

COMMAND CONTROL CENTER

MULTI-STATION CONTROL CONSOLES

(With Type EC-76-A & EC-77-A Panels)

Maintenance Manual LBI 4177E

DATAFILE FOLDER - DF4083 *****



SPECIFICATIONS*

DIMENSIONS

42" H x 60" W x 30" D
(Includes Desk and Turret)

TEMPERATURE RANGE

—30°C to 60°C (—22°F to 140°F)

MAXIMUM POWER REQUIREMENTS 250 watts at 117 VAC, 50/60 Hz
(Six-station Control)

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

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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.**

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PURPOSE

The Desk options 6801, 6802, 6803, 6873, 6874 and 6875 have been replaced with options 6800-11, 6800-12, 6800-13, 6800-14, 6800-15 and 6800-16 respectively. With this Desk change the Distribution Block, Terminal Boards TB1 thru TB4, and the Interconnecting wires to the monitor panel for the telephone line termination have been removed. Refer to Figure 1.

The telephone line connections are now routed through a plastic cable conduit and terminated at TB861, TB862 and TB863 on the back of the Monitor Panel instead of TB1 thru TB4 on the back of the Command Control Center Console. The Telephone Line, AC Power, and Footswitch connections were changed as follows:

CONNECTIONS

All connections to the control center except microphone and power connections are made at terminal boards TB861-TB863, located at the rear of the Monitor Panel Chassis.

TELEPHONE LINES

Three types of telephone line connections are commonly used in remote control applications. The three connection methods and their individual characteristics are shown in Table 1 and Figure 2. All lines must be connected using the same method.

For proper operation of the DC control circuit, the polarity of the telephone pair carrying the control voltages must be the

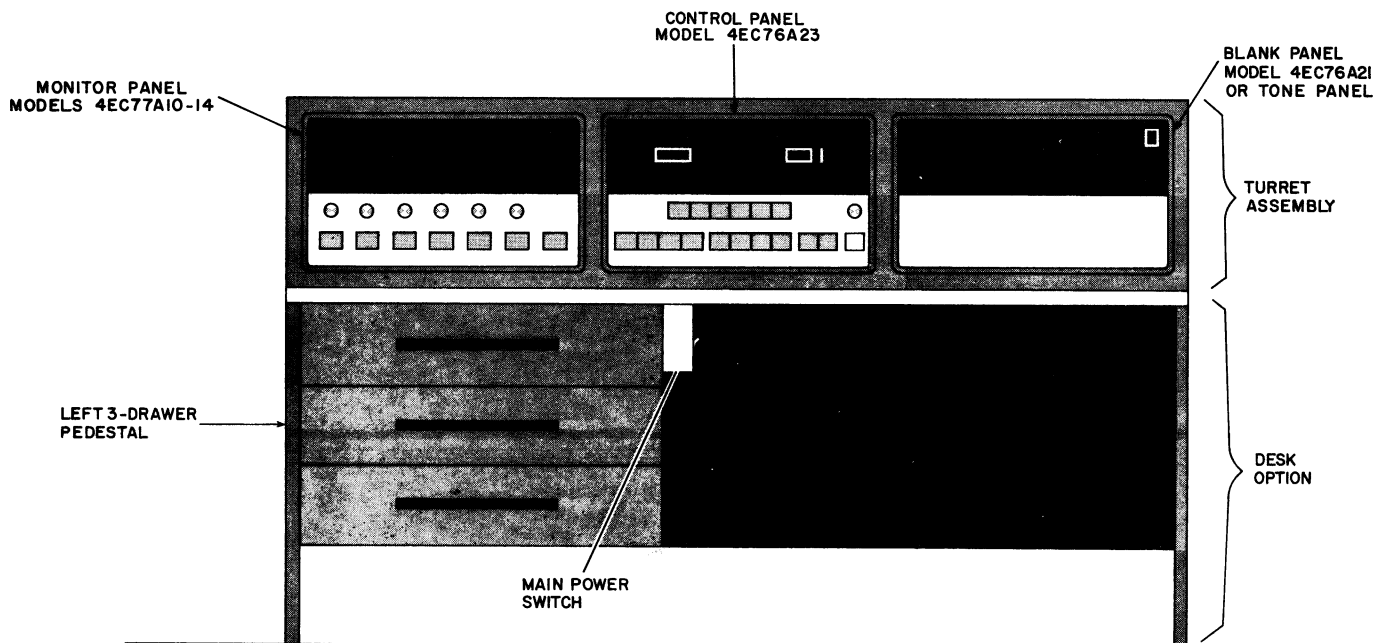


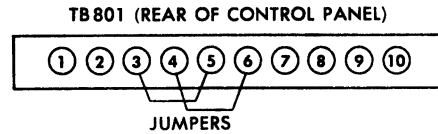
Figure 1 - Typical Command Control Center

ADDENDUM TO LBI-4177

same at both the control center and the remote control panel (at the base station). Therefore, 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 center. The ungrounded wire will appear as an open circuit. The grounded wire will show a resistance. Identify the wires at both ends and observe line polarity as indicated in the following procedure.

1. Connect the telephone lines to TB861-TB863 on the Monitor Panel and make jumper connections to TB801 (10-point terminal board nearest the AC line cord connection at the rear of the control panel chassis) according to the method selected.

Method 1 - Single Telephone Pair (Control Voltage Simplex Line to Line)



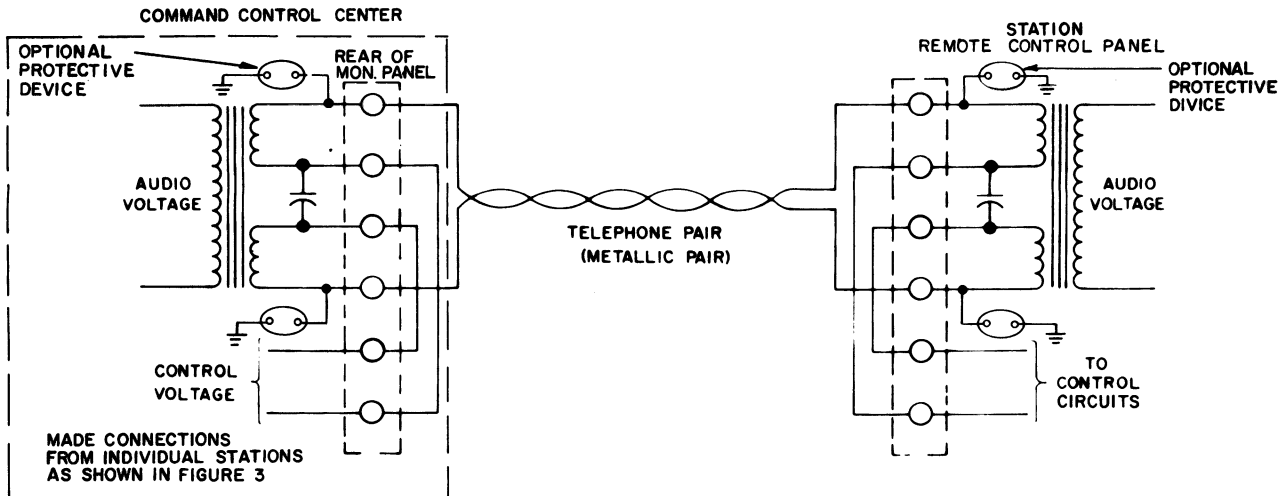
- a. Connect a jumper between TB801-3 and TB801-5.
- b. Connect a jumper between TB801-4 and TB801-6.
- c. Connect telephone pair(s) to audio terminals of TB861, TB862 and TB863 as shown in Figure 3. Observe the following line polarities:

Stations 1, 3 and 5 - Terminal 1 connects to TB701-1 at the station.

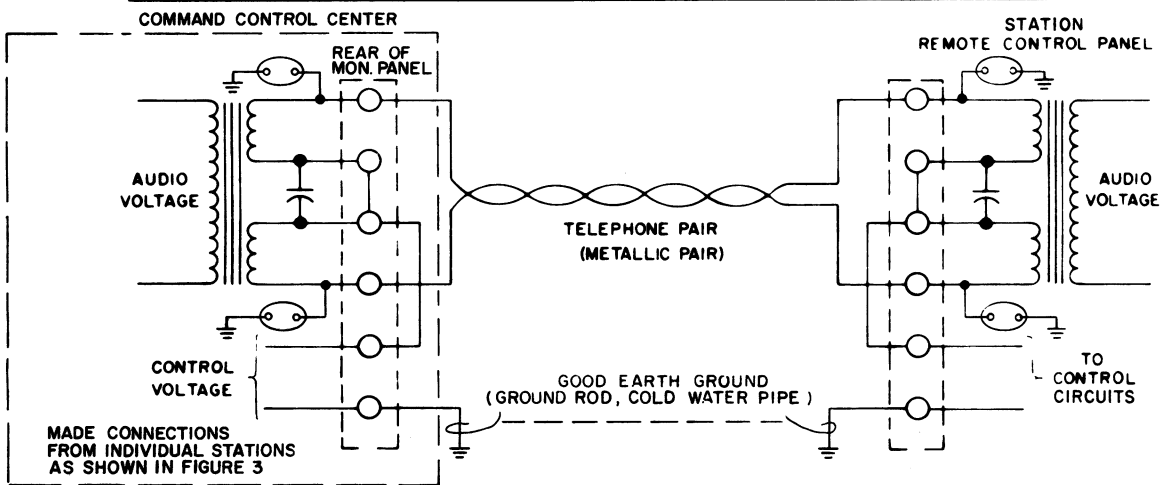
Stations 2, 4 and 6 - Terminal 5 connects to TB701-1 at the station.

