MOBILE RADIO

MASTR II MAINTENANCE MANUAL

ONE-THRU 12-FREQUENCY CONTROL UNIT

SPECIFICATIONS *

Control Unit (Common Kit)	19A129576G1
One-thru 12-Frequency Kit	19A129578G2
Controls	Power-On Volume Squelch Channel Selector Switch Option Switch Optional Blanker Disable Switch
Indicators	Power On Light Transmit Light Optional Channel Busy Light Option Light

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

GENERAL ELECTRIC

TABLE OF CONTENTS

OPTIONS

DESCRIPTION	MODEL NUMBER
Internal/External Speaker (Option 1001)	19A129567G1
Public Address (Option 1002)	19A129567G2
Fixed Squelch (Option 1003)	19A129567G3
Squelch Operated Relay (Option 1004)	19A129567G4
Two-Frequency PSLM (Options 1005, 1006, 1007)	19A129567G5
Channel Busy Light (Option 1008)	19A129567G6
Noise Blanker Switch (Option 1009)	19A129567G7
Type 99 Tone Decoder (Option 1012 thru 1015)	19A129567G9
Type 90 Tone Encoder/Decoder (Option 1016 thru 1021)	19A129567G13-15
Dual Control (Option 1023 thru 1026)	19A129567G8
Extender Board (Option 9029)	19C320588G1

WARNING

Although the highest DC voltage in the radio is supplied by the vehicle battery, high current may be drawn under short circuit conditions. These currents can possibly heat metal objects such as tools, rings, watchbands, etc. enough to cause burns. Be careful when working near energized circuits!

High-level RF energy in the transmitter Power Amplifier assembly can cause RF burns. KEEP AWAY FROM THESE CIRCUITS when the transmitter is energized!

DESCRIPTION

MASTR II Control Units are attractively styled, highly functional units that are enclosed in a two-piece molded Lexan® housing for durability and ease of disassembly. The Control Units are mounted to the vehicle with a Safety Release Lexan® mounting bracket assembly for passenger safety.

The Control Unit uses a printed wiring board to provide a minimum of wiring. The only internal wires used are on the POWER-ON switch and indicator lights.

Cable plugs are secured to the back of the Control Unit by plastic locking clips. The plugs are equipped with indexing tabs to assure connection to the correct jack. The cable is equipped with a strain relief hook that attaches to a steel plate on the bottom rear of the Control Unit.

The microphone plug is secured to a jack on the bottom of the unit by means of a captive locking screw.

All indicator lights are light-emitting diodes (LEDs) for reliability, long life, and low power consumption.

CIRCUIT ANALYSIS

The Control Units are equipped with a VOLUME control, SQUELCH control and a POWER-ON rocker switch. The multi-frequency Control Unit is also equipped with a frequency selector switch.

When the POWER-ON switch (S701) is in the OFF position, power is removed from the radio except for the transmitter PA, which is connected to the vehicle battery at all times. Pushing the switch to the ON position applies power to the radio, provides power for the push-to-talk (PTT) circuit and lights the power-on LED in the Power-ON/Frequency Indicator window.

Pressing the PTT switch on the microphone energizes the antenna switch, keys the transmitter, mutes the receiver, and lights the transmit indicator LED.

Releasing the PTT switch turns off the transmitter and transmit indicator, de-energizes the antenna switch and un-mutes the receiver. Refer to the Table of Contents for a simplified Transmitter Keying and Power Distribution Diagram.

CR701 and CR708 are protective diodes. CR701 will cause the fuse in the yellow lead to blow if the polarity is reversed. CR708 inhibits the PTT circuit if the polarity is reversed.

MULTI-FREQUENCY SWITCH (S702)

The frequency selector switch is a 12-position switch with mechanical stops that limit rotation from one through twelve positions as required.

The frequency selector switch selects the desired channel for both transmitting and receiving. The switch connects A- to the selected transmitter and receiver ICOM so that the radio operates on the selected channel.

DC CONVERTER MODIFICATIONS

In radios equipped with the DC converter, the POWER-ON switch is modified so that

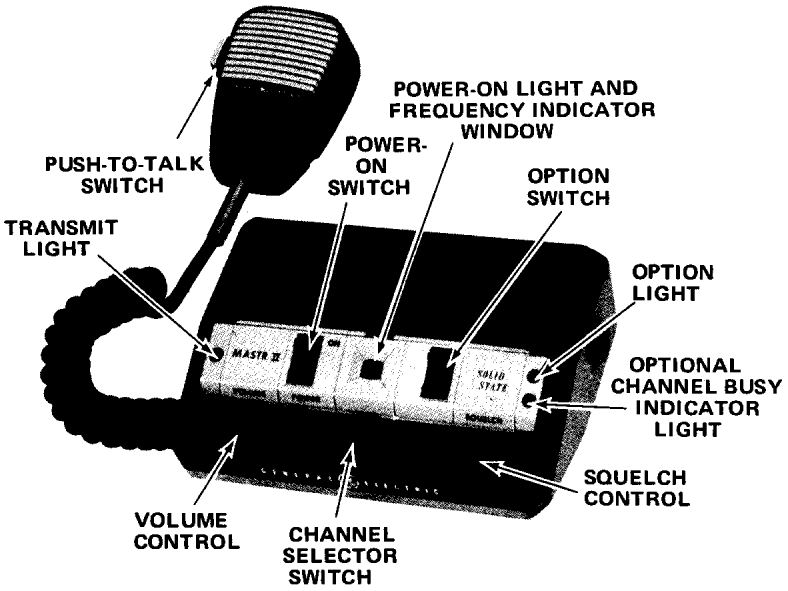


Figure 1 - Control Unit Layout

placing the switch in the ON position applies the input voltage directly to the DC converter. Instructions for the modification are shown on the control unit Schematic Diagram.

OPTIONS

MASTR II control units may be equipped with different options. All controls and indicator lights (LEDs) are shown in Figure 1.

Channel Busy Indicator

When no signal is applied to the receiver, the Carrier Activity Sensor (CAS) voltage from the receiver squelch IC is near A-. This forward biases diode CR702 in the control unit, keeping Q701 turned off. When a signal is applied to the receiver (with or without audio), the CAS voltage rises to approximately 10 Volts. This reverse biases CR702, allowing Q701 to conduct, turning on Channel Busy Indicator CR706. The indicator will remain on as long as a signal is applied to the receiver, or until the transmitter is keyed.

Noise Blanker Disable Switch

Noise Blanker Disable switch S1 mounts on the back of the control unit (see Outline Diagram). Placing the switch in the "OFF" position applies A- to the blanker disable lead. The A- is connected to pin 4 of the receiver blanker IC (U551), disabling the noise blanker circuit. The A- is connected to the blanker disable circuit by a jumper from H63 to H66 on the system board (see Front Panel & System Board Maintenance Manual).

Placing the switch in the "ON" position removes the A- to pin 4 of the blanker IC, allowing the blanker to operate.

Fixed Squelch

In radios with the Fixed Squelch option, a two-position rotary switch replaces the standard variable squelch potentiometer. A squelch potentiometer is then mounted on J904 on the system board (see Front Panel & System Board Maintenance Manual).

Turning the optional squelch switch on the Control Unit to the right applies A- to the squelch disable lead. The A- is connected to pin 2 of the receiver audio IC (U604), disabling the squelch circuit (and Channel Guard if present). Turning the switch to the left removes the A- to Pin 2 of the squelch IC, enabling the squelch circuit (and Channel Guard).

Internal/External Speaker

For radios equipped with the Internal/External Speaker option, the control unit will be equipped with optional SPEAKER switch (marked INT-EXT), an Option indicator light and an Internal/External Speaker component board. The radio also has an external speaker mounted outside of the vehicle passenger compartment (on the roof, under the hood, etc).

With the switch in the INT (Internal) position, all of the messages received will be heard on the speaker mounted in the vehicle.

Placing the switch in the EXT (External) position turns on the option light, and applies all received messages to both the external and internal speaker. This allows the received messages to be heard while the operator is inside or outside of the vehicle.

For complete details, refer to the Maintenance Manual for the Internal/External Speaker option.

Public Address

With the Public Address option, the control unit will be equipped with an optional PA-ON switch, on Option indicator light, and a Public Address component board. The vehicle will also have an additional speaker mounted outside of the passenger compartment.

With the PA switch in the "OFF" position, the operator can send and receive messages as he normally does. Placing the PA switch in the ON position lights the Option light, disables the transmitter, and switches the receiver audio output to the external speaker.

