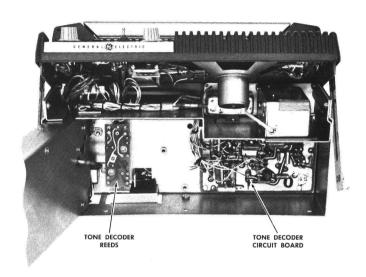


MAINTENANCE MANUAL

PORTA-MOBIL TYPE 99 TONE DECODERS (Models 4EJ19A10 & 11)



SPECIFICATIONS *

POWER REQUIREMENTS:

Decoder will operate over a voltage range of 11.0 volts to 16.6 volts DC.

MULTIVIBRATOR TIMING:

Beep sounds in speaker constitute distinctive calling; these tones are approximately 180 ms. long with 180 ms. intervals between beeps. These times may vary ±20 ms. depending on reed frequency.

TONE FREQUENCIES

517.5 to 997.5 Hz

TEMPERATURE:

-30°C to +60°C. (-22°F to 144°F)

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

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DESCRIPTION

PORTA-MOBIL Type 99 Tone Decoders, Models 4EJ19A10 & All, provide selective paging for PORTA-MOBIL Combinations. The decoders respond to tone dispatchers generating two-tone sequential signaling. These include the General Electric 100, 400 and 900 Call Dispatchers, the Command Terminal and Dial-Paging Terminal.

When a signal modulated by the proper combination of two sequential tones is received, the PORTA-MOBIL receiver audio is turned on and off several times during reception of the second tone. A "beep" tone is reproduced in the speaker of the portable to alert the operator that a call is being received. After completion of the second tone transmission, the PORTA-MOBIL audio circuits are unmuted and the message is received.

Electromechanical reeds (resonant to the desired tone frequencies) are utilized in the Tone Decoders. Two reeds are used in Model 4EJ19A10 providing Individual Call only. Four reeds are used in Model 4EJ19A11 providing Individual Call and All Call or Group Call. Removal of CR3, CR5, Q8 & Q9, as indicated on the Schematic Diagram for Model 4EJ19A11, permits Individual Call, All Call and two Group Calls.

OPERATION

To initiate a call, the operator removes the microphone from its bracket on the Control Unit. This action automatically closes the monitor switch, permitting the operator to monitor the channel before placing the call. When Control Unit Models 4EC60Al8 and A21 (handset) are used, a special MONITOR-RESET toggle switch (S706) is provided on the control unit. This switch must be moved to the MONITOR position to monitor the channel.

Upon completion of a call, the RESET switch (\$707 on Control Unit 4EC60A14, A15, A26, A27; \$706 on microphone-equipped Control Units 4EC60A18, A21) must be operated to the RESET position to restore audio muting. On Control Unit Models 4EC66A12, A13, A16, A17, switch \$703 must be turned to NORMAL.

CIRCUIT ANALYSIS

Audio is coupled from the PORTA-MOBIL discriminator to the base of audio amplifier Q1 through coupling capacitor C1. The amplified signal is then RC coupled to amplifier-limiter stage Q2. This stage drives the reed decoders. CR1 and CR2 serve to limit the tone amplitude. A zener regulator VR1 holds the supply voltage constant to the amplifier. Thus, a constant drive voltage is applied across the reeds.

TWO-REED DECODER

Model 4EJ19A10 is a two-reed decoder which responds to one combination of sequential tones. When the first tone of a two-tone sequential call is received, reed FL1 responds. (The reed is an electromechanical device resonant only to the desired first tone of the selective-calling code). The contacts of FL1 close, charging C7 from the positive supply and turning Q3 off.

After Q3 turns off, C8 charges from the positive supply voltage through R16 and contacts of FL1. In approximately 500 milliseconds, the positive charge on C8 is sufficient to turn Q4 on. Current flow in the collector circuit of Q4 produces a forward bias on the base of Q5 allowing it to conduct and clamp the base of Q6 to positive. Capacitor C9 charges in a negative direction through R21, CR7 and Q4, but Q6 is held at cut-off by the positive voltage applied to its base through Q5

When the first tone is removed, contacts of FL1 open. C7 discharges through R13, forward biasing Q3 allowing it to conduct. This turns Q4 and Q5 off. When Q5 turns off, the positive voltage is removed from the base of Q6 and the negative charge on C9 turns Q6 on.

The charge on C9 keeps Q6 on for approximately 1-second, holding the base of Q7 negative. If the second tone is received during this time interval, the positive supply is connected through contacts of FL2 to the emitter of Q7 and this transistor conducts. The output from Q7 operates silicon-controlled switch SCS1 and multivibrator Q10 & Q11.

SCS1 is normally turned off. In this case, positive voltage is connected from the control unit to the noise amplifier in the receiver to hold the receiver audio circuits off (see Figure 1). When Q7 is turned on by contacts of the second-tone reed, SCS1 operates. This removes the positive voltage from the noise amplifier to unmute the receiver audio circuits. SCS1 continues to conduct until the RESET switch is operated to open the supply lead to the switch.

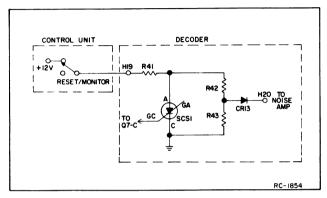


Figure 1 - Silicon-Controlled Switch Circuit

During the reception of the second tone in the two-tone sequence, the output from Q7 operates multivibrator Q10 and Q11. The square wave output of this circuit turns the receiver audio circuits on and off during this period, resulting in a series of "beep" tones in the loudspeaker.

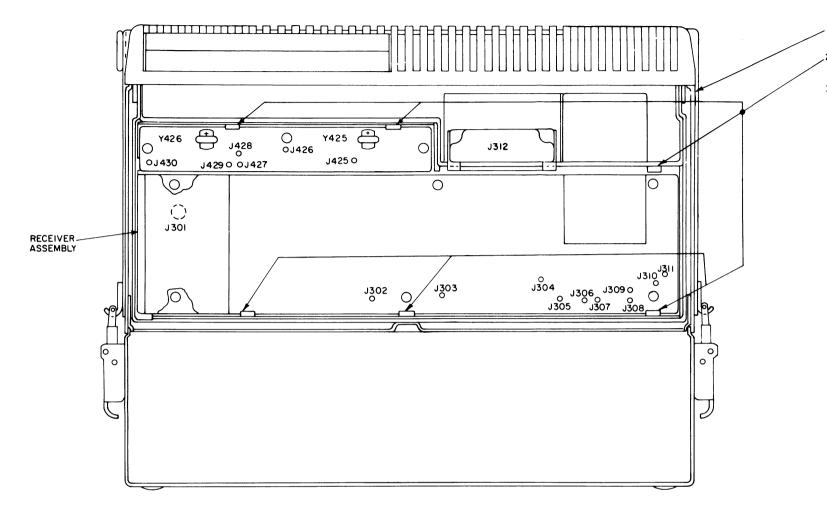
These "beeps" are 180 milliseconds in duration with a 180-millisecond interval between each beep. Both of these time periods may vary as much as ±20 milliseconds, depending on the reed frequency. The result is 4 to 6 beeps during the second tone interval. If the VOLUME control is turned all the way down, the operator will still hear a click at the end of each beep.

FOUR-REED DECODER

Model 4EJ19All is a four-reed decoder, which can respond to more than one combination of sequential tones. Its operation is similar to the two-reed decoder, except for a bistable multivibrator circuit (Q8 & Q9) which prevents the decoder from responding to an incorrect code. The four-reed decoder is designed so that FL1 operates with FL2 and FL3 operates with FL4.

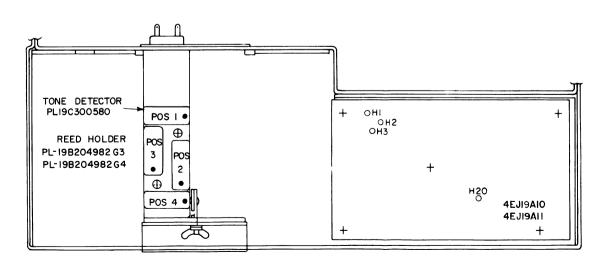
If the first tone of a two-tone sequential code operates FL1, Q8 of the multivibrator conducts. A negative potential is connected through Q8 to the reed terminal of FL4, disabling this reed circuit. Thus, the second tone of this particular sequence must operate FL2 before the decoder can respond.

If FL3 responds to the first tone, Q9 operates and disables the FL2 reed circuit. Now FL4 must respond to the second tone of this particular sequence before the decoder can operate.



DISASSEMBLY INSTRUCTIONS

- . REMOVE SCREWS AND HINGE BACK CONTROL UNIT AS INDICATED.
- REMOVE SIX #6-32 X I/4 SCREWS & LOCKWASHERS HOLDING RECEIVER ASSEMBLY.
- DISCONNECT IN-LINE CONNECTORS P304 AND P305.
 SWING RECEIVER ASSEMBLY TO LEFT, EXPOSING SELECTIVE CALLING COMPONENTS



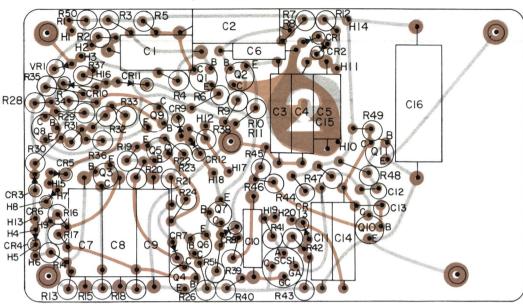
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DISASSEMBLY INSTRUCTIONS

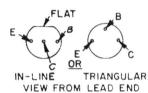
TYPE 99 TONE DECODERS MODELS 4EJ19A10 & 11

OUTLINE DIAGRAM

COMPONENT BOARD 19C317223G18 G2



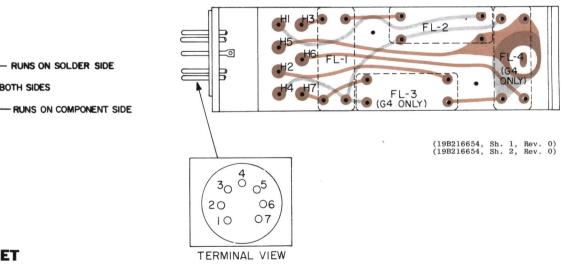
LEAD IDENTIFICATION



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

LEAD IDENTIFICATION FOR SCSI

REED HOLDER 19B204982G3 & G4



SERVICE SHEET

TYPE 99 TONE DECODERS MODELS 4EJ19A10 & 11

Issue 3

RUNS ON BOTH SIDES

(19C317294, Rev. 2)

PARTS LIST

LBI-4048B

TYPE 99 TONE DECODER MODELS 4EJ19A10 AND 11

SYMBOL	GE PART NO.	DESCRIPTION
		GIPLGY-0-1
C1 and C2	19C307099P23	Polyester: 0.1 µf ±20%, 200 VDCW; sim to Sprague 192P10402.
C3 and	5496267P14	Tantalum: 15 µf ±20%, 20 VDCW; sim to Sprague Type 150D.
C4 C5	19C307099P6	Polyester: .033 µf ±20%, 200 VDCW; sim to Sprague 192P33392.
C6	19C307099P1	Polyester: .0047 µf ±20%, 200 VDCW; sim to Sprague 192P47202.
C7	5496267 P 17	Tantalum: 1.0 µf ±35%, 35 VDCW; sim to Sprague Type 150D.
C8 and C9	19A115680P8	Electrolytic: 10 µf +150% -10%, 25 VDCW; sim to Mallory Type TT.
C10	19C307099P3	Polyester: .01 µf ±20%, 200 VDCW; sim to Sprague 192P10302.
C11	5496267P18	Tantalum: 6.8 µf ±35%, 35 VDCW; sim to Sprague Type 150D.
C12	5496267P13	Tantalum: 2.2 μ f $\pm 20\%$, 20 VDCW; sim to Sprague Type 150D.
C13	5496267P17	Tantalum: 1.0 μf $\pm 20\%$, 35 VDCW; sim to Sprague Type 150D.
C14	5496267P14	Tantalum: 15 μ f $\pm 20\%$, 20 VDCW; sim to Sprague Type 150D.
C15	19C307099P23	Polyester: 0.1 μf $\pm 20\%$, 200 VDCW; sim to Sprague 192P10402.
C16*	19A115680P4	Electrolytic: 50 µf +150% -10%, 25 VDCW; sim to Mallory Type TT. Added by REV A.
CR1 thru CR13	19A115250P1	DIODES AND RECTIFIERS
Q1 and	19Al15123P1	Silicon, NPN; sim to Type 2N2712.
Q2 Q3	19A115768P1	Silicon, PNP; sim to Type 2N3702.
Q4	19A115123P1	Silicon, NPN; sim to Type 2N2712.
Q5 thru Q7	19A115768P1	Silicon, PNP; sim to Type 2N3702.
Q8 thru Q11	19A115123P1	Silicon, NPN; sim to Type 2N2712.
R1	3R77P271K	Composition: 270 ohms ±10%, 1/2 w.
R2	3R77P103K	Composition: 10,000 ohms ±10%, 1/2 w.
R3	3R77P114J	Composition: 0.11 megohms ±5%, 1/2 w.
R4	3R77P912J	Composition: 9100 ohms ±5%, 1/2 w.
R5	3R77P103K	Composition: 10,000 ohms ±10%, 1/2 w.
R6	3R77P221K	Composition: 220 ohms ±10%, 1/2 w.
R7	3R77P622J	Composition: 6200 ohms ±5%, 1/2 w.
R8	3R77P822K	Composition: 8200 ohms ±10%, 1/2 w.
R9	3R77P103K	Composition: 10,000 ohms ±10%, 1/2 w.
R10	3R77P432J	Composition: 4300 ohms ±5%, 1/2 w.
		,

SYMBOL	GE PART NO.	DESCRIPTION
R11	3R77P222K	Composition: 2200 ohms ±10%, 1/2 w.
R12	3R77P821K	Composition: 820 ohms ±10%, 1/2 w.
R13	3R77P623J	Composition: 62,000 ohms ±5%, 1/2 w.
R14*	3R77P822K	Composition: 8200 ohms ±10%, 1/2 w.
		Earlier than REV A:
	3R77P102K	Composition: 1000 ohms ±10%, 1/2 w.
R15	3R77P101K	Composition: 100 ohms ±10%, 1/2 w.
R16	3R77P183J	Composition: 18,000 ohms ±5%, 1/2 w.
R17	3R77P154K	Composition: 0.15 megohm ±10%, 1/2 w.
R18	3R77P513J	Composition: 51,000 ohms ±5%, 1/2 w.
R19	3R77P223K	Composition: 22,000 ohms ±10%, 1/2 w.
R20	3R77P103K	Composition: $10,000 \text{ ohms } \pm 10\%$, $1/2 \text{ w}$.
R21	3R77P101K	Composition: 100 ohms ±10%, 1/2 w.
R22	3R77P753J	Composition: 75,000 ohms ±5%, 1/2 w.
R23	3R77P823K	Composition: 82,000 ohms ±10%, 1/2 w.
R24	3R77P104K	Composition: 0.1 megohms ±10%, 1/2 w.
R26	3R77P103K	Composition: 10,000 ohms ±10%, 1/2 w.
R28	3R77P102K	Composition: 1000 ohms ±10%, 1/2 w.
R29 and R30	3R77P303J	Composition: 30,000 ohms ±5%, 1/2 w.
R31 and R32	3R77P223K	Composition: 22,000 ohms ±10%, 1/2 w.
R33 and R34	3R77P303J	Composition: 30,000 ohms ±5%, 1/2 w.
R35	3R77P102K	Composition: 1000 ohms ±10%, 1/2 w.
R36	3R77P101K	Composition: 100 ohms ±10%, 1/2 w.
R37 and R38	3R77P102K	Composition: 1000 ohms ±10%, 1/2 w.
R39	3R77P103K	Composition: 10,000 ohms ±10%, 1/2 w.
R40	3R77P104K	Composition: 0.1 megohm ±10%, 1/2 w.
R41	3R77P512J	Composition: 5100 ohms ±5%, 1/2 w.
R42	3R77P272K	Composition: 2700 ohms ±10%, 1/2 w.
R43	3R77P222K	Composition: 2200 ohms ±10%, 1/2 w.
R44	3R77P103K	Composition: 10,000 ohms ±10%, 1/2 w.
R45	3R77P514J	Composition: 0.51 megohm ±5%, 1/2 w.
R46	3R77P104K	Composition: 0.1 megohm ±5%, 1/2 w.
R47	3R77P392K	Composition: 3900 ohms ±10%, 1/2 w.
R48	3R77P104K	Composition: 0.1 megohm ±10%, 1/2 w.
R49	3R77P392K	Composition: 3900 ohms ±10%, 1/2 w.
R50	3R77P121K	Composition: 120 ohms ±10%, 1/2 w.
R51	3R77P103K	Composition: 120 onms ±10%, 1/2 w.
SCS1	19A115198P1	
VRl	4036887P8	VOLTAGE REGULATORS
		MISCELLANEOUS

PRODUCTION CHANGES

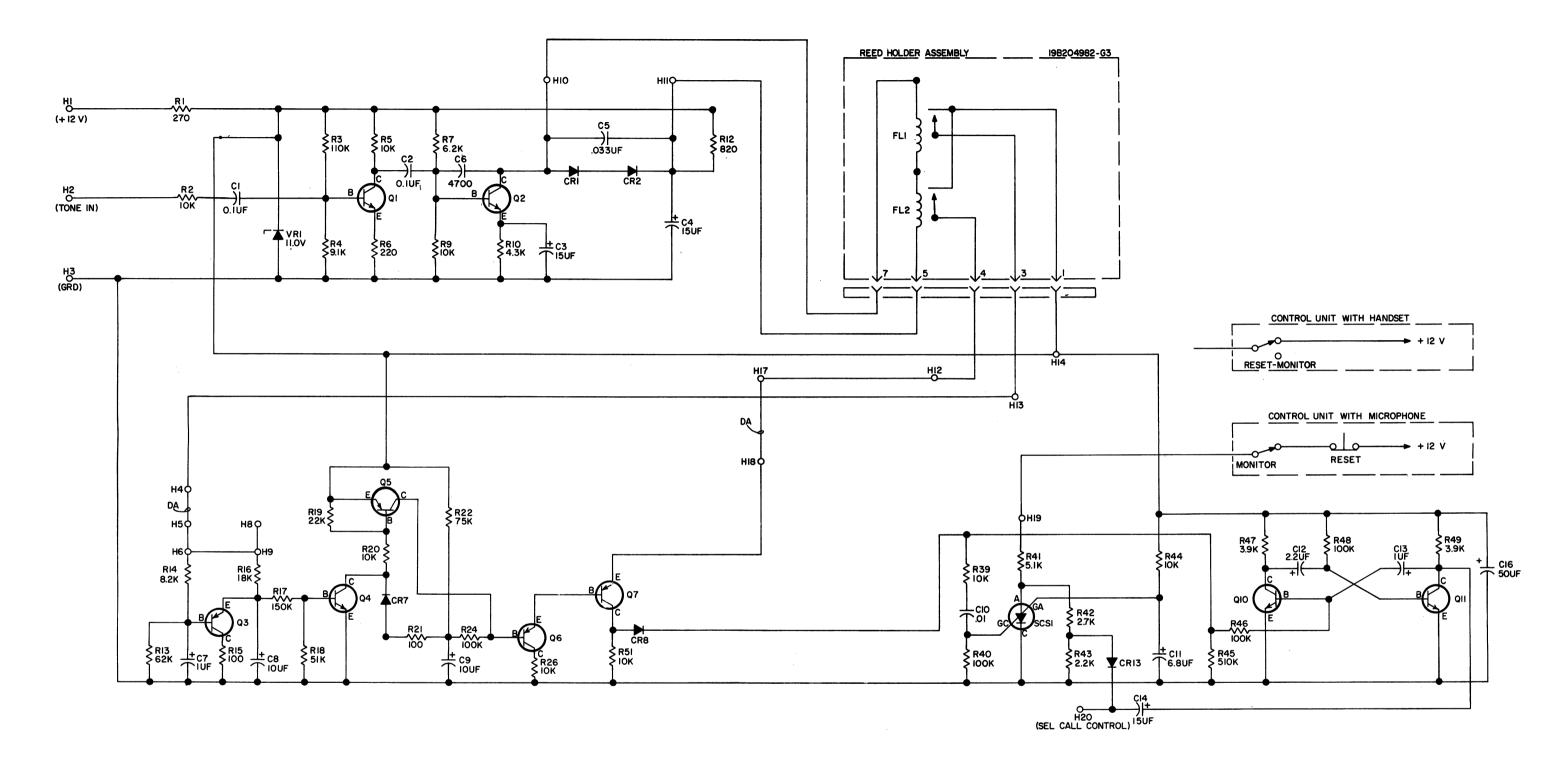
Changes in the equipment to improve performance or to simplify circuits are identified by a "Revision Letter", which is stamped after the model number of the unit. The revision stamped on the unit includes all previous revisions. Refer to the Parts List for description of parts affected by these revisions.

