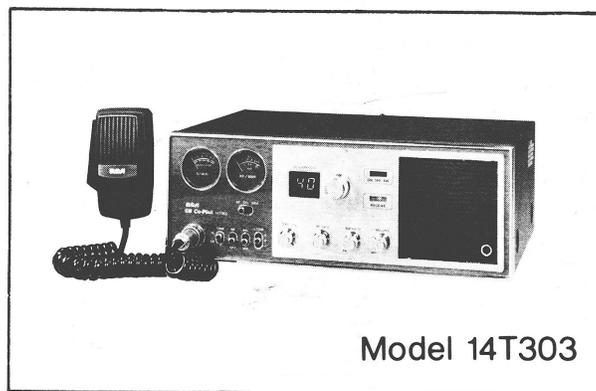


Service Manual

for

RCA CB Co-Pilot



40 Channel

Citizen's Band Transceivers

IMPORTANT NOTICE

The transmitter section of this transceiver may only be serviced by, or under the direct supervision of a qualified technician having a valid First or Second Class FCC Radiotelephone license. This includes internal adjustments or replacement of crystals, transistors, or any other components which can affect the performance of the transmitter. Servicing should only be done by a licensed, capable technician using suitable equipment and having complete knowledge of proper CB servicing techniques.

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General Description

RCA CB Co-Pilot Citizen's Band Transceivers Models 14T260, 14T270, 14T303, 14T304 and 14T305 are fully transistorized, FCC type approved, 40 channel CB units designed for two-way AM radio communication in the 26.965 to 27.405 MHz Class D citizen's band. All models except 14T303 are mobile units and operate on 12-15 volts DC (13.8 V Nominal) with either positive or negative ground and are fused in the input power cable. Model 14T303 is a base station unit with built-in power supply and is designed to operate from a 120 VAC 50/60 Hz source. Operation on all 40 CB channels is provided through use of two built-in crystals operating in a highly stable PLL (phase-lock-loop) design. All receiver and transmitter crystal controlled frequencies are synthesized in the PLL circuitry.

All units feature switchable ANL circuitry for automatic noise limiting, squelch control and built in RF gain controls to optimize receiver sensitivity. External PA and speaker jacks are provided. Models 14T270, 14T303 and 14T305 incorporate a Noise Blanker switch, Delta Tune circuitry for improved reception of off-frequency signals and a LOCAL/DISTANT switch, also an RF/CAL/SWR switch and meter for adjusting antenna SWR ratio.

Other individual features such as an S/Mod Meter, Tone Control, front panel dimmer control, On-The-Air, Receive and Transmit Lights, Mod light and head phone jack are featured on one or more of the models as outlined in the specific operating instructions for the particular model.

Typical Specifications

General

Frequency Range	26.965 – 27.405 MHz
Channels	40 (PLL Synthesized)
Frequency Tolerance	±0.005%
Operating Temperature Range	-30°C to +50°C (-22°F to +112°F)
Power Source	12-15 VDC (13.8 V nom.) Positive or Negative Ground (or 105-120 VAC 50/60 Hz for 14T303 only)
Current Drain	Transmit: 1.5A nom. Receive: 1.2A nom. (full audio)

Transmitter

Emission	6A3
RF Power Output	4W (FCC Maximum)
Modulation Type	AM
Modulation Level	Up to 100% Max (Limited to FCC Specs)
Attenuation of Spurious and Harmonic Radiation	60 dB (Min)
Antenna Input Impedance	50 Ohms

Receiver

Sensitivity	0.5 microvolts for 10 dB S/N
Adjacent Channel Rejection	-40 dB or more
Image Rejection (1st IF)	60 dB
Spurious Rejection (except images)	45 dB nom.

IF Frequencies

1st IF	10.695 MHz
2nd IF	455 kHz
Squelch Sensitivity	1.5 uV to 100 uV
Audio Output	3 W

Mechanical

14T260

Dimensions	6-3/8" x 2-1/4" x 7-7/8" (162mm x 57mm x 200mm)
Weight	3.5 lbs (1.6 kg)

14T270

Dimensions	7" x 2-5/16" x 8-1/4" (178mm x 59mm x 209mm)
Weight	3 lbs 13.6 oz (1.75 kg)

14T303

Dimensions	12-1/4" x 10-1/8" x 4-1/4" (311mm x 257mm x 108mm)
Weight	8 lbs 13 oz (4 kg)

