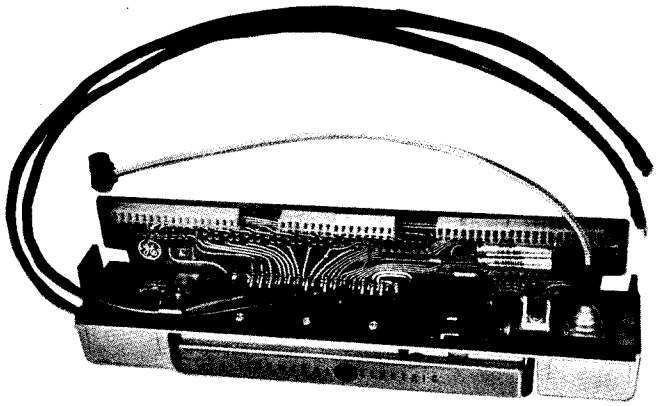
MOBILE RADIO

MASTR II
MAINTENANCE MANUAL
CONTROL UNITS, FRONT PANEL & SYSTEM BOARD



Maintenance Manual LBI-4590 B

1-THRU 8-FREQ. CONTROL UNITS 19A129576G1
FRONT PANEL & SYSTEM BOARD 19D416653G1

SPECIFICATIONS *

CONTROL UNITS

Control Unit (Common Kit)	19A129576G1
One-Frequency Kit	19A129577G1
or	
Multi-Frequency Kit	19A129578G1
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

FRONT PANEL & SYSTEM BOARD

Model Number	19D416653G1
Input Voltage	12 Volts DC
Output	Regulated 10 Volts DC At 0.1 to 0.5 amperes

*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)	19A129576G1
Public Address (Option 1002)	19A129576G2
Fixed Squelch (Option 1003)	19A129576G3
Squelch Operated Relay (Option 1004)	19A129576G4
Two-Frequency PSLM (Options 1005, 1006, 1007)	19A129576G5
Channel Busy Light (Option 1008)	19A129576G6
Noise Blanker Switch (Option 1009)	19A129576G7

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!

CONTROL UNIT

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 a mechanical stop that limits rotation from one through eight 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.

OPTIONS

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

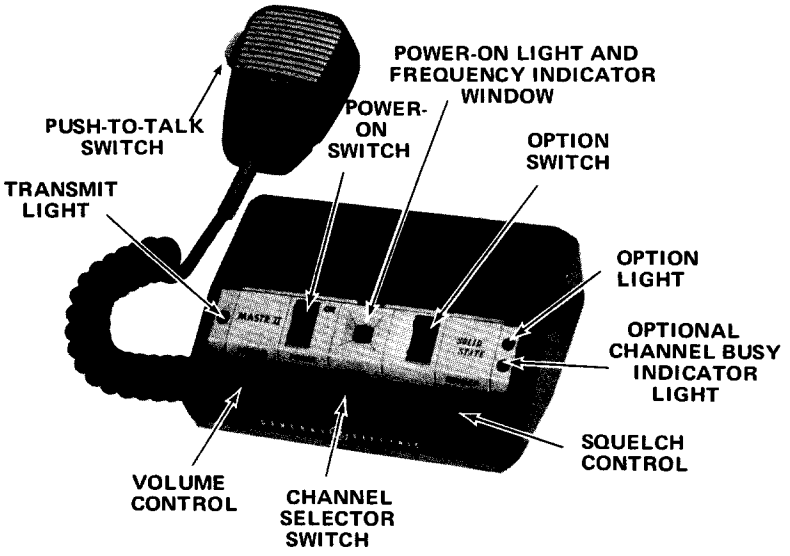


Figure 1 - Control Unit Layout

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 Figure 2).

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 Figure 2).

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.

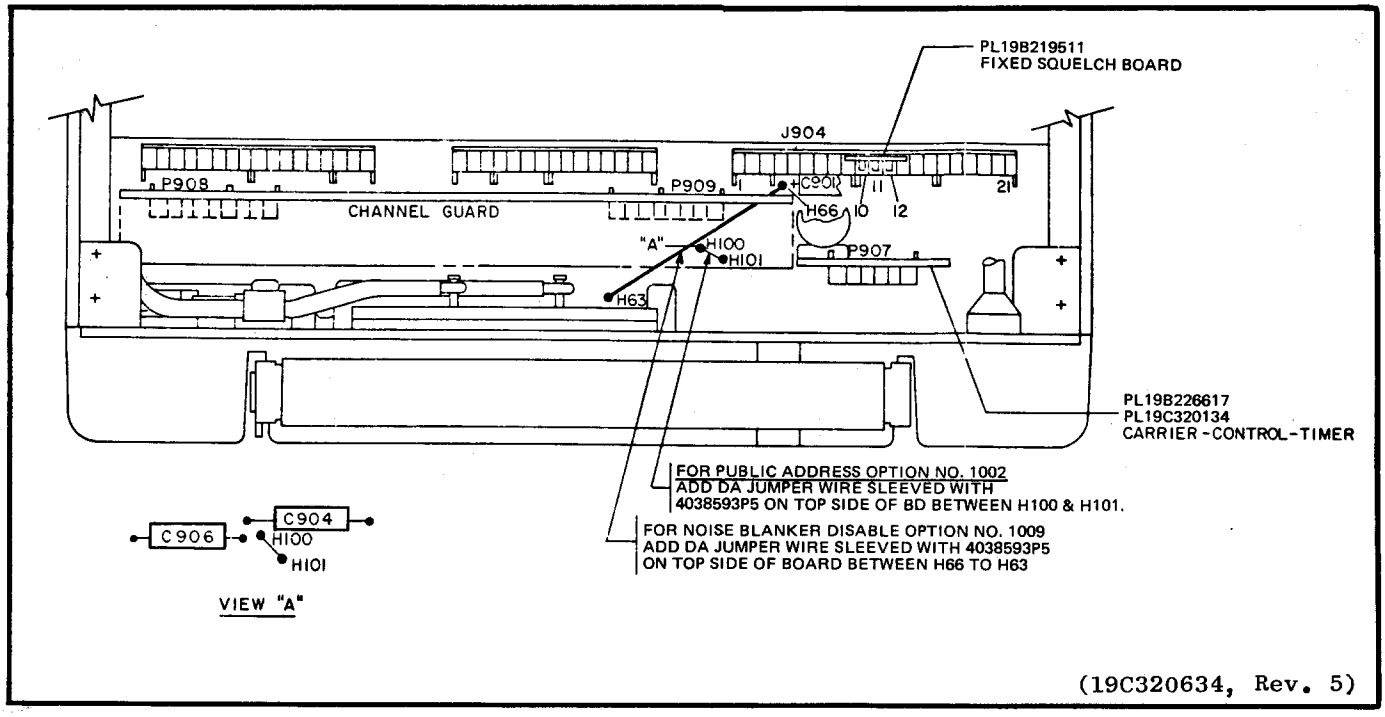


Figure 2 - Blanker Disable and Fixed Squelch Modifications

Public Address

With the Public Address option, the control unit will be equipped with an optional PA-ON switch, an 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. The audio output of the Public Address circuit is connected to the receiver audio PA by a jumper from H100 to H101 on the system board (see Figure 2).

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 selection 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.

IGNITION SWITCH CONNECTIONS

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 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 are turned on and off only by the POWER-ON switch on the Control Unit.

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.

