

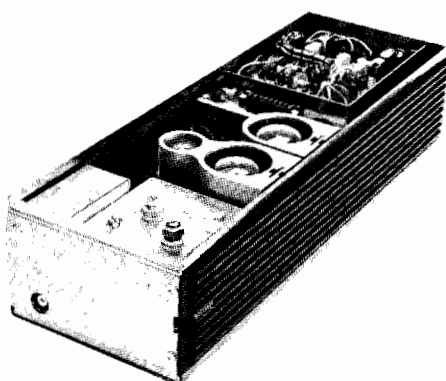


communications

MASTR

Progress Line

25-50 MC, 100-WATT TRANSMITTER MODELS 4ET55A10-27



SPECIFICATIONS *

FCC Filing Designation:

ET-55-A

Frequency Range:

25-50 MC

Power Output:

100 watts minimum

Crystal Multiplication Factor:

12

Frequency Stability:

$\pm 0.0005\%$ (-30°C to $+60^{\circ}\text{C}$)

Spurious & Harmonic Radiation:

At least 85 db below rated power output

Modulation:

Adjustable from 0 to ± 5 KC swing with instantaneous modulation limiting

Audio Frequency Characteristics:

Within $+1$ db to -3 db of a 6 db/octave pre-emphasis from 300 to 3000 cps per EIA standards.
Post limiter filter per FCC and EIA.

Distortion:

Less than 5%

Deviation Symmetry:

0.5 KC maximum

Tubes & Transistors:

100-Watt Transmitter with no Options:

3 tubes
6 transistors
4 diodes

Maximum Frequency Spacing:

0.4 %

Duty Cycle: Mobile-

20% transmit (one minute transmit, four minutes off)

Station-

Continuous

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

TABLE OF CONTENTS

SPECIFICATIONS Page i

DESCRIPTION. Page 1

CIRCUIT ANALYSIS Page 2

 Power Inputs. Page 2

 Oscillator. Page 2

 Audio Amplifiers and Limiter. Page 2

 Phase Modulator Page 3

 Amplifiers, 1st and 2nd Multipliers Page 3

 3rd Multiplier. Page 3

 Power Amplifier Page 4

 Channel Guard Transmitter (Optional). Page 4

MAINTENANCE. Page 6

 Disassembly Page 6

 Alignment Procedure Page 7

 Test Procedures Page 8

 Power Output Page 8

 Tone Deviation Page 8

 Voice Deviation. Page 8

 Troubleshooting Page 9

OUTLINE DIAGRAM. Page 10

SCHEMATIC DIAGRAM. Page 11

PARTS LIST Page 12 thru 16

PRODUCTION CHANGES Page 17

ILLUSTRATIONS

Figure 1 Block Diagram. Page 1

Figure 2 Top Cover Removed for Servicing. Page 6

Figure 3 Bottom Cover Removed for Servicing Page 6

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.

DESCRIPTION

The MASTR Progress Line FM Transmitter, Type ET-55-A, is a crystal-controlled, phase-modulated transmitter designed for one-, two- or four-frequency operation within the 25-50 megacycle band. The transmitter consists of the following modules:

- Transistorized Exciter Board, with audio, oscillator modulator, amplifier and multiplier stages,
- Tubed multiplier and power amplifier stages,
- Optional transistorized Channel Guard Board.

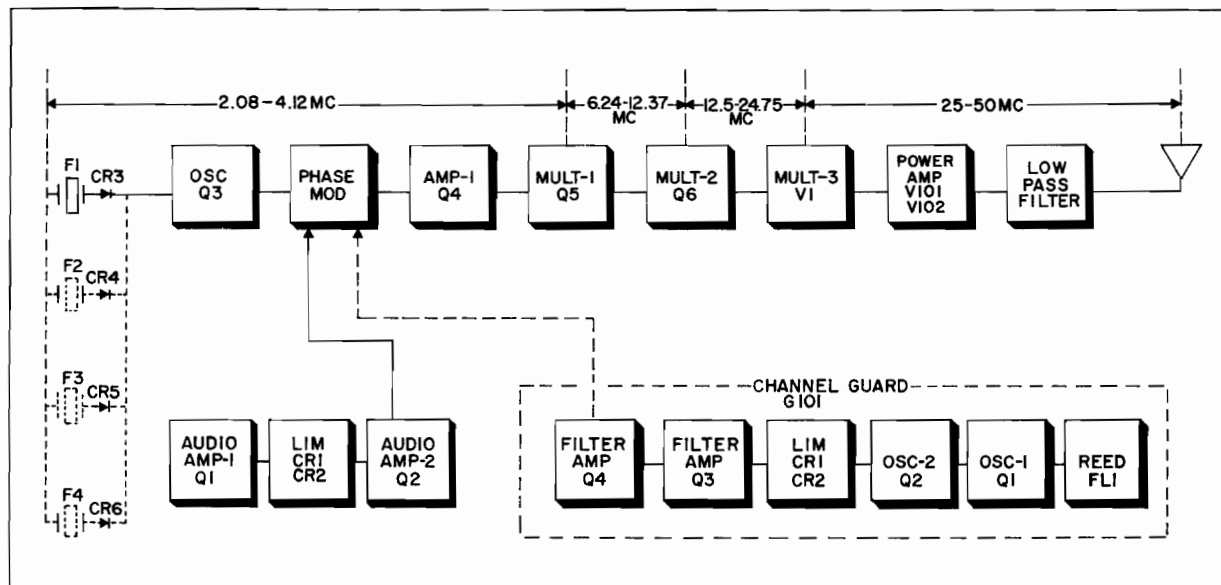


Figure 1 - Transmitter Block Diagram

All input leads to the transmitter are individually filtered by the 20-pin feed-through by-pass connector J101. The output passes through a four-section, low-pass filter that features good shielding between sections and Teflon® capacitors for fail-free operation with an open or shorted antenna.

CIRCUIT ANALYSIS

Six silicon transistors and only three tubes are used in the transmitter to provide a minimum power output of 100 watts. The frequency of the crystals used ranges from 2 to 4.2 megacycles, and the crystal frequency is multiplied 12 times.

A centralized metering jack (J102) is provided for use with General Electric Test Set 4EX3A10. The Test Set meters the multiplier, amplifier and PA stages as well as filament and regulated supply voltages. The metering jack also provides access to receiver audio, microphone and push-to-talk leads.

POWER INPUTS

The following supply voltages are connected from the power supply to the transmitter through the 20-pin by-pass connector J101:

Pin 3 - Filament Voltage

Pin 4 - +300 volts MULT B+

Pin 5 - +650 volts PA B+

Pin 8 - -45 volts bias

Pin 14 - +10 volts for Channel Guard option

Pin 15 - -20 volts for Exciter Board.

OSCILLATOR

A transistorized Colpitts oscillator (Q3) is used in the transmitter. The oscillator crystal is thermistor compensated at both ends of the temperature range to provide instant frequency compensation with a frequency stability of $\pm 0.0005\%$ without crystal ovens or warmers.

In single-frequency transmitters, a jumper (from H1 to H2) connects the F1 crystal keying lead to ground to forward bias diode CR3. Forward biasing the diode reduces its impedance, and the crystal frequency is applied to the base of oscillator Q3. Feedback for the oscillator is developed across C41/C42. The oscillator output is coupled directly to the phase modulator.

In multi-frequency transmitters, the single oscillator transistor is used, and up to three additional crystal circuits, identical to the F1 crystal circuit, can be added. The keying jumper is removed and the proper frequency is selected by switching the crystal keying lead to ground by means of a frequency selector switch on the Control Unit.

AUDIO AMPLIFIERS AND LIMITER

An audio signal from the microphone is coupled through C1 to the base of Class A audio amplifier Q1. The design of the microphone, in

conjunction with C2 and R3, produces a 6-db audio pre-emphasis. R48 and C74 provides RF de-coupling.

The amplified audio signal is RC-coupled to the diode limiters, CR1 and CR2. These diodes operate in series and are normally in a forward conducting state. An audio signal of sufficient amplitude to cause limiting takes the diodes out of conduction, so that one diode conducts only on positive cycles and the other conducts only on negative cycles.

Following the limiter stage is a second Class A amplifier, Q2. The output of Q2 is coupled through MOD ADJUST potentiometer R14 to a combined post-limiter filter and de-emphasis network. This network consists of R17, R18, R19, C5, C8, C9 and C49. The output of the filter and de-emphasis network is applied directly to the phase modulator.

PHASE MODULATOR

The phase modulator is a varactor (voltage-variable capacitor) CV-1 in series with tuneable coil L1. This network appears as a series-resonant circuit to the RF output of the oscillator. An audio signal applied to the modulator varies the bias of CV-1, resulting in a phase modulated output. The output of the modulator is coupled through blocking capacitor C51 to the base of the first amplifier. For Channel Guard transmitters, a second modulator stage (L2 and CV-2) is cascaded with the first modulator. The output of the Channel Guard encoder is fed through CHANNEL GUARD MOD ADJUST R20 to the modulator stages.

AMPLIFIERS, 1ST AND 2ND MULTIPLIERS

The first amplifier (Q4) isolates the modulator from the loading effects of the first multiplier and provides amplification. The output is DC-coupled to the first multiplier. Metering resistor R41 permits the MULT-1 stage to be metered at centralized metering jack J102-10.

Following Q4 are two inductively coupled Class C, common-emitter multiplier stages (Q5 and Q6). Q5 is a tripler, with collector tank L3 tuned to three times the crystal frequency.

Q6 operates as a doubler stage, with collector tank T1 tuned to six times the crystal frequency. Resistor R43 is for metering the MULT-2 stage at J102-2.

THIRD MULTIPLIER

The output of the transistorized Exciter is coupled by a short length of RF cable to the grid tank (L9/L10/L11) of beam pentode V1. This stage operates as a doubler with the plate tank tuned to 12 times the crystal frequency.

The grid of V1 is metered through metering resistors R1 and R2 at J102-4. The combination of R1, R2 and R3 drops the bias voltage to approximately -11 volts to protect V1 against loss of drive. Plate voltage is supplied through R7 and L1/L2.

When measuring grid current to V1, there will be a residual reading of approximately 0.16 volts without any drive. This is caused by the presence of fixed bias voltage to the grid of the tube.

POWER AMPLIFIER

The output of the MULT-3 stage is coupled through L1/L2 and L6/L7 to the grids of the two compactron beam power amplifiers (V101 and V102) operating in parallel. PA grid drive is metered at J102-6 and J102-14 by measuring voltage drop across R11. Bias voltage (-45)volts is applied to the PA grids through R8, R11 and L6/L7. There is no residual reading on the PA.

Plate current is metered from J102-1 to J102-9 across metering resistor R102. Plate voltage is supplied through L101. The PA plate tank is shunt-tuned by capacitor C110/C112. R18, R19, R21, and R22 are the screen grid dropping resistors.

WARNING

The meter leads are at plate potential (high-B+) when metering the PA plate at J102-1 and J102-9.

Placing the TUNE-OPERATE switch (S102) in the OPERATE position applies 300 volts to A145/A146/A147-J3 and -J7. The 300 volts appearing on each side of R17 effectively shorts the resistor out of the circuit, and R18 and R19 (for V101) and R21 and R22 (for V102) are in series for normal operation of V101 and V102. When S102 is in the TUNE position, the screen voltage is applied to J3 only. Now, dropping resistors R17, R18 and R19 (for V101) and R11, R21 and R22 (for V102) are in series to reduce the screen voltage. This reduces the plate dissipation of V101 and V102 while tuning the power amplifier stage. Feedback through C122 neutralizes the stage.

Antenna coupling is achieved by varying the coupling between L115, L116, L117 and L110/L111/L112. The antenna circuit is tuned by C111.

The RF output from the antenna coil is fed to low-pass filter FL101/FL102/FL103. This filter has a low insertion loss and a harmonic attenuation of at least -50 db through all harmonics. The filter output is fed to the antenna changeover relay located on the front of the system frame.

CHANNEL GUARD TRANSMITTER (G101)

The Channel Guard encoder (G101) is assembled on a printed wiring board that mounts on the underside of the MASTR transmitter. The encoder is supplied by a regulated 10 volts and a regulated 20 volts. The 10-volt supply is applied to Q1 and Q2 continuously (even in the STANDBY position), and the 20 volts is applied to Q3 and Q4 only when the transmitter is keyed.

Transistors Q1 and Q2 with reed FL1 are the tone oscillator portion of the circuit. The reed is resonant at the desired tone frequency. Clipping diodes CR1 and CR2 shape the output of the oscillator circuit into a square wave, which is coupled through the Channel Guard TONE ADJUST Control (R12) to the base of Q3. R12 will not require adjustment unless the Channel Guard tone frequency is changed. Then R12 must be set to the new reed frequency.

Q3 and Q4 form a two-section low-pass filter that removes the distortion in the square wave, producing a sine wave output. The square wave oscillator output has a constant amplitude, making the encoder less sensitive to shock and vibration. The encoder tone is fed to the tone modulator on the Exciter Board through Channel Guard MOD ADJ R20.

The Channel can be monitored by moving the CG-OFF SWITCH on the Control Unit to the OFF Position (or by removing the microphone or handset from the optional hang-up bracket).

NOTE

If the Two-Way Radio is mounted vertically or at an angle of over 45° rotate the encoder reed 90° in its mounting bracket so that the label with the G-E Drawing and Part Number is facing the rear of the Two-Way Radio. See Figure 3 for location of the encoder reed.

MAINTENANCE

DISASSEMBLY

To service the transmitter 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 transmitter.
3. Slide cover back and lift off.

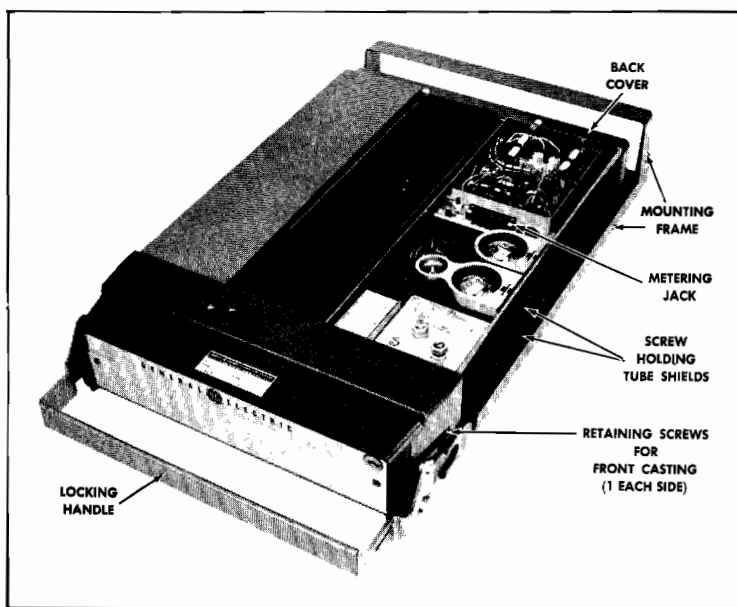


Figure 2 - Top Cover Removed

To service the transmitter from the bottom—

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

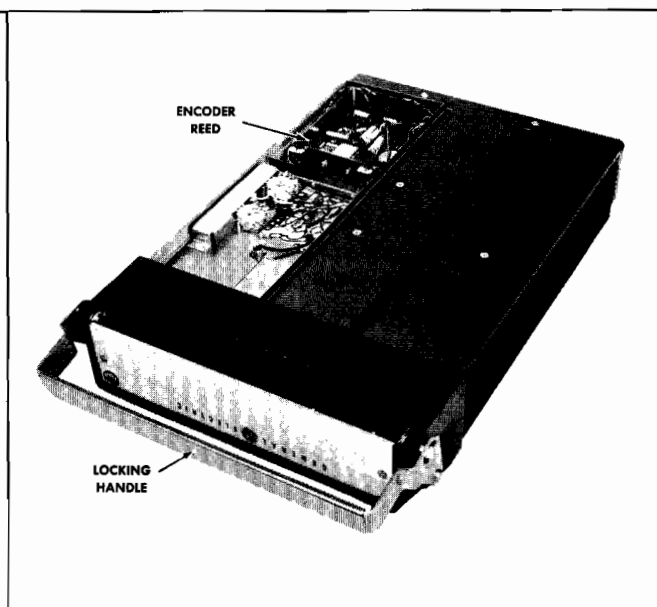


Figure 3 - Bottom Cover Removed

NOTE

To replace tubes, loosen screws holding tube shields and slide shields off.

To remove transmitter from system frame—

1. Loosen the two retaining screws in the front casting (see Figure 2) and pull casting away from the system frame.
2. Remove the four screws in the back cover.
3. Remove the two screws holding the transmitter at each end of the system frame.
4. Disconnect the antenna jack in front of the transmitter and the 20-pin feed-through connector at the back of the transmitter, and slide the unit out of the system frame.

MODULATION LEVEL ADJUSTMENT

The MOD ADJUST (R14) was adjusted to the proper setting before shipment and should not normally require readjustment. This setting permits approximately 75% modulation for the average voice level. The audio peaks which would cause overmodulation are clipped by the modulation limiter. The limiter, in conjunction with the de-emphasis network, instantaneously limits the slope of the audio wave to the modulator, thereby preventing overmodulation while preserving intelligibility.

TEST EQUIPMENT

1. An audio oscillator
2. A frequency modulation monitor
3. An output meter or a VTVM
4. G-E Test Set, Model 4EX3A1

PROCEDURE

1. Connect the audio oscillator and the meter across audio input terminals J5 (Green-Hi) and J6 (Black-Lo) on G-E Test Set or across J1 (Mike High) and J2 (Mike Low) on the Exciter Board.
2. Apply a 1.0-volt signal at 1000 cps to Test Set or across J1 and J2 on Exciter Board.
3. For transmitters without Channel Guard, set the MOD ADJUST (R14) for a 4.5-kilocycle swing with the deviation polarity which gives the highest reading as indicated on the frequency modulation monitor.
4. For transmitters with Channel Guard, set the Channel Guard MOD ADJUST (R20) for 0.75-KC tone deviation. Then repeat L1/L2 and L3/L4 as shown in Step 1 of Transmitter Alignment Procedure. Reset tone deviation to 0.75 KC deviation. Remove the tone to the transmitter by unplugging leads to J7 and J8 on Exciter Board, or by switching to a non-Channel Guard frequency in multi-frequency units. Next, apply a 1.0 volt signal at 1000 cps and set MOD ADJUST (R14) for 3.75-KC deviation (4.5 KC minus 0.75-KC tone deviation).
5. For multifrequency transmitters, set the deviation as described in Steps 3 or 4 on the channel producing the largest amount of deviation.

PA POWER INPUT

For FCC purposes, the PA power input can be determined by measuring the PA Plate voltage and the plate current indication, and using the following formula:

$$P_i = \frac{\text{Plate Voltage} \times \text{Plate Current Indication}}{2.5}$$

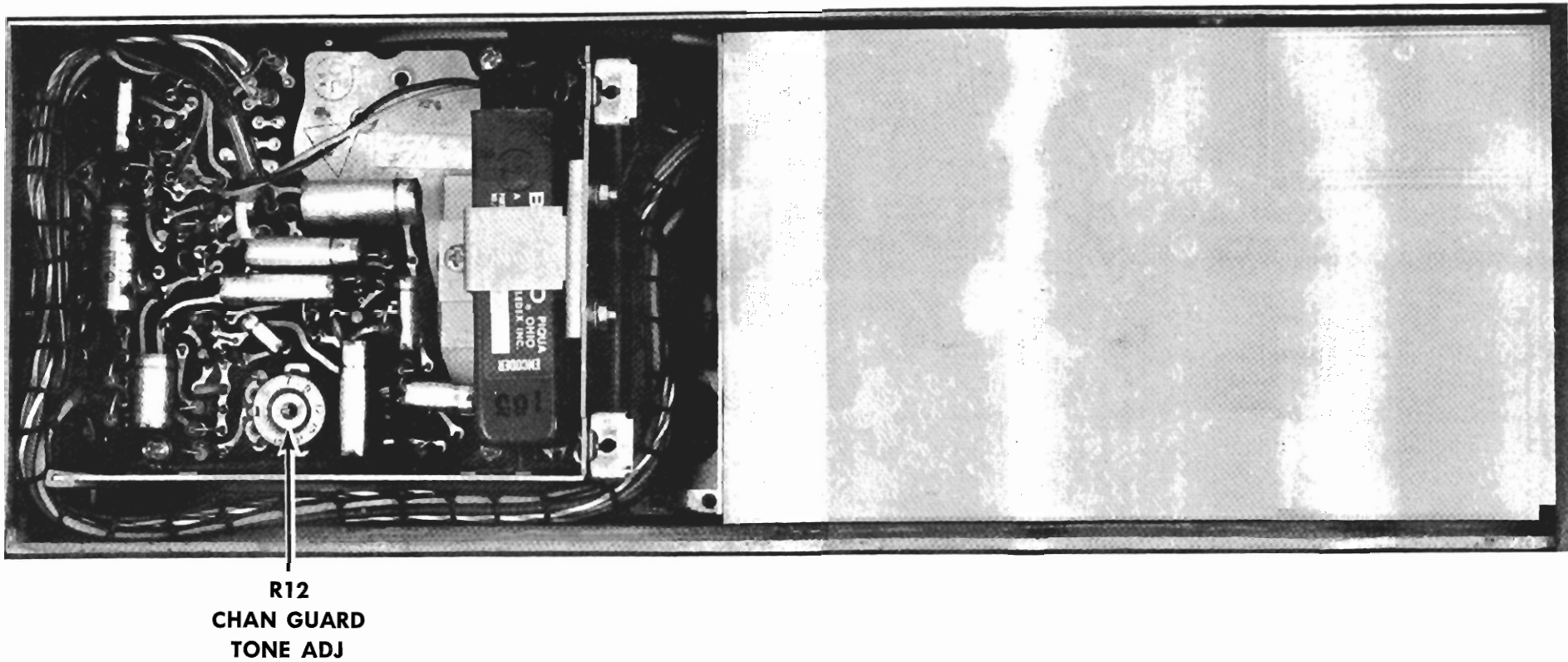
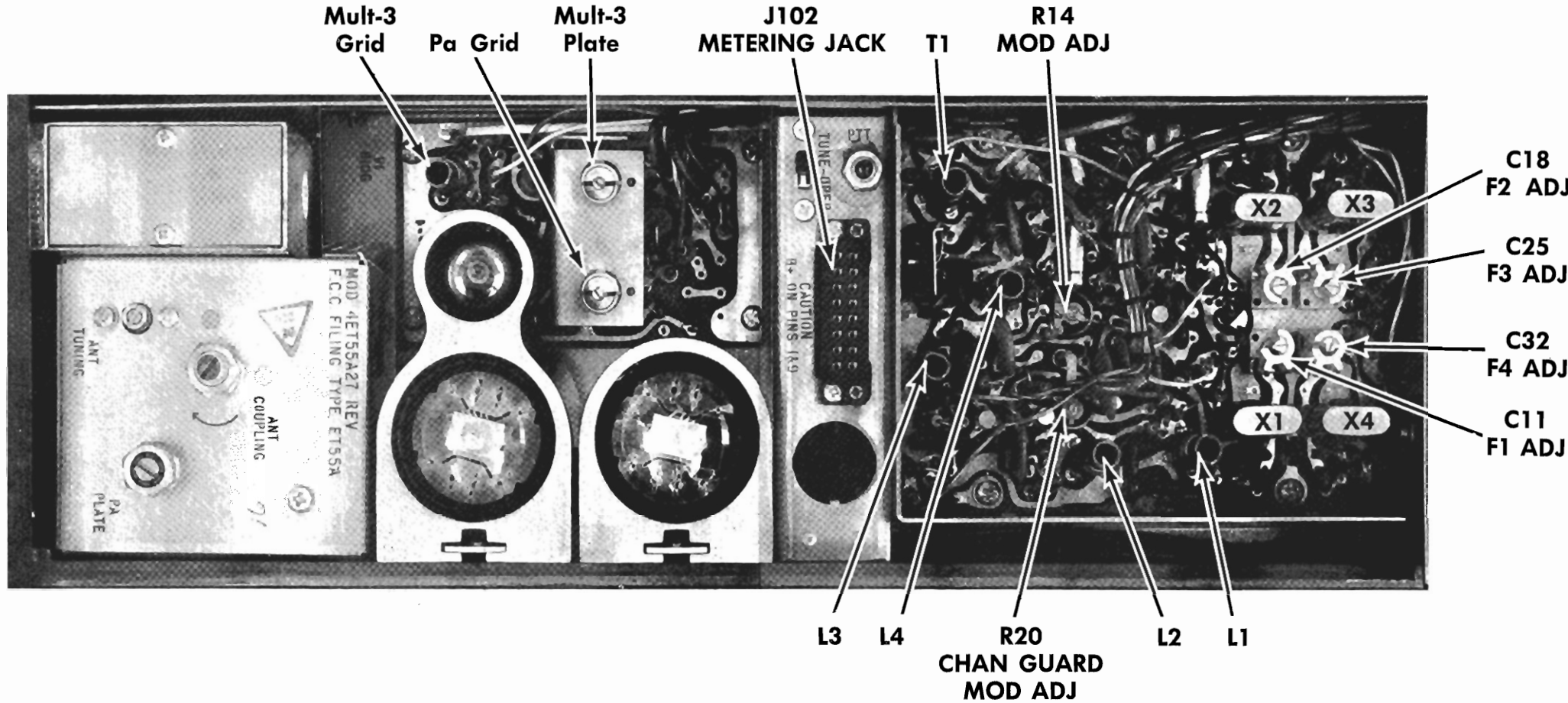
where:

P_i is the power input in watts

Plate voltage is measured with G-E Test Set in position G, using the 1000-volt scale (or measured from J102-1 to -16 with multimeter).

Plate current indication is measured with G-E Test Set in position G, using the TEST 1 scale (or measured from J102-1 to -9 with multimeter).

2.5 is the value of the plate current metering resistor in ohms.



TRANSMITTER ALIGNMENT

LBI-3580

EQUIPMENT REQUIRED

1. General Electric Test Set Model 4EX3A10, Station Metering Switching Panel or a 20,000 ohms-per-volt Multimeter with a 1-volt scale.

PRELIMINARY CHECKS AND ADJUSTMENTS

1. Place crystal (operating frequency $\div 12$) in crystal socket XY1.
2. Set crystal trimmer C11 to mid-capacity. If multi-frequency transmitter, set all trimmers to mid-capacity and tune transmitter on channel with the highest frequency (except for Step 7).
3. Place the TUNE-OPERATE switch (S102) in the TUNE position.
4. Connect Test Set Model 4EX3A10 to the Transmitter Centralized Metering Jack J102. If using Multimeter, connect the positive lead to J102-16 (Ground) except for Steps 6 through 14.
5. For a large change in frequency or a badly misaligned transmitter, set the slugs in all slug-tuned coils in the center of the coil form. All slugs will then tune clockwise, except MULT-3 PLATE and PA GRID slugs which tune counterclockwise.
6. All adjustments are made with the transmitter keyed.

METERING POSITION				TYPICAL	PROCEDURE
STEP	4EX3A10	Multimeter - at J102	TUNING CONTROL	METER READING	
EXCITER BOARD					
1.	A (MULT-1)	Pin 10	L1 (and L2 with Channel Guard)	0.6 v (0.4 v Minimum)	Tuning the modulator is a critical adjustment. Carefully tune L1 for maximum meter reading. For transmitters with Channel Guard, alternately tune L1 and L2 for maximum meter reading.
2.	A (MULT-1)	Pin 10	L3	See pro- cedure	Tune L3 for a small peak in meter reading (not required unless changing frequency).
3.	B (MULT-2)	Pin 2	L4 and L3	0.65 v (0.4 v Minimum)	Tune L4 and then L3 for maximum meter reading. Then tune T1 for minimum meter reading (not required unless changing frequency). NOTE Misalignment of this coil may result in the remainder of the transmitter being tuned off frequency. Always start with the slug in the center of the coil form (at maximum inductance) and tune for the first peak.
MULT-3 AND POWER AMPLIFIER					
4.	D (MULT-3)	Pin 4	MULT-3 GRID and T1 (on Exciter)	0.55 v (0.4 v Minimum)	Alternately tune MULT-3 GRID and T1 (on Exciter) for maximum meter reading. Then tune MULT-3 PLATE for slight change in meter reading (not required unless changing frequency).
5.	F (PA GRID)	Pin 14 (+) and Pin 6 (-)	PA GRID and MULT-3 PLATE	0.45 v (0.4 v Minimum)	Alternately tune PA GRID and MULT-3 PLATE for maximum meter reading.
6.					Rotate ANT COUPLING fully counterclockwise.
7.	G (PA PLATE)	WARNING High B-plus on Pins 1 and 9.		Minimum	For single-frequency transmitters, carefully tune PA PLATE for minimum meter reading.
		PA PLATE			For multi-frequency transmitters, switch to the lowest frequency and adjust PA PLATE for minimum meter reading.
8.					Place S102 in the OPERATE position.
9.	G (PA PLATE)	Pin 1 (+) and Pin 9 (-)	ANT COUPLING	See pro- cedure	Rotate ANT COUPLING clockwise until meter reading rises slightly. In multi-frequency transmitters, switch back to the highest frequency before tuning ANT COUPLING.
10.	G (PA PLATE)	Pin 1 (+) and Pin 9 (-)	ANT TUNING	Maximum	Adjust ANT TUNING for maximum meter reading.
11.	G (PA PLATE)	Pin 1 (+) and Pin 9 (-)	ANT COUPLING	0.7 v	Adjust ANT COUPLING for metering reading of 0.7 volts.
12.	F (PA GRID)	Pin 14 (+) and Pin 6 (-)	PA GRID	Maximum	Readjust PA GRID for maximum meter reading.
FREQUENCY ADJUSTMENT					
13.			C11, (C18, C25 and C32 in multi-fre- quency units)		With no modulation, adjust crystal trimmer C11 (on Exciter) for proper oscillator frequency. In multi-frequency units, adjust C18, C25 and C32 as required. Next, refer to the MODULATION ADJUSTMENT.

ALIGNMENT PROCEDURE

25 — 50 MC, 100-WATT MASTR
TRANSMITTER MODELS 4ET55A10-27

Issue 3

TEST PROCEDURES

These Test Procedures are designed to assist you in servicing a transmitter that is operating--but not properly. Problems encountered could be low power output, low B plus, tone and voice deviation, defective audio sensitivity and modulator adjust control set too high. By following the sequence of test steps starting with Step 1, the defect can be quickly

TEST EQUIPMENT REQUIRED

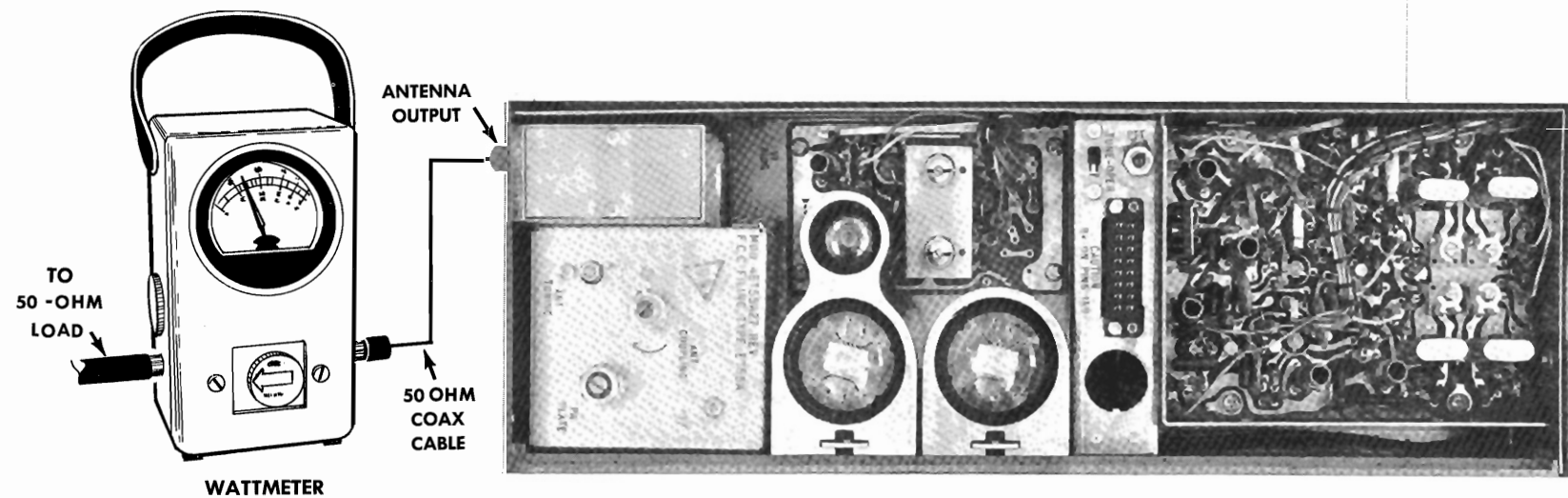
for test hookup as shown:

1. Wattmeter similar to:
Bird #43
Jones #711N
2. VTVM similar to:
Triplet #850
Heath #1M-21
3. Audio Generator similar to:
Heath #1G-72
4. Deviation Meter (with a .75 KC scale) similar to:
Measurements #140
Lampkin #205A
5. Multimeter similar to:
G-E METERING TEST SET MODEL 4EX3A10 or
Triplet #631 or
20,000 ohms-per-volt voltmeter

STEP 1

POWER MEASUREMENT TEST PROCEDURE

- Connect transmitter output to wattmeter as shown below:



- Key transmitter and check wattmeter for minimum reading of 100 watts.

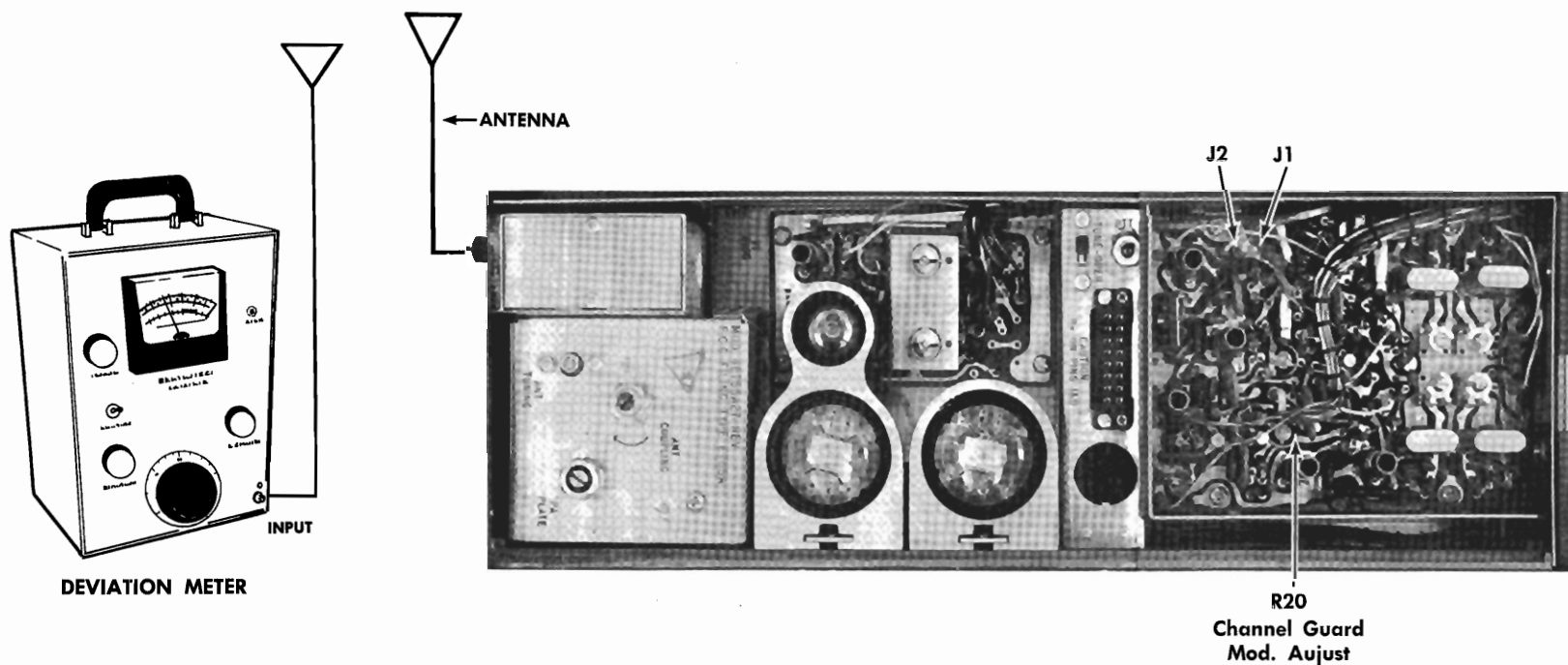
SERVICE CHECK

Refer to Service Hints on Transmitter Troubleshooting Procedure.

STEP 2

TONE DEVIATION WITH CHANNEL GUARD TEST PROCEDURE

- Setup Deviation Meter and monitor output of transmitter as shown below:

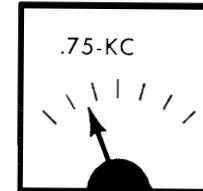


- Unplug the MIC HI terminal from J1 on Transmitter Exciter Board.
- Key transmitter and check for 0.75-KC deviation. If reading is low or high, adjust Channel Guard MOD ADJUST (R20) for a reading of 0.75 KC.

NOTES:

The Channel Guard MOD ADJUST (R20) may be adjusted for deviations up to 0.80 KC for tone frequencies from 71.9 cps to 82.5 cps, and deviations up to 1.0 KC for all tone frequencies above 82.5 cps.

DEVIATION METER



NOTES:

- On units supplied with Channel Guard, the Phase Modulator Tuning should be peaked carefully to insure proper performance. (Refer to Steps 1 and 2 in the Transmitter Alignment Chart).
- The Tone Deviation Test Procedures should be repeated every time the Tone Frequency is changed.

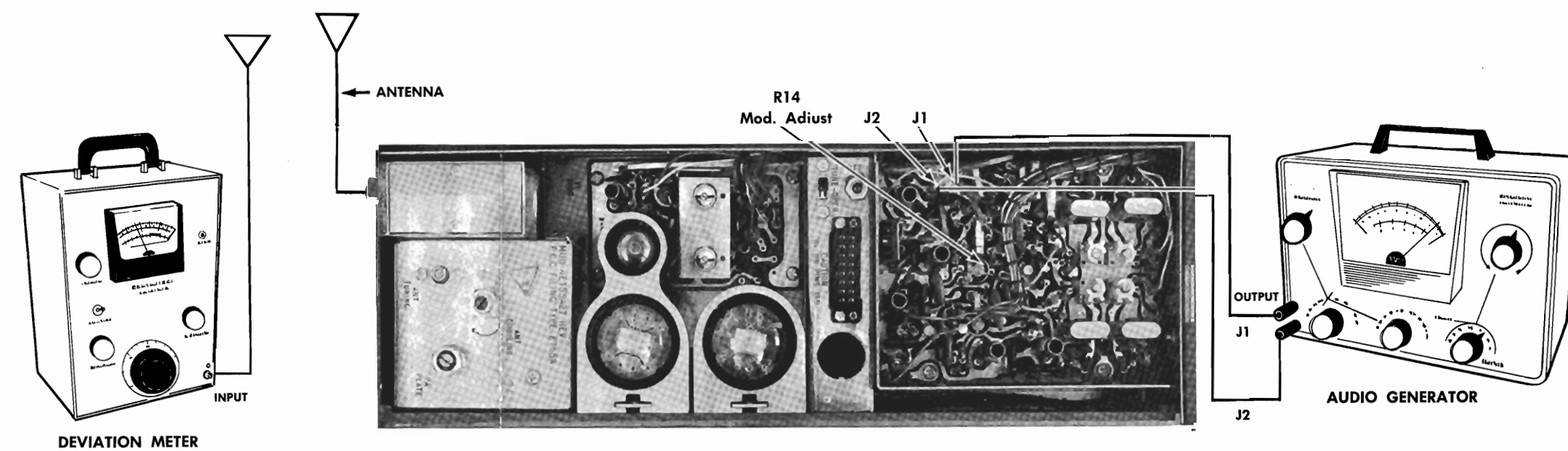
SERVICE CHECK

If the 0.75-KC deviation is not obtainable when adjusting R20, replace the Tone Transmitter reed.

STEP 3

VOICE DEVIATION AND SYMMETRY TEST PROCEDURE

- Unplug the High and Low Mike leads from the Exciter Board Jacks J1 and J2.
- Connect test equipment to transmitter as shown below:



- Set the generator output to 1.0 VOLTS RMS and frequency to 1 KC.
- Key the transmitter and adjust Deviation Meter to carrier frequency.
- Deviation reading should be ± 4.5 KC.
- Adjust "Modulation Adjust Control" R14 until deviation reads 4.5 KC on plus (+) or minus (-) deviation, whichever is greater. This adjustment should be made with the correct level of tone applied on Channel Guard transmitters.

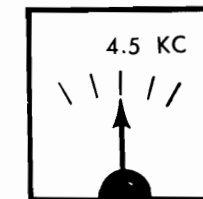
NOTES:

-- MASTR transmitters are adjusted for 4.5 KC deviation at the factory. The factory adjustment will prevent the transmitter from deviating more than 5.0 KC under the worst conditions of frequency, voltage and temperature.

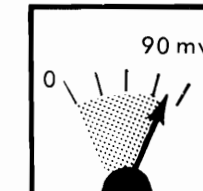
If the deviation reading plus (+) and minus (-) differs by more than 0.5 KC, check the following:

- Recheck Step 1 as shown in the Transmitter Alignment Chart.
- Check Audio Sensitivity by reducing generator output until deviation falls to 3.3 KC. Voltage should be LESS than 90 millivolts.

DEVIATION METER



METER



STEP 1 - QUICK CHECKS

CHECK VOLTAGES AT CENTRALIZED METERING JACK J102 Multimeter = pin numbers GE Test Set = A thru G positions						
POWER OUTPUT	Pins 10 & 16 A	Pins 2 & 16 B	Pins 4 & 16 D	Pins 6 & 14 F	Pins 1 & 9 G	PROBABLE DEFECT
Low	0.7 v	0.65 v	0.6 v	0.4 v	0.7 v	Weak 7984
0	0.7 v	0.65 v	0.6 v	0	0	Open 7984
Low	0.7 v	0.65 v	0.6 v	Low or neg.	--	Weak 8106
0	0.7 v	0.65 v	0.15 v	0	0.4 v	8106 Fil. open
0	0.7 v	0.65 v	0.15 v	0	0	Open Fil. Fuse
0	0.7 v	0 or over 1.0 v	0.15 v	0	0.4 v	Defective Q6
0	Over 1.0 v	0	0.15 v	0	0.4 v	Shorted Q5 or Open Q4
0	0	0	0.15 v	0	0.4 v	Defective Q3- or Modulator (See note A)
NOTE A --- Localize trouble by checking:--						
1. -20 volt DC supply at J102-12-16.						
2. Measure 12.6 VDC across Q3 emitter resistor R31, then:						
(a) Remove crystal - a slight variation in R31 voltage reading indicates Q3 stage operating properly.						
(b) If no voltage is measured, check keying leads CR3-CR6, Q3.						
(c) With crystal removed, short Q4 base to emitter. A voltage reading above 1.0 volt indicates Q4 and Q5 are operating properly. Defect may be in Modulator.						
(d) If modulator is defective, check voltage variable diodes CV1 and CV2.						

STEP 2
CHECK TYPICAL DC VOLTAGES

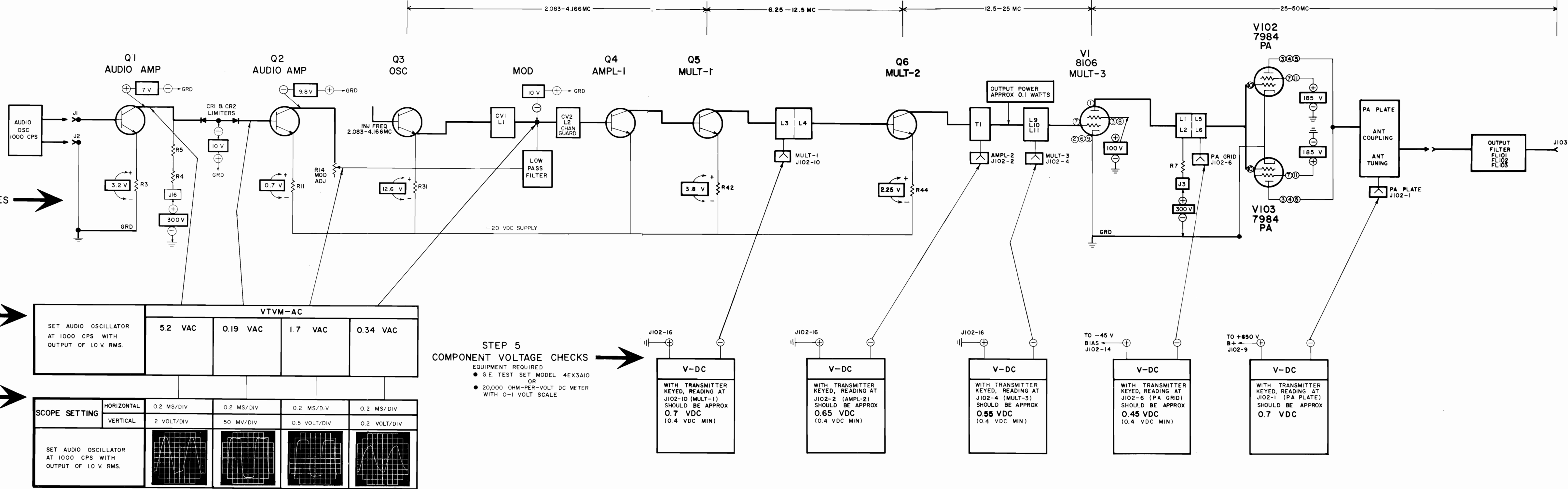
EQUIPMENT REQUIRED
● G.E. TEST MODEL 4EX3A10 OR
● 20,000 OHM-PER-VOLT METER

STEP 3
CHECK AUDIO AC VOLTAGES

EQUIPMENT REQUIRED
● AUDIO OSCILLATOR
● AC VTVM

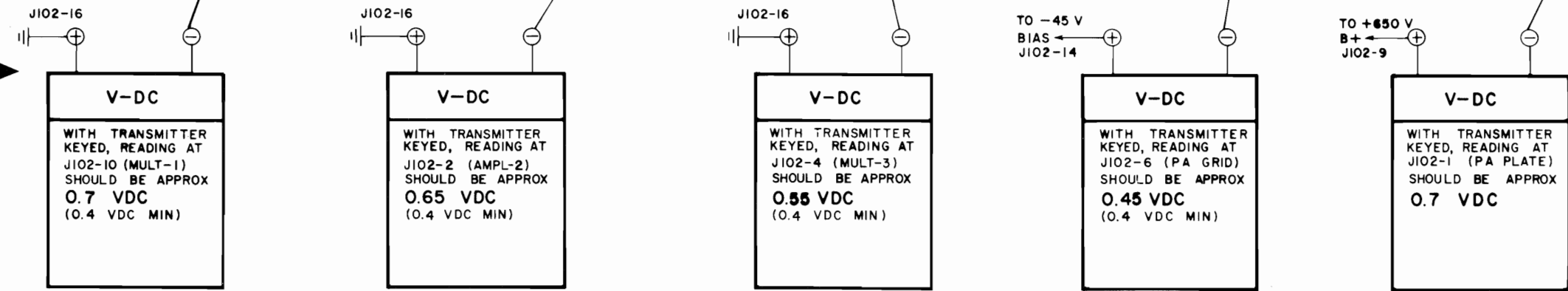
STEP 4
AUDIO & OSC. WAVEFORMS

EQUIPMENT REQUIRED
● AUDIO OSCILLATOR
● OSCILLOSCOPE



STEP 5
COMPONENT VOLTAGE CHECKS

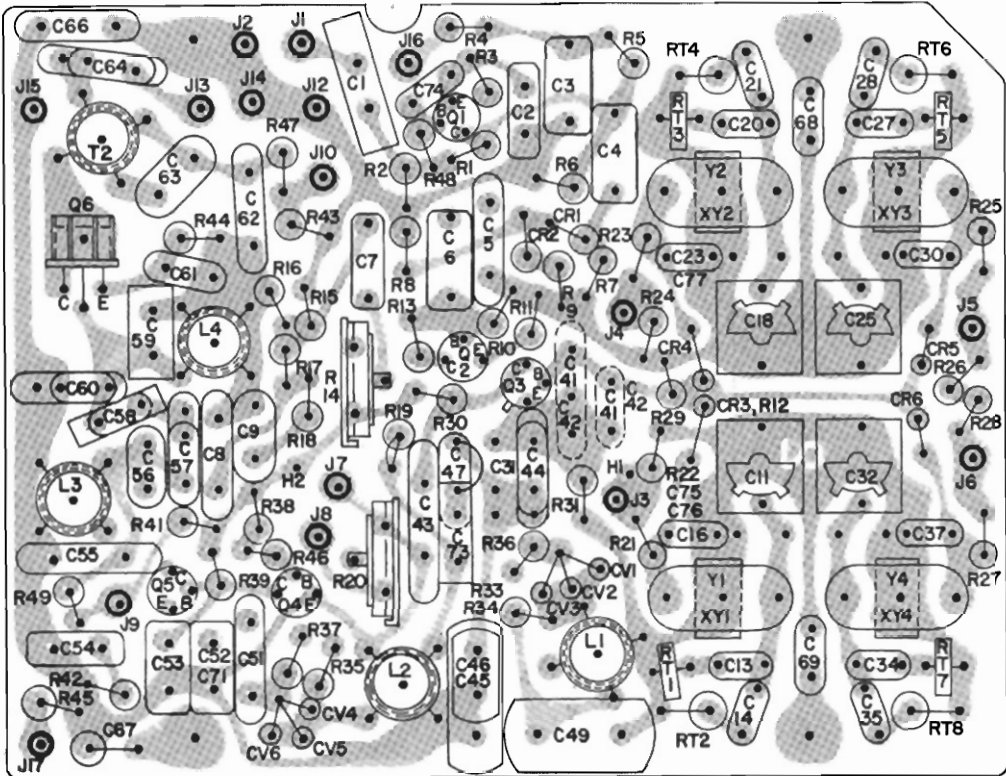
EQUIPMENT REQUIRED
● G.E. TEST SET MODEL 4EX3A10 OR
● 20,000 OHM-PER-VOLT DC METER WITH 0-1 VOLT SCALE



TROUBLESHOOTING PROCEDURE

25 - 50 MC, 100-WATT MASTER
TRANSMITTER MODELS 4ET55A10-27

EXCITER



EXCITER READINGS TAKEN TO CHASSIS GROUND						
TRANSISTOR	EMITTER		BASE		COLLECTOR	
	-	+	-	+	-	+
Q1	6.4K	6.8K	200K	12K	65K	22K
Q2	8.5K	5K	70K	13K	10K	10K
Q3	10K	6.5K	20K	2.9K	100	100
Q4	6.5K	3.1K	80K	8K	4.2K	2.5K
Q5	7K	3.8K	4.2K	2.5K	1700	170 Ω
Q6	6.7K	3.3K	6.5K	3.1K	70	70

EXCITER READINGS TAKEN TO -20V LINE (J. BLUE)						
TRANSISTOR	EMITTER		BASE		COLLECTOR	
	-	+	-	+	-	+
Q1	13K	12K	220K	45K	3.1K	6.5K
Q2	1.2K	1.2K	65K	4.7K	16K	22K
Q3	2.0K	2K	6.2K	5.5K	3.3K	6.6K
Q4	0	0	3.3K	3.4K	10K	4.1K
Q5	340	390	10K	4.1K	3.4K	6.8K
Q6	50	120	0	0	3K	6.6K

RESISTANCE READINGS

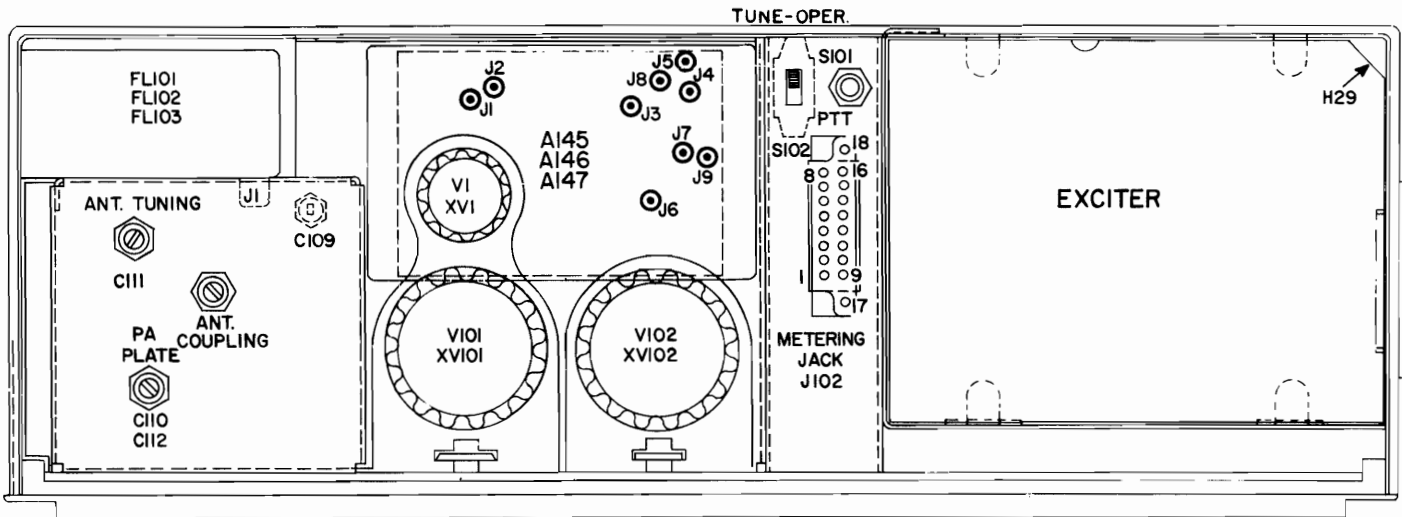
ALL READINGS ARE TYPICAL READINGS MEASURED WITH A 20,000 OHM-PER-VOLT METER AND J101 DISCONNECTED. + OR - SIGNS SHOW METER LEAD GROUNDED.

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

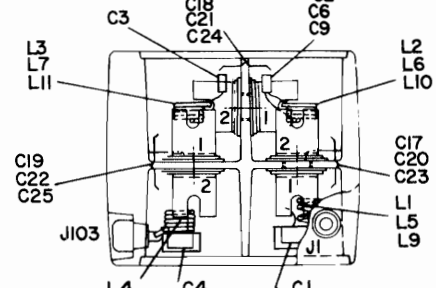
CHANNEL GUARD READINGS MEASURED TO CHASSIS GND						
TRANSISTOR	EMITTER		BASE		COLLECTOR	
	+	-	+	-	+	-
Q1	∞	∞	∞	∞	∞	∞
Q2	∞	∞	∞	∞	∞	∞
Q3	2.7K	4.9K	9.5K	30K	6.4K	7.5K
Q4	2.7K	4.9K	6K	24K	2.5K	2.6K

CHANNEL GUARD READINGS MEASURED TO -10 VOLT LINE (J5 ORANGE LEAD)						
TRANSISTOR	EMITTER		BASE		COLLECTOR	
	+	-	+	-	+	-
Q1	200	200	9K	14K	2.7K	25K
Q2	1.3K	1.3K	3.4K	6.3K	15K	8.7K
Q3	∞	∞	∞	∞	∞	∞
Q4	∞	∞	∞	∞	∞	∞

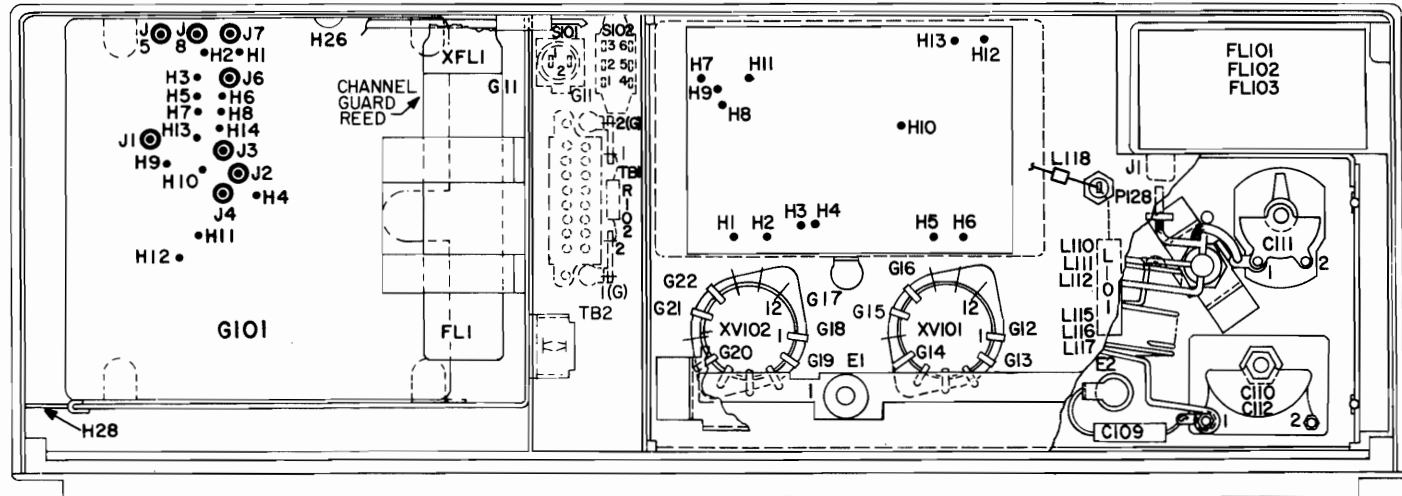
TOP VIEW



VIEW AT "A"

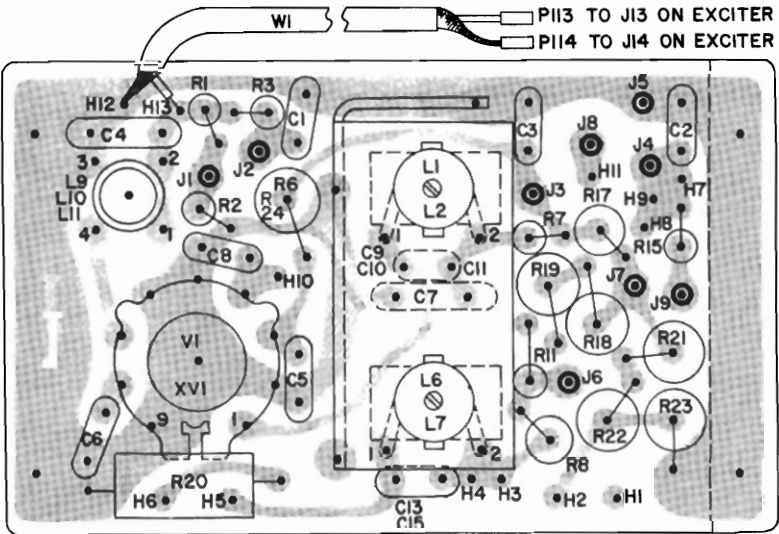


BOTTOM VIEW



READINGS FROM TUBE SOCKET PINS TO CHASSIS GROUND												
PIN	1	2	3	4	5	6	7	8	9	10	11	12
XV1	27K	0	82K	13 Ω	0	0	16K	82K	0			
XV101	0	0	0	∞	∞	0	27K	0	0	75K	27K	1.3 Ω
XV102	0	0	∞	∞	∞	0	27K	0	0	75K	27K	1.3 Ω

READINGS AT J101 TAKEN TO CHASSIS GROUND		
PIN	-	+
1	0	0
2	∞	∞
3	1.3 Ω	1.3 Ω
4	27K	27K
5	∞	∞
6	∞	∞
7	∞	∞
8	70K	70K
9	∞	∞
10	∞	∞
11	∞	∞
12	30K	16K
13	∞	∞
14	∞	∞
15	6.5K	3.1K
16	∞/30K	∞/16K
17	∞/30K	∞/16K
18	∞/30K	∞/16K
19	0	0
20	∞	∞



A145 - A147

(19B204613, Sh. 1, Rev. 1)
(19B204613, Sh. 2, Rev. 1)

OUTLINE DIAGRAM

25 — 50 MC, 100-WATT MASTR
TRANSMITTER MODELS 4ET55A10-27

CHANNEL GUARD
GIO1

(19C303456, Sh. 1, Rev. 3)
(19C303456, Sh. 2, Rev. 3)

PARTS LIST			
LBI-3531B			
25-50 MC TRANSMITTER			
MODELS 4RT55A10 - 4RT55A36			
4RT55A10-18 (PL-19E500808 G28-36) STANDARD, REV. A			
4RT55A19-27 (PL-19E500808 G37-45) CHANNEL GUARD, REV. B			

SYMBOL	G-E PART NO.	DESCRIPTION
----- SUBASSEMBLIES (Cont'd) -----		
----- CAPACITORS (Cont'd) -----		
A101-103, A106-108, A111-113, A116-118, A121-123, A126-128		EXCITER BOARD ASSEMBLY
C1	19B209243-P3	Polyester dielectric: radial leads, .022 pf ±20%, 40 VDCV; sim to Amerex C280A/P22K.
C2*	19B209243-P4	Polyester: .033 pf ±20%, 40 VDCV. In Models 4RT55A11, 12, 14, 15, 17 and 18 REV. B and earlier; in Models 4RT55A10, 13 and 16 REV. C and earlier; in Models 4RT55A20, 21, 22, 24, 26 and 27 REV. D and earlier; and in Models 4RT55A19, 22 and 25 REV. E and earlier: Polyester: .022 pf ±20%, 40 VDCV.
C3*	19B209243-P13	Polyester: .01 pf ±20%, 40 VDCV. In Models 4RT55A12, 15, 17 and 18 REV. C and earlier; in Models 4RT55A10, 11, 13, 14 and 16 REV. D and earlier; in Models 4RT55A21, 24, 26 and 27 REV. E and earlier; and in Models 4RT55A19, 20, 22, 23 and 25 REV. F and earlier: Tubular, Wylars dielectric: radial leads, 0.1 pf ±20%, 200 VDCV.
C4	19B209243-P7	Polyester dielectric: radial leads, 0.1 pf ±20%, 40 VDCV; sim to Amerex C280A/P100K.
C5	7491395-P114	Ceramic disc: radial leads, .0022 pf ±10%, 500 VDCV.
C6	19B209243-P7	Polyester dielectric: radial leads, 0.1 pf ±20%, 40 VDCV; sim to Amerex C280A/P100K.
C7	19B209243-P5	Polyester dielectric: radial leads, .047 pf ±20%, 40 VDCV; sim to Amerex C280A/P47K.
C8	7491395-P114	Ceramic disc: radial leads, .0022 pf ±10%, 500 VDCV.
C9	5493366-P470J	Silver mica, dipped phen: radial leads, 470 pf ±5%, 100 VDCV; sim to Electro Motive Type DM-15. (Used in Models 4RT55A10-18.)
C11	5491271-P106	Variable, air dielectric, subminiature: approx 1.98-12.4 pf, 750 v peak; sim to RF Johnson 189-6-5.
C13 and C14	19C300685-P93	Ceramic disc: temp-comp, radial leads, 5 pf ±0.1 pf, 500 VDCV, temp coef 0 PPM.
C16*	5496219-P343	Ceramic: 13 pf ±5%, 500 VDCV, temp coef -150 PPM.
C18	5491271-P106	Variable, air dielectric, subminiature: approx 1.98-12.4 pf, 750 v peak; sim to RF Johnson 189-6-5. (Used in Models 4RT55A13-18, 22-27, 31-36.)
C20 and C21	19C300685-P93	Ceramic disc: temp-comp, radial leads, 5 pf ±0.1 pf, 500 VDCV, temp coef 0 PPM. (Used in Models 4RT55A13-18, 25-27, 31-36.)
C23*	5496219-P343	Ceramic: 13 pf ±5%, 500 VDCV, temp coef -150 PPM.
C25	5491271-P106	Variable, air dielectric, subminiature: approx 1.98-12.4 pf, 750 v peak; sim to RF Johnson 189-6-5. (Used in Models 4RT55A13-18, 25-27, 34-36.)
C27 and C28	19C300685-P93	Ceramic disc: temp-comp, radial leads, 5 pf ±0.1 pf, 500 VDCV, temp coef 0 PPM. (Used in Models 4RT55A13-18, 25-27, 34-36.)
C30*	5496219-P343	Ceramic: 13 pf ±5%, 500 VDCV, temp coef -150 PPM.
C31	5496372-P178	Ceramic disc: temp-comp, radial leads, 820 pf ±5%, 500 VDCV, temp coef -3300 PPM. (Used in Models 4RT55A21, 24, 27, 30, 33 and 36.)
C32	5491271-P106	Variable, air dielectric, subminiature: approx 1.98-12.4 pf, 750 v peak; sim to RF Johnson 189-6-5. (Used in Models 4RT55A13-18, 25-27, 34-36.)
C34	19C300685-P93	Ceramic disc: temp-comp, radial leads, 5 pf ±0.1 pf, 500 VDCV, temp coef 0 PPM. (Used in Models 4RT55A13-18, 25-27, 34-36.)
C35 and C37*	5496219-P343	Ceramic: 13 pf ±5%, 500 VDCV, temp coef -150 PPM.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.

SYMBOL	G-E PART NO.	DESCRIPTION
----- SUBASSEMBLIES (Cont'd) -----		
----- CAPACITORS (Cont'd) -----		
C41A	5496372-P178	Ceramic disc: temp-comp, radial leads, 820 pf ±5%, 500 VDCV, temp coef -3300 PPM. (Used in Models 4RT55A10, 11, 13, 14, 16, 17, 19, 20, 22, 23, 25, 26, 28, 29, 31, 32, 34 and 35.)
C41B	5496372-P62	Ceramic disc: temp-comp, radial leads, 390 pf ±5%, 500 VDCV, temp coef -2200 PPM. (Used in Models 4RT55A12, 15 and 18.)
C42A	4029003-P4	Silver mica, dipped phen: radial leads, 880 pf ±5%, 500 VDCV; sim to Electro Motive Type DM-20. (Used in Models 4RT55A21, 24, 27, 30, 33 and 36.)
C43	5494481-P120	Ceramic disc: radial leads, .006 pf ±10%, 500 VDCV; sim to RMC Type JF Discap.
C44A	4029003-P1	Silver mica, dipped phen: radial leads, 510 pf ±5%, 500 VDCV; sim to Electro Motive Type DM-20. (Used in Models 4RT55A10, 11, 13, 14, 16, 17, 19, 20, 22, 23, 25, 26, 28, 29, 31, 32, 34 and 35.)
C44B	4029003-P6	Silver mica, dipped phen: radial leads, 820 pf ±5%, 500 VDCV; sim to Electro Motive Type DM-20. (Used in Models 4RT55A12, 15 and 18.)
C45A	4029003-P16	Silver mica, dipped phen: radial leads, 2200 pf ±5%, 500 VDCV; sim to Electro Motive Type DM-20. (Used in Models 4RT55A10, 13 and 16.)
C45B	4029003-P12	Silver mica, dipped phen: radial leads, 1500 pf ±5%, 500 VDCV; sim to Electro Motive Type DM-20. (Used in Models 4RT55A11, 12, 14, 15, 17 and 18.)
C46A	4029003-P12	Ceramic disc: temp-comp, radial leads, 1500 pf ±5%, 500 VDCV; sim to Electro Motive Type DM-20. (Used in Models 4RT55A19, 22, 25, 28, 31 and 34.)
C46B	4029003-P8	Silver mica, dipped phen: radial leads, 1000 pf ±5%, 500 VDCV; sim to Electro Motive Type DM-20. (Used in Models 4RT55A20, 21, 23, 24, 26, 27, 29, 30, 32, 33, 35 and 36.)
C47	5496372-P174	Ceramic disc: temp-comp, radial leads, 680 pf ±5%, 500 VDCV, temp coef -3300 PPM. (Used in Models 4RT55A19-36.)
C49	5493367-P1000J	Silver mica, dipped phen: radial leads, .001 pf ±5%, 100 VDCV; sim to Electro Motive Type DM-20. (Used in Models 4RT55A19-36.)
C51	5496372-P66	Ceramic disc: radial leads, .004 pf ±10%, 500 VDCV; sim to RMC Type JF Discap.
C52A	5493366-P470K	Silver mica, dipped phen: radial leads, 470 pf ±10%, 100 VDCV; sim to Electro Motive Type DM-15. (Used in Models 4RT55A19, 20, 22, 23, 25, 26, 28, 29, 31, 32, 34 and 35.)
C52B	5493366-P390K	Silver mica, dipped phen: radial leads, 390 pf ±10%, 100 VDCV; sim to Electro Motive Type DM-15. (Used in Models 4RT55A21, 24, 27, 30, 33 and 36.)
C53A	5493366-P270K	Silver mica, dipped phen: radial leads, 270 pf ±10%, 100 VDCV; sim to Electro Motive Type DM-15. (Used in Models 4RT55A10, 13, 16, 19, 22, 25, 26, 28, 31 and 34.)
C53B	5493366-P220K	Silver mica, dipped phen: radial leads, 220 pf ±10%, 100 VDCV; sim to Electro Motive Type DM-15. (Used in Models 4RT55A16, 25-27, 34-36.)
C53C	5493366-P180K	Silver mica, dipped phen: radial leads, 180 pf ±10%, 100 VDCV; sim to Electro Motive Type DM-15. (Used in Models 4RT55A12, 15, 18, 21, 24, 27, 30, 33 and 36.)
C54	19B209243-P1	Polyester dielectric: radial leads, 0.1 pf ±20%, 40 VDCV; sim to Amerex C280A/P100K.
C55	7491827-P5	Ceramic disc: radial leads, 0.1 pf ±80% -30%, 50 VDCV; sim to Sprague 36C172.
C56A	5493366-P1000J	Silver mica, dipped phen: radial leads, .001 pf ±5%, 100 VDCV; sim to Electro Motive Type DM-15. (Used in Models 4RT55A10, 11, 13, 14, 16, 17, 19, 20, 22, 23, 25, 26, 28, 29, 31, 32, 34 and 35.)
C56B	5493366-P680J	Silver mica, dipped phen: radial leads, 680 pf ±5%, 100 VDCV; sim to Electro Motive Type DM-15. (Used in Models 4RT55A12, 15, 18, 21, 24, 27, 30, 33 and 36.)

SYMBOL	G-E PART NO.	DESCRIPTION
----- SUBASSEMBLIES (Cont'd) -----		
----- CAPACITORS (Cont'd) -----		
C57A	5496219-P767	Ceramic disc: temp-comp, radial leads, 150 pf ±5%, 500 VDCV, temp coef -750 PPM. (Used in Models 4RT55A10, 13, 16, 19, 22, 25, 26, 31 and 34.)
C57B	5496219-P860	Ceramic disc: temp-comp, radial leads, 75 pf ±5%, 500 VDCV, temp coef -1500 PPM. (Used in Models 4RT55A11, 14, 17, 20, 23, 26, 29, 32 and 35.)
C57C	5496219-P855	Ceramic disc: temp-comp, radial leads, 47 pf ±5%, 500 VDCV, temp coef -1500 PPM. (Used in Models 4RT55A12, 15, 18, 21, 24, 27, 30, 33 and 36.)
C58A	5496219-P41	Ceramic disc: temp-comp, radial leads, 10 pf ±5%, 500 VDCV, temp coef 0 PPM. (Used in Models 4RT55A10, 13, 16, 19, 22, 25, 28, 31 and 34.)
C58B	5496219-P38	Silver mica, dipped phen: radial leads, 7 pf ±0.25 pf, 500 VDCV, temp coef 0 PPM. (Used in Models 4RT55A11, 14, 17, 20, 23, 26, 29, 32 and 35.)
C58C	5496219-P36	Ceramic disc: temp-comp, radial leads, 5 pf ±0.25 pf, 500 VDCV, temp coef 0 PPM. (Used in Models 4RT55A12, 15, 18, 21, 24, 27, 30, 33 and 36.)
C59A	5493366-P1000J	Silver mica, dipped phen: radial leads, .001 pf ±5%, 100 VDCV; sim to Electro Motive Type DM-15. (Used in Models 4RT55A10, 11, 13, 14, 16, 17, 19, 20, 22, 23, 25, 26, 28, 29, 31, 32, 34 and 35.)
C59B	5493366-P680J	Silver mica, dipped phen: radial leads, 680 pf ±5%, 500 VDCV; sim to Electro Motive Type DM-15. (Used in Models 4RT55A12, 15, 18, 21, 24, 27, 30, 33 and 36.)
C60A	5496219-P767	Ceramic disc: temp-comp, radial leads, 150 pf ±5%, 500 VDCV, temp coef -750 PPM. (Used in Models 4RT55A10, 13, 16, 19, 22, 25, 28, 31 and 34.)
C60B	5496219-P860	Ceramic disc: temp-comp, radial leads, 75 pf ±5%, 500 VDCV, temp coef -1500 PPM. (Used in Models 4RT55A11, 14, 17, 20, 23, 26, 29, 32 and 35.)
C60C	5496219-P855	Ceramic disc: temp-comp, radial leads, 47 pf ±5%, 500 VDCV, temp coef -1500 PPM. (Used in Models 4RT55A12, 15, 18, 21, 24, 27, 30, 33 and 36.)
C61A	5494481-P112	Ceramic disc: radial leads, .001 pf ±10%, 500 VDCV; sim to RMC Type JF Discap.
C62	5494481-P118	Ceramic disc: radial leads, .004 pf ±10%, 500 VDCV; sim to RMC Type JF Discap.
C63A	5493366-P270J	Silver mica, dipped phen: radial leads, 270 pf ±5%, 100 VDCV; sim to Electro Motive Type DM-15. (Used in Models 4RT55A10, 13, 16, 19, 22, 25, 26, 28, 31 and 34.)
C63B	5493366-P150J	Silver mica, dipped phen: radial leads, 150 pf ±5%, 100 VDCV; sim to Electro Motive Type DM-15. (Used in Models 4RT55A11, 14, 17, 20, 23, 26, 29, 32 and 35.)
C63C	5493366-P82J	Silver mica, dipped phen: radial leads, 82 pf ±5%, 100 VDCV; sim to Electro Motive Type DM-15. (Used in Models 4RT55A12, 15, 18, 21, 24, 27, 30, 33 and 36.)
C64A	5496219-P772	Ceramic disc: temp-comp, radial leads, 240 pf ±5%, 500 VDCV, temp coef -750 PPM. (Used in Models 4RT55A10, 13, 16, 19, 22, 25, 28, 31 and 34.)
C64B	5496219-P769	Ceramic disc: temp-comp, radial leads, 180 pf ±5%, 500 VDCV, temp coef -750 PPM. (Used in Models 4RT55A11, 14, 17, 20, 23, 26, 29, 32 and 35.)
C64C	5496219-P763	Ceramic disc: temp-comp, radial leads, 100 pf ±5%, 500 VDCV, temp coef -750 PPM. (Used in Models 4RT55A12, 15, 18, 21, 24, 27, 30, 33 and 36.)
C66	5494481-P118	Ceramic disc: radial leads, .004 pf ±10%, 500 VDCV; sim to RMC Type JF Discap.
C67	5496267-P18	Tubular, hermetically sealed, tantalum, dry solid; axial leads, 6.8 pf ±20%, 35 VDCV; sim to Sprague 1500B85X035B2.

SYMBOL	G-E PART NO.	DESCRIPTION
----- SUBASSEMBLIES (Cont'd) -----		
----- CAPACITORS (Cont'd) -----		
C68 and C69	7491827-P2	Ceramic disc: radial leads, .01 pf ±80% -30%, 50 VDCV; sim to Sprague 19C180.
C71A	5493366-P680J	Silver mica, dipped phen: radial leads, 680 pf ±5%, 100 VDCV; sim to Electro Motive Type DM-15. (Used in Models 4RT55A10, 11, 13, 14, 16 and 17.)
C71B	5490008-P43	Silver mica, dipped phen: radial leads, 470 pf ±5%, 500 VDCV; sim to Electro Motive Type DM-15. (Used in Models 4RT55A12, 15 and 18.)
C73A	5490008-P27	Silver mica, dipped phen: radial leads, 100 pf ±5%, 500 VDCV; sim to Electro Motive Type DM-15. (Used in Models 4RT55A10, 11, 13, 14, 16 and 17.)
C73B	5490008-P25	Silver mica, dipped phen: radial leads, 82 pf ±5%, 500 VDCV; sim to Electro Motive Type DM-15. (Used in Models 4RT55A12, 15 and 18.)
C74	5494481-P112	Ceramic disc: radial leads, .001 pf ±10%, 500 VDCV; sim to RMC Type JF Discap.
C75*	5496219-P37	Ceramic disc: 6pf ±0.25 pf, 500 VDCV. (Used in Models 4RT55A11 and 20.)
C76* and C77	5496219-P35	Ceramic disc: 4 pf ±0.25 pf, 500 VDCV, temp coef 0 PPM. (Used in Models 4RT55A14 and 23.)
----- DIODES AND RECTIFIERS -----		
C81 and C82	19A11531J-P1	Silicon.
C83 and C84	19A11563J-P1	Silicon (Used in Models 4RT55A13-18, and 22 - 27)
C85 and C86	19A11563J-P1	Silicon. (Used in Models 4RT55A16-18, 25-27, 34-36.)
Q1 and Q2	19A115123-P1	Silicon, NPN; sim to Type 2N2712.
Q3 and Q4	19A118330-P1	Silicon, NPN.
Q5	19A115328-P1	Silicon, NPN.
Q6*	19A115328-P1	Silicon: NPN. In Models 4RT55A12, 15, 17 and 18 REV. C and earlier; in Models 4RT55A10, 11, 13, 14 and 16 REV. D and earlier; in Models 4RT55A21, 24, 26 and 27 REV. E and earlier; and in Models 4RT55A19, 20, 22, 23 and 25 REV. F and earlier.
Q6*	19A115329-P1	Silicon: NPN.
----- RESISTORS -----		
R1	3R77-P334K	Fixed composition: 0.33 megohm ±10%, 1/2 w.
R2	3R77-P105K	Fixed composition: 1 megohm ±10%, 1/2 w.
R3*	3R77-P472K	Fixed composition: 4700 ohms ±10%, 1/2 w. In Models 4RT55A11, 12, 14, 15, 17 and 18 REV. B and earlier; in Models 4RT55A10, 13 and 16 REV. C and earlier; in Models 4RT55A20, 21, 23, 24, 26 and 27 REV. D and earlier; and in Models 4RT55A19, 20, 22, 23 and 25 REV. E and earlier: Fixed composition: 6800 ohms ±10%, 1/2 w.
R4	3R77-P274K	Fixed composition: 0.27 megohm ±10%, 1/2 w.
R5	3R77-P224K	Fixed composition: 0.22 megohm ±10%, 1/2 w.
R6	3R77-P683K	Fixed composition: 68,000 ohms ±10%, 1/2 w.
R7	3R77-P334J	Fixed composition: 0.33 megohm ±10%, 1/2 w.
R8	3R77-P684K	Fixed composition: 0.68 megohm ±10%, 1/2 w.
R9	3R77-P334K	Fixed composition: 0.33 megohm ±10%, 1/2 w.
R10	3R77-P683K	Fixed composition: 68,000 ohms ±10%, 1/2 w.
R11	3R77-P122K	Fixed composition: 1200 ohms ±10%, 1/2 w.
R12*	3R152-P100J	Fixed composition: 100 ohms ±5%, 1/4 w.
R13	3R77-P224K	Fixed composition: 0.22 megohm ±10%, 1/2 w.
R14*	19B209358-P106	Variable carbon film: approx 75-10,000 ohms ±20%, 0.25 w. In Models 4RT55A12, 15, 17 and 18 REV. C and earlier; in Models 4RT55A10, 11, 13, 14 and 16 REV. D and earlier; in Models 4RT55A21, 24, 26 and 27 REV. E and earlier; and in Models 4RT55A19, 20, 22, 23, and 25 REV. F and earlier.
L2A	PL-19C303526-G1	Coil. (Used in Models 4RT55A19, 22, 25, 28, 31 and 34). Includes:
5491798-P2		Tuning slug.
R15 and R16	3R77-P224K	Fixed composition: 0.22 megohm ±10%, 1/2 w.
R17	3R77-P473K	Fixed composition: 47,000 ohms ±10%, 1/2 w.
R18	3R77-P623K	Fixed composition: 62,000 ohms ±10%, 1/2 w.
R19	3R77-P103K	Fixed composition: 10,000 ohms ±10%, 1/2 w.
R20*	19B209358-P107	Variable carbon film: approx 75-25,000 ohms ±20%, 0.25 w. In Models 4RT55A21, 24, 26 and 27 REV. D & E; and in Models 4RT55A19, 20, 22, 23 and 25 REV. F & P.
19B201969-P7		Variable carbon film: 25,000 ohms ±20%, 1/2 w. (Used in Models 4RT55A19-27.)
19B201969-P6		Variable: carbon film: .01 megohm ±20%, 0.1 w. linear taper; sim to Centralab Series 4. (Used in Models 4RT55A19-36.)
R21	3R77-P682J	Fixed composition: 6800 ohms ±5%, 1/2 w.

SYMBOL	G-E PART NO.	DESCRIPTION
----- SUBASSEMBLIES (Cont'd) -----		
----- SUBASSEMBLIES (Cont'd) -----		
----- RESISTORS (Cont'd) -----		
R22	3R77-P153K	Fixed composition: 15,000 ohms ±10%, 1/2 w.
R23	3R77-P682J	Fixed composition: 6800 ohms ±5%, 1/2 w. (Used in Models 4RT55A13-18, 22-27, 31-36.)
R24	3R77-P153K	Fixed composition: 15,000 ohms ±10%, 1/2 w. (Used in Models 4RT55A13-18, 22-27, 31-36.)
R25	3R77-P682J	Fixed composition: 6800 ohms ±5%, 1/2 w. (Used in Models 4RT55A16-18, 25-27, 34-36.)
R26	3R77-P153K	Fixed composition: 15,000 ohms ±10%, 1/2 w. (Used in Models 4RT55A16-18, 25-27, 34-36.)
R27	3R77-P682J	Fixed composition: 6800 ohms ±5%, 1/2 w. (Used in Models 4RT55A16-18, 25-27, 34-36.)
R28	3R77-P153K	Fixed composition: 15,000 ohms ±10%, 1/2 w. (Used in Models 4RT55A16-18, 25-27, 34-36.)
R29	3R77-P153J	Fixed composition: 15,000 ohms ±10%, 1/2 w.
R30	3R77-P101K	Fixed composition: 10,000 ohms ±10%, 1/2 w.
R31A	3R77-P272J	Fixed composition: 2700 ohms ±5%, 1/2 w. (Used in Models 4RT55A10, 11, 13, 14, 16, 17, 19, 20, 22, 23, 25, 26, 28, 29, 31, 32, 34 and 35.)
R31B	3R77-P202J	Fixed composition: 2000 ohms ±5%, 1/2 w. (Used in Models 4RT55A12, 15, 18, 21, 24, 27, 30, 33 and 36.)
R33A	3R77-P393K	Fixed composition: 39,000 ohms ±10%, 1/2 w. (Used in Models 4RT55A10 and 13.)
R33B	3R77-P273K	Fixed composition: 27,000 ohms ±10%, 1/2 w. (Used in Models 4RT55A11, 14 and 17.)
R33C	3R77-P223K	Fixed composition: 22,000 ohms ±10%, 1/2 w. (Used in Models 4RT55A12, 15 and 18.)
R34A	3R77-P223K	Fixed composition: 22,000 ohms ±10%, 1/2 w. (Used in Models 4RT55A19, 22, 25, 28, 31 and 34.)
R34B	3R77-P153K	Fixed composition: 15,000 ohms ±10%, 1/2 w. (Used in Models 4RT55A19, 20, 22, 23, 25, 26, 28, 32 and 35.)
R34C	3R77-P103K	Fixed composition: 10,000 ohms ±10%, 1/2 w. (Used in Models 4RT55A21, 24, 27, 30, 33 and 36.)
R35A	3R77-P473K	Fixed composition: 47,000 ohms ±10%, 1/2 w. (Used in Models 4RT55A19, 2

(CONT'D FROM PAGE 12) (LBI-3531)

SYMBOL	G-E PART NO	DESCRIPTION	SYMBOL	G-E PART NO	DESCRIPTION
		----- SUBASSEMBLIES(Cont'd) -----			----- SUBASSEMBLIES(Cont'd) -----
		----- INDUCTORS -----			----- RESISTORS(Cont'd) -----
L1	PL-19B205051-G1 7142014-P16 7127634-P2	Coil. (Used in Models 4ET55A10, 13, 16, 19, 22, 25, 28, 31 and 34). Includes: Tuning slug. Speed clip.	R20 R21 and R22 R23 R24*	3R79-P473J 3R79-P432J 3R79-P473J 3R79-P333J	Fixed composition: 47,000 ohms $\pm 5\%$, 2 w. Fixed composition: 4300 ohms $\pm 5\%$, 2 w. Fixed composition: 47,000 ohms $\pm 5\%$, 2 w. Fixed composition: 33000 ohms $\pm 5\%$, 1 w. (Used in Models 4ET55A11, 12, 14, 15, 17, 18, 20, 21, 23, 24, 26 and 27).
L2	PL-19B205051-G2 7142014-P16 7127634-P2	Coil. (Used in Models 4ET55A11, 12, 14, 15, 17, 18, 20, 21, 23, 24, 26, 27, 29, 30, 32, 33, 35 and 36). Includes: Tuning slug. Speed clip.	V1		----- TUBES ----- Type 8106.
L6	PL-19B205051-G6 7142014-P16 7127634-P2	Coil. (Used in Models 4ET55A10, 13, 16, 19, 22, 25, 28, 31 and 34). Includes: Tuning slug. Speed clip.	W1	PL-19A121361-G1	----- CABLES ----- Cable, RF: includes 2 contacts, approx 11 inches long.
L7	PL-19B205051-G7 7142014-P16 7127634-P2	Coil. (Used in Models 4ET55A11, 12, 14, 15, 17, 18, 20, 21, 23, 24, 26, 27, 29, 30, 32, 33, 35 and 36). Includes: Tuning slug. Speed clip.	XV1	7489470-P2	----- SOCKETS ----- Tube, mica-filled phen: 8 pins rated at 1 amp.
L9	PL-19B204614-G1 5491798-P4	Coil. (Used in Models 4ET55A10, 13, 16, 19, 22, 25, 28, 31 and 34). Includes: Tuning slug.			BOARD ASSEMBLY PL-19B204931-G1 (Used in PL-19C303542 G6-8)
L10	PL-19B204614-G2 5491798-P4	Coil. (Used in Models 4ET55A11, 14, 17, 20, 23, 26, 29, 32 and 35). Includes: Tuning slug.	J1 thru J9	4033513-P4	----- JACKS AND RECEPTACLES ----- Contact, electrical: sim to Bead Chain L93-3.
L11	PL-19B204614-G3 5491798-P4	Coil. (Used in Models 4ET55A12, 15, 18, 21, 24, 27, 30, 33 and 36). Includes: Tuning slug.			----- CAPACITORS -----
R1	3R77-P153J	Fixed composition: 15,000 ohms $\pm 5\%$, 1/2 w.	CI05 and CI06	5494481-P12	Ceramic disc: radial leads, .001 μ f $\pm 10\%$, 500 VDCW; sim to RMC Type JF Discap.
R2	3R77-P221J	Fixed composition: 220 ohms $\pm 5\%$, 1/2 w.	CI07	7485975-P17	Ceramic dielectric, feed-thru: axial leads, 470 pf $\pm 20\%$, 750 VDCW; sim to Erie Style 327.
R3	3R77-P473J	Fixed composition: 47,000 ohms $\pm 5\%$, 1/2 w.	CI09	7478981-P2	Silver mica: temp-comp, axial leads, 470 pf $\pm 10\%$, 1500 VDCW, temp coef ± 500 PPM. Type RCM20B.
R6*	3R79-P473J	Fixed composition: 47,000 ohms $\pm 5\%$, 2 w. (Used in Models 4ET55A10, 13, 16, 19, 22 and 25).	CI10	5491498-P3	Variable, air dielectric: approx 2.8-50 pf, 1700 v peak. (Used in Models 4ET55A12, 15, 18, 21, 24, 27, 30, 33 and 36).
R7	3R77-P221K	Fixed composition: 220 ohms $\pm 10\%$, 1/2 w.	CI11	19B209123-P1	Variable, air dielectric: approx 6.5-50 pf; sim to Hammarlund Type APC.
R8	3R78-P432J	Fixed composition: 4300 ohms $\pm 5\%$, 1 w.	CI12	5491498-P4	Variable, air dielectric: approx 5.8-75 pf, 1700 v peak. (Used in Models 4ET55A10, 11, 13, 14, 16, 17, 19, 20, 22, 23, 25, 26, 28, 29, 31, 32, 34 and 35).
R11	3R77-P680J	Fixed composition: 68 ohms $\pm 5\%$, 1/2 w.	CI17 and CI18	5494481-P12	Ceramic disc: radial leads, .001 μ f $\pm 10\%$, 500 VDCW; sim to RMC Type JF Discap.
R15	5495948-P444	Deposited carbon, epoxy coated: 0.28 megohm $\pm 15\%$, 1/2 w; sim to Texas Instruments Type CDI/2MR.	CI19	7489162-P39	Silver mica, dipped phen: radial leads, 330 pf $\pm 5\%$, 500 VDCW; sim to Electro Motive Type DM-15.
R17	3R78-P683K	Fixed composition: 68,000 ohms $\pm 10\%$, 1 w.	CI22	5492304-P8	Ceramic disc: temp-comp, radial leads, 3 pf ± 0.25 pf, 2000 VDCW, temp coef -0 ± 120 PPM.
R18 and R19	3R79-P432J	Fixed composition: 4300 ohms $\pm 5\%$, 2 w.	CI24 and CI25	5494481-P12	Ceramic disc: radial leads, .001 μ f $\pm 10\%$, 500 VDCW; sim to RMC Type JF Discap.
		----- RESISTORS -----			----- FILTERS -----
			FL1		Reed, governor: coil - 600 ohms $\pm 10\%$, standard 7-pin tube socket mounting. (Used in Models 4ET55A19-36).
				3R161-P719 3R161-P770 3R161-P825 3R161-P885 3R161-P948 3R161-P1000 3R161-P1035 3R161-P1072	71.9 cps 77.0 cps 82.5 cps 88.5 cps 94.8 cps 100.0 cps 103.5 cps 107.2 cps

(CONT'D ON PAGE 14)

(CONT'D FROM PAGE 13) (LBI-3531)

SYMBOL	G-E PART NO	DESCRIPTION	SYMBOL	G-E PART NO	DESCRIPTION
		----- FILTERS(Cont'd) -----			----- OSCILLATORS(Cont'd) -----
		3R161-P1109 110.9 cps 3R161-P1148 114.8 cps 3R161-P1188 118.8 cps 3R161-P1230 123.0 cps 3R161-P1273 127.3 cps 3R161-P1318 131.8 cps 3R161-P1365 136.5 cps 3R161-P1413 141.3 cps 3R161-P1462 146.2 cps 3R161-P1514 151.4 cps 3R161-P1567 156.7 cps 3R161-P1622 162.2 cps 3R161-P1679 167.9 cps 3R161-P1738 173.8 cps 3R161-P1799 179.9 cps 3R161-P1862 186.2 cps 3R161-P1928 192.8 cps 3R161-P2035 203.5 cps			----- RELAYS -----
		LOW PASS FILTER ASSEMBLY	K1	5494796-P6	Armature, open: 12 VDC nominal, 2 w max operating, 96 ohms $\pm 15\%$ coil res, 2 form A and 2 form C contacts rated at 2 amps at 115 VAC or 28 VDC; sim to Potter Brumfield Type MG. (Used in Models 4ET55A28-36).
		The low pass filters are factory tuned. If a filter component is found to be defective, it is recommended that the entire filter assembly be replaced to maintain rated power output and spurious attenuation.	Q1 thru Q4	19A115123-P1	Silicon, NPN; sim to Type 2N2712.
FL101	19D402233-G1	25-33 MC (Used on Models 4ET55A10, 13, 16, 19, 22, 25).			----- TRANSISTORS -----
FL102	19D402233-G2	33-42 MC (Used on Models 4ET55A11, 14, 17, 20, 23, 26).	R1	3R77-P562K	Fixed composition: 5600 ohms $\pm 10\%$, 1/2 w.
FL103	19D402233-G3	42-50 MC (Used on Models 4ET55A12, 15, 18, 21, 24, 27).	R2	3R77-P201K	Fixed composition: 200 ohms $\pm 10\%$, 1/2 w.
		----- OSCILLATORS -----	R3	3R77-P682J	Fixed composition: 6800 ohms $\pm 5\%$, 1/2 w.
		TONE OSCILLATOR ENCODER ASSEMBLY	R4*	3R77-P512K	Fixed composition: 5100 ohms $\pm 10\%$, 1/2 w.
G101 and G102		G101 (19C303466-G2) (4ET55A19-27)		3R77-P912K	In Models 4ET55A19-27 earlier than REV. A: Fixed composition: 9100 ohms $\pm 10\%$, 1/2 w.
		----- CAPACITORS -----	R5	3R77-P123K	Fixed composition: 12,000 ohms $\pm 10\%$, 1/2 w.
C1	19B209243-P6	Polyester dielectric: radial leads, .068 μ f $\pm 20\%$, 40 VDCW; sim to Amperex C280AA/P68K.	R6	3R77-P512K	Fixed composition: 5100 ohms $\pm 10\%$, 1/2 w.
C2	7489483-P17	Tubular, hermetically sealed, electrolytic: axial leads, 50 μ f $\pm 75\%$ $\pm 10\%$, 25 VDCW; sim to Sprague 30D186A1.	R7	3R77-P132K	Fixed composition: 1300 ohms $\pm 10\%$, 1/2 w.
C3	19A115414-P216	Tubular, Mylar [®] dielectric: radial leads, 0.33 μ f $\pm 5\%$, 100 VDCW.	R8	3R77-P622K	Fixed composition: 6200 ohms $\pm 10\%$, 1/2 w.
C4	19B209243-P2	Polyester dielectric: radial leads, .015 μ f $\pm 20\%$, 40 VDCW; sim to Amperex C280AA/P15K.	R9	3R77-P122K	Fixed composition: 1200 ohms $\pm 10\%$, 1/2 w.
C5	19B209243-P9	Polyester dielectric: radial leads, 0.22 μ f $\pm 20\%$, 40 VDCW; sim to Amperex C280AA/P220K.	R10	3R77-P302J	Fixed composition: 3000 ohms $\pm 5\%$, 1/2 w.
C6	19B209243-P8	Polyester dielectric: radial leads, 0.15 μ f $\pm 20\%$, 40 VDCW; sim to Amperex C280AA/P150K.	R11	3R77-P273J	Fixed composition: 27,000 ohms $\pm 5\%$, 1/2 w.
C7	19B209243-P3	Polyester dielectric: radial leads, .022 μ f $\pm 20\%$, 40 VDCW; sim to Amperex C280AA/P22K.	R12	7491365-P220	Variable, carbon film: .01 megohm $\pm 10\%$, .08 w, non-linear taper; sim to CTS Type UPE-70.
C8	19A115414-P17	Tubular, Mylar [®] dielectric: radial leads 0.47 μ f $\pm 20\%$, 100 VDCW.	R13	3R77-P274K	Fixed composition: 0.27 megohm $\pm 10\%$, 1/2 w.
C9	19B209243-P9	Polyester dielectric: radial leads, 0.2 μ f $\pm 20\%$, 40 VDCW; sim to Amperex C280AA/P220K.	R14	3R77-P822K	Fixed composition: 8200 ohms $\pm 10\%$, 1/2 w.
C10	19A115414-P216	Tubular, Mylar [®] dielectric: radial leads, 0.33 μ f $\pm 5\%$, 100 VDCW.	R15	3R77-P620K	Fixed composition: 62 ohms $\pm 10\%$, 1/2 w.
C11 and C12	5494481-P107	Ceramic disc: radial leads, 470 pf $\pm 20\%$, 500 VDCW; sim to RMC Type JF Discap.	R16	3R77-P243K	Fixed composition: 24,000 ohms $\pm 10\%$, 1/2 w.
C13	19B209243-P8	Polyester dielectric: radial leads, 0.15 μ f $\pm 20\%$, 40 VDCW; sim to Amperex C280AA/P150K. (Used in Models 4ET55A28-36).	R17	3R77-P153K	Fixed composition: 15,000 ohms $\pm 10\%$, 1/2 w.
C14*	5494481-P111	Ceramic disc: radial leads, .001 uf $\pm 20\%$, 500 VDCW; sim to RMC JF Discap. Added in Models 4ET55A19-27 by REV. A.	R18	3R77-P102K	Fixed composition: 1000 ohms $\pm 10\%$, 1/2 w.
		----- DIODES AND RECTIFIERS -----	R19	3R77-P184K	Fixed composition: 0.18 megohm $\pm 10\%$, 1/2 w.
CR1* thru CR3*	19A115250-P1	Silicon. In Models 4ET55A19-27 earlier than REV. A:	R20	3R77-P622J	Fixed composition: 6200 ohms $\pm 5\%$, 1/2 w.
	4036936-P1	Silicon.	R21	3R77-P330K	Fixed composition: 33 ohms $\pm 10\%$, 1/2 w.
			R22	3R77-P183K	Fixed composition: 18,000 ohms $\pm 10\%$, 1/2 w.
			R23	3R77-P623K	Fixed composition: 62,000 ohms $\pm 10\%$, 1/2 w.
			R24	3R77-P333J	Fixed composition: 33,000 ohms $\pm 5\%$, 1/2 w.
			R25	3R77-P393K	Fixed composition: 39,000 ohms $\pm 10\%$, 1/2 w.
					----- THERMISTORS -----
			RT1	5490828-P30	Rod: radial leads, 0.33 megohm $\pm 10\%$ res, 1 w max; sim to Globar Type 783H-3.
					----- SOCKETS -----
			XFL1	PL-19A121920-G1	Reed, mica-filled phen: 7 pins rated at 1 amp at 500 VRMS with 4-1/2 inches of cable.
					BOARD ASSEMBLY
					PL-19B204542-G1 (4ET55A28-36) PL-19B204542-G2 (4ET55A19-27)
					----- JACKS AND RECEPTACLES -----
			J1 thru J8	4033513-P4	Contact, electrical: sim to Bead Chain L93-3.

(CONT'D ON PAGE 15)

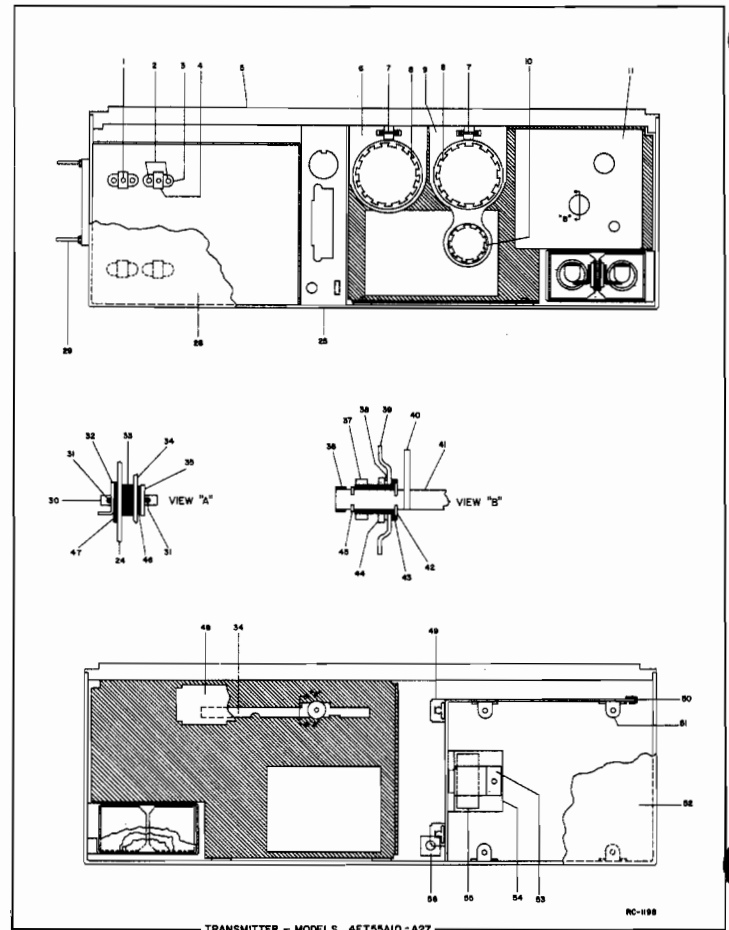
(CONT'D FROM PAGE 14) (LBI-3531)

SYMBOL	G-E PART NO	DESCRIPTION	SYMBOL	G-E PART NO	DESCRIPTION
		----- JACKS AND RECEPTACLES -----			----- TUBES -----
J101	PL-19C303426-G1	Connector: 20 pin contacts.	V101 and V102		Type 79841.
J102	19B209125-P1	Connector, Lexans: 18 contacts rated at 5 amps min at 1000 VDC max.			----- SOCKETS -----
		----- INDUCTORS -----	XV101 and XV102	19C301007-P5	Tube, plastic: 12 pins rated at 5 amps max; sim to Alcon Metal Products 371G bottom mount.
L101	7772834-P4	Choke, RF: 7 μ h, approx freq range 35 to 110 mc; sim to Ohmite Z-50.			MECHANICAL PARTS (SEE RC-1198)
L110	19A121378-P1	Coil. (Used in Models 4ET55A10, 13, 16, 19, 22, 25, 28, 31 and 34).			
L111	19A121379-P2	Coil. (Used in Models 4ET55A11, 14, 17, 20, 23, 26, 29, 32 and 35).			
L112	19A121379-P1	Coil. (Used in Models 4ET55A12, 15, 18, 21, 24, 27, 30, 33 and 36).			
L115	19A121377-P2	Coil. (Used in Models 4ET55A10, 13, 16, 19, 22, 25, 28, 31 and 34).	1	19B200525-P8	Rivet. (Part of XY1-4).
L116	19A121376-P2	Coil. (Used in Models 4ET55A11, 14, 17, 20, 23, 26, 29, 32 and 35).	2	4033751-P1	Contact, electrical: sim to Methode 752 V(PB). (Part of XY1-4).
L117	19A121375-P1	Coil. (Used in Models 4ET55A12, 15, 18, 21, 24, 27, 30, 33 and 36).	3	4039307-P1	Crystal socket. (Part of XY1-4).
L118*	19A115700-P2	RF Choke. (Used in Models 4ET55A10, 13, 16, 19, 22 and 25).	4	4033089-P1	Clip. (Part of XY1-4).
		----- PLUGS -----	5	PL-19C303395-G2	Heat sink: approx 14-1/2 x 3-1/4 x 1/2 inches thick.
P101	4029840-P2	Contact, electrical: solder coated brass; sim to Amp 42827-2.	6	19B204571-P1	Tube heat sink. (Used with V102).
P102	4029840-P1	Contact, electrical: solder coated brass; sim to Amp 41854.	7	19A121195-P2	Support: approx 2 x 5/8 x 1/16 inches thick. (Used with V101 and V102).
P103 thru P106	4029840-P2	Contact, electrical: solder coated brass; sim to Amp 42827-2.	8	7165167-P7	Tube shield insert: approx 5-3/16 x 1-7/8 inches flat; sim to Atlas 106-332-18. (Used with V101 and V102).
P107	4029840-P1	Contact, electrical: solder coated brass; sim to Amp 41854. (Used in Models 4ET55A19-36).	9	19B204702-P1	Tube heat sink. (Used with V1).
P108	4029840-P2	Contact, electrical: solder coated brass; sim to Amp 42827-2. (Used in Models 4ET55A19-36).	10	7165167-P5	Tube shield insert: approx 2-7/8 x 1-1/4 inches flat; sim to Atlas 106-332-5. (Used with V1).
P109 and P110	4029840-P2	Contact, electrical: solder coated brass; sim to Amp 42827-2.	11	PL-19B204490-G1	Can: approx 2 x 3-1/16 x 3-1/4 inches.
P112 thru P117	4029840-P2	Contact, electrical: solder coated brass; sim to Amp 42827-2.	12	PL-19B204565-G1	Casting: approx 1-3/8 x 2-1/2 x 2-7/8 inches. (Includes J1 and J103).
P120 and P121	4029840-P1	Contact, electrical: solder coated brass; sim to Amp 41854.	13	19A121004-P1	Angle: approx 1/2 x 1/2 x 9/16 inches. (Part of C17-25).
P122 thru P127	4029840-P2	Contact, electrical: solder coated brass; sim to Amp 42827-2.	14	19A121006-P8	Washer: approx 3/4 inches dia. (Part of C19).
P128	7160522-P1	Plug, phono: phen.	15	19A121006-P5	Washer: approx 5/8 inches dia. (Part of C25).
P129	4029840-P2	Contact, electrical: solder coated brass; sim to Amp 42827-2.	16	19A121006-P6	Washer: approx 11/16 inches dia. (Part of C22).
P130 thru P132	4029840-P2	Contact, electrical: solder coated brass; sim to Amp 42827-2. (Used in Models 4ET55A19-36).	17	19A121018-P3	Washer: approx 7/8 x 1/32 inches dia, Teflon®. (Part of C17-25).
P133	4029840-P1	Contact, electrical: solder coated brass; sim to Amp 41854. (Used in Models 4ET55A19-36).	18	4031594-P1	Spacer: approx 1/4 inches dia, Teflon®. (Part of C17-25).
P134 thru P137	4029840-P2	Contact, electrical: solder coated brass; sim to Amp 42827-2. (Used in Models 4ET55A19-36).	19	19A121006-P7	Washer: approx 3/4 inches dia. (Part of C17 and C18).
		----- RESISTORS -----	20	19A121006-P6	Washer: approx 11/16 inches dia. (Part of C24).
R102	19A115416-P2	Precision, wirewound: 2.5 ohms $\pm 1\%$, 2 w; sim to Dale Type RS-2B.	21	4036835-P4	Solder terminal: sim to Shakeproof 2177-04-000. (Part of C18 and C24).
		----- SWITCHES -----	22	19A121006-P3	Washer: approx 5/8 inches dia. (Part of C23).
S101	7481654-P6	Pushbutton: single pole, normally open, 1/2 amp at 115 VAC; sim to Grayhill 30-1.	23	19A121006-P5	Washer: approx 5/8 inches dia. (Part of C20).
S102	19B209040-P1	Slide: DPDT, 0.5 amp at 125 v; sim to Continental Wirt Type 126.	24	PL-19B204708-G1	Chassis: approx 7-3/4 x 4-1/2 inches.
		----- TERMINAL BOARDS -----	25	PL-19B204395-G1	Chassis: approx 14-1/2 x 4-3/4 x 3-3/8 inches.
TB1	7487424-P2	Miniature, phen: 1 terminal.	28	PL-19C303396-G1	Cover: approx 14-1/2 x 4-3/4 x 5/16 inches thick.
TB2	7487424-P1	Miniature, phen: 1 terminal.	29	19A121676-P1	Pin guide: 4-40 thread, approx 5/8 inch pin. (Used with J101).
			30	19A121465-P1	Post: approx 7/8 x 3/16 inches dia.
			31	N509P608C13	Dowel pin, spring: approx 1/2 x 1/16 inches dia.

(CONT'D ON PAGE 16)

(CONT'D FROM PAGE 15) (LBI-3531)

SYMBOL	G-E PART NO	DESCRIPTION
MECHANICAL PARTS(Cont'd)		
32	19B204776-P1	Angle support: approx 5/8 x 1/4 x 1/2 inches wide. (Part of post assembly).
33	19B204756-P1	Insulator: approx 1/4 x 1/2 inches dia, ceramic. (Part of post assembly).
34	19C303666-P1	Plate line. (Used with V101 and V102).
35	N402P39C13	Washer: approx 3/16 inches dia. No. 10.
36	4031527-P2	Collar: approx 1/8 x 5/16 inches.
37	4031531-P1	Locknut: approx 3/8 x 1/16 inches dia. No. 32.
38	7115130-P9	Lockwasher: Approx 3/8 inches dia; sim to Shakeproof 1220-2.
39	19B205023-P1	Support: approx 1-3/8 x 1/2 x 1/16 inches thick.
40	N509P612C	Dowel pin: approx 3/4 x 1/16 inches dia.
41	19A121189-P2	Post: approx 2-3/8 x 1/4 inches dia.
42	4031532-P1	Cup washer: approx 1/2 inch dia.
43	4031530-P1	Bearing: approx 3/8 x 1/16 inches dia. No. 32.
44	7893936-P1	Nut: approx 3/8 x 1/2 inches dia. No. 32.
45	N910P18C	Retaining ring: approx 1/32 x 5/16 inches dia.
46	5493361-P6	Spring washer: approx 1/2 inch dia; sim to Shakeproof 3502-10-79.
47	19A121547-P1	Plate: approx 13/16 x 1/2 x 3/32 inches thick. (Part of post assembly).
48	19B204640-P1	Shield. (Used with V101 and V102 line plate).
49	4036921-P1	Mounting support, bottom cover: approx 7/8 x 5/8 x 1/32 inches dia; sim to Tinnerma C17809-8A-67.
50	4029030-P10	Rubber channel: approx 1-1/4 inches long.
51	19B204366-P1	Support: approx 11/16 x 3/8 x 1/16 inches thick.
52	PL-19C303396-G3	Cover: approx 14-3/8 x 4-3/4 x 5-16 inches thick.
53	19A121065-P1	Support: (Used with FL1 in Models 4ET55A20-36).
54	PL-19A121257-G1	Angle. (Used with FL1 in Models 4ET55A20-36).
55	4032591-P26	Rubber pad: approx 1-1/2 x 3/4 x 1/8 inches thick, adhesive back.
56	4036835-P3	Solder terminal: sim to Shakeproof 2149-14-000. (Used with S101).



PRODUCTION CHANGES

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

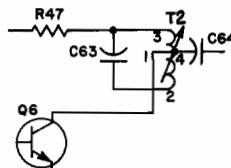
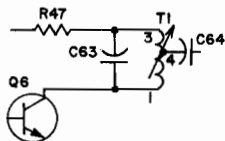
REV. A - Models 4ET55A19-27 only
To reduce Channel Guard distortion. Changed CR1, CR2, CR3, and R4 and added C14 on Channel Guard Board G101.

REV. A - Models 4ET55A10-18 only
REV. B - Models 4ET55A19-27 only
To improve stability of 2nd Multiplier. Changed T1 on Exciter Board A101-A130.

Elementary Diagram Changes:

Was

Changed To



REV. C - Models 4ET55A19-27 only
To reduce Channel Guard distortion at low tone frequencies. Changed CHANNEL GUARD MOD ADJUST R20 on Exciter Board A101-A130.

REV. B - Models 4ET55A10, 13 & 16 only
REV. D - Models 4ET55A19, 22, 23, 27 Only
To improve tuning and MULT-1 reading. Added C16, C23, C30 and C37 in oscillator section of 25-33 MC Exciter boards.

REV. C - Models 4ET55A10, 13 and 16.

REV. E - Models 4ET55A19, 22 and 25.
To eliminate RF from high B+ and metering leads in 25-33 MC range. Added L118.

REV. B - Models 4ET55A11, 12, 14, 15, 17 and 18.

REV. D - Models 4ET55A20, 21, 23, 24, 26 and 27.
To increase grid drive over the 33-42 and 42-50 MC range. Deleted R6 and added R24 to Power Amplifier Board Assemblies A146 and A147.

REV. C - Models 4ET55A11, 12, 14, 15, 17 and 18.

REV. D - Models 4ET55A10, 13, and 16.

REV. E - Models 4ET55A20, 21, 23, 24, 26 and 27.

REV. F - Models 4ET55A19, 22, and 25.
To increase sensitivity of microphone input. Changed C2 and R3.

REV. D - Models 4ET55A11 and 14.

REV. F - Models 4ET54A20 and 23.
To improve stability of crystal oscillator stage. Added C75/C76/C77.

REV. D - Models 4ET55A12, 15, 17 and 18.

REV. E - Models 4ET55A10, 11, 13, 14 and 16.

REV. F - Models 4ET55A21, 24, 26 and 27.

REV. G - Models 4ET55A19, 20, 22, 23 and 25.
To incorporate improved semiconductor components into the Exciter Board Assembly. Changed C3, CR3-CR6, CV1 and CV2, Q6, R14, and R20. Added CV3 - CV6 and R12.