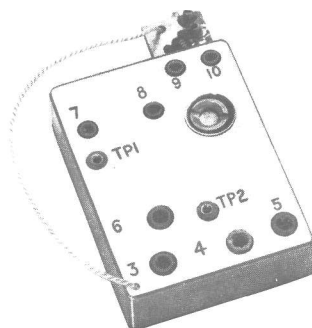


# MASTR *Personal Series*

**PROGRESS LINE**

## PE MODELS

470-512 MHz, 1 WATT TRANSMITTER TYPE KT-26-A AND KT-26-B



### SPECIFICATIONS \*

|                               |   |
|-------------------------------|---|
| Type Number                   | KT-26-A & KT-26-B   |
| Power Output                  | 1 Watt  |
| Modulation Deviation          | 0 to $\pm 5$ kHz  |
| Spurious                      |   |
| Radiated                      | -50 dB  |
| Conducted                     | -50 dB  |
| Audio Response                | Within +1 and -3 dB of a 6-dB/octave pre-emphasis from 300 to 3000 Hz except for an additional 6-dB/octave roll-off from 2500 to 3000 Hz per EIA. |
| Audio Distortion              | Less than 8%  |
| Crystal Multiplication Factor | 24  |
| RF Load Impedance             | 50 ohms   |
| Modulation Sensitivity        | 0.5 to 1.5 millivolts   |
| Maximum Frequency Spacing     |   |
| 470—512 MHz                   | +0.4% of highest frequency<br>no degradation<br>+3.5 MHz<br>1 dB degradation in power output.   |

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

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#### 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

Transmitter Types KT-26-A and KT-26-B are crystal controlled, phase modulated transmitters for one- through eight-frequency operation in the 470-512 MHz band. The transmitters utilize both discrete components and Integrated Circuit Modules (IC's). The application of each transmitter type is shown in the following chart:

| Type No. | PA Model | Frequency Range | No. Frequencies | Power Output |
|----------|----------|-----------------|-----------------|--------------|
| KT-26-A  | 4EF41A12 | 470-512 MHz     | 2               | 1 Watt       |
| KT-26-B  | 4EF41A12 | 470-512 MHz     | 8               | 1 Watt       |

The transmitters consist of the audio, voltage regulator, oscillator, compensator and modulator IC's, and plug-in Exciter/PA module. All of the transmitter modules are mounted on the System Board. Supply voltages for the transmitter are provided by the battery and Regulator. The different transmitter voltages are shown in the following chart:

| Voltage              | Used For:   |
|----------------------|---|
| Continuous 7.5 Volts | Regulator module  |
| Keyed 7.5 Volts      | Regulator 5.4-Volt keying, Exciter and PA modules.                                    |
| Keyed 5.4 Volts      | Compensator, Oscillator, Audio and Modulator modules, and optional Compressor module. |

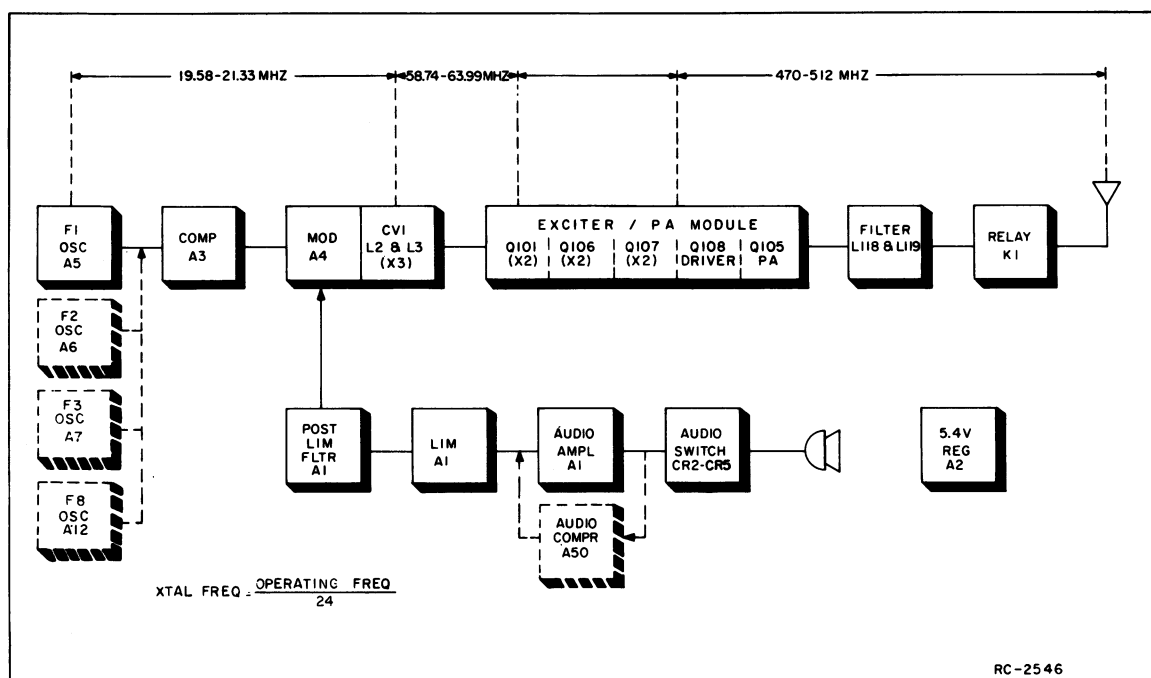
References to symbol numbers mentioned in the following test are found on the Schematic Diagrams, Outline Diagrams and Parts Lists (see Table of Contents). The typical simplifier circuit diagrams used in the text are representative of the circuits in the IC modules. A block diagram of the transmitter is shown in Figure 1.

## CIRCUIT ANALYSIS

## REGULATOR A2

The Regulator module operates from the 7.5 Volt from the battery, and provides a continuous, regulated 5.4 Volts and a switched 5.4 Volts for operating the transmitter, receiver and tone options. A typical regulator circuit is shown in Figure 2.

Turning on the radio applies the battery voltage to Pin 2 of the Regulator, causing Q2 and then Q1 to conduct. When conducting, the continuous 5.4 Volts at the collector of Q1 is taken from Pin 4 and applied to the receiver Compensator and Oscillator module.



**Figure 1 - Transmitter Block Diagram**

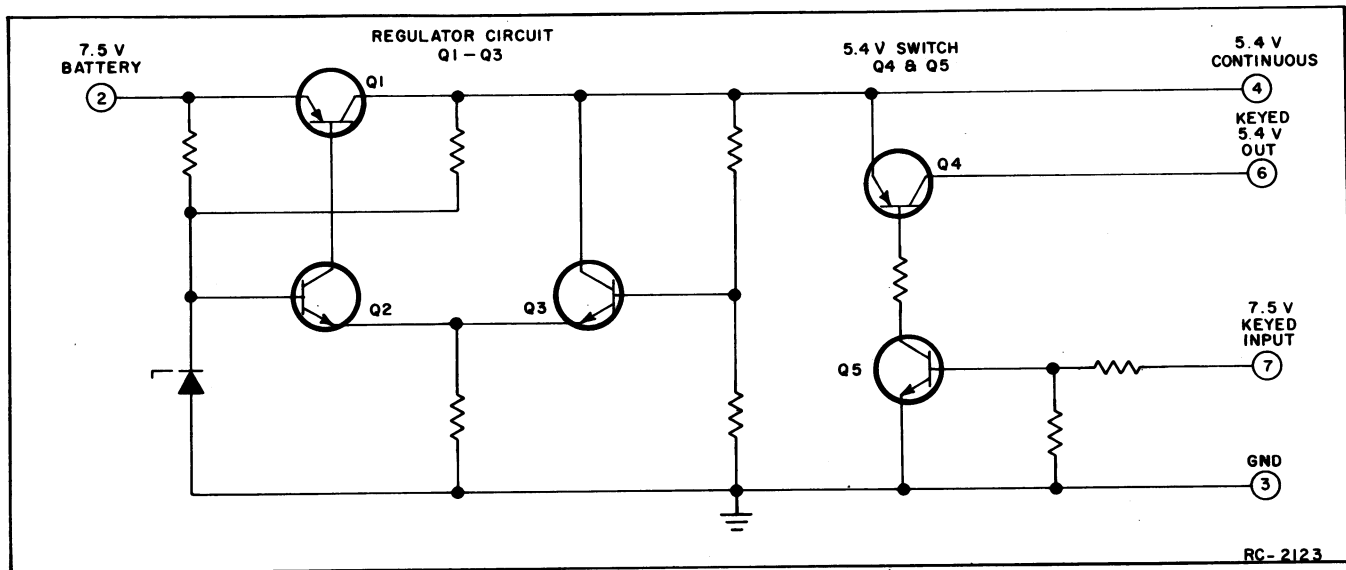


Figure 2 - Typical Regulator Circuit

Regulation is provided by Q2 and Q3, which operate as a differential amplifier. If the output of Q1 starts to increase, Q3 conducts harder, causing Q2 to conduct less. This causes Q1 to conduct less, keeping its output at 5.4 Volts. If the output of Q1 starts to decrease, Q3 conducts less, causing Q2 to conduct harder. This causes Q1 to conduct harder, keeping the output constant.

Q4 and Q5 operate as a DC switch. Keying the transmitter applies the battery voltage to Pin 7 and to the base of Q5, turning it on. This turns on PNP transistor Q4, so that the regulated 5.4 Volts at Pin 6 is applied to the transmitter Compensator, Modulator, and audio module, and to the optional Compressor module and multi-frequency switch S1.

#### OSCILLATOR MODULE A5

Oscillator Model 4EG27A11 consists of a crystal-controlled Colpitts oscillator and a Channel Guard tone modulator. The entire oscillator is contained in a metal can with the transmitter operating frequency printed on the top. The crystal frequency ranges from 19.58 to 21.33 MHz and the crystal frequency is multiplied 24 times.

The oscillator frequency is temperature compensated to provide instant frequency compensation, with a frequency stability of  $\pm 0.0002\%$  from  $0^{\circ}\text{C}$  to  $+55^{\circ}\text{C}$  and  $\pm 0.0005\%$  from  $-30^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$ . The temperature compensation network is contained in Compensator module A3.

A typical oscillator circuit is shown in Figure 3.

In single-frequency transmitters, a jumper from Hole 20 to Hole 21 on the System Board connects the keyed 5.4 Volt supply voltage to the oscillator module. Keying the transmitter applies the supply voltage to the oscillator, turning it on. The oscillator output is applied to Compensator A3.

In two-frequency transmitters, F2 Oscillator Module A6 is mounted on the board. The single-frequency supply jumper is removed, and the proper frequency is selected by connecting the keyed 5.4 Volts to be selected oscillator module through frequency selector switch S1 on the control unit.

For Channel Guard applications, tone from the Channel Guard encoder is applied to the oscillator module. The tone is applied through Pin 3 to the voltage-variable capacitor on the oscillator module, which frequency modulates the oscillator output.

#### NOTE

All oscillator modules are individually compensated at the factory and cannot be repaired in the field. Any attempt to remove the oscillator cover will void the warranty.

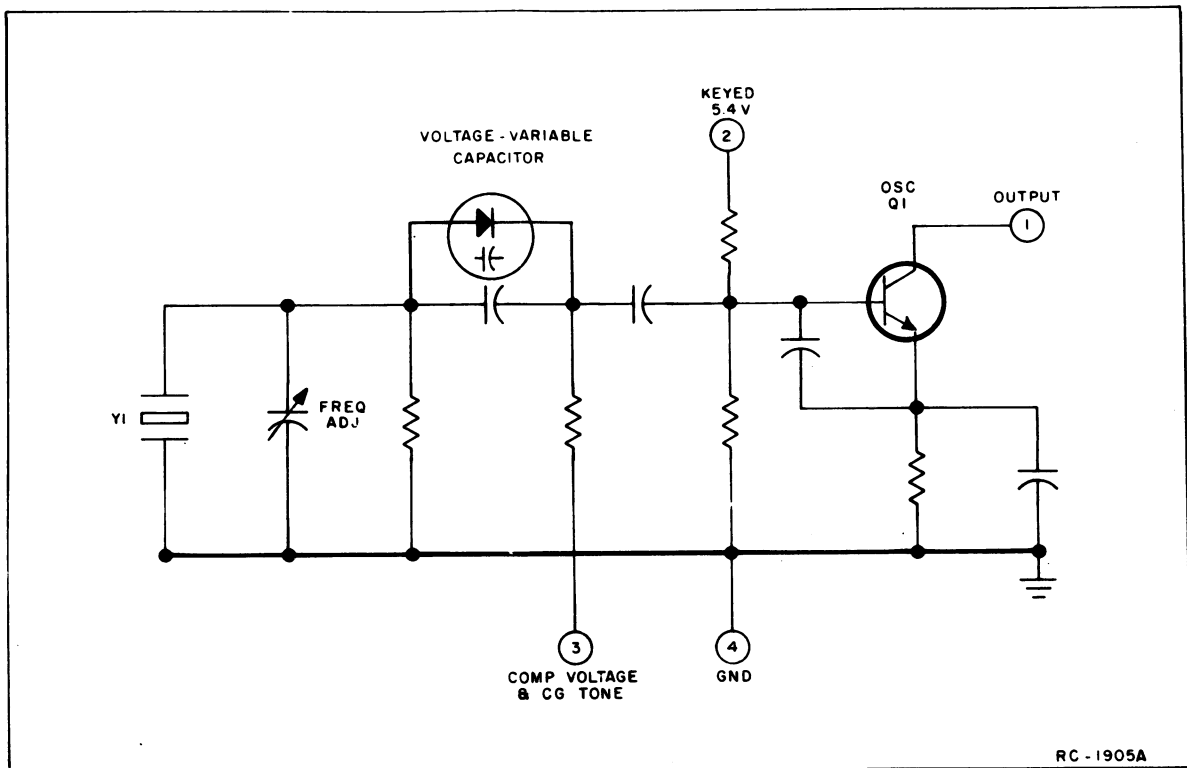


Figure 3 - Typical Oscillator Circuit

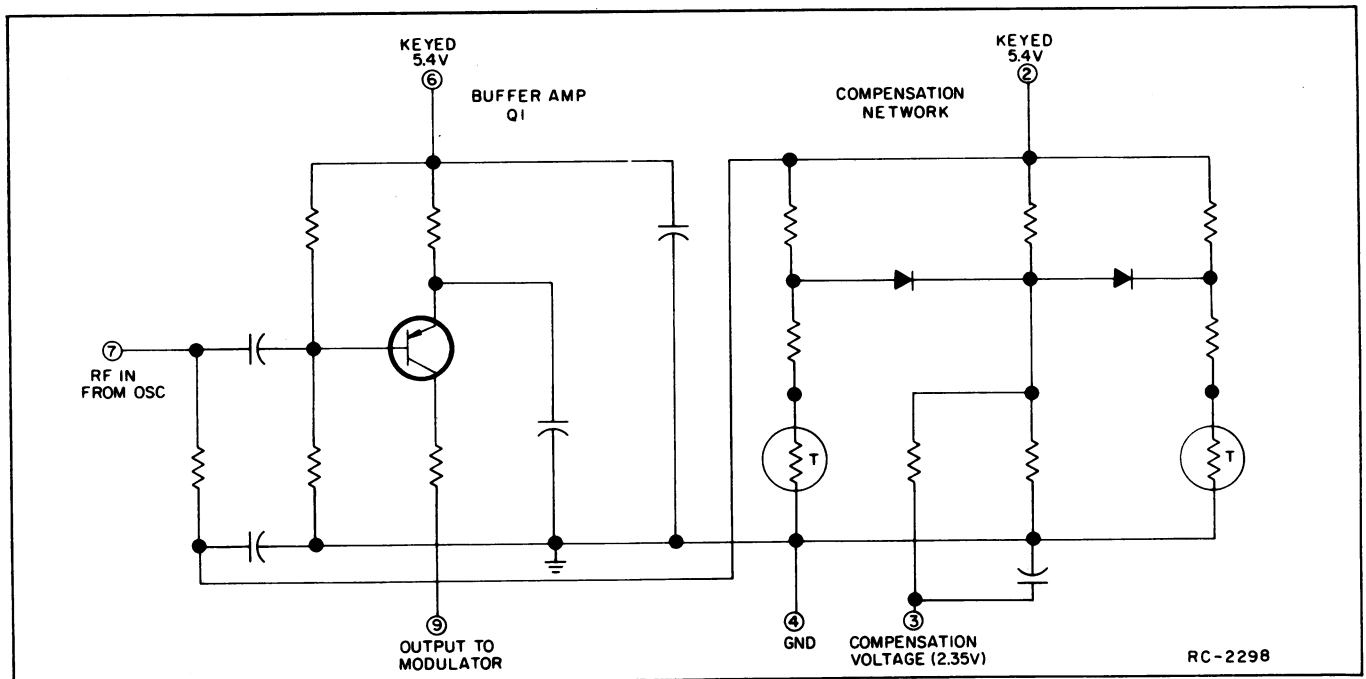


Figure 4 - Typical Compensator Circuit

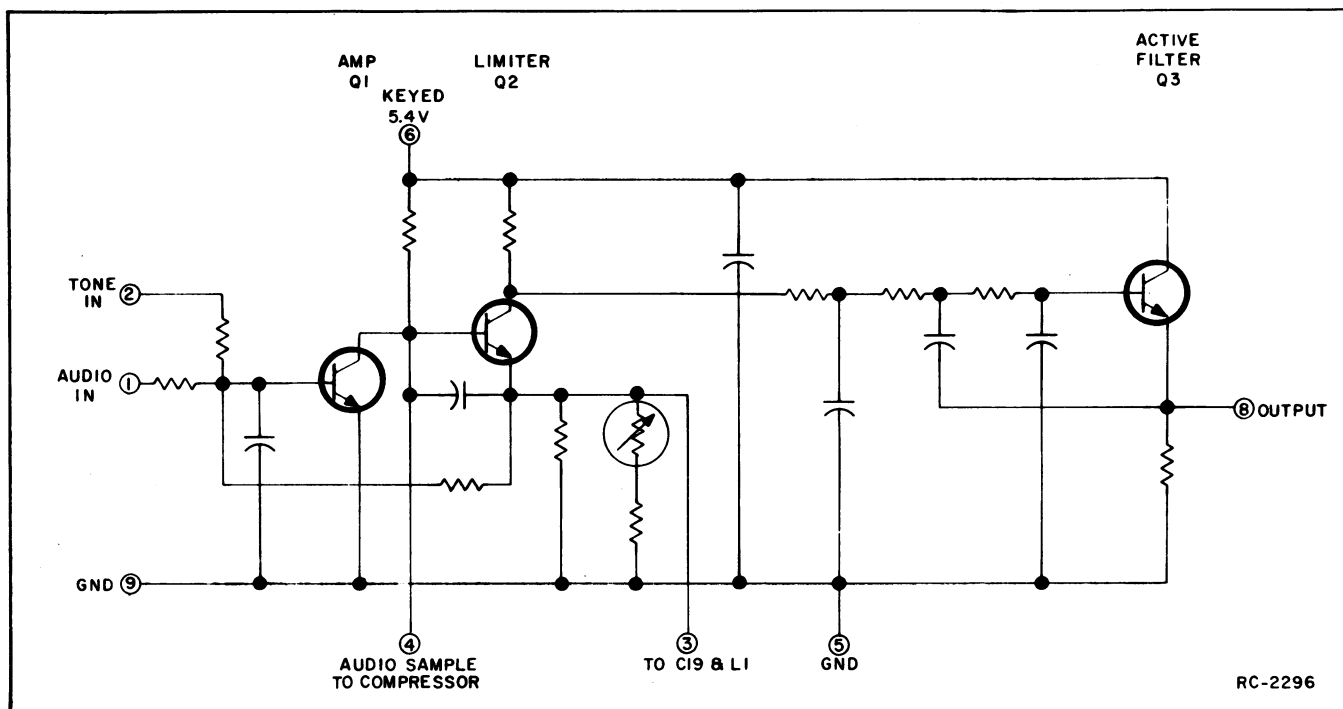


Figure 5 - Typical Amplifier &amp; Limiter Circuit

**COMPENSATOR A3**

Compensator module A3 contains a buffer-amplifier, and the temperature compensating network for the oscillator. A typical Compensator circuit is shown in Figure 4.

RF from the oscillator at Pin 7 is coupled through a DC-blocking capacitor to the base of buffer-amplifier Q1. This stage isolates the oscillator from the modulator. The output of Q1 connects from Pin 9 to the modulator.

In the compensation network, the keyed 5.4 Volts at Pin 2 is applied to a thermistor-compensated voltage divider. The output is Pin 3 (2.35 Volts measured with a VTVM) is applied to Pin 3 and to the voltage-variable capacitor in the oscillator module. At temperatures below  $-10^{\circ}\text{C}$ , the compensated voltage increases to maintain the proper voltage on the oscillator voltage-variable capacitor.

**Service Note:** An abnormally low VTVM reading (or no reading) at Pin 3 may indicate a short or leakage path in the oscillator.

This can be checked by unsoldering Pin 3, raising it off the printed board and taking another reading. If this reading is normal the problem is in the oscillator module. If the reading remains low (or zero) the problem is in the Compensator.

**AUDIO AMPLIFIER AND LIMITER A1**

Audio from the microphone is coupled through the audio switching circuit to Pin 1 and then to the base of audio amplifier Q1 (see Figure 5). In Type 90 encoder applications, the encode tone is applied to the amplifier at Pin 2.

The amplifier output is applied directly to the transistorized limiter stage (Q2). Following the limiter is a combined post-limiter filter and de-emphasis network. The filter output at Pin 8 is coupled through Mod Adjust potentiometer R8 to the Modulator module A4.

**PHASE MODULATOR**

The phase modulator circuit consists of Modulator A4, voltage-variable capacitor

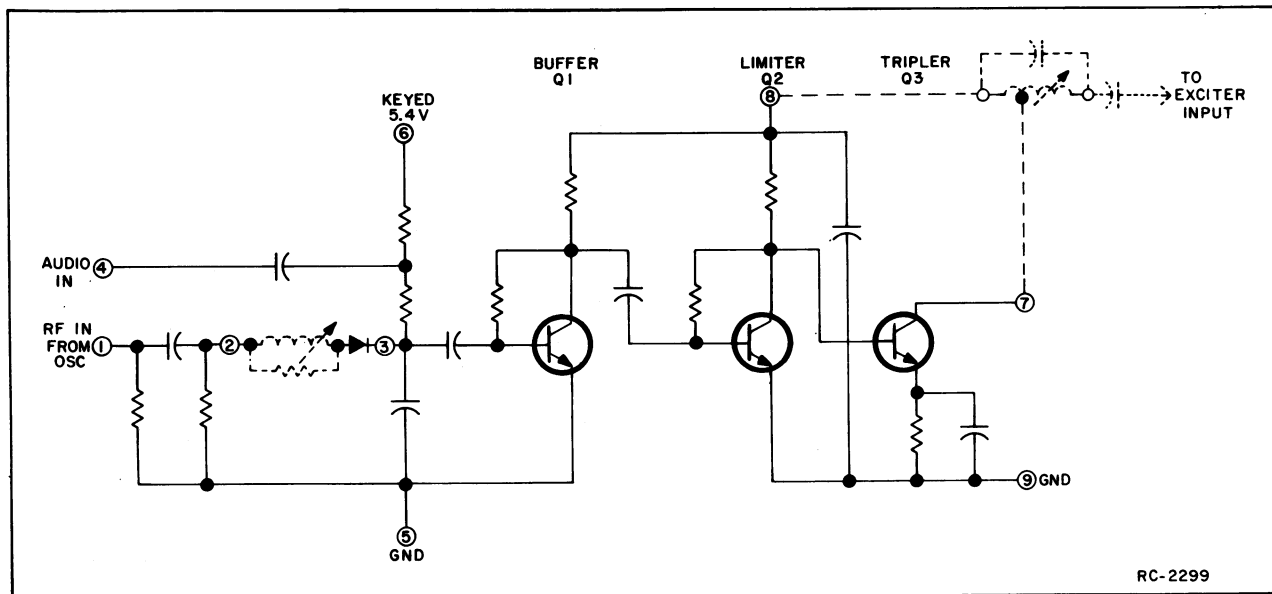


Figure 6 - Typical Phase Modulator Circuit

CV1 and tuneable coil L2. CV1 and L2 are mounted on System Board A707. A typical modulator circuit is shown in Figure 6.

With CV1 in series with L2, the network appears as a series-resonant circuit when RF from the oscillator is applied to Pin 1. Applying audio from Audio Limiter A1 to Pin 4 of Modulator A4 varies the bias of CV1, resulting in a phase modulated output.

Buffer Q1 isolates the modulator from the leading effects of the following multiplier stage, and also provides some amplification. Following the buffer stage is tripler Q2. The output of Q2 is coupled through L3 (on the System Board) to the exciter module. L3 is tuned to three times the crystal frequency.

#### EXCITER/PA MODULE

Exciter/PA Model 4EF41A12 (470-512 MHz) consists of three class C doubler stages, a class C driver stage and a class C power amplifier stage.

All of the stages are supplied by a type of constant-K, DC collector feed network.

#### Doubler Stages

The modulator output is coupled through T101 to the base of 1st doubler Q101. T101 is tuned to three times the crystal frequency.

The modulator coils and the 1st doubler base circuit are metered at TP1. The 1st doubler collector circuit is metered at TP2.

The output of the 1st doubler is coupled through T102 (untuned) and T103 to the base of 2nd doubler Q106. T103 is tuned to six times the crystal frequency, and is metered at TP2.

An impedance-matching network couples the output of Q106 to the base of Q107. The network consists of C112, C113, L105, C114, and C115 and also provides some selectivity. L105 is tuned to 12 times the crystal frequency.

3rd doubler Q107, driver Q108 and PA transistor Q105 are tuned by measuring the total current drain of the radio. An ammeter with a one ampere full scale meter is used in series with the radio's 7.5-Volt supply. GE Test Regulator Model 4EX18A10 and Test Set Model 4EX3A11 may be used in place of the ammeter.

#### Driver & PA

Following the third doubler is an impedance-matching network consisting of L107, C146, L108, C119 and C120. The network matches the high impedance doubler output to the low impedance driver input. C119 is tuned to 24 times the crystal frequency.

The driver output is coupled through a similar impedance-matching network to

the base of class C power amplifier Q105. The power amplifier output is applied to the low-pass filter through a series-tuned matching network (L115, L124, C144, L114 and C150).

#### Low-Pass Filter

Low-pass filter L118, L119, C147, C133 and C134 provides for the suppression of harmonics. The filter output is applied to

the antenna through system switching relay K1 mounted on the Systems Board.

An RF adaptor cable is available for connecting the transmitter RF output to a wattmeter. Connecting the RF adaptor cable to J702 opens a set of contacts on the antenna strip line assembly. This disconnects the antenna and connects the transmitter output to J702-3. Connection to chassis ground is made at J702-4.



MODULATION LEVEL ADJUSTMENT

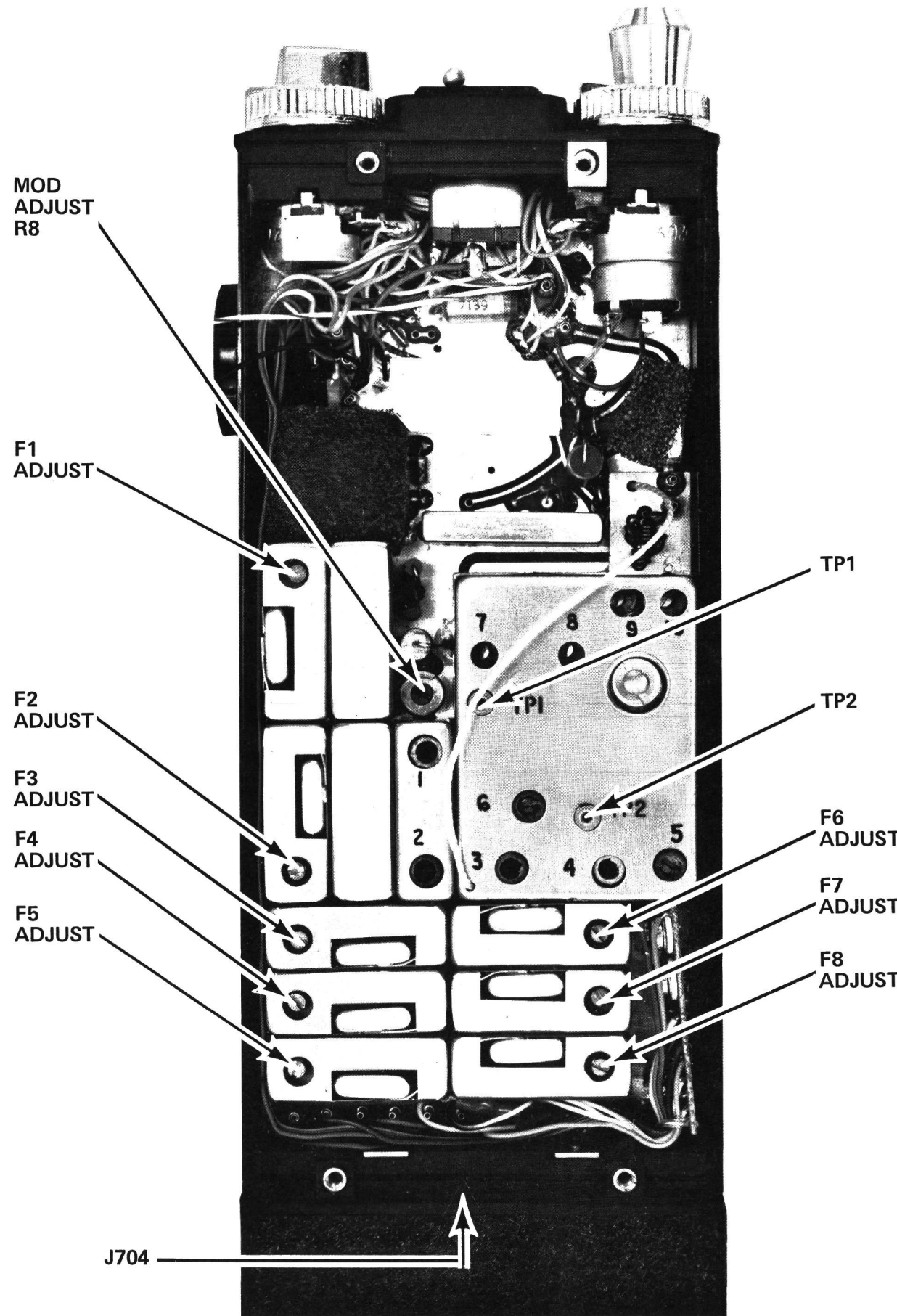
The MOD ADJUST (R8) was adjusted to the proper setting before shipment and should not normally require readjustment. This setting permits approximately 75% modulation for the average voice level. The audio peaks which would cause overmodulation are clipped by the modulation limiter. The limiter, in conjunction 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. Audio oscillator Model 4EX6A10
- 2. A deviation meter
- 3. An output meter or a VTVM
- 4. Test Adaptor Model 4EX12A10

PROCEDURE

- 1. Connect the equipment as shown in the Test Procedure on the back of this page.
- 2. Apply a 140 millivolt signal at 1000 Hz to the Test Adaptor. If the Test Adaptor is not used, apply a 14 millivolt signal to Pin 4 (Mike Hi) and Pin 1 of Accessory Jack J701.
- 3. With the signal applied, adjust Tuning Control 1 for zero modulation symmetry on the lowest channel frequency.
- 4. For transmitters without Channel Guard, set MOD ADJUST R8 for a 4.5-kilohertz swing with the deviation polarity which gives the highest reading as indicated on the frequency modulation monitor.
- 5. For transmitters with Channel Guard, check the Channel Guard Modulation as shown in Step 2 of the transmitter Test Procedure. With Channel Guard tone applied, set the deviation as described in Step 4 above.
- 6. For multi-frequency transmitters, set the deviation as described in Step 4 on the channel producing the largest amount of deviation.



TRANSMITTER ALIGNMENT

LBI-4576

EQUIPMENT REQUIRED:

- GE Test Set Model 4EX3A11 (or 4EX8K11) or equivalent 20,000 ohm-per-Volt meter.
- GE Test Regulator Model 4EX18A10, or an ammeter capable of measuring one ampere.
- A 50-ohm, terminating wattmeter connected to external antenna jack J702 thru RF adaptor cable 19C317633G1 (Option 4466).
- A frequency counter.

PRELIMINARY CHECKS AND ADJUSTMENTS

- 1. In multi-frequency transmitters, set the channel selector switch to the lowest channel frequency.
- 2. Set the slugs in Tuning Controls 1 thru 6 even with the top of the can (there is no slug in Tuning Control 4). When properly aligned, the slugs will be between the top of the can and the coil.
- 3. If using Test Set 4EX3A11 and Test Regulator 4EX18A10, connect the Test Set to the metering jack on the Test Regulator. Then connect the Regulator output to J704 on the radio, and set the Regulator for 6 Volts. Switch the Test Set range to the Test 1 position. Place the test selector switch on position "I" to check the supply voltage (read on the 1-Volt scale as 10-Volts full scale). Switch to position "G" for current drain readings (read on the 1-Volt scale as 1 ampere full scale).
- 4. Test Point meter reading made with the (+) meter lead to TP1 and TP2, and the (-) lead to system ground.
- 5. All adjustments made with the transmitter keyed.

ADJUSTMENT PROCEDURE

| STEP | TUNING CONTROL | TYPICAL METER READING | PROCEDURE  |
|------|----------------|-----------------------|--|
| 1.   | 1, 2, and 3    | Maximum (at TP1)      | Adjust Tuning Controls 1, 2 and 3 for maximum meter reading at TP1. If no reading is obtained, adjust Tuning Control 3 for maximum transmitter current, and then re-adjust 1, 2 and 3 for maximum meter reading at TP1.  |
| 2.   | 5              | Maximum (at TP2)      | Adjust Tuning Control 5 for maximum meter reading at TP2.  |
| 3.   | 6              | Maximum (at TP1)      | Adjust Tuning Control 6 for maximum meter reading at TP1.  |
| 4.   | 1, 2, 3, 5,    |                       | Retune 1, 2, 3, 5, and 6 for maximum meter reading at TP1.   |
| 5.   | 6              |                       | Tune 6 for maximum transmitter current.  |
| 6.   | 7 and 8        | Maximum Power Output  | Adjust Tuning Controls 7 and 8 for maximum power output. If no power reading is obtained, tune 7 and 8 for maximum transmitter current.  |
| 7.   | 9 and 10       |                       | Tune 9 and 10 for maximum power output.  |
| 8.   | 6 thru 10      | Maximum Power Output  | Retune Tuning Controls 6 thru 10 until no further increase in power output is obtained.  |
| 9.   |                |                       | Apply 7.5 Volts and check for a power output of one Watt (minimum).  |
| 10.  |                |                       | With no modulation, adjust F1 through F8 crystal trimmers for proper oscillator frequencies. Next, refer to the Modulation Adjustment. <div>NOTE<br/>It is recommended that all frequency adjustments be made when the equipment is at a temperature of approximately 75°F. In no case should frequency adjustments be made when the equipment is outside the temperature range of 60°F to 90°F.</div> |

ALIGNMENT PROCEDURE

470--512 MHz TRANSMITTERS  
TYPE KT-26-A AND KT-26-B

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, 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 localized. Once a defect is pin-pointed, refer to the "Service Check" and the additional corrective measures included in the Transmitter Troubleshooting Procedure. Before starting with the Transmitter Test Procedures, be sure the transmitter is tuned and aligned to the proper operating frequency.

TEST EQUIPMENT REQUIRED

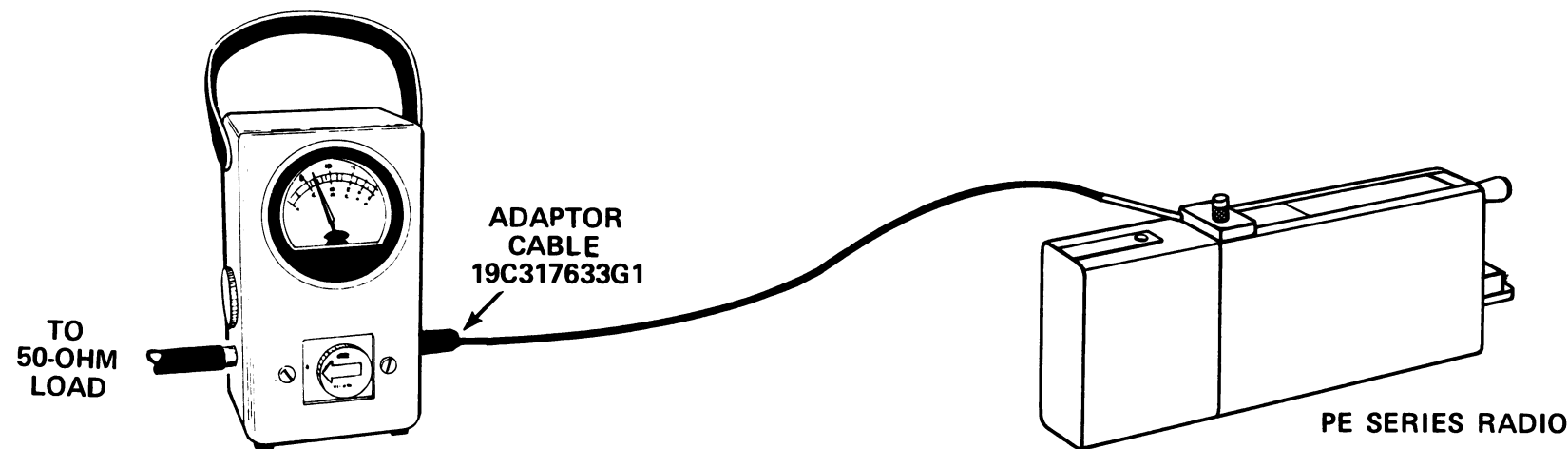
for test hookup shown:

- |  |  |  |
|--|--|--|
| 1. Wattmeter similar to:<br>Bird # 43  | 2. VTVM similar to:<br>Triplett # 850<br>Heath # 1M-21 | 3. Audio Generator similar to:<br>GE Model 4EX6A10 or<br>Heath # IG-72 |
| 4. Deviation Meter (with<br>a .75 kHz scale) similar to:<br>Measurements # 140<br>Lampkin # 205A | 5. GE Test Adaptor Model<br>4EX12A10.                  |  |

STEP 1  
POWER MEASUREMENT

TEST PROCEDURE

- A. Connect transmitter output to wattmeter as shown below. GE adaptor cable 19C317633G1 is recommended for accurate power output readings.



- B. Key transmitter and check wattmeter for desired power output..

SERVICE CHECK

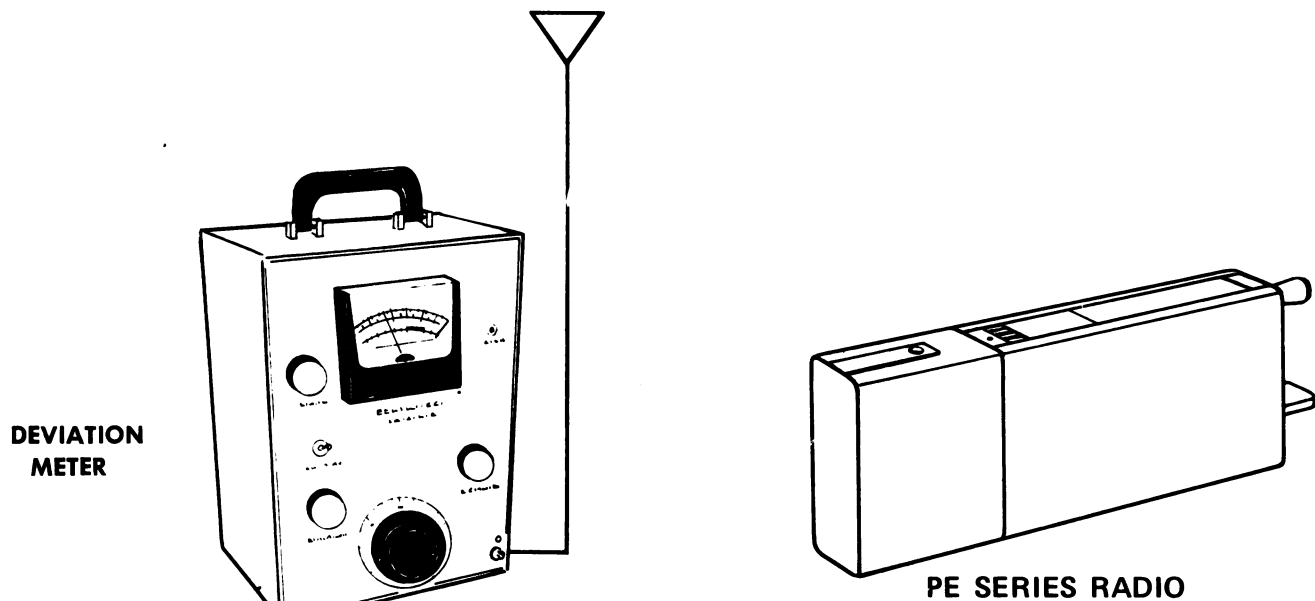
Refer to Service Hints on Transmitter Troubleshooting Procedure.

STEP 2

VOICE DEVIATION WITH CHANNEL GUARD

TEST PROCEDURE

- A. Set up Deviation Meter and monitor output of transmitter as shown below:



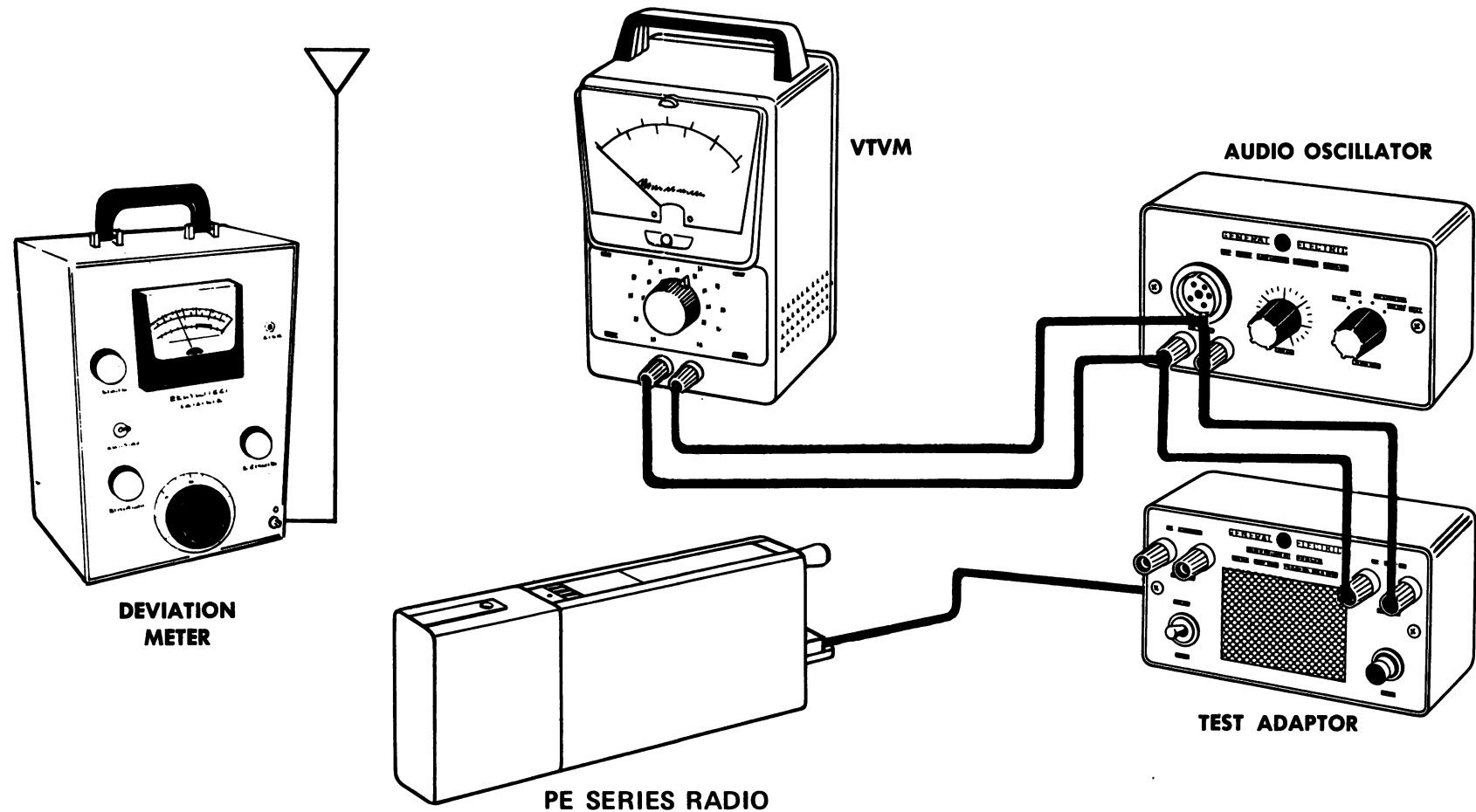
- B. Set MOD ADJUST R8 fully counterclockwise.
- C. Key transmitter and check for approximately 0.75-kHz deviation. If reading is low or high, refer to the Channel Guard Troubleshooting Procedure (see Table of Contents)

**NOTES**--The Tone Deviation Test Procedures should be repeated every time the Tone Frequency is changed.

STEP 3  
VOICE DEVIATION AND SYMMETRY

TEST PROCEDURE

- A. Connect test equipment to transmitter as shown below:



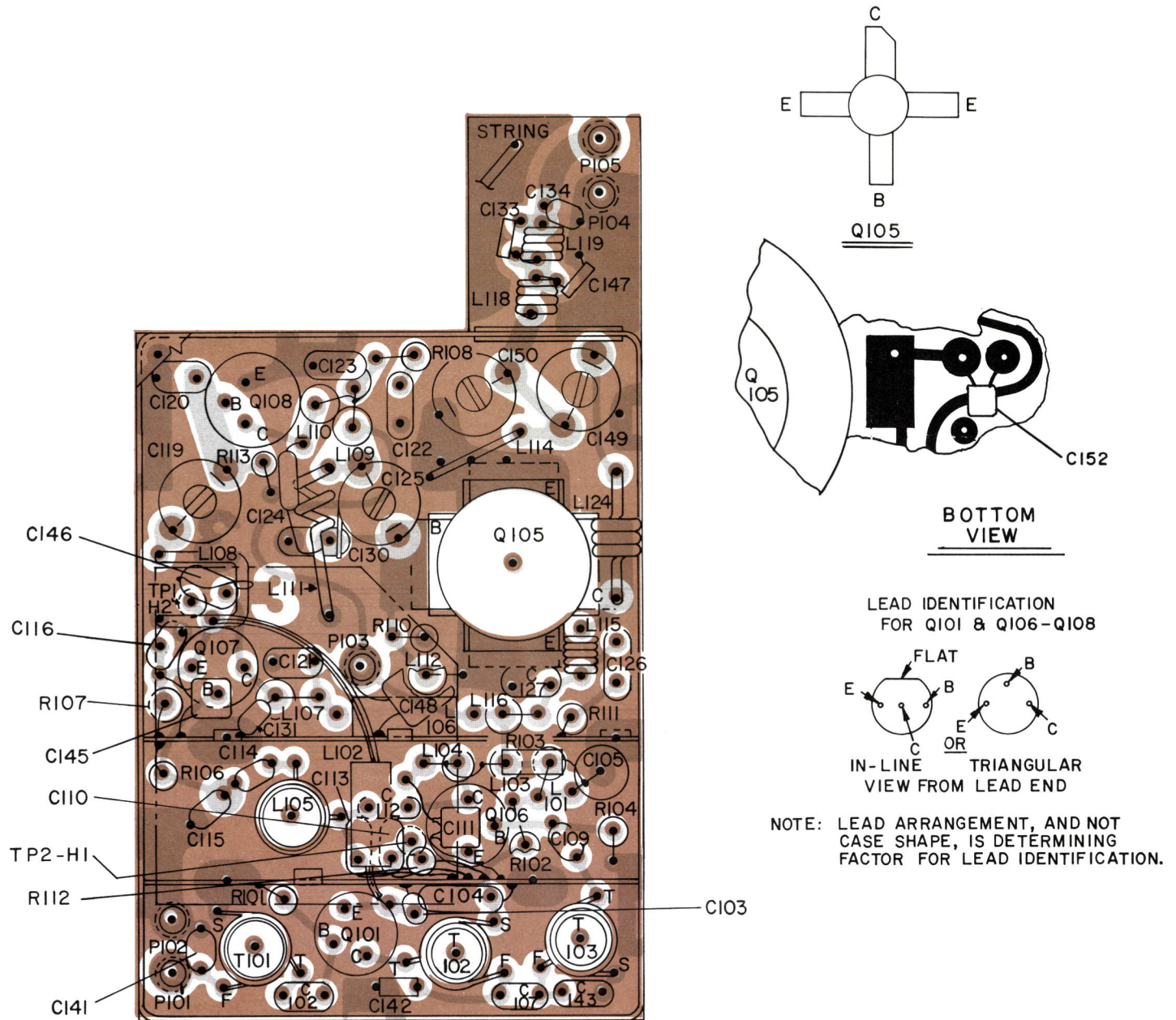
- B. Set the generator output to 140 millivolts RMS and frequency to 1 kHz. If the Test Adaptor is not used, set the generator output for 14 millivolts.
- C. Key the transmitter and adjust Deviation Meter to carrier frequency.
- D. Deviation reading should be  $\pm 4.5$  kHz. If the deviation is not 4.5 kHz, set the deviation as directed on the Transmitter Alignment Procedure (see Table of Contents).

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

If the deviation reading plus (+) or minus (-) differs by more than 0.5 kHz:

- E. Refer to the Modulation Adjustment on the Transmitter Alignment Procedure.
- F. Check Audio Sensitivity by reducing generator output until deviation falls to 3 kHz. Voltage should be LESS than 14 millivolts.

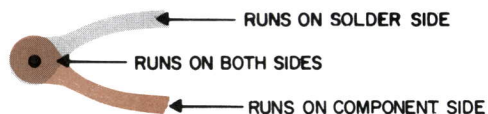


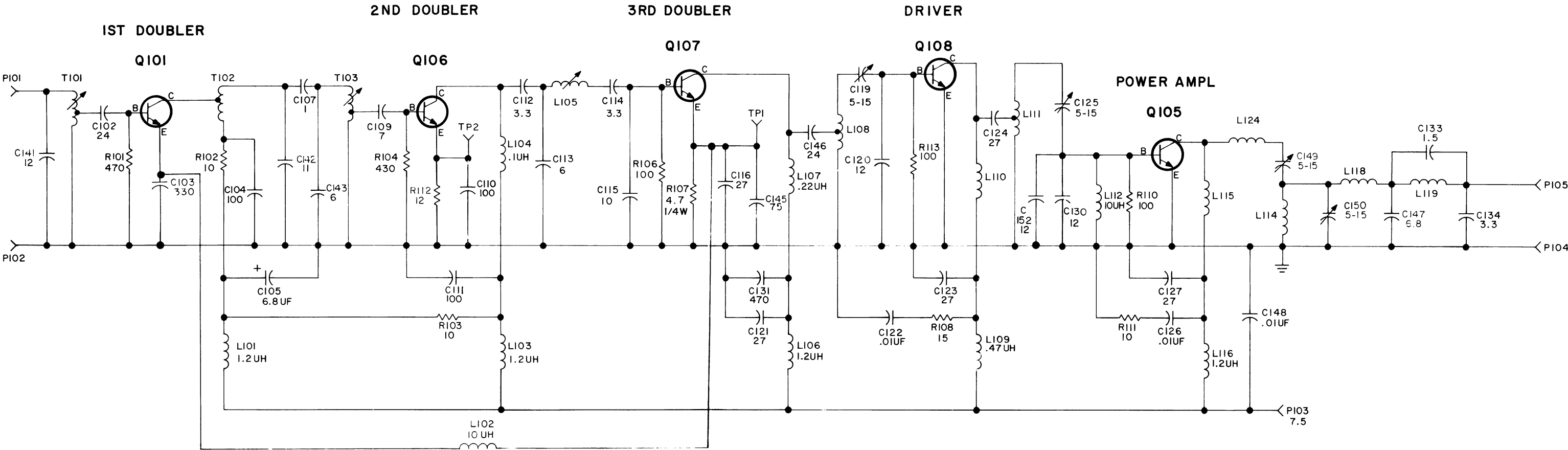


(19C320878, Rev. 1)  
 (19C320138, Sh. 1, Rev. 3)  
 (19C320138, Sh. 2, Rev. 3)

## OUTLINE DIAGRAM

470—512 MHz TRANSMITTER  
 EXCITER/PA ASSEMBLY





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

ALL RESISTORS ARE 1/10 WATT UNLESS OTHERWISE SPECIFIED AND RESISTOR VALUES IN OHMS UNLESS FOLLOWED BY K=1000 OHMS OR MEG=1,000,000 OHMS. CAPACITOR VALUES IN PICOFARADS (EQUAL TO MICROMICROFARADS) UNLESS FOLLOWED BY UF= MICROFARADS. INDUCTANCE VALUES IN MICROHENRYS UNLESS FOLLOWED BY MH= MILLIHENRYS OR H=HENRYS.

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

| THIS ELEM DIAG APPLIES TO |            |
|---------------------------|------------|
| MODEL NO                  | REV LETTER |
| 4EF41A12                  | B          |

(19D417123, Rev. 3)

**SCHEMATIC DIAGRAM**

470--512 MHz TRANSMITTER  
EXCITER/PA ASSEMBLY

PARTS LIST

LBI-45308  
EXCITER/PA MODULE  
4EF41A12 (470-512 MHz)  
19D416545G3

| SYMBOL          | GE PART NO.    | DESCRIPTION   |
|-----------------|----------------|---|
|                 |                | ----- CAPACITORS -----  |
| C102            | 19A116114P2042 | Ceramic: 24 pf ±5%, 100 VDCW; temp coef -80 PPM.  |
| C103            | 19A116192P7    | Ceramic: 330 pf ±10%, 50 VDCW; sim to Erie 8101-A050-W5R.                               |
| C104            | 19A116114P8064 | Ceramic: 100 pf ±10%, 100 VDCW; temp coef -1500 PPM.                                    |
| C105            | 5491674P39     | Tantalum: 6.8 µf ±20%, 15 VDCW; sim to Sprague Type 162D.                               |
| C107            | 19A116114P1    | Ceramic: 1 pf ±10%, 100 VDCW; temp coef 0 PPM.  |
| C109            | 19A116114P24   | Ceramic: 7 pf ±5%, 100 VDCW; temp coef 0 PPM.   |
| C110 and C111   | 19A116114P8064 | Ceramic: 100 pf ±10%, 100 VDCW; temp coef -1500 PPM.                                    |
| C112            | 19A116114P12   | Ceramic: 3.3 pf ±5%, 100 VDCW; temp coef 0 PPM.   |
| C113            | 19A116114P20   | Ceramic: 6 pf ±5%, 100 VDCW; temp coef 0 PPM.   |
| C114            | 19A116114P12   | Ceramic: 3.3 pf ±5%, 100 VDCW; temp coef 0 PPM.   |
| C115            | 19A116114P2032 | Ceramic: 10 pf ±5%, 100 VDCW; temp coef -80 PPM.  |
| C116            | 19A116114P2044 | Ceramic: 27 pf ±5%, 100 VDCW; temp coef -80 PPM.  |
| C119*           | 19A116149P2    | Variable: 4.5 to 15 pf, 63 VDCW, temp coef -75 PPM.<br><br>Earlier than REV A:          |
|                 | 19A116710P4    | Variable, ceramic: 5 to 15 pf, 50 VDCW; sim to Erie Style 511-000.                      |
| C120            | 19A116114P2033 | Ceramic: 12 pf ±5%, 100 VDCW; temp coef -80 PPM.  |
| C121            | 19A116114P2044 | Ceramic: 27 pf ±5%, 100 VDCW; temp coef -80 PPM.  |
| C122            | 19A116192P1    | Ceramic: 0.01 µf ±20%, 50 VDCW; sim to Erie 8121-M050-W5R.                              |
| C123 and C124   | 19A116114P2044 | Ceramic: 27 pf ±5%, 100 VDCW; temp coef -80 PPM.  |
| C125*           | 19A116149P2    | Variable, ceramic: 4.5 to 15 pf, 63 VDCW, temp coef -75 PPM.<br><br>Earlier than REV A: |
|                 | 19A116710P4    | Variable, ceramic: 5 to 15 pf, 50 VDCW; sim to Erie Style 511-000.                      |
| C126            | 19A116192P1    | Ceramic: 0.01 µf ±20%, 50 VDCW; sim to Erie 8121-M050-W5R.                              |
| C127            | 19A116114P2044 | Ceramic: 27 pf ±5%, 100 VDCW; temp coef -80 PPM.  |
| C130            | 19A116114P2033 | Ceramic: 12 pf ±5%, 100 VDCW; temp coef -80 PPM.  |
| C131            | 19A116192P2    | Ceramic: 470 pf ±20%, 50 VDCW; sim to Erie 8111-M050-W5R.                               |
| C133            | 19A116114P4    | Ceramic: 1.5 pf ±5%, 100 VDCW; temp coef 0 PPM.   |
| C134            | 19A116114P12   | Ceramic: 3.3 pf ±5%, 100 VDCW; temp coef 0 PPM.   |
| C141            | 19A116114P2033 | Ceramic: 12 pf ±5%, 100 VDCW; temp coef -80 PPM.  |
| C142            | 19A116114P2142 | Ceramic: 24 pf ±5%, 100 VDCW; temp coef -80 PPM.  |
| C143            | 19A116114P2020 | Ceramic: 6 pf ±5%, 100 VDCW; temp coef -80 PPM.   |
| C145            | 19A116114P2060 | Ceramic: 75 pf ±5%, 100 VDCW; temp coef -80 PPM.  |
| C146            | 19A116114P2042 | Ceramic: 24 pf ±5%, 100 VDCW; temp coef -80 PPM.  |
| C147            | 19A116114P22   | Ceramic: 6.8 pf ±5%, 100 VDCW; temp coef 0 PPM.   |
| C148            | 19A116192P1    | Ceramic: 0.01 µf ±20%, 50 VDCW; sim to Erie 8121-M050-W5R.                              |
| C149* and C150* | 19A116149P2    | Variable: 4.5 to 15 pf, 63 VDCW, temp coef -75 PPM.<br><br>Earlier than REV A:          |
|                 | 19A116710P4    | Variable: less than 5 pf to more than 15 pf, 50 VDCW; sim to Erie 511-000.              |

| SYMBOL         | GE PART NO.    | DESCRIPTION  |
|----------------|----------------|--|
| C152*          | 19A116114P2033 | Ceramic: 12 pf ±5%, 100 VDCW; temp coef -80 PPM.<br>Added by REV B.  |
|                |                | ----- INDUCTORS -----  |
| L101           | 19B209420P114  | Coil, RF: 1.20 µh ±10%, 0.18 ohms DC res max; sim to Jeffers 4436-1. |
| L102           | 19B209420P125  | Coil, RF: 10.0 µh ±10%, 3.10 ohms DC res max; sim to Jeffers 4446-4. |
| L103           | 19B209420P114  | Coil, RF: 1.20 µh ±10%, 0.18 ohms DC res max; sim to Jeffers 4436-1. |
| L104           | 19B209420P101  | Coil, RF: 0.10 µh ±10%, 0.08 ohms DC res max; sim to Jeffers 4416-1. |
| L105           | 19B219526G1    | Coil. Includes:  |
|                | 19A127805P1    | Tuning slug.   |
| L106           | 19B209420P114  | Coil, RF: 1.20 µh ±10%, 0.18 ohms DC res max; sim to Jeffers 4436-1. |
| L107           | 19B209420P105  | Coil, RF: 0.22 µh ±10%, 0.14 ohms DC res max; sim to Jeffers 4416-5. |
| L108           | 19B219524P1    | Coil.  |
| L109           | 19B209420P109  | Coil, RF: 0.47 µh ±10%, 0.34 ohms DC res max; sim to Jeffers 4426-2. |
| L110           | 19A129251P1    | Coil.  |
| L111           | 19B219525P1    | Coil.  |
| L112           | 19B209420P125  | Coil, RF: 10.0 µh ±10%, 3.10 ohms DC res max; sim to Jeffers 4446-4. |
| L114           | 19A129250P1    | Coil.  |
| L115           | 19A129252P1    | Coil.  |
| L116           | 19B209420P114  | Coil, RF: 1.20 µh ±10%, 0.18 ohms DC res max; sim to Jeffers 4436-1. |
| L118 and L119  | 19A129247P1    | Coil.  |
| L124           | 19A129230G3    | Coil.  |
|                |                | ----- PLUGS -----  |
| P101 thru P105 | 19A115834P4    | Contact, electrical: sim to AMP 2-332070-9.                          |
|                |                | ----- TRANSISTORS -----  |
| Q101           | 19A116201P3    | Silicon, NPN.  |
| Q105*          | 19A129165P2    | Silicon, NPN.  |
|                |                | In REV A and earlier:  |
|                | 19A129165P1    | Silicon, NPN.  |
| Q106 thru Q108 | 19A116201P3    | Silicon, NPN.  |
|                |                | ----- RESISTORS -----  |
| R101           | 3R151P471K     | Composition: 470 ohms ±10%, 1/8 w.                                   |
| R102 and R103  | 3R151P100K     | Composition: 10 ohms ±10%, 1/8 w.                                    |
| R104           | 3R151P431J     | Composition: 430 ohms ±5%, 1/8 w.                                    |
| R106           | 3R151P101K     | Composition: 100 ohms ±10%, 1/8 w.                                   |
| R107           | 19A116670P16   | Composition: 4.7 ohms ±5%, 1/4 w.                                    |
| R108           | 3R151P150K     | Composition: 15 ohms ±10%, 1/8 w.                                    |
| R110           | 3R151P101K     | Composition: 100 ohms ±10%, 1/8 w.                                   |
| R111           | 3R151P100K     | Composition: 10 ohms ±10%, 1/8 w.                                    |
| R112           | 3R151P120K     | Composition: 12 ohms ±10%, 1/8 w.                                    |
| R113           | 3R151P101K     | Composition: 100 ohms ±10%, 1/8 w.                                   |
|                |                | ----- TRANSFORMERS -----   |
| T101           | 19B219527G2    | Coil.  |
| T102           | 19B219523G2    | Coil.  |
| T103           | 19B219523G1    | Coil.  |
|                |                | ----- MISCELLANEOUS -----  |
|                | 4035306P11     | Washer: 1/8 dia. (Used with Q101, Q106-Q108).                        |

PRODUCTION CHANGES

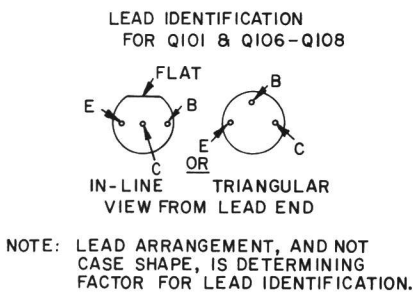
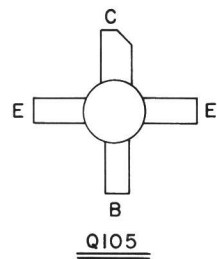
Changes in the equipment to improve performance or to simplify circuits are identified by a "Revision Letter", which is stamped after the model number of the unit. The revision stamped on the unit includes all previous revisions. Refer to the Parts List for descriptions of parts affected by these revisions.

REV. A - To incorporate a new trimmer capacitor.  
Changed C119, C125, C149 and C150.

REV. B - To improve power output.  
Changed Q105 and added C152.

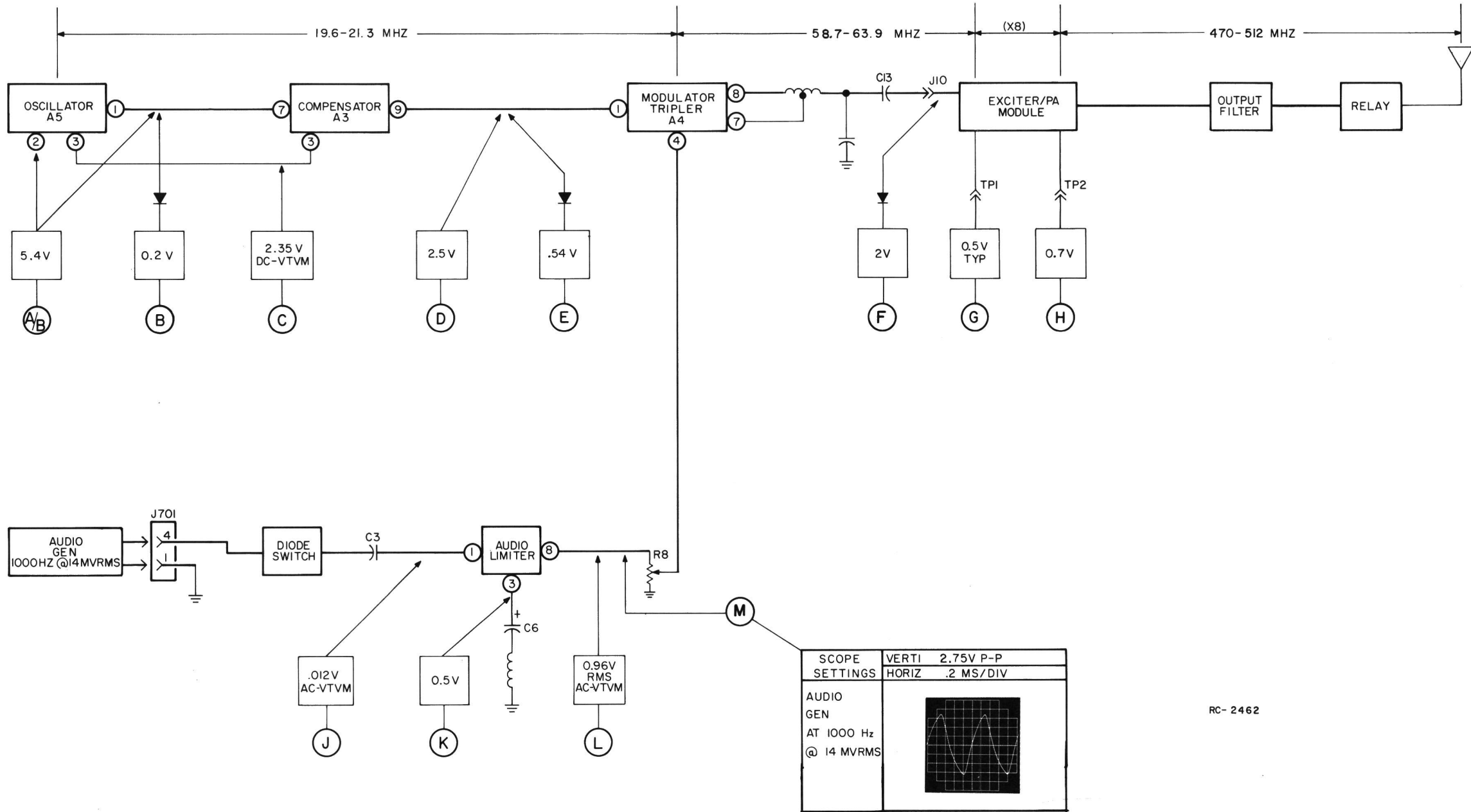
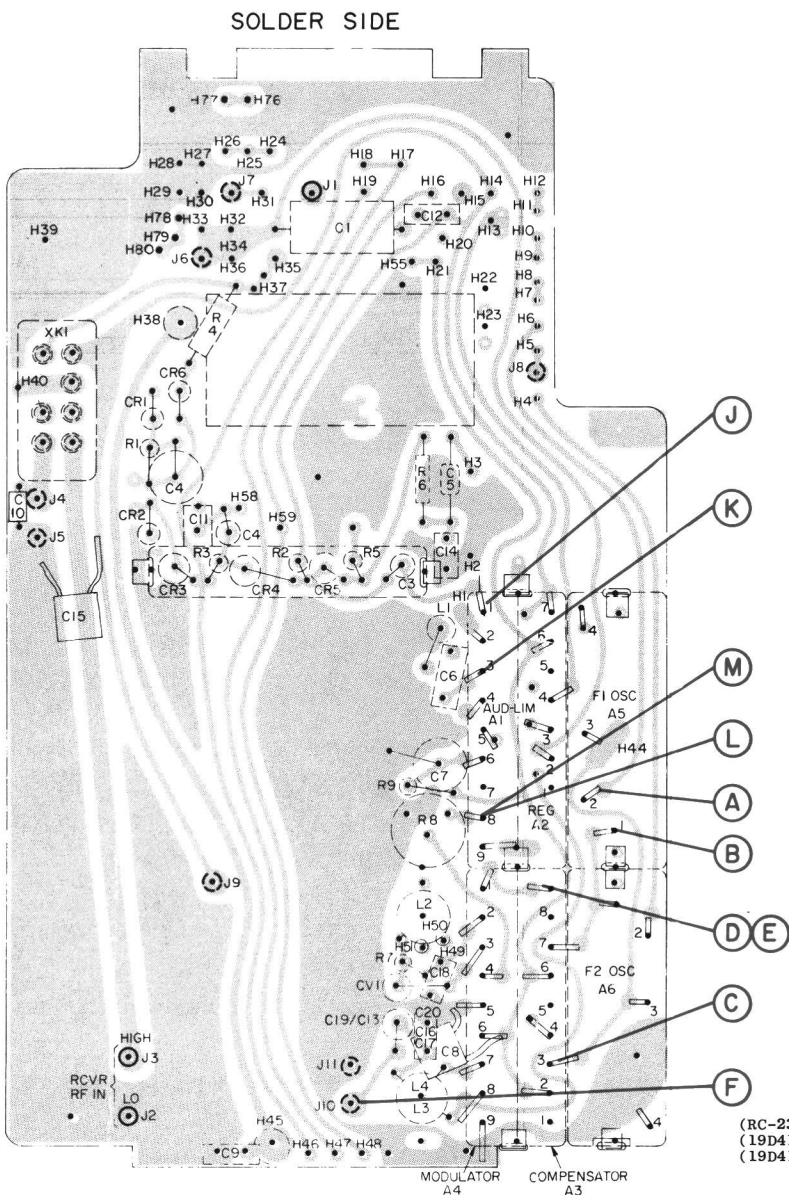
STEP I - QUICK CHECKS

| SYMPTOM                                      | QUICKCHECK  |
|--|---|
| No power output                              | <ol style="list-style-type: none"><li>1. Check the current drain.</li><li>2. If the current is more than 500 milliamps, check the stripline switch, antenna relay, low-pass filter and for a shorted C10.</li><li>3. If the current drain is less than 500 milliamperes, detune the transmitter tuning controls from 10 to 1 in that order to determine which tuning control doesn't cause a decrease in current. Then check the associated stage following that control.</li></ol> |
| Low Power output                             | <ol style="list-style-type: none"><li>1. Low battery voltage (refer to Battery Checks in operation section of the manual).</li><li>2. Check the transmitter alignment.</li></ol>  |
| Distorted or no audio with normal RF output. | <ol style="list-style-type: none"><li>1. Check voltage readings at J , K , L and M .</li><li>2. Improper setting of Mod Adjust R8.</li><li>3. Check Mod coil L2.</li><li>4. Shorted C3 or C6 on Audio Board.</li><li>5. Bad microphone.</li></ol>   |
| No reading at TP1                            | Check voltage readings at A , B , D , E and F .   |



STEP 2 - TYPICAL VOLTAGE READINGS

DC READINGS MADE WITH GE TEST SET MODEL 4EX3A10,11 OR EQUIVALENT. READINGS SHOWN IN SERIES WITH A DIODE ARE RF READINGS TAKEN WITH RF PROBE 19C311370G1 AND TEST SET MODEL 4EX3A10,11 ON 3 VOLT SCALE.  
EXCEPTION: READINGS FOLLOWED BY VTVM WERE MEASURED WITH A VTVM WITH 11 MEG OHM OR GREATER METER INPUT.



TROUBLESHOOTING PROCEDURE  
470--512 MHz TRANSMITTER TYPE KT-26-A  
AND TYPE KT-26-B

## ORDERING SERVICE PARTS

Each component appearing on the schematic diagram is identified by a symbol number, to simplify locating it in the parts list. Each component is listed by symbol number, followed by its description and GE Part Number.

Service parts may be obtained from Authorized GE Communication Equipment Service Stations or through any GE Radio Communication Equipment Sales Office. When ordering a part, be sure to give:

1. GE Part Number for component
2. Description of part
3. Model number of equipment
4. Revision letter stamped on unit

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These instructions do not purport to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with installation, operation or maintenance.

Should further information be desired, or should particular problems arise which are not covered sufficiently for the purchaser's purposes, contact the nearest Radio Communication Equipment Sales Office of the General Electric Company.

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# MAINTENANCE MANUAL

LBI-4576

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MOBILE RADIO DEPARTMENT  
GENERAL ELECTRIC COMPANY • LYNCHBURG, VIRGINIA 24502



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