Regency ELECTRONICS INC.

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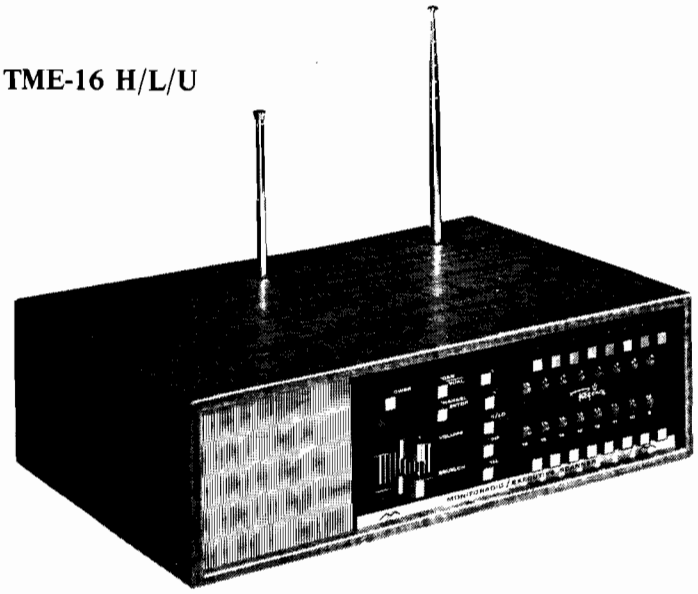
SERVICE MANUAL

TME-16 H/L/U



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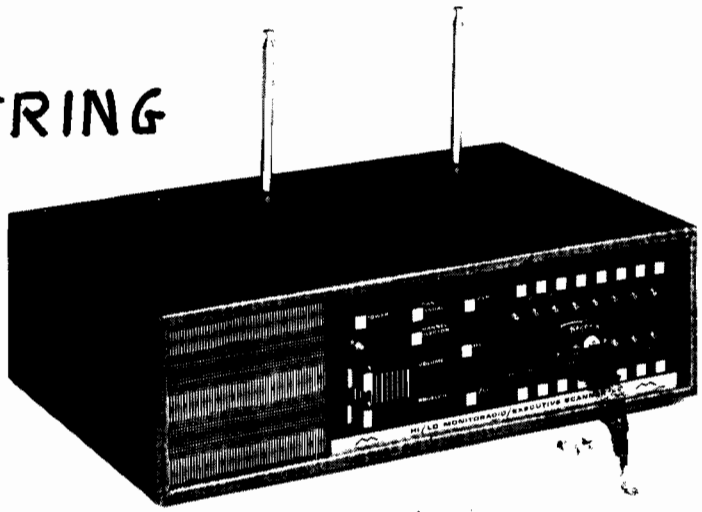


TME-16 H/L

MONITORADIO RECEIVER

7707 RECORDS STREET
INDIANAPOLIS, INDIANA 46226

PRINTED IN U.S.A.
1-73

PRICE $5.00
SM-10-324-1

MONITORADIO RECEIVERS

CONTENTS

SECTION 1 SPECIFICATIONS AND CIRCUIT DESCRIPTION

1-1 SPECIFICATIONS (SUBJECT TO CHANGE WITHOUT NOTICE)

RECEIVER-MODEL TME-16H/L/U

Frequency Range..... Low Band; 30-50 MHz
High Band; 150-174 MHz
UHF Band; 450-470 MHz
Antenna Impedance.....50 Ohms
Channels.....16, Crystal Controlled
Sensitivity (at tune-up).....Low Band; 0.5μv (max.)
High Band; 0.6μv (max.)
UHF Band; 0.7μv (max.)
Frequency Separation
Low Band.....6 MHz
Model 8 H/LL/U.....33-39 MHz
Model 8 H/LM/U.....37-43 MHz
Model 8 H/LH/U.....41-47 MHz
High Band.....6 DB Bandwidth; 8 MHz
10 DB Bandwidth; 12 MHz
UHF Band.....6 DB Bandwidth; 8 MHz
10 DB Bandwidth; 12 MHz

Selectivity (I.F.)..... 6 DB Down; ±7 KHz (min.)
50 DB Down; ±18 KHz (max.)
Spurious Rejection(excluding Primary Image).....50 DB
AFC Range (UHF Board Only).....Approx. ±6 KHz
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

RECEIVER-MODEL TME-16H/L

Frequency Range.....Low Band 30-50 MHz
High Band; 150-174 MHz
Antenna Impedance.....50 Ohms
Channels.....16, Crystal Controlled
Sensitivity (at tune-up).....Low Band; 0.5μv (max.)
High Band; 0.6μv (max.)

Frequency Separation
Low Band.....6 MHz
"200" Series RF Board.....40-47 MHz
"300" Series RF Board.....33-40 MHz
High Band..... 6 DB Bandwidth; 8 MHz
10 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

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.....24
Field Effect Transistors.....Model TME-16H/L/U only; 1
Diode (Total)..... Model TME-16H/L; 20
Model TME-16H/L/U; 21
Zener Diodes.....1
Rectifier Diodes.....2
Varactor Diode.....Model TME-16H/L/U only; 1
Scanner Section
Integrated Circuits.....8
Silicon Transistors.....8
Diodes (Total).....Model TME-16H/L/U; 31
Model TME-16H/L; 39
Zener Diodes.....2

GENERAL

Front Panel Size.....3 7/8" x 13"
Depth (Including Knobs and Rear Panel Connectors).....9 1/2"
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 for high band crystals and the desired

receive frequency, or Part No. 301-542 for low band crystals and the desired receive frequency, or Part No. 301-603 for UHF 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:
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

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

UHF Band Crystal:

a. Crystal Frequency = $\frac{\text{Receive Frequency} - 10.7 \text{ MHz}}{9}$

EXAMPLE:
Crystal Frequency = $\frac{458.000 \text{ MHz} - 10.700 \text{ MHz}}{9}$

Crystal Frequency = 49.70000 MHz

b. Frequency Tolerance of .001%
c. 3rd overtone
d. Parallel resonance-18pf load capacity
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 antennas if they are 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 in the proper socket pins as indicated on the Crystal Location Diagram 3-12. The sockets are numbered, in pairs, corresponding to the channel number on the front panel.

For high and low band crystals inserted into the 301-563 High/Low RF Board, band programming will have to be performed. 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 3-13.

NOTE: If a particular channel is not used in the High/Low Board (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 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, carefully slide the unit back into the cabinet. Screw the four feet back into place and replace the rear panel. Push the volume and squelch knobs back on their shafts and the unit is again ready for operation.

1-4 RF BOARD

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 by 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 or 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.

On Model TME-16H/L, the "300" series RF board is identical to the previous description except for one being a "200" series board and the other a "300" series board.

For the "300" series RF board for Model TME-16H/L/U, Q301 is a Field Effect RF transistor used in the common gate configuration. Q301 has broad band tuned circuits in its input and output circuitry. The output from the RF amplifier is coupled to the mixer transistor Q302.

The first L.O. (local oscillator), Q303, uses third overtone crystals. The output frequency from the oscillator, (3 times the crystal frequency), is coupled to the base of Q307. Q307 is a tripler which multiplies the oscillator output by 3 for use as the ultimate injection frequency (9 times the crystal frequency). The output of Q307 is coupled to the mixer transistor, Q302.

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 automatic frequency control circuit (AFC) consists of Q304, Q305, Q306 and CR309. Q305 and Q306 form a differential amplifier. The voltage at pin 1 of IC 102 is determined by the amount the signal is off frequency; this is called an error voltage. The error voltage is amplified by Q304 and applied to CR309. CR309 is a voltage dependent capacitor, or varactor, in the oscillator circuit. When the voltage applied to CR309 changes, the frequency of the oscillator is changed.

The second L.O. frequency is normally 10.245 MHz. In cases where interference is encountered from a signal approximately 910 KHz from the desired frequency, the second L.O. may be changed to 11.155 MHz. If the second L.O. is 10.245 MHz, the error voltage is taken from the collector of Q306. If the second L.O. has been changed to 11.155 MHz, the error voltage is taken from the collector of Q305. The correct combination can be determined by checking the frequency stamped on the second L.O. crystal, (Y101).

1-5 IF-AUDIO BOARD

The IF input circuitry consists of T101 and Q101, used as an IF amplifer. 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 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" occuring 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) arrived, 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

The squelch tail circuit consists of R418, CR413, C406 and R419. 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 C406. Removing C406 from the circuit will remove the squelch tail completely.

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 401, IC 402, IC 501 and IC 502, 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 403, IC 404, IC 503 and IC 504, convert the repetitive clock pulses into an electronic sequencing or stepping action. Each register has four output lines and all sixteen 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 (Q401) which feeds the output pulses back to the input of the first register (IC 403). 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 (Q406) followed by a pulse amplifier (Q407) and a clock line driver (Q408) 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 R 412 and C405.

The NORMAL scan rate is approximately 15 Hz and it is determined by R412, C404 and C405. C404 is essentially placed in parallel with C405 whenever Q405 is con-

ducting. When the scanner reaches an active channel (programming button for that channel is pushed in), a pulse from the register's activate output line turns on Q402 which cuts off Q 403. When Q403 is cut off (not conducting), Q405 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, C403, in parallel with C404. Holding 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.

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 (Q404) starts conducting. When Q404 is conducting, it lowers the voltage available to the emitter of the unijunction (Q406) 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 C403, which is connected to the collector of Q404 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.

The three push buttons labeled 1-8, ALL and 9-16 in Model TME-16H/L, or the five push buttons labeled Hi, Lo, Hi/Lo, UHF and ALL in Model TME-16H/L/U, select which group of programming buttons is connected to the register's activate output line. For example, when the 9-16 button is pushed in, only the programming buttons 9 through 16 are connected to the registers so that these channels can be activated. Thus, even though channels 1 and 5 (for example) may be programmed for operation, the enter group of buttons 1 through 8 are actually connected so as to be in the inactive mode regardless whether or not they are pushed in or out. In essence, the group Selector buttons overide the channel programming buttons in regards to activation of a particular 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 2-8 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.

Diagram 3-12 shows location of RF boards.

2-2 QUADRATURE DETECTOR ALIGNMENT

NOTE: Omit this section for Model TME-16H/L/U

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 the antenna input.

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

2-3-3 Adjust volume control for 0.5 volt 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 form.

2-3-5 Pre-align quadrature detector by tuning L103 for maximum noise (AC voltmeter). Model TME-16H/L/U only.

2-3-6 Adjust volume control for 1 volt noise reading on AC voltmeter.

2-3-7 Connect the R.F. signal generator to the antenna input jack of "200" series board. Turn modulation off. Set the generator to the high band crystal frequency that will be used for high band section alignment.

2-3-8 Adjust the signal generator output until the voltmeter reads 0.2 volts.

2-3-9 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.

NOTE: Coils will have two peaks; adjust core of T101 to peak away from center of the coil form, and adjust core of T201 to peak nearest the center of the coil form.

2-3-10 Set the generator frequency to the secondary image frequency. This is 910 KHz below the channel frequency. NOTE: some receivers have the second oscillator at 11.155 MHz, in this case the image frequency is 910 above the channel frequency. Check the frequency marked on top of the crystal.

2-3-11 Adjust the signal generator output until voltmeter reads .2 volts.

2-3-12 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 withing two turns of the position in step No. 4 and 9.

2-4 RF ALIGNMENT ("200" SERIES BOARD)

2-4-1 Preset the slugs L201, L202 and L203 out of the outer end of the coil form three turns. Preset 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 of "200" series R.F. board. 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 ("300" SERIES BOARD - TME - 16 H/L)

2-5-1 Preset the slugs L301, L302 and L303 out of the outer end of the coil form three turns. Preset L304, L306, L307 and L308 four turns from the outer ends of the coil form.

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

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

HIGH BAND SECTION

2-5-4 Activate high band channel nearest to center of high band frequencies being used.

2-5-5 Connect signal generator to antenna input jack of "300" series RF board. 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 T301 for maximum quieting (lowest meter reading). Adjust signal generator output to maintain voltmeter reading between .1 and .2 volts of "300" series RF board.

2-5-8 Adjust L306, L307, L308 and L304, 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

2-5-9 Activate Low Band channel nearest to center of low band frequencies being used.

2-5-10 Set generator accurately to the center frequency of the channel being used for alignment. Turn modulation off.

2-5-11 Adjust output of signal generator until AC voltmeter reads 0.2 volts.

2-5-12 Adjust coils L301, L302, and L303 (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.

2-6 RF ALIGNMENT ("300" SERIES BOARD - TME - 16 H/L/U)

2-6-1 Connect the R.F. signal generator to the antenna input jack of the "300" series board. Set the generator to the operating crystal frequency.

2-6-2 Adjust output of signal generator until AC voltmeter reads 0.2 volts.

2-6-3 Pre-Adjust Trimmer Capacitor (C317) so that the silvered half-moon section is nearest to the rear of the receiver.

2-6-4 Adjust T301 for maximum quieting (lowest meter reading). Adjust signal generator output to maintain voltmeter reading between .1 and .2 volts.

2-6-5 Adjust C301 and C302 (trimmer capacitors) in that order, for maximum quieting (lowest meter reading). Adjust signal generator output to maintain voltmeter reading between .1 and .2 volts. Repeat adjustments until no further improvements can be made.

NOTE: Use non-metallic screwdriver for trimmer adjustments.

Peaks are very sharp, tune with care. Two peaks can be observed, tune to peak with silver moon section away form I.F. Board.

2-6-6 Adjust the core of L303 for maximum quieting (lowest meter reading). Adjust signal generator to maintain reading on AC voltemter between .1 and .2 volts.

NOTE: To properly adjust L303, C317 must be pre-adjusted as in Step 2-3-11.

2-6-7 Adjust C317 counter clockwise with non-metallic screwdriver for maximum quieting (lowest meter reading). Adjust signal generator to maintain reading on AC voltmeter between .1 and .2 volts. Do NOT re-adjust L303 after C317 is adjusted.

2-6-8 Re-adjust C301, C302 and C317 (only) for maximum quieting (lowest meter reading). Adjust signal generator output to maintain .1 and .2 volts. Repeat adjustments until no further improvements can be made.

2-7 AFC ALIGNMENT (TME-16H/L/U ONLY)

NOTE: This adjustment requires an accurate 10.7 MHz ±1 KHz oscillator or 455 KHz ±500 Hz oscillator to be used as a reference signal. If none are available, proceed to Step 2-7-5.

2-7-1 Pre-align Quadrature Detector by tuning L103 for maximum noise (AC voltmeter reading) at the speaker terminals.

2-7-2 With a coupling loop, inject "reference" signal (either 10.7 MHz or 455 KHz) to produce good quieting (more than 30 DB quieting). Adjust R326 for reading of 3.8 to 4.0 volts at the collector of Q304.

2-7-3 Remove the "reference" signal and have the unit squelched and receiving no signal. The voltage on the collector of Q304 shall be between 3.2 and 4.6 volts. If not, note voltage and proceed to Step 2-7-4. If voltage is between 3.2 and 4.6 volts, AFC Alignment is complete.

NOTE: Any further adjustments made to L103 and R326 will require AFC to be re-adjusted.

2-7-4 Inject "Reference" signal and monitor voltage on collector of Q304, adjust L103 for same voltage as noted in Step 3. Re-adjust R326 for a voltmeter reading of 3.8 to 4.0 volts. Repeat Step 2-4-3.

NOTE: Do not adjust L103 more than 1/4 turn at a time.

2-7-5 If an accurate I.F. signal source is not available, an approximate AFC alignment can be made by adjusting L103 for maximum noise (AC voltmeter reading) at the speaker terminals, and with unit squelched and receiving no signal, adjust R326 for a voltmeter reading of 3.2 to 4.6 on the collector of Q304.

NOTE: Units equiped with a 10.245 MHz crystal have the jumper in the AFC circuit connected between the base of Q304 and collector of Q306. When a 11.155 MHz crystal is used, the jumper is connected between the base of Q304 and the collector of Q305. If crystal is changed from one frequency to the other, the jumper must be changed.

2-8 NOISE BALANCE ADJUSTMENT (TME-16H/L ONLY)

NOTE: This adjustment may be required only if excessive "ignition noise" is encountered. Usually, the "noise" problem is caused by improper of inadequate noise suppression of the vehicle's ignition system. In Models containing UHF RF Board (TME-16H/L/U), noise balance is achieved through AFC Alignment.

2-8-1 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.

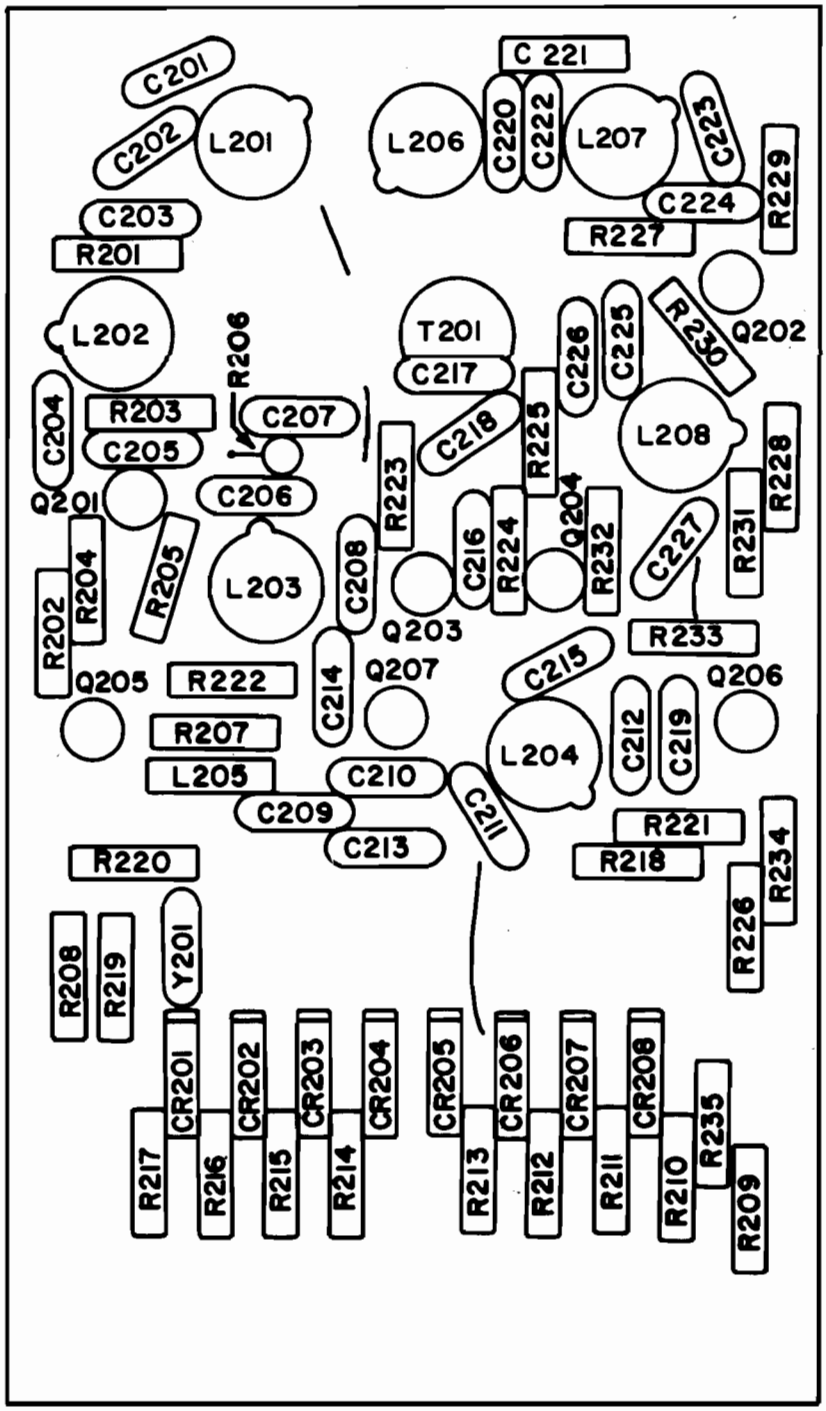
2-8-2 Connect the oscilloscope to the junction of Q109's emitter and Q110's collector, or to the speaker terminals.

2-8-3 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 of negative if an unbalanced condition exists.

2-8-4 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 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

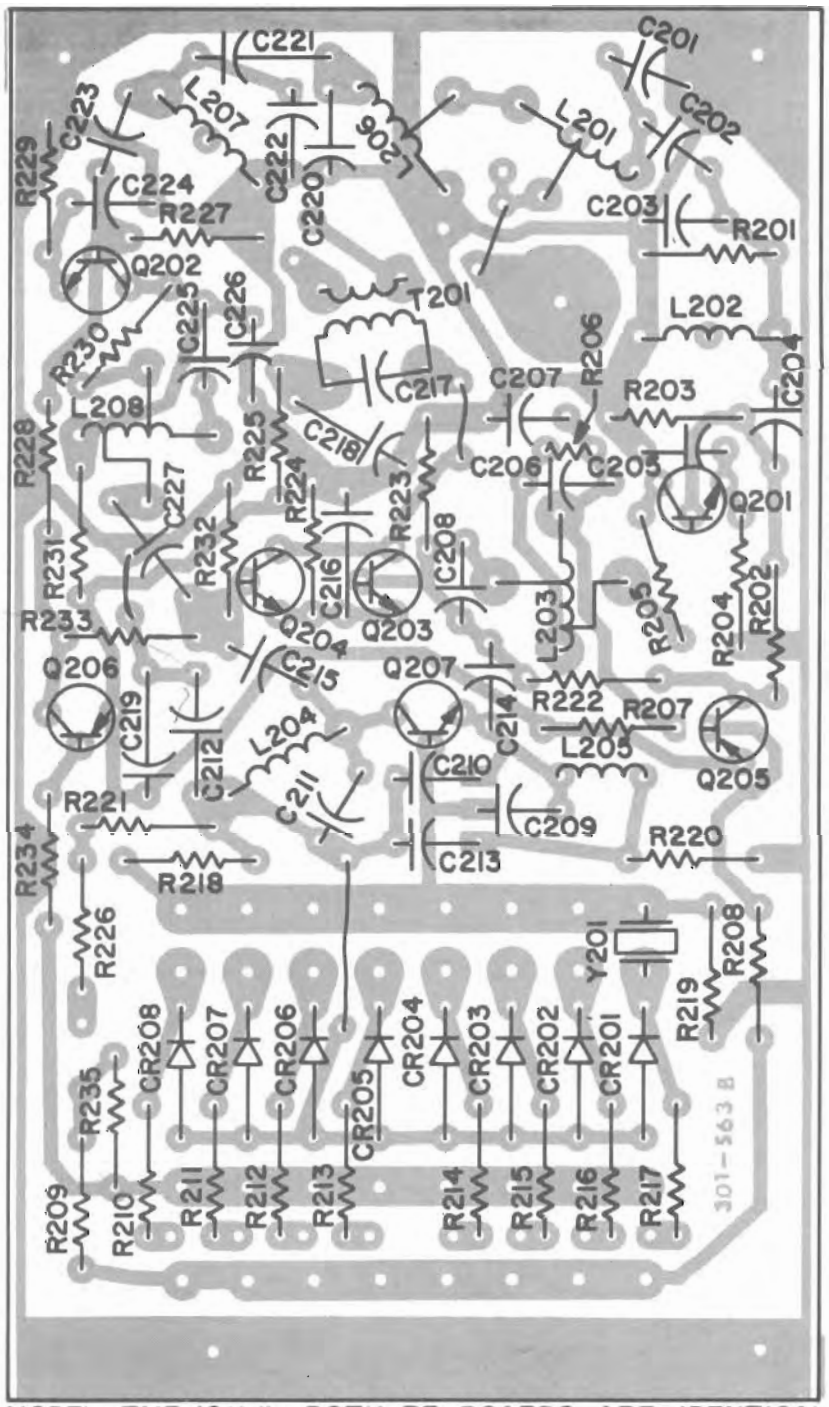
RF BOARD 301-563



MODEL TME-16H/L: BOTH RF BOARDS ARE IDENTICAL EXCEPT FOR ONE BEING A "200" SERIES BOARD AND THE OTHER A "300" SERIES BOARD.

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

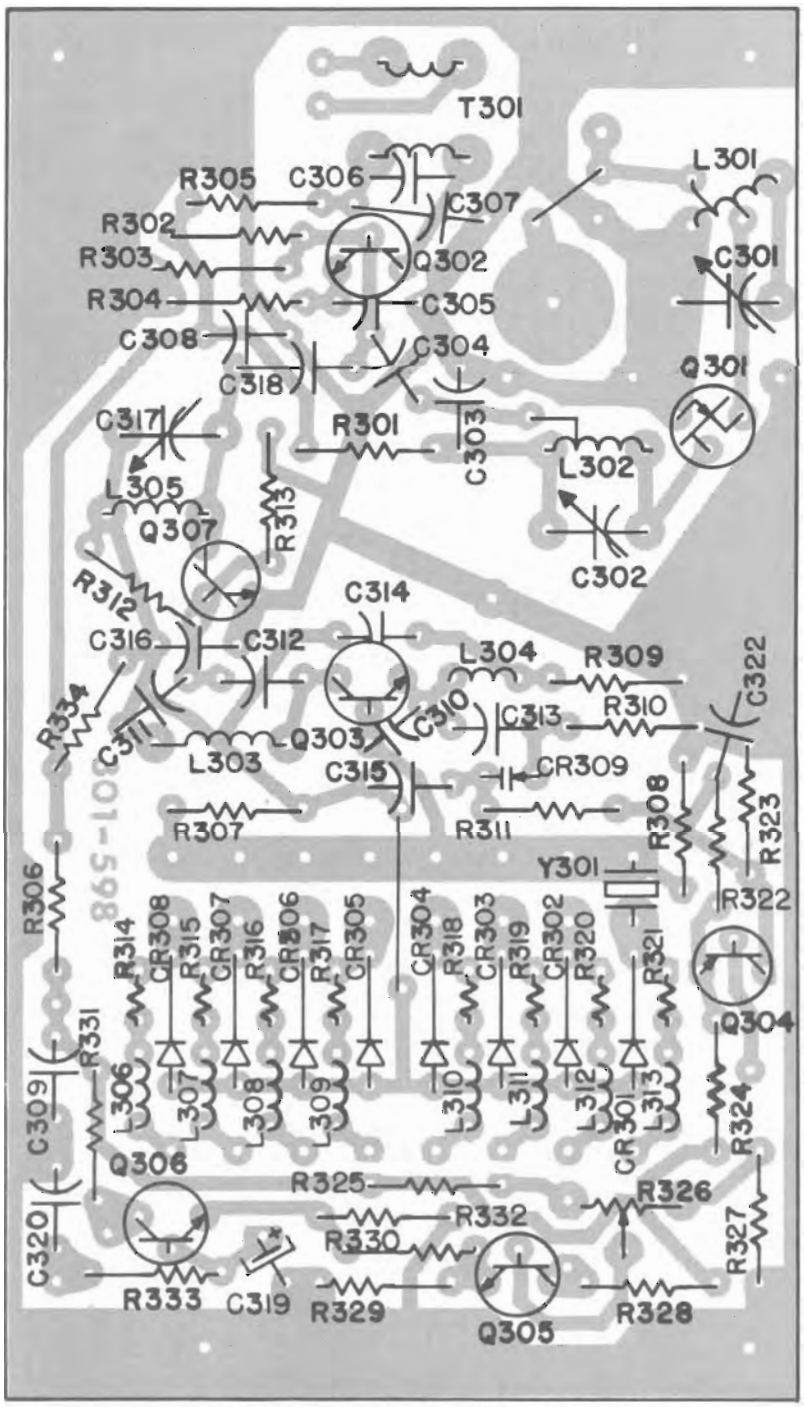
RF BOARD 301-563



MODEL TME-16 H/L: BOTH RF BOARDS ARE IDENTICAL EXCEPT FOR ONE BEING A "200" SERIES BOARD AND THE OTHER A "300" SERIES BOARD.

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

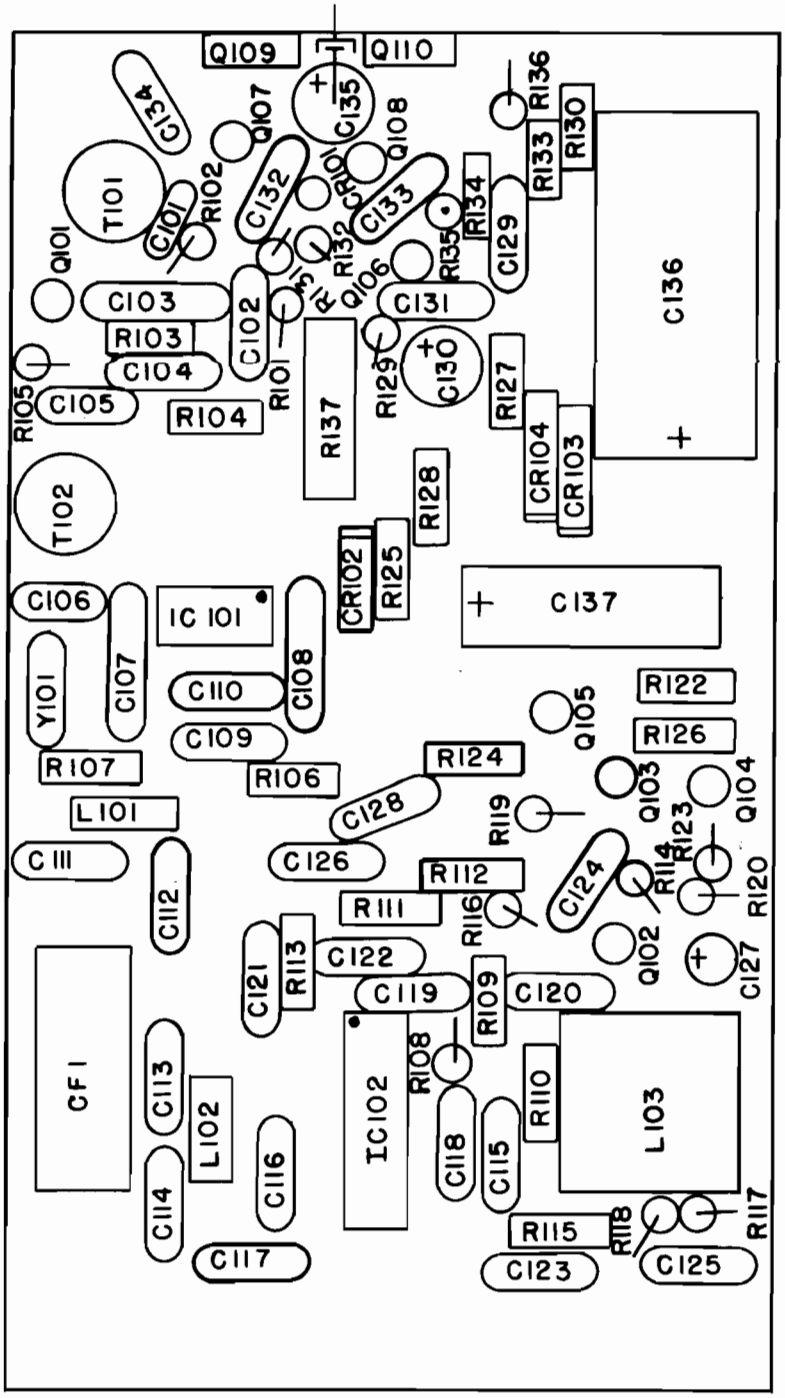
RF BOARD 301-598



(TME – 16 H/L/U ONLY)

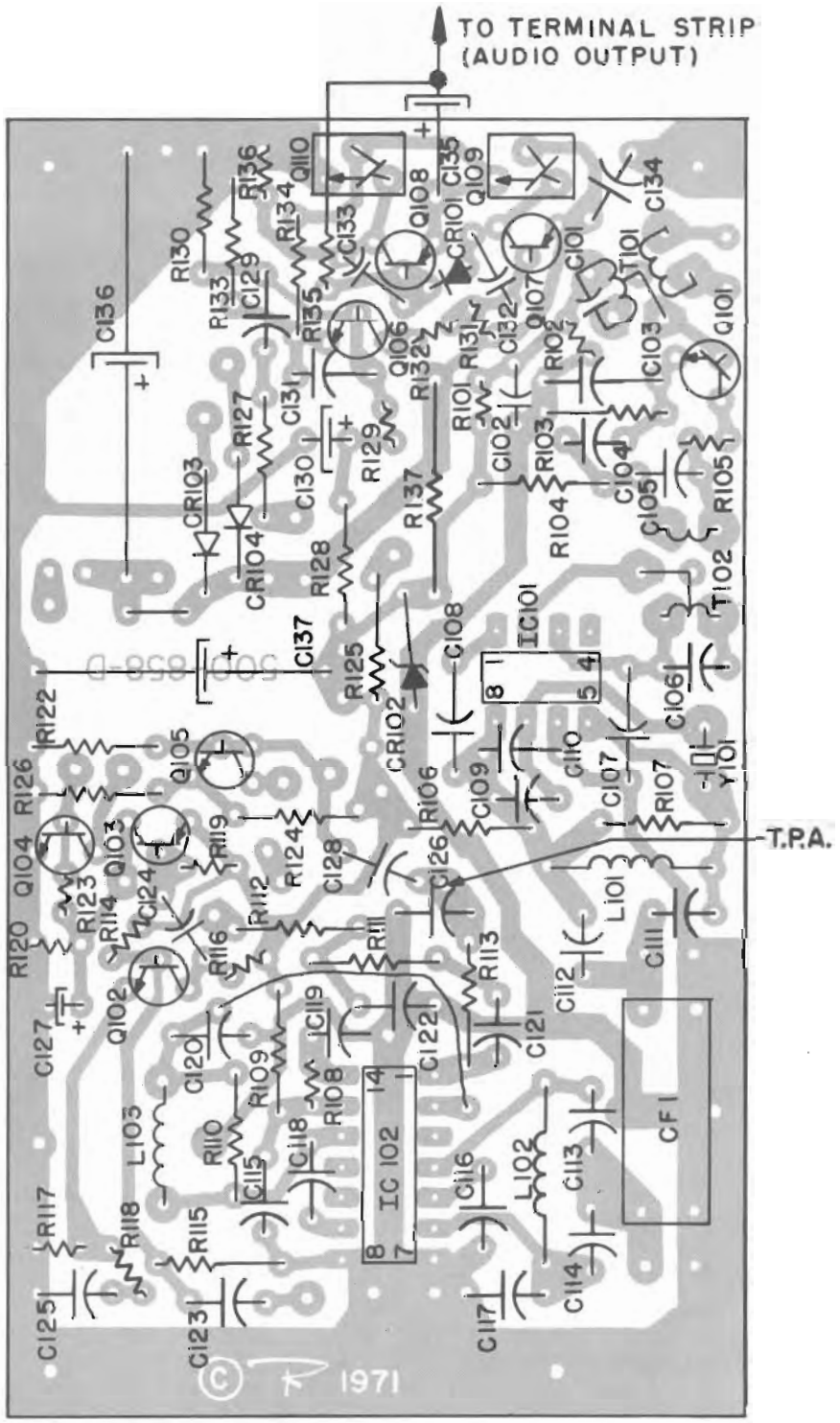
3-4 RF BOARD BOTTOM VIEW (UHF BOARD)

IF BOARD 500-858



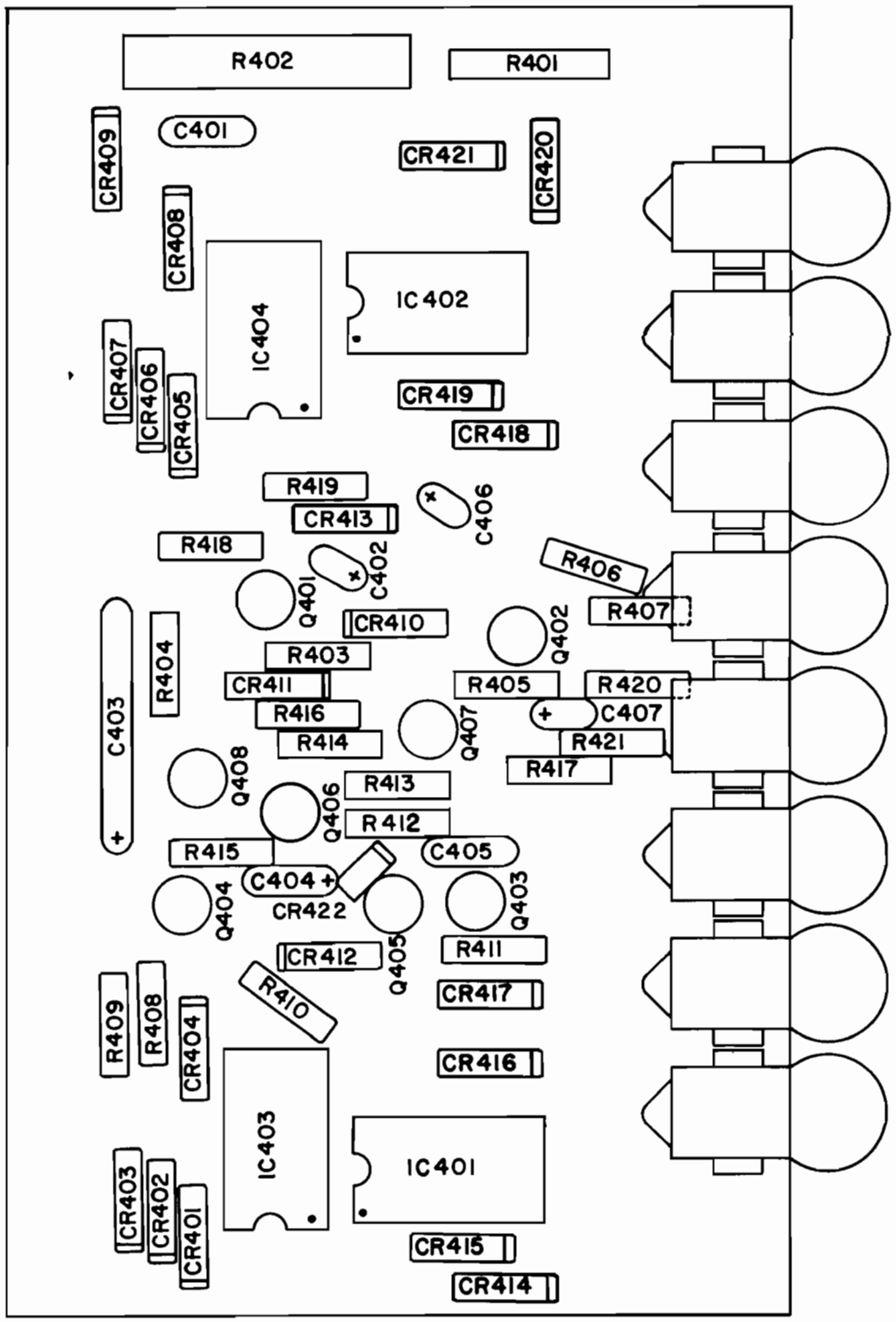
3-5 IF-AUDIO BOARD PARTS PLACEMENT DIAGRAM

IF BOARD 500-858

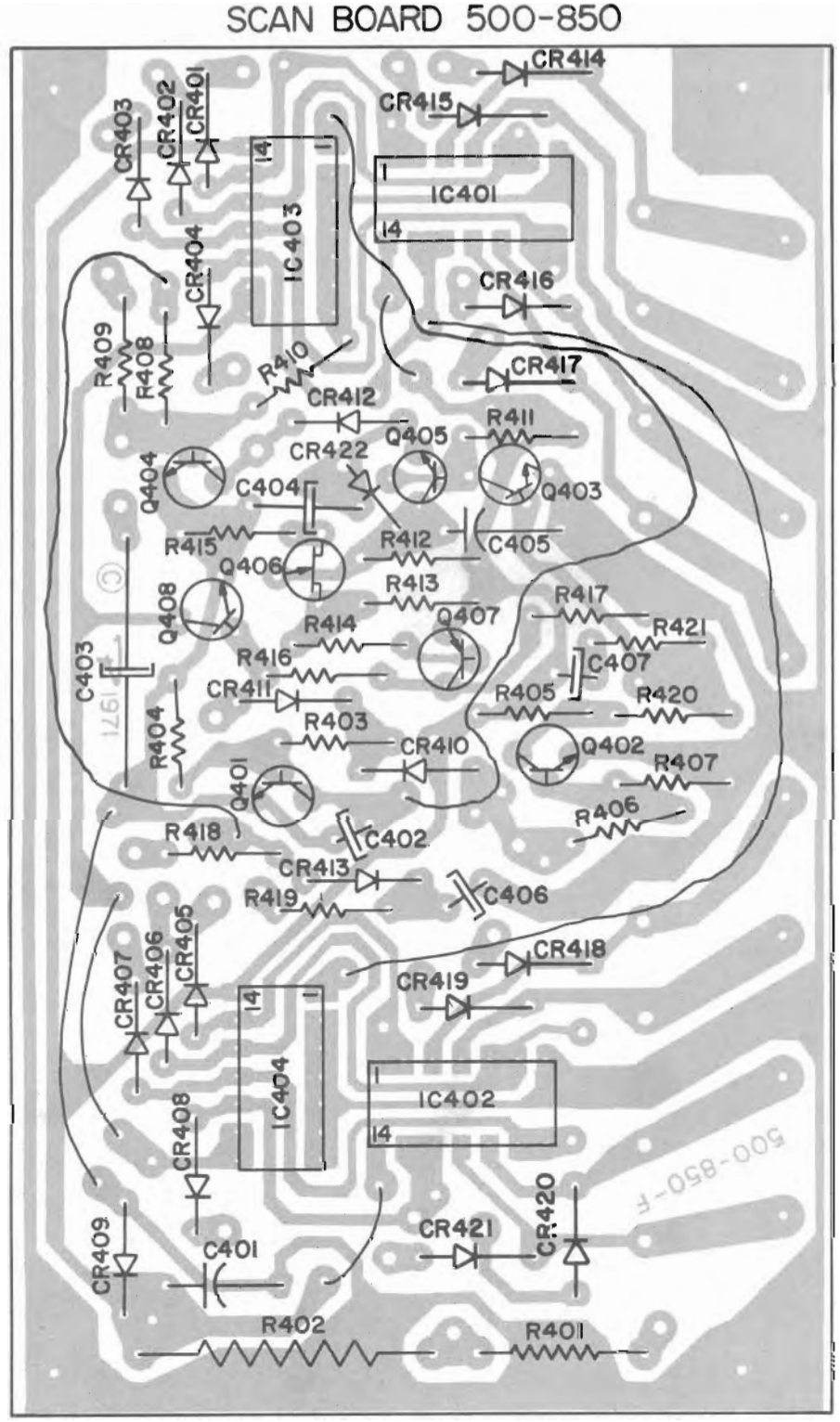


3-6 IF-AUDIO BOARD BOTTOM VIEW

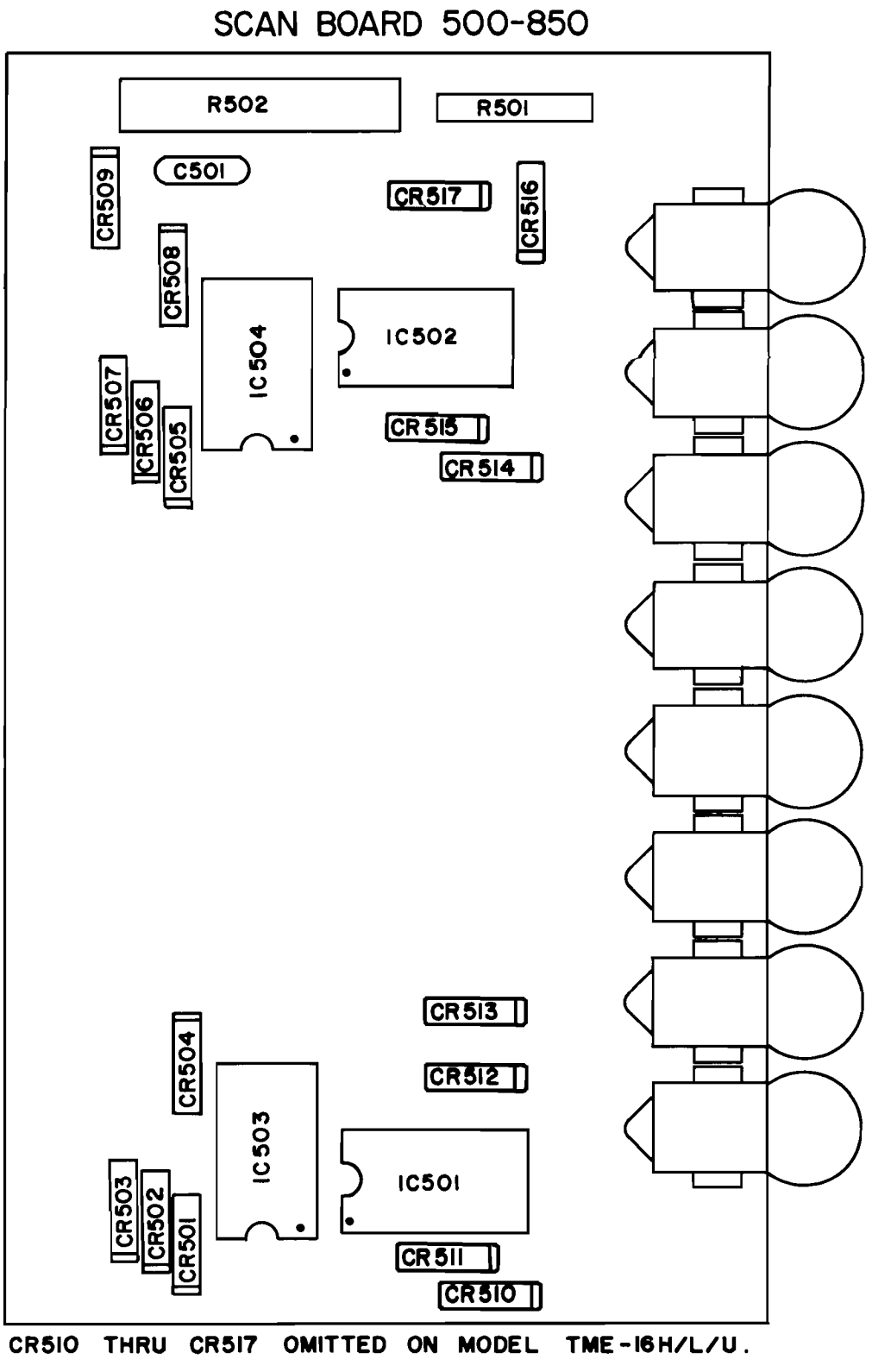
SCAN BOARD 500-850



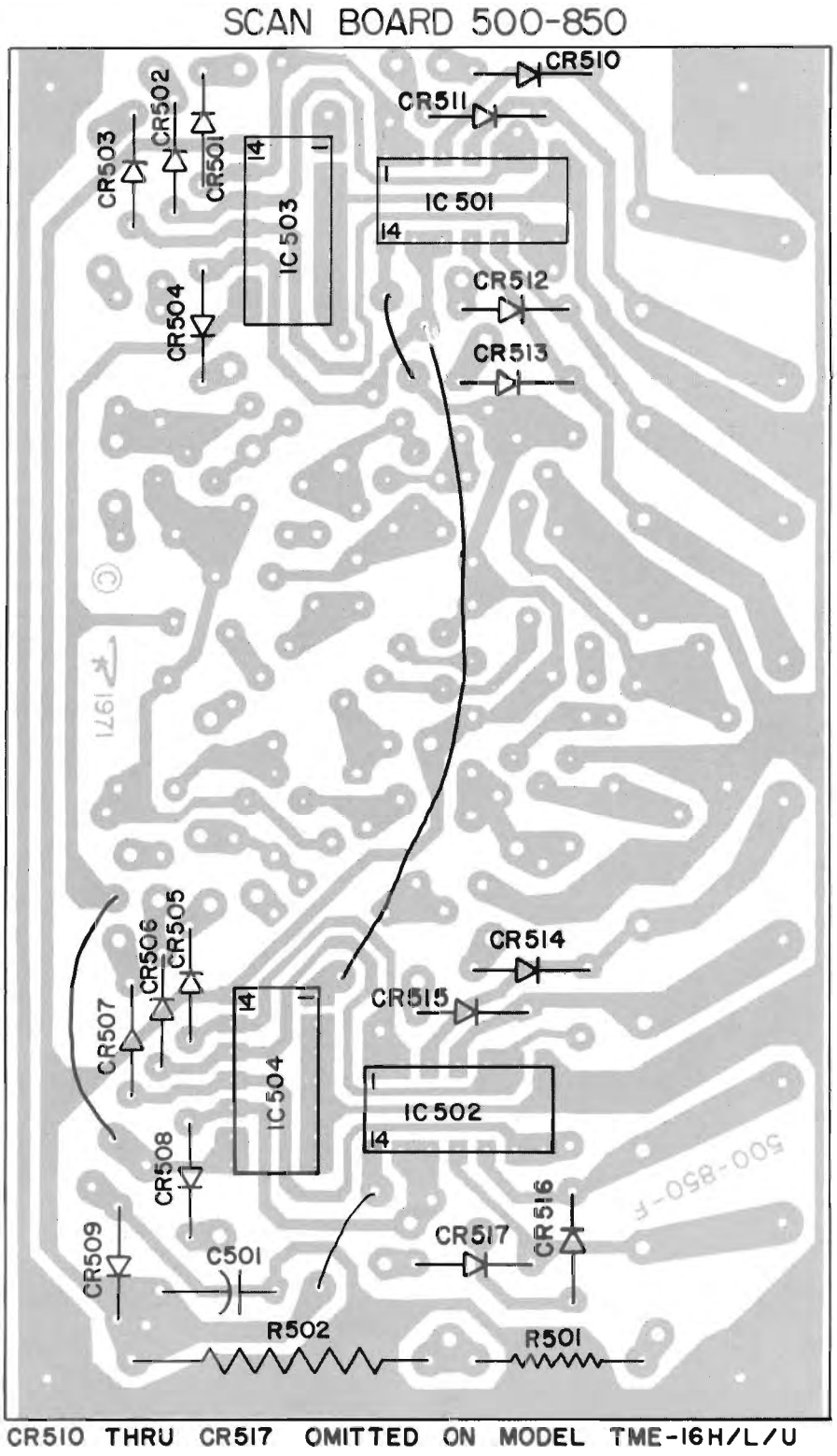
3-7 SCANNER BOARD PARTS PLACEMENT DIAGRAM



3-8 SCANNER BOARD BOTTOM VIEW



3-9 SCANNER BOARD (SECONDARY) PARTS PLACEMENT DIAGRAM



3-10 SCANNER BOARD (SECONDARY) BOTTOM VIEW

3-11 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	Low Band Activated
		0	0	7.6	High Band Activated
Note: Model	Q202	0	0	7.6	Low Band Activated
TME-16H/L		3.1	3.8	7.0	High Band Activated
has "300"	Q203	1.6	2.3	7.1	Low Band Activated
Series RF Board		1.6	0	7.1	High Band Activated
voltages identical	Q204	1.6	0	7.1	Low Band Activated
to "200" Series		1.6	2.3	7.1	High Band Activated
RF Board voltages	Q205	7.8	7.4	7.6	Low Band Activated
		7.8	11.0	0V	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. 301-598	Q301(FET)	0	0	5.5	
	Q302	1.5	2.2	6.8	
NOTE: Model	Q303	.25	3.1	6.8	
TME-16H/L/U	Q304	7.8	7.2	3.0-5.0	
only.	Q305	2.9	3.6	7.4	
	Q306	2.9	3.6	7.2	
	Q307	0	.2	6.8	
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	
Scan Board	Q401	0	.70	.10	(SCAN)
		0	.70	0	(MAN)
No. 500-850	Q402	0	.70	.10	

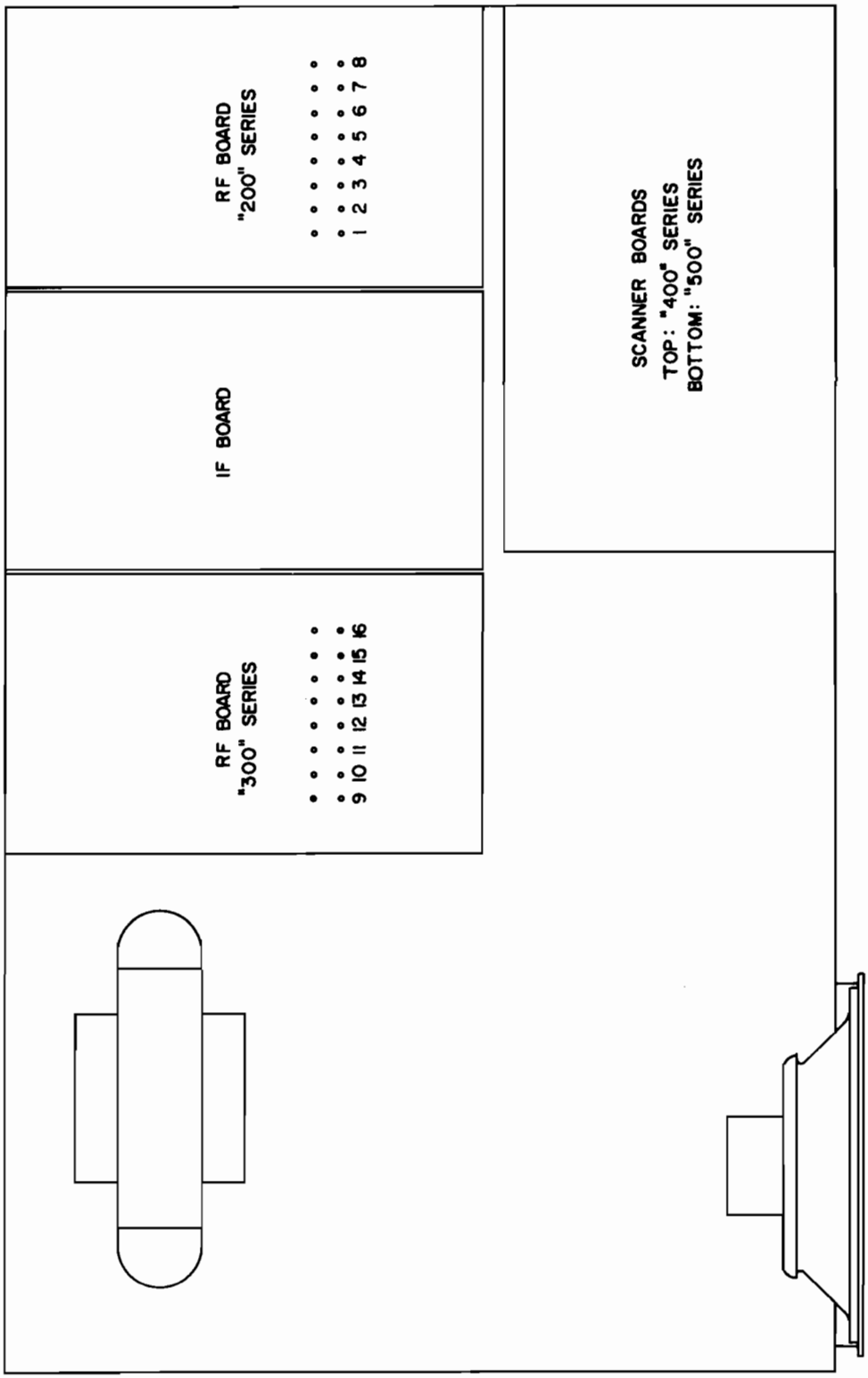
3-11 VOLTAGE DATA (CONTINUED)

TRANSISTOR	EMITTER (Source)	BASE (Gate)	COLLECTOR (Drain)
Q403	0	.10	3.6 (SCAN)
	0	.10	1.2 (MAN)
Q404	0	.10	2.8 (SCAN)
	0	.70	0.2 (MAN)
Q405	3.1	3.6	3.2 (SCAN)
	0.7	1.2	0.7 (MAN)
Q407 (PNP)	5.1	4.5	.20 (SCAN)
	5.1	4.6	.10 (MAN)
Q408	0	.10	1.5
	Base 1	Emitter	Base 2
Q406	.20	3.2	4.6 (SCAN)
(unijunction)	.20	0.7	4.6 (MAN)

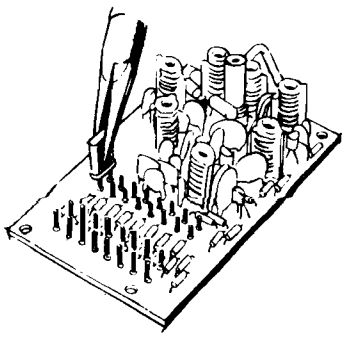
VOLTAGE DATA – INTEGRATED CIRCUITS

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 (M401 is lighted).

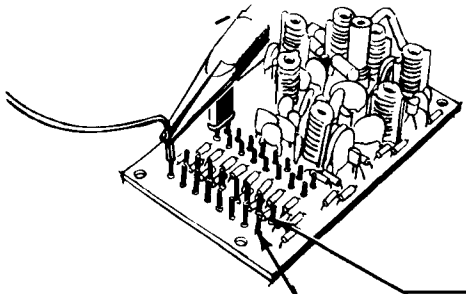
	IC No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
IF Board 500-858	IC 101	4.2	0.7	0.7	4.2	7.8	0	4.2	7.8	–	–	–	–	–	–	
	IC 102	4.0	3.5	0	1.3	1.3	1.3	0	0	0.2	1.4	2.9	3.5	7.6	5.0	
Scan Board 500-850	IC 401	.7P	.7P	9P	9P	.7P	.7P	0	.7P	.7P	9P	9P	.7P	.7P	5.1	(Scan)
		3.3	3.3	0.5	10.8	0.2	0.2	0	0.2	0.2	10.8	10.8	0.2	0.2	5.1	(Man)
	IC 402	.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 403	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 404	.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)
Scan Board Secondary 500-850	IC 501	.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 502	.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 503	.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)
	IC 504	.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)



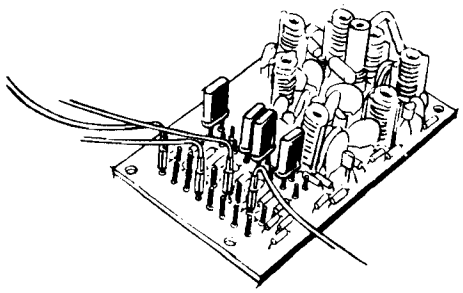
3-12 CRYSTAL LOCATION DIAGRAM



Insert crystal for high or low band frequency *of your choice*

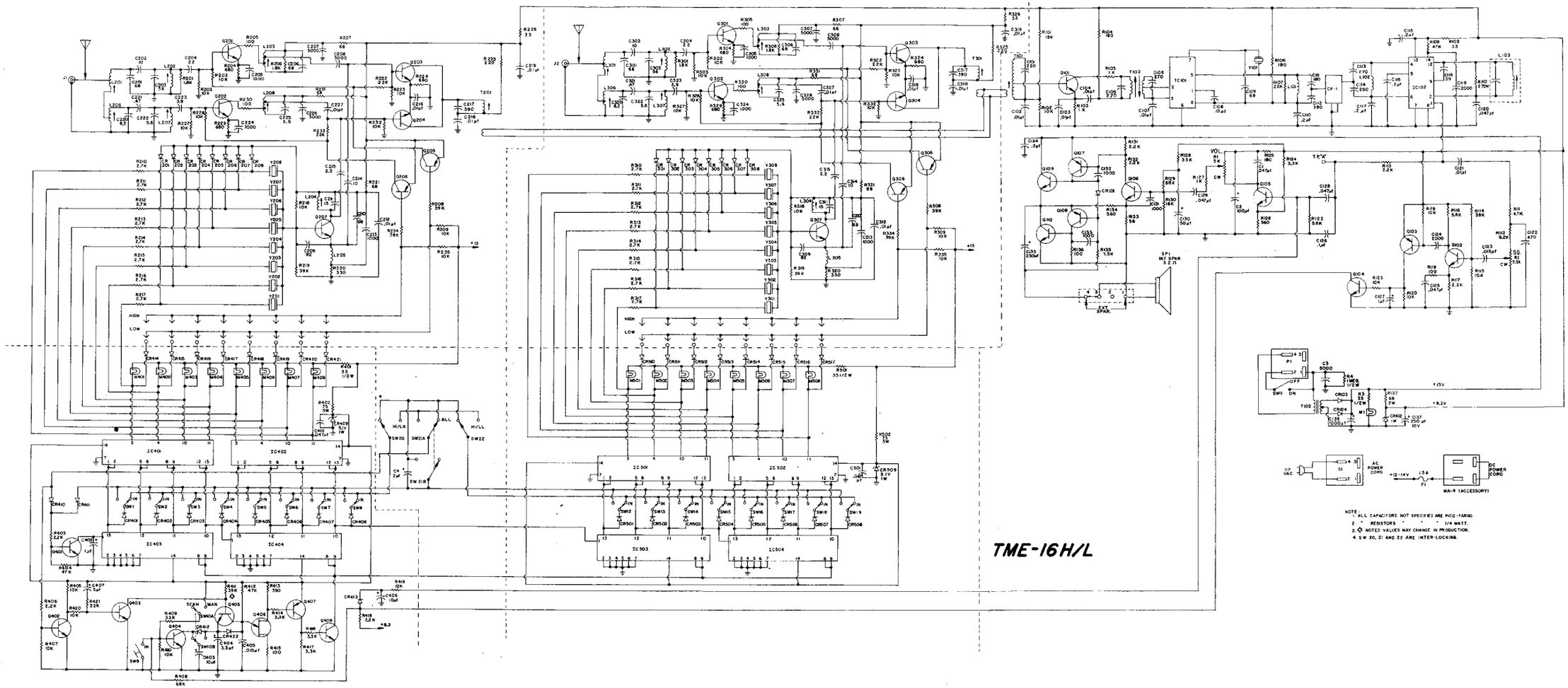


Connect lead to corresponding high or low band terminal programmer

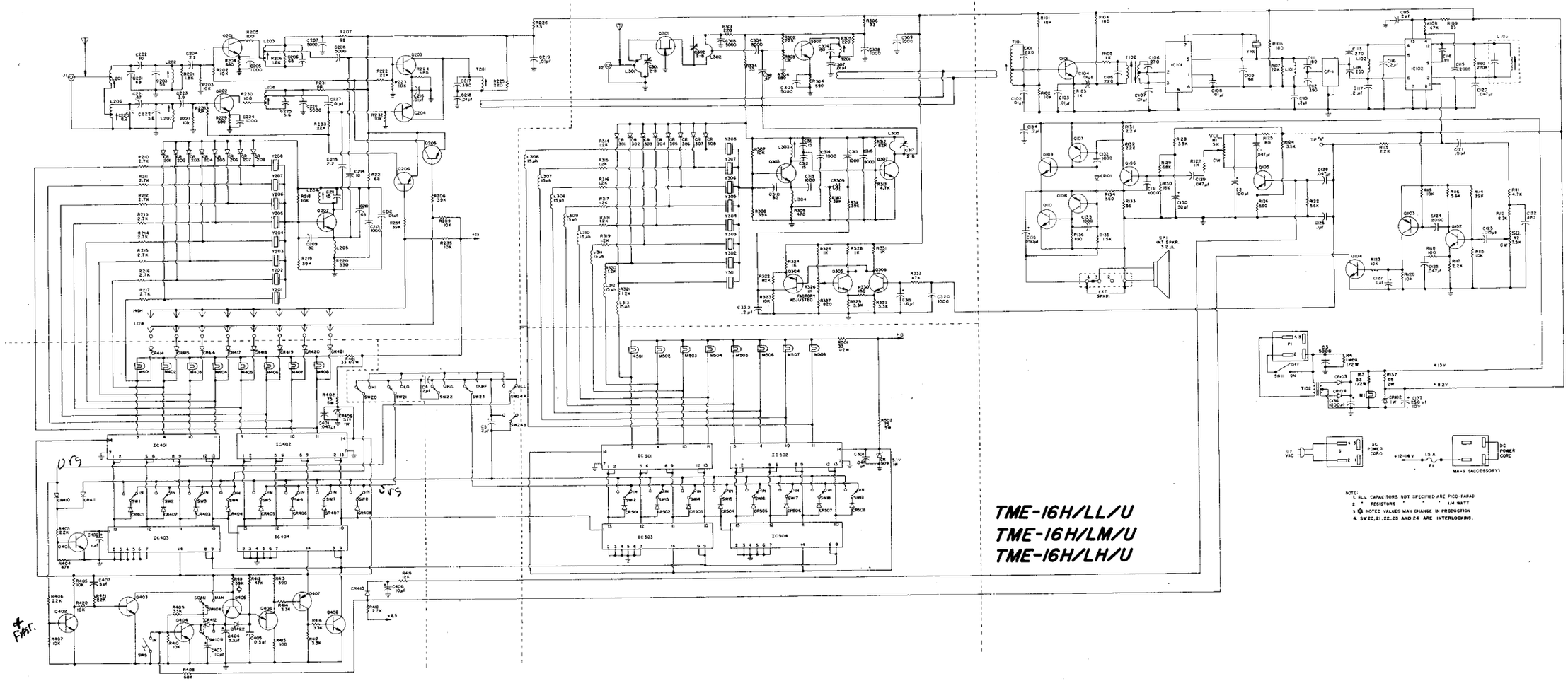


Repeat procedure for each channel in sequence of your choice

3-13 BAND PROGRAMMING DIAGRAM



3-14 SCHEMATIC (TME - 16 H/L)



3-15 SCHEMATIC (TME - 16 H/L/U)

SECTION 4 PARTS LIST
4-1 RF BOARD (H/L) 301-563

NOTE: In Model TME-16H/L both RF Boards are identical except for one being a "200" series board and the other a "300" series board.

Item No.	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	68ohm, 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.
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 (UHF) 301-598
TME - 16 H/L/U ONLY

Item No.	Description	Part No.
	RESISTORS	
R301	220 ohm, 10%, ¼W	
R302	22K, 10%, ¼W	
R303	10K, 10%, ¼W	
R304	680 ohm, 10%, ¼W	
R305	220 ohm, 10%, ¼W	
R306	33 ohm, 10%, ¼W	
R307	10K, 10%, ¼W	
R308	38K, 10%, ¼W	
R309	470 ohm, 10%, ¼W	
R310	39K, 10%, ¼W	
R311	39K, 10%, ¼W	
R312	82K, 10%, ¼W	
R313	4.7K, 10%, ¼W	
R314	1.2K, 10%, ¼W	
R315	1.2K, 10%, ¼W	
R316	1.2K, 10%, ¼W	
R317	1.2K, 10%, ¼W	
R318	1.2K, 10%, ¼W	
R319	1.2K, 10%, ¼W	
R320	1.2K, 10%, ¼W	
R321	1.2K, 10%, ¼W	
R322	82K, 10%, ¼W	
R323	10K, 10%, ¼W	
R324	1K, 10%, ¼W	
R325	1K, 10%, ¼W	
R326	Trimmer 1K, 30% (Stand Up)	X201R102B
R327	820 ohm, 10%, ¼W	
R328	1K, 10%, ¼W	
R329	3.3K, 10%, ¼W	
R330	150 ohm, 10%, ¼W	
R332	1K, 10%, ¼W	
R332	3.3K, 10%, ¼W	
R333	47K, 10%, ¼W	
R324	33 ohm, 10%, ¼W	
	CAPACITORS	
C301	2-8pf, NPO, Trimmer	10S-Triko 22
C302	2-8pf, NPO, Trimmer	10S-Triko 22
C303	.005MF, +80%-20% 500V, Z5U (Disc.)	RMC-Type SM
C304	.005MF, +80%-20% 500V, Z5U (Disc.)	RMC-Type SM
C305	.005MF, +80%-20% 500V, Z5U (Disc.)	RMC-Type SM

Item No.	Description	Part No.
C306	150pf, 5% 50V (Mica)	DM-10 or Equiv.
C307	.01MF, +80%-20% 500V, Z5U (Disc)	RMC-Type BG
C308	.005MF, +80%-20% 500V, Z5U (Disc.)	RMC-Type SM
C309	.001MF, +80%-20% 500V, Z5U (Disc.)	RMC-Type BG
C310	82pf, 5% 50V (Mica)	DM-10 or equiv.
C311	15pf, 10%, NPO (Disc.)	RMC-Type CG
C312	15pf, 10% NPO (Disc.)	RMC-Type CG
C313	.001MF, +80%-20% 500V, Z5U (Disc.)	RMC-Type BG
C314	.001MF, +80%-20% 500V, Z5U (Disc.)	RMC-Type BG
C315	.001MF, +80%-20% 500V, Z5U (Disc.)	RMC-Type BG
C316	.005MF, +80-20% 500V, Z5U (Disc)	RMC-Type SM
C317	2-8pf, NPO, Trimmer	10S Triko 22
C318	.47pf, 10% (Composition)	
C319	1.0mf 85°C 50V (Electrolytic)	
C320	.001MF, +80%-20% 500V, Z5U (Disc.)	RMC-Type BG
C322	.2 MF, +80%-20% 12V (Disc.)	Murata Type BC-12
	COILS	
L301	Coil, RF Input	301-600-1
L302	Coil, RF Output	301-600-2
L303	Coil, RF (Red)	301-520-2
L304	Coil, RF Osc.	102-369
L305	Coil, RF Osc.	301-600-3
L306	Choke, 15uh	
L307	Choke, 15uh	
L308	Choke, 15uh	
L309	Choke, 15uh	
L310	Choke, 15uh	
L311	Choke, 15uh	
L312	Choke 15uh	
L313	Choke, 15uh	
T301	Coil, Mixer	301-619
	TRANSISTOR	
Q301	Silicon, N-Channel FET	2N5245
Q302	Silicon NPN, 2N5222	SPS-1473 (RT)
Q303	Silicon NPN (Low Beta) 2N5130	SM-4304-S
Q304	Silicon PNP, 2N5227	SPS-1539 (WT)
Q305	Silicon NPN, MPS-5172	SPS-952
Q306	Silicon NPN, MPS-5172	SPS-952
Q307	Silicon NPN, 2N5222	SPS-1473 (RT)

NOTE: RT = Red Top, WT = White Top

Item No.	Description	Part No.
	DIODES	
CR301	Germanium-Junction, Signal	102-339
CR302	Germanium-Junction, Signal	102-339
CR303	Germanium-Junction, Signal	102-339
CR304	Germanium-Junction, Signal	102-339
CR305	Germanium-Junction, Signal	102-339
CR306	Germanium-Junction, Signal	102-339
CR307	Germanium-Junction, Signal	102-339
CR308	Germanium-Junction, Signal	102-339
CR309	Silicon, Varactor	Motorola MV2209
	MISCELLANEOUS	
	Sheild Assembly	301-602

4-3 IF-AUDIO BOARD 500-858

Item No.	Description	Part No.
	RESISTORS	
R101	18K, 10%, ¼W	
R102	10K, 10%, ¼W	
R103	1K, 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	5.6, 10%, ¼W	
R117	2.2K, 10%, ¼W	
R118	100ohm, 10%, ¼W	
R119	10K, 10%, ¼W	
R120	10K, 10%, ¼W	
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	560 ohm, 10%, ¼W	
R135	1.5K, 10%, ¼W	
R136	100 ohm, 10%, ¼W	
R137	68 ohm, 10% 2W (Wire Wound) IRC-Type BWH	
	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)	
C105	220pf, 5% 50V (Mica)	DM-10 or equiv.
C106	27pf, 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 Z5U (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 Z5U (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)	
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 (Dsic.)	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	Chike, 820uh	ES-2228
L103	Coil, Quadrature	301-517
	INTEGRATED CIRCUITS	
IC101	Integrated Circuit	301-679-1
IC102	Integrated Circuit, MC-1357P	301-576-3

Item No.	Description	Part No.
	DIODES	
C R101	Diode, Silicon, 1N4148	102-412
CR102	Diode, Zener, 8.2V 5% 1W.	IN4738A
CF103	Diode, Rectifier	1N4002
CR104	Diode, Rectifier	1N4002
	FILTER	
CF-1	455KHz Ceramic Filter (TME-16H/L/U only)	301-724
CF-1	455KHz Ceramic Filter (TME-16H/L only)	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 (PRIMARY BOARD)

Item No.	Description	Part No.
	RESISTORS	
R401	33ohms, 10%, ¼W	
R402	75 ohms, 10%, 5 W Wirewound	
R403	2.2K, 10%, ¼W	
R404	47K, 10%, ¼W	
R405	10K, 10%, ¼W	
R406	2.2K, 10%, ¼W	
R407	10K, 10%, ¼W	
R408	68K, 10%, ¼W	
R409	33K, 10%, ¼W	
R410	22K, 10%, ¼W	
R411	39K, 10%, ¼W	
R412	47K, 10%, ¼W	
R413	390 ohms, 10%, ¼W	
R414	3.3K, 10%, ¼W	
R415	100 ohms, 10%, ¼W	
R416	3.3K, 10%, ¼W	
R417	3.3K, 10%, ¼W	
R418	2.2K, 10%, ¼W	
R419	12K, 10%, ¼W	
R420	10K, 10%, ¼W	
R421	22K, 10%, ¼W	
	CAPACITORS	
C401	.047mf, 20%, 100V (Mular Film)	
C402	1mf, 80°C. 25V (Electrolytic)	
C403	10mf, 85°C. 25V (Electrolytic)	
C404	3.3mf, 10%, 16V Tant. (Electrolytic)	TAG43212-14133
C405	.015mf, 20%, 100V (Mylar Film)	
C406	10 mf, 85°C. 25V (Electrolytic)	
C407	5mf, 85°C. 10V (Electrolytic)	
	INTEGRATED CIRCUITS	
IC401	Power NAND Gate	301-576-2
IC402	Power NAND Gate	301-576-2
IC403	4-Bit Shift Register	301-576-6
IC404	4-Bit Shift Register	301-576-6
	TRANSISTORS	
Q401	NPN Silicon, General Purpose, MPS5172	SPS-952
Q402	NPN Silicon, General Purpose, MPS5172	SPS-952
Q403	NPN Silicon, General Purpose, MPS5172	SPS-952
Q404	NPN Silicon, General Purpose, MPS5172	SPS-952
Q405	NPN Silicon, General Purpose, MPS5172	SPS-952

Item No.	Description	Part No.
Q406	PN Silicon, Unijunction	2N4871
Q407	PNP Silicon, 2N227	SPS-1539 (WT)
Q408	NPN Silicon, General Purpose, MPS5172	SPS-952
NOTE:	WT - White Top	
	DIODES	
CR401	Silicon, Signal, IN4148	102-412
CR402	Silicon, Signal, IN4148	102-412
CR503	Silicon, Signal IN4148	102-412
CR404	Silicon, Signal, IN4148	102-412
CR406	Silicon, Signal, IN4148	102-412
CR407	Silicon, Signal, IN4148	102-412
CR409	Silicon, Zener, 5.1V, 5%, 1W	IN4733A
CR410	Silicon, Signal, IN4148	102-412
CR411	Silicon, Signal, IN4148	102-412
CR413	Silicon, Signal, IN4148	102-412
CR414	Silicon, Signal, IN4148	102-412
CR415	Silicon, Signal, IN4148	102-412
CR416	Silicon, Signal, IN4148	102-412
CR417	Silicon, Signal, IN4148	102-412
CR418	Silicon, Signal, IN4148	102-412
CR419	Silicon, Signal, IN4148	102-412
CR420	Silicon, Signal, IN4148	102-412
CR421	Silicon, Signal, IN4148	102-412
CR422	Silicon, Signal, IN4148	102-412
	LAMPS	
M401	Incandescent, 14.4V, 120 MA.	No. 53
M402	Incandescent, 14.4V, 120 MA.	No. 53
M403	Incandescent, 14.4V, 120 MA.	No. 53
M404	Incandescent, 14.4V, 120 MA.	No. 53
M405	Incandescent, 14.4V, 120 MA.	No. 53
M406	Incandescent, 14.4V, 120 MA.	No. 53
M407	Incandescent, 14.4V, 120 MA.	No. 53
M408	Incandescent, 14.4V, 120 MA.	No. 53

4-5 SCANNER BOARD 500-850 (SECONDARY BOARD)

Item No.	Description	Part No.
	RESISTORS	
R501	33 ohms, 10%, ¼W	
R502	75 ohms, 5%, 5W Wirewound	
	CAPACITORS	
C501	.047 mf, 20%, 100V (Mylar Film)	
	INTEGRATED CIRCUITS	
IC501	Power NAND Gate	301-576-2
IC502	Power NAND Gate	301-576-2
IC503	4-Bit Shift Register	301-576-6
IC504	4-Bit Shift Register	301-576-6
	DIODES	
CR501	Silicon, Signal, IN4148	102-412
CR502	Silicon, Signal, IN4148	102-412
CR503	Silicon, Signal, IN4148	102-412
CR504	Silicon, Signal, IN4148	102-412
CR505	Silicon, Signal, IN4148	102-412
CR506	Silicon, Signal, IN4148	102-412
CR507	Silicon, Signal, IN4148	102-412
CR508	Silicon, Signal, IN4148	102-412
CR509	Silicon, Zener, 5.1V, 5%, 1W	IN4733A
CR510	Silicon, Signal, IN4148 (TME-16H/L only)	102-412
CR511	Silicon, Signal, IN4148 (TME-16H/L only)	102-412
CR512	Silicon, Signal, IN4148 (TME-16H/L only)	102-412
CR513	Silicon, Signal, IN4148 (TME-16H/L only)	102-412
CR514	Silicon, Signal, IN4148 (TME-16H/L only)	102-412
CR515	Silicon, Signal, IN4148 (TME-16H/L only)	102-412
CR516	Silicon, Signal, IN4148 (TME-16H/L only)	102-412
CR517	Silicon, Signal, IN4148 (TME-16H/L only)	102-412
	LAMPS	
M501	Incandescent, 14.4V, 120 MA.	No. 53
M502	Incandescent, 14.4V, 120 MA.	No. 53
M503	Incandescent, 14.4V, 120 MA.	No. 53
M504	Incandescent, 14.4V, 120 MA.	No. 53
M505	Incandescent, 14.4V, 120 MA.	No. 53
M506	Incandescent, 14.4V, 120 MA.	No. 53
M507	Incandescent, 14.4V, 120 MA.	No. 53
M508	Incandescent, 14.4V, 120 MA.	No. 53

4-6 CHASSIS ASSEMBLY

Item No.	Description	Part No.
	ELECTRICAL COMPONENTS	
R1	5K, Volume Control	Stackpole R72-00691
R2	7.5K, Squelch Control	Stackpole R72-00692
R3	33 ohms, 10%, ¼W	
R4	1 Meg, 10%, 112W	
C1	.047mf, 10%, 100V (Mylar Film)	
C2	250mf, 85°C 16V (Electrolytic)	
C3	.005mf, +80%-20% 1400 Z5U (Disc.)	RMC-Type U
C4	2mf, 85°C, 50V (Electrolytic)	
T1	Transformer, Power	301-699
M1	Lamp, No. 53	
Y200	See Section 1—2	
Y300	See Section 1—2	
SW1-8, SW12-19	1P2T, 8 Stations on Single Frame, P-P	UID500-874-3 Prom. 301-551-3
SW-11	1P2T, Push-push (UL)	UID 500-874-6 Prom. 301-551-7
SW9-10	2P2T	UID 500-874-19 Prom. 301-551-20
SW20-22	2P2T (TME-16H/Lonly)	UID 500-874-13 Prom. 301-551-14
SW20-24	(TME-16H/L/U only)	UID 500-874-12 Prom. 301-551-6
Ant.-1	Telescoping Antenna (UHF)	1201-0000-003
Ant.-1	Telescoping Antenna (H/L)	1201-0000-002
Spk.-1	Speaker, 3.2 ohm, 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 50ohm, Teflon	RG-188/U
	MECHANICAL COMPONENTS	
	Panel, Front (TME-16H/L)	600-330
	Panel, Front (TME-16H/L/U)	600-307
	Panel, Back	301-674
	Knob, Volume and Squelch	Plasticware 301-670
	Lens, Green, Power Indicator	1759
	Lens, Red, Channel Lamps	102-353
	Socket, Lamp (Power)	300-269-4
	Socket, Pins, Crystal	T35-362

Item No.	Description	Part No.
	Terminal Board, 4-Lug (Rear Apron)	301-079-14
	Foot, Rubber	Lavelle 705R
	Cabinet/Wrap Assembly	600-311
	Manual, Owner's Instruction (TME-16H/L/U)	IS-10-324-1
	Manual, Owner's Instruction (TME-16H/L)	IS-10-324-2
	Manual, Service ($5.00 Prepaid)	SM-10-324-1