MOBILE RADIO

MASTR Progress Line

MOBILE CONTROL UNIT MODELS 4EC59A42-49

Maintenance Manual LBI-3944A
*****
DF-4070

SPECIFICATIONS *

MODEL NUMBERS	4EC59A42 through 4EC59A49
USED WITH	MASTR Royal Professional Mobile Combinations
CONTROLS	VOLUME Control
	OFF-ON-STBY Control
	SQUELCH Control
	SEARCH-LOCK MONITOR Switch
	Optional Controls
	CHANNEL GUARD Monitor Switch
	SPEAKER-OFF Monitor Switch
	Dimmer Control for Frequency Indicator Lights
INDICATORS	Transmit light: red
	F1, F1-F2 Frequency indicator light: green
	F2 Frequency indicator light: yellow

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

EC-59-A

GENERAL ELECTRIC

TABLE OF CONTENTS

ILLUSTRATIONS

WARNING

No one should be permitted to handle any portion of the equipment that is supplied with voltage of RF power; 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 are compact, highly functional control units that are designed for either Trunk-Mount or Front-Mount MASTR 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

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 light does not light.

Turning the switch to the ON position enables the push-to-talk (PTT) circuit, lights the green pilot light, and applies +12 volts to the receiver and power regulator. The position of the Frequency Indicator switch determines which light will glow when the OFF-ON-STBY switch is turned on ON. Two-frequency units with search-lock monitor and indicator lights use the GREEN light for both F1 and F1-F2 positions. The YELLOW light is used when the frequency switch is in the F2 position only. After a short warm-up time, the PTT button may be pressed to key the transmitter.

Pushing the PTT button on the microphone lights the red pilot light, energizes the antenna changeover relay, and applies a keyed voltage to the transmitter and power regulator. The keyed voltage also mutes the receiver audio stages.

CONTROLS

All models of the Control Unit have VOLUME and SQUELCH controls, and an OFF-ON-STBY switch. Depending on the model number, some of the Control Units may have one or more of the controls described in the following paragraphs. A chart showing which controls are present on each Control Unit Model is provided on the Control Unit Wiring Diagram.

Instructions for adjusting the controls are in the Operator's Manual for the Two-Way Radio.

SEARCH-LOCK MONITOR Switch (S705)

Search-Lock Monitor Switch S705 has three positions: F1, F1-F2 and F2. When the switch is in the F1-F2 position, no voltage is fed from S705 to either receiver crystal switching +10 volts between the two receiver crystal switching diodes at a rate of approximately 10 times per second. When a signal is received on either channel, the SLM will "lock" on that frequency for the duration of the signal.

Turning S705 to the F1 or F2 position applies +10 volts to the selected crystal switching diode in the receiver oscillator and overrides the SLM. Switching to the F1 or F2 position also connects the crystal switching diode of the transmitter oscillator to ground, so that the radio will operate on the frequency determined by the selected transmitter and receiver oscillator. With S705 in the F1-F2 position, the transmitter will operate on the F1 frequency only.

In radios equipped with Channel Guard, the receiver Channel Guard operates only in the F1 position. The transmitter Channel Guard operates in the F1 and F1-F2 position.

SPEAKER-OFF Switch (S702)

The SPEAKER-OFF switch is used whenever a telephone handset and hookswitch is used. The switch operates in parallel with the hookswitch and, in the SPEAKER position, overrides the speaker muting circuit in the handset hookswitch. Calls can then be heard from the speaker, regardless of whether the handset is on or off the hookswitch.

With the switch in the OFF position and the handset off the hookswitch, calls are heard only from the handset earpiece. The speaker still operates with the handset hung up.

CHANNEL GUARD-OFF Switch (S703)

Placing this switch in the OFF position disables the receiver Channel Guard so that the receiver operates on noise squelch only.

Dimmer Control (R705 - Optional)

The dimmer control is a rheostat in series with the green pilot light. Turning the control adjusts the amount of light given off by the green pilot light.

VEHICLE IGNITION SWITCH CONNECTIONS

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,

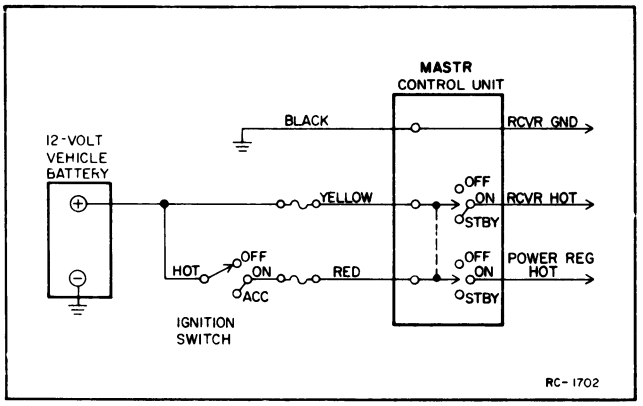


Figure 1 — 12-VDC Connections for Ignition Switch Standby

and the red fused lead provides the +12 volts for the power regulator. The three types of operation are:

1. Ignition Switch Standby

For this type of operation, the red fused lead (power regulator 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 power regulator 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 the 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

The Royal Professional mobile combination operates in 12-volt, negative ground vehicle systems only! If the radio is ever moved to a different vehicle, always check the battery polarity and voltage of the new system before using the radio.

