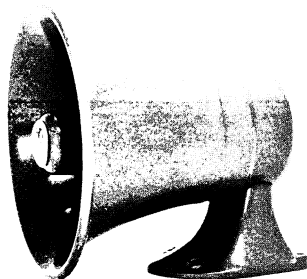


# MASTR II MAINTENANCE MANUAL

## INTERNAL/EXTERNAL SPEAKER OPTION 1001



LOUDSPEAKER — 19B209425P2  
SPEAKER CABLE — 19B219826G1



CONTROL UNIT

### SPECIFICATIONS \*

#### Audio Power

Applied to External Speaker	9 Watts
Applied to Internal Speaker	1 Watt
Internally Dissipated	2 Watts

#### Power Requirement

0.01 Amperes (additional current required by Control Unit)

#### Loudspeaker (19B209425P2)

Impedance	8 ohms $\pm 10\%$
Power (max.)	25 Watts
Voice Coil Resistance	6.75 ohms $\pm 15\%$

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

Although the highest DC voltage in MASTR II Mobile Equipment is supplied by the vehicle battery, high currents may be drawn under short circuit conditions. These currents can possibly heat metal objects such as tools, rings, watchbands, etc., enough to cause burns. Be careful when working near energized 12-Volt circuits! High-level RF energy in the transmitter Power Amplifier assembly can cause RF burns upon contact. KEEP AWAY FROM THESE CIRCUITS WHEN THE TRANSMITTER IS ENERGIZED!

## DESCRIPTION

Option 1001 consists of a 19B209425P2 Speaker (designed for external mounting), a 19B219826G1 Speaker Cable assembly and a 19A129567G1 Option Kit. The external speaker permits monitoring the radio from outside of the vehicle. Connections from the external speaker to the Control unit are made through the Vehicle System Plug (P701).

Extender Board 19C320588G1 is available for gaining access to the component board for maintenance purposes.

## CIRCUIT ANALYSIS

Speaker selection is determined by the setting of SPEAKER switch S1701 on the front of the Control Unit. When the SPEAKER switch is placed in the INT position, all receiver audio power is applied to the internal speaker. Placing the SPEAKER switch to the EXT position transfers up to approximately 9 Watts of the receiver audio power to the external speaker, while applying up to 1 Watt to the internal speaker. Up to approximately 2 Watts of audio is dissipated internally by resistor R1701.

The Option light (CR1701) illuminates whenever the SPEAKER switch is placed in the EXT position, indicating the selection of the external speaker. The use of the option light (CR1701) adds an additional 10 milliamperes current drain within the Control Unit. Resistor R1702 functions to limit the current through CR1701.

## INSTALLATION

Control Units equipped with the factory installed Internal/External Speaker Option is supplied with an external Speaker (19B209425P2) and a Speaker Cable Assembly (19B219826G1). Mount the external Speaker in the desired location (on vehicle roof, under hood, etc.) and make the Speaker electrical connections to the Vehicle System Plug (P701) using the cable assembly in accordance with the following:

### EXTERNAL SPEAKER MOUNTING

1. Using the backing plate as a template, mark and drill two 13/64-inch holes for the backing plate retaining screws, and four 9/32-inch holes for the speaker mounting screws. Next, drill a 5/8-inch hole for the Speaker Cable and insert rubber grommet in the hole.
2. Attach the backing plate to the mounting surface with two #8-32 threadforming screws and lockwashers.

3. Route cable from the Control Unit through backing plate (under mounting surface), grommet, and gasket, to the Speaker (see Figure 1).
4. Connect the Speaker Cable leads and the Speaker leads using the two splice connectors furnished.

### CAUTION

Do not ground either side of the External Speaker leads.

5. Mount the Speaker using four 1/4" x 7/8" screws, and lockwashers supplied.

### ELECTRICAL CONNECTION TO VEHICLE SYSTEM PLUG

1. Insert one lead of the Speaker Cable assembly (19B219826G1) into P701-2 (Speaker Lo of the Vehicle System Plug).
2. Insert the other lead of the Speaker Cable assembly into P701-19 (External Speaker Hi of the Vehicle System Plug).
3. Strain relieve the Speaker Cable to the Control Unit using a standard cable clamp (not supplied) in order to prevent damage to P701-2 and P701-19.
4. Connect P701 (Vehicle System Plug) to J701 on the control unit. The Internal/External Speaker Option is now ready for operation.

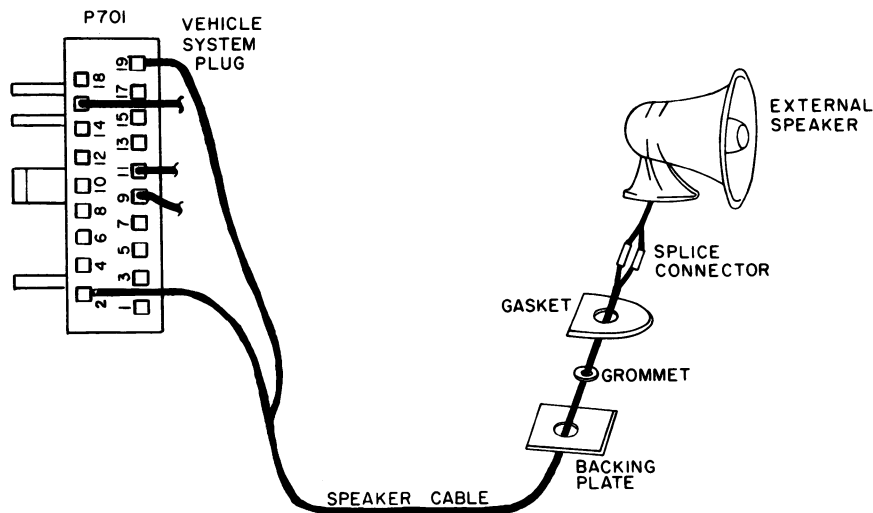
## FIELD MODIFICATION INSTRUCTIONS

The following modification instructions are used to install the Internal/External Speaker Option Kit (19A129567G1) in a Control Unit which is not equipped with an exclusive option, such as, the Public Address Option or the Priority Search-Lock Monitor Option.

### STEP 1

Remove the printed wiring board from the Control Unit and cut the printed wiring run at Point B. Disassemble the Control Unit to gain access to the bottom of the printed wiring board as follows:

- a. Remove the two screws on the bottom of the front edge of the Control Unit and lift off the top cover.
- b. Remove the two screws securing the microphone jack.



RC-2536

Figure 1 - External Speaker Connections

- c. Remove the screw between J701 and J702, and the screw between J702 and J703.
- d. Remove the screw at each end of the switch and control mounting bracket.
- e. Remove the screw securing the Power-On switch (S701), to the Control Unit housing, then swing the board up from the front and lift out.
- f. Cut the printed wiring run at Point B. Refer to the Control Unit Outline Diagram (Control Unit Maintenance Manual) for the location of Point B.
- g. Re-install the board assembly in the Control Unit.

**STEP 2**

Position the Internal/External Speaker board assembly in the guide slots located inside the sides of the Control Unit housing. Gently insert the board assembly into the the Control Unit, making sure that the connectors on the board assembly mate correctly with the square pins of the Control Unit board assembly.

**STEP 3**

Mount the SPEAKER switch (S1701) in the space provided in the Control Unit. Orient the SPEAKER switch as shown on the Outline Diagram. Secure the switch to the switch and control mounting bracket with the 4-40 x 1/4 inch Phillips head POZIDRIV® tap screw provided. Secure the other end of the switch to the Control Unit housing with the 4-40 x 1/4 inch Phillips head tap screw provided.

**STEP 4**

Position the LED (CR1701) in the Option light slot of the Control Unit housing and secure in place with the spring clip provided.

**STEP 5**

Make connections as indicated in Connection Chart on the Outline Diagram.

**STEP 6**

Remove the existing nameplate from the the Control Unit top cover and install new Nameplate (NP270753P3) as follows:

- a. Viewing the Control Unit from the front, there are only three of the plastic Nameplate tabs which lock in place. These are the top left hand tab, the top right hand tab and the bottom center tab. The remaining tabs function only as guide tabs.
- b. Release the locking action of the tabs, starting with the top right hand tab, then the top left hand tab. Apply pressure with fingers or use a small flat blade screwdriver to release tabs. Push released tabs up through slots to prevent re-locking of tabs.
- c. Release the locking action of the bottom center tab and pry the nameplate loose from the top cover. The old nameplate will not be used with the Internal/External Speaker Option.
- d. Install new nameplate (NP270753P3) in place of the old nameplate.

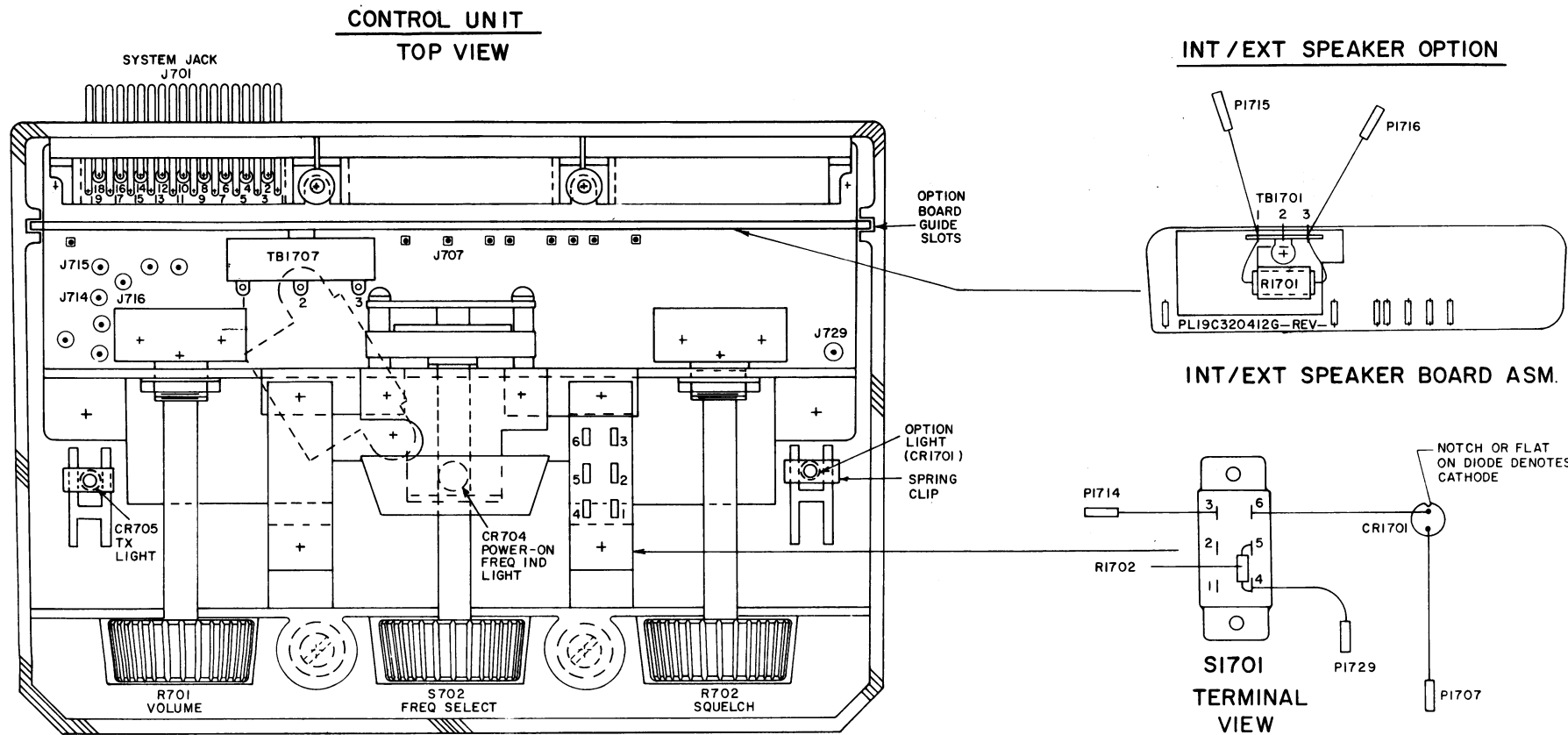
Exercise care when inserting the nameplate tabs through the slots in the Control Unit top Cover.

secure with the two screws previously removed from the bottom of the Control Unit housing

**STEP 7**

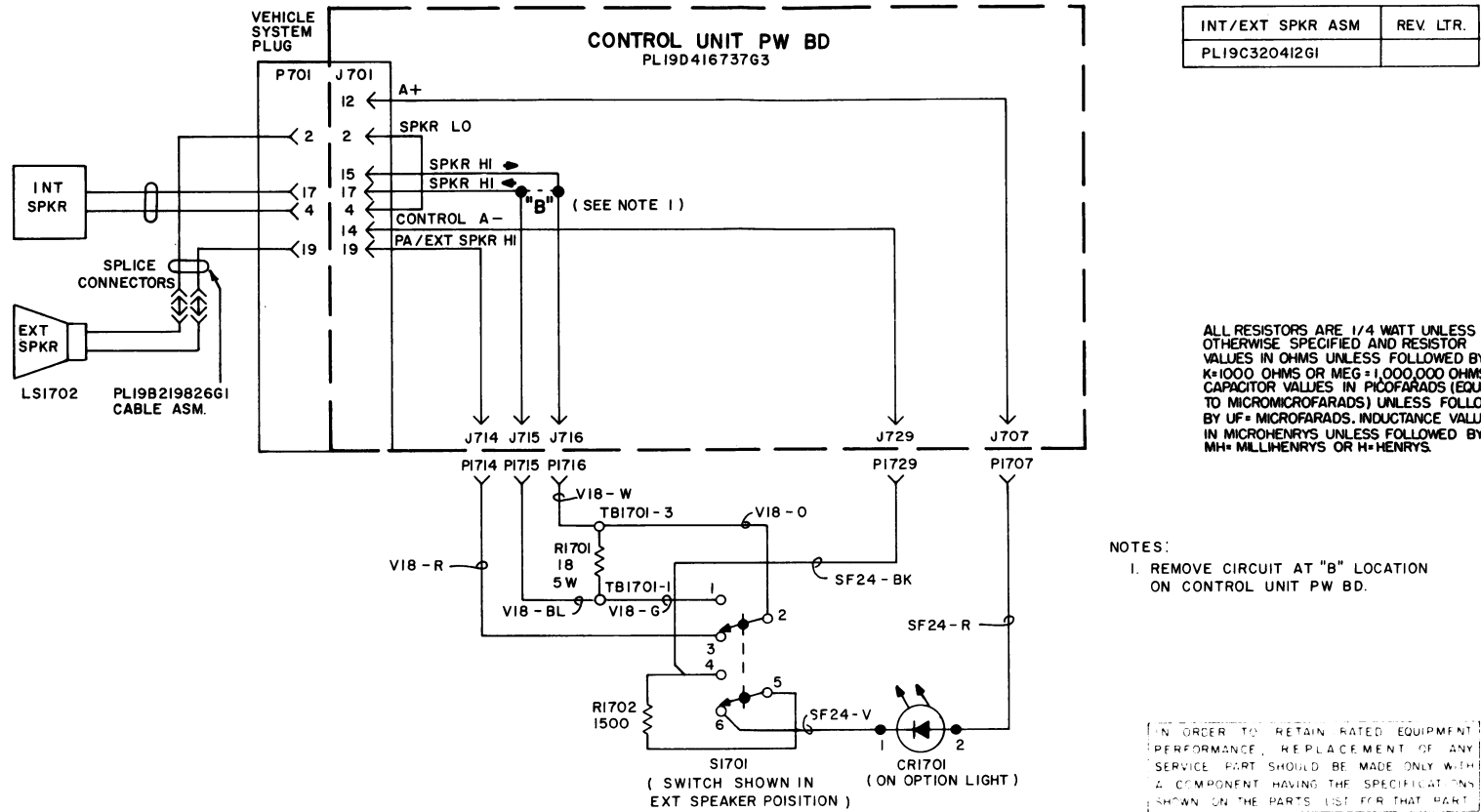
Replace the Control Unit top cover and

OUTLINE DIAGRAM



(19D417786, Rev. 0)

SCHEMATIC DIAGRAM



(19C320471, Rev. 2)

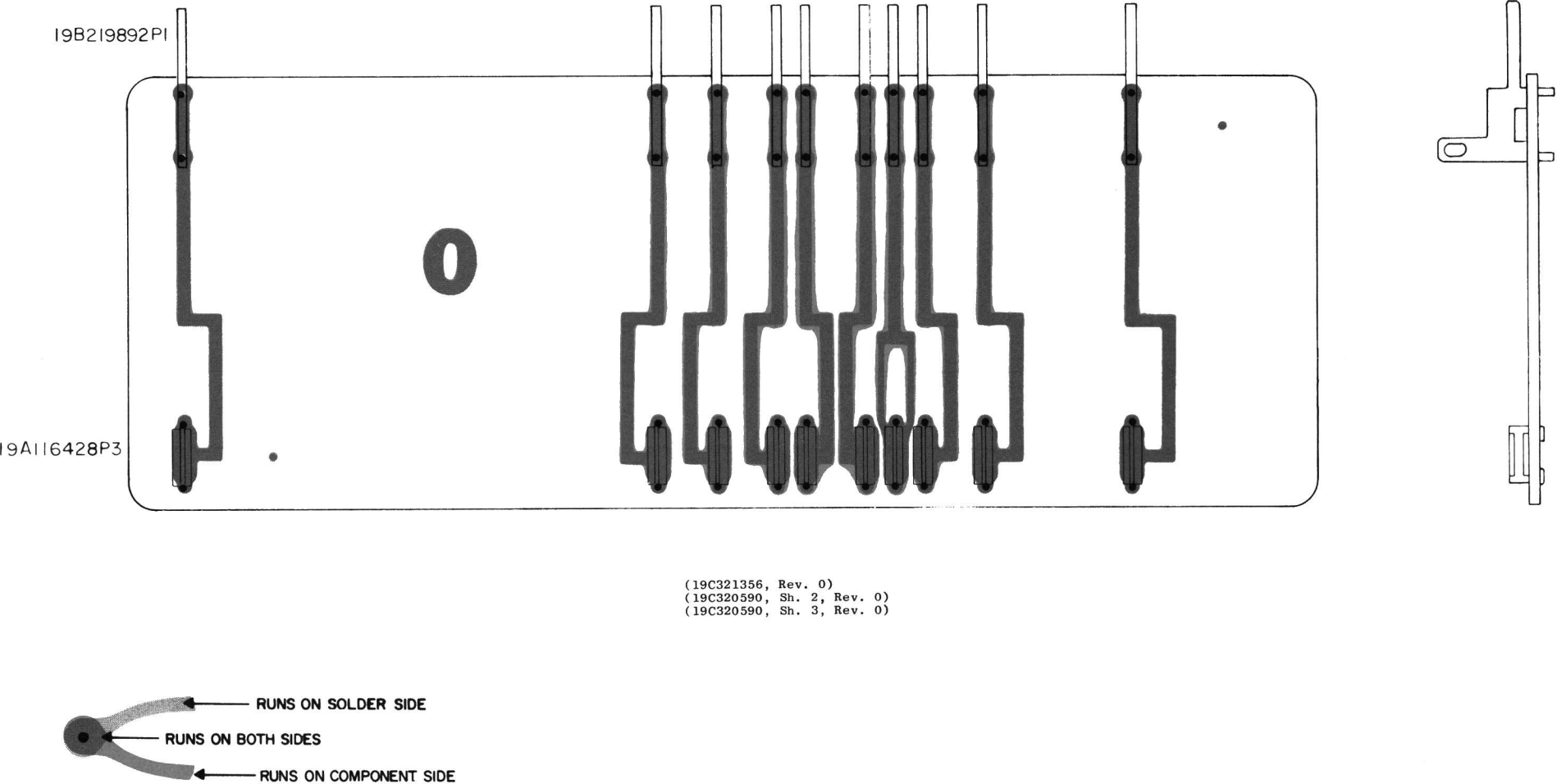
SCHEMATIC & OUTLINE DIAGRAM

INTERNAL/EXTERNAL SPEAKER  
OPTION 1001

INTERNAL/EXTERNAL SPEAKER OPTION

SYMBOL	GE PART NO.	DESCRIPTION
CRI701	CONTROL UNIT MODIFICATION KIT 19A129567G1	
	NP270753P3	Nameplate.
	19B201074P204	Tap screw, PHILLIPS POZIDRIV®: 4-40-1/4.
	N117P9004C6	Tap screw, phillips head: 4-40-1/4.
	19A116807P1	Clip, spring tension.
	BOARD AND SWITCH ASSEMBLY 19C320412G1	
	----- DIODES AND RECTIFIERS -----	
	19A129291P3	Diode, light emitting: clear.
	----- PLUGS -----	
	19A127042P2	Terminal, solderless: wire No. 20-24 AWG; sim to Malco 12093-10.
P1707	4029840P1	Contact, electrical: sim to AMP 41854.
P1714 thru P1716	4029840P2	Contact, electrical: sim to Amp 42827-2.
P1729	----- RESISTORS -----	
R1701	5493035P53	Wirewound: 18 ohms ±5%, 5 w; sim to Hamilton Hall Type HR.
R1702	3R152P152J	Composition: 1500 ohms ±5%, 1/4 w.
S1701	----- SWITCHES -----	
	19A116622P4	Push: DPDT, 6 positions; sim to Switchcraft 11K1039.
TB1701	----- TERMINAL BOARDS -----	
	7775500P7	Phen: 3 terminals.
	----- MISCELLANEOUS -----	
	19A129732P1	Plate. (Mounts R1701, TB1701).
	4038930P1	Clip: approx 13/16 x 13/16 inches. (Secures R1701).
LS1	19A116428P3	Contact, electrical: sim to AMP 85487-3 (Strip Form). (Located on printed wiring board).
	ASSOCIATED ASSEMBLIES	
	19B209425P2	Loudspeaker, permanent magnet: 25 w. 8 ohms ±10% voice coil imp, 300-13,000 Hz. 6175 ±15% DC res voice coil; sim to Atlas SA-340M2.
W1	19B219826G1	Speaker cable: 2 conductor, approx 20 feet.

\*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES



(19C321356, Rev. 0)  
(19C320590, Sh. 2, Rev. 0)  
(19C320590, Sh. 3, Rev. 0)

OUTLINE DIAGRAM

MASTR II Control Unit Extender Board  
19C320588G1

## 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 of 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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MOBILE RADIO DEPARTMENT  
GENERAL ELECTRIC COMPANY • LYNCHBURG, VIRGINIA 24502



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