Pressing the PTT switch on the microphone switches the microphone output through the receiver audio amplifier circuit so that the amplified message is heard on the external speaker only. No messages can be transmitted in this mode of operation, and all incoming messages will be heard on the external speaker.

For complete details, refer to the Maintenance Manual for the Public Address option.

Priority Search-Lock Monitor

For radios equipped with Priority Search-Lock Monitor, (PSLM), the control unit will be equipped with a SEARCH-ON switch, a Channel Busy light, and a PSLM board.

With the SEARCH switch in the ON position, the PSLM provides two channel monitoring (depending on the PSLM option used) by alternately sampling a priority channel and then a non-priority channel.

When a signal is received on the priority channel, the PSLM stops searching and locks on the priority channel for the duration of the message. When a signal is first received on the non-priority channel, the PSLM stops on that channel while monitoring the priority channel. If a signal is received on the priority channel while the PSLM is stopped on the non-priority channel, the

PSLM reverts to the priority channel and locks on that channel for the duration of the message.

NOTE

The PSLM will operate only when the receiver is squelched. When the receiver is unsquelched, the PSLM will lock on the first channel that receives a message.

The Channel Busy light will glow steadily whenever a message is received on the priority channel. When a message is received on a non-priority channel, the Channel Busy light will flash on and off. Keying the transmitter turns on the red Transmit light, and turns off the Channel Busy light.

Placing the SEARCH switch in the "OFF" position disables the PSLM circuit, and messages can be sent and received only on the channel selected by the frequency selector switch.

For complete details, refer to the Maintenance Manual for the Priority Search-Lock Monitor option.

Squelch Operated Relay

In radios equipped with the Squelch Operated Relay option, the control unit will be equipped with an OPTION-ON switch an Option light and a Squelch Operated Relay component board.

When the switch is in the ON position, the relay will energize and the Option light will turn on each time a message is received (receiver unsquelches). The relay will remain locked up and the Option light will remain on until the OPTION switch is turned "OFF". The relay can be connected to turn on a light, operate an alarm or perform other functions as desired.

For complete details, refer to the Maintenance Manual for the Squelch Operated Relay option.

Type 99 Tone Decoders

Type 99 Tone equipment eliminates reception of unwanted calls through the use of a sequential Tone Decoder. The equipment provides individual or group call capability using either two or four Versatone networks. (Versatone networks determine the tone frequencies that the unit responds to).

Decoder operation is controlled by the Monitor/Reset switch and/or Hookswitch. When the microphone or handset is removed from the Hookswitch, the decoder is deactivated and the receiver reverts to noise squelch operation. Replacing the microphone or handset automatically resets the receiver to respond to only those calls properly tone coded. A Decoder Call Indicator will light each time a properly tone coded call is received.

An optional External Alarm Relay is controlled by the two position Option-ON switch. When a properly tone coded call is received and the OPTION switch is in the ON position, the relay will operate an external horn or light.

For complete details, refer to the Maintenance Manual for the Type 99 Tone Decoder option.

Type 90 Tone Encoder and Decoders

Type 90 Tone equipment provides tone coded message transmission to eliminate reception of unwanted calls. All Type 90 Tone Encoders and Decoders operate on a single tone selectable from ten standard frequencies between 1000 and 3000 Hz.

A single tone burst automatically preceeds the first transmission in the standard unit. The tone burst is initiated by removing the microphone or handset from the hookswitch and keying the PTT. The Pushbutton Tone-ON switch allows the tone to be sent manually if desired.

Decoder operation is controlled by the Monitor/Reset switch and/or Hookswitch. When the microphone or handset is removed, the receiver reverts to noise squelch operation. Replacing the microphone or handset, automatically resets the unit to the decode function. A Decoder Call Indicator will light each time a properly tone coded call is received.

An optional External Alarm Relay is controlled by the two position Option-ON switch. When a properly tone coded call is received and the Option-ON switch is in the ON position, the relay will operate an external horn or light.

For complete details, refer to the Maintenance Manual for the Type 90 Tone Encoder/Decoder option.

Dual Control

The Dual Control equipment allows the radio to be operated by either of two remotely located control units. Control is transferred between control units by depressing the Control switch on the control unit where control is desired.

When the Control switch is depressed, the Control Light indicates the unit with control. Control remains with this unit until the Dual Control switch on the second control unit is operated.

For complete details, refer to the Maintenance Manual for the Dual Control option.

Extender Board

Troubleshooting the component board options in the control unit is facilitated by using Extender Board 19C320588G1 (Option 9029). The Extender Board provides feed throughs for all connections between the control unit printed wire board and the option component board.

12-VOLT IGNITION SWITCH CONNECTIONS

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

1. Ignition Switch Control - For ignition switch control, the yellow fused lead connects 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.
2. Ignition Switch Bypass - For ignition switch bypass, the yellow fused lead connects 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 are turned on and off only by the POWER-ON switch on the Control Unit.

DC CONVERTER CONNECTIONS

For combinations equipped with the DC converter, a single red fused lead is used. The fused lead always connects to battery plus in either positive or negative ground systems.

CAUTION

When using the DC Converter, do not connect battery ground to the Control Unit A-. To do so may cause failure of the current limiting circuit in the converter.

MAINTENANCE

DISASSEMBLY

To gain access to the inside of the Control Unit, simply remove the two screws on the bottom of the front edge of the unit, and lift off the top cover.

To remove the printed wiring board from the control unit housing:

1. Remove the two screws holding the microphone jack.
2. Remove the screw between J701 and J702, and remove the screw between J702 and J703.
3. Remove the screw at each end of the switch and control mounting bracket.
4. Remove the screw holding Power-On switch S701 to the bottom housing. Then swing the printed wiring board up from the front and lift the board out.

RE-INSTALLATION

±12-Volt Systems

If the radio is moved to a different vehicle, always check the battery polarity and voltage of the new system before using the radio.

If the radio is moved to a vehicle with different battery polarity, it will be necessary to change the ignition switch leads to the vehicle system plug. Use the extraction tool as shown in Figure 2, and change the leads as shown in Figures 3 or 4 as required.

DC CONVERTER

For radios equipped with the DC converter, no changes are required in the lead to the vehicle system plug.

