



3101 S.W. Third Avenue, Fort Lauderdale, Florida 33315 U.S.A.



Instruction Manual

SSB COMMUNICATIONS EQUIPMENT

GSB-205 A SYSTEM

2nd EDITION, 1 AUGUST 1969
MANUAL PART NUMBER 99656

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SECTION I

GENERAL INFORMATION

A. SYSTEM DESCRIPTION

The SunAir GSB-205A SSB Communication Equipment is a light-weight, 5-channel, 20W PEP, single sideband, transmitting-receiving system. It is designed for Man-Pak, mobile or base station use. The transceiver is housed in a water-resistant case which also contains batteries, antenna, microphone, speaker, battery charger, CW module and other optional accessories.

It is designed to provide short to medium range communications for field and mobile use. When used with a long wire antenna, range can be extended to hundreds of miles.

B. SPECIFICATIONS

General:

| | |
|---------------------------|---|
| Frequency Range | 2.0 to 10.0 MHz. |
| Number of Channels | Up to 5 single frequency simplex. |
| Channel Frequency Spacing | No restriction. |
| Modes of Operation | 2.8A3J, USB and/or LSB. |
| Power Source | 12.6 VDC, Negative Ground. |
| Temperature Range | -20°C to +50°C. |
| Frequency Stability | Not more than <u>+100</u> Hz change over temperature range. |

Transmitter:

| | |
|---------------------|--------------------------------|
| Power Output | 20W PEP nominal. |
| Sidetone | 0 to 100 MW, adjustable. |
| Carrier Suppression | Not less than 40 db below PEP. |
| Unwanted Sideband | Not less than 40 db below PEP. |

Receiver:

| | |
|-----------------|--|
| Sensitivity | 1 uv for 10 db SINAD |
| Gain | 3 uv for 100 MW (500 ohm), 1W (speaker) |
| 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. 1W at 3.2 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. EQUIPMENT SUPPLIED WITH THE GSB-205A:

| <u>Quantity</u> | <u>Description</u> | <u>Part Number</u> | <u>Weight</u> |
|-----------------|--|--------------------|---------------|
| 1 | GSB-205A with USB or LSB and 1 Channel | 99700 | 8.4 Kg |
| 1 | Microphone | | .26 Kg |
| 1 | Sectional Whip Antenna | | .34 Kg |
| 1 | Ground Radial 99660 | | .11 Kg |
| 2 | Batteries, 2.6 A.H. | | .59 Kg Each |
| 1 | D. C. Power Cord | | .06 Kg |
| 1 | Instruction Manual | 99656 | .22 Kg |

D. ACCESSORIES AND OPTIONS FOR THE GSB-205A:

| <u>Quantity</u> | | <u>SunAir Part Number</u> | <u>Weight</u> |
|-----------------|--|-------------------------------|---------------------------|
| 2 | Batteries, 8 A. H. | 99877 | 1.5 Kg Each |
| 1 | Battery Charger, 115/230 VAC | 99657 | .46 Kg |
| 1 | 10 Meter Wire Antenna | 99659 | .20 Kg |
| 1 | Handset | 87450 | .34 Kg |
| 1 | Headset | 84020 | .40 Kg |
| 1 | Canvas Back Pack | 87474 | .17 Kg |
| 1 | Accessory Pocket for Back Pack | 84004 | .11 Kg |
| 1 | CW Key | 99658 | .22 Kg |
| 1-4 | Additional Channels (See Section 4) | - | 78. 78 Gm Each |
| 1 | USB Filter | 81731 | .11 Kg |
| 1 | LSB Filter | 81743 | .11 Kg |
| 1 | Mobile Mount | 99720 | .68 Kg |
| 1 | Antenna Coupler, CU-205A | 99722 | .46 Kg |
| 1 | Antenna Coupler, CU-500 | 95952 | 1.4 Kg |
| 1 | Coupler Channeling Unit | 99721 | .34 Kg |
| 1 | Mobile Whip | 71516 | .4 Kg |
| 1 | Mobile Antenna Mount | 71528 | .7 Kg |

SECTION II

INSTALLATION

A. GENERAL

The GSB-205A is the most versatile HF single sideband portable transceiver available. It is primarily a portable transceiver, but with the proper accessories it may be installed as a fixed base station, or as a marine, land, or air mobile transceiver. In each of these optional modes of installation, the GSB-205A may be quickly removed from its fixed mounting option and carried directly into the field as a fully portable transceiver.

Adherence to the suggestions and instructions contained in this section will assure an easier and more satisfactory installation of the GSB-205A Communication System.

B. 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.

C. 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.

D. 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.

E. INSTALLATION CONFIGURATIONS

The GSB-205A transceiver has been designed to perform in a variety of operating configurations. The following are some of the numerous modes of installation.

1. Man-Pak

The GSB-205A, being a portable transceiver, requires only the canvas back pack to become a Man-Pak transceiver.

The GSB-205A requires two (2) 6.3V batteries for operation. The 2.6 ampere hour batteries are standard equipment and the 8 ampere hour batteries are offered as an option. The useful battery life of the 8 A.H. batteries is of course longer than that of the 2.6 A.H. batteries but are each 0.9 Kg. heavier.

The sectional whip antenna is standard equipment with the GSB-205A, with the 10 meter wire antenna optional. If field operation is anticipated, obviously the whip is more adaptable.

The ground radial supplied with the transceiver is required for long range communications because the very small ground plane effect provided by the case of a portable transceiver in this frequency range greatly reduces the antenna radiation efficiency. The ground radial provides this ground plane effect and increases the antenna radiation efficiency to provide an increase in range for consistent communications to more than three hundred miles on the higher frequencies (7-10 MHz).

The ground radial is VERY IMPORTANT for successful communications. The radial should be laid out full length on the ground in a straight line. This applies to both the 10 meter wire antenna and the sectional whip antenna.

The antenna coupler is tuned to match either the 10 meter wire antenna or the sectional whip antenna on all channels but on some frequencies both antennas and the radial can be used together. Use of both antennas will increase the usable range of the transceiver only if they can be tuned by the tune control on the antenna coupler.

2. Mobile Installation

The GSB-205A may be operated from a mobile vehicle in a number of ways. The major areas that will be more fully explained are: Land Mobile, Marine Mobile and Airborne Mobile. Many other possible methods of installation that are not discussed below may prove practical for your particular application of this transceiver.

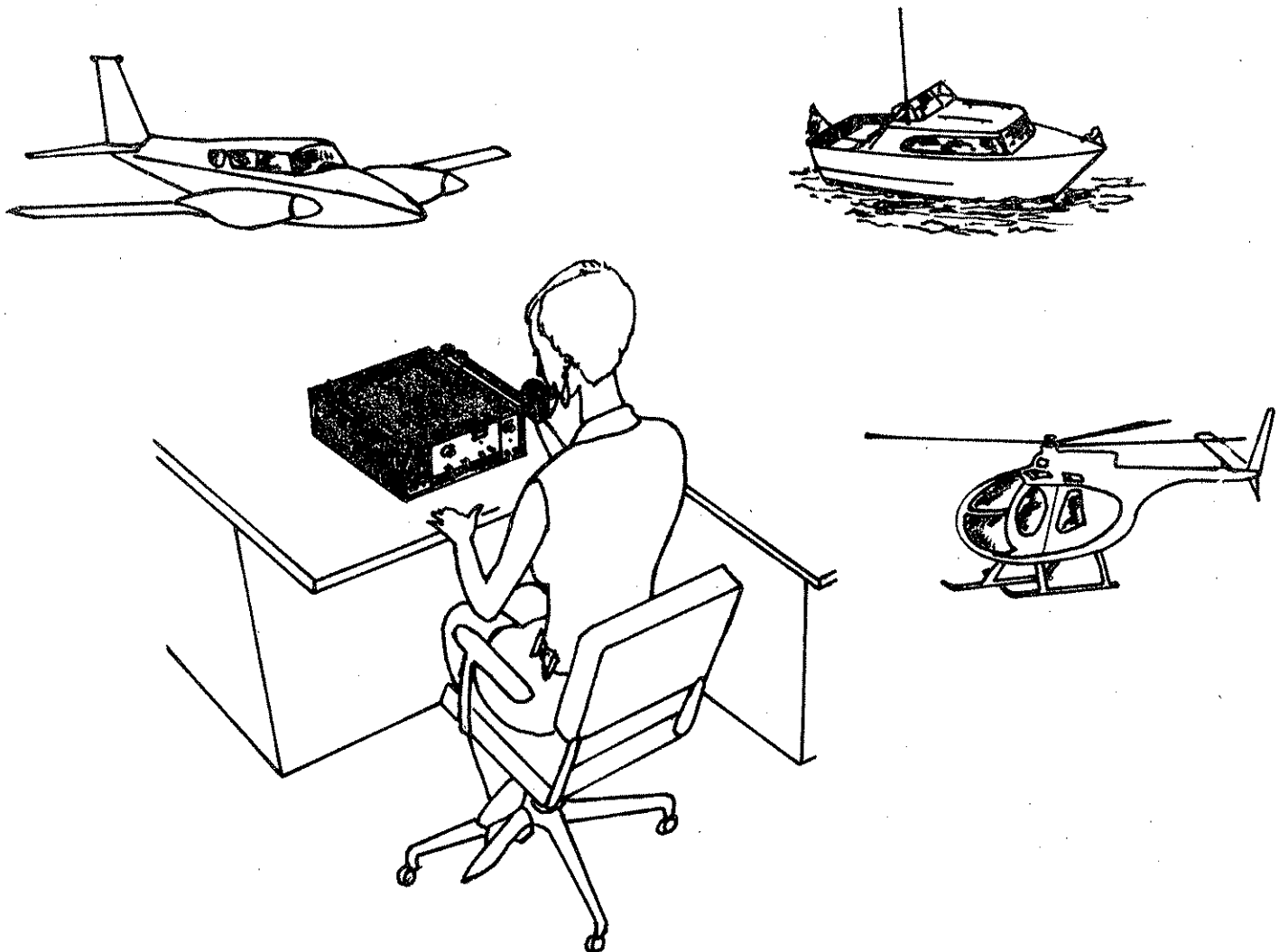
(a) Land Mobile

The GSB-205A may be installed in a mobile vehicle in a number of ways, as shown in Figures 1 and 3.

In an open type vehicle, such as a jeep, the sectional whip may be used in conjunction with a ground strap from the jeep body to the ground binding post on the transceiver.

NOTE: The sectional whip must not be in an upright position when the vehicle is in motion as the sectional whip is not designed for the stresses and strains encountered from a moving vehicle.

The transceiver may be mounted in almost any location that is convenient for the operator in a closed vehicle by using a mobile mount and an extra antenna coupler, a CU-205A or a CU-500, mounted close to the mobile whip. A ground strap from the vehicle chassis or body to the ground binding post on the transceiver MUST be used. CU-205A installation instructions are given in Section III. CU-500 installation instructions are given in the CU-500 Manual. Whip antenna mounting instructions come in their packages.



SEVERAL MODES OF OPERATION OF THE GSB-205A

(b) Marine Mobile

The GSB-205A may be used in an open boat with the mobile mount and the sectional whip antenna. An RF ground MUST be provided from the ground binding post on the transceiver to a grounding plate on the hull.

NOTE: The sectional whip antenna must be taken down while the boat is under way. Also, care must be taken to keep the transceiver dry.

An installation in a larger, closed boat should be made using a mobile whip and an extra antenna coupler, a CU-205A or a CU-500. Voltage to channel the remote operated CU-500 must be taken from the boat's electrical system. Figure 4 shows several possible mounting configurations.

Either antenna coupler will have to have 50 ohm coaxial cable from the external 50 ohm antenna connection on the transceiver to the antenna coupler. Fine tuning of the antenna coupler is required after installation.

(c) Airborne Mobile Installation

In this type of installation, a standard aircraft antenna with a CU-500 Antenna Coupler should be installed by a licensed aircraft radio shop.

Some factors to consider before installing a fixed antenna:

Recommended Type and Length

| <u>Length</u> | <u>Type Antenna</u> | <u>Type Aircraft</u> |
|---------------|---------------------|----------------------|
| 45' | Straight, End-Fed | Transport |
| 34' | Straight, End-Fed | Heavy Twin |
| 25'-29' | Vee, End-Fed | Light Twin, Single |
| 23'-25' | Straight, End-Fed | Light Twin |

Antenna radiation efficiency is highest when the antenna aperture is greatest. Therefore, it is advantageous to use as long an antenna as is practical. Where antenna length cannot be achieved with a straight antenna, the VEE antenna may be used. This antenna usually runs from fuselage to vertical stabilizer to wingtip.

Straight antennas are recommended when icing may be a factor. On lighter aircraft, this antenna runs from the nose compartment, over the cockpit and terminates on the vertical stabilizer.

Other antenna configurations are available for helicopters, high speed aircraft and special problem installations. SunAir Customer Service will provide suggestions for special requirements.

The antenna coupler should be located within 12 inches of the feed-through insulator.

Antenna wire should be one of the following two types:

- (1) Copperweld (#18 bare) with a tensile strength of 153 pounds.
- (2) Anti-precipitation static wire with a tensile strength of 250 pounds.

The transceiver may be mounted in the mobile mount or placed in a convenient location for operation.

3. Fixed Station

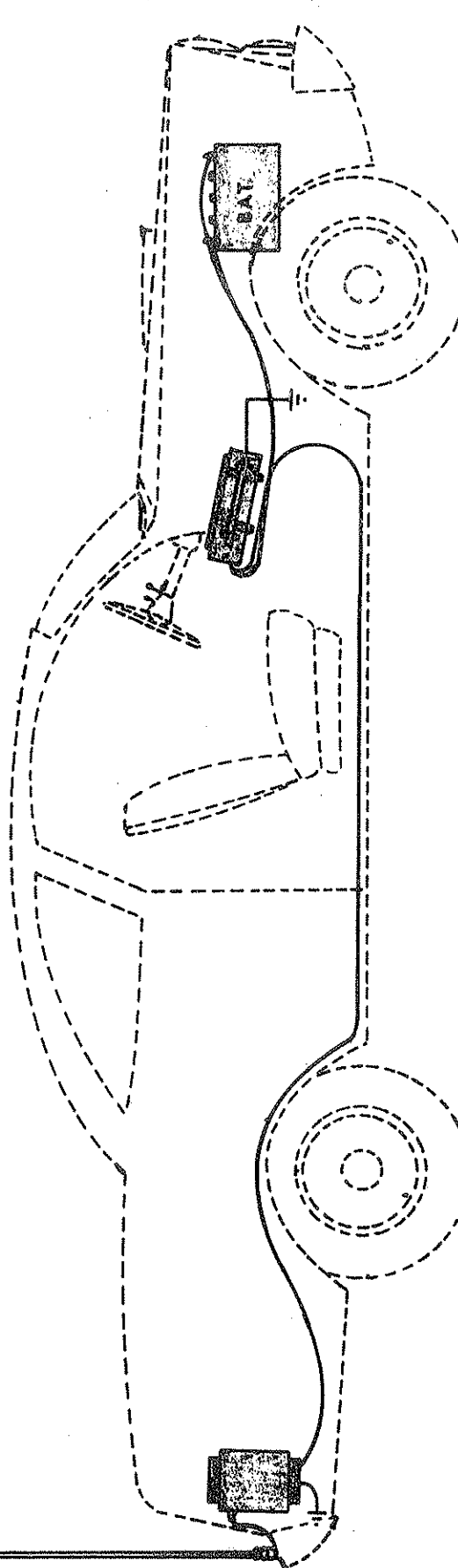
The GSB-205A may be installed in a number of different ways for a fixed or semi-fixed installation. Several configurations are shown in Figures 2 and 5.

The 10 meter long wire antenna may be used with the antenna coupler in the transceiver if the transceiver can be mounted on an outside wall with the mobile mount bracket and the antenna lead-in kept short.

A separate antenna coupler can be mounted close to the antenna and the transceiver located anywhere within approximately 20 feet of the antenna coupler.

Two antenna couplers are offered as options - a manual channel changing unit, the CU-205A, and a remote channel changing unit, the CU-500, which requires either 12 VDC or 24 VDC from a source external from the transceiver.

FIGURE No. 1
LAND MOBILE MOUNTING METHOD
(CLOSED VEHICLE)



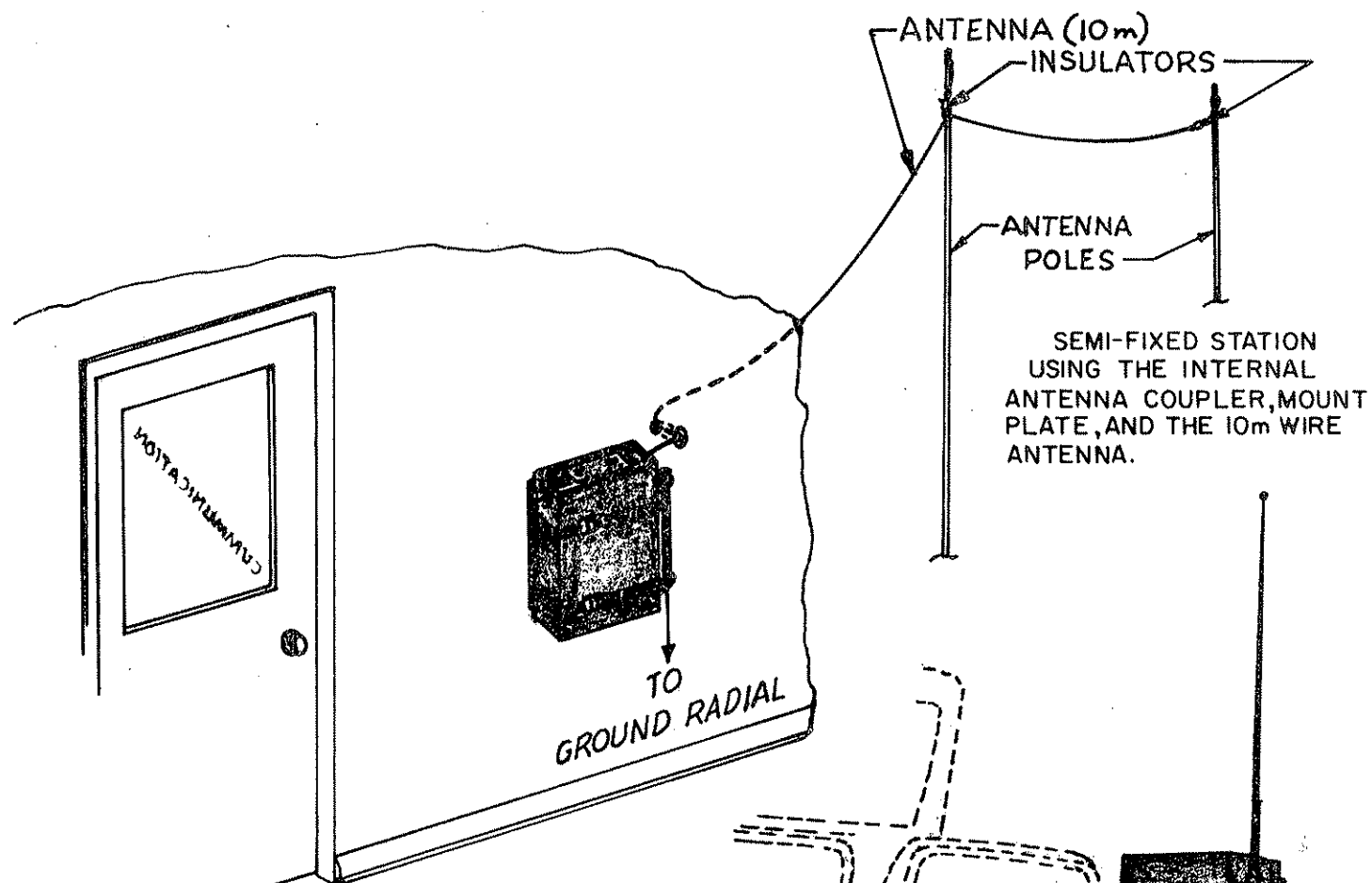


FIGURE No.2

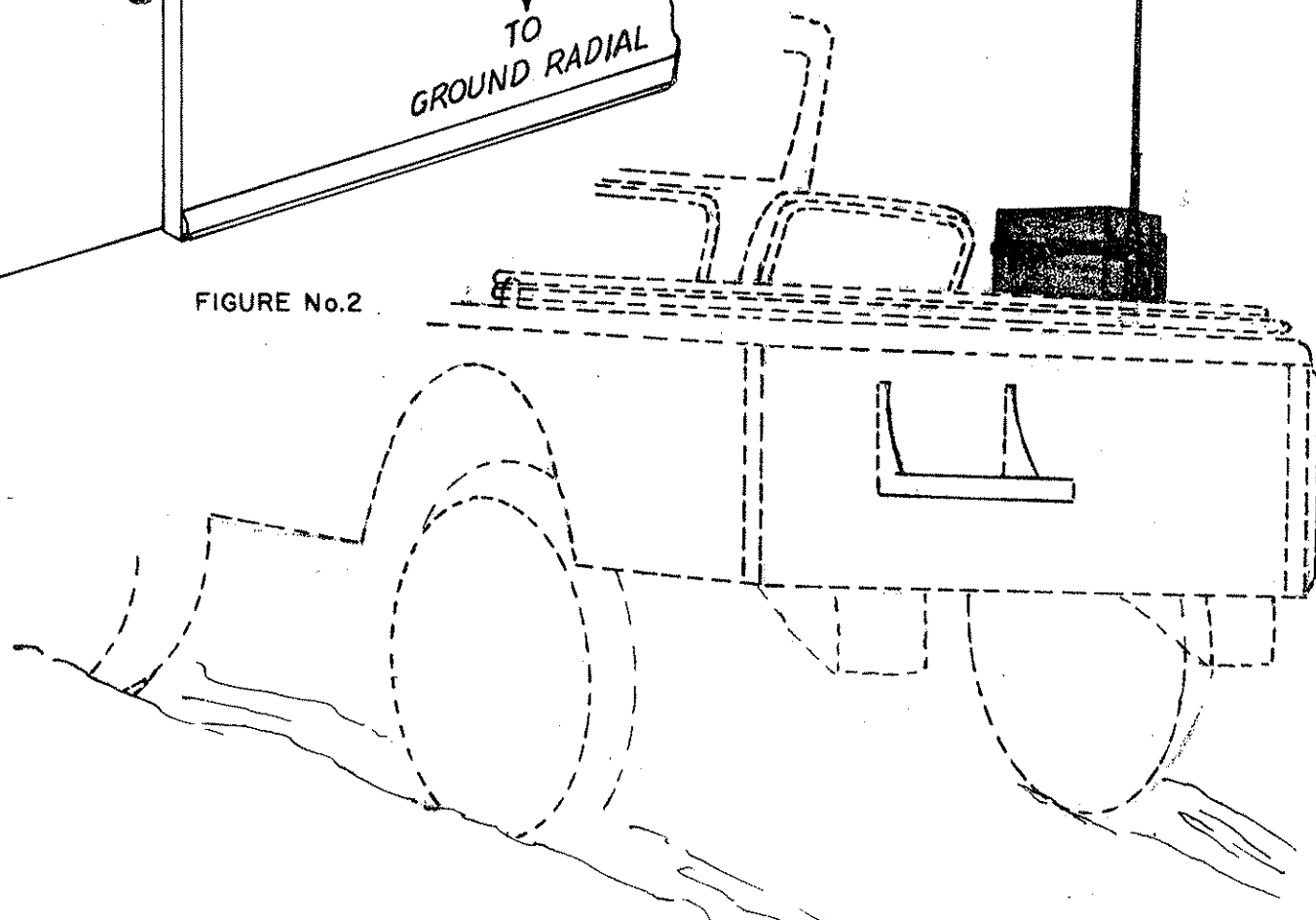


FIGURE No.3
LAND MOBILE MOUNTING METHOD
(OPEN VEHICLE)

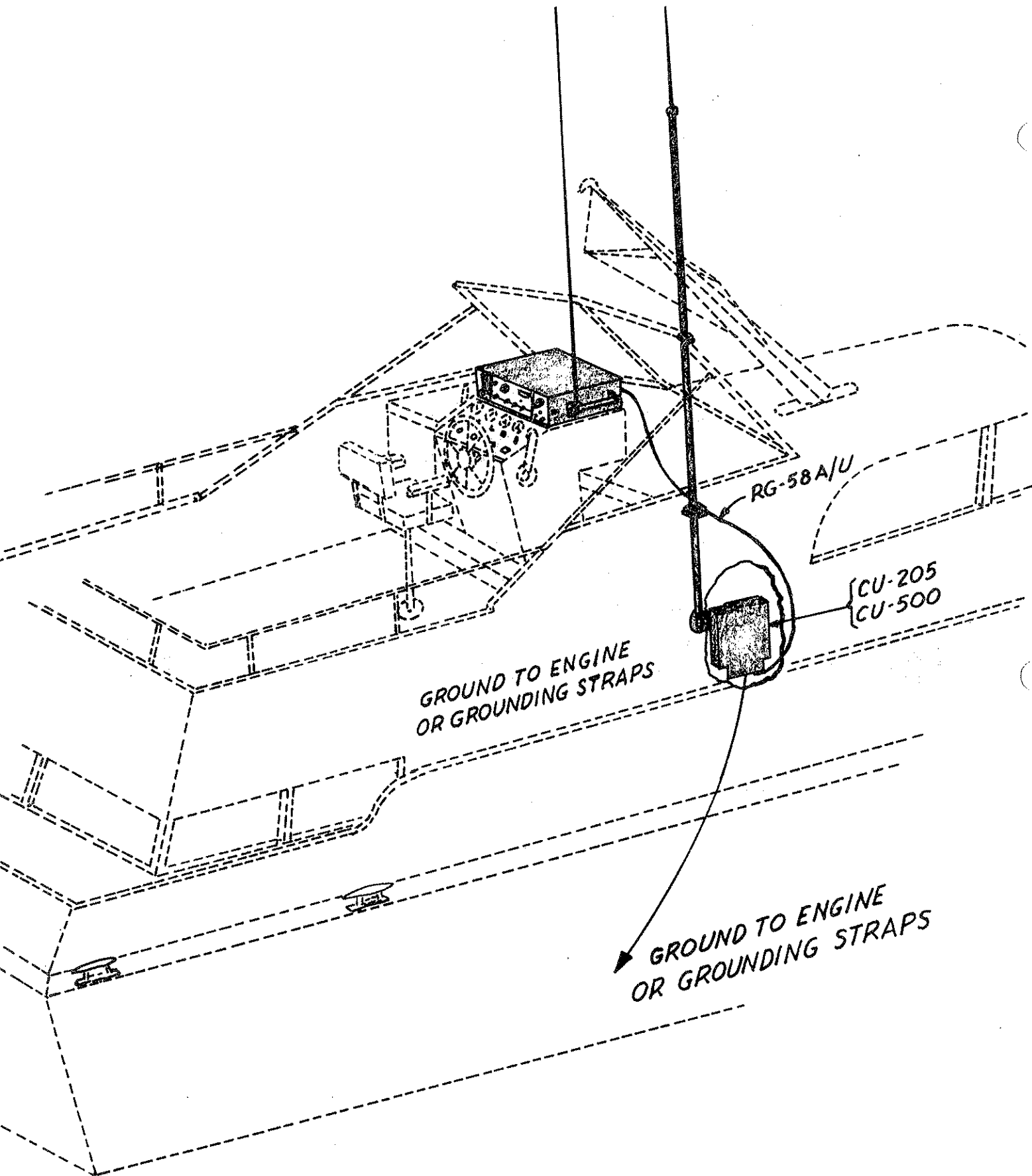


FIGURE No. 4
3 POSSIBLE MARINE MOBILE MOUNTING METHODS

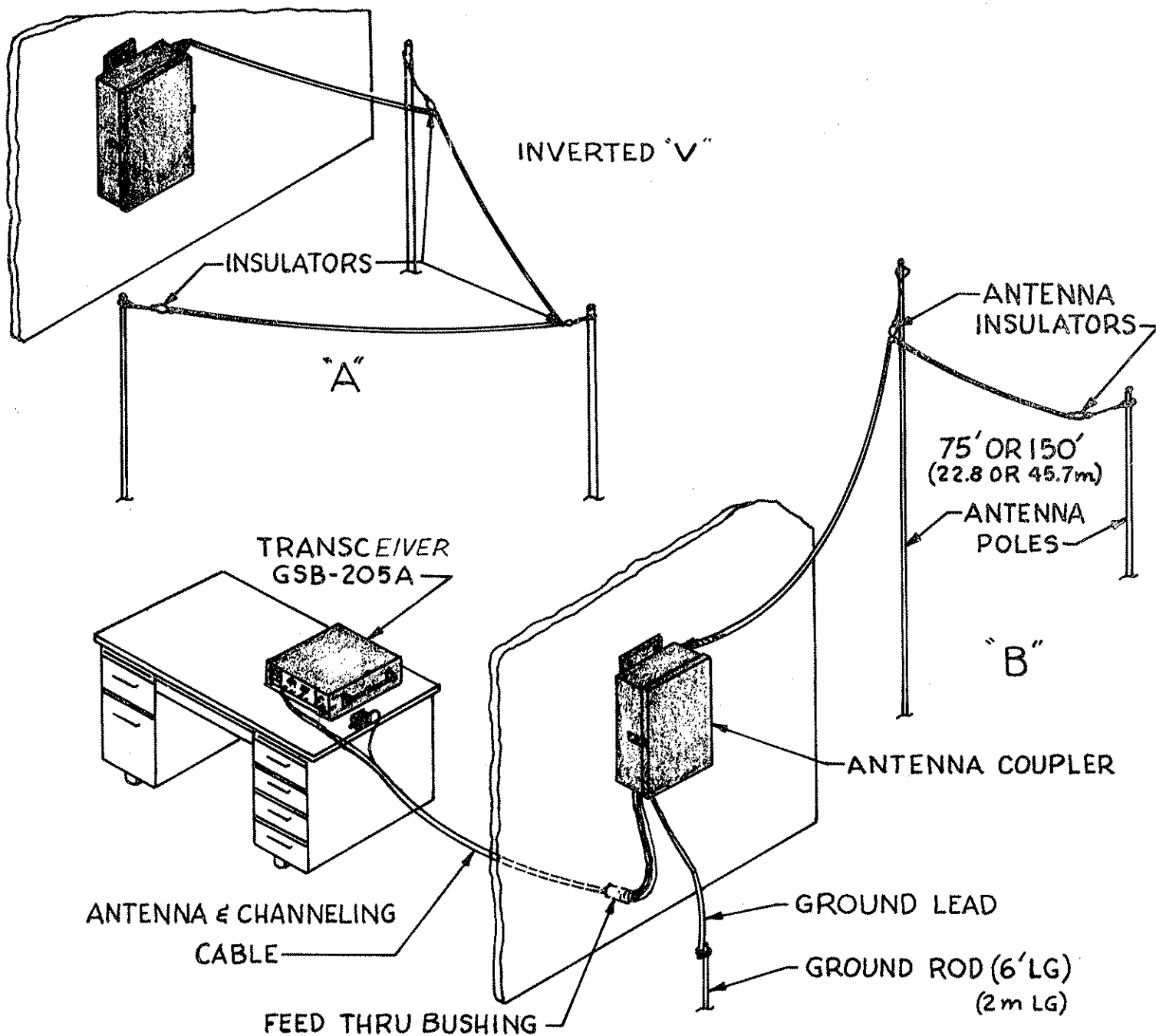


FIGURE No.5
TWO POSSIBLE GSB-205A BASE STATION AND CU-500 INSTALLATIONS

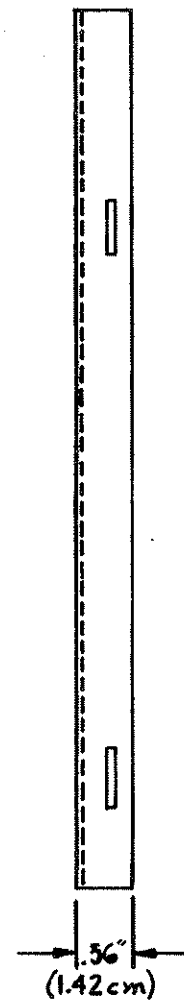
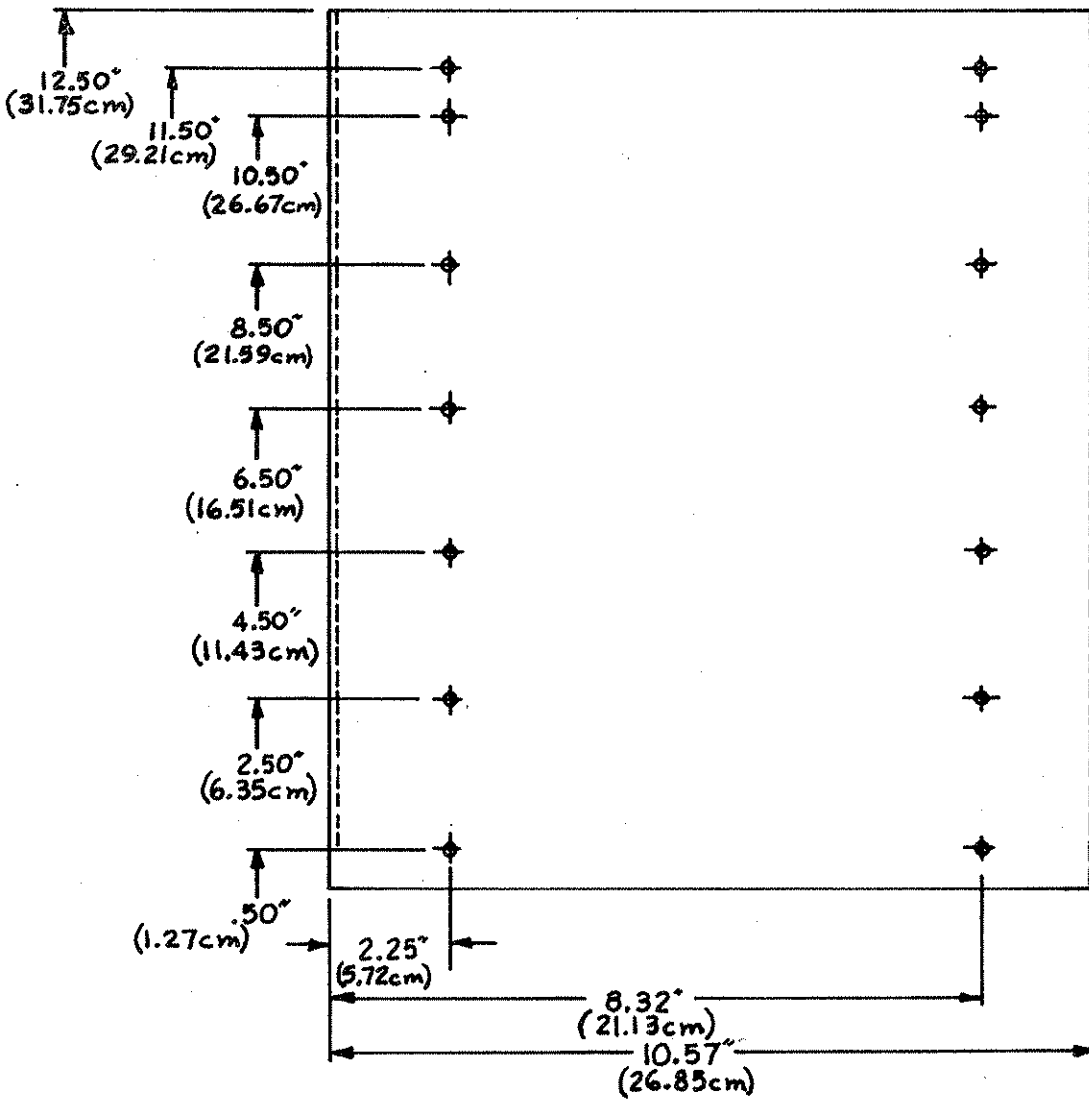
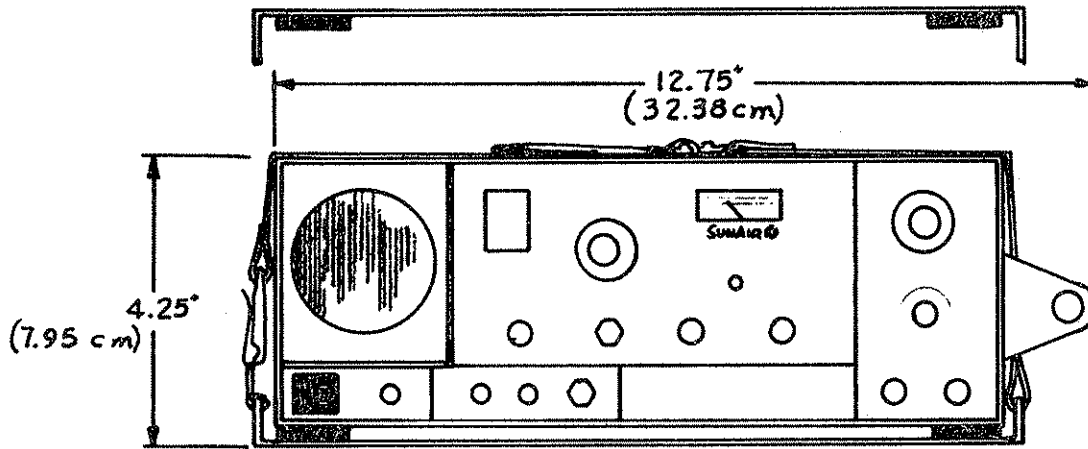


FIGURE No. 6

GSB-205A MOUNTING PLATE DEMENSIONS

SECTION III

OPERATION

A. CONTROLS AND METERING

1. Mode Switch - Selects operating mode of the transceiver, OFF-USB-LSB.
2. Transceiver Channel Selector - Selects the operating channel of the transceiver.
3. Gain - Controls the receiver audio level.
4. Clarifier - Varies the receiver audio output frequency.
5. Battery Test Switch - Push switch to check batteries, should read "GOOD" on meter.
6. Antenna Coupler Channel Selector - Selects operating channel of the antenna coupler.

NOTE: both the transceiver and the antenna coupler must be on the same channel.

7. "Tune-CW" Switch - Selects either Tune, Normal Receive-Transmit, or Telegraphy operation.
8. Antenna Coupler Tune - Switch the "TUNE-CW" switch to "TUNE", adjust the coupler tune control for maximum indication on the meter.
9. Meter - In the receive mode, it monitors the input signal strength; on transmit, it monitors the relative power output.

B. ANTENNA SYSTEMS

1. Sectional Whip Antenna

The 6 section whip antenna with the ground radial is standard equipment with the GSB-205A as the unit is primarily a portable transceiver.

For proper operation, the ground radial must be used.

The sectional whip antenna is intended for portable operation of the transceiver and should not be used for mobile applications. Solid 5x5 communications of over 300 miles can be achieved on the higher frequencies (7-10 MHz) using the sectional whip antenna and ground radial.

2. Mobile Whip Antenna

The mobile whip antenna is intended for use in land and marine mobile applications. An antenna coupler tuned for the sectional whip will not tune the mobile whip without realignment. If the transceiver is intended for use as a semi-permanent mobile unit and as a portable unit, an extra antenna coupler should be installed to tune the mobile whip. It may be either a CU-205A or a CU-500.

A ground plane is still required for proper operation. In an automobile, truck or metal boat, the body or hull of the vehicle may be used. In a wood or fiberglass boat, an RF ground plate should be installed on the hull.

3. Wire Antenna

The optional 10 meter wire antenna with the ground radial is for use in a semi-fixed base installation where it would be convenient to install the antenna between two fixed points. It should be plugged into the antenna coupler jack marked "Wire". (The sectional whip may also be used for this application with no degradation of range).

The sectional whip antenna may, on some frequencies, be able to be used with the 10 meter wire antenna and ground radial for increased range if the antenna coupler is able to tune the two antennas at the same time.

C. TRANSCEIVER

1. Connect the antenna and radial.
2. Turn on the transceiver by selecting upper or lower side-band.
3. Depress the "Battery Test" switch and check that the meter reads in the "Good" region.
4. Select desired channel of operation on the transceiver and antenna coupler.

5. Adjust the receiver "Gain" control for desired audio level.
6. Turn the "Tune-CW" switch to "Tune" and adjust the "Tune" control on the antenna coupler for a maximum reading on the meter. Return the "Tune-CW" switch to its center position (R/TX).
7. Transmitting is accomplished by pressing the switch on the microphone and speaking directly into the microphone with a normal voice level.
8. The "Clarifier" control is used to change the pitch of a received signal to achieve a more readable voice contact. It has no effect on the transmitting frequency.

D. ANTENNA COUPLER

1. Internal Antenna Coupler

The internal antenna coupler is pretuned at the factory for the frequencies ordered with the transceiver. The antenna coupler channel selector must be on the same channel as the transceiver when using the sectional whip or 10 meter wire antennas.

When an external antenna coupler is used, the channel selector on the antenna coupler in the GSB-205A MUST be on "EXT".

The "TUNE" control on the antenna coupler is used to fine tune the antenna coupler to the present operating surroundings.

Two binding post jacks are provided on the front of the antenna coupler, one marked "Wire", which is for the 10 meter wire antenna, the other marked "Whip", which is for the sectional whip antenna.

2. CU-205A

The CU-205A is identical with the internal antenna coupler of the GSB-205A with the exception that it is supplied with a mounting bracket. When using the CU-205A for a mobile or fixed station installation, the antenna coupler in the GSB-205A MUST be channeled to "EXT". Whenever two antenna

couplers are to be alternately used with one GSB-205A, one of them MUST be channeled to "EXT". The lead-in wire from the antenna to the coupler should not exceed 1/2 meter in length and a good RF ground between the antenna coupler and the mounting surface must be maintained.

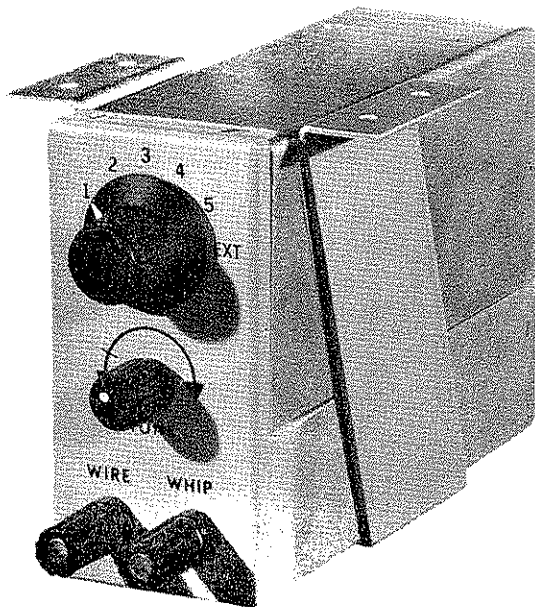


FIGURE No. 7
MANUAL CHANNELING ANTENNA COUPLER,
CU-205A, FOR MOBILE MOUNTING

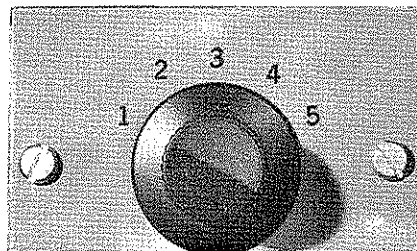


FIGURE No. 8
REMOTE CHANNELING CONTROL BOX FOR CU-500

Pg. 19

E. TELEGRAPHY

The telegraphy option consists of a miniature connector on the transceiver and the telegraph key with leg strap, wire and a mating connector.

For telegraphy operation, set up the transceiver for normal operation, as in Section III. When receiving telegraphy, the "TUNE-CW" switch must be in the center position (R/TX). To transmit telegraphy, turn the "TUNE-CW" switch to "CW" and send the message in code, using the telegraph key. When the information is transmitted, return the "TUNE-CW" switch to "R/TX" to receive the answer.

F. BATTERY CHARGING

The batteries can be charged from any 13.75 VDC power source, such as a DC power supply, or a 12.6 VDC vehicle with its engine running (which charges at a voltage of 13.75 VDC).

The AC Battery Charger option, if ordered, will charge the batteries at the proper rate from any 115/230 VAC, 50-60 Hz power source. The battery charger is wired at the factory for 115 VAC, unless specified for 230 VAC. This conversion may be made in the field by changing the split primary winding on the battery charger transformer, T2, from parallel connection to series connection, as shown in Figure 26.

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 phone output jack. 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 at the phone jack. Tune L201, L202, L203 and L204 for maximum audio output while decreasing the RF input to keep an 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 "TUNE-CW" switch to "CW" and 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 "TUNE-CW" switch to "CW". 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 "TUNE-CW" switch to "Tune". Adjust the two tuned circuits for peak output.

5. Balanced Modulator

The balanced modulator in the GSB-205A is of the 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. Turn the "TUNE-CW" switch to "CW". 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. Turn the "TUNE-CW" switch to "Tune", alternately adjust the two capacitors for maximum power and linearity at a power output between 15-20 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.

8. Audio Oscillator

The audio oscillator is used to tune the antenna coupler in normal operation and used as a CW tone oscillator when operating with a telegraph key.

After completing step 7, the audio oscillator level should be set to produce 15-20 watts, as indicated on the wattmeter.

Using the same test setup as step 7, turn the "TUNE-CW" switch to "Tune" and adjust R805 to produce 15-20 watts output on all channels. The waveform should be crisp and clean on the oscilloscope.

9. Sidetone

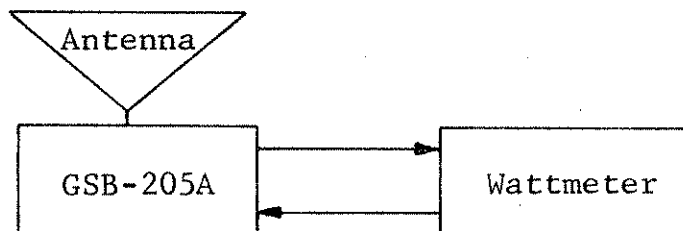
Sidetone is a valuable asset when sending telegraphy as it allows the operator to hear what he is sending. In voice communications, it is not necessary and is normally turned off by R617, except when the telegraphy option is ordered.

D. ANTENNA COUPLER - CU-205A

The antenna coupler is composed entirely of passive devices, inductors and capacitors and the only maintenance normally required would be tuning because of a frequency or antenna change. For frequency change, see Section V.

The following procedure should be followed to tune the coupler:

1. Test Setup:



2. Test Procedure:

- (a) Pull the radio out of the case just far enough to connect the wattmeter between the transceiver coax and the antenna coupler. Connect the ground radial and antenna.

It is important to leave the radio in the case as the case affects the tuning of the coupler. If the transceiver is to be installed on a metal frame, such as an automobile, it should be tuned at the installation site. If the radio is to be used as a back pack or base station on a wooden table, it should be tuned on the table.

- (b) If the whip and long wire antenna are to be used interchangeably, set the coupler tune knob to the crossed lines on the front panel. If either the whip or the long wire is to be used exclusively, the knob can be set to the center position for a broader tuning range.

- (c) Set the transceiver and coupler switches to the same channel and key the transmitter by switching the "TUNE-CW" switch to the "Tune" position.
- (d) Adjust the proper channel shunt capacitor (C1011-15) for a dip in reflected power as shown on the wattmeter. If no dip appears, adjust the channel series capacitor (1001-05) by about 10 turns. Adjust C1011-15 for a dip.
- (e) After a dip has been reached, increase the series capacitance by turning the piston screw clockwise, then re-dip the reflected power by means of C1011-15. If this dip is lower than the previous dip, repeat the procedure until the reflected power is zero. If the second dip is higher in reflected power than the first dip, decrease the series capacitance (C1001-05) by turning the piston screw counter-clockwise and repeat this procedure until the reflected power is zero.

If a dip in reflected power is still being approached and the shunt capacitor (C1011-15) is at maximum or minimum, it is necessary to change the tap on the air dux coil.

If the shunt capacitor is at a maximum, more inductance is required; therefore, move the tap down the coil about 2 turns. If the shunt capacitor is at a minimum, less inductance is required; therefore, move the tap up the coil about 2 turns. Between 2.0 and 2.6 MHz a fixed shunt capacitor is across the variable shunt capacitor (C1011-15). A 100pf capacitor is used at 2 MHz and decreases down to zero at 2.6 MHz.

- (f) Repeat for each active channel.

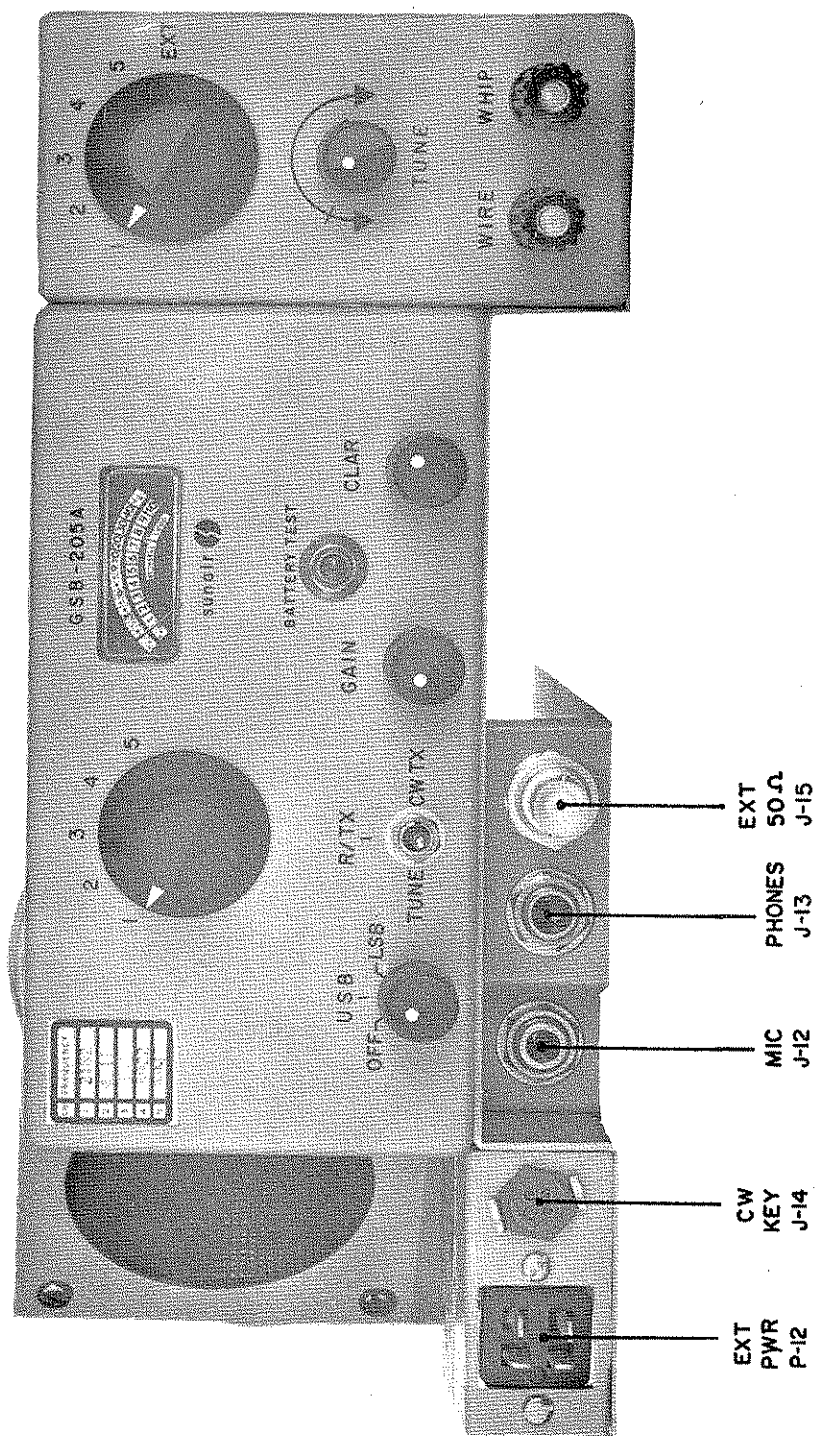


FIGURE No. 10

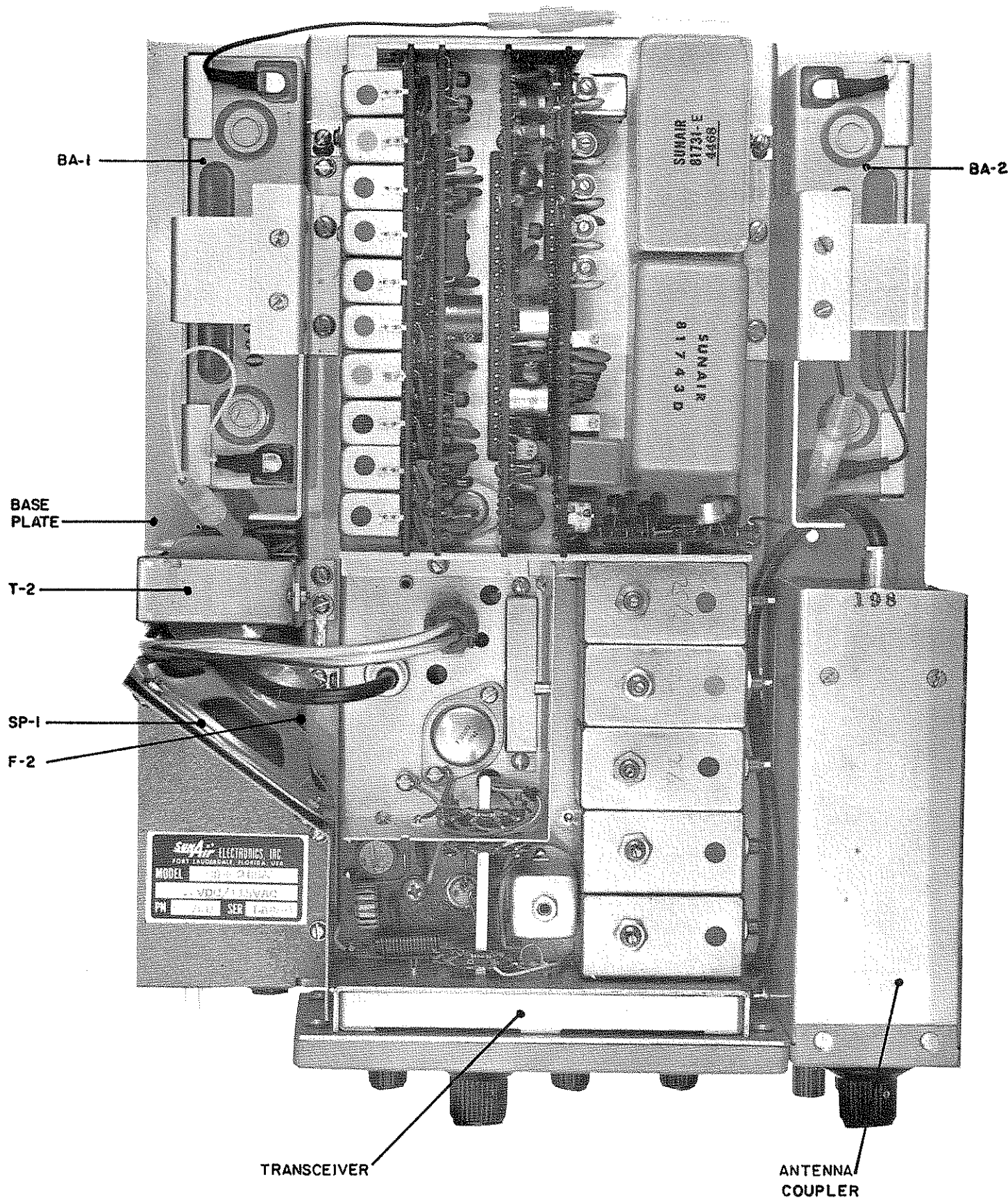


FIGURE No. 11

GSB-205A, TOP VIEW

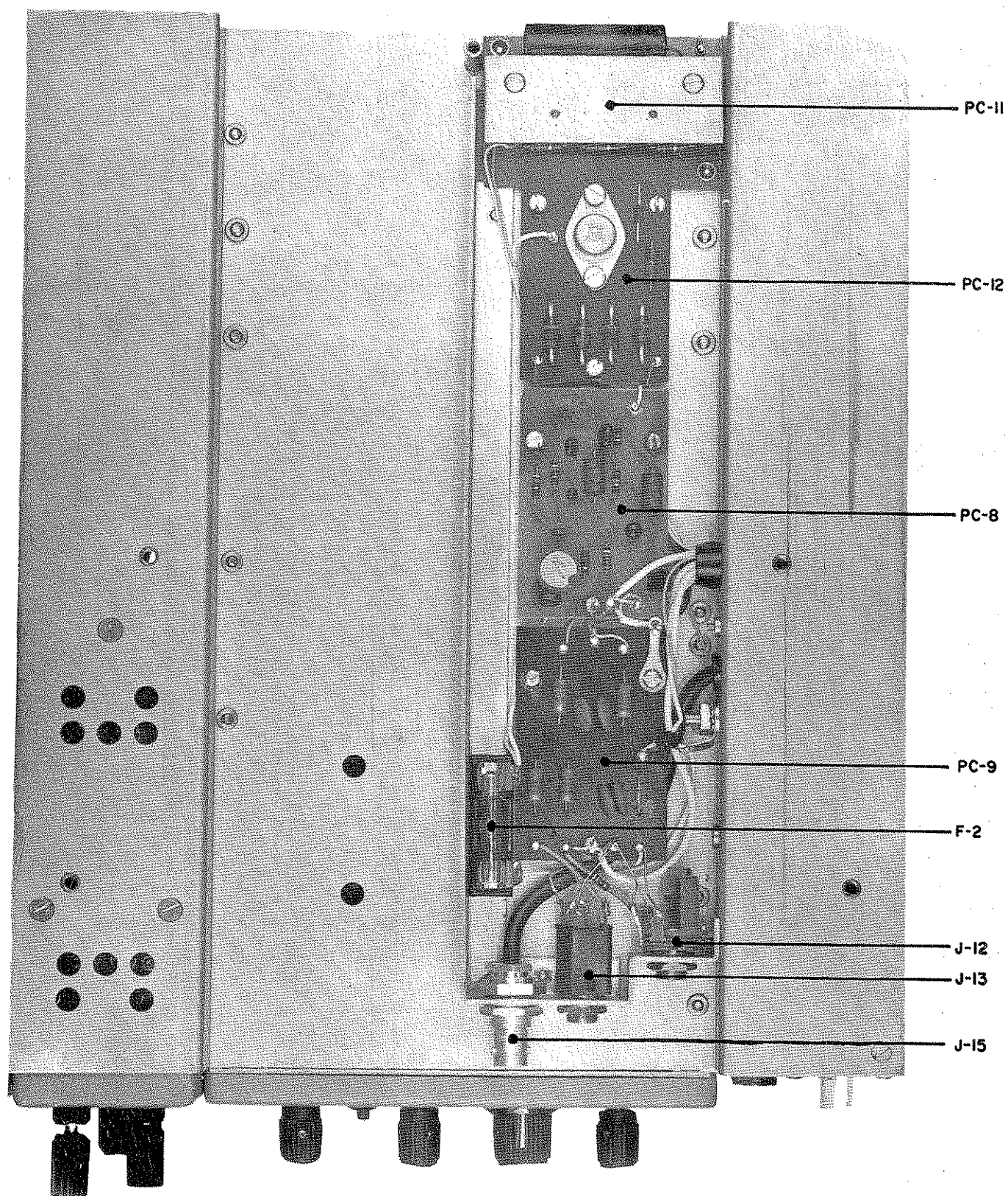


FIGURE No. 12

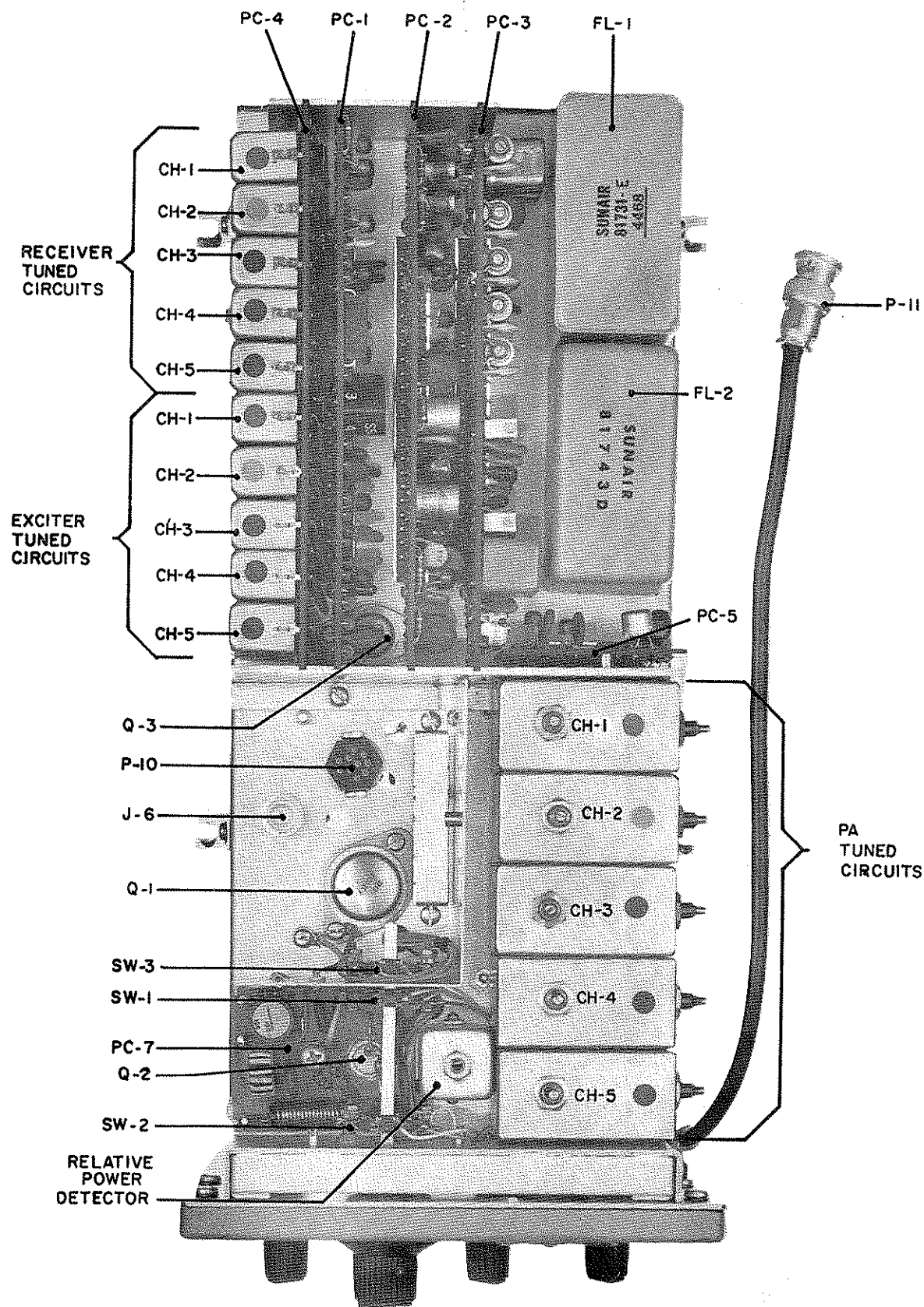


FIGURE No.13

GSB-205A, TOP VIEW WITHOUT TRAY

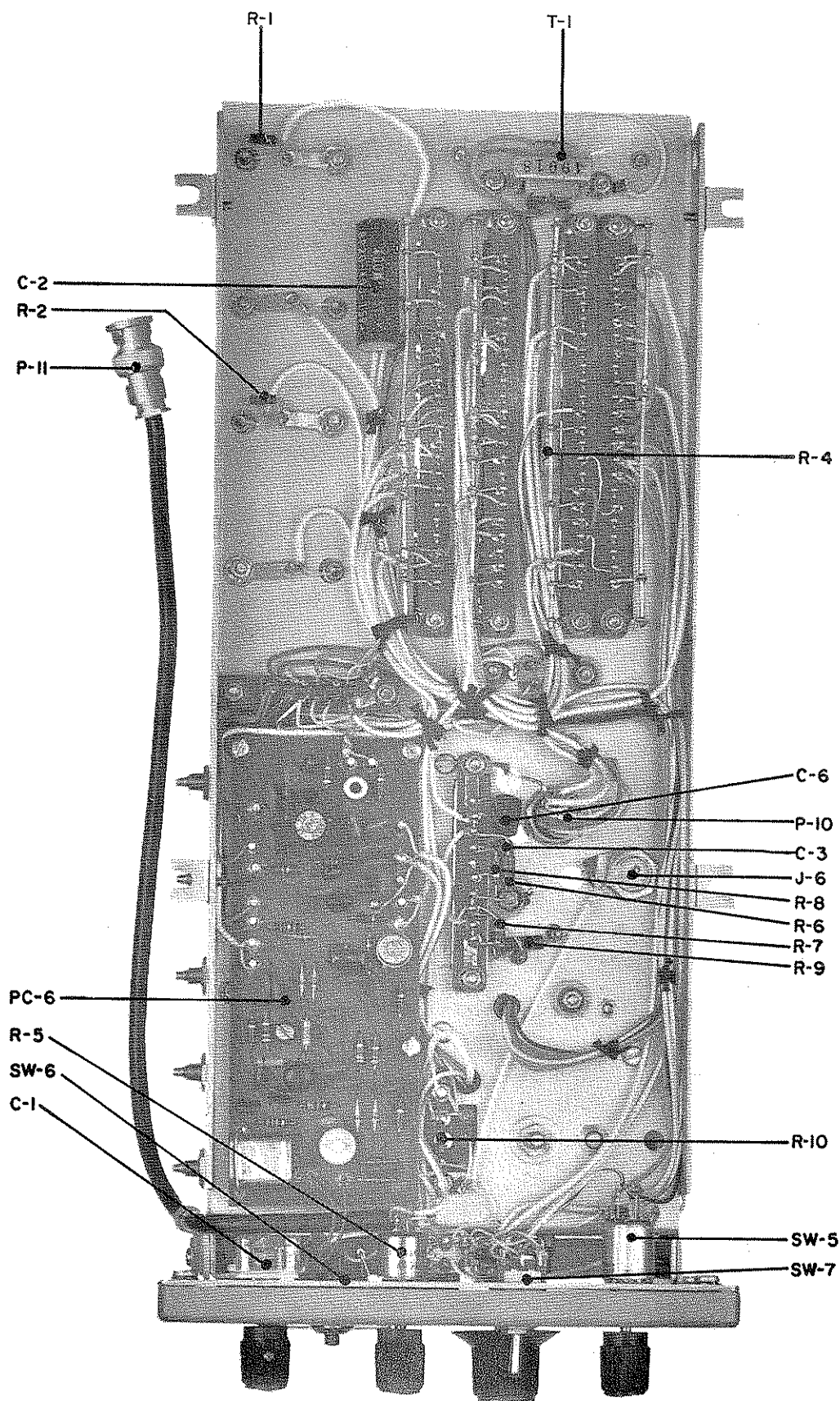


FIGURE No. 14

GSB-205, BOTTOM VIEW WITHOUT TRAY

SECTION V

FREQUENCY CHANGES

A. FREQUENCY BANDS

The receiver/transmitter frequency spectrum is divided into five 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 given in Table 2.

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.

*64551-3
α 470pF*

| 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 | 99664-3 | 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 |

Table 1

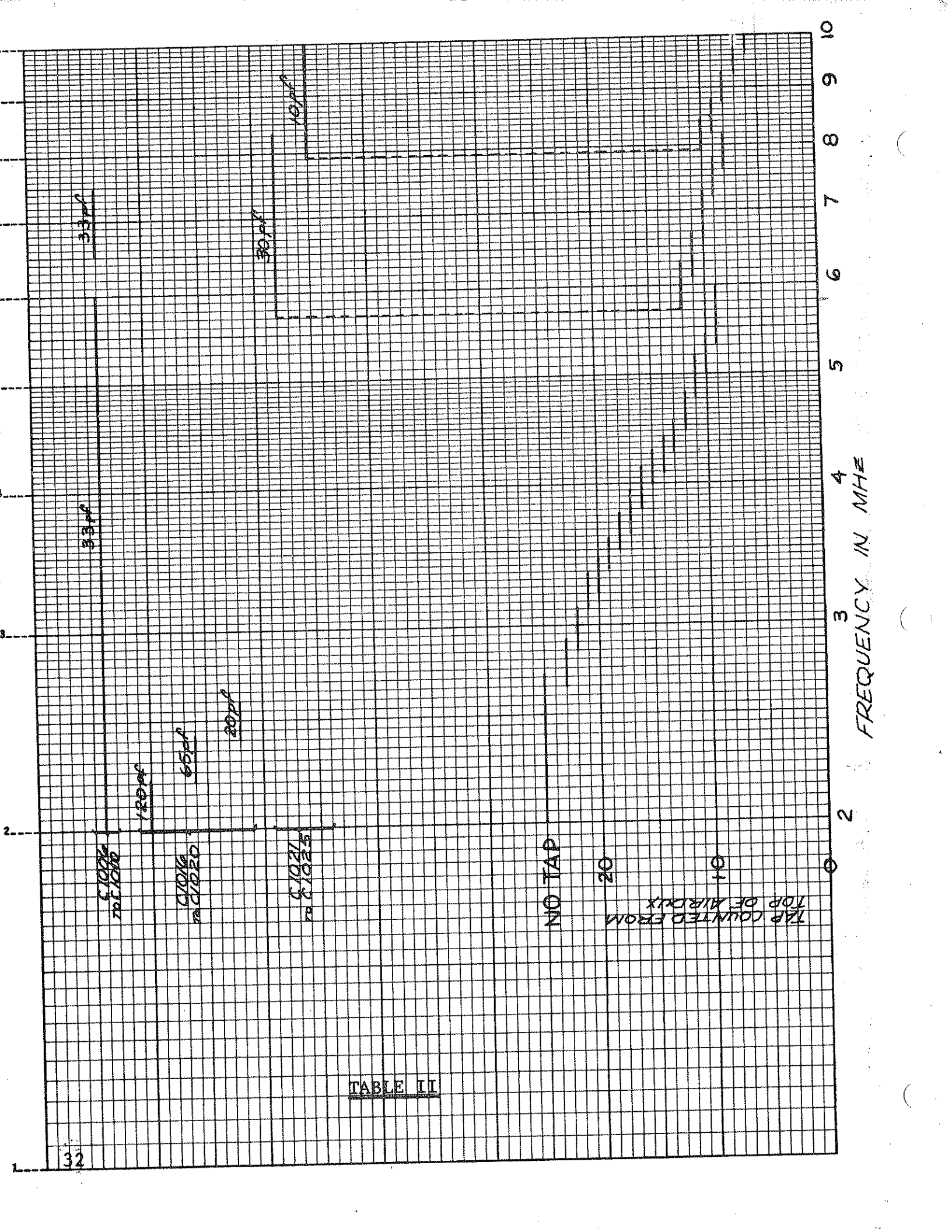
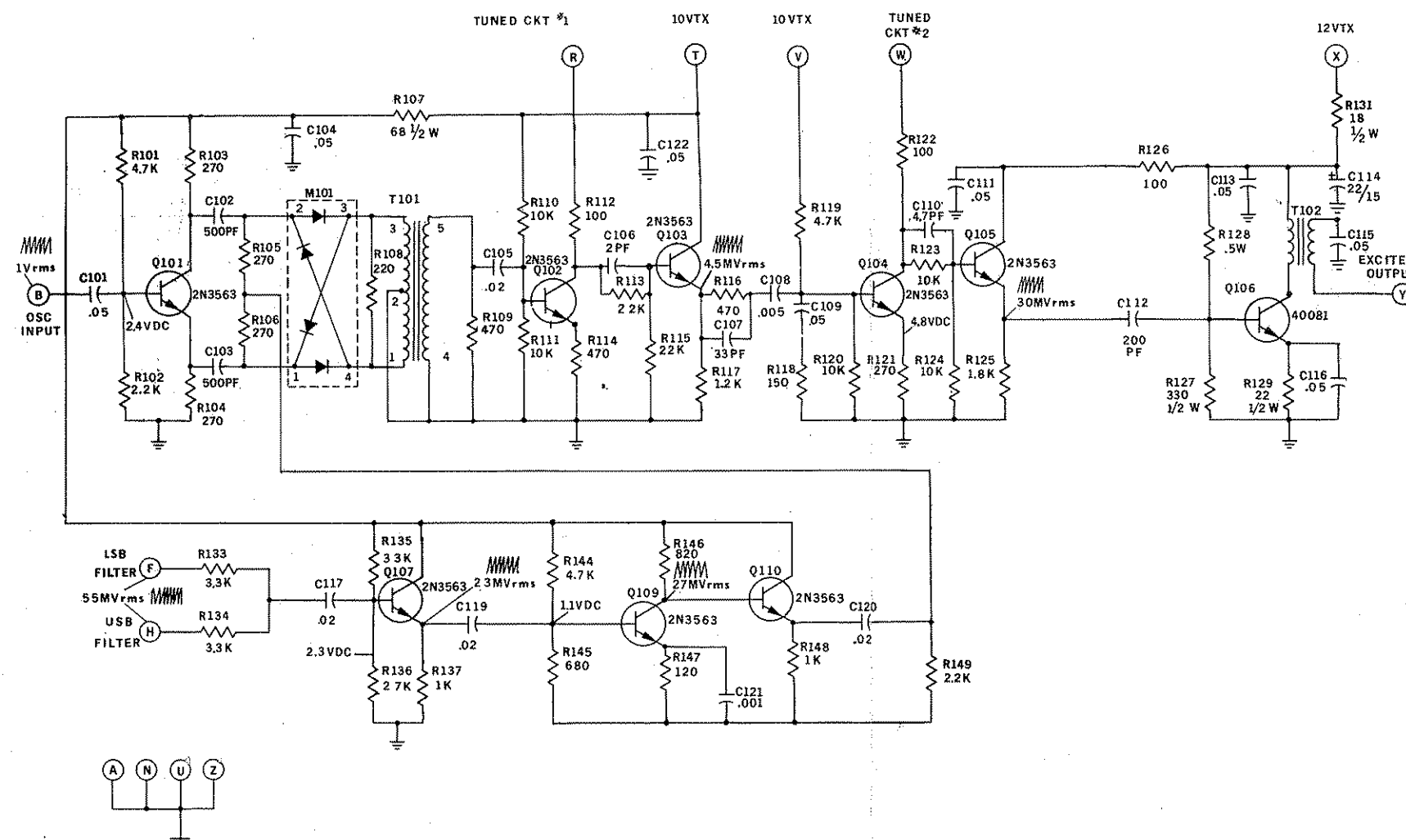
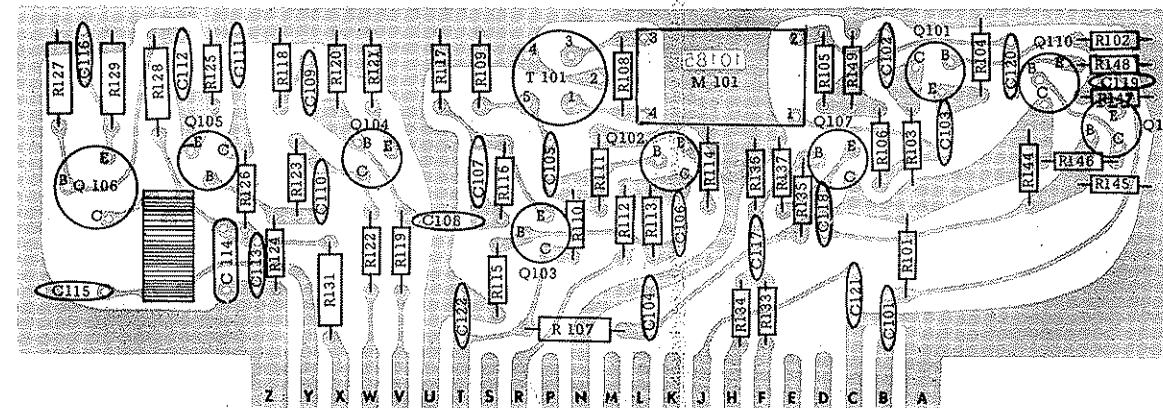


TABLE II

| CKT. SYM. | PART NO. | DESCRIPTION |
|-----------|----------|-------------------------------|
| PC1 | 99857 | Complete Exciter Board Ass'y. |
| | 10185 | P.C. Board |
| C101 | 27357 | Capacitor, Disc .05 uf 25V |
| C102 | 25098 | " " 500 pf |
| C103 | 25098 | " " 500 pf |
| C104 | 27357 | " " .05 uf 25V |
| C105 | 26913 | " " .02 uf 25V |
| C106 | 25971 | Capacitor, Dipped Mica 2 pf |
| C107 | 26078 | " " 33 pf |
| C108 | 27333 | Capacitor, Disc .005 uf 100V |
| C109 | 27357 | " " .05 uf 25V |
| C110 | 26236 | " " 4.7 pf |
| C111 | 27357 | " " .05 uf 25V |
| C112 | 25804 | Capacitor, Dipped Mica 200 pf |
| C113 | 27357 | Capacitor, Disc .05 uf 25V |
| C114 | 27412 | Capacitor, Tantalum 22 uf 15V |
| C115 | 27357 | Capacitor, Disc .05 uf 25V |
| C116 | 27357 | " " .05 uf 25V |
| C117 | 26913 | " " .02 uf 25V |
| C118 | 26913 | " " .02 uf 25V |
| C119 | 28208 | " " .001 uf 100V |
| C120 | 26913 | " " .02 uf 25V |
| C121 | 27357 | " " .05 uf 25V |
| C122 | 27357 | " " .05 uf 25V |
| M101 | 40323 | Diode, Ring |
| Q101 | 44329 | Transistor, Silicon 2N3563 |
| Q102 | 44329 | " " 2N3563 |
| Q103 | 44329 | " " 2N3563 |
| Q104 | 44329 | " " 2N3563 |
| Q105 | 44329 | " " 2N3563 |
| Q106 | 44472 | " " 40081 |
| Q107 | 44329 | " " 2N3563 |
| Q109 | 44329 | " " 2N3563 |
| Q110 | 44329 | " " 2N3563 |
| R101 | 17077 | Resistor, Comp. 4.7K 1/4W 10% |
| R102 | 17807 | " " 2.2K 1/4W 10% |
| R103 | 17845 | " " 270 1/4W 10% |
| R104 | 17845 | " " 270 1/4W 10% |
| R105 | 17845 | " " 270 1/4W 10% |
| R106 | 17845 | " " 270 1/4W 10% |
| R107 | 16774 | " " 68 1/2W 10% |
| R108 | 17132 | " " 220 1/4W 10% |
| R109 | 17261 | " " 470 1/4W 10% |
| R110 | 17041 | " " 10K 1/4W 10% |
| R111 | 17041 | " " 10K 1/4W 10% |
| R112 | 17479 | " " 100 1/4W 10% |
| R113 | 17223 | " " 22K 1/4W 10% |
| R114 | 17261 | " " 470 1/4W 10% |
| R115 | 17223 | " " 22K 1/4W 10% |
| R116 | 17261 | " " 470 1/4W 10% |
| R117 | 18186 | " " 1.2K 1/4W 10% |
| R118 | 17273 | " " 150 1/4W 10% |
| R119 | 17077 | " " 4.7K 1/4W 10% |
| R120 | 17041 | " " 10K 1/4W 10% |
| R121 | 17845 | " " 270 1/4W 10% |
| R122 | 17118 | " " 100 1/4W 10% |
| R123 | 17041 | " " 10K 1/4W 10% |
| R124 | 17041 | " " 10K 1/4W 10% |
| R125 | 17819 | " " 1.8K 1/4W 10% |
| R126 | 17118 | " " 100 1/4W 10% |
| R127 | 17338 | " " 330 1/2W 10% |

| CKT. SYM. | PART NO. | DESCRIPTION |
|-----------|----------|--------------------------------|
| R128 | 17730 | Resistor, -Comp. 1.5K 1/2W 10% |
| R129 | 18693 | " " 22 1/2W 10% |
| R131 | 18473 | " " 18 1/2W 5% |
| R133 | 17089 | " " 3.3K 1/4W 10% |
| R134 | 17089 | " " 3.3K 1/4W 10% |
| R135 | 17792 | " " 33K 1/4W 10% |
| R136 | 17120 | " " 27K 1/4W 10% |
| R137 | 17156 | " " 1K 1/4W 10% |
| R144 | 17077 | " " 4.7K 1/4W 10% |
| R145 | 17663 | " " 680 1/4W 10% |
| R146 | 17821 | " " 820 1/4W 10% |
| R147 | 18655 | " " 120 1/4W 10% |
| R148 | 17156 | " " 1K 1/4W 10% |
| R149 | 17807 | " " 2.2K 1/4W 10% |
| T101 | 48911 | Transformer, Balanced Mixer |
| T102 | 99693 | " Exciter Output |



5. ALL RESISTORS IN OHMS, 10% - 1/4W UNLESS OTHERWISE NOTED.
4. ALL CAPACITORS IN .UF UNLESS OTHERWISE NOTED.
3. MEASUREMENTS MADE IN TRANSMIT MODE WITH 100MV, 1000Hz SIGNAL AT MICROPHONE INPUT.
2. USB FILTER USED FOR LSB MODE.
1. LSB FILTER USED FOR USB MODE.

FIGURE No.15
P.C.No.1 EXCITER

| CKT. SYM. | PART NO. | DESCRIPTION |
|-----------|----------------|--|
| PC2 | 99858 10186 | Complete Receiver Board Ass'y. P.C. Board |
| C201 | 27357 | Capacitor, Disc .05 uf 25V |
| C202 | 27357 | " " .05 uf 25V |
| C203 | 27357 | " " .05 uf 25V |
| C204 | 25098 | " " 500 pf |
| C205 | 27357 | " " .05 uf 25V |
| C206 | 28301 | " Dipped Mica 62 pf |
| C207 | 28325 | " " 220 pf |
| C208 | 28325 | " " 220 pf |
| C209 | 27357 | " Disc .05 uf 25V |
| C210 | 27357 | " " .05 uf 25V |
| C211 | 27412 | " Tantalum 22 uf 15V |
| C212 | 27357 | " Disc .05 uf 25V |
| C213 | 27357 | " " .05 uf 25V |
| C214 | 27357 | " " .05 uf 25V |
| C215 | 27357 | " " .05 uf 25V |
| C216 | 26913 | " " .02 uf 25V |
| C217 | 25086 | " " 220 pf |
| C218 | 25086 | " " 220 pf |
| C219 | 27357 | " " .05 uf 25V |
| C220 | 27357 | " " .05 uf 25V |
| C221 | 26913 | " " .02 uf 25V |
| C222 | 27278 | " " .0022 uf 200V |
| C223 | 28064 | " Dipped Mica 250 pf |
| C224 | 25086 | " Disc 220 pf |
| C226 | 28337 | " "Red Cap" .47 uf 50V |
| C227 | 27357 | " Disc .05 uf 25V |
| C228 | 27357 | " " .05 uf 25V |
| C229 | 27357 | " " .05 uf 25V |
| C230 | 27357 | " " .05 uf 25V |
| C231 | 27412 | " Tantalum 22 uf 15V |
| C232 | 27357 | " Disc .05 uf 25V |
| C233 | 27412 | " Tantalum 22 uf 15V |
| C234 | 28337 | " "Red Cap" .47 uf 50V |
| C235 | 27357 | " Disc .05 uf 25V |
| CR201 | 40373 | Diode, Zener 1N5231 |
| CR202 | 44290 | " Silicon 1N914 |
| CR203 | 40373 | " Zener 1N5231 |
| CR204 | 44290 | " Silicon 1N914 |
| CR205 | 44290 | " " 1N914 |
| IC201 | 44446 | Integrated Circuit CA3005 |
| IC202 | 44458 | " " CA3002 |
| IC203 | 44458 | " " CA3002 |
| L201 | 47955-1 | Inductor, Mixer Primary |
| L202 | 47955-2 | Inductor, Mixer Secondary |
| L203 | 48961 | Inductor, IF |
| L204 | 48961 | Inductor, IF |
| L205 | 64678 | Inductor, Trap, 150 uh |
| Q201 | 44422 | Transistor, Silicon A466 |
| Q202 | 44252 | " " 2N3646 |
| Q203 | 44252 | " " 2N3646 |
| Q204 | 44252 | " " 2N3646 |
| Q205 | 44434 | " " MPS-2925 |
| Q206 | 44434 | " " MPS-2925 |
| Q207 | 44252 | " " 2N3646 |
| R201 | 17077 | Resistor, Comp. 4.7K 1/4W 10% |
| R202 | 18162 | " " 8.2K 1/4W 10% |

| CKT. SYM. | PART NO. | DESCRIPTION |
|-----------|----------|--------------------------------|
| R203 | 17077 | Resistor, Comp., 4.7K 1/4W 10% |
| R204 | 17156 | " " 1K 1/4W 10% |
| R205 | 17819 | " " 1.8K 1/4W 10% |
| R206 | 17819 | " " 1.8K 1/4W 10% |
| R207 | 17819 | " " 1.8K 1/4W 10% |
| R208 | 18655 | " " 120 1/4W 10% |
| R209 | 18655 | " " 120 1/4W 10% |
| R210 | 17156 | " " 1K 1/4W 10% |
| R211 | 17845 | " " 270 1/4W 10% |
| R212 | 17572 | " " 18K 1/4W 10% |
| R213 | 17572 | " " 18K 1/4W 10% |
| R214 | 18306 | " " 5.6K 1/4W 10% |
| R215 | 18306 | " " 5.6K 1/4W 10% |
| R216 | 17819 | " " 1.8K 1/4W 10% |
| R217 | 18186 | " " 1.2K 1/4W 5% |
| R218 | 17819 | " " 1.8K 1/4W 10% |
| R219 | 17041 | " " 10K 1/4W 10% |
| R220 | 18186 | " " 1.2K 1/4W 10% |
| R221 | 17041 | " " 10K 1/4W 10% |
| R222 | 17168 | " " 82K 1/4W 10% |
| R223 | 18318 | " " 12K 1/4W 10% |
| R224 | 17883 | " " 3.9K 1/4W 10% |
| R225 | 17273 | " " 150 1/4W 10% |
| R226 | 17845 | " " 270 1/4W 10% |
| R227 | 17039 | " " 100K 1/4W 10% |
| R228 | 17144 | " " 56K 1/4W 10% |
| R229 | 17481 | " " 6.8K 1/4W 10% |
| R230 | 17819 | " " 1.8K 1/4W 10% |
| R231 | 17118 | " " 100 1/4W 10% |
| R232 | 17936 | " " 47 1/4W 10% |
| R233 | 17572 | " " 18K 1/4W 10% |
| R234 | 17156 | " " 1K 1/4W 10% |
| R235 | 17144 | " " 56K 1/4W 10% |
| R236 | 17223 | " " 22K 1/4W 10% |
| R237 | 17223 | " " 22K 1/4W 10% |
| R238 | 17223 | " " 22K 1/4W 10% |

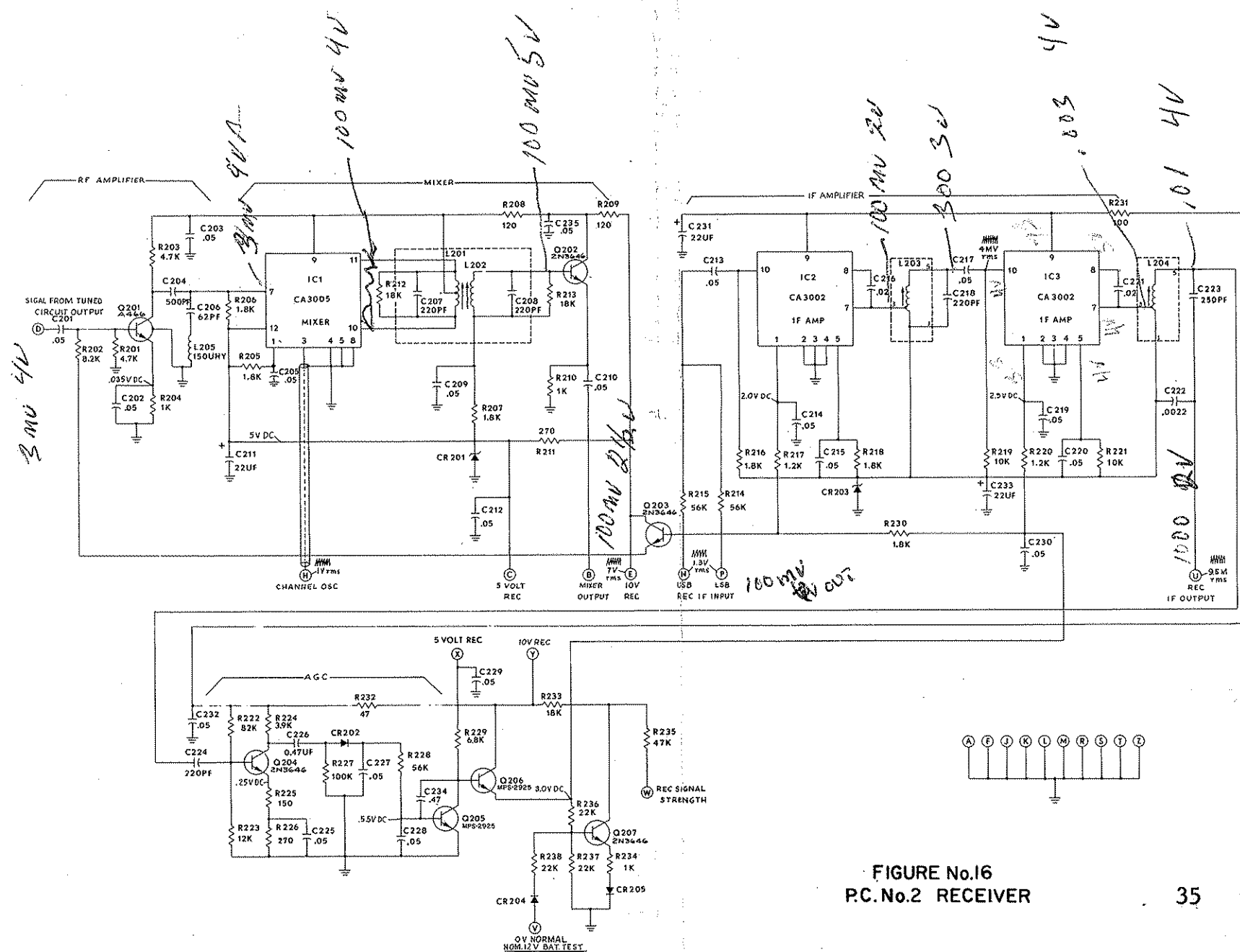
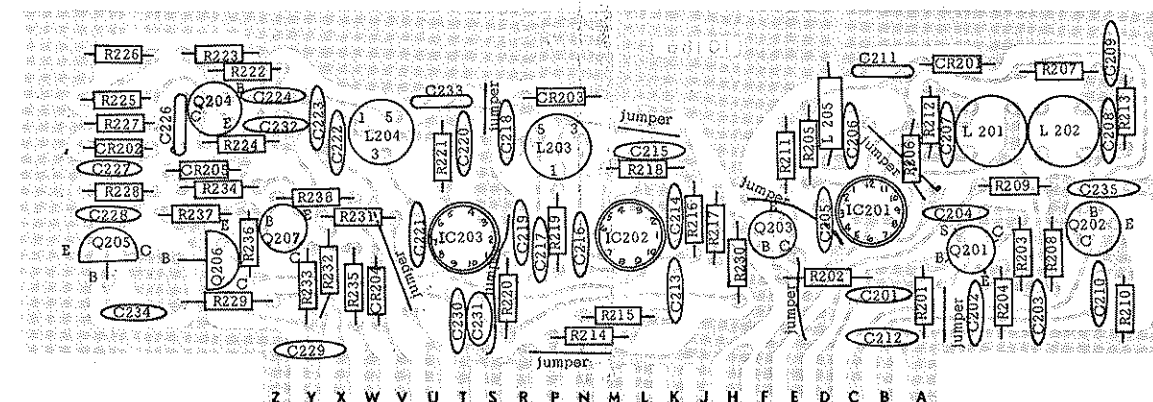


FIGURE No.16
P.C.No.2 RECEIVER

| CKT. SYM. | PART NO. | DESCRIPTION |
|------------------|----------|-----------------------------------|
| PC-3 | 99859 | Complete Chan. Osc. & Bal. Mod. |
| | 10187 | Board Assembly |
| | | 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 | 24795 | " Trimmer 9-35pf Ceramic |
| C308 | 27333 | " Disc .005uf 100V |
| C309 | 27981 | " Disc 100pf 200V |
| C310 | 27333 | " Disc .005uf 100V |
| C311 | 28466 | " Dipped Mica 75pf |
| C312 | 27357 | " Disc .05uf 25V |
| C313 | 27357 | " Disc .05uf 25V |
| C314 | 26913 | " Disc .02uf 25V |
| C315 | 27357 | " Disc .05uf 25V |
| C317 | 27515 | " Dipped Mica 360pf |
| C318 | 26107 | " Dipped Mica 68pf |
| C319 | 27357 | " Disc .05uf 25V |
| C320 | 27357 | " Disc .05uf 25V |
| C321 | 26092 | " Dipped Mica 47pf |
| C322 | 26913 | " Disc .02uf 25V |
| C323 | 25050 | " Disc 22pf N750 |
| C324 | 28040 | " Trimmer .8-4.5pf Glass |
| C325 | 25050 | " Disc 22pf N750 |
| C326 | 28040 | " Trimmer .8-4.5pf Glass |
| C327 | 25050 | " Disc 22pf N750 |
| C328 | 28040 | " Trimmer .8-4.5pf Glass |
| C329 | 25050 | " Disc 22pf N750 |
| C330 | 28040 | " Trimmer .8-4.5pf Glass |
| C331 | 25050 | " Disc 22pf N750 |
| C332 | 28040 | " Trimmer .8-4.5pf Glass |
| C333 | 27357 | " Disc .05uf 25V |
| CR301 thru CR305 | 40141 | Diode, Silicon, 1N461 |
| L301 | 64666 | Inductor, 120uh |
| M301 | 40311 | Ring Diode Module |
| Q301 | 44252 | Transistor, Silicon 2N3646 |
| Q302 | 44252 | " " 2N3646 |
| Q303 | 44329 | " " 2N3563 |
| Q304 | 44329 | " " 2N3563 |
| Q305 | 44331 | " " 2N3643 |
| R301 | 33849-3 | 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% |
| R314 | 17235 | " " 15K, 1/4W, 10% |

| CKT. SYM. | PART NO. | DESCRIPTION |
|----------------|----------|--|
| 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% |
| R319 | 17223 | " " 22K, 1/4W, 10% |
| R320 | 17223 | " " 22K, 1/4W, 10% |
| R321 | 18253 | " " 33, 1/4W, 10% |
| R322 | 17091 | " " 330, 1/4W, 10% |
| R323 | 18320 | " " 560, 1/4W, 10% |
| R324 | 17132 | " " 220, 1/4W, 10% |
| R325 | 18318 | " " 12K, 1/4W, 10% |
| R326 | 18318 | " " 12K, 1/4W, 10% |
| R327 | 17663 | " " 680, 1/4W, 10% |
| R328 | 17261 | " " 470, 1/4W, 10% |
| thru R333 | | |
| T301 | 48909 | Transformer, Wideband RF |
| Y301 thru Y305 | 81793 | Crystal, Frequency Dependent Component |

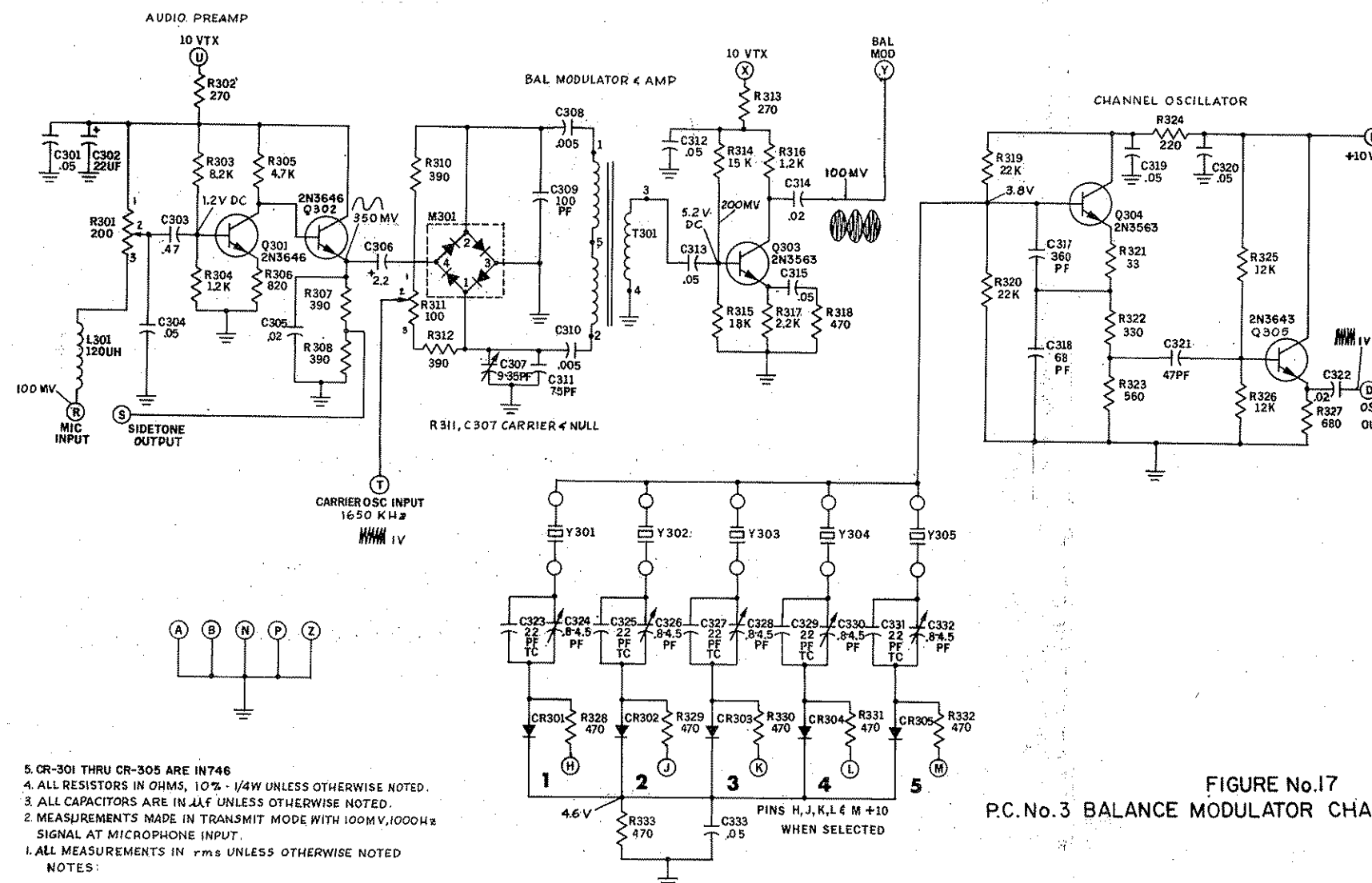
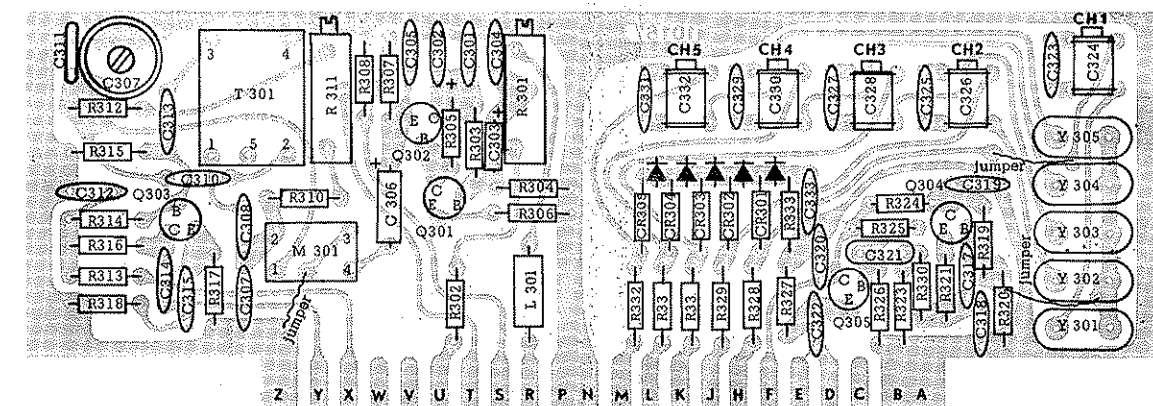
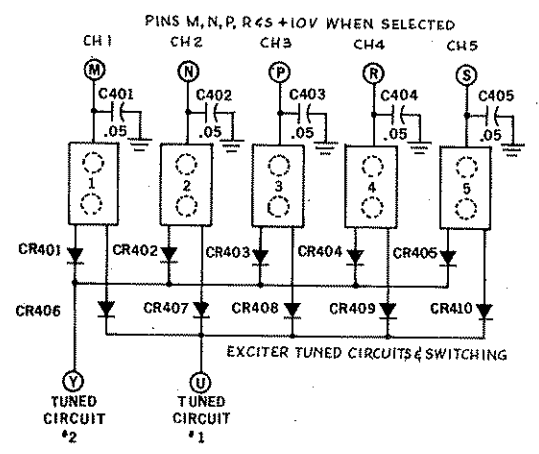
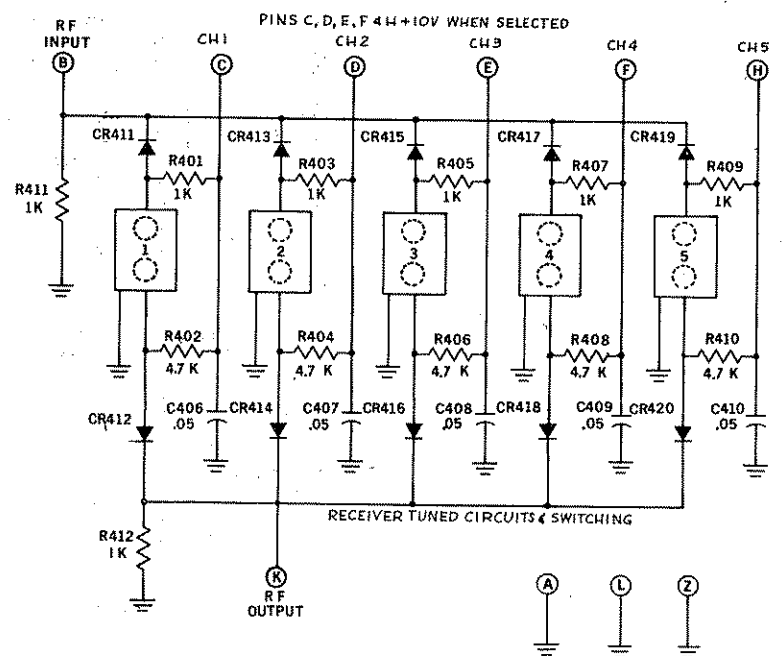
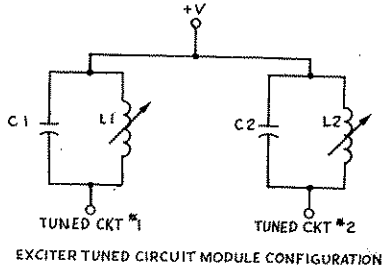
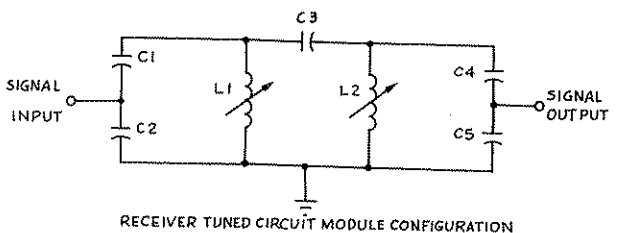
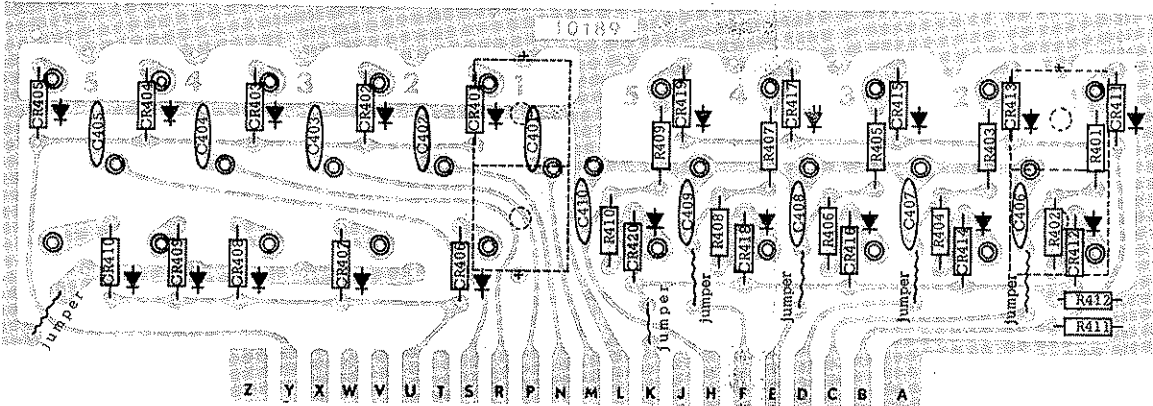


FIGURE No.17
P.C. No.3 BALANCE MODULATOR CHANNEL OSCILLATOR

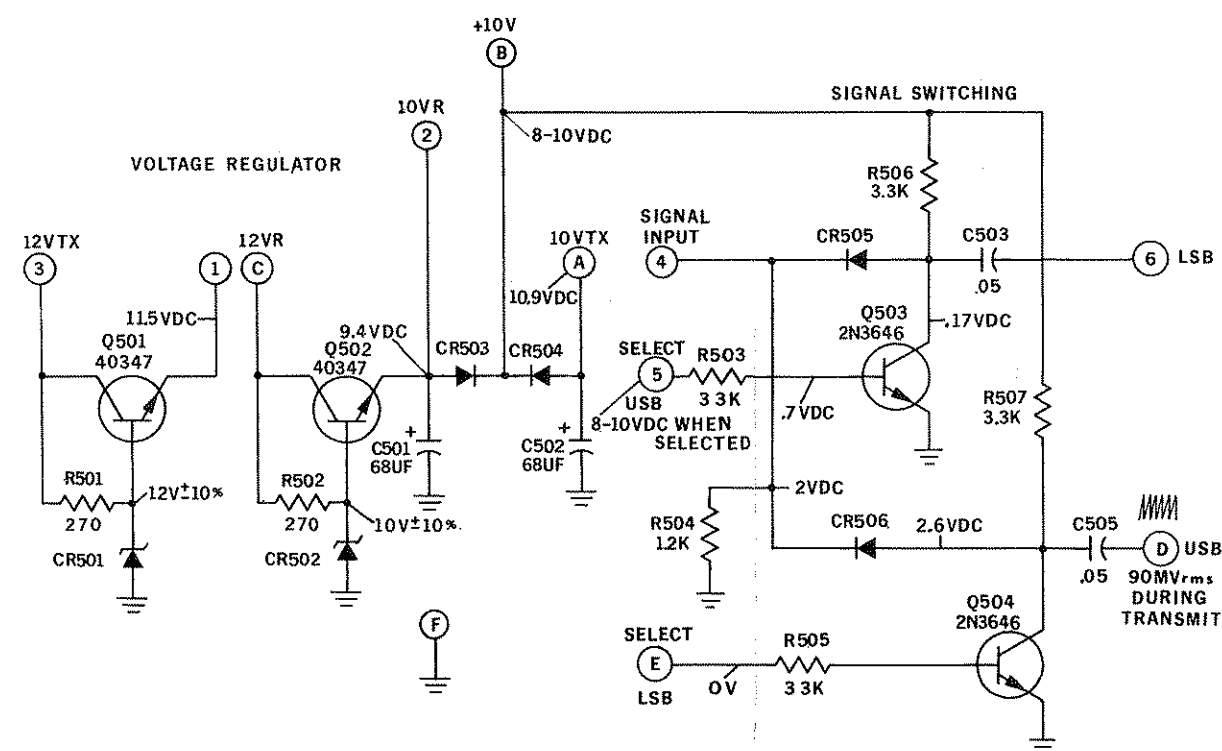
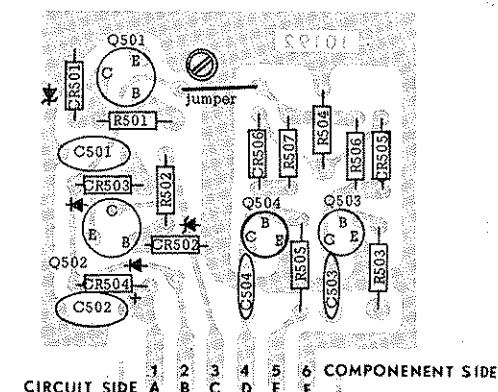
| CKT. SYM. | PART NO. | DESCRIPTION |
|------------------------|----------------|---|
| PC4 | 99860 10189 | Complete Tuned Circuit P.C. Ass'y. P. C. Board |
| C401 thru C410 | 27357 | Capacitor, Disc .05 uf 25 V |
| CR401 thru CR420 | 44290 | Diode, Silicon 1N914 |
| R401 | 17156 | Resistor, Comp. 1K 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 μ F UNLESS OTHERWISE NOTED.
 NOTES:

FIGURE No.18
 P.C. No.4 PRESECTOR EXCITER TUNED CIRCUITS

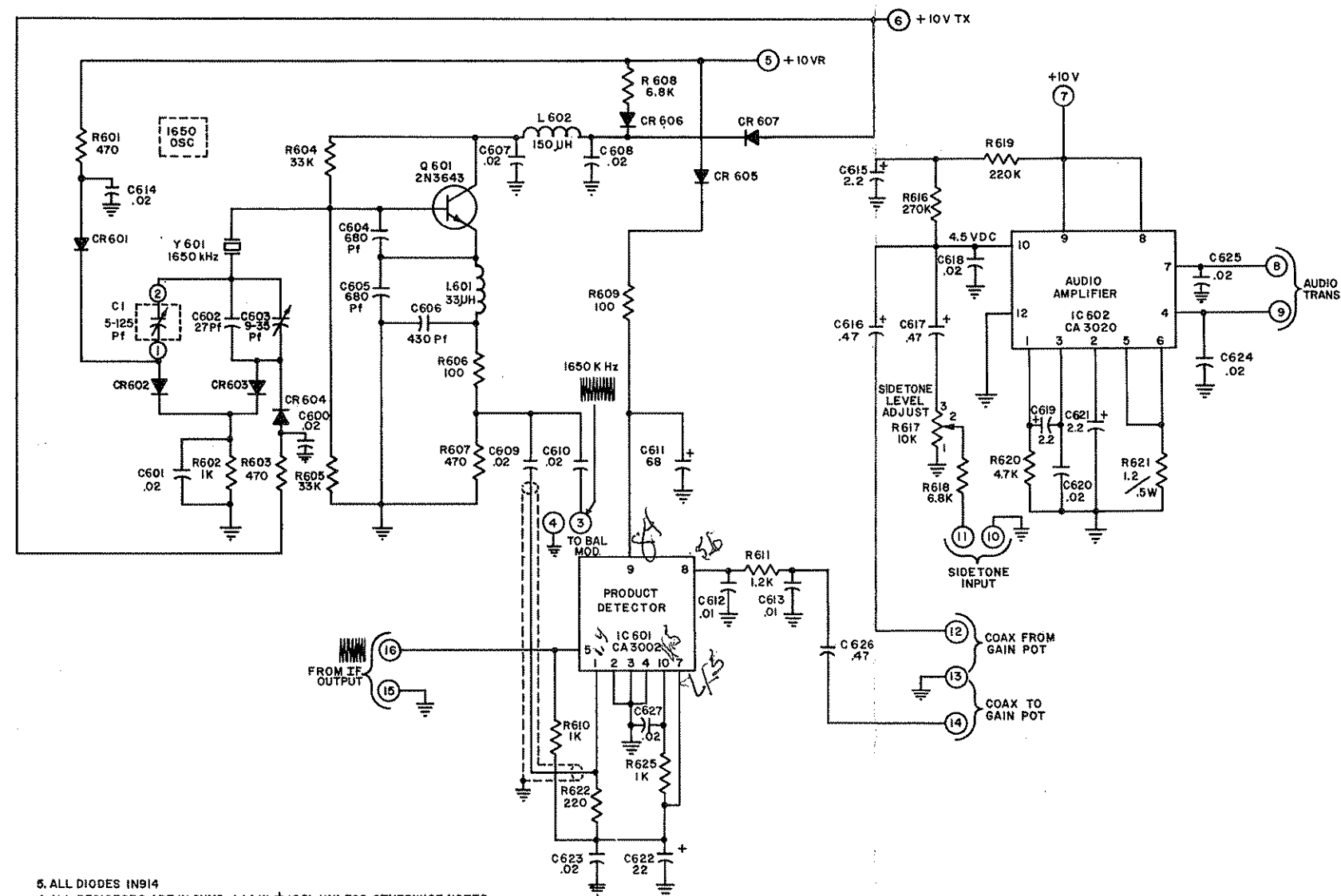
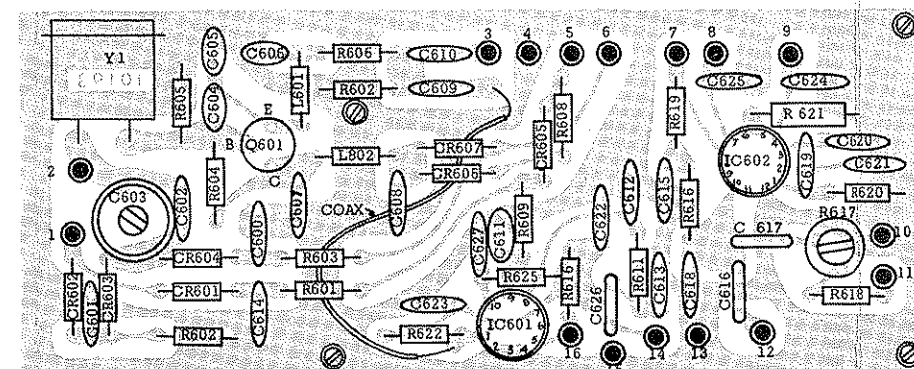
| CKT. SYM. | PART NO. | DESCRIPTION |
|-----------|----------|---|
| PC-5 | 99862 | Complete Regulator, Switching Bd. Assy. |
| | 10192 | PC Board |
| C501 | 28038 | Capacitor, Tant, 68 uf, 15V |
| C502 | 28038 | " " 68 uf, 15V |
| C503 | 27357 | " Disc, .05 uf, 25V |
| C504 | 27357 | " " .05 uf, 25V |
| CR501 | 40359 | Diode, Zener, 1N4742 |
| CR502 | 40385 | " " 1N5240B |
| CR503 | 40165 | " Silicon 10D4 |
| CR504 | 40165 | " " 10D4 |
| CR505 | 44290 | " " 1N914 |
| CR506 | 44290 | " " 1N914 |
| Q501 | 44379 | Transistor, 40347 |
| Q502 | 44379 | " 40347 |
| Q503 | 44252 | " 2N3646 |
| Q504 | 44252 | " 2N3646 |
| R501 | 17845 | Resistor, Comp. 270, 1/4W, 10% |
| R502 | 17845 | " " 270, 1/4W, 10% |
| R503 | 17792 | " " 33K, 1/4W, 10% |
| R504 | 18186 | " " 1.2K, 1/4W, 10% |
| R505 | 17792 | " " 33K, 1/4W, 10% |
| R506 | 17089 | " " 3.3K, 1/4W, 10% |
| R507 | 17089 | " " 3.3K, 1/4W, 10% |



4. ALL RESISTORS IN OHMS, 10% - 1/4W UNLESS OTHERWISE NOTED.
3. ALL CAPACITORS IN μ F UNLESS OTHERWISE NOTED.
2. USB MODE SELECTED
1. VOLTAGE READINGS OF Q503 & Q504 STAGES REVERSE WHEN OPPOSIT MODE IS SELECTED.
NOTES:

FIGURE No.19
P.C. No.5 SWITCHING,VOLTAGE REGULATOR

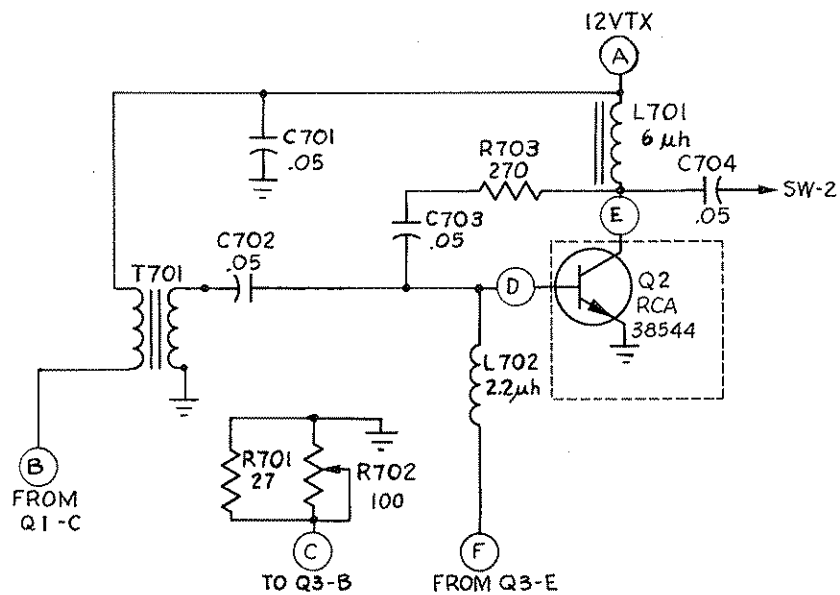
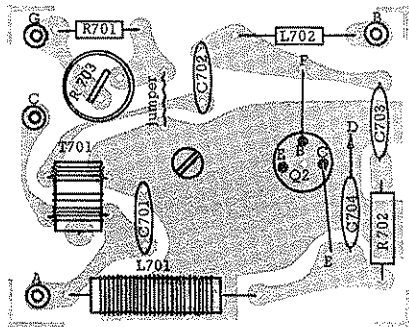
| CKT. SYM. | PART NO. | DESCRIPTION |
|------------------|----------|--|
| PC6 | 99863 | Car. Osc., Prod. Det., Aud. Board Ass'y. |
| | 10193 | P.C. Board |
| C600 | 26913 | Capacitor, Disc .02 uf 25V |
| C601 | 26913 | " " .02 uf 25V |
| C602 | 25062 | " " 27 pf NPO |
| C603 | 24795 | " Variable 9-35 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 |



5. ALL DIODES IN914
 4. ALL RESISTORS ARE IN OHMS, 1/4 W \pm 10% UNLESS OTHERWISE NOTED
 3. ALL CAPACITORS ARE IN μ F UNLESS OTHERWISE NOTED
 2. MEASUREMENTS MADE IN TRANSMIT MODE WITH 100MV, 1000Hz SIGNAL AT MICROPHONE INPUT.
 1. ALL MEASUREMENTS IN rms UNLESS OTHERWISE NOTED

FIGURE No.20
 P.C. No.6 1650 OSCILLATOR PRODUCT DETECTOR

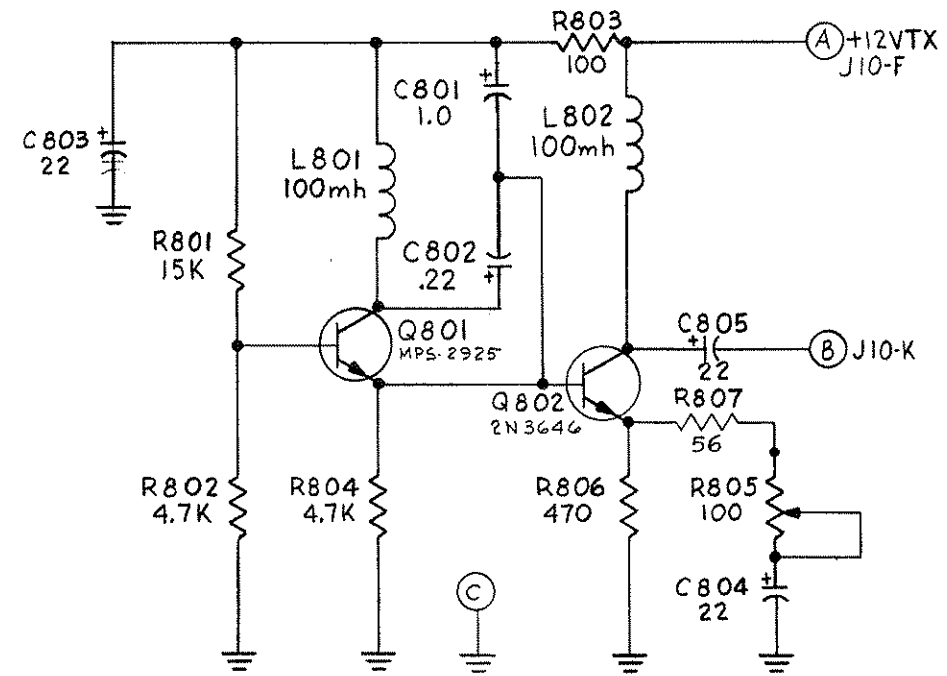
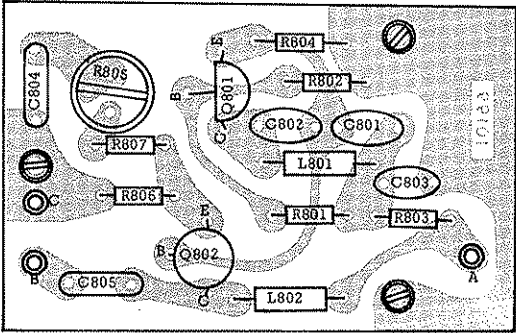
| CKT. SYM. | PART NO. | DESCRIPTION |
|-----------|----------|-------------------------------|
| PC-7 | 99864 | Complete P. A. Board Ass'y. |
| | 10194 | PC Board |
| C701 | 27357 | Capacitor, Disc, .05 uf, 25V |
| C702 | 27357 | " " .05 uf, 25V |
| C703 | 27357 | " " .05 uf, 25V |
| C704 | 27929 |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



2. ALL RESISTORS IN OHM, 10% 1/2 W UNLESS OTHERWISE NOTED.
 1. ALL CAPACITORS IN μf UNLESS OTHERWISE NOTED.

FIGURE No.21
 P.C. No.7 POWER AMPLIFIER

| CKT. SYM. | PART NO. | DESCRIPTION |
|-----------|----------|----------------------------------|
| PC-8 | 99716 | Complete Audio Osc. Board Ass'y. |
| | 10199 | PC Board |
| C801 | 28363 | Capacitor, Tant, 1 uf, 15V |
| C802 | 28351 | " " .22 uf, 20V |
| C803 | 27412 | " " 22 uf, 15V |
| C804 | 27412 | " " 22 uf, 15V |
| C805 | 27412 | " " 22 uf, 15V |
| L801 | 56401 | Inductor, 100 mh |
| L802 | 56401 | " 100 mh |
| Q801 | 44434 | Transistor, MPS-2925 |
| Q802 | 44252 | " , 2N3646 |
| R801 | 17235 | Resistor, Comp., 15K, 1/4W, 10% |
| R802 | 17077 | " " 4.7K, 1/4W, 10% |
| R803 | 17118 | " " 100 , 1/4W, 10% |
| R804 | 17077 | " " 4.7K, 1/4W, 10% |
| R805 | 33576 | Resistor, Variable 100, 1W, 5% |
| R806 | 18411 | Resistor, Comp., 470, 1/4W, 10% |
| R807 | 17429 | " " 56, 1/4W, 10% |



NOTES:
1. ALL CAPACITORS ARE IN μ f UNLESS OTHERWISE NOTED.
2. ALL RESISTORS ARE IN OHMS, 10% 1/4W UNLESS NOTED.

FIGURE No.22
P.C.No.8 TONE OSCILLATOR

| CKT. SYM. | PART NO. | DESCRIPTION |
|-----------|----------|------------------------------------|
| PC-9 | 99866 | Complete R.F. By-Pass Board Ass'y. |
| | 10202 | PC Board |
| C901 | 27357 | Capacitor, Disc .05 uf, 25V |
| C902 | 27357 | " " .05 uf, 25V |
| C903 | 27357 | " " .05 uf, 25V |
| C904 | 27357 | " " .05 uf, 25V |
| CR901 | 44290 | Diode, Silicon, 1N914 |
| L-901 | 64678 | Inductor, 150 uh |
| L-902 | 64678 | " 150 uh |
| L-903 | 64678 | " 150 uh |
| L-904 | 64678 | " 150 uh |

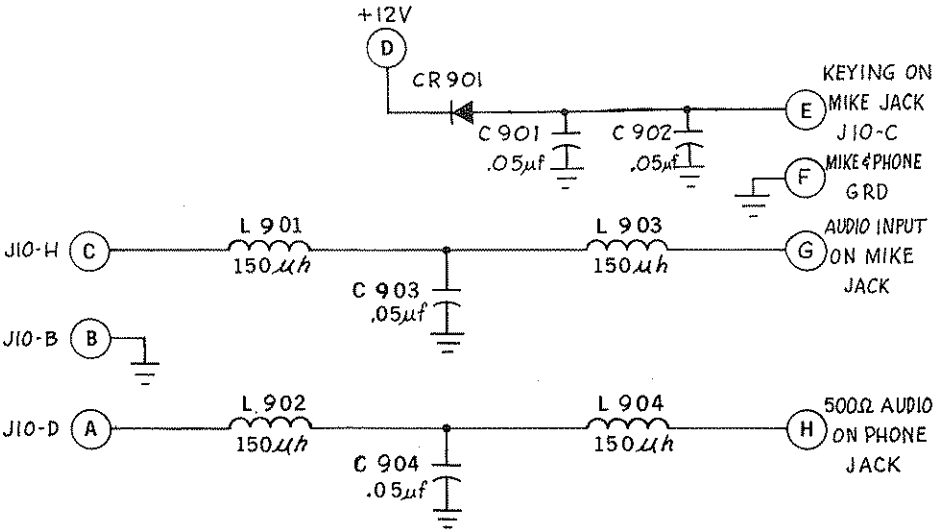
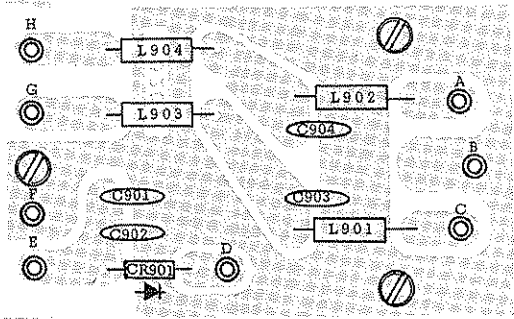
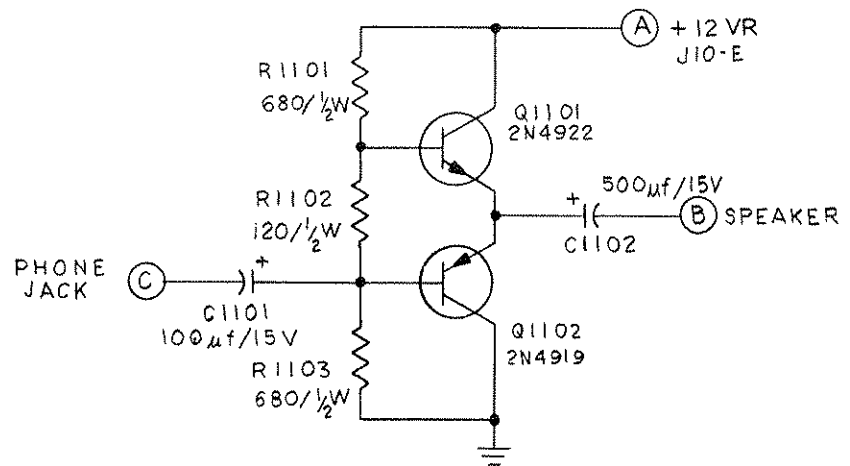
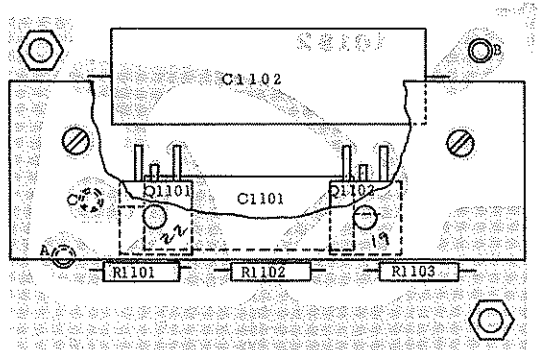


FIGURE No.23
P.C.No.9 RADIO FREQUENCY BY-PASS

| CKT. SYM. | PART NO. | DESCRIPTION |
|-----------|----------|--------------------------------------|
| PCII | 99886 | Complete Audio Amp. Board Ass'y. |
| | 10182 | P.C. Board |
| | 10183 | Heatsink |
| C1101 | 26597 | Capacitor, Electrolytic, 100 uf, 15V |
| C1102 | 27307 | " " 500 uf, 15V |
| Q1101 | 44549 | Transistor, 2N4922 |
| Q1102 | 44537 | " 2N4919 |
| R1101 | 16750 | Resistor, Comp., 680, 1/2W, 10% |
| R1102 | 18643 | " " 120, 1/2W, 10% |
| R1103 | 16750 | " " 680, 1/2W, 10% |



NOTES:
1. ALL CAPACITORS IN µf UNLESS NOTED.
2. ALL RESISTORS IN OHMS, 10%-1/2 WATT UNLESS NOTED.

FIGURE No.25
P.C.No.II AUDIO POWER AMPLIFIER

| CKT. SYM. | PART NO. | DESCRIPTION |
|-----------|----------|---------------------------------------|
| PC-12 | 99657 | Complete Battery Charger Board Ass'y. |
| | 10200 | PC Board |
| CR1201 | 40397 | Diode, Silicon, 1N5400 |
| CR1202 | 40397 | " " " |
| CR1203 | 40397 | " " " |
| CR1204 | 40397 | " " " |
| CR1205 | 40402 | " Zener, LM-15A |
| F2 | 86248 | Fuse, 1/2 Amp., 3AG |
| Q1201 | 44355 | Transistor, 2N3054 |
| R1201 | 16580 | Resistor, Comp., 150, 1/2W, 5% |
| T2 | 48985 | Transformer |
| | 99880 | A. C. Cord Ass'y. |
| | 10073 | Transformer Bracket |
| | 84862 | Fuseholder |

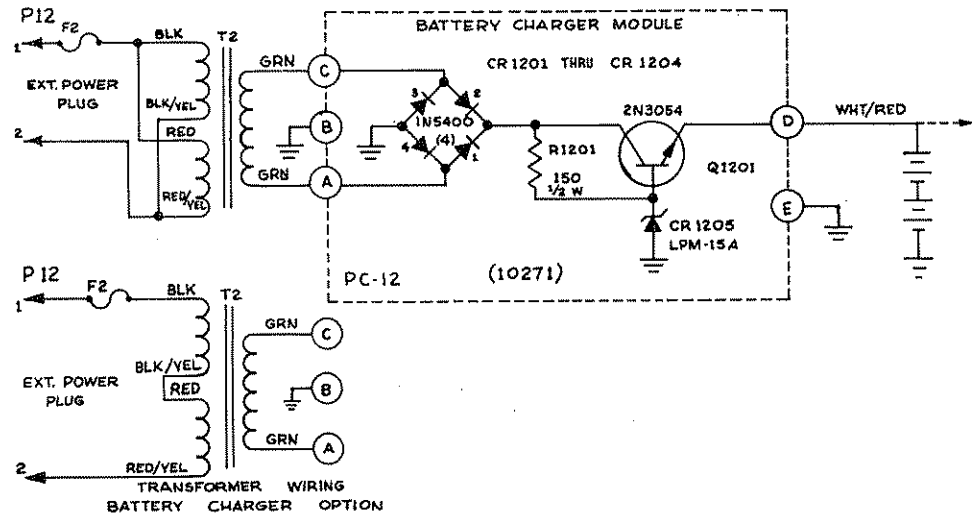
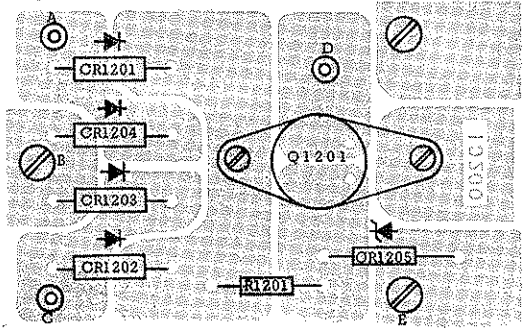


FIGURE No.26
PC No.12 BATTERY CHARGER MODULE

PARTS LIST

| CKT. SYM. | PART NO. | DESCRIPTION | CKT. SYM. | PART NO. | DESCRIPTION |
|-----------|----------|----------------------------------|-----------|----------|---------------------------------|
| BA1 | 99878 | Battery Assembly, 2.6 A.H. | SW1 | 33801 | Switch Wafer, 5 Pos., Shorting |
| BA1 | 99877 | " " 8.0 A.H. (Optional) | SW2 | 33801 | Switch Wafer, 5 Pos., Shorting |
| BA2 | 99878 | " " 2.6 A.H. | SW3 | 33801 | Switch Wafer, 5 Pos., Shorting |
| BA2 | 99877 | " " 8.0 A.H. (Optional) | SW5 | 33837 | Switch, Rotary, 3 Pole, 3 Pos. |
| C1 | 28052 | Capacitor, Variable, 5-125pf | SW6 | 33916 | Switch, Push Button, 1 Pole |
| C2 | 25165 | " Electrolytic, 400uf, 15V | SW7 | 34219 | Switch, Toggle, 2P2T, ON-OFF-ON |
| C3 | 28375 | " Dipped Mica, 560pf | T1 | 49018 | Transformer, Audio |
| C4 | 27929 | " Disc, .05, 100V | T2 | 48985 | Transformer, Battery Charger |
| C5 | 24472 | " Tantalum, 2.2uf, 15V | | 33978 | Knob, Channel Select |
| C6 | 28038 | " Tantalum, 68uf, 15V | | 33980-1 | Knob, Gain |
| CR1 | 40000 | Diode, Silicon, 1N2246 | | 33980-2 | Knob, Mode |
| F1 | 84898 | Fuse, 5 Amp, 3AG | | 33980-3 | Knob, Clarifier |
| F2 | 86248 | Fuse, .5 Amp, 3AG | | 84862 | Fuse Holder |
| FL1 | 81731 | Filter, Crystal, USB | | 99880 | Power Cord With Plug, AC |
| FL2 | 81743 | Filter, Crystal, LSB | | 99882 | Power Cord With Plug, DC |
| J1 | 74817-4 | Connector, PC Card, 22 Pin | | 87371 | Microphone |
| J2 | 74817-4 | " " " " " | | 99660 | Ground Radial |
| J3 | 74817-4 | " " " " " | | 71449 | Whip Antenna, Sectional |
| J4 | 74817-4 | " " " " " | | 74453-2 | Connector, Battery, Pos. |
| J5 | 74817-1 | " " " " 6 Pin Double | | 74453-1 | Connector, Battery, Neg. |
| J6 | 74374 | " " " " BNC, UG-1094/u | | 98863 | Relative Power Detector |
| J10 | 75005-1 | Connector, Female, Power | | | |
| J12 | 84056 | Connector, Female, Mic | | | |
| J13 | 74855 | Connector, Female, Phones | | | |
| J14 | 74570 | Connector, Female, CW Key | | | |
| J15 | 74611 | Connector, Female, UG-909/u | | | |
| K1 | 66365 | Relay, 2 Pole, 12VDC | | | |
| M1 | 99869 | Meter, 150 ua | | | |
| P10 | 75005-2 | Connector, 10 Pin | | | |
| P11 | 74403 | Connector, BNC, UG88/u | | | |
| P12 | 74831 | Connector, Male, Ext. Power | | | |
| P13 | 74403 | Connector, Male, UG-88/u | | | |
| Q1 | 44410 | Transistor, Silicon, SE9083 | | | |
| Q2 | 44408 | Transistor, Silicon, 38544 | | | |
| Q3 | 44355 | Transistor, Silicon, 2N3054 | | | |
| R1 | 18186 | Resistor, Comp., 1.2K, 1/4W, 10% | | | |
| R2 | 18186 | " " 1/2K, 1/4W, 10% | | | |
| R3 | 17168 | " " 82K, 1/4W, 10% | | | |
| R4 | 18332 | " " 180, 3W, 10% | | | |
| R5 | 33928 | " Variable 10K, 1/2W, 10% | | | |
| R6 | 17596 | " Comp., 1.2K, 1/2W, 10% | | | |
| R7 | 17390 | " " 470, 1/2W, 10% | | | |
| R8 | 17247 | " " 1.5K, 1/4W, 10% | | | |
| R9 | 16803 | " " 5.6 1/2W, 10% | | | |
| R10 | 18667 | " " 2.7K, 1/4W, 10% | | | |
| R11 | 17261 | " " 470, 1/4W, 10% | | | |
| SP1 | 87424 | Speaker | | | |

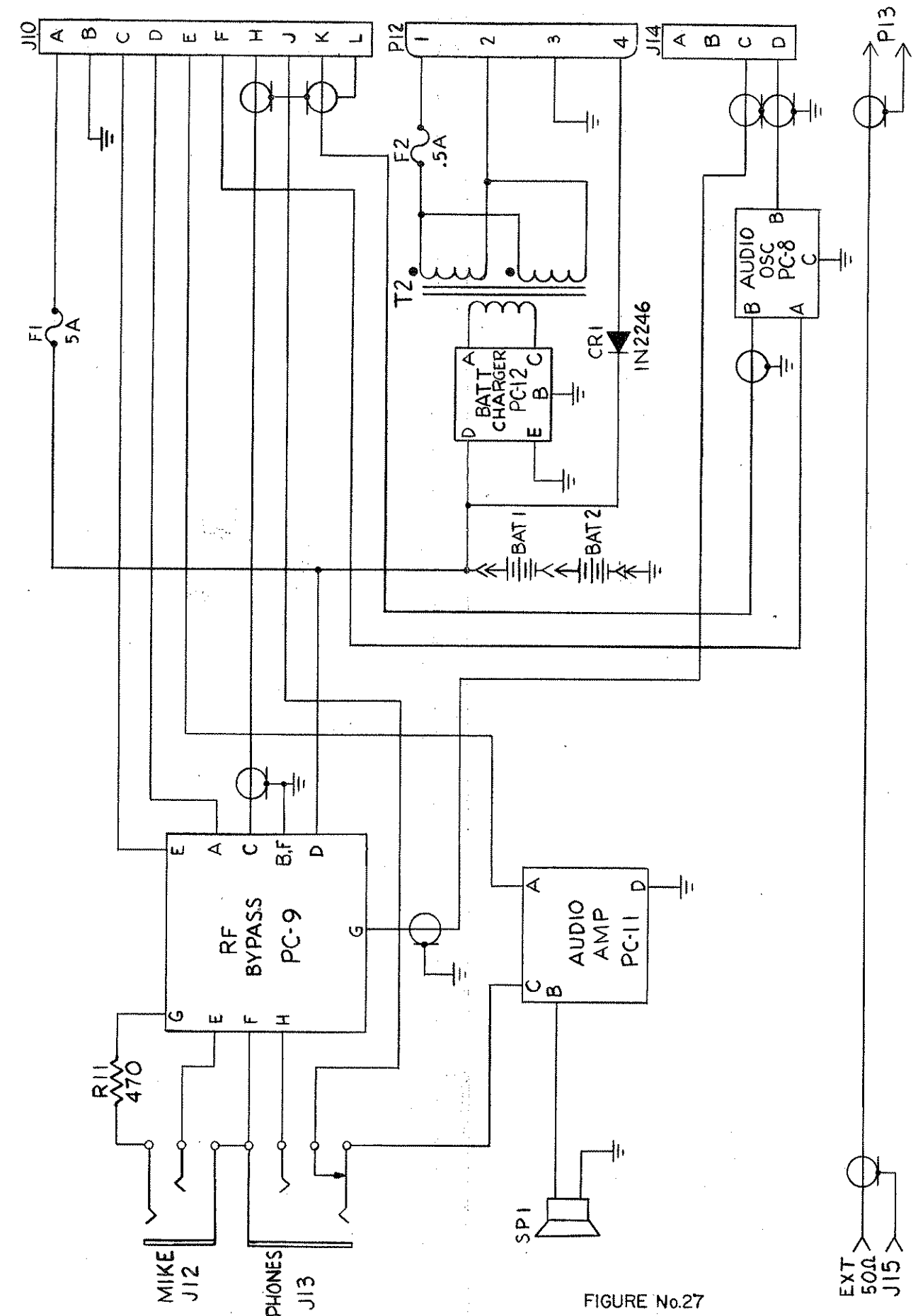


FIGURE No.27
MOUNTING PLATE WIRING DIAGRAM

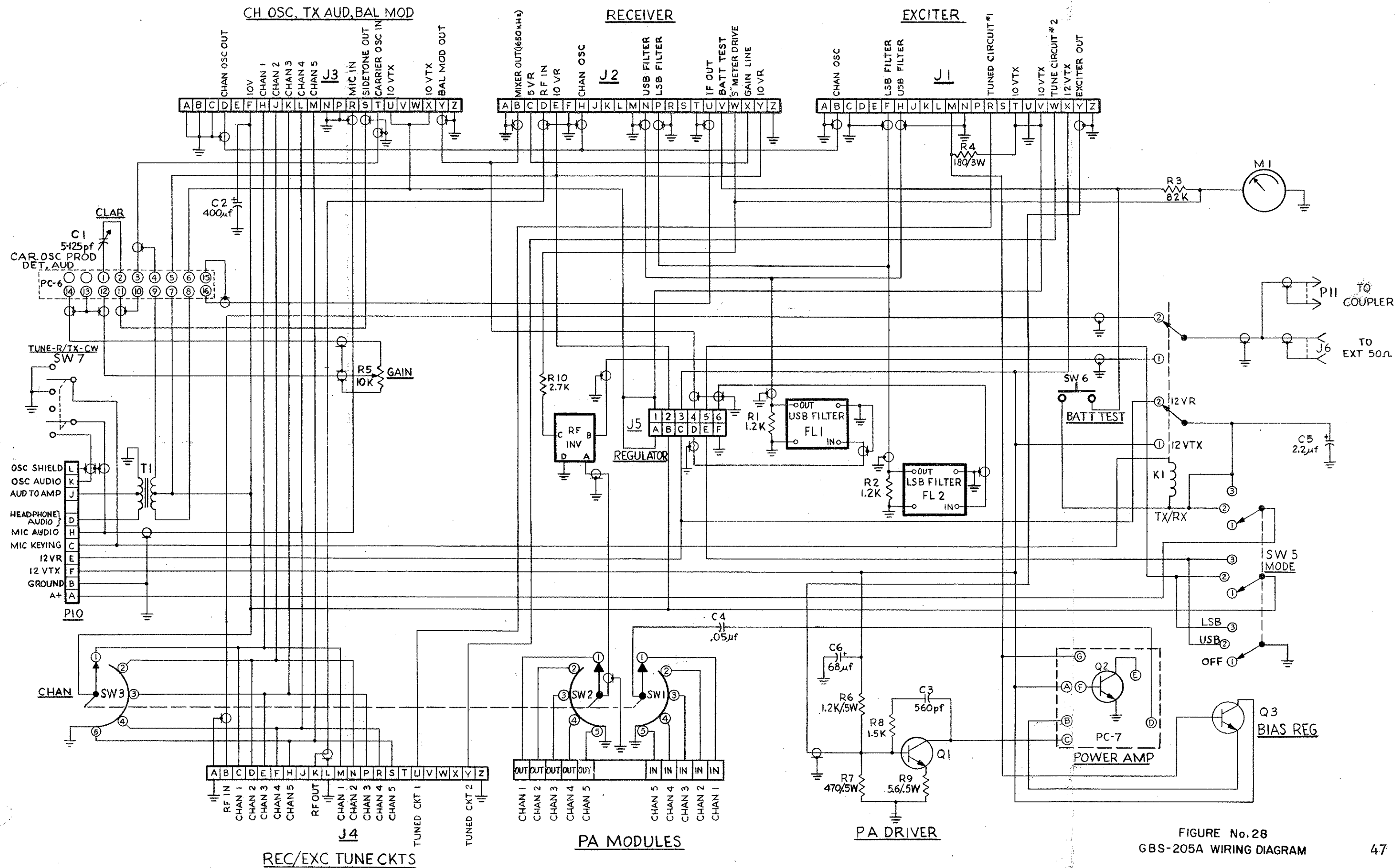


FIGURE No.28
GBS-205A WIRING DIAGRAM

1000

1000

SunAir Electronics, Inc.
Manual: GSB-205A

Addendum 1
Date: 11/14/69

Reference:

AGC modification in all GSB-205A receivers.

Purpose:

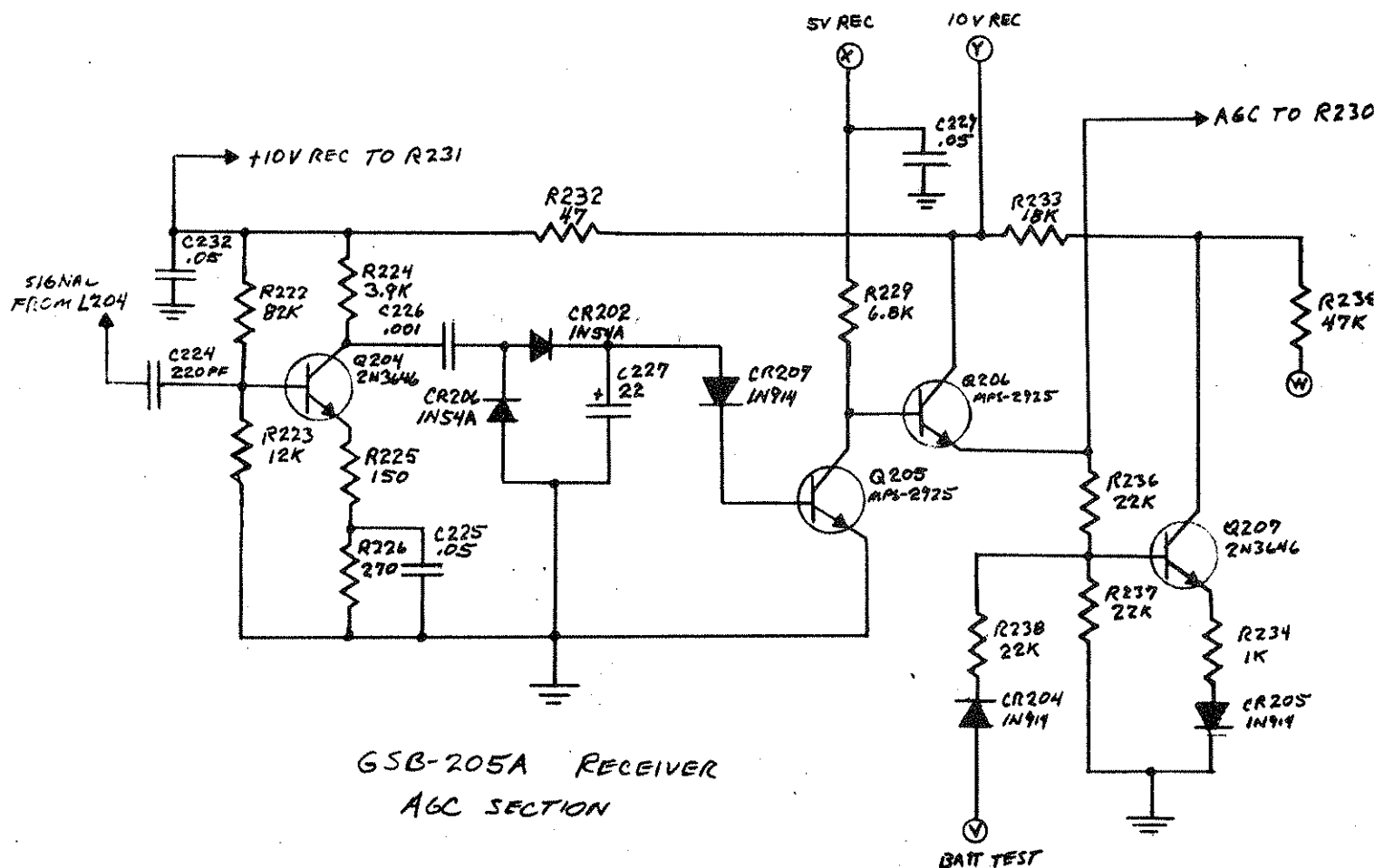
To increase the dynamic range of the receiver for close unit to unit transmission.

Manual Reference:

Schematic, Figure No. 16, P. C. No. 2, Receiver, Page 35.

Effectivity:

Serial Number 173 and subsequent.



SUNAIR ELECTRONICS, INC.

ADDENDUM 2

MANUAL: ASB-205 and GSB-205

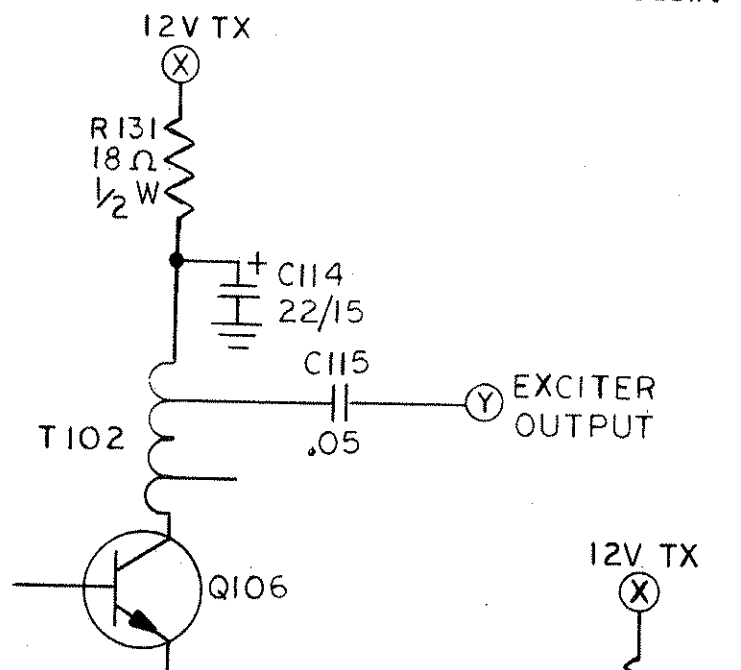
DATE: 8/22/72

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:



Change to the following:

