USE AND CARE GUIDE

MODEL
A3-5825B

SINGLE SIDEBAND 36 CHANNEL AM 18 CHANNEL - MOBILE CITIZENS BAND TRANSCEIVER Model A3-5825B

GENERAL ELECTRIC

MODEL
A3-5825B

From General Electric . . . a Citizen Band Transceiver (combination receiver-transmitter) for operation on AM-18 channels and single sidebands (SSB), 36 channels. Phase lock loop (PLL) circuitry electronically synthesizes all 18 channels. No additional crystals needed. Includes "quick release" mounting bracket with hardware that fits most vehicles.

Please read all instructions throughly before installing or operating your CB Transceiver.

This USE AND CARE GUIDE, in addition to providing installation and operating instructions, also includes general information and a brief section on what to expect from CB radio. The contents are listed in the following order:

P & T LICENSE REQUIREMENT

Do not transmit with your CB unit without P & T (Postal and Telecommunications Department) Citizens Radio Service License.

You must apply for a license to the Superintendent, Regulatory and Licensing Section or the District Radio Inspector in the State in which the station is to be operated.

I GENERAL INFORMATION

CB's MANY USES

CB radio is easy to understand and operate. There is really nothing technically you must know . . . no more than what it takes to use a telephone or operate any standard AM or FM radio.

When communicating with your CB, always be brief, never use profanity (against the law) and follow P & T rules.

Here are some of the many uses for CB Radio:

- **Personal or Family** — Keep in touch between your car, home, friends and neighbors.
- **Hunting, Fishing or Camping** — Talk between campsites, to fishing boat, boat-to-shore, hunting parties, or camper-to-camper.
- **Travel and Vacation** — Request directions when you are lost on the highway, need help to repair a flat tire or to report an emergency.
- **Remember, the biggest party line ever is CB (for listening Fun).**

SINGLE SIDEBAND

Conventional 18 channel (AM) units operate on a transmitted signal consisting of 3 parts; CARRIER, UPPER SIDEBAND and LOWER SIDEBAND. Both UPPER and LOWER SIDEBANDS are located on either side of the CARRIER and contain identical information (all the audio) being transmitted.

EXAMPLE:

A unit with 3 watts RF output modulated 100% (maximum audio), the useful transmitted power is only 1/2 watt (either sideband).

Single sideband transmitters cancel out the carrier and one sideband and devotes the final stage to transmitting only one of the sidebands. That is, all 3 watts would be used to transmit the selected sideband. This results in, perhaps, twice the useful range of conventional AM.

Points of Interest:

1. Since the operator of an SSB unit has the option to select either upper or lower sideband on which to transmit for each CB channel, he effectively has twice as many transmission paths (**NOTE:** AM does overlap or interfere with SSB on the same channel, so the 36 SSB "channels" are not new independent transmission paths).
2. Since the carrier is not transmitted on SSB, the receiver must recreate a "carrier" to enable demodulation. Since this recreated carrier must be accurately on frequency, a "clarifier" control is necessary to fine tune.
3. Conventional AM receivers use AGC circuitry to guard against overload signals. But AGC needs a transmitted carrier to work. Thus, SSB units do not have AGC and instead, have an RF Gain Control so the operator may manually adjust level of incoming signals.

SPECIFICATIONS

GENERAL

CHANNELS: AM-18 channels – PLL digital logic channel synthesizer circuitry, SSB-36

POWER REQUIREMENTS: Consumption – 35 watts; Current drain – 2.5 amps (100% mod.) at 13.8 Volt DC

POWER SUPPLY: 12 Volts DC normal (Positive or Negative ground)

SEMICONDUCTORS: integrated circuits, transistors and diodes.

OPERATING TEMPERATURE RANGE: –30 to +50°C

MICROPHONE: Dynamic with push-to-talk switch, 500 ohm.

BULT-IN SPEAKER: 8 ohms impedance; 94 mm (3-1/2 inches) in size.

CONTROLS/FEATURES: Volume with ON-OFF switch, Squelch, CB/PA switch, R.F. Gain Control, Channel selector switch, Tone switch, Noise blanker + ANL switch AM/SSB switch, Clarifier (fine and coarse) control, LED type channel readout, Mic Power Control, Large TX (transmit) light, Antenna warning light, S-RF meter (receive-transmit).

CONNECTORS: External speaker jack 3.5 mm (8 ohms impedance), S0239 type antenna receptacle to match PL-259 coax plug (50 ohms impedance), PA Speaker Jack 3.5 mm (8 ohms impedance), 12 Volt DC power jack, separate power cable that allows easy disconnect, MIC Jack.

DIMENSIONS: 190 mm W, 65 mm H, 215 mm D.

RECEIVER

SENSITIVITY: Better than 0.5 μV for 500 mW audio output at MIN Squelch setting.

CLARIFIER: ±600 Hz MIN

FREQUENCY COVERAGE: 27.015 to 27.225 MHz 18 channels AM and SSB 36 channels.

ADJACENT CHANNEL SELECTIVITY: MIN. 50 dB at ±10 kHz

SPURIOUS REJECTION: Better than 60 dB.

IF FREQUENCIES: SSB: 10.695 MHz. AM: 1st; 10.695 MHz. 2nd; 0.455 MHz.

SQUELCH RANGE: AM: 1 μV to 400 μV, SSB: 0.7 μV to 20 μV

TRANSMITTER

FREQUENCY RESPONSE: 400 Hz to 2.5 kHz.

FREQUENCY COVERAGE: 27.015 to 27.225 MHz; 18 channels AM and SSB 36 channels.

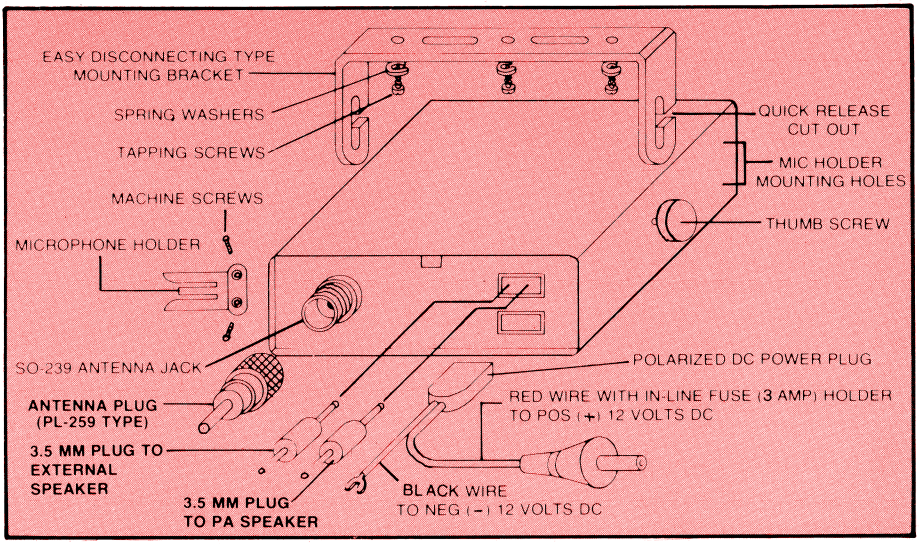
TRANSMIT POWER OUTPUT: 4 watts maximum as limited by P & T Regulations at 13.8 Volts DC, (PEP 12 watts max SSB).

MODULATION: Capable of 100%. factory pre-set limit 85 ~ 100%

FREQUENCY TOLERANCE: Better than ±.005% MAX.

SPURIOUS REJECTION: Better than 60 dB.

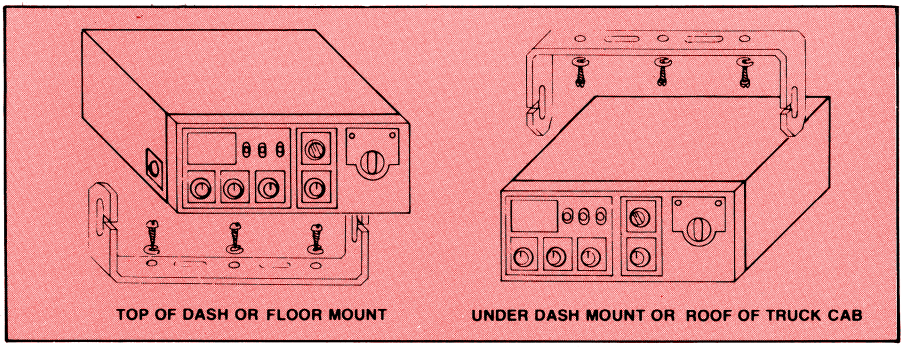
II INSTALLATION INSTRUCTIONS



Install unit as shown in REAR PANEL sketch. Tools required: A) #30 drill (1/8 inch.)
B) Phillips head screwdriver

1. Mount CB so all controls are conveniently available to you (the operator) **without interfering with movements for safe driving of your vehicle.**
2. **Be sure all cables are clear of brake, clutch and accelerator.**
3. Use MOUNTING BRACKET as template for drilling 1/8-inch holes. Mount bracket with self-TAPPING SCREWS.
4. Install MICROPHONE HOLDER on either side of CB and mount it in horizontal or vertical position to suit your own preference.
5. Use THUMB SCREWS to secure the CB to MOUNTING BRACKET.

   NOTE: Do not mount transceiver in heater or air conditioning air flow path.
6. Connect antenna plug to antenna jack on rear of unit (see ANTENNA section for further information).
7. Connect DC power plug to DC 12V jack located on rear of unit (see POWER CONNECTION section for further information).



POWER CONNECTION

This Transceiver is designed for 12 volt DC use with either negative or positive ground electrical systems. Most cars and small trucks made since 1958 use a negative ground system, while some older cars and newer heavy trucks have a positive ground system.

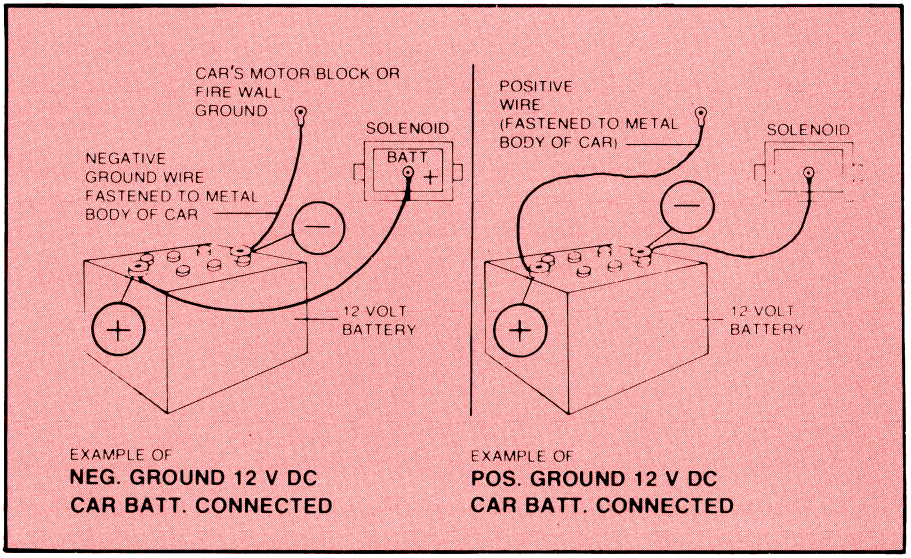
WARNING: Do not operate unit before installing antenna. Be sure CB is in the OFF position when making power and Ant. connections.

LOCATING POWER CONNECTIONS

Connect power cord to:

Fuse block, solenoid, voltage regulator (marked BATT), cigarette lighter, or direct to the battery. Usually the most convenient location for connecting power is either to the **fuse block** (normally located under dash or left or right side of steering column), or **direct to the battery.**

You may prefer using the ignition accessory terminal on the fuse block, so transceiver will automatically turn off when ignition switch (key) is turned off. If connection is made at fuse block, be sure to use fuse side of terminal.



NEGATIVE GROUND WIRING CONNECTION

If your (—) battery terminal is connected to the car's motor block, then the vehicle is a negative ground system. Connect the "Red" wire (with in-line 3 amp fuse holder) to POS. (+) side of battery, or any of the locations previously mentioned. Connect the "Black" wire to any grounded, NEG (—) metal part of the vehicle.

CAUTION: Be sure Black wire is connected to metal, as many under dash and side parts are made of non-conductive plastic. Good ground is essential for satisfactory operation.

POSITIVE GROUND WIRING CONNECTION

Connect the "Red" wire (with in-line 3 amp fuse holder) to any metal part of the vehicle body or POS. (+) battery terminal.

WARNING: Do not operate unit before installing antenna. Be sure CB is in the OFF position when making power and Ant. connections.

This CB has built-in protection against transistor burn-out in case you transmit (5 min. limit) accidentally without antenna connected. Be sure antenna is connected before transmitting for the first time.

III ANTENNAS

For best reception and transmission, your CB Transceiver should use an antenna especially designed for a frequency of 27 MHz. Antennas are purchased separately and include installation instructions.

Numerous types of CB antennas are available that range from emphasis on ease of installation to emphasis on performance. Often the difference in performance between many mobile antennas is modest.

Your Transceiver has a standard antenna connector, type SO-239 (located on rear panel), for easy connection to a standard PL-259 coax plug. The antenna matching circuit in your Transceiver requires no adjustment if the antenna load is between 35 and 100 ohms. If the coax antenna cable must be made longer, use coax cable with impedance and frequency ratings for 27 MHz, and use only enough cable to suit your needs. This will insure a proper impedance match and maximum power from the transmitter to the antenna.

BASE ANTENNAS

When using this CB Transceiver as a base station, any Citizen Band ground plane, dipole or vertical antenna may be used. REMEMBER, THE RADIO WILL TRANSMIT ONLY AS GOOD AS ITS ANTENNA, SO CHOOSE THE BEST ANTENNA THAT WILL SUIT YOUR NEEDS. The range of the transceiver depends basically on the height of the antenna. Whenever possible, select the highest location within the P & T limits.

The GROUND PLANE antenna provides greater coverage and is non-directional. Ideal for mobile-to-mobile (or to base) operation, it is designed for medium-long range communication.

Whatever type antenna you choose, a good ground is important. Be sure you have metal-to-metal contact at the point where antenna is mounted on car. Painted surfaces should be scraped (at least a small area) to assure metal-to-metal contact. This will provide protection to your system and reduce static interference.

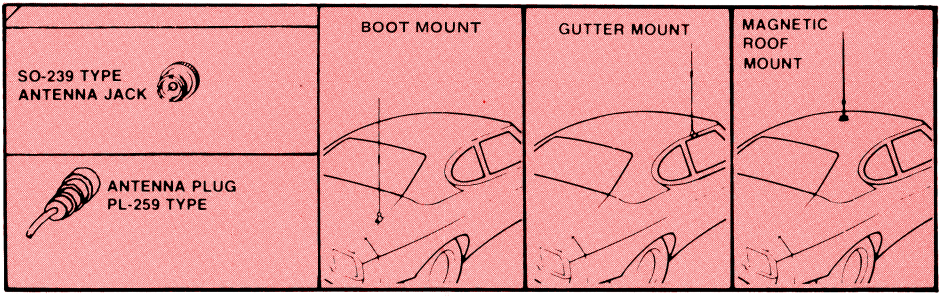
Use coaxial cable rated for the 27 MHz frequency when connecting your Base Station antenna to the transceiver. Use 27 MHz connectors and terminate them well when installing the antenna system.

MOBILE ANTENNAS

Some of the mobile antennas available are:

TYPE	ADVANTAGE
• CB-AM-FM Combination with CB splitter	Some performance compromised, but use single antenna on vehicle.
• Magnetic mount	No mounting installation required.
• Gutter mount	Easy to install.
• Bonnet/Boot	Easy to install, location flexibility.
• Rooftop	Permanent installation, high antenna location.
• 108" (1/4 wave)	Performance oriented, but garage parking limitation.
• Twin antennas mirror or cab mount	Performance (specialized application) and appearance appeal.
• No ground plane	For use on boats, snowmobiles or motor bikes.
• Base station types	Permanent in home use application (not applicable to mobile use).

Select the antenna that best fits your use or installation needs. You may want to install your CB in more than one vehicle or location. For that purpose, additional bracket, power cord and antennas are available.



General rules for best mobile antenna performance:

1. Mount antenna on vehicle as high as possible.
2. The higher percentage of antenna length mounted above rooftop, the better performance.
3. Center antenna in middle of selected location (i.e. boot, gutter or roof).
4. Install antenna cable line away from noise sources (ignition system, gauges, etc.).
5. Be sure to mount antenna with a good metal-to-metal ground.
6. Prevent antenna cable damage:

   Boot Mount — leave enough cable slack so boot can be fully opened.

   Gutter Mount — route cable snugly to prevent cable flexing and allow closing of door or windows.

   For quick release — to remove antenna, always pull on the PL-259 plug and not on the antenna cable.

Antenna performance may be peaked by slightly adjusting its length using SWR (standing wave ratio) meter. This meter is purchased separately or the SWR can be checked by a local CB radio serviceman. Most antennas are factory tuned but this adjustment may improve antenna efficiency. An SWR reading below 1.5 is desired, as this indicates that over 95% of the transmit power is broadcast into the air. For example if your SWR is 3.0, only 60% of power is broadcast. The rest is "reflected" back into your CB and dissipated as harmless heat.

NOTE: Mounting the antenna in a boat will require a ground or special antenna. Grounding can either be a metal hull, a ground made of tin-foil or copper sheeting, and cover an area of 12 square feet or more. The transceiver must also have an adequate ground.

WARNING: Operating unit without attaching antenna, or with a broken or shorted cable, will result in low and possible no power output and can damage your CB Transceiver.

IV OPERATING INSTRUCTIONS

SINGLE SIDEBAND INFORMATION

Standard Citizens Band radios are AM (amplitude modulation) operated. AM creates "carrier" frequencies which are made up of 2 sidebands, one upper and one lower for each of the 18 channels. This transmission system, where one sideband is transmitted and the other suppressed, is called Single Sideband (SSB). The LSB position on MODE switch allows your unit to transmit and receive on the lower sideband. USB is used for the upper sidebands.

Your choice of LSB or USB depends on prior arrangement with other operators or common practice in a local area.

IMPORTANT: Install unit as described under INSTALLATION INSTRUCTIONS. Make sure antenna, power source and microphone are properly connected before you operate.

TO RECEIVE

1. Connect MICROPHONE and turn unit "ON" by rotating VOLUME ON-OFF switch clockwise. Continue to rotate knob in same direction to increase loudness. You cannot Transmit or Receive if MICROPHONE is disconnected.
2. Set CB/PA switch to CB position.
3. The MODE switch has 3 positions (AM/LSB/USB) that can be used on each of the 18 channels. When it is placed in AM, the unit transmits and receives as any conventional transceiver.

If you select channel 11, for example, your CB receives all signals . . . AM plus LSB and USB, SSB is only intelligible if both you and the other operator are in the same USB or LSB position. When transmitting, LSB or USB MODE you select will interfere with AM stations on that channel. They also hear you, though not intelligibly.

4. Turn SQUELCH counterclockwise and a hissing sound will be heard in the speaker. Slowly rotate SQUELCH clockwise until the hissing just stops.

