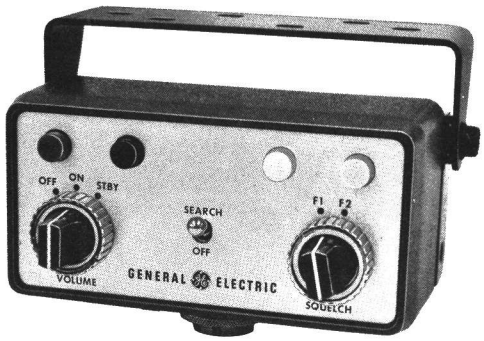
MOBILE RADIO

MASTR Progress Line

MOBILE CONTROL UNIT MODELS 4EC59A99 THROUGH 102

Maintenance Manual LBI-4363A
DF-4670



EC-59-A

SPECIFICATIONS *

MODEL NUMBERS	4EC59A99 through 4EC59A102
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 CHANNEL GUARD-OFF Switch SEARCH-OFF Switch
INDICATORS	Transmitter filament-on light: green Transmit light: red Receive F1 light: white Receive F2 light: yellow

*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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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 4EC59A99 through 4EC59A102 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.

An automatic pilot light dimmer has been incorporated in these control units. This dimmer uses a photo-resistor to sense ambient light and adjust the lamp regulator to provide the proper lamp current to the pilot lamps for the existing ambient light conditions. The intensity of the green power on lamp and the two channel lamps are controlled by this automatic pilot light dimmer. The red transmit lamp intensity is not adjustable. The lamps are extinguished when the combination is in STANDBY.

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.

CHANNEL GUARD-OFF Switch (S703)

When the CHANNEL GUARD-OFF switch is in the CHANNEL GUARD position, all signals are locked out except those from transmitters that are continuously tone coded for positive identification by the receiver. Placing the CHANNEL GUARD-OFF switch in the OFF position opens the emitter circuit of Q4 on printed wire board A702 and instantly disables the Channel Guard Operation so that all calls on the channel can be heard. When the hookswitch option is used, lifting the microphone from its hanger disables the Channel Guard Circuit.

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.

INDICATOR LIGHT CONTROL CIRCUITS

Turning the OFF-ON-STBY switch to the ON position, completes the collector circuit of Q701 on printed circuit board A703. This turns on Q701 and lights the green power-on light. Current through Q701 is controlled by the conduction of Q1, whose base is controlled by the setting of adjustable potentiometer R4 and the series resistance of photo-resistor V701. The resistance of V701 is determined by the ambient light falling on its photosensitive surface.

The frequency indicator lights are controlled by transistors Q1 thru Q3 on printed wire board A702. Transistors Q1 thru Q3 are actually Integrated Circuit Modules, having the equivalent circuit of a Darlington Amplifier. Depending on the frequency being received, +10 Volts is applied to the base of Q1 or Q2 causing the transistor to conduct through its associated frequency indicator light.

When the receiver is squelched, a positive voltage is applied to the base of Q5 on printed circuit board A703. Conduction of Q5 turns off Q3, keeping the emitters of Q1 - Q2 open and the frequency indicator lights off. When the receiver is unsquelched, Q5 does not conduct. The emitters of Q1 - Q2 are grounded through Q3 and the selected frequency indicator light turns on.

The base of Q4, on printed wire board A702, is connected to the base of Q1 through CR1 and to the base of Q2 through CR2. When the proper tone coded signal is received Q4 conducts, disabling the Channel Guard so the call can be heard. CR1 or CR2 may be removed for single frequency Channel Guard only. See Note 3 of Schematic 19D416069.

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 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

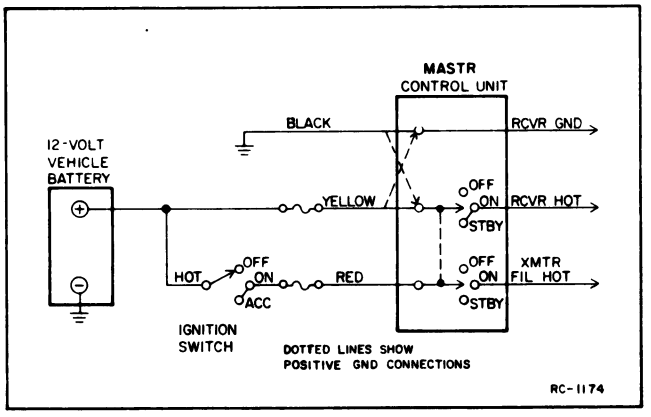


Figure 1 - 12-VDC Connections for Ignition Switch Standby

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 2 for disassembly of the plug.

