MOBILE RADIO

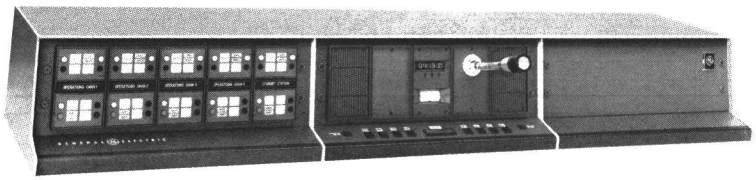
LBI30310A

series 2500, 503 & 502

COMMAND CONTROL CENTER

INSTALLATION MANUAL

SERIES 2500



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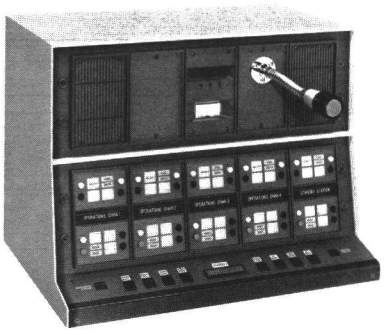
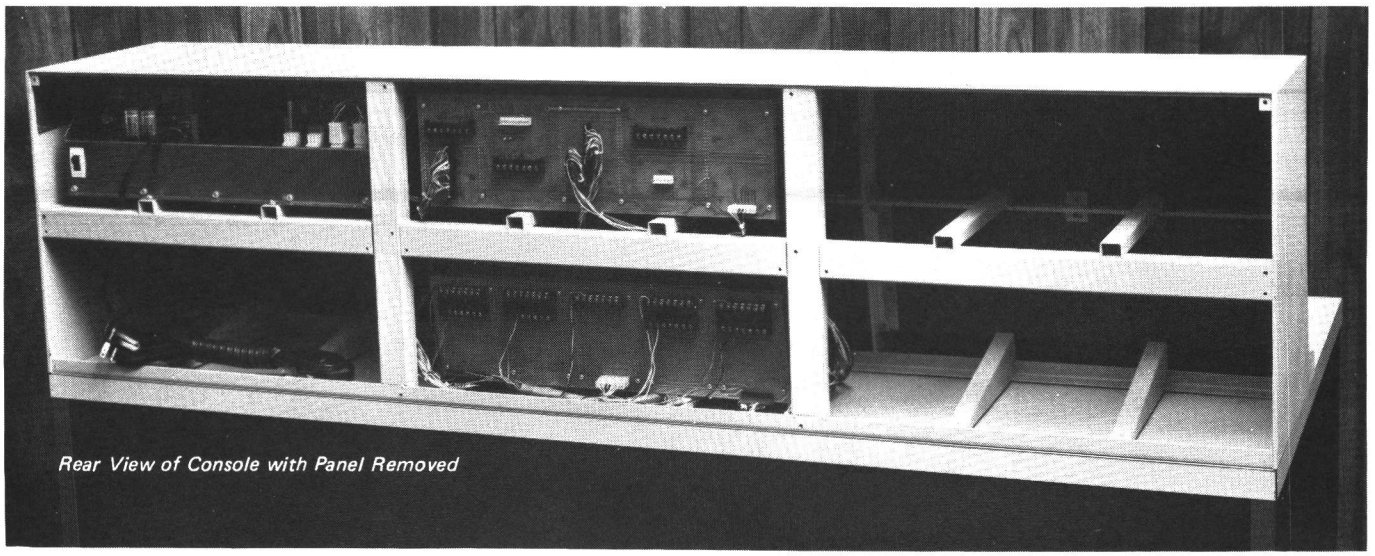


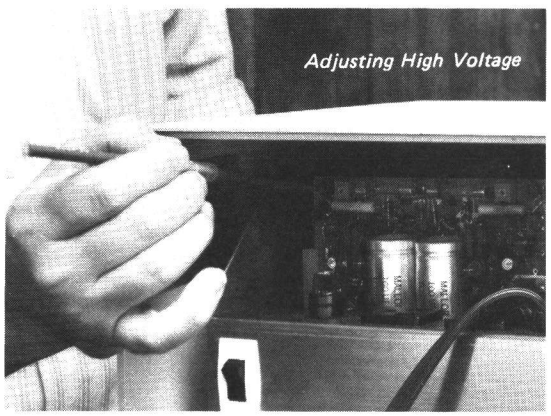
SERIES 502

SPECIFICATIONS

Dimensions (2500)	15''H x 60''W x 15''D
Dimensions (503)	8''H x 60''W x 15''D
Dimensions (502)	15''H x 20''W x 15''D
Temperature Range:	
Full Compliance	10°C to 40°C
Operable	-10°C to 60°C
Maximum Power Requirements	250 Watts, 121 Volts, 50/60 Hz (six-channel control)

GENERAL ELECTRIC





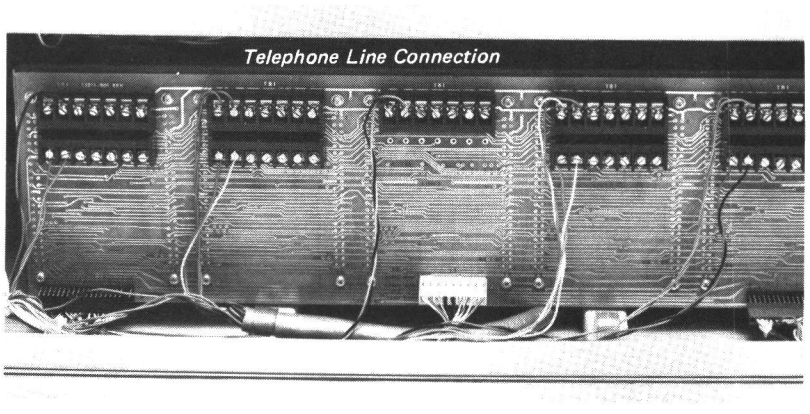


Figure 1-2

WARNING

No one should be permitted to handle any portion of the equipment that is supplied with high voltage; or to connect any external apparatus to the units while the units are supplied with power. KEEP AWAY FROM LIVE CIRCUITS.

TABLE OF CONTENTS

FIGURES

PLANNING YOUR INSTALLATION

The desk and turret of the Series 2500, 503 & 502 consoles are shipped separately. This manual provides installation and adjustment procedures necessary to place the control center in operation.

CONSOLE LOCATION

The control center should be located near the telephone line inputs and the primary power. Select a location that is convenient for the operator, and provides adequate space for future maintenance and servicing.

POWER REQUIREMENTS

All consoles require 121 VAC, 50/60 Hz primary power. An optional 242/121 volt step-down transformer kit is available for locations where the primary power source is 242 VAC. (Refer to Maintenance Manual LBI30300.) The console primary power should have its own fuse or circuit breaker.

TELEPHONE LINES

A key link in a remote control installation is the telephone pair(s) between the console and the station. A telephone pair is simply a pair of wires that normally range in size from AWG #19 to AWG #26. Equipment designed to operate with telephone pairs should have a nominal impedance of 600 ohms.

Types of Connections: Advantages, Disadvantages

Three types of telephone line connectors are commonly used in remote control applications. The following chart contains information to assist in selecting the connection method and the type of telephone line to lease. Before choosing one or the other method, consider both cost and performance since one may be available at considerably lower rate. Some local telephone companies, however, offer no choice, but will provide an audio pair and a control pair.

Telephone Line Noise

Telephone pairs pass through overhead cables, underground cables, junction points and switch boards. Consequently noise may be induced on the line, although the pair is usually fairly well balanced. An unshielded run in a flourescent-lighted building, for example, is especially susceptible to noise pickup. Therefore, the most conventient place for the dispatcher may not be the best location to originate or receive transmissions. The amount or noise pickup is principally a function of the length of line and the environment through which it passes. Assume, for instance, there is 10 millivolts of noise pickup in a particular installation. If the audio output of the console is one volt, and the line loss is 10:1, the audio signal at the station is 100 millivolts, only 20 dB higher than the noise. This relatively high background noise would reduce the intelligibility of the audio and, consequently, the maximum working range.

Now consider a short line in which the noise pickup is only two millivolts and the line loss only 2:1. The signal at the receiving end would then be 250 times (48 dB) greater than the noise.

In other words, for the best signal-to-noise ratio, the shortest, lowest-loss line available should be used.

Signal Attenuation

As in all transmission lines, there are inherent losses in telephone lines. For example, about half the input voltage of a 1 kHz tone is lost in six miles using an AWG #19 wire pair. With AWG 26 wire, only 2 1/4 miles may be covered before the signal is attenuated by half. A telephone pair will normally have a maximum length of about 12

Method	Description	Advantages or Disadvantages
1	One metallic pair: for both audio and control voltages with control voltage simplexed from line to line.	Economical; dependable where earth currents may be large, or where a good earth ground cannot be obtained; keying clicks will be heard in paralleled control consoles.
2	One metallic pair: for both audio and control voltages with control voltage simplexed from line to ground.	Economical; earth ground currents (encountered near power company substations) may interfere with control functions; keying clicks minimized.
3	Two telephone pairs; one for audio voltage and one for control voltage (metallic pair).	Provides best performance; keying clicks will not be heard; least susceptible to earth ground currents which may interfere with control functions.

miles before amplification is added by the telephone company to make up for line losses. Line losses as high as 30 dB can be tolerated in operating a remote station from the consoles, but such high losses should be avoided whenever possible.

The series DC resistance of a telephone pair will affect the control between the console and a remote station. Current regulators in the console DC control current sources minimize these variations, after initial adjustments. The consoles will operate channels with line loop resistances of up to 8000 ohms. Stray leakage currents, noise, faults, earth currents, etc. may, however, cause faulty operation.

INSTALLING YOUR CONSOLE

The console installation consists of:

1. Mounting the turret on the desk.
2. Making power and telephone line connections.
3. Installing the lightning protection assembly.
4. Performing adjustment procedures.

MOUNTING THE TURRET ON THE DESK

To install the turret assembly, six mounting holes and two cable access holes must be drilled in the desk top. The top has a wood core with a laminated plastic cover, so a small electric drill (with wood bit) or brace and auger bit may be used. See Figure 3.

1. Drill two, 2- to 3-inch cable access holes - B1, B2 in Figure 3 - in the desk top.
2. Place the turret assembly on the desk top.
3. Remove the rear cover from the turret. (Remove all screws except those holding the bottom of the cover, then loosen the bottom screws and lift out cover.)
4. Disconnect the three front lip assemblies. Lift and remove the assemblies from the turret and remove the lower cage assemblies as required.
5. Align the turret cabinet with the side and back edges of the desk top.
6. Using the turret cabinet as a template, or the drill plan, Figure 3, mark the six mounting hole positions. The holes are located on the bottom braces of the turret.

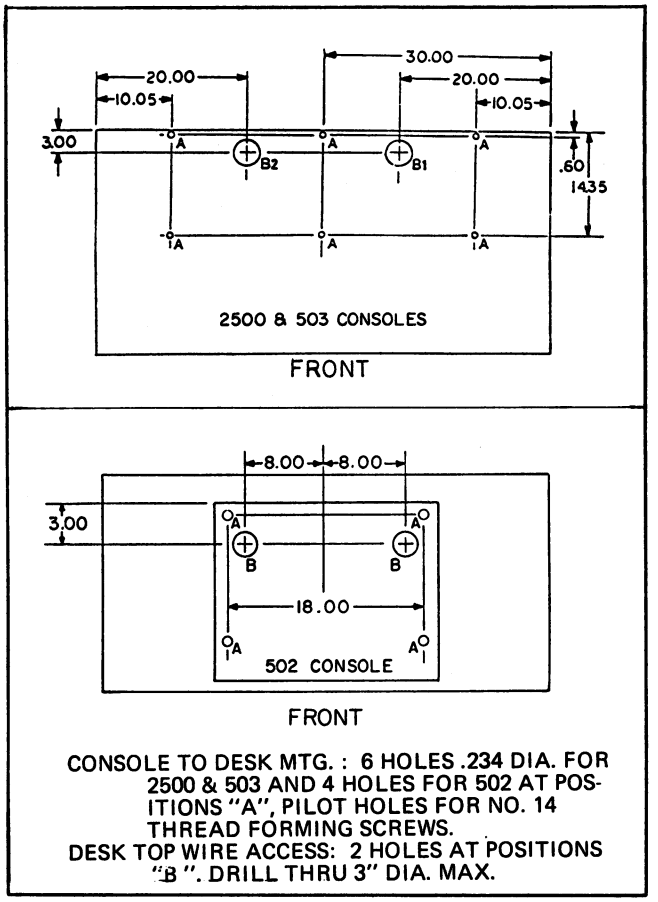


Figure 3 - Mounting and Wire Access Hole Pattern

7. Drill six mounting holes for the 2500, 503 and 4 holes for the 502 to a depth of 3/4 inch using an "A" (.234-inch diameter) drill.
8. Return the turret to the mounting location. Insert the 3-wire, rubber insulated power cable (from the console power supply) through hole B1 in the desk top. Secure the turret to the desk with the six #14 x 5/8" thread-forming screws, and flat washers, which are provided.
9. Replace the card cages and front lip assemblies.
10. Route control cable from turret through hole B2 in the desk top.

NOTE

AC power cables should be separated from control cables and routed through a different hole.

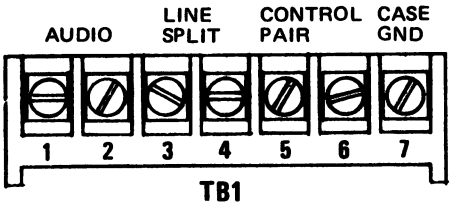
11. Replace turret rear cover.

TELEPHONE LINE CONNECTIONS

NOTE

Before connecting the telephone pair, it is necessary to identify each end of the wires that will carry the control voltage. Temporarily connect one of the wires at the remote control panel to a good earth ground, and measure the resistance of each of the wires to ground at the control console. The ungrounded wire will appear as an open circuit. The grounded wire will show a resistance. Identify the wires at both ends. Then observe line polarity as indicated in the following procedure.

A telephone pair is connected to a TB1 on the Transmit/Receive Mother Board(s) for each channel module.



Depending on the control method selected, connect telephone lines and make jumper connections as described below.

Method 1: (For single telephone pair, control voltage simplexed line to line. See Figure 4A.)

a. Connect a jumper between TB1-3 and TB1-5.

b. Connect a jumper between TB1-4 and TB1-6.

c. Connect telephone pair(s) to audio terminals of TB1-1 and TB1-2.

Method 2: (For single telephone pair, control voltage simplexed line to ground. See Figure 4B.)

a. Connect a jumper between TB1-3 and TB1-4.

b. Connect a jumper between TB1-4 and TB1-5.

c. Connect a jumper between TB1-6 and TB1-7.

d. Connect telephone pair(s) to TB1-1 and TB1-2.

e. Make connection to earth ground (for each station at TB1-7).

Method 3: (Separate control and audio pair. See Figure 4C.)

a. Connect a jumper between TB1-3 and TB1-4.

b. Connect audio pairs to audio terminals of TB1.

INSTALLING LIGHTNING PROTECTION ASSEMBLY

The Lightning Protection Assembly, SEC/50550-001, should be installed as shown in Figure 5. Make the middle binding post common for all lines, using AWG #20 insulated wire, and connect the common to a good earth ground. Connect the telephone pairs across the outer terminals.

The lightning protection circuitry should be located away from the console, preferably where the telephone lines enter the building.

After the telephone line connections have been completed, and the lightning arrestors installed, a few adjustments may be required before placing the unit in service. Before applying power to the console, make sure that the station installation and adjustment has been completed, and that all telephone lines have been connected to the proper terminals. Then connect the power cable to a 117 volt, 50/60 Hz AC source, and turn on the console power switch, S1, at the back of the console. Make the necessary adjustments as described in the Adjustment Procedures below.

DESK MICROPHONE CONNECTIONS

I Connect the standard desk microphone leads on SEC/53268-001, Center Section Mother Board, as follows:

A. White lead to TB1-7 (MIC HI)

B. Blue lead to TB1-6 (MIC LO)

C. Red lead to TB2-2 (PTT)

D. Black lead to TB2-1 (GND)

II Connect the Channel Guard desk microphone leads as follows:

A. White lead to TB1-7 (MIC HI)

B. Blue lead to TB1-6 (MIC LO)

C. Red lead to TB2-2 (PTT)

D. Black lead to TB2-1 (GND)

E. Green lead to TB2-4 (CG MON)

METHOD 1: SINGLE TELEPHONE PAIR WITH CONTROL SIMPLEXED LINE TO LINE

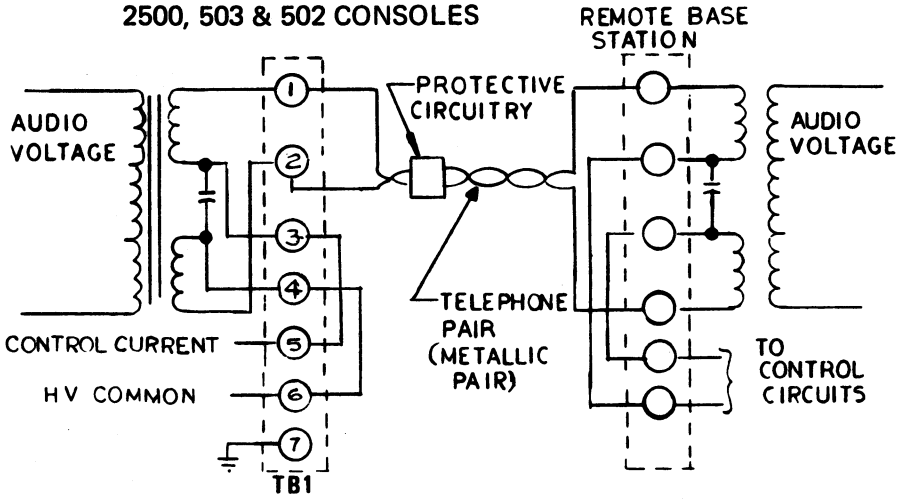


Figure 4A

METHOD 2: SINGLE TELEPHONE PAIR WITH CONTROL SIMPLEXED BETWEEN CENTER TAP AND GROUND

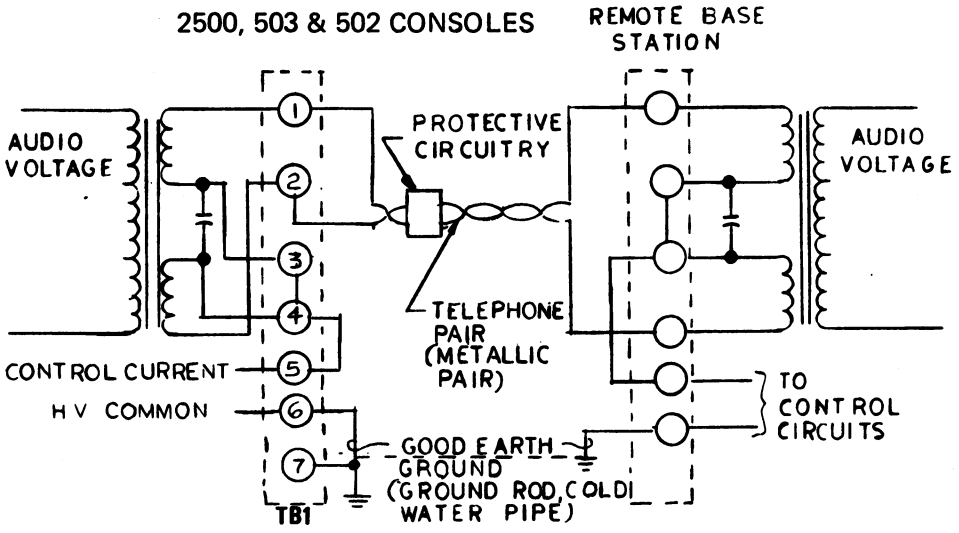


Figure 4B

METHOD 3: SEPARATE CONTROL AND AUDIO PAIR

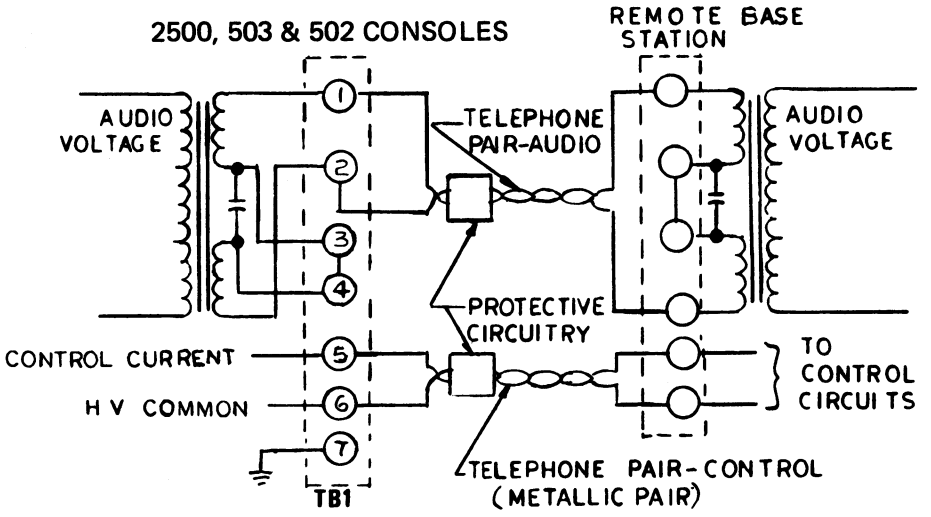


Figure 4C

Figure 4 - Telephone Line Connections

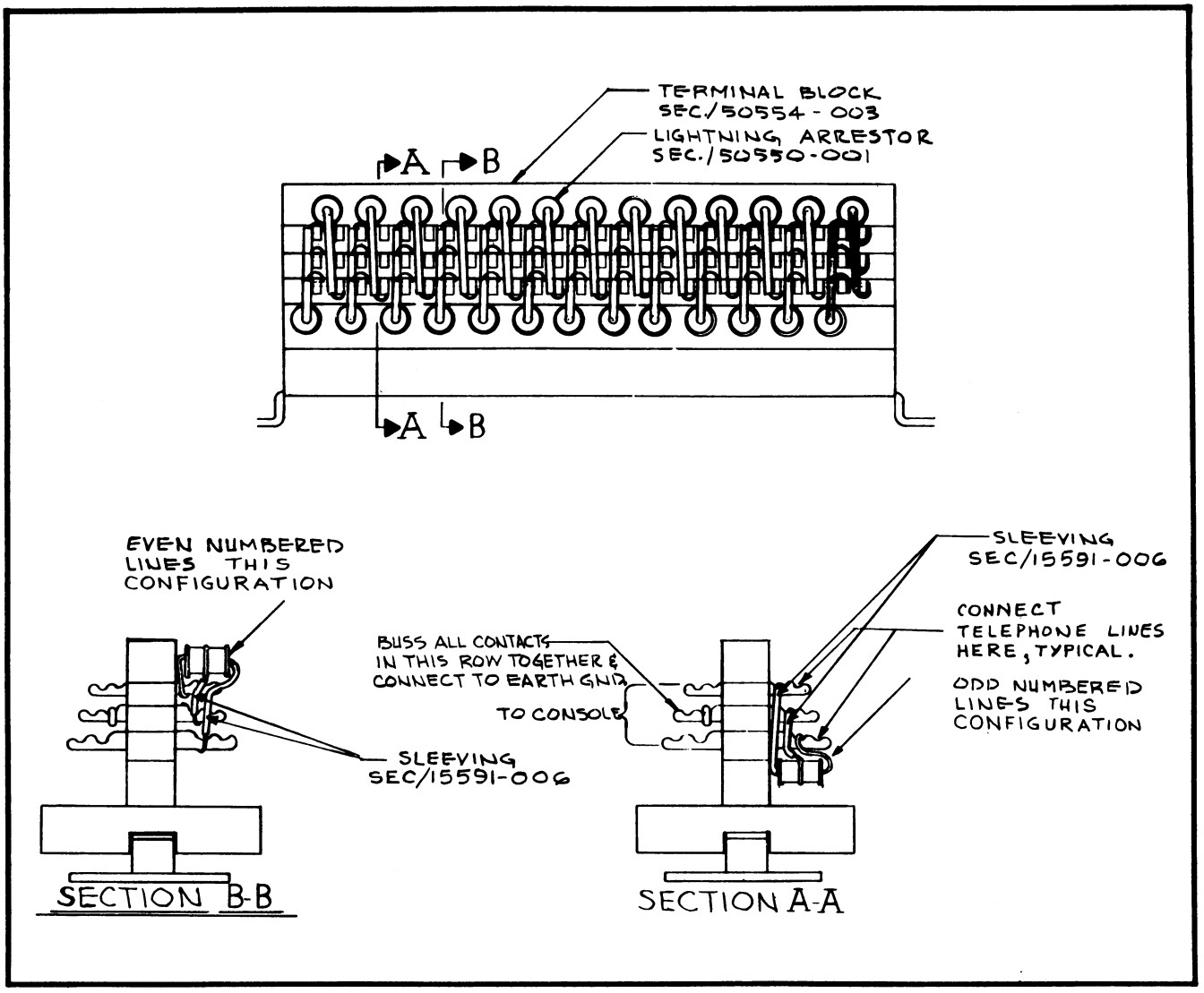


Figure 5 - Lightning Protection Assembly

I Remove Existing Microphone

A. Power down console.

B. Remove selected speaker (right).

C. Remove audio control board (left board in opening).

D. Carefully reach in the opening and disconnect the console mic leads.

E. Remove the three screws on the console mic and remove it.

F. Remove the two screws holding the mic panel (plastic) in place and install the blank panel supplied.

G. Re-assemble the audio control board and selected speaker.

II Mounting the Boom and Microphone

A. Using the outline template supplied with these instructions, drill three mounting holes in the desired location in the top of the console.

NOTE

Be very careful not to let metal flakes fall into the electronics below! Use a piece of paper or cardboard to catch them!

B. Using the #10-32 bolts, flat washers and nuts, fasten the boom mounting plate in place.

C. Attach the boom and microphone to the base.

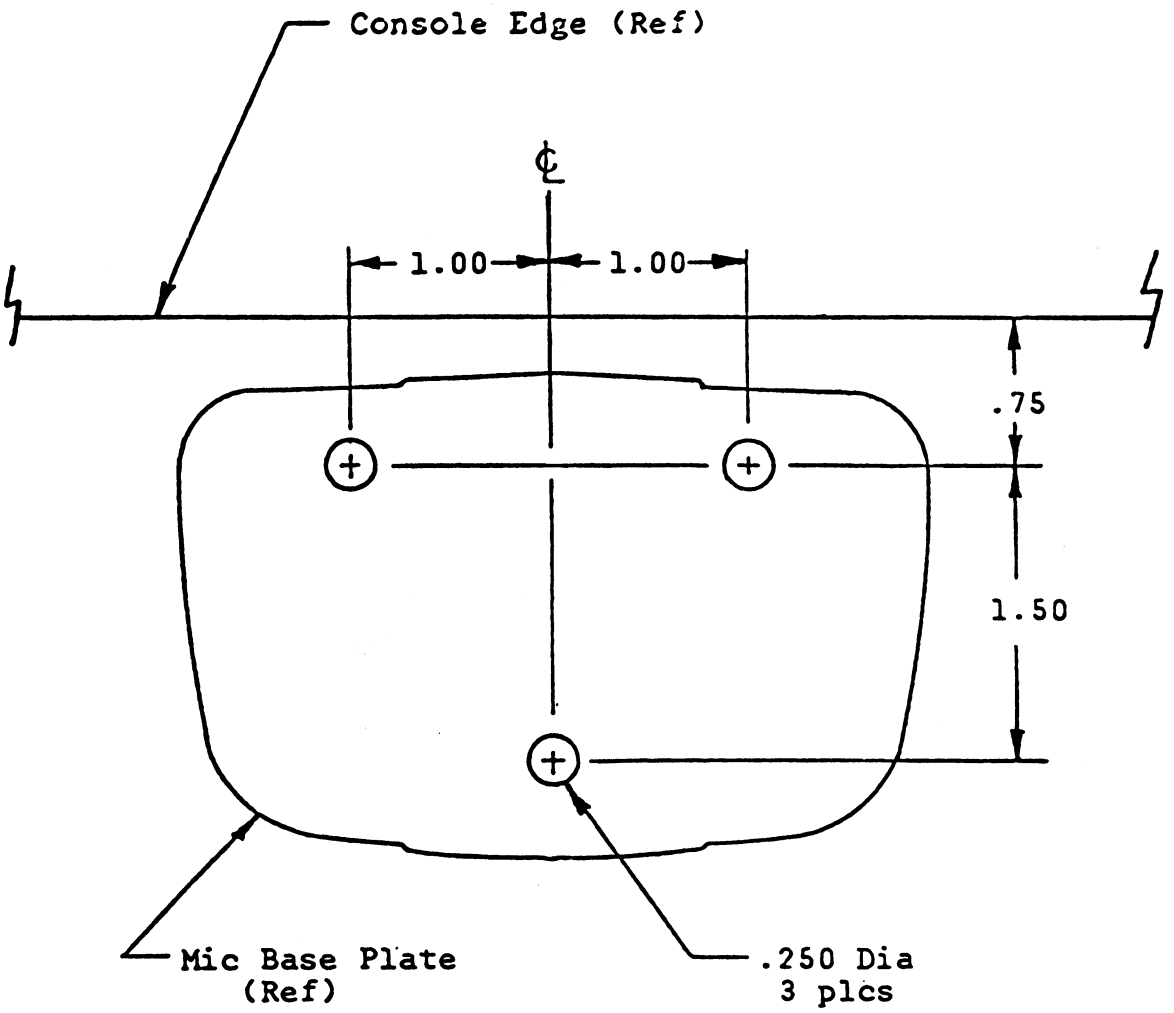


Figure 6 - Boom Mic Baseplate Mounting Template Scale: 1/1

III Hook-up

A. Clip off the connector attached to the longer cable.

B. Strip the wires and if desired, crimp the spade lugs supplied to the wires.

C. Hook the white wire to TB1 pin 5 "Aux Mic Hi" on the center section Mother Board.

D. Hook the black and shield to TB1 pin 4 "Aux Mic Lo" on the center section Mother Board.

OPTION CONNECTIONS

Refer to individual options and accessories for special connections.

GENERAL CONSOLE INSTALLATION NOTES

1. Before trying to remove any console module by its handle, perform the following steps; (See Figure 7).

   a. Lift off the two legend cover plates (held in place by magnets).

   b. Remove the (2) screws and discard.

   c. Replace the legend cover plates.

   The module may now be removed.

2. A switch panel for selecting alternate transmitter sites is included in each console position. Two T/R modules are assigned for each channel - one dedicated to the main transmitter and the second to the

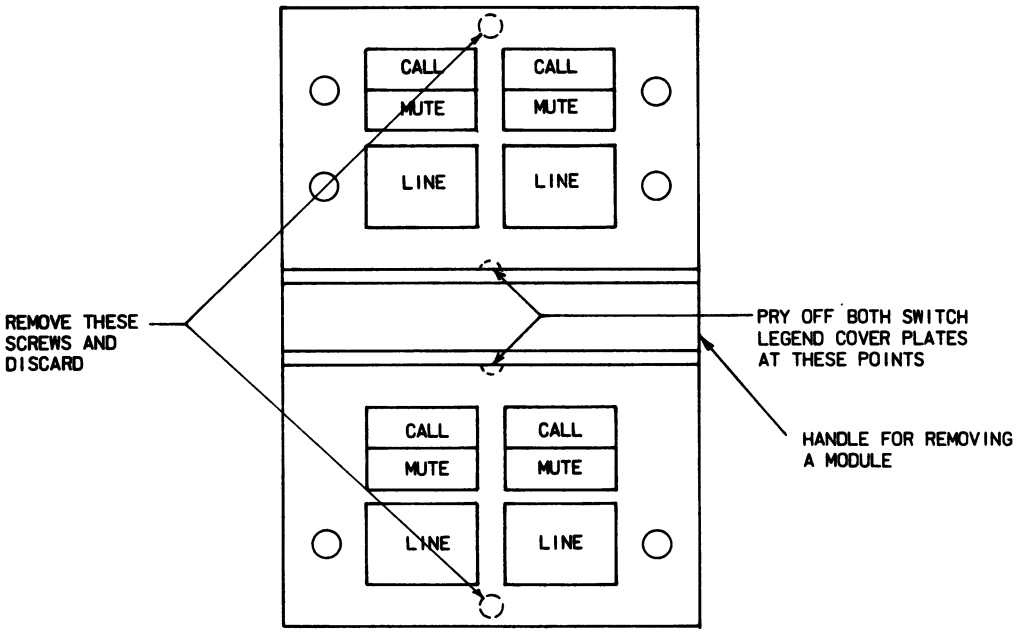


Figure 7 - Module, Legend Cover Plate

alternate sites. Up to six alternate sites can be accommodated for each of six channels. Looking at the front of the console (each position), the T/R module to the far left is the Channel 1 main T/R module. The next module to the right is the Channel 1 alternate T/R module. The next module to the right is the Channel 2 main T/R module, the next to the right is the Channel 2 alternate T/R module, and so on.

3. All incoming telephone lines should be protected with the telephone line protectors supplied with the consoles. The center connection for each protector should be secured to a building Earth connection (preferably a cold water pipe).

4. If the console(s) are installed in an area covered by carpet, which might create static electricity problems, make sure the console is suitably connected to Earth.

5. Modules having handles may be removed with power applied to the console, but do not remove any of the boards located in the upper central turret section of each console position with power applied.

PARALLEL CONNECTION OF CONSOLES

I Termination:

A. DC Control modules

1. Remove R23 and R36 on the Receive Board, 53154-0001.

2. For N paralleled consoles, install R23 in each Receive Board, with a resistance of N X 600 ohms. For example, if three consoles are to be paralleled, install an 1800 ohm resistor in R23 position for each of the three Receive Boards.

3. If the module has 4-Wire Audio, also install R36 in each Receive Board, with a resistance of N X 600 ohms.

B. Tone Control Modules

1. Remove R55 and R71 on the Receive Board, 53224-001.

2. For N paralleled consoles, install R71 in each Receive Board, with a resistance of N X 600 ohms. For example if three consoles are to be paralleled, install an 1800 ohm resistor in R71 position for each of the three Receive Boards.

3. If the module has 4-Wire Audio, also install R55 in each Receive Board, with a resistance of N X 600 ohms.

II Cross-busy indication and cross muting.

A. For all modules that are to be paralleled, jumper E7 to E10 on the T/R Mother Board. (Refer to 54157-0001 and 54158-0001.)

B. Connect TB2-7 for the module in Console A to TB2-7 of the corresponding module in Console B.

Repeat for each module that is to be paralleled.

C. Connect a single logic ground wire between the consoles by running a wire from TB1-3 of the Central Control Mother Board of Console A to TB1-3 of Console B.

Results:

1. For 2-Wire Modules:

   a. Transmission on Console A pulls $\overline{PTX}$ (TB2-7) low. This generates a BUSY indication on the module in Console B, totally mutes the Receive Audio of the module in Console B, and inhibits transmission from the module in Console B.

