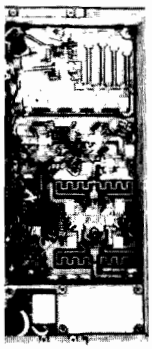
MOBILE RADIO

MASTR II MAINTENANCE MANUAL

406-420 & 450-512 MHz STATION TRANSMITTER

EXCITER ASSEMBLY



PA ASSEMBLY

SPECIFICATIONS *

FCC Filing Designation	KT-53-A, C || Extended Local Control KT-54-A, C || Extended Local/DC & Tone Remote || DC Remote/Tone Remote KT-55-A, C || All Controls
Power Output	
406-420 MHz & 450-470 MHz (Int. Duty)	40 Watts (Adjustable from 12 to 40 Watts)
(Cont. Duty)	35 Watts (Adjustable from 12 to 35 Watts)
470-494 MHz (Int. Duty)	38 Watts (Adjustable from 12 to 38 Watts)
(Cont. Duty)	33 Watts (Adjustable from 12 to 33 Watts)
494-512 MHz (Int. Duty)	35 Watts (Adjustable from 12 to 35 Watts)
(Cont. Duty)	30 Watts (Adjustable from 12 to 30 Watts)
Frequency Stability	
(-30°C to +60°C)	±0.0005% (KT-53-A, KT-54-A, KT-55-A)
(0°C to +55°C)	±0.0002% (KT-53-A, KT-54-A, KT-55-A)
(-30°C to +60°C)	±0.0002% (KT-53-C, KT-54-C, KT-55-C)
Spurious and Harmonic Emission	At least 80 dB below full rated power output.
Modulation	Adjustable from 0 to ±5 kHz 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 Hz per EIA standards. Post limiter filter per FCC and EIA.
Distortion	Less than 5% (300 Hz) Less than 3% (3000 Hz)
Deviation Symmetry	0.6 kHz maximum

Maximum Frequency Spread (2 to 4 channels)	Full Specification	1 dB degradation
406 - 420 & 450 - 470 MHz	5.50 MHz	9.00 MHz
470 - 494 MHz	5.80 MHz	9.50 MHz
494 - 512 MHz	6.00 MHz	9.75 MHz

Duty Cycle	EIA 20% Intermittent (KT-53-A, C & KT-54-A,C) Continuous (KT-55-A,C)
RF Output Impedance	50 ohms

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

GENERAL ELECTRIC

Maintenance Manual LBI-4738

406-420 & 450-512 MHz EXCITER 19D416859G5-8
INTERMITTENT DUTY 40-WATT PA ASSEMBLY 19C320620G5-8
CONTINUOUS DUTY 35-WATT PA ASSEMBLY 19D417383G5-8

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ILLUSTRATIONS

WARNING

Although the highest DC voltage in the MASTR II station transmitter is the 12 VDC supply voltage, high currents may be drawn under short circuit conditions. These currents can possibly heat metal objects such as fools, rings, watchbands, etc., enough to cause burns. Be careful when working near energized circuits! High-level RF energy in the transmitter Power Amplifier assembly can cause RF burns upon contact. KEEP AWAY FROM THESE CIRCUITS WHEN THE TRANSMITTER IS ENERGIZED!

DESCRIPTION

Transmitter Types KT-53-A, C; KT-54-A, C and KT-55-A, C are crystal-controlled, phase modulated transmitters designed for one through four-frequency operation in the 406 to 420 and 450 to 512 megahertz band. The solid state transmitter utilizes both integrated circuits (ICs) and discrete components, and consists of the following assemblies:

Exciter Board; with audio, modulator, amplifier and multiplier stages

Power Amplifier Assembly; with amplifier, driver, PA, power control, filter and antenna switch.

CIRCUIT ANALYSIS

EXCITER

The exciter uses seven transistors and one integrated circuit to drive the PA assembly. The exciter can be equipped with up to four Integrated Circuit Oscillator Modules (ICOMs). The ICOM crystal frequency ranges from approximately 11.3 to 14.2 megahertz, and the crystal frequency is multiplied 36 times.

Audio, supply voltages and control functions are connected through P902.

Centralized metering jack J103 is provided for use with GE Test Set Model 4EX3A11 or Test Kit 4EX8K12. The test set meters the modulator, multiplier and amplifier stages, and the regulated 10-Volts.

ICOMS

Three different types of ICOMs are available for use in the exciter. Each of the ICOMs contains a crystal-controlled Colpitts oscillator, and two of the ICOMs contain compensator ICs are:

5C-ICOM - contains an oscillator and a 5 part-per-million (±0.0005%) compensator IC. Provides compensation for EC-ICOMs.

EC-ICOM - contains an oscillator only. Requires external compensation from a 5C-ICOM.

2C-ICOM - contains an oscillator only. 2 PPM (±0.0002%) compensator IC. Will not provide compensation for an EC-ICOM.

The ICOMs are enclosed in an RF shielded can with the type ICOM (5C-ICOM, EC-ICOM or 2C-ICOM) printed on the top of the can. Access to the oscillator trimmer is obtained by prying up the plastic tab on the top of the can. The tabs can also be used to pull the ICOMs out of the radio.

Frequency selection is accomplished by switching the ICOM keying lead (terminal 6) to A-. The oscillator is turned on

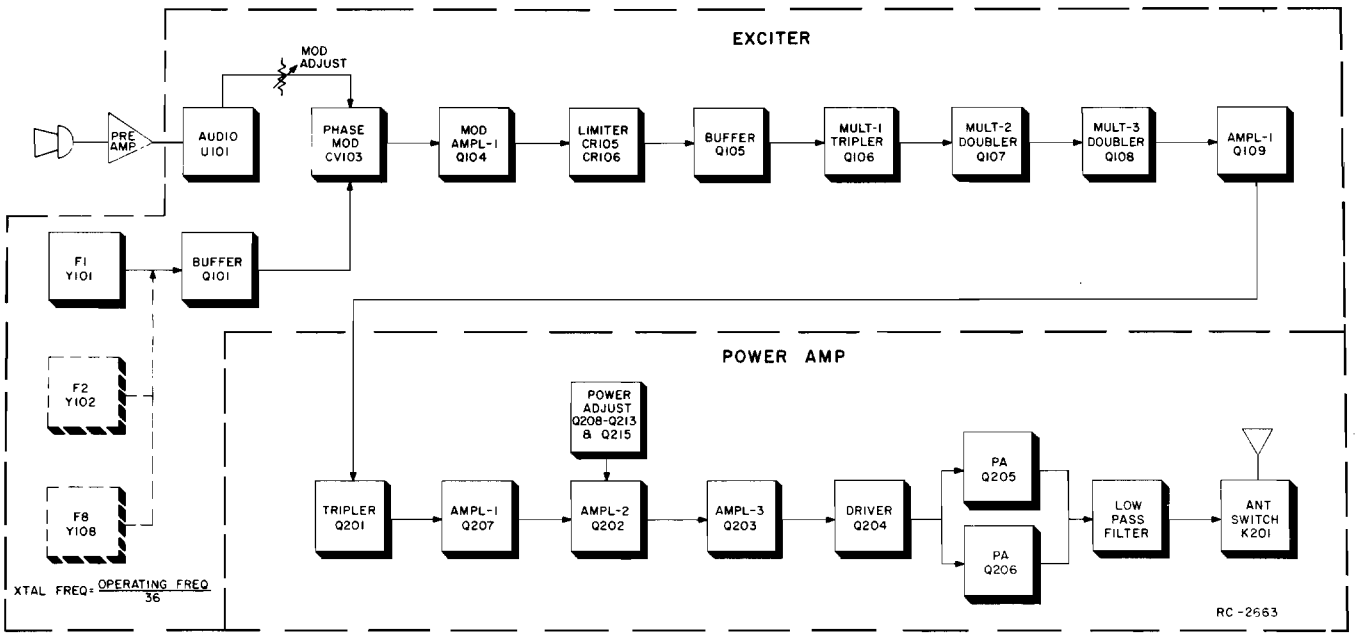


Figure 1 - Transmitter Block Diagram

by applying a keyed +10 Volts to the external oscillator load resistor.

CAUTION

All ICOMs are individually compensated at the factory and cannot be repaired in the field. Any attempt to repair or change an ICOM frequency will void the warranty.

In transmitter types KT-53-A, C using EX-ICOMs, at least one 5C-ICOM must be used. The 5C-ICOM is normally used in the receiver F1 position, but can be used in any transmit or receive position. One 5C-ICOM can provide compensation for up to 8 EC-ICOMs in the transmit and receiver. Should the 5C-ICOM compensator fail in the open mode, the EC-ICOMs will still maintain 2 PPM frequency stability from 0°C to 55°C (+32°F to 131°F) due to the regulated compensation voltage (5 Volts) from the 10-Volt regulator IC. In transmitter types KT-54-A,C and KT-55-A,C at least one 5C ICOM is required for the transmitter and at least one 5C ICOM is required for the receiver. If desired, up to 8 5C-ICOMs may be used in the station.

The 2C-ICOMs are self-compensated at 2 PPM and will not provide compensation for EC-ICOMs.

Oscillator Circuit

The quartz crystals used in ICOMs exhibit the traditional "S" curve characteristics of output frequency versus operating temperature.

At both the coldest and hottest temperatures, the frequency increases with increasing temperature. In the middle temperature range (approximately 0°C to 55°C), frequency decreases with increasing temperature.

Since the rate of change is nearly linear over the mid-temperature range, the output frequency change can be compensated by choosing a parallel compensation capacitor with a temperature coefficient approximately equal and opposite that of the crystal.

Figure 2 shows the typical performance of an uncompensated crystal as well as the typical performance of a crystal which has been matched with a properly chosen compensation capacitor.

At temperatures above and below the mid-range, additional compensation must be introduced. An externally generated compensation voltage is applied to a varactor (voltage-variable capacitor) which is in parallel with the crystal.

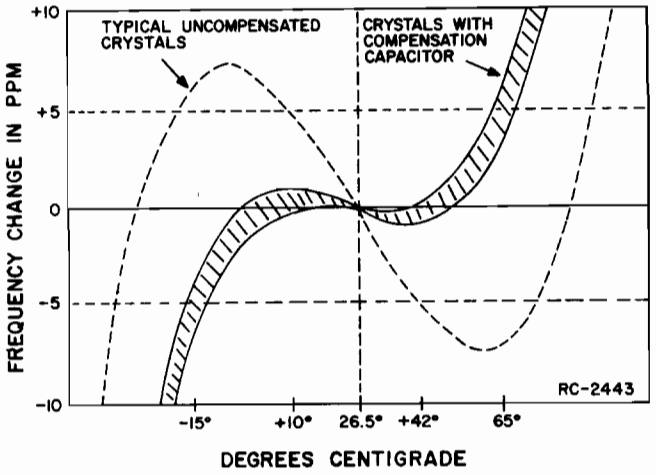


Figure 2 - Typical Crystal Characteristics

In transmitter types KT-53-A, C a constant bias of 5 Volts (provided from Regulator IC U901 in parallel with the compensator) establishes the varactor capacity at a constant value over the entire mid-temperature range. With no additional compensation, all of the oscillators will provide 2 PPM frequency stability from 0°C to 55°C (+32°F to 131°F).

Compensator Circuits

Both the 5C-ICOMs are temperature compensated at both ends of the temperature range to provide instant frequency compensation. An equivalent ICOM circuit is shown in Figure 3.

The cold end compensation circuit does not operate at temperatures above 0°C. When the temperature drops below 0°C, the circuit is activated. As the temperature decreases, the equivalent resistance decreases and the compensation voltage increases.

The increase in compensation voltage decreases the capacity of the varactor in the oscillator, increasing the output frequency of the ICOM.

The hot end compensation circuit does not operate at temperatures below +55°C. When the temperature rises above +55°C, the circuit is activated. As the temperature increases, the equivalent resistance decreases and the compensation voltage decreases. The decrease in compensation voltage increases the capacity of the varactor, decreasing the output frequency of the ICOM.

SERVICE NOTE: Proper ICOM operation is dependent on the closely-controlled input voltages from the 10-Volt regulator. Should all of the ICOMs shift off frequency, check the 10-Volt regulator module or check output of 5C ICOM.

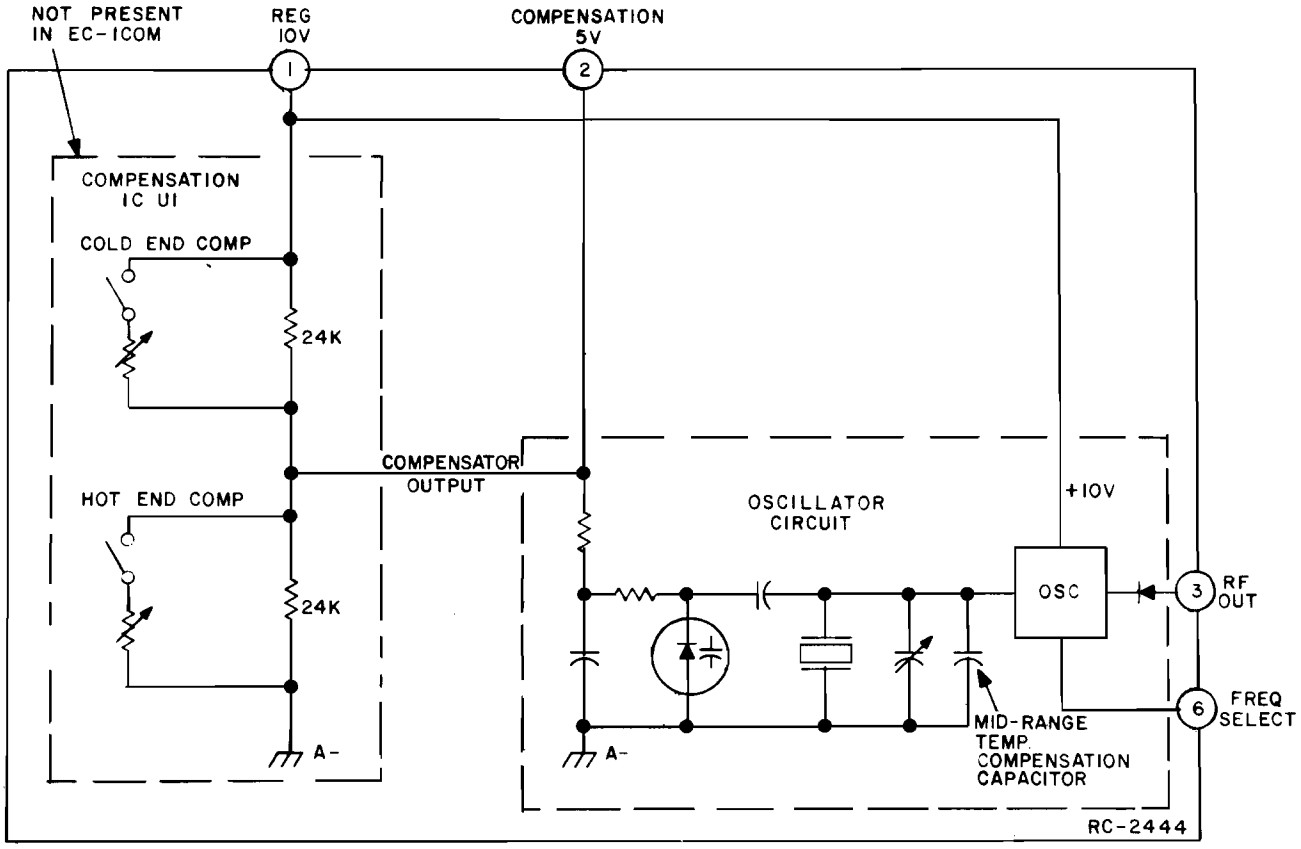


Figure 3 - Equivalent ICOM Circuit

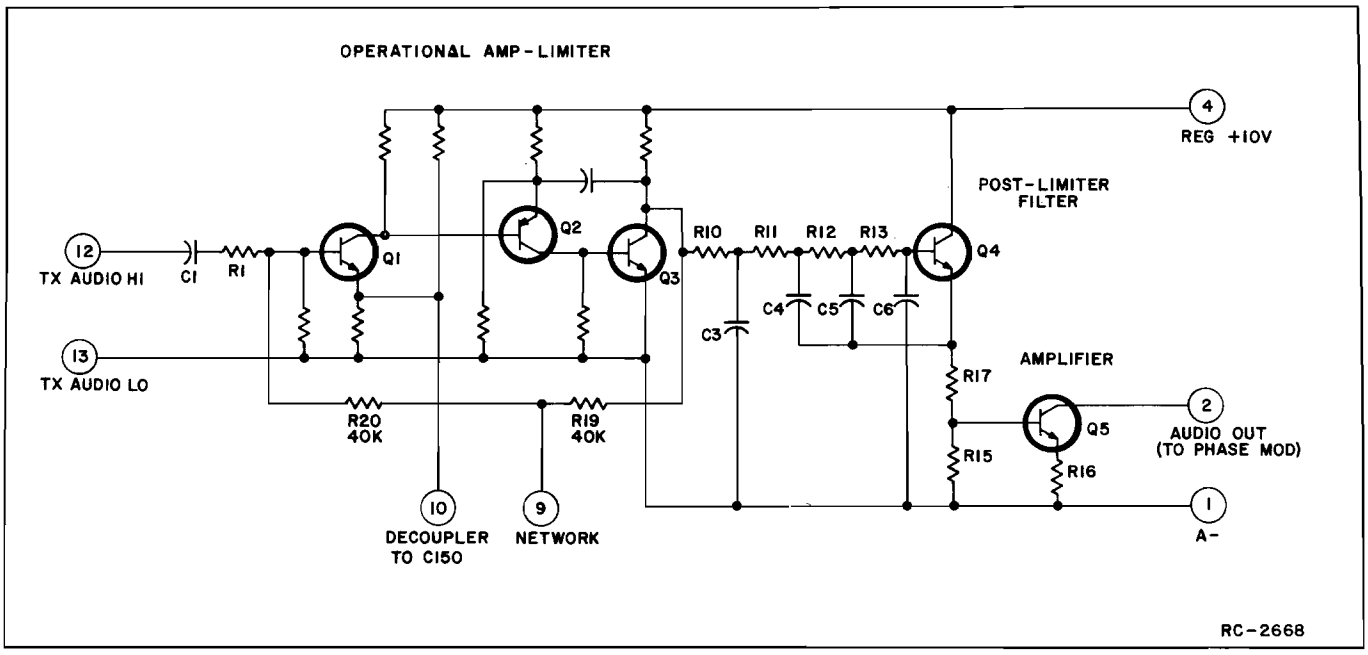


Figure 4 - Simplified Audio IC

AUDIO IC

The transmitter audio circuit is contained in audio IC U101. A simplified drawing of the audio IC is shown in Figure 4.

