, RELAY CHASSIS	6028054704	SUNAIR
9187530520	BRACKET, TUNING CAP. REAR	9187530520	SUNAIR
9187530538	BRACKET, TUNING CAP. FRONT	9187530538	SUNAIR
9187530546	SHIELD, REAR	9187530546	SUNAIR
9187530554	SHIELD, FRONT	9187530554	SUNAIR

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SUNAIR P/N	DESCRIPTION	VENDOR P/N	COMMERCIAL SOURCES
9187530457	CHASSIS RELAY ASSY.	9187530457	SUNAIR
0281620008	CAP. 0.01UF, 25V, X5S	C069B250F103Z	SPRAQUE, ERIE
0286270005	CAP. 1000PF, 500V	3570Q1X5U0102M	ERIE
0405180004	DIODE, RECTIFIER 1N4004, 400V, 1A	1N4004	MOTOROLA, INT'L RECTIFIER
0500500002	WASHER, SPLIT #12	98215	FEDERAL SCREW
0523640005	LUG, SOLDER, PLAIN .375 ID	1497	HH SMITH, ZIERICK
0588990001	WIRE, BUSS NO. 20	297	ALPHA
0652680003	INDUCTOR, MOLDED, 47UH, 5%, 110MA	1326-3J	JEFFERS, DELAVAN
0743740009	CONNECTOR, RF, BNC UG-1094/U	UG-1094/U	AMPHENOL, KINGS
0753690004	CONNECTOR, RF, COAX FEEDTHRU	55-036-3196	SEAELECTRO
0754440001	CONNECTOR, RF, JCM	142-0294-001	JOHNSON, AMPHENOL
0755120001	CONNECTOR, RF, COAX FEEDTHRU	55-037-3196	SEAELECTRO
0767000005	SOCKET, RELAY, 4PDT CONTACTS	27E006	POTTER & BRUMFIELD
0767500008	RETAINER, RELAY SOCKET	24A032	POTTER & BRUMFIELD
0878260005	SPRING, RELAY HOLD-DOWN	20C217	POTTER & BRUMFIELD
6028054500	WIRE KIT, CHASSIS RELAY	6028054500	SUNAIR
0560900005	CABLE, COAX, RG 178B/U	RG 178B/U	ALPHA, BELDEN
6028054607	CHASSIS, RELAY	6028054607	SUNAIR
9187530767	WIRE KIT, PRESELECTION ASSY	9187530767	SUNAIR
0583940005	WIRE, NO. 24 WH/GRY	MIL-W-16878 TYPE E	ALPHA, BELDEN
0584110006	WIRE, NO. 24 WH/BLU	MIL-W-16878 TYPE E	ALPHA, BELDEN
0584610009	WIRE, NO. 24 WH/BRN	MIL-W-16878 TYPE E	ALPHA, BELDEN
0584850000	WIRE, NO. 24 WHITE	MIL-W-16878 TYPE E	ALPHA, BELDEN
0584970005	WIRE, NO. 24 GREY	MIL-W-16878 TYPE E	ALPHA, BELDEN
0585020001	WIRE, NO. 24 VIOLET	MIL-W-16878 TYPE E	ALPHA, BELDEN
0585140006	WIRE, NO. 24 BLUE	MIL-W-16878 TYPE E	ALPHA, BELDEN
0585260001	WIRE, NO. 24 GREEN	MIL-W-16878 TYPE E	ALPHA, BELDEN
0585380007	WIRE, NO. 24 YELLOW	MIL-W-16878 TYPE E	ALPHA, BELDEN
0585400008	WIRE, NO. 24 ORANGE	MIL-W-16878 TYPE E	ALPHA, BELDEN
0585520003	WIRE, NO. 24 RED	MIL-W-16878 TYPE E	ALPHA, BELDEN
0585640009	WIRE, NO. 24 BROWN	MIL-W-16878 TYPE E	ALPHA, BELDEN
0585760004	WIRE, NO. 24 BLACK	MIL-W-16878 TYPE E	ALPHA, BELDEN