CAUTION

Do not install the Royal Professional in a vehicle system using a circuit breaker. The radio must be operated in a system protected by a 15-amp quick blow fuse (similar to GE Fuse Assembly 19B216021-G4 and fuse 1R11-P4).

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.

NOTE

The plug is assembled to 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.

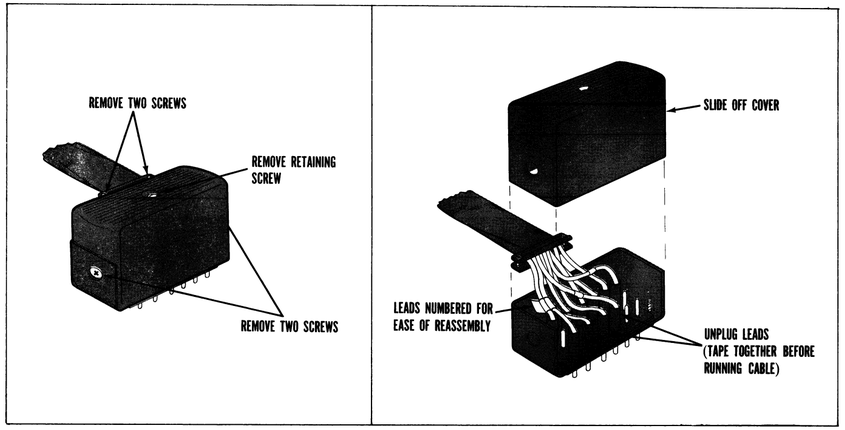
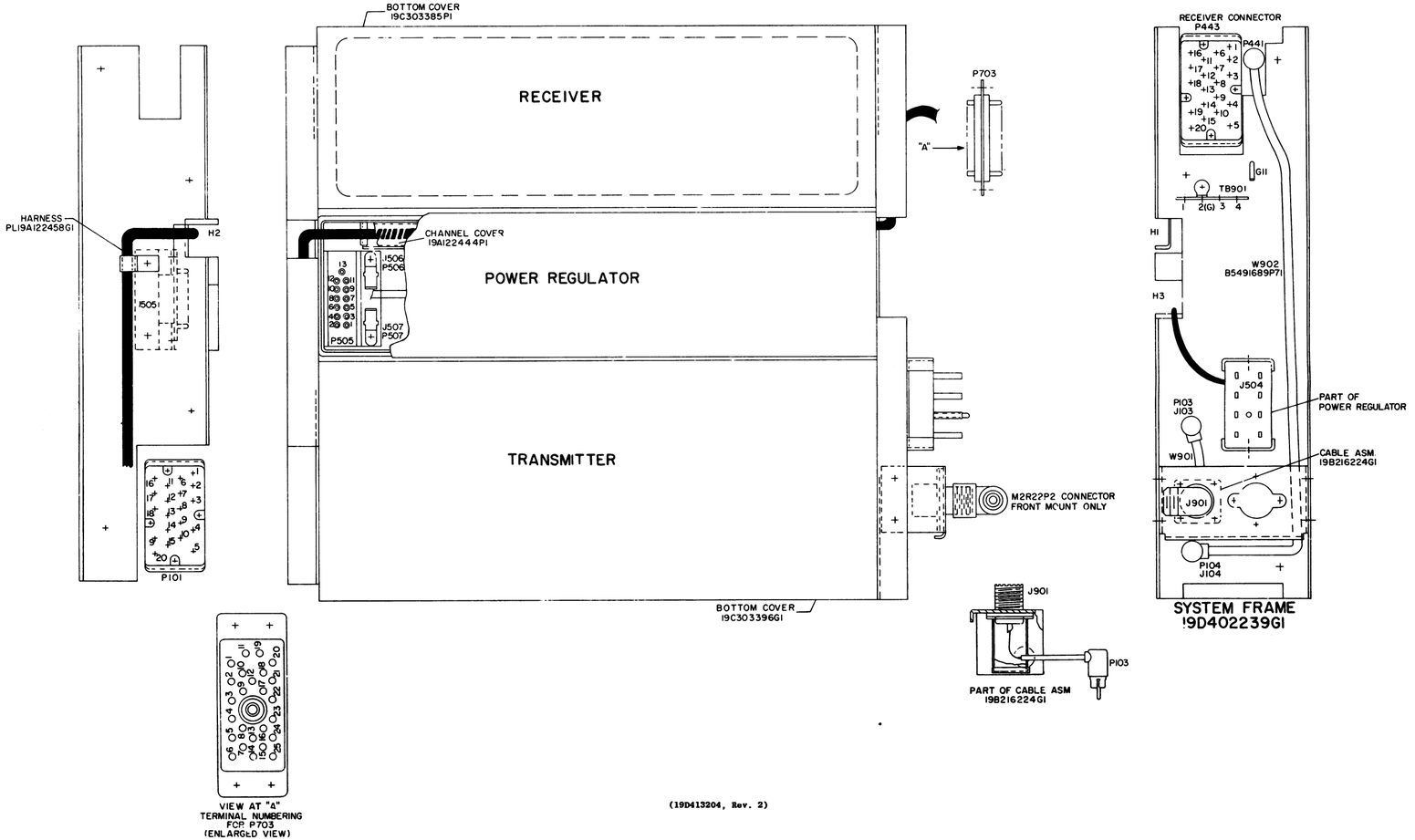