Audio from the station preamplifier at pin 12 is coupled through pre-emphasis capacitor C1 to the base of Q1 in the operational amplifier-limiter circuit.

The operational amplifier-limiter circuit consists of Q1, Q2 and Q3. Q3 provides limiting at high signal levels. The gain of the operational amplifier circuit is fixed by negative feedback through R19, R20 and the resistance in the network (Pin 9).

The output of Q3 is coupled through a de-emphasis network (R10 and C3) to an active post-limiter filter consisting of C4, C5, C6, R11, R12, R13, R15, R17 and Q4.

Following the post-limiter filter is class A amplifier Q5. The output of Q5 is coupled through MOD ADJUST potentiometer R104 and resistor R125 to the phase modulator.

SERVICE NOTE: If the DC voltages to the Audio IC are correct and no audio output can be obtained, replace U101.

For radios equipped with Channel Guard, tone from the encoder is applied to the phase modulator through CHANNEL GUARD MOD ADJUST potentiometer R105, and resistor R127. Instructions for setting R105 are contained in the modulation adjustment section of the Transmitter Alignment Procedure.

BUFFER, PHASE MODULATORS & AMPLIFIERS

The output at pin 3 of the selected ICOM is coupled through buffer-amplifier Q101 to the modulator stage. The phase modulator is varactor (voltage-variable capacitor) CV103 in series with tunable coil T103. This network appears as a series-resonant circuit to the RF output of the oscillator. An audio signal applied to the modulator circuit through blocking capacitor C107 varies the bias of CV103, resulting in a phase modulated output. A voltage divider network (R110 and R111) provides the proper bias for varactor CV103.

The output of the modulator is coupled through blocking capacitor C150 to the base of Class A amplifier Q104. The output of the modulator is metered through C123, R128 and CR104, and is applied to the base of buffer Q105. Diodes CR105 and CR106 remove any amplitude modulation in the modulator output.

BUFFER, MULTIPLIERS & AMPLIFIER

Buffer Q105 is saturated when no RF signal is present. Applying an RF signal to Q105 provides a sawtooth waveform at its collector to drive the class C tripler, Q106. The tripler stage is metered through R138. The output of Q106 is coupled through tuned circuits T104 and T105 to the base of doubler Q107. The doubler stage is metered through R141.

The output of Q107 is coupled through tuned circuits T106 and T107 to the base of second doubler Q108. Q108 is metered through R146.

The output of Q108 is coupled through three tuned circuits (T108, T109 and T110) to the base of amplifier Q109.

Q109 is a Class C amplifier, and is metered through R148. The amplifier collector circuit consists of T111, C154, C155, T112 and C157, and matches the amplifier output to the input of the power amplifier assembly.

POWER AMPLIFIER

The PA assembly uses seven RF power transistors and seven transistors in the Power Control circuitry to provide rated power output. The broadband PA has no adjustments other than Power Control potentiometer R226.

Supply voltage for the PA is connected through power leads from the system board to feedthrough capacitors C297 and C298 on the bottom of the PA assembly. C297, C298, C299, L295 and L296 prevent RF from getting on the Power leads. Diode CR295 (on the intermittent duty PA only) will cause the main fuse in the fuse assembly to blow if the polarity of the power leads is reversed, providing reverse voltage protection for the radio.

Centralized metering jack J205 is provided for use with GE Test Set Model 4EX3A11 or Test Kit 4EX8K12. The Test Set meters the Tripler drive (exciter output), Ampl-2 input, Driver and PA current.

TRIPLER & RF AMPLIFIERS

The exciter output is coupled through an RF cable to PA input jack J201. The 50-ohm RF input is coupled through a matching network (C206 and W209) to the base of the broadband tripler stage, Q201.

Part of the RF input is rectified by CR201 and is used to activate the Power Control circuit. Another portion of the rectified RF is applied to J205 for metering the tripler drive.

The output of Q201 is coupled through a 20-ohm collector matching network (C212, C213, C4219 and L203) to the input of a high-pass filter consisting of C217 through C225, and W210 through W213.

Following the high-pass filter is a low-pass filter consisting of W214 through W219, C226 through C230 (and C4214 through C4217 in the 406-420 MHz band). The two filter sections combine to act as a band-pass filter providing a minimum of 60 dB rejection below 300 megahertz and 30 dB rejection above 600 megahertz.

In 450 to 512 megahertz transmitters, the filter output is coupled through a matching network (C231, C232, C233 and W220) to the base of Class C amplifier Q207. Collector voltage to Q207 is coupled through collector stabilizing network L220, R216, L219 and C234. The output of Q207 is coupled through a matching network (W221, C236, C237 and W222) to the base of the second Class C amplifier Q202. Drive to Q202 is metered at J205 (Ampl-2 Input) through metering network C238, CR202, C239 and R205.

In 406 to 420 megahertz transmitters, Q207 and its associated circuitry is removed, and the filter output is coupled through C285 to the base of second amplifier Q202.

Collector voltage for Q202 is coupled through stabilizing network L206, R206, L205 and C240. Matching network W223, C241, C242, C243 and W224 matches the output of Q202 to the base of third amplifier Q203.

Collector voltage for Q203 is applied through stabilizing network R207, L209, and C246.

The output of Q203 is coupled through a matching network (W225, C247, C248, C249 and W226) to the base of Class C driver Q204. Collector voltage for Q204 is applied through collector stabilizing network C201, L211 and C267.

Collector current for Q204 is metered across tapped manganin resistor R214 at J205 (Driver Current). The reading is taken on the one-volt scale with the High Sensitivity button pressed, and read as 10 amperes full scale.

Following Q204 is a matching network (W227 and C253) that matches the driver output to the 50-ohm impedance of power divider network W228 and R209.

The power amplifier stages consist of two identical paralleled Class C PA circuits (Q205 and Q206). One output of the power divider network is applied to the base of Q205 through matching network W229 and C268.

Supply voltage for Q205 is coupled through collector stabilizing network L213, R210, L214 and C255. The output of Q205 is coupled through a matching network (W231 and C258) and added to the output of Q206 in power combiner network R212 and W233. The combined collector current for Q205 and Q206 is metered across tapped manganin resistor R213 at J205 (PA Current). The reading is taken on the one-volt scale with the High Sensitivity button pressed, and read as 10 amperes full scale.

The PA output is coupled through a low-pass filter to the antenna through antenna switch K201. Capacitors C214, C270 through C4218 provide DC ground isolation for ± ground operation.

WARNING

The stud mount RF Power Transistors used in the transmitter contain Beryllium Oxide, a TOXIC substance. If the ceramic, or other encapsulation is opened, crushed, broken or abraded, the dust may be hazardous if inhaled. Use care in replacing transistors of this type.

POWER CONTROL CIRCUIT

When the transmitter is keyed, rectified RF from CR201 is applied to the base of switch Q208, turning it on. Turning on Q208 turns on voltage regulator Q210, supplying a constant voltage to Power Adjust potentiometer R226.

Q212, Q213 and Q215 operate as an amplifier chain to supply voltage to the collector of Q202 (Ampl-2). The setting of R226 determines the voltage applied to the base of Q212. The higher the voltage at the base of Q212, the harder the amplifiers conduct, supplying more collector voltage to Q202. The lower the voltage at the base of Q212, the less collector voltage is supplied to Q202. Reducing the supply voltage to Q202 reduces the driver to Q203 and Q204, thereby reducing the power output of the PA. The power output can be adjusted by R226 from approximately 12 to 40 Watts.

Temperature protection is provided by Q209, Q211 and thermistor RT201 which is mounted in the PA heatsink. Under normal operating conditions, the circuit is inactive (Q209 is on and Q211 is off). When the heatsink temperature reaches approximately 100°C, the resistance of RT201 decreases. This increases the base voltage applied to Q209, turning it off. Turning off Q209 allows Q211 to turn on, decreasing the voltage at Power Adjust potentiometer R226. This reduces the base voltage to Q212 which causes Q213 and Q215 to conduct less, reducing the collector voltage to Q202 (Ampl-2). This reduces the transmitter

output power, keeping the heatsink at a maximum of approximately 100°C. When the heatsink temperature decreases below 100°C, the temperature control circuit turns off, allowing the normal transmitter power output.

MAINTENANCE

DISASSEMBLY

For a more complete mechanical parts breakdown refer to the station manual. To service the transmitter exciter from the front:

1. Turn the two latching knobs (A) counter-clockwise to unlatch the Radio Panel Front Door. Refer to Figure 5.
2. Swing the Radio Panel Front Door down as shown.
3. Remove covers.

To service the transmitter Power Amplifier from the rear:

1. Remove the top two screws (B) on the Intermittent or Continuous Duty Power Amplifier. Refer to Figure 6.
2. Swing the Power Amplifier down as shown. Remove the top cover of the Power Amplifier.

NOTE

If the heatsink blower option is present, this blower must be removed before the Power Amplifier can be lowered.

To remove the PA board: Refer to Figure 7.

1. Remove the PA top cover and unplug the exciter/PA cable (B) .
2. Unsolder the two feedthrough coils (E) and the thermistor leads (F) .
3. For Continuous Duty stations only, remove all heatsink sections from the heat dissapator plate.
4. Remove the PA transistor hold-down nuts and spring washers on the bottom of the PA assembly.

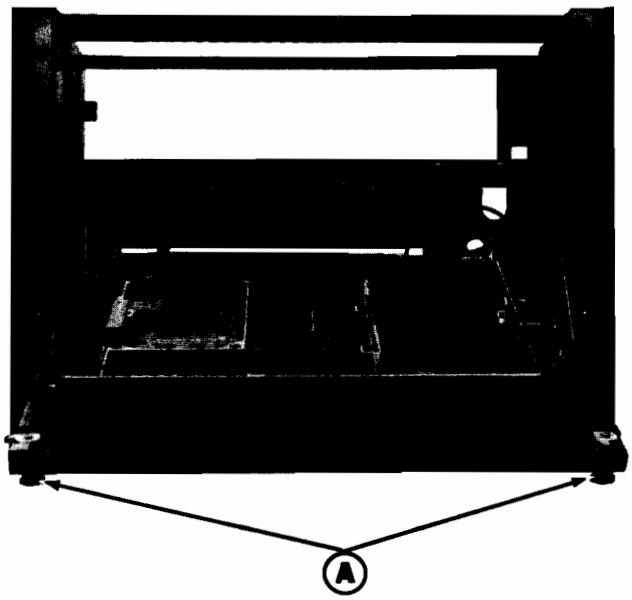


Figure 5 - Access to Exciter - Front View

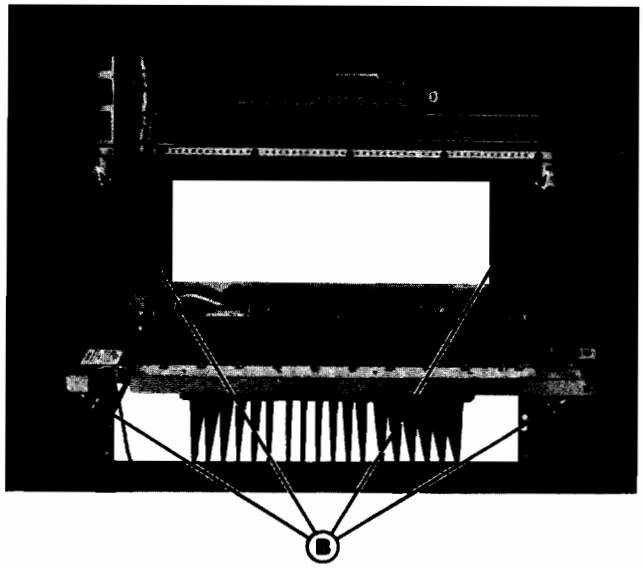


Figure 6 - Access To Power Amplifier - Rear View

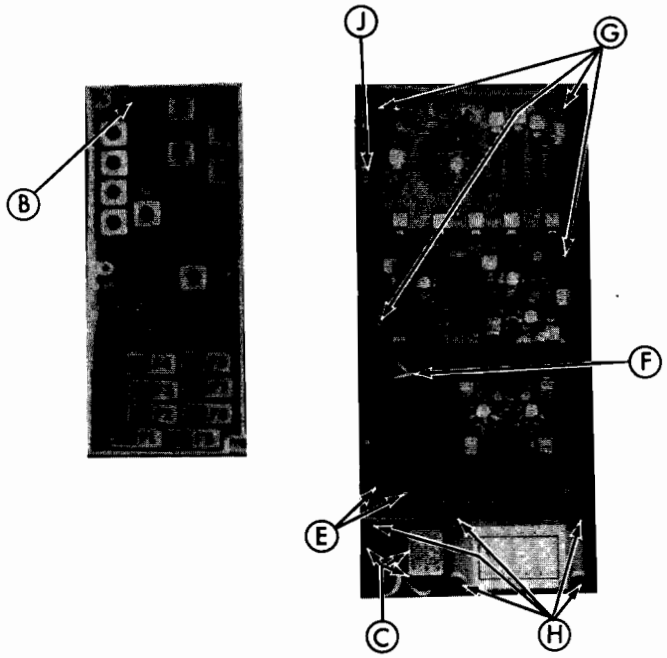


Figure 7 - PA Board Removal

5. Remove the four PA board mounting screws (G), the five screws in the filter casting (H), and the retaining screw in Q210 (J), and lift the board out.

PA TRANSISTOR REPLACEMENT

When replacing a power transistor where more than one are in parallel, make sure all the paralleled transistors are from the same manufacturer for proper operation.

WARNING

The stud mounted RF Power Transistors used in the transmitter contain Beryllium Oxide, a TOXIC substance. If the ceramic or other encapsulation is opened, crushed, broken or abraded, the dust may be hazardous if inhaled. Use care in replacing transistors of this type.

To replace the PA RF transistors:

1. Unsolder one lead at a time with a 50-watt soldering iron. Use a scribe to hold the lead away from the printed circuit board until the solder cools.

2. Turn the transmitter.

NOTE

If the transmitter has a continuous Duty Power Amplifier a section of Heat Sink may have to be removed to get to the transistor hold-down nuts. Apply a light coat of silicon grease when replacing the removed section of Heat Sink.

3. Hold the body of the transistor to prevent it from turning. Remove the transistor hold-down nut and spring washer through the hole in the heatsink with an 11/32-inch nut-driver. Lift out the old solder from the printed circuit board with a de-soldering tool such as a SOLDA PULLT®. Special care should be taken to prevent damage to the printed circuit board runs.

4. Trim the new transistor leads (if required) to the lead length of the removed transistor. Cut the collector lead at a 45° angle for future identification (see Figure 8). The letter "C" on the top of the transistor indicates the collector.

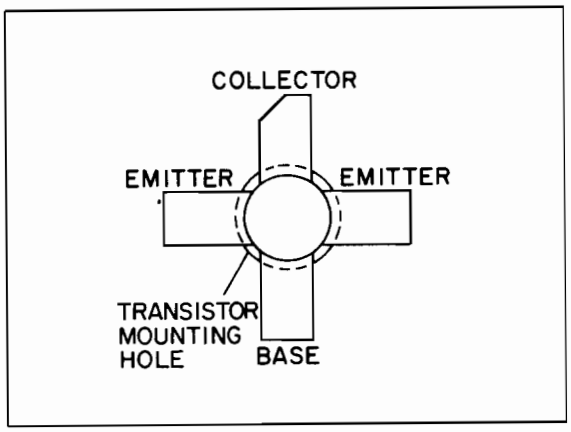


Figure 8 - Lead Identification

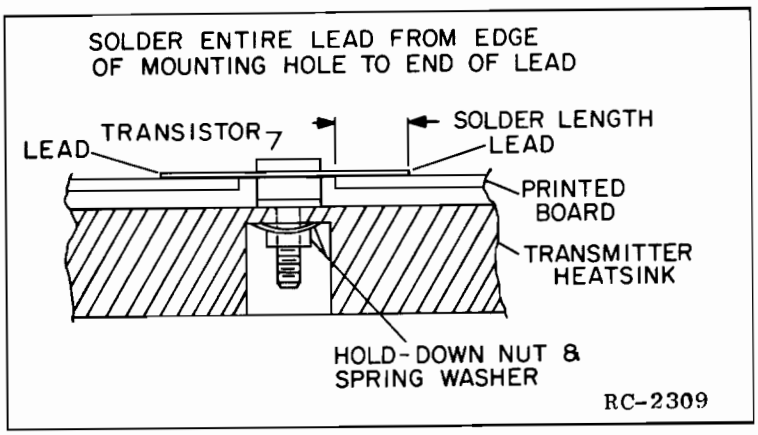


Figure 9 - Lead Forming

5. Applying a coating of silicon grease around the transistor mounting surface, and place the transistor in the mounting hole. Align the leads as shown in the Outline Diagram. Then hold the body of the transistor and replace the holding-down nut and spring-washer, using moderate torque (8 inch-pounds). A torque wrench must be used for this adjustment since transistor damage can result if too little or too much torque is used.

6. Make sure that the transistor leads are formed as shown in Figure 9 so that the leads can be soldered to the printed circuit pattern, starting from the inner edge of the mounting hole.

7. Solder the leads to the printed circuit pattern. Start at the inner edge of mounting hole and solder the remaining length of transistor lead to the board. Use care not to use excessive heat that causes the printed wire board runs to lift up from the board. Check for shorts and solder bridges before applying power.

CAUTION

Failure to solder the transistor leads as directed may result in the generation of RF loops that could damage the transistor or may cause low power output.