REV. A - Models 4EJ19A10 & 11

4036555P1

To eliminate multivibrator falsing causing a popping in the speaker. Add C16 and change R14.

Insulator, washer: nylon. (Used with SCS1).



(19D413339, Rev. 2)

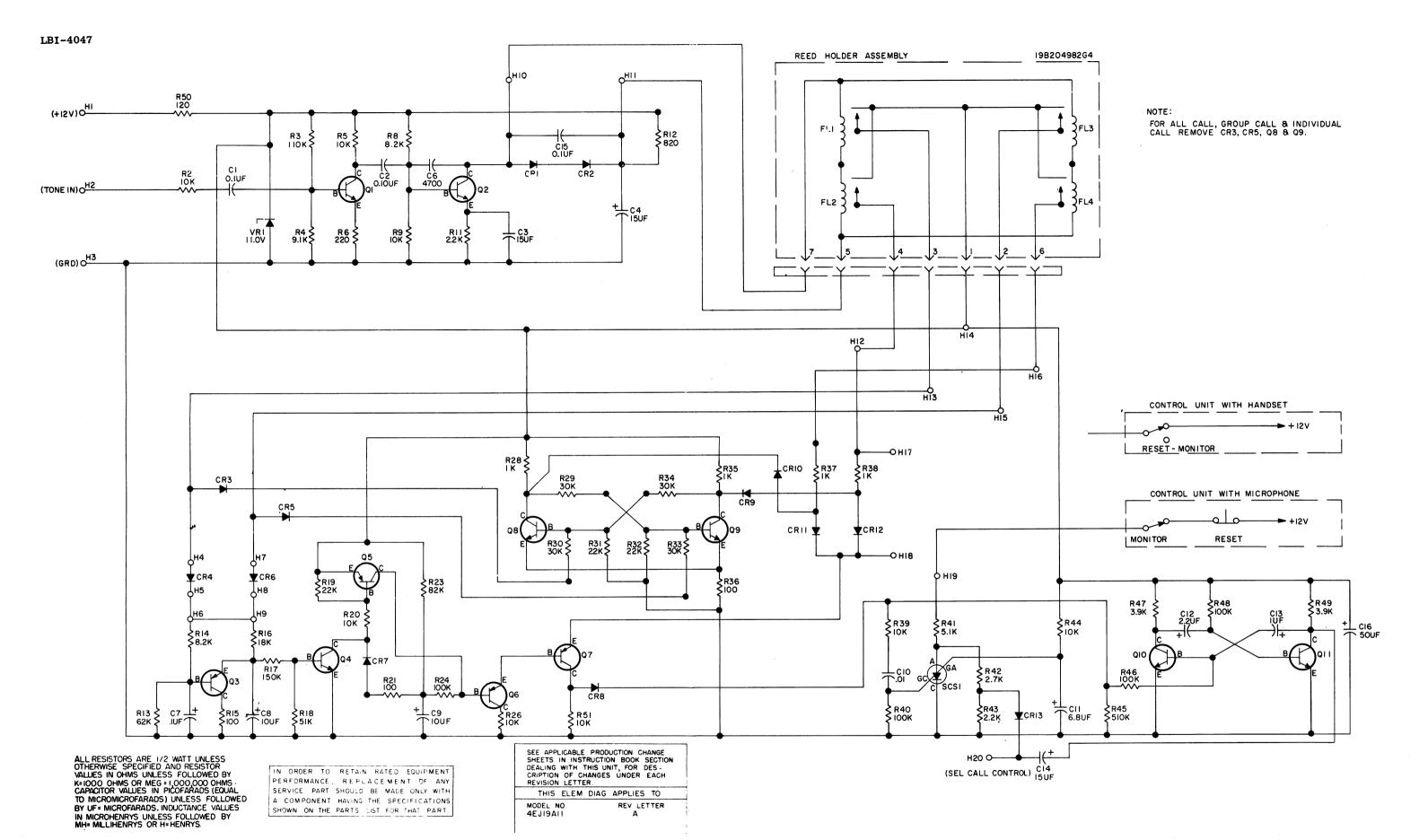
ALL RESISTORS ARE 1/2 WATT UNITESS OTHERWISE SPECIFIED AND RESISTOR VALUES IN OHMS UNLESS FOLLOWED BY K=1000 OHMS OR MEG=1,000,000 OHMS CAPACITOR VALUES IN PICOFARADS (EQUAL TO MICROMICROFARADS) UNILESS FOLLOWED BY UF= MICROFARADS, INDUCTANCE VALUES IN MICROHENRYS UNLESS FOLLOWED BY MH= MILLIHENRYS OR H=HENRYS.

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

SEE APPLICABLE PRODUCTION CHANGE SHEETS IN INSTRUCTION BOOK SECTION DEALING WITH THIS UNIT, FOR DES-CRIPTION OF CHANGES UNDER EACH REVISION LETTER. THIS ELEM DIAG APPLIES TO MODEL NO REV LETTER 4EJ19A10 Α

SERVICE SHEET

TYPE 99 TONE DECODER MODELS 4EJ19A10



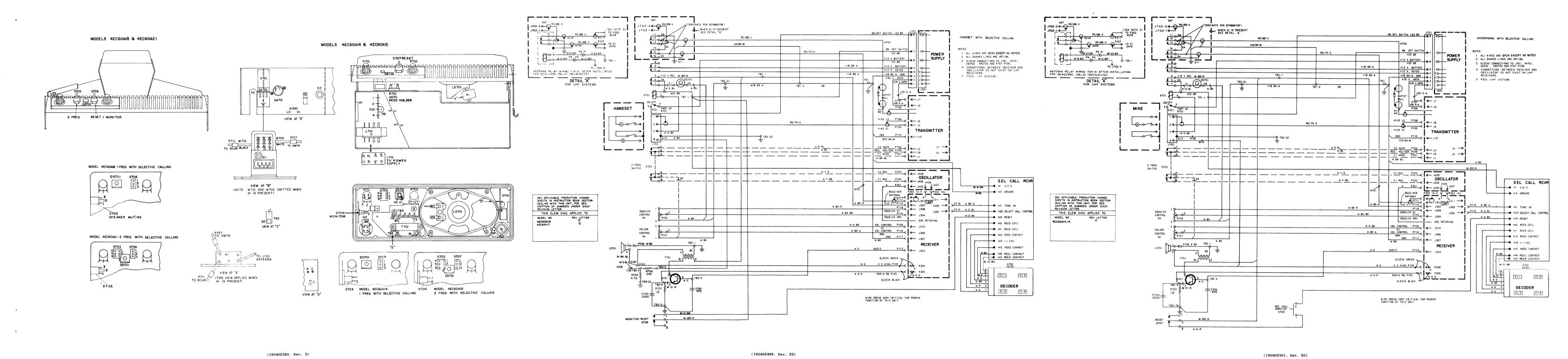
SERVICE SHEET

TYPE 99 TONE DECODER MODEL 4EJ19A11

(19D413338, Rev. 2)

MODELS 4EC60AI4 & 4EC60AI5

OUTLINE DIAGRAM



		PARTS L	IST
		LBI-4051	В
		CONTROL UN	IT
DEL	4EC60A14	19D402279G5	(Single Frequency)
DEL	4EC60A15	19D402279G6	(Two Frequency)
	4EC60A18	19D402279G9	(Single Frequency)
	4EC60A21	19D402279G12	(Two Frequency)

	MODEL 4EC60A18 MODEL 4EC60A21	19D402279G9 (Single Frequency) 19D402279G12 (Two Frequency)	and P702		42827-2.
			P705	4029840P2	Contact, electrical: taper pin, sim to Amp 42827-2.
SYMBOL	GE PART NO.	DESCRIPTION	P706 thru P708	4029840P1	Contact, electrical: taper pin, sim to Amp 41854.
701		REED HOLDER ASSEMBLY	P709	4029840P2	Contact, electrical: taper pin, sim to Amp 42827-2.
1701		19B204982G3 (Used with 4EJ19Al0 Decoder) 19B204982G4 (Used with 4EJ19Al1 Decoder)	P710	4029840P1	Contact, electrical: taper pin, sim to Amp 41854.
FL1	19C300580		P712 thru P720	4029840P2	Contact, electrical: taper pin, sim to Amp 42827-2.
thru FL4	G1 G2	frequency). 517.5 Hz 532.5 Hz	P722 and P723	4029840P2	Contact, electrical: taper pin, sim to Amp 42827-2.
	G3 G4 G5 G6	547.5 Hz 562.5 Hz 577.5 Hz 592.5 Hz	P724 and P725	71471 99 P2	Connector: 1 female contact; sim to Winchester Electronics 21804.
	G7 G8 G9	607.5 Hz 622.5 Hz 637.5 Hz	P726	4036634P1	Receptacle, pin: sim to Amp 42428-2.
	G10 G11 G12 G13 G14 G15	652.5 Hz 667.5 Hz 682.5 Hz 697.5 Hz 712.5 Hz 727.5 Hz	Q701*	19A116118P3	Silicon, NPN. In 4EC60Al4, 15, 18 of REV A-F:
	G16 G17 G18	742.5 Hz 757.5 Hz 772.5 Hz		19A115527P1	In 4EC60A21 of REV A-E: Silicon, NPN; sim to Type 2N1701.
	G19 G20	787.5 Hz 802.5 Hz			In REV A and earlier:
	G21 G2? G23 G24	817.5 Hz 832.5 Hz 847.5 Hz 862.5 Hz		19A115246P1	Silicon, NPN; sim to Type 2N1701.
	G25 G26	877.5 Hz 892.5 Hz	R701	19C300097P10	
	G27 G28 G29 G30	907.5 Hz 922.5 Hz 937.5 Hz 952.5 Hz	R701	190300097P10	Resistor/switch: includes Resistor, variable, carbon film, 5000 chms ±20%, 1/8 w; (S701) Switch, 2 amps at 125 VAC; sim to Mallory Type MLC.
	G31 G32 G33	967.5 Hz 982.5 Hz 997.5 Hz	R702	19C300097P9	Variable, carbon film: 5000 ohms $\pm 20\%$, $1/4$ w; sim to Mallory Type MLC.
		CAPACITORS	R703	19B209022P115	Wirewound: 1 ohms $\pm 10\%$, 2 w; sim to IRC Type BWH.
701*	5494481P7	Ceramic disc: 470 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap. Added by REV B.	R704*	19B209022P135	Wirewound: 6.8 ohms, $\pm 5\%$, 2 w; sim to IRC Type BWH. Deleted by REV F.
c705*	5494481P14	Ceramic disc: 2000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap. Added by REV E.			In Models earlier than REV A:
		INDICATING DEVICES		19B209022P38	Wirewound: 9.1 ohms ±5%, 2 w; sim to IRC Type BWH.
DS701	4034664Pl	Lamp, incandescent: 28 v, .04 amp; sim to GE 2148.	R705	19B209022P131	Wirewound: 4.7 ohms $\pm 10\%$, 2 w; sim to IRC Type BWH.
		JACKS AND RECEPTACLES	R706	3R77P241J	Composition: 240 ohms ±5%, 1/2 w.
J 701	7473192P31	Connector: 8 terminals, phenolic; sim to HB Jones 261-31-02-000.	l		SWITCHES
J702	19A116550P1	Connector, coaxial: sim to Gold Line GLC-88.	S701 S702*	19B209040P1	(Part of R701). Slide: DPDT, 0.5 amp at 125 v; sim to Continer
J 703	19B209201P1	Connector: 4 contacts; sim to Switchcraft 3C-1088.			Wirt 126. Deleted by REV F.
		RELAYS	S703*	19A116877P6	Toggle: DPDT, 1 ma at 6 VDC; sim to C and K Components Series Type 7201G.
K701*	19C307010P18	Armature: 12 VDC nominal, 130 ohms res ±10% at 25°C, 4 form C contacts; sim to Allied Control			In 4EC60A15 of REV G and earlier: In 4EC60A21 of REV F and earlier:
		T154-X-976A.	1	4036949P2	Toggle: DPDT, 100 µa at 5 VDC; sim to Arrow-Ha and Hegeman TS-6.
	19C307010P5	In Models of REV C and earlier: Armature: 12 VDC nominal, 130 ohms res ±10% at	S704	7481654P10	Pushbutton (red): SP normally open, 1 amp at 115 VAC; sim to Grayhill 30-15.
		25°C, 4 form C contacts; sim to Allied Control T154-X-413.	S705	19B209239P1	Pushbutton (red): SPDT, 250 ma at 115 VAC or 25 VDC; sim to Switchcraft 923.
			S706*	19A116877P1	Toggle: SPDT, 1 ma at 6 VDC; sim to C and K Components Series Type 7101G.
LS701	19C307094P1	Permanent magnet: 3.2 ohms ±10% voice coil imp., 3 w input, 325 ±50 Hz resonance; sim to Oaktron S7473.			In 4EC60Al8 of REV G and earlier: In 4EC60A2l of REV F and earlier:
				4036949P1	Toggle: SPDT, 100 μa at 5 VDC; sim to Arrow-Ha and Hegeman TS3.

SYMBOL GE PART NO.

4029840P2

DESCRIPTION	SYMBOL	GE PART NO.	DESCRIPTION	Ľ
	S707*	19A116877P2	Toggle: SPDT, 1 ma at 6 VDC; sim to C and K Components Series Type 7108G.	
Contact, electrical: taper pin, sim to AMP 42827-2.		4036949P3	In 4EC60A14, 15, of REV G and earlier: Toggle: SPDT, momentary contacts, 100 µa at 5 VDC; sim to Arrow-Hart and Hegeman TM-3.	
Contact, electrical: taper pin, sim to Amp 42827-2.				
Contact, electrical: taper pin, sim to Amp 41854.	т701	19B209079P1	Audio freq: freq range 0.3-3 KHz, operating 275 MADC,	
Contact, electrical: taper pin, sim to Amp 42827-2. Contact, electrical: taper pin, sim to Amp			Pri 1: 55 ohms ±10% imp at 1 w, 0.895 ohm ±10% DC res, Sec 1: 3.2 ohms ±10% at 1 w, 0.168 ohm max DC res.	
41854.	ā			
Contact, electrical: taper pin, sim to Amp 42827-2.	TB1	7775500P8	Phenolic: 4 terminals.	
Contact, electrical: taper pin, sim to Amp	TB2	7775500P55	Phenolic: 5 terminals.	
42827-2.	твз	7775500P44	Phenolic: 2 terminals. (Used in Models 4EC60A14 and 4EC60A15 only).	
Connector: 1 female contact; sim to Winchester Electronics 21804.	ТВ3	7775500P7	Phenolic: 3 terminals. (Used in Models 4EC60A18 and 4EC60A21 only).	
Receptacle, pin: sim to Amp 42428-2.	1			
TRANSISTORS	W701		CABLE ASSEMBLY 19A121176G1	
Silicon, NPN. In 4EC60Al4, 15, 18 of REV A-F:				
In 4EC60A21 of REV A-E:	P711	5496078P1	Connector, push-on: Teflon, sim to FRX 27-1.	
Silicon, NPN; sim to Type 2N1701. In REV A and earlier:			MISCELLANEOUS	
Silicon, NPN; sim to Type 2N1701.		19B209044P11	Cable, RF: 5.75 inches long. Type RG-174/U.	١
RESISTORS	W702		CABLE ASSEMBLY 19A121176G2	
Resistor/switch: includes Resistor, variable, carbon film, 5000 ohms ±20%, 1/8 w; (8701) Switch, 2 amps at 125 VAC; sim to Mallory				
Type MLC. Variable, carbon film: 5000 ohms ±20%, 1/4 w;	P727	5496078P2	Connector, push-on: Teflon, sim to FXR 27-2.	
sim to Mallory Type MLC. Wirewound: 1 ohms ±10%, 2 w; sim to IRC Type		19B209044P13	MISCELLANEOUS Cable, RF: 4 inches long. Type RG-188/U.	
BWH. Wirewound: 6.8 ohms, ±5%, 2 w; sim to IRC Type				
BWH. Deleted by REV F. In Models earlier than REV A:	XA701	19B209065P2	Tube: 7 contacts, phenolic; sim to Alcon Metal	
Wirewound: 9.1 ohms ±5%, 2 w; sim to IRC Type			Products 524M-2.	1
BWH. Wirewound: 4.7 ohms ±10%, 2 w; sim to IRC	XK701	5491595P5	Relay, nylon: 16 contacts; sim to Allied Control 30054-2.	
Type BWH. Composition: 240 ohms $\pm 5\%$, $1/2$ w.			ANTENNA RELAY KIT 19821626G2 (Includes J702 and K1)	
SWITCHES				l
(Part of R701).			POWER CABLE - 12 VOLT 19C303640G3	ł
Slide: DPDT, 0.5 amp at 125 v; sim to Continental Wirt 126. Deleted by REV F.			MISCELLANEOUS	ļ
Toggle: DPDT, 1 ma at 6 VDC; sim to C and K Components Series Type 7201G.		4034405-P3 19A115776P2	Connector, plug. Fuseholder.	
In 4EC60Al5 of REV G and earlier: In 4EC60A21 of REV F and earlier:		7484390P4	Fuse, cartridge.	
Toggle: DPDT, 100 µa at 5 VDC; sim to Arrow-Hart and Hegeman TS-6.		19A115776P4	Contact, electrical. (Used with 19Al15776P2 fuseholder).	1
Pushbutton (red): SP normally open, 1 amp at 115 VAC; sim to Grayhill 30-15.			POWER CABLE - 6 VOLT 19C3O364OG4	
Pushbutton (red): SPDT, 250 ma at 115 VAC or 25 VDC; sim to Switchcraft 923.			MISCELLANEOUS	
Toggle: SPDT, 1 ma at 6 VDC; sim to C and K Components Series Type 7101G.		4034405P3	Connector, plug.	
In 4EC60Al8 of REV G and earlier: In 4EC60A21 of REV F and earlier:		19A115776P2	Fuseholder.	1
Toggle: SPDT, 100 µa at 5 VDC; sim to Arrow-Hart and Hegeman TS3.		7484390P3 19A115776P4	Fuse cartridge. Contact, electrical. (Used with 19A115776P2	
			fuseholder).	
	1			1