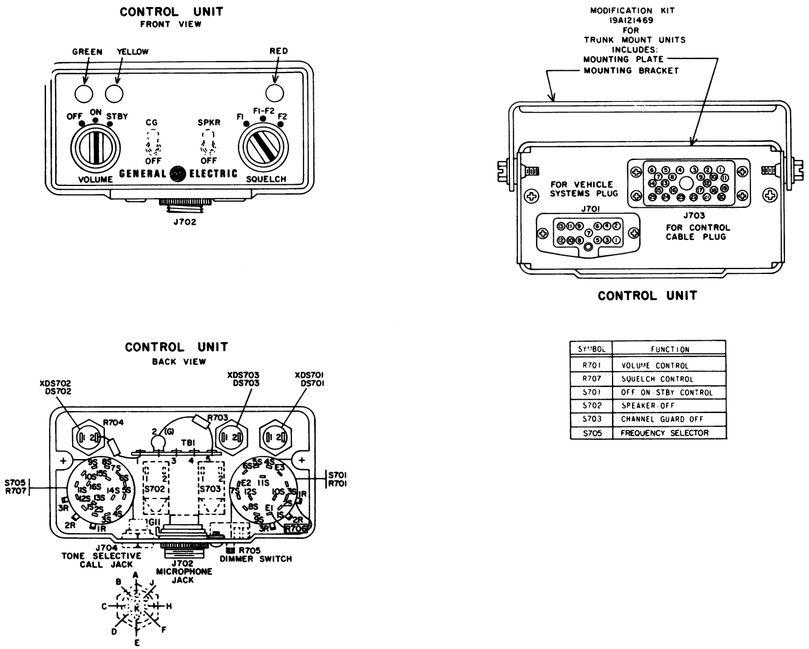
Figure 2 - Disassembly of Control Cable Plug

SYSTEM FRAME AND HARNESS



(19D413204, Rev. 2)

CONTROL UNIT



SYMBOL	FUNCTION
R701	VOLUME CONTROL
R707	SQUELCH CONTROL
S701	OFF ON STBY CONTROL
S702	SPEAKER OFF
S703	CHANNEL GUARD OFF
S705	FREQUENCY SELECTOR

(19C303829, Rev. 3)