   NOTE: This adjustment is very important as it eliminates annoying static noise (hissing) and weak background signals when no one is calling you. Turning SQUELCH clockwise increases the signal strength needed to actuate the Receiver section. Therefore, setting SQUELCH beyond the point where hissing just stops may prevent reception of weak signals. The Receiver is most sensitive when SQUELCH is in "MIN" position, but the high atmosphere noise level will provide a continuous objectionable background hiss.
5. Set TONE switch for HIGH or LOW tonal reception.
6. Turn CHANNEL SELECTOR to any of the 18 Citizen Band channels you choose as indicated in the LED readout window.

NOISE BLANKER + AUTOMATIC NOISE LIMITER SWITCH

OFF — When no noise is present, set NB+ANL switch to OFF for clearer reception of distant stations to get maximum sensitivity.

NB — To reduce noise from ignition, motor or other pulse type noise interference.

NB+ANL — If noise interference is still present, place switch in NB+ANL to reduce excessive noise interference.

R.F. GAIN

Use this control to prevent an overload when receiving strong signals.

EXAMPLE: Communicating with car directly in front (or back) of you. When RF/S METER indicates more than three-fourths ("receiving" strong local signals), merely reduce RF GAIN control. Increase RF GAIN control to receive weak or distant signals.

CLARIFIER CONTROLS (COARSE AND FINE)

These controls are used while in USB or LSB MODE which clears up incoming voice. If the

voice you receive sounds like Donald Duck, turn COARSE control until the tone grows lower, then use the FINE control. When the voice sounds low in pitch, reverse controls until tones grow higher. It takes practice to learn the knack of clarifying, so turn COARSE control back and forth slowly until the voice is strong and clear then use FINE tune control. When in AM position, set controls to center position.

ANTENNA WARNING INDICATOR

If you have trouble in your antenna system, the AWI light will glow. When this light is "ON" your antenna or connecting cable is not connected, badly mis-matched (high SWR), or damaged. AWI works only in the AM position.

AWI light will go on when SWR reading is between 3:1 to 7:1 depending on antenna installation. AWI will also light on same channels or all channels when using a magnetic antenna. This is normal because SWR reading with magnetic antenna exceeds 3:1 reading. If AWI lights on some channels but not on all channels means that SWR is high on only those channels. Using CB with AWI on will not harm the unit. As long as reception and transmissions are acceptable, no action need be taken by the user. Some antennas (in a particular location) are just not tuneable below a 3:1 SWR reading.

NOTE: In some situations, the combinations of a particular CB, antenna, plus the antenna mounting location will result in a low AWI threshold below 2:1 SWR. Transmitting with AWI lighted does not degrade performance. If you have this combination, check with an SWR meter. Tune antenna for the most frequency used channel for reading below 2:1 (no AWI light). Periodically check antenna tuning against this channel (In a few cases, tuning below 2:1 may not be possible using some mounting locations and some types of antennas, like magnetic, gutter or short whip types).

TO TRANSMIT

1. Check to see that the antenna is screwed on the ANTENNA JACK on the rear of the unit.
2. Insert the keyed MICROPHONE PLUG into MIC JACK (side panel).
3. Wait until the channel you selected is clear.
4. Hold the MICROPHONE directly in front of you at a distance of about 50 or 75 m.m. Now, press in the MICROPHONE push button and talk in a normal voice to transmit your message.

NOTE: Do not shout into the Microphone or hold MIC against your mouth to prevent over-modulation. Over-modulation is referred to as sounding like "marble mouth" (garbled).

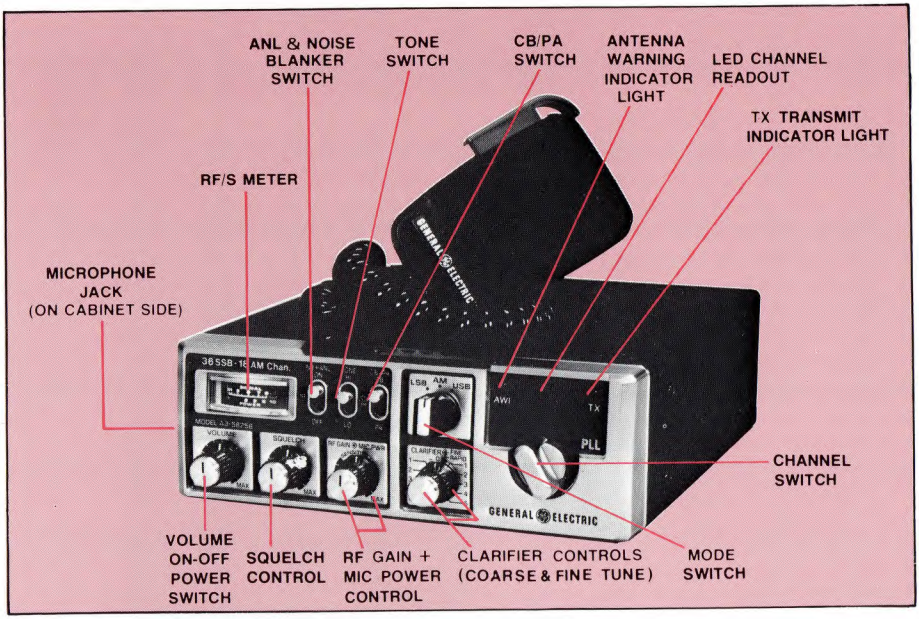
5. TRANSMIT INDICATOR LIGHT will flicker when you talk and the intensity will vary with your voice loudness into the MICROPHONE. This is a "modulation" light and will only glow when you are in TRANSMIT and speaking.
6. To RECEIVE, release the microphone push button.
7. The NOISE BLANKER + ANL, CLARIFIER, VOLUME, RF GAIN, and SQUELCH settings have no effect when transmitting.
8. To turn the transceiver off, rotate the VOLUME ON-OFF switch to the left position (counterclockwise) until a click is heard.

NOTE: Do not press and hold MIC switch without talking, as you are sending signal with no information (modulation) and are causing interference to other users.

MICROPHONE POWER GAIN

A pre-amplifier circuit is built into this unit to increase microphone gain. Experiment with control for the setting that will best suit your individual use.

NOTE: When MIC GAIN is set to maximum ambient noise (back seat conversation or passing cars) may also be picked up by the microphone. In high noise situations, like trucks, sport cars, boats, low mic gain setting may produce best results. MIC gain is also used to adjust PA loudness.



RF/S METER

The METER on this transceiver serves two functions:

1. When Receiving, it indicates the relative incoming signal strength (RX signal) in "S" units on the upper half scale.
2. In the Transmit mode, it indicates the relative "RF" (Transmit-TX) power output from your Transceiver on the lower half scale.

EXTERNAL SPEAKER JACK

An optional remote 8 ohm speaker may be used (for mobile installation) to overcome muffled sound caused by carpet or other obstructions. With remote speaker plugged into 3.5 mm EXT. SP. jack, the internal speaker is automatically disconnected.

PUBLIC ADDRESS (PA) FEATURES

Use as a PA amplifier with optional 8 ohm PA speaker as follows:

1. Connect 3.5 mm plug from PA Speaker to the PA jack located on the cabinet back.
2. Turn unit to ON position by rotating VOLUME ON-OFF switch.

   NOTE: While in PA or PA/CB mode, all audio output is directed to the PA jack and the internal speaker is disconnected.

CB/PA SWITCH POSITIONS

- **PA** – For PA operation only, press in the MICROPHONE pushbutton and talk in a normal voice.
  PA loudness can only be varied by the MIC POWER knob. Channel LED will be OFF in PA mode.
- **PA/CB** – When not using PA, and MIC switch is released, you can listen to (monitor) CB transmission through the PA speaker. Volume is adjustable for CB monitor and PA loudness only by the MIC POWER control.
- **CB** – Returns unit to normal mode of operation.

IMPORTANT: Mount PA speaker facing away from MIC and as far as possible from unit to prevent high-pitched sounds (feedback howl) at maximum MIC POWER loudness.

V WHAT TO EXPECT/NOISE

GENERAL CB INFORMATION

The following is what you may expect once your CB is properly connected.

- The effective range depends on several distance factors: The antenna used, its height, terrain (city with tall buildings or other obstructions, over water, flat land or hills), weather conditions, and number of other CB'ers on the same channel at the same time.
- Tall buildings, such as found in major metropolitan areas, will reduce distance greatly.
- Weather and atmospheric conditions such as lightning, sun spots and other electrical interference will result in strong static and limit TRANSMIT and RECEIVE range.
- Skip (long distance communications) is possible when CB signal is reflected back from ionized atmosphere and should be avoided.

Under normal and favorable conditions the relative range is shown below. This should not be taken as a minimum range of performance, but rather what can be expected under favorable circumstances and proper antenna mounting.

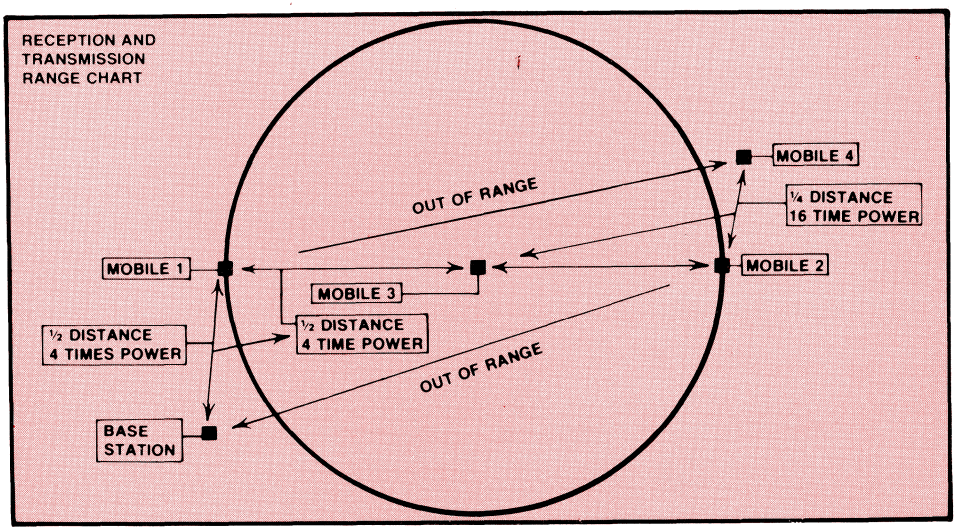
MOBILE TO MOBILE:	2 to 8 km on land and up to 16 km across water.
BASE TO MOBILE:	8 to 16 km on land and up to 24 km across water.
BASE TO BASE:	Up to 32 km, depending on type of antenna, height and terrain.

FADING

Fading occurs while driving away from another Mobile or Base CB while communicating. Fading sounds like you're picking up every other word or background noise level increases while voice level decreases. Also, stronger signals will override your communications. A CB operating half way between your two Mobiles (MOBILE 1 and 2) will have 4 times the signal power compared to your mobile. This is often referred to as "walking over you", as shown in RANGE CHART.

RECEIVES ONLY ONE SIDE OF CONVERSATION

This is not unusual on CB broadcasts — the distance between the two transmissions you are monitoring may put one out of your range (as shown in sketch) or signal strength may be different from a mobile station versus a Base Station.



NOISE

Some noise is to be expected and is normal. There will be a higher level of background noise when used as a mobile CB Transceiver and the car is running.

If this noise becomes objectionable (which is caused by the vehicle's alternator, generator, spark plugs, windshield washer and other electrical systems), a noise suppression kit may need to be installed.

Noise from the alternator or generator will create a whining high pitched sound and will vary with engine speed. Spark plugs and ignition noise will show up as a popping sound and can also vary with engine speed.

To tell the difference between noise created by the ignition system and noise created by the generator, start the vehicle and race the engine — now, turn the engine off, and if the noise stops immediately, you have determined the ignition system as at fault.

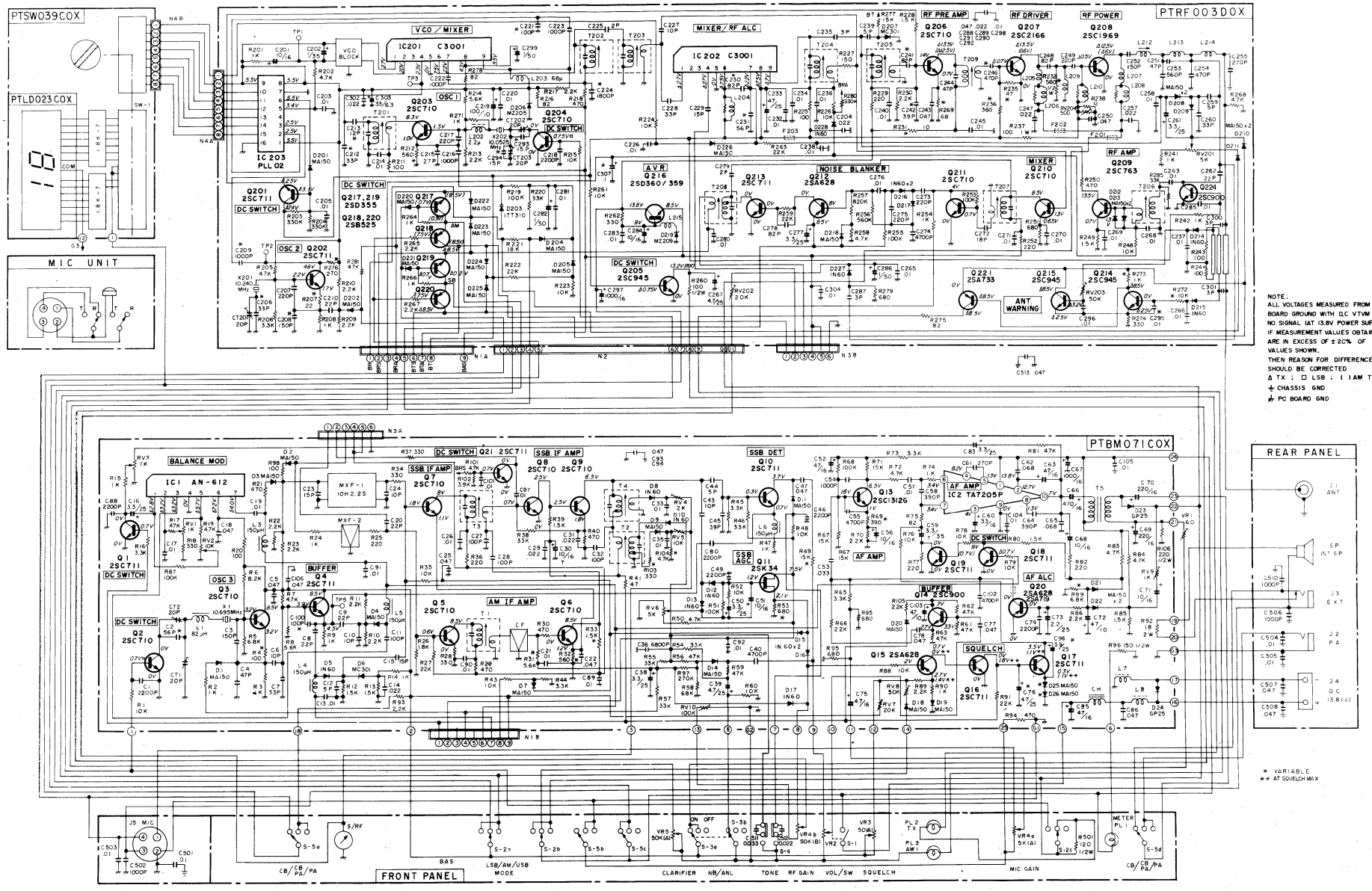
Noise which stops a few seconds after the ignition is turned off, it caused by the alternator or generator.

Noise can be caused by electrical interference from spark plugs and ignition cables. Most late model vehicles have resistance high tension ignition cable and resistive spark plugs supplied as standard equipment. This eliminates the need for spark plug suppression. If not supplied, kits are available from automotive supply dealers.

CITIZENS BAND FREQUENCY CHART

Channel No.	Frequency
1	27.015 MHz
2	27.025 MHz
3	27.035 MHz
4	27.055 MHz
5	27.065 MHz
6	27.085 MHz
7	27.095 MHz
8	27.105 MHz
9	27.115 MHz
10	27.125 MHz
11	27.135 MHz
12	27.155 MHz
13	27.165 MHz
14	27.175 MHz
15	27.185 MHz
16	27.195 MHz
17	27.205 MHz
18	27.225 MHz

VI SCHEMATIC



VII SERVICE/WARRANTY

SERVICE CHECK LIST

In case of difficulty, use the following list before seeking service.

EXCESSIVE NOISE INTERFERENCE

Position all wires as far away from noise sources as possible. (Refer to Noise Suppression paragraph).

The hissing or static received with Squelch control OFF is normal, and considered part of the fun and challenge by many CB'ers. Atmospheric conditions sometimes cause a broadcast signal to "Skip" resulting in unwanted interference from distant CB broadcasts.

	IS PA SWITCH ON AND NO PA SPEAKER?	POWER CABLE CONNECTED PROPERLY?	CHECK 3 AMP FUSE?	SQUELCH ADJUSTED PROPERLY? (SET TOO HIGH?)	ROTATE VOLUME ON-OFF SWITCH TO ON	SWITCH TO AN OPERATING CHANNEL	IS ANTENNA SECURELY SCREWED INTO ANT. JACK?	IS MICROPHONE PUSH-TO-TALK BUTTON FULLY DEPRESSED?	FIRMLY CONNECT MICROPHONE TO TRANSCEIVER	POOR GROUND CONNECTION	MICROPHONE CABLE BROKEN?	ANTENNA OUT OF SWR ADJUSTMENT?
NO SOUND NO CHANNEL LIGHT		•	•		•					•		
NO SOUND HAVE CHANNEL LIGHT	•			•			•					
NOT RECEIVING VOICE				•		•						
RECEIVING POORLY							•			•		•
TRANSMIT DIFFICULTIES							•	•	•		•	•
NO MODULATION (TX) LIGHT									•		•	
RECEIVING UNCLEAR SIGNALS				•		•						

WARNING

Do not attempt to disassemble this cabinet. The technical information provided in this booklet is only for use by qualified servicers. It is the user's responsibility to see that this unit is operating at all times in accordance with the P & T Citizens Radio Service regulations.

SERVICE

For Service return to Australian General Electric (Appliances) Pty. Limited, Service Centres are listed below.

COMPANY OPERATED SERVICE CENTRES

	Phone No.
VICTORIA	
14 Hardner Road, Mount Waverley, 3149	543-2555
Shop 20 Embank Arcade, off 325 Collins Street, Melbourne, 3000	62-6326
NEW SOUTH WALES	
6 Gould Street, Enfield, 2136	642-6055
16-24 Cosgrove Road, Enfield, 2136	642-0133
14 Arkley Street, Bankstown, 2200	707-2222
Suite 15, 1st Floor Dymocks Arcade, 424 George St., Sydney 2000	231-3793
Suite 7, 370-376 Church Street, Parramatta, 2150	630-2447
16 Bull Street, Newcastle, 2300	26-2055
27 Crescent Road, Waratah, Newcastle, 2298	67-2900
51 Hill Street, Roseville, 2142	467-1696
QUEENSLAND	
18-22 Yeatman Street, Hyde Park, Townsville, 4810	077-72-2555
Cnr. Elliott & Immarna Streets, Albion, 4010	262-5387
14 Anthony Street, West End, Brisbane, 4001	44-1471
WESTERN AUSTRALIA	
121 Burswood Road, Victoria Park, 6100	61-7277
100 Beechboro Road, Bayswater, 6053	71-7711
SOUTH AUSTRALIA	
302-304 Grange Road, Cnr. Findon Road, Flinders Park, 5025	352-1288
304 Gilbert Street, Adelaide, 5000	51-4219
278 West Beach Road, Marleston, 5033	43-9703
TASMANIA	
170 Murray Street, Hobart, 7000	34-2257

Attach your sales receipt to this booklet for future reference or jot down the date this product was purchased or received as a gift. This information will be valuable if service should be required during the warranty period.

