Customer_____

G. E. Req. No._____

Customer Order No._____

communications

MAINTENANCE MANUAL

TRANSISTORIZED PROGRESS LINE

25-50 Megacycle

100-Watt

12-Volt Mobile Combinations

LBI-3697

COMMUNICATION PRODUCTS DEPARTMENT

GENERAL ELECTRIC

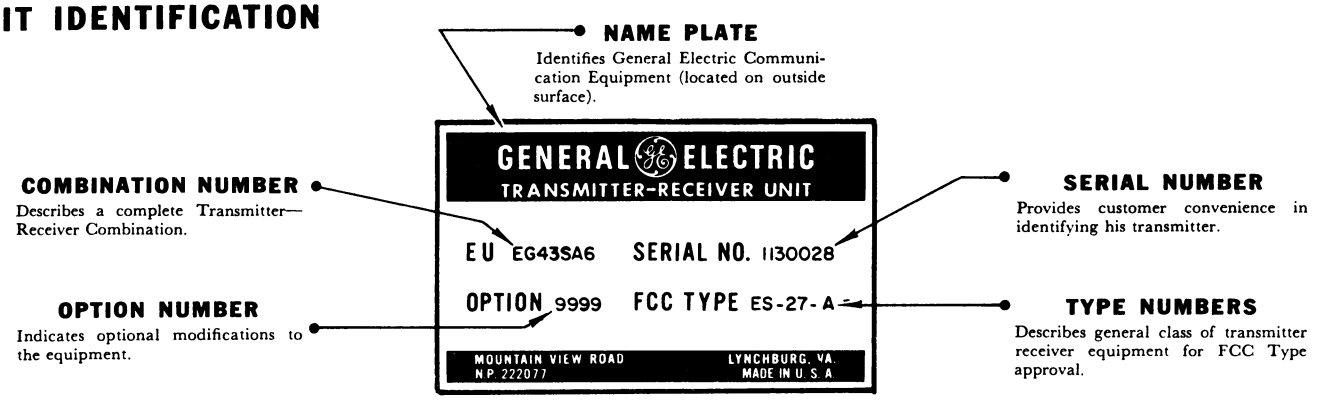
LYNCHBURG, VIRGINIA

PRINTED IN U.S.A.

INTRODUCTION

The following information has been included to assist the serviceman in the use of this book.

UNIT IDENTIFICATION



Model Number—Describes unit in detail for proper identification (e. g. Transmitter Board Model 4EF20A10)

WARNING

NO ONE SHOULD BE PERMITTED TO HANDLE ANY PORTION OF THE EQUIPMENT THAT IS SUPPLIED WITH HIGH VOLTAGE; OR TO CONNECT ANY EXTERNAL APPARATUS TO THE UNITS WHILE THE UNITS ARE SUPPLIED WITH POWER. **KEEP AWAY FROM LIVE CIRCUITS.**

PRODUCTION CHANGES

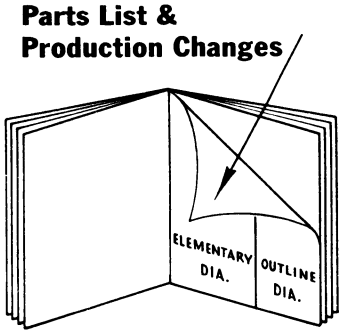
Revision Letters—Changes in the equipment to improve performance or simplify circuits are identified by a revision letter stamped after the model number on the Unit Nameplate or Stamping. Any given revision includes all previous revisions.

Production Changes—List all changes up to and including the latest revision of the unit. They are found in the service sheets and should be used for checking and/or correcting instructions to correspond with the equipment being serviced.

SERVICE PARTS

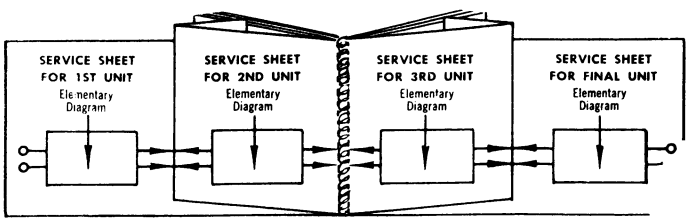
1. ***Parts List*** — Gives symbol number, description and part numbers of the principal service parts in each unit.
2. ***Symbol Numbers*** — Each component appearing on the Elementary Diagram and Parts List is identified by the Symbol Number for easier identification.
3. ***Where to Order*** — Service Parts may be obtained from Authorized G.E. Service Stations or through any G.E. Communication Equipment District Sales Office (see list at end of book).
4. ***Ordering*** — When ordering a part, the following information should be given:
   1. Symbol Number
   2. Description
   3. Part Number
   4. Model Number of Unit
   5. Revision letter stamped on Unit.

SERVICE SHEETS



Each transmitter or receiver consists of several units, each identified by a Model number. Each unit has its own Elementary Diagram, Outline Diagram, Parts List and Production Changes, printed on a Service Sheet as shown on the left.

These Service Sheets can be unfolded to form a complete transmitter or receiver diagram as shown on the right.



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CONTROL UNITS
- Front Mount RC-987
- Trunk Mount RC-707

2-WATT SPEAKER/AMPLIFIER MODEL 4EZ10A10 . . . . . RC-670

SOLENOID ASSEMBLY MODEL 4KC12B10 . . . . . RC-540

MICROPHONE AND HANDSET RC-541

ANTENNA MODEL 4EY5A5 . . . . . RC-527

EQUIPMENT INDEX

Equipment	Model or PL Number
FM Transmitter (25-50 MC)	
a) 25-33 MC Transmitter	
Oscillator (two required for two-frequency transmitter)	4EG11B10
Audio/Exciter Assembly	4EG14A10
Power Amplifier Assembly	4EF19A10
b) 33-42 MC Transmitter	
Oscillator (two required for two-frequency transmitter)	4EG11B10
Audio/Exciter Assembly	4EG14A10
Power Amplifier Assembly	4EF19A11
c) 42-50 MC Transmitter	
Oscillator (two required for two-frequency transmitter)	4EG11B10
Auxio/Exciter Assembly	4EG14A11
Power Amplifier Assembly	4EF19A12
FM Receiver (25-50 MC)	
Oscillator	
Single-frequency receiver	4EG12A12
Two-frequency receiver	4EG12A13
RF Hi-IF Assembly (42-50 MC)	4EF16A10
Tuning Range Modification Kit (25-33 MC)	PL-4032668-G1
Tuning Range Modification Kit (33-42 MC)	PL-4032668-G2
1st 6-Coil Lo-IF	
Wide Band receiver	4EL10B10
Narrow Band receiver	4EL10A10
2nd 6-Coil Lo-IF	
Wide Band Receiver	4EL10B11
Narrow Band receiver	4EL10A11
Audio Assembly	4EA10A10
Power Supply	4EP15C11
Speaker/Amplifier 2-Watt	4EZ10A10
Speaker/Amplifier 10-Watt	4EZ11A10
Control Unit	
Front or Trunk Mount	4EC37A10
Rear Mount	4EC45A10
Channel Selector Switch for Front or Trunk Mount	
Control Unit (required for 2-Freq. operation)	PL-4033574-G1
Front Section Assembly Components	
Housing	PL-4031387-G1
Frame	PL-5491719-G1
Insulator-Shield	PL-4031362-G1
Insulator-Diagram	PL-5491425-G4
Rear Section Assembly Components	
Frame	PL-4031382-G1
Top Cover	PL-4031384-G1
Bottom Cover	PL-4031383-G1
Front Panel	PL-5493770-G1
Transistorized Speaker-Amplifier	
2-Watt	4EZ10A10
10-Watt	4EZ11A10
Solenoid Assembly & Circuit Breaker	4KC12B10
Microphone	
Military	4EM18A10,B10,C10
Handset	4EM19A10
25-50 MC Antenna and Cable	4EY5A5
Cables	
Battery Cables	PL-7147499-G4
Power Cables	
9-Foot for Front-Mount Combinations	PL-7147299-G16
23-Foot for Trunk-Mount and Rear-Mount Combinations	PL-7147299-G17
Positive-Ground Adapter	PL-7147299-G18
Power Control Cable	PL-4031386-G1
RF Extension Cables for Trunk-Mount	
Transmitter Cable	PL-5491689-P6
Receiver Cable	PL-5491689-P5
Extension Cable for Rear Mount	PL-5493939-G1
Ignition Switch Wire (fused)	PL-7142873-G4
Mounting Hardware & Brackets	
Front or Trunk Mount	
Basic Mounting Hardware Kit	PL-4031483-G1
2-Unit Mounting Hardware Kit	PL-4031876-G1
Rear Mount	
Basic Mounting Hardware Kit	PL-4035636-G1
Control Unit Mounting Hardware Kit	PL-4036430-G1
Rear Mount Bracket	PL-5493954-G1
Tools	
Alignment Tools	
Hex Slug Type	A-4038831-P2
Slotted Screw Type	PL-4033530-G2
Antenna Tool (Hex Wrench)	PL-7139389-G2
Disassembly Tool (Hex Wrench)	A-7150729-P4
Channel Guard Option 4831 & 4833	
Channel Guard Transmitter-Receiver	4NS11B11

SPECIFICATIONS *

GENERAL

DIMENSIONS	WIDTH		HEIGHT		DEPTH
Front-Mount	8-5/8"	x	4"	x	15-1/4"
Front Unit	8-5/8"	x	4"	x	6-1/2"
Rear Unit	8-5/8"	x	4"	x	9-1/4"

WEIGHT	POUNDS
Front-Mount	21
Front Unit	8
Rear Unit	13

BATTERY DRAIN	
Transmitter	13.4 volts DC 25 amps
Receiver (with transmitter filaments on)	13.8 volts DC 1.6 amps
Battery Saving Standby Unsquelched Squelched	13.8 volts DC 540 ma 40 ma
BATTERY VOLTAGE	13.8 volts DC ±10% (will operate over a range of 20% EIA) 12-volt DC system, positive or negative ground
DUTY CYCLE	Transmit: 20% (one minute on, four minutes off)
AMBIENT TEMPERATURE RANGE	-30°C to +60°C

TRANSMITTER

FCC Type Numbers	ET-39-A (Narrow Band) ET-39-B (Wide Band)
Frequency Range	25-50 MC
Power Output	100 watts
Crystal Mutiplication	12 (25-33 MC) 16 (33-50 MC)
Frequency Stability	±.0005%
Modulation	Wide Band: ±15 KC (max) deviation for 100% Narrow Band: ±5 KC (max) deviation for 100%
Audio Frequency Characteristics	Response within +1 to -3 db of a true 6 db per octave pre-emphasis characteristic from 300-3000 cps reference to 1000 cps level.
Distortion	Less than 10%
Spurious and Harmonic Radiation	At least 70 db below rated power output at any frequency.
Module Complement	Oscillator Model 4EG11B10* (Two required for Two-Frequency operation.) Audio/Exciter Model 4EG14A10 (25-42 MC Combinations) Model 4EG14A11 (42-50 MC Combinations) Power Amplifier Model 4EF19A10 (25-33 MC Combinations) Model 4EF19A11 (33-42 MC Combinations) Model 4EF19A12 (42-50 MC Combinations)

* For Channel Guard applications, Oscillator Model 4EG11C10 is required.

RECEIVER

Frequency range	25-50 MC
Undistorted audio output	2 watts (less than 10% distortion with speaker Model 4EZ10A10)
Frequency stability	±0.0005%
Modulation acceptance	±6 KC (Narrow Band) ±15 KC (Wide Band)
Type numbers	ER-32-A Narrow Band ER-32-H ER-32-B Wide Band ER-32-J
Sensitivity	0.35 microvolts (NB) .25 microvolts (NB) 0.4 microvolts (WB) .30 microvolts (WB)
Selectivity EIA	Adjacent channel 80 db dcwn (NB) Adjacent channel 80 db down (WB)
Squelch sensitivity	0.2 microvolts 0 12 microvolts
Spurious response	90 db down 85 db down
Module Complement	
RF Amplifier	Model 4EF16A10 (25-50 MC)* Model 4EF16B10 (25-50 MC)*
Oscillator	Model 4EG12A12 (one-freq.) Model 4EG12A13 (two-freq.)
Low IF	Model 4EL10A10 (NB) Model 4EL10B10 (WB)
2nd Low IF	Model 4EL10A11 (NB) Model 4EL10B11 (WB)
Audio Assembly	Model 4EA10A10, B10

POWER SUPPLIES

Type Number	EP-15-C	
Output	Voltage	Current
Bias	-24 volts	60 ma
Relay	-24 volts	80 ma
Low B-Plus		
High Band	300 volts	140 ma
Low Band	300 volts	50 ma
High B-Plus		
High Band	680 volts	240 ma
Low Band	650 volts	300 ma
Transistors	4	
Rectifiers	10	
Battery Drain		
Transmit	13.4 volts	25 amps
Receiver (with transmitter Fil. on)	13.8 volts	2.9 amps
Battery Saving (not squelched)	13.8 volts	540 ma
Battery Saving (squelched)	13.8 volts	40 ma
Battery Voltage	13.4 volts ±10% (will operate ±20% per EIA) 12 volts system-positive or negative ground	
Duty cycle	Transmit: 20% (one minute transmit, four minutes off)	
Ambient Temperature Range:	-30°C to +60°C	
Metering	J504 - reading taken on a 0-3 volt, 20,000 ohm-per-volt meter multiplied by 300 - actual voltage at High B+.	

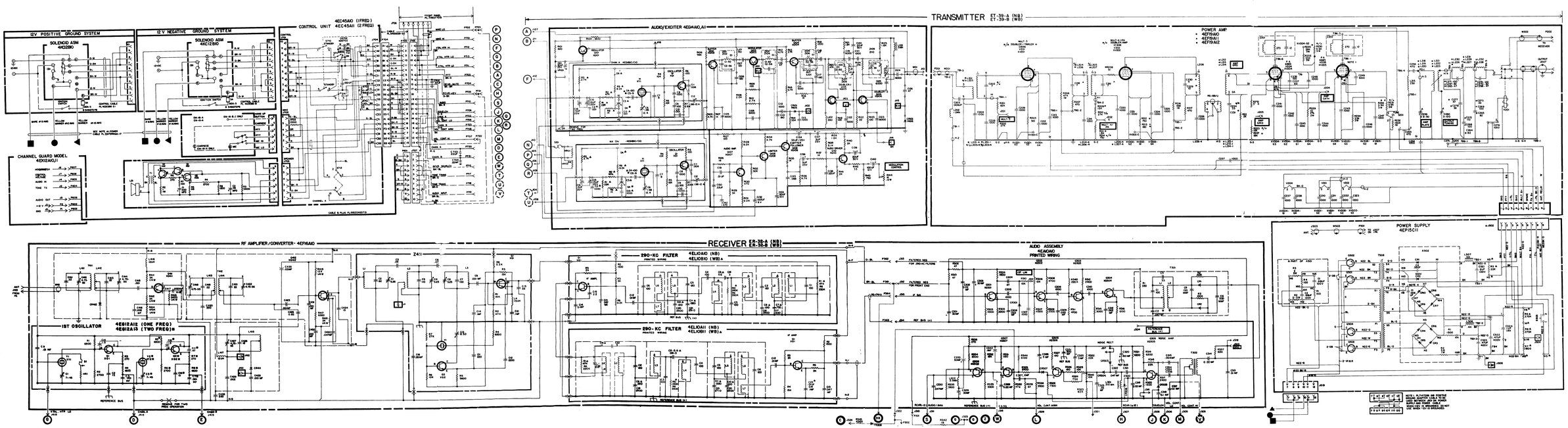
* Tuning Range Modification Kit PL-4032668-G1 for 25-33-MC. Tuning Range Modification Kit PL-4032668-G2 for 33-42 MC.

System Wiring Diagram

FRONT OR SPLIT MOUNT
TRANSISTORIZED PROGRESS LINE
25-50 MC, 100-WATT MOBILE COMBINATIONS

(RC-931B)

(EE-5499063, Sh 1, Rev. 3)
(EE-5499063, Sh. 3, Rev. 0)
(19D402133, Rev. 1)



System Wiring Diagram

TRUNK MOUNT
TRANSISTORIZED PROGRESS LINE
25-50 MC, 100-WATT MOBILE COMBINATIONS

(RC-932B)

(EE-5499063, Sh. 1, Rev. 3)
(ES-5499063, Sh. 2, Rev. 0)
(CD-5497405, Rev. 3)
(19D402133, Rev. 13)

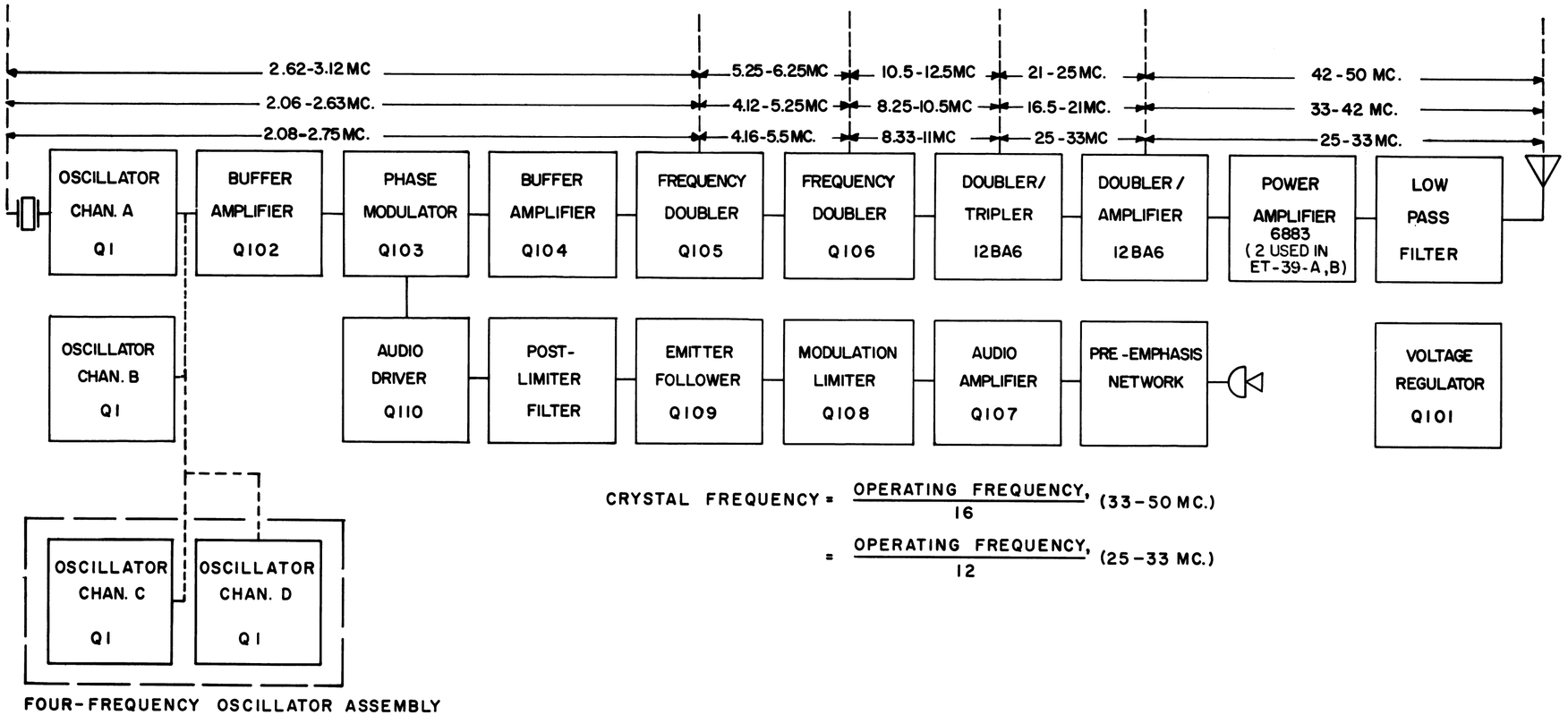
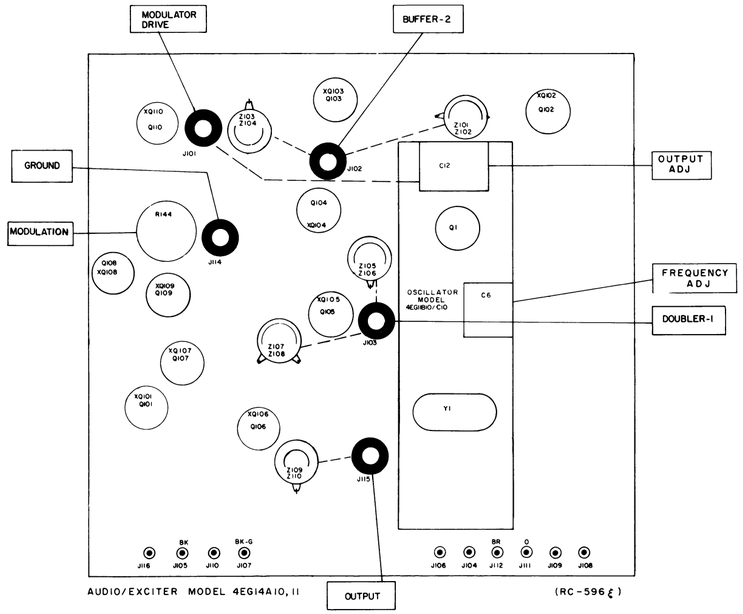
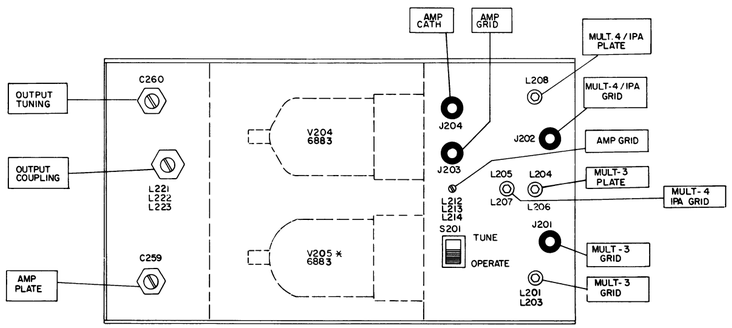


Fig. 1 - Block Diagram

TRANSMITTER TYPES
ET-38-A, B AND ET-39-A, B

(RC-608E)
****





* USED IN 4EF19A10,11,12 ONLY.

Fig. 2 - Alignment Procedure

25-50 MC TRANSMITTER TYPES ET-38-A, B AND ET-39-A, B

(RC-596E)

FREQUENCY ADJUSTMENT

With no modulation, key the transmitter and adjust C6 (Freq. Adj.) located on the Audio/Exciter Assembly, for proper oscillator frequency, observed on a frequency meter. Oscillator frequency = output frequency ÷ 12 (for 25 to 33 Mc operation). Oscillator frequency = output frequency ÷ 16 (for 33 to 50 Mc operation).

INITIAL ADJUSTMENT

1. Connect a 50-ohm load to the ANT jack (J503) on the back of the Power Supply heat sink.
2. Rotate OUTPUT COUPLING L221/L222/L223 fully clockwise.
3. Place the TUNE-OPERATE switch in the TUNE position.
4. Use a 20,000 ohms-per-volt meter with a 0-3 volt scale for metering.

POWER AMPLIFIER

STEP NO.	METERING JACKS +	METERING JACKS -	TUNING CONTROL	METER READING	PROCEDURE
1.	J505 (black)	AMP GRID (J203)	L212/L213/L214	Maximum	While keying the transmitter, tune L212 for maximum meter reading. Then peak L208 and repeak L212.
2.	J204	J505	C259	Minimum	While keying the transmitter, tune C259 for sharp dip in meter reading. Adjust carefully for lowest reading.
3.					Place the TUNE-OPERATE switch (S201) in the OPERATE position.
4.	J505	AMP GRID (J203)	AMP GRID L212/L213/L214	Maximum	While keying the transmitter, turn slug in AMP GRID about 1/2 turn counter-clockwise. Tune for maximum reading. (In some models it will be necessary to turn slug as much as a full turn counterclockwise to obtain the initial grid drive peak.)
5.	J204	J505	C259 & L221/L222/L223	1.0 volts	While keying the transmitter, carefully dip C259 again. Then turn OUTPUT COUPLING control (L221) slowly counterclockwise until meter reads 1.0 volt.
6.	J204	J505	OUTPUT TUNING C260	Maximum	While keying the transmitter, tune OUTPUT TUNING (C260) for maximum meter reading.
7.	"	"	OUTPUT COUPLING (L221/L222/L223)	1.6 volts	While keying the transmitter, turn the OUTPUT COUPLING control (L221) counterclockwise for a meter reading of 1.6 volts. Then repeak C260.
8.	J505	J203	AMP GRID L212/L213/L214	Maximum	While keying the transmitter, re-peak L212 for maximum reading.
9.	J204	J505	OUTPUT COUPLING (L221/L222/L223)	1.6	While keying the transmitter, adjust OUTPUT COUPLING (L221) for reading of 1.6 volts.
10.					Check the frequency and modulation level of the transmitter. If an adjustment is necessary, follow the procedure outlined below.

MODULATION LEVEL ADJUSTMENT

The MOD. control (R144) located on the Audio/Exciter, was adjusted to the proper setting before shipment and should not normally require re-adjustment. This setting permits approximately 60% modulation for the average voice level. The audio peaks which would cause overmodulation are limited by the modulation limiter. The limiter instantaneously limits the slope of the audio wave, preventing overmodulation, but preserving the intelligibility of the transmission.

TEST EQUIPMENT

1. An audio oscillator.
2. A frequency modulation monitor.
3. An output meter or a VTVM.

PROCEDURE

1. Connect the audio oscillator and the meter across pins 1 and 2 of the microphone receptacle (J703 on the Control Unit) or to J110 (high) and J105 (low) on the Audio/Exciter Assembly.
2. Apply a 0.30-volt signal at 1000 cps across the microphone terminals.**
3. Disconnect the microphone from the control unit, and key the transmitter by means of the PTT switch located on the Power Supply Unit.
4. Set the MOD. control (R144), for a 13 to 15-kilocycle swing* as indicated on the frequency modulation monitor for wide-band, and for a 5-kilocycle swing for narrow band.

   EXCEPTION: For transmitters operating in the 25-33 Mc range, adjust R144 for 11-kilocycles swing for wide band.

   If no audio oscillator is available, the modulation level control can be set by connecting the microphone to the transmitter, whistling a loud, clear tone into the microphone, and setting the MOD. control (R144) for a 13 to 15-kilocycle swing*, as indicated on the modulation monitor.

*Because of the high selectivity of General Electric Mobile Radio equipment, excessively high swings can impair communication effectiveness as well as excessively low swings. Within the range of settings recommended, good performance should be obtained. In general, more problems arise from high swing settings than from low; for this reason, the modulation control is set for ± 13 kilocycles when the equipment is shipped from the factory.

**For Audio/Exciters of Revision C or earlier, apply a 0.15-volt signal.

TRANSMITTER ALIGNMENT

1. Connect a 50-ohm load to the ANT. jack (J503) located on the back of the power supply heat sink.
2. Place the TUNE-OPERATE switch (S201) in the TUNE position.
3. Rotate the Output Coupling (L221/L222/L223) fully clockwise.
4. Turn core of Z107/Z108 and Z109/Z110 (on Audio/Exciter) until they are even with top of coil. Turn core of L201/L203 and L204/L206 (on PA) until they are even with top of coil form.
5. Place crystal Y1 into crystal socket XY1 located on the Audio/Exciter Board.

CAUTION

DO NOT KEY THE TRANSMITTER FOR LONGER THAN 30 SECONDS IN EACH MINUTE UNTIL THE TRANSMITTER IS FULLY ALIGNED. FAILURE TO DO SO MAY DAMAGE THE TRANSMITTER.

The transmitter can be completely tuned using the 0 to 3-volt scale of a 20,000 ohms-per-volt meter. The meter readings given in the chart below are those which should be obtained using such a meter.

STEP NO.	METERING JACKS +	METERING JACKS -	TUNING CONTROL	METER READING	PROCEDURE
			AUDIO/EXCITER		
1.	J114 (black)	J102	Z101/Z102 Z103/Z104	Maximum	While keying the transmitter, tune Z101/Z102 and then Z103/Z104 for maximum meter reading.
2.	"	J101	C12 on oscillator	0.70 volts	While keying the transmitter, adjust C12 for reading of 0.70 volts.
3.	"	J103			Repeat Steps 1 and 2 until no improvement results.
4.	"	"	Z105/Z106	Maximum	While keying the transmitter, tune Z105/Z106 for maximum meter reading. Then carefully tune Z107/Z108 toward coil base for a dip in meter reading.
5.	"	J115	Z109/Z110	Maximum	While keying the transmitter, tune Z109/Z110 for maximum meter reading. If two peaks occur, the larger is usually the desired resonance.
			POWER AMPLIFIER		
1.	J505 (black)	MULT-3 (J201)	L201/L203	Maximum	While keying the transmitter, tune L201/L203 for maximum. If peak of less than 0.6 volts is obtained, continue turning slug until a larger peak occurs.
2.	"	"	L204/L206	Variation	While keying the transmitter, tune L204/L206 for a variation in meter reading (usually a small peak)*.
3.	"	MULT-4 (J202)	L205/L207	Maximum	While keying the transmitter, tune L205/L207 for maximum meter reading. Then alternate between L204/L206 and L205/L207 until no further increase is obtained.
4.	"	"	L208	Variation	While keying the transmitter, tune L208 for variation in meter reading (usually small peak)*.
5.	"	AMP GRID (J203)	L212/L213/L214	Maximum	While keying the transmitter, tune L212/L213/L214 for maximum meter reading. Then repeak L208 and L212/L213/L214.
6.	J204	J505	C259	Minimum	While keying the transmitter, tune C259 for sharp dip in meter reading. Adjust carefully for lowest reading.
7.					Place the TUNE-OPERATE switch (S201) in the OPERATE position.
8.	J505	AMP GRID (J203)	AMP GRID L212/L213/L214	Maximum	While keying the transmitter, turn slug in AMP GRID about 1/2 turn counterclockwise. Tune for maximum reading. (In some models it will be necessary to turn counterclockwise to obtain the initial grid drive peak.)
9.	J204	J505	C259 & L221/L222/L223	1.0 volts	While keying the transmitter, carefully dip C259 again. Then turn OUTPUT COUPLING control L221 slowly counterclockwise until meter reads 1.0 volt.
10.	"	"	OUTPUT TUNING C260	Maximum	While keying the transmitter, tune OUTPUT TUNING (C260) for maximum meter reading.
11.	"	"	OUTPUT COUPLING (L221/L222/L223)	1.6 volts	While keying the transmitter, turn the OUTPUT COUPLING control counterclockwise for a meter reading of 1.6 volts. Then re-peak C260.
12.	J505	J203	AMP GRID	Maximum	While keying the transmitter, repeak L212/L213/L214 for maximum reading.
13.	J204	J505	OUTPUT COUPLING (L221/L222/L223)	1.6 volts	While keying the transmitter, adjust OUTPUT COUPLING for reading of 1.6 volts.
			FINAL CHECK		
1.	J114	J101	C12 (on Audio/ Exciter Board)	0.70 volt	Check reading at J101. Adjust C12 for 0.70 volts if necessary.
2.	"	"	C12 (Chan B)	0.70 volt	For two-frequency transmitters, tune the transmitter on Channel A as shown in Step 1 above. Then switch to the Channel B Oscillator and adjust C12 (Chan B) for a reading of 0.70 volts.
3.	"	"	C12 (Chan. C & D on 4-Freq. Osc. Assembly)	0.70 volt	For 4-Freq. transmitters, tune the transmitter on Chan. A and Chan. B as shown in Step 3 above. Then switch to Chan. C and Chan. D and adjust C12 on the 4-Freq. Osc. Assembly for a reading of ~0.7 volt.

* If two points of variation are observed, the resonance with the slug farthest in coil is the proper frequency.

NOTE

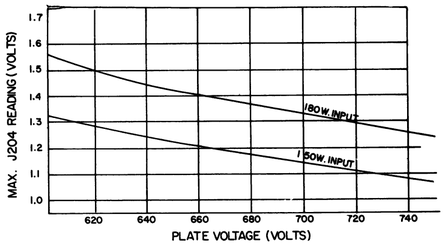
In some services, FCC regulations do not permit the use of full rated power input to the final amplifier plate circuit (ET-39-A or B only). In such case, the Output Coupling control must not ordinarily be adjusted for a meter reading of 1.60 volts at J204. To find the maximum permissible meter reading at J204, measure the power amplifier plate voltage under load and calculate the J204 meter reading from the following formula:

$$\text{J204 meter reading (volts)} = \frac{5P}{E}$$

Where P is the maximum permissible power input
E is the power amplifier plate voltage under load.

The maximum permissible J204 meter reading vs. plate voltage is shown in the chart below for power inputs of 180 watts and 150 watts.