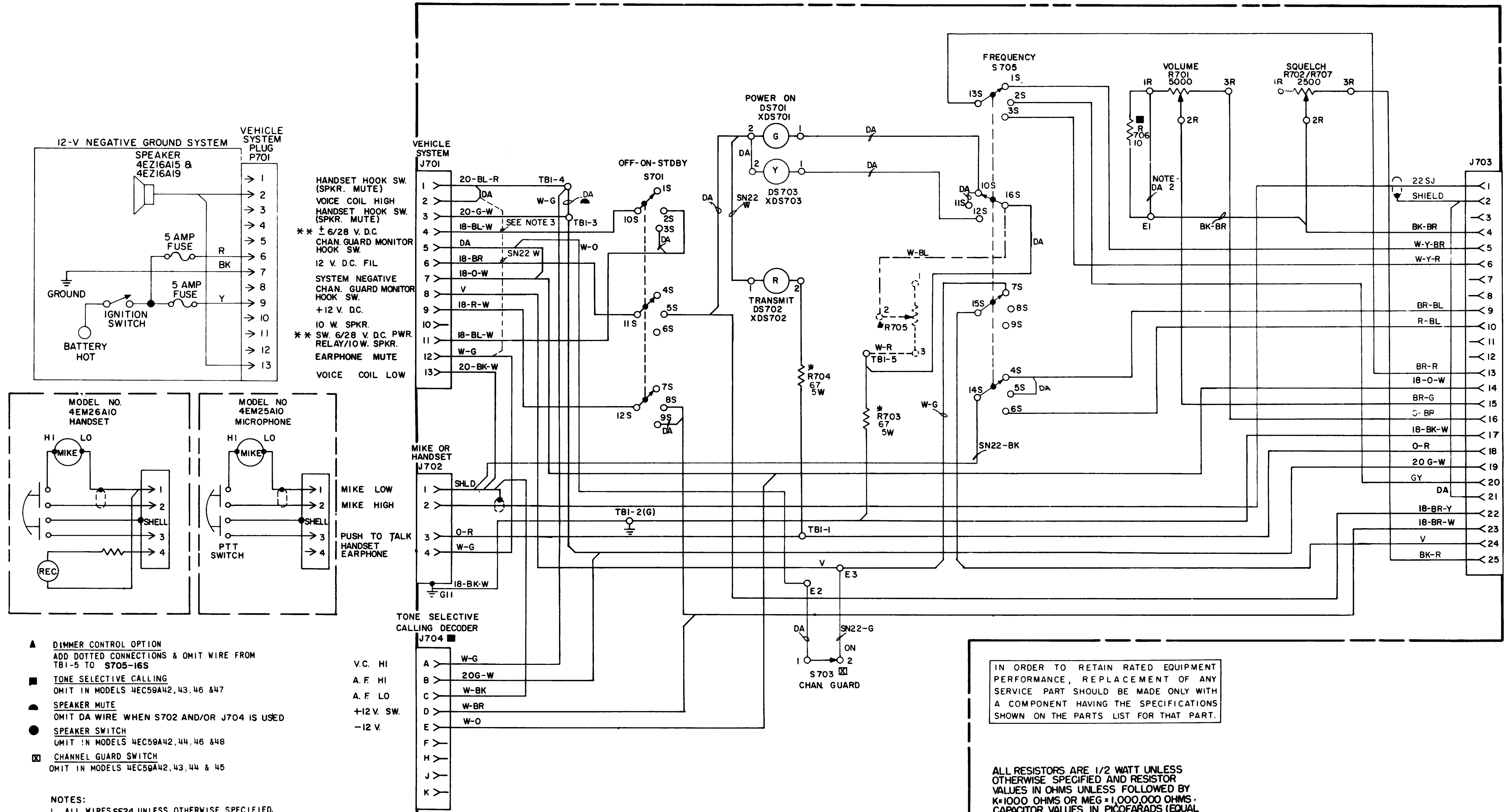
OUTLINE DIAGRAM

MASTR CONTROL UNIT
MODELS 4EC59A42-49

CONTROL UNIT

MODEL NUMBER	REV. LETTER	NO. OF FREQ.	FREQ. INDICATOR LIGHTS	CHANNEL GUARD MONITOR SWITCH	SPEAKER OFF-ON SWITCH	TONE OPTION JACK
4EC59A42	C	SEARCH-LOCK MONITOR	X			
4EC59A43	C	SEARCH-LOCK MONITOR	X		X	
4EC59A44	G	SEARCH-LOCK MONITOR	X			X
4EC59A45	G	SEARCH-LOCK MONITOR	X		X	X
4EC59A46	C	SEARCH-LOCK MONITOR	X	X		
4EC59A47	C	SEARCH-LOCK MONITOR	X	X	X	
4EC59A48	G	SEARCH-LOCK MONITOR	X	X		X
4EC59A49	G	SEARCH-LOCK MONITOR	X	X	X	X