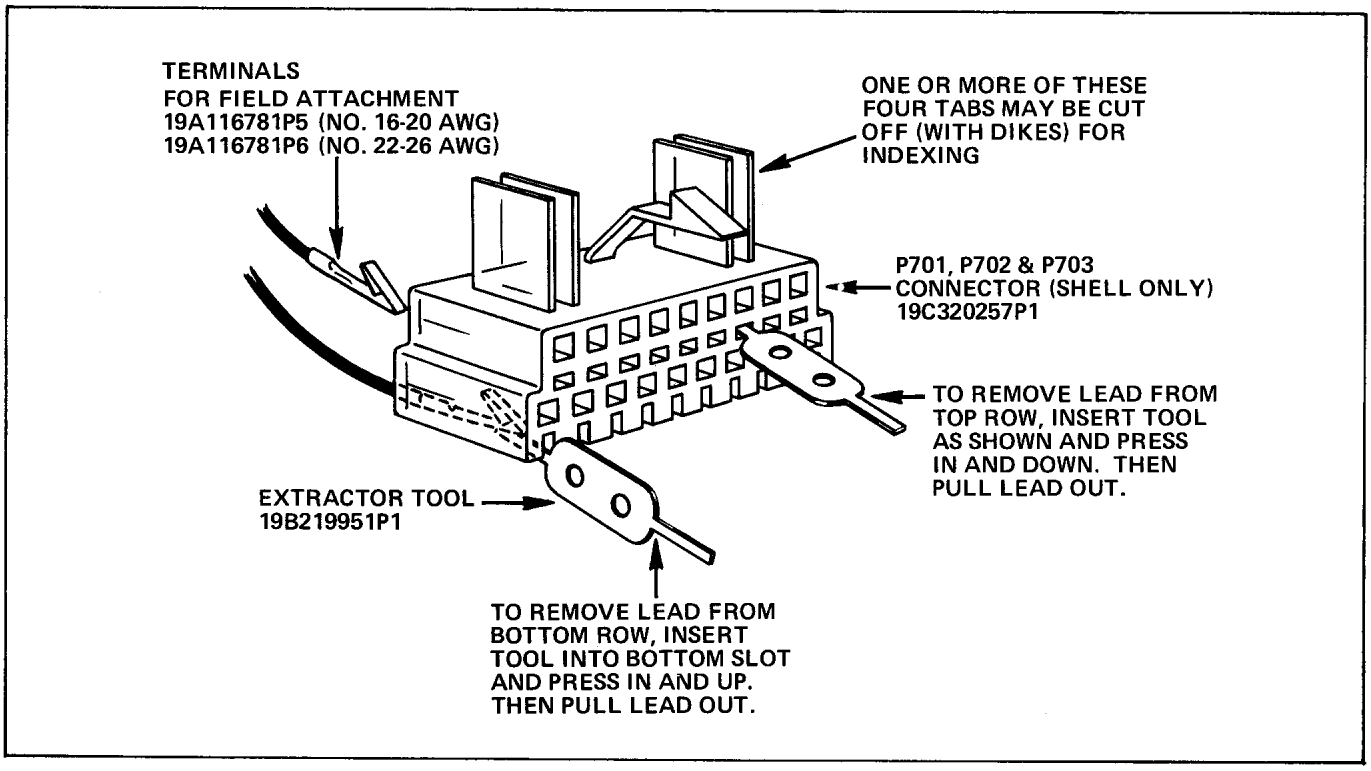


Figure 2 - Using Extraction Tool

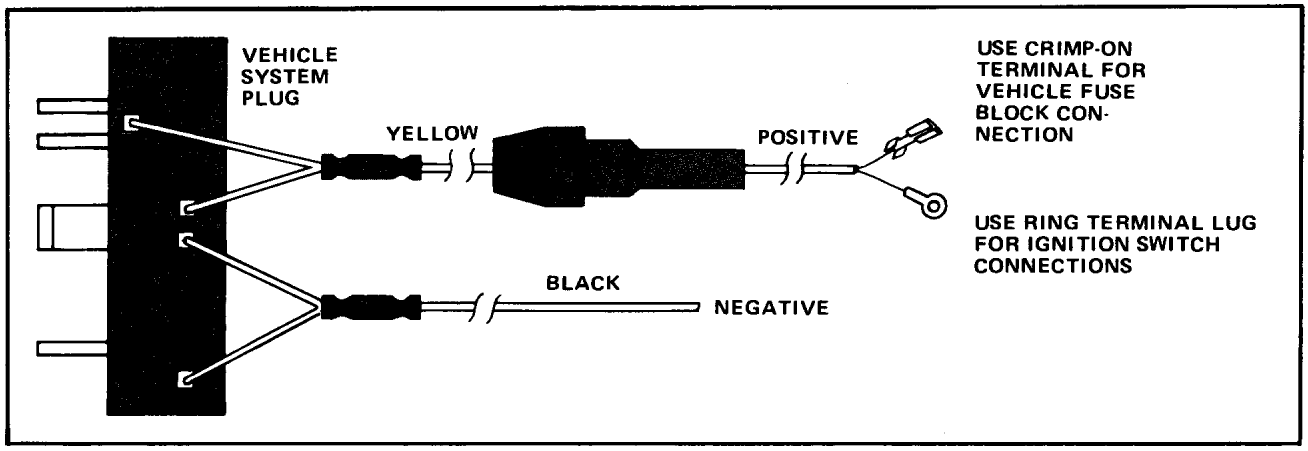


Figure 3 - 12-Volt, Negative Ground Connections

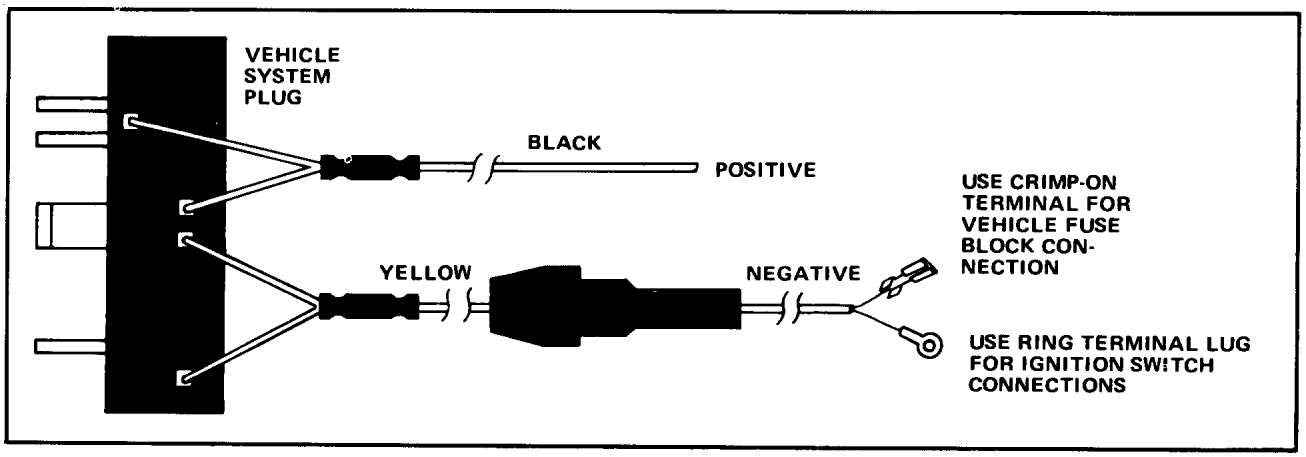
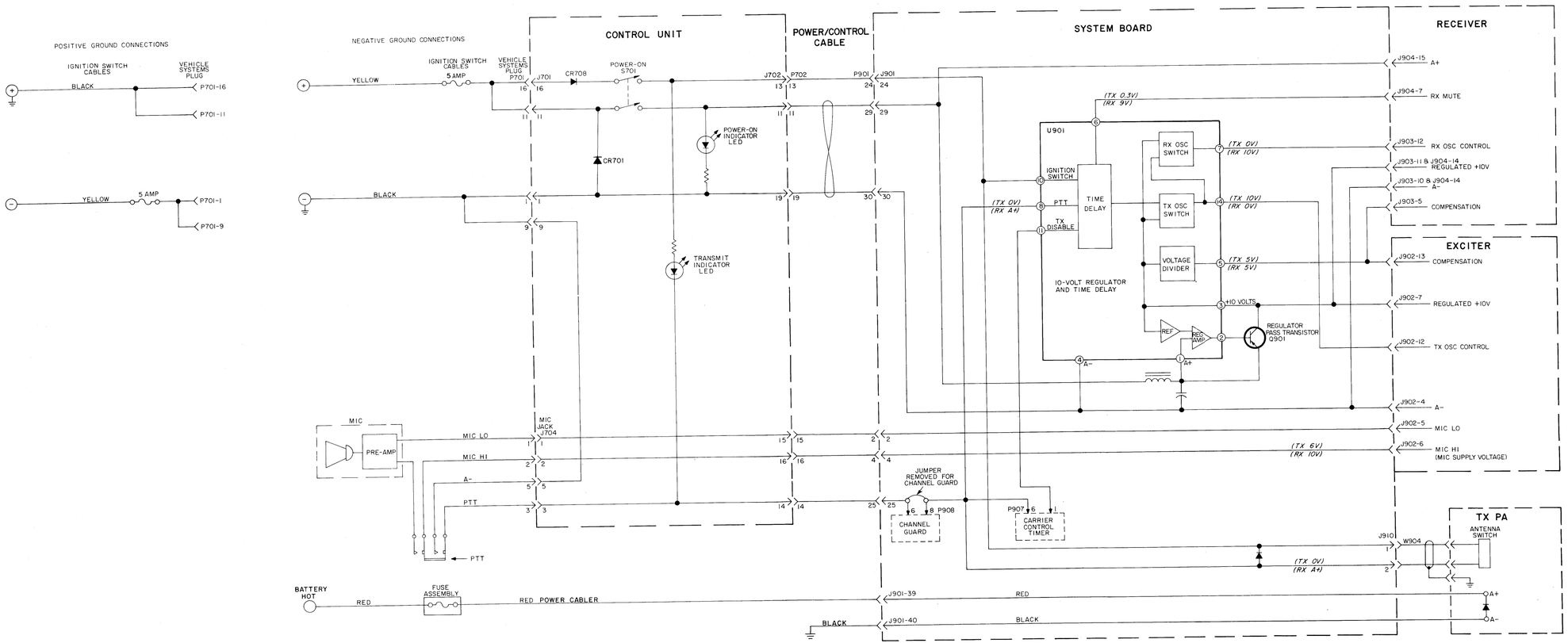
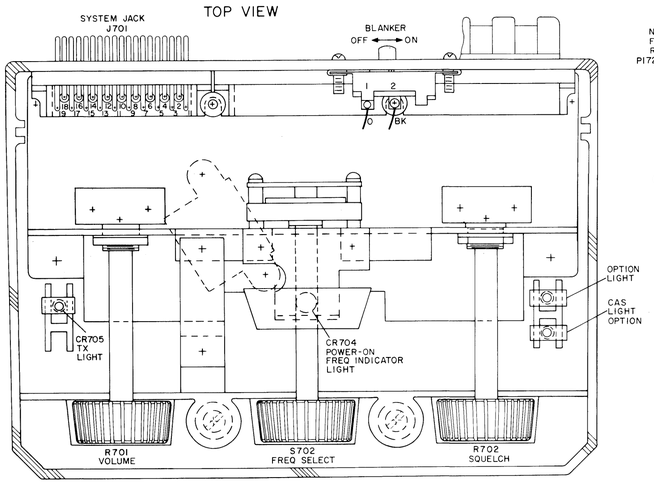


