Customer_____

G. E. Req. No._____

Customer Order No._____

communications

MAINTENANCE MANUAL

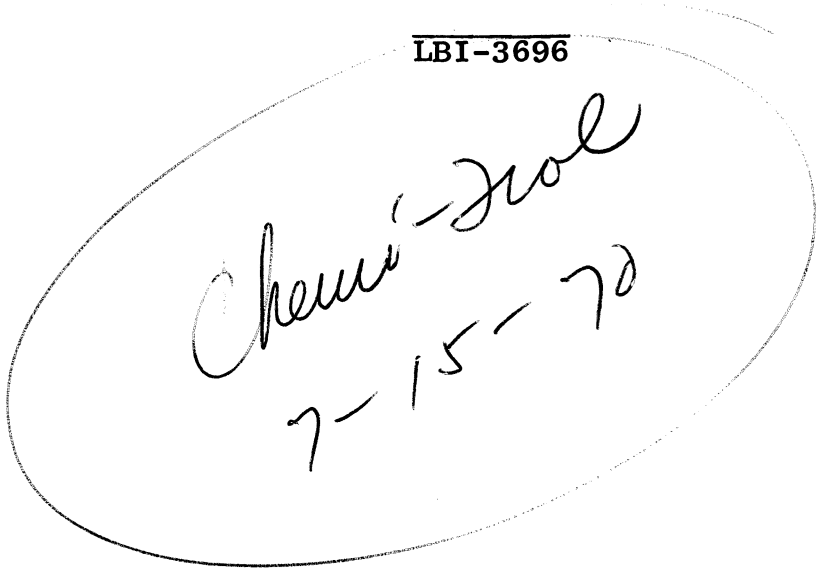
TRANSISTORIZED PROGRESS LINE

130-174 Megacycle

80-Watt

12-Volt Mobile Combinations

LBI-3696



COMMUNICATION PRODUCTS DEPARTMENT

GENERAL ELECTRIC

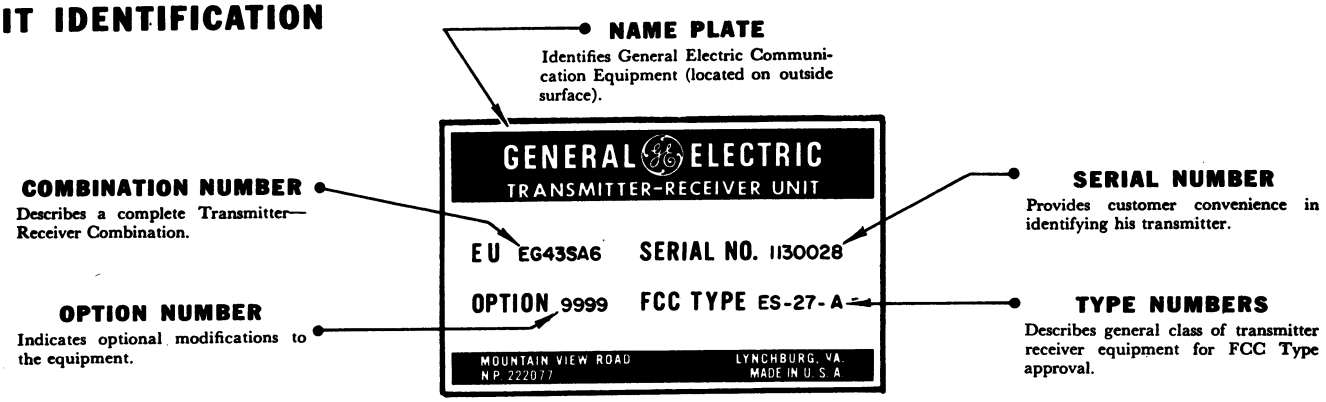
LYNCHBURG, VIRGINIA

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.

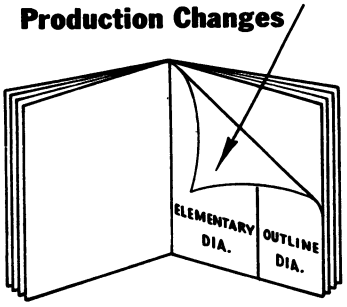
Production Changes—List all changes up to and includin the latest revision of the unit. They are found the service sheets and should be used for checkin and/or correcting instructions to correspond with the equipment being serviced.

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.

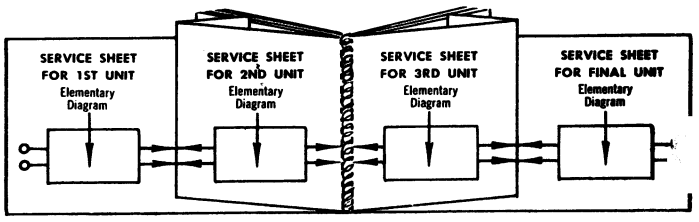
SERVICE SHEETS

Parts List & Production Changes



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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EQUIPMENT INDEX

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 27 amps
Receiver (with transmitter filaments on)	13.8 volts DC 2.9 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)
	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-34-C (Narrow-Band) ET-34-D (Wide Band)
Frequency Range	130-174 MC
Power Output	80 Watts
Crystal multiplication	24
Frequency stability	± .005%
Modulation	Wide-Band: ±15 KC (max.) deviation for 100%. Narrow-Band: ±5 KC (max.) deviation for 100%.
Aduio 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 60 db below rated power output at any frequency.
Module complement	Audio/Exciter Model 4EG10B10
	Oscillator Model 4EG11D10** (Two required for Two-Frequency Operation)
	Driver/Amplifier Model 4EF10A10 130-150 MC Combinations
	Driver/Amplifier Model 4EF10A11 150-174 MC Combinations
	Power Amplifier Model 4EF17A10 130-150 MC Combinations
	Power Amplifier Model 4EF17A11 150-174 MC Combinations

* Specifications subject to change without notice. For specifications of Transmitter, Receiver, and Power Supply, refer to the Maintenance Manual for that unit.

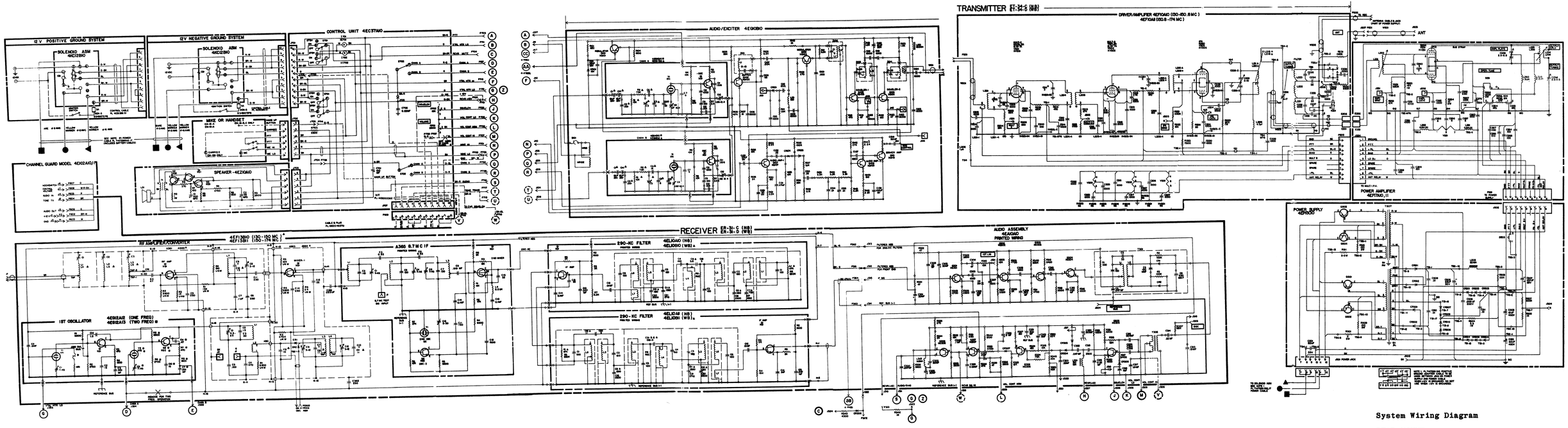
** For Channel Guard applications, Oscillator Model 4EG11E10 is required.

RECEIVER

Type Numbers	ER-31-C (Narrow Band) ER-31-D (Wide Band)
Frequency Range	130-174 MC
Transistor Complement	18 transistors, 10 diodes
Sensitivity	
20 db quieting	0.5 microvolts
EIA	0.5 microvolts
Selectivity	
EIA	Adjacent channel 80 db down (NB) Adjacent channel 80 db down (WB)
20 db quieting	120 db down at ±15 KC (NB) 120 db down at ±30 KC (WB)
Oscillator Frequency Stability	±0.0005%
Spurious Responses	90 db down
Modulation Acceptance	±6 KC (Narrow Band) ±15 KC (Wide Band)
Intermodulation (EIA Method)	64 db down
Squelch Sensitivity	
Critical	0.20 microvolt
Maximum	1.0 microvolt
Frequency Response (EIA Method)	Within +2, -8 db of standard 6 db per octave de-emphasis from 300 to 3000 cps, reference 1000 cps.
Audio Output	2 watts (less than 10% distortion using speaker model 4EZ10A10)
Module Complement	RF Amplifier Model 4EF13B10 (130-150 MC) RF Amplifier Model 4EF13B11 (150-174 MC) Oscillator Model 4EG12A12 (1 freq.) Oscillator Model 4EG12A13 (2 freq.) Low IF Model 4EL10A10 (NB) Low IF Model 4EL10B10 (WB) 2nd Low IF Model 4EL10A11 (NB) 2nd Low IF Model 4EL10B11 (WB) Audio Assembly Model 4EA10A10

POWER SUPPLY

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+.	

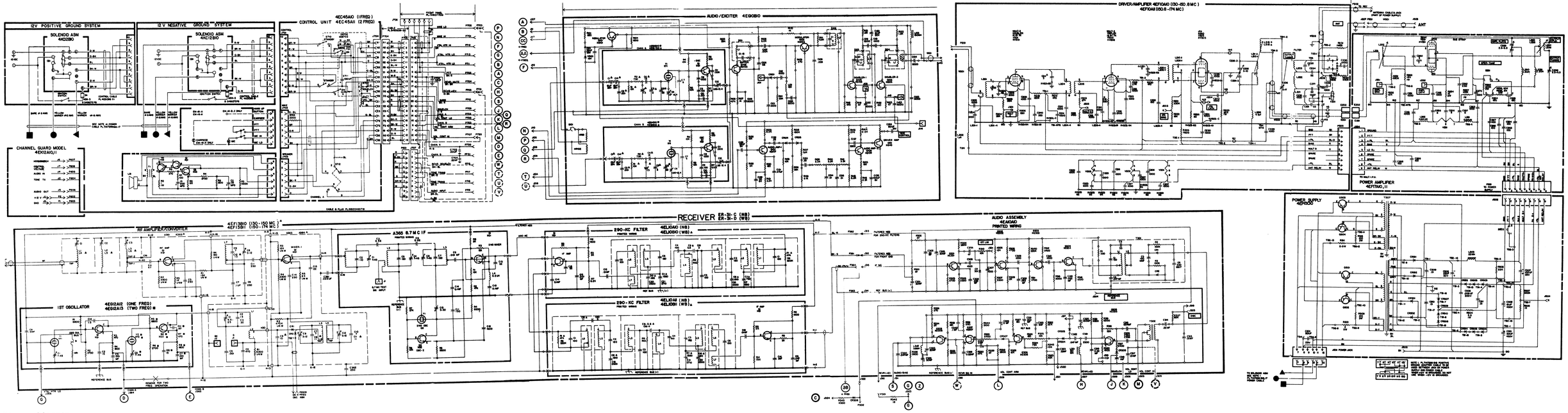


(EE-5499065, Rev. 5)
(EE-5499061, Sh. 4, Rev. 0)

System Wiring Diagram

REAR MOUNT
TRANSISTORIZED PROGRESS LINE
80-WATT, 130-174 MC MOBILE COMBINATIONS

(RC-779B)



System Wiring Diagram

REAR MOUNT
TRANSISTORIZED PROGRESS LINE
80-WATT, 130-174 MC MOBILE COMBINATIONS

(RC-780)

(EE-5499065, Rev. 5)
(EE-5499081, Sh. 4, Rev. 0)
(DD-5497405, Rev. 3)

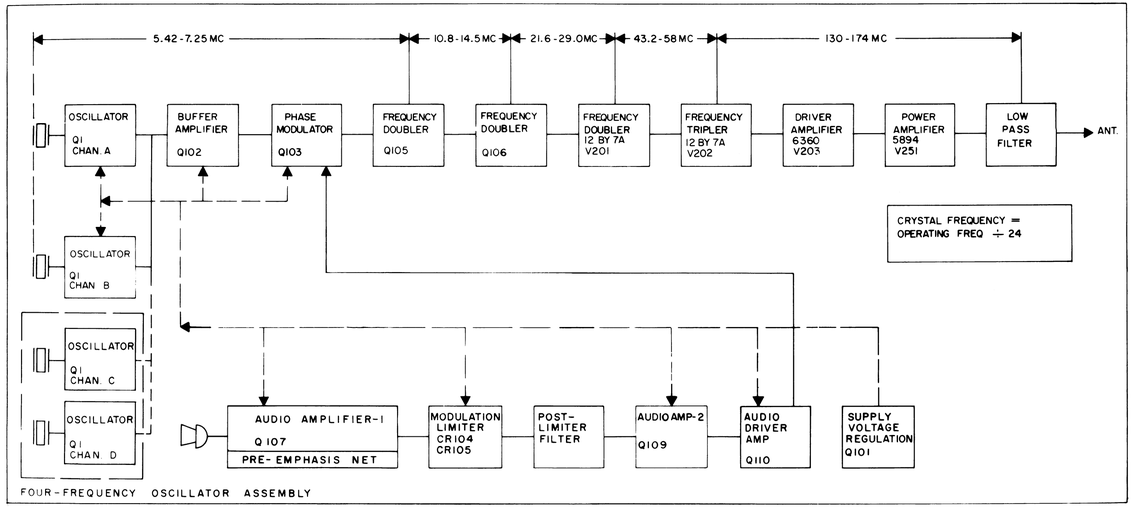
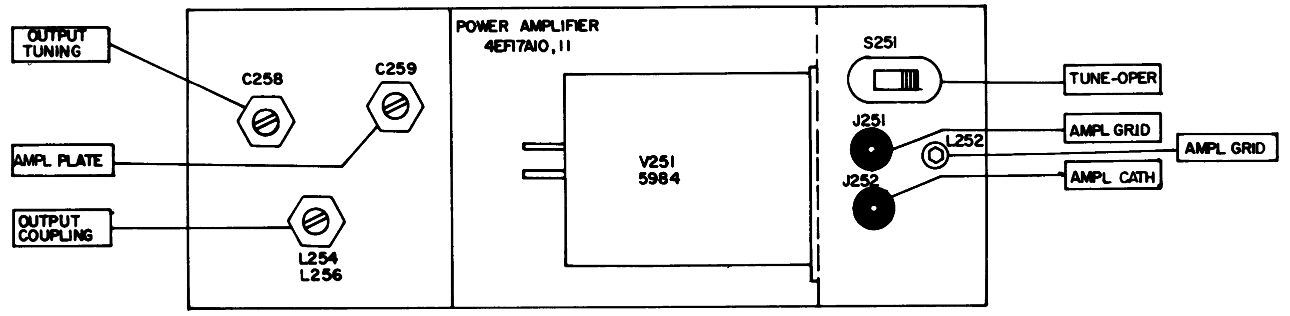
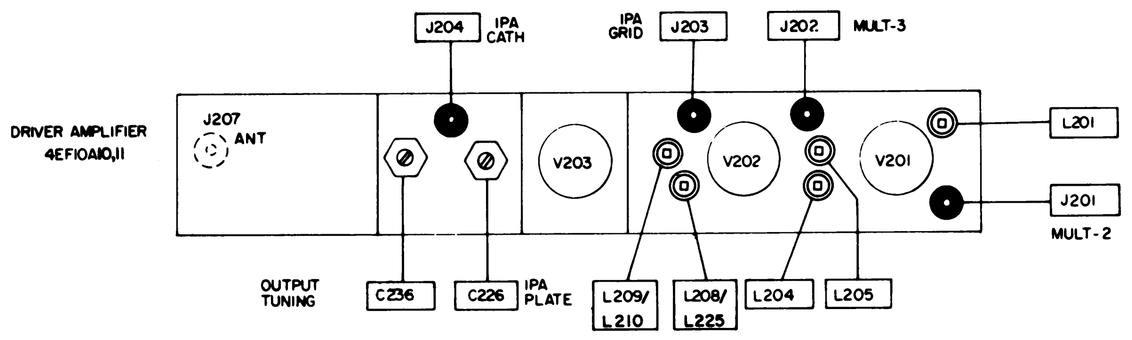


Fig. 1 - Block Diagram

130-174 MC, 80-WATT TRANSMITTER TYPES ET-34-C, D

(RC-681B)





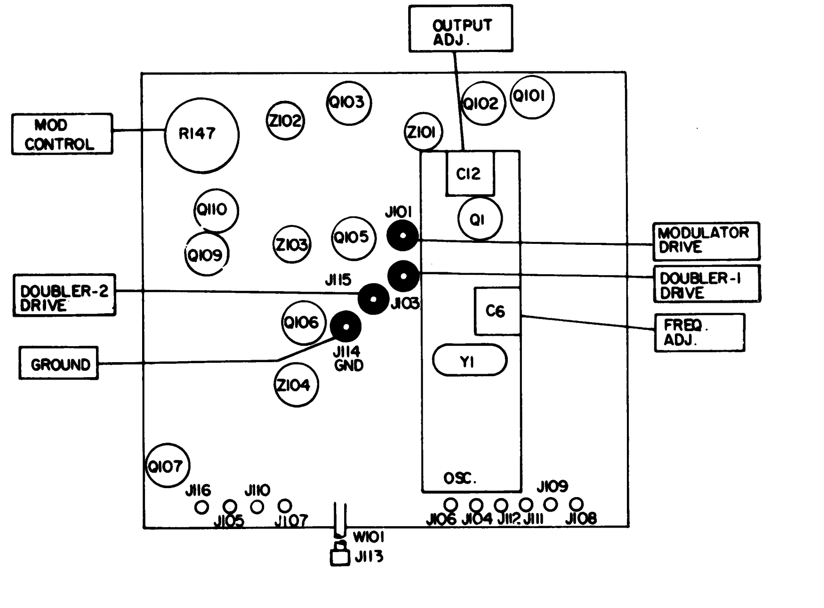


Fig. 2 - Alignment Procedure

130-174 MC, 80-WATT
TRANSMITTER TYPES
ET-34-C, D

(RC-684B)

INITIAL ADJUSTMENT

1. Connect a 50-ohm load to the ANT jack (J503) on back of the Power Supply heat sink.
2. Rotate OUTPUT COUPLING L254/L256 fully counterclockwise.
3. Place the TUNE-OPERATE switch in the TUNE position.
4. 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
POWER AMPLIFIER					
1.	J505	J251 (AMPL GRID)	L252	At least -1.9 volts	While keying the transmitter, tune L252 for maximum meter reading using brass slug in top of coil form.
2.	J505	J251 (AMPL GRID)	C236 (On Driver-Amplifier) and L252	At least -1.9 volt	If reading at J251 is below -1.9 volts, alternately adjust C236 and then re-peak L252.
3.	J252 (AMPL CATH)	J505	C259 (AMPL PLATE)		While keying the transmitter, carefully tune C259 for minimum meter reading.
4.					Place the TUNE-OPERATE switch in the OPERATE position.
5.	J252 (AMPL CATH)	J505	L254/L256 (OUTPUT COUPLING)		While keying the transmitter, slowly rotate L254/L256 clockwise for a slight increase in meter reading.
6.	"	"	C258 (OUTPUT TUNING)		While keying the transmitter, tune C258 for maximum meter reading.
7.	"	"	L254/L256	+2.4 volts	While keying the transmitter, adjust L254/L256 for a meter reading of +2.4 volts.
8.	J505	J251 (AMPL GRID)	L252	At least -1.9 volt	If reading at J251 is below -1.9 volts, adjust C236 and then repeak L252 until reading is at least -1.9 volts. Repeat step 7 after these adjustments have been made.
9.					Check the frequency and modulation level of the transmitter. If necessary, readjust the frequency or modulation following the procedure outlined below.

MODULATION LEVEL ADJUSTMENT

The MOD. control (R147) 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 occasional 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. 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 0.150 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 (R147), for a 13 to 15-kilocycle swing* as indicated on the frequency modulation monitor. (For narrow band, 5-kilocycle swing.)

   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 (R147) 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 narrow band, 5-kilocycle swing.)

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 ÷ 24.

80 WATT TRANSMITTER ALIGNMENT

1. Connect a 50-ohm load to the ANT. jack (J503) on the back of the power supply heat sink.
2. Place crystal Y1 into crystal socket XY1 on the Audio/Exciter Board.
3. Place TUNE-OPERATE switch in TUNE position.
4. Set C6 on the Oscillator Board at about half of maximum capacity.
5. Set C12 on the Oscillator Board near maximum capacity.
6. Rotate OUTPUT COUPLING L254/L256 fully counterclockwise.

CAUTION

DO NOT KEY THE TRANSMITTER MORE THAN 10 SECONDS OF EACH 30 SECONDS UNTIL THE TRANSMITTER IS FULLY ALIGNED. TO DO SO MAY DAMAGE THE TRANSMITTER.

The transmitter can be completely tuned using the 0 to 3-volt scale of a 20,000 ohm-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 BOARD					
1.	J114 (black)	J101	Z101		While keying the transmitter, tune Z101 for maximum meter reading.
2.	"	J103	Z102	At least -0.25 volt	While keying the transmitter, tune Z102 for maximum meter reading.
3.	"	J101	C12 (On Oscillator Board)	-0.8 volt	While keying the transmitter, adjust C12 for a meter reading of 0.8 volt.
4.	"	J115	Z103	At least -0.2 volt	While keying the transmitter, tune Z103 for maximum meter reading.
5-A	J114 (black)	J201 (MULT-2 on Driver Amplifier)	Z104	At least -1.5 volt	FOR FRONT MOUNT INSTALLATIONS: While keying the transmitter, tune Z104 for maximum meter reading.
5-B	"	J115	Z104		FOR SPLIT MOUNT INSTALLATIONS: While keying the transmitter, carefully tune Z104 for a small dip in meter reading.
DRIVER AMPLIFIER					
1.	J505	J201 (MULT-2)	L201	At least -1.5 volt	While keying the transmitter, tune L201 for maximum meter reading.
2.	"	"	L204		While keying the transmitter, tune L204 for a small variation in meter reading.
3.	"	J202 (MULT-3)	L205 and L204	At least -1.5 volt	While keying the transmitter, alternately tune L205 and then L204 for maximum meter reading.
4.	"	"	L208/L225		While keying the transmitter, tune L208/L225 for a small variation in meter reading.
5.	"	J203 (IPA GRID)	L209/L210 and L208/L225	At least -1.2 volt	While keying the transmitter, alternately tune L209/L210 and L208/L225 for maximum meter reading.
6.	J204 (IPA CATH)	J505	C236 and C226		While keying the transmitter, tune C236 and then C226 for minimum meter reading.
POWER AMPLIFIER					
1.	J505	J251 (AMPL GRID)	L252		Set iron core in bottom of L252 flush with bottom of coil form. While keying the transmitter, tune brass core down into coil form for maximum meter reading. If reading decreases, or if there is no peak while tuning L252, re-set brass core at top of coil form and then tune iron core into coil for maximum meter reading. Continue to turn iron core in clockwise direction until meter reading decreases approximately 10%. Now use brass slug to retune L252 for maximum reading. (Any further retuning of L252 should be done with the brass core only.)
2.	J505	J251 (AMPL GRID)	C236 (On Driver-Amplifier) and L252	At least -1.9 volt	If reading at J251 is below -1.9 volts, alternately adjust C236 and then repeak L252.
3.	J252 (AMPL CATH)	J505	C259 (AMPL PLATE)		While keying the transmitter, carefully tune C259 for minimum meter reading.
4.					Place the TUNE-OPERATE switch in the OPERATE position.
5.	J252 (AMPL CATH)	J505	L254/L256 (OUTPUT COUPLING)		While keying the transmitter, slowly rotate L254/L256 clockwise for a slight increase in meter reading.
6.	"	"	C258 (OUTPUT TUNING)		While keying the transmitter, tune C258 for maximum meter reading.
7.	"	"	L254/L256	+2.4 volts	While keying the transmitter, adjust L254/L256 for a meter reading of +2.4 volts.
8.	J505	J251 (AMPL GRID)	L252	At least -1.9 volt	If reading at J251 is below -1.9 volts, adjust C236 and then repeak L252 until reading is at least -1.9 volts. Repeat step 7 after these adjustments have been made.
FINAL CHECK					
1.			Z102 and Z101		Recheck tuning of Z102 and then Z101 according to step 2 and step 1 on Audio/Exciter Assembly.
2.	J114	J101	C12 (On Audio/Exciter Assembly)	-0.8 volt	While keying the transmitter, recheck the reading at J101. If necessary, readjust C12 for a reading of -0.8 volt.
3.	J114	J101	C12 (Chan. B)	-0.8 volt	For Two-Frequency transmitters where the frequency separation does not exceed 0.4%, tune the transmitter on Channel A according to the above procedure. Then switch to the Channel B Oscillator and adjust C12 (Channel B) for a reading of -0.8 volt.
4.	"	"	C12 (Chan. C & D on 4-Freq. Osc. Assembly)		For 4-Freq. transmitters, tune the transmitter on Channel A and Channel B as shown in Step 3 above. Then switch to Channel C and Channel D and adjust C12 on the 4-Freq. Osc. Assembly for a reading of -0.8 volt.

NOTE

When tuned in accordance with the normal alignment procedure, the power amplifier plate input may exceed the maximum permitted by the terms of the station license. In such case, the input must be reduced by backing off the OUTPUT COUPLING control, L254/L256 until the AMPL CATH (J252) meter reading is at a permissible level.

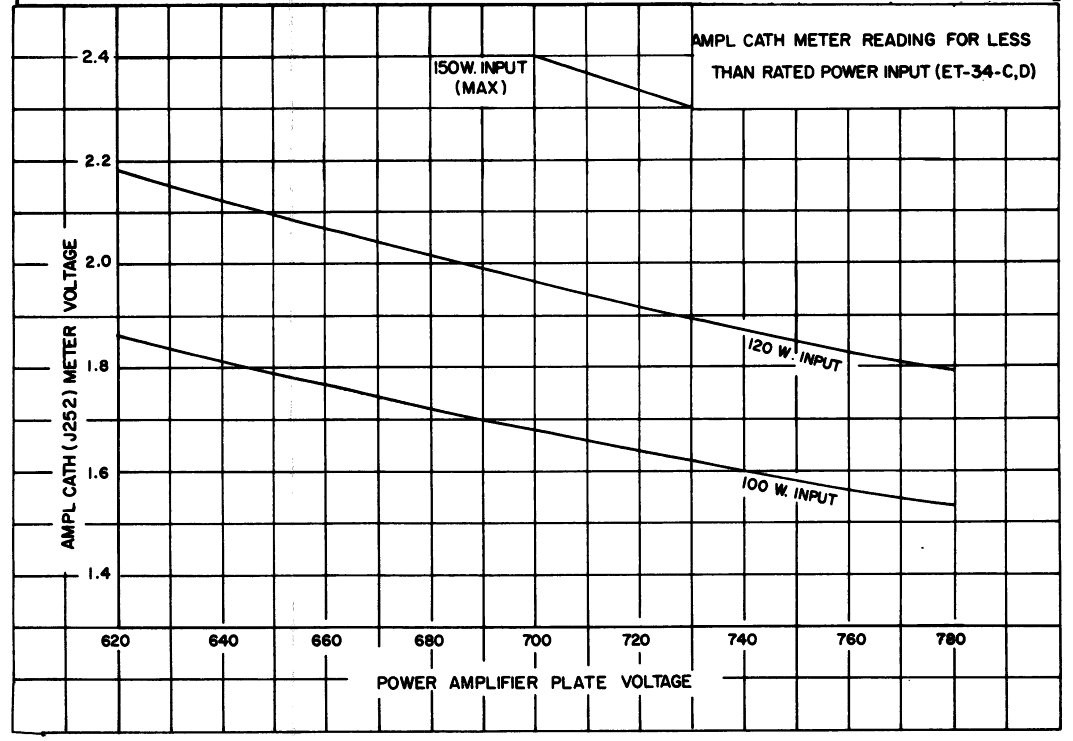
The permissible AMPL CATH meter reading may be determined from the formula:

$$E_k = \left(\frac{P_i}{E_{BB}} + I_{sg} + I_g\right) \times 10$$

where E_k is the DC voltage measured at the AMPL CATH jack (J252).
P_i is the permissible power input (watts).
E_{bb} is the measured power amplifier plate voltage.
I_{sg} is the power amplifier screen current (amperes).
I_g is the power amplifier grid current (amperes).

For this purpose, I_{sg} may be taken as 0.015 amperes and I_g may be taken as 0.010 amperes.

The permissible meter reading at J252 may be read off the curve "AMPL CATH METER READING FOR LESS THAN RATED POWER INPUT (ET-34-C, D)" for power inputs of 100 and 120 watts.



LBI-33219

PARTS LIST

AUDIO EXCITER MODEL 4EG10B10 REV. F
OSCILLATOR MODEL 4EG11D10 REV. B
(Without Channel Guard)
OSCILLATOR MODEL 4EG11E10 REV. A
(With Channel Guard)

SYMBOL	DESCRIPTION	G-E DRAWING & PART NO.
	AUDIO EXCITER	
	CAPACITORS	
C101	Capacitor, Electrolytic: (Vertical mount), sealed in aluminum tube, insulated, 35 µf +100% -10%, 25 VDCW. Sprague Electric Co Cat. No. 40D183A2.	C-5493869-P14
C105	Capacitor, High dielectric: Ceramic disc, (stabilized versus frequency), 6,000 pf ±10%, 500 VDCW. Radio Materials Corp Type JF Discap. (Leads are 0.188-inches long).	C-5494481-P120
C106	Capacitor, Fixed, silver mica: (DM15-dipped phenolic insulation), 68 pf ±10%, 500 VDCW. Electro Motive Mfg Co Type DM15.	B-5490008-P123
C107	Capacitor, High dielectric: Ceramic disc, (stabilized versus frequency), 4,000 pf ±10%, 500 VDCW. Radio Materials Corp Type JF Discap. (Leads are 0.188-inches long).	C-5494481-P118
C108 and C109	Capacitor, High dielectric: Ceramic disc, (stabilized versus frequency), 6,000 pf ±10%, 500 VDCW. Radio Materials Corp Type JF Discap. (Leads are 0.188-inches long).	C-5494481-P120
C112 and C113	Capacitor, High dielectric: Ceramic disc, (stabilized versus frequency), 1,000 pf ±10%, 500 VDCW. Radio Materials Corp Type JF Discap. (Leads are 0.188-inches long).	B-5494481-P112
C119	Capacitor, High dielectric: Ceramic disc, (stabilized versus frequency), 6,000 pf ±10%, 500 VDCW. Radio Materials Corp Type JF Discap. (Leads are 0.188-inches long).	C-5494481-P120
C120	Capacitor, Electrolytic: (Vertical mount), sealed in aluminum tube, insulated, 15 µf +100% -10%, 50 VDCW. Sprague Electric Co Cat. No. 40D184A2.	C-5493869-P27
C121	Capacitor, High dielectric: Ceramic disc, (stabilized versus frequency), 1,000 pf ±10%, 500 VDCW. Radio Materials Corp Type JF Discap. (Leads are 0.188-inches long).	B-5494481-P112
C122 thru C125	Capacitor, High dielectric: Ceramic disc, (stabilized versus frequency), 6,000 pf ±10%, 500 VDCW. Radio Materials Corp Type JF Discap. (Leads are 0.188-inches long).	C-5494481-P120
C128	Capacitor, Electrolytic: (Vertical mount), sealed in aluminum tube, insulated, 25 µf +100% -10%, 6 VDCW. Sprague Electric Co Cat. No. 30D134A1.	C-5493678-P5
C129	Capacitor, Electrolytic: (Vertical mount), sealed in aluminum tube, insulated, 50 µf +100% -10%, 6 VDCW. Sprague Electric Co Cat. No. 30D135A1.	C-5493670-P6
C131*	Capacitor, Mylar®, dielectric 0.47 µf ±5%, 100 VDCW. Good-All Electric Co Type 663-UW. In Models earlier than Rev. C: Capacitor, Mylar, dielectric, 1.00 µf ±5%, 100 VDCW. Good-All Electric Co Type 663-UW (straight leads).	B-5491656-P4 B-5491656-P6
C132 and C133	Capacitor, Mylar®, dielectric: 0.33 µf ±20%, 50 VDCW. Good-All Electric Co Type 601PE. (Crimped leads).	B-5491189-P109
C134 and C135	Capacitor, Mylar®, dielectric: 0.01 µf ±5%, 50 VDCW. Good-All Electric Co Type 601PE. (Crimped leads).	B-5491189-P201
C137	Capacitor, Fixed silver mica: DM20-dipped phenolic insulation, 3,200 pf ±2%, 500 VDCW. Electro Motive Mfg Co Type DM20.	C-4029003-P16
C138	Capacitor, Electrolytic: (Vertical mount), sealed in aluminum tube, insulated, 100 µf +100% -10%, 6 VDCW. Sprague Electric Co Cat. No. 40D134A2.	C-5493869-P29
C139	Capacitor, Electrolytic: (Vertical mount), sealed in aluminum tube, insulated, 50 µf +100% -10%, 15 VDCW. Sprague Electric Co Cat. No. 40D168A2.	C-5493869-P9

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

SYMBOL	DESCRIPTION	G-E DRAWING & PART NO.
	RECTIFIERS	
CR101	Diode, Germanium: Hermetically sealed in glass case (fusion sealed).	B-5492632-P1
CR104 and CR105	Diode, Silicon: Hermetically sealed in glass envelope. Hughes MFG Co Type HDE235.	B-5491705-P2
	HEATERS	
HR101	Heater Assembly.	PL-4032754-G1
HR102	Heater Assembly. (Used in Two-Frequency only).	PL-4032754-G1
	JACKS AND RECEPTACLES	
J101	Jack, Test: (Printed circuit), nylon body, beryllium copper contact. Alden Products Co Part No. 1110PC1-green.	A-4033568-P3
J102	Jack, Test: (Printed circuit), nylon body, beryllium copper contact. Alden Products Co Part No. 1110PC1-green.	A-4033568-P3
J104 thru J112	Contact, Pin: Brass, cadmium plated. Bead Chain Mfg Co Cat. No. L93-3.	A-4033313-P4
J113	Connector, Phono: (Long) XXXP phenolic insulation, brass shell, brass contact. Accurate Mfg Co Cat. No. A-10032-S. (Included in R101).	A-7104941-P11
J114	Jack, Test: (Printed circuit), nylon body, beryllium copper contact. Alden Products Co Part No. 1110PC1-black.	A-4033568-P1
J115	Jack, Test: (Printed circuit), nylon body, beryllium copper contact. Alden Products Co Part No. 1110PC1-green.	A-4033568-P3
J116	Contact, Pin: Brass, cadmium plated. Bead Chain Mfg Co Cat. No. L93-3.	A-4033313-P4
	INDUCTORS	
L101	Coil, RF choke: Inductance 120 µh ±10%. Jeffers Co Cat. No. 10404-36.	B-7488079-P73
L103	Choke Assembly. Inductance 150 mh.	PL-4035541-G1
	TRANSISTORS	
Q101	Transistor, Germanium: Hermetically sealed in metal case. with glass seal.	C-5496665-P6
Q102*	Transistor, Germanium, PNP. In models earlier than Rev. D: (Pick up old descrip. and part no.)	194115180-P2
Q103	Transistor, Germanium: PNP.	C-5498643-P2
Q105	Transistor, Germanium: PNP, hermetically sealed in metallic case.	B-5493957-P4
Q106	Transistor, Germanium: PNP, hermetically sealed in metallic case.	B-5493957-P5
Q107	Transistor, Germanium: Hermetically sealed in metal case, with glass seal.	C-5496665-P6
Q109	Transistor, Germanium: Hermetically sealed in metal case, with glass seal.	C-5496665-P6
Q110	Transistor, Germanium: NPN. Sylvania Mfg Co	B-5492639-P2
	RESISTORS	
R101	Resistor, Fixed composition: 820 ohms ±10%, 1/2 w.	C-3877-P821K
R104	Resistor, Fixed composition: 1,800 ohms ±10%, 1/2 w.	C-3877-P182K
R105	Resistor, Fixed composition: 4,700 ohms ±10%, 1/2 w.	C-3877-P472K
R106◉	Resistor, Fixed composition: 33,000 ohms ±10%, 1/2 w. In Models earlier than Rev. A: Resistor, Fixed composition: 56,000 ohms, ±10%.	C-3877-P333K
R107	Resistor, Fixed composition: 1,000 ohms ±10%, 1/2 w.	C-3877-P102K
R108	Resistor, Fixed composition: 2,200 ohms ±10%, 1/2 w.	C-3877-P222K
R109	Resistor, Fixed composition: 270 ohms ±10%, 1/2 w.	C-3877-P271K

SYMBOL	DESCRIPTION	G-E DRAWING & PART NO.
	RESISTORS (CONT'D)	
R110	Resistor, Fixed composition: 1,000 ohms ±10%, 1/2 w.	C-3877-P102K
R111	Resistor, Fixed composition: 6,800 ohms ±10%, 1/2 w.	C-3877-P682K
R114	Resistor, Fixed composition: 33,000 ohms ±10%, 1/2 w.	C-3877-P333K
R118	Resistor, Fixed composition: 470 ohms ±10%, 1/2 w.	C-3877-P471K
R119	Resistor, Fixed composition: 47 ohms ±10%, 1/2 w.	C-3877-P470K
R121	Resistor, Fixed composition: 1,800 ohms ±10%, 1/2 w.	C-3877-P182K
R122	Resistor, Fixed composition: 150 ohms ±10%, 1/2 w.	C-3877-P151K
R123	Resistor, Fixed composition: 47 ohms ±10%, 1/2 w.	C-3877-P470K
R125	Resistor, Fixed composition: 1,800 ohms ±10%, 1/2 w.	C-3877-P182K
R126	Resistor, Fixed composition: 15,000 ohms ±10%, 1/2 w.	C-3877-P153K
R128	Resistor, Fixed composition: 3,000 ohms ±10%, 1/2 w.	C-3877-P302K
R129	Resistor, Fixed composition: 8,200 ohms ±10%, 1/2 w.	C-3877-P822K
R130	Resistor, Fixed composition: 180 ohms ±5%, 1/2 w.	C-3877-P181J
R131	Resistor, Fixed composition: 2,200 ohms ±10%, 1/2 w.	C-3877-P222K
R133	Resistor, Fixed composition: 10,000 ohms ±5%, 1/2 w.	C-3877-P103J
R135	Resistor, Fixed composition: 0.15 megohm ±5%, 1/2 w.	C-3877-P154J
R136	Resistor, Fixed composition: 39,000 ohms ±5%, 1/2 w.	C-3877-P393J
R137 and R138	Resistor, Fixed composition: 5,100 ohms ±5%, 1/2 w.	C-3877-P512J
R139 thru R141	Resistor, Fixed composition: 3,300 ohms ±10%, 1/2 w.	C-3877-P332K
R142	Resistor, Fixed composition: 27,000 ohms ±10%, 1/2 w.	C-3877-P273K
R143	Resistor, Fixed composition: 6,800 ohms ±10%, 1/2 w.	C-3877-P682K
R144	Resistor, Fixed composition: 2,200 ohms ±10%, 1/2 w.	C-3877-P222K
R145	Resistor, Fixed composition: 150 ohms ±10%, 1/2 w.	C-3877-P151K
R146	Resistor, Fixed composition: 2,200 ohms ±10%, 1/2 w.	C-3877-P222K
R147	Potentiometer: (Carbon film): (For printed circuits) resistance 1,000 ohms ±20%, 0.15 w. Chicago Telephone Supply Corp Type UPC-70. (Linear taper).	B-7491365-P1
	SWITCH	
S101	Thermostat, Disc: Non-adjustable, SPST contacts, sanitized disc, rating 300 ma at 20 VDC; temperature - open 0°C (not more than), closed -10°C (not less than). Spencer Corp Cat. No. C6786-B-1.	A-4032758-P1
	VOLTAGE REGULATOR	
VR101*	Diode: Silicon, Zener Type. In model 4EG10B10 of Rev. E and earlier: Diode, Zener: Hermetically sealed in glass case, 15 v. Pacific Semiconductor Inc. Type PS6939.	C-5496365-P3
	CABLE	
W101	Cable Assembly Includes the following components: Cable: 17-inches long. Type RG-174/U. Connector, Phono: (J113).	B-5491689-P27 A-7104941-P11

SYMBOL	DESCRIPTION	G-E DRAW-ING & PART NO.
	SOCKETS	
XQ101	Socket, Transistor: 4-contacts, low-loss mica-filled phenolic, 1,000 megohms minimum, contact resistance 0.03 ohms maximum, 1 amp, 600 vrms. Elco Corp Cat. No. 3303. (Used with mounting ring. Elco Corp Cat. No. 737. (G-E Dwg and Part No. A-7168244-P1)).	B-5490277-P1
XQ102	Socket, Transistor: 4-pin P.W. (Stand-off type) 4-contacts - 2 (No. 816) and 2 (No. 820), beryllium copper, gold flash over silver plate.	A-7162500-P1
XQ103	Socket, Transistor: 4-contacts, low-loss mica-filled phenolic, 1,000 megohms minimum, contact resistance 0.03 ohms maximum, 1 amp, 600 vrms. Elco Corp Cat. No. 3303. (Used with mounting ring. Elco Corp Cat. No. 737. (G-E Dwg and Part No. A-7168244-P1)).	B-5490277-P1
XQ105 and XQ106	Socket, Transistor: 4-pin P.W. (Stand-off type) 4-contacts - 2 (No. 816) and 2 (No. 820), beryllium copper, gold flash over silver plate.	A-7162500-P1
XQ107	Socket, Transistor: 4-contacts, low-loss mica-filled phenolic, 1,000 megohms minimum, contact resistance 0.03 ohms maximum, 1 amp, 600 vrms. Elco Corp Cat. No. 3303. (Used with mounting ring. Elco Corp Cat. No. 737. (G-E Dwg and Part No. A-7168244-P1)).	B-5490277-P1
XQ109 and XQ110	Socket, Transistor: 4-contacts, low-loss mica-filled phenolic, 1,000 megohms minimum, contact resistance 0.03 ohms maximum, 1 amp, 600 vrms. Elco Corp Cat. No. 3303. (Used with mounting ring. Elco Corp Cat. No. 737. (G-E Dwg and Part No. A-7168244-P1)).	B-5490277-P1
	FILTERS	
Z101	Coil Assembly Includes the following components with Z101 prefix:	PL-5493641-G1
Z101-C1	Capacitor, Fixed silver mica: DM15-dipped phenolic insulation, 15 pf ±10%, 500 VDCW. Electro Motive Mfg Co Type DM15.	B-7489182-P108
Z101-L1	Coil: 70-turns, left-hand, close-wound.	B-5493641-P7
Z102	Coil Assembly Includes the following components with Z102 prefix:	PL-5493648-G1
Z102-C1◉	Capacitor, Fixed silver mica: DM15-dipped phenolic insulation, 9 pf ±10%, 500 VDCW. Electro Motive Mfg Co Type DM15.	B-7489182-P105
	Capacitor, Fixed silver mica, DM19-dipped phenolic insulation, 18pf ±10%, 500 VDCW. Electro Motive Mfg. Co. Type DM-19.	B-7489182-P109
Z102-L1	Coil: 60-turns, right-hand, close-wound.	B-5493648-P8
Z102-L2	Coil: 6-turns, right-hand, close-wound.	B-5493648-P10
Z103	Coil Assembly Includes the following components with Z103 prefix:	PL-5493643-G1
Z103-C1◉	Capacitor, Fixed, silver mica: DM 15-dipped phenolic insulation, 33 pf ±10%, 500 VDCW. Chicago Telephone Supply Corp Type DM-15. In Models of Rev. A or earlier: Capacitor, Fixed, silver mica: DM 15-dipped phenolic insulation, 39 pf ±10%, 500 VDCW. Electro Motive Mfg Co Type DM-15.	B-7489182-P113 B-7489182-P117
Z103-L1	Coil: 28-turns, left-hand, close-wound.	B-5493643-P8
Z103-L2	Coil: 3-turns, left-hand, close-wound.	B-5493643-P10
Z104	Coil Assembly Includes the following components with Z104 prefix:	PL-5493644-G1
Z104-C1	Capacitor, Fixed silver mica: DM10-dipped phenolic insulation, 18 pf ±10%, 500 VDCW. Electro Motive Mfg Co Type DM-10.	B-7489182-P109
Z104-L1	Coil: 17-turns, right-hand, close-wound.	B-5493644-P8
Z104-L2	Coil: 3-turns, right-hand, close-wound.	B-5493644-P10
	MISCELLANEOUS	
	Printed Wiring Board: Phenolic-tan, copper clad, 4.75-inches long, 4.50-inches wide.	C-5496751-P1

SYMBOL	DESCRIPTION	G-E DRAWING & PART NO.
	OSCILLATOR	
	MODEL 4EG11D10 (Without Channel Guard) MODEL 4EG11E10 (With Channel Guard)	
	CAPACITORS	
C1	Capacitor, Electrolytic: (Vertical mount), insulated, sealed in aluminum tube, 15 µf +100% -10%, 25 VDCW. Sprague Electric Mfg Co Cat. No. 30D183A1. (Used in Model 4EG11E10 only).	C-5495670-P16
C2	Capacitor, High dielectric: Ceramic disc, (stabilized versus frequency), 1,000 pf ±10%, 500 VDCW. Radio Materials Corp Type JF Discap. (Leads are 0.188-inches long). (Used in Model 4EG11E10 only).	B-5494481-P112
C3	Capacitor, Voltage variable: (Hermetically sealed), silicon, sealed in glass case, 27 pf ±5%, 20 VDCW. Motorola Semiconductors Inc Varicap Type V-27. (Used in Model 4EG11E10 only).	C-5495769-P2
C4	Capacitor, Fixed ceramic disc: Insulated, temp compensating, 18 pf ±5%, 500 VDCW, -80 temp coef. (Used in Model 4EG11E10 only).	C-5496219-P245
C5	Capacitor, Fixed, ceramic disc: (Insulated, temperature compensating), 8 pf ±5, 10.25 pf, 500 VDCW, 0 temp coef. (Used in Model 4EG11E10 only).	C-5496219-P39
C6	Capacitor, Variable: Sub-miniature, (supplied with 2-mounting tabs, unassembled), 14-plates, 1.98 to 12.4 pf, 850 v peak voltage. EF Johnson Co Cat. No. 189-6-5.	B-5491271-P106
C7	Capacitor, Fixed ceramic disc: (Insulated, temperature compensating), 8.0 pf ±5%, 500 VDCW, -80 temp coef.	C-5496219-P236
C8	Capacitor, Fixed silver mica: DM20-dipped phenolic insulation, crimped leads, 1,000 pf ±10%, 500 VDCW. Electrocutive Mfg Co Type DM20.	A-4029003-P108
C9	Capacitor, Fixed ceramic disc: (Insulated, temperature, compensating), 100 pf ±5%, 500 VDCW, -330 temp coef.	C-5496219-P562
C10	Capacitor, High dielectric: Ceramic disc, (stabilized versus frequency), 1,000 pf ±10%, 500 VDCW. Radio Materials Corp Type JF Discap. (Leads are 0.188-inches long).	B-5494481-P112
C11	Capacitor, High dielectric: Ceramic disc, (stabilized versus frequency), 6,000 pf ±10%, 500 VDCW. Radio Materials Corp Type JF Discap. (Leads are 0.188-inches long).	C-5494481-P120
C12	Capacitor, Variable: Sub-miniature, (supplied with 2-mounting tabs, unassembled), 14-plates, 1.98 to 12.4 pf, 850 v peak voltage. EF Johnson Co Cat. No. 189-6-5.	B-5491271-P106
C13	Capacitor, Fixed, ceramic disc: (Insulated, temperature compensating), 22 pf ±5%, 500 VDCW, 0 temp coef. (Used in Model 4EG11D10 only).	C-5496219-P47
C14	Capacitor, Electrolytic: (Vertical mount), insulated, sealed in aluminum tube, 10 µf +100% -10%, 25 VDCW. Sprague Electric Mfg Co Cat. No. 30D183A1. (Used in Model 4EG11E10 only).	C-5495670-P16
	TRANSISTORS	
Q1	Transistor, Germanium: PNP.	194115180-P2
Q2	Transistor, Germanium: PNP, hermetically sealed in metallic case. Type 2N1225. (Used in Model 4EG11E10 only).	B-5493957-P2
	RESISTORS	
R1	Resistor, Fixed composition: 10,000 ohms ±5%, 1/2 w. (Used in Model 4EG11E10 only).	C-3877-P103J
R2	Resistor, Fixed composition: 7,500 ohms ±5%, 1/2 w. (Used in Model 4EG11E10 only).	C-3877-P752J
R4 and R5	Resistor, Fixed composition: 10,000 ohms ±5%, 1/2 w.	C-3877-P103J
R6	Resistor, Fixed composition: 100 ohms ±10%, 1/2 w.	C-3877-P101K
R7	Resistor, Fixed composition: 3,900 ohms ±5%, 1/2 w.	C-3877-P392J

SYMBOL	DESCRIPTION	G-E DRAWING & PART NO.
	SOCKETS	
XQ1	Socket, Transistor: 4-pin P.W. (stand-off), 4-contacts - 2 (No. 816) and 2 (No. 820), beryllium copper, gold flash over silver plate.	A-7162500-P1
XY1	Contact, Crystal: Printed wiring, 2-beryllium copper contacts, 4-slots.	B-5490557-P2
	CRYSTAL	
	When reordering give G-E Dwg and Part No. and specify exact frequency needed.	
Y1	Crystal, Quartz: Frequency range 5,400 to 7,250 KC. Crystal frequency = (Operating frequency ÷ 24).	B-5491417-P3
	MISCELLANEOUS	
	Printed Wiring Board: Textolite, copper clad, 3.37-inches long, 1-inch wide.	B-5493560-P1
Lug, Terminal: Brass, 0.46-inches long, 0.030-inches wide, (except 2-shoulders - 0.093-inches wide, 0.02-inches thick).		A-4029546-P1

PRODUCTION CHANGES

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

REV. A - (Model 4EG10B10)

To increase drive to Modulator and First Doubler. R106 and Z102-C1 changed.

REV. B - (Model 4EG10B10)

To facilitate 1st doubler tuning at high end of band. Z103-C1 changed.

REV. C - (Model 4EG10B10)

To increase low frequency response. C131 changed.

REV. A - (Model 4EG11D10) and 4EG11E10 only)

Increased diameter of posts used to mount Stand-off boards. Changed part number of posts from 4029546-P1 to 4038104-P1.

REV. B - (Model 4EG11D10 only)

To utilize a more available transistor. Q1 changed.

REV. D - (Model 4EG10B10)

To utilize a more available transistor. Q102 changed.

REV. E - (Model 4EG10B10)

To advance revision letter. No component changes were made.

REV. F - (Model 4EG10B10)

To incorporate improved component. Changed VR101.

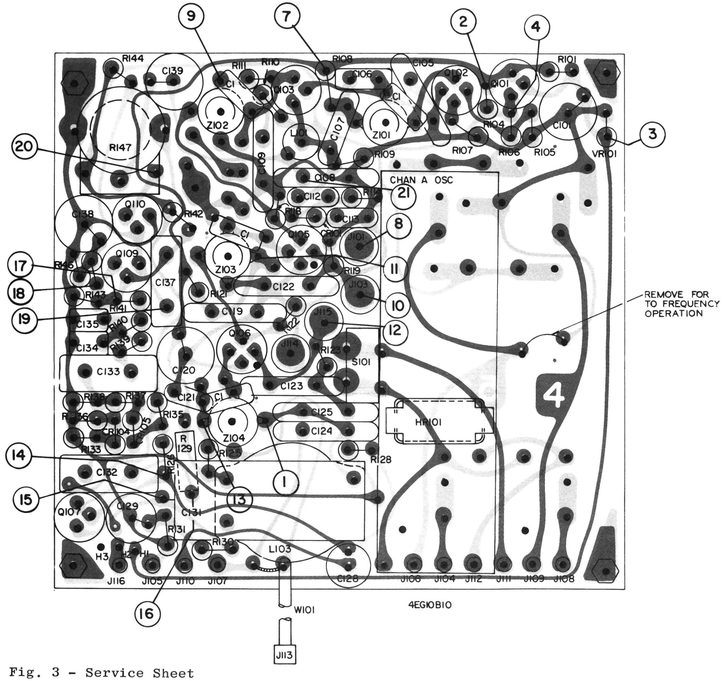


Fig. 3 - Service Sheet

AUDIO/EXCITER MODEL 4EG10B10; REV. F
OSCILLATOR MODELS 4EG11D10; REV. B
AND MODEL 4EG11E10; REV. A

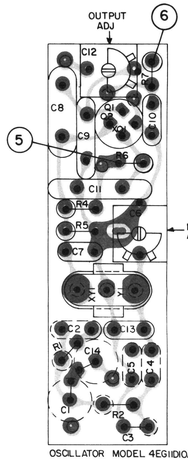
(RC-685F)

(19C300203, Rev. 2)
(C-5496750, Sh. 1, Rev. 4)
(C-5496750, Sh. 2, Rev. 5)

RESISTANCE READINGS

TRANSISTOR	C	B	E
Q1	100	5K	3.9K
Q102	2.2K	4.1K	1K
Q103	1K	0	270
Q105	1.8	.2	47
Q106	1.8	.05	47
Q107	8.2K	2.5K	2.4K
Q109	2.2K	5.2K	2.4K
Q110	0	2.2K	1K

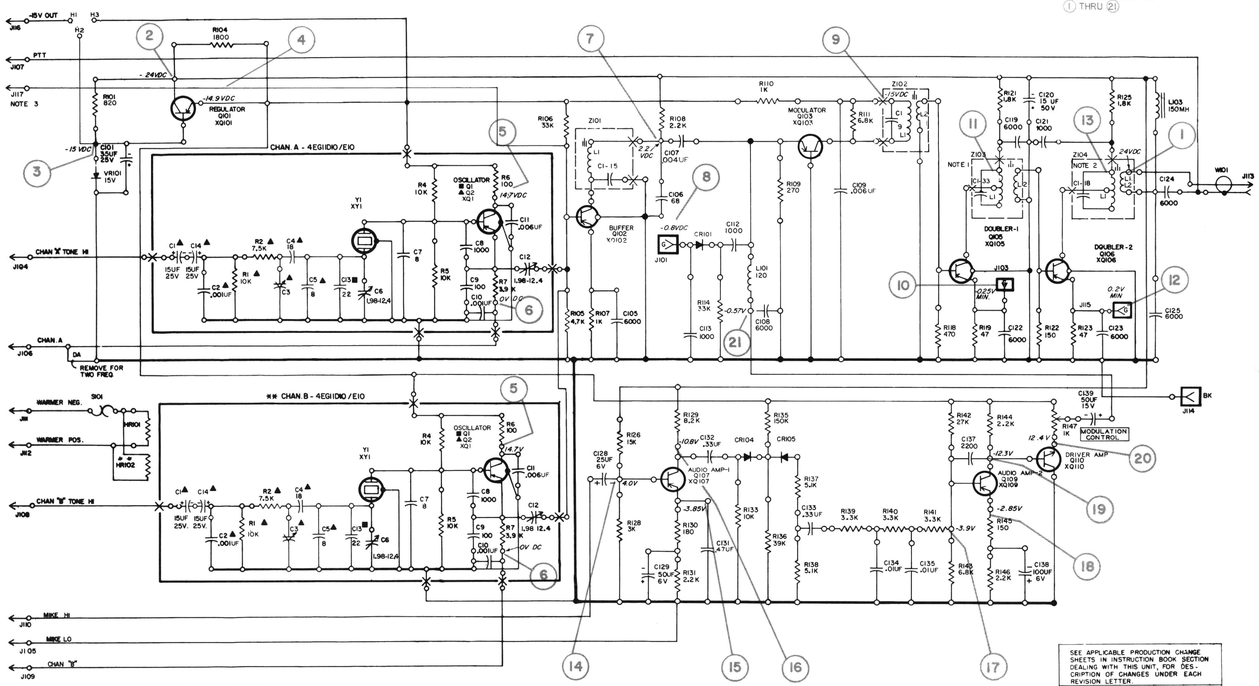
RESISTANCE READINGS TAKEN WITH TRANSISTOR OUT OF SOCKET AND THE COLLECTOR AND EMITTER OF Q101 SHORTED TO THE AUDIO EXCITER GROUND (J114). WHEN MAKING MEASUREMENTS AT EITHER XQ109 AND XQ110, REMOVE BOTH Q109 AND Q110.



OSCILLATOR MODEL 4EG11D10/E10

(19C300203, Rev. 2)
(B-5493541, Sh. 1, Rev. 1)
(B-5493541, Sh. 2, Rev. 0)

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



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

○=○ TERMINAL LUG
ALL CIRCUIT PRINTED WIRING EXCEPT AS NOTED

■ USE WITH 4EG10D10 ONLY
▲ USE WITH 4EG11E10 ONLY
※※ TWO FREQUENCY OPERATION ONLY

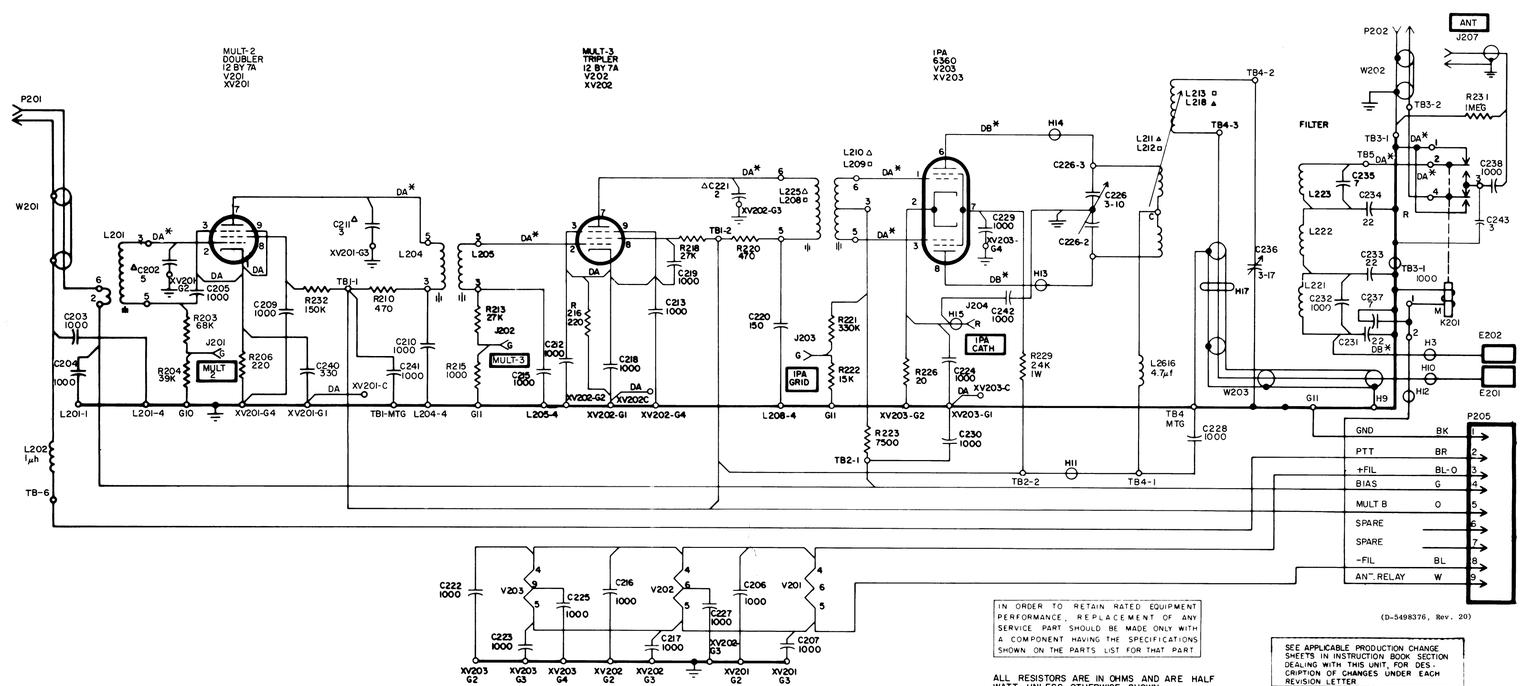
VOLTAGE READINGS MEASURED FROM TRANSISTOR SOCKET PIN TO GROUND WITH A 20,000 OHM-PER-VOLT METER (±20%).

NOTE 1: V(C)-V(E) 38 V
NOTE 2: V(C)-V(E) 38 V
NOTE 3: 4-FREQ. ONLY

(D-5498908, Rev. 10)

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
4EG10B10	F
4EG11D10	B
4EG11E10	A



NOTES:
1. FOR WIRING INSTRUCTION SEE A4031623.
2. DRESS CR201 AGAINST TB3 ON SIDE AWAY FROM FILTER.

(D-5498376, Rev. 20)

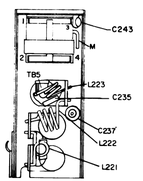
IN ORDER TO RETAIN RATED EQUIPMENT PERFORMANCE, REPLACEMENT OF ANY SERVICE PART SHOULD BE MADE ONLY WITH A COMPONENT HAVING THE SPECIFICATIONS SHOWN ON THE PARTS LIST FOR THAT PART.

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 MICROFARADS UNLESS OTHERWISE SHOWN
MF = MICROFARADS

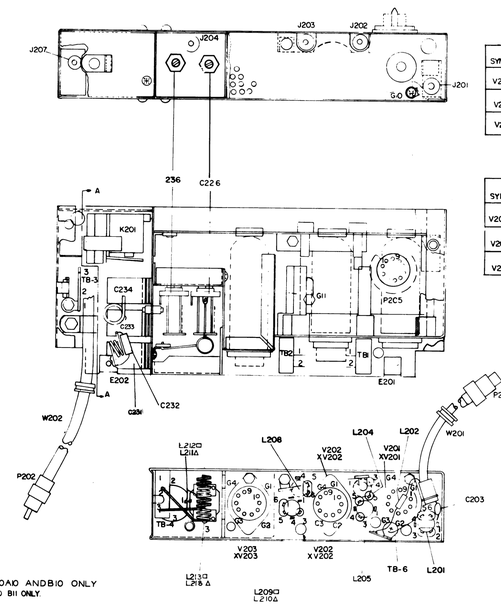
PRESENT IN 4EF10A10
PRESENT IN 4EF10A11

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
4EF10A10	K
4EF10A11	J



SECT A-A



VOLTAGE READING										
SYMBOL	TUBE	1	2	3	4	5	6	7	8	9
V201	12 BY 7	3	-5 ①	3	FIL	FIL	FIL	300 ①	90	3
V202	12 BY 7	6	-50 ①	6	FIL	FIL	FIL	300 ①	160	3
V203	6360	-40 ①	1.5	-40 ①	FIL	FIL	300 ①	175	300 ①	FIL

RESISTANCE READING										
SYMBOL	TUBE	1	2	3	4	5	6	7	8	9
V201	12 BY 7	220	107K	220	FIL	FIL	FIL	470 ①	27K ②	220
V202	12 BY 7	220	275K	220	FIL	FIL	FIL	470 ①	27K ②	220
V203	6380	345K	20	345K	FIL	FIL	1.4 ①	39K	1.4 ②	FIL

CONDITIONS OF MEASUREMENTS

VOLTAGE READINGS TAKEN WITH A VTVM DC VOLTAGE TO GROUND.

RESISTANCE READINGS TAKEN FROM TUBE PIN TO GROUND.
① VOLTAGE AT THIS POINT CANNOT BE MEASURED DIRECTLY ON TUBE PIN WITHOUT UPSETTING OPERATION OF CIRCUIT. MEASURED ON BYPASSED OR GROUNDED SIDE OF COMPONENT IN SAME CIRCUIT.
② RESISTANCE READING TAKEN FROM TUBE PIN TO P205-5 (MULT B+).

(C-5494913, Rev. 7)

Δ PRESENT IN 4EF10A10 AND B10 ONLY
□ PRESENT IN 4EF10A11 AND B11 ONLY.

Fig. 4 - Service Sheet

DRIVER/AMPLIFIER
MODEL 4EF10A10, REV. K
MODEL 4EF10A11, REV. J

(RC-558E)

PARTS LIST

DRIVER/AMPLIFIER
MODEL 4EF10A10, REV. K
MODEL 4EF10A11, REV. J
PL-5495257-G1, 2

SYMBOL	G-E PART NO.	DESCRIPTION
		CAPACITORS
C202	7770468-P5	Ceramic, temp. compensating, tubular 5.0 mmfd ±0.5 mmfd, 500 VDCW. Used in Model 4EF10A10 only.
C203	7774750-P4	Ceramic, Hi-K disk; 0.001 mfd +100% -0%, 500 VDCW. Included as part of W201 cable.
C204	7774750-P4	Ceramic, Hi-K disk; 0.001 mfd +100% -0%, 500 VDCW. Included as part of L201.
C205 thru C207	7774750-P4	Ceramic, Hi-K disk; 0.001 mfd +100% -0%, 500 VDCW.
C208*	7774750-P4	Ceramic, Hi-K disk; 0.001 mfd +100% -0%, 500 VDCW. Deleted by Rev. A.
C209	7774750-P4	Ceramic, high-K disk; 0.001 mfd +100% -0%, 500 VDCW.
C210	7774750-P4	Ceramic, high-K disk; 0.001 mfd +100% -0%, 500 VDCW. Included as part of L204.
C211*	7770468-P3	Ceramic, insulated, temp compensating, tubular, 3.0 uuf ± 0.5 uuf, ±10%, 500 VDCW. (Used in Model 4EF10A10 only). In models of Rev. E or earlier;
	7770468-P5	Ceramic, insulated, temp compensating, tubular, 5.0 uuf ± 0.5 uuf, ±10%, 500 VDCW. (Used in Model 4EF10A10 only).
C212* and C213*	7774750-P4	Ceramic, high-K disk; 0.001 mfd +100% -0%, 500 VDCW. Added by Rev. A.
C214*	7770468-P3	Ceramic, insulated, temp compensating, tubular 3.0 uuf ± 0.5 uuf, ± 10%, 500 VDCW. (Used in Model 4EF10A10 only). (Deleted by Rev. F).
C215	7774750-P4	Ceramic, high-K disk; 0.001 mfd +100% -0%, 500 VDCW. Included as part of L205.
C216 thru C219	7774750-P4	Ceramic, high-K disk; 0.001 mfd +100% -0%, 500 VDCW.
C220	7489162-P131	Silver Mica, dipped phenolic insulation; 150 mmfd ± 10%, 500 VDCW. Sim to Electromotive Mfg. DM15. Included as part of L208.
C221*	7770468-P2	Ceramic, insulated, temp compensating, tubular; 2.0 uuf ± 0.5 uuf, ± 10%, 500 VDCW. (Used in Model 4EF10A10 only). In models of Rev. E or earlier:
	7770468-P3	Ceramic, insulated, temp compensating, tubular; 3.0 uuf ± 0.5 uuf, ± 10%, 500 VDCW. (Used in Model 4EF10A10 only).
C222 thru C225	7774750-P4	Ceramic, high-K disk; 0.001 mfd +100% -0%, 500 VDCW.
C226	5490272-P13	Variable, air; 2.97 to 9.72 mmfd, 1250 v peak, butter-fly type. Sim to E. F. Johnson 160-211-53.
C227*	7774750-P4	Ceramic, high-K disk; 0.001 mfd +100% -0%, 500 VDCW. Added by Rev. A.
C228 thru C230	7774750-P4	Ceramic, high-K disk; 0.001 mfd +100% -0%, 500 VDCW.
C231		Capacitor Assembly consists of: (1) Machine screw - 4-40 x 7/16 inch.
	4031593-P1	(2) Washer, steel; 0.14 dia.
	4032084-P1	(2) Washer, insulator; Teflon, 0.113 dia.
	5491229-P1	(1) Bracket, steel; 0.56 dia, bend radii 0.062.
	4031594-P1	(1) Insulator; Teflon, 0.242 diam.
		(2) Lockwashers; #4.
		(1) Nut, Hex; steel, 4-40.
	7487424-P11	(1) Terminal Strip; miniature, XXXP phenolic, color-tan, terminal brass.(Sim to Cinch 4408), mounting bracket brass (Sim to Cinch 4478).
C232	7770468-P7	Ceramic, temp. compensating, tubular; 7.0 mmfd ± 0.5 mmfd, 500 VDCW.

SYMBOL	G-E PART NO	DESCRIPTION
		CAPACITORS (CONT'D)
C233 and C234		Same as C231.
C235	7770468-P7	Ceramic, temp. compensating, tubular; 7.0 mmfd ± 0.5 mmfd, 500 VDCW.
C236*	5490272-P4	Variable, air; 2.97 to 17.64 mmfd, 1250 v peak; single type. Sim to E. F. Johnson 160-110-53. Added by Rev. A.
C237	7160230-G1	Feed thru assembly, includes capacitor, 1000 mmfd +100% -0%, 500 VDCW. Naida Dev. 277A. G-E Dwg. #7160807-P1.
C238	7774750-P4	Ceramic, high-K disk; 0.001 mfd +100% -0%, 500 VDCW.
C239*	7774750-P4	Ceramic, Hi-K disk; 0.001 mfd +100% -0%, 500 VDCW. Added by Rev. C. Deleted by Rev's.H and J.
C240*	7489162-P39	Silver Mica, dipped phenolic insulation, 330 mmfd - 5%, 500 VDCW. Sim to Electromotive Mfg. DM15. Added by Rev. A.
C241*	7774750-P4	Ceramic, Hi-K disk; 0.001 µf +100% -0%, 500 VDCW. (Added by Rev. A).
C242*	7774750-P4	Ceramic, Hi-K disk; 0.001 mfd +100% -0%, 500 VDCW. Added by Rev. E.
C243*	5496218-P34	Ceramic disc; temp-comp, radial leads, 3 pf, ±0.25 pf, 500 VDCW, temp coef. 0 PPM. Added by REV's K and J.
		RECTIFIER
CR201*		Diode Type 1N616. Added by Rev. C/ Deleted by Rev's. H and J
		JACKS AND RECEPTACLES
J201 thru J203	7150763-P4	Test point jack, stake-in, molded nylon, Sim to Alden Products 110BC1-green.
J204	7150763-P2	Test point jack, stake-in, molded nylon, Sim to Alden Products 110BC1-red.
J207	7104941-P7	Phono type connector, mica filled phenolic. Sim to Cinch 14H20190 except silver plated.
J208*	4033567-P2	Test jack, stake-in, nylon red. Sim to Alden Products 110SMI. Added by Rev. C. Deleted by Rev's. H and J.
		RELAY
K201*	5491704-P2	Armature, continuous duty; res 300 Ohms ± 10%, pickup 18 VDC min., 30 grams min. contact pressure. In Model 4EF10A10, Rev. G or earlier;
	5491704-P1	In Model 4EF10A11, Rev. F or earlier; Armature, continuous duty; res 300 Ohms ± 10%, pick-up 18 VDC min., 1-form B, 1-form C contacts, 30 grams min. contact pressure.
		INDUCTORS
L201	PL-5491771-G1	Coil Assembly: includes C204 and R203.
L202	7488079-P6	RF choke coil; inductance 1.00 µf ± 20%. Sim to Jeffers 10100-30. (Included as part of W201). (Added by Rev. A).
L204	PL-5491767-G1	Coil Assembly, includes C210.
L205	PL-5491772-G1	Coil Assembly, includes C215 and R213.
L208	PL-5491770-G1	Coil Assembly, includes C220.
L209	PL-5491768-G1	Coil Assembly, includes R221. Used on Model 4EF10A11 only.
L210	PL-5491768-G2	Coil Assembly, includes R221. Used on Model 4EF10A10 only.
L211*	4033757-P2	RF Coil. (Used in Model 4EF10A10 only).
	4032707-P2	In models of Rev. D or earlier: RF Coil. (Used in Model 4EF10A10 only).
L212*	4033757-P1	RF Coil. (Used in Model 4EF10A11 only).
	4032707-P1	In models of Rev. D or earlier: RF Coil. (Used in Model 4EF10A11 only).
L213*	4033756-P1	RF Coil. (Used in Model 4EF10A11 only). (Deleted in Model 4EF10A10 by Rev. F).
	4033756-P1	RF Coil. (Used in Model 4EF10A11 only).
	4031374-P1	In Models of Rev. D or earlier: RF Coil.(Used in Model 4EF10A11 only).
L216	7488079-P39	RF Choke Coil; inductance 4.7 uh ± 10%, Sim to Jeffers 10200-36.

SYMBOL	G-E PART NO	DESCRIPTION
		INDUCTORS (CONT'D)
L218*	4033756-P2	RF Coil. (Used in Model 4EF10A10 only). (Added by Rev. F).
L221	4031598-P1	RF Coil.
L222	4031595-P1	RF Coil.
L223	4031598-P2	RF Coil.
		PLUGS
P201	4032504-P2	Phono type, long pin connector. Included as part of W201.
P202	7104941-P11	Phono type, long pin connector. Included as part of W202.
P205	4032478-P1	Plug, connector; 9-pin; body-plaskon melamine MIO-997-1MG2.
		RESISTORS
R203	3R77-P683K	Composition, 68,000 ohms ± 10%, 1/2 w. (Included as part of L201).
R204	3R77-P393K	Composition, 39,000 ohms ± 10%, 1/2 w.
R206	3R77-P221K	Composition, 220 ohms ± 10%, 1/2 w.
R208*	3R77-P273K	Composition, 27,000 ohms ± 10%, 1/2 w. Deleted by Rev. A.
R210	3R77-P471K	Composition, 470 ohms ± 10%, 1/2 w.
R213	3R77-P273K	Composition, 27,000 ohms ± 10%, 1/2 w. Included as part of L205.
R214*	3R77-P471K	Composition, 470 ohms ± 10%, 1/2 w. Deleted by Rev. A.
R215*	3R77-P102K	Composition, 1,000 ohms ± 10%, 1/2 w. Added by Rev. A.
R216	3R77-P221K	Composition, 220 ohms ± 10%, 1/2 w.
R218	3R77-P273K	Composition, 27,000 ohms ± 10%, 1/2 w.
R220	3R77-P471K	Composition, 470 ohms ± 10%, 1/2 w.
R221	3R77-P334J	Composition, 0.33 megohms ± 5%, 1/2 w. Included as part of L209 or L210.
R222	3R77-P153J	Composition, 15,000 ohms ± 5%, 1/2 w.
R223*	3R77-P752J	Composition, 7500 ohms ± 5%, 1/2 w. In models of Rev. D or earlier;
	3R77-P103K	Composition, 10,000 ohms ± 10%, 1/2 w.
R226	3R77-P200J	Composition, 20 ohms ± 5%, 1/2 w.
R228*	3R78-P393K	Composition, 39,000 ohms ± 10%, 1 w. (Del. by Rev. A)
R229*	3R78-P243K	Composition, 24,000 ohms ± 10%, 1 w. (Added by Rev. A).
R230*	3R77-P564K	Composition, 0.56 megohms ± 10%, 1/2 w. Added by Rev.C. Deleted by Rev's H and J.
R231	3R77-P105K	Composition, 1 megohm ± 10%, 1/2 w.
R232*	3R77-P154K	Composition, 0.15 megohm ± 10%, 1/2 w. Added by Rev. A.
		TUBES
V201 and V202		Type 12BY7A.
V203		Type 6360.
		CABLES
W201	PL-4031373-G1	Cable Assembly: includes C203, L202, P201.
W202*	PL-4032644-G1	Cable Assembly: includes P202. In Models of Rev. C or earlier:
	5491689-P10	Cable Assembly: includes RG-58A/U cable, 19 inches long with a phono-type long-pin connector (G-E Dwg. No. A-7104941-P11) on one end. Sim to Accurate A10033-8.
W203		RG-188/U cable, 4.50 inches long.

SYMBOL	G-E PART NO	DESCRIPTION
		SOCKETS
XV201 and XV202	7480532-P8	9 pin miniature, mica-filled phenolic, 4 ground ears; sim to Elco 512-S-P4.
XV203	5491669-P5	Tube UHF, 9-pin miniature, standard, ears; Sim to Elco 512-S-PH.
		MISCELLANEOUS ELECTRICAL PARTS
E201 and E202	PL-4031368-G1 4032483-P1 4032222-P1 330-P905-C13	Contact Assembly includes: (1) Base; steel, 0.93 dia. (1) Contact Strip; steel, 0.34 dia. (1) Eyelet; brass, 3/32 x 5/32.

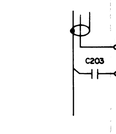
*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.

PRODUCTION CHANGES

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

Models 4EF10A10, 11
REV. A - to improve 1st doubler operation and increase power output
- C203 moved from L201-2 to L201-4
- C208 changed to C240
- R208 changed to R232
- C236 added.
- C219 moved from XV204-G4 to XV202-3
- C212 added between XV202-G4 and XV202-9
- R214 changed to R215
- L202 added between W201 and TB6
- C227 added XV203-6 and XV202-G3
- W203 shield grounded to TB4 mounting
- R228 changed to R229
- C241 added between TB1-1 and TB1-mtg.

WAS



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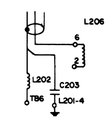
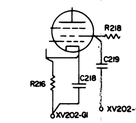
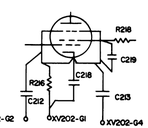
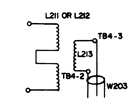
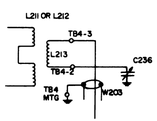




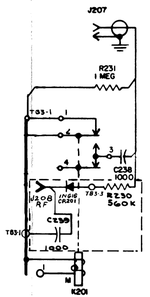






REV. B - to obtain more drive to the IPA stage L201, L204 and L205 cores changed.

REV. C - to make Models 4EF10A10, 11 compatible with Models 4EF12A10, 11. J208, CR201, R230 and C239 were added as shown within the broken lines below.

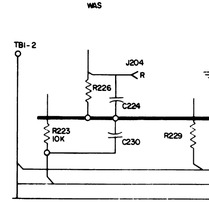


PRODUCTION CHANGES

REV. D - to reduce RF pickup on shield of coaxial cable. Ground connection added to shield of W202.

REV. E - to increase power output. C242 added between J204 and C226 ground. Elementary Diagram changes as shown below:

WAS:



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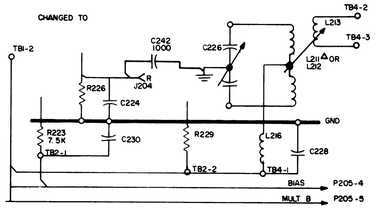


REV. F (Model 4EF10A10 only) - To increase power output,

Changed:
- C211 from 5 mmfd to 3 mmfd
- C221 from 3 mmfd to 2 mmfd
- C214 deleted
- L218 △ added in place of L213 so elementary diagram now reads L218 △ or L213 at output coupling stage.

REV. G (Model 4EF10A10 only)
REV. F (Model 4EF10A11 only) - To reduce spurious radiation.

Changed:
Replaced dust cover under V203 plate tank compartment with dust cover having spring to contact bottom outer cover.

REV. H (Model 4EF10A10 only)
REV. G (Model 4EF10A11 only) - To minimize induced voltage in receiver front end.

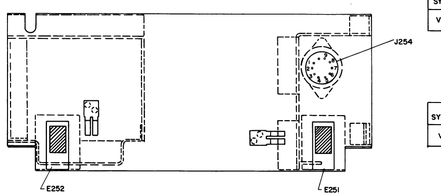
Changed:
K201 changed to two form C contacts.

REV. J (Model 4EF10A10 only)
REV. H (Model 4EF10A11 only) - To simplify tuning procedure.

Changed:
Deleted J208, R230, C239 and CR201.

REV. K (Model 4EF10A10 only)
REV. J (Model 4EF10A11 only)

To reduce conducted spurious. Added C243 from K201-3 to chassis ground.

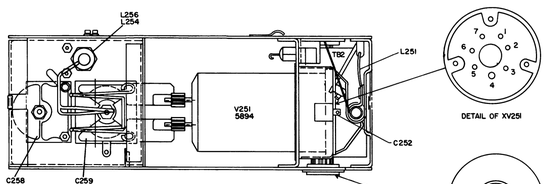


VOLTAGE READING

SYMBOL	TYPE	1	2	3	4	5	6	7	CAP (2)
V251	5894	FIL.	-175 ③	220	2.2	FIL CT	-175	FIL	690

RESISTANCE READING

SYMBOL	TYPE	1	2	3	4	5	6	7	CAP
V251	5894	∞	16K ①	27K ③	10Ω ②	∞	16K ①	∞	0 ③



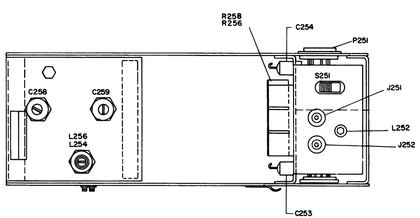
VOLTAGE READINGS MEASURE FROM TUBE PIN TO GROUND WITH VTVM (± 20%)

① READING TAKEN FROM TUBE PIN TO P251-4

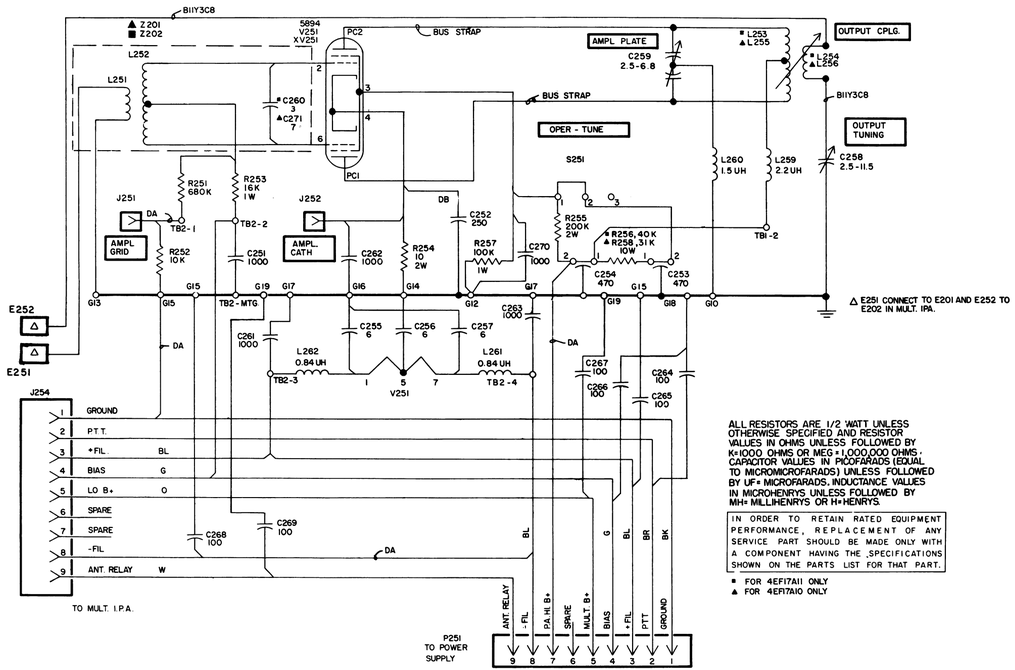
② RESISTANCE AT THIS POINT: ±1.0%.

③ READING TAKEN FROM TUBE PIN TO P251-7 WITH TUNE/OPERATE SWITCH IN OPERATE POSITION.

④ MEASURED FROM C.T. OF L252 TO GROUND



(D-5498773, Rev. 1)



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 4EF17A11 ONLY
▲ FOR 4EF17A10 ONLY

(C-5495772, Rev. 6)

Fig. 5 - Service Sheet

POWER AMPLIFIER ASSEMBLY
MODEL 4EF17A10
MODEL 4EF17A11; REV. B

(RC-582E)

PARTS LIST

POWER AMPLIFIER ASSEMBLY
MODEL 4EF17A10
MODEL 4EF17A11, REV. B

SYMBOL	G-E PART NO.	DESCRIPTION
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C251	7774750-P4	Ceramic, Hi-K disc, insulated; 0.001 uf +100% -0%, 500 VDCW.
C252		(Included in XV251).
C253 and C254	7485975-P17	Ceramic, feed-thru type; 470 uuf ±20%, 750 VDCW. Sim to Erie 327.
C255 thru C257	7489162-P2	Silver-mica, dipped phenolic insulation; 6 uuf ±5%, ±0.5 uuf, 500 VDCW. Sim to Electromotive Mfg. DM15.
C258	5491657-P1	Variable air; 5-plates, 2.75 uuf min (±20% +2 uuf) 11.5 uuf max (±20%). Sim to Cardwell Condenser PL-6554.
C259	5492359-P1	Variable air, (butterfly); ceramic, 6 aluminum plates per section, 2.5 uuf, 1700 v peak.
C260*	7770468-P234	Ceramic, insulated, temp compensating; tubular 3.0 pf ±0.25 pf ±5%, 500 VDCW, -80 temp coef. Used in Model 4EF17A11 only.
	7770468-P204	In Models earlier than Rev. A: Ceramic, insulated, temp compensating; tubular, 4.0 pf ±0.5 pf ±10%, 500 VDCW, -80 temp coef.
C261	5494481-P12	Ceramic, Hi-K disc; insulated, 1,000 uuf ±10%, 500 VDCW. Sim to RMC JF Discap.
C262	7774750-P4	Ceramic, Hi-K disc, insulated; 0.001 uf +100% -0%, 500 VDCW.
C263	5494481-P12	Ceramic, Hi-K disc; insulated, 1,000 uuf ±10%, 500 VDCW. Sim to RMC JF Discap.
C264 thru C269	7489162-P27	Silver-mica, dipped phenolic insulation; 100 uuf ±5%, 500 VDCW. Sim to Electromotive Mfg. DM15.
C270	5494481-P12	Ceramic, Hi-K disc; insulated, 1,000 uuf ±10%, 500 VDCW. Sim to RMC JF Discap.
C271	7770468-P238	Ceramic, temp compensating, tubular 7.0 uuf, ±0.25 uuf, 500 VDCW, -80 temp coef. Used in 4EF17A10 only.
		- - - - - - JACKS AND RECEPTACLES - - - - - - -
J251	4033567-P4	Test jack: stake in; molded nylon. Sim to Alden Products 110SMI-green.
J252	4033567-P2	Test jack: stake in; molded nylon. Sim to Alden Products 110SMI-red.
J254	5491669-P1	Socket: tube, UHF; insulated mica-filled phenolic, 9-pin miniature. Sim to Elco 512-8-PH.
		- - - - - - - - - INDUCTORS - - - - - - - - - -
L251	4033690-P1	RF Coil.
L252	PL-4033693-G1	Coil Assembly; includes RF Coil (G-E A4033691-P1) and Link (G-E 4029894-P1).
L253	4033683-P1	RF Coil. Used in Model 4EF17A11 only.
L254	4033682-P1	RF Coil. Used in Model 4EF17A11 only.
L255	4034836-P1	RF Coil. Used in Model 4EF17A10 only.
L256	4034837-P1	RF Coil. Used in Model 4EF17A10 only.
L259	7488079-P53	RF Choke Coil: insulated, molded in Thermosetting compound; ind 2.2 µh ±20%. Sim to Jeffers 10402-24.
L260	7488079-P34	RF Choke Coil: insulated, molded in Thermosetting compound; ind 1.5 µh ±20%. Sim to Jeffers 10200-26.
L261 and L262	7772834-P6	Coil: RF choke; ind 0.84 µh, current 1,000 ma, freq range 160-350 mc, yellow. Sim to Ohmite Z-235.

SYMBOL	G-E PART NO	DESCRIPTION
		- - - - - - - - - - PLUG - - - - - - - - - -
P251	4032478-P1	Connector: plug 9-pin, body-plaskon melamine.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R251	3R77-P684J	Composition, 0.68 megohm ±5%, 1/2 w.
R252	3R77-P103J	Composition, 10,000 ohms ±5%, 1/2 w.
R253	3R78-P163J	Composition, 16,000 ohms ±5%, 1 w.
R254	7119855-P3	Wire-wound precision; 10 ohms ±1%, 2 w. Sim to Shallcross 220RA.
R255	3R79-P204J	Composition, 0.20 megohm ±5%, 2 w.
R256*	7478740-P47	Wire-wound, tinned copper or brass leads, 40,000 ohms ±5%, 10 w. Sim to Sprague Electric 10KT. Used in Model 4EF17A11 only.
	7478740-P46	In receivers of Rev. A or earlier: Wirewound; tinned copper or brass leads, 31,000 ohms ±5%, 10 w. Sim to Sprague Electric 10KT.
R257	3R78-P104J	Composition, 0.10 megohm ±5%, 1 w.
R258	7478740-P46	Wire-wound, tinned copper or brass leads, 31,000 ohms ±5%, 10 w. Sim to Sprague Electric 10KT.
		- - - - - - - - - - SWITCH - - - - - - - - - -
S251	7145098-P3	Switch: slide; spdt, 1.0 amp at 125 v. Sim to Stackpole Carbon SS-32.
		- - - - - - - - - - TUBE - - - - - - - - - -
V251		Tube. Type 5894.
		- - - - - - - - - - SOCKET - - - - - - - - - -
XV251	PL-4034100-G1	Tube Socket Assembly Consists of the following:
	7489471-P3	(1) Socket: tube; aluminum etched shell, (plated), ceramic L-4B or steatite insulation, 7-pins (brass clips with steel springs, both cadmium plated). (To be used with tubes having a Jetec Cat. No. E7-20).
	7484398-P3	(1) Capacitor: fixed mica, (uncased); 250 pf ±10%, 500 VDCW. Sim to Underwood Electric J-1-HF. (C252)
		- - - MISCELLANEOUS PARTS AND ASSEMBLIES - - - -
Z201		Assembly. Consists of the following components: L251, L252 and C260. Used in Model 4EF17A11 only.
Z202		Assembly. Consists of the following components: L251, L252 and C271. Used in Model 4EF17A10 only.
E251 and E252	4032466-P1	Printed Board Contact: 0.062" thick epoxy glass, 1.00" wide, 1.25" long.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.

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

REV. A - To increase power output adequate grid tuning range. C260 changed from 4 pf to 3 pf. Mounting of C260 changed from XV251-2 and XV251-6 to points on leads of L252. Iron core added to L252.

REV. B - To increase power output. R256 changed.

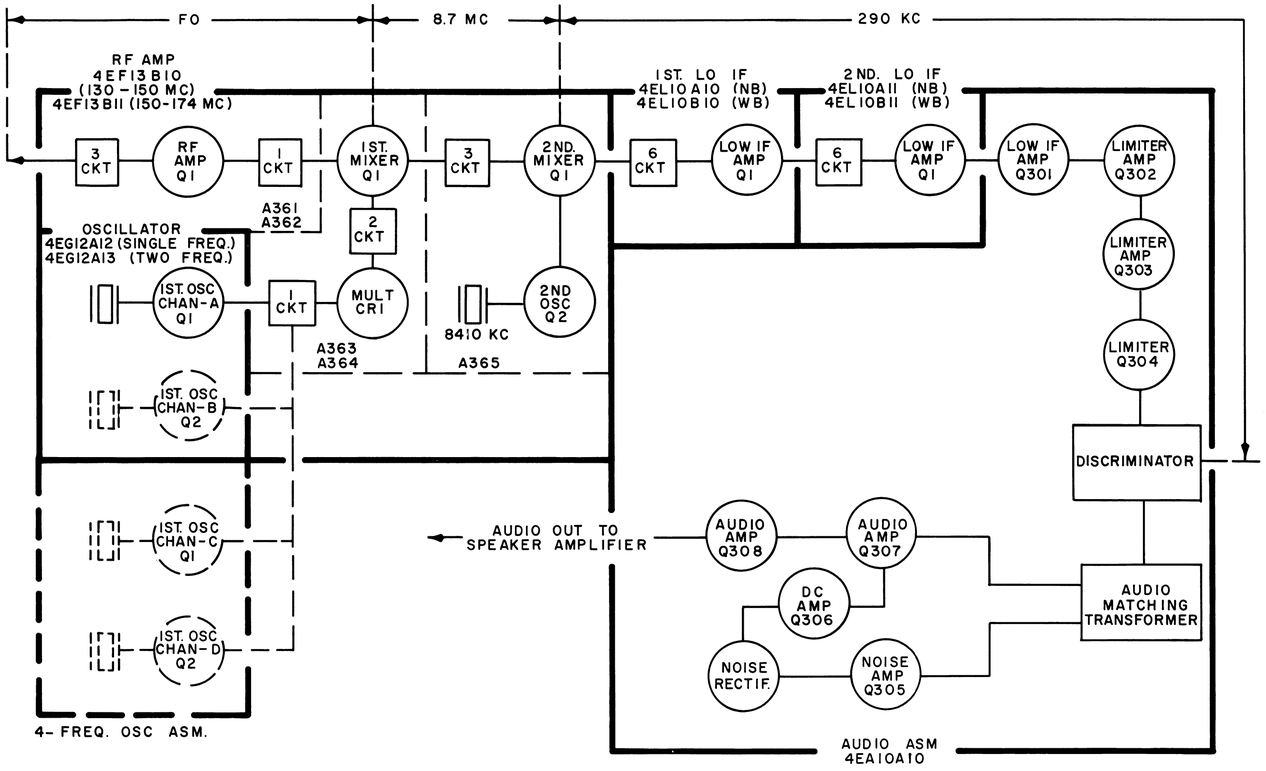
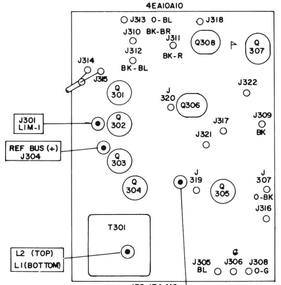


FIG. 1 BLOCK DIAGRAM OF RECEIVER TYPE ER-31-C,D

Block Diagram

130-174 MC TRANSISTORIZED
PROGRESS LINE RECEIVERS
TYPE ER-31-C, D

(RC-771C)



⊢ DO NOT REMOVE Q307 WITHOUT FIRST REMOVING Q308 OR DISCONNECTING SPEAKER AMPLIFIER

Alignment Procedure

130-174 MC TRANSISTORIZED PROGRESS LINE RECEIVERS TYPES ER-31-C, D

(RC-772B)

INITIAL ADJUSTMENT

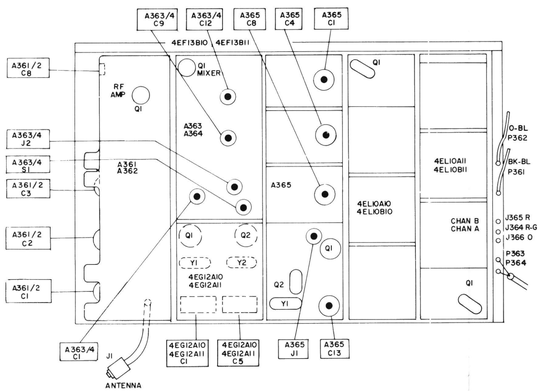
Use a 20,000 ohm-per-volt meter having a 0-3 volt scale for metering.

STEP NO.	METERING JACKS +	METERING JACKS −	TUNING CONTROL	METER READING	PROCEDURE
1.	J304 (Reference Bus)	J301 (LIM-1)	A361/A362-C1, C2 & C3	Maximum	While receiving an on-frequency signal that is not strong enough to saturate the first limiter, tune antenna transformer trimmers C1, C2 & C3 for maximum meter reading.
2.	J303	J304	A365-C13	Zero	While receiving a signal on the system operating frequency, adjust the 2nd oscillator trimmer A365-C13 for discriminator zero. If more trimming range is needed, adjust C1 on the oscillator assembly (4EG12A12). C1 should be kept as near to max. as possible.

FOUR-FREQUENCY RECEIVER ALIGNMENT

1. Set C1 and C5 on Oscillators 4EG12A13 and A2302 to mid-range (with tuning slot parallel to board).
2. Set A2301-C5 on Buffer Amplifier for maximum capacity (with solder dot on rotor next to solder dot on base).

STEP NO.	METERING JACKS +	METERING JACKS −	TUNING CONTROL	METER READING	PROCEDURE
1.					Perform STEP. NO. 1,2 and 3 of DISCRIMINATOR ALIGNMENT for One- and Two-Frequency receivers.
2.	A363/ A364-J2	A363/ A364-J1	A363/A364-C1 OSC TANK ON RF BOARD	10% off Maximum	Using the highest frequency of Channel A or B, adjust A363/A364-C1 for 10% off maximum on the slow fall-off side (minimum capacity side). Align solder dot of C1 with paint dot on can.
3.	J304	A2301-J1	A2301-C1 BUFFER AMP	10% off Maximum	Using the highest frequency of Channel C or D, adjust A2301-C1 for 10% off maximum on the slow fall-off side (minimum capacity side). Align solder dot of C1 with paint dot on can.
4.	A363/ A364-J2	A363/ A364-J1	A2301-C5 BUFFER AMP	Maximum	Peak A2301-C5 using the same channel as used in STEP NO. 3.
5.					Select the Channel closest to the mid-frequency between Channel A and Channel D, and perform STEP No. 1 through 6 of the OSCILLATOR AND RF ALIGNMENT for One- and Two-Frequency receivers.



RECEIVER ALIGNMENT

1. Make sure that a crystal of the proper frequency is in the high-frequency crystal socket.
2. In two-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 having a 0-3 volt scale for metering.
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 J201 - 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.	A363/ A364-J2	A363/ A364-J1	OSC TANK (A363/A364-C1)	10% off Maximum	1. Align solder dot of C1 with paint dot on can. Adjust A363/A364-C1 for 10% off maximum on the slow fall-off side (min. capacity side). This will be the slow sloping side.
2.	J304	J303			1. Disconnect the antenna and apply an unmodulated signal of the proper receiver frequency to A361/A362-J1. Adjust signal for zero discriminator reading.
3.	J304	J301 (LIM-1)	A361/A362-C1, C2,C3,C8 A363/A364-C9 & C12	Maximum	1. Peak indicated capacitors, keeping discriminator zero by adjusting the signal source. 2. Reduce the signal source as needed to prevent saturation of the Limiter (J301).
4.	J304	J303	4EG12A12-C1		1. Set 4EG12A12-C1* to max. capacity (as indicated by alignment of solder dots). Tune C1* and Z365-C13 alternately for zero meter reading while receiving a "known correct system frequency". 2. C1* should be kept as near to maximum capacity as possible.
5.	J304 (Reference Bus)	J301 (LIM-1)	A361/A362-C1, C2 & C3	Maximum	While receiving an on-frequency signal that is not strong enough to saturate the first limiter tune antenna transformer trimmers A361/A362-C1, C2 & C3 for maximum meter reading.

* 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.

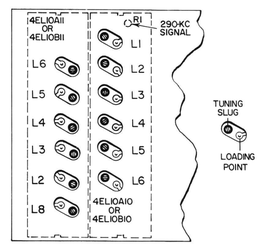
Filter Model 4EL10A10 or 4EL10B10		
Step	Load Coils	Tune slug for max. LIM-1 meter reading
1	L2	L1
2	L1 and L3	L2
3	L2 and L4	L3
4	L3 and L5	L4
5	L4 and L6	L5
6	L5	L6
7	Repeat steps 1 through 6, being careful not to saturate LIM-1.	

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.

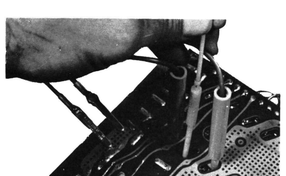
The loading tools are used hy passing the contact screw and flange through the oval hole over the loading point, rotating the tool a quarter turn so that the flange holds the screw against the loading point, and clipping the alligator clip to the ground foil on the printed board.

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.



BOTTOM VIEW: **LOW-BAND**
RF AMPLIFIER/CONVERTER EF-16-A

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

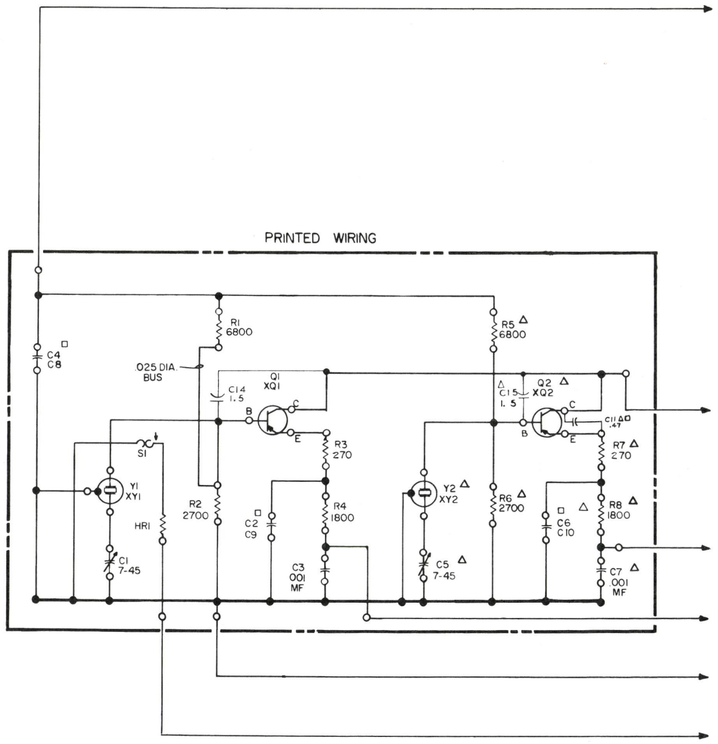
1st OSCILLATOR

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:
	19B200130-P2	In Model 4EG12A12 earlier than Rev. A: 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.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.



FOR WIRING INSTRUCTIONS SEE A403I623

△ PARTS FOR 4EGI2AII, 4EGI2AI3 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.

□

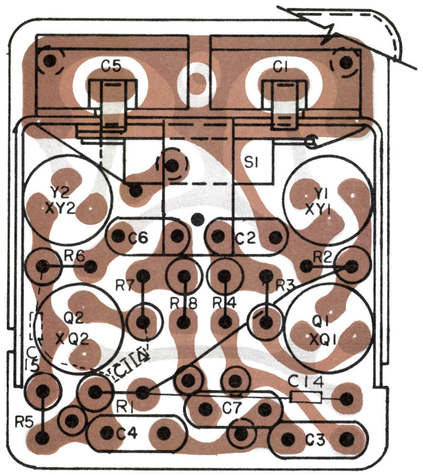
4EG12A10	4EG12A11	4EG12A12	4EG12A13
C2 = 7	C2 = 7	C9 = 15	C9 = 15
C4 = .001MF	C4 = .001MF	C8 = .01MF	C8 = .01MF
	C6 = 7		C10 = 15
			C11 = .47

Fig. 3 - Service Sheet

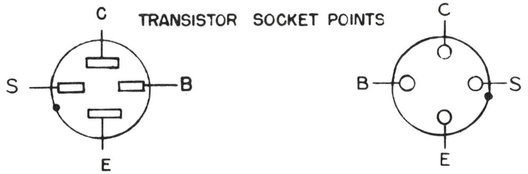
OSCILLATOR
MODEL 4EG12A10; REV. E
MODEL 4EG12A11; REV. E
MODEL 4EG12A12; REV. E
MODEL 4EG12A13; REV. F

(RC-554L)

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



TRANSISTOR SOCKET POINTS



(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. 4EF13AII-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

PRODUCTION CHANGES

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

REV. A - To improve temperature compensation of Hi IF tuned circuits, changed A365-C2, A365-C5, and A365-C7. No change to elementary diagram.

REV. B - To reinforce terminal lugs used to mount sub-assembly printed wiring boards to prevent damage during vibration, increased diameter of posts used to mount stand-off boards. Changed part number from 4029548-P1 to 4308104-P1.

REV. C - To incorporate high quality transistor, changed A365-Q1

REV. D - To provide standardized sockets for transistors, changed A361/2-XQ1 and A363/4-XQ1.

REV. E - To incorporate improved transistors. Changed A361/2-Q1 and A363/4-Q1.

REV. F - To improve assembly. Added hole to printed wiring board.

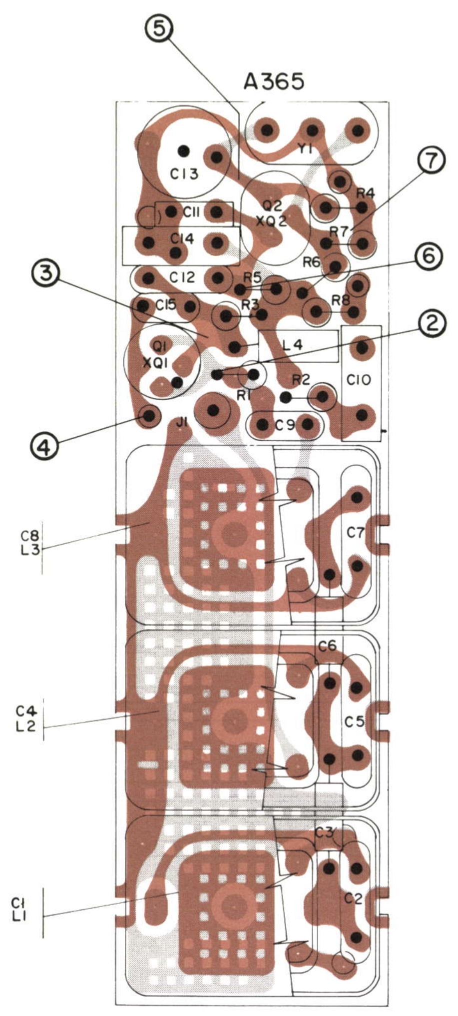
REV. G - (4EF13B10 only)
To improve oscillator band end activity. Changed (A364-C3).

PARTS LIST

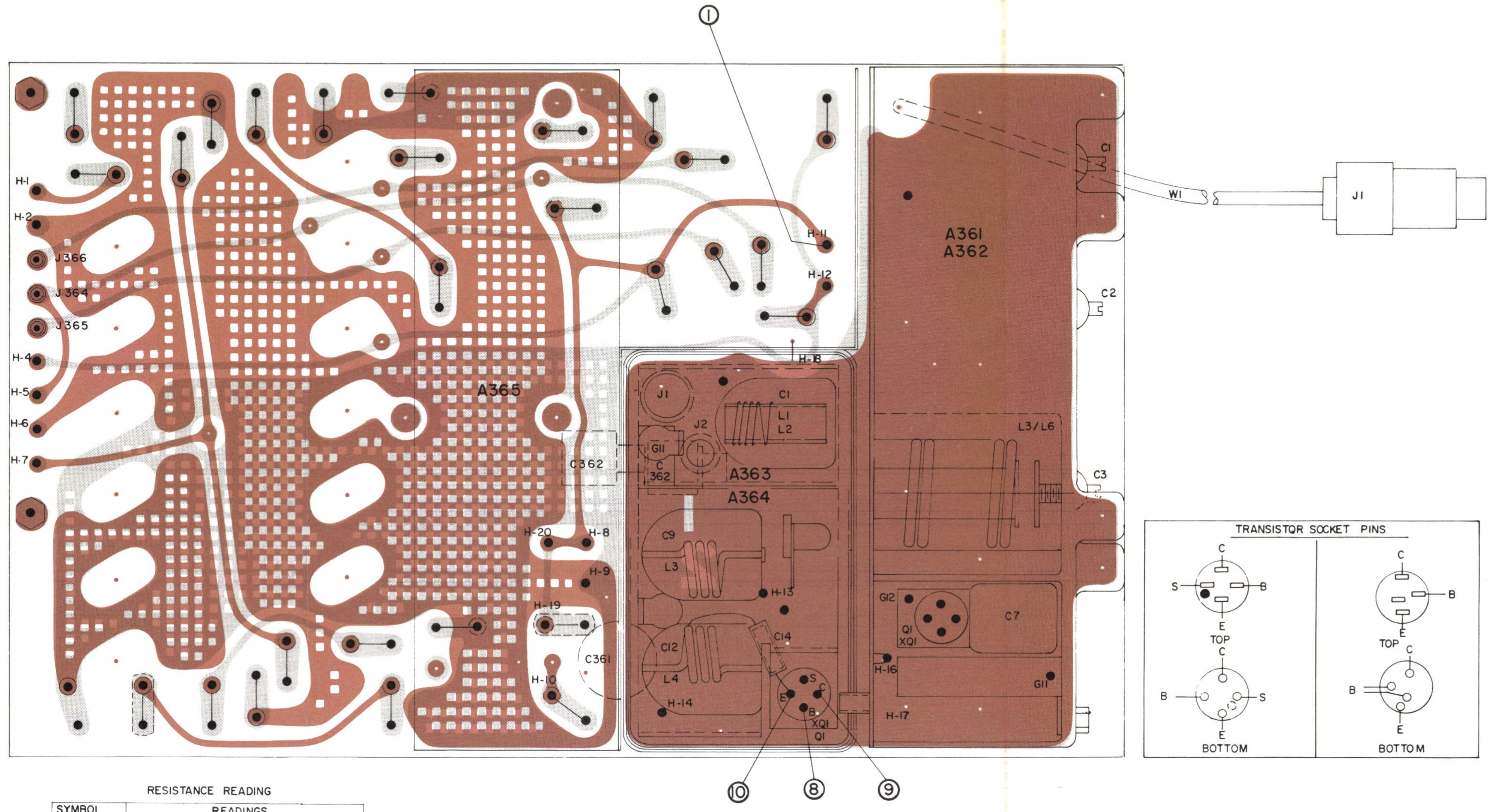
RF BOARD
MODEL 4EF13B10, 11
PL-19D400024

SYMBOL	G-E PART NO.	DESCRIPTION
A361/2	PL-19C300428 PL-19C300428-G1 PL-19C300428-G2	RF Amplifier - Consisting of the following components with an A361 or A362 prefix. For 130-150 MC use. Foe 150-174 MC use.
A361/2-C1 thru C3		Capacitor, part of mechanical construction.
A361/2-C4	7489162-P119	Capacitor, silver mica; 47 pf ±10% 500 VDCW, sim to Electromotive DM15.
A361/2-C5	7146331-G3	Capacitor Asm. Included the following components: Capacitor, mica: 250 pf ±10% 500 VDCW. G-E Part No. 7484398-P3 Leg., Terminal: Copper, G-E Part No. 7878455-P2.
A361/2-C6	7484398-P3	Capacitor, mica; 250 pf ±10%, 500 VDCW; sim to Underwood J-1-HF.
A361/2-C7	5491189-P6	Capacitor, Mylar®, dielectric. Straight leads, 0.10 µf ±20%, 50 VDCW, sim to Good-All Electric.
A361/2-C8	7484389-P2	Capacitor, variable. 3 to 12 pf, +50% -100% 500 VDCW, 0° temp. coef, sim to Erie Resistor.
A361/2-C9	5496218-P238	Capacitor, fixed ceramic disc, temp. compensating 7.0 pf ±0.25 pf 500 VDCW, -80 temp. coef. Model 4EF13B11 only.
A361/2-C10	5496218-P243	Capacitor, fixed ceramic disc, temp compensating, 13 pf ±5% 500 VDCW. Temp coef -220 Model 4EF13B10 only.
A361/2-C11	7489162-P139	Capacitor, fixed silver mica: DM-15-dipped phenolic insulation; 330 pf ±10%, 500 VDCW; sim to Electromotive DM-15.
A361/2-CR1	4034827-P1	Diode, hermetically sealed in glass body; sim to Radio Receptor DR-385.
A361/2-L1	4036878-G1	Coil, assembly consisting of Coil 19B200616-P1, and strap 7119771-P1. Model 4EF13B11 only.
A361/2-L2	19B200616-P1	Coil, 7 turns at 9 1/2 turns per inch, left hand wound. Model 4EF13B11 only.
A361/2-L3	4036878-G2	Coil assembly, consisting of coil 19B200616-P1 and strap 7119771-P1. Model 4EF13B11 only.
A361/2-L4	4036878-G3	Coil assembly, consisting of Coil 19B200616-P2 and strap 7119771-P1. Model 4EF13B10 only.
A361/2-L5	19B200616-P2	Coil, 8 turns at 9 1/2 turns per inch, left hand wound. Model 4EF13B10 only.
A361/2-L6	4036878-G4	Coil Assembly, consisting of coil 19B200616-P2, and strap 7119771-P1. Model 4EF13B10 only.
A361/2-L7	4036880-G1	Coil Assembly consisting of Coil 7141042-P2 and strap 7119771-P1.
A361/2-Q1*	19A115413-P1 19C300037-P4	Transistor, Germanium: PNP. In Models earlier than Rev. E: Transistor, germanium: MADT, PNP, hermetically sealed in metallic case with glass seal.
A361/2-R1	3R152-P153K	Resistor, fixed composition, 15 K ohms ±10%,1/4 w.
A361/2-R2	3R152-P392K	Resistor, fixed composition, 3900 ohms ±10%,1/4 w.
A361/2-R3	3R152-P102K	Resistor, fixed composition, 1K ohms ±10%, 1/4 w.
A361/2-R4	3R152-P511J	Resistor, fixed composition, 510 ohms ±5%, 1/4 w.
A361/2-W1	5491689-P14	Cable, Assembly: Includes the following components Cable, black, max. operating voltage 350 VRMS, 500 VDC; sim to Type RG-174/A. Connector phono-type. G-E Part No. 4032504-P5.
A361/2-XQ1*	4038139-P1 4036353-P1	Socket, Transistor: Low loss mica filled phenolic, 4 pins, current rating 1 amp, contact resistance 0.03 ohms max. Sim to Elco Corp. 3308. In Models earlier than Rev. D. Socket, 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.
A363/4	PL-19C300425	Multiplier - Mixer. Consisting of the following components with an A363 or A364 prefix.
A363/4-C1	PL-19C300425-G1 PL-19C300425-G2 7484389-P9	For 130-150 MC use. For 150-174 MC use. Capacitor, variable: Ceramic Trimmer; 4.5 to 25 pf +50% -100%, 500 VDCW. 0° Temp. coef. Sim to Erie TS2A-NPO.
A363/4-C2	5496218-P244	Capacitor, fixed ceramic disc: 15 pf ±5%, 500 VDCW -80 temp coef. Model 4EF13B11 only.
A363/4-C3*	5496218-P249 5496218-P249	Capacitor, fixed ceramic disc: 27 pf ±5%, 500 VDCW, -80 temp coef. Model 4EF13B10 only. In Models earlier than Rev. G: Capacitor, fixed ceramic disc: 27 pf ±5%, 500 VDCW, -80 temp coef. Model 4EF13B10 only.
A363/4-C4	7489162-P43	Capacitor, fixed, silver mica, 470 pf ±5%, 300 VDCW. Sim to Electromotive DM15.
A363/4-C5	5494481-P12	Capacitor, high dielectric; ceramic disc,1,000 pf ±10%, 500 VDCW. Sim to RMC JF Discap.
A363/4-C6	5496218-P241	Capacitor, fixed ceramic disc: 10 pf ±5% 500 VDCW -80 temp coef. Model 4EF13B10 only.
A363/4-C7	5496218-P238	Capacitor, fixed ceramic disc: 7 pf ±0.25 pf. 500 VDCW, -80 temp. coef. Model 4EF13B11 only.
A363/4-C8	7473485-P13	Capacitor, fixed ceramic, 11 pf ±5%, 500 VDCW. Sim to Erie 331. Model 4EF13B10 only.
A363/4-C9	7484389-P2	Capacitor, variable: (Ceramic trimmer) 3 to 12 pf +50% -100%, 500 VDCW, 0° temp. coef. Sim to Erie TS2A-NPO.
A363/4-C10	5496218-P238	Capacitor, fixed ceramic disc: 7 pf ±0.25 pf, 500 VDCW -80 temp coef. Model 4EF13B11 only.
A363/4-C11	7473485-P13	Capacitor, fixed ceramic, 11 pf ±5%, 500 VDCW. Sim to Erie 331. Model 4EF13B10 only.
A363/4-C12	7484389-P2	Capacitor, variable: (Ceramic trimmer) 3 to 12 pf +50% -100%, 500 VDCW, 0° temp. coef. Sim to Erie TS2A-NPO.
A363/4-C13	5496218-P247	Capacitor, fixed ceramic disc, 22 pf, ±5%, 500 VDCW, -80 temp. coef.
A363/4-C14	5492056-P3	Capacitor, uncased mica 250 pf, ±10%, 500 VDCW. Sim to Underwood J-1-HF.
A363/4-CR1	4036900-P1	Diode, silicon varactor (multiplier, 3 x range 40 to 54 MC).
A363/4-J1	4033567-P4	Test jack: Molded nylon body, beryllium copper contact, max. op. voltage 600 rms, max. op. temp. 105°C. Sim to Alden 110-SM1
A363/4-J2	4033568-P1	Test jack, (printed circuit type) nylon body, beryllium copper contacts. Sim to Alden 110PC1-black.
A363/4-L1 and L2	4036877-G1	RF transformer: Includes L1 and L2.
A363/4-L3	4036879-G1	Coil assembly consisting of coil 4036881-P1 and ling 4029894-P1.
A363/4-L4	4036879-G2	Coil assembly consisting of coil 4036881-P1 and link 4029894-P1.
A363/4-Q1*	19A115413-P1 19B200131-P1	Transistor, Germanium: PNP. In Models earlier than Rev.E: Transistor, germanium: PNP; hermetically sealed in metallic case with glass seal.
A363/4-R1	3R152-P622K	Resistor, fixed composition, 6.2 K ohms, ±10%, 1/4 watt.
A363/4-R2	3R152-P474K	Resistor, fixed composition, 0.47 megohm ±10%, 1/4 watt.
A363/4-R3	3R152-P123K	Resistor, fixed composition, 12K ohms, ±10%,1/4 w.
A363/4-R4	3R152-P392K	Resistor, fixed composition, 3.9K ohms, ±10%, 1/4 w.
A363/4-R5	3R152-P202J	Resistor, fixed composition, 2K ohms ±5%, 1/4 w.
A361/2-XQ1*	4038139-P1	Socket, transistor: Low loss mica filled phenolic, 4 pins, current rating 1 amp, contact resistance 0.03 ohms max. Sim to Elco Corp. 3308. In Models earlier than Rev. D.
A363/4-XQ1*	4036353-P1	Socket, transistor: PW (stand off): low - loss mica filled phenolic insulation, 4 pins, current rating 1 amp, contact res 0.30 ohms. Sim to Elco 3308.
A365	PL-5491264-G1	Hi-IF Filter - Mixer/Osc. - Consisting of the following components with an A365 prefix.
A365-C1	5490515-P2	Capacitor, Variable: (ceramic trimmer): 7 pf (+0% -100%) to 45 pf (+50% -0%), 500 VDCW, -500 temp coef. (Included in Coil and Trimmer Assembly. G-E Part No. PL-5490543-G8).
A365-C2*	5496219-P64 5494210-P364	Capacitor, fixed ceramic disc, 110 pf, ±5%, 500 VDCW, 0 temp coef. In Models earlier than REV. A: Capacitor, fixed ceramic disc, ±5%, 500 VDCW, -150 temp coef.
A365-C3	7130348-P15	Capacitor, (Fixed): (Moulded): 0.62 pf ±5%, 500 VDCW, 0° temp coef. Sim to Jeffers JM-5/32.
A365-C4		Capacitor, variable (ceramic trimmer): 7 pf (+0% -100%) to 45 pf (+50% -0%), 500 VDCW, -500 temp coef. (Included in Coil and Trimmer Assembly. G-E Part No. PL-5490549-G9).
A365-C5*	5496219-P66 5494219-P366	Capacitor, fixed ceramic disc, 130 pf, ±5%, 500 VDCW, 0 temp coef. In Models earlier than REV. A: Capacitor, fixed ceramic disc, 130 pf, ±5%, 500 VDCW, -150 temp coef.
A365-C6	Capacitor, (Fixed): (Moulded): 0.62 pf ±5%, 500 VDCW, 0° temp coef. Similar to Jeffers Mfg. Co. Type JM-5/32.	K-7130348-P15
A365-C7#	Capacitor, fixed ceramic disc, 130 pf, ±5%, 500 VDCW, 0 temp. coef. In Models earlier than REV. A: Capacitor, mixed ceramic disc, 130 pf, ±5%, 500 VDCW, -150 temp. coef.	C-5496219-P66 C-5494219-P366
A365-C8	Capacitor, Variable; (Ceramic trimmer); 7 pf (+0% -100%) to 45 pf (+50% -0%), 500 VDCW, -500 temp coef. (Included in Coil and Trimmer Assembly, G-E Dwg and Group No., PL-5490543-G10).	B-5490513-P2
A365-C9	Capacitor, High dielectric: Ceramic disc, (stabilized versus frequency): insulated, 0.188-inch leads, 1,000 pf ±10%, 500 VDCW. Similar to Radio Materials Corp Type JF Discap.	C-5494481-P112
A365-C10	Capacitor, Mylar®, dielectric: Crimped leads, 0.10 uf ±20%, 50 VDCW. Similar to Good-All Electric Mfg Co Type 601PE.	B-5491189-P106
A365-C11	Capacitor, Silver mica, dipped phenolic insulation; 150 pf ±10%, 500 VDCW. Similar to Electro Motive Mfg Co Type DM-15.	B-5490008-P131
A365-C12	Capacitor, Ceramic disc: (Stabilized, high dielectric temperature); 1,500 pf ±20%, 500 VDCW. Similar to Sprague Electric Co Type JL.	B-7491395-P11
A365-C13	Capacitor, Variable; (Ceramic trimmer); 5 pf to 30 pf, -750 temp coef, terminals mounted flat on capacitor. Similar to Erie Resistor Corp Style 557-36.	B-5490446-P6
A365-C14	Capacitor, Mylar®, dielectric: Crimped leads, 0.10 uf ±20%, 50 VDCW. Similar to Good-All Electric Mfg Co Type 601PE.	B-5491189-P106
A365-C15	Capacitor, Ceramic disc: Insulated, temperature compensating: 22 pf ±5%, 500 VDCW, -80 temp coef.	C-5494210-P247
A365-J1	Jack, Test: (Printed circuit); nylon body, beryllium copper contact, operating voltage 600 vrms maximum, operating temperature 105°C maximum. Similar to Alden Products Co Part No. 110PC1 -- Yellow.	A-4033568-P4
A365-L1	Toroidal Coil Assembly Includes the following components: Coil: 24-turns, close wound on inside, right hand wound, Core, Iron: Toroidal; frequency 8.7 mc ±5%, Wire, Magnet: Polyurethane coated. AWG No. 22. (Included in Coil and Trimmer Assembly, G-E Dwg and Group No., PL-5490543-G8).	PL-5491266-G2 B-5491266-P5 B-5490351-P1
A365-L2	Toroidal Coil Assembly Includes the following components: Coil: 1-1/2 - turns, close wound on inside, right hand wound, Coil: 24-turns, close wound on inside, right hand wound, Core, Iron: Toroidal; frequency 8.7 mc ±5%. Wire, Magnet; Polyurethane coated. AWG No. 32. Wire, Magnet: Polyurethane coated. AWG No. 22. (Included in Coil and Trimmer Assembly, G-E Dwg. and Group No., PL-5490543-G9).	PL-5491266-G1 B-5491266-P3 B-5491266-P4 B-5490351-P1 A-4029250-P20 A-4029250-P35
A365-L3	Toroidal Coil Assembly Includes the following components: Coil: 24-turns, close wound on inside, right hand wound, Core, Iron: Toroidal; frequency 8.7 mc ±5%. Wire, Magnet; Polyurethane coated. AWG No. 22. (Included in Coil and Trimmer Assembly, G-E Dwg and Group No., PL-5490543-G10).	PL-5491266-G2 B-5491266-P5 B-5490351-P1 A-4029250-P35
A365-L4	Coil, RF choke: Insulated, moulded in thermo-setting compound, powdered iron core, inductance 8.20 uh ±10%. Similar to Jeffers Electronics Division Cat. No. 10102-30. (Gray-red).	B-7488079-P15
A365-Q1	Transistor, NPN: Hermetically sealed in metallic case with glass seal. Similar to Type 4JX3C505.	A-4036546-P2
A365-Q2	Transistor, Germanium: Hermetically sealed in metallic case with glass seal. Similar to Type 2N1087.	B-5492655-P6
A365-R1	Resistor, Fixed composition: 15,000 ohms ±10%, 1/2 w.	C-3R77-P153K
A365-R2	Resistor, Fixed composition: 47,000 ohms ±10%, 1/2 w.	C-3R77-P473K
A365-R3	Resistor, Fixed composition: 15,000 ohms ±10%, 1/2 w.	C-3R77-P153K
A365-R4	Resistor, Fixed composition: 8,200 ohms ±10%, 1/2 w.	C-3R77-P822K
A365-R5	Resistor, Fixed composition: 5,600 ohms ±10%, 1/2 w.	C-3R77-P562K
A365-R6	Resistor, Fixed composition: 10,000 ohms ±10%, 1/2 w.	C-3R77-P103K
A365-R7	Resistor, Fixed composition: 27,000 ohms ±10%, 1/2 w.	C-3R77-P273K
A365-R8	Resistor, Fixed composition: 2,000 ohms ±5%, 1/2 w.	C-3R77-P202J
A365-XQ1	Socket, Transistor: 4-pin P.W. (stand-off); 4-contacts - 2 (No. 816) and 2 (No. 820), beryllium copper, gold flash over silver plate.	A-7162500-P1
A365-XQ2	Socket, Transistor: Low-Loss mica-filled phenolic insulation; 4-contacts, 1,000 megohms minimum insulation resistance, contact resistance 0.03 ohm voltage. Similar to Elco Corp Cat. No. 3303. (Used with Elco Corp Cat. No. 757).	B-5490277-P1
A365-Y1	Crystal, Quartz: Anti-resonant; metal envelope, insulated outer leads, frequency range 8,410 KC ±200 cps at 25°C, load capacity 13 pf, maximum effective resonance resistance 100 ohms.	A-4031076-P1
C361	Capacitor, disc: Insulated, high dielectric; 0.025 mf +80% -20%, 50 VDCW. Sim. to Sprague No. 29C187.	B-7491827-P6
C362	Capacitor, fixed mica, uncased; 250 pf ±10%, 500 VDCW. Sim to Underwood Elec J-1-HF.	M-7484398-P3
J364 thru J366	Pin, contact: brass; 0.435-inches long, 0.093-inches wide. Similar to Bead Chain Co. Cat. No. L93-3.	A-4033513-P4
P361 thru P364	Terminal; brass, 0.056-inches long, 0.115-inches diameter, 1 contact. Similar to Amp Inc. Cat. No. 41854.	A-4029840-P1

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.



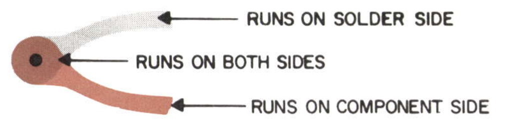
(CC-5494044, Rev. 1)
(B-5491740, Sh. 1, Rev. 1)
(B-5491740, Sh. 2, Rev. 1)



(CC-5494044, Rev. 1)
(19C300460, Sh. 1, Rev. 1)
(19C300460, Sh. 2, Rev. 2)

RESISTANCE READING

SYMBOL NUMBER	READINGS			
	E	B1 OR B2	C	B2 OR S
A361 A362 Q1	1000 Ω	3.1 K	550 Ω	470 K
A363 A364 Q1	2 K	3 K	47 Ω	470 K
A365 - Q1	29 K	18.5 K	0	18.5 K
A365 - Q2	7.6 K	18 K	8 K	



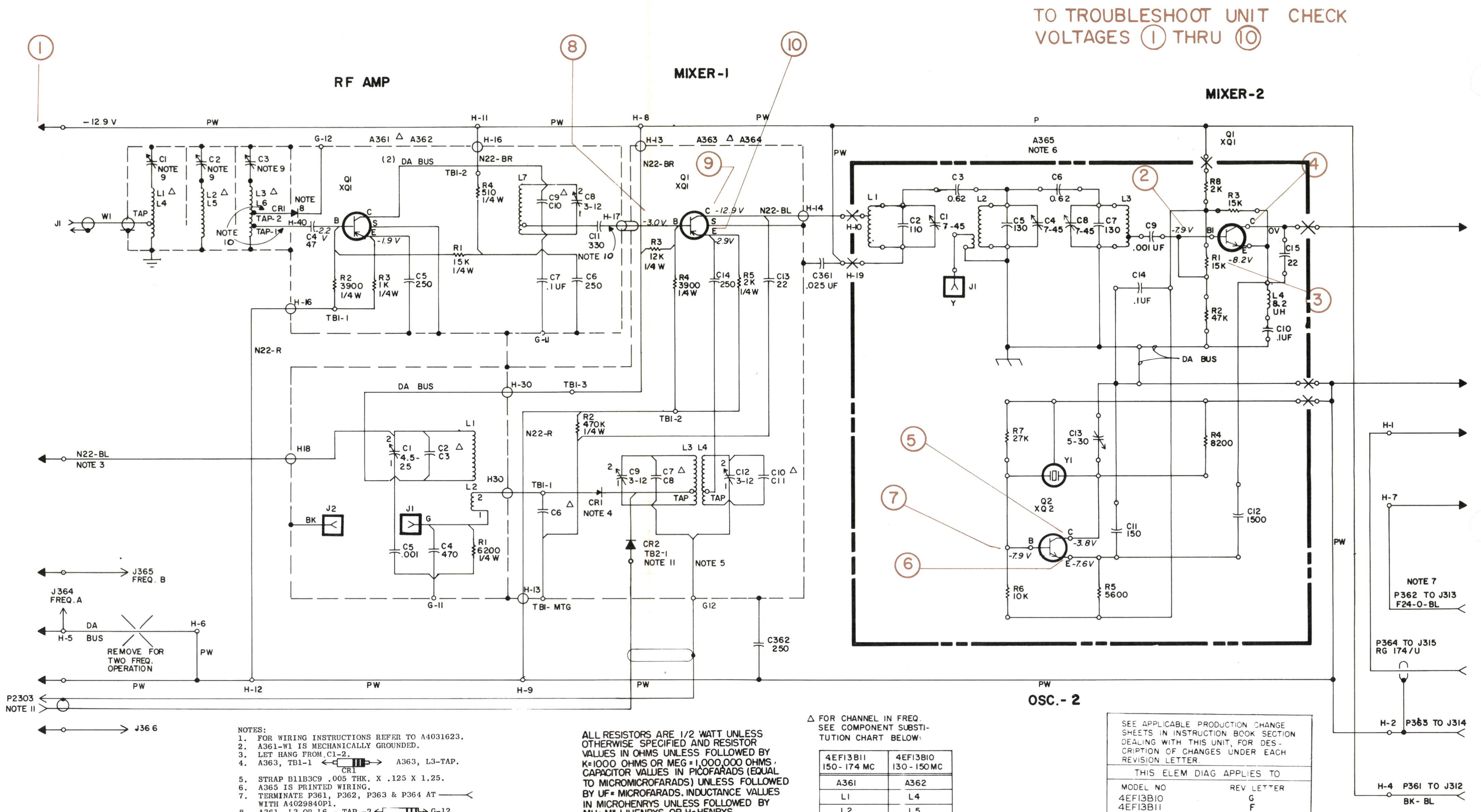
RESISTANCES

1. RECEIVER DISCONNECTED FROM POWER.
2. TRANSISTOR REMOVED FROM SOCKET UNDER TEST.
3. P361 (LEAD FROM H-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 %.

Service Sheet

RF AMPLIFIER/CONVERTER
MODEL 4EF13B10, REV. G.
MODEL 4EF13B11, REV. F.

(RC-773F)



NOTES:
1. FOR WIRING INSTRUCTIONS REFER TO A4031623.
2. A361-W1 IS MECHANICALLY GROUNDED.
3. LET HANG FROM C1-2.
4. A363, TB1-1 ← CR1 → A363, L3-TAP.
5. STRAP B11B3C9 .005 THK. X .125 X 1.25.
6. A365 IS PRINTED WIRING.
7. TERMINATE P361, P362, P363 & P364 AT —< WITH A4029840P1.
8. A361, L3 OR L6 - TAP -2 ← CR1 → G-12.
9. A361, C1, C2 & C3 ARE MECHANICALLY MADE.
10. USE TEFLON SLEEVING A4038593P6.
11. PART OF 4 FREQ. MOD. KIT A4039[illegible] TO BE USED WITH PL19B204[illegible]G4 & 5 OSCILLATOR.

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

TERMINAL LUG.

ALL VOLTAGE READINGS MEASURED WITH A 20,000 OHM-PER-VOLT METER ±20 % FROM THE INDICATED POINT TO THE POSITIVE SUPPLY BUS.

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.

(19D400057, Rev. 14)

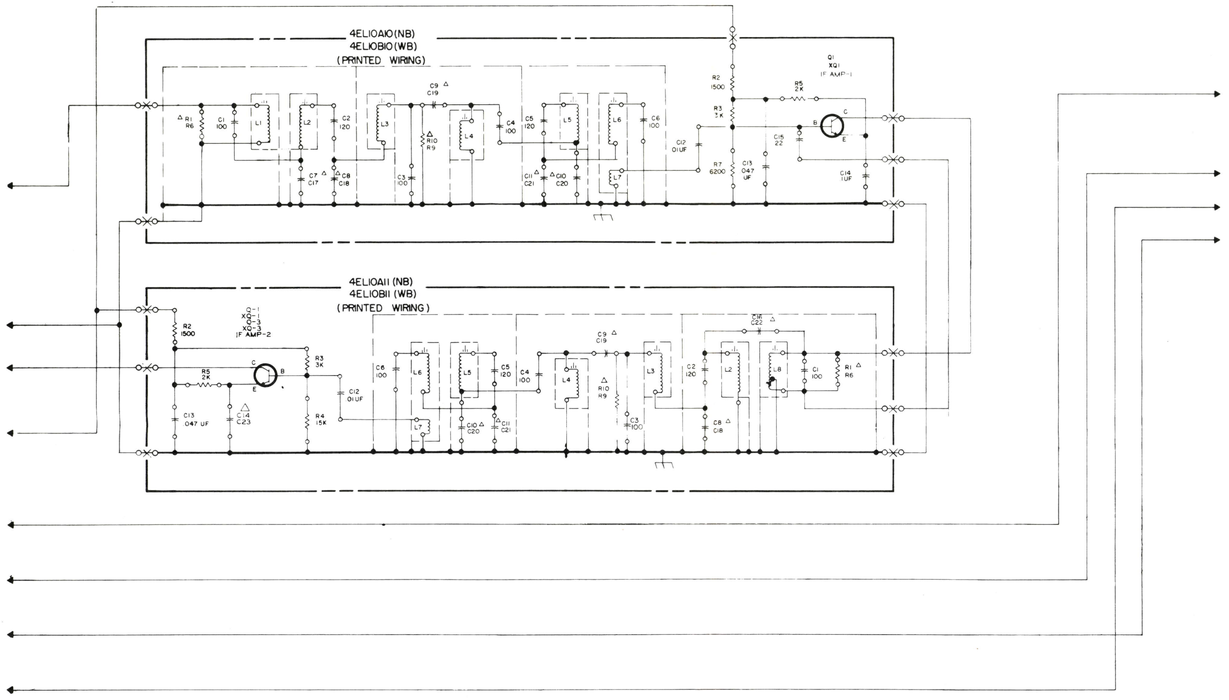
△ FOR CHANNEL IN FREQ. SEE COMPONENT SUBSTITUTION CHART BELOW:

4EF13B11 150-174 MC	4EF13B10 130-150 MC
A361	A362
L1	L4
L2	L5
L3	L6
C9-7	C10-13
A363	A364
C2-15	C3-27
C7-7	C8-11
C10-7	C11-11
NONE	C6-10

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
4EF13B10	G
4EF13B11	F



4ELIOAIO	4ELIOBIO	4ELIOAII	4ELIOBII	4ELIOAIO	4ELIOBIO	4ELIOAII	4ELIOBII
R6 = 220 K	R1 = 47 K	R6 = 220 K	R1 = 47 K	R9= 390K	R10=240K	R9= 390K	R10=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 = 1UF	C14=1UF	C14=1UF	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 MICROFARADS (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 REVISION LETTER.

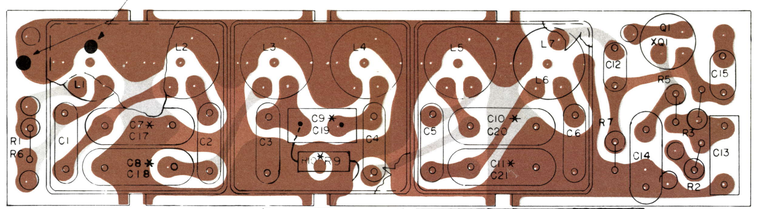
THIS ELEM DIAG APPLIES TO

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

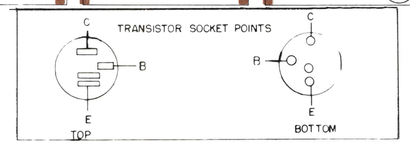
(D-5498430, Rev. 13)

NOTES
1. FOR WIRING INSTRUCTION SEE 3403623
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.

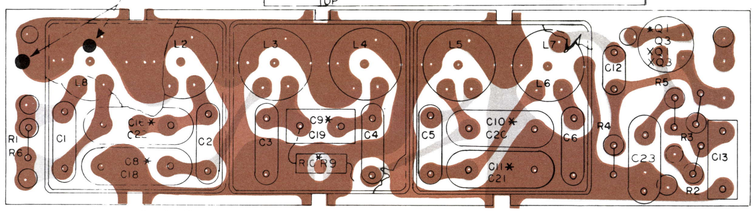
G1 - 4ELIOBIO - BLUE
G3 - 4ELIOAIO - RED



* 4ELIOBIO



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



* 4ELIOBII

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

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

VOLTAGE READING

SYMBOL NUMBER	TRANSISTOR E	B	C
4ELIOAIO Q1 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 4ELIOBIC 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 4EAIOAIO
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, 730 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. 19C180.	M-7491437-P6
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 ±2%, 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 mmf ±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 mmf ±2%, 500 VDCW. Electromotive Mfg Co Type DM20.	A-4029003-P204
C18#	Fixed silver mica, DM20-dipped phenolic insulation; crimped leads, 2,500 mmf ±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 mmf ±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 mmf ±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 mmf ±0.2 mmf, 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 mmf ±0.2 mmf, 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 mmf ±0.2 mmf, 500 VDCW, temp coef zero. Erie Resistor Corp Style 331.	B-7473485-P34 B-7473485-P31 B-7473485-P31
C20#	Fixed silver mica, DM20-dipped phenolic insulation; crimped leads, 2,500 mmf ±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 mmf ±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 mmf ±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 mmf ±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 mmf ±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 mmf ±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 mmf ±0.2 mmf, 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 mmf ±0.2 mmf, 500 VDCW, temp coef zero. Erie Resistor Corp Style 331.	B-7473485-P35 B-7473485-P22
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, 2000 ohms ±5%, 1/2 w.	C-3R77-P202J
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)

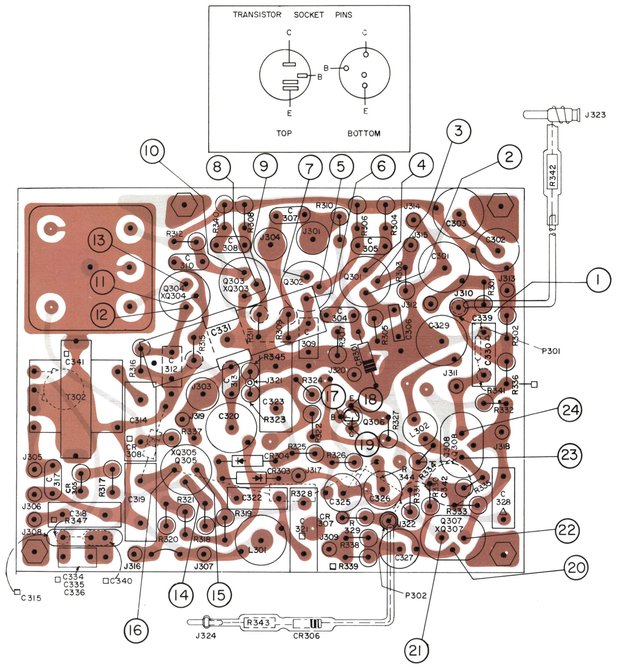
Increased diameter of posts used to mount stand-off boards. Changed part number of posts from 4029548-P1 to 4038104-P1.

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

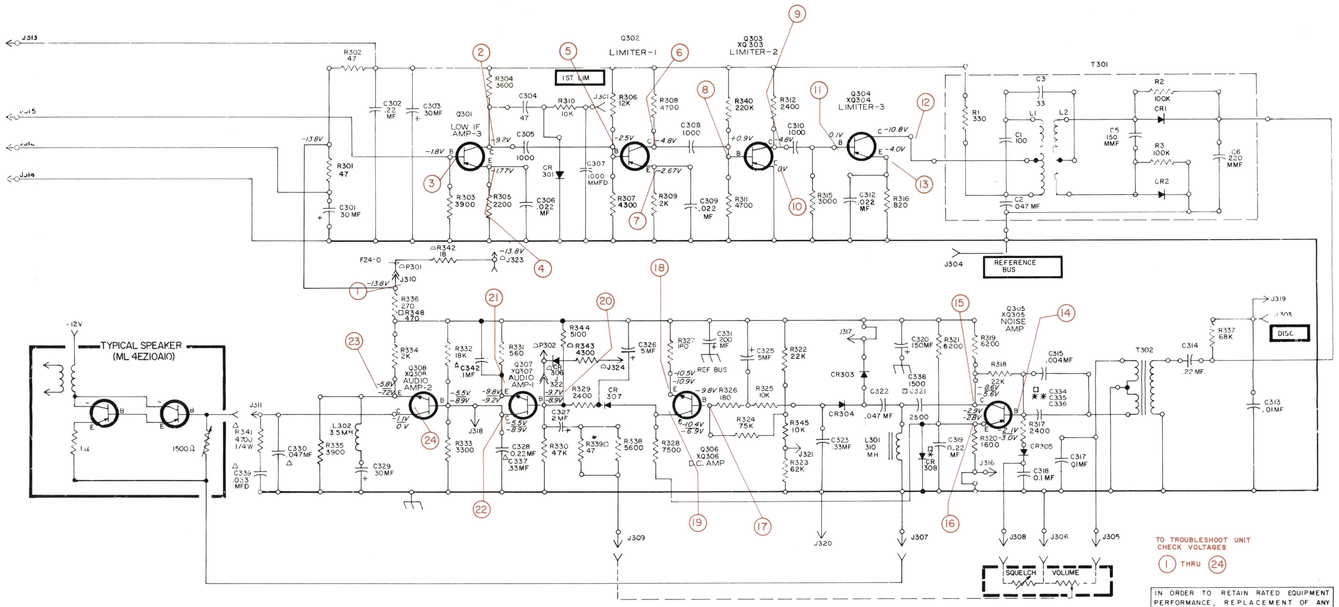
SYMBOL NUMBER	TRANSISTOR		
	E	B	C
Q301	2.2K	2.7K	5.2K
Q302	2K	2.75K	7.4K
Q303	0	5K	4.1K
Q304	1K	3K	1.95K
Q305	1.6K	30K	7.8K
Q306 *	.92K	4.4K	7.6K
Q307	2.2K	11.4K	3K
Q308	2K	3K	∞

* 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 ± 1%

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

□ FOR MODEL 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 PL19B214290G1 & G2.

(D-5498437, Rev. 38)

* USED IN NARROW BAND RECEIVERS ONLY

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

**

CAPACITOR	VALUE
C334	.01 MF
C335	.022 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=KILOHMS OR M=MEGOHMS. ALL 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 4EA10AA1 (NB), REV. XF
MODEL 4EA10A11, (NB), REV. J
MODEL 4EA10B10 (WB), REV. M

SYMBOL	G-E PART NO.	DESCRIPTION
		CAPACITORS
C301	5491000-P1	Electrolyte, low imp type; 30 µf +100% -50%, 25 VDCW, 10 HH max imp at 50 KC/sec; sim to Sprague 545553.
C302	7491930-P110	Mylar‡, dielectric; 0.22 µf ±20%, 100 VDCW; sim to Good-All Electric 66DUK.
C303	5491000-P1	Electrolyte, low imp type; 30 µf +100% -50%, 25 VDCW, 10 HH max imp at 50 KC/sec; sim to Sprague 545553.
C304	5494210-P617	Ceramic, temperature, 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: 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. Q.
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 4EA10A10 earlier than REV. G and Model 4EA10A11 earlier than REV. E:
	5491000-P1	Electrolyte, low imp type; 30 µf, +100% -50%, 25 VDCW, 10 HH max imp at 50 KC/sec; sim to Sprague Electric Co. 545553.
C321*	4029003-P208	Silver mica, dipped phenolic insulation, 2500 µµf ±2%, 500 VDCW; sim to Electromotive Mfg. DM20.
	4029003-P20	In models of Rev. G or earlier: 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: Mylar‡, dielectric; straight leads, 0.33 µf ±20%, 50 VDCW; sim to Good-All Electric 601PE. In models of Rev. C and earlier: 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: Electrolytic, (miniature for 85°C operation); hermetically sealed in aluminum tube, 5 µf +100% -10%, 6 VDCW; sim to Sprague Electric 30D125A1.
	7489483-P1	

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

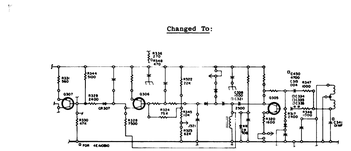
SYMBOL	G-E PART NO	DESCRIPTION
		CAPACITORS (CONT'D)
C326*	7489483-P6	Electrolytic, miniature, sealed; 5 mf +100% -10% 25 VDCW; sim to Sprague 30D179A1. In model 4EA10, Rev. D and earlier: Electrolytic, (vertical mount type), insulated, sealed in aluminum tube 10 mf, +100% -15%, 15 VDCW; sim to Sprague 30D165A1.
	7489483-P5	In Model 4EA10A10, Rev. L and earlier: 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 30D179A1. In models of Rev. L or earlier: 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	Electrolyte, low imp type; 30 µf +100% -50%, 25 VDCW, 10 HH max imp at 50 KC/sec; sim to Sprague 545553.
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 30D179A1.
C332*	5491189-P102	Mylar‡, dielectric; dipped epoxy coating, insulated, tinned 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: 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: Electrolytic, (vertical mount type); insulated, sealed in aluminum tube, 50 µf +100% -10%, 15 VDCW; sim to Sprague 30D169A1.
	5495670-P23	
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 disc, insulated; 0.01 mf +80% -20%, 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. T, 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: 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 Rev. 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: Jack, Test: Printed wiring, insulated nylon-green; sim to Raytheon B4436401-166-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: 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: 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 LS3-3.
J319* thru J322*	4033513-P4	Contact Pin: Brass; cadmium plated finish; sim to Bead Chain LS3-3. Added by Rev. R.
J323*	4033348-P1	Contact; Female (rection (Part of Mute Mod Cable 19B204290-G2). Added to Model 4EA10A10 by Rev. T; to Model 4EA10B10 by Rev. B.
J324*	4033513-P1	Contact Pin: Brass; sim to Bead Chain LS3-3. (Part of Mute Cable 19B204290-G1). Added to Model 4EA10A10 by Rev. T; to Model 4EA10B10 by Rev. B.
		INDUCTORS
L201	PL-4031476-G1	Choke coil: 310 mh ±10%, 310 ohms max DC res.
L302*	5491736-P6	Choke: 3.1 h ±10% at 1000 cps, 2.5 ohms; sim to Aladdin 33-494. In models of Rev. N, P and R: Choke: 3.5 mh ±10% at 100 cps, 3.0 ohms; sim to Aladdin 33-176.
	5491736-P4	In models of Rev. L and earlier: Choke: Assembly; includes the following: Core, Wire,
	PL-4031477-G1 7773023-P25 4029250-P10	
		TRANSISTORS
Q301* and Q202*	4038260-P2	Germanium, PNP. In Model 4EA10A10, Rev. XE and earlier, Model 4EA10A11 Rev. J and earlier, and Model 4EA10B10, Rev. L and earlier: PNP, Germanium. In model 4EA10A10, Rev. XC and earlier, Model 4EA10A11, Rev. F and earlier, Model 4EA10B10, Rev. H and earlier:
	4037661-P1	
	4037661-P2	PNP, Germanium. In models earlier than Rev. R: sim to 2N169.
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: 2N450/4JX1A100.
Q306*	19A115123-P1	NPN, Silicon. In model 4EA10A10 earlier than Rev. V; Model 4EA10A11 earlier than Rev. B; Model 4EA10B10 earlier than Rev. D: 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: 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: Composition: 3,300 ohms ±10%, 1/2 w.
R308*	3R77-P472K	Composition: 4.7K ohms ±10%, 1/2 w. In models of Rev. R: Composition: 3.6K ohms ±10%, 1/2 w. In models of Rev. P and earlier:

SYMBOL	G-E PART NO	DESCRIPTION
		RESISTORS (CONT'D)
R309*	3R77-P202J 3R152-P202J	Composition: 2,000 ohms, ±5%, 1/2 w. In models of Rev. D thru L: 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.
R317*	3R77-P122J	In Models of Rev. XE, M, L and earlier: 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, Fixed composition: 1,000 ohms, ±5%, 1/2 w. In models of Rev. K, H, J: 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.
	3R77-P822K	In Model 4EA10A10 earlier than Rev. A: 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. C and 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: 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. A 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-P971J	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, M, L and earlier: Composition: 3,900 ohms, ±5%, 1/2 w.
R339*	3R77-P470KX	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 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 Rev. 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 µµf, ±5%, 500 VDCW, -750 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*	7774846-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	3881-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	280 KC close wound coils. Pri: 1-L1 Sec: 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. T and earlier, And Model 4EA10B10, Rev. H and earlier, Audio transformer; imp ratio 35,000/2,000.
	5490525-P2	
		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.

Changed To:



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 C215, R317 and R327, and added CR305 between J208 and R317 with cathode toward J208. Connected J208 to junction of Q208 - 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. Changed as connected between junction of R325-CR304 and minus bus and is now connected between junction of R323-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. C319 replaced by R342.

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. 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 L202.

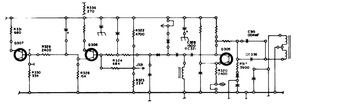
REV. T - (Model 4EA10A10 only)
REV. B - (Model 4EA10B10 only)
To allow 4EA10B10 microphone to be used with TPL system. Added Mute Mod. Cables 19B204290-G1 and 19B204290-G2.

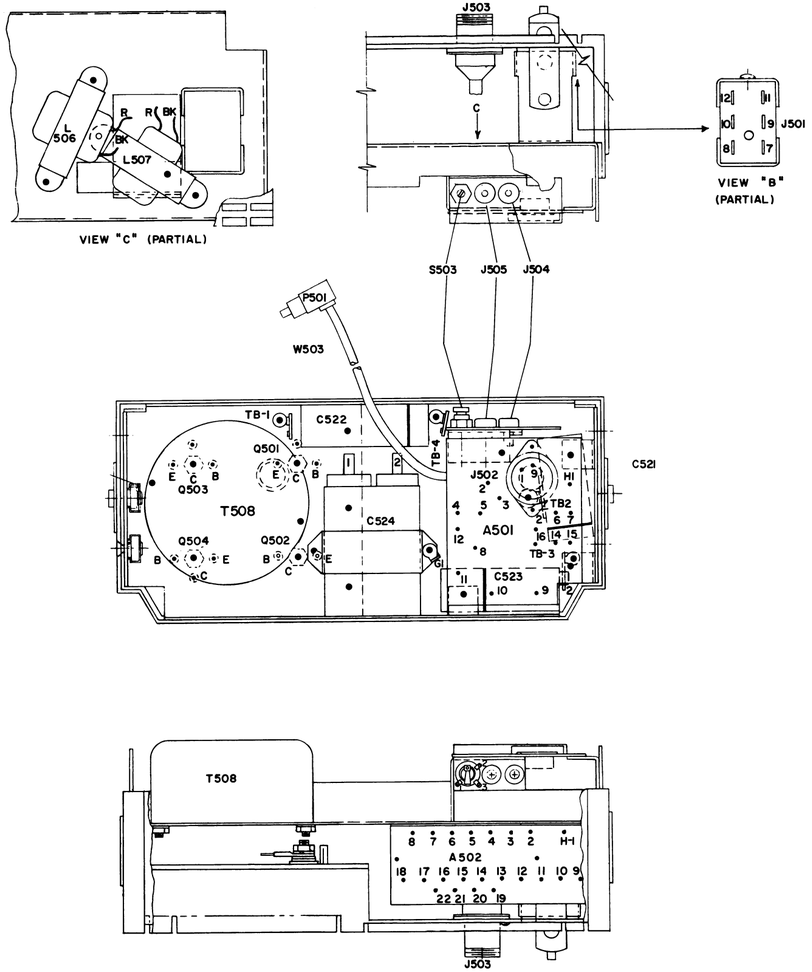
REV. U - (Model 4EA10A10 only)
REV. C - (Model 4EA10A11 only)
To improve receiver muting. Changed R343.

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 changed. Added R344, R345, R347 and R348, diode CR307, capacitors C340, C341. Deleted R336.

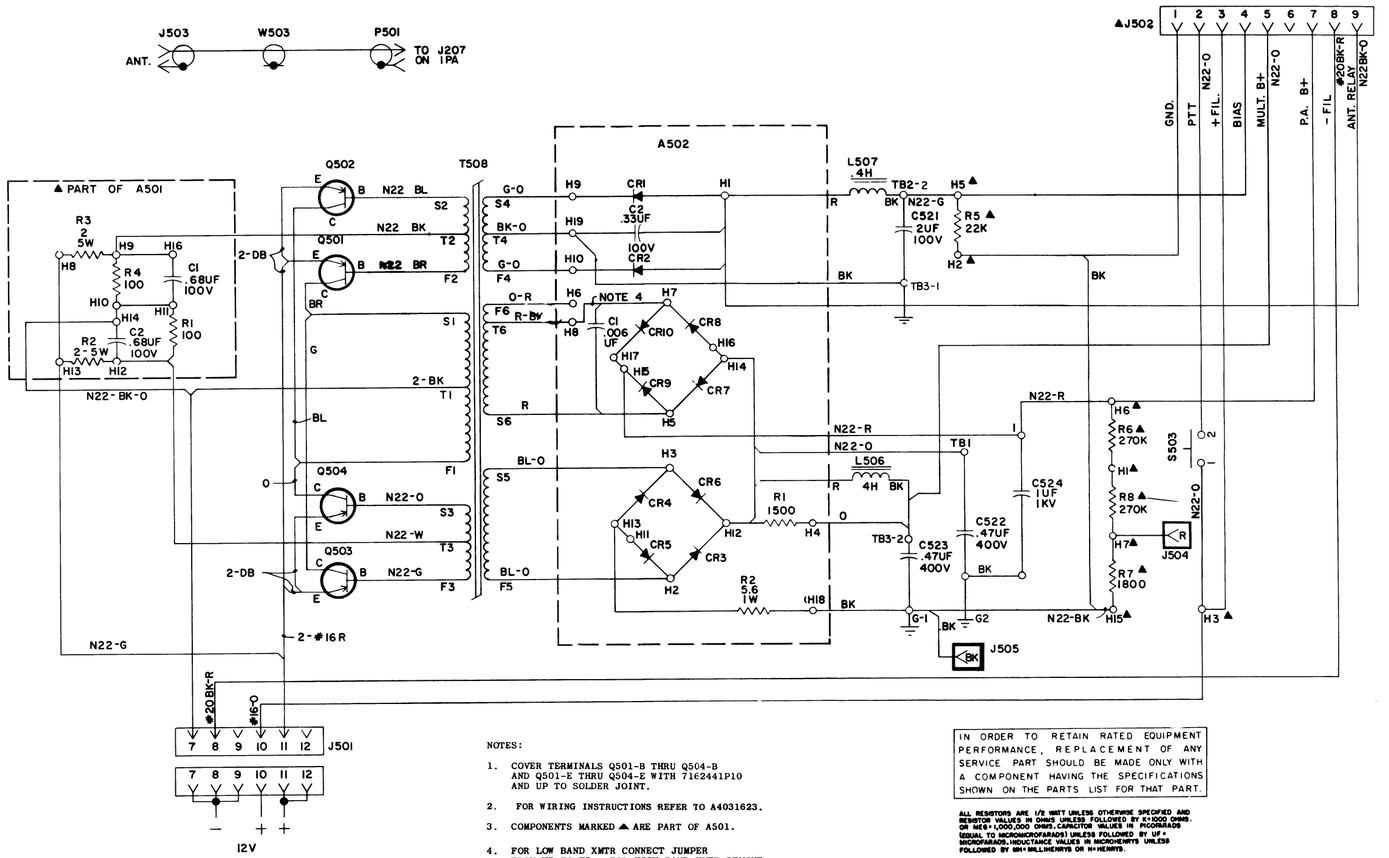
Elementary Diagram Changes

Was:





(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.

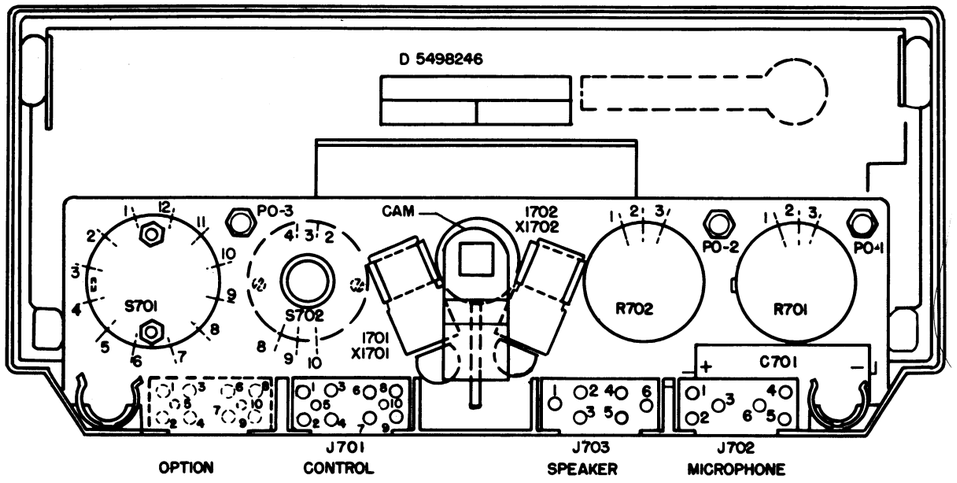
SYMBOL	G-E PART NO	DESCRIPTION
		PLUG
P501	7104941-P6	Phono: XXXP phenolic insulation, max voltage 350 rms, 500 VDC. Sim to Cinch 15H20175. (Part of W503).
		TRANSISTORS
Q501 thru Q504	5490810-P1	Germanium, PNP, power.
		SWITCH
S503	5490868-P1	Push button; non-locking, SPDT, 1/4 amp at 120 VAC; sim to 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.

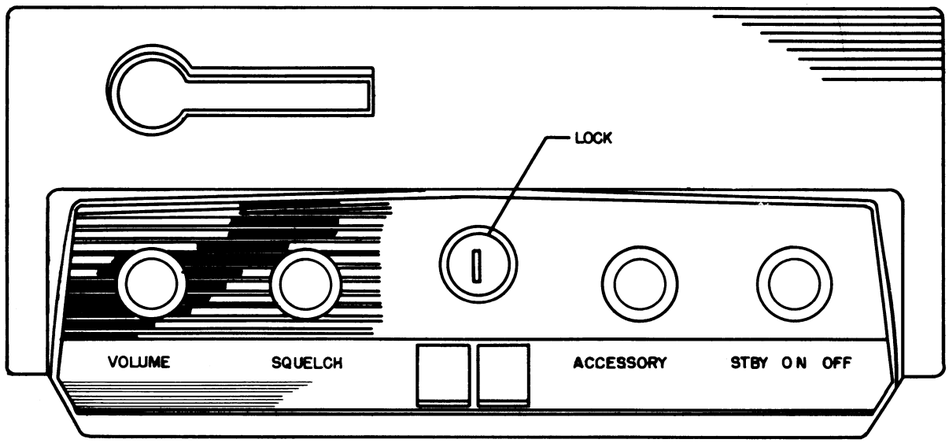
PRODUCTION CHANGES

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.

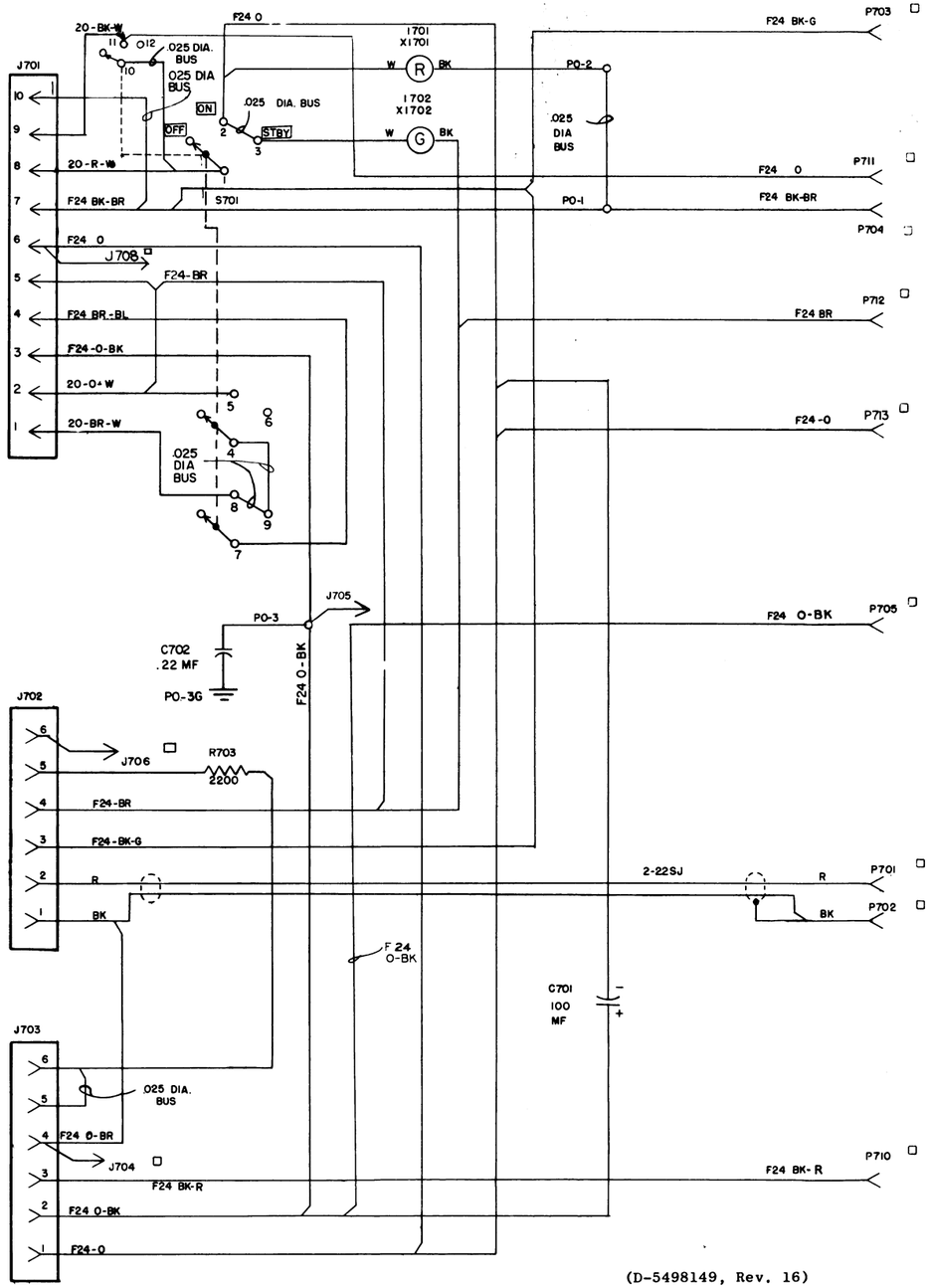


REAR VIEW

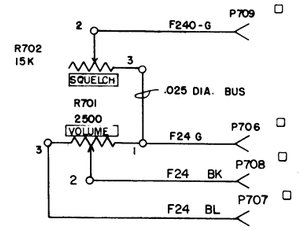


FRONT VIEW

(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.

30244

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.

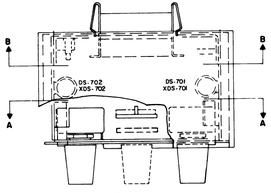
REV. K - To reduce alternator interference in TPL receiver delete 0-BK F24 wire from P705 to PO-3 and add 0-BK F24 wire from P705 to J703-2.

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.

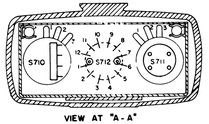
REV. M - To improve supply line filtering changed connecting point of C701.

CONTROL UNIT
MODEL 4EC45A10

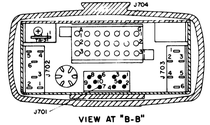
FRONT VIEW



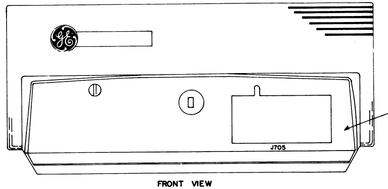
TOP VIEW



VIEW AT "A-A"

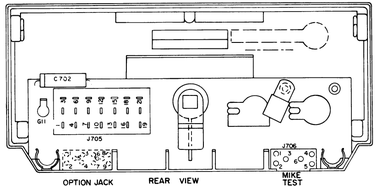


VIEW AT "B-B"



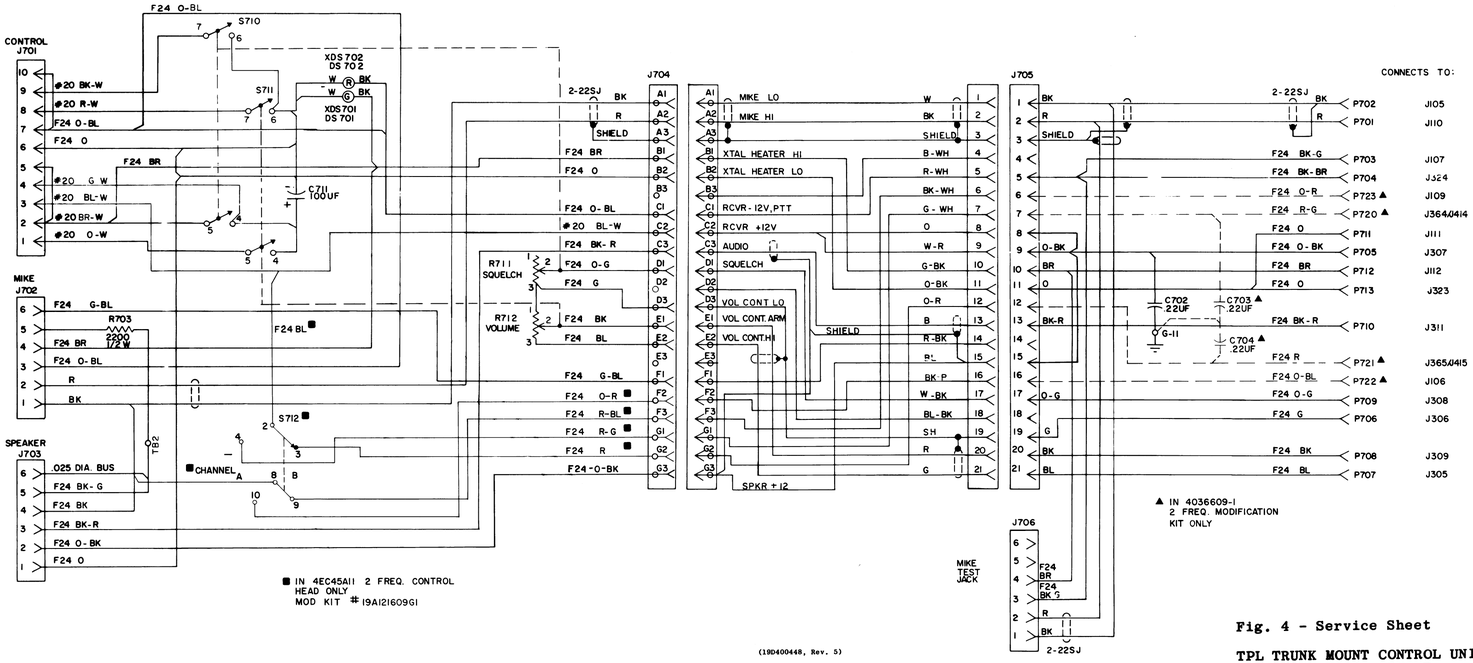
FRONT PANEL
PL 5493770

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. 10SSR21.
		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 LC15KPC4C2.
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. 8S17.

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.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.

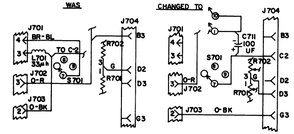
PRODUCTION CHANGES

(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.

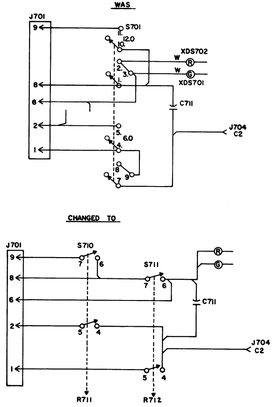
REV. B (Model 4EC45A10)
To prevent noise pickup and improve option operation. Deleted L701 and added C711.

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 R703 (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.

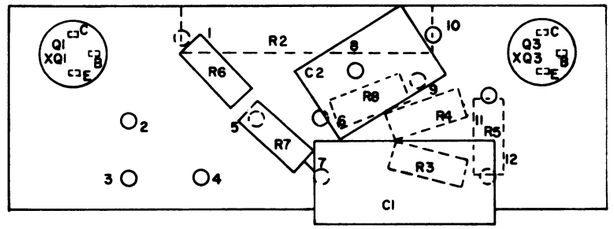
For options such as a two-frequency transmitter or receiver, an additional housing may be attached to the under side of the Control Unit, or mounted adjacent to the Control Unit on the under side of the instrument panel. This housing includes a two-frequency switch for selecting the proper channel for transmitting or receiving. The two-frequency switch connects the emitter 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)

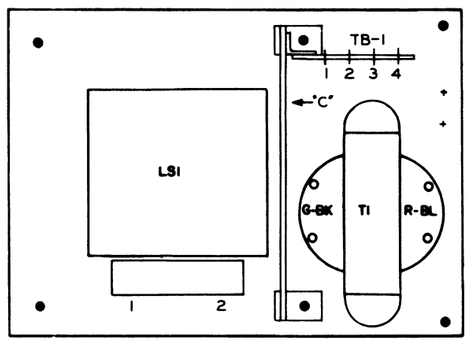
REV. A (Model 4EC45A11)
To permit control of filaments by OFF-ON Switch in positive-ground installations. The connection from S710-6 to S711-7 was moved to connect between S710-6 and S711-6.

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.

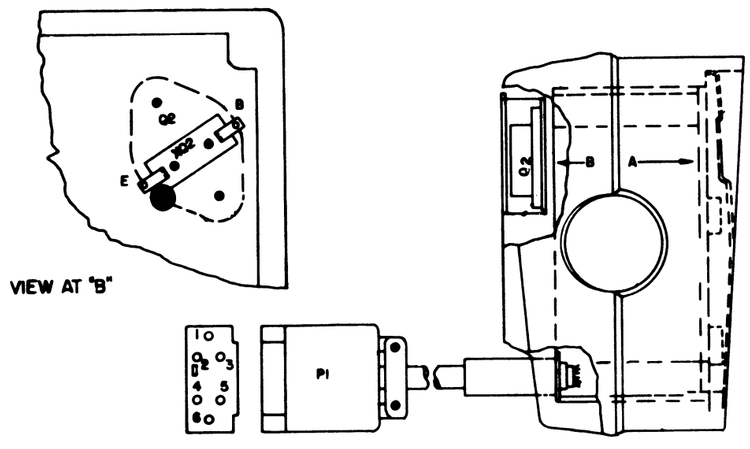
REV. B (Model 4EC45A11)
To make unit compatible with the 12/24-volt Converter (Model 4EP20A10). Deleted O-BK wire from J704-C2 to S711-4. Added BL-W wire from J704-C2 to J701-3, BL wire from S712-2 to J704-C2, and G-W wire from S710-4 to J701-4.



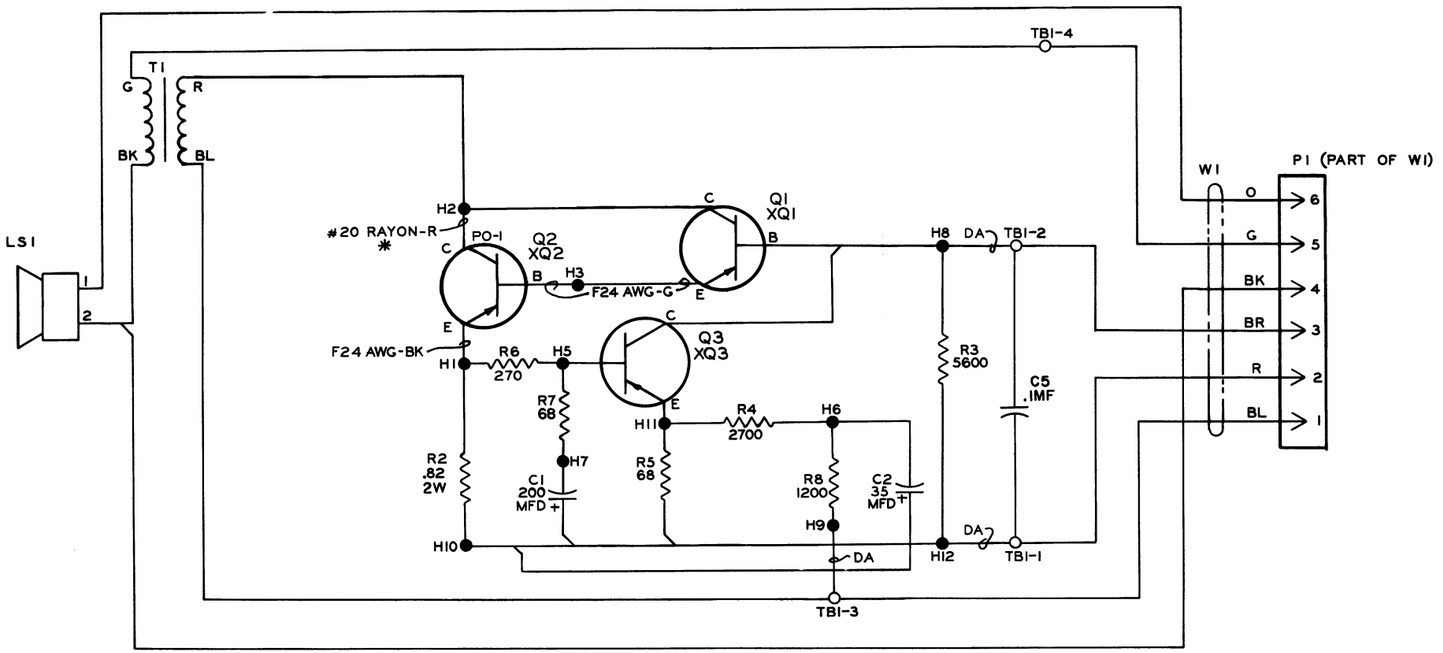
VIEW AT "C"



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

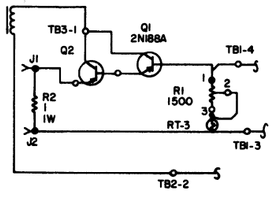
(Refer to Parts List for description of parts affected by these revisions).

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

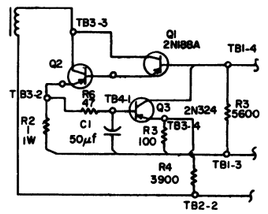
REV. B - To eliminate bias pot and metering jacks and to improve bias stability. Deleted R1, RT3, J1 and J2. Add R3, R4, R5, R6, C1 and Q3.

ELEMENTARY DIAGRAM CHANGES

FROM



TO

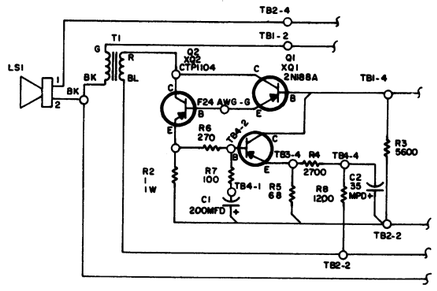


REV. C - To increase power output at low temperatures and to improve frequency response. Changed C1 and R6. Added R7.

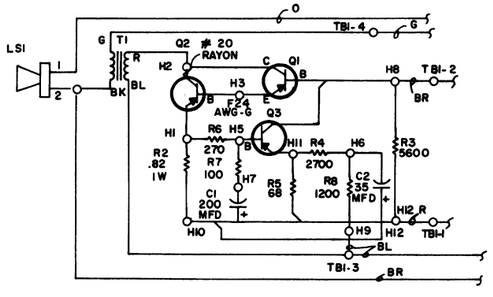
REV. D - To eliminate alternator and ignition interference from the TPL audio output. Added R8 and C2. Changed R4 and TB4.

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



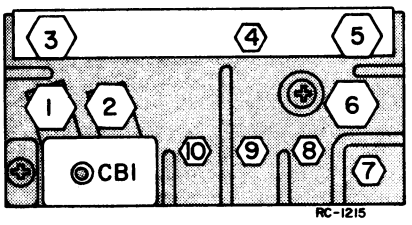
CHANGED TO

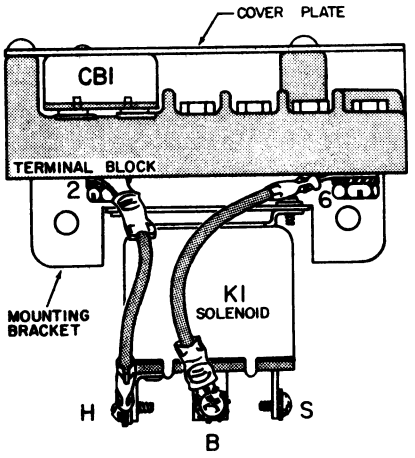


REV. F - To provide increased thermal protection. Changed Q2 from 5496663-P1 to 5496663-P2.

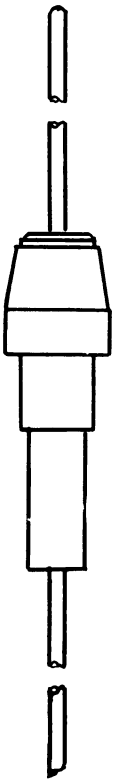
ELEMENTARY DIAGRAM CHANGES - NONE.

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	BROWN-WHITE
	IGNITION SWITCH WIRE	
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.

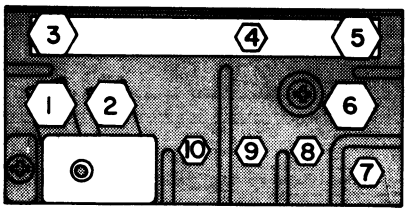
PRODUCTION CHANGES

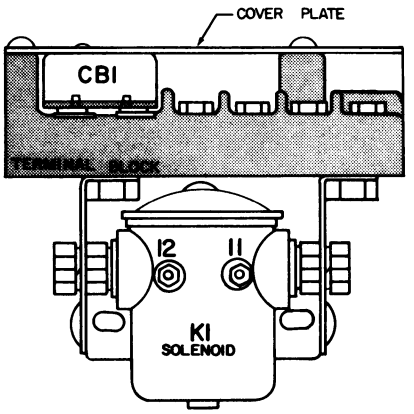
(Refer to the Parts List for description of parts affected by these changes.)

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

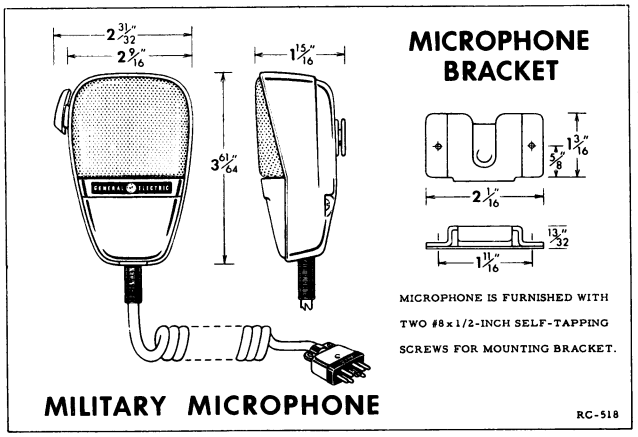
REV. B & C - To utilize solenoid with lower pickup current. Changed K1 and added mounting bracket.

OUTLINE DIAGRAM BEFORE REV. B:

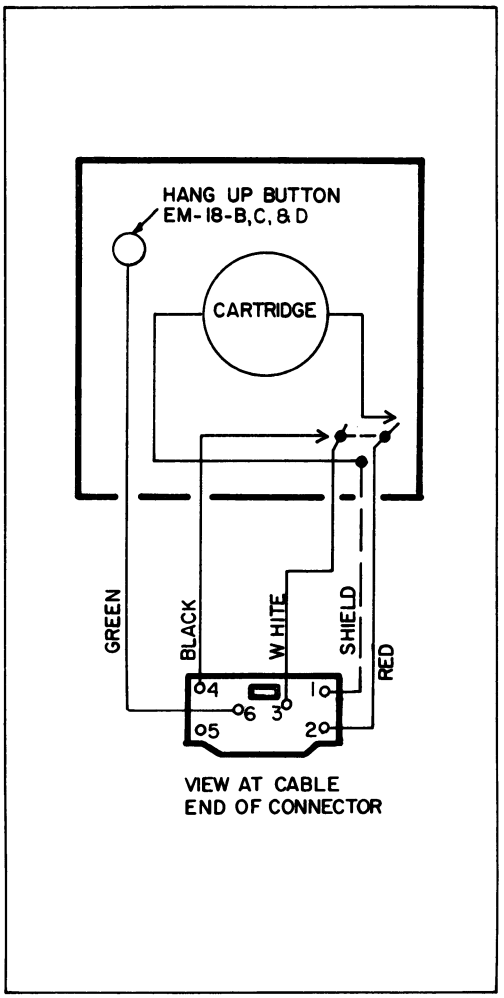




MODEL 4EM18A10, B10, C10 & D10

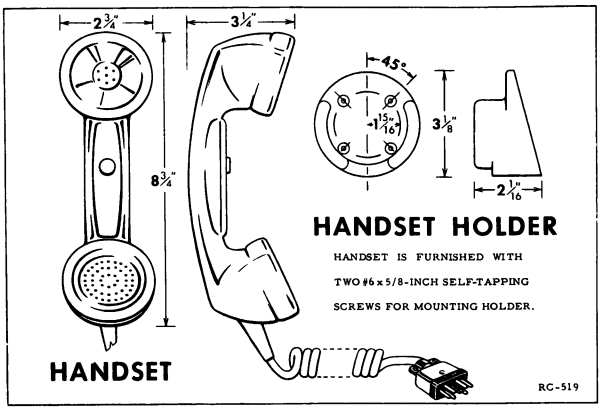


OUTLINE DIAGRAM

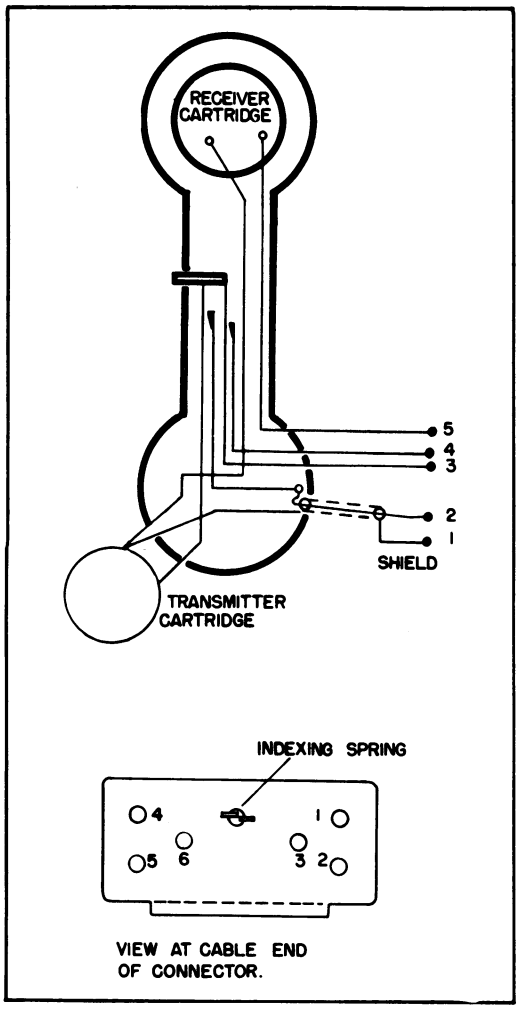


WIRING DIAGRAM

MODEL 4EM19A10



OUTLINE DIAGRAM



WIRING DIAGRAM

Elementary & Outline Diagrams

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

(RC-541D)

*****

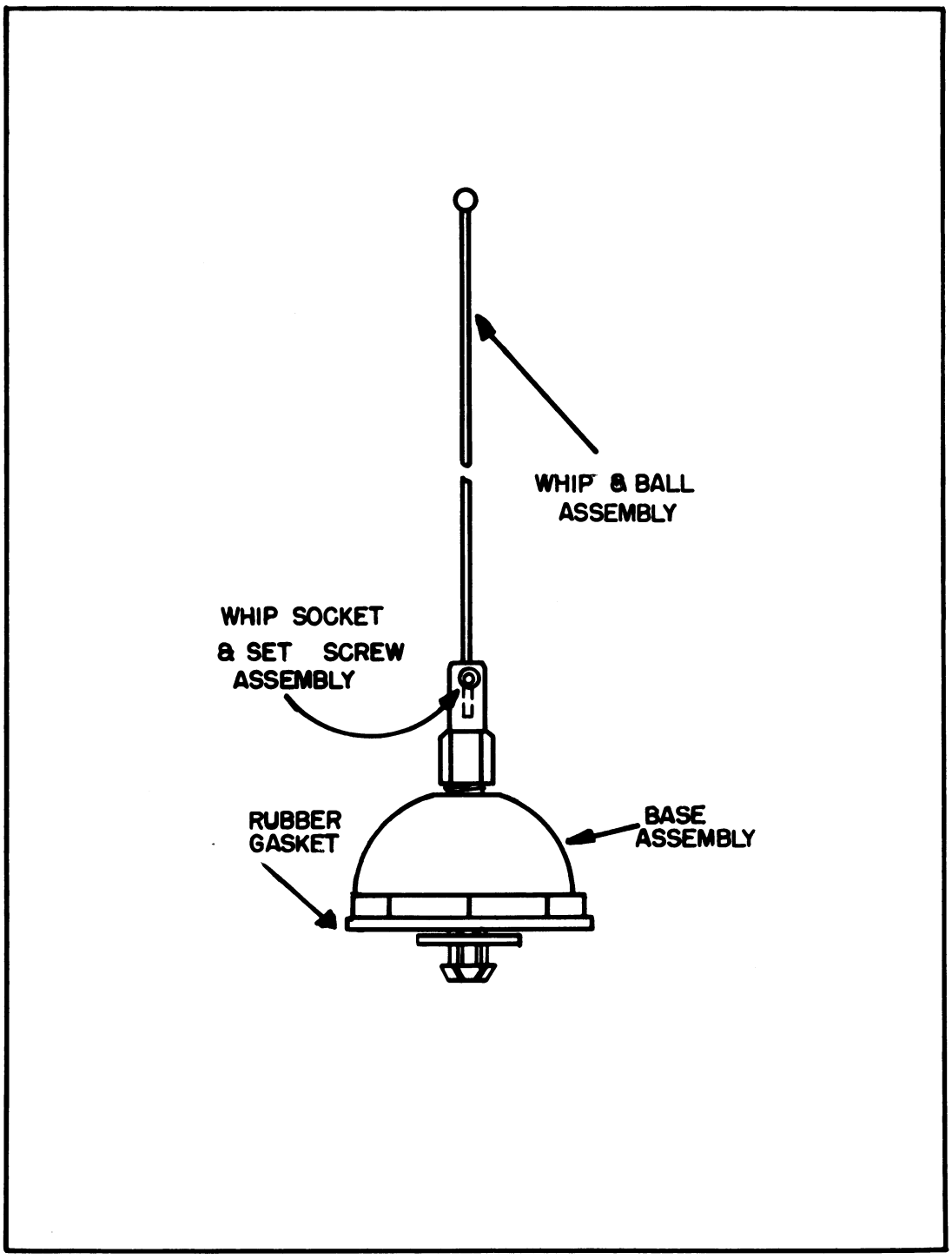
PARTS LIST

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, ROOF-MOUNT
130-174 AND 450-470 MC
MODEL 4EY12A10 & 4EY12A11

(RC-542A)

PARTS LIST

130-174 AND 450-470 MC ROOF-MOUNT ANTENNA
MODEL 4EY12A10
MODEL 4EY12A11

MODEL NUMBER	DESCRIPTION	G-E DRAWING & PART NO.
4EY12A10	ANTENNA ASSEMBLY	B-5490969-P7
	Replacement Parts For Antenna:	
	Whip only: Stainless steel, 19.75 inches long.	B-5490969-P4
	Whip Socket and Setscrews (less whip).	B-5490969-P5
	Whip with Whip Socket and Setscrews.	B-5490969-P6
	Connector, Coaxial: 2-piece straight plug. Amphenol Cat. No. 83-1SP. Signal Corps Cat. No. PL-259.	M-2R22-P1
	Adapter, Cable: (For using PL-259 connector with RG-58/U cable). Type UG-175/U.	A-7105381-P1
	Cable, Antenna: 12 feet long. Type RG-58/U.	
4EY12A11	ANTENNA ASSEMBLY	B-5490969-P8
	Replacement Parts For Antenna:	
	Whip only: Stainless steel, 19.75 inches long.	B-5490969-P4
	Whip Socket and Setscrews (less whip).	B-5490969-P5
	Whip with Whip Socket and Setscrews.	B-5490969-P6
	Connector, Coaxial: 2-piece straight plug. Amphenol Cat. No. 83-1SP. Signal Corps Cat. No. PL-259.	M-2R22-P1
	Adapter, Cable: (For using PL-259 connector with RG-58/U cable). Type UG-175/U.	A-7105381-P1
	Cable, Antenna: 15 feet long. Type RG-58/U.	