** TERMINALS 4 & 11 ARE USED ON 12 VOLT SYSTEMS FOR CONTROL OF 10-WATT SPEAKER.



▲ DIMMER CONTROL OPTION
ADD DOTTED CONNECTIONS & OMIT WIRE FROM TB1-5 TO S705-16S

■ TONE SELECTIVE CALLING
OMIT IN MODELS 4EC59A42, 43, 46 & 47

◓ SPEAKER MUTE
OMIT DA WIRE WHEN S702 AND/OR J704 IS USED

● SPEAKER SWITCH
OMIT IN MODELS 4EC59A42, 44, 46 & 48

⊠ CHANNEL GUARD SWITCH
OMIT IN MODELS 4EC59A42, 43, 44 & 45

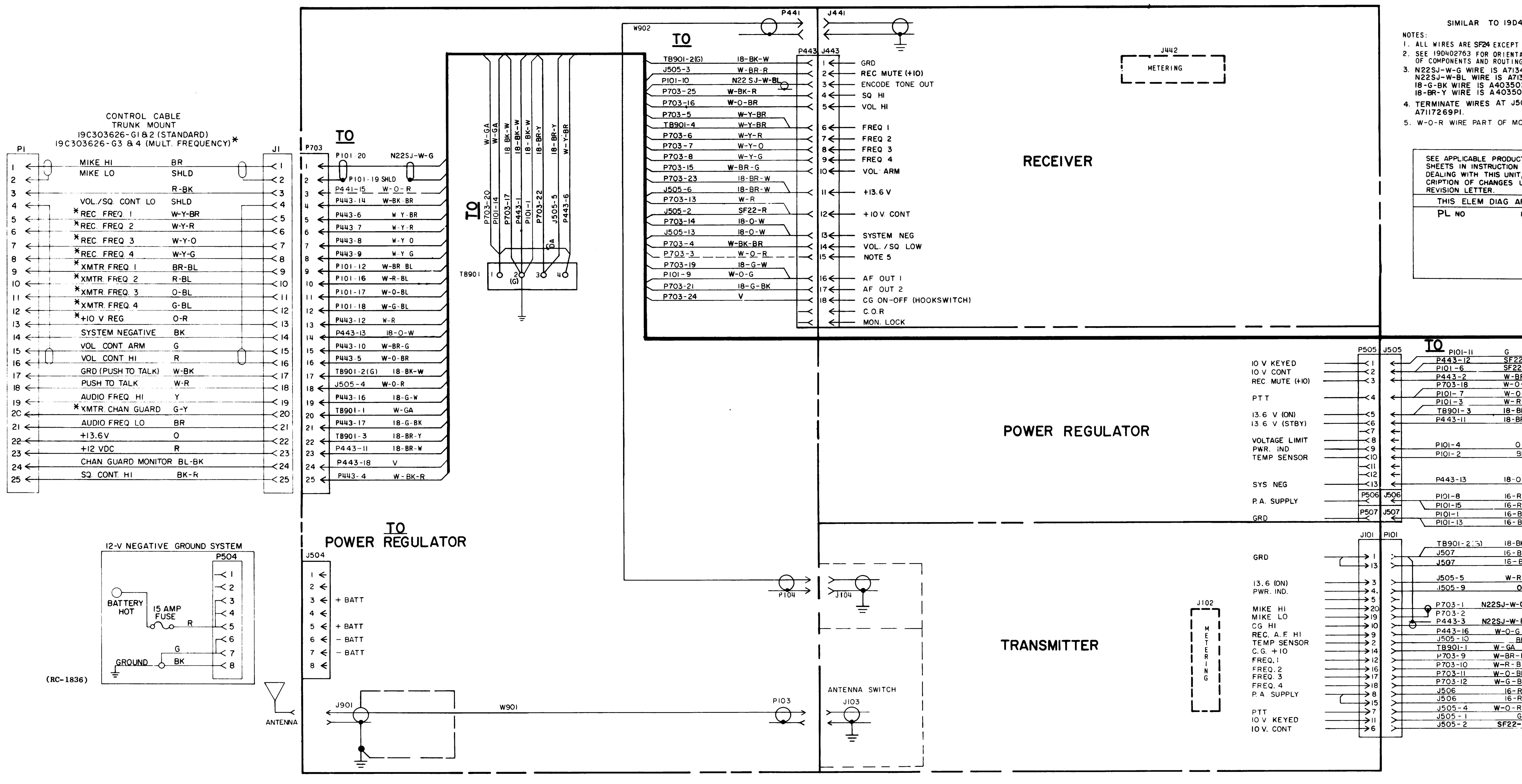
NOTES:
1. ALL WIRES SF24 UNLESS OTHERWISE SPECIFIED.
2. OMIT DA WIRE WHEN R706 IS USED.
3. ADD W WIRE WHEN PL19B204970G1 HOOKSWITCH IS USED.

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 1/2 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

(19D402415, Rev. 15)

SYSTEM FRAME AND HARNESS



(19D402766, Rev. 8)

SIMILAR TO 19D402338

NOTES:
1. ALL WIRES ARE SF24 EXCEPT AS OTHERWISE SHOWN.
2. SEE 19D402763 FOR ORIENTATION AND LOCATION OF COMPONENTS AND ROUTING OF CABLE.
3. N22SJ-W-G WIRE IS A7134854P4
   N22SJ-W-BL WIRE IS A7134854P5
   18-G-BK WIRE IS A4035028P9
   18-BR-Y WIRE IS A4035028P11
4. TERMINATE WIRES AT J506 & J507 WITH A7117269P1.
5. W-O-R WIRE PART OF MOD KIT 19A127270G6.

SEE APPLICABLE PRODUCTION CHANGE SHEETS IN INSTRUCTION BOOK SECTION DEALING WITH THIS UNIT, FOR DESCRIPTION OF CHANGES UNDER EACH REVISION LETTER.	
THIS ELEM DIAG APPLIES TO	
PL NO	REV LETTER