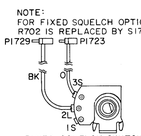
Figure 4 - 12-Volt, Positive Ground Connections (Page 6 is blank)

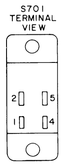


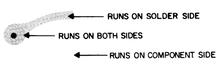
RC-2451C

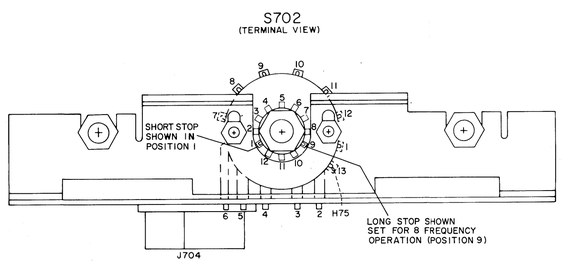
TRANSMITTER KEYING & POWER DISTRIBUTION DIAGRAM

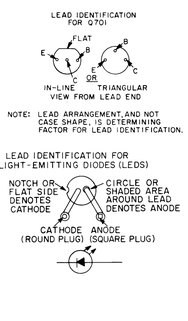


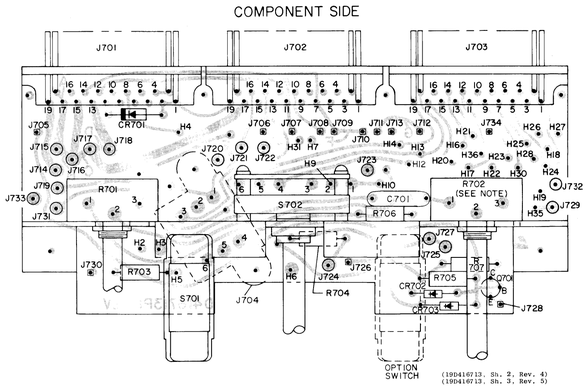


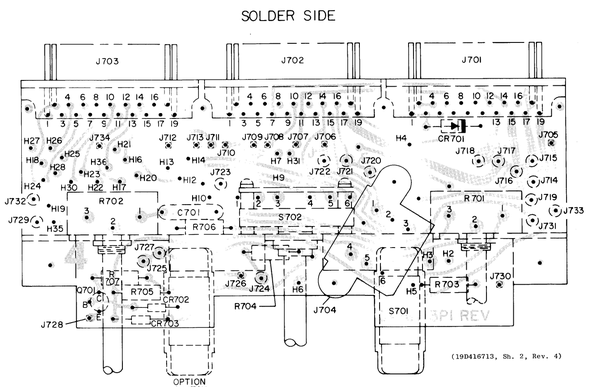












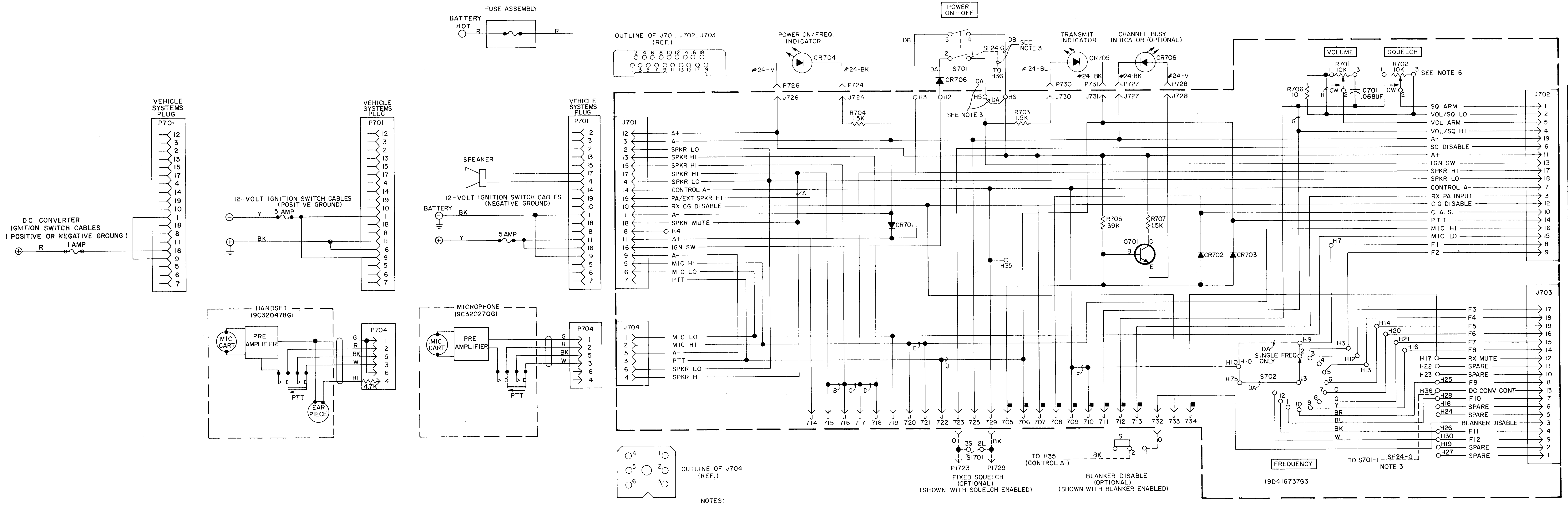
FREQUENCY SELECTOR SWITCH STOP SETTINGS

IF THE NUMBER OF OPERATING FREQUENCIES ARE CHANGED, IT WILL BE NECESSARY TO CHANGE THE STOP SETTINGS ON THE FREQUENCY SELECTOR SWITCH, TO SET THE STOPS:

1. REMOVE THE CONTROL UNIT PRINTED WIRING BOARD FROM THE HOUSING (SEE DISASSEMBLY PROCEDURE).
2. REMOVE THE 3/8-INCH NUT AND WASHER HOLDING THE SWITCH STOPS IN PLACE.
3. MAKE SURE THAT THE SHORT ADJUSTMENT STOP IS IN POSITION 1 (SEE OUTLINE DIAGRAM).
4. ROTATE THE SWITCH SHAFT FULLY COUNTERCLOCKWISE TO THE SHORT STOP POSITION.
5. FOR ONE FREQUENCY OPERATION, PLACE THE LONG STOP IN POSITION 2.
6. FOR TWO THROUGH ELEVEN FREQUENCIES, PLACE THE LONG STOP IN THE POSITION NUMBERED ONE HIGHER THAN THE NUMBER OF CHANNELS TO BE SELECTED.
7. FOR TWELVE FREQUENCIES, REMOVE BOTH STOPS.
8. REPLACE THE 3/8-INCH NUT AND WASHER.

OUTLINE DIAGRAM

1 THRU 12-FREQUENCY CONTROL UNIT



NOTES:
1. LETTER CODES ARE RUNS ON PW BD TO BE REMOVED WHEN SPECIFIED ON OPTIONS.
2. SLEEVE WIRES ON S701.
3. FOR DC CONVERTER OPERATION, CHANGE WIRING AS FOLLOWS:

OMIT	CONNECT
S701-1 TO H5	S701-1 TO H36
S701-4 TO H6	H5 TO H6

4. DA=#22 AWG WIRE SIZE
   DB=#18 AWG WIRE SIZE
5. ■ INDICATES SQUARE POSTS
6. OMIT R702 FOR FIXED SQUELCH. WHEN FIXED SQUELCH IS USED WITH PSLM, ADD 10K, 1/2 WATT RESISTOR BETWEEN HOLES WHERE LEADS 1 & 3 OF R702 WERE.

