

 **MOBILE RADIO**

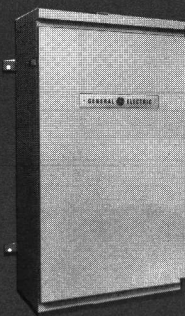
# MASTR

**Progress Line**

**MAINTENANCE MANUAL**



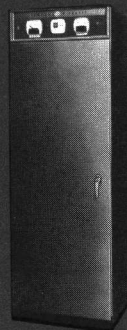
**DESK-MATE STATION**



**POLE-MOUNT STATION**

**952 - 960 MHz  
TWO-WAY FM  
STATION  
COMBINATIONS  
DC REMOTE CONTROL  
AND  
TONE REMOTE  
CONTROL  
LBI - 4607**

DF-9023



**FLOOR-MOUNT STATION**

**GENERAL  ELECTRIC**

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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.

## EQUIPMENT INDEX

EQUIPMENT	TYPE OR MODEL NUMBER
Converter Panel & Signal Generator	19D413291G1 19D413397G1
Transmitter	4ET59C42, C43
Receiver	4ER42H11, H17
Desk-Mate (DM) Cabinet	7354211G4
Pole-Mount (PM) Cabinet	7132483G6
Floor-Mount (VM) Cabinet	19C303465G3
Station Power Supply	4EP38A10
Antenna Relay (mounts on Converter Panel)	19B216688G1
Control Shelf	19D416725G1
Tone Control Control Shelf System Board (Back Plane) Secur-it Tone Board Transmitter Control Board Receiver Control Board Audio Board	19D416721G1 19D416728G1 19D416660G1-G4 19D416658G2 19D416667G3, G4
DC Control Control Shelf System Board (Back Plane) Control Shelf Blank Panel DC Remote Control Board Audio Board	19D416721G2 19C320228P1 19D416661G1-G4 19D416667G3, G4
Meter Switching Circuit (VM station)	19A121460G1
Meter Panel (VM station)	19C303519G1
Speaker	19B219618G1
117-VAC Power Cable (DM & VM stations)	7491206-P1
Alignment Tools (hex slug type) (slotted screw type)	4038831P2 4033530G2
Keys (DM & VM stations)	LL201
Handle (PM station)	7145676P2

**SPECIFICATIONS\*****GENERAL**

FCC FILING NUMBER	ES-34-A
DIMENSIONS (H x W x D)	
Desk-Mate Station	30-3/8" x 14" x 25-1/2"
Pole-Mount Station	42" x 23" x 12-1/2"
Floor-Mount Station	69" x 22" x 23"
Weight	
Desk-Mate	Approximately 150 pounds
Pole-Mount	Approximately 200 pounds
Floor-Mount	Approximately 300 pounds
DUTY CYCLE (Transmit & Receive)	Continuous
INPUT VOLTAGE	117 VAC, $\pm 10\%$ , 50/60 Hz
INPUT POWER	Transmit: 1.66 amps max, 195 watts Receive: 0.8 amps max, 95 watts
OPERABLE TEMPERATURE RANGE	-30°C (-22°F) to +60°C (+140°F)
FREQUENCY RANGE	952-960 megahertz

TRANSMITTER	RECEIVER
(Includes Converter & Driver Transmitter)	(Includes Converter & 450 MHz Rec)
RF Power Output: 10 watts	RF Input Impedance: 50 ohms
RF Output Impedance: 50 ohms	Channel Spacing: 100 kHz
Spurious and Harmonic Emission: -60 dB	Sensitivity:
Modulation Deviation: 0 to $\pm 15$ kHz (36F3)	EIA 12 dB SINAD 1.0 $\mu$ V
Frequency Stability: $\pm 0.0002\%$ from -30°C. to +60°C., +25°C. Reference	20 dB Quieting 1.25 $\mu$ V
FM Noise: -50 dB	Critical Squelch 0.35 $\mu$ V
Audio Response: Within +1 and -3 dB of 6 dB/octave pre-emphasis, 300 to 3000 Hz per EIA	Channel Guard Squelch 10 dB SINAD
Audio Distortion: Less than 3%	Selectivity:
	EIA 2-Signal (100 kHz channels) -90 dB
	Frequency Stability: (1st Oscillator) $\pm 0.0002\%$ from -30°C. to +60°C., +25°C. Reference
	Modulation Acceptance: $\pm 19$ kHz
	Spurious and Image -60 dB
	Audio Response: Within +1 and -8 dB of 6 dB/octave de-emphasis, 300 to 3000 Hz
	Audio Output: 5 watts at 3.5 ohms +18 dBm at 600 ohms at less than 5% distortion

\* 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
<b>D</b> Desk-Mate Station	<b>T</b> 117 VAC	<b>4</b> 8-16 watts	<b>8</b> 50 KHz (Rating of 450-MHz Receiver)	<b>R</b> DC Remote Control Station	<b>A</b> 1-Freq. T 1-Freq. R	<b>S</b> Standard	<b>99</b> 952—960 MHz
<b>P</b> Pole-Mount Station				<b>T</b> Tone Remote Control Station		<b>U</b> Channel Guard	
<b>V</b> Floor-Mount Station							

## DESCRIPTION

The General Electric MASTR Progress Line Remote Control Stations operate in the 952-960 megahertz band. This band is normally utilized for radio link operation in radio controlled base station systems.

Three Cabinet styles (Desk-Mate, Pole-Mount & Floor-Mount) are available to meet different system requirements. Individual characteristics of the cabinets are listed in the following paragraphs.