Purchase Date .....

Name of Store .....

RECORD SERIAL NO.

In the event service should be required, you may need both Model and Serial Numbers to identify your transceiver. Record the Serial Number (located on the rear of the chassis) in the space below.

GENERAL ELECTRIC
CITIZEN BAND TRANSCEIVER

MODEL NO. A3-5825B

SERIAL NO. _____

NINETY DAY WARRANTY

YOUR NEW GENERAL ELECTRIC PRODUCT IS WARRANTED AGAINST DEFECTS IN MATERIAL AND/OR WORKMANSHIP FOR A PERIOD OF 90 DAYS FROM DATE OF PURCHASE. THIS WARRANTY DOES NOT INCLUDE DAMAGE TO THE PRODUCT RESULTING FROM ACCIDENT OR MISUSE. WARRANTY REPAIRS OR REPLACEMENT WILL BE CARRIED OUT AT NO COST TO YOU FOR LABOUR, MATERIAL OR RETURN TRANSPORTATION, PROVIDING THE PRODUCT IS DELIVERED PREPAID TO THE NEAREST COMPANY OPERATED SERVICE CENTRE AS LISTED IN THE INSTRUCTION BOOK.

GENERAL ELECTRIC*

* TRADEMARK GENERAL ELECTRIC COMPANY U.S.A.
AUSTRALIAN GENERAL ELECTRIC (APPLIANCES) PTY. LIMITED
1 GARDINER ROAD, NOTTING HILL, VICTORIA,
AUSTRALIA, 3168

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GENERAL ELECTRIC

CITIZENS BAND

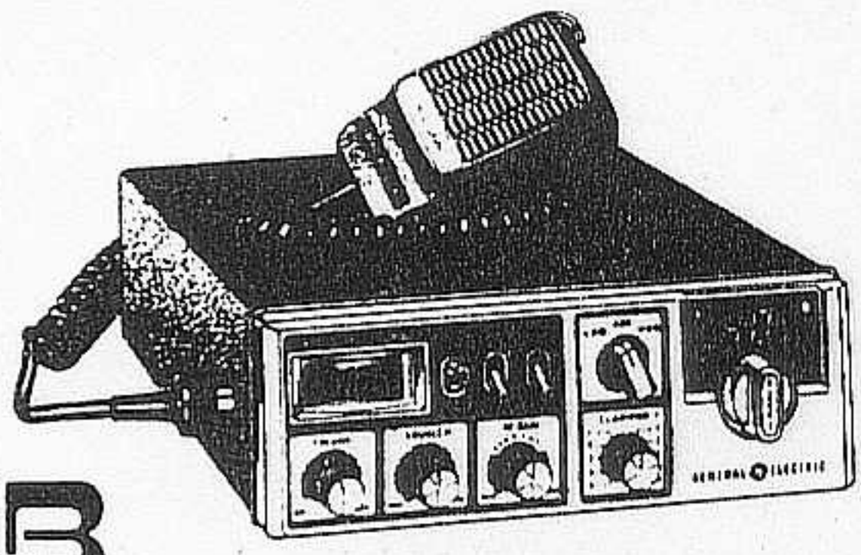
SERVICE MANUAL

FEATURES

36 Channel Single Side Band allows user to Receive and Transmit 36 SSB Channels or 18 AM CB channels for greater versatility. Clarifier Control assures fine tuning on receiver frequency.

- Mic Gain Control
- Clarifier Control: Dual (Fine & Course)
- Noise Blanker and ANL (Automatic Noise Limiter)-(3 positon Switch). reduces ignition type noise.
- Lighted S/RF meter. . . shows relative Receive and Transmit signal strength
- AWI Light. . . Antenna Warning (failure) Indicator indicates when antenna system needs adjustment
- PA/CB Switch
  -PA: Public Address with volume control
  -CB: CB reception from built-in speaker
- RF Gain Control. . . prevents overload due to strong signals
- Hi-Lo Tone Switch
- LED Channel Display
- Transmit Modulation Light . . . indicates relative modulation level
- Screw-on type microphone

MOBILE CB TRANSCEIVER



MODEL A3-5825B

SERVICE SPECIFICATIONS

RECEIVER

Sensitivity: Better than 0.5uv for 500MW audio output at MIN Squelch setting.
Clarifier: ± 600Hz MIN.
Frequency Coverage: 27.105 to 27.225 MHz, 18 channels AM and SSB 36 channels.
Adjacent Channel Selectivity: Better than 60db.
Spurious Rejection: Better than 60db.
IF Frequencies: SSB; 10.695MHz, AM; 1st 10.695MHz, 2nd; 0.455MHz.
Squelch Range: AM; 1uV to 400uV
SSB; 0.7uV to 20uV

TRANSMITTER

Frequency Response: 400Hz to 2.5kHz.
Frequency Coverage: 27.105 to 27.225 MHz; 18 channels, AM and SSB 36 channels.
Transmit Power Output: 4 watts maximum at 13.8 Volts DC. (PEP 12 watts max SSB).
Modulation: Capable of 100% factory pre-set limit.
Frequency Tolerance: Better than .005% MAX.
Adjacent Channel Selectivity: MIN. 50dB at ± 10kHz.

GENERAL

Power Requirement: Consumption - 18 watts; Current drain - 1.3 amps (100% mod.) at 13.8 Volt DC
Power Supply: 12 Volts DC normal (Pos. or Neg. ground)

CAUTION: THIS MANUAL IS DESIGNED FOR USE BY QUALIFIED ELECTRONIC TECHNICIANS ONLY. REPAIR OR ADJUSTMENT OF TRANSMITTER CIRCUITS MUST BE UNDER SUPERVISION OF A PERSON WITH FIRST-OR SECOND-CLASS RADIOTELEPHONE LICENSE. CONSUMER USERS ARE URGED TO CONTACT QUALIFIED FACTORY AUTHORIZED SERVICE FACILITIES FOR REPAIRS.

AUSTRALIAN GENERAL ELECTRIC (APPLIANCES) PTY. LIMITED, 1 GARDINER ROAD, NOTTING HILL, VICTORIA, AUSTRALIA 3168

37-8517-78 11/78

GENERAL ELECTRIC

DESCRIPTION OF TRANSCEIVER CIRCUITS

RECEIVER CIRCUITS

(AM & SSB)

RF STAGE- An incoming signal from the antenna jack (J1) is coupled to the base of Q209 (RF Amp) thru AWI warning circuit L214, C626, C263, and T206. Transformer (T206) in the base circuit of Q209, is broad tuned to 27MHz. When used in some versions; D212 and D213 provide overload protection, and Q224 grounds the signal fed to T206 in transmit. The RF amplifier stage provides sensitivity and local oscillator isolation.

MIXERS (AM)- The amplified signal from the collector of Q209 is developed across T205, which is peaked tuned to 27MHz. The signal is coupled to the base of Q210 thru C235 and T204, which is peaked tuned to 27MHz. The signal at the base of Q210 is mixed with local oscillator signal (37.660MHz - 38.100MHz) from the frequency synthesizer to produce the 10.695MHz first intermediate frequency. The signal is coupled thru C279, T208, R24, MXF-2 (Filter), and R25 to base of Q5 from T207. Transformers T207 and T208 are peaked tuned to 10.695MHz. The signal at the base of Q5 (Second Mixer) is mixed with 10.240MHz to produce the 455kHz second intermediate frequency. The 455kHz is developed across T1, tuned to 455kHz.

IF & DETECTOR (AM)- The 455kHz intermediate frequency from the secondary of T1 is coupled thru CF filter and R30 to Q6 (AM IF Amp). The steep sided skirts of the amplitude-versus-frequency response curve of the filter CF helps eliminate adjacent channel interference and improves selectivity. The amplified output from Q6 is coupled to the base of Q8 thru C28 and T3. The SSB IF transformer is T3. The output of Q8 is direct coupled to the base of Q9. The amplified output of Q9 is coupled to D10 thru T4 and T2. T4 is a SSB IF transformer. Transformer T2 is peak tuned to 455kHz. The detector diode D10 rectifies the negative envelope of the modulated IF signal and C36 shunts the 455kHz to ground, leaving the detected audio at a negative DC level.

AGC (AM)- A voltage divider network consisting of R97, R57, R55, R56, and R58 sets up an optimum AGC level. The detected audio causes a reverse current to flow thru R58, R56, D10, and T2 secondary. This reverse current causes the voltage on the AGC line to become less positive, reducing the gain of Q6 (AM IF Amp), Q209 (RF Amp), and Q210 (Mixer).

NB & ANL- When in the on position and under no signal condition, C39 charges through R54 with a slight forward bias across D14 (ANL). As the detected audio level increases, C39 is allowed to charge according to the average audio level, increasing the forward bias on D14. Since D14 is in series with the audio signal path, any negative spikes that are high compared to the average audio level will overcome the forward bias on D14 and open the signal path momentarily to mute spikes such as those generated by an auto ignition system. With S-36 set to NB or OFF, R60 is placed in series with C39, decreasing the RC time constant, causing D14 to remain in conduction.

SIGNAL METER (AM)- Diode D9 rectifies the positive envelope of the modulated IF signal and feeds the resulting DC current through RV5 to the SIGNAL-POWER Meter (M). RV5 (AM SIGNAL METER ADJUST) is adjusted for a "9" reading, with a 100uV signal at the antenna connector (J1).

MIXER (SSB)- The amplified signal from the collector of Q209 is developed across T205, which is peaked tuned to 27MHz. The signal is coupled to the base of Q210 thru C235 and T204, which is peaked tuned to 27MHz. The signal at the base of Q210 is mixed with local oscillator signal (37.660MHz - 38.100MHz for USB and 37.657MHz - 38.097MHz for LSB) from the frequency synthesizer. The IF signal is developed across T207 which is tuned for the difference frequency.

IF & SSB DETECTOR- The signal from T207 is coupled to the base of Q7 (SSB IF Amp) thru C279, T208, D2, R98, MXF-1 (Filter), and R34. The steep side skirts of the amplitude-verses-frequency response curve of the filter (MXF-1) helps elimate adjacent channel interference and improves selectivity. T208 is peaked tuned to 10.694MHz. The amplified signal from Q7 is coupled to the base of Q8 thru T3, which is peaked tuned to 10.6935MHz. The output of Q8 is direct coupled to the base of Q9. The output of Q9 is developed across T4, which is tuned for 10.6935MHz. The signal is coupled thru C44 to the base of Q10 (SSB DET). Q10 (SSB DET) combines the RF SSB signal at the base to the carrier signal at the emitter. The carrier signal comes from Q3 (Osc 3) and thru Q4 (Buffer) at a frequency of 10.695MHz in USB and 10.692MHz in LSB. The detected output of Q19 is an audio signal which is coupled thru C47 and R49 to the audio line.

AGC (SSB)- An RF signal from Q9 is coupled to the gate of Q11 (SSB AGC). From Q9 thru C43 to a voltage doubler consisting of D12, D13, and C51. As the signal increases the voltage doubler decreases the bias on Q11, thus decreasing the bias and gain of Q7 (SSB IF Amp), Q209 (RF Amp), and Q210 (Mixer). The AGC level is determined by the adjustment of RV6 (SSB AGC) (See Alignment Instructions). RV8 is adjusted for best audio output with signals from 50uV to 50,000uV.

SIGNAL METER (SSB)- D8 rectifies the SSB IF signal and the resulting DC current is fed through RV4 to the SIGNAL-POWER Meter (M). RV4 (SSM SIGNAL METER ADJUST) is adjusted for "9" reading, with a 100uV signal at the antenna connector (J1).

SQUELCH (AM & SSB)- The signals applied to the base of Q15 (SQUELCH) comes from D17 (Providing AM AGC) and from D16 (providing SSB AGC). When in AM mode the voltage applied to the base of Q15 overcomes the bias provided by VR3 (SQUELCH) and RV7 (AM SQUELCH RANGE), Q15 will conduct. When in SSB mode the voltage applied to the base of Q15 overcomes the bias provided by VR3, RV7, and RV10 (SSB SQUELCH RANGE), Q15 will conduct. The conduction of Q15 forward biases Q16 (SQUELCH). Q16 back biases Q17 (SQUELCH), which allows IC2 (AF Amp) to operate. However, when the bias supplied to the base of Q15 is not sufficient to overcome the emitter bias, Q15 is biased off. With Q15 not conducting, Q16 is biased off, which forward biases Q17. Q17 conduction applies ground to pin 7 of IC2 thru R75 and R76. With pin 7 of IC2 grounded, IC2 is turned off. RV7 (AM SQUELCH RANGE) allows the squelch circuit to be preset to a predetermined signal of 1000uV at the antenna connector (J1) with VR3 (SQUELCH) set at maximum for AM operation. RV8 (SSB SQUELCH RANGE) allows the squelch circuit to be preset to a predetermined signal of 1000uV at the antenna connector (J1) with VR3 (SQUELCH) set at maximum for SSB operation.

AUDIO- Audio from C40 (In AM) and R49 (In SSB) is coupled to VR2 (VOLUME). The audio from VR2 (VOLUME) wiper is coupled to the base of Q14 (BUFFER) thru C77. The output from the emitter of Q14 is coupled to the base of Q13 (AF Amp), thru C78, R66, and C53. The amplified output is coupled to pin 6 of IC1 (AF Amp) thru R72, C57, and R74. The output of IC2 is capacitively coupled to T5 thru C66. Audio from T5 secondary is coupled thru C70 and S-5d to J3 in CB position. With no external speaker connected, the audio path is thru J3 and R92 to speaker (SP). From speaker (SP) to pin 3 of J5 (MIC Plug) and thru the microphone to ground (pin 2 of J5). In AM and SSB receive, Q19 (DC SWITCH) is biased on to ground C59, allowing IC5 to have maximum gain. In CB/PA position audio is coupled to J2 (PA). When C511 and C512 are grounded by TONE switch S4, high frequency audio tones are shorted to ground.

PA- In PA, audio is coupled from MIC thru pin 1 of J5 to VR4a (MIC GAIN). Audio from MIC is controlled by VR4a and fed to pin 6 of IC2. In CB/PA or PA position, the output from pin 10 of IC2 is coupled to J2 (PA) thru C66, T5, C70, and S-5d and J2 to ground.

NOISE BLANKER- Noise pulses from the secondary of T207 are coupled thru C272 to base of Q211 (NOISE BLANKER). Amplified noise pulses from the collector of Q211 are coupled thru C273, C276, and voltage doubler circuit D216, D217, C275 and C274 to the base of Q212. The voltage supplied by the doubler to Q212 is amplified and fed to the base of Q213 thru R-C network C278 and R259. The signal at the base of Q213 varies the resistance of Q213 to ground. The noise is shorted to ground thru Q213. The Noise Blanker is turned off by removing B+ from Q212.

POWER DISTRIBUTION

This unit is designed for operation from a standard 12 VDC automotive power supply. Diode D24 provides polarity protection that will cause the fuse to blow if the power supply leads are reversed. Low-pass filtering is provided by L7, L8, C86 and Ch to attenuate noises from the power supply.

Unregulated B+, switched only by On/Off switch S1 (part of volume control), is supplied to PL1 (Meter Lamp), IC2 (AF Amp), and T5 (Audio Transformer). With switch S-5c in CB position, unregulated B+ is also fed to SW-1 (Channel Switch) thru S-2b to VR5 (AM Power). Unregulated B+ from S5-c is also fed through S-2b (in upper and lower sideband positions) to PL2 (TX Lamp), Q207 (RF Driver), Q208 (RF Driver), Q208 (RF Power), Q216 (AVR), and Q210 (Mixer). Unregulated B+ also goes through R73 to provide voltage for Q13 (AF Amp) and thru R231 to Q206 (RF Preamp).

An independent, well regulated 8.5V DC is provided by emitter follower circuit of Q216 (AVR) in conjunction with a 9-volt reference diode D219. This regulation voltage is applied to Q210 (Mixer), Q7 (SSB IF Amp), Q6 (AM IF Amp), Q5 (Am IF Amp), IC201 (VCO Mixer), Q203 (Osc 1), Q4 (Buffer), Switch S2 (LSB, AM, USB), Switch S3 (NB/ANL), IC1 (Balanced Mod.) and RV7 (AM SQUELCH RANGE). The regulated 8.5V DC is fed through R216 and drops to 5.28V DC, regulated by D206 (5.4 volt Zener). This 5.28V DC is the supply source for IC201 (VCO Mixer, Q202 (Osc 2), IC203 (PLL 02), the VCO-Osc Block, and Switch SW1 (Channel Selector). Voltage is supplied from Q216's emitter to S2. In the AM position, the voltage is then switched through S2 to the collector of Q43 (DC SWITCH) and to the collector of Q217 (DC SWITCH). Q217 is forward biased (in receive) suppling voltage to Q6 (AM IF Amp) and Q3 (Osc 3). The voltage also goes thru D222 to Q16 (SQUELCH), Q211 (NOISE BLANKER). In transmit, Q217 is biased off and Q218 (DC SWITCH) is forward biased thru R265. Voltage from Q218 is supplied to Q214 (AWI), Q215 (AWI) and Q221 (AWI). The voltage supplied by Q218 is also fed thru D224 as the supply voltage for Q201 (DC SWITCH), IC202 (MIXER/RF ALC) and provides bias for Q207 (RF DRIVER) and Q208 (RF POWER).
In USB or LSB positions the voltage thru S2 supplies voltage to D18 and the collector of Q219 (DC SWITCH). Q219 is forward biased in receive. The voltage from the emitter of Q219 supplies voltage to Q11 (SSB AGC) and Q10 (SSB DET), thru D223 to Q1 (DC SWITCH), Q8 & Q9 (SSB IF Amp), Q14 (BUFFER) and Q16 (SQUELCH). In transmit, Q219 is biased off and Q220 is biased on thru R267. Voltage supplied from Q220 goes to Q18 (DC SWITCH) and D225.

Voltage supplied from S2, in LSB position, provides bias for Q204 (DC SWITCH) and Q2 (DC SWITCH).

TRANSMITTER CIRCUITS

RF PREAMP (AM)- Unmodulated RF at the selected CB center frequency is fed from pin 9 of IC202 (MIXER/RF ALC) thru C235, T205, and C241 to the base of Q206. The unmodulated RF from pin 9 of IC202 is developed across T204. T204 and T205 are peak tuned to 27MHz. The amplified RF is developed across paralled tank circuit T209 and C244, tuned to 27MHz.

RF DRIVER (AM)- Q207 base is driven by RF signal coupled from the secondary of T209 thru C246. Q207 is a grounded emitter stage for high power gain, and operates at class "C" (E-B junction reversed biased) for maximum efficiency. The output is developed across RFC L205 which presents a high empedance to RF without blocking the audio modulation.

RF POWER (AM)- NPN power transistor Q208 is driven by a signal from the collector of Q207 thru C248, developed across L209 thru C249. L209 is tuned for 27MHz. Q208 also operates class "C" for maximum efficiency, and the RF carrier output is developed across L207 and L208. C252 and L212 are series tuned to 27MHz. A pi-network, low-pass filter, is formed by C253, L213 and C254 for impedance matching to a 50-ohm antenna which is required for legal operation. R268 is used as a static discharge bleeder. L214, tuned to 27MHz, is used for antenna matching.

POWER METER (AM)- RF energy is fed from the collector of Q208 thru C252, L212, L213, and C287 to (RF Detector) D227. The RF detected by D227 is filtered by C286 and C265 and fed to Meter (M) thru RV203 (POWER)-RV202 in some models. RV203 is adjusted so the internal POWER Meter (M) agrees with an external RF wattmeter.

MODULATION (AM)- Audio from the microphone is coupled thru pin 1 of J5 thru VR4a (MIC GAIN), C75, R65, and C53 to the base of Q13. The amplified output of Q13 is coupled thru R72, C57, and R74 to pin 6 of IC2. In AM transmit, Q19 (DC SWITCH) is biased by Q18 (DC SWITCH), grounding C59, permitting maximum gain of IC2. IC2 drives the output transformer T5 thru C66 to the level required for transmit modulation. The B+ for Q208 (RF POWER) and Q207 (RF DRIVER) is supplied from VR1 (AM POWER) thru T5 secondary and D23. D23 limits the maximum modulation and provides shaping for improved modulation linearity. Thus, the B+ increases and decreases at an audio rate, varying the amplitude of the radiated carrier. NOTE: The modulated B+ line can reach peak voltages up to twice the power supply voltage.

AM AF ALC- Audio from the cathode of D23 is coupled to the base of Q20 (AF ALC) thru RV9 (AF ALC), C71, D22 and R86. Audio supplied to the base of Q20 is rectified by D22. This rectified voltages varies the resistance to ground for the audio signal supplied to IC2, thus regulating modulation. RV9 is adjusted for 100% modulation with a 1000Hz, 20mV signal at pin 1 of J5, with VR4a (MIC GAIN) at maximum.

TX(MOD)INDICATOR(AM)- The modulated B+ line from D23 goes to Switch S2 (LSB/AM/USB), to PL2 (AWI), and thru PL2 to Q205 (DC SWITCH). Q205 is biased on in transmit. The modulated B+ line varies the intensity of PL2 (AWI).

ANT WARNING INDICATOR (AWI) - With a standing wave voltage ratio of 5 to 1 or greater, significant voltages are rectified by D215 and D214 to forward bias, Q214 and reverse bias Q215. The voltage from the collector of Q214 causes Q221 to conduct, lighting PL3 (AWI). RV202 and RV205 are adjusted with unit in transmit, so PL3 lights with a 250 ohm non-inductive resistor connected between J1 and chassis (see Alignment Instructions).

TRANSMITTER SSB- Audio from the MIC is coupled thru pin 1 of J5 thru VR4a (MIC GAIN), C75, R65, and C53 to base of Q13. The amplified output of Q13 is coupled thru R72, C57, and R74 to pin 6 of IC2. In SSB transmit Q19 (DC SWITCH) is biased off by Q18 (DC Switch) placing R77 in series with C59 to ground, causing IC2 to have lower gain than in AM position. IC2, with this lower gain, acts as a MIC amp for SSB operation. The output of IC2 (pin 10) is coupled thru R81, C83, RV3 (SSB MIC GAIN), R15, and C16 to pin 1 of IC1 (Balance Mod). IC1 has two inputs, one is the audio at pin 1, the other is the output of Q3 (Osc 3) thru Q4 (BUFFER). The frequency of Q3 thru Q4 (Buffer) is 10.695MHz in USB and 10.692MHz in LSB. With both inputs present in IC1, the output will be the sum or difference input. With pin 1 of J5 grounded, RV1 and RV2 are adjusted for MINIMUM RF output at J1. In USB the difference in frequency developed by IC1 will be passed by the steep side skirts of the amplitude-verses-frequency response curve of the filter MXF-1. In LSB the sum frequency developed by IC1 will be passed by MXF-1. The output of IC1 (Pin 7) is complete thru C19, R21, D3, MFX-1, and R34 to base of Q7. The output of Q7 is developed across T3. The secondary of T3 feeds thru C87 and C229 to pin 4 of IC202 (MIXER/RF ALC). Pin 4 of IC202, approximately 10.6935MHz, is mixed with the frequency supplied to pin 1 of IC202. The frequency at pin 1 (IC202) varies with each channel (37.710 to 37.920 MHz for USB and 37.707 to 37.917 MHz in LSB). The output of the mixer, pin 6, is fed thru C230 to pin 7 of RF ALC. The output from pin 9 of RF ALC is developed across T204 and coupled thru C235, T205, and C43 to the base of Q206. T204 and T205 are tuned for 27MHz.

RF PREAMP- Modulated RF at the selected CB frequency is fed from pin 9 of IC202 (MIXER/RF ALC) thru C235, T205, and C241 to the base of Q206 (RF PREAMP). Modulated RF from pin 9 of IC3 is developed across T204. T204 and T205 are peak tuned to 27MHz. The amplified RF is developed across parallel tank circuit T209 and C244 which are tuned to 27MHz. Q206 is disabled by Q201 (thru R228) in SSB Receive.

RF DRIVER (SSB)- The Q207 base is driven by RF signal coupled from the secondary of T209 thru C246. Q207 is a grounded emitter stage for high power gain. The output is developed across RFC L205 which presents a high impedance to RF.

RF POWER (SSB)- NPN power transistor Q208 is driven by a signal from the collector of Q207 thru C248 developed across L209, thru C53. L209 is tuned for 27MHz. Q208 operates class "A" for maximum linearity and the RF output is developed across L207 and L208. The bias for Q208 is developed thru R237, R238, and L206. C252 and L212 are series tuned to 27MHz. C253, L213 and C254 form a low-pass filter, Pi-network, tuned for impedance matching to a 50 ohm antenna, required for legal operation. R268 is used as a static discharge bleeder. L214, tuned to 27MHz, is used for antenna matching.

RF ALC (SSB)- The RF output from Q208 is fed thru C252, L212, L213, C259 and D209 to RV201 (ALC). D208 and D209 rectifies the RF signal. The RF voltage is rectified and filtered then applied for reference at RV201 wiper. When the voltage exceeds reference voltage, a voltage is fed to RF ALC to decrease the gain of IC202.

SSB AF ALC- Audio from pin 10 of IC2 (used as MIC Preamp in SSB) is coupled thru C68, R82, D21 and R86 to the base of Q20. Audio supplied to the base of Q20 is rectified by D22. This voltage varies the resistance to ground for the audio signal supplied to IC2.

DIGITAL FREQUENCY SYNTHESIZER

(Includes Phase Lock Loop (PLL) Circuits)

GENERAL- The synthesizer used in the single sideband transceiver generates four crystal controlled frequency outputs. One, at channel center frequency, is used for driving the RF transmitter circuits. The second is used as the first local oscillator signal for AM or SSB receiver operation. The third is used in AM mode as the local oscillator signal for the AM second mixer. The remaining output is used as a transmit offset frequency in AM or SSB and as a beat frequency oscillator (BFO) for sideband reception. For precise accuracy and frequency stability, this unit incorporates the Phase Locked Loop (PLL) system.

Basically, phase locked loop is an electronic servo-loop consisting of an oscillator whose output frequency is controlled by a DC voltage, a phase comparator that generates a DC voltage directly proportional to the frequency difference at its inputs, and a low-pass filter to "smooth out" the DC correction voltage. The phase comparator continuously compares the output of the voltage controlled oscillator (VCO) to a reference frequency and uses the DC correction voltage to shift the VCO frequency until the VCO is locked exactly in phase with the frequency reference.

To generate the crystal controlled frequencies required for SSB transceiver operation, while keeping the complexity of the channel select system at a reasonable level, both linear (heterodyning) and digital (countdown) techniques are employed.

VCO- The VCO section of IC201, pin 1 and 2, operates 9.41MHz (in AM and USB) 9.4115MHz (in LSB) below channel center frequency. Within the VCO oscillator block, the capacitance of the varicap diode is controlled by the DC correction voltage from pin 5 of PLL circuit IC203. The RC network C203, R202, and C202, ahead of the VCO block, removes any "ripple" from the DC correction voltage. The inductance in the VCO block (VCO) is adjust for 3.6 volts, ±01 volt, at TP1 in USB channel 1. Q202 (Osc 2) is used as a reference oscillator at a frequency of 10.240MHz, adjusted by CT201. Capacitors C206 and C208 are temperature compensated to ensure reference frequency stability. Q202 output is coupled to pin 3 of IC203 (reference input) thru C209. Q203 (Osc 1) is the offset oscillator which is crystal controlled by X202. The output of Q203 is tuned to the second overtone of X202 by T201. In AM & USB, CT202 is adjusted for 20.105MHz, in LSB, CT202, grounded thru Q204 (DC Switch), is adjusted for 20.1035MHz at TP3. The output of the collector of Q203, is coupled to one input of the mixer section of IC201 (VCO-Mixer) pin 4. The other input of the mixer is supplied internally by the VCO. The mixer output, pin 6 of IC201, includes the sum, and difference frequencies as well as the fundamentals. The difference from the mixer pin 6 of IC201 is selected by T202 and C224 and coupled to pin 7 of IC201 thru C222. Pin 7 of IC201 is the input to differential amplifier section of IC201. Pin 9 of IC201 is the output and is coupled to pin 2 of IC203 thru C223. This frequency ranges from 2.29 MHz to 2.50 MHz, depending on channel selected. The sum from the mixer, pin 6 of IC201, is developed across parallel tuned circuits T202, coupled by C225, and T203. The output of the secondary of T203 is coupled to pin 1 of IC202 thru C228. This frequency 37.710 MHz to 37.920 MHz in AM & USB, and 37.707 MHz to 37.917 MHz in LSB, is coupled to Q210 (Mixer) thru C227. IC203, a large scale integration PLL microcircuit, is the heart of the digital synthesizer. There are two inputs to IC203, one is the reference input at pin 3 of IC203, the other, a sample input at pin 2, is the difference produced in IC201. Both reference and sample inputs are counted down to 10kHz. The reference input is divided by digital frequency divider composed of chains of flip-flops interconnected to give a square wave, divided-down version of the input frequency. The reference frequency is divided by 1024 to give 10kHz. The sample input is divided by a programmable divider down to 10kHz. The programmable divider divides by a non-fixed divider designated "n" which is programmed by selector switch SW1 and provided to IC203 at pins 10 thru 15 (See chart on page 8. The two 10kHz signals are then internally supplied to phase detector and compared. The phase detector generates a correction DC voltage directly related to the difference in phase. This voltage, pin 5 of IC203, is supplied to the VCO to shift the VCO frequency so the VCO and the reference input have no phase difference and is "Phase Locked"

UNLOCK- Bias current for RF predriver Q206 is supplied through R228 by switching transistor Q201. D201, in the base circuit of Q201, is normally reverse biased, with approximately 5V DC at the cathode. However, when there is a significant phase difference in the PLL circuit, indicating an out-of-lock condition, the unlock detector in IC203 grounds the cathode of D201, removing bias from Q201. Thus, with Q201 and Q206 turned off, there can be no off-frequency transmission during the lock-in period.

XMT OFFSET/SSB BFO- Q3 (Osc 3) is used to produce both a transmit off-set frequency and a BFO for SSB. Crystal X1 and the capacitance of CT1 is adjusted for 10.695MHz in AM (Transmit) & USB operation. In LSB, Q2 (DC Switch) is turned on, grounding C2 and CT2, allowing Q3 to operate at 10.692MHz. Q3 is biased off in AM receive position. In AM transmit the signal from the emitter of Q3 is coupled to the secondary of T3 thru C6, R7, R23, MXF-1, R34, amplifed by Q7 and fed to the primary of T3. In SSB operation the output Q3 is fed to the emitter of Q10 for carrier insertion to SSB detectors, thru C6, Q4, and C80. The third output from Q3 is fed to the Balance Mod, pin 3 of IC1, thru C6, Q4, C9, D4 and C11. IC202, the Transmit Mixer-RF ALC, operates only in transmit. One input to the mixer is from IC201 (VCO-Mixer) to pin 1 of IC202. The other input to IC202, pin 4, comes from the secondary of T3. The output of the mixer, pin 6 of IC202, is coupled to pin 7 of IC202 (RF-ALC Amp) whose output is fed to the RF Preamp.

CLARIFIER- The clarifier gives a "fine tune" adjustment between modulated IF signal supplied to the SSB Detector Q10 and the BFO signal supplied by Q3 (Osc 3). To give the unit this adjustment the frequency of the IF signal is varied slightly. To vary the frequency of the IF the PLL frequency supplied to the (First Mixer) Q210 is varied. To vary the PLL frequency the tuned circuit of Q203 (Osc 1) is varied. In Receive, voltage is supplied to R221 which biases D204 on, allowing VR5 (CLARIFIER) to vary the voltage to varicap D203 and thus the frequency of Q203. The frequency can be varied in both AM & SSB receive. However, in transmit AM or SSB, D205 is turned on, suppling a fixed voltage and D204 is turned off disabling clarifier VR5, in accordance with FCC rules about varying XMT frequencies externally.

GENERAL ELECTRIC

ALIGNMENT INSTRUCTIONS

CAUTION: Use isolation transformer or observe polarity when connecting test equipment.
Allow a 15-minute warm-up period.
Adjustments made with 13.8-volt DC input.
Connect low sides of test equipment to ground unless specified otherwise.
Connect 50-ohm dummy load or antenna before keying transmitter.
Connect microphone.

Suggested Alignment Tools: GC ELECTRONICS:

T1,T2,T207,T208.....5009,8728A,8728
L209,L212,L214,T209.....9091,8728A,8728
T3,T4,T201 thru T206,VCO.....9440
CT1,CT2,CT201,CT202,CT203.....8276,5000

SYNTHESIZER ALIGNMENT

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of frequency counter to TP2 (Q202 Collector).	Ch. 15, USB Clarifier 0	CT201	Adjust for 10.240MHz.
Input of oscilloscope to TP3 (IC 201, Pin 4).	Ch. 15, USB Clarifier 0	T201	Adjust for maximum RF.
Input of frequency counter to TP3 (IC201, Pin 4).	Ch. 15, USB Clarifier 0	CT203	Adjust for 20.105MHz.
	Ch. 15, LSB Clarifier 0	CT202	Adjust for 20.1035MHz.
Input of frequency counter to TP5 (Q4, Emitter).	Ch. 15, USB Clarifier 0	CT1	Adjust for 10.695MHz.
	Ch. 15, LSB Clarifier 0	CT2	Adjust for 10.692MHz.
Input of DC meter to TP1.	Ch. 1, USB Clarifier 0	VCO	Adjust for 3.6 volts.
Input of oscilloscope to TP13 (IC202, Pin 1).	Ch. 18, USB Clarifier 0	T202	Adjust for maximum RF.
	Ch. 1, USB Clarifier 0	T203	Adjust for maximum RF.
Input of frequency counter to TP13 (IC202, Pin 1).	Ch. 1, USB or AM, Clarifier 0		Check for 37.710 MHz. Check all channels. (See Truth Chart for correct frequencies).
Input of frequency counter to TP13 (IC202, Pin 1).	Ch. 1, LSB Clarifier 0		Check for 37.707 MHz. Check all channels. (See Truth Chart for correct frequencies).

TRANSMITTER ALIGNMENT

Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna connector.
NOTE: Be sure to check transmit frequency and power on all active channels after alignment of transmitter.

See channel frequencies chart.

SSB

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Inject a 2400Hz, 2.5mV signal at MIC input.	Ch. 18, USB MIC-AWR Maximum	T204	Adjust for maximum.
Inject a 2400Hz, 2.5mV signal at MIC input.	Ch. 1, USB MIC-AWR Maximum	T205	Adjust for maximum.
Inject a 2400Hz, 2.5mV signal at MIC input.	Ch. 15, USB MIC-AWR Maximum	T3,T209, L209,L212, L214	Adjust for maximum.

TRANSMITTER ADJUSTMENTS

Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna connector.
NOTE: Be sure to check transmit frequency and power on all active channels after adjustment of transmitter.
See channel frequencies chart.

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
No signal input.	Ch. 15, USB	RV1,RV2	BALANCE Adjust for MINIMUM RF.
Inject a 2400Hz, 20mV signal at MIC input.	Ch. 15, USB MIC-PWR Maximum	RV3,RV201	ALC Set RV3 to midrange. Adjust RV201 for 12 watts maximum. If necessary adjust RV3 to obtain 12 watts.
Inject a 1000Hz, 20mV signal at MIC input. Input of oscilloscope on modulation meter to antenna jack.	Ch. 15, AM MIC-PWR Maximum	RV9	AF ALC Adjust RV9 for 100% modulation, maximum.
Connect an RF wattmeter and 50 ohm/25 watt dummy load to antenna connector.	Ch. 15, AM	VR1	AM POWER Adjust VR1 for 4 watts.
Connect an RF wattmeter and 50 ohm/25 watt dummy load to antenna connector.	Ch. 15, AM	RV203	POWER METER Adjust RV203 so that POWER meter agrees with RF wattmeter.
Connect a 250 ohm/5 watt non-inductive resistor to antenna connector.	Ch. 15, AM	RV202,RV205	AWI Set RV202 to midrange. Adjust RV205 so that AWI indicator lights. If necessary adjust RV205 so that AWI lights.

RECEIVER ALIGNMENT

Connect an AC VTVM or AF wattmeter across speaker voice coil.
Adjust volume control to obtain a suitable indication.
Set generator output low enought to prevent AGC limiting.

AM

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to TP11 (Base of Q5). 455kHz,1000Hz @ 30% modulation.	Ch. 15, AM RF Gain Maximum Clarifier 0 Squelch MINIMUM NB + ANL Off	T2,T1	Adjust for maximum output.
Output of signal generator thru .01uF to antenna jack. 27.185MHz,1000Hz @ 30% modulation.	Ch. 15, AM RF Gain Maximum Clarifier 0 Squelch MINIMUM NB + ANL Off	T208,T207, T204,T205, T206	Adjust for maximum output. If necessary readjust T1 and T2. Recheck alignment of T204 and T205 in Transmitter Alignment.

RECEIVER ALIGNMENT

Connect an AC VTVM or AF wattmeter across speaker voice coil.
Adjust volume control to obtain a suitable indication.
Set generator output low enough to prevent AGC limiting.

SSB

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to TP12. 10.694MHz, no modulation.	Ch. 15, USB RF Gain Maximum Clarifier 0 Squelch MINIMUM NB + ANL Off	T4, T3	Adjust for maximum output.
Output of signal generator thru .01uF to antenna jack. 27.186, no modulation.	Ch. 15, USB RF Gain Maximum Clarifier 0 Squelch MINIMUM NB + ANL Off	T208,T207, T204,T205, T206	Adjust for maximum output. If necessary readjust T3 and T4. Recheck alignment of T204 and T205 in Transmitter Alignment.