Fig. 2. Maximum permissible PA Cathode current



PARTS LIST

AUDIO/EXCITER MODEL 4EG14A10, 11, REV. L
OSCILLATOR MODEL 4EG11B10 (Without Channel Guard) REV. C
OSCILLATOR MODEL 4EG11C10 (With Channel Guard), REV. D

SYMBOL	G-E PART NO.	DESCRIPTION
		AUDIO/EXCITER
		CAPACITORS
C101	5491000-P1	Electrolytic, low imp type; 30 mfd +100% -50%, 25 VDCW; 10 ES max imp at 50 KC/sec., sim to Sprague S45553.
C105	5494481-P119	High dielectric, ceramic disc, (stabilized versus freq); 6,000 µµf ±20%, 500 VDCW. Sim to Radio Material JF Discap.
C106	5490008-P129	Silver mica, dipped phenolic insulation; 120 µµf ±10%, 300 VDCW. Sim to Electromotive Mfg. DM-15.
C107*	5490008-P129	Silver mica, dipped phenolic insulation; 120 µµf ±10%, 300 VDCW. Sim to Electromotive Mfg. DM-15. In Audio/Exciters earlier than Rev. B.
	5490008-P143	Silver mica, dipped phenolic insulation; 470 µµf ±10%, 300 VDCW; sim to Electromotive Mfg. DM-15 Model 4EG14A10 only.
C108	5494481-P119	High dielectric, ceramic disc, (stabilized versus freq); 6,000 µµf ±20%, 500 VDCW. Sim to Radio Materials JF Discap.
C110	5490008-P133	Silver mica, dipped phenolic insulation; 180 µµf ±10%, 500 VDCW. Sim to Electromotive Mfg. DM-15.
C111 thru C113	5494481-P112	High dielectric, ceramic disc, (stabilized versus freq); 1,000 µµf ±10%, 500 VDCW. Sim to Radio Materials JF Discap.
C115	5490008-P119	Silver mica, dipped phenolic insulation; 47 µµf ±10%, 300 VDCW; sim to Electromotive Mfg. DM-15.
C117	5490008-P133	Silver mica, dipped phenolic insulation; 180 µµf ±10%, 500 VDCW; sim to Electromotive Mfg. DM-15.
C118	5490008-P119	Silver mica, dipped phenolic insulation; 47 µµf ±10%, 300 VDCW; sim to Electromotive Mfg. DM-15.
C119	5494481-P119	High dielectric, ceramic disc (stabilized versus freq); 6,000 µµf ±20%, 500 VDCW. Sim to Radio Materials JF Discap.
C120	5490670-P20	Electrolytic, (vertical mount type); insulated, sealed in metal tube; 20 µf +100% -15%, 50 VDCW. Sim to Sprague 30D198A1.
C121	5494481-P112	High dielectric, ceramic disc, (stabilized versus freq); 1,000 µµf ±10%, 500 VDCW. Sim to Radio Materials JF Discap.
C122 thru C125	5494481-P119	High dielectric, ceramic disc, (stabilized versus freq); 6,000 µµf ±20%, 500 VDCW. Sim to Radio Materials JF Discap.
C126	5490008-P119	Silver mica, dipped phenolic insulation; 47 µµf ±10%, 300 VDCW; sim to Electromotive Mfg. DM-15.
C130	5491189-P309	Mylar-dielectric, 0.33 µf ±5%, 50 VDCW. Sim to Good-All 601PE.
C131	5491189-P301	Mylar-dielectric, 0.01 µf ±5%, 50 VDCW. Sim to Good-All 601PE.
C132	5490670-P7	Electrolytic, (vertical mount type); insulated, sealed in aluminum tube, 100 µf +100% -15%, 6 VDCW. Sim to Sprague 30D135A1.
C133	5493869-P26	Electrolytic, (vertical mount type); insulated, sealed in aluminum tube, 20 µf +100% -10%, 15 VDCW. Sim to Sprague 40D165A2.
C134	5493869-P14	Electrolytic, (vertical mount type); insulated, sealed in aluminum tube, 35 µf +100% -10%, 25 VDCW. Sim to Sprague 40D183A2.
C135	5491189-P305	Mylar-dielectric; 0.068 µf ±5%, 50 VDCW. Sim to Good-All 601PE.
C136	5490670-P14	Electrolytic, (vertical mount type); insulated, sealed in aluminum tube, 5 µf +100% -15%, 25 VDCW. Sim to Sprague 30D179A1.
C137	5493869-P12	Electrolytic, (vertical mount type); insulated, sealed in aluminum tube, 5 µf +100% -10%, 25 VDCW. Sim to Sprague 40D176A2.
C138	5491189-P308	Mylar-dielectric; 0.22 µf ±5%, 50 VDCW. Sim to Good-All 601PE.
C139	5490670-P20	Electrolytic, (vertical mount type); insulated, sealed in aluminum tube, 20 µf +100% -15%, 50 VDCW. Sim to Sprague 30D198A1.
C140	5493869-P6	Electrolytic, (vertical mount type); insulated, sealed in aluminum tube, 100 µf +100% -10%, 12 VDCW. Sim to Sprague 40D153A2.
C141*	5490008-P135	Silver mica, dipped phenolic insulation; 220 pf ±10%, 300 VDCW; sim to Electromotive Mfg. DM-15. Added by Rev. F. Model 4EG14A11 only.
C142	5490008-P43	Silver mica, dipped phenolic insulation; 470 pf, ±5%, 300 VDCW. Added by Rev. G to Models 4EG14A10, 11 only.
		RECTIFIERS
CR101 and CR102	5492652-P1	Diode.
		VOLTAGE REGULATOR
VR101	5490307-P17	Silicon Diode, zener type; 14.25 to 15.75 v at 0.2 ma 12 DC. Sim to Hoffman #2A15.
		OSCILLATORS
G101	PL-5492964-G2	Oscillator Model 4EG11B10. (See separate parts list on this page).
G102	PL-5492964-G1	Oscillator Model 4EG11C10. (See separate parts list on this page).
		HEATER
HR101	PL-4032754-G1	Heater Assembly.
		JACKS AND RECEPTACLES
J101 thru J103	4033568-P3	Test jack; insulated nylon, color green; sim to Alden 110 PC1.
J104 thru J112	4033513-P4	Contact pin; brass finish, cadmium plate; sim to Bead Chain LS3-3.
J113	4032504-P2	Connector, Phono: Molded coaxial cable. Sim to Component 5202MCX. (Included in W101).
J114	4033568-P1	Test jack; insulated nylon, color black. Sim to Alden 110 PC1.
J115	4033568-P3	Test jack; insulated nylon, color green. Sim to Alden 110 PC1.
J116	4033513-P4	Contact pin; brass finish, cadmium plate. Sim to Bead Chain LS3-3.
		INDUCTORS
L101*	7491382-P2	RF choke coil; ind 150 µh ±10%. Sim to Delevan 4500 series. Deleted by Rev. C.
L102	7491382-P104	RF choke coil; ind 330 µh ±10%. Sim to Delevan 3500 series.
L103	PL-4033350-G1	RF Choke Assembly.
		TRANSISTORS
Q101*	5496665-P6	Germanium; PNP. Changed by Rev. F.
Q102*	19A115180-P2	Germanium; PNP. Changed by Rev. H.
Q103*	5496665-P6	Germanium; PNP. Changed by Rev. F.
Q104* thru Q106*	19A115180-P2	Germanium; PNP. Changed by Rev. H.
Q107* thru Q110	5496665-P6	Germanium; PNP. Changed by Rev. F.
		RESISTORS
R101*	3R77-P821K	Composition, 820 ohms ±10%, 1/2 w. In Models earlier than Rev. D:
	3R77-P162J	Composition, 1600 ohms ±5%, 1/2 w.
R102*	3R77-P302J	Composition, 3000 ohms ±5%, 1/2 w. Deleted by Rev. H.
R103*	3R77-P912J	Composition, 9100 ohms ±5%, 1/2 w. Deleted by Rev. H.
R104	3R77-P182K	Composition, 1800 ohms ±10%, 1/2 w.
R105	3R77-P472	Resistor, Fixed composition: 4,700 ohms ±10%, 1/2 w.
R106	3R77-P563K	Composition, 56,000 ohms ±10%, 1/2 w.
R107	3R77-P102K	Composition, 1000 ohms ±10%, 1/2 w.
R108	3R77-P222K	Composition, 2200 ohms ±10%, 1/2 w.
R109	3R77-P101K	Composition, 100 ohms ±10%, 1/2 w.

SYMBOL	G-E PART NO	DESCRIPTION
		RESISTORS (CONT'D)
R110	3R77-P272K	Composition, 2700 ohms ±10%, 1/2 w.
R111*	3R77-P104K	Composition, 0.1 megohms ±10%, 1/2 w. Deleted by Rev. K.
R112	3R77-P472K	Composition, 4700 ohms ±10%, 1/2 w.
R113	3R77-P273K	Composition, 27,000 ohms ±10%, 1/2 w.
R114	3R77-P333K	Composition, 33,000 ohms ±10%, 1/2 w.
R115	3R77-P272K	Composition, 2700 ohms ±10%, 1/2 w.
R116	3R77-P103K	Composition, 1000 ohms ±10%, 1/2 w.
R117	3R77-P562K	Composition, 5600 ohms ±10%, 1/2 w.
R118*	3R77-P122K	Resistor, Fixed composition: 1,200 ohms ±10%, 1/2 w. In Models earlier than Rev. A: Resistor, Fixed composition: 1,200 ohms ±10%, 1/2 w.
R119	3R77-P101K	Composition, 100 ohms ±10%, 1/2 w.
R120	3R77-P473K	Composition, 47,000 ohms ±10%, 1/2 w.
R121	3R77-P182K	Composition, 1800 ohms ±10%, 1/2 w.
R122	3R77-P220J	Composition, 22 ohms ±5%, 1/2 w.
R123	3R77-P101K	Composition, 100 ohms ±10%, 1/2 w.
R124	3R77-P273K	Composition, 27,000 ohms ±10%, 1/2 w.
R125	3R77-P182K	Composition, 1800 ohms ±10%, 1/2 w.
R126*	3R77-P183K	Composition, 18,000 ohms ±10%, 1/2 w. In Models earlier than Rev. E:
	3R77-P223K	Composition, 22,000 ohms ±10%, 1/2 w.
R127	3R77-P101K	Composition, 100 ohms ±10%, 1/2 w.
R128*	3R77-P822J	Composition, 8200 ohms ±5%, 1/2 w. In Models earlier than Rev. F:
	3R77-P113J	Composition, 11,000 ohms, ±5%, 1/2 w. In Models of Rev. H and earlier:
	3R77-P822J	Composition, 8200 ohms, ±5%, 1/2 w.
R129	3R77-P302J	Composition, 3000 ohms ±5%, 1/2 w.
R130*	3R77-P471K	Composition, 470 ohms ±10%, 1/2 w. In Models earlier than Rev. E:
	3R77-P221K	Composition, 220 ohms ±10%, 1/2 w.
R131*	3R77-P202J	Composition, 2,000 ohms ±5%, 1/2 w. In Models earlier than Rev. K: Composition 2200 ohms ±5%, 1/2 w.
R132	3R77-P303J	Composition, 30,000 ohms ±5%, 1/2 w.
R133*	3R77-P474K	Composition, 0.47 megohms ±10%, 1/2 w. Deleted by Rev. K.
R134	3R77-P472K	Composition, 4700 ohms ±10%, 1/2 w.
R135	3R77-P102K	Composition, 1000 ohms ±10%, 1/2 w.
R136	3R77-P472K	Composition, 4700 ohms ±10%, 1/2 w.
R137	3R77-P102K	Composition, 1000 ohms ±10%, 1/2 w.
R138	3R77-P512J	Composition, 5100 ohms ±5%, 1/2 w.
R139	3R77-P182J	Composition, 1800 ohms ±5%, 1/2 w.
R140 and R141	3R77-P202J	Resistors, Fixed composition: 2,000 ohms ±5%, 1/2 w.
R142*	3R77-P330J	Composition, 33,000 ohms, ±5%, 1/2 w. In Models of Rev. J and earlier:
	3R77-P470K	Composition, 47 ohms, ±10%, 1/2 w.
R143	3R77-P751J	Composition, 750 ohms ±5%, 1/2 w.
R144	5492251-P1	Potentiometer; composition, (molded element), res 1000 ohms ±20%, 2 taper, 0.12 w. Sim to Allen Bradley F.
R145*	3R77-P472K	Composition, 4700 ohms ±10%, 1/2 w. Added by Rev. C.
		THERMOSTAT
S101	4032758-P1	Disc type, non adjustable, SPST, 300 ma, 20 VDC rating; not more than 0°C open, not less than -10°C closed. Sim to Spencer C67B7.
		VOLTAGE REGULATOR
VR101*	4036887-P12	Diode: Silicon, zener type. In Models earlier than REV. L:
	5496365-P3	Diode, Zener: Hermetically sealed in glass case. Sim to Pacific Semiconductor PS6939.
	5490307-P17	In Models earlier than REV. D: Silicon Diode, Zener type; Sim to Hoffman 2A15.

SYMBOL	G-E PART NO	DESCRIPTION
		CABLE
W101	5491689-P27	Cable Assembly Includes the following: Cable; 42-1/2 inches long. Type RG-174/U. Connector, Phono: (J4113J).
		SOCKETS
XQ101	5490277-P1	Transistor; 4 contacts, low loss mica filled phenolic; contact res .030 ohms max. 1 amp; sim to Elco 3303.
XQ102	7162500-P1	Transistor; 4-pin P.W. (stand-off type) 4 contacts, 2-#816 and 2-#820, berrylium copper, gold flash over silver plate.
XQ103	5490277-P1	Transistor; 4 contacts, low loss mica filled phenolic; contact res 0.30 ohms, max. 1 amp. Sim to Elco 3303.
XQ104 thru XQ106	7162500-P1	Transistor; 4-pin P.W. (stand-off type) 4 contacts 2-#816 and 2-#820 berrylium copper, gold flash over silver plate.
XQ107 thru XQ110	5490277-P1	Transistor; 4 contacts, low loss mica filled phenolic; contact res 0.30 ohms max. 1 amp, Sim to Elco 3303.
		FILTERS
Z101	PL-5492482-G1	Coil Assembly; includes the following components with Z101 prefix. Used in Model 4EG14A10 only.
Z101-C1	7489162-P125	Capacitor; fixed, silver mica, dipped phenolic insulation; 82 µµf ±10%, 500 VDCW. Sim to Electromotive Mfg. DM-15.
Z101-L1	4029250-P7	RF Coil; made from magnet wire; round copper, coated with polyurethane, 38 AWG.
Z102	PL-5492482-G2	Coil Assembly; includes the following components with Z102 prefix. Used in Model 4EG14A11 only.
Z102-C2	7489162-P121	Capacitor; fixed, silver mica, dipped phenolic insulation; 56µµf ±10%, 500 VDCW. Sim to Electromotive Mfg. DM-15.
Z102-L1	4029250-P7	RF Coil; made from magnet wire; round copper, coated with polyurethane, 38 AWG.
Z103	PL-5492482-G1	Coil Assembly; Same as Z101 above. Used in Model 4EG14A10 only.
Z104	PL-5492482-G2	Coil Assembly; same as Z102 above. Used in Model 4EG14A11 only.
Z105	PL-5492482-G1	Coil Assembly, Same as Z101 above. Used in Model 4EG14A10 only.
Z106	PL-5492482-G2	Coil Assembly; same as Z102 above. Used in Model 4EG14A11 only.
Z107	PL-5492488-G1	Coil Assembly; includes the following components with Z107 prefix. Used in Model 4EG14A10 only.
Z107-C1	7489162-P127	Capacitor; fixed, silver mica, dipped phenolic insulation; 100 µµf ±10%, 500 VDCW. Sim to Electromotive Mfg. DM-15.
Z107-L1 and Z107-L2	4029250-P10	RF Coil, made from magnet wire; round copper coated with polyurethane, 32 AWG.
Z108	PL-5492488-G2	Coil Assembly; includes the following components with Z108 prefix. Used in Model 4EG14A11 only.
Z108-C2	7489162-P125	Capacitor; fixed, silver mica, dipped phenolic, insulation; 82 µµf ±10%, 500 VDCW. Sim to Electromotive Mfg. DM-15.
Z108-L1 and Z108-L2	4029250-P10	RF Coil; made from magnet wire; round copper coated with polyurethane, 32AWG.
Z109	PL-5491966-G1	Coil Assembly; includes the following components with Z109 prefix. Used with Model 4EG14A10 only.
Z109-C1	7489162-P121	Capacitor; fixed, silver mica, dipped phenolic insulation, 56 µµf ±10%, 500 VDCW. Sim to Electromotive Mfg. DM-15.
Z109-L1 and Z109-L2	4029250-P45	RF Coil; made from magnet wire; round copper, coated with polyurethane, 38 AWG.
Z110	PL-5491966-G2	Coil Assembly; includes the following components with Z110 prefix. Used in Model 4EG14A11 only.
Z110-C2	7489162-P117	Capacitor; fixed, silver mica, dipped phenolic insulation; 39 µµf ±10%, 500 VDCW. Sim to Electromotive Mfg. DM-15.
Z110-L1 and Z110-L2	4029250-P45	RF Coil; made from magnet wire, round copper, coated with polyurethane, 38AWG.

SYMBOL	G-E PART NO	DESCRIPTION
		OSCILLATOR MODEL 4EG11B10 (Without Channel Guard) MODEL 4EG11C10 (With Channel Guard)
		CAPACITORS
C1*	5495670-P15	Electrolytic, (vertical mount type); insulated, sealed in aluminum tube, 10 µf +100% -15%, 25 VDCW. Sim to Sprague 30D182A1. Used in Model 4EG11C10 only. Deleted by Rev. D.
C2	5494481-P112	High dielectric, ceramic disc, (stabilized versus freq); 1,000 µµf ±10%, 500 VDCW. Sim to Radio Materials JF Discap. Used in Model 4EG11C10 only.
C3	5495769-P3	Voltage variable, (hermetically sealed); silicon sealed in glass case, 7 µµf ±1/2 µµf, 25 VDCW. Sim to Pacific Semiconductors Inc Varicap V-7. Used in Model 4EG11C10 only.
C4*	5496218-P450	Capacitor, Fixed ceramic disc: (insulated, temp compensating), 50 pf ±5%, 500 VDCW. -220 temp coef. (Used in Model 4EG11C10 only). In Models earlier than Rev. A: Capacitor, Fixed ceramic disc: Insulated, temp compensating), 100 pf ±5%, 500 VDCW. -750 temp coef. (Used in Model 4EG11C10 only).
C5	5494210-P40	Fixed ceramic disc, insulated, temp compensating; 9.0 µµf ±5%. Used in Model 4EG11B10 only.
C6	5491271-P6	Variable, sub-miniature; all metal parts to be silver-plated, (supplied with 2 mounting tabs), also has screw-driver slot, 14-plates, 1.98 to 12.4 µµf, 850 peak voltage rating. Sim to EF Johnson 189-6.
C7	5494210-P239	Fixed ceramic disc: insulated, temp compensating; 8.0 µµf ±5%, ±0.25 µµf, 500 VDCW, -80 temp coef.
C8	4029003-P108	Fixed silver mica, DM20-dipped phenolic insulation crimped leads, 1,000 µµf ±10%, 300 VDCW. Sim to Electromotive Mfg. DM20.
C9*	5494210-P761	Ceramic disk; insulated, temp. compensating; 82pf ±5%, 500 VDCW. Temp coef -470. In Models earlier than Rev. B:
	5494210-P563	Ceramic disk, insulated, temp. compensating; 100 pf ±5%, 500 VDCW. Temp coef -330. (Model 4EG11C10 only).
C10	5494481-P112	High dielectric, ceramic disc, (stabilized versus freq); 1,000 µµf ±10%, 500 VDCW. Sim to Radio Materials JF Discap.
C11	5494481-P119	High dielectric, ceramic disc, (stabilized versus freq); 6,000 µµf ±20%, 500 VDCW. Sim to Radio Materials JF Discap.
C12	5491271-P6	Variable, sub-miniature; all metal parts to be silver-plated, (supplied with 2 mounting tabs) also has screw-driver slot, 14-plates, 1.98 to 12.4 µµf, 850 peak voltage rating. Sim to EF Johnson 189-6
C13	5494481-P112	High dielectric, ceramic disc, (stabilized versus freq); 1,000 µµf ±10%, 500 VDCW. Sim to Radio Materials JF Discap. Used in Model 4EG11C10 only.
C15* and C16	5494267-P14	Tantalum, dry solid, Tubular: 15 µf, ±20%, 20 VDCW; sim to Sprague Electric Co. 150D156X0020DB2. Used in Model 4EG11C10 only. Added by Rev. D.
		TRANSISTORS
Q1*	19A115180-P2	Transistor; Model 4EG11B10 only. Changed by Rev. C.
Q2*	5493957-P5	Transistor; Model 4EG11C10 only. Added by Rev.B.
		RESISTORS
R1	3R77-P223K	Composition, 22,000 ohms ±10%, 1/2 w. Used in Model 4EG11C10 only.
R2	3R77-P473J	Resistor, Fixed composition: 47,000 ohms ±5%, 1/2 w. (Used in Model 4EG11C10 only).
R3	3R77-P272J	Composition, 2,700 ohms ±5%, 1/2 w. Used in Model 4EG11C10 only.
R4 and R5	3R77-P103J	Composition, 10,000 ohms ±5%, 1/2 w.
R6	3R77-P101K	Composition, 100 ohms ±10%, 1/2 w.
R7	3R77-P392J	Composition, 3,900 ohms ±5%, 1/2 w.
R8	3R77-P102J	Composition, 1,000 ohms ±5%, 1/2 w. Used in Model 4EG11C10 only.

SYMBOL	G-E PART NO	DESCRIPTION
		RESISTORS (CONT'D)
R9*	3R77-P822J	Resistor, Fixed composition: 8,200 ohms ±5%, 1/2 w. In Models earlier than Rev. A: Resistor, Fixed composition: 18,000 ohms ±5%, 1/2 w. (Used in Model 4EG11C10 only).
	3R77-P183J	
R10*	5490828-P9	Thermistor: Thermal resistor, glyptol dipped body; 10,000 ohms at 25°C ±5%, max input 0.25 w at 40°C, temp coef 4,200°C ±5%. Sim to Global 351M. (Used in Model 4EG11C10 only). Deleted by Rev. A.
		SOCKETS
XQ1	7162500-P1	Transistor socket; 4-pin P.W. (stand-off type) insulated, 4-contacts -2-No. 816 and 2-No. 820, berrylium copper, gold flash over silver-plate.
XY1	5490557-P2	Crystal socket; printed-wiring contact, 2-berrylium copper contacts, 4-slots.
		CRYSTALS
		When reordering give G-E Part No and specify exact freq needed.
Y1	5492757-P1	Oscillator; freq range 2,050 to 3,400 KC, load capacitance 15 µµf, resonance res 130 ohms.
		Crystal freq - (Operating freq) ÷ 12 (25-33 MC) ÷ 16 (33-50 MC)

PRODUCTION CHANGES

(Refer to Parts List for description of parts affected by these changes)

REV. A (Model 4EG14A10, 11 only)
To improve modulation symmetry, ease of tuning, and to increase drive. R118 changed.

REV. A (Model 4EG11C10 only)
To improve frequency adjustment of oscillator. R10 deleted, and C4 and R9 changed.

REV. B (Model 4EG14A10, 11 only)
To permit low band operation with tone squelch by replacing oscillator Model 4EG11A11 with Model 4EG11B10. R102 and R103 deleted, and C107 changed.

REV. C (Model 4EG14A10, 11 only)
To eliminate the possibility of self oscillation. L101 replaced by R145.

REV. D (Model 4EG14A10, 11 only)
To utilize a more available diode. VR101 and R101 changed.

REV. E (Model 4EG14A10, 11 only)
To increase low frequency response. R126, R130 and R131 changed.

REV. F (Model 4EG14A11 only)
To increase R.F. output when tone squelch modulator is used, to insure use of high quality transistors. Q101, thru Q110 changed. C107 changed.

REV. B (Model 4EG11C10 only)
To increase R.F. output when tone squelch modulator is used to insure use of high quality transistors. Q1, deleted, C9 changed, Q2 added.

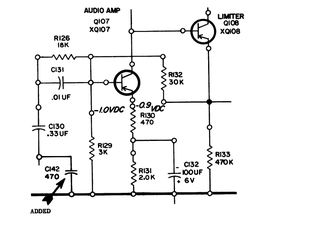
REV. A (Model 4EG11B10 only)
To assure high quality transistors. Q1 changed.

REV. F (Model 4EG14A10 only)
To assure use of high quality transistors. New G.E. Drawing Number added to Q101 through Q110.

REV. B (Model 4EG11B10 only)

REV. C (Model 4EG11C10 only)
Increased diameter of posts used to mount stand-off boards. Changed G.E. Drawing Number of posts from 4029548-P1 to 4038104-P1.

REV. G (Models 4EG14A10,11 only)
To prevent feedback between the antenna and mike cord in close installations. Capacitor C142 added as shown below:



REV. C (Model 4EG11B10 only)
To utilize a more available transistor. Changed Q1.

REV. H (Models 4EG14A10,11)
To utilize a more available transistor. Changed Q102,Q104, Q105 and Q106.

REV. J (Models 4 EG14A10,11)
To reduce audio distortion. Changed R128.

REV. D (Model 4EG11C10 only)
To make unit compatible with new Channel Guard. Deleted C1 and added C15 and C16. Added Note 8 to elementary.

REV. K (Models 4EG14A10,11)
To reduce audio distortion and improve symmetry. Deleted R111 and R133. Changed R128 and R142. Added G.E. Dwg. to CR101, CR102.

REV. L (Models 4EG14A10,11)
To incorporate improved Component. Changed VR101.

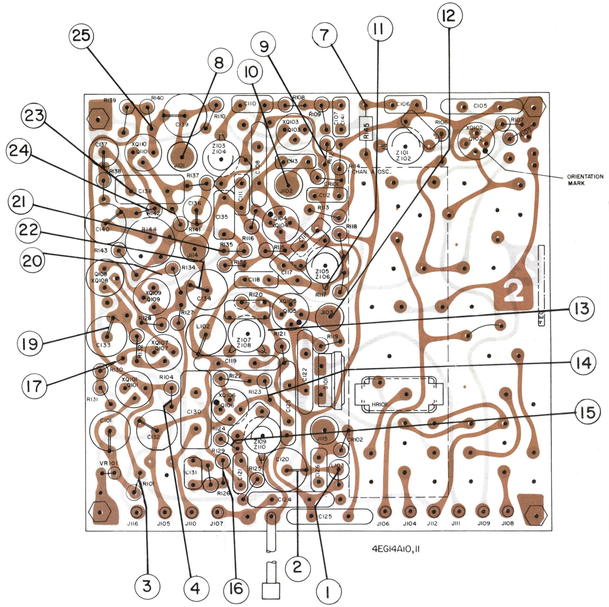
*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.

RESISTANCE READINGS

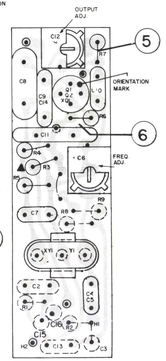
TRANSISTOR	C	B	E
Q1	100	5K	3.9K
Q102	4.7K	4.3K	1K
Q103	4.7K	1.24K	1.23K
Q104	1.2K	2.45K	1K
Q105	1.8K	0	100
Q106	1.8K	0	100
Q107	8.3K	3K	2.47K
Q108	4.8K	8.3K	33K
Q109	100	4.8K	5.7K
Q110	2K	1.55K	800

CONDITIONS OF MEASUREMENTS

RESISTANCE READINGS TAKEN WITH TRANSISTORS OUT OF SOCKETS, WITH THE EMITTER AND COLLECTOR OF XQ101 SHORTED TO THE AUDIO/EXCITER GROUND.



4EG14A10, 11



4EG11B10 (WITHOUT TONE)
4EG11C10 (WITH TONE)

NOTE:
1. ▲R3 IN 4EG11C10 FOR USE WITH 4NS11B11 ONLY. CLIP OUT FOR USE WITH 4EK12A10, A11 OR 4EH13A10.

RUNS ON SOLDER SIDE
RUNS ON BOTH SIDES
RUNS ON COMPONENT SIDE

(C-5496339, Rev. 10)
(C-5495399, Sh. 1, Rev. 2)
(C-5495399, Sh. 2, Rev. 2)

(C-5496339, Rev. 10)
(B-5492871, Rev. 0)

Fig. 3 - Service Sheet

25-50 MC AUDIO/EXCITER
MODEL 4EG14A10, 11; REV. L
OSCILLATOR MODEL 4EG11B10; REV. C
OSCILLATOR MODEL 4EG11C10; REV. D

(RC-588Q)
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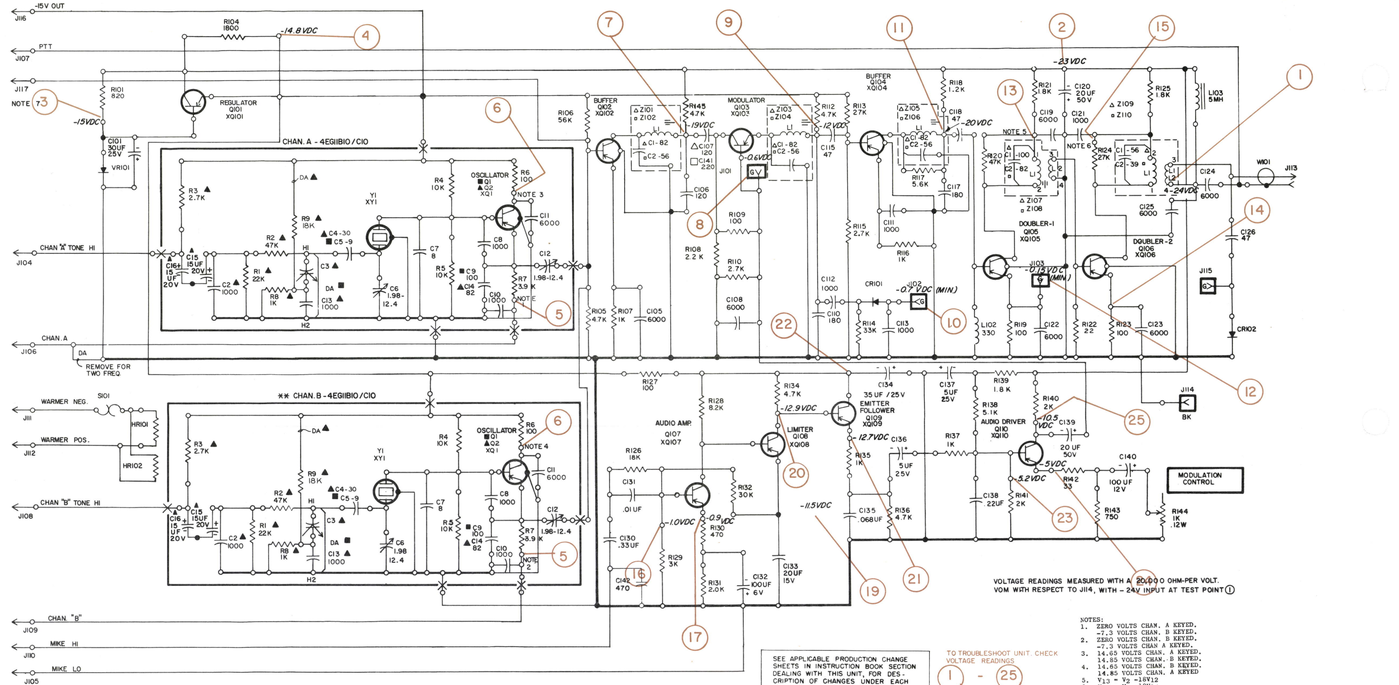
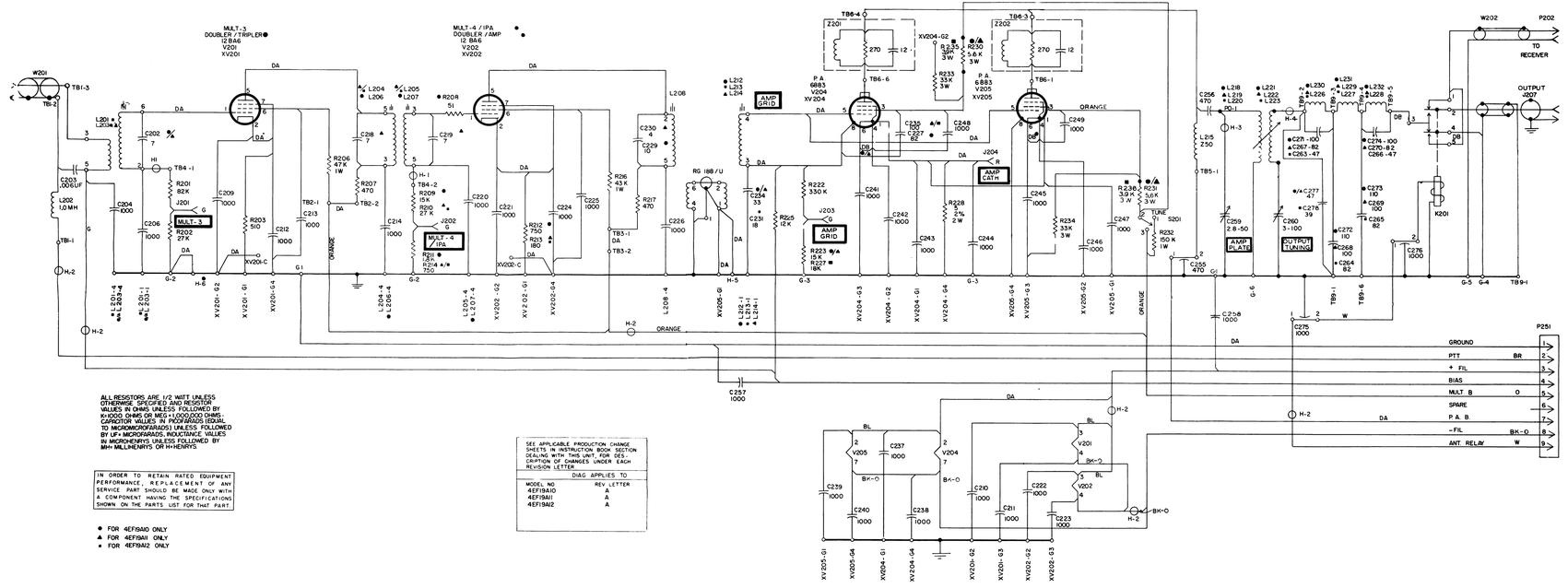




ALL RESISTORS ARE 1/2 WATT UNLESS OTHERWISE SPECIFIED AND RESISTOR VALUES IN OHMS UNLESS FOLLOWED BY K=1000 OHMS OR MEG=1,000,000 OHMS. CAPACITOR VALUES IN PICOFARADS (EQUAL TO MICROMICROFARADS) UNLESS FOLLOWED BY UF= MICROFARADS. INDUCTANCE VALUES IN MICROHENRYS UNLESS FOLLOWED BY MH= MILLIHENRYS OR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

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.

● FOR 4EF19A10 ONLY
▲ FOR 4EF19A11 ONLY
■ FOR 4EF19A12 ONLY

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

DIAG APPLIES TO	
MODEL NO	REV LETTER
4EF19A10	A
4EF19A11	A
4EF19A12	A

(DD-5497188, Rev. 6)

VOLTAGE READINGS

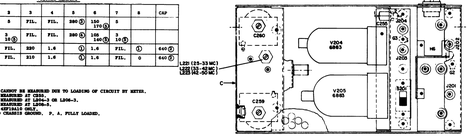
SYMBOL	TUBE TYPE	1	2	3	4	5	6	7	8	CAP
V201	12BA6	1	0	FIL.	FIL.	260 Ⓐ	100 175 Ⓑ	0		
V202	12BA6	1	24 Ⓐ	FIL.	FIL.	260 Ⓐ	100 140 Ⓑ	24 Ⓐ		
V204	6883	1.6	FIL.	320	1.6	Ⓒ	1.6	FIL.	Ⓒ	640 Ⓓ
V205	6883	1.6	FIL.	310	1.6	Ⓒ	1.6	FIL.	0	640 Ⓓ

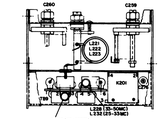
NOTES:
① CANNOT BE MEASURED DUE TO LOADING OF CIRCUIT BY METER.
② MEASURED AT C255.
③ MEASURED AT L204-4 OR L206-4.
④ MEASURED AT C257.
⑤ ADJUSTABLE CORE.
* MEASURED TO CHASSIS GROUND. P. A. FULLY LOADED.

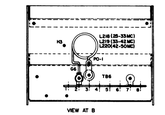
RESISTANCE READINGS

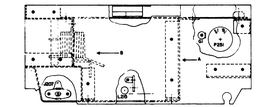
SYMBOL	TUBE TYPE	1	2	3	4	5	6	7	8	CAP
V201	12BA6	10K	510			90K	67K	510		
V202	12BA6	28K	180 175K Ⓐ			39K	33K	180 75K Ⓐ		
V204	6883	1 Ⓑ	◇◇	18K	0	345 18K Ⓑ	0	◇◇	345 18K Ⓑ	1 Ⓑ
V205	6883	1 Ⓑ	◇◇	18K	0	345 18K Ⓑ	0	◇◇	9	1 Ⓑ

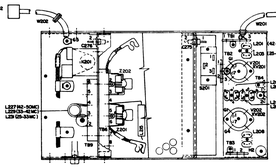
NOTES:
Ⓐ 4EF19A10 ONLY
Ⓑ 4EF19A11 & 12 ONLY
Ⓒ MEASURED AT TEST POINT 205.
Ⓓ MEASURED FROM TUBE CAP TO 2501-7.
* MEASURED TO CHASSIS GROUND. UNLESS OTHERWISE SPECIFIED. TUNE/ON SWITCH IN ONE POSITION.

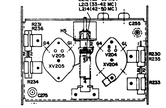












(D-5498949, Rev. 0)

Fig. 4 - Service Sheet

POWER AMPLIFIER
MODEL 4EF19A10, 11, 12; REV. A

(RC-607B)

PARTS LIST

POWER AMPLIFIER
MODELS 4EF19A10, 11, 11, 12; REV. A
PL-5498581-G4, 5, 6

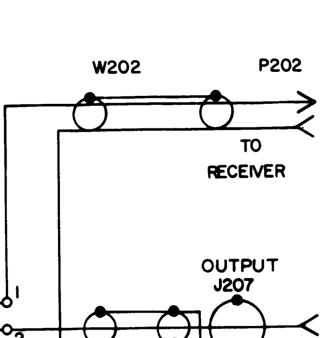
SYMBOL	DESCRIPTION	G-E DRAWING & PART NO.
	CAPACITORS	
C202	Fixed, ceramic disc, (insulated, temp compensating); tinned copper leads, 7.0 uuf ±025 uuf ± 5%, 500 VDCW, 0 temp coef. (Used in Model 4EF19A10 and 11 only).	C-7774846-P38
C203	High dielectric, ceramic disc, (stabilized versus freq); tinned copper or brass leads, 6,000 uuf ± 20%, 500 VDCW. Radio Materials Corp Type JF Discap.	C-5494481-P19
C204	Fixed, ceramic disc, (insulated, high dielectric); single unit shielded construction, tinned copper contacts, 0.001 uf +100% -0%, 500 VDCW.	C-7774750-P4
C206	Fixed, ceramic disc, (insulated, high dielectric); single unit shielded construction, tinned copper contacts, 0.001 uf +100% -0%, 500 VDCW.	C-7774750-P4
C209 thru C214	Fixed, ceramic disc, (insulated, high dielectric); single unit shielded construction, tinned copper contacts, 0.001 uf +100% -0%, 500 VDCW.	C-7774750-P4
C218 and C219	Fixed, ceramic disc, (insulated, temp compensating); tinned copper leads, 7.0 uuf ± 0.25 uuf ± 5%, 500 VDCW, 0 temp coef. (Used in Model 4EF19A11 only).	C-7774846-P38
C220 thru C226	Fixed, ceramic disc, (insulated, high dielectric); single unit shielded construction, tinned copper contacts, 0.001 uf +100% -0%, 500 VDCW.	C-7774750-P4
C227	Fixed, silver mica, DM15-dipped phenolic insulation; tinned copper or brass leads, 82 uuf ± 5%, 500 VDCW. Electromotive Mfg Co Type DM15. (Used in Model 4EF19A10 only).	B-7489162-P25
C229	Fixed, ceramic disc, (insulated, temp compensating); tinned copper leads, 10.0 uuf ± 0.25 uuf ± 5%, 500 VDCW, 0 temp coef. (Used in Model 4EF19A10 only).	C-7774846-P41
C230	Fixed, ceramic disc, (insulated, temp compensating); tinned copper leads, 4.0 uuf ± 0.25 uuf ± 5%, 500 VDCW, 0 temp coef. (Used in Model 4EF19A11 only).	C-7774846-P35
C231	Fixed, silver mica, DM15-dipped phenolic insulation; tinned copper or brass leads, 18 uuf ± 5%, 500 VDCW. Electromotive Mfg Co Type DM15. (Used in Model 4EF19A12 only).	B-7489162-P9
C234	Fixed, silver mica, DM15-dipped phenolic insulation; tinned copper or brass leads, 33 uuf ± 5%, 500 VDCW. Electromotive Mfg Co Type DM15. (Used in Model 4EF19A10 and 11 only).	B-7489162-P15
C235	Fixed, silver mica, DM15-dipped phenolic insulation; tinned copper or brass leads, 100 uuf ± 5%, 500 VDCW. Electromotive Mfg Co Type DM15. (Used in Model 4EF19A11 only).	B-7489162-P27
C237 thru C240	Fixed, ceramic disc, (insulated, high dielectric); single unit shielded construction, tinned copper contacts, 0.001 uf +100% -0%, 500 VDCW.	C-7774750-P4
C241 thru C249	High dielectric, ceramic disc, (stabilized versus freq); tinned copper or brass leads, 1,000 uuf ± 10%, 500 VDCW. Radio Materials Corp Type JF Discap.	C-5494481-P12
C255	Fixed, ceramic dielectric, (feed thru); thermo-setting insulation, tinned copper leads, 470 uuf ± 20%, max. power factor 2.5% at 1KC/sec, variable temp coef, 750 VDCW. Erie Resistor Corp Type 327. (Hardware supplied).	B-7485975-P17
C256	Fixed mica, (CM20 case); insulated, temp coef ± 500°C, 470 uuf ± 10%, 1,500 VDCW. Electromotive Mfg Co Type RCM20B.	B-7478981-P2
C257	Fixed, ceramic disc, (insulated, high dielectric); single unit shielded construction, tinned copper contacts, 0.001 uf +100%, -0%, 500 VDCW.	C-7774750-P4
C258	High dielectric, ceramic disc, (stabilized versus freq); tinned copper or brass leads, 1,000 uuf ± 10%, 500 VDCW. Radio Materials Corp Type JF Discap.	C-5494481-P12
C259	Variable air; ceramic, screwdriver slot, split bushing, 13-plates (aluminum), 2.8 to 50.0 uuf. La Pointe Industries Inc Type 101-8.	B-5491498-P1
	CAPACITORS (CONT'D)	
C260	Variable air; ceramic, screwdriver slot, split bushing, 19-plates (aluminum), 3.0 to 100.0 uuf. La Pointe Industries Inc Type 101-2.	B-5491498-P2
C263	Fixed, silver mica, (CM15 case), insulated, operating ambient temp range +85°C -20°C, 47 uuf ± 5%, 500 VDCW. Electromotive Mfg Co Type CM15. (Used in Model 4EF19A12 only).	P-3R122-P39
C264 and C265	Fixed mica, (RCM Style); Class C, insulated, operating ambient temp +85°C -20°C, 82 uuf ± 5%, 500 VDCW. RTMA Style 20. RCM20C-820J. (Used in Model 4EF19A12 only).	P-3R141-P125
C266	Fixed, silver mica, (CM15 case), insulated, operating ambient temp range +85°C -20°C, 47 uuf ± 5%, 500 VDCW. Electromotive Mfg Co Type CM15. (Used in Model 4EF19A12 only).	P-3R122-P39
C267	Fixed, silver mica, (CM15 case), insulated, operating ambient temp range +85°C -20°C, 82 uuf ± 5%, 500 VDCW. Electromotive Mfg Co Type CM15. (Used in Model 4EF19A11 only).	P-3R122-P45
C268 and C269	Fixed mica, (RCM Style); Class C, insulated, operating ambient temp +85°C -20°C, 100 uuf ± 5%, 500 VDCW. RTMA Style 20. RCM20C-101J. (Used in Model 4EF19A11 only).	P-3R141-P127
C270	Fixed, silver mica, (CM15 case), insulated, operating ambient temp range +85°C -20°C, 82 uuf ± 5%, 500 VDCW. Electromotive Mfg Co Type CM15. (Used in Model 4EF19A11 only).	P-3R122-P45
C271	Fixed, silver mica, (CM15 case), insulated, operating ambient temp range +85°C -20°C, 100 uuf ± 5%, 500 VDCW. Electromotive Mfg Co Type CM15. (Used in Model 4EF19A10 only).	P-3R122-P47
C272 and C273	Fixed mica, (RCM Style); Class C, insulated, operating ambient temp +85°C -20°C, 110 uuf ± 5%, 500 VDCW. RTMA Style 20. RCM20C-111J. (Used in Model 4EF19A10 only).	P-3R141-P128
C274	Fixed, silver mica, (CM15 case), insulated, operating ambient temp range +85°C -20°C, 100 uuf ± 5%, 500 VDCW. Electromotive Mfg Co Type CM15. (Used in Model 4EF19A10 only).	P-3R122-P47
C275 and C276	Feed Thru Capacitor Assembly: includes the following; (1) Capacitor (G-E Dwg and Part No. A-7160807-P1) 1,000 uuf +100% -0%, 500 VDCW. Maida Div Co Style 277A. (1) Wire (G-E Dwg and Part No. B-11-B10A5) 0.064 dia x 0.875 ± 0.04) long.	PL-7160230-G1
C277	Fixed, silver mica, DM15-dipped phenolic insulation; tinned copper or brass leads, 47 uuf ± 5%, 500 VDCW. Electromotive Mfg Co Type DM15. (Used in Model 4EF19A10 and 11 only).	B-7489162-P19
C278	Fixed, silver mica, DM15-dipped phenolic insulation; tinned copper or brass leads, 39 uuf ± 5%, 500 VDCW. Electromotive Mfg Co Type DM15. (Used in Model 4EF19A12 only).	B-7489162-P17
	JACKS AND RECEPTACLES	
J201 thru J203	Test, stake in; green molded nylon, berryllium copper contact, electro-tin plated metal parts, max operating voltage 600 vrms, max operating temp 105°C. Alden Products Co Part No. 110-SMI-green.	A-4033567-P4
J204	Test; stake in, red molded nylon, berryllium copper contact, electro-tin plated metal parts, max operating voltage 600 vrms, max operating temp 105°C. Alden Products Co Part No. 110-SMI-red.	A-4033567-P2
J207	Phono-type jack; ceramic and XXXP phenolic insulation, cadmium finished steel shell, cadmium plated brass spring contact. Cinch Cat. No. 14H18331.	K-7104941-P5
	RELAY	
K201*	Antenna: 24 VDC nom, 300 ohms ±10% at 25°C, 2 form C contacts, 30 grams contact pressure; sim to FA Scherma Mfg Co MS-32C.	19C307020-P3
	In Models earlier than Rev. A Armature; continous duty, res 300 ohms ±10%, pick-up 18 VDC min, contacts - 1-form B and 1-form C, 30 grams min contact pressure.	B-5491704-P1
	INDUCTORS	
L201	RF Coil Assembly. (Used in Model 4EF19A12 only).	PL-5491808-G1
L202	RF Choke Coil: insulated molded in Thermo-setting compound, inductance 1.00 uh ± 20%. Jeffers Cat. No. 10100-30.	B-7488079-P6
L203	RF Coil Assembly. (Used in Model 4EF19A10 and 11 only).	PL-5491808-G2
L204 and L205	RF Coil Assembly. (Used in Model 4EF19A11 and 12 only).	PL-5491819-G1
	INDUCTORS (CONT'D)	
L206	RF Coil Assembly. (Used in Model 4EF19A10 only).	PL-5491819-G2
L208	RF Coil Assembly.	PL-5491817-G1
L212	RF Coil Assembly. (Used in Model 4EF19A10 only).	PL-5491463-G2
L213	RF Coil Assembly. (Used in Model 4EF19A12 only).	PL-5491463-G1
L214	RF Coil Assembly. (Used in Model 4EF19A11 only).	PL-5491463-G3
L215	RF Choke Coil: inductance 7.0 uh, current 1,000 ma, freq range 35-110 mc, red. Ohmite Cat. No. Z-50.	P-7772834-P4
L218	Coil: 5-11/16 turns, LH close wound. (Used in Model 4EF19A10 only).	A-4033886-P1
L219	Coil: 3-11/16 turns, LH close wound. (Used in Model 4EF19A11 only).	A-4033885-P1
L220	Coil: 2-11/16 turns left hand wound, 9-turns per in. (Used in Model 4EF19A12 only).	A-4033887-P1
L221	Coil: 5-5/8 turns, left-hand close wound. (Used in Model 4EF19A10 only).	A-4033861-P3
L222	Coil: 4-5/8 turns, left-hand close wound. (Used in Model 4EF19A11 only).	A-4033861-P2
L223	Coil: 3-5/8 turns, left-hand close wound. (Used in Model 4EF19A12 only).	A-4033861-P1
L226	Coil: 2-1/2 turns, 0.250 ID. B22F1 No. 20 AWG. (Used in Model 4EF19A11 and 12 only).	A-7146644-P1
L227	Coil: 4-1/2 turns at 13 turns per in., 0.465 ID. B22F1 No. 14 AWG. (Used in Model 4EF19A12 only).	A-7146645-P1
L228	Coil: 2-1/2 turns, 0.250 ID. B22F1 No. 20 AWG. (Used in Model 4EF19A12 only).	A-7146644-P1
L229	Coil: 5-1/2 turns at 13 turns per in., 0.465 ID. B22F1 No. 14 AWG. (Used in Model 4EF19A11 only).	A-7146645-P2
L230	Coil: 3-1/2 turns, 0.250 ID. B22F1 No. 20 AWG. (Used in Model 4EF19A10 only).	A-7146644-P2
L231	Coil; 6-1/2 turns at 13 turns per in. 0.465 ID. B22F No. 14 AWG. (Used in Model 4EF19A10 only).	A-7146645-P3
L232	Coil; 3-1/2 turns, 0.250 ID. B22F1 No. 22 AWG. (Used in Model 4EF19A10 only).	A-7146644-P2
	PLUGS	
P201	(Part of W201).	
P202	(Part of W202).	
P251	Plug: 9-pin, body - plaskon melamine.	A-4032478-P1
	RESISTORS	
R201	Composition, 82,000 ohms ± 5%, 1/2 w.	C-3R77-P823J
R202	Composition, 27,000 ohms ± 5%, 1/2 w.	C-3R77-P273J
R203	Composition, 510 ohms ± 10%, 1/2 w.	C-3R77-P511K
R206	Composition, 47,000 ohms ± 5%, 1 w.	C-3R78-P473J
R207	Composition, 470 ohms ± 10%, 1/2 w.	C-3R77-P471K
R208	Composition, 51 ohms ± 5%, 1/2 w. (Used in Model 4EF19A10 only).	C-3R77-P510J
R209	Composition, 15,000 ohms ± 5%, 1/2 w. (Used in Model 4EF19A10 only).	C-3R77-P153J
R210	Composition, 27,000 ohms ± 5%, 1/2 w. (Used in Model 4EF19A11 and 12 only).	C-3R77-P273J
R211	Composition, 1,800 ohms ± 5%, 1/2 w. (Used in Model 4EF19A10 only).	C-3R77-P182J
R212	Composition, 750 ohms ± 5%, 1/2 w. (Used in Model 4EF19A10 only).	C-3R77-P751J
R213	Composition, 180 ohms ± 10%, 1/2 w. (Used in Model 4EF19A11 and 12 only).	C-3R77-P181K
R214	Composition, 750 ohms ± 5%, 1/2 w. (Used in Model 4EF19A11 and 12 only).	C-3R77-P751J
R216	Composition, 43,000 ohms ± 5%, 1 w.	C-3R78-P433J
R217	Composition, 470 ohms ± 10%, 1/2 w.	C-3R77-P471K
R222	Composition, 0.33 megohm ± 5%, 1/2 w.	C-3R77-P334J
R223	Composition, 15,000 ohms ± 5%, 1/2 w. (Used in Model 4EF19A10 and 11 only).	C-3R77-P153J
R225	Composition, 12,000 ohms ± 10%, 1/2 w.	C-3R77-P123K
R227	Composition, 18,000 ohms ± 5%, 1/2 w. (Used in Model 4EF19A12 only).	C-3R77-P183J
R228	Wire-wound, precision; 5 ohms ± 2%, 2 w. Shallcross Type 220RA.	K-7119855-P8
R230 and R231	Composition, 5,600 ohms ± 5%, 3 w. (Used in Model 4EF19A10 and 11 only).	C-3R148-P562J
	RESISTORS (CONT'D)	
R232	Composition, 0.15 megohm ± 10%, 1 w.	C-3R78-P154K
R233 and R234	Composition, 33,000 ohms ± 5%, 3 w.	C-3R148-P333J
R235 and R236	Composition, 3,900 ohms ± 5%, 3 w. (Used in Model 4EF19A12 only).	C-3R148-P392J
	SWITCH	
S201	Slide; spdt, 1.0 amp at 125 v. Stackpole Cat. No. SS-32.	A-7145098-P3
	TUBES	
V201 and V202	Tubes. Type 12BA6.	
V204 and V205	Tubes. Type 6883.	
	CABLES	
W201	RG-58A/U cable, 17 in. long with a molded coaxial cable phono connector (G-E Dwg and Part No. A-4032504-P2) on one end, silver plated. Component Mfg Service Inc Part No. 5202MCX.	B-5491689-P11
W202	RG-58A/U cable, 19 in. long with a phono type long pin connector (G-E Dwg and Part No. A-7140941-P11). Accurate Cat. No. A10033-8.	B-5491689-P10
	SOCKETS	
XV201 and XV202	Tube socket and shield: (7-pin miniature); mica-filled phenolic, bottom mount also flat top with 4-ground lugs, phosphor-bronze contacts; rating - 660 vrms at sea level, 220 vrms at 50,000 feet; current 1 amp, operating temp -80°C.	P-7768887-P14
XV204	Tube; 8-pin ± 0.016, 4-ground lugs on saddle. Cinch Cat. No. 2108.	K-7132886-P2
XV205	Tube Socket Assembly consists of: (1) Tube socket, (G-E Dwg and Part No. K-7132886-P1), 8-pin. Cinch Cat. No. 2121 (37A contacts). (1) Strap; tinned copper.	PL-7133702-G2
	SUB ASSEMBLY	
	SUPPRESSOR ASSEMBLY	
Z201 and Z202	Includes the following components with Z201 and Z202 prefix	PL-4033835-G1
Z201-C1 and Z202-C1	Fixed, silver mica, DM15-dipped phenolic insulation; tinned copper or brass leads, 12 uuf ± 5%, 500 VDCW. Electromotive Mfg Co Type DM15.	B-7489162-P7
Z201-L1 and Z202-L1	3-turns left hand wound, 14-turns per inch.	A-4033797-P1
Z201-R1 and Z202-R1	Composition, 270 ohms ± 5%, 1 w.	C-3R78-P271J
	MISCELLANEOUS	
	Continuous operation at temp of +80°C 1,900 v at 60 cycles, rms; impedance 53 ± 5 ohms, polyethene core. RG58A/U coaxial cable.	A-4033821-P1

PRODUCTION CHANGES

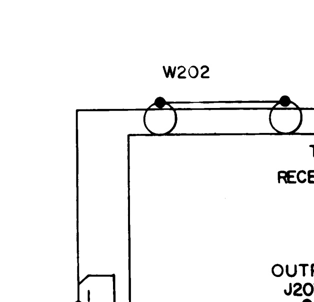
(Refer to Parts List for description of parts affected by these changes.)

REV. A - To protect RF Amplifier in Receiver by grounding receiver input during transmit. Changed K201.

WAS



CHANGED TO



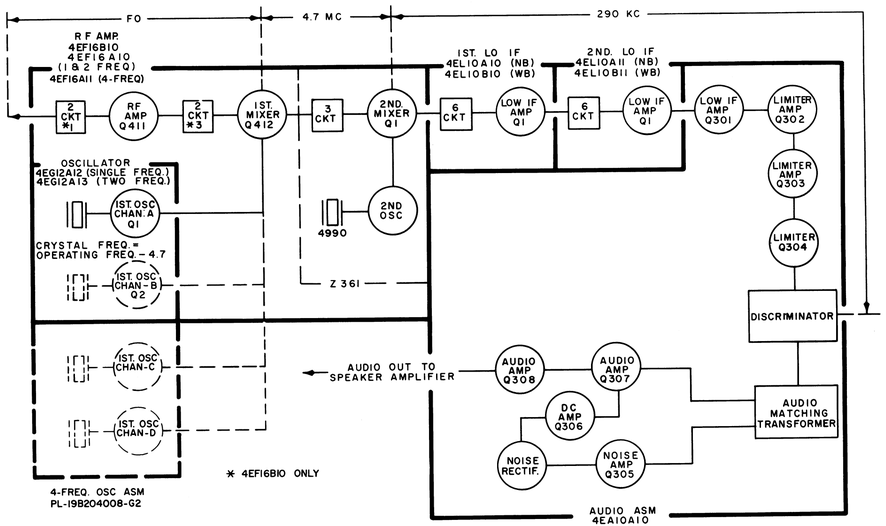


FIG. 1 BLOCK DIAGRAM OF RECEIVER TYPE ER-32-A,B,H,J, (RC977)

Fig. 1 - Block Diagram

25-54 MC TRANSISTORIZED
PROGRESS LINE RECEIVER
TYPES ER-32-A, B, H, J

(RC-977A)

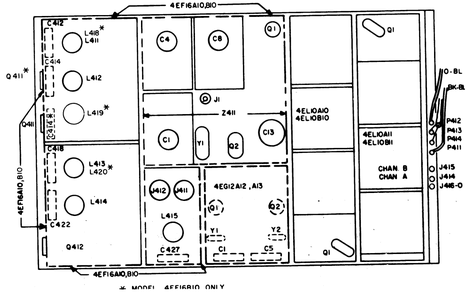
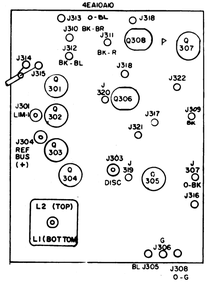
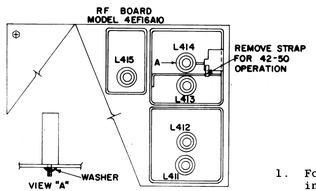


Fig. 2 - Alignment Procedure

25-54 MC TRANSISTORIZED
PROGRESS LINE RECEIVERS
TYPES ER-32-A, B, H, J

(RC-600F)





INITIAL ADJUSTMENT

Use a 20,000 ohm-per-volt meter with a 0-3 volt scale for metering.

STEP NO.	METERING JACKS +	METERING JACKS -	TUNING CONTROL	METER READING	PROCEDURE
1.	J304 (Reference Bus)	J301 (LIM-1)	T411-C412 & C414	Maximum	While receiving a signal on the system operating frequency which is not strong enough to saturate the 1st Limiter, tune the antenna transformer trimmers C412 and C414 for maximum LIM-1 meter reading.
2.	J304	J303	Z411-C13	Zero	While receiving an on-frequency signal, adjust the second oscillator trimmer Z411-C13 for discriminator zero. If more trimming range is needed, adjust C1* on the first oscillator assembly 4EG12A12.

*For 2 frequency oscillator 4EG12A13, perform same function with C5.

FREQUENCY RANGE CHANGES

1. For operation in the 42-50 MC range install a crystal of the proper frequency. On Model 4EF16A10 clip out the strap connecting the shield between L413 and L414 to ground. (See outline) Repeat steps 1 through 5 of Oscillator and RF alignment procedure. Feed in signal of proper frequency and zero the discriminator using 4EG12A12-C1.

2. For operation in the 25-33 MC range, install the five cores in Tuning Range Modification Kit PL-4032668-C1 as shown above. For 33-42 MC operation install the five cores in Tuning Range Modification Kit PL-4032668-G2 as shown above. Do NOT clip out strap mentioned in step 1. Install proper crystal and repeat steps 1 through 5 of Oscillator and RF Alignment procedure. Zero the discriminator by using 4EG12A12-C1.

3. Whenever Modification Kit PL-4032668-G1 is applied to Low Band Dual Front End in the 25-33 MC range, and is used with crossband applications with high band receivers, do NOT install the core in Oscillator coil L415.

RECEIVER ALIGNMENT

1. Make sure that a crystal of the proper frequency is in the high-frequency crystal socket.
2. In two-frequency or four-frequency units, the high-frequency oscillator is peaked and the low-frequency oscillator meter reading is observed.
3. Use a 20,000 ohm-per-volt meter.
4. For convenience, use a "zero center" meter for discriminator metering.
5. Turn the power ON.

STEP NO.	METERING JACKS +	METERING JACKS -	TUNING CONTROL	METER READING	PROCEDURE
DISCRIMINATOR ALIGNMENT					
1.	J304 (Reference Bus)	J303 (DISC)	L2	Zero	1. Apply signal from a 290 KC +0.002% signal source to the base of 4EL10A11, B11-Q1 (adjust signal level to maintain saturation at J301 - at least 2 volts). 2. Adjust L2 (discriminator secondary) for zero.
2.	J304 (Reference Bus)	J303 (DISC)	L1	Minimum	1. Set signal generator to 285 KC and note value of negative meter reading. 2. Set signal generator to 295 KC and note value of positive meter reading. 3. Positive and negative values noted above must be equal in amplitude. If not equal, tune L1 (discriminator primary) until the values are equally positive and negative. Readings should be 25 microamperes (0.76v) on each side of center and should be equal to within ±5 microamps (0.16v). 4. Repeat Steps 1,2,3 until proper balance is met.
OSCILLATOR AND RF ALIGNMENT					
1.	J411	J412	OSC TANK (C427)	Maximum	1. Align solder dot of C427 with paint dot on can. Adjust C427 for maximum, then detune to 90% of maximum on slow sloping side (should exceed 1.3 volts). This will be the slow sloping side.
2.	J411	J412	For Four-Freq. only: 4-Freq. Oscillator Assembly Filter A2305-C427		1. Adjust C427 for maximum, then detune to 90% of maximum on slow sloping side for highest frequency channel. (should exceed 1.3 volts).
3.	J304	J301			1. Disconnect the antenna and apply an unmodulated signal of the proper receiver frequency to J413. For 4-frequency operation use the channel closest to the center frequency. Adjust signal for zero discriminator reading.
4.	J304	J301	C412, C414, C418 and C422	Maximum	1. Peak C412, C414, C418 and C422, keeping discriminator zero by adjusting the signal source. 2. Reduce the signal source as needed to prevent saturation of the Limiter (J301).
5.	J304	J303	4EG12A12-C1 Z411-C13		1. Set 4EG12A12-C1* to maximum capacity (as indicated by alignment of solder dots). Tune 4EG12A12-C1* and Z411-C13 alternately for zero meter reading while receiving a "known correct system frequency". 2. 4EG12A12-C1* should be kept as near to maximum capacity as possible.

*For 2 frequency oscillator 4EG12A13, perform same function with C5

290 KC FILTER ALIGNMENT

The coils in the 290 KC IF Filter Models 4EL10A10, 4EL10A11, 4EL10B10, and 4EL10B11 are overcoupled, it would not be possible to properly align them by a simple peaking procedure. By temporarily resistor-loading the coils, however, they become critically coupled and can then be easily tuned by peaking. The loading can then be removed, restoring them to their normally overcoupled condition. A resistor-loading tool may be ordered as a standard service part by General Electric Part No. 4907-A.

Setup Procedure

1. Apply a 290-KC signal through a 1.0-PFD (or smaller) capacitor across resistor R1 on Filter 4EL10A10 or 4EL10B10. If desired, use a "gimmick" to insert the signal, by looping the signal generator lead around R1.
2. Remove the first oscillator crystal from the receiver to be sure no interfering signals are being received.
3. Connect a 20,000 ohms-per-volt meter from the 1st Limiter Jack (J310) to ground (J304).
4. Adjust the input signal level so that the 1st Limiter is not saturated. Use the minimum usable signal level.
5. Peak the load coils as shown in the Coil Charts below.

Filter Model 4EL10A10 or 4EL10B10		
Step	Load Coils	Tune slug for max. LIM-1 meter reading
1	L2	L1
2	L1 and L3	L2
3	L2 and L4	L3
4	L3 and L5	L4
5	L4 and L6	L5
6	L5	L6
7	Repeat steps 1 through 6, being careful not to saturate LIM-1.	

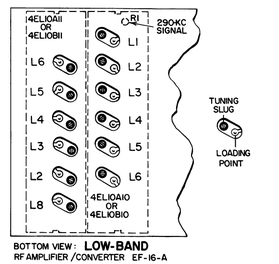
Filter Model 4EL10A11 or 4EL10B11		
Step	Load Coils	Tune slug for max. LIM-1 meter reading
1	L2	L8
2	L8 and L3	L2
3	L2 and L4	L3
4	L3 and L5	L4
5	L4 and L6	L5
6	L5	L6
7	Repeat steps 1 through 6, being careful not to saturate LIM-1.	

NOTE
Do not adjust the discriminator, but keep the 290-KC signal zeroed to the discriminator during the alignment.

The loading tools are used by passing the contact screw and flange through the oval hole over the loading point, rotating the tool a quarter turn so that the flange holds the screw against the loading point, and clipping the alligator clip to the ground foil on the printed board.

CAUTION

The slugs in the Filter coils can be easily damaged if the tuning tool does not fit the slots well or if too much force is applied. Once cracked, a slug may be very difficult to replace and may require replacing the complete coil.



Two Spring Loaded TPL Tools

IF Loading tool in use

PRODUCTION CHANGES

(Refer to Parts List for description of parts affected by these revisions.)

REV. A (Models 4EG12A10, 4EG12A11 only.)

To assure more uniform operation of oscillator. Decrease tolerance on components R1, R2, R4, R5, R6 and R8.

REV. A (Model 4EG12A13 only)

To improve 2-frequency receiver operation. Add capacitor C11 to solder side of 4EG12A13 board.

REV. A (Model 4EG12A12 only)
REV. B (Model 4EG12A10, 11, 13 only)

To employ transistors with more uniform characteristics. Q1 of 4EG12A10 and 4EG12A12 changed. Q1 and Q2 of 4EG12A11 and 4EG12A13 changed.

REV. B (Model 4EG12A12 only)
REV. C (Model 4EG12A10, 11, 13 only)

To provide for mounting of transistor with 4 leads, (one lead is dummy). XQ1 and XQ2 changed.

REV. C (Model 4EG12A12 only)
REV. D (Model 4EG12A10, 11 and 13 only)

Increased diameter of posts used to mount stand-off boards. Changed part number of posts from 4029548-P1 to 4038104-P1.

REV. D (Model 4EG12A12 only)
REV. E (Model 4EG12A10, 11 and 13 only)

Changed transistor sockets.

REV. E (Model 4EG12A12 only)
REV. F (Model 4EG12A13 only)

To prevent oscillator dropout at low temperature and make slope side tuning easier to identify. Added C14 and C15 and changed R3 and R7.

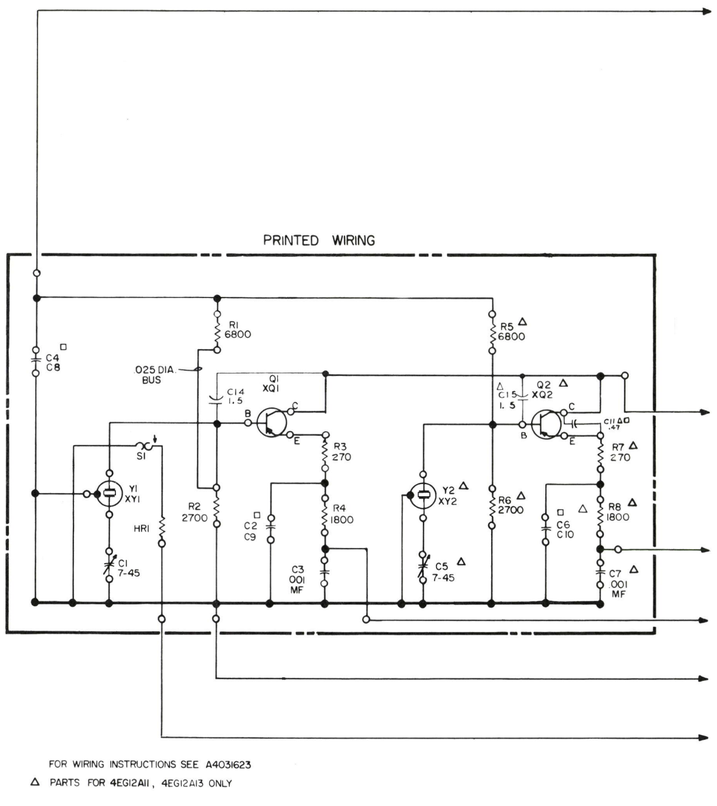
PARTS LIST

1st OSCILLATOR

MODEL 4EG12A10 (1-FREQ) REV. E
MODEL 4EG12A11 (2-FREQ) REV. E
MODEL 4EG12A12 (1-FREQ) REV. E
MODEL 4EG12A13 (2-FREQ) REV. F
PL-5491299-G1,2,3,4

SYMBOL	G-E PART NO.	DESCRIPTION
		- - - - - - - - - -CAPACITORS - - - - - - - - - -
C1	7484389-P66	Ceramic; variable; 7 uufd to 45 uufd, 500 VDCW, stator terminal straight out, rotor terminal bent. Sim to Erie TS2A-N500.
C2	5494210-P38	Ceramic disc, insulated, temp. compensating; 7.0 uufd ±5%, 500 VDCW. Used in Models 4EG12A10, 11 only.
C3	5494481-P112	Ceramic disc, insulated, 1000 uufd ±10%, 500 VDCW; sim to RMC Corp. JF Discap.
C4	5494481-P112	Ceramic disc, insulated, 1000 uufd ±10%, 500 VDCW; sim to RMC Corp. JF Discap. Used in Models 4EG12A10, 11 only.
C5	7484389-P66	Ceramic, variable; 7 uuf to 45 uufd, 500 VDCW, stator terminal straight out, rotor terminal bent. Sim to Erie TS2A-N500. Used in Models 4EG12A11, 13 only.
C6	5494210-P38	Ceramic disc, insulated, temp. compensating; 7.0 uufd ±5%, 500 VDCW. Used in Model 4EG12A11 only.
C7	5494481-P112	Ceramic disc, insulated; 1000 uufd ±10%, 500 VDCW; sim to RMC Corp. JF Discap. Used in Models 4EG12A11, 13 only.
C8	5491189-P101	Mylar-dielectric; 0.01 uf ±20%, 50 VDCW; sim to Good-All 601PE. Used in Models 4EG12A12, 13 only.
C9	5494210-P44	Ceramic disc, insulated, temp compensating; 15 uufd ±5%, 500 VDCW. Used in Models 4EG12A12, 13 only.
C10	5494210-P44	Ceramic disc, insulated, temp compensating; 15 uufd ±5%, 500 VDCW. Used in Model 4EG12A13 only.
C11*	5491601-P13	Moulded Type, 0.47 mmfd, ±10%, 500 VDCW. Used in Model 4EG12A13 only. Added by REV. A.
C14* and C15	5491601-P23	Fixed molded; 1.5 pf ±10%, 500 VDCW. Sim to Quality Components Type MC. Added to Model 4EG12A12 by REV. E; to Model 4EG12A13 by REV. F.
		- - - - - - - - - -HEATER - - - - - - - - - -
HR1	4031390-G1	Heater and bracket assembly.
		- - - - - - - - - -TRANSISTORS - - - - - - - - - -
Q1*	4036830-P2	Transistor, Germanium: PNP; hermetically sealed metallic case with glass seal. Sim to Type 2N1744. In Models 4EG12A10, 4EG12A11 and 4EG12A13 of Rev. A or earlier: In Model 4EG12A12 earlier than Rev. A:
	19B200130-P2	Transistor, Germanium: MADT, PNP; hermetically sealed in metallic case with glass seal. Sim to Type 2N502.
Q2*	4036830-P2	Transistor, Germanium: PNP; hermetically sealed, metallic case with glass seal. Sim to Type 2N1744. (Used in Models 4EG12A11 and 4EG12A13 only).
	19B200130-P2	In Models of Rev. A or earlier: Transistor, Germanium: MADT, PNP; hermetically sealed in metallic case with glass seal. Sim to Type 2N502. (Used in Models 4EG12A11 and 4EG12A13 only).
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R1*	3R77-P682J	Composition, 6,800 ohms ±5%, 1/2 w. Added by Rev. A.
	3R77-P682K	Composition, 6,800 ohms ±10%, 1/2 w. Deleted by Rev. A.
R2*	3R77-P272J	Composition, 2,700 ohms ±5%, 1/2 w. Added by Rev. A.
	3R77-P272K	Composition, 2,700 ohms ±10%, 1/2 w. Deleted by Rev. A.
R3*	3R77-P271J	Composition: 270 ohms ±10%, 1/2 w. In Models 4EG12A12 earlier than Rev. E and in Model 4EG12A13 earlier than Rev. F:
	3R77-P471K	Composition: 470 ohms ±10%, 1/2 w.