SCHEMATIC & INTERCONNECTION DIAGRAM

MASTR CONTROL UNIT MODELS 4EC59A42-49

PARTS LIST

LBI-3956A
CONTROL UNIT
MODELS 4EC59A42 - 4EC59A49
AND
ASSOCIATED ASSEMBLIES

SYMBOL	GE PART NO.	DESCRIPTION
		CONTROL UNIT 19D413054-G6
		- - - - - - - - INDICATING DEVICES - - - - - -
DS701 thru DS703	19B301122-P1	Light, indicator: miniature, 6 v; sim to GE Type 1764.
		- - - - - - - JACKS AND RECEPTACLES - - - - - -
J701	19C303576-P1	Socket, phen: 13 contacts rated at 5 amps max.
J702	19A116061-P1	Connector, chassis: 4 female contacts; sim to Amphenol Type 91-PM4F-1000.
J703	19D402408-P1	Connector, phen: 25 contacts rated at 5 amps max.
J704	19B216279-G1	Jack assembly: 9 female contacts rated at 5 amps at 900 VRMS: sim to Winchester MRS-1AN.
		- - - - - - - - RESISTORS - - - - - - - -
R701		(Part of S701).
R703 and R704	5493035-P19	Wirewound, ceramic: 67 ohms ±5%, 5 w; sim to Tru-Ohm Type X-60.
R706*	3B77-P106K	Composition: 10 ohms ±10%, 1/2 w.
	3B77-P560K	In Models 4EC59A44, 45, 48, 49 of REV B thru F: Composition: 56 ohms ±10%, 1/2 w.
	3B77-P271K	In Models of REV A: Composition: 270 ohms ±10%, 1/2 w.
	3B77-P220K	In Models earlier than REV A: Composition: 22 ohms ±10%, 1/2 w.
R707		(Part of S705).
		- - - - - - - - - - SWITCHES - - - - - - - -
S701*	19C307089-P19	Switch/Resistor: includes Switch, rotary, 3 pole, 3 positions, non-shorting contacts, 250 ma at 500 VRMS; Resistor (R701), variable, 5000 ohms ±20% 1/2 w max, mod log taper; sim to Mallory LC5K-3253.
	19C307089-P1	In Models 4EC59A42, 43 and 47 earlier than Rev B; In Models 4EC59A44, 45, 46 and 49 earlier than Rev D: Switch/Resistor: includes Switch, rotary, 3 poles, 3 positions, non-shorting contacts, 250 ma at 500 VRMS; Resistor (R701), variable, 5000 ohms ±20%, 1/2 w max; sim to Mallory LC.
S702 and S703	5491899-P5	Toggle: DPST, 3 amps at 250 VAC or 250 VDC; sim to Cutler-Hammer 8280S15.
S705	19C307089-P20	Switch/Resistor: includes Switch, rotary, 9 poles, 3 positions; momentary shorting contacts 250 ma at 500 VRMS; Resistor (R707), variable, 2000 ohms ±10%, 1 w max; sim to Mallory LC.
		- - - - - - - - TERMINAL BOARDS - - - - - - - -
TB1	7775500-P12	Phen: 5 terminals.
		- - - - - - - - - - SOCKETS - - - - - - - - - -
XDS701 thru XDS703	19B201122-P2	Lamp, miniature: sim to Drake Series 121.
		MECHANICAL PARTS (SEE RC-1195)
1	8529919C13	Plug button: approx 21/32 inches dia. (Used in Models 4EC59A42, 46, and 47).
2	8529P9C13	Plug button: approx 13/32 inches dia.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

SYMBOL	GE PART NO.	DESCRIPTION
3	19A131521-G1	Mounting bracket.
4	19B201122-P3	Lens cap: green translucent nylon, approx 3/8 inch dia.
5	19B201122-P6	Lens cap: yellow translucent nylon, approx 3/8 inch dia.
6	NP257834	Nameplate: approx 4-15/16 x 2-1/4 inches, etched aluminum. (Used in Models 4EC59A42 and 44).
7	NP257835	Nameplate: approx 4-15/16 x 2-1/4 inches, etched aluminum. (Used in Models 4EC59A43 and 45).
8	NP257836	Nameplate: approx 4-15/16 x 2-1/4 inches, etched aluminum. (Used in Models 4EC59A46 and 48).
9	NP257844	Nameplate: approx 4-15/16 x 2-1/4 inches, etched aluminum. (Used in Models 4EC59A47 and 49).
10	19B201122-P4	Lens cap: red translucent nylon, approx 3/8 inch dia.
11	19B204443-G1	Knob: gray.
12	19C203413-P1	Knob: VOLUME/SQUELCH.
13	19B204467-P1	Casing: approx 5-7/16 x 2-11/16 x 1-13/16 inches.
14	19B204522-P1	Mounting plate: approx 5-7/16 x 2-1/2 x 1/16 inches thick.

ASSOCIATED ASSEMBLIES

	19A121469-G1	Control unit modification kit (trunk mount).
	19D402239-G1	12 volt vehicles frame.
	19A122444-P1	Cover, wire channel (on systems frame).
	19C303452-G1	Front casting (Front mount).
	19C303452-G2	Front casting (Trunk mount).
	5491682-P2	Lock: Yale and Towne. (Part of Front casting).
	5491682-P7	Cam. (Used with lock).
		POWER CABLE ASSEMBLY 19C303601-G1 (12 VOLT FRONT MOUNT) 19C303601-G2 (12 VOLT TRUNK MOUNT)
	19B209189-P1	Connector, phen: 8 contacts rated at 15 amps at 1100 VRMS; sim to Beauchaine and Sons S-5401-76.
	19D402438-P1	Cap, connector.
	19A115313-P1	Cable: 3 conductor, approx 9 feet long. (Used in 19C303601-G1).
	19A115314-P1	Cable: 3 conductor, approx 18 feet long. (Used in 19C303601-G2).
		CONTROL CABLE ASSEMBLY 19C303926-G1, G2 (SINGLE FREQ) 19C303926-G3, G4 (MULTI-FREQ)
P1	19C303626-G5	Plug, male, includes: connector 19D402408-P9, cap 19C303290-P2.
J1	19C303626-G6	Plug, female, includes: connector 19D402408-P1, cap 19C303290-P1.
P104		(Part of W902).
P441		(Part of W902).
		- - - - - - - - MISCELLANEOUS - - - - - - - -
	19D402408-P1	Connector, female phen: 25 contacts rated at 5 amps max.
	19D402408-P3	Connector, male phen: 25 contacts rated at 5 amps max.
	19C303290-P1	Cap, connector. (Used with 19D402408-P1 connector).
	19C303290-P2	Cap, connector. (Used with 19D402408-P3 connector).

