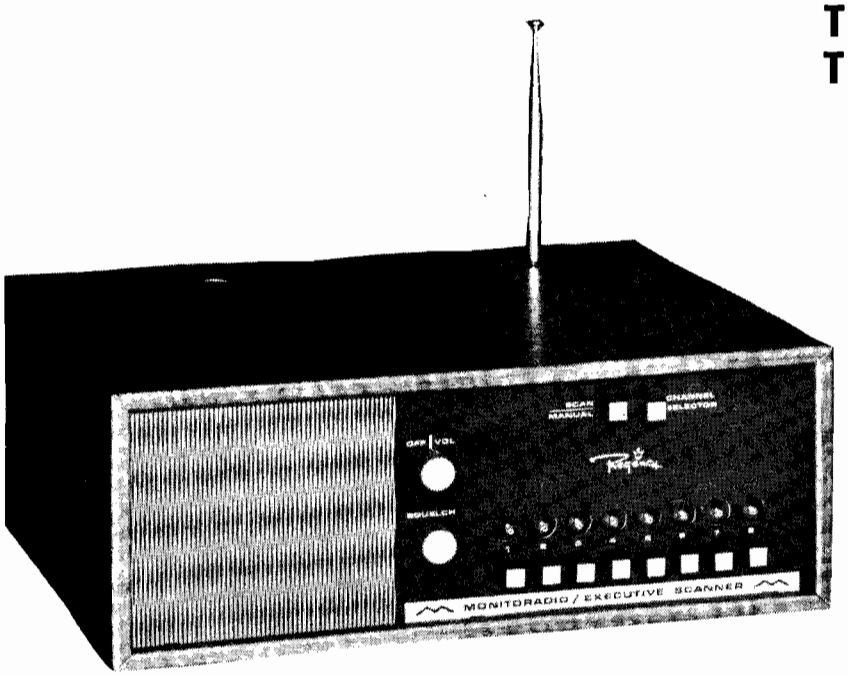
Regency ELECTRONICS INC.

SERVICE MANUAL

MODELS:
TME-8H
TME-8H/LL
TME-8H/LM
TME-8H/LH



VHF MONITORADIO RECEIVER

7707 RECORDS STREET
INDIANAPOLIS, INDIANA 46226

PRINTED IN U.S.A.
2-73

PRICE $5.00
SM-10-326-1

VHF MONITORADIO RECEIVER

CONTENTS

SECTION 1 SPECIFICATIONS AND CIRCUIT DESCRIPTION

1-1 SPECIFICATIONS (SUBJECT TO CHANGE WITHOUT NOTICE)

RECEIVER (MODEL TME-8H/L)

Frequency Range.....Low Band 30-50 MHz
High Band; 150-174 MHz
Antenna Impedance.....50 Ohms
Channels.....8; Crystal Controlled
Sensitivity (at tune-up).....Low Band; 0.5μv (max.)
High Band; 0.7μv (max.)

Frequency Separation
Low Band.....6 MHz
Model 8 H/LL.....33-39 MHz
Model 8 H/LM.....37-43 MHz
Model 8 H/LH.....41-47 MHz
High Band.....6 DB Bandwidth; 8 MHz
9 DB Bandwidth; 12 MHz
Selectivity (I.F.).....6 DB Down; ±7 KHz (min.)
50 DB Down; ±20 KHz (max.)
Spurious Rejection (excluding Primary Image).....50 DB
Modulation Acceptance.....±7 KHz (min.)
Intermediate Frequencies.....1st I.F. - 10.7 MHz
2nd I.F. - 455 KHz
Squelch System....."Noise Operated"
Audio Output (3.2 Ω Speaker).....3 Watts @ 10%, or less,
distortion; 5 Watts, maximum
FCC Certified.....Part 15, Subpart C

RECEIVER (MODEL TME-8H)
Frequency Range.....150-174 MHz
Antenna Impedance.....50 Ohms
Channels.....8; Crystal Controlled
Sensitivity (at tune-up).....0.7μv (max.)
Frequency Separation.....6 DB Bandwidth; 8 MHz
9 DB Bandwidth; 12 MHz
Selectivity (I.F.).....6 DB Down; ±7 KHz (min.)
50 DB Down; ±20 KHz (max.)
Spurious Rejection (excluding Primary Image).....50 DB
Modulation Acceptance.....±7 KHz (min.)
Intermediate Frequencies.....1st I.F. - 10.7 MHz
2nd I.F. - 455 KHz
Squelch System....."Noise Operated"
Audio Output (3.2 Ω Speaker) 3 Watts @ 10%, or less,
distortion; 5 Watts, maximum
FCC Certified..... Part 15, Subpart C

SCANNER
Scan Rate..... Approx. 15 channels per sec.
Scan Delay.....Approx. 1/2 sec.

POWER

Voltage Requirement	117 VAC (±10%), 60 Hz., 17 Watts Max. 13.8 VDC (±10%)
Current Requirements	@ 13.8 VDC
Receiver (Squelched)	180 MA.
Receiver (Max. Audio Output)	800 MA.
Fuse Size	1.5 Amp., 3AG

SEMICONDUCTORS

Receiver Section	
Integrated Circuits	2
Silicon Transistors	Model TME-8H/L; 17 Model TME-8H; 13
Diode (Total)	12
Zener Diodes	1
Rectifier Diodes	2
Scanner Section	
Integrated Circuits	4
Silicon Transistors	8
Diodes (Total)	Model TME-8H/L; 22 Model TME-8H; 14
Zener Diode	1

GENERAL

Front Panel Size	3 7/8" x 10 1/8"
Depth (Including Knobs and Rear Panel Connectors)	9 1/2 in.
Antenna Connector	Motorola Type
Power Connector	4-pin, polarized
Speaker Size	3 1/2 inch, square

1-2 CRYSTAL SPECIFICATIONS

Minature plug-in crystals are utilized in the receiver. Because of the high accuracy (close tolerances) required, Shepherd Industries' crystals are recommended. If the crystals are ordered from Regency, it is only necessary to specify Part No. 301-532 for high band crystals, or Part No. 301-542 for low band crystals and the desired receive frequency.

If desired, the crystals may be purchased from other manufacturers. The following specifications must be included in the order:

High Band Crystal:

a. Crystal frequency, determined as follows:

$$\text{Crystal frequency} = \frac{\text{channel frequency} - 10.7\ \text{MHz}}{3}$$

EXAMPLE:

$$\text{Crystal frequency} = \frac{155.55\ \text{MHz} - 10.7\ \text{MHz}}{3} = \frac{144.85\ \text{MHz}}{3} = 48.2833\ \text{MHz}$$

b. Frequency Tolerance of .001%
c. 3rd Overtone
d. Series resonance minus 450 Hz
e. Maximum equivalent series resistance of 35 ohms
f. Drive level of 2 MW
g. Holder: HC -25/u

Low Band Crystal:

a. Crystal frequency, determined as follows:
Crystal frequency = channel frequency + 10.7 MHz

Example:
Crystal frequency = 39.5 MHz + 10.7 MHz = 50.2 MHz

b. Frequency Tolerance of .001%
c. 3rd Overtone
d. Series resonance minus 450 Hz
e. Maximum equivalent series resistance of 35 ohms
f. Drive level of 2 MW
g. Holder: HC - 25/u

1-3 CRYSTAL INSTALLATION AND BAND PROGRAMMING

Prior to installing a crystal, the receiver will have to be partially pulled out of its cabinet. First, remove the telescopic antenna if it is installed. Second, remove the two knobs (volume and squelch). Third, remove the rear panel (cover) by removing the four mounting screws. Fourth, remove the four rubber feet by unscrewing each one. The receiver may then be slid rearward from the cabinet until the crystal socket pins are accessible.

Insert the crystal, or crystals, in the proper socket pins as indicated on the crystal location drawing 3-10. The number by each pair of sockets matches the channel number on the front panel.

Band programming will have to be performed on Model TME-8H/L only. This is described in the following paragraph.

If the crystal inserted is for the High Band (148-174 MHz), place the proper color-coded wire and socket onto the proper High Band pin; if the crystal is for the Low Band (30-50 MHz), place the proper wire and socket onto the proper Low Band pin. Pictorial B illustrates how the band selection wires are properly connected. Pictorial C shows an example of a partially programmed board. See Diagram 3-11.

NOTE: If a particular channel is not used (in other words, there is no crystal installed for that channel), the band selection wire must still be connected to either a High band pin or to a Low band pin. Thus, for proper scanner operation, all of the band selection wires MUST be connected, even though not all channels are used.

After the crystals are installed and any necessary band programming changes are completed, reinstall the speaker assembly. Then carefully reinstall the cover and its hardware.

1-4 RF BOARD (TME-8H/L)

Q201 is a low band RF amplifier with broad-band tuned circuits in its input and output circuitry. The output of the RF amplifier is coupled to the input of the low band mixer, Q203.

Q202 is a high band RF amplifier with broad-band circuits in its input and output circuitry. The output of the RF amplifier is coupled to the input of the high band mixer, Q204.

The first L.O. (local oscillator), Q207, uses third overtone crystals and operates on all channels, whether high or low. For low band signals the fundamental frequency of the crystal is taken off the emitter of Q207 for injection. For high band signals, the third harmonic of the crystal is coupled off the collector of Q207 for oscillator injection. The radio is switched between high and low band transistors Q205 and Q206. When Q205 conducts, operating bias is applied to the low band RF amplifier and mixer. When Q206 conducts, operating bias is applied to the high band RF amplifier and mixer. Each channel then becomes either high band or low band depending on which RF amplifier and mixer are switched on by Q205 and Q206. Conduction of Q205 and Q206 are determined by the program board. If the lead for a particular channel is connected to a high band pin, the high band RF amplifier and mixer are turned on, if the lead is connected to a low band pin, the low band RF amplifier and mixer are turned on when the radio scans that particular channel.

A crystal is electrically connected to the oscillator circuit when its associated diode is forward biased. Until the scanner reaches that particular channel, the diode is back biased and prevents the oscillator from operating on the crystal's frequency. When the respective channel is reached, the scanner's output line provides a low resistance path to ground, which turns the diode on (forward biases it) and effectively connects the crystal into the oscillator circuit.

The output frequency from either mixer, Q203 or Q204, is tuned to 10.7 MHz by T201. The output is linked-coupled to T101, the IF input tuned circuit.

1-5 RF BOARD (TME-8H)

Q201 is an RF amplifier with broad-band tuned circuits in its input and output circuitry. The output of the RF amplifier is coupled to the input of the mixer, Q202.

The first L.O. (local oscillator), Q203, uses third overtone crystals. The output frequency from the oscillator, (3 times crystal), is also coupled to the input of the mixer transistor, Q202.

A crystal is electrically connected to the oscillator circuit when its associated diode is forward biased. Until the scanner reaches that particular channel, the diode is back biased and prevents the oscillator from operating on the crystal's frequency. When the respective channel is reached, the scanner's output line provides a low resistance path to ground, which turns the diode on (forward biases it) amd effectively connects the crystal into the oscillator circuit.

The output frequency from the mixer, Q202, is tuned to 10.7 MHz by T201. The output is link-coupled to T101, the IF input tuned circuit.