SYMBOL	G-E PART NO	DESCRIPTION
		- - - - - - - -RESISTORS (CONT'D) - - - - - - - -
R4*	3R77-P182J	Composition, 1,800 ohms ±5%, 1/2 w. Added by Rev. A.
	3R77-P182K	Composition 1,800 ohms ±10%, 1/2 w. Deleted by Rev. A.
R5*	3R77-P682J	Composition, 6,800 ohms ±5%, 1/2 w. Used in Models 4EG12A11, 13 only. Added by Rev. A in Model 4EG12A11.
	3R77-P682K	Composition, 6,800 ohms ±10%, 1/2 w. Used in Model 4EG12A11 only. Deleted by Rev. A.
R6*	3R77-P272J	Composition, 2,700 ohms ±5%, 1/2 w. Used in Models 4EG12A11, 13 only. Added by Rev. A in Model 4EG12A11.
	3R77-P272K	Composition, 2,700 ohms ±10%, 1/2 w. Used in Model 4EG12A11 only. Deleted by Rev. A.
R7*	3R77-P271J	Composition: 270 ohms ±10%, 1/2 w. In Models 4EG12A12 earlier than Rev. E, and Models 4EG12A13 earlier than Rev. F:
	3R77-P471K	Composition, 470 ohms ±10%, 1/2 w. Used in Models 4EG12A11, 13 only.
R8*	3R77-P182J	Composition, 1,800 ohms ±5%, 1/2 w. Used in Models 4EG12A11, 13 only. Added by Rev. A in Model 4EG12A11.
	3R77-P182K	Composition, 1,800 ohms ±10%, 1/2 w. Used in Model 4EG12A11 only. Deleted by Rev. A.
		- - - - - - - - - -SWITCH - - - - - - - - - -
S1	4033082-P1	Thermostat, snap-acting, non-adjustable; semi-enclosed type; closes at 30° ±5°, opens at 65° ±7°. Sim to Stevens M-262.
		- - - - - - - - - -SOCKETS - - - - - - - - - -
XQ1*	4036353-P2	Socket, Transistor: PW (Stand-off); low loss mica-filled phenolic insulation, 3-pins (beryllium copper), current rating 1 amp, contact res 0.30 ohms max (per contact). Sim to Elco 3308. In Models of Rev. B or earlier:
	5490277-P1	Socket, Transistor: 4-contacts, low loss mica-filled phenolic; contact res 0.03 ohms max, 1 amp. Sim to Elco 3303.
XQ2*	4036353-P2	Socket, Transistor: PW (Stand-off); low loss mica-filled phenolic insulation, 3-pins (beryllium copper), current rating 1 amp, contact res 0.30 ohms max (per contact). Sim to Elco 3308. Used in Model 4EG12A11, 13 only. In Models of Rev. B or earlier:
	5490277-P1	Socket, Transistor: 4-contacts, low loss mica-filled phenolic; contact res 0.30 ohms max, 1 amp. Sim to Elco 3303.
XY1	5490277-P1	4-contacts, low loss, mica-filled phenolic; contact res .03 ohms max, 1 amp; sim to Elco 3303.
XY2	5490277-P1	4-contacts, low loss mica-filled phenolic; contact res .03 ohm max, 1 amp; sim to Elco 3303. Used in Model 4EG12A11, 13 only.
		- - - - - - - - - - CRYSTALS - - - - - - - - - -
Y1	4033466-P1	Quartz, anti-resonance, freq. range: 20 to 55.5 MC. When reordering give G-E Part No. and specify exact freq needed. 150-170 MC operation: Crystal freq - (operating freq -8.7) ÷ 3. 25-50 MC operation: Crystal freq - 4.7.
Y2	4033466-P1	Quartz, anti-resonance, freq. range: 20 to 55.5 MC. When reordering give G-E Part No. and specify exact freq needed. 150-170 MC operation: Crystal freq - (operating freq -8.7) ÷ 3. 25-50 MC operation: Crystal freq - 4.7. Used in Model 4EG12A11, 13 only.



FOR WIRING INSTRUCTIONS SEE A4031623

△ PARTS FOR 4EG12A11, 4EG12A13 ONLY

(C-5495636, Rev. 8)

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
4EG12A10	E
4EG12A11	E
4EG12A12	E
4EG12A13	F

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 IN OHMS AND ARE HALF WATT UNLESS OTHERWISE SHOWN

K=1000 OHMS
MEG=1,000,000 OHMS

ALL CAPACITORS ARE IN MICRO MICRO FARADS UNLESS OTHERWISE SHOWN

MF = MICRO FARAD.

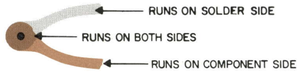
□

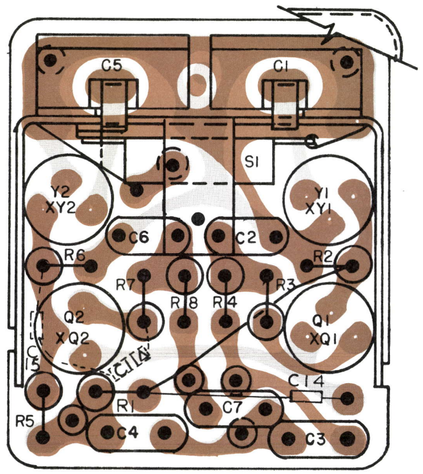
4EG12A10	4EG12A11	4EG12A12	4EG12A13
C2 = 7	C2 = 7	C9 = 15	C9 = 15
C4 = .001MF	C4 = .001MF	C8 = .01MF	C8 = .01MF
	C6 = 7		C10 = 15
			C11 = .47

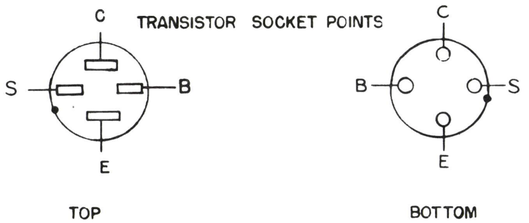
Fig. 3 - Service Sheet

OSCILLATOR
MODEL 4EG12A10; REV. E
MODEL 4EG12A11; REV. E
MODEL 4EG12A12; REV. E
MODEL 4EG12A13; REV. F

(RC-554L)







(B-5492232, Rev. 4)
(B-5491781, Sh. 1, Rev. 0)
(B-5491781, Sh. 2, Rev. 0)

△ Located on Dip Solder Side of 4EG12A13 only.

VOLTAGE READINGS

SYMBOL NUMBER	TRANSISTOR		
	E	B	C
Q1	-3.1	-3.3	-12.5
Q2	-3.1	-3.3	-12.5

RESISTANCE READINGS

SYMBOL NUMBER	TRANSISTOR		
	E	B	C
Q1	2300 NOTE 5	2K	0
Q2	2300 NOTE 5	2K	0

CONDITIONS OF MEASURMENTS.

VOLTAGE :

1. READINGS TAKE WITH A 20,000 OHM-PER-VOLT METER - POSITIVE PROBE TO J304 REF. BUS.
2. INPUT VOLTAGE -13.8 V D-C
3. READINGS TAKEN WITH RECEIVER TERMINATED INTO 2-WATT SPKR/AMP.
4. READINGS TAKEN FROM BOTTON OF TRANSISTOR SOCKETS ARE APPROX. ± 10%

RESISTANCE

1. OSCILLATOR CONNECTED TO RF BOARD.
2. TRANSISTOR REMOVED FROM SOCKET UNDER TEST.
3. 4EF13A11-P361 CONNECTS TO REF. BUS. J363.
4. READINGS TAKEN FROM TOP OF TRANSISTOR SOCKET TO REFERENCE BUS. ARE WITHIN ± 20%
5. RESISTANCE WILL BE INF. ON CHANNEL NOT SELECTED

PARTS LIST

RF AMPLIFIER
MODEL 4EF16A10, REV. M
MODEL 4EF16A11, REV. B

SYMBOL	G-E PART NO.	DESCRIPTION
		- - - - - - - - - - -CAPACITORS - - - - - - - - - - -
C411*	5496218-P247	Ceramic disc: Temp comp, radial leads, 22 pf, ±5%, 500 VDCW, temp coef. -80 PPM.
		In Models earlier than REV. M and REV. B:
	5496218-P913	Fixed ceramic disc: 22 pf ±10%, 500 VDCW, +100 temp coef.
		In Models earlier than REV. E:
	7774846-P47	Fixed ceramic disc: 22 pf ±10%, 500 VDCW, 0 temp coef.
C412*	7484389-P13	Variable, ceramic: 4.5 to 30 pf, -100% +50%, 500 VDCW, 0 temp coef; sim to Erie Resistor Corp. Style 503.
		In Models earlier than REV. M and REV. B:
	7484389-P8	Variable: (Ceramic), 4.75 to 55 pf -100 to +30%, 500 VDCW, -500 temp coef.
C413*	5496218-P248	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef -80 PPM.
		In Models earlier than REV. M and REV. B:
	5496218-P913	Fixed ceramic disc: 22pf ±10%, 500 VDCW, +100 temp coef.
		In models earlier than REV. E:
	7774846-P47	Fixed ceramic disc: 22 pf ±10%, 500 VDCW, 0 temp coef.
C414*	7484389-P13	Variable ceramic: 4.5 to 30 pf, -100% +50%, 500 VDCW, 0 temp coef; sim to Erie Resistor Corp. Style 503.
		In Models earlier than REV. M and REV. B:
	7484389-P8	Variable: (Ceramic), 4.75 to 55 pf -100 to +30% 500 VDCW, -500 temp coef.
C415	5494481-P12	High dielectric: Ceramic disc, (stabilized versus freq), 1,000 pf ±10%, 500 VDCW. Sim to Radio Materials JF Discap.
C416 and C417	5494481-P14	High dielectric: Ceramic disc, (stabilized versus freq), 2,000 pf ±10%, 500 VDCW; sim to Radio Materials JF Discap.
C418*	7484389-P13	Variable ceramic: 4.5 to 30 pf, -100% +50%, 500 VDCW, 0 temp coef; sim to Erie Resistor Corp. Style 503.
		In Models earlier than REV. M and REV. B:
	7484389-P8	Variable: (Ceramic), 4.75 to 55 pf -100 to +30%, 500 VDCW, -500 temp coef.
C419*	5496218-P248	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef -80 PPM.
		In Models earlier than REV. M and REV. B:
	5496218-P913	Fixed ceramic disc: 22 pf ±10%, 500 VDCW, +100 temp coef.
		In Models earlier than REV. E:
	7774846-P47	Fixed ceramic disc: 22 pf ±10%, 500 VDCW, 0 temp coef.
C420	7484398-P3	Fixed mica: (Uncased), 250pf ±10%, 500 VDCW; sim to Underwood J-1-HF.
C421*	5496218-P247	Ceramic disc: 22 pf ±5%, 500 VDCW, temp coef -80 PPM.
		In Models earlier than REV. M and REV. B:
	5496218-P913	Fixed ceramic disc: 22 pf ±10%, 500 VDCW, +100 temp coef.
		In Models earlier than REV. E:
	7774846-P47	Fixed ceramic disc: 22 pf ±10%, 500 VDCW, 0 temp coef.
C422*	7484389-P13	Variable ceramic: 4.5 to 30 pf -100% +50%, 500 VDCW, 0 temp coef; sim to Erie Style 503.
		In Models earlier then REV. M and REV. B:
	7484389-P8	Variable: (Ceramic), 4.75 to 55 pf -100 to +30%, 500 VDCW, -500 temp coef.
C423	5494481-P12	High dielectric: Ceramic disc, (stabilized versus freq), 1,000 pf ±10%, 500 VDCW; sim to Radio Materials JF Discap.
C424	7774846-P244	Fixed ceramic disc: (Insulated, temp compensating), 15 pf ±5%, 500 VDCW, -80 temp coef.
C425*	7130348-P12	Fixed, moulded: 0.82 pf ±5%, 500 VDCW, 0 temp coef; sim to Jeffers JM-5/32.
		In Models earlier than REV. M and REV. B:
	7130348-P12	Fixed: (Moulded) 0.82 pf ±10%, 500 VDCW; sim to Jeffers type JM 5/32.
		In Models of REV. H and earlier:
	7770468-P34	Fixed ceramic: (insulated, temp compensating), 3.0 pf ±5%, ±0.25 pf, 500 VDCW, 0 temp coef.
C426*	5496218-P943	Ceramic disc: Temp comp radial leads; 13 pf ±5%, 500 VDCW, temp coef, +100 PPM.
		In Models earlier than REV. M and REV. B:
	7774846-P45	Fixed ceramic disc: (Insulated, temp compensating), 18 pf ±5%, 500 VDCW, 0 temp coef.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.

SYMBOL	G-E PART NO	DESCRIPTION
		- - - - - - - - -CAPACITORS (Cont'd) - - - - - - - -
C427	7484389-P8	Variable: (Ceramic), 4.75 to 55 pf -100 to +30%, 500 VDCW, -500 temp coef.
C428	5494481-P12	High dielectric: Ceramic disc, (stabilized versus freq), 1,000 pf ±10%, 500 VDCW; sim to Radio Materials JF Discap.
C429	5494481-P14	High dielectric: Ceramic disc, (stabilized versus freq), 2,000 pf ±10%, 500 VDCW; sim to Radio Materials JF Discap.
C430*	5494481-P12	Fixed ceramic disc: 0.001 µf ±10%, 500 VDCW; sim to RMC JF.
		In Models of REV. E or earlier:
	5491189-P4	Mylar® dielectric: radial leads, 0.047 pf ±20%, 50 VDCW.
C431 and C432	5494481-P12	High dielectric: Ceramic disc, (stabilized versus freq), 1,000 pf ±10%, 500 VDCW; sim to Radio Materials JF Discap.
C433	7484398-P3	Fixed mica:(Uncased), 250 pf ±10%, 500 VDCW; sim to Underwood J-1-HF.
C434	5491827-P3	Disc type: (Insulated, high dielectric), 0.025 µf +80% -20%, 50 VDCW; sim to Sprague 29C187. (Added by REV. B).
C435	5491827-P4	Disc type: (Insulated, high dielectric), 0.05 µf +80% -20%, 50 VDCW. Sim to Sprague 44C29. (Added by Rev. B).
C436*	7130348-P12	Fixed, moulded: 0.82 pf ±5%, 500 VDCW, 0 temp coef; sim to Jeffers JM-5/32. Added by REV. M and REV. B.
C437*	5496218-P246	Ceramic disc: Temp comp radial leads; 20 pf ±5%, 500 VDCW, temp coef -80 PPM. Added by REV. M and REV. B.
C450* thru C453	5496218-P244	Ceramic disc, temp comp, radial leads; 15 pf ±5%, 500 VDCW, temp coef -80 PPM. Added by REV. M and REV. B.
		- - - - - - - - - - RECTIFIERS - - - - - - - - - -
CR411	7777146-P3	Diode, Germanium: Max peak inv 60 vw, min fwd cur.5 ma. Sim to Hughes 1N90.
CR412	4038642-P1	Diode: Max peak inv 50 vw, max fwd cur 100 ma. Sim to Radio Receptor DR385.
CR414	5496365-P3	Diode, Germanium. Used in High Power Mod Kit 4038460 only.
		- - - - - - - - JACKS AND RECEPTACLES - - - - - - -
J411	4033567-P4	Jack, Test: (Stake in), molded nylon body, copper contact, max operating voltage 600 vrms, max operating temp 105°C. Sim to Alden Products 110-SMI-green.
J412	4033567-P6	Jack, Test: (Stake in), molded nylon body, copper contact, max operating voltage 600 vrms, max operating temp 105°C. Sim to Alden Products 110-SMI-blue.
J413	4032504-P5	Connector, Phono: Molded on termination for use with coaxial cable. (Included in W411).
J414 thru J416	4033513-P4	Contact, Pin: Brass. Sim to Bead Chain L93-3.
		- - - - - - - - - - INDUCTORS - - - - - - - - - -
L411	PL-4031073-G6	Coil Assembly.
L412	PL-4031073-G8	Coil Assembly.
L413 and L414	PL-4031073-G7	Coil Assembly.
L415	PL-4031073-G9	Coil Assembly.
L416 and L417	7488079-P17	Coil, RF Choke: Ind 12.0 µf ±10%. Sim to Jeffers 10102-34.
		- - - - - - - - - - - PLUGS - - - - - - - - - - -
P411 thru P414	4029840-P1	Terminal: (Plug receptacle for 0.093 inch long pin), 1-contact. Sim to Amp 41854. Hand Tool Amp 47745.
		- - - - - - - - - - TRANSISTORS - - - - - - - - - -
Q411	19A115413-P1	Germanium: PNP.
		In Models of Rev. H or earlier:
Q411*	19C300037-P2	Germanium: MADT, PNP; hermetically sealed in metallic case with glass seal. Sim to T-2042.
		In Models of Rev A or earlier:
		Sim to 2N502.
Q412	19B200131-P1	Germanium: MADT, PNP.
		In Models of Rev. J:
	19A115413-P1	Germanium: PNP.
		In Models of Rev. H and earlier:
Q412*	19B200131-P1	Germanium: PNP; hermetically sealed in metallic case with glass seal. Sim to T-2044.
		In Models of Rev A or earlier:
		Sim to 4JX3C504.

SYMBOL	G-E PART NO	DESCRIPTION
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R411 and R412	3R152-P302J	Fixed composition: 3,000 ohms ±5%, 1/4 w.
R413	3R152-P242J	Fixed composition: 2,400 ohms ±5%, 1/4 w.
R414	3R152-P474K	Fixed composition: 0.47 megohm ±10%, 1/4 w.
R415	3R152-P123J	Fixed composition: 12,000 ohms ±5%, 1/4 w.
		In Amplifiers of Rev. A or earlier:
	3R152-P203J	Fixed composition: 20,000 ohms ±5%, 1/4 w.
R416	3R152-P223K	Fixed composition: 22,000 ohms ±10%, 1/4 w. (Deleted by Rev. B).
R417	3R152-P392J	Fixed composition: 3,900 ohms ±5%, 1/4 w.
		In Amplifiers of Rev. A or earlier:
	3R152-P682J	Fixed composition: 6,800 ohms ±5%, 1/4 w.
R418	3R152-P202J	Fixed composition: 2,000 ohms ±5%, 1/4 w.
		In Amplifiers of Rev. A or earlier:
	3R152-P472K	Fixed composition: 4,700 ohms ±10%, 1/4 w.
		- - - - - - - - TRANSFORMERS - - - - - - - - -
T411		Transformer Assembly Consists of the following components: C411 thru C414 CR412 L411 and L412
T412		Transformer Assembly Consists of the following components: C418 and C419, C421 and C422 L413 and L414
		- - - - - - - - - - CABLE - - - - - - - - - -
W411	5491689-P13	Cable Assembly Includes the following components: Cable: 9-inches long. Type RG-174/U.
	4032504-P5	Connector, Phono: (J413)
		- - - - - - - - - - SOCKETS - - - - - - - - -
XQ411*	4038139-P1	Transistor: low loss mica filled phenolic, 4 pins (beryllium copper), current rating 1 amp., contact res. 0.03 ohms max. Sim to Elco Corp. Part #3308.
		In Models of Rev. F and earlier:
	4036353-P1	Transistor: PW (Stand off): low loss mica filled phenolic insulation, 4-pins (beryllium copper), rating current 1 amp, contact res 0.30 ohms maximum (per contact). Sim to Elco Corp 3308.
		In Models of Rev. A or earlier:
	5490277-P1	Transistor: Low loss mica filled phenolic insulation; 4-contacts, 1,000 megohms mini insulation res, contact res 0.03 ohms max, max current 1 amp, working voltage 400 VRMS. Sim to Elco Corp 3303. (Used with mounting ring. Sim to Elco Corp 757).
XQ412*	4038139-P1	Transistor: low loss mica filled phenolic, 4 pins (beryllium copper), current rating 1 amp, contact res. 0.03 ohms max. Sim to Elco Corp. Part #3308.
		In Models of Rev. F and earlier:
	4036353-P1	Transistor: PW (Stand off): low loss mica filled phenolic insulation, 4-pins (beryllium copper), current rating 1 amp, contact res 0.30 ohms max (per contact). Sim to Elco Corp 3308.
		- - - - - - - - - - FILTER - - - - - - - - - -
Z411	PL-5492292-G1	HI-IF FILTER-MIXER/OSCILLATOR Includes the following components with Z411 prefix:
Z411-C1	5490515-P1	Capacitor, Variable: (Ceramic trimmer), 4.5 pf (+0% -100%) to 25 pf (+50% -0%), 500 VDCW. (Included in Coil and Trimmer Assembly, G-E Dwg and Group No. PL-5490543-G11)
Z411-C2	5494210-P461	Capacitor, Fixed ceramic disc: Insulated, temp compensating, 82 pf ±5%, 500 VDCW, -220 temp coef.
Z411-C3	5491601-P111	Capacitor, Fixed: (Moulded). 0.39 pf ±5%, 500 VDCW. Quality Components Inc Type MC.
Z411-C4	5490515-P1	Capacitor, Variable: (Ceramic trimmer), 4.5 pf (+0% -100%) to 25 pf (+50% -0%), 500 VDCW. (Included in Coil and Trimmer Assembly, G-E Dwg and Group No. PL-5490543-G12).
Z411-C5	5494210-P463	Capacitor, Fixed ceramic disc: Insulated, temp compensating, 100 pf ±5%, 500 VDCW, -220 temp coef.
		In Mixer/Oscillators earlier than Rev. A:
	5494210-P464	Capacitor, Fixed ceramic disc: Insulated, temp compensating, 110 pf ±5%, 500 VDCW, -220 temp coef.
Z411-C6	5491601-P113	Capacitor, Fixed: (Moulded), 0.47 pf ±5%, 500 VDCW. Quality Components Inc Type MC.
Z411-C7	5494210-P463	Capacitor, Fixed ceramic disc: Insulated, temp compensating, 100 pf ±5%, 500 VDCW, -220 temp coef.
Z411-C8	5490515-P1	Capacitor, Variable: (Ceramic trimmer), 4.5 pf (+0% -100%) to 25 pf (+50% -0%), 500 VDCW. (Included in Coil and Trimmer Assembly, G-E Dwg and Group No. PL-5490543-G13).

SYMBOL	G-E PART NO	DESCRIPTION
		- - - - - - - - - FILTER (CONT'D) - - - - - - - - -
Z411-C9	5494481-P112	Capacitor, High dielectric: Ceramic disc; (stabilized versus freq), 1,000 pf ±10%, 500 VDCW. Sim to Radio Materials JF Discap.
Z411-C10	5491189-P106	Capacitor, Mylar® dielectric: Crimped leads, 0.10 µf ±20%, 50 VDCW. Sim to Good-All 601PE.
Z411-C11	7491395-P1	Capacitor, Ceramic disc: (Stabilized high dielectric temp), 220 pf ±20%, 500 VDCW.
Z411-C12	7491395-P14	Capacitor, Ceramic disc: (Stabilized high dielectric temp), 2,200 pf ±20%, 500 VDCW.
Z411-C13	5490446-P1	Capacitor, Variable: (Ceramic trimmer), 8 to 50 pf, 350 VDCW, -750 temp coef. Sim to Eric Resistor 557-36.
Z411-C14	5491189-P106	Capacitor, Mylar®, dielectric: Crimped leads, 0.10 µf ±20%, 50 VDCW. Sim to Good-All 601PE.
Z411-C15	5494210-P247	Capacitor, Fixed ceramic disc: Insulated, temp compensating, 22 pf ±5%, 500 VDCW, -80 temp coef.
Z411-C16	5491189-P109	Capacitor, Mylar:, dielectric: Crimped leads, 0.33 µf ±20%, 50 VDCW. Sim to Good-All 601PE.
Z411-J1	4033568-P4	Jack, Test: (Printed circuit), nylon body, berryllium copper contact, max operating voltage 600 vrms, max operating temp 105°C. Sim to Alden Products 110-PC1-yellow.
Z411-L1	PL-5490596-G1	Toroidal Coil Assembly. (Included in Coil and Trimmer Assembly, G-E Dwg and Group No. PL-5490543-G11).
Z411-L2	PL-5490596-G2	Toroidal Coil Assembly. (Included in Coil and Trimmer Assembly, G-E Dwg and Group No. PL-5490543-G12).
Z411-L3	PL-5490596-G3	Toroidal Coil Assembly. (Included in Coil and Trimmer Assembly, G-E Dwg and Group No. PL-5490543-G13).
Z411-L4	7488079-P18	Coil, RF Choke: Inductance 15.0 µh ±10%. Sim to Jeffers Electronic Div 10202-36.
Z411-Q1	4036929-P2	Transistor, Germanium: PNP; hermetically sealed in metallic case with glass seal. Sim to R653.
		In Models of Rev A and B:
		Transistor. Sim to 4JX3C505/3N36.
Z411-Q2	5492655-P4	Transistor, Germanium: Hermetically sealed in metallic case with glass seal. Sim to 2N1086.
		In Models of Rev A and B:
		Transistor. Sim to 2N1086.
Z411-R1	3R77-P153K	Resistor, Fixed composition: 15,000 ohms ±10%, 1/2 w.
Z411-R2	3R77-P473K	Resistor, Fixed composition: 47,000 ohms ±10%, 1/2 w.
Z411-R3	3R77-P153K	Resistor, Fixed composition: 15,000 ohms ±10%, 1/2 w.
Z411-R4	3R77-P822K	Resistor, Fixed composition: 8,200 ohms ±10%, 1/2 w.
Z411-R5	3R77-P562K	Resistor, Fixed composition: 5,600 ohms ±10%, 1/2 w.
Z411-R6	3R77-P103K	Resistor, Fixed composition: 10,000 ohms ±10%, 1/2 w.
Z411-R7	3R77-P273K	Resistor, Fixed composition: 27,000 ohms ±10%, 1/2 w.
Z411-R8	3R77-P222K	Resistor, Fixed composition: 2,200 ohms ±10%, 1/2 w.
Z411-XQ1	7162500-P1	Socket, Transistor: 4-pin P.W. (stand-off type), 4-contacts - 2 (No. 816) and 2 (No. 820), berryllium copper, gold flash over silver plate.
Z411-XQ2	5490277-P1	Socket, Transistor: 4-contacts, insulated, low-loss mica-filled phenolic, 1,000 megohms min, contact res 0.03 ohms max, 1 amp. 400 vrms. Sim to Elco 3303. (Used with mounting ring. Elco 757. (G-E Dwg. and Part No. A-7162414-P1)).
Z411-Y1	4031075-P1	Crystal, Quartz: Frequency 4,990 KC, ±120 cps at 25°C.
	PL-5490543-G11	Coil and Trimmer Assembly Includes the following components: C1 L1
	PL-5490543-G12	Coil and Trimmer Assembly Includes the following components: C4 L2
	PL-5490543-G13	Coil and Trimmer Assembly Includes the following components: C8 L3

PARTS LIST

NOISE BLANKER
MODIFICATION KIT
PL-4038585-G1

SYMBOL	G-E PART NO.	DESCRIPTION
		- - - - - - - - - - - DIODE - - - - - - - - - - -
CR413	4038642-P1	Germanium
		- - - - - - - - - - CONNECTORS - - - - - - - - - -
P2354	5496809-P1	Plug, phenolic: 3 circuits. Sim to Molex 1055P3.
P2355 and P2356	4033348-P1	Contact, Female Friction: Brass. Sim to Bead Chain M125-34
		- - - - - - - - - - RESISTOR - - - - - - - - - -
R420	3R152-P471J	Composition, 470 ohms ±5%, 1/4 w.
		- - - - - - - - - - CABLES - - - - - - - - - -
	4038586-G1	Cable Assembly: Two 26-inch F24 wires and black braid cover with male connector P2354, and contacts P2355 and P2356.
W412	5491689-P39	Cable Assembly: 20-inch RG 174/U cable with male phono connector (P415).
		- - - - - - - - - - TERMINAL - - - - - - - - - -
TB3	7487424-P2	Terminal strip, one terminal and mounting bracket.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

PRODUCTION CHANGES

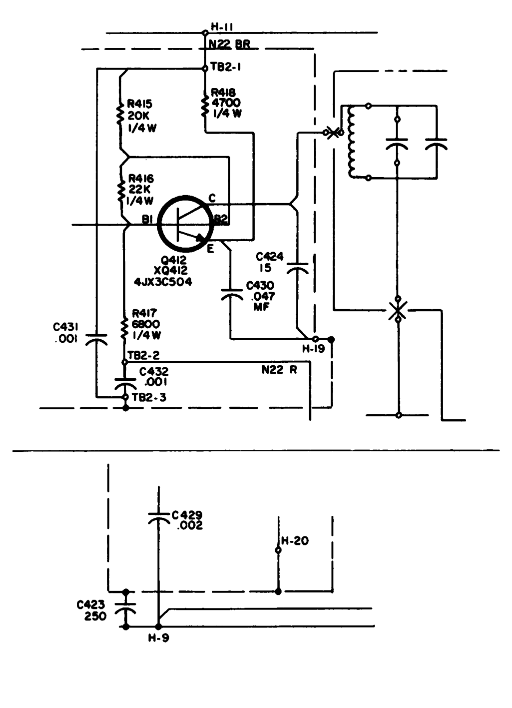
(Refer to Parts List for description of parts affected by these revisions)

REV. A- To bring Hi-IF tuning to within design center. C5 in Z411 changed.

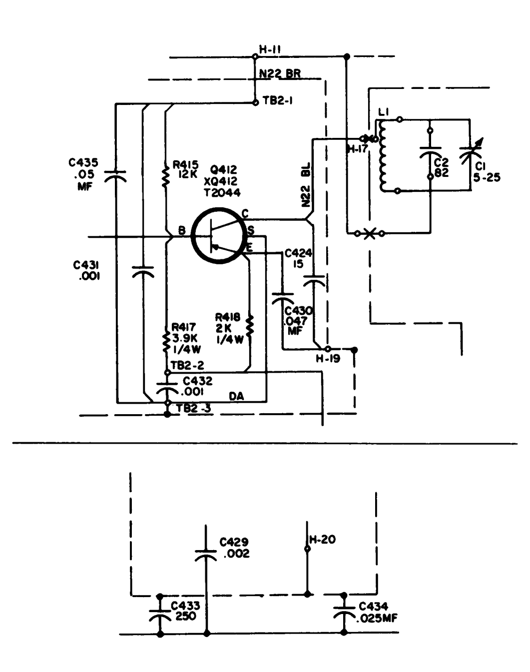
REV. B- To improve the performance of the RF Amplifier. C434 and C435 added; Q411, Q412, R415, R417, R418 and XQ411 changed. R416 deleted.

Elementary Diagram changes shown below.

WAS



CHANGE TO



REV. C - To replace tetrode transistors with triode. Transistors Z411-Q1 and Z411-Q2 was changed.

REV. D - Increased diameter of parts used to mount stand-off boards. Changed part number of posts from 4029548-P1 to 4038104-P1.

REV. E - To provide improved operation at temperature extremes. Changed temperature coefficient of C411, C412, C419 and C421.

REV. F - To provide increased reliability of mixer circuitry. Changed value of C430.

REV. G - To provide standardized sockets for transistors. Changed XQ411 and XQ412.

REV. H - To provide increased protection against overload. Changed Q411 and Q412.

REV. J - To improve rejection of interfering signals. Changed C425.

REV. K - To improve receiver operation under high signal conditions. Changed Q412.

REV. L - (Model 4EF16A10 only).
REV. A - (Model 4EF16A11 only)
To simplify removal or addition of components.

REV. M - (Model 4EF16A10 only)
REV. B - (Model 4EF16A11 only)
To improve temperature compensation of RF circuits. Changed C411 thru C414, C418, C419 , C421, C422, C425, C426, C436, C437 and added C450 thru C453.

