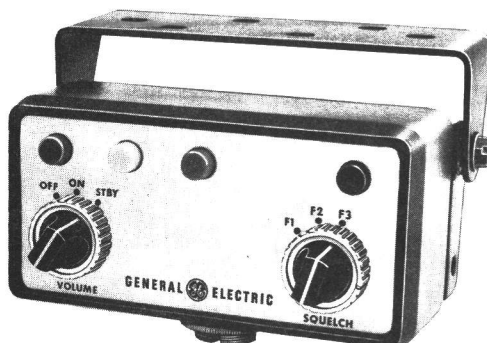




communications

MASTR Progress Line

MOBILE CONTROL UNIT MODELS 4EC59A58-65



For 4070

Maintenance Manual LBI-3510
DF-4070

SPECIFICATIONS *

MODEL NUMBERS

4EC59A58 through 4EC59A65

USED WITH

MASTR Progress Line Mobile Combinations

CONTROLS

VOLUME Control

OFF-ON-STBY Switch

SQUELCH Control

Three-Frequency Selector Switch

Optional Controls

CHANNEL GUARD Monitor Switch

SPEAKER-OFF Monitor Switch

Dimmer Control for Frequency Selector Lights

INDICATORS

Transmit light: red

F1 Frequency indicator light: green

F2 Frequency indicator light: yellow

F3 Frequency indicator light: blue

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

EC-59-A

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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 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 frequency selector lights do not light.

Turning the switch to the ON position applies filament voltage to the transmitter, activates the push-to-talk (PTT) circuit, and illuminates a frequency selector light. On multi-frequency units with indicator lights, the position of the Frequency Indicator switch determines which light will glow when the OFF-ON-STBY switch is turned to ON. The frequency selector lights are: F1 -GREEN, F2 -YELLOW and F3 -BLUE. 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.

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.

Three Frequency Switch (S705)

For three-frequency operation, a frequency selector switch selects the channel desired (F1, F2 or F3) for both transmitting and receiving. The switch connects +10 volts to the selected receiver oscillator switching diode and connects the transmitter oscillator switching diode to ground, so that the unit will operate on the frequency determined by each of the crystal-controlled oscillators.

In three-frequency radios, the transmitter and receiver Channel Guard will operate only when the frequency selector switch is in the F1 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 frequency selector lights. Turning the control dims or brightens the light to the level desired by the operator. The dimmer control has no effect on the red transmit light.

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 a frequency selector light and supplies transmitter filament voltage. Turning the OFF-ON-STBY switch to OFF removes all power to the Two-Way Radio.

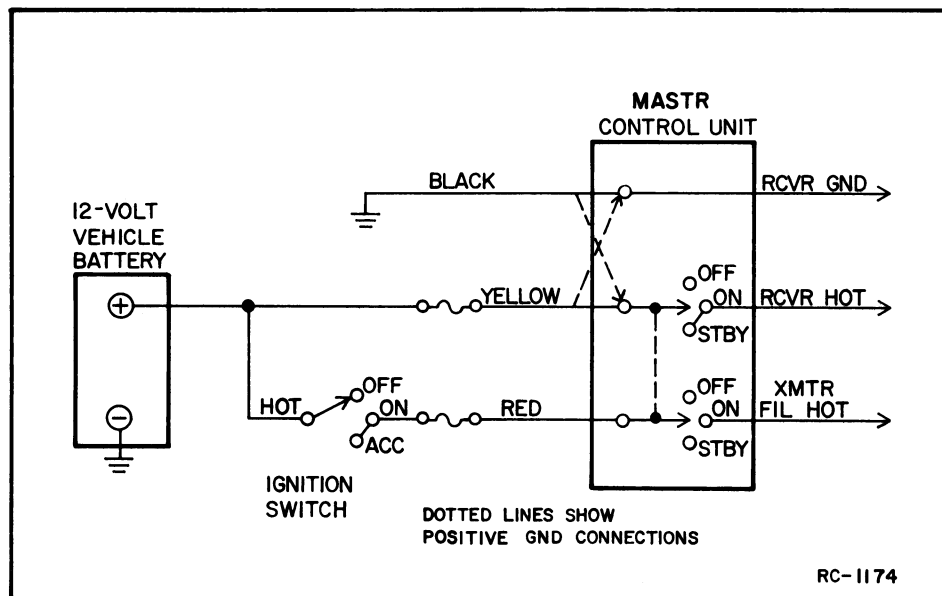


Figure 1 - 12-VDC Connections for Ignition Switch Standby

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 in the vehicle system. The black cable provides the connection from the relay coil on the circuit breaker 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.