1-6 IF-AUDIO BOARD

The IF input circuitry consists of T101 and Q101, used as an IF amplifier. The output of this amplifier is fed to an integrated circuit, IC 101, which contains another amplifier for 10.7 MHz, the second mixer circuitry and the second L.O. circuitry, normally operating at 10.245 MHz. In some locations where a strong Image signal has been encountered, this oscillator's frequency is moved to 11.155 MHz. (The crystal frequency is stamped on the top of the crystal).

The 455 KHz output of IC 101 (terminal 5) is coupled through a tuned circuit to the input of the ceramic filter, CF-1. CF-1 is a narrow-band filter centered at 455 KHz. The excellent band-pass characteristics of CF-1 provide for very good adjacent channel rejection. The output of CF-1 is coupled through another tuned circuit to the input of integrated circuit IC 102. IC 102 is a series of amplifiers providing approximately 60 DB gain at 455 KHz. Also included in IC 102 is the limiting circuitry and a quadrature detector circuit. L103, connected between terminals 2 and 12 of IC 102, is the adjustable quadrature coil.

The audio output from IC 102 (terminal 1) is coupled to the input of the audio amplifier circuit and to the input of the noise-operated squelch circuit.

Transistor Q102 is an amplifier whose frequency responses extends from approximately 5 KHz to 25 KHz. Q102 amplifies the "noise" occurring in this frequency range. The noise is coupled to the base of Q103. Q103 is used as a detector which rectifies the amplified noise and produces DC voltage at its collector. When the DC voltage at the collector of Q103 is positive and of sufficient value to provide base bias for Q104, Q104 turns on and provides a short circuit to the squelch tail circuitry which provides bias to Q105. This action turns off Q105 and the audio output from the receiver is squelched (muted).

When a signal (carrier) arrives, the output from the detector (Q103) is reduced to the point where the DC voltage at the base of Q104 is no longer sufficient to cause Q104 to conduct. At this time, Q105 is allowed to conduct normally and the audio output of the unit is heard. With the audio pre-amplifier (Q105) operating normally, audio is applied through the volume control to the base of the audio amplifier, Q106. Q106 supplies a signal to the audio

driver transistors, Q107 and Q108. The output transistors, Q109 and Q110, form a quasi-complementary, transformerless stage capable of delivering 5 watts to the speaker.

1-7 SCANNER BOARD

The squelch tail circuit consists of R319, CR313, C306 and R318. This circuit is used to keep the squelch circuit open for a short time after the station signal goes off. The purpose of the squelch tail circuit is to prevent the squelch cicuits from chopping very weak signals, especially mobile signals. The timing of the squelch tail can be changed by changing the value of C306. Removing C306 from the circuit will remove the squelch tail completely.

While scanning, the scanner is stopped on a channel if a carrier is being received by the unit. First, the squelch is broken and then the stop-start stage (Q304) starts conducting. When Q304 is conducting, it lowers the voltage available to the emitter of the unijunction (Q306) below its firing point, thus stopping pulse generation. There is a delay in the resumption of scanning action after the carrier is removed. This delay is provided by C303, which is connected to the collector of Q304 when the SCAN-MANUAL button is pushed in (scan mode). The delay permits a short interval of a "stopped clock" so that another signal (carrier), responding to the first signal (for example a mobile station replying to its base station) can come on channel without the unit scanning through all of the other channels.

Three basic functional circuits make up the Scanner system. They are the lamp gates, the registers, and a multi-speed clock. The clock circuitry also includes a stop-start circuit in addition to generating pulses.

The lamp gates, IC 301 and IC 302, are switched on or off by the outputs of the registers. When a gate is switched on, its respective output goes to a low voltage, providing essentially a ground path for the lamp and diode switching circuitry. Thus, the channel's lamp is lighted and its associated crystal is switched into the first local oscillator's circuit.

The registers, IC 303 and IC 304, convert the repetitive clock pulses into an electronic sequencing or stepping action. Each register has four output lines and all eight of these lines are sequenced through a low to high voltage state. Only one output is "high" at any one time. The high voltage switches on the associated gate, which activates the lamp and crystal. Each output is connected, through a diode, to an inverter-amplifier (Q301) which feeds the output pulses back to the input of the first register (IC 303). Thus, the registers are utilized in a ring or recirculating counter configuration.

The clock's primary function is to generate the pulses required by the registers. A unijunction oscillator stage (Q306) followed by a pulse amplifier (Q307) and a clock line driver (Q308) form the basic clock circuitry. There are three clock speeds (repetition rates) that are available and they are FAST, NORMAL and SLOW. Each speed is automatically selected by the scanner system for its various modes of operation.

The FAST speed (approximately 1200 Hz) is the rate the system operates at when it scans an inactive channel. In other words, if all of the channel programming buttons were in the "out" position, the scanner would actually be sequencing each channel at this extreme speed. Of course, this rate greatly exceeds the amount of time it takes for the receiver to respond to a proper signal (carrier). The FAST rate is determined by the R-C network of R312 and C305.

The NORMAL scan rate is approximately 15 Hz and it is determined by R312, C304 and C305. C304 is essentially placed in parallel with C305 whenever Q305 is conducting. When the scanner reaches an active channel (programming button for that channel is pushed in), a pulse from the register's output line turns on Q302 which cuts off Q303. When Q303 is cut off (not conducting), Q305 is turned on and the clock runs at a slow enough rate for the scanner to respond to a proper signal.

The SLOW clock speed occurs when the scanner is operating in the manual channel selection mode. Pushing the SCAN-MANUAL button to the out position forces the scanner to stop. In addition, it connects another capacitor, C303, in parallel with C304. Holding in the CHANNEL SELECTOR button allows the scanner to resume operating, but at a very slow rate (approximately 2 Hz). This manual scan rate is slow enough to permit the operator to readily stop the scanning action when the scanner has reached his desired channel.

SECTION 2 ALIGNMENT AND TUNING PROCEDURE

2-1 EQUIPMENT REQUIRED

2-1-1 FM Signal Generator
2-1-2 Oscilloscope
2-1-3 AC VTVM
2-1-4 Noise Generator (to be used in 2-6 only)

NOTE: During all steps of alignment, the squelch control should be in the maximum clockwise position (minimum squelch action).

All receivers should be aligned to the channel nearest the center of the frequency range in the band over which they will operate

Diagrams 3-1, 3-3 and 3-5 show the location of all coils to be adjusted.

2-2 QUADRATURE DETECTOR ALIGNMENT

2-2-1 Connect the FM Signal generator to the antenna input jack. Accurately set frequency to the center of the channel being used for alignment. Modulate signal generator with 1000 Hz, 3 KHz deviation.

2-2-2 Connect the oscilloscope to test point A, (Junction of C126, C128, R113). See diagram 3-6.

2-2-3 Adjust output of signal generator until all noise in scope pattern just disappears.

2-2-4 Adjust L103 for maximum peak to peak amplitude, while maintaining symmetry of the detected signal.

2-3 IF ALIGNMENT

2-3-1 Disconnect RF signal generator from antenna input.

2-3-2 Connect AC voltmeter across speaker terminals.

2-3-3 Adjust volume control for .5 volt noise reading on AC voltmeter.

2-3-4 Peak T102 (bottom core and top core, in that order) for maximum noise (maximum meter reading on AC voltmeter). If circuit is not badly misaligned, the correct point should be within 2 turns of the cores' present position.

NOTE: Coils will have two peaks; adjust core to peak away from the center of the coil form.

2-3-5 Adjust volume control for 1.0 volt noise reading on AC voltmeter.

2-3-6 Connect the R.F. signal generator to the antenna input jack.

Turn modulation off. Set the generator to the high band crystal frequency that will be used for high band section alignment.

2-3-7 Adjust the signal generator output until the voltmeter reads 0.2 volts.

2-3-8 Adjust T101 and T201, (in that order), for maximum quieting (lowest meter reading). Adjust signal generator to maintain reading on AC voltmeter between 0.1 and 0.2 volts. If two peaks occur, use the one away from the center of the coil form.

2-3-9 Set the generator frequency to the secondary image frequency. This is 910 KHz below the channel frequency.

NOTE: Some receivers may have the second oscillator at 11.155 MHz, if this is the case, the image frequency is 910 KHz ABOVE the channel frequency. Check the frequency marked on top of the crystal (10.245 MHz for below and 11.155 MHz for above). The reverse is true for low band channels due to high side injection for the first oscillator.

2-3-10 Adjust the signal generator output until voltmeter reads .2 volts.

2-3-11 Adjust T102 (bottom core), T102 (top core), T101 and T201 (in that order), for maximum quieting degradation (highest meter reading). Adjust signal generator output to maintain voltmeter reading between 0.1 and 0.2 volts. The correct position for the cores should be within two turns of the position in step No. 4 and 8.

2-4 RF ALIGNMENT (H/L)

2-4-1 Preset the cores of L201, L202 and L203 out of the outer end of the coil form three turns. Preset the cores of L204, L206, L207 and L208 four turns from the outer ends of the coil form.

2-4-2 Connect AC voltmeter across speaker terminals.

2-4-3 With nothing connected to the antenna input, adjust the volume control until AC voltmeter reads 1.0 volt of noise.

HIGH BAND SECTION

2-4-4 Activate high band channel nearest to center of high band frequencies being used.

2-4-5 Connect signal generator to antenna input jack. Set generator accurately to the frequency of the channel being used. Turn modulation off.

2-4-6 Adjust output signal generator until AC voltmeter reads .2 volts.

2-4-7 Adjust L206, L207, L208 and L204, in that order, for maximum quieting (lowest meter reading). Adjust signal generator to maintain reading on AC voltmeter between .1 and .2 volts. Repeat adjustment until no further improvements can be made.

LOW BAND SECTION

2-4-8 Activate Low Band channel nearest to center of low band frequencies being used.

2-4-9 Set generator accurately to the center frequency of the channel being used for alignment. Turn modulation off.

2-4-10 Adjust output of signal generator until AC voltmeter reads 0.2 volts.

2-4-11 Adjust coils L201, L202 and L203 (in that order) for maximum quieting (lowest meter reading). Adjust the signal generator output to maintain voltmeter reading between .1 and .2 volts. Repeat adjustments until no further improvement can be made.

2-5 RF ALIGNMENT (H)

2-5-1 Preset the cores of L201, L202, L203 and L204 four turns from the outer ends of the coil form.

2-5-2 Connect AC voltmeter across speaker terminals.

2-5-3 With nothing connected to the antenna input, adjust the volume control until AC voltmeter reads 1.0 volt of noise.

2-5-4 Activate channel nearest to center of frequencies over which the unit will operate.

2-5-5 Connect signal generator to antenna input jack. Set generator accurately to the frequency of the channel being used. Turn modulation off.

2-5-6 Adjust output signal generator until AC voltmeter reads .2 volts.

2-5-7 Adjust L201, L202, L203 and L204, in that order, for maximum quieting (lowest meter reading). Adjust signal generator to maintain reading on AC voltmeter between .1 and .2 volts. Repeat adjustment until no further improvements can be made.

2-6 NOISE BALANCE ADJUSTMENT

NOTE: This adjustment may be required only of excessive "ignition noise" is encountered. Usually, the "noise" problem is caused

by improper or inadequate noise suppression of the vehicle's ignition system.

2-6-1 Using a "T" connector, connect the FM signal generator and the Noise Generator to the antenna input jack. If a "T" connector is not available, connect the FM generator to the antenna jack and feed in the noise signal by means of a 3 or 4 turn loop coupled to the input coil, L206 (TME-8H/L) or L201 (TME-8H).

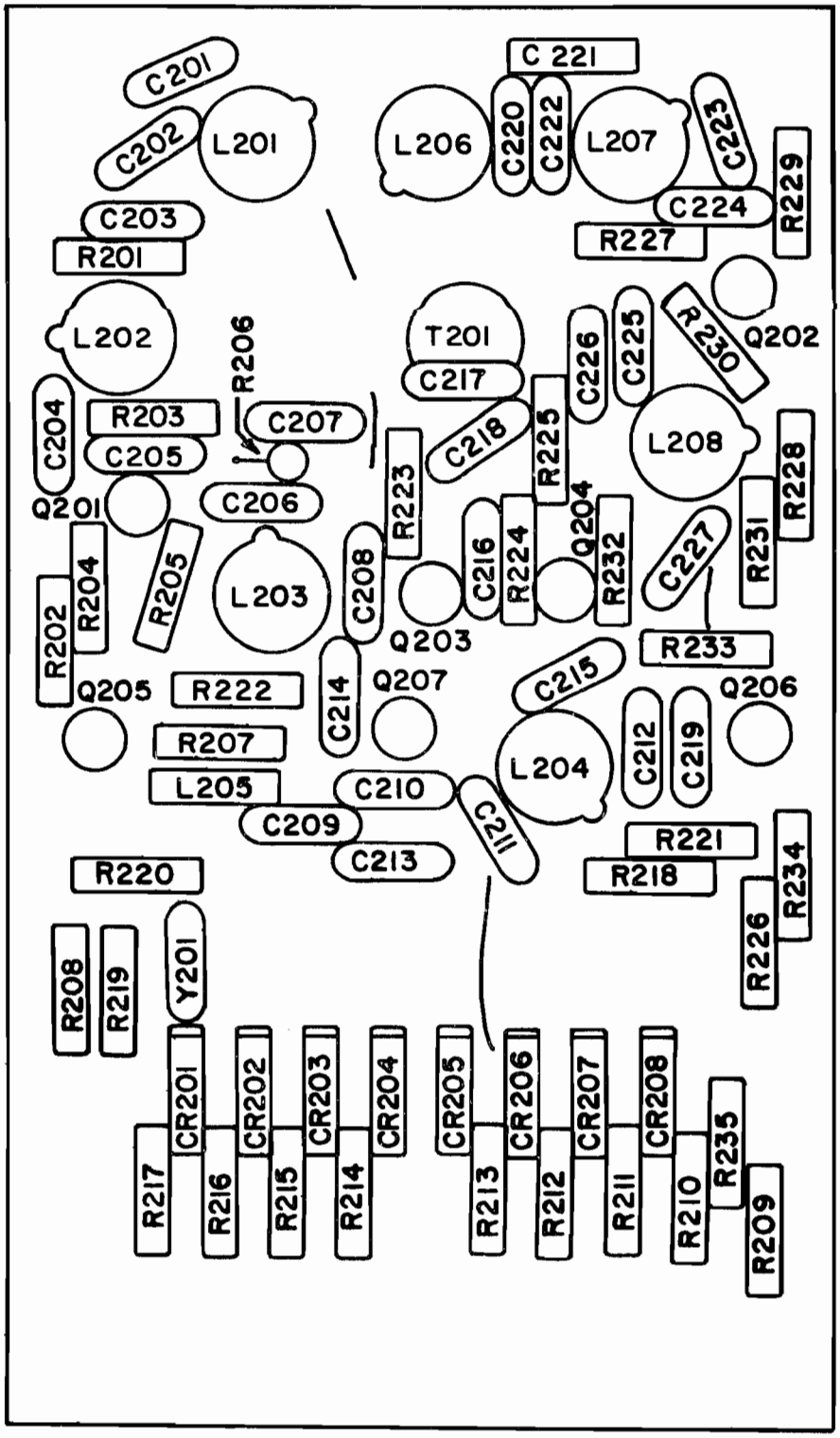
2-6-2 Connect the oscilloscope to the junction of Q109's emitter and Q110's collector, or to the speaker terminals.

2-6-3 Apply a 3 to 10 microvolt signal, as accurately as can be set to the exact channel frequency (carrier only, no modulation), and adjust the output of the noise generator until spikes are clearly seen in the audio output as viewed on the oscilloscope. The noise spikes will be either mostly positive or negative if an unbalanced condition exists.

2-6-4 Tune L102 (quadrature detector coil) until the noise spikes are equally positive and negative in their amplitude. The overall amplitude of these spikes should be much less as a balance is achieved. Usually, only a 1/4 turn, or less, is needed to obtain the proper adjustment for best noise balance. If a proper balance can not be achieved, repeat the IF and RF alignments and then try the noise balance adjustment again.

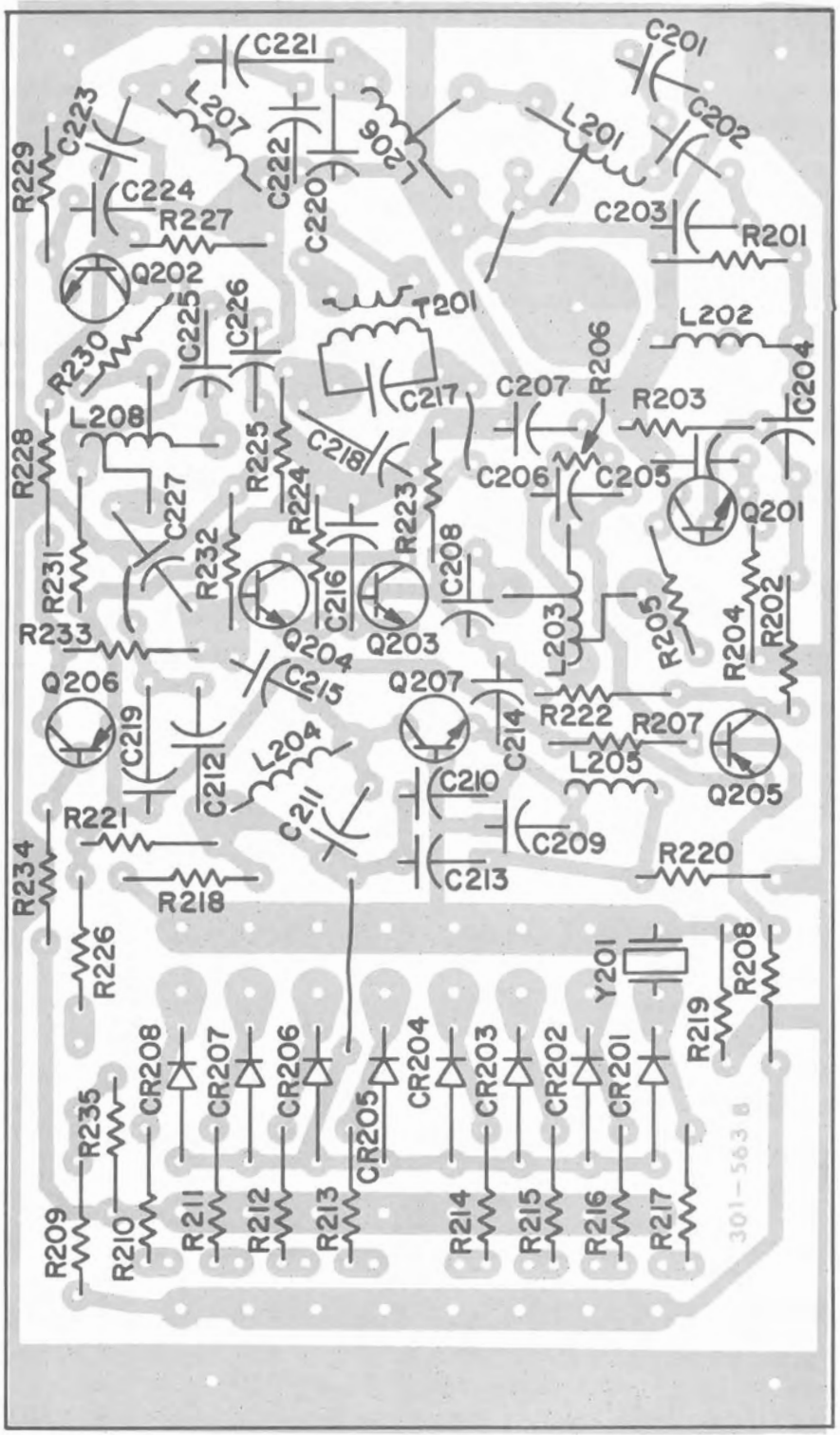
SECTION 3 DIAGRAMS, VOLTAGE DATA AND SCHEMATICS

RF BOARD 301-563



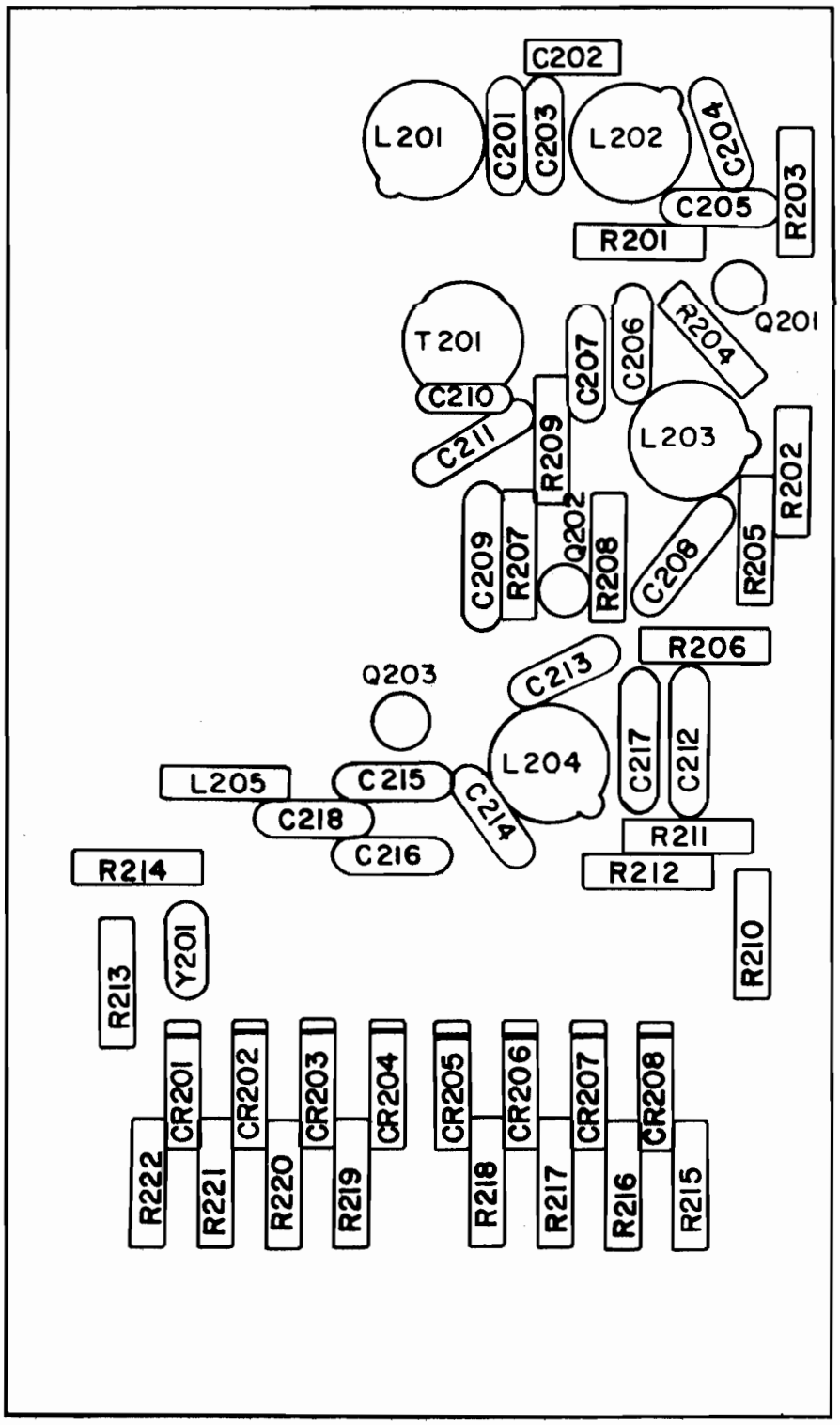
3-1 RF BOARD PARTS PLACEMENT DIAGRAM (TME-8H/L)

RF BOARD 301-563



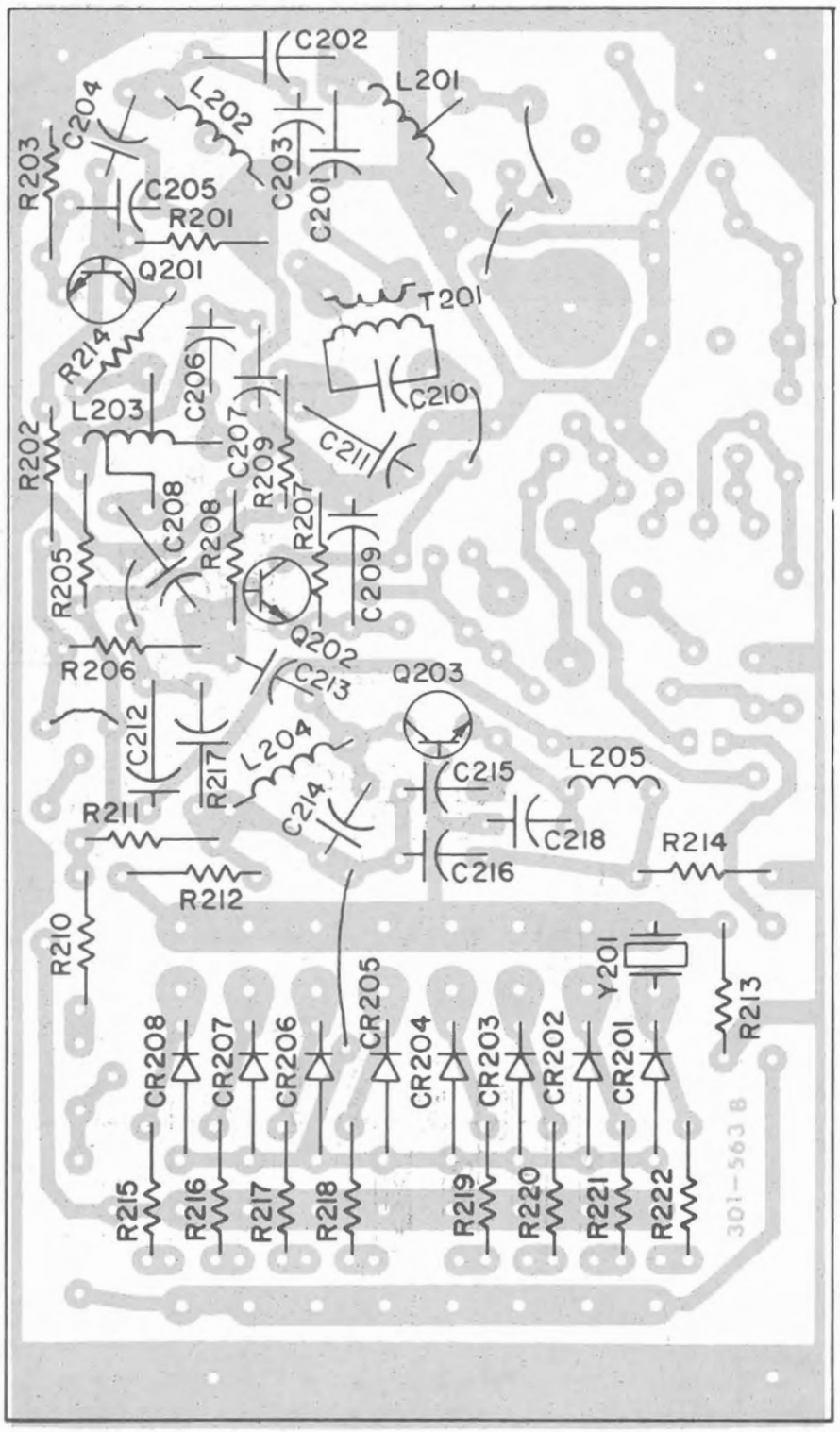
3-2 RF BOARD BOTTOM VIEW (TME-8H/L)

RF BOARD 301-563



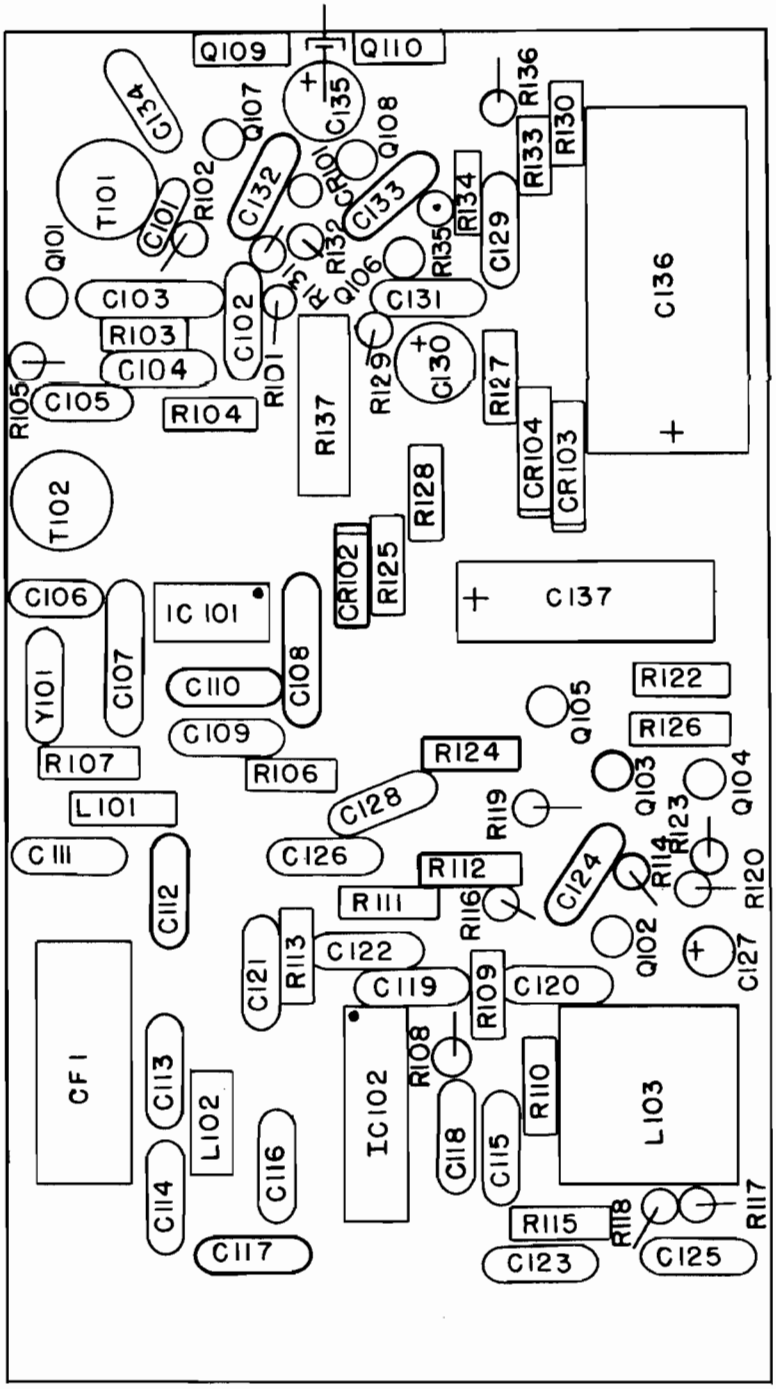
3-3 RF BOARD PARTS PLACEMENT DIAGRAM (TME-8H)

RF BOARD 301-563



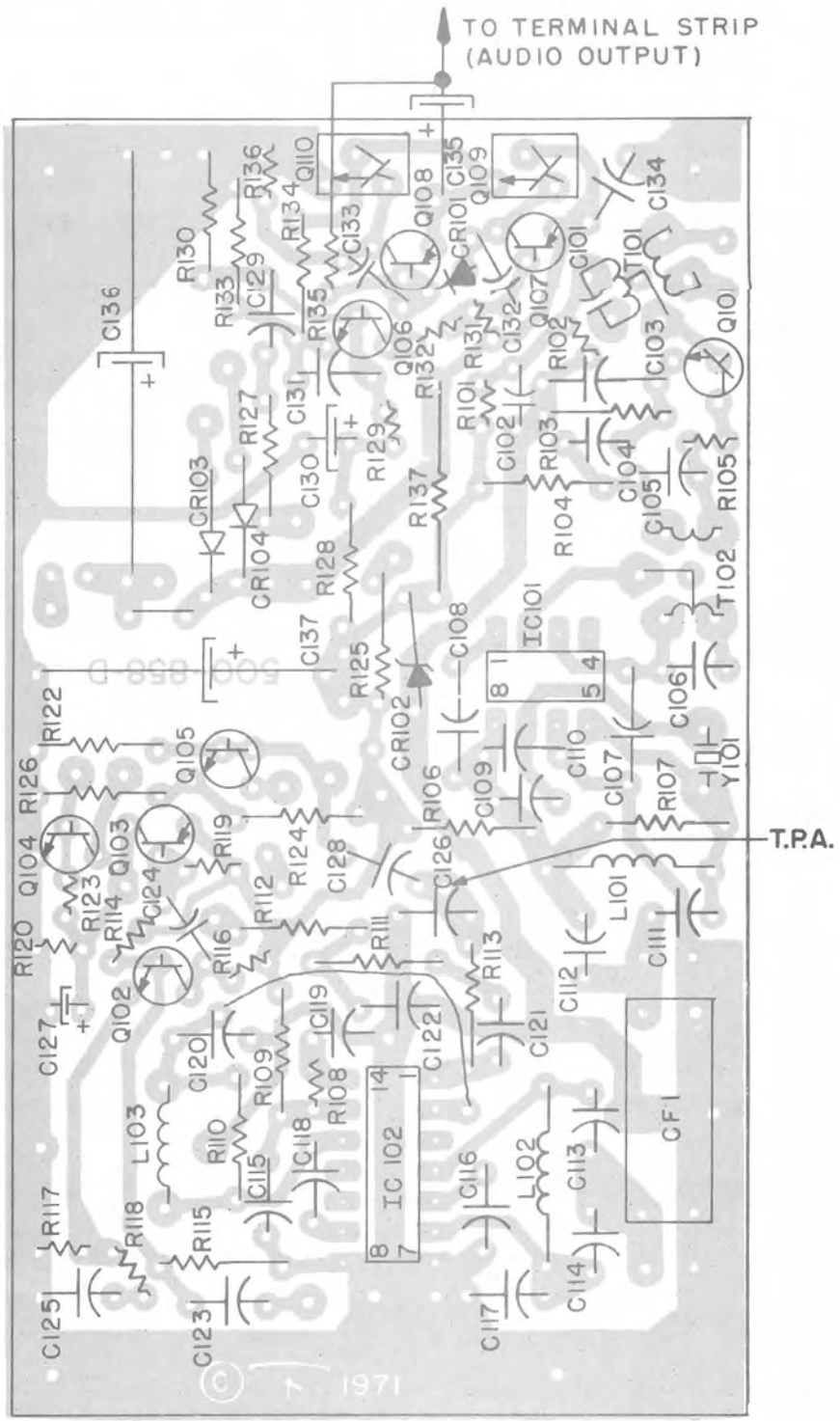
3-4 RF BOARD BOTTOM VIEW (TME-8H)