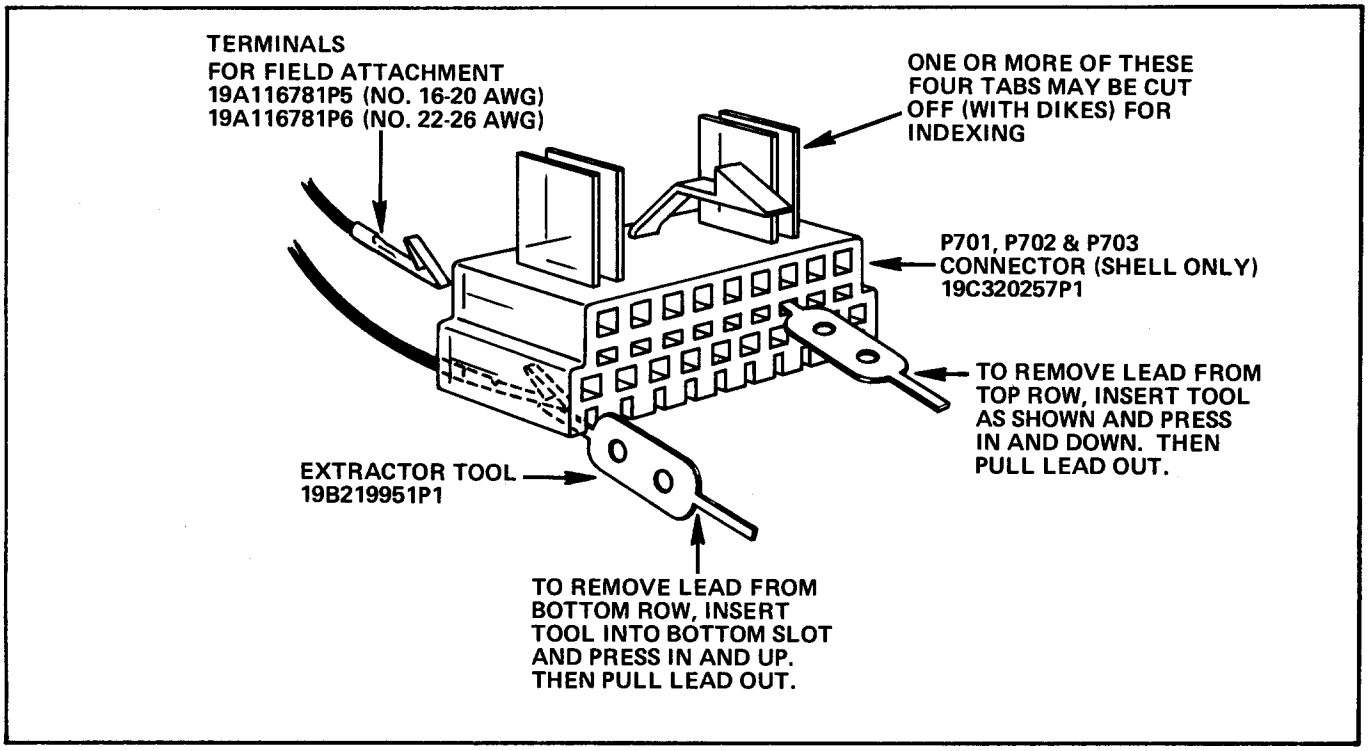


Figure 3 - Using Extraction Tool

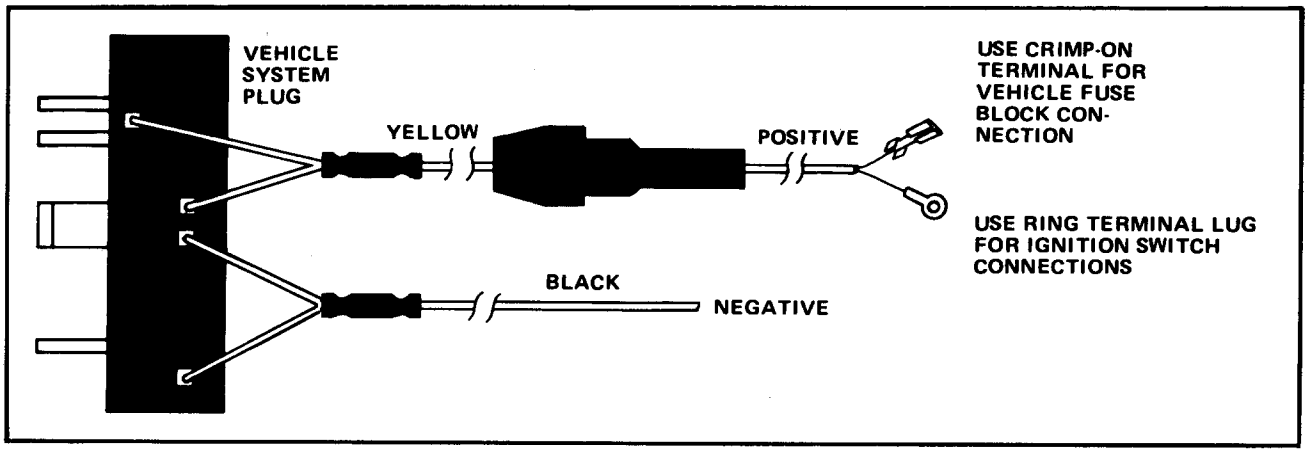


Figure 4 - 12-Volt, Negative Ground Connections

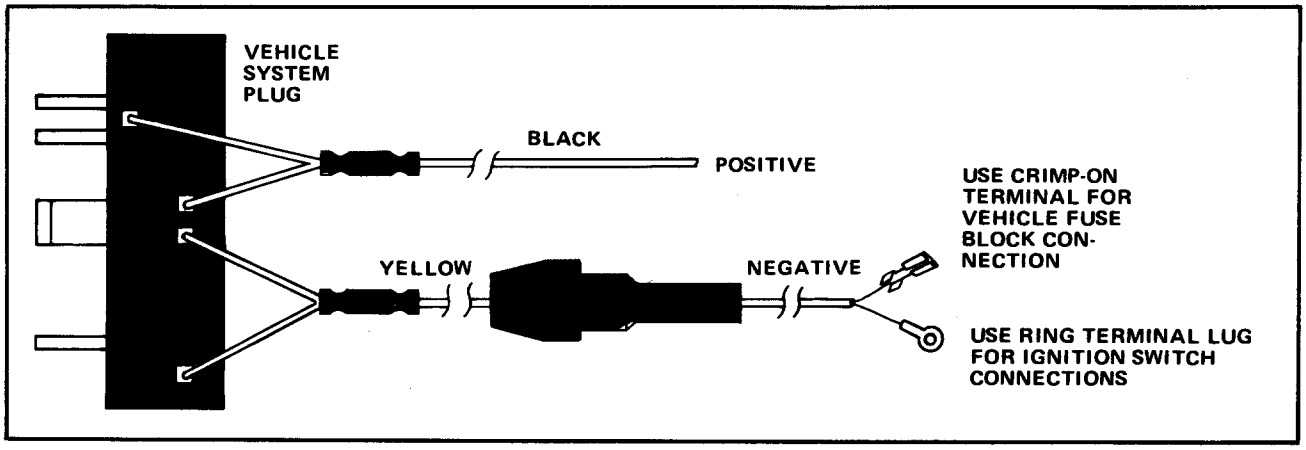


Figure 5 - 12-Volt, positive Ground Connections

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

Standard MASTR II mobile combinations operate in ±12-Volt systems only. 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 3, and change the leads as shown in Figures 4 or 5 as required.

FRONT PANEL & SYSTEM BOARD

DESCRIPTION

The System Board mounts to the front casting of the radio, and terminates the power/control cable through jack J901 on the front panel. The System Board provides all power and control functions through printed wiring runs and jacks J902, J903 and J904 to the modules making up the transmitter and receiver functions.

The jack provides 30 control pins that are soldered directly to the System Board, two power pins, and holes for eight optional pins. Power cables from the two power pins run directly from J901 through the left side rail to the bottom of the transmitter PA assembly.

Transmitter exciter and receiver modules plug in from the bottom to jacks on the rear of the System Board.

A hybrid integrated circuit 10-Volt regulator and control module, a centralized metering jack, and pins for plugging in Channel Guard and Carrier Control Timer modules are also mounted on the System Board.

NOTE

In Channel Guard applications, a jumper between H71 and H72 on the System Board is removed.

Centralized metering jack J905 is provided for use with General Electric Test Set 4EX3A11 or Test Kit 4EX8K12. The red metering plug provides continuous access to the regulated 10 Volts, A+, transmitter and receiver audio, and PTT.

The black metering plug on the Test Set is used for metering the transmitter and receiver circuits.

CIRCUIT ANALYSIS

10-VOLT REGULATOR IC

The 10-Volt Regulator IC contains the following circuits:

- 10-Volt Regulator Reference Amplifiers
- Compensation Voltage Divider
- Receiver Muting and Delay
- Transmitter Keying and Delay

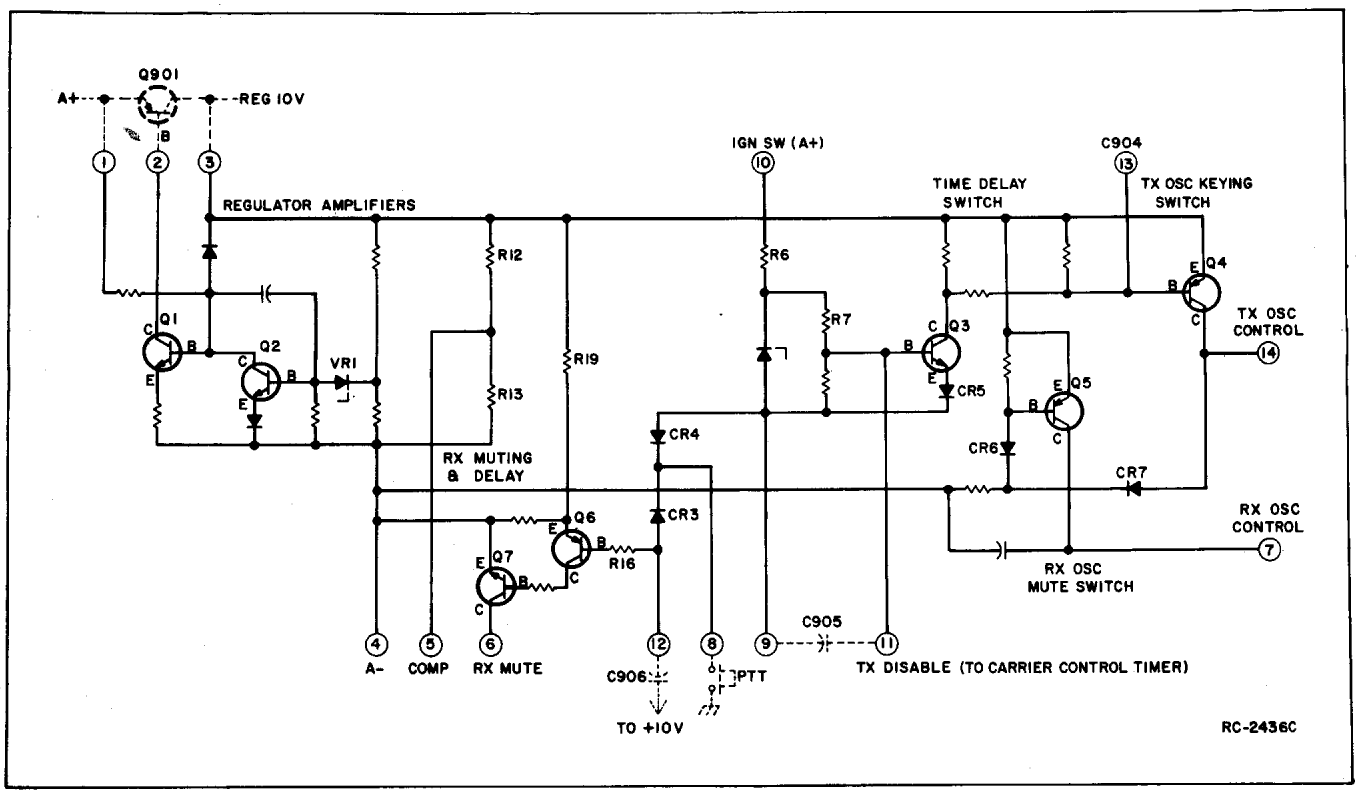


Figure 6 - Typical Regulator IC

- Receiver Oscillator Control
- Transmitter Disable

A typical regulator IC is shown in Figure 6.

10-Volt Regulator

The 10-Volt regulator includes regulator amplifiers Q1 and Q2 (in the IC), and regulator pass transistor Q901. Q901 is mounted on the side of the front casting which acts as a heatsink for the transistor. The regulator circuit provides a closely-controlled supply voltage for the transmitter exciter and receiver (except for the audio PA), and for Channel Guard and Carrier Control Timer options when present. Input voltage (A+) is supplied from the Control Unit on J901-29.

Turning on the radio applies voltage (A+) through input filter L901 and C902 to pin 1 of the regulator and to the base of Q1, causing it to conduct. This turns on PNP regulator pass transistor Q901 and an output voltage appears at the collector. When the output voltage (at pin 3) reaches 10 Volts, zener diode VR1 breaks down, and Q2 starts conducting.

If the output voltage starts to increase, the base current of Q2 also increases, causing it to conduct harder. This causes Q1 to conduct less, decreasing the forward bias on Q901. The voltage drop across Q901 increases and the output remains constant.

When the input voltage starts to drop, the output voltage also tends to drop, causing Q2 to conduct less. This allows Q1 to conduct harder, increasing the forward bias on Q901 and causing it to conduct harder. This reduces the voltage drop across Q901 to keep the output constant.

Service Note: The 10-Volt regulator is protected against short circuits. When supply voltage is present but there is no 10-Volt output, the trouble is probably not in the 10-Volt regulator. Always check for a short (or high drain) on the 10-Volt line before replacing the regulator (see Trouble-shooting Procedure).

Compensation Voltage Divider

When the regulator is turned on, the 10-Volt output is applied to a voltage divider network consisting of R12 and R13. This high impedance source provides a stable 5-Volt compensation input (at pin 5) to the transmitter and receiver ICOMs. This source must not be used for any other purpose.

Receiver Muting & Delay

Pressing the PTT switch grounds the base of Q6 in the receiver muting and delay circuit, turning it on. Turning on Q6 turns on Q7, causing its collector to drop to A-. The A- at pin 6 is applied to the receiver squelch and audio ICs, muting the receiver.

With the PTT switch pressed, C906 starts to charge from the +10-Volt line. When the PTT switch is released, C906 keeps Q6 and Q7 on for approximately 50 milliseconds as the capacitor discharges through R19, the emitter-base junction of Q6, and R16. This delays the turn-on of the receiver audio for 50 milliseconds.

Transmitter Keying & Delay

Pressing the PTT switch on the microphone connects pin 8 of the regulator IC to A-. Capacitor C905 starts to charge through R6 and R7. In 15 milliseconds, C905 is charged to a voltage high enough to allow time delay switch Q3 to turn on. This causes transmitter oscillator control switch Q4 to turn on. Turning on Q4 applies voltage to the transmitter ICOM(s), keying the transmitter. Keying the transmitter ICOM is the only keying control function in the transmitter. The collector voltage of Q4 also reverse biases CR6, turning off Q5 and removing the supply voltage to the receiver ICOM(s).

The 15 millisecond time delay in the transmitter oscillator keying circuit allows the antenna switch to energize before RF is applied to the antenna switch. When the PTT is released, diode CR901 delays the antenna switch from de-energizing until the RF is removed from the contacts.

Receiver Oscillator Control

When the radio is in the receive mode (transmitter unkeyed), transmitter oscillator control switch Q4 is off and receiver oscillator control switch Q5 is conducting. The voltage at the collector of Q5 is applied to the receiver ICOM(s).

Transmitter Disable

In radios equipped with a Carrier Control Timer, pin 11 connects to P907-1 (TX DISABLE) on the Carrier Control Timer plug. When the timing cycle on the Carrier Control Timer runs out, A- is applied to

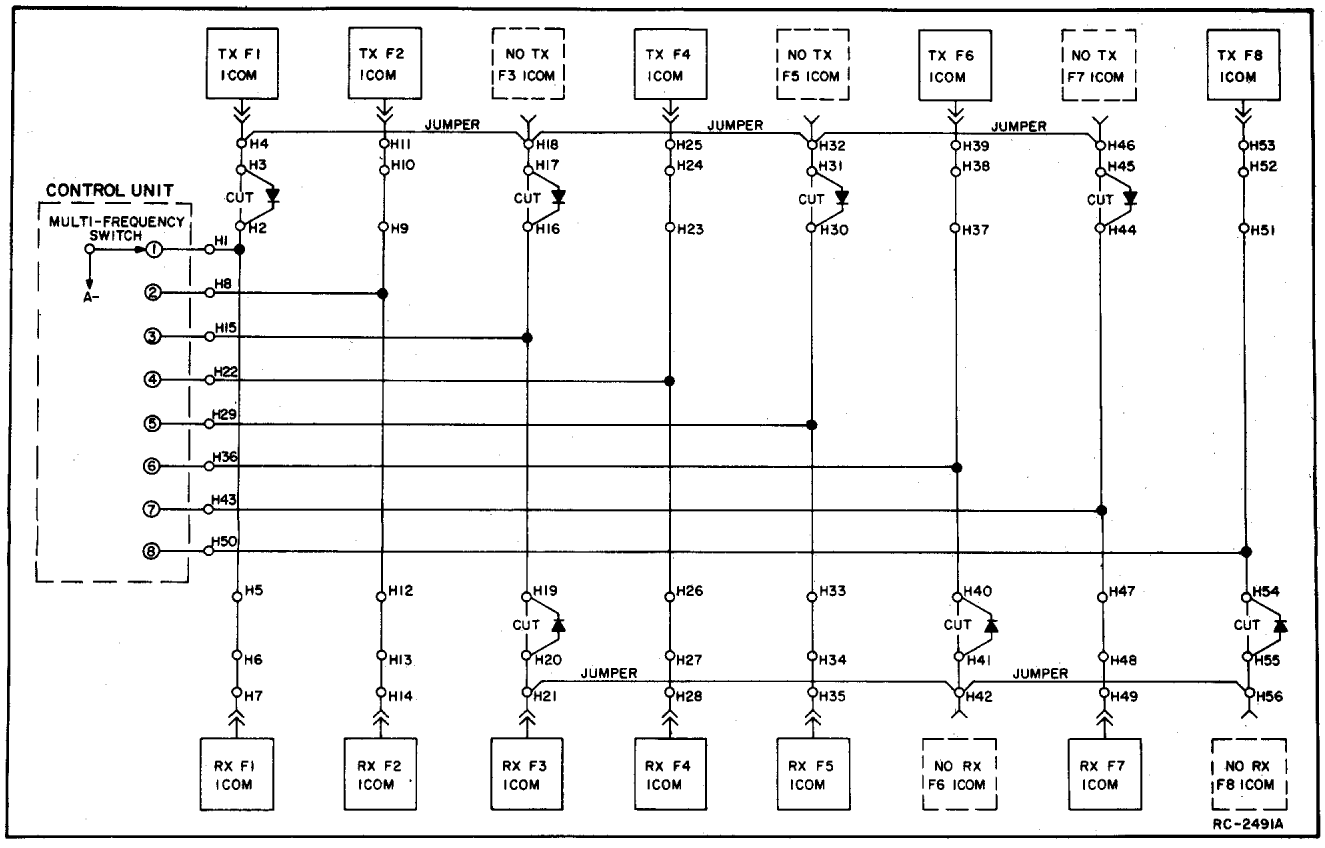


Figure 7 - Repeating ICOMs

pin 11, turning off the transmitter oscillator control voltage which turns off the transmitter.

REPEATING ICOMS

A matrix on the bottom of the System Board can be modified to permit both the transmitter and receiver to repeat the use of the same frequency without the use of additional ICOMs. This can be done by simply cutting frequency selection runs on the System Board, adding isolation diodes across the cut runs, and then connecting the repeated channels together with a jumper. With this modification, the frequency selector switch will have the same transmitter or receiver frequency on one or more switch positions as desired, using only one ICOM for each of the repeated channels. An example of the System Board modified for repeating ICOMs is shown in Figure 7.

For example, to repeat transmitter channels F1, F3, F5 and F7:

1. Cut the runs between H2 and H3, H16 and H17, H30 and H31, and H44 and H45.
2. Connect a diode (cathode end towards the frequency select lead) across each of the cut runs.
3. Connect a #26 AWG sleeved jumper from H4 to H18, H18 to H32 & H32 to H46.

To repeat receiver channels F3, F6 and F8:

1. Cut the runs between H19 and H20, H40 and H41, and H54 and H55.
2. Connect a diode (cathode end towards the frequency select lead) across each of the cut runs.
3. Connect a #26 AWG sleeved lead from H21 to H42, and from H42 to H46.

MAINTENANCE

DISASSEMBLY

To service the System Board from the top (see Mechanical Parts Breakdown):

1. Pull the locking handle down, then pry up the top cover at the front notch and lift off the cover.

To service the board from the bottom:

1. Pull the locking handle down and pull the radio out of the mounting frame.
2. Remove the top cover, then loosen the two bottom cover retaining screws and remove the bottom cover.

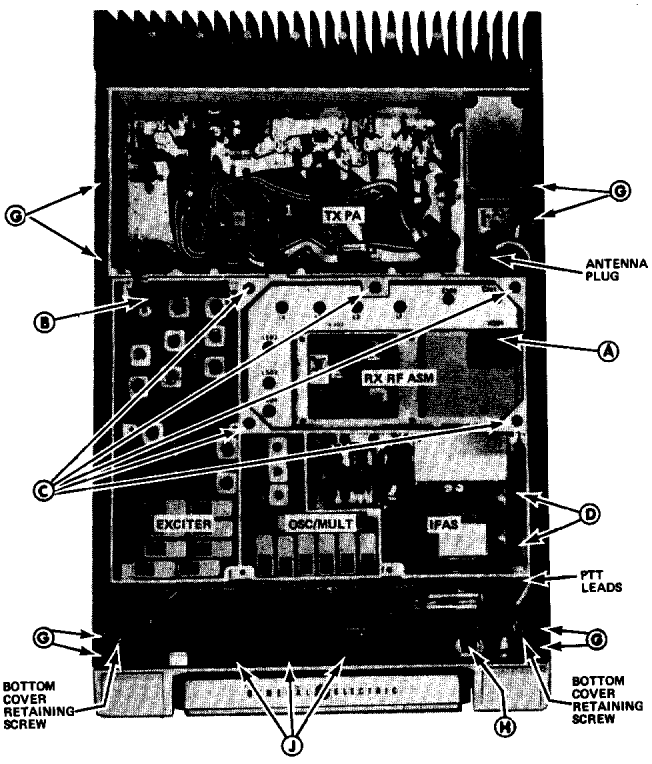


Figure 8 - Disassembly Procedure (Top View)

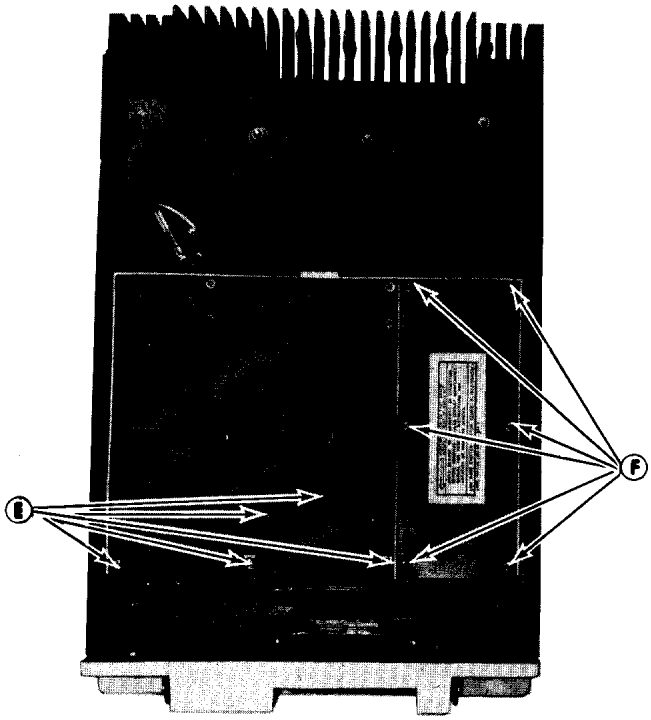


Figure 9 - Disassembly Procedure (Bottom View)

To remove the System Board from the radio:

1. Remove the top and bottom covers.
2. Disconnect the receiver antenna input plug Ⓐ , and the exciter output plug Ⓑ . (see Figure 8).
3. Remove the five screws Ⓒ holding the receiver RF assembly to the module mounting frame. Then remove the two screws Ⓓ holding the receiver audio PA heatsink to the right side rail.
4. Remove the five screws Ⓔ holding the receiver boards to the module mounting frame (see Figure 9).
5. Remove the six screws Ⓕ holding the exciter board and its bottom cover to the module mounting frame.
6. Press straight down on the plug-in Exciter and then the Osc/Mult and IFAS boards to avoid bending the pins when unplugging the boards from the System Board Jacks.
7. Remove the four screws Ⓖ in each of the side rails and remove the side rails (see Figure 8). NOTE: Remove the shield on the left side rail to expose the power cables, and if desired, unsolder the cables from the bottom of the PA Assembly.
8. Disconnect the PTT leads from J910 on the System Board, and the antenna plug from the PA assembly.
9. If it is necessary to remove the System Board from the front casting, remove the mounting screw Ⓗ from regulator transistor Q901. Then remove six screws Ⓙ (three along the top and three along the bottom) on System jack J901 and remove the System Board.

TROUBLESHOOTING

10-VOLT REGULATOR U901

SYMPTOM	PROCEDURE
No 10-Volt output	1. Check input voltage (A+) at pin 1 of U901. 2. Remove the Power/Control cable from J901. Check for shorts from Pins 3, 7 and 14 to A-. These readings should be no less than 100 ohms. 3. Check Pass transistor Q901. 4. Replace U901.
Regulator output too high	1. Check Q901. 2. Replace U901.
No switched 10-Volts for transmitter or receiver	1. Check for shorts from Pins 7 and 14 to A-. 2. Check to see that Pin 8 of U901 goes to A- when PTT switch is pressed. 3. Replace U901.