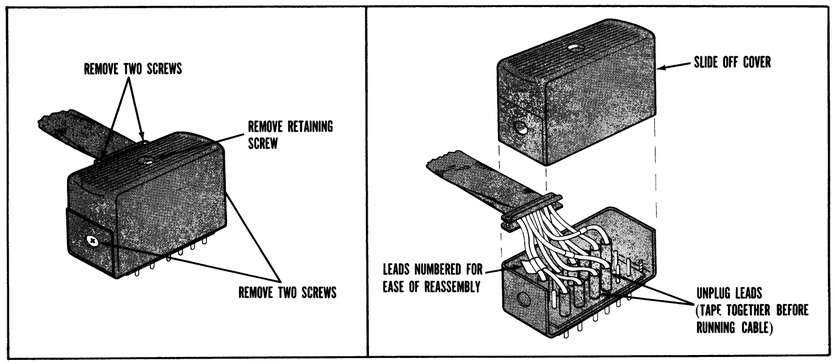
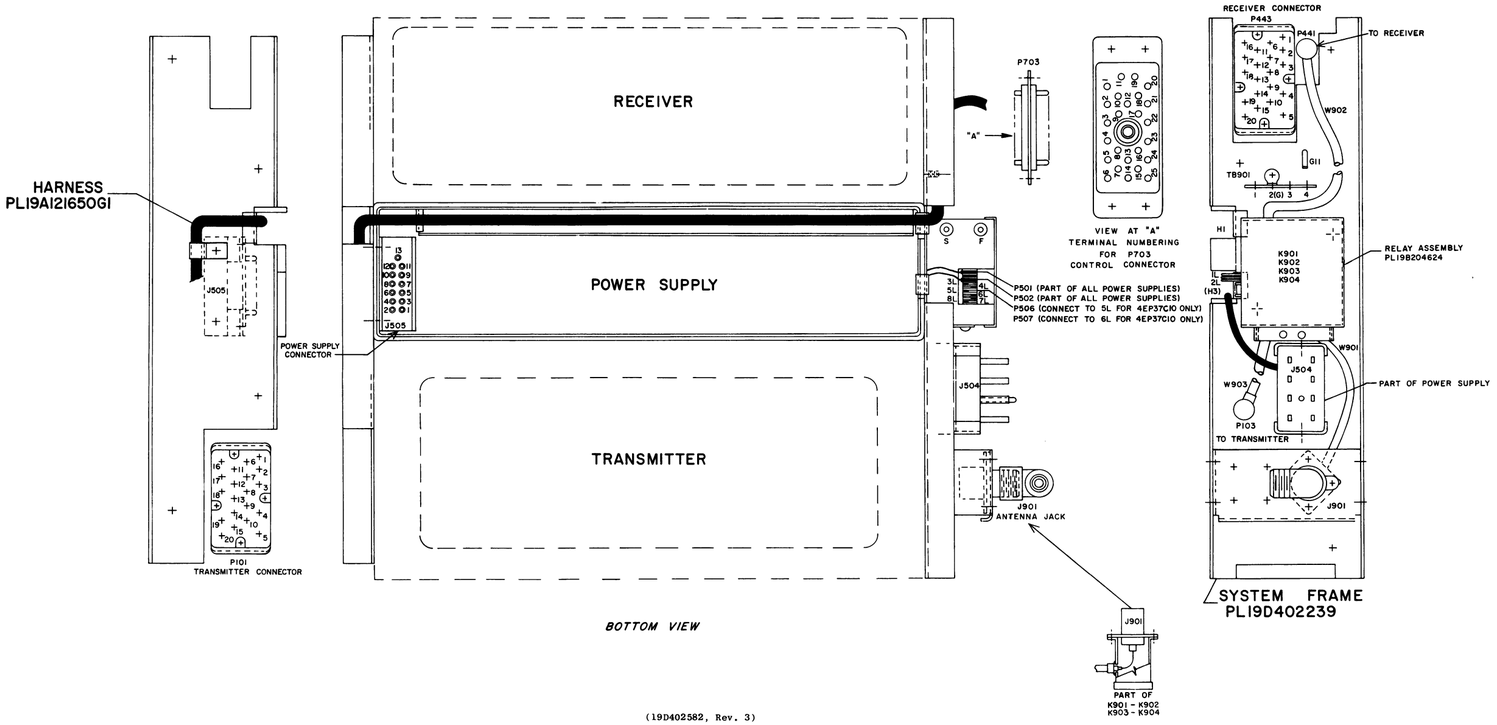


Figure 2 - Disassembly of Control Cable Plug

NOTE

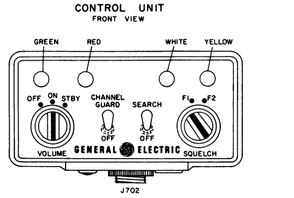
The plug is assembled so that the cable comes out of the top of the plug when connected to the Control Unit. To have the cable come out of the bottom of the plug, remove the remaining two screws and rotate the metal frame 180 degrees.

SYSTEM FRAME AND HARNESS

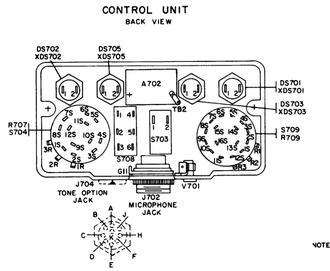


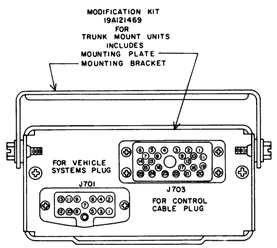
(19D402582, Rev. 3)

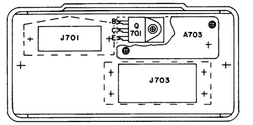
CONTROL UNIT

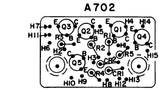


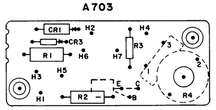
SYMBOL	FUNCTION
R707	SQUELCH CONTROL PART OF S704
R709	VOLUME CONTROL
S704	FREQUENCY SELECTOR
S703	CHANNEL GUARD-OFF
S708	SEARCH - OFF
S709	OFF-ON-STBY CONTROL

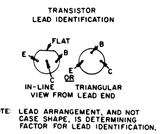












NOTE: LEAD ARRANGEMENT, AND NOT CASE SHAPE, IS DETERMINING FACTOR FOR LEAD IDENTIFICATION.

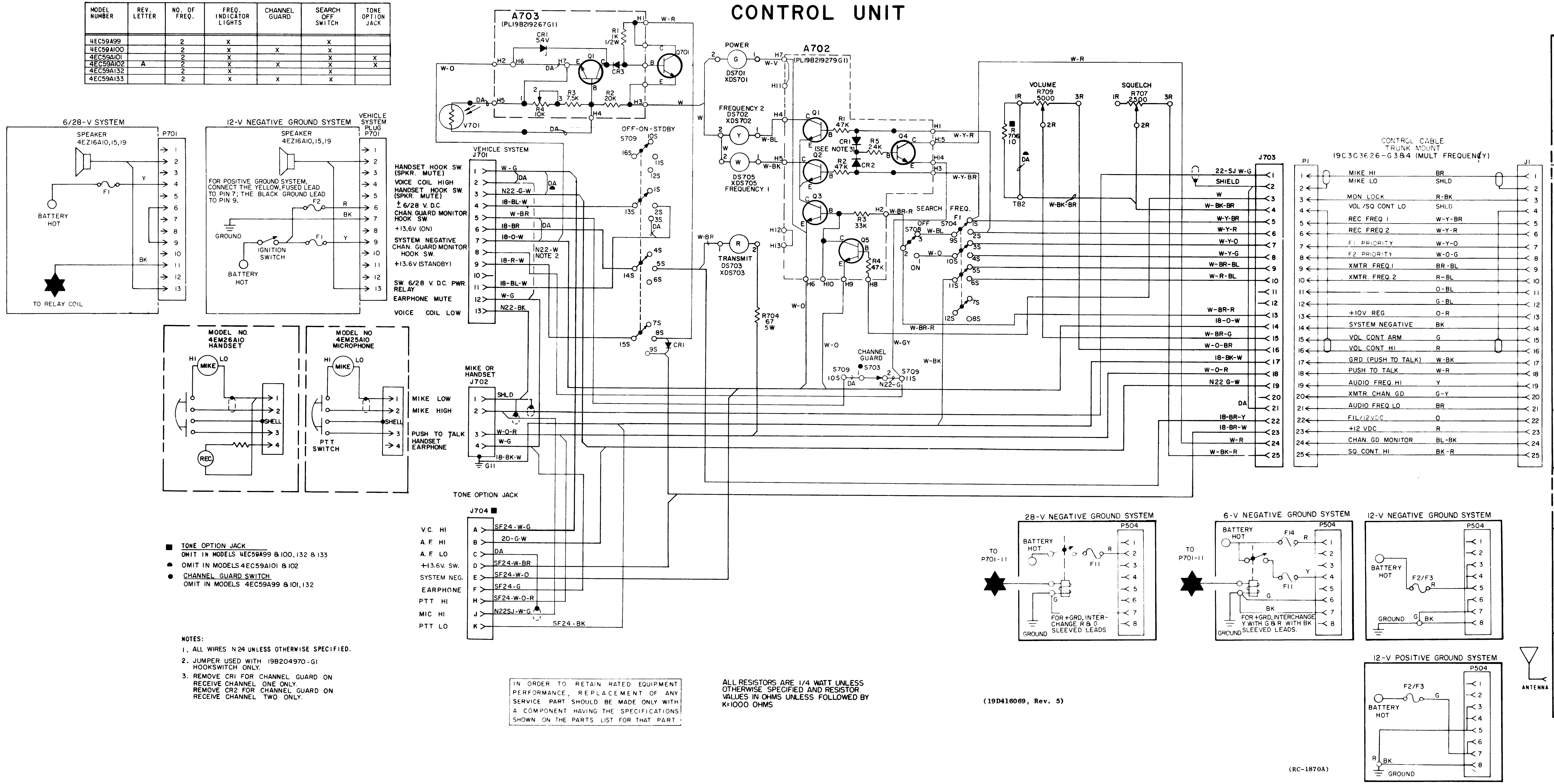
(19C320356, Rev. 1)

OUTLINE DIAGRAM

MASTR CONTROL UNIT
MODELS 4EC59A99 THROUGH 102

MODEL NUMBER	REV. LETTER	NO. OF FREQ.	FREQ. INDICATOR LIGHTS	CHANNEL GUARD	SEARCH OFF SWITCH	TONE OPTION JACK
4EC59A99		2	X		X	
4EC59A100		2	X	X	X	
4EC59A101		2	X		X	X
4EC59A102	A	2	X	X	X	X
4EC59A132		2	X		X	
4EC59A133		2	X	X	X	

CONTROL UNIT



■ TONE OPTION JACK
OMIT IN MODELS 4EC59A99 & 100, 132 & 133

● OMIT IN MODELS 4EC59A101 & 102

● CHANNEL GUARD SWITCH
OMIT IN MODELS 4EC59A99 & 101, 132

NOTES:
1. ALL WIRES N 24 UNLESS OTHERWISE SPECIFIED.
2. JUMPER USED WITH 19B204970-G1 HOOKSWITCH ONLY.
3. REMOVE CR1 FOR CHANNEL GUARD ON RECEIVE CHANNEL ONE ONLY. REMOVE CR2 FOR CHANNEL GUARD ON RECEIVE CHANNEL TWO ONLY.

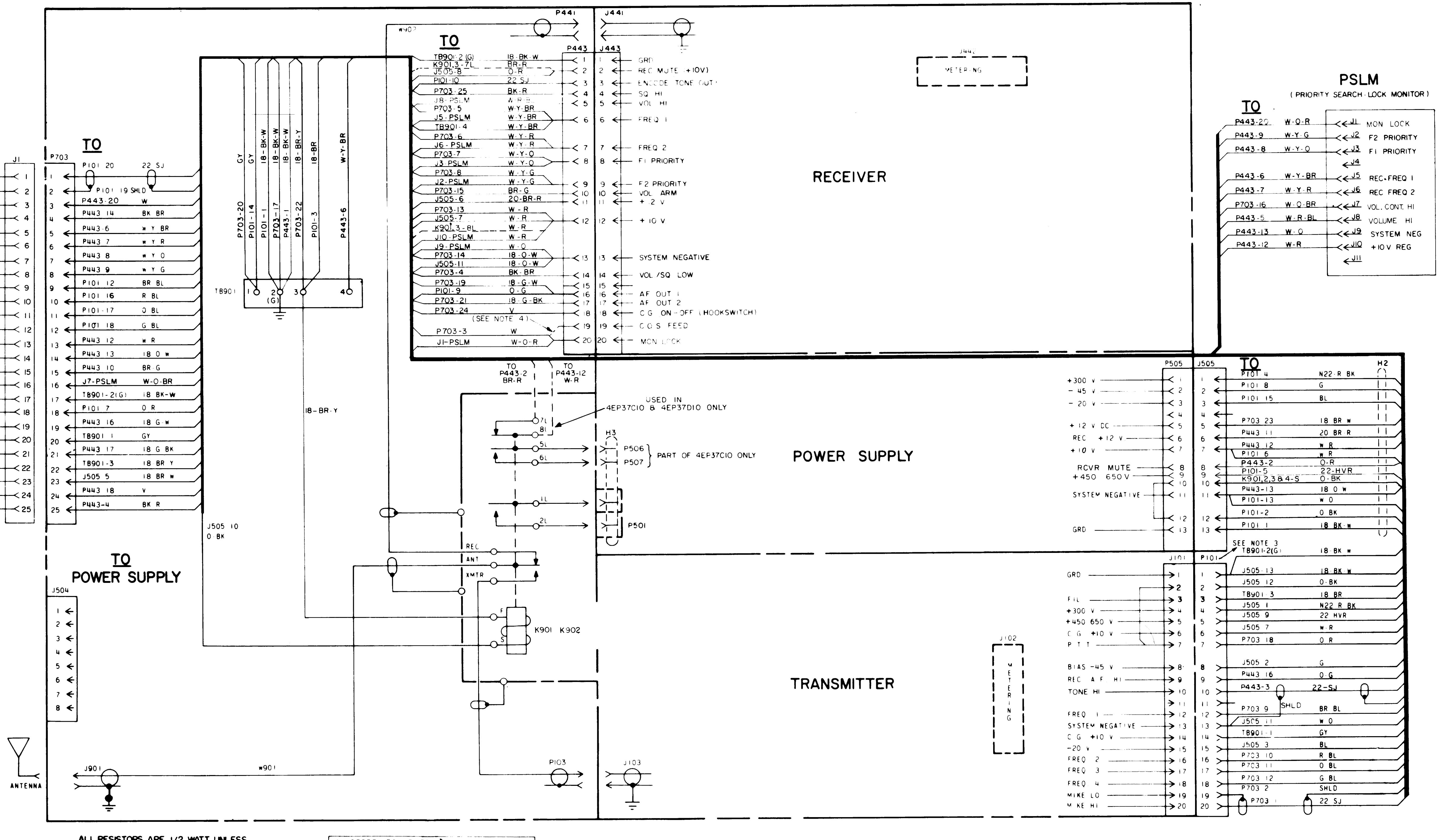
IN ORDER TO RETAIN RATED EQUIPMENT PERFORMANCE, REPLACEMENT OF ANY SERVICE PART SHOULD BE MADE ONLY WITH A COMPONENT HAVING THE SPECIFICATIONS SHOWN ON THE PARTS LIST FOR THAT PART.

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

(19D416069, Rev. 5)

(RC-1870A)

SYSTEM FRAME AND HARNESS



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

(19D413465, Rev. 3)

NOTES
1. ALL WIRES ARE SF24 EXCEPT AS OTHERWISE SHOWN.
2. SEE 19D402476 FOR ORIENTATION AND LOCATION OF COMPONENTS AND ROUTING OF CABLE
3. SEE 19A121837P1 FOR CONNECTIONS OF P101
4. CONNECT WHITE WIRE COMING FROM P703-3 TO P443-9 WHEN USING 4EC59A80 AND 4EC59A82

SCHEMATIC & INTERCONNECTION DIAGRAM

MASTR CONTROL UNIT, MODELS 4EC59A99 THROUGH 102

PARTS LIST

LBI-4364

CONTROL UNIT
MODELS 4EC59A99-102
AND
ASSOCIATED ASSEMBLIES

SYMBOL	GE PART NO.	DESCRIPTION
		CONTROL UNIT 19D413054G11
A702		COMPONENT BOARD 19B219279G1
		- - - - - - - DIODES AND RECTIFIERS - - - - - -
CR1 and CR2	19A115250P1	Silicon.
		- - - - - - - - - TRANSISTORS - - - - - - - - -
Q1 thru Q3	19A116272P1	Integrated circuit, monolithic, linear: sim to Type 2N5305.
Q4 and Q5	19A115123P1	Silicon, NPN; sim to Type 2N2712.
		- - - - - - - - - - RESISTORS - - - - - - - -
R1 and R2	3R152P473J	Composition: 47,000 ohms ±5%, 1/4 w.
R3	3R152P333J	Composition: 33,000 ohms ±5%, 1/4 w.
R4	3R152P473J	Composition: 47,000 ohms ±5%, 1/4 w.
R5	3R152P243J	Composition: 24,000 ohms ±5%, 1/4 w.
A703		COMPONENT BOARD 19B219267G1
		- - - - - - - DIODES AND RECTIFIERS - - - - -
CR1	4036887P5	Silicon, Zener.
CR3	19A115250P1	Silicon.
		- - - - - - - - - TRANSISTORS - - - - - - - -
Q1	19A115123P1	Silicon, NPN; sim to Type 2N2712.
		- - - - - - - - - - RESISTORS - - - - - - - -
R1	3R77P102J	Composition: 1000 ohms ±5%, 1/2 w.
R2	3R77P203J	Composition: 20,000 ohms ±5%, 1/2 w.
R3	3R152P752J	Composition: 7500 ohms ±5%, 1/4 w.
R4	19B209358P6	Variable, carbon film: approx 75 to 10,000 ohms ±20%, 0.25 w; sim to CTS Type U-201.
		- - - - - - - 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	19C303576P1	Receptacle: 13 contacts rated at 5 amps.
J702		Receptacle, Includes:
	19A116061P2	Receptacle: 4 contacts; sim to Amphenol Type 91-PN4F-1000.
	19A116061P4	Lockwasher, internal tooth.
	19A116061P5	Nut, knurled: No. 13/16-27N-2.
	19A116049P1	Solderless terminal.
J703	19D402408P1	Receptacle: 25 contacts rated at 5 amps.
J704	19B216279G1	Jack assembly: 9 female contacts rated at 5 amps at 900 VRMS; sim to Winchester M9S-LRN.

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - TRANSISTORS - - - - - - - - -
Q701	19A116203P3	Silicon, NPN.
		- - - - - - - - - - RESISTORS - - - - - - - - -
R704	5493035P19	Wirewound: 67 ohms ±5%, 5 w; sim to Hamilton Hall Type HR.
R706	3R77P100K	Composition: 10 ohms ±10%, 1/2 w.
R707		(Part of S704).
R709		(Part of S709).
		- - - - - - - - - - SWITCHES - - - - - - - - - -
S703	5491899P5	Toggle: SPST, 3 amps at 250 VAC/VDC; sim to Cutler-Hammer 8280K15.
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 Cutter-Hammer 8373K8.
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.
		- - - - - - - - PHOTO RESISTORS - - - - - - -
V701	19A115994P1	Photoconductive, cell: 60 v, 75 mw at 25°C; sim to Clairex Co. CL605L.
		- - - - - - - - - - SOCKETS - - - - - - - - - -
XDS701 thru XDS703	19B201122P2	Lampholder, sim to Drake Mfg. Co. 121 Series.
XDS705	19B201122P2	Lampholder, sim to Drake Mfg. Co. 121 Series.
		MECHANICAL PARTS CONTROL UNIT (SEE RC-2302)
1	19B201122P3	Lens cap: green translucent nylon. (Used with DS701).
2	19B201122P4	Lens cap: red translucent nylon. (Used with DS703).
3	NP257935	Nameplate, etched aluminum. (WITHOUT CHANNEL GUARD).
4	NP270640	Nameplate, etched aluminum. (CHANNEL GUARD).
5	19B201122P7	Lens cap: white translucent nylon. (Used with DS705).
6	19B201122P6	Lens cap: yellow translucent nylon. (Used with DS702).
7	19B204443G1	Knob, grey. (ON-OFF-STBY, F1-F2).
8	19C303413P1	Knob. (VOLUME/SQUELCH).
9	19B216271G1	Housing.
10	19B204522P2	Mounting Plate.
11	19A115495P1	Screw, hexhead: No. 1/4-20 x 5/8.
12	19A116023P1	Insulator, plate. (Used with Q701).
13	19A116022P1	Insulated bushing. (Used with Q701).
14	N80P9006C6	Screw, phillips: panhead, No. 4-40 x 3/8. (Used with Q701).
15	19A121521G1	Mounting bracket.
16	19B204949P2	Jewel: red plastic.
17	19A129045G1	Support. (Secures V701).
18	N529P19C13	Plug button.
		ASSOCIATED ASSEMBLIES
	19A121469G1	Control unit modification kit (trunk mount).
	19D402239G1	12 volt vehicle frame.

