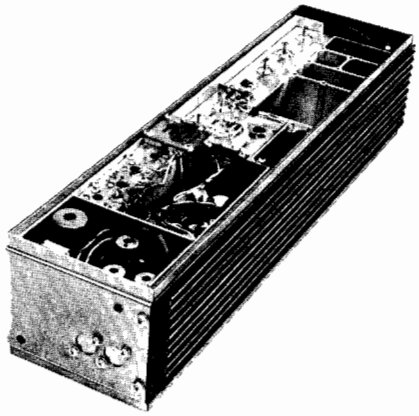
communications

MASTR Progress Line

132-174 MC RECEIVER MODELS 4ER41A22-27 (WITH NOISE BLANKERS)



Maintenance Manual LBI-3595

ER-41-A

SPECIFICATIONS *

	ER-41-A
FCC Filing Designation	
Frequency Range	132-174 MC
Audio Output	2 watts at less than 10% distortion (using Speaker Model 4EZ16A10)
Sensitivity	
12-db SINAD (EIA Method)	0.35 μv
20-db Quieting Method	0.5 μv
Selectivity	
EIA Two-Signal Method	-85 db (adjacent channel, 30 KC channels)
20-db Quieting Method	-100 db at ±15 KC
Spurious Response	-100 db
Frequency Stability	±.0005% (-30°C to +60°C)
Modulation Acceptance	±6 KC (narrow-band)
Squelch Sensitivity	
Critical Squelch	0.15 μv
Maximum Squelch	Greater than 20 db quieting (less than 2 μv)
Intermodulation (EIA)	-60 db
Maximum Frequency Separation	0.4%
Frequency Response	+1 and -8 db of a standard 6-db per octave de-emphasis curve from 300 to 3000 cps (1000-cps reference)

*These specifications are intended primarily for the use of the serviceman. Refer to the appropriate Certified and Guaranteed Specification Sheet for the complete specifications.

GENERAL ELECTRIC

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ILLUSTRATIONS

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.

DESCRIPTION

General Electric MASTR Progress Line Receiver Type ER-41-A is a double conversion, superheterodyne FM receiver designed for operation on the 132-174 megacycle band.

The receiver is of single-unit construction and is completely housed in an aluminum casting for maximum shielding and rigidity. The top part of the casting contains the front end through the 1st Low IF Amplifier stages and the Noise Blanker Board. The bottom portion of the casting contains the Audio Squelch Board and the optional Channel Guard Board.

CIRCUIT ANALYSIS

The MASTR Progress Line Receiver is completely transistorized, using a total of 26 silicon transistors. Input leads to the receiver are individually filtered by the 20-pin feed-through by-pass connector J443.

A regulated +10 volts is used for all receiver stages except the audio PA stage which operates from the 12-volt system supply.

Centralized metering jack J442 is provided for use with General Electric Test Set, Model 4EX3A10, for ease of alignment and servicing. The Test Set meters the oscillator, multiplier, and limiter stages as well as the discriminator, audio PA, voice coil and regulated 10 volts.

RF AMPLIFIERS (A301/A302 and A303/A304)

The 1st RF Amplifier A301 (132-150.8 MC) or A302 (150.8-174 MC) consists of three tuned helical resonators and an RF amplifier stage (Q1). The RF signal from the antenna is coupled by RF cable W441 to a tap on L301/L304. The tap is positioned to insure the proper impedance match to the antenna. RF energy is coupled through the three coils by openings in the shield walls, to the base of RF amplifier Q1. The output of Q1 is LC coupled through transformer T1/T2 to helical resonators L307/L309 and L308/L310, and then to a second RF amplifier stage A303 (132-150.8 MC) or A304 (150.8-174 MC).

The output of the A303/A304-Q1 is coupled through transformer T1/T2 to helical resonator L112/L113, and then to the base of the 1st mixer (A305-Q1). Neutralizing for the 2nd RF amplifier stage is provided by A303/A304-C7.

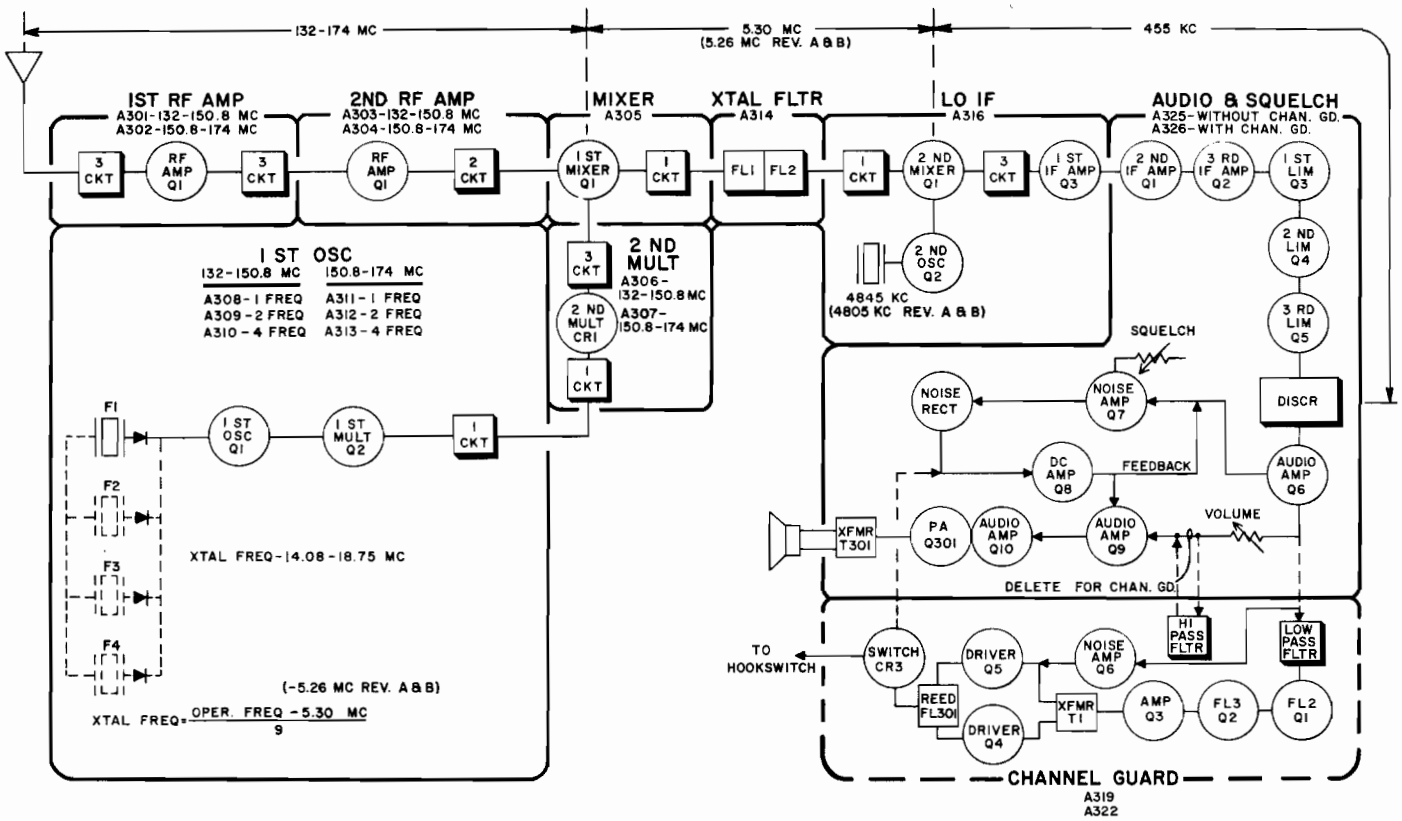


Figure 1 - Receiver Block Diagram

1ST OSCILLATOR AND MULT-1 (A308-A313)

The receiver 1st oscillator operates in a transistorized Colpitts oscillator circuit. The oscillator crystal operates in a fundamental mode at a frequency of approximately 14 to 18 megacycles. The crystal is cut to provide temperature compensation at the high end of the temperature range and is thermistor compensated at low temperatures. This provides ±.0005% frequency stability as soon as the receiver is energized--without the warm-up time required by crystal ovens or warmers.

In single-frequency receivers, a jumper from P6 to C311 connects the regulated 10 volts to the crystal circuit, which forward biases diode CR1. Forward biasing the diode reduces its impedance, so that the crystal frequency is applied to the base of oscillator transistor Q1. Feedback for the oscillator is developed across C21/C22. The oscillator output is fed through C24 to the base of the 1st multiplier Q2.

Multi-frequency receivers use only one oscillator transistor, and up to three additional crystal circuits, identical to the F1 crystal circuit, can be added. The 10-volt jumper is removed, and the proper frequency is selected by switching the desired crystal circuit to +10 volts by means of a frequency selector switch on the Control Unit.

The output of the 1st multiplier (tripler Q2) is transformer-coupled (T1/T2) to the 2nd multiplier assembly. The 1st multiplier tank is tuned to three times the crystal frequency. This stage is metered at centralized metering jack J442-4 through metering network CR5, R16, R303 and C32.

2ND MULTIPLIER (A306/A307)

Coupling from the 1st multiplier tank is through A306-T1/T2 to the anode of multiplier diode A306-CR1. Three resonant LC circuits (T3/T4, T5/T6 and T7/T8) follow CR1 and are tuned to nine times the crystal frequency. The 2nd multiplier output is fed through C13 to the base of the first mixer.

1ST MIXER (A305) AND CRYSTAL FILTER (A314)

The RF signal from the RF amplifiers and the low-side injection voltage from the 2nd multiplier are applied to the base of 1st mixer A305-Q1. The mixer collector tank (L1 and C3) is tuned to 5.30 megacycles (5.26 MC in Revision A and B receivers), and provides impedance matching to the high IF filter.

The highly selective, two-stage crystal filter (A314) following the 1st mixer provides the major selectivity for the receiver. The output of the filter is fed through impedance matching transformer A316-T1 to the base of the 2nd mixer.

2ND OSCILLATOR, 2ND MIXER AND 1ST IF AMPLIFIER (A316)

The 2nd oscillator A316-Q2 operates in a Colpitts oscillator circuit, with feedback supplied through C2. The oscillator frequency is 4845 KC (4805 KC in Revision A and B receivers) with the low-side injection voltage fed to the base of the 2nd mixer.

The Hi IF signal from the filter is fed to the base of 2nd mixer A316 (Q1) with the 2nd oscillator output. The 455 KC 2nd mixer output is fed to three tuned low IF circuits (L1, L2, L3). L1, L2 and L3 are required for shaping the nose of the IF waveform, and also reject the undesired output frequencies from the mixer.

The low IF signal is coupled through C14 to the base of the 1st low IF amplifier A316-Q3. The output of A316-Q3 is RC coupled to the base of the 2nd IF amplifier.

2ND IF AMPLIFIERS AND LIMITERS (A325)

Following A316-Q3 are two additional RC coupled low IF amplifiers (A325-Q1 and -Q2). The 2nd IF amplifier stage is metered at J442-2 through metering network C8, CR1 and R12.

After the IF amplifiers are three RC coupled limiter stages (A325-Q3, -Q4 and -Q5). First limiter metering is provided at J442-3 through metering network C13, CR2, R18 and C15.

DISCRIMINATOR (A325)

The receiver utilizes a Foster-Seely type discriminator. The output of the 3rd limiter is connected to a tap on the primary tuned circuit of discriminator T1. This allows the discriminator to operate at a higher level. Diodes CR5 and CR6 rectify the 455 KC IF signals to recover the audio. The stage is metered at J442-10 through metering network R27 and C22.

1ST AUDIO AMPLIFIER (A325)

The output of the discriminator is fed to the 1st audio amplifier (Q6). This stage operates as an emitter-follower to match the impedance of the discriminator to the noise amplifier stage and VOLUME control. Q6 also provides some power gain.

AUDIO AMPLIFIERS

When audio is present in the incoming signal, it is taken off the emitter of Q6 and connected to the VOLUME control through A325-J9. The VOLUME control arm connects to A325-J8 which feeds the audio signal to the base of the 2nd audio amplifier, Q9. C34, C36, C37 and L4 make up the de-emphasis network. The collector current of Q9 should be adjusted to 650 milliamps by potentiometer R47 as indicated by a reading of 0.65 volts at metering jack J442-1. This adjustment should be made with the VOLUME control fully counterclockwise. Thermistor RT1 keeps the output current constant over wide variations in temperature after R47 has been set.

Following Q9 is a Darlington circuit, which consists of compound-connected transistors Q10 and Q310. The Darlington circuit provides a higher input impedance than is normally encountered in transistor amplifiers. Also, this circuit has a more linear operation, with less distortion at maximum power output.

The output of the amplifier stage is coupled by audio transformer T301 to the loudspeaker. Audio high and low are present at the centralized metering jack (J442). When the General Electric Test Set is connected to J442, these leads are connected to the black and green jacks for sensitivity, frequency response, distortion, power output and other measurements.

SQUELCH

Noise from audio amplifier Q6 is used to operate the squelch circuit. When no carrier is present in the receiver, noise is coupled to the base of noise amplifier Q7. The gain of the noise amplifier is determined by the SQUELCH control, which varies the bias on the base of Q7.

The noise amplifier output is fed through a high-pass filter (C30 and L1) which attenuates frequencies below 3 KC. Thermistor RT2 keeps the critical squelch constant over wide variations in temperature.

Noise from the high-pass filter is rectified by CR3 and CR4, and the negative DC output of the noise rectifiers is fed to the base of DC amplifier Q8.

DC amplifier Q8 acts as a squelch switch. A negative output from the noise rectifiers cuts off the DC amplifier. When cut off, the collector is at the +10 volt supply potential. This positive voltage is fed to the base of Q9, a PNP transistor, cutting it off. Since audio stages Q9, Q10 and Q301 are DC coupled, Q10 and Q301 are cut off also. The positive voltage from the collector circuit of the DC amplifier is used as feedback through R33 to the base of noise amplifier Q7, causing it to conduct more heavily. This feedback helps to sharply cut off Q8, providing sharp, rapid switching action.

When the receiver is quieted by a signal, noise voltage from the noise rectifiers is reduced; and the DC amplifier conducts. While conducting, the collector potential of Q8 is negative; and negative feedback to the base of noise amplifier Q7 causes it to conduct less.

This negative voltage is applied to the base of PNP transistor Q9, causing it to conduct. Now, all the audio stages are turned on and sound is heard at the loudspeaker.

With the receiver squelched, the final audio amplifiers are cut off; and the receiver drain is less than 50 milliamps in 12-volt systems.

It should be noted that a hysteresis effect was designed into the squelch circuit and, as a result, the squelch does not operate in the same manner as other conventional squelch circuits. The circuit is designed so that a weak signal will open the squelch. The signal may be reduced by 3 to 5 db without the squelch closing. This limits squelch "flutter" or "picket-fence" operation.

NOISE BLANKER (A320/A321 - FIGURE 2)

An RF signal and noise pulse from the antenna is fed simultaneously to the Noise Blanker and receiver RF amplifier section. The signal and noise is transformer coupled through T1/T2 to the base of the first of three RF amplifier stages. The three amplifier stages (Q1, Q2 and Q3) raise the level of the noise pulse which is coupled through T9/T10 and L13 to the base of pulse detector Q4. A metering network consisting of R13, C21, C22 and CR2 permits the blanker to be metered at centralized metering jack J442-11.

Base bias for the pulse detector is established by R12 and CR1. CR1 is normally conducting, which keeps Q4 in a barely conducting state. A noise pulse applied to the base of Q4 causes it to conduct heavily. This results in a negative pulse at the output (collector) or Q4. Following Q4 is a low-pass RF filter (C23 and L14).

The output of the filter is fed to the base of pulse amplifier, Q5. This stage is biased by CR3, R16 and R18 so that it is just conducting. The negative-going pulse from the pulse detector cuts CR3

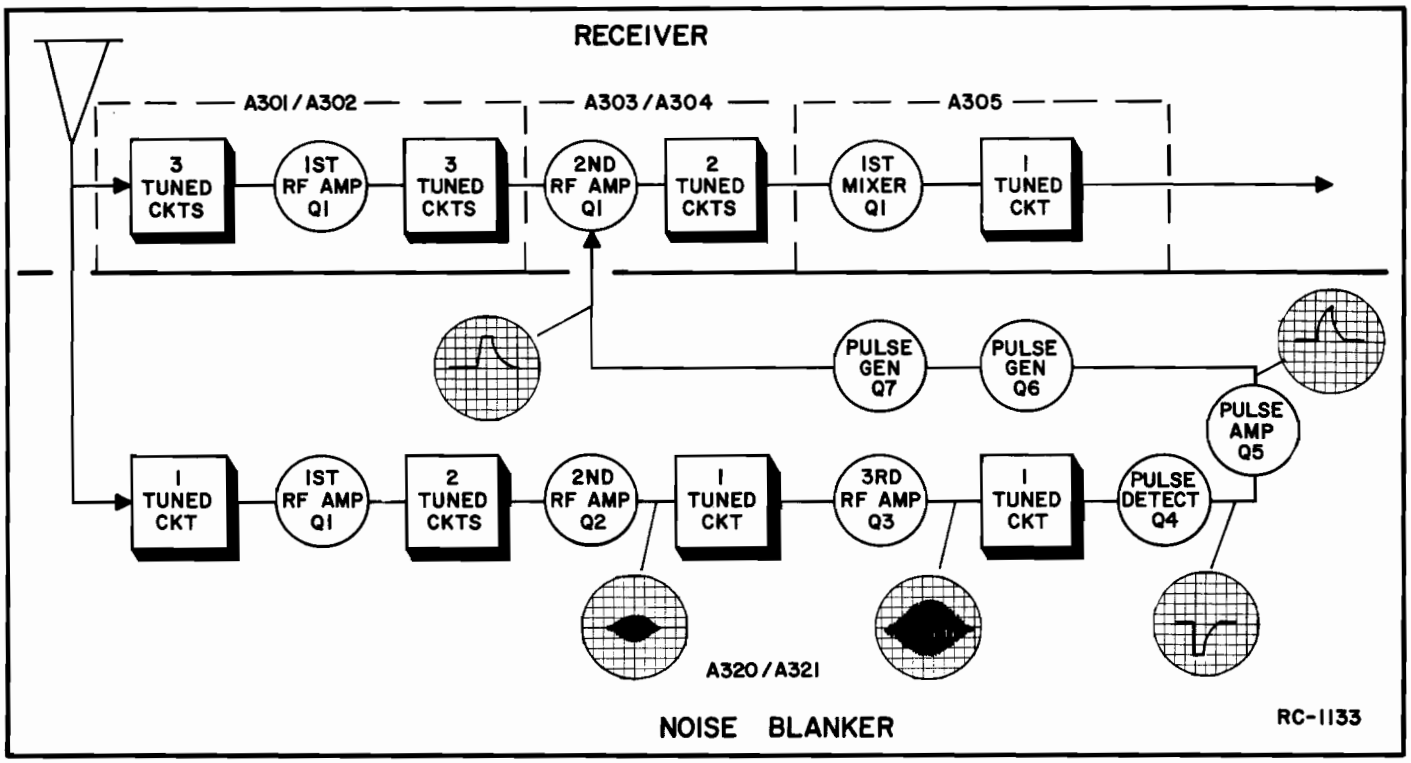


Figure 2 - Noise Blanker Block Diagram

off, which biases Q5 on, and a positive pulse appears at the output of Q5.

Q6 and Q7 form part of the one-shot multivibrator circuit. Bias voltage through R24 keeps Q6 normally turned on. The positive voltage at the collector of Q6 keeps Q7 turned off. The amplified positive-going pulse from the pulse amplifier (Q5) is fed to the base of Q6, cutting the stage off. As Q6 cuts off, Q7 is turned on; and the output is a positive-going blanking pulse. The positive blanking pulse is fed to the emitter of A303/A304-Q1, which cuts off that stage for the duration of the noise pulse.

The blanking pulse width is determined by R24 and C34. Diode CR6 keeps the output pulse a square wave. CR5 prevents oscillation at temperature extremes.

At the same time the blanking pulse is fed to the receiver, samples of the pulse are fed to the automatic repetition rate switch consisting of C29, C33, CR4, R17, R18 and R21. The pulse sample is coupled through C33 and rectified by CR4. This voltage charges C29 and then discharges through R17 and R18, turning off pulse amplifier Q5. The time constant of C29, R17 and R18 are selected so that output pulses from Q7 will never exceed two kilocycles. This prevents blanking the receiver for a long enough time to keep the desired signal from being heard.

As the noise signal from the antenna is applied to the Noise Blanker, the RF signal is applied to the receiver RF amplifier (A301/A302). The six tuned circuits in the receiver provide a time delay for the RF signal, which enables the blanking pulse from the Noise Blanker to cut off the RF amplifier in the receiver before the noise pulse can get there.

MAINTENANCE

MOBILE DISASSEMBLY

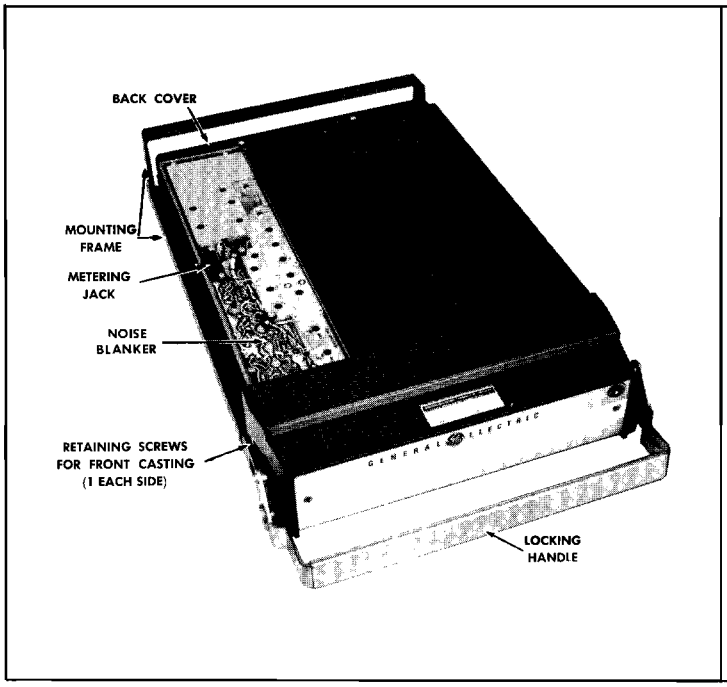


Figure 3 - Removing Top Cover

To service the receiver from the top--

1. Pull locking handle down and pull radio about one inch out of mounting frame.
2. Pry up cover at rear of receiver.
3. Slide cover back and lift off.

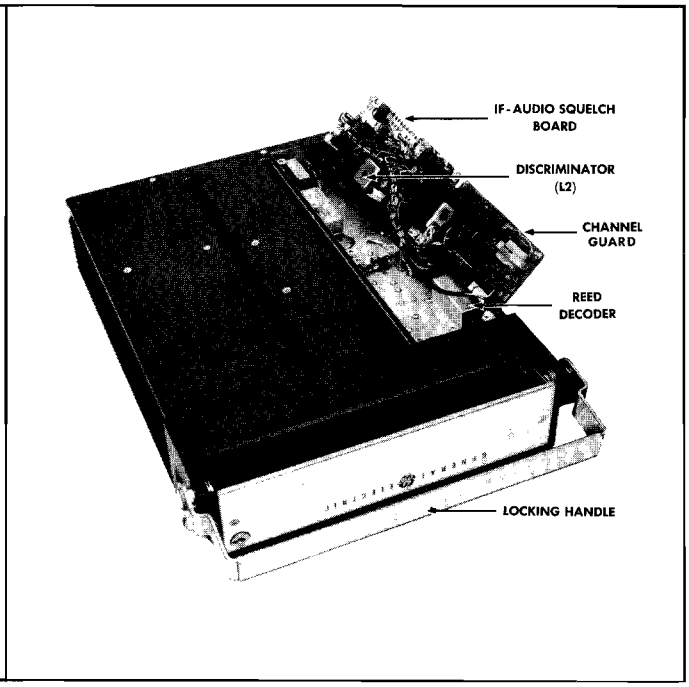


Figure 4 - Removing Bottom Cover

To service the receiver from the bottom--

1. Pull locking handle down. Pull radio out of mounting frame.
2. Remove screws in bottom cover. Pry up cover at back of receiver.
3. Slide cover back and lift off.

To remove the receiver from the system frame--

1. Loosen the two Phillips-head retaining screws in front casting (see Figure 3), and pull casting away from system frame.

2. Remove the four screws in the back cover.

3. Remove the two screws holding the receiver at each end of the system frame.

4. Disconnect the antenna jack and the 20-pin connector from the front of the receiver, and slide the unit out of the system frame.

FRONT END ALIGNMENT

EQUIPMENT REQUIRED

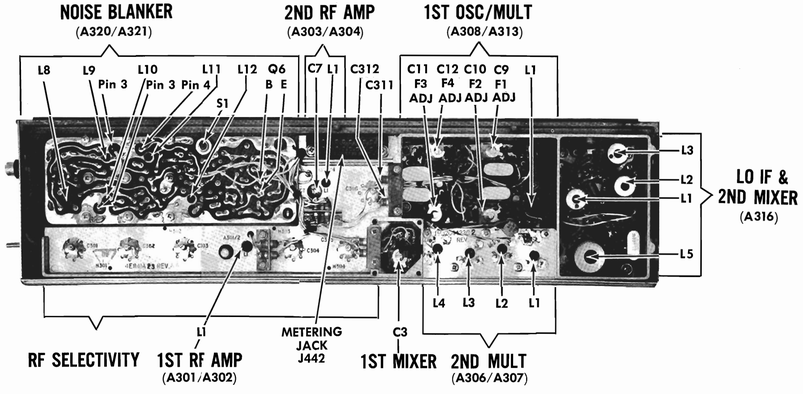
1. G-E Test Set Model 4EX3A10 (or 20,000 ohms-per-volt multimeter).
2. A 132-174 MC signal source. Connect a one-inch piece of insulated wire no larger than .065 inch to generator outpu probe.

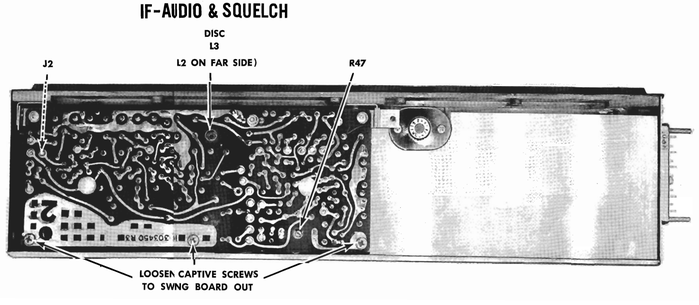
PRELIMINARY CHECKS AND ADJUSTMENTS

1. Connect Test Set Model 4EX3A10 to receiver centralized metering jack J442 and set meter sensitivity switch to the TEST 1 position.
2. With VOLUME control full counterclockwise and Test Set in position G, adjust R47 on IF-AUDIO & SQUELCH BOARD for reading of 0.65 volts. If using Multimeter, connect leads to J442-1 (AUDIO-PA) and J442-8 (System Negative).
3. With Test Set in position J, check for regulated +10 volts. If using Multimeter, measure from C311 to C312.
4. If using Multimeter, connect the positive lead to J442-16 (ground).
5. Disable the Channel Guard.

ALIGNMENT PROCEDURE

STEP	METERING POSITION 4EX3A10	METERING POSITION Multimeter - at J442	TUNING CONTROL	METER READING	PROCEDURE
			OSCILLATOR AND MULTIPLIERS		
1.	D (MULT-1)	Pin 4	L1 (on 1st OSC/MULT) and L1 (on 2nd MULT)	See Procedure	Tune L1 (1st OSC/MULT) for maximum meter reading. Then tune L1 (2nd MULT) for minimum meter reading.
2.	E (MULT-2)	Pin 5	L1 (on 1st OSC/MULT) and L1 (on 2nd MULT)	Maximum	Tune L1 (1st OSC/MULT) and L1 (2nd MULT) for maximum meter reading.
3.	A (DISC)	Pin 10		Zero	Apply an on-frequency signal into Hole 304. Adjust the signal generator for discriminator zero.
4.	B (2nd IF AMP)	Pin 2	L2, L3 and L4 (on 2nd MULT)	Maximum	Apply an on-frequency signal as above. Tune L2, L3 and L4 for maximum meter reading, keeping signal below saturation.
			RF AMPLIFIER		
5.	B (2nd IF AMP)	Pin 2	L1 (on 1st RF AMP) C301, C302, C303, C304 and C305	Maximum	Apply an on-frequency signal to the antenna jack. Tune C301 through C305 and L1 for maximum meter reading, keeping signal below saturation.
			FREQUENCY ADJUSTMENT		
6.	A (DISC)	Pin 10	C9 on 1st OSC/MULT (C10, C11 and C12 for multi-frequency	Zero	Apply an on-frequency signal to the antenna jack. Tune C9 for zero discriminator reading. In multi-frequency units, tune C10, C11 and C12 as required.





COMPLETE RECEIVER & NOISE BLANKER ALIGNMENT

LBI-3595

EQUIPMENT REQUIRED

1. G-E Test Set Model 4EX3A10 (or 20,000 ohms-per-volt multimeter).
2. A 455 KC and 132-174 MC signal source. Connect a one-inch piece of insulated wire no larger than .065 inch to generator output probe.
3. Two 33,000-ohm resistors for tuning low IF coils.*

PRELIMINARY CHECKS AND ADJUSTMENTS

1. Connect Test Set Model 4EX3A10 to receiver centralized metering jack J442 and set meter sensitivity switch to the TEST 1 position.
2. Set crystal trimmer C9 on 1ST OSC/MULT Board to mid-capacity. In multi-frequency receivers, set C10, C11 or C12 to mid-capacity as required.
3. In multi-frequency receivers where the maximum frequency spacing is less than 200 KC, align the unit on channel F1. If the frequency spacing is greater than 200 KC, align the receiver on the center frequency.
4. Adjust all slugs on Noise Blanker (A320/A321) to bottom of coil (closest to printed wiring board)
5. Set C7 on 2ND RF AMP to minimum capacity (silver side of rotor toward Blanker board). Failure to set C7 before starting the alignment may cause the receiver to oscillate.
6. With VOLUME control fully counterclockwise and Test Set in position G, adjust R47 on IF-AUDIO & SQUELCH Board for reading of 0.65 volts. If using multimeter, connect leads to J442-1 (Audio PA) and J442-8 (System Negative).
7. With Test Set in position J, check for regulated +10 volts. If using multimeter, measure from C311 to C312.
8. If using multimeter, connect the positive lead to J442-16 (ground).
9. Disable the Channel Guard.

ALIGNMENT PROCEDURE

STEP	METERING POSITION 4EX3A10	METERING POSITION Multimeter - at J442	TUNING CONTROL	METER READING	PROCEDURE
			DISCRIMINATOR		
1.	A (DISC)	Pin 10	L3 (Bottom slug on IF-AUDIO & SQUELCH Board)	Zero	Apply a 455-KC signal to A317/A318-J2 and adjust L3 (disc secondary) for zero meter reading.
2.	A (DISC)	Pin 10	L2 (Top) and L3 (bottom slug on IF-AUDIO & SQUELCH Board)	1.7 v (2.1 v max)	Switch Test Set to TEST 3 position. Then alternately apply a 445-KC and 465-KC signal while adjusting L2 and L3 for readings of at least 1.7 volts, but not more than 2.1 volts. Both readings must be within 0.1 volt.
			OSCILLATOR AND MULTIPLIERS		
3.	D (MULT-1)	Pin 4	L1 (1ST OSC/MULT) and L1 (2ND MULT)	See Procedure	Tune L1 on 1ST OSC/MULT for maximum meter reading. Then tune L1 on 2ND MULT for minimum meter reading.
4.	E (MULT-2)	Pin 5	L1 (1ST OSC/MULT) and L1 (2ND MULT)	Maximum	Tune L1 on 1ST OSC/MULT and L1 on 2nd MULT for maximum meter reading.
5.	A (DISC)	Pin 10		Zero	Apply an on-frequency signal to Hole 304. Adjust the signal generator for discriminator zero.
6.	B (2nd IF AMP)	Pin 2	L2, L3 and L4 (2ND MULT)	Maximum	Apply signal as above. Tune L2, L3 and L4 for maximum meter reading, keeping signal below saturation.
			RF AMPLIFIER & SELECTIVITY		
7.	B (2ND IF AMP)	Pin 2	L1 (1ST RF AMP) L1 (2ND RF AMP) C301, C302, C303, C304, C305 and C306 (RF SELECTIVITY)	Maximum	Apply an on-frequency through RF probe and tune circuits as shown below, keeping signal below saturation. Apply Signal Generator Probe To: — Tune: Hole 304 — C306, L1 (2ND RF AMP) and C305 Hole 303 — C304 Hole 302 — L1 (1ST RF AMP) and C303 Hole 301 — C302, C301
8.	B (2nd IF AMP)	Pin 2	C301 through C306, L1 (1ST RF AMP), L1 (2ND RF AMP)	Maximum	Apply an on-frequency signal to antenna jack J441. Tune C301 through C306, L1 (on 1ST RF AMP) and L1 (2ND RF AMP) for maximum meter reading, keeping signal below saturation.
9.	"	"	C7 (2ND RF AMP)	Minimum	Apply signal as above. Short the base to emitter of Q6 on Blanker Board. Increase signal level until a slight increase in reading is observed. Tune C7 for minimum meter reading. Then repeat STEP 8.
			MIXERS		
10.	B (2nd IF AMP)	Pin 2	C3 (1ST MIXER)	Maximum	Apply signal as above, and tune C3 for maximum meter reading, keeping signal below saturation.
11.	"	"	L5 (2ND MIXER)	Maximum	Apply signal as above, and tune T1 for maximum meter reading, keeping signal below saturation.
			LO IF*		
12.	B (2nd IF AMP)	Pin 2	L2, L2 and L3 (Lo IF MIXER)	Maximum	With one end of the 33,000-ohm resistors to ground, load and peak as follows: Load L2 at Points B-C-Peak L1 and L2. Load L3 and L3 at Points A and C--Peak L2.
			NOISE BLANKER A320/A321		
13.	H (BLANKER)	Pin 11 (-) and Pin 16 (+)	L8, L9, L10, L11 and L12 (on NOISE BLANKER)	Maximum	Apply a signal 10 MC above operating frequency as shown below, keeping signal below saturation. In multi-frequency units, apply signal 10 MC above highest operating frequency. Increase signal level until slight increase in reading is observed. Apply Signal Generator Probe To: — Tune: Pin 6 of L11 — L12 (2nd peak) Pin 3 of L10 — L11 (1st peak) Pin 3 of L9 — L10 (1st peak) Antenna Jack J441 — L9 and L8 (1st peak)
14.	"	"	"	"	Apply signal on blanker frequency (10 MC above operating frequency) to antenna jack J441. Retune L8 through L12 for maximum meter reading.
15.	"	"	"	.05 v	Apply a 1,000-microvolt signal on blanker frequency to antenna jack J441. Reading should be approximately .05 volt.
			FREQUENCY ADJUSTMENT		
16.	A	Pin 10	C9 (on 1ST OSC/MULT) C10, C11 and C12 for multi-frequency	Zero	Apply an on-frequency signal to antenna jack J441. Tune C9 for zero discriminator reading. In multi-frequency units, tune C10, C11 or C12 as required.

*NOTE—The low IF coils have been aligned at the factory and will normally require no further adjustment. If alignment is necessary, refer to the RECEIVER OUTLINE DIAGRAM for location or resistor loading points A, B and C.

ALIGNMENT PROCEDURE

132 — 174 MC. MASTR RECEIVER
MODELS 4ER41A22-27
(WITH NOISE BLANKER)

TEST PROCEDURES

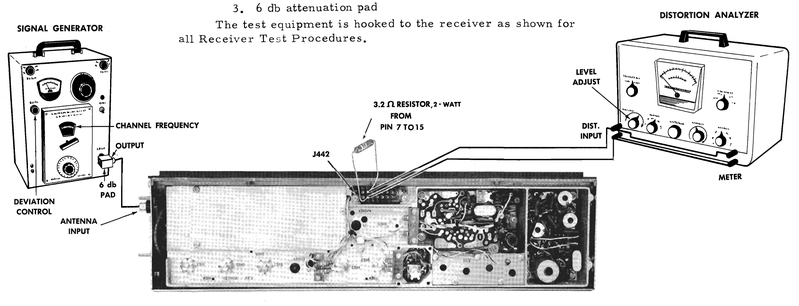
These Test Procedures are designed to help you to service a receiver that is operating---but not properly. The problems encountered could be low power, poor sensitivity, distortion, limiter not operating properly, and low gain. By following the sequence of test steps starting with Step 1, the defect can be quickly localized. Once the defective stage is pin-pointed, refer to the "Service Check" listed to correct the problem. Additional corrective measures are included in the Troubleshooting Procedure. Before starting with the Receiver Test Procedures, be sure the receiver is tuned and aligned to the proper operating frequency.

TEST EQUIPMENT REQUIRED

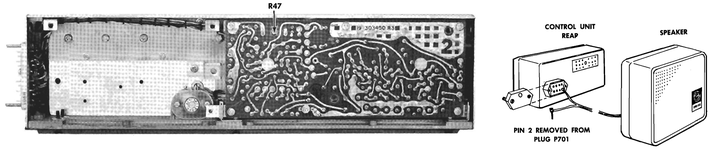
for test hookup shown:

1. Distortion Analyzer similar to: Heath # 1M-12
2. Signal Generator similar to: Measurements # M-560
3. 6 db attenuation pad

The test equipment is hooked to the receiver as shown for all Receiver Test Procedures.



COMPONENT TOP VIEW



COMPONENT BOARD WIRING VIEW

STEP 1

AUDIO POWER OUTPUT AND DISTORTION

TEST PROCEDURE

Measure Audio Power Output as follows:

1. Connect a 1,000-microvolt test signal modulated by 1,000 cycles ±3.3 KC deviation to the antenna jack J441.
2. Two-Watt Speaker:
   When speaker is used, disconnect speaker lead pin from J701-2 (on rear of Control Unit). Hook up a 3.2-ohm load resistor from J442-15 to J442-7

   OR

   Handset:
   When handset is used, lift handset off of hookswitch.
3. Two-Watt Speaker:
   Connect Distortion Analyzer input across the 3.2-ohm resistor as shown

   OR

   Handset:
   Connect Distortion Analyzer input from J442-15 to J442-7.
4. Two-watt speaker--set volume control for two-watt output (2.53 VRMS):

VOLTMETER SCALE ON DISTORTION ANALYZER

5. Make distortion measurements according to manufacturer's instructions. Reading should be less than 10% (5% is typical).

SERVICE CHECK

If the distortion is more than 10%, or maximum audio output is less than two watts (for two-watt speaker) make the following checks:

1. Battery and regulator voltage---low voltage will cause distortion. (Refer to Receiver Schematic Diagram for voltages.)
2. Audio Bias Adjust (R47)---should be adjusted for 0.65 volts. (Refer to Receiver Alignment on reverse side of page).
3. Audio Gain (Refer to Receiver Troubleshooting Procedure).
4. Discriminator Alignment (Refer to Receiver Alignment on reverse side of page).

STEP 2

USABLE SENSITIVITY (12 db SINAD)

TEST PROCEDURE

Measure sensitivity of the receiver modulated at the standard test modulation as follows:

1. Be sure Test Step 1 checks out properly.
2. Reduce the Signal Generator output from setting in Test Step 1.
3. Adjust Distortion Analyzer LEVEL control for a +2 db reading.
4. Set CONTROL from LEVEL to DISTORTION reading. Repeat Steps 1, 2 and 3 until difference in reading is 12 db (+2 db to -10 db).
5. The 12-db difference (Signal plus Noise and Distortion to noise plus distortion ratio) is the "usable" sensitivity level. Reading should be less than 0.35 microvolts with audio output at least one watt (1.83 volts RMS across the 3.2-ohm receiver load).

SERVICE CHECK

If the sensitivity level is more than 0.35 microvolts, make the following checks:

1. Alignment of RF stages (Refer to RF Alignment in Receiver Alignment on reverse side of page.)
2. Gain measurements as shown on the Receiver Troubleshooting Procedure.

STEP 3

MODULATION ACCEPTANCE BANDWIDTH (IF BANDWIDTH)

TEST PROCEDURE

1. Be sure Test Steps 1 and 2 check out properly.
2. Set Signal Generator output for twice the microvolt reading obtained in Test Step 2 - 4.
3. Increase Signal Generator frequency deviation.
4. Adjust LEVEL Control for +2 db.

DB SCALE ON DISTORTION ANALYZER

5. Set CONTROL from LEVEL to DISTORTION reading. Repeat Steps 3, 4 and 5 until difference between readings becomes 12 db (from +2 db to -10 db).

LEVEL DISTORTION ON DISTORTION ANALYZER

6. Deviation control reading for the 12-db difference is the Modulation Acceptance Bandwidth of the receiver. It should be more than ±6 KC (but less than ±9 KC).

SERVICE CHECK

If the Modulation Acceptance Bandwidth test does not indicate the proper width, check the following:

1. Make gain measurements as shown on the Receiver Troubleshooting Procedure.
2. Voltage reading of Limiter (Q4) should read 0.4 volts RMS with a one-microvolt input signal on Test Set Meter or 0.9 volts with voltmeter. (Measure at J442-2).

STEP 1 - QUICK CHECKS

SYMPTOM	PROCEDURE
NO SUPPLY VOLTAGE	Check power connections and continuity of supply leads, and check fuse in power supply. If fuse is blown, check receiver for short circuits.
NO REGULATED 10 VOLTS	Check the 12-volt supply. Then check regulator circuit (See Troubleshooting Procedure for Power Supply).
LOW 2ND LIM READING	Check supply voltages and then check oscillator reading at J442-4 as shown in STEP 2. Make SIMPLIFIED VTVM GAIN CHECKS from 2nd Mixer through 2nd Limiter stages as shown in STEP 2.
LOW OSCILLATOR READING	Check alignment of Oscillator (Refer to Front End Alignment Procedure). Check voltage and resistance reading of 1st Oscillator/Multiplier Q1/Q2. Check crystal Y1.
LOW RECEIVER SENSITIVITY	Check Front End Alignment (Refer to Receiver Alignment Procedure). Check antenna connections, cable and relay. Check voltage and resistance readings of RF Amp and 1st and 2nd Mixers. Make SIMPLIFIED GAIN CHECKS (STEP 2).
LOW AUDIO	Check Audio PA (Q341) output current at J442-1. If reading is low-- a. Check BIAS ADJ for 0.65 VDC at J442-1 and -8 (STEP 2). b. Check Q341. Check unsquelched voltage readings in Audio section (Refer to Receiver Schematic Diagram). Check voltage and resistance readings on Channel Guard receiver.
IMPROPER SQUELCH OPERATION	Check voltage and resistance readings of Squelch circuit (Refer to Receiver Schematic Diagram).
DISCRIMINATOR IDLING TOO FAR OFF ZERO	See if discriminator zero is on 455 KC.

STEP 3- VOLTAGE RATIO READINGS

EQUIPMENT REQUIRED:

1. RF VOLTMETER (SIMILIAR TO BOONTON MODEL 91-CA OR MILLIVAC TYPE MV-18 C.
2. SIGNAL ON RECEIVEE FREQUENCY (BELOW SATURATION). CORRECT FREQUENCY CAN BE DETERMINED BY ZEROING THE DISCRIMINATOR. USE 1,000 CYCLE SIGNAL WITH 2.3 KC DEVIATION FOR AUDIO STAGE.

PROCEDURE:

1. APPLY PROBE TO INPUT OF STAGE (FOR EXAMPLE, BASE OF RF AMP). PEAK RESONANT CIRCUIT OF STAGE BEING MEASURED AND TAKE VOLTAGE READING (E_1).
2. MOVE PROBE TO INPUT OF FOLLOWING STAGE (1ST MIXER*). REPEAK FIRST RESONANT CIRCUIT THEN PEAK CIRCUIT BEING MEASURED AND TAKE READING (E_2).
3. CONVERT READINGS BY MEANS OF THE FOLLOWING FORMULA.

$$\text{VOLTAGE RATIO} = \frac{E_2}{E_1}$$

4. CHECK RESULTS WITH TYPICAL VOLTAGE RATIOS SHOWN ON DIAGRAM.

* NOTE: ON 1ST MIXER, REMOVE CRYSTAL BEFORE MEASURING BASE VOLTAGE. REPLACE CRYSTAL TO MEASURE COLLECTOR VOLTAGE.
ON 2ND MIXER, INCREASE SIGNAL INPUT TO APPROX. 0.3 V TO OVERRIDE INJECTION VOLTAGE.

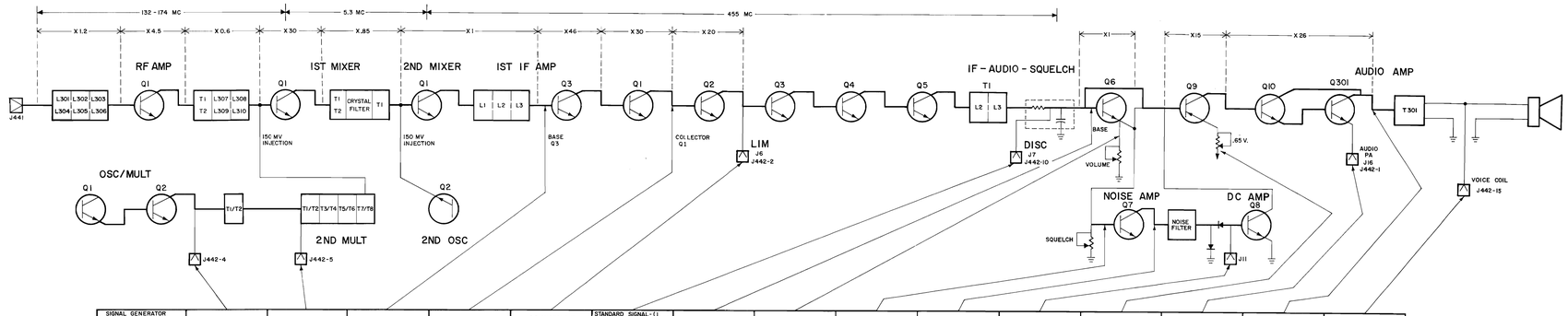
STEP 2- SIMPLIFIED VTVM GAIN CHECKS

EQUIPMENT REQUIRED:

1. VTVM-AC & DC
2. SIGNAL GENERATOR (MEASUREMENTS M560 EQUIV.)

PRELIMINARY STEPS:

1. SET VOLUME CONTROL FULLY CLOCKWISE.
2. SET SQUELCH CONTROL FULLY COUNTERCLOCKWISE.
3. RECEIVER SHOULD BE PROPERLY ALIGNED.
4. CONNECT SIGNAL GENERATOR TO ANTENNA JACK.
5. VTVM CONNECTS BETWEEN GROUND AND POINTS INDICATED BY ARROWS.

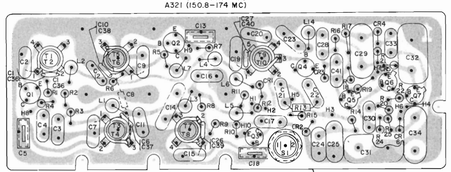


SIGNAL GENERATOR INPUT: MAINTAIN SETTING AT DISCRIMINATOR ZERO			UNMODULATED	UNMODULATED	0.5 MICROVOLT UNMODULATED	STANDARD SIGNAL (1 MILLIVOLT AT RCVR FREQ. MODULATED BY 1KC WITH 3.3KC DEVIATION)	STANDARD SIGNAL	STANDARD SIGNAL	STANDARD SIGNAL	STANDARD SIGNAL	NO SIGNAL	NO SIGNAL	NO SIGNAL	STANDARD SIGNAL	STANDARD SIGNAL
PROCEDURE			INCREASE SIGNAL GENERATOR OUTPUT FROM ZERO UNTIL VTVM READING DECREASES BY 5% DC	INCREASE SIGNAL GENERATOR OUTPUT FROM ZERO UNTIL VTVM READING DECREASES TO MINIMUM DC								VOLUME CONTROL IN FULL COUNTER-CLOCKWISE POSITION			ADJUST VOLUME CONTROL FOR RATED 2 WATT OUTPUT ACROSS 3.2 OHM LOAD
READING	1.0 VDC	0.4 VDC	GENERATOR OUTPUT SHOULD BE APPROX. 150 MICROVOLTS	GENERATOR OUTPUT SHOULD BE APPROX. 30 MICROVOLTS	2.5 VDC	0.1 VAC	0.5 VAC	0.5 VAC	0.07 VAC	2.5 VAC	2.0 VDC	ADJUST FOR 0.65 VDC WITH VTVM ON J442-1 AND J442-8	0.65 VDC	8.5 VAC	2.53 VAC

RC-1218

NOISE BLANKER

A320 (132-150.8 MC)
A321 (150.8-174 MC)

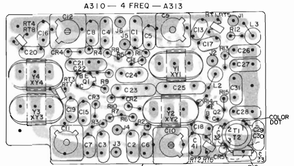


TRANSISTOR	EMITTER		BASE		COLLECTOR	
A320/321	—	+	—	+	—	+
Q1	200Ω	360Ω	1.6K	360Ω	360Ω	500Ω
Q2	100Ω	360Ω	1.5K	650	360Ω	360Ω
Q3	200Ω	360Ω	1.6K	360Ω	360Ω	500Ω
Q4	100Ω	100Ω	11K	2.6K	5K	6K
Q5	1K	1K	3.3K	75K	3.3K	3.3K
Q6	0	0	33Ω	16.5K	330Ω	600Ω
Q7	94Ω	260Ω	330Ω	600Ω	370Ω	700Ω

(198D204405, Sh. 1, Rev. 1)
(198D204405, Sh. 2, Rev. 1)

1ST OSCILLATOR/MULTIPLIER

132-150.8MC 150.8-174MC
A308 — 1 FREQ — A311
A309 — 2 FREQ — A312
A310 — 4 FREQ — A313



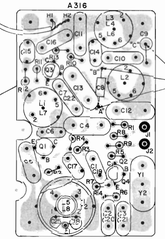
(198D204412, Sh. 1, Rev. 0)
(198D204412, Sh. 2, Rev. 0)

P2 TO J4 ON IF-AUDIO & SQUELCH BOARD

P1 TO J2 ON IF-AUDIO & SQUELCH BOARD

2ND MIXER

A316

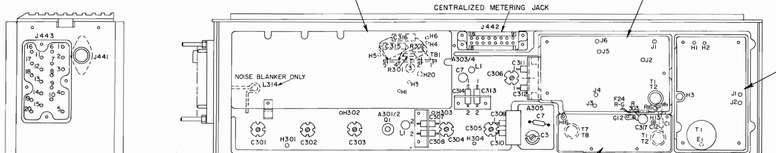


RESISTOR LOADING POINTS

(198D204436, Sh. 1, Rev. 1)
(198D204436, Sh. 2, Rev. 1)

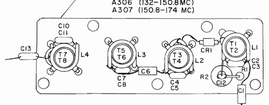
TOP VIEW

CENTRALIZED METERING JACK



2ND MULTIPLIER

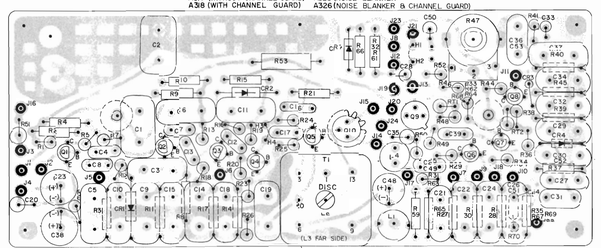
A306 (132-150.8MC)
A307 (150.8-174 MC)



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

IF-AUDIO & SQUELCH BOARD

A317 (WITHOUT CHANNEL GUARD)
A318 (WITH CHANNEL GUARD)
A325 (NOISE BLANKER)
A326 (NOISE BLANKER & CHANNEL GUARD)



(L3 FAR SIDE)

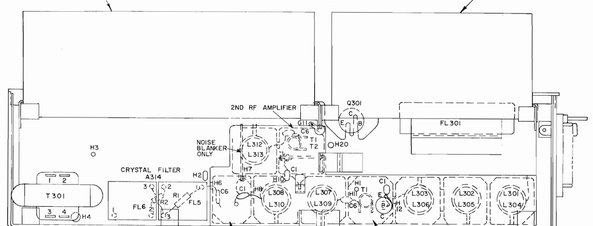
(198D303451, Sh. 1, Rev. 3)
(198D303451, Sh. 2, Rev. 3)

TRANSISTOR	EMITTER		BASE		COLLECTOR	
	—	+	—	+	—	+
A308/313-Q1	1K	1K	6.5K	2.8K	100Ω	100Ω
A308/313-Q2	73Ω	152Ω	1K	160Ω	100Ω	100Ω
A320-Q1	2.7K	2.7K	7.5K	3.8K	1.6K	1.6K
A301/302-Q1	290Ω	270Ω	290Ω	290Ω	100Ω	100Ω
A316-Q1	3.8K	5.3K	8.5K	2.9K	200Ω	200Ω
A316-Q2	2.7K	6.8K	8.5K	2.7K	200Ω	200Ω
A317-Q3	2.2K	2.3K	2.3K	2.2K	2.7K	3.2K
A317-Q1	2.1K	2K	13.5K	4.1K	4.1K	5.2K
A317-Q2	2.1K	2K	13.5K	4.1K	4.1K	5.2K
A317-Q3	2.1K	2K	13.5K	4.1K	4.1K	5.2K
A317-Q4	2.1K	2K	13.5K	4.1K	4.1K	5.2K
A317-Q5	1.0K	1.0K	13.5K	2.8K	350Ω	350Ω
A317-Q6	★3.2K	★0 MΩ	36.0K	2.5K	0	0
A317-Q7	1.7K	1.7K	11.0K	4.0K	7.0K	16K
A317-Q8	180Ω	180Ω	100K	2.8K	11.0K	19K
A317-Q9	2.2K	2.2K	4.1K	95K	2.3K	2.3K
A317-Q10	40Ω	35Ω	2.3K	2.3K	40Ω	35Ω
A301-Q201	1Ω	1Ω	40Ω	35Ω	40Ω	35Ω

★READINGS MAY VARY DUE TO DIFFERENCES IN TRANSISTORS.

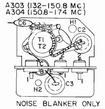
(198B620737, Rev. 3)

BOTTOM VIEW



2ND RF AMPLIFIER

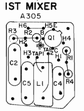
A303 (132-150.8 MC)
A304 (150.8-174 MC)



NOISE BLANKER ONLY

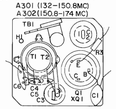
IST MIXER

A305



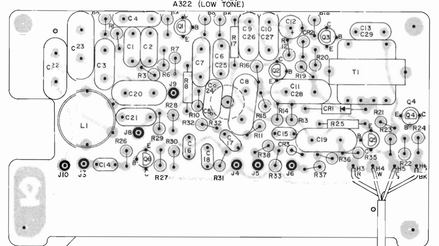
IST RF AMPLIFIER

A301 (132-150.8MC)
A302 (150.8-174 MC)



CHANNEL GUARD

A319 (HI TONE)
A322 (LOW TONE)



(198D204553, Sh. 1, Rev. 2)
(198D204553, Sh. 2, Rev. 2)

TO DECODER REED FL301 XFL1

TRANSISTOR	EMITTER		BASE		COLLECTOR	
A319/322	—	+	—	+	—	+
Q1	56Ω	56Ω	8.3K	145Ω	6.5K	8.3K
Q2	270Ω	270Ω	8K	500Ω	5K	5.5K
Q3	1K	1K	75K	3K	1K	1K
Q4	0	0	14K	45Ω	1K	1K
Q5	0	0	14K	45Ω	1K	1K
Q6	20Ω	20Ω	4.5K	85Ω	2K	2K

RESISTANCE READINGS

ALL READINGS ARE TYPICAL READINGS MEASURED WITH A 20,000 OHM-PER-VOLT METER, AND WITH CONTROL CABLE DISCONNECTED (OR IN STATIONS, PLUG J443 DISCONNECTED). READINGS ARE MADE WITH A SHORTING JUMPER CONNECTED FROM C311-1 (+12V) TO C112-1 (-12), AND ARE MEASURED FROM TRANSISTOR PINS TO C311-1, + OR — SIGNS SHOW METER LEAD TO C311-1.

CAUTION

ALWAYS REMOVE THE SHORTING JUMPER AFTER MAKING RESISTANCE READINGS. APPLYING POWER WITH THE SHORTING JUMPER CONNECTED MAY DAMAGE THE UNIT

FOR READINGS OF:	USE SCALE:
1-100Ω	X 1
100-1K Ω	X 10
1K-50K Ω	X 1,000
50K Ω	X 100,000

OUTLINE DIAGRAM

13 — 174 MC, MASTR RECEIVER
MODELS 4ER41A10-45

ALL VOLTAGE READINGS ARE TYPICAL READINGS TAKEN WITH A 20,000 OHM-PER-VOLT VOLTMETER AND MEASURED TO SYSTEM NEGATIVE.
S-CRITICAL SQUELCH
US-UNSQUELCHED

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.

(19B620710, Rev. 12)

SCHEMATIC DIAGRAM

132 — 174 MC RECEIVER
MODELS 4ER41A22-27
(WITH NOISE BLANKER)

Issue 1

PARTS LIST

LBI-3584

132-174 MC RECEIVER WITH NOISE BLANKER
MODELS 4ER41A22 - 4ER41A27
(PL-19E500810 G13-18)
REV C

SYMBOL	G-E PART NO.	DESCRIPTION
		- - - - - - - - - SUBASSEMBLIES - - - - - - - - -
A301 and A302		RF AMPLIFIER ASSEMBLY A301 PL-19C303414-G1 (4ER41A22, 24, 26) A302 PL-19C303414-G2 (4ER41A23, 25, 27)
		- - - - - - - - - - CAPACITORS - - - - - - - - -
C1	7489162-P127	Silver mica, dipped phen: radial leads, 100 pf ±10%, 500 VDCW; sim to Electro Motive Type DM-15.
C2 and C3	5493392-P107	Ceramic, stand-off: .001 µf +100% -0%, 500 VDCW; sim to Allen-Bradley Type SS5A.
		- - - - - - DIODES AND RECTIFIERS - - - - -
CR1	4038642-P1	Germanium.
		- - - - - - - - - - TRANSISTORS - - - - - - -
Q1	19A115342-P1	Silicon, NPN.
		- - - - - - - - - - RESISTORS - - - - - - - -
R1	3R152-P333J	Fixed composition: 33,000 ohms ±5%, 1/4 w.
R2	3R152-P153J	Fixed composition: 15,000 ohms ±5%, 1/4 w.
R3	3R152-P471J	Fixed composition: 470 ohms ±5%, 1/4 w.
R4	3R152-P101K	Fixed composition: 100 ohms ±10%, 1/4 w.
		- - - - - - - - - - TRANSFORMERS - - - - - -
T1 and T2		COIL ASSEMBLY T1 PL-19A121076-G1 (4ER41A22, 24, 26) T2 PL-19A121076-G2 (4ER41A23, 25, 27)
		- - - - - - - - - - CAPACITORS - - - - - - -
C4	5496218-P244	Ceramic disc: temp-comp, radial leads, 15 pf ±5%, 500 VDCW, temp coef -80 PPM. (Used in Models 4ER41A22, 24 and 26).
C5	5496218-P241	Ceramic disc: temp-comp, radial leads, 10 pf ±0.25 pf, 500 VDCW, temp coef -80 PPM. (Used in Models 4ER41A23, 25 and 27).
C6	5496218-P239	Ceramic disc: temp-comp, radial leads, 8 pf ±0.25 pf, 500 VDCW, temp coef -80 PPM.
		- - - - - - - - - - INDUCTORS - - - - - - -
L1	PL-19A121078-G1	Coil.
		- - - - - - - - - MISCELLANEOUS - - - - - - -
	5491798-P5	Tuning slug.
		- - - - - - - - - TERMINAL BOARDS - - - - - -
TB1	7487424-P15	Miniature, phen: 2 terminals.
		- - - - - - - - - - - SOCKETS - - - - - - - -
XQ1	5490277-P5	Transistor, phen: 3 contacts rated at 1 amp at 400 VRMS; sim to Alcon 1213LL2.
		- - - - - - - - - SUBASSEMBLIES(Cont'd) - - - -
A303 and A304		RF AMPLIFIER ASSEMBLY A303 PL-19C303412-G1 (4ER41A22, 24, 26) A304 PL-19C303412-G2 (4ER41A23, 25, 27)
		- - - - - - - - - - CAPACITORS - - - - - - - -
C1	7489162-P127	Silver mica, dipped phen: radial leads, 100 pf ±10%, 500 VDCW; sim to Electro Motive Type DM-15.
C2 and C3	5493392-P107	Ceramic, stand-off: .001 µf +100% -0%, 500 VDCW; sim to Allen-Bradley Type SS5A.
C7	19C301246-P1	Variable, ceramic dielectric: temp-comp, approx 2-8 pf, temp coef 0 PPM, 350 VDCW; sim to Erie Style 538.
		- - - - - - DIODES AND RECTIFIERS - - - - -
CR1	4038642-P1	Germanium.
		- - - - - - - - - - TRANSISTORS - - - - - - -
Q1	19A115342-P1	Silicon, NPN.
		- - - - - - - - - - RESISTORS - - - - - - - -
R1	3R152-P622J	Fixed composition: 6200 ohms ±5%, 1/4 w.
R2	3R152-P222J	Fixed composition: 2200 ohms ±5%, 1/4 w.
R3	3R152-P470K	Fixed composition: 47 ohms ±10%, 1/4 w.
R4	3R152-P101K	Fixed composition: 100 ohms ±10%, 1/4 w.
R5	3R152-P200J	Fixed composition: 20 ohms ±5%, 1/4 w.
		- - - - - - - - - - TRANSFORMERS - - - - - -
T1 and T2		COIL ASSEMBLY T1 PL-19A121087-G1 (4ER41A22, 24, 26) T2 PL-19A121087-G2 (4ER41A23, 25, 27)
		- - - - - - - - - - CAPACITORS - - - - - - -
C4	5496218-P244	Ceramic disc: temp-comp, radial leads, 15 pf ±5%, 500 VDCW, temp coef -80 PPM. (Used in Models 4ER41A22, 24 and 26).
C5	5496218-P241	Ceramic disc: temp-comp, radial leads, 10 pf ±0.25 pf, 500 VDCW, temp coef -80 PPM. (Used in Models 4ER41A23, 25 and 27).
C6	5496218-P38	Ceramic disc: temp-comp, radial leads, 7 pf ±0.25 pf, 500 VDCW, temp coef 0 PPM.
		- - - - - - - - - - INDUCTORS - - - - - - -
L1	19A121086-P1	Coil.
		- - - - - - - - - MISCELLANEOUS - - - - - - -
	5491798-P5	Tuning slug.
A305		FIRST MIXER ASSEMBLY PL-19B204430-G1
		- - - - - - - - - - CAPACITORS - - - - - - - -
C1 and C2	5494481-P14	Ceramic disc: radial leads, .002 µf ±10%, 500 VDCW; sim to RMC Type JF Discap.
C3	5491271-P106	Variable, air dielectric, subminiature: approx 1.98-12.4 pf, 750 v peak; sim to EF Johnson 189-6-5.
C4	5496218-P247	Ceramic disc: temp-comp, radial leads, 22 pf ±5%, 500 VDCW, temp coef -80 PPM.
C5	5494481-P14	Ceramic disc: radial leads, .002 µf ±10%, 500 VDCW; sim to RMC Type JF Discap.
		- - - - - - - - - SUBASSEMBLIES(Cont'd) - - - -
		- - - - - - - - - - CAPACITORS(Cont'd) - - - -
C6	5494481-P12	Ceramic disc: radial leads, .001 µf ±10%, 500 VDCW; sim to RMC Type JF Discap.
C7	5496219-P247	Ceramic disc: temp-comp, radial leads, 22 pf ±5%, 500 VDCW, temp coef -80 PPM.
		- - - - - - - - - - TERMINALS - - - - - - - -
E1	4038104-P1	Lug: solder dipped brass.
		- - - - - - - - - - INDUCTORS - - - - - - - -
L1	PL-19A121082-G1	Toroidal coil.
		- - - - - - - - - - TRANSISTORS - - - - - - -
Q1	19A115342-P1	Silicon, NPN.
		- - - - - - - - - - RESISTORS - - - - - - - -
R2	3R152-P822J	Fixed composition: 8200 ohms ±5%, 1/4 w.
R3	3R152-P202J	Fixed composition: 2000 ohms ±5%, 1/4 w.
R4	3R152-P102J	Fixed composition: 1000 ohms ±5%, 1/4 w.
R10	3R152-P183K	Fixed composition: 18,000 ohms ±10%, 1/4 w.
A306 and A307		MULTIPLIER ASSEMBLY A306 PL-19B204423-G1 (4ER41A22, 24, 26) A307 PL-19B204423-G2 (4ER41A23, 25, 27)
		- - - - - - - - - - CAPACITORS - - - - - - -
C1	5491601-P120	Tubular, molded: axial leads, 1 pf ±5%, 500 VDCW; sim to Quality Components Type MC.
C6	5491601-P107	Tubular, molded: axial leads, 0.27 pf ±5%, 500 VDCW; sim to Quality Components Type MC.
C12	5493392-P7	Ceramic, feed-thru: .001 µf +100% -0%, 500 VDCW; sim to Allen-Bradley Type FA5C.
C13	5496218-P34	Ceramic disc: temp-comp, radial leads, 3 pf ±0.25 pf, 500 VDCW, temp coef 0 PPM.
		- - - - - - DIODES AND RECTIFIERS - - - - -
CR1	19A115443-P1	Silicon.
		- - - - - - - - - - RESISTORS - - - - - - - - -
R1	3R152-P471J	Fixed composition: 470 ohms ±5%, 1/4 w.
R2	3R152-P100J	Fixed composition: 10 ohms ±5%, 1/4 w.
		- - - - - - - - - - TRANSFORMERS - - - - - - -
T1 and T2		COIL ASSEMBLY T1 PL-19A121109-G1 (4ER41A22, 24, 26) T2 PL-19A121109-G2 (4ER41A23, 25, 27)
		- - - - - - - - - - CAPACITORS - - - - - - - -
C2	5496218-P255	Ceramic disc: temp-comp, radial leads, 47 pf ±5%, 500 VDCW, temp coef -80 PPM. (Used in Models 4ER41A22, 24 and 26).
C3	5496218-P252	Ceramic disc: temp-comp, radial leads, 36 pf ±5%, 500 VDCW, temp coef -80 PPM. (Used in Models 4ER41A23, 25 and 27).
		- - - - - - - - - - INDUCTORS - - - - - - - -
L1	19A121108-P1	Coil.
		- - - - - - - - MISCELLANEOUS - - - - - - - -
	5491798-P5	Tuning slug.
		- - - - - - - - - SUBASSEMBLIES(Cont'd) - - - -
		- - - - - - - - - - TRANSFORMERS(Cont'd) - - -
T3 and T4		COIL ASSEMBLY T3 PL-19A121095-G1 (4ER41A22, 24, 26) T4 PL-19A121095-G2 (4ER41A23, 25, 27)
		- - - - - - - - - - CAPACITORS - - - - - - - -
C4	5496218-P241	Ceramic disc: temp-comp, radial leads, 10 pf ±0.25 pf, 500 VDCW, temp coef -80 PPM. (Used in Models 4ER41A22, 24 and 26).
C5	5496218-P238	Ceramic disc: temp-comp, radial leads, 7 pf ±0.25 pf, 500 VDCW, temp coef -80 PPM. (Used in Models 4ER41A23, 25 and 27).
		- - - - - - - - - INDUCTORS - - - - - - - -
L2	19A121094-P1	Coil.
		- - - - - - - - MISCELLANEOUS - - - - - - - -
	5491798-P5	Tuning slug.
T5 and T6		COIL ASSEMBLY T5 PL-19A121097-G1 (4ER41A22, 24, 26) T6 PL-19A121097-G2 (4ER41A23, 25, 27)
		- - - - - - - - - - CAPACITORS - - - - - - - -
C7	5496218-P241	Ceramic disc: temp-comp, radial leads, 10 pf ±0.25 pf, 500 VDCW, temp coef -80 PPM. (Used in Models 4ER41A22, 24 and 26).
C8	5496218-P238	Ceramic disc: temp-comp, radial leads, 7 pf ±0.25 pf, 500 VDCW, temp coef -80 PPM. (Used in Models 4ER41A23, 25 and 27).
		- - - - - - - - - - INDUCTORS - - - - - - - -
L3	19A121096-P1	Coil.
		- - - - - - - - MISCELLANEOUS - - - - - - -
	5491798-P5	Tuning slug.
T7 and T8		COIL ASSEMBLY T7 PL-19A121111-G1 (4ER41A22, 24, 26) T8 PL-19A121111-G2 (4ER41A23, 25, 27)
		- - - - - - - - - - CAPACITORS - - - - - - - -
C10	5496218-P241	Ceramic disc: temp-comp, radial leads, 10 pf ±0.25 pf, 500 VDCW, temp coef -80 PPM. (Used in Models 4ER41A22, 24 and 26).
C11	5496218-P238	Ceramic disc: temp-comp, radial leads, 7 pf ±0.25 pf, 500 VDCW, temp coef -80 PPM. (Used in Models 4ER41A23, 25 and 27).
		- - - - - - - - - - INDUCTORS - - - - - - - -
L4	19A121110-P1	Coil.
		- - - - - - - - MISCELLANEOUS - - - - - - -
	5491798-P5	Tuning slug.
		- - - - - - - - - SUBASSEMBLIES(Cont'd) - - - -
A308 thru A313		FIRST OSCILLATOR ASSEMBLY A308 PL-19B204419-G1 (4ER41A22) A309 PL-19B204419-G2 (4ER41A24) A310 PL-19B204419-G3 (4ER41A26) A311 PL-19B204419-G4 (4ER41A23) A312 PL-19B204419-G5 (4ER41A25) A313 PL-19B204419-G6 (4ER41A27)
		- - - - - - - - - - CAPACITORS - - - - - - - -
C1	5494481-P112	Ceramic disc: radial leads, .001 µf ±10%, 500 VDCW; sim to RMC Type JF Discap.
C2	5494481-P112	Ceramic disc: radial leads, .001 µf ±10%, 500 VDCW; sim to RMC Type JF Discap. (Used in Models 4ER41A24-27).
C3 and C4	5494481-P112	Ceramic disc: radial leads, .001 µf ±10%, 500 VDCW; sim to RMC Type JF Discap. (Used in Models 4ER41A26 and 27).
C5	5496219-P751	Ceramic disc: temp-comp, radial leads, 33 pf ±5%, 500 VDCW, temp coef -750 PPM.
C6	5496219-P751	Ceramic disc: temp-comp, radial leads, 33 pf ±5%, 500 VDCW, temp coef -750 PPM. (Used in Models 4ER41A24-27).
C7 and C8	5496219-P751	Ceramic disc: temp-comp, radial leads, 33 pf ±5%, 500 VDCW, temp coef -750 PPM. (Used in Models 4ER41A26 and 27).
C9	5491271-P106	Variable, air dielectric, subminiature: approx 1.98-12.4 pf, 750 v peak; sim to EF Johnson 189-6-5.
C10	5491271-P106	Variable, air dielectric, subminiature: approx 1.98-12.4 pf, 750 v peak; sim to EF Johnson 189-6-5. (Used in Models 4ER41A24-27).
C11 and C12	5491271-P106	Variable, air dielectric, subminiature: approx 1.98-12.4 pf, 750 v peak; sim to EF Johnson 189-6-5. (Used in Models 4ER41A26 and 27).
C13	5496219-P40	Ceramic disc: temp-comp, radial leads, 9 pf ±0.25 pf, 500 VDCW, temp coef 0 PPM.
C14	5496219-P40	Ceramic disc: temp-comp, radial leads, 9 pf ±0.25 pf, 500 VDCW, temp coef 0 PPM. (Used in Models 4ER41A24-27).
C15 and C16	5496219-P40	Ceramic disc: temp-comp, radial leads, 9 pf ±0.25 pf, 500 VDCW, temp coef 0 PPM. (Used in Models 4ER41A26 and 27).
C17	19C300685-P93	Ceramic disc: temp-comp, radial leads, 5 pf ±0.1 pf, 500 VDCW, temp coef 0 PPM.
C18	19C300685-P93	Ceramic disc: temp-comp, radial leads, 5 pf ±0.1 pf, 500 VDCW, temp coef 0 PPM. (Used in Models 4ER41A24-27).
C19 and C20	19C300685-P93	Ceramic disc: temp-comp, radial leads, 5 pf ±0.1 pf, 500 VDCW, temp coef 0 PPM. (Used in Models 4ER41A26 and 27).
C21	5496219-P771	Ceramic disc: temp-comp, radial leads, 220 pf ±5%, 500 VDCW, temp coef -750 PPM.
C23	5494481-P114	Ceramic disc: radial leads, .002 µf ±10%, 500 VDCW; sim to RMC Type JF Discap.
C24	5490008-P31	Silver mica, dipped phen: radial leads, 150 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C25	5496219-P467	Ceramic disc: temp-comp, radial leads, 150 pf ±5%, 500 VDCW, temp coef -220 PPM.
C26 thru C28	5494481-P112	Ceramic disc: radial leads, .001 µf ±10%, 500 VDCW; sim to RMC Type JF Discap.
C31	5494481-P112	Ceramic disc: radial leads, .001 µf ±10%, 500 VDCW; sim to RMC Type JF Discap.
		- - - - - - DIODES AND RECTIFIERS - - - - - -
CR1	19A115348-P1	Silicon.
CR2	19A115348-P1	Silicon. (Used in Models 4ER41A24-27).
CR3 and CR4	19A115348-P1	Silicon. (Used in Models 4ER41A26 and 27).
		- - - - - - - - - SUBASSEMBLIES(Cont'd) - - - -
		- - - - - - JACKS AND RECEPTACLES - - - - - -
J1 and J2	4033513-P4	Contact, electrical: sim to Bead Chain L93-3.
J3 and J4	4033513-P4	Contact, electrical: sim to Bead Chain L93-3. (Used in Models 4ER41A24-27).
J5	4033513-P4	Contact, electrical: sim to Bead Chain L93-3.
J6	4033513-P4	Contact, electrical: sim to Bead Chain L93-3. (Used in Models 4ER41A24-27).
		- - - - - - - - - - INDUCTORS - - - - - - - - -
L2 and L3	7488079-P16	Choke, RF: 10 µh ±10% ind at 640 ma, 0.6 ohm DC res; sim to Jeffers 4421-7.
		- - - - - - - - - - TRANSISTORS - - - - - - - -
Q1 and Q2	19A115330-P1	Silicon, NPN.
		- - - - - - - - - - RESISTORS - - - - - - - - -
R1	3R152-P562J	Fixed composition: 5600 ohms ±5%, 1/4 w.
R2	3R152-P562J	Fixed composition: 5600 ohms ±5%, 1/4 w. (Used in Models 4ER41A24-27).
R3 and R4	3R152-P562J	Fixed composition: 5600 ohms ±5%, 1/4 w. (Used in Models 4ER41A26 and 27).
R5	3R152-P104K	Fixed composition: 0.1 megohm ±10%, 1/4 w.
R6	3R152-P104K	Fixed composition: 0.1 megohm ±10%, 1/4 w. (Used in Models 4ER41A24-27).
R7 and R8	3R152-P104K	Fixed composition: 0.1 megohm ±10%, 1/4 w. (Used in Models 4ER41A26 and 27).
R9	3R152-P153J	Fixed composition: 15,000 ohms ±5%, 1/4 w.
R10	3R152-P101K	Fixed composition: 100 ohms ±10%, 1/4 w.
R11 and R12	3R152-P102J	Fixed composition: 1000 ohms ±5%, 1/4 w.
R13	3R152-P151J	Fixed composition: 150 ohms ±5%, 1/4 w.
R14	3R152-P103J	Fixed composition: 10,000 ohms ±5%, 1/4 w.
R15	3R152-P101K	Fixed composition: 100 ohms ±10%, 1/4 w.
		- - - - - - - - - - THERMISTORS - - - - - - -
RT1	19B209284-P5	Disc: 43 ohms res nominal at 25°C, color code green.
RT2	19B209284-P5	Disc: 43 ohms res nominal at 25°C, color code green. (Used in Models 4ER41A24-27).
RT3 and RT4	19B209284-P5	Disc: 43 ohms res nominal at 25°C, color code green. (Used in Models 4ER41A26 and 27).
		- - - - - - - - - - TRANSFORMERS - - - - - - -
T1 and T2		COIL ASSEMBLY T1 PL-19B204421-G1 (4ER41A22, 24, 26) T2 PL-19B204421-G2 (4ER41A23, 25, 27)
		- - - - - - - - - - CAPACITORS - - - - - - - -
C29	5496218-P253	Ceramic disc: temp-comp, radial leads, 39 pf ±5%, 500 VDCW, temp coef -80 PPM. (Used in Models 4ER41A22, 24 and 26).
C30	5496218-P250	Ceramic disc: temp-comp, radial leads, 30 pf ±5%, 500 VDCW, temp coef -80 PPM. (Used in Models 4ER41A23, 25 and 27).
C32	5496218-P34	Ceramic disc: temp-comp, radial leads, 3 pf ±0.25 pf, 500 VDCW, temp coef 0 PPM.
		- - - - - - - - - SUBASSEMBLIES(Cont'd) - - - -
		- - - - - - - - - - CAPACITORS(Cont'd) - - - -
C33	5494481-P12	Ceramic disc: radial leads, .001 µf ±10%, 500 VDCW; sim to RMC Type JF Discap.
		- - - - - - DIODES AND RECTIFIERS - - - - -
CR5	5491705-P2	Silicon.
		- - - - - - - - - - INDUCTORS - - - - - - - - -
L1	19A121093-P1	Coil.
		- - - - - - - - - - RESISTORS - - - - - - - -
R16	3R152-P103K	Fixed composition: 10,000 ohms ±10%, 1/4 w.
		- - - - - - - - - MISCELLANEOUS - - - - - - - -
	5491798-P5	Tuning slug.
		- - - - - - - - - - - SOCKETS - - - - - - - -
XY1		Refer to Mechanical Parts (RC-1167).
XY2		Refer to Mechanical Parts (RC-1167). (Used in Models 4ER41A24-27).
XY3 and XY4		Refer to Mechanical Parts (RC-1167). (Used in Models 4ER41A26 and 27).
		- - - - - - - - - - - CRYSTALS - - - - - - - -
		When reordering give G-E Part No. and specify exact freq needed. Crystal freq = (OF -5.26 MC) ÷ 9.
Y1	19B206176-P4	Quartz: freq range 14082.222 to 16171.111 KC, temp range -30°C to +85°C. (Used in Models 4ER41A22, 24 and 26).
Y1	19B206176-P5	Quartz: freq range 16171.111 to 18748.888 KC, temp range -30°C to +85°C. (Used in Models 4ER41A23, 25 and 27).
Y2	19B206176-P4	Quartz: freq range 14082.222 to 16171.111 KC, temp range -30°C to +85°C. (Used in Models 4ER41A24 and 26).
Y2	19B206176-P5	Quartz: freq range 16171.111 to 18748.888 KC, temp range -30°C to +85°C. (Used in Models 4ER41A25 and 27).
Y3 and Y4	19B206176-P4	Quartz: freq range 14082.222 to 16171.111 KC, temp range -30°C to +85°C. (Used in Model 4ER41A26).
Y3 and Y4	19B206176-P5	Quartz: freq range 16171.111 to 18748.888 KC, temp range -30°C to +85°C. (Used in Model 4ER41A27).
A314*		CRYSTAL FILTER ASSEMBLY PL-19B204616-G3 Used in units of Rev C. Units of Rev B or earlier used Crystal Filter Assembly, PL-19B204616-G1 (see below).
		- - - - - - - - - - FILTERS - - - - - - - - -
FL5 and FL6	PL-19C304094-G4	Bandpass filter.
		- - - - - - - - - - RESISTORS - - - - - - - - -
R1	3R152-P432K	Fixed composition: 4300 ohms ±10%, 1/4 w.
R2	3R152-P102K	Fixed composition: 10000 ohms ±10%, 1/4 w.
		- - - - - - - - - SUBASSEMBLIES(Cont'd) - - - -
A314*		CRYSTAL FILTER ASSEMBLY PL-19B204616-G1 In Models of Rev B or earlier.
		- - - - - - - - - - - FILTERS - - - - - - - - -
FL1 and FL2	PL-19C304094-G1	Bandpass filter.
		- - - - - - - - - - RESISTORS - - - - - - - - -
R1	3R152-P432K	Fixed composition: 4300 ohms ±10%, 1/4 w.
R2	3R152-P102K	Fixed composition: 10000 ohms ±10%, 1/4 w.
A316		SECOND MIXER ASSEMBLY PL-19B204438-G1
		- - - - - - - - - - CAPACITORS - - - - - - - -
C1	5490008-P9	Silver mica, dipped phen: radial leads, 18 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C2 and C3	5490008-P35	Silver mica, dipped phen: radial leads, 220 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C4	5491189-P106	Mylar® dielectric, dipped epoxy: radial leads, 0.1 µf ±20%, 50 VDCW; sim to Good-All Type 601PE.
C5	5491189-P103	Mylar® dielectric, dipped epoxy: radial leads, .033 µf ±20%, 50 VDCW; sim to Good-All Type 601PE.
C6	5496219-P47	Ceramic disc: temp-comp, radial leads, 22 pf ±5%, 500 VDCW, temp coef 0 PPM.
C7	5496219-P666	Ceramic disc: temp-comp, radial leads, 130 pf ±5%, 500 VDCW, temp coef -470 PPM.
C8 and C9	5491601-P28	Tubular, molded: axial leads, 2.7 pf ±10%, 500 VDCW; sim to Quality Components Type MC.
C10 and C11	5496219-P666	Ceramic disc: temp-comp, radial leads, 130 pf ±5%, 500 VDCW, temp coef -470 PPM.
C12 and C13	5491189-P106	Mylar® dielectric, dipped epoxy: radial leads, 0.1 µf ±20%, 50 VDCW; sim to Good-All Type 601PE.
C14 and C15	5491189-P101	Mylar® dielectric, dipped epoxy: radial leads, .01 µf ±20%, 50 VDCW; sim to Good-All Type 601PE.
C16	5491189-P104	Mylar® dielectric, dipped epoxy: radial leads, .047 µf ±20%, 50 VDCW; sim to Good-All Type 601PE.
C17	5494481-P112	Ceramic disc: radial leads, .001 µf ±10%, 500 VDCW; sim to RMC Type JF Discap.
		- - - - - - - - - - TERMINALS - - - - - - - -
E1	4038104-P1	Lug: solder dipped brass.
		- - - - - - JACKS AND RECEPTACLES - - - - -
J1 and J2	4033513-P4	Contact, electrical: sim to Bead Chain L93-3.
		- - - - - - - - - - INDUCTORS - - - - - - - -
L1	PL-19C303464-G1	Coil. Includes:
	7160519-P2	Tuning slug.
		- - - - - - - - - SUBASSEMBLIES(Cont'd) - - - -
		- - - - - - - - - - INDUCTORS(Cont'd) - - - - -
L2	PL-19C303464-G2	Coil. Includes:
	7160519-P2	Tuning slug.
L3	PL-19C303464-G3	Coil. Includes:
	7160519-P2	Tuning slug.
L4		(Part of L3).
L5		(Part of T1).
		- - - - - - - - - - - PLUGS - - - - - - - - - -
P1	4029840-P2	Contact, electrical: solder coated brass; sim to Amp 42827-2.
P2	4029840-P1	Contact, electrical: solder coated brass; sim to Amp 41854.
		- - - - - - - - - - TRANSISTORS - - - - - - - -
Q1	19A115245-P1	Silicon, NPN.
Q2 and Q3	19A115123-P1	Silicon, NPN; sim to Type 2N2712.
		- - - - - - - - - - RESISTORS - - - - - - - - -
R1	3R152-P152K	Fixed composition: 1500 ohms ±10%, 1/4 w.
R2	3R152-P392K	Fixed composition: 3900 ohms ±10%, 1/4 w.
R3	3R152-P103K	Fixed composition: 10,000 ohms ±10%, 1/4 w.
R4	3R152-P333K	Fixed composition: 33,000 ohms ±10%, 1/4 w.
R5 and R6	3R152-P103K	Fixed composition: 10,000 ohms ±10%, 1/4 w.
R7	3R152-P512J	Fixed composition: 5100 ohms ±5%, 1/4 w.
R8 and R9	3R152-P201J	Fixed composition: 200 ohms ±5%, 1/4 w.
R10	3R152-P302J	Fixed composition: 3000 ohms ±5%, 1/4 w.
R11	3R152-P622J	Fixed composition: 6200 ohms ±5%, 1/4 w.
R12	3R152-P302J	Fixed composition: 3000 ohms ±5%, 1/4 w.
R13	3R152-P202J	Fixed composition: 2000 ohms ±5%, 1/4 w.
		- - - - - - - - - - TRANSFORMERS - - - - - - -
T1		COIL ASSEMBLY PL-19B204414-G1
		- - - - - - - - - - CAPACITORS - - - - - - - -
C18	5496218-P261	Ceramic disc: temp-comp, radial leads, 82 pf ±5%, 500 VDCW, temp coef -80 PPM.
		- - - - - - - - MISCELLANEOUS - - - - - - -
	5491798-P3	Tuning slug.
		- - - - - - - - - - - CRYSTALS - - - - - - - -
Y1*	19A110192-P3	Quartz: freq 4845 KCS ±100 cps at 25°C, temp range -30° to +75°C.
	19A110192-P1	In Models of Rev B or earlier: Quartz: freq 4805 KCS ±100 cps at 25°C, temp range -30° to +75°C.
		- - - - - - - - - SUBASSEMBLIES(Cont'd) - - - -
A320 and A321		NOISE BLANKER A320 PL-19C303408-G1 (4ER41A22, 24, 26) A321 PL-19C303408-G2 (4ER41A23, 25, 27)
		- - - - - - - - - - CAPACITORS - - - - - - - -
C3 and C4	5494481-P112	Ceramic disc: radial leads, .001 µf ±10%, 500 VDCW; sim to RMC Type JF Discap.
C5	5492056-P3	Uncased silver mica: 250 pf ±10%, 500 VDCW; sim to Underwood Type J-1-HF.
C8	5491601-P23	Tubular, molded: axial leads, 1.5 pf ±10%, 500 VDCW; sim to Quality Components Type MC.
C11 and C12	5494481-P112	Ceramic disc: radial leads, .001 µf ±10%, 500 VDCW; sim to RMC Type JF Discap.
C13	5492056-P3	Uncased silver mica: 250 pf ±10%, 500 VDCW; sim to Underwood Type J-1-HF.
C14	5496219-P21	Ceramic disc: temp-comp, radial leads, 100 pf ±10%, 500 VDCW, temp coef 0 PPM.
C16 and C17	5494481-P112	Ceramic disc: radial leads, .001 µf ±10%, 500 VDCW; sim to RMC Type JF Discap.
C18	5492056-P3	Uncased silver mica: 250 pf ±10%, 500 VDCW; sim to Underwood Type J-1-HF.
C20 thru C22	5494481-P112	Ceramic disc: radial leads, .001 µf ±10%, 500 VDCW; sim to RMC Type JF Discap.
C23	5496219-P17	Ceramic disc: temp-comp, radial leads, 47 pf ±10%, 500 VDCW, temp coef 0 PPM.
C24	5490008-P39	Silver mica, dipped phen: radial leads, 330 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C25	5491189-P104	Mylar® dielectric, dipped epoxy: radial leads, .047 µf ±20%, 50 VDCW; sim to Good-All Type 601PE.
C28	5494481-P112	Ceramic disc: radial leads, .001 µf ±10%, 500 VDCW; sim to RMC Type JF Discap.
C29	5491189-P108	Mylar® dielectric, dipped epoxy: radial leads, 0.22 µf ±20%, 50 VDCW; sim to Good-All Type 601PE.
C30	5494481-P112	Ceramic disc: radial leads, .001 µf ±10%, 500 VDCW; sim to RMC Type JF Discap.
C31 and C32	19A115028-P114	Mylar® dielectric, dipped phen: radial leads, 0.1 µf ±20%, 200 VDCW.
C33	5491189-P101	Mylar® dielectric, dipped epoxy: radial leads, .01 µf ±20%, 50 VDCW; sim to Good-All Type 601PE.
C34	4029003-P4	Silver mica, dipped phen: radial leads, 680 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-20.
C41	5490008-P39	Silver mica, dipped phen: radial leads, 330 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
		- - - - - - DIODES AND RECTIFIERS - - - - -
CR1	5491705-P2	Silicon.
CR2 thru CR4	7777146-P3	Germanium; sim to Type 1N90.
CR5	5491705-P2	Silicon.
CR6	7777146-P3	Germanium; sim to Type 1N90.
		- - - - - - - - - - INDUCTORS - - - - - - - -
L1 thru L7	7488079-P8	Choke, RF: 2.2 µh ±10%, 1 ohm DC res; sim to Jeffers 4411-12.
L14	7488079-P8	Choke, RF: 2.2 µh ±10%, 1 ohm DC res; sim to Jeffers 4411-12.
		- - - - - - - - - SUBASSEMBLIES(Cont'd) - - - -
		- - - - - - - - - - TRANSISTORS - - - - - - - -
Q1 thru Q4	19A115342-P1	Silicon, NPN.
Q5 thru Q7	19A115393-P1	Silicon, NPN.
		- - - - - - - - - - RESISTORS - - - - - - - - -
R1	3R152-P202K	Fixed composition: 2000 ohms ±10%, 1/4 w.
R2	3R152-P682K	Fixed composition: 6800 ohms ±10%, 1/4 w.
R3	3R152-P511K	Fixed composition: 510 ohms ±10%, 1/4 w.
R4	3R152-P391K	Fixed composition: 390 ohms ±10%, 1/4 w.
R5	3R152-P682K	Fixed composition: 6800 ohms ±10%, 1/4 w.
R6	3R152-P202K	Fixed composition: 2000 ohms ±10%, 1/4 w.
R7	3R152-P391K	Fixed composition: 390 ohms ±10%, 1/4 w.
R8	3R152-P682K	Fixed composition: 6800 ohms ±10%, 1/4 w.
R9	3R152-P202K	Fixed composition: 2000 ohms ±10%, 1/4 w.
R10	3R152-P391K	Fixed composition: 390 ohms ±10%, 1/4 w.
R11	3R152-P511K	Fixed composition: 510 ohms ±10%, 1/4 w.
R12	3R152-P123K	Fixed composition: 12,000 ohms ±10%, 1/4 w.
R13	3R152-P102K	Fixed composition: 1000 ohms ±10%, 1/4 w.
R14	3R152-P101K	Fixed composition: 100 ohms ±10%, 1/4 w.
R15	3R152-P562K	Fixed composition: 5600 ohms ±10%, 1/4 w.
R16	3R152-P822K	Fixed composition: 8200 ohms ±10%, 1/4 w.
R17	3R152-P203K	Fixed composition: 20,000 ohms ±10%, 1/4 w.
R18	3R152-P104K	Fixed composition: 0.1 megohm ±10%, 1/4 w.
R19	3R152-P102K	Fixed composition: 1000 ohms ±10%, 1/4 w.
R20	3R152-P332K	Fixed composition: 3300 ohms ±10%, 1/4 w.
R21	3R152-P102K	Fixed composition: 1000 ohms ±10%, 1/4 w.
R22	3R152-P681K	Fixed composition: 680 ohms ±10%, 1/4 w.
R24	3R152-P183K	Fixed composition: 18,000 ohms ±10%, 1/4 w.
R25	3R152-P471K	Fixed composition: 470 ohms ±10%, 1/4 w.
		- - - - - - - - - - SWITCHES - - - - - - - -
S1	7481654-P7	Pushbutton: single pole, normally closed, 1/10 amp at 115 VAC; sim to Grayhill 30-2.
		- - - - - - - - - TRANSFORMERS - - - - - - -
T1 and T2		COIL ASSEMBLY T1 PL-19B204424-G1 (4ER41A22, 24, 26) T2 PL-19B204424-G2 (4ER41A23, 25, 27)
		- - - - - - - - - CAPACITORS - - - - - - - -
C1	5496218-P50	Ceramic disc: temp-comp, radial leads, 30 pf ±5%, 500 VDCW, temp coef 0 PPM. (Used in Models 4ER41A22, 24 and 26).
C2	7489162-P39	Silver mica, dipped phen: radial leads, 330 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C36	5496218-P46	Ceramic disc: temp-comp, radial leads, 20 pf ±5%, 500 VDCW, temp coef 0 PPM. (Used in Models 4ER41A23, 25 and 27).
		- - - - - - - - - INDUCTORS - - - - - - - -
L8	PL-19A121756-G1	Coil.
		- - - - - - - - MISCELLANEOUS - - - - - - -
	5491798-P5	Tuning slug.

(CONT'D ON PAGE 15)

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.

(CONT'D FROM PAGE 14) (LBI-3584)

SYMBOL	G-E PART NO	DESCRIPTION
		- - - - - - - - SUBASSEMBLIES(Cont'd) - - - -
		- - - - - - - - - TRANSFORMERS(Cont'd) - - -
T3 and T4		COIL ASSEMBLY T3 PL-19B204425-G1 (4ER41A22, 24, 26) T4 PL-19B204425-G2 (4ER41A23, 25, 27)
		- - - - - - - - - CAPACITORS - - - - - - - -
C6	5496218-P48	Ceramic disc: temp-comp, radial leads, 24 pf ±5%, 500 VDCW, temp coef 0 PPM. (Used in Models 4ER41A22, 24 and 26).
C7	7489162-P39	Silver mica, dipped phen: radial leads, 330 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C37	5496218-P44	Ceramic disc: temp-comp, radial leads, 15 pf ±5%, 500 VDCW, temp coef 0 PPM. (Used in Models 4ER41A23, 25 and 27).
		- - - - - - - - - INDUCTORS - - - - - - - -
L9	PL-19A121755-G1	Coil.
		- - - - - - - - MISCELLANEOUS - - - - - - -
	5491798-P5	Tuning slug.
T5 and T6		COIL ASSEMBLY T5 PL-19B204426-G1 (4ER41A22, 24, 26) T6 PL-19B204426-G2 (4ER41A23, 25, 27)
		- - - - - - - - - CAPACITORS - - - - - - - -
C9	7489162-P39	Silver mica, dipped phen: radial leads, 330 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C10	5496218-P48	Ceramic disc: temp-comp, radial leads, 24 pf ±5%, 500 VDCW, temp coef 0 PPM. (Used in Models 4ER41A22, 24 and 26).
C38	5496218-P45	Ceramic disc: temp-comp, radial leads, 18 pf ±5%, 500 VDCW, temp coef 0 PPM. (Used in Models 4ER41A23, 25 and 27).
		- - - - - - - - - INDUCTORS - - - - - - - -
L10	PL-19A121750-G1	Coil.
		- - - - - - - - MISCELLANEOUS - - - - - - -
	5491798-P5	Tuning slug.
T7 and T8		COIL ASSEMBLY T7 PL-19B204427-G1 (4ER41A22, 24, 26) T8 PL-19B204427-G2 (4ER41A23, 25, 27)
		- - - - - - - - - CAPACITORS - - - - - - - -
C15	7489162-P39	Silver mica, dipped phen: radial leads, 330 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C26	5496218-P46	Ceramic disc: temp-comp, radial leads, 20 pf ±5%, 500 VDCW, temp coef 0 PPM. (Used in Models 4ER41A22, 24 and 26).
C39	5496218-P44	Ceramic disc: temp-comp, radial leads, 15 pf ±5%, 500 VDCW, temp coef 0 PPM. (Used in Models 4ER41A23, 25 and 27).
		- - - - - - - - - INDUCTORS - - - - - - - -
L11	PL-19A121752-G1	Coil.
		- - - - - - - - MISCELLANEOUS - - - - - - -
	5491798-P5	Tuning slug.

SYMBOL	G-E PART NO	DESCRIPTION
		- - - - - - - - SUBASSEMBLIES(Cont'd) - - - -
		- - - - - - - - - TRANSFORMERS(Cont'd) - - -
T9 and T10		COIL ASSEMBLY T9 PL-19B204423-G1 (4ER41A22, 24, 26) T10 PL-19B204423-G2 (4ER41A23, 25, 27)
		- - - - - - - - - CAPACITORS - - - - - - - -
C19	7489162-P39	Silver mica, dipped phen: radial leads, 330 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C27	5496218-P47	Ceramic disc: temp-comp, radial leads, 22 pf ±5%, 500 VDCW, temp coef 0 PPM. (Used in Models 4ER51A22, 24 and 26).
C40	5496218-P44	Ceramic disc: temp-comp, radial leads, 15 pf ±5%, 500 VDCW, temp coef 0 PPM. (Used in Models 4ER41A23, 25 and 27).
		- - - - - - - - - INDUCTORS - - - - - - - -
L12	PL-19A121751-G1	Coil.
L13	19A121104-P1	Coil.
		- - - - - - - - MISCELLANEOUS - - - - - - -
	5491798-P5	Tuning slug.
A325		IF/AUDIO ASSEMBLY PL-19D402327-G7
		- - - - - - - - - CAPACITORS - - - - - - - -
C1 and C2	19A115028-P116	Mylar® dielectric, dipped phen: radial leads, 0.22 µf ±20%, 200 VDCW.
C3	19A115028-P111	Mylar® dielectric, dipped phen: radial leads, .047 µf ±20%, 200 VDCW.
C4	5494481-P112	Ceramic disc: radial leads, .001 µf ±10%, 500 VDCW; sim to RMC Type JF Discap.
C5	19A115028-P109	Mylar® dielectric, dipped phen: radial leads, .022 µf ±20%, 200 VDCW.
C6	19A115028-P111	Mylar® dielectric, dipped phen: radial leads, .047 µf ±20%, 200 VDCW.
C7	5494481-P112	Ceramic disc: radial leads, .001 µf ±10%, 500 VDCW; sim to RMC Type JF Discap.
C8	5496218-P717	Ceramic disc: temp-comp, radial leads, 47 pf ±10%, 500 VDCW, temp coef -750 PPM.
C9	19A115028-P109	Mylar® dielectric, dipped phen: radial leads, .022 µf ±20%, 200 VDCW.
C10	19A115028-P114	Mylar® dielectric, dipped phen: radial leads, 0.1 µf ±20%, 200 VDCW.
C11	19A115028-P111	Mylar® dielectric, dipped phen: radial leads, .047 µf ±20%, 200 VDCW.
C12	5494481-P112	Ceramic disc: radial leads, .001 µf ±10%, 500 VDCW; sim to RMC Type JF Discap.
C13	5496218-P717	Ceramic disc: temp-comp, radial leads, 47 pf ±10%, 500 VDCW, temp coef -750 PPM.
C14	19A115028-P109	Mylar® dielectric, dipped phen: radial leads, .022 µf ±20%, 200 VDCW.
C15	19A115028-P114	Mylar® dielectric, dipped phen: radial leads, 0.1 µf ±20%, 200 VDCW.
C16	5496219-P421	Ceramic disc: temp-comp, radial leads, 100 pf ±10%, 500 VDCW, temp coef -220 PPM.
C17	5494481-P112	Ceramic disc: radial leads, .001 µf ±10%, 500 VDCW; sim to RMC Type JF Discap.
C18 and C19	19A115028-P109	Mylar® dielectric, dipped phen: radial leads, .022 µf ±20%, 200 VDCW.
C20	5496267-P14	Tubular, hermetically sealed, tantalum, dry solid: axial leads, 15 µf ±20%, 20 VDCW; sim to Sprague 150D156X0020B2.

SYMBOL	G-E PART NO	DESCRIPTION
		- - - - - - - - SUBASSEMBLIES(Cont'd) - - - -
		- - - - - - - - - CAPACITORS(Cont'd) - - - -
C21	19B209243-P9	Polyester dielectric: radial leads, 0.22 µf ±20%, 40 VDCW; sim to Amperex C280AA/P220K.
C22	19A115028-P107	Mylar® dielectric, dipped phen: radial leads, .01 µf ±20%, 200 VDCW.
C23	5491000-P1	Tubular, hermetically sealed, electrolytic: axial leads, 30 µf +75% -10%, 25 VDCW; sim to Sprague 345553.
C24	19A115028-P107	Mylar® dielectric, dipped phen: radial leads, .01 µf ±20%, 200 VDCW.
C25	5494481-P112	Ceramic disc: radial leads, .001 µf ±10%, 500 VDCW; sim to RMC Type JF Discap.
C27	19B209243-P7	Polyester dielectric: radial leads, 0.1 µf ±20%, 40 VDCW; sim to Amperex C280AA/P100K.
C28	5496267-P17	Tubular, hermetically sealed, tantalum, dry solid: axial leads, 1 µf ±20%, 35 VDCW; sim to Sprague 150D105X0035A2.
C29	19B209243-P9	Polyester dielectric: radial leads, 0.22 µf ±20%, 40 VDCW; sim to Amperex C280AA/P220K.
C31	19B209243-P5	Polyester dielectric: radial leads, .047 µf ±20%, 40 VDCW; sim to Amperex C280AA/P47K.
C32	19B209243-P9	Polyester dielectric: radial leads, 0.22 µf ±20%, 40 VDCW; sim to Amperex C280AA/P220K.
C33	5496267-P28	Tubular, hermetically sealed, tantalum, dry solid: axial leads, 0.47 µf ±20%, 35 VDCW; sim to Sprague 150D474X0035A2.
C34	19B209243-P9	Polyester dielectric: radial leads, 0.22 µf ±20%, 40 VDCW; sim to Amperex C280AA/P220K.
C35	5496267-P6	Tubular, hermetically sealed, tantalum, dry solid: axial leads, 33 µf ±20%, 10 VDCW; sim to Sprague 150D336X0010B2.
C37	19A115028-P303	Mylar® dielectric, dipped phen: radial leads, .0033 µf ±10%, 200 VDCW.
C38	5495670-P10	Tubular, hermetically sealed, electrolytic: axial leads, 100 µf +75% -10%, 15 VDCW; sim to Sprague 30D172A1.
C39	5490008-P143	Silver mica, dipped phen: radial leads, 470 pf ±10%, 300 VDCW; sim to Electro Motive Type DM-15.
C48	5495670-P9	Tubular, hermetically sealed, electrolytic: axial leads, 35 µf +75% -10%, 15 VDCW; sim to Sprague 30D169A1.
C50	5496267-P14	Tubular, hermetically sealed, tantalum, dry solid: axial leads, 15 µf ±20%, 20 VDCW; sim to Sprague 150D156X0020B2.
C52	4029003-P16	Silver mica, dipped phen: radial leads, .0022 µf ±5%, 500 VDCW; sim to Electro Motive Type DM-20.
C53	5491189-P106	Mylar® dielectric, dipped epoxy: radial leads, 0.1 µf ±20%, 50 VDCW; sim to Good-All Type 601PE.
C54	7491930-P3	Tubular, Mylar® dielectric: axial leads, .0047 µf ±20%, 100 VDCW; sim to G-E Type 61F.
		- - - - - - DIODES AND RECTIFIERS - - - - - -
CR1 and CR2	7777146-P3	Germanium; sim to Type 1N90.
CR3 and CR4	19A11250-P1	Silicon.
CR7	19A11250-P1	Silicon.
		- - - - - - JACKS AND RECEPTACLES - - - - - -
J1 thru J24	4033513-P4	Contact, electrical: sim to Bead Chain L93-3.
		- - - - - - - - - INDUCTORS - - - - - - - -
L1	PL-4031476-G1	Choke. Includes:
	7773023-P25	Tuning slug.

SYMBOL	G-E PART NO	DESCRIPTION
		- - - - - - - - SUBASSEMBLIES(Cont'd) - - - -
		- - - - - - - - - INDUCTORS(Cont'd) - - - - -
L4	5491736-P6	Choke: 3.5 mh ±10% ind at 1 KC, 2.5 ohms DC res max; sim to Aladdin 33-494.
		- - - - - - - - - TRANSISTORS - - - - - - - -
Q1 thru Q8	19A115123-P1	Silicon, NPN; sim to Type 2N2712.
Q9	19A115247-P1	Silicon, PNP; sim to Type 2N1024.
Q10	19A115300-P1	Silicon, NPN; sim to Type 2N3053.
		- - - - - - - - - RESISTORS - - - - - - - - -
R1	3R77-P330K	Fixed composition: 33 ohms ±10%, 1/2 w.
R2	3R77-P473K	Fixed composition: 47,000 ohms ±10%, 1/2 w.
R3	3R77-P183J	Fixed composition: 18,000 ohms ±5%, 1/2 w.
R4	3R77-P101K	Fixed composition: 100 ohms ±10%, 1/2 w.
R5	3R77-P472K	Fixed composition: 4700 ohms ±10%, 1/2 w.
R6	3R77-P202J	Fixed composition: 2000 ohms ±5%, 1/2 w.
R7	3R77-P473K	Fixed composition: 47,000 ohms ±10%, 1/2 w.
R8	3R77-P183J	Fixed composition: 18,000 ohms ±5%, 1/2 w.
R9	3R77-P101K	Fixed composition: 100 ohms ±10%, 1/2 w.
R10	3R77-P472K	Fixed composition: 4700 ohms ±10%, 1/2 w.
R11	3R77-P202J	Fixed composition: 2000 ohms ±5%, 1/2 w.
R12	3R77-P103K	Fixed composition: 10,000 ohms ±10%, 1/2 w.
R13	3R77-P473K	Fixed composition: 47,000 ohms ±10%, 1/2 w.
R14	3R77-P183J	Fixed composition: 18,000 ohms ±5%, 1/2 w.
R15	3R77-P101K	Fixed composition: 100 ohms ±10%, 1/2 w.
R16	3R77-P472K	Fixed composition: 4700 ohms ±10%, 1/2 w.
R17	3R77-P202J	Fixed composition: 2000 ohms ±5%, 1/2 w.
R18	3R77-P103K	Fixed composition: 10,000 ohms ±10%, 1/2 w.
R19	3R77-P473K	Fixed composition: 47,000 ohms ±10%, 1/2 w.
R20	3R77-P183J	Fixed composition: 18,000 ohms ±5%, 1/2 w.
R21	3R77-P472K	Fixed composition: 4700 ohms ±10%, 1/2 w.
R23	3R77-P202J	Fixed composition: 2000 ohms ±5%, 1/2 w.
R24	3R77-P682K	Fixed composition: 6800 ohms ±10%, 1/2 w.
R25	3R77-P183J	Fixed composition: 18,000 ohms ±5%, 1/2 w.
R26	3R77-P102J	Fixed composition: 1000 ohms ±5%, 1/2 w.
R27	3R77-P683K	Fixed composition: 68,000 ohms ±10%, 1/2 w.
R28	3R77-P222J	Fixed composition: 2200 ohms ±5%, 1/2 w.
R29 and R30	3R77-P753J	Fixed composition: 75,000 ohms ±5%, 1/2 w.
R31	3R77-P512J	Fixed composition: 5100 ohms ±5%, 1/2 w.
R32	3R77-P102J	Fixed composition: 1000 ohms ±5%, 1/2 w.
R34	3R77-P113K	Fixed composition: 11,000 ohms ±10%, 1/2 w.
R36	3R77-P153K	Fixed composition: 15,000 ohms ±10%, 1/2 w.
R37	3R77-P222J	Fixed composition: 2200 ohms ±5%, 1/2 w.
R38	3R77-P751J	Fixed composition: 750 ohms ±5%, 1/2 w.
R39	3R77-P562J	Fixed composition: 5600 ohms ±5%, 1/2 w.
R40	3R77-P113K	Fixed composition: 11,000 ohms ±10%, 1/2 w.
R41	3R77-P204K	Fixed composition: 0.2 megohm ±10%, 1/2 w.
R44	3R77-P153K	Fixed composition: 15,000 ohms ±10%, 1/2 w.
R45	3R77-P181K	Fixed composition: 180 ohms ±10%, 1/2 w.
R46	3R77-P333K	Fixed composition: 33,000 ohms ±10%, 1/2 w.
R47	19B209115-P1	Variable, carbon film: 5000 ohms ±20%, 0.15 w, linear taper; sim to CTS Type UPE-70.

SYMBOL	G-E PART NO	DESCRIPTION
		- - - - - - - - SUBASSEMBLIES(Cont'd) - - - -
		- - - - - - - - - RESISTORS(Cont'd) - - - - -
R48	3R77-P222J	Fixed composition: 2200 ohms ±5%, 1/2 w.
R49	3R77-P821K	Fixed composition: 820 ohms ±10%, 1/2 w.
R50	3R77-P392K	Fixed composition: 3900 ohms ±10%, 1/2 w.
R51	19B209022-P15	Wirewound, phen: 1 ohm ±5%, 2 w; sim to IRC Type BWH.
R52	3R77-P152K	Fixed composition: 1500 ohms ±10%, 1/2 w.
R53	5495948-P444	Deposited carbon, epoxy coated: 0.28 megohm ±1%, 1/2 w; sim to Texas Instruments Type CD1/2MR.
R59	3R77-P512K	Fixed composition: 5100 ohms ±10%, 1/2 w.
R65	3R77-P123K	Fixed composition: 12,000 ohms ±10%, 1/2 w.
R66	3R77-P223K	Fixed composition: 22,000 ohms ±10%, 1/2 w.
R68	3R77-P134J	Fixed composition: 0.13 megohm ±5%, 1/2 w.
R69	3R77-P392J	Fixed composition: 3900 ohms ±5%, 1/2 w.
R70	3R77-P471J	Fixed composition: 470 ohms ±5%, 1/2 w.
		- - - - - - - - - THERMISTORS - - - - - - - -
RT1	19B209143-P2	Rod: axial leads, 4000 ohms ±10% res, 1 w max; sim to Globar Type 789F-12.
RT2	19B209143-P3	Rod: axial leads, 850 ohms ±10% res, 1 w max; sim to Globar Type 789F.
		- - - - - - - - - TRANSFORMERS - - - - - - - -
T1		DISCRIMINATOR ASSEMBLY PL-19C303612-G1
		- - - - - - - - - CAPACITORS - - - - - - - -
C41 and C42	19B209196-P1	Ceramic disc: temp-comp, radial leads, 280 pf ±5%, 500 VDCW, temp coef -115 ±30 PPM.
C45	7489162-P43	Silver mica, dipped phen: radial leads, 470 pf ±5%, 300 VDCW; sim to Electro Motive Type DM-15.
C46	7489162-P35	Silver mica, dipped phen: radial leads, 220 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C47	5491189-P4	Mylar® dielectric, dipped epoxy: radial leads, .047 µf ±20%, 50 VDCW; sim to Good-All Type 601PE.
		- - - - - - DIODES AND RECTIFIERS - - - - - -
CR5 and CR6	19A11250-P1	Silicon.
		- - - - - - - - - INDUCTORS - - - - - - - - -
L2 and L3	PL-19A121532-G1	Coil.
		- - - - - - - - - RESISTORS - - - - - - - - -
R56	3R152-P331J	Fixed composition: 330 ohms ±5%, 1/4 w.
R57 and R58	3R152-P473J	Fixed composition: 47,000 ohms ±5%, 1/4 w.
		- - - - - - - - - CAPACITORS - - - - - - - -
C315 and C316	5496267-P11	Tubular, hermetically sealed, tantalum, dry solid: axial leads, 68 µf ±20%, 15 VDCW; sim to Sprague 150D686X0015B2.
C317	5494481-P12	Ceramic disc: radial leads, .001 µf ±10%, 500 VDCW; sim to RMC Type JF Discap.

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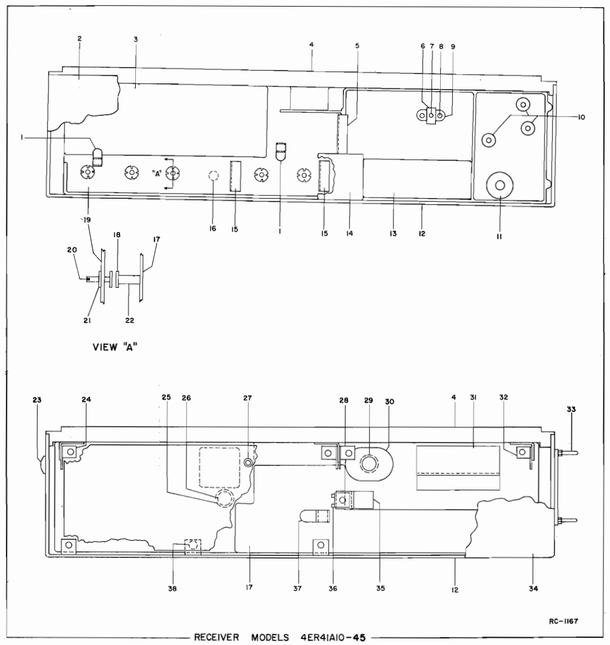
(CONT'D FROM PAGE 15) (LBI-3584)

SYMBOL	G-E PART NO	DESCRIPTION
		- - - - - - JACKS AND RECEPTACLES - - - - -
J442	19B209125-P2	Connector: 18 contacts rated at 5 amps min at 1000 VDC max.
J443	PL-19C303426-G1	Connector: 20 pin contacts.
		- - - - - - - - - - PLUGS - - - - - - - - -
P301 thru P303	4029840-P2	Contact, electrical: solder coated brass; sim to Amp 42827-2. (Used in Models 4ER41A24-27).
P304 thru P309	4029840-P2	Contact, electrical: solder coated brass; sim to Amp 42827-2.
P310	4029840-P1	Contact, electrical: solder coated brass; sim to Amp 41854.
P311 thru P320	4029840-P2	Contact, electrical: solder coated brass; sim to Amp 42827-2.
P321	4029840-P1	Contact, electrical: solder coated brass; sim to Amp 41854.
P325	4029840-P2	Contact, electrical: solder coated brass; sim to Amp 42827-2.
P329	4029840-P2	Contact, electrical: solder coated brass; sim to Amp 42827-2.
P337	4029840-P2	Contact, electrical: solder coated brass; sim to Amp 42827-2. (Used in Models 4ER41A24-27).
		- - - - - - - - - TRANSISTORS - - - - - - -
Q301	19A115527-P1	Silicon, PNP.
		- - - - - - - - - RESISTORS - - - - - - - -
R301 and R302	3R152-P681K	Fixed composition: 680 ohms ±10%, 1/4 w.
R303	3R152-P102K	Fixed composition: 1000 ohms ±10%, 1/4 w.
		- - - - - - - - - TRANSFORMERS - - - - - -
T301	19B209083-P1	Audio freq: Pri 1: 19 ohms ±10% imp at 3 w, 0.866 ohm DC res max. Sec 1: 3.5 ohms ±10% imp at 3 w, 0.222 ohm DC res max.
		- - - - - - - - TERMINAL BOARDS - - - - - -
TB1	7487424-P7	Miniature, phen: 4 terminals.
		RF CIRCUIT ASSEMBLY PL-19C303472-G3 (4ER41A22, 24, 26) PL-19C303472-G4 (4ER41A23, 25, 27)
		- - - - - - - - - CAPACITORS - - - - - - - -
C301 thru C305		Refer to Mechanical Parts (RC-1167).
C307 thru C314	19B209135-P1	Tubular, ceramic, hi dielectric: feed-thru, 1000 pf +150% -0%, 500 VDCW.
		- - - - - - JACKS AND RECEPTACLES - - - - - -
J441		(Part of W441).
		- - - - - - - - - INDUCTORS - - - - - - - -
L301	PL-19B204461-G4	Coil. (Used in Models 4ER41A22, 24 and 26).
L302	19B200616-P2	Coil. (Used in Models 4ER41A22, 24 and 26).
L303	PL-19B204461-G4	Coil. (Used in Models 4ER41A22, 24 and 26).
L304	PL-19B204461-G1	Coil. (Used in Models 4ER41A23, 25 and 27).
L305	19B200616-P1	Coil. (Used in Models 4ER41A23, 25 and 27).
L306	PL-19B204461-G1	Coil. (Used in Models 4ER41A23, 25 and 27).
L307	PL-19B204461-G4	Coil. (Used in Models 4ER41A22, 24 and 26).
L308	PL-19B204461-G6	Coil. (Used in Models 4ER41A22, 24 and 26).
L309	PL-19B204461-G3	Coil. (Used in Models 4ER41A23, 25 and 27).
L310	PL-19B204461-G5	Coil. (Used in Models 4ER41A23, 25 and 27).
L311	19A121385-P1	Coil.
L312	PL-19B204461-G6	Coil. (Used in Models 4ER41A22, 24 and 26).
L313	PL-19B204461-G5	Coil. (Used in Models 4ER41A23, 25 and 27).
L314	19A121289-P1	Coil.
		- - - - - - - - - CABLES - - - - - - - - -
W441	19B209122-P1	Connector, coaxial: includes cable jack (J441), approx 5 inches long.
		MECHANICAL PARTS (SEE RC-1167)
1	7145451-P1	Cable clamp. (Used in Models 4ER41A24-27).
2	PL-19C303396-G4	Cover: approx 14-13/32 x 3-9/16 x 9/32 inches.
3	19B204890-P1	(Not used).
4	PL-19C303394-G2	Heat sink: approx 14-9/16 x 3-7/32 x 13/32 inches thick.
5	19A121222-P1	Angle support: approx 1-5/32 x 11/32 x 9/32 inches. (Used with C311 and C312 in PL-19C303472-G3 and 4).
6	4033089-P1	Clip. (Part of XY1-4 in A308-313).
7	19B200525-P8	Rivet. (Part of XY1-4 in A308-313).
8	4033751-P1	Electrical contact: sim to Methode 752 V (PB). (Part of XY1-4 in A308-313).
9	4039307-P1	Crystal socket. (Part of XY1-4 in A308-313).
10	4029739-P2	Can: approx 7/8 x 1/2 x 1/2 inches thick. (Part of L1-3 in A316).
11	4034252-P5	Can: approx 1-3/16 x 3/4 x 1/32 inches thick. (Part of T1 in A316).
12	PL-19C303389-G1	Chassis: approx 14-1/2 x 3-1/2 x 3-7/32 inches.
13	19B204396-P1	Support: approx 3 x 1 x 1/32 inches thick. (Used in A306 and 307).
14	19A121071-P1	Plate: approx 1-11/32 x 1-5/16 x 1/32 inches thick.
15	19A121221-P1	Angle support: approx 15/16 x 5/16 x 1/32 inches. (Used with C307-310 in PL-19C303472-G3 and 4).
16	7162414-P1	Mounting ring, transistor socket: approx 7/16 inch dia; sim to Elco 757. (Used with Q1 in A301 and 302).
17	19B204397-P1	RF plate: approx 8-5/8 x 2-5/8 x 1/32 inches thick.
18	PL-4036765-G2	Screw: approx 1/4 x 1/16 inches dia, with 6/32 threads. (Part of C301-305 in PL-19C303472-G3 and 4).
19	19C303562-P1	RF chassis: approx 13-3/4 x 3-1/4 x 1-13/16 inches. (Used in PL-19C303472-G3 and 4).
20	PL-4036765-G4	Screw: approx 9/16 x 1/16 inches dia, with 6-32 threads. (Part of C301-305 in PL-19C303472-G3 and 4).
21	7117825-P1	Spring, washer: approx 15/32 inch dia, with 6-32 threads; sim to Tinnerman C4578B-632-24. (Part of C301-305 in PL-19C303472-G3 and 4).
22	4036899-P4	Ceramic insulator: approx 1 x 3/8 inches dia; sim to Centralab 3BX845C. (Part of C301-305 in PL-19C303472-G3 and 4).
23	4033986-P6	Plug button: approx 7/16 inch dia; sim to United Car Fastener BS-48199.
24	PL-19B204583-G3	MECHANICAL PARTS(Cont'd) Hinge.
25	4035439-P1	Transistor heat sink: approx 1/4 x 1/2 inches dia; sim to Birtcher 3AL-635-2R. (Used with Q10 in A325).
26	4036555-P1	Washer insulator: nylon. (Used with Q9 and 10 in A325).
27	4035306-P11	Fiber washer: approx 1/8 x 3/16 x 1/32 inches thick. (Used with L1 in A325).
28	PL-19B204583-G1	Hinge.
29	19A121284-P1	Mica insulator: approx 11/16 inch dia. (Used with Q301).
30	19A121283-P1	Support. (Used with Q301).
31	PL-19A121229-G1	(Not used).
32	PL-19B204583-G2	(Not used).
33	19A121676-P1	Guide pin: approx 1 x 1/8 inches dia with 4-40 mounting thread.
34	PL-19C303396-G2	Cover: approx 14-9/16 x 3-7/32 x 13/32 inches.
35	19A121297-P1	Angle: approx 1-5/16 x 1 x 1/2 inches.
36	7160861-P4	Spring clip nut: sim to Tinnerman C6452-8Z-157.
37	4029851-P6	Cable clamp: nylon; sim to Weckesser 5/16-4.
38	19A115461-P2	Spring washer: approx 1/4 inch dia; sim to Shakeproof 3597-04-00.



RECEIVER MODELS 4ER41A10-45

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 & B - These revisions were incorporated into initial shipments.

REV. C - To minimize chance of interference, IF frequency changed from 5.26 MC to 5.30 MC Changed crystal filter A314 and A316-Y1.