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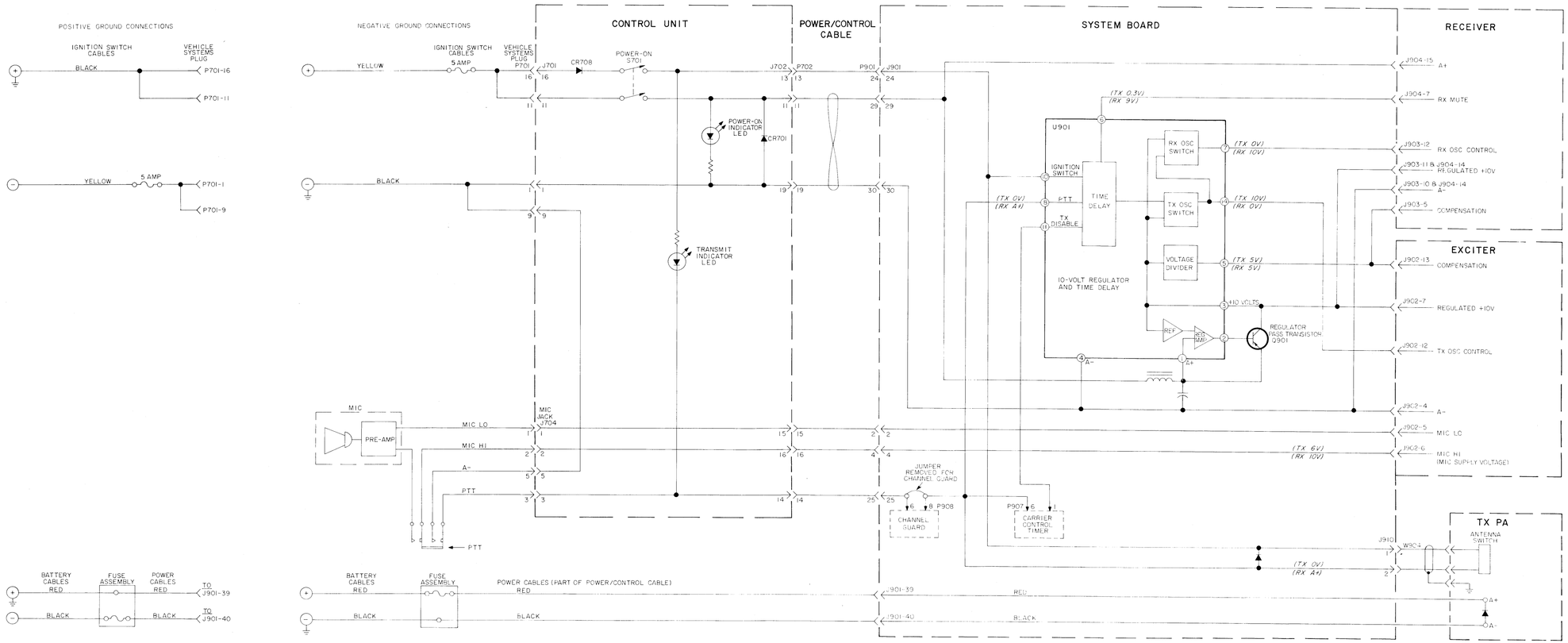
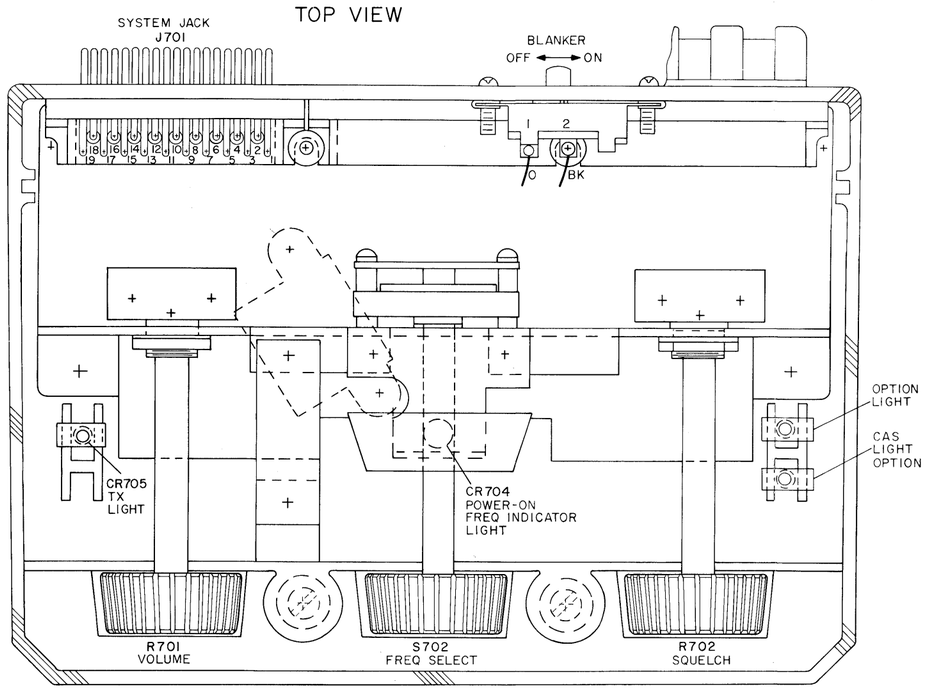
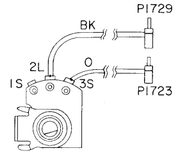


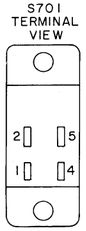
TRANSMITTER KEYING & POWER DISTRIBUTION DIAGRAM

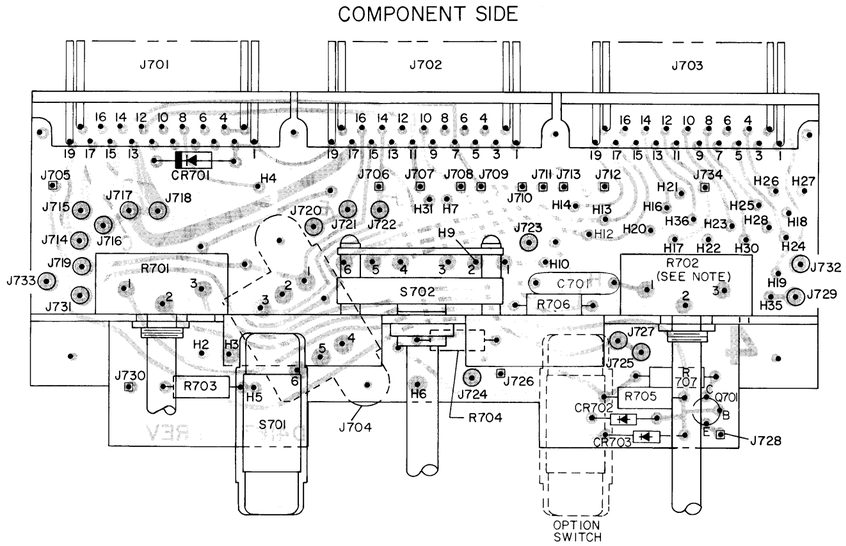


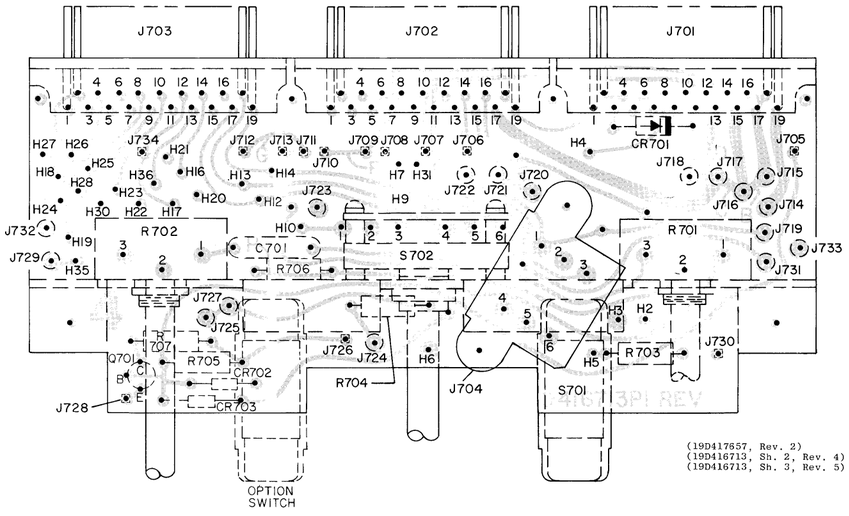
NOTE:
FOR FIXED SQUELCH OPTION, R702 IS REPLACED BY S1701.



FIXED SQUELCH SWITCH
S1701
(VIEWED FROM KNOB END)

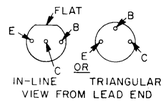






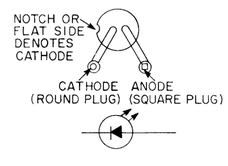
(19D417657, Rev. 2)
(19D416713, Sh. 2, Rev. 4)
(19D416713, Sh. 3, Rev. 5)

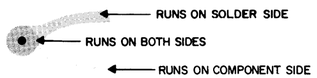
LEAD IDENTIFICATION FOR Q701

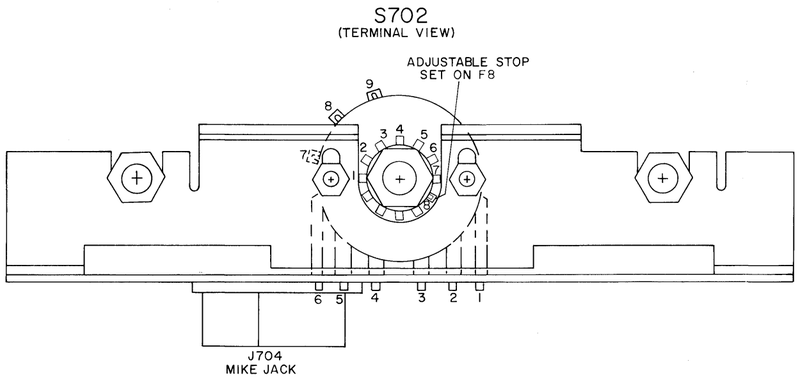


NOTE: LEAD ARRANGEMENT, AND NOT CASE SHAPE, IS DETERMINING FACTOR FOR LEAD IDENTIFICATION.