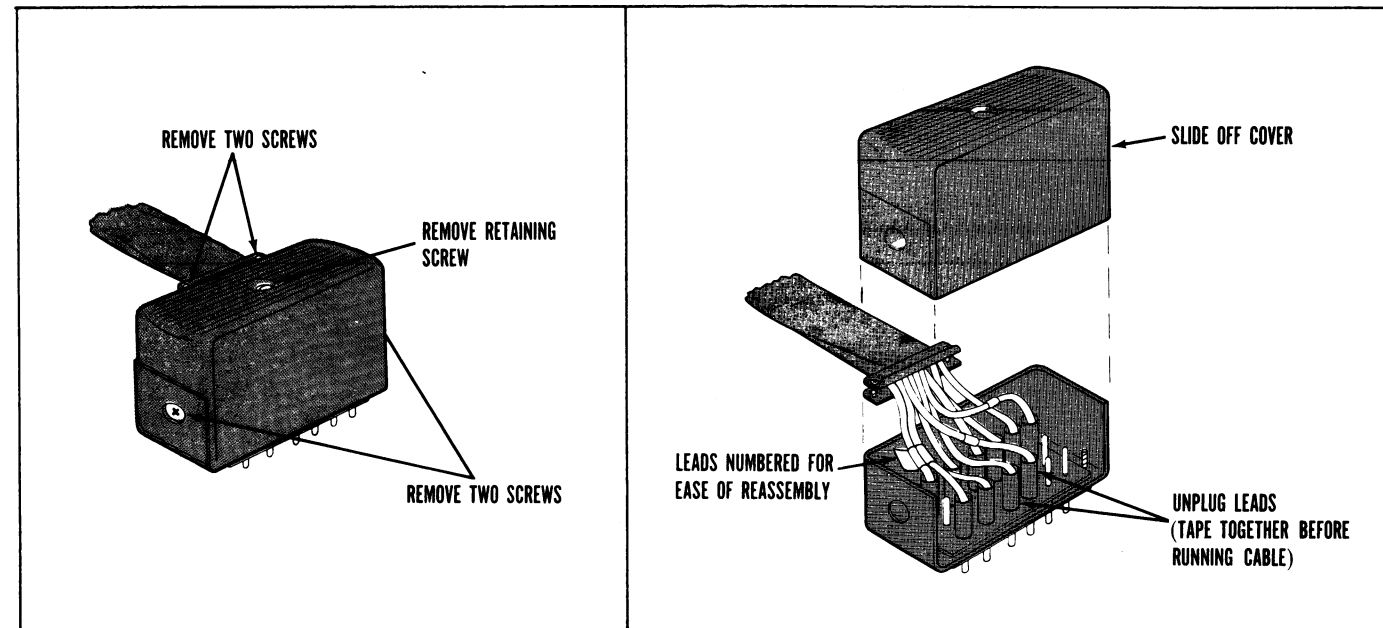


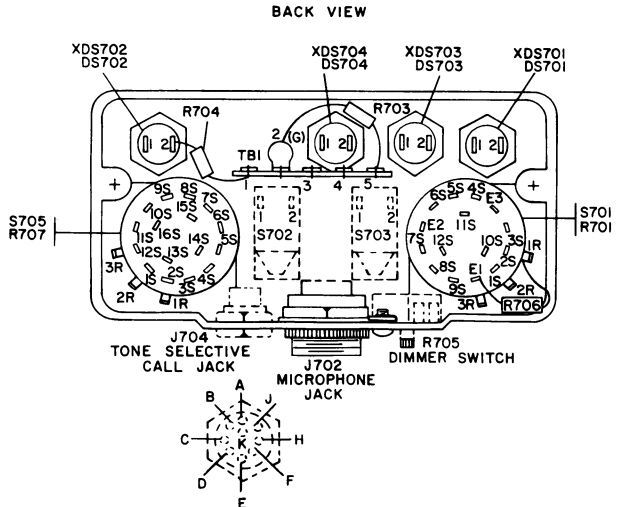
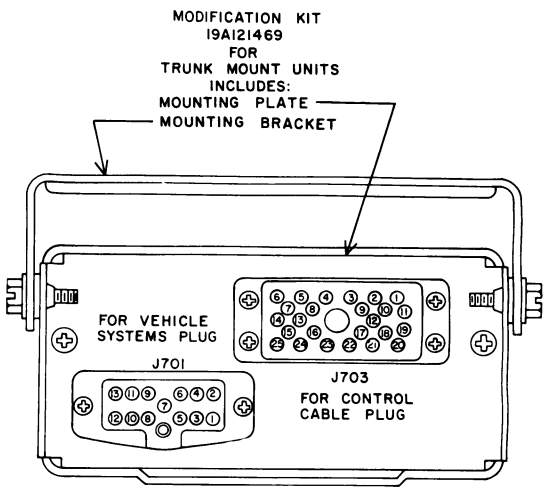
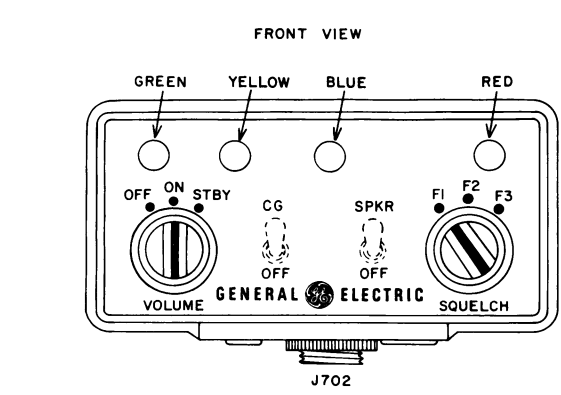
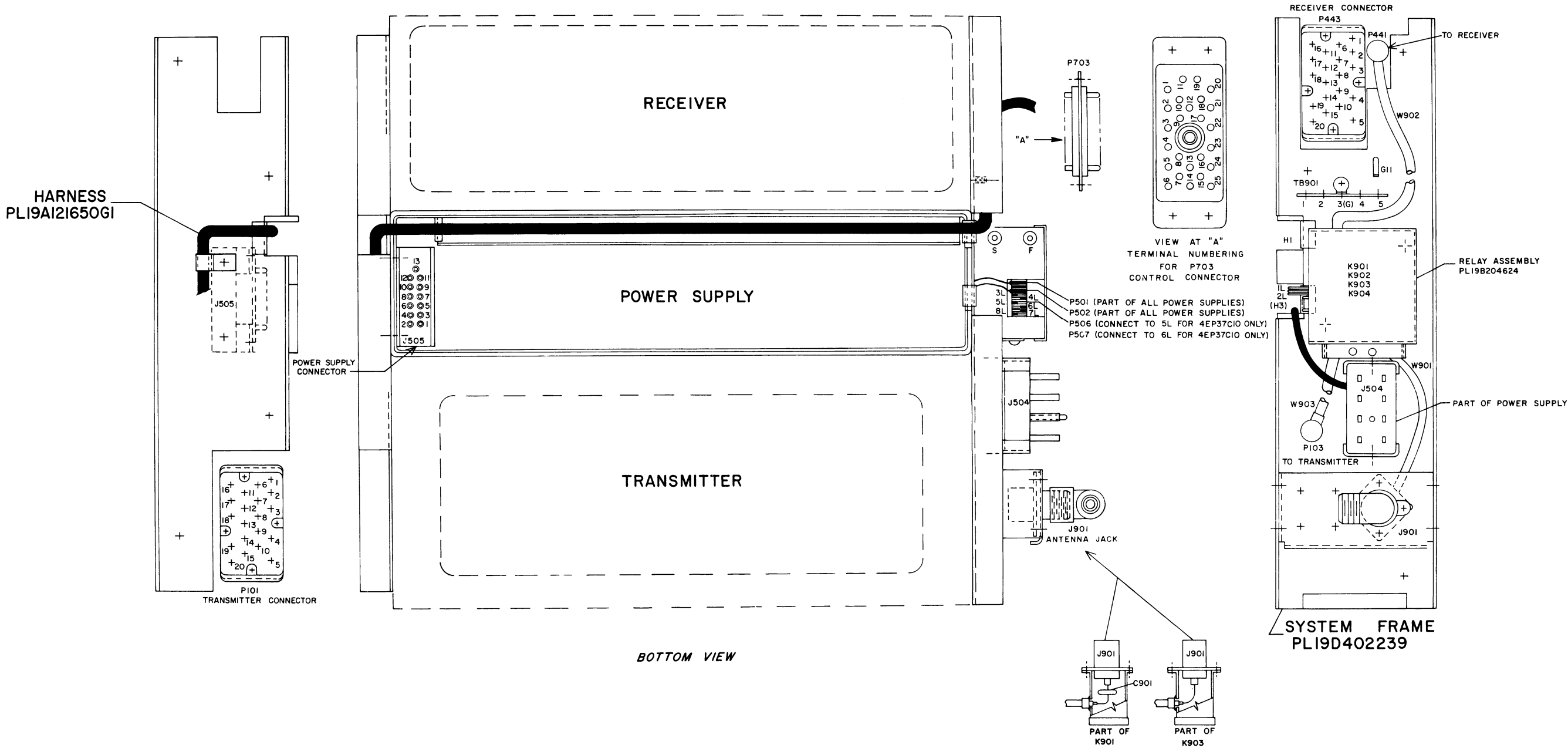
Figure 2 - Disassembly of Control Cable Plug

