MOBILE RADIO

MASTR

Progress Line

MAINTENANCE MANUAL

FLOOR MOUNT STATION

TWO-WAY FM
FLOOR MOUNT
STATION
COMBINATION

HIGH POWER
REMOTE CONTROL

LBI-3629F

MICROPHONE

DF.9014

TABLE OF CONTENTS

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.

EQUIPMENT INDEX

EQUIPMENT	TYPE OR MODEL NUMBER
Transmitter Exciters	ET-54-A through ET-59-D
Power Amplifier (25-50 MHz)	4EF4A1, 2, 3
Power Amplifier (132-174 MHz)	4EF5A1
Power Amplifier (450-470 MHz)	4EF6A1
Power Amplifier Power Supply	4EP6B1
Receiver	ER-39-A through ER-42-H
Cabinet	19C303465-G1
Station Power Supply	4EP38A10
Antenna Relay (mounts on 4EP38A10)	19A121260-G1
Remote Control Panel (DC Control) (Tone & Code Control) Decoder Panel (Tone & Code Control)	4KC16A10 4KC16A11 4KC17A10
Meter Switching Circuit	19A121460-G1
Meter Panel	19C303518-G1
Microphone	4EM25A10
Microphone Mounting Kit	7141414-G2
Speaker	4EZ16A20
117-VAC Power Cable	7491206-P1
Two-Prong Plug Adapter	7160486-P1
Alignment Tools (hex slug type) (slotted screw type)	4038831-P2 4033530-G2
Keys	LL802

OPTIONAL EQUIPMENT

EQUIPMENT	OPTION NO.	TYPE OR MODEL NUMBER
Priority Search Lock Monitor Remote Kits	7678 7679	19A122231-G16 19A122231-G15
Transmitter-Exciter Metering Cover	7648	19C303676-G3
Receiver Metering Cover	7649	19C303676-G2
Receiver Power Supply	7917, 18, 7925, 7930	4EP39A10
Antenna Matching Power Supply	7925 - 7930	4EP41A10
Antenna Matching Unit (30-40 MHz)	7925, 7928	4KY8A2
Antenna Matching Unit (40-50 MHz)	7926, 7929	4KY8A3
Antenna Matching Unit (152-174 MHz)	7927, 7930	4KY8C1
220-110 Volt Stepdown Transformer Kit	7606	19C307148-P1
Line Voltmeter	7901	19A120042-G5
Cabinet Blower	7902	4029917-G2
Intercom Kit	7620	19A122231-G9

SPECIFICATIONS *

DIMENSIONS (H x W x D)	69" x 22" x 23"
WEIGHT	Approximately 395 pounds
DUTY CYCLE (Transmit & Receive)	Continuous
INPUT VOLTAGE	117 VAC, ±10%, 50/60 Hz
INPUT POWER	Transmit: 9.3 Amps Max. 1100 Watts Receive: 1.5 Amps Max. 176 Watts
OPERABLE TEMPERATURE RANGE	-30°C (-22°F) to +60°C (+140°F)

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

COMBINATION NOMENCLATURE

1st Digit	2nd Digit	3rd Digit	4th Digit	5th Digit	6th Digit	7th Digit	8th & 9th Digits
Mechanical Package	Operating Voltage	RF Power Output Range	Channel Spacing	Control	Number of Freq.	Options	Frequency Range
V Floor-Mount Station	**M** 117 VAC	**8** 128—256 watts	**4** 20 kHz	**R** Remote Control Station	**A** 1-Freq. T 1-Freq. R	**S** Standard	**11** 25—33 MHz
		9 Over 256 watts	**6** 30 kHz		**B** 2-Freq. T 1-Freq. R	**N** Noise Blanker	**22** 33—42 MHz
			7 40 kHz		**C** 2-Freq. T 2-Freq. R	**U** Channel Guard (71.9—156.7 Hz)	**33** 42—50 MHz
			8 50 kHz		**D** 1-Freq. T 2-Freq. R	**V** Channel Guard (162.2—203.5 Hz)	**44** 66—77 MHz
			9 60 kHz		**E** 3-Freq. T 3-Freq. R	**W** Noise Blanker & Channel Guard (71.9—156.7 Hz)	**45** 77—88 MHz
					F 4-Freq. T 4-Freq. R	**X** Noise Blanker & Channel Guard (162.2—203.5 Hz)	**55** 132—150.8 MHz
						P UHS Receiver	**66** 150.8—174 MHz
						G UHS Receiver & Channel Guard (71.9—156.7 Hz)	**77** 406—420 MHz
						H UHS Receiver & Channel Guard (162.2—203.5 Hz)	**88** 450—470 MHz

DESCRIPTION

The General Electric MASTR Progress Line Floor Mount Station is a complete two-way High Power Remote Station. The station can be placed in the control building adjacent to the antenna installation or it may be located in another location suitable to your communication requirements. The transmitter exciter board and the receiver are fully transistorized. Silicon transistors are used throughout for added reliability.

A muffin fan is used to air cool the transmitter and 13.4-volt regulator transistor (Q502). The fan is mounted on the front of the Transmitter-Receiver Power Supply. A blower is also used to cool the PA tubes in the PA Power Supply. An optional cabinet blower is available for continuous duty or high temperature operation. This blower mounts on the lower rear of the cabinet.

Both front and back doors on the station cabinet can be opened to gain access to the transmitter, receiver and power supply. The transmitter exciter and receiver modules are equipped with centralized metering jacks, and are mounted on swing-out chassis for simplified alignment and troubleshooting.

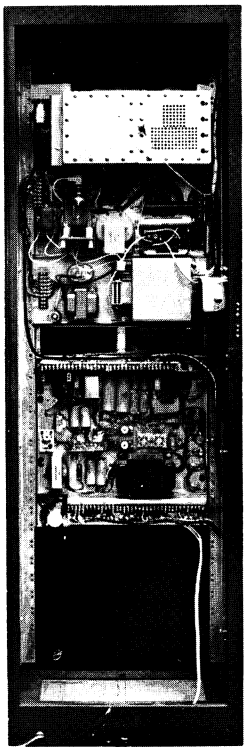


Figure 1 Rear View

The transmitter exciter and receiver modules may be used interchangeably in mobile and station installations. No modifications are required when transferring the units from one type of operation to another.

