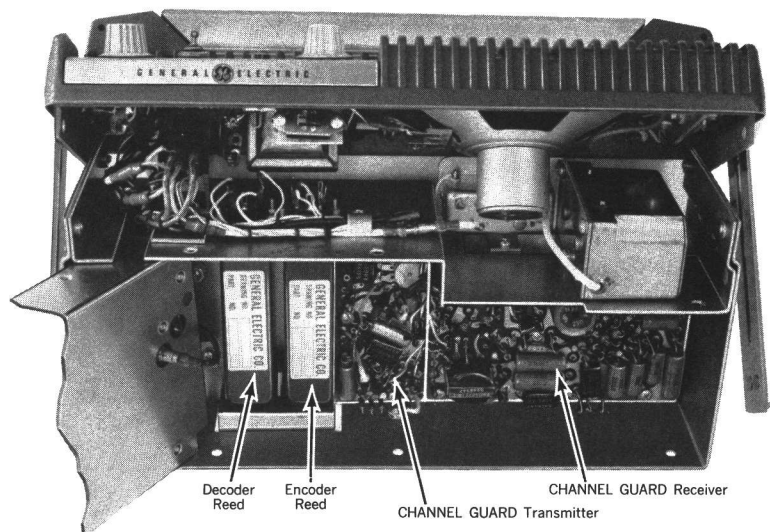


MAINTENANCE MANUAL

PORTA-MOBIL CHANNEL GUARD
(Models 4EH12A10, 4EJ11A10,A11)



SPECIFICATIONS *

Tone frequencies	From 71.9 to 203.5 Hz
Operable temperature range	-30°C to +70°C
CHANNEL GUARD TRANSMITTER MODELS	4EH12A10
Output level	Adjustable for ± 0.75 kHz deviation
Frequency stability	± 0.3 percent
CHANNEL GUARD RECEIVER MODELS	4EJ11A10 (71.9 to 156.7 Hz) 4EJ11A11 (162.2 to 203.5 Hz)
Frequency stability	± 0.3 percent
Tone rejection	Down at least 30 dB, relative to audio output, at 2/3 system deviation
Response time	Less than 250 milliseconds
Tone squelch opening SINAD	Less than 6 dB

*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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 (Includes Outline & Schematic Diagrams, Parts List and
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 Control Units, Models 4EC60A11, 13, 17 & 20 RC-1108

 Control Units, Models 4EC60A23 & 25 RC-1377

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 with 19D402599-G5 Top Panel (Sheets 1 & 2) RC-1376

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DESCRIPTION

General Electric PORTA.MOBIL Channel Guard units are used to prevent the reception of undesired signals from users of the same channel. All signals on a channel are locked out of the PORTA.MOBIL receiver audio circuits except those that are continuously tone-coded for positive identification by the receiver.

The Channel Guard unit consists of a tone squelch transmitter and/or a tone squelch receiver. The tone-squelch transmitter generates the properly coded tone for modulating the PORTA.MOBIL carrier during transmission. The tone-squelch receiver decodes the properly coded tone from the desired signal and unsquelches the PORTA.MOBIL audio circuits.

Automatic channel monitoring is provided when the Channel Guard unit is used with the microphone hookswitch. The receive tone squelch is disabled when the microphone is removed from the hookswitch. A special MONITOR switch is provided on the control unit when the handset is used. This switch is placed in the MONITOR position when a transmission is to be made.

Model 4EJ11A10 Tone-Squelch Receiver provides low-range Channel Guard decoding (71.9 to 156.7 Hz). Model 4EJ11A11 Tone-Squelch Receiver provides high-range decoding (156.7 to 203.5 Hz). Model 4EH12A10 Tone-Squelch Transmitter is used for all tone frequencies from 71.9 to 203.5 Hz. The same tone frequency is used for both channels in two-frequency PORTA.MOBIL Combinations.

OPERATION

When the microphone of the PORTA.MOBIL Combination is on the hang-up bracket, the tone-squelch circuit keeps the audio circuits squelched until a signal modulated by the proper tone coding is received. The cut-off bias on the PORTA.MOBIL receiver DC amplifier is then removed to permit the audio circuits to operate.

When a call is initiated, the operator lifts the microphone from the hang-up bracket. The PORTA.MOBIL receiver reverts to the standard squelch circuit automatically. (If the handset is used, the Channel Guard switch on the control unit must be operated to the MONITOR position.) The channel may then be monitored. If the operator finds the channel clear, the call is made in the usual manner. The proper

tone for unsquelching the receiver of the called unit will be transmitted automatically.

ADJUSTMENT

Only one adjustment is required on the tone-squelch unit. Normally this adjustment is made at the factory and should require no further attention. If operating conditions are such that further adjustment is required, the procedure outlined below should be followed.

1. Monitor the PORTA.MOBIL transmitter with a deviation monitor.
2. With the transmitter keyed, adjust R613 (TONE ADJ) for 0.75 Hz deviation.

Refer to Service Sheet RC-1107 for location of this control.

CIRCUIT DESCRIPTION

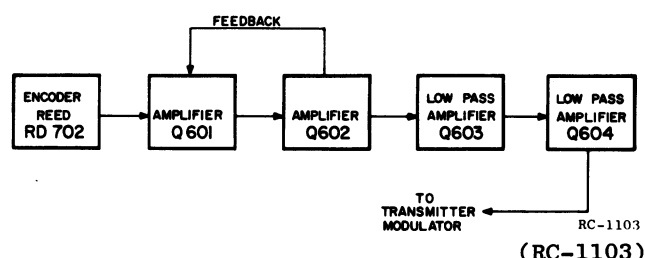


Figure 1 Model 4EH12A10 Channel Guard Tone Transmitter (RC-1103)

Q601 and Q602 (together with reed encoder RD702) serve as the tone oscillator portion of the tone-squelch transmitter. RD702 is an electro-mechanical reed device resonant to the desired tone frequency. The output of Q602 is coupled back to the base of Q601. RD702 is also in the base circuit of Q601. The resultant output of the oscillator is essentially a square wave.

The tone signal is passed through deviation control R613, through an active band-pass filter consisting of Q603 and Q604 to output terminal E605. Selective feedback is incorporated in this filter. The output signal is applied to the PORTA.MOBIL exciter.

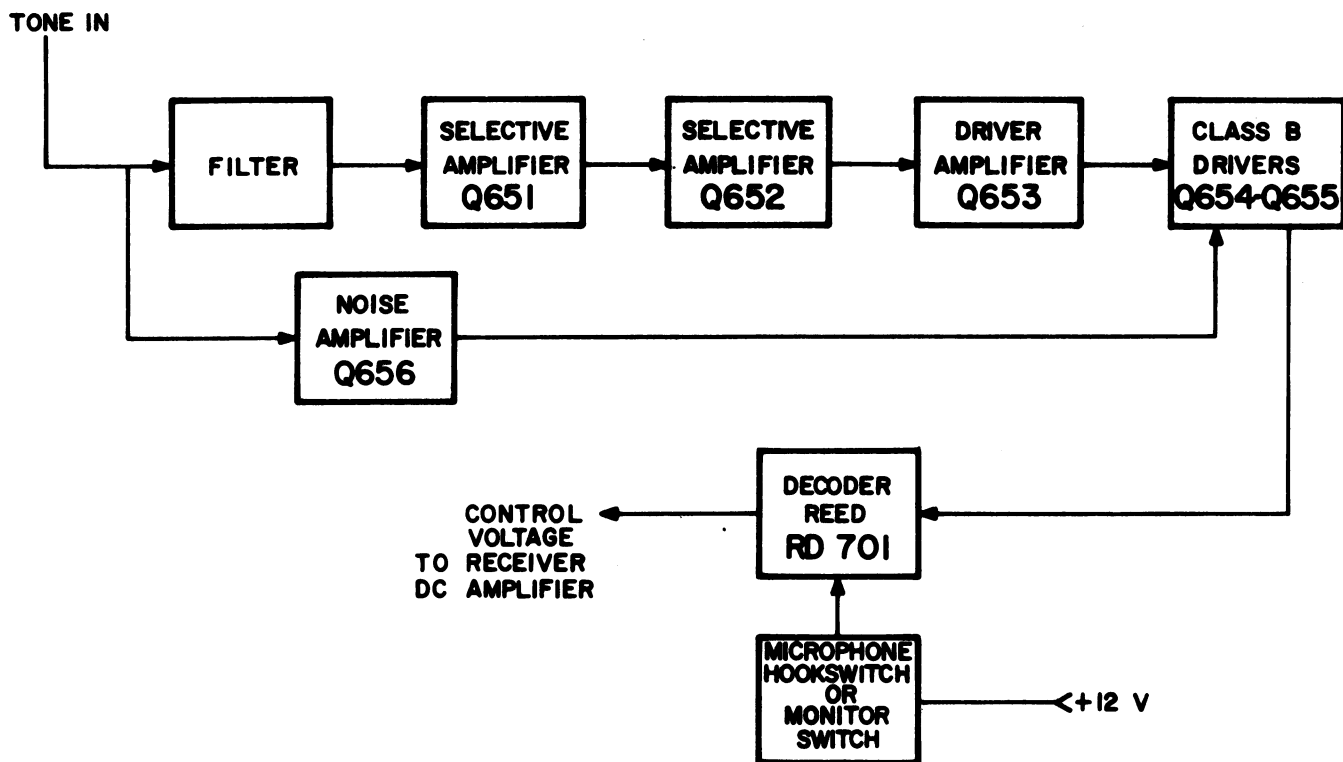


Figure 2 Models 4EJ12A10-A11 Channel Tone Receivers

(RC-1104)

Audio from the PORTA.MOBIL receiver discriminator is connected to the tone-squelch receiver through terminal E660. The audio is divided into two paths: a low-pass filter composed of Q651 and Q652 which removes the higher audio frequencies; and a selective noise amplifier (Q656) which amplifies the noise frequencies above 5 KHz and applies these frequencies to the driver stage to reduce noise falsing.

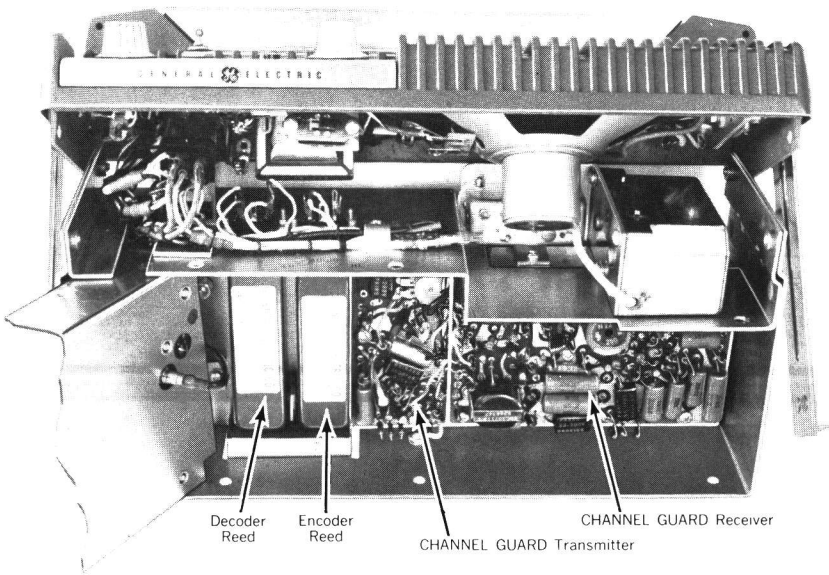
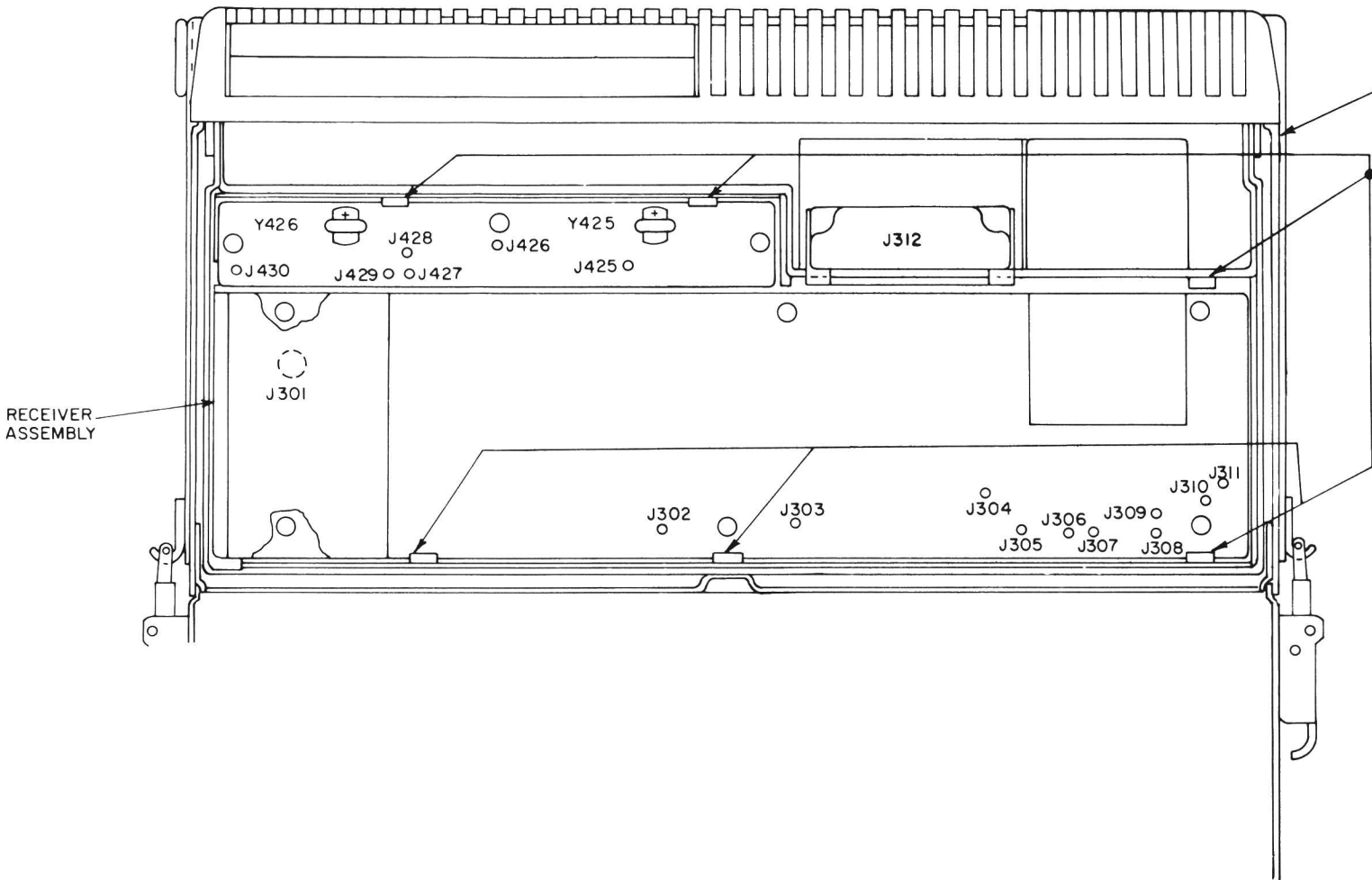
Component selection in the low-pass filter determines the tone range of the receiver. The tone is amplified by Q653 which operates a push-pull driver circuit composed of T651 and Q654-Q655. This stage drives the reed decoder RD701. The reed is resonant to the desired tone frequency and its contacts close only when the correct tone frequency is present.

The microphone hookswitch (S704) applies a hold-off bias to the PORTA.MOBIL receiver DC amplifier, keeping the audio circuits squelched as long as the microphone is on hook. When the handset is used, the MONITOR switch (S706) is closed, permitting the bias voltage to hold the DC amplifier off. When the microphone is removed from the hand-up bracket (or S706 is placed in the MONITOR position), the bias voltage is interrupted. Also, if a tone of the proper frequency is received, the reed decoder is operated and the bias voltage is bypassed to ground. Under any of these conditions, the receiver audio circuits will be unsquelched.

Terminal E558 is connected in parallel with the PORTA.MOBIL VOLUME control. A low-pass filter composed of C664, C665, and L651 bypasses the tone frequencies to ground. Thus tone is prevented from reaching the audio circuits.

DISASSEMBLY INSTRUCTIONS

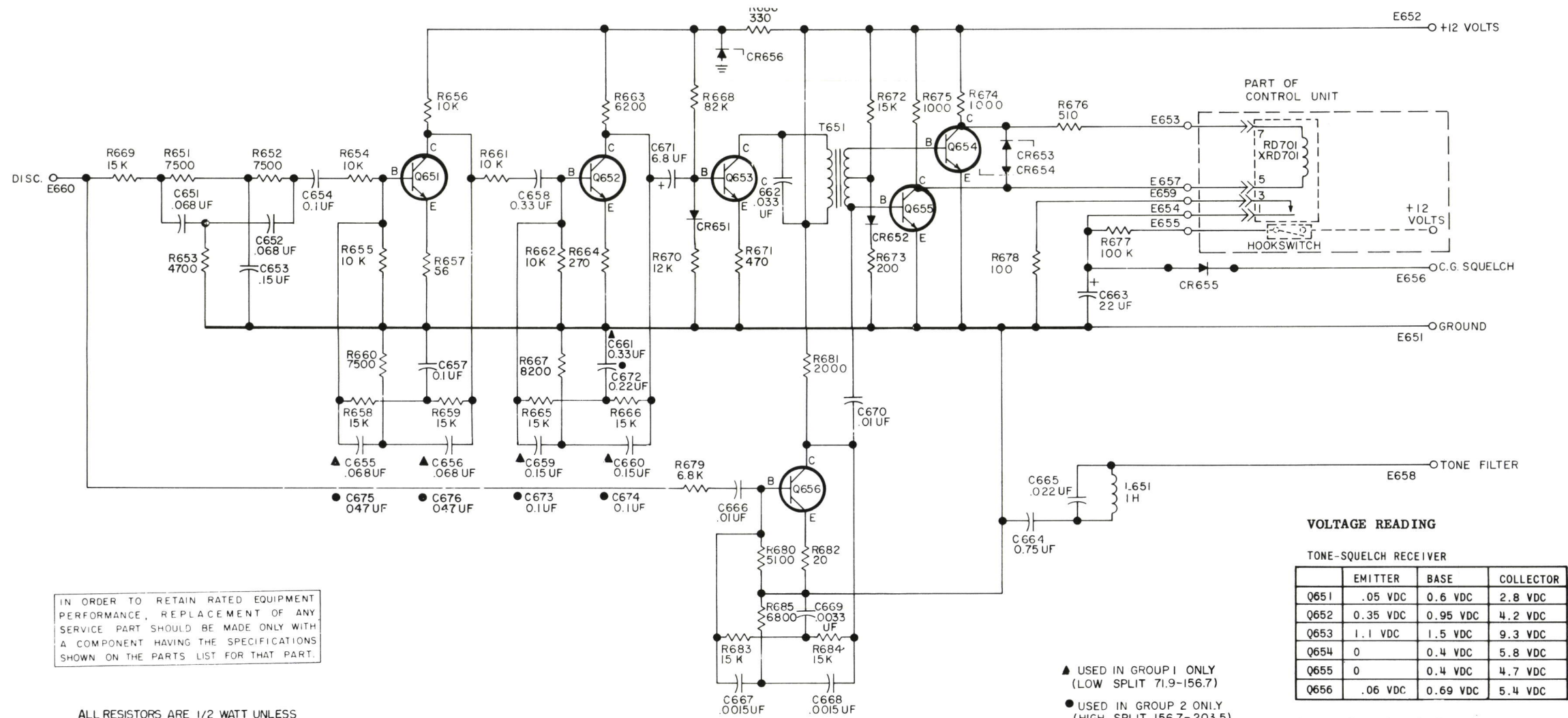
- 1. REMOVE SCREWS AND HINGE BACK CONTROL UNIT AS INDICATED.
- 2. REMOVE SIX #6-32 X 1/4 SCREWS & LOCKWASHERS HOLDING RECEIVER ASSEMBLY.
- 3. DISCONNECT IN-LINE CONNECTORS P304 AND P305. SWING RECEIVER ASSEMBLY TO LEFT, EXPOSING CHANNEL GUARD COMPONENTS.



DISASSEMBLY DIAGRAM

PORTA-MOBIL CHANNEL GUARD
MODELS 4EH12A10, 4EJ11A10 & -A11
(RC-1109A)

CHANNEL GUARD RECEIVER MODELS 4EJ11A10-A11



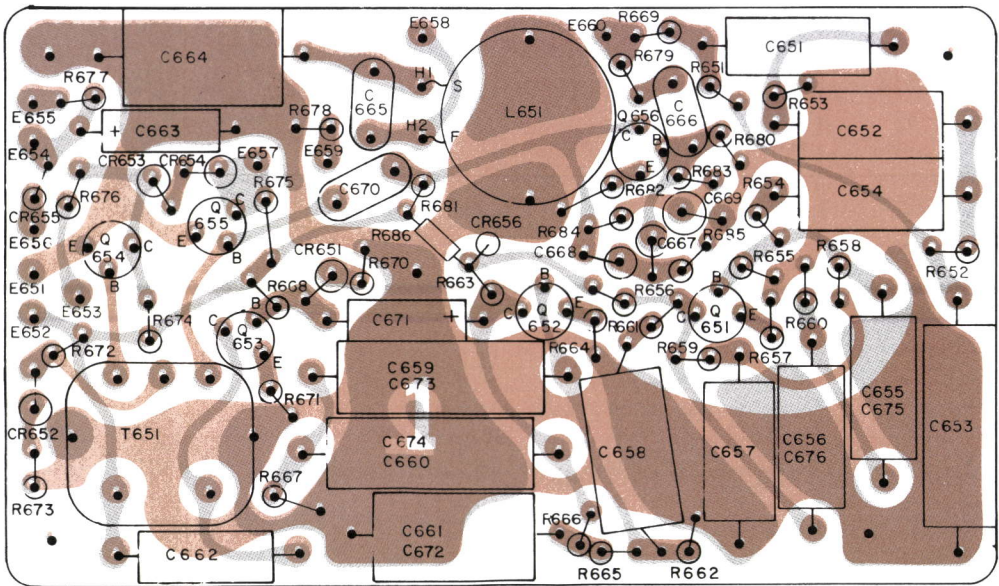
IN ORDER TO RETAIN RATED EQUIPMENT PERFORMANCE, REPLACEMENT OF ANY SERVICE PART SHOULD BE MADE ONLY WITH A COMPONENT HAVING THE SPECIFICATIONS SHOWN ON THE PARTS LIST FOR THAT PART.

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

THIS ELEM DIAG APPLIES TO	
MODEL NO	REV LETTER
4EJ11A10	A
4EJ11A11	A

ECR 221

(19D402325, Rev. 0)



(19C303715, Rev. 1)
(19B204574, Sh. 1, Rev. 1)
(19B204574, Sh. 2, Rev. 2)

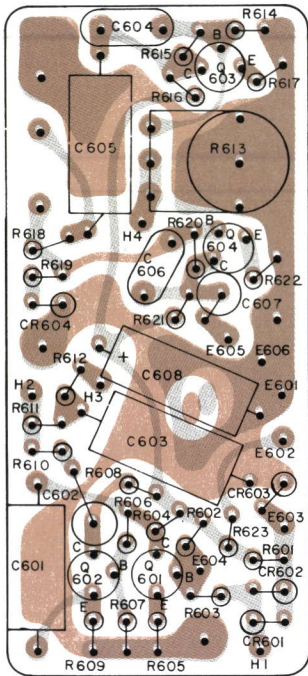
VOLTAGE READING

TONE-SQUELCH RECEIVER

	EMITTER	BASE	COLLECTOR
Q651	.05 VDC	0.6 VDC	2.8 VDC
Q652	0.35 VDC	0.95 VDC	4.2 VDC
Q653	1.1 VDC	1.5 VDC	9.3 VDC
Q654	0	0.4 VDC	5.8 VDC
Q655	0	0.4 VDC	4.7 VDC
Q656	.06 VDC	0.69 VDC	5.4 VDC

ALL READINGS TAKEN WITH 20,000 OHMS-PER-VOLT DC METER

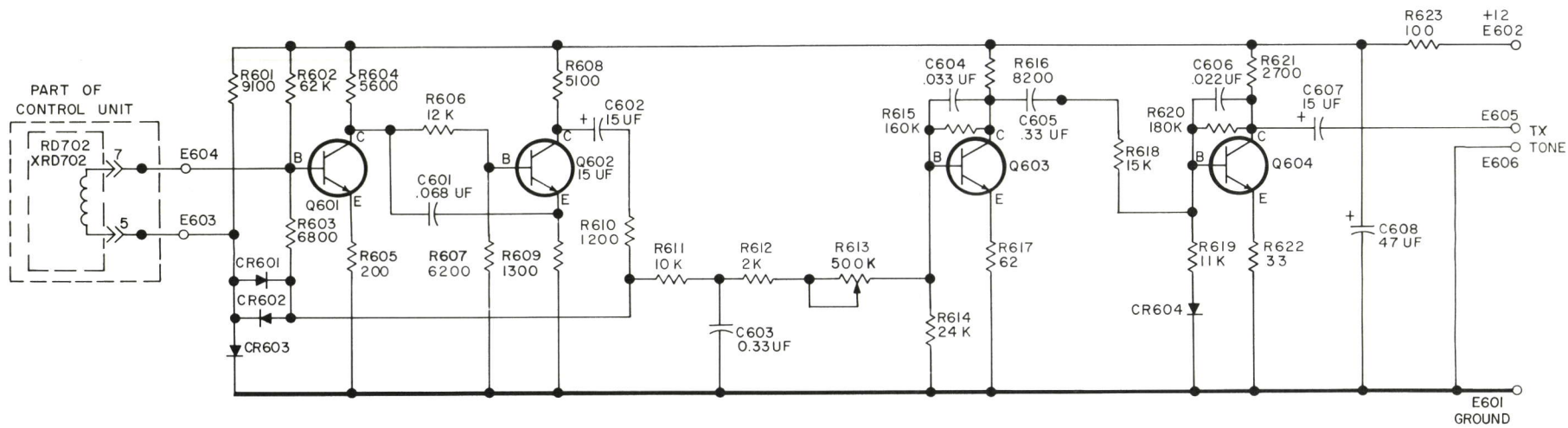
- ▲ USED IN GROUP 1 ONLY (LOW SPLIT 71.9-156.7)
- USED IN GROUP 2 ONLY (HIGH SPLIT 156.7-203.5)



(19C303716, Rev. 0)
(19B204573, Sh. 1, Rev. 0)
(19B204573, Sh. 2, Rev. 0)

FROM	TO	WIRE	REMARKS
H1	H2	SN22G	
H3	H4	SN22G	

CHANNEL GUARD TRANSMITTER MODEL 4EH12A10



(19C303491, REV. 1)

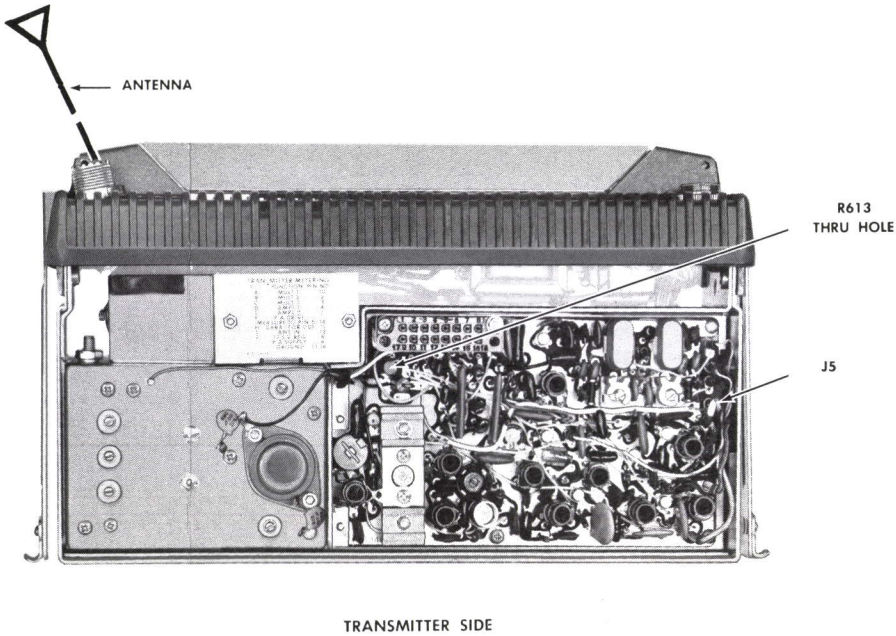
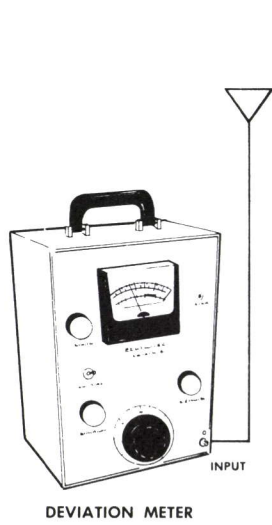
TONE DEVIATION WITH CHANNEL GUARD TEST PROCEDURE

1. Set up Deviation Meter and monitor output of transmitter as shown below.

VOLTAGE READINGS
ALL READINGS TAKEN WITH 20,000 OHMS-PER-VOLT DC METER

TONE-SQUELCH TRANSMITTER

	EMITTER	BASE	COLLECTOR
Q601	0.25 VDC	0.84 VDC	4.8 VDC
Q602	1.05 VDC	1.5 VDC	8.2 VDC
Q603	.05 VDC	0.64 VDC	6.2 VDC



2. Unplug the MIC HI terminal from J5 on Transmitter Exciter Board.
3. Key transmitter and check for 0.75kHz deviation. If reading is low or high, adjust Tone Deviation Control (R613) for a reading of 0.75 kHz.

SERVICE SHEET

PORTA-MOBIL CHANNEL GUARD
MODELS 4EH12A10, 4EJ11A10 & -A11

(RC-1107E)

PARTS LIST			SYMBOL	G-E PART NO	DESCRIPTION
LBI-3487C					
CHANNEL GUARD TONE RECEIVER MODEL 4EJ11A10 19C303484-G1 71.9 to 156.7 MHz MODEL 4EJ11A11 19C303484-G2 156.7 to 203.5 MHz REV A					
SYMBOL	G-E PART NO.	DESCRIPTION			
		----- CAPACITORS -----			
C651 and C652	19C307099-P22	Polyester: .068 µf ±10%, 200 VDCW; sim to Sprague 192P68392.	L651	19B204500-G1	----- INDUCTORS ----- Coil. Includes tuning slug 5495352-P3.
C653	19C307099-P28	Polyester: 0.15 µf ±10%, 200 VDCW; sim to Sprague 192P15492.	Q651 thru Q656	19A115123-P1	----- TRANSISTORS ----- Silicon, NPN; sim to Type 2N2712.
C654	19C307099-P24	Polyester: 0.1 µf ±10%, 200 VDCW; sim to Sprague 192P10492.			----- RESISTORS -----
C655 and C656	19C307099-P22	Polyester: .068 µf ±10%, 200 VDCW; sim to Sprague 192P68392.	R651 and R652	3R152-P752J	Composition: 7500 ohms ±5%, 1/4 w.
C657	19C307099-P24	Polyester: 0.1 µf ±10%, 200 VDCW; sim to Sprague 192P10492.	R653	3R152-P472J	Composition: 4700 ohms ±5%, 1/4 w.
C658	19B209134-P13	Metallized paper: 0.33 µf ±20%, 200 VDCW; sim to Hopkins P332D.	R654 thru R656	3R152-P103J	Composition: 10,000 ohms ±5%, 1/4 w.
C659 and C660	19C307099-P28	Polyester: 0.15 µf ±10%, 200 VDCW; sim to Sprague 192P15492.	R657	3R152-P560J	Composition: 56 ohms ±5%, 1/4 w.
C661	19B209134-P13	Polyester: 0.33 µf ±20%, 200 VDCW; sim to Hopkins P332D.	R658 and R659	3R152-P153J	Composition: 15,000 ohms ±5%, 1/4 w.
C662	19C307099-P18	Polyester: .033 µf ±10%, 200 VDCW; sim to Sprague 192P33392.	R660	3R152-P752J	Composition: 7500 ohms ±5%, 1/4 w.
C663	5496267-P10	Tantalum: 22 µf ±20%, 15 VDCW; sim to Sprague 150D.	R661 and R662	3R152-P103J	Composition: 10,000 ohms ±5%, 1/4 w.
C664	19B209134-P16	Metallized paper: 0.75 µf ±10%, 50 VDCW; sim to Hopkins P75P5DK.	R663	3R152-P622J	Composition: 6200 ohms ±5%, 1/4 w.
C665*	5491459-P7	Polyester: .022 µf ±10%, 50 VDCW; sim to Good-All 601PE. Deleted in 4EJ11A11 by Rev A.	R664	3R152-P271J	Composition: 270 ohms ±5%, 1/4 w.
C666*	5491459-P6	Polyester: .01 µf ±10%, 50 VDCW; sim to Good-All Type 601PE. Deleted in 4EJ11A11 by Rev A.	R665 and R666	3R152-P153J	Composition: 15,000 ohms ±5%, 1/4 w.
C667 and C668	19C307099-P30	Polyester: .0015 µf ±10%, 200 VDCW; sim to Sprague 192P15292.	R667	3R152-P822J	Composition: 8200 ohms ±5%, 1/4 w.
C669	19C307099-P32	Polyester: .0033 µf ±10%, 200 VDCW; sim to Sprague 192P33292.	R668	3R152-P823J	Composition: 82,000 ohms ±5%, 1/4 w.
C670	5491459-P6	Polyester: .01 µf ±10%, 50 VDCW; sim to Good-All Type 601PE.	R669	3R152-P153J	Composition: 15,000 ohms ±5%, 1/4 w.
C671	5496267-P18	Tantalum: 6.8 µf ±20%, 35 VDCW; sim to Sprague 150D.	R670	3R152-P123J	Composition: 12,000 ohms ±5%, 1/4 w.
C672	19B209134-P7	Metallized paper: 0.22 µf ±20%, 200 VDCW; sim to Hopkins P222D.	R671*	3R152-P471J	Composition: 470 ohms ±5%, 1/4 w.
C673 and C674	19C307099-P24	Polyester: 0.1 µf ±10%, 200 VDCW; sim to Sprague 192P10492.		3R152-P102J	In Models earlier than Rev A: Composition: 1000 ohms ±5%, 1/4 w.
C675* and C676*	19C307099-P20	Polyester: .047 µf ±10%, 200 VDCW; sim to Sprague 192P47392. Added by Rev A.	R672	3R152-P153J	Composition: 15,000 ohms ±5%, 1/4 w.
		----- RECTIFIERS -----	R673	3R152-P201J	Composition: 200 ohms ±5%, 1/4 w.
CR651 and CR652	4038056-P1	Germanium.	R674 and R675	3R152-P102J	Composition: 1000 ohms ±5%, 1/4 w.
CR653 and CR654	4036887-P6	Silicon, Zener.	R676	3R152-P511J	Composition: 510 ohms ±5%, 1/4 w.
CR655	4038056-P1	Germanium.	R677	3R152-P104J	Composition: 0.1 megohm ±5%, 1/4 w.
CR656*	4036887-P7	Silicon, Zener.	R678	3R152-P101J	Composition: 100 ohms ±5%, 1/4 w.
		----- TERMINALS -----	R679	3R152-P682J	Composition: 6800 ohms ±5%, 1/4 w.
R651 thru R660	4038104-P1	Lug, terminal: brass.	R680	3R152-P512J	Composition: 5100 ohms ±5%, 1/4 w.
			R681	3R152-P202J	Composition: 2000 ohms ±5%, 1/4 w.
			R682	3R152-P200J	Composition: 20 ohms ±5%, 1/4 w.
			R683 and R684	3R152-P153J	Composition: 15,000 ohms ±5%, 1/4 w.
			R685	3R152-P682J	Composition: 6800 ohms ±5%, 1/4 w.
			R686*	3R152-P331J	Composition: 330 ohms ±5%, 1/4 w. Added by Rev A.
					----- TRANSFORMERS -----
			T651	19C307118-P1	Audio freq: Pri: 23,000 ohms ±10% imp, Sec: 8000 ohms imp.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.

PRODUCTION CHANGES

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

REV. A - Models 4EJ11A10 & 11 - To increase bandwidth and improve sensitivity. Added CR656, R686 and changed R671 on 19C303484-G1 & G2. Added C675 & C676 and deleted C655 & C656 on 19C303484-G2.

REV. A - Model 4EH12A10 - To extend range of tone output control. Changed R613.

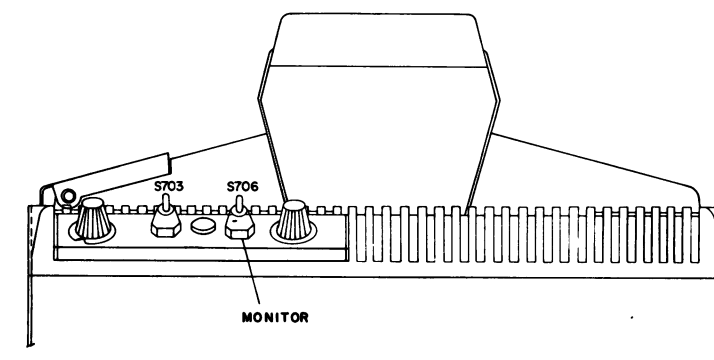
LBI-3488B

PARTS LIST

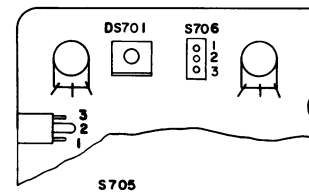
CHANNEL GUARD TONE TRANSMITTER MODEL 4EH12A10 - PL-19C303485-G1 - 71.9 to 203.5 MC			SYMBOL	G-E PART NO.	DESCRIPTION
					----- CAPACITORS -----
C601	19C307099-P22	Mylars dielectric: .068 µf ±10%, 200 VDCW; sim to Sprague 192P68392.			
C602	5496267-P14	Tantalum, dry solid: 15 µf ±20%, 20 VDCW; sim to Sprague 150D156X0020B2.			
C603	19B209134-P13	Metallized paper: 0.33 µf ±20%, 200 VDCW; sim to Hopkins P332D.			
C604	5491459-P1	Mylars dielectric: .033 µf ±10%, 50 VDCW; sim to Good-All Type 601PE.			
C605	19B209134-P13	Metallized paper: 0.33 µf ±20%, 200 VDCW; sim to Hopkins P332D.			
C606	5491459-P7	Mylars dielectric: .022 µf ±10%, 50 VDCW; sim to Good-All Type 601PE.			
C607	5496267-P14	Tantalum, dry solid: 15 µf ±20%, 20 VDCW; sim to Sprague 150D156X0020B2.			
C608	5496267-P15	Tantalum, dry solid: 47 µf ±20%, 20 VDCW; sim to Sprague 150D476X0020B2.			
		----- RECTIFIERS -----			
CR601 thru CR604	4036936-P1	Silicon.			
		----- MISCELLANEOUS -----			
R601 thru R606	4038104-P1	Lug, terminal: brass.			
		----- TRANSISTORS -----			
Q601 thru Q604	19A115123-P1	Silicon, NPN; sim to Type 2N2712.			
		----- RESISTORS -----			
R601	3R152-P912J	Fixed composition: 9100 ohms ±5%, 1/4 w.			
R602	3R152-P622J	Fixed composition: 62,000 ohms ±5%, 1/4 w.			
R603	3R152-P682J	Fixed composition: 6800 ohms ±5%, 1/4 w.			
R604	3R152-P562J	Fixed composition: 5600 ohms ±5%, 1/4 w.			
R605	3R152-P201J	Fixed composition: 200 ohms ±5%, 1/4 w.			
R606	3R152-P123J	Fixed composition: 12,000 ohms ±5%, 1/4 w.			
R607	3R152-P622J	Fixed composition: 6200 ohms ±5%, 1/4 w.			
R608	3R152-P512J	Fixed composition: 5100 ohms ±5%, 1/4 w.			
R609	3R152-P132J	Fixed composition: 1300 ohms ±5%, 1/4 w.			
R610	3R152-P122J	Fixed composition: 1200 ohms ±5%, 1/4 w.			
R611	3R152-P103J	Fixed composition: 10,000 ohms ±5%, 1/4 w.			
R612	3R152-P202J	Fixed composition: 2000 ohms ±5%, 1/4 w.			
R613*	19C300124-P16 19C300124-P8	Variable, carbon film: 500K ±20% 1/16 watt. In Models earlier than Rev. A: Variable, carbon film: 0.1 megohm ±20%, 1/16 w, mod log taper; sim to Mallory Type MLC.			
R614	3R152-P243J	Fixed composition: 24,000 ohms ±5%, 1/4 w.			
R615	3R152-P164J	Fixed composition: 0.16 megohm ±5%, 1/4 w.			
R616	3R152-P822J	Fixed composition: 8200 ohms ±5%, 1/4 w.			
R617	3R152-P620J	Fixed composition: 62 ohms ±5%, 1/4 w.			
R618	3R152-P153J	Fixed composition: 15,000 ohms ±5%, 1/4 w.			
R619	3R152-P113J	Fixed composition: 11,000 ohms ±5%, 1/4 w.			
R620	3R152-P184J	Fixed composition: 0.18 megohm ±5%, 1/4 w.			
R621	3R152-P272J	Fixed composition: 2700 ohms ±5%, 1/4 w.			
R622	3R152-P330J	Fixed composition: 33 ohms ±5%, 1/4 w.			
R623	3R152-P101J	Fixed composition: 100 ohms ±5%, 1/4 w.			

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.

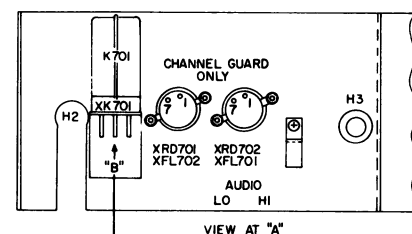
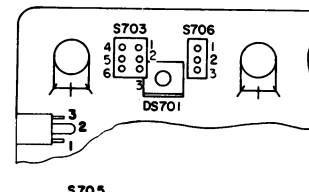
MODELS 4EC60A17, 4EC60A20, 4EC60A32 & 4EC60A33



MODEL 4EC60A17 & 4EC60A32: 1 FREQ WITH CHANNEL GUARD



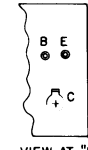
MODEL 4EC60A20 & 4EC60A33: 2 FREQ WITH CHANNEL GUARD



VIEW AT "B" (NOTE: W701 AND W702 OMITTED WHEN K1 IS PRESENT)

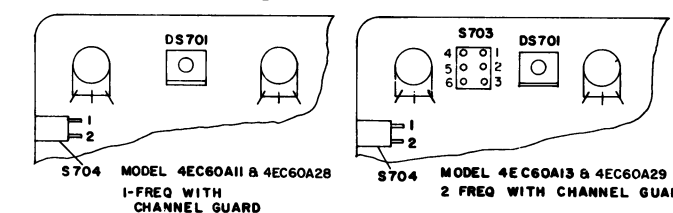
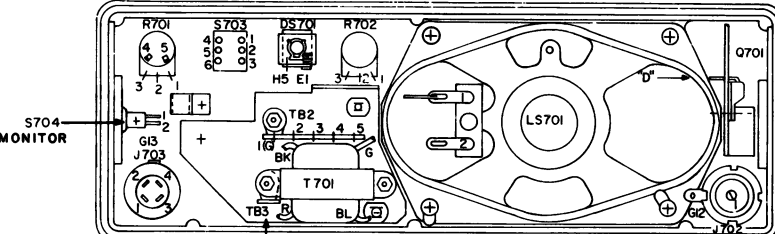
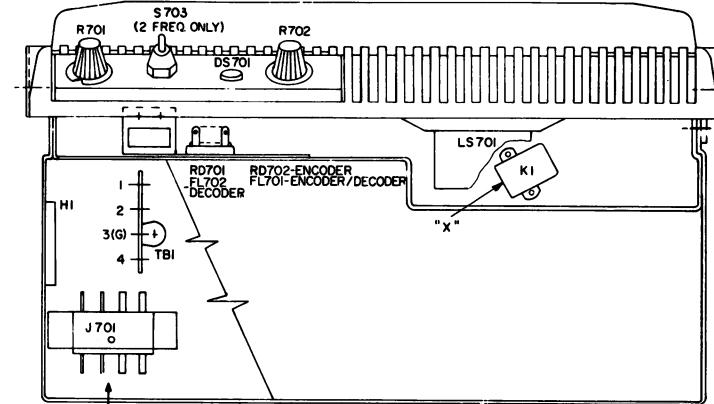


VIEW AT "X" (THIS VIEW APPLIES WHEN K1 IS PRESENT)



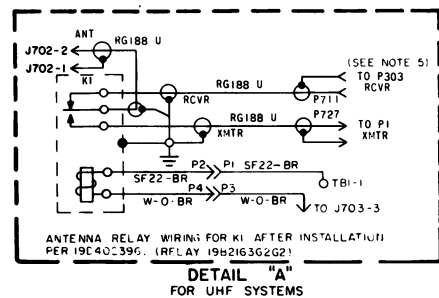
(19D402511, Rev. 7)

MODELS 4EC60A11, 4EC60A13, 4EC60A28 & 4EC60A29



MODEL 4EC60A11 & 4EC60A28 1-FREQ WITH CHANNEL GUARD

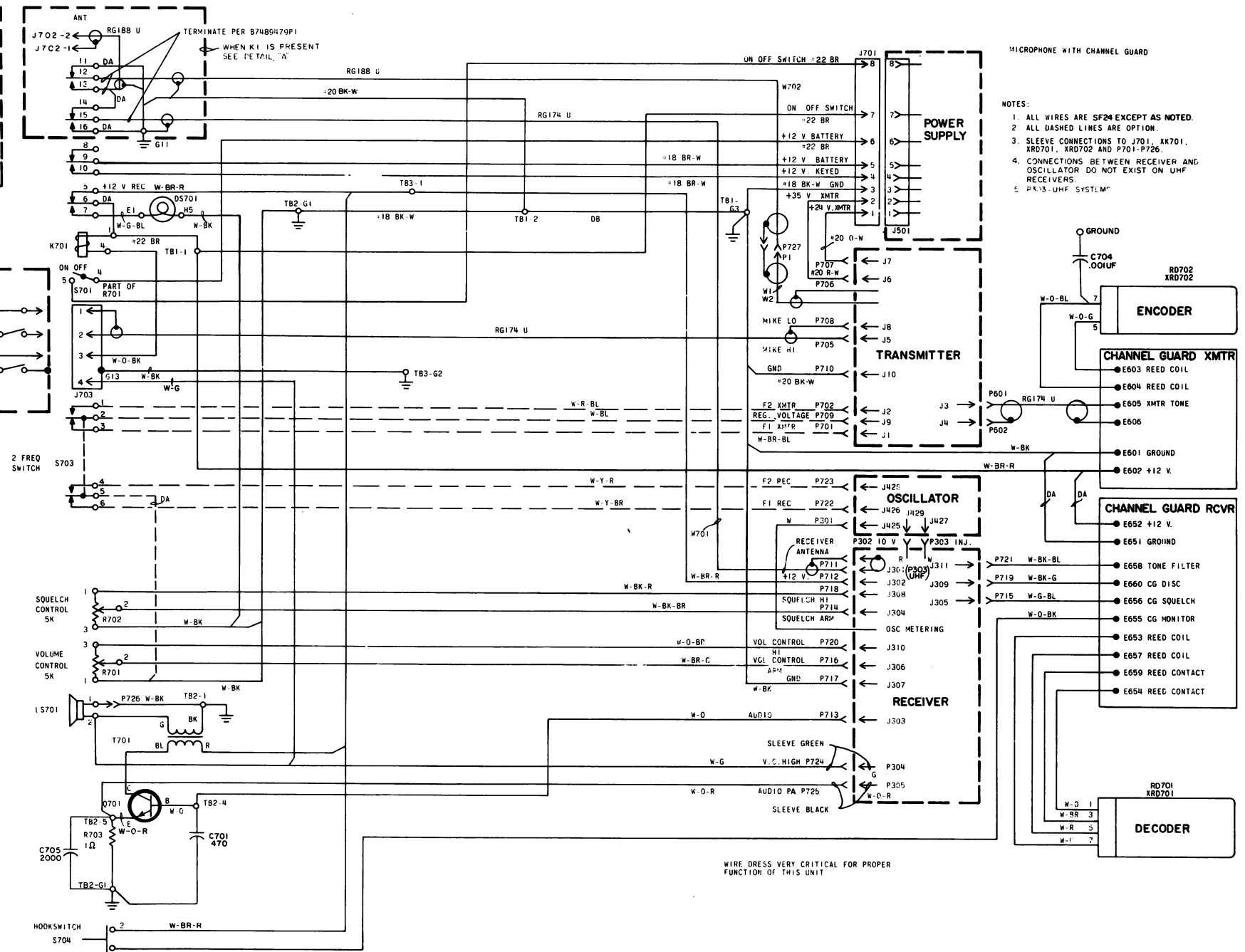
MODEL 4EC60A13 & 4EC60A29 2-FREQ WITH CHANNEL GUARD



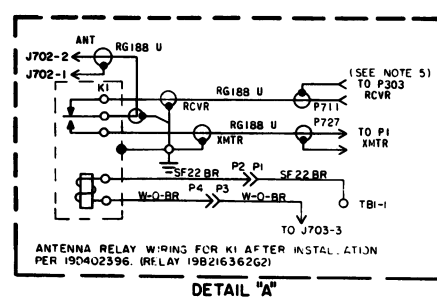
SEE APPLICABLE PRODUCTION CHANGE SHEETS IN INSTRUCTION BOOK SECTION DEALING WITH THIS UNIT FOR DESCRIPTION OF CHANGES UNDER EACH REVISION LETTER

THIS ELEM DIAG APPLIES TO MODEL NO. 4EC60A11, 4EC60A13, 4EC60A28, 4EC60A29

REV. LETTER H



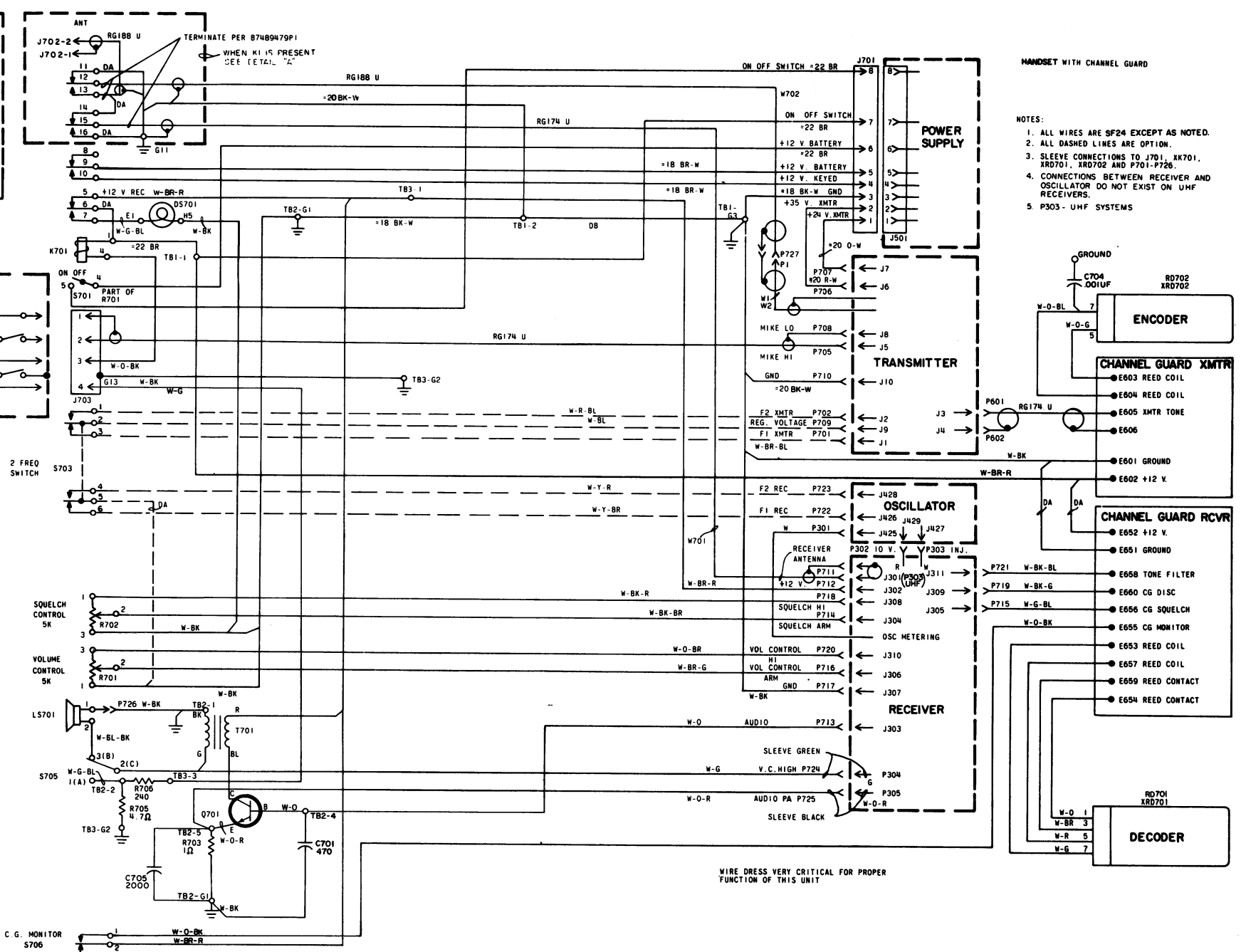
(19D402495, Rev. 16)



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

THIS ELEM DIAG APPLIES TO MODEL NO. 4EC60A11, 4EC60A13, 4EC60A28, 4EC60A29

REV. LETTER H



(19D402498, Rev. 16)

SERVICE SHEET

PORTA-MOBIL CONTROL UNIT
MODELS 4EC60A11, A13, A17 & A20
(RC-1108G)

PARTS LIST		
LBI-3486 E		
CONTROL UNIT		
MODEL 4EC60A11 19D402278-G2 (Single Frequency), REV F MODEL 4EC60A13 19D402278-G4 (Two Frequency), REV F MODEL 4EC60A17 19D402278-G8 (Single Frequency), REV E MODEL 4EC60A20 19D402278-G11 (Two Frequency), REV E		
SYMBOL	GE PART NO.	DESCRIPTION
-----CAPACITORS-----		
C701*	5494481-P7	Ceramic disc: 470 pf, ±20%, 1000 VDCV. Added by REV B.
C704*	5494481-P11	Ceramic disc: 1000 pf, ±20%, 1000 VDCV. Added to 4EC60A11, 13 by REV E; 4EC60A17, 20 by REV E.
C705*	5491481-P14	Ceramic disc: 2000 pf, ±10%, 1000 VDCV. Added to 4EC60A11, 13 by REV F; 4EC60A17, 20 by REV E.
-----INDICATING DEVICES-----		
DS701	4034664-P1	Lamp, incandescent: 28 V, .04 amp; sim to GE 2148.
-----JACKS AND RECEPTACLES-----		
J701	7473192-P31	Connector: 8 terminals, phenolic; sim to HB Jones 261-31-02-000.
J702	5493682-P2	Connector, coaxial: sim to FXR 33975.
J703	19B209201-P1	Connector: 4 contacts; sim to Switchcraft 3C-1088.
-----RELAYS-----		
K701*	19C307010-P15	Armature: 12 VDC nominal, 130 ohms res ±10% at 25°C, 4 form C contacts; sim to Allied Control T154-16274.
	19C307010-P5	In Models 4EC60A11, 13 of REV C and earlier: In Models 4EC60A17, 20 of REV B and earlier: Armature: 12 VDC nominal, 130 ohms res ±10% at 25°C, 4 form C contacts, sim to Allied Control T154-X-413.
-----LOUDSPEAKERS-----		
LS701	19C307094-P1	Permanent magnet: 3.2 ohms ±10% voice coil imp., 3 W input, 325 ±50 Hz resonance; sim to Oaktron 57473.
-----PLUGS-----		
P701 and P702	4029840-P2	Contact, electrical: taper pin, solder coated brass; sim to Amp 42827-2.
P705	4029840-P2	Contact, electrical: taper pin, solder coated brass; sim to Amp 42827-2.
P706 thru P708	4029840-P1	Contact, electrical: taper pin, solder coated brass; sim to Amp 41854.
P709	4029840-P2	Contact, electrical: taper pin, solder coated brass; sim to Amp 42827-2.
P710	4029840-P1	Contact, electrical: taper pin, solder coated brass; sim to Amp 41854.
P712 thru P721	4029840-P2	Contact, electrical: taper pin, solder coated brass; sim to Amp 42827-2.
P722 thru P723	4029840-P2	Contact, electrical: taper pin, solder coated brass; sim to Amp 42827-2.
P724 and P725	7147199-P2	Connector: 1 female contact; sim to Winchester Electronics 21804.
P726	4036634-P1	Receptacle, pin: sim to Amp 42428-2.
-----TRANSISTORS-----		
Q701*	19A116118P3	Silicon, NPN; sim to Type 2N1701
	19A115527P1	In 4EC60A11, 13 REV B-G
	19A115246	In 4EC60A17, 20 REV D-F
-----RESISTORS-----		
R701	19C300097-P10	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.

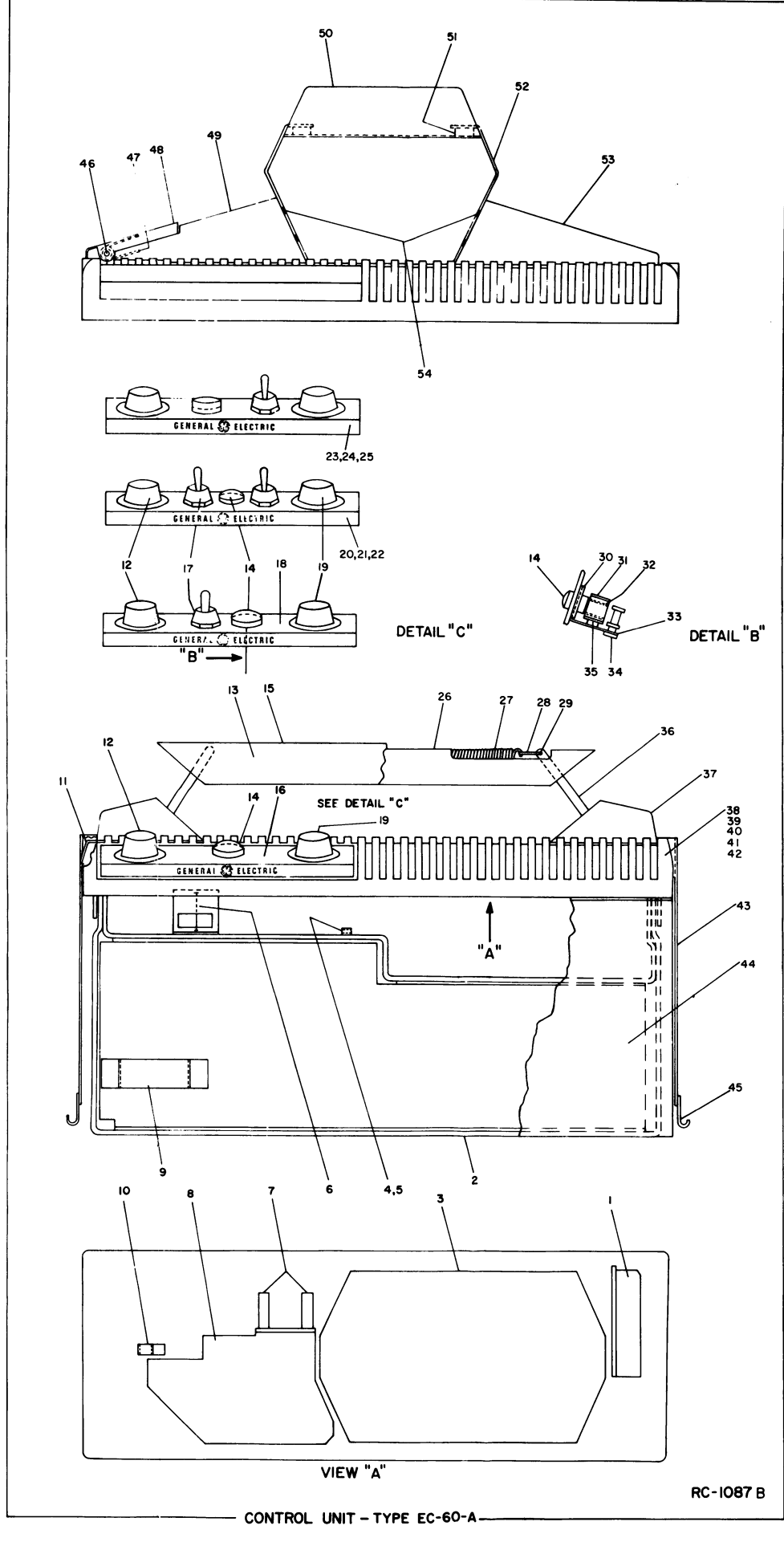
SYMBOL	GE PART NO.	DESCRIPTION
R702	19C300097-P9	Variable, carbon film: 5000 ohms ±20%, 1/4 W.; sim to Mallory Type MLC.
R703	19B209022-P115	Wirewound: 1 ohm ±10%, 2 W; sim to IRC Type BWH.
R704	19B209022-P135	Wirewound: 6.8 ohms ±5%, 2 W; sim to IRC Type BWH
	19B209022-P38	In Models earlier than REV. A: Wirewound: 5.1 ohms ±5%, 2 W; sim to IRC Type BWH
R705	19B209022-P131	In Models earlier than REV. F: Wirewound: 4.7 ohms ±10%, 2 W; sim to IRC Type BWH.
R706	3R77-P241J	Composition: 240 ohms ±5%, 1/2 W.
-----RESONANT REED DECODER-----		
RD701		Reed, detector: coil - 600 ohms ±10%, standard 7-pin tube socket mounting.
	3R160-P719	71.9 Hz
	3R160-P770	77.0 Hz
	3R160-P825	82.5 Hz
	3R160-P865	86.5 Hz
	3R160-P948	94.8 Hz
	3R160-P1000	100.0 Hz
	3R160-P1005	100.5 Hz
	3R160-P1072	107.2 Hz
	3R160-P1100	110.0 Hz
	3R160-P1148	114.8 Hz
	3R160-P1188	118.8 Hz
	3R160-P1230	123.0 Hz
	3R160-P1273	127.3 Hz
	3R160-P1318	131.8 Hz
	3R160-P1365	136.5 Hz
	3R160-P1413	141.3 Hz
	3R160-P1462	146.2 Hz
	3R160-P1514	151.4 Hz
	3R160-P1567	156.7 Hz
	3R160-P1622	162.2 Hz
	3R160-P1679	167.9 Hz
	3R160-P1738	173.8 Hz
	3R160-P1799	179.9 Hz
	3R160-P1862	186.2 Hz
	3R160-P1928	192.8 Hz
	3R160-P2035	203.5 Hz
-----RESONANT REED ENCODER-----		
RD702		Reed, governor: coil - 600 ohms ±10%, standard 7-pin tube socket mounting.
	3R161-P719	71.9 Hz
	3R161-P770	77.0 Hz
	3R161-P825	82.5 Hz
	3R161-P865	86.5 Hz
	3R161-P948	94.8 Hz
	3R161-P1000	100.0 Hz
	3R161-P1005	100.5 Hz
	3R161-P1072	107.2 Hz
	3R161-P1100	110.0 Hz
	3R161-P1148	114.8 Hz
	3R161-P1188	118.8 Hz
	3R161-P1230	123.0 Hz
	3R161-P1273	127.3 Hz
	3R161-P1318	131.8 Hz
	3R161-P1365	136.5 Hz
	3R161-P1413	141.3 Hz
	3R161-P1462	146.2 Hz
	3R161-P1514	151.4 Hz
	3R161-P1567	156.7 Hz
	3R161-P1622	162.2 Hz
	3R161-P1679	167.9 Hz
	3R161-P1738	173.8 Hz
	3R161-P1799	179.9 Hz
	3R161-P1862	186.2 Hz
	3R161-P1928	192.8 Hz
	3R161-P2035	203.5 Hz
-----SWITCHES-----		
S701		(Part of R701).
S702	19B209040-P1	Slide: DPDT, 0.5 amp at 125 V; sim to Continental Wirt 126.
S703	4036949-P2	Toggle: DPDT, 100 µa at 5 VDC; sim to Arrow-Hart and Hegeman TS-6.
S704*	7481654-P10	Push button (red): SPNO, 1 amp at 115 VAC; sim to Grayhill 30-15.
S705	19B209239-P1	Push button (red): SPDT, 250 ma at 115 VAC or 25 VDC; sim to Switchcraft 923.
S706	4036949-P1	Toggle: SPDT, 100 µa at 5 VDC; sim to Arrow-Hart and Hegeman TS3.

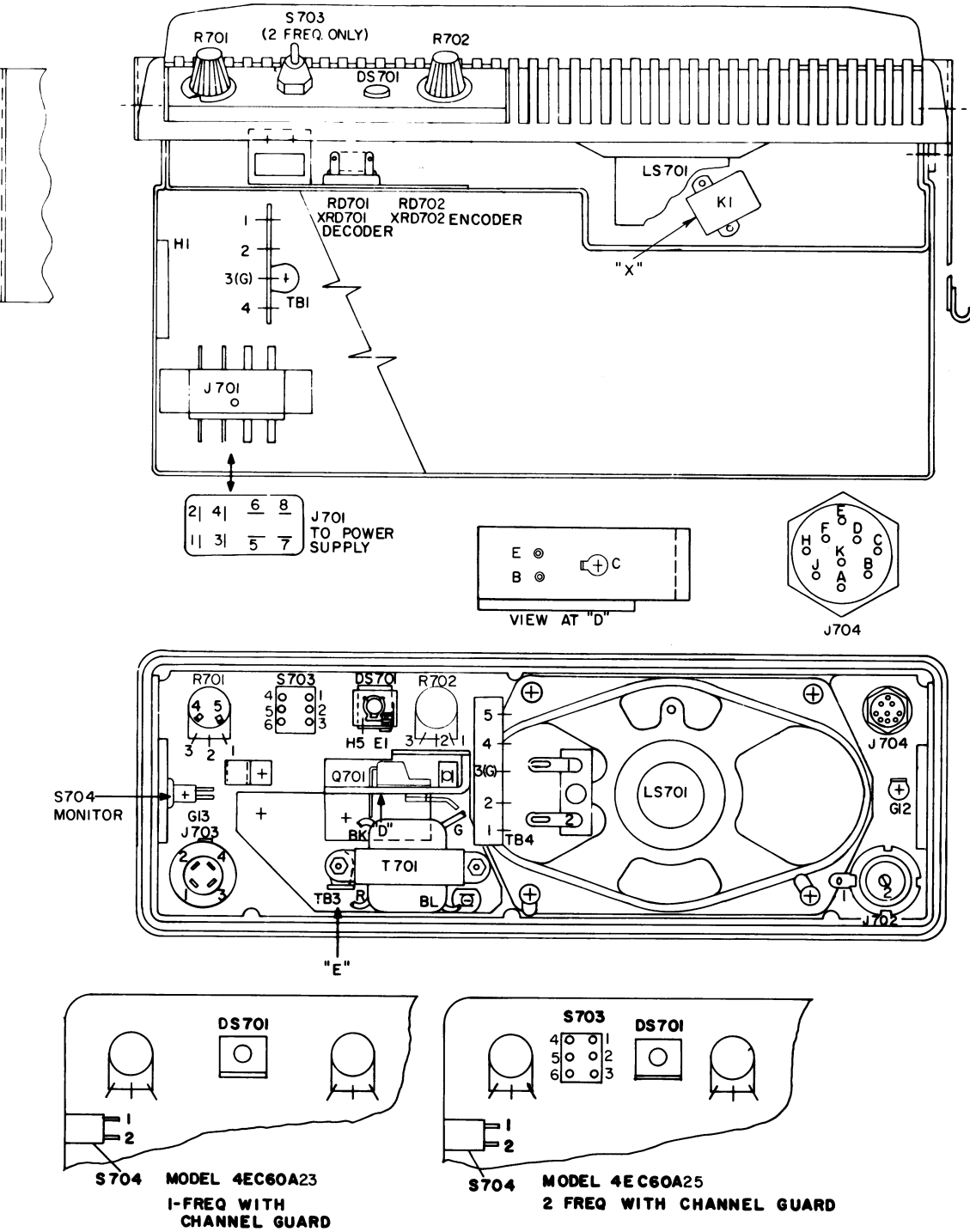
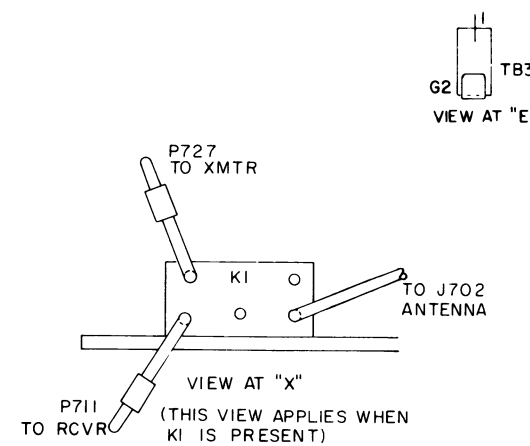
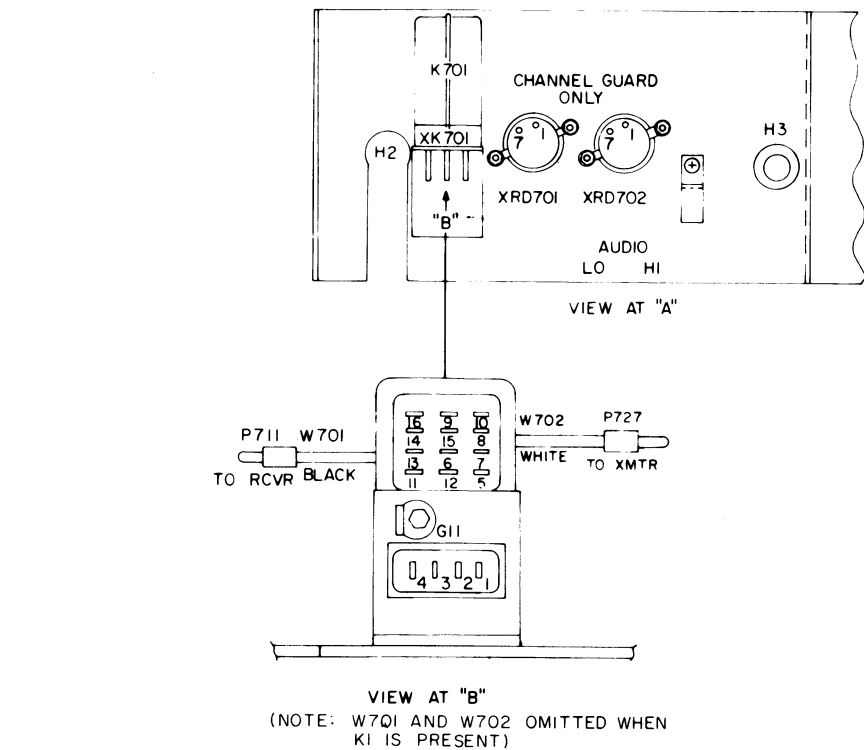
SYMBOL	G-E PART NO	DESCRIPTION
----- TRANSFORMERS -----		
T701	19B209079-P1	Audio freq: freq range 0.3-3 Hz, operating 275 MAEC. Pri 1: 55 ohms ±10% imp at 1 w, 0.895 ohm ±10% DC res. Sec 1: 3.2 ohms ±10% at 1 w, 0.168 ohm max DC res.
----- TERMINAL BOARDS -----		
TB1	7775500-P8	Phenolic: 4 terminals.
TB2	7775500-P55	Phenolic: 5 terminals.
TB3	7775500-P44	Phenolic: 2 terminals.
	7775500-P7	Phenolic: 3 terminals.
----- CABLES -----		
W701		CABLE ASSEMBLY 19A121176-G1
P711	5496078-P1	Connector, push-on: Teflon; sim to FRX 27-1.
	19B209044-P11	Cable, RF: 5.75 inches long. Type RG-174/U.
W702		CABLE ASSEMBLY 19A121176-G2
P727	5496078-P2	Connector, push-on: Teflon; sim to FRX 27-2.
	19B209044-P13	Cable, RF: 4 inches long. Type RG-188/U.
----- SOCKETS -----		
XX701	5491595-P5	Relay, nylon: 16 contacts; sim to Allied Control 30054-2.
XR701 and XR702	19B209065-P2	Tube: 7 contacts, molded phenolic; sim to Alcon Metal Products 524M-2.
DC CHARGING CABLE ASSEMBLY 19B204993-G1		
----- MISCELLANEOUS -----		
7160478-P1		Cable: 2 conductor, 50 inches; sim to Birnbach 789.
4034405-P1		Plug, general purpose: 4 contacts, polarized, 10 amps at 135 VMS; sim to Cannon XLR-411C.
19A115513-P1		Connector, cigarette lighter: 12 VDC; sim to Cole-Horshe 1524.
POWER SUPPLY EXTENSION CABLE ASSEMBLY 19B204269-G1		
----- MISCELLANEOUS -----		
7473192-P19		Socket, phenolic: 8 terminals, cable clamp in cap; sim to HB Jones 261-32-08-030.
7473192-P26		Plug, phenolic: 8 terminals, cable clamp in cap; sim to HB Jones 261-31-08-030.
7162441-P23		Tubing, flexible, plastic: 3 feet long.
AUTO GUTTER MOUNT ANTENNA MODEL 4EY19C10-15 (High Band)		
----- MISCELLANEOUS -----		
19C303620-P1		Antenna Assembly. Includes: plastic ball tip; 19.5 to 25 inch stainless steel whip; socket; insulators; adapter; RG-58A/U cable; PL-259 plug; clip; 2-net screws; rubber pad; sim to Antenna Specialists ASP157.

SYMBOL	G-E PART NO	DESCRIPTION
	19C303620-P2	Replacement Whip Assembly. Includes: plastic ball tip; 19.5 to 25 inch stainless steel whip; socket; insulators; sim to Antenna Specialists 19A904-1.
MICROPHONE MODEL 4EM33D10 (19B209199-P1)		
----- MISCELLANEOUS -----		
		Switch: moisture proof. Shure Brothers RP-33.
		Spring: switch. Shure Brothers 44A159.
		Cable and Plug Assembly. approx 5 feet.
		Shure Brothers RP-35.
		Button, switch: red plastic. Shure Brothers RP-34.
		Cartridge, transmitter: controlled magnetic. Shure Brothers RP-32.
		Case, Mounting Button and Nameplate: plastic. Shure Brothers RP-31.
HANDSET MODEL 4EM34A10 (19B209198-P1)		
----- MISCELLANEOUS -----		
		Cartridge, transmitter: controlled magnetic. Shure Brothers RP-15.
		Cartridge, receiver: 3 W max power. Shure Brothers RP-41.
		Switch: with mounting plate. Shure Brothers RP-81.
		Cable and Plug Assembly. Includes: 4 conductor tinsel coiled cord, neoprene jacket, extended length approx 5 feet, molded on weather proof 7-pin plug. Shure Brothers RP-47.
		Handle Assembly. Phenolic, weather proof construction. Shure Brothers RP-49.
		Cap, transmitter: phenolic. Shure Brothers RP-49.
		Cap, receiver: phenolic. Shure Brothers RP-49.
PORTABLE ANTENNA MODEL 4EY18A10-13 (Low Band)		
----- MISCELLANEOUS -----		
19C303707-G1		25-31 MHz Antenna Assembly. Includes: 0.25 inch dia aluminum ball, 48.25 inch stainless steel rod, tuning screw and locknut, rubber O-ring weather seal; sim to Antenna Specialists ASP-431GE.
19C303707-G2		31-36 MHz Antenna Assembly. Includes: 0.25 inch dia aluminum ball, 48.25 inch stainless steel rod, tuning screw and locknut, rubber O-ring weather seal; sim to Antenna Specialists ASP-4431GE.
19C303707-G3		36-42 MHz Antenna Assembly. Includes: 0.25 inch dia aluminum ball, 38 inch stainless steel rod, tuning screw and locknut, rubber O-ring weather seal; sim to Antenna Specialists ASP-4431GE.
19C303707-G4		42-50 MHz Antenna Assembly. Includes: 0.25 inch dia aluminum ball, 38 inch stainless steel rod, tuning screw and locknut, rubber O-ring weather seal; sim to Antenna Specialists ASP-4431GE.
PORTABLE ANTENNA MODEL 4EY19C10-15		
		MODEL 4EY19C10 130 -150.8 MHz MODEL 4EY19C11 150.8-166 MHz MODEL 4EY19C12 162 -166 MHz MODEL 4EY19C13 166 -174 MHz MODEL 4EY19C14 406 -420 MHz MODEL 4EY19C15 450 -470 MHz
----- MISCELLANEOUS -----		
19C303620-P1		Antenna Assembly. Includes: plastic ball tip; 19.5 to 25 inch stainless steel whip; socket; insulators; adapter; RG-58A/U cable; PL-259 plug; clip; 2-net screws; rubber pad; sim to Antenna Specialists ASP157.

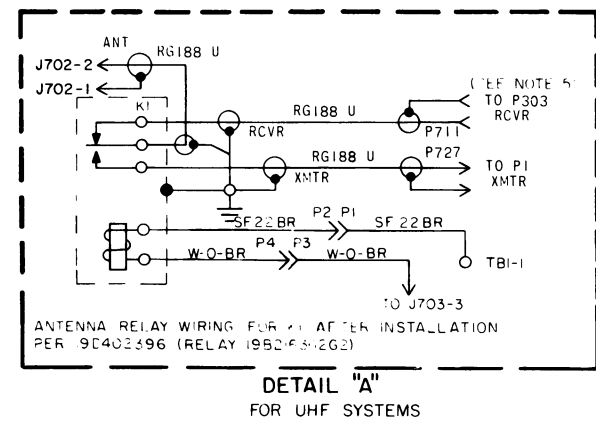
SYMBOL	G-E PART NO	DESCRIPTION
MECHANICAL PARTS (SEE RC-1087)		
1	19A121154-P1	Support: (Used with Q701).
2	19B204532-G1	Chassis Assembly.
3	19B204527-P1	Diaphragm.
4		(Not Used).
5	7763941-P4	Clip.
6	5491598-P9	Spring, retainer; wire; sim to Allied Control 30040-2. (Used with R701).
7	7142162-P98	Spacer.
8	19A121174-G1	Chassis Assembly.
9	19A121178-P1	Support: (Used with J701).
10	19A121199-P1	Clip.
11	19A121215-P1	Spring: (Used in Models 4EC60A11 and 4EC60A13 only).
12	19B204639-G2	Knob Assembly.
13	19C303537-G1	Handle Assembly: (Includes items 15, 26, 27, 28, 29 and 30). (Used in Models 4EC60A11 and 4EC60A13 only).
14	19B204949-P1	Jewel: red plastic; sim to Rohm and Haas 2444 Plexiglas.
15	19B204492-P1	Extrusion: (Part of Handle Assembly, 19C303537-G1).
16	NP243498	Nameplate: etched aluminum. (Used in Model 4EC60A11 only).
17	5490135-P3	Boot, dust and moisture seal: silicon rubber; sim to APM-Hexseal N-5032-B. (Used in Models 4EC60A13, 17 and 20 only).
18	NP243497	Nameplate: etched aluminum. (Used in Model 4EC60A13 only).
19	19B204639-G1	Knob Assembly: (Used with R702).
20	NP243615	Nameplate: etched aluminum. (Used in Model 4EC60A20 only).
21		(Not Used).
22		(Not Used).
23		(Not Used).
24	NP243617	Nameplate: etched aluminum. (Used in Model 4EC60A17 only).
25		(Not Used).
26	19C303538-P1	Handle: (Part of Handle Assembly, 19C303537-G1).
27	19A121363-P1	Spring: (Part of Handle Assembly, 19C303537-G1).
28	19A121173-P1	Retainer: (Part of Handle Assembly, 19C303537-G1).
29	N533P1308	Pin, dowel: (Part of Handle Assembly, 19C303537-G1).
30	4031053-P7	Nut, speed: sim to Timmerman C120046017-67.
31	4035711-P4	Clip, spring tension: sim to Augat Brothers 60040-CT.
32	7150727-P116	Sleeving, insulation: 30 inches long.
33	19A121730-P1	Bracket.
34	4034512-P3	Terminal, feed-thru; sim to Sealectro RST-MM-10-TUR.
35	7142162-P96	Spacer.
36	19A122608-G1	Support Assembly: (Part of Handle Assembly, 19C303537-G1).
37	19C303427-P1	Casting: (Used in Models 4EC60A11 and 4EC60A13 only).
38		(Not Used).
39		(Not Used).
40	19C303457-P2	Casting: (Used in Model 4EC60A11 only).
41	19C303457-P4	Casting: (Used in Model 4EC60A13 and 4EC60A17 only).

SYMBOL	G-E PART NO	DESCRIPTION
42	19C303457-P6	Casting: (Used in Model 4EC60A20 only).
43	19A121169-G1	Support Assembly.
44	19B204501-G1	Case Assembly.
45	4029994-P1	Strike.
46	N509P1914C	Pin, dowel: (Used in Models 4EC60A17 and 4EC60A20 only).
47	19A121741-P1	Spring: (Used in Models 4EC60A17 and 4EC60A20 only).
48	19B204963-P1	Lever: (Used in Models 4EC60A17 and 4EC60A20 only).
49	19C303679-P1	Casting: (Used in Models 4EC60A17 and 4EC60A20 only).
50	19A127584-G1	Handle: (Used in Models 4EC60A17 and 4EC60A20 only).
51	19A121742-P1	Spacer: (Used in Models 4EC60A17 and 4EC60A20 only).
52	19B204965-P1	Spring: (Used in Models 4EC60A17 and 4EC60A20 only).
53	19C303679-P2	Casting: (Used in Models 4EC60A17 and 4EC60A20 only).
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	To provide audio to microphone jack. Added G-W wire between J704-4 and LS701-2	
REV. D	Models 4EC60A11, 13 - To incorporate an improved relay. Changed R701.	
REV. D	Models 4EC60A17, 20	
REV. E	Models 4EC60A11, 13 - To prevent RF from stopping encoder. Added C704.	
REV. E	Models 4EC60A17, 20	
REV. F	Models 4EC60A11, 13 - 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. G	Models 4EC60A11, 13	
REV. F	Models 4EC60A17, 20 - To eliminate Audio-Lo Switch and resistor. Deleted S702 and R704.	
REV. H	Models 4EC60A11, 13	
REV. G	Models 4EC60A17, 20 - To incorporate a new transistor. Changed Q701.	





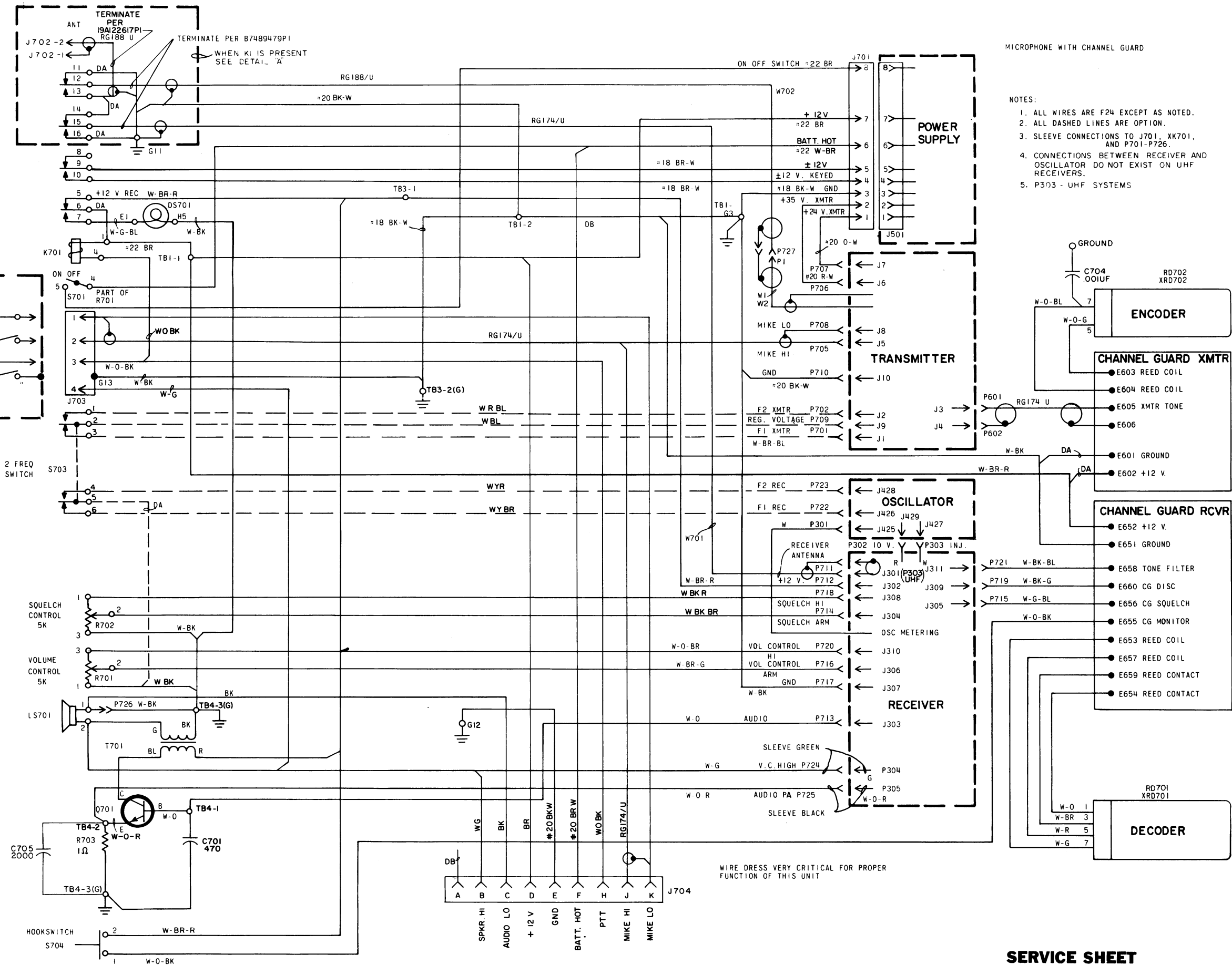
(19D402797, Rev. 4)



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

THIS ELEM DIAG APPLIES TO

MODEL NO	REV LETTER
4EC60A23	F
4EC60A25	G



(19D402725, Rev. 13)

SERVICE SHEET

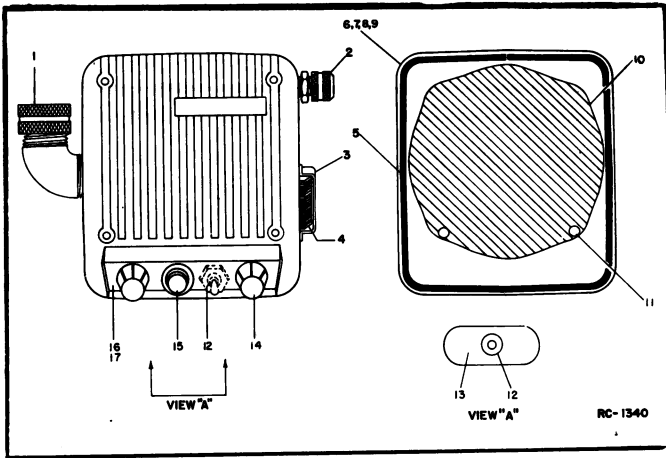
PORTA-MOBIL CONTROL UNIT WITH
ACCESSORY JACK OPTION
MODELS 4EC60A23 & 25

(RC-1377B)

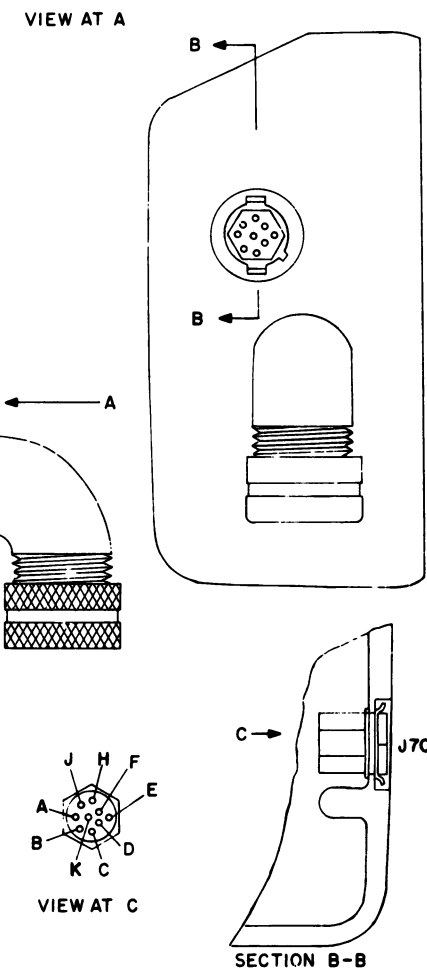
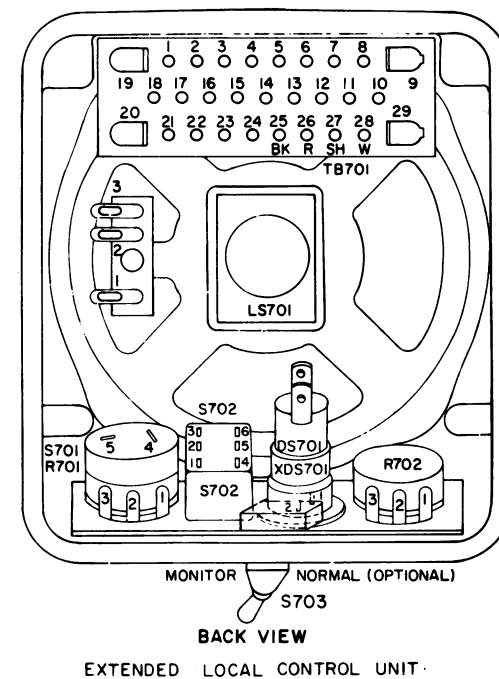
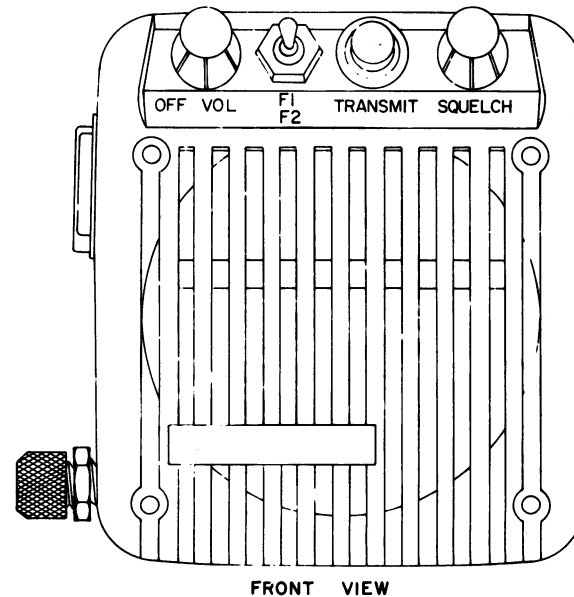
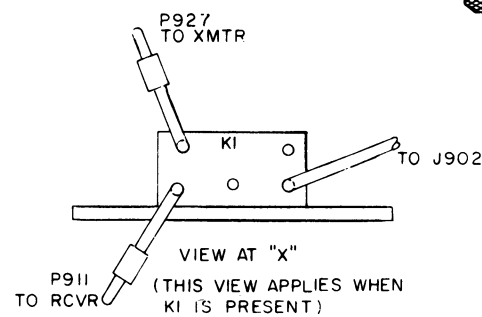
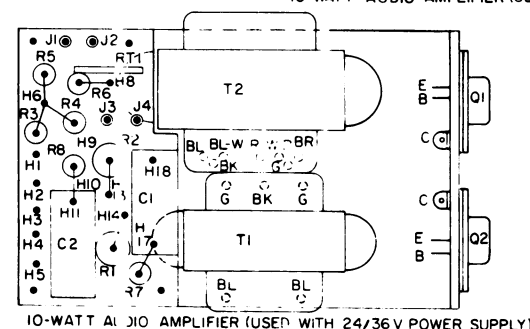
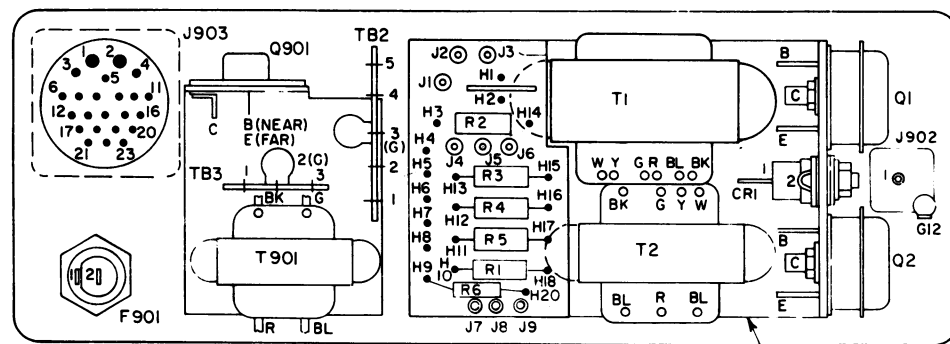
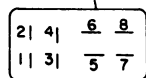
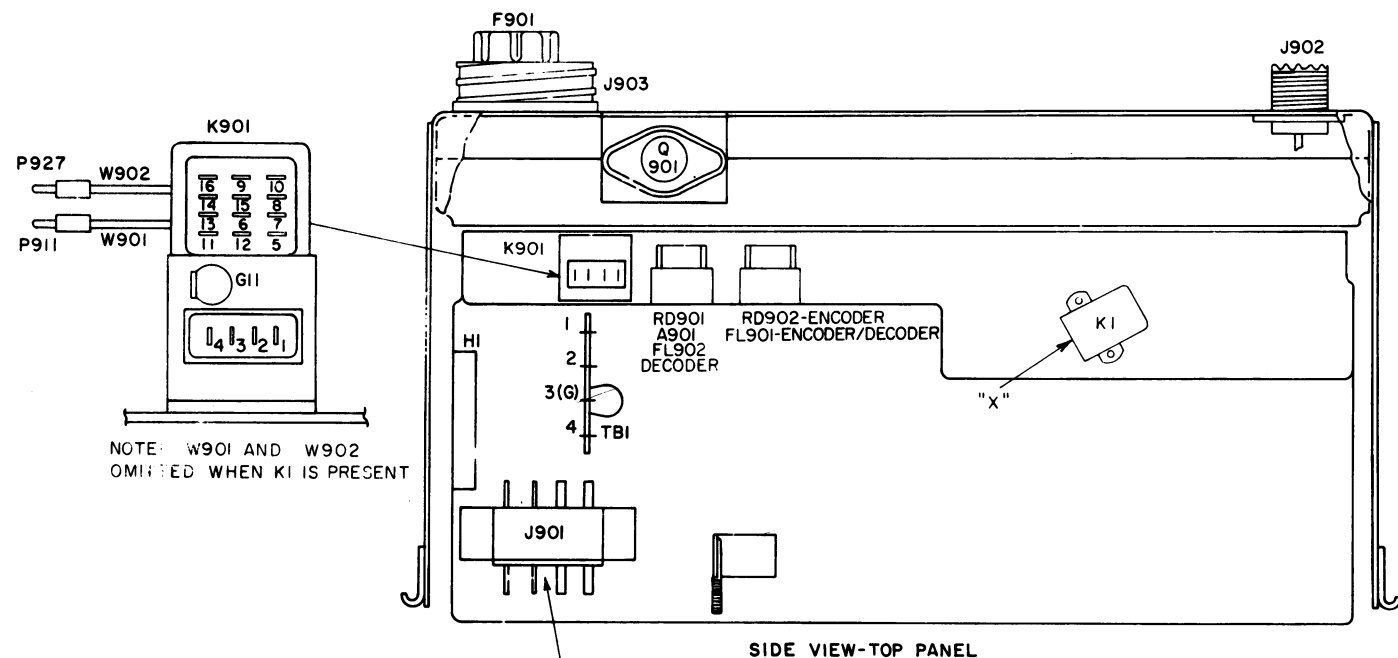
CONTROL UNIT MODEL 4EC66A12	(19D402603-G3)	SINGLE FREQUENCY
CONTROL UNIT MODEL 4EC66A13	(19D402603-G4)	TWO FREQUENCY
CONTROL UNIT MODEL 4EC66A16	(19D402603-G7)	SINGLE FREQUENCY WITH ACCESSORY JACK OPTION
CONTROL UNIT MODEL 4EC66A17	(19D402603-G8)	TWO FREQUENCY WITH ACCESSORY JACK OPTION
TRANSMITTER-RECEIVER TOP PANEL		19D402598-G2
AND ASSOCIATED ASSEMBLIES		

SYMBOL	G-E PART NO	DESCRIPTION
		TRANSMITTER-RECEIVER TOP PANEL 19D402599-G2
		----- CAPACITORS -----
C901	7489162-P39	Silver mica: 330 pf $\pm 5\%$, 500 VDCW; sim to Electro Motive Type DM-15.
C902	5494481-P7	Ceramic disc: 470 pf $\pm 20\%$, 1000 VDCW; sim to RMC Type JF Discap.
		----- FUSES -----
F901	7102673-P2	Quick blowing: 15 amps at 32 v; sim to Littell-fuse 311015 or Bussman AGC-15.
		----- JACKS AND RECEPTACLES -----
J901	7473192-P31	Connector, phen: 8 terminals; sim to HB Jones 261-31-08-000.
J902	2R22-P3	Receptacle, panel, coaxial. Signal Corps SO-239 or sim to Amphenol 83-1R.
J903	19E200010-P2	Receptacle: 23 contacts; sim to Cannon Electric MK-L23-32S.
		----- RELAYS -----
K901*	19C307010-P15	Armature: 12 VDC nominal, 130 ohms $\pm 10\%$ coil res, 4 form C contacts; sim to Allied Control T154-16274.
	19C307010-P5	In Models earlier than Rev A: Armature: 12 VDC nominal, 130 ohms $\pm 10\%$ coil res, 4 form C contacts; sim to Allied Control T154-X-413.
		----- PLUGS -----
P901 and P902	4029840-P2	Contact, electrical: sim to AMP 42827-2.
P905	4029840-P2	Contact, electrical: sim to AMP 42827-2.
P906 thru P908	4029840-P1	Contact, electrical: sim to AMP 41854.
P909	4029840-P2	Contact, electrical: sim to AMP 42827-2.
P910	4029840-P1	Contact, electrical: sim to AMP 41854.
P911		Part of W901.
P912 thru P914	4029840-P2	Contact, electrical: sim to AMP 42827-2.
P916 thru P918	4029840-P2	Contact, electrical: sim to AMP 42827-2.
P920	4029840-P2	Contact, electrical: sim to AMP 42827-2.
P922 and P923	4029840-P2	Contact, electrical: sim to AMP 42827-2.
P924 and P925	7147199-P2	Connector: female contact; sim to Winchester Electronics 21804.
P926	4029840-P2	Contact, electrical: sim to AMP 42827-2.
P927		Part of W902.
		----- TRANSISTORS -----
Q901*	19A115527-P1 19A116118P3	Silicon, NPN. In Models REV. B and later
		----- RESISTORS -----
R901	19E209022-P115	Wirewound: 1 ohm $\pm 10\%$, 2 w; sim to IRC Type BWH.
R902	3R77-P473K	Composition: 47,000 ohms $\pm 10\%$, 1/2 w.
		----- RESONANT REED DECODER -----
RD901		Reed, detector: coil - 600 ohms $\pm 10\%$, standard 7-pin tube socket mounting.
	19C307140-P719	71.9 Hz
	19C307140-P770	77.0 Hz
	19C307140-P825	82.5 Hz
	19C307140-P885	88.5 Hz
	19C307140-P948	94.8 Hz
	19C307140-P1000	100.0 Hz
	19C307140-P1035	103.5 Hz

SYMBOL	G-E PART NO	DESCRIPTION
	19C307140-P1072 19C307140-P1109 19C307140-P1148 19C307140-P1188 19C307140-P1230 19C307140-P1273 19C307140-P1318 19C307140-P1365 19C307140-P1413 19C307140-P1462 19C307140-P1514 19C307140-P1567 19C307140-P1622 19C307140-P1679 19C307140-P1738 19C307140-P1799 19C307140-P1862 19C307140-P1928 19C307140-P2035	107.2 Hz 110.9 Hz 114.8 Hz 118.8 Hz 123.0 Hz 127.3 Hz 131.8 Hz 136.5 Hz 141.3 Hz 146.2 Hz 151.4 Hz 156.7 Hz 162.2 Hz 167.9 Hz 173.8 Hz 179.9 Hz 186.2 Hz 192.8 Hz 203.5 Hz
RD902	3R161-P719 3R161-P770 3R161-P825 3R161-P885 3R161-P948 3R161-P1000 3R161-P1035 3R161-P1072 3R161-P1109 3R161-P1148 3R161-P1188 3R161-P1230 3R161-P1273 3R161-P1318 3R161-P1365 3R161-P1413 3R161-P1462 3R161-P1514 3R161-P1567 3R161-P1622 3R161-P1679 3R161-P1738 3R161-P1799 3R161-P1862 3R161-P1928 3R161-P2035	----- RESONANT REED ENCODER ----- Reed, governor: coil - 600 ohms $\pm 10\%$, standard 7-pin tube socket mounting. 71.9 Hz 77.0 Hz 82.5 Hz 88.5 Hz 94.8 Hz 100.0 Hz 103.5 Hz 107.2 Hz 110.9 Hz 114.8 Hz 118.8 Hz 123.0 Hz 127.3 Hz 131.8 Hz 136.5 Hz 141.3 Hz 146.2 Hz 151.4 Hz 156.7 Hz 162.2 Hz 167.9 Hz 173.8 Hz 179.9 Hz 186.2 Hz 192.8 Hz 203.5 Hz ----- TRANSFORMERS -----
T901	19B209079-P1	Audio freq: 0.3-3 KHz freq range, Pri: 55 ohms $\pm 10\%$ imp, 0.895 ohm $\pm 10\%$ DC res, Sec: 3.2 ohms imp, 0.168 ohm DC res.
TB1	7775500-P8	Phen: 4 terminals.
TB2	7775500-P11	Phen: 5 terminals.
TB3	7775500-P7	Phen: 3 terminals.
W901		----- CABLES ----- CABLE 19A121176-G1 ----- PLUGS -----
P911	5496078-P1 19B209044-P11	Push-on, coaxial: sim to FXR 27-1. Cable, RF: approx 6 inches; sim to Amphenol 21-598.
W902		CABLE 19A121176-G2 ----- PLUGS -----
P927	5496078-P2 19B209044-P13	Jack, coaxial: sim to FXR 27-2. Cable, RF: approx 4 inches; sim to Amphenol 421-105.
XF901	19B209065-P3	Fuseholder: 15 amps at 250 v; sim to Littelfuse 342006.
XK901	5491595-P5	Relay: 16 contacts; sim to Allied Control 30054-2.
XRD901 and XRD902	19B209065-P2	Tube, phen: 7 contacts; sim to Alcon 524M-2.



***COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.**



- NOTES:
1. S703 USED ONLY IN MODELS 4EC66A12, 13.
 2. S702 USED ONLY IN MODELS 4EC66A11, 13.
 3. J701 USED ONLY IN MODELS 4EC66A14-17.

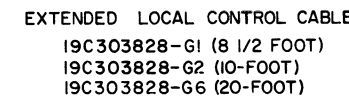
SERVICE SHEET

EXTENDED LOCAL CONTROL UNIT
MODELS 4EC66A12, 13, 16 & 17
TRANSMITTER-RECEIVER TOP PANEL
19D402599-G2 (Used with
6 & 12-Volt Power Supplies)

(RC-1279C, Sheet 1)

(19D402695, Rev. 6)

EXTENDED LOCAL CONTROL CABLE



*USED WITH CHANNEL GUARD/SEL CALL RECEIVERS
**CONNECTIONS NOT USED ON 20-FOOT CABLE

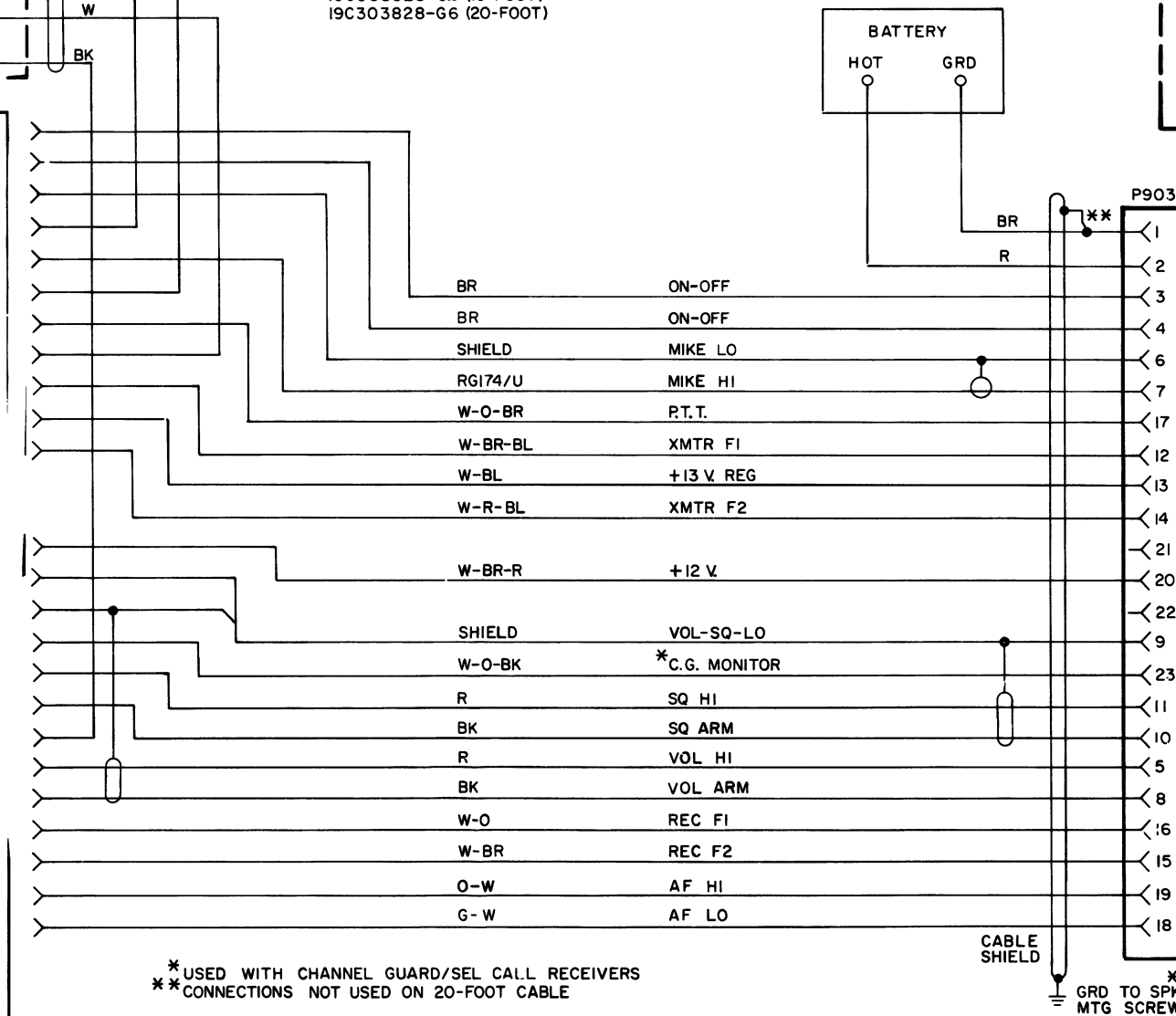
* MICROPHONE CONNECTIONS

TB701-28 PTT (W)
TB701-27 MIKE LO (SH)
TB701-26 MIKE HI (R)
TB701-25 GROUND (BK)

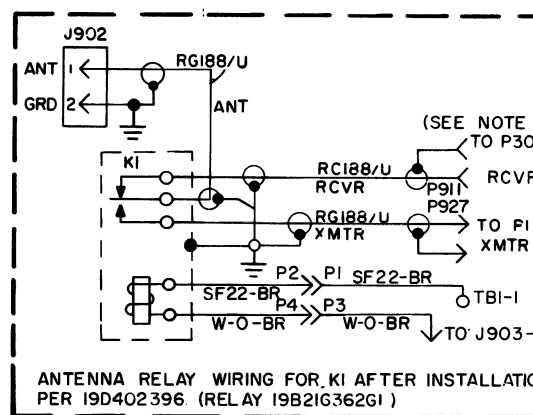
▲S-02 USED ONLY IN MODELS 4EC66A11,13,15 & 17
▲S703 USED ONLY IN MODELS 4EC66A12,13,16 & 17
●J-0 USED ONLY IN MODELS 4EC66A14, 15, 16, 17

NOTES:
1. ALL Wires SF24 UNLESS OTHERWISE SPECIFIED.
2. DELETE IN MODELS 4EC66A11,13,15 &17

(19C303826, Rev. 5)

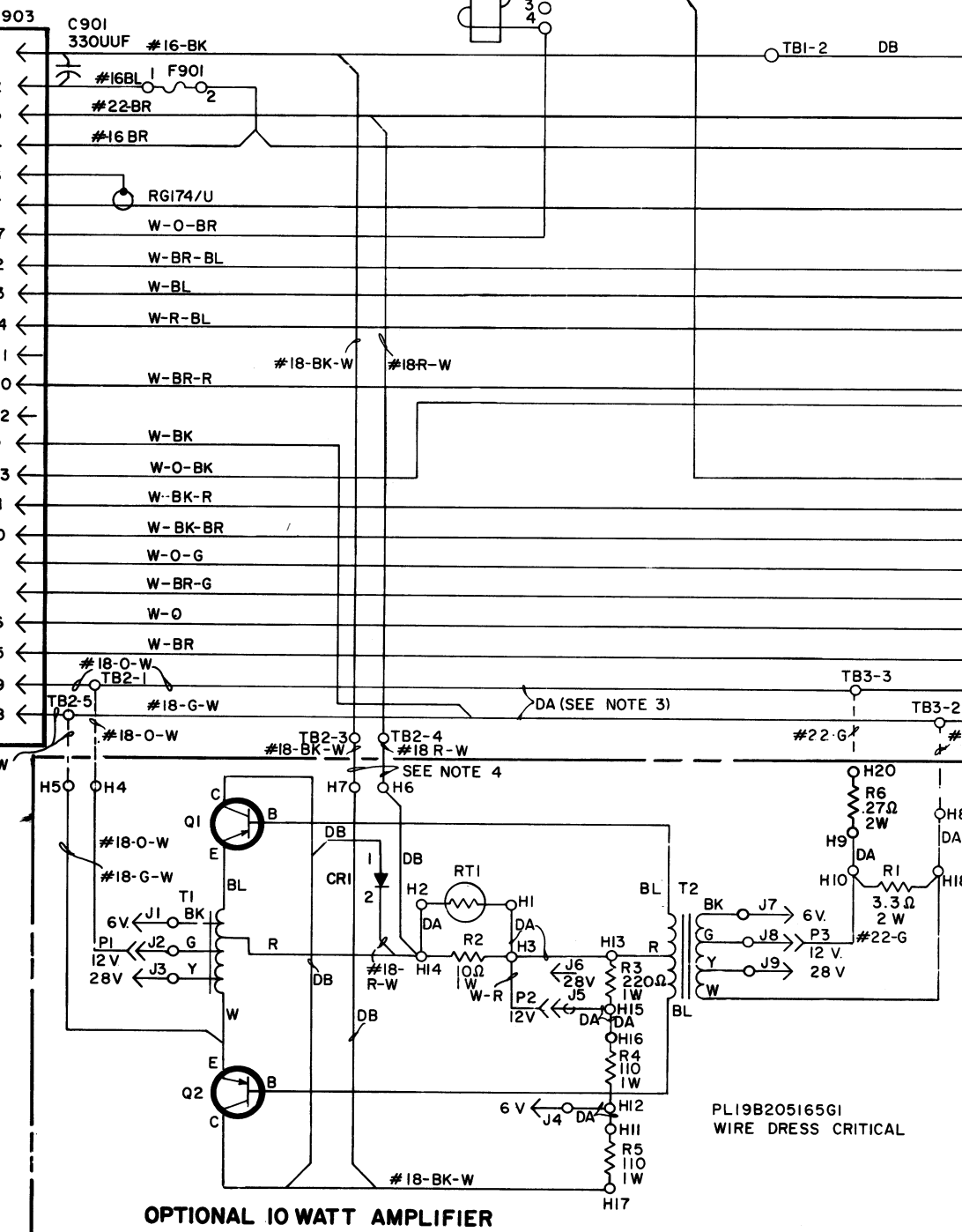


RC-1262B



DETAIL "A"

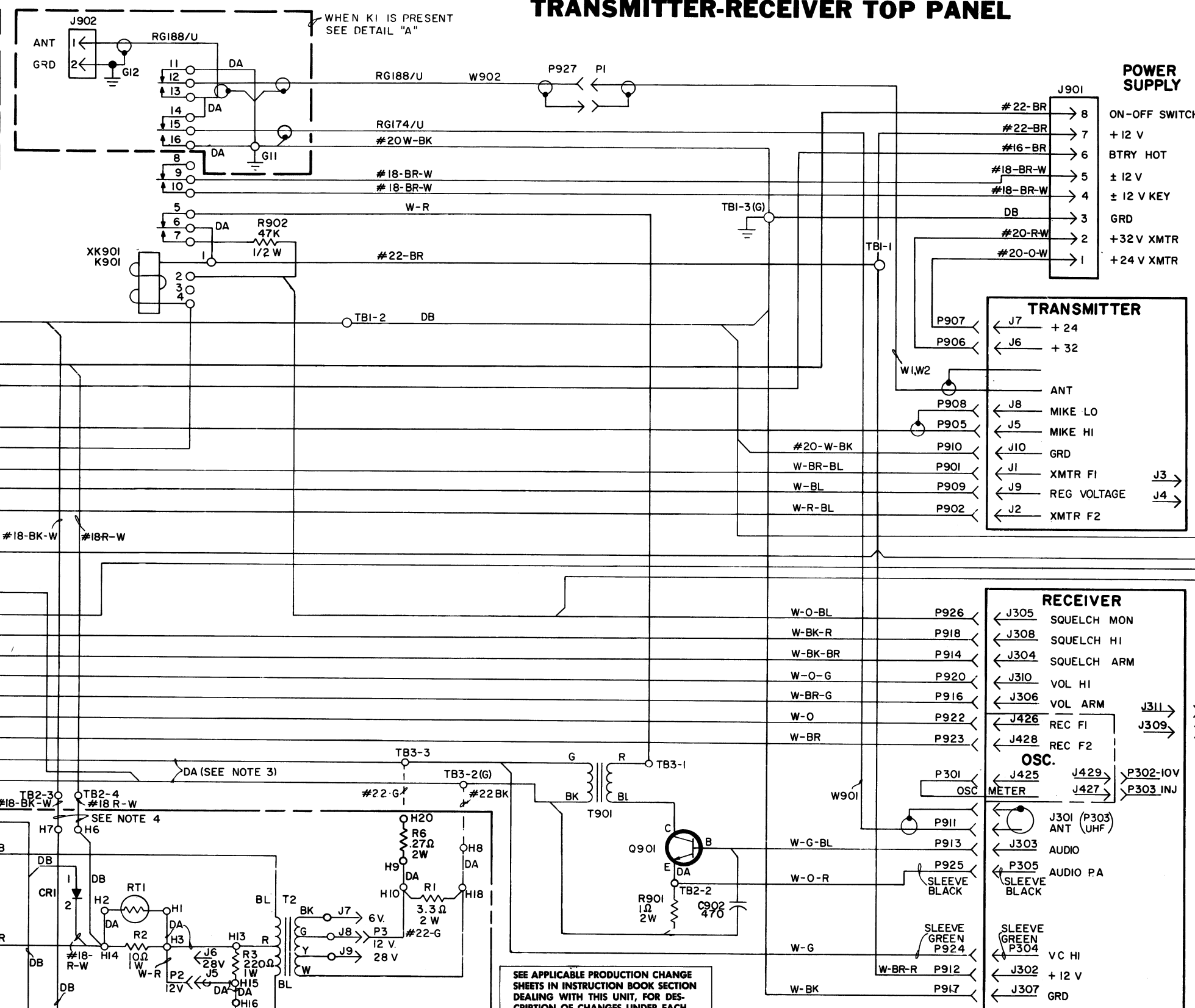
FOR UHF SYSTEMS



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

(19D402605, Rev. 13)

TRANSMITTER-RECEIVER TOP PANEL

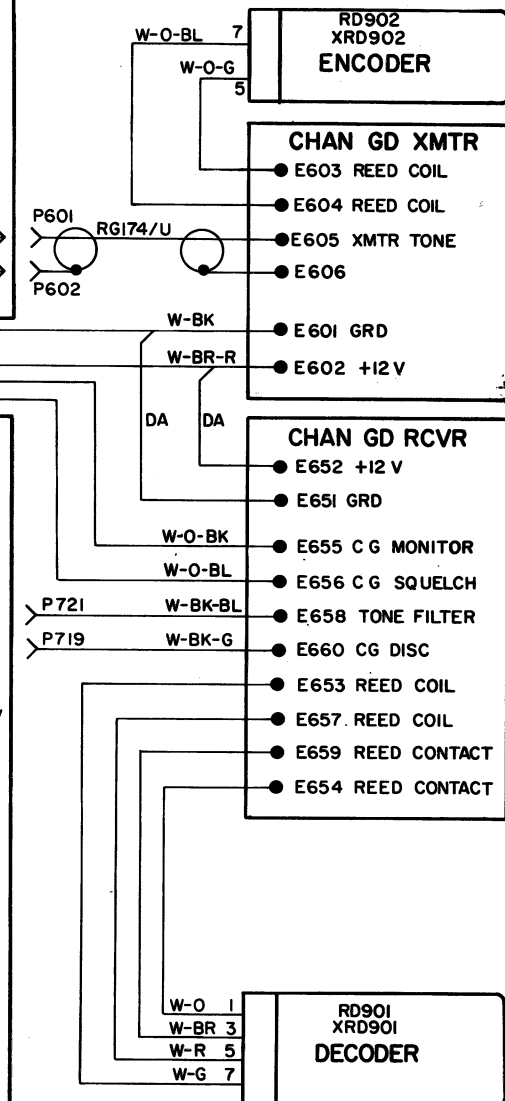


IN ORDER TO RETAIN RATED EQUIPMENT PERFORMANCE, REPLACEMENT OF ANY SERVICE PART SHOULD BE MADE ONLY WITH A COMPONENT HAVING THE SPECIFICATIONS SHOWN ON THE PARTS LIST FOR THAT PART.

POWER SUPPLY

- ONE OR TWO FREQ. WITH CHANNEL GUARD
WIRE DRESS CRITICAL.

- 1 ALL WIRES ARE SF24 EXCEPT AS NOTED
- 2 ALL DASHED LINES ARE OPTION
- 3 DELETE WIRES BETWEEN TB2-1 & TB3-1.
ALSO BETWEEN TB2-5 & TB3-2. WHEN
USING 10 WATT AMPLIFIER
4. FOR POSITIVE GROUND CHANGE WIRE FROM
H6 TO TB2-3 & WIRE FROM H7 TO TB2-4.
5. FOR 10 WATT AMPLIFIER OPTION WHEN
USING 6 OR 28 VOLTS CHANGE P1:P2
& P3 TO APPROPRIATE JACK
- 6 FOR SINGLE FREQUENCY UNITS REMOVE
JUMPER BETWEEN J1 & J9 ON TRANSMITTER
7. CONNECTIONS BETWEEN RECEIVER AND
OSCILLATOR DO NOT EXIST ON UHF RECEIVERS
8. P303 - UHF SYSTEMS



SERVICE SHEET

EXTENDED LOCAL CONTROL UNIT
MODELS 4EC66A12,13,16 & 17
TRANSMITTER-RECEIVER TOP PANEL
19D402599-G2 (Used with
6 & 12-Volt Power Supplies)

(RC-1279D, Sheet 2)

SYMBOL	G-E PART NO	DESCRIPTION
		MECHANICAL PARTS
19B205129-G1		Cover. (Mounts J902, 903).
19B205127-P1		Support. (Mounts locking latch).
4029994-P1		Catch, pull-down. (Mates with catch on power supply to keep unit intact).
4037158-P7		Channel, rubber; sim to Atlantic India Rubber J661. (Located above J901).
4032574-P2		Gasket, cover, neoprene.
19A121981-G1		Chassis. (Mounts T901, T92, 3).
7763541-P5		Clip, cable. (Located between F901 and J903).
19A121178-P1		Support. (Used with J901).
5491595-P9		Clip, relay: sim to Allied Control 30040-2. (Used with K901).
7763541-P4		Clip, cable. (Located by XK901).
19B204532-G1		Chassis.
19A122071-P1		Grommet. (Located by K901).
		----- ASSOCIATED ASSEMBLIES -----
19A122010-G2		Control Mounting Kit.
		132-174 MHz ANTENNA MODEL 4EY18A13 (5490969-P13) (HIGH BAND)
		----- MISCELLANEOUS -----
		Antenna: includes 20-inch stainless steel whip, whip socket, antenna cable, cable adapter, PL-259 plug; sim to Antenna Specialists ASP201GE or Danbury-Knudsen Type PA-25.
5490969-P4		Whip: 20-inch stainless steel.
5490969-P5		Socket, whip.
5490969-P6		Whip and whip socket: 20-inch stainless steel whip, whip socket.
		Cable, antenna: approx 15 feet. Type RG-58/U. (Used with G-E Dwg 2822-P1 and G-E Dwg 7103381-P1).
7105381-P1		Adapter, cable: 1 x 7/16 inches dia. Type UC-175/U. (Used with G-E Dwg 2822-P1 and Type RG-58/U cable).
2R22-P1		Plug, coaxial: Signal Corps PL-259; sim to Amphenol 83-1SP. (Used with G-E Dwg 7105381-P1 and Type RG-58/U cable).
		25-54 MHz ANTENNAS MODELS 4EY18A10-15 (LOW BAND)
		----- MISCELLANEOUS -----
19C303707-P1		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.
19C303707-P2		Model 4EY18A11, 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.
19C303707-P3		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.
19C303707-P4		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.
19C303707-P5		Model 4EY18A14, 42-48 MHz antenna. Includes 38-inch stainless steel rod, tuning screw, rubber O-ring weather seal; sim to Antenna Specialists ASP-D431-GE.
19C303707-P6		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.
2R22-P2		Adapter, UHF: right angle. Signal Corps M-359; sim to Amphenol 83-1AP. (Used in Models 4EY18A10-15).

SYMBOL	G-E PART NO	DESCRIPTION
		25-50 MHz ANTENNA (LOW BAND)
		----- MISCELLANEOUS -----
7491074-P1		Antenna: includes 96-1/2 inch stainless steel rod; sim to Antenna Specialists ASPA3BGE.
7102930-P3		Adapter, antenna: 2-5/16 inches. (Used with G-E Dwg 7491074-P1).
4033101-G1		Antenna package: includes base, adapter spring, cable and plug.
7472890-G5		Antenna base. (Used in PL-4033101-G1).
7476632-G4		Adapter spring. (Used in PL-4033101-G1).
5492239-P1		Cable, antenna: includes Type RG-58/U cable approx 15 feet, PL-259 plug, terminal; sim to Antenna Specialists 15A43. (Used in 4033101-G1).
2R22-P1		Plug, coaxial: Signal Corps PL-259; sim to Amphenol 83-1SP. (Used with G-E Dwg 5492239-P1 in PL-4033101-G1).
4KY9A1		Coil, loading: 25-54 MHz; sim to Antenna Specialists ASPA87.
19A121577-G1		Antenna hook kit.
7134724-P1		Antenna hook. (Used in PL-19A121577-G1).
		132-174 MHz ANTENNA MODEL 4EY19A10 (HIGH BAND)
		----- MISCELLANEOUS -----
19C303658-P1		Antenna. Includes 22-inch stainless steel rod, sleeving, spring, cap and O-ring; sim to Antenna Specialists ASP-405-GE.
		25-50, 132-174 MHz ANTENNA MODEL 4EY20A10
		----- MISCELLANEOUS -----
19C303620-P1		Antenna. Includes 19-1/2 inch stainless steel whip, socket, insulators, adapter, RG-58A/U cable, PL-259 plug, clip; sim to Antenna Specialists ASP-157.
19C303620-P2		Replacement whip. Includes 19-1/2 inch stainless steel whip, socket, insulators; sim to Antenna Specialists 19A904-1.
		MICROPHONE MODEL 4EM25C10
1		Cable clamp. Shure Brothers RP21. (Includes parts 3 and 8).
2		Switch. Shure Brothers RP26.
3		Case (back) and mounting button: plastic. Shure Brothers RP21. (Includes parts 1 and 8).
4		Switch button: red plastic. Shure Brothers RP25.
5		Spring. Shure Brothers RP16. (includes miscellaneous hardware).
6		Shield. Shure Brothers RP23.
7		Cartridge, magnetic controlled.
8		Case (front): plastic. Shure Brothers RP21. (Includes parts 1 and 3).
9		Cable: approx 6 feet.
		MICROPHONE MODEL 4EM33C10 (19B209199-P2)
		----- MISCELLANEOUS -----
		Switch: moisture proof. 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 RP31.
		Shield. Shure Brothers RP36.

SYMBOL	G-E PART NO	DESCRIPTION
		MICROPHONE MODEL 4EM33C10 (19B209306-P1)
		----- MISCELLANEOUS -----
		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 RP31.
		Shield. Shure Brothers RP36.
		----- MISCELLANEOUS -----
		Handset MODEL 4EM34A10 (19B209198-P1)
		----- MISCELLANEOUS -----
		Cartridge, transmitter: controlled magnetic. Shure Brothers RP13.
		Cartridge, receiver: 3 watt max power. Shure Brothers RP41.
		Switch. Shure Brothers RP81.
		Cable and plug: approx 5 feet. Shure Brothers RP47.
		Handle, transmitter cap, receiver cap: phen, weather proof. Shure Brothers RP49.
		POWER CONTROL CABLE 19C303828-G2
		----- MISCELLANEOUS -----
19A115067-P1		Cable, 2-conductor: approx 10 feet; sim to Belden 31713.
19B200010-P3		Plug: 23 contacts; sim to Cannon Electric NK-L23-23C-3/4.
		POWER CONTROL CABLE 19C303828-G3
		----- MISCELLANEOUS -----
19A115067-P3		Cable, 2-conductor: approx 23 feet; sim to Belden 7721.
19B200010-P3		Plug: 23 contacts; sim to Cannon Electric NK-L23-23C-3/4.
		DC TRICKLE CHARGE CABLE 19B204993-G2
		----- MISCELLANEOUS -----
7160478-P1		Cable: 2-conductors: approx 50 inches; sim to Birnbach 789.
4034405-P5		Plug: 5 sockets; sim to Cannon Electric XLR-5-11C.
19A115513-P1		Connector, cigarette lighter: 12 VDC; sim to Cole-Berssee 1624.
		POWER CABLE - 12 VOLT 19C303940-G3
		----- MISCELLANEOUS -----
4034405-P3		Plug: 3 sockets; sim to Cannon Electric XLR-3-11C.
19A115067-P1		Cable, 2-conductor: approx 10 feet; sim to Belden 31713.
19A115776-P2		Phen: sim to Bussman Type HHJ.
7484390-P4		Fuse, quick blowing: 8 amps at 250 v; sim to Bussman ABC-8 or Littelfuse 314008.

SYMBOL	G-E PART NO	DESCRIPTION
		POWER CABLE - 6 VOLT 19C303640-G4
		----- MISCELLANEOUS -----
4034405-P3		Plug: 3 sockets; sim to Cannon Electric XLR-3-11C.
19A115067-P1		Cable, 2-conductor: approx 10 feet; sim to Belden 31713.
19A115776-P2		Phen: sim to Bussman Type HHJ.
7484390-P3		Fuse, quick blowing: 15 amps at 250 v; sim to Bussman ABC-15 or Littelfuse 214015.
		AC CHARGING CABLE 5492570-G1
		----- MISCELLANEOUS -----
4034403-P1		Plug: sim to GE 4304-3.
4034405-P1		Plug: 4 sockets; sim to Cannon Electric XLR-4-11C.
7160478-P1		Cable, 2-conductor: approx 51 inches; sim to Birnbach 789.
		AC CHARGING CABLE 5492570-G2
		----- MISCELLANEOUS -----
C1	7489159-P16	Capacitor, metallized plastic: 4 µf ±20%, 200 VDCW; sim to Sprague 118P.
	4034403-P1	Plug: sim to G-E 4304-3.
	4034405-P1	Plug: 4 sockets; sim to Cannon Electric XLR-4-11C.
	7160478-P1	Cable, 2-conductor: approx 51 inches; sim to Birnbach 789.
		POWER SUPPLY EXTENSION CABLE 19B204289-G1
		----- MISCELLANEOUS -----
	7473192-P19	Receptacle: 8 terminals; sim to HB Jones 261-32-08-030.
	7473192-P26	Plug: 8 terminals; sim to HB Jones 261-31-08-030.
	7162441-P23	Sleeving, electrical: approx 7/16 inch dia.

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 - Transmitter-Receiver Top Panel 19D402599-G2 - To incorporate an improved relay. Changed K901.
- REV. A - Models 4EC6A12, 13, 16 & 17 - To eliminate noise in receiver. Deleter jumper between TB701-14 and TB701-17, and between TB701-1 and TB701-17.
- REV. B - Transistor-Receiver Top Panel 19D402599G2 To incorporate a new transistor. Changed Q901.

PARTS LIST

LBI-3669C

10-WATT AUDIO AMPLIFIER
19B205165-G1
REV A

PRODUCTION CHANGES
(10-WATT AUDIO AMPLIFIER)

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 improve audio response. Changed R1 and added R6.

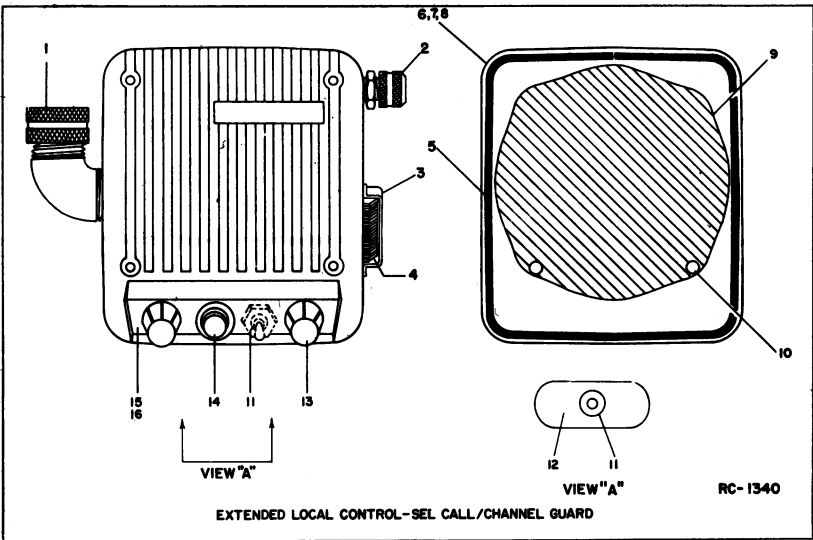
SYMBOL	G-E PART NO.	DESCRIPTION
		----- DIODES AND RECTIFIERS -----
CRI	19A115617-P1	Silicon.
		----- JACKS AND RECEPTACLES -----
J1 thru J9	4033513-P4	Contact, electrical: sim to Bead Chain L93-3.
		----- PLUGS -----
p1 thru P3	4029840-P2	Contact, electrical: sim to AMP 42827-2.
		----- TRANSISTORS -----
Q1 and Q2	5490810-P1	Germanium, PNP.
		----- RESISTORS -----
R1*	19B209022-P27	Wirewound, phen: 3.3 ohms ±5%, 2 w; sim to IRC Type BWH.
	19B209022-P137	In Models earlier than Rev A: Wirewound: 8.2 ohms ±10%, 2 w; sim to IRC BWH.
R2	3R78-P10GJ	Composition: 10 ohms ±5%, 1 w.
R3	3R78-P221J	Composition: 220 ohms ±5%, 1 w.
R4 and R5	3R78-P111J	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).
		----- THERMISTORS -----
RT1	19C300048-P3	Disc: 1 ohm ±10% res at 25°C.
		----- TRANSFORMERS -----
T1	19B209218-P1	Audio freq: 0.3-3 KHz freq range nominal, 0.3 ohm DC res max.
T2	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-P1	Terminal, solder: sim to Shakeproof 2118-10-01-2520N.
6	19A115221-P3	Washer, mica.
7	4034215-P1	Bushing.
		TRANSISTOR MOUNT RC-1280

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.

PARTS LIST

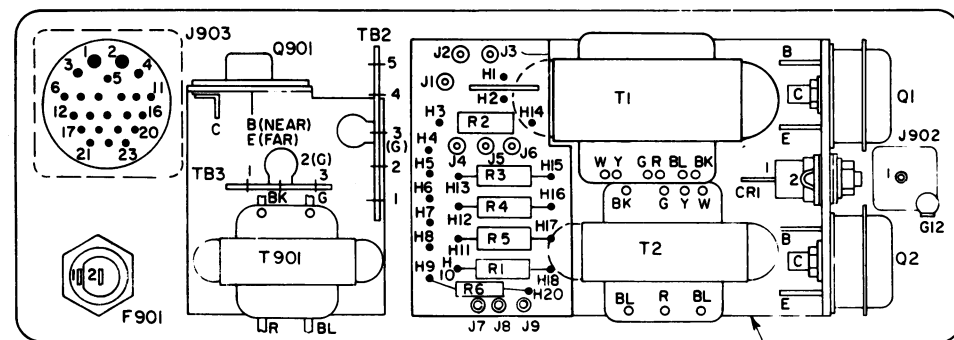
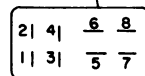
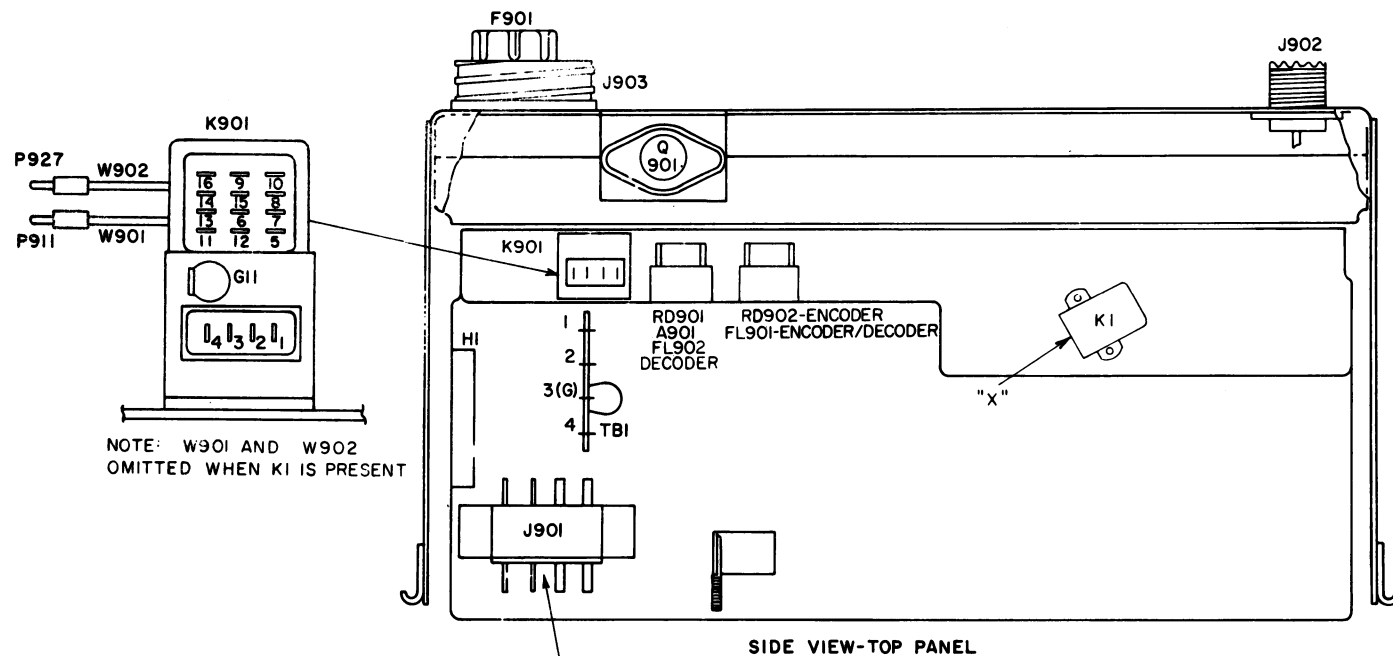
LBI-3708 B
CONTROL UNIT WITH CHANNEL GUARD
MODEL 4EC66A12 (PL-19D402603-G3) (1 Frequency)
MODEL 4EC66A13 (PL-19D402603-G4) (2 Frequency)
MODEL 4EC66A16 (PL-19D402603-G7) (1 Frequency with ACCESSORY JACK OPTION)
MODEL 4EC66A17 (PL-19D402603-G8) (2 Frequency with ACCESSORY JACK OPTION)
TRANSMITTER-RECEIVER TOP PANEL PL-19D402599-G5
AND
ASSOCIATED ASSEMBLIES

SYMBOL	G-E PART NO.	DESCRIPTION
----- INDICATING DEVICES -----		
DS701	19C307037-P4	Lamp, incandescent: 14 v; sim to G-E 1815.
----- JACKS AND RECEPTACLES -----		
J701	7489183-P5	Connector: 9 contacts; sim to Winchester M9S-LRN. (Used in Models 4EC66A16, 17).
----- LOUDSPEAKERS -----		
LS701	5491260-P7	Permanent magnet, 5-inch: 3.2 ohms $\pm 10\%$ voice coil imp, 15 w max operating, 385 cps $\pm 15\%$ resonance, paper dust cap; sim to Jensen Model P5-VAS12761.
----- RESISTORS -----		
R701	19B209256-P2	Resistor/switch: includes Resistor, variable, 5000 ohms $\pm 20\%$, 0.25 w; Switch (S701), rotary, SPST, 15 amps at 10 v; sim to CTS Series 45.
R702	19B209256-P1	Variable, carbon film: 5000 ohms $\pm 20\%$, 0.5 w; sim to CTS Series 45.
----- SWITCHES -----		
S701		(Part of R701).
S702	5491899-P6	Toggle: DPDT, 3 amps at 250 v; sim to Cutler--Hammer 8363K7. (Used in Models 4EC66A13, 17).
S703	5491899-P7	Toggle: SPST, 3 amps at 125 v; sim to Cutler--Hammer 8280K16.
----- TERMINAL BOARDS -----		
TB701	PL-19B205152-G1	Terminal board: 25 contacts.
----- SOCKETS -----		
XDS701	7141855-P15	Lamp: sim to Dialight 95-410-975 (modified).
MECHANICAL PARTS (SEE RC-1340)		
1	19A122065-P1	Bushing: 3/4-14; sim to Pyle-National DB-1191690 (modified).
2	19A122066-P1	Bushing: 1/4-18; sim to Pyle-National DB-44516 (modified).
3	4031457-P1	Support. (Used with microphone).
4	4031458-P1	Spring. (Used with microphone).
5	4032574-P2	Gasket, cover, neoprene: approx 27-3/4 inches.
6	19D402601-P3	Casting. (Used in Model 4EC66A12).
7	19D402601-P4	Casting. (Used in Model 4EC66A13).
8	19D402601-P7	Casting. (Used in Model 4EC66A16).
9	19D402601-P8	Casting. (Used in Model 4EC66A17).
10	19B205162-P1	Diaphragm: approx 2-3/8 inches dia.
11	19A121990-P1	Spacer: 3/4 inch hex. (Used with TB701).
12	5490135-P4	Boot: 15/32-32; sim to APM-Hexseal N-1030-B. (Used with S702 in Models 4EC66A13, 17, S703).
13	NP248842	Nameplate.
14	PL-4039182-G1	Knob. (Used with R701, 702).
15	19A115040-P9	Lens, panel light: red lens; sim to Dialight 81-331. (Used with DS701).
16	NP248843	Nameplate. (Used in Models 4EC66A13, 17).
17	NP248844	Nameplate. (Used in Models 4EC66A12, 16).



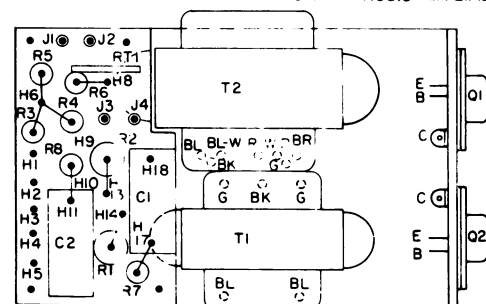
SYMBOL	G-E PART NO	DESCRIPTION
TRANSMITTER-RECEIVER TOP PANEL 19D402599-G5		
----- CAPACITORS -----		
C902	5494481-P7	Ceramic disc: 470 pf $\pm 20\%$, 1000 VDCW; sim to RMC Type JF Discap.
----- JACKS AND RECEPTACLES -----		
J901	7473192-P31	Connector, phen: 8 terminals; sim to HB Jones 261-31-08-000.
J902	2R22-P3	Receptacle, panel, coaxial. Signal Corps SO-239 or sim to Amphenol 83-1R.
J903	19B200010-P2	Receptacle: 23 contacts; sim to Cannon Electric NK-L23-32S.
----- RELAYS -----		
K901*	19C307010-P15	Armature: 12 VDC nominal, 130 ohms $\pm 10\%$ coil res, 4 form C contacts; sim to Allied Control T154-16274. In Models earlier than Rev A:
	19C307010-P5	Armature: 12 VDC nominal, 130 ohms $\pm 10\%$ coil res, 4 form C contacts; sim to Allied Control T154-X-413.
----- PLUGS -----		
P901 and P902	4029840-P2	Contact, electrical: sim to AMP 42827-2.
P905	4029840-P2	Contact, electrical: sim to AMP 42827-2.
P906 thru P908	4029840-P1	Contact, electrical: sim to AMP 41854.
P909	4029840-P2	Contact, electrical: sim to AMP 42827-2.
P910	4029840-P1	Contact, electrical: sim to AMP 41854.
P912 thru P914	4029840-P2	Contact, electrical: sim to AMP 42827-2.
P916 thru P918	4029840-P2	Contact, electrical: sim to AMP 42827-2.
P920	4029840-P2	Contact, electrical: sim to AMP 42827-2.
P922 and P923	4029840-P2	Contact, electrical: sim to AMP 42827-2.
P924 and P925	7147199-P2	Connector: female contact; sim to Winchester Electronics 21804.
P926	4029840-P2	Contact, electrical: sim to AMP 42827-2.
----- TRANSISTORS -----		
Q901*	19A115527-P1 19A116118P3	Silicon, NPN. In Models REV. B and later
----- RESISTORS -----		
R901	19B209022-P115	Wirewound: 1 ohm $\pm 10\%$, 2 w; sim to IRC Type BWH.
R902	3R77-P473K	Composition: 47,000 ohms $\pm 10\%$, 1/2 w.
----- RESONANT REED DECODER -----		
RD901		Reed, detector: coil - 600 ohms $\pm 10\%$, standard 7-pin tube socket mounting.
	19C307140-P719	71.9 Hz
	19C307140-P770	77.0 Hz
	19C307140-P825	82.5 Hz
	19C307140-P885	88.5 Hz
	19C307140-P948	94.8 Hz
	19C307140-P1000	100.0 Hz
	19C307140-P1035	103.5 Hz
	19C307140-P1072	107.2 Hz
	19C307140-P1109	110.9 Hz
	19C307140-P1148	114.8 Hz
	19C307140-P1188	118.8 Hz
	19C307140-P1230	123.0 Hz
	19C307140-P1273	127.3 Hz
	19C307140-P1318	131.8 Hz
	19C307140-P1365	136.5 Hz
	19C307140-P1413	141.3 Hz
	19C307140-P1462	146.2 Hz
	19C307140-P1514	151.4 Hz
	19C307140-P1567	156.7 Hz
	19C307140-P1622	162.2 Hz
	19C307140-P1679	167.9 Hz
	19C307140-P1738	173.8 Hz

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.

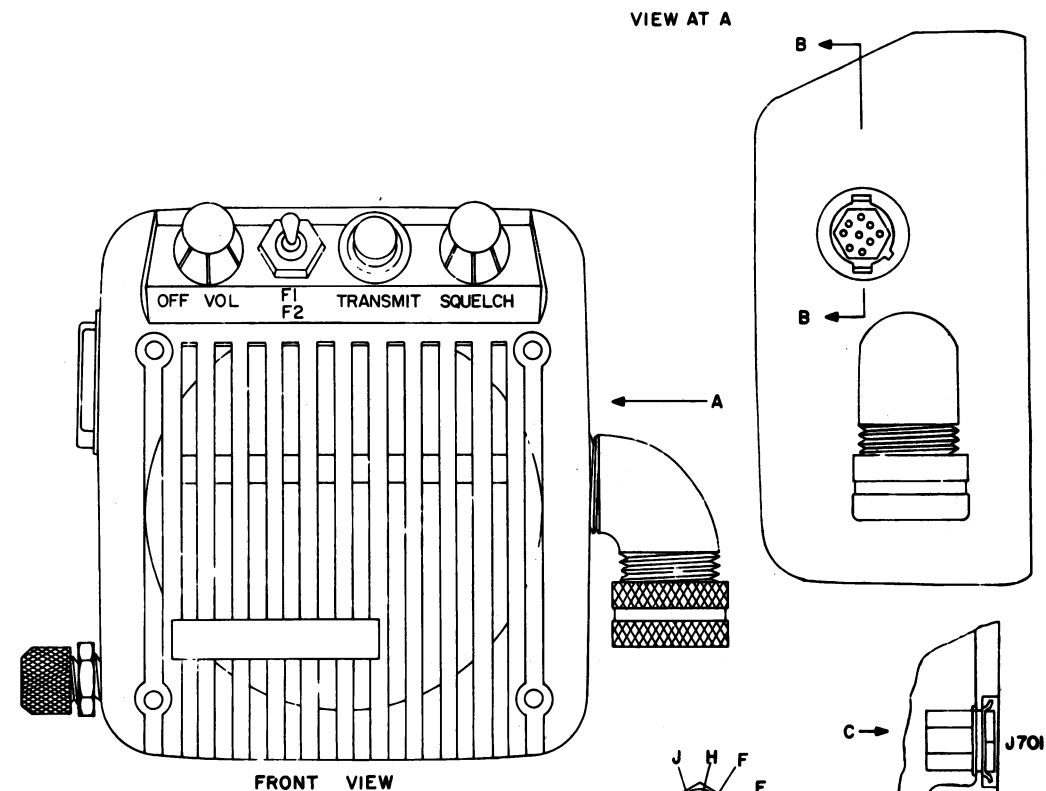
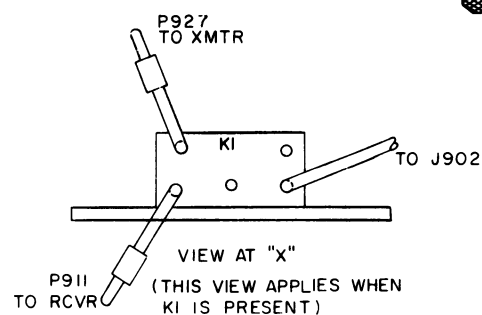


COMPONENT VIEW-TOP COVER PANEL

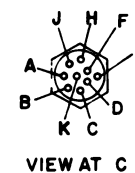
10-WATT AUDIO AMPLIFIER (USED WITH 6/12V POWER SUPPLY)



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

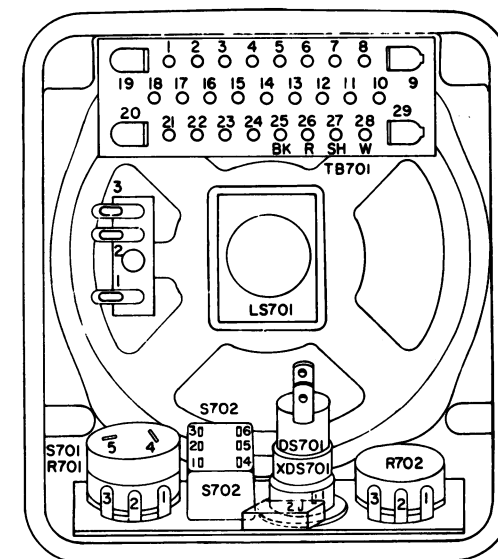


FRONT VIEW



SECTION B-B

- NOTES:
1. S703 USED ONLY IN MODELS 4EC66A12, 13.
 2. S702 USED ONLY IN MODELS 4EC66A11, 13.
 3. J701 USED ONLY IN MODELS 4EC66A14-17.



MONITOR NORMAL (OPTIONAL)

BACK VIEW

EXTENDED LOCAL CONTROL UNIT

SERVICE SHEET

EXTENDED LOCAL CONTROL UNIT
MODELS 4EC66A12, 13, 16 & 17
AND TRANSMITTER-RECEIVER TOP PANEL
19D402599-G5 (Used with 24/36 Volt
Power Supplies)

(RC-1376A, Sheet 1)

CONTROL UNIT

TRANSMITTER-RECEIVER TOP PANEL



SYMBOL	G-E PART NO	DESCRIPTION
	4037158-P7	Channel, rubber: sim to Atlantic India Rubber X861. (Located above J901).
	4032574-P2	Gasket, cover, neoprene.
	19A121981-G1	Chassis. (Mounts T901, T82, 3).
	7763541-P5	Clip, cable. (Located by J903).
	19A121178-P1	Support. (Used with J901).
	5491585-P9	Clip, relay: sim to Allied Control 30040-2. (Used with XK901).
	7763541-P4	Clip, cable. (Located by XK901).
	19B204532-G1	Chassis.
	19A122071-P2	Grommet. (Located by K901).
		----- ASSOCIATED ASSEMBLIES -----
	19A122010-G2	Control Mounting Kit.
		132-174 MHz ANTENNA MODEL 4EY12A13 (5490869-P13) (HIGH BAND)
		----- MISCELLANEOUS -----
		Antenna: includes 20-inch stainless steel whip, whip socket, antenna cable, cable adapter, PL-259 plug; sim to Antenna Specialists ASP201GE or Danbury-Knudsen Type PA-25.
	5490969-P4	Whip: 20-inch stainless steel.
	5490969-P5	Socket, whip.
	5490969-P6	Whip and whip socket: 20-inch stainless steel whip, whip socket.
		Cable, antenna: approx 15 feet. Type RG-58/U. (Used with G-E Dwg 2R22-P1 and G-E Dwg 7105381-P1).
	7105381-P1	Adapter, cable: 1 x 7/16 inches dia. Type UG-175/U. (Used with G-E Dwg 2R22-P1 and Type RG-58/U cable).
	2R22-P1	Plug, coaxial: Signal Corps PL-259; sim to Amphenol 83-1SP. (Used with G-E Dwg 7105381-P1 and Type RG-58/U cable).
		25-54 MHz ANTENNAS MODEL 5 4EY18A10-15 (LOW BAND)
		----- MISCELLANEOUS -----
	19C303707-P1	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.
	19C303707-P2	Model 4EY18A11, 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.
	19C303707-P3	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.
	19C303707-P4	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.
	19C303707-P5	Model 4EY18A14, 42-48 MHz Antenna. Includes 38-inch stainless steel rod, tuning screw, rubber O-ring weather seal; sim to Antenna Specialists ASP-D431-GE.
	19C303707-P6	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.
	2R22-P2	Adapter, UHF: right angle. Signal Corps M-359; sim to Amphenol 83-1AP. (Used in Models 4EY18A10-15).

SYMBOL	G-E PART NO	DESCRIPTION
		25-50 MHz ANTENNA (LOW BAND)
		- - - - - MISCELLANEOUS - - - - -
	7491074-P1	Antenna: includes 96-1/2 inch stainless steel rod; sim to Antenna Specialists ASPASBGE.
	7102930-P3	Adapter, antenna: 2-5/16 inches. (Used with G-E Dwg 7491074-P1).
	4033101-G1	Antenna package: includes base, adapter spring, cable and plug.
	7472880-G5	Antenna base. (Used in PL-4033101-G1).
	7476632-G4	Adapter spring. (Used in PL-4033101-G1).
	5492239-P1	Cable, antenna: includes Type RG-58/U cable approx 15 feet, PL-259 plug, terminal; sim to Antenna Specialists 15A43. (Used in 4033101-G1).
	2822-P1	Plug, coaxial: Signal Corps PL-259; sim to Asphenol 83-18P. (Used with G-E Dwg 5492239-P1 in PL-4033101-G1).
	4039101-P1	Coil, loading: 25-40 MHz; sim to Antenna Specialists ASPA87.
	19A121577-G1	Antenna hook kit.
	7134724-P1	Antenna hook. (Used in 19A121577-G1).
		132-174 MHz ANTENNA MODEL 4EY19A10 (HIGH BAND)
		- - - - - MISCELLANEOUS - - - - -
	19C303658-P1	Antenna. Includes 22-inch stainless steel rod, sleeving, spring, cap and O-ring; sim to Antenna Specialists ASP-403-G2.
		25-50, 132-174 MHz ANTENNA MODEL 4EY20A10
		- - - - - MISCELLANEOUS - - - - -
	19C303620-P1	Antenna. Includes 19-1/2 inch stainless steel whip, socket, insulators, adapter, RG-58A/U cable, PL-259 plug, clip; sim to Antenna Specialists ASP-157.
	19C303620-P2	Replacement whip. Includes 19-1/2 inch stainless steel whip, socket, insulators; sim to Antenna Specialists ASPA04-1.
		MICROPHONE MODEL 4EM25C10
1		Cable clamp. Shure Brothers RP21. (Includes parts 3 and 8).
2		Switch. Shure Brothers RP26.
3		Case (back) and mounting button: plastic. Shure Brothers RP21. (Includes parts 1 and 8).
4		Switch button: red plastic. Shure Brothers RP25.
5		Spring. Shure Brothers RP16. (Includes miscellaneous hardware).
6		Shield. Shure Brothers RP23.
7		Cartridge, magnetic controlled.
8		Case (front): plastic. Shure Brothers RP21. (Includes parts 1 and 3).
9		Cable: approx 6 feet.
		MICROPHONE MODEL 4EM33B10 (19B209199-P2)
		- - - - - MISCELLANEOUS - - - - -
		Switch: moisture proof. 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 RP31.
		Shield. Shure Brothers RP36.

SYMBOL	G-E PART NO	DESCRIPTION
		MICROPHONE MODEL 4EM33C10 (19B209308-P1) ----- MISCELLANEOUS ----- 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. Shield. Shure Brothers RP36. HANDSET MODEL 4EM34A10 (19B209198-P1) ----- MISCELLANEOUS ----- Cartridge, transmitter: controlled magnetic. Shure Brothers RP13. Cartridge, receiver: 3 watt max power. Shure Brothers RP41. Switch. Shure Brothers RP81. Cable and plug: approx 5 feet. Shure Brothers RP47. Handle, transmitter cap, receiver cap: phen, weather proof. Shure Brothers RP49. POWER CONTROL CABLE 19C303828-G2 ----- MISCELLANEOUS ----- 19A115067-P1 Cable, 2-conductor: approx 10 feet; sim to Belden 31713. 19B200010-P3 Plug: 23 contacts; sim to Cannon Electric NK-L23-23C-3/4. POWER CONTROL CABLE 19C303828-G3 ----- MISCELLANEOUS ----- 19A115067-P3 Cable, 2-conductor: approx 23 feet; sim to Belden 7721. 19B200010-P3 Plug: 23 contacts; sim to Cannon Electric NK-L23-23C-3/4. DC TRICKLE CHARGE CABLE 19B204993-G2 ----- MISCELLANEOUS ----- 7160478-P1 Cable: 2-conductors: approx 50 inches; sim to Birnbach 789. 4034405-P5 Plug: 5 sockets; sim to Cannon Electric XLB-5-11C. 19A115513-P1 Connector, cigarette lighter: 12 VDC; sim to Cole-Herassee 1624. POWER CABLE - 12 VOLT 19C303640-G3 ----- MISCELLANEOUS ----- 4034405-P3 Plug: 3 sockets; sim to Cannon Electric XLB-3-11C. 19A115067-P1 Cable, 2-conductor: approx 10 feet; sim to Belden 31713. 7124109-P3 Fuseholder: sim to Bussmann Type HDJ-B (modified). 7484390-P4 Fuse, quick blowing: 8 amps at 250 v; sim to Bussmann ABC-8 or Littelfuse 314008.

SYMBOL	G-E PART NO	DESCRIPTION
		POWER CABLE - 6 VOLT 19C303640-G4 ----- MISCELLANEOUS ----- 4034405-P3 Plug: 3 sockets; sim to Cannon Electric XLB-3-11C. 19A115067-P1 Cable, 2-conductor: approx 10 feet; sim to Belden 31713. 7124109-P3 Pushholder: sim to Bussmann Type HDJ-B (modified). 7484390-P3 Fuse, quick blowing: 15 amps at 250 v; sim to Bussmann ABC-15 or Littelfuse 214015. AC CHARGING CABLE 5492570-G1 ----- MISCELLANEOUS ----- 4034403-P1 Plug: sim to G-E 4304-3. 4034405-P1 Plug: 4 sockets; sim to Cannon Electric XLB-4-11C. 7160478-P1 Cable, 2-conductor: approx 51 inches; sim to Birnbach 789. AC CHARGING CABLE 5492570-G2 ----- MISCELLANEOUS ----- C1 7489159-P16 Capacitor, metallized plastic: 4 μf $\pm$20%, 500 VDCW; sim to Sprague 118P4050284. 4034403-P1 Plug: sim to G-E 4304-3. 7160478-P1 Cable, 2-conductor: approx 87 inches; sim to Birnbach 789. 4034405-P1 Plug: 4 sockets: sim to Cannon Electric XLB-4-11C. POWER SUPPLY EXTENSION CABLE 19B204289-G1 ----- MISCELLANEOUS ----- 7473192-P19 Receptacle: 8 terminals; sim to HB Jones 261-32-08-030. 7473192-P26 Plug: 8 terminals; sim to HB Jones 261-31-08-030. 7162441-P23 Sleeving, electrical: approx 7/16 inch dia.

10 WATT AUDIO AMPLIFIER
PL-19B205432-G1

DESCRIPTION
----- CAPACITORS -----
Polyester: 0.47 μ f $\pm$ 20%, 100 VDCW.
----- PLUGS -----
Contact, electrical: sim to AMP 42827-2.
----- TRANSISTORS -----
Silicon, NPN: sim to Type 2N3441.
----- RESISTORS -----
Metal film: 1000 ohms $\pm$ 10%, 3 w; sim to Corning Glass Type LPI-3.
Wirewound: 1 ohm $\pm$ 10%, 2 w; sim to IBC Type BWH.
Wirewound: 4.3 ohms $\pm$ 5%, 2 w; sim to IBC Type BWH.
Wirewound: 3.3 ohms $\pm$ 10%, 2 w; sim to IBC Type BWH.
Composition: 620 ohms $\pm$ 5%, 1 w.
----- THERMISTORS -----
Disc: 1 ohm.
----- TRANSFORMERS -----
Audio freq: 0.3-3 kHz freq range, Pri: 3.6 ohms $\pm$ 10% imp, 0.2 ohm DC res, Sec: 78 ohms imp, 5.5 ohms $\pm$ 15% DC res.
Audio freq: 0.3-3 kHz freq range, Pri: 120 ohms $\pm$ 10% imp, 5.4 ohms $\pm$ 15% DC res, Sec: 3.5 ohms imp, 0.3 ohm DC res.
MODIFICATION KIT PL-19A122384-G1
----- CAPACITORS -----
Tantalum: 15 μ f $\pm$ 20%, 20 VDCW; sim to Sprague Type 150D.
----- RESISTORS -----
Wirewound: 3.3 ohms $\pm$ 10%, 2 w; sim to IBC Type BWH.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

ORDERING SERVICE PARTS

Each component appearing on the schematic diagram is identified by a sumbol number, to simplify locating it in the parts list. Each component is listed by sumbol number, followed by its description and G-E Part Number.

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

1. GE Part Number for component
2. Description of part
3. Model number of equipment
4. Revision letter stamped on unit

These instructions do not purport to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with installation, operation or maintenance.

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

MAINTENANCE MANUAL

LBI-3498

DF-5024

**MOBILE RADIO DEPARTMENT
GENERAL ELECTRIC COMPANY • LYNCHBURG, VIRGINIA 24502**



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