

Customer_____

G. E. Req. No. _____

Customer Order No. _____

INSTRUCTIONS

FOR

Modification Kit PL-19A121862-G1
PORTA-MOBIL CHANNEL GUARD ENCODER ONLY
OPTION 5541

LBI-3575

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1184



COMMUNICATION PRODUCTS DEPARTMENT
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INSTALLATION INSTRUCTIONS

Modification Kit PL-19A121862-G1

PORTA-MOBIL CHANNEL GUARD ENCODER ONLY
OPTION 5541

Option 5541 provides a Channel Guard Tone-Squelch Transmitter (Model 4EH12A10) for use with General Electric PORTA-MOBIL Control Unit Models 4EC60A10, A12, A14, A15, A16, A18, A19 and A21. Modification Kit PL-19A121862-G1 is required for these control units. Installation Diagram 19C303726 shows the necessary steps for modifying the control units and Service Sheet RC-1107 provides servicing information on the Model 4EH12A10 Channel Guard Encoder.

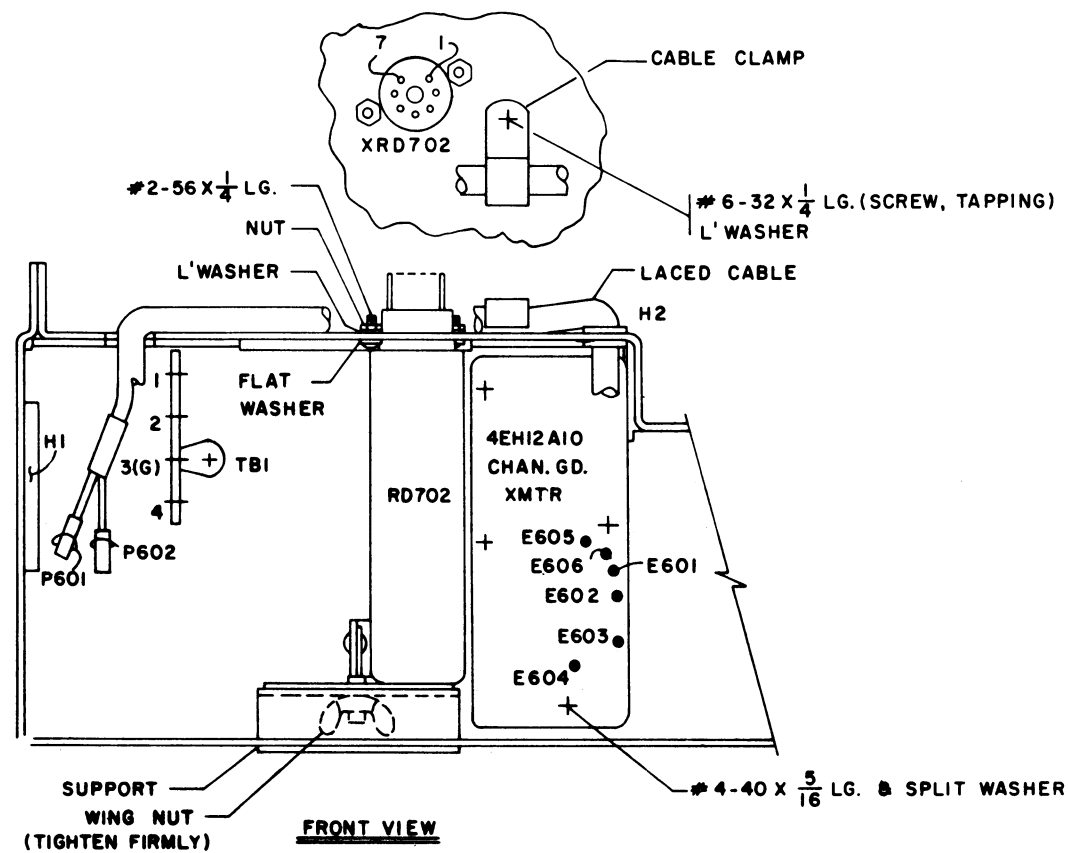
Adjustment

Only one adjustment is required for the Channel Guard Encoder. Monitor the PORTA-MOBIL transmitter with a deviation monitor. With the transmitter keyed, adjust R613 (TONE ADJUST) for 0.75 KC deviation.

Circuit Description

Q601 and Q602 (together with reed encoder RD702) serve as the tone oscillator portion of the tone-squelch transmitter. RD702 is an electromechanical 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.

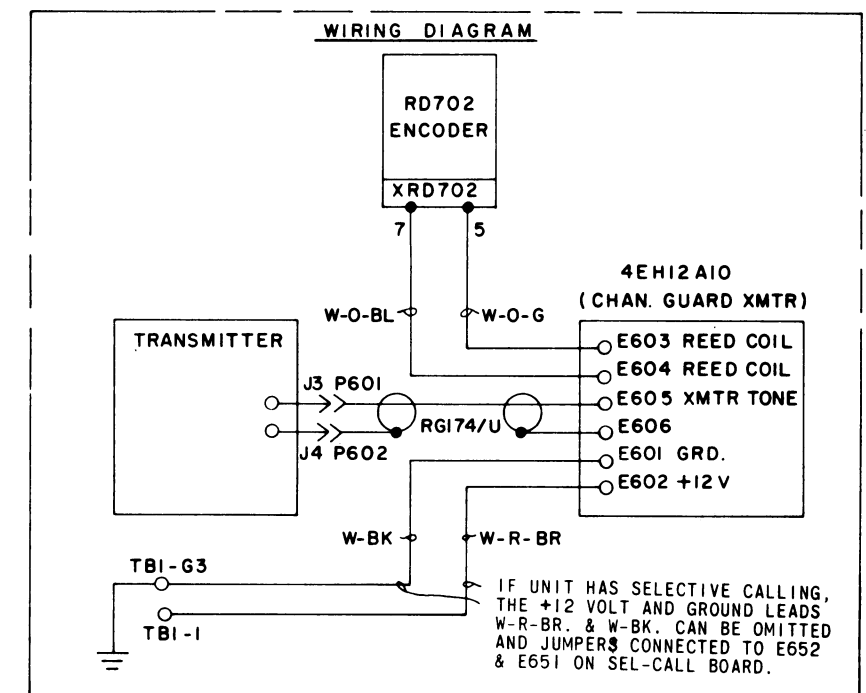
The tone signal is passed through deviation control R613, through an active band-pass filter consisting of Q603 and Q604 to output terminal E605. Selective feedback is incorporated in this filter. The output signal is applied to the PORTA-MOBIL exciter.



INSTRUCTIONS:

THESE INSTRUCTIONS COVER THE INSTALLATION OF MOD. KIT PL19A121862 FOR MODIFYING 4EC60A10, 12, 14, 15, 16, 18, 19 AND 21 CONTROL UNIT FOR CHANNEL GUARD, ENCODER ONLY, LOW AND HIGH TONE.

1. MOUNT SOCKET XRD702 TO CHASSIS WITH #2-56 HARDWARE SUPPLIED. THEN MOUNT COMPONENT BOARD 4EH12A10 AS SHOWN WITH #4-40 HARDWARE PROVIDED.
2. FEED CABLE THRU H2 AND SOLDER WIRES TO TERMINAL LUGS ON 4EH12A10 BOARD. MAKE CONNECTIONS TO XRD702 SOCKET. PLACE CABLE IN SLOT IN CHASSIS AND MAKE CONNECTIONS TO TB-1 PER DIAGRAM. FEED P601 & P602 THRU H1 AND CONNECT TO TRANSMITTER BOARD (J3 & J4). REPLACE CABLE CLAMP ON UNIT WITH LARGER ONE SUPPLIED USING HARDWARE FOR SMALLER CLAMP.
3. PLUG ENCODER IN SOCKET AND RETAIN IN POSITION WITH BRACKET AND WING NUT.

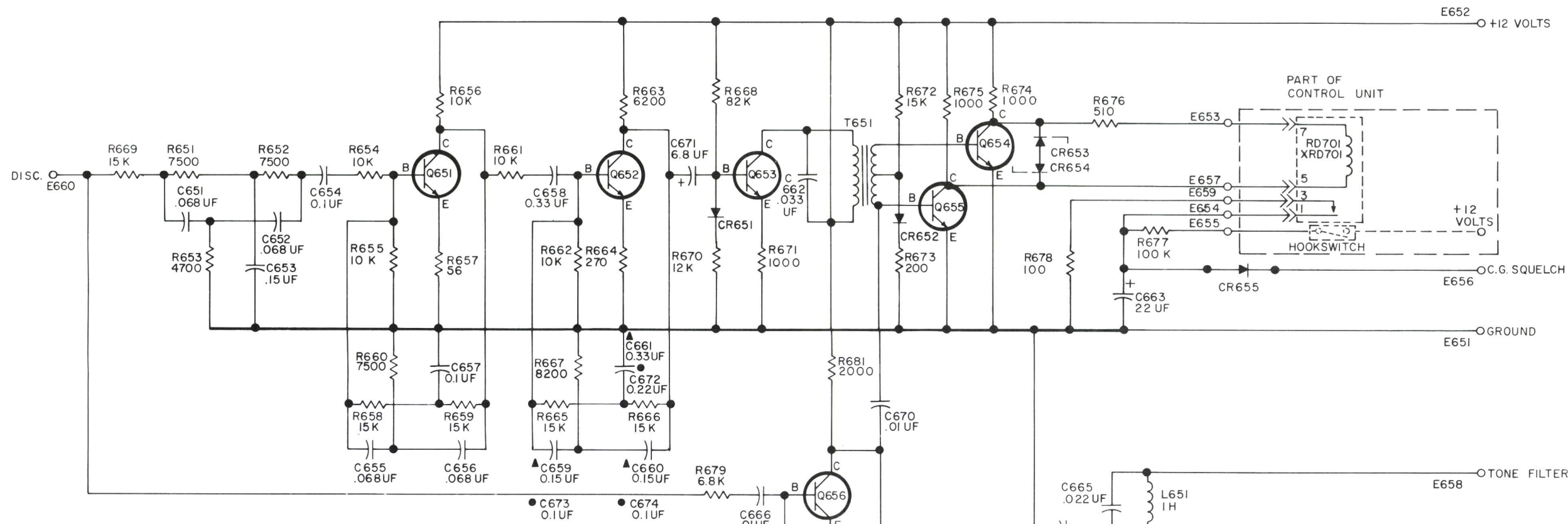


Installation Instructions

MODIFICATION KIT PL-19A121862-G1
PORTA-MOBIL CHANNEL GUARD
ENCODER ONLY, OPTION 5541

(19C303726, Rev. 0)

MODEL 4EJ11A10-A11 TONE SQUELCH RECEIVERS



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 PICO FARADS (EQUAL TO MICROMICROFARADS) UNLESS FOLLOWED BY UF= MICROFARADS. INDUCTANCE VALUES IN MICROHENRYS UNLESS FOLLOWED BY MH= MILLIHENRYS OR H=HENRYS.

(19D402325, REV. 1)

(19C303715, REV. 0)
(19B204574, Sh. 1, REV. 1)
(19B204574, Sh. 2, REV. 1)

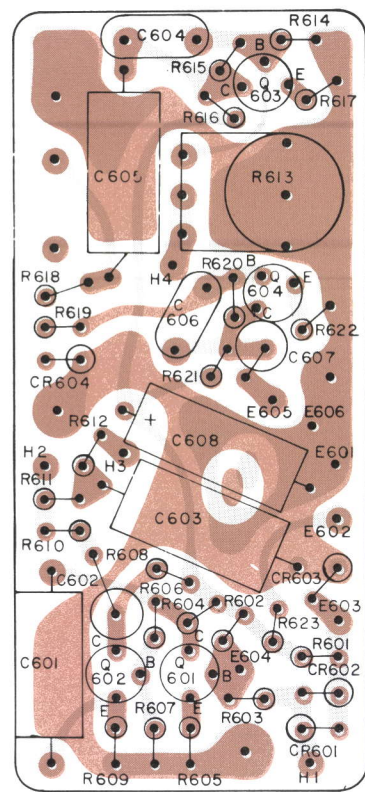
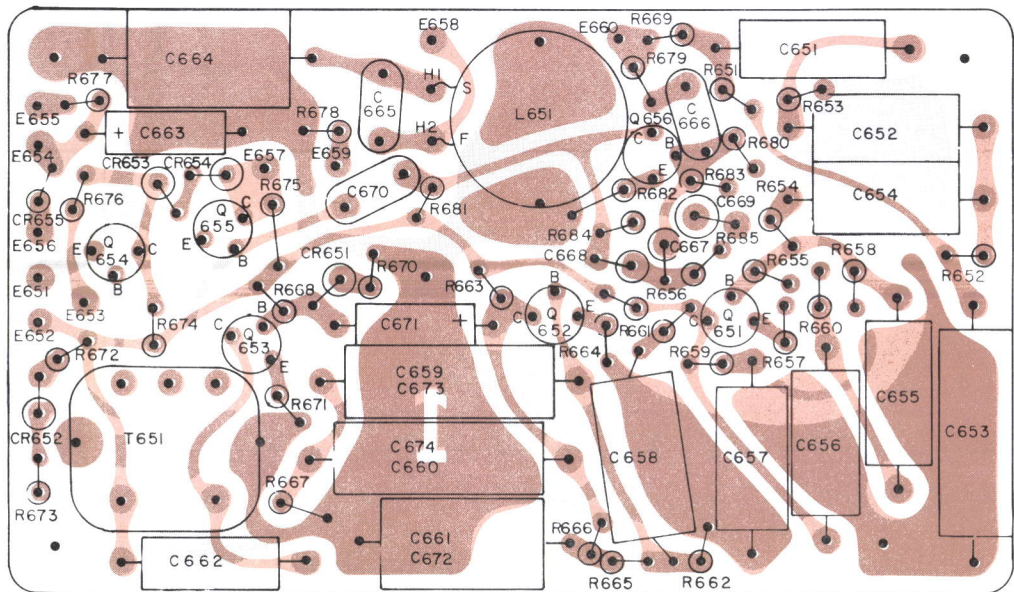
VOLTAGE READING

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

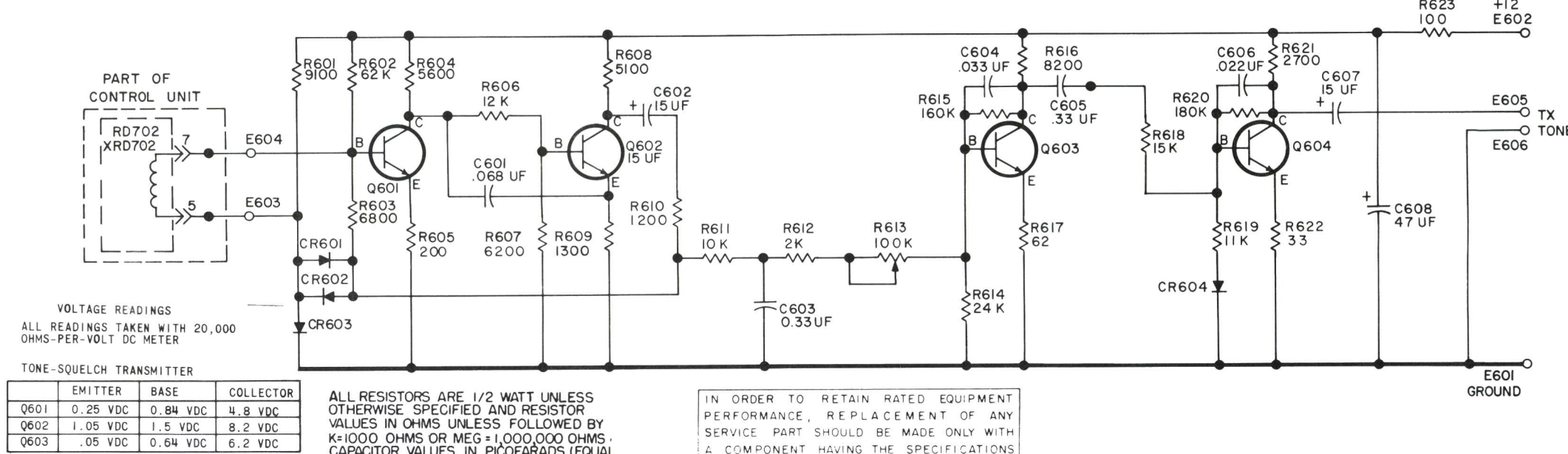
ALL READINGS TAKEN WITH 20,000 OHMS-PER-VOLT DC METER

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



FROM	TO	WIRE	REMARKS
H1	H2	SN22 G	
H3	H4	SN22 G	

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



PARTS LIST			SYMBOL	G-E PART NO	DESCRIPTION
CHANNEL GUARD TONE RECEIVER MODEL 4EJ11A10 - PL-19C303484-G1 - 71.9 to 156.7 MC MODEL 4EJ11A11 - PL-19C303484-G2 - 156.7 to 203.5 MC			Q651 thru Q656	19A115123-P1	----- TRANSISTORS ----- Silicon, NPN; sim to Type 2N2712.
----- CAPACITORS -----			R651 and R652	3R152-P752J	Fixed composition: 7500 ohms ±5%, 1/4 w.
C651 and C652	19C307099-P22	Mylar® dielectric: .068 µf ±10%, 200 VDCW; sim to Sprague 192P68392.	R653	3R152-P472J	Fixed composition: 4700 ohms ±5%, 1/4 w.
C653	19C307099-P28	Mylar® dielectric: 0.15 µf ±10%, 200 VDCW; sim to Sprague 192P15492.	R654 thru R656	3R152-P103J	Fixed composition: 10,000 ohms ±5%, 1/4 w.
C654	19C307099-P24	Mylar® dielectric: 0.1 µf ±10%, 200 VDCW; sim to Sprague 192P10492.	R657	3R152-P560J	Fixed composition: 56 ohms ±5%, 1/4 w.
C655 and C656	19C307099-P22	Mylar® dielectric: .068 µf ±10%, 200 VDCW; sim to Sprague 192P68392.	R658 and R659	3R152-P153J	Fixed composition: 15,000 ohms ±5%, 1/4 w.
C657	19C307099-P24	Mylar® dielectric: 0.1 µf ±10%, 200 VDCW; sim to Sprague 192P10492.	R660	3R152-P752J	Fixed composition: 7500 ohms ±5%, 1/4 w.
C658	19B209134-P13	Metallized paper: 0.33 µf ±20%, 200 VDCW; sim to Hopkins P332D.	R661 and R662	3R152-P103J	Fixed composition: 10,000 ohms ±5%, 1/4 w.
C659 and C660	19C307099-P28	Mylar® dielectric: 0.15 µf ±10%, 200 VDCW; sim to Sprague 192P15492. (Used in Model 4EJ11A10 only).	R663	3R152-P622J	Fixed composition: 6200 ohms ±5%, 1/4 w.
C661	19B209134-P13	Metallized paper: 0.33 µf ±20%, 200 VDCW; sim to Hopkins P332D. (Used in Model 4EJ11A10 only).	R664	3R152-P271J	Fixed composition: 270 ohms ±5%, 1/4 w.
C662	19C307099-P18	Mylar® dielectric: .033 µf ±10%, 200 VDCW; sim to Sprague 192P33392.	R665 and R666	3R152-P153J	Fixed composition: 15,000 ohms ±5%, 1/4 w.
C663	5496267-P10	Tantalum, dry solid: 22 µf ±20%, 15 VDCW; sim to Sprague 150D226X0015B2.	R667	3R152-P822J	Fixed composition: 8200 ohms ±5%, 1/4 w.
C664	19B209134-P15	Metallized paper: 0.75 µf ±20%, 50 VDCW; sim to Hopkins P75P5D.	R668	3R152-P823J	Fixed composition: 82,000 ohms ±5%, 1/4 w.
C665	5491459-P7	Mylar® dielectric: .022 µf ±10%, 50 VDCW; sim to Good-All 601PE.	R669	3R152-P153J	Fixed composition: 15,000 ohms ±5%, 1/4 w.
C666	5491459-P6	Mylar® dielectric: .01 µf ±10%, 50 VDCW; sim to Good-All Type 601PE.	R670	3R152-P123J	Fixed composition: 12,000 ohms ±5%, 1/4 w.
C667 and C668	19C307099-P30	Mylar® dielectric: .0015 µf ±10%, 200 VDCW; sim to Sprague 192P15292.	R671	3R152-P102J	Fixed composition: 1000 ohms ±5%, 1/4 w.
C669	19C307099-P32	Mylar® dielectric: .0033 µf ±10%, 200 VDCW; sim to Sprague 192P33292.	R672	3R152-P153J	Fixed composition: 15,000 ohms ±5%, 1/4 w.
C670	5491459-P6	Mylar® dielectric: .01 µf ±10%, 50 VDCW; sim to Good-All Type 601PE.	R673	3R152-P201J	Fixed composition: 200 ohms ±5%, 1/4 w.
C671	5496267-P18	Tantalum, dry solid: 6.8 µf ±20%, 35 VDCW; sim to Sprague 150D685X0035B2.	R674 and R675	3R152-P102J	Fixed composition: 1000 ohms ±5%, 1/4 w.
C672	19B209134-P7	Metallized paper: 0.22 µf ±20%, 200 VDCW; sim to Hopkins P222D. (Used in Model 4EJ11A11 only).	R676	3R152-P511J	Fixed composition: 510 ohms ±5%, 1/4 w.
C673 and C674	19C307099-P24	Mylar® dielectric: 0.1 µf ±10%, 200 VDCW; sim to Sprague 192P10492. (Used in Model 4EJ11A11 only).	R677	3R152-P104J	Fixed composition: 0.1 megohm ±5%, 1/4 w.
----- RECTIFIERS -----			R678	3R152-P101J	Fixed composition: 100 ohms ±5%, 1/4 w.
CR651 and CR652	7777146-P3	Germanium; sim to Type 1N90.	R679	3R152-P682J	Fixed composition: 6800 ohms ±5%, 1/4 w.
CR653 and CR654	4036887-P6	Silicon, Zener®.	R680	3R152-P512J	Fixed composition: 5100 ohms ±5%, 1/4 w.
CR655	7777146-P3	Germanium; sim to Type 1N90.	R681	3R152-P202J	Fixed composition: 2000 ohms ±5%, 1/4 w.
----- MISCELLANEOUS -----			R682	3R152-P200J	Fixed composition: 20 ohms ±5%, 1/4 w.
E651 thru E660	4038104-P1	Lug, terminal: brass.	R683 and R684	3R152-P153J	Fixed composition: 15,000 ohms ±5%, 1/4 w.
----- INDUCTORS -----			R685	3R152-P682J	Fixed composition: 6800 ohms ±5%, 1/4 w.
L651	PL-19B204500-G1 5495352-P3	Coil Assembly. Includes: Tuning slug.	T651	19C307118-P1	----- TRANSFORMERS ----- Audio freq: Pri: 25,000 ohms ±10% imp, Sec: 8000 ohms imp.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.

PARTS LIST			SYMBOL	G-E PART NO	DESCRIPTION
CHANNEL GUARD TONE TRANSMITTER MODEL 4EH12A10 - PL-19C303485-G1 - 71.9 to 203.5 MC			C601	19C307099-P22	----- CAPACITORS ----- Mylar® 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	Mylar® 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	Mylar® 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 150D476X0020R2.	CR601 thru CR604	4036936-P1	----- RECTIFIERS ----- Silicon.
----- MISCELLANEOUS -----			E601 thru E606	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-P623J	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-P8	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.