$3.00 per copy

GX3000U

35 Watt UHF/FM Transceiver

Contains:

- ☐ Specifications
- ☐ FCC Information
- ☐ Operation
- ☐ Installation
- ☐ Theory of Operation
- ☐ Performance Tests
- ☐ Alignment Procedure
- ☐ Complete Drawings
- ☐ Parts Lists

Service Manual

Standard Communications

GX3000U

Sixty-Four-Channel Thirty-Five-Watt UHF/FM Transceiver

This manual is intended for use by qualified technicians and includes all necessary information pertaining to GX3000U operation, installation, circuit design, and Maintenance. Information on the installation of the TN22 and TN23 tone board is also included. Changes which occur after the printed date will be incorporated in supplemental service publications.

The complete GX3000U transceiver model numbers are:

- GX3000UAA111
- GX3000UAA131
- GX3000UAA141
- GX3000UAA151

Printed: 1/85

Contents

Specifications 1

Performance specifications are nominal unless otherwise indicated.
Specifications are subject to change without notice.

1.1 GENERAL

Frequency Range	450-512 MHz*
Number of Channels	64
Input Voltage	13.6 VDC
Current Drain:	
Standby	500 mA
Receive	1.5 A
Transmit	10 A
Channel Spacing	25 kHz
Dimensions	2.36-H x 7.24-W x 10.08 -D in.
Weight	5.5 lbs.
Compliance	FCC Parts 21 22,90,DOC
FCC Type Acceptance Numbers	APV9T22883
DOC Type Acceptance Numbers	363-192-4111

*F3 = 450 to 470 MHz
F4 = 470 to 490 MHz
F5 = 490 to 512 MHz

1.2 TRANSMITTER

Measurements are made in accordance with EIA Standard RS-152-B.

RF Power Output	35W (±2.5 MHz) 31W (±5 MHz) 18W (±10 MHz)
Spurious and Harmonic Emissions	65 dB
FM Hum and Noise	40 dB
Modulation	±5 kHz
Audio Distortion	5% max.
Frequency Stability:	
-30° to +60° C	±5 ppm
Channel Spread	±10 MHz

1.3 RECEIVER

Measurements are made in accordance with EIA Standard RS-152-B.

Sensitivity:	
12 dB SINAD	0.3 uV
20 dB Quieting	0.4 uV
Squelch Sensitivity:	
Threshold	0.3 uV
Modulation Acceptance Bandwidth	± 7.0 kHz
Selectivity	70 dB
Spurious and Image Rejection	85 dB
Intermodulation Rejection	70 dB
Audio Power Output at 5% Distortion	3 W
Frequency Stability:	±5 ppm max
Channel Spread	±5 MHz

General Information 2

2.1 DESCRIPTION

The Standard Communications Corp. (SCC) GX3000U is a semiduplex UHF/FM mobile transceiver that incorporates operator-programmable priority scan. Frequencies for each of 64 channels may be programmed into the GX3000U EPROM. A temperature compensating circuit provides frequency stabilization over -30°C to +60°C.

The scanning function looks for a signal on any of the channels programmed for scanning. If a priority channel is programmed, the scanning starts with this channel. If no priority channel is programmed, scanning starts with the displayed channel.

The following features may be programmed into the EPROM:

- busy channel lockout
- one priority channel
- up to 37 discrete EIA CTCSS tone frequencies (when TN22 is installed)
- time out timer with programmable time ranging from 0.5 min to 7.5 min in increments of .5 min
- channel frequencies

The priority channel may be changed by the operator, and scan channels are programmable by the operator.

A back-up feature permits operator programmed channels and the working channel to be retained in memory when the power is off. If back-up is not in effect, the unit powers up to channel one.

The EPROM is programmed by SCC or the dealer. An EPROM Burner (A3400) is available for programming the EPROM. EPROM's may be reprogrammed numerous times after they are erased.

2.2 OPTIONS

Options available for use with the GX3000U include:

A00416006.....Tower Clamp for AT26 & AT27
AR1.....Accessory Receptacle Kit
AT10.....UHF 5 dB Gain Antenna
AT27.....UHF 8.25 dB Gain Antenna
AT56.....UHF 4.5 dB Gain Antenna
BM1.....Mobile Mount
BST-1.....Base Station Tray
CM1.....Cowl Mount
MM1.....Magnetic Mount
MP600.....Base Station Microphone
MP502.....Telephone Type Microphone; black or white (used with PH506B)
PH506B.....Hanger for MP502 with PC Switch; black
RCU-1.....Remote Control Unit
REU-1.....Remote Extension Unit
RTU-51A.....Remote Terminal Unit
TM1.....Trunk Mount
TN22.....CTCSS Multiple Tone Board
TN23.....CTCSS Single Tone Board
UG-1186/U.....Antenna Connector
WW1.....1/4 Wave Whip Antenna
12/120-12.....12 Amp Power Supply
201S.....7 Watt Extension Speaker; brown, grey or white

All necessary service information for each of these devices is included separately with each unit.

FCC Information 3

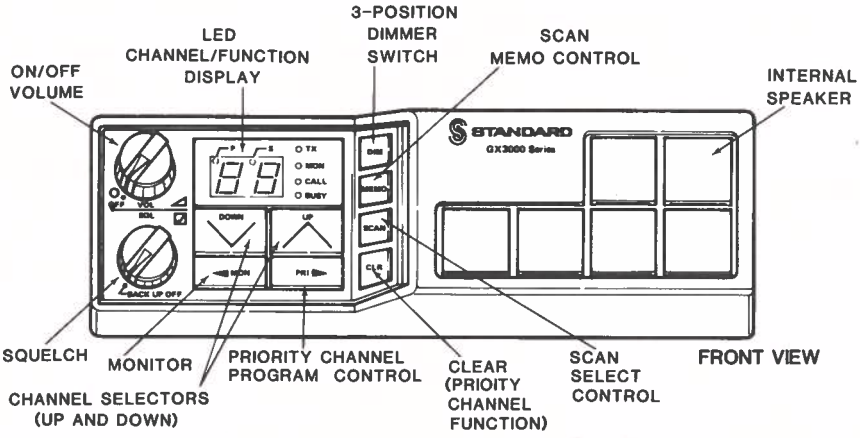
The GX3000U complies with the Federal Communications Commission (FCC) requirements that regulate Business Radio Service and other services within the 450 to 512 MHz range. The user must know and comply with all applicable part of the FCC Rules and Regulations. Rules applicable to each service may be ordered from:

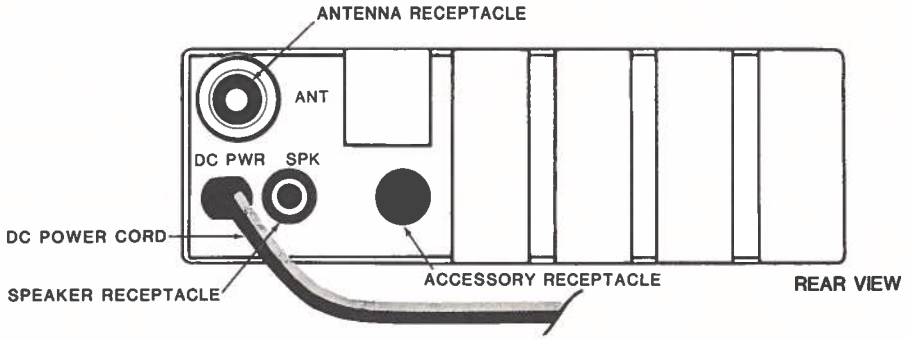
SUPERINTENDENT OF DOCUMENTS
Government Printing Office
Washington, D.C. 20402

A valid station license and call sign are required before operating the GX3000U. It is the user's responsibility to apply for and obtain an FCC radio license. The following data pertaining to the GX3000U will by included on the FCC license application.

Type Accepted ..... FCC Parts 21, 90 and 95
Output Power ..... 35 watt
Emission 16F3
Frequency Range ..... 450 to 512 MHz
Type Number APV9T22883

Controls & Connections 4





Installation 5

5.1 FCC REQUIREMENTS

FCC regulations require that the transceiver's deviation and frequency be tested before initial installation or operation. Before conducting the following procedure, conduct the performance test in the Maintenance Section of this manual.

5.2 PROCEDURE

1. The transceiver can be mounted at any angle. Choose a location to mount the transceiver that allows:

   - accessibility to front panel controls
   - connections to a power source and an antenna
   - nearby space for installation of a microphone hanger

2. The front panel of the GX3000U may be positioned in one of two positions. The normal position, tilted upward, is for installation on or below the dash. For overhead installation, the following steps invert the front panel to allow viewing of the controls and display:

   a. Remove four screws from each side of the transceiver.

   b. Remove the top and bottom covers.

   c. Two screws on each side attach the front panel to the transceiver. Remove these screws.

   d. Invert the front panel position.

   e. Attach the front panel using the screws removed in Step c.

   f. Attach the top and bottom covers using the screws removed in Step a.

   g. Install the transceiver in an inverted position so that the front panel is tilted downward.

3. Mount the bracket using the washers, nuts, and long hex head bolts.

4. Thread the mylar washers onto the mounting bracket knobs.

5. Position the transceiver within the bracket arms, matching the bracket and transceiver notches to effect the desired positioning.

6. Secure the transceiver to the brackets with the mounting knobs.

7. At the rear of the transceiver, connect the antenna cable to the antenna jack (see Figure 2).

8. Connect the red power cord to a suitable DC source (13.6 VDC ±20%, 10 amp current). Connect the black power cord to negative ground. See Figure 2 for this step.

9. Use a through line wattmeter to confirm that the voltage/standing-wave ratio is 1.5 to 1 or better.

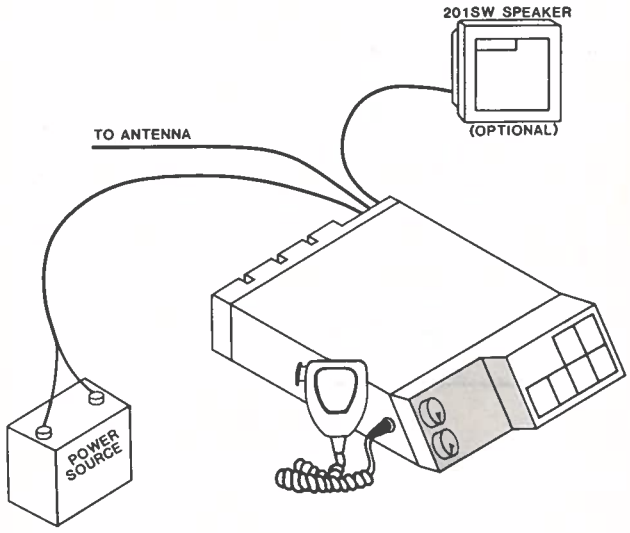


Figure 2. GX3000U Installation Interconnections

5.3 OPTIONAL INSTALLATIONS

The GX3000U also accepts tone boards TN22 and TN23.

- TN22 is a multi-tone tone board capable of separate tones for each channel.
- TN23 is a single-tone tone board having one tone for all channels.

To use a CTCSS tone board, the following three steps are necessary:

1. Reprogram the EPROM.
2. Install the tone board.
3. Unsolder a jumper.

The following instructions describe installation and alignment for both tone boards. Refer to Figure 3 for the installation location.

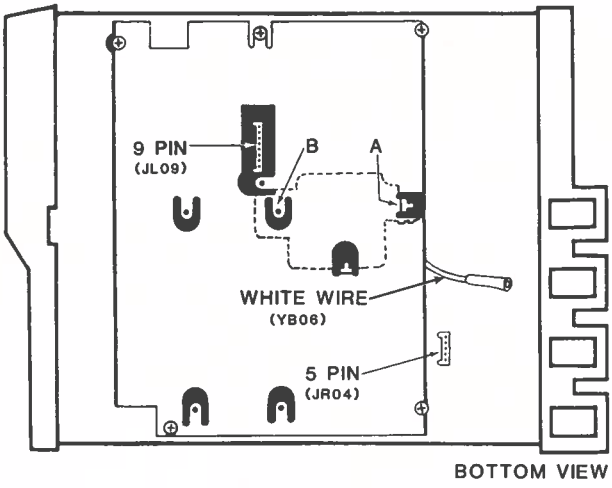


Figure 3. Tone Board Installation

5.3.1 TN22 Tone Board

A. Installation

1. Remove the transceiver top and bottom cover.
2. Install the TN22 in the following manner.
   a. Ensure that the tone board is installed in such a way that it is sitting atop the transceiver shield bracket (see Figure 3) with the component side up.
   b. Hook the TN22 tone board to the hook at point A so that the model number end can be screwed onto the tab at point B (see Figure 3).
   c. With a 2.6 mm self-tapping screw, secure the model end of the tone board to the tab at point B (see Figure 3).
   d. Plug the 9-pin socket into transceiver plug JL09.
   e. Plug the 5-pin socket into transceiver plug JR04.
   f. Plug the white wire from TN22 into socket YB06 of white wire from the radio.
3. On the component side (top of radio) of the GX3000 series, unsolder "Flying Joint" JR10. JR10 is located near the 8-pin connector JR01.

   NOTE: The frequency must be programmed by the EPROM, (FX10) in radio.

B. Encoder Alignment

1. Connect the test equipment as shown in Figure 4.
2. Select any programmed CTCSS channel.
3. Set the tone generator to the desired frequency.
4. Set the communications monitor to the radio transmitter frequency.
5. Key the transmitter and ensure that the Lissajous figure in the communications monitor is a stationary circle.
6. Key the transmitter and adjust R106 on the tone board until the tone deviation is $\pm$650 Hz.

C. Decoder Alignment and Test

1. If the GX3000 MON LED is on, depress the MON key until the MON LED turns off.
2. Set the communications monitor to the receive frequency of the radio .
3. Modulate the signal with the desired tone frequency, with a deviation of $\pm$500 Hz.
4. Set the signal generator output to the "OFF" position.

5. Connect the hang up button on the rear of the microphone to ground. Audible noise should disappear.

6. Gradually increase the RF signal level. The tone squelch opening level should not exceed 10 dB QS.

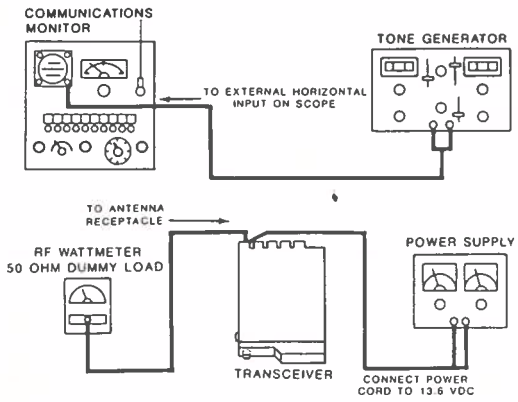


Figure 4. Tone Board Encoder Alignment

5.3.2 TN23

A. Installation

1. Remove the transceiver top and bottom cover.

2. Install the TN23 in the following manner.

   a. Ensure that the tone board is installed in such a way that it is sitting atop the transceiver shield bracket (see Figure 3).

   b. Hook the TN23 tone board to the hook at point A so that the model number end can be screwed onto the tab at point B (see Figure 3).

   c. With a screw, secure the model number end to the tab at point B (see Figure 3).

   d. Plug in the 9-pin socket into the transceiver plug JL09.

   e. Plug in the 5-pin socket into the transceiver plug JR04.

3. On the component side (top of radio) of the GX3000 series, unsolder "Flying Joint" JR10. Refer to Figure 7.

4. Use the six DIP switches on TN23 to program the tone frequencies (see Figure 16).

   NOTE: If the tone board is installed in the radio, the EPROM (FX10) must be programmed to accept tone board installation/operaton in receive mode.