IF BOARD 500-858

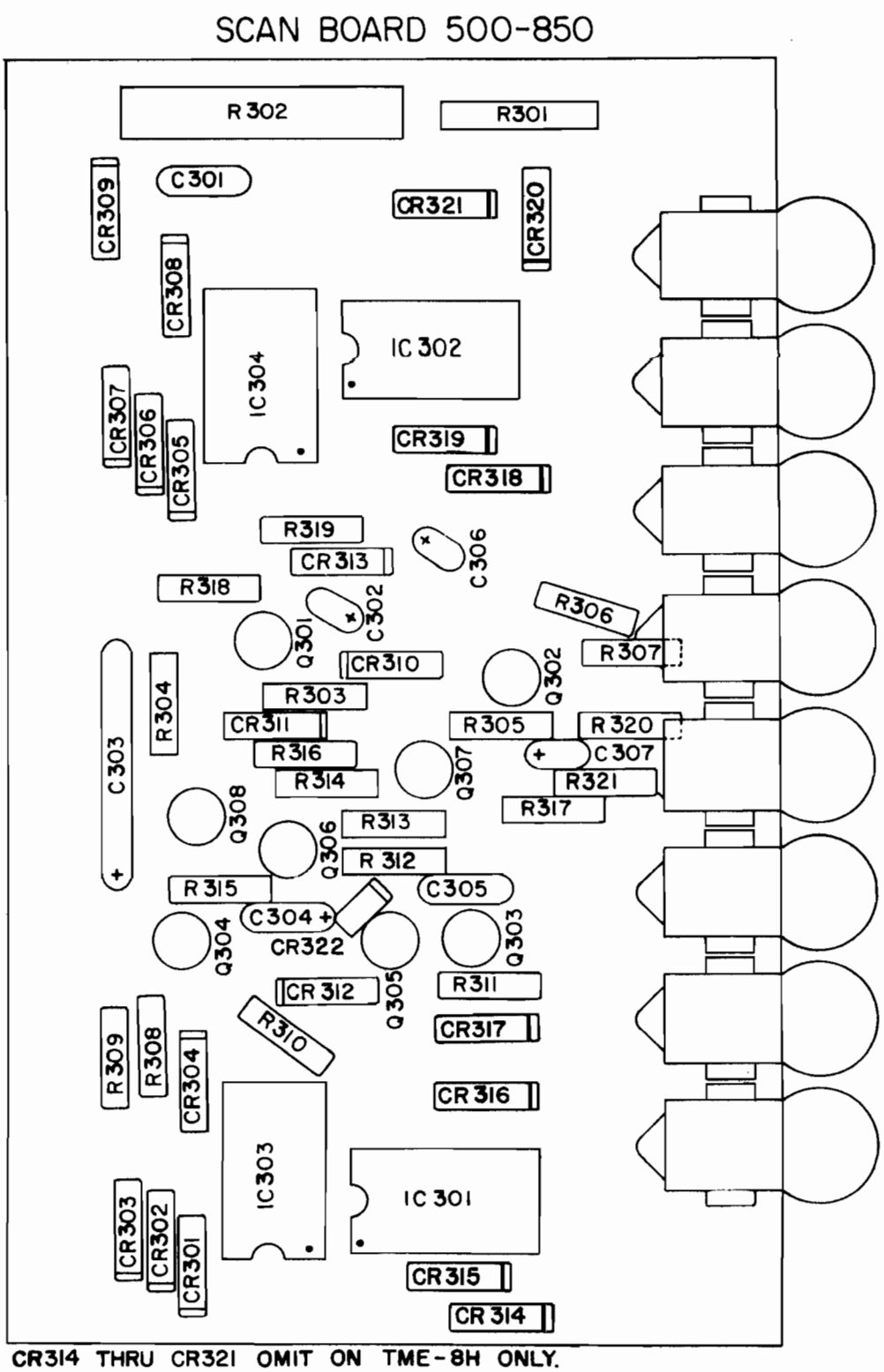


3-5 IF-AUDIO BOARD PARTS PLACEMENT DIAGRAM

IF BOARD 500-858

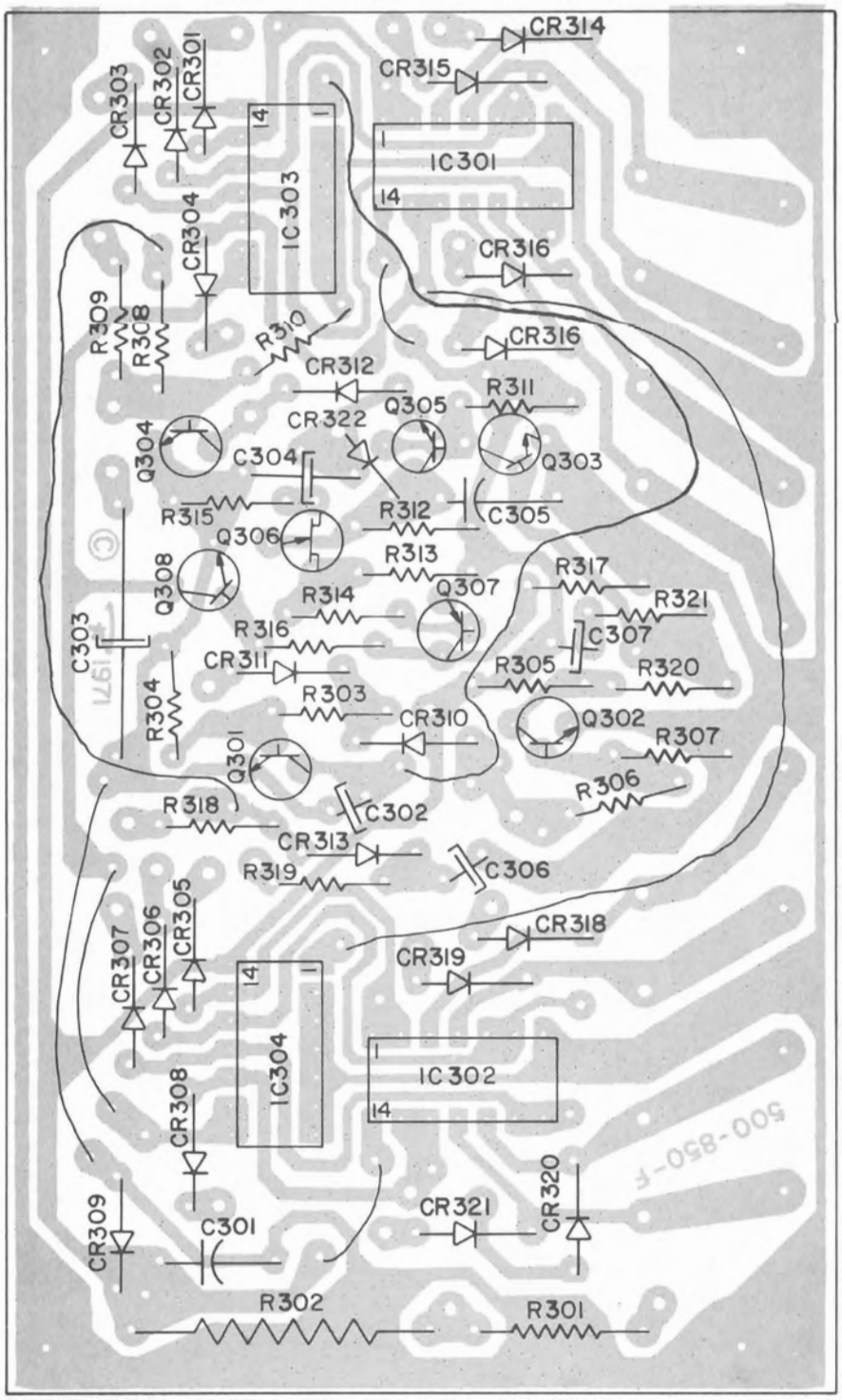


3-6 IF-AUDIO BOARD BOTTOM VIEW



3-7 SCANNER BOARD PARTS PLACEMENT DIAGRAM

SCAN BOARD 500-850



CR314 THRU CR321 OMIT ON TME-8H ONLY.

3-8 SCANNER BOARD BOTTOM VIEW

3-9 VOLTAGE DATA

NOTE: All voltages are nominal and are measured with a VTVM. SCAN indicates the unit is scanning. MAN indicates the unit is not scanning and is stopped at channel 1. A "P" beside a voltage indicates that the meter reading is pulsating (fluctuating) because the scanner section of the unit is operating.