- **Desk-Mate** - The Desk-Mate station can be conveniently located adjacent to a desk to provide additional working area, or in some other suitable area as required. Both side panels on the station can be easily removed to gain access to the unit modules for servicing.
- **Pole-Mount** - The Pole-Mount station is ruggedly built and can be mounted outdoors in remote locations regardless of weather conditions. An optional heater kit is available for installations where the climate is such that the cabinet temperature drops below 5°F. The unit modules are mounted to a "swing out" rack to facilitate servicing either side of the equipment.
- **Floor-Mount** - The Floor-Mount station can be placed in the control building adjacent to the antenna installation or it may be located in another area as required. Front and back doors on the station cabinet can be opened to gain access to the unit modules. The rear door is interlocked to protect personnel from contact with voltages. When the rear door is opened, the interlock switch opens the power supply output to

the transmitter. A 117-VAC receptacle is mounted inside the rear of the cabinet for plug-in of service equipment.

### CONVERTER PANEL & SIGNAL GENERATOR

The Converter Panel with built-in Signal Generator provides both transmit and receive functions in the 952-960 megahertz band. The panel includes:

- 960 to 450 megahertz receiver converter stage.
- 476-480 to 952-960 megahertz transmitter doubler stage.
- 960 megahertz crystal controlled signal generator.
- Antenna Switching Relay K2651.

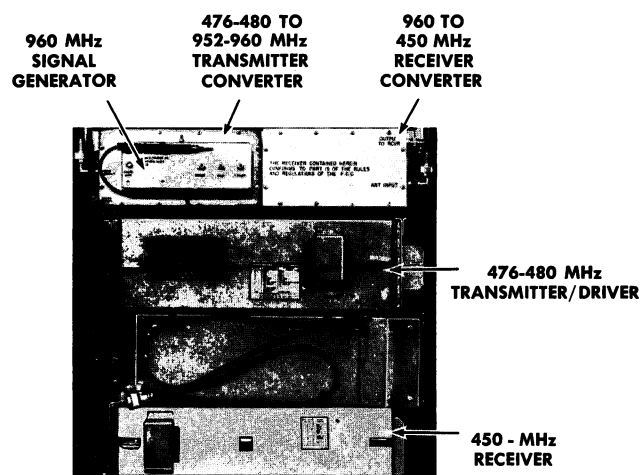


Figure 1 - Typical Station Equipment Arrangement

**TRANSMITTER/DRIVER**

The Transmitter/Driver is a single frequency transmitter which provides a 476-480 megahertz signal output to the doubler stage of the converter panel. The transmitter/driver is available with or without Channel Guard capability.

**RECEIVER (450-470 MHz)**

A 450 megahertz output from the receiver converter stage of the converter panel connects to a single frequency, 450-470 megahertz Receiver (Model 4ER42H11 & H17). This receiver acts as an IF amplifier and is available with or without Channel Guard capability. The receiver is completely contained in an aluminum casting, which provides excellent shielding.

**POWER SUPPLY**

Station Power Supply Model 4EP38A10 provides operating voltages for both the transmitter and receiver. In addition to plate, screen and bias voltages for the transmitter, the power supply provides:

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

**CONTROL SHELF ASSEMBLY**

Control Shelf 19D416725G1 contains the System Board, the AC input circuit and plug-in printed wire modules with solid state circuitry for up to six DC Remote Control functions and up to twelve Tone Remote Control functions. The shelf mounts on the chassis mounting frame below the Transmitter-Receiver Power Supply.

**AC Input**

The 117-Volt AC input connects directly to TB1202-1 and 2. All power to the station is controlled by switch S1201 on the Control Shelf.

An optional 220/110 Volt AC Stepdown Transformer Kit is available for use when the input line voltage is 220 Volts AC.

**WARNING**

117-Volts AC is always present at TB1202-1 and 2 even when S1201 is in the OFF position. Always use care when servicing the cabinet power module on the control shelf.

**Telephone Lines**

The key link in a Remote Control installation is the telephone line from the Dispatcher unit to the Remote Control station. The telephone line is connected directly from the dispatcher's console to the remote station wherever it may be located.

Refer to Control Shelf Maintenance Manual LBI-4490 for complete information on Remote Control Telephone lines.

**MICROPHONE (OPTIONAL)**

Microphone Model 4EM25A10 is mounted inside the station for use during service and maintenance work by the serviceman. The Microphone connects to the mike jack J902 located on the front side of the power supply.

**SPEAKER ASSEMBLY**

Speaker Assembly 19B219618G1 is designed for an audio input of 1.5 Watts when used in MASTR Progress Line Remote Stations. The Speaker Assembly mounts on the chassis of transmitter-receiver power supply Type EP-38-A as an aid to the serviceman.

**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.

**HEATER MODEL 4KZ3A1 (OPTIONAL)**

The Heater is an option used with Pole-Mount Stations where the climate is such that an auxiliary cabinet heater is required. The heater consists of a 250-Watt heater strip and a temperature-operated switch. When the temperature of the cabinet drops below 5°F, the switch closes, thereby applying power to the heater strip. When the temperature rises above 5°F, the heater will be turned off by the opening of the switch. The heater strip is usually mounted on the bottom of the cabinet on the inside of a

convenient location. Splice one lead from the temperature switch to a lead from the heater strip. Connect other lead from the temperature switch to Power Supply 4EP38A10, TB502-14 and other lead from heater strip to TB502-15. For complete Installation Instructions of Heater Kit refer to EBI-4353.

## METERING CIRCUITS

### (FLOOR-MOUNT STATION)

#### METER PANEL (19C303519G1)

The Meter Panel is located above the front door on the Floor-Mount station cabinet. The panel contains the following meters for making voltage test readings in the transmitter and receiver:

- Meter M901--measures test voltages in transmitter circuits.
- Meter M902--measures test voltages in receiver circuits.
- 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 (19A121460G1)

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 P1002--plugs into receiver centralized metering jack J442. (or J1002 if optional receiver top cover is used).
- Test Probe P1003--for external metering (3-Volt full scale meter range).
- 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.