Table 1 - Telephone Line Connection Methods

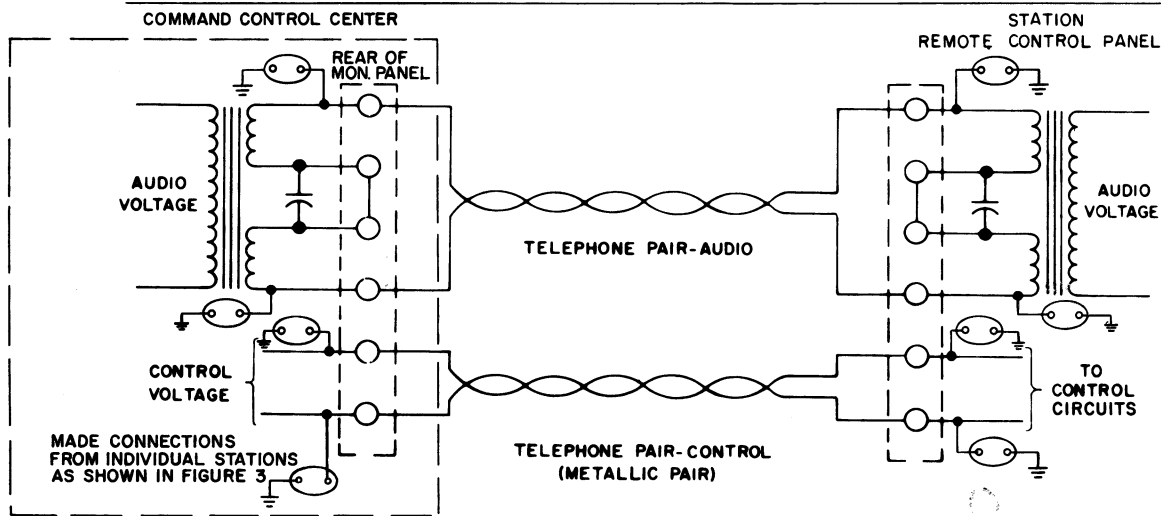
Method	Description	Advantages or Disadvantages
1	One metallic pair: for both audio and control voltages with control voltages simplex from line to line.	Economical; dependable where earth currents may be large, or where a good earth ground cannot be obtained; keying clicks will be heard in paralleled control facilities.
2	One metallic pair: for both audio and control voltages with control voltages simplex 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.



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



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



METHOD 3 - SEPARATE CONTROL AND AUDIO PAIRS

RC-2721

Figure 2 - Telephone Line Connections

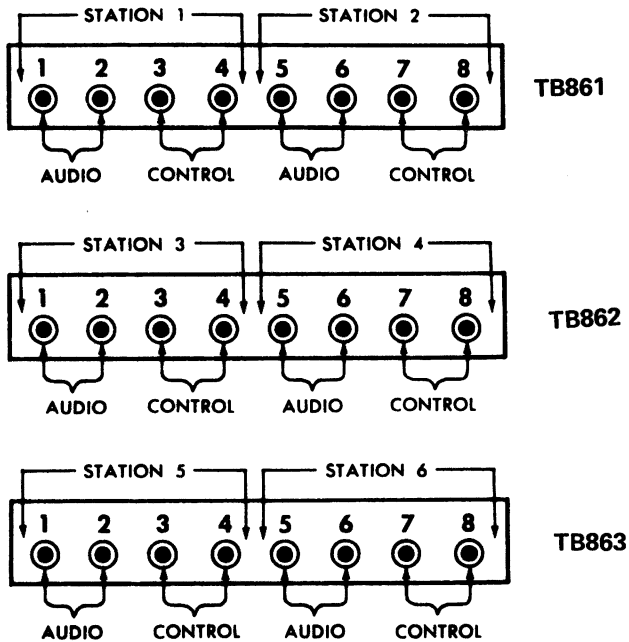
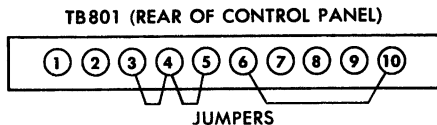


Figure 3 - Telephone Line Connections

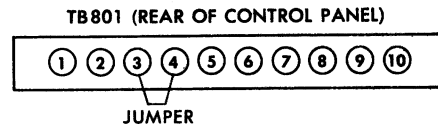
Method 2 - Single Telephone Pair (Control Voltage Simplex Line to Ground)



- Connect a jumper between TB801-3 and TB801-4.
- Connect a jumper between TB801-4 and TB801-5.
- Connect telephone pair(s) to audio terminals of TB861, TB862 and TB863 as shown in Figure 3. Observe the following line polarities:
 Stations 1, 3 and 5 - Terminal 1 connects to TB701-1 at the station.
 Stations 2, 4 and 6 - Terminal 5 connects to TB701-1 at the station.
- Make connections to earth ground for each station as follows:

Station 1 - TB861-4	Station 4 - TB862-8
Station 2 - TB861-8	Station 5 - TB863-4
Station 3 - TB862-4	Station 6 - TB863-8

Method 3 - Separate Control and Audio Pairs



- Connect a jumper between TB801-3 and TB801-4.
 - Connect audio pairs to audio terminals of TB861, TB862 and TB863 as shown in Figure 3.
 - Connect control pairs to terminals of TB861, TB862 and TB863 as shown in Figure 3. Observe the following line polarities:
 Stations 1, 3 and 5 - Terminal 3 connects to TB701-5 at the station.
 Stations 2, 4 and 6 - Terminal 7 connects to TB701-5 at the station.
2. Connect terminal 8 of terminal board TB851 to a good earth ground, such as a cold water pipe or an electrical conduit. It is essential to have a good ground, regardless of the method of telephone line control used, as a safety measure for the dispatcher.

AC POWER

When the AC Power Junction Box with Switch S1 has been installed and wired as described in Installation Instruction LBI-4159, connect the control center to a 117-volt, 50/60-Hz source. An optional 220/117-volt AC stepdown transformer is available for operation from a 220-volt, 50/60 Hz source.

The main power switch (S1) is located at the rear of the desk on the metal divider wall at the back of the kneehole space. S1 connects power to the duplex AC power receptacles at the rear of the turret. Cable connections between S1 and the AC power receptacles are shown on page 6 of LBI-4159.

Connect the AC power cable for each 19-inch panel to one of the AC receptacles at the back of the turret.

FOOTSWITCH (OPTION 5014)

When the footswitch is used, make connections to terminals TB851-7 and TB851-8 on the terminal block at the rear of the control panel.

FURNITURE OPTION CROSS REFERENCE

<u>NEW OPTION NUMBER</u>	<u>OLD OPTION NUMBER</u>	<u>NEW OPTION NUMBER</u>	<u>OLD OPTION NUMBER</u>
6800-01	6805	6800-20	6854
6800-02	6806	6800-21	6846
6800-03	6804	6800-22	6845
6800-04	6850	6800-23	6840
6800-05	6876	6800-24	6839
6800-06	6807	6800-25	6847
6800-07	6808	6800-26	6849
6800-11	6801	6800-27	6818
6800-12	6802	6800-28	6816 } Both replaced by 6800-28
6800-13	6803		6817 }
6800-14	6873	6800-29	6811 } All 3 replaced by 6800-29
6800-15	6874		6812 }
6800-16	6875		6814 }
6800-17	6809	6800-30	6815 } Both replaced by 6800-30
6800-18	6810		6820 }
6800-19	6855	6800-31	6819

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WORLD HEADQUARTERS • LYNCHBURG, VIRGINIA 24502 U.S.A.

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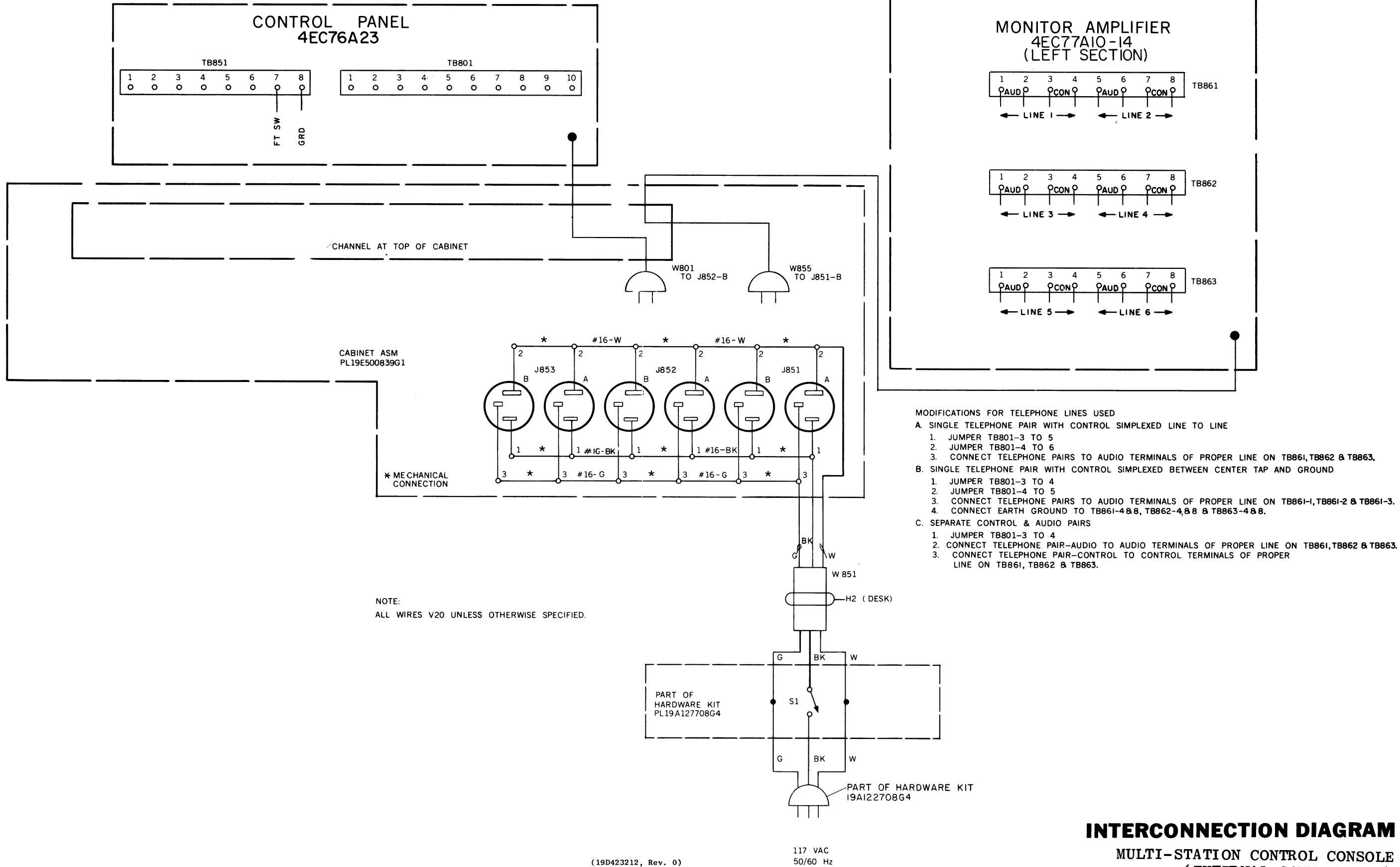
* Trademark of General Electric Company U.S.A.
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PARTS LIST