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.

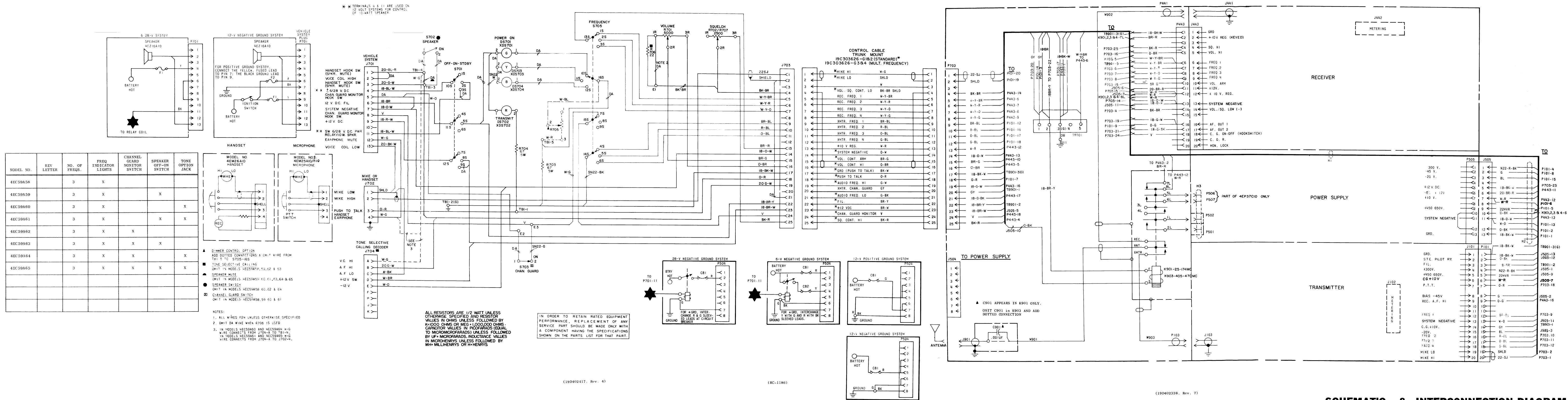
SYSTEM FRAME AND HARNESS

CONTROL UNIT



CONTROL UNIT

SYSTEM FRAME & HARNESS



PARTS LIST			SYMBOL G-E PART NO DESCRIPTION			SYMBOL G-E PART NO DESCRIPTION			SYMBOL G-E PART NO DESCRIPTION			SYMBOL G-E PART NO DESCRIPTION			SYMBOL G-E PART NO DESCRIPTION			SYMBOL G-E PART NO DESCRIPTION			SYMBOL G-E PART NO DESCRIPTION																																																																																																								
LBI-3522 CONTROL UNIT MODELS 4EC59A58 - 4EC59A65 (PL-19C402303 G58-65) AND ASSOCIATED ASSEMBLIES			----- ASSOCIATED ASSEMBLIES(Cont'd) -----			----- ASSOCIATED ASSEMBLIES(Cont'd) -----			----- ASSOCIATED ASSEMBLIES(Cont'd) -----			----- ASSOCIATED ASSEMBLIES(Cont'd) -----			----- ASSOCIATED ASSEMBLIES(Cont'd) -----			----- ASSOCIATED ASSEMBLIES(Cont'd) -----			----- ASSOCIATED ASSEMBLIES(Cont'd) -----																																																																																																								
			POWER CABLE ASSEMBLY PL-19C303601-G1 (12 VOLT FRONT MOUNT) PL-19C303601-G2 (12 VOLT TRUNK MOUNT)			MISCELLANEOUS(Cont'd) - - - 19D402408-P3 Connector, phen: 25 contacts rated at 5 amps max. 19C303290-P1 Cap, connector. 19C303290-P2 Cap, connector. 19A115437-P1 Cable: approx 18 feet long. (Used in PL-19C303626-G1). 19A115437-P1 Cable: approx 23 feet long. (Used in PL-19C303626-G2). 19A115437-P2 Cable: approx 18 feet long. (Used in PL-19C303626-G3). 19A115437-P2 Cable: approx 23 feet long. (Used in PL-19C303626-G4).			RELAY ASSEMBLY PL-19B204824-G1 (STANDARD) C901 19B209141-P1 Ceramic disc: axial leads, .001 pf ±10%, 500 VDC. J901 2R22-P3 Receptacle, panel, coaxial: mica-filled insert, UHF contact. Signal Corps SO-239; sim to Amphenol 83-1R. (Used with W901).			MISCELLANEOUS(Cont'd) - - - 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. 7105381-P1 Cable, antenna: approx 15 feet long. Type RG-58/U. (Used with G-E Dwg 2R22-P1 and G-E Dwg 7105381-P1). 2R22-P1 Adapter, cable: approx 1 x 7/16 inches dia. Type UG-175/U. (Used with G-E Dwg 2R22-P1 and Type RG-58/U cable). Plug, coaxial: mica-filled insert, UHF contact. Signal Corps PL-259; sim to Amphenol 83-1SP. (Used with G-E Dwg 7105381-P1 and Type RG-58/U cable).			MECHANICAL PARTS(Cont'd) CONTROL UNIT(Cont'd) 8 NP243487 Nameplate: approx 4-15/16 x 2-1/4 inches, etched aluminum. (Used in Models 4EC59A62 and A64). 9 NP243474 Nameplate: approx 4-15/16 x 2-1/4 inches, etched aluminum. (Used in Models 4EC59A63 and A65). 