SYMBOL	GE PART NO.	DESCRIPTION
	7139880-P8	Cable, single freq: 13 conductors, approx 18 feet long. (Specify length when ordering).
	7139880-P6	Cable, single freq: 13 conductors, approx 23 feet long. (Specify length when ordering).
	7139880-P11	Cable, multi freq: 23 conductors, approx 18 feet long. (Specify length when ordering).
	7139880-P11	Cable, multi freq: 23 conductors, approx 23 feet long. (Specify length when ordering).
		VEHICLE SYSTEM CABLE KIT 19A121545-G1 (12 VOLT VEHICLES)
	19A121429-P1	Pin: 1/2 inch long.
	19A121441-G1	Plug: 13 contacts.
	19C303574-P1	Cover.
		FUSED LEAD ASSEMBLY 19A121314-G1 (19A121454-G1)
	1B16-P6	Fuse, cartridge, quick blowing: 5 amps at 250 v; sim to Littelfuse 312005 or Bussmann MTH-5.
	19A115776-P2	Fuseholder: sim to Bussmann Type HDJ-S.
		INTERCONNECTION HARNESS ASSEMBLY 19A122435-G6
J505	19A122683-G1	Plug, male: 13 pin contacts.
		- - - - - - - - PLUGS - - - - - - - - - -
P101	19C303506-P1	Connector, phen: 20 contacts rated at 5 amps max at 600 VDC.
P443	19C303506-P1	Connector, phen: 20 contacts rated at 5 amps max at 600 VDC.
P703	19D402408-P2	Connector, phen: 25 contacts rated at 5 amps max.
		- - - - - - - - TERMINAL BOARDS - - - - - - - -
TB901	7775500-P10	Phen: 4 terminals.
		ANTENNA CABLE ASSEMBLY 19B215224-G3
		- - - - - - - JACKS AND RECEPTACLES - - - - - -
J901	2B22-P3	Receptacle, panel, coaxial: mica-filled insert, UHF contact. Signal Corps SO-239 or sim to Amphenol 83-1R.
P103		(Part of W901).
		- - - - - - - - - - CABLES - - - - - - - - - -
W901	5491689-P56	Cable, RF: coaxial, approx 12 inches long. Includes phono type plug (P103).
	2B22-P2	Adapter, right angle, coaxial: polystyrene, UHF contact. Signal Corps W-359; sim to Amphenol 83-1AP. (Front mount only) (Connect to J901).
		RECEIVER RF CABLE ASSEMBLY
		- - - - - - - - - - CABLES - - - - - - - - - -
P104		(Part of W902).
P441		(Part of W902).
		- - - - - - - - - - CABLES - - - - - - - - - -
W902	5491689-P71	Cable, Receiver, RF: includes two phono type plugs (P104 and P441), 350 VRMS max, approx 12 inches long.
		12 VOLT FUSEHOLDER 19B216021-G4
	19D413045-P1	Base.
	19D413046-P1	Cover.
	19B205950-P1	Fuse clip.

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - - FUSES - - - - - - - - - -
	1A11-P4	Quick blowing: 15 amps, 250 v; sim to Bussmann SON15. (transmitter).
		130 - 470 MHz ANTENNA MODEL 4ST12A13 (5490909-P13)
		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 ASP0220QE or Danbury-Knudsen Type PA-2L.
	5490969-P4	Whip: stainless steel, approx 20 inches long; ball tip.
	5490969-P5	Socket, whip: with (2) No. 6-32 set screws.
	5490969-P6	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 2B22-P1 and GE Dwg 7105381-P1).
	7105381-P1	Adapter, cable, Type UG-175/U. (Used with GE Dwg 2B22-P1 and Type RG-58/U cable).
	2B22-P1	Plug, coaxial: mica-filled insert, UHF contact. Signal Corps PL-259; sim to Amphenol 83-1SP. (Used with GE Dwg 7105381-P1 and Type RG-58/U cable).
		25 - 50 MHz ANTENNA
	7491074-P1	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 ASPA35HR.
	7102930-P3	Adapter, antenna: approx 2-5/16 inches long. (Used with GE Dwg 7491074-P1).
	4033101-G1	Antenna package: includes base; adapter spring; cable and plug.
	7472880-G5	Antenna base. (Used in 4033101-G1).
	7476632-G4	Adapter spring. (Used in 4033101-G1).
	5492239-P1	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. (Used in 4033101-G1).
	2B22-P1	Plug, coaxial: mica-filled insert, UHF contact. Signal Corps PL-259; sim to Amphenol 83-1SP. (Used with GE Dwg 5492239-P1 in 4033101-G1).
	4KY9A1	Coil, loading: 25 to 33 MHz; sim to Antenna Specialists ASPA87.
	19A121577-G1	Antenna hook kit.
	7134724-P1	Antenna hook. (Used in 19A121577-G1).
		HANDSET MODEL 4EM28A10 (19B209100-G1) (SEE RC-1194)
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		Handle. Shure Brothers RP49.
6		Adapter. Shure Brothers 65A230.
7		Magnetic controlled cartridge. Shure Brothers RP61.
8	3B77-P222K	Resistor, composition: 2200 ohms ±10%, 1/2 w.
9		Receiver cap. Shure Brothers 65A1994. (Part of RP69).
10		Washer. Shure Brothers 34A321.
11		Escutcheon. Shure Brothers 53A536A.