MODULATION LEVEL ADJUSTMENT

The MOD ADJUST (R104) 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 (GE Model 4EX6A10)
2. A frequency modulation monitor
3. An output meter or a VTVM
4. GE Test Set Model 4EX3A11 or 4EX8K12

PROCEDURE

1. Set the station gain control R14 to its fully clockwise position.
2. Connect the audio oscillator and the meter through a 0.5 μF (or larger) DC blocking capacitor, across audio input terminals J10 (Green-Hi) and J11 (Black-Lo) on GE Test Set, and connect the Red Test set plug to the system Red metering plug. If not using GE Test Set connect audio oscillator and meter across J952-13 (Mike-High) through a 0.5 microfarad (or larger) DC blocking capacitor, and J952-14 (Mike-Low) on the System Board.
3. Adjust the audio oscillator for 30 millivolts RMS at 1000 Hz.
4. For transmitters without Channel Guard, set MOD ADJUST R104 for a 4.5 kHz swing with the deviation polarity which gives the highest reading as indicated on the frequency modulation monitor.
5. For transmitters with Channel Guard set Channel Guard MOD ADJUST R105 for zero tone deviation. Next, with the 30 millivolts signal at 1000 Hz applied, set MOD ADJUST R104 for 3.75 kHz deviation. Then remove the signal from the audio oscillator and set Channel Guard MOD ADJUST R105 for 0.75 kHz tone deviation.
6. For multi-frequency transmitters, set the deviation as described in Steps 4 or 5 on the channel producing the largest amount of deviation.
7. Remove the audio oscillator and key the mike. While talking in a normal voice at a distance of four to six inches from the station microphone, adjust station gain control R14 for a deviation of 3 kHz as measured on the deviation monitor.

PA POWER INPUT

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

$$P_i = \text{PA voltage} \times \text{PA current}$$

where:

P_i is the power input in Watts,

PA voltage is measured with Test Set Model 4EX3A11 in Position G on the 15-Volt range (read as 15 Volts full scale), and with the polarity switch in the (-) position. With Test Set Model 4EX8K12, use the B+ position and the 1-Volt range (read as 15 Volts full scale), with the HIGH SENSITIVITY button pressed and the polarity switch in the (-) position.

PA current is measured with the Test Set in Position G in the Test 1 position, and with the HIGH SENSITIVITY button pressed (10 amperes full scale).

Example:

P_i = 12.6 Volts x 3.4 amperes = 43 Watts

ICOM FREQUENCY ADJUSTMENT

First, check the frequency to determine if any adjustment is required. The frequency should be set with a frequency meter or counter with an absolute accuracy that is 5 to 10 times better than the tolerance to be maintained, and with the entire radio as near as possible to an ambient temperature of 26.5°C (79.8°F).

MASTR II ICOMs should be reset only when the frequency shows deviation in excess of the following limits:

A. ±0.5 PPM, when the radio is at 26.5°C (79.8°F).

B. ±2 PPM at any other temperature within the range of -5°C to +55°C (+23°F to +131°F).

C. The specification limit (±2 PPM or ±5 PPM) at any temperature within the ranges of -40°C to -5°C (-40°F to +23°F) or +55°C to +70°C (+131°F to +158°F).

If an adjustment is required, pry up the cover on the top of the ICOM to expose the trimmer, and use one of the following procedures:

If the radio is at an ambient temperature of 26.5°C (79.8°F), set the oscillator for the correct operating frequency.

If the radio is not at an ambient temperature of 26.5°C, setting errors can be minimized as follows:

A. To hold the setting error to ±0.6 PPM (which is considered reasonable for 5 PPM ICOMS):

1. Maintain the radio at 26.5°C (±5°C) and set the oscillator to desired frequency, or-
2. Maintain the radio at 26.5°C (±10°C) and offset the oscillator, as a function of actual temperature, by the amount shown in Figure 10.

E. To hold setting error to ±0.35 PPM (which is considered reasonable for 2 PPM ICOMs): Maintain unit at 26.5°C (±5°C) and offset the oscillator as a function of actual temperature, by the amount shown in Figure 10.

For example: Assume the ambient temperature of the radio is 18.5°C (65.4°F). At that temperature, the curve shows a correction factor of 0.3 PPM. (At 406 MHz, 1 PPM is 406 Hz. At 512 MHz, 1 PPM is 512 Hz).

With an operating frequency of 450 MHz, set the oscillator for a reading of 135 Hz (0.3 x 450 Hz) higher than the licensed operating frequency. If a negative correction factor is obtained (at temperatures above 26.5°C), set the oscillator for the indicated PPM lower than the licensed operating frequency.

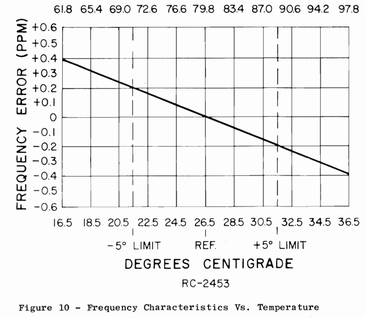
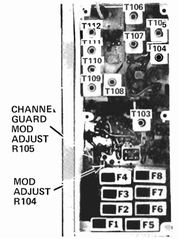
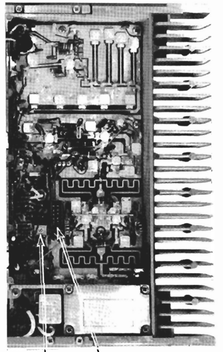
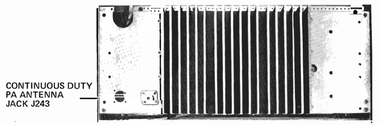
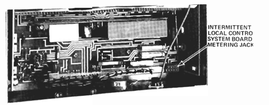


Figure 10 - Frequency Characteristics Vs. Temperature









TRANSMITTER ALIGNMENT

EQUIPMENT REQUIRED

1. GE Test Set Model 4EX3A11 or Test Kit 4EX8K12.
2. A 50-ohm wattmeter connected to antenna jack J201 or J243.
3. A frequency counter.

PRELIMINARY CHECKS AND ADJUSTMENTS

1. Place ICOMs on Exciter Board (crystal frequency = operating frequency ÷ 36).
2. For a large change in frequency or badly mis-aligned transmitter, pre-set the slugs in T104 and T105 to the bottom of the coil form.
3. For multi-frequency transmitters with a frequency spacing less than 2.75 MHz for frequencies between 450-470 MHz, 2.90 MHz for frequencies between 494-512 MHz, tune the transmitter on the lowest frequency.

   For multi-frequency transmitters with a frequency spacing greater than that specified above, tune the transmitter using a center frequency tune-up ICOM. These limits can be extended to 2.75 MHz, 2.90 MHz, and 3.00 MHz respectively with 1 dB degradation in power output.
4. Connect the red plug on the GE Test Set to the System Board metering jack, and the black plug to the Exciter metering jack. Set the polarity to +, and set the range to the Test 1 position (1-Volt position for 4EX8K12) for all adjustments.
   NOTE: With the Test Set connected to the PA metering jack, the voltage reading at position "F" with the HIGH SENSITIVITY button pressed may be converted to driver collector current by reading the current as 10 amperes full scale. The voltage reading at position "G" with the HIGH SENSITIVITY button pressed may be converted to PA collector current by reading the current as 10 amperes full scale.
5. All adjustments are made with the transmitter keyed. Unkey the transmitter between steps to avoid unnecessary heating.

STEP	METER POSITION	TUNING CONTROL	METER READING	PROCEDURE
1.	B (MOD-1)	T103	See Procedure	Tune T103 for the maximum meter reading on the lowest frequency. After tuning T103 for maximum, turn the slug 1/8 of a turn clockwise (increasing inductance).
2.	C (MULT-1)	T104	Minimum	Tune T104 for a dip in meter reading.
3.	D (MULT-2)	T105, T104 & T106	See Procedure	Tune T105 for a maximum meter reading and re-adjust T104 for maximum meter reading. Then tune T106 for a dip in meter reading.
4.	F (MULT-3)	T107, T106, T108 & T109	See Procedure	Tune T107 for maximum meter reading and re-adjust T106 for maximum meter reading. Then tune T108 for a dip in meter reading and T109 for maximum meter reading.
5.	G (AMPL-1)	T110, T108 & T109	Maximum	Tune T110 for maximum meter reading, and then re-adjust T108 and T109 for maximum meter reading.
6.	D (AMPL-1 DRIVE on PA)	T111 & T112	Maximum	Move the black metering plug to the Power Amplifier metering jack and tune T111 and then T112 for maximum meter reading. Then alternately tune T111 and T112 for maximum meter reading.
7.	G (AMPL-1)	T108, T109 & T110	Maximum	Move the black metering plug back to the exciter metering jack and re-adjust T108, T109 and T110 for maximum meter reading.
8.	D (AMPL-1 DRIVE on PA)	T111 & T112	Maximum	Move the black metering plug back to the Power Amplifier metering jack and re-adjust T111 and T112 for maximum meter reading.
9.		R226		Set Power Adjust potentiometer R226 on the PA board for the desired power output (from 12 to 40 Watts).
	ADDITIONAL STEPS FOR TRANSMITTERS USING CENTER FREQUENCY TUNE-UP ICOM			
10.	D (MULT-2)	T105	See Procedure	Move the black metering plug to the exciter metering jack and re-adjust T105 for equal drive on the highest and lowest frequency.
11.	G (AMPL-1)	T110 & T108	Maximum	Re-adjust T110 and then T108 for maximum meter reading on the lowest frequency.

ALIGNMENT PROCEDURE

406—512 MHz, FOR INTERMITTENT AND CONTINUOUS DUTY STATION TRANSMITTER

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. 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 as shown:

1. Wattmeter similar to:

   Bird # 43
   Jones # 711N

2. VTVM similar to:

   Triplett # 850
   Heath # IM-21

3. Audio Generator similar to:

   GE Model 4EX6A10

4. Deviation Meter (with a .75 kHz scale) similar to:
   Measurements # 720

5. Multimeter similar to:

   GE TEST SET MODEL 4EX3A11,
   MODEL 4EX8K12 or
   20,000 ohms-per-Volt voltmeter

POWER MEASUREMENT

TEST PROCEDURE

1. Connect transmitter output from the antenna jack to the wattmeter through a 50-ohm coaxial cable. Make sure the wattmeter is terminated into a 50-ohm load.

2. Key the transmitter and check the wattmeter for the desired power output.

SERVICE CHECK

Check the setting of the Power Adjust Control (R226).

Refer to the QUICK CHECKS on the Transmitter Troubleshooting Procedure.

VOICE DEVIATION AND SYMMETRY

TEST PROCEDURE

1. Connect the test equipment to the transmitter as shown.

2. In radios with Channel Guard, set Channel Guard Mod Adjust R105 for zero tone deviation.

3. Set the Audio generator output to 30 Millivolts RMS and frequency to 1 kHz.

4. Key the transmitter and adjust Deviation Meter to carrier frequency.

5. Deviation reading should be ±4.5 kHz in radios without Channel Guard, and ±3.75 kHz in radios with Channel Guard.

6. If necessary, adjust MOD ADJUST control R104 for the proper deviation on plus (+) or minus (-) deviation, whichever is greater.

NOTES: -- MASTR II station 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.

7. If the deviation reading plus (+) or minus (-) differs by more than 0.5 kHz, recheck Steps 1 and 2 as shown in the Transmitter Alignment Chart.

TONE DEVIATION WITH CHANNEL GUARD

TEST PROCEDURE

1. Set up the Deviation Meter and monitor the output of the transmitter.

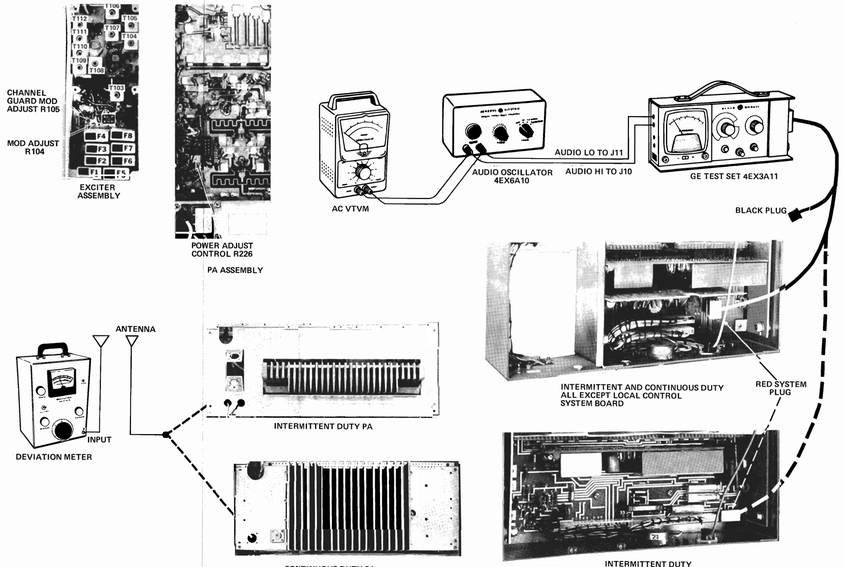
2. Remove the 1000 Hz signal from the audio generator.

3. Key the transmitter and check for 0.75 kHz deviation. If the reading is low or high, adjust Channel Guard MOD ADJUST R105 for a reading of 0.75 kHz.

NOTES:

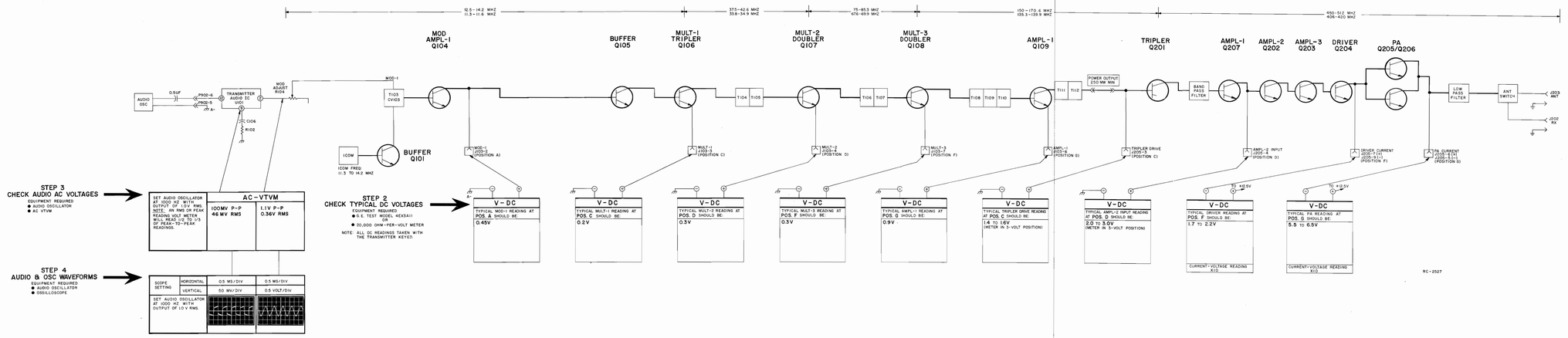
1. On units supplied with Channel Guard, the Phase Modulator Tuning should be adjusted carefully to insure proper performance. (Refer to Step 1 in the Transmitter Alignment Chart).

2. The Tone Deviation Test Procedures should be repeated every time the Tone Frequency is changed.



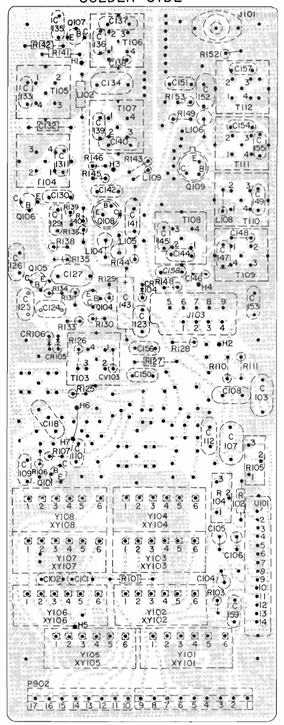
STEP I - QUICK CHECKS

METER POSITION OR TEST SET	PROBABLE DEFECTIVE STAGE		
	HIGH METER READING	LOW METER READING	ZERO METER READING
EXCITER			
"B" (MOD-1)	Q102, 10-Volt Regulator	T103, CV103 C104,	T103, CV103, CR104, Q104
"C" (MULT-1)	Q105, Q106 T104	Q105, Q106	Q105, Q106, T104
"D" (MULT-2)	Q107, T106	T104, T104, Q107	T104, T105, Q107, T106
"F" (MULT-3)	Q108, T108	T106, T107, Q108	T106, T107, Q108, T108
"G" (AMPL-1)	Q109, C157	T108, T109, T110, Q109	T108, T109, T110, Q109, L106
POWER AMPLIFIER			
"C" (TRIPLER DRIVE)		Low Output from Exciter	No output from Exciter CR201
"D" (AMPL-2 INPUT)	Q207	Q207	Q207, Q201
"F" (DRIVER CURRENT)	Q204	Q204, Low Output from Q201, Q207, Q202, Q203	Q203, Q202, Q207, Q201. Check Pos. C & D
"G" (PA CURRENT)	Q205, Q206	Q201, Q207, Q202, Q203, Q204, Q205, Q206	Q206, Q205, Q204, Q203, Q202, Q207, Q201, Q215



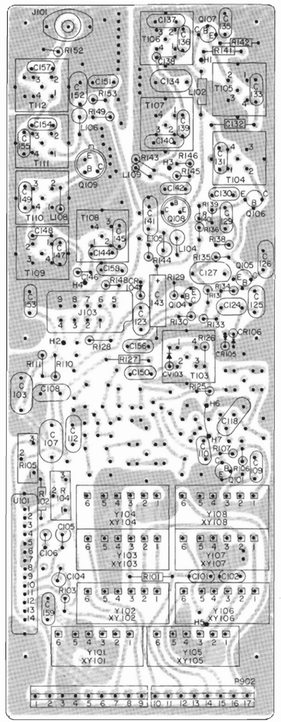
EXCITER BOARD

SOLDER SIDE



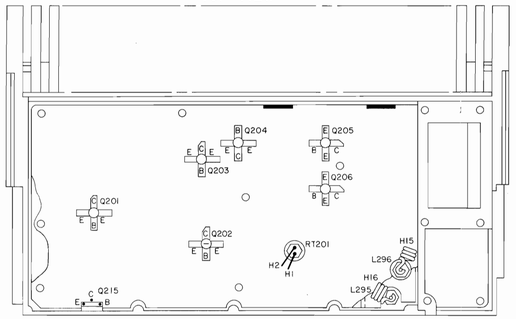
(19D417162, Sh. 2, Rev. 3)