SYMBOL	GE PART NO.	DESCRIPTION
		POWER CABLE - 24/36 VOLT
		19B205422G1
		MISCELLANEOUS
	4034405P3 19A115776P2	Connector, plug. Fuseholder.
	1R16P7	Fuse, cartidge.
	19A115776P4	Contact, electrical. (Used with 19Al15776P2 fuseholder).
		POWER SUPPLY EXTENSION CABLE ASSEMBLY 19B204289G1
		MISCELLANEOUS
	7473192P19	Socket, phenolic: 8 terminals, cable clamp in cap; sim to HB Jones 261-32-08-030.
	7473192P26 7162441P23	Plug, phenolic: 8 terminals, cable clamp in cap sim to HB Jones 261-31-08-030.
	,102111723	Tubing, flexible, plastic: 3 feet long. MICROPHONE MODEL 4EM33C10
		(19B209306P1)
		Switch. Shure Brothers RP33.
		Cable and plug: approx 5 feet. Shure Brothers RP35.
		Button: red plastic. Shure Brothers RP34. Cartridge, magnetic controlled. Shure Brothers
		RP32. Case, mounting button and nameplate: plastic. Shure Brothers RP40.
		Shield. Shure Brothers RP36.
		MICROPHONE MODEL 4EM33D10 (19B209199P3)
		Switch: moisture proof. Shure Brothers RP33.
		Cable and Plug: approx 80 inches. Shure Brothers RP35.
		Button: red plastic. Shure Brothers RP34.
		Cartridge, magnetic controlled. Shure Brothers RP32.
		Case, mounting button and nameplate: plastic Shure Brothers RP31.
		Shield. Shure Brothers RP36.
		HANDSET MODEL 4EM34AlO (19B209198Pl)
		miscellaneous
		Cartridge, transmitter: controlled magnetic. Shure Brothers 99A86.
		Cartridge, receiver: 3 w max power. Shure Brothers 99A562.
	Ì	Switch: with mounting plate. Shure Brothers 90A925.
		Cable and Plug Assembly. Includes: 4 conductor tinsel coiled cord, neoprene jacket, extended length approx 5 feet, molded on weather proof 4-pin plug. Shure Brothers 90A1030.
		Handle Assembly. Phenolic, weather proof construction. Shure Brothers 90A971.
		Cap, transmitter: phenolic. Shure Brothers 65A197A.
		Cap, receiver: phenolic. Shure Brothers 65A199

15030707791 Bodd 4THAIN, 83-30 ME Antonia. Includes produced to the product of the product o	YMBOL	GE PART NO.	DESCRIPTION	SYMBOL	GE PART NO.	DESCRIPTION
1003010797						Cable, antenna: approc 15 feet. Type RG-58,
19000707979 Nacla 48710A10, 20-20 Mark attenues, Includes Specialists (AD-45)—Carlo Marketine scall pits to dateman Specialists (AD-45)—Carlo Marketine scall pits (AD-45)—Carlo					7105381P1	Adapter, cable: Type UG-175/U. (Used with (
19000707792 Rocal Stitlands			MISCELLANEOUS		000001	1
19C103707972 Nocl. 48710A1, 20-32 ME. Asternas. Includes		19C3O37O7P1	48-1/4 inch stainless steel rod, tuning screw, rubber O-ring weather seal; sim to Antenna		2R22P1	Amphenol 83-1SP. (Used with GE Dwg 7105281P1
19C103707793 Second Statics and Part Post Continues and Part Post Statics and Part P		19C303707P2	Model 4EY18All, 29-33 MHz Antenna. Includes 48-1/4 inch stainless steel rod, tuning screw, rubber O-ring weather seal; sin to Antenna			MODEL 4EY20A10 (HIGH BAND)
19C303707P4 Rodel SETIANIA, 30-62 MEE Astronm. Includes Deligney marker small size to attems. Specialists APP-C51-CE.		19C303707P3	Model 4EY18A12, 33-36 MHz Antenna. Includes 48-1/4 inch stainless steel rod, tuning screw, rubber O-ring weather seal; sim to Antenna		19C3O362OP1	Antenna Assembly. Includes: plastic ball ti 19.5 ±0.25 inch stainless steel whip; socket; insulatores; adapter; RG-58A/U cable; PL-259
19C10370795 Social STIBLES ASSESSED So		19C303707P4	Model 4EY18A13, 36-42 MHz Antenna, Includes 38-inch stainless steel rod, tuning screw, rubber O-ring weather seal; sim to Antenna Specialists		19C303620P2	Antenna Specialists ASP157. Replacement Whip Assembly. Includes: plasti
10033707P6 Sect. March Attenues Includer Sect. Attenues Includer		19C303707P5	Model 4EY18A14, 42-48 MHz Antenna, Includes 38-inch stainless steel rod, tuning screw, rubber O-ring weather seal; sim to Antenna Specialists			socket; insulators; sim to Antenna Specialist
Asp-Edit-G. Asp-Edit-G. Asper. URF: right angle. Signal Corps N-359; sin to Amphenol 83-lAP. (Used in Models 4ECGOAld, 12, 16 and 19 only Class and Season) Asper. URF: Asper. URF: sin to Amphenol 83-lAP. (Used in Models 4ECGOAld and 4ECGOAld an		19C303707P6	Model 4EY18A15, 48-54 MHz Antenna. Includes 38-inch stainless steel rod, tuning screw, rubber			
ain to Amphenol 85-1AP. (Used in Models 4					1	1 · · ·
MOBILE ANTENNA (LOW ARAD)		2R22P2	sim to Amphenol 83-1AP. (Used in Models		ì	
NOBILE ATTENNA (LOW BAND)			4EY18A10-15).	1	19820452721	
### Antenna: includes 96-1/2 includes 1				1	7763541P4	
T491074P1				6	5491595P9	Spring, retainer: wire; sim to Allied Control
Total		740107401		7	7142162P98	
403310IGI Antenna package: includes base, adapter spring cable and plug. 7472880G5 Antenna base. (Used in 404410IG1). 7476632C4 Adapter spring. (Used in 403310IG1). 5492339P1 Cable, antenna: includes Type RG-58/U cable approx 15 feet, PL-259 plug, terminal; sim to Antenna Specialists 15A43. (Used in 403310IG1). 2R22P1 Plug, coaxial: Signal Corps PL-295; min to Amphenol 83-18P. (Used with GE Dwg 5492239P1 in 403310IG1). 4K79A1 Coil, loading: 25-33 MBHz; sim to Antenna Specialists ASPAR7. Coil loading: 25-33 MBHz; sim to Antenna Specialists ASPAR7. Antenna hook kit. 7134724P1 Antenna hook (Used in 194121577G1). PORTABLE AND INUISTRIAL ANTENNA MOREL 48T91GC1 150.8-162 MHz MCREL 48T91GC1 150.8-162		7491074P1	rod; sim to Antenna Specialists ASPA3BGE.		1	
Cable and plug. 10 1981219991 Cip: 1982045962 Cip: Spring: (Used in Models 4EC60A14 and 4EC60A only). 1982045962 Spring: (Used in Models 4EC60A14 and 4EC60A only). 19820463962 Spring: (Used in Models 4EC60A14 and 4EC60A only). 19820463962 Spring: (Used in Models 4EC60A14 and 4EC60A only). 19820463962 Spring: (Used in Models 4EC60A14 and				9	19A121178P1	Support: (Used with J701).
Adapter spring. (Used in 403310[d]). 12		4033101G1		10	19A121199P1	Clip:
Cable, antenna: includes Type RC-98U cable approx 15 feet PL-299 plays, (reginal; sin to Antenna Specialists 1943) (Used in 4033101G1). 13		7472880G5	Antenna base. (Used in 4044101G1).	11	19A121215P1	Spring: (Used in Models 4EC60Al4 and 4EC60Al only).
Approx 15 feet, PL-259 plug, terminal; sim to Antenna Specialists 1543. (Used in 4033101G1). 198204949P1 19820494P1 19820494P1 19820494P1 19820494P1 19820494P1 19820494P1 1982049P1 198				12	19B204639G2	Knob Assembly:
1			approx 15 feet, PL-259 plug, terminal; sim to Antenna Specialists 15A43. (Used in 4033101G1).	13	19C303537G1	
19A121577Gl		2R22P1	Plug, coaxia: Signal Corps PL-209; sim to Amphenol 83-1SP. (Used with GE Dwg 5492239Pl in 4033101Gl).	14	19B204949P1	Jewel: red plastic; sim to Rohm and Haas 244 Plexiglas.
19A121577G1		4KY9A1	Coil, loading: 25-33 MHz; sim to Antenna Specialists ASPAR7.	15	19B204492P1	Extrusion: (Part of Handle Assenbly, 19C3035
Antenna hook. (Used in 19A121577G1).		19A121577G1				· ·
PORTABLE AND INDUSTRIAL ANTENNA MODELS 4EY19C10-155 (HIGH BAND AND UHF) 20 (Used in Model 4EC60A20 only).		7134724P1	Antenna hook. (Used in 19Al21577Gl).	17	5490135P3	
MODEL 4EY19C10 130-150.8 MHz MODEL 4EY19C11 150.8-162 MHz MODEL 4EY19C11 150.8-162 MHz MODEL 4EY19C13 160-174 MHz MODEL 4EY19C13 166-174 MHz MODEL 4EY19C13 460-420 MHz MODEL 4EY19C13 450-470 MHz MODEL 4EY12A13 (HIGH BAND AND UHF) MODEL 4EY12A13 (Used in Model 4EC60A14 only). Mameplate: etched aluminum. (Used in Model 4EC60A18 only). Mameplate: etched aluminum. (Us			PORTABLE AND INDUSTRIAL ANTENNA	18		(Used in Models 4EC60Al2, 13 and 19 only).
MODEL 4EY19C10 130-150.8 MHz MODEL 4EY19C11 150.8-162 MHz MODEL 4EY19C12 150.8-162 MHz MODEL 4EY19C12 166-166 MHz MODEL 4EY19C13 166-174 MHz MODEL 4EY19C13 166-174 MHz MODEL 4EY19C15 450-470 MHz MODEL 4EY19C15 450-470 MHz MODEL 4EY12A13 (HIGH BAND AND UHF) MODEL 4EY12A13 (HIGH BAND AND UHF) 23 NP243619 Nameplate: etched aluminum. (Used in Model 4EC60A14 only). (Used in Model 4EC60A14 only). (Used in Model 4EC60A14 only). Mameplate: etched aluminum. (Used in Model 4EC60A14 only). Model 4EC60A16 only). Mameplate: etched aluminum. (Used in Model 4EC60			MODELS 4EY19C10-15	l l	19B204639G1	
MODEL 4EY19C12 162-166 MHz MODEL 4EY19C13 166-174 MHz MODEL 4EY19C13 166-174 MHz MODEL 4EY19C13 406-420 MHz MODEL 4EY19C15 450-470 MHz 22 NP243619 Nameplate: etched aluminum. (Used in Model 4EC60A21 only).					NP243618	·
MOBILE ANTENNA MODEL 4EY12A13 (HIGH BAND AND UHF) 24			MODEL 4EY19C12 162-166 MHz MODEL 4EY19C13 166-174 MHz MODEL 4EY19C14 406-420 MHz	22		4EC60A15 only). Nameplate: etched aluminum. (Used in Model
NP243620 Nameplate: etched aluminum. (Used in Model 4EC60A18 only). Antenna: includes 20-inch stainless steel whip, whip socket, antenna cable, cable adapter, PL-259 plug; sim to Antenna Specialists ASPD201Œ or Danbury-Knudsen Type PA-25. Secket, Whip: 20-inch stainless steel. NS33Pl308 Pin, dowel: (Part of Handle Assembly, 19C30353761).			MOBILE ANTENNA MODEL 4EY12A13		NP243616	
MISCELLANEOUS Antenna: includes 20-inch stainless steel whip, whip socket, antenna cable, cable adapter, PL-259 plug; sim to Antenna Specialists ASPD201GE or Danbury-Knudsen Type PA-25. 5490969P4 Whip: 20-inch stainless steel. Socket, whip. Migh socket, antenna cable, cable adapter, PL-259 plug; sim to Antenna Specialists ASPD201GE or Danbury-Knudsen Type PA-25. Whip: 20-inch stainless steel. Socket, whip. AECGÔA18 only). Handle: (Part of Handle Assembly, 19C3035377) Pin, dowel: (Part of Handle Assembly, 19C3035377) Pin, dowel: (Part of Handle Assembly)			(HIGH BAND AND UHF)	1	NP243620	
whip socket, antenna cable, cable adapter, PL-259 plug; sim to Antenna Specialists ASPD201GE or Danbury-Knudsen Type PA-25. 5490969P4 Whip: 20-inch stainless steel. 5490969P5 Socket, whip. 27 19A121363P1 Spring: (Part of Handle Assembly, 19C303537 28 19A121173P1 Retainer: (Part of Handle Assembly, 19C303537 29 N533P1308 Pin, dowel: (Part of Handle Assembly 19C303537G1).			MISCELLANEOUS			4EC60A18 only).
plug; sim to Antenna Specialists ASPD201GE or Danbury-Knudsen Type PA-25. 28			whip socket, antenna cable, cable adapter, PL-259	ŀ	1	Handle: (Part of Handle Assembly, 19C303537
5490969P4 Whip: 20-inch stainless steel. 29 N533Pl308 Pin, dowel: (Part of Handle Assembly 19C303537Gl).			plug; sim to Antenna Specialists ASPD201GE or		í	
5490969P5 Socket, whip. 19C303537G1).		5490969P4	Whip: 20-inch stainless steel.			1
		5490969P5				19C303537G1).

SYMBOL	GE PART NO.	DESCRIPTION
31	4035711P4	Clip, spring tension: sim to Augat Brothers
		6007-8-CT.
32	7150727P116	Sleeving, insulation: 30 inches long.
33	19A121730P1	Bracket.
34	4034512P3	Terminal, feed-thru: sim to Sealectro RST-MM-10-TUR.
35	7142162P96	Spacer.
36	19A121343G1	Support Assembly: (Part of Handle Assembly, 19C303537Gl).
37	19C3O3427P1	Casting: (Used in Models 4EC60A14 and 4EC60A15 only).
38		(Used in Model 4EC60Al2 only).
39		(Used in Model 4EC60Al0 only).
40		(Used in Models 4EC60All and 4EC60Al6 only).
41	19C303457P4	Casting: (Used in Model 4EC60Al4 and 4EC60Al8 only).
42	19C303457P6	Casting: (Used in Model 4EC60Al5 and 4EC60A21 only).
43	19A121169G1	Support Assembly.
44	19B204501G1	Case Assembly.
45	4029994Pl	Strike: chrome plated steel.
46	N509P1912C	Pin, dowel: (Used in Models 4EC60Al8 and 4EC60A21 only).
47	19A121741P1	Spring: (Used in Models 4EC60Al8 and 4EC60A21 only).
48	19B204963P1	Lever: (Used in Models 4EC60A18 and 4EC60A21 only).
49	19C3O3679P1	Casting: (Used in Models 4EC60A18 and 4EC60A21 only).
50	19A127584G1	Handle Assembly: (Used in Models 4EC60Al8 and 4EC60A21 only).
51	19C3O3679P2	Casting: (Used in Models 4EC60A18 and 4EC60A21 only).
52	N648P9004	Screw: cap. (Used for mounting handle).

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 - To incorporate an improved output transistor. Changed Q701 and R704.

REV. B - To reduce high frequency audio gain. Added C701.

REV. C - (Models 4EC60A18 and A21 only)

To keep the receiver unmuted while receiving messages until unit
is manually reset. Removed W-BR-R wire from S-706-2 to TB3-1 and
added a W-BR-R wire from S706-2 to TB1-1.

REV. C - (Models 4EC60A14 and 15 only)
To provide audio to microphone jack. Added W-G wire from LS701-2
to J703-4.

REV, D - To incorporate an improved relay. Changed K701.

REV. E - To eliminate instability of the receiver PA caused by the use of a higher gain PA transistor. Added C705 from the emitter of Q701 to the chassis.

REV. F - Models 4EC60A14, A15 and A18

To eliminate audio LO switch and associated resistors. Deleted S702 and R704.

REV. F - Models 4EC60A21

To incorporate a new transistor. Changed Q701

REV. G - Models 4EC60A14, Al5 and Al8

To incorporate a new transistor. Changed Q701

REV. G - Model 4EC60A21

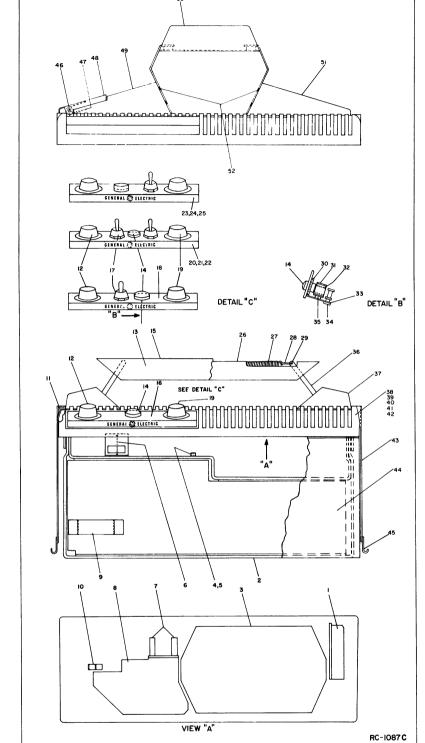
To incorporate a new switch. Changed S703 and S706

REV. H - Models 4EC60A14 and A15

To incorporate a new switch. Changed S703 and S707.

REV. H - Model 4EC60A18

To incorporate a new switch. Changed S703 and S706.