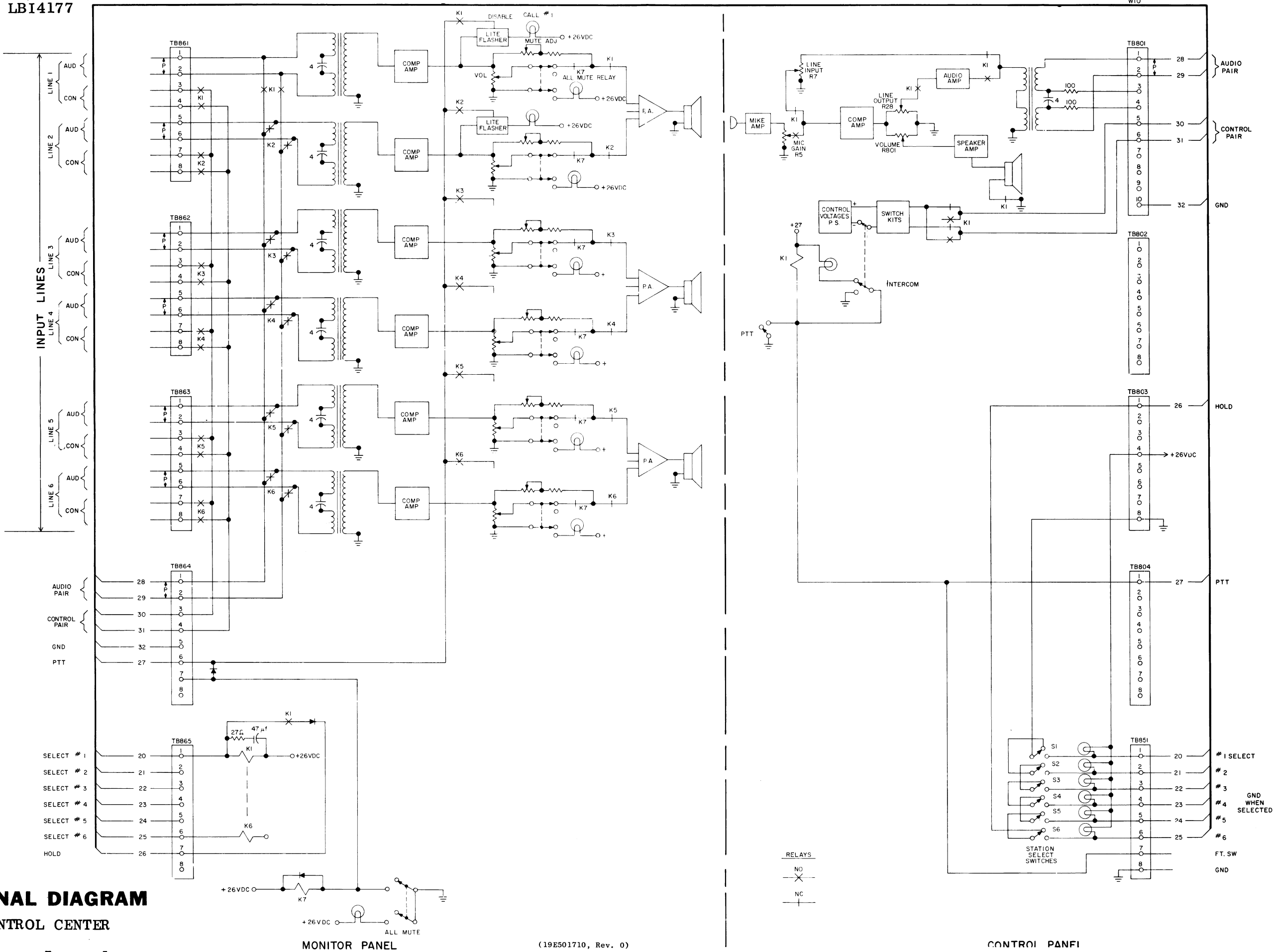
LBI-4874
CABINET ASSEMBLY 19E500839G2
HARDWARE KIT 19A122708G4
HARNESS KIT 19A127231G1

SYMBOL	GE PART NO.	DESCRIPTION
J851 thru J853	19B209395P1	CABINET ASSEMBLY 19E500839G2 ----- JACKS AND RECEPTACLES ----- Receptacle, power: 3 wire grounding type 15 amps at 125 v; sim to Circle F Mfg. 1517-2.
W851	19B205814G1	----- CABLES ----- Cable assembly: approx 30 inches long.
	19A115874P1 4035267P1	----- MISCELLANEOUS ----- Friction catch. (Used to secure drawers). Plug button. (Drawer slides).
		HARDWARE KIT 19A122708G4
S1	19B209396P1	----- SWITCHES ----- Toggle: 15 amps, 120 VAC; sim to GE 5941.
		HARNESS KIT 19A127231G1
W10	19C311636G1 19B209260P103	----- CABLES ----- Harness assembly. Includes: Terminals. (26)
	19A122706P1 N80P13008C13 N402P7C13 N404P13C13	----- MISCELLANEOUS ----- Support. Machine screw: No. 6-32 x 1/2. Flatwasher: No. 6. Lockwasher: No. 6.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES



INTERCONNECTION DIAGRAM
MULTI-STATION CONTROL CONSOLE
(EXTERNAL CONNECTIONS)



FUNCTIONAL DIAGRAM
COMMAND CONTROL CENTER

TABLE 1 — COMBINATION NOMENCLATURE

1st & 2nd Digit	3rd Digit	4th Digit	5th Digit	6th Digit	7th Digit	8th & 9th Digit
DC DESK CONSOLE	2 TWO-STATION CONTROL	1 STANDARD	A STANDARD	A 1-FREQUENCY TRANSMITTER & RECEIVER	T DC CONTROL	11 STANDARD
	3 THREE-STATION CONTROL	2 TYPE 99 TONE	B CHANNEL GUARD	B 2-FREQ. TRANS. & 1-FREQ. RCVR.		
	4 FOUR-STATION CONTROL	3 TYPE 90 TONE		C 2-FREQ. TRANS. & 2-FREQ. RCVR.		
	5 FIVE-STATION CONTROL	4 DIGITAL SIGNALING		D 1-FREQ. TRANS. & 2-FREQ. RCVR.		
	6 SIX-STATION CONTROL			R 1-FREQ. TRANS. & SEARCH LOCK MONITOR (OR 2 RECEIVERS)		
				S 2-FREQ. TRANS. & SEARCH LOCK MONITOR (OR 2 RECEIVERS)		

OPTIONAL EQUIPMENT

OPTION	EQUIPMENT
5014	Footswitch (19B201488P4)
5136	Swivel Chair (Vinyl Seat)
5137	Swivel Chair (Fabric Seat)
5138	Straight Chair (Vinyl Seat)
5139	Straight Chair (Fabric Seat)
5142	Swinging-Arm Microphone (Model 4EM13A1)
5148	Left Pedestal Desk
5149	Right Pedestal Desk
5150	Two Pedestal Desk
5152	Typewriter Platform (For Left Pedestal Desk)
5153	Typewriter Platform (For Right Pedestal Desk)
5154	220 to 117-VAC Step-Down Transformer (19C307131-P1)
5156	Desk Microphone (Model 4EM28A10)
5157	Desk Microphone (Model 4EM28B10 - used with Channel Guard)

DESCRIPTION

The General Electric Command Control Center provides dispatching, monitoring, and supervisory control functions required in modern two-way radio remote control systems. Control Centers described in this manual are for controlling 2 to 6 base stations. They are capable of providing up to five remote control functions for each base station. The Control Centers are compatible with radio systems that use remote control panels requiring 6- and 16-milliampere control currents at the remote station location. DC control and audio voltages are connected to the associated radio equipment over wire (telephone) lines.

The basic control center consists of an attractively styled desk with a three-section turret assembly. The cabinet is finished with a tan metallic enamel, providing a finish that is highly scratch resistant. A beige laminated plastic desk top provides a writing surface that harmonizes with the cabinet finish. The desk may have one or two pedestals which contain sliding storage drawers for filing logs, reports and other items. A swing-down back panel provides access to wiring on the distribution block at the rear of the desk. Optional office furniture includes a typewriter platform and straight or swivel-base arm

chairs.

The three-section turret assembly mounts at the rear of the desk top. Each turret section can accommodate a 19-inch panel drawer assembly which may be pulled forward for routine inspection and maintenance. Three duplex AC power receptacles, located at the rear of the turret, provide power connections for the drawer assemblies and miscellaneous test equipment.

The center section of the turret contains a Model 4EC76A23 Control Panel. This panel provides up to 10-watts of audio to the speaker. The Control Panel front includes illuminated push-button switches for selecting the desired station audio (from the Monitor Panel) and for selecting remote control functions at that station. Each station select switch operates a relay on an associated line termination module and the relay contacts transfer the desired station from the Monitor Panel to the Control Panel. A volume control, speaker, compression meter, clock and swivel microphone are also mounted on the front of the Control Panel. When servicing the Control Panel, refer to unit Maintenance Manual LBI-4178.