5. For programmed tones in the frequency range of 67 thru 120 Hz, cut RA25 on the tone board . RA25 is located near QA02 at end of 8-pin IC TL062.

B. Encoder Alignment and Decoder Test.

1. Connect the test equipment as shown in Figure 12.

2. Set the communcications monitor to the radio transmitter frequency.

3. Key the transmitter and adjust R07 until the tone deviation is ±650 Hz.

4. If the MON LED is on, push the MON key until the MON LED turns off.

5. Set the communications monitor to the receive frequency of the radio.

6. Modulate the signal with the desired tone frequency, with a deviation of ±500 Hz.

7. Set the signal generator output to the "OFF" position.

8. Connect the hang up button on the rear of the microphone to ground. Audible noise should disappear.

9. Gradually increase the RF signal generator level. The tone squelch opening level should not exceed 10 dB QS.

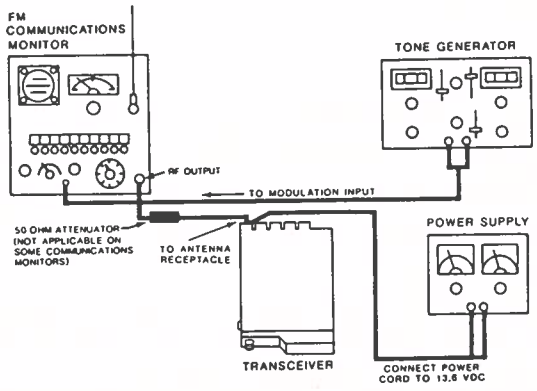


Figure 5. Tone Board Decoder Test

Operation 6

1. Ensure the following connections are made:

   - The power cord with a 10 amp fuse is connected to the power source.
   - The antenna is connected to the jack marked "ANT" on the back of the unit.
   - The MP566 Microphone is connected to the 5-prong jack on the left side of unit.

2. Rotate OFF/VOLUME control clockwise to ON.

3. Select the desired channel using the UP and DOWN keys as follows:

   - Press the UP key to select the next higher channel.
   - Press the DOWN key to select the next lower channel.
   - Channel selection automatically steps while the UP or DOWN key is held depressed. Selection stops when key is released.

   NOTE: If the selected channel is the priority channel, the dot labeled "P" will light.

4. Adjust the ON/VOLUME control to the desired volume of received signals.

5. With no signal present, rotate the SQUELCH control clockwise until the background noise just disappears.

FEATURES

Priority Channel

Program a channel as the priority channel as follows:

- Select desired channel as in Step 3.
- Press the PRI key.
- Program the channel as a scan channel (see Scan Channels).

A channel which has been programmed as a priority channel may be disabled as follows:

- Select the priority channel as in Step 3.
- Press the PRI key to disable the priority status of the channel.

Back Up

The back up feature enables the working channel and the operator-programmed priority and scan channels to be retained in memory when the power is turned off. Back up is in effect when the SQL key has not been turned counterclockwise past the click to the BACK UP OFF position.

Scan Channels

Program scan channels as follows:

- Select the desired channel as in Step 3.
- Press the MEMO key.
- Pressing the MEMO key again returns the channel to normal, non-scan status.
- Repeat this procedure for each channel to be programmed as a scan channel.

Scanning

To use the scan feature, the squelch must be set as in step 5, there must be no signal present, and the microphone must be hung up. The scan mode is then entered by pressing the SCAN key. The channel display will be blank, and the dot labeled "S" will blink. Scanning then procedes in one of the following two modes:

a) Regular scan (no priority channel is programmed):

   Scanning starts with the lowest channel and procedes sequentially through channels selected as scan channels until a signal is encountered.

   When a signal is encountered, the busy channel is displayed and scanning stops.

b) Priority scan (priority channel is programmed):

   Scanning starts with priority channel.

   If a signal is detected in the priority channel, scanning stops.

   If no signal is detected in the priority channel:

   - Other scan channels are scanned alternately with priority channel.

- The priority channel continues to be scanned even when the scanning stops on a channel other than the priority channel.

  If the working channel is no longer busy, scanning begins again.

  All keys except the CLR key are disabled during scanning.

Taking the microphone off its hanger will stop scanning, but scan mode will not be exited.

Scan mode is exited when the CLR key is pressed or the transmitter is keyed.

Clear

The CLR key operates as follows:

- When in scan mode, pressing CLR exits scan mode.
- When current channel is other than priority channel, pressing CLR again recalls the priority channel. An additional push at this point returns to the previous channel.

Priority Scan

In priority scan mode, the time spent sampling the busy channel and the time spent scanning are as follows:

a) Without tone board:

- Stay at working channel for 1,000 milliseconds.
- Scan priority channel for 50 milliseconds.

b) With tone board:

- Stay at working channel for 1000 milliseconds.
- Scan priority channel for 300 milliseconds.

Monitor

It is illegal to transmit on a channel without first monitoring it. A channel is monitored as follows:

a) If a tone frequency is programmed for the channel:

   lift the microphone off the bracket

   or

   press the MON key to suppress the tone frequency and monitor the channel.

   - Press MON again to mute audio and reinstate the tone frequency.

b) If no tone frequency is programmed for the channel:

   - Monitoring is continuous.

Display Brightness

The brightness of channel display can be controlled by the DIM key. There are three levels of brightness, and the GX3000U powers up to the brightest level. Pressing the DIM key dims the brightness by one step.

- If DIM is pushed when display is at the dimmest level, display defaults to the brightest level.

LED Indicators

The LED indicators function as follows:

- S is lit during scanning mode.
- P is lit during priority scanning or when the current channel is the priority channel.
- TX is lit during transmission. When programmed for time-out timing, the time out timer stops transmission when the time limit has been reached, and the TX light is off.
- MON

  If CTCSS is programmed for the channel:
  MON is lit when the MON key is pushed and channel monitoring is in progress.

  If CTCSS is not programmed for the channel:
  MON is lit during RX mode.

- BUSY is on when the channel status is busy, without regard to CTCSS tone presence.
- CALL is used for applications as required.

Time out timer

If the time out timer feature is programmed:

- A beeping alarm sounds 10 seconds before the transmitting time limit.
- Transmission is cut off when this limit has been reached.
- Timer is reset by releasing push-to-talk button momentarily.

Theory of Operation 7

Refer to the transceiver block diagram (Figure 6) and the schematics at the rear of the manual for the following description.

7.1 PLL FREQUENCY SYNTHESIZER

Follow the block diagram in Figure 6 for this section.

7.1.1 Reference Signal

The output of the 6.4 MHz reference oscillator circuit QP03 is divided by QP01 to produce a 12.5 kHz reference signal.

The oven circuit provides heat compensation for crystal XP01 in order to prevent the frequency drift when the temperature is low. Frequency drift is kept within ± 5 ppm.

7.1.2 VCO

The oscillation frequency of the VCO is controlled by the voltage applied to QV03. The VCO output is divided according to the pulse swallow counter created by QP02 and QP01, corresponding to the channel frequency.

7.1.3 N Number

QP01 contains the N number. This number is the frequency set in the EPROM. It is serially transfered to QP01.

7.1.4 Phase Detector

The phase detector in QP01 compares the divided VCO frequency with the reference frequency. If these two frequencies are in phase, the DC correction voltage from QP01 to the VCO remains constant. If the divided frequency is lower than the reference frequency, the DC correction voltage from QP01 is increased. If the divided frequency is greater than the reference frequency, the DC correction voltage is decreased.

7.1.5 VCO Correction

The correction voltage travels through QP32 to QV03. The capacitance of QV03 varies indirectly with the DC correction voltage.

7.1.6 Phase-Locked-Loop

The VCO output then travels through the phase-locked-loop circuit again and again. The loop becomes locked when the reference frequency matches the divided frequency from the VCO.

7.2 RECEIVER

The receiver uses a double conversion superheterodyne to operate in the frequency range 450 to 512 MHz.

7.2.1 RF Stage

The incoming RF signal passes through the antenna and is amplified by RF AMP QR03. The amplified signal passes on to the gate of the first mixer QR04 to be mixed with the first local oscillator.

7.2.2 First Local Oscillator

The VCO originates the first local oscillator. The first local oscillator from the VCO passes through LP62 and LP63 and is appplied to the gate of the first mixer QR04.

7.2.3 First Intermediate Frequency (IF)

The heterodyning action of the first mixer produces a 45 MHz intermediate frequency (first IF) which is fed through a bandpass filter (LR33 and LR34), passed through two two-pole crystal filters (FR30 and FR31), and amplified by the first IF AMP (QR31 and QR33).

7.2.4 Second Local Oscillator

Crystal XP50 generates a second local oscillator signal of 45.455 MHz. This is applied to the base of the second mixer QR50.

7.2.5 Second Mixer, Second IF

The signal from the first IF AMP is applied to the base of QR50 and heterodyned with the signal from the second local oscillator. A second IF of 455 KHz is produced and passed through ceramic filters FR50 and FR51.

The second IF is then applied to QR56 and passed through QR56's internal detector circuit to recover the audio.

7.2.6 Volume Control and AF Amplifier

The detected signal, passed through the de-emphasis circuit (CR80 and RR63), is amplified by AF PREAMP QA03 and applied to AF volume control RG01. The AF signal which passed through RG01 is amplified by AF AMP QA01. This signal drives speaker NG01.

7.2.7 Squelch Circuit

The signal for the squelch circuitry is obtained from QR56, detected by QR54 and QR55, and applied to squelch control RG02. This DC voltage controls a switch in QR56 which in turn controls QA04 to disable AUDIO PREAMP QA03.

7.3 TRANSMITTER

The transmitter delivers 35 watts in the frequency range of 450 to 512 MHz.

7.3.1 Microphone Amplifier

The audio signal from the microphone travels through QM01. QM01 and associated circuitry constitute a pre-emphasis characteristic microphone amplifier.

7.3.2 Filter and Attenuator

The amplified signal then procedes through additional circuitry of QM01 where it is limited and passed through a roll-off filter. The signal from QM01 is amplified by AMP QP32 (1/2) and then travels through the FET attenuator QP33.

7.3.3 RF Signal

Next, the signal is applied to the VCO, and then directly to the 6.4 MHz REF circuit to obtain a modulated signal.

7.3.4 RF Amplifier

The output from the VCO is output to the pre-amp stage and is amplified by QT01, QT02, and QT03. QT01 through QT03 are controlled by TX +8V. This TX +8V is synchronized to the PLL unlock circuit. This circuit prevents transmission when it is unlocked.

7.3.5 Power Module

The signal amplified by QT03 is amplified by the power module QB01 and further amplified by QB02. The QB01 output is controlled by APC +B to maintain constant RF output power.

7.3.6 Automatic Power Control (APC)

The RF output power is sampled by CB35, rectified by QB04, and applied to APC control RC04. This voltage is applied to QC04, QC05, and QC06 to control the supply voltage on Driver QB01, maintaining constant power output.

As the temperature of QB01 and QB02 increases, the resistance of posistor QB07 increases. The voltage that flows to QB01 and QB02 decreases.

7.3.7 SWR Protector Circuit

QB05 rectifies any reflected power caused by antenna mismatch. This rectified power is applied to QC03 and then passes on to the APC circuit. RC02 adjusts the maximum SWR level before the RF power is reduced.

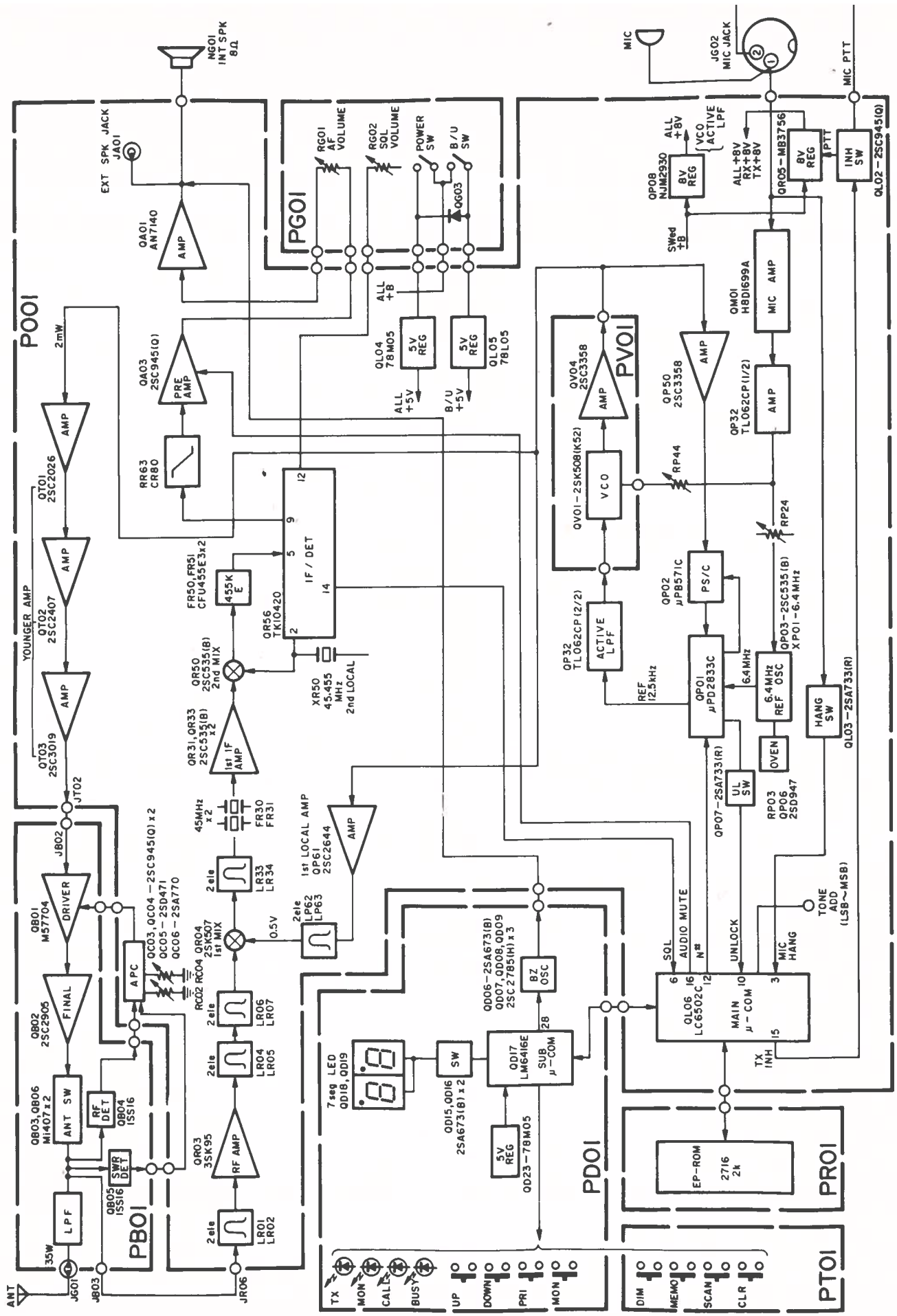


Figure 6. GX3000U Block Diagram

Maintenance 8

8.1 FCC REQUIREMENTS

The FCC requires that the deviation and frequency of the transceiver be checked annually.

8.2 PRECAUTIONS

The inherent quality of the solid-state components used in this transceiver provide many years of continuous use. Take the following precautions to prevent damage to the transceiver.

- Never key the transmitter unless an antenna or suitable dummy load is connected to the tranceiver's antenna receptacle.
- Ensure that the input voltage does not exceed 16 VDC or fall below 11 VDC.
- During alignment, do not transmit for more than 10 seconds at a time. Transmitting over longer periods can cause heat build-up and transistor damage.

8.3 TEST APPLICATIONS

- Performance test: conducted to check overall transceiver operation. This should be performed before transceiver sale/installation.
- Alignment: conducted if the transceiver fails the performance test or if a critical electrical component has been replaced. SCC recommends that alignment be performed whenever maintenance is performed.
- Troubleshooting: conducted after alignment to isolate a fault in the transceiver.

8.4 TEST EQUIPMENT

The following test equipment, or its equivalent, is necessary for GX3000U maintenance.

EQUIPMENT	MODEL
FM Communications Monitor (service monitor)	Cushman CE-6A
RF Wattmeter with 50 load	Bird 6154
Tone Generator	Cushman CE-11
Voltmeter	Hewlett Packard 427A
RF Probe	Hewlett Packard 11096B
Frequency Counter	Hewlett Packard 5314A
Oscilloscope	Hewlett Packard 1220A
DC Ampere Meter	Simpson 374
Power Supply	Adjustable 11 to 13.6V, 25 Amp

8.5 ALIGNMENT

The GX3000U alignment points are shown in Figure 8. After connecting the test equipment, ensure that the supply voltage is 13.6 V.

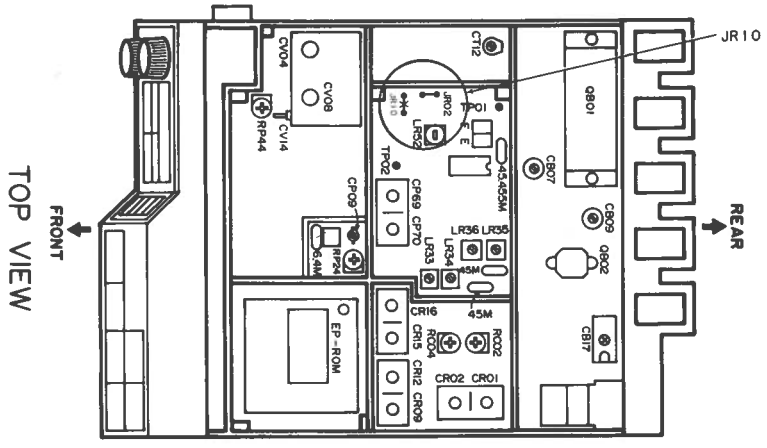


Figure 7. GX3000U Alignment Points

8.5.1 PLL

Connect the test equipment as illustrated in Figure 8.

1. Connect a voltmeter with an internal resistor greater than 500 k ohm to CV14.
2. Set the transceiver to a programmed channel, and key the PTT (push to talk button).
3. Adjust CV08 so that the voltage at CV14 in the TX mode is 3.5 V.
4. Unkey the PTT.
5. Adjust CV04 so that the voltage at CV14 is 3.5 V.
6. Repeat Steps 2 through 5.
7. Connect a frequency counter to TP02.
8. Adjust CP09 so that the indicated frequency is 45 MHz below the frequency of the programmed channel selected in Step 2.

8.5.2 Transmitter

1. Connect the test equipment as illustrated in Figure 8.
2. Connect an RF power meter and a dummy load to the antenna connector of the unit, and depress the PTT switch.
3. Set the power supply voltage to 11.0 V.
4. Turn RC02 and RC04 fully clockwise.
5. Adjust CV04 so that the voltage at CV14 is 3.5 V.
6. Change the power supply voltage to 13.6 V and repeat Step 5.
7. Adjust RC04 so that output power is 37.0 W.
8. Connect a linear detector and dummy load to the antenna connector of the transceiver.

   NOTE: Attach a capacitor (10 uF/16 V) between the audio generator and Mic connector pin 1 , with the "+" side connected to the transceiver.
9. Set the signal generator to 2 MHz above the frequency of a programmed channel.
10. Turn RP24 fully counter clockwise and set the audio generator output to 50 mV.
11. Using RP24, adjust the deviation to ±4.5 kHz.

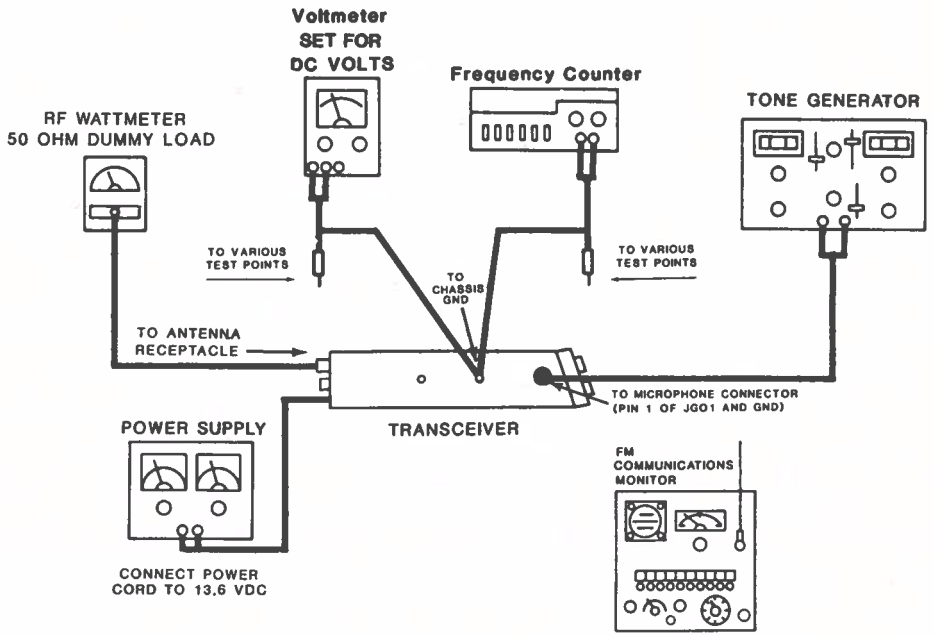


Figure 8. TX/PLL Test Setup

12. Turn RP24 clockwise until a deviation of ±4.5 kHz is again attained.

13. Lower the audio generator output by 20 dB, and use RP44 to adjust for minimum distortion.

14. Adjust the audio generator output to produce a deviation of ±3 kHz.

15. Increase the audio generator output by 20 dB, and use RP24 to adjust to a deviation of ±4.5 kHz.

16. Repeat Steps 13 through 15.

8.5.3 Receiver

1. Connect the test equipment as illustrated in Figure 9.

2. Connect a signal generator to the antenna connector.

3. Connect a 4 dummy load, an RF voltmeter, and an oscilloscope to the external speaker jack.

4. Connect a 30 uA meter to TP01.

5. Set the AF volume to the center position.

6. Adjust LR52, LR33, LR34, LR35, and LR36 for maximum noise on the AC voltmeter.

7. Set the signal generator to a programmed channel frequency with a deviation of ±5 kHz.

8. Set the transceiver to a programmed channel.

9. Apply the signal from the signal generator to the transceiver.

10. Adjust CR01, CR02, CR09, CR12, CR15, CR16, CR69, CR70, LR33, LR34, LR35, and LR36 for maximum meter deflection at TP01.

    NOTE: Ensure that the signal generator output is lowered below the meter's saturation level.

11. Repeat Step 10 several times.

12. Adjust the AF volume to approximately 1 V.

13. Adjust LR52 for maximum reception waveforms.

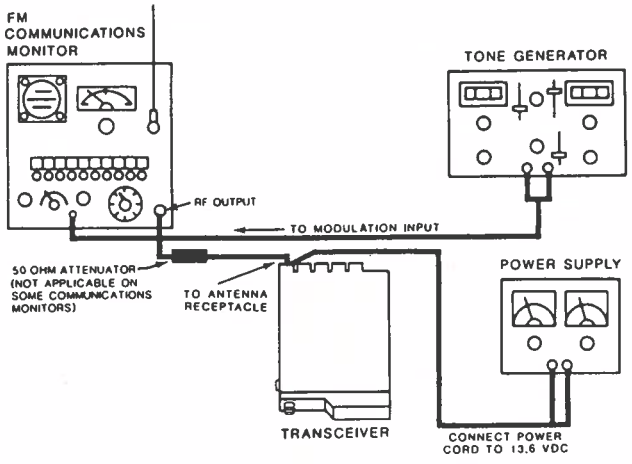


Figure 9. RX Test Setup

When the front end range is 10 MHz, perform the following additional steps:

14. Set the signal generator and the transceiver channel to a frequency near, but above, the low edge.

15. Apply a signal from the signal generator to the transceiver.

16. Adjust CR12 and CR16 for maximum meter deflection at TP01.

17. Ensure that the highest frequency still meets the specifications. If it does not, repeat Steps 14 through 17, using a slightly higher frequency for Step 14.

8.6 PERFORMANCE TEST

8.6.1 Microprocessor

Many of the features unique to the GX3000 are governed by the microprocessor. The program written for the microprocessor controls the following functions:

o channel display

o transmit and receive frequencies

o priority scan

o tone encode and decode frequencies

Perform the following steps to test these functions.

1. Connect a 50 ohm dummy load to the antenna receptacle.

2. Turn on the off/volume control. Confirm that the channel display illuminates showing either the lowest channel or the priority channel (if the priority channel is programmed).

3. Press the UP button several times. Confirm that the channel number increases one step each time the UP button is depressed.

4. Press the UP button and hold it depressed. Confirm that the channel numbers increase at a rate of approximately 6 ch per second.

5. Repeat Steps 3 and 4 for the DOWN button.

6. Ensure that the squelch control is in the Back up, off position. Make note of the current channel.

7. Turn the off/volume control off and then on. If the current channel is Step 6 was the priority channel, the transceiver must power up to the priority channel. Otherwise, the transceiver must power up to channel 1.

8. Press the MON key. If a tone board is installed, the audio must be muted.

9. Press the MON key again. If a tone board is installed, Ensure that the audio returns.

10. Depress the DIM button. Confirm that the display illumination level changes. There are three levels of illumination.

11. Depress the PRI button once. If the current channel is not on the EPROM priority channel, the "P" indicator must illuminate. Depress the PRI button a second time and confirm that the "P" indicator goes out.

12. Depress the MEMO button. Confirm that the "S" indicator illuminates.

13. Depress the MEMO button a second time. Confirm that the "S" indicator goes out.

14. Enter several channels into scan memory by depressing the MEMO button while stopped on each of several different channels.

15. Ground the microphone hanger to the chassis.

16. Set the squelch fully clockwise.

17. Depress the SCAN button. The "S" indicator must start blinking and the channel display must go blank. This indicates that scanning is taking place.

18. Unground the microphone. The transceiver must stop scanning. The "S" indicator must stop blinking and remain on. The channel display must show the channel that was being scanned when the microphone was ungrounded.

19. Ground the microphone. The transceiver must start scanning.

20. Depress the CLR button. Scanning must stop.

21. Depress the SCAN button. Confirm that the display is blank and that the "S" indicator starts blinking. This indicates that scanning is taking place.

22. Unground the microphone. Confirm that scanning stops.

23. Depress the PTT button on the microphone. The TX light must illuminate.

24. Ground the microphone hanger. Confirm that the transceiver stays on the channel that was transmitted on.

25. Unground the microphone hanger and press the PTT button. Confirm the following:

    - The radio beeps 10 seconds before the timer duration is reached.
    - The radio stops transmitting when the timer duration is reached.

8.6.2 Transmitter

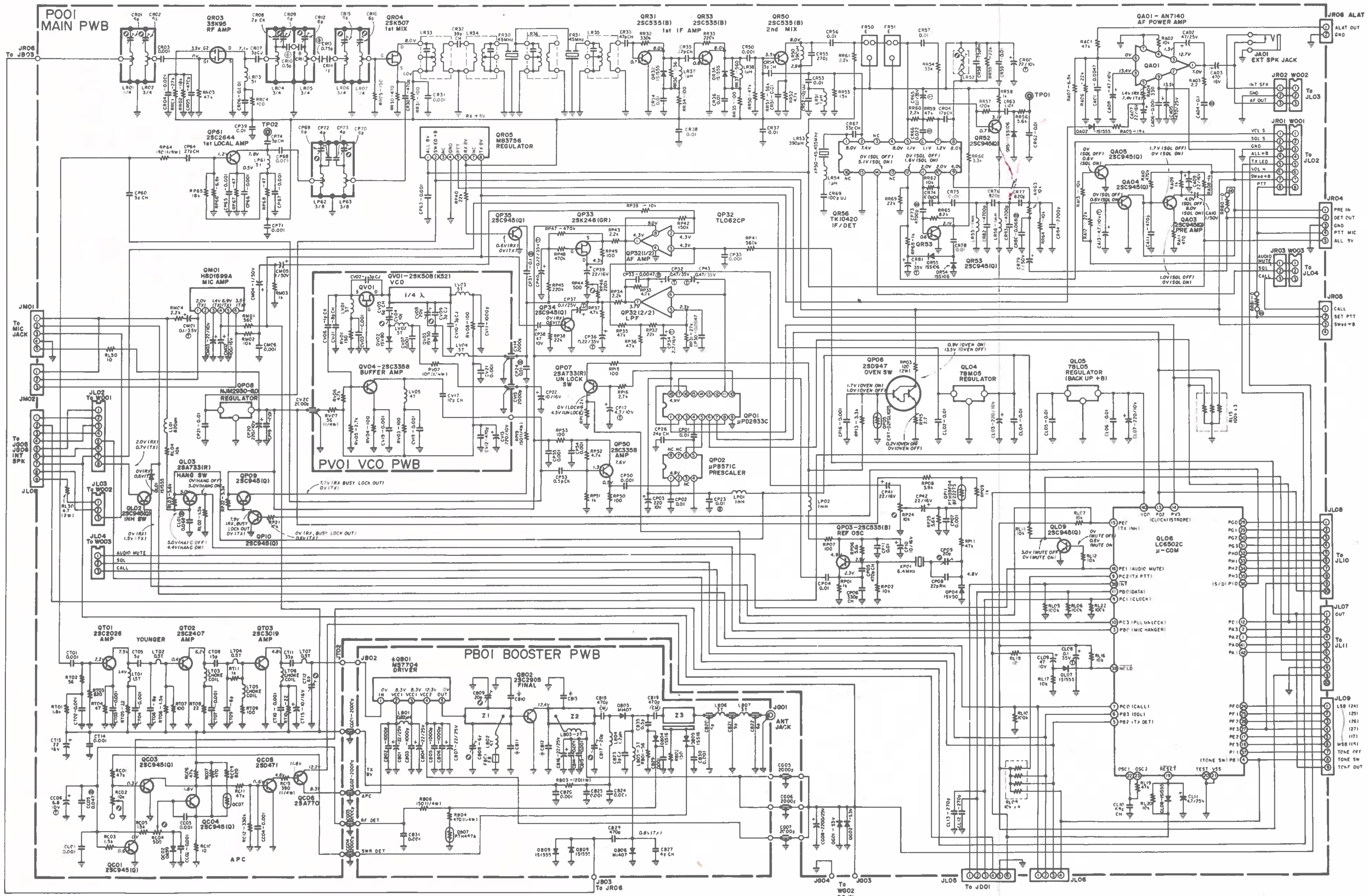
1. Connect a wattmeter with a 50 ohm dummy load to the antenna receptacle.
2. Turn on the off/volume control.
3. Key the transmitter and confirm the following:
    - The minimum power output is 35 watts.
    - The TX indicator illuminates.
    - The receiver background audio turns off.
4. Set the service monitor to a programmed channel frequency.
5. Key the transmitter. Confirm that the service monitor indicates a transmit frequency within $\pm$500 Hz.
6. Set the service monitor to measure the transmitter deviation.
7. Key the transmitter. Speak into the microphone. Confirm that the deviation does not exceed $\pm$4.5 kHz.
8. Repeat Steps 3 through 7 for all other programmed channels.

8.6.3 Receiver

1. Connect the signal generator output of a service monitor to the transceiver's antenna receptacle.
2. Connect an AC voltmeter to the external speaker jack with a 4 ohm, 5 watt resistor in parallel.
3. Turn the squelch control fully counterclockwise.
4. Adjust the volume control for a voltmeter reading of 1.4 VAC.
5. With modulation turned off, set the service monitor's signal generator to the receive frequency of the selected programmed channel.
6. Slowly increase the signal level until the voltmeter reading is reduced to 0.14 VAC (20 dB decrease). Confirm that the service monitor's signal generator output does not exceed 0.5 uV.
7. Reduce the service monitor's signal generator output to zero.
8. Adjust the squelch control clockwise until the static just disappears (threshold squelch).
9. Set the internal modulation of the service monitor's signal generator to $\pm$3 kHz, with a 1 kHz audio tone.
10. Increase the service monitor's signal generator output until audio is regained. Confirm that the signal generator ouput does not exceed 0.35 uV.
11. Turn the squelch control fully clockwise (tight squelch).
12. Increase the service monitor's signal generator output until audio is regained. Confirm that the service monitor's signal generator output does not exceed 3.5 uV.
13. Repeat Steps 5 through 12 for other all programmed channels.

Drawings 9

The drawings in this section show the electrical and mechanical parts locations and interconnections of the GX3000U. The values of most electrical parts are indicated on the schematic diagrams.



F-CHART

	CR11	CB10	CB11	CB12	CB13	QB01
F3	1p	30p	30p	43p CM	43p CM	M57704H
F4	0.75p	30p	30p	43p CM	43p CM	M57704UH
F5	0.5p	27p	27p	39p CM	39p CM	M57704SH

FRONTEND BANDWIDTH

	CR10	CR13
5 MHz	0.5p	0.5p
10 MHz	0.75p	1p

RR80 AUDIO LINE
RR81 PTT LINE

ACC BOARD	RR80	RR81
CTCSS	W/O	W
DPL	W/O	W/O

W: WITH
W/O: WITH OUT

Figure 10. GX3000U Main/Booster Schematic Diagram

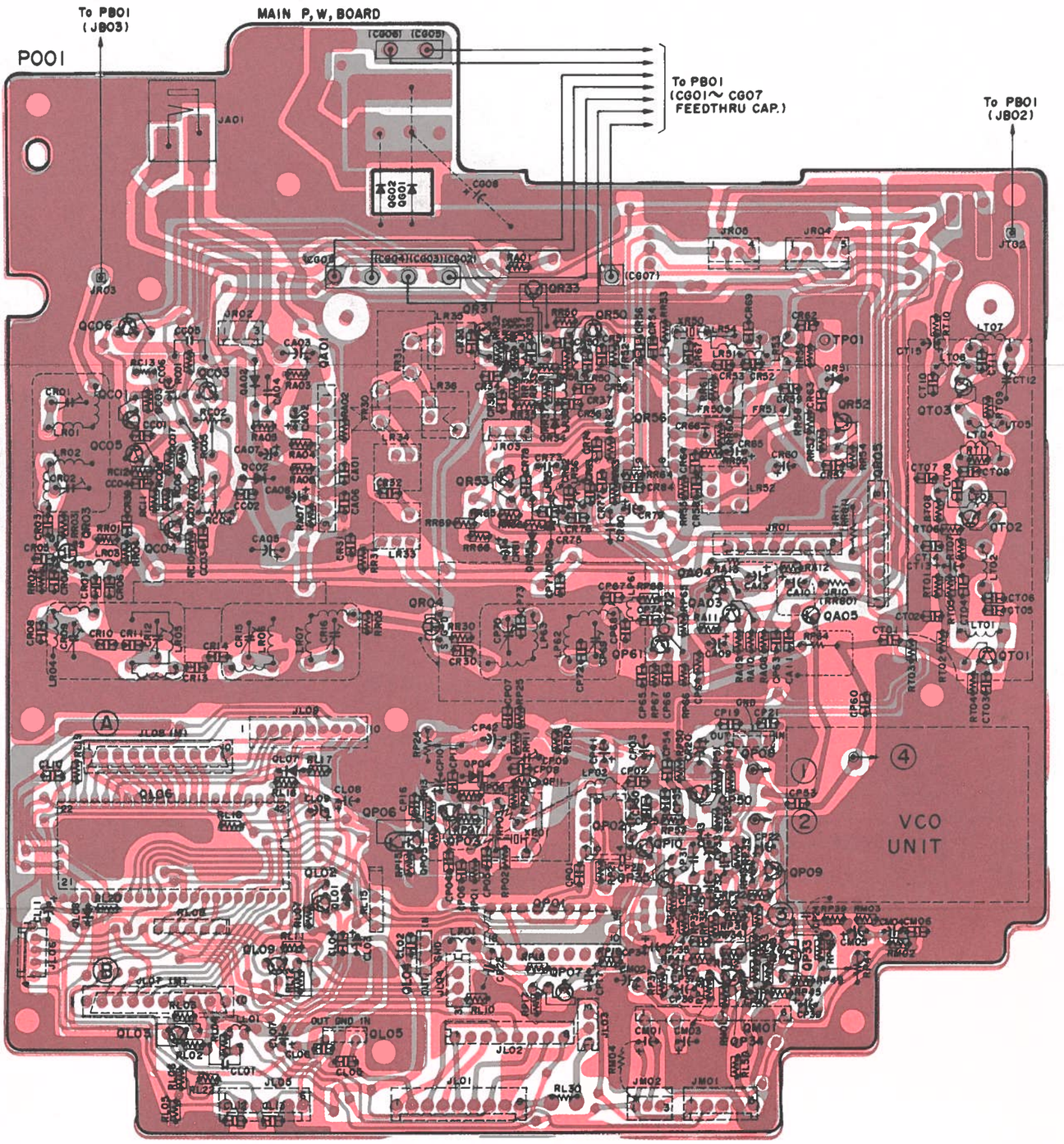


Figure 11. GX3000U Main P.C. Board Layout

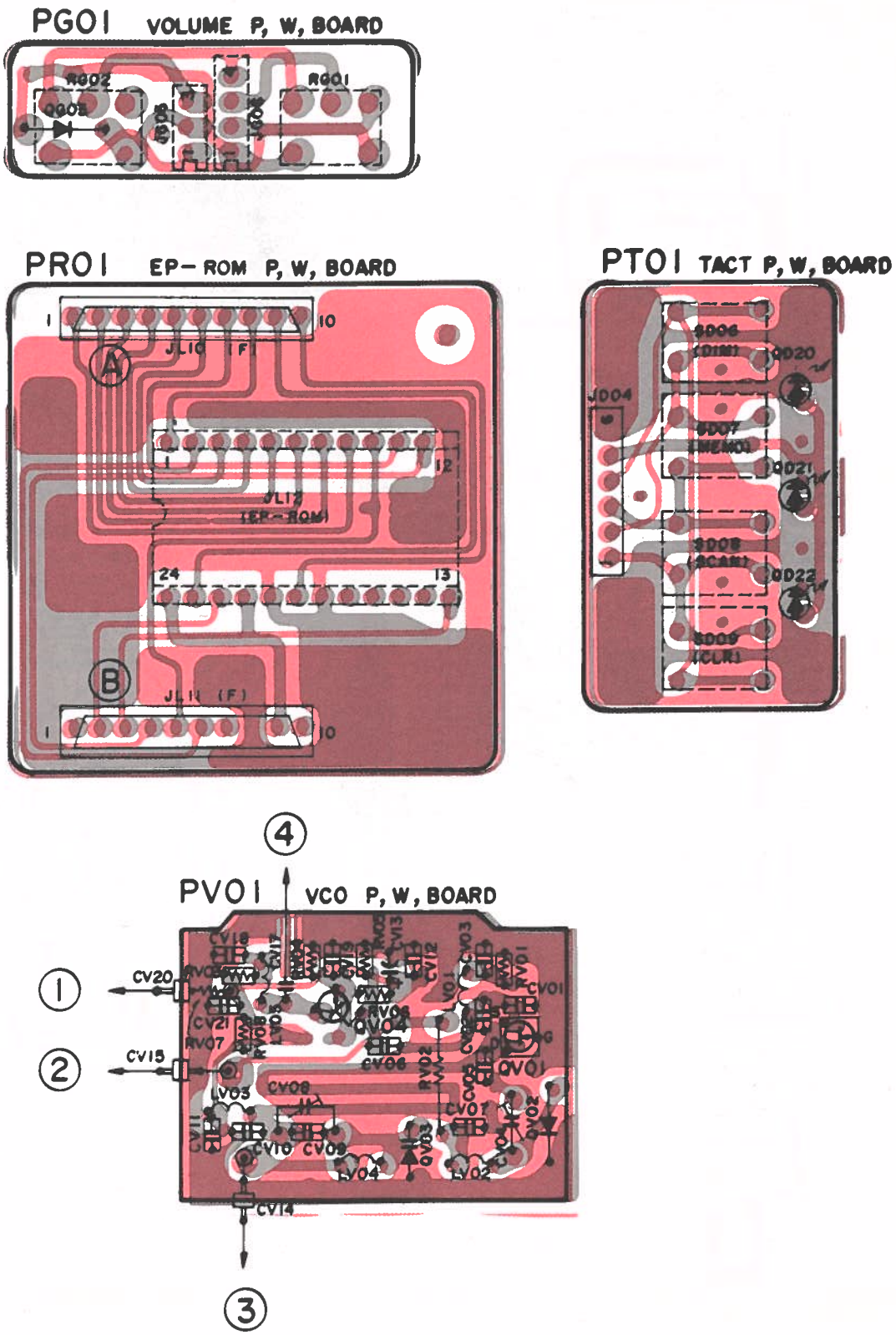


Figure 12. GX3000U Volume, EP-ROM, VCO, and TACT P.C. Boards

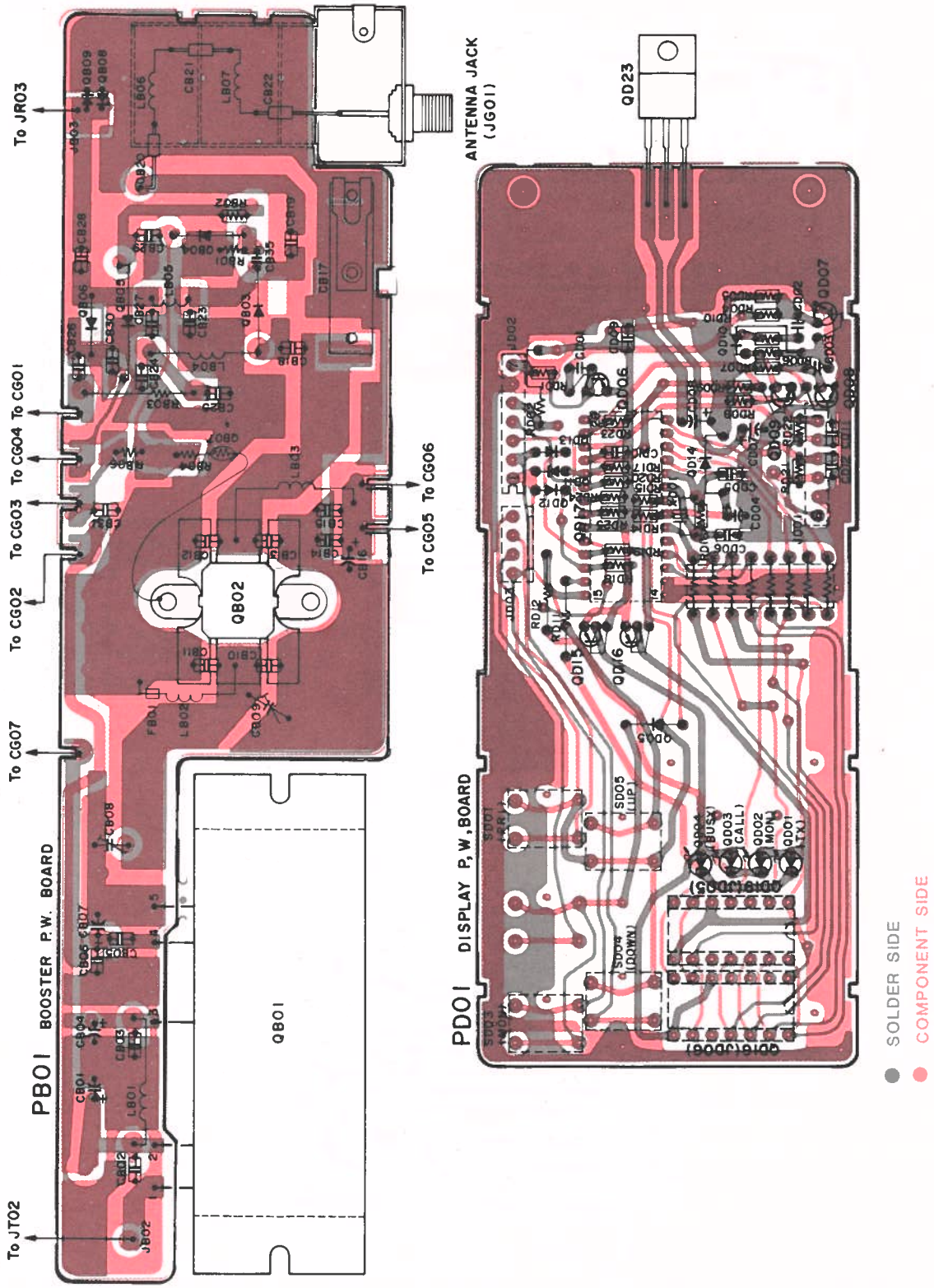


Figure 13. GX3000U Display and Booster P.C. Boards

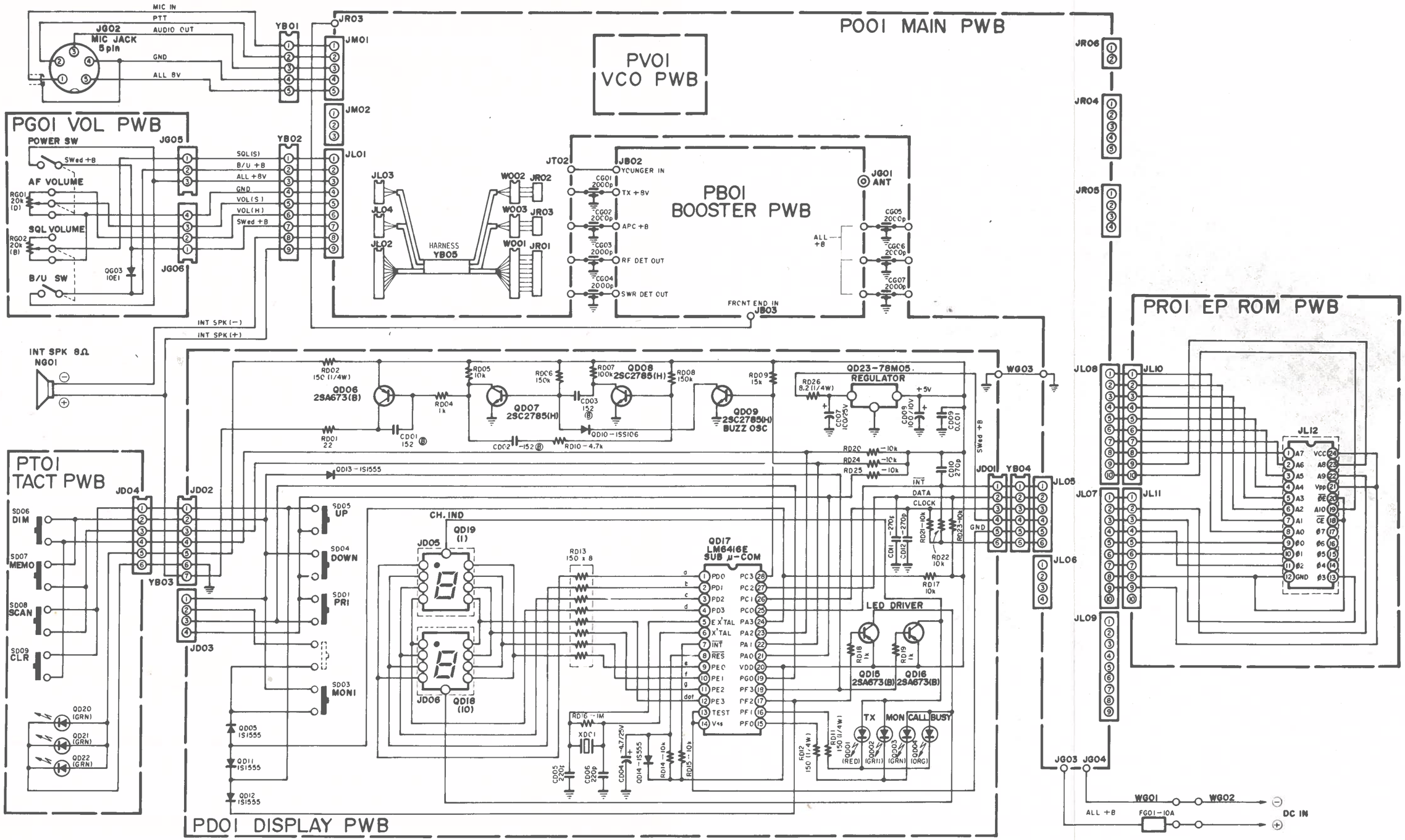
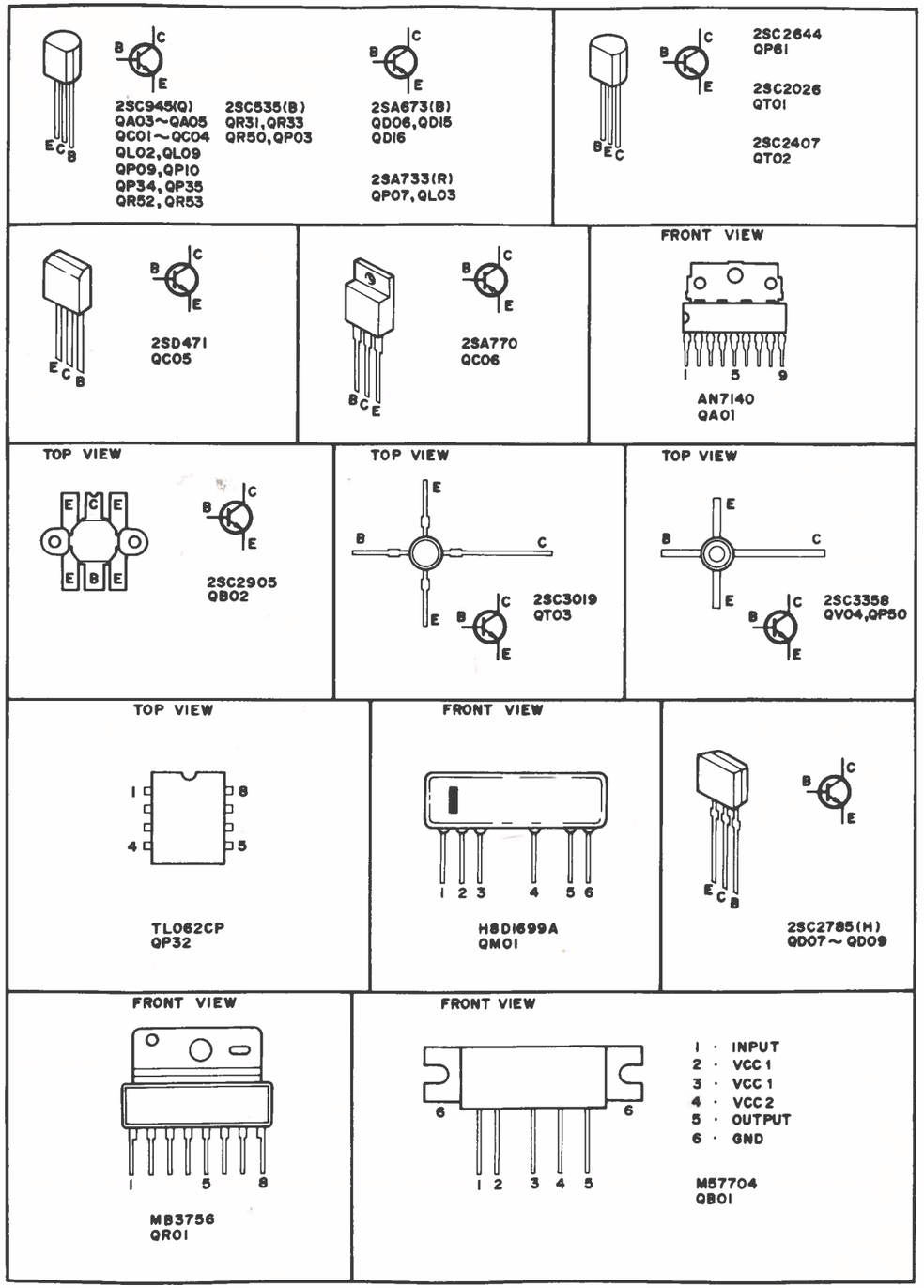


Figure 14. GX3000U Front Panel Schematic Diagram



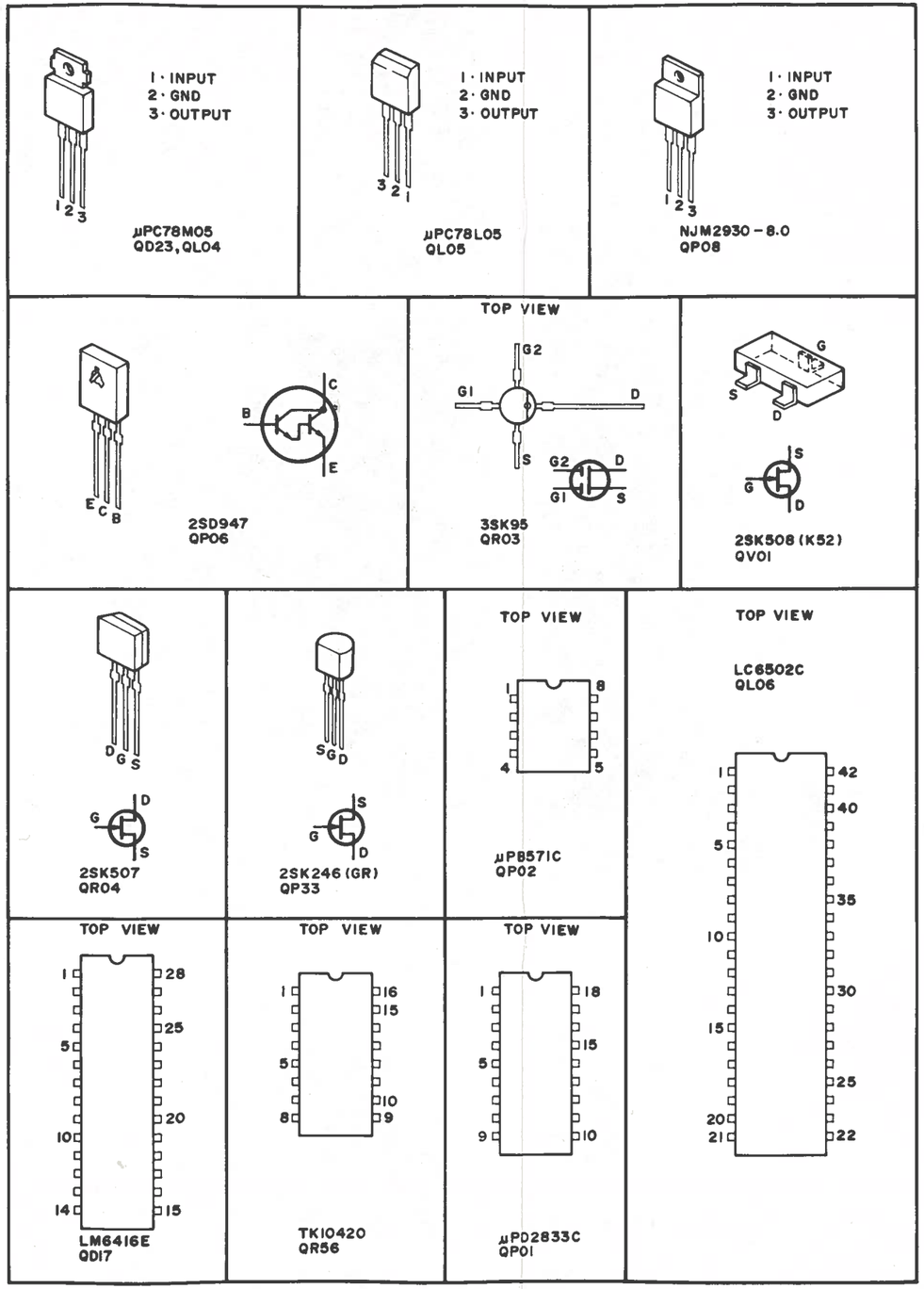
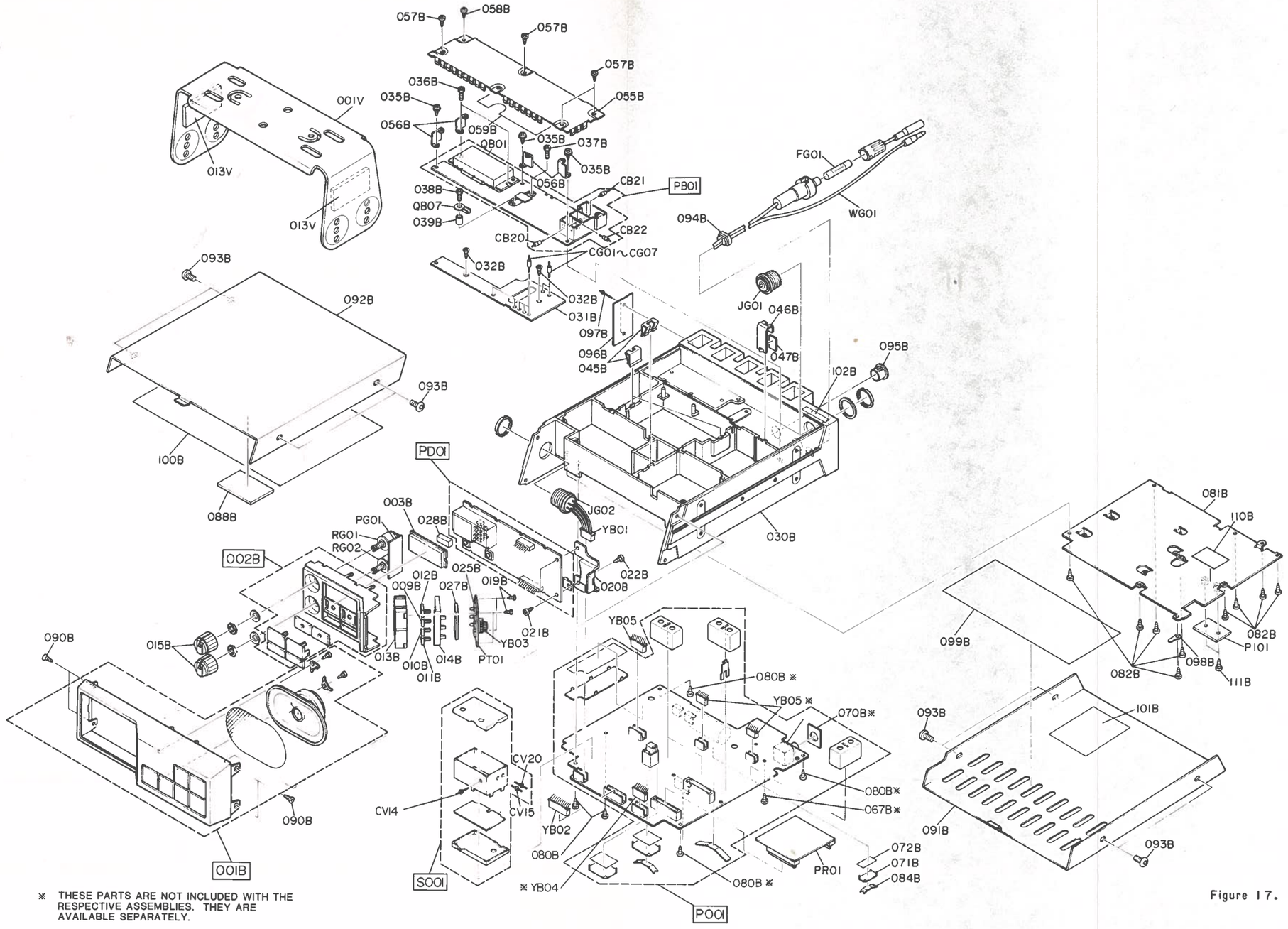


Figure 15. Semiconductor Pin Details

Tone Frequency	Switch # 1 2 3 4 5 6
67.0	1 0 1 1 1 0
71.9	0 0 1 1 1 0
74.4	1 1 0 1 1 0
77.0	0 1 0 1 1 0
79.7	1 0 0 1 1 0
82.5	0 0 0 1 1 0
85.4	1 1 1 0 1 0
88.5	0 1 1 0 1 0
91.5	1 0 1 0 1 0
94.8	1 0 0 1 1 1
100.0	0 0 0 1 1 1
103.5	1 1 1 0 1 1
107.2	0 1 1 0 1 1
110.9	1 0 1 0 1 1
114.8	0 0 1 0 1 1
118.8	1 1 0 0 1 1
123.0	0 1 0 0 1 1
127.3	1 0 0 0 1 1
131.8	0 0 0 0 1 1
136.5	1 1 1 1 0 1
141.3	0 1 1 1 0 1
146.2	1 0 1 1 0 1
151.4	0 0 1 1 0 1
156.7	1 1 0 1 0 1
162.2	0 1 0 1 0 1
167.9	1 0 0 1 0 1
173.8	0 0 0 1 0 1
179.9	1 1 1 0 0 1
186.2	0 1 1 0 0 1
192.8	1 0 1 0 0 1
203.5	0 0 1 0 0 1
210.7	1 1 0 0 0 1
218.1	0 1 0 0 0 1
225.7	1 0 0 0 0 1
233.6	0 0 0 0 0 1
241.8	1 1 1 1 1 0
250.3	0 1 1 1 1 0

Logic 0 = SW. ON
Logic 1 = SW. OFF

Figure 16. Program Truth Table



※ THESE PARTS ARE NOT INCLUDED WITH THE RESPECTIVE ASSEMBLIES. THEY ARE AVAILABLE SEPARATELY.

Figure 17. GX3000U Exploded Parts View

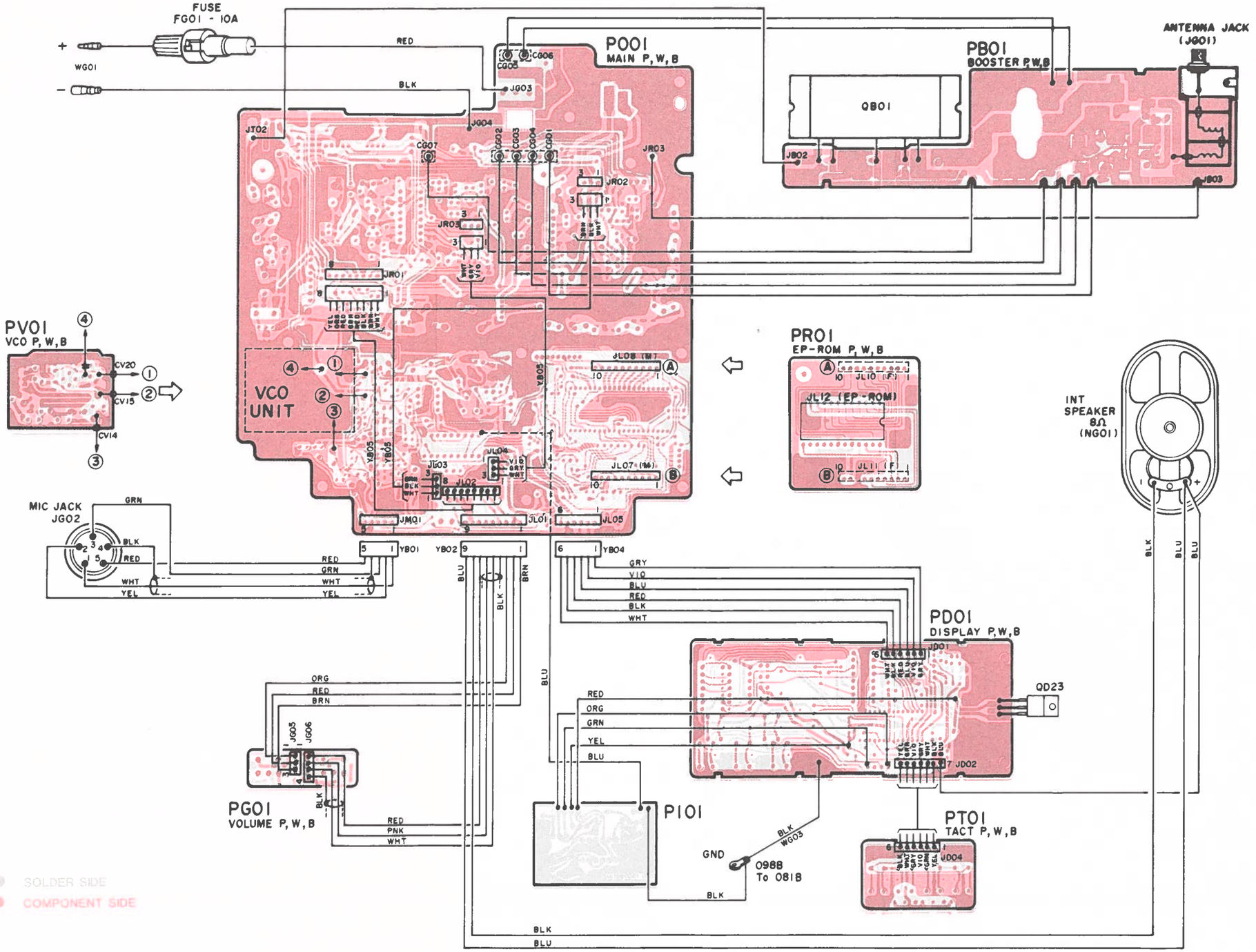


Figure 18. GX3000U Front Control
P.C. Board Schematic Diagram

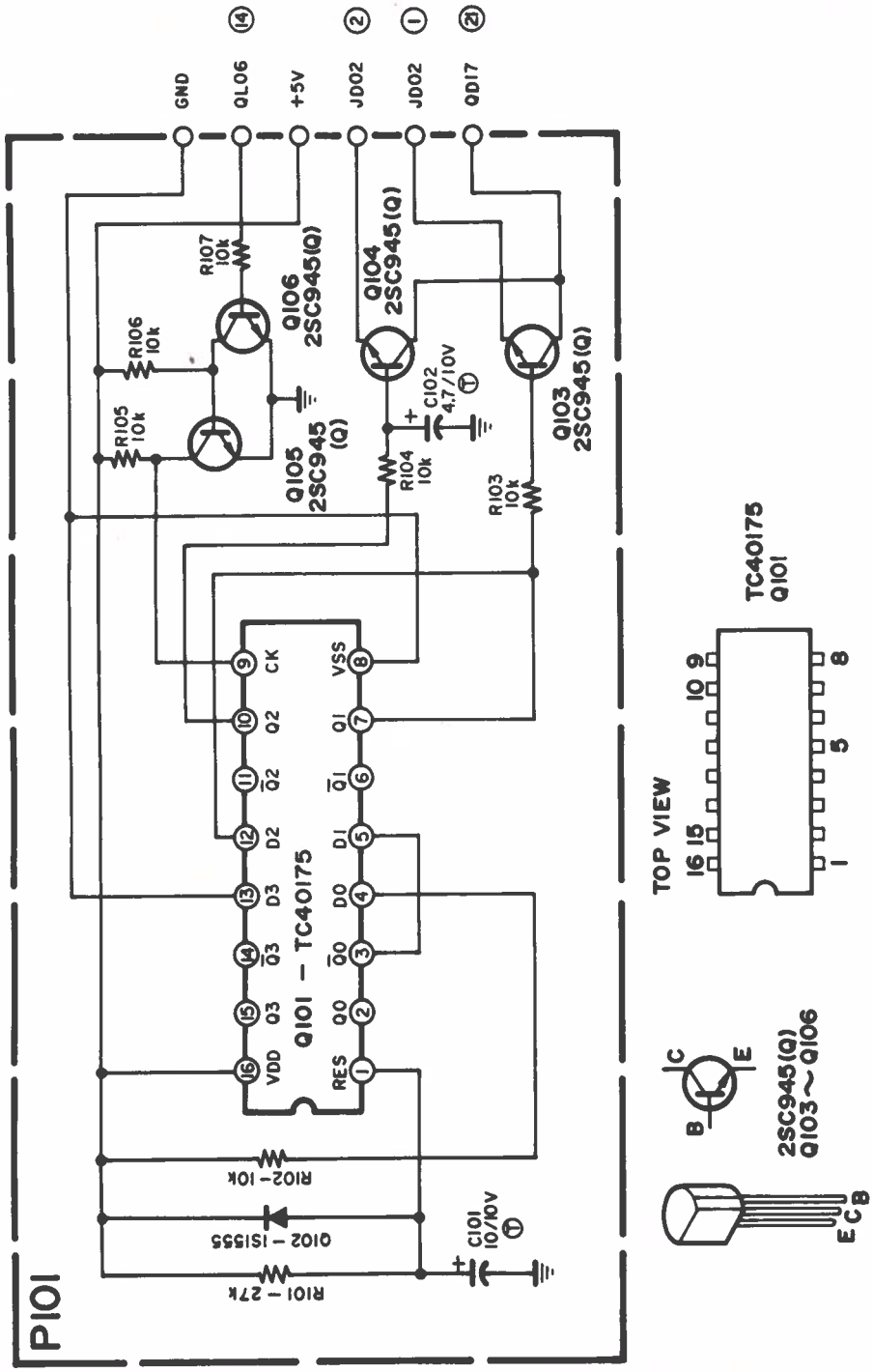


Figure 19. GX3000U Micro Computer Control Schematic Diagram

Parts List 10

10.1 GENERAL

Information on most electrical and mechanical parts is included in the parts lists. The parts are listed by reference designators in alphanumeric order.

10.2 ORDERING REPLACEMENT PARTS

Crystal orders should be referred to the Frequency Management Department at (213) 532-5300 ext. 251, or write:

Standard Communications Corp.
Frequency Management Department
P.O. Box 92151
Los Angeles, CA 90009-2151

All other parts orders should be referred to the Parts Department at (213) 532-5300 ext. 248 or write:

Standard Communications Corp.
Parts Department
P.O. Box 92151
Los Angeles, CA 90009-2151

Please note that SCC may not be able to fill replacement parts orders without such identifying information as:

- reference designator
- value
- description
- part number
- unit model number

Reference Designator	Description	SCC Part Number
Capacitors		
CA01	Ceramic, 4700 pF	DK5647230Y
CA02	Electrolytic, 47 uF, 25 V	EA47602510
CA03	Electrolytic, 470 uF, 16 V	EA47701610
CA04	Ceramic, 0.1 uF	DS17104010
CA05	Electrolytic, 470 uF, 25 V	EA47702510
CA06	Ceramic, 1000 pF	DK5610230Y
CA07	Electrolytic, 22 uF, 16 V	EA22601610
CA08	Electrolytic, 47 uF, 16 V	EA47601010
CA09	Electrolytic, 22 uF, 16 V	EA22601610
CA10	Electrolytic, 1 uF, 50 V	EA10505010
CA11	Ceramic, 470 pF	DK5647130Y
CA13	Electrolytic, Tantalum, 4.7 uF, 16 V (T)	EV47501660
CB01	Electrolytic, 22 uF, 25 V	EA22602510
CB02	Ceramic, 1000 pF	DK5610230Y
CB03	Ceramic, 1000 pF	DK5610230Y
CB04	Electrolytic, 22 uF, 25 V	EA22602510
CB05	Ceramic, 1000 pF	DK5610230Y
CB06	Ceramic, 1000 pF	DK5610230Y
CB07	Electrolytic, 22 uF, 25 V	EA22602510
CB08	Trimming, 6 pF	CT10600100

Reference Designator	Description	SCC Part Number
CB09	Trimming, 25 pF	CT12500030
CB10	Ceramic, 30 pF, CH	DD45300300
CB10	Ceramic, 30 pF, CH	DD45300300
CB10	Ceramic, 27 pF, CH	DD45270300
CB11, F3	Ceramic, 30 pF, CH	DD45300300
CB11, F4	Ceramic, 30 pF, CH	DD45300300
CB11, F5	Ceramic, 27 pF, CH	DD45270300
CB12, F3	Mica Chip, 43 pF	DF95430500
CB12, F4	Mica Cnip, 43 pF	DF95430500
CB12, F5	Mica Chip, 39 pF	DF95390500
CB13, F3	Mica Chip, 43 pF	DF95430500
CB13, F4	Mica Chip, 43 pF	DF95430500
CB13, F5	Mica Chip, 39 pF	DF95390500
CB14	Ceramic, 1000 pF	DK5610230Y
CB15	Ceramic, 1000 pF	DK5610230Y
CB16	Electrolytic, 22 uF, 25 V	EA22602510
CB17	Trimming, 20 pF	CT12000060
CB18	Mica Chip, 470 pF	DF95471500
CB19	Mica Chip, 470 pF	DF95471500
CB23	Ceramic, 3 pF, CJ	DD5003030Y
CB24	Ceramic, 1000 pF	DK5610230Y
CB25	Ceramic, 1000 pF	DK5610230Y
CB26	Ceramic, 1000 pF	DK5610230Y
CB27	Ceramic, 4 pF, CH	DD5004030Y
CB28	Ceramic, 470 pF	DK46471300
CB29	Ceramic, 1000 pF	DK5610230Y
CB30	Ceramic, 1000 pF	DK5610230Y
CB31	Ceramic, 1000 pF	DK5610230Y
CB35	Ceramic, 0.5 pF	DD10005370
CC01	Ceramic, 0.001 uF	DK5610230Y
CC02	Ceramic, 0.001 uF	DK5610230Y
CC03	Ceramic, 0.001 uF	DK5610230Y
CC04	Ceramic, 0.001 uF	DK5610230Y
CC05	Ceramic, 0.047 uF	DS17473010
CC06	Electrolytic, Tantalum, 6.8 uF, 10 V, T	EV68501060
CD01	Ceramic, 1500 pF	DS17152010
CD02	Ceramic, 1500 pF	DS17152010
CD03	Ceramic, 1500 pF	DS17152010
CD04	Electrolytic, 4.7 uF, 25 V	EA47502510
CD05	Ceramic, 220 pF, CH	DD5522130Y
CD06	Ceramic, 220 pF, CH	DD5522130Y
CD07	Electrolytic, 100 uF, 25 V	EA10702510
CD08	Electrolytic, 100 uF, 10 V	EA10701010
CD09	Ceramic, 1000 pF	DK5610230Y
CD10	Ceramic, 270 pF	DK5627130Y
CD11	Ceramic, 270 pF	DK5627130Y
CD12	Ceramic, 270 pF	DK5627130Y
CG08	Electrolytic, 2200 uF, 25 V	EA22802510
CL01	Ceramic, 0.068 uF	DS17683010
CL02	Ceramic, 10000 pF	DK5610330Y
CL03	Electrolytic, 220 uF, 10 V	EA22701010
CL04	Ceramic, 10000 pF	DK5610330Y
CL05	Ceramic, 10000 pF	DK5610330Y
CL06	Ceramic, 10000 pF	DK5610330Y
CL07	Electrolytic, Tantalum, 4.7 uF, 10 V, T	EV47501060
CL08	Electrolytic, Tantalum, 0.1 uF, 35 V, T	EV10403560

Reference Designator	Description	SCC Part Number
CL09	Electrolytic, 47 uF, 10 V	EA47601010
CL10	Ceramic, 68 pF, CH	DD5568030Y
CL11	Electrolytic, 4.7 uF, 25 V	EA47502510
CL12	Ceramic, 270 pF	DK5627130Y
CL13	Ceramic, 270 pF	DK5627130Y
CM01	Electrolytic, Tantalum, 0.1 uF, 35 V	EV10403560
CM02	Electrolytic, 100 uF, 16 V	EA10701610
CM03	Electrolytic, Tantalum, 22 uF, 10 V	EV22601060
CM04	Electrolytic, 1 uF, 50 V	EA10505030
CM05	Electrolytic, 1 uF, 50 V	EA10505030
CM06	Ceramic, 0.001 uF	DK5610230Y
CP01	Ceramic, 10000 pF	DK5610330Y
CP02	Ceramic, 10000 pF	DK5610330Y
CP03	Electrolytic, 220 uF, 10 V	EA22701010
CP04	Ceramic, 10000 pF	DK5610330Y
CP05	Ceramic, 470pF, CH	DD5547130Y
CP06	Ceramic, 330pF, CH	DD5533130Y
CP07	Ceramic, 0.001 uF	DK5610230Y
CP08	Ceramic, 22 pF, RH	DD5522033Y
CP09	Trimming, 20 pF	CT12000130
CP10	Electrolytic, 10 uF, 16 V	EA10601610
CP11	Ceramic, 10000 pF	DK5610330Y
CP16	Ceramic, 1000 pF	DK5610230Y
CP17	Electrolytic, Tantalum, 4.7 uF, 10 V, T	EV47501060
CP19	Ceramic, 10000 pF	DK5610330Y
CP20	Electrolytic, 220 uF, 10 V	EA22701010
CP21	Ceramic, 10000 pF	DK5610330Y
CP22	Electrolytic, 10 uF, 16 V	EA10601610
CP23	Ceramic, 0.01 uF	DS17103010
CP24	Ceramic, 0.01 uF B	DS17103010
CP25	Ceramic, 0.01 uF	DS17103010
CP26	Ceramic, 24 pF, CH	DD15240300
CP30	Ceramic, 4700 pF	DK5647230Y
CP31	Ceramic, 0.1 uF	DS17104010
CP32	Electrolytic, Tantalum, 0.47 uF, 35 V, T	EV47403560
CP33	Ceramic, 0.0047 uF	DS17472010
CP34	Electrolytic, Tantalum, 2.2 uF, 16 V, T	EV22501660
CP35	Ceramic, 1000 pF	DK5610230Y
CP36	Electrolytic, Tantalum, 0.22 uF, 35 V, T	EV22403560
CP37	Electrolytic, Tantalum, 0.1 uF, 35 V, T	EV10403560
CP38	Electrolytic, 47 uF, 10 V	EA47601010
CP39	Electrolytic, 22 uF, 16 V	EA22601610
CP40	Electrolytic, Tantalum, 0.22 uF, 35 V, T	EV22403560
CP41	Electrolytic, 22 uF, 16 V	EA22601610
CP42	Electrolytic, 22 uF, 16 V	EA22601610
CP43	Electrolytic, Tantalum, 0.47 uF, 35 V, T	EV47403560
CP50	Ceramic, 1000 pF	DK5610230Y
CP53	Ceramic, 0.5 pF, CK	DD5000530Y
CP54	Ceramic, 1000 pF	DK5610230Y
CP55	Ceramic, 1000 pF	DK5610230Y
CP60	Ceramic, 5 pF, CH	DD5005030Y

Reference Designator	Description	SCC Part Number
CP63	Ceramic, 1000 pF	DK5610230Y
CP64	Ceramic, 27 pF, CH	DD5527030Y
CP65	Ceramic, 1000 pF	DK5610230Y
CP66	Ceramic, 1000 pF	DK5610230Y
CP67	Ceramic, 1000 pF	DK5610230Y
CP68	Ceramic, 1000 pF	DK5610230Y
CP69	Trimming, 6 pF	CT10600140
CP70	Trimming, 6 pF	CT10600140
CP71	Ceramic, 1000 pF	DK5610230Y
CP72	Ceramic, 4 pF, CH	DD5004030Y
CP73	Ceramic, 4 pF, CH	DD5004030Y
CP74	Ceramic, 5 pF, CH	DD5005030Y
CR01	Trimming, 6 pF	CT10600140
CR02	Trimming, 6 pF	CT10600140
CR03	Ceramic, 1000 pF	DK5610230Y
CR04	Ceramic, 1000 pF	DK5610230Y
CR05	Ceramic, 470 pF	DK5647130Y
CR06	Ceramic, 1000 pF	DK5610230Y
CR07	Ceramic, 3 pF, CJ	DD5003030Y
CR08	Ceramic, 2 pF, CK	DD5002030Y
CR09	Trimming, 6 pF	CT10600140
CR10	Ceramic, 0.5 pF, CK	DD5000530Y
CR11	Ceramic, 1 pF, CK	DD5001030Y
CR11	Ceramic, 0.75 pF, CK	DD5000830Y
CR11	Ceramic, 0.5 pF, CK	DD5000530Y
CR12	Trimming, 6 pF	CT10600140
CR13	Ceramic, 0.75 pF, CK	DD5000830Y
CR14	Ceramic, 1 pF, CK	DD5001030Y
CR15	Trimming, 6 pF	CT10600140
CR16	Trimming, 6 pF	CT10600140
CR30	Ceramic, 470 pF	DK5647130Y
CR31	Ceramic, 1000 pF	DK5610230Y
CR32	Ceramic, 39 pF, CH	DD5539030Y
CR33	Ceramic, 47 pF, CH	DD5547030Y
CR34	Ceramic, 10000 pF	DK5610330Y
CR35	Ceramic, 22 pF, CH	DD5522030Y
CR36	Ceramic, 10000 pF	DK5610330Y
CR37	Ceramic, 10000 pF	DK5610330Y
CR38	Ceramic, 10000 pF	DK5610330Y
CR39	Ceramic, 10000 pF	DK5610330Y
CR50	Ceramic, 1000 pF	DK5610230Y
CR51	Ceramic, 10000 pF	DK5610330Y
CR52	Ceramic, 12 pF, UJ	DD5512036Y
CR53	Ceramic, 10000 pF	DK5610330Y
CR54	Ceramic, 5 pF, CH	DD5005030Y
CR55	Ceramic, 270 pF	DK5627130Y
CR56	Ceramic, 10000 pF	DK5610330Y
CR57	Ceramic, 10000 pF	DK5610330Y
CR58	Ceramic, 75 pF, RH	DD5575033Y
CR59	Ceramic, 10000 pF	DK5610330Y
CR60	Electrolytic, Tantalum, 22 uF, 10 V	EV22601060
CR62	Ceramic, 10000 pF	DK5610330Y
CR63	Ceramic, 10000 pF	DK5610330Y
CR64	Ceramic, 12 pF, CH	DD5512030Y
CR65	Electrolytic, Tantalum, 0.1 uF, 35 V	EV10403560
CR66	Ceramic, 0.022 uF	DS17223010
CR67	Ceramic, 33 pF, CH	DD5533030Y

Reference Designator	Description	SCC Part Number
CR69	Ceramic, 100 pF, UJ	DD5510136Y
CR73	Ceramic, 4700 pF	DS17472010
CR74	Ceramic, 100 pF, CH	DD5510130Y
CR75	Ceramic, 10000 pF	DK5610330Y
CR76	Ceramic, 820 pF	DK5682130Y
CR77	Ceramic, 820 pF	DK5682130Y
CR78	Ceramic, 10000 pF	DK5610330Y
CR79	Electrolytic, 1 uF, 50 V	EA10505010
CR80	Ceramic, 0.068 uF	DS17683010
CR81	Electrolytic, Tantalum, 1 uF, 35 V, T	EV10503560
CR82	Ceramic, 4700 pF	DK5647230Y
CR83	Ceramic, 4700 pF	DK5647230Y
CR84	Ceramic, 2200 pF	DK5622230Y
CT01	Ceramic, 0.001 uF	DK5610230Y
CT02	Ceramic, 0.001 uF	DK5610230Y
CT03	Ceramic, 0.001 uF	DK5610230Y
CT04	Ceramic, 0.001 uF	DK5610230Y
CT05	Ceramic, 5 pF, CH	DD5005030Y
CT06	Ceramic, 8 pF, CH	DD5108030Y
CT07	Ceramic, 0.001 uF	DK5610230Y
CT08	Ceramic, 15 pF, CH	DD5515030Y
CT09	Ceramic, 6 pF, CH	DD5106030Y
CT10	Ceramic, 0.001 uF	DK5610230Y
CT11	Ceramic, 33 pF, CH	DD5533030Y
CT12	Trimming, 6 pF	CT10600140
CT13	Electrolytic, 22 uF, 16 V	EA22601610
CT14	Ceramic, 0.001 uF	DK5610230Y
CT15	Electrolytic, 10 uF, 16 V	EA10601610
CV01	Ceramic, 8 pF, CH	DD5108030Y
CV02	Ceramic, 3 pF, CJ	DD5003030Y
CV03	Ceramic, 1000 pF	DK5610230Y
CV04	Trimming, 10 pF	CT11000020
CV05	Ceramic, 6 pF, CH	DD5106030Y
CV06	Ceramic, 1 pF, CK	DD5001030Y
CV07	Ceramic, 1000 pF	DK5610230Y
CV08	Trimming, 20 pF	CT12000020
CV09	Ceramic, 3 pF, CJ	DD5003030Y
CV10	Ceramic, 3 pF, CJ	DD5003030Y
CV11	Ceramic, 1000 pF	DK5610230Y
CV12	Ceramic, 470 pF	DK5647130
CV13	Electrolytic, 220 uF, 10 V	EA22701010
CV17	Ceramic, 10 pF, CH	DD11100300
CV18	Ceramic, 1000 pF	DK5610230Y
CV19	Ceramic, 1000 pF	DK5610230Y
CV21	Ceramic, 1000 pF	DK5610230Y

Inductors

LB01	Coil, Choke, 0.82 uF	LC18210010
LB02	Coil, 6 T	LK030006E6
LB03	Coil, Choke, 2 T	LC15000100
LB04	Coil, Choke, 1.2 uH	LC11220020
LB05	Coil, Choke, 3 T	LC13000050
LB06	Coil, Choke, 3 T	LC17000110
LB07	Coil, Choke, 3 T	LC17000110
LL01	Coil, Choke, 820 uH	LC18240030
LP01	Coil, Choke, 1 MH	LC11050040
LP02	Coil, Choke, 1 MH	LC11050070
LP61	Coil, Choke, 5 T	LC14000010

Reference Designator	Description	SCC Part Number
LP62	Coil, Link	156C121040
LP63	Coil, Link	156C121040
LR01	Coil, Frontend	156C121010
LR02	Coil, Frontend	156C121010
LR03	Coil, Choke, 5 T	LC14000010
LR04	Coil, Frontend	156C121030
LR05	Coil, Frontend	156C121030
LR06	Coil, Frontend	156C121030
LR07	Coil, Frontend	156C121030
LR37	Coil, Choke, 1 uH	LC11020070
LR38	Coil, Choke, 1 uH	LC11020070
LR50	Coil, Choke, 390 uH	LC13940010
LR51	Coil, Choke, 1 uH.	LC11020070
LR53	Coil, Choke, 390 uH	LC13940010
LR54	Coil, Choke, 1 uH.	LC11020020
LR55	Coil, Choke, 1 MH	LC11050070
LR56	Coil, Choke, 1 MH	LC11050070
LT01	Coil, Air, 1.5 T	MK03506510
LT02	Coil, Link, 0.5 T	4704121070
LT03	Coil, Choke	LC12010012
LT04	Coil, Link, 0.5T	4704121070
LT05	Coil, Choke	LC12010012
LT06	Coil, Choke	LC12010012
LT07	Coil, Link, 0.5 T	146C121010
LV01	Coil, Air, 5 T	MK03005010
LV02	Coil, Air, 5 T	MK03005010
LV03	Coil, Air, 5 T	MK03005010
LV04	Coil, Air, 5 T	MK03005010
LV05	Coil, Air, 4 T	MK03005020

Semiconductors

QA01	IC, AN7140	HC10060020
QA02	Diode, 1S1555	HD20011050
QA03	Transistor, 2SC945 (Q)	HT309451Q0
QA04	Transistor, 2SC945 (Q)	HT309451Q0
QA05	Transistor, 2SC945 (Q)	HT309451Q0
QB02	Transistor, 2SC2905	HT32905010
QB03	Pin Diode, M1407	HD50001200
QB04	Diode, 1SS16	HD20005060
QB05	Diode, 1SS16	HD20005060
QB06	Pin Diode, M1407	HD50001200
QB08	Diode, 1S1555	HD20011050
QB09	Diode, 1S1555	HD20011050
QC01	Transistor, 2SC945 (Q)	HT309451Q0
QC02	Diode, OA99	HD10005020
QC03	Transistor, 2SC945 (Q)	HT309451Q0
QC04	Transistor, 2SC945 (Q)	HT309451Q0
QC05	Transistor, 2SD471 (L)	HT404711L0
QC06	Transistor, 2SA770	HT107701A0
QC07	Thermistor, M2325 (1K)	HH00002120
QD01	L.E.D, Sel2210S, Red	HI10030080
QD02	L.E.D., SEL2410E, Green	HI10029080
QD03	L.E.D., SEL2410E, Green	HI10029080
QD04	L.E.D., SEL2910A, Orange	HI10031080
QD05	Diode, 1S1555	HD20011050
QD06	Transistor, 2SA673 (B)	HT106731B0
QD07	Transistor, 2SC2785 (H)	HT327851H0
QD08	Transistor, 2SC2785 (H)	HT327851H0

Reference Designator	Description	SCC Part Number
QD09	Transistor, 2SC2785 (H)	HT327851H0
QD10	Diode, 1SS106	HD20016010
QD11	Diode, 1S1555	HD20011050
QD12	Diode, 1S1555	HD20011050
QD13	Diode, 1S1555	HD20011050
QD14	Diode, 1S1555	HD20011050
QD15	Transistor, 2SA673 (B)	HT106731B0
QD16	Transistor, 2SA673 (B)	HT106731B0
QD17	IC, LM6416E	HC10152030
QD18	L.E.D., 7 Seg, GL-9E03	HI10043320
QD19	L.E.D., 7 Seg, GL-9E03	HI10043320
QD20	L.E.D., SEL2410E, Green	HI10029080
QD21	L.E.D., SEL2410E, Green	HI10029080
QD22	L.E.D., SEL2410E, Green	HI10029080
QD23	IC, UPC78M05	HC10051060
QG01	Diode, S3V20	HD20027290
QG02	Diode, S3V20	HD20027290
QG03	Diode, 10E1	HD20023100
QL01	Diode, 1S1555	HD20011050
QL02	Transistor, 2SC945 (Q)	HT309451Q0
QL03	Transistor, 2SA733 (R)	HT107331R0
QL04	IC, UPC78M05	HC10051060
QL05	IC, 78L05	HC10031060
QL06	IC, LC6502C	HC10153030
QL07	Diode, 1S1555	HD20011050
QL08	Diode, 1S1555	HD20011050
QL09	Transistor, 2SC945 (Q)	HT309451Q0
QM01	IC, H8D1699A	HC10032230
QP01	IC, UPD2833C	HC10086060
QP02	IC, UPB571C	HC10087060
QP03	Transistor, 2SC535 (B)	HR30535180
QP04	Varicap, 1SV50	HD40001060
QP05	Thermistor, ERT-D2FGL102S	HH00023020
QP06	Transistor, 2SD947	HT40947010
QP07	Transistor, 2SA733 (R)	HT107331R0
QP08	IC, NJM2930-8.0V	HC31108090
QP09	Transistor, 2SC945 (Q)	HT309451Q0
QP10	Transistor, 2SC945 (Q)	HT309451Q0
QP11	Varistor, PTH59F04PF222	HP00015230
QP32	IC, TL062CP	HC10027370
QP33	F.E.T., 2SK246, GR	HF202461C0
QP34	Transistor, 2SC945, Q	HT309451Q0
QP35	Transistor, 2SC945, Q	HT309451Q0
QP50	Transistor, 2SC3358	HT33358010
QP61	Transistor, 2SC2644	HT32644000
QR03	F.E.T., 3SK95	HF40095000
QR04	F.E.T., 2SK507	HF205071A0
QR05	IC, MB3756	HC10003180
QR31	Transistor, 2SC535 (B)	HT305351B0
QR32	Diode, 1S1555	HD20011050
QR33	Transistor, 2SC535 (B)	HT305351B0
QR34	Diode, 1S1555	HD20011050
QR50	Transistor, 2SC535 (B)	HT305351B0
QR51	Diode, 1SS106	HD20016010
QR52	Transistor, 2SC945 (C)	HT309451Q0
QR53	Transistor, 2SC945 (Q)	HT309451Q0
QR54	Diode, 1SS106	HD20016010
QR55	Diode, 1SS106	HD20016010
QR56	IC, TK10420	HC10007420
QT01	Transistor, 2SC2026	HT32026100

Reference Designator	Description	SCC Part Number
QT02	Transistor, 2SC2407	HT32407100
QT03	Transistor, 2SC3019	HT33019100
QV01	Chip Fet, (25K), 2SK508	HY205081A0
QV02	Varicap, 1SV80	HD40003060
QV03	Varicap, 1SV50	HD40001060
QV04	Transistor, 2SC3358	HT33358010

Resistors

Unless otherwise noted, all chip resistors in this parts list are valued at 1/10 W, ±5%. All resistance values are in ohms. Resistors not listed in this parts list are composed of carbon film and valued at 1/4 W, ±5%. The resistance values of those resistors not listed are on the schematic diagram.

RA01	Chip, 47 kΩ	NI0547311Y
RA02	Chip, 10 kΩ	NI0510311Y
RA03	Chip, 2.2Ω, 1/10W	NI1002211Y
RA04	Chip, 330Ω	NI0533111Y
RA05	Chip, 18 kΩ, 1/10W	NI0518311Y
RA06	Chip, 22 kΩ	NI0522311Y
RA07	Chip, 6.8 kΩ	NI0568211Y
RA08	Chip, 1 kΩ	NI0510211Y
RA09	Chip, 1 kΩ	NI0510211Y
RA10	Chip, 470 kΩ	NI0547411Y
RA11	Chip, 470Ω,	NI0547111Y
RA12	Chip, 22 kΩ, 1/10W	NI0522311Y
RB02	Chip, 150Ω, 1/10W	NI0515111Y
RC01	Chip, 47 kΩ	NI0547311Y
RC02	Trimming, 10 kΩ	RA01030710
RC03	Chip, 15 kΩ, 1/10W	NI0515311Y
RC04	Trimming, 500Ω	RA05010280
RC06	Chip, 47 kΩ, 1/10W	NI0547311Y
RC07	Chip, 470Ω, 1/10W	NI0547111Y
RC08	Chip, 820Ω, 1/10W	NI0582111Y
RC10	Chip, 10Ω, 1/10W	NI0510011Y
RC11	Chip, 47 kΩ, 1/10W	NI0547311Y
RC12	Chip, 330 kΩ, 1/10W	NI0533411Y
RD01	Chip, 22Ω	NI0522011Y
RD04	Chip, 1 kΩ, 1/10W	NI0510211Y
RD05	Chip, 10 kΩ, 1/10W	NI0510311Y
RD06	Chip, 150 kΩ, 1/10W	NI0515411Y
RD07	Chip, 100 kΩ, 1/10W	NI0510411Y
RD08	Chip, 150 kΩ, 1/10W	NI0515411Y
RD09	Chip, 15 kΩ, 1/10W	NI0515311Y
RD10	Chip, 4.7 kΩ, 1/10W	NI0547211Y
RD14	Chip, 10 kΩ, 1/10W	NI0510311Y
RD15	Chip, 10 kΩ, 1/10W	NI0510311Y
RD16	Chip, 1 mΩ, 1/10W	NI0510511Y
RD17	Chip, 10 kΩ, 1/10W	NI0510311Y
RD18	Chip, 1 kΩ, 1/10W	NI0510211Y
RD19	Chip, 1 kΩ, 1/10W	NI0510211Y
RD20	Chip, 10 kΩ, 1/10W	NI0510311Y
RD21	Chip, 10 kΩ, 1/10W	NI0510311Y
RD22	Chip, 10 kΩ, 1/10W	NI0510311Y
RD23	Chip, 10 kΩ, 1/10W	NI0510311Y
RD24	Chip, 10 kΩ, 1/10W	NI0510311Y
RD25	Chip, 10 kΩ, 1/10W	NI0510311Y
RL02	Chip, 1.5 kΩ, 1/10W	NI0515211Y

Reference Designator	Description	SCC Part Number
RL03	Chip, 5.6 kΩ, 1/10W	NI0556211Y
RL04	Chip, 10 kΩ, 1/10W	NI0510311Y
RL05	Chip, 100 kΩ, 1/10W	NI0510411Y
RL06	Chip, 100 kΩ, 1/10W	NI0510411Y
RL07	Chip, 10 kΩ, 1/10W	NI0510311Y
RL10	Chip, 100 kΩ, 1/10W	NI0510411Y
RL11	Chip, 10 kΩ, 1/10W	NI0510311Y
RL12	Chip, 10 kΩ, 1/10W	NI0510311Y
RL16	Chip, 10 kΩ, 1/10W	NI0510311Y
RL17	Chip, 10 kΩ, 1/10W	NI0510311Y
RL18	Chip 10Ω, 1/10W	NI0510011Y
RL19	Chip 47 kΩ, 1/10W	NI0547311Y
RL20	Chip, 10 kΩ, 1/10W	NI0510311Y
RL22	Chip, 100 kΩ, 1/10W	NI0510411Y
RL30	Metal, 4.7Ω, 2W	NK15047020
RL50	Chip, 10Ω, 1/10W	NI0510011Y
RM01	Chip, 560Ω, 1/10W	NI0556111Y
RM02	Chip, 10 kΩ, 1/10W	NI0510311Y
RM03	Chip, 1 kΩ, 1/10W	NI0510211Y
RP01	Chip, 1 kΩ, 1/10W	NI0510211Y
RP02	Chip, 10 kΩ, 1/10W	NI0510311Y
RP06	Chip, 5.6 kΩ, 1/10W	NI0556211Y
RP07	Chip 100Ω, 1/10W	NI0510111Y
RP08	Chip, 3.9 kΩ, 1/10W	NI0539211Y
RP09	Chip, 1 kΩ	NI0510211Y
RP11	Chip, 47 kΩ, 1/10W	NI0547311Y
RP13	Chip, 3.3 kΩ, 1/10W	NI0533211Y
RP15	Chip 2.2Ω, 1/10W	NI1002211Y
RP16	Chip, 2.7 kΩ, 1/10W	NI0527211Y
RP17	Chip, 2.2 kΩ, 1/10W	NI0522211Y
RP18	Chip,100Ω, 1/10W	NI0510111Y
RP21	Chip 10 kΩ, 1/10W	NI0510311Y
RP22	Chip, 3.3 kΩ, 1/10W	NI0533211Y
RP24	Trimming, 10 kΩ	RA01030710
RP25	Chip, 5.6 kΩ	NI0556211Y
RP31	Chip, 27 kΩ, 1/10W	NI0527311Y
RP32	Chip, 22 kΩ, 1/10W	NI0522311Y
RP33	Chip, 4.7 kΩ, 1/10W	NI0547211Y
RP34	Chip, 2.2 kΩ, 1/10W	NI0522211Y
RP35	Chip, 47 kΩ, 1/10W	NI0547311Y
RP36	Chip, 47 kΩ, 1/10W	NI0547311Y
RP37	Chip, 4.7 kΩ	NI0547211Y
RP38	Chip, 22 kΩ, 1/10W	NI0522311Y
RP39	Chip, 10 kΩ, 1/10W	NI0510311Y
RP40	Chip, 22 kΩ, 1/10W	NI0522311Y
RP41	Chip, 560 kΩ, 1/10W	NI0556411Y
RP42	Chip, 150 kΩ, 1/10W	NI0515411Y
RP43	Chip, 2.2 kΩ, 1/10W	NI0522211Y
RP44	Trimming, 500Ω	RA05010280
RP45	Chip, 220 kΩ, 1/10W	NI0522411Y
RP46	Chip, 220 kΩ, 1/10W	NI0522411Y
RP47	Chip, 470 kΩ, 1/10W	NI0547411Y
RP48	Chip, 470 kΩ, 1/10W	NI0547411Y
RP49	Chip, 100Ω	NI0510111Y
RP50	Chip, 100Ω, 1/10W	NI0510111Y
RP51	Chip, 1 kΩ, 1/10W	NI0510211Y
RP52	Chip, 4.7 kΩ, 1/10W	NI0547211Y
RP53	Chip, 100Ω, 1/10W	NI0510111Y
RP65	Chip, 18 kΩ, 1/10W	NI0518311Y

Reference Designator	Description	SCC Part Number
RP66	Chip, 6.8 kΩ, 1/10W	NI0568211Y
RP67	Chip, 47Ω, 1/10W	NI0547011Y
RP68	Chip, 47Ω, 1/10W	NI0547011Y
RR01	Chip, 27 kΩ	NI0527311Y
RR02	Chip, 18 kΩ	NI0518311Y
RR03	Chip, 47 kΩ	NI0547311Y
RR04	Chip, 100Ω	NI0510111Y
RR05	Chip, 150Ω, 1/10W	NI0515111Y
RR30	Chip, 470Ω, 1/10W	NI0547111Y
RR31	Chip, 100Ω	NI0510111Y
RR32	Chip, 330 kΩ	NI0533411Y
RR33	Chip, 220 kΩ	NI0522411Y
RR34	Chip, 100Ω	NI0510111Y
RR35	Chip, 100Ω	NI0510111Y
RR36	Chip, 56Ω	NI0556011Y
RR37	Chip, 560Ω	NI0556111Y
RR50	Chip, 47 kΩ	NI0547311Y
RR51	Chip, 56 kΩ	NI0556311Y
RR52	Chip, 4.7 kΩ	NI0547211Y
RR53	Chip, 15 kΩ	NI0515311Y
RR54	Chip, 33 kΩ, 1/10W	NI0533311Y
RR55	Chip, 22 kΩ	NI0522311Y
RR56	Chip, 5.6 kΩ	NI0556211Y
RR57	Chip, 120 kΩ	NI0512411Y
RR58	Chip, 1 kΩ	NI0510211Y
RR59	Chip, 47 kΩ	NI0547311Y
RR60	Chip, 2.2 kΩ	NI0522211Y
RR61	Chip, 2.2 kΩ	NI0522211Y
RR62	Chip, 10 kΩ, 1/10W	NI0510311Y
RR63	Chip, 10 kΩ, 1/10W	NI0510311Y
RR64	Chip, 10 kΩ	NI0510311Y
RR65	Chip, 82 kΩ	NI0582311Y
RR66	Chip, 3.3 kΩ	NI0533211Y
RR68	Chip, 1 kΩ	NI0510211Y
RR69	Chip, 22 kΩ	NI0522311Y
RT01	Chip, 1.8 kΩ, 1/10W	NI0518211Y
RT02	Chip, 56Ω, 1/10 W	NI0556011Y
RT03	Chip, 820Ω, 1/10W	NI0582111Y
RT04	Chip, 47Ω, 1/10W	NI0547011Y
RT05	Chip, 22Ω, 1/10W	NI0522011Y
RT06	Chip, 1.5 kΩ, 1/10W	NI0515211Y
RT07	Chip, 100Ω, 1/10W	NI0510111Y
RT08	Chip, 22Ω, 1/10W	NI0522011Y
RT09	Chip, 100Ω, 1/10W	NI0510111Y
RT10	Chip, 22Ω, 1/10W	NI0522011Y
RT11	Chip, 1 kΩ, 1/10W	NI0510211Y
RV01	Chip, 150Ω, 1/10W	NI0515111Y
RV03	Chip, 100Ω, 1/10W	NI0510111Y
RV04	Chip, 100Ω, 1/10W	NI0510111Y
RV05	Chip, 2.7 kΩ, 1/10W	NI0527211Y
RV06	Chip, 4.7 kΩ, 1/10W	NI0547211Y
RV08	Chip, 100Ω, 1/10W	NI0510111Y

Mechanical, Chassis Electrical

CB20	Feedthrough, Capacitor, 6 pF	DC11060010
CB21	Feedthrough, Capacitor, 9 pF	DC11060010
CB22	Feedthrough, Capacitor, 6 pF	DC11060010

Reference Designator	Description	SCC Part Number
CG01	Feedthrough, Capacitor, 2000 pF..	DC18202110
CG02	Feedthrough, Capacitor, 2000 pF	DC18202110
CG03	Feedthrough, Capacitor, 2000 pF..	DC18202110
CG04	Feedthrough, Capacitor, 2000 pF..	DC18202110
CG05	Feedthrough, Capacitor, 2000 pF..	DC18202110
CG06	Feedthrough, Capacitor, 2000 pF..	DC18202110
CG07	Feedthrough, Capacitor, 2000 pF..	DC18202110
FG01	Fuse, 10 A	FS11000600
JG01	Jack	YJ10001580
JG02	Jack	YJ10001872
QB01	IC, M57704H	HC10026200
QB01	IC, M57704UH	HC10033200
QB01	IC, M57704SH	HC10034200
QB07	Varistor	HP0000423R
QV04	Transistor, 2SC3358	HT33358010
RG01	Resistor, Variable	RK12030150
RG02	Resistor, Variable	RK12030160
WG01	A.C. Power Cord	YC02000370
YB01	Connective Cord	YB00101020
YB02	Connective Cord	YB00201150
YB03	Connective Cord	YB00101010
YB04	Connective Cord	YB00150460
003B	LED Window	156C053010
009B	Memo Button	156C270040
010B	Scan Button	156C270050
011B	CLR Button	156C270060
012B	Dim Button	156C270070
014B	Key Board Reflector	156C274012
019B	Screw	51380206P0
020B	Heatsink	156C267010
021B, 022B	Screw	51280306B0
025B	Spacer	156C118023
027B	Buffer	156C056040
028B	Buffer	156C056050
030B	Frame	156C401012
031B	Bracket	156C160012
032B	Shield	51500306B0
033B	Shield	156C109040
034B	Shield	156C109022
035B	Screw	5126030880
036B, 037B	Bolt	52730308S9
038B	Bolt	52730312S9
039B	Collar	101C055020
045B	Clamper	156C005030
046B	Clamper	156C005042
047B	Insulator	156C120010
055B	Lid	157C257022
056B	Bracket	157C160020
059B	Insulator	157C120020
067B	Screw	51100306A9
070B	Spacer	156C118010
071B	Shield	109C109040
072B	Insulator	109C120060
080B	Screw	51290308B0
081B	Bracket	156C160022
082B	Screw	51290308B0
084B	Spring	102C115030
088B	Buffer	156C056030
092B	Lid	156C257022

Reference Designator	Description	SCC Part Number
093B	Screw	51480305B9
094B	Bushing	1455259070
095B	Bushing	239H259030
096B	Indicator	156C265010
097B	Name Plate Fix	5508245710
098B	Lug	62030039W0
099B	Sheet	156C107010
100B	Diagram	156C853010
101B	Label	156C861012
102B	Label	101C861040

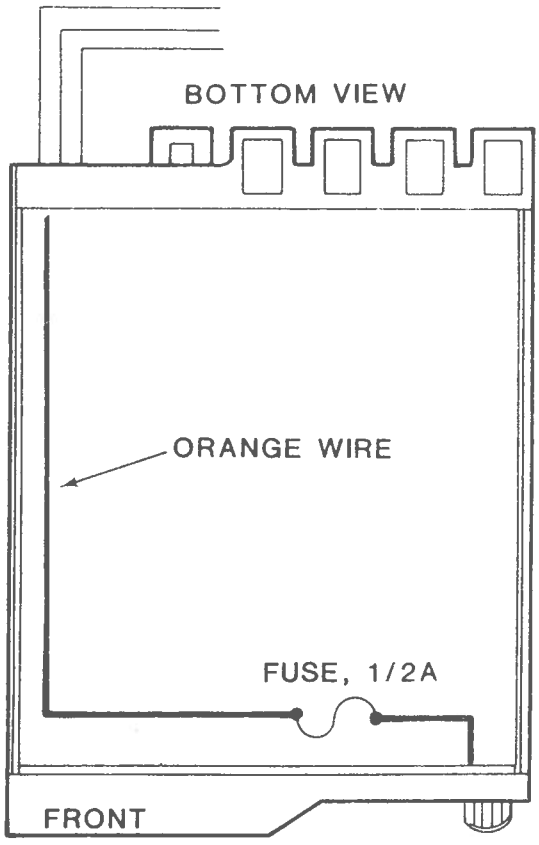
Standard Communications Corp.

Inserts

GX3000 Memory Backup Installation

There is an orange wire now installed in the GX3000 series transceiver. The purpose of this wire is to connect the memory backup power to the transceiver. This will hold all programmed data in memory even if the radio is turned off. This orange wire should be installed to a fused constant D.C. source under the dashboard (such as the lights).

If the orange wire is connected to the battery, an in-line fuse should be installed as close to the battery as possible.



Standard Communications Corp.

Inserts

GX3000U Service Information Insert

The following paragraph replaces the information in Step 5 from Section 5.3.2, A on page 7 of the GX3000U Owner's Operating and Maintenance Manual. The specified frequency range has changed.

5. For programmed tones in the frequency range of 67 through 120 Hz, cut RA25 on the tone board. RA25 is located near QA02 at end of 8-pin IC TL062.

Standard Communications

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Telephone 213/532-5300

GX3000U0301 8/85

E002 885 1K VF