FIGURE 5.5

SUNAIR P/N	DESCRIPTION	VENDOR P/N	COMMERCIAL SOURCES
9187530759	PRESELECTOR ASSY	9187530759	SUNAIR
0283630001	CAP. 1UF, 35V, T368	T368A105M035AS	KEMET
0500020001	WASHER, SPLIT #4	MS35338-135	ABBOTT SCREW, ANILLO INDUSTRIES
0500040001	WASHER, SPLIT #6	MS35338-136	ABBOTT SCREW, ANILLO INDUSTRIES
0500180008	WASHER, FLAT #4 .281 OD	96302	FEDERAL SCREW
0500200009	WASHER, FLAT #6 .312 OD	96304	FEDERAL SCREW
0500780005	WASHER, FLAT #10 .437 OD	(Description only)	ELECTRONIC FASTNERS
0500850046	SCREW, PH 4-40 X 1/4 LG.	MS51957-13	ABBOTT SCREW, COLUMBIA NUT & BOLT
0500850054	SCREW, PH 4-40 x 5/16 LG.	MS51957-14	ABBOTT SCREW, COLUMBIA NUT & BOLT
0500850062	SCREW, PH 4-40 X 3/8 LG.	MS51957-15	ABBOTT SCREW, COLUMBIA NUT & BOLT
0500850160	SCREW, PH 4-40 X 1 LG.	MS51957-21	ABBOTT SCREW, COLUMBIA NUT & BOLT
0500890056	SCREW, PH 6-32 x 5/16 LG.	MS51957-27	ABBOTT SCREW, COLUMBIA NUT & BOLT
0500890064	SCREW, PH 6-32 x 3/8 LG.	MS51957-28	ABBOTT SCREW, COLUMBIA NUT & BOLT
0501470425	SCREW, FH 4-40 x 1/2 LG. BLK.	FHNY-005-BK	BRADY, WECKESSER
0501720006	CLAMP, CABLE 3/16 ID, 3/8 W	F4NY187-BK	BRADY, WECKESSER
0501880003	NUT, HEX 4-40 X 3/16 AF	70202	FEDERAL SCREW
0502180021	SCREW, SET 6-32, 1/8 L, CUP	0502180021	SUNAIR
0502200022	SCREW, SET 8-32, 1/8 L, CUP	0502200022	SUNAIR
0502410001	LUG, SOLDER, PLAIN NO. 2	38-200	FEDERAL SCREW
0502420006	LUG, SOLDER, PLAIN NO. 4	MS35431-2	SEASTROM, ZIERICK
0517500001	SPACER, .112 ID, .152 OD, .625L	3-5162-265	OAK
0517860007	WASHER, FLAT .120 ID .190 OD	2-1185-113	OAK
0526570245	SCREW, HEX HD 10-32 X 1 1/2 LG	MS35308	ABBOTT SCREW, COLUMBIA NUT & BOLT
0536550000	TERMINAL, INSUL. 4-40 MALE	572-4822-1-0516	CAMBION
0666640009	RELAY, 4PDT, 12V, SENSITIVE	MYUA-006-016	OMRON
0841380007	PULLEY, TIMING 1/4 BELT	6A314DF02508	STOCK DRIVE
0841390002	BELT, TIMING 1/5 PITCH 1/4 W 90T	6R3090025	STOCK DRIVE
0841410003	PULLEY, TIMING 1/4 BELT	6A3RL5005-3	STOCK DRIVE
1003324606	STANDOFF, F-F, 4-40, 1.00 L	8220-SS-0440-7	AMATOM
1005880018	STANDOFF, F-F, 6-32 .625L	8396-A-0632	AMATOM
5024053508	MOTOR, 12VDC, 96.7/1 GEAR/RED	5024053508	SUNAIR
6028051900	PCB. REAR PLATE, PRESELECTOR	6028051900	SUNAIR
6028052809	SWITCH, WAFER, PRESELECTOR	6028052809	SUNAIR
6028054101	SLEEVE ADAPTER	6028054101	SUNAIR
9187530562	COVER, BOTTOM	9187530562	SUNAIR
9187530694	PLATE, BEARING	9187530694	SUNAIR
9187530767	WIRE KIT, PRESELECTOR ASSY	9187530767	SUNAIR

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FIGURE 5.6

SUNAIR P/N	DESCRIPTION	VENDOR P/N	COMMERCIAL SOURCES
9187531119	PC ASSY. BAND GAIN	9187531119	SUNAIR
0405180004	DIODE, RECTIFIER 1N4004	1N4004	MOTOROLA, INT'L RECTIFIER
1004720025	POT. 5K, 10%, 1/2W, 25 TURNS	3299W-1-502	BOURNS
1006630023	CONNECTOR, STRIP, 9 PIN DUAL	65625-118	BERG
9187531101	PCB. BAND GAIN	9187531101	SUNAIR

FIGURE 5.7

SUNAIR P/N	DESCRIPTION	VENDOR P/N	COMMERCIAL SOURCES
9187531801	POWER SUPPLY/RELAY ASSY	9187531801	SUNAIR
0163720002	RESISTOR, 47, 10%, 2W	RCR42G470J5	ALLEN BRADLEY, OHMITE
0187720002	RESISTOR, 10, 10%, 1W	RCR32GF100K	ALLEN BRADLEY, OHMITE
0197410006	RESISTOR, 200, 5%, 14W	77FN200ROJ	OHMITE, SPRAGUE
0282130004	MOUNTING RING, CAP	4-36-14M	SPRAGUE, MALLORY
0282320008	CAP. 27PF, 500V, DM15, 2%	CM05ED270G03	SANGAMO, CORNELL-DUBILIER
0440940001	MICA INS. TO-3 TRANSISTOR	B52600F011	MOTOROLA
0448370000	TRANSISTOR, NPN, SI. 2N3772	2N3772	TEXAS INSTRUMENTS, RCA
0500020001	WASHER, SPLIT #4	MS35338-135	ABBOTT SCREW, ANILLO INDUSTRIES
0500040001	WASHER, SPLIT #6	MS35338-136	ABBOTT SCREW, ANILLO INDUSTRIES
0500060002	WASHER, SPLIT #8	MS35338-137	ABBOTT SCREW, ANILLO INDUSTRIES
0500070008	WASHER, SPLIT #10	MS35338-138	ABBOTT SCREW, ANILLO INDUSTRIES
0500180008	WASHER, FLAT #4 .281 OD	96302	FEDERAL SCREW
0500200009	WASHER, FLAT #6 .312 OD	96304	FEDERAL SCREW
0500620059	SCREW, FH 4-40 x 5/16 LG.	MS24693C-3	ABBOTT SCREW, VOI-SHAN
0500850089	SCREW, PH 4-40 x 1/2 LG.	MS51957-17	ABBOTT SCREW, COLUMBIA NUT & BOLT
0500890064	SCREW, PH 6-32 x 3/8 LG.	MS51957-28	ABBOTT SCREW, COLUMBIA NUT & BOLT
0500890081	SCREW, PH 6-32 x 1/2 LG.	MS51957-30	ABBOTT SCREW, COLUMBIA NUT & BOLT
0500910120	SCREW, PH 8-32 x 3/4 LG.	MS51957-47	ABBOTT SCREW, COLUMBIA NUT & BOLT
0500940061	SCREW, PH 10-32 x 3/8 LG.	MS51958-61	COLUMBIA NUT & BOLT, SPS TECH
0501060324	SCREW, RH 8-32 x 2 LG.	MS51957-53	ABBOTT SCREW, COLUMBIA NUT & BOLT
0501880003	NUT, HEX 4-40 x 3/16/ AF	70202	FEDERAL SCREW
0501910000	NUT, HEX 6-32 x 1/4 AF	70206	FEDERAL SCREW
0502070005	LUG, SOLDER, IT NO. 10 53/64 L	1965	FEDERAL SCREW
0502650001	WASHER, SHLD .156 ID .375 OD	2155	HH SMITH
0502690003	NUT, HEX 8-32 x 1/4 AF	70208	FEDERAL SCREW
0506390004	TERMINAL, INSUL. 4-40 FEMALE	2333-5-1	ELECTRONIC MOLDING
0859070000	TERMINAL STRIP, 8 TERM. 2 GND.	69-6492-1	MANDEX
1001120027	CAP. 10000UF, 50V	3190DD103U050BMA1	MEPCO
1002650020	DIODE, BRIDGE	SCBA-1	SEMTECH
1003940021	STANDOFF, F-F, 6-32 2.375 L	8236-SS-0632-7	AMATOM
1007440031	TRANSFORMER, 115 VAC-24 VAC	24-6	SIGNAL
1007490039	FERRITE BEAD	02673000801	FAIR-RITE
9187530333	SHIELD, PAD	9187530333	SUNAIR
9187532000	POWER SUPPLY, 12V OUT, 1.7 AMP	B12-1.7	CONDOR