14T304

Dimensions	7" x 2-5/16" x 8-1/4" (178mm x 59mm x 209mm)
Weight	3 lbs 13.6 oz (1.75 kg)

14T305

Dimensions	7" x 2-5/16" x 8-1/4" (178mm x 59mm x 209mm)
Weight	3 lbs, 13.6 oz (1.75 kg)

code signal (see Frequency table on page 13) is applied to the terminals of the programmable divider in IC1, to preset the divider. The two signals, the crystal signal from Osc1 Q1, and the signal from the VCO via the LPF and buffer, are compared in the phase detector of IC1 and the phase detector produces a DC output voltage derived from the phase difference in the signals fed to it — i.e., the 2.86 to 3.3 MHz signal from the VCO and the divided down signal from reference OSC1 (Q1). This DC output is applied through an LPF to the VCO, forming the phase loop. This DC voltage applied to the VCO causes it to shift frequency until its output signal locks up with the count-down frequency provided from reference oscillator Q1 (when the two signals are in phase) at which point no DC output is produced in the phase detector, and the VCO remains "locked" on frequency. When a new channel is selected a new "N" code is applied to the programmable divider. The VCO is no longer locked because of the resulting phase difference in the phase detector, and it again shifts frequency to a locked condition, in turn producing 37 MHz output signals corresponding to the new channel programmed by the new "N" code.

In summary, it will be seen that a range of stable VCO frequencies in the 17 MHz range will be produced, each

specific frequency being determined by the "N" code selected by the channel selector. As previously outlined one of the VCO outputs, that at 37.66 to 38.10 MHz, is fed to the receiver and transmitter sections. Its function is described in the separate sections which follow.

Electronic Channel Selection (14T305 only)

Model 14T305 provides for electronic channel selection by means of "Up" and "Down" pushbutton controls on the microphone, which take the place of the conventional rotary channel selector switch. (Refer to PLL block diagram Figure 3). Actual channel selection is developed in IC5 which incorporates a read only memory (ROM), a program driver, an up/down counter and an LED driver. The ROM is programmed with the "N" codes shown in the chart on page 13. When either the "up" or "down" pushbutton is actuated, the up/down counter shifts one channel up or down in approximately one second. After the initial channel change, if a pushbutton is held depressed the scanner in IC5 will operate at a rate change of approximately 6 channels/second. As the channel change is occurring the LED driver causes the channels to change on the LED indicator. When the desired channel appears, the pushbutton switch is released, and the up/down counter operation is suspended. At this point the appropriate "N" code signal for the selected channel is fed to the input of PLL IC1, causing the proper channel to be selected, as outlined previously in preceding chapters for conventional switch type channel selection. During the channel selection process, initiated by activating either the "up" or "down" pushbutton, the transmitter and receiver sections of the transceiver are inoperative. This is accomplished by removing the bias from the 455 kHz amplifier Q11/Q12 of the receiver and the bias on DC switch Q22 of the transmitter.

Transmitter

The transmitter crystal oscillator, OSC2 contained in IC3, is operating at 10.695 MHz, controlled by crystal X2. This signal is beat in the mixer section of IC3 with the 37 MHz signal output from the VCO IC2, the exact frequency of which was determined by channel selection and the PLL circuitry, as previously outlined. The resultant signal, therefore, that is fed to the RF amplifier in IC3, is the channel frequency of the channel selected (channel 1—40 between 26.965 and 27.405 MHz), see Frequency Chart on Page 13.

The 27 MHz RF amplifier output is coupled to RF pre-driver transistor Q3 through L5/T3 and C32. The pre-driver serves to isolate the oscillator and mixer stages from the output, and at the same time provide a certain amount of power gain. Q3 output is applied to the base

