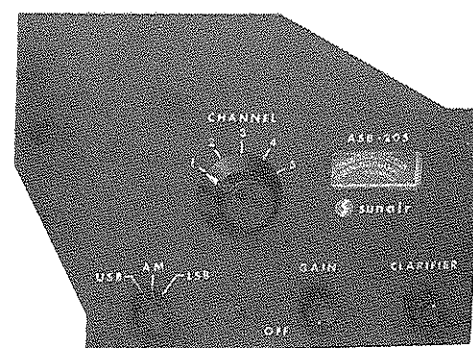


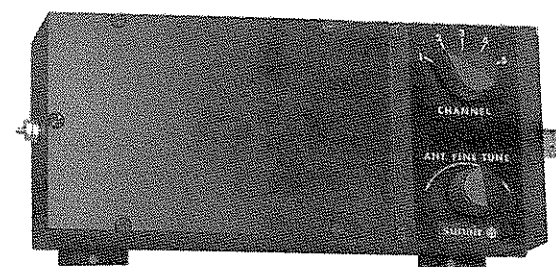


**sunair electronics, inc.**

3101 S.W. Third Avenue, Fort Lauderdale, Florida 33315, USA



ASB-205



CU-25

# **Instruction Manual**

## **SSB COMMUNICATIONS EQUIPMENT**

### **ASB-205**

1st EDITION, 1 JULY 1971

ASB-205 SERIAL NO. 501

CU-25 SERIAL NO. 101

MANUAL PART NO. 99418

FEB 1 1972

# WARRANTY POLICY

## AVIONICS DIVISION

Sunair Electronics warrants each equipment manufactured by it to be free from defects in material or workmanship, under normal use for which intended, for one (1) year from date of installation. Sunair will hereunder replace or repair (at Sunair's discretion) any defective components (EXCLUDING TUBES AND SEMI-CONDUCTORS).

Any such defective equipment (or component) shall be returned, transportation charges prepaid, to Sunair or to a Sunair authorized warranty station. Provided that the failure is within the terms of this warranty and is not due to damage, misuse, improper installation or unauthorized modification or repair, Sunair will, in addition to replacing component parts within specified periods, also assume warranty labor costs for ninety (90) days from date of original installation. Any such charges must be reasonable and for actual bench repair only and limited to a maximum of four (4) hours. Labor not directly related to correcting the defective condition cannot be honored.

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## SECTION I

### GENERAL INFORMATION

#### A. SYSTEM DESCRIPTION

The Sunair ASB-205 SSB Transceiver is a lightweight small all solid state unit designed to be used in light single engine aircraft and helicopters. It will provide long range communications when used with the recommended 29' or 34' V antennas.

#### B. SPECIFICATIONS

##### General:

Frequency Range	2.0 to 13.5 MHz
Number of Channels	Up to 5 single frequency simplex.
Channel Frequency Spacing	No restriction.
Modes of Operation	SSB, AME: Transmit-Compatible AM Receive-Exhorted carrier
Power Source	13.7 VDC: 0.12A receive, 3.6A transmit 27.5 VDC with regulator: 0.22A receive, 3.8A transmit.
Temperature Range	0°C to +50°C
Frequency Stability	Not more than ±100 Hz change over temperature range.
Weight	5.25 lbs. (2.4 Kg)
Size	5" x 3" x 13.5" (12.7 x 7.6 x 34.3cm) WHD

##### Transmitter:

Power Output	20W PEP nominal
Sidetone	0 to 5MW, adjustable.
Carrier Suppression	Not less than 40 db below PEP
Unwanted Sideband	Not less than 40 db below PEP

Receiver:

Sensitivity	SSB: 0.7 uv for 10 db (S+N)/N AME: 3 uv for 6 db (S+N)/N
Gain	3 uv for 100 MW (500 ohm) SSB 3 uv for 20 MW AM
Selectivity	Not more than 6 db down at 2.1 kHz Not less than 60 db down at 7.0 kHz
AGC	Not more than 6 db variation in audio output from 10 to 100,000 uv RF input.
Audio Output	100 MW at 500 ohm.
Audio Response	Not more than 6 db variation from 350 to 2450 Hz.
Clarifier Range	Not less than 200 Hz variation in audio frequency.

C. ACCESSORIES AND OPTIONS FOR THE ASB-205

	Sunair <u>Part No.</u>
CU-25 Antenna Coupler, Manual Control	99614
CU-105-1 Antenna Coupler, Remote Control	99814
Regulator, 27.5 VDC to 12.5 VDC	99423
Anti-Precipitation Antenna Installation Kit	95158
Bare Wire Antenna Installation Kit	95146
Microphone, transistorized, noise cancelling	87151

## SECTION II

### INSTALLATION

#### A. UNPACKING

Carefully lift the equipment from its shipping carton(s). Examine for visible damage. If the transceiver or accessories have been damaged in transit, save the shipping materials and notify the transportation agency immediately.

Check the equipment included in the shipment against your order.

Remove the transceiver from its case and check that all plugs and printed circuit cards are properly seated. Check all switches and controls for freedom of movement.

#### B. RETURN OF EQUIPMENT

If you wish to return your equipment for repairs, etc., without prior correspondence, be sure to include the following information attached to the equipment inside the packing carton:

1. Complete instructions detailing the work to be performed.
2. Your return address.
3. Method of shipment by which the equipment should be returned.
4. Special instructions.

Direct your correspondence to:

SunAir Electronics, Inc.  
Customer Service Department  
3101 S. W. 3rd Avenue  
Fort Lauderdale, Florida 33315  
U. S. A.

Telex No. 51-4443

#### C. ORDERING OF REPLACEMENT PARTS

When ordering replacement parts, please furnish the following information as applicable:

1. Sunair type number, name and serial number of principal equipment.
2. Unit sub-assembly number where applicable.
3. Quantity required.
4. Sunair part number and description.
5. Item or symbol number obtained from parts list or schematic.

#### D. INSTALLATION PROCEDURE

The installation of the ASB-205 in an Aircraft is very simple and straight-forward. The procedure listed below should be followed in order to insure a trouble free installation:

1. ASB-205
  - (a) Select an area in the control panel that will accept the depth of the ASB-205. (13.5 inches plus 2 inches for the connector).
  - (b) Mark and make cut out on panel to fit radio dust cover.
  - (c) Fabricate 2 "L" brackets to match dust cover mounting holes and attach brackets to mounting rails of front panel. For added stability a mounting hole is provided on the rear of the dust cover to secure a hanging bracket if desired.
  - (d) Fabricate installation cable in accordance with the installation cable drawing in this section.
2. CU-25 Antenna Coupler

If CU-25 Manually Operated Antenna Coupler is to be installed:

  - (a) Select location of coupler preferably above the pilot's seat in the headliner within reach of the pilot.



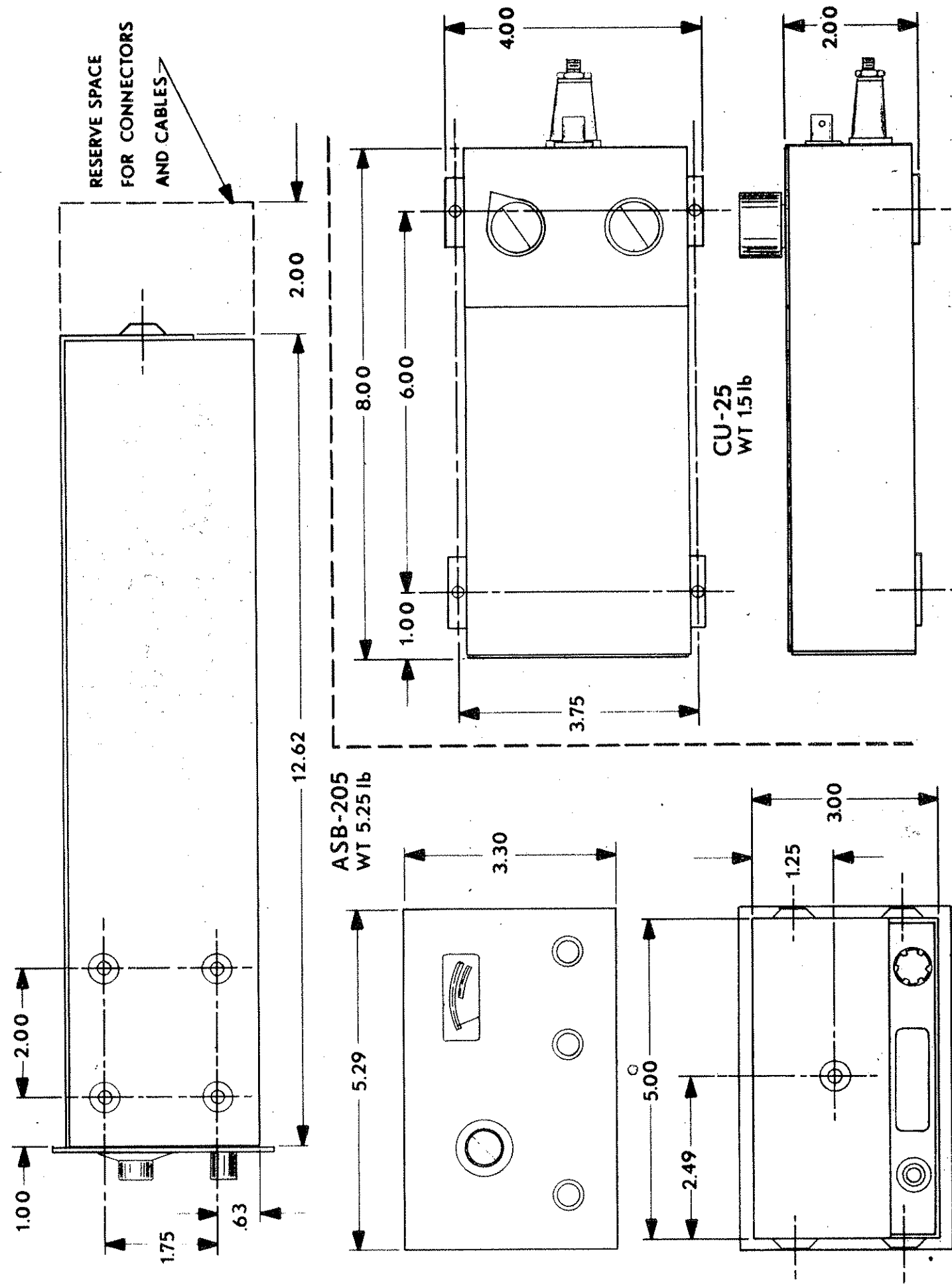


FIGURE NO.1 OUTLINE AND MOUNTING DIMENSIONS

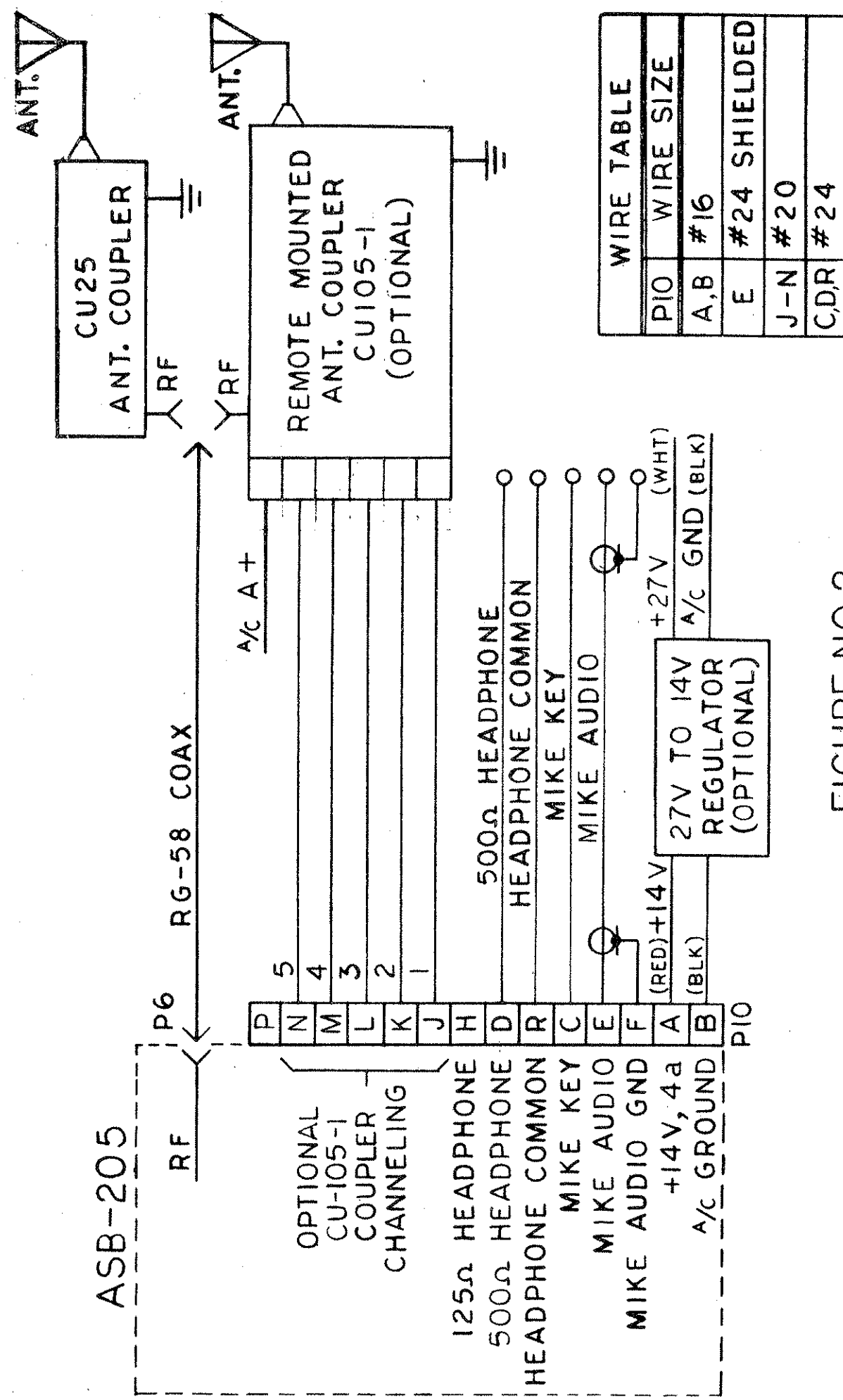


FIGURE NO.2  
INSTALLATION WIRING  
ASB-205

- (b) Mount coupler securely with four sheet metal screws to a mounting bracket fabricated by the installer.
- (c) If coupler is mounted behind headliner remove the two knobs and channel plate from coupler and reinstall on outside of headliner.
- (d) Coupler must be securely grounded to aircraft skin with mounting screws. Also install ground wire from stud in end of coupler box to aircraft skin.
- (e) Coupler antenna post should be located as close as possible to end of antenna (never more than 12 inches).
- (f) Refer to paragraph E this section for antenna customizing data and tune-up procedure.

### 3. CU-105-1 Antenna Coupler

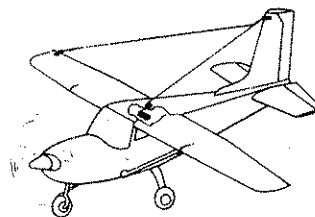
If remote mounted CU-105-1 is to be installed:

- (a) Refer to CU Coupler Handbook supplied for installation and tuning instructions.

### 4. Antenna Installation

- (a) The ASB-205 system has been designed to be used with a 29 or 34 foot V Antenna.
- (b) Install bare wire or anti-precept wire antenna kit as shown in sketch.
- (c) Antenna may terminate on either wing tip, however, the end of the antenna should be at least 12 inches from wing.
- (d) Maintain tight tension on antenna so it will not sag while in flight.

RECOMMENDED  
ANTENNA CONFIGURATION



5. Regulator

If the ASB-205 is to be installed in a 28V Aircraft it is necessary to use the 28V to 14V Regulator, PN 99423. Refer to diagram of regulator and install and wire as shown.

NOTE It is necessary that regulator in-put voltage be turned off with either the aircraft master power switch preferable, or a separate switch as the radio switch does not interrupt power to the regulator. If the regulator is connected directly across the aircraft battery a small current will flow even when the radio is turned off and the battery will discharge.

E. SYSTEM CHECKOUT AND ANTENNA COUPLER TUNING

After installing the transceiver, coupler and antenna the following procedure must be performed in order to complete the installation and insure that the system will perform as required.

1. ANTENNA COUPLER - CU-25

The antenna coupler has been customized at the factory for the 29' or 34' antenna and the selected frequencies. The air dux clips have not been soldered as it may be necessary to move them to a different turn during tune-up. Air dux clips must be soldered to air dux after tune-up.

(a) Coupler Configuration

Refer to the coupler schematic diagram, the component layout drawing and the two customizing sheets. The coupler basic circuit is configured in a pi network; the input C, the airdux inductor and the output capacitor trimmer. As it becomes necessary to modify the basic circuit Csl and Ctl may be added by connection of jumpers. The two customizing sheets show when Csl and Ctl should be used. Refer to the component board layout if jumpers must be added or changed. The capacitors Ctl and Csl are installed in the unit. Csl=50pf and Ctl=75pf. The values are not critical as the air dux tap can be changed and Cl varied to achieve the required VSWR.

If it becomes necessary to add or take out either Ctl or Csl, this is done by jumpers on the component board.

(b) Coupler Tuning

1. Install wattmeter or SWR meter between transceiver and coupler.
2. Remove coupler phenolic cover.
3. Set antenna trim capacitor to approximately half value (Rotor half way into stator).
4. Set transceiver to AM and Channel #1. Set coupler to Channel #1.
5. Key transceiver and note reverse power.
6. If reverse power is greater than 1 watt rotate antenna trim capacitor to determine if reverse power will decrease to zero, and adjust C1 padder with antenna trim set for minimum reverse power.
7. If reverse power cannot be zeroed return antenna trim to half value and move air dux clip to a different turn and repeat the process.
8. The customizing chart shows the frequencies where it is necessary to use Ctl and Csl. If the antenna is electrically close to the 29 and 34 foot antennas show in the customizing charts the coupler should be configured exactly as shown plus or minus one or two turns on the air dux. Air dux turns are counted from the antenna post, the odd numbered turns next to the component board and the even numbered turns next to the chassis.
9. The ASB-205 panel meter may also be used as a tuning indicator. The same coupler tuning procedure is followed except the coupler is tuned for a maximum meter indication. To obtain higher power output and more power meter deflection the radio may be operated in the SB Mode and a single tone (such as whistling) may be injected into the microphone. Check the reverse power while doing this to determine if the coupler is tuned for zero reflected power.

## 29' ANTENNA

## CUSTOMIZING DATA FOR CU-25 COUPLER

FREQ kHz	C <sub>1</sub> pf (Add to padder)	Tap From Ant End	C <sub>s1</sub> pf	C <sub>n</sub> pf
2150	2400	60		75
2200	2400	60		75
2350	2400	51		75
2400	2400	49		75
2450	2200	48		75
2850	2200	40		75
3023	2000	34		75
3050	2000	33		75
3150	2000	33		75
3450	2000	27		75
3800	1800	22		75
4100	1500	28		
4600	1000	22		
4750	1000	22		
5050	750	19		
5400	750	16		
5550	750	16		
5650	750	15		
5850	750	14		
5950	750	14		
6250	470	12		
6550	470	10		
6800	470	9		
7250	250	22	50	
7650	250	20	50	
8200	250	17	50	
8250	250	16	50	
8300	250	16	50	
8850	250	14	50	
9000	250	13	50	
9100	250	12	50	
9300		11	50	
10000		6	50	
11000		9		75
12300		7		75
12400		6		75
13300		5		75

FIGURE NO. 3

# 34' ANTENNA

## CUSTOMIZING DATA FOR CU-25 COUPLER

FREQ kHz	C <sub>1</sub> pf (Add to padder)	Tap From Ant End	C <sub>s1</sub> pf	C <sub>t1</sub> pf
2000	2400	73		75
2200	2400	56		75
2650	2200	40		75
2850	2200	36		75
2950	2200	33		75
3023	2000	32		75
3200	2000	30		75
3400	2000	26		75
3650	1800	23		75
3850	1800	20		75
4050	1500	26		
4750	1000	18		
4850	1000	17		
5100	750	16		
5550	750	12		
5650	750	11		
5750	750	10		
6200	470	7		
6550	470	5		
6650	470	4		
6750	250	3		
7200	250	19	50	
7700	250	16	50	
8200	250	11	50	
8500	250	8	50	
8800		7	50	
8850		6	50	
8900		5	50	
9050		17		75
10000		11		75
11300		7		75
12300		6		75
13300		5		75

