communications

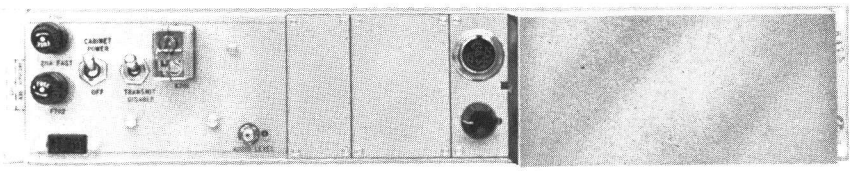
MASTR Progress Line

REMOTE CONTROL PANEL MODEL 4KC16A11

(and Options 7620 & 7621)

Maintenance Manual LBI-3827

DF. 4078



SPECIFICATIONS *

Threshold of Compression	
Transmit	10 millivolts maximum
Receive	-12 dbm
Compression Range	With audio input increase of 30 db beyond start of compression, output level increases less than 3 db
Input Impedance	600 ohms
Audio Line Output	+18 dbm into 600 ohms
Temperature Range	-30°C to +60°C (-22°F to +140°F)
Frequency Response	±2 db from 300 to 2750 cps
Distortion	Less than 3%
Dimensions (HxWxD)	3 1/2" x 19" x 3 1/4" (Less Options)

KC-16-A

*These specifications are intended primarily for the use of the serviceman. Refer to the appropriate Specification Sheet for the complete specifications.

GENERAL ELECTRIC

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ILLUSTRATIONS

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.

DESCRIPTION

Remote Control Panel Model 4KC16A11 was designed for use with Decoder Panel Model 4KC17A10 and Transistorized Control Console (XC Series) Model 4EC72A10 for tone keying applications in MASTR remote control stations. In addition to the transmitter keying relay, the Remote Control Panel is equipped with either the Intercom-Compressor or Compressor-Amplifier option to amplify and equalize audio input levels.

CONNECTIONS

Any circuit capable of passing audio frequencies in the 300 to 3000-cps range can be used to connect the output of the Transistorized Control Console to the Remote Control Panel. It is not necessary to observe polarity in wire line connections as tone keying is used in place of a DC control current. Make connections to TB701 as shown in Figure 1.

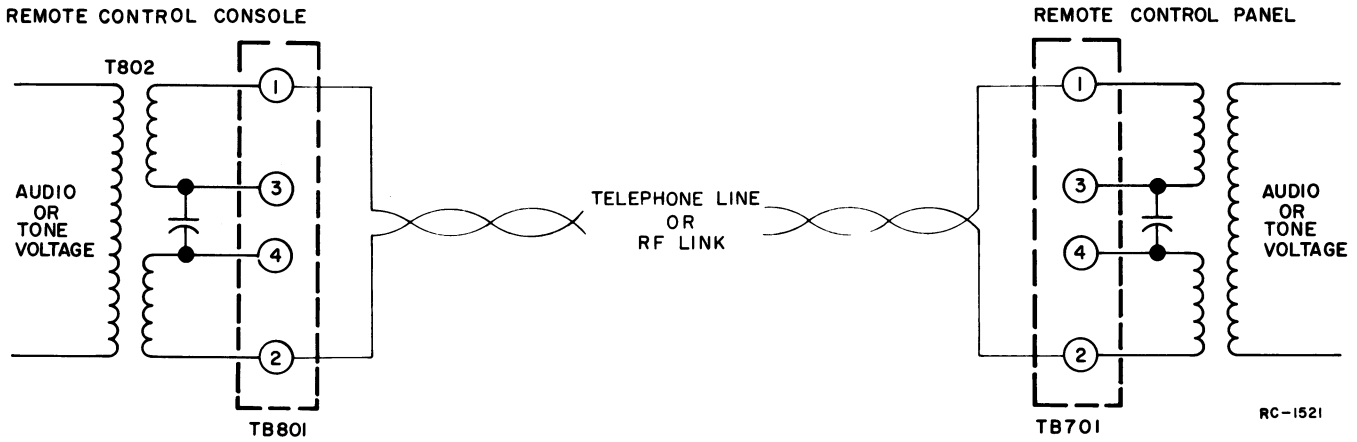


Figure 1 - Wire Line Connections for Tone Keying

CIRCUIT ANALYSIS

The Remote Control Panel is normally mounted in the station cabinet below the transmitter-receiver power supply Model 4EP38A10.

The panel consists of the following components:

- Line matching transformer T701
- 13-volt transmit keying relay K1001
- AUDIO LEVEL control R701
- TRANSMIT-DISABLE switch S702
- AC power switch S701, fuses and convenience outlet
- Terminal boards for telephone line, power line and station interconnection
- Optional Intercom-Compressor or Compressor-Amplifier Board

POWER CIRCUITS

Power applied to terminals TB706-1 and TB706-2 supplies all units in the MASTR station, and is controlled by CABINET POWER switch S701. One section of the switch opens and closes the 117 volt AC line, and the (other) section is used in the regulated line (when the voltage regulator option is used). Each line contains a 20-ampere fuse for circuit protection. A convenience outlet (J701) is connected across the unregulated input, and can be used even with the CABINET POWER switch off.

TRANSMITTER KEYING CIRCUIT

Keying the microphone at the Remote Console applies a coded 3000-cps tone to TB701 on the Remote Control Panel (Figure 2). The tone is connected to the detector circuitry on the Decoder Panel where it is filtered, detected, and used to operate a switching circuit. The switching circuit applies +13 volts DC to TB701-5 on the Remote Panel to energize relay K1001, keying the station transmitter.

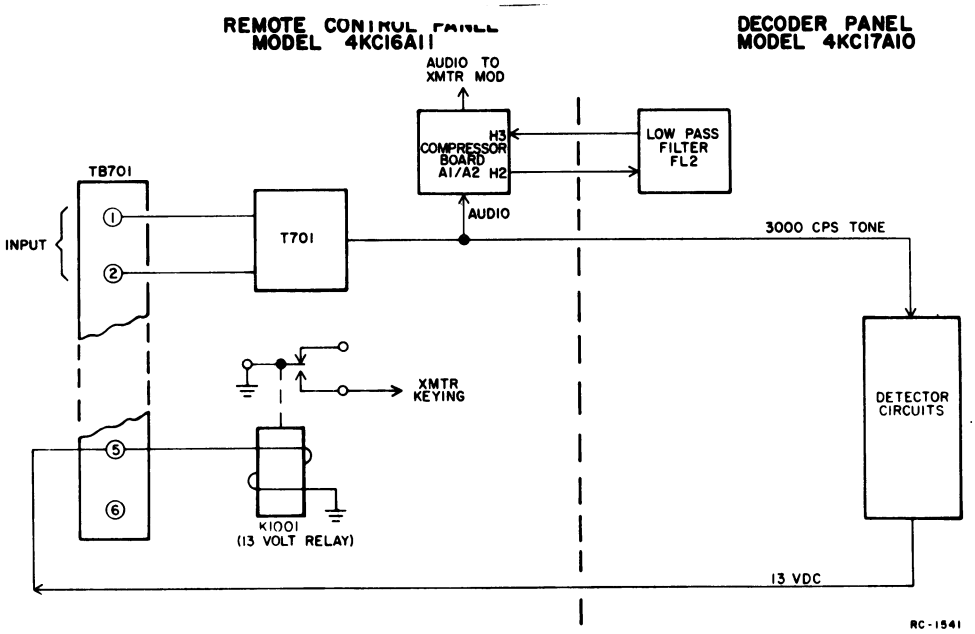


Figure 2 - Transmitter Keying and Audio Circuits

AUDIO CIRCUITS

INTERCOM-COMPRESSOR (Option 7620)

Intercom-Compressor board A1 is used to equalize audio output levels over a wide range of microphone or line input levels. The board operates as a mike-to-line compression-amplifier in the transmit or intercom mode, and as a line-to-speaker compression-amplifier in the receive mode. This simplifies or eliminates line level settings in paralleled Remote Control Consoles.

For this option, the station microphone and speaker are connected to the Remote Control Panel as shown in the simplified switching diagram (Figure 3).