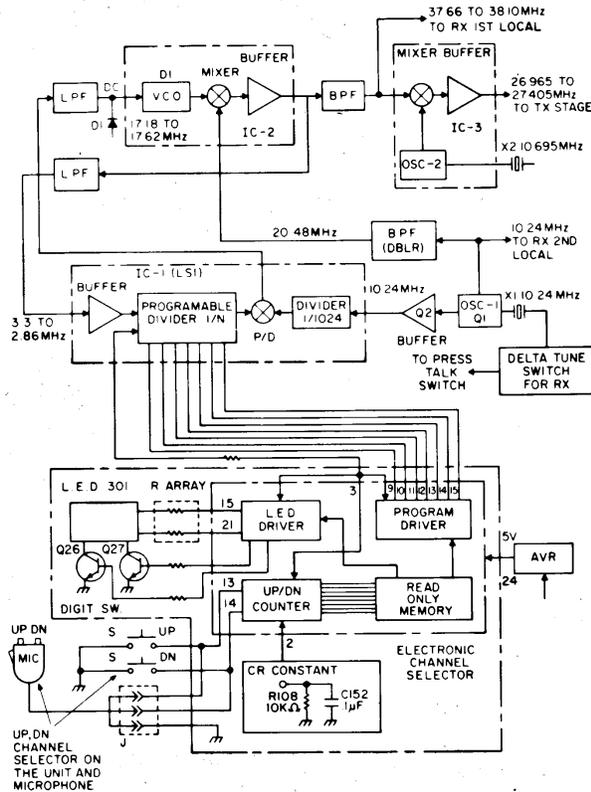


Figure 3 — PLL Block Diagram (14T305 only)

input of Q4, the RF Driver stage and in turn to Q5 the RF output stage of the transmitter. These stages amplify the 27 MHz RF signal resulting in an output at L13 of 4 watts.

In the transmit mode, the microphone feeds audio through IC4 to the output transformer T11 and to the collectors of Q4 and Q5 thereby modulating the transmitter. This modulating audio is applied to both the driver and output stages to provide carrier modulation up to 100%. An ALC voltage derived from the audio signal at Q15 is fed to IC4 to control the output of T11 and prevent over-modulation. Factory adjustment of 90% modulation is achieved by adjustment of RV2 at Q14 output.

The low pass filter between the antenna and receiver and transmitter inputs serves to pass the 27 MHz signals, attenuating higher frequency signals. It also serves to match the antenna impedance to the output impedance of the transmitter output transistor stage Q5.

Receiver

The rf signal, at a frequency between 26.965 and 27.405 MHz, feeds from the antenna through L13, L12, L11 and T5 to the 27 MHz Neutralized RF Amp Q8. Then the amplified output signal from Q8 is coupled through T6 to Mixer Q9 where it is beat with an injection signal from the VCO in IC2.

The frequency of the injection signal from IC2 depends on the channel being received, as a signal in the 37 MHz range is programmed by the channel selector. The output of Mixer Q9 is therefore 10.695 MHz, the first IF frequency, and is the result of the RF input and mixing of IC2 VCO signals. (see Frequency Chart on Page 13).

This 10.695 MHz 1st IF signal is then fed to Q10 the second mixer. Also fed to the 2nd Mixer is a second signal from Q1, Oscillator No. 1. This oscillator signal is at 10.24 MHz. Mixing of these two signals results in a signal in the T8 output from the 2nd Mixer of 455 kHz, the second IF frequency.

The 455 kHz second IF signal passes through the ceramic bandpass filter CF, and feeds the 455 kHz signal to IF amplifiers Q11 and Q12 which include IF transformers T9 and T10. The output of Q12 is applied to D9 the diode detector.

The rectified audio signal from the detector is passed through the volume control VR1 to the input of the audio

circuit IC4. The audio output is transformer coupled to the internal speaker, and to an external speaker if used.

Q13 is the squelch amplifier transistor. At low or no signal levels Q13 conducts heavily and its output, connected to pin 6 of IC4 results in no signal output from the audio section. As the incoming RF signal increases it results in a decreasing output from Q13. This results in opening up the AF amplifier and output is achieved. The point at which Q13 cuts off is determined by setting the SQUELCH control VR2.

Noise Blanker (except 14T260 & 14T304)

Placing the Noise Blanker switch to "ON" activates the noise blanker circuitry. The noise signals contained in the IF signals at Mixer Q9 output, feed through C134 to the base of Q18. The amplified output of Q18 is rectified by diodes D18 and D19. The resulting DC voltage turns on Q19 which in turn turns on Q20. This causes the IF signal at T8 to be shorted to ground through Q20 during the presence of the noise impulses, blanking out the noise at the receiver output.

Delta Tune (except 14T260 & 14T304)

Delta tune circuitry is employed in the oscillator No. 1 Q1 crystal stage. The "Delta-Tune" switch on the front panel acts to connect Q16 in the Q1 oscillator circuit. Depending upon whether the + position of switch or - position of switch is chosen the crystal frequency is "pulled" slightly above or below its normal operating frequency.

Public Address

Switching provision is made in the audio input circuit of the transceiver to provide a PA function by switching the microphone output. The audio output is also switched to an external PA speaker jack. This switching occurs when the CB/PA switch is set to the PA position.