-- CONTROL UNIT - TYPE EC-60-A-----

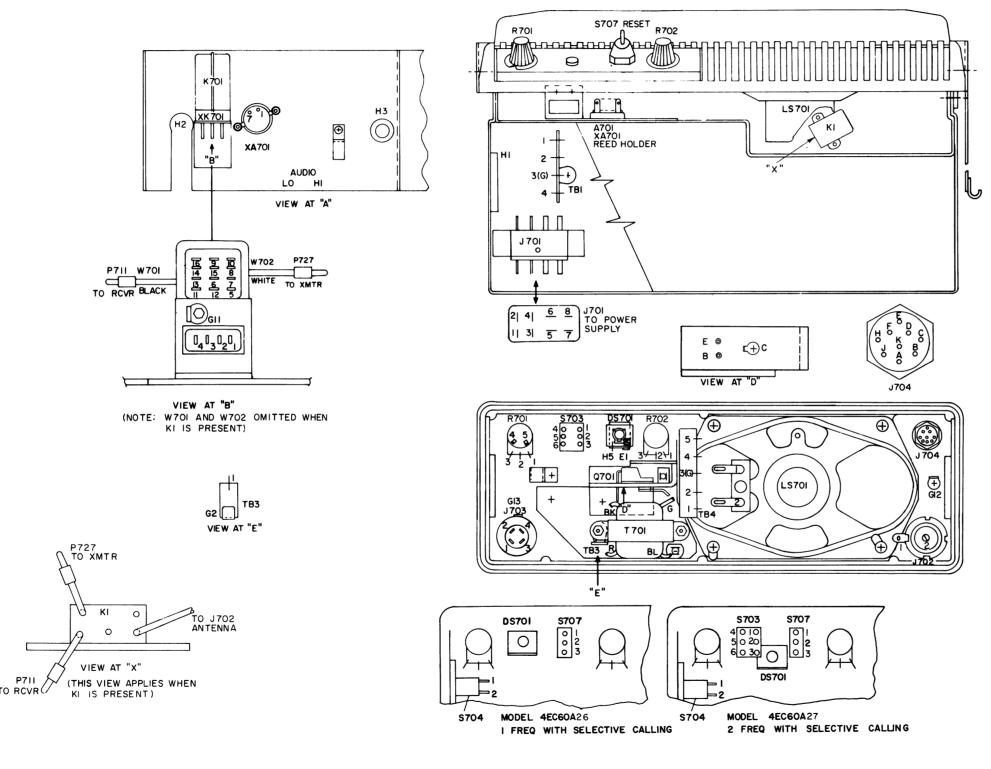
*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.

LBI-4047

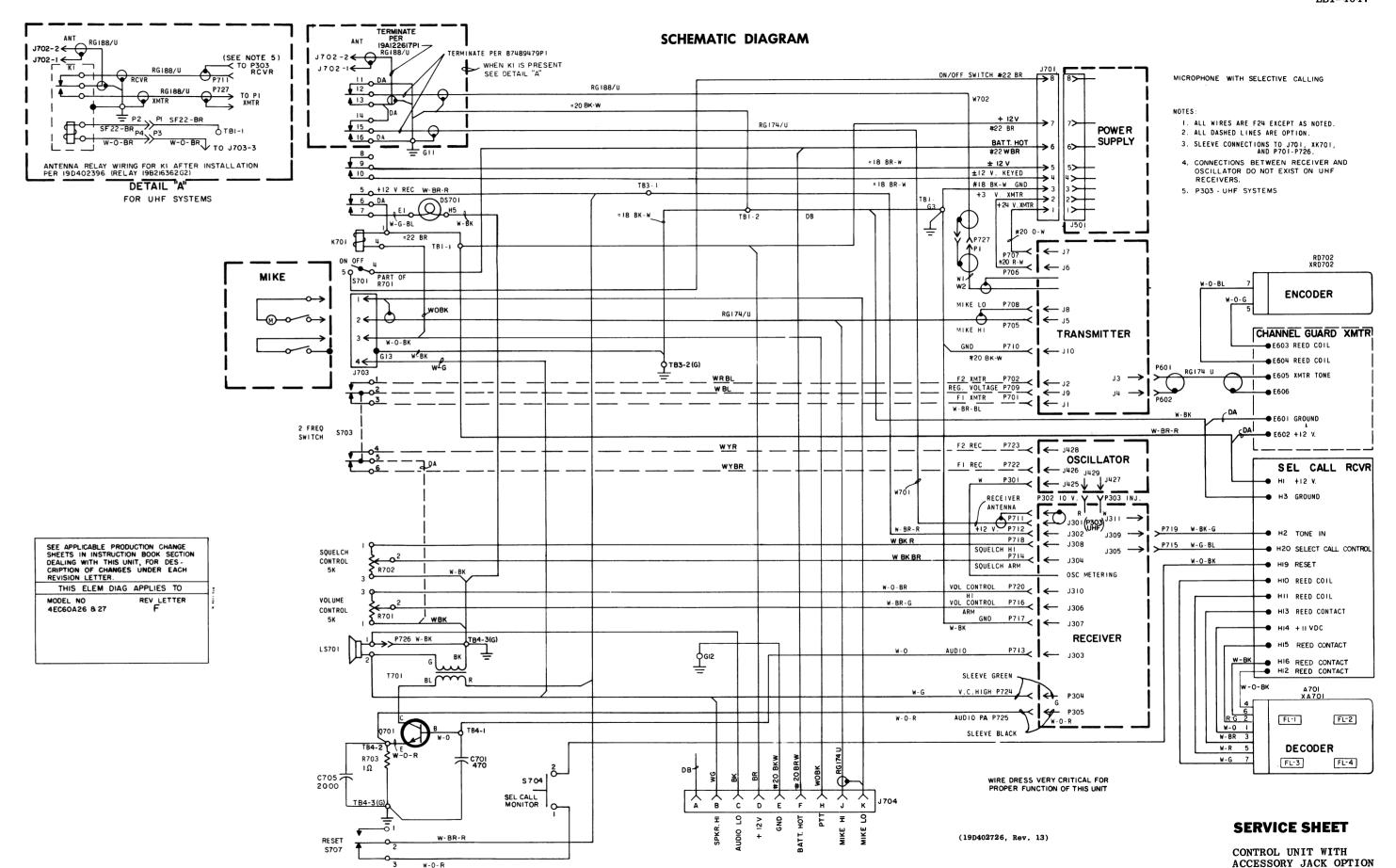
MODELS 4EC60A26 & 27

Issue 3

OUTLINE DIAGRAM



19D402796, Rev. 4)



LBI-4047

PARTS LIST

CONTROL UNIT

MODEL 4EC60A26 19D402279G17 (Single Frequency)

MODEL 4EC60A27 19D402279G18 (Two Frequency)

frequency). S17.5 Hz G2 S32.5 Hz G3 S47.5 Hz G4 S47.5 Hz G5 S47.5 Hz G5 S47.5 Hz G6 S47.5 Hz G6 S47.5 Hz G6 S47.5 Hz G6 G57.5 Hz G6 G57.5 Hz G6 G67.5 Hz G60 G57.5 Hz G610 G67.5 Hz G611 G67.5 Hz G67.5 Hz G612 G68.2.5 Hz G614 T12.5 Hz G615 T27.5 Hz G616 T27.5 Hz G617 T27.5 Hz G618 T27.5 Hz G619 G619	SYMBOL	GE PART NO.	DESCRIPTION
Tone Detector. (Check group numbers for desired frequency). S17.5 Hz S12.5 Hz S22.5 Hz S23.5 Hz S23.5 Hz S24.5 Hz S24.5 Hz S25.5 Hz S2	A701		19B204982G3 (Used with 4EJ19A10 Decoder)
frequency). 1			TONE NETWORKS
G3 547.5 Hz G6 552.5 Hz G6 577.5 Hz G7 69 592.5 Hz G7 69 592.5 Hz G7 69 592.5 Hz G8 69 697.5 Hz G8 69 697.5 Hz G10 652.5 Hz G11 667.5 Hz G12 682.5 Hz G13 697.5 Hz G14 712.5 Hz G15 742.5 Hz G16 742.5 Hz G17 757.5 Hz G19 787.5 Hz G20 802.5 Hz G21 817.5 Hz G22 832.5 Hz G22 832.5 Hz G23 892.5 Hz G24 877.5 Hz G25 892.5 Hz G26 892.5 Hz G27 907.5 Hz G28 892.5 Hz G29 937.5 Hz G31 982.5 Hz G32 997.5 Hz G31 982.5 Hz G32 997.5 Hz G32 997.5 Hz G33 997.5 Hz G31 998.5 Hz G32 997.5 Hz G32 997.5 Hz G33 997.5 Hz G31 998.5 Hz G32 997.5 Hz G33 997.5 Hz G33 997.5 Hz G34 998.5 Hz G35 997.5 Hz G37 997.5 Hz G38 997.5 Hz G39 997.5 Hz G39 997.5 Hz G39 997.5 Hz G30 998.5 Hz G31 998.5 Hz G32 998.5 Hz G33 997.5 Hz G33 997.5 Hz G34 998.5 Hz G35 997.5 Hz G37 997.5 Hz G38 997.5 Hz G39 997.5 Hz G39 997.5 Hz G39 997.5 Hz G30 998.5 Hz G31 998.5 Hz G32 998.5 Hz G33 997.5 Hz G31 998.5 Hz G32 998.5 Hz G33 997.5 Hz G33 997.5 Hz G31 998.5 Hz G32 998.5 Hz G33 997.5 Hz G33 997.5 Hz G33 997.5 Hz G34 998.5 Hz G35 997.5 Hz G37 997.5 Hz G38 997.5 Hz G39 997.5 H	thru	G1	517.5 Hz
G12 682.5 Hz G13 697.5 Hz G14 712.5 Hz G15 727.5 Hz G16 742.5 Hz G17 75.5 Hz G17 75.5 Hz G19 787.5 Hz G19 787.5 Hz G20 802.5 Hz G21 817.5 Hz G22 832.5 Hz G23 847.5 Hz G24 862.5 Hz G25 877.5 Hz G26 892.5 Hz G27 907.5 Hz G29 937.3 Hz G29 937.3 Hz G30 987.5 Hz G31 987.5 Hz G32 987.5 Hz G33 987.5 Hz G32 987.5 Hz G33 987.5 Hz G32 987.5 Hz G33 987.5 Hz G33 987.5 Hz G32 987.5 Hz G33 987.5 Hz G33 987.5 Hz G33 987.5 Hz G34 987.5 Hz G35 987.5 Hz G37 987.5 Hz G37 987.5 Hz G38 987.5 Hz G39 987.5 Hz G39 987.5 Hz G30 987		G3 G4 G5 G6 G7 G8 G9	547.5 Hz 562.5 Hz 577.5 Hz 592.5 Hz 607.5 Hz 622.5 Hz 637.5 Hz
G18 619 778.5 Hz 620 802.5 Hz 621 817.5 Hz 622 802.5 Hz 622 832.5 Hz 622 832.5 Hz 622 832.5 Hz 622 832.5 Hz 622 877.5 Hz 626 882.5 Hz 627 97.5 Hz 628 922.5 Hz 62		G11 G12 G13 G14 G15 G16	682.5 Hz 697.5 Hz 712.5 Hz 727.5 Hz 742.5 Hz
G24 862.5 Bz G25 G26 892.5 Bz G26 892.5 Bz G27 907.5 Bz G29 937.5 Bz G30 952.5 Bz G31 967.5 Bz G32 982.5 Bz G32 997.5 Bz G32 997.5 Bz G33 997.5 Bz G32 G33 997.5 Bz G32 G33 997.5 Bz G32 G33 997.5 Bz G32 G33 G33 997.5 Bz G32 G33 G33 G33 G33 G33 G33 G33 G33 G33		G1 8 G19 G20 G21 G22	772.5 Hz 787.5 Hz 802.5 Hz 817.5 Hz 832.5 Hz
G30 952.5 Hz 967.5 Hz 982.5 Hz 982.5 Hz 982.5 Hz 982.5 Hz 982.5 Hz 987.5 Hz 987.5 Hz		G24 G25 G26 G27 G28	862.5 Hz 877.5 Hz 892.5 Hz 907.5 Hz 922.5 Hz
C701 5494481P7 Ceramic disc: 470 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap. C705* 5494481P14 Ceramic disc: 2000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap. Added by REV C. INDICATING DEVICES DS701 4034664P1 Lamp, incandescent: 28 v, .04 amp; sim to GE 2148. J701 7473192P31 Connector: 8 terminals, phenolic; sim to HB Jones 261-31-02-000. J702 19A116550P1 Connector, coaxial: sim to Gold Line GLC-88. J703 19B209201P1 Connector: 4 contacts; sim to Switchcraft 3C-1088. J704 7489183P5 Connector: 9 contacts; sim to Winchester M9S-LRN		G30 G31 G32	952.5 Hz 967.5 Hz 982.5 Hz
### CType JF Discap. Cross			
REC Type JF Discap. Added by REV C.	C701	5494481P7	
DS701 4034664P1 Lamp, incandescent: 28 v, .04 amp; sim to GE 2148. JACKS AND RECEPTACLES J701 7473192P31 Connector: 8 terminals, phenolic; sim to HB Jones 261-31-02-000. J702 19A116550P1 Connector: 4 contacts; sim to Gold Line GLC-88. J703 19B209201P1 Connector: 4 contacts; sim to Switchcraft 3C-1088. J704 7489183P5 Connector: 9 contacts; sim to Winchester M9S-LRN	C705*	5494481P14	
J701 7473192P31 Connector: 8 terminals, phenolic; sim to HB Jones 261-31-02-000. J702 19A116550P1 Connector, coaxial: sim to Gold Line GLC-88. J703 19B209201P1 Connector: 4 contacts; sim to Switchcraft 3C-1088. J704 7489183P5 Connector: 9 contacts; sim to Winchester M9S-LRN	DS701	4034664P1	Lamp, incandescent: 28 v, .04 amp; sim to GE
### Jones 261-31-02-000. J702 19A116550P1 Connector, coaxial: sim to Gold Line GLC-88. J703 19B209201P1 Connector: 4 contacts; sim to Switchcraft 3C-1088. J704 7489183P5 Connector: 9 contacts; sim to Winchester M9S-LRN			JACKS AND RECEPTACLES
J703 19B209201P1 Connector: 4 contacts; sim to Switchcraft 3C-1088. J704 7489183P5 Connector: 9 contacts; sim to Winchester M9S-LRN	J701	7473192P31	
3C-1088. J704 7489183P5 Connector: 9 contacts; sim to Winchester M9S-LRN	J 702	19A116550P1	Connector, coaxial: sim to Gold Line GLC-88.
### 19C307010P18 Armature: 12 VDC nominal, 130 ohms res ±10% at 25°C, 4 form C contacts; sim to Allied Control T154-X-976A. In Modls of REV A and earlier:	J703	19B209201P1	
Marmature: 12 VDC nominal, 130 ohms res ±10% at 25°C, 4 form C contacts; sim to Allied Control T154-X-976A. In Models of REV A and earlier: 19C307010P5 Armature: 12 VDC nominal, 130 ohms res ±10% at 25°C, 4 form C contacts; sim to Allied Control T154-X-413.	J704	7489183P5	
19C307010P5 Armature: 12 VDC nominal, 130 ohms res ±10% at 25°C, 4 form C contacts; sim to Allied Control T154-X-413.	K701*	19C307010P18	Armeture: 12 VDC nominel 130 ohms res +10% at
LS701 19C307094P1 Permanent magnet: 3.2 ohms ±10% voice coil imp., 3 w input, 325 ±50 Hz resonance; sim to		19C307010P5	A-mature. 12 WDC nominal 130 ohms res t10% at
LS701 l9C307094Pl Permanent magnet: 3.2 ohms ±10% voice coil imp., 3 w input, 325 ±50 Hz resonance; sim to			T154-X-413.
	LS701	19C307094P1	Permanent magnet: 3.2 ohms ±10% voice coil imp., 3 w input, 325 ±50 Hz resonance; sim to
		1	

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

		PEOCHIPTION	average.	05 DADT NO	DECCRIPTION
YMBOL	GE PART NO.	DESCRIPTION	SYMBOL	GE PART NO.	DESCRIPTION
P701 and	4029840P2	Contact, electrical: taper pin; sim to AMP 42827-2.	W701		CABLE ASSEMBLY
P702 P705	4029840P2	Contact, electrical: taper pin; sim to AMP			19A121176G1
P706	4029840P1	42827-2.	P711	5496078P1	Connector, push-on: Teflon, sim to FRX 27-1.
thru P708	4029040P1	Contact, electrical: taper pin; sim to AMP 41854.			MISCELLANEOUS
P709	4029840P2	Contact, electrical: taper pin; sim to Amp 42827-2.		19B209044P11	Cable, RF: 5.75 inches long. Type RG-174/U.
P710	4029840P1	Contact, electrical: taper pin; sim to AMP 41854.			CABLE ASSEMBLY
P712 thru P720	4029840P2	Contact, electrical: taper pin; sim to AMP 42827-2.		,	19A121176G2
P722 and P723	4029840P2	Contact, electrical: taper pin; sim to AMP 42827-2.	₽727	5496078 P 2	Connector, push-on: Teflon, sim to FXR 27-2.
P724 and P725	7147199P2	Connector: 1 female contact; sim to Winchester Electronics 21804.		19B209044P13	Cable, RF: 4 inches long. Type RG-188/U.
P726	4036634P1	Receptacle, pin: sim to Amp 42428-2.			
		TRANSISTORS	XA701	19B209065P2	Tube: 7 contacts, phenolic; sim to Alcon Metal Products 524M-2.
Q701*	19A116118P3	Silicon, NPN. In REV D and earlier:	XK701	5491595 P 5	Relay, nylon: 16 contacts; sim to Allied Control 30054-2.
	19A115527P1	Silicon, NPN.			
		RESISTORS			ANTENNA RELAY KIT 19B216362G2 (Includes J702 and K1)
R701	19C300097P10	Resistor/switch: includes Resistor, variable, carbon film, 5000 ohms ±20%, 1/8 w; (S701) Switch, 2 amps at 125 VAC; sim to Mallory Type MLC.			POWER CABLE - 12 VOLT 19C3O3640G3
R702	19C300097P9	Variable, carbon film: 5000 ohms ±20%, 1/4 w; sim to Mallory Type MLC.			
R 703	19B209022P115	Wirewound: 1 ohms ±10%, 2 w; sim to IRC Type BWH.		4034405-P3	Connector, plug.
R704*	19B209022P135	Wirewound: 6.8 ohms, ±5%, 2 w; sim to IRC Type BWH. Deleted by REV D.		19A115776P2 7484390P4	Fuseholder. Fuse, cartridge.
				19A115776P4	Contact, electrical. (Used with 19A115776P2 fuseholder).
8701		(Part of R701).			
S702*	19B209040P1	Slide: DPDT, 0.5 amp at 125 v; sim to Continental Wirt 126. Deleted by REV D.			POWER CABLE - 6 VOLT 19C303640G4
8703*	19A116877P6	Toggle: DPDT, 1 ma at 6 VDC; sim to C and K Components 7201G.			MISCELLANEOUS
		In REV E and earlier:		4034405P3	Connector, plug.
	4036949P2	Toggle: DPDT, 100 µa at 5 VDC; sim to Arrow-Hart and Hegeman TS-6.		19A115776P2 7484390P3	Fuseholder. Fuse cartridge.
8704	7481654P10	Pushbutton (red): SP normally open, 1 amp at 115 VAC; sim to Grayhill 30-15.		19A115776P4	Contact, electrical. (Used with 19A115776P2 fuseholder).
8707*	19A116877P2	Toggle: SPDT, 1 ma at 6 VDC; sim to C and K Components 7108G.			POWER CABLE - 24/36 VOLT
	402604072	In REV E and earlier:			19B205422G1
	4036949P3	Toggle: SPDT, momentary contacts, 100 µa at 5 VDC; sim to Arrow-Hart and Hegeman TM-3.		4034405P3	Connector, plug.
				19A115776P2	Fuseholder.
r701	19B209079P1	Audio freq: freq range 0.3-3 KHz, operating 275 MADC.		1R16P7	Fuse, cartidge.
		Pri 1: 55 ohms ±10% imp at 1 w, 0.895 ohm ±10% DC res, Sec 1: 3.2 ohms ±10% at 1 w, 0.168 ohm max DC		19All5776P4	Contact, electrical. (Used with 19Al15776P2 fuseholder).
		res.			POWER SUPPLY EXTENSION CABLE ASSEMBLY 19B204289G1
rp1	7775500P8	Phenolic: 4 terminals.			MISCELLANEOUS
ГВ1 ГВ3	7775500P8	Phenolic: 2 terminals.		7473192P19	Socket phenolic: 8 terminals, cable clamp in
гв3 гв4	7775500P11	Phenolic: 5 terminals.		7473192P26	cap; sim to HB Jones 261-32-08-030. Plug, phenolic: 8 terminals, cable clamp in cap;
				7162441P23	sim to HB Jones 261-31-08-030. Tubing, flexible, plastic: 3 feet long.

	SYMBOL	GE PART NO.	DESCRIPTION
			MICROPHONE MODEL 4EM33C10 (19B209306P1)
			MISCELLANEOUS
			Switch. Shure Brothers RP33.
C 27-1.			Cable and plug: approx 5 feet. Shure Brothers RP35.
	-		Button: red plastic, Shure Brothers RP34. Cartridge, magnetic controlled, Shure Brothers
174/U.			RP32.
			Case, mounting button and nameplate: plastic. Shure Brothers RP40.
			Shield. Shure Brothers RP36.
27-2.			MICROPHONE MODEL 4EM33D10 (198209199P3)
		İ	Switch: moisture proof. Shure Brothers RP33.
/u.	1		Cable and plug: approx 80 inches. Shure Brothers RD35.
			Button: red plastic. Shure Brothers RP34.
on Metal			Cartridge, magnetic controlled. Shure Brothers RP32.
ed Control			Case, mounting button and nameplate: plastic Shure Brothers RP31.
			Shield. Shure Brothers RP36.
			PORTABLE AND INDUSTRIAL ANTENNA MODELS 4EY18A10-15 (LOW BAND)
	-		
		19C303707P1	Model 4EY18A10, 25-29 MHz Antenna. Includes 48-1/4 inch stainless steel rod, tuning screw, rubber O-ring weather seal; sim to Antenna Specialists ASP-431-GE.
		19C303707P2	Model 4EY18All, 29-33 MHz Antenna. Includes 48-1/4 inch stainless steel rod, tuning screw, rubber O-ring weather seal; sin to Antenna Specialists ASP-A431-GE.
776P2		19C303707P3	Model 4EY18A12, 33-36 MHz Antenna. Includes 48-1/4 inch stainless steel rod, tuning screw, rubber O-ring weather seal; sim to Antenna Specialists ASP-B431-GE.
		19C303707P4	Model 4EY18A13, 36-42 MHz Antenna, Includes 38-inch stainless steel rod, tuning screw, rubber O-ring weather seal; sim to Antenna Specialists ASP-C431-CE.
		19C303707P5	Model 4EY18A14, 42-48 MHz Antenna, Includes 38-inch stainless steel rod, tuning screw, rubber O-ring weather seal; sim to Antenna Specialists ASP-D-431-GE.
776P2		19C303707P6	Model 4EY18A15, 48-54 MHz Antenna. Includes 38-inch stainless steel rod, tuning screw, rubber O-ring weather seal; sim to Antenna Specialists ASP-E431-GE.
		2R22P2	Adapter, UHF: right angle. Signal Corps M-359; sim to Amphenol 83-1AP. (Used in Models 4EY18A10-15).
			MOBILE ANTENNA (LOW BAND)
			MISCELLANEOUS
776P2		7491074P1	Antenna: includes 96-1/2 inch stainless steel rod; sim to Antenna Specialists ASPA3BGE.
MBLY		7102930P3	Adapter, antenna: (Used with GE Dwg 7491074P1).
1001		4033101G1	Antenna package: includes base, adapter spring cable and plug.
amp in		7472880G5	Antenna base. (Used in 4044101G1).
		7476632G4	Adapter spring. (Used in 4033101G1).

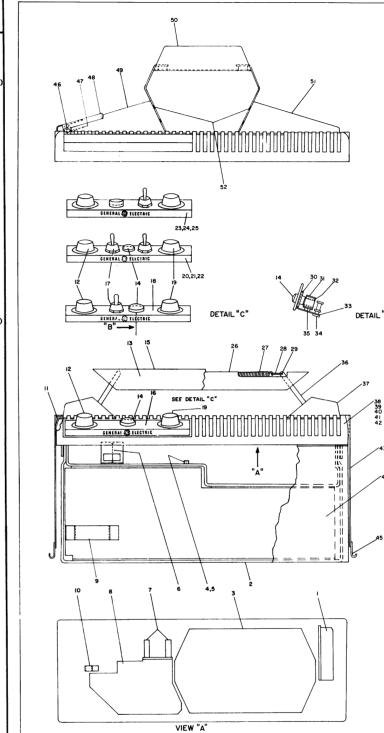
Cable, antenna: includes Type RG-58/U cable approx 15 feet, PL-259 plug, terminal; sim to Antenna Specialists 15A43. (Used in 4033101G1).

SYMBOL	GE PART NO.	DESCRIPTION	SYMBOL	GE PART NO
	2R22P1	Plug, coaxial: Signal Corps PL-259; sim to Amphenol 83-18P. (Used with GE Dwg 5492239Pl in 403310161).	14	19B204949P1
	4KY9A1	Coil, loading: 25-33 MHz; sim to Antenna Specialists ASPA87.	15 16	19B204492P1
	19A121577G1	Antenna hook kit.	17	5490135P3
	7134724P1	Antenna hook, (Used in 19A121577G1).		
		PORTABLE AND INDUSTRIAL ANTENNA	18	
		MODELS 4EY19C10-15 (HIGH BAND AND UHF)	19 20	19B204639G1
		MODEL 4EY19C10 130-150.8 MHz MODEL 4EY19C11 150.8-162 MHz MODEL 4EY19C12 162-166 MHz	21	NP243618
		MODEL 4EY19C13 166-174 MHz MODEL 4EY19C14 406-420 MHz	22	
		MODEL 4EY19C15 450-470 MHz	23	NP243616
		MOBILE ANTENNA	24	
		MODEL 4EY12A13 (HIGH BAND AND UHF)	25	
			26	19C3O3538P1
		MISCELLANEOUS	27	19A121363P1
		Antenna: includes 20-inch stainless steel whip, whip socket, antenna cable, cable adapter, PL-	28	19A121173P1
		259 plug; sim to Antenna Specialists ASPD201GE or Danbury-Knudsen Type PA-25.	29	N533P1308
	5490969P4	Whip: 20-inch stainless steel.	30	4031053P7
	5490969P5	Socket, whip.	31	4035711P4
	5490969P6	Whip and whip socket: 20-inch stainless steel whip, whip socket.	32	7150727P116
		Cable, antenna: approx 15 feet. Type RG-58/U.	33	19A121730P1
	1	(Used with GE Dwg 2R22Pl and GE Dwg 7105381Pl).	34	4034512P3
	7105381P1	Adapter, cable: Type UG-175/U. (Used with GE Dwg 2R22-Pl and Type RG-58/U cable).	35	7142162 P9 6
	2R22P1	Plug, coaxial: Signal Corps PL-259; sim to Amphenol 83-1SP. (Used with GE Dwg 7105281P1 and Type RG-58/U cable).	36	19A121343G1
	1		37	19C303427P1
		AUTO GUTTER MOUNT ANTENNA MODEL 4EY2OA10	38	
		(HIGH BAND)	39	
İ		MISCELLANEOUS	40	
	19C303620P1	Antenna Assembly. Includes: plastic ball tip;	41	19C303457P10
		19.5 ±0.25 inch stainless steel whip; socket; insulators; adapter; RG-58A/U cable; PL-259	42	19C3O3457P11
		plug; clip; 2-set screws; rubber pad; sim to Antenna Specialists ASP157.	43	19A121169G1
İ	19C303620P2	Replacement Whip Assembly. Includes: plastic ball tip; 19.5 ±0.25 inch stainless steel whip;	44	19B204501G1
		socket; insulators; sim to Antenna Specialists 19A904-1.	45	4029994P1
		MECHANICAL PARTS (SEE RC-1087)		
1		(Not Used).		
2	19B204532G1	Chassis Assembly:		
3	19B204527P1	Diaphragm:		
4		(Not Used).		
5	7763541P4	Clip, spring tension.	1	
6	5491595P9	Spring, retainer: wire; sim to Allied Control 30040-2. (Used with K701).		
7	7142162P98	(Not Used).	1	
8	19A121174G2	Chassis Assembly:		
9	19A121178P1	Support: (Used with J701).		
10	19A121199P1	(Not Used).	1	
111	19A121215P1	Spring:	1	1

Handle Assembly: (Includes items 15, 26, 27, 28, 29 and 36).

19C303537G1

	SYMBOL	GE PART NO.	DESCRIPTION
im to 92239P1	14	19B204949P1	Jewel: red plastic; sim to Rohm and Haas 2444 Plexiglas.
nna	15	19B204492P1	Extrusion: (Part of Handle Assembly, 19C3035376
	16		(Not Used).
	17	5490135P3	Boot, dust and moisture seal: silicon rubber; sim to APM-Hexseal N-5032-B.
. 1	18		(Not Used).
^	19	19B204639G1	Knob Assembly: (Used with R702).
- 1	20		(Not Used).
z z z	21	NP243618	Nameplate: etched aluminum. (Used in Model 4EC60A27 only).
z	22		(Not Used).
z	23	NP243616	Nameplate: etched aluminum. (Used in Model 4EC60A26 only).
	24		(Not Used).
İ	25		(Not Used).
	26	19C303538P1	Handle: (Part of Handle Assembly, 19C303537G1)
	27	19A121363P1	Spring: (Part of Handle Assembly, 19C303537G1)
eel whip, er, PL-	28	19A121173P1	Retainer: (Part of Handle Assembly 19C303537G1)
SPD201GE or	29	N533P1308	Pin, dowel: (Part of Handle Assembly 19C3035376
	30	4031053P7	Nut, speed: sim to Tinnerman Cl20046017-67.
	31	4035711P4	Clip, spring tension: sim to Augut Brothers 6007-8-CT.
ss steel	32	7150727P116	Sleeving, insulation: 30 inches long.
RG-58/U.	33	19A121730P1	Bracket.
with GE	34	4034512P3	Terminal, feed-thru: sim to Sealectro RST-MM-10-TUR.
	35	7142162 P9 6	Spacer.
m to 05281P1	36	19A121343G1	Support Assembly: (Part of Handle Assembly, 19C303537G1).
}	37	19C303427P1	Casting: (Used in Models 4EC60Al4 and 4EC60Al5 only).
	38		(Not Used).
_ 1	39		(Not Used).
all 44m.	40		(Not Used).
eall tip; cocket; L-259	41	19C303457P10	Casting: (Used in Model 4EC60A26 only).
im to	42	19C303457P11	Casting: (Used in Model 4EC60A27 only).
-1	43	19A121169G1	Support Assembly.
plastic el whip; ialists	44	19B204501G1	Case Assembly.
	45	4029994P1	Strike: chrome plated steel.



- CONTROL UNIT - TYPE EC-60-A-----

RC-1087C

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 To provide audio to the microphone jack. Added W-G wire from LS7-1-2 to J703-4.
- REV. B To incorporate an improved relay. Changed K701.
- REV. C.- To eliminate instability of the receiver PA caused by the use of higher gain PA transistor. Added C705 from the emitter of Q701 to the chassis.
- REV. D To eliminate audio LO switch and associated resistors. Deleted 3702 and R704.
- REV. E To incorporate a new transistor. Changed Q701.
- REV. F To incorporate a new switch. Changed S703 and S707.

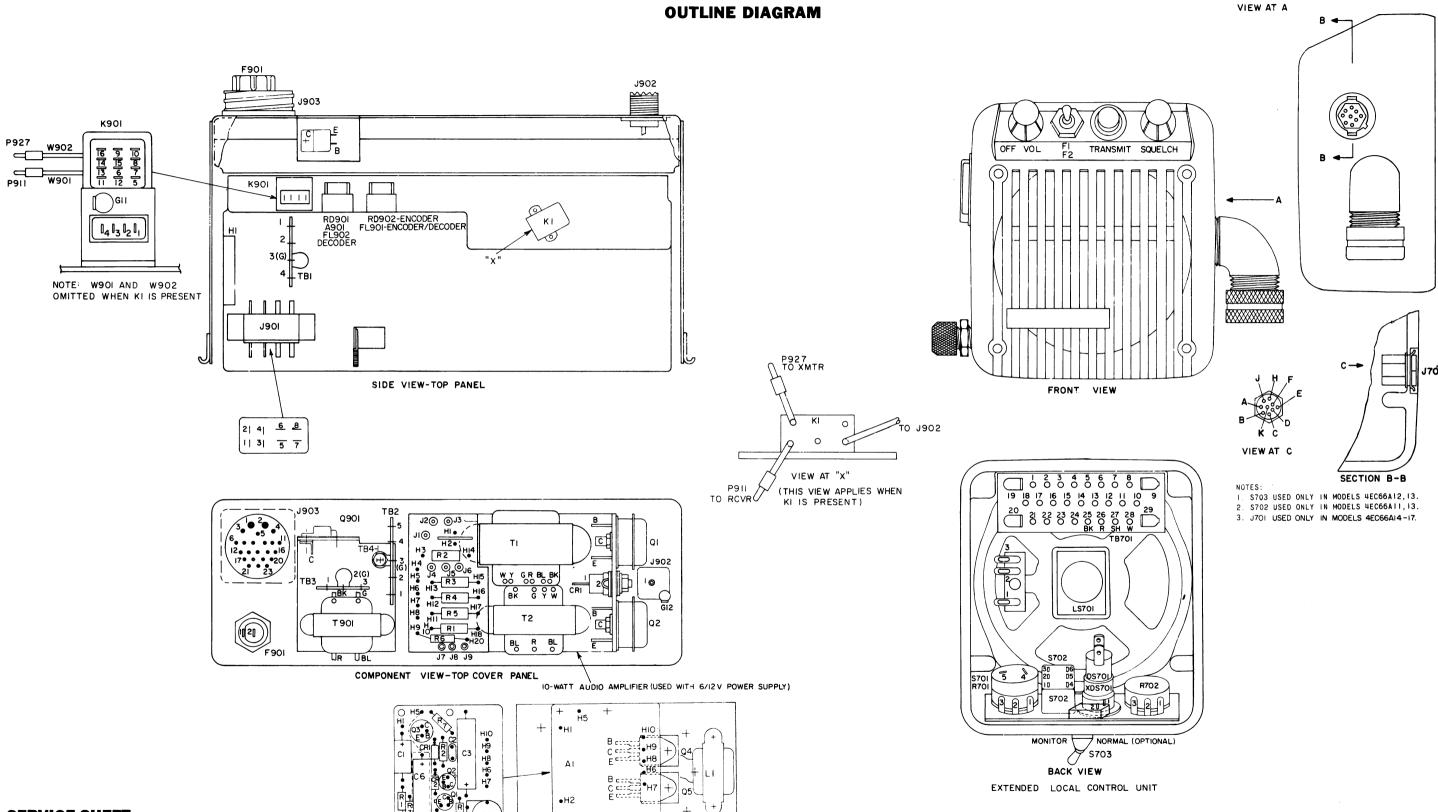
PARTS LIST

CONTROL UNIT MODEL 4EC66A12 (19D402603G3) SINGLE FREQUENCY
CONTROL UNIT MODEL 4EC66A13 (19D402603G4) TWO FREQUENCY
CONTROL UNIT MODEL 4EC66A16 (19D402603G7) SINGLE FREQUENCY
CONTROL UNIT MODEL 4EC66A17 (19D402603G8) TWO FREQUENCY WITH
ACCESSORY JACK OPTION
TRANSMITTER-RECEIVER TOP PANEL 19D402599G3
AND
ASSOCIATED ASSEMBLIES

SYMBOL	GE PART NO.	DESCRIPTION
		3300
		INDICATING DEVICES
D8701	19C307037P4	Lamp, incandescent: 14 v ±.01 v; sim to GE 1815.
		JACKS AND RECEPTACLES
J701	7489183P5	Connector: 9 contacts; sim to Winchester M9S-LRN.
L8701	5491260 P 7	Permanent magnet, 5-inch: 3.2 ohms ±10% voice coil imp, 15 w max operating, 385 Hz ±15% resonance; sim to Jensen Model P5-VAS12761.
		RESISTORS
R701	19B209256P2	Resistor/switch: includes Resistor, variable, 5000 ohms ±20%, 0.25 w; Switch (\$701), rotary, SPST, 15 amps at 10 v; sim to CTS Series 45.
R702	19B209256P1	Variable, carbon film: 5000 ohms ±20%, 0.5 w; sim to CTS Series 45.
		SWITCHES
8701		(Part of R701).
8702	5491899P6	Toggle: DPDT, 3 amps at 250 v; sim to Cutler- Hammer 8363K7.
8703	5491899P7	Toggle: SPST, 3 amps at 125 v; sim to Cutler-Hammer 8280Kl6.
TB701	19B205152Gl	Terminal board: 25 contacts.
		SOCKETS
XD8701	7141855P15	Lamp: sim to Dialight 95-410-975 (modified).
		HARNESS ASSEMBLY 19D402603G11 (4EC66A12) 19D402603G12 (4EC66A13) 19D402603G15 (4EC66A16) 19D402603G16 (4EC66A17) (Includes TB701)
		MECHANICAL PARTS (SEE RC-1340)
1	19A122065P1	Bushing: 3/4-14; sim to Pyle-National DB-1191690 (modified).
2	19A122066P1	Bushing: 1/4-18; sim to Pyle-National DB-44516 (modified).
3	4031457P1	Support. (Used with microphone).
4	4031458P1	Spring. (Used with microphone).
5	4032574P2	Gasket,cover, neoprene: approx 27-3/4 inches.
6	19D402601P3	Casting. (Used in Model 4EC66Al2).
7	19D402601P4	Casting. (Used in Model 4EC66Al3).
8	19D402601P7	Casting. (Used in Model 4EC66Al6).
9	19D402601P8	Casting. (Used in Model 4EC66Al7).
10	19B205162P1	Diaphragm: approx 2-3/8 inches dia.
11	19A121990P1	Spacer: 3/4 inch hex. (Used with TB701).
12	5490135P4	Boot: sim to APM-Hexseal N-1030-B. (Used with S702 in Models 4EC66Al3,17, S703).
13	NP248842	Nameplate.
14	4039182G1	Knob. (Used with R701, 702).
	1	

	SYMBOL	G-E PART NO	DESCRIPTION	SYMBO
	15	19A115040P9	Lens, panel light: red lens; sim to Dialight 81-331. (Used with DS701).	P906 thru
	16	NP248843	Nameplate. (Used in Models 4EC66Al3, 17),	P908
	17	NP248844	Nameplate. (Used in Models 4EC66Al2, 16).	P909
				P910
			TRANSMITTER-RECEIVER TOP PANEL 19D402599G3	P912 thru P914
	A901		REED HOLDER ASSEMBLY 19B204982G3 (Used with 4EJ19A10 Decoder) 19B204982G4 (Used with 4EJ19A11 Decoder)	P916 thru P918
				P920
-	FL1 thru FL4	19C300580	Tone Detector, (Check group numbers for desired frequency),	P922 and P923
N.	124	G1	517.5 Hz	P924 and
		G2 G3 G4 G5 G6 G7	532.5 H2 547.5 H2 562.5 Hz 577.5 Hz 592.5 Hz 607.5 Hz	P925 P926
-		G8 G9 G10 G11 G12 G13 G14 G15	622.5 Hz 637.5 Hz 652.5 Hz 667.5 Hz 682.5 Hz 697.5 Hz 712.5 Hz 727.5 Hz	Q 901*
1		G17 G18	757.5 Hz 772.5 Hz	R901
		G19 G20	787.5 Hz 802.5 Hz	R902
		G21 G22 G23 G24	817.5 Hz 832.5 Hz 847.5 Hz 862.5 Hz	т901
		G25 G26 G27 G28 G29	877.5 Hz 892.5 Hz 907.5 Hz 922.5 Hz 937.5 Hz	1901
- -		G30 G31	952.5 Hz 967.5 Hz	
		G32 G33	982.5 Hz 997.5 Hz	TB1
_			l	TB2
-	C901	7489162P39	Silver mica: 330 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.	TB3
l	C902	5494481P7	Ceramic disc: 470 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap.	W901
			FUSES	
	F901	7102673 P2	Quick blowing: 15 amps at 32 v; sim to Littel- fuse 311015 or Bussmann AGC-G15.	P91
			jacks and receptacles	
90	J901	7473192P31	Connector, phen: 8 terminals; sim to HB Jones 261-31-08-000.	
	J902	4029493P1	Receptacle, coaxial; sim to Amphenol 83-798 or Equiv. Military S0-239A.	W902
	J903	19B200010P2	Receptacle: 23 contacts; sim to Cannon Electric NK-L23-32S.	
	K901*	19C3O7O1OP18	Armature: 12 VDC nominal, 130 ohms ±10% coil res, 4 form C contacts; sim to Allied Control	P9:
			T154-X-976A. In 19D402599G3 earlier than REV A:	
		19C307010P5	Armature: 12 VDE nominal, 130 ohms ±10% coil res, 4 form C contacts; sim to Allied Control T154-X-413.	XA90:
	1	i	PLUGS	
	P901 and P902	4029840P2	Contact, electrical: sim to AMP 42827-2.	XF90:
	P905	4029840P2	Contact, electrical: sim to AMP 42827-2.	

SYMBOL	G-E PART NO	DESCRIPTION
P906 thru P908	4029840Pl	Contact, electrical: sim to AMP 41854.
P909	4029840P2	Contact, electrical: sim to AMP 42827-2.
P910	4029840P1	Contact, electrical: sim to AMP 41854.
P912 thru P914	4029840P2	Contact, electrical: sim to AMP 42827-2.
P916 thru P918	4029840 P 2	Contact, electrical: sim to AMP 42827-2.
P920	4029840P2	Contact, electrical: sim to AMP 42827-2.
P922 and P923	4029840P2	Contact, electrical: sim to AMP 42827-2.
P924 and P925	7147199P2	Connector: female contact; sim to Winchester Electronics 21804.
P926	4029840P2	Contact, electrical: sim to AMP 42827-2.
		TRANSISTORS
Q901*	19A116118P3	Silicon, NPN.
	19A115527P1	In REV A and earlier: Silicon, NPN.
R901	19B209022P115	
R902	3R77P473K	Composition: 47,000 ohms ±10%, 1/2 w.
"""		05mpositoisii. 11,000 0mms 120%, 1/2 #1
Т901	19B209079P1	Audio freq: 0.3-3 KHz freq range, Pri: 55 chms ±10% imp, 0.895 chm ±10% DC res, Sec: 3.2 chms imp, 0.168 chm DC res.
		TERMINAL BOARDS
TB1	7775500P8	Phen: 4 terminals.
TB2	7775500P11	Phen: 5 terminals.
твз	7775500P7	Phen: 3 terminals.
W901		CABLE 19A121176G1
P911	5496078P1	Push-on, coaxial: sim to FXR 27-1.
		MISCELLANEOUS
	19B209044P11	Cable, RF: approx 6 inches; sim to Amphenol 21-598.
W902		CABLE 19A121176G2
P927	5496078P2	Jack, coaxial: sim to FXR 27-2.
		MISCELLANEOUS
	19B209044P13	Cable, RF: approx 4 inches; sim to Amphenol 421-105.
XA901	19B209065P2	Tube, phen: 7 contacts; sim to Alcon Metal Products 524M-2.
XF901	19B209265P3	Fuseholder: 15 amps at 250 v; sim to Littelfuse 342006.
хк901	5491595P5	Relay: 16 contacts; sim to Allied Control 30054-2.
	1	
	1	

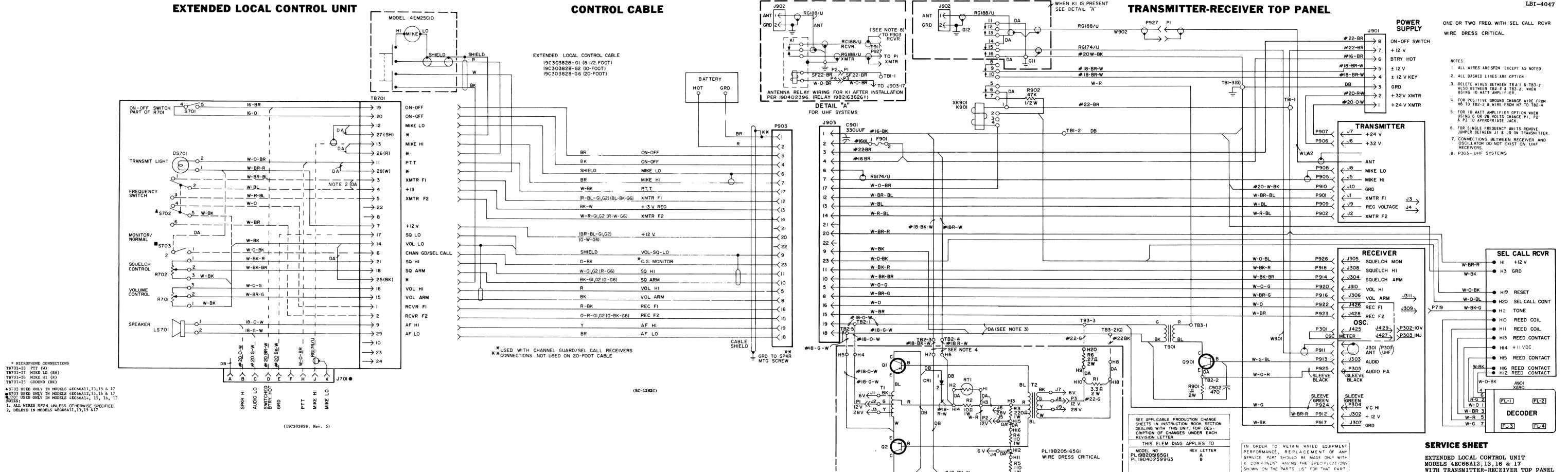


+ ^{H4} •H3

10-WATT AUDIO AMPLIFIER (USED WITH 24/36 V POWER SUPPLY)

SERVICE SHEET

EXTENDED LOCAL CONTROL UNIT MODELS 4EC66A12,13,16 & 17 WITH TRANSMITTER-RECEIVER TOP PANEL PL-19D402599-G3 (Used with 6/12-Volt Power Supplies)



OPTIONAL IO WATT AMPLIFIER

* MICROPHONE CONNECTIONS

TB701-28 PTT (W)

TB701-26 MIKE HI (R)

Power Supplies)

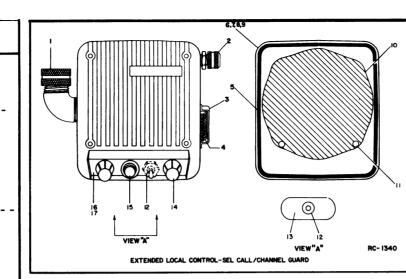
PL-19D402599-G3 (Used with 6/12-Volt

(RC-1858B, Sheet 2)

(19D402606, Rev. 15)

LBI-4047

19a12201062 Clip, cable. (Located between F801 and J903).	SYMBOL	OL G-E PART NO DESCRIPTION		SYMBOL	G-E PART NO	DESCRIPTION	SYMBOL	G-E PART NO	DESCRIPTION
## Actions in any Section (1997) 1997 19			19D402599G11 (Includes C901, J901, J903, P901, P902,		1	Antenna package: includes base, adapter spring.			19C303828G2
188607989 188607999 18860799 188607999 188607999 188607999 188607999 188607999 188607999 188607999 188607999 188607999 188607999 188607999 188607999 188607999 188607999 188607999 18860799 188607999 188607999 188607999 188607999 188607999 188607999 188607999 188607999 18860799 1			P922-P926, R902, TB1, W901, W902, XK901)					19A115067P1	Cable. 2-conductor: approx 10 feet: sim to
1890013970 1890013970 20001301370 20			MECHANICAL PARTS			Cable, antenna: includes Type RC-58/U cable		19B200010P3	Plug, 23 contacts; sim to Cannon Electric
1001000097 100101007 100		ı	' '		2R22P1	Plug, coaxial: Signal Corps PL-259; sim to Amphenol 83-1SP. (Used with GE Dwg 5492239P1		<u> </u>	POWER CONTROL CABLE 19C303828G6
1001009976		7147306P2	I		4039101P1	Coil, loading: 25-54 megahertz: sim to Antenna			MISCELLANEOUS
1995/1997 Compared		,	1	1	19A121577G1	I	1	19A115067P3	Cable, 2-conductor: approx 23 feet; sim to Belden 7721.
Married Active (1997) Court (Incided Active (1997) Court (1997) Court (Incided Active			supply to keep unit intact).		7134724P1	Antenna hook. (Used in 19A121577G1).		19B200010P3	
19411810102 Character, (Merott PRO), 725, 2) Character, (Merott PRO), 725, 2) Character, (Merott PRO), 725, 2) Character, (Merott PRO), 725, 2) Character, (Merott PRO), 725, 2) Character, (Merott PRO), 725, 2) Character, (Merott PRO), 725, 2) Character, (Merott PRO), 725, 200, 2) Character, (Merott Pro), 725, 200, 2) Character, (Merott Pro), 725, 200, 2) Character, (Merott Pro), 725, 200, 2) Character, (Merott Pro), 725, 200, 2) Character, (Merott Pro), 725, 200, 2) Character, (Merott Pro), 725, 200, 2) Character, (Merott Pro), 725, 200, 2) Character, (Merott Pro),			X661. (Located above J901).			MODELS 4EY19C10-15			
1982-1987 1982-1988 1982						,			19B204289GI
Mail 1997 Support (Under with Prop)			l ' ' ' I			MODEL 4EY19C11 150.8-162 MHz		1	MISCELLANEOUS
\$600,0000000000000000000000000000000000		19A121178P1				MODEL 4EY19C13 166-174 MHz MODEL 4EY19C14 406-420 MHz	1	7473192P19	Receptacle: 8 terminals; sim to HB Jones 261-32-08-030.
Selication of the policy in the Allied Control 20020-1. (Green vit 2002). (Control 20020-1. (Control 2		5491595P 9	Clip, relay: sim to Allied Control 30040-2.			MODEL 4EY19C15 450-470 MHz		7473192P26	
1982-01-00-01 1982-01-00-0		5491595P10	Clip, relay: sim to Allied Control 30052-1.			MODEL 4EY12A13		7162441P23	
180200707797 Control Montage (Located by EUG1). Control Montage (Located by EUG		7763541P4	Clip, cable. (Located by XK901).						
1812/00/1922 1812		19B204532G1	Chassis,						19B205422G1
19A122010G2 Ocated Scenting Etc. ATHERA RELAT HT 19A12305 and H1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		19A122071P2				whip socket, antenna cable, cable adapter, PL-259 plug; sim to Antenna Specialists ASPD201GE or		19A115067P1	Cable, 2 conductor: approx 10 feet; sim to
ATTENNA RELAY HIT TORINGON BELLY TIT TORINGON BELLY TITL TORIN		18412201062			5490969P4	Whip: 20-inch stainless steel.			
APPRIAR MELITATION CONTINUES (Includes 2002 and II) PORTARE AND HUMERIAL ANTENNA MELICATION (Cross with Car Day 2522-7) and CB Day 10052417). PORTARE AND HUMERIAL ANTENNA MELICATION (Cross with Car Day 2522-7) and CB Day 10052417). 19C00370772 19C00		19812201002	control mounting art.		5490969P5	Socket, whip.		1	
Chile, natural: approx 15 feet. Type 80-58-07. (Gend with Gen Part of General Control			19B216362G1		5490969P6	Whip and whip socket: 20-inch stainless steel whip, whip socket.			Littlefuse 312004 or Bussman MTH-4.
### APPLICATION OF THE PROPERTY OF THE PROPERY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY			(Includes J902 and K1)			Cable, antenna: approx 15 feet. Type RG-58/U. (Used with GR Dwg 2822-Pl and GR Dwg 7105381Pl)		4034405P3	
Ambhonol 83-18P. (Used with GE Deg 7100281971 Ambhonol 48THAILA 22-28 MEX Antenna. Includes 48-1/4 Lock stainless steel rod, tuning screw, public Oring wather seal; six to Antenna. Specialists ASP-0431-02. 19C303707P2 Bodol 48THAIL 29-38 WEA Antenna. Includes 48-1/4 Lock stainless steel rod, tuning screw, public Oring wather seal; six to Antenna. Specialists ASP-0431-02. 19C303707P4 19C303707P5 Bodol 48THAIL 29-38 WEA Antenna. Includes 48-1/4 Lock stainless steel rod, tuning screw, public Oring wather seal; six to Antenna. Specialists ASP-0431-02. 19C303707P6 19C303707P6 19C303707P6 19C303707P6 19C303707P6 20C4 48THAIL 29-38 WEA Antenna. Includes 38-18P. (Used in Bodols STIRAL) 12-18P. (Used in Bodols STIRAL) 12-			MODELS 4EY18A10-15		7105381P1	Adapter, cable: Type UG-175/U. (Used with GE			
Bedd, 48718A10, 26-29 MPs Antenna. Includes problem Oring weather seal; six to Antenna Specialists ASP-431-CG. 18C303707P2		·	MISCELLANEOUS		2R22P1	Amphenol 83-1SP. (Used with GE Dwg 7105281P1			MISCELLANEOUS
Specialists ASP-431-CE. 19C303707P2 Rodel 4ETERIAL 20-32 MEE Antenna. Includes 48-1/4 inch stainless steel rod, tuning screw, rubber Oring wather seal; sin to Antenna Specialists ASP-M31-CE. 19C303707P3 Rodel 4ETERIAL 23-36 MEE Antenna. Includes 48-1/2 inch stainless steel rod, tuning screw, rubber Oring wather seal; sin to Antenna Specialists ASP-M31-CE. 19C303707P4 Rodel 4ETERIAL 23-36 MEE Antenna. Includes 58-1/2 inch stainless steel rod, tuning screw, rubber Oring wather seal; sin to Antenna Specialists ASP-M31-CE. 19C303707P5 Rodel 4ETERIAL 23-36 MEE Antenna. Includes 38-inch stainless steel rod, tuning screw, rubber Oring wather seal; sin to Antenna Specialists ASP-M31-CE. 19C303707P6 Rodel 4ETERIAL 23-36 MEE Antenna. Includes 38-inch stainless steel rod, tuning screw, rubber Oring wather seal; sin to Antenna Specialists ASP-M31-CE. 19C303707P6 Rodel 4ETERIAL 23-36 MEE Antenna. Includes 38-inch stainless steel rod, tuning screw, rubber Oring wather seal; sin to Antenna Specialists ASP-M31-CE. 19C303707P6 Rodel 4ETERIAL 23-36 MEE Antenna. Includes 38-inch stainless steel rod, tuning screw, rubber Oring wather seal; sin to Antenna Specialists ASP-M31-CE. 19C303707P6 Rodel 4ETERIAL 23-36 MEE Antenna. Includes 38-inch stainless steel rod, tuning screw, rubber Oring wather seal; sin to Antenna Specialists ASP-M31-CE. 19C303707P6 Rodel 4ETERIAL 23-36 MEE Antenna. Includes 38-inch stainless steel rod, tuning screw, rubber Oring wather seal; sin to Antenna Specialists ASP-M31-CE. 19C303707P6 Rodel 4ETERIAL 23-36 MEE Antenna. Includes 38-inch stainless steel rod, tuning screw, rubber Oring wather seal; sin to Antenna Specialists ASP-M31-CE. 19C303707P6 Rodel 4ETERIAL 23-36 MEE Antenna. Includes 38-inch stainless steel rod, tuning screw, rubber Oring wather seal; sin to Antenna Specialists ASP-M31-CE. 19C303707P6 Rodel 4ETERIAL 23-36 MEE Antenna. Includes 38-inch stainless steel rod, tuning screw, rubber Oring wather seal; sin to Antenna Specialists ASP-M31-CE. 19C303707P6 Rodel 4ETERIAL 23-36 MEE Ante		19C3O37O7P1	48-1/4 inch stainless steel rod, tuning screw,					19A115067P1	Cable, 2-conductor: approx 23 feet; sim to Belden 31713.
19C303707P2 Short ASTRAIL, 33-38 East Astronas. Includes Sel-1/4 inch stainless steel rod, tuning screw, Specialists ASP-ASI-GE. Sel-1/4 inch stainless steel; old Attennas Sel-1/4 inch stainless steel; old Attennas Sel-1/4 inch stainless steel; old Attennas Sel-1/4 inch stainless steel rod, tuning screw, rubber Oring weather seal; sis to Attennas Sel-1/2 inch stainless steel rod, tuning screw, rubber Oring weather seal; sis to Attennas Sel-1/2 inch stainless steel rod, tuning screw, rubber Oring weather seal; sis to Attennas Sel-1/2 inch stainless steel rod, tuning screw, rubber Oring weather seal; sis to Attennas Sel-1/2 inch stainless steel rod, tuning screw, rubber Oring weather seal; sis to Attennas Sel-1/2 inch stainless steel rod, tuning screw, rubber Oring weather seal; sis to Attennas Sel-1/2 inch stainless steel rod, tuning screw, rubber Oring weather seal; sis to Attennas Sel-1/2 inch stainless steel rod, tuning screw, rubber Oring weather seal; sis to Attennas Sel-1/2 inch stainless steel rod, tuning screw, rubber Oring weather seal; sis to Attennas Sel-1/2 inch stainless steel rod, tuning screw, rubber Oring weather seal; sis to Attennas Sel-1/2 inch stainless steel rod, tuning screw, rubber Oring weather seal; sis to Attennas Sel-1/2 inch stainless steel rod, tuning screw, rubber Oring weather seal; sis to Attennas Specialists Sel-1/2 inch stainless steel rod, tuning screw, rubber Oring weather seal; sis to Attennas Specialists Sel-1/2 inch stainless steel rod, tuning screw, rubber Oring weather seal; sis to Attennas Specialists Sel-1/2 inch stainless steel rod, tuning screw, rubber Oring weather seal; sis to Attennas Specialists Sel-1/2 inch stainless steel rod, tuning screw, rubber Oring weather seal; sis to Attennas Specialists Sel-1/2 inch stainless steel rod, tuning screw, rubber Oring weather seal; sis to Attennas Specialists Sel-1/2 inch stainless steel rod, tuning screw, rubber Oring weather seal; sis to Attennas Specialists Sel-1/2 inch stain			Specialists ASP-431-GE.			MODEL 4EY20A10		19A115776P2	Phenolic: sim to Bussman Type HHJ.
Specialists SSP-4431-GE. 19C303707P3 Model 4EVIABL2, 33-36 MEz Antenna. Includes 48-1/4 inch stainless steel rod, tuning screw, rubber Oring weather seal; sin to Antenna Specialists ASP-851-GE. 19C303707P4 Model 4EVIABL3, 36-24 MEz Antenna. Includes 38-inch stainless steel rod, tuning screw, rubber Oring weather seal; sin to Antenna Specialists ASP-851-GE. 19C303707P5 Model 4EVIABL4, 42-48 MEz Antenna. Includes 38-inch stainless steel rod, tuning screw, rubber Oring weather seal; sin to Antenna Specialists 19A504-1. 19C303707P6 Model 4EVIABL4, 42-48 MEz Antenna. Includes 38-inch stainless steel rod, tuning screw, rubber Oring weather seal; sin to Antenna Specialists 19A504-1. 19C303707P6 Model 4EVIABL4, 42-48 MEz Antenna. Includes 38-inch stainless steel rod, tuning screw, rubber Oring weather seal; sin to Antenna Specialists 18A504-1. 19C303707P6 Model 4EVIABL5, 43-48 MEz Antenna. Includes 38-inch stainless steel rod, tuning screw, rubber Oring weather seal; sin to Antenna Specialists 18A504-1. 19C303707P6 Model 4EVIABL5, 43-48 MEz Antenna. Includes 38-inch stainless steel rod, tuning screw, rubber Oring weather seal; sin to Antenna Specialists 38-38-38-31-36. 19C303707P6 Model 4EVIABL5, 43-48 MEz Antenna. Includes 38-inch stainless steel rod, tuning screw, rubber Oring weather seal; sin to Antenna Specialists 38-38-48-31-31-62. 2R22P2 Mapter, UHF: right angle. Signal Corps N-399; sin to Antenna Specialists ASP-31PA. (Used in Models 413-34-34-48-48-48-48-48-48-48-48-48-48-48-48-48		19C303707P2	48-1/4 inch stainless steel rod, tuning screw, rubber O-ring weather seal: sim to Antenna					IR16P7	Cartridge, quick blowing: 4 amps at 250 v; sin to Littelfuse 312004 or Bussman MTH-4.
## 19303707P4 Model Extindess steel rod, tuning screw, rubber Or-ing weather seal; six to Antenna Specialists ASP-15702		1000000000	Specialists ASP-A431-GE.		19C3O362OP1	Antenna. Includes 19-1/2 inch stainless steel		4034405P3	Plug: 3 sockets; sim to Cannon Electric XLR-3-11C.
19C303707P4 8		190303707₽3	48-1/4 inch stainless steel rod, tuning screw, rubber O-ring weather seal; sim to Antenna			cable, PL-259 plug, clip; sim to Antenna			
Model 4EY1814, 42-48 MEz Antenna. Includes 38-inch stainless steel rod, tuning screw, rubber O-ring weather seal; sim to Antenna Specialists ASP-D431-GE. 19C30370796 Model 4EY1815, 48-54 MEz Antenna. Includes 38-inch stainless steel rod, tuning screw, rubber O-ring weather seal; sim to Antenna Specialists ASP-B431-GE. 2R22P2 Mapter, UHF: right angle. Signal Corps M-359; sim to Amplenol 83-IAP. (Used in Models 4EY18A10-15). MOBILE ANTENNA (LOW BAND) Antenna: includes 96-1/2 inch stainless steel rod; sim to Antenna includes 96-1/2 inch stainless steel rod; sim to Antenna includes 96-1/2 inch stainless steel rod; sim to Antenna includes 96-1/2 inch stainless steel rod; sim to Antenna includes 96-1/2 inch stainless steel rod; sim to Antenna Specialists ASPASEE. MICROPHONE MODEL 4EW25C10 Cable clamp. Shure Brothers RP21. (Includes parts 2 and 8). Switch. Shure Brothers RP21. (Includes parts 1 and 8). Switch. Shure Brothers RP25. (Includes parts 1 and 8). Spring. Shure Brothers RP25. (Includes miscellaneous hardware). Spring. Shure Brothers RP25. (Includes miscellaneous hardware). Antenna: includes 96-1/2 inch stainless steel rod; sim to Antenna Specialists ASPASEE. MOBILE ANTENNA (Includes parts 1 and 3).		19C303707P4	Model 4EY18Al3, 36-42 MHz Antenna. Includes 38-inch stainless steel rod, tuning screw, rubber O-ring weather seal; sim to Antenna Specialists		19C303620P2	steel whip, socket, insulators; sim to Antenna	C1	7489150D16	MISCELLANEOUS
19C303707P6 Model 4EY18Al5, 48-54 MHz Antenna. Includes 38-inch stainless steel rod, tuning screw, rubber O-ring weather seal; sim to Antenna Specialists ASP-E431-GE. 2R22P2 Mapter, UHF: right angle. Signal Corps M-359; sim to Amphenol 83-1AP. (Used in Models 4EY18Al0-15). MOBILE ANTENNA (LOW BAND) 7491074P1 Antenna: includes 96-1/2 inch stainless steel rod; sim to Antenna Specialists ASPA3BGE. Model 4EY18Al5, 48-54 MHz Antenna. Includes 38-inch stainless steel rod; sim to Antenna Specialists ASPA3BGE. Parts 3 and 8). Switch. Shure Brothers RP26. Case (back) and mounting button: plastic. Shure Brothers RP21. (Includes parts 1 and 8). Switch button: red plastic. Shure Brothers RP25. Spring. Shure Brothers RP23. Cartridge, magnetic controlled. Case (front): plastic. Shure Brothers RP21. (Includes parts 1 and 3).		19C303707P5	Model 4EY18A14, 42-48 MHz Antenna. Includes 38-inch stainless steel rod, tuning screw, rubber O-ring weather seal; sim to Antenna Specialists			MODEL 4EM25Cl0		4034403P1	200 VDCW; sim to Sprague 118P40502S4. Plug: sim to GE 4304-3.
Adapter, UHF: right angle. Signal Corps M-359; sim to Amphenol 83-1AP. (Used in Models 4 Switch button: red plastic. Shure Brothers RP25. Spring. Shure Brothers RP16. (includes miscellaneous hardware). Spring. Shure Brothers RP16. (includes miscellaneous hardware). Shield. Shure Brothers RP23. Cartridge, magnetic controlled. Case (front): plastic. Shure Brothers RP21. (Includes parts 1 and 8). Switch button: red plastic. Shure Brothers RP25. Spring. Shure Brothers RP25. Spring. Shure Brothers RP25. Spring. Shure Brothers RP25. Cartridge, magnetic controlled. Case (front): plastic. Shure Brothers RP21. (Includes parts 1 and 3).		19C303707P6	Model 4EY18Al5, 48-54 MHz Antenna. Includes 38-inch stainless steel rod, tuning screw, rubber O-ring weather seal; sim to Antenna Specialists	2		parts 3 and 8). Switch. Shure Brothers RP26.			Birnbach 789. Plug: 5 sockets: sim to Cannon Electric
MOBILE ANTENNA (LOW BAND) The state of the		2R22P2	Adapter, UHF: right angle. Signal Corps M-359; sim to Amphenol 83-1AP. (Used in Models			Shure Brothers RP21. (Includes parts 1 and 8).			
MOBILE ANTENNA (LOW BAND) 6 Shield. Shure Brothers RP23. 7 Cartridge, magnetic controlled. Case (front): plastic. Shure Brothers RP21. (Includes parts 1 and 3).			#EIIOAIU-13),	5		Spring. Shure Brothers RP16. (includes		1	
7 Cartridge, magnetic controlled. 7 Case (front): plastic. Shure Brothers RP21. 7 (Includes parts 1 and 3).				6		· ·		1	
7491074Pl Antenna: includes 96-1/2 inch stainless steel rod; sim to Antenna Specialists ASPASBGE. 8 Case (front): plastic. Shure Brothers RP21. (Includes parts 1 and 3).									
rod; sim to Antenna Specialists ASPA3BGE.		7491074P1		8		Case (front): plastic. Shure Brothers RP21.			
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PARTS LIST LBI-3669D

10-WATT POWER AMPLIFIER 19B205165-G1 REV A

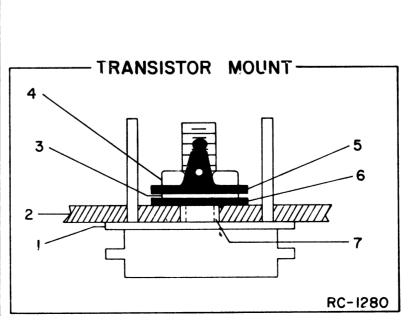
SYMBOL	GE PART NO.	DESCRIPTION
CR1	19A115617-P1	DIODES AND RECTIFIERS
J1 thru J9	4033513-P4	JACKS AND RECEPTACLES
Pl thru P3	4029840-P2	Contact, electrical: sim to AMP 42827-2.
Q1 and Q2	5490810-P1	TRANSISTORS
R1*	19B209022-P27	Wirewound, phen: 3.3 ohms ±5%, 2 w; sim to IRC Type BWH. In Models earlier than Rev A:
	19B209022-P137	Wirewound: 8.2 ohms ±10%, 2 w; sim to IRC BWH.
R2 R3	3R78-P100J 3R78-P221J	Composition: 10 ohms ±5%, 1 w.
R4 and R5	3R78-P111J	Composition: 220 ohms ±5%, 1 w. Composition: 110 ohms ±5%, 1 w.
R6*	19B209022-P1	Wirewound: 0.27 ohms ±5%, 2 w; sim to IRC Type BWH. (Added by REV A).
RT1	19C300048-P3	Disc: 1 ohm $\pm 10\%$ res at 25°C.
T1	19B209218-P1	TRANSFORMERS
Т2	19B209220-P1	Audio freq: 0.3-3 KHz freq range nominal, Pri: 0.17 ohm DC res max, Sec: 5.5 ohms DC res max.
		MECHANICAL PARTS (SEE RC-1280)
1	4031291-P1	Insulator, disc.
2	19B205142-G1	Chassis.
3	4034225-P1	Flat washer. (For 10-32 screw).
4	4032596-P1	Nut: 10-32.
5	4036835-Pl	Terminal, solder: sim to Shakeproof 2118-10-01-2520N.
6	19A115221-P3	Washer, mica: approx 9/16 inch dia.
7	4034215-P1	Bushing.

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 10-Watt Power Amplifier 19B205165-G1
 To improve audio response. Changed R1 and added R6.
- REV. A Transmitter-Receiver Top Panel 19D402599-G3
- To incorporate an improved relay. Changed K901.
- REV. A Control Unit (Models 4EC66A12, 13, 16 & 17

 To eliminate noise in receiver. Deleted jumper between TB701-14 & TB701-17 and jumper between TB701-1 & TB701-17.
- REV. B Transmitter-Receiver Top Panel 19D402599-G3
 To incorporate a new transistor. Changed Q901.



*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.

PARTS LIST

LBI-4054B

CONTROL UNIT WITH SELECTIVE CALLING

MODEL 4EC66A12 (19D402603G3) (1 Frequency)

MODEL 4EC66A13 (19D402603G4) (2 Frequency)

MODEL 4EC66A16 (19D402603G7) (1 Frequency with ACCESSORY JACK OPTION)

MODEL 4EC66A17 (19D402603G8) (2 Frequency with ACCESSORY JACK OPTION)

TRANSMITTER-RECEIVER TOP PANEL 19D402599G6

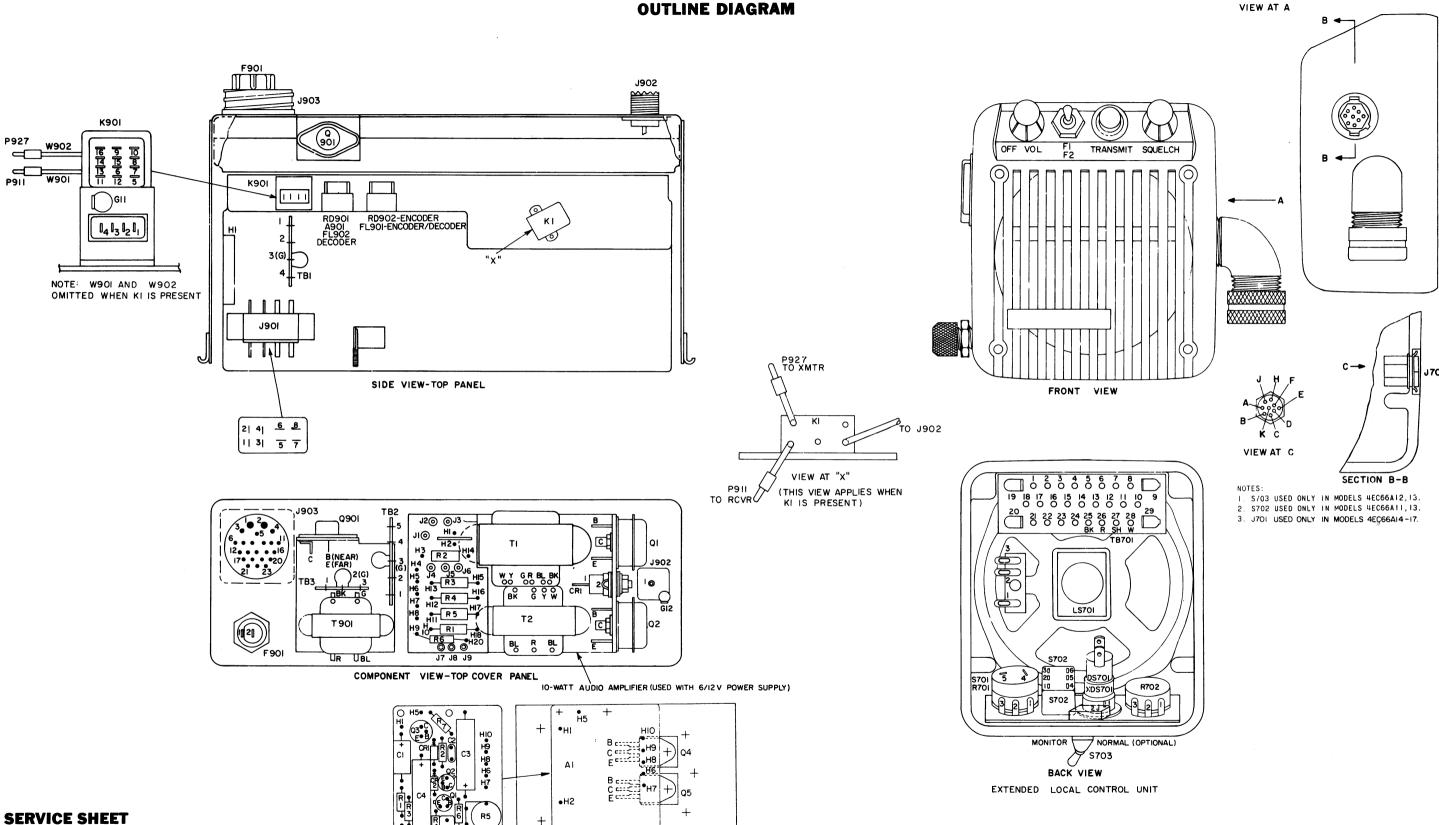
AND

AND

ASSOCIATED ASSEMBLIES

SYMBOL	GE PART NO.	DESCRIPTION
		INDICATING DEVICES
DS701	19C307037P4	Lamp, incandescent: 14 v ±.01 v; sim to GE 1815.
J701	7489183P5	Connector: 9 contacts; sim to Winchester M9S-LRN.
		LOUDSPEAKERS
LS701	5491260P7	Permanent magnet, 5-inch: 3.2 ohms ±10% voice coil imp, 15 w max operating, 385 Hz ±15% resonance; sim to Jensen Model P5-VAS12761.
		RESISTORS
R701	19B209256P2	Resistor/switch: includes Resistor, variable, 5000 ohms ±20%, 0.25 w; Switch (8701), rotary, SPST, 15 amps at 10 v; sim to CTS Series 45.
R702	19B209256P1	Variable, carbon film: 5000 ohms ±20%, 0.5 w; sim to CTS Series 45.
8701		(Part of R701).
8702	5491899P6	Toggle: DPDT, 3 amps at 250 v; sim to Cutler-Hammer 8363K7.
8703	5491899P7	Toggle: SPST, 3 amps at 125 v; sim to Cutler-Hammer 8280K16.
		TERMINAL BOARDS
TB701	19B205152G1	Terminal board: 25 contacts.
XDS701	7141855P15	Lamp: sim to Dialight 95-410-975 (modified).
		HARNESS ASSEMBLY 19D402803G11 (4EC66A12) 19D402803G12 (4EC66A13) 19D402803G15 (4EC66A16) 19D402803G16 (4EC66A17) (Includes TB701)
		MECHANICAL PARTS (SEE RC-1340)
1	19A122065P1	Bushing: 3/4-14; sim to Pyle-National DB-1191690 (modified).
2	19A122066P1	Bushing: 1/4-18; sim to Pyle-National DB-44516 (modified).
3	4031457P1	Support. (Used with microphone).
4	4031458P1	Spring. (Used with microphone).
5	4032574P2	Gasket, cover, neoprene: approx 27-3/4 inches.
6	19D402601P3	Casting. (Used in Model 4EC66Al2).
7	19D402601P4	Casting. (Used in Model 4EC66A13).
8	19D402601P7	Casting. (Used in Model 4EC66A16).
9	19D402601P8 19B205162P1	Casting. (Used in Model 4EC66A17).
	198205162P1 19A121990P1	Diaphragm: approx 2-3/8 inches dia. Spacer: 3/4 inch hex. (Used with TB701).
	TOUTSTOOLL	
11 12	5490135P4	I Boot: Sim to ADM-Haveas N-1020 P
12	5490135P4	Boot: sim to APM-Hexseal N-1030-B. (Used with S702 in Models 4EC66A13,17, S703).
	5490135P4 NP248842	Boot: sim to APM-Hexseal N-1030-B. (Used with S702 in Models 4EC66A13,17, S703). Nameplate.
12		(Used with S702 in Models 4EC66A13,17, S703).
12 13	NP248842	(Used with S702 in Models 4EC66A13,17, S703). Nameplate.
12 13	NP248842	(Used with S702 in Models 4EC66A13,17, S703). Nameplate.

	SYMBOL	G-E PART NO	DESCRIPTION	SYMBOL	G-E PART NO	DESCRIPTION
	15	19A115040P9	Lens, panel light: red lens; sim to Dialight 81-331. (Used with DS701).	P912 thru P914	4029840P2	Contact, electrical: sim to AMP 42827-2.
	16 17	NP248843 NP248844	Nameplate. (Used in Models 4EC66Al3, 17). Nameplate. (Used in Models 4EC66Al2, 16).	P916 thru P918	4029840P2	Contact, electrical: sim to AMP 42827-2.
٦			TRANSMITTER-RECEIVER TOP PANEL 19D402599G6	P920	4029840P2	Contact, electrical: sim to AMP 42827-2.
$\left \cdot \right $	A901		REED HOLDER ASSEMBLY	P922 and P923	4029840P2	Contact, electrical: sim to AMP 42827-2.
			19B204982G3 (Used with 4EJ19A10 Decoder) 19B204982G4 (Used with 4EJ19A11 Decoder)	P924 and P925	7147199P2	Connector: female contact; sim to Winchester Electronics 21804.
	FL1 thru	19C300580	Tone Detector. (Check group numbers for desired frequency).	P926	4029840P2	Contact, electrical: sim to AMP 42827-2.
11	FL4	G1 .	517.5 Hz	Q901*	19A116118P3	
		G2 G3 G4	532.5 Hz 547.5 Hz 562.5 Hz			In REV A and earlier:
		G5 G6 G7	577.5 Hz 592.5 Hz 607.5 Hz		19A115527P1	Silicon, NPN.
		G8 G9	622.5 Hz 637.5 Hz	R901	19B209022P115	RESISTORS
		G10 G11	652.5 Hz 667.5 Hz	R902	3R77P473K	Wirewound: 1 ohm ±10%, 2 w; sim to IRC Type BWH. Composition: 47,000 ohms ±10%, 1/2 w.
		G12 G13 G14	682.5 Hz 697.5 Hz 712.5 Hz			·
		G15 G16 G17 G18 G19 G20	727.5 Hz 742.5 Hz 757.5 Hz 772.5 Hz 787.5 Hz	Т901	198209079P1	Audio freq: 0.3-3 KHz freq range, Pri: 55 ohms ±10% imp, 0.895 ohm ±10% DC res, Sec: 3.2 ohms imp, 0.168 ohm DC res.
		G21 G22	802.5 Hz 817.5 Hz 832.5 Hz			TERMINAL BOARDS
11		G23 G24	847.5 Hz 862.5 Hz	TB1	7775500P8	Phen: 4 terminals.
П		G25 G26	877.5 Hz 892.5 Hz	TB2	7775500P11	Phen: 5 terminals.
$\parallel \parallel$		G27 G28 G29	907.5 Hz 922.5 Hz 937.5 Hz	твз	7775500P7	Phen: 3 terminals.
		G30 G31	952.5 Hz 967.5 Hz			
		G32 G33	982.5 Hz 997.5 Hz	W901		CABLE
П				1		19A121176G1
Ш	C902	5494481P7	Ceramic disc: 470 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap.			
П		:		P911	5496078P1	Push-on, coaxial: sim to FXR 27-1.
П	J901	7473192P31	JACKS AND RECEPTACLES Connector, phen: 8 terminals; sim to HB Jones			MISCELLANEOUS
	J902	4029493P1	261-31-08-000. Receptacle, coaxial; sim to Amphenol 83-798 or		19B209044P11	Cable, RF: approx 6 inches; sim to Amphenol 21-598.
	J903	19B200010P2	Equiv. Military S0-239A. Receptacle: 23 contacts; sim to Cannon Electric	W902		CABLE 19A121176G2
			NK-L23-32S.			
			RELAYS	P927	5496078P2	Jack, coaxial: sim to FXR 27-2.
	K901*	19C3O7O1OP18	Armature: 12 VDC nominal, 130 ohms ±10% coil res, 4 form C contacts; sim to Allied Control T154-X-976A.			MISCELLANEOUS
			In 19D402599G3 earlier than REV A:		19B209044P13	Cable, RF: approx 4 inches; sim to Amphenol 421-105.
		19C3O7O1OP5	Armature: 12 VDE nominal, 130 ohms ±10% coil res, 4 form C contacts; sim to Allied Control			
			T154-X-413.	XA901	19B209065P2	Tube, phen: 7 contacts; sim to Alcon Metal
				XK901	5491595P5	Products 524M-2. Relay: 16 contacts; sim to Allied Control
	P901 and P902	4029840P2	Contact, electrical: sim to AMP 42827-2.	ARSOI	3451353F3	30054-2.
	P905	4029840P2	Contact, electrical: sim to AMP 42827-2.			HARNESS ASSEMBLY 19D402599G14
	P906 thru P908	4029840P1	Contact, electrical: sim to AMP 41854.			(Includes J901, J903, P901, P902, P905- P910, P912-P914, P916-P918, P920, P922- P926, R902, TB1, W901, W902, XK901)
	P909	4029840P2	Contact, electrical: sim to AMP 42827-2.			
	P910	4029840P1	Contact, electrical: sim to AMP 41854.			MECHANICAL PARTS
					7147306P2	Insulator, bushing. (Used with Q901).
					19A116023P1	Insulator, plate. (Used with Q901).
		1				
S.				L		

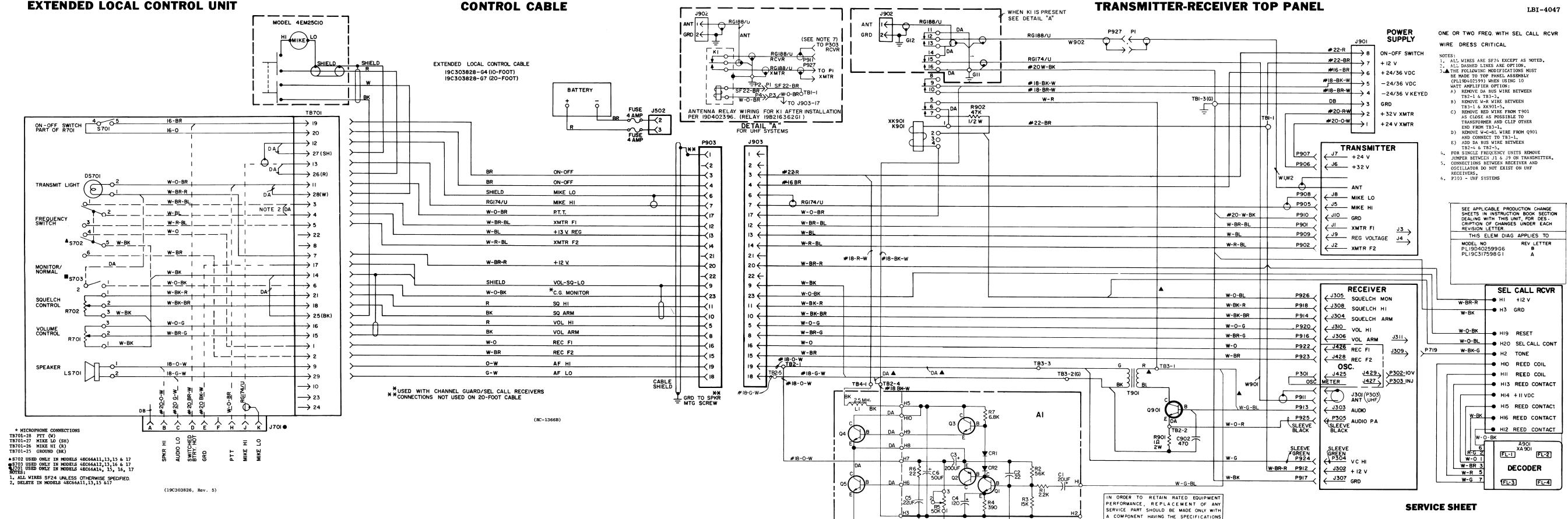


(19D413760, Rev. 0)

H4 ● •H3

10-WATT AUDIO AMPLIFIER (USED WITH 24/36 V POWER SUPPLY)

EXTENDED LOCAL CONTROL UNIT MODELS 4EC66A12,13,16 & 17 WITH TRANSMITTER-RECEIVER TOP PANEL PL-19D402599-G6 (Used with 24/36-Volt Power Supply)



SHOWN ON THE PARTS LIST FOR THAT PART.

(19D413762, Rev. 2)

PRINTED WIRING

____OPTIONAL IO WATT AMPLIFIER____

EXTENDED LOCAL CONTROL UNIT MODELS 4EC66A12,13,16 & 17 WITH TRANSMITTER-RECEIVER TOP PANEL PL-19D402599-G6 (Used with 24/36-Volt Power Supply)

(RC-1859B, Sheet 2)

LBI-4047

MBOL	G-E PART NO	DESCRIPTION	SYMBOL	G-E PART NO	DESCRIPTION
	19B205129G2	Cover. (Mounts J902, 903).		2R22P1	Plug, coaxial: Signal Corps PL-259; sim to
	19B205127P1	Support: (Mounts locking latch).			Amphenol 83-1SP. (Used with GE Dwg 5492239P1 in 4033101G1).
	4029994P1	Catch, pull-down. (Mates with catch on power supply to keep unit intact).		4039101P1	Coil, loading: 25-54 megahertz; sim to Antenna Specialists ASPA87.
	4037158P7	Channel, rubber: sim to Atlantic India Rubber		19A121577G1	Antenna hook kit.
	4032574P2	X661. (Located above J901), Gasket, cover, neoprene.		7134724P1	Antenna hook. (Used in 19A121577G1).
	19A121981G1	Chassis. (Mounts T901, TB2, 3).			PORTABLE AND INDUSTRIAL ANTENNA
i	7763541 P 5	Clip, cable. (Located between F901 and J903).			MODELS 4EY19C10-15 (HIGH BAND AND UHF)
	19A121178P1	Support, (Used with J901).			MODEL 4EY19Cl0 130-150.8 MHz MODEL 4EY19Cl1 150.8-162 MHz
	5491595P9	Clip, relay: sim to Allied Control 30040-2. (Used with K901).			MODEL 4EY19Cl2 162-166 MHz MODEL 4EY19Cl3 166-174 MHz MODEL 4EY19Cl4 406-420 MHz
	5491595P10	Clip, relay: sim to Allied Control 30052-1. (Used with XK901).			MODEL 4ET19014 400-420 MHz MODEL 4EY19015 450-470 MHz
	7763541P4	Clip, cable. (Located by XK901).			MOBILE ANTENNA MODEL 4EY12A13
	19B204532G1	Chassis.			(HIGH BAND AND UHF)
	19A122071P2	Grommet: (Located by K901),			MISCELLANEOUS
		ASSOCIATED ASSEMBLIES			Antenna: includes 20-inch stainless steel whip, whip socket, antenna cable, cable adapter, PL-25
	19A122010G2	Control Mounting Kit.			plug; sim to Antenna Specialists ASPD201GE or Danbury-Knudsen Type PA-25.
		ANTENNA RELAY KIT		5490969 P 4	Whip: 20-inch stainless steel.
		19B216362G1 (Includes J902 and K1)		5490969P5	Socket, whip.
		PORTABLE AND INDUSTRIAL ANTENNA	4	5490969P6	Whip and whip socket: 20-inch stainless steel whip, whip socket.
		MODELS 4EY18A10-15 (LOW BAND)			Cable, antenna: approx 15 feet. Type RG-58/U. (Used with GE Dwg 2R22Pl and GE Dwg 7105381Pl).
		MISCELLANEOUS		7105381P1	Adapter, cable: Type UG-175/U. (Used with GE Dwg 2R22Pl and TypeRG-58/U cable).
	19C303707Pl	Model 4EY18AlO, 25-29 MHz Antenna. Includes 48-1/4 inch stainless steel rod, tuning screw, rubber O-ring weather seal; sim to Antenna Specialists ASP-431-CE.		2R22P1	Plug, coaxial: Signal Corps PL-259; sim to Amphenol 83-1SP. (Used with GE Dwg 7105281P1 and Type RG-58/U cable).
	19C303707P2	Model 4EY18All, 29-33 MHz Antenna. Includes 48-1/4 inch stainless steel rod, tuning screw, rubber O-ring weather seal; sim to Antenna Specialists ASP-A431-GE.			AUTO GUTTER MOUNT ANTENNA MODEL 4EY2OA10 (HIGH BAND)
	19C3O37O7P3	Model 4EY18Al2, 33-36 MHz Antenna. Includes 48-1/4 inch stainless steel rod, tuning screw,			
		rubber O-ring weather seal; sim to Antenna Specialists ASP-B431-GE.		19C3O362OP1	Antenna. Includes 19-1/2 inch stainless steel whip, socket, insulators, adapter, RG-58A/U
	19C303707P4	Model 4EY18A13, 36-42 MHz Antenna. Includes 38-inch stainless steel rod, tuning screw, rubber O-ring weather seal; sim to Antenna Specialists ASP-C431-GE.		19C3O362OP2	cable, PL-259 plug, clip; sim to Antenna Specialists ASP-157. Replacement whip. Includes 19-1/2 inch stainles
	19C3O37O7P5	Model 4EY18A14, 42-48 MHz Antenna. Includes 38-inch stainless steel rod. tuning screw, rubber			steel whip, socket, insulators; sim to Antenna Specialists 19A904-1.
		O-ring weather seal; sim to Antenna Specialists ASP-D431-GE.			MICROPHONE MODEL 4EM25C10
	19C303707P6	Model 4EY18A15, 48-54 MHz Antenna. Includes 38-inch stainless steel rod, tuning screw, rubber O-ring weather seal; sim to Antenna Specialists ASP-E431-GE.	1		Cable clamp. Shure Brothers RP21. (Includes parts 3 and 8).
	2R22P2	Adapter, UHF: right angle. Signal Corps M-359;	2	İ	Switch. Shure Brothers RP26.
		sim to Amphenol 83-1AP. (Used in Models 4EY18A10-15).	3		Case (back) and mounting button: plastic. Shure Brothers RP21. (Includes parts 1 and 8).
		MOBILE ANTENNA	4		Switch button: red plastic. Shure Brothers RP
		(LOW BAND)	5		Spring. Shure Brothers RP16. (includes miscellaneous hardware).
	'	MISCELLANEOUS	6		Shield. Shure Brothers RP23.
	7491074P1	Antenna: includes 96-1/2 inch stainless steel rod; sim to Antenna Specialists ASPA3BGE.	7		Cartridge, magnetic controlled.
	7102930P3	Adapter, antenna: (Used with GE Dwg 7491074P1).	8		Case (front): plastic. Shure Brothers RP21.
	4033101G1	Antenna package: includes base, adapter spring,	9		(Includes parts 1 and 3). Cable: approx 6 feet.
	7472880G5	cable and plug. Antenna base. (Used in 4033101G1).			
	7476632G4	Adapter spring. (Used in 4033101G1).			POWER CONTROL CABLE 19C303828G4
	5492239P1	Cable, antenna: includes Type RG-58/U cable approx 15 feet, PL-259 plug, terminal; sim to Antenna Specialists 15A43. (Used in 4033101G1).			MISCELLANEOUS
		Antenna Specialists 15A43. (Used in 4033101G1).		19B200010P3	Plug, 23 contacts; sim to Cannon Electric NK-L23-23C-3/4.

	G-E PART NO	DESCRIPTION
		POWER CONTROL CABLE 19C3O3828G7
		MISCELLANEOUS
	7139880P10	Cable, special purpose: approx 20 feet.
	19B200010P3	Plug: 23 contacts; sim to Cannon Electric NK-L23-23C-3/4.
		POWER CABLE 19B205422G1
		MISCELLANEOUS
	19A115067Pl	Cable, 2 conductor: approx 10 feet; sim to Belden 31713.
	19A115776P2	Phenolic: sim to Bussman Type HHJ.
	IR16P7	Quick blowing: 4 amps at 250 v; sim to Littlefuse 312004 or Bussman MTH-4.
	4034405P3	Plug: 3 sockets; sim to Cannon Electric XLR-3-11C.
		POWER CABLE 19B205422G2
		MISCELLANEOUS
	19A115067P1	Cable, 2-conductor: approx 23 feet; sim to Belden 31713.
	19A115776P2	Phenolic: sim to Bussman Type HHJ.
	IR16P7	Cartridge, quick blowing: 4 amps at 250 v; sit to Littelfuse 312004 or Bussman MTH-4.
	4034405P3	Plug: 3 sockets; sim to Cannon Electric XLR-3-11C.
		POWER SUPPLY EXTENSION CABLE 198204289G1
		MISCELLANEOUS
	7473192P19	Receptacle: 8 terminals; sim to HB Jones 261-32-08-030.
	7473192P26	Plug: 8 terminals; sim to HB Jones 261-31-08-030.
	7162441P23	Sleeving, electrical.
		6,78,9
<u> </u>		2
		3 \

EXTENDED LOCAL CONTROL-SEL CALL/CHANNEL GUARD

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.

PARTS LIST

LBI-4187B

DESCRIPTION

AMPLIFIER BOARD 19B219085G1

Electrolytic: 20 μf +150% -10%, 25 VDCW; sim to Mallory Type TT. Ceramic disc: 22 pf ±5%, 500 VDCW, temp coef 0 PPM.

Electrolytic: 200 μf +150% -10%, 18 VDCW; sim to Mallory Type TT. Electrolytic: 120 µf +150% -10%, 26 VDCW; sim to Mallory Type TT. Electrolytic: 120 μf +150% -10%, 26 VDCW; sim to Mallory Type TT.

- - - - - - DIODES AND RECTIFIERS - - - - -

- - - - - - - - RESISTORS - - - - - - -

Variable, carbon film: approx 100 to 50,000 ohms ±20%, 0.25 w; sim to CTS Type U-201.

Reactor: 2.5 mh ind, 0.5 ohm DC res max, 20 VDC operating. Added by REV A.

----- MISCELLANEOUS -----

Insulator, bushing. (Used with Q4 and Q5).

Insulator, plate. (Used with Q4 and Q5). Insulator, disc: nylon. (Used with Q1-Q3).

Heat Sink. (Used with Q3).

Composition: 2200 ohms ±10%, 1/2 w.

Composition: 56,000 ohms $\pm 10\%$, 1/2 w.

Composition: 15,000 ohms $\pm 10\%$, 1/2 w. Composition: 390 ohms ±10%, 1/2 w.

Composition: 22 ohms ±10%, 1/2 w.

Composition: 6800 ohms ±10%, 1/2 w.

Silicon, NPN; sim to Type 2N3053.

Silicon, NPN; sim to Type 2N3053.

Silicon, PNP.

Silicon, NPN.

10-WATT AMPLIFIER 19C317598G1

Silicon.

SYMBOL | GE PART NO.

19A115680P3

19A115680P10

19A115680P109 19A115680P6

4037822P1

3R77P563K

3R77P153K

3R77P391K 19B209358P8

3R77P682K

19A115300P1

19A115562P1

19A115300P1

19A115686P1

19A116203P3

19A115222P3

19A116023P2

4035439P1

L1*

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

- REV. A. Transmitter-Receiver Top Panel 19D402599-G6
- To incorporate an improved relay. Changed K901.
- REV. A. Control Unit (Models 4EC66A12, 13, 16 & 17

To eliminate noise in receiver. Deleted jumper between TB701-14 & TB701-17 and jumper between TB701-17.

- REV. A 10 Watt Amplifier Board 19C317598G1 To add filtering. Added C6 and L1.
- REV. B Transmitter-Receiver Top Panel 19D402599-G6
- To incorporate a new transistor. Changed Q901.

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 sumbol 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
- Description of part
 Model number of equipment
- 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-4047

MOBILE RADIO DEPARTMENT
GENERAL ELECTRIC COMPANY • LYNCHBURG, VIRGINIA 24502



DF-5025