FIGURE NO. 4

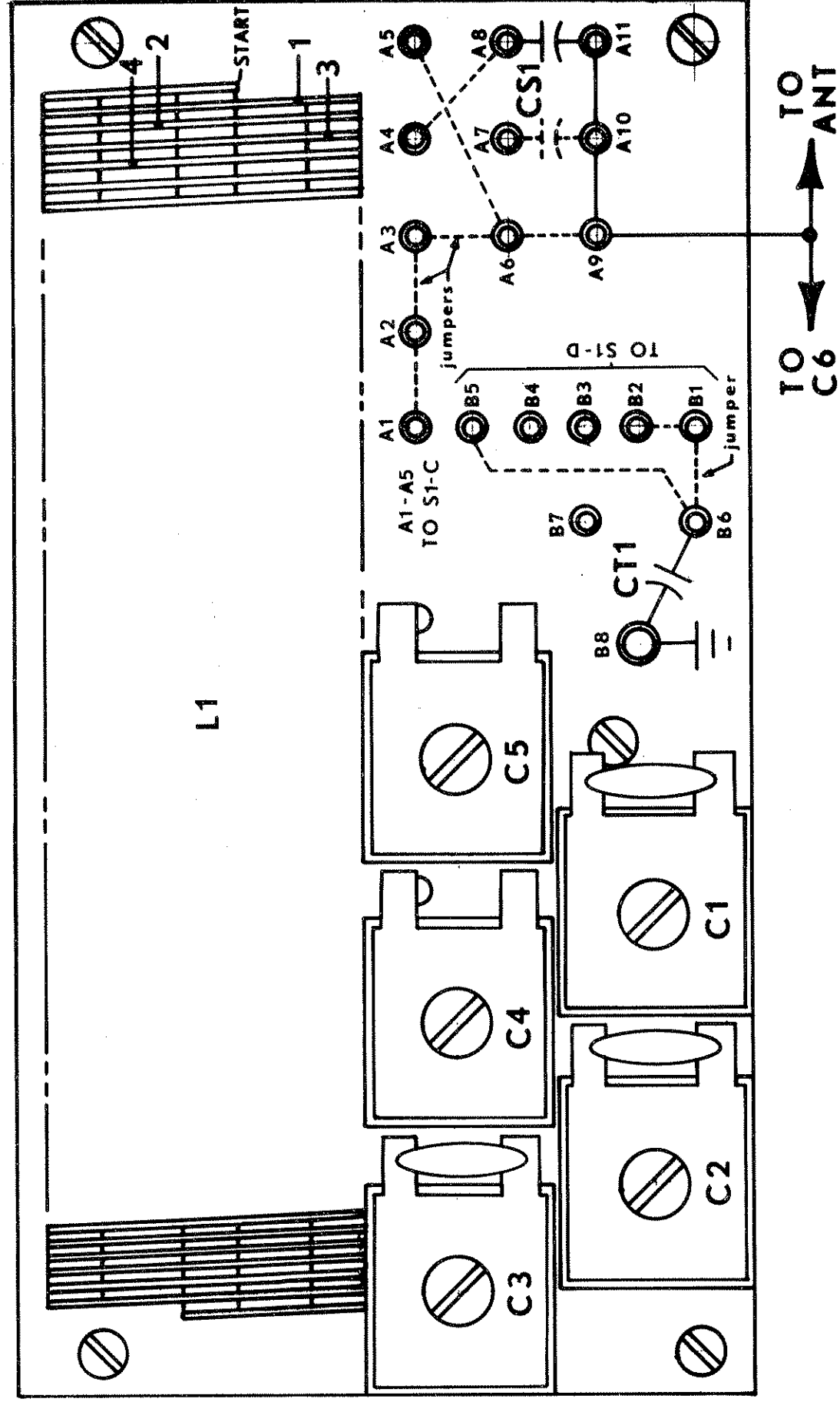


FIGURE NO. 5  
CU-25 COMPONENT BOARD



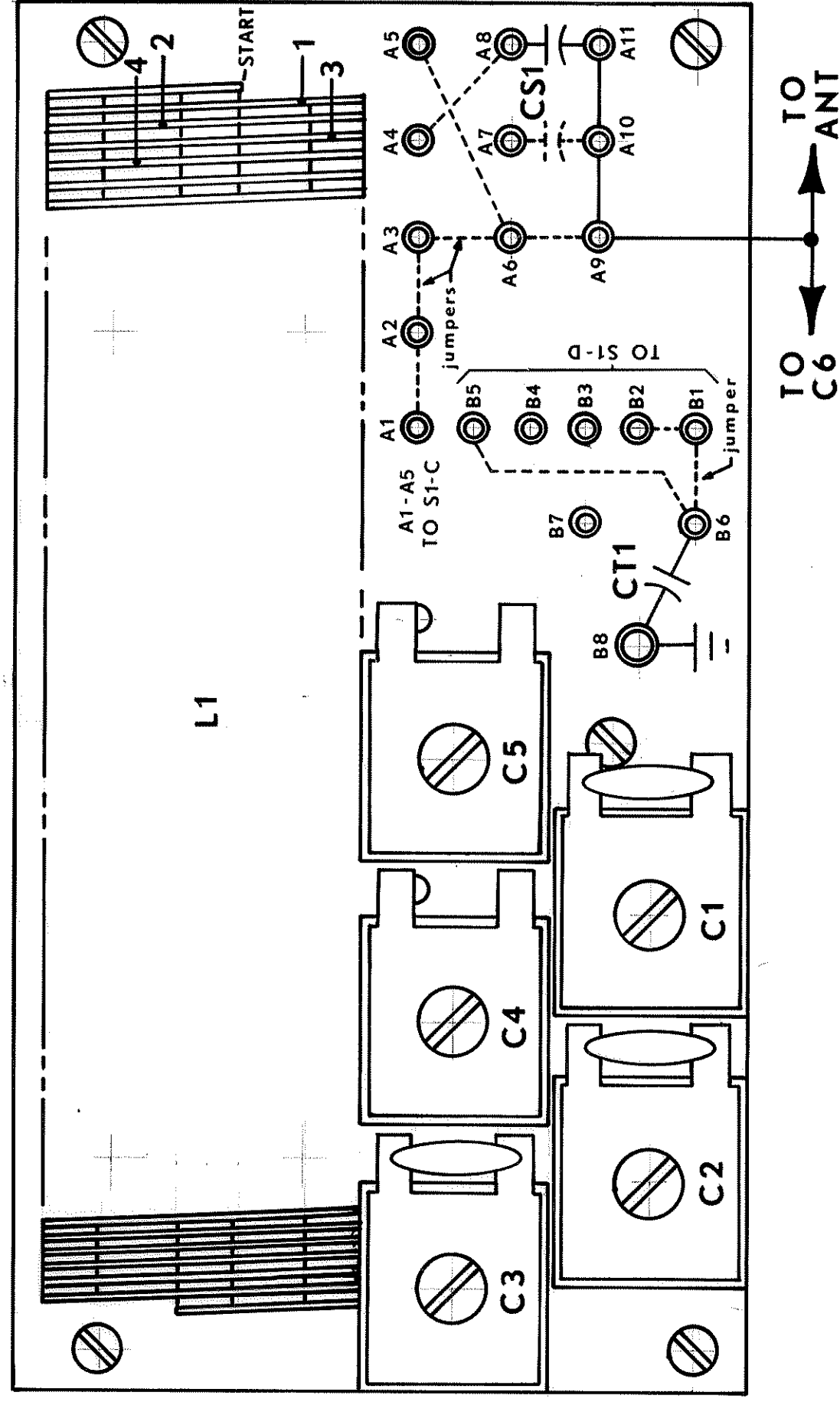
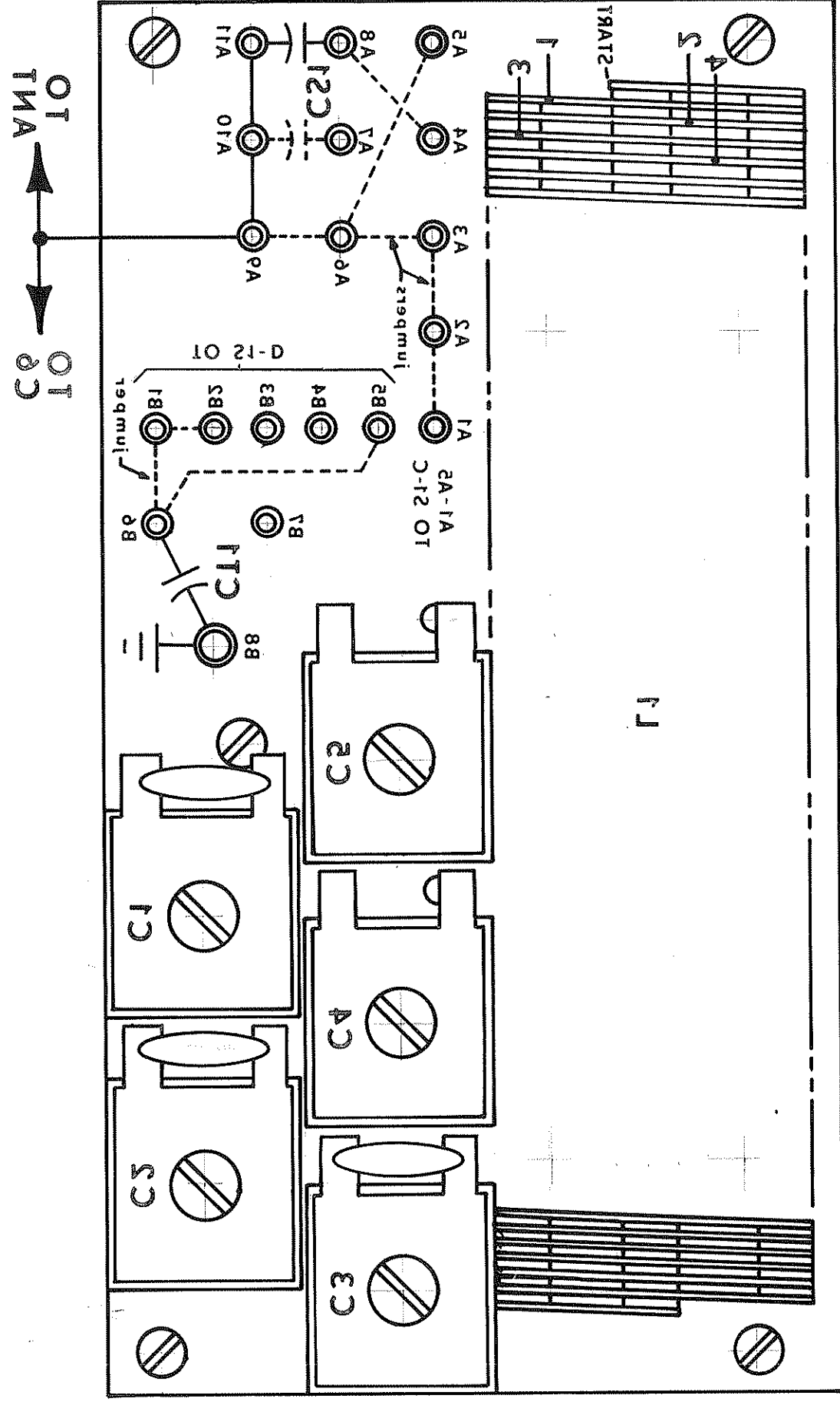


FIGURE NO. 5  
CU-25 COMPONENT BOARD

CU-52 COMPONENT BOARD  
FIGURE NO. 2



## 2. ANTENNA COUPLER CU-105-1 (REMOTE CONTROLLED)

- (a) If this type of antenna coupler is installed instead of the CU-25 manual switched unit refer to the CU-105-1 coupler manual supplied and follow the tuning instructions contained therein.

## 3. MICROPHONE GAIN

- (a) The microphone gain potentiometer, R301, has been set at the factory for an average level microphone. If after tuning the antenna coupler, the transmitter output sounds distorted or too weak on AM the microphone gain adjust, R301, on PC-3 may have to be changed to compensate for a different microphone level.

NOTE: Good SSB transmission in a noisy environment requires the use of a good noise cancelling microphone. It is recommended that the Shure model 488T transistorized noise cancelling microphone be used, Sunair part number 87151.

## 4. SIDETONE LEVEL

- (a) The sidetone level has been set at the factory for approximately 10 milliwatts when connected to a 500 ohm headset. This level may be adjusted by R617 on PC-6 located on the underside of the radio chassis.

NOTE: If the transceiver audio output is to be connected to a cabin speaker amplifier it will probably be necessary to mute the audio output during transmit or if headphones will never be used, R617 may be set to minimum level.

## F. COMMUNICATION CHECK

- (a) After the entire installation procedure has been completed the system should be checked for operation.

1. Select a channel of a nearby ground station.
2. If manual CU-25 antenna coupler is installed, set mode switch to AM and key transmitter. Tune antenna trim control for maximum meter deflection.
3. Reset mode switch to required transmission mode, sideband or AM

4. Call station and request transmission check.
5. When operating AM, the exhalted carrier method of reception is then used and a tone will be heard when the received station is transmitting. By rotating the clarifier knob, this tone is adjusted to "zero beat", or "nulled" so that the received speech is heard clearly with no interference from the tone.
6. If operating sideband, rotate the clarifier control for natural voice sound during receive.
7. Check operation of the audio gain control.
8. If ground stations are not near enough for a communications check a receiver should be used to check for operation on each channel.

### SECTION III

#### OPERATION

##### A. CONTROLS AND METERING, ASB-205

1. Mode switch-Selects operating mode of the transceiver, USB, LSB, AME (Exhalted carrier receive)
2. Transceiver Channel Selector-Selects the operating channel of the transceiver.
3. Gain-Controls the receiver audio level and ON/OFF functions.
4. Clarifier-Varies the receiver audio output frequency on SSB, permits zero beating a received AM carrier for AM reception.
5. Meter-In the receive mode, it monitors the input signal strength; on transmit, it monitors the relative power output and indicates correct antenna coupler tuning when indicating maximum deflection.

##### B. ANTENNA COUPLER, CU-25

1. Channel Select, selects operating channel. Coupler and transceiver must be on same channel number.
2. Antenna Fine Tune-Fine tune antenna coupler. Used in AM mode while monitoring meter for maximum up-scale deflection.

## SECTION IV

### ALIGNMENT

#### A. EQUIPMENT REQUIRED:

<u>Description</u>	<u>Suggested Type</u>
(a) RF Signal Generator	HP-606B
(b) AC-VTVM	HP-400H
(c) DC-VTVM	HP-412A
(d) Oscilloscope	Tektronix 543B/L
(e) Frequency Counter	HP-5245L
(f) Thru-Line Wattmeter	Bird 43/50H
(g) 50 ohm Coaxial Load	Bird 81B

NOTE: After alignment of any major portion of the system has been performed, repeaking of all the tuned circuits and antenna coupler should be done to insure optimum performance.

#### B. RECEIVER

The receiver alignment is broken into two basic areas, the input RF tuned circuits, located on PC-4 and the mixer and IF tuned circuits, located on PC-2. If the mixer and IF amplifier need alignment, they should be tuned before RF tuned circuit alignment is done.

##### 1. RF Tuned Circuits

The RF tuned circuits are aligned by connecting the RF signal generator to the RF input of the transceiver, J6. Set the gain control to full clockwise position. Raise the RF signal input for an audio output of approximately 5 Vrms across a 470 ohm load on the audio output line. For each channel, adjust the two coils in the tuned circuits for maximum audio output while lowering the RF signal input to keep approximately 5 Vrms of audio output.