SEE APPLICABLE PRODUCTION CHANGE SHEETS IN INSTRUCTION BOOK SECTION DEALING WITH THIS UNIT, FOR DESCRIPTION OF CHANGES UNDER EACH REVISION LETTER.

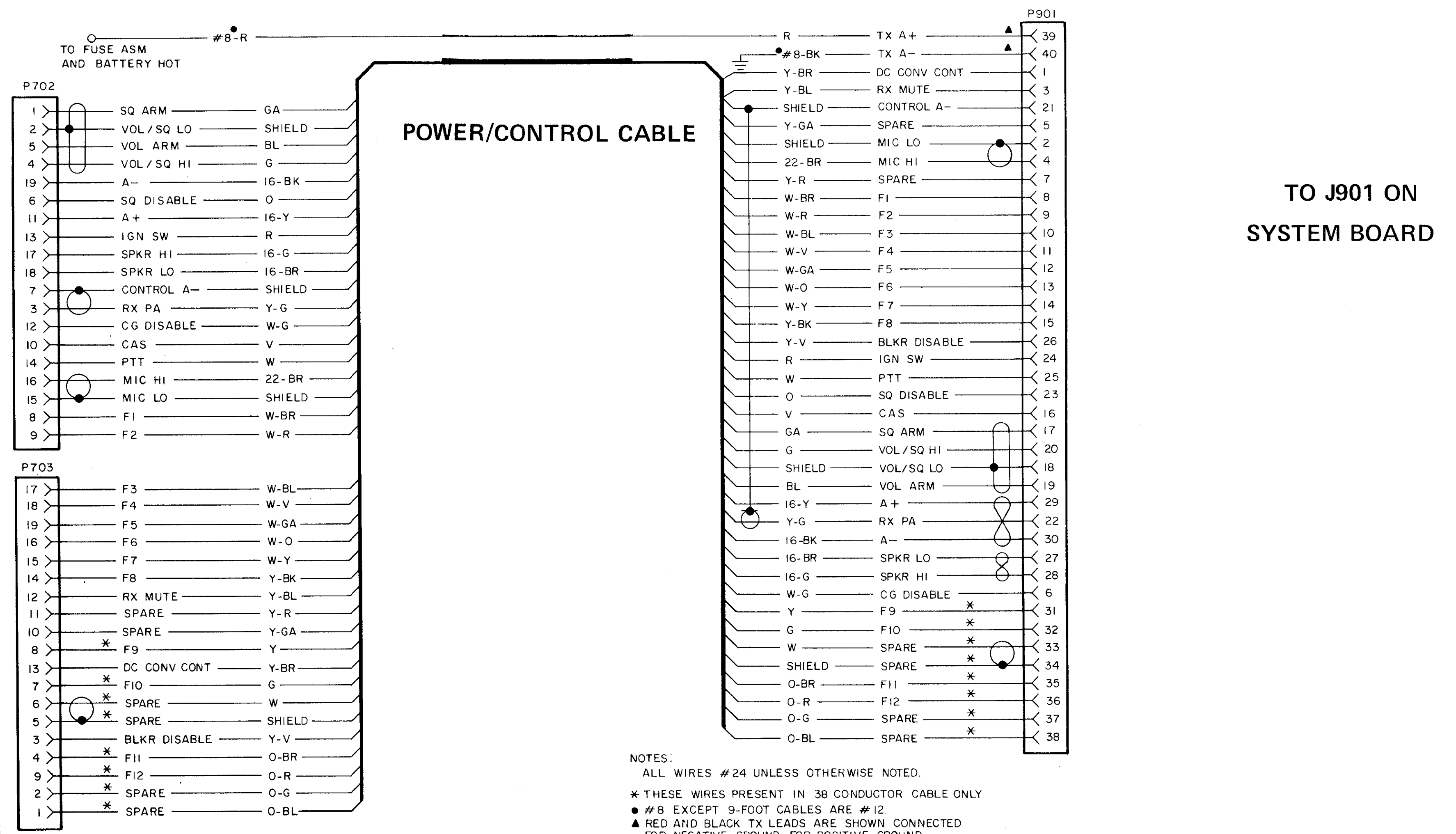
THIS ELEM DIAG APPLIES TO

MODEL NO	REV LETTER
19D416737G3	A

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.

(19D417130, Rev. 4)



NOTES:
ALL WIRES #24 UNLESS OTHERWISE NOTED.
* THESE WIRES PRESENT IN 38 CONDUCTOR CABLE ONLY.
● #8 EXCEPT 9-FOOT CABLES ARE #12.
▲ RED AND BLACK TX LEADS ARE SHOWN CONNECTED FOR NEGATIVE GROUND. FOR POSITIVE GROUND, CONNECT RED LEAD TO P901-40 AND BLACK TO P901-39.

(19C321784, Rev. 3)

SCHEMATIC DIAGRAM

1 THRU 12-FREQUENCY CONTROL UNIT

Issue 2

PARTS LIST

LBI-4733B

1-12 FREQUENCY CONTROL UNIT,
AND
ASSOCIATED ASSEMBLIES

SYMBOL	GE PART NO.	DESCRIPTION
		CONTROL UNIT INCLUDES:
		COMMON KIT 19A129570G1 AND ONE FREQ KIT 19A129577G1 1-12 FREQ KIT 19A129578G2
		COMMON KIT 19A129570G1
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R702	19A116687P1	Variable, carbon film: 10,000 ohms ±20%, 1/2 w; sim to Mallory LC-14C10K).
		COMPONENT BOARD 19D416737G2
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C701	19A116080P106	Polyester: 0.068 µf ±10%, 50 VDCW.
		- - - - - - - - DIODES AND RECTIFIERS - - - - - - - -
CR701	403782ZP1	Silicon.
CR702 and CR703	19A115250P1	Silicon.
CR705	19B219800G1	Diode, light emitting.
CR708	403782ZP1	Silicon.
		- - - - - - - - JACKS AND RECEPTACLES - - - - - - - -
J701 thru J703	19C320257P2	Pin wafer assembly: 19 contacts.
J704	19B219627G1	Connector: 6 contacts.
J705 thru J713	19A116779P1	Contact, electrical: sim to Molex 08-50-0404.
J714 thru J725	403331ZP4	Contact, electrical: sim to Bead Chain L83-3.
J726	19A116779P1	Contact, electrical: sim to Molex 08-50-0404.
J727	403331ZP4	Contact, electrical: sim to Bead Chain L83-3.
J728	19A116779P1	Contact, electrical: sim to Molex 08-50-0404.
J729	403331ZP4	Contact, electrical: sim to Bead Chain L83-3.
J730	19A116779P1	Contact, electrical: sim to Molex 08-50-0404.
J731 thru J733	403331ZP4	Contact, electrical: sim to Bead Chain L83-3.
J734	19A116779P1	Contact, electrical: sim to Molex 08-50-0404.
		- - - - - - - - - - TRANSISTORS - - - - - - - - - -
Q701	19A115889P1	Silicon, NPN.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R701	19A116687P2	Variable, carbon film: 10,000 ohms ±20%, 1/4 w; sim to Mallory RJ24.
R703 and R704	3R77P152K	Composition: 1500 ohms ±10%, 1/2 w.
R705	3R77P393K	Composition: 39,000 ohms ±10%, 1/2 w.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