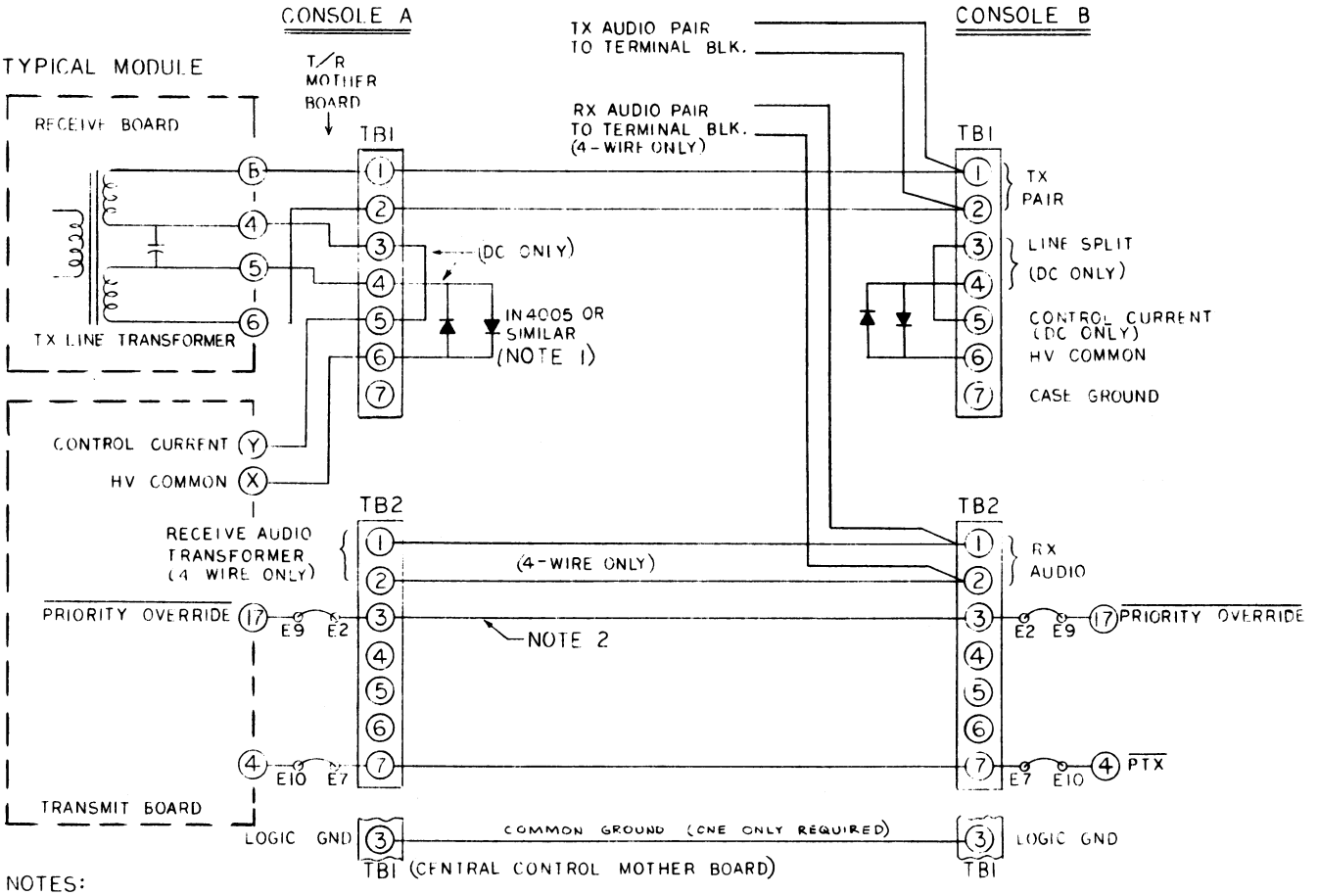
   b. If muting of the parallel Console Receive Audio is not desired, clip diode CR3 on the DC Receive Board, or CR23 on the Tone Receive Board. This would be desirable, for instance, if the consoles are physically separated so that acoustic feedback is not a problem and intercom operation between the consoles is desired.

2. For 4-Wire Modules:

   Transmission on Console A pulls PTX low. This generates a BUSY indication on the module in Console B and inhibits transmission from the module in Console B. It does not mute the Receive Audio in Console B because the cross-mute diode is removed during installation of the 4-Wire Audio Kit.

III Priority Override

This connection should be made only in the case where one console is strapped and is to be used as a supervisor over the parallel console. Operation of the function is described in the module maintenance manual, LBI30301 or LBI30302. Parallel interconnection is as follows:



NOTES:

1. DIODES AS SHOWN REDUCE HUM AND CROSS-TALK IN PARALLEL-CONNECTED, LINE-TO-LINE KEYING DC CONSOLES.
2. DO NOT INTERCONNECT PRIORITY OVERRIDE UNLESS ONE CONSOLE IS STRAPPED FOR AND IS TO BE USED AS SUPERVISOR.

(54157-0001, Rev. 0)

Figure 8 - Parallel Connection of Consoles

A. For the modules in both consoles to be paralleled, jumper E2 to E9.

B. Connect a wire between TB2-3 of the module in Console A to TB2-3 of the module in Console B.

Other special interconnections are possible, using the uncommitted locations of TB2 and the various I/O's from the modules. These connection points are shown on 54148-0001.

SPECIAL MODULE STRAPPING OPTIONS

I Automatic unselect or select when simul-select mode is terminated. Modules are strapped at the factory to unselect when simul-select mode is terminated. If it is desired that a module be automatically selected when simul-select is terminated, strap J103 on the tone transmit board to Y instead of X, or strap J107 on the DC transmit board to Y instead of X.

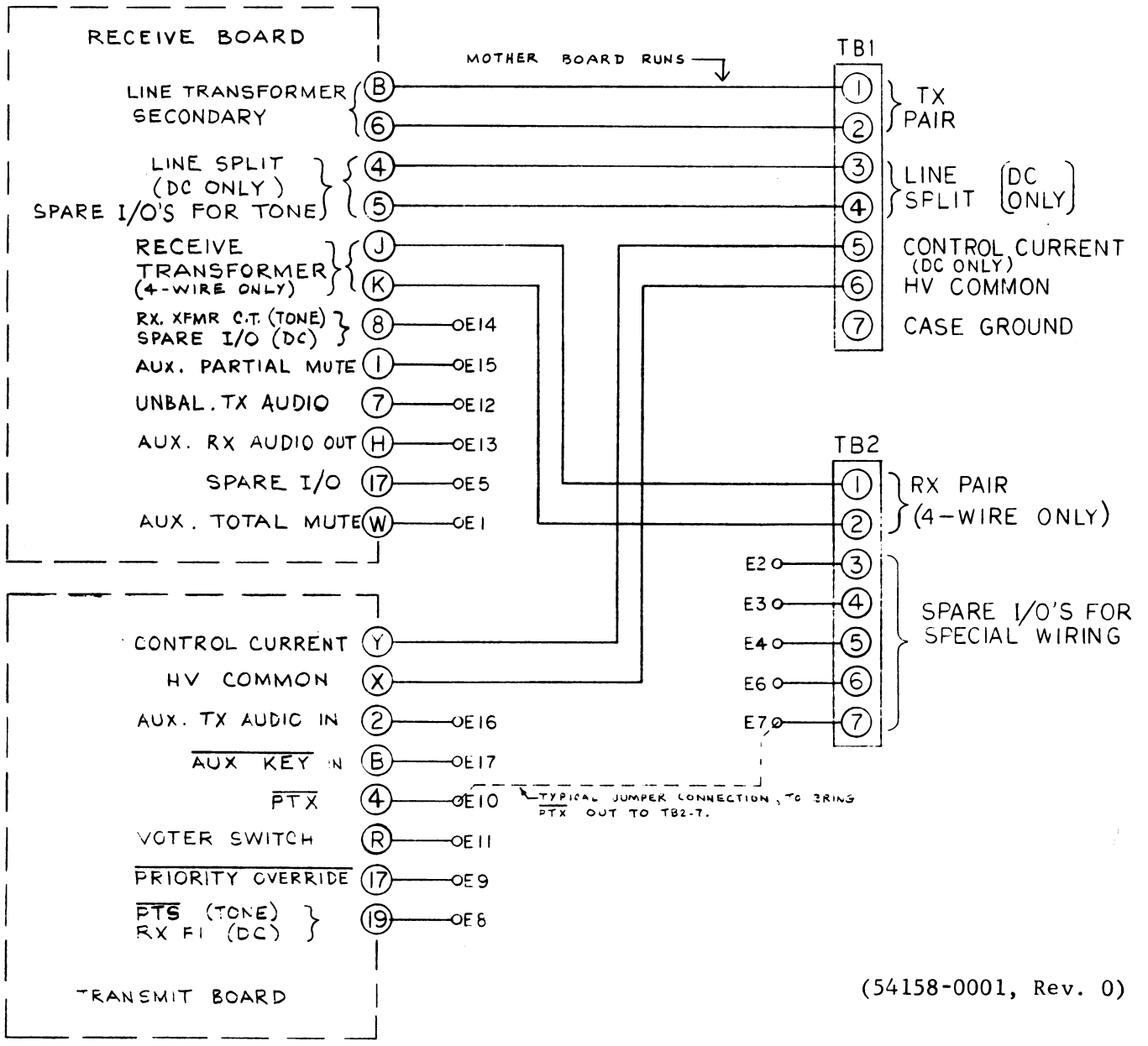


Figure 9 - Transmit/Receive Module Input/Output and Jumper Connections

II If a console is to have supervision over a parallel console, strap the Transmit Board as follows:

A. For DC Module

1. Strap J108 to B, rather than A.

2. Strap J109 to D, rather than C.

B. For Tone Module

1. Strap J104 to B, rather than A.

2. Strap J106 to D, rather than C.

III If simulcast capability is not desired on a module:

A. Clip out J106 on the DC Transmit Board.

B. Clip out J101 on the Tone Transmit Board.

TESTING AND TROUBLESHOOTING AIDS

Extender PC boards, SEC/53290-001 and SEC/53290-002, should be used for routing power and signals to and from the circuit boards during servicing. Card puller SEC/53347-001 should be used for withdrawing PC cards from the Central Control Section card cage.

ADJUSTMENT PROCEDURES

Before adjusting the audio system, make sure that AC power line, phone lines and ground connections have been completed at the console and base station.

MICROPHONE GAIN

WARNING

Before adjusting the transmit audio levels, be sure the VU meter level-adjust potentiometer is fully counterclockwise to keep from pegging the meter.

1. Remove the four screws retaining the Selected Speaker grill (upper center port, slot five) and set the speaker assembly aside. Replace the Audio/Control Board (SEC/53209-001 located in slot 1 of the port with the left extender board. Then plug the Audio/Control board into the extender board jack.

2. Remove the 10-pin connector, labeled "Headset Connector" on the Center Section Mother Board, SEC/53268-001, at the rear of the console.

3. Place an AC VTVM on TP2 (Tx AUDIO) and TP1 (GND).

4. Apply a 1000 Hz, 100 mV signal to MIC HI and MIC LO of the headset connector. Capacitively couple the signal generator to the connector with a 0.1 microfarad capacitor.

5. Turn potentiometer R54 (compressor sensitivity adjust) fully clockwise. Adjust R1 (Audio Level) to a reference level, in dB, on the VTVM, while the module is Selected and PTT (Push-to-Talk) is activated.

6. Reset the input signal at the level indicated in the following chart.

Microphone	Input Level Setting
EM-35-A (Goose-neck Mic)	10 mV
EM-28-A (Desk Mic)	12 mV
EM-25-A (Military Mic)	60 mV
EM-26-A (Handset)	60 mV
EM-13-A (Boom Mic)	6 mV

Adjust R54 counterclockwise until the reference level on the VTVM decreases 2 dB.

7. Increase input signal by 10 dB then readjust R1 to obtain 245 mV on the VTVM.

AUXILIARY MICROPHONE GAIN

WARNING

Before adjusting the transmit audio levels, be sure the VU meter level-adjust potentiometer is fully counterclockwise to keep from pegging the meter.

1. Re-install the headset connector (see step 2 above), and apply the audio signal to TB1-5 (AUX MIC HI) and TB1-4 (AUX MIC LO).

2. Repeat the same procedure as described above for MIC Gain except adjust R6 (instead of R54) on the AUX MIC option board, SEC/53192-001, for the specified compressor sensitivity level. The AUX MIC option board is piggyback on the Audio/Control board.

ALERT TONE

1. Place an AC VTVM on TP2 (Tx AUDIO) and TP1 (AUDIO GND) and depress the Alert Tone switch on the Common Control Lip.

2. Adjust R2 on Alert Tone option board (SEC/53193-001), which is piggyback on the Audio/Control Board, until the meter reads 245 mV.

TIMED MUTE

1. If the Timed Mute option is used, the duration of the Mute period can be adjusted with R1 on the Timed Mute option board (SEC/53194-001), which is piggyback on the Audio/ Control board.

2, The minimum, approximately 10 seconds, is obtained by turning R1 fully clockwise. The timing can be increased up to 90 seconds by turning R1 CCW. Measure the time by observing the Mute lamps on the Common Control Lip.

TONE ENCODER INPUTS

1. Apply a 1000 Hz, 100 mV signal to pin 3 of the encoder connector, J4, on the Center Section Mother Board (SEC/53268-001).

2. Connect an AC VTVM on TP2 (Tx AUDIO) and TP1 (AUDIO GND).

3. Connect pin 5 to pin 1 of J4.

4. Adjust R53 until the meter reads 245 mV.

5. Repeat steps 1 through 4 with the audio applied to pin 4 of J4, and adjusting R52 for 245 mV on TP2.

SEC/53155-001
SELECTED SPEAKER AMPLIFIER

A. BIAS ADJUST

1. Remove the Speaker Amplifier Board (SEC/53155-001), which is adjacent to the Audio/Control board, from the card cage and insert the right extender board. Insert the Speaker Amplifier board in the connector on the extender board.

2. Carefully remove the 24-volt fuse, F2, on the Speaker Amplifier board and attach the leads of a DC milliammeter to each fuse-holder clip. Adjust R25 to obtain 18 mA on the meter.

B. NOTCH FILTER ADJUSTMENT

1. Remove the speaker wires from the Speaker Amplifier board and connect an AC VTVM in their place. Connect a non-inductive, 3.3 ohm load across the meter leads

2. Apply a 1 kHz, approximately 85 mV signal to TP8 on the Center Section Mother Board.

3. Connect a frequency counter across the input signal leads, and adjust the input frequency to 2175 Hz.

4. Adjust the notch frequency (R8) and the notch depth (R19) to obtain a minimum reading.

C. RECORDER OUTPUT

1. Connect an AC VTVM to TP2 pins 6 and 7, the balanced Recorder Output.

2. Depress the Alert Tone switch on the Common Control Lip, and adjust R47 on the Speaker Amplifier board to 0 dBm (.775 mV).

3. With a 1000 Hz, one-volt rms signal on the Receive audio pair of a selected line, adjust R46 for a 0 dBm (.775 mV, rms).

NOTE

Now R47 can be used for a master volume control for Transmit and Receive audio to the recorder if less than 0 dBm is required.

SEC/53155-001
UNSELECTED SPEAKER AMPLIFIER

The Unselected Speaker amplifier board is at the left, in slot 1, of the upper center port. Make adjustments in acccordance with procedures A and B above, for the Selected Speaker amplifier. The Unselected Speaker amplifier has no recorder circuit.

VU METER LEVEL

1. Remove the four retaining screws on the Clock/VU Meter module face and carefully let the module hang on the front of the console.

2. Remove the Clock/VU Meter PC Board, SEC/53205-001, from slot 5.

3. Insert the right extender card (SEC/53290-001) and plug the PC board into the extender card connector.

4. Push the Alert Tone switch on the Common Control lip, and adjust R34, the VU meter level-adjust potentiometer, until the meter reads 0 VU.

SEC/53197-001
TONE BOARD

The tones and their respective levels have been carefully adjusted at the factory. It is recommended that the following procedures be implemented only if ABSOLUTELY NECESSARY.

1. By grounding the proper inputs to the Tone board, the desired frequency can be called up in steady state. (Refer to the table in the Tone Board circuit analysis paragraphs of Maintenance Manual LBI30300.)