RESISTANCE

	E	B1 B	C	B2 S
Q411	2.5	1.5	0	
Q412	2.2	7.2	0	12K
Q411-Q1	29K	18.5K		19K
Q411-Q2	28K	18K	8K	

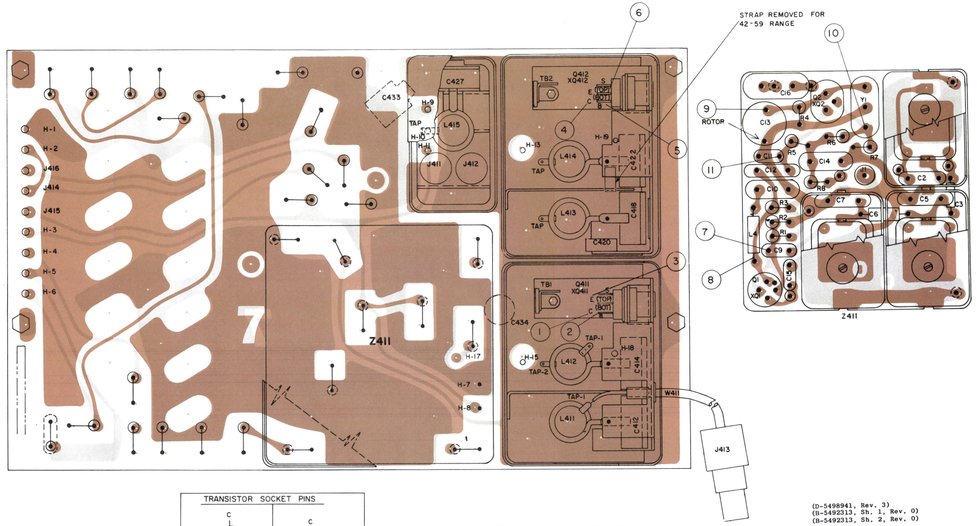
CONDITIONS OF MEASUREMENTS

VOLTAGES:

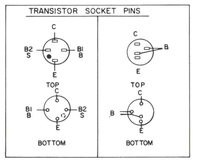
1. READINGS TAKEN ON A 20,000 OHM - PER-VOLT METER POSITIVE PROBE TO J304 ON 4EA10A10.
2. INPUT VOLTAGE - 13.8 VOLTS DC.
3. SQUELCH SETTING - MAXIMUM.
4. COMPLETE RECEIVER TERMINATED INTO A 2-WATT SPEAKER/AMP.
5. FIRST OSC CRYSTAL REMOVED.

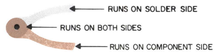
RESISTANCES:

1. RECEIVER DISCONNECTED FROM POWER.
2. TRANSISTOR REMOVED FROM SOCKET UNDER TEST.
3. P351 (LEAD FROM R-4, NEGATIVE BUS) SHORTED TO POSITIVE BUS (J304 ON 4EA10A10).
4. READINGS TAKEN FROM TOP OF TRANSISTOR SOCKETS TO J304 ON 4EA10A10 ARE WITHIN ±20%.

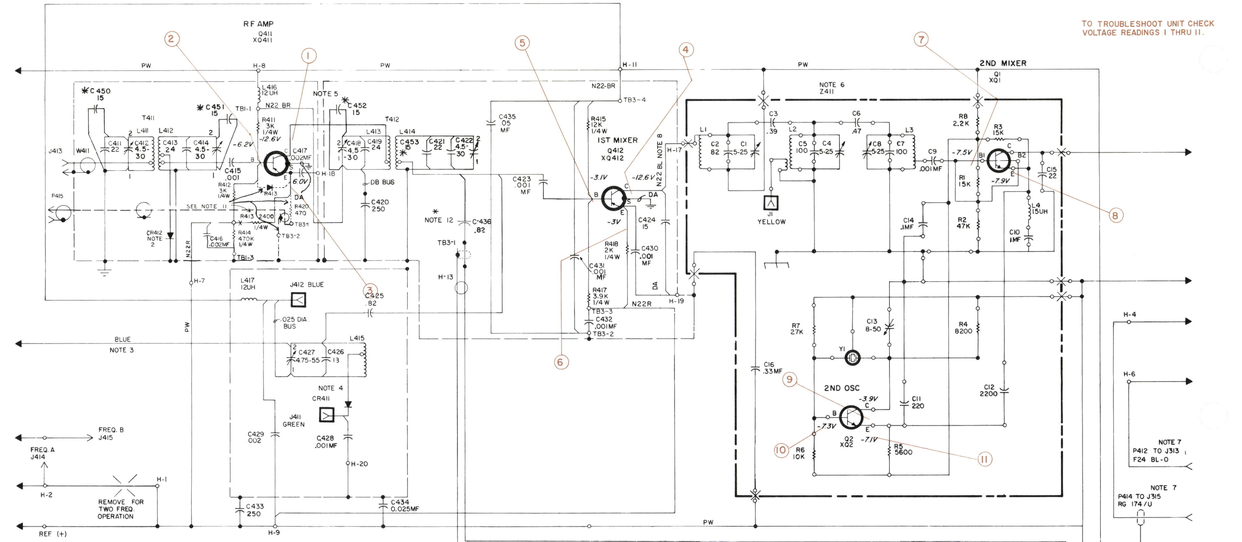


(D-5498941, Rev. 3)
(D-5498477, Sh. 1, Rev. 7)
(D-5498477, Sh. 2, Rev. 7)





(D-5498941, Rev. 3)
(B-5492313, Sh. 1, Rev. 0)
(B-5492313, Sh. 2, Rev. 0)



NOTE 11 PARTS SHOWN DOTTED INSIDE R.F.AMPLIFIER SHIELD ARE ADDED BY MODIFICATION KIT No. 4A03858G1 AND R413 REMOVED WHEN RECEIVER IS USED WITH NOISE BLANKER 4EZ14A10, 4EZ14A11 OR 4EZ14A12.

NOTE 12. TO BE USED ON (G2) 4-FREQ. UNITS ONLY.

NOTES
1. FOR WIRING INSTRUCTION SEE A4031623.
2. DIODE ORIENTATION AS SHOWN (ANODE, CATHODE)
3. LET HANG FROM C427-2.
4. L415 TAP ← (CR411) → J411.
5. STRAP B1B3A9 .005 THK X 125 X 2.90LG.
6. Z411 IS PRINTED WIRING.
7. (TERMINATED P411, P412, P413, & P414 AT ——< WITH A4029840 P1.)
8. LET HANG FROM XQ412-C.
9. LET HANG FROM XQ412-B1.

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.

(D-5498600, Rev. 23)
(RC-996)

DESIGNATES REFERENCE BUS (POSITION SUPPLY VOLTAGE) AND IS NOT NECESSARILY GROUND.

TERMINAL LUG.

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.

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

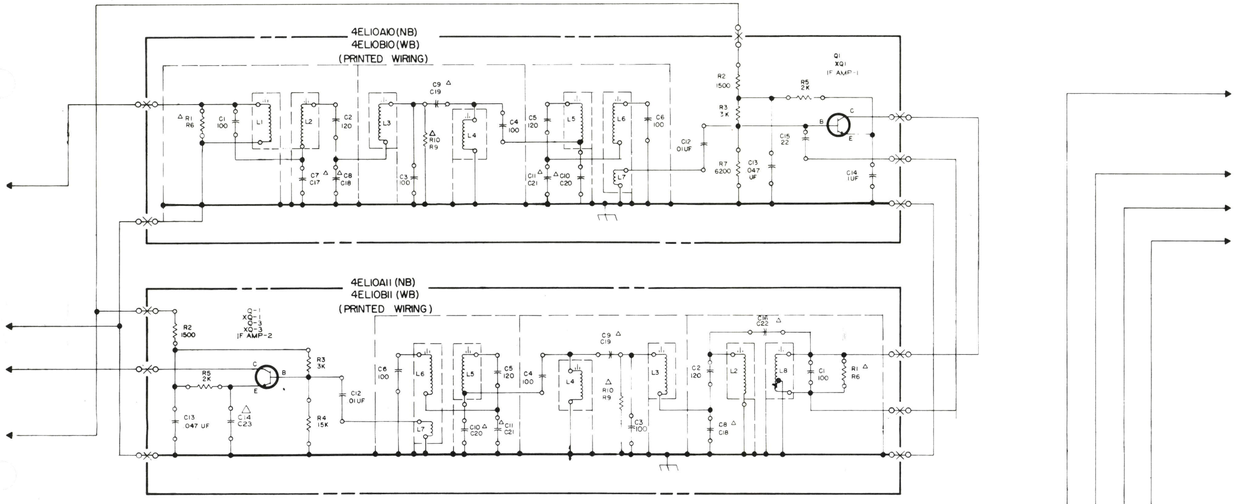
THIS ELEM DIAG APPLIES TO	
MODEL NO	REV LETTER
4EF16A10	M
4EF16A11	B

* C450, C451, C452, AND C453 ARE USED IN THE 25-29, 33-37, AND 42-46MC FREQ. RANGES. SEE FREQ. RANGE MODIFICATION INSTRUCTION PLI98205085G1,2,3 FOR 4EF16A10, AND GROUPS 45, AND 6 FOR 4EF16A11.

Service Sheet

RF AMPLIFIER/CONVERTER
MODEL 4EF16A10, REV. M
MODEL 4EF16A11, REV. B

(RC-598M)



△ 4ELIOAIO	4ELIOBIO	4ELIOAII	4ELIOBII	4ELIOAIO	4ELIOBIO	4ELIOAII	4ELIOBII
R6 = 220 K	R1 = 47 K	R6 = 220 K	R1 = 47 K	R9 = 390K	R9 = 240K	R9 = 39 K	R9 = 240K
C17 = 1830	C7 = 730	C22 = 5	C16 = 10 5				
C18 = 2500	C8 = 1210	C18 = 2500	C8 = 1210				
C9 = 3	C9 = 5 6	C19 = 3	C9 = 5 6				
C20 = 2500	C10 = 1210	C20 = 2500	C10 = 1210				
C21 = 2710	C11 = 1320	C21 = 2710	C11 = 1320				
C14 = IUF	C14 = IUF	C14 = IUF	C23 = 01UF				

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.

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

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

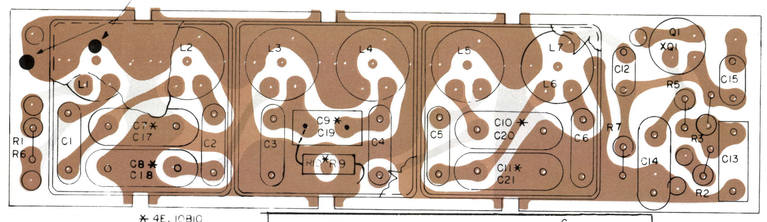
THIS ELEM. DIAG. APPLIES TO

MODEL NO.	REV. LETTER
4ELIOAIO	F
4ELIOBIO	F
4ELIOAII	F
4ELIOBII	F

(D-5498430, Rev. 13)

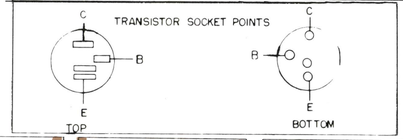
NOTES:
1. FOR WIRING INSTRUCTION SEE A4051623
2. ⊣⊢ DESIGNATES REFERENCE BUS (POSITIVE SUPPLY VOLTAGE) AND IS NOT NECESSARILY GROUNDED
3. ⊙ TERMINAL LUG.
5. △ THESE COMPONENTS ARE DIFFERENT FOR WIDE AND NARROW BAND. SEE CHART.

G1 - 4ELIOBIO - BLUE
G3 - 4ELIOAIO - RED

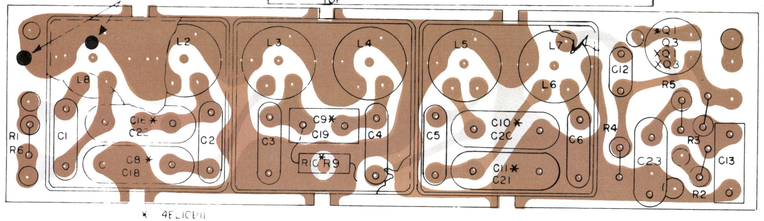


* 4ELIOBIO

TRANSISTOR SOCKET POINTS

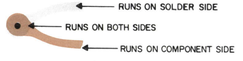


G2 - 4ELIOBII - ORANGE
G4 - 4ELIOAII - GREEN



* 4ELIOBII

(B-5492324, Rev. 5)
(B-5491746, Sh. 1, Rev. 0)
(B-5491746, Sh. 2, Rev. 1)



VOLTAGE READING

SYMBOL NUMBER	TRANSISTOR E	B	C
4ELIOAIO 4ELIOBIC Q1	-6.2	-5.9	0
4ELIOAII-Q3 4ELIOBII-Q1	-9	-8.6	-2.0

RESISTANCE READING

SYMBOL NUMBER	TRANSISTOR E	B	C
4ELIOAIO 4ELIOBIO Q1	3.5K	2.8K	14
4ELIOAII-Q3 4ELIOBII-Q1	3.6K	3.7K	∞

* CIRCUIT OPEN WITH P364 DISCONNECTED.

CONDITIONS OF MEASURMENTS

VOLTAGE

1. READINGS TAKEN ON A 20,000 OHMS-PER-VOLT METER-POSITIVE PROBE TO J304 ON 4ELIOAIC
2. INPUT VOLTAGE = 13.8 V D-C
3. SQUELCH SETTING = MAXIMUM
4. COMPLETE RECEIVER TERMINATED 2-WATT SPKR/AMP
5. READINGS TAKEN FROM BOTTOM OF TRANSISTOR SOCKETS TO J304 ON 4EAIOAIO ARE APPROX ± 10%

RESISTORS

1. POWER DISCONNECTED FROM RECEIVER AND P361 CONNECTED TO J304 ON 4EAIOAIO.
2. TRANSISTOR REMOVED FROM SOCKET UNDER TEST
3. READING TAKEN FROM TOP OF TRANSISTOR SOCKETS TO J304 ON 4EAIOAIO ARE WITHIN ± 20%

Fig. 5 - Service Sheet

290-KC FILTERS
MODEL 4EL10A10, REV. F
MODEL 4EL10B10, REV. F
MODEL 4EL10A11, REV. F
MODEL 4EL10B11, REV. F

(RC-556H)
****

PARTS LIST

1st LO-IF Model 4EL10A10 (N-B) Rev. F
1st LO-IF Model 4EL10B10 (W-B) Rev. F
2nd LO-IF Model 4EL10A11 (N-B) Rev. F
2nd LO-IF Model 4EL10B11 (W-B) Rev. F

PL-5491713-G1 thru G4

SYMBOL	DESCRIPTION	G-E DRAWING & PART NO.
	CAPACITORS	
C1	Ceramic disk, insulated, temp. compensating, 100 mmfd ±5%, 500 vdcw, -470 temp. coef.	C-5494210-P763
C2	Ceramic disk, insulated, temp. compensating, 120 mmfd ±5%, 500 vdcw, -470 temp. coef.	B-5496219-P665
C3 and C4	Ceramic disk, insulated, temp. compensating, 100 mmfd ±5%, 500 vdcw, -470 temp. coef.	C-5494210-P763
C5	Ceramic disk, insulated, temp. compensating, 120 mmfd ±5%, 500 vdcw, -470 temp. coef.	B-5496219-P665
C6	Ceramic disk, insulated, temp. compensating, 100 mmfd ±5%, 500 vdcw, -470 temp. coef.	C-5494210-P763
C7	Silver mica, dipped phenolic insulation, 720 mmfd ±2%, 500 vdcw. Electro Motive Mfg Type DM-20. Used in Model 4EL10B10 only.	A-4029003-P201
C8	Silver mica, dipped phenolic insulation, 1210 mmfd ±2%, 500 vdcw. Electro Motive Mfg Type DM-20. Used in Model 4EL10B10, 11 only.	A-4029003-P202
C9	Ceramic, temp. compensating, 5.6 mmfd ±.15 mmfd, 500 vdcw. Erie Type 331. Used in Models 4EL10B10, 11 only.	M-7473485-P29
C10	Silver mica, dipped phenolic insulation, 1210 mmfd ±2%, 500 vdcw. Electro Motive Mfg Type DM-20. Used in Models 4EL10B10, 11 only.	A-4029003-P202
C11	Silver mica, dipped phenolic insulation, 1220 mmfd ±2%, 500 vdcw. Electro Motive Mfg Type DM-20. Used in Models 4EL10B10, 11 only.	A-4029003-P203
C12	Ceramic, Hi-K disk, insulated, 0.01 mfd ±80% -20%, 50 vdcw. Sprague Cat. No. 10C10D.	M-7401827-P9
C13	*Mylar-dielectric, 0.047 mfd ±20%, 50 vdcw. Goodall Type 601PE.	B-5491189-P104
C14#	*Mylar, dielectric, 0.1 mf ±20%, 50 vdcw. Goodall Type 601PE. Used in Models 4EL10A10 and B10, Models 4EL10A11, Rev. A and earlier and Model 4EL10B11 earlier than Rev. A. Added to Model 4EL10A10 by Rev. D.	B-5491189-P106
C15	Ceramic disk, insulated, temp. compensating; 22 mmfd ±5%, 500 vdcw, -80 temp coef. Used in Models 4EL10B10, A10 only.	C-5494210-P247
C16	Ceramic, temp. compensating; 10.5 mmfd ±.25 mmfd, 500 vdcw, 0 temp. coef. Used in Model 4EL10B11 only.	M-7473485-P33
C17#	Fixed silver mica, DM20-dipped phenolic insulation: crimped leads, 1,830 µµf ±2%, 500 VDCW. Electromotive Mfg Co Type DM20. (Used in Model 4EL10A10 only). In Filters of Rev A or earlier: Fixed silver mica, DM20-dipped phenolic insulation: crimped leads, 1,500 µµf ±2%, 500 VDCW. Electromotive Mfg Co Type DM20.	A-4029003-P207 A-4029003-P204
C18#	Fixed silver mica, DM20-dipped phenolic insulation: crimped leads, 2,500 µµf ±2%, 500 VDCW. Electromotive Mfg Co Type DM20. (Used in Models 4EL10A10, 11 only). In Filters, Model 4EL10A10, of Rev A or earlier: Fixed silver mica, DM20-dipped phenolic insulation: crimped leads, 2,000 µµf ±2%, 500 VDCW. Electromotive Mfg Co Type DM20. In Filters, Model 4EL10A11, earlier than Rev A: Fixed silver mica, DM20-dipped phenolic insulation: crimped leads, 2,000 µµf ±2%, 500 VDCW. Electromotive Mfg Co Type DM20.	A-4029003-P208 A-4029003-P205 A-4029003-P205
C19#	Fixed ceramic, (insulated, temp compensating): impregnated dipped phenolic coating, tinned copper or brass leads, 3.0 µµf ±0.2 µµf, 500 VDCW, temp coef zero. Erie Resistor Corp Style 331. (Used in Models 4EL10A10, 11 only). In Filters, Model 4EL10A10, of Rev A or earlier: Fixed ceramic, (insulated, temp compensating): impregnated dipped phenolic coating, tinned copper or brass leads, 4.0 µµf ±0.2 µµf, 500 VDCW, temp coef zero. Erie Resistor Corp Style 331 In Filters, Model 4EL10A11, earlier than Rev A: Fixed ceramic, (insulated, temp compensating): impregnated dipped phenolic coating, tinned copper or brass leads, 4.0 µµf ±0.2 µµf, 500 VDCW, temp coef zero. Erie Resistor Corp Style 331.	B-7473485-P34 B-7473485-P31 B-7473485-P31

SYMBOL	DESCRIPTION	G-E DRAWING & PART NO.
C20#	Fixed silver mica, DM20-dipped phenolic insulation: crimped leads, 2,500 µµf ±2%, 500 VDCW. Electromotive Mfg Co Type DM20. (Used in Models 4EL10A10, 11 only). In Filters, Model 4EL10A10, of Rev A or earlier: Fixed silver mica, DM20-dipped phenolic insulation: crimped leads, 2,000 µµf ±2%, 500 VDCW. Electromotive Mfg Co Type DM20. In Filters, Model 4EL10A11, earlier than Rev A: Fixed silver mica, DM20-dipped phenolic insulation: crimped leads, 2,000 µµf ±2%, 500 VDCW. Electromotive Mfg Co Type DM20.	A-4029003-P208 A-4029003-P205 A-4029003-P205
C21#	Fixed silver mica, DM20-dipped phenolic insulation: crimped leads, 2,710 µµf ±2%, 500 VDCW. Electromotive Mfg Co Type DM20. (Used in Models 4EL10A10, 11 only). In Filters, Model 4EL10A10, of Rev A or earlier: Fixed silver mica, DM20-dipped phenolic insulation: crimped leads, 2,200 µµf ±2%, 500 VDCW. Electromotive Mfg Co Type DM20. In Filters, Model 4EL10A11, earlier than Rev A: Fixed silver mica, DM20-dipped phenolic insulation: crimped leads, 2,200 µµf ±2%, 500 VDCW. Electromotive Mfg Co Type DM20.	A-4029003-P209 A-4029003-P206 A-4029003-P206
C22#	Fixed ceramic, (insulated, temp compensating): impregnated dipped phenolic coating, tinned copper or brass leads, 5.0 µµf ±0.2 µµf, 500 VDCW, temp coef zero. Erie Resistor Corp Style 331. (Used in Model 4EL10A11 only). In Filters earlier than Rev A: Fixed ceramic, (insulated, temp compensating): impregnated dipped phenolic coating, tinned copper or brass leads, 7.0 µµf ±0.2 µµf, 500 VDCW, temp coef zero. Erie Resistor Corp Style 331.	B-7473485-P35 B-7473485-P32
C23#	*Mylar, dielectric, 0.01 mf ±20%, 50 VDCW. Goodall Type 601PE. Added to Model 4EL10A11 by Rev. B. to Model 4EL10B11 by Rev. A. Deleted from Model 4EL10A11 by Rev. D.	B-5491189-P101
	INDUCTORS	
L1	Coil assembly-290 KC. Used in Models 4EL10A10, B10 only.	PL-5490610-G1
L2 thru L5	Coil assembly-290 KC.	PL-5490610-G1
L6 and L7	Coil assembly-290 KC.	PL-5490610-G2
L8	Coil assembly-290 KC. Used in Models 4EL10A11, B11 only.	PL-5490610-G3
	TRANSISTOR	
Q1#	Transistor.	B-5492653-P2
Q3#	Transistor. Added by Rev. D in Model 4EL10A11.	A-4036929-P2
	RESISTORS	
R1	Composition, 47,000 ohms ±10%, 1/2 w. Used in Models 4EL10B10, 11 only.	C-3R77-P473K
R2	Composition, 1500 ohms ±10%, 1/2 w.	C-3R77-P152K
R3	Composition, 3000 ohms ±5%, 1/2 w.	C-3R77-P302J
R4#	Composition, 15,000 ohms ±5%, 1/2 w. Deleted by Rev. A in Models 4EL10A10, B10 only.	C-3R77-P153J
R5	Composition, 2000 ohms ±5%, 1/2 w.	C-3R77-P202J
R6	Composition, 0.22 megohms ±10%, 1/2 w. Used in Models 4EL10A10, 11 only.	C-3R77-P224K
R7	Composition, 6200 ohms ±5%, 1/2 w. Added by Rev. A in Models 4EL10A10, B10 only.	C-3R77-P622J
R9	Composition, 0.39 megohms, ±10%, 1/2 w. Added by Rev. F. In Models 4EL10A10,11 only.	C-3R77-P394K
R10	Composition, 0.24 megohms ±10%, 1/2 w. Changed by Rev F. Models 4EL10B10, 11 only. In Models 4EL10B10, 11, Rev. F only. Composition, 0.3 megohms, ±5%, 1/2 w. Added by Rev. F.	C-3R77-P244K C-3R77-P304J
	SOCKETS	
XQ1	4-contacts, low loss mica filled phenolic: contact resistance .03 ohm max 1 amp. Elco Cat. No. 3303. Socket must mate with Elco 757 mtg ring.	B-5490277-P1
XQ3		

PRODUCTION CHANGES

(Refer to Parts List for description of parts affected by these revisions).

REV. A (Models 4EL10A10, 4EL10B10 only)

To reduce the possibility of oscillations oaused by strong off-channel signals. R4 replaced by R7.

REV. A (Model 4EL10A11)
REV. B (Model 4EL10A10)

To narrow the frequency response of the 290 KC filters. Changed values of C17 through C22.

REV. A (Model 4EL10B11)
REV. B (Model 4EL10A11)

To improve performance with high input signals. Changed value of C14.

REV. C (Models 4EL10A10, 11)
REV. B (Models 4EL10B10, 11)

To incorporate high quality Transistors. Changed Q1.

REV. D (Model 4EL10A10)
REV. C (Models 4EL10B10, 11)

To improve operation of receivers at high himidity, changed treatment of coils.

REV. D (Model 4EL10A11)

To improve operation of receivers at high himidity and high temperatures. Changed treatment of coils. Changed Q1 to Q3 and changed C23 to C14.

REV. D (Model 4EL10B10)
(Model 4EL10B11)

REV. E (Model 4EL10A10)
(Model 4EL10A11)

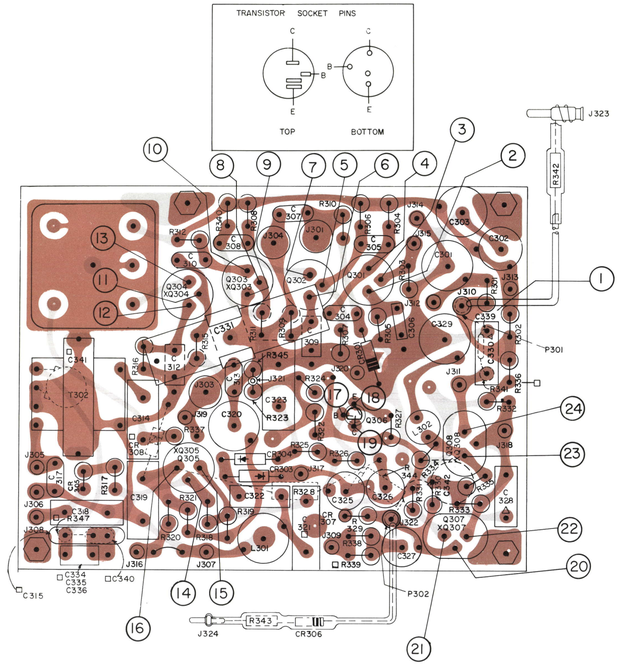
Increased diameter of posts used to mount stand-off boards. Changed part number of posts from 4029548-P1 to 4038104-P1.

REV. E (Model 4EL10B10)
(Model 4EL10B11)

To facilitate alignment of low I.F.'s. Added R10.

REV. F (Models 4EL10A10,11)
(Models 4EL10B10,11)

To facilitate alignment of low I.F.'s with single cupcove coils. Added R9, changed R10.



RESISTANCES

1. AUDIO ASSEMBLY DISCONNECTED FROM CIRCUIT.
2. TRANSISTOR REMOVED FROM SOCKET UNDER TEST.
3. READINGS TAKEN FROM TOP OF TRANSISTOR SOCKETS TO J304 ON 4EA10A10
4. READINGS OBTAINED ARE WITHIN ± 20%.

RESISTANCE READINGS

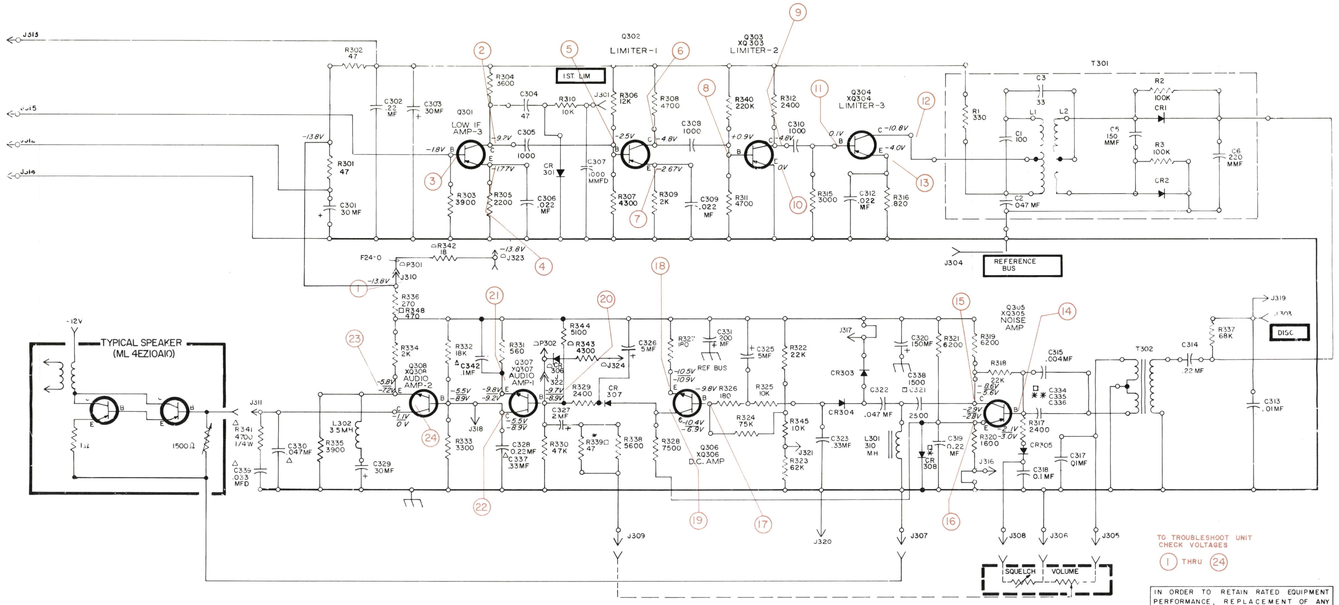
SYMBOL NUMBER	TRANSISTOR		
	E	B	C
Q301	2.2K	2.7K	5.2K
Q302	2K	2.75K	7.4K
Q303	0	5K	9.1K
Q304	1K	3K	1.95K
Q305	1.6K	30K	7.8K
Q306 *	.92K	4.4K	7.6K
Q307	2.2K	11.4K	3K
Q308	2K	3K	∞

* TRANSISTOR SOLDERED IN BOARD-READINGS TAKEN UNDER THIS CONDITION.

△ FOR MODEL NO 4EA10A11 SUBSTITUTE C337 FOR C328 C339 AND R341 FOR C330

□ FOR MODEL NO 4EA10B10 OMIT C334,C335,C336, CR308,R346 R339, SUBSTITUTE C338 FOR C321, C340 & R347 FOR C315, R348 FOR R336 AND ADD C341

⬭ FOR MODEL NO 4EA10A10 & 4EA10B10 ADD P301, P302, CR306, R342, R343, J323 & J324.



VOLTAGES

READINGS TAKEN ON A 20,000 OHM-PER-VOLT METER-POSITIVE PROBE TO J304 ON 4EA10A10.

2. INPUT VOLTAGE-13.8 VOLTS D-C.

3. SQUELCH SETTING-WHERE TWO READINGS ARE GIVEN, TOP READING IS WITH MINIMUM SQUELCH AND BOTTOM READING IS WITH MAXIMUM SQUELCH OTHERWISE READINGS ARE WITH MAXIMUM SQUELCH SETTING.

4. RF ASSEMBLY, IF ASSEMBLY AND AUDIO ASSEMBLY TERMINATED INTO A 2-WATT SPEAKER AMPLIFIER.

5. READINGS OBTAINED ARE APPROXIMATELY ± 1V.

△ FOR MODEL NO 4EA10A11 SUBSTITUTE C337 FOR C328 AND C339 AND R341 FOR C330, DELETE C342

□ FOR MODEL NO 4EA10A10 OMIT CR308, R339, C334, C335 & C336. SUBSTITUTE C338 FOR C321 AND R348 FOR R336.

⬭ FOR MODELS 4EA10A10 AND 4EA10B10 ADD R342, R343, CR306, J323, J324, P301 & P302. THESE ITEMS ARE PART OF PL19B204290G1 & G2.

(D-5498457, Rev. 38)

* USED IN NARROW BAND RECEIVERS ONLY.

⊣⊢ DESIGNATES REFERENCE BUS (POSITIVE SUPPLY VOLTAGE) AND IS NOT NECESSARILY GROUND

CAPACITOR	VALUE
C334	.001 MF
C335	.0022 MF
C336	.4700

USED IN NARROW BAND RECEIVERS ONLY. ONLY ONE OF THESE CAPACITORS WILL BE FOUND IN THE UNIT AND IT WILL BE SELECTED IN THE FACTORY FOR OPTIMUM SQUELCH PERFORMANCE.

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 MF=MICROFARADS. INDUCTANCE VALUES IN MICROHENRYS UNLESS FOLLOWED BY MH=MILLIHENRYS OR H=HENRYS.

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
4EA10A10	XF
4EA10A11	J
4EA10B10	M

TO TROUBLESHOOT UNIT CHECK VOLTAGES (1) THRU (24)

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.