VOLTAGE DATA – TRANSISTORS:

	TRANSISTOR	EMITTER (Source)	BASE (Gate)	COLLECTOR (Drain)	
	TRANSISTOR	EMITTER (Source	BASE (Gate)	COLLECTOR (Drain)	
RF Board No. 301-563 (TME-8H/L only)	Q201	3.1	3.8	7.0	Low Band Activated
		0	0	7.6	High Band Activated
	Q202	0	0	7.6	Low Band Activated
		3.1	3.8	7.0	High Band Activated
	Q203	1.6	2.3	7.1	Low Band Activated
		1.6	0	7.1	High Band Activated
	Q204	1.6	0	7.1	Low Band Activated
		1.6	2.3	7.1	High Band Activated
	Q205	7.8	7.4	7.6	Low Band Activated
		7.8	11.0	0	High Band Activated
	Q206	7.8	11.0	0	Low Band Activated
		7.8	7.0	7.6	High Band Activated
	Q207	3.4	4.1	7.0	
RF Board No. 301-563 (TME-8H only)	Q201	3.1	3.8	7.0	
	Q202	1.6	2.3	7.1	
	Q203	3.4	4.1	7.0	
IF Board No. 500-858	Q101	2.3	3.0	5.8	
	Q102	1.0	1.7	4.8	
	Q103 (PNP)	8.2	8.2	0	(unsquelched)
		8.2	8.2	1.0	(squelched)
		8.2	8.2	1.5	Min. (tight squelch)
	Q104	0	0	7.2	(unsquelched)
		0	.80	.30	(squelched)
		0	.80	.10	(tight squelch)
	Q105	1.4	1.9	5.1	(unsquelched)
		1.1	.10	8.2	(tight squelch)
	Q106	0.7	1.3	12.4	
	Q107 (PNP)	13.8	13.1	7.2	
	Q108 (PNP)	6.9	6.6	.10	
	Q109	6.9	7.2	13.8	
	Q110	0	.10	6.9	

VOLTAGE DATA (CONTINUED)

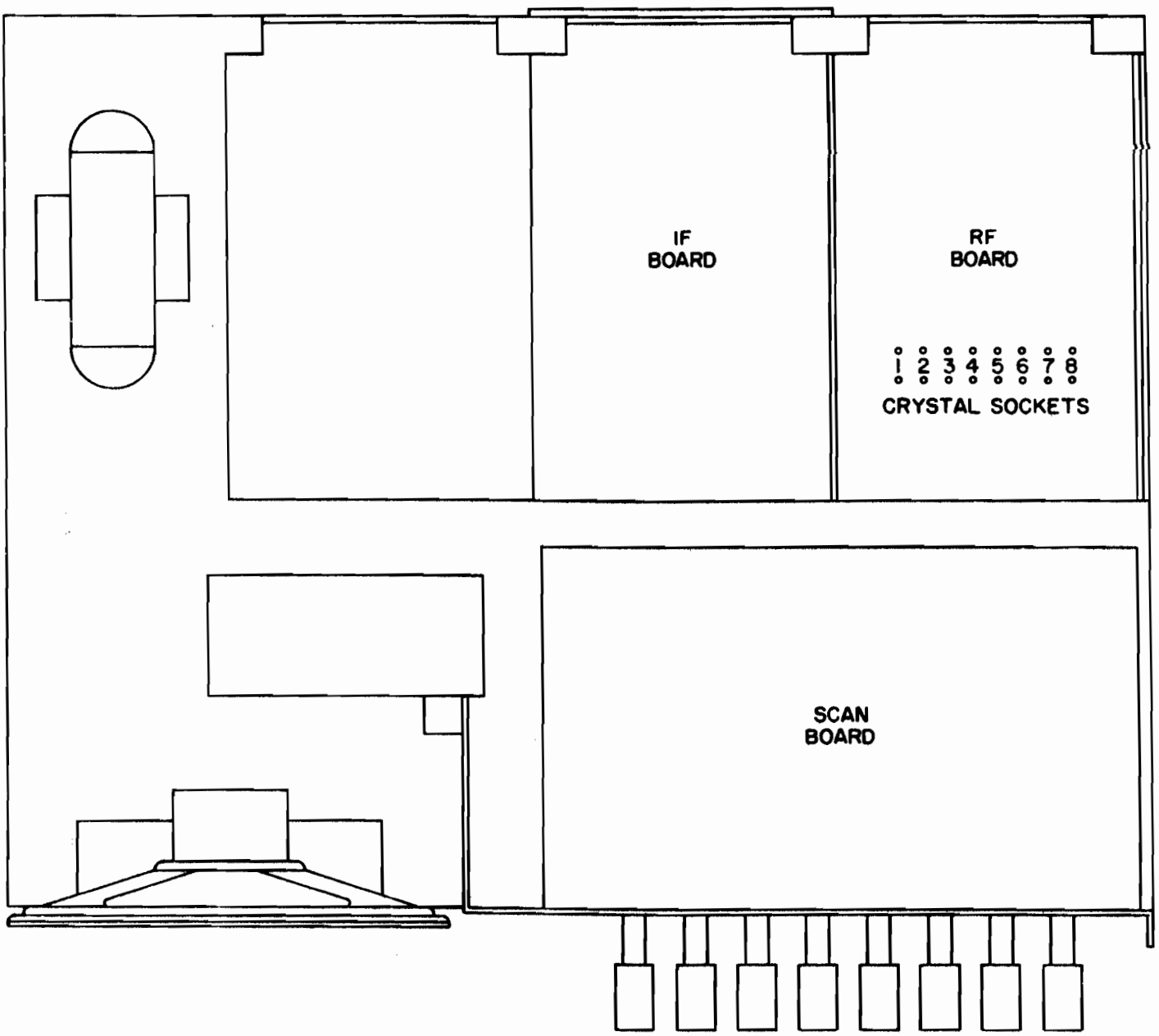
Scan Board No. 500-850	Q301	0	.70	.10 (SCAN)
		0	.70	0 (MAN)
	Q302	0	.70	.10
	Q303	0	.10	3.6 (SCAN)
		0	.10	1.2 (MAN)
	Q304	0	.10	2.8 (SCAN)
		0	.70	0.2 (MAN)
	Q305	3.1	3.6	3.2 (SCAN)
		0.7	1.2	0.7 (MAN)
	Q307 (PNP)	5.1	4.5	2.0 (SCAN)
		5.1	4.6	.10 (MAN)
	Q308	0	.10	1.5
		Base 1	**Emitter**	**Base 2**
	Q306 (unijunction)	.20	3.2	4.6 (SCAN)
		.20	0.7	4.6 (MAN)

VOLTAGE DATA (CONTINUED)

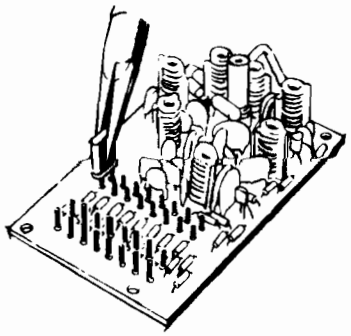
Voltage Data Integrated Circuits

NOTE: A "P" beside a voltage indicates that the meter reading is pulsating (fluctuating) because the scanner section of the unit is operating. MAN indicates the unit is not scanning and is at channel 1 (M301 is lighted).

	IC No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
IF Board 500-858	IC 101	4.2	0.7	0.7	4.2	7.8	0	4.2	7.8	–	–	–	–	–	–	
	IC 102	4.0	3.5	0	1.3	1.3	1.3	0	0	0.2	1.4	2.9	3.5	7.6	5.0	
Scan Board	IC 301	.7P	.7P	9P	9P	.7P	.7P	0	.7P	.7P	9P	9P	.7P	.7P	5.1	(Scan)
		3.3	3.3	0.5	10.8	0.2	0.2	0	0.2	0.2	10.8	10.8	0.2	0.2	5.1	(Man)
	IC 302	.7P	.7P	9P	9P	.7P	.7P	0	.7P	.7P	9P	9P	.7P	.7P	5.1	(Scan)
		0.2	0.2	10.8	10.8	0.2	0.2	0	0.2	0.2	10.8	10.8	0.2	0.2	5.1	(Man)
	IC 303	0.1	0	0	0	0	0	0	1.5	1.5	.7P	.7P	.7P	.7P	5.1	(Scan)
		0	0	0	0	0	0	0	1.5	1.5	0.2	0.2	0.2	3.3	5.1	(Man)
	IC 304	.7P	0	0	0	0	0	0	1.5	1.5	.7P	.7P	.7P	.7P	5.1	(Scan)
		0.2	0	0	0	0	0	0	1.5	1.5	0.2	0.2	0.2	0.2	5.1	(Man)

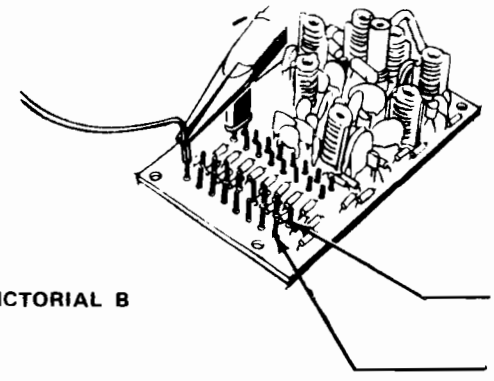


3-10 CRYSTAL LOCATION DIAGRAM



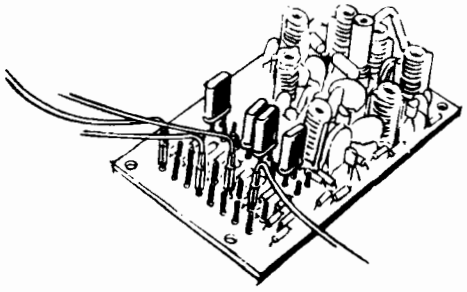
Insert crystal for high or low band frequency of your choice