The rear door is interlocked to protect personnel from B+ voltages when the door is opened. A 117-VAC receptacle mounted in the cabinet provides AC for service equipment.

TRANSMITTER

The transmitter assembly consists of the transmitter exciter and power amplifier. The PA includes a power tube and is air-cooled by a blower mounted on the PA supply. The standard transmitter may be equipped with:

- One through four frequencies
- Channel Guard (tone squelch)

RECEIVER

The fully transistorized receiver is completely contained in an aluminum casting, which provides excellent electrical shielding and reduces the effects of vibration. The standard receiver may be equipped with:

- One through four frequencies
- Channel Guard (tone squelch)
- Noise Blanker (25—50 MHz and 132—174 MHz)

POWER SUPPLIES

Transmitter Exciter-Receiver Power Supply (4EP38A10)

Station Power supply Model 4EP38A10 provides operating voltages for both the transmitter-exciter and receiver. The power supply provides:

- Regulated -20 volts for the transistorized transmitter exciter-board.
- Regulated +10 volts for the receiver and for transmitter Channel Guard.
- Regulated -13.4 volts for transmitter filaments, receiver audio, relays and pilot lights.

PA Power Supply (4EP6B1)

The Power Supply provides the B-plus plate and screen grid voltages for power amplifier (types EF-4-A, EF-5-A or EF-6-A). In addition, the following voltages are provided for the power amplifier:

- 6 VDC regulated filament supply
- 140 VDC antenna relay supply

2nd Receiver Power Supply (Optional)

Receiver power supply Model 4EP39A10 is provided when the station is equipped with a second receiver.

Antenna Matching Power Supply (Optional)

The Antenna Matching Power Supply provides the 200 volts DC B-plus, and filament voltage for the station antenna matching units. The supply mounts on the meter switching panel.

ANTENNA MATCHING UNITS (Optional)

The Antenna Matching Units are designed to provide the gain necessary to match two or three receivers to a single antenna where frequency separation requirements are 1.0 MHz or less. The unit consists of a highly-selective, dual-tuned preselector circuit with individual cathode follower outputs to properly match the receiver inputs.

ANTENNA CIRCUITS

The antenna transmission line connects to the top connector on the antenna relay located on the Power Amplifier chassis. The receive antenna connects from the rear connector on the antenna relay to the left socket on the antenna bracket located on the Transmitter-Receiver power supply chassis. The transmit antenna connects directly from the front connector on the antenna relay to the high-power power amplifier. A coax cable connects the high power amplifier plug P482 to the exciter jack J103. (Transmitter exciter on Transmitter-Receiver Power Supply chassis).

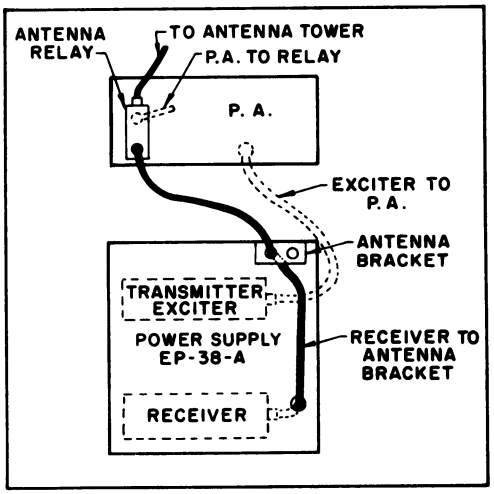


Figure 2-Antenna Connections (Rear View)

REMOTE CONTROL PANEL

Two different remote control panels are available for use in the station:

- Model 4KC16A10 -- for DC keying and control systems
- Model 4KC16A11 -- for tone keying and code control systems

Each panel contains a transmitter keying relay, remote control accessories and options, and terminal boards for power, wire line and station interconnections. Power for the station connects directly to TB706-1 and -2, and is controlled by power switch S701. S701 also controls the green power-on light on the station meter panel. An optional stepdown transformer kit is available for 220 VAC line voltages.

WARNING

117-volts AC is always present at TB706-1 and -2 even with S701 in the OFF position. Be careful when servicing the control panel.

DECODER PANEL (4KC17A10)

The Decoder Panel (along with remote control panel Model 4KC16A11) is used in tone keying and code control systems. The panel consists of the transistorized decoder circuitry, band-pass and low-pass filters FL1 and FL2, and terminal boards for power and station interconnections. The decoder circuitry is located in a hinged assembly on the front of the panel. The filters and terminal boards are located on the back of the panel.

The decoder circuitry decoders the binary codes (from remote control console Model 4EC72A10) for high speed function switching. The circuitry also detects the 3-kHz tone to energize the relay on the remote control panel which keys the station transmitter.

MICROPHONE (4EM25A10)

A microphone is mounted inside the station for use during service and maintenance work by the serviceman. The microphone is connected to mike jack J902 located on the front side of the Transmitter-Receiver Power Supply.

SPEAKER (4EZ16A20)

The speaker is designed for an audio output to two-watts. An attenuator is located on the speaker case for adjustment of the audio output level.

The speaker leads connect to TB501-11 and TB502-5 on the Transmitter-Receiver Power Supply.

NOTE

When a speaker is not used, a 3.5-ohm, 10-watt resistor must be connected from TB501-11 to TB502-5 as a substitute for the speaker load impedance.

METERING CIRCUITS

Meter Panel (19C303518-G1)

The Meter Panel is located above the front door on the station cabinet. The panel contains the following meters:

- Meter M901--measures test voltages in transmitter circuits.
- Meter M902--measures test voltages in receiver circuits.
- Meter M903--measures PA plate current in transmitter power amplifier circuits.
- Meter M904--measures the PA plate voltage of the power amplifier.
- Line Voltmeter 19A120042-G5 (option)--continuously monitors line voltage. The meter is a 0-150 VAC voltmeter connected across the 117- VAC line.