RECEIVER ADJUSTMENTS

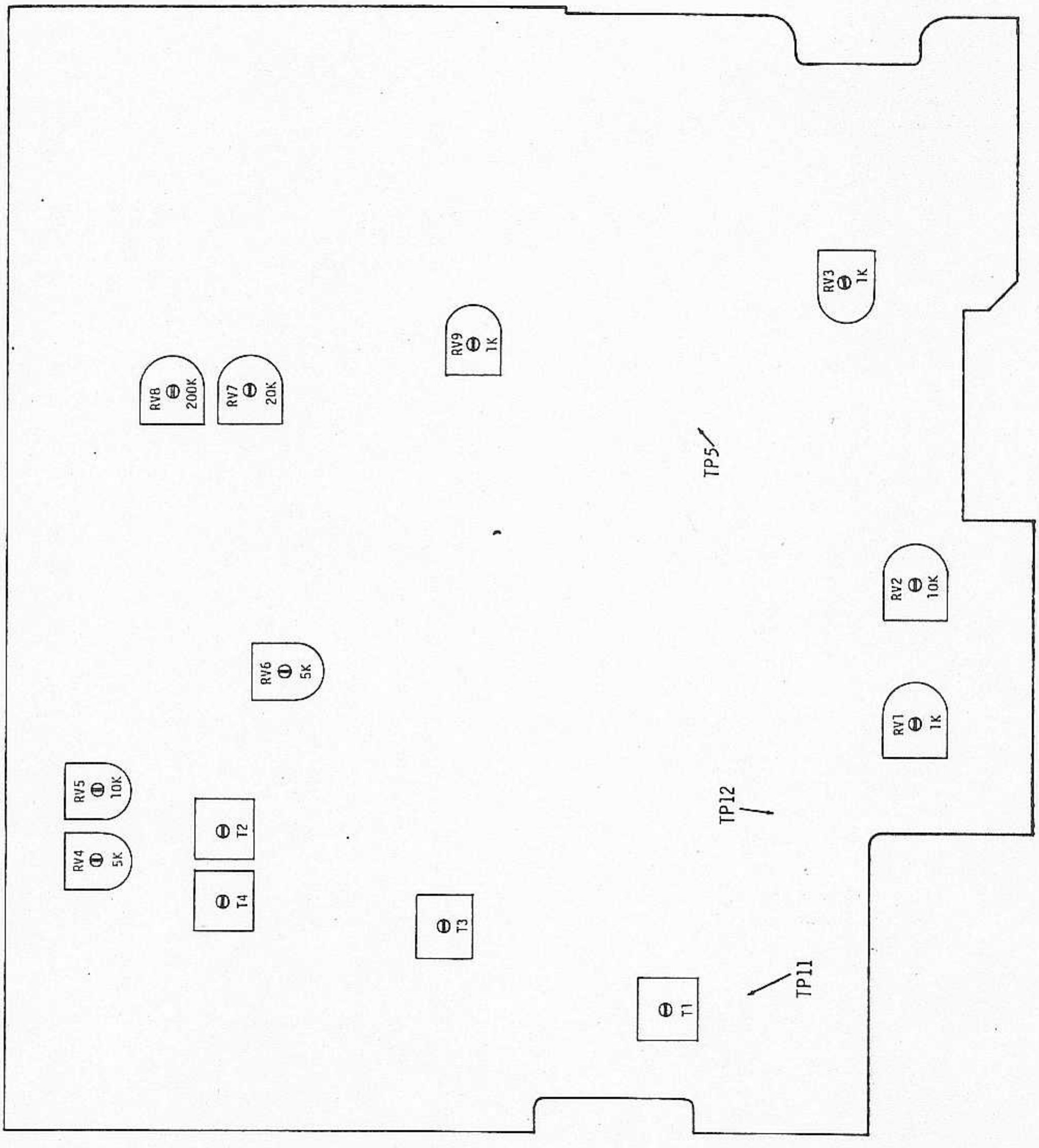
Connect an AC VTVM or AF wattmeter across speaker voice coil.
Adjust volume control to obtain a suitable indication.

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to antenna jack. 27.186MHz, no modulation. Output 50,000uV.	Ch. 15, USB RF Gain Maximum Clarifier 0 Squelch MINIMUM NB + ANL Off	RV6	SSB AGC Adjust volume for 0db. Decrease generator output to 50uV. Adjust RV6 so audio does not drop more than 10db.
Output of signal generator thru .01uF to antenna jack. 27.185MHz,1000Hz @ 30% modulation. Output 1000uV.	Ch. 15, AM RF Gain Maximum Clarifier 0 Squelch Maximum NB + ANL Off	RV7	AM SQUELCH Adjust RV7 so squelch just breaks.
Output of signal generator thru .01uF to antenna jack. 27.186MHz, no modulation. Output 1000uV.	Ch. 15, USB RF Gain Maximum Clarifier 0 Squelch Maximum NB + ANL Off	RV8	SSB SQUELCH Adjust RV8 so squelch just breaks.
Output of signal generator thru .01uF to antenna jack. 27.185MHz,1000Hz @ 30% modulation. Output 100uV.	Ch. 15, AM RF Gain Maximum Clarifier 0 Squelch MINIMUM NB + ANL Off	RV5	AM SIGNAL METER Adjust RV5 for 9 on SIGNAL scale of meter.
Output of signal generator thru .01uF to antenna jack. 27.186MHz, no modulation. Output 100uV.	Ch. 15, USB RF Gain Maximum Clarifier 0 Squelch MINIMUM NB + ANL Off	RV4	SSB SIGNAL METER Adjust RV4 for 9 on SIGNAL scale of meter.

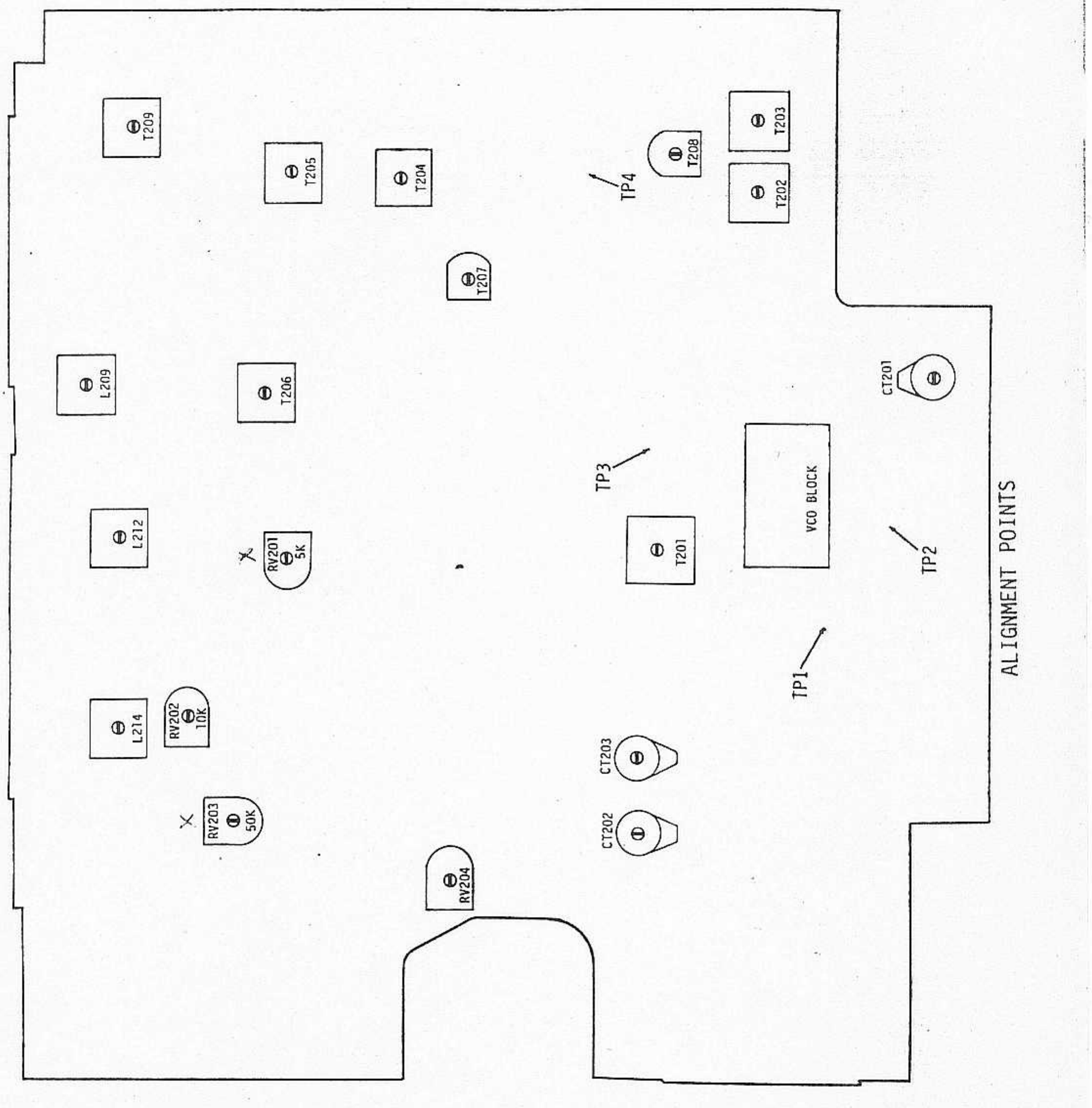
CHANNEL FREQUENCY CHART AND TRUTH TABLE

CHANNEL NO.	CHANNEL FREQ. (MHZ)	"N" CODE	VCO FREQUENCY (MHZ)		CHANNEL SW OUTPUT						RX 1st LOCAL	
			AM/USB	LSB	P0	P1	P2	P3	P4	P5	AM/USB	LSB
1	27.015	250	17.605	17.6035	0	1	0	1	1	1	37.710	37.707
2	27.025	249	17.615	17.6135	1	0	0	1	1	1	37.720	37.717
3	27.035	248	17.625	17.6235	0	0	0	1	1	1	37.730	37.727
4	27.055	246	17.645	17.6435	0	1	1	0	1	1	37.750	37.747
5	27.065	245	17.655	17.6535	1	0	1	0	1	1	37.760	37.757
6	27.085	243	17.675	17.6735	1	1	0	0	1	1	37.780	37.777
7	27.095	242	17.685	17.6835	0	1	0	0	1	1	37.790	37.787
8	27.105	241	17.695	17.6935	1	0	0	0	1	1	37.800	37.797
9	27.115	240	17.705	17.7035	0	0	0	0	1	1	37.810	37.807
10	27.125	239	17.715	17.7135	1	1	1	1	0	1	37.820	37.817
11	27.135	238	17.725	17.7235	0	1	1	1	0	1	37.830	37.827
12	27.155	236	17.745	17.7435	0	0	1	1	0	1	37.850	37.847
13	27.165	235	17.755	17.7535	1	1	0	1	0	1	37.860	37.857
14	27.175	234	17.765	17.7635	0	1	0	1	0	1	37.870	37.867
15	27.185	233	17.775	17.7735	1	0	0	1	0	1	37.880	37.877
16	27.195	232	17.785	17.7835	0	0	0	1	0	1	37.890	37.887
17	27.205	231	17.795	17.7935	1	1	1	0	0	1	37.900	37.897
18	27.225	229	17.815	17.8135	1	0	1	0	0	1	37.920	37.917

1 = H. Level (4.5 - 5.5V) 0 = L. Level (0.05 - 0.4V)

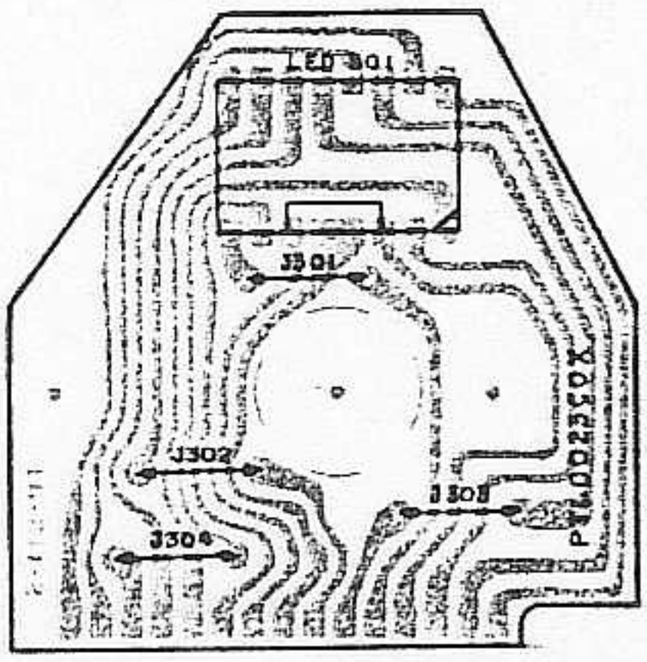

RV8 200K
RV7 20K
RV9 1K
RV3 1K
TP5
RV2 10K
ALIGNMENT POINTS
RV6 5K
RV5 10K
RV4 5K
T2
T4
T3
T1
TP12
TP11
RV1 1K

GENERAL ELECTRIC

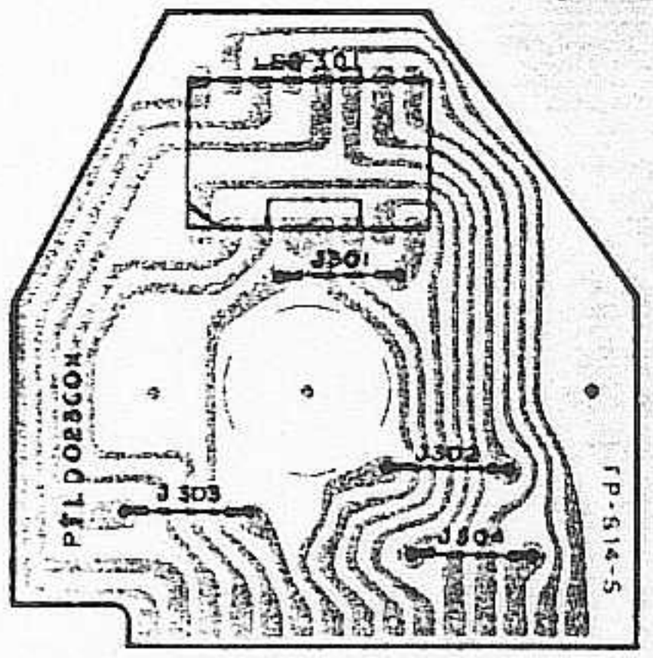


TROUBLESHOOTING CHART

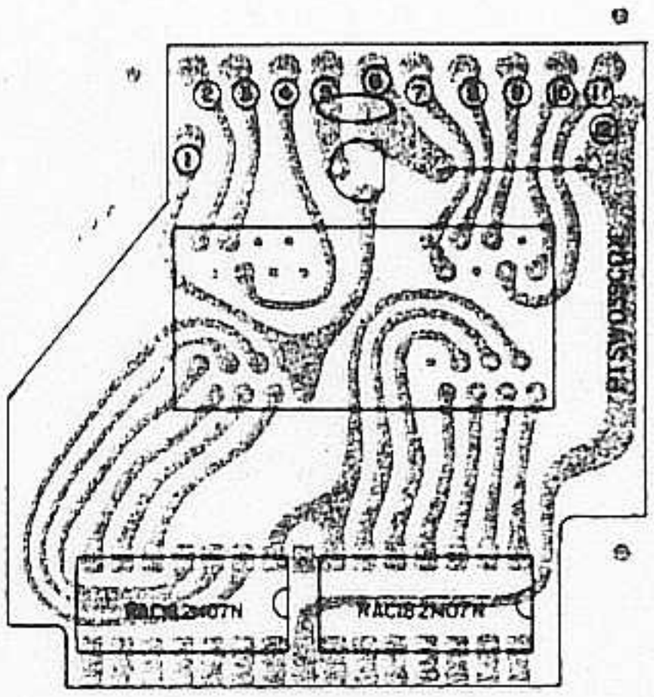
NOTE: No attempt has been made to cover all eventualities. However, known trouble areas have been included to reinforce standard troubleshooting techniques.	
Dead unit	Blown fuse; 13.8 volt DC supply line open, S1 On/Off switch defective; D24 shorted; CH or L8 open.
No sound from speaker - external speaker works normally	External speaker jack (J3) open or defective. Open or defective speaker.
No sound in Receive mode: no modulation in Transmit mode.	Check voltage for proper operation of IC2 (AF Amp). Using a scope check for presence of audio input at pin 6. Check for audio output at pin 10. IC2 is used as a Power Amp in AM, a Mic Amp in SSB.
No modulation in Transmit; Sound normal in Receive mode.	AM: defective microphone. Check for proper operating voltages of Q13, Q19, Q20 SSB: Defective microphone. Check for proper operating voltages of Q13, Q20. Check C150, R168, RV11, L18, R81, C83, R15, RV3 and C16. Check IC1 for proper operating voltages.
No sound in Receive mode, modulation normal in Transmit mode.	Check VR2 volume control for open or intermittent wiper contacts. Check squelch circuit Q15, Q16 & Q17 and associated components.
Squelch control will not squelch background noise.	AM: Improper adjustment of trim pot. RV7 (check Alignment Instructions for proper adjustment). Q15, Q16, Q17 defective. SSB: Improper adjustment of trim pots. RV7 or RV8 (check Alignment Instructions for proper adjustments). Q36, Q15, Q16, Q17 defective. Note: Squelch circuits receive signal from AGC line.
RF/IF section of Receiver dead.	Check for proper voltage on Q209 & Q210. Using frequency counter, check output of T203, if no output check PLL circuits.
AM IF section of Receiver dead.	Using frequency counter, check for output from Q202. Check Q5, Q6, Q8 & Q9 for proper operating voltages.
SSB IF section of Receiver dead.	Check for proper operating voltages of Q7, Q8, Q9 & Q10. Using a frequency counter, check for output of TP5.
Receiver off frequency.	Check synthesizer alignment. Check for proper operation of clarifier VR5. Check D4 and D5.
No RF output from transmitter.	AM: Check D202, Q206, Q207, Q208 and Q15 for proper voltages. SSB: Check IC202, IC1, Q206, Q207, Q208 & Q14 for proper voltages. Check for proper adjustment of RV201 (See Alignment Instructions).
Weak RF output from transmitter.	Check transmitter alignment; operating of transmitter stages IC202, Q206, Q207, Q208 and associated output components.
High VSWR reading, (AWI indicator ligts.).	Check antenna connections, must be clean and tight. Check coax cable for open, shorts, or weather deterioration. Note: AWI not used in SSB mode.
Transmitter off frequency.	Check D204 & D205 for open. Check synthesizer and transmitter alignment. (See Alignment for proper adjustment).
Can not transmit or intermittent transmit.	Check microphone for intermittent or open leads.
Transmit modulation distorted.	AM: Check Q13 & Q20 operating voltages, RV9 adjustment. (See Alignment Instructions). SSB: Check Q13, Q20, Q18 & Q19 operating voltages.
Noise blanker does not operate	Check for proper voltages on Q211, Q212, & Q213. Check for defective switch S2.
Incorrect S/RF meter reading.	Check Alignment Instructions for correct adjustment of RV5 & RV203 (AM) and RV4 (SSB). Check for defective meter rectifiers D8, D10 & D227.
PA function not operating.	Check S5, Jack (J2) and PA speaker.
Clarifier inoperative	Check VR5 for intermittent or open wiper contacts. Check for open D204 or R221.