PICTORIAL A



Connect lead to corresponding high or low band terminal programmer

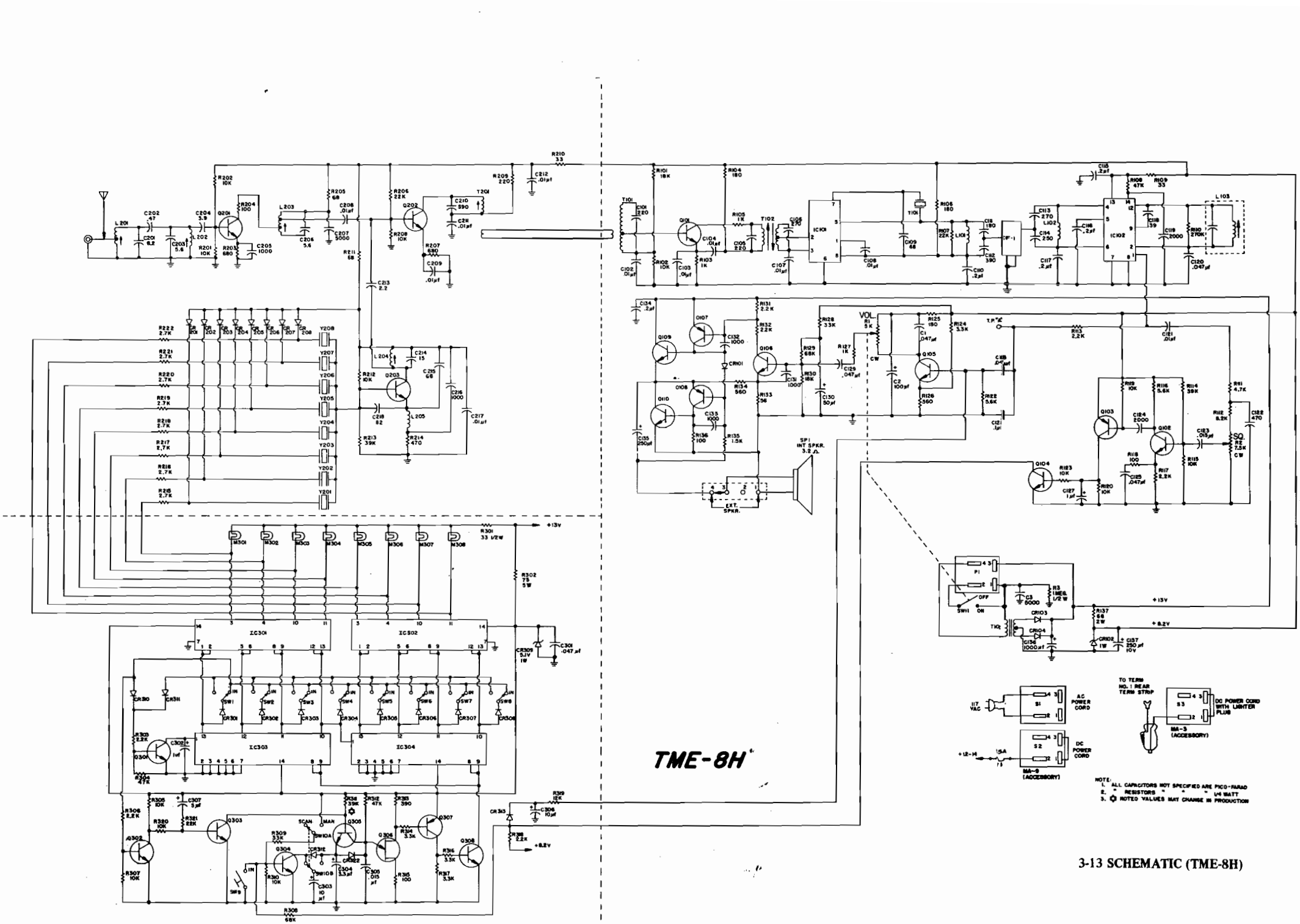
PICTORIAL B

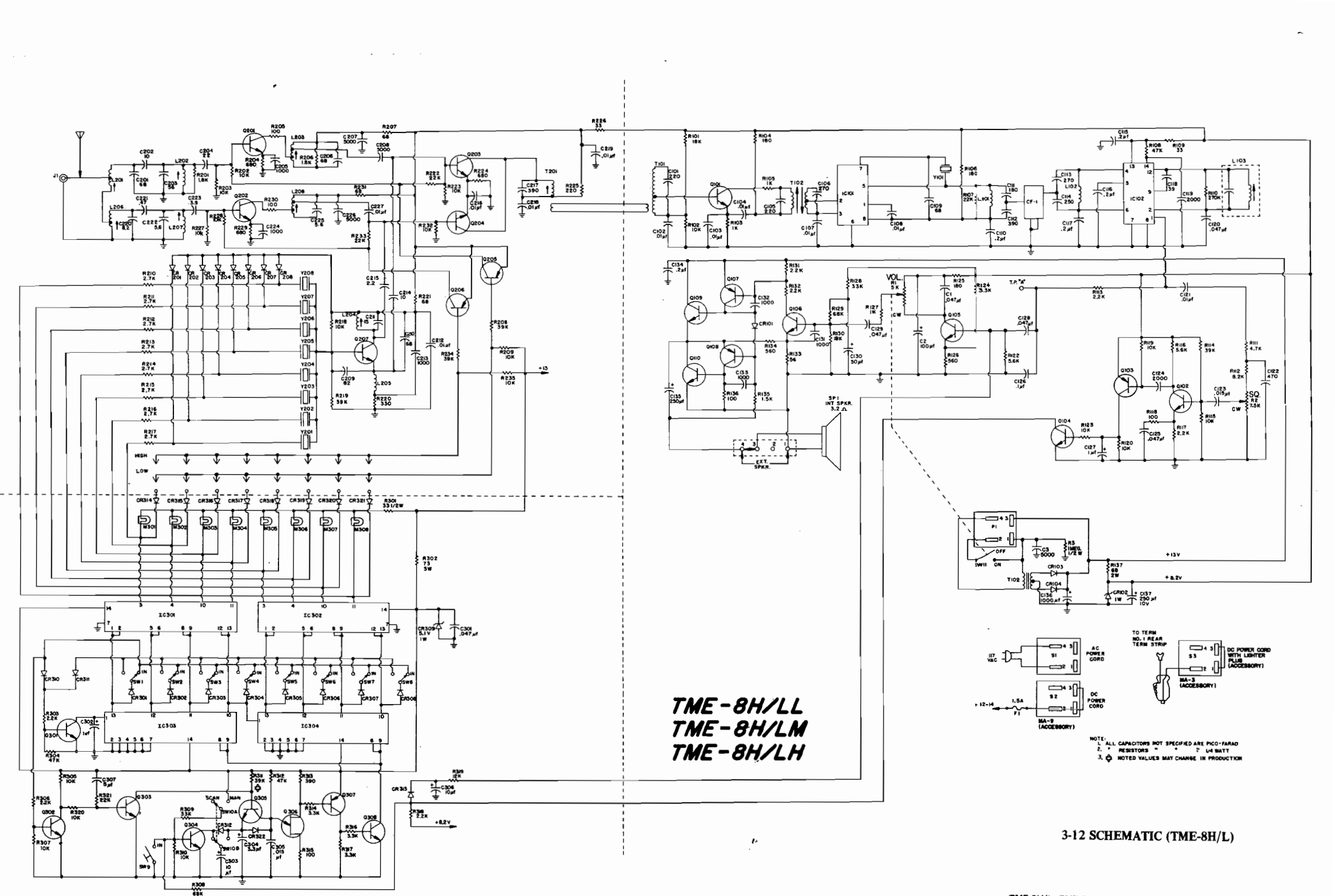


Repeat procedure for each channel in sequence of your choice

PICTORIAL C

3-11 BAND PROGRAMMING DIAGRAM


TME-8H*
3-13 SCHEMATIC (TME-8H)
NOTE:
1. ALL CAPACITORS NOT SPECIFIED ARE PICO-FARAD
2. " RESISTORS " " " 1/4 WATT
3. ✪ NOTED VALUES MAY CHANGE IN PRODUCTION



3-12 SCHEMATIC (TME-8H/L)

SECTION 4 PARTS LIST

4-1 RF BOARD (TME-8H/L) 301-563

Item	Description	Part No.
	RESISTORS	
R201	1.8K, 10%, ½W	
R202	10K, 10%, ¼W	
R203	10K, 10%, ¼W	
R204	680ohm, 10%, ¼W	
R205	100ohm, 10%, ¼W	
R206	1.8K, 10%, ¼W	
R207	680ohm, 10%, ¼W	
R208	39K, 10%, ¼W	
R209	10K, 10%, ¼W	
R210	2.7K, 10%, ¼W	
R211	2.7K, 10%, ¼W	
R212	2.7K, 10%, ¼W	
R213	2.7K, 10%, ¼W	
R214	2.7K, 10%, ¼W	
R215	2.7K, 10%, ¼W	
R216	2.7K, 10%, ¼W	
R217	2.7K, 10%, ¼W	
R218	10K, 10%, ¼W	
R219	39K, 10%, ¼W	
R220	330ohm, 10%, ¼W	
R221	68ohm, 10%, ¼W	
R222	22K, 10%, ¼W	
R223	10K, 10%, ¼W	
R224	680ohm, 10%, ¼W	
R225	220ohm, 10%, ¼W	
R226	33ohm, 10%, ¼W	
R227	10K, 10%, ¼W	
R228	10K, 10%, ¼W	
R229	680ohm, 10%, ¼W	
R230	100ohm, 10%, ¼W	
R231	68ohm, 10%, ¼W	
R232	10K, 10%, ¼W	
R233	22K, 10%, ¼W	
R234	39K, 10%, ¼W	
R235	10K, 10%, ¼W	
	CAPACITORS	
C201	68pf, 5%, 50V (MICA)	DM-10 or Equiv.
C202	10pf, 10% NPO (DISC)	RMC-Type CG
C203	56pf, 5% 50V (MICA)	DM-10 or Equiv.
C204	22pf, 10% NPO (DISC)	RMC-Type CG
C205	.001mf, +80%-20%, 500VZ5U (DISC)	RMC-Type BG
C206	68pf, 5% 50V (MICA)	DM-10 or Equiv.
C207	.005mf, +80%-20%, 500VZ5U (DISC)	RMC-Type SM
C208	.005mf, +80%-20%, 500VZ5U (DISC)	RMC-Type SM
C209	82pf, 5%, 50V (MICA)	DM-10 or Equiv.

Item	Description	Part No.
C210	68pf, 5% 50V (MICA)	DM-10 or Equiv.
C211	15pf, 10% NPO (DISC)	RMC-Type CG
C212	.01mf, +80%-20%, 500VZ5U (DISC)	RMC-Type BG
C213	.001mf, +80%-20%, 500V (DISC)	RMC-Type BG
C214	10pf, 10% NPO (DISC)	RMC-Type CG
C215	2.2pf, 10% NPO (DISC)	RMC-Type CG
C216	.01mf, +80%-20%, 500VZ5U (DISC)	RMC-Type BG
C217	390pf, 5% 50V (MICA)	DM-10 or Equiv.
C218	.01mf, +80%-20%, 500VZ5U (DISC)	RMC-Type BG
C219	.01mf, +80%-20%, 500VZ5U (DISC)	RMC-Type BG
C220	8.2pf, 10% NPO (DISC)	RMC-Type CG
C221	.47pf, 10% (composition)	
C222	5.6pf, 10% NPO (DISC)	RMC-Type CG
C223	3.9pf, 10% NPO (DISC)	RMC-Type CG
C224	.001, +80%-20%, 500VZ5U (DISC)	RMC-Type BG
C225	5.6pf, 10% NPO (DISC)	RMC-Type CG
C226	.005mf, +80%-20%, 500VZ5U (DISC)	RMC-Type SM
C227	.01MF, +80%-20%, 500VZ5U (DISC)	RMC-Type BG
	COILS	
L201	Coil, Ant. (YEL)	301-520-4
L202	Coil, RF Input (GRN)	301-520-5
L203	Coil, RF Output (BLU)	301-520-6
L204	Coil, RF Inj. (WHT)	301-520-9
L205	Coil, Osc.	102-369
L206	Coil, Ant (BRN)	301-520-1
L207	Coil R.F. Input (RED)	301-520-2
L208	Coil RF Output (ORG)	301-520-3
T201	Coil Mixer Output	102-405
	TRANSISTORS	
Q201	Silicon NPN, 2N5222	SPS-1473 RT
Q202	Silicon NPN, 2N5222	SPS-1473 RT
Q203	Silicon NPN, 2N5222	SPS-1473 RT
Q204	Silicon NPN, 2N5222	SPS-1473 RT
Q205	Silicon PNP, 2N5227	SPS-1539 WT
Q206	Silicon PNP, 2N5227	SPS-1539 WT
Q207	Silicon NPN, 2N5230 (Low Beta)	SM-4304-S
	Note: RT=red top, WT=white top	

Item No.	Description	Part No.
	DIODES	
CR201	Germanium-Junction, Signal	102-339
CR202	Germanium-Junction, Signal	102-339
CR203	Germanium-Junction, Signal	102-339
CR204	Germanium-Junction, Signal	102-339
CR205	Germanium-Junction, Signal	102-339
CR206	Germanium-Junction, Signal	102-339
CR207	Germanium-Junction, Signal	102-339
CR208	Germanium-Junction, Signal	102-339