Meter Switching Panel Assembly (19A121460-G1)

The Meter Switching Panel Assembly is mounted on the front of the accessory panel and contains the switches and circuitry for switching from stage to stage in the receiver and transmitter. The voltage readings for each stage is indicated on the meters located in the Meter Panel. The Meter Switching Panel Assembly includes:

- Plug P1001--plugs into transmitter centralized metering jack J102 (or J1001 if optional transmitter top cover is used).
- Plug 1002--plugs into receiver centralized metering jack J442 (or J1002 if optional receiver top cover is used).
- Test Probe P1003--to measure high power amplifier grid voltage.
- Switch S1001--to switch transmitter voltage test points into the test meter circuit.
- Switch S1002--to switch receiver voltage test points into the test meter circuit.
- Switch S1004--test probe polarity reversing switch.

Test probe P1003 is used to measure the high voltage power amplifier grid current/voltage and plugs into the PA grid jack on the high power supply.

Refer to the transmitter and/or receiver maintenance manual for the proper voltage readings for each stage tested.

Transmitter voltage readings will be indicated on transmitter "tune up" meter (M901) and receiver readings will be indicated on the receiver "tune up" meter (M902). Both meters are located on the Meter Panel

Circuit Analysis

The voltage test points in the receiver and transmitter are connected through the connecting cables to lug terminals on the receiver and transmitter voltage wafer switches. With the receiver switch in the "A" meter switch position for example, the

The meter voltage check points are:

TX (S1001) & RX (S1002) Switch Position No.	Transmitter Function	Meter Range Full Scale	Receiver Function	Meter Range Full Scale
A	MULT 1	1 V	DISC	1 V*
B	MULT 2	1 V	2nd IF	1 V*
C**	AMPL 3	1 V	1st LIM	1 V*
D	MULT 3	1 V	MULT 1	1 V*
E***	AMPL/MULT 4	1 V	MULT 2	1 V*
F	PA GRID	1 V	- - -	
G	PA PLATE CURRENT	1 V	AUDIO PA	1 V*
H***	POWER OUTPUT	1 V	BLANKER	1 V*
I	20 VOLTS	30 V	- - - -	
J	PA PLATE VOLTAGE	1,000 V	10-VOLTS	15 V
K	EXTERNAL PROBE	3 V	- - - -	
L/VM	RECEIVER 2nd IF	1 V	- - - -	

* can be increased to 3-V by switch S1003.
** not used in ET-54-A
*** used only in ET-59-C

discriminator output voltage is connected by the switch to TB901-11-12 through wire numbers 22 and 23 to receiver meter (M902) in the Meter Panel. If the transmitter switch is in the "F" position, for example, the PA grid voltage is connected by the switch to TB901-9-10, through wire numbers 20 and 22 to meter (M901) in the Meter Panel.

Switch S1003 is used to connect the 3-volt multiplying resistor into the receiver meter circuit. Test probe P1003 is used to measure the high power amplifier grid drive. When using the test probe, turn the transmitter switch S1001 to the "External" position. R1002 is a multiplier resistor in series with the test probe to make the meter 3-volts full scale when using the external probe.

Resistor R1007 is a multiplier resistor in series with the receiver meter when switch S1003 is in the 3-volt position. Silicon rectifiers CR1001, CR1002, resistors R1003 and R1004 in the transmitter meter circuit and CR1003, CR1004, CR1005 and R1006 in the receiver meter circuit protect the meters from overload and voltage spikes.

NOTE

For continuous monitoring of test voltages, optional transmitter and receiver top covers (19C303676-G3 and -G2 respectively) are available. The covers contain external sockets to attach the transmitter and receiver cables from the Meter Switching Panel Assembly.

INITIAL ADJUSTMENT

After the station has been installed as described in the Installation Manual, the transmitter, exciter, PA, receiver, power supply, and control panel must be adjusted by an electronics technician who holds a 1st or 2nd Class FCC Radiotelephone or Radiotelegraph license before the station can be placed in operation. Built-in metering circuits are provided with the station.

TEST EQUIPMENT REQUIRED

The following test equipment is required for the adjustment of both transmitter and receiver:

1. A tuning tool and a screwdriver.
2. A signal source operating at the system frequency (preferably) the transmitter which will normally be monitored by the receiver).

TRANSMITTER ADJUSTMENT

The initial adjustment for the transmitter assembly includes:

- Tuning grid and plate controls on PA.
- Loading the power amplifier into the antenna.
- Checking the frequency and modulation.

For the Initial Adjustment procedure, refer to the transmitter exciter and power amplifier MAINTENANCE MANUALS.

RECEIVER ADJUSTMENT

The initial adjustment for the receiver includes:

- Zeroing the receiver to the system operating frequency.
- Matching the antenna transformer to the antenna.

For the Receiver Initial Adjustment Procedure, refer to the FRONT END ALIGNMENT PROCEDURE in the MAINTENANCE MANUAL for the receiver.

POWER SUPPLY ADJUSTMENT

The initial adjustment for the power supply includes:

- Turning Switch S501 ON.
- Adjusting VOLUME control R511 as follows:

  1. Apply a 1000-Hz signal to the receiver antenna jack at maximum system deviation.
  2. In DC control systems (using the 4KC16A10 remote control panel), adjust the VOLUME control for not more than 6 volts RMS across the audio pair (TB701-1 and -2 on the remote control panel).

     In tone and code control systems (using the 4KC16A11 remote control panel), adjust the VOLUME control for not more than 4.2 volts RMS across the audio pair (TB701-1 and -2 on the remote control panel).

- Adjusting SQUELCH control R512 for quieting.

REMOTE CONTROL PANEL ADJUSTMENT

The initial adjustment for either remote control panel includes:

- Turning power switch S701 ON.
- Adjusting AUDIO LEVEL CONTROL R701.

For the Initial Adjustment Procedure, refer to the MAINTENANCE MANUAL for the Control Panel.

ANTENNA-MATCHING UNIT ADJUSTMENT

The initial antenna matching unit adjustment is peaking T671 and Z671.

For the ADJUSTMENT procedures, refer to the MAINTENANCE MANUAL for the Antenna Matching Unit.

MAINTENANCE

TEST AND TROUBLESHOOTING PROCEDURES

The individual MAINTENANCE MANUAL for the transmitter and receiver describe standard test procedures which the serviceman can use to compare the actual performance of the transmitter or receiver against the specifications of the unit when shipped from the factory.

In addition, specific troubleshooting procedures are available to assist the serviceman in troubleshooting the transmitter, receiver and power supply.

For best results in servicing the station, the TEST PROCEDURES should be used in conjunction with the TROUBLESHOOTING PROCEDURES. Both sheets are listed in the Table of Contents of the applicable MAINTENANCE MANUAL.

PREVENTIVE MAINTENANCE

To insure high operating efficiency and to prevent mechanical and electrical failures from interrupting system operations, routine checks should be made of all mechanical and electrical parts. This preventive maintenance should include the maintenance checks listed below:

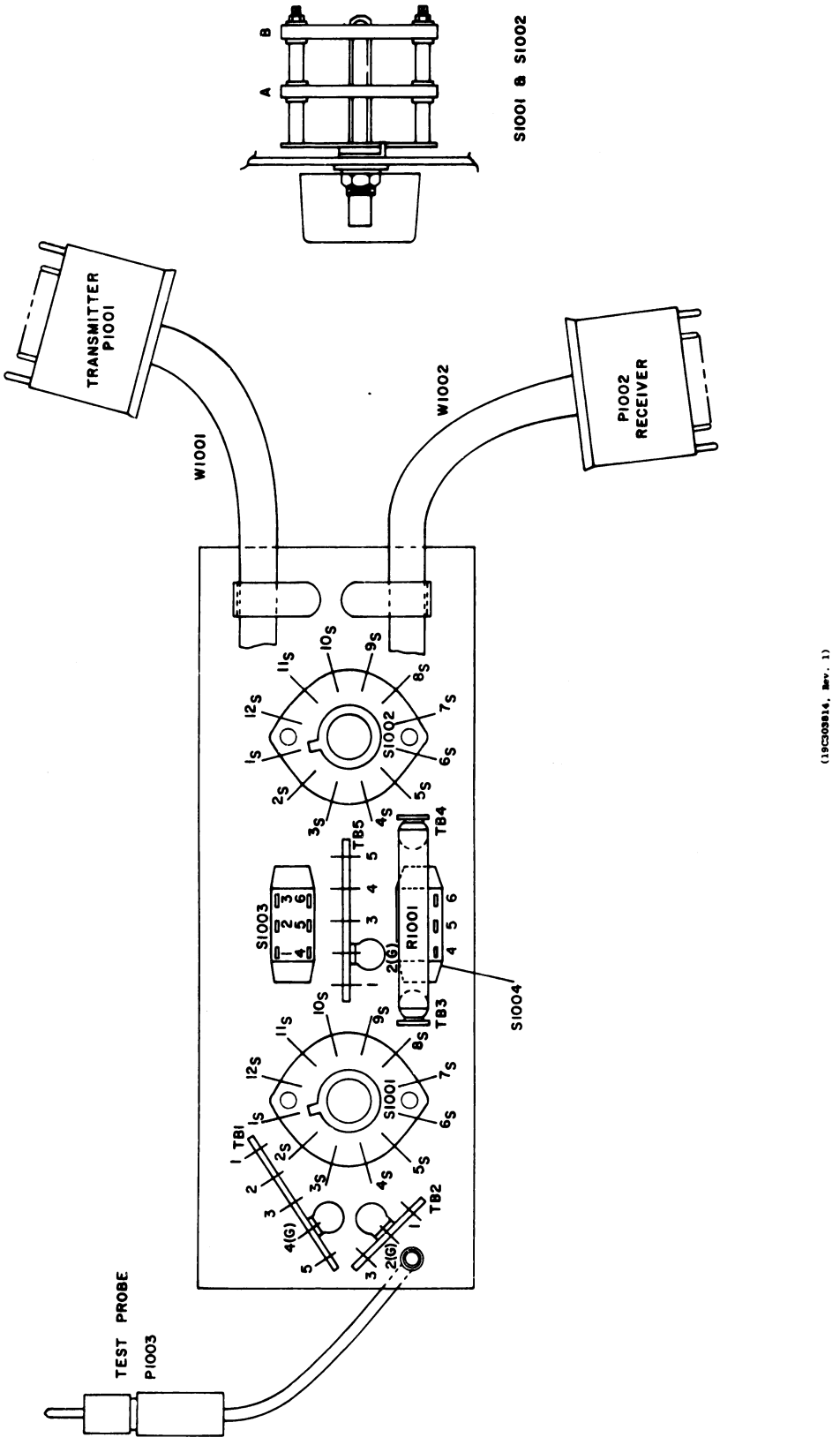
PREVENTIVE MAINTENANCE PROGRAM

CHECK THE FOLLOWING ONCE A YEAR:

1. Transmitter frequency and deviation (FCC normally requires this check-up at least ONCE a year). ☐
2. Measure and record the antenna system V.S W.R. ☐
3. Check input voltage at TB706-1 and -2 on control panel. Reading should be within 10% of 117 VAC. (Also check during routine service calls). ☐
4. Compare and record transmitter meter readings with voltages taken during initial tune-up. Retune, if necessary. ☐
5. Compare and record receiver meter readings with voltages taken during initial tune-up. Retune, if necessary. ☐
6. Check for positive indication of pressure on transmission line pressure gauge (if pressurized line is used). ☐
7. Clean dust from fan blades and lubricate bearings. ☐
8. Burnish pitted or coated relay contacts to smooth out metallic desposits or remove the coating. ☐

MAKE THE FOLLOWING MAINTENANCE CHECKS DURING ROUTINE SERVICE CALLS:

1. Check antenna lines and mast for mechanical stability. ☐
2. Visually check:
   - External cables ☐
   - Internal cables ☐
   - Plugs ☐
   - Sockets ☐
   - Terminal boards ☐
3. Check for tightness of nuts, bolts, and screws to make sure nothing is working loose from its mounting. ☐
4. Replace tubes as necessary. (It may be convenient to replace all station tubes during the yearly check-up). ☐

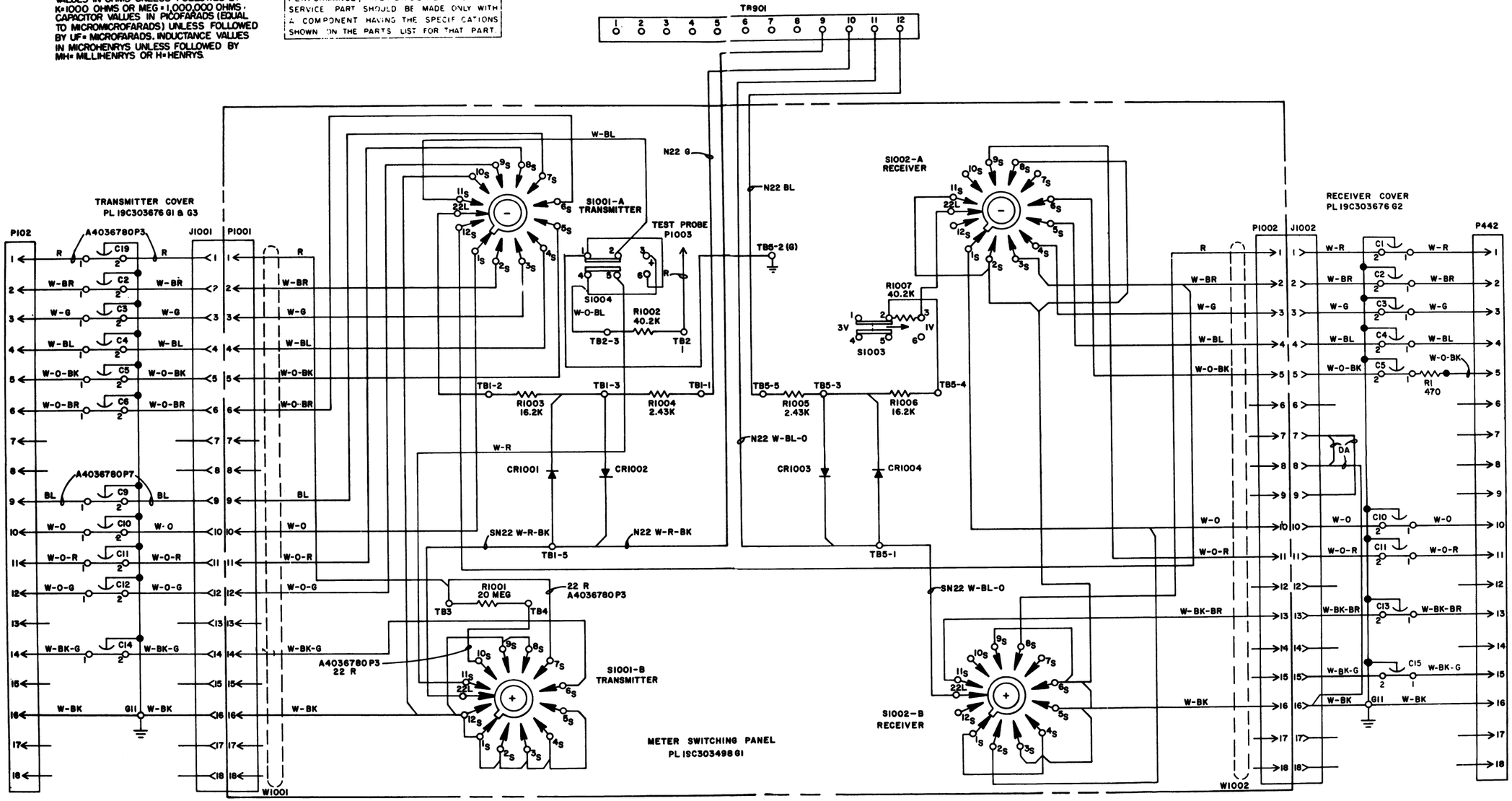


OUTLINE DIAGRAM

MASTR FLOOR-MOUNT STATION COMBINATION
METER SWITCHING PANEL

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.

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.



SEE APPLICABLE PRODUCTION CHANGE SHEETS IN INSTRUCTION BOOK SECTION DEALING WITH THIS UNIT, FOR DESCRIPTION OF CHANGES UNDER EACH REVISION LETTER.

THIS ELEM DIAG APPLIES TO

MODEL NO	REV LETTER
19C303498G1	A
19C303676G2	B

NOTES:

1. ALL WIRES ARE DA UNLESS OTHERWISE SHOWN IN METER SWITCHING PANEL.
2. ALL WIRES ARE #24 UNLESS OTHERWISE SHOWN IN RECEIVER & TRANSMITTER COVER.
3. TERMINATE ALL WIRES NOT USED IN W1001 & W1002 BY CUTTING OFF FLUSH WITH CABLE JACKET.

(19D402334, Rev. 9)

SCHEMATIC DIAGRAM

MASTR FLOOR-MOUNT STATION COMBINATION
METER SWITCHING PANEL

PARTS LIST

LBI-3565C

METER SWITCHING PANEL ASSEMBLY
19A121460-G1

SYMBOL	G-E PART NO.	DESCRIPTION
		METER SWITCHING PANEL 19C303498-G1
		- - - - - - - - DIODES AND RECTIFIERS - - - - - -
CR1001 thru CR1004	5494922-P1	Silicon; sim to Type 1N456.
		- - - - - - - - - - - - PLUGS - - - - - - - - - -
P1001		(Part of W1001).
P1002		(Part of W1002).
P1003	4032797-P1	Probe, test; sim to Birnbach Type 415 (red).
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R1001	5496955-P576	Deposited carbon: 20 megohms ±2%, 2 w; sim to Texas Instruments Type CD2R.
R1002	5495948-P359	Deposited carbon: 40,200 ohms ±1%, 1/2 w; sim to Texas Instruments Type CD1/2MR.
R1003	5495948-P321	Deposited carbon: 16,200 ohms ±1%, 1/2 w; sim to Texas Instruments Type CD1/2MR.
R1004 and R1005	5495948-P238	Deposited carbon: 2430 ohms ±1%, 1/2 w; sim to Texas Instruments Type CD1/2MR.
R1006	5495948-P321	Deposited carbon: 16,200 ohms ±1%, 1/2 w; sim to Texas Instruments Type CD1/2MR.
R1007	5495948-P359	Deposited carbon: 40,200 ohms ±1%, 1/2 w; sim to Texas Instruments Type CD1/2MR.
		- - - - - - - - - - SWITCHES - - - - - - - - - -
S1001 and S1002	19C307113-P2	Rotary: 2 sections, 2 poles, 12 positions, non-shorting contacts, 2 amps at 28 VDC or 1 amp at 110 VDC; sim to Oak 235585-K2.
S1003 and S1004	7145098-P1	Slide: DPDT, 3/4 amp at 125 VAC or 1/2 amp at 125 VDC; sim to Stackpole SS-150.
		- - - - - - - - TERMINAL BOARDS - - - - - - - -
TB1	7775500-P9	Phen: 5 terminals.
TB2	7775500-P7	Phen: 3 terminals.
TB3 and TB4	7775500-P46	Phen: 1 terminal.
TB5	7775500-P9	Phen: 5 terminals.
		- - - - - - - - - - - CABLES - - - - - - - - - -
W1001	19C303568-P2	Metering: includes 18 pin plug (P1001) rated at 1000 VDC max, approx 38 inches long.
W1002	19C303568-P2	Metering: includes 18 pin plug (P1002) rated at 1000 VDC max, approx 38 inches long.
		- - - - - - - - - - MISCELLANEOUS - - - - - - - -
	19B204861-G1	Chassis. (Used in 19C303498-G1).
	7763541-P5	Cable, clamp. (Used with W1001 and W1002 in 19C303498-G1).
	7487773-P6	Knob: red; sim to Eastman Chemical 28739. (Used with S1001 and S1002 in 19C303498-G1).
	19B204590-G1	Box. (Used in 19A121460-G1).
	4029030-P11	Rubber channel seal: approx 2-1/2 inches long. (Used in 19A121460-G1).

SYMBOL	G-E PART NO	DESCRIPTION
		COVER ASSEMBLY 19C303676-G1 (TRANSMITTER STATION METERING) 19C303676-G2 (RECEIVER STATION METERING) 19C303676-G3 (TRANSMITTER STATION METERING, VENTILATED)
		- - - - - - - - - - CAPACITORS - - - - - - - - -
C1 thru C6	5493392-P7	Ceramic, feed-thru: .001 µf +100% -0%, 500 VDCW; sim to Allen-Bradley Type FA5C.
C9	19B209282-P1	Ceramic, feed-thru: 680 pf ±20%, 1000 VDCW; sim to Sprague Type 544C.
C10 thru C14	5493392-P7	Ceramic, feed-thru: .001 µf +100% -0% 500 VDCW; sim to Allen-Bradley Type FA5C.
C15*	5493392-P7	Ceramic, feed-thru: .001 µf +100% -0%, 500 VDCW; sim to Allen-Bradley Type FA5C. Added by Rev B.
C19	19B209282-P1	Ceramic, feed-thru: 680 pf ±20%, 1000 VDCW; sim to Sprague Type 544C.
		- - - - - - - - JACKS AND RECEPTACLES - - - - - -
J1001 and J1002	19B205689-G2	Connector: 18 contacts.
		- - - - - - - - - - - PLUGS - - - - - - - - - -
P102	19B204727-P1	Connector: 18 contacts rated at 1000 VDC max.
P442	19B204727-P1	Connector: 18 contacts rated at 1000 VDC max.
		- - - - - - - - - - - RESISTORS - - - - - - - - - -
R1*	3R77-P471K	Composition: 470 ohms ±10%, 1/2 w. Added by Rev A.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.

PRODUCTION CHANGES

Changes in the equipment to improve performance or to simplify circuits are identified by a "Revision Letter", which is stamped after the model number of the unit. The revision stamped on the unit includes all previous revisions. Refer to the Parts List for descriptions of parts affected by these revisions.

REV. A — To eliminate 3 db loss in receiver sensitivity with cover on. Added R1 to receiver metering cover.

REV. B — To allow audio metering with cover. Added C15.

PARTS LIST

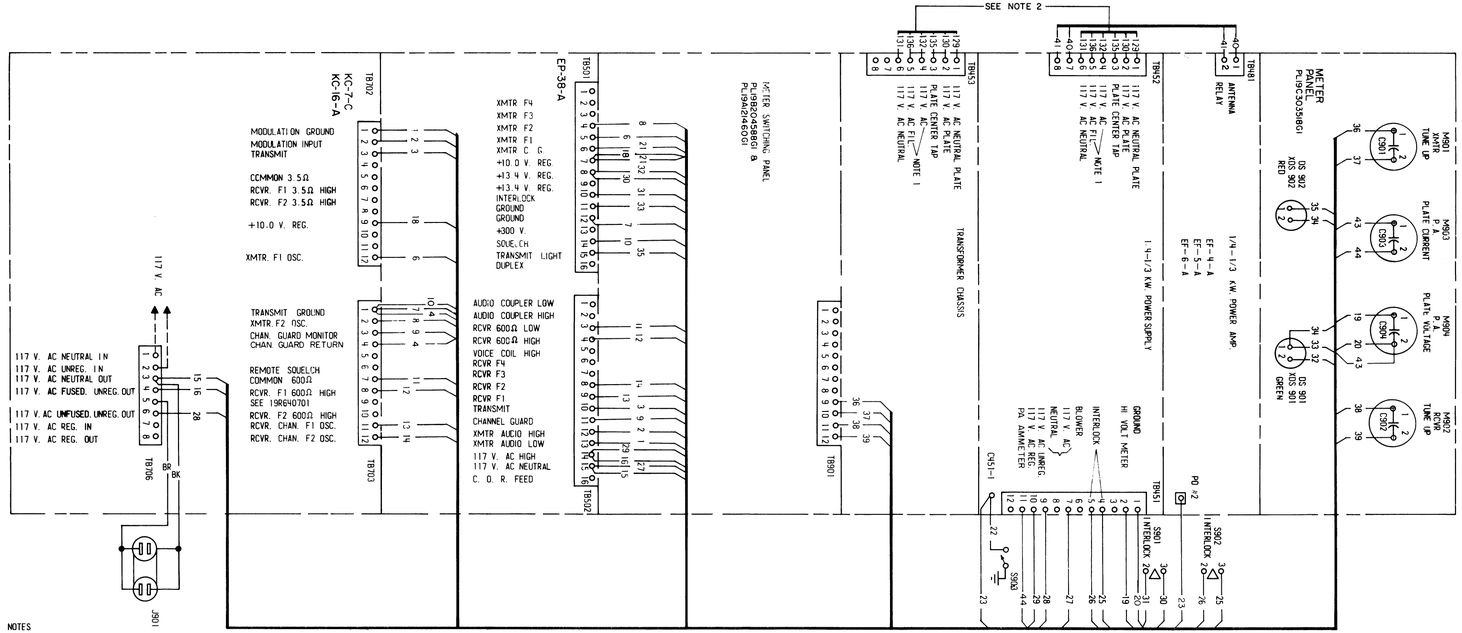
LBI-3564

HIGH POWER FLOOR MODEL STATION CABINET
PL-19C303465-G1 and G2

SYMBOL	G-E PART NO.	DESCRIPTION
		- - - - - - - - JACKS AND RECEPTACLES - - - - - -
J901	PL-4029758-G1	Duplex outlet, phen: polarized, 15 amps at 125 v.
		- - - - - - - - - - SWITCHES - - - - - - - - - -
S901	7141440-P1	Push, door interlock: SPDT, 10 amps at 125 or 250 VAC.
S902	5490346-P1	Push, door interlock: SPDT, 10 amps at 125 or 240 VAC, 0.5 amp at 125 VDC or 0.25 amp at 250 VDC; sim to Micro Switch Type 2AC5.
S903	PL-5491274-G1	Door interlock, grounding.
		- - - - - - - - - MISCELLANEOUS - - - - - - - -
	NS29P30C13	Plug button: approx 7/8 inch dia. (Located on top of cabinet).
	5491480-P5	Cable clamp: sim to Adel Precision Type 754. (Located in top of cabinet).
	4036217-P1	Cable clamp: sim to Thomas and Betts 3302. (Located in bottom of cabinet).
		CABINET ASSEMBLY PL-7668242-G14
		- - - - - - - - - MISCELLANEOUS - - - - - - - -
	PL-5498454-G1	Cabinet shell: approx 69 x 22 x 5/8 inches.
	PL-5495572-G1	Rear door: approx 66 x 21-3/4 x 5/8 inches.
	7774537-P1	Angle mounting: approx 63-1/2 x 1-1/2 x 1/8 inches.
	7488490-P1	Door handle: includes key LL-802; sim to Yale and Towne S14105.
	PL-5495571-G6	Front door: approx 59 x 21-3/4 x 5/8 inches.
	4031566-P1	Rear door grill: approx 15-1/4 x 12 x 1/16 inches.
	PL-5493646-G1	Instruction book holder: approx 13-1/2 x 9-1/2 x 5/16 inches.
		Ground lug, Ilsco SLU-70.
		- - - - - - - - - SUBASSEMBLIES - - - - - - - - -
		METER PANEL ASSEMBLY PL-19C303518-G1 (Used in PL-19C303465-G1) PL-19C303518-G2 (Used in PL-19C303465-G2)
		- - - - - - - - - - CAPACITORS - - - - - - - - -
C901 thru C904	5494481-P11	Ceramic disc: radial leads, .001 µf ±20%, 500 VDCW; sim to RMC Type JF Discap.
		- - - - - - - - INDICATING DEVICES - - - - - -
DS901 and DS902	19C307037-P19	Lamp, incandescent: miniature, 14 v ±0.1 v; sim to G-E 756.
		- - - - - - - - - - METERS - - - - - - - - - -
M901 and M902	5491869-P11	Microammeter: -10/0/+50 µa, 3-1/2 inch; sim to G-E Type DO-91.

SYMBOL	G-E PART NO	DESCRIPTION
		- - - - - - - - - SUBASSEMBLIES(Cont'd) - - - - -
		- - - - - - - - - - METERS(Cont'd) - - - - -
M903	5491869-P4	Milliammeter, DC: 0-500 MADC, 500 ma movement, 3-1/2 inch; sim to G-E Type DO-91.
M904	5491869-P5	Voltmeter, DC: 0-3000 VDC, 1 ma movement, 3-1/2 inch; sim to G-E Type DO-91.
		- - - - - - - - - - SOCKETS - - - - - - - - - -
XDS901	7141855-P13	Lamp: cylindrical grn plastic lens; sim to Dialight 135-410-1432.
XDS902	7141855-P12	Lamp: cylindrical red plastic lens; sim to Dialight 135-410-1431.
		- - - - - - - - - MISCELLANEOUS - - - - - - - -
	NP243462	Chassis: approx 21-5/8 x 6-3/4 x 7/8 x 1/6 inches, etched aluminum.
		LINE VOLTMETER PL-19A120042-G5
		- - - - - - - - - - CAPACITORS - - - - - - - - -
C1	3R81-P102M	Ceramic disc: radial leads, .001 µf ±20%, 500 VDCW; sim to Radio Materials Type JL Discap.
		- - - - - - - - - - METERS - - - - - - - - - -
M1	5491869-P7	Voltmeter, AC: 0-150 VAC, 100 ohms per volt movement, 3-1/2 inch; sim to G-E Type DO-91.
		- - - - - - - - - CABINET BLOWER - - - - - - - - -
	5491241-G2	Blower Motor assembly: 117 VAC, 50/60 cycles, 1700 RPM
	19B200425-P3	Filter: permanent type, steel electrogalvanized, Media uncoated.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.