The left section of the turret contains the Monitor Panel. These panels determine

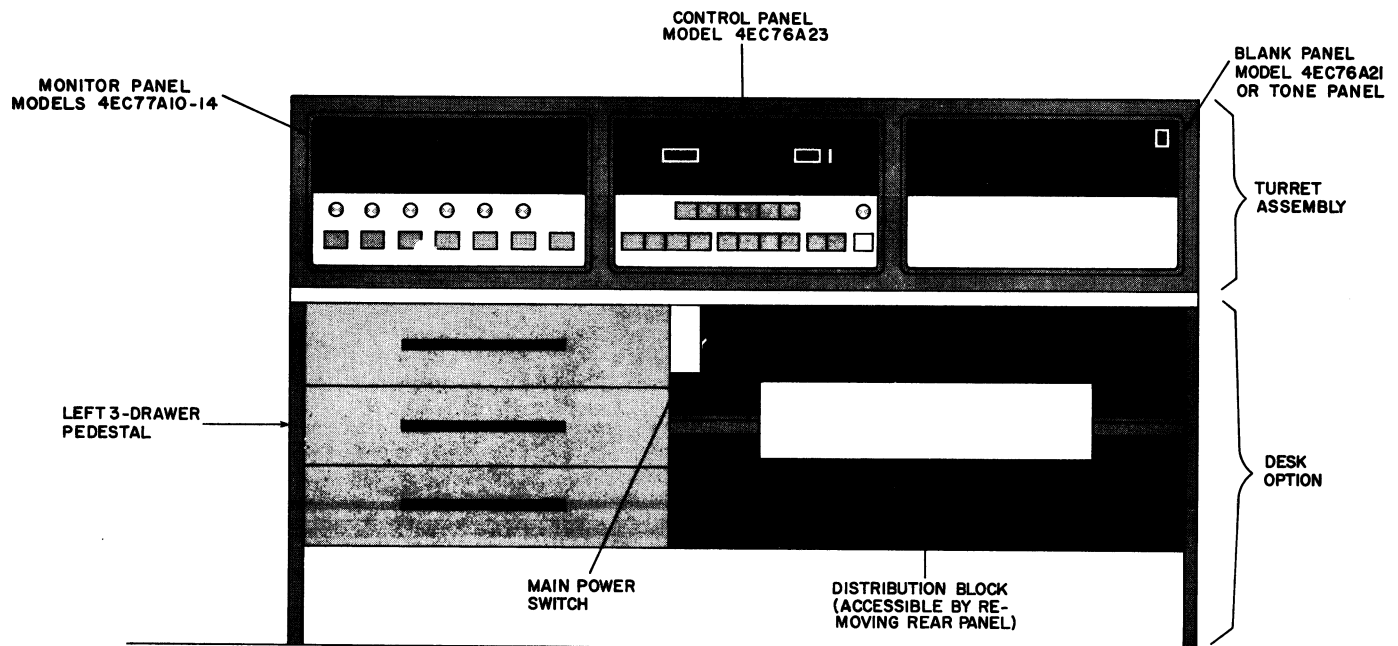


Figure 1 - Typical Radio Control Center

the number of stations that can be controlled from the Radio Control Center (see Table 2). Refer to unit Maintenance Manual LBI-3984 when servicing the Monitor Panel.

Table 2 - Monitor Panel Application

Model Numbers	Stations Controlled
4EC77A10	Two
4EC77A11	Three
4EC77A12	Four
4EC77A13	Five
4EC77A14	Six

The right section of the turret contains either a blank 19-inch panel (Model 4EC76A21) or one of three types of Tone Panels. The Tone Panels are their applications are shown in Table 3.

Refer to the Combination Nomenclature and Option Index Chart (Table 1) for a complete listing of available accessory application kits and options which are designed to meet the different requirements of individual two-way radio systems.

CONNECTIONS

All connections to the control center except microphone and power connections are made at terminal boards TB1-TB4, located on the distribution block at the rear of the console desk. Access to the distribution block is gained by inserting a screwdriver in the dimple in the center (top edge) of the rear panel and prying the panel outward.

TELEPHONE LINES

Three types of telephone line connections are commonly used in remote control applications. The three connection methods and their individual characteristics are shown in Table 4 and Figure 2. All lines

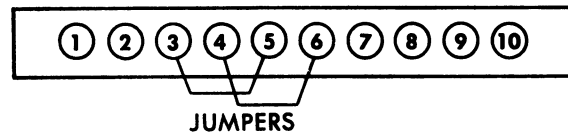
must be connected using the same method.

For proper operation of the DC control circuit, the polarity of the telephone pair carrying the control voltages must be the same at both the control center and the remote control panel (at the base station). Therefore, 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 center. The ungrounded wire will appear as an open circuit. The grounded wire will show a resistance. Identify the wires at both ends and observe line polarity as indicated in the following procedure.

1. Connect the telephone lines to TB2-TB4 on the distribution block and make jumper connections to TB801 (10-point terminal board nearest the AC line cord connection at the rear of the control panel chassis) according to the method selected.

Method 1 - Single Telephone Pair (Control Voltage Simplex Line to Line)

TB801 (REAR OF CONTROL PANEL)



- a. Connect a jumper between TB801-3 and TB801-5.
- b. Connect a jumper between TB801-4 and TB801-6.
- c. Connect telephone pair(s) to audio terminals of TB2, TB3 and TB4 as shown in Figure 3. Observe the following line polarities:

Stations 1, 3 and 5 - Terminal 1 connects to TB701-1 at the station.

Table 3 - Tone Panel Application

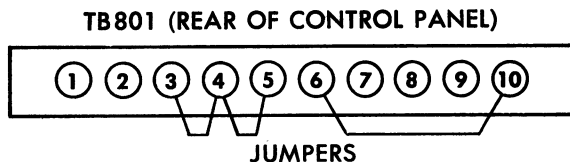
TONE TYPE	MODEL NUMBER	APPLICATION	MAINT. MANUAL
99	4EH19A10 4EH19A11 4EH19A12	100-Call Sequential Tone Signaling 400-Call Sequential Tone Signaling 900-Call Sequential Tone Signaling	LBI-3986
90	4EH19B10 4EH19B11 4EH19B12	Pulse Tone (5-tone, 1050-1650 Hz Freq Range) Pulse Tone (5-tone, 1800-2400 Hz Freq Range) Pulse Tone (10-tone, 1050-2400 Hz Freq Range)	LBI-3985
Digital (Dial)	4EH19C10 4EH19C11 4EH19C12	Digital Pulse Tone (590 Hz) Digital Pulse Tone (1500 Hz) Digital Pulse Tone (2805 Hz)	LBI-3987

Table 4 - Telephone Line Connection Methods

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 facilities.
2	One metallic pair: for both audio and control voltages with control voltages 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.

Stations 2, 4 and 6 - Terminal 5 connects to TB701-1 at the station.

Method 2 - Single Telephone Pair (Control Voltage Simplexed Line to Ground)



- a. Connect a jumper between TB801-3 and TB801-4.
- b. Connect a jumper between TB801-4 and TB801-5.
- c. Connect telephone pair(s) to audio terminals of TB2, TB3 and TB4 as shown in Figure 3. Observe the following line polarities:

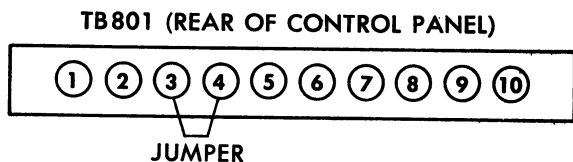
Stations 1, 3 and 5 - Terminal 1 connects to TB701-1 at the station.

Stations 2, 4 and 6 - Terminal 5 connects to TB701-1 at the station.

- d. Make connections to earth ground for each station as follows:

Station 1 - TB2-4	Station 4 - TB3-8
Station 2 - TB2-8	Station 5 - TB4-4
Station 3 - TB3-4	Station 6 - TB4-8

Method 3 - Separate Control and Audio Pairs



- a. Connect a jumper between TB801-3 and TB801-4.
- b. Connect audio pairs to audio terminals of TB2, TB3 and TB4 as shown in Figure 3.
- c. Connect control pairs to terminals of TB2, TB3 and TB4 as shown in Figure 3. Observe the following line polarities:

Stations 1, 3 and 5 - Terminal 3 connects to TB701-5 at the station.

Stations 2, 4 and 6 - Terminal 7 connects to TB701-5 at the station.

2. Connect terminal 8 of terminal board TB1 to a good earth ground, such as a cold water pipe or an electrical conduit. It is essential to have a good ground, regardless of the method of telephone line control used, as a safety measure for the dispatcher.

AC POWER

When the AC Power Junction Box with Switch S1 has been installed and wired as described in Installation Instruction LBI-4159, connect the control center to a 117-volt, 50/60-Hz source. An optional 220/117-volt AC stepdown transformer is available for operation from a 220-volt, 50/60 Hz source.

The main power switch (S1) is located on the distribution block at the rear of the desk, or on the metal divider wall if front access is desired. S1 connects power to the duplex AC power receptacles at the rear of the turret. Cable connections between S1 and the AC power receptacles are shown on page 9.

Connect the AC power cable for each 19-inch panel to one of the AC receptacles at the back of the turret.

CONNECTIONS

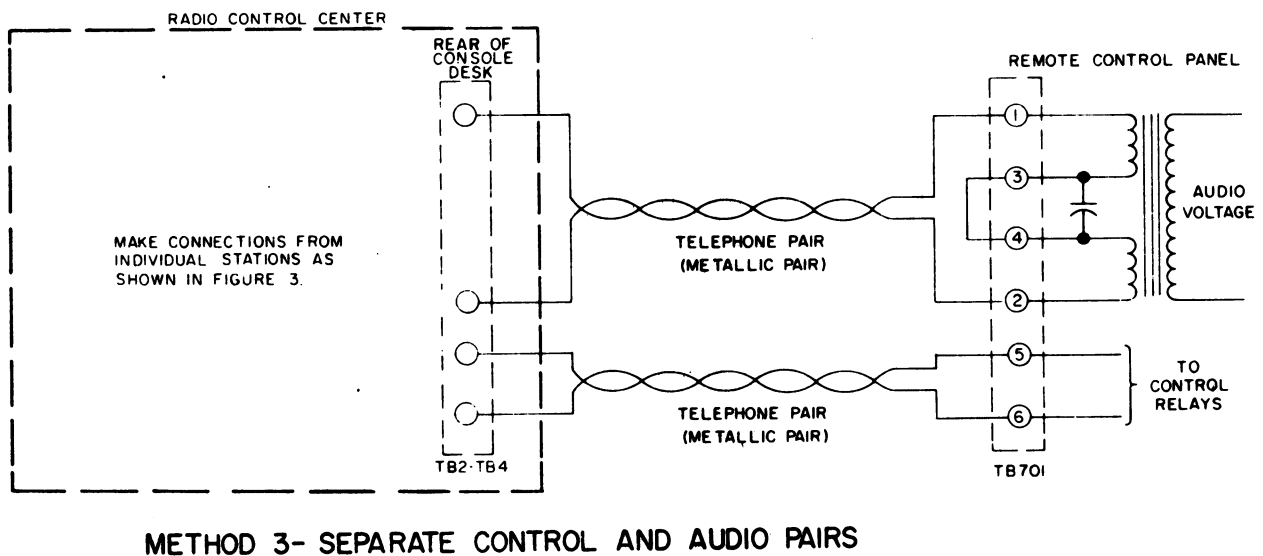
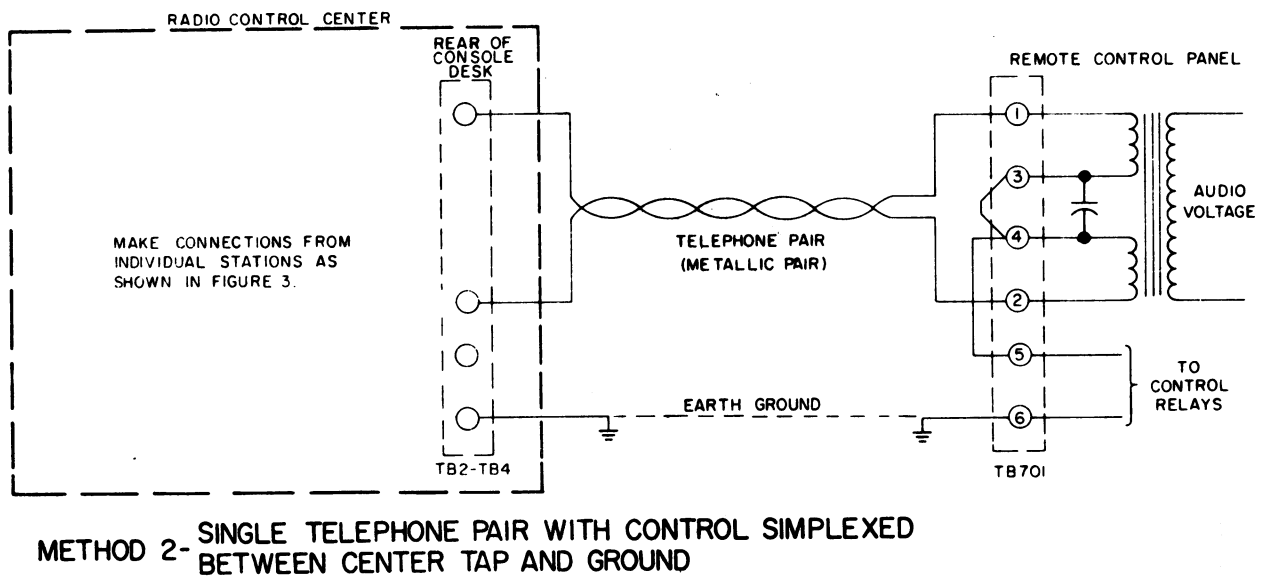
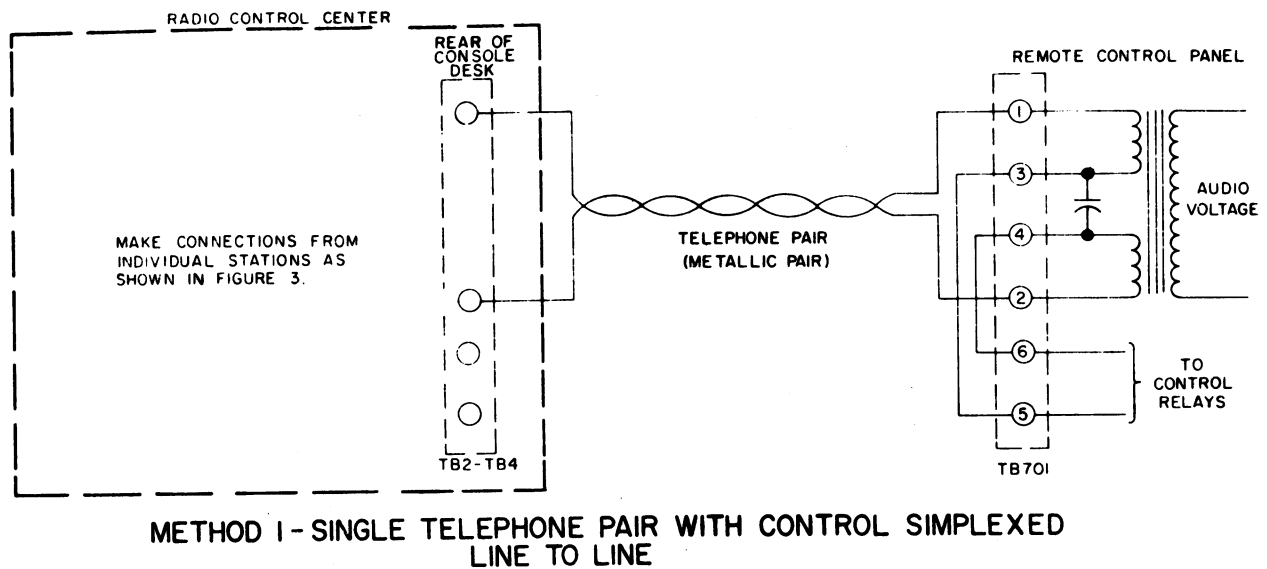


Figure 2 - Telephone Line Connection Methods

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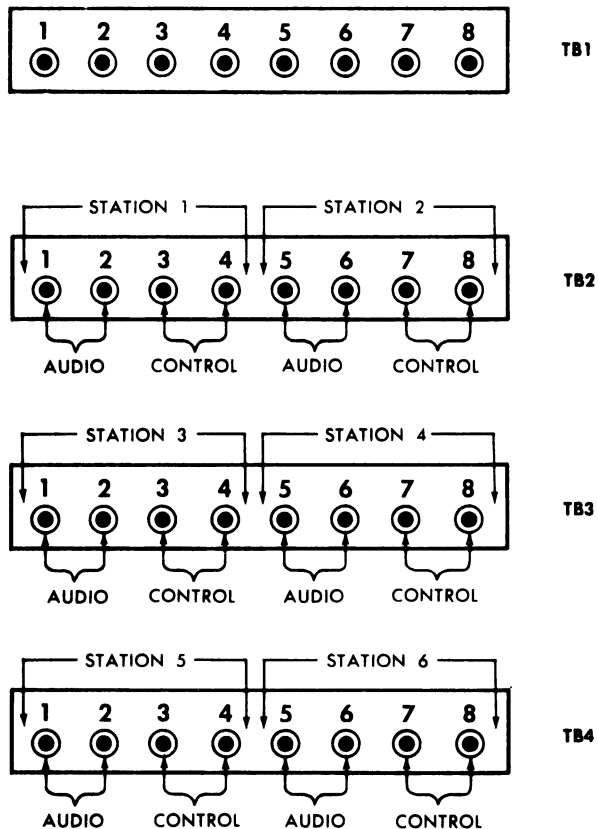


Figure 3 - Telephone Line Connections

ACCESSORIES

DESK MICROPHONE MODEL 4EM28A10 or B10

When the desk microphone is used, make connections as follows:

1. Route the microphone cable through a slot in the bottom of the control panel frame and secure with c'amp and screw provided.
2. Plug cable connector into J801.
3. For 4EM28B10 only: Remove the black wire between J801-4 & TB806-2.

FOOTSWITCH (OPTION 5014)

When the footswitch is used, make connections to terminals TB1-7 and TB1-8 on the distribution block at the rear of the desk.

ADJUSTMENT PROCEDURE

After the necessary connections have been made to the control center, a few adjustments to the Control Panel and Monitor Panel are required before placing the control center in service. These adjustments are described in the unit Maintenance Manuals.

NOTE

Before starting adjustment, make sure that the LINE LEVEL ADJUST (R1501 on the EP-38-A) has been set for no more than 2.7 volts RMS (+11 dBm) at the audio pair with maximum system deviation.

OPERATION

Before attempting to operate the Command Control Center, be sure that AC power switches S1 and S801 are turned ON (the lamp behind the clock serves as the power ON indicator). S1 is located on the distribution block or on the metal divider wall (see Figure 1). S801 is located on the back of the control panel chassis.

A Functional Diagram is provided on page 10 to help in understanding operation of the Control Console.

MONITOR PANEL

Channel 1 for each station is monitored automatically by circuits of the Monitor Panel. Individual VOLUME controls and CALL/MUTE switches (with push-to-operate, push-to-release action) are provided on the front of the Monitor Panel for each station. When MUTE is selected, the bottom half of the switch lights and audio volume from the associated station is reduced. The CALL position permits full audio volume from the station. A flashing CALL lamp in the upper half of the switch operates on incoming audio, regardless of the switch position.

A push-to-operate, push-to-release ALL Mute switch is also located on the front of the Monitor Panel. This switch lights when in the ALL MUTE position, and mutes all incoming calls except those that are selected from the Control Panel (center section).

CONTROL PANEL

In order to establish control of a station, the audio input for that station must be switched from the Monitor Panel to the Control Panel by operating the associ-

ated station select switch on the Control Panel. The station select switches are momentary-action and light when operated. They are electrically interlocked, therefore, when a second switch is operated the first switch is released and its light is turned off.

Switches and controls required for remote operation of a selected station are located on the front of the Control Panel within easy reach of the operator. The switches are illuminated, push-button type, with either momentary or alternate (push-to-operate, push-to-release) switching action. Typical control procedures for transmit and receive operation and a table describing push-button switch functions follow.

To Receive a Message

1. Select the desired receive channel by pressing the RECEIVE 1/RECEIVE 2 switch. (Lighted half of the switch indicates the channel selected). When separate RECEIVE 1 and RECEIVE 2 switches are used, pressing both switches provides simultaneous monitoring (of two receivers) or search-lock monitoring (of a two-frequency receiver).
2. When the first call is received, adjust

the VOLUME control for the desired listening level.

To Transmit A Message

1. Select the desired transmit channel by pressing the XMIT 1/XMIT 2 switch. (Lighted half of the switch indicates the channel selected).
2. Listen briefly to make sure no one is using the channel. Operate the CHANNEL GUARD MONITOR switch if your remote control station is equipped with Channel Guard.
3. Press the TRANSMIT switch on the front panel to key the station transmitter. If an optional desk microphone or footswitch is used, the transmitter may be keyed by the microphone transmit button or by the footswitch.