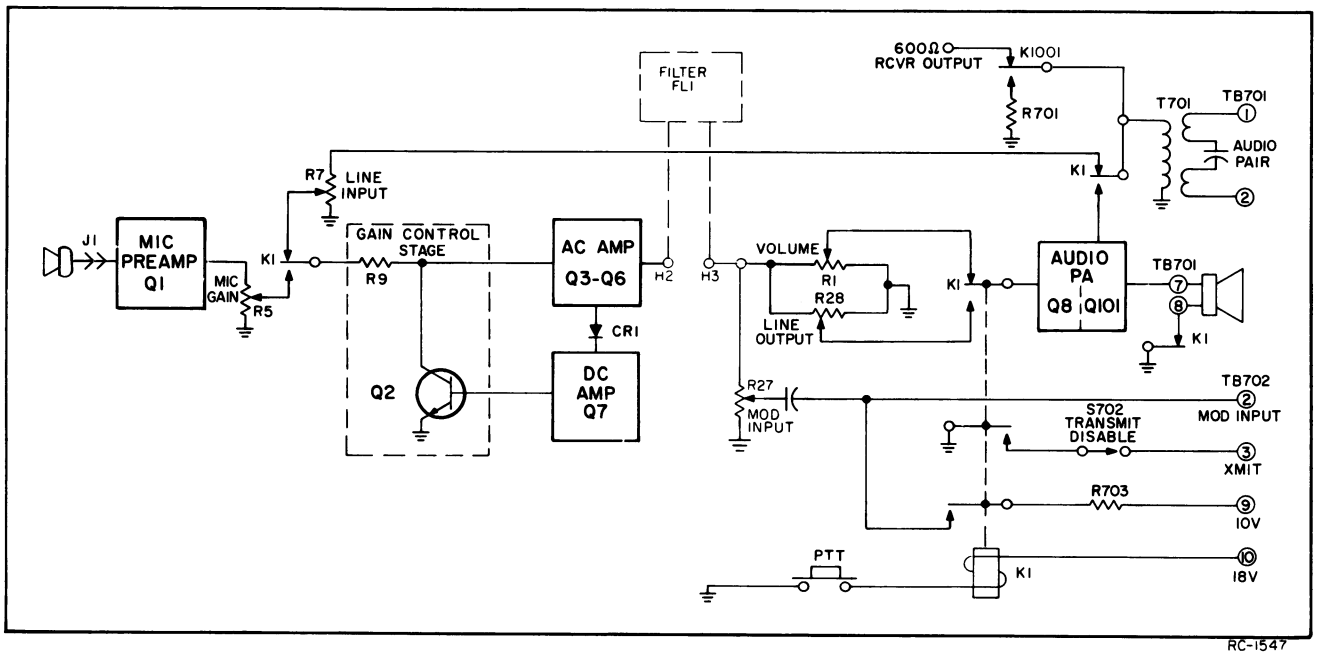


Figure 3 - Block Diagram of Intercom-Compressor Option

Transmit/Intercom Mode

Keying the microphone at the control panel energizes relay K1, which mutes the loudspeaker and applies audio from the common-emitter preamp (Q1) through Mike Gain control R5 to the compressor-amplifier (Q2 through Q7). The compressor-amplifier output is applied to low-pass filter FL1 on the Decoder panel to remove any 3-KC tone in the audio signal. One portion of the filtered compressor-amplifier output is connected by the relay through Line Output control R28 to compound-connected audio PA transistors Q8 and Q1. Following the audio PA stage, audio voltage is coupled through line-matching transformer T701 to the telephone pair and then to the Remote Control Console.

The other portion is coupled through Mod Input control R27 to the transmitter modulation input (TB702-2). Energizing K1 applies +10 volts along with the audio to open the diode-gating circuit on the EP-38-A, and grounds the transmitter keying lead.

Placing the TRANSMIT-DISABLE switch (S702) in the disable position opens the ground lead so that the transmitter cannot be keyed, and the Intercom-Compressor operates as an intercom only.

Receive Mode

Audio from a Remote Control Console or station receiver is coupled through line-matching transformer T701 to Intercom-Compressor board A1. The audio input (from J17) is connected through the normally-closed relay contact to Line Input control R7, and then to the Compressor-Amplifier. Following the Compressor-Amplifier, the audio voltage is connected by the relay through VOLUME control R1 to the audio PA, and then through the secondary of audio transformer T1 to the speaker. The 600-ohm receiver output is applied directly to the line through T701.

Compressor-Amplifier

The compressor-amplifier circuit consists of gain control stage Q2, high gain audio amplifier Q3 through Q6, and DC amplifier Q7.

When audio is applied to the compressor-amplifier, resistor R9 and the AC impedance of transistor Q2 act as a voltage divider for the AC input signal. The output of Q2 is amplified by a four stage, direct-coupled amplifier (Q3 through Q6). Both AC and DC feedback in the amplifier circuit provides for extremely stable operation.

One portion of the amplified output is fed through Line Output control R28 to the Audio PA stage. The remaining portion is rectified by detector CR1, filtered by C8 and amplified by DC current amplifier Q7. This DC output is fed back to the base of gain control transistor Q2.

The amount of DC feedback to the gain control stage determines the AC impedance of Q2. When the input level rises, the AC amplifier output starts to increase. The output is detected, amplified, and fed back to the base A2. This increase in feedback reduces the AC impedance of Q2 which decreases the audio voltage to the AC amplifier, keeping the amplifier output constant.

When the audio input decreases, the output of the AC amplifier starts to decrease, reducing the feedback to Q2. This raises the AC impedance of Q2 and increases the audio voltage to the AC amplifier, keeping the amplifier output constant.

COMPRESSOR-AMPLIFIER (Option 7621)

The Compressor-Amplifier board A2 consists of gain control stage Q2, high gain audio amplifiers Q3 through Q6, and DC amplifier Q7.

When audio from a Remote Control Console is applied to the Compressor-Amplifier, resistor R9 and the AC impedance of transistor Q2 act as a voltage divider for the AC input signal. The output of Q2 is amplified by a four-stage, direct coupled amplifier (Q3 through Q6).

Both AC and DC feedback in the amplifier circuit provides for extremely stable operation.

The output of Q6 is applied to low-pass filter FL1 on the Decoder panel to remove any 3-KC tone in the audio signal. One portion of the filter output is fed through Modulation Input control R27 to the transmitter modulation input (TB702-2). The remaining portion is rectified by detector CR1, filtered by C8 and amplified by DC current amplifier Q7. This DC output is fed back to the base of gain control transistor Q2.

The amount of DC feedback to the gain control stage determines the AC impedance of Q2. When the input level rises, the AC amplifier output starts to increase. The output is detected, amplified, and fed back to the base Q2. This increase in feedback reduces the AC impedance of Q2 which decreases the audio voltage to the AC amplifier, keeping the amplifier output constant.

When the audio input decreases, the output of the AC amplifier starts to decrease, reducing the feedback to Q2. This raises the AC impedance of Q2 and increases the audio voltage to the AC amplifier, keeping the amplifier output constant.

MAINTENANCE

The Remote Control Panel will require a minimum of maintenance. Should service be required on the Intercom-Compressor or Compressor-Amplifier options, use the DC voltage readings included on the Schematic Diagrams and the step-by-step Troubleshooting Chart included on the Outline Diagrams.

WARNING

When servicing the control panel or station, always place toggle switch S702 in the TRANSIT-DISABLE position. This opens the transmitter keying circuit and prevents the application of high voltage to the transmitter (keying the transmitter) from a remote point.

After servicing the unit, always place the TRANSMIT-DISABLE switch back in the Operate position.

ADJUSTMENT PROCEDURE

Before adjusting the Remote Control Panel, make sure that all power line, phone line and ground connections have been completed at the Control Console and the base station. Also, the base station and Control Console should have been properly aligned, and the station VOLUME control (R511 on Power Supply EP-38-A) set for not more than 6 volts RMS at the audio pair with maximum system deviation at 1000 cps applied to the base station receiver antenna jack.

To adjust the Control Panel, refer to one of the following procedures, as applicable:

I. CONTROL PANEL WITH INTERCOM-COMPRESSOR

LINE INPUT ADJUSTMENT

The Line Input has been adjusted at the factory for an input of 180 millivolts RMS (-12 dbm) for threshold of compression. Use of excessive compression will accent background and line noise during pauses in transmission.

Procedure:

1. Feed a 1000-cps signal onto the audio pair from the Transistorized Control Console having the largest line loss. Adjust the audio generator to produce +18 dbm on the audio pair. However, if the source has been adjusted for less than +18 dbm on the line, set the generator to this lower level.

2. Adjust the Line Input control (R7) for threshold of compression as indicated by a reading of 0.4 volt DC on a 20,000 ohm-per-volt meter connected from A1-J19 to ground.

MIC GAIN ADJUSTMENT

The Mic Gain has been adjusted at the factory for 10 millivolts for threshold of compression. Use of excessive compression will accent background and line noise during pauses in transmission.

Procedure:

1. Key the microphone and talk into the mike from a normal distance or apply a 5-millivolt tone into pins 1 and 2 of microphone jack J1.

2. Adjust Mic Gain control R5 for threshold of compression as indicated by a reading of 0.4 volt DC on a 20,000 ohm-per-volt meter connected from A1-J19 to ground.

LINE OUTPUT AND MODULATION INPUT ADJUSTMENT

The Intercom-Compressor option has been set at the factory for a line output of 6 volts RMS (+18 dbm). To minimize cross-talk, always reduce this level whenever line losses and noise pickup permit an adequate signal-to-noise ratio.

Procedure:

1. Feed a 1000-cps, 30-millivolt signal into pins 1 and 2 of mike jack J1.

2. Connect an AC-VTVM across the audio pair. Use a 0.5-mfd capacitor in series with the meter if DC is being simplexed line-to-line.

3. Adjust Line Output control R28 on the Intercom-Compressor for 6 volts RMS (or less when possible).

4. Connect an AC-VTVM across pins 1 and 2 of Mike Jack J902 on Power Supply EP-38-A. Adjust the Modulation Input Control (R27) on the Intercom board for a meter reading of 200 millivolts RMS.

II. CONTROL PANEL WITH COMPRESSOR-AMPLIFIER

AUDIO LEVEL AND MODULATION INPUT ADJUSTMENT

AUDIO LEVEL control R701 on the Remote Control Panel has been adjusted at the factory for an input of 180 millivolts RMS (-12 dbm) for threshold of compression. Use of excessive compression will accent background and line noise during pauses in transmission.

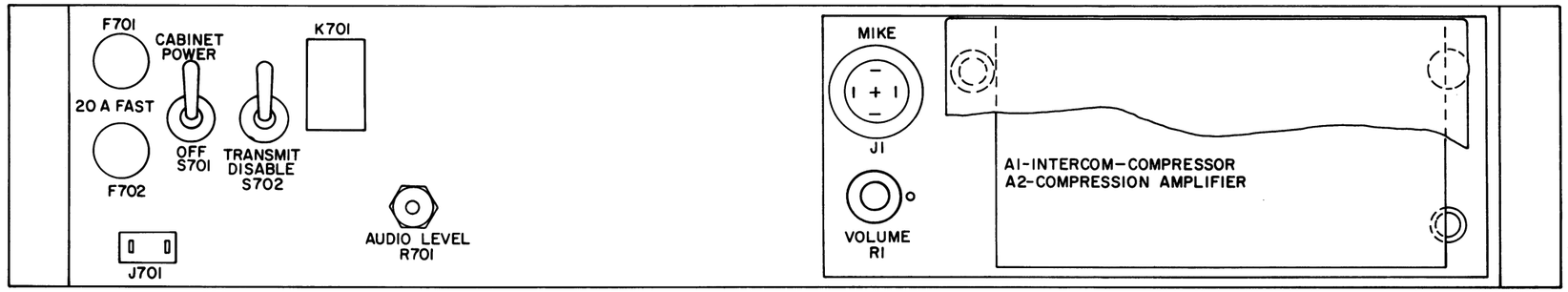
Procedure:

1. Feed a 1000-cps signal onto the audio pair from the Transistorized Control Console having the largest line loss. Adjust audio generator to produce +18 dbm on the audio pair. However, if the source has been adjusted for less than +18 dbm on the line, set audio generator to this lower level.

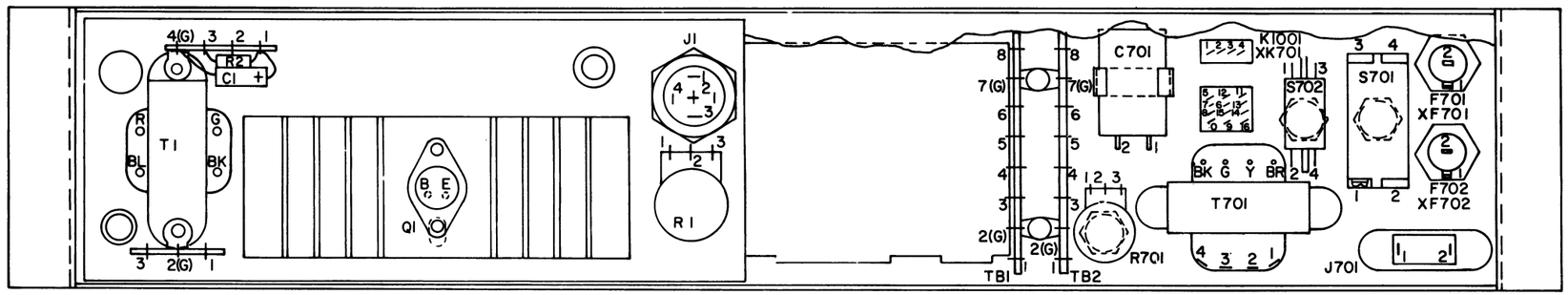
2. Adjust the AUDIO LEVEL control (R701) for threshold of compression as indicated by a reading of 0.4 volt DC on a 20,000 ohm-per-volt meter connected from J19 on Compressor board to ground.

3. Connect an AC-VTVM across pins 1 and 2 of Mike Jack J902 on Power Supply EP-38-A. Adjust the Modulation Input Control on the Compressor board for a meter reading of 200 millivolts RMS.

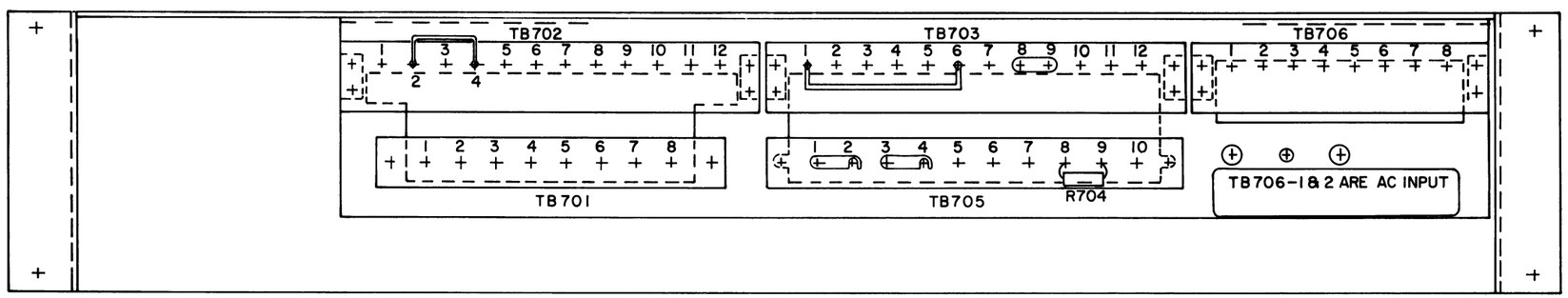
FRONT VIEW



REAR VIEW



REAR TERMINAL VIEW



OUTLINE DIAGRAM

(19D413065, Rev. 0)