SYMBOL	GE PART NO.	DESCRIPTION
R706	3R77P100K	Composition: 10 ohms ±10%, 1/2 w.
R707	3R77P152K	Composition: 1500 ohms ±10%, 1/2 w.
		- - - - - - - - - - SWITCHES - - - - - - - - - -
S701	19A116622P5	Push: DPST, 0.5 amp VDC or 3.0 amps at 125 v; sim to Switchcraft 11E1940.
		FREQUENCY INDICATOR LIGHT ASSEMBLY 19B219696G2
		- - - - - - - - DIODES AND RECTIFIERS - - - - - - - -
CR704	19A134146P16	Diode, optoelectronic: red; sim to Opcox LNR-6.
		- - - - - - - - - - PLUGS - - - - - - - - - -
P724	4029840P2	Contact, electrical: sim to Amp 42827-2.
P726	19A127042P2	Terminal, solderless: sim to Waldo 12003-10.
		ONE FREQUENCY KIT 19A129577G1
	19B219626P1	Knob plug. (See RC-2447 item 23).
	7140578P4	Nut, push on: sim to Tinnerman C1359-014-27. (See RC-2447 item 24).
	19A130069P1	Diffuser. (See RC-2447 item 25).
		1-12 FREQUENCY KIT 19A129578G2
		- - - - - - - - - - SWITCHES - - - - - - - - - -
S702	19B219996G1	Rotary: 1 section, 1 pole, 12 positions, 2 amps at 28 VDC or 1 amp at 110 VRMS; sim to Oak Type "F".
	19B219825G1	Knob, (See RC-2447 item 6).
	19B219699G1	Frequency Indicator. (Includes items 7-10 on RC-2447).
	7141325P2	Hex nut: No. 4-40.
	N404P11C5	Lockwasher: No. 4.
		CHANNEL BUSY OPTION 19A129567G6
		- - - - - - - - DIODES AND RECTIFIERS - - - - - - - -
CR706	19B219800G2	Diode, light emitting.
	19A116807P1	Clip, spring tension. (Secures CR706).
		NOISE BLANKER DISABLE OPTION 19A129567G7
		- - - - - - - - - - SWITCHES - - - - - - - - - -
S1	19B219988G1	Slide: DPST, 1 pole, 2 positions, .5 amp VDC or 3 amps VAC at 125; sim to Switchcraft 46302LH.
	403248GP1	Nut, sheet spring. (Secures S1).
	N40P9006C6	Screw, phillips: pashead, No. 4-40 x 3/8.
		FIXED SQUELCH OPTION
		- - - - - - - - - - SWITCHES - - - - - - - - - -
S1701		SWITCH ASSEMBLY 19A129567G3
		- - - - - - - - - - PLUGS - - - - - - - - - -
P1723	4033346P1	Contact, electrical: sim to Bead Chain M135-34.
P1729	4033346P1	Contact, electrical: sim to Bead Chain M135-34.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
	3R77P103J	Resistor, composition: 10,000 ohms ±5%, 1/2 w.

SYMBOL	GE PART NO.	DESCRIPTION
		MECHANICAL PARTS (SEE RC-2447)
1	19A116807P1	Clip, spring tension.
2	19A116773P106	Tap screw: thd size No. 7-19 x 3/8.
3	19B201074P304	Tap screw: No. 4-40 x 1/4.
4	3402P8C6	Washer: No 8.
5	19C320248G1	Housing.
6	19B219825G1	Knob.
7	19C320175P1	Frequency indicator.
8	RP270754A	Nameplate, (1-12).
9	RP270754B	Nameplate, (OFF, A-H).
10	402P006P1	Retainer strap: sim to Tinnerman C2386-020-1.
11	19179004C13	Tap screw: No. 6-40 x 1/4.
12	7141225P2	Hex nut: No. 4-40.
13	N404P11C6	Lockwasher, internal tooth: No. 4.
14	19A134017P1	Adjustable stop. (Short).
	19A134017P2	Adjustable stop. (Long).
15	19B219578G1	Safety release disc.
16	19C320023P1	Retaining bracket.
17	N187P16010C6	Screw, hexhead, slotted: No. 10-32 x 5/8. (Quantity 1, used with safety release disc and retaining bracket).
18	N710P16012C6	Screw, hexhead, slotted: No. 10-16 x 3/4. (Quantity 3, used without safety release disc and retaining bracket).
19	19D416594P1	Mounting bracket.
20	19E500988P1	Cover.
21	19A116985P1	Tag screw, assembled washer: No. 13-16 x 3/4 with No. 10 hexhead.
22	RP270753P1	Nameplate. (MARK II SOLID STATE).
23	19B219626P1	Knob plug. (Frequency switch S702).
24	7140578P4	Nut, push on: sim to Tinnerman C1359-014-27. (Used with item 23).
25	19A130009P1	Diffuser.
26	7160815P4	Washer, spring: sim to Shakeproof 3544-14-00.
		POWER/CONTROL CABLE 28 CONDUCTOR 19D629494G14
		- - - - - - - - - - PLUGS - - - - - - - - - -
P702		Connector, Includes:
	19B226516P2	Shell.
	19A116781P5	Contact, electrical: wire size No. 16-20 AWG; sim to Molex 08-50-0106. (Quantity 4).
	19A116781P6	Contact, electrical: wire size No. 22-26 AWG; sim to Molex 08-50-0108. (Quantity 15).
P703		Connector, Includes:
	19B226516P2	Shell.
	19A116781P6	Contact, electrical: wire size No. 22-26 AWG; sim to Molex 08-50-0108. (Quantity 19).
P901		Connector, special purpose, Includes:
	19C307162P1	Shell.
	19A134240P1	Contact, electrical: sim to AMP 350657-1. (Quantity 34).
	19A134240P2	Contact, electrical: sim to AMP 350656-1. (Quantity 4).
	19A134240P3	Contact, electrical: sim to AMP 350655-1. (Quantity 2).
		- - - - - - - - - - MISCELLANEOUS - - - - - - - - - -
	7139886P16	Cable: 38 conductor, 20 feet.

SYMBOL	GE PART NO.	DESCRIPTION
	7142878G1	Clip loop (strain relief).
	19A115799P1	Terminal, solderless: sim to AMP 33460, (Quantity 2).
	19B209245P103	Coil.
	19A134241P1	Jack screw. (Used with P901).
		12-VOLT 2-WIRE IGNITION SWITCH CABLE 19B219537G4
		- - - - - - - - - - PLUGS - - - - - - - - - -
P701		Connector. Includes:
	19B226516P9	Shell.
	19A129504G1	Y Cable. (BLACK).
		FUSED LEAD ASSEMBLY 19A129480G2 (Used with 19B219537G4)
	1816P8	Fuse, quick blowing: 5 amps at 250 v; sim to Littelfuse 312005 or Bussmann WTN-5.
	19A115776P2	Fuseholder, phes: sim to Bussmann Type HHJ.
	19A115776P3	Contact, electrical: sim to Littelfuse 904-83. (Located inside fuseholder).
	7491823P7	Ring terminal, solderless: wire size No. 16-14 AWG.
	7491823P8	Ring terminal, solderless: wire size No. 16-14 AWG.
	4029484P2	Terminal, quick connect: wire size 14-18 AWG, fits 1/4 x .032 tab; sim to AMP 41274.
	19A115579P1	Insulated splice.
	19A116781P5	Contact, electrical: wire size No. 16-20 AWG; sim to Molex 08-50-0106.
		DC CONVERTER IGNITION SWITCH CABLE 19B219537G3
		- - - - - - - - - - PLUGS - - - - - - - - - -
P701		Connector. Includes:
	19B226516P9	Shell.
	19A130117G1	Jumper.
		FUSED LEAD ASSEMBLY 19A129480G1 (Used with 19B219537G3)
	1816P3	Fuse, quick blowing: 1 amp 250 v; sim to Littelfuse 312001 or Bussmann AGC-1.
	19A115776P2	Fuseholder, phes: sim to Bussmann Type HHJ.
	19A115776P3	Contact, electrical: sim to Littelfuse 904-83. (Located inside fuseholder).
	7491823P7	Ring terminal, solderless: wire size No. 16-14 AWG.
	7491823P8	Ring terminal, solderless: wire size No. 16-14 AWG.
	4029484P2	Terminal, quick connect: wire size 14-18 AWG, fits 1/4 x .032 tab; sim to AMP 41274.
	19A115579P1	Insulated splice.
	19A116781P5	Contact, electrical: wire size No. 16-20 AWG; sim to Molex 08-50-0106.
		OPTIONAL 12-VOLT 3-WIRE IGNITION SWITCH CABLE 19B219537G1
		- - - - - - - - - - PLUGS - - - - - - - - - -
P701		Connector. Includes:
	19B226516P3	Shell.
	19A129504G1	Y Cable. (BLACK).