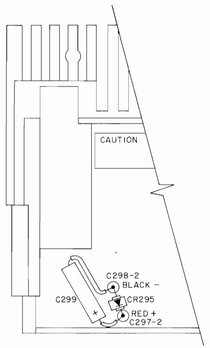
COMPONENT SIDE



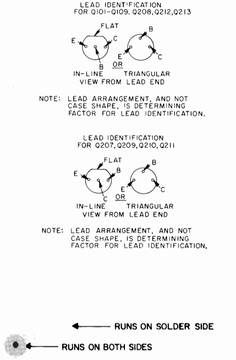
(19D416850, Sh. 2, Rev. 3)
(19D416850, Sh. 3, Rev. 3)

PA ASSEMBLY
TOP VIEW

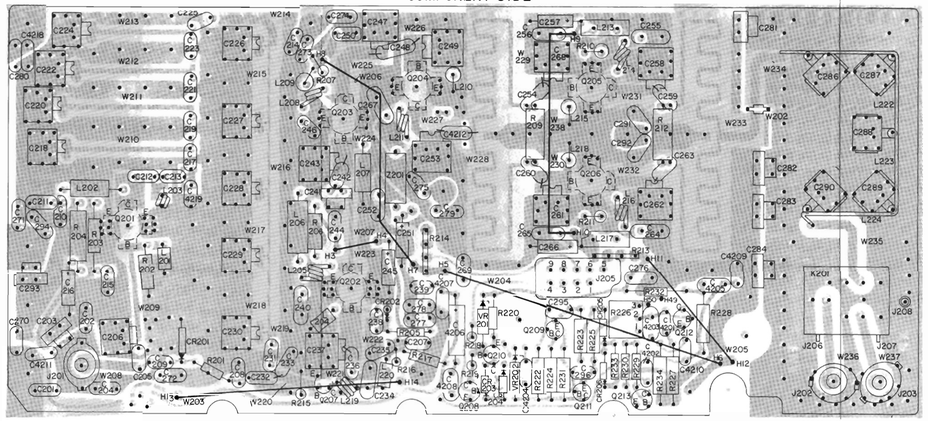




(19R622078, Rev. 2)

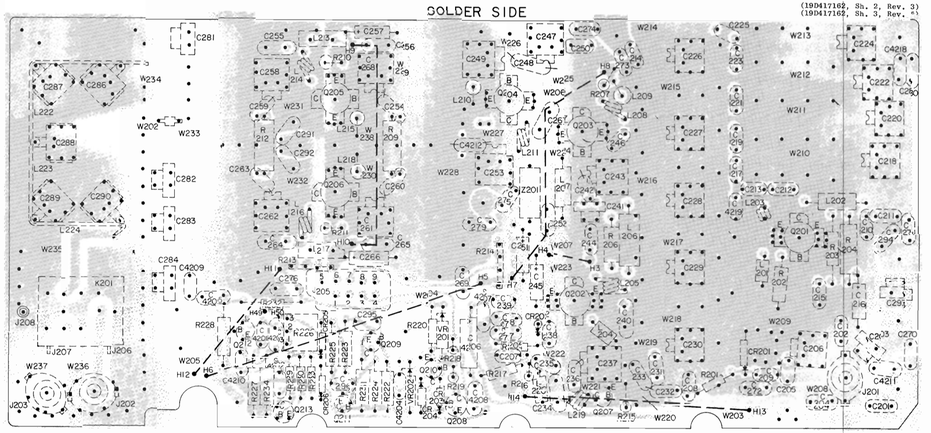


PA BOARD
COMPONENT SIDE



(19D417162, Sh. 2, Rev. 3)
(19D417162, Sh. 3, Rev. 3)

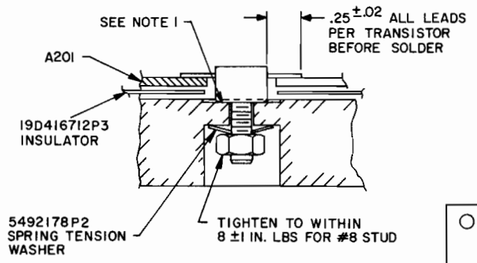
SOLDER SIDE



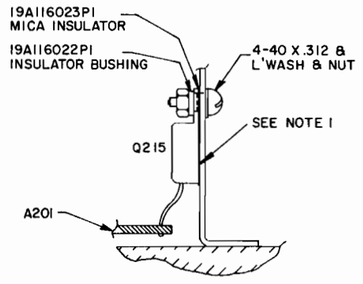
(19D416850, Sh. 2, Rev. 3)

OUTLINE DIAGRAM

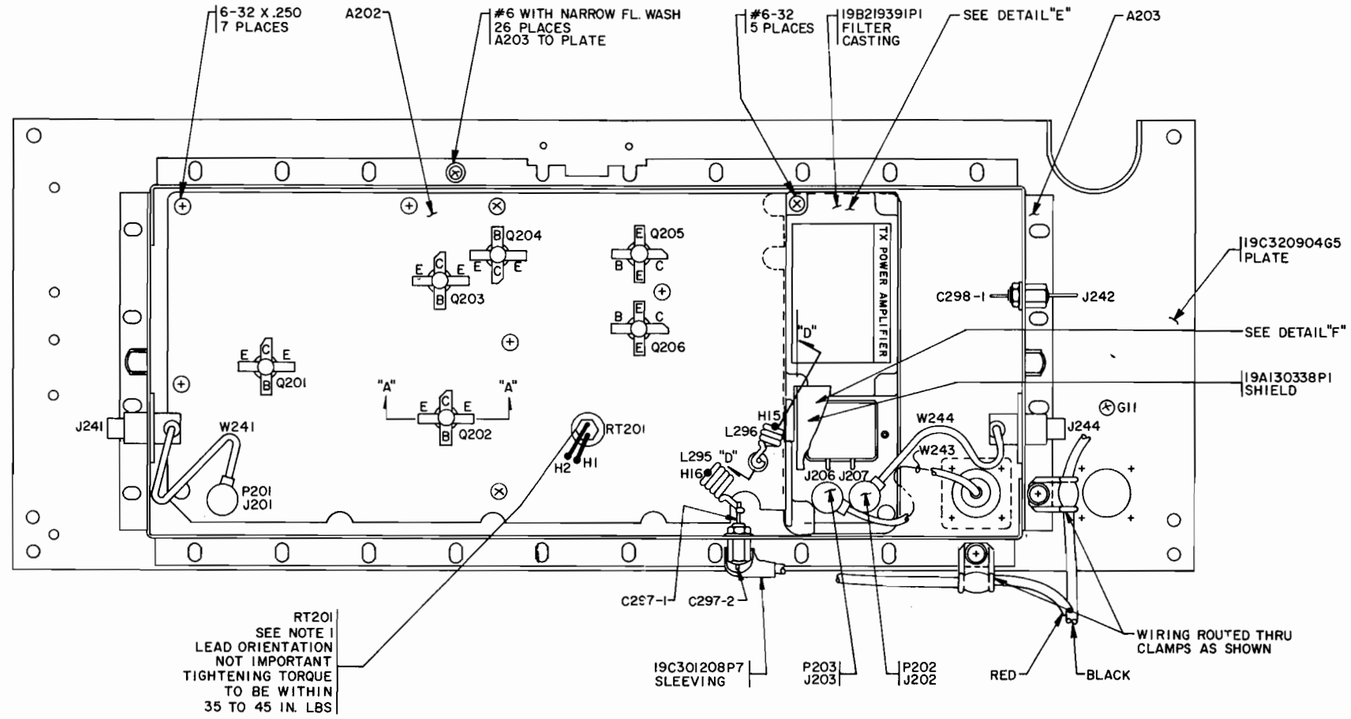
EXCITER BOARD & PA BOARD FOR INT. & CONT. DUTY;
PA ASSEMBLY FOR INTERMITTENT DUTY ONLY

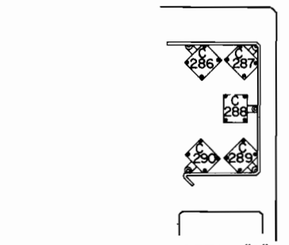


SECTION A-A
TYP MTG FOR Q201 THRU Q206

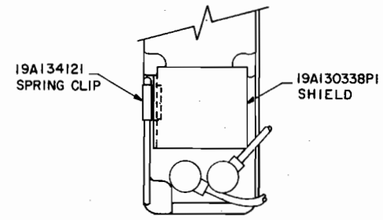


SECTION B-B



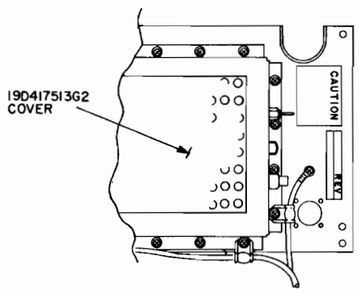


DETAIL "E"
(VIEW OF A202 WITH COVER REMOVED)

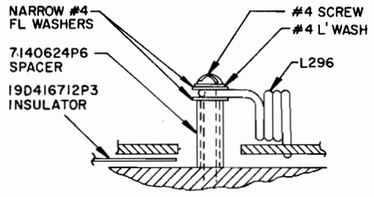


DETAIL "F"

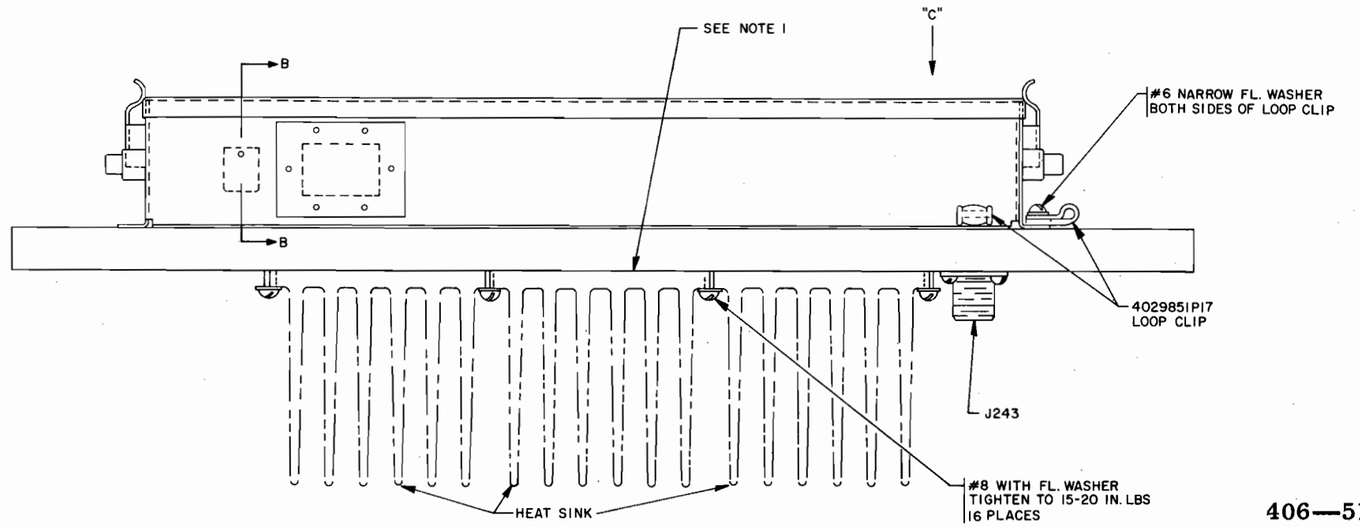
NOTES:
1. APPLY SILICONE GREASE TO BOTH SIDES OF MICA INSULATOR TO MOUNTING SURFACE OF Q201 THRU Q206 & RT201 AND UNPAINTED FLAT SURFACE OF HEAT SINKS.
   NO GREASE ALLOWED ON THE THREADED PORTION OF THE MTG STUD.



VIEW AT "C"



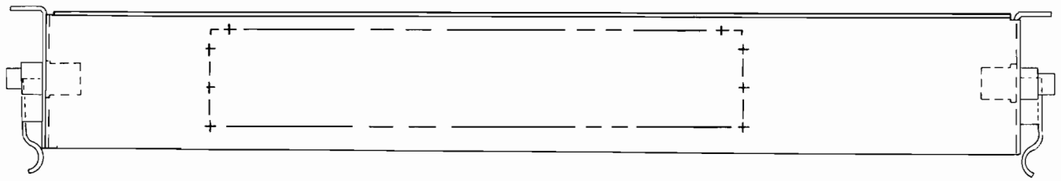
SECTION D-D



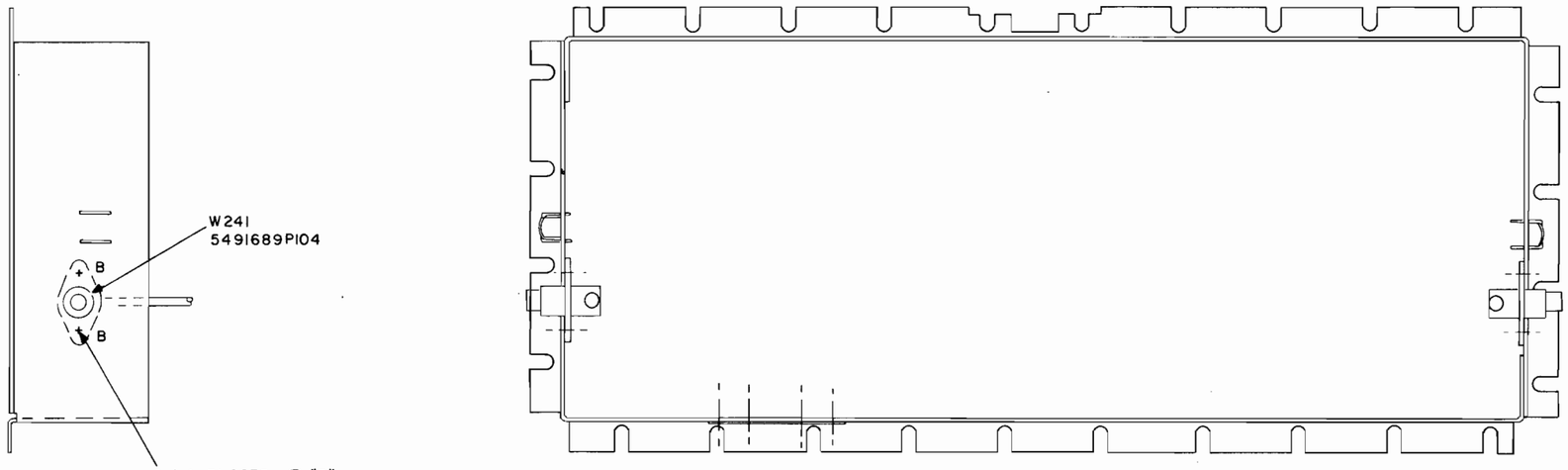
(19D423083, Rev. 0)

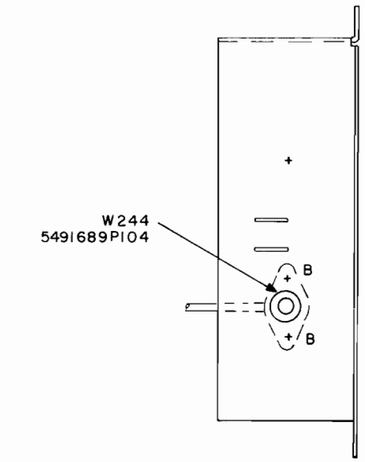
OUTLINE DIAGRAM

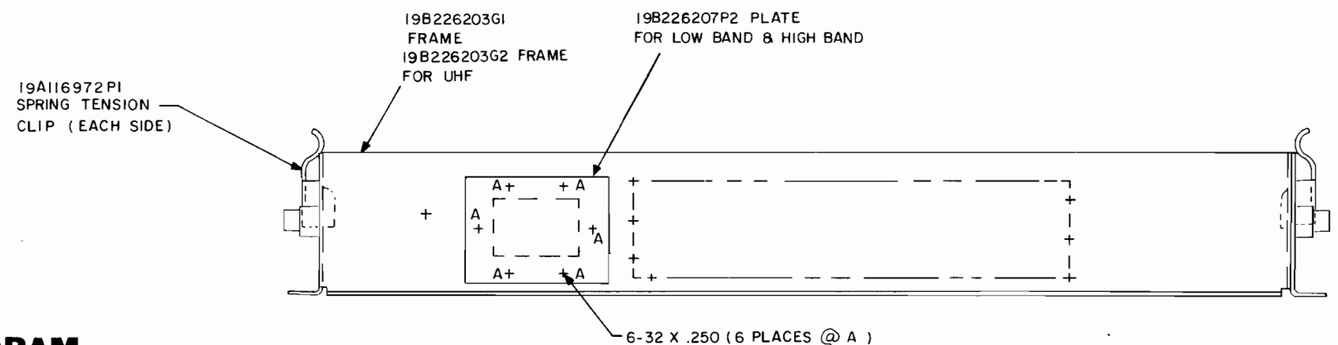
406—512 MHz, STATION TRANSMITTER
CONTINUOUS DUTY PA



A203







OUTLINE DIAGRAM

FRAME ASSEMBLY FOR INTERMITTENT & CONTINUOUS DUTY TRANSMITTERS

(19D423098, Rev. 0)

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.

19D416859G5, 7

REV. A - Incorporated into initial shipment.