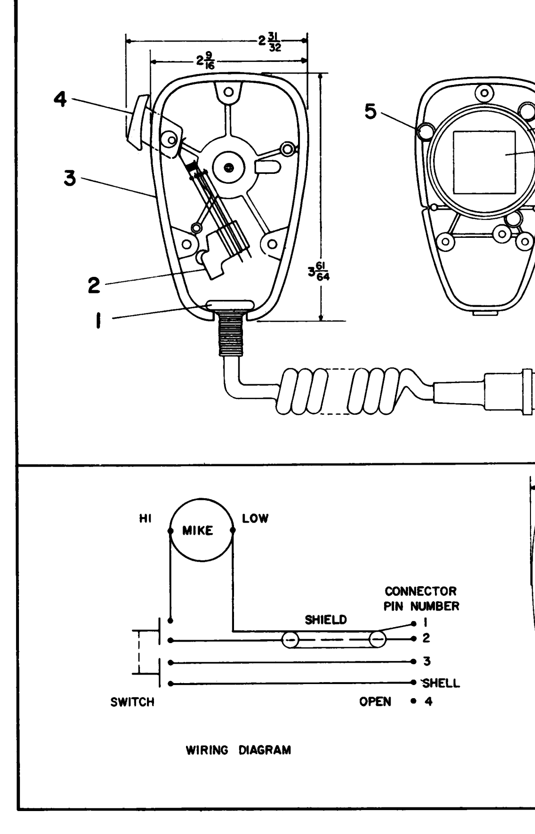
SYMBOL	GE PART NO.	DESCRIPTION
	19D402239G2	6 and 28 volt vehicle frame.
	19A122444P1	Cover, wire channel (on systems frame).
	19C303452G1	Front casting (Front mount).
	19C303452G2	Front casting (Trunk mount).
	4034260P3	Screw: 10-32 x 1-1/8. (Secures Front casting).
	5491682P2	Lock: Yale and Towne. (Part of Front casting).
	5491682P7	Cam. (Used with lock).
		POWER CABLE ASSEMBLY 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.
	19A115313P1	Cable: 3 conductor, approx 9 feet long. (Used in 19C303601G1).
	19A115314P1	Cable: 3 conductor, approx 18 feet long. (Used in 19C303601G2).
		POWER CABLE ASSEMBLY 19C303603G1 (28 VOLT FRONT MOUNT) 19C303603G2 (28 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.
	19A115313P1	Cable: 3 conductor, approx 9 feet long. (Used in 19C303603G1).
	19A115314P1	Cable: 3 conductor, approx 18 feet long. (Used in 19C303603G2).
		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-FREQ) 19C303626G3, G4 (MULTI-FREQ)
		- - - - - - - - - - - PLUGS - - - - - - - - - -
P1	19C303626G5	Plug, male: includes connector 19D402408P3, cap 19C303290P2 and connector retaining screw 19A121444P2.

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - JACKS AND RECEPTACLES - - - - - -
J1	19C303626G6	Plug, female: includes connector 19D402408P1, 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 connector).	Cap, connector. (Used with 19D402408P3
	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.
	19A121441G1	Plug: 13 contacts.
	19C303574P1	Cover.
		FUSED LEAD ASSEMBLY 19A121314G1 (19A121454G1, G2) 19A121314G2 (19A121454G2)
		- - - - - - - - - MISCELLANEOUS - - - - - - - -
	1R16P8	Cartridge, quick blowing: 5 amps at 250 v; sim to Littelfuse 312005 or Bussman MTH-5.
	19A115776P2	Fuseholder.
		INTERCONNECTION HARNESS ASSEMBLY 19A121650G1
		- - - - - - - - JACKS AND RECEPTACLES - - - - -
J505	19B204409G1	Plug, male: 13 pin contacts.
		- - - - - - - - - - - PLUGS - - - - - - - - - -
P101	19C303506P1	Connector, phen: 20 contacts.
P443	19C303506P1	Connector, phen: 20 contacts.
P703	19D402408P2	Connector, phen: 25 contacts.
		- - - - - - - TERMINAL BOARDS - - - - - - - -
TB901	7775500P10	Phen: 4 terminals.
		12 VOLT RELAY ASSEMBLY 25-470 MHz 19B209445P1
		Includes J901, K901, P103, P441, W901-W903.
		6/12, 12/28 VOLT RELAY ASSEMBLY 25-470 MHz 19B209445P2
		Includes J901, K902, P103, P441, W901-W903.
		FUSE AND RELAY ASSEMBLY 7487952G19 (28 VOLT VEHICLE) 7487952G20 (6 VOLT VEHICLE)
		- - - - - - - - - - FUSES - - - - - - - - - - -
F11	1R11P4	Quick blowing: 15 amps, 250 v; sim to Bussman NON15.