SYMBOL	GE PART NO.	DESCRIPTION
		FUSED LEAD ASSEMBLY 19A129480G1 1 AMP (RED) (Used with 19B219537G1)
	1816P3	Fuse, quick blowing: 1 amp 250 v; sim to Littelfuse 312001 or Bussmann AGC-1.
	19A115776P2	Fuseholder, phes: sim to Bussmann Type HHJ.
	19A115776P3	Contact, electrical: sim to Littelfuse 904-83. (Located inside fuseholder).
	7491823P7	Ring terminal, solderless: wire size No. 16-14 AWG.
	7491823P8	Ring terminal, solderless: wire size No. 16-14 AWG.
	4029484P2	Terminal, quick connect: wire size 14-18 AWG, fits 1/4 x .032 tab; sim to AMP 41274.
	19A115579P1	Insulated splice.
	19A116781P5	Contact, electrical: wire size No. 16-20 AWG; sim to Molex 08-50-0106.
		FUSED LEAD ASSEMBLY 19A129480G2 5 AMP (YELLOW) (Used with 19B219537G1)
	1816P8	Fuse, quick blowing: 5 amp 250 v; sim to Littelfuse 312005 or Bussmann WTN-5.
	19A115776P2	Fuseholder, phes: sim to Bussmann Type HHJ.
	19A115776P3	Contact, electrical: sim to Littelfuse 904-83. (Located inside fuseholder).
	7491823P7	Ring terminal, solderless: wire size No. 16-14 AWG.
	7491823P8	Ring terminal, solderless: wire size No. 16-14 AWG.
	4029484P2	Terminal, quick connect: wire size 14-18 AWG, fits 1/4 x .032 tab; sim to AMP 41274.
	19A115579P1	Insulated splice.
	19A116781P5	Contact, electrical: wire size No. 16-20 AWG; sim to Molex 08-50-0106.
		BATTERY CABLES
	7147499G7	Battery cable. (BLACK), 3 feet.
	7147499G8	Battery cable. (RED), 3 feet.
		25 - 50 MHz ANTENNA
	7491074P1	Antenna: includes stainless steel rod approx 66-1/2 inches long; ball tip; lockwasher: No. 10-32 hex socket set screw; sim to Antenna Specialists ASP53SM.
	7102930P3	Adapter, antenna: approx 2-5/16 inches long. (Used with GE Dwg 7491074P1).
	4K19A1	Loading coil: 25-33 MHz; sim to Antenna Specialists ASP48T.
	19A121577G1	Antenna hook kit.
	7134724P1	Antenna hook.
	19C307172P1	Antenna Package: Includes base and ball assembly, adapter spring assembly, cable assembly, horseshoe plate, and rubber gasket.
		Base and ball assembly. Newtronics 5485.
		Adapter spring assembly. Newtronics 3337.
		Cable assembly. Newtronics 183-RAO.
		Horseshoe plate. Newtronics 3323-3.
		Rubber gasket. Newtronics 3320.
		132-512 MHz ANTENNA 19B209556P1
		Whip assembly. 068110-001.
		Whip nut assembly. 068047-001.

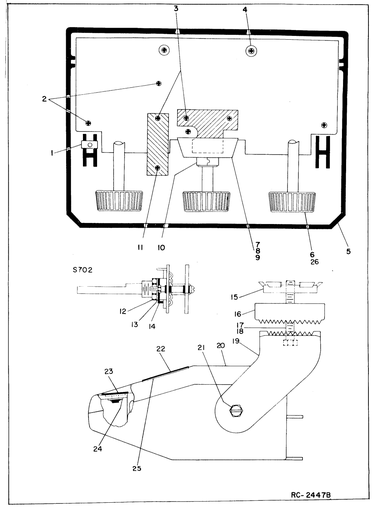
SYMBOL	GE PART NO.	DESCRIPTION
		Base nut assembly. 068048-001.
		"O" Ring (LARGE). 007009-122.
		Stud assembly. 068046-001.
		RG58/U Cable, 15 feet. 068115-001.
		12 VOLT FUSE ASSEMBLY 19B210602G4 (Fuses must be ordered separately)
		- - - - - - - - - - FUSES - - - - - - - - - -
F1	1R11P4	Quick blowing: 15 amps, 250 v; sim to Bussmann MDX15. (Used with low power transmitters, 16-38 w).
F3	1R11P7	Quick blowing: 30 amps, 250 v; sim to Bussmann MDX30. (Used with high power transmitters, 40-125 w).
F4	1R11P5	Quick blowing: 20 amps, 250 v; sim to Bussmann MDX20. (Used with medium power transmitters, 38-66 w).

PRODUCTION CHANGES

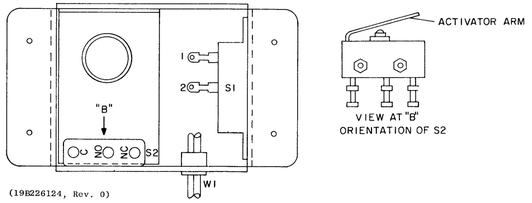
Changes in the equipment to improve performance or to simplify circuits are identified by a "Revision Letter", which is stamped after the model number of the unit. The revision stamped on the unit includes all previous revisions. Refer to the Parts List for descriptions of parts affected by these revisions.

REV. A - Control Unit Common Kit 19A129576G1

To improve connector retention. Changed bracket at rear of control unit assembly.

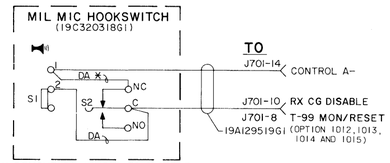


OUTLINE DIAGRAM



(19E226124, Rev. 0)

SCHEMATIC DIAGRAM



* REMOVE DA JUMPER TO DISABLE AUTOMATIC CHANNEL GUARD MONITOR

S2 - SHOWN OFF HOOK

S1 - SHOWN OFF MONITOR

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	
MODEL NO	REV LETTER

(19A129660, Rev. 3)

PARTS LIST

LBI-4483A

MICROPHONE HOOKSWITCH
19C320318G1

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - - SWITCHES - - - - - - - - - -
S1	19B219698G1	Slide: SPST, 3 amp at 125 VAC, 2.2 amp at 14 VAC; sim to Switchcraft 46202LH, (S1 includes switch and housing).
S2	19A116676P1	Sensitive: SPDT, 5 amp at 24 VDC or 5 amp at 250 VRMS; sim to Microswitch 111SM1-T2.
		- - - - - - - - - - CABLES - - - - - - - - - -
W1	19A129414G1	2 conductor cable: approx 5 feet long, includes (2) 19A116781P3 contacts.
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
	19A116768P6	Strain relief: sim to Heyco SR-3P-4. (Used with W1).
	N193P1410C	Tap screw, phillips: No. 8 x 5/8.
	N84P5008C6	Screw, phillips: No. 2-56 x 1/2. (Secures S2).
	N210P5C6	Hexnut: No. 2-56. (Secures S2).
	N404P8C6	Lockwasher, internal tooth: No. 2. (Secures S2).

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

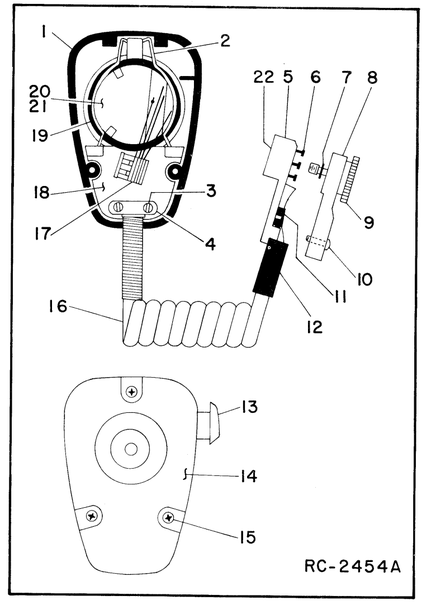
PARTS LIST

LBI-4481A

TRANSISTORIZED DYNAMIC MICROPHONE
19C320270G1
(SEE RC-2454)

SYMBOL	GE PART NO.	DESCRIPTION
1		Front Case Assembly. RP127. (includes items 14, 15).
2		Retaining spring. (Part of item 18).
3		Tap screw, phillips. (Part of item 16).
4		Retaining bar. (Part of item 16).
5	19D416766P1	Connector base.
6	19A129435P1	Contact.
7	7109043P1	Retaining ring.
8	19D416767P1	Connector cover.
9	19B219723G1	Screw.
10	N136AP905C	Tap screw, phillips: No. 4 x 5/16.
11	19A116937P1	Cable clip.
12	19B219749P1	Strain relief.
13		Switch button kit. RP126.
14		Rear Case Assembly. (Part of item 1).
15		Tap screw, phillips. (Part of item 1).
16	19C321016G1	Cable assembly: Includes items 3-12 and cable RP129.
17		Switch Assembly. RP128.
18		Grille Assembly. RP130. (includes items 2, 19, 21).
19		"O" Ring. (Part of item 18).
20		Transistorized Cartridge. RP117.
21		Washer. (Located under cartridge- part of item 18).
22	19C321016G3	Connector assembly: Includes items 5-12.