10 19B201122-P5 Lens cap: blue translucent nylon, approx 3/8 inch dia. 11 19B201122-P4 Lens cap: red translucent nylon, approx 3/8 inch dia. 12 PL-19B204443-G1 Knob: gray. 13 19C303413-P1 Knob: VOLUME/SQUELCH. 14 19B204467-P1 Casting: approx 5-7/16 x 2-1/16 x 1-13/16 inches. 15 19B204522-P1 Mounting plate: approx 5-7/16 x 2-1/2 x 1/16 inches thick.			MECHANICAL PARTS(Cont'd) MILITARY MICROPHONE(Cont'd) MODEL 4EM25A10(Cont'd) 6 Shield. Shure Brothers 53A341. 7 Magnetic controlled cartridge. Shure Brothers 99A86. 8 Case (front): plastic. Shure Brothers 90A969. 9 Cable and plug: approx 6 feet long. Shure Brothers 90A619.			25-50 MC ANTENNA K901 19C307107-P1 Armature, coaxial-power: 12 VDC nominal, 2.5 w max operating, 80 ohms ±10% coil res, 3 form A, 1 form B and 1 form C coaxial contacts. (Used in PL-19B204624-G1). P103 (Part of W903). P441 (Part of W902). 7491074-P1 Antenna: includes stainless steel rod approx 98-1/2 inches long; ball tip; lockwasher; No. 10-32 hex socket set screw; sim to Antenna Specialists ASPA38GE. 7102930-P3 Adapter, antenna: approx 2-5/16 inches long. (Used with G-E Dwg 7491074-P1). PL-4033101-G1 Antenna package: includes base; adapter spring; cable and plug. PL-7472880-G5 Antenna base. (Used in PL-4033101-G1). PL-7476632-G4 Adapter spring. (Used in PL-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 PL-4033101-G1). 2R22-P1 Plug, coaxial: mica-filled insert, UHF contact. Signal Corps PL-259; sim to Amphenol 83-1SP. (Used with G-E Dwg 5492239-P1 in PL-4033101-G1). 4039101-P1 Coil, loading: 25 to 54 megacycles; sim to Antenna Specialists ASPA7. PL-19A121577-G1 Antenna hook kit. 7134724-P1 Antenna hook. (Used in PL-19A121577-G1).			MECHANICAL PARTS CONTROL UNIT 1 N529P19C13 Plug button: approx 21/32 inches dia. (Used in Models 4EC59A58, 59, 62 and 63). 2 N529P5C13 Plug button: approx 13/32 inches dia. 3 PL-19A121521-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 NP243488 Nameplate: approx 4-15/16 x 2-1/4 inches, etched aluminum. (Used in Models 4EC59A58 and A60). 7 NP243486 Nameplate: approx 4-15/16 x 2-1/4 inches, etched aluminum. (Used in Models 4EC59A59 and A61).			MECHANICAL PARTS MILITARY MICROPHONE 1 19A115470-P1 Rubber grommet: approx 3/4 inch dia: sim to Atlantic Rubber 2278 (without hole). 2 19A121623-P1 Insulator: adhesive back, approx 4 x 1/2 x 1/8 inches thick. 3 PL-19A121521-G1 Mounting support. 4 7160861-P20 Speed nut: sheet spring; sim to Tinnerman CR104-832-4. 5 19A12467-P1 Pad: adhesive back, approx 3/4 x 1/8 inches thick. 