LEAD IDENTIFICATION FOR LIGHT-EMITTING DIODES (LEDS)

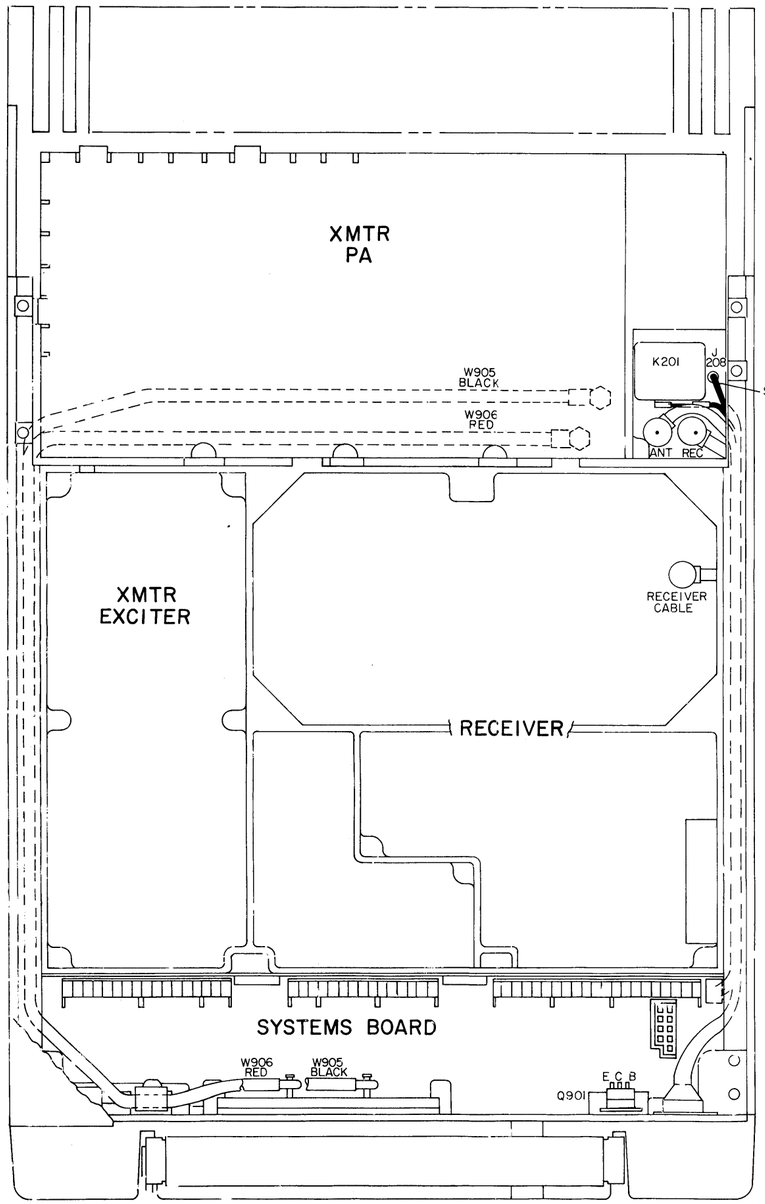


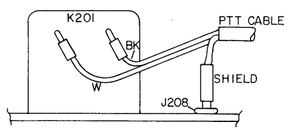


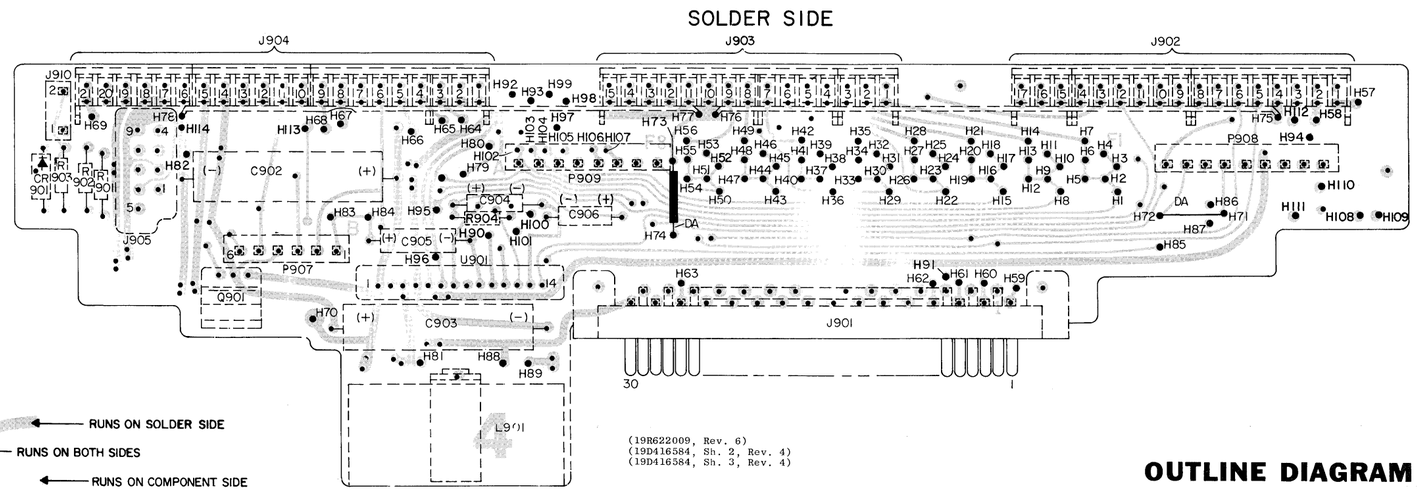


OUTLINE DIAGRAM

1 THRU 8-FREQUENCY CONTROL UNIT



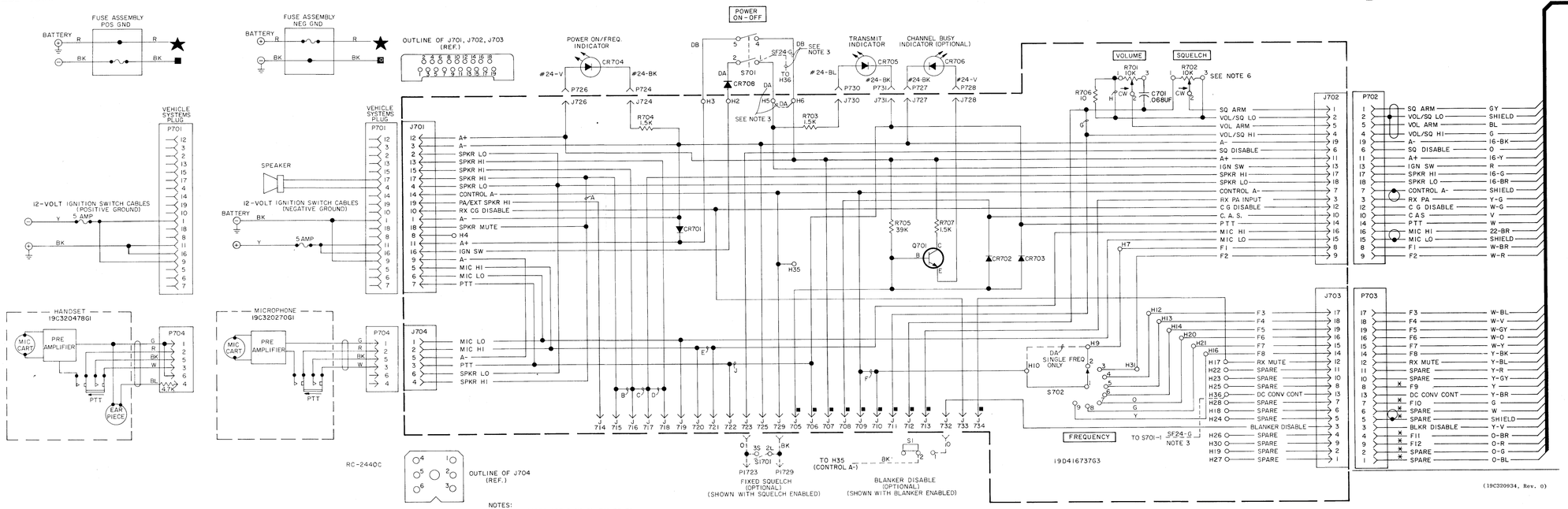




(19R622009, Rev. 6)
(19D416584, Sh. 2, Rev. 4)
(19D416584, Sh. 3, Rev. 4)

OUTLINE DIAGRAM

FRONT PANEL & SYSTEM BOARD
19D416653G1



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 SCHEM DIAG APPLIES TO:

MODEL NO.	REV. LETTER
19D416737G3	A
19D416781G1	A
19D416781G2	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.

(19D416854, Rev. 8)

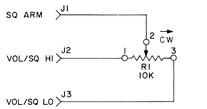
INTERCONNECTION DIAGRAM

CONTROL UNIT & SYSTEM BOARD

POWER/CONTROL CABLE

FIXED SQUELCH OPTION

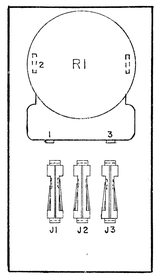
SCHEMATIC DIAGRAM



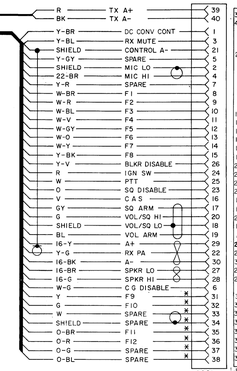
IN ORDER TO RETAIN RATED EQUIPMENT PERFORMANCE, REPLACEMENT OF ANY SERVICE PART SHOULD BE MADE ONLY WITH A COMPONENT HAVING THE SPECIFICATIONS SHOWN ON THE PARTS LIST FOR THAT PART.

(19A129237, Rev. 1)

OUTLINE DIAGRAM

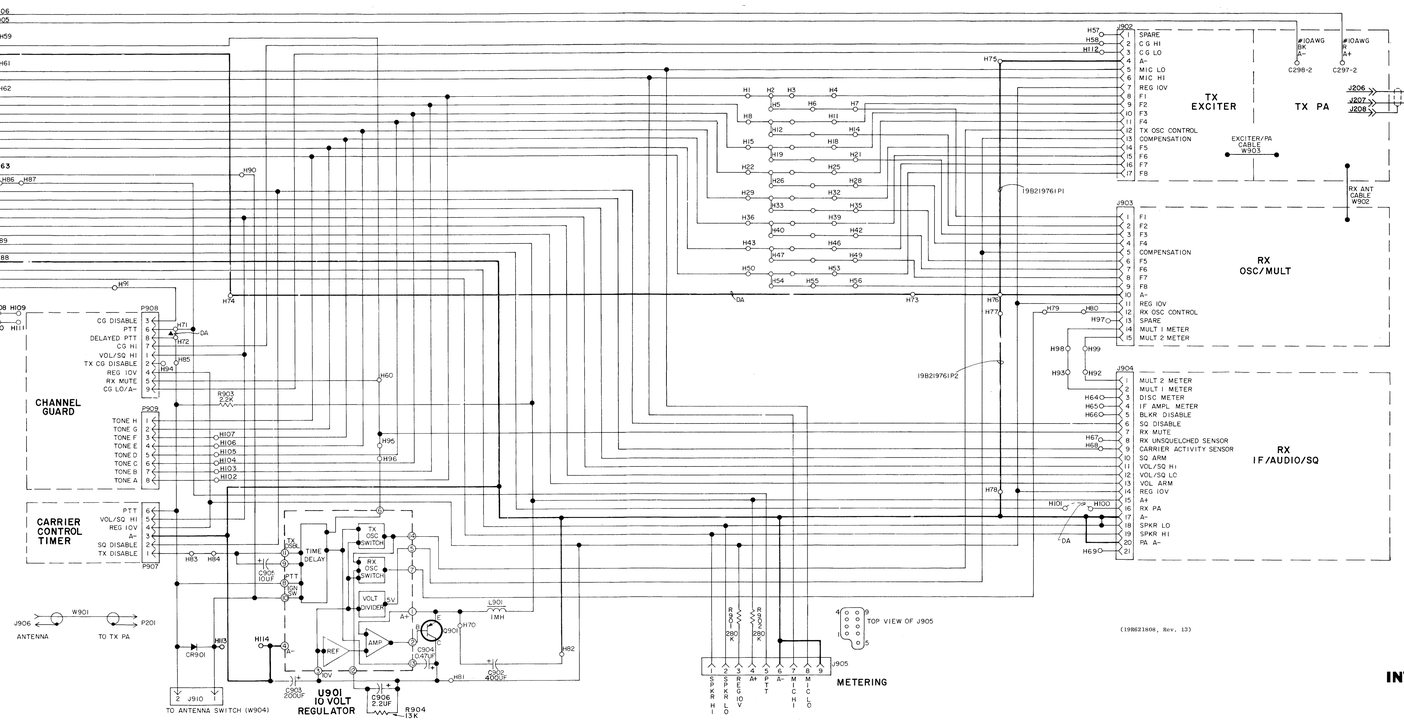


(19B219511, Rev. 1)



✖ THESE WIRES PRESENT IN 38 CONDUCTOR CABLE ONLY.
ALL WIRES #24 UNLESS OTHERWISE NOTED.
● #8 EXCEPT 9-FOOT CABLES ARE #12

(19C320934, Rev. 0)



(19B621808, Rev. 13)

	REV. LETTER
"M" MODEL FRONT PANEL 19D416653G1	A
"E" MODEL FRONT PANEL 19D417084G1	
SYSTEM BOARD 19D416602G1	C

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 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.