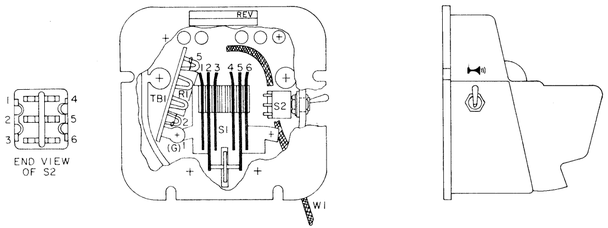
*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES



SERVICE SHEET

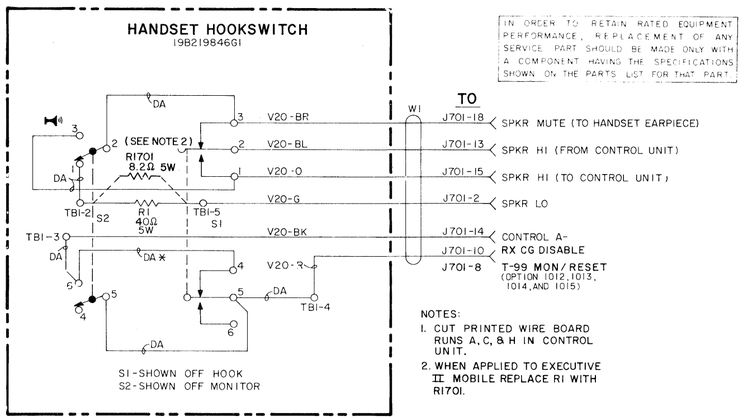
MICROPHONE & HOOKSWITCH

OUTLINE DIAGRAM



(19B226131, Rev. 0)

SCHEMATIC DIAGRAM



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.

W1	TO	
V20-BR	J701-18	SPKR MUTE (TO HANDSET EARPIECE)
V20-BL	J701-13	SPKR HI (FROM CONTROL UNIT)
V20-O	J701-15	SPKR HI (TO CONTROL UNIT)
V20-G	J701-2	SPKR LO
V20-BK	J701-14	CONTROL A-
	J701-10	RX CG DISABLE
V20-R	J701-8	T-99 MON/RESET (OPTION 1012,1013, 1014, AND 1015)

NOTES:
1. CUT PRINTED WIRE BOARD RUNS A, C, & H IN CONTROL UNIT.
2. WHEN APPLIED TO EXECUTIVE II MOBILE REPLACE R1 WITH R1701.

* REMOVE DA JUMPER TO DISABLE AUTOMATIC CHANNEL GUARD MONITOR

(19B219842, Rev. 6)

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

MODEL NO	REV LETTER
PL19B219846G1	A

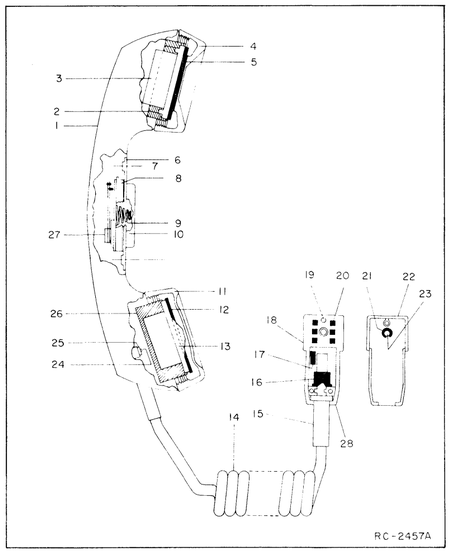
PARTS LIST

LBI-4484A

HANDSET HOOKSWITCH
19B219846G1

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R1	5493035P11	Wirewound: 40 ohms ±5%, 5 w; sim to Hamilton Hall Type HR.
		Earlier than REV A:
	5493035P12	Wirewound: 60 ohms ±5%, 5 w; sim to Hamilton Hall Type HR.
		- - - - - - - - - - SWITCHES - - - - - - - - - -
S1	19A129585P1	Holder and switch: Thermoplastic case, contact rating 1 amp at 125 v.
S2	19A116877P6	Toggle: DPDT, 1 ma at 6 VDC; sim to C and K Components 7201G. (CHANNEL GUARD DISABLE).
		- - - - - - - - - TERMINAL BOARDS - - - - - - - - -
TB1	7775500P203	Phen: 5 terminals.
		- - - - - - - - - - - CABLES - - - - - - - - - - -
W1	19B219841G1	6 conductor, 5 feet long.
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
	N190AP1312C	Tap screw, phillips pozidriv; No. 6 x 3/4. (Secures housing to base plate).
	N101P1510P	Tap screw, phillips: No. 8 x 5/8. (Used for mounting base plate).
	19A129586P1	Bumper, rubber. (2).

*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 - Handset Hookswitch 19B219846G1
To improve the operation of the audio output stage by lowering the off-hook terminating resistance. Changed R1.

PARTS LIST

LBI-4482A

TRANSISTORIZED DYNAMIC HANDSET
19C320478G1

SYMBOL	GE PART NO.	DESCRIPTION
1		Case Assembly. Includes items 1, 2, 4, 5, 11, 12, 26. Shure Brothers RP142.
2		Adapter. Part of item 1.
3		Receiver Cartridge. Shure Brothers RP140.
4		Receiver Cap. Part of item 1.
5		Washer. Part of item 1.
6		Escutcheon. Part of item 27.
7		Flat head screw, socket cap: No. 4-40 x 1/4. Part of item 27.
8		Actuator. Part of item 27.
9		Spring. Part of item 27.
10		Plunger bar. Part of item 27.
11		Transmitter cap. Part of item 1.
12		Washer. Part of item 1.
13		Transmitter cartridge. Shure Brothers RP139.
14	19C321016G2	Cable assembly: Includes items 14-23 and cable RP141.
15	19B219749P1	Flex relief.
16	19A116937P1	Cable clamp: sim to Malco 21012-3.
17	3R77P472K	Resistor, (R1) Composition, 4700 ohms ±10%, 1/2 w.
18	19D416766P1	Connector case.
19	N136AP905C	Screw.
20	19A129435P1	Pin contact.
21	7109043P1	Retaining ring. 3/16 inch, sim to National Lockwasher WA 510.
22	19D416767P1	Connector Cover.
23	19B219723G1	Screw. (Secures cover, item 22 to case, item 18).
24		Screw. Part of item 14.
25		Cable clamp. Part of item 14.
26		Shield. Part of item 1.
27		Switch Assembly. Includes items 6-10. Shure Brothers RP143.
28	19C321016G3	Connector assembly: Includes items 15, 16, 18-23. Does not include resistor, item 17.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

LBI-4488

SPEAKER
19C320302G1

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - LOUDSPEAKERS - - - - - - - - -
LS1	19A116694P1	Permanent magnet, 5 inch: 20 watts, 8 ohms ±10% imp, 100 to 10,000 Hz response; sim to Oaktron T2877.
		- - - - - - - - - - - CABLES - - - - - - - - - -
W1	19A129414G1	2 conductor cable: approx 5 feet long, includes (2) 19A116781P3 contacts.
		- - - - - - - - - MISCELLANEOUS - - - - - - - -
	19B219692G1	Grille.
	19D416396P1	Housing.
	19C320016P1	Mounting bracket. (Located between housing and retaining bracket).
	19C320022P1	Retaining bracket. (Located between mounting bracket and safety release disc).
	19B219578G1	Safety Release Disc.
	19A116986P108	Tap screw, with lockwasher: No. 7-19 x 1/2. (Secures speaker to housing).
	19A116986P112	Tap screw, with lockwasher: No. 7-19 x 3/4. (Secures grille to housing).
	19A116985P1	Tap screw, with lockwasher: No. 13-16 x 3/4. (Secures mounting bracket to housing).
	N187P16010C6	Screw, hexhead, slotted: No. 10-32 x 5/8. (Quantity 1- used with safety release disc and retaining bracket).
	N710P16012C6	Screw, hexhead, slotted: No. 10-16 x 3/4. (Secures mounting bracket or retaining bracket).

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

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 Communication Equipment Sales Office of the General Electric Company.

MAINTENANCE MANUAL

LBI-4734

MOBILE RADIO DEPARTMENT
GENERAL ELECTRIC COMPANY • LYNCHBURG, VIRGINIA 24502

GENERAL ELECTRIC

DF-4093

PRINTED IN U.S.A.