6 19C303500-P1 Aluminum grille: approx 4-7/8 x 4-1/2 inches. 7 PL-19C303504-G1 Can: approx 5-3/8 x 5 x 2 inches. 8 4037072-P10 Nylon plug: sim to Fastex 207-120241-00. 9 PL-19A121550-G1 Speaker cover: approx 5-1/8 x 4-7/8 x 1 inches. 10 5490407-P3 Neoprene grommet: approx 3/4 inches dia.			FUSED LEAD ASSEMBLY PL-19A121314-G1 (PL-19A121454 G1-2) PL-19A121314-G2 (PL-19A121454-G2) 19L16-P8 Fuse, cartridge, quick blowing: 5 amps at 250 v; sim to Littelfuse 312005 or Bussmann WTM-5. 7124109-P3 Fuseholder: sim to Bussmann Type HNJ-B. 7112178-P7 Cable: approx 8-3/4 feet long. (Used in PL-19A121314-G1). 7112178-P4 Cable: approx 8-3/4 feet long. (Used in PL-19A121314-G2).			CIRCUIT BREAKER ASSEMBLY PL-7487952-G11 (12 VOLT VEHICLES) PL-7487952-G12 (28 VOLT VEHICLES) PL-7487952-G13 (6 VOLT VEHICLES) C1 5491516-P7 Thermal disc: 40 amps, 6 to 12 v operating, manual reset; sim to Littelfuse 814040. CB2 5491516-P7 Thermal disc: 40 amps, 6 to 12 v operating, manual reset; sim to Littelfuse 814040. (Used in PL-7487952-G13).			INTERCONNECTION HARNESS ASSEMBLY PL-19A121650-G1 K1 7486515-P1 Armature, enclosed: 6 VDC nominal, 36 ohms ±8% coil res, 1 form A contact rated at 15 amps; sim to RHM 60-108013-3. (Used in PL-7487952-G13). K3 7486515-P3 Armature, enclosed: 28 VDC nominal, 300 ohms ±10% coil res, 1 form A contact rated at 15 amps. (Used in PL-7487952-G12).			TERMINAL BOARDS J505 PL-19B204409-G1 Connector, phen: 20 contacts rated at 5 amps max at 600 VDC. 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. TB901 7775500-P11 Phen: 5 terminals.			TERMINAL BOARDS J505 PL-19B204409-G1 Connector, phen: 20 contacts rated at 5 amps max at 600 VDC. 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. TB901 7775500-P11 Phen: 5 terminals.			TERMINAL BOARDS J505 PL-19B204409-G1 Connector, phen: 20 contacts rated at 5 amps max at 600 VDC. 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. TB901 7775500-P11 Phen: 5 terminals.			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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 G-E Part Number.

Service parts may be obtained from Authorized G E Communication Equipment Service Stations or through any G-E Radio Communication Equipment Sales Office. When ordering a part, be sure to give:

1. G-E 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 Communication Equipment Sales Office of the General Electric Company.

MAINTENANCE MANUAL

LBI-3510

DF-4070

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