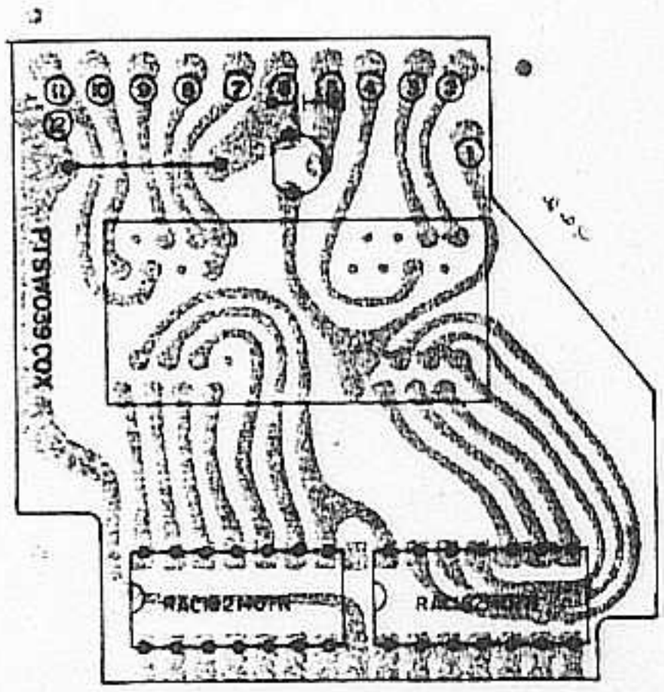
LED DISPLAY BOARD (TOP VIEW)



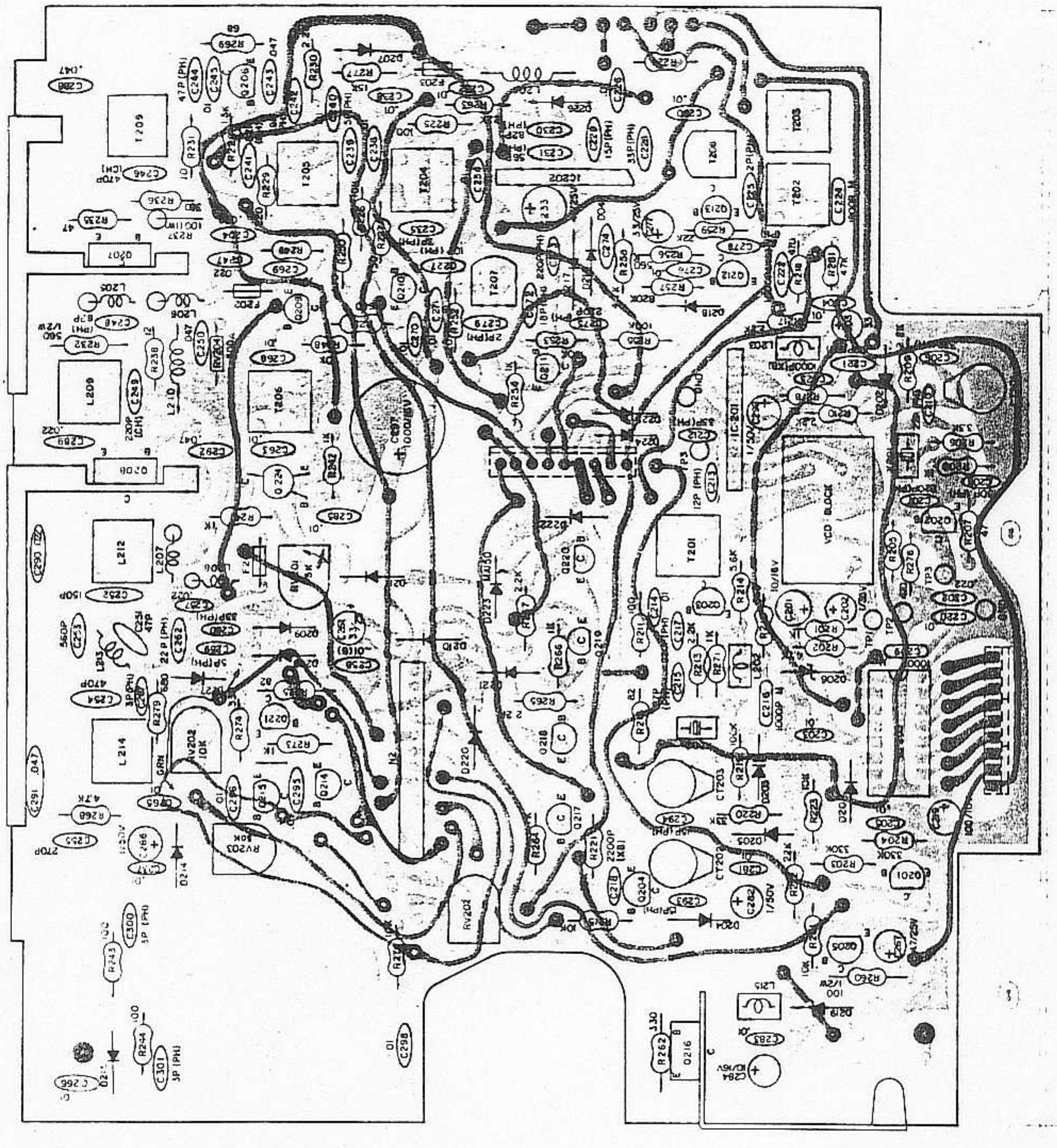
LED DISPLAY BOARD (BOTTOM VIEW)



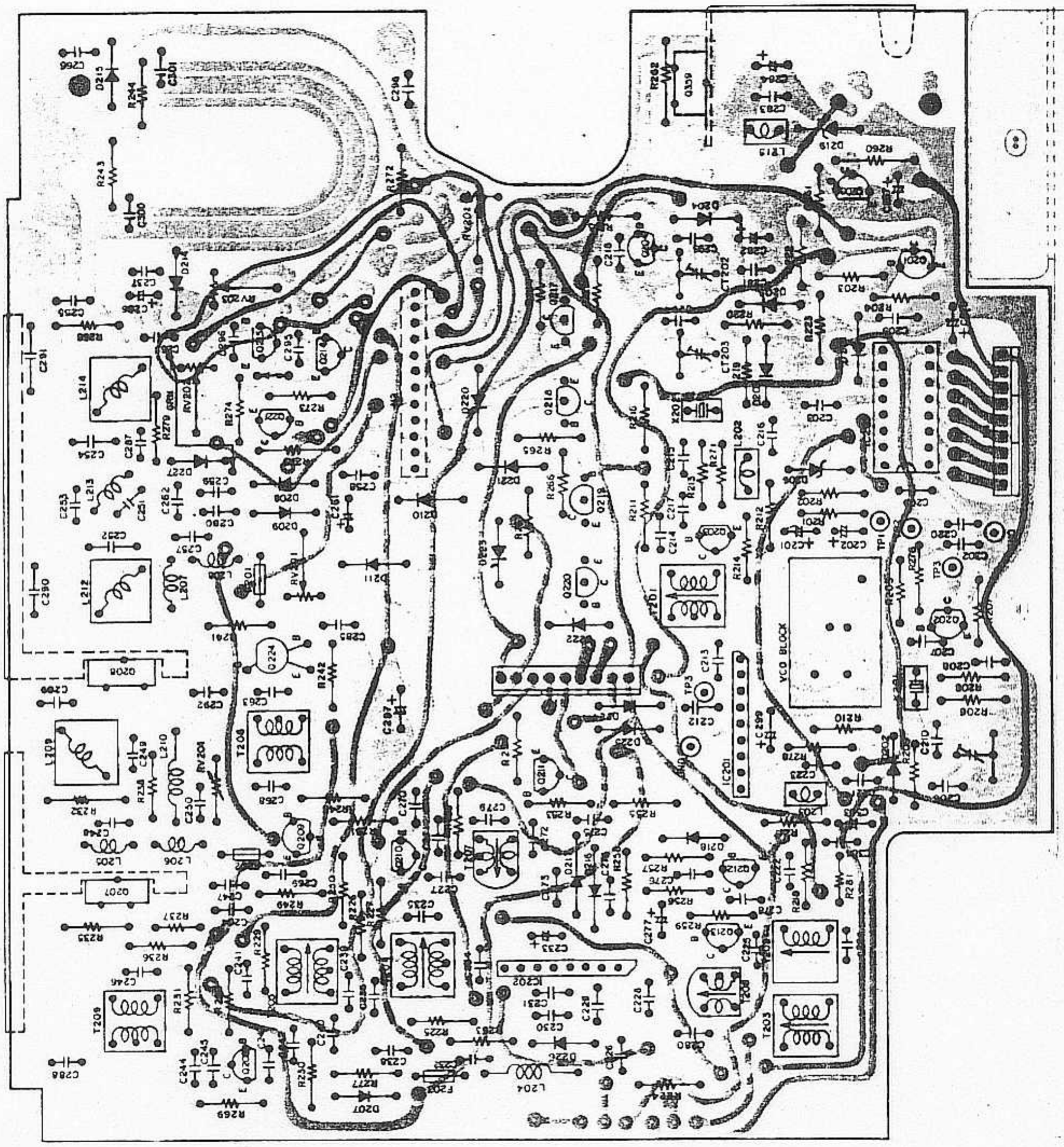
SWITCH BOARD (TOP VIEW)



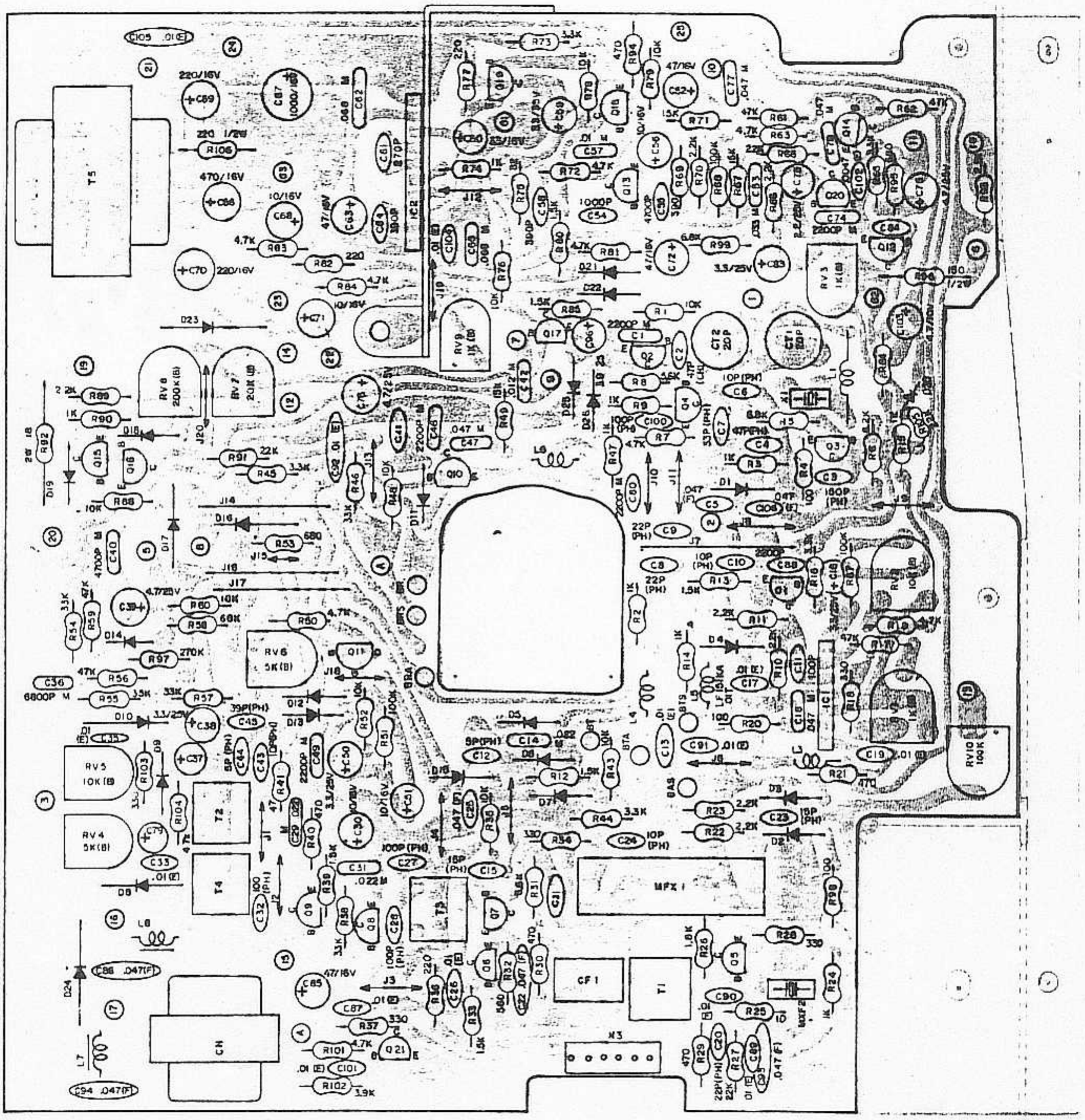
SWITCH BOARD (BOTTOM VIEW)



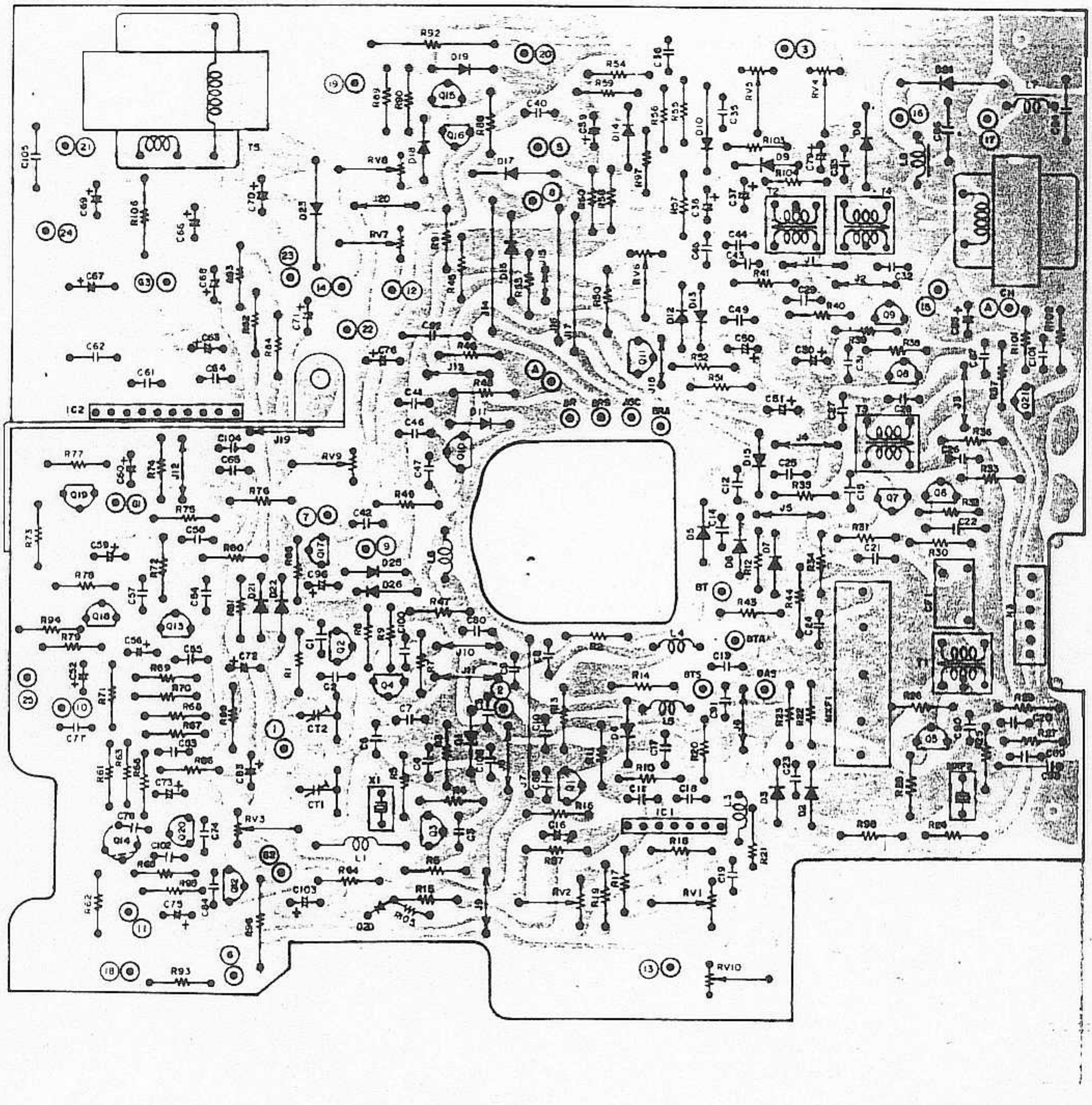
RF BOARD (TOP BOARD)



RF BOARD (BOTTOM BOARD)

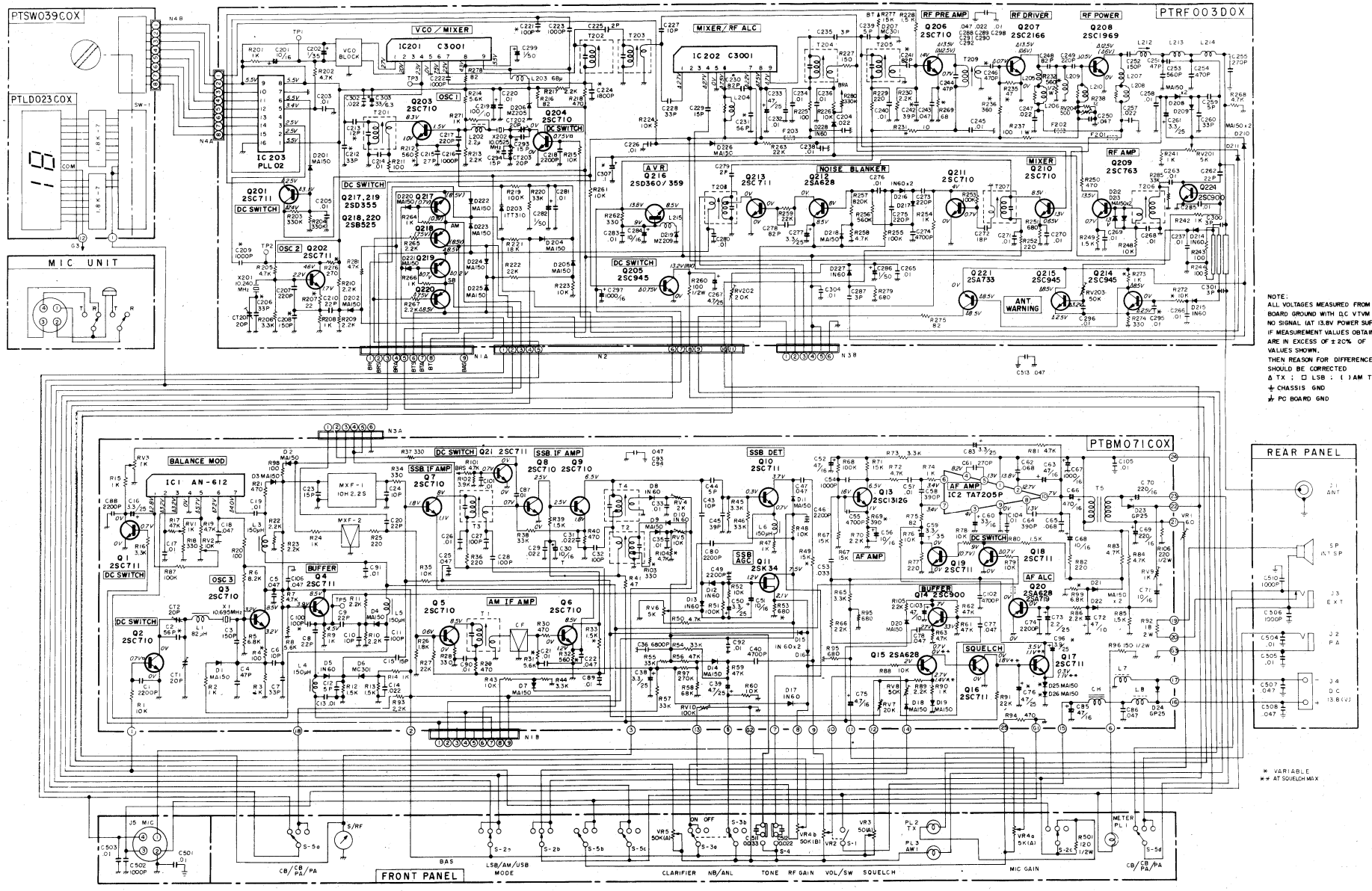


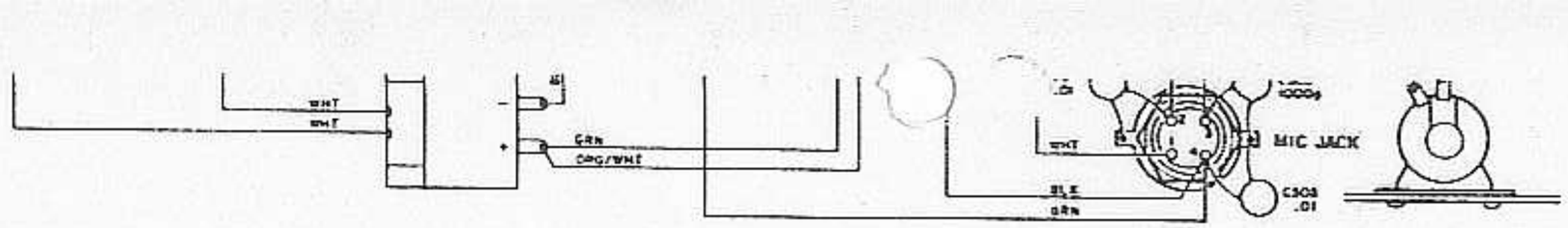
IF/AUDIO BOARD (TOP VIEW)



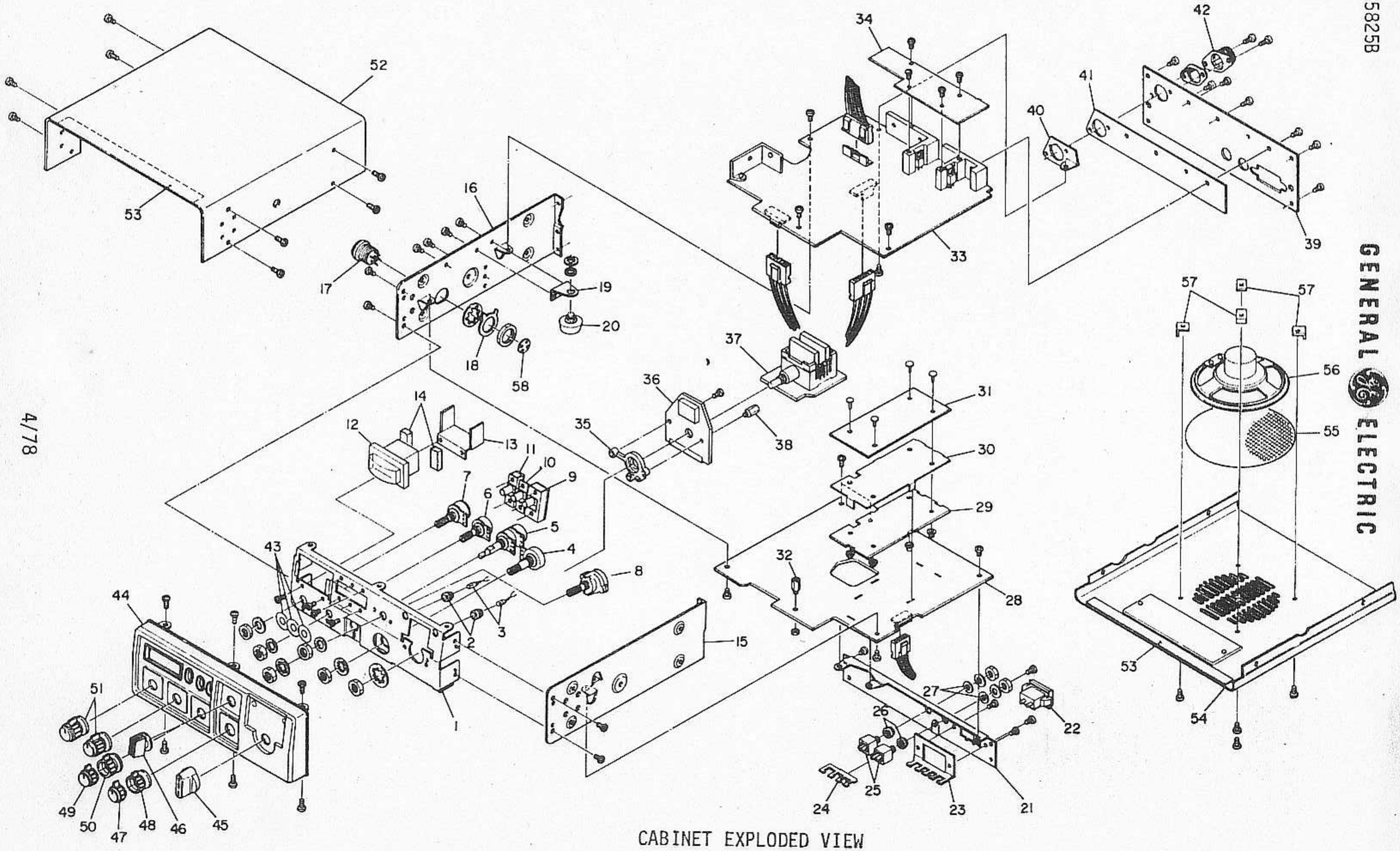
IF/AUDIO BOARD (BOTTOM VIEW)

VI SCHEMATIC





INTERCONNECTION DIAGRAM



CABINET EXPLODED VIEW

REPLACEMENT PARTS - MODEL A3-5825B

CAT. NO.	REF.	DESCRIPTION
		CABINET & CHASSIS
EA92X45	1	Panel, Chassis Front
EA2X787	2	Holder, Lamp
EA41X202	3	Lamp, PL2/PL3
EA49X433	4	Clarifier Control, VR5, 50K
EA49X432	5	MIC/RF Gain Control, VR4, 5K/50K
EA49X431	6	Squelch Control, VR3, 50K
EA49X430	7	Volume Control, VR2, 50K
EA55X148	8	Band Switch, S2
EA55X133	9	CB/PA Switch, S5
EA39X225	10	Tone Switch, S4
EA39X227	11	NB/ANL Switch, S3
EA62X154	12	Meter, S/RF
EA2X936	13	Bracket, Meter Mounting
N.S.I.	14	Sponge
EA92X46	15	Panel, Chassis Side Left)
EA92X47	16	Panel, Chassis Side (Right)
EA41X176	17	Microphone Jack, J5
EA2X937	18	Washer, Mic Jack
N.S.I.	19	Bracket, Power Control Mounting
EA49X429	20	AM Power Control, VRI, 6 Ohms
N.S.I.	21	Bracket, Jack Mounting
EA41X156	22	Jack, DC, J4
EA2X735	23	Terminal, DC Jack Ground
EA38X29	24	Terminal, Jack Ground
EA41X135	25	Jack, PA & Ext. Spkr., J2 & J3
EA60X13	26	Washer, Flange, Jack Insulator
EA60X14	27	Washer, Fiber, Jack Insulator
EA93X345	28	IF/Audio Board w/components
N.S.I.	29	Barrier (Part of Ref. 30)
EA5X11	30	Shield Assembly
N.S.I.	31	Barrier (Part of Ref. 30)
N.S.I.	32	Stud-PCB Mounting
EA93X344	33	RF Board w/components
N.S.I.	34	Shield, RF Board
EA2X736	35	Bracket, Switch Bushing
EA93X343	36	LED Board w/components
EA93X373	37	Channel Selector Switch Assembly (Complete)
EA1X571	38	Support, Channel Switch
N.S.I.	39	Panel, Chassis Rear
EA2X938	40	Bracket, Antenna Jack Mounting
EA2X939	41	Headsink, Plate Type
N.S.I.	43	Scrim, Switch
N.S.I.	44	Panel, Control
EA43X683	45	Knob, Channel Selector
EA43X687	46	Knob, Mode Selector
EA43X831	47	Knob, Fine Clarifier
EA43X832	48	Knob, Rapid Clarifier
EA43X729	49	Knob, RF Gain
EA43X730	50	Knob, Mic Gain
EA43X727	51	Knob, Volume & Squelch
EA98X602	52	Cabinet Top
N.S.I.	53	Sheet (Part of Ref. 52 & 54)
EA98X603	54	Cabinet Bottom
N.S.I.	55	Sheet, Spkr.
EA95X127	56	Speaker, 8 Ohms
EA2X940	57	Clip, Speaker Mounting
EA60X18	58	Spacer, Mic Jack
N.S.I.	59	Plate, Rating & Serial No. (Part of Ref. 54)
EA1X365	60	Screw, Bind Head, 2 X 3mm
EA1X444	61	Screw, Bind Head, 2.6 X 5mm
EA1X396	62	Screw, Bind Head, 3 X 6mm
EA1X461	63	Screw, Bind Head, 3 X 8mm
EA1X618	64	Screw, Flat Head, 2.6 X 5mm
EA1X644	65	Screw, CEMS, 3 X 10mm
EA1X396	66	Screw, Bind Nail, 3 X 6mm (Black)
RT5630	67	Nut, PCB Mounting, 3mm
EA1X432	68	Screw, CEMS, 3 X 8mm
EA1X468	69	Washer, Fiber (Flat), 3mm
EA1X442	70	Screw, Brass Tap, 3 X 8mm
EA1X444	71	Screw, Pan Head, 2.6 X 5mm
EA1X479	72	Washer, Inside Tooth, 7mm
EA1X572	73	Washer, Inside Tooth, 9mm
EA1X656	74	Washer, Inside Tooth, 10mm
N.S.I.	75	Rivet, 2.6 X 3.5mm
N.S.I.	76	Rivet, Pan Hea, 3 X 3.5mm
N.S.I.	77	Terminal
EA1X459	78	Washer, Flat Lock, 3mm
EA1X456	79	Washer, Inside Tooth, 3mm

ACCESSORIES

5-1722	Cord, DC Power, 2 pin
5-0231	Cigarette Lighter Cord, 2 pin
EA10X29	Fuse, 3 Amp (3AG)
5-1728	Microphone, Standard 4 pin
5-1739	Microphone, Power/ .Mobile
5-1737	Microphone, Power/Base
5-1711	External Speaker
5-1710	PA Speaker
5-0221	Mounting Kit
5-1199	Base Station Kit

N.S.I. = Not Sold Independently

REPLACEMENT PARTS - MODEL A3-5825B

CAT. NO.	SYM.	DESCRIPTION
INTEGRATED CIRCUITS		
EA33X8508	IC-1	Balanced Modulator, AN612
EA33X8396	IC-2	Audio/Mod. Amp, TA7205P
EA33X8394	IC-201	VCO/Mixer, MC3001AT
EA33X8509	IC-202	Mixer/RF ALC, MC3001AN
EA33X8388	IC-203	PLL Circuit, PLL-02A
TRANSISTORS		
EA15X354	Q1	DC Switch, 2SC711F
EA15X364	Q2	LSB Switch, 2SC710D
EA15X364	Q3	Carrier Osc. (10.695MHz), 2SC710D
EA15X354	Q4	Buffer, 2SC711E
EA15X365	Q5	2nd Mixer, 2SC710C
EA15X365	Q6	AM IF Amp., 2SC710C
EA15X365	Q7	Band Amp, (10.7MHz), 2SC710C
EA15X365	Q8	IF Amp., 2SC710C
EA15X365	Q9	IF Amp., 2SC710C
EA15X354	Q10	SSB Detector, 2SC711E
EA15X394	Q11	SSB AGC Amp.,(FET), 2SK34E
EA15X352	Q13	Audio Amp., 2SC1312G
EA4025	Q14	Audio Buffer, 2SC900F
RV1059	Q15	Squelch Comparator, 2SA628F
EA15X354	Q16	Squelch Comparator, 2SC711F
EA15X354	Q17	Squelch Switch, 2SC711F
EA15X354	Q18	PA Switch, 2SC711F
EA15X354	Q19	PA Switch, 2SC711F
RV1059	Q20	ALC Amp., 2SA628F
EA15X354	Q21	DC Switch, 2SC711F
EA15X354	Q201	Unlock Switch, 2SC711F
EA15X354	Q202	Osc. (10.24MHz), 2SC711E
EA15X364	Q203	Osc. (10.0525MHz), 2SC710D
EA15X364	Q204	LSB Switch, 2SC710D
RT7557	Q205	DC Switch, 2SC945A
EA15X364	Q206	RF Preamp, 2SC710D
EA15X391	Q207	RF Driver, 2SC2166
EA15X392	Q208	RF Final Amp., 2SC1969
EA15X393	Q209	RF Amp., (RX), 2SC763C
EA15X365	Q210	Mixer, 2SC710C
EA15X365	Q211	Noise Blanker Amp., 2SC710C
RV1059	Q212	Noise Amp., 2SA628F
EA15X354	Q213	Noise Blanker, 2SC711F
RT7557	Q214	AWI Amp., 2SC945A
RT7557	Q215	AWI Amp., 2SC945A
EA15X423	Q216	Voltage Regulator 2SD359
EA15X424	Q217	DC Switch, 2SD355
EA15X425	Q218	DC Switch, 2SB525
EA15X424	Q219	DC Switch, 2SD355
EA15X425	Q220	DC Switch, 3SB525
EA15X185	Q221	AWI Amp., 2SA733
EA4025	Q224	Switch, 2SC900U

CAT. NO.	SYM.	DESCRIPTION
DIODES		
EA16X146	D1	Switch, MA150
EA16X146	D2	Switch, MA150
EA16X146	D3	Switch, MA150
EA16X146	D4	Switch, MA150
EA16X48	D5	Switch, 1N60
EA16X176	D6	Switch, MC301
EA16X146	D7	Switch, MA150
EA16X48	D8	Meter Detector, SSB (RX), 1N60
EA16X146	D9	Meter Detector, AM (RX), MA150
EA16X48	D10	AM Detector, 1N60
EA16X146	D11	Bias, MA150
EA16X48	D12	SSB AGC Detector, 1N60
EA16X48	D13	SSB AGC Detector, 1N60
EA16X146	D14	ANL, MA150
EA16X48	D15	Gate, 1N60
EA16X48	D16	Gate, 1N60
EA16X48	D17	AGC Gate, 1N60
EA16X146	D18	Bias, MA150
EA16X146	D19	Bias, MA150
EA16X146	D20	B+ Gate, MA150
EA16X146	D21	ALC, MA150
EA16X146	D22	ALC, MA150
EA16X149	D23	Limiting, GP25B
EA16X149	D24	Polarity Protection, GP25B
EA16X146	D25	Temperature Comp., MA150
EA16X146	D26	Temperature Comp., MA150
EA16X146	D201	Unlock Blocking, MA150
EA16X146	D202	B+ Gate, MA150
EA16X177	D203	Varicap, ITT-310
EA16X146	D204	B+ Switching, MA150
EA16X146	D205	B+ Switching, MA150
EA16X136	D206	Zener, MZ205
EA16X176	D207	B+ Gate
EA16X146	D208	SSB ALC, MA150
EA16X146	D209	SSB ALC, MA150
EA16X146	D210	B+ Blocking, MA150
EA16X146	D211	B+ Blocking, MA150
EA16X146	D212	RF Overload, MA150
EA16X146	D213	RF Overload, MA150
EA16X48	D214	AWI Detector, 1N60
EA16X48	D215	AWI Detector, 1N60
EA16X48	D216	Noise Detector, 1N60
EA16X48	D217	Noise Detector, 1N60
EA16X146	D218	B+ Blocking, MA150
EA16X175	D219	Zener, M2309
EA16X146	D220	B+ Switching, MA150
EA16X146	D221	B+ Switching, MA150
EA16X146	D222	B+ Switch, MA150
EA16X146	D223	B+ Switch, MA150
EA16X146	D224	B+ Switch, MA150
EA16X146	D225	B+ Switch, MA150
EA16X146	D226	Detent Blocking, MA150
EA16X48	D227	Meter Detector, (TX), 1N60
EA16X48	D228	B+ Blocking, 1N60
TRANSFORMERS & COILS		
EA36X256	CH	Choke Transformer, Power

REPLACEMENT PARTS - MODEL 3-5825B

CAT. NO.	SYM.	DESCRIPTION
TRANSFORMERS & COILS, cont'd.		
EA35X135	L1	Coil, Osc., 10.695MHz
EA36X377	L3	Coil, RF Choke, 150uH
EA36X377	L4	Coil, RF Choke, 150uH
EA36X377	L5	Coil, RF Choke, 150uH
EA36X377	L6	Coil, RF Choke, 150uH
EA36X263	L7	Coil, B+ Choke
EA36X263	L8	Coil, B+ Choke
EA36X237	L202	Coil, Osc., 10.0525MHz, 2.2uH
EA36X239	L203	Coil, B+ Choke, 68uH
EA36X290	L204	Coil, B+ Choke, 1.95uH
EA36X294	L205	Coil, Loading, .75uH
EA36X293	L206	Coil, Loading, .75uH
EA36X294	L207	Coil, Loading, .75uH
EA36X293	L208	Coil, Loading, .75uH
EA36X292	L209	Coil, Matching, .15uH
EA36X293	L210	Coil, B+ Choke, .75uH
EA36X295	L212	Coil, TVI Trap, .335uH
EA36X297	L213	Coil, Pi Filter, .11uH
EA36X378	L214	Coil, Pi Filter, .11uH
EA36X239	L215	Coil, B+ Choke, 68uH
EA36X288	T1	Transformer, IF, 455kHz
EA36X379	T2	Transformer, IF, 455kHz
EA36X286	T3	Transformer, IF, 10.7MHz
EA36X286	T4	Transformer, IF, 10.7MHz
EA64X37	T5	Transformer, Audio Output
EA36X281	T201	Transformer, Doubler, 10.0525MHz
EA36X258	T202	Transformer, Bandpass, 37MHz
EA36X280	T203	Transformer, Bandpass, 37MHz
EA36X282	T204	Transformer, Bandpass, 27MHz
EA36X283	T205	Transformer, Bandpass, 27MHz
EA36X249	T206	Transformer, RF Input (RX)
EA36X380	T207	Transformer, RF (RX), 10.7MHz
EA36X380	T208	Transformer, RF (RX), 10.7MHz
EA36X284	T209	Transformer, RF (TX), .56uH