4-2 RF BOARD (TME-8H) 301-563

Item No.	Description	Part No.
	RESISTORS	
R201	10K, 10%, ¼W	
R202	10K, 10%, ¼W	
R203	680 ohm, 10%, ¼W	
R204	100 ohm, 10%, ¼W	
R205	68 ohm, 10%, ¼W	
R206	22K, 10%, ¼W	
R207	680 ohm, 10%, ¼W	
R208	10K, 10%, ¼W	
R209	220 ohm, 10%, ¼W	
R210	33 ohm, 10%, ¼W	
R211	68 ohm, 10%, ¼W	
R212	10K, 10%, ¼W	
R213	39K, 10%, ¼W	
R214	470 ohm, 10%, ¼W	
R215	2.7K, 10%, ¼W	
R216	2.7K, 10%, ¼W	
R217	2.7K, 10%, ¼W	
R218	2.7K, 10%, ¼W	
R219	2.7K, 10%, ¼W	
R220	2.7K, 10%, ¼W	
R221	2.7K, 10%, ¼W	
R222	2.7K, 10%, ¼W	
	CAPACITORS	
C201	8.2pf, 10%, NPO (DISC)	RMC-Type CG
C202	.47pf, 10% (COMPOSITION)	
C203	5.6pf, 10% NPO (DISC)	RMC-Type CG
C204	3.9pf, 10% NPO (DISC)	RMC-Type CG
C205	.001mf, +80%-20%, 500V Z5U (Disc.)	RMC-Type BG
C206	5.6pf, 10% NPO (Disc.)	RMC-Type CG
C207	.005mf, +80%-20%, 500V Z5U (Disc)	RMC-Type SM
C208	.01mf, +80%-20%, 500V Z5U (Disc)	RMC-Type BG
C209	.01mf, +80%-20%, 500V Z5U (Disc)	RMC-Type BG
C210	390pf, 5%, 50V (Mica)	DM-10 or Equiv.
C211	.01mf, +80%-20%, 500V Z5U (Disc)	RMC-Type BG
C212	.01mf, +80%-20%, 500V Z5U (Disc)	RMC-Type BG
C213	2.2pf, 10% NPO (Disc)	RMC-Type CG
C214	15pf, 10% NPO (Disc)	RMC-Type CG
C215	68pf, 5% NPO (Mica)	DM-10 or Equiv.
C216	.001mf. +80%-20%, 500V Z5U (Disc)	RMC-Type BG
C217	.01mf, +80%-20%, 500V Z5U)Disc)	RMC-Type BG
C218	82pf, 5% 50V (Mica)	DM-10 or Equiv.
	COILS	
L201	Coil, Ant (BRN)	301-520-1
L202	Coil, RF Input (RED)	301-520-2
L203	Coil, RF Output (ORG)	301-520-3
L204	Coil, Inj. (WHT)	301-520-9
L205	Coil, OSC.	102-369
T201	Coil, Mixer Output	102-405
	TRANSISTORS	
Q201	Silicon NPN, 2N5222	SPS-1473 (RT)
Q202	Silicon NPN, 2N5222	SPS-1473 (RT)
Q203	Silicon NPN, 2N5130 (low Beta)	SM-4304-S
	NOTE: RT=Red Top	
	DIODES	
CR201	Germanium-Junction, Signal	102-339
CR202	Germanium-Junction, Signal	102-339
CR203	Germanium-Junction, Singal	102-339
CR204	Germanium-Junction, Signal	102-339
CR205	Germanium-Junction, Signal	102-339
CR206	Germanium-Junction, Signal	102-339
CR207	Germanium-Junction, Signal	102-339
CR208	Germanium-Junction, Signal	102-339

Item No.	Description	Part No.
	DIODES	
CR101	Diode, Silicon, 1N4148	102-412
CR102	Diode, Zener, 8.2V 5% 1W	IN4738A
CR103	Diode, Rectifier	1N4002
CR104	Diode, Rectifier	1N4002
	FILTER	
CF-1	455 KHz Ceramic Filter	301-723
	CRYSTAL	
Y101	10.245 MHz or	301-516-1
	11.155 MHz	301-516-2
	TRANSISTORS	
Q101	Silicon NPN, MPS 5172	SPS-952
Q102	Silicon NPN, MPS 5172	SPS-952
Q103	Silicon PNP, 2N5227	SPS-1539 WT
Q104	Silicon NPN, MPS 5172	SPS-952
Q105	Silicon NPN, MPS 5172	SPS-952
Q106	Silicon NPN, MPS 5172	SPS-952
Q107	Silicon PNP	MPS-A55
Q108	Silicon PNP	MPS-A55
Q109	Silicon NPN, AF Power	MJE-521
Q110	Silicon NPN, AF Power	MJE-521

Note: WT=White Top

4-4 SCANNER BOARD 500-850

Item No.	Description	Part No.
	RESISTORS	
R301	33 ohms, 10%, ½W	
R302	75 ohms, 10%, 5 W Wirewound	
R303	2.2K, 10%, ¼W	
R304	47K, 10%, ¼W	
R305	10K, 10%, ¼W	
R306	2.2K, 10%, ¼W	
R307	10K, 10%, ¼W	
R308	68K, 10%, ¼W	
R309	33K, 10%, ¼W	
R310	22K, 10%, ¼W	
R311	39K, 10%, ¼W	
R312	47K, 10%, ¼W	
R313	390 ohms, 10%, ¼W	
R314	3.3K, 10%, ¼W	
R315	100 ohms, 10%, ¼W	
R316	3.3K, 10%, ¼W	
R317	3.3K, 10%, ¼W	
R318	2.2K, 10%, ¼W	
R319	12K, 10%, ¼W	
R320	10K, 10%, ¼W	
R321	22K, 10%, ¼W	
	CAPACITORS	
V301	.047 mf, 20%, 100V (Mylar Film)	
C302	1 mf, 80° C. 25V (Electrolytic)	
C303	10mf, 85°C. 25V (Electrolytic)	
C304	3.3 mf, 10%, 16V Tant. (Electrolytic) TAG43212-14133	
C305	.015 mf, 20%, 100V (Mylar Film)	
C306	10 mf, 85°C. 25V (Electrolytic)	
C307	5 mf, 85°C. 10V (Electrolytic)	
	INTEGRATED CIRCUITS	
IC301	Power NAND Gate	301-576-2
IC302	Power NAND Gate	301-576-2
IC 303	4-Bit Shift Register	301-576-6
IC304	4-Bit Shift Register	301-576-6
	TRANSISTORS	
Q301	NPN Silicon, General Purpose, MPS5172	SPS-952
Q302	NPN Silicon, General Purpose, MPS5172	SPS-952
Q303	NPN Silicon, General Purpose, MPS5172	SPS-952
Q304	NPN Silicon, General Purpose, MPS5172	SPS-952
Q305	NPN Silicon, General Purpose, MPS5172	SPS-952
Q306	PN Silicon, Unijunction	2N4871
Q307	PNP Silicon, 2N227	SPS-1539 (WT)
Q308	NPN Silicon, General Purpose, MPS5172	SPS-952
NOTE:	WT = White Top	
	DIODES	
CR301	Silicon, Signal, IN4148	102-412
CR302	Silicon, Signal, IN4148	102-412
CR303	Silicon, Signal IN4148	102-412
CR304	Silicon, Signal, IN4148	102-412
CR305	Silicon, Signal, IN4148	102-412
CR306	Silicon, Signal, IN4148	102-412
CR307	Silicon, Signal, IN4148	102-412
CR308	Silicon, Signal, IN4148	102-412
CR309	Silicon, Zener, 5.1V, 5%, 1W	IN4733A
CR310	Silicon, Signal, IN4148	102-412
CR311	Silicon, Signal, IN4148	102-412
CR312	Silicon, Signal, IN4148	102-412
CR313	Silicon, Signal, IN4148	102-412
CR314	Silicon,Signal IN4148 (TME-8H/L only)	102-412
CR315	Silicon, Signal, IN4148 (TME-8H/L only)	102-412
CR316	Silicon, Signal IN4148(TME-8H/L only)	102-412
CR317	Silicon, Signal IN4148(TME-8H/L only)	102-412
CR318	Silicon, Signal, IN4148(TME-8H/L only)	102-412
CR319	Silicon, Signal, IN4148(TME-8H/L only)	102-412
CR320	Silicon, Signal, IN4148(TME-8H/L only)	102-412
CR321	Silicon, Signal, IN4148(TME-8H/L only)	102-412
CR322	Silicon, Signal, IN4148	102-412
	LAMPS	
M301	Incandescent, 14.4V, 120 MA.	No. 53
M302	Incandescent, 14.4V, 120 MA.	No. 53
M303	Incandescent, 14.4V, 120 MA.	No. 53
M304	Incandescent, 14.4V, 120 MA.	No. 53
M305	Incandescent, 14.4V, 120 MA.	No. 53
M306	Incandescent, 14.4V, 120 MA.	No. 53
M307	Incandescent, 14.4V, 120 MA.	No. 53
M308	Incandescent, 14.4V, 120 MA.	No. 53

4-5 CHASSIS ASSEMBLY

Item No.	Description	Part No.
	ELECTRICAL COMPONENTS	
R1	5K, Volume Control	102-479-3
R2	7.5K, Squelch Control	102-479-2
R3	1M.E.G, 10%, ½W	
C1	.047mf, 10%, 100V (Mylar Film)	
C2	100mf, 85°C 10V (Electrolytic)	
C3	.005mf, +80%-20% 1400V Z5U (Disc.)	RMC-Type U
T1	Transformer, Power	301-515
Y200	See Section 1-2	
SW1-8, SW9-10	IP2T, 8 Stations on Single Frame, P-P 2P2T	UID 500-874-19 Prom. 301-551-20
Ant.-1	Telescoping Antenna (TME-8H/L)	TAD-392450-AD
Ant.-1	Telescoping Antenna (TME-8H)	P-6-125/102
Spk.-1	Speaker, 3.2 ohms, 3½" Square Assembly	301-793
J1	Antenna, Connector	Cinch 201-24-01-002
P1	Connector, Chassis, Power	Beauchaine P-3304-AB
S1	Connector, Cable, Power	Beauchaine S-3304-FHT
	AC Power Cord Assembly	MA-1
	Cable, Coaxial 50 ohms, Teflon	RG-188/U
	MECHANICAL COMPONENTS	
	Panel, Front	600-339
	Panel, Back	301-675
	Knob, Volume and Squalch	Plasticware 40600CC
	Lens, Red, Channel Lamps	102-353-1
	Socket, Pins, Crystal	T35-362
	Terminal Board, 4-Lug (Rear Apron)	301-079-14
	Foot, Rubber	Lavelle 705R
	Cabinet/Wrap Assembly	600-312-2
	Manual, Owner's Instruction (TME-8H	IS-10-326-1
	Manual, Owner's Instruction (TME-8H/L)	IS-10-326-2
	Manual, Service ($5.00 Prepaid)	SM-10-326-1