Switch and Control Functions

Individual system requirements will determine the number of switches that are installed on the control panel and the functions provided by the control center. Table 5 describes the available switches and controls and gives the function of each.

Table 5 - Switch and Control Functions

CONTROL	FUNCTION
STATION SELECT SWITCHES	<p>Momentary-action, push-button switch. Lights when the station is selected. Enables the selected station transmitter to operate when the TRANSMIT switch is pressed.</p> <p>The station select switches are electrically interlocked to prevent simultaneous selection of two or more stations.</p>
XMIT 1/XMIT 2	<p>Alternate-action push-button switch for transmit channel selection.</p> <p>When XMIT 1 is selected, operation is on transmit channel #1 and the upper half of the switch is lighted.</p> <p>When XMIT 2 is selected, operation is on transmit channel #2 and the lower half of the switch is lighted.</p>
REPEATER DISABLE	<p>Alternate-action, push-button switch. Lights when operated to disable the repeat mode of operation at the base station.</p> <p>When the switch is not lighted, the station will operate as a repeater.</p>
CHANNEL GUARD MONITOR	<p>Alternate-action, push-button switch. Lights when operated to disable Channel Guard at the base station. This position permits monitoring of all communications on the base station frequency.</p> <p>When the switch is not lighted, only Channel Guard coded signals are monitored.</p>

Table 5 (continued)

CONTROL	FUNCTION
RECEIVE 1/RECEIVE 2	<p>Alternate-action, push-button switch, for receiver channel selection.</p> <p>When RECEIVE 1 is selected, operation is on receive channel #1 and the upper half of the switch is lighted.</p> <p>When RECEIVE 2 is selected, operation is on receive channel #2 and the lower half of the switch is lighted.</p>
RECEIVE 1 RECEIVE 2	<p>Alternate-action, push-button switch. Lights when channel 1 receiver is selected (see following note).</p> <p>Alternate-action, push-button switch. Lights when channel 2 receiver is selected (see following note).</p> <p style="text-align: center;">- NOTE -</p> <p>Separate switches for RECEIVE 1 and RECEIVE 2 are used when simultaneous monitoring of two single-frequency receivers or search lock monitor of a two-frequency receiver is required. Pressing both switches provides the simultaneous monitoring or search lock monitor function.</p>
SUPV CONTROL	<p>Alternate-action, push-button switch. Lights when SUPV CONTROL is selected to provide supervisory control over all transmissions from other control consoles. This permits an operator to terminate unauthorized or unwanted transmissions. The switch places a short across the control pair, thus, no transmission can be initiated while the switch is lighted.</p>
INTERCOM	<p>Momentary-action, push-button switch. Lights when pressed. Allows communication with persons at base station or at other consoles without energizing the transmitter. Simply press the INTERCOM switch and talk into the microphone. Do not press the TRANSMIT switch. To listen, release the INTERCOM switch.</p>
MUTE	<p>Alternate-action, push-button switch. Lights in the MUTE position. The switch permits the operator to temporarily reduce the speaker volume for business discussions, telephone calls, etc, without changing the VOLUME control setting.</p>
TONE	<p>Momentary-action, push-button switch. Lights when pressed. The switch activates the tone alert oscillator which transmits an alerting tone signal for designating messages of special importance.</p>
TRANSMIT	<p>Momentary-action, push-button switch. Lights when pressed and keys the base station transmitter.</p>
VOLUME CONTROL	<p>Adjustable resistor. Audio level of speaker is varied by this control.</p>
VU Meter and Compression Meter	<p>The VU meter or Compression meter enables the operator to check the line level. At normal voice levels, the VU meter should occasionally swing up to zero (0). With the Compression meter, the needle should be in the green area.</p>
Digital Clock	<p>The console may be equipped with a 12 or 12/24-hour digital clock. The clock is connected so that it operates with power switch S801 (on back of the center Panel Chassis) in the ON or OFF position. However S1 on the console distribution block must be ON.</p>

MAINTENANCE

The Command Control Center is designed for ease of servicing and minimum maintenance. The 19-inch panels in the console turret may be pulled forward for routine inspection and maintenance in the following manner:

1. Grasp the panel frame and pull the panel forward until the stop is reached.
2. To completely remove the panel from the turret, lift the panel to clear the stop and pull forward. No electrical disconnections are required to set the panel on the desk top.

Circuits on the power distribution block are accessible from the rear of the control center. Insert a screwdriver blade in the dimple in the center (top edge) of the rear panel of the desk. Then, pry outward to release the panel and expose the distribution block.

Refer to the appropriate unit Maintenance Manual for detailed troubleshooting and servicing information.

GENERAL ELECTRIC COMPANY • MOBILE COMMUNICATIONS DIVISION
WORLD HEADQUARTERS • LYNCHBURG, VIRGINIA 24502 U.S.A.



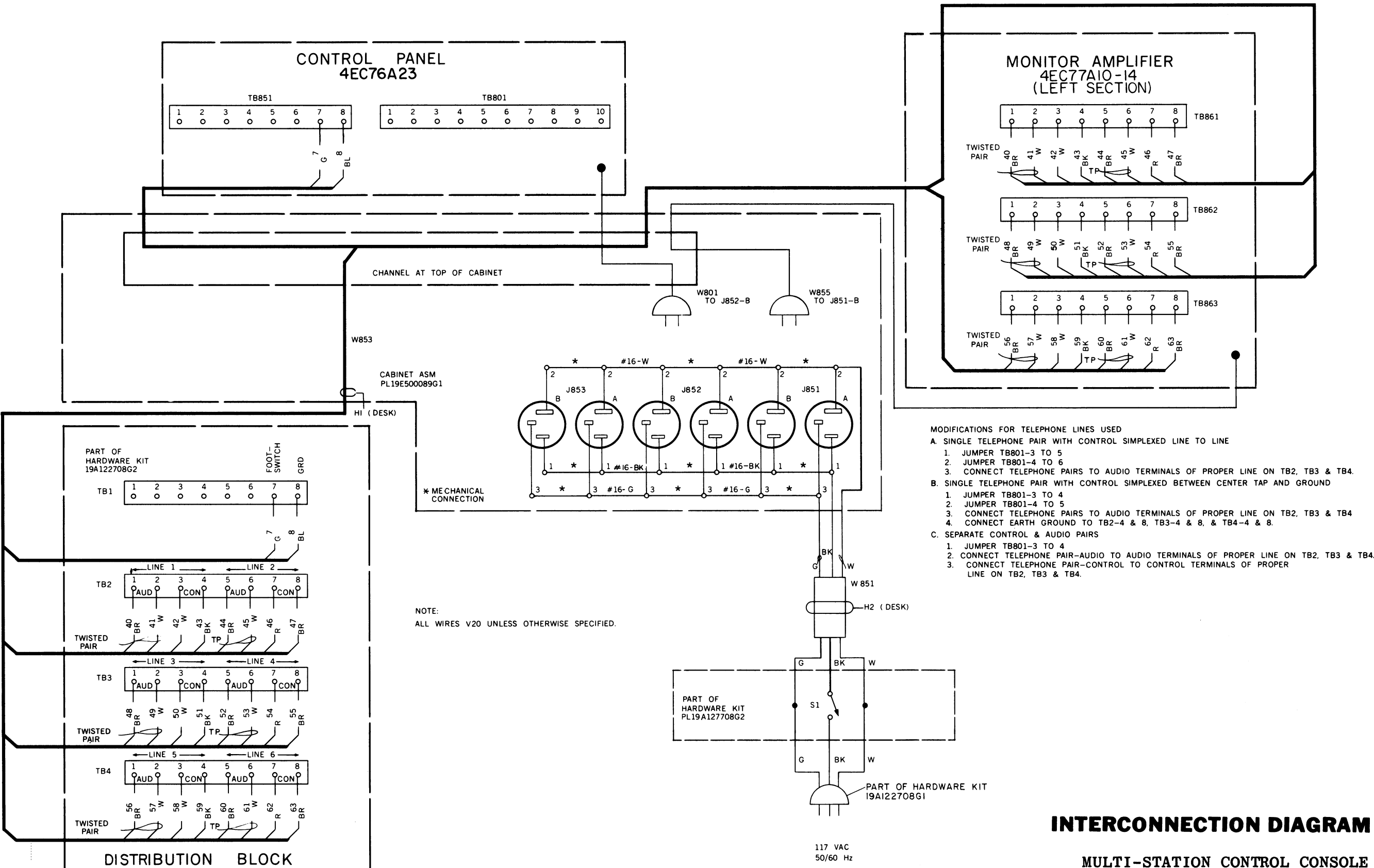
PARTS LIST

LBI-3982A

CABINET ASSEMBLY 19E500839G1
HARDWARE KIT 19A122708G2
HARNESS KIT 19A127231G1

SYMBOL	GE PART NO.	DESCRIPTION
J851 thru J853	19B209395P1	CABINET ASSEMBLY 19E500839G1 ----- JACKS AND RECEPTACLES ----- Receptacle, power: 3 wire grounding type 15 amps at 125 v; sim to Circle F Mfg. 1517-2.
W851 W853	19B205814G1 19C311633G1 19B209260P103	----- CABLES ----- Cable assembly: approx 30 inches long. Cable assembly. Includes: Terminals. (52)
	19A115874P1 4035267P1	----- MISCELLANEOUS ----- Friction catch. (Used to secure drawers). Plug button. (Drawer slides).
		HARDWARE KIT 19A122708G2
S1	19B209396P1	----- SWITCHES ----- Toggle: 15 amps, 120 VAC; sim to GE 5941.
TB1 thru TB4	19C301087P4	----- TERMINAL BOARDS ----- Phen: 8 terminals; sim to GE CR151D.
		HARNESS KIT 19A127231G1
W10	19C311636G1 19B209260P103	----- CABLES ----- Harness assembly. Includes: Terminals. (26)
	19A122706P1 N80P13008C13 N402P7C13 N404P13C13	----- MISCELLANEOUS ----- Support. Machine screw: No. 6-32 x 1/2. Flatwasher: No. 6. Lockwasher: No. 6.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES



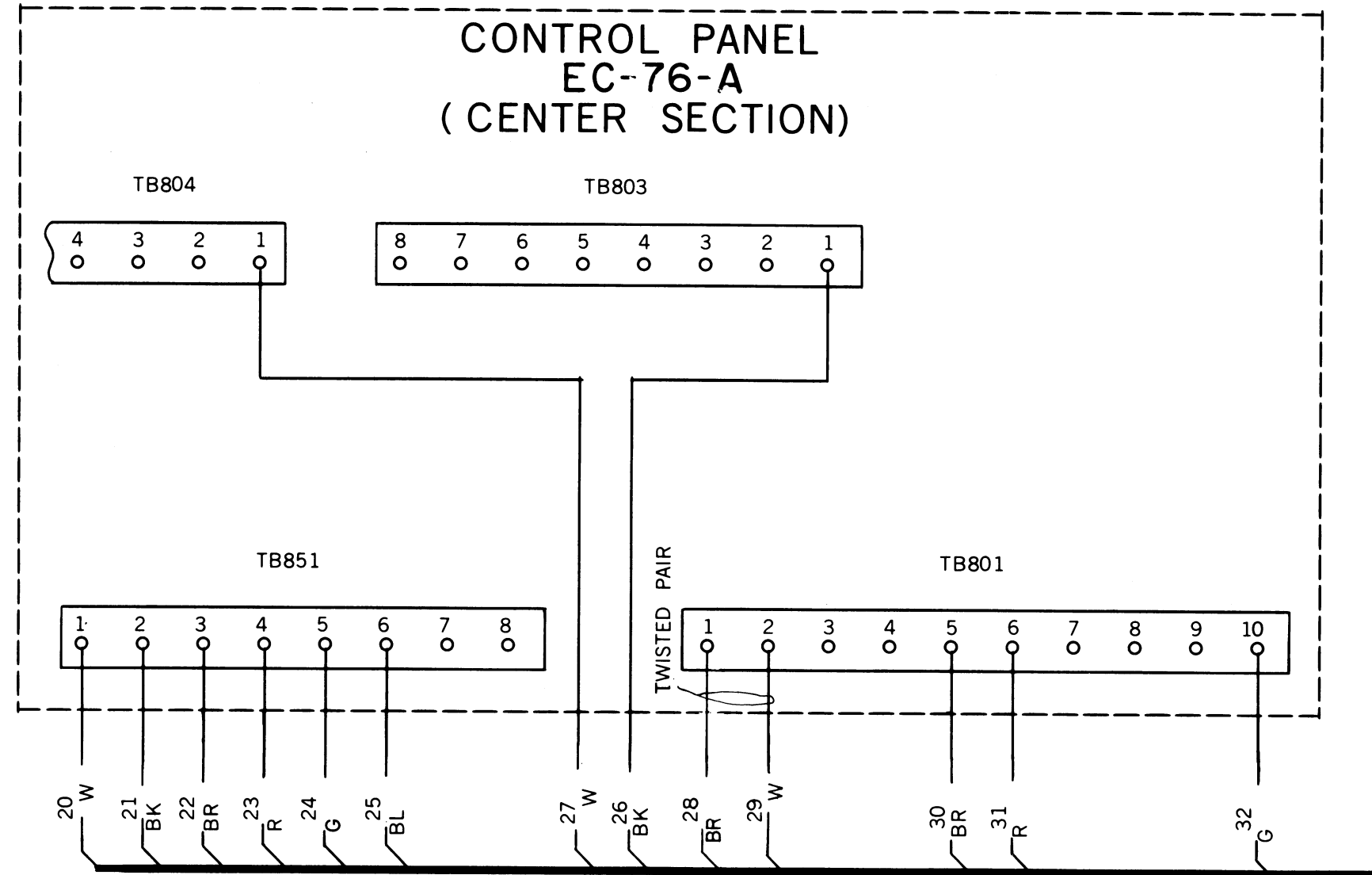
INTERCONNECTION DIAGRAM
MULTI-STATION CONTROL CONSOLE
(EXTERNAL CONNECTIONS)

INTERCONNECTION DIAGRAM

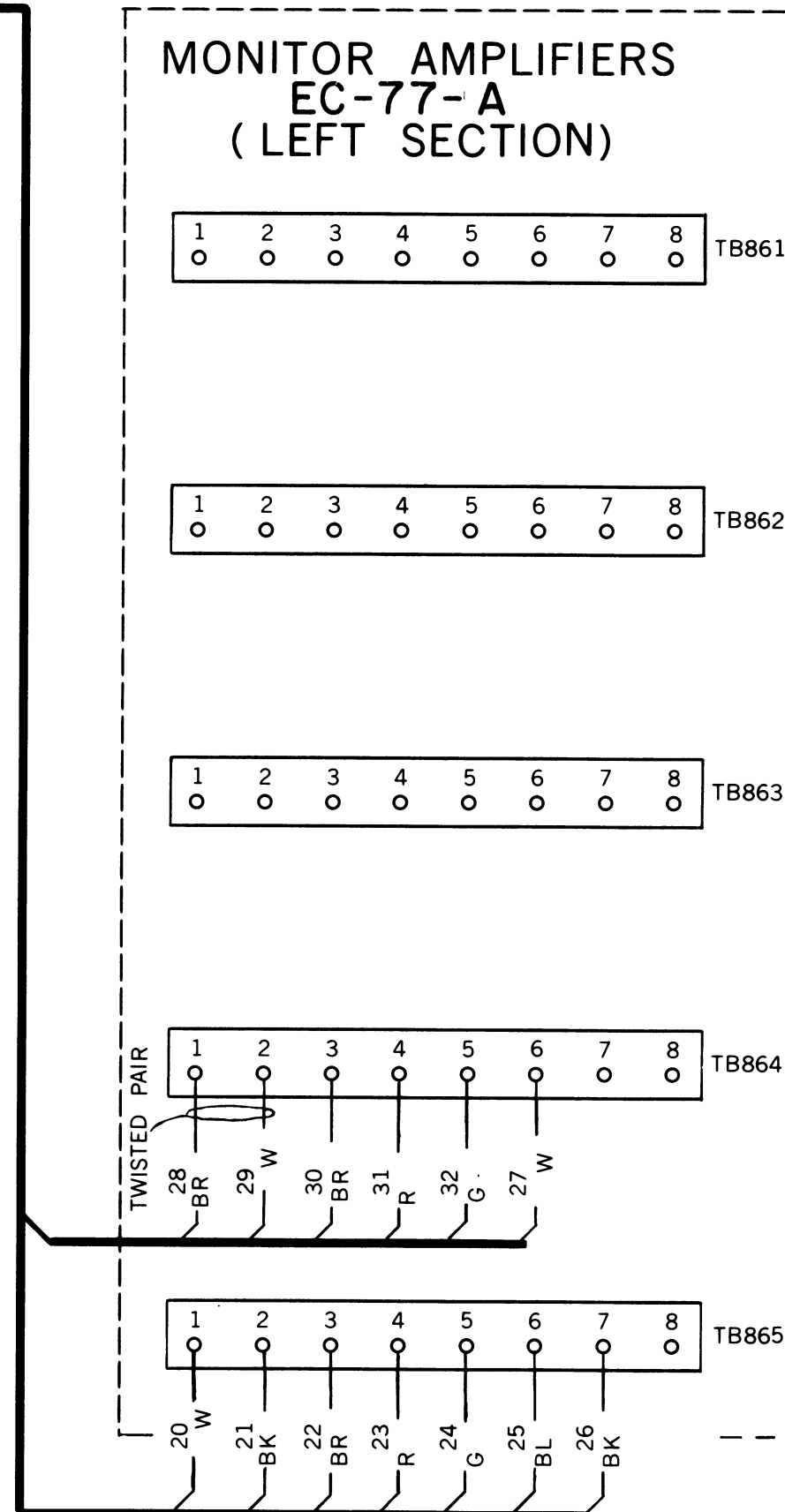
MULTI-STATION CONTROL CONSOLE

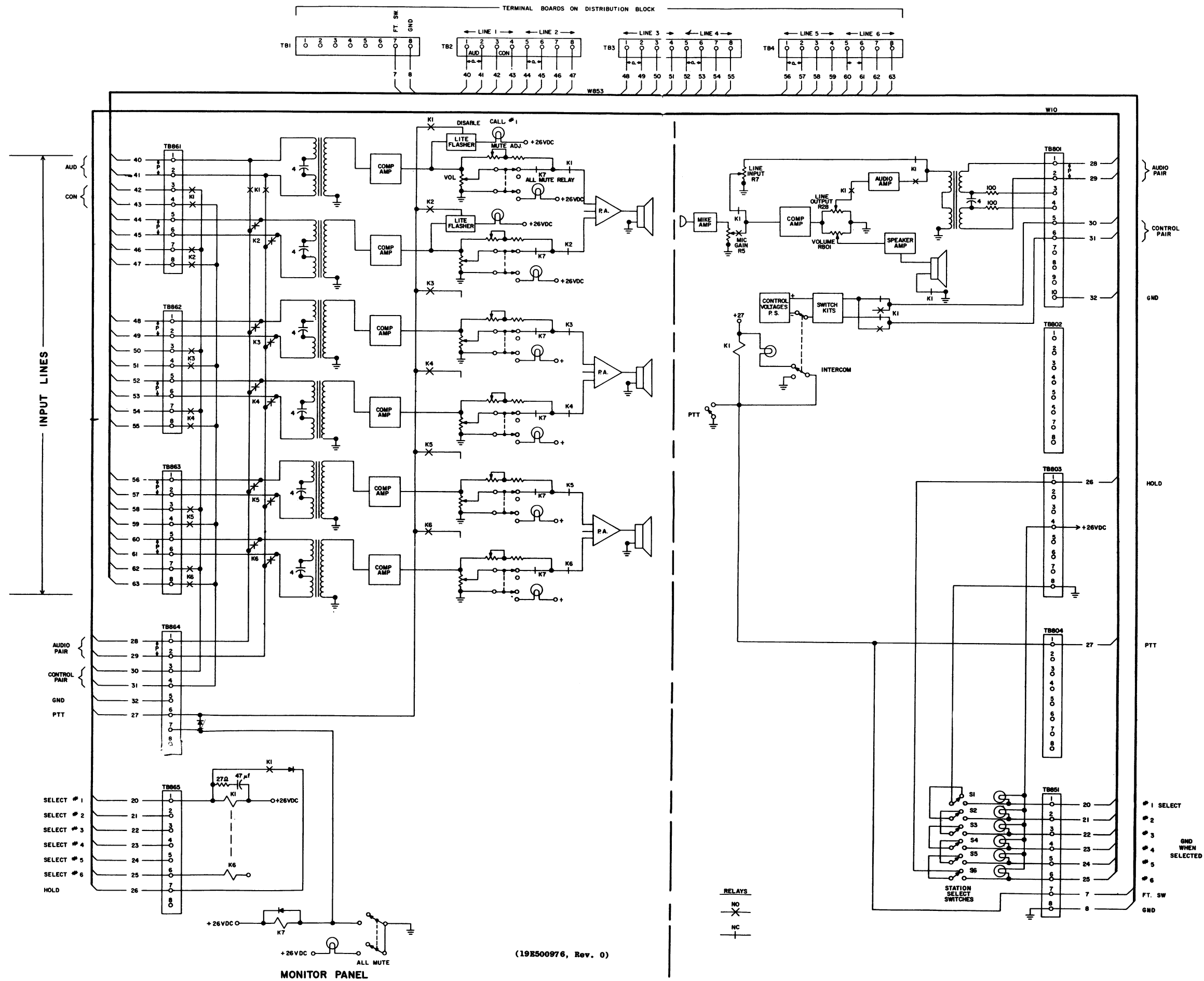
NOTE

1. ALL WIRES V20 UNLESS
OTHERWIRE SPECIFIED



WIO





FUNCTIONAL DIAGRAM

COMMAND CONTROL CENTER

Issue 1

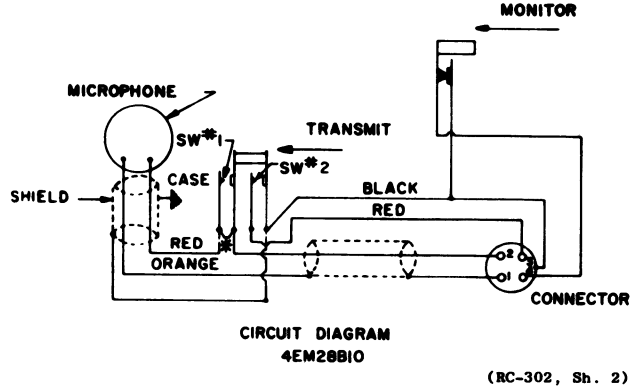
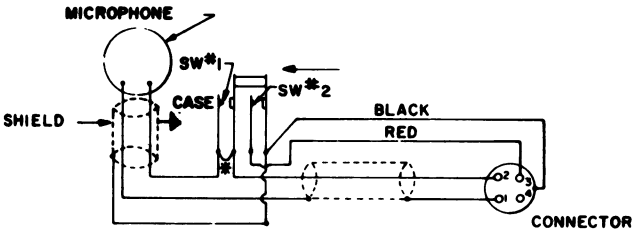
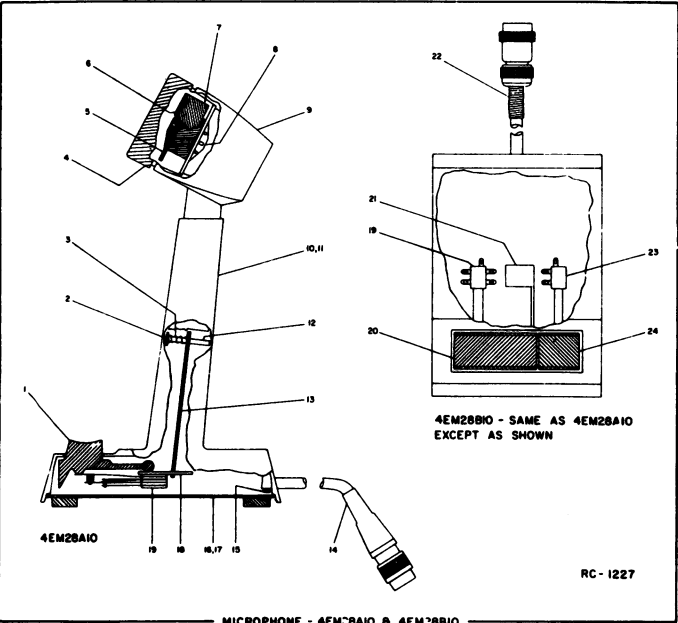
MAGNETIC CONTROLLED DESK MICROPHONE
MODEL 4EM28A10 (19C307105P1)
MODEL 4EM28B10 (19C307106P1)
(SEE RC1227)

SYMBOL	GE PART NO.	DESCRIPTION
		MECHANICAL PARTS MODEL 4EM28A10
1	RP68	Pushbutton.
2		Washer. Shure Brothers 30A697.
3		Spring. Shure Brothers 44A149.
4	RP72	Cap and grille.
5	RP13	Magnetic controlled cartridge.
6		Washer. Shure Brothers 34A223.
7		Shield. Shure Brothers 53A528.
8		Damping pad. Shure Brothers 20B33.
9		Housing. (Part of item 4).
10		Base. (Part of item 4).
11		(Not Used).
12		Pin. Shure Brothers 31A848.
13		Bracket. Shure Brothers 53A637.
14	RP65	Cable and plug.
15		Cable clamp. Shure Brothers 53A532.
16		Bottom plate. Shure Brothers 90A1015.
17		(Not Used).
18		Mounting bracket. Shure Brothers 53A633.
19	RP70	Switch.
		MODEL 4EM28B10
1		(Not Used).
2		Washer. Shure Brothers 30A697.
3		Spring. Shure Brothers 44A149.
4	RP72	Cap and grille.
5	RP13	Magnetic controlled cartridge.
6		Washer. Shure Brothers 34A223.
7		Shield. Shure Brothers 53A528.
8		Damping pad. Shure Brothers 20B33.
9		Housing. (Part of item 4).
10		(Not Used).
11		Base. (Part of item 4).
12		Pin. Shure Brothers 31A848.
13		Bracket. Shure Brothers 53A637.
14		(Not Used).
15		Cable clamp. Shure Brothers 53A532.
16		(Not Used).
17		Bottom plate. Shure Brothers 90B1015.
18		Mounting bracket. Shure Brothers 53A633.
19	RP71	Switch.
20	RP69	Pushbutton (Transmit).
21		Locking arm. Shure Brothers 53A667.
22	RP66	Cable and plug.
23		Switch. (Part of item 19).
24		Pushbutton (Monitor). (Part of item 20).

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

SERVICE SHEET

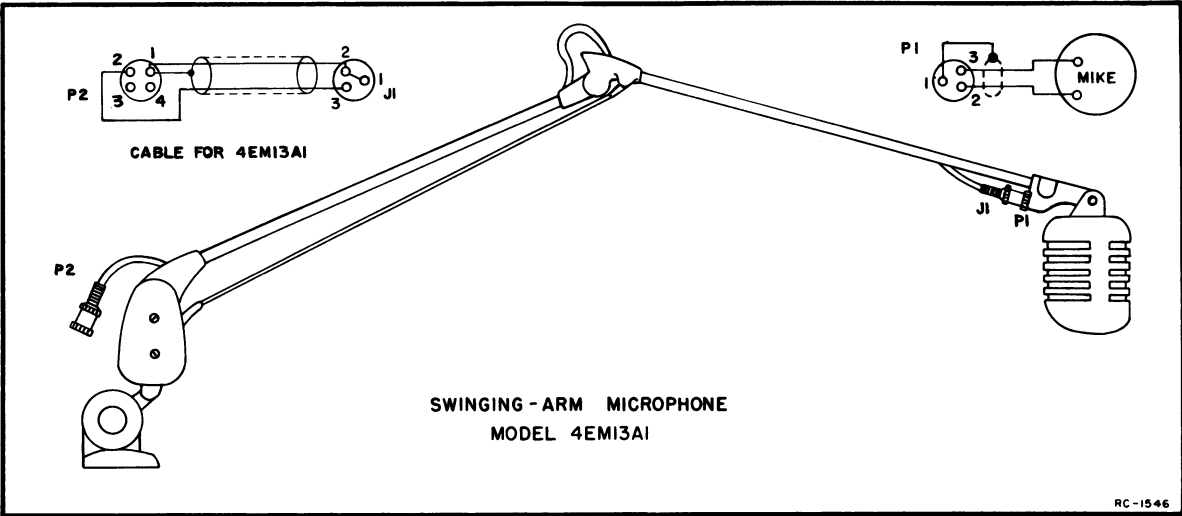
DESK MICROPHONES
MODELS 4EM28A10 & B10
(OPTIONS 5156 & 5157)



* JUMPER MAY BE REMOVED FOR PARALLEL OR SPECIAL OPERATION

- NOTES:
1. SWITCH #1 OF THE MICROPHONE CIRCUIT MUST CLOSE FIRST AND OPEN LAST.
 2. MONITOR AND TRANSMIT BUTTONS ARE MECHANICALLY INTERLOCKED, MAKING IT NECESSARY TO PRESS MONITOR BUTTON BEFORE TRANSMITTING. TO MONITOR CONTINUOUSLY, PRESS MONITOR BUTTON DOWN AND SLIDE FORWARD TO "LOCK" POSITION. PRESS AND PUSH BACK BUTTON TO RELEASE. TO OPERATE MONITOR AND TRANSMIT FUNCTIONS INDEPENDENTLY, REMOVE LOCKING ARM BRACKET (PART 21 SHOWN ABOVE AND IN PARTS LIST).

SWINGING-ARM MIKE MODEL 4EM13A1
(OPTION 5142)
(Mtg Kit 7774934P2)



PARTS LIST

SWINGING ARM MICROPHONE
MODEL 4EM13A1

SYMBOL	GE PART NO.	DESCRIPTION
	7487533P1	Dynamic microphone, multi-impedance: moving coil, 1000 cps response, 0-80° swivel adjustment; sim to Shure Brothers 55S. Includes:
P1	7478726P2	Connector, cable: 4 female contacts; sim to Amphenol 91-MC4F.
	7774934P2	Microphone bracket: 24 inch reach, shielded 2 conductor rubber or polyvinyl jacket. Includes:
J1	7478726P5	Connector, cable: 3 male contacts; sim to Amphenol Type 91-MC3M.
P2	7478726P6	Connector, cable: 4 male contacts; sim to Amphenol Type 91-MC4M.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.

SERVICE SHEET

SWINGING-ARM MICROPHONE MODEL 4EM13A1
(OPTION 5142)