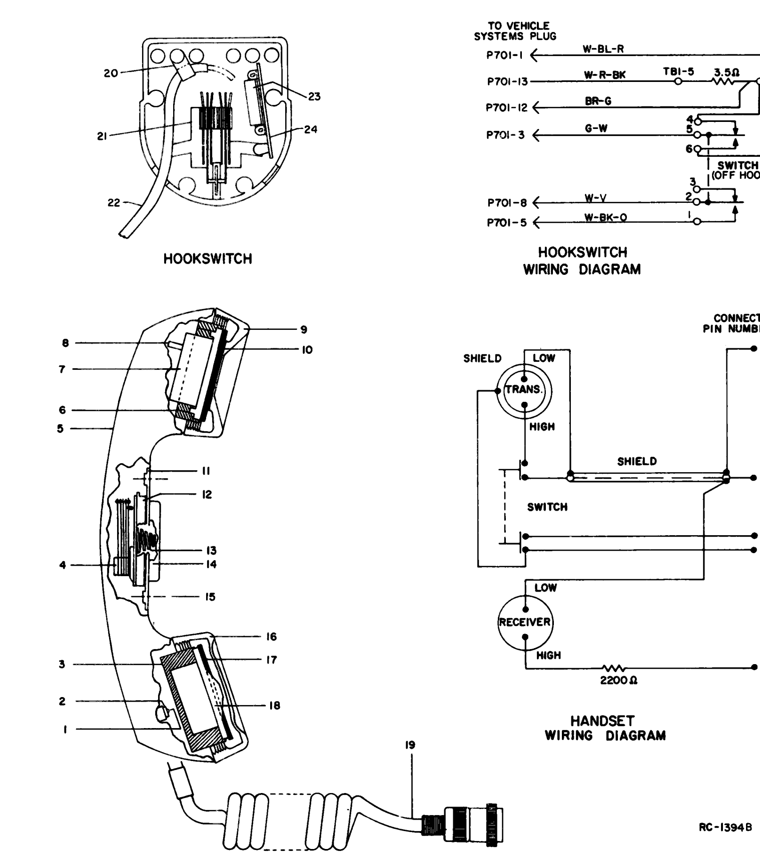
SYMBOL	GE PART NO.	DESCRIPTION
F14	1R11P7	Quick blowing: 30 amps, 250 v; sim to Bussman NON30. (Used in 7487952G20).
		- - - - - - - - - - RELAYS - - - - - - - - - - -
K1	7486515P1	Armature, enclosed: 6 VDC nominal, 26 ohms ±8% coil res, 1 form A contact rated at 15 amps; sim to RBM 60-108013-3. (Used in 7487952G20).
K3	7486515P3	Armature, enclosed: 28 VDC nominal, 300 ohms ±10% coil res, 1 form A contact rated at 15 amps. (Used in 7487952G19).
		12 VOLT FUSE ASSEMBLY 19B216021G4
	19D413045P1	Base.
	19D413046P1	Cover.
	19B205950P1	Fuse clip.
		- - - - - - - - - - - FUSES - - - - - - - - - -
F2	1R11P6	Quick blowing: 25 amps, 250 v; sim to Bussman NON25. (Used with medium power transmitters).
F3	1R11P7	Quick blowing: 30 amps, 250 v; sim to Bussman NON30. (Used with high power transmitters).
		130 - 470 MHz ANTENNA MODEL 4EY12A13 (5490969P13)
		- - - - - - - - - - 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 ASPD201GE or Danbury-Knudsen Type PA-25.
	5490969P4	Whip: stainless steel, approx 20 inches long; ball tip.
	5490969P5	Socket, whip: with (2) No. 6-32 set screws.
	5490969P6	Whip and whip socket: stainless steel whip approx 20 inches long with ball tip; whip socket with (2) No. 6-32 set screws.
		Cable, antenna: approx 15 feet long. Type RG-58/U. (Used with GE Dwg 2R22P1 and GE Dwg 7105381P1).
	7105381P1	Adapter, cable: approx 1 x 7/16 inches dia. Type UG-175/U. (Used with GE Dwg 2R22P1 and Type RG-58/U cable).
	2R22P1	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 ASPA3BGE.
	7102930P3	Adapter, antenna: approx 2-5/16 inches long. (Used with GE Dwg 7491074P1).
	4033101G1	Antenna package: includes base; adapter spring; cable and plug.
	7472880G5	Antenna base.
	7476632G4	Adapter spring.
	5492239P1	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 15A43.
	2R22P1	Plug, coaxial: mica-filled insert, UHF contact. Signal Corps PL-259; sim to Amphenol 83-1SP. (Used with GE Dwg 5492239P1).
	4KY9A1	Coil, loading: 25 to 33 MHz; sm to Antenna Specialists ASPA87.
	19A121577G1	Antenna hook kit.
	7134724P1	Antenna hook.

SYMBOL	GE PART NO.	DESCRIPTION
		HANDSET MODEL 4EM26A10 MODEL 4EM26C10 (SEE RC-1394)
1		Self tap screw, bind head: No. 4 x 5/16. Shure Brothers 30C640C.
2		Cable clamp. Shure Brothers 53A532.
3		Shield. Shure Brothers RP19.
4		Switch. Shure Brothers RP81.
5		Case. Shure Brothers RP49. (Used in 4EM26A10).
		Case. Shure Brothers 21RP899F. (Used in 4EM26C10).
6		Adapter. Shure Brothers 65A230.
7		Magnetic controlled cartridge. Shure Brothers RP41.
8	3R77P222K	Resistor, composition: 2200 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 30C557B.
16		Transmitter cap. (Part of RP49).
17		Washer. Shure Brothers 34A309.
18		Magnetic controlled cartridge. Shure Brothers RP13.
19		Cable and plug. Shure Brothers RP48. (Used in 4EM26A10).
		Cable and plug. Shure Brothers 21RP738F. (Used in 4EM26C10).
		HOOKSWITCH ASSEMBLY 19B204867G1 (SEE RC-1394)
		- - - - - - - - - MISCELLANEOUS - - - - - - - -
20	4029851P4	Cable clamp; sim to WEC Kesser 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 Tru-Ohm Type X-60.
24	7775500P55	Terminal board, phen: 5 terminals.
		MILITARY MICROPHONE MODEL 4EM25A10 19B209102G1 (SEE RC-1163)
1		Cable clamp. Shure Brothers 53A532.
2		Switch. Shure Brothers RP26.
3		Case (back) and mounting buttn: 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 RP13.
8		Case (front): plastic. Shure Brothers RP67.
9		Cable and plug: approx 6 feet long. Shure Brothers RP14.