The meter voltage check points are shown in Table 1.

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 discriminator output voltage is connected by the switch to TB901-11 and 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 and 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 for external metering. 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, R1005 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, (19C303676G3 and G2, respectively) are available. The covers contain external sockets to attach the transmitter and receiver cables from the Meter Switching Panel Assembly.

TABLE 1

Tx (S1001) & Rx (S1002) Switch Position No.	Transmitter Function (Models 4ET59C42 & 43)	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.

## INITIAL ADJUSTMENT

After the station has been installed as described in the Installation Manual, the converter panel, transmitter, 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.

### 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).
3. The Floor-Mount Station contains built-in metering circuits. For Desk-Mate or Pole-Mount Stations, one of the following is required:

A GE Portable Test Set Model 4EX3A10 which is especially designed for testing the MASTR Station transmitter and receiver -- or a 20,000 ohms-per-volt multimeter -- or an optional built-in Station Test Metering Panel.

4. Wattmeter.

### TRANSMITTER/DRIVER ADJUSTMENT

The initial adjustment for the transmitter/driver includes checking the frequency and modulation. For the initial adjustment procedure, refer to the MAINTENANCE MANUAL for transmitter models 4ET59C42 & 43.

### TRANSMITTER CONVERTER

The initial adjustment for the transmitter converter includes final tuning, loading, and checking the power output. (While inserting a 25-Watt input from the transmitter/driver, check for at least 10 Watts at the converter output). For the initial adjustment procedure, refer to the MAINTENANCE MANUAL for the converter panel.

### RECEIVER (Models 4ER42H11 & 17)

The initial adjustment for the 450-470 MHz receiver includes adjusting the receiver operating frequency to the output frequency of the receiver converter. To obtain the converter output frequency, subtract the oscillator mixing frequency (marked on the ICOM in the converter) from the system operating frequency. For the initial adjustment procedure, refer to the MAINTENANCE MANUAL for the receiver.



**RECEIVER CONVERTER**

The initial adjustment from the receiver converter includes matching to the antenna and adjusting frequency to the system operating frequency. For the initial adjustment procedure, refer to the MAINTENANCE MANUAL for the converter panel.

**POWER SUPPLY ADJUSTMENT**

The initial adjustment on the power supply includes turning ON power switch S501 and adjusting VOLUME (R511) and SQUELCH (R12) controls as follows:

Connect signal generator to receiver at maximum system deviation with 1000 Hz. Adjust VOLUME control R511 for approximately 6.0 VRMS across the 600-ohm telephone line terminals TB701-1 and 2. (Do not reset R511 after this adjustment). Set the SQUELCH control R512 to quieting.

**CONTROL SHELF ADJUSTMENT**

The initial adjustment for the remote control shelf includes:

- Turning the power switch S1201 ON.
- Adjusting the required Tone or DC Controls.

For Tone and DC Controls Adjustment Procedures, refer to Maintenance Manual LBI-4490 for the control shelf.

**MAINTENANCE****TEST AND TROUBLESHOOTING PROCEDURES**

The individual Maintenance Manuals 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 in Table 2.

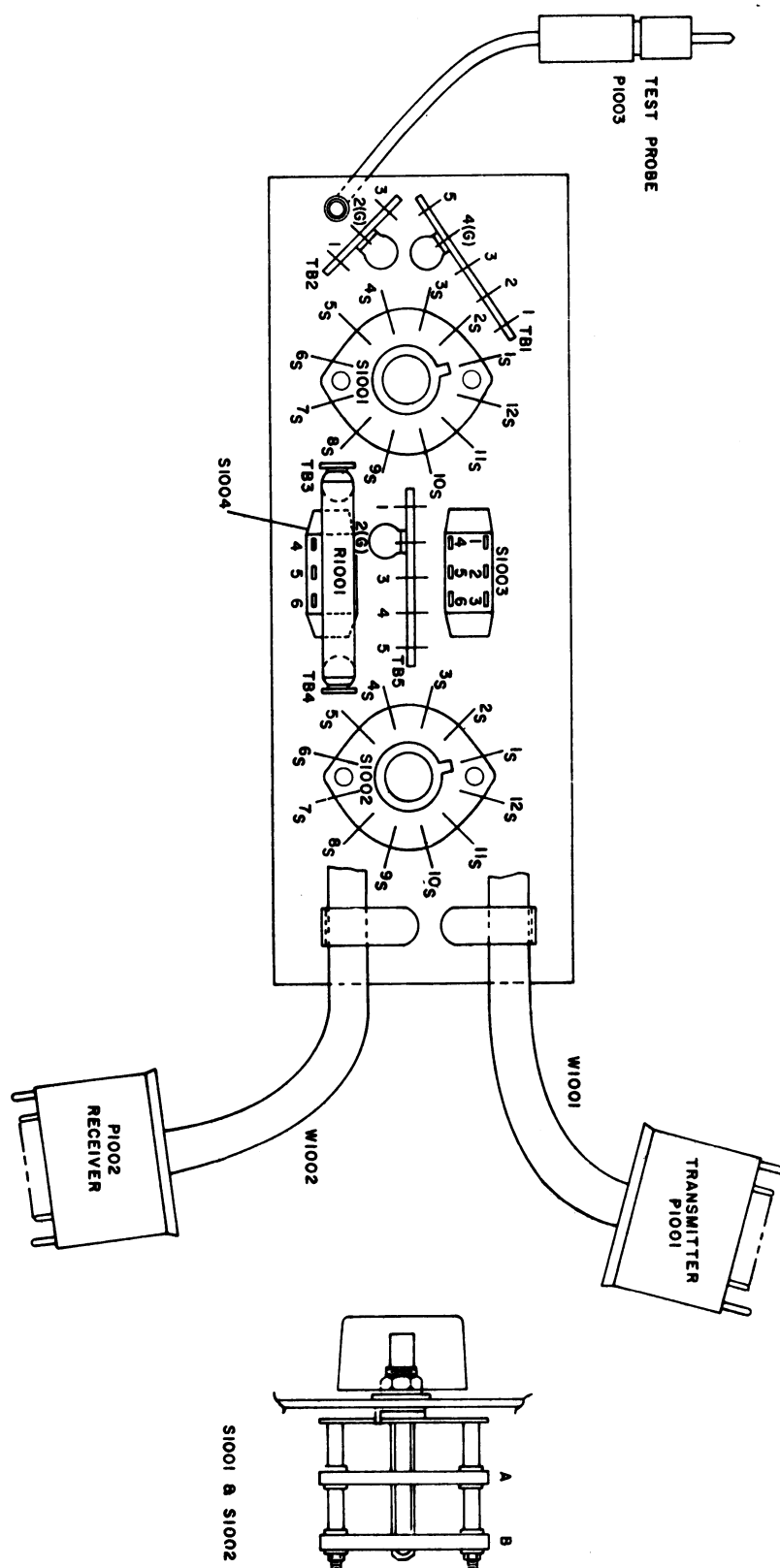
TABLE 2  
PREVENTIVE MAINTENANCE PROGRAM

CHECK THE FOLLOWING ONCE A YEAR:	
1. Transmitter frequency and deviation (FCC requires this check-up ONCE a year).	<input type="checkbox"/>
2. Measure and record the forward and reflected power to the antenna system.	<input type="checkbox"/>
3. Check input voltage at TB1202-1 and 2 on control shelf. Reading should be within 20% of 117 VAC. (Also check during routine service calls).	<input type="checkbox"/>
4. Record transmitter meter readings. Compare with readings taken during initial tune-up. Retune, if necessary.	<input type="checkbox"/>
5. Record receiver meter readings. Compare with readings taken during initial tune-up. Retune, if necessary.	<input type="checkbox"/>
6. Check for positive indication of pressure on transmission line pressure gauge (if pressurized line is used).	<input type="checkbox"/>
7. Clean dust from fan blades and lubricate bearings.	<input type="checkbox"/>
8. Burnish pitted or coated relay contacts to smooth out metallic deposits or remove the coating.	<input type="checkbox"/>

MAKE THE FOLLOWING MAINTENANCE CHECKS DURING ROUTINE CALLS:	
1. Check antenna lines and mast for mechanical stability.	<input type="checkbox"/>
2. Visually check:	<input type="checkbox"/>
External cables	<input type="checkbox"/>
Internal cables	<input type="checkbox"/>
Plugs	<input type="checkbox"/>
Sockets	<input type="checkbox"/>
Terminal boards	<input type="checkbox"/>
3. Check for tightness of nuts, bolts, and screws to make sure nothing is working loose from its mounting.	<input type="checkbox"/>
4. Replace tubes as necessary. (It may be convenient to replace all station tubes during the yearly check-up).	<input type="checkbox"/>

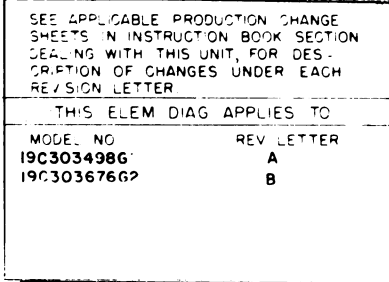




(19C303814, Rev. 1)

## OUTLINE DIAGRAM

MASTR FLOOR-MOUNT STATION COMBINATION  
METER SWITCHING PANEL ASSEMBLY 19A121460G1



**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.**

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
CRI001 thru CRI004	5494922-P1	----- DIODES AND RECTIFIERS ----- Silicon; sim to Type 1N456.
P1001 P1002 P1003	4032797-P1	----- PLUGS ----- (Part of W1001). (Part of W1002). Probe, test; sim to Birnbach Type 415 (red).
RI001 RI002 RI003 RI004 and RI005 RI006 RI007	5496955-P576 5495948-P359 5495948-P321 5495948-P238 5495948-P321 5495948-P359	----- RESISTORS ----- Deposited carbon: 20 megohms $\pm 2\%$ , 2 w; sim to Texas Instruments Type CD2R. Deposited carbon: 40,200 ohms $\pm 1\%$ , 1/2 w; sim to Texas Instruments Type CD1/2MR. Deposited carbon: 16,200 ohms $\pm 1\%$ , 1/2 w; sim to Texas Instruments Type CD1/2MR. Deposited carbon: 2430 ohms $\pm 1\%$ , 1/2 w; sim to Texas Instruments Type CD1/2MR. Deposited carbon: 16,200 ohms $\pm 1\%$ , 1/2 w; sim to Texas Instruments Type CD1/2MR. Deposited carbon: 40,200 ohms $\pm 1\%$ , 1/2 w; sim to Texas Instruments Type CD1/2MR.
S1001 and S1002 S1003 and S1004	19C307113-P2 7145098-P1	----- SWITCHES ----- Rotary: 2 sections, 2 poles, 12 positions, non-shorting contacts, 2 amps a* 28 VDC or 1 amp at 110 VDC; sim to Oak 23J585-K2. Slide: DPDT, 3/4 amp at 125 VAC or 1/2 amp at 125 VDC; sim to Stackpole SS-150.
TB1 TB2 TB3 and TB4 TB5	7775500-P9 7775500-P7 7775500-P46 7775500-P9	----- TERMINAL BOARDS ----- Phen: 5 terminals. Phen: 3 terminals. Phen: 1 terminal. Phen: 5 terminals.
W1001 W1002	19C303568-P2 19C303568-P2	----- CABLES ----- Metering: includes 18 pin plug (P1001) rated at 1000 VDC max, approx 38 inches long. Metering: includes 18 pin plug (P1002) rated at 1000 VDC max, approx 38 inches long.
	19B204861-G1 7763541-P5 7487773-P6 19B204590-G1 4029030-P11	----- MISCELLANEOUS ----- Chassis. (Used in 19C303498-G1). Cable, clamp. (Used with W1001 and W1002 in 19C303498-G1). Knob: red; sim to Eastman Chemical 28739. (Used with S1001 and S1002 in 19C303498-G1). Box. (Used in 19A121460-G1). 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)
C1 thru C6 C9 C10 thru C14 C15* C19 J1001 and J1002 P102 P442 RI*	5493392-P7 19B209282-P1 5493392-P7 5493392-P7 19B209282-P1 19B205689-G2 19B204727-P1 19B204727-P1 3R77-P471K	----- CAPACITORS ----- Ceramic, feed-thru: .001 $\mu$ f +100% -0%, 500 VDCW; sim to Allen-Bradley Type FA5C. Ceramic, feed-thru: 680 pf $\pm 20\%$ , 1000 VDCW; sim to Sprague Type 544C. Ceramic, feed-thru: .001 $\mu$ f +100% -0%, 500 VDCW; sim to Allen-Bradley Type FA5C. Ceramic, feed-thru: .001 $\mu$ f +100% -0%, 500 VDCW; sim to Allen-Bradley Type FA5C. Added by Rev B. Ceramic, feed-thru: 680 pf $\pm 20\%$ , 1000 VDCW; sim to Sprague Type 544C. ----- JACKS AND RECEPTACLES ----- Connector: 18 contacts. ----- PLUGS ----- Connector: 18 contacts rated at 1000 VDC max. Connector: 18 contacts rated at 1000 VDC max. ----- RESISTORS ----- Composition: 470 ohms $\pm 10\%$ , 1/2 w. Added by Rev A.

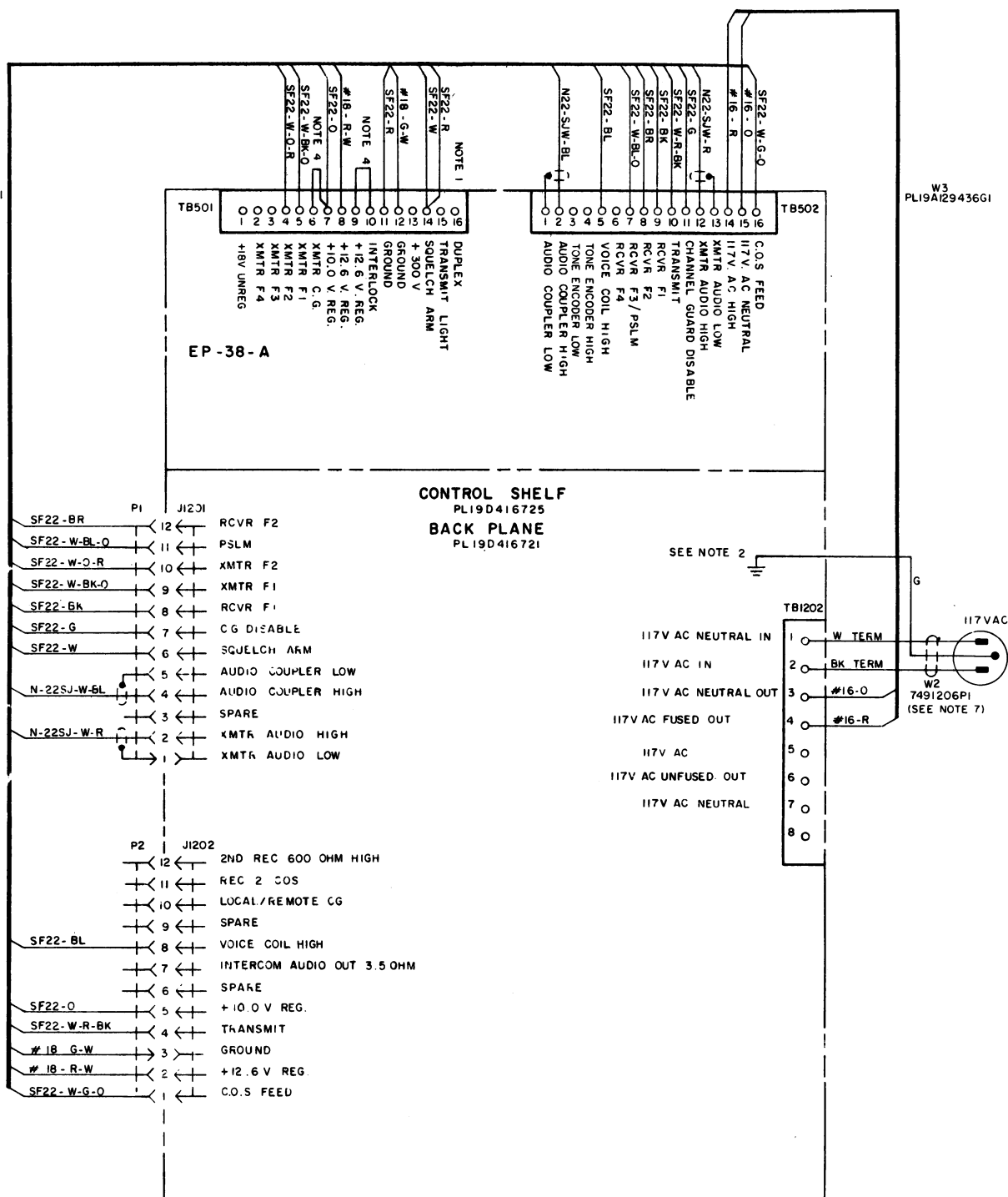
PRODUCTION CHANGES

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.

\*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

W1  
PL19C320316G1W3  
PL19A129436G1**INTERCONNECTION DIAGRAM**

**MASTR DESK-MATE AND  
POLE-MOUNT STATION COMBINATIONS  
DC/TONE REMOTE CONTROL PANEL**

**PARTS LIST**

LBI-3562

POLE MOUNT STATION CABINET  
7132483-G6

SYMBOL	G-E PART NO.	DESCRIPTION
	7353495-P5, 18, 19, 20	Door Assembly: weather seal: rubber, Manhattan Div. of Raybestos Manhattan Inc., Passaic, N.J. 1/2" OD x 1/2" ID x 9'7", A12A2A
	7769652-G1	Hinge Assembly: (for swing out mounting bracket)  Hinge, door: Stanley, cat #195 with leaves assembled reversed, no swage, without mounting holes. (give all above information when re- ordering)
	7769631-G1	Pull-Latch: Corbin Cab Lock Co. #015642SD.  Mounting bracket: (mounts on swing away hinge assembly.)

\*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

**PARTS LIST**

HEATER

MODEL 4KZ3A1

SYMBOL	G-E PART NO.	DESCRIPTION
HR901		Heater Strip: sim to General Electric 51-344.
S901		Thermo-switch: adjusted to +5°F, sim to Fenwall Inc. A-7300.

\*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.

**PARTS LIST**

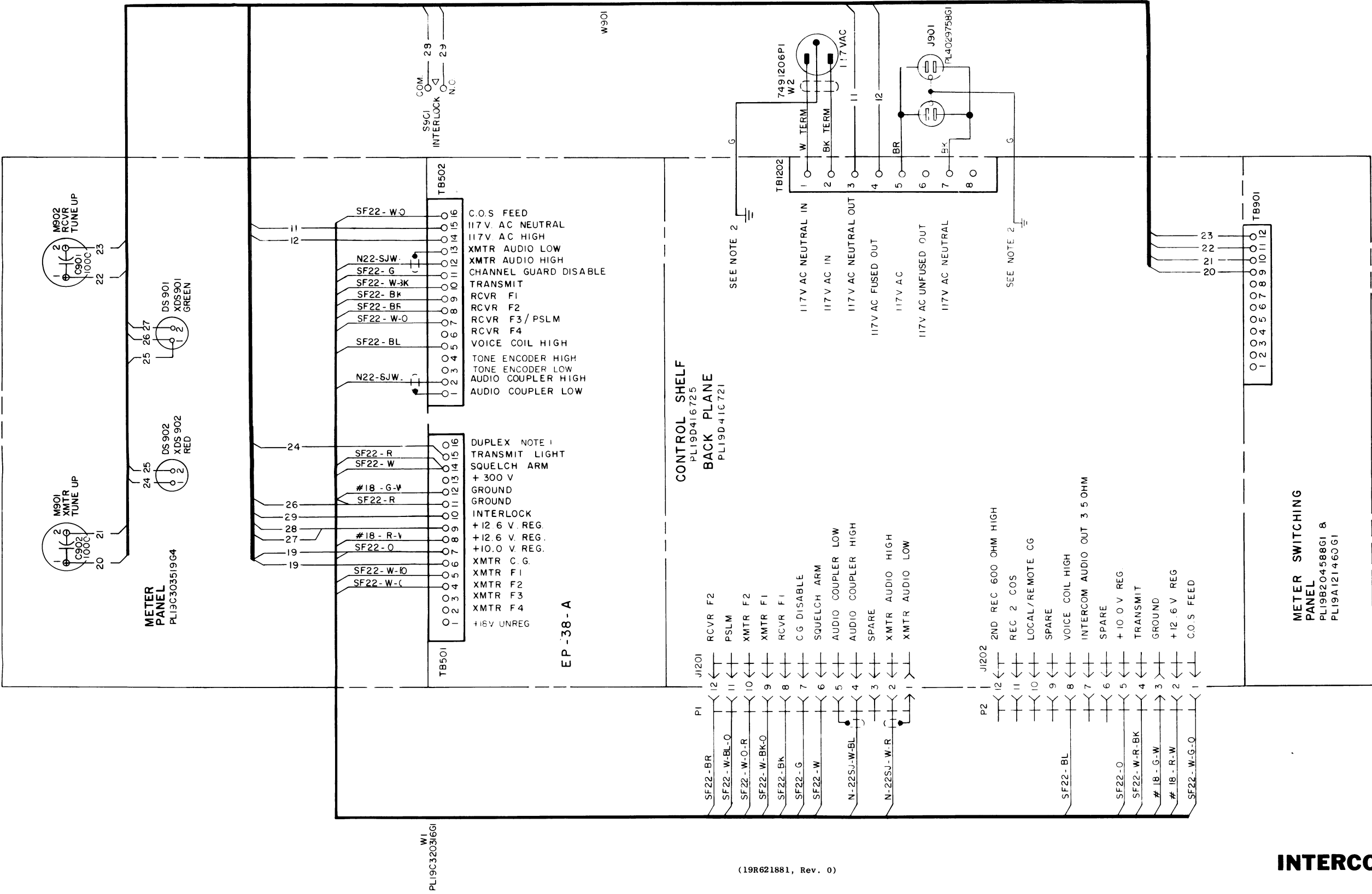
LBI-3561

DESK MATE STATION CABINET  
7354211-G4

SYMBOL	G-E PART NO.	DESCRIPTION
	7354211-P4	Cabinet Assembly
	7354211-P8	Door (fits either side)
	4035449-P5	Bumper, door: rubber, sim to Atlantic India Rubber Co. 1165.
	4033979-P1	Lock and Key: sim to Yale & Towne 6678DX1.  Key: Yale & Towne LL201.
	N529P38C	Plug (for cable knockouts at bottom of assembly)
	7354211-P7	Mounting rack (2 drilled angles)

\*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.