In the PA mode, the transceiver serves as a public address amplifier providing 3 watts output to an external PA speaker. The other functions of the transceiver are deactivated in the PA mode per FCC Rules & Regulations.

Servicing

General

These RCA Co—Pilot Citizen's Band Transceivers performance depends upon the high quality of components employed and proper servicing techniques performed by licensed fully qualified technical personnel. Only use of the replacement parts given in the parts list on pages 37 through 44 should be employed.

Illustrations to aid in servicing and adjustment; such as top and bottom views, exploded views and superimposed printed board views, are provided to assist in proper and competent servicing. Block diagrams are shown in Figures 2, 4 and 5. The schematic diagrams are shown in Figures 34 through 37.

Figures 21 and 22 of the main printed circuit boards show map grid coordinates at the sides of the illustrations. These coordinates are keyed to corresponding key numbers in the replacement parts list, for instant location of smaller parts. Major components, not shown in Figures 21 and 22 are shown in views Figures 16 — 20. Exploded views identify all mechanical parts by means of balloon callouts. These balloons key to corresponding balloons shown in the mechanical parts list section.

Simple removal of the four Phillips screws at each side of the transceiver case permits removal of both halves of the case. The 14T303 base station requires removal of six screws in the cabinet top. Ten screws hold the bottom cabinet plate.

Servicing all models is fundamentally the same due to the similarity of the units.

Electronic switching is used in the units making them inoperable when the microphone is disconnected from the front of the unit. In order to activate a unit only for receiver service, a dummy plug must be used in place of the microphone plug. (Except Model 14T305 which provides remote selection of CHAN, SQ & VOL from controls on the microphone. The microphone must be used to activate the transceiver for 14T305 service). Use of this plug is **HIGHLY RECOMMENDED TO ACTIVATE THE RECEIVER WHEN PERFORMING SERVICE. IF THE MICROPHONE IS USED ACCIDENTAL DEPRESSION OF THE TRANSMIT BUTTON COULD RESULT IN DAMAGE TO VALUABLE TEST EQUIPMENT.** See Figure 7 for view and information on dummy plug.

Note — Crystals appear to be plug-in units. What appear to be sockets are spacers for thermal isolation, crystals are soldered to board.

Test Equipment

The following test equipment is required and recommended for servicing the 14T260, 14T270, 14T303, 14T304 and 14T305 Transceivers.

1. A 50 ohm resistive antenna load with a power capability of 5 watts or more, such as Bird Model 43 "thru line" wattmeter with a 5A Element and a Model 8053 RF Coaxial Load Resistor, or equivalent.
2. A frequency counter operable in the required CB range, such as Hewlett-Packard Model HP 5283A or suitable equivalent.
3. A HF Signal Generator which operates in the 50 kHz to 65 MHz frequency range with +1% accuracy such as Hewlett-Packard HP-606B, Wavetek Model 3000 or equivalent.
4. An oscilloscope capable of accurate monitoring of 27 MHz range AM signals.
5. High Input impedance Electronic Voltmeter such as a WV-500B or equivalent.
6. Dummy plug to activate transmitter without using microphone, see Figure 7.
7. Dummy mike plug for receiver servicing, with jumper between pins 2 and 3 as seen in Figure 7.
8. An 8 ohm 5 watt resistive dummy speaker load.
9. An Audio Signal Generator, 10 Hz to 20 kHz range.
10. An RF Voltmeter. (WV-500B with WG-301A Probe)
11. A regulated bench DC power supply capable of supplying 0 — 20 DC @ at least 2 amperes.
12. DC Ammeter with 0 — 2 amp. scale.
13. DC Voltmeter with 20k ohms/V rating.
14. A 120 volt 60 Hz AC source.
15. A digital voltmeter.

Tune Up and Alignment

Before performing any adjustments, check visually all jacks, plugs and solder joints for good connection. Shown in the schematics are nominal test voltage values for the transceiver transistors. In addition, certain other pertinent voltages are shown on the schematics. For tune-up and servicing identical procedures may be employed for all models. Use of an isolation transformer is recommended when servicing Model 14T303.