NOTES

1. CONNECTIONS ARE FOR 60 CYCLE OPERATION. FOR OTHER FREQUENCIES REMOVE CONNECTIONS TO TB4152-4 AND 5 AND JUMPER BETWEEN THEM.
2. WIRES #129-132, 135 & 136 ARE PART OF EP-6-A RUNNING LIST.
3. IF RECEIVER MUTE IS NOT DESIRED, MOVE N22-BL. WIRE INSIDE HEP38A FROM TB501-16 TO TR5U1-7.
4. TB706-1 MUST BE CONNECTED TO GROUND OR NEUTRAL OF THE BUILDING WIRING SYSTEM.
5. IF REMOTE SQUELCH IS DESIRED, REMOVE SQUELCH POT WIRE #10 FROM TB703-1 AND CONNECT TO TB703-6 AND ADD JUMPER FROM TB701-6 TO TB702-1.

(19D402343, Rev. 8)

INTERCONNECTION DIAGRAM

MASTR FLOOR-MOUNT
REMOTE CONTROL STATION COMBINATION
HIGH POWER

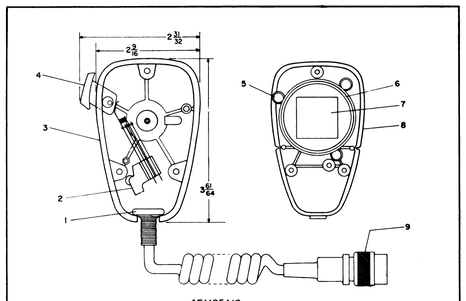
PARTS LIST

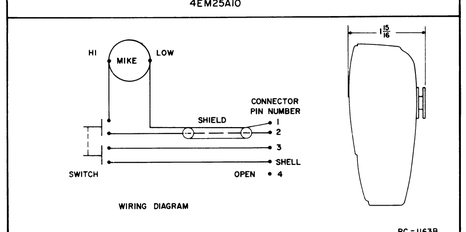
LBI-3558B

MILITARY MICROPHONE
MODEL 4EM25A10
(PL-19B209102-G1)
(SEE RC-1163)

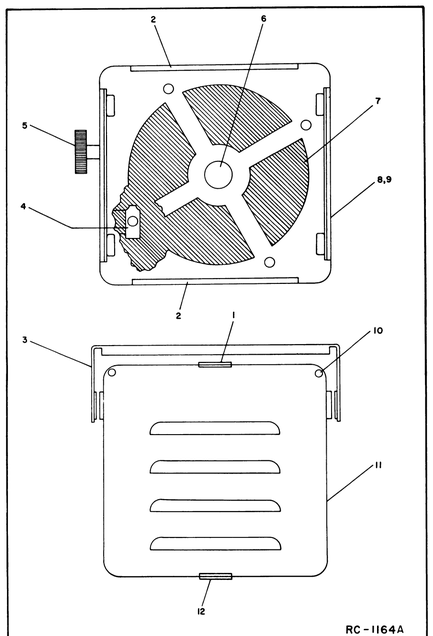
SYMBOL	G-E PART NO.	DESCRIPTION
		MECHANICAL PARTS
		MODEL 4EM25A10
1		Cable clamp. Shure Brothers EP-16.
2		Switch. Shure Brothers EP26.
3		Case (back) and mounting button: plastic. Shure Brothers EP-67.
4		Switch button: red plastic. Shure Brothers EP-25.
5		Spring. Shure Brothers EP-1.
6		Shield. Shure Brothers EP-23.
7		Magnetic controlled cartridge. Shure Brothers EP-13.
8		Case (front) plastic. (Part of item 3).
9		Cable and plug: approx 6 feet long. Shure Brothers EP-14.

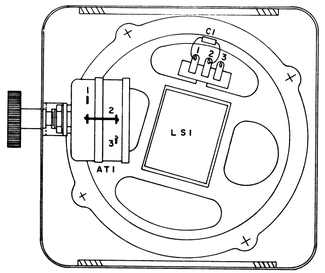
*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.





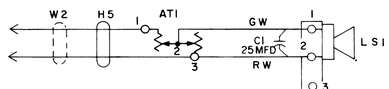
MILITARY MICROPHONE-MODEL 4EM25A10





NOTE: ATTENUATOR (AT1) USED ON MODEL 4EZ16A20 ONLY

RC-1363 B



WIRING DIAGRAM-MODEL 4EZ16A20

RC-1362B

The speaker leads connect to TB501-11 and TB502-5 on the Transmitter-Receiver Power Supply.

SPECIFICATIONS

Audio Power Input:	5-watts
Frequency Range:	300-3000 Hz
Input Impedance:	3.2 ohms
Attenuator:	3.5 ohms

PARTS LIST

LBI-4081

FIVE-WATT STATION SPEAKER

MODEL 4EZ16A20 19D402449-G13
MODEL 4EZ16A21 19D402449-G14

SYMBOL	G-E PART NO.	DESCRIPTION
		---------- ATTENUATORS ----------
AT1	7478301-P48	L-pad, variable, audio: 3.5 ohms res, 4 w, 40 db min attenuation max, 294° rotation.
		---------- CAPACITORS ----------
C1	19B209233-P1	Electrolytic, non-polorized: 25 µf ±20%, 25 VDCW; sim to Sprague 41D.
		---------- LOUDSPEAKERS ----------
LS3	19B209422-P1	Permanent magnet: 5 inch, 3.2 ohms ±10% imp, 2.98 ohms ±15% DC res, 7.5 w max operating.
		---------- CABLES ----------
W2	7484521-G7	Speaker: 2 conductor with 2 spade tongue terminals, approx 4 feet long.
		MECHANICAL PARTS (SEE RC-1164)
1	5490407-P3	Neoprene grommet.
2	19A121623-P1	(Not used).
3	19A121521-G1	Mounting support.
4	7160861-P20	(Not used).
5	19A115837-P1	Plastic knob. (Used in Model 4EZ16A20).
6	19A13487-P1	(Not used).
7	19C303500-P1	(Not used).
8	19B216269-G3	Can. (Used in Model 4EZ16A20).
9	19B216269-G2	Can. (Used in Model 4EZ16A21).
10	4037072-P10	(Not used).
11	19A121550-G3	Speaker cover.
12	19A115470-P1	Rubber grommet: approx 3/4 inch dia; sim to Atlantic Rubber 2279 (without hole).

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.

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 GE Part Number.

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

1. GE 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.

MAINTENANCE MANUAL

LBI-3629

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