- NOTES:
1. MOVE THE W-R WIRE INSIDE 4EP38A FROM TB501-16 TO TB501-7 FOR REPEAT COMBINATIONS OR IF RECEIVER MUTE IS NOT DESIRED.
  2. CONNECT GREEN LEAD TO CONVENIENT CHASSIS MOUNTING SCREW.
  3. TO DISABLE RECEIVER CHANNEL GUARD REMOVE WIRE FROM TB502-11 ON 4EP38A.
  4. IN REMOTE/REPEAT COMBINATIONS WITH CHANNEL GUARD LIFT SF22-G WIRE ON TB502-11 AND ADD JUMPER BETWEEN TB502-11 AND TB501-11. (JUMPER IS PART OF 19A12945G1 KIT).
  5. WHEN TONE REMOTE SQUELCH OPTION IS PRESENT, REMOVE SF22-R WIRE BETWEEN TB501-11 AND TB501-14.

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 MILLIHENRYS OR H=HENRYS.

INTERCONNECTION DIAGRAM

MASTR FLOOR-MOUNT DC/TONE  
REMOTE CONTROL STATION COMBINATION  
MEDIUM POWER

PARTS LIST

LBI-4520

MEDIUM POWER FLOOR MODEL STATION CABINET  
7668242G14

SYMBOL	GE PART NO.	DESCRIPTION
	7488490P4	Door handle: includes key LL-802; sim to Yale and Towne S1410S.
	5491682P19	Rim lock. (Used with door handle).
	19A115141P2	Ground lug.
	5493646G1	Instruction book holder.
		CABINET ASSEMBLY 19D402873G1
	5498454G1	Cabinet shell: approx 69 x 22 x 5/8 inches.
	5495572G1	Rear door.
	7774537P1	Angle, mounting.
	5495571G6	Front door.
	4031566P1	Rear door grille.
		ASSOCIATED ASSEMBLIES
		- - - - - JACKS AND RECEPTACLES - - - - -
J901	4029758G1	Duplex outlet, phen: polarized, 15 amps at 125 v.
		METER PANEL ASSEMBLY 19C303519G4
		- - - - - CAPACITORS - - - - -
C901 and C902	5494481P11	Ceramic disc: 1000 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap.
		- - - - - INDICATING DEVICES - - - - -
DS901 and DS902	19C307037P19	Lamp, incandescent: 14 v; sim to GE 756.
		- - - - - METERS - - - - -
M901 and M902	5491869P11	Microammeter: -10/0/+50 µa, 3-1/2 inch; sim to GE Type DO-91.
		- - - - - CABLES - - - - -
W901		CABLE ASSEMBLY 19A129447G1
		- - - - - SWITCHES - - - - -
S901	19A115887P1	Push: 10 amps at 125/250 VAC; sim to Microswitch 2AC1.
		- - - - - SOCKETS - - - - -
XDS901	7141855P13	Lamp: green plastic lens; sim to Dialight 135.
XDS902	7141855P12	Lamp: red plastic lens; sim to Dialight 135.
		- - - - - MISCELLANEOUS - - - - -
	NP243463	Meter Panel, nameplate: etched aluminum.
	NP243528	Nameplate (GE).
		LINE VOLTMETER 19A120042G5
		- - - - - CAPACITORS - - - - -
C1	3R81P102M	Ceramic disc: 1000 µf ±20%, 500 VDCW.
		- - - - - METERS - - - - -
M1	5491869P7	Voltmeter, AC: 0-150 VAC, 15,000 ohms ±10%, 100 ohms per volt movement, 3-1/2 inch; sim to GE Type DO-91.

# PARTS LIST

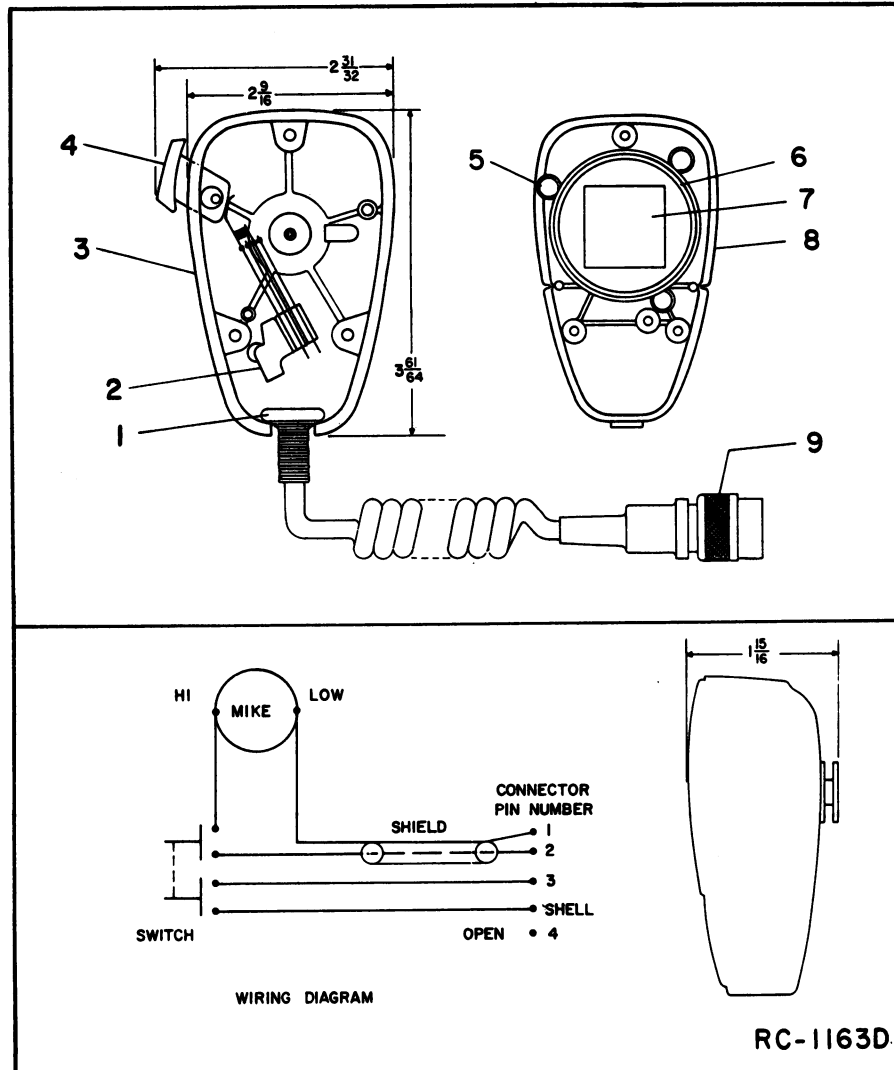
LBI-4607

LBI-3558B

MILITARY MICROPHONE  
MODEL 4EM25A10  
(PL-198209102-P1)  
(SEE RC-1163)

SYMBOL	G-E PART NO.	DESCRIPTION
MECHANICAL PARTS		
MODEL 4EM25A10		
1		Cable clamp. Shure Brothers RP-16.
2		Switch. Shure Brothers RP-26.
3		Case (back) and mounting button: plastic. Shure Brothers RP-67.
4		Switch button: red plastic. Shure Brothers RP-25.
5		Spring. Shure Brothers RP-1.
6		Shield. Shure Brothers RP-23.
7		Magnetic controlled cartridge. Shure Brothers RP-13.
8		Case (front) plastic. (Part of item 3).
9		Cable and plug: approx 6 feet long. Shure Brothers RP-14.

\*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.



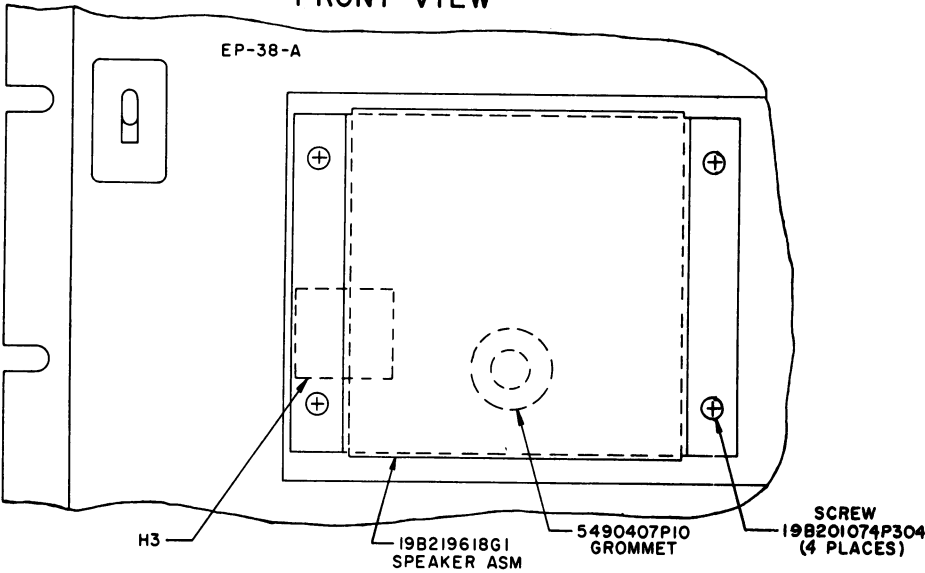
PARTS LIST

LBI-4427  
 STATION SPEAKER  
 19B219618G1

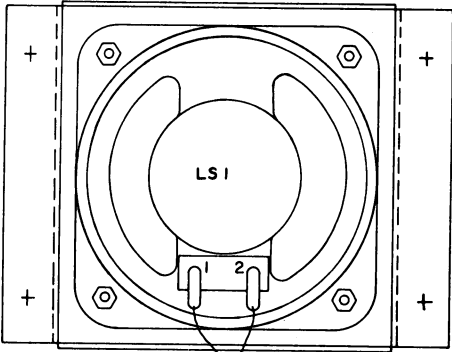
SYMBOL	GE PART NO.	DESCRIPTION
LS1	19A115964P1	----- LOUDSPEAKERS ----- Weatherproof, Permanent Magnet: 3-1/2 inch, 18 ohm $\pm 10\%$ imp at 1000 Hz, 15-19 ohms DC; sim to Oaktron S-9847.
	19B219615P1	----- MISCELLANEOUS ----- Cover.
	19B209260P103	Terminal, solderless: sim to AMP 60495-1.
	5490407P10	Grommet.
	19B201074P304	Tap screw: No. 6-32 x 1/4.

\*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

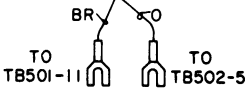
FRONT VIEW



REAR VIEW



(19C320601, Rev. 1)



## 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 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

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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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# MAINTENANCE MANUAL

LBI-4607

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MOBILE RADIO DEPARTMENT  
GENERAL ELECTRIC COMPANY • LYNCHBURG, VIRGINIA 24502

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