FIGURE 5.7

<u>SUNAIR P/N</u>	<u>DESCRIPTION</u>	<u>VENDOR P/N</u>	<u>COMMERCIAL SOURCES</u>
9187531909	PC ASSY. 26V POWER, SUPPLY	9187531909	SUNAIR
0167120000	RESISTOR, 22 K, 10%, $\frac{1}{2}$ W	RC20GF223K	ALLEN BRADLEY, OHMITE
0167360001	RESISTOR, 2.2K, 10%, $\frac{1}{2}$ W	RC20GF222K	ALLEN BRADLEY, OHMITE
0168030004	RESISTOR, 5.6, 10%, $\frac{1}{2}$ W	RC20GF5R6K	ALLEN BRADLEY, OHMITE
0169320006	RESISTOR, 0.25, 10%, 3W	T2B-79	RCL, DALE ELECTRONICS
0173640001	RESISTOR, 180, 10%, $\frac{1}{2}$ W	RCR20G181JS	ALLEN BRADLEY, OHMITE
0184970008	RESISTOR, 1.8K, 5%, $\frac{1}{2}$ W	RC07GF182J	ALLEN BRADLEY, OHMITE
0197460003	RESISTOR, 1000, 1%, $\frac{1}{2}$ W	RN65D1001F	CORNING GLASS, DALE ELECTRONICS
0280890001	CAP. 470UF, 50V TAL	50-TAL-47D	CHEMICON, PANASONIC
0282580000	CAP. 0.0033UF, 100V, NPO, 10%	C321C332K1G5CA	KEMET
0338490060	POT. 2K, 10%, 3/4W, 15 TURNS	3006P-1-202	BOURNS
0403970008	DIODE, RECTIFIER	1N5400	MOTOROLA, INT'L RECTIFIER
0448190001	IC LINEAR	MC1723G	MOTOROLA ONLY
0448390001	TRANSISTOR, PNP, SI. 2N2907A	2N907A	MOTOROLA, RAYTHEON
0754100006	JACK, PCB, PRESS-IN	3286-1-03	CAMBION
9187531933	PCB. 28V POWER SUPPLY W/HDW	9187531933	SUNAIR
0501080007	TERMINAL, TURRET SWGD .112 MTG	10-311-201	CONCORD
1007470038	STANDOFF, SWAGE, 6-32, .187L	9532B-B-0632-4	AMATOM
9187531917	PCB. 26V POWER SUPPLY	9187531917	SUNAIR

FIGURE 5.8

<u>SUNAIR P/N</u>	<u>DESCRIPTION</u>	<u>VENDOR P/N</u>	<u>COMMERCIAL SOURCES</u>
5024030095	POWER AMPLIFIER ASSY.	5024030095	SUNAIR
0193240009	RESISTOR, 50, 10%, 30W	HL24-0Z-50-10/8	DALE
0281350001	CAP. 51 PF, 500V, DM15, 2%	CMR05E510G0DR	SANGAMO, CORNELL-DUBILIER
0448150000	TRANSISTOR, NPN, SI.	2N4127	THOMSON-CSF ONLY
0448170001	TRANSISTOR, NPN, SI.	0448170001	SUNAIR
0500020001	WASHER, SPLIT #4	MS35338-135	ABBOTT SCREW, ANILLO INDS.
0500060002	WASHER, SPLIT #8	MS35338-137	ABBOTT SCREW, ANILLO INDS.
0500180008	WASHER, FLAT #4 .281 OD	96302	FEDERAL SCREW
0500210004	WASHER, FLAT #8 .375 OD	96306	FEDERAL SCREW
0500850054	SCREW, PH 4-40 x 5/16 LG.	MS51957-14	ABBOTT SCREW, COLUMBIA NUT & BOLT
0500850071	SCREW, PH 4-40 x 7/16 LG.	MS51957-16	ABBOTT SCREW, COLUMBIA NUT & BOLT
0500910146	SCREW, PH 8-32 x 7/8 LG.	MS51957-48	ABBOTT SCREW, COLUMBIA NUT & BOLT
0501880003	NUT, HEX 4-40 x 3/16 AF	70202	FEDERAL SCREW
0502270691	SPACER, .171 ID, .312 OD, .187L	9285-A171-16	AMATOM
0502690003	NUT, HEX 8-32 x $\frac{1}{2}$ AF	70208	FEDERAL SCREW
0753490005	CONNECTOR, RF, BNC	18225	AMPHENOL, KINGS
0753600005	CONNECTOR, RF, JCM	142-0298-001	JOHNSON

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5024030192	PC ASSY POWER AMPLIFIER	5024030192	SUNAIR
0161140009	RESISTOR, 300, 5%, 5W	RW67V301	OHMITE, DALE
0163840008	RESISTOR, 10, 10%, 2W	RCR42G100JS	ALLEN BRADLEY, OHMITE
0165920009	RESISTOR, 39, 10%, ½W	RCR20G390JS	ALLEN BRADLEY
0167480006	RESISTOR, 1K, 10%, ½W	RCR20G102JS	ALLEN BRADLEY, OHMITE
0170910008	RESISTOR, 330, 5%, ½W	RCR07G331JS	ALLEN BRADLEY
0172730007	RESISTOR, 150, 10%, ½W	RCR07G151JS	ALLEN BRADLEY
0175600007	RESISTOR, 820, 10%, ½W	RCR20G821JS	ALLEN BRADLEY, OHMITE
0177160004	RESISTOR, 10, 5%, ½W	RCR07G100JS	ALLEN BRADLEY
0178690007	RESISTOR, 2.2, 10%, ½W	RCR20G2R2JS	ALLEN BRADLEY
0183700007	RESISTOR, 5.1K, 5%, ½W	RCR20G512JS	ALLEN BRADLEY
0184090008	RESISTOR, 3.3K, 5%, ½W	RCR20G332JS	ALLEN BRADLEY
0184110009	RESISTOR, 470, 5%, ½W	RC07GF471J	ALLEN BRADLEY, OHMITE
0184610001	RESISTOR, 82, 10%, ½W	RCR07G820JS	ALLEN BRADLEY
0186050003	RESISTOR, 3.3, 10%, ½W	RCR20G3R3JS	ALLEN BRADLEY
0186670001	RESISTOR, 2.7K, 10%, ½W	RCR07G272JS	ALLEN BRADLEY, OHMITE
0192690001	RESISTOR, 22, 10%, ½W	RCR07G220JS	ALLEN BRADLEY
0193360004	RESISTOR, 0.1, 10%, 15W	HLM-15-10Z.1-10	DALE
0194770001	RESISTOR, 1, 10%, ½W	RC20GF010K	NJRMT
0245750002	CAP. 47µf, 50V, CL65B	CL65BJ470MPE	MEPCO
0266020003	CAP. 125µf, 3V	ALW125-1DE	CORNELL-DUBILIER
0272780006	CAP. 0.0022µf, 200V, Z5F, 10%	805030Z5F0222K	ERIE, SPRAGUE
0280910002	CAP. 1µf, 50V, 198D	T362A105M050AS	KEMET, SPRAGUE
0280950004	CAP. 0.01µf, 250V, X5V, 20%	C067A251M103K	SPRAGUE, RMC
0281610002	CAP. 0.1µf, 50V, X7R, 20%	C331C104M1R5CA	KEMET, SPRAGUE
0281627771	CAP. .01µf, 25V, X55/Y5P	DD350B30Y5P103Z25V	ERIE
0281700001	CAP. 47µf, 20V, 196D	T362C476M020AS	KEMET, SPRAGUE
0281730008	CAP. .01µf, 50V, X7R , 20%	C320C103M5R5CA	KEMET
0283510005	CAP. .22µf, 35V, T368	T368A224M035AS	KEMET
0286260000	CAP. 0.001µf, 250V, X5R, 10%	DD61B10X5R102K250VM	ERIE
0346380006	POT. 10, 5%, ½W, PC MOUNT	3305P-1-100	BOURNS
0405180004	DIODE, RECTIFIER	1N4004	MOTOROLA, INT'L RECTIFIER
0405270003	DIODE, SIGNAL, SIL.	1N4454	ITT SEMICONDUCTOR, UNITRODE
0446780006	TRANSISTOR, PNP, SI. 2N4249	PN424918	FAIRCHILD
0448140004	TRANSISTOR, NPN, SI.	2N3866	RAYTHEON, MOTOROLA
0500020001	WASHER, SPLIT #4	MS35338-135	ABBOTT SCREW, ANILLO INDS.
0500270007	WASHER, FLAT #6 .312 OD	33-111	FEDERAL SCREW
0500850127	SCREW, PH 4-40 x ¾ LG.	MS51957-19	ABBOTT SCREW, COLOMBIA NUT & BOLT
0500850160	SCREW, PH 4-40 x 1 LG.	MS51957-21	ABBOTT SCREW, COLUMBIA NUT & BOLT
0501880003	NUT, HEX 4-40 x 3/16 AF	70202	FEDERAL SCREW
0502270616	SPACER, .140 ID, .250 OD, .250L	0502270616	SUNAIR
0502710004	MOUNTING PAD, TRANSISTOR	7717-149N	THERMALLOY ONLY
0535400004	SPACER, .140 ID, .250 OD, .187L	9223-PH-140	AMATOM
0650000005	INDUCTOR, MOLDED, 22µh, 5%	1316-4J	JEFFERS, DELEVAN
0652180001	INDUCTOR, MOLDED, 2.7µh, 5%	4436-5J	JEFFERS, DELEVAN
0659210002	INDUCTOR, MOLDED, 6.8µh, 5%	4446-2J	JEFFERS, DELEVAN
0753590000	CONNECTOR, POWER, 7 PIN RECT.	126-016	AMPHENOL, SUNAIR
0840730004	HEATSINK	2225B	THERMALLOY
5024030290	PCB. POWER AMPLIFIER W/HDW.	5024030290	SUNAIR
5035520000	STANDOFF, SWAGE 8-32 .125L	9552B-B-0832-4	AMATOM
5024030206	PCB. POWER AMPLIFIER	5024030206	SUNAIR
5024030401	TRANSFORMER INPUT	5024030401	SUNAIR
5024030508	TRANSFORMER INTERSTAGE	5024030508	SUNAIR