REMOTE CONTROL PANEL
MODEL 4KC16A11

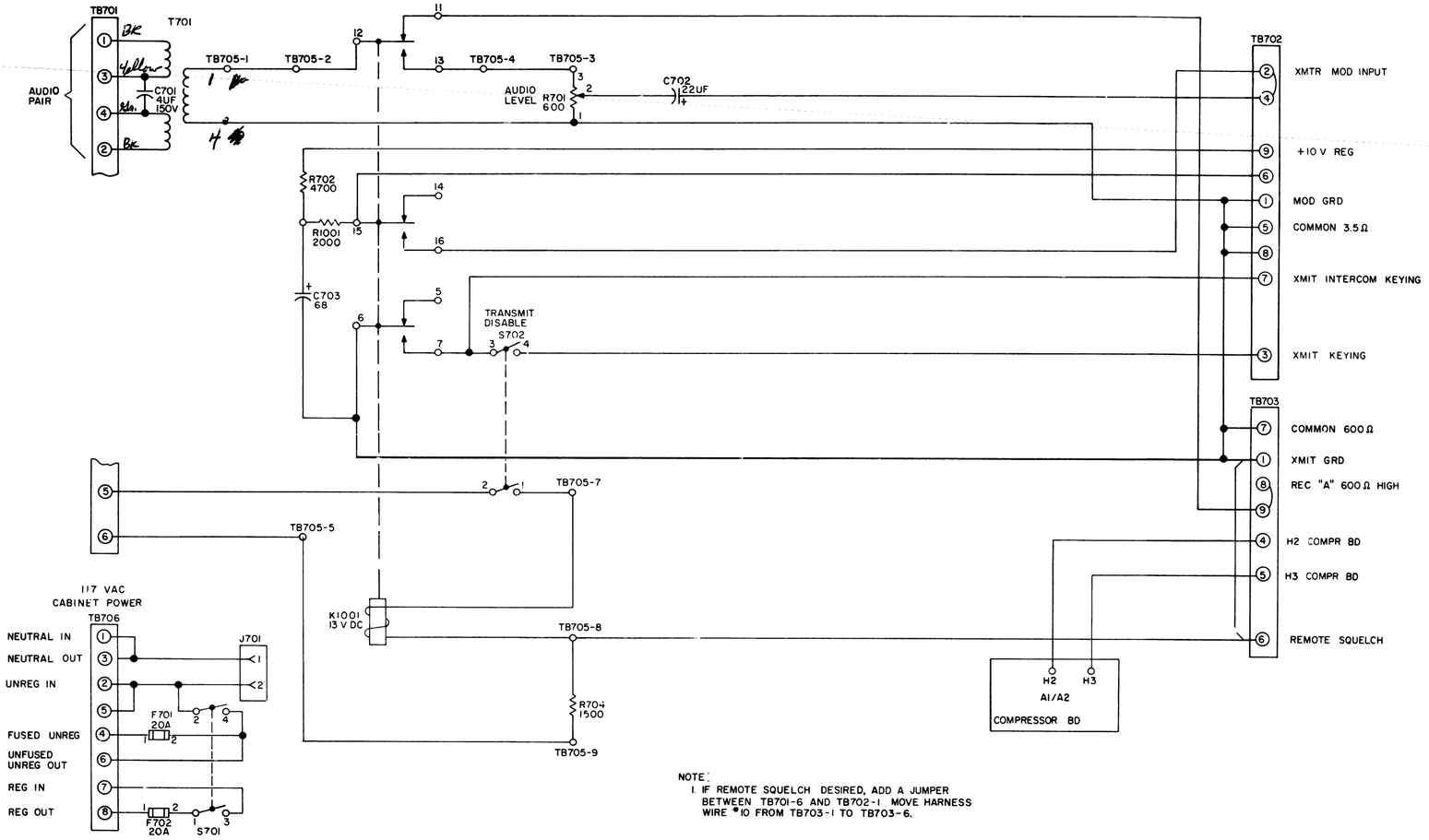
PARTS LIST

LBI-3828

REMOTE CONTROL PANEL
MODEL 4KC16A11
(PL-19D402661-G1)

SYMBOL	G-E PART NO.	DESCRIPTION
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C701	7486445-P1	Electrolytic, non polorized: 4 µf +100% -10%, 150 VDCW.
C702	5496267-P10	Tantalum: 22 µf ±20%, 15 VDCW; sim to Sprague Type 150D.
C703	5496267-P11	Tantalum: 68 µf ±20%, 15 VDCW; sim to Sprague Type 150D.
		- - - - - - - - - - - FUSES - - - - - - - - - - -
F701 and F702	7484390-P5	Quick blowing: 20 amps at 250 v; sim to Bussmann ABC-20.
		- - - - - - - JACKS AND RECEPTACLES - - - - - - -
J702	7128081-P1	Connector, phen: 2 contacts; sim to Cinch 54A12844.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R701	5494774-P114	Variable, carbon film: 600 ohms ±20%, 0.3 w; sim to CTS Series 70 Control.
R702	3R77-P472K	Composition: 4700 ohms ±10%, 1/2 w.
		- - - - - - - - - - SWITCHES - - - - - - - - - - -
S701	7109677-P1	Toggle: DPST, 12 amps at 125 v; sim to Arrow--Hart and Hegeman 82143-V.
S702	7478623-P2	Toggle: DPST, 3 amps at 125 VDC; sim to Arrow--Hart and Hegeman 20902-BJC.
		- - - - - - - - - TRANSFORMERS - - - - - - - - -
T701	19A115731-P1	Audio freq: 0.3-6 KC freq range, Pri (1-4): 22 ohms ±15% DC res, Pri (2-3): 12.5 ohms ±15% DC res, Sec 1: 13 ohms ±15% DC res, Sec 2: 13 ohms ±15% DC res.
		- - - - - - - - TERMINAL BOARDS - - - - - - - -
TB1 and TB2	7775500-P24	Phen: 8 terminals.
TB701	7117710-P8	Phen: 8 terminals; sim to Cinch 1780.
TB702 and TB703	19C301086-P8	Feed-thru, phen: 12 terminals; sim to G-E CR151D75412AB.
TB705	7117710-P10	Phen: 10 terminals; sim to Cinch 1799.
TB706	19C301086-P6	Feed-thru, phen: 8 terminals; sim to G-E CR151D75408AB.
		- - - - - - - - - - SOCKETS - - - - - - - - - -
XF701 and XF702	19B209005-P1	Fuseholder, post type, phen: 15 amps at 250 v; sim to Littelfuse 342012.
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
	7118719-P4	Clip, spring tension: sim to Prestole E-50005-038. (Used with C701).

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.



NOTE:
1. IF REMOTE SQUELCH DESIRED, ADD A JUMPER BETWEEN TB701-6 AND TB702-1 MOVE HARNESS WIRE #10 FROM TB703-1 TO TB703-6.

(19D413057, Rev. 0)