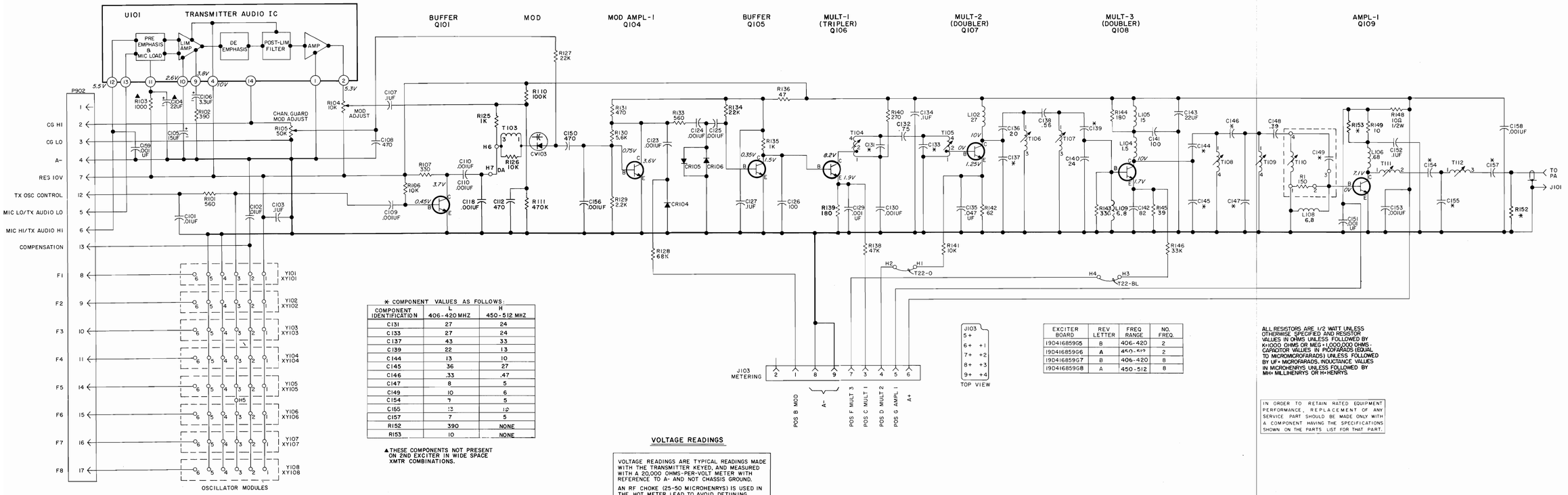
PARTS LIST

LBI-4609A

406-420 MHz, 450-512 MHz EXCITER BOARD
19D416859G5-G8

SYMBOL	GE PART NO.	DESCRIPTION
		19D416859G5 2 FREQ 406-420 MHz (L) 19D416859G6 2 FREQ 450-512 MHz (H) 19D416859G7 8 FREQ 406-420 MHz (L) 19D416859G8 8 FREQ 450-512 MHz (H)
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C101 and C102	19A116080P1	Polyester: 0.01 µf ±20%, 50 VDCW.
C103	19A116080P107	Polyester: 0.1 µf ±10%, 50 VDCW.
C104	5496267P10	Tantalum: 22 µf ±20%, 15 VDCW; sim to Sprague Type 150D.
C105	5496267P14	Tantalum: 15 µf ±20%, 20 VDCW; sim to Sprague Type 150D.
C106	5496267P9	Tantalum: 3.3 µf ±20%, 15 VDCW; sim to Sprague Type 150D.
C107	19A116080P107	Polyester: 0.1 µf ±10%, 50 VDCW.
C108	5494481P107	Ceramic disc: 470 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap.
C109 and C110	5494481P111	Ceramic disc: 1000 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap.
C112	5494481P107	Ceramic disc: 470 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap.
C118	5494481P112	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C123 thru C125	5494481P111	Ceramic disc: 1000 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap.
C126	7489162P27	Silver mica: 100 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C127	19A116080P107	Polyester: 10 µf ±10%, 50 VDCW.
C129 and C130	5494481P111	Ceramic disc: 1000 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap.
C131L	5496219P249	Ceramic disc: 27 pf ±5%, 500 VDCW, temp coef -80 PPM.
C131H	5496219P248	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef -80 PPM.
C132	5491601P118	Phenolic: 0.75 pf ±5%, 500 VDCW.
C133L	5496219P249	Ceramic disc: 27 pf ±5%, 500 VDCW, temp coef -80 PPM.
C133H	5496219P248	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef -80 PPM.
C134	19A116080P107	Polyester: 0.1 µf ±10%, 50 VDCW.
C135	19A116080P105	Polyester: 0.047 µf ±10%, 50 VDCW.
C136*	5496219P246	Ceramic disc: 20 pf ±5%, 500 VDCW, temp coef -80 PPM. Added to G5 and G7 by REV A.
C136L*	5496219P348	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef -150 PPM. Deleted from G5 and G7 by REV A.
C136H*	5496219P246	Ceramic disc: 20 pf ±5%, 500 VDCW, temp coef -80 PPM. Deleted from G5 and G7 by REV A.
C137*	5496219P251	Ceramic disc: 33 pf ±5%, 500 VDCW, temp coef -80 PPM. Deleted from G5 and G7 by REV A.
C137L*	5496219P254	Ceramic disc: 43 pf ±5%, 500 VDCW, temp coef -80 PPM. Added to G5 and G7 by REV A.
C137H*	5496219P251	Ceramic disc: 33 pf ±5%, 500 VDCW, temp coef -80 PPM. Added to G5 and G7 by REV A.
C138	5491601P115	Phenolic: 0.56 pf ±5%, 500 VDCW.
C139L	5496219P247	Ceramic disc: 22 pf ±5%, 500 VDCW, temp coef -80 PPM.
C139H	5496219P243	Ceramic disc: 13 pf ±5%, 500 VDCW, temp coef -80 PPM.
C140	5496219P348	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef -150 PPM.
C141	5490008P127	Silver mica: 100 pf ±10%, 500 VDCW; sim to Electro Motive Type DM-15.
C142	7489162P25	Silver mica: 82 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C143	5496267P10	Tantalum: 22 µf ±20%, 15 VDCW; sim to Sprague Type 150D.
C144L*	5496219P243	Ceramic disc: 13 pf ±15%, 500 VDCW, temp coef -80 PPM. In G5 and G7 earlier than REV A:
	5496219P244	Ceramic disc: 15 pf ±15%, 500 VDCW, temp coef -80 PPM.
C144H	5496219P241	Ceramic disc: 10 pf ±0.25 pf, 500 VDCW, temp coef -80 PPM.
C145*	5496219P249	Ceramic disc: 27 pf ±5%, 500 VDCW, temp coef -80 PPM. Deleted in G5 and G7 by REV A.
C145L*	5496219P252	Ceramic disc: 36 pf ±5%, 500 VDCW, temp coef -80 PPM. Added to G5 and G7 by REV A.
C145H*	5496219P249	Ceramic disc: 27 pf ±5%, 500 VDCW, temp coef -80 PPM. Added to G5 and G7 by REV A.
C146*	5491601P113	Phenolic: 0.47 pf ±5%, 500 VDCW. Deleted in G5 and G7 by REV A.
C146L*	5491601P109	Phenolic: 0.33 pf ±5%, 500 VDCW. Added to G5 and G7 by REV A.
C146H*	5491601P113	Phenolic: 0.47 pf ±5%, 500 VDCW. Added to G5 and G7 by REV A.
C147L	5496219P239	Ceramic disc: 8.0 pf ±0.25 pf, 500 VDCW, temp coef -80 PPM.
C147H	5496219P236	Ceramic disc: 5.0 pf ±0.25 pf, 500 VDCW, temp coef -80 PPM.
C148	5491601P111	Phenolic: 0.39 pf ±5%, 500 VDCW.
C149L	5496219P241	Ceramic disc: 10 pf ±0.25 pf, 500 VDCW, temp coef -80 PPM.
C149H	5496219P237	Ceramic disc: 6.0 pf ±0.25 pf, 500 VDCW, temp coef -80 PPM.
C150	5496372P365	Ceramic disc: 470 pf ±10%, 500 VDCW, temp coef -4700 PPM.
C151	19A116655P19	Ceramic disc: 1000 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap.
C152	19A116080P107	Polyester: 0.1 µf ±10%, 50 VDCW.
C153	19A116655P19	Ceramic disc: 1000 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap.
C154L	5496219P238	Ceramic disc: 7.0 pf ±0.25 pf, 500 VDCW, temp coef -80 PPM.
C154H	5496219P236	Ceramic disc: 5.0 pf ±0.25 pf, 500 VDCW, temp coef -80 PPM.
C155L	5496219P243	Ceramic disc: 13 pf ±5%, 500 VDCW, temp coef -80 PPM.
C155H	5496219P241	Ceramic disc: 10 pf ±0.25 pf, 500 VDCW, temp coef -80 PPM.
C156	5494481P112	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C157L	5496219P238	Ceramic disc: 7.0 pf ±0.25 pf, 500 VDCW, temp coef -80 PPM.
C157H	5496219P236	Ceramic disc: 5.0 pf ±0.25 pf, 500 VDCW, temp coef -80 PPM.
C158 and C159	19A116655P19	Ceramic disc: 1000 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap.
		- - - - - - - DIODES AND RECTIFIERS - - - - - - -
CR104 thru CR106	19A115250P1	Silicon.
CY103*	5495769P8	Silicon, capacitive: 33 pf ±20%, at 4 VDC. Deleted in G5 and G7 by REV A.
CY103L*	5495769P9	Silicon, capacitive: 33 pf ±20%, at 4 VDC. Added to G5 and G7 by REV A.
CY103H*	5495769P8	Silicon, capacitive: 33 pf ±20%, at 4 VDC. Added to G5 and G7 by REV A.
		- - - - - - - JACKS AND RECEPTACLES - - - - - - -
J101	19A116832P1	Receptacle, coaxial: sim to Cinch 14H11613.
J103	19B219374G1	Connector. Includes:
	19A116651P1	Contacts. (9).
		- - - - - - - - - - INDUCTORS - - - - - - - - - -
L102	19B209420P130	Coil, RF: 27.0 µh ±10%, 3.60 ohms DC res max; sim to Jeffers 441316-5.
L104	7488079P7	Choke, RF: 1.50 µh ±10%, 0.50 ohms DC res max; sim to Jeffers 4411-10K.
L105	7488079P18	Choke, RF: 15.0 µh ±10%, 1.20 ohms DC res max; sim to Jeffers 4421-9K.
L106	7488079P5	Choke, RF: 0.68 µh ±10%, 0.15 ohms DC res max; sim to Jeffers 4411-5K.
L108 and L109	19B209420P123	Coil, RF: 6.80 µh ±10%, 1.80 ohms DC res max; sim to Jeffers 4446-2.
		- - - - - - - - - - PLUGS - - - - - - - - - -
P902		Includes:
	19B219594P2	Contact strip: 8 pins.
	19B219594P3	Contact strip: 9 pins.
		- - - - - - - - - - TRANSISTORS - - - - - - - - - -
Q101*	19A115330P1	Silicon, NPN. In G5, G7 of REV A and earlier: In G6, G8 of REV B and earlier:
	19A115910P1	Silicon, NPN; sim to Type 2N3904.
Q104 thru Q106	19A115330P1	Silicon, NPN.
Q107	19A115328P1	Silicon, NPN.
Q108 and Q109	19A115329P2	Silicon, NPN.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R101	3R152P561K	Composition: 560 ohms ±10%, 1/4 w.
R102	3R152P391K	Composition: 390 ohms ±10%, 1/4 w.
R103	3R152P102K	Composition: 1000 ohms ±10%, 1/4 w.
R104	19B209358P106	Variable, carbon film: approx 75 to 10,000 ohms ±10%, 0.25 w; sim to CTS Type X-201.
R105	19B209358P108	Variable, carbon film: approx 100 to 50,000 ohms ±10%, 0.25 w; sim to CTS Type X-201.
R106*	3R152P103K	Composition: 10,000 ohms ±10%, 1/4 w. In G5, G7 of REV A and earlier: In G6, G8 of REV B and earlier:
	3R152P393K	Composition: 39,000 ohms ±10%, 1/4 w.
R107	3R152P331K	Composition: 330 ohms ±10%, 1/4 w.
R110	3R152P104K	Composition: 0.10 megohm ±10%, 1/4 w.
R111	3R152P474K	Composition: 0.47 megohm ±10%, 1/4 w.
R125	3R152P102K	Composition: 101000 ohms ±10%, 1/4 w.
R126	3R152P103K	Composition: 10,000 ohms ±10%, 1/4 w.
R127	3R152P223K	Composition: 22,000 ohms ±10%, 1/4 w.
R128	3R152P683K	Composition: 69,000 ohms ±10%, 1/4 w.
R129	3R152P222K	Composition: 2200 ohms ±10%, 1/4 w.
R130	3R152P562K	Composition: 5600 ohms ±10%, 1/4 w.
R131	3R152P471K	Composition: 470 ohms ±10%, 1/4 w.
R133	3R152P561K	Composition: 560 ohms ±10%, 1/4 w.
R134	3R152P223K	Composition: 22,000 ohms ±10%, 1/4 w.
R135	3R152P102K	Composition: 1000 ohms ±10%, 1/4 w.
R136	3R152P470K	Composition: 47 ohms ±10%, 1/4 w.
R138	3R152P473K	Composition: 47,000 ohms ±10%, 1/4 w.
R139	3R152P181K	Composition: 180 ohms ±10%, 1/4 w.
R140	3R152P271K	Composition: 270 ohms ±10%, 1/4 w.
R141	3R152P103K	Composition: 10,000 ohms ±10%, 1/4 w.
R142	3R152P620J	Composition: 62 ohms ±5%, 1/4 w.
R143	3R152P331K	Composition: 330 ohms ±10%, 1/4 w.
R144	3R152P181K	Composition: 180 ohms ±10%, 1/4 w.
R145	3R152P390K	Composition: 39 ohms ±10%, 1/4 w.
R146	3R152P333K	Composition: 33,000 ohms ±10%, 1/4 w.
R148	3R77P100J	Composition: 10 ohms ±5%, 1/2 w.
R149	3R152P100K	Composition: 10 ohms ±10%, 1/4 w.
R152*	3R152P391K	Composition: 390 ohms ±10%, 1/4 w. Added to G5 and G7 by REV A.
R153*	3R152P100K	Composition: 10 ohms ±10%, 1/4 w. Added to G5 and G7 by REV A.
		- - - - - - - - - - TRANSFORMERS - - - - - - - -
T103	19D416843G1	Coil. Includes:
	5493185P12	Tuning slug.
T104	19D416843G3	Coil. Includes:
	5493185P12	Tuning slug.
T105	19D416843G2	Coil. Includes:
	5493185P12	Tuning slug.
T106 and T107	19D416843G7	Coil. Includes:
	5493185P12	Tuning slug.
T108 and T109	19D416843G5	Coil. Includes:
	5493185P13	Tuning slug.
T110		COIL ASSEMBLY 19D416843G8
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R1	3R152P151K	Composition: 150 ohms ±10%, 1/4 w.
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
	5493185P13	Tuning slug.
T111	19D416843G4	Coil. Includes:
	5493185P12	Tuning slug.
T112	19D416843G6	Coil. Includes:
	5493185P12	Tuning slug.
		- - - - - - - - INTEGRATED CIRCUITS - - - - - - - -
U101	19D416542G1	Audio Transmitter.
		- - - - - - - - - - SOCKETS - - - - - - - - - -
XY101 thru XY108		Socket. Part of Mechanical Construction. Includes:
	19A116779P1	Contact, electrical: sim to Molex 08-54-0404. Quantity (6) with each.
		- - - - - - - - - - OSCILLATORS - - - - - - - - - -
		NOTE: When reordering specify ICOM Frequency.
		ICOM Freq = $\frac{\text{Operating Frequency}}{36}$
Y101 thru Y108	19A129393G18	Externally compensated, ±5 PPM, 406-512 MHz.
Y101 thru Y108	19A129393G15	Externally compensated, ±2 PPM, 406-512 MHz.
		MECHANICAL PARTS
	19A129424G2	Can. (Used with T103-T112).
	4036555P1	Insulator, washer: nylon. (Used with Q108, Q109).

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES



* COMPONENT VALUES AS FOLLOWS:

COMPONENT IDENTIFICATION	L 406-420 MHZ	H 450-512 MHZ
C131	27	24
C133	27	24
C137	43	33
C139	22	13
C144	13	10
C145	36	27
C146	.33	.47
C147	8	5
C149	10	6
C154	7	5
C155	12	12
C157	7	5
R152	390	NONE
R153	10	NONE

▲THESE COMPONENTS NOT PRESENT ON 2ND EXCITER IN WIDE SPACE XMTR COMBINATIONS.

EXCITER BOARD	REV LETTER	FREQ RANGE	NO. FREQ.
19D416859G5	B	406-420	2
19D416859G6	A	420-450	2
19D416859G7	B	406-420	8
19D416859G8	A	450-512	8

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

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

VOLTAGE READINGS

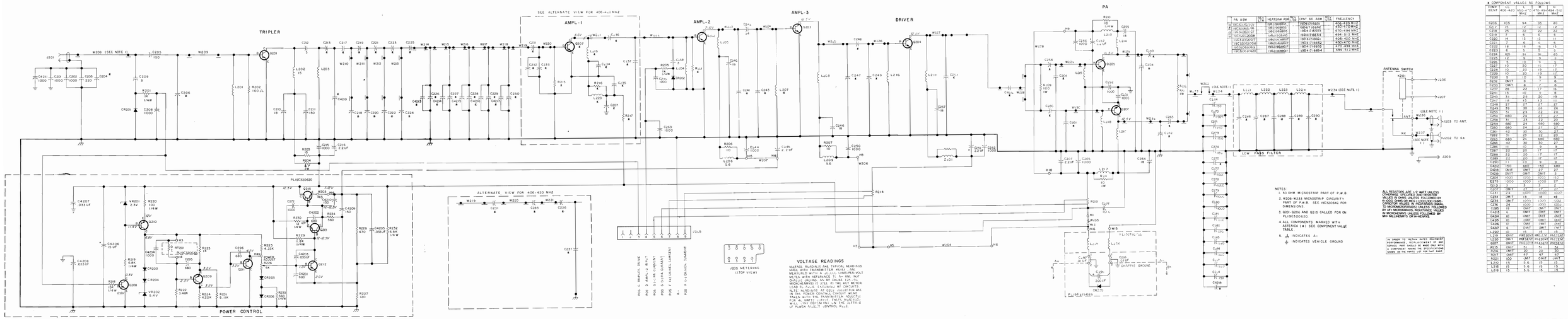
VOLTAGE READINGS ARE TYPICAL READINGS MADE WITH THE TRANSMITTER KEYED, AND MEASURED WITH A 20,000 OHMS-PER-VOLT METER WITH REFERENCE TO A- AND NOT CHASSIS GROUND.

AN RF CHOKE (25-50 MICROHENRYS) IS USED IN THE HOT METER LEAD TO AVOID DETUNING RF CIRCUITS.