##### 2. Mixer and IF Amplifier

For alignment of the mixer and IF Amplifier, remove PC-3 and PC-4. Set the RF signal generator with the frequency counter to 1648.5 kHz (for USB) and connect to PC-2-D. Set the signal generator output to produce approximately 5 Vrms of audio output across a 470 ohm load on the audio output line. Tune L201, L202, L203 and L204 for maximum

audio output level of approximately 5 Vrms.

### C. TRANSMITTER

#### 1. P. A. Bias

The bias on the final power amplifier should be set first in transmitter alignment procedure to avoid damage to the transistor.

Connect the VTVM to the base of the power amplifier transistor, Q2. Turn the "MODE" switch to SB and key transmitter. Set the bias regulator potentiometer, R702, for a reading of approximately 0.55 volts.

#### 2. Carrier Oscillator

Connect the frequency counter to PC-6-3 through a 68pf capacitor. Turn the "MODE" switch to SB and key transmitter. Adjust the carrier oscillator trimmer capacitor, C603, for 1650.000 kHz on the counter.

#### 3. Channel Oscillator

Connect the frequency counter to J-3-D through a 68pf capacitor.

Adjust the appropriate trimmer capacitor on PC-3 for the exact crystal frequency, the channel frequency plus 1650 kHz. Repeat this procedure for each channel used.

#### 4. Exciter

The exciter has two tuned circuits for each channel which are located on PC-4. Connect the oscilloscope to PC-1-Y. Turn the "MODE" switch to AM and key transmitter. Adjust the two tuned circuits for peak output.

#### 5. Balanced Modulator

The balanced modulator is a ring modulator type and must be balanced with R311 and C307 to suppress the carrier oscillator in the output. The output from the balanced modulator is a double sideband suppressed carrier signal which is connected to a band pass filter, FL-1 or FL-2, through the selected solid state switch on PC-5. The sideband filter removes one sideband and attenuates the carrier an additional 15 db.

Connect the oscilloscope to the exciter output at PC-1-Y. Set the "MODE" switch to SB and key transmitter. Alternately adjust C307 and R311 for a null on the oscilloscope. This adjustment must be repeated several times to reach the full null.

#### 6. Power Amplifier

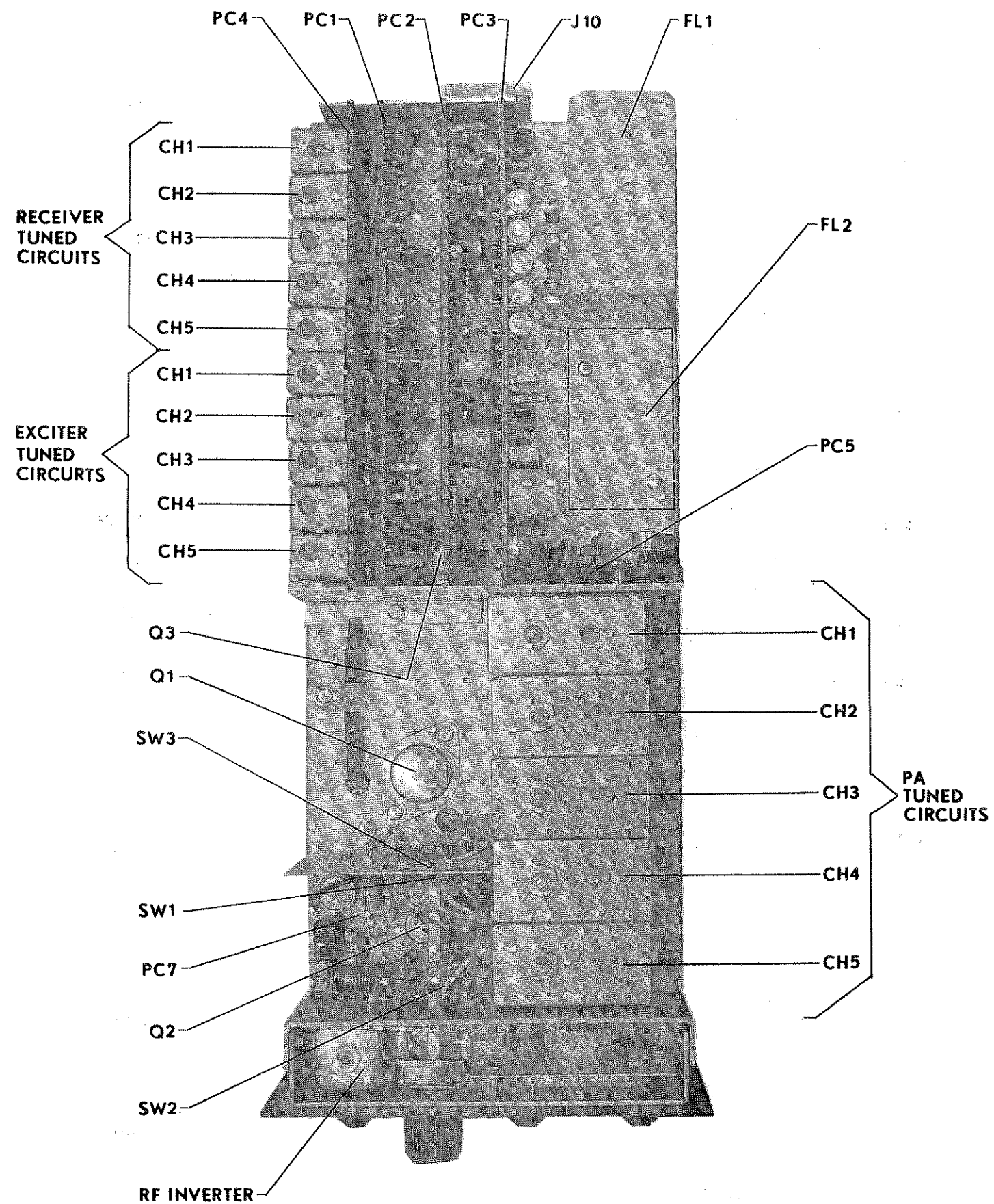
The PA has one tuned circuit for each channel mounted on a plate on the chassis. The tuned circuits are in a "T" configuration. The two padder capacitors must be tuned for a compromise between power output and linearity. Connect the wattmeter with coaxial load and the oscilloscope to the transmitter output. Set the Mode switch to AM and inject 1000 Hz tone at mic input. Key transmitter and adjust audio level for 100% modulation. Alternately adjust the two capacitors in the channel tuned circuit can for maximum power output and best linearity. Average power reading should be approximately 8 to 10 watts.

NOTE: The PA tuned circuits must be tuned at an output level close to rated output to achieve the proper match to the power transistor. The output can be increased or decreased with the microphone gain potentiometer, R301.

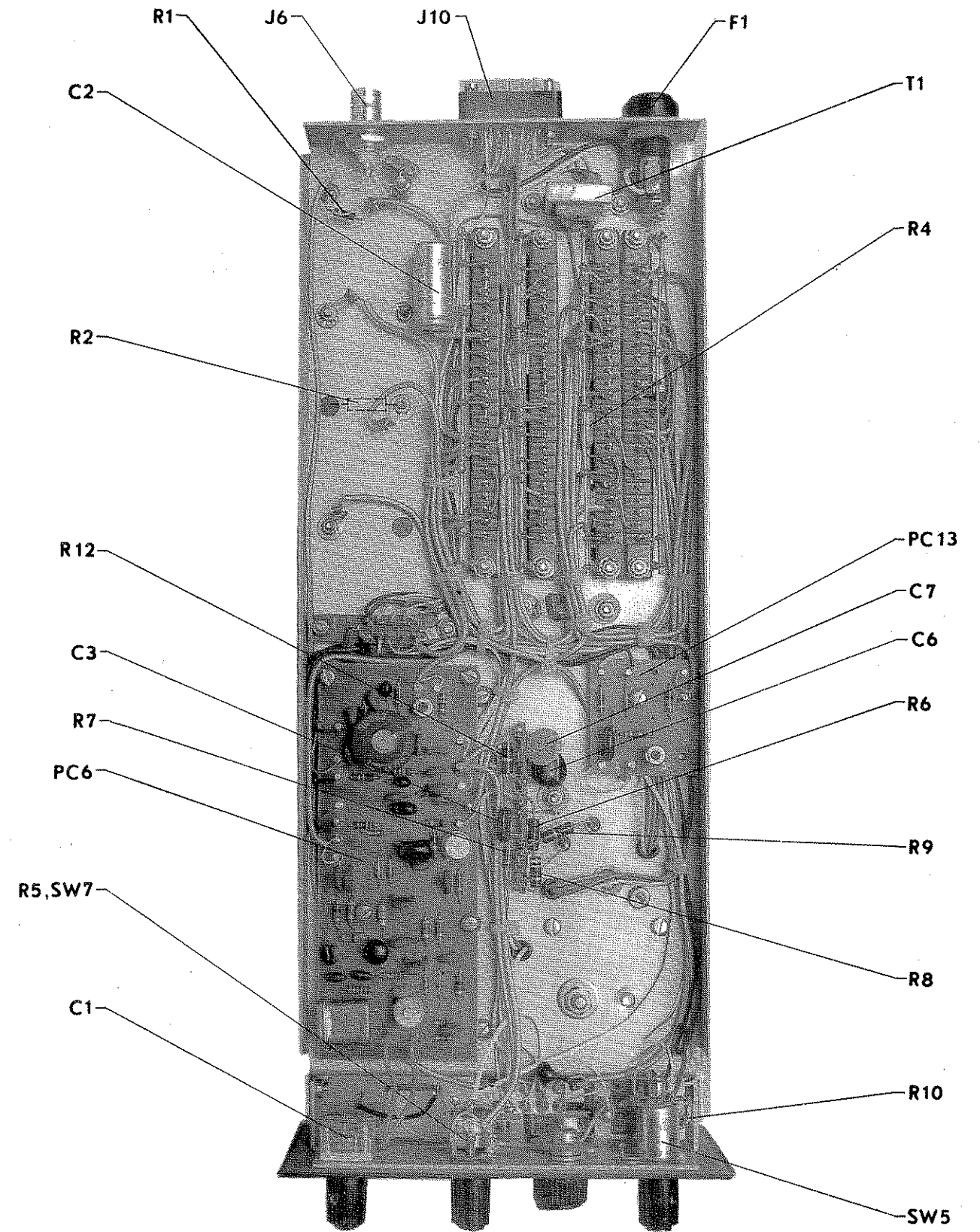
#### 7. Microphone Amplifier Adjust

With the same test setup as step 6, connect the microphone to the microphone jack. Speak directly into the microphone with a normal voice level and set the microphone gain potentiometer, R301, so that the output power, read on the wattmeter, is approximately 8 watts. (This is approximately 20 watts PEP). The wave form should be crisp and clean on the oscilloscope.





ASB-205 PARTS CALL-OUT, TOP VIEW  
FIGUER NO. 6



## SECTION V

### FREQUENCY CHANGES

#### A. FREQUENCY BANDS

The receiver/transmitter frequency spectrum is divided into seven bands. Any frequency change that does not exceed the band limit can be made by retuning the receiver/transmitter tuned circuits, antenna coupler and changing crystals. There are three frequency determining modules in the radio: The receiver RF preselector, the exciter tuned circuits and the final PA tuned circuit. The frequency bands and modules for the transceiver are divided as shown in Table 1. The capacitor values and air dux tap numbers for the antenna coupler are shown in the two customizing charts.

If it becomes necessary to change frequency from one band to another, order the appropriate modules by part number. The channel crystal part number is 81793 and requires that the channel frequency be specified.

#### B. BAND CHANGES

Band changes should be made by a qualified technician. All band changing is accomplished by changing three modules, the preselector, exciter, the PA and the channel crystal. After installing the correct modules, as shown in Table 1, the modules must be tuned to the correct frequency and the crystal frequency adjusted to the channel operating frequency by the trimmer capacitors located on PC3. The antenna coupler must also be tuned to the new frequency.

For alignment, see Section IV.

BAND	COLOR IDENT.	FREQ. MHz	PRE-SELECTOR MODULE	EXCITER MODULE	PA MODULE
1	Brown	2.0 - 2.6	99664-1	99665-1	99662-1
2	Red	2.6 - 3.5	99664-2	99665-2	99662-2
3	Orange	3.5 - 4.5	99665-3	99665-3	99662-3
4	Yellow	4.5 - 6.0	99664-4	99665-4	99662-4
5	Green	6.0 - 7.9	99664-5	99665-5	99662-5
6	Blue	7.9 - 10.3	99664-6	99665-6	99662-6
7	Violet	10.3 - 13.5	99664-7	99665-7	99662-7

TABLE 1

## RECOMMENDED SPARE PARTS LIST

The ASB-205 design allows a substitution technique for repair.

The Recommended Spare Parts List, therefore, contains only items required to repair a unit in the field. To simplify repair by substituting PC Boards, it is recommended that PC Board assemblies be stocked. Assemblies that malfunction will be repaired at SunAir at a nominal charge and returned (see note below).

Using the schematics in the Manual, a malfunction can be localized to a specific assembly and that assembly quickly substituted to repair the unit.

### IMPORTANT NOTE:

When returning one or more PC Boards, you must ship AIR PARCEL POST consigned to SunAir Electronics, 3101 S. W. 3rd Avenue, Fort Lauderdale, Florida, U.S.A., and plainly mark on all mailing documents:

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



RECOMMENDED SPARE PARTS LIST

Quantity Required for supporting indicated numbers of units per year				MODEL		Voltage 12.6 VDC	Total Price	
1	5	10	25	SunAir P/N	Description	Unit Price	Total Price	
1	1	2	3	99857	PC #1 Assy, Exciter			
1	1	2	3	99858	PC #2 " Receiver			
1	1	2	3	99859	PC #3 " Ch Osc & Bal Mod			
0	0	1	2	99860	PC #4 " Less Tuned Circuits			
1	1	2	3	99862	PC #5 " Voltage Regulator			
1	1	2	3	99863	PC #6 " Car.Osc & Audio			
0	0	0	1	99864	PC #7 " PA			
5	5	10	15	84898	Fuse, 5 Amp. 3AG			
0	1	1	2	98869	Meter			
0	0	1	2	28052	Cap., Var., 4-126pf			
0	1	2	5	24850	" " 1-30pf			
0	0	1	2	28026	" " 3-20pf			
0	0	1	1	81731	Crystal Filter, USB Operation			
0	0	1	1	81743	" " LSB "			
0	0	1	1	98863	RF Inverter			
0	0	1	1	49018	Transformer, Audio			
0	1	1	2	66365	Relay			
1	1	2	4	44408	Transistor, RF, 38544			
1	1	2	3	44355	" Req., 2N3054			
1	1	2	3	44410	" RF, SE9083			

CKT. SYM.	PART NO.	DESCRIPTION
	99423	28V TO 14V REGULATOR
CR1	44173	DIODE, ZENER 15V±5%, 5 WATT
Q1	44630	TRANSISTOR, NPN, MJ802
R1	18564	RESISTOR, 120 OHMS, 5 WATT

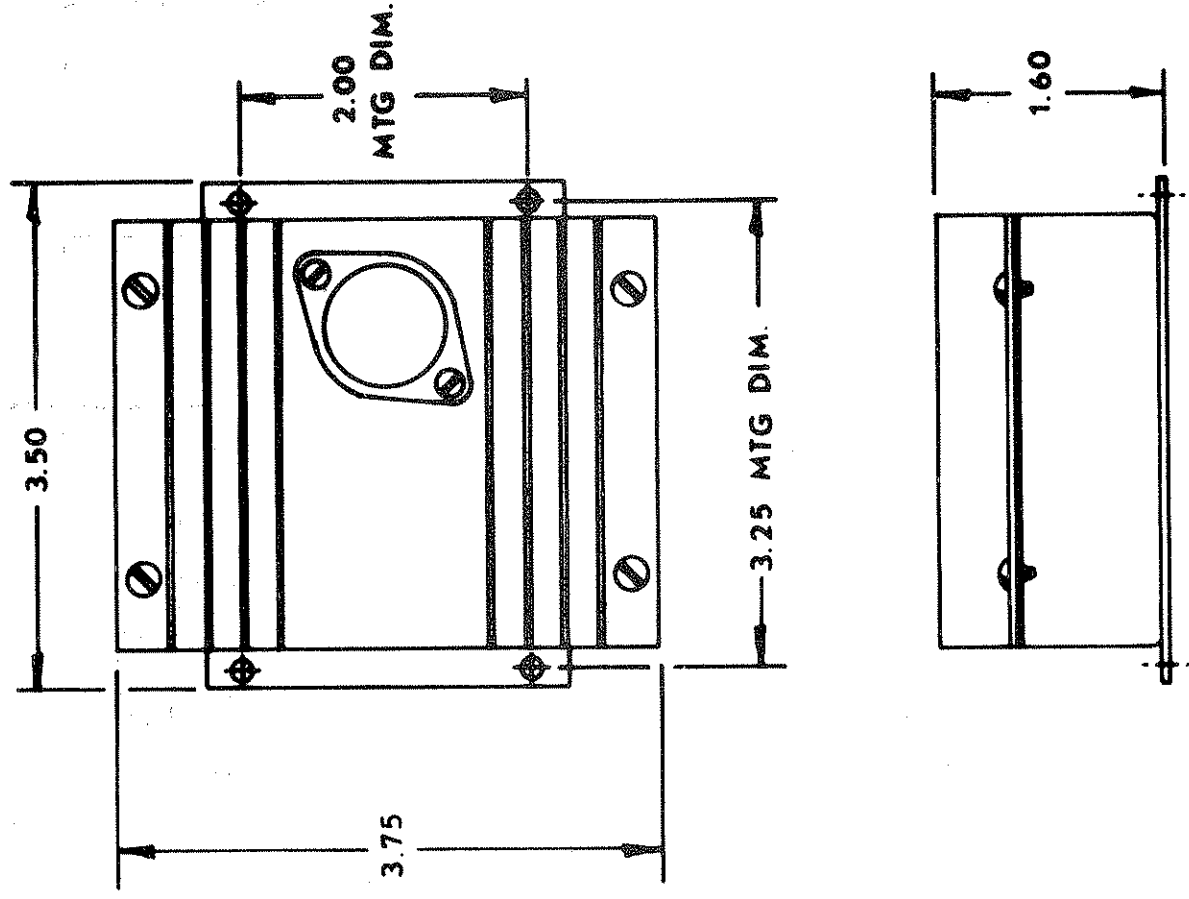
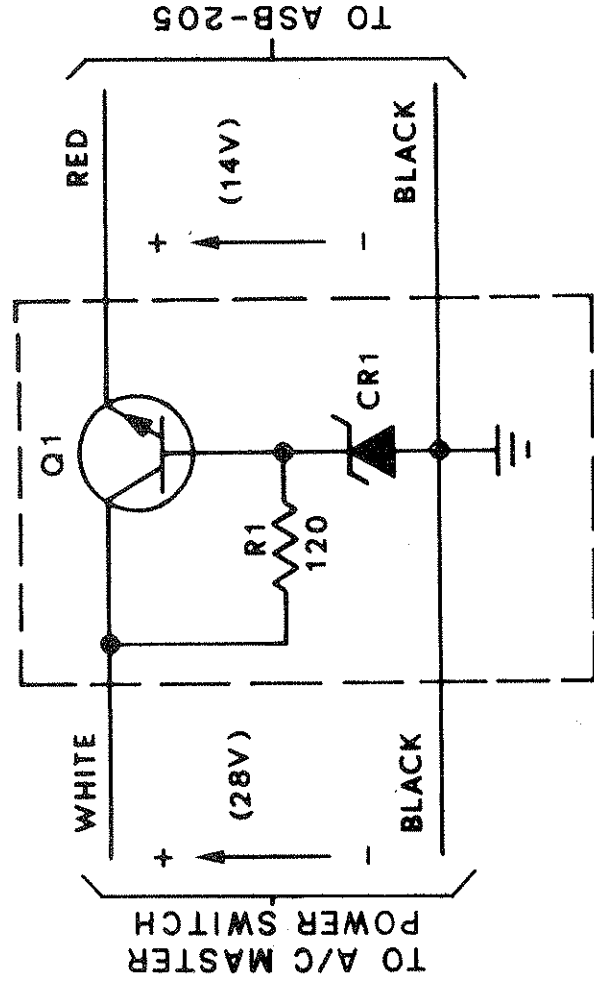


FIGURE NO.8 28V TO 14V REGULATOR

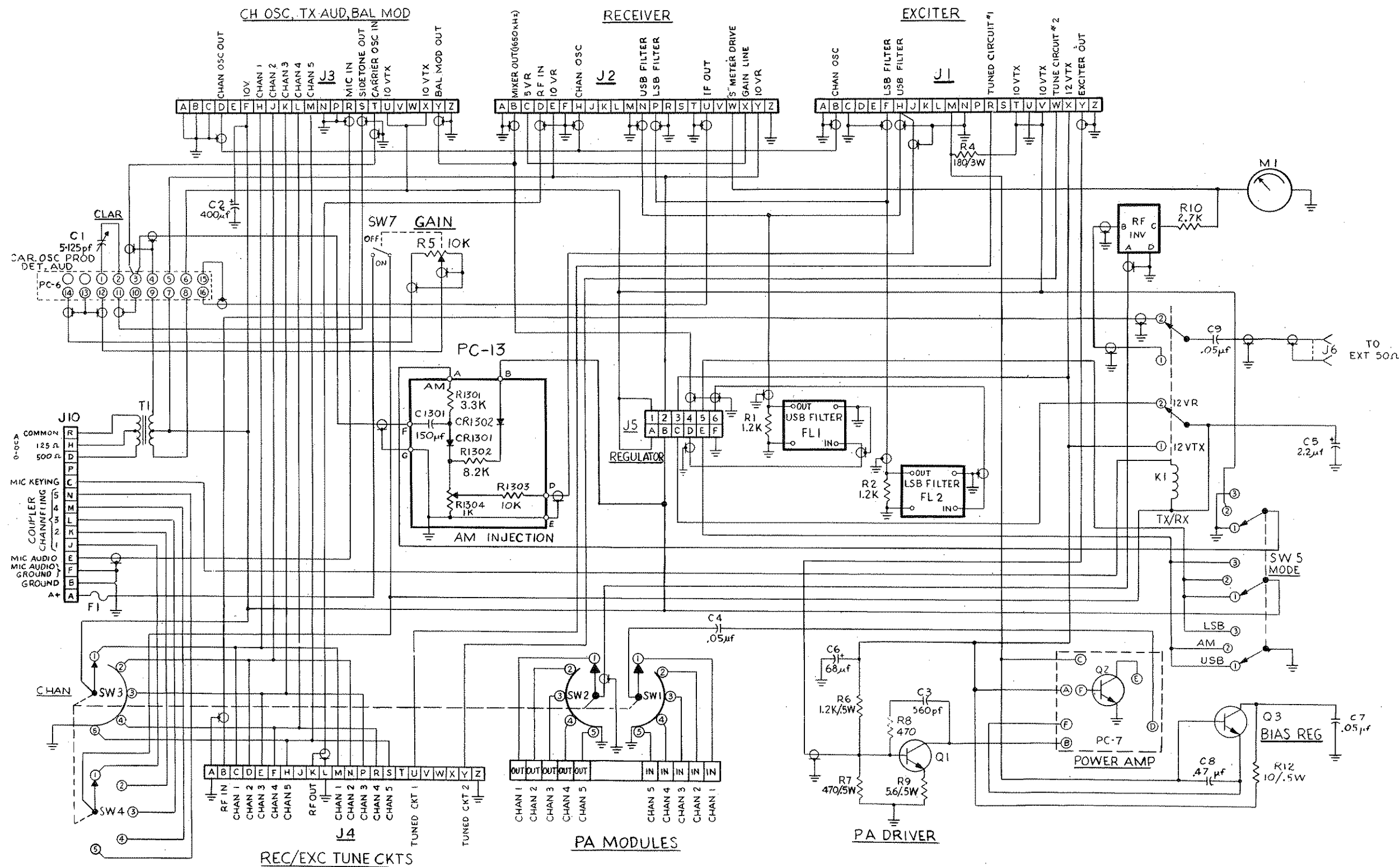
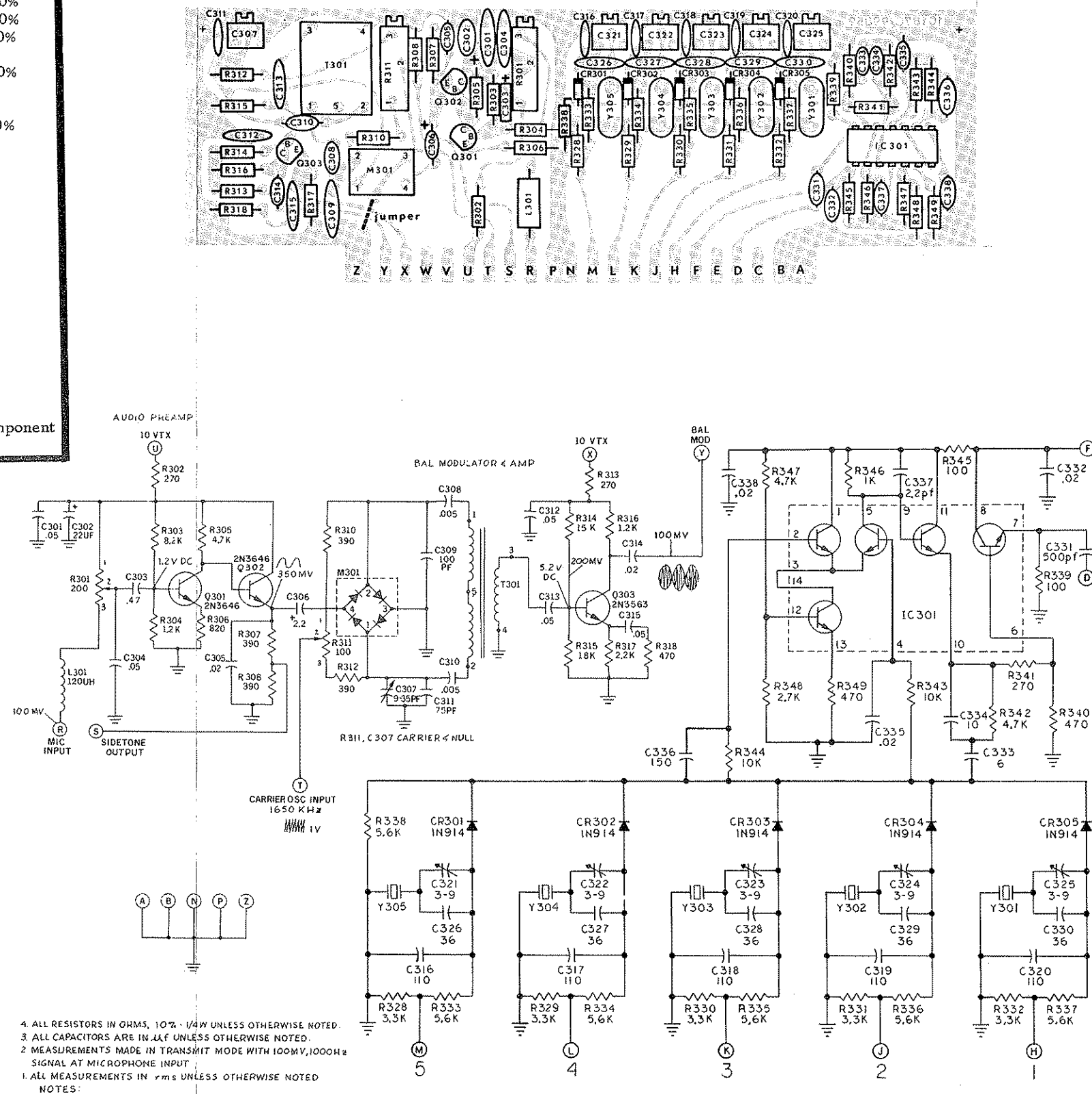


FIGURE NO.10

CKT. SYM.	PART NO.	DESCRIPTION	
PC-3	99859	Complete Chan. Osc. & Bal. Mod. Board Assembly	
	10187	P. C. Board	
C301	27357	Capacitor, Disc.	.05uf 25V
C302	27412	" Tantalum	.22uf 15V
C303	28337	" Red Cap	.47uf 50V
C304	27357	" Disc.	.05uf 25V
C305	26913	" Disc.	.02uf 25V
C306	24472	" Tantalum	2.2uf 35V
C307	28739	" Trimmer	7-35pf Ceramic
C308	27333	" Disc.	.005uf 100V
C309	27981	" Disc.	100pf 200V
C310	27333	" Disc.	.005uf 100V
C311	28466	" Dipped Mica	75 pf
C312	27357	" Disc.	.05uf 25V
C313	27357	" Disc.	.05uf 25V
C314	26913	" Disc.	.02uf 25V
C315	27357	" Disc.	.05uf 25V
C316	28131	" Dipped Mica	110pf
C317	28131	" " "	110pf
C318	28131	" " "	110pf
C319	28131	" " "	110pf
C320	28131	" " "	110pf
C321	28741	" Trimmer	3-9pf NO75
thru			
C325			
C326	28478	" Disc Ceramic	36pf N220
thru			
C330			
C331	28167	" Disc.	500pf 100V
C332	26913	" Disc.	.02uf 25V
C333	25036	" Disc.	6pf 100 V
C334	26834	" Disc.	10pf 500V
C335	26913	" Disc.	.02uf 25V
C336	27498	" Dipped Mica	150pf
C337	25000	" Disc.	2.2pf 100V
C338	26913	" Disc.	.02uf 25V
CR301	44290	Diode Silicon	1N914
thru			
CR305			
IC301	44551	IC	CA3046
L301	64666	Inductor	120uh
M301	40311	Ring Diode Module	
Q301	44252	Transistor, Silicon	2N3646
Q302	44252	" "	2N3646
Q303	44329	" "	2N3563
R301	33849-2	Resistor, Variable	200, 3/4W, 10%
R302	17845	" Comp.	270, 1/4W, 10%
R303	18162	" "	8.2K, 1/4W, 10%
R304	18186	" "	1.2K, 1/4W, 10%
R305	17077	" "	4.7K, 1/4W, 10%
R306	17821	" "	820, 1/4W, 10%
R307	17833	" "	390, 1/4W, 10%
R308	17833	" "	390, 1/4W, 10%
R310	17833	" "	390, 1/4W, 10%
R311	33849-2	" Variable	100, 3/4W, 10%
R312	17833	" Comp.	390, 1/4W, 10%
R313	17845	" "	270, 1/4W, 10%

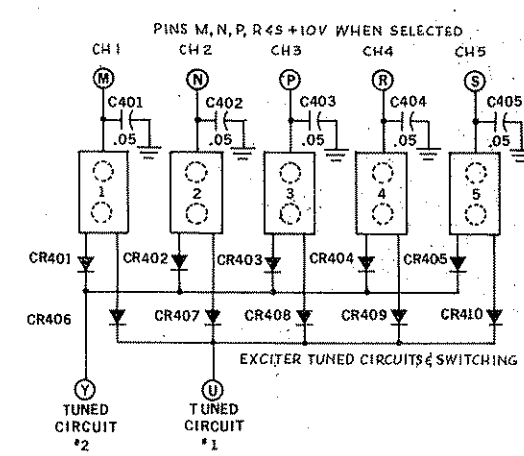
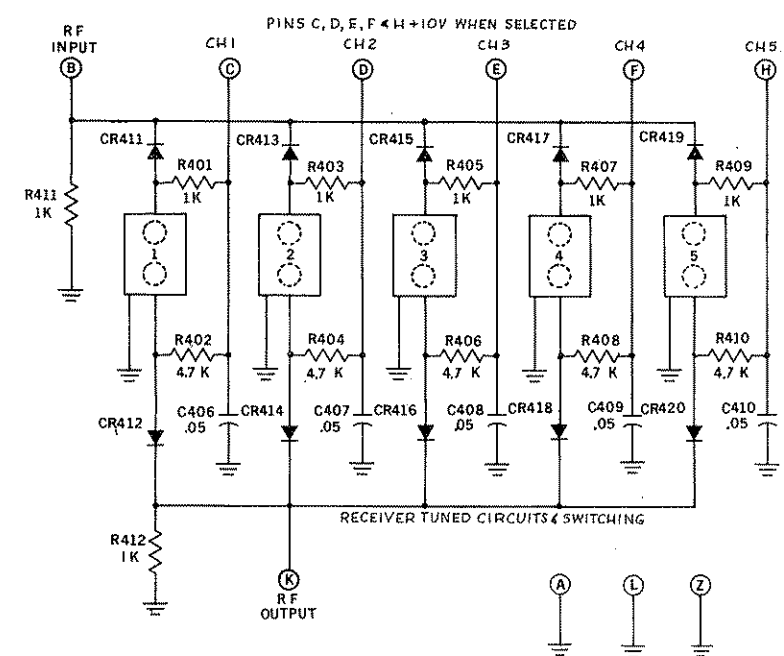
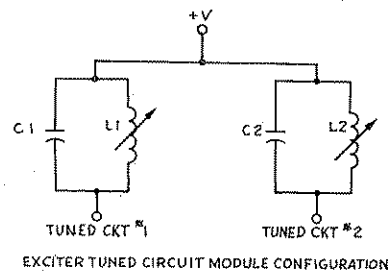
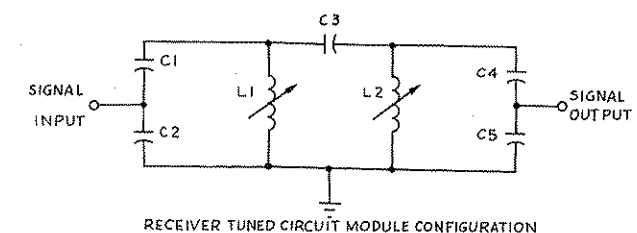
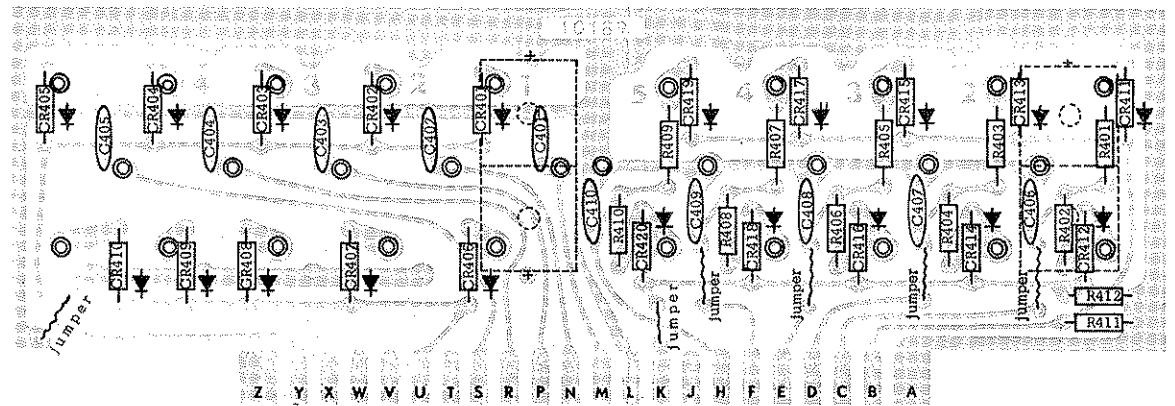
CKT. SYM.	PART NO.	DESCRIPTION	
R314	17235	Resistor, Comp.	15K, 1/4W, 10%
R315	17572	Resistor, Comp.	18K, 1/4W, 10%
R316	18186	" "	1.2K, 1/4W, 10%
R317	17807	" "	2.2K, 1/4W, 10%
R318	17261	" "	470, 1/4W, 10%
R328	thru	Resistor, Comp.	3.3K, 1/4W, 10%
R332	17089		
R333	thru	" "	5.6K, 1/4W 10%
R338	18306		
R339	17118	" "	100 " "
R340	17261	" "	470 " "
R341	17845	" "	270 " "
R342	17077	" "	4.7K " "
R343	17041	" "	10K " "
R344	17041	" "	10K " "
R345	17118	" "	100 " "
R346	17156	" "	1K " "
R347	17077	" "	4.7K " "
R348	18667	" "	2.7K " "
R349	17261	" "	470 " "
T301	48909	Transformers, Wideband RF	
Y301	thru	Crystal, Frequency Dependent Component	
Y305	81793		



P.C. No. 3 BALANCE MODULATOR CHANNEL OSCILLATOR



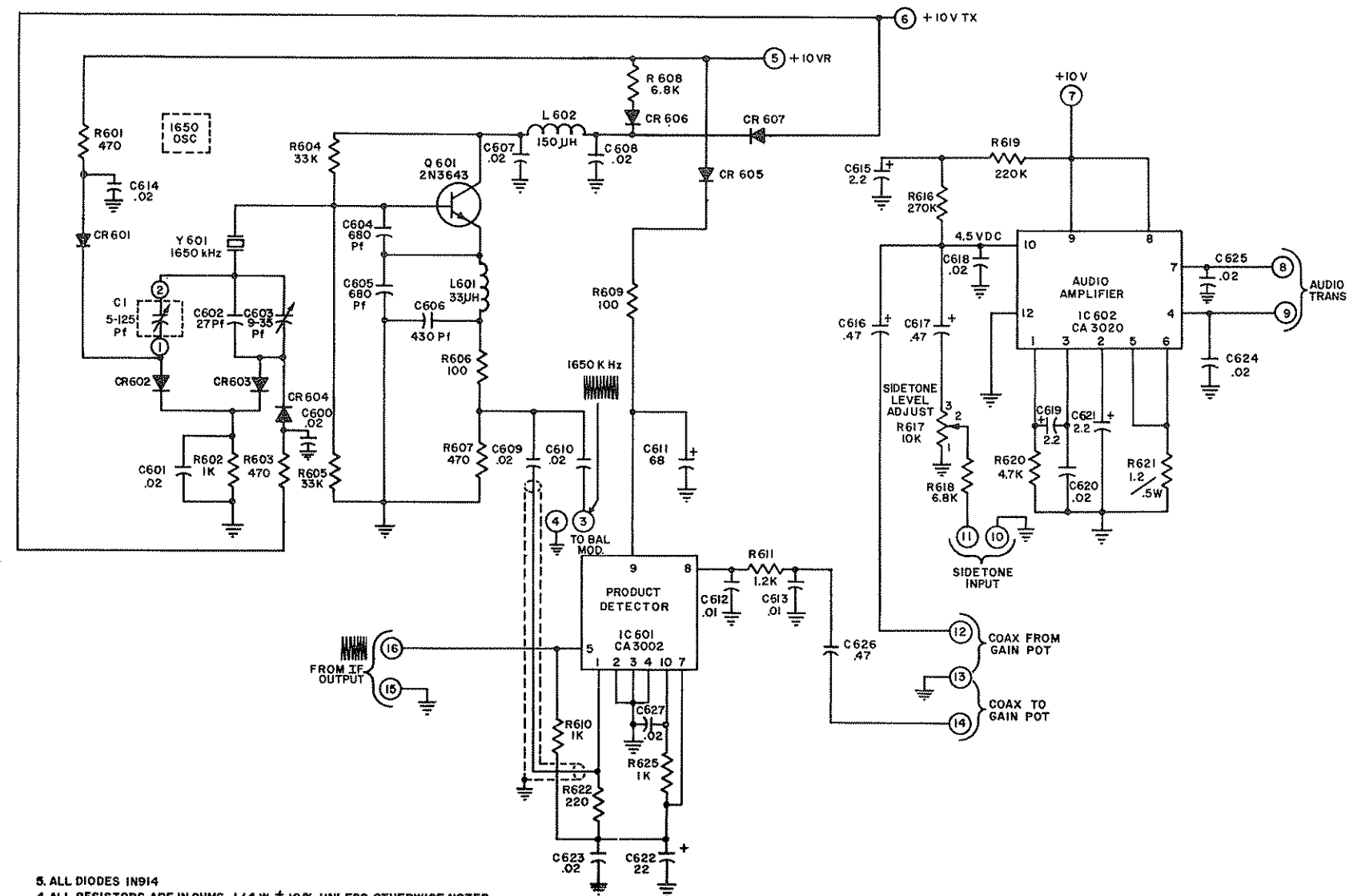
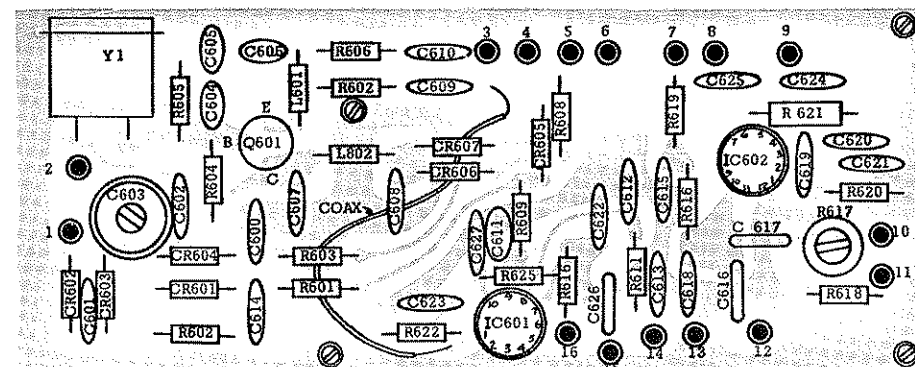
CKT. SYM.	PART NO.	DESCRIPTION
PC4	99860 10189	Complete Tuned Circuit P.C. Ass'y. P. C. Board
C401 thru C410	27357	Capacitor, Disc .05 uf 25 V
CR401 thru CR420	44290	Diode, Silicon 1N914
R401	17156	Resistor, Comp. 1K 1/4W 10%
R402	17077	" " 4.7K 1/4W 10%
R403	17156	" " 1K 1/4W 10%
R404	17077	" " 4.7K 1/4W 10%
R405	17156	" " 1K 1/4W 10%
R406	17077	" " 4.7K 1/4W 10%
R407	17156	" " 1K 1/4W 10%
R408	17077	" " 4.7K 1/4W 10%
R409	17156	" " 1K 1/4W 10%
R410	17077	" " 4.7K 1/4W 10%
R411	17156	" " 1K 1/4W 10%
R412	17156	" " 1K 1/4W 10%



2. ALL RESISTORS IN OHMS, 10% - 1/4W UNLESS OTHERWISE NOTED.  
 1. ALL CAPACITORS IN .05 uf UNLESS OTHERWISE NOTED.  
 NOTES:



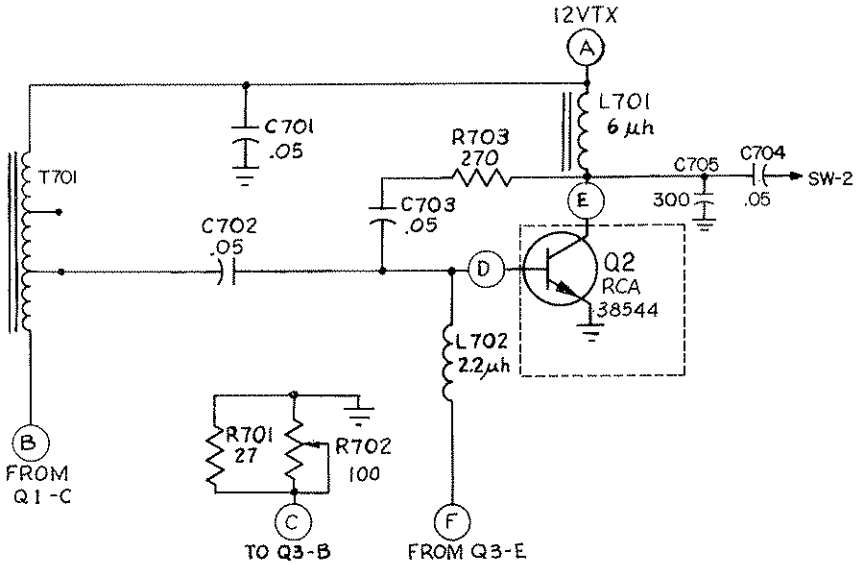
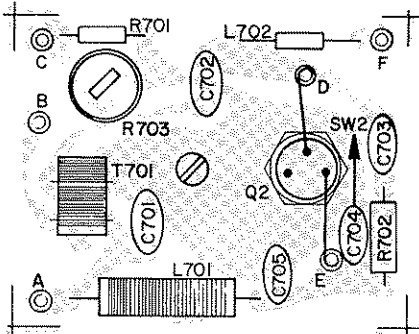
CKT. SYM.	PART NO.	DESCRIPTION
PC6	99863	Car. Osc., Prod. Det., Aud. Board Ass'y.
	10193	P.C. Board
C600	26913	Capacitor, Disc .02 uf 25V
C601	26913	" " .02 uf 25V
C602	25062	" " 27 pf NPO
C603	24795	" Variable 9-35 pf N650
C604	28428	" Dipped Mica 680 pf
C605	28428	" " 680 pf
C606	28454	" " 430 pf
C607	26913	" Disc .02 uf 25V
C608	26913	" " .02 uf 25V
C609	26913	" " .02 uf 25V
C610	26913	" " .02 uf 25V
C611	28038	" Tantalum 68 uf 15V
C612	26913	" Disc .02 uf 25V
C613	26913	" " .02 uf 25V
C614	26913	" " .02 uf 25V
C615	24472	" Tantalum 2.2 uf 15V
C616	28337	" "Red Cap" .47 uf 50V
C617	28337	" "Red Cap" .47 uf 50V
C618	26913	" Disc .02 uf 25V
C619	24472	" Tantalum 2.2 uf 15V
C620	26913	" Disc .02 uf 25V
C621	24472	" Tantalum 2.2 uf 15V
C622	27412	" Tantalum 22 uf 15V
C623	26913	" Disc .02 uf 25V
C624	26913	" Disc .02 uf 25V
C625	26913	" Disc .02 uf 25V
C626	28337	" "Red Cap" .47 uf 50V
C627	26913	" Disc .02 uf 25V
CR601 thru CR607	44290	Diode, Silicon 1N914
IC601	44458	Integrated Circuit CA3002
IC602	44460	" " CA3020
L601	65969	Inductor 33 uh
L602	65919	" 150 uh
Q601	44331	Transistor 2N3643
R601	17261	Resistor, Comp. 470 1/4W 10%
R602	17156	" " 1K 1/4W 10%
R603	17261	" " 470 1/4W 10%
R604	17792	" " 33K 1/4W 10%
R605	17792	" " 33K 1/4W 10%
R606	17118	" " 100 1/4W 10%
R607	17261	" " 470 1/4W 10%
R608	17481	" " 6.8K 1/4W 10%
R609	17118	" " 100 1/4W 10%
R610	17156	" " 1K 1/4W 10%
R611	18186	" " 1.2K 1/4W 10%
R616	17211	" " 270K 1/4W 10%
R617	33825	" Variable 10K 1/2W
R618	17481	" Comp. 6.8K 1/4W 10%
R619	17778	" " 220K 1/4W 10%
R620	17077	" " 4.7K 1/4W 10%
R621	18849	" " 1.2 1/2W 10%
R622	17132	" " 220 1/4W 10%
R625	17156	" " 1K 1/4W 10%
Y601	81779	Crystal, HC-32, 1650. kHz
	87187	Heatsink



- NOTES:
1. ALL MEASUREMENTS IN rms UNLESS OTHERWISE NOTED
  2. MEASUREMENTS MADE IN TRANSMIT MODE WITH 100mV, 1000Hz SIGNAL AT MICROPHONE INPUT.
  3. ALL CAPACITORS ARE IN  $\mu$ F UNLESS OTHERWISE NOTED
  4. ALL RESISTORS ARE IN OHMS, 1/4 W  $\pm$  10% UNLESS OTHERWISE NOTED
  5. ALL DIODES 1N914

P.C. No. 6 1650 OSCILLATOR PRODUCT DETECTOR

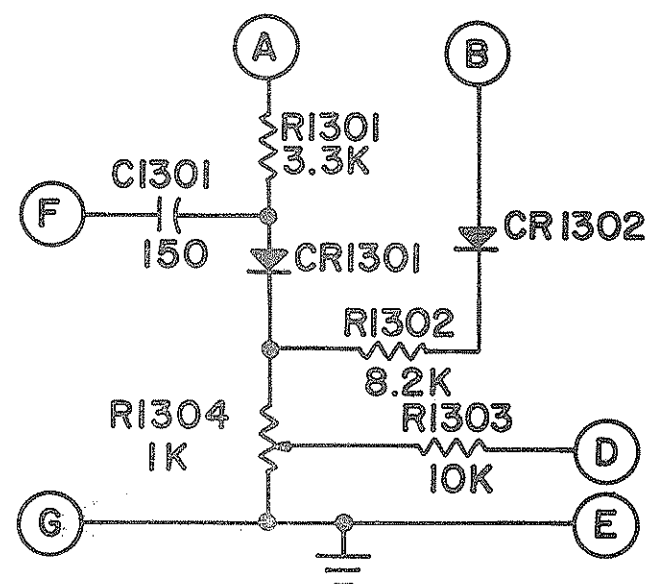
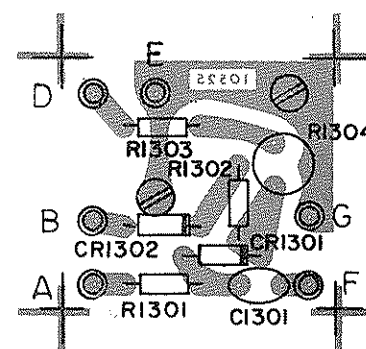
CKT. SYM.	PART NO.	DESCRIPTION
PC-7	99864	Complete P. A. Board Ass'y.
	10194	PC Board
C701	27357	Capacitor, Disc. .05 uf, 25V
C702	27357	" " .05 uf, 25V
C703	27357	" " .05 uf, 25V
C704	27929	" " .05 uf, 100V
C705	27632	" " 300 pf, 500V
L701	56334	Inductor 6 uh
L702	63454	" 2.2uh
R701	17259	Resistor, Comp. 27, 1/4W, 10%
R702	16762	" " 270, 1/2W, 10%
R703	33576	" " 100, 1W, 5%
T701	99693	Transformer, Wideband



2. ALL RESISTORS IN OHM, 10% 1/2W UNLESS OTHERWISE NOTED.  
 1. ALL CAPACITORS IN  $\mu$ f UNLESS OTHERWISE NOTED.

P.C. No.7 POWER AMPLIFIER

CKT. SYM.	PART NO.	DESCRIPTION
PC 13	97824 10525	AM Injection PC Board
C1301	27498	Capacitor, Dipped Mica 150pf
CR1301	44290	Diode, Silicon 1N914
CR1302	44290	" " "
R1301	17089	Resistor, Fixed Comp, 1/4W+10% 3.3K
R1302	18162	" " " " 8.2K
R1303	17041	" " " " 10. K
R1304	34154	Potentiometer 1 K



**NOTES:**

1. ALL RESISTORS IN OHMS  $\frac{1}{4}W \pm 10\%$ ,  
ALL CAPACITORS IN uf,  
UNLESS OTHERWISE NOTED.



SUNAIR ELECTRONICS, INC.  
MANUAL: ASB-205

ADDENDUM 1  
DATE: 9/1/71

REFERENCE:

PC # 13  
AM INJECTION

PURPOSE:

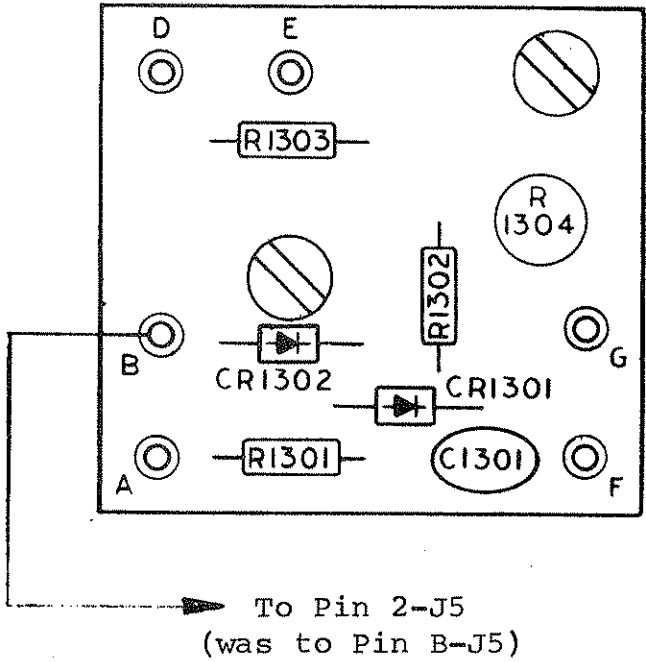
TO IMPROVE AM  
SUPPRESSION IN A3J  
MODE

MANUAL REFERENCE:

SCHEMATIC FIGURE 10, PC13,  
PAGE 27

TEXT:

Sym	Part Number	Description
C1301	27498	Capacitor, Dipped Mica 150pf
CR1301	44290	Diode, Silicon 1N914
CR1302	44290	Diode, Silicon 1N914
R1301	17089	Resistor, Fixed Comp, 1/4W+10% 3.3K
R1302	18162	Resistor, Fixed Comp, 1/4W+10% 8.2K
R1303	17041	Resistor, Fixed Comp, 1/4W+10% 10.K
R1304	34154	Potentiometer 1 K

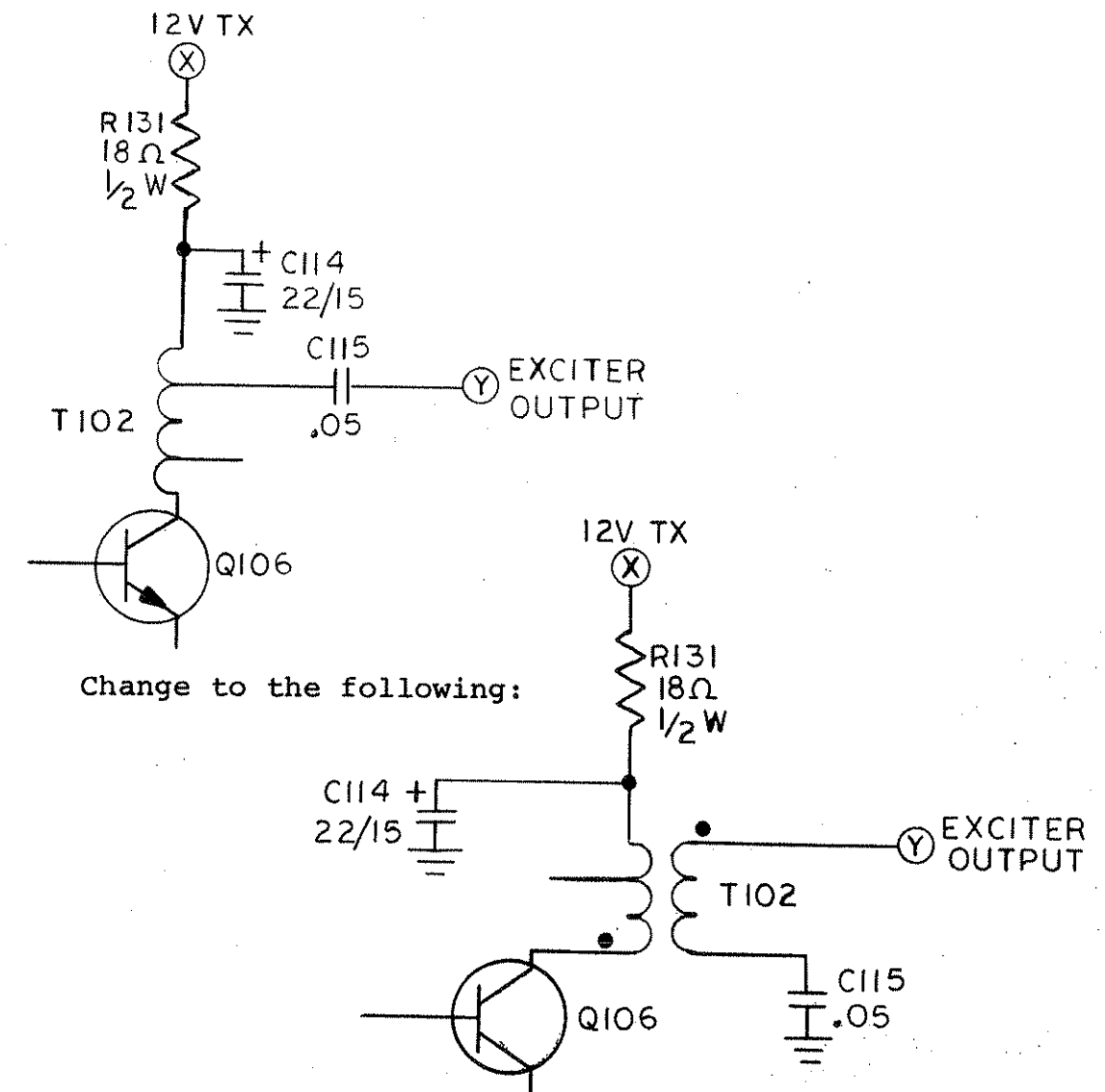


REFERENCE: PC #1  
T 102

PURPOSE: To prevent oscillation at higher frequencies  
above 6 MHz

MANUAL REFERENCE: Schematic PC #1 Exciter

TEXT: T102 was connected as shown below:





SUNAIR ELECTRONICS, INC.  
MANUAL: ASB-205

ADDENDUM #3  
DATE: 12/1/72

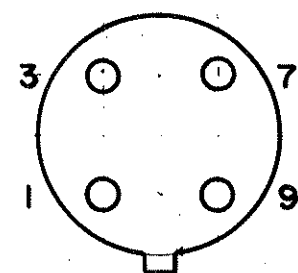
REFERENCE: Balanced Modulator, Diode Ring, M301

ECN: 054-038

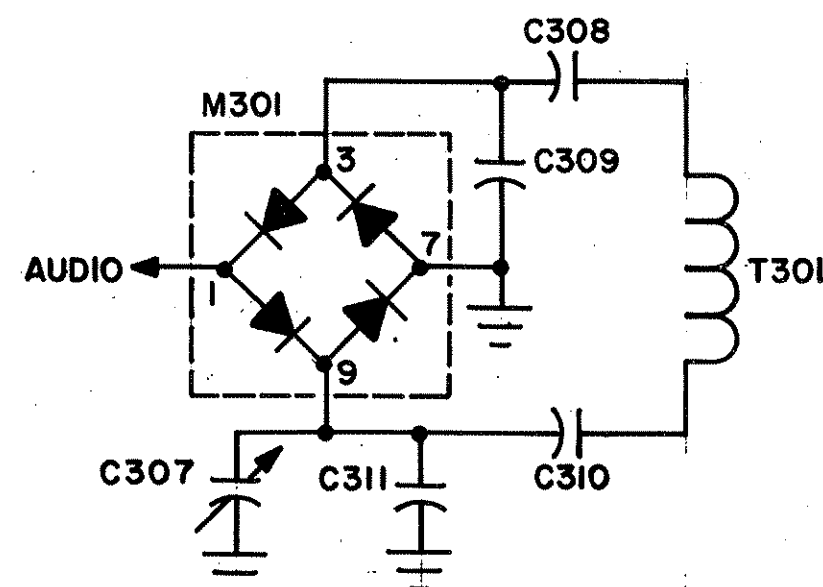
PURPOSE: Module M301, PN 40311, Package Change

MANUAL REFERENCE: PC-3 Schematic Diagram

TEXT: The modulator diode ring package has been changed to a TO-5 package. Schematic diagram and modulator connections are as shown below.



DIODE RING  
TO5 PACKAGE  
BOTTOM VIEW



SIMPLIFIED SCHEMATIC

NOTE: It will be necessary to form the diode ring leads in order to pair 1 with 7, and 3 with 9 to conform to the p-c board configuration.