Figure 6 - Service Sheet

AUDIO ASSEMBLY
MODEL 4EA10A10 (NB), REV. XF
MODEL 4EA10A11 (NB), REV. J
MODEL 4EA10B10 (WB), REV. M

(RC-557Y)

PARTS LIST

AUDIO ASSEMBLY
MODEL 4EA10A10 (NB), REV. XF
MODEL 4EA10A11,(NB), REV. J
MODEL 4EA10B10 (WB), REV. M

SYMBOL	G-E PART NO.	DESCRIPTION
		CAPACITORS
C301	5491000-P1	Electrolytic, low imp type; 30 µf +100% -50%, 25 VDCW, 10 HM max imp at 50 KC/sec; sim to Sprague S45553.
C302	7491930-P110	Mylar®, dielectric; 0.22 µf ±20%, 100 VDCW; sim to Good-All Electric 663UW.
C303	5491000-P1	Electrolytic, low imp type; 30 µf +100% -50%, 25 VDCW, 10 HM max imp at 50 KC/sec; sim to Sprague S45553.
C304	5494210-P617	Ceramic disc, insulated, temp compensating; 47 µµf ±10%, 500 VDCW, -750 temp coef.
C305	5494481-P112	Ceramic disc, insulated; 1,000 µµf ±10%, 500 VDCW sim to RMC Corp JF Discap.
C306	5491189-P102	Mylar®, dielectric; 0.022 µf ±20%, 50 VDCW; sim to Good-All Electric 601PE.
C307*	5494481-P112	Ceramic, disc, insulated; 1,000 µµf ±10%, 500 VDCW; sim to RMC Corp JF Discap.
C308	5494481-P112	Ceramic, disc, insulated; 1,000 µµf ±10%, 500 VDCW; sim to RMC Corp JF Discap.
C309	5491189-P102	Mylar®, dielectric; 0.022 µf ±20%, 50 VDCW; sim to Good-All Electric 601PE.
C310	5494481-P112	Ceramic disc, insulated; 1,000 µµf ±10%, 500 VDCW; sim to RMC Corp JF Discap.
C312	5491189-P102	Mylar®, dielectric; 0.022 µf ±20%, 50 VDCW; sim to Good-All Electric 601PE.
C313	7491827-P2	Ceramic, Hi-K disc, insulated; 0.01 µf +80%, -30% 50 VDCW; sim to Sprague 19C180.
C314	5491189-P108	Mylar®, dielectric; 0.22 µf ±5%, 50 VDCW; sim to Good-All Electric 601PE.
C315*	5494481-P118	Hi-K disc, ceramic, insulated, 4,000 µµf ±10%, 500 VDCW; sim to RMC Corp JF Discap. Added to 4EA10B10 by Rev. K. In models earlier than Rev. A:
	5491189-P102	Mylar® dielectric; 0.022 µf ±20%, 50 VDCW; sim to Good-All Electric 601PE.
C316*	5491189-P101	Mylar®, dielectric; dipped epoxy coating, insulated, tinned copper-clad steel (crimped) leads, 0.10 µf ±20%, 50 VDCW; sim to Good-All Electric 601PE. (Deleted by Rev. G).
C317	7491827-P2	Ceramic, Hi-K disc, insulated; 0.01 µf +80%, -30% 50 VDCW; sim to Sprague 19C180.
C318	5491189-P106	Mylar®, dielectric; 0.1 µf ±20%, 50 VDCW; sim to Good-All Electric 601PE.
C319	5491189-P108	Mylar®, dielectric; 0.22 µf ±5%, 50 VDCW; sim to Good-All Electric 601PE.
C320*	5496267-P112	Tantalum, dry solid, tubular: 150 µf, ±20% 15 VDCW; sim to Sprague Electric Co. 150D157X0015S2. In Model 4EA10A10 earlier than REV. XB, Model 4EA10B10 earlier than REV. G and Model 4EA10A11 earlier than REV. E:
	5491000-P1	Electrolytic, low imp type: 30 µf, +100% -50%, 25 VDCW, 10 HM max imp at 50 KC/sec; sim to Sprague Electric Co. S45553.
C321*	4029003-P208	Silver mica, dipped phenolic insulation, 2500 µµf ±2%, 500 VDCW; sim to Electromotive Mfg. DM20. In models of Rev. G or earlier:
	4029003-P20	Silver mica, dipped phenolic insulation, 3300 µµf ±5%, 500 VDCW.
C322	5491189-P104	Mylar®, dielectric; 0.047 µf ±20%, 50 VDCW; sim to Good-All Electric 601PE.
C323*	5491189-P109	Mylar®, dielectric; crimped leads, 0.33 µf ±20%, 50 VDCW; sim to Good-All Electric 601PE. In models of Rev. D thru L:
	5491189-P9	Mylar®, dielectric; straight leads, 0.33 µf ±20%, 50 VDCW; sim to Good-All Electric 601PE. In models of Rev. C and earlier:
	7489483-P1	Electrolytic, (miniature for 85°C operation); hermetically sealed in aluminum tube, 5 µf +100% -10%, 6 VDCW; sim to Sprague Electric 30D125A1.
C325*	5495670-P3	Electrolytic, (vertical mount type); insulated, sealed in aluminum tube, 5 µf +100% -10%, 6 VDCW; sim to Sprague Electric 30D125A1. In models of Rev. L and earlier:
	7489483-P1	Electrolytic, (miniature for 85°C operation); hermetically sealed in aluminum tube, 5 µf +100% -10%, 6 VDCW; sim to Sprague Electric 30D125A1.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

SYMBOL	G-E PART NO	DESCRIPTION
		CAPACITORS (CONT'D)
C326*	7489483-P6	Electrolytic, miniature, sealed; 5 mf +100% -10% 25 VDCW; sim to Sprague 30D179A1. In model 4EA10, Rev. D and earlier:
	5495670-P8	Electrolytic, (vertical mount type), insulated, sealed in aluminum tube: 10 mf, +100% -15%, 15 VDCW; sim to Sprague 30D165A1. In Model 4EA10A10, Rev. L and earlier:
	7489483-P5	Electrolytic, hermetically sealed: 10 mf, +100% -10%, 15 VDCW; sim to Sprague 30D165A1.
C327*	5495670-P13	Electrolytic, (vertical mount type); insulated, sealed in metal tube, 2 µf +100% -15%, 25 VDCW; sim to Sprague 30D176A1. In models of Rev. C or earlier:
	7489483-P6	Electrolytic, miniature, hermetically sealed in metal tube; 5 µf +100% -10%, 25 VDCW; sim to Sprague 30D179A1.
C328	5491189-P108	Mylar®, dielectric: 0.22 µf ±5%, 50 VDCW; sim to Good-All Electric 601PE. Model 4EA10A10 only.
C329	5491000-P1	Electrolytic, low imp type; 30 µf +100% -50%, 25 VDCW, 10 HM max imp at 50 KC/sec; sim to Sprague S45553.
C330	5491189-P104	Mylar®, dielectric: 0.047 µf ±20%, 50 VDCW; sim to Good-All Electric 601PE. Model 4EA10A10 only.
C331	7489483-P20	Electrolytic, miniature, hermetically sealed in metal tube; 200 µf +100% -15%, 15 VDCW; sim to Sprague Cat No. 30D174A1.
C332*	5491189-P102	Mylar®, dielectric; dipped epoxy coating, insulated, timned copper-clad steel (crimped) leads, 0.022 µf ±20%, 50 VDCW; sim to Good-All Electric 601PE. (Added by Rev. G; deleted by Rev. L.)
C333*		Deleted in Model 4EA10A10 by Rev. XE, in Model 4EA10A11 by Rev. H and in Model 4EA10B10 by Rev. L. In Models earlier than 4EA10A10, Rev. XE, 4EA10A11 Rev. H, and 4EA10B10, Rev. L:
	5495670-P23	Electrolytic, (vertical mount type); insulated, sealed in aluminum tube, 50 µf +100% -10%, 15 VDCW; sim to Sprague 30D170A1. In Models of Rev. J thru L:
	5495670-P9	Electrolytic, (vertical mount type); insulated, sealed in aluminum tube, 35 µf +100% -10%, 15 VDCW; sim to Sprague 30D169A1.
C334*	5491189-P101	Mylar®, dielectric; crimped leads, 0.01 µf ±20%, 50 VDCW; sim to Good-All Electric 601PE. Added to Model 4EA10A10 by Rev. L and to Model 4EA10B10 by Rev. K.
C335*	5491189-P102	Mylar®, dielectric; crimped leads, 0.022 µf ±20%, 50 VDCW; sim to Good-All Electric 601PE. Added to Model 4EA10A10 by Rev. L and to 4EA10B10 by Rev. K.
C336*	4029003-P24	Silver mica; dipped phenolic insulation; 4700 µµf ±5%, 300 VDCW; sim to Electromotive DM20. Added to Models 4EA10A10 by Rev. L and to 4EA10B10 by Rev. K.
C337	5491189-P109	Mylar®, 0.33 µf ±20%, 50 VDCW. Model 4EA10A11 only.
C338	7147203-P12	Fixed silver mica, 1,500 pf ±5%, 500 VDCW; sim to Electromotive DM20. Used in Model 4EA10B10 only.
C340*	7491930-P3	Mylar®, dielectric: 0.0047 mfd, ±20%, 100 VDCW; sim to G-E Type 61F. Added to Model 4EZ10B10 by Rev. D. Deleted from Model 4EA10B10 by Rev. K.
C341*	7491827-P2	Ceramic, Hi-K disk, insulated; 0.01 mf +80% -30%, 5 VDCW; sim to Sprague 19C180. Added to Model 4EA10B10 by Rev. D. Deleted from Model 4EA10B10 by Rev. K.
C342*	7491827-P5	Ceramic, disk type, insulated: 0.1 mf, +80% -30% 50 VDCW; sim to Sprague 36C172. Added to Model 4EA10A10 by Rev. W; to Model 4EA10B10 by Rev. E, and to Model 4EA10A11 by Rev. C.
		RECTIFIERS
CR301	7777146-P3	Diode; Germanium; sim to Hughes 1N90.
CR303* and CR304*	4036936-P1	Silicon diodes; hermetically sealed in glass tubes. In models of Rev. M and earlier:
	5491705-P2	Silicon diode; sim to Hughes HD6225.
CR305*	4036887-P1	Silicon Zener diode; hermetically sealed in glass. In models of Rev. A thru M: Diode, Type 1N465.
CR306*	5491705-P2	Silicon diode; sim to Hughes HD6225. (Part of Mute Mod Cable 19B204290-G2). Added by Tev. T to Model 4EA10A10 and Rev. B to Model 4EA10B10.
CR307*	4036936-P1	Silicon diode; sealed in glass. Added to Model 4EA10A10 by Rev. V; to Model 4EA10A11 by Rev. B; and to Model 4EA10A11 by Rev. D.
CR308*	4036887-P3	Silicon diode, sealed in glass. Added to Model 4EA10A10 by Rev. V; and to Model 4EA10A11 by Rev. B.

SYMBOL	G-E PART NO	DESCRIPTION
		JACKS AND RECEPTACLES
J301	4033568-P3	Test jack: (Printed circuit); green nylon body, beryllium copper contact, max operating voltage, 600 vrms, max operating temp 105°C; sim to Alden Products 110PC1-green. In models of Rev. L or earlier:
	4029830-P3	Jack, Test: Printed wiring, insulated nylon-green; sim to Raytheon B8436401-166-G7.
J303*	4033568-P6	Test jack: (Printed circuit); orange nylon body, beryllium copper contact, max operating voltage, 600 vrms, max operating temp 105°C; sim to Alden Products 110PC1-orange. In models of Rev. L or earlier:
	4029830-P6	Jack, Test: Printed wiring, insulated nylon-orange; sim to Raytheon B-8436401-166-G5.
J304*	4033568-P2	Test Jack: (Printed circuit); red nylon body, beryllium copper contact, max operating voltage, 600 vrms, max operating temp 105°C; sim to Alden Products 110PC1-red. In models of Rev. L or earlier:
	4029830-P2	Jack, Test: Printed wiring, insulated nylon-red; sim to Raytheon Mfg. B-8436401-166-G4.
J305 thru J318	4033513-P4	Contact Pin: Brass; cadmium plated finish; sim to Bead Chain L93-3.
J319* thru J322*	4033513-P4	Contact Pin: Brass; cadmium plated finish; sim to Bead Chain L93-3. Added by Rev. M.
J323*	4033348-P1	Contact; Female friction. (Part of Mute Mod Cable 19B204290-G1). Added to Model 4EA10A10 by Rev. T; to Model 4EA10B10 by Rev. B.
J324*	4033513-P1	Contact Pin: Brass; sim to Bead Chain L93-3. (Part of Mute Mod Cable 19B204290-G1). Added to Model 4EA10A10 by Rev. T; to Model 4EA10B10 by Rev. B.
		INDUCTORS
L301	PL-4031476-G1	Choke coil; 310 mh ±10%, 310 ohms max DC res.
L302*	5491736-P6	Choke: 3.5 mh ±10% at 1000 cps, 2.5 ohms; sim to Aladdin 33-494. In models of Rev. M, N, P and R:
	5491736-P4	Choke: 2.65 mh ±10% at 100 cps, 3.0 ohms; sim to Aladdin 33-176. In models of Rev. L and earlier:
	PL-4031477-G1	Choke: Assembly; includes the following:
	7773023-P25	Core.
	4029250-P10	Wire.
		TRANSISTORS
Q301* and Q302*	4038260-P2	Germanium, PNP. In Model 4EA10A10, Rev. XE and earlier, Model 4EA10A11, Rev. J and earlier, and Model 4EA10B10, Rev. L and earlier:
	4037661-P1	PNP, Germanium. In model 4EA10A10, Rev. XC and earlier, Model 4EA10A10, Rev. F and earlier, Model 4EA10B10, Rev. H and earlier:
	4037661-P2	PNP, Germanium. In models earlier than Rev. R; sim to 2N450.
Q303 and Q304	5496214-P1	PNP, Germanium.
Q305*	5496214-P1	PNP, Germanium. Hermetically sealed in metallic case with glass seals. In models earlier than Rev. P: 2N450/4JX1A810.
Q306*	19A115123-P1	NPN, Silicon. In model 4EA10A10 earlier than Rev. V; Model 4EA10A11 earlier than Rev. B; Model 4EA10B10 earlier than Rev. D:
	4033428-P1	NPN, Germanium.
Q307* and Q308*	5492659-P2	NPN, Germanium. Hermetically sealed in metallic case with glass seal. In models earlier than Rev. P: 2N169.
		RESISTORS
R301 and R302	3R77-P470K	Composition: 47 ohms ±10%, 1/2 w.
R303*	3R77-P392K	Composition: 390 ohms ±10%, 1/2 w. In models earlier than Rev.'s XD, G, K:
	3R77-P272K	Composition: 2,700 ohms ±10%, 1/2 w.
R304	3R77-P362J	Composition: 3,600 ohms ±5%, 1/2 w.
R305	3R77-P222K	Composition: 2,200 ohms ±10%, 1/2 w.
R306	3R77-P123K	Composition: 12,000 ohms ±10%, 1/2 w.
R307*	3R77-P432J	Composition: 4,300 ohms, ±5%, 1/2 w. In models earlier than Rev's. XD, G, K:
	3R77-P332K	Composition: 3,300 ohms ±10%, 1/2 w.
R308*	3R77-P472K	Composition: 4.7K ohms ±10%, 1/2 w. In models of Rev. R:
	3R77-P562K	Composition: 5.6K ohms ±10%, 1/2 w. In models of Rev. P and earlier:

SYMBOL	G-E PART NO	DESCRIPTION
		RESISTORS (CONT'D)
R309*	3R77-P202J	Composition: 2,000 ohms, ±5%, 1/2 w. In models of Rev. D thru L:
	3R152-P202J	Fixed composition: 2,000 ohms ±5%, 1/4 w. In models of Rev. C or earlier: Composition: 2,000 ohms, ±5%, 1/2 w.
R310*	3R77-P103J	Composition: 10,000 ohms, ±5%, 1/2 w. Added by Rev. M.
R311	3R77-P472J	Composition: 4,700 ohms, ±5%, 1/2 w.
R312	3R77-P242J	Composition: 2,400 ohms, ±5%, 1/2 w.
R315	3R77-P302J	Composition: 3,000 ohms, ±5%, 1/2 w.
R316*	3R77-P821J	Composition: 820 ohms +5%, 1/2 w. In Models of Rev. XE, H, L and earlier:
	3R77-P122J	Fixed composition: 1,200 ohms, +5%, 1/2 w; In Model 4EA10A10, Rev. XB and earlier, Model 4EA10A11 Rev. E and earlier, Model 4EA10B10 Rev. G and earlier,
	3R77-P102J	Fixed composition: 1,000 ohms, +5%, 1/2 w. In models of Rev. K, H, J:
	3R77-P821J	Fixed composition: 820 ohms, +5%, 1/2 w. In models of Rev. G or earlier: Fixed composition: 1,000 ohms, +5%, 1/2 w.
R317*	3R77-P242K	Composition: 2,400 ohms, ±10%, 1/2 w. In model 4EA10A10, Rev. B to Rev. U, and Models 4EA10A11 and 4EA10B10, Rev. A and earlier:
	3R77-P392J	Composition: 3,900 ohms, ±5%, 1/2 w. In Model 4EA10A10 earlier than Rev. A:
	3R77-P822K	Composition: 8,200 ohms, ±10%, 1/2 w.
R318	3R77-P223K	Composition: 22,000 ohms, ±10%, 1/2 w.
R319	3R77-P622J	Composition: 6,200 ohms, ±5%, 1/2 w.
R320*	3R77-P162K	Composition: 1,600 ohms, ±10%, 1/2 w. In Model 4EA10A10 from Rev. G through Rev. U; Model 4EA10A11, Rev. A or earlier; Model 4EA10B10, Rev. C and earlier:
	3R77-P242J	Composition: 2,400 ohms, ±5%, 1/2 w. In Model 4EA10A10, Rev. F and earlier:
	3R77-P222J	Composition: 2,200 ohms, ±5%, 1/2 w. In Model 4EA10A10, Rev. A and earlier:
	3R77-P222K	Composition: 2,200 ohms, ±10%, 1/2 w.
R321	3R77-P622J	Composition: 6,200 ohms, ±5%, 1/2 w.
R322*	3R77-P223J	Composition: 22,000 ohms, ±5%, 1/2 w. In Model 4EA10A10, Rev. U and earlier: Model 4EA10A11, Rev. A and earlier; Model 4EA10B10, Rev. C and earlier:
	3R77-P472J	Composition: 4,700 ohms, ±5%, 1/2 w.
R323*	3R77-P623J	Composition: 62,000 ohms, ±5%, 1/2 w. In Model 4EA10A10, Rev. U and earlier; Model 4EA10A11, Rev. A and earlier; Model 4EA10B10, Rev. C and earlier:
	3R77-P223J	Composition: 22,000 ohms, ±5%, 1/2 w.
R324*	3R77-P753J	Composition: 75,000 ohms, ±5%, 1/2 w. In Model 4EA10A10, Rev. U and earlier; Model 4EA10A11, Rev. A and earlier; Model 4EA10B10, Rev. C and earlier:
	3R77-P683K	Composition: 68,000 ohms, ±10%, 1/2 w.
R325*	3R77-P103J	Composition: 10,000 ohms, ±5%, 1/2 w. In Models of Rev. D or earlier:
	3R77-P223J	Composition: 22,000 ohms, ±10%, 1/2 w. In Models of Rev. C or earlier:
	3R77-P331K	Composition: 330 ohms, ±10%, 1/2 w.
R326	3R77-P181K	Composition: 180 ohms, ±10%, 1/2 w.
R327*	3R77-P181K	Composition: 180 ohms, ±10%, 1/2 w. In Models of Rev. A thru L:
	3R152-P181K	Composition: 180 ohms, ±10%, 1/4 w. In Models earlier than Rev. A:
	3R77-P181K	Composition: 180 ohms, ±10%, 1/2 w.
R328*	3R77-P752K	Composition: 7,500 ohms, ±10%, 1/2 w. In Model 4EA10A10, Rev. U and earlier; Model 4EA10A11, Rev. A and earlier; Model 4EA10B10, Rev. C and earlier:
	3R77-P153J	Composition: 15,000 ohms, ±5%, 1/2 w.
R329*	3R77-P242J	Composition: 2,400 ohms, ±5%, 1/2 w. In Models of Rev. D or earlier:
	3R77-P302J	Composition: 3,000 ohms, ±5%, 1/2 w. In Models of Rev. C or earlier:
	3R77-P332J	Composition: 3,300 ohms, ±5%, 1/2 w. In Models of Rev. B or earlier:
	3R77-P222K	Composition: 2,200 ohms, ±10%, 1/2 w.
R330	3R77-P473J	Composition: 47,000 ohms, ±5%, 1/2 w. In Models 4EA10A10, Rev. U and earlier; Model 4EA10A11, Rev. A and earlier; Model 4EA10B10, Rev. C and earlier:
	3R77-P333J	Composition: 33,000 ohms, ±5%, 1/2 w.
R331*	3R77-P561K	Composition: 560 ohms, ±10%, 1/2 w. In Model 4EA10A10, Rev. U and earlier; Model 4EA10A11, Rev. C and earlier; Model 4EA10B10, Rev. A and earlier:
	3R77-P681J	Composition: 680 ohms, ±5%, 1/2 w.
R332	3R77-P183J	Composition: 18,000 ohms, ±5%, 1/2 w.
R333	3R77-P332J	Composition: 3,300 ohms, ±5%, 1/2 w.
R334	3R77-P202J	Composition: 2,000 ohms, ±5%, 1/2 w.
R335	3R77-P392J	Composition: 3,900 ohms, ±5%, 1/2 w.
R336*	3R77-P271J	Composition: 270 ohms, ±5%, 1/2 w. Deleted from Model 4EA10B10 by Rev. D.
R337	3R77-P683J	Composition: 68,000 ohms, ±5%, 1/2 w.

SYMBOL	G-E PART NO	DESCRIPTION
		RESISTORS (CONT'D)
R338*	3R77-P562K	Composition: 5600 ohms +10%, 1/2 w. In Models of Rev. XE, H, L and earlier:
	3R77-P392J	Composition: 3,900 ohms, +5%, 1/2 w.
R339*	3R77-P470KK	Composition: 47 ohms, ±10%, 1/2 w. In Models of Rev. A or earlier:
	3R77-P272K	Composition: 2,700 ohms, ±10%, 1/2 w. Used in Models 4EA10A10 and 4EA10A11 only.
R340	3R77-P224K	Composition: 0.22 megohms, ±10%, 1/2 w.
R342*	3R77-P180J	Composition: 18,ohms, ±5%, 1/2 w. (Part of Mute Mod Cable 19B204290-G1.) Added to Model 4EA10A10 by Rev. T; to Model 4EA10B10 by Rev. B.
R343*	3R77-P432J	Composition: 4,300 ohms, ±5%, 1/2 w. (Part of Mute Mod Cable 19B204290-G2.) In Model 4EA10A10, Rev. T and Model 4EA10B10, Rev. B:
	3R77-P153K	Composition: 15,000 ohms, ±10%, 1/2 w.
R344*	3R77-P512J	Composition: 5,100 ohms, ±5%, 1/2 w. Added to Model 4EA10A10 by Rev. V; Model 4EA10A11 by Rev. B; and Model 4EA10B10 by Rev. D.
R345*	3R77-P103J	Composition: 10,000 ohms, ±5%, 1/2 w. Added to Model 4EA10A10 by Rev. V; to Model 4EA10A11 by Rev. B and Model 4EA10B10 by Rev. D.
R346*	3R77-P102J	Composition: 1,000 ohms, +5%, 1/2 w. Added to Model 4EA10A10 by Rev. V; to Model 4EA10A11 by Rev. B; to 4EA10B10 by Rev. K. Deleted from all models by Revs. XF, J and M.
R347*	3R77-P102J	Composition: 1,000 ohms, ±5%, 1/2 w. Added to Model 4EA10B10 by Rev. D. Deleted from Model 4EA10B10 by Rev. K.
R348*	3R77-P471J	Composition: 470 ohms, ±5%, 1/2 w. Added to Model 4EA10B10 by Rev. D.
		TRANSFORMERS
T301	PL-5495127-G1	Discriminator transformer; includes the following components with T301 prefix:
T301-C1*	5496218-P463	Capacitor: Ceramic disc; insulated, temp compensating,100 µf, ±5%, 500 VDCW, -200 temp coef. In Models of Rev. H or earlier:
	7774846-P263	Capacitor: Ceramic disc, insulated,temp compensating, 100 µµf, ±5%, 500 VDCW, -80 temp coef. Changed by Rev. K.
T301-C2	5491189-P4	Capacitor: Mylar® dielectric; 0.047 µf ±20%, 50 VDCW; sim to Good-All Electric 601PE.
T301-C3*	774846-P615	Capacitor: Mylar®; 33 µµf ±20%, 50 VDCW; sim to Good-All 601PE. In Models earlier than Rev.'s V,B, & D:
	7774846-P617	Capacitor: Ceramic disc, insulated, temp compensating, 47 µµf, ±10%, 500 VDCW, -750 temp coef.
T301-C4*	7774846-P265	Capacitor: Ceramic disc; insulated, temp compensating, 120 µµf, ±5%, 500 VDCW, -80 temp coef. (Deleted by Rev. K.)
T301-C5*	5496218-P467	Capacitor: Ceramic disc, insulated, temp compensating, 150 µµf, ±5%, 500 VDCW, -220 temp coef. In Models of Rev. H or earlier:
	7774846-P247	Capacitor: Ceramic disc; insulated temp compensating, 22 µµf, ±10%, 500 VDCW, -80 temp coef.
T301-C6	3R81-P221K	Capacitor: Ceramic; stabilized Hi-K disc, 220 µµf ±10%, 500 VDCW; sim to Radio Material JL.
T301-CR1 and T301-CR2	7777146-P9	Rectifiers: Germanium diode; sim to Hughes 1N198.
T301-L1 and T301-L2	PL-5491503-G1	290 KC close wound coils. Pri: 1-L1 Pri: 2-L2
T301-R1	3R-152-P331K	Resistor: Composition; 330 ohms, ±10%, 1/4 w.
T301-R2 and T301-R3	3R-152-P104K	Resistors: Composition; 0.1 megohms, ±10%, 1/4 w.
T302*	5490525-P3	Audio Transformer: impedance ratio 35,000/2,000. In Model 4EA10A10, Rev. XC and earlier; Model 4EA10A10, Rev. F and earlier; And Model 4EA10B10, Rev. H and earlier:
	5490525-P2	Audio transformer; imp ratio 35,000/2,000.
		SOCKETS
XQ301* and XQ302	5490277-P1	4-contacts, low loss mica filled phenolic;contact res .03 ohms max, 1 amp; sim to Elco 3303. Socket must mate with Elco 757 mtg ring.
XQ303 thru XA308	5490277-P1	4-contacts, low loss mica filled phenolic; contact res. 03 ohms max, 1 amp; sim to Elco 3303. Socket must mate with Elco 757 mtg. ring.
		CABLES
	19B204290-G1*	Mute Mod Cable. Includes the following: J323, R342 and P301
	19B204290-G2*	Mute Mod Cable. Includes the following: CR306, J324, R343 and P302.

PRODUCTION CHANGES

(Refer to Parts List for description of parts affected by these revisions).

REV. A - (Model 4EA10A10 only) To improve squelch clipping and line voltage balance. Changed value of C315, R317 and R327, and added CR305 between J308 and R317 with cathode toward J308. Connected J308 to junction of Q308 - base and Q307 - collector.

REV. B - (Model 4EA10A10 only) To reduce variation in noise amplifier bias and increase audio output in narrow-band units. Changed R320 and R339.

REV. C - (Model 4EA10A10 only) To improve audio input level to output stage by optimizing bias resistor. Changed value of R329.

REV. D - (Model 4EA10A10 only) To decrease squelch operating times. Changed C323, C327, R309 and R325, C323 was connected between junction of R325-CR304 and minus bus and is now connected between junction of R325-CR304 and plus bus.

REV. E - (Model 4EA10A10 only) To improve speaker bias control and squelch operation with reduced voltage. R329 and R325 changed.

REV. F - (Model 4EA10A10 only) To improve squelch control travel and prevent possibility of squelch lockup. Changed R320.

REV. G - (Model 4EA10A10 only) To improve squelch holding at reduced supply voltage. C316 replaced by C332.

REV. H - (Model 4EA10A10 only) To improve reduced voltage and squelch clipping characteristics. R316 and C321 changed.

REV. J - (Model 4EA10A10 only) To eliminate tone burst from speaker when transmitter is keyed. Added C333.

REV. K - (Model 4EA10A10 only) To improve temperature compensation characteristics in discriminator T301-C1 and C5 changed and T301-C4 deleted.

REV. L - (Model 4EA10A10 only) To improve squelch clipping and low voltage squelch characteristics. Delete C332. Add C334, C335, C336. Changed R316.

REV. M - (Model 4EA10A10 only) To improve metering operation and reduce pick-up hum. Change C323, C325, C326, J302, J303, R309, R327, and L302. Add J319, J320, J321 and J322.

REV. N - (Model 4EA10A10 ~~only~~) To improve squelch performance at battery voltage extremes. CR303, CR304, and CR305 changed.

REV. P - (Model 4EA10A10 only) To incorporate high quality Transistors. Q305, Q307 and Q308 changed. No change to elementary.

REV. R - (Model 4EA10A10 only) To improve operation of receiver at high temperature and low line voltages. R308, Q301 and Q302 changed.

REV. S - (Model 4EA10A10 only)
REV. A - (Model 4EA10A11 and 4EA10B10 only)
To improve roll-off characteristics and reduce effects of ignition noise. Changed L302.

REV. T - (Model 4EA10A10 only)
REV. B - (Model 4EA10B10 only)
To allow 4EM18D microphone to be used with TPL system. Added Mute Mod. Cables 19B204290-G1 and 19B204290-G2.

REV. U - (Model 4EA10A10 only)
REV. C - (Model 4EA10B10 only)
To improve receiver muting. Changed R343.

REV. V - (Model 4EA10A10 only)
REV. B - (Model 4EA10A11 only)
REV. D - (Model 4EA10B10 only)
To provide improved squelch action for better receiver performance in weak signal areas.
In Models 4EA10A10/11 changed R317, R320, R322 thru R324, R328, R330, R331 and Q306. Added R344 thru R346, and diodes CR307 and CR308.
In Model 4EA10B10, changed same resistors and transistor as in Models 4EA10A10/11 above. Added R344, R345, R347 and R348, diode CR307, capacitors C340, C341. Deleted R336.

Elementary Diagram Changes

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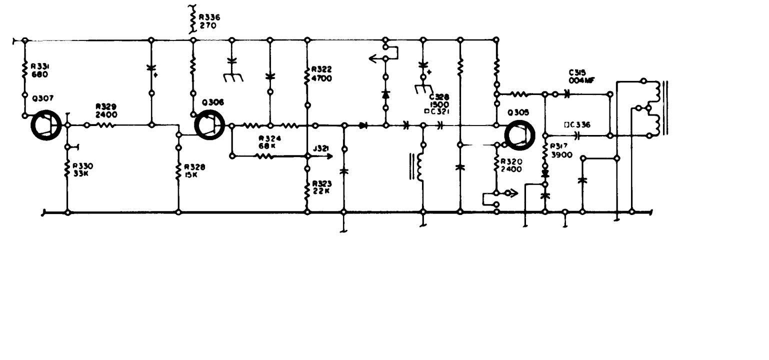

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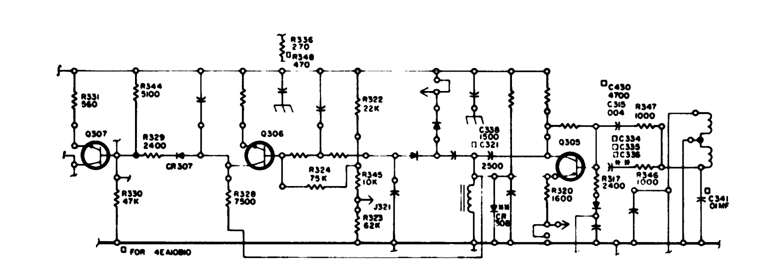


REV. W - (Model 4EA10A10 only)
REV. C - (Model 4EA10A11 only)
REV. E - (Model 4EA10B10 only)
To provide audio response consistent with improved speakers. To reduce receiver susceptibility to low frequency oscillation when powered from a supply which has a high internal impedance. Added C342 and changed C326.

REV. XA- (Model 4EA10A10 only)
REV. D - (Model 4EA10A11 only)
REV. F - (Model 4EA10B10 only)
To improve discriminator response. Changed T301-C3.

REV. XB- (Model 4EA10A10 only)
REV. E - (Model 4EA10A11 only)
REV. G - (Model 4EA10B10 only)
To provide additional supply voltage noise de-coupling and reduce susceptibility to receiver "motor boating". Changed C320.

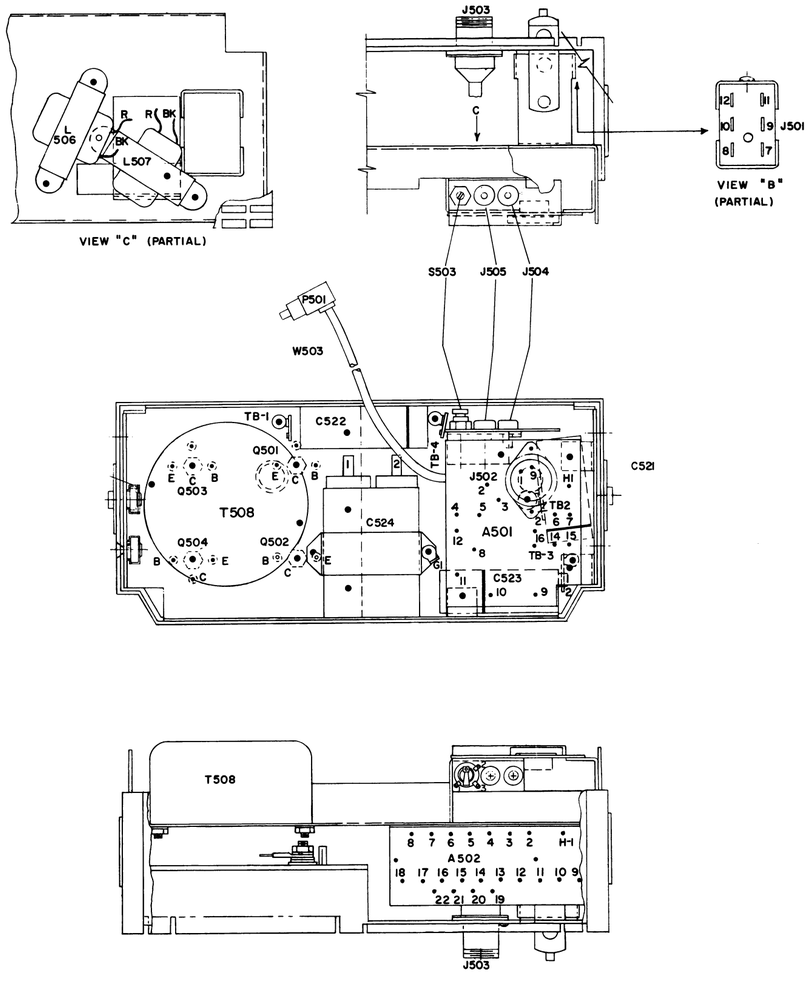
REV. XC- (Model 4EA10A10 only)
REV. F - (Model 4EA10A11 only)
REV. H - (Model 4EA10B10 only)
To improve discriminator output level. Changed R316.

REV. XD- (Model 4EA10A10 only)
REV. G - (Model 4EA10A11 only)
REV. J - (Model 4EA10B10 only)
To improve limiting characteristics and tone-frequency response. Changed R303, R307, Q301, Q302 and T302.

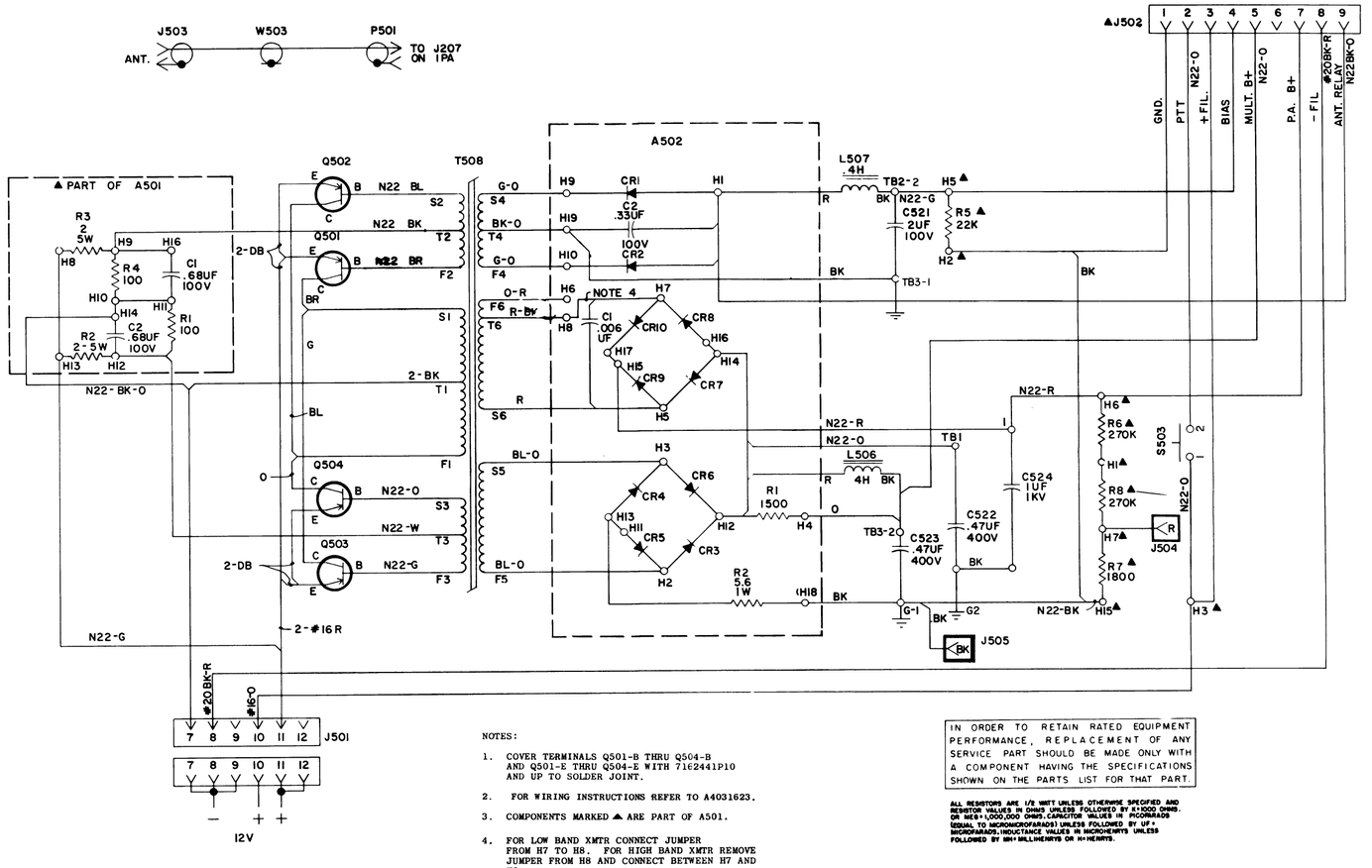
REV. K - (Model 4EA10B10 only)
To improve maximum squelch performance-increase sensitivity. Added R345, C315, C334, C335 and C336. Deleted C340, R347 and C341.

REV. XE- (Model 4EA10A10 only)
REV. H - (Model 4EA10A11 only)
REV. L - (Model 4EA10B10 only)
To reduce receiver susceptibility to audio rate flutter. Deleted C333.

REV. XF- (Model 4EA10A10 only)
REV. J - (Model 4EA10A11 only)
REV. M - (Model 4EA10B10 only)
To incorporate new transistor. Changed R316, R338, Q301 and Q302. Deleted R346.



(19D402129, Rev. 1)



NOTES:

1. COVER TERMINALS Q501-B THRU Q504-B AND Q501-E THRU Q504-E WITH 7162441P10 AND UP TO SOLDER JOINT.
2. FOR WIRING INSTRUCTIONS REFER TO A4031623.
3. COMPONENTS MARKED ▲ ARE PART OF A501.
4. FOR LOW BAND XMTR CONNECT JUMPER FROM H7 TO H8. FOR HIGH BAND XMTR REMOVE JUMPER FROM H8 AND CONNECT BETWEEN H7 AND H6.

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.

(19D400642, Rev. 5)

Fig. 5 - Service Sheet

12-VAC, 80/100-WATT
TRANSISTORIZED POWER SUPPLY
MODEL 4EP15C11, REV. A

(RC-907D)

PARTS LIST

80 & 100-WATT POWER SUPPLY
MODEL 4EP15C11

SYMBOL	G-E PART NO.	DESCRIPTION
		ASSEMBLIES
A501	PL-4038568-G1	Component Board Assembly. Includes the following components with A501 prefix:
A501-C1 and A501-C2	19B209004-P11	Mylar®, 0.68 mf ±10%, 100 VDCW.
A501-R1	5495562-P4	Wirewound, miniature; 100 ohms ±5%, 3 w. Sim to Sprague 242E1015.
A501-R2 and A501-R3	5495562-P1	Wirewound, miniature; 2 ohms ±5%, 5 w. Sim to Sprague 243E2R05.
A501-R4	5495562-P4	Wirewound, miniature; 100 ohms ±5%, 3 w. Sim to Sprague 242E1015.
A501-R5	3R77-P223K	Fixed composition; 22,000 ohms ±10%, 1/2 w.
A501-R6	3R77-P274J	Fixed composition; 0.27 megohms ±5%, 1/2 w.
A501-R7	3R77-P182J	Fixed composition; 1800 ohms ±5%, 1/2 w.
A501-R8	3R77-P274J	Fixed composition; 0.27 megohms ±5%, 1/2 w.
A502	PL-4038641-G1	Component Board. Includes the following components with A502 prefix:
A502-C1	19C301693-P2	Fixed ceramic disc; 150 pf ±10%, 1000 VDCW. Sim to RMC JF Discap.
A502-C2	7491930-P11	Mylar®, tubular; 0.33 µf ±20%, 100 VDCW. Sim to Good-All 663-UW.
A502-CR1 and A502-CR2	5492294-P1	Silicon.
A502-CR3 thru A502-CR6	5490415-P2	Silicon.
A502-CR7* thru A502-CR10*	4037822-P2 4037325-P1	Silicon. In Model earlier than REV. A: Silicon.
A502-R1	3R77-P152K	Fixed composition; 1500 ohms ±10%, 1/2 w.
A502-R2	5490205-P5	Fixed composition; 5.6 ohms ±10%, 1 w.
		CAPACITORS
C521	7491930-P14	Mylar®, tubular; 2 µf ±20%, 100 VDCW. Sim to Good-All 663-UW.
C522 and C523	19B201815-P37	Paper and Mylar®; 0.47 µf ±10%, 400 VDCW. Sim to Sprague 160P47404.
C524	3R88-P6	Fixed paper; 1 µf ±10%, 1,000 VDCW. Sim to GE 23F891.
		JACKS AND RECEPTACLES
J501	5491989-P2	Plug, black molded phenolic; Sim to HB Jones P-406 LAB.
J502	5491257-P1	Socket, VHF, miniature, 9-pin. Sim to Elco 513-S-PH. (Part of A501).
J503	2R22-P3	Connector, coaxial; Uses RG58/U cable for 50 ohms and RG59/U cable for 75 ohms; Sim to Amphenol 83-1R. (Part of W503).
J504	7150763-P2	Metering jack; molded nylon. Sim to Alden 110BC1-red.
J505	7150763-P1	Metering jack; molded nylon; Sim to Alden 110BC1-black.
		INDUCTORS
L506 and L507	19B200775-P1	Reactor: 0.45 h ±0.05 h, 0.15 amps DC, 20 ohms ±10% DC res.

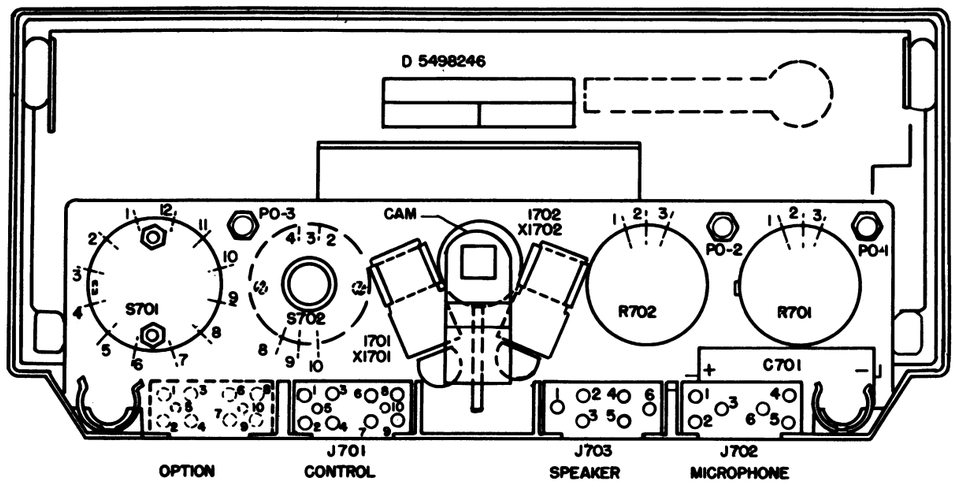
SYMBOL	G-E PART NO	DESCRIPTION
		PLUG
P501	7104941-P6	Phono: XXXP phenolic insulation, max voltage 350 rms, 500 VDC. Sim to Cinch 15H20175. (Part of W503).
		TRANSISTORS
Q501 thru Q504	5490810-P1	Germanium, PNP, power.
		SWITCH
S503	5490868-P1	Push button; non-locking, SPDT, 1/4 amp at 120 VAC; sim to Switchcraft 953.
		TRANSFORMER
T508	PL-19B201949-G1	Toroidal, power.
W503	PL-7146725-G4	Cable Assembly. Includes the following components:
	2R22-P3	Connector (J503) Hood Connector: VHF; Sim to Amphenol 83-765.
	7489477-P8	Ring: for Coaxial Terminations; Sim to Burndy YOC150.
		Cable: 17.50 inches long. Type RG58A/U
	7104941-P6	Connector (P501).

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.

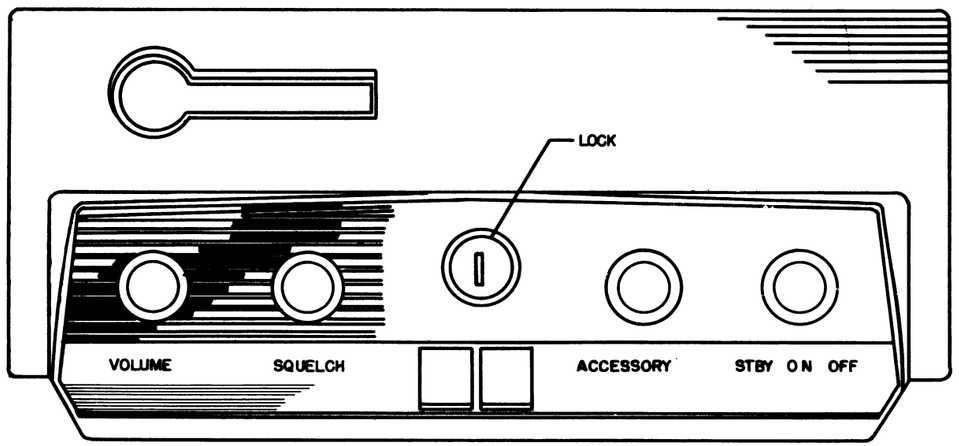
PRODUCTION CHANGES

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 - To incorporate smaller diodes. Changed CR7, CR8, CR9 and CR10.

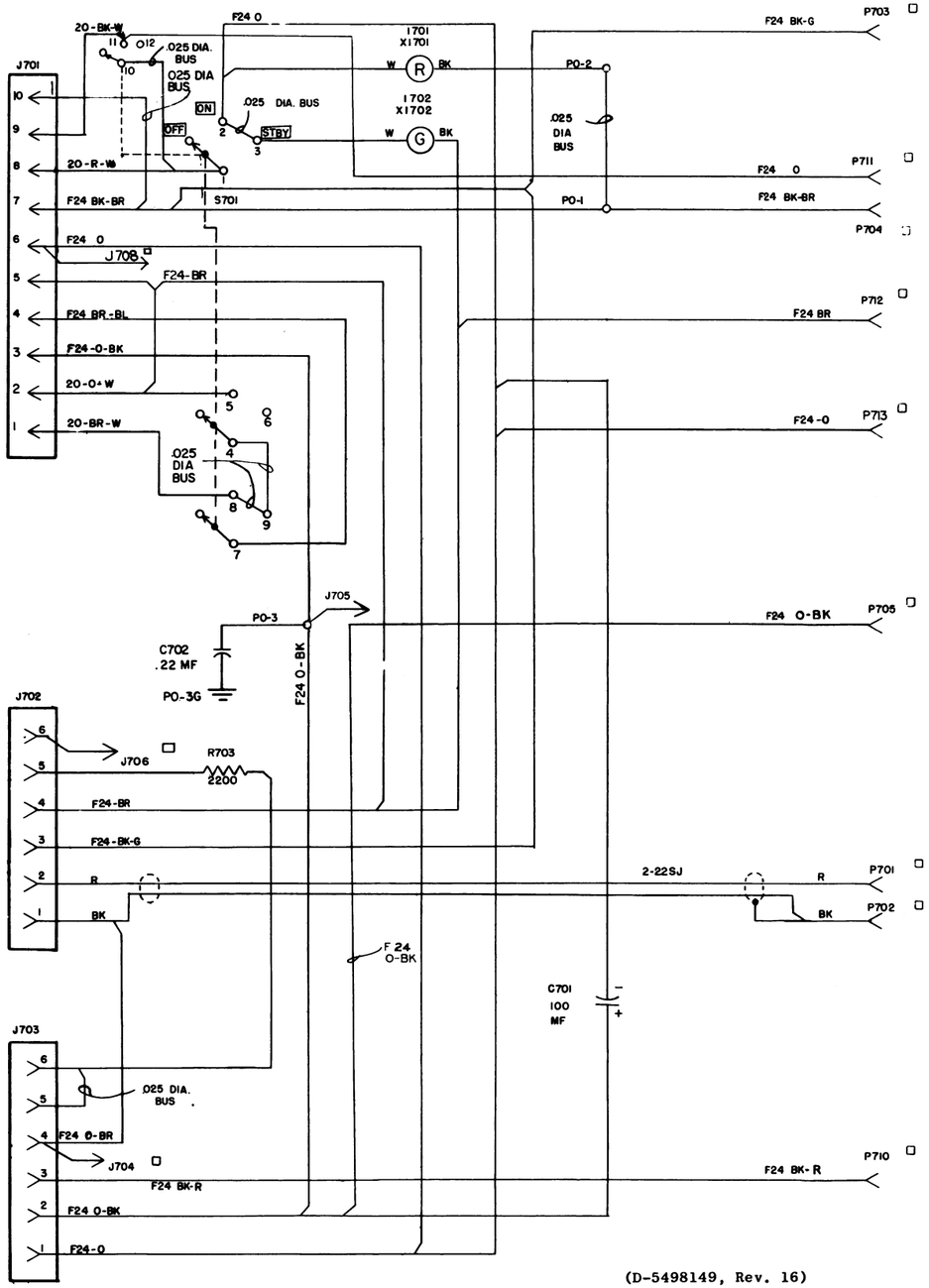


REAR VIEW

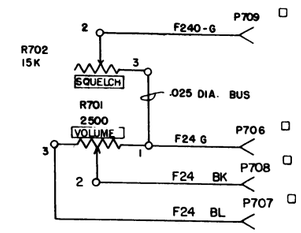


FRONT VIEW

(C-5495693, Rev. 0)



(D-5498149, Rev. 16)



ALL RESISTORS ARE IN OHMS AND ARE HALF WATT UNLESS OTHERWISE SHOWN.
K = 1000 OHMS

ALL CAPACITORS ARE IN MICROMICROFARADS
MF = MICROFARADS

FOR WIRING INSTRUCTIONS SEE A4031623, A4032777

NOTES
1. J704 J705 J706 & J708 ARE .50" LONG. PIGTAILS OF .040 DIA. BUS.
2. TERMINATE AT ——< WITH A4029840 P1 (P701 THRU P713).
3. DILATED SLEEVING .750 IN. LG. TO COVER ALL METAL PARTS OF P707.

COLORS USED F24 (A-7142367)

O
BK
BR
R
G
BL
O-BK
O-BR
O-G
O-BL
BK-BR
BK-R
BK-G

COLORS USED 20 (A-7144683)

BK-W
R-W
O-W
BR-W

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
4EC37A10	M

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.

Service Sheet

TPL CONTROL UNIT MODEL 4EC37A10; REV. M

(RC-987A)

PARTS LIST
FOR
TRANSISTORIZED PROGRESS LINE CONTROL UNIT

MODEL 4EC37A10, REV. M

SYMBOL	DESCRIPTION	G-E DRAWING & PART NO.
	CAPACITOR	
C701	Electrolytic, miniature, hermetically sealed in metal tube; 100 mfd +100% -15%, 25 v d-c w. Sprague Cat. #30D188A1.	B-7489483-P18
C702#	≠ Mylar, dielectric; 0.22 µf ±20%, 100 VDCW. Good-All Electric Co Type 663-UW. Added by Rev. E.	B-7491930-P10
	INDICATING DEVICES	
I701 and I702	G-E Type 53 Lamp.	
	JACKS AND RECEPTACLES	
J701	Connector: 10-pin, male, black phenolic. Component Mfg Service Part No. 6601-CM10.	B-5495345-P2
J702	Connector: 6-pin, female, black phenolic. Component Mfg Service Part No. 6601-CF6.	B-5495345-P3
J703	Connector: 6-pin, male, black phenolic. Component Mfg Service Part No. 6601-CF6A.	B-5495345-P4
J704	Jack formed from 1/2" of AWG #18 wire on J703-4.	
J705	Jack formed from 1/2" of AWG #18 wire on PO-3.	
J706	Jack formed from 1/2" of AWG #18 wire on J702-6.	
	PLUGS	
P701 thru P713	Terminal: 1-pin, female, for .093" pin. Amp Inc Cat. #47745.	A-4029840-P1
	TERMINAL POSTS	
PO-1 thru PO-3	Standoff Terminal.	A-7143206-P1
	RESISTORS	
R701	Potentiometer, composition, for push-on knob; 2500 ohms ± 20%, mod. log taper. Similar to Allen Bradley Type J.	B-5491971-P2
R702	Potentiometer, composition, for push-on knob; 15,000 ohms ±20%, linear taper. Similar to Allen Bradley Type J.	B-5491971-P1
R703	Composition, 2200 ohms ± 10%, 1/2 w.	C-3R77-P222K
	SWITCHES	
S701	Switch, Rotary: 4-pole, 3-position. Oak Mfg Co. Type F.	C-5495227-P4
S702	Switch, Rotary: 1-section, 2-pole, 2-position, non-shorting type contacts. Similar to Oak Mfg Co. Type A. (Part of 2-Freg. Switch Kit)	C-5495454-P1
	SOCKETS	
XI701 and XI702	Lamp sockets, similar to Drake Mfg Co. miniature bayonet socket with plastic insulating sleeve, 6-inch leads.	A-4032220-P1
	MISCELLANEOUS MECHANICAL PARTS	
	Jewel: red Plexiglas. (R)	A-4031265-P1
	Jewel: green Plexiglas. (R)	A-4031265-P2
	Knobs: red-orange, for flatted shaft.	C-5495256-P1
	Lock Components:	
	Lock	B-5491682-P2
	Cam	A-4032757-P1
	Key Set	B-5491682-P4

≠ Registered U.S. Patent Office.

PRODUCTION CHANGES

(Refer to Parts List for description of parts affected by these revisions.)

REV. A & B - These revisions were value improvements incorporated into original production.

REV. C - To assure RF grounds. Added contact strip to allow ground connection between phono connector and control unit.

REV. D - To eliminate "mid-air" connection when unit is used with "Channel Guard". Lead from R703 which was connected to J702-6 is now connected to J703-6.

REV. E - To reduce possibility of broadcast signal intermodulation, added C702 between PO-3 and PO-3G (Grd).

REV. F - Deleted contact strip between phono connection and control unit.

REV. G - To adapt TPL control head for use with the 4EM18B10 microphone deleted circuit between J702-6 and J702-5.

REV. H - To eliminate polarity reversal at P711 when unit is placed on standby in positive ground system, removed F24-0 wire between No. 3 Terminal (STBY) on S701 and P711. Connected F24-0 wire from P711 to No. 11. Terminal of S701.

REV. J - To allow option operation in standby add wire from J701-6 to J708 when unit is equipped with either secode or tone squelch option.

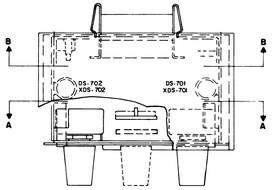
REV. K - To reduce alternator interference in TPL receiver delete O-BK F24 wire from P705 to PO-3 and add O-BK F24 wire from P705 to J703-2.

REV. L - To increase reliability of control connector J701 by paralleling contacts. Removed wire from Pin No. 10 and connected to Pin No. 7. Ran jumper from Pin 19 to Pin 7. Removed wire from Pin 5 and connected to Pin 2. Ran jumper from Pin 5 to Pin 2.

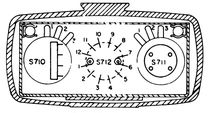
REV. M - To improve supply line filtering changed connecting point of C701.

CONTROL UNIT
MODEL 4EC45A10

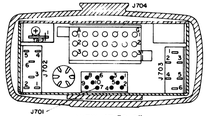
FRONT VIEW



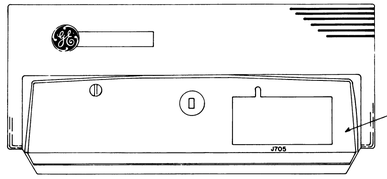
TOP VIEW



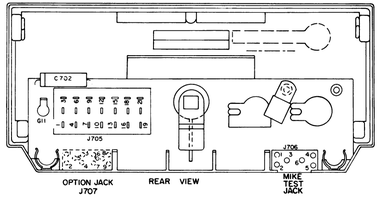
VIEW AT "A-A"



VIEW AT "B-B"

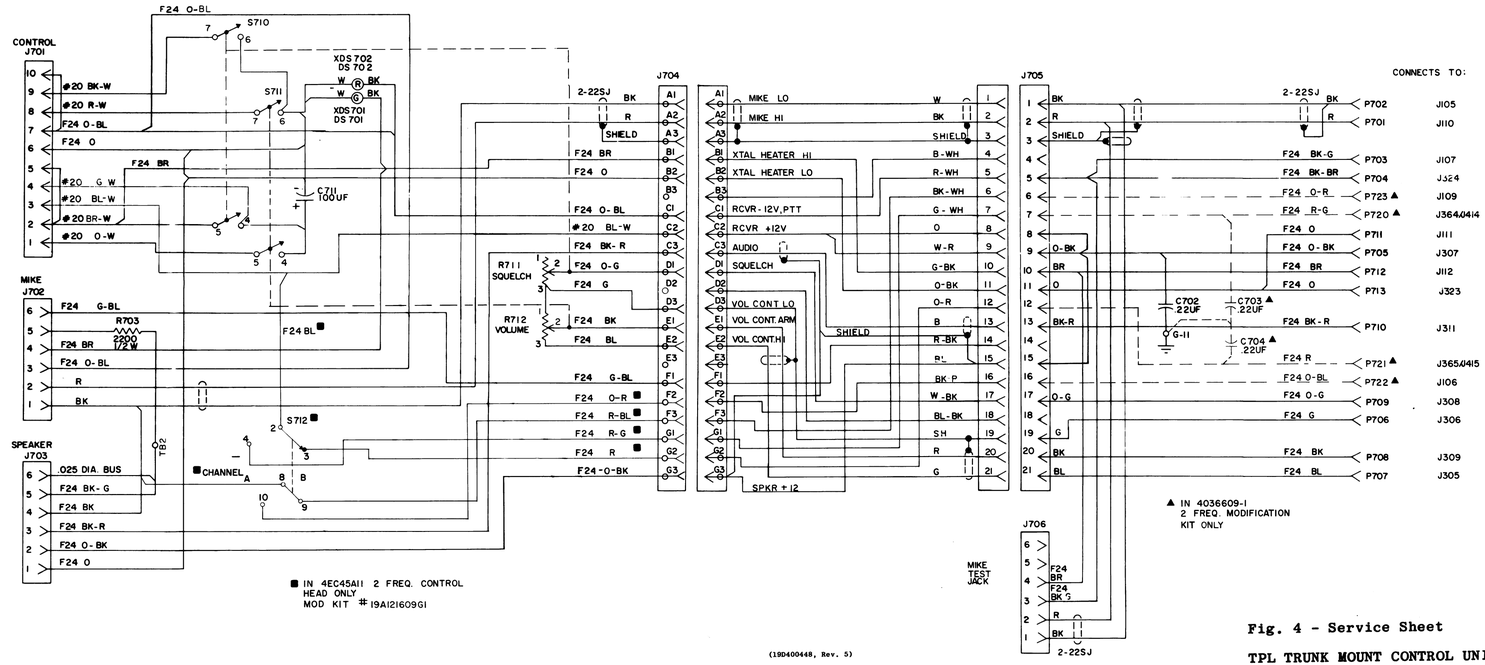


FRONT VIEW



(19D400055, Rev. 1)

CONTROL UNIT MODEL 4EC45A10,11 | EXTENSION CABLE PL-5493939G2 | FRONT PANEL PL-5493770G1



■ IN 4EC45A11 2 FREQ. CONTROL HEAD ONLY MOD KIT #19A121609G1

▲ IN 4036609-1 2 FREQ. MODIFICATION KIT ONLY

(19D400448, Rev. 5)

Fig. 4 - Service Sheet

TPL TRUNK MOUNT CONTROL UNIT
MODEL 4EC45A10; REV. E
MODEL 4EC45A11; REV. B
FRONT PANEL PL-5493770-G1

(RC-707H)
****

PARTS LIST

CONTROL UNIT MODEL 4EC45A10, REV. E
MODEL 4EC45A11, REV. B
FRONT PANEL PL - 5493770-G1

SYMBOL	G-E PART NO.	DESCRIPTION
		CAPACITORS
C711*	7489483-P18	Electrolytic: 85°C operation; 100 mf +100% -10%, 25 VDCW; Sim to Sprague 30D188A1.
		INDICATING DEVICES
DS701 and DS702		Lamp, incandescent: (Min bayonet base); design volts 14.50, design current 0.12 amps. (Uses G-3-1/2 size bulb). Sim to G.E. 53.
		JACKS AND RECEPTACLES
J701	5495345-P2	Connector, plug: Black phenolic insulation 10-male contacts (brass), max rating 1,000 VDC (contact to contact), max current 5 amps. Sim to Component Mfg. Service Inc. 6601-CM10.
J702	5495345-P3	Connector, socket: black phenolic insulation; 6-female contacts (brass), max rating 1,000 VDC (contact to contact), max current 5 amps; Sim to Component Mfg. Service 6601-CF6.
J703	5495345-P4	Connector, socket: Black phenolic insulation, 6-female contacts (brass), max rating 1,000 VDC (contact to contact), max current 5 amps; Sim to Component Mfg. Service 6601-CF6A.
J704	5496809-P114	Connector, receptacle: phenolic, 21 circuits. Sim to Molex Products Co. 1055R21.
		INDUCTOR
L701*	7488079-P67	R.F. Choke: Inductance 33 uh ±10%. Sim to Jeffers Catalog 10404-24. Deleted by Rev. B.
		RESISTORS
R701*	5496870-P4	Potentiometer, composition: (For push-on knob); mod log taper, 2,500 ohms ±20%, Sim to Allen Bradley Co. J. Deleted by Rev. C.
R702*	5496870-P3	Potentiometer, composition: (For push-on knob); linear taper, 15,000 ohms ±20%, Sim to Allen Bradley Co. J. Deleted by Rev. C.
R703	3R77-P222K	Fixed composition; 2,200 ohms ±10%, 1/2 w
R711*	5496870-P6	Potentiometer, carbon film: (for push-on knob); linear taper, 15,000 ohms ±20%; (include S710, a DPST push-pull switch, 6 amp, 125 VAC); Sim to Mallory LC15XPPCAC2.
R712*	5496870-P5	Potentiometer, carbon film: (for push-on knob); mod log taper, 2,500 ohms ±20%, (includes S711, a DPST rotary switch, 6 amps, 125 VAC); Sim to Mallory LC15MP.
		SWITCHES
S701*	5495227-P4	Rotary: high grade phenolic insulation; shorting type contacts, 1-section, 4-pole, 3-position, contact rating - make and break 4 amps at 12 VDC. Sim to Oak Mfg. Co. F. Deleted by Rev. C.
S710*		Part of R711.
S711*		Part of R712.
S712	5495454-P1	Switch, rotary: Non-shorting contacts, 2-section, 2-pole, 2-position; contact rating 2 amps at 25 VDC. Used in Model 4EC45A11 only.
		SOCKETS
XDS701 and XDS702	4032220-P1	Socket, lamp; Min bayonet base; plastic insulating sleeve, 6-inch leads. Sim to Drake Mfg. Co. N517.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.

SYMBOL	G-E PART NO	DESCRIPTION
		MISCELLANEOUS MECHANICAL PARTS
	19B200008-P1	Control housing, steel, 2.428 x 2.75 inches dia.
	19B201630-G1	Chassis, weld assembly.
	4038132-G1	Plate, cover; steel, 2.56 x 4.05 inches.
	19B200400-P1	Plate, aluminum.
	4032248-P1	Clip, mounting; spring steel; annealed carbon.
	4035746-P1	Jewel, red, #2444 plexiglass, 0.250 dia. x 1.051g.
	4035746-P2	Jewel, green, #2092 Plexiglass.
	5495256-P1	Knob, Butyrate (Tenite 11); red-orange color, for use with flatted shaft. Sim to Eastman Chemical Co. 32599.
	7143206-P2	Terminal, standoff: Brass, molded (asbestos filled melamine) insulation, 0.781 inches long.
		EXTENSION CABLE PL 543939-G2
P704	4037336-P1	Connector.
P705	19B200895-P24	Socket.
	7142878-G1	Cable clamp.
	7139880-P5	Cable (23 ft., 10 in. long).
		FRONT PANEL PL-5493770-G1
C702	7491930-P10	Capacitor, Mylar®, dielectric; 0.22 mf ±20%, 100 VDCW. Sim to Good-All Electric Mfg. Co. 663-UW.
J705	4039092-P1	Receptacle, 21 pin male; sim to H. B. Jones P-321-SB.
J706	5495345-P3	Connector, socket; black phenolic insulation; 6-female contacts; max rating 1,000 VDC (contact to contact), max current 5 amps. Sim to Component Mfg. Service 6601-CF6.
P701 thru P713	4029840-P1	Terminal: (Plug receptacle for 0.093 inch long pin); brass, 1 contact, Sim to Amp Mfg. Co. 41854. Sim to Hand Tool Amp Mfg. Co. 47745.
	5496771-P1	Control Panel.
	5493765-P1	Plate.
	4032574-P1	Gasket.
	5491682-P2	Lock.
	7878455-P2	Lug, terminal, copper, bent at 90° angle, 0.688 in. lg., 0.25 in. wide, 0.025 in. thick.
	7143206-P4	Terminal, standoff: brass, molded insulation, 0.625 inches long.

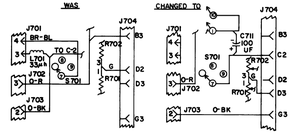
PRODUCTION CHANGES

(Refer to Parts List for description of parts affected by these revisions).

REV. A (Model 4EC45A10)
To increase reliability of control connector by paralleling contacts. Removed wires from Pins 10 and 5. Added jumper from Pin 10 to Pin 7, and from Pin 5 to Pin 2.

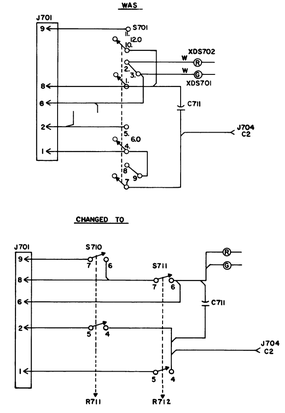
REV. B (Model 4EC45A10)
To prevent noise pickup and improve option operation. Deleted L701 and added C711.

Elementary Diagram Changes



REV. C (Model 4EC45A10)
To provide mounting space for 2-frequency on dual front end option switch on Control Unit. Deleted R701 (Volume), S701 (STBY-ON-OFF), and R702 (SQUELCH), Added R711/S710 (SQUELCH/STBY PUSH) and R712/S711 (VOLUME-OFF) Control.

Elementary Diagram Changes



Text Changes

Circuit Description of Control Unit, LBI-3256, pages 1 and 2, 4th through 8th paragraphs were:

The position of the STBY-ON-OFF switch (S701) determines whether or not the transmitter and receiver are operative. In the OFF position, all power is removed from the Two-Way Radio. Turning the switch to STBY (standby) applies power only to the receiver.

In vehicles in average commercial use, it is entirely feasible to leave the receiver operating continuously on STBY due to the extremely low battery drain. Ignition switch control can therefore be eliminated, if the switch is turned to STBY whenever the engine is turned off.

Turning the STBY-ON-OFF switch to ON applies filament voltage to the tubes in the transmitter, activates the push-to-talk (PTT) circuit, and lights the green pilot light. After a short warm-up time, the PTT button on the microphone may be pressed to key the transmitter. Notice that pressing the PTT switch shorts the voltage across the receiver, muting the receiver, energizing the solenoid, and lighting the red pilot light. As the solenoid contactors close, they apply power to the power supply, which, in turn, supplies B-plus and bias voltages to the transmitter, placing the transmitter on the air.

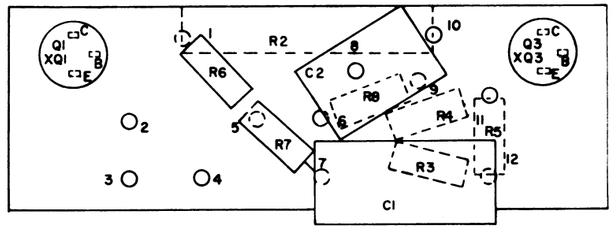
For options such as a two-frequency transmitter or receiver, an additional housing may be attached to the under side of the Control Unit, or mounted adjacent to the Control Unit on the under side of the instrument panel. This housing includes a two-frequency switch for selecting the proper channel for transmitting or receiving. The two-frequency switch will connect the exciter of the selected transmitter oscillator and/or receiver first oscillator to ground so that the unit will operate on the frequency determined by that oscillator.

REV. D (Model 4EC45A10)

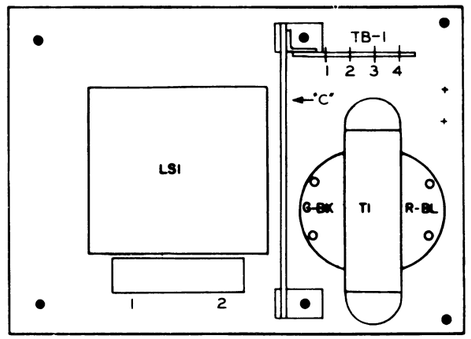
REV. A (Model 4EC45A11)
To permit control of filaments by OFF-ON Switch in positive-ground installations. The connection from S710-6 to S711-7 was moved to connect between S710-6 and S711-6.

REV. E (Model 4EC45A10)
To make unit compatible with the 12/24-volt Converter (Model 4EP20A10). Deleted O-BK wire from J704-C2 to S711-4. Added BL-W wire from J704-C2 to J701-3; and added G-W wire from S710-4 to J701-4.