(19R622018, Rev. 4)

SCHEMATIC DIAGRAM

406—512 MHz, EXCITER BOARD
19D416859G5-G8



★ COMPONENT VALUES AS FOLLOWS

COMPT (CKT 406-420	L1	L2	L3	L4
	MHz	MHz	MHz	MHz
C206	10.5	9.4	9.5	8.0
C217	15	12	12	12
C218	25	22	22	22
C219	7	6	6	6
C220	14	12	12	11
C221	10	9	9	8
C222	18	16	16	14
C223	6	5	5	4
C225	105	91	91	83
C275	12	9	9	9
C426	5	5	5	5
C227	20	20	15	17
C228	10	10	10	10
C229	10	20	19	17
C230	27	22	22	22
C232	OMIT	8	7	6
C233	OMIT	8	7	6
C237	28	22	22	22
C241	13	10	9	8
C243	33	25	20	20
C247	18	15	13	11
C248	39	30	24	20
C249	39	30	24	20
C253	51	43	32	30
C254	680	24	27	27
C256	51	43	32	30
C259	680	24	680	680
C260	680	24	27	27
C261	56	30	30	27
C262	51	25	22	20
C265	680	680	680	680
C266	43	30	30	27
C286	11	10	9	9
C287	22	17	17	17
C288	22	20	17	17
C289	22	20	17	17
C290	11	10	9	9
C425	OMIT	OMIT	27	680
C428	OMIT	OMIT	27	27
C429	OMIT	OMIT	OMIT	2
C204	1000	1000	1000	680
C275	1000	1000	1000	27
C213	3	3	3	3
C407	OMIT	22	15	22
C214	1000	1000	1000	1000
C234	OMIT	18	15	12
C235	1000	1000	1000	1000
C295	18	OMIT	OMIT	OMIT
C423	6	OMIT	OMIT	OMIT
C424	10	OMIT	OMIT	OMIT
C426	10	OMIT	OMIT	OMIT
C426	10	OMIT	OMIT	OMIT
C427	5	OMIT	OMIT	OMIT
C427	5	4	4	3
L215	OMIT	FREQUENT	FREQUENT	FREQUENT
L220	OMIT	FREQUENT	FREQUENT	FREQUENT
Q207	OMIT	FREQUENT	FREQUENT	FREQUENT
R205	OMIT	51	51	51
R216	OMIT	20	20	20
R217	OMIT	20	20	20
R220	100	68	OMIT	OMIT
L225	15	5.6	15	15
L215	15	5.6	15	15
L218	15	5.6	15	15

PA ASM	QTY	HEATSINK ASM	QTY	CPNT SO ASM	QTY	FREQUENCY
19C320620G1	1	19B129689G1	1	19D917766G1	1	406-420 MHZ
19C320620G2	1	19B129689G2	1	19D917766G2	1	420-450 MHZ
19C320620G3	1	19B129689G3	1	19D917766G3	1	450-470 MHZ
19C320620G4	1	19B129689G4	1	19D917766G4	1	470-494 MHZ
19C320620G5	1	19B129689G5	1	19D917766G5	1	494-512 MHZ
19C320620G6	1	19B129689G6	1	19D917766G6	1	406-420 MHZ
19C320620G7	1	19B129689G7	1	19D917766G7	1	420-450 MHZ
19C320620G8	1	19B129689G8	1	19D917766G8	1	450-470 MHZ
19C320620G9	1	19B129689G9	1	19D917766G9	1	470-494 MHZ
19C320620G10	1	19B129689G10	1	19D917766G10	1	494-512 MHZ

NOTES:
1. 50 OHM MICROSTRIP PART OF P.W.B. SEE HC320642 FOR DIMENSIONS.
2. W208-W235 MICROSTRIP CIRCUITRY PART OF P.W.B. SEE HC320642 FOR DIMENSIONS.
3. Q201-Q206 AND Q215 CALLED FOR ON PL19C320620.
4. ALL COMPONENTS MARKED WITH ASTERICK (★) SEE COMPONENT VALUE TABLE.
5. ⏚ INDICATES A-
⏚ INDICATES VEHICLE GROUND

ALL RESISTORS ARE 1/8 WATT UNLESS OTHERWISE SPECIFIED. RESISTOR VALUES IN OHMS UNLESS FOLLOWED BY "K" FOR KILOHMS. CAPACITOR VALUES IN MICROFARADS (MFD), OR MICROMICROFARADS (MMFD) UNLESS FOLLOWED BY "MF" FOR MICROFARADS OR "PF" FOR PICOFARADS. UNLESS FOLLOWED BY MFD MILLIHENRYS OR MH HENRYS.

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

(1986021966, Rev. B)

SCHEMATIC DIAGRAM

406—512 MHz, STATION POWER AMPLIFIER
19C320620G5-G8 INTERMITTENT DUTY

Issue 1

PARTS LIST

LBI-4619A

406-420, 450-512 MHz
40 WATT POWER AMPLIFIER
19C320620G5-G8

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - - INDUCTORS - - - - - - - - -
L295 and L296	19A129562P2	Coil.
		- - - - - - - - - - TRANSISTORS - - - - - - - -
Q201	19A129283P1	Silicon, NPN.
Q202	19A116953P1	Silicon, NPN.
Q203	19A116953P2	Silicon, NPN.
Q204 thru Q206	19A129283P4	Silicon, NPN.
Q215	19A116742P1	Silicon, NPN.
		- - - - - - - - - THERMISTORS - - - - - - - - - -
RT201	19A129379G1	Thermistor.
		POWER AMPLIFIER BOARD 19D417166G1 403-420 MHz (LL) 19D417166G2 450-470 MHz (L) 19D417166G3 470-494 MHz (M) 19D417166G4 494-512 MHz (H)
		- - - - - - - - - - CAPACITORS - - - - - - - - -
C201 and C202	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C203	19A116679P220K	Mica: 220 pf ±10%, 250 VDCW.
C204LL	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C204L	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C204M	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C204H	19A116655P8	Ceramic disc: 150 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C205	19A116655P8	Ceramic disc: 150 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C206LL	19A116952P105	Silver mica: 105 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C206L	19A116952P94	Silver mica: 94 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C206M	19A116952P85	Silver mica: 85 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C206H	19A116952P80	Silver mica: 80 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C207	5496218P249	Ceramic disc: 27 pf ±5%, 500 VDCW, temp coef -80 PPM.
C208	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C209	19A116656P3J0	Ceramic disc: 3 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C210	7489162P9	Silver mica: 18 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C211	19A116655P8	Ceramic disc: 150 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C212	19A116656P3J0	Ceramic disc: 3 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C213LL	19A116656P3J0	Ceramic disc: 3 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C213L	19A116656P3J0	Ceramic disc: 3 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

SYMBOL	GE PART NO.	DESCRIPTION
C213M	19A116656P3J0	Ceramic disc: 3 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C213H	5491238P12	Ceramic disc: 2 pf ±0.25 pf, 500 VDCW, temp coef ±120 PPM.
C214	19A116655P8	Ceramic disc: 150 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap.
C215	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C216	5496267P13	Tantalum: 2.2 μf ±20%, 20 VDCW; sim to Sprague Type 150D.
C217LL	19A116656P15J0	Ceramic disc: 15 pf ±5%, 500 VDCW, temp coef 0 PPM.
C217L	19A116656P12J0	Ceramic disc: 12 pf ±5%, 500 VDCW, temp coef 0 PPM.
C217M	19A116656P12J0	Ceramic disc: 12 pf ±5%, 500 VDCW, temp coef 0 PPM.
C217H	19A116656P12J0	Ceramic disc: 12 pf ±5%, 500 VDCW, temp coef 0 PPM.
C218LL	19A116952P25	Silver mica: 25 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C218L	19A116952P22	Silver mica: 22 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C218M	19A116952P22	Silver mica: 22 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C218H	19A116952P22	Silver mica: 22 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C219LL	19A116656P7J0	Ceramic disc: 7 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C219L	19A116656P6J0	Ceramic disc: 6 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C219M	19A116656P6J0	Ceramic disc: 6 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C219H	19A116656P5J0	Ceramic disc: 5 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C220LL	19A116952P14	Silver mica: 14 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C220L	19A116952P12	Silver mica: 12 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C220M	19A116952P12	Silver mica: 12 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C220H	19A116952P11	Silver mica: 11 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C221LL	19A116656P7J0	Ceramic disc: 7 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C221L	19A116656P6J0	Ceramic disc: 6 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C221M	19A116656P6J0	Ceramic disc: 6 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C221H	19A116656P6J0	Ceramic disc: 6 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C222LL	19A116952P18	Silver mica: 18 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C222L	19A116952P16	Silver mica: 16 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C222M	19A116952P16	Silver mica: 16 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C222H	19A116952P15	Silver mica: 15 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C223LL	19A116656P6J0	Ceramic disc: 6 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C223L	19A116656P5J0	Ceramic disc: 5 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C223M	19A116656P5J0	Ceramic disc: 5 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C223H	19A116656P5J0	Ceramic disc: 5 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C224LL	19A116952P105	Silver mica: 105 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C224L	19A116952P91	Silver mica: 91 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C224M	19A116952P91	Silver mica: 91 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.

SYMBOL	GE PART NO.	DESCRIPTION
C224H	19A116952P85	Silver mica: 85 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C225LL	19A116656P12J0	Ceramic disc: 12 pf ±5%, 500 VDCW, temp coef 0 PPM.
C225L	19A116656P9J0	Ceramic disc: 9 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C225M	19A116656P9J0	Ceramic disc: 9 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C225H	19A116656P9J0	Ceramic disc: 9 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C226LL	19A116656P5J0	Ceramic disc: 5 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C226L	19A116952P10	Silver mica: 10 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C226M	19A116952P9	Silver mica: 9 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C226H	19A116952P9	Silver mica: 9 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C227LL	19A116656P10J0	Ceramic disc: 10 pf ±0.5 pf, 250 VDCW; sim to 0 PPM.
C227L	19A116952P20	Silver mica: 20 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C227M	19A116952P19	Silver mica: 19 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C227H	19A116952P17	Silver mica: 17 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C228LL	19A116656P10J0	Ceramic disc: 10 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C228L	19A116952P20	Silver mica: 20 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C228M	19A116952P19	Silver mica: 19 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C228H	19A116952P17	Silver mica: 17 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C229LL	19A116656P10J0	Ceramic disc: 10 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C229L	19A116952P20	Silver mica: 20 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C229M	19A116952P19	Silver mica: 19 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C229H	19A116952P17	Silver mica: 17 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C230LL	19A116656P5J0	Ceramic disc: 5 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C230L	19A116952P10	Silver mica: 10 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C230M	19A116952P9	Silver mica: 9 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C230H	19A116952P9	Silver mica: 9 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C231LL	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C231L	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C231M	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C231H	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C232L	19A116656P8J0	Ceramic disc: 8 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C232M	19A116656P7J0	Ceramic disc: 7 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C232H	19A116656P6J0	Ceramic disc: 6 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C233L	19A116656P8J0	Ceramic disc: 8 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C233M	19A116656P7J0	Ceramic disc: 7 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C233H	19A116656P6J0	Ceramic disc: 6 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C234	7489162P9	Silver mica: 18 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C235	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.

SYMBOL	GE PART NO.	DESCRIPTION
C236LL	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C236L	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C236M	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C236H	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C237LL	19A116952P28	Silver mica: 28 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C237L	19A116952P22	Silver mica: 22 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C237M	19A116952P17	Silver mica: 17 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C237H	19A116952P16	Silver mica: 16 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C238	19A116656P3J0	Ceramic disc: 3 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C239	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C240	7489162P9	Silver mica: 18 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C241LL	19A116679P13D	Mica: 13 pf ±.5 pf, 250 VDCW.
C241L	19A116679P10D	Mica: 10 pf ±.5 pf, 250 VDCW.
C241M	19A116679P9D	Mica: 9 pf ±.5 pf, 250 VDCW.
C241H	19A116679P8D	Mica: 8 pf ±.5 pf, 250 VDCW.
C242	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C243LL	19A116952P31	Silver mica: 31 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C243L	19A116952P25	Silver mica: 25 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C243M	19A116952P20	Silver mica: 20 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C243H	19A116952P19	Silver mica: 19 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C244	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C245	5496267P13	Tantalum: 2.2 μf ±20%, 20 VDCW; sim to Sprague Type 150D.
C246	7489162P9	Silver mica: 18 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C247LL	19A116952P18	Silver mica: 18 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C247L	19A116952P15	Silver mica: 15 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C247M	19A116952P13	Silver mica: 13 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C247H	19A116952P11	Silver mica: 11 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C248LL	5496218P249	Ceramic disc: 27 pf ±5%, 500 VDCW, temp coef -80 PPM.
C248L	5496218P249	Ceramic disc: 27 pf ±5%, 500 VDCW, temp coef -80 PPM.
C248M	5496218P249	Ceramic disc: 27 pf ±5%, 500 VDCW, temp coef -80 PPM.
C248H	5496218P249	Ceramic disc: 27 pf ±5%, 500 VDCW, temp coef -80 PPM.
C249LL	19A116952P39	Silver mica: 39 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C249L	19A116952P30	Silver mica: 30 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C249M	19A116952P28	Silver mica: 28 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C249H	19A116952P26	Silver mica: 26 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C250	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C251	5496267P13	Tantalum: 2.2 μf ±20%, 20 VDCW; sim to Sprague Type 150D.
C252	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.

SYMBOL	GE PART NO.	DESCRIPTION
C253LL	19A116952P31	Silver mica: 31 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C253L	19A116952P23	Silver mica: 23 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C253M	19A116952P22	Silver mica: 22 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C253H	19A116952P20	Silver mica: 20 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C254LL	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C254L	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C254M	5496218P249	Ceramic disc: 27 pf ±5%, 500 VDCW, temp coef -80 PPM.
C254H	5496218P249	Ceramic disc: 27 pf ±5%, 500 VDCW, temp coef -80 PPM.
C255	7489162P9	Silver mica: 18 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C256	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C257	5496267P13	Tantalum: 2.2 μf ±20%, 20 VDCW; sim to Sprague Type 150D.
C258LL	19A116952P31	Silver mica: 31 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C258L	19A116952P23	Silver mica: 23 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C258M*	19A116952P23	Silver mica: 23 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
		Earlier than REV A:
	19A116952P22	Silver mica: 22 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C258H	19A116952P20	Silver mica: 20 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C259LL	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C259L	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C259M	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C259H	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C260LL	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C260L	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C260M	5496218P249	Ceramic disc: 27 pf ±5%, 500 VDCW, temp coef -80 PPM.
C260H	5496218P249	Ceramic disc: 27 pf ±5%, 500 VDCW, temp coef -80 PPM.
C261LL	19A116952P42	Silver mica: 42 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C261L	19A116952P30	Silver mica: 30 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C261M	19A116952P30	Silver mica: 30 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C261H	19A116952P27	Silver mica: 27 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C262LL	19A116952P31	Silver mica: 31 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C262L	19A116952P23	Silver mica: 23 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C262M*	19A116952P23	Silver mica: 23 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
		Earlier than REV A:
	19A116952P22	Silver mica: 22 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C262H	19A116952P20	Silver mica: 20 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C263LL	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C263L	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C263M	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C263H	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C264	7489162P9	Silver mica: 18 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.

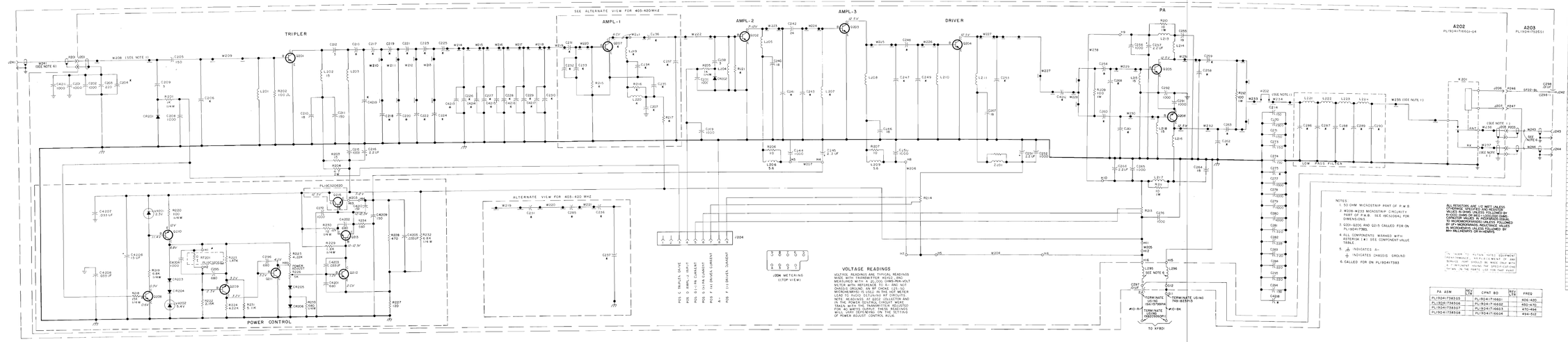
SYMBOL	GE PART NO.	DESCRIPTION
C265	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C266	5496267P13	Tantalum: 2.2 μf ±20%, 20 VDCW; sim to Sprague Type 150D.
C267	7489162P9	Silver mica: 18 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C268LL	19A116952P42	Silver mica: 42 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C268L	19A116952P30	Silver mica: 30 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C268M	19A116952P30	Silver mica: 30 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C268H	19A116952P27	Silver mica: 27 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C269	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C270	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C271	19A116655P8	Ceramic disc: 150 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C272	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C273 and C274	19A116655P8	Ceramic disc: 150 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C275LL	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C275L	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C275M	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C275H	19A116656P27J0	Ceramic disc: 27 pf ±5%, 500 VDCW, temp coef 0 PPM.
C276 thru C280	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C281 thru C284	19A116679P220K	Mica: 220 pf ±10%, 250 VDCW.
C285	5496218P45	Ceramic disc: 18 pf ±5%, 500 VDCW, temp coef 0 PPM.
C286LL	19A116952P11	Silver mica: 11 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C286L	19A116952P10	Silver mica: 10 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C286M	19A116952P9	Silver mica: 9 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C286H	19A116952P9	Silver mica: 9 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C287LL	19A116952P22	Silver mica: 22 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C287L	19A116952P20	Silver mica: 20 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C287M	19A116952P17	Silver mica: 17 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C287H	19A116952P17	Silver mica: 17 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C288LL	19A116952P22	Silver mica: 22 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C288L	19A116952P20	Silver mica: 20 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C288M	19A116952P17	Silver mica: 17 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C288H	19A116952P17	Silver mica: 17 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C289LL	19A116952P22	Silver mica: 22 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C289L	19A116952P20	Silver mica: 20 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C289M	19A116952P17	Silver mica: 17 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C289H	19A116952P17	Silver mica: 17 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.

SYMBOL	GE PART NO.	DESCRIPTION
C290LL	19A116952P11	Silver mica: 11 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C290L	19A116952P10	Silver mica: 10 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C290M	19A116952P9	Silver mica: 9 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C290H	19A116952P9	Silver mica: 9 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J1HF.
C291 and C292	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C293	19A116679P220K	Mica: 220 pf ±10%, 250 VDCW.
C294	19A116655P8	Ceramic disc: 150 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C295 and C296	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C4201 and C4202	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C4203	19A116080P104	Polyester: 0.033 μf ±10%, 50 VDCW.
C4204	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C4205	19A116080P104	Polyester: 0.033 μf ±10%, 50 VDCW.
C4206	5496267P14	Tantalum: 15 μf ±20%, 20 VDCW; sim to Sprague Type 150D.
C4207 and C4208	19A116080P104	Polyester: 0.033 μf ±10%, 50 VDCW.
C4209 and C4210	19A116655P8	Ceramic disc: 150 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C4211	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C4212L	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C4212LL	19A116655P8	Ceramic disc: 150 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C4212M	19A116655P8	Ceramic disc: 150 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C4212H	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C4213LL	19A116656P6J0	Ceramic disc: 6 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C4214LL	19A116656P10J0	Ceramic disc: 10 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C4215LL	19A116656P10J0	Ceramic disc: 10 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C4216LL	19A116656P10J0	Ceramic disc: 10 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C4217LL	19A116656P6J0	Ceramic disc: 6 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C4218M	5496218P249	Ceramic disc: 27 pf ±5%, 500 VDCW, temp coef -80 PPM.
C4218H	5496218P249	Ceramic disc: 27 pf ±5%, 500 VDCW, temp coef -80 PPM.
C4219H	5491238P12	Ceramic disc: 2 pf ±0.25 pf, 500 VDCW, temp coef -80 ±120 PPM.
		- - - - - - - - DIODES AND RECTIFIERS - - - - - -
CR201 thru CR206	19A115250P1	Silicon.
		- - - - - - - JACKS AND RECEPTACLES - - - - - - -
J201 thru J203	19A116832P1	Receptacle, coaxial: sim to Cinch 14H11613.
J204	19B219374G1	Connector: 9 contacts.
J208	4033513P4	Contact, electrical: sim to Bead Chain L93-3.
		- - - - - - - - - - - RELAYS - - - - - - - - -
K201	19A116722P1	Hermetic sealed: 125 ohms ±20%, 1 form C contact, 9.6 to 15.8 VDC (over the temp range indicated).

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - - INDUCTORS - - - - - - - - -
L201	19A129773G1	Coil.
L202	7488079P18	Choke, RF: 15.0 μh ±10%, 1.20 ohms DC res max; sim to Jeffers 4421-9K.
L203LL	19A129233P4	Coil.
L203L	19A129233P2	Coil.
L203M	19A129233P3	Coil.
L203H	19A129233P3	Coil.
L204	19A129773G1	Coil.
L205	19B219457P4	Coil.
L206	7488079P40	Choke, RF: 5.60 μh ±10%, 0.15 ohms DC res max; sim to Jeffers 4422-1K.
L207LL	19B209420P125	Coil, RF: 10.0 μh ±10%, 3.10 ohms DC res max; sim to Jeffers 4446-4.
L207L	7488079P18	Choke, RF: 15.0 μh ±10%, 1.20 ohms DC res max; sim to Jeffers 4421-9.
L207M	7488079P18	Choke, RF: 15.0 μh ±10%, 1.20 ohms DC res max; sim to Jeffers 4421-9.
L207H	7488079P18	Choke, RF: 15.0 μh ±10%, 1.20 ohms DC res max; sim to Jeffers 4421-9.
L208	19B219457P3	Coil.
L209	7488079P40	Choke, RF: 5.60 μh ±10%, 0.15 ohms DC res max; sim to Jeffers 4422-1.
L210LL	7488079P18	Choke, RF: 15.0 μh ±10%, 1.20 ohms DC res max; sim to Jeffers 4421-9.
L210L	7488079P40	Choke, RF: 5.60 μh ±10%, 0.15 ohms DC res max; sim to Jeffers 4422-1.
L210M	7488079P18	Choke, RF: 15.0 μh ±10%, 1.20 ohms DC res max; sim to Jeffers 4421-9.
L210H	7488079P18	Choke, RF: 15.0 μh ±10%, 1.20 ohms DC res max; sim to Jeffers 4421-9.
L211	19B219457P3	Coil.
L213	19A129346G1	Coil.
L214	19B219457P3	Coil.
L215LL	7488079P18	Choke, RF: 15.0 μh ±10%, 1.20 ohms DC res max; sim to Jeffers 4421-9.
L215L	7488079P40	Choke, RF: 5.60 μh ±10%, 0.15 ohms DC res max; sim to Jeffers 4422-1.
L215M	7488079P18	Choke, RF: 15.0 μh ±10%, 1.20 ohms DC res max; sim to Jeffers 4421-9.
L215H	7488079P18	Choke, RF: 15.0 μh ±10%, 1.20 ohms DC res max; sim to Jeffers 4421-9.
L216	19B219457P3	Coil.
L217	19A129346G1	Coil.
L218LL	7488079P18	Choke, RF: 15.0 μh ±10%, 1.20 ohms DC res max; sim to Jeffers 4421-9.
L218L	7488079P40	Choke, RF: 5.60 μh ±10%, 0.15 ohms DC res max; sim to Jeffers 4422-1.
L218M	7488079P18	Choke, RF: 15.0 μh ±10%, 1.20 ohms DC res max; sim to Jeffers 4421-9.
L218H	7488079P18	Choke, RF: 15.0 μh ±10%, 1.20 ohms DC res max; sim to Jeffers 4421-9.
L219	19A129774P1	Coil.
L220	19A129773G1	Coil.
L221LL	19C320623P1	Coil.
L221L	19C320623P2	Coil.
L221M	19C320623P2	Coil.
L221H	19C320623P2	Coil.
L222LL	19C320623P1	Coil.
L222L	19C320623P2	Coil.
L222M	19C320623P2	Coil.
L222H	19C320623P2	Coil.
L223LL	19C320623P1	Coil.

SYMBOL	GE PART NO.	DESCRIPTION
L223L	19C320623P2	Coil.
L223M	19C320623P2	Coil.
L223H	19C320623P2	Coil.
L224LL	19C320623P1	Coil.
L224L	19C320623P2	Coil.
L224M	19C320623P2	Coil.
L224H	19C320623P2	Coil.
		- - - - - - - - - - TRANSISTORS - - - - - - - -
Q207	19A116201P1	Silicon, NPN.
Q208	19A115910P1	Silicon, NPN; sim to Type 2N3904.
Q209 thru Q211	19A115768P1	Silicon, PNP; sim to Type 2N3702.
Q212	19A115910P1	Silicon, NPN; sim to Type 2N3904.
Q213	19A115779P1	Silicon, PNP; sim to Type 2N3251.
		- - - - - - - - - - RESISTORS - - - - - - - - -
R201	3R152P102J	Composition: 1000 ohms ±5%, 1/4 w.
R202	3R77P101J	Composition: 100 ohms ±5%, 1/2 w.
R203	3R77P150J	Composition: 15 ohms ±5%, 1/2 w.
R204	19B209022P131	Wirewound: 4.7 ohms ±10%, 2 w; sim to IRC Type BWH.
R205	3R152P102J	Composition: 1000 ohms ±5%, 1/4 w.
R206 and R207	3R77P100J	Composition: 10 ohms ±5%, 1/2 w.
R209	3R78P101J	Composition: 100 ohms ±5%, 1 w.
R210 and R211	3R78P100J	Composition: 10 ohms ±5%, 1 w.
R212	3R78P101J	Composition: 100 ohms ±5%, 1 w.
R213 and R214	19C320212P2	Shunt resistor.
R215	3R152P510J	Composition: 51 ohms ±5%, 1/4 w.
R216	3R152P200J	Composition: 20 ohms ±5%, 1/4 w.
R217	3R77P470J	Composition: 47 ohms ±5%, 1/2 w.
R218	3R152P153J	Composition: 15,000 ohms ±5%, 1/4 w.
R219	3R152P682J	Composition: 6800 ohms ±5%, 1/4 w.
R220 and R221	3R152P101J	Composition: 100 ohms ±5%, 1/4 w.
R222	19A116278P233	Metal film: 2150 ohms ±2%, 1/2 w.
R223	19A116278P217	Metal film: 1470 ohms ±2%, 1/2 w.
R224 and R225	19A116278P261	Metal film: 4220 ohms ±2%, 1/2 w.
R226	19A116559P102	Variable, cermet: 5000 ohms ±20%, .5 w; sim to CTS Series 360.
R227	3R77P121J	Composition: 120 ohms ±5%, 1/2 w.
R228	3R77P471J	Composition: 470 ohms ±5%, 1/2 w.
R229	3R152P182J	Composition: 1800 ohms ±5%, 1/4 w.
R230	3R152P120J	Composition: 12 ohms ±5%, 1/4 w.
R231	19A116278P269	Metal film: 5110 ohms ±2%, 1/2 w.
R232	3R152P682J	Composition: 6800 ohms ±5%, 1/4 w.
R233	3R152P681J	Composition: 680 ohms ±5%, 1/4 w.
R234	3R77P561J	Composition: 560 ohms ±5%, 1/2 w.
		- - - - - - - - VOLTAGE REGULATORS - - - - - - -
VR201	4036887P1	Silicon, Zener.
VR202	4036887P5	Silicon, Zener.

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - - - CABLES - - - - - - - - - -
W202	19A129571P1	Strap.
W203	19B219995P1	Jumper.
W204	19B219995P2	Jumper.
W205	19B219995P3	Jumper.
W206	19B219986P1	Jumper.
W207	19B219995P5	Jumper.
W208 thru W237		(Part of printed wiring board 19D417162P1 for L, M, H and 19D417402P1 for LL).
W238	19B219995P4	Jumper.
		- - - - - - - - - - FILTERS - - - - - - - - - -
Z201	19B219649G3	Filter.
		HEAT SINK ASSEMBLY 19B219688G5
		- - - - - - - - - - CAPACITORS - - - - - - - - -
C297 and C298	19A116708P1	Ceramic, feed-thru: 0.01 μf +125 -0%, 500 VDCW; sim to Erie Style 327.
C299	19A115680P10	Electrolytic: 200 μf +150% -10%, 18 VDCW; sim to Mallory Type TT.
		- - - - - - - DIODES AND RECTIFIERS - - - - - - -
CR295	19A116783P1	Silicon.
		- - - - - - - - - - MISCELLANEOUS - - - - - - - -
	19D416712P5	Insulation. (Located under component board).
	19B201074P320	Tap screw, Phillips POZIDRIV®: No. 6-32 x 1-1/4. (Used with Filter casting).
	5492178P2	Washer, spring tension. (Used with Q201-Q206).
	N207P15C6	Hexnut: No. 8-32. (Used with Q201-Q206).
	19A116022P1	Insulator, bushing. (Used with Q215).
	19A116023P1	Insulator, plate. (Used with Q215).
	N5602P015	"O" Ring. (Used with Q215).
	N402P7C6	Washer: No. 6. (Used with Q215).
	19A129888P1	Insulator. (Used with Q215 under washer).
	19A129661P1	Insulator. (Located by L295, L296).
	19A129434P1	Washer. (Used with C297, C298).
	19B209502P1	Terminal, stud. (Used with C286-C290).



(19B620065, Rev. 1)

SCHEMATIC DIAGRAM

406—512 MHz, STATION POWER AMPLIFIER
19D417383G5-G8 CONTINUOUS DUTY

PARTS LIST

LBI-4748
406-420, 450-512 MHz
40 WATT POWER AMPLIFIER
19D417785G5-G6

SYMBOL	GE PART NO.	DESCRIPTION
A202		POWER AMPLIFIER BOARD A202L1 19D416661G1 406-420 MHz A202L 19D417166G2 450-470 MHz A202M 19D417166G3 470-494 MHz A202N 19D417166G4 494-512 MHz
		- - - - - - - - - CAPACITORS - - - - - - - - -
C201 and C202	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C203	19A116079P220K	Mica: 220 pf ±10%, 250 VDCW.
C204LL	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C204L	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C204M	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C204N	19A116655P8	Ceramic disc: 150 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C205	19A116655P8	Ceramic disc: 150 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C206LL	19A116652P105	Silver mica: 105 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C206L	19A116652P94	Silver mica: 94 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C206M	19A116652P85	Silver mica: 85 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C206N	19A116652P80	Silver mica: 80 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C207	5496218P249	Ceramic disc: 27 pf ±5%, 500 VDCW, temp coef -80 PPM.
C208	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C209	19A116656P5J0	Ceramic disc: 3 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C210	7489162P9	Silver mica: 18 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C211	19A116655P8	Ceramic disc: 150 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C212	19A116656P5J0	Ceramic disc: 3 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C213LL	19A116656P5J0	Ceramic disc: 3 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C213L	19A116656P5J0	Ceramic disc: 3 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C213M	19A116656P5J0	Ceramic disc: 3 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C213N	5491238P12	Ceramic disc: 2 pf ±0.25 pf, 500 VDCW, temp coef 1120 PPM.
C214	19A116655P8	Ceramic disc: 150 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap.
C215	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C216	5496267P13	Tantalum: 2.2 pf ±20%, 20 VDCW; sim to Sprague Type 150D.
C217LL	19A116656P15J0	Ceramic disc: 15 pf ±5%, 500 VDCW, temp coef 0 PPM.
C217L	19A116656P12J0	Ceramic disc: 12 pf ±5%, 500 VDCW, temp coef 0 PPM.
C217M	19A116656P12J0	Ceramic disc: 12 pf ±5%, 500 VDCW, temp coef 0 PPM.
C217N	19A116656P12J0	Ceramic disc: 12 pf ±5%, 500 VDCW, temp coef 0 PPM.

SYMBOL	GE PART NO.	DESCRIPTION
C217N	19A116656P12J0	Ceramic disc: 12 pf ±5%, 500 VDCW, temp coef 0 PPM.
C218LL	19A116652P23	Silver mica: 23 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C218L	19A116652P22	Silver mica: 22 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C218M	19A116652P22	Silver mica: 22 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C218N	19A116652P22	Silver mica: 22 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C219LL	19A116656P7J0	Ceramic disc: 7 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C219L	19A116656P6J0	Ceramic disc: 6 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C219M	19A116656P6J0	Ceramic disc: 6 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C219N	19A116656P5J0	Ceramic disc: 5 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C220LL	19A116652P14	Silver mica: 14 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C220L	19A116652P12	Silver mica: 12 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C220M	19A116652P12	Silver mica: 12 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C220N	19A116652P11	Silver mica: 11 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C221LL	19A116656P7J0	Ceramic disc: 7 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C221L	19A116656P6J0	Ceramic disc: 6 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C221M	19A116656P6J0	Ceramic disc: 6 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C221N	19A116656P6J0	Ceramic disc: 6 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C222LL	19A116652P18	Silver mica: 18 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C222L	19A116652P16	Silver mica: 16 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C222M	19A116652P16	Silver mica: 16 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C222N	19A116652P15	Silver mica: 15 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C223LL	19A116656P6J0	Ceramic disc: 6 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C223L	19A116656P5J0	Ceramic disc: 5 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C223M	19A116656P5J0	Ceramic disc: 5 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C223N	19A116656P5J0	Ceramic disc: 5 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C224LL	19A116652P105	Silver mica: 105 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C224L	19A116652P91	Silver mica: 91 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C224M	19A116652P91	Silver mica: 91 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C224N	19A116652P85	Silver mica: 85 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C230LL	19A116656P12J0	Ceramic disc: 12 pf ±5%, 500 VDCW, temp coef 0 PPM.
C230L	19A116656P9J0	Ceramic disc: 9 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C230M	19A116656P9J0	Ceramic disc: 9 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C230N	19A116656P8J0	Ceramic disc: 8 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C232LL	19A116656P7J0	Ceramic disc: 7 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C232L	19A116656P6J0	Ceramic disc: 6 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C232M	19A116656P6J0	Ceramic disc: 6 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C232N	19A116656P5J0	Ceramic disc: 5 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C233LL	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C233L	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C233M	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C233N	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C234LL	19A116652P28	Silver mica: 28 pf ±2%, 250 VDCW; sim to Underwood Type J18F.

SYMBOL	GE PART NO.	DESCRIPTION
C236N	19A116652P9	Silver mica: 9 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C236R	19A116652P9	Silver mica: 9 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C237LL	19A116656P10J0	Ceramic disc: 10 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C227L	19A116652P20	Silver mica: 20 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C227R	19A116652P19	Silver mica: 19 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C227E	19A116652P17	Silver mica: 17 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C228LL	19A116656P10J0	Ceramic disc: 10 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C228L	19A116652P20	Silver mica: 20 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C228M	19A116652P19	Silver mica: 19 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C228N	19A116652P17	Silver mica: 17 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C229LL	19A116656P10J0	Ceramic disc: 10 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C229L	19A116652P20	Silver mica: 20 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C229M	19A116652P19	Silver mica: 19 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C229N	19A116652P17	Silver mica: 17 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C230LL	19A116656P5J0	Ceramic disc: 5 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C230L	19A116652P10	Silver mica: 10 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C230M	19A116652P9	Silver mica: 9 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C230N	19A116652P8	Silver mica: 8 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C231LL	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C231L	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C231M	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C231N	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C246LL	5496218P249	Ceramic disc: 27 pf ±5%, 500 VDCW, temp coef -80 PPM.
C246L	5496218P249	Ceramic disc: 27 pf ±5%, 500 VDCW, temp coef -80 PPM.
C246M	5496218P249	Ceramic disc: 27 pf ±5%, 500 VDCW, temp coef -80 PPM.
C246N	5496218P249	Ceramic disc: 27 pf ±5%, 500 VDCW, temp coef -80 PPM.
C249LL	19A116652P39	Silver mica: 39 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C249L	19A116652P38	Silver mica: 38 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C249M	19A116652P26	Silver mica: 26 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C250	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C251	5496267P13	Tantalum: 2.2 pf ±20%, 20 VDCW; sim to Sprague Type 150D.
C252	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C253LL	19A116652P31	Silver mica: 31 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C253L	19A116652P23	Silver mica: 23 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C253M	19A116652P22	Silver mica: 22 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C253N	19A116652P20	Silver mica: 20 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.