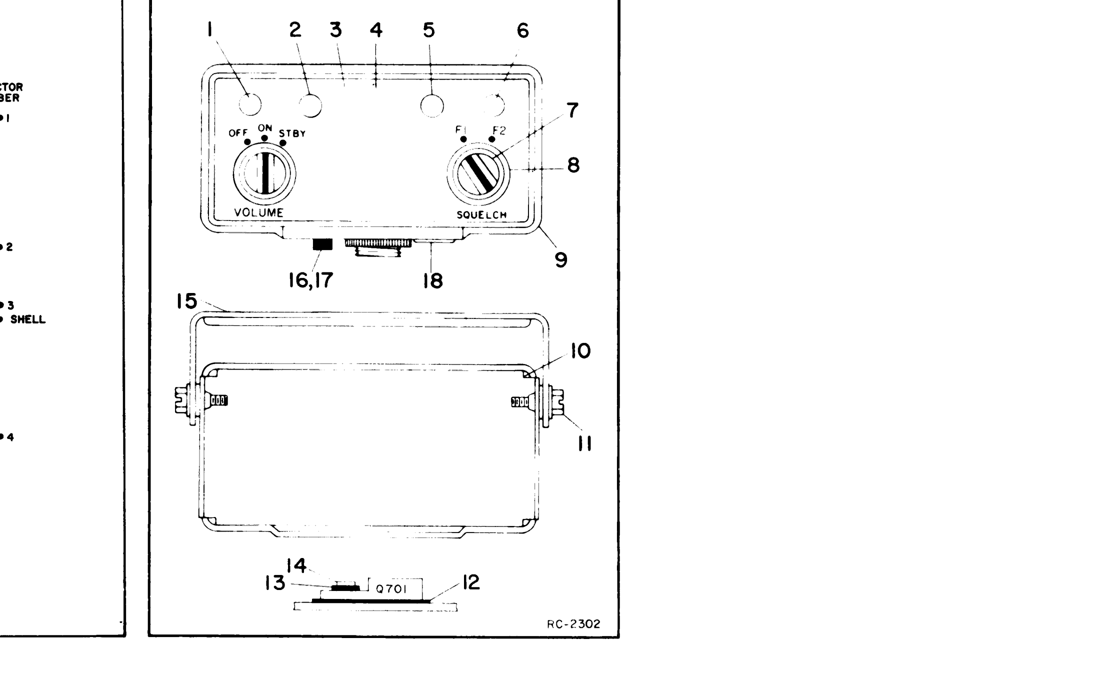
SYMBOL	GE PART NO.	DESCRIPTION
		5 WATT SPEAKER 4EZ16A19 19D402449G12
C1	19B209233P1	Electrolytic, non-polorized: 25 µf ±20%, 25 VDCW; sim to Sprague 44DC.
LS3	19B209422P1	Permanent magnet: 5 inch, 3.2 ohms ±10% imp, 2.98 ohms ±15% DC res, 7.5 w max operating.
W1	19A121546G1	Cable assembly: approx 48 inches long, includes (2) 19A121429P1 pins.
	19B216269G2	Speaker housing.
	19A121550G3	Cover.
	19A121521G1	Mounting support.
	5490407P3	Neoprene grommet. (Upper)
	19A115470P1	Rubber grommet. (Lower)



RC-1163D



HANDSET - MODELS 4EM26A10,C10 WITH HOOKSWITCH PL-19B204867G1



RC-2302

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

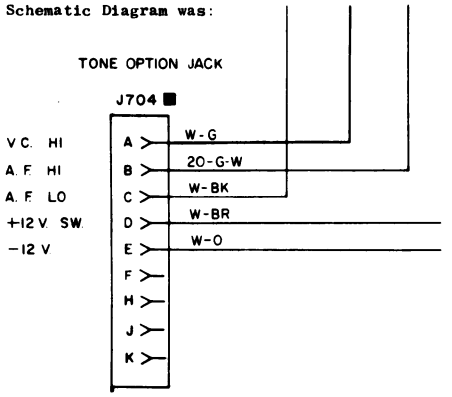
PRODUCTION CHANGES

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 - Models 4EC59A101 & 102

Added mike hi, PTT, earphone and ground to Tone Option Jack J702.

Schematic Diagram was:



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-4363

MOBILE RADIO DEPARTMENT
GENERAL ELECTRIC COMPANY • LYNCHBURG, VIRGINIA 24502

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DF-4070

PRINTED IN U.S.A.