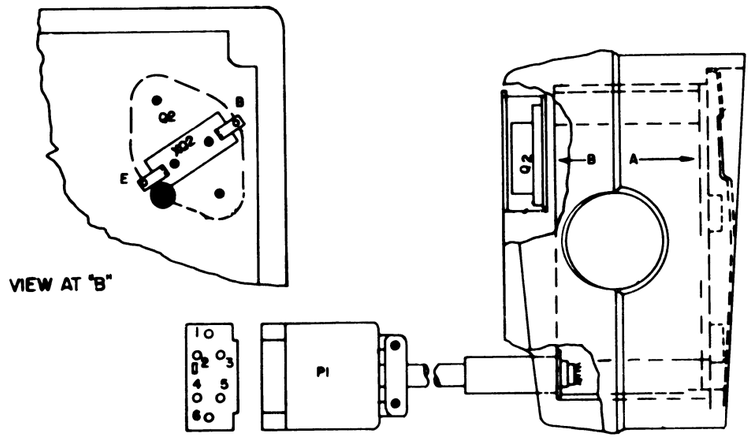
REV. B (Model 4EC45A11)
To make unit compatible with the 12/24-volt Converter (Model 4EP20A10). Deleted O-BK wire from J704-C2 to S711-4. Added BL-W wire from J704-C2 to J701-3, BL wire from S712-2 to J704-C2, and G-W wire from S710-4 to J701-4.



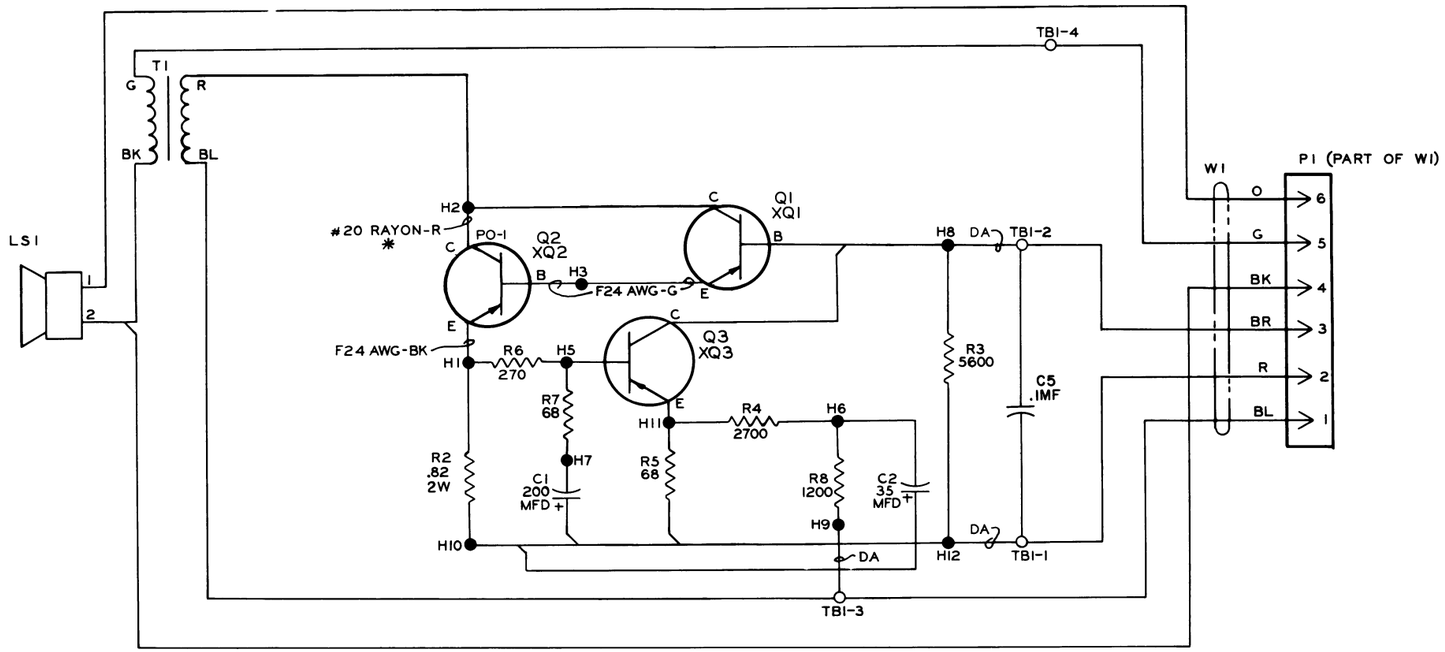
VIEW AT "C"



VIEW AT "A"



(C-5495687, Rev. 4)



ALL RESISTORS ARE IN OHMS AND ARE HALF WATT UNLESS OTHERWISE SHOWN.
K = 1000 OHMS.

ALL CAPACITORS ARE IN MICROMICROFARADS
MF = MICROFARADS

FOR WIRING INSTRUCTIONS SEE A4031623.

(C-5495468, Rev. 20)

* NOTES:

1. TERMINATE #20 RAYON R WIRE ON PO-1 WITH B5490444P2.
2. CONNECTION BETWEEN Q2-C AND PO-1 IS MECHANICAL.

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
4EZ10A10	G

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.

Fig. 1 - Service Sheet

2-WATT TRANSISTORIZED SPEAKER/AMPLIFIER MODEL 4EZ10A10; REV. G

(RC-670D)
****

PARTS LIST

TRANSISTORIZED SPEAKER/AMPLIFIER

MODEL 4EZ10A10
REV. G

SYMBOL	G-E PART NO.	DESCRIPTION
		CAPACITORS
C1#	7489483-P15	Electrolytic: (min stet for 85° operation), hermetically sealed in aluminum tube, 200 uf +100% - 10%, 3 VDCW. Sprague Electric Mfg Co No. 30D116A1.
	7489483-P4	In Models of Rev. B: Electrolytic: (Min stet for 85°C operation) hermetically sealed in aluminum tube, 50 uf +100% -10%, 6 VDCW. Sprague Electric Mfg. Co No. 30D133A1. (Added by Rev. B.)
C2#	7489483-P10	Electrolytic: (Miniature for 85° operation), hermetically sealed in aluminum tube, 35 uf +100% -10%, 15 VDCW. Sprague Electric Mfg Co No. 30D169A1. (Added by Rev. D.)
C5*	19A115028-P14	Mylar®, dielectric: 0.1 µf ±20%, 200 VDCW.
		JACKS
J1#	7150763-P1	Test Point: (Nylon, stake in), molded nylon body, berryllium copper contact, operating voltage 600 vrms, operating temp 105°C. Alden Products Co Part No. 110BC1-black. (Deleted by Rev. B.)
J2#	7150763-P2	Test point: (Nylon, stake in), molded nylon body, berryllium copper contact, operating voltage 600 vrms, operating temp 105°C. Alden Products Co Part No. 110BC1-red. (Deleted by Rev. B.)
		LOUDSPEAKER
LS1	7487536-P1	Speaker: 3-1/2 inch permanent magnet, cone resonance 200 to 325 cps at 2 w. voice coil imp. 3.2 ohms ±10%.
		PLUG
P1	5495345-P14	Black phenolic, 6-male contacts, (brass), max rating 1,000 VDC, max current 5 amps. Component Mfg Service Inc No. 6601-M6A. (Included in W1).
		TRANSISTORS
Q1#	5496667-P2	Germanium, PNP. Changed by REV. E.
Q2#	5496663-P2	Germanium, PNP. Changed by REV. F.
Q3#	5496666-P5	Germanium, PNP. Added by REV. B. Changed by REV. E.
		RESISTORS
R1#	2R73-P49	Potentiometer, Composition: (linear taper), 1,500 ohms ±20%, 2.25 w. Allen Bradley Co Type J. (Deleted by REV. B).
R2#	3R19-P54	Wirewound: 0.82 ohms ±10%, 1 w. 1RC type BW-1.
	3R19-P4	In Models of REV. A, B, C, D: Wirewound: 1.0 ohm ±10%, 1 w. LRC Type BW-1.
	3R18-P8	In Models earlier than REV. A: Wirewound; 1.0 ohm ±10%, 1/2 w. IRC Type BW.
R3#	3R77-P562K	Fixed composition: 5,600 ohms ±10%, 1/2 w. (Added by REV. B.)
R4#	3R77-P272K	Fixed composition; 2,700 ohms ±5%, 1/2 w. In Models of REV. B. and REV. C.
	3R77-P392J	Fixed composition: 3,900 ohms ±5%, 1/2 w. (Added by REV. B.)
R5#	3R77-P680J	Fixed composition: 68 ohms ±5%, 1/2 w. (Added by REV. B.)
R6#	3R77-P271K	Fixed composition: 270 ohms ±10%, 1/2 w. In Models of REV. B:
	3R77-P470K	Fixed composition: 47 ohms ±10%, 1/2 w. (Added by REV. B.)
R7*	3R77-P680K	Fixed composition: 68 ohms ±10%, 1/2 w. In Models of Rev. C thru F:
	3R77-P101K	Fixed composition: 100 ohms ±10%, 1/2 w. (Added by Rev. C).
R8#	3R77-P122K	Fixed composition: 1,200 ohms ±5%, 1/2 w. (Added by REV. D.)
		THERMISTOR
RT3#	5490828-P10	Thermal resistor, 300 ohms (±10%) at 25°C, max input 0.30 w at 40°C, 3,500 temp coef ±5%-black. Globar Div Type 416H. (In Models of REV. A. only).
		TRANSFORMER
T1	5491520-P1	Audio: Output transistor, Pri: Imp 22 ohms ±10% at 3 w. Sec: Imp 3.50 ohms ±10% at 3 w.
		CABLE
W1	PL-4031385-G1	Cable Assembly Includes the following components:
	5495345-P14	Connector, Plug: (P1)
	5495345-P21	Hood and Liner Assembly Includes the following: Hood, Metal: Nickel-plated, 1.12 inches long 1.20 inches tall, 0.50 inches wide. Line, Insulated: Black phenolic.
	5495345-P22	Pin, Metal: 0.50 inches long, 0.07 inches in diameter. (For assembling hood to plug).
	5491775-P1	Cable: Cotton braid jacket, 0.28 inches max. diameter, 36-inches long.
	5495345-P23	Retainer, Spring: Steel. Component Mfg. Service Inc. Cat. No. P-35.
		SOCKETS
XQ1	5490277-P1	Transistor: 4-contacts, low-loss mica-filled phenolic, 1,000 megohms min, contact res 0.03 ohms max, 1 amp, 400 vrms. Elco Corp No. 3303. (Used with mounting ring. Elco Corp No. 757. (G-E Dwg and Part No. A-7162414-P1).
XQ2	4029834-P2	Transistor: 2-contacts for 0.062 diameter pins. Industrial Hardware Co Part No. M7.
XQ3#	5490277-P1	Transistor; 4-contacts, low-loss mica-filled phenolic, 1,000 megohms min, contact res 0.03 ohms max, 1 amp, 400 vrms. Elco Corp No. 3303. (Used with mounting ring. Elco Corp No. 757. (G-E Dwg and Part No. A-7162414-P1). (Added by REV. B.)
		MISCELLANEOUS
	5495274-P1	Housing, Speaker: Metal, 0.031 inches max, inside radii, 0.062 inches max, outside radii.
	5491692-P1	Grille: Metal, perforated, anodized, 5.06 inches long, 3.70 inches wide.
TB1 and TB2	7775500-P6	Board, Terminal: Laminated phenolic, Nema Grade XXXP-tan, 3-terminals (solder-plated).
TB3	7775500-P3	Board, Terminal: Laminated phenolic, Nema Grade XXXP-tan, 3-terminals (solder-plated).
	7147178-P2	Ring, Squeeze: for speaker cable
	5491292-P1	Bracket, Mounting: Metal, polished finish, 5.68 inches long, 1.24 inches wide.
	4032459-P1	Screw, Thumb: Steel, abrasive polished, 0.75 inches long.
	4029974-P1	Insulator, Transistor: Aluminum, anodized.
	7162414-P1	Ring, Mounting: (For transistor socket), brass, cadmium plated. (To mate with Elco Corp No. 3300 Series). Elco Corp No. 757.
		Grease, Silicone; Dow Corning No. 4 Compound.
TB4	7487424-P6	Strip, Terminal: (Miniature), insulated, Nema Grade XXXP phenolic-tan: bracket, brass (Cinch Mfg Co No. 4478); 3-terminals, brass (Cinch Mfg Co No.4409.)
	4035439-P1	Sink, Heat for Q1: Transistor, aluminum alloy, red anodize. Birtcher Corp No. 3A1-635-2R.
	4035471-P1	Insulator: Mylar, 0.137 inches inside diameter, 0.210 inches outside diameter.
	19B201226	Component Board.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.

PRODUCTION CHANGES

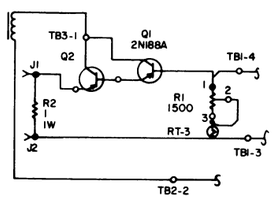
(Refer to Parts List for description of parts affected by these revisions).

REV. A - To improve stable operation at high temperature. RT3 added between pin 3 of R1 and TB1-3. Changed R2.

REV. B - To eliminate bias pot and metering jacks and to improve bias stability. Deleted R1, RT3, J1 and J2. Add R3, R4, R5, R6, C1 and Q3.

ELEMENTARY DIAGRAM CHANGES

FROM



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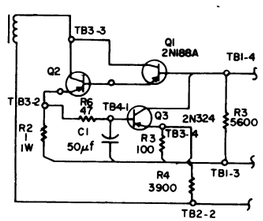
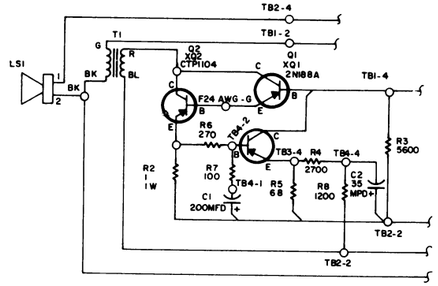


REV. C - To increase power output at low temperatures and to improve frequency response. Changed C1 and R6. Added R7.

REV. D - To eliminate alternator and ignition interference from the TPL audio output. Added R8 and C2. Changed R4 and TB4.

REV. E - To improve mechanical layout, and to assure high quality transistors. Added component board, changed R2, and added G-E Drawing Numbers to Q1, Q2, and Q3.

WAS



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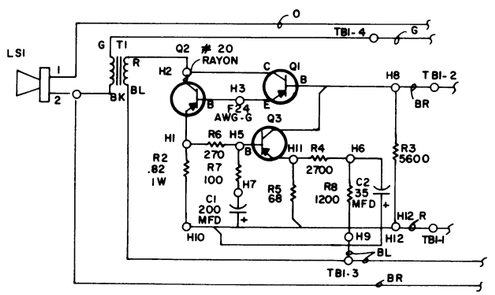
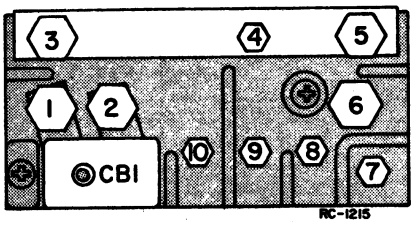
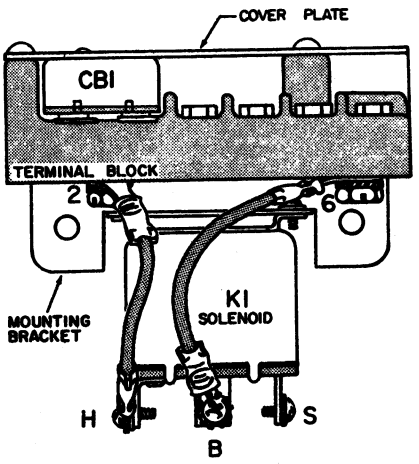


REV. F - To provide increased thermal protection. Changed Q2 from 5496663-P1 to 5496663-P2.

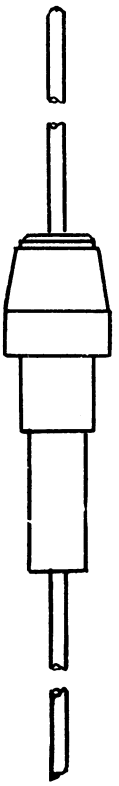
ELEMENTARY DIAGRAM CHANGES - NONE.

REV. G - To improve frequency response. Changed R7 and added C5.





(RC-1215)



COVER PLATE

12-VOLT CONNECTIONS		
TERM NO.	NEG. GROUND	POS. GROUND
1*	"HOT" BATTERY LEAD	
3*	GROUND BATTERY LEAD	
4*	BROWN—WHITE	ORANGE—WHITE
5	CENTER COND. —	
6	=12 (¼" LUG) —	
7	=16 (=10 LUG) — POWER CABLE	
7	BLACK—WHITE	RED—WHITE
8	IGNITION SWITCH WIRE	
	ORANGE—WHITE	BROWN—WHITE
9	RED—WHITE	BLACK—WHITE
S	ORANGE—BLACK BLUE	ORANGE—BLACK BLUE
*CONNECTIONS TO THESE TERMINALS IDENTICAL FOR 12-VOLT OR 28-VOLT OPERATION		USE POWER CABLE ADAPTER 7147299G18
M.P. 222023		

28 VOLT CONNECTIONS		
TERM. NO.	NEG. GROUND	POS. GROUND
1, 3, 4, 11, 12*	SAME AS 12-VOLT CONNECTIONS (*)	
10	ORANGE-WHITE IGNITION SWITCH WIRE	BROWN-WHITE
7	BLACK-WHITE	BLACK-WHITE
8	RED WHITE	RED WHITE
	POWER CABLE	
7	RED	RED
8	GREEN	GREEN
5	WHITE	YELLOW
6	YELLOW	WHITE

Outline Diagram

SOLENOID ASSEMBLY MODEL 4KC12B10
CIRCUIT BREAKER, PL-5491516-G7
IN-LINE FUSED LEAD, PL-7142873-G4

(RC-540D)
****

PARTS LIST

SOLENOID ASSEMBLIES
MODEL 4KC12B10 REV. C

CIRCUIT BREAKER
B-5491516-P7
IN-LINE FUSED LEAD
PL-7142873-G4

SYMBOL	G-E PART NO.	DESCRIPTION
K1*		Solenoid, 12-VDC; res 85-90 ohms at 25°C, pick-up 9.5 v at 25°C, dropout 4.0 v at 25°C, 16.0 v max for continuous duty.
	5495431-P2	In Models of Rev. A and earlier: Solenoid Contactor Assembly; Coil res 17.9 ohms ±10%, insulated terminals, pickup. 9.6 volts or less, 12 VDC nominal, single-pole normally-open contacts. Sim to RBM No. 70-111224.
	5495169-P1	Terminal block.
	4033168-P1	Solenoid Assembly bracket.
	4033384-G1	Cover Plate.
	19B205183-P1	Mounting Bracket.
CB1	5491516-P7	Circuit Breaker, manual reset, thermal disc type, 12 VDCW Operation, contacts snap action (quick make & break) 40 amps. Sim to Littelfuse No. 814040.
	1R16-P3	Fuse; 5 amp at 125 v; sim to Bussman MDX-5
	7124109-P3	Fuse holder; sim to Bussman HDJ-B.
	PL-7147299-G18	Cable Assembly
	7480290-P19	Connector
	7160275-P1	Cable
	5491799-P108	Connector

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.

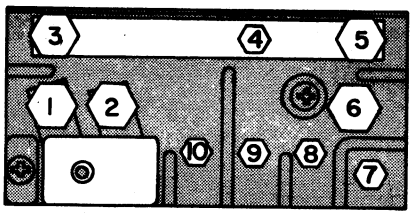
PRODUCTION CHANGES

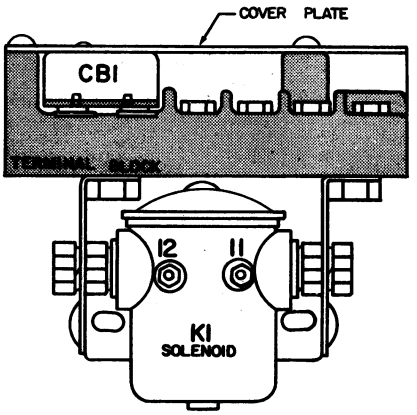
(Refer to the Parts List for description of parts affected by these changes.)

REV. A - To prevent breakers tripping at voltage extremes. Changed CB1 from B-5491516-P6.

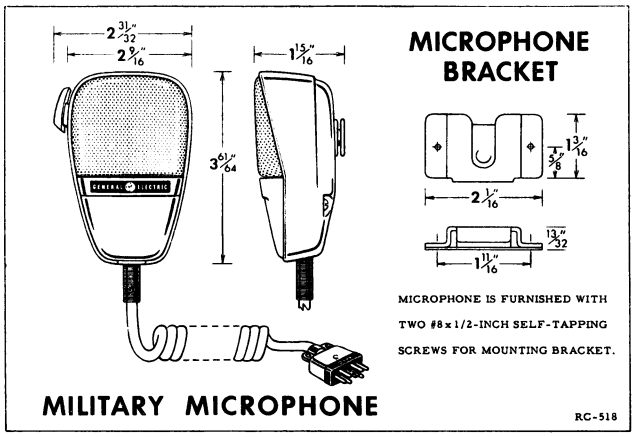
REV. B & C - To utilize solenoid with lower pickup current. Changed K1 and added mounting bracket.

OUTLINE DIAGRAM BEFORE REV. B:

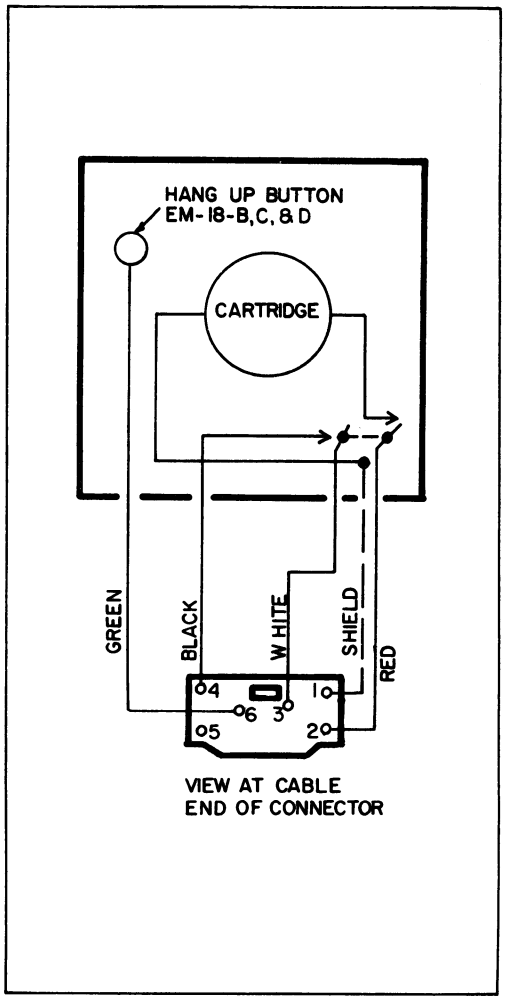




MODEL 4EM18A10, B10, C10 & D10

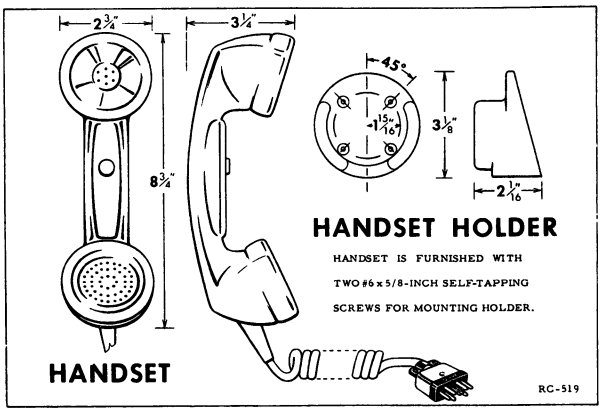


OUTLINE DIAGRAM

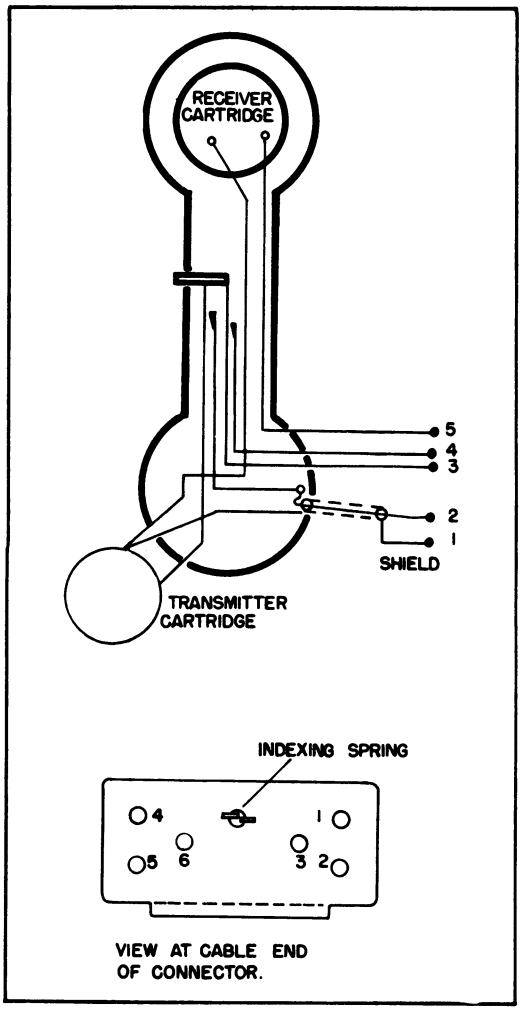


WIRING DIAGRAM

MODEL 4EM19A10



OUTLINE DIAGRAM



WIRING DIAGRAM

Elementary & Outline Diagrams

MILITARY MICROPHONE
MODEL 4EM18A10, B10, C10 & D10
TELEPHONE HANDSET
MODEL 4EM19A10

(RC-541D)

*****

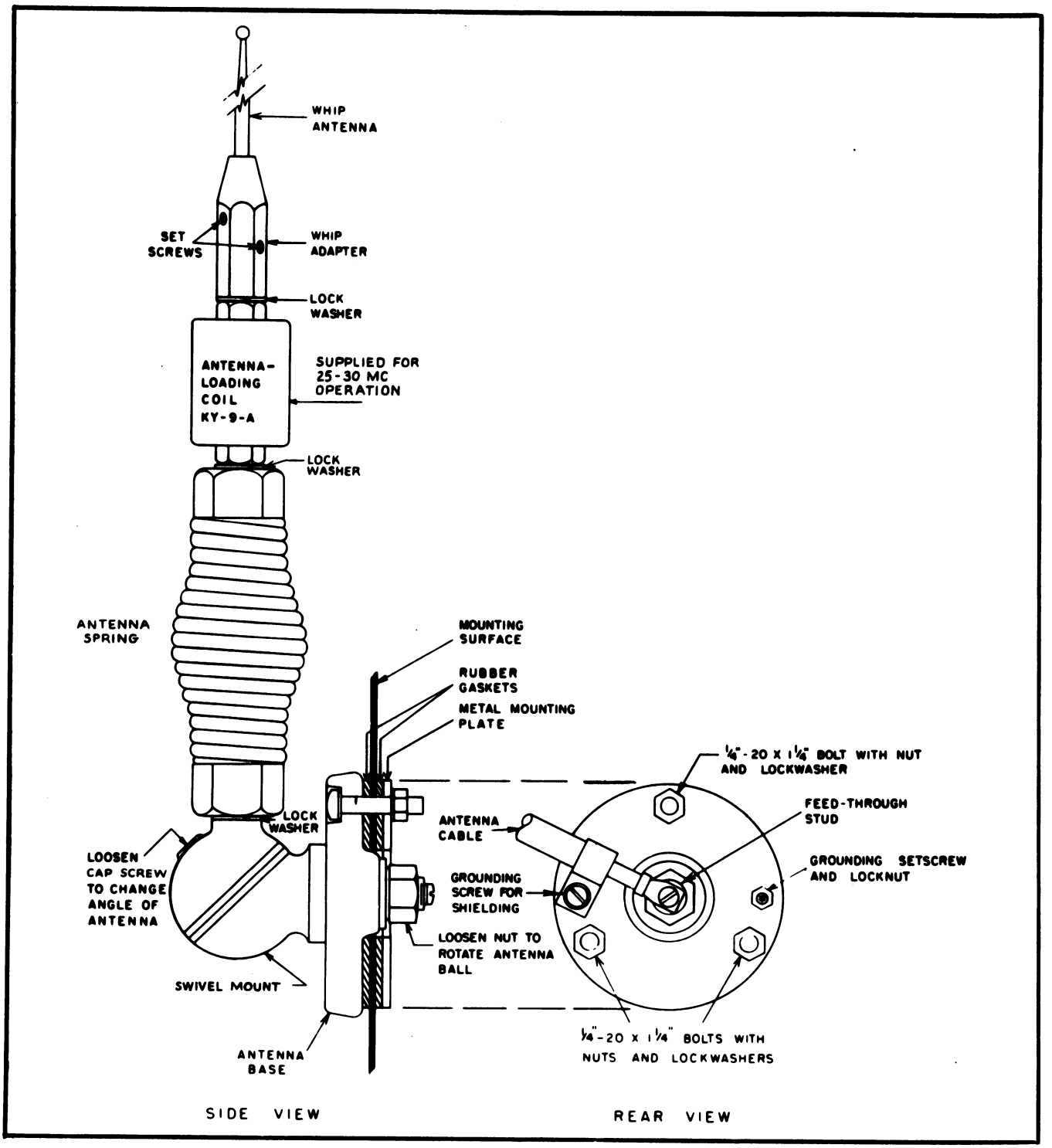
PARTS LIST

MILITARY MICROPHONE
MODEL 4EM18A10
MODEL 4EM18B10
MODEL 4EM18C10
MODEL 4EM18D10
TELEPHONE HANDSET
MODEL 4EM19A10

SYMBOL	G-E PART NO.	DESCRIPTION
		MILITARY MICROPHONE MODEL 4EM18A10
	5491402-P1	Microphone, hand, controlled-reluctance, Shure Bros. Internal imp 1400 ohms approx., output 63-db below 1-volt per microbar at 1-KC, open circuit. Includes 3 conductors, (one under shield) cable with 6-pin corrector. Includes microphone bracket, spring and cable clamp.
	4031457-P1	Microphone bracket.
	4031458-P1	Microphone bracket spring.
	99E556	Cartridge, sim to Shure Bros. 99E556.
	5495345	Connector, 6-pin.
	4033271-P1	Cable clamp.
		MILITARY MICROPHONE MODEL 4EM18B10
	5491402-P2	Microphone, hand, controlled-reluctance, Shure Bros. Internal imp 1400 ohms approx., output 63-db below 1-volt per microbar at 1-KC, open circuit. Includes 4 conductors, (one under shield) cable with 6-pin corrector. Includes microphone bracket, spring and cable clamp.
	4031457-P1	Microphone bracket.
	4031458-P1	Microphone bracket spring.
		Cable and Plug assembly, sim to Shure Bros. 90B647.
		Cartridge, sim to Shure Bros. 99E556.
	5495345-P13	Connector, 6-pin plug, black phenolic.
	5495345-P21	Connector hood, clamp and insulating lines.
	5495345-P22	Connector pin.
	5495345-P23	Connector spring retainer.
	4033271-P1	Cable clamp.
		Switch, sim to Shure Bros. 90A617.
		MILITARY MICROPHONE MODEL 4EM18C10
	5491402-P3	Microphone, hand, controlled-reluctance, Shure Bros. Internal imp 1400 ohms approx., output 63-db below 1-volt per microbar at 1-KC open circuit. Includes 4 conductors, (one under shield) cable with 6-pin corrector. Includes microphone bracket, spring and cable clamp.
	4031457-P1	Microphone bracket.
	4031458-P1	Microphone bracket spring.
		Cartridge, sim to Shure Bros 99E556.
		Cable and Plug assembly, sim to Shure Bros. 90B647.
	5495345-P13	Connector, 6-pin plug, black phenolic.
	5495345-P21	Connector hood, clamp and insulating lines.
	5495345-P22	Connector pin.
	5495345-P23	Connector spring retainer.
	4033271-P1	Cable clamp.
	65-178	Plastic cup; sim to Shure Bros. 65-178.
		Switch, sim to Shure Bros. 90A617.
		TELEPHONE HANDSET MODEL 4EM19A10
	5491797	Telephone handset, includes controlled-reluctance transmitter; sim to Shure Bros. 99E556, controlled reluctance receiver; sim to Shure Bros. 99A148, 4 conductor (one under shield) cable, with 6-pin connector. Includes handset holder. Transmitter load imp 25,000 ohms approx., output 63-db below 1-volt per milibar at 1-KC, open circuit. Receiver imp 125 ohms at 1-KC.

SYMBOL	G-E PART NO	DESCRIPTION
		TELEPHONE HANDSET MODEL 4EM19A10 (CONT'D)
	4029479-P1	Telephone handset holder.
		Transmitter cartridge, sim to Shure Bros. 99E556.
		Receiver cartridge, sim to Shure Bros. 99A148.
		Cable and Plug assembly, sim to Shure Bros. 90C647
	5495345	Connector, 6-pin.
	4033271-P1	Cable clamp.
		Switch, sim to Shure Bros. 90B274.
		MILITARY MICROPHONE MODEL 4EM18D10
	5491402-P4	Microphone, hand, controlled-reluctance, sim to Shure Bros. Internal imp 1400 ohms approx., output 63-db below 1-volt per microbar at 1-KC, open circuit. Includes 4 conductors, (one under shield) cable with 6-pin corrector. Includes microphone bracket, spring and cable clamp.
	4031457-P1	Microphone bracket.
	4031458-P1	Microphone bracket spring.
		Cartridge, sim to Shure Bros 99E556.
		Cable and Plug assembly, sim to Shure Bros. 90A913
	5495345-P13	Connector, 6-pin plug, black phenolic.
	5495345-P21	Connector hood, clamp and insulating lines.
	5495345-P22	Connector pin.
	5495345-P23	Connector spring retainer.
	4033271-P1	Cable clamp.
	65-178	Plastic cup, sim to Shure Bros. 65-178.
		Switch, sim to Shure Bros. 90A617.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.



Outline Diagram

ANTENNA, 25-50 MC
MODEL 4EY5A5

(RC-527A)
****

PARTS LIST

ANTENNA MODEL 4EY5A5

SYMBOL	DESCRIPTION	G-E DRAWING & PART NO.
	Antenna; stainless steel, whip 95.7 inches. Similar to Antenna Specialists Co. Model #ASP3BGE. Includes adapter.	B-7491074-P1
	Antenna Package; includes antenna base assembly, spring and cable. Includes installation instructions.	A-4033101-G1
	Antenna Base Assembly.	M-7472880-G5
	Spring.	M-7476632-G4