SYMBOL	GE PART NO.	DESCRIPTION
C237L	19A116652P22	Silver mica: 22 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C237M	19A116652P17	Silver mica: 17 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C237N	19A116652P16	Silver mica: 16 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C238	19A116656P5J0	Ceramic disc: 5 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C239	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C240	7489162P9	Silver mica: 18 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C241LL	19A116679P13D	Mica: 13 pf ±.5 pf, 250 VDCW.
C241L	19A116679P10D	Mica: 10 pf ±.5 pf, 250 VDCW.
C241M	19A116679P9D	Mica: 9 pf ±.5 pf, 250 VDCW.
C241N	19A116679P8D	Mica: 8 pf ±.5 pf, 250 VDCW.
C242	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C243LL	19A116652P31	Silver mica: 31 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C243L	19A116652P25	Silver mica: 25 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C243M	19A116652P20	Silver mica: 20 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C243N	19A116652P19	Silver mica: 19 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C244	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C245	5496267P13	Tantalum: 2.2 pf ±20%, 20 VDCW; sim to Sprague Type 150D.
C246	7489162P9	Silver mica: 18 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C247LL	19A116652P18	Silver mica: 18 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C247L	19A116652P15	Silver mica: 15 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C247M	19A116652P13	Silver mica: 13 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C247N	19A116652P11	Silver mica: 11 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C248LL	5496218P249	Ceramic disc: 27 pf ±5%, 500 VDCW, temp coef -80 PPM.
C248L	5496218P249	Ceramic disc: 27 pf ±5%, 500 VDCW, temp coef -80 PPM.
C248M	5496218P249	Ceramic disc: 27 pf ±5%, 500 VDCW, temp coef -80 PPM.
C248N	5496218P249	Ceramic disc: 27 pf ±5%, 500 VDCW, temp coef -80 PPM.
C249LL	19A116652P39	Silver mica: 39 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C249L	19A116652P38	Silver mica: 38 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C249M	19A116652P26	Silver mica: 26 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C250	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C251	5496267P13	Tantalum: 2.2 pf ±20%, 20 VDCW; sim to Sprague Type 150D.
C252	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C253LL	19A116652P31	Silver mica: 31 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C253L	19A116652P23	Silver mica: 23 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C253M	19A116652P22	Silver mica: 22 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C253N	19A116652P20	Silver mica: 20 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.

SYMBOL	GE PART NO.	DESCRIPTION
C254LL	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C254L	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C254M	5496218P249	Ceramic disc: 27 pf ±5%, 500 VDCW, temp coef -80 PPM.
C254N	5496218P249	Ceramic disc: 27 pf ±5%, 500 VDCW, temp coef -80 PPM.
C255	7489162P9	Silver mica: 18 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C256	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C257	5496267P13	Tantalum: 2.2 pf ±20%, 20 VDCW; sim to Sprague Type 150D.
C258LL	19A116652P31	Silver mica: 31 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C258L	19A116652P23	Silver mica: 23 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C258M	19A116652P23	Silver mica: 23 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C258N	19A116655P20	Silver mica: 20 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C259LL	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C259L	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C259M	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C259N	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C260LL	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C260L	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C260M	5496218P249	Ceramic disc: 27 pf ±5%, 500 VDCW, temp coef -80 PPM.
C260N	5496218P249	Ceramic disc: 27 pf ±5%, 500 VDCW, temp coef -80 PPM.
C261LL	19A116652P42	Silver mica: 42 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C261L	19A116652P30	Silver mica: 30 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C261M	19A116652P30	Silver mica: 30 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C261N	19A116652P27	Silver mica: 27 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C262LL	19A116652P31	Silver mica: 31 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C262L	19A116652P23	Silver mica: 23 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C262M	19A116652P23	Silver mica: 23 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C262N	19A116655P20	Silver mica: 20 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C263LL	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C263L	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C263M	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C263N	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C264	7489162P9	Silver mica: 18 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C265	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C266	5496267P13	Tantalum: 2.2 pf ±20%, 20 VDCW; sim to Sprague Type 150D.
C267	7489162P9	Silver mica: 18 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.

SYMBOL	GE PART NO.	DESCRIPTION
C268LL	19A116652P42	Silver mica: 42 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C268L	19A116652P30	Silver mica: 30 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C268M	19A116652P30	Silver mica: 30 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C268N	19A116652P27	Silver mica: 27 pf ±2%, 250 VDCW; sim to Underwood Type J18F.
C269	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C270	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C271	19A116655P8	Ceramic disc: 150 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C272	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C273 and C274	19A116655P8	Ceramic disc: 150 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C275LL	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C275L	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C275M	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C275N	19A116656P32J0	Ceramic disc: 27 pf ±5%, 500 VDCW, temp coef 0 PPM.
C276 thru C280	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C281 thru C284	19A116679P220K	Mica: 220 pf ±10%, 250 VDCW.
C285	5496218P45	Ceramic disc: 18 pf ±5%, 500 VDCW, temp coef 0 PPM.
C286LL	19A116652P11	Silver mica: 11 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C286L	19A116652P10	Silver mica: 10 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C286M	19A116652P9	Silver mica: 9 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C286N	19A116652P8	Silver mica: 8 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C287	19A116652P22	Silver mica: 22 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C287L	19A116652P20	Silver mica: 20 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C287M	19A116652P17	Silver mica: 17 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C287N	19A116652P17	Silver mica: 17 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C288LL	19A116652P22	Silver mica: 22 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C288L	19A116652P20	Silver mica: 20 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C288M	19A116652P17	Silver mica: 17 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C288N	19A116652P17	Silver mica: 17 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C289LL	19A116652P22	Silver mica: 22 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C289L	19A116652P20	Silver mica: 20 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C289M	19A116652P17	Silver mica: 17 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C289N	19A116652P17	Silver mica: 17 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C290LL	19A116653P11	Silver mica: 11 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C290L	19A116652P10	Silver mica: 10 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.

SYMBOL	GE PART NO.	DESCRIPTION
C290M	19A116652P9	Silver mica: 9 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C290N	19A116652P9	Silver mica: 9 pf ±0.5 pf, 250 VDCW; sim to Underwood Type J18F.
C291 and C292	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C293	19A116679P220K	Mica: 220 pf ±10%, 250 VDCW.
C294	19A116655P8	Ceramic disc: 150 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C295 and C296	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C297	19A116655P8	Ceramic disc: 150 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C298 and C4302	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C4303	19A116680P104	Polyester: 0.033 µf ±10%, 50 VDCW.
C4304	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C4305	19A116680P104	Polyester: 0.033 µf ±10%, 50 VDCW.
C4306	5496267P14	Tantalum: 15 µf ±20%, 20 VDCW; sim to Sprague Type 150D.
C4307 and C4308	19A116080P104	Polyester: 0.033 µf ±10%, 50 VDCW.
C4309 and C4210	19A116655P8	Ceramic disc: 150 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C4211	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C4212L	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C4212LL	19A116655P8	Ceramic disc: 150 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C4212M	19A116655P8	Ceramic disc: 150 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C4212N	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C4213LL	19A116656P6J0	Ceramic disc: 6 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C4314LL	19A116656P10J0	Ceramic disc: 10 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C4215LL	19A116656P10J0	Ceramic disc: 10 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C4216LL	19A116656P10J0	Ceramic disc: 10 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C4217LL	19A116656P6J0	Ceramic disc: 6 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C4218M	5496218P249	Ceramic disc: 27 pf ±5%, 500 VDCW, temp coef -80 PPM.
C4218N	5496218P249	Ceramic disc: 27 pf ±5%, 500 VDCW, temp coef -80 PPM.
C4219N	5491238P12	Ceramic disc: 2 pf ±0.25 pf, 500 VDCW, temp coef -80 1120 PPM.
		- - - - - - - - - DIODES AND RECTIFIERS - - - - - - - - -
CR201 thru CR206	19A115250P1	Silicon.
		- - - - - - - - JACKS AND RECEPTACLES - - - - - - - -
J201 thru J203	19A116832P1	Receptacle, coaxial: sim to Cinch 14B11613.
J204	19B219374G1	Connector: 9 contacts.
J208	4033313P4	Contact, electrical: sim to Bead Chain L03-3.
		- - - - - - - - - - - KELAYS - - - - - - - - - - -
K201	19A116722P1	Hermetic sealed: 125 ohms ±90%, 1 form C contact, 9.6 to 15.8 VDC (over the temp range indicated).

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - - INDUCTORS - - - - - - - - - -
L201	19A129773G1	Coil.
L202	7488079P18	Choke, RF: 15.0 µh ±10%, 1.20 ohms DC res max; sim to Jeffers 4423-9K.
L203LL	19A129233P4	Coil.
L203L	19A129233P2	Coil.
L203M	19A129233P3	Coil.
L203N	19A129233P5	Coil.
L204	19A129773G1	Coil.
L205	19B219437P4	Coil.
L206	7488079P40	Choke, RF: 5.60 µh ±10%, 0.15 ohms DC res max; sim to Jeffers 4422-1K.
L207LL	19B209420P125	Coil, RF: 10.0 µh ±10%, 3.10 ohms DC res max; sim to Jeffers 4446-4.
L207	7488079P18	Choke, RF: 15.0 µh ±10%, 1.20 ohms DC res max; sim to Jeffers 4423-9.
L207M	7488079P18	Choke, RF: 15.0 µh ±10%, 1.20 ohms DC res max; sim to Jeffers 4423-9.
L207N	7488079P18	Choke, RF: 15.0 µh ±10%, 1.20 ohms DC res max; sim to Jeffers 4423-9.
L208	19B219437P3	Coil.
L209	7488079P40	Choke, RF: 5.60 µh ±10%, 0.15 ohms DC res max; sim to Jeffers 4422-1.
L210LL	7488079P18	Choke, RF: 15.0 µh ±10%, 1.20 ohms DC res max; sim to Jeffers 4423-9.
L210L	7488079P40	Choke, RF: 5.60 µh ±10%, 0.15 ohms DC res max; sim to Jeffers 4422-1.
L210M	7488079P18	Choke, RF: 15.0 µh ±10%, 1.20 ohms DC res max; sim to Jeffers 4423-9.
L210N	7488079P18	Choke, RF: 15.0 µh ±10%, 1.20 ohms DC res max; sim to Jeffers 4423-9.
L211	19B219457P3	Coil.
L213	19A129346G1	Coil.
L214	19B219457P3	Coil.
L215LL	7488079P18	Choke, RF: 15.0 µh ±10%, 1.20 ohms DC res max; sim to Jeffers 4423-9.
L215L	7488079P40	Choke, RF: 5.60 µh ±10%, 0.15 ohms DC res max; sim to Jeffers 4422-1.
L215N	7488079P18	Choke, RF: 15.0 µh ±10%, 1.20 ohms DC res max; sim to Jeffers 4423-9.
L215M	7488079P18	Choke, RF: 15.0 µh ±10%, 1.20 ohms DC res max; sim to Jeffers 4423-9.
L216	19B219457P3	Coil.
L217	19A129346G1	Coil.
L218LL	7488079P18	Choke, RF: 15.0 µh ±10%, 1.20 ohms DC res max; sim to Jeffers 4423-9.
L218L	7488079P40	Choke, RF: 5.60 µh ±10%, 0.15 ohms DC res max; sim to Jeffers 4422-1.
L218M	7488079P18	Choke, RF: 15.0 µh ±10%, 1.20 ohms DC res max; sim to Jeffers 4423-9.
L218N	7488079P18	Choke, RF: 15.0 µh ±10%, 1.20 ohms DC res max; sim to Jeffers 4423-9.
L219	19A129774P1	Coil.
L220	19A129773G1	Coil.
L221LL	19C330633P1	Coil.
L221L	19C330623P2	Coil.
L221M	19C330623P2	Coil.
L221N	19C330623P2	Coil.
L222LL	19C330623P2	Coil.
L222L	19C330623P2	Coil.
L222M	19C330623P2	Coil.
L222N	19C330623P2	Coil.
L223LL	19C330623P1	Coil.

(Cont'd on Page 21)

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

(Cont'd from Page 20)

SYMBOL	GE PART NO.	DESCRIPTION
L223L	19C320623P2	Coil.
L223M	19C320623P2	Coil.
L223H	19C320623P2	Coil.
L224LL	19C320623P1	Coil.
L224L	19C320623P2	Coil.
L224M	19C320623P2	Coil.
L224H	19C320623P2	Coil.
		- - - - - - - - - - TRANSISTORS - - - - - - - - -
Q207	19A116201P1	Silicon, NPN.
Q208	19A115910P1	Silicon, NPN; sim to Type 2N3904.
Q209 thru Q211	19A115768P1	Silicon, PNP; sim to Type 2N3702.
Q212	19A115910P1	Silicon, NPN; sim to Type 2N3904.
Q213	19A115779P1	Silicon, PNP; sim to Type 2N3251.
		- - - - - - - - - - RESISTORS - - - - - - - - -
R201	3R152P102J	Composition: 1000 ohms ±5%, 1/4 w.
R202	3R77P101J	Composition: 100 ohms ±5%, 1/2 w.
R203	3R77P150J	Composition: 15 ohms ±5%, 1/2 w.
R204	19B209022P131	Wirewound: 4.7 ohms ±10%, 2 w; sim to IRC Type BWH.
R205	3R152P102J	Composition: 1000 ohms ±5%, 1/4 w.
R206 and R207	3R77P100J	Composition: 10 ohms ±5%, 1/2 w.
R209	3R78P101J	Composition: 100 ohms ±5%, 1 w.
R210 and R211	3R78P100J	Composition: 10 ohms ±5%, 1 w.
R212	3R78P101J	Composition: 100 ohms ±5%, 1 w.
R213 and R214	19C320212P2	Shunt resistor.
R215	3R152P510J	Composition: 51 ohms ±5%, 1/4 w.
R216	3R152P200J	Composition: 20 ohms ±5%, 1/4 w.
R217	3R77P470J	Composition: 47 ohms ±5%, 1/2 w.
R218	3R152P153J	Composition: 15,000 ohms ±5%, 1/4 w.
R219	3R152P682J	Composition: 6800 ohms ±5%, 1/4 w.
R220 and R221	3R152P101J	Composition: 100 ohms ±5%, 1/4 w.
R222	19A116278P233	Metal film: 2150 ohms ±2%, 1/2 w.
R223	19A116278P201	Metal film: 1000 ohms ±2%, 1/2 w.
R224 and R225	19A116278P261	Metal film: 4220 ohms ±2%, 1/2 w.
R226	19A116559P102	Variable, cermet: 5000 ohms ±20%, .5 w; sim to CTS Series 360.
R227	3R77P121J	Composition: 120 ohms ±5%, 1/2 w.
R228	3R77P471J	Composition: 470 ohms ±5%, 1/2 w.
R229	3R152P182J	Composition: 1800 ohms ±5%, 1/4 w.
R230	3R152P120J	Composition: 12 ohms ±5%, 1/4 w.
R231	19A116278P269	Metal film: 5110 ohms ±2%, 1/2 w.
R232	3R152P682J	Composition: 6800 ohms ±5%, 1/4 w.
R233	3R152P681J	Composition: 680 ohms ±5%, 1/4 w.
R234	3R77P561J	Composition: 560 ohms ±5%, 1/2 w.
		- - - - - - - - VOLTAGE REGULATORS - - - - - - - -
VR201	4036887P1	Silicon, Zener.
VR202	4036887P5	Silicon, Zener.

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - - CABLES - - - - - - - - - -
W202	19A129571P1	Strap.
W203	19B219995P1	Jumper.
W204	19B219995P2	Jumper.
W205	19B219995P3	Jumper.
W206	19B219986P1	Jumper.
W207	19B219995P5	Jumper.
W208 thru W237		(Part of printed wiring board 19D417162P1 for L, M, H and 19D417402P1 for LL).
W238	19B219995P4	Jumper.
		- - - - - - - - - - FILTERS - - - - - - - - - -
Z201	19B219649G3	Filter.
A203		FRAME ASSEMBLY 19D417526G2
		- - - - - - - - - - CABLES - - - - - - - - - -
W241	5491689P104	Cable, RF: approx 3-5/8 inches long, 350 VRMS; 500 VDC operating voltage.
W244	5491689P104	Cable, RF: approx 3-5/8 inches long, 350 VRMS; 500 VDC operating voltage.
		- - - - - - - - - CAPACITORS - - - - - - - - -
C297 and C298	19A116708P1	Ceramic, feed-thru: 0.01 µf +100% -0%, 500 VDCW; sim to Erie Style 327.
		- - - - - - - - - INDUCTORS - - - - - - - - - -
L295	19A129562P3	Coil.
L296	19A129562P2	Coil.
		- - - - - - - - - - PLUGS - - - - - - - - - -
P246 and P247	4036634P1	Contact, electrical; sim to AMP 42428-2.
		- - - - - - - - - TRANSISTORS - - - - - - - - -
Q201	19A129283P1	Silicon, NPN.
Q202	19A116953P1	Silicon, NPN.
Q203	19A116953P2	Silicon, NPN.
Q204 thru Q206	19A129283P4	Silicon, NPN.
Q215	19A116742P1	Silicon, NPN.
		- - - - - - - - - - THERMISTORS - - - - - - - - -
RT201	19A129379G1	Thermistor: 4700 ohms ±5%, color code white.
		- - - - - - - - - - CABLES - - - - - - - - - -
W243		RF CABLE ASSEMBLY 19A129312G6
		- - - - - - - - JACKS AND RECEPTACLES - - - - - -
J243		Includes:
	4029493P1	Connector.
	4029082P2	Adaptor.
		- - - - - - - - - - PLUGS - - - - - - - - - -
P203	5491689P108	RF: approx 10 inches long, 350 VRMS, 500 VDC operating voltage.
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
	19D416712P3	Insulation. (Located under component board).
	19B201074P322	Tap screw, Phillips POZIDRIV®: No. 6-32 x 1-3/8. (Used with Filter casting).

SYMBOL	GE PART NO.	DESCRIPTION
	5492178P2	Washer, spring tension. (Used with Q201-Q206).
	N207P15C6	Hexnut: No. 8-32. (Used with Q201-Q206).
	19A116022P1	Insulator, bushing. (Used with Q215).
	19A116023P1	Insulator, plate. (Used with Q215).
	19B209502P1	Terminal, stud. (Used with C286-C290).
	19D417513G2	Cover.
	19B226212P1	Heat sink.