

**MANUAL FOR VHF  
COMM. TRANSCEIVER  
& NAV. RECEIVER  
SA 1036**

**SUNAIR ELECTRONICS, INC.**

3101 SOUTHWEST THIRD AVENUE  
FORT LAUDERDALE, FLORIDA, U. S. A.

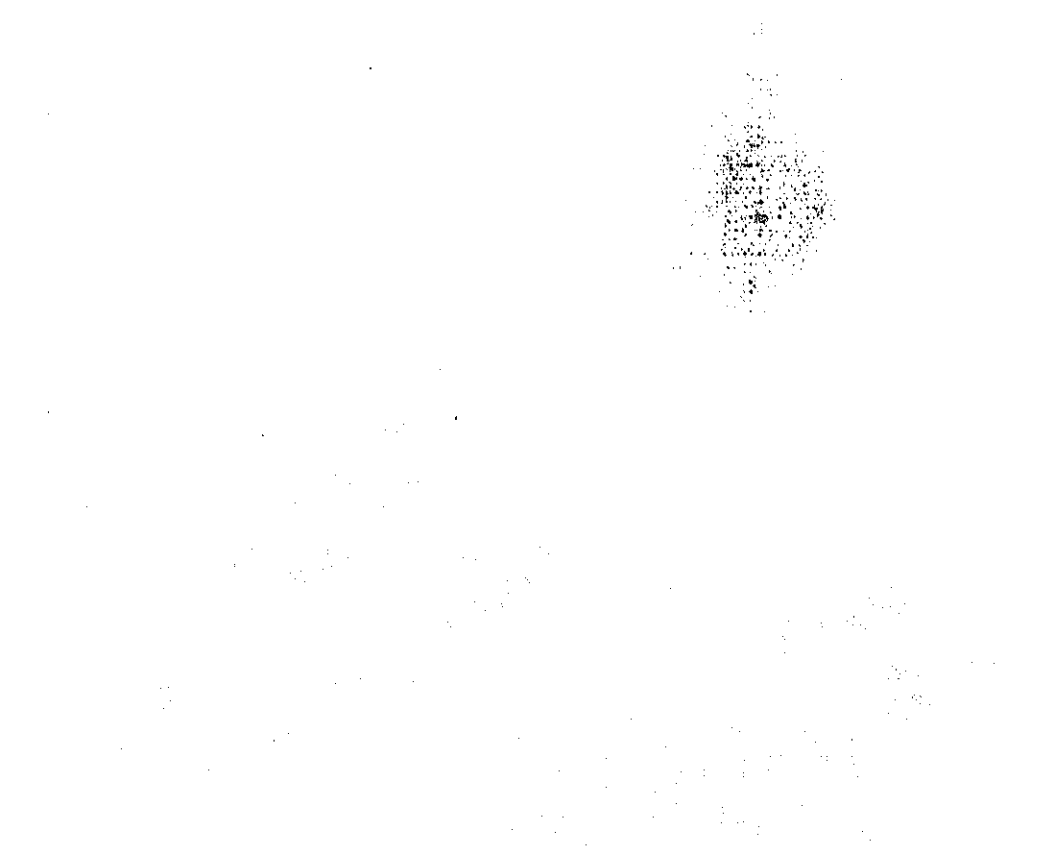


TABLE OF CONTENTS

SA-1036

<u>PARAGRAPH</u>		<u>PAGE</u>
<u>Section I</u> - <u>GENERAL INFORMATION</u>		
1 - 1	Specifications SA1036	1
1 - 2	Specifications SA1-300	2
1 - 3	General Description	3
1 - 4	Instrument Panel Unit	3
1 - 5	Modulator, Power Supply	4
1 - 6	Controls	4
1 - 7	Units & Accessories Supplied	4
1 - 8	Accessories Available, but not supplied	6
<u>Section II</u> - <u>THEORY OF OPERATION</u>		
2 - 1	Comm. Transceiver & Nav. Receiver	7
2 - 2	Transmitter	7
2 - 3	Comm. Receiver	7
2 - 4	Nav. Receiver	8
2 - 5	VOR/LOC Converter	9
<u>Section III</u> <u>ALIGNMENT PROCEDURE</u>		
3 - 1	General	10
3 - 2	Equipment Required	10
3 - 3	Test Set-up	10
3 - 4	Alignment Procedure	10

<u>PARAGRAPH</u>		<u>PAGE</u>
<u>Section IV - TROUBLE SHOOTING</u>		
4 - 1	Transceiver SA1036	23
4 - 2	VOR/LOC Converter SA1-300	24
<u>Section V - INSTALLATION</u>		
5 - 1	Mechanical Installation	31
5 - 2	Electrical Installation	31
5 - 3	Warning	31
5 - 4	Converter Indicators SA1-300 & SA1-400	31
<u>Section VI - PARTS LIST</u>		
6 - 1	Parts List SA-1036	37
6 - 2	Parts List SA1-300	47

LIST OF ILLUSTRATIONS

SA-1036

<u>DESCRIPTION</u>	<u>PAGE</u>
Front Panel	5
Test Set #1	11
Test Set #2	14
Com. & Nav. Receiver I.F. Response	15
Test Set #3	19
Schematic SA-1036	21
Schematic SA1-300	22
Components Layout	25
SA-1036 Top View	26
SA-1036 Bottom View #1	27
SA-1036 Bottom View #2	28
SA1-300 Printed Circuit Board #1	29
SA1-300 Printed Circuit Board #2	29
SA1-300 Printed Circuit Board #3	30
SA1-300 Printed Circuit Board #4	30
SA-1036 Installation Dimensions & Instrument Panel Cut-out	32
SA1-300 Installation Dimensions & Instrument Panel Cut-out	33
Interconnecting wiring Diagram SA-1036 and SA1-300	35
Interconnecting Wiring Diagram for SA-1036 system	36

TABLE OF CONTENTS

SAV901/902

<u>PARAGRAPH</u>		<u>PAGE</u>
	<u>Section I</u> - <u>THEORY OF OPERATION</u>	
1 - 1	Description	7
1 - 2	Theory of Operation	7
	Section II TROUBLE SHOOTING	5
	Section III INSTALLATION	8
	Section IV PARTS LIST	10

LIST OF ILLUSTRATIONS

<u>POWER SUPPLY</u>	<u>PAGE</u>
Power Supply Block Diagram	1
Modulator Power Supply	4
Modulator Power Supply Inside Views	6
Schematic Power Supply	7
Modulator Power Supply Mounting Diagram	9

SECTION I

GENERAL INFORMATION

1 - 1                      SPECIFICATIONS    SA-1036

Weights:                      SA-1036 Transceiver, including  
                                 Modulator/Power Supply            12 lb.

Power Requirements:        SA1-300 VOR/LOC Converter Indicator, 2.30 lb.

                                 13.75 volts                      27.5 volts

                                 13 amp. Transmit                7 amp. Transmit

                                 6 amp. Receive                   3 amp. Receive

NAVIGATION RECEIVER

Frequency Range:            108 mc to 117.9 mc, 100 kc spacing

Frequency Stability:        NMT .005%

Sensitivity:                   NLT 10 db S+N/N for 2 uv

Gain:                           For 1 mv NLT 6w into 3.2 ohm Speaker

Headphone Output:         For 1 mv NLT 500 mw into 500 ohm Output

Selectivity:                   NMT 6 db at 40 kc; NLT 60 db at 180 kc

AGC:                           NMT 4 db change in Output with Input from  
                                 10 uv to 10,000 uv

Image Rejection:            NLT 60 db

COMMUNICATIONS RECEIVER

Frequency Range:            118 mc to 135.95 mc, 50 kc spacing -- Export  
                                 model 117 mc to 135.95 mc

Frequency Stability:        NMT .005%

Sensitivity:                   NLT 6 db S+N/N for 1 uv

Gain:                           For 1 mv NLT 6w into 3.2 ohm Speaker

Headphone Output:         For 1 mv NLT 500 mw into 500 ohm Output

Selectivity:                   NMT 6 db at 35 kc; NLT 60 db at 180 kc

AGC:                           NMT 4 db change in Output with Input from  
                                 10 uv to 10,000 uv

Image Rejection:            NLT 60 db

TRANSMITTER

Frequency Range:            118 mc to 135.95 mc, 50 kc spacing -- Export  
                                 model 117 mc to 135.95 mc

RF Power:                    Nominal 14w

Frequency Stability:        NMT .005%

Modulation:                   Up to 95%. Speech filter and clipper provided.

Sidetone:                    NLT 50 mw into 500 ohms at 85% Modulation

Harmonic and  
Spurious Radiation:        Suppression of Spurious Radiations exceeds the  
                                 minimums set by the FCC

NMT - not more than  
NLT - not less than



SPECIFICATIONSSA1-300 VOR/LOC CONVERTER INDICATOR

Power Requirements: 13.75 volts or 27.5 volts, 4.4 watts  
Omni: Course width:  $\pm 10^\circ$  with standard  
VOR signal  
Course accuracy:  $\pm 3^\circ$  or better  
Sensitivity: Reliable course indication  
with 2 uv RF signal into  
SA-1036  
Localizer: Input Signal .75 to 1.4 volts  
Course Width  $\pm 10^\circ$  for 4 DDM  
Accuracy  $\pm 3^\circ$  or better

## GENERAL DESCRIPTION

- 1 - 3 The SunAir VHF Transceiver SA-1036 represents an economical, high performance and light weight communication and navigation package for application in private and commercial aircraft, where reliability and size of the unit are of prime importance. The SA-1036 system consists of two separate units; one panel-mounted transceiver, and a remote-mounted modulator/power supply.

## INSTRUMENT PANEL UNIT

- 1 - 4 The panel unit contains a complete 360 channel communications transceiver and, in addition, an independent 100 channel navigation receiver which operates simultaneously with the communications portion of the unit.

The frequency selector on the left hand side of the transceiver front panel controls the receive and transmit frequency of the communications transceiver. By addition of one single crystal, the total channel number of the communications transceiver can be increased to 380 for operation in foreign countries. The communications transceiver operates in the single channel simplex mode; that is, both receive and transmit will take place at the frequency indicated by the frequency controls of the communications portion of the unit.

The navigation receiver is channeled by the frequency control located on the right hand side of the front panel of the unit. In conjunction with the SunAir model SA1-300 VOR/LOC converter indicator unit, the navigation receiver will provide complete VHF omni range and localizer reception. The transfer from omni to localizer indication is automatically provided by selecting localizer frequencies on the navigation receiver frequency controls.

The SunAir SA-1036 NAV/COM transceiver provides the required glide slope receiver channeling cables. In conjunction with the SunAir VOR/ILS indicator, model SA1-400, and the SunAir solid state glide slope receiver, model SGR-20, the SA-1036 NAV/COM transceiver can be extended to a full instrument landing system.

## MODULATOR/POWER SUPPLY UNIT

- 1 - 5 The remote-mounted modulator/power supply unit is available in two versions, model SAV 901 for 14 volt operation, and SAV 902 for 28 volt operation. Both units are completely transistorized and provide in conjunction with the VHF Transceiver SA-1036 the required speaker and headphone output, as well as the high level plate and screen modulation for the communications transmitter.

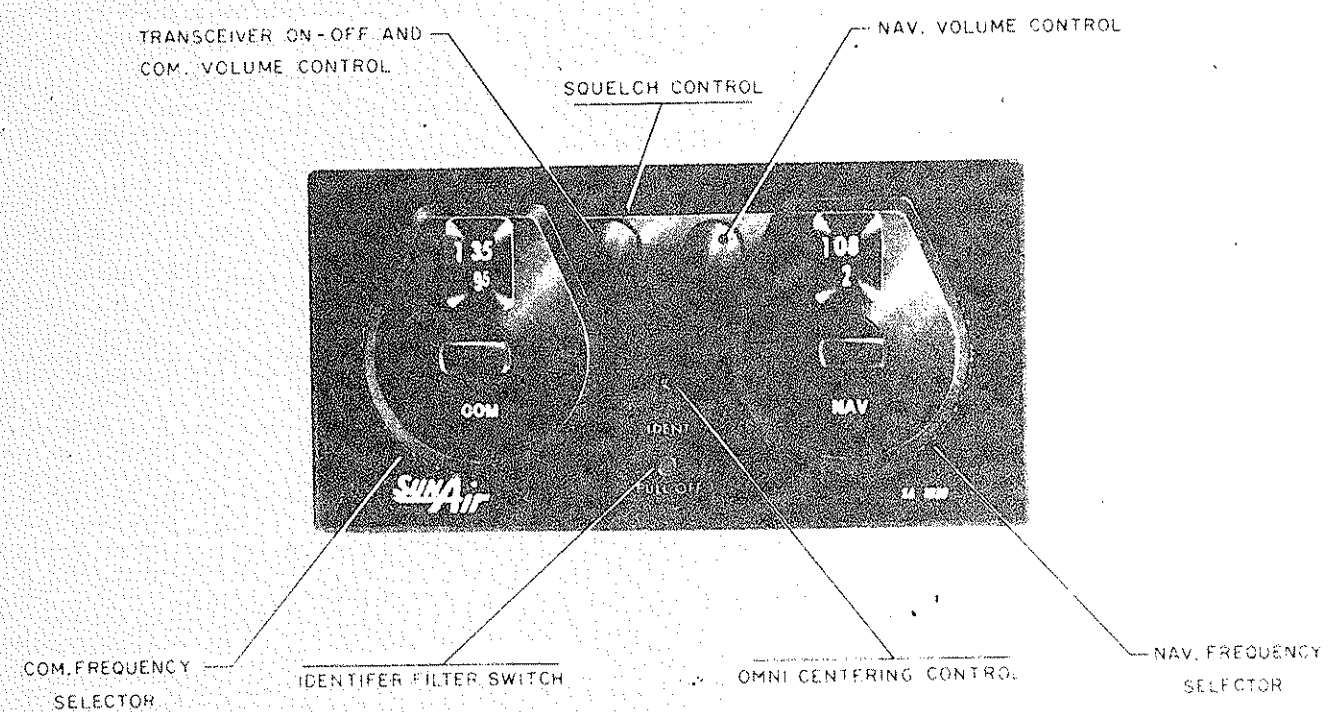
## CONTROLS

- 1 - 6 a. Frequency selector communications transceiver: On left hand side of the front panel.  
b. Frequency selector for navigation receiver: On right hand side of the front panel.  
c. Volume and squelch control for communications receiver: Small left hand knob and recessed knob on the front panel.  
d. Volume control for navigation receiver: Small right hand knob on the front panel.  
e. On-Off switch: Combined with communication receiver volume control.  
f. Identify filter: Push-pull switch in lower middle of the front panel.  
g. Omni centering control, screwdriver adjustment: In middle of the front panel.

## 1 - 7 UNITS AND ACCESSORIES SUPPLIED WITH TRANSCEIVER

- a. SunAir VHF Transceiver SA-1036, either domestic 360 channel communications transceiver or 380 channel communications transceiver as ordered.  
b. Modulator/power supply unit.  
    SAV 901, 14 volts  
    SAV 902, 28 volts  
c. Antenna connector, communications transceiver, SunAir part number 74403, one each.  
d. Connector, female, main cable, SunAir part number 74609, one each.  
e. Connector, male, modulator/power supply, SunAir part number 74427, one each.  
f. Connector, male, main cable, SunAir part number 74582.  
g. Antenna connector, navigation receiver, SunAir part number 74520, one each.  
h. Hood for connectors, SunAir part number 74623, two each.







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1 - 8 ACCESSORIES AVAILABLE BUT NOT SUPPLIED WITH TRANSCEIVER

- a. Converter indicator, model SA1-300, VOR/LOC
- b. Converter indicator, model SA1-400, VOR/LOC glide slope
- c. Receiver, glide slope, model SGR-20
- d. Main cable assembly to connect modulator/power supply unit  
with instrument panel unit.
  - Eight feet long, SunAir part number 94245
  - Sixteen feet long, SunAir part number 94180
- e. SunAir VHF navigation antenna, model SAN-200
- f. SunAir VHF communications antenna, model SAC-100
- g. Headphones, 500 ohms nominal, and/or loud speaker, 3 ohms  
nominal.
- h. Microphone, low impedance carbon, noise cancelling.

## SECTION II

### THEORY OF OPERATION

The 1036 Comm. and Nav. Systems consist of three separate units.

- (a) Comm. Transceiver and Nav. Receiver.
- (b) Power Supply SAV 901 (14v) or SAV 902 (28v) SA-1036
- (c) VOR/LOC Converter Indicator SA1-300

### COMM. TRANSCIVER AND NAV. RECEIVER

- 2 - 1 The SA-1036 proper consists of three sections; the Comm. Transmitter, the Comm. Receiver, the Nav. Receiver and a Crystal saving synthesizer circuit, forming part of three said sections.

### TRANSMITTER

- 2 - 2 The transmitter HF oscillator is a modified Colpitts oscillator employing an impedance inverter circuit so as to operate with series mode crystals making its performance more stable. The LF oscillator V13 is also of the modified Colpitts type, utilizing a nuvistor for better and cooler performance. Its output feeds the cathode of mixer tube  $\frac{1}{2}$ V14; the output of the HF oscillator feeds the grid of the mixer; the output of the mixer selects the sum of the two (2) frequencies and feeds it to the grid of the amplifier tube V15 which in turn feeds it to driver tube V16. The driver provides the necessary power to drive the final tube V17. The final tube V17 operating in Class C and well below its ratings will provide reliable power output up to the life of the tube. Its output tank circuit consists of a  $\pi$  configuration followed by a low pass filter to provide good harmonic and spurious rejection.

The SA-1036 features a crystal saving synthesizer circuit, whereas with proper mixing, 380 channels are covered in the Comm. Receiver and Transmitter sections and 100 channels in the Nav. Receiver sections, utilizing only a total of 62 crystals.

### COMM. RECEIVER

- 2 - 3 The Comm. signal (117.0 to 135.95 mc) is fed through a tuned circuit to grid of RF amplifier V7, output of amplifier is then fed to grid of 1st mixer through a double tuned transformer (3 tuned circuits are provided for good RF selectivity). The HF oscillator Q1 is fed also to grid of mixer tube V8, output of mixer @ 32.006 mc is then coupled through a double tuned transformer T6 to grid of 2nd mixer V9, which gets also injection of L.F. oscillator V13. Output of 2nd mixer at 3 mc gets



coupled through two (2) double tuned circuits to grid of 2nd IF (3MC) 1st amplifier, which in turn feeds 2nd amplifier  $\frac{1}{2}$  V11 through double tuned transformer T9. Output of 2nd IF amplifier gets fed through double tuned transformer T10 to detector Diode CR5. Diode CR6 in conjunction with R88, R89, R90, R91 and C111 forms a noise limiter; diode CR6 is reverse biased when noise spikes of short duration occur, consequently blocking audio signal path during these small intervals, this circuit is effective in preventing ignition type noise from getting into the speaker and/or earphones. Diode CR7 and associated circuitry acts like a squelch circuit, diode is biased on or off by a combination of signal level and potentiometer R81 settings; squelch is set to open when R81 is fully CCW and signal level is less than 30 uv and more than 5 uv into receiver input. AGC voltage is taken out of the same detector diode CR5 through filter composed of R84, R85, and C108; diode CR4 is used to delay AGC action so as to realize system maximum gain at low signal levels and keep a good S+N/N ratio.

2-4

#### NAV. RECEIVER

Theory of operation is similar to that of the Comm. Receiver up to the detector section, with the exception of range of frequencies (108.0 to 117.95). The Nav. Receiver utilizes a voltage doubler detector for large AGC dynamic range. It also employs a noise limiter consisting of diode CR2 and associated circuitry and a delay AGC consisting of diode CR3 and Resistor R26 and R27.

The AGC employs extra filtering so as to completely remove any 30 cps from the AGC line. The output of the detector is fed through a variable  $5^\circ$  phase shifter into cathode follower  $\frac{1}{2}$  V11 and to the VOR/LOC converter.

Detector output is also coupled together with the audio coming from the Comm. Receiver to an adding network consisting of R39, R40, R41 and R42 which feeds audio amplifier tube  $\frac{1}{2}$  V4 whose output goes out to power supply unit.

VOR/LOC CONVERTER

The RF carrier of a selected VOR frequency is modulated by a 9960 cps sub-carrier signal which in turn, is modulated by a 30 cps FM signal; at the same time the carrier is AM modulated at a 30 cps rate. The NAV. signal output out of the receiver gets amplified by Q1 and separated into its amplitude and frequency modulated components. High pass filter composed of C5, R43 and R44 selects the 9960 cps component and feeds to amplifier-limiter Q6, which in turn feeds amplifier-limiter Q7. Signal is applied in turn to slope detector stage Q8 and CR15; output is then applied to emitter follower stage Q9, which drives the stator of 30 cps resolver. The output of resolver two rotor windings gets added through a 90° phase circuit composed of C36, R60 and R61 and fed into a booth-strapped emitter follower Q10, which in turn feeds 30 cps selective feedback amplifier composed of Q11 and Q12. Its output is then applied to two (2) discriminator circuits, the RT-LT and To-From respectively. The AM component coming out of Q1 gets amplified and selected through 30 cps feedback amplifier composed of Q2 and Q3 whose output feeds one branch of the RT-LT discriminator circuit. The output of Q2-Q3 amplifier also feeds a 90° phase shifter network and is coupled to emitter follower stage Q4 which feeds signal to branch of To-From discriminator circuit.

The RT-LT and To-From phase discriminator circuits compare the phase of the 30 cps signal derived from the variable phase channel to that of the 30 cps signal derived from the reference channel and modifies them to a DC voltage proportional to the displacement to or from the station. The resultant DC component drives the RT-LT needle and the To-From flags.

### SECTION III

#### ALIGNMENT PROCEDURE

##### MODEL SA 1036 TRANSCEIVER

#### 3-2 GENERAL

PURPOSE: The following procedure is intended as a guide to the proper alignment and adjustment of the unit.

#### 3-2 EQUIPMENT REQUIRED

VTVM	H-P 412A	
VHF Signal Generator	H-P 608D	
D.C. Power Supply	H-P 712B	
D.C. Power Supply	H-P 814A	
R.F. Wattmeter	BIRD 611	
A.F. VTVM	H-P 400H	
Sweep Generator	KAY 932	
Oscilloscope	H-P 120B	
Signal Generator & Counter	H-P 606A ) H-P 5253B)	or crystal marker generator test set

#### 3-3 TEST SET UP

Connect equipment as shown in Fig. 3.1 and allow 10 minutes warmup time. A+ supply set at 13.75 VDC or 27.5 VDC and low B+ set at 250 VDC.

#### 3-4 ALIGNMENT PROCEDURE

##### 3.4.1 KC Oscillator: Com.

3.4.1.1 Set the fractional megacycle selector dial to the ".5" position (Com Section).

3.4.1.2 While observing the DC voltage at pin 8, V13, adjust L16 to produce a maximum voltage. The adjustment of L16 shall begin at the minimum inductance position of the core.

##### 3.4.2 KC Oscillator - NAV

3.4.2.1 Set the fractional megacycle selector dial (NAV Section) to the ".5" position.

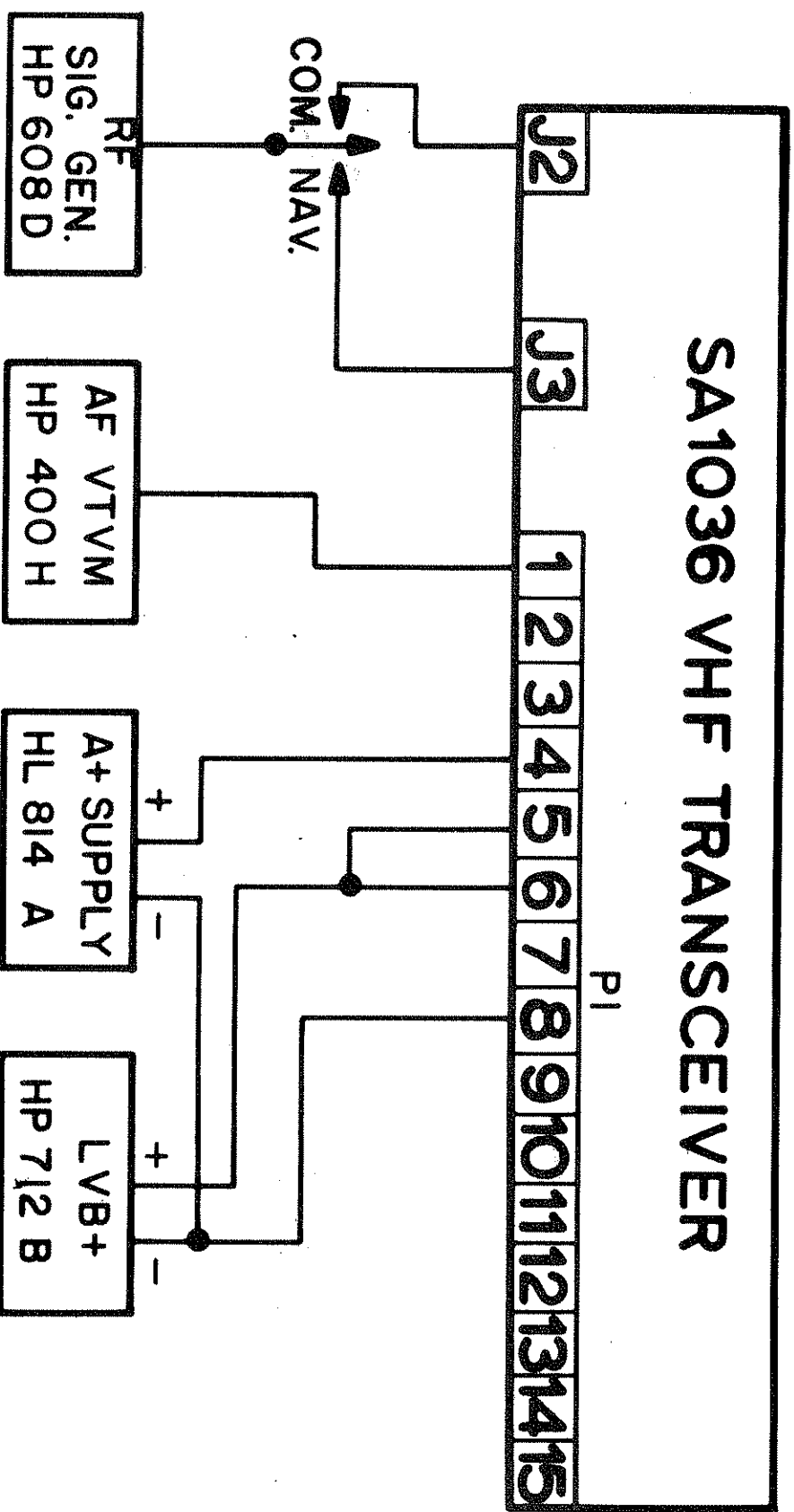


FIG. 3.1 TEST SET OPERATION

3.4.2.2 While observing the DC voltage at pin 8 V5, adjust L9 to produce a maximum voltage. The adjustment of L9 shall begin at the minimum inductance position of the core.

3.4.3 MC Oscillator - Com.

3.4.3.1 Set the megacycle and fractional megacycle selector dials to 118 and .5 respectively (Com. Section).

3.4.3.2 Observe the DC voltage at the collector of Q1 and adjust L16 for a minimum voltage. Begin the adjustment of L16 with the core in the minimum inductance position.

3.4.4 MC Oscillator - NAV

3.4.4.1 Set the megacycle and fractional megacycle selector dials to "117" and ".5" respectively.

3.4.4.2 Observe the DC Voltage of pin 2 V3, and adjust L5 for maximum voltage. Begin the adjustment of L5 with the core in the minimum inductance position.

3.4.5 IF Amplifier (Com.)

Connect required equipment as shown in Fig. 3.2.

3.4.5.1 Connect Oscilloscope Signal lead to junction of R88 and R89, and adjust width of horizontal display to cover graticulated area of screen. Set marker to 3 MC crystal unit. Connect Sweep Generator to pin 2 of T10, and adjust Sweep center frequency to 3 MC by slowly turning sweep generator frequency control until marker becomes visible in the middle of the oscilloscope screen.

3.4.5.2 Connect Sweep Generator Signal lead to pin 2 of V11.

3.4.5.3 Slowly adjust top and bottom core of T10 until no further improvement can be obtained by comparing display scope with Fig. 3.3.

- 3.4.5.4 Connect signal lead from Sweep Generator to pin 1, V10. Connect Oscilloscope signal lead to Pin 7, V11. Connect 0.01 mf capacitor from pin 6, V11 to ground.
- 3.4.5.5 Slowly adjust top and bottom core of T9 filter unit until no further improvement can be obtained by comparing scope display with Fig. 3.3.
- 3.4.5.6 Remove .01 mf capacitor from pin 6, V11. Connect oscilloscope signal lead to junction R88 and R89. Check overall display and compare it with Fig. 3.4. A slight adjustment of T9 may be needed.
- 3.4.5.7 Connect signal lead from sweep generator to pin 1, V9. Connect Oscilloscope signal lead to junction R88 and R89.
- 3.4.5.8 Adjust top core of T7 and bottom core of T8 simultaneously, keeping the center marker in the very center of the display. Then adjust the bottom core of T7 and top core of T8 simultaneously, still keeping the center marker in the middle of the display, until no further improvement of display can be obtained by comparing scope display with Fig. 3.5.

#### 3.4.6 I.F. Amplification NAV

Connect required equipment as shown in Fig. 3.2.

- 3.4.6.1 Connect Oscilloscope signal lead to junction of R23 and R22 and adjust width of horizontal display to cover graticulated area of screen. Set marker to 3,561.2 KC crystal unit. Connect Sweep generator signal lead to pin 6 of T5. Slowly tune the Sweep generator frequency control about 3.5 MC and look for the marker pip. Center the marker pip in the middle of the scope screen.
- 3.4.6.2 Connect Sweep generator signal lead to pin 2 of V6.
- 3.4.6.3 Slowly adjust top and bottom core of T5 until no further improvement can be obtained by comparing scope display with Fig. 3.6.

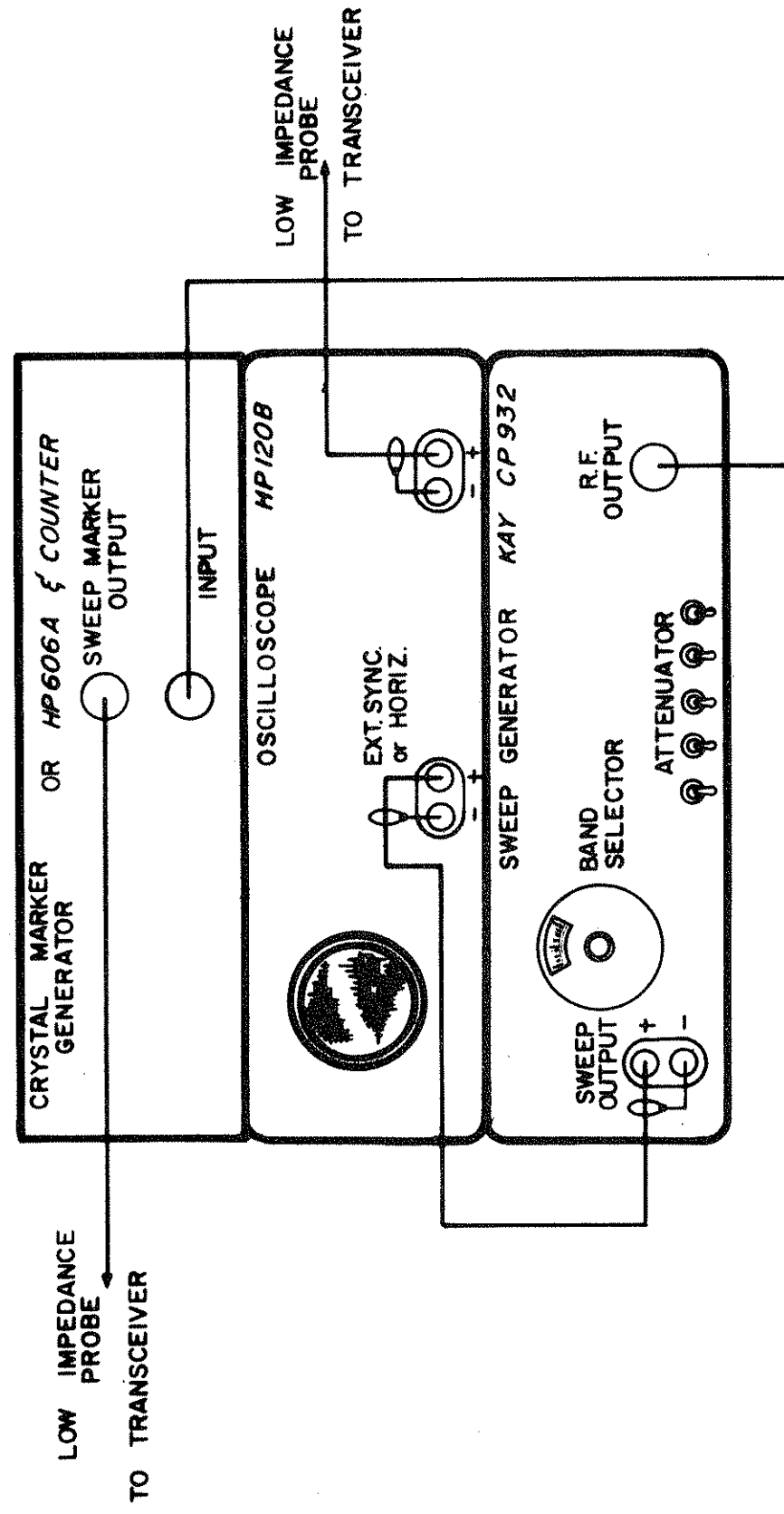
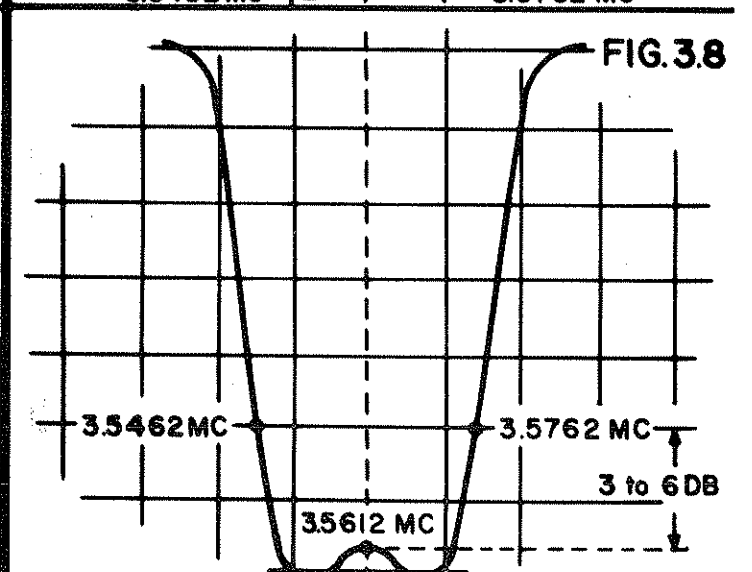
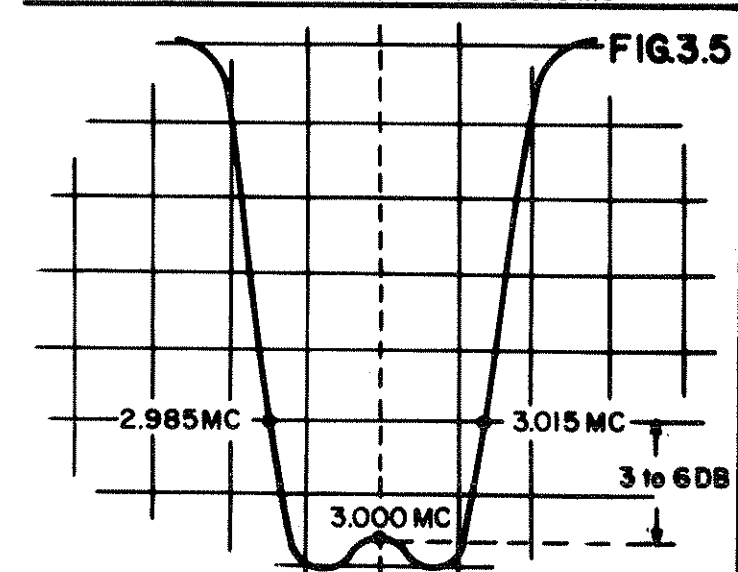
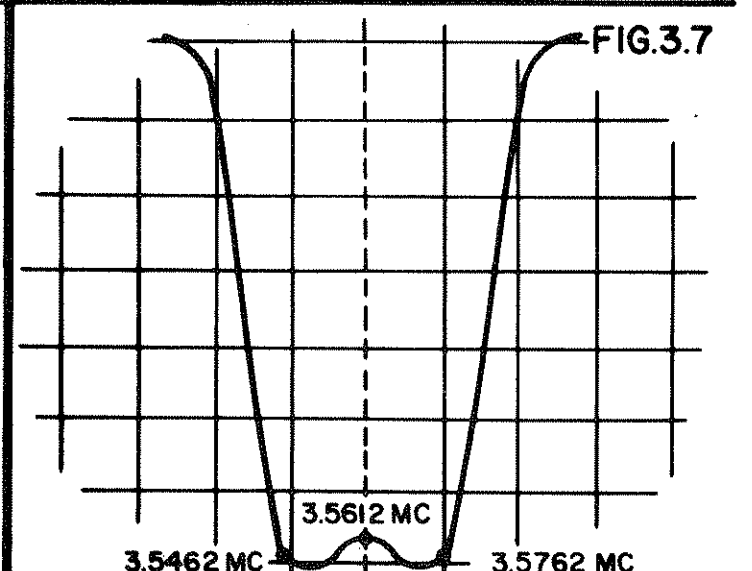
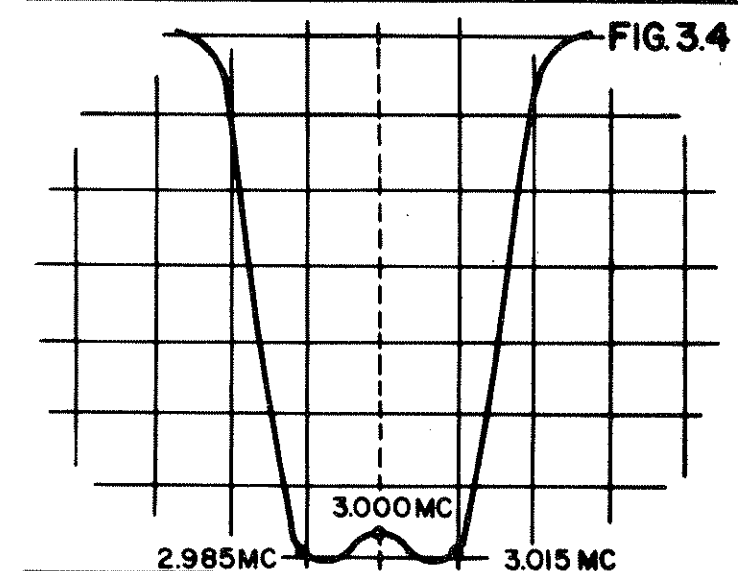
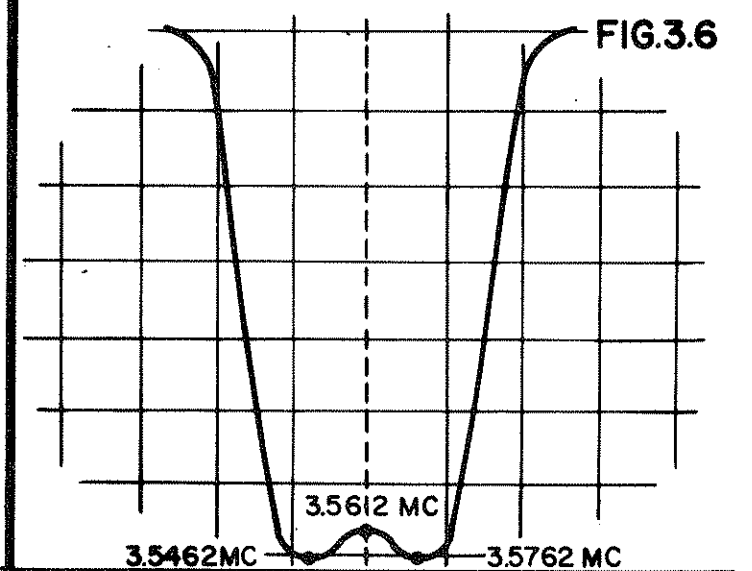
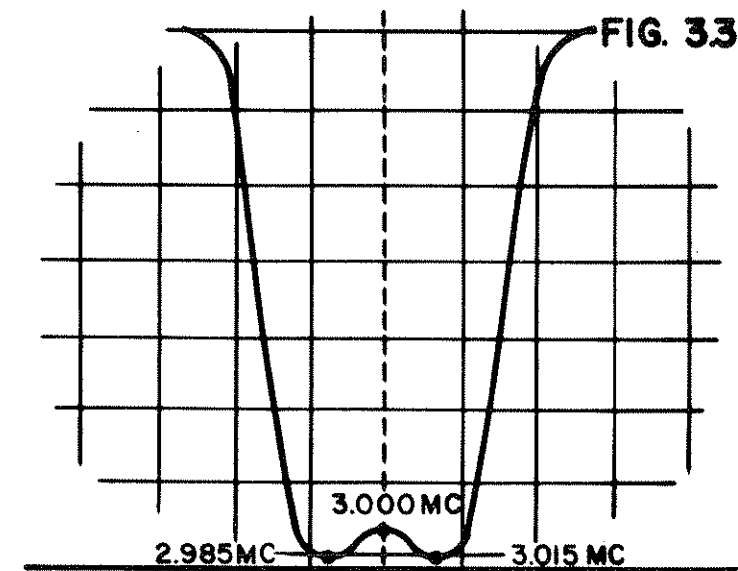


FIG. 3.2 TEST SET OPERATION

COMMUNICATION RECEIVER  
IF RESPONSE

NAVIGATION RECEIVER  
IF RESPONSE





- 3.4.6.4 Connect signal lead of Sweep generator of pin 2, V5. Connect Oscilloscope signal lead to pin 3, V6. Connect 0.01 mf capacitor from pin 7 of V6 to ground.
- 3.4.6.5 Slowly adjust top and bottom core of T4 filter unit until no further improvement can be obtained by comparing scope display with Fig.3.6.
- 3.4.6.6 Remove .01 mf capacitor from pin 7, V5, connect oscilloscope signal lead to junction R22 and R23. Check overall display and compare it with Fig.3.7. A slight adjustment may be needed of T4.
- 3.4.6.7 Connect signal lead from Sweep generator to pin 2, V4. Connect Oscilloscope signal lead to junction of R22 and R23.
- 3.4.6.8 Adjust top and bottom core of T3 simultaneously, keeping the 3,561.2 KC marker in the center of display, until no further improvement can be obtained. Adjust top and bottom core of T2, until no further improvement can be obtained. Adjust top core of T2 and bottom core of T3 simultaneously, keeping the center marker in the very center of display. Then adjust the bottom core of T2 and top core of T3 simultaneously, still keeping the center marker in the middle of the display, until no further improvement of display can be obtained by comparing scope display with Fig.3.8.

3.4.7 32 MC I.F. Amp. (Com.) (Refer to Fig. 3.1)

Set megacycle selector dial (Comm.) to 125 MC

- 3.4.7.1 Set fractional megacycle selector dial (Com.) to ".10". Turn volume and squelch control fully clockwise.
- 3.4.7.2 Apply to J2 a 125.1 MC signal, modulated 30%, at 1000 cps, and observe the AC RMS voltage at pin 1 of P1.

- 3.4.7.3 Adjust the top core of T6 to produce a maximum indication in the AF VTVM. Reduction of the 125.1 MC signal level may be required in order to be below the AGC threshold.
- 3.4.7.4 Set fractional megacycle selector to ".85".
- 3.4.7.5 Change generator frequency to a 125.85 MC signal, modulated at 30% at 1000 cps. and observe the AC RMS voltage at pin 1 of P1.
- 3.4.7.6 Adjust the bottom core to T6 to produce a maximum indication in the AF VTVM. Reduction of the 125.85 MC signal level may be required in order to be below the AGC threshold.
- 3.4.7.7 Repeat steps 3.4.7.1 through 3.4.7.6 until no further improvement of voltage output can be obtained at pin 1 of P1.
- 3.4.8 30 MC I.F. Amp (NAV)
  - Set megacycle selector dial to 112 MC.
  - 3.4.8.1 Set fractional megacycle selector dial (NAV) to ".10". Turn volume control fully clockwise.
  - 3.4.8.2 Apply to J3 a 112.1 MC signal, modulated 30% at 1000 cps. and observe the AC RMS voltage at pin 1 of P1.
  - 3.4.8.3 Adjust the top core of T1 to produce a maximum indication in the AF VTVM. Reduction of the 112.1 MC signal level may be required in order to be below the AGC threshold.
  - 3.4.8.4 Set fractional megacycle selector dial to ".80".
  - 3.4.8.5 Change generator frequency to a 112.8 MC signal modulated 30% to 1000 cps and observe the AC RMS voltage at pin 1 of P1.
  - 3.4.8.6 Adjust the bottom core of T1 to produce a maximum indication in the AF VTVM. Reduction of the 112.8 MC signal level may be required in order to be below the AGC threshold.
  - 3.4.8.7 Repeat steps 3.4.8.1 through 3.4.8.6 until no further improvement of voltage output can be obtained at pin 1 of P1.

#### 3.4.9 R.F. AMP. Com Section

- 3.4.9.1 Set the megacycle and fractional megacycle selector dial to "135" and ".5" respectively. Turn Com. volume and squelch control fully clockwise.
- 3.4.9.2 Apply a "135.5" MC signal modulated 30% at 1000 cps to the antenna input J2 and observe the AC RMS voltage at pin 1 of P1.
- 3.4.9.3 Adjust, in turn, L20, L19 and L18 to produce a maximum voltage at pin 1 of P1. Reduction of the 135.5 signal level may be required in order to be below the AGC threshold.
- 3.4.9.4 Repeat procedure 3.4.9.3 until no further improvement can be obtained.

#### 3.4.10 RF Amp. Nav. Section

- 3.4.10.1 Set the megacycle and fractional megacycle selector dial to "117" and ".5" respectively. Turn Nav. Volume control fully clockwise.
- 3.4.10.2 Apply a "117.5" MC signal modulated 30% at 1000 cps to the antenna input J3 and observe the AC RMS voltage at pin 1 of P1.
- 3.4.10.3 Adjust, in turn, L3, L2 and L1 to produce a maximum voltage at pin of P1. Reduction of the 117.5 MC signal level may be required in order to be below the AGC threshold.
- 3.4.10.4 Repeat procedure 3.4.10.3 until no further improvement can be obtained.

#### 3.4.11 Com. Squelch Control

- 3.4.11.1 Set the megacycle and fractional megacycle selector dials to any position between 118.00 and 135.95 MC.
- 3.4.11.2 Adjust the squelch control for maximum squelch and apply an R.F. signal to the antenna input terminal J2.

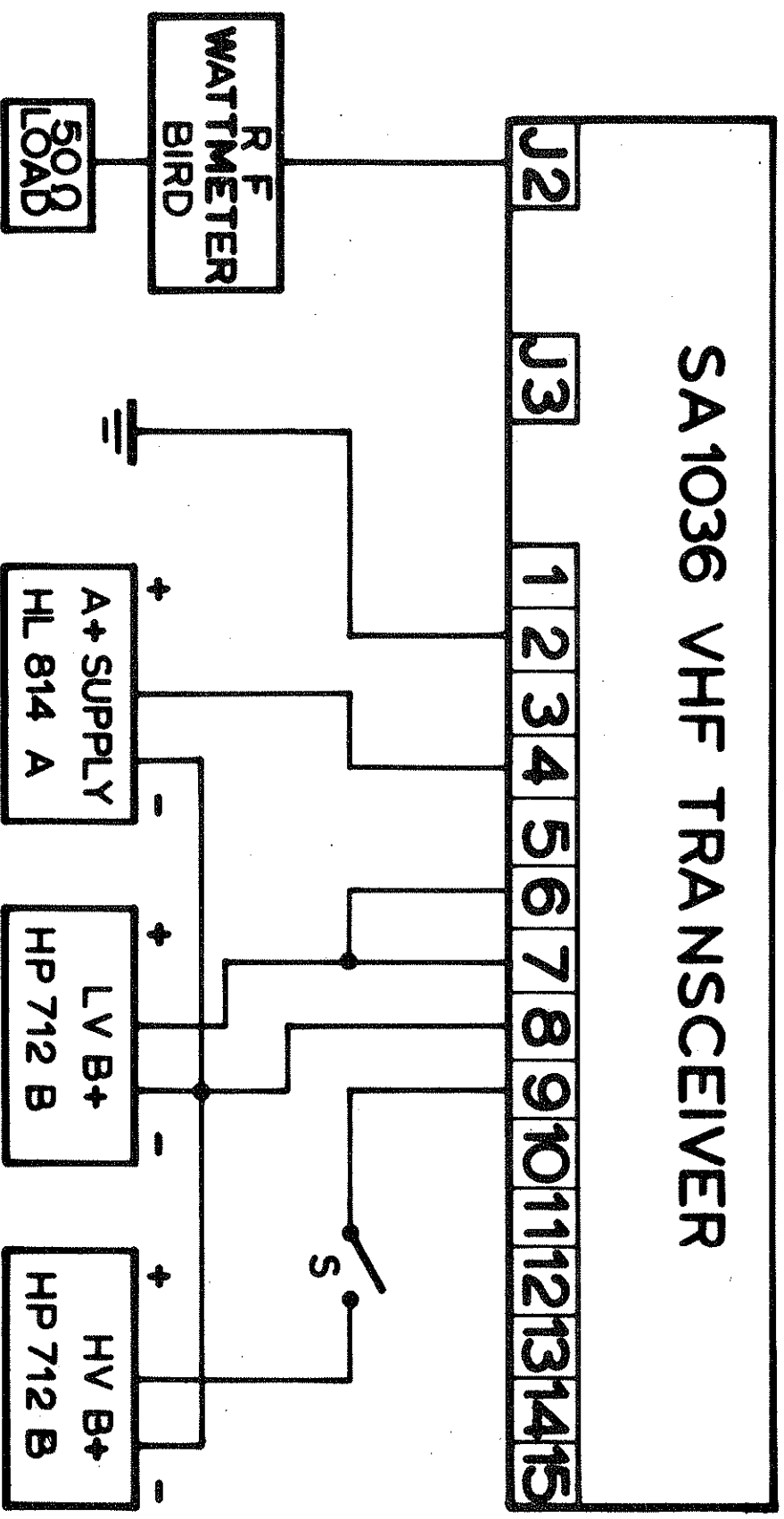


FIG. 3.9 TEST SET OPERATION

3.4.11.3 Squelch should open with an input signal between 10 to 30 uv.

3.4.12 TRANSMITTER With the equipment operating in transmit mode.

3.4.12.1 Connect equipment as shown in Fig. 3.9. High B+ set at 500v. Do not close switch S.

3.4.12.2 Set the megacycle and fractional megacycle selector dials to 135 and .50 respectively.

3.4.12.3 Observe the DC voltage at pin 1 of V14 and adjust L22 for a maximum voltage. Begin the adjustment of L22 with the minimum inductance position.

3.4.12.4 Observe the negative DC voltage at pin 2 of V16 with the meter probe decoupled by a 1 meg ohm resistor and adjust L25 and L26 for maximum negative voltage.

3.4.12.5 Set the megacycle and fractional megacycle selector dial to 118 and .5 respectively.

3.4.12.6 Observe the negative DC voltage at pin 2 of V16 with the meter probe decoupled and adjust C133 for maximum negative voltage.

3.4.12.7 Repeat steps 3.4.12.4 through 3.4.12.6 until no further improvement can be obtained.

3.4.12.8 Set the megacycle and fractional megacycle selector dial to 135 and .50 respectively.  
Close Switch S.

3.4.12.9 Observe the negative DC voltage at the junction of L31 and R104 with the meter probe decoupled, and adjust L29 for maximum negative voltage. Adjust C139 for maximum output power.

3.4.12.10 Set the megacycle and fractional megacycle selector dial to 118 and .50 respectively.

3.4.12.11 Observe the negative DC voltage at the junction of L31 and R104 with the meter probe decoupled, and adjust C134 for maximum negative voltage. Adjust C142 for maximum output power.

3.4.12.12 Repeat steps 3.4.12.8 through 3.4.12.11 until no further improvement can be obtained.



# SECTION IV

## TROUBLESHOOTING

TROUBLE	CAUSE	REMEDY
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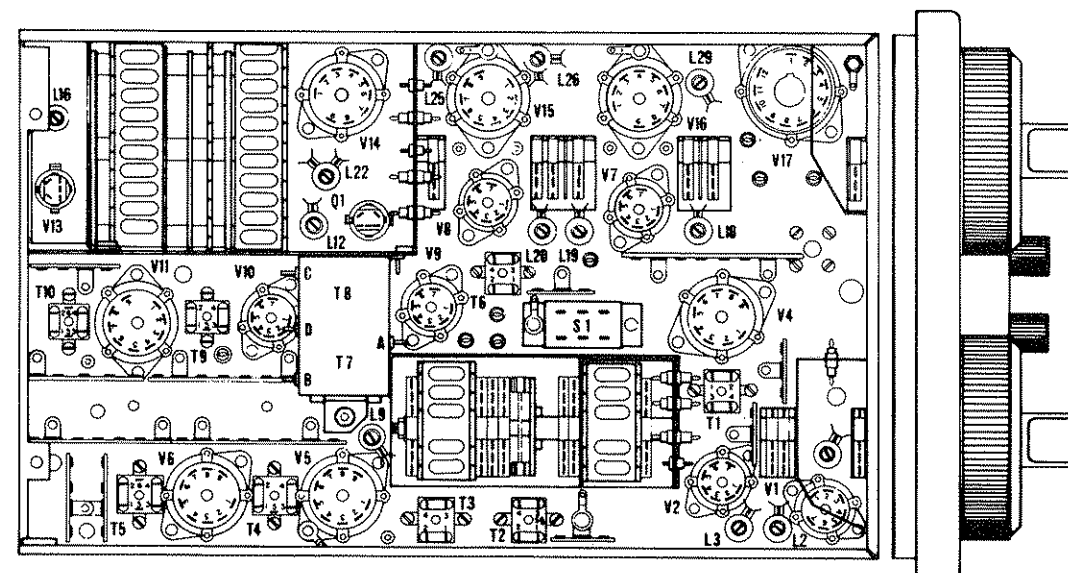
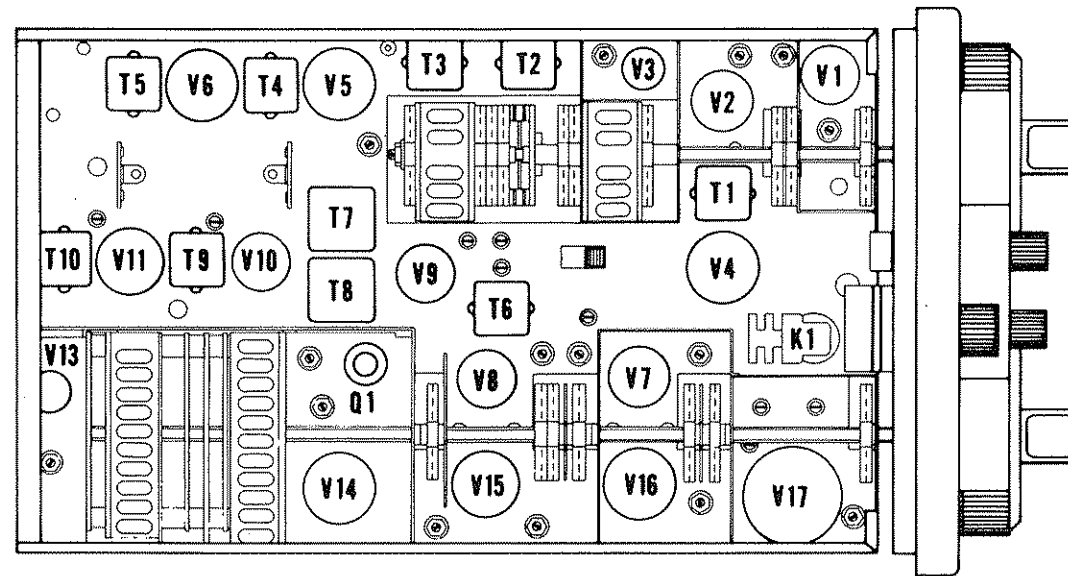
### SA-1036 TRANSCEIVER

4-1

1	No audio	(a) No filament voltage	1-Check Switch S1 2-Check for open wires on filament circuitry.
2	Audio in Nav. Receiver but no audio in some channel of Comm. Receiver.	(a) Comm. MC Oscillator not operating in all channels.	1-Tune L12 2-Defective Crystal, replace if necessary.
3	Audio in Nav. Receiver but no audio in Comm. Receiver thru all channels.	(a) Component failure in Comm. Receiver Section.	1-Use standard trouble shooting technique; check B+, filament voltages, proper voltages at pins of tubes, check volume control pot, replace tubes if necessary.
4	Audio in Comm. Receiver, but no audio in Nav. receiver thru all channels.	Same as 3	Same as 3
5	Audio in Comm. Receiver but no Audio in Some channels of Nav. Receiver	(a) Nav. MC Oscillator not operating in all channels.	1-Tune L5. 2-Defective Crystal, replace if necessary. 3-Weak V3 tube.
6	No Transmitter Power Output	(a) No high B+ (b) No low B+ (c) Bad Final Tube (d) Defective Ant. Relay (e) Component Failure	1-See power supply trouble shooting chart. 1-Same as above 1-Replace V17 1-Check relay K1 for open winding or bad contacts. 1-Use standard trouble shooting procedure.
7	No Transmitter Power Output in some channels.	(a) Comm. MC Oscillator	1-Tune L22 2-Check for defective crystals, replace if necessary. 3-Weak V14 Tube

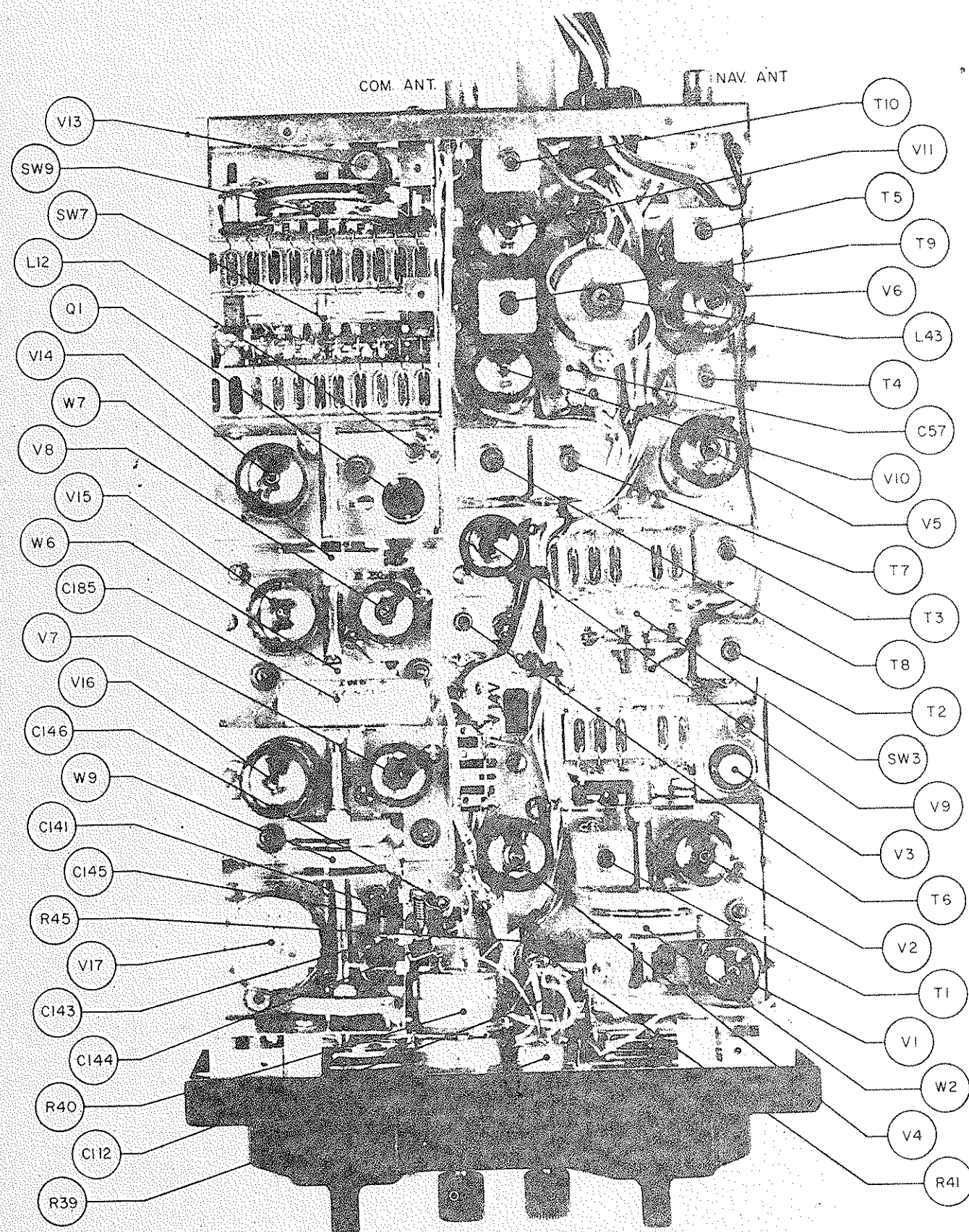
TROUBLE		CAUSE	REMEDY
8	Low Transmitter Power Output	(b) Comm. fractional MC, oscillator.	1-Tune L16 2-Check for defective crystals and replace. 3-Weak V13 Tube.
		(a) Misalignment (b) Weak final Tube (c) Weak Driver (d) No DC bias at grid of final	1-Align Transmitter 1-Replace V17 if necessary. 1-Replace V16 if necessary 1-See power supply trouble shooting chart.
VOR/LOC CONVERTER			
SAI-300, IN SYSTEM			
1	Audio but no meter indication when in proper channel	(a) Failure of SAI-300	1-Check for open wires to SAI-300 2-Return unit to factory.





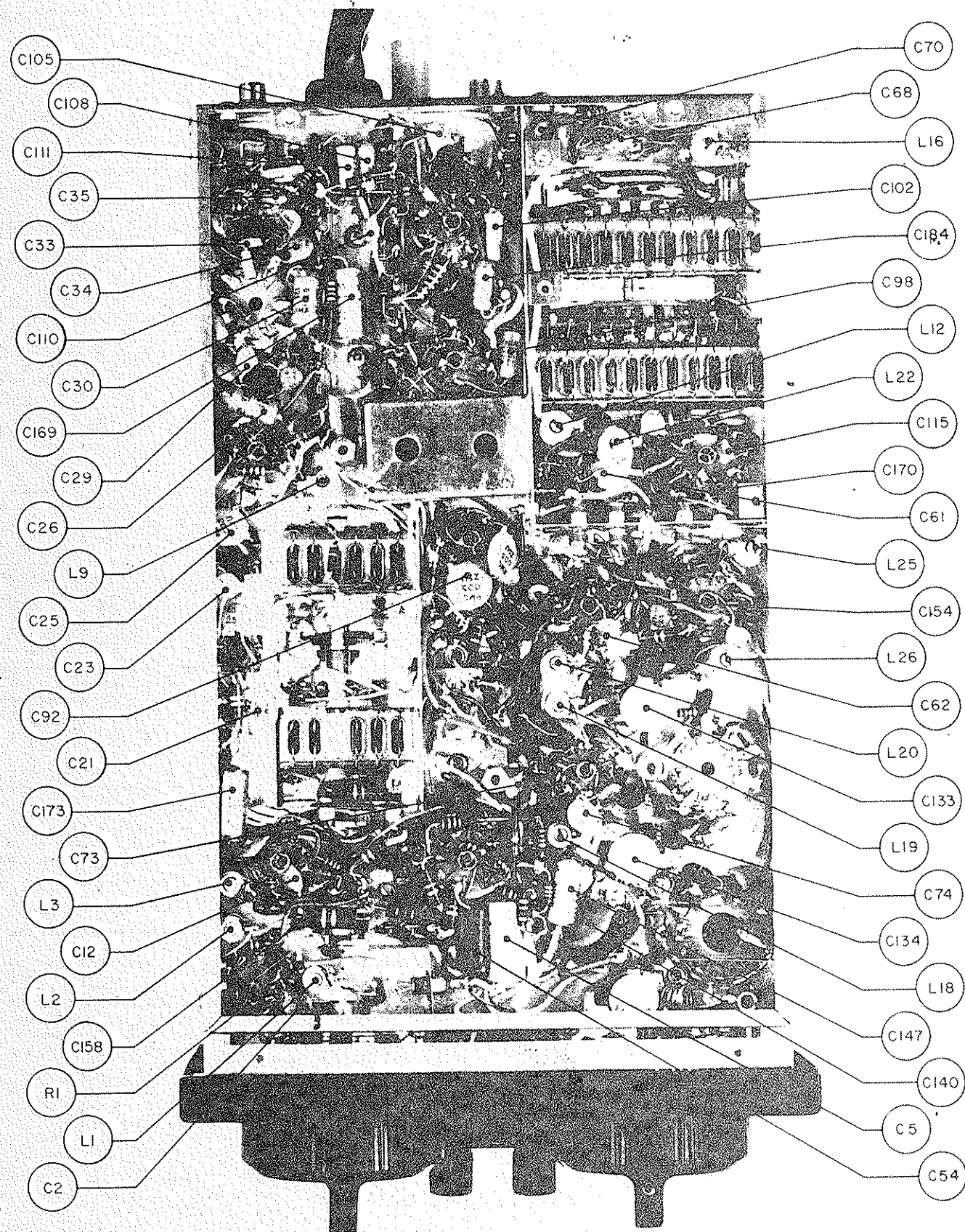
COMPONENTS LAYOUT SA 1036  
TOP AND BOTTOM VIEW



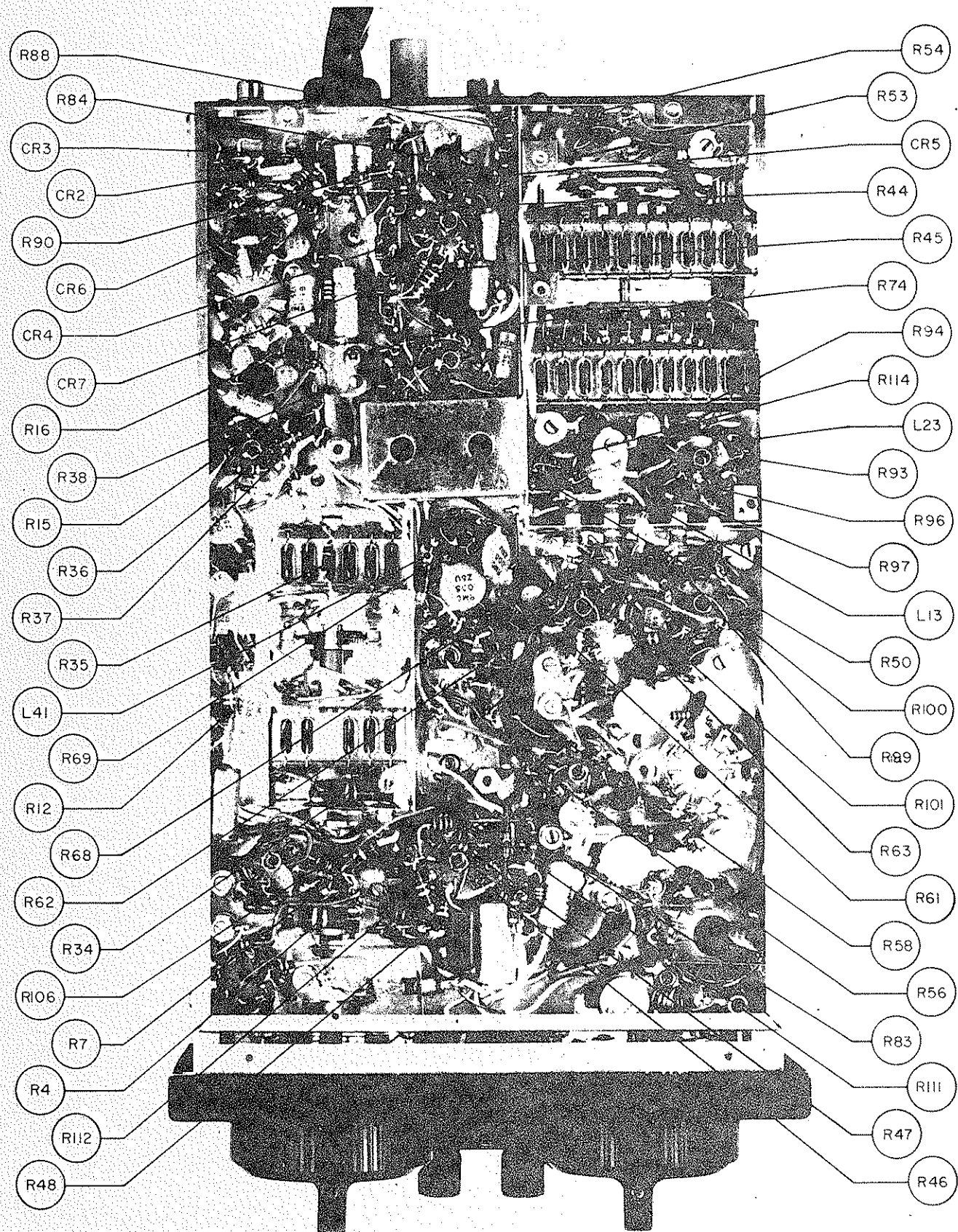


SA 1036 TOP VIEW



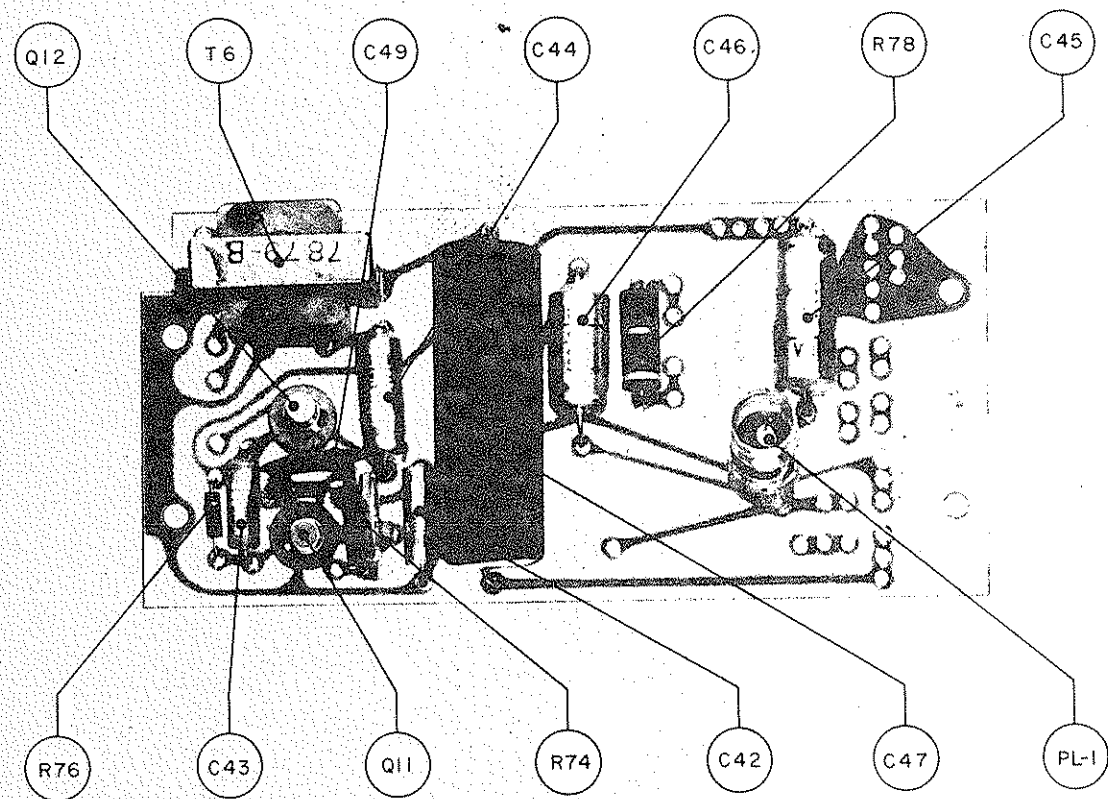




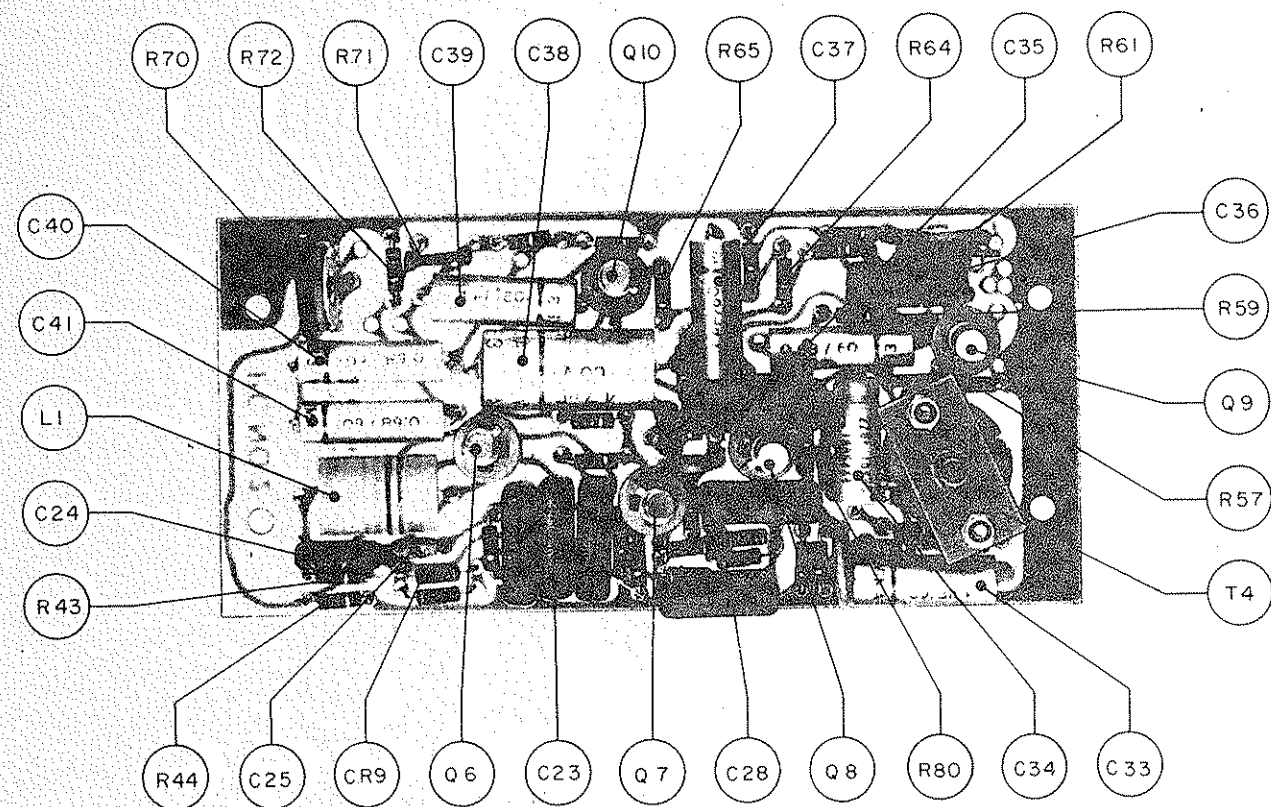






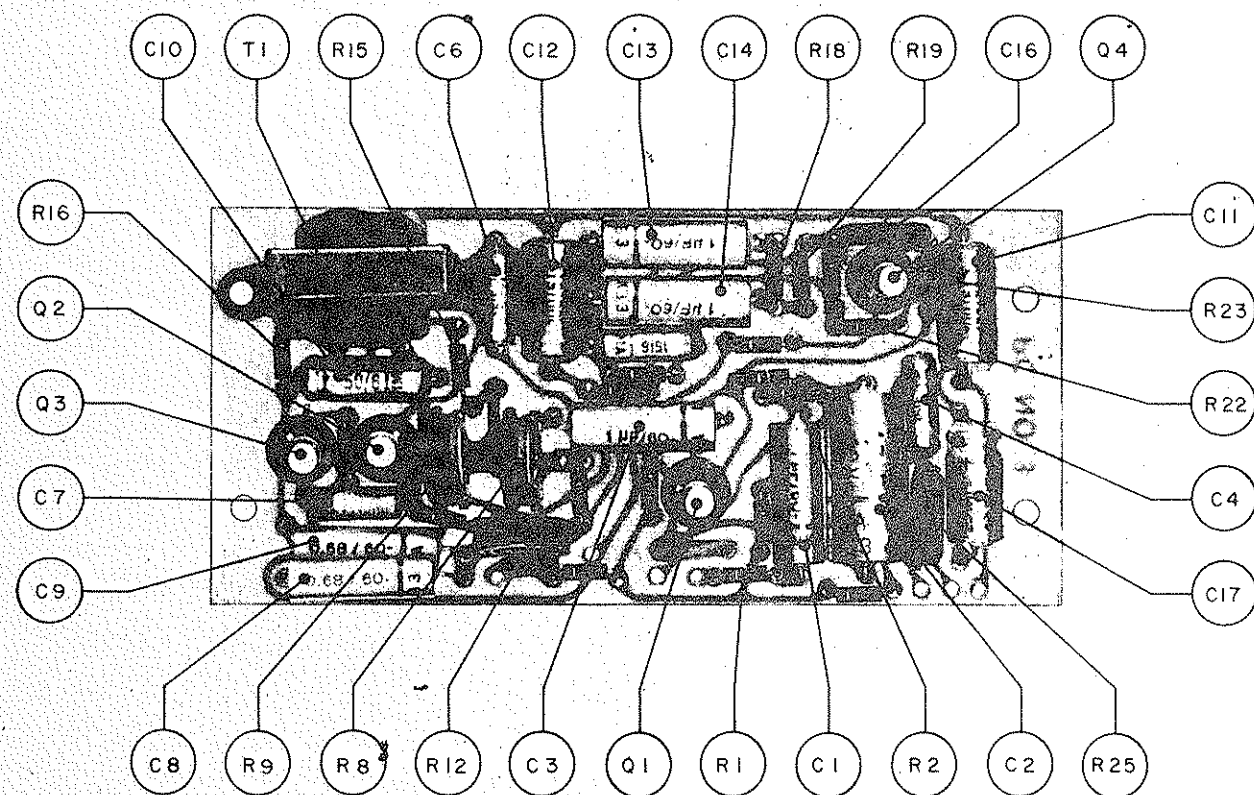


SAI-00 PRINTED CIRCUIT BOARD NO. 1

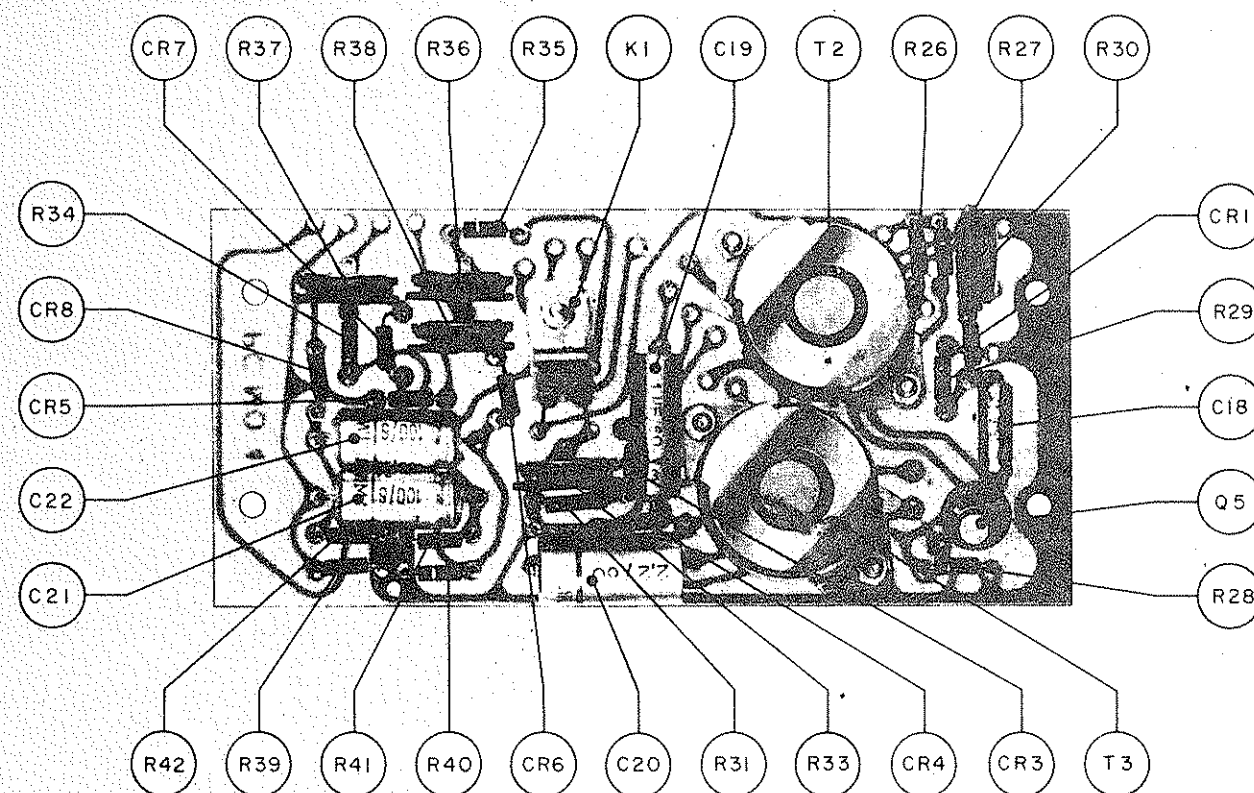


SAI-00 PRINTED CIRCUIT BOARD NO. 2





SAI-300 PRINTED CIRCUIT BOARD NO. 3



SAI-300 PRINTED CIRCUIT BOARD NO. 4



## SECTION V

### INSTALLATION

#### 5 - 1 MECHANICAL INSTALLATION

The mounting of the instrument panel unit is accomplished by mounting the transceiver mounting frame, supplied as a standard accessory, on the mounting brackets on the sides of the transceiver cut-out in the instrument panel. The mounting brackets are fabricated by the installer, See Figure 5-1 page 32, for dimensions.

The SA1-300 is designed to mount in the instrument panel separately from the transceiver and a location best suited for good visual display. See Figure 5-2 page 33 for mounting dimension.

#### 5 - 2 ELECTRICAL INSTALLATION

The connections between the panel-mounted unit and the remote-mounted modulator/power supply unit are made with the main cable assembly. In addition, the main cable assembly provides the connections from the panel-mounted unit to the VOR/LOC converter unit and also to the ILS converter indicator unit. All ground connections needed for the equipment are provided within the main cable assemblies.

The antenna connections are fabricated after all units, panel-mounted transceiver, remote-mounted modulator/power supply and the communications and navigation antenna have been installed. The navigation antennas are provided with antenna cables, having a length sufficient for all cases. These cables should be cut to their required length and equipped with the antenna connectors supplied as standard accessories. See 5-3, page 35.

- 5 - 3 **WARNING:** The SA-1036 Transceiver is prepared for operation on 14 and 28 volt systems. The change of system voltage requires setting of the filament group switch, located on the transceiver chassis and marked "14v - 28v". In addition, the dial illumination circuit requires the removal of the jumper across the dropping resistor for 28 volt operation. The jumper is located above the filament group switch. Failure to follow these procedures may result in the loss of vacuum tubes and dial bulbs.

#### CONVERTER INDICATORS SA1-300 and SA1-400

- 5 - 4 The converter indicators are designed for 14 and 28 volt opera-



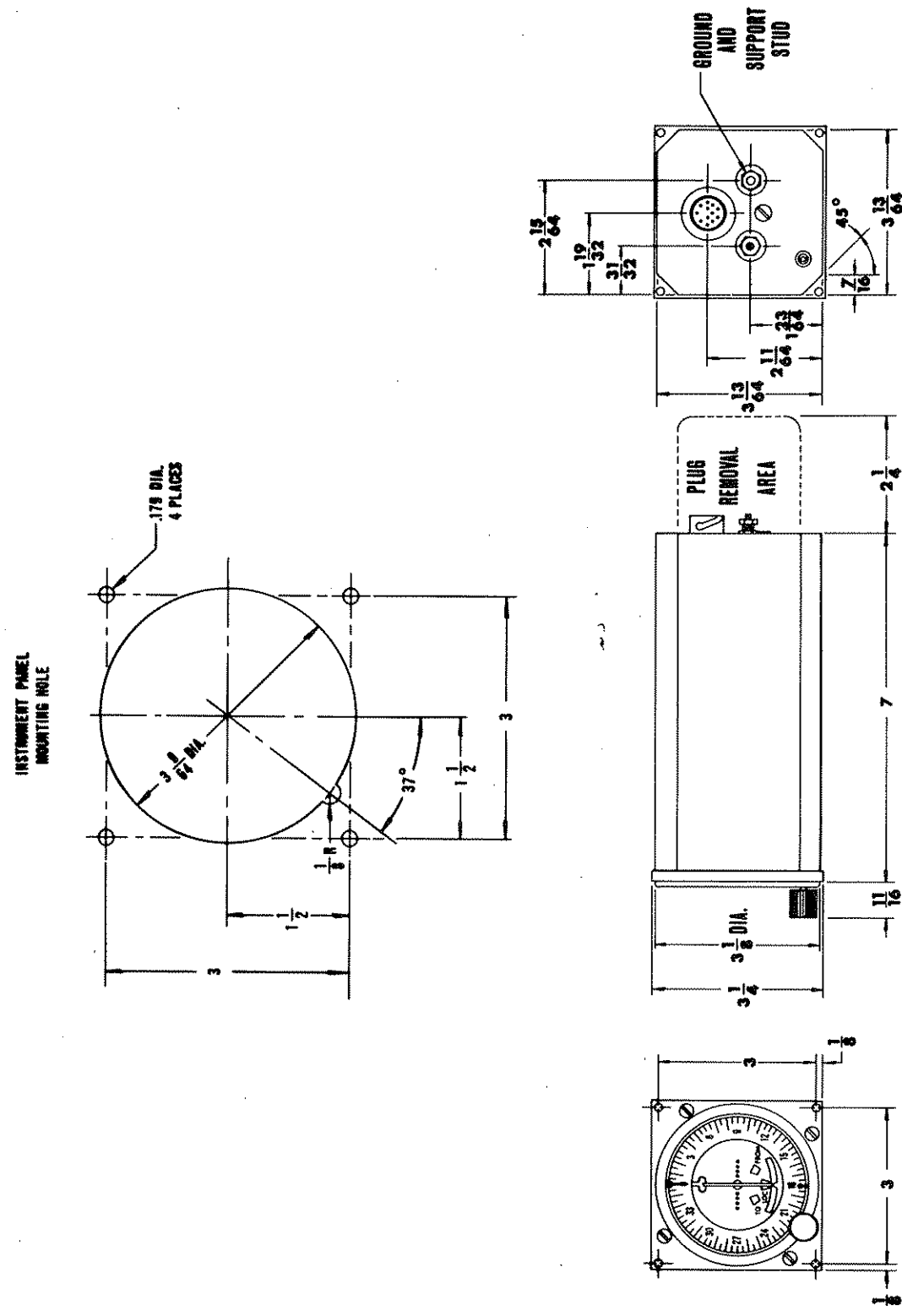


FIG. 5.2 SAI 300 INSTALLATION DIMENSIONS AND PANEL CUT OUT

tion and require no internal change of circuitry. When choosing between the two systems, refer to Figure 5-4, page 35, for the proper cable terminations on P101. It will be noted on plug P101 that pin N is used only on 14 volt systems and pin A is used only on 28 volt systems. Additionally, pin M receives a ground from pin D when used on the 14 volt system.



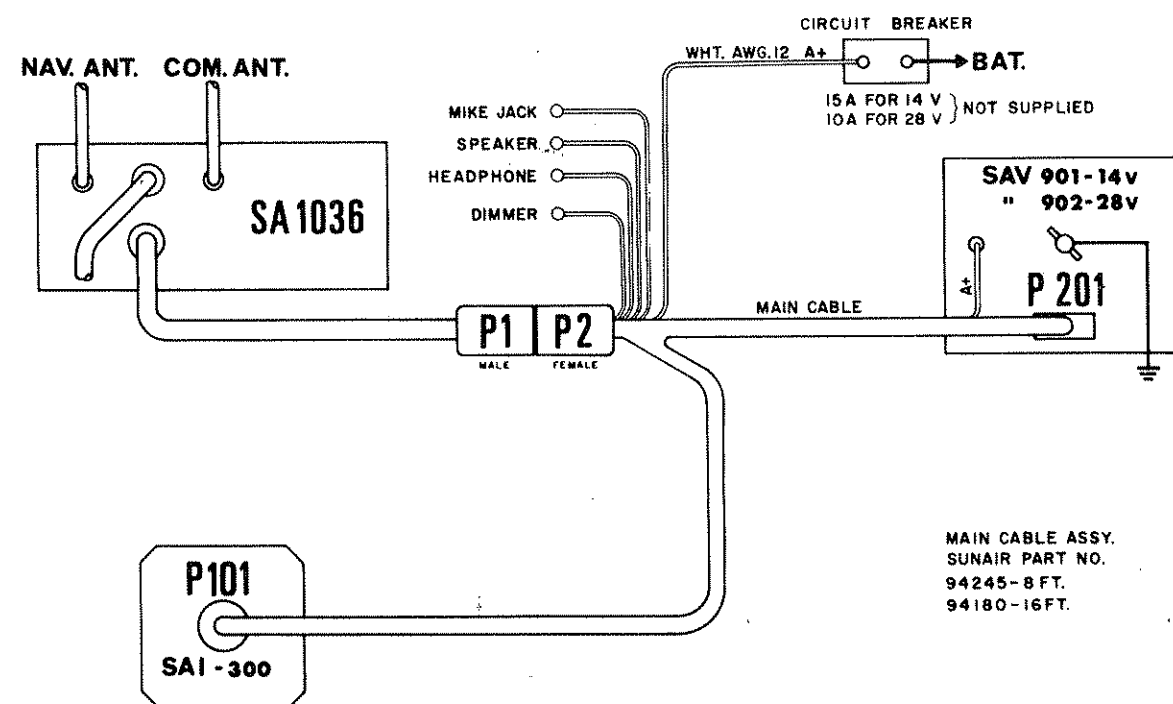
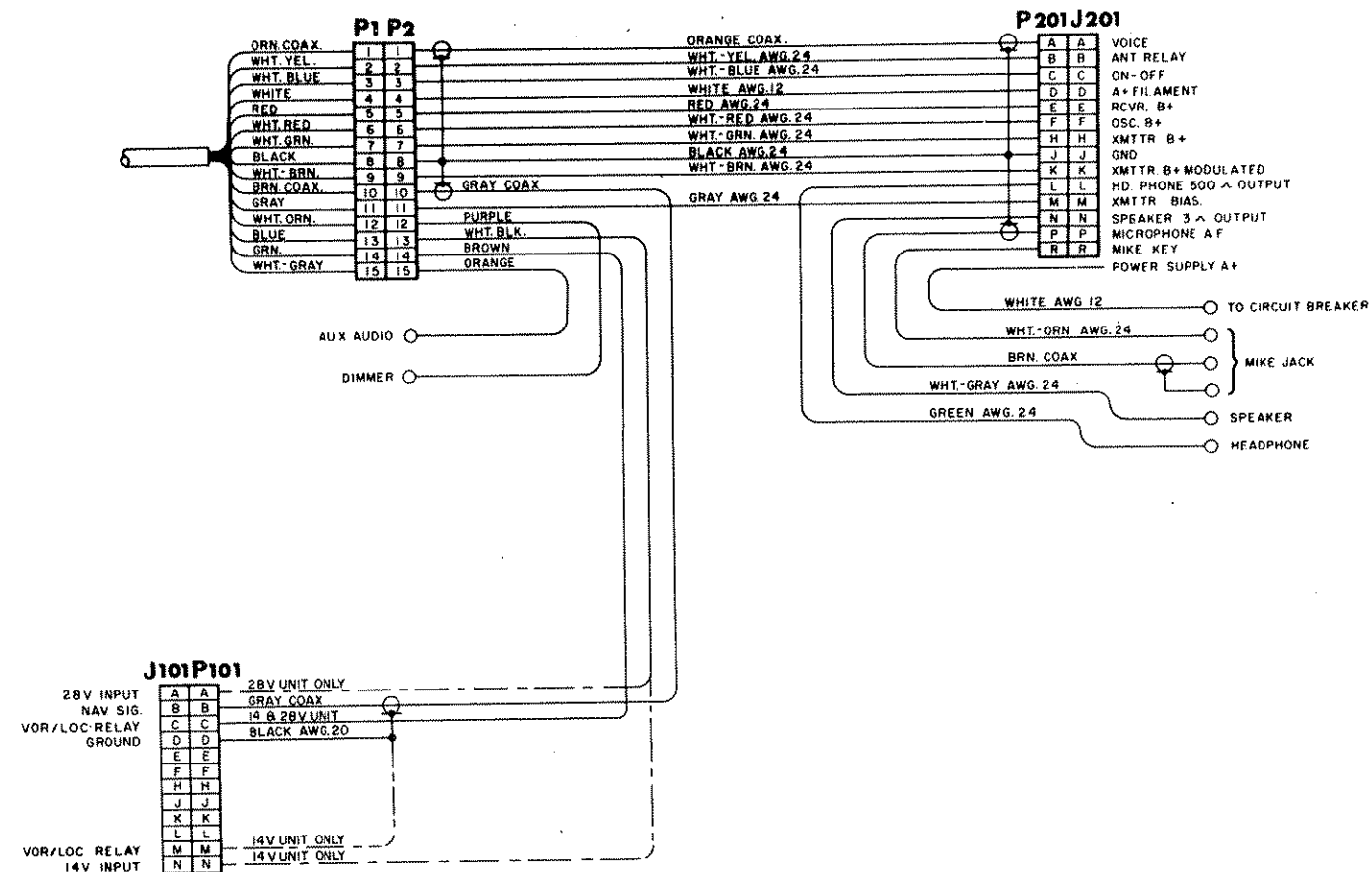


FIG. 5.3 INTERCONNECTING WIRING DIAGRAM SA 1036 AND SAI 300

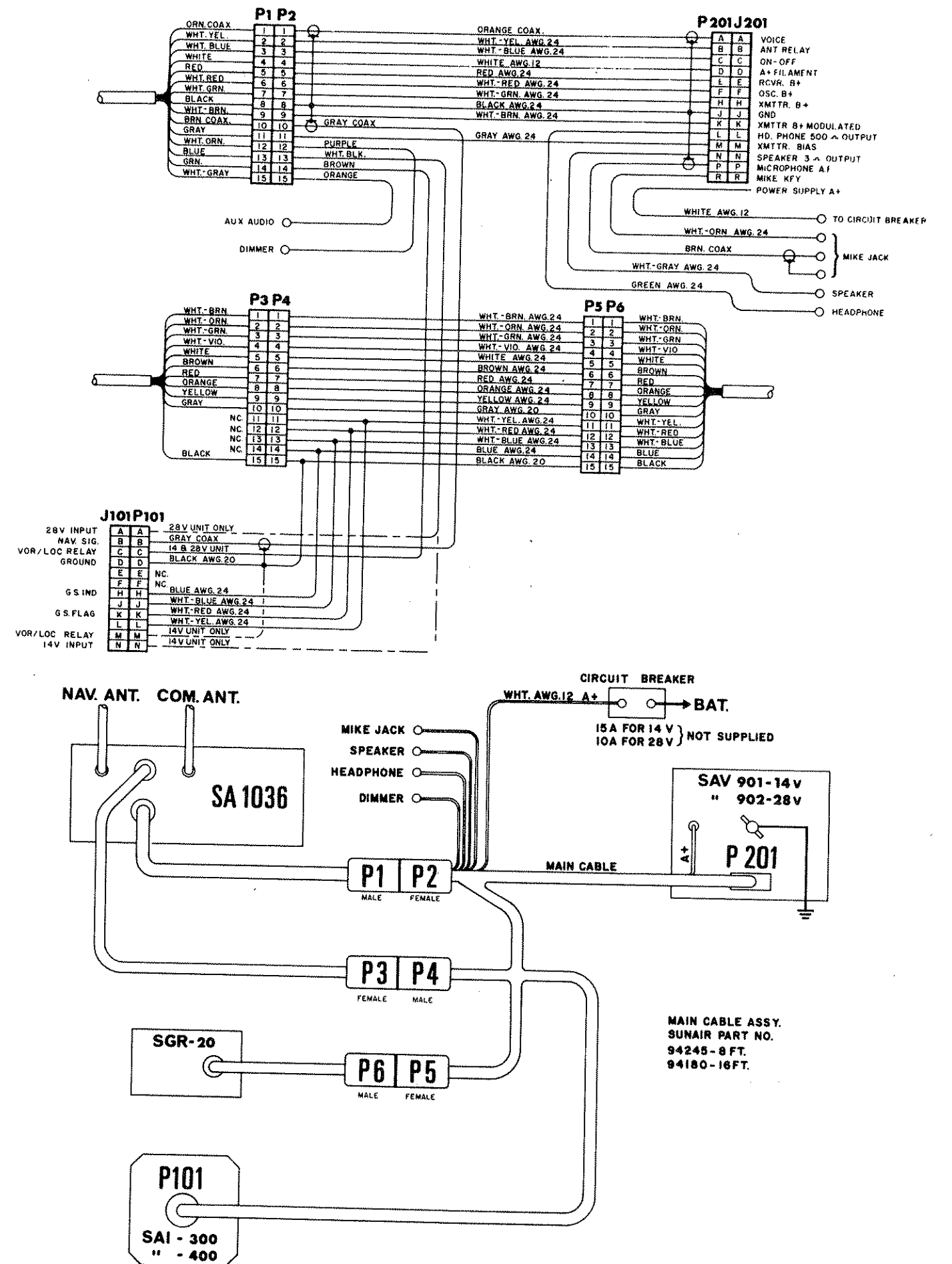


FIG. 5.4 INTERCONNECTING WIRING DIAGRAM FOR SA 1036 SYSTEM.

SECTION VI

6-1

PARTS LIST SA 1036

SYMBOL NO.	PART NO.	DESCRIPTION
B1	84367	BULB, 12v.
B2		SAME AS B1.
C1	26248	CAPACITOR, DISC: 6-8 pf, NPO
C2	25074	CAPACITOR, DISC: 100 pf, 500v.
C3		SAME AS C1.
C4	25866	CAPACITOR, FEEDTHRU: 1000 pf, 500v.
C5	26585	CAPACITOR, POLY: 2.2 uf, 60v.
C6	24422	CAPACITOR, DISC: .0033 uf, 500v.
C7	25983	CAPACITOR, MICA 10 pf, 5%, 500v.
C8	25098	CAPACITOR, DISC: 500 pf, 500v.
C9		SAME AS C8
C10		SAME AS C8
C11	26092	CAPACITOR, MICA: 47 pf, 5%, 500v.
C12	25000	CAPACITOR, DISC: 2.2 pf, .25 pf, NPO
C13		SAME AS C6
C14		SAME AS C6
C15	26107	CAPACITOR, MICA: 68 pf, 5%, 500v.
C16		SAME AS C6
C17		SAME AS C8
C18	26016	CAPACITOR, MICA: 1 pf, 5%, 500v.
C19		SAME AS C6
C20		SAME AS C6
C21	25103	CAPACITOR, DISC: .005 uf, 500v.
C22	25701	CAPACITOR, DISC: 1.5 pf, 500v, NPO
C23		SAME AS C22
C24		SAME AS C18
C25		SAME AS C21
C26	25141	CAPACITOR, MYLAR: .1 uf, 10%, 500v.
C27		SAME AS C6
C28	26200	CAPACITOR, DISC: 750 pf, 10%, 500v.
C29		SAME AS C18
C30		SAME AS C26
C31		SAME AS C6
C32		SAME AS C21
C33		SAME AS C12
C34		SAME AS C2
C35		SAME AS C2
C36		SAME AS C21
C37	26157	CAPACITOR, MYLAR: .22 uf, 250v.
C38		SAME AS C6
C39	25189	CAPACITOR, MYLAR: .047 uf, 125v.
C40		SAME AS C4
C41		SAME AS C8
C42	26224	CAPACITOR, DISC: 3.3 pf, .25 pf, NPO

PARTS LIST, SA 1036

SYMBOL NO.	PART NO.	DESCRIPTION
C43		SAME AS C7
C44		SAME AS C4
C45		SAME AS C8
C46		DELETED
C47		DELETED
C48		SAME AS C7
C49		SAME AS C7
C50		DELETED
C51		SAME AS C21
C52		DELETED
C53		DELETED
C54		SAME AS C37
C55		DELETED
C56	26808	CAPACITOR, MYLAR: .033 uf, 100v.
C57	26511	CAPACITOR, ELECTROLYTIC: 12 uf, 250v.
C58		SAME AS C8
C59	26078	CAPACITOR, MICA: 33 pf, $\pm 5\%$ , 500v.
C60	26054	CAPACITOR, MICA: 22 pf, $\pm 5\%$ , 500v.
C61		SAME AS C8
C62		SAME AS C12
C63		SAME AS C4
C64		SAME AS C8
C65		SAME AS C8
C66		DELETED
C67		DELETED
C68		SAME AS C8
C69	26066	CAPACITOR, MICA: 27 pf, 5%, 500v.
C70		SAME AS C8
C71		SAME AS C4
C72		SAME AS C7
C73		SAME AS C8
C74	25660	CAPACITOR, DISC: 20 pf, 500v, NPO
C75		SAME AS C2
C76		SAME AS C7
C77		SAME AS C6
C78	26212	CAPACITOR, MICA: 82 pf, 5%, 500v.
C79		SAME AS C8
C80		SAME AS C8
C81		SAME AS C6
C82		SAME AS C8
C83		SAME AS C7
C84		SAME AS C8
C85		SAME AS C8
C86		SAME AS C8
C87		SAME AS C6
C88		SAME AS C18
C89		DELETED
C90		SAME AS C6

PARTS LIST, SA 1036

SYMBOL NO.	PART NO.	DESCRIPTION
C91		SAME AS C8
C92		SAME AS C21
C93		DELETED
C94		SAME AS C21
C95	26303	CAPACITOR, MYLAR: .01 uf, 400v.
C96		SAME AS C22
C97		SAME AS C95
C98		SAME AS C26
C99		SAME AS C6
C100		SAME AS C95
C101		SAME AS C6
C102		SAME AS C26
C103		SAME AS C6
C104		SAME AS C6
C105		SAME AS C18
C106		SAME AS C2
C107		SAME AS C21
C108		SAME AS C26
C109		SAME AS C2
C110		SAME AS C8
C111		SAME AS C26
C112		SAME AS C21
C113		SAME AS C8
C114		SAME AS C8
C115		SAME AS C42
C116	26236	CAPACITOR, DISC: 4.7 pf, .25 pf, NPO.
C117		SAME AS C8
C118		SAME AS C59
C119		SAME AS C8
C120		SAME AS C4
C121		SAME AS C7
C122		SAME AS C8
C123		SAME AS C6
C124		SAME AS C8
C125		SAME AS C6
C126		SAME AS C8
C127		SAME AS C6
C128		SAME AS C7
C129		SAME AS C6
C130		SAME AS C8
C131		SAME AS C8
C132		SAME AS C6
C133	26169	CAPACITOR, VARIABLE: 5-25 pf, NPO.
C134		SAME AS C133
C135		SAME AS C59

PARTS LIST, SA 1036

SYMBOL NO.	PART NO.	DESCRIPTION
C136		SAME AS C4
C137		SAME AS C8
C138		SAME AS C8
C139	25139	CAPACITOR, CERAMIC TRIMMER: .5-4.5 pf.
C140	24226	CAPACITOR, DISC: 330 pf, 1 kv.
C141	24082	CAPACITOR, DISC: 75 pf, 1 kv, NPO.
C142		SAME AS C133
C143		SAME AS C8
C144	26028	CAPACITOR, MICA: 12 pf, 5%, 500v.
C145	26133	CAPACITOR, MICA: 7 pf, 5%, 500v.
C146	26145	CAPACITOR, MICA: 30 pf, 5%, 500v.
C147	25153	CAPACITOR, ELECTROLYTIC: 10 uf, 30v.
C148		SAME AS C8
C149		SAME AS C8
C150		SAME AS C8
C151		SAME AS C8
C152		SAME AS C8
C153		SAME AS C8
C154		SAME AS C8
C155		SAME AS C8
C156		SAME AS C4
C157		DELETED
C158		SAME AS C6
C159		SAME AS C6
C160		SAME AS C6
C161		SAME AS C8
C162		SAME AS C8
C163		SAME AS C4
C164		SAME AS C4
C165		SAME AS C6
C166		SAME AS C6
C167		SAME AS C4
C168		SAME AS C4
C169	25270	CAPACITOR, MYLAR: .47 uf, 125v.
C170		SAME AS C8
C171		SAME AS C8
C172		SAME AS C4
C173		SAME AS C169
C174		SAME AS C8
C175		SAME AS C6
C176		SAME AS C8
C177		SAME AS C8
C178		SAME AS C116
C179		SAME AS C42
C180	26042	CAPACITOR, MICA: 20 pf, 5%, 500 v.

## PARTS LIST, SA 1036

<u>SYMBOL</u> <u>NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
C181	25036	CAPACITOR, DISC: 6 pf, .25 pf, 500v.
C182		SAME AS C56
C183		SELECTIVE VALVE
C184		SAME AS C39
C185		SAME AS C57
CR1	40141	DIODE: 1N461
CR2		SAME AS CR1.
CR3		SAME AS CR1.
CR4		SAME AS CR1.
CR5		SAME AS CR1.
CR6		SAME AS CR1.
CR7		SAME AS CR1.
CR8		SAME AS CR1.
J2	74374	CONNECTOR, COM. ANTENNA.
J3	51293	CONNECTOR, NAV. ANTENNA.
K1	66303	RELAY, ANTENNA.
L1	96085	COIL, VARIABLE: ANTENNA INPUT.
L2	96097	COIL, VARIABLE: RF AMP.
L3	96102	COIL, VARIABLE: FIRST MIXER
L4	56255	COIL, FIXED: .22 uh.
L5	96047	COIL, VARIABLE: MC OSC.
L6	63428	COIL, FIXED: .47 uh.
L7	63442	COIL, FIXED: 1.5 uh
L8		DELETED
L9	96114	COIL, VARIABLE: FRACT. MC OSC.
L10		DELETED
L11		SAME AS L4
L12	96023	COIL VARIABLE: MC OSC.
L13	63454	COIL, FIXED: 2.2 uh
L14		SAME AS L13
L15		SAME AS L7
L16	96011	COIL, VARIABLE: MC OSC.
L17		SAME AS L13
L18	96126	COIL, VARIABLE; ANTENNA INPUT.
L19	96138	COIL, VARIABLE: RF AMPLIFIER.
L20	96140	COIL, VARIABLE: FIRST MIXER.
L21		SAME AS L4.
L22		SAME AS L12
L23		SAME AS L6
L24		DELETED
L25	96152	COIL, VARIABLE: XMTR. RF AMP. INPUT.
L26	96164	COIL, VARIABLE: XMTR. RF AMP. OUTPUT.
L27		SAME AS L13.
L28		DELETED
L29		SAME AS L26.
L30		SAME AS L13.

## PARTS LIST, SA 1036

SYMBOL			
NO.	PART NO.	DESCRIPTION	
L31		SAME AS L13.	
L32	63521	COIL, FIXED: 1.1 uh	
L33	97211	COIL, AIRWOUND	
L34	93904	INDUCTOR, FIXED: .057 uh.	
L35	93899	INDUCTOR, FIXED: .047 uh.	
L36		SAME AS L6.	
L37		SAME AS L6.	
L38	63430	COIL, FIXED 1.0 uh.	
L39		SAME AS L38.	
L40		SAME AS L13.	
L41		SAME AS L38.	
L42		SAME AS L7.	
L43	97261	INDUCTOR: IDENTIFIER FILTER: 800 mh.	
R1	17039	RESISTOR: 100k/10%/1/4w.	
R2	17261	RESISTOR: 470/10%/1/4w.	
R3		SAME AS R1.	
R4	17417	RESISTOR: 10k/10%/1w.	
R5	17065	RESISTOR: 1 meg/10%/1/4w.	
R6	17845	RESISTOR: 270/10%/1/4w.	
R7	16724	RESISTOR: 10k/10%/1/2w.	
R8	17211	RESISTOR: 270k/10%/1/4w.	
R9	17663	RESISTOR: 680/10%/1/4w.	
R10	16695	RESISTOR: 33k/10%/1/2w.	
R11	18150	RESISTOR: 56k/10%/1/2w.	
R12	17053	RESISTOR: 22k/10%/1/2w.	
R13		SAME AS R8.	
R14	17091	RESISTOR: 330/10%/1/4w.	
R15	17144	RESISTOR: 56k/10%/1/4w.	
R16		SAME AS R7.	
R17	17132	RESISTOR: 220/10%/1/4w.	
R18		SAME AS R15	
R19	16748	RESISTOR: 1k/10%/1/2w.	
R20	18057	RESISTOR: 470k/10%/1/4w.	
R21		DELETED	
R22		SAME AS R15	
R23	17675	RESISTOR: 150k/10%/1/4w.	
R24		SAME AS R5.	
R25		SAME AS R5.	
R26	18095	RESISTOR: 22 meg/10%/1/4w.	
R27		SAME AS R5.	
R28		SAME AS R1.	
R29		DELETED	
R30		DELETED	
R31		DELETED	
R32		SAME AS R17.	
R33		SAME AS R1.	



## PARTS LIST, SA 1036

SYMBOL		
NO.	PART NO.	DESCRIPTION
R34	17340	RESISTOR: 15k/10%/13.
R35		SAME AS R17.
R36	17106	RESISTOR: 47k/10%/1/4w.
R37	17247	RESISTOR: 1.5k/10%/1/4w.
R38	16920	RESISTOR: 4/7k10%/1/2w.
R39	32998	POTENTIOMETER: 1 meg.
R40	33007	POTENTIOMETER: 1 meg. 1; 100kp.
R41	17778	RESISTOR: 220 k/10%/1/4w.
R42		SAME AS R1.
R43		SAME AS R5
R44	17089	RESISTOR: 3.3k/10%/1/4w.
R45		SAME AS R10.
R46		SAME AS R8.
R47		SAME AS R14
R48	16607	RESISTOR: 15k/10%/1/2w.
R49		SAME AS R17.
R50		SAME AS R44
R51	17235	RESISTOR: 15k/10%/1/4w.
R52		SAME AS R17.
R53		SAME AS R1.
R54		SAME AS R14.
R55		SAME AS R12.
R56		SAME AS R1.
R57	17118	RESISTOR: 100/10%/1/4w.
R58		SAME AS R12.
R59		SAME AS R12.
R60		SAME AS R4.
R61		SAME AS R5.
R62		SAME AS R57.
R63		SAME AS R1.
R64		SAME AS R51.
R65		SAME AS R19.
R66	17041	RESISTOR: 10k/10%/1/4w.
R67		SAME AS R17
R68		SAME AS R10
R69	17223	RESISTOR: 22k/10%/1/4w.
R70		SAME AS R26
R71		SAME AS R48
R72		SAME AS R8
R73		SAME AS R17.
R74		SAME AS R1.
R75		SAME AS R5.
R76		SAME AS R7.
R77		SAME AS R14.
R78		SAME AS R15

PARTS LIST, SA 1036

SYMBOL			
NO.	PART NO.	DESCRIPTION	
R79		SAME AS R19	
R80	17352	RESISTOR: 68k/10%/1/4w.	
R81		DELETED	
R82	16671	RESISTOR: 100k/10%/1/2w.	
R83		SAME AS R36	
R84		SAME AS R66	
R85	18447	RESISTOR: 820k/10%/1/4w.	
R86	17508	RESISTOR: 1.5 meg. 10%/1/4w.	
R87		SAME AS R86	
R88		SAME AS R41	
R89	17168	RESISTOR: 82k/10%/1/4w.	
R90		SAME AS R5	
R91		SAME AS R5	
R92		SAME AS R14	
R93		SAME AS R1	
R94		SAME AS R4	
R95		SAME AS R1	
R96		SAME AS R14	
R97		SAME AS R82	
R98		SAME AS R19	
R99		SAME AS R5	
R100	16774	RESISTOR: 68 ohm, 10%/1/4w.	
R101		SAME AS R7	
R102		SAME AS R36	
R103	16229	RESISTOR: 6.8k, 10%/1/2w.	
R104	17120	RESISTOR: 27k, 10%/1/4w.	
R105	18435	RESISTOR: 45k/10%/5w.	
R106		DELETED	
R107	16310	RESISTOR: 40 ohm/10%/3w.	
R108	33318	POTENTIOMETER: 100k 1/2w.	
R109	16308	RESISTOR: 100 ohm, 3w.	
R110	17261	RESISTOR: 470/10%/1/4w.	
R111	18459	RESISTOR: 18/10%/1/4w.	
R112	16700	RESISTOR: 27k/10%/1/2w.	
R113		SAME AS R20	
R114	18265	RESISTOR: 56/10%/1/4w.	
R115		SAME AS R6	
T1	48715	TRANSFORMER IF.	
T2	48727	TRANSFORMER IF.	
T3	48739	TRANSFORMER IF.	
T4	48870	TRANSFORMER IF.	
T5	48741	TRANSFORMER IF.	
T6		SAME AS T1	
T7	48753	TRANSFORMER IF.	
T8	48765	TRANSFORMER IF.	

## PARTS LIST SA 1036

SYMBOL NO.	PART NO.	DESCRIPTION
T9	48777	TRANSFORMER IF.
T10	48789	TRANSFORMER IF.
V1	76334	TUBE, VACUUM, 7167.
V2		SAME AS V1.
V3	76542	TUBE, NUVISTOR-13CW4
V4	76621	TUBE, VACUUM-6BL8.
V5		SAME AS V4
V6	76657	TUBE, VACUUM-6EH7.
V7		SAME AS V1.
V8		SAME AS V1.
V9	76633	TUBE, VACUUM-6DK6.
V10	76645	TUBE, VACUUM-6AU6.
V11		SAME AS V4.
Q1	44252	TRANSISTOR, 2N3646.
V13		SAME AS V3.
V14	76346	TUBE, VACUUM-8102.
V15	76358	TUBE, VACUUM-8106.
V16	76516	TUBE, VACUUM-12 BY7A
V17	76463	TUBE, VACUUM, VHF. 8156.
S1	32534	SWITCH, SLIDE
S3	33306	SWITCH, PUSH PULL IDENT.
Y1	81418	CRYSTAL, CR55/U 77.5562 MC.
Y2	81420	CRYSTAL, CR55/U 78.5562 MC.
Y3	81432	CRYSTAL, CR55/U 79.5562 MC.
Y4	81444	CRYSTAL, CR55/U 80.5562 MC.
Y5	81456	CRYSTAL, CR55/U 81.5562 MC.
Y6	81468	CRYSTAL, CR55/U 82.5562 MC.
Y7	81470	CRYSTAL, CR55/U 83.5562 MC.
Y8	81482	CRYSTAL, CR55/U 84.5562 MC.
Y9	81494	CRYSTAL, CR55/U 85.5562 MC.
Y10	81509	CRYSTAL, CR55/U 86.5562 MC.
Y11	80749	CRYSTAL, CR56/U 34.005 MC.
Y12	80751	CRYSTAL, CR56/U 34.105 MC.
Y13	80763	CRYSTAL, CR56/U 34.205 MC.
Y14	80775	CRYSTAL, CR56/U 34.305 MC.
Y15	80787	CRYSTAL, CR56/U 34.405 MC.
Y16	80799	CRYSTAL, CR56/U 34.505 MC.
Y17	80804	CRYSTAL, CR56/U 34.605 MC.
Y18	80816	CRYSTAL, CR56/U 34.705 MC.
Y19	80828	CRYSTAL, CR56/U 34.805 MC.
Y20	80830	CRYSTAL, CR56/U 34.905 MC.
Y21	81559	CRYSTAL, CR56/U 81.9938 MC.
Y22	81511	CRYSTAL, CR55/U 82.9938 MC.
Y23	81523	CRYSTAL, CR55/U 83.9938 MC.
Y24	81535	CRYSTAL, CR55/U 84.9938 MC.
Y25	80385	CRYSTAL, CR55/U 85.9938 MC.

## PARTS LIST SA 1036

SYMBOL NO.	PART NO.	DESCRIPTION
Y26	80397	CRYSTAL, CR55/U 86.9938 MC.
Y27	80402	CRYSTAL, CR55/U 87.9938 MC.
Y28	80414	CRYSTAL, CR55/U 88.9938 MC.
Y29	80426	CRYSTAL, CR55/U 89.9938 MC.
Y30	80438	CRYSTAL, CR55/U 90.9938 MC.
Y31	80440	CRYSTAL, CR55/U 91.9938 MC.
Y32	80452	CRYSTAL, CR55/U 92.9938 MC.
Y33	80464	CRYSTAL, CR55/U 93.9938 MC.
Y34	80476	CRYSTAL, CR55/U 94.9938 MC.
Y35	80488	CRYSTAL, CR55/U 95.9938 MC.
Y36	80490	CRYSTAL, CR55/U 96.9938 MC.
Y37	80505	CRYSTAL, CR55/U 97.9938 MC.
Y38	80517	CRYSTAL, CR55/U 98.9938 MC.
Y39	80529	CRYSTAL, CR55/U 99.9938 MC.
Y40	80531	CRYSTAL, CR55/U 100.9938 MC.
Y41	80543	CRYSTAL, CR55/U 101.9938 MC.
Y42	80555	CRYSTAL, CR55/U 102.9938 MC.
Y43	81212	CRYSTAL, CR56/U 35.0062 MC.
Y44	81224	CRYSTAL, CR56/U 35.0562 MC.
Y45	81236	CRYSTAL, CR56/U 35.1062 MC.
Y46	81248	CRYSTAL, CR56/U 35.1562 MC.
Y47	81250	CRYSTAL, CR56/U 35.2062 MC.
Y48	81262	CRYSTAL, CR56/U 35.2562 MC.
Y49	81274	CRYSTAL, CR56/U 35.3062 MC.
Y50	81286	CRYSTAL, CR56/U 35.3562 MC.
Y51	81298	CRYSTAL, CR56/U 35.4062 MC.
Y52	81303	CRYSTAL, CR56/U 35.4562 MC.
Y53	81315	CRYSTAL, CR56/U 35.5062 MC.
Y54	81327	CRYSTAL, CR56/U 35.5562 MC.
Y55	81339	CRYSTAL, CR56/U 35.6062 MC.
Y56	81341	CRYSTAL, CR56/U 35.6562 MC.
Y57	81353	CRYSTAL, CR56/U 35.7062 MC.
Y58	81365	CRYSTAL, CR56/U 35.7562 MC.
Y59	81377	CRYSTAL, CR56/U 35.8062 MC.
Y60	81389	CRYSTAL, CR56/U 35.8562 MC.
Y61	81391	CRYSTAL, CR56/U 35.9062 MC.
Y62	81406	CRYSTAL, CR56/U 35.9562 MC.

VOR/LOC CONVERTER SA1-300

SYMBOL NO	PART NO.	DESCRIPTION
C1	26561	CAPACITOR, ELECTRO 1 mf/60v.
C2	26573	CAPACITOR, ELECTRO. 4.7mf/60v.
C3		SAME AS C1
C4	26171	CAPACITOR, ELECTRO. 15 mf/6v.
C5	25684	CAPACITOR, DISC. .001mf/20%/500v.
C6		SAME AS C4
C7	25177	CAPACITOR, MYLAR, .001mf/400v.
C8	26559	CAPACITOR, ELECTRO. .68mf/60v.
C9		SAME AS C8
C10	26638	CAPACITOR, ELECTRO. 50mf/6v.
C11	26274	CAPACITOR, ELECTRO. 100mf/6v.
C12		SAME AS C11
C13		SAME AS C1
C14		SAME AS C1
C15		SAME AS C4
C16	26303	CAPACITOR, MYLAR, .01mf/400v.
C17	25787	CAPACITOR, ELECTRO. 25mf/15v.
C18		SAME AS C4
C19		SAME AS C1
C20	26585	CAPACITOR, ELECTRO. 2.2mf/60v.
C21		SAME AS C11
C22		SAME AS C11
C23	25713	CAPACITOR, MYLAR, 1mf/250v.
C24	26523	CAPACITOR, MYLAR, .033mf/250v.
C25	25098	CAPACITOR, DISC., 500pf/500v.
C26		SAME AS C23
C27		SAME AS C23
C28		SAME AS C23
C29		SAME AS C23
C30		SAME AS C25
C31		SAME AS C5
C32	26779	CAPACITOR, MICA, .0082mf, $\pm 5^{\circ}/o$ , 500v.
C33		SAME AS C1
C34		SAME AS C17
C35		SAME AS C8
C36	26793	CAPACITOR, MYLAR, .22mf/250v.
C37		SAME AS C1
C38		SAME AS C2
C39		SAME AS C1
C40		SAME AS C8
C41		SAME AS C8
C42		SAME AS C4
C43		SAME AS C7
C44		SAME AS C10
C45	26597	CAPACITOR, ELECTRO, 100mf/15v.

VOR/LOC CONVERTER SA1-300

SYMBOL NO.	PART NO.	DESCRIPTION
C46		SAME AS C11
C47	26614	CAPACITOR, ELECTRO, 1000mf/2v.
C49	24393	CAPACITOR, DISC., .05mf/75v.
R1	17778	RESISTOR, 220k, $\pm 10\%$ , $\frac{1}{4}w$ .
R2	17235	RESISTOR, 15k, $\pm 10\%$ , $\frac{1}{4}w$ .
R3	17039	RESISTOR, 100k, $\pm 10\%$ , $\frac{1}{4}w$ .
R4	17120	RESISTOR, 27k, 10%, $\frac{1}{4}w$ .
R5	17091	RESISTOR, 330 ohm, $\pm 10\%$ , $\frac{1}{4}w$ .
R6	17089	RESISTOR, 3.3, $\pm 10\%$ , $\frac{1}{4}w$ .
R7		SAME AS R2
R8	18198	POTENTIOMETER, 100k, $\frac{1}{2}w$ .
R9	18203	POTENTIOMETER, 50k, $\frac{1}{2}w$ .
R10	17481	RESISTOR, 6.8k, $\pm 10\%$ , $\frac{1}{4}w$ .
R11		SAME AS R2
R12	18071	POTENTIOMETER, 5k, $\frac{1}{2}w$ .
R13	18227	THERMISTOR
R14	17247	RESISTOR, 1.5k, 10%, $\frac{1}{4}w$ .
R15	17352	RESISTOR, 68k, 10%, $\frac{1}{4}w$ .
R16		SAME AS R5
R17		RESISTOR, 8.2k, 10%, $\frac{1}{4}w$ .
R18		SAME AS R17
R19		SAME AS R17
R20		SAME AS R2
R21		SAME AS R2
R22		SAME AS R2
R23		SAME AS R6
R24	18174	RESISTOR, 15 ohm, 10%, $\frac{1}{4}w$ .
R25	18083	POTENTIOMETER, 10k, $\frac{1}{2}w$ .
R26		SAME AS R15
R27	17156	RESISTOR, 1k, 10%, $\frac{1}{4}w$ .
R28		SAME AS R14
R29		SAME AS R17
R30		SAME AS R25
R31		SAME AS R3
R32		SAME AS R3
R33		SAME AS R12
R34	17077	RESISTOR, 4.7k, 10%, $\frac{1}{4}w$ .
R35		SAME AS R27
R36		SAME AS R12
R37		SAME AS R12
R38	18215	POTENTIOMETER, 3k, $\frac{1}{2}w$ .
R39	17041	RESISTOR, 10k, 10%, $\frac{1}{4}w$ .
R40		SAME AS R39

VOR/LOC CONVERTER SA1-300

SYMBOL NO.	PART NO.	DESCRIPTION
R41		SAME AS R39
R42		SAME AS R39
R43		SAME AS R2
R44		SAME AS R10
R45	17807	RESISTOR, 2.2k, 10%, $\frac{1}{4}$ w.
R46		SAME AS R10
R47		SAME AS R15
R48	17223	RESISTOR, 22k, 10%, $\frac{1}{4}$ w.
R49	17261	RESISTOR, 470 ohm, 10%, $\frac{1}{4}$ w.
R50		SAME AS R6
R51		SAME AS R48
R52		SAME AS R15
R53	17118	RESISTOR, 100 ohm, 10%, $\frac{1}{4}$ w.
R54		SAME AS R6
R55		SAME AS R14
R56		SAME AS R13
R57		SAME AS R10
R58		SAME AS R53
R59		SAME AS R2
R60	17572	RESISTOR, 18k, 10%, $\frac{1}{4}$ w.
R61		SAME AS R25
R62		SAME AS R3
R63		SAME AS R2
R64		SAME AS R4
R65		SAME AS R5
R66		SAME AS R6
R68		SAME AS R10
R69		SAME AS R15
R70		SAME AS R12
R71		SAME AS R13
R72		SAME AS R5
R74		SAME AS R9
R75		SAME AS R2
R76		SAME AS R14
R77	16138	RESISTOR, 75 ohm, 5w.
R78	16528	RESISTOR, 470 ohm, $\pm 10\%$ , 1w.
R79	33320	POTENTIOMETER, 1k, $\frac{1}{2}$ w.
T1	48698	TRANSFORMER, 30 cps
T2	64006	TRANSFORMER, 90 cps
T3	64018	TRANSFORMER, 150 cps
T4	63997	TRANSFORMER, 10kc

VOR/LOC CONVERTER SA1-300

SYMBOL NO.	PART NO.	DESCRIPTION
T5	33136	RESOLVER, 30 cps
T6		SAME AS T1
L1	56152	CHOKE, MOLDED, 10 ohm, $\pm 5\%$ .
K1	66303	RELAY, DPDT, 300 ohm
Q1	44226	TRANSISTOR, ME-213
Q2	44197	TRANSISTOR, ME-216
Q3		SAME AS Q2
Q4		SAME AS Q1
Q5		SAME AS Q2
Q6		SAME AS Q2
Q7		SAME AS Q2
Q8		SAME AS Q2
Q9		SAME AS Q2
Q10		SAME AS Q1
Q11		SAME AS Q2
Q12		SAME AS Q2
CR1	40141	DIODE, 1N461
CR3	40270	DIODE, 1N3121
CR4		SAME AS CR3
CR5		SAME AS CR1
CR6		SAME AS CR1
CR7		SAME AS CR1
CR8		SAME AS CR1
CR9		SAME AS CR1
CR10		SAME AS CR1
CR11		SAME AS CR1
CR12		SAME AS CR1
CR13		SAME AS CR1
CR14		SAME AS CR1
CR15		SAME AS CR1
CR16	40177	DIODE, ZENER, 10v, 1N2974A
PL-1	86418	LIGHT, PILOT, #39
M1	13411	METER, 35-0-35/35 ua Mov.



## SECTION I

### THEORY OF OPERATION

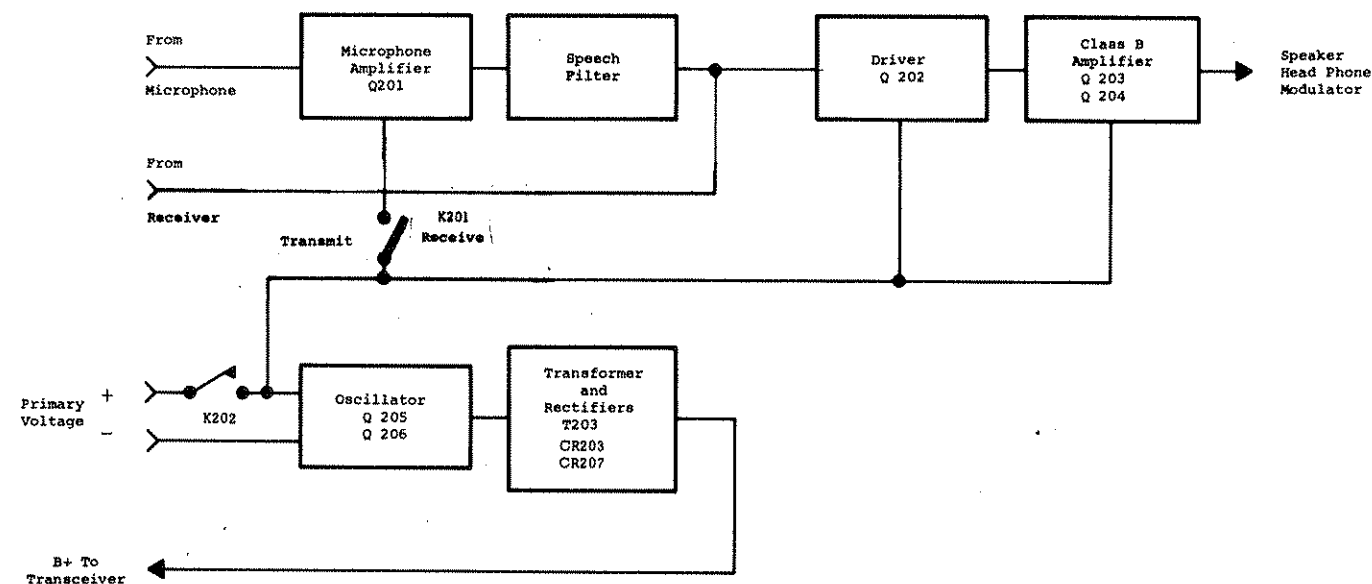
#### MODULATOR/POWER SUPPLY

##### DESCRIPTION:

The modulator/power supply for use with the SUNAIR SA-360, SA-1036 and SA-90 Transceivers consists of a one unit package which contains the high voltage power supply, the audio amplifier and the modulator circuits of the system. Two units are available, the SAV901 for 14 volt and the SAV902 for 28 volt operation.

##### THEORY OF OPERATION:

#### BLOCK DIAGRAM



Each of the SUNAIR Modulator/Power Supply units are completely transistorized. Their special design permits proper operation of all transistors up to ambient temperatures of 55°C. A large surface heatsink with low thermal resistance insures fast dissipation of heat developed by the Class B A.F. power amplifier, which is used for both receiver output and transmitter modulation. Two major etched circuit boards are employed for the power supply, audio amplifier and bias networks. Adequate shielding eliminates interference of power supply switching pulses with other equipment.

With the transceiver in the receive position, the high B plus, 500 volt DC, is inoperative, while only the low B plus of 250 volts DC is being supplied to the receiver portion of the transceiver. Relay K201 normally is not energized and thus connects the output of the cathode follower AF amplifier in the receiver to the base of the driver transistor Q202. A resistor of suitable value, in most cases 1.5 K ohm is connected in series with the base and the audio source to equalize the gain of the unit and provide linearization of base current.

The collector of Q202 feeds the primary of the driver transformer T201 which in turn provides out-of-phase drive currents for the class B power amplifier. The bias network for the power amplifier adjusts the quiescent collector currents to a value of approximately 50 ma to prevent crossover distortion at low signal levels. The output transformer T202 assures proper loading of Class B amplifier in order to obtain the required output power. Secondary No. 1, designed for a load of 4 K ohm is used to modulate the R. F. amplifier, while secondary No. 2 provides outputs for a speaker with nominal impedance of 3 ohms and for headphones with an impedance of 500 ohms. In the transmit position, the secondary No. 2 is disconnected from ground and thus does not load the amplifier.

In the transmit position, the relay K201 connects the primary voltage to the mike amplifier Q201. At the same time, high B plus is applied through the secondary No. 1 of T202 to the R. F. power amplifier. The carbon microphone obtains through the microphone potentiometer R201 the required DC power in order to produce a modulated DC voltage at the rotor of R201. The magnitude of the microphone signal can be adjusted by moving the rotor of R201. The small signal transistor Q201 is biased in such a manner that above a certain signal level symmetrical clipping will take place. The resulting harmonic distortion is then removed in the speech filter consisting of the inductor L201 and the capacitors C205 and C206. Overmodulation can thus be safely prevented, and by proper adjustment of the microphone potentiometer R201, a consistent modulation level of 95 per cent is assured.

The high voltage power supply consists of a matched pair of switching transistors which generate a square wave alternating through the primary of T203, which then is

transformed into the secondary winding. The high B plus of 500 volts DC uses a full wave bridge rectifier circuit, while the low B plus is taken from the center tap.

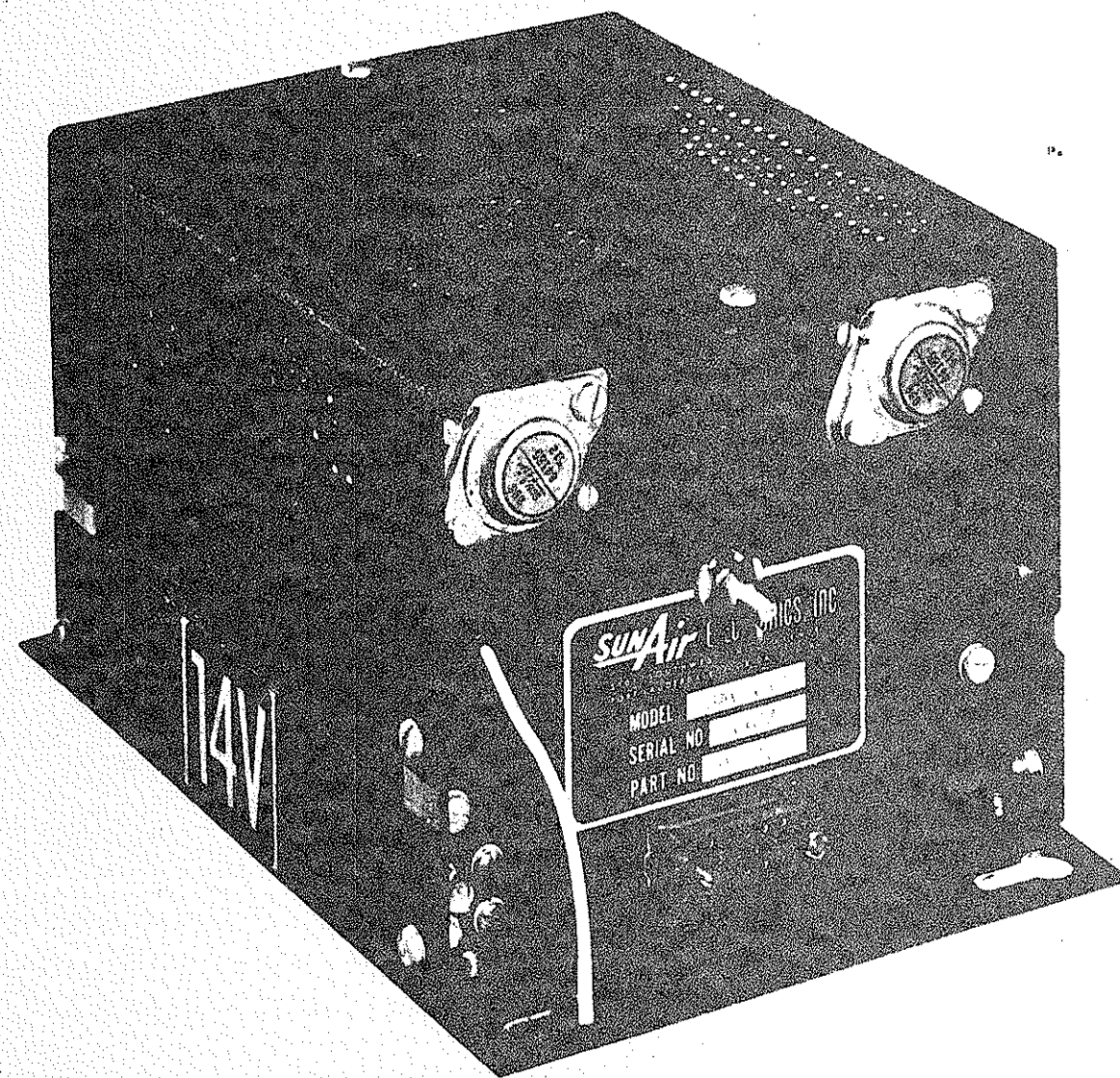
Large filter capacitors and inductors eliminate remaining ripple and provide almost pure DC to the transceiver.

The modulator/power supply differs in design for the 14 and 28 volt units, therefore, when ordering the unit the available power system voltage of the aircraft must be specified.

**CAUTION:**

Do not install the SAV 901 or 902 directly above or beside a heat generating piece of equipment and always insure there is a supply of cool air to the modulator/power supply. Do not short the cases of the power transistors to the ground; these are the collectors and carry signal voltages. A protective circuit prevents damage to the system in case plus and minus have been interchanged.





MODULATOR POWER SUPPLY

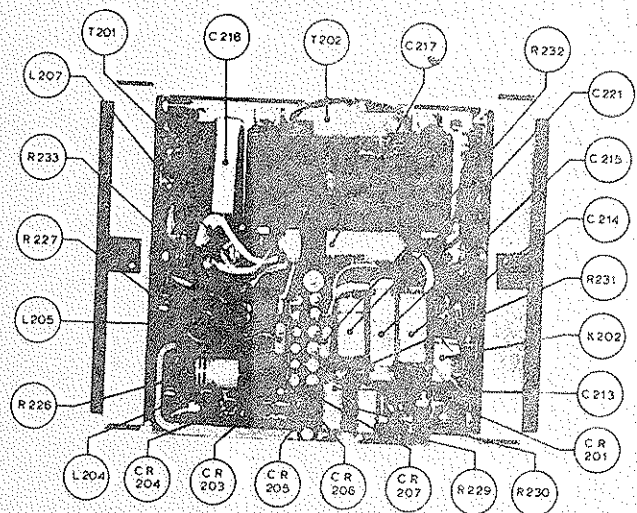


SECTION IITROUBLE SHOOTINGPOWER SUPPLY

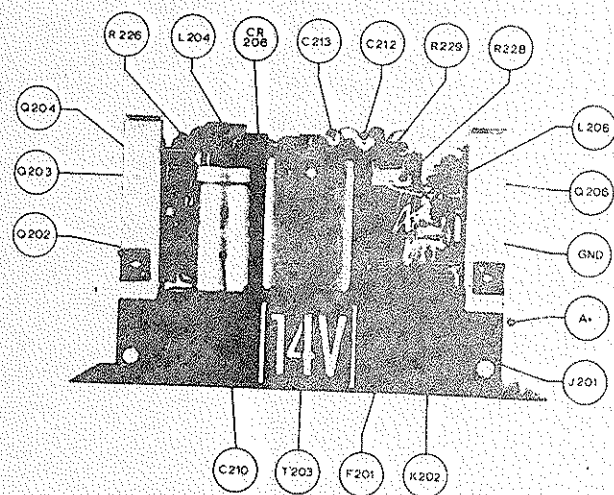
TROUBLE	CAUSE	REMEDY
1 No low B+	(a) Blown Fuse	1-Replace F201
	(b) Diode Failure	1-Check rectifier diodes CR203, CR204, CR205, & CR206; replace if necessary.
	(c) Filter Capacitors	1-Check C211 and C217 for shorts or leakage; replace if necessary.
	(d) Power Transistor	1-Check Q205 and/or Q206; replace if necessary.
	(e) Relay Failure	1-Check relay contacts K201-5.
2 No high B+	(a) Filter Capacitor	1-Check C210 for leakage or short.
	(b) Relay Failure	1-Check relay contacts K201-4.
3 No Receiver Audio	(a) Audio Amplifier Transistor failure	1-Check Q202, Q203 & Q204; replace if necessary.
4 No Microphone Audio	(a) Defective Microphone	1-Replace Mike.
	(b) Transistor Failure	1-Replace Q201
	(c) Relay contact Failure	1-Check relay contacts K201-1
5 No negative bias	(a) Defective Rectifier	1-Replace CR207.
	(b) Defective filter capacitors	1-Check C212 & C213 for short or leakage.



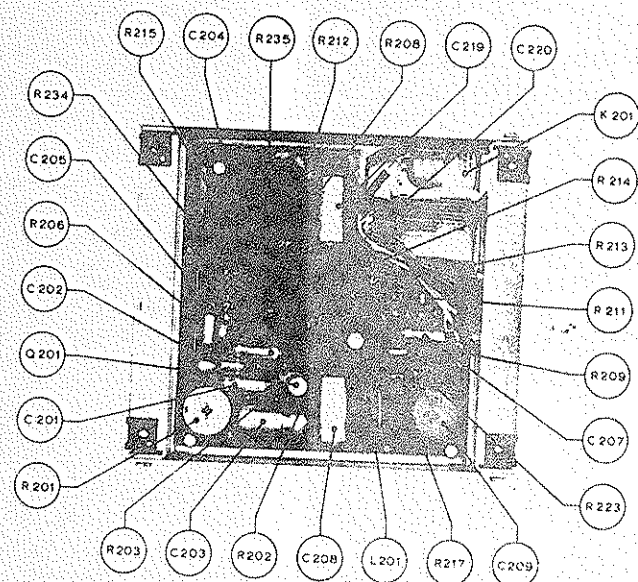




TOP VIEW MODULATOR POWER SUPPLY

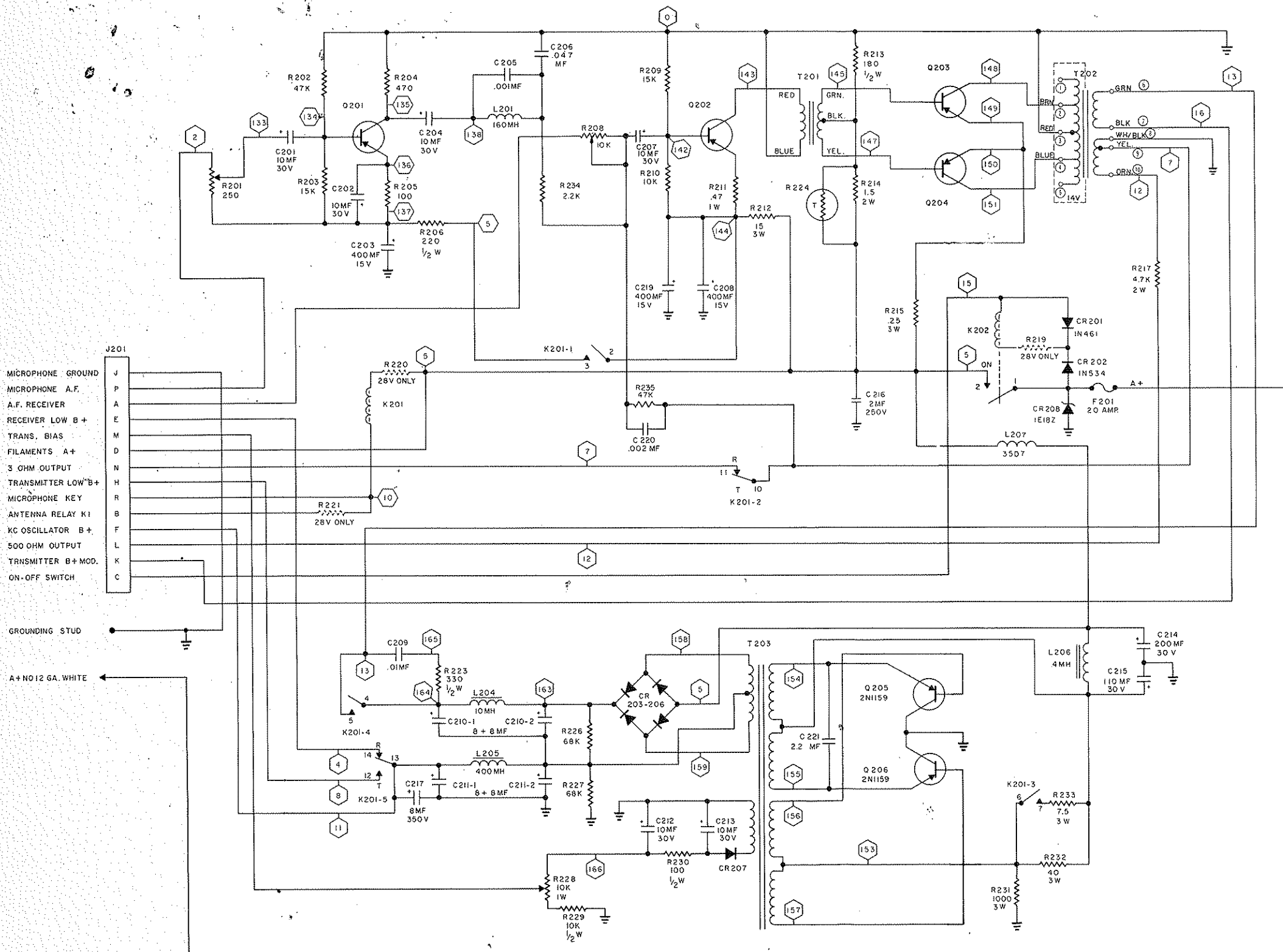


SIDE VIEW MODULATOR POWER SUPPLY



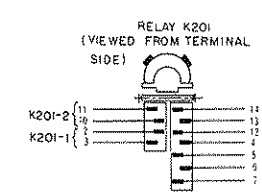
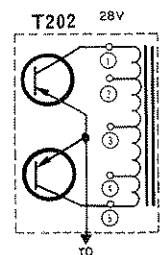
BOTTOM VIEW MODULATOR POWER SUPPLY





J201  
 MICROPHONE GROUND  
 MICROPHONE A.F.  
 A.F. RECEIVER  
 RECEIVER LOW B+  
 TRANS. BIAS  
 FILAMENTS A+  
 3 OHM OUTPUT  
 TRANSMITTER LOW B+  
 MICROPHONE KEY  
 ANTENNA RELAY K1  
 KC OSCILLATOR B+  
 500 OHM OUTPUT  
 TRANSMITTER B+ MOD.  
 ON-OFF SWITCH  
 C

GROUNDING STUD  
 A+ NO 12 GA. WHITE



28 VOLT COMPONENT CHART

CKT SYM.	VALUE FOR 28V UNITS ONLY
R 212	100 $\Omega$ 3W
R 213	450 $\Omega$ 3W
R 219	75 $\Omega$ 3W
R 220	75 $\Omega$ 3W
R 221	75 $\Omega$ 3W
R 232	100 $\Omega$ 3W
R 233	40 $\Omega$ 3W
R 234	4.7 K 25W
CR 208	1E36Z
F 201	10 AMP

NOTE:  
 UNLESS OTHERWISE NOTED, RESISTANCE VALUES  
 ARE IN OHMS 1/4 W

SCHEMATIC APPLIES TO SER.  
 NO. 3000 AND SUBSEQUENT.

0-15

0-14

0-13

ECN NO	SYM	DESCRIPTION	DATE
REVISIONS			
588	A	ADDED R235 1R 3W	11-27-63
598	B	ADDED R234 4.7K 25W	11-27-63
608	C	CHANGED COLOR CODE	12-16-63
618	D	ADDED R233 40 $\Omega$ 3W	12-16-63
628	E	ADDED R232 40 $\Omega$ 3W	12-16-63
638	F	SEC ETR 672	10-1-64
648	G	226S A L 207, RELOCATED	10-1-64
658	H	DELETED COLOR CODE ON J201	12-1-64
668	I	SHT FOR CN 798	2-16-69
678	J	ADDED C218	3-8-63
688	K	SHT FOR CN 844	6-23-63

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### SECTION III

#### INSTALLATION

##### POWER SUPPLY SAV 901/902

- 3.1 The modulator/power supply unit can be installed at any convenient place in the aircraft. Sufficient ventilation for the modulator/power supply unit is required. Therefore, do not install this unit close to heat generating equipment.

The modulator/power supply unit must be provided with a low resistance electrical ground.

See figure 3.1, page 59 , for dimensional details.

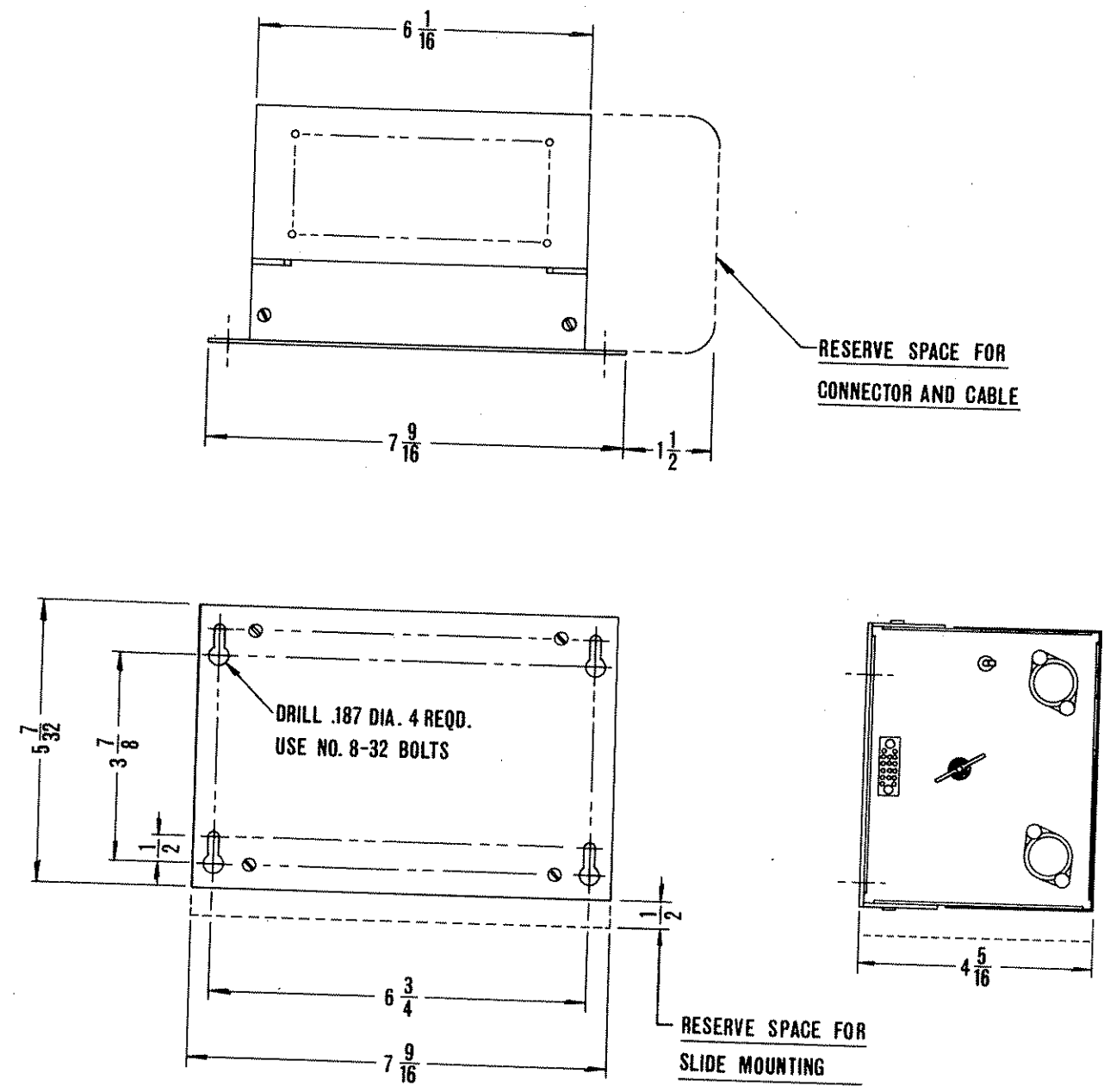


FIG. 3.1 MODULATOR POWER SUPPLY MOUNTING DIMENSIONS

SECTION IVPARTS LISTMODEL SAV 901 - SAV 902POWER SUPPLY

SYMBOL NO.	PART NO.	DESCRIPTION
T201	48181	TRANSFORMER, AUDIO, DRIVER
T202	48296	TRANSFORMER, AUDIO, OUTPUT
T203	93277	TRANSFORMER, POWER
C221	26585	CAPACITOR, ELECTRO. 2.2mf/60v.
C201	25153	CAPACITOR, ELECTRO. 10mf/30v.
C202		SAME AS C201
C203	25165	CAPACITOR, ELECTRO. 400mf/15v.
C204		SAME AS C201
C205	25177	CAPACITOR, MYLAR, 1000pf/400v.
C206	25189	CAPACITOR, MYLAR, .047mf/125v.
C207		SAME AS C201
C208		SAME AS C203
C209	24410	CAPACITOR, DISC., .01mf/1.4kv
C210	25191	CAPACITOR, ELECTRO. 8+8mf/500v.
C211		SAME AS C210
C212		SAME AS C201
C213		SAME AS C201
C214	25816	CAPACITOR, ELECTRO. 200mf/30v.
C215	26963	CAPACITOR, ELECTRO. 110mf/30v.
C216	26377	CAPACITOR, MYLAR. 2mf/250v.
C217	24848	CAPACITOR, ELECTRO. 8mf/350v.
C219		SAME AS C203
C220	24903	CAPACITOR, MICA: 2000pf.±5%, 500v.
R201	32455	POTENTIOMETER, 250 ohm, ±20%, 1w.
R202	17106	RESISTOR, 47k±10%, ¼w.
R203	17235	RESISTOR, 15k±10%, ¼w.
R204	17261	RESISTOR, 470 ohm, ±10%, ¼w.
R205	17118	RESISTOR, 100 ohm, ±10%, ¼w.
R206	17285	RESISTOR, 220 ohm, ±10%, ½w.
R208	18093	POTENTIOMETER, 10k, ±10%, ½w.
R209		SAME AS R203
R210	17041	RESISTOR, 10k, ±10%, ¼w.
R211	17297	RESISTOR, .47 ohm, ±10%, 1w.
R214	17302	RESISTOR, 1.5 ohm, ±10%, 2w.
R215	16932	RESISTOR, .25 ohm, 3w.
R217	16413	RESISTOR, 4.7k, ±10%, 2w.

SYMBOL NO.	PART NO.	DESCRIPTION
R226	17352	RESISTOR, 68k, $\pm 10\%$ , $\frac{1}{4}w$ .
R227		
R228	32754	POTENTIOMETER, 10k, 1w.
R229	16736	RESISTOR, 10k, $\pm 10\%$ , $\frac{1}{2}w$ .
R230	17479	RESISTOR, 100 ohm, $\pm 10\%$ , $\frac{1}{2}w$ .
R231	16279	RESISTOR, 1k, 3w.
R235		SAME AS R202
L201	93758	CHOKE, 160mh
L204	56152	CHOKE, 10mh
L205	93722	CHOKE, 400mh
L206	93734	CHOKE, .4mh
L207	56097	CHOKE, 35D7
Q201	44056	TRANSISTOR, 2N1379
Q202	44185	TRANSISTOR, 2N1159
Q203		SAME AS Q202
Q204		SAME AS Q202
Q205		SAME AS Q202
Q206		SAME AS Q202
K201	66298	RELAY, 14v, (Transmitter)
K202	66016	RELAY, KD3D/12v (On-Off)
CR201	40141	DIODE, 1N461
CR202	40165	DIODE, #534
CR203	40153	DIODE, #538
CR204		SAME AS CR203
CR205		SAME AS CR203
CR206		SAME AS CR203
CR207		SAME AS CR202



SAV 901 (14V) ONLY

SYMBOL NO.	PART NO.	DESCRIPTION
R213	17364	RESISTOR, 180 ohm, $\pm 10\%$ , $\frac{1}{2}w$ .
R232	16310	RESISTOR, 40 ohm, 3w.
R233	17895	RESISTOR, 7.5 ohm, 3w.
CR208	40191	DIODE, ZENER 1E18Z
F201	86030	FUSE, 20 amps.
R234	17807	RESISTOR, 2.2k, $\pm 10\%$ , $\frac{1}{4}w$ .

SAV 902 (28V) ONLY

R212	16308	RESISTOR, 100 ohm, 3w.
R213	16281	RESISTOR, 450 ohm, 3w.
R219	16944	RESISTOR, 75 ohm, 3w.
R220		SAME AS R219
R221		SAME AS R219
R232		SAME AS R212
R233	16310	RESISTOR, 40 ohm, 3w.
R234	17077	RESISTOR, 4.7k, 10%, $\frac{1}{4}w$ .
CR208	40244	DIODE, ZENER 1E36Z
F201	84848	FUSE, 10 amps.



#### ADDENDUMS

Information contained in this section supplements the information contained in the manual. References to this section may be indicated where necessary in the manual.



SUNAIR ELECTRONICS INC.  
MANUAL FOR VHF COMMUNICATIONS  
TRANSCEIVER & NAV. RECEIVER  
MODEL 1036

ADDENDUM 1  
DATE: 8/5/65

PCN NUMBER 869  
PCN DATE: 7/27/65  
EFFECTIVITY: SERIAL NO. 1018 DATE: 7/27/65  
MODELS AFFECTED: SA 1036  
MANUAL REFERENCE: Page 44, Parts List

SCHEMATIC NUMBER 10378  
SCHEMATIC ISSUE: B  
SUBJECT: 30 MC. I.F. Transformer

TEXT: T-6 Part No. now changed to 48715-02  
due to an internal change.

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MODEL 1036

ADDENDUM 1  
DATE: 8/5/65

PCN NUMBER: 869  
PCN DATE: 7/27/65  
EFFECTIVITY: SERIAL NO. DATE  
MODELS AFFECTED: SA1036  
MANUAL REFERENCE: Page 40, Parts List

SCHEMATIC NUMBER:  
SCHEMATIC ISSUE:

SUBJECT: Previously unlisted items now being added to  
Parts List.

TEST: Added Items:  
P1 #74582 - Connector, Power, Male  
J1 #74609 - Connector, Power, Female  
H1 #74623 - Hood for Connector  
H2 # Same as H1  
Note: Although most used values are called out  
in the Parts list, C18,C19,C33,C88,  
C105 and R28 are selective values

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MODEL SA 1036

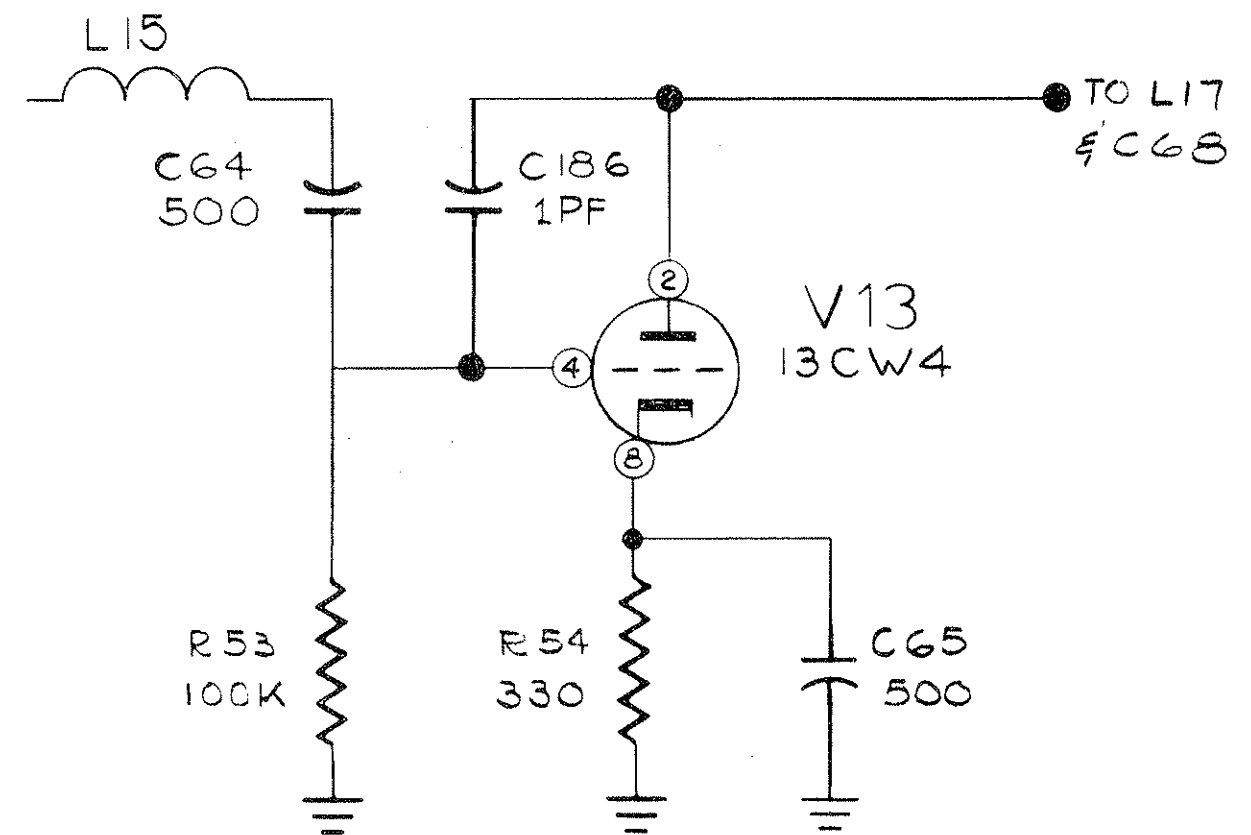
ADDENDUM 2  
DATE: 8/26/65

PCN NUMBER: 897  
PCN DATE: 8-26-65  
EFFECTIVITY: SERIAL NO. 1030 DATE: 8/26/65  
MODELS AFFECTED: SA 1036  
MANUAL REFERENCE: Schematic SA 1036, page 21, Parts List, page 41

SCHEMATIC NUMBER: 10378  
SCHEMATIC ISSUE: C  
SUBJECT: Component addition to improve performance of COM.  
Fractional MC Osc. at low input voltages.

TEXT:

C 186 26016 Capacitor, Mica: 1 pf, 5%, 500 V.





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MODEL 1036

ADDENDUM 3  
DATE: 9/3/65

PCN NUMBER:

PCN DATE:

EFFECTIVITY:            SERIAL NO. 1030            DATE 9/3/65

MODELS AFFECTED:        SA-1036

MANUAL REFERENCE:       Schematic SA-1036, Parts List, Page 38

SCHEMATIC NUMBER:      10378

SCHEMATIC ISSUE:       C

SUBJECT:                Component value changes to improve  
                          sensitivity of the COM. Section.

TEST:                    Delete C62 and C85 from Parts List and  
                          change C60 and C84 as follows:

C-60	26066 Capacitor, Mica: 27 pf, $\pm$ 5%, 500 V.
C-84	26092 Capacitor, Mica: 47 pf, $\pm$ 5%, 500 V.

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MODEL 1036

ADDENDUM 4  
DATE: 9/24/65

PCN NUMBER: 929  
PCN DATE: 9/24/65  
EFFECTIVITY: SERIAL No. 4020 DATE: 9/24/65  
MODELS AFFECTED: SAI - 300, SA1 - 400  
MANUAL REFERENCE: SCHEMATIC, page 22, Parts List, page 49.

SCHEMATIC NUMBER: 10885

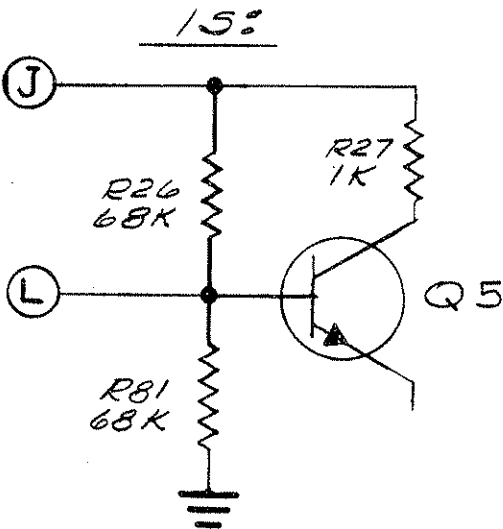
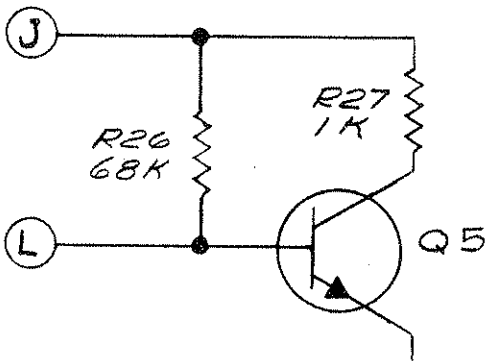
SCHEMATIC ISSUE:

SUBJECT: Add component value to improve linearity and  
stability of amplifier Q5  
Correction of Parts List - Add R80

TEXT:

R80	17223	Resistor 22K/10%/1/4W
R81	17352	Resistor 68K/10%/1/4W

WAS:

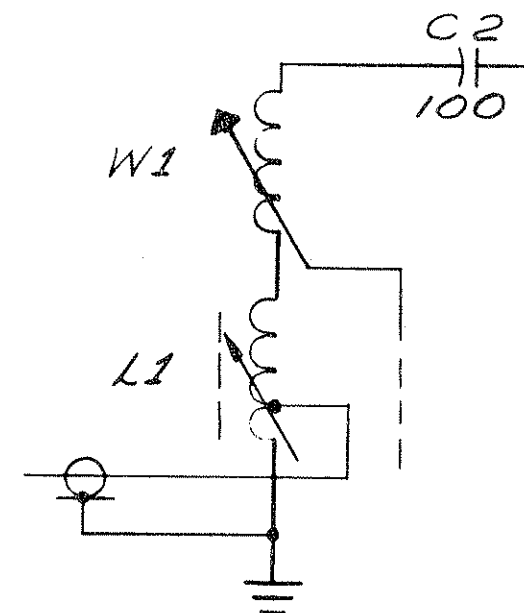


SUNAIR ELECTRONICS  
MANUAL FOR VHF COMMUNICATIONS  
TRANSCEIVER & NAV. RECEIVER  
MODEL SA 1036

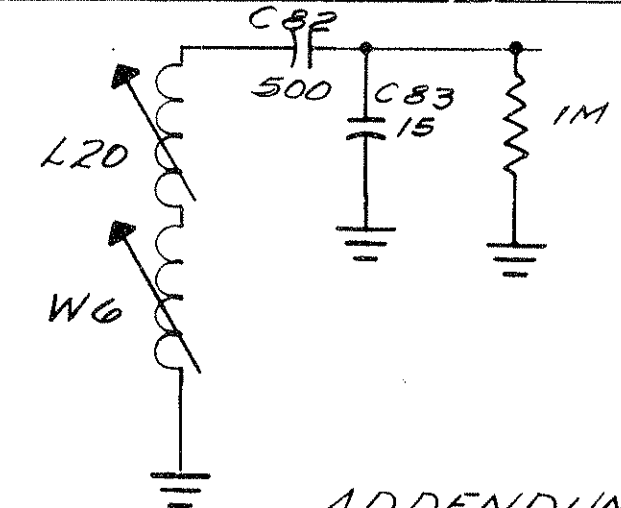
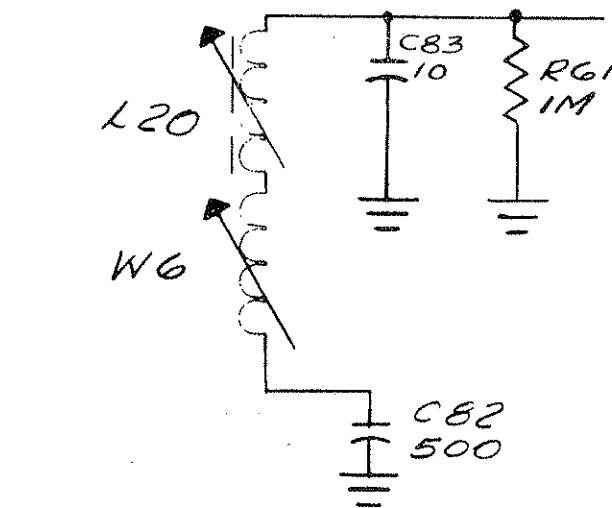
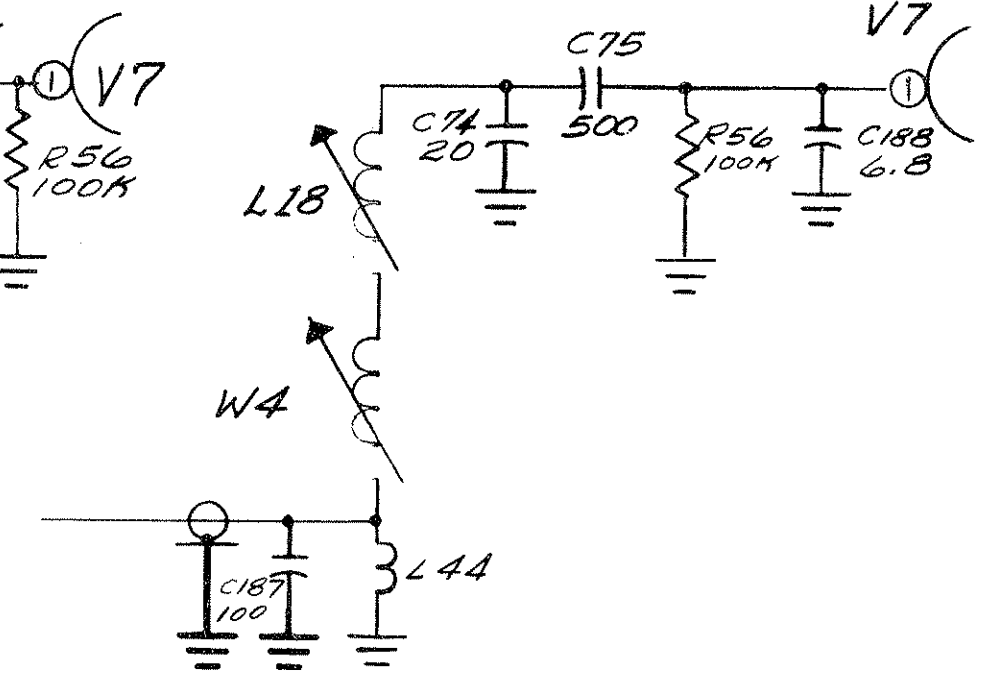
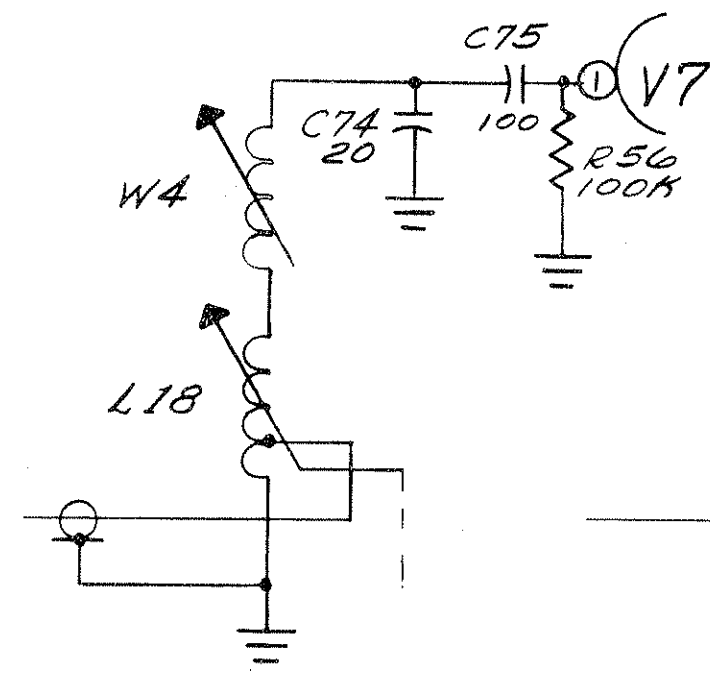
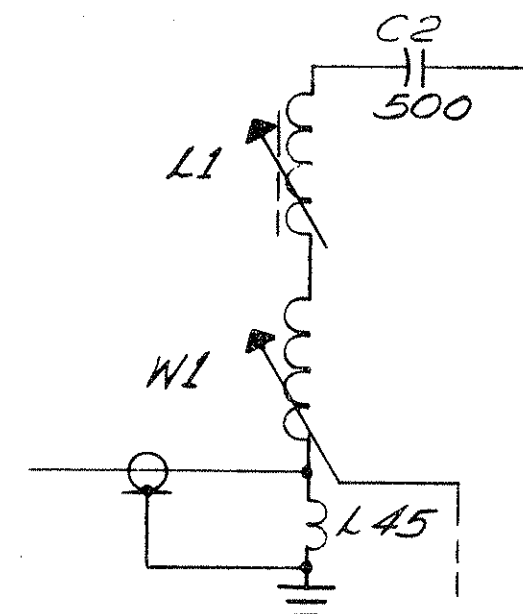
ADDENDUM 5  
DATE: 9/29/65

PCN NUMBER; 938  
PCN DATE: 10/4/65  
EFFECTIVITY: SERIAL NO. 1034 DATE: 9/29/65  
MANUAL REFERENCE: Schematic, page 21, Parts List, page 37, page 38,  
page 41 and page 42  
SCHEMATIC NUMBER: 10378  
SCHEMATIC ISSUE: D  
SUBJECT: Component value changes to improve tracking of the  
COM. and NAV. sections.  
TEXT: Replace C2, C7 and C11 on page 37 as follows:  
C2 25098 Capacitor, Disc: 500 pf, 500V  
C7 26248 Capacitor, Disc: 6.8 pf, NPO  
C11 Same as C2  
Replace C43, C75, C76 and C83 on page 38 as follows:  
C43 26846 Capacitor, Disc: 15 pf NPO  
C75 25098 Capacitor, Disc: 500 pf, 500V  
C76 Same as C43  
C83 Same as C43  
Add C187 and C188 on page 41 of the manual as follows:  
C187 25074 Capacitor, Disc: 100 pf, 500V  
C188 26248 Capacitor, Disc: 6.8 pf, NPO  
Add L44 and L45 on page 42 of the manual as follows:  
L44 98148 Choke, Fixed.  
L45 98150 Choke, Fixed.

WAS:



15:



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MODEL 1036

ADDENDUM 6  
DATE: 9/29/65

PCN NUMBER: 945  
PCN DATE: 10/4/65  
EFFECTIVITY: SERIAL No. 1034 DATE: 9/29/65  
MANUAL REFERENCE: Schematic, page 21, Parts List, page 37, page 40  
page 41, page 42, Addendum 5, page 1 of 2.  
SCHEMATIC NUMBER: 10378  
SCHEMATIC ISSUE: D  
SUBJECT: Component value changes to improve tracking of the  
NAV sections.

TEXT: Replace C42 on page 37, C174 on page 40,  
L4 on page 41 and R32 on page 42 as follows:

C42	26236	Capacitor, Disc: 4.7 pf, NPO
C174	26092	Capacitor, Mica, 47 pf. 500V
L4	63428	Coil, Fixed: .47 uh
R32	17663	Resistor: 680/10%/1/4 W

Replace C43 on Addendum 5, page 1 of 2 as follows:

C43	26248	Capacitor Disc: 6.8 pf. NPO
-----	-------	-----------------------------

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MODEL 1036

ADDENDUM 7  
DATE: 10/20/65

PCN NUMBER 963 and 971  
PCN DATE: 10/26/65  
EFFECTIVITY: Serial No. SAI-300 4016 DATE: 10/26/65  
SAI-400 5007

MODELS AFFECTED: SAI-300, SAI-400  
MANUAL REFERENCE: Schematic, page 22, Parts List, page 47,  
page 49, page 50 and Addendum 4, page 1 of 1

SCHEMATIC NUMBER 10885

SCHEMATIC ISSUE: B

SUBJECT: Change in wire color code from J101 to P.C.  
Board #1 and T/F meter.  
Component value changes to improve tracking  
of the VOR

TEXT: Page 2 of 2 of the Addendum is the revised  
schematic of page 22 of the manual.

Replace C33 on page 47, R48, R54, R55,  
R67 on page 49, CR16 on page 50, and  
R80 on page 1 of 1 of Addendum 4 as follows:

C33	25713	Capacitor, Mylar .1 mf/250V
R48	17041	Resistor, 10K/10%/1/4W
R54	18306	Resistor, 5.6K/10%/1/4W
R55		Selected Value
R67		Selected Value
CR16	44288	Diode Zener 9-10V , 10W
R80		Deleted

NOTE: The plus sign on pin H of J101 means that a positive voltage applied to  
this pin will produce an upward needle deflection.

The plus sign on pin K of J101 means that a positive voltage applied to  
this pin will produce a flag movement towards the "ON" window.

SUNAIR ELECTRONICS, INC.  
MANUAL FOR VHF COMMUNICATIONS  
TRANSCIVER & NAV. RECEIVER  
MODEL 1036

ADDENDUM 8  
DATE: 12/16/65

PCN NUMBER: 1015

PCN DATE: 12/16/65

EFFECTIVITY: Serial No. 1057 and up.

MANUAL REFERENCE: Schematic 10378, page 21, Parts List,  
pages 37 and 41.

SCHEMATIC NUMBER: 10378

SCHEMATIC ISSUE: E

SUBJECT: a) Addition of diode switching to disable the  
receiver communication M.C. oscillator  
when transmitter is in operation.

b) Improvement of detector efficiency.

TEXT: Deleted the following parts:

CR 1 Diode IN461	Part No. 40141
C 32 Cap. 100 pf	Part No. 25074

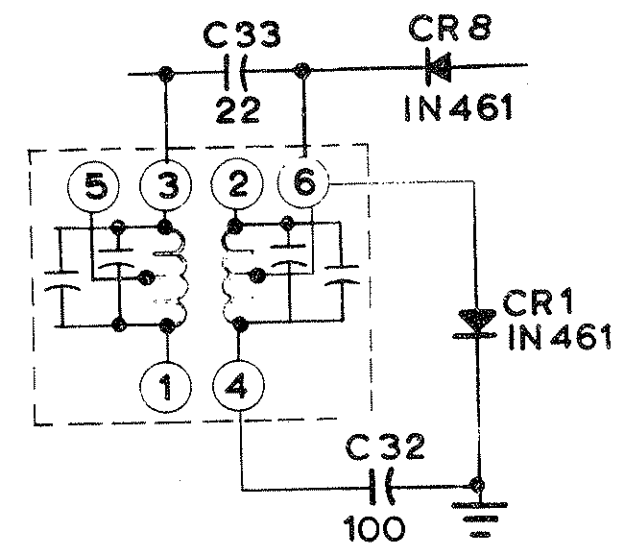
Added the following parts:

CR 9 Diode IN914	Part No. 44290
C 189 Cap. .0033 uf	Part No. 24422
R 116 Resistor 120 K	Part No. 17510

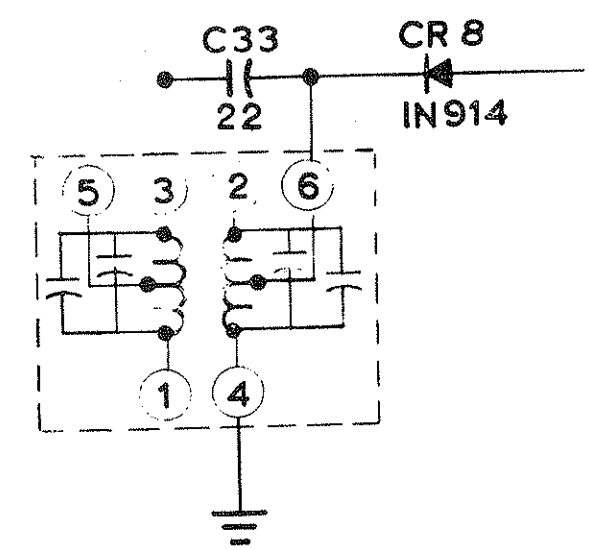
CHANGED:

CR 8 was IN461	Part No. 40141
Is now IN914	Part No. 44290

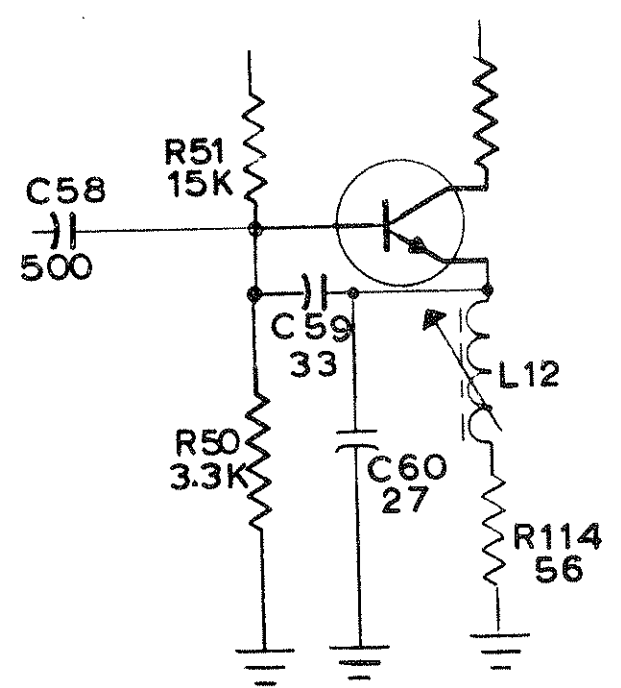
WAS:T5



IS:T5



WAS:Q1



IS:Q1