2. All frequencies other than F2 (1850 Hz) can be adjusted by R14.

3. The oscillator level-adjust pot, R28, and the main control tone level-adjust pot, R5, are used to establish the desired levels, and are measured at pin X of the Tone Board.

4. For the F2 tone, use frequency-adjust pot R36.

5. The F2 tone level is adjusted by R47, the oscillator level adjust, and by R64, the F2 control tone level. Measure the signal at pin 22 of the Tone board.

LINE OUTPUT, DC

The Transmit audio level has been set at the factory for a line output of 2.45 volts, rms (+10 dBm). This level may be reduced when required by local telephone company regulations, or whenever line losses and noise pickup permit an acceptable signal-to-noise ratio.

1. Remove the module under test from the card cage and install both extender boards, SEC/53290-001 and SEC/53290-002, in the card cage. Reinstall the module in the extender board connectors.

2. Connect an AC VTVM and 600 ohms load across the audio pair (TB1-1 and TB1-2 on the Transmit/Receive Mother board) of the line under test. For DC modules, use a non-polarized 150 volt capacitor in series with the meter.

3. Remove the connector labeled HEAD SET CONNECTOR on the Center Section Mother Board. Apply a 1000 Hz, 70 mV signal to the MIC HI and MIC LO pins of the headset connector. Capacitively couple the signal generator to the MIC HI input with 0.1 µF capacitor.

4. Select the module under test and activate the PTT bar on the Common Control Lip. Read +11 dBm on the meter.

5. The desired line level can be adjusted by R14, which is located on the DC module Transmit board, SEC/53153-001.

LINE OUTPUT, TONE

1. Repeat steps 1 through 4 of the DC line output procedure.

2. The desired line level can be adjusted with R91 located on the tone module Transmit Board, SEC/53207-001.

3. Tone levels were carefully adjusted at the factory as follows:

Secur-it tone	+10 dBm
Function tone	0 dBm
Hold tone	-20 dBm

If absolutely necessary, these can be readjusted by R90, the tone control level-adjust pot.

LINE INPUT, DC

The Line input control on the module Receive board has been adjusted at the factory for an input of 100 mV, rms (-20 dBm) for threshold of compression. The sensitivity can be adjusted for a threshold as low as 25 mV. Setting the control for excessive compression will accent background and line noise during pauses in transmission.

1. Repeat Step 1 of Line Output, DC procedure.

2. Place an AC VTVM on TP8 (Selected Audio) and TP9 (audio ground) on the Center Section Mother Board.

3. Place a 1 kHz signal across the audio pair from the base station (TB1-1 and -2 for 2-wire control, or TB2-1 and -2 for 4-wire control). Place a non-polarized 150-volt capacitor in series with the signal source for DC modules.

4. Select the module under test.

5. Set the input sensitivity pot, R38 on the Receive board SEC/53154-001, fully clockwise.

6. Set the signal generator at the desired threshold and note the meter reading.

7. Turn R38 CCW until the meter reading decreases 2 dB.

8. The audio level control, R27 on the Receive board, determines the level at the speaker amplifier input, which should be set for 85 mV, rms to provide 5 watts at maximum volume.

LINE INPUT, TONE

1. Repeat steps 1 through 4 of the Line Input, DC procedure.

2. Turn sensitivity pot R1 fully clockwise.

3. Set the signal generator to the desired threshold level and note the meter reading.

4. Turn R1 CW until the reading drops 2 dB.

5. The audio level control, R2, sets the level at the speaker amplifier input, and should be set for 85 mV, rms to obtain 5 watts at the maximum volume setting.

MUTE LEVEL ADJUST

1. Use the two extender boards to set the module up for testing.

2. Capacitively couple a 1000 Hz, 0 dBm (.775 mV, rms) signal to Receive Audio terminals 1 and 2 at either TB1 or TB2, for 2-wire or 4-wire control, respectively.

3. Place a VTVM across the Selected audio (TP8) and audio ground (TP9).

4. Note the level.

5. Depress the Local Mute switch.

6. Adjust R26 (on the DC Receive board) and R3 (on the tone Receive board) for the desired mute level.

SEC/53392-001
LINE COMPENSATION KIT

The Line Compensation Kit is shipped with R67 (on the DC Receive board) or R92 (on the tone Receive board) fully clockwise to prevent interference with normal adjustment.

1. Complete all adjustments as outlined in the Adjustment Procedure.

2. Apply a 3000-Hz signal, at the highest permissible level, to the audio pair from the base station.

3. Adjust R38 on the DC Receive board, or R1 on the Tone Receive board to the threshold of compression. The threshold of compression is reached when the Call lamp begins to flash, about 2 dB before the audio is in complete compression.

4. Change the 3000 Hz signal to a 600 Hz signal at the same level.

5. Adjust R67 or R92 to the threshold of compression.

DC CONTROL CURRENT ADJUSTMENTS

1. Connect a DC milliammeter in series with the control current on the line.

2. Depending on the system, follow the procedure indicated below.

A) 1F Tx, 1F Rx

Activate Select, PTT (Transmit bar)

Adjust R36 on DC Tx board, SEC/53153-001

Read +6 mA

B) 2F Tx, 1F Rx

Activate Tx F1, Select, PTT (Transmit bar)

Adjust R36 on DC Tx board, SEC/53153-001

Read +6 mA

C) 2F Tx, 1F Rx

Activate Tx F2, Select, PTT (Transmit bar)

Adjust R5 on +(11 to 15) mA Option, SEC/53190-001

Read +11 mA

D) 1F Tx, 2F Rx

Activate Rx F2

Adjust R9 on -6 mA and -(11 to 15) mA Option board, SEC/53189-001

Read -6 mA

E) 2 Separate Receivers

Activate RCVR 1

Adjust R9 on -6 mA and -(11 to 15) mA Option Board, SEC/53189-001

Read -6 mA

F) 2 Separate Receivers

Activate RCVR 2

Adjust R10 on -6 mA and -(11 to 15) mA Option board, SEC/53189-001

Read -11 mA

G) Channel Guard Monitor

Activate Select, Channel Guard Monitor

Adjust R5 on -2.5 mA Option board, SEC/53191-001

Read -2.5 mA

H) Channel Guard Disable

Activate Channel Guard Disable

Adjust R5 on -2.5 mA Option board, SEC/53191-001

Read -2.5 mA

I) Repeater Disable

Activate Repeater Disable

Adjust R9 on -6 mA and -(11 to 15) mA Option board, SEC/53189-001

Read -6 mA

J) Repeater Disable, Channel Guard Disable

Activate Repeater Disable, Channel Guard Disable

Adjust R10 on -6 mA and -(11 to 15) mA Option board, SEC/53189-001

Read -11 mA

ACCESSORY INSTALLATIONS

SEC/53384-001 (OPTION)
HEADSET ADAPTOR

1. Remove rear cover of console.
2. Remove dummy connector on "Headset Connector" (J6) on SEC/53268-001, Center Section Mother Board.
3. Install headset connector in place of the dummy connector.

NOTE

If the headset used does not have a PTT (Push-to-Talk) switch, clip out the jumper between E20 and E21 on the Mother Board.

SEC/51329-001 (OPTION)
FOOTSWITCH

1. Remove rear cover of console.
2. Connect the black (bk) wire to TB2-2 (PTT) and the white (w) wire to TB2-1 (GND).

NOTE

If a dual footswitch is used, CG MON is TB2-4 and GND is TB2-3.

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