SCHEMATIC DIAGRAM

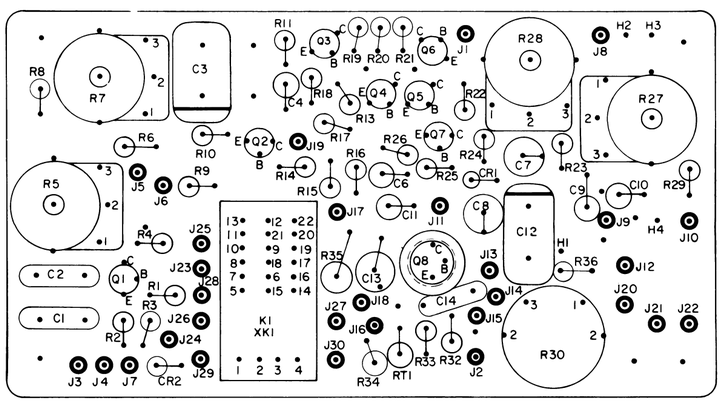
REMOTE CONTROL PANEL
MODEL 4KC16A11

SYMBOL	G-E PART NO	DESCRIPTION
		OPTIONS
		INTERCOM COMPRESSOR PL-19A122231-G9
		AMPLIFIER PANEL ASSEMBLY PL-19C303975-G1
		- - - - - - - - - SUBASSEMBLIES - - - - - - - - -
A1		COMPONENT BOARD ASSEMBLY PL-19C303936-G1
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C1 and C2	19B209243-P5	Polyester: .047 µf ±20%, 40 VDCW.
C3	19A115028-P116	Polyester: 0.22 µf ±20%, 200 VDCW.
C4	5496267-P2	Tantalum: 47 µf ±20%, 6 VDCW; sim to Sprague Type 150D.
C6	5496267-P10	Tantalum: 22 µf ±20%, 15 VDCW; sim to Sprague Type 150D.
C7	5496267-P107	Tantalum: 100 µf ±20%, 10 VDCW; sim to Sprague Type 150D.
C8	5496267-P103	Tantalum: 150 µf ±20%, 6 VDCW; sim to Sprague Type 150D.
C9	5496267-P10	Tantalum: 22 µf ±20%, 15 VDCW; sim to Sprague Type 150D.
C10	5496267-P17	Tantalum: 1.0 µf ±20%, 35 VDCW; sim to Sprague Type 150D.
C11	5496267-P9	Tantalum: 3.3 µf ±20%, 15 VDCW; sim to Sprague Type 150D.
C12	19A115028-P114	Polyester: 0.1 µf ±20%, 200 VDCW.
C13	5496267-P19	Tantalum: 22 µf ±20%, 35 VDCW; sim to Sprague Type 150D.
C14	5494481-P128	Ceramic disc: .0027 µf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
		- - - - - - - DIODES AND RECTIFIERS - - - - - - -
CR1	19A115250-P1	Silicon.
CR2	4037822-P1	Silicon.
		- - - - - - - JACKS AND RECEPTACLES - - - - - - -
J1 thru J30	4033513-P4	Contact, electrical: sim to Bead Chain L93-3.
		- - - - - - - - - - - RELAYS - - - - - - - - - - -
K1	19C307010-P12	Armature: 24 VDC nominal, 1.5 w max operating, 430 ohms ±15% coil res, 6 form C contacts; sim to Allied Control T154-CCC-CCC-430.
		- - - - - - - - - - TRANSISTORS - - - - - - - - - -
Q1 thru Q7	19A115123-P1	Silicon, NPN: sim to Type 2N2712.
Q8	19A115300-P2	Silicon, NPN: sim to Type 2N3053.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R1	3R77-P474J	Composition: 0.47 megohm ±5%, 1/2 w.
R2	3R77-P473J	Composition: 47,000 ohms ±5%, 1/2 w.
R3	3R77-P272J	Composition: 2700 ohms ±5%, 1/2 w.
R4	3R77-P393J	Composition: 39,000 ohms ±5%, 1/2 w.
R5	19B209115-P7	Variable, carbon film: 100,000 ohms ±20%, .05 w; sim to CTS Type UPE-70.
R6	3R77-P472K	Composition: 4700 ohms ±10%, 1/2 w.
R7	19B209115-P6	Variable, carbon film: 25,000 ohms ±20%, .05 w; sim to CTS Type UPE-70.
R8	3R77-P361J	Composition: 360 ohms ±5%, 1/2 w.
R9	3R77-P473K	Composition: 47,000 ohms ±10%, 1/2 w.
R10	3R77-P103K	Composition: 10,000 ohms ±10%, 1/2 w.
R11	3R77-P332J	Composition: 3300 ohms ±5%, 1/2 w.
R13	3R77-P153J	Composition: 15,000 ohms ±5%, 1/2 w.
R14	3R77-P101J	Composition: 100 ohms ±5%, 1/2 w.
R15	3R77-P333J	Composition: 33,000 ohms ±5%, 1/2 w.
R16	3R77-P104J	Composition: 0.1 megohm ±5%, 1/2 w.
R17	3R77-P275J	Composition: 2.7 megohms ±5%, 1/2 w.
R18	3R77-P331J	Composition: 330 ohms ±5%, 1/2 w.
R19	3R77-P394J	Composition: 0.39 megohm ±5%, 1/2 w.
R20	3R77-P623J	Composition: 62,000 ohms ±5%, 1/2 w.
R21	3R77-P153J	Composition: 15,000 ohms ±5%, 1/2 w.
R22	3R77-P102K	Composition: 1000 ohms ±10%, 1/2 w.
R23	3R77-P103K	Composition: 10,000 ohms ±10%, 1/2 w.
R24	3R77-P102K	Composition: 1000 ohms ±10%, 1/2 w.
R25	3R77-P104K	Composition: 0.1 megohm ±10%, 1/2 w.
R26	3R77-P102K	Composition: 1000 ohms ±10%, 1/2 w.
R27 and R28	19B209115-P4	Variable, carbon film: 5000 ohms ±20%, .08 w; sim to CTS Type UPE-70.
R29	3R77-P101K	Composition: 100 ohms ±10%, 1/2 w.
R30	19B209113-P2	Variable, wirewound: 2500 ohms ±20%, 2.5 w; sim to CTS Series 110.
R32	3R77-P821K	Composition: 820 ohms ±10%, 1/2 w.
R33	3R77-P222K	Composition: 2200 ohms ±10%, 1/2 w.
R34	19B209022-P15	Wirweound: 1 ohm ±5%, 2 w; sim to IRC Type BWH.
R35	3R78-P270K	Composition: 27 ohms ±10%, 1 w.
R36	3R77-P682K	Composition: 6800 ohms ±10%, 1/2 w.
		- - - - - - - - - THERMISTORS - - - - - - - - -
RT1	19B209143-P2	Rod: 4000 ohms ±10%; sim to Globar Type 789F-12.
		- - - - - - - - - - SOCKETS - - - - - - - - - -
XK1	19B209172-P1	Relay, phen: 22 contacts: sim to Allied Control 30054-24.
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C1	5496267-P12	Tantalum: 150 µf ±20%, 15 VDCW; sim to Sprague Type 150D.
		- - - - - - - JACKS AND RECEPTACLES - - - - - - -
J1	7117934-P2	Connector, chassis: 4 female contacts: sim to Amphenol Type 91-PC4F.
		- - - - - - - - - - - PLUGS - - - - - - - - - - -
P1 thru P3	4029840-P2	Contact, electrical: sim to AMP 42827-2.
P9	4029840-P1	Contact, electrical: sim to AMP 41854.
P10 thru P12	4029840-P2	Contact, electrical: sim to AMP 42827-2.
P13	4029840-P1	Contact, electrical: sim to AMP 41854.
P14 thru P17	4029840-P2	Contact, electrical: sim to AMP 42827-2.
P18	4029840-P1	Contact, electrical: sim to AMP 41854.
P20 thru P22	4029840-P2	Contact, electrical: sim to AMP 42827-2.
P24 and P25	4029840-P2	Contact, electrical: sim to AMP 42827-2.
P27 thru P30	4029840-P2	Contact, electrical: sim to AMP 42827-2.
		- - - - - - - - - - TRANSISTORS - - - - - - - - - -
Q1	19A115527-P1	Silicon, NPN.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R1	5496870-P11	Variable, carbon film: 5000 ohms ±20% 0.5 w; sim to Mallory LC(5K).
R2	3R77-P101K	Composition: 100 ohms ±10%, 1/2 w.
		- - - - - - - - - TRANSFORMERS - - - - - - - - -
T1	19A115612-P1	Audio freq: 0.3-3 KC freq range, Pri: 24.5 ohms ±5% imp, 1.38 ohms DC res, Sec: 3.3 ohms imp, 0.18 ohm DC res.
		- - - - - - - - TERMINAL BOARDS - - - - - - - - -
TB1	7775500-P7	Phen: 3 terminals.
TB2	7775500-P3	Phen: 4 terminals.
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
	19A122217-P1	Heat sink. (Used with Q1 in Amplifier Panel Assembly, PL-19C303975-G1).
	7487773-P5	Knob: sim to Eastman Chemical 28739. (Used with R1 in Amplifier Panel Assembly, PL-19C303975-G1).
	4035439-P1	Heat sink: sim to Birtcher 3AL-635-2R. (Used with Q8 in Component Board Assembly, PL-19C303936-G1).
	4036555-P1	Insulator, washer: nylon. (Used with Q8 in Component Board Assembly, PL-19C303936-G1).
	19A115368-P1	Retainer, relay: sim to Allied Control 30040-3. (Used with K1 in Component Board Assembly, PL-19C303936-G1).
		MODIFICATION KIT PL-19A122271-G1
		- - - - - - - - - - CABLES - - - - - - - - - -
	PL-19B205411-G1 PL-19B205411-G2	Lead: approx 61 inches long with 1 terminal. Lead: approx 44 inches long with 2 terminals.
		RELAY KIT PL-7145278-G2
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
R1	5493035-P10	Resistor, wirewound: 3.5 ohms ±5%, 5 w; sim to Tru-Ohm Type X-60.
	7775500-P7	Terminal board, phen: 3 terminals.
		COMPRESSOR AMPLIFIER PL-19A122231-G10
		AMPLIFIER PANEL ASSEMBLY PL-19C303975-G2
A2		COMPONENT BOARD ASSEMBLY PL-19C303936-G3
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C3	19A115028-P116	Polyester: 0.22 µf ±20%, 200 VDCW.
C4	5496267-P2	Tantalum: 47 µf ±20%, 6 VDCW; sim to Sprague Type 150D.
C6	5496267-P10	Tantalum: 22 µf ±20%, 15 VDCW; sim to Sprague Type 150D.
C7	5496267-P107	Tantalum: 100 µf ±20%, 10 VDCW; sim to Sprague Type 150D.
C8	5496267-P103	Tantalum: 150 µf ±20%, 6 VDCW; sim to Sprague Type 150D.
C9	5496267-P10	Tantalum: 22 µf ±20%, 15 VDCW; sim to Sprague Type 150D.
C16	7774750-P4	Ceramic disc: .001 µf +100% -0%, 500 VDCW.
		- - - - - - - DIODES AND RECTIFIERS - - - - - - -
CR1	19A115250-P1	Silicon.
		- - - - - - - JACKS AND RECEPTACLES - - - - - - -
J1	4033513-P4	Contact, electrical: sim to Bead Chain L93-3.
J5	4033513-P4	Contact, electrical: sim to Bead Chain L93-3.
J7	4033513-P4	Contact, electrical: sim to Bead Chain L93-3.
J9	4033513-P4	Contact, electrical: sim to Bead Chain L93-3.
J12	4033513-P4	Contact, electrical: sim to Bead Chain L93-3.
J19 and J20	4033513-P4	Contact, electrical: sim to Bead Chain L93-3.
J22	4033513-P4	Contact, electrical: sim to Bead Chain L93-3.
		- - - - - - - - - TRANSISTORS - - - - - - - - -
Q2 thru Q7	19A115123-P1	Silicon, NPN; sim to Type 2N2712.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R9	3R77-P473K	Composition: 47,000 ohms ±10%, 1/2 w.
R10	3R77-P103K	Composition: 10,000 ohms ±10%, 1/2 w.
R11	3R77-P332J	Composition: 3300 ohms ±5%, 1/2 w.
R13	3R77-P153J	Composition: 15,000 ohms ±5%, 1/2 w.
R14	3R77-P101J	Composition: 100 ohms ±5%, 1/2 w.
R15	3R77-P333J	Composition: 33,000 ohms ±5%, 1/2 w.
R16	3R77-P104J	Composition: 0.1 megohm ±5%, 1/2 w.
R17	3R77-P275J	Composition: 2.7 megohms ±5%, 1/2 w.
R18	3R77-P331J	Composition: 330 ohms ±5%, 1/2 w.
R19	3R77-P394J	Composition: 0.39 megohm ±5%, 1/2 w.
R20	3R77-P623J	Composition: 62,000 ohms ±5%, 1/2 w.
R21	3R77-P153J	Composition: 15,000 ohms ±5%, 1/2 w.
R22	3R77-P102K	Composition: 1000 ohms ±10%, 1/2 w.
R23	3R77-P103K	Composition: 10,000 ohms ±10%, 1/2 w.
R25	3R77-P104K	Composition: 0.1 megohm ±10%, 1/2 w.
R26	3R77-P102K	Composition: 1000 ohms ±10%, 1/2 w.
R27	19B209115-P4	Variable, carbon film: 5000 ohms ±20%, .08 w; sim to CTS Type UPE-70.
		- - - - - - - - - - PLUGS - - - - - - - - - -
P1	4029840-P2	Contact, electrical: sim to AMP 42827-2.
P5	4029840-P2	Contact, electrical: sim to AMP 42827-2.
P9	4029840-P2	Contact, electrical: sim to AMP 42827-2.
P12	4029840-P2	Contact, electrical: sim to AMP 42827-2.
		TONE KEYING MODIFICATION KIT PL-19A122460-G2
		- - - - - - - - - - RELAYS - - - - - - - - - -
K1001	5491595-P14	Armature: 1.5 w operating, 520 ohms ±15% coil res, 4 form C contacts; sim to Allied Control T154-X-131.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R1001	3R77-P202J	Composition: 2000 ohms ±5%, 1/2 w.

