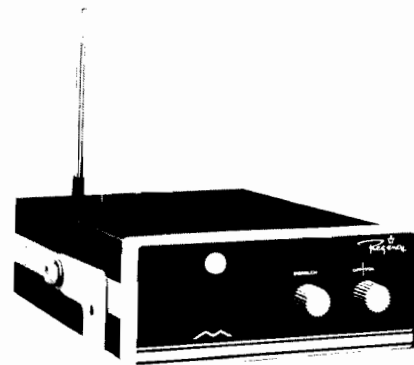


 Regency

ENGINEERING
COPY
ELECTRONICS INC.

SERVICE MANUAL

MODELS:
TMR-8H
TMR-4H
TMR-1H



VHF MONITOR RADIO RECEIVER

7707 RECORDS STREET
INDIANAPOLIS, INDIANA 46226

PRINTED IN U.S.A.
12-72

PRICE \$5.00
SM-10-270-1

VHF MONITORADIO RECEIVER

CONTENTS

SECTION 1 SPECIFICATIONS AND DESCRIPTION

- 1-1 Specifications
- 1-2 Crystal Specifications
- 1-3 Crystal Installation
- 1-4 RF Board
- 1-5 IF-Audio Board
- 1-6 Scanner Board

SECTION 2 ALIGNMENT AND TUNING PROCEDURE

- 2-1 Equipment Required
- 2-2 Quadrature Detector
- 2-3 IF Alignment
- 2-4 RF Alignment
- 2-5 Noise Balance Adjustment

SECTION 3 DIAGRAMS, VOLTAGE DATA AND SCHEMATICS

- 3-1 RF Board Parts Placement Diagram (TMR-8H, 4H)
- 3-2 RF Board Bottom View (TMR-8H, 4H)
- 3-3 RF Board Parts Placement (TMR-1H)
- 3-4 RF Board Bottom View (TMR-1H)
- 3-5 IF-Audio Board Parts Placement Diagram (TMR-8H, 4H)
- 3-6 IF-Audio Board Bottom View (TMR-8H, 4H)
- 3-7 IF-Audio Board Parts Diagram (TMR-1H)
- 3-8 IF-Audio Board Bottom View (TMR-1H)
- 3-9 Scanner Board Parts Placement Diagram (TMR-8H)
- 3-10 Scanner Board Bottom View (TMR-8H)
- 3-11 Scanner Board Parts Placement Diagram (TMR-4H)
- 3-12 Scanner Board Bottom View (TMR-4H)
- 3-13 Voltage Data
- 3-14 Crystal Location Diagrams
- 3-15 Schematic (TMR-8H)
- 3-16 Schematic (TMR-4H)
- 3-17 Schematic (TMR-1H)

SECTION 4 PARTS LIST

- 4-1 RF Board
- 4-2 IF-Audio Board
- 4-3 Scanner Board
- 4-4 Chassis Assembly

SECTION I SPECIFICATIONS AND DESCRIPTION

1-1 SPECIFICATIONS

RECEIVER

Frequency Range.....	150-174 MHz
Antenna Impedance.....	50 Ohms
Channels.....	TMR-8H-8; Crystal Controlled TMR-4H-4; Crystal Controlled TMR-1H-1; Crystal Controlled
Sensitivity (at tune-up).....	0.7 μ v (max.)
High Band.....	6 DB Bandwidth; 8 MHz 9 DB Bandwidth; 12 MHz
Selectivity (I.F.).....	6 DB Down; \pm 7 KHz (min.) 50 DB Down; \pm 20 KHz (max.)
Spurious Rejection (excluding Primary Image).....	50 DB
Modulation Acceptance.....	\pm 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

SCANNER (TMR-8H AND TMR-4H ONLY)

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

POWER

Voltage Requirement.....	117 VAC (\pm 10%), 60 Hz., 17 Watts Max. 13.8 VDC (\pm 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.....	13
Diode (Total).....	TMR-8H-12 TMR-4H-8 TMR-1H-4
Zener Diodes.....	1
Rectifier Diodes.....	2
Scanner Section (TMR-8H and TMR-4H only)	
Integrated Circuits.....	TMR-8H-4 TMR-4H-3
Silicon Transistors.....	TMR-8H-3 TMR-4H-1

Diodes (Total).....	4
Zener Diode.....	1

GENERAL

Front Panel Size.....	5 5/8" x 2 5/16"
Depth (Including Knobs and Rear Panel Connectors).....	9 in.
Antenna Connector.....	Motorola Type
Power Connector.....	4-pin, polarized
Speaker Size.....	4 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 and the desired receive frequency.

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

- a. Crystal frequency, determined as follows:

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

Example:

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

1-3 CRYSTAL INSTALLATION

Prior to installing a crystal, the TMR cover will have to be removed. To remove this cover, unscrew the two large bolts located at the sides of the unit. The cover may then be slipped off by sliding it toward the rear of the unit.

Next, the speaker should be removed. Unscrew the two small metal screws (one located on each side) holding the speaker mounting brackets in place. Then carefully place the speaker assembly along side of the unit.

Insert the crystal, or crystals, in the proper socket pins as indicated on the crystal location drawing 3-14.

The number by each pair of sockets matches the channel number on the front panel.

After the crystals are installed, reinstall the speaker assembly. Then carefully reinstall the cover and its hardware.

1-4 RF BOARD

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 coupled to the input of the mixer transistor, Q202.

In the 4-channel and 8-channel models, 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 the mixer, Q202, is tuned to 10.7 MHz by T201. The output is link-coupled to T101, the IF input tuned circuit.

1-5 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 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 response 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 essentially a short circuit between the base of Q105 and ground. In the TMR-8H and TMR-4H, Q104 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.

1-6 SCANNER BOARD (TMR-8H AND TMR-4H ONLY)

The squelch tail circuit consists of R317, CR313, C313 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 circuits from chopping very weak signals, especially mobile signals. The timing of the squelch tail can be changed by changing the value of C313. Removing C313 from the circuit will remove the squelch tail completely.

The basic scanning multivibrator is contained in IC 304 and free runs at approximately 15 Hz. In addition, IC 304 is connected as a divider which divides the input frequency by two. This signal as well as other signals from IC 303 are applied to IC 301 (8-channel only) and IC 302 to turn on the proper circuits to activate the proper channels.

In the 8 channel model, IC 301 and IC 302 have no power source unless either Q301 or Q302 is turned on to supply their respective operating voltage. Q301 and Q302 are driven by the divider circuits contained in IC 303. Q301 and Q302 are turned on and off at one-fourth of the multivibrator frequency.

Switching to Manual turns Q303 on so that no scanning can occur. Pressing the Channel Selector button applies one pulse to the scanner's multivibrator causing the multivibrator to switch to its opposite state. As a result, the scanner circuitry advances to the next 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 2-5 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 over which they will operate.

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

2-2 QUADRATURE DETECTOR

- 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 slugs 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 frequency that will be used for 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).
- 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 slugs should be within two turns of the position in step No. 4 and 8.

2-4 RF ALIGNMENT

- 2-4-1 Preset the slugs L201, L202, L203, and L204 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.
- 2-4-4 Activate channel nearest to center of frequencies over which the unit will operate.
- 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 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.

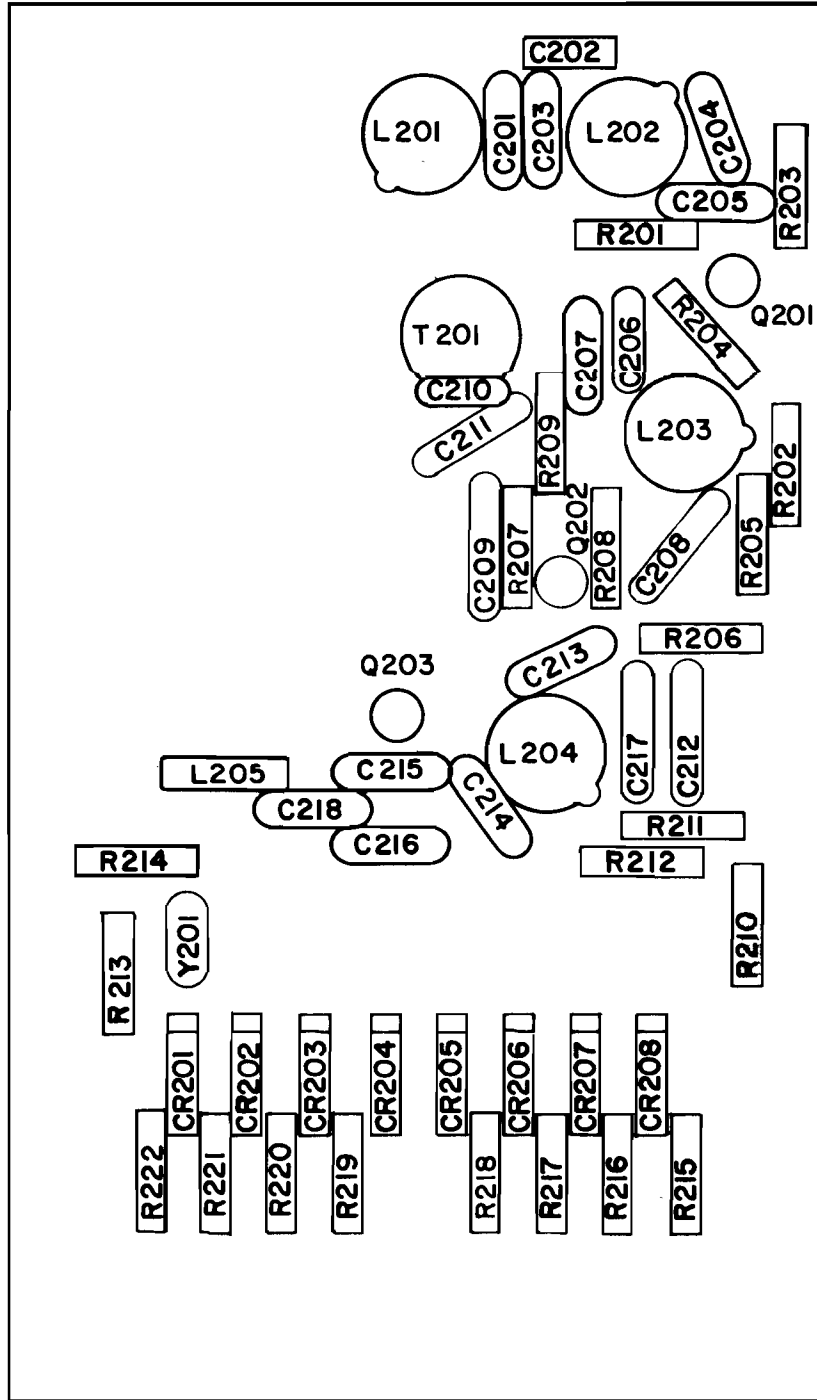
2-5 NOISE BALANCE ADJUSTMENT

- NOTE:** This adjustment may be required only if excessive "ignition noise" is encountered. Usually, the "noise" problem is caused by improper or inadequate noise suppression of the vehicle's ignition system.
- 2-5-1 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, L201.
- 2-5-2 Connect the oscilloscope to the junction of Q109's emitter and Q110's collector, or to the speaker terminals.
- 2-5-3 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.
- 2-5-4 Tune L103 (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 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

- 3-1 RF BOARD PARTS PLACEMENT DIAGRAM (TMR-8H, 4H)**
- 3-2 RF BOARD BOTTOM VIEW (TMR-8H, 4H)**
- 3-3 RF BOARD PARTS PLACEMENT DIAGRAM (TMR-1H)**
- 3-4 RF BOARD BOTTOM VIEW (TMR-1H)**
- 3-5 IF-AUDIO BOARD PARTS PLACEMENT DIAGRAM (TMR-8H, 4H)**
- 3-6 IF-AUDIO BOARD BOTTOM VIEW (TMR-8H, 4H)**
- 3-7 IF-AUDIO BOARD PARTS PLACEMENT DIAGRAM (TMR-1H)**
- 3-8 IF-AUDIO BOARD BOTTOM VIEW (TMR-1H)**
- 3-9 SCANNER BOARD PARTS PLACEMENT DIAGRAM (TMR-8H)**
- 3-10 SCANNER BOARD BOTTOM VIEW (TMR-8H)**
- 3-11 SCANNER BOARD PARTS PLACEMENT DIAGRAM (TMR-4H)**
- 3-12 SCANNER BOARD BOTTOM VIEW (TMR-4H)**
- 3-13 VOLTAGE DATA**
- 3-14 CRYSTAL LOCATION DIAGRAMS**
- 3-15 SCHEMATIC (TMR-8H)**
- 3-16 SCHEMATIC (TMR-4H)**
- 3-17 SCHEMATIC (TMR-1H)**

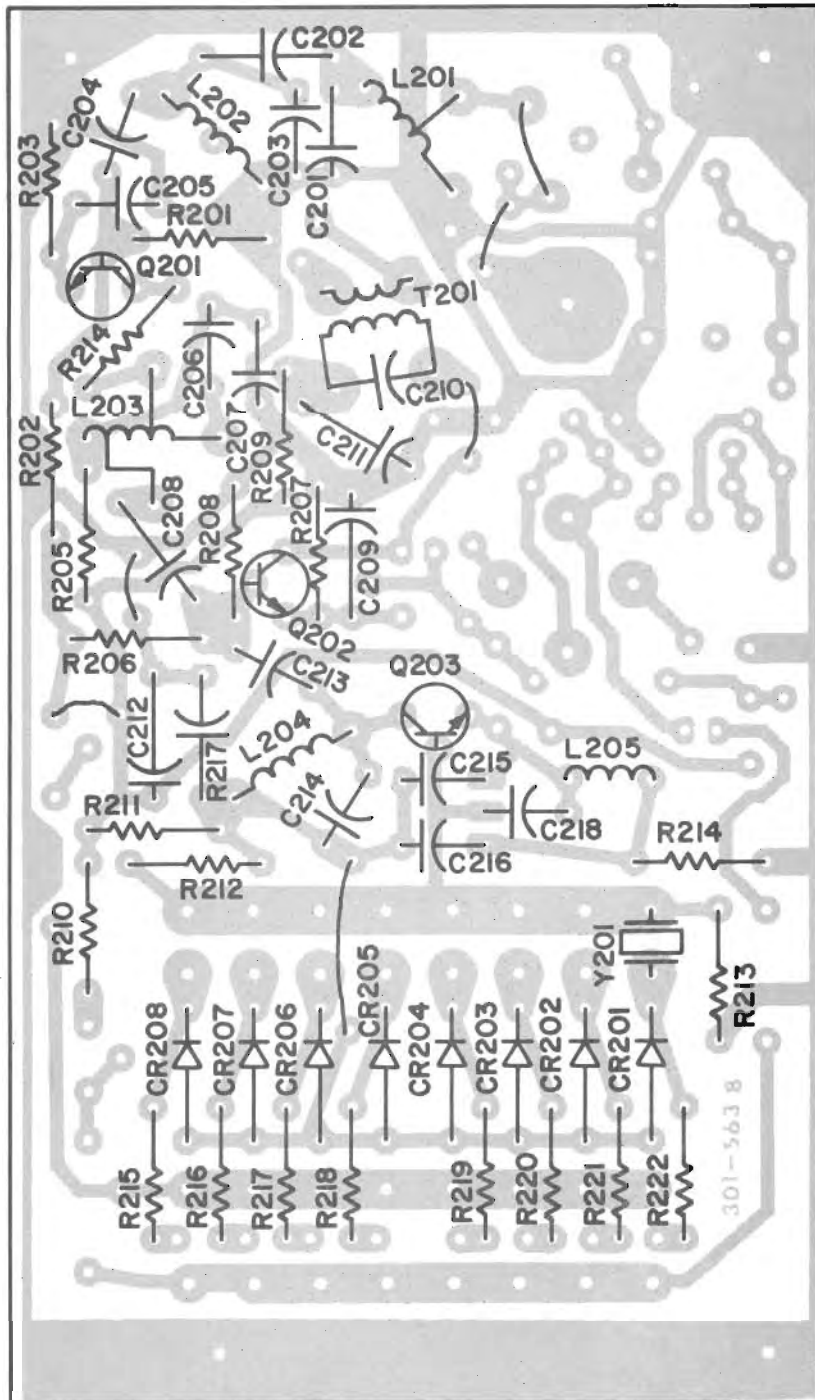
RF BOARD 301-563



R215, R216, R221, R222, CR201, CR202, CR207, AND CR208
USED ON TMR-8H ONLY.

3-1 RF BOARD PARTS PLACEMENT DIAGRAM (TMR-8H,4H)

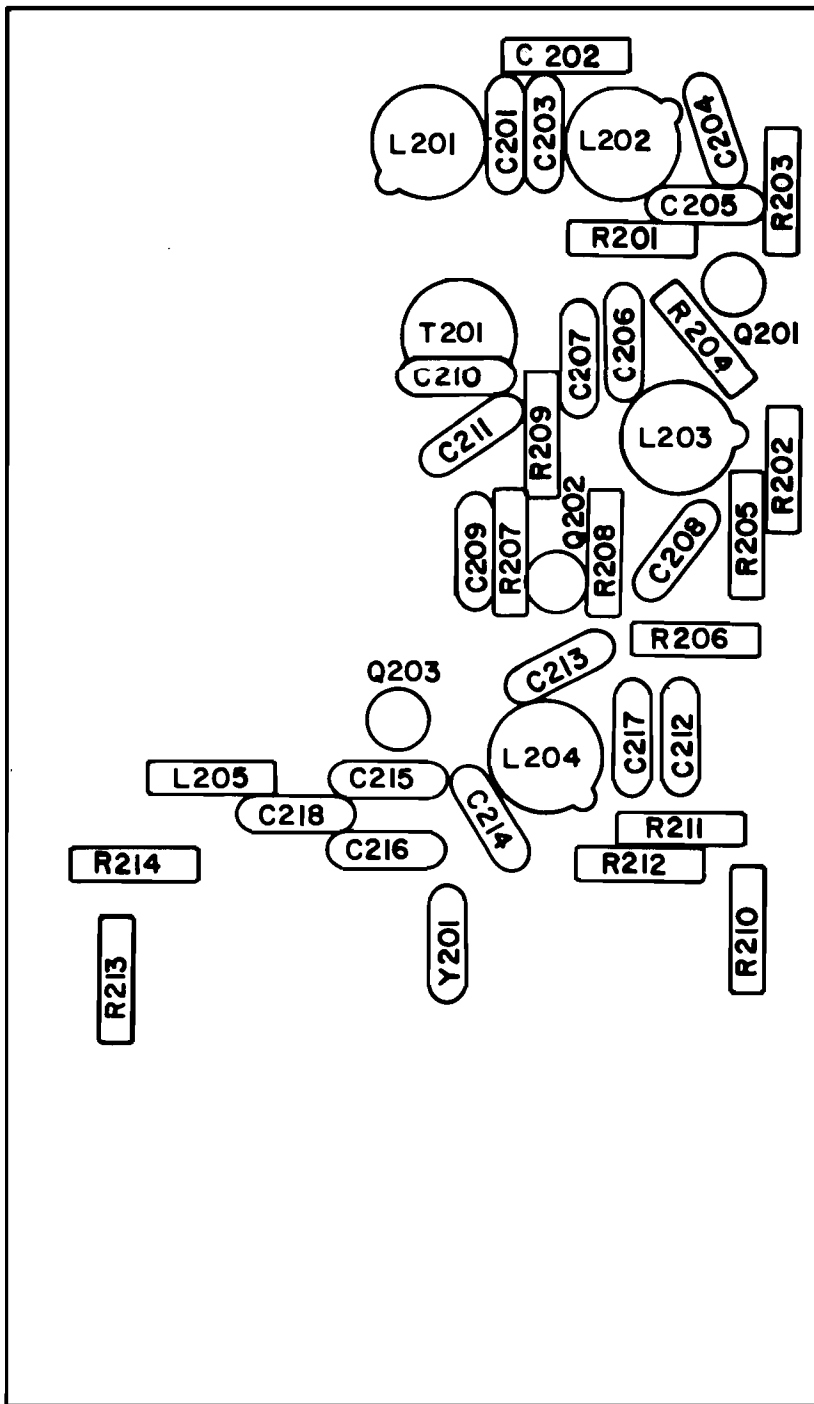
RF BOARD 301-563



R215, R216, R221, R222, CR201, CR202, CR207, AND CR208
USED ON TMR-8H ONLY.

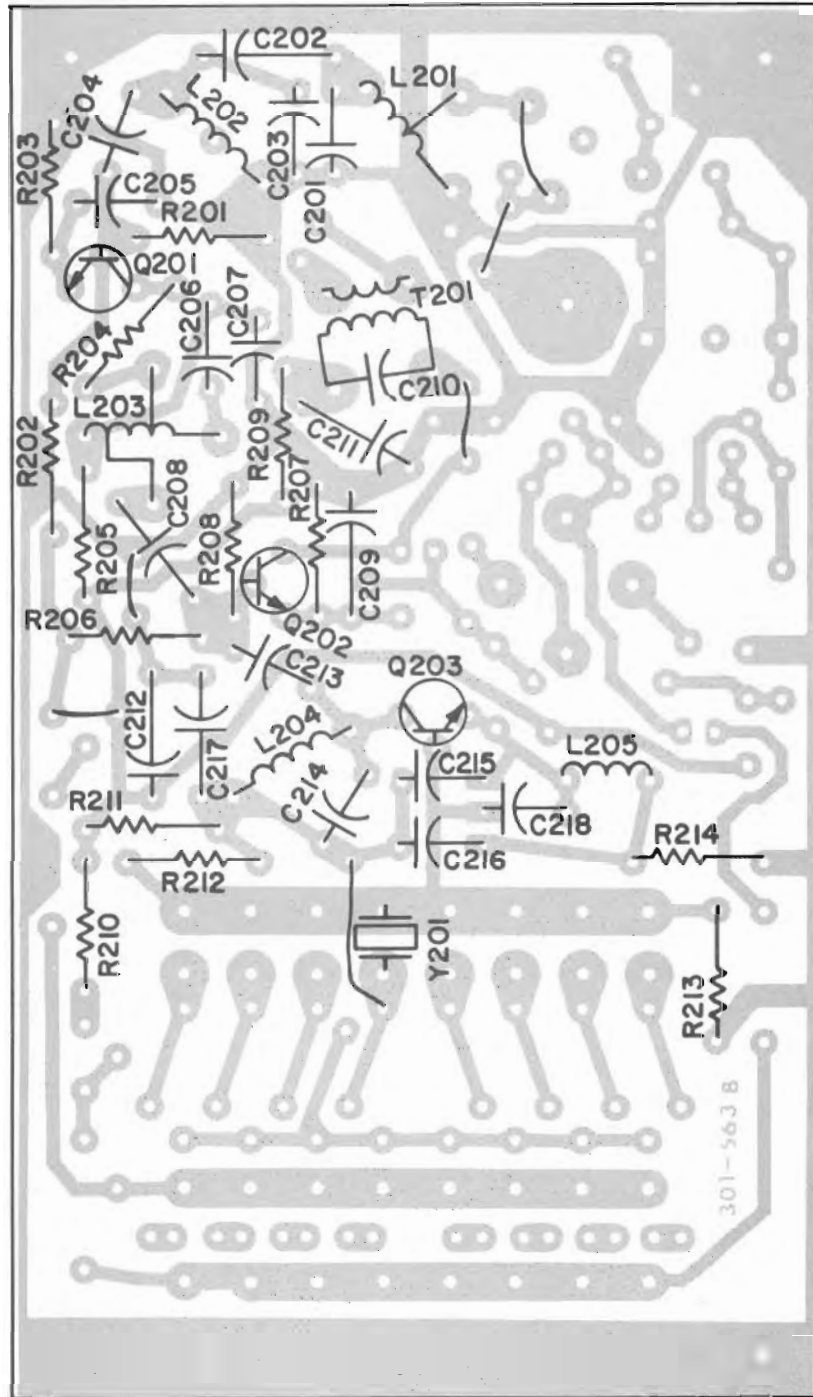
3-2 RF BOARD BOTTOM VIEW (TMR-8H,4H)

RF BOARD 301-563



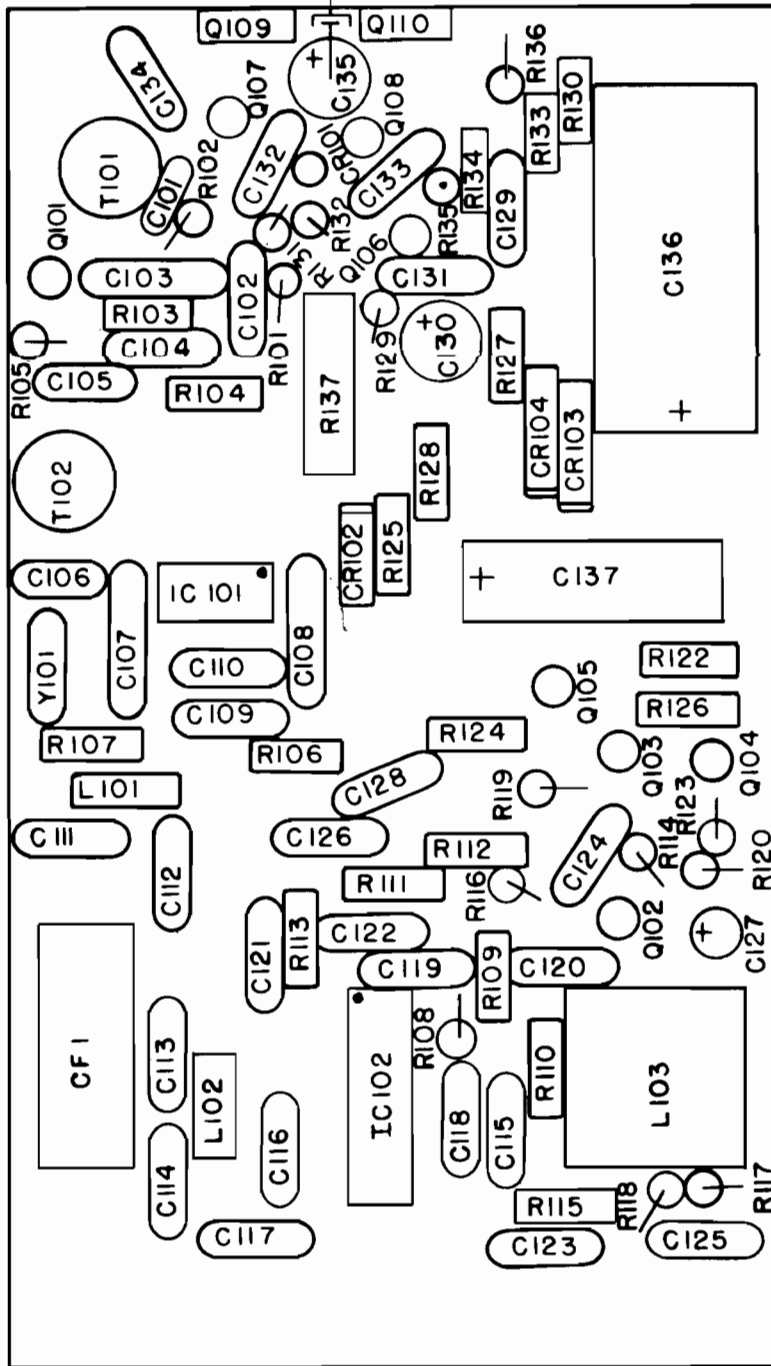
3-3 RF BOARD PARTS PLACEMENT DIAGRAM (TMR-1H)

RF BOARD 301-563



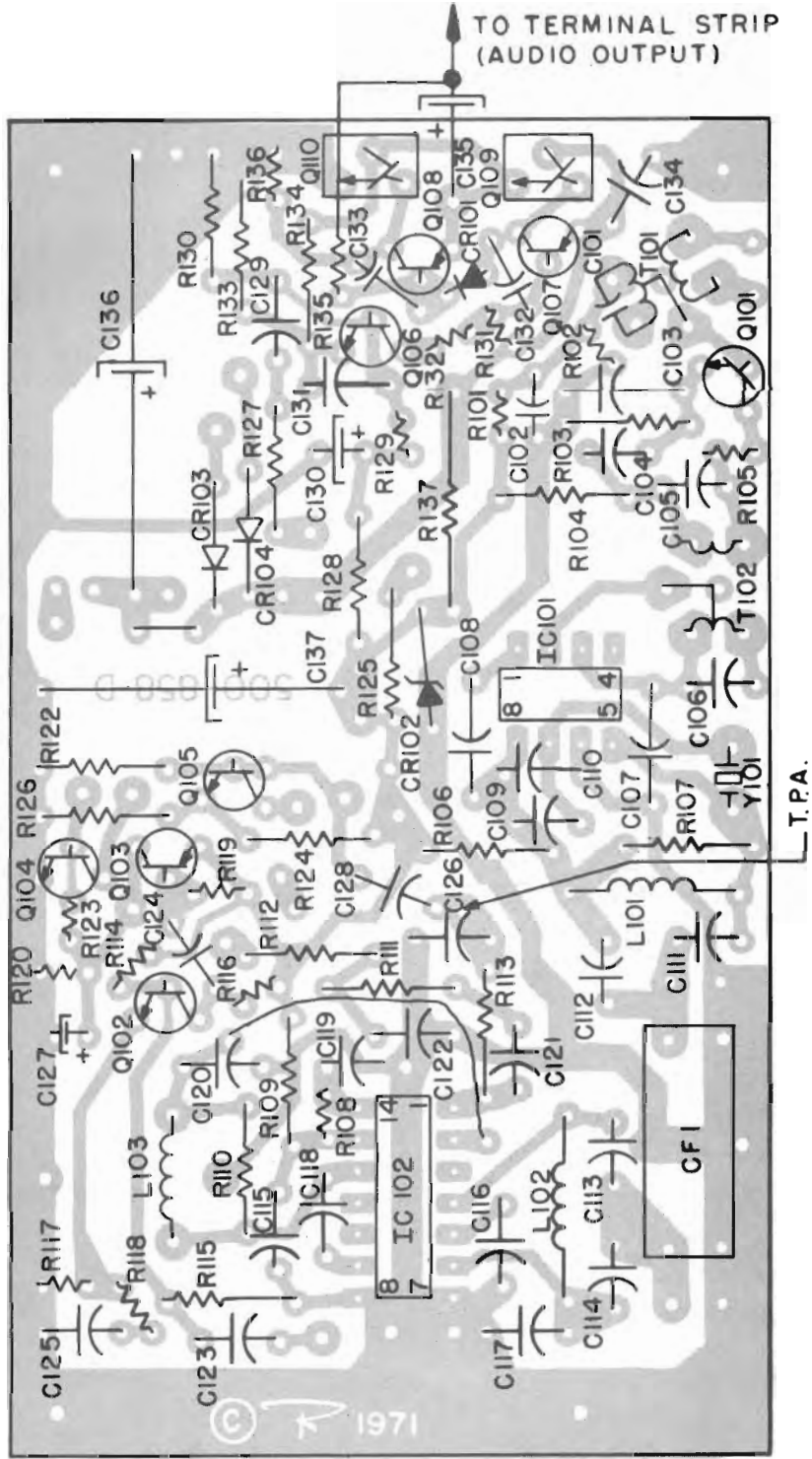
3-4 RF BOARD BOTTOM VIEW (TMR-1H)

IF BOARD 500-858



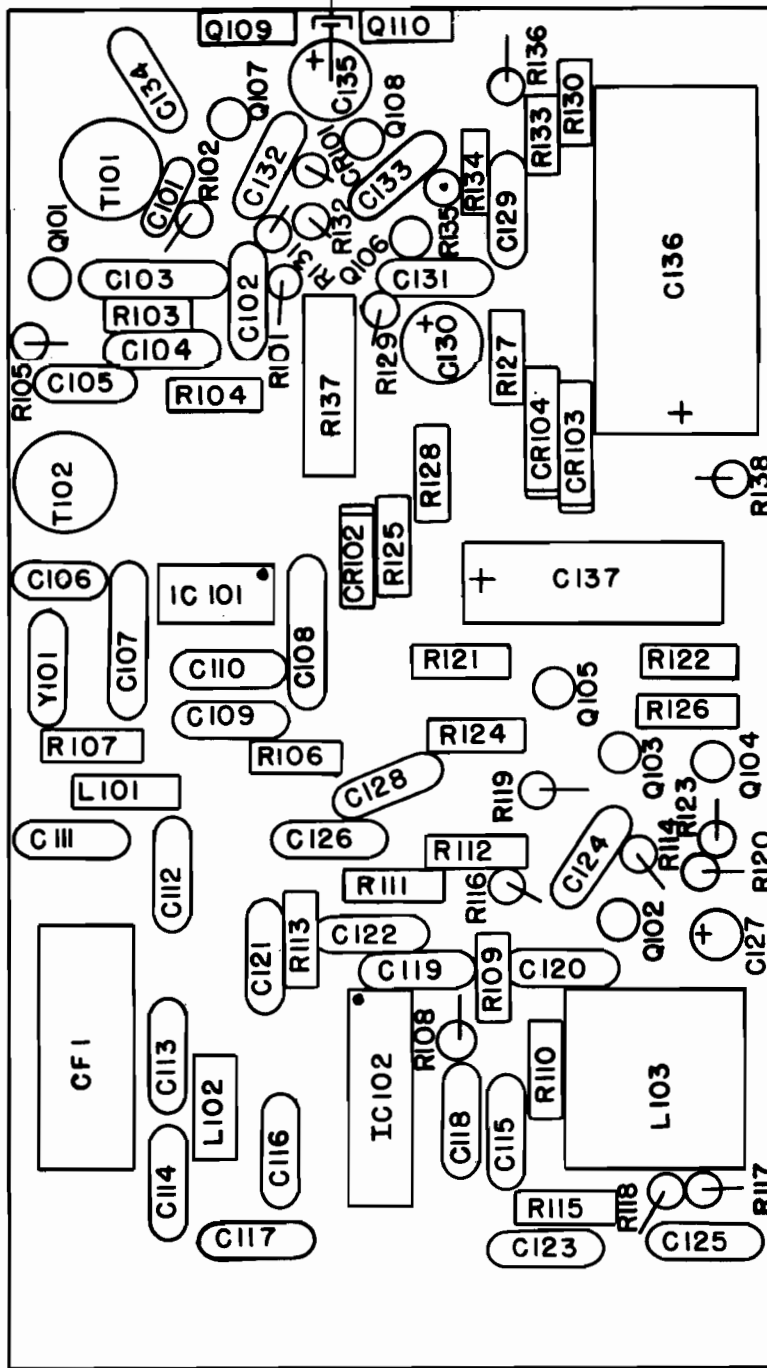
3-5 IF-AUDIO BOARD PARTS PLACEMENT DIAGRAM (TMR-8H, 4H)

IF BOARD 500-858



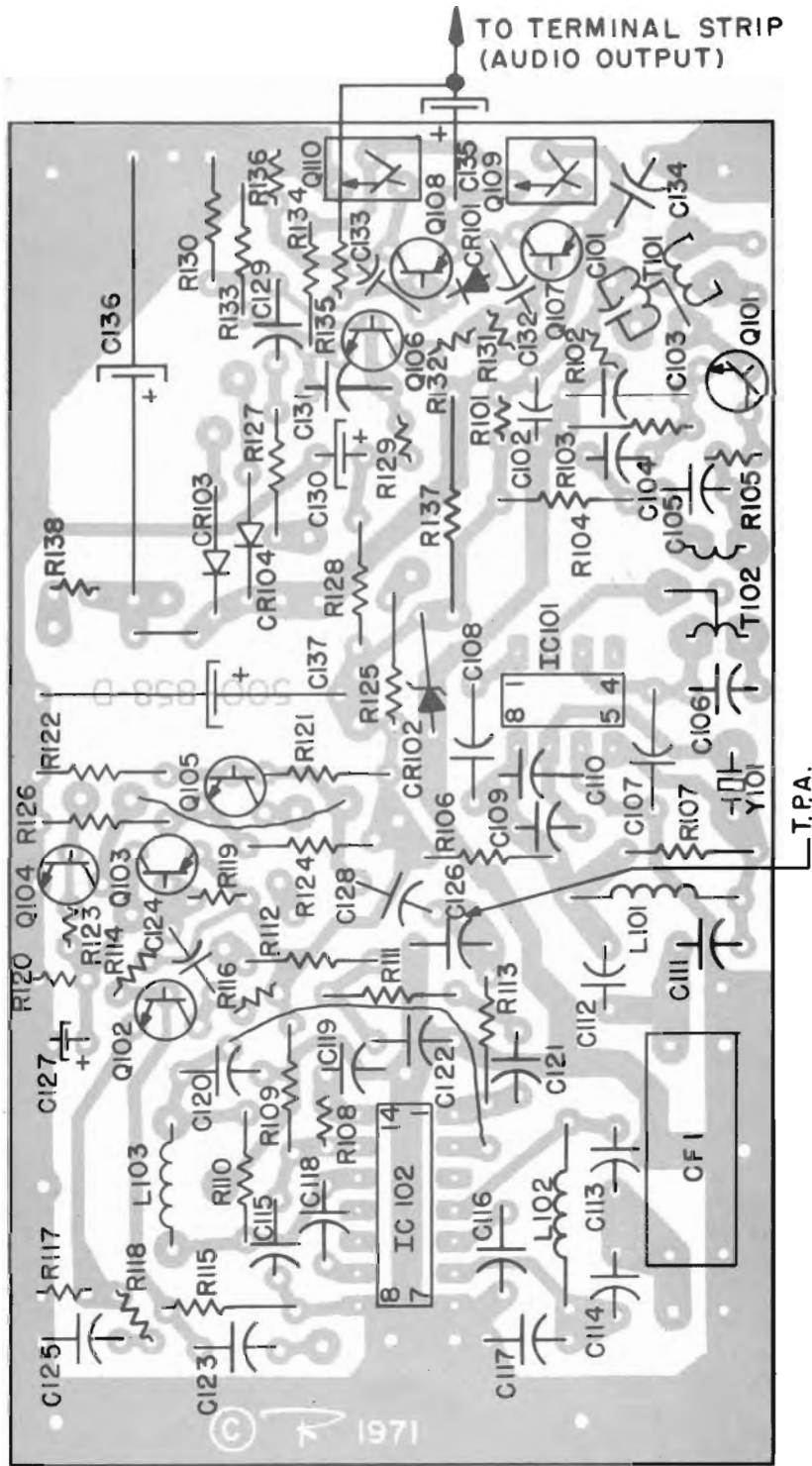
3-6 IF-AUDIO BOARD BOTTOM VIEW (TMR-8H, 4H)

IF BOARD 500-858



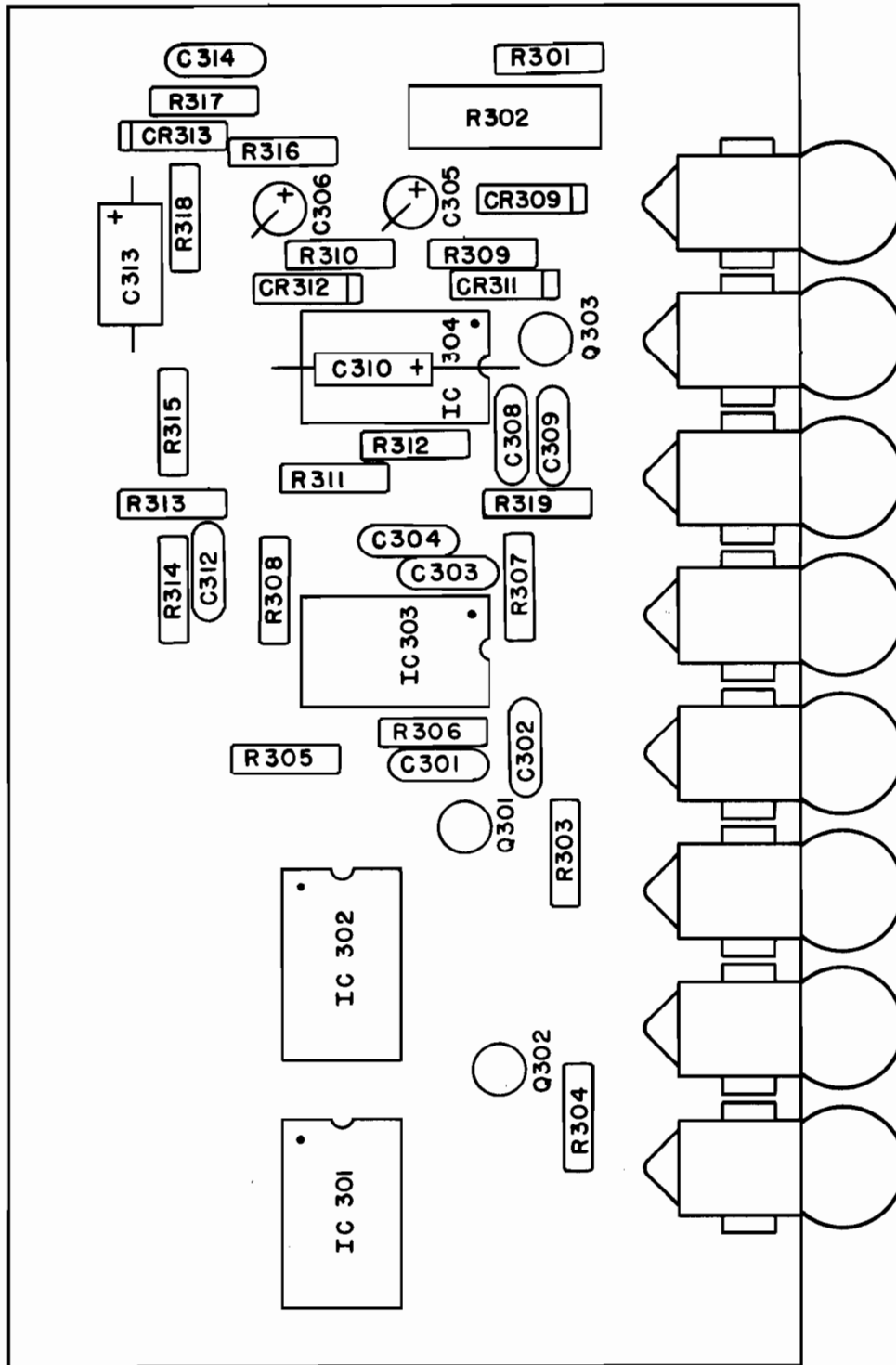
3-7 IF-AUDIO BOARD PARTS PLACEMENT DIAGRAM (TMR-1H)

I F BOARD 500-858



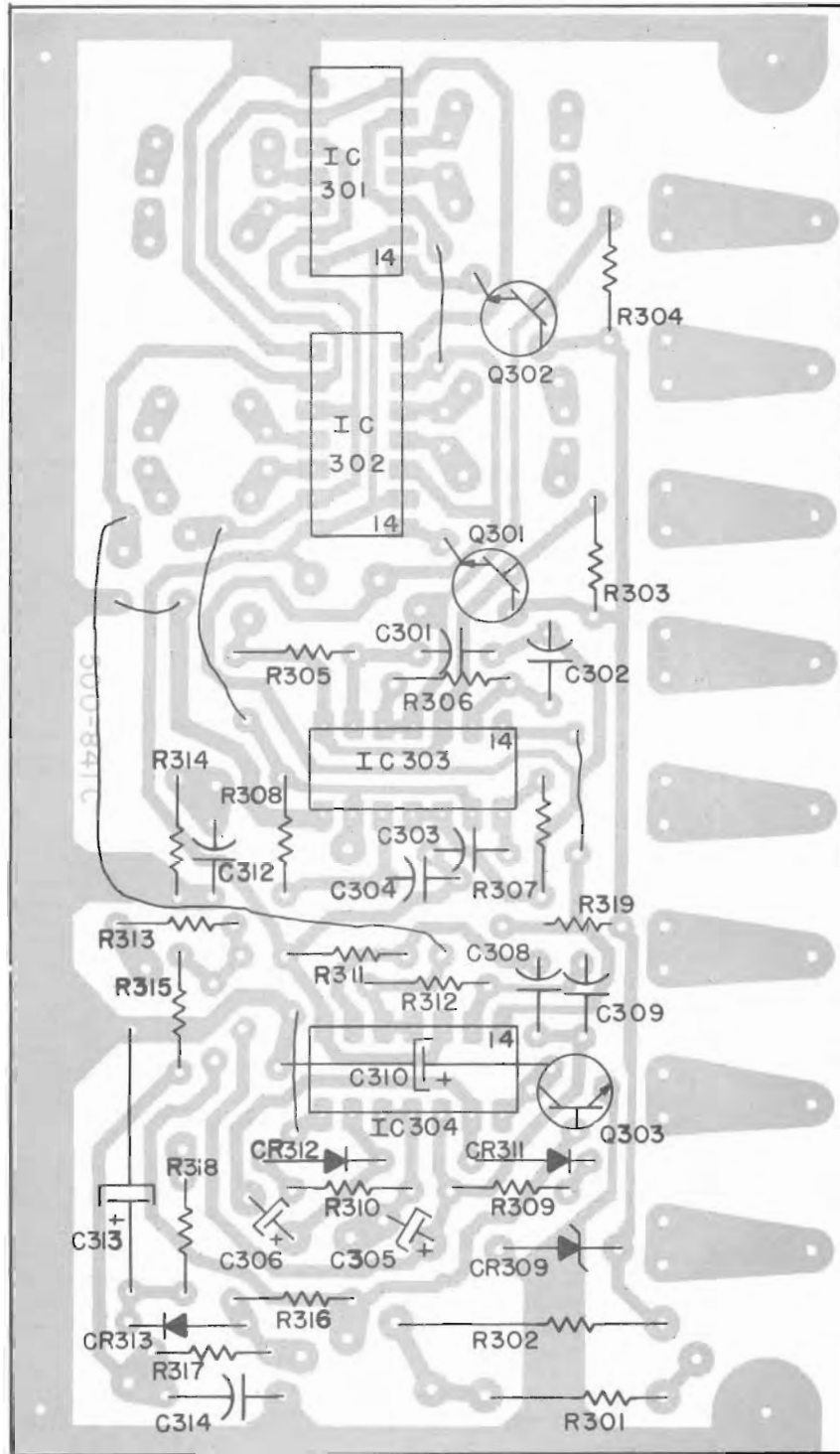
3-8 IF-AUDIO BOARD BOTTOM VIEW (TMR-1H)

SCAN BOARD 500-841



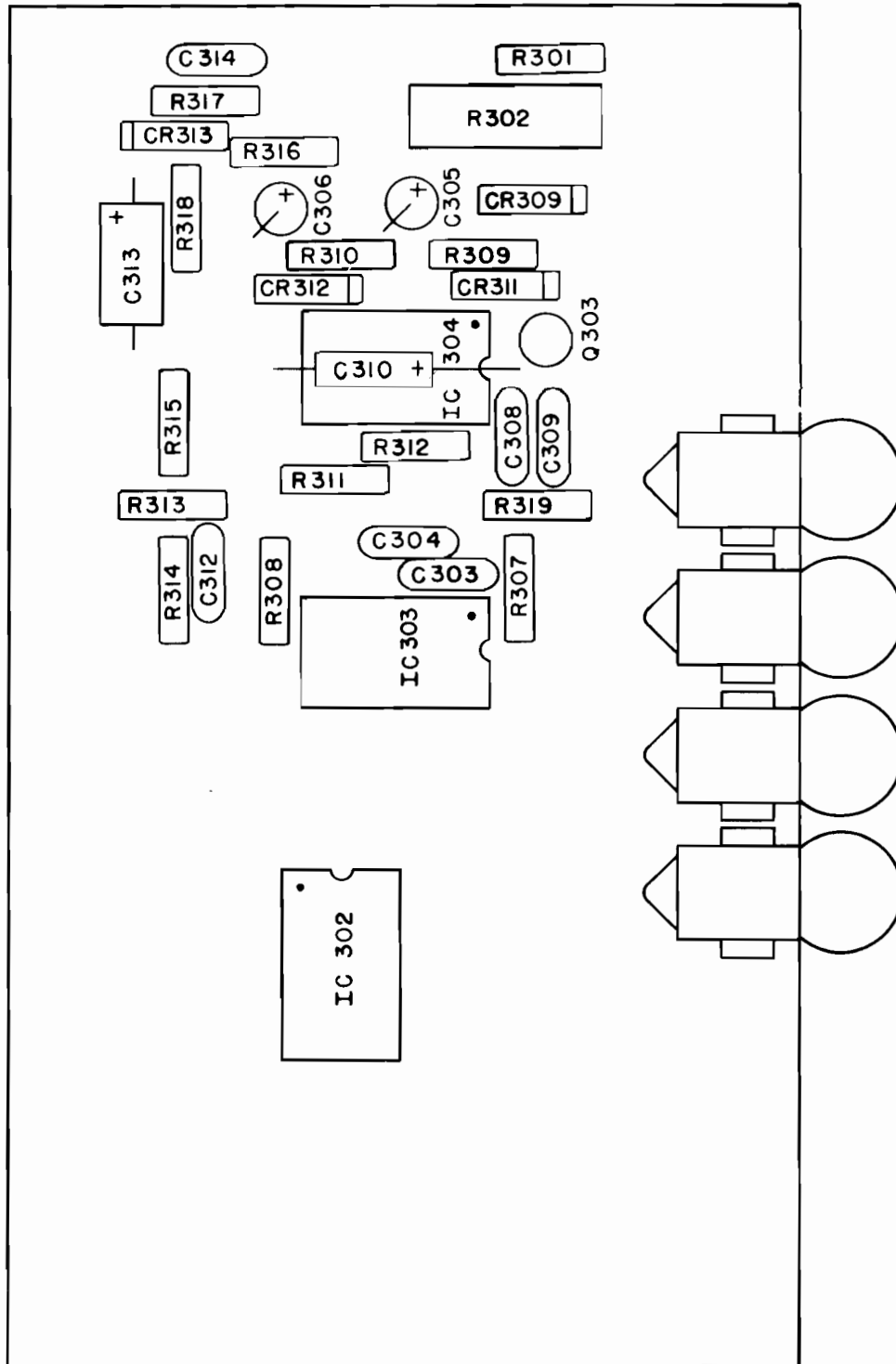
3-9 SCANNER BOARD PARTS PLACEMENT DIAGRAM (TMR-8H)

SCAN BOARD 500-841



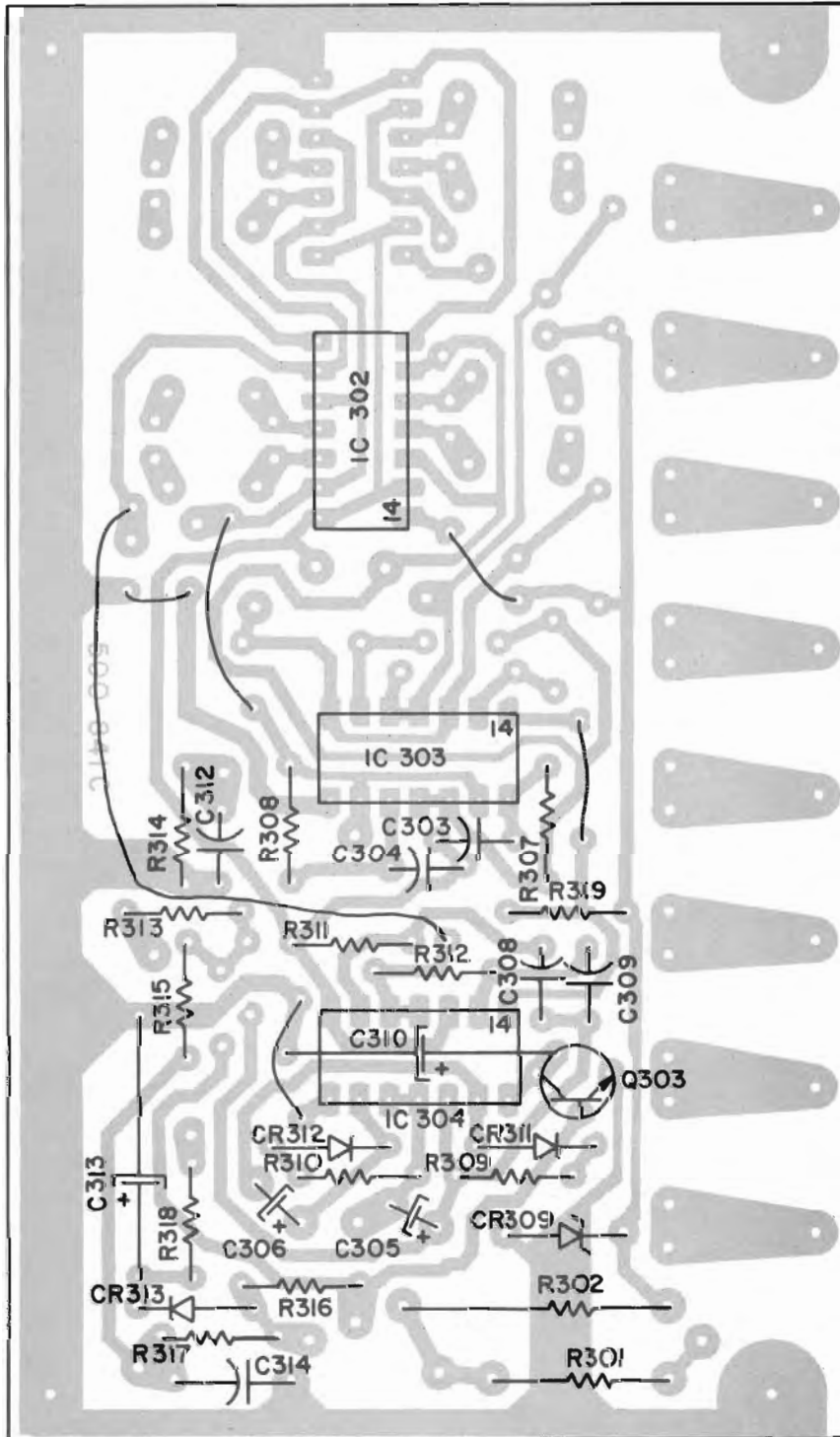
3-10 SCANNER BOARD BOTTOM VIEW (TMR-8H)

SCAN BOARD 500-841



3-11 SCANNER BOARD PARTS PLACEMENT DIAGRAM (TMR-4H)

SCAN BOARD 500-841



3-12 SCANNER BOARD BOTTOM VIEW (TMR-4H)

3-13 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:

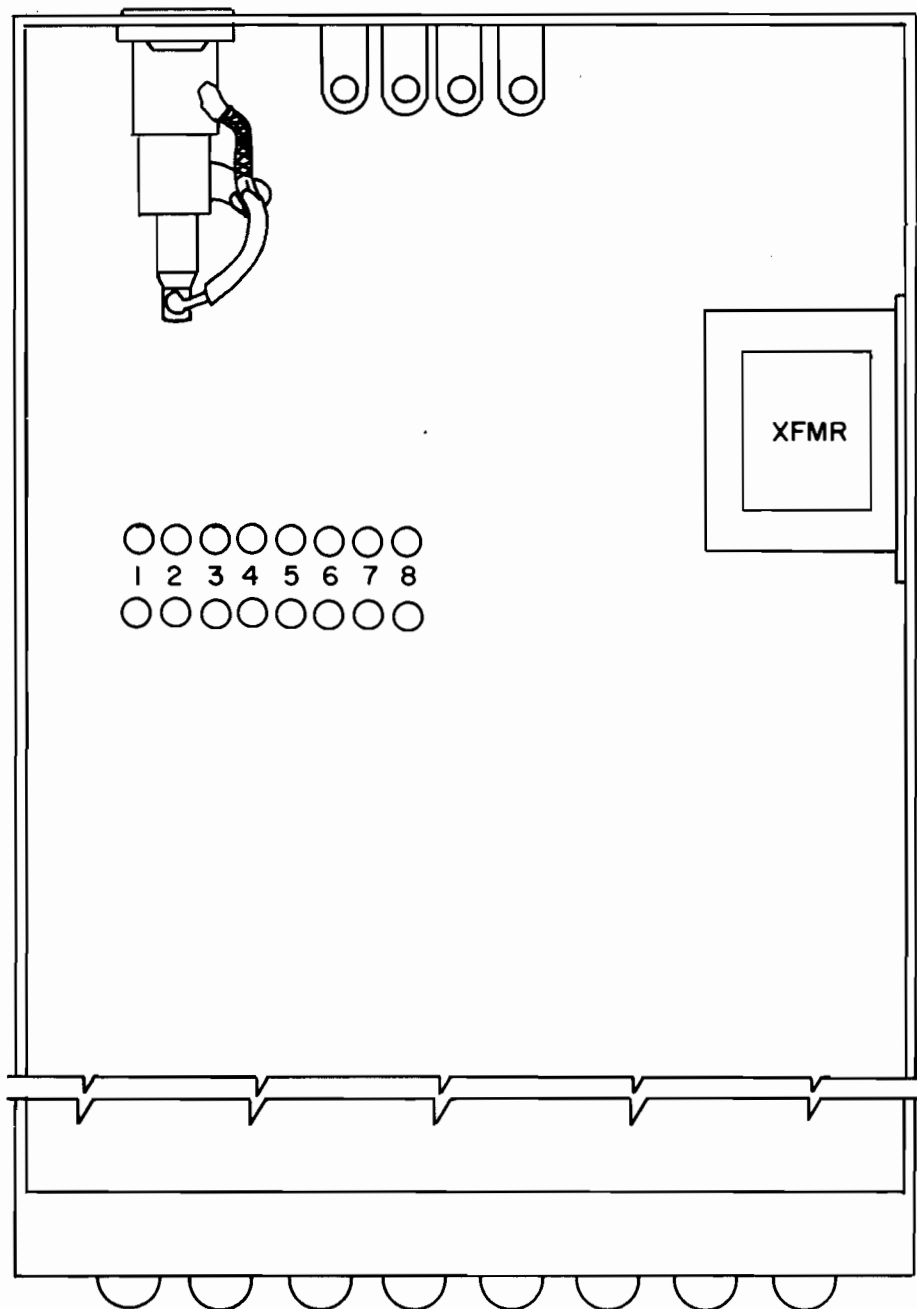
	TRANSISTOR	EMITTER (Source)	BASE (Gate)	COLLECTOR (Drain)
RF Board No. 301-563	Q201	3.1	3.8	7.0
	Q202	1.6	2.3	7.1
	Q203	3.4	4.1	7.0
IF Board No. 500-858	Q101	2.3	3.0	5.8
	Q102	1.0	1.7	4.8
	Q103 (PNP)	8.2	8.2	0 (unquelched)
		8.2	8.2	1.0 (squelched)
		8.2	8.2	1.5 Min. (tight squelch)
	Q104	0	0	7.2 (unquelched) (TMR-8H, 4H)
		0	0	1.9 (unquelched) (TMR-1H)
		0	.80	.30 (squelched)
		0	.80	.10 (tight squelch)
	Q105	1.4	1.9	5.1 (unquelched)
		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	
Scan Board No. 500-841	Q301	.2	.2	6.0 Manual
		3P	3P	6.0 Scan
	Q302	5.2	5.9	6.0 Manual
		3P	3P	6.0 Scan
	Q303	0	.7	.1 Manual
		0	.1	1.6 Scan

3-13 VOLTAGE DATA (CONTINUED)

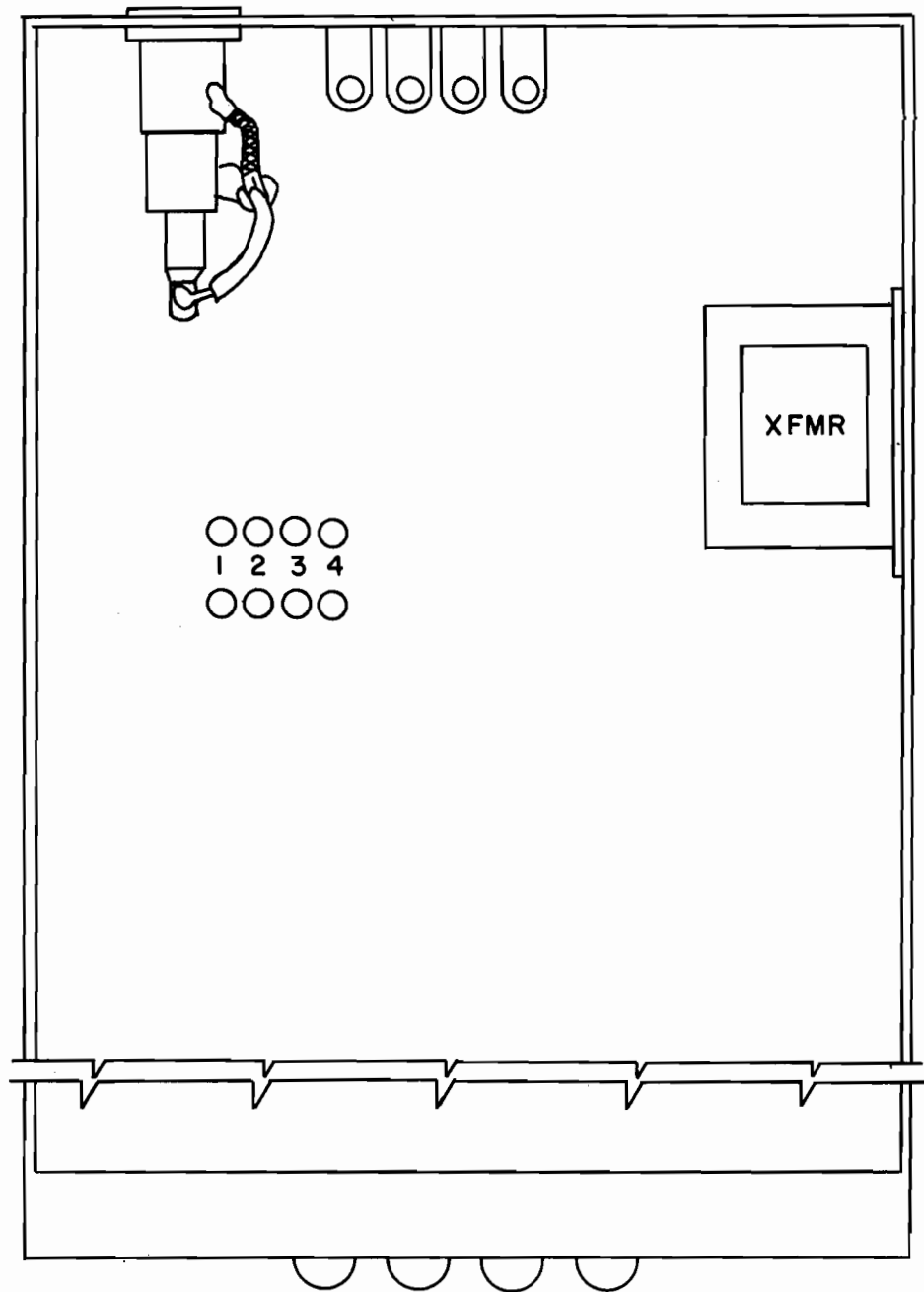
VOLTAGE DATA - INTEGRATED CIRCUITS

IC No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
IF Board	IC 101	4.2	0.7	4.2	7.8	0	4.2	7.8	-	-	-	-	-	-
	IC 102	4.0	3.5	1.3	1.3	1.3	0	0	0.2	1.4	2.9	3.5	7.6	5.0
Scan Board	IC 301	2.0P	2.0P	9.9P	2.0P	2.0P	0	2.0P	2.0P	9P	9P	2P	2P	3P (SCAN)
		.2	3.6	11	3.6	3.6	0	3.6	.2	11	11	.2	.2	5.2 (MAN)
	IC 302	2.0P	2.0P	9P	2.0P	2.0P	0	2.0P	2.0P	9P	9P	2P	2P	3P (SCAN)
		.2	3.6	11	3.6	3.6	0	3.6	.2	11	11	.2	.2	0 (MAN)
	IC 303	2.7P	2.0P	2.0P	2.7P	2.0P	0	3P	4P	3P	3P	3P	4P	4.8 (SCAN)
		1.5	3.6	.2	3.6	3.6	0	.2	1.5	5.9	5.9	.2	5.9	4.8 (MAN)
F	IC 304	1.6	1.3P	1.8P	1.3P	1.3P	0	2P	2.7P	2.0P	2.0P	2.0P	2.0	4.8 (SCAN)
		.1	.2	3.8	1.5	1.5	0	.2	1.5	3.6	3.6	.2	3.6	4.8 (MAN)

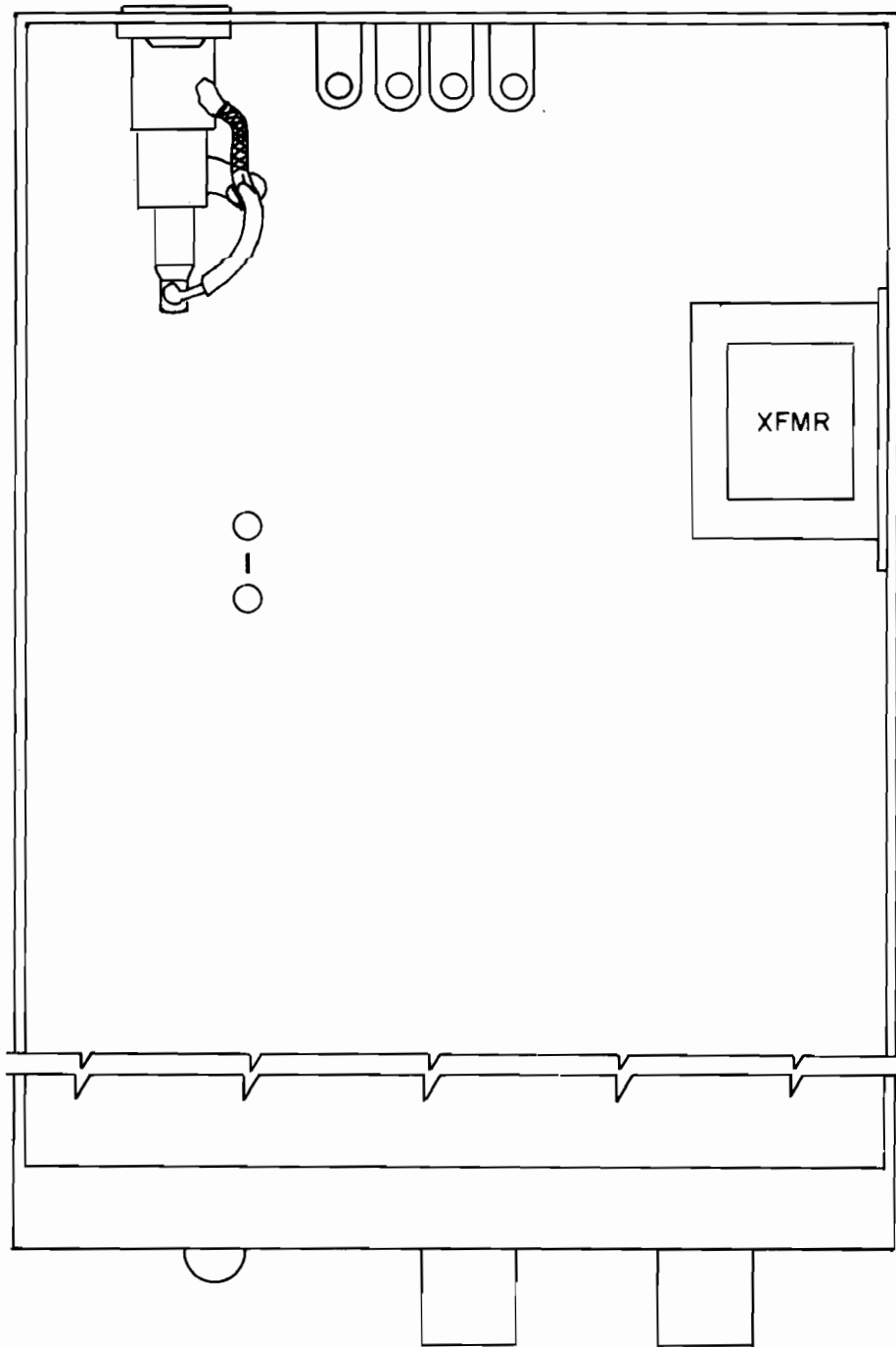
3-14 CRYSTAL LOCATION DIAGRAMS



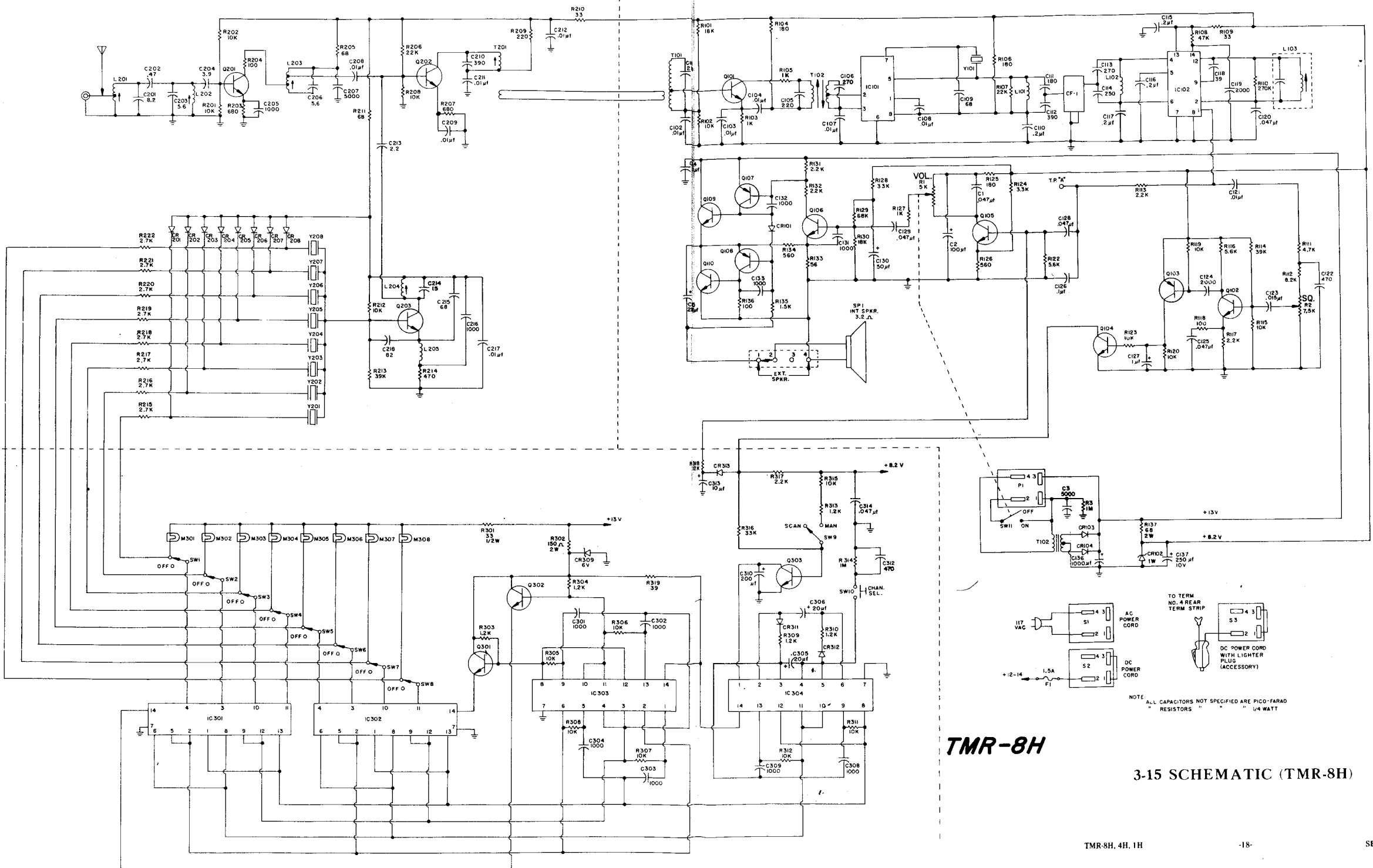
CRYSTAL LOCATION DIAGRAM (TMR-8H)



CRYSTAL LOCATION DIAGRAM (TMR-4H)

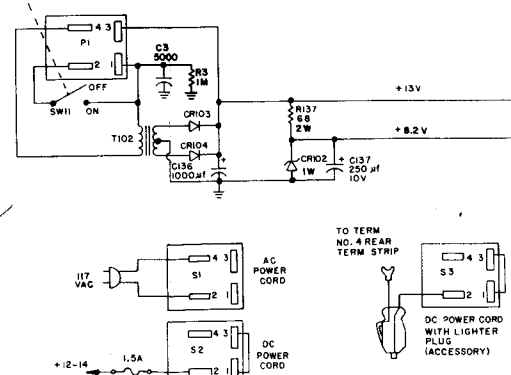


CRYSTAL LOCATION DIAGRAM (TMR-1H)

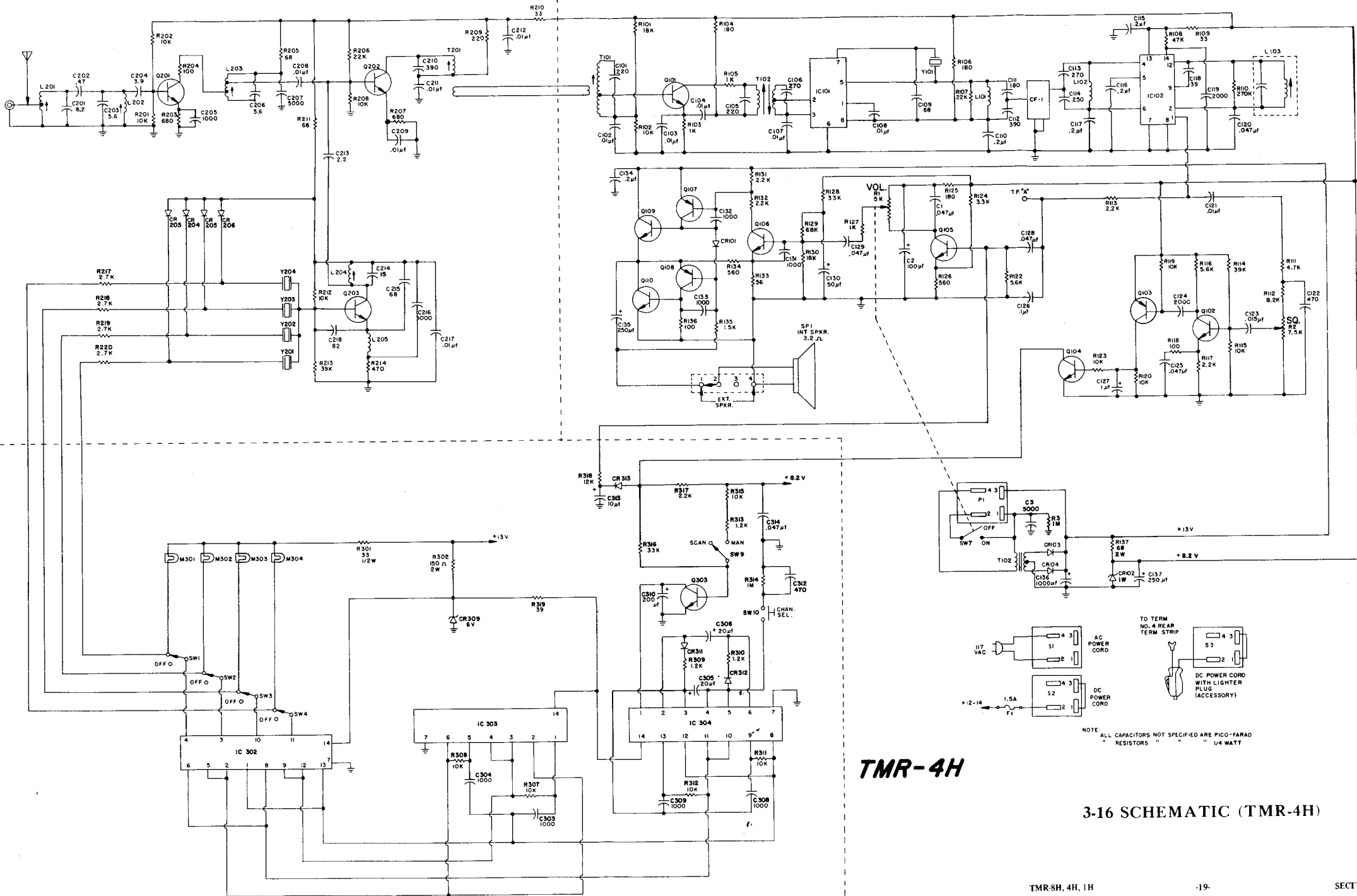


TMR-8H

3-15 SCHEMATIC (TMR-8H)



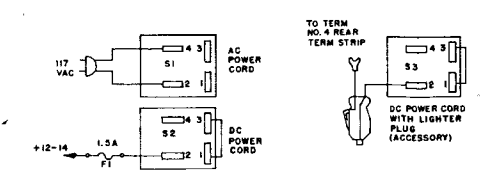
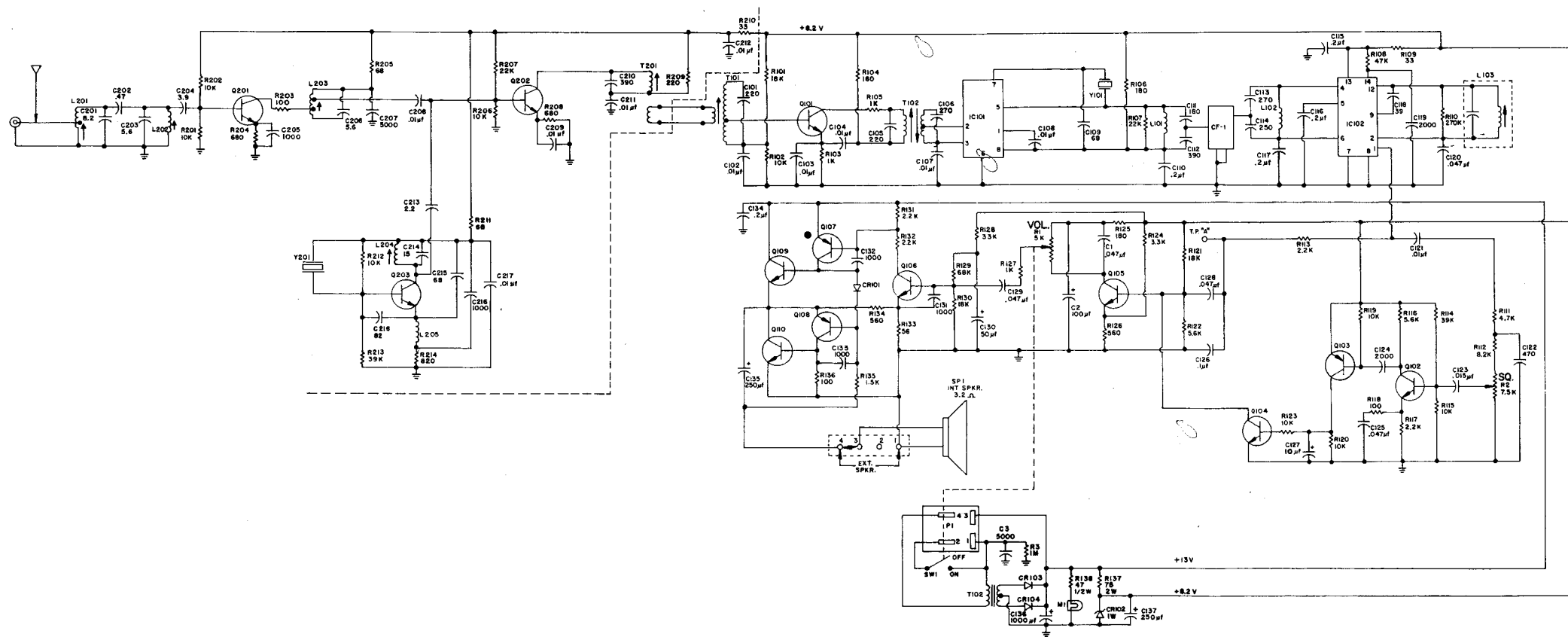
NOTE: ALL CAPACITORS NOT SPECIFIED ARE PICO-FARAD
RESISTORS " " " 1/4 WATT



TMR-4H

3-16 SCHEMATIC (TMR-4H)

NOTE: ALL CAPACITORS NOT SPECIFIED ARE PICO-FARAD
RESISTORS " " " " 1/4 WATT



NOTES:
 1. ALL CAPACITORS NOT SPECIFIED ARE PICO-FARAD.
 ALL RESISTORS NOT SPECIFIED ARE 1/4 WATT.

TMR-1H

3-17 SCHEMATIC (TMR-1H)

SECTION 4 PARTS LIST

4 - 1 RF BOARD 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	820 ohm, 10%, ¼W	(TMR-1H only)
R214	470 ohm, 10%, ¼W	(TMR-4H & 8H only)
R215	2.7K, 10%, ¼W	(TMR-8H only)
R216	2.7K, 10%, ¼W	(TMR-8H only)
R217	2.7K, 10%, ¼W	(TMR-4H & 8H only)
R218	2.7K, 10%, ¼W	(TMR-4H & 8H only)
R219	2.7K, 10%, ¼W	(TMR-4H & 8H only)
R220	2.7K, 10%, ¼W	(TMR-4H & 8H only)
R221	2.7K, 10%, ¼W	(TMR-8H only)
R222	2.7K, 10%, ¼W	(TMR-8H only)
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.

Item No.	Description	Part No.
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 (TMR-8H only)	102-339
CR202	Germanium-Junction, Signal (TMR-8H only)	102-339
CR203	Germanium-Junction, Signal (TMR-4H & 8H only)	102-339
CR204	Germanium-Junction, Signal (TMR-4H & 8H only)	102-339
CR205	Germanium-Junction, Signal (TMR-4H & 8H only)	102-339
CR206	Germanium-Junction, Signal (TMR-4H & 8H only)	102-339
CR207	Germanium-Junction, Signal (TMR-8H only)	102-339
CR208	Germanium-Junction, Signal (TMR-8H only)	102-339

4 - 2 IF AUDIO BOARD 500 - 858

Item No.	Description	Part No.
RESISTORS		
R101	18K, 10%, ¼W	
R102	10K, 10%, ¼W	
R103	1 K, 10%, ¼W	
R104	180 ohm, 10%, ¼W	
R105	1K, 10%, ¼W W	
R106	180 ohm, 10%, ¼W	
R107	22K, 10%, ¼W	
R108	47K, 10%, ¼W	
R109	33 ohm, 10%, ¼W	
R110	270K, 10%, ¼W	
R111	4.7K, 10%, ¼W	
R112	8.2K, 10%, ¼W	
R113	2.2K, 10%, ¼W	
R114	39K, 10%, ¼W	
R115	10K, 10%, ¼W	
R116	5.6K, 10%, ¼W	
R117	2.2K, 10%, ¼W	
R118	100 ohm, 10%, ¼W	
R119	10K, 10%, ¼W	
R120	10K, 10%, ¼W	
R121	18K, 10%, ¼W (TMR-1H only)	
R122	5.6K, 10%, ¼W	
R123	10K, 10%, ¼W	
R124	3.3K, 10%, ¼W	
R125	180 ohm, 10%, ¼W	
R126	560 ohm, 10%, ¼W	
R127	1K, 10%, ¼W	
R128	33K, 10%, ¼W	
R129	68K, 10%, ¼W	
R130	18K, 10%, ¼W	
R131	2.2K, 10%, ¼W	
R132	2.2K, 10%, ¼W	
R133	56 ohm, 10%, ¼W	
R134	560ohm, 10%, ¼W	
R135	1.5K, 10%, ¼W	
R136	100 ohm, 10%, ¼W	
R137	68 ohm, 10% 2W (Wire Wound) (TMR-8H & 4H only)	IRC-Type BWH
R137	75 ohm, 5%, 2W (Wire Wound) (TMR-1H only)	IRC-Type BWH
R138	47 ohm, 10%, ¼W (TMR-1H only)	
CAPACITORS		
C101	220pf, 5% 50V (MICA)	DM-10 or Equiv.
C102	.01mf, 10% 100V (Mylar Film)	
C103	.01mf, +80%-20% 500V Z5U (DISC)	RMC-Type BG
C104	.01mf, 10%, 100V (Mylar Film)	

Item No.	Description	Part No.
C105	220pf, 5% 50V (MICA)	DM-10 or Equiv.
C106	270pf, 5% 50V (MICA)	DM-10 or Equiv.
C107	.01mf+80%-20% 500V Z5U (DISC)	RMC-Type BG
C108	.01mf+80%-20% 500V Z5U (DISC)	RMC-Type BG
C109	68pf, 5% 50V (MICA)	DM-10 or Equiv.
C110	.2mf, +80%-20% 12V (DISC)	Murata Type BC-12
C111	180pf, 5% 50V (MICA)	DM-10 or Equiv.
C112	390pf, 5% 50V (MICA)	DM-10 or Equiv.
C113	270pf, 5% 50V (MICA)	DM-10 or Equiv.
C114	250pf, 5% 50V (MICA)	DM-10 or Equiv.
C115	.2mf, +80%-20% 12V (DISC)	Murata Type BC-12
C116	.2mf, +80%-20% 12V (DISC)	Murata Type BC-12
C117	.2mf, +80%-20% 12V (DISC)	Murata Type BC-12
C118	39pf, 10% NPO (DISC)	RMC-Type CG
C119	.002mf, 20% 500V Z5F (DISC)	RMC-Type JG
C120	.047mf, 10% 100V (Mylar Film)	
C121	.01mf, 10% 100V (Mylar Film)	
C122	470pf, 20% 500V Z5F (DISC)	RMC-Type JG
C123	.015mf, 10% 100V (Mylar Film)	
C124	.002mf, 20% 500V Z5F (DISC)	RMC-Type JG
C125	.047mf, 10% 100V (Mylar Film)	
C126	.1mf, 20% 12V (DISC)	Murata Type BC-12
C127	1mf, 85°C 50V (Electrolytic)	(TMR-8H & 4H only)
C127	10mf, 85°C 10V (Electrolytic)	(TMR-1H only)
C128	.047mf, 10% 100V (Mylar Film)	
C129	.047mf, 10% 100V (Mylar Film)	
C130	50mf, 85°C 10V (Electrolytic)	
C131	.001+80%-20% 500V Z5U (DISC)	RMC-Type BG
C132	.001+80%-20% 500V Z5U (DISC)	RMC-Type BG
C133	.001+80%-20% 500V Z5U (DISC)	RMC-Type BG
C134	.2mf, +80%-20% 12V (DISC)	Murata Type BC-12
C135	250mf, 85°C 16V (Electrolytic)	
C136	1000mf, 85°C 16V (Electrolytic)	
C137	250mf, 85°C 10V (Electrolytic)	
COILS		
T101	Coil, 10.7 MHz Input	102-507
T102	Coil, 10.7 MHz Output	301-730
L101	Choke, 820uh	ES-2228
L102	Choke, 820uh	ES-2228
L103	Coil, Quadrature	301-517

INTEGRATED CIRCUITS

IC101	Integrated Circuit	301-679-1
IC102	Integrated Circuit, MC-1375P	301-576-3

Item No.	Description	Part No.
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DIODES

CR101	Diode, Silicon, 1N4148	102-412
CR102	Diode, Zener, 8.2V 5% 1W	1N4738A
CR103	Diode, Rectifier	1N4002
CR104	Diode, Rectifier	1N4002

FILTER

CF-1	455 KHz Ceramic Filter	301-723
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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 - 3 SCANNER BOARD 500 - 841(TMR-8H,4H)

Item No.	Description	Part No.
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RESISTORS

R301	33 ohm, 10%, 1/2W	
R302	150 ohm, 10%, 2W	
R303	1.2K, 10%, 1/4W (TMR-8H only)	
R304	1.2K, 10%, 1/4W (TMR-8H only)	
R305	10K, 10%, 1/4W (TMR-8H only)	
R306	10K, 10%, 1/4W (TMR-8H only)	
R307	10K, 10%, 1/4W	
R308	10K, 10%, 1/4W	
R309	1.2K, 10%, 1/4W	
R310	1.2K, 10%, 1/4W	
R311	10K, 10%, 1/4W	
R312	10K, 10%, 1/4W	
R313	1.2K, 10%, 1/4W	
R314	1 Meg., 10%, 1/4W	
R315	10K, 10%, 1/4W	
R316	33K, 10%, 1/4W	
R317	2.2K, 10%, 1/4W	
R318	12K, 10%, 1/4W	
R319	39 ohm, 10%, 1/4W	

CAPACITORS

C301	.001mf +80%-20% 500V Z5U (DISC) (TMR-8H only)	RMC-Type BG
C302	.001mf +80%-20% 500V Z5U (DISC) (TMR-8H only)	RMC-Type BG
C303	.001mf, +80%-20% 500V Z5U (DISC)	RMC-Type BG
C304	.001mf, +80%-20% 500V Z5U (DISC)	RMC-Type BG
C305	20mf, 10% 85°C 16V (Electrolytic)	
C306	20mf, 10% 85°C 16V (Electrolytic)	
C308	.001mf, +80%-20% 500V Z5U (DISC)	RMC-Type BG
C309	.001mf, +80%-20% 500V Z5U (DISC)	RMC-Type BG
C310	200mf, 85°C 10V (Electrolytic)	
C312	470pf ± 20% 500V Z5F (DISC)	RMC-Type JG
C313	10mf, 85°C 10V (Electrolytic)	
C314	.047mf, 10% 100V (Mylar Film)	

INTEGRATED CIRCUITS

IC301	Power Nand Gate (TMR-8H only)	301-576-2
IC302	Power Nand Gate	301-576-2
IC303	Quad-2 Input Nand Gate	301-576-4
IC304	Quad-2 Input Nand Gate	301-576-4

Item No.	Description	Part No.
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TRANSISTORS

Q301	Silicon NPN, MPS5172 (TMR-8H only)	SPS-952
Q302	Silicon NPN, MPS5172 (TMR-8H only)	SPS-952
Q303	Silicon NPN, MPS5172	SPS-952

DIODES

CR309	Silicon, Zener, 6.0V, 5%, 1/2W	MZ92-6.0B
CR311	Silicon, Signal, 1N4148	102-412
CR312	Silicon, Signal, 1N4148	102-412
CR313	Silicon, Signal, 1N4148	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. (TMR-8H only)	No. 53
M306	Incandescent, 14.4V, 120 MA. (TMR-8H only)	No. 53
M307	Incandescent, 14.4V, 120 MA. (TMR-8H only)	No. 53
M308	Incandescent, 14.4V, 120 MA. (TMR-8H only)	No. 53

4 - 4 CHASSIS ASSEMBLY

Item No.	Description	Part No.
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ELECTRICAL COMPONENTS

R1	5K, Volume Control/Switch (SW 1) (TMR-8H & 4H only)	102-479-3
R1	5K, Volume Control/Switch (SW 1) (TMR-1H only)	102-303-5
R2	7.5K, Squelch Control (TMR-8H & 4H only)	102-479-2
R2	7.5K, Squelch Control (TMR-1H only)	102-303-6
R3	1 Meg., 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
M1	Lamp, No. 53 (TMR-1H only)	
Y200	Crystals, Receive (Specify frequency)	301-532
SW1-8	1P2T, 8 Stations on Single Frame (TMR-8H only)	UID 500-874-3 Prom. 301-551-3
SW1-4	1P2T, 4 Stations on Single Frame (TMR-4H only)	UID 500-874-2 Prom. 301-551-2
SW9	1P2T, Push-push (TMR-8H & 4H only)	UID 500-874-1 Prom. 301-551-1
SW10	1P2T, Momentary (TMR-8H & 4H only) On Same Frame with SW9	UID 500-874-1 Prom. 301-551-1
Ant.-1	Telescoping Antenna	P-6-125/102
Spk.-1	Speaker, 3.2 ohm, 4-in. Sq. Assembly	301-537-1
J1	Antenna, Connector	Cinch 201-24-01-002
P1	Connector, Chassis, Power	Beauchaine P-3304-AB
S1-3	Connector, Cable, Power	Beauchaine S-3304-FHT
F1	Fuse, 1½ Ampere, 3AG	
	DC Power Cord Assembly	MA-9
	AC Power Cord Assembly	MA-1
	Cable, Coaxial 50 ohm, Teflon	RG-188/U

MECHANICAL COMPONENTS

Front Panel (Casting)	500-813
Face Plate (TMR-8H only)	301-513
Face Plate (TMR-4H only)	301-538
Face Plate (TMR-1H only)	301-535
Knob, Volume and Squelch (TMR-8H & 4H only)	Plasticware 27500
Knob, Volume and Squelch (TMR-1H only)	Phillips Series No. 3-9

Item No.	Description	Part No.
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	Lens, Red, Channel Lamps	102-353-1
	Socket Pins, Crystals	T35-362
	Terminal Board, 4 Lug (Rear Panel)	300-079-14
	Cabinet/Wrap Assembly	600-259
	Feet, Rubber	Atlantic India 734
	Bracket, Mobile Mounting	301-431
	Manual, Owner's Instruction (TMR-8H)	IS-10-270-1
	Manual, Owner's Instruction (TMR-4H)	IS-10-275-1
	Manual, Owner's Instruction (TMR-1H)	IS-10-271-1
	Manual, Service (\$5.00 Prepaid)	SM-10-270-3