▲REMOVE FOR CHANNEL GUARD
DA= #22 AWG WIRE SIZE

INTERCONNECTION DIAGRAM

CONTROL UNIT & SYSTEM BOARD

PARTS LIST

LBI-4581B

1-8 FREQUENCY CONTROL UNIT FRONT PANEL - SYSTEM BOARD, AND ASSOCIATED ASSEMBLIES

SYMBOL	GE PART NO.	DESCRIPTION
		CONTROL UNIT INCLUDES: COMMON KIT 19A129576G1 AND ONE FREQ KIT 19A129577G1 OR MULTI-FREQ KIT 19A129578G1
		COMMON KIT 19A129576G1
		- - - - - - - DIODES AND RECTIFIERS - - - - - -
CR705	19B219800G1	Diode, light emitting.
		- - - - - - - - - - - RESISTORS - - - - - - - - - - -
R702	19A116687P1	Variable, carbon film: 10,000 ohms ±20%, 1/2 w; sim to Mallory LC-1A(10K).
		COMPONENT BOARD 19D416737G3
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C701*	19A116080P106	Polyester: 0.068 µf ±10%, 50 VDCW. Added by REV A.
		- - - - - - - DIODES AND RECTIFIERS - - - - - -
CR701	4037822P1	Silicon.
CR702 and CR703	19A115250P1	Silicon.
CR708	4037822P1	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 08-54-0404.
J714 thru J725	4033513P4	Contact, electrical: sim to Bead Chain L93-3.
J726	19A116779P1	Contact, electrical: sim to Molex 08-54-0404.
J727	4033513P4	Contact, electrical: sim to Bead Chain L93-3.
J728	19A116779P1	Contact, electrical: sim to Molex 08-54-0404.
J729	4033513P4	Contact, electrical: sim to Bead Chain L93-3.
J730	19A116779P1	Contact, electrical: sim to Molex 08-54-0404.
J731 thru J733	4033513P4	Contact, electrical: sim to Bead Chain L93-3.
J734	19A116779P1	Contact, electrical: sim to Molex 08-54-0404.
		- - - - - - - - - - - - TRANSISTORS - - - - - - - -
Q701	19A115889P1	Silicon, NPN; sim to Type 2N2712.
		- - - - - - - - - - - - RESISTORS - - - - - - - - - -
R701	19A116687P2	Variable, carbon film: 10,000 ohms ±20%, 1/4 w; sim to Mallory M204.
R703 and R704	3R77P152K	Composition: 1500 ohms ±10%, 1/2 w.
R705	3R77P393K	Composition: 39,000 ohms ±10%, 1/2 w.
R706	3R77P100K	Composition: 10 ohms ±10%, 1/2 w.
R707	3R77P152K	Composition: 1500 ohms ±10%, 1/2 w.
R708*	3R77P471K	Composition: 470 ohms ±10%, 1/2 w. Deleted by REV A.
		- - - - - - - - - - - SWITCHES - - - - - - - - - - -
S701	19A116622P5	Push: DPST, 0.5 amp VDC or 3.0 amps at 125 v; sim to Switchcraft 11K1040.
		FREQUENCY INDICATOR LIGHT ASSEMBLY 19B219696G2
		- - - - - - - - DIODES AND RECTIFIERS - - - - - - -
CR704	19A129291P3	Diode, light emitting: red.
		- - - - - - - - - - - - PLUGS - - - - - - - - - - -
P724	4029840P2	Contact, electrical: sim to Amp 42827-2.
P726	19A127042P2	Terminal, solderless: sim to Malco 12093-10.
		ONE FREQUENCY KIT 19A129577G1
	19B219626P1	Knob plug. (See RC-2447 item 23).
	7140578P4	Nut, push on: sim to Tinnerman C1259-014-27. (See RC-2447 item 24).
	19A130009P1	Diffuser. (See RC-2447 item 25).
		MULTI-FREQUENCY KIT 19A129578G1
		- - - - - - - - - - - SWITCHES - - - - - - - - - - -
S702	19A116697P1	Rotary: 1 section, 1 pole, 8 positions (supplied with adj stop), non- shorting contacts, 2 amps at 28 VDC or 1 amp at 110 VRMS; sim to Oak Mfg Type "F".
	19B219825G1	Knob. (See RC-2447 item 6).
	19B219699G1	Frequency Indicator. (Includes items 7-10 on RC-2447).
	7115130P9	Lockwasher: sim to Shakeproof 1220-2. (See RC-2447 item 13).
	7165075P2	Hex nut, brass: No. 3/8-32. (See RC-2447 item 12).
	7141225P2	Hex nut: No. 4-40.
	N404P11C6	Lockwasher: No. 4.
		CHANNEL BUSY OPTION 19A129567G6
		- - - - - - - - DIODES AND RECTIFIERS - - - - - -
CR706	19B219800G2	Light emitting.
	19A116807P1	Clip, spring tension. (Secures CR706).
		NOISE BLANKER DISABLE OPTION 19A129567G7
		- - - - - - - - - - - SWITCHES - - - - - - - - - -
S1	19B219988G1	Slide: SPST, 1 pole, 2 positions, .5 amp VDC or 3 amps VAC at 125; sim to Switchcraft 46202LH.
	4032480P1	Nut, sheet spring. (Secures S1).
		FIXED SQUELCH OPTION
		- - - - - - - - - - SWITCHES - - - - - - - - - - -
S1701		SWITCH ASSEMBLY 19A129567G3
		- - - - - - - - - - - PLUGS - - - - - - - - - - -
P1723	4033348P1	Contact, electrical: sim to Bead Chain M125-34.
P1729	4033348P1	Contact, electrical: sim to Bead Chain M125-34.
		FIXED SQUELCH BOARD 19B219511G1 (Mounts on System Board)
		- - - - - - - - JACKS AND RECEPTACLES - - - - - -
J1 thru J3	19A116428P3	Contact, electrical: sim to AMP 85487-3 (Strip Form).
		- - - - - - - - - - - RESISTORS - - - - - - - - - - -
R1	19B209358P6	Variable, carbon film: approx 75 to 10,000 ohms ±20%, 0.25 w; sim to CTS Type U-201.
		MECHANICAL PARTS (SEE RC-2447)
1	19A116807P1	Clip, spring tension.
2	19A116773P106	Tap screw: thd size No. 7-19 x 3/8.
3	19B201074P204	Tap screw, Phillips POZIDRIV®: No. 4-40 x 1/4.
4	N402P8C6	Washer: No 8.
5	19C320389G1	Housing.
6	19B219825G1	Knob.
7	19C320175P1	Frequency indicator.
8	NP270754A	Nameplate. (1-12).
9	NP270754B	Nameplate. (OFF, A-H).
10	4029006P1	Retainer strap: sim to Tinnerman C2386-020-1.
11	N117P9004C13	Tap screw: No. 4-40 x 1/4.
12	7165075P2	Hex nut, brass: No. 3/8-32.
13	7115130P9	Lockwasher: sim to Shakeproof 1220-2.
14	19A134017P1	Adjustable stop.
15	19B219578G1	Safety release disc.
16	19C320022P1	Retaining bracket.
17	N187P16010C6	Screw, hexhead, slotted: No. 10-32 x 5/8. (Quantity 1, used with safely release disc and retaining bracket).
18	N710P16012C6	Screw, hexhead, slotted: No. 10-16 x 3/4. (Quantity 3, used without safely release disc and retaining bracket).
19	19D416594P1	Mounting bracket.
20	19E500988P1	Cover.
21	19A116985P1	Tap screw, assembled washer: No. 13-16 x 3/4 with No. 10 hexhead.
22	NP270753P1	Nameplate. (MASTR II SOLID STATE).
23	19B219626P1	Knob plug. (Frequency switch S702).
24	7140578P4	Nut, push on: sim to Tinnerman C1259-014-27. (Used with item 23).
25	19A130009P1	Diffuser.
26	7160815P4	Washer, spring; sim to Shakeproof 3544-14-00.
		FRONT PANEL AND SYSTEM BOARD 19D416653G1
		- - - - - - - - - - TRANSISTORS - - - - - - - - - -
Q901	19A116375P1	Silicon, PNP.
		- - - - - - - - - - - CABLES - - - - - - - - - - -
W901		ANTENNA CABLE 19A129312G1
J906		Connector. Includes receptacle and adapter:
	4029493P1	Receptacle, coaxial: sim to Amphenol 83-798.
	4029082P2	Adapter: sim to Amphenol 83-765.
	5491689P84	Cable, RF: approx 13-3/4 inches long, 350 VRMS, 500 VDC operating voltage. (Includes P201).
W905 and W906		POWER LEAD 19A129315G1 (BLACK) 19A129315G2 (RED)
	19A115799P14	Terminal, solderless: wire size No. 12-10 AWG; sim to AMP 322447.
	7117269P1	Terminal, solderless: wire size No. 14 AWG. (Used with contact 19B219394P1).
	19B219394P1	Contact.
		SYSTEM BOARD 19D416602G1
		- - - - - - - - - - - CAPACITORS - - - - - - - - - -
C901*	19A115680P10	Electrolytic: 200 µf +150% -10%, 18 VDCW; sim to Mallory Type TT. Deleted by REV A.
C902*	19A115680P24	Electrolytic: 400 µf +150% -10%, 18 VDCW; sim to Mallory Type TT.
		Earlier than REV A:
	19A115680P10	Electrolytic: 200 µf +150% -10%, 18 VDCW; sim to Mallory Type TT.
C903	19A115680P10	Electrolytic: 200 µf +150% -10%, 18 VDCW; sim to Mallory Type.TT.
C904	5496267P28	Tantalum: 0.47 µf ±20%, 35 VDCW; sim to Sprague Type 150D.
C905	19B200240P10	Tantalum: 10 µf ±5%, 15 VDCW.
C906*	5496267P213	Tantalum: 2.2 µf ±10%, 20 VDCW; sim to Sprague Type 150D.
		In REV A and earlier:
	19C300075P15001J	Polyester: 15,000 pf ±5%, 100 VDCW; sim to GE Type 61F. Added by REV A.
		- - - - - - - DIODES AND RECTIFIERS - - - - - - -
CR901	4037822P1	Silicon.
		- - - - - - - JACKS AND RECEPTACLES - - - - - - -
J901	19D416398G1	Connector. Includes 30 (19A116669P1) contacts.
J902		Connector. Includes:
	19A116659P3	Printed wiring: 8 contacts; sim to Molex 09-52-3082.
	19A116659P4	Printed wiring: 6 contacts; sim to Molex 09-52-3062.
	19A116659P1	Printed wiring: 3 contacts; sim to Molex 09-52-3032.
J903		Connector. Includes:
	19A116659P3	Printed wiring: 8 contacts; sim to Molex 09-52-3082.
	19A116659P1	Printed wiring: 3 contacts; sim to Molex 09-52-3032.
	19A116659P15	Printed wiring: 4 contacts; sim to Molex 09-52-3042.
J904		Connector. Includes:
	19A116659P4	Printed wiring: 6 contacts; sim to Molex 09-52-3062.
	19A116659P1	Printed wiring: 3 contacts; sim to Molex 09-52-3032.
J905	19B219374G2	Connector. Includes 9 (19A116651P1) contacts.
J910	19A116779P1	Contact, electrical: sim to Molex 08-54-0404. (Quantity 2).
		- - - - - - - - - - INDUCTORS - - - - - - - - - -
L901	19A115894P1	Audio freq: 1.0 mh inductance, 0.35 ohms DC res.
		- - - - - - - - - - - PLUGS - - - - - - - - - -
P907	19A116779P1	Contact, electrical: sim to Molex 08-54-0404. (Quantity 6).
P908	19A116779P1	Contact, electrical: sim to Molex 08-54-0404. (Quantity 9).
P909	19A116779P1	Contact, electrical: sim to Molex 08-54-0404. (Quantity 8).
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R901 and R902	19C314256P22803	Metal film: 280,000 ohms ±1%, 1/4 w.
R903	3R152P222K	Composition: 2200 ohms ±10%, 1/4 w.
R904*	3R152P133J	Composition: 13,000 ohms ±5%, 1/4 w. Added by REV B.
		- - - - - - - INTEGRATED CIRCUITS - - - - - - -
U901*	19D416564G2	10-Volt Regulator.
		Earlier than REV A:
	19D416564G1	10-Volt Regulator.
		- - - - - - - - - MISCELLANEOUS - - - - - - - -
	19A129264G1	Clip. (Used with L901).
	19B219398P1	Support. (Used with J901).
	19B219761P1	Jumper. (Connects J902 and J903).
	19B219761P2	Jumper. (Connects J903 and J904).
		ASSOCIATED ASSEMBLIES
W902	5491689P83	Receiver Antenna Cable: (STANDARD), 4-3/4 inches long; 350 VRMS, 500 VDC operating voltage.
W902	5491689P77	Receiver Antenna Cable: (NOISE BLANKER/PRE-AMP), 6 inches long; 350 VRMS, 500 VDC operating voltage.
W903	5491689P86	Exciter/PA Cable: 3-1/2 inches long; 350 VRMS, 500 VDC operating voltage.
W904		PUSH-TO-TALK-CABLE 19A129314G1
	4036634P1	Contact, electrical; sim to AMP 42428-2. (Used with black and white wire on shielded end).
	4029840P2	Contact, electrical: sim to Amp 42827-2. (Used with shield).
	19A116781P6	Contact, electrical: sim to Molex 08-50-0108. (Used with black and white wire on connector block end).
	19A116659P16	Connector block. 2 contact; sim to Molex 09-50-4031.
		POWER/CONTROL CABLE 38 CONDUCTOR 19D416716G11
		- - - - - - - - - - - PLUGS - - - - - - - - - -
P702		Connector. Includes:
	19B226516P1	Shell.
	19A116781P5	Contact, electrical: wire size No. 16-20 AWG; sim to Molex 08-50-0106. (Quantity 7).
	19A116781P6	Contact, electrical: wire size No. 22-26 AWG; sim to Molex 08-50-0108. (Quantity 12).
P703		Connector. Includes:
	19B226516P1	Shell.
	19A116781P5	Contact, electrical: wire size No. 16-20 AWG; sim to Molex 08-50-0106. (Quantity 1).
	19A116781P6	Contact, electrical: wire size No. 22-26 AWG; sim to Molex 08-50-0108. (Quantity 18).
		- - - - - - - - - MISCELLANEOUS - - - - - - - -
	19D416352P14	Cable: 38 conductor, 20 feet, includes P901.
	7142878G1	Clip loop (strain relief).
	19A115799P2	Terminal, solderless: sim to AMP 33461. (Quantity 2).
		POWER/CONTROL CABLE 30 CONDUCTOR 19D416716G5
		- - - - - - - - - - - PLUGS - - - - - - - - - -
P702 and P703		Connector. Includes:
	19C320257P1	Shell.
	19A116781P5	Contact, electrical: wire size No. 16-20 AWG; sim to Molex 08-50-0106. (Quantity 7).
	19A116781P6	Contact, electrical: wire size No. 22-26 AWG; sim to Molex 08-50-0108. (Quantity 23).
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
	19D416352P5	Cable: 30 conductor, 20 feet, includes P901.
	7142878G1	Clip loop (strain relief).
	19A115799P2	Terminal, solderless: sim to AMP 33461. (Quantity 2).
		POWER/CONTROL CABLE 18 CONDUCTOR 19D416716G2
		- - - - - - - - - - - PLUGS - - - - - - - - - - -
P702		Connector. Includes:
	19C320257P1	Shell.
	19A116781P5	Contact, electrical: wire size No. 16-20 AWG; sim to Molex 08-50-0106. (Quantity 6).
	19A116781P6	Contact, electrical: wire size No. 22-26 AWG; sim to Molex 08-50-0108. (Quantity 12).
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
	P19D416352P2	Cable: 18 conductor, 20 feet, includes P901.
	7142878G1	Clip loop (strain relief).
	19A115799P2	Terminal, solderless: sim to AMP 33461. (Quantity 2).
		IGNITION SWITCH CABLE 19B219537G4
		- - - - - - - - - - - PLUGS - - - - - - - - - -
P701	19B226516P3	Connector.
	19A129504G1	Y Cable (Black).
		Y FUSED LEAD 19A129480G3
	1R16P8	Fuse, quick blowing: 5 amps at 250 v; sim to Littelfuse 312005 or Bussmann MTH-5.
	19A115776P2	Fuseholder, phen: sim to Bussmann Type HHJ.
	19A115776P3	Contact, electrical: sim to Littelfuse 904-83. (Located inside fuseholder).
	7491823P7	Terminal, solderless: wire size No. 16-14 AWG.
	7491823P8	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 IGNITION SWITCH CABLE 19B219537G1
		- - - - - - - - - - - PLUGS - - - - - - - - - - -
P701	19B226516P3	Connector.
	19A129504G1	Y Cable (BLACK).
		FUSED LEAD 19A129480G1 1 AMP (RED) 19A129480G2 5 AMP (YELLOW)
	1R16P3	Fuse, quick blowing: 1 amp 250 v; sim to Littelfuse 312001 or Bussmann AGC -1.
	1R16P8	Fuse, quick blowing: 5 amps at 250 v; sim to Littelfuse 312005 or Bussmann MTH-5.
	19A115776P2	Fuseholder, phen: sim to Bussmann Type HHJ.
	19A115776P3	Contact, electrical: sim to Littelfuse 904-83. (Located inside fuseholder).
	7491823P7	Terminal, solderless: wire size No. 16-14 AWG.
	7491823P8	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
		- - - - - - - - - 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; sim to Antenna Specialists ASPA87.
	19A121577G1	Antenna hook kit.
	7134724P1	Antenna hook.
		132-512 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).
		12 VOLT FUSE ASSEMBLY 19B216021G4 (Fuses must be ordered separately)
		- - - - - - - - - - FUSES - - - - - - - - - -
F1	1R11P4	Quick blowing: 15 amps, 250 v; sim to Bussmann NON15. (Used with low power transmitters, 16-38 w).
F3	1R11P7	Quick blowing: 30 amps, 250 v; sim to Bussmann NON30. (Used with high power transmitters, 66-128 w).
F4	1R11P5	Quick blowing: 20 amps, 250 v; sim to Bussmann NON20. (Used with medium power transmitters, 38-66 w).

*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 - Front Panel Assembly 19D416653G1
To improve operation.
Changed U901 and added C906.

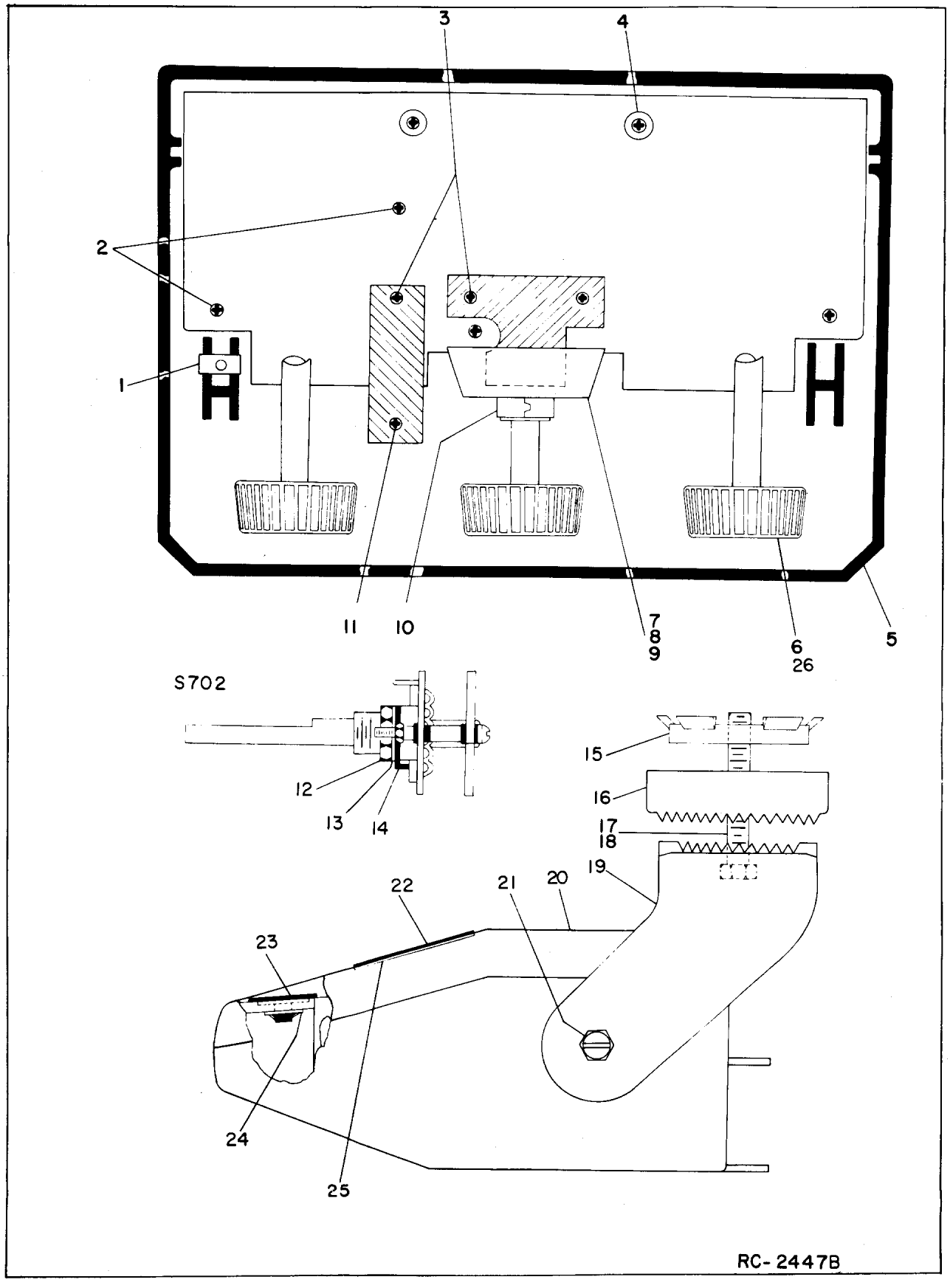
REV. A - Control Unit Board 19D416737G3
To improve Channel Guard tone rejection.
Replaced R708 with C701.

REV. A - Control Unit Common Kit 19A129576G1
To improve connector retention.
Changed bracket at rear of Control Unit assembly.

REV. A - System Board 19D416602G1
To improve operation.
Deleted C901 and changed C902.

REV. B - System Board 19D416602G1
To prevent receiver muting caused by ignition noise.
Changed C906 and added R904.

REV. C - System Board 19D416602G1
To improve performance under high RF fields.
Connected speaker low to A-, and added Holes H108 thru H112.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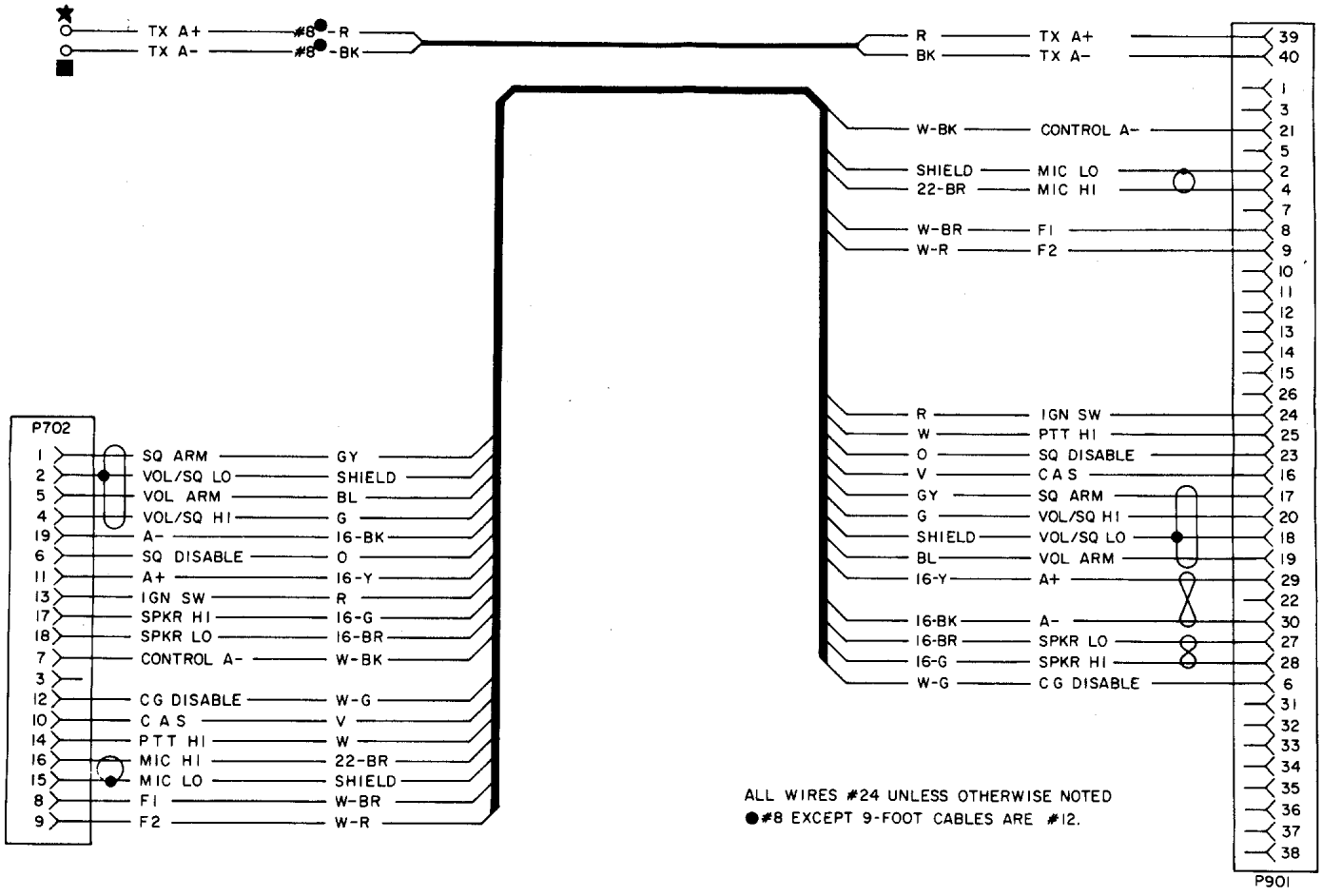
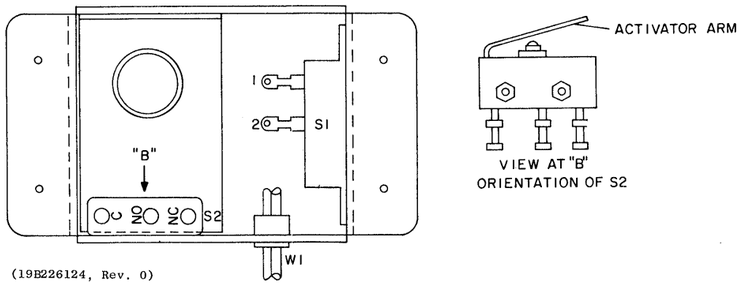


19C320397, Rev. 2

WIRING DIAGRAM

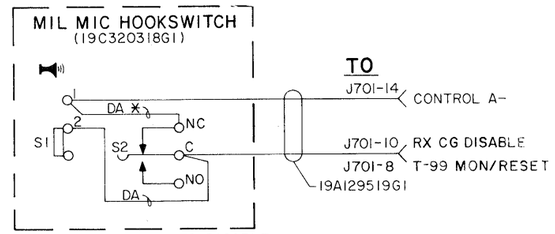
OPTIONAL 18-CONDUCTOR
POWER/CONTROL CABLE

OUTLINE DIAGRAM



(19B226124, Rev. 0)

SCHEMATIC DIAGRAM



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. 2)

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

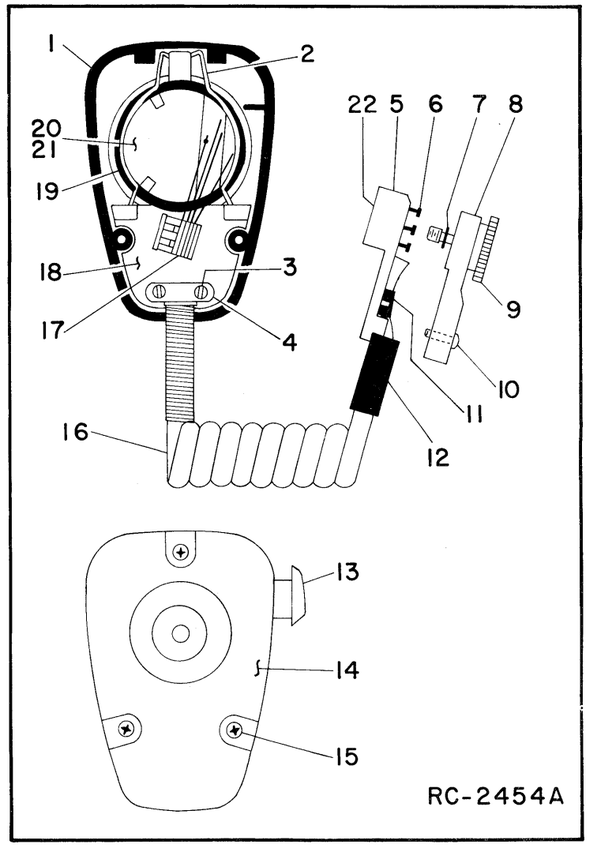
PARTS LIST

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.

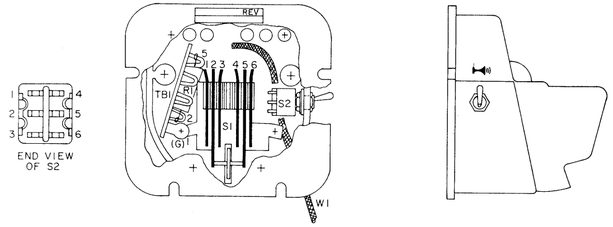
*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES



SERVICE SHEET

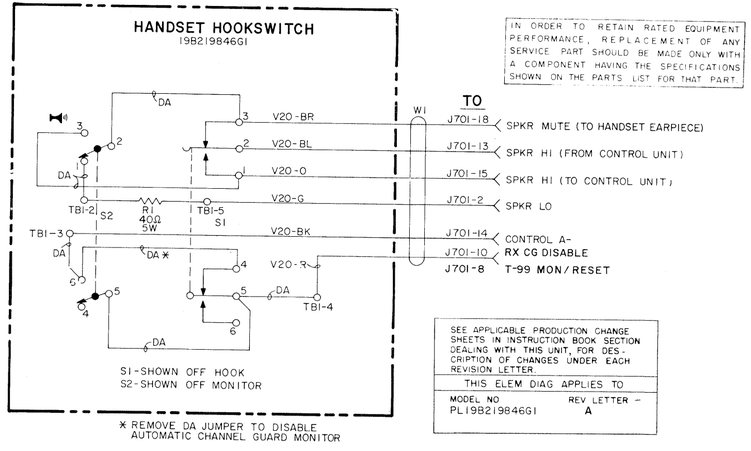
MICROPHONE & HOOKSWITCH

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.

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

(19B219842, Rev. 4)

SERVICE SHEET

HANDSET & HOOKSWITCH

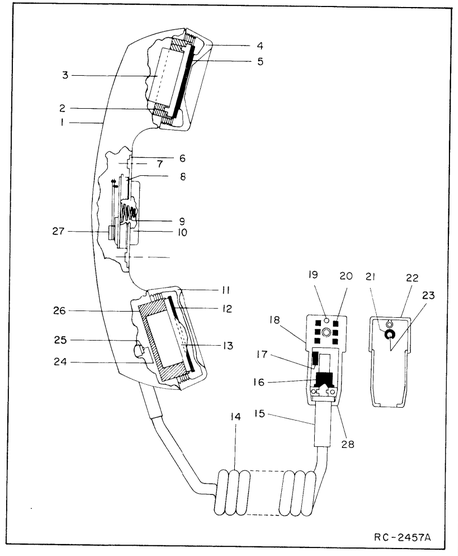
PARTS LIST

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.
	5493035P12	Earlier than REV A: 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).
	X101P1510P	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-4590

DF-4093

MOBILE RADIO DEPARTMENT
GENERAL ELECTRIC COMPANY • LYNCHBURG, VIRGINIA 24502

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