TROUBLESHOOTING PROCEDURE

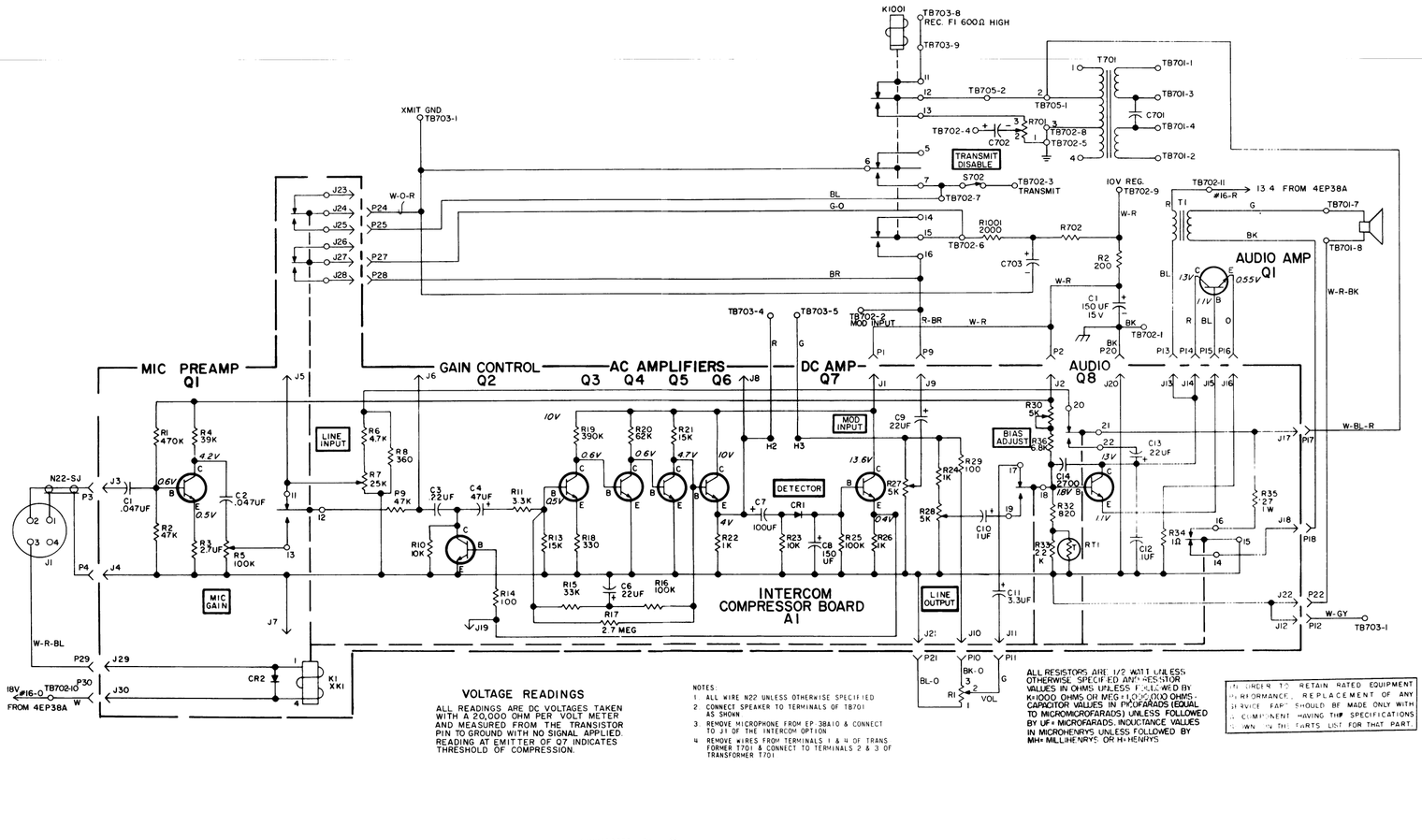
SYMPTOM	PROCEDURE
No audio from the speaker	1. Check for audio input with AC-VTVM at TB701-1 & -2. 2. Make sure that the VOLUME control R1 is not set at minimum (fully counterclockwise). 3. Check to see that K1 is not energized. 4. Check the audio input with an AC-VTVM at A1-J17. If no audio, check T701 and C701. 5. Check the setting of LINE INPUT control R7 (refer to the Adjustment Procedure). If R7 cannot be adjusted for the correct reading, check relay contacts K1-11, -12 and -13. 6. Check supply voltages at J1, J2 and J13 on A1 (refer to the Schematic Diagram). 7. Check Bias Adjust R30 for a setting of 0.55 volt DC measured across R34 on A1. If R30 cannot be adjusted for the correct reading, check Q8, T1 and relay contacts K1-14, -15 and -16. 8. Check the DC voltages on Q3 thru Q6 (refer to the Schematic Diagram).
No audio on the line when the microphone is keyed.	1. Check the microphone leads and relay contacts K1-11 thru -22. 2. Check the setting of MIC GAIN R5 and LINE OUTPUT R28 (refer to the Adjustment Procedure). 3. Key the microphone and check the DC voltages on Q1 (refer to the Schematic Diagram). 4. Check capacitor C13 on A1.
No audio to the transmitter modulation input (TB702-2).	Check the setting of Modulation Input Control R27 (refer to Adjustment Procedure).

OUTLINE DIAGRAM



(19C311168, Rev. 1)

SCHEMATIC DIAGRAM



VOLTAGE READINGS

ALL READINGS ARE DC VOLTAGES TAKEN WITH A 20,000 OHM PER VOLT METER AND MEASURED FROM THE TRANSISTOR PIN TO GROUND WITH NO SIGNAL APPLIED. READING AT EMITTER OF Q7 INDICATES THRESHOLD OF COMPRESSION.

NOTES:
1. ALL WIRE N22 UNLESS OTHERWISE SPECIFIED
2. CONNECT SPEAKER TO TERMINALS OF TB701 AS SHOWN
3. REMOVE MICROPHONE FROM EP 3BA10 & CONNECT TO J1 OF THE INTERCOM OPTION
4. REMOVE WIRES FROM TERMINALS 1 & 4 OF TRANSFORMER T701 & CONNECT TO TERMINALS 2 & 3 OF TRANSFORMER T701

ALL RESISTORS ARE 1/2 WATT UNLESS OTHERWISE SPECIFIED. RESISTOR VALUES IN OHMS UNLESS FOLLOWED BY K=1000 OHMS OR MEG=1,000,000 OHMS. CAPACITOR VALUES IN PICOFARADS (EQUAL TO MICROMICROFARADS) UNLESS FOLLOWED BY UF= MICROFARADS. INDUCTANCE VALUES IN MICROHENRYS UNLESS FOLLOWED BY MH= MILLIHENRYS OR H= HENRYS.

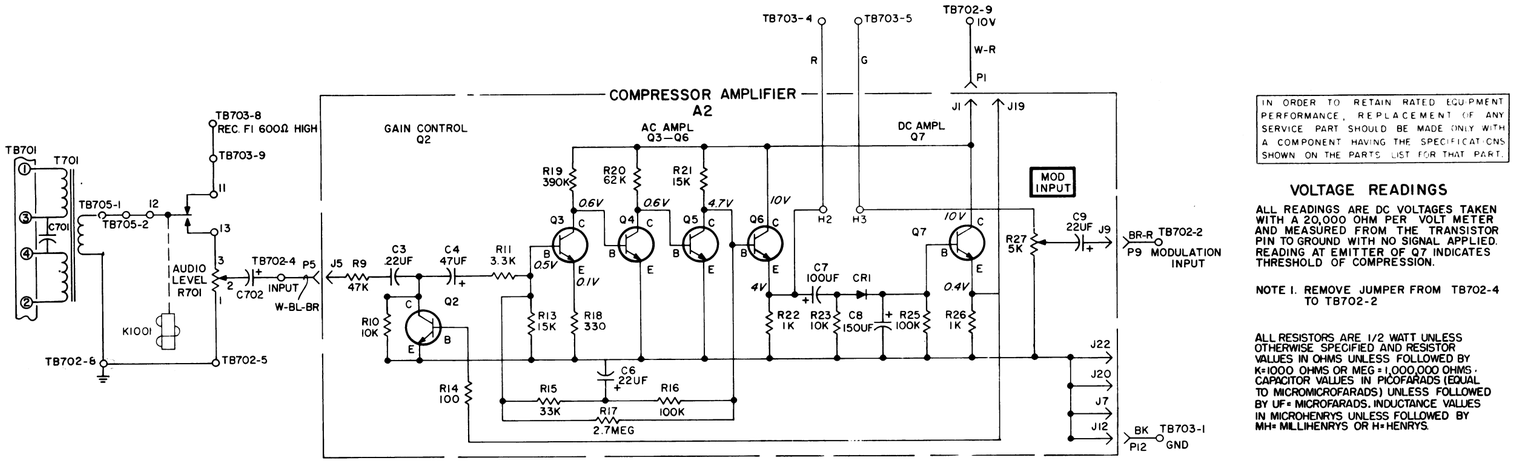
IN ORDER TO RETAIN RATED EQUIPMENT PERFORMANCE, REPLACEMENT OF ANY SERVICE PART SHOULD BE MADE ONLY WITH A COMPONENT HAVING THE SPECIFICATIONS SHOWN IN THE PARTS LIST FOR THAT PART.

(19D413058, Rev. 0)

SERVICE SHEET

INTERCOM-COMPRESSOR
OPTION 7620
19A122231-G9

SCHEMATIC DIAGRAM



(19D413059, Rev. 0)

IN ORDER TO RETAIN RATED EQUIPMENT PERFORMANCE, REPLACEMENT OF ANY SERVICE PART SHOULD BE MADE ONLY WITH A COMPONENT HAVING THE SPECIFICATIONS SHOWN ON THE PARTS LIST FOR THAT PART.

VOLTAGE READINGS

ALL READINGS ARE DC VOLTAGES TAKEN WITH A 20,000 OHM PER VOLT METER AND MEASURED FROM THE TRANSISTOR PIN TO GROUND WITH NO SIGNAL APPLIED. READING AT EMITTER OF Q7 INDICATES THRESHOLD OF COMPRESSION.

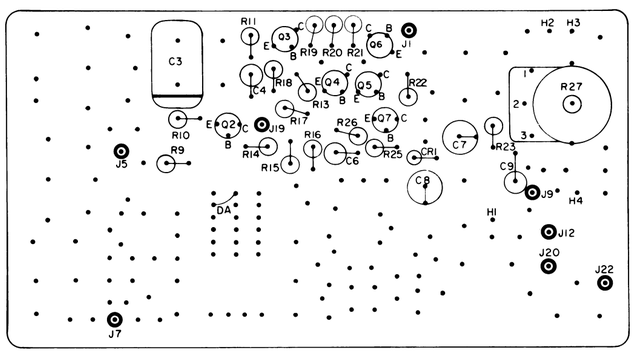
NOTE 1. REMOVE JUMPER FROM TB702-4 TO TB702-2

ALL RESISTORS ARE 1/2 WATT UNLESS OTHERWISE SPECIFIED AND RESISTOR VALUES IN OHMS UNLESS FOLLOWED BY K=1000 OHMS OR MEG=1,000,000 OHMS. CAPACITOR VALUES IN PICOFARADS (EQUAL TO MICROMICROFARADS) UNLESS FOLLOWED BY UF=MICROFARADS. INDUCTANCE VALUES IN MICROHENRYS UNLESS FOLLOWED BY MH=MILLIHENRYS OR H=HENRYS.

TROUBLESHOOTING PROCEDURE

SYMPTOM	PROCEDURE
No audio to the transmitter modulation input (TB702-2).	1. Check the audio input with an AC-VTVM at TB702-4 and A2-J5. If no audio, check T701 and C701. 2. Check the setting of AUDIO LEVEL control R701 and Transmitter Modulation Input Control R27 (refer to the Adjustment Procedure). 3. Check supply voltages at J1 on A2 (refer to the Schematic Diagram). 4. Check the DC voltages on Q3 thru Q6 (refer to the Schematic Diagram).

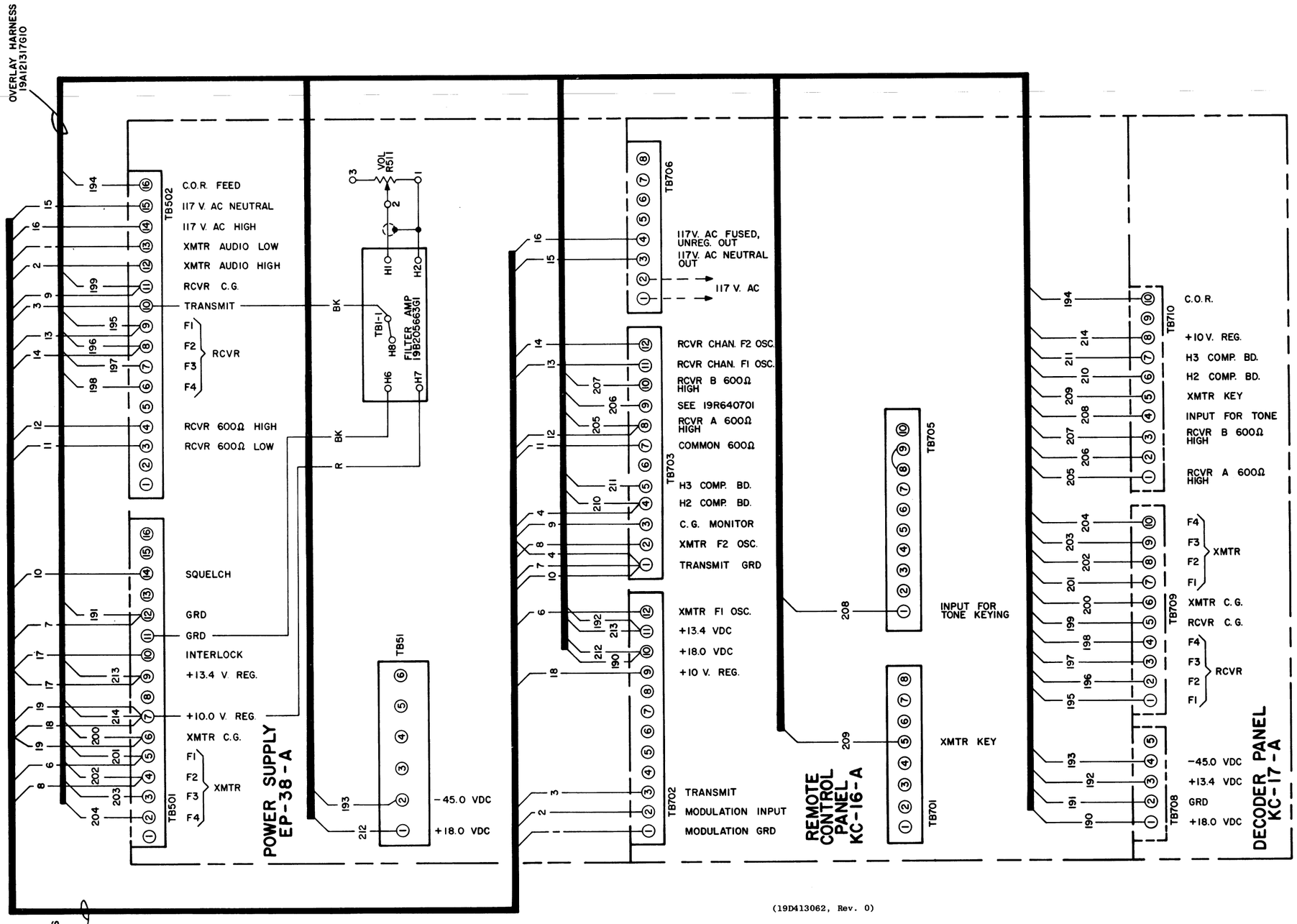
OUTLINE DIAGRAM



(19C311169, Rev. 1)

SERVICE SHEET

COMPRESSOR-AMPLIFIER
OPTION 7621
19A122231-G10



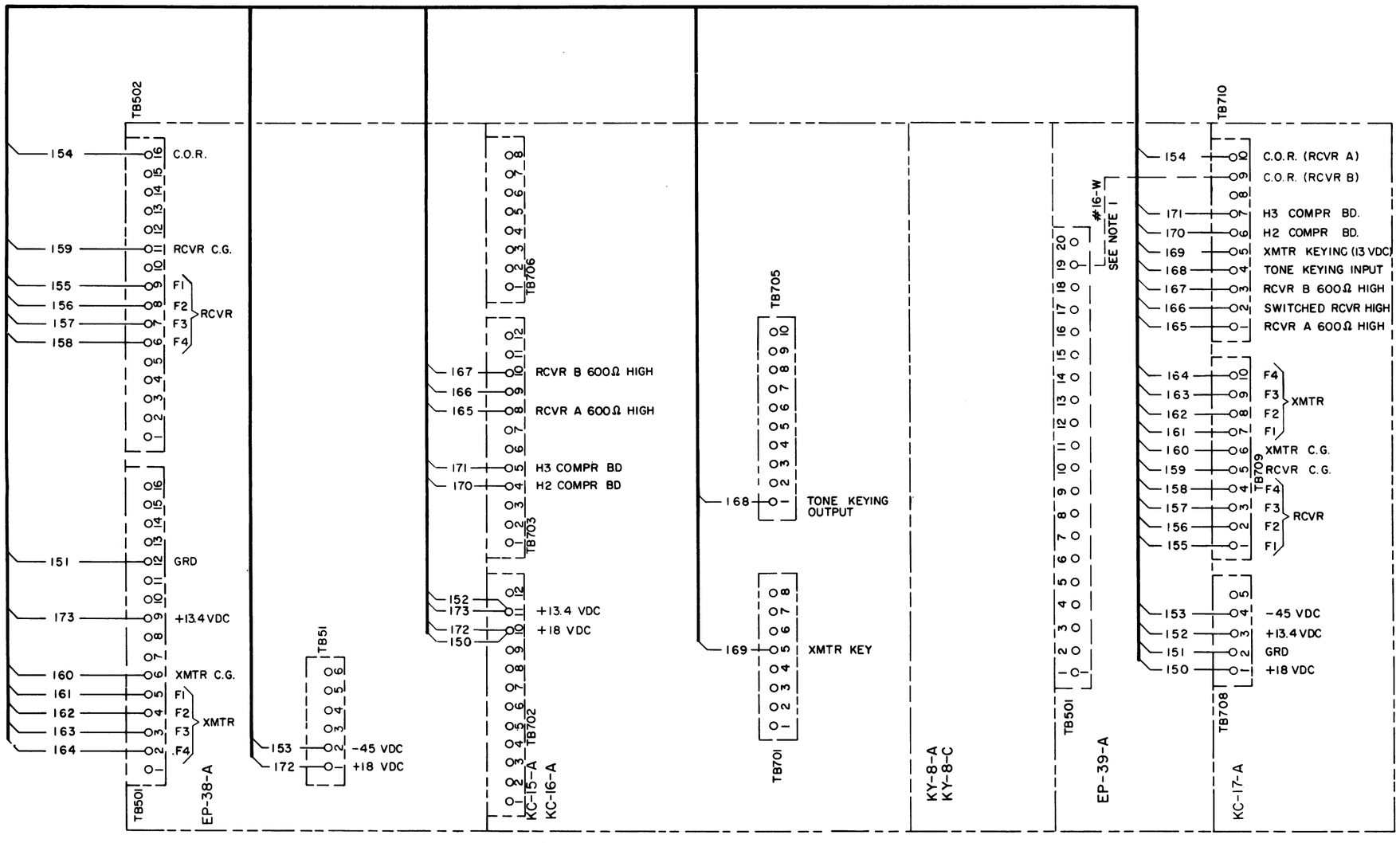
NOTES:

1. TB706-1 MUST BE CONNECTED TO GROUND OR NEUTRAL OF THE BUILDING WIRING SYSTEM.
2. IF RECEIVER MUTE IS NOT DESIRED, MOVE N22-BL WIRE INSIDE 4EP38A FROM TB501-16 TO TB501-7.

(19D413062, Rev. 0)

INTERCONNECTION DIAGRAM

REMOTE CONTROL STATION



(19D402768, Rev. 1)

NOTE:
1. PART OF MODIFICATION KIT PL19A122460G4.

INTERCONNECTION DIAGRAM

SECOND RECEIVER OVERLAY

ORDERING SERVICE PARTS

Each component appearing on the schematic diagram is identified by a symbol number, to simplify locating it in the parts list. Each component is listed by symbol number, followed by its description and G-E Part Number.

Service parts may be obtained from Authorized G E Communication Equipment Service Stations or through any G-E Radio Communication Equipment Sales Office. When ordering a part, be sure to give:

1. G-E Part Number for component
2. Description of part
3. Model number of equipment
4. Revision letter stamped on unit

These instructions do not purport to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with installation, operation or maintenance.

Should further information be desired, or should particular problems arise which are not covered sufficiently for the purchaser's purposes, contact the nearest Radio Communication Equipment Sales Office of the General Electric Company.

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