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5024030605	CHOKE, RF	5024030605	SUNAIR
5024030702	CHOKE, RF	5024030702	SUNAIR
5024030893	DRIVER TRANSFORMER ASSY.	5024030893	SUNAIR
0281610002	CAP. 0.1μf, 50V, X7R, 20%	C331C104M1R5CA	KEMET, SPRAGUE
0287390004	CAP. 7-35 PF, 160V, N1500	300450603	THRUSH, STETTNER ELECTRIC
0508050006	SPACER, .155 ID, .187 OD, .800L	0508050006	SUNAIR
0613650000	CORE, FERRITE 3/8 OD x 3/16 LG.	CN20T3119	CER. MAG., FERRONICS
5024030907	PCB. DRIVER TRANSFORMER	5024030907	SUNAIR
5024031008	PCB. DRIVER TRANSFORMER	5024031008	SUNAIR
5024031199	OUTPUT TRANSFORMER ASSY.	5024031199	SUNAIR
0281610002	CAP. 0.1μf, 50V, X7R, 20%	C331C104M1R5CA	KEMET, SPRAGUE
0500850101	SCREW, PH 4-40 x 5/8 LG.	MS51957-18	ABBOTT SCREW, COLUMBIA NUT & BOLT
0508210003	SPACER, .155 ID, .187 OD, 2.150 L	0508210003	SUNAIR
0533320003	CLIP, COMPONENT	6002-55C	AUGAT
0613650000	CORE, FERRITE 3/8 OD x 3/16 LG.	CN20T3119	CER. MAG., FERRONICS
5024031202	PCB. OUTPUT TRANSFORMER	5024031202	SUNAIR
5024031300	PCB. OUTPUT TRANSFORMER	5024031300	SUNAIR
5024031504	SPACER, PLATE	5024031504	SUNAIR
5024031407	HEATSINK, PA	5024031407	SUNAIR

FIGURE 5.9

SUNAIR P/N	DESCRIPTION	VENDOR P/N	COMMERCIAL SOURCES
5024057490	PC ASSY ODD CHANNEL FILTER	5024057490	SUNAIR
0280980001	CAP. 2400PF, 500V, DM19, 2%	CMR06F242G0DR	SANGAMO, CORNELL-DUBILIER
0280990006	CAP. 750PF, 500V, DM19, 2%	CMR06F751G0DR	SANGAMO, CORNELL-DUBILIER
0281000000	CAP. 1100PF, 500V, DM19, 2%	CM06FD112G03	SANGAMO, CORNELL-DUBILIER
0281030006	CAP. 1200PF, 500V, DM19, 2%	CMR06122G0DR	SANGAMO, CORNELL-DUBILIER
0281060002	CAP. 560PF, 500V, DM19, 2%	CMR06561G0DR	SANGAMO, CORNELL-DUBILIER
0281270007	CAP. 1500PF, 500V, DM19, 2%	CMR06152G0DR	SANGAMO, CORNELL-DUBILIER
0282360000	CAP. 56PF, 500V, DM15, 2%	DM15ED560G03	SANGAMO, CORNELL-DUBILIER
0282640002	CAP. 390PF, 500V, DM19, 2%	DM19ED391G03	ARCO
0282660003	CAP. 330PF, 500V, DM19, 2%	DM19FD331G03	SANGAMO, CORNELL-DUBILIER
0282670009	CAP. 270PF, 500V, DM19, 2%	DM19ED271G03	ARCO
0282680004	CAP. 250PF, 500V, DM19, 2%	DM19ED251G03	ARCO
0282700005	CAP. 180PF, 500V, DM19, 2%	DM19ED181G03	ARCO
0282730001	CAP. 150PF, 500V, DM19, 2%	DM19CD151G03	ARCO
0282740007	CAP. 130PF, 500V, DM19, 2%	CM06FD131G03	SANGAMO, CORNELL-DUBILIER
0282810005	CAP. 62PF, 500V, DM20, 2%	DM20CD620G03	KAHGAN
0282830006	CAP. 39PF, 500V, DM20, 2%	DM20CD390G03	KAHGAN
1005330000	RELAY, SPST, 12V, REED	310-5-1	WABASH
5024050801	INDUCTOR, FILTER, 4.5UH BLK	5024050801	SUNAIR
5024050908	INDUCTOR, FILTER, 3.4UH BRN	5024050908	SUNAIR
5024051009	INDUCTOR, FILTER, 2.15UH RED	5024051009	SUNAIR
5024051106	INDUCTOR, FILTER, 1.60UH ORN	5024051106	SUNAIR
5024051203	INDUCTOR, FILTER, 1.00 UH YEL	5024051203	SUNAIR
5024051301	INDUCTOR, FILTER, 0.73UH GRN	5024051301	SUNAIR
5024051408	INDUCTOR, FILTER, 0.41UH BLU	5024051408	SUNAIR
5024051505	INDUCTOR, FILTER, 0.275UH VIO	5024051505	SUNAIR
5024058003	PCB. ODD CHANNEL	5024058003	SUNAIR

FIGURE 5.10

SUNAIR P/N	DESCRIPTION	VENDOR P/N	COMMERCIAL SOURCES
5024057791	PC ASSY EVEN CHANNEL FILTER	5024057791	SUNAIR
0280990006	CAP. 750PF, 500V, DM19, 2%	CMR06F751G0DR	SANGAMO, CORNELL-DUBILIER
0281060002	CAP. 560PF, 500V, DM19, 2%	CMR06F561G0DR	SANGAMO, CORNELL-DUBILIER
0281110000	CAP. 75PF, 500V, DM15, 2%	CMR05E750G0DR	SANGAMO, CORNELL-DUBILIER
0281210004	CAP. 1000PF, 500V, DM19, 2%	CMR06F102G0DR	SANGAMO, CORNELL-DUBILIER
0281220000	CAP. 1600PF, 500V, DM19, 2%	CMR06F162G0DR	SANGAMO, CORNELL-DUBILIER
0281340005	CAP. 160PF, 500V, DM15, 2%	CM05FD161G03	SANGAMO, CORNELL-DUBILIER
0282630007	CAP. 510PF, 500V, DM19, 2%	CM06FD511G03	SANGAMO, CORNELL-DUBILIER
0282640002	CAP. 390PF, 500V, DM19, 2%	DM19ED391G03	ARCO
0282680004	CAP. 250PF, 500V, DM19, 2%	DM19ED251G03	KAHGAN
0282700005	CAP. 180PF, 500V, DM19, 2%	DM19ED181G03	KAHGAN
0282750002	CAP. 120PF, 500V, DM19, 2%	DM19CD121G03	KAHGAN
0282790004	CAP. 82PF, 500V, DM20, 2%	DM20CD820G03	KAHGAN
0282810005	CAP. 62PF, 500V, DM20, 2%	DM20CD620G03	KAHGAN
0282820001	CAP. 51PF, 500V, DM20, 2%	DM20CD510G03	KAHGAN
0282830006	CAP. 39PF, 500V, DM20, 2%	DM20CD390G03	KAHGAN
1005320021	CAP. 15PF, 500V, DM15	DM15CD150D03	SANGAMO, CORNELL-DUBILIER
1005320039	CAP. 12PF, 500V, DM15	DM15CD120D03	SANGAMO, CORNELL-DUBILIER
1005330000	RELAY, SPST, 12V, REED	310-5-1	WABASH
5024051106	INDUCTOR, FILTER, 1.60UH ORN	5024051106	SUNAIR
5024051505	INDUCTOR, FILTER, 0.275UH VIO	5024051505	SUNAIR
5024051904	INDUCTOR, FILTER, 3.10UH GRY	5024051904	SUNAIR
5024052005	INDUCTOR, FILTER, 2.32UH WHT	5024052005	SUNAIR
5024052102	INDUCTOR, FILTER, 1.20UH WH/RED	5024052102	SUNAIR
5024052200	INDUCTOR, FILTER, 0.65UH WH/ORN	5024052200	SUNAIR
5024052307	INDUCTOR, FILTER, 0.51UH WH/YEL	5024052307	SUNAIR
5024052501	INDUCTOR, FILTER, 0.22UH WH/GRN	5024052501	SUNAIR
5024058101	PCB. EVEN CHANNEL	5024058101	SUNAIR

FIGURE 5.11

SUNAIR P/N	DESCRIPTION	VENDOR P/N	COMMERCIAL SOURCES
9187531216	PC ASSY. POWER DETECTOR	9187531216	SUNAIR
0171180003	RESISTOR, 100, 5%, $\frac{1}{4}$ W	RCR07G101JS	ALLEN BRADLEY, OHMITE
0259830003	CAP. 10PF, 500V, DM10	CMR04C100D0DR	SANGAMO, CORNELL-DUBILIER
0274740001	CAP. 100PF, 500V, DM10, 5%	CMR04F101G0DR	SANGAMO, CORNELL-DUBILIER
0281610002	CAP. 0.1UF, 50V, X7R, 20%	C331C104M1R5CA	KEMET, SPRAGUE
0283377771	CAP. .47UF, 50V, X7R, 20%	C330C474M5R5CA	KEMET
0405270003	DIODE, SIGNAL, SIL.	1N4454	ITT SEMI CONDUCTOR, UNITRODE
0643310002	INDUCTOR, MOLDED, 1000UH, 5%	1331-35J	JEFFERS, DELEVAN
1008050024	CONNECTOR, PC, 8 PIN	7428-22-05-3081	MOLEX
5024055608	TRANSFORMER, CURRENT	5024055608	SUNAIR
9187531259	PCB. POWER DETECTOR W/HDW	9187531259	SUNAIR
0508220009	BRACKET, RIGHT ANGLE 4-40 THD.	741-4-40	ZIERICK
0508500001	RIVET, SEMI-TUB .120 x 3/16L	MS16535-134	NATIONAL RIVET
9187531208	PCB. POWER DETECTOR	9187531208	SUNAIR
9187531241	FILTER ENCLOSURE	9187531241	SUNAIR