SYMBOL	GE PART NO.	DESCRIPTION
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 30C537S.
16		Transmitter cap. Shure Brothers 65A197A. (Part of RP49).
17		Washer. Shure Brothers 34A309.
18		Magnetic controlled cartridge. Shure Brothers RP13.
19		Cable and plug. Shure Brothers RP48.
		HOOKSWITCH ASSEMBLY 19B204867-G1
		- - - - - - - - MISCELLANEOUS - - - - - - - - -
20	4029851-P4	Cable clamp; sim to WEC Kenser 3/6-4.
21	19A121612-P1	Holder and switch: thermoplastic case, contact rating 1 amp at 125 v.
22	19A121581-G1	Cable: approx 8-1/2 feet long.
23	5493035-P10	Resistor, wirewound, ceramic: 3.5 ohms ±5%, 5 w; sim to Tru-Ohm Type X-60.
24	7775500-P55	Terminal board, phen: 5 terminals.
		MILITARY MICROPHONE MODEL 4EM25A10 19B209100-G1 (SEE RC-1163)
1		Cable clamp. Shure Brothers 53A532.
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-16.
6		Shield. Shure Brothers RP-23.
7		Magnetic controlled cartridge. Shure Brothers RP-13.
8		Case (front): plastic. Shure Brothers RP-67.
9		Cable and plug: approx 6 feet long. Shure Brothers RP-14.
		5 WATT SPEAKER 4EZ16A19 19D402449-G12
C1	19B209233-P1	Electrolytic, non-polorized: 25 µf ±20%, 25 VDCW; sim to Sprague 41DC.
LS3	19B209422-P1	Permanent magnet: 5 inch, 3.2 ohms ±10% imp, 2.98 ohms ±15% DC res, 7.5 w max operating.
M1	19A121546-G1	Cable assembly: approx 48 inches long, includes (2) 19A121429-P1 pins.
	19B216269-G2	Speaker housing.
	19A121550-G3	Cover.
	19A121521-G1	Mounting support.
	5490407-P3	Neoprene grommet. (Upper)
	19A115470-P1	Rubber grommet. (Lower)

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 4EC59A44, 45, 48, 49
To make units compatible with tone decoders. Changed R706.

REV. B — Models 4EC59A44, 45, 48, 49
To reduce speaker minimum audio level when using decoders. Changed R706.

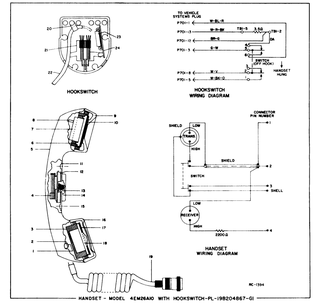
REV. A — Models 4EC59A42, 43, 46, 47
REV. C — Models 4EC59A44, 45, 48, 49
To reduce power supply switching noise from modulating transmitter. Removed black wire from ground lug TB1-2 (other end connected to S705-1&5 and connected it to J702-1.

REV. B — Models 4EC59A42, 43, 46, 47
REV. D — Models 4EC59A44, 45, 48, 49
To incorporate switch with improved reliability. Changed T701.

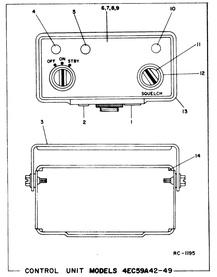
REV. C — Models 4EC59A42, 43, 46, 47
REV. E — Models 4EC59A44, 45, 48, 49
To ground microphone jack. Added BK-W wire from TB1-2(G) to G11.

REV. D — Models 4EC59A42, 43, 46, 47
REV. F — Models 4EC59A44, 45, 48, 49
To incorporate a new control unit housing. Changed housing from metal to Lexan.

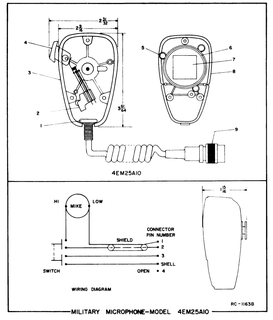
REV. G — Models 4EC59A44, 45, 48, 49
To reduce audio output level at minimum volume control setting. Changed R706.



HANDSET - MODEL 4EM28A10 WITH HOOKSWITCH-PL-19B204867-G1



CONTROL UNIT MODELS 4EC59A42-49



MILITARY MICROPHONE-MODEL 4EM25A10

ORDERING SERVICE PARTS

Each component appearing on the schematic diagram is identified by a symbol number, to simplity 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 in variations in equipment nor to provide for every possible contingency to be met in connection with installation, operation or maintenance.

Should further information be desired, or should particular problems arise which are not covered sufficiently for the purchaser's purposes, contact the nearest Radio Communication Equipment Sales Office of the General Electric Company.

MAINTENANCE MANUAL

LBI-3944

DF-4080

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