POTENTIOMETERS

EA49X434	RV-1	SSB Transmit Adjust, 1K
EA49X435	RV-2	SSB Transmit Adjust, 10K
EA49X360	RV-3	SSB Modulation Adjust, 1K
EA49X359	RV-4	Meter Adjust, SSB Rec., 5K
EA49X363	RV-5	Meter Adjust, AM Rec., 10K
EA49X359	RV-6	SSB AGC Adjust, 5K
EA49X332	RV-7	Squelch Adjust, 20K
EA49X361	RV-8	Squelch Adjust, 200K
EA49X360	RV-9	AM Modulation Adjust, 1K
EA49X436	RV-10	RF Gain Adjust, 100K
EA49X437	RV-201	SSB RF ALC Adjust, 5K

CAT. NO.	SYM.	DESCRIPTION
TRANSISTORS, cont'd.		
EA49X332	RV-202	Meter Adjust, Transmit, 20K
EA49X438	RV-203	AWI Sensitivity Adjust, 50K
EA49X439	RV-204	Bias Adjust, 500 Ohms

CONTROLS

EA49X429	VR-1	Control, AM Power, 10W 6 Ohms
EA49X430	VR-2	Control, Volume, 50K
EA49X431	VR-3	Control, Squelch, 50K
EA49X432	VR-4	Control, Mic/RF Gain, 5K/50K
EA49X433	VR-5	Control, Clarifier, 50K

SWITCHES

EA93X342	SW-1	Channel Selector Switch Assembly w/P.C. Board
EA55X148	S-2	Rotary Switch, USB/LSB/AM
EA39X227	S-3	Slide Switch, NB/ANL
EA39X225	S-4	Slide Switch, Tone
EA55X133	S-5	Slide Switch, CB/PA

CONNECTORS

EA41X203	J-1	Jack, R.F. Connector
EA41X135	J-2	Jack, PA/Speaker
EA41X135	J-3	Jack, Ext. Speaker
EA41X156	J-4	Jack, DC, 2 pin
EA41X176	J-5	Jack, Microphone
EA34X53	N1-A	Socket, 9 pin
EA8X195	N1-B	Plug, 9 pin
EA34X54	N2-A	Socket, 12 pin
EA8X196	N2-B	Plug, 12 pin
EA34X55	N3-A	Socket, 6 pin
EA8X197	N3-B	Plug, 6 pin
EA34X53	N4-A	Socket, 9 pin
EA8X198	N4-B	Plug, 9 pin

CAPACITORS

EA30X62	C1-1,2 201,202, 203	20pf, Trimmer	
EA22X5	C1,49, 74,80	2200pf, 50V (.0022MF)	(M)
EA18X246	C2,4	47pf, 50V	(C)
EA18X217	C3	150pf, 50V	(C)
EA22X4	C5,25, 106,243, 250,288, 291,292, 507,508, 513	.047MF, 50V	(C)
EA18X152	C6,10,24, 43	10pf, 50V	(C)
EA18X232	C7	33pf, 50V	(C)
EA18X155	C8,9,20	22pf, 50V	(C)
EA18X186	C11	100pf, 50V	(C)

GENERAL ELECTRIC

REPLACEMENT PARTS - MODEL 3-5825B

CAT. NO.	SYM.	DESCRIPTION	
CAPACITORS cont'd.			
EA2525	C12	5pF, 50V	(C)
EA18X228	C13,17,19 21,26,33, 35,87,89, 90,91,101, 104	.01MF, 50V	(C)
EA22X14	C14,29,31	.022MF, 50V	(M)
EA18X200	C15	15pf, 50V	(C)
EA31X126	C16	3.3MF, 25V, Tan.	(E)
EA22X4	C18,47,77, 78	.047MF, 50V	(M)
EA2747	C22,86,93, 94	.047MF, 50V	(C)
EA18X201	C23	150f, 50V	(C)
EA18X186	C27,28,32, 100	100pf, 50V	(C)
EA31X246	C30	10MF, 16V Tan.	(E)
EA22X3	C36	6800pF, 50V (.0068MF)	(M)
EA2552	C38,83, 261,277	3.3MF, 25V	(E)
EA31X211	C39,75,76, 103,267	4.7MF, 25V	(E)
EA22X8	C40	4700pf, 50V (.0047MF)	(M)
EA2525	C44	5pf, 50V	(C)
EA18X141	C45	39pf, 50V	(C)
EA31X239	C50	3.3MF, 16V	(E)
EA31X246	C51,56,68, 71	10MF, 16V	(E)
EA31X214	C52,63,72, 85	47MF, 16V	(E)
EA22X16	C53	.033MF, 50V	(M)
EA18X224	C54	1000pf, 50V (.001MF)	(C)
RT2860	C55	4700pf, 50V (.0047MF)	(C)
EA18X224	C57	.01MF, 50V	(M)
EA18X203	C58,64	390pf, 50V	(C)
EA31X239	C59	3.3MF, 35V, Tan.	(E)
RT2315	C60	33MF, 16V	(E)
EA18X170	C61	270pf, 50V	(C)
EA22X24	C62,65	.068MF, 50V	(M)
RT4637	C66	470MF, 16V	(E)
EA31X200	C67	1000MF, 16V	(E)
RT5047	C69,70	220MF, 16V	(E)
EA31X216	C73	2.2MF, 25V	(E)
EA22X5	C88	2200pf, 50V (.0022MF)	(C)
EA18X228	C92,105, 266	.01MF, 50V	(C)
EA31X261	C96	3.9MF, 25V, Tan.	(E)
RT2860	C102	.0047MF, 50V (.0047MF)	(C)
EA31X246	C201	10MF, 16V, Tan.	(E)
EA31X204	C202	1MF, 35V Tan.	(E)
EA18X228	C203,205, 214,220, 226,232, 234,236, 237,238, 240,245, 258,263, 265,266, 268,269, 270,271, 276,280, 281,283, 285,295, 296,298, 304,501, 503,504, 505	.01MF, 50V	(C)

CAT. NO.	SYM.	DESCRIPTION	
CAPACITORS cont'd.			
EA22X14	C204,247, 257,289, 290,302	.022MF, 50V	(C)
EA31X194	C206,212, 228,260	33pf, 150V	(C)
EA18X218	C207,217, 273,275	220pf, 50V	(C)
EA18X217	C208	150pf, 50V	(C)
EA22X10	C209,216	1000pf, 50V (.001MF)	(M)
EA18X155	C210,262	22pf, 50V	(C)
EA18X248	C213	12pf, 50V	(C)
EA18X181	C215	27pf, 50V	(C)
EA22X5	C218	2200pf, 50V	(C)
RS6480	C219	100MF, 10V	(E)
EA18X254	C221	100pf, 50V	(C)
EA18X224	C222,223	1000pf, 50V (.001MF)	(C)
RT5774	C224	1800pf, 50V (.0018MF)	(M)
EA18X160	C225,279	2pf, 50V	(C)
EA18X152	C227	10pf, 50V	(C)
EA18X200	C229,293, 294	15pf, 50V	(C)
EA18X234	C230,241, 248,278	82pf, 50V	(C)
EA18X207	C231	56pf, 50V	(C)
RT4632	C233	45MF, 25V	(E)
EA18X174	C235,287, 300,301	3pf, 50V	(C)
EA18X273	C230	5pf, 50V	(C)
EA18X141	C242	39pf, 50V	(C)
EA18X246	C244,251	47pf, 50V	(C)
EA18X220	C246,254	470pf, 50V	(C)
EA18X218	C249	220pf, 50V	(C)
EA18X217	C252	150pf, 50V	(C)
EA18X221	C253	560pf, 50V	(C)
EA18X170	C255	270pf, 50V	(C)
EA18X202	C272	18pf, 50V	(C)
EA22X8	C274	.0047, 50V	(C)
EA31X204	C282,286, 299	1MF, 50V	(E)
EA31X246	C284	10MF, 16V	(E)
RT5269	C303	33MF, 6.3V	(E)
RT5044	C307	1MF, 50V, Tan.	(E)
EA31X201	C502,506, 510	1000pf, 50V	(C)

(M) MYLAR, (E) ELECTROLYTIC, (C) CERAMIC

RESISTORS

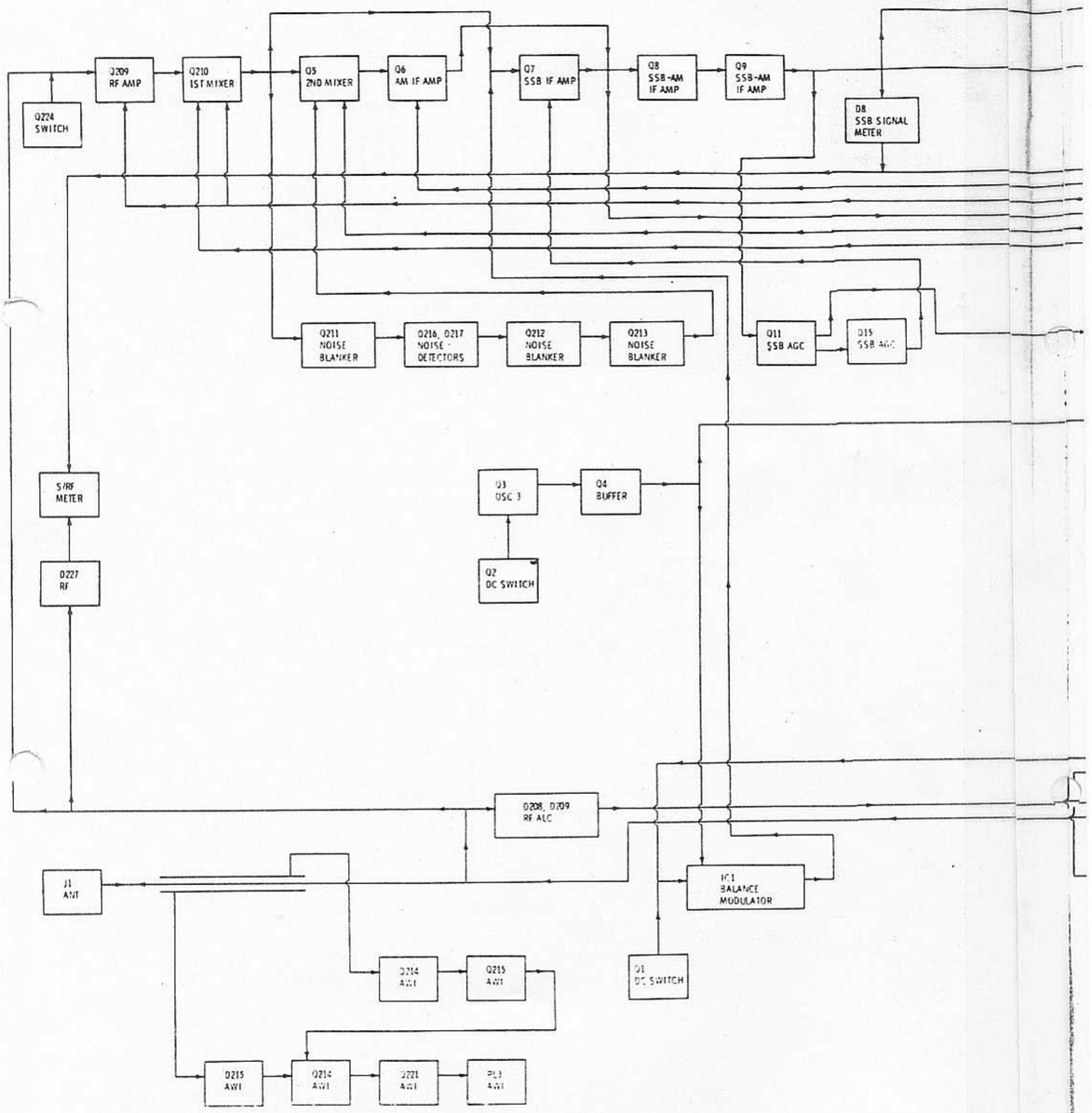
All resistors not listed are common values that may be found in the standard resistor list contained in the current issue of The AEPD Replacement Parts Catalog (RT9300).

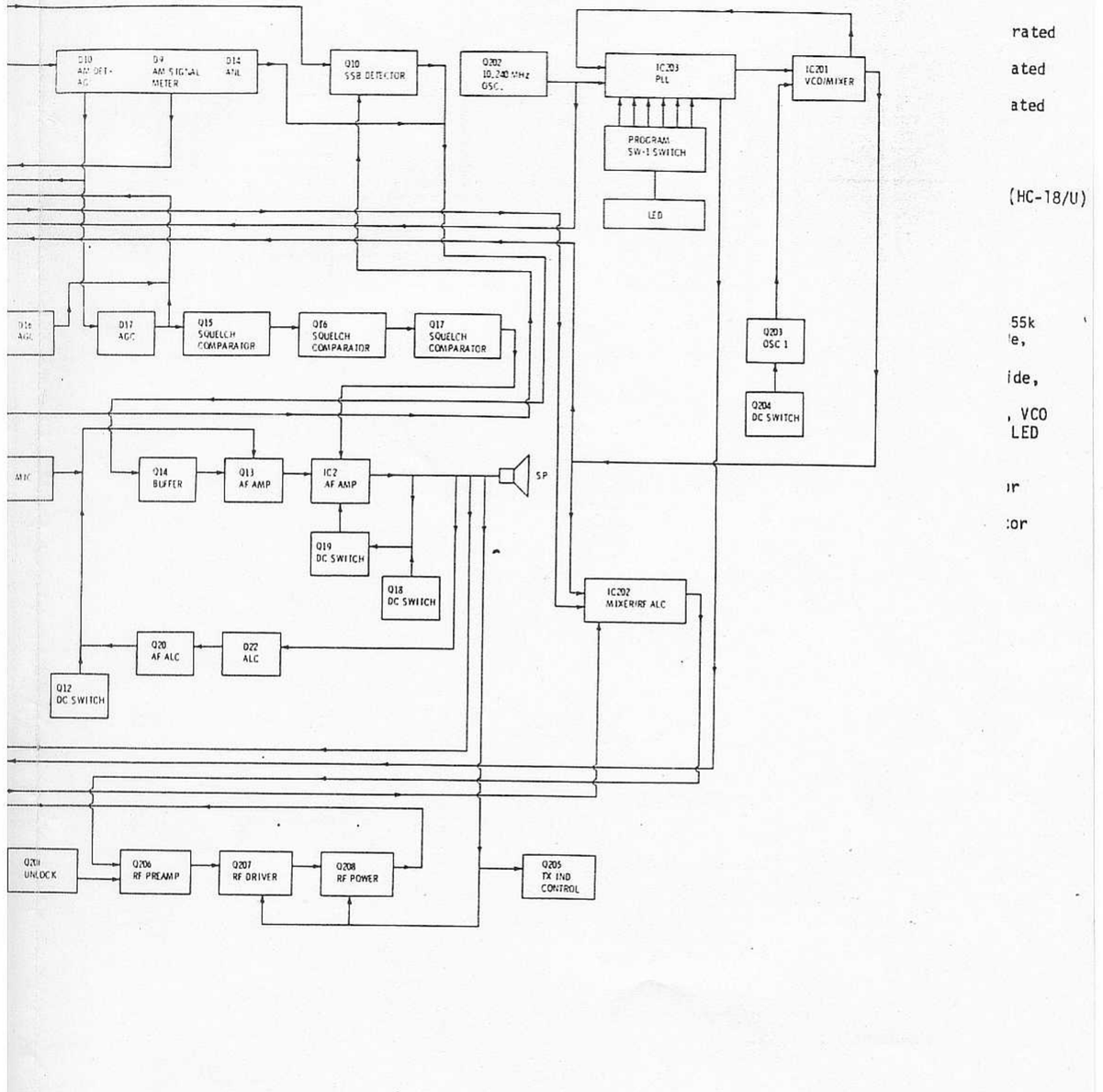
RT5253	R53,95	680 Ohms, 10%, 1/4W, Carbon
RT6197	R75,216, 275,278	82 Ohms, 10%, 1/4W, Carbon
EA14X57	R92	18 Ohms, 2W, Metal Oxide Film
EA13X111	R96	150 Ohms, 1/2W, Metal Oxide Film
EA13X112	R106	220 Ohms, 1/2W, Metal Oxide Film
EA13X204	R232	560 Ohms, 1/2W, Metal Oxide Film
EA13X203	R236	360 Ohms, 10%, 1/4W, Carbon

REPLACEMENT PARTS - MODEL 3-5825B

CAT. NO.	SYM.	DESCRIPTION
RESISTORS, con't.		
EA14X72	R237	100 Ohms, 1W, Metal Oxide Film
EA13X13	R238	12 Ohms, 10%, 1/4W, Carbon
N.S.I.	R256	560K, 10%, 1/4W, Carbon
N.S.I.	R257	820K, 10%, 1/4W, Carbon
EA13X109	R260	100 Ohms, 1/2W, Metal Oxide Film
EA13X54	R501	120 Ohms, 1/2W, Metal Oxide Film
MISCELLANEOUS		
EA42X4	MS-1	Resistor Array, 1.8K X 7
EA65X9	MS-2	Flexible Connector Wire, 15 Conductor
EA93X343	MS-3	LED P.C.Board w/components
EA93X344	MS-4	RF P.C. Board w/components
EA93X345	MS-5	IF/Audio P.C. Board w/components
EA2X941	MS-6	Ferrite Bead
EA1X657	MS-7	Screw, Pan Head (Nylon), 3 X 6mm
EA60X17	MS-8	Insulator, Transistor (Silicon)
EA60X15	MS-9	Insulator, Integrated Circuit (Mica)
EA2X942	MS-10	Heatsink, Integrated Circuit (Large)
EA2X678	MS-11	Heatsink, Integrated Circuit (Small)
EA2X943	MS-12	Heatsink, Q207
EA2X944	MS-13	Heatsink, Q208
EA2X945	MS-14	Heatsink, Q216
EA2X786	MS-15	Spacer, Crystal (HC-18/U)
EA75X4	X-1	Crystal, Osc., 10.695MHz
EA75X6	X-201	Crystal, Osc., 10.240MHz
EA75X9	X-202	Crystal, Osc., 10.5025 MHz
EA36X232	CF	Filter, Ceramic, 455kHz
EA36X376	MXF-1	Filter, Metal Oxide, 10.6935 MHz
EA36X333	MXF-2	Filter, Metal Oxide, 10.695MHz
EA35X134	VCO	Oscillator Block, VCO
EA16X308	LED	Display, Channel LED
EA62X154	M-1	Meter, S/RF
EA95X127	SP-1	Speaker, 8 Ohms
EA41X202	PL-2	Lamp, TX Indicator (Ref. #3)
EA41X202	PL-3	Lamp, AWI Indicator (Ref. #3)

N.S.I. = Not Sold Independently





BLOCK DIAM

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