Transmitter Alignment

Connect test equipment to the transceiver as shown in the block diagram below, Figure 6. To activate the trans-

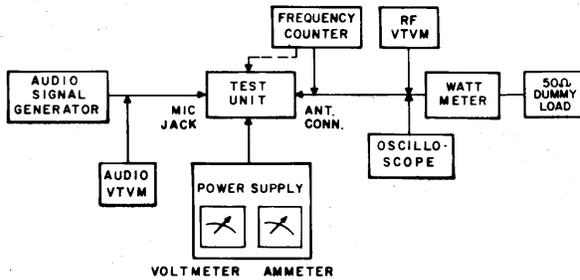


Figure 6 – Test Equipment Hook-Up

mitter without using the microphone, use the dummy microphone plug wired as shown in Figure 7A. This plug is also used to introduce a modulating audio signal to the microphone input circuit as described in the following procedure. (On 14T305 use the microphone to activate the transceiver)

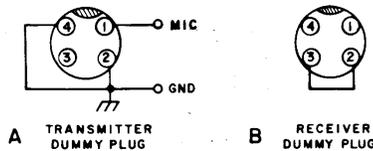


Figure 7 – Dummy Microphone Plugs

A. PLL CIRCUIT ALIGNMENT

Before proceeding with the PLL Alignment, check the Q1 control oscillator operating frequency at the emitter of Q2 on the frequency counter. (Use a 1000 pf capacitor in series with counter probe). Set "Delta Tune" switch to "0". If necessary adjust CT1 to obtain a reading of 10.240000 MHz \pm 50 Hz. Set "Delta Tune" switch to + position, a reading between 10.24040 and 10.240750 MHz should be obtained. Switch to - position, a reading between 10.23975Q and 10.239590 MHz should be obtained.

VCO Alignment

To more readily follow the frequencies involved during the alignment, refer to partial block diagram, Figure 8.

1. Set channel selector to channel 1. Check IC-1 for 5.4 volts \pm .1 volt.
2. Connect DC Voltmeter, set to 5 V range, between ground and R2 high side at TP8, see Figures 16 – 20. (Meter input impedance should be 20k ohm/volt or higher).

3. Adjust L1 core clockwise to obtain 3.6 volts + 0.1 volt on meter. (Start with core at top of form).
4. Set channel selector to channel 40 position. A reading between 1.4 and 2.3 volts should be obtained.

B. ALIGNMENT OF MIXER, PREDRIVER Q3 AND DRIVER Q4.

- a. Set channel selector to channel 19 position.
- b. Connect oscilloscope to the base of Q3 and ground.
- c. Adjust T1, L2, T2, L5 and T3 for maximum 27.185 MHz output on scope.
- d. Adjust power supply for a supply voltage of 7.0 volts.

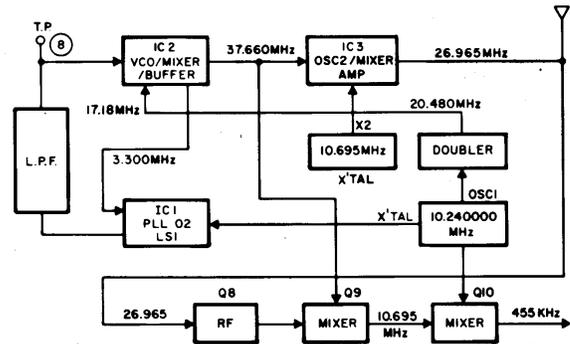


Figure 8 – Partial Block Diagram

- e. Move oscilloscope to base of Q4, between C40 and ground.
- f. Adjust T3 and T4 for maximum amplitude on the scope.

C. ALIGNMENT OF RF POWER AMPLIFIER

- a. Set channel selector to channel 19. Return power supply voltage to 13.8 volts.
- b. Adjust L7 for maximum reading on the RF wattmeter. See Figure 6.
- c. Adjust L11 for maximum RF output.
- d. Adjust L12 for maximum RF output.
- e. Readjust L11 for maximum RF output.

- f. Turn L7 clockwise for an output of 4.4 watts on the meter.
- g. Turn L12 counter-clockwise to obtain a reading of 3.8 watts on the meter.

D. TRANSMITTER FREQUENCY CHECK

- a. Connect the frequency counter to the ANT connector and check the frequency on each channel with no modulation. The frequency should be within ± 800 Hz of the center frequency for each channel. Refer to the frequency table on page 13.

E. MODULATION SENSITIVITY ALIGNMENT

- a. Connect the transmit dummy plug to the microphone jack. (Except 14T305)
- b. Apply a 1 kHz 6 mV signal to the microphone input circuit.
- c. Adjust RV2 to obtain 85–90% modulation, as observed on the scope, see Figure 6.
- d. Increase the signal input to 60 mV and observe that modