MOBILE RADIO

MASTR Progress Line

MOBILE CONTROL UNIT MODELS 4EC59A80 & 82

Maintenance Manual LBI-4056E

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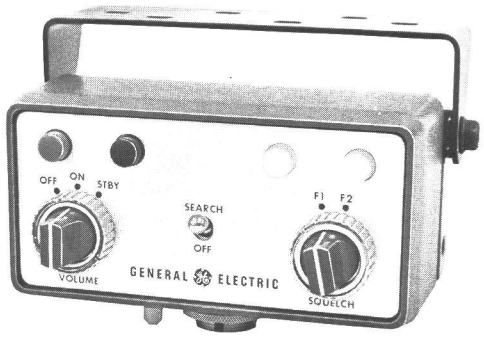
Dec. 1970



SPECIFICATIONS *

MODEL NUMBERS	4EC59A80 and 4EC59A82
USED WITH	MASTR Professional Series Mobile Combinations with Priority Search Lock Monitor
CONTROLS	VOLUME Control OFF-ON-STBY Switch SQUELCH Control F1 - F2 Selector Switch SEARCH-OFF Switch Dimmer Control for Pilot Lights
INDICATORS	Transmitter filament-on light: green Transmit light: red Receive F1 light: white Receive F2 light: yellow

EC-59-A

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

GENERAL ELECTRIC

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ILLUSTRATIONS

WARNING

No one should be permitted to handle any portion of the equipment that is supplied with high voltage; or to connect any external apparatus to the units while the units are supplied with power. KEEP AWAY FROM LIVE CIRCUITS.

DESCRIPTION

MASTR Progress Line Control Units Models 4EC59A80 and 4EC59A82 are used with MASTR mobile combinations that are equipped with the Priority Search-Lock Monitor Option. They are compact, highly functional control units designed for either Trunk-Mount or Front-Mount mobile combinations.

In Trunk-Mount installations, a plate is installed on the back of the Control Unit to hold the connectors. A mounting bracket is provided for mounting the Control Unit within convenient reach of the operator. In Front-Mount installations, the Control Unit is attached to the front of the MASTR Two-Way Radio.

Cable connections are secured to the Control Unit by means of captive locking screws.

CIRCUIT ANALYSIS

CONTROLS

In addition to VOLUME and SQUELCH controls, the control units are provided with the controls described in the following paragraphs.

OFF-ON-STBY Switch (S709)

The OFF-ON-STBY (standby) switch determines whether or not the transmitter and receiver are operative. With the switch in the OFF position, all power is removed from the Two-Way Radio. Turning the switch to STBY applies power to the receiver only, and the green pilot light does not light.

Turning the switch to the ON position applies filament voltage to the transmitter, activates the push-to-talk (PTT) circuit, and lights the green pilot light. After a short warm-up time, the PTT button may be pressed to key the transmitter.

Pushing the PTT button energizes the system relay, which, in turn, starts the power supply, switches the antenna and mutes the receiver. Keying the transmitter also lights the red pilot light.

F1-F2 Frequency Selector Switch (S704)

The frequency selector switch selects the desired channel (F1 or F2) for both transmitting and receiving. However, frequency selection is affected by the position of the SEARCH-OFF switch (S708) as follows.

When the SEARCH-OFF switch is OFF, the frequency selector switch connects +10 volts to the selected receiver oscillator switching diode and connects the transmitter oscillator switching diode to ground. This permits the unit to operate on the frequency determined by each of the crystal-controlled oscillators.

When SEARCH is selected, the frequency selector switch connects the transmitter oscillator switching diode to ground and determines which receiver channel has priority. The +10 volts is applied to the receiver oscillator from the Priority Search-Lock Monitor circuits.

NOTE

In combinations equipped with transmit Channel Guard, the Channel Guard will operate only when the frequency selector switch is in the F1 position.

SEARCH-OFF Switch (S708)

When switch S708 is in the SEARCH position, Priority Search-Lock Monitor operation is selected, giving priority to the channel selected by the frequency selector switch. The OFF position of S708 disables the Priority Search-Lock. In this case, the position of the frequency selector switch determines which channel is monitored.

NOTE

The priority channel may be locked on either F1 or F2 by changing a connection to the PSLM board. When connected for this mode of operation, the priority channel can not be changed by the frequency selector switch.

Dimmer Control (R710)

The dimmer control is a rheostat in series with the power-on and frequency indicator lights. Turning the control adjusts the amount of light that is given off by the lamps.

INDICATOR LIGHT CONTROL CIRCUITS

The power-on and frequency indicator lights are controlled by transistors Q1 thru Q4 on printed wiring board A701 (see Figure 1). Transistors Q1 thru Q4 are actually Integrated Circuit Modules, having the equivalent circuit of a Darlington Amplifier as shown in Figure 1.

Q5 is an NPN transistor for use in special Channel Guard Monitor applications and is not part of the light control circuits.

Turning the OFF-ON-STBY switch to the ON position, completes the collector circuit of Q4. This turns on Q4 and lights the green power-on light. When a signal is received, a positive voltage from the carrier operated switch (COS) is applied to the base of Q3. Q3 conducts, grounding the emitter of Q1 and Q2 and the base of Q4.

Depending on which frequency is being received, +10 volts is applied to the base of Q1 or Q2 causing the transistor to conduct through its associated frequency indicator light and the power-on light. At the same time, Q4 is turned off to equalize the current flow through the power-on light while the series-connected frequency light is on. This keeps the light from the power-on lamp constant in both receive and non-receive conditions.

When the SEARCH-OFF switch is in the OFF position, the +10 volts is applied to Q1 or Q2 through the frequency selector switch. If the SEARCH-OFF switch is in the SEARCH position, the +10 volts is applied to Q1 or Q2 from the Priority Search-Lock Monitor circuit.

12-VOLT SYSTEMS

In 12-volt vehicle systems, the Control Unit may be connected for three different modes of operation, depending on the way the three ignition switch cables are connected in the vehicle system. The black ignition switch cable provides the receiver ground connection. The yellow fused lead provides the receiver hot connections, and the red fused lead provides the hot connections for the transmitter filaments. The three types of operation are:

1. Ignition Switch Standby - For this type of operation, the red fused lead (transmitter filament voltage) is connected to the ACCESSORY or ON terminal of the ignition switch. The yellow fused lead (receiver hot) is connected to the hot side of the ignition switch, and the black lead connects to vehicle ground.

   With the ignition switch OFF, the receiver automatically reverts to STBY, ready to receive messages. Turning the ignition switch to the ON or ACCESSORY position turns on the green pilot light and supplies transmitter filament voltage. Turning the OFF-ON-STBY switch to OFF removes all power to the Two-Way Radio.

2. Ignition Switch Control - For ignition switch control, the yellow and red fused leads are connected to the ACCESSORY or ON terminal of the ignition

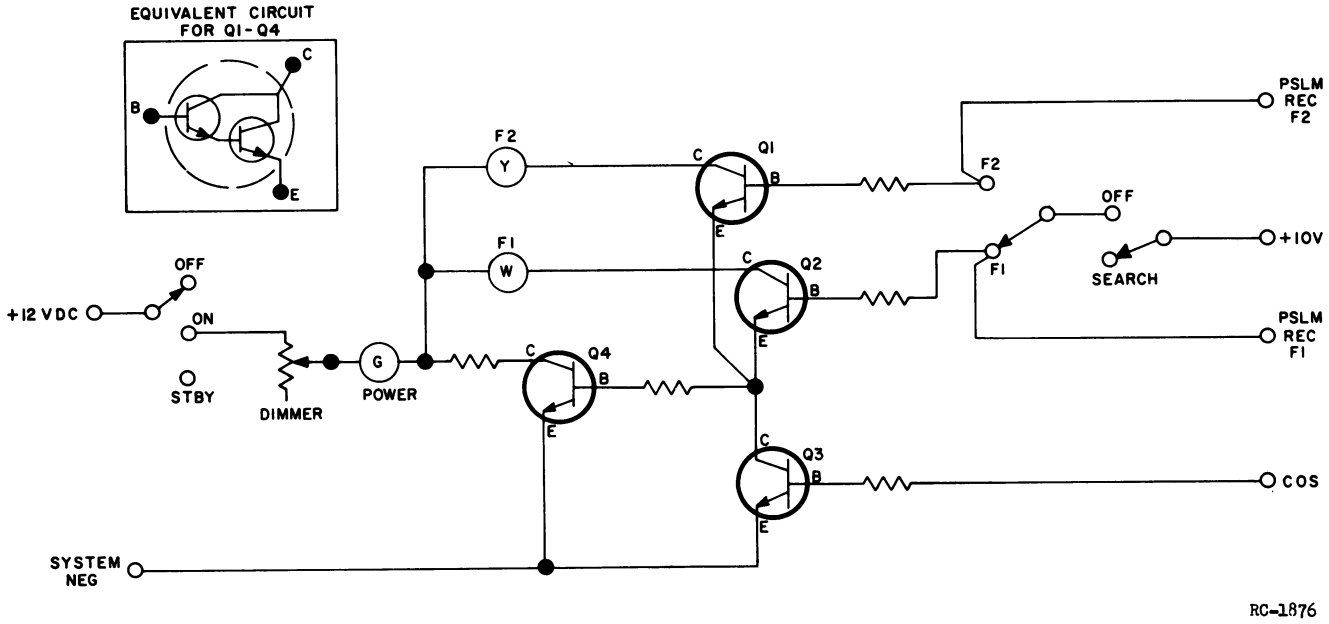


Figure 1 - Indicator Light Control Circuits

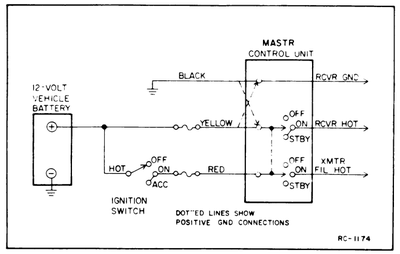


Figure 2 - 12-VDC Connections for Ignition Switch Standby

switch. The transmitter and receiver will operate only when the ignition switch is in the ACCESSORY or ON position. Turning the ignition switch OFF removes all power to the radio.

3. Ignition Switch Bypass - For ignition switch bypass, the yellow and red fused leads connect to the "hot" side of the ignition switch or the vehicle fuse block assembly. Both the transmitter and receiver operate independently of the ignition switch and can be turned on and off only by the OFF-ON-STBY switch on the MASTR Control Unit.

6- AND 28-VOLT SYSTEMS

In 6- and 28-volt systems, the Control Unit may be connected for two different modes of operation, depending on the way the two ignition switch cables are connected in the vehicle system. The black cable provides the connection from the relay coil on the fuse assembly to the control head. The yellow fused lead provides the hot connection to operate the relay. The two types of operation are:

1. Ignition Switch Control - For ignition switch control, the yellow fused lead connects to the ON or ACCESSORY terminal of the ignition switch. The transmitter and receiver will operate only when the ignition switch is in the ON or ACCESSORY position. Turning the ignition switch OFF removes all power to the radio.

2. Ignition Switch Bypass - For ignition switch bypass, the yellow fused lead connects to the "hot" side of the ignition switch or vehicle fuse block assembly. Both the transmitter and receiver operate independently of the ignition switch, and can be turned on and off only by the OFF-ON-STBY switch on the MASTR Control Unit.

MAINTENANCE

DISASSEMBLY

In Trunk-Mount installations, access to the inside of the Control Unit is obtained by removing the two Phillips-head screws in the back of the unit and pulling the back panel away from the housing.

In Front-Mount installations, remove the two Phillips-head screws holding the front casting to the frame and move the casting away from the frame. Next, remove the two screws securing the control cable plug to the inside of the front casting. Then remove the two flat-head screws holding the Control Unit to the front casting.

PILOT LIGHT REPLACEMENT

The pilot lights can be easily replaced without disassembling the Control Unit. First, unscrew the colored lens. Then wrap a small piece of masking tape around the bulb, to give the fingers a firm grip, and unscrew the bulb.

REINSTALLATION

If it becomes necessary to move the Two-Way Radio and Control Unit to another vehicle, the 25-pin control cable plug may need to be disassembled.

Refer to Figure 3 for disassembly of the plug.

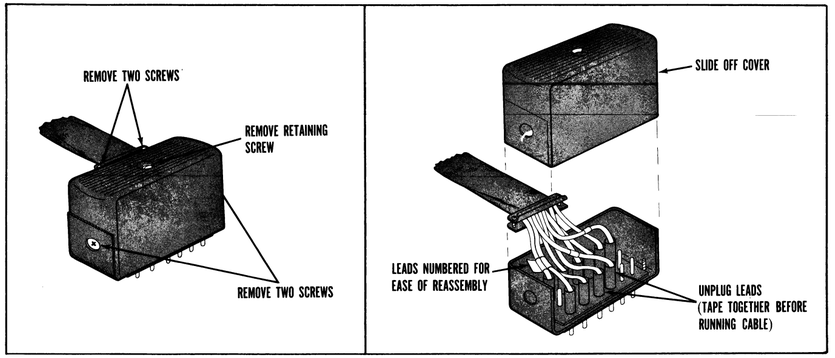
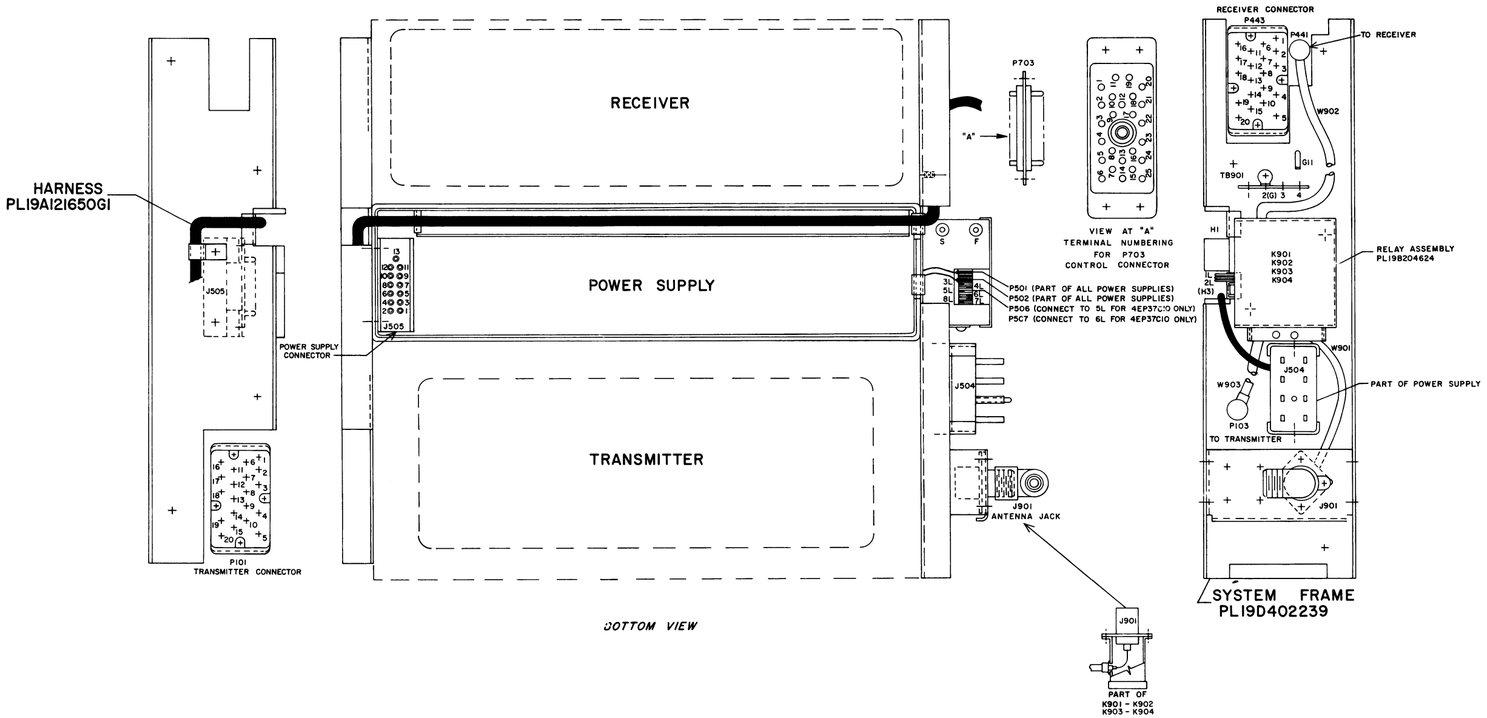


Figure 3 - Disassembly of Control Cable Plug

NOTE

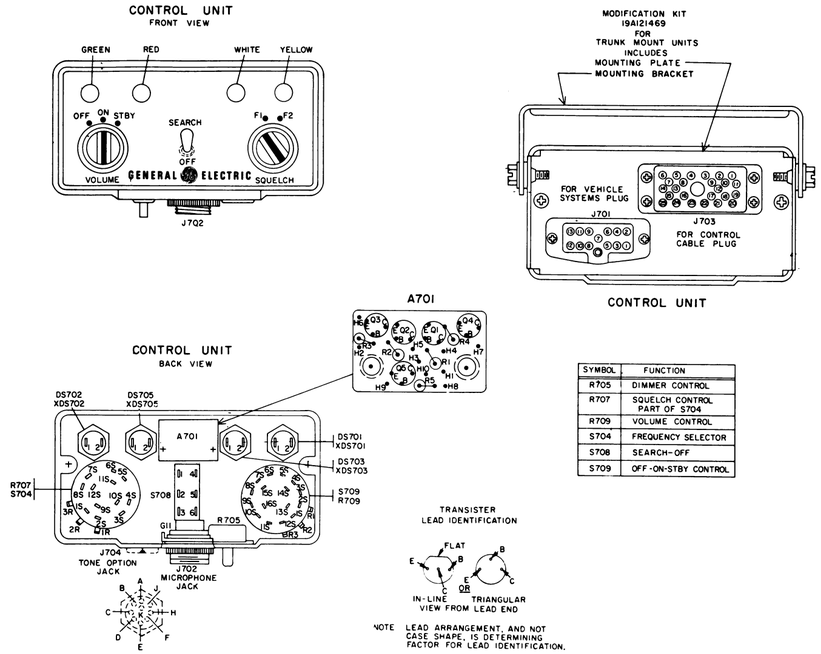
The plug is assembled so that the cable comes out of the top of the plug when connected to the Control Unit. To have the cable come out of the bottom of the plug, remove the remaining two screws and rotate the metal frame 180 degrees.

SYSTEM FRAME AND HARNESS



(19D402582, Rev. 3)

CONTROL UNIT



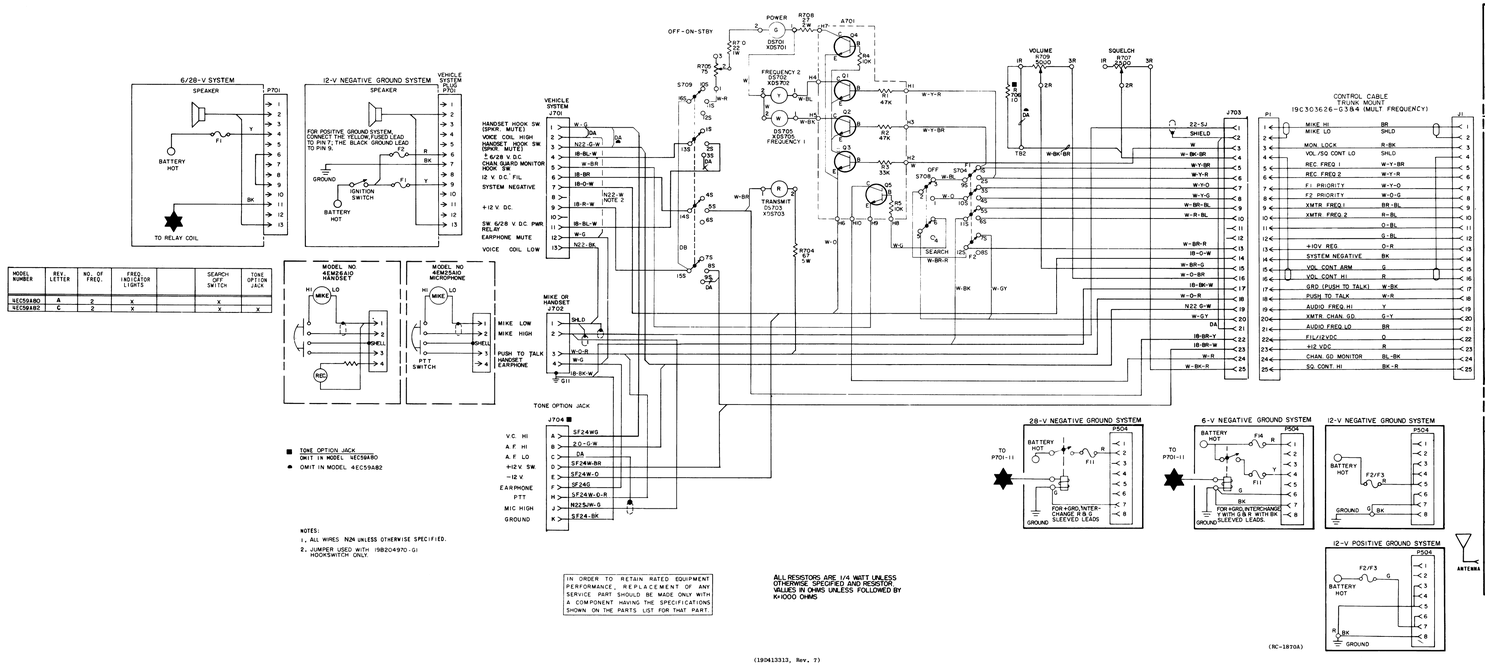
SYMBOL	FUNCTION
R705	DIMMER CONTROL
R707	SQUELCH CONTROL PART OF S704
R709	VOLUME CONTROL
S704	FREQUENCY SELECTOR
S708	SEARCH-OFF
S709	OFF-ON-STBY CONTROL

(19C317318, Rev. 0)

OUTLINE DIAGRAM

MASTR CONTROL UNIT
MODELS 4EC59A80 & 82

CONTROL UNIT



MODEL NUMBER	REV. LETTER	NO. OF FREQ.	FREQ. INDICATOR LIGHTS		SEARCH ON/OFF SWITCH	TONE OPTION JACK
4EC59A80	A	2	X		X	
4EC59A82	C	2	X		X	X

■ TONE OPTION JACK OMIT IN MODEL 4EC59A80

● OMIT IN MODEL 4EC59A82

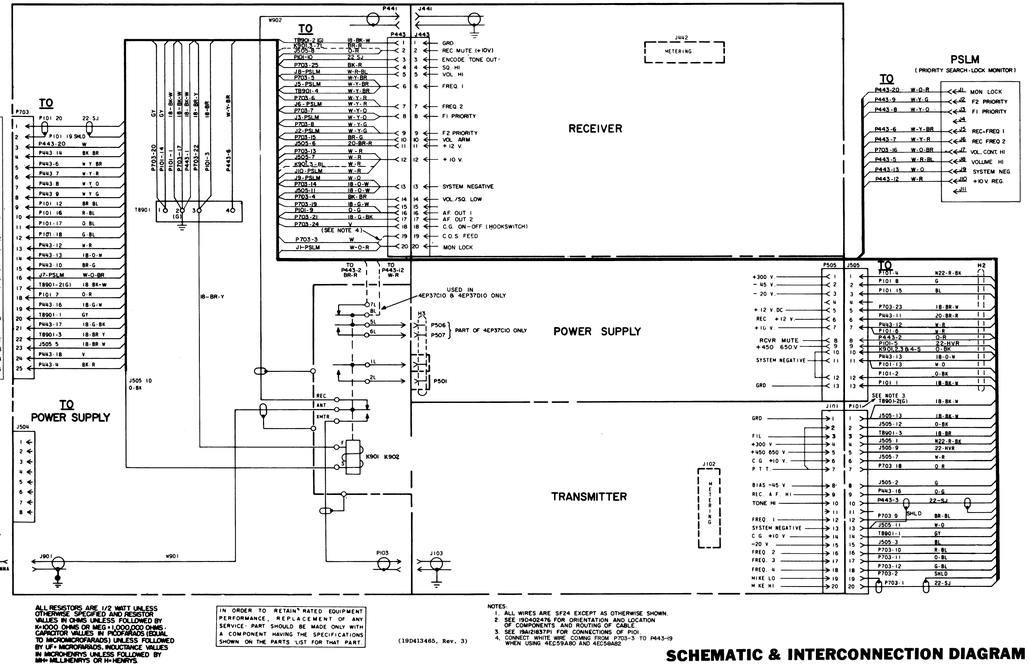
NOTES:
1. ALL WIRES N24 UNLESS OTHERWISE SPECIFIED.
2. JUMPER USED WITH 19B204970-G1 HOOKSWITCH ONLY.

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.

ALL RESISTORS ARE 1/4 WATT UNLESS OTHERWISE SPECIFIED AND RESISTOR VALUES IN OHMS UNLESS FOLLOWED BY K=1000 OHMS

(19D413313, Rev. 7)

SYSTEM FRAME AND HARNESS



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.

(19D413465, Rev. 3)

NOTES:
1. ALL WIRES ARE 22A EXCEPT AS OTHERWISE SHOWN.
2. SEE 19D402476 FOR ORIENTATION AND LOCATION OF COMPONENTS AND ROUTING OF CABLE.
3. SEE 19A216379 FOR CONNECTIONS OF P101.
4. CONNECT WHITE WIRE COMING FROM P703-3 TO P443-19 WHEN USING 4EC59A80 AND 4EC59A82

SCHEMATIC & INTERCONNECTION DIAGRAM

MASTR CONTROL UNIT, MODELS 4EC59A80 & 82

Issue 6

PARTS LIST

LBI-4056E

CONTROL UNIT
MODELS 4EC59A80, 82
AND
ASSOCIATED ASSEMBLIES

SYMBOL	GE PART NO.	DESCRIPTION
		CONTROL UNIT 19D413054G9
A701		COMPONENT BOARD 19D216751G1
		- - - - - - - - - TRANSISTORS - - - - - - - - -
Q1 thru Q4	19A116272P1	Integrated circuit; sim to 2N5305.
Q5	19A115123P1	Silicon, NPN.
		- - - - - - - - - RESISTORS - - - - - - - - -
R1 and R2	3R152P473K	Composition: 47,000 ohms ±10%, 1/4 w.
R3	3R152P333K	Composition: 33,000 ohms ±10%, 1/4 w.
R4 and R5	3R152P103K	Composition: 10,000 ohms ±10%, 1/4 w.
		- - - - - - - - INDICATING DEVICES - - - - - - - -
DS701 thru DS703	19B201122P1	Lamp, incandescent: 6.0 v; sim to GE 1768.
DS705	19B201122P1	Lamp, incandescent: 6.0 v; sim to GE 1768.
		- - - - - - - - JACKS AND RECEPTACLES - - - - - - - -
J701	19C30357G91	Receptacle: 13 contacts rated at 5 amps.
J702		Connector. Includes:
	19A116061P2	Receptacle: 6 female contacts; sim to Amphenol Type 81-PM6F-1000.
	19A116061P4	Lockwasher.
	19A116061P5	Nut, Knurled.
J703	19D406240P1	Receptacle: 25 contacts rated at 5 amps.
J704	19B216779G1	Jack assembly: 9 female contacts rated at 5 amps at 900 VRMS; sim to Winchester M93-LRN.
		- - - - - - - - - RESISTORS - - - - - - - - -
R704	5493035P19	Wirewound: 67 ohms ±5%, 5 w; sim to Hamilton Hall Type HH.
R705	19B209114P1	Variable, wirewound: 75 ohms ±20%, 3 w; sim to CTS Series 112.
R706	3R77P100K	Composition: 10 ohms ±10%, 1/2 w.
R707		(Part of S704).
R708	3R79P270K	Composition: 27 ohms ±10%, 2 w.
R709		(Part of S709).
R710	3R78P220J	Composition: 22 ohms ±5%, 1 w.
		- - - - - - - - - SWITCHES - - - - - - - - -
S704	19C307089P22	Switch/Resistor: includes Switch, rotary, 4 poles, 2 positions, momentary shorting contacts, 250 ma at 500 VRMS; Resistor (R707), variable, 2500 ohms ±10%, 1 w max; sim to Mallory Type LC.
S708	5491899P4	Toggle: DPDT, 6 amps at 125 VAC/VDC; sim to Cutler-Hammer 8371E5.
S709	19C307089P24	Switch/Resistor: includes Switch, rotary, 4 poles, 3 positions, momentary shorting contacts, 250 ma at 500 VRMS; Resistor (R709), variable, 2500 ohms ±20%, 1/2 w max; sim to Mallory Type LC.
		- - - - - - - - - SOCKETS - - - - - - - - -
XDS701 thru XDS703	19B201122P2	Lampholder, sim to Drake Mfg. Co. 1241 Series.
XDS705	19B201122P2	Lampholder, sim to Drake Mfg Co 121 Series.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

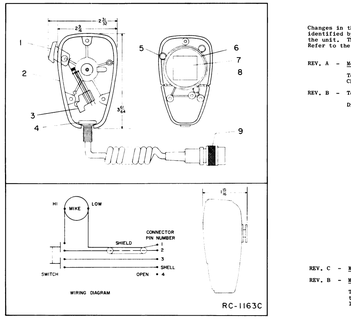
SYMBOL	GE PART NO.	DESCRIPTION
		MECHANICAL PARTS CONTROL UNIT (SEE RC-1872)
1	8529P18C13	Plug button.
2	19A125121G1	Mounting bracket.
3	19B201122P3	Lens cap: green translucent nylon. (Used with DS703.)
4	19B201122P4	Lens cap: red translucent nylon. (Used with DS703.)
5	8P257935	Nameplate, etched aluminum.
6	19B201122P7	Lens cap: white translucent nylon. (Used with DS703.)
7	19B201122P6	Lens cap: yellow translucent nylon. (Used with DS703.)
8	19B204443G1	Knob, grvr. (ON-OFF-STBY, F1-F2).
9	19C30413P1	Knob. (VOLUME - SQUELCH).
10	19D413010P1	Housing.
11	19B204522P1	Mounting Plate.
12	19A116773P106	Tap screw, Phillips POZIDRIV®: No. 7-19 x 2/8, bi-low thread. (Secures housing to mounting surface).
		ASSOCIATED ASSEMBLIES
	19A121699G1	Control unit modification kit (trunk mount).
	19D402239G1	12 volt vehicle frame.
	19D402239G2	6 and 28 volt vehicle frame.
	19A123644P1	Cover, wire channel (on systems frame).
	19C30452G1	Front casting (front mount).
	19C30452G2	Front casting (Trunk mount).
	403426G93	Screw: 10-32 x 1-1/8. (Secures Front casting).
	5491682P2	Lock: Yale and Towne. (Part of Front casting).
	19A116422P7	Cam. (Used with lock).
		DINKER CONTROL MODIFICATION KIT 19A121293G1
		- - - - - - - - - RESISTORS - - - - - - - - -
R705	19B209114P1	Variable, wirewound: 75 ohms ±20%, 3 w; sim to CTS Series 112.
		POWER CABLE ASSEMBLY (6 VOLT FRONT MOUNT) 19C303601G1 (12 VOLT FRONT MOUNT) 19C303601G2 (12 VOLT TRUNK MOUNT)
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
	19B209189P1	Connector, phen: 8 contacts rate at 15 amps at 1100 VRMS; sim to Beauchaine and Sons S-5401-76.
	19D402438P1	Cap, connector.
	19A121444P2	Connector retaining screw.
	7146477P3	Cable: 2 lengths, approx 9 feet long connected to pins 1 and 7.
	7146477P4	Cable: 2 lengths, approx 9 feet long connected to pins 4 and 6.
		POWER CABLE ASSEMBLY (6 VOLT TRUNK MOUNT) 19C303605G1
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
	19B209189P1	Connector, phen: 8 contacts rate at 15 amps at 1100 VRMS; sim to Beauchaine and Sons S-5401-76.
	19D402438P1	Cap, connector.
	19A121444P2	Connector retaining screw.
	7146477P1	Cable: 2 lengths, approx 22 feet long connected to pins 1 and 7.
	7146477P3	Cable: 2 lengths, approx 22 feet long connected to pins 4 and 6.
		CONTROL CABLE ASSEMBLY 19C303626G1, G2 (1-PEDG) 19C303626G3, G4 (MULTI-PEDG)
		- - - - - - - - - PLUGS - - - - - - - - -
P1	19C303626G5	Plug, male: includes connector 19D402406P3, cap 19C303290P2 and connector retaining screw 19A121444P2.
		- - - - - - - - JACKS AND RECEPTACLES - - - - - - - -
J1	19C303626G6	Plug, female: includes connector 19D402406P1, cap 19C303290P1 and connector retaining screw 19A121444P1.
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
	19D402408P1	Connector, female phen: 25 contacts rated at 5 amps max.
	19D402408P3	Connector, male phen: 25 contacts rated at 5 amps max.
	19C303290P1	Cap, connector. (Used with 19D402408P1 connector).
	19C303290P2	Cap, connector. (Used with 19D402408P3 connector).
	7139880P11	Cable: 23 conductors. (When ordering specify length). (Used in 19C303626G3 and G4).
	7139880P8	Cable: 13 conductors. (When ordering specify length). (Used in 19C303626G1 and G2).
		VEHICLE SYSTEM CABLE KIT 19A121454G1 (12 VOLT VEHICLES) 19A121454G2 (6/28 VOLT VEHICLES)
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
	19A121324G1	6/28 volt vehicle jumper. (Used in 19A121454G2).
	19A121429P1	Pin: 1/2 inch long.
	19A121414G1	Plug: 13 contacts.
	19C303574P1	Cover.
		FUSED LEAD ASSEMBLY 19A121314G1 (19A121454G1, G2) 19A121314G2 (19A121454G2)
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
1B16P8		Cartridge, quick blowing: 5 amps at 250 v; sim to Littelfuse 312005 or Bussman MTH-5.
	19A115776P2	Fuseholder.

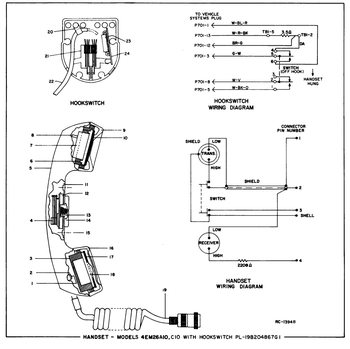
SYMBOL	GE PART NO.	DESCRIPTION
		POWER CABLE ASSEMBLY (6 VOLT FRONT MOUNT) 19C303607G1
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
	19B209189P1	Connector, phen: 8 contacts rate at 15 amps at 1100 VRMS; sim to Beauchaine and Sons S-5401-76.
	19D402438P1	Cap, connector.
	19A121444P2	Connector retaining screw.
	7146477P3	Cable: 2 lengths, approx 9 feet long connected to pins 1 and 7.
	7146477P4	Cable: 2 lengths, approx 9 feet long connected to pins 4 and 6.
		POWER CABLE ASSEMBLY (6 VOLT TRUNK MOUNT) 19C303606G1
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
	19B209189P1	Connector, phen: 8 contacts rate at 15 amps at 1100 VRMS; sim to Beauchaine and Sons S-5401-76.
	19D402438P1	Cap, connector.
	19A121444P2	Connector retaining screw.
	7146477P1	Cable: 2 lengths, approx 22 feet long connected to pins 1 and 7.
	7146477P3	Cable: 2 lengths, approx 22 feet long connected to pins 4 and 6.
		CONTROL CABLE ASSEMBLY 19C303626G1, G2 (1-PEDG) 19C303626G3, G4 (MULTI-PEDG)
F11	1B11P4	Quick blowing: 15 amps, 250 v; sim to Bussman MDN15.
F14	1B11P7	Quick blowing: 30 amps, 250 v; sim to Bussman MDN30. (Used in 7497953G30).
		- - - - - - - - - RELAYS - - - - - - - - -
K1	7486515P1	Armature, enclosed: 6 VDC nominal, 26 ohms ±8% coil res, 1 form A contact rated at 15 amps; sim to KUM 6G-1DM13-3. (Used in 7487953G20).
K3	7486515P3	Armature, enclosed: 28 VDC nominal, 300 ohms ±10% coil res, 1 form A contact rated at 15 amps. (Used in 7487953G19).
		12 VOLT FUSE ASSEMBLY 19B216021G4 (Fuses must be ordered separately)
		- - - - - - - - - FUSES - - - - - - - - -
F2	1B11P6	Quick blowing: 25 amps, 250 v; sim to Bussman MDN25. (Used with medium power transmitters).
F3	1B11P7	Quick blowing: 30 amps, 250 v; sim to Bussman MDN30. (Used with high power transmitters).
		130 - 470 MHz ANTENNA MODEL 4ET12A13 (54909689P13)
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
		Antenna: includes stainless steel whip approx 20 inches long; ball tip; whip socket: No. 6-32 set screw; rubber mounting gasket; antenna cable; cable adapter: PL-259 coaxial plug; sim to Antenna Specialists ASPD2001GK or Danbury-Knudsen Type PA-25.
	54909689P4	Whip: stainless steel, approx 20 inches long; ball tip.
	54909689P5	Socket, whip: with (2) No. 6-32 set screws.
	54909689P6	Whip and whip socket: stainless steel whip approx 20 inches long with ball tip; whip socket with (2) No. 6-32 set screws.

SYMBOL	GE PART NO.	DESCRIPTION
		INTERCONNECTION HARNESS ASSEMBLY 19A121650G1
		- - - - - - - - JACKS AND RECEPTACLES - - - - - -
J505	19B204609G1	Plug, male: 13 pin contacts.
		- - - - - - - - - PLUGS - - - - - - - - -
P101	19C303506P1	Connector, phen: 20 contacts.
P443	19C303506P1	Connector, phen: 20 contacts.
P703	19D402460H2	Connector, phen: 25 contacts.
		- - - - - - - TERMINAL BOARDS - - - - - - - -
TB901	7775500P10	Phen: 4 terminals.
		12 VOLT RELAY ASSEMBLY 25-174 MHz 19B209044P1 (Used with GE Dwg 7491074P1).
		Includes K901, K903, P103, P441, W901-W903.
		6/12, 12/28 VOLT RELAY ASSEMBLY 406-470 MHz 19B209044P2
		Includes J901, K902, P103, P441, W901-W903.
		FUSE AND RELAY ASSEMBLY 7487952G19 (28 VOLT VEHICLE) 7487952G20 (6 VOLT VEHICLE)
		- - - - - - - - - FUSES - - - - - - - - -
F11	1B11P4	Quick blowing: 15 amps, 250 v; sim to Bussman MDN15.
F14	1B11P7	Quick blowing: 30 amps, 250 v; sim to Bussman MDN30. (Used in 7487953G30).
		- - - - - - - - - RELAYS - - - - - - - - -
K1	7486515P1	Armature, enclosed: 6 VDC nominal, 26 ohms ±8% coil res, 1 form A contact rated at 15 amps; sim to KUM 6G-1DM13-3. (Used in 7487953G20).
K3	7486515P3	Armature, enclosed: 28 VDC nominal, 300 ohms ±10% coil res, 1 form A contact rated at 15 amps. (Used in 7487953G19).
		12 VOLT FUSE ASSEMBLY 19B216021G4 (Fuses must be ordered separately)
		- - - - - - - - - FUSES - - - - - - - - -
F2	1B11P6	Quick blowing: 25 amps, 250 v; sim to Bussman MDN25. (Used with medium power transmitters).
F3	1B11P7	Quick blowing: 30 amps, 250 v; sim to Bussman MDN30. (Used with high power transmitters).
		130 - 470 MHz ANTENNA MODEL 4ET12A13 (54909689P13)
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
		Antenna: includes stainless steel whip approx 20 inches long; ball tip; whip socket: No. 6-32 set screw; rubber mounting gasket; antenna cable; cable adapter: PL-259 coaxial plug; sim to Antenna Specialists ASPD2001GK or Danbury-Knudsen Type PA-25.
	54909689P4	Whip: stainless steel, approx 20 inches long; ball tip.
	54909689P5	Socket, whip: with (2) No. 6-32 set screws.
	54909689P6	Whip and whip socket: stainless steel whip approx 20 inches long with ball tip; whip socket with (2) No. 6-32 set screws.

SYMBOL	GE PART NO.	DESCRIPTION
		Cable, antenna: approx 15 feet long. Type RG-58/U. (Used with GE Dwg 2B22P1 and GE Dwg 7105381P).
	7105381P1	Adapter, cable: approx 1 x 7/16 inches dia, Type UG-175/U. (Used with GE Dwg 2B22P1 and Type RG-58/U cable).
	2B22P1	Plug, coaxial: mica-filled insert, UHF contact. Signal Corps PL-259; sim to Amphenol 83-1SP. (Used with GE Dwg 7105381P1 and Type RG-58/U cable).
		25 - 50 MHz ANTENNA
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
	7491074P1	Antenna: includes stainless steel rod approx 96-1/2 inches long; ball tip; lockwasher; No. 10-32 hex socket set screw; sim to Antenna Specialists ASP436RC.
	7102930P3	Adapter, antenna: approx 2-5/16 inches long. (Used with GE Dwg 7491074P1).
	4033101G1	Antenna package: includes base; adapter spring; cable and plug.
	747288G5	Antenna base.
	747663G4	Adapter spring.
	549223P1	Cable, antenna: includes Type RG-58/U cable approx 15 feet long; PL-259 coaxial plug; mounting clip; ring tongue terminal; sim to Antenna Specialists 13A63.
	2B22P1	Plug, coaxial: mica-filled insert, UHF contact. Signal Corps PL-259; sim to Amphenol 83-1SP. (Used with GE Dwg 549223P1).
	4X79A1	Coil, loading: 25 to 33 MHz; sim to Antenna Specialists ASP447.
	19A121577G1	Antenna hook kit.
	7134724P1	Antenna hook.
		HANDSET MODEL 4EM29A10 MODEL 4EM29C10 (SEE RC-1394)
1		Self tap screw, bind head: No. 4 x 5/16. Shure Brothers 30C540C.
2		Cable clamp. Shure Brothers 53A532.
3		Shield. Shure Brothers RP19.
4		Switch. Shure Brothers RP81.
5		Case. Shure Brothers RP49. (Used in 4EM29A10).
		Case. Shure Brothers 21RP899F. (Used in 4EM29C10).
6		Adapter. Shure Brothers 65A230.
7		Magnetic controlled cartridge. Shure Brothers RP41.
8	2B77P222K	Resistor, composition: 220C ohms ±10%, 1/2 w.
9		Receiver cap. (Part of item 5).
10		Washer. Shure Brothers 34A321.
11		Escutcheon. Shure Brothers 53A536A.
12		Actuator. Shure Brothers 53A556.
13		Spring. Shure Brothers 44A140.
14		Plunger bar. Shure Brothers RP82.
15		Flat head screw, socket cap: No. 4-40 x 1/4. Shure Brothers 30C537B.
16		Transmitter cap. (Part of RP49).
17		Washer. Shure Brothers 34A309.
18		Magnetic controlled cartridge. Shure Brothers RP43.
19		Cable and plug. Shure Brothers RP48. (Used in 4EM29A10).
		Cable and plug. Shure Brothers 21RP738F. (Used in 4EM29C10).

SYMBOL	GE PART NO.	DESCRIPTION
		HOOKSWITCH ASSEMBLY 19B204867G1 (SEE RC-1394)
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
20	402985lP4	Cable clamp: sim to WC Keeser 3/16-4.
21	19A121612P1	Holder and switch: thermoplastic case, contact rating 1 amp at 125 v.
22	19A121581G1	Cable: approx 8-1/2 feet long.
23	5493035P10	Resistor, wirewound, ceramic: 3.5 ohms ±5%, 5 w; sim to Hamilton Hall Type EE.
24	7775500P55	Terminal board, phen: 5 terminals.
		MILITARY MICROPHONE MODEL 4EM35A10 19B209102G1 (SEE RC-1163)
1		Cable clamp. Shure Brothers 53A532.
2		Switch. Shure Brothers RP26.
3		Case (back) and mounting butts: plastic. Shure Brothers RP67.
4		Switch button: red plastic. Shure Brothers RP25.
5		Spring. Shure Brothers RP16.
6		Shield. Shure Brothers RP23.
7		Magnetic controlled cartridge. Shure Brothers RP15.
8		Case (front): plastic. Shure Brothers RP67.
9		Cable and plug: approx 6 feet long. Shure Brothers RP14.
		5 WATT SPEAKER 19C329392G3 4EX20A10
LS2	19A116910P1	Permanent magnet: 5 inch, 3.2 ohms ±5% imp, 5 w max operating; sim to Pioneer 002009.
W1	19A121546G1	Cable assembly: approx 48 inches long, includes (2) 19A121429P1 pins.
	19D416396P3	Speaker housing.
	19C320016P2	Mounting support.
	5490401P3	Neoprene grommet. (Upper)
	19A115470P1	Rubber grommet. (Lower)
	19B219082G3	Grille.
	19A116985P1	Screw, hex head-slotted: double head thread, with internal tooth washer, No. 13-16 x 3/4. (Secures housing to mounting bracket).





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 description of parts affected by these revisions.

REV. A - Model 4EC59A82

To reduce audio output level at minimum volume control setting. Changed R706.

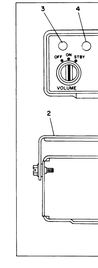
REV. B - To add MIC HI, PTT, earphone and ground to Tone Option Jack J704.

Diagram was:

REV. C - Model 4EC59A82

REV. B - Model 4EC59A80

To incorporate new housing. Changed housing from 19D216271G1 to 19D413010P1. Changed backplate retaining screw to 19A116773P106.



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 Communications Equipment Sales Office of the General Electric Company.

MAINTENANCE MANUAL

LBI-4056

DF-4070

MOBILE RADIO DEPARTMENT
GENERAL ELECTRIC COMPANY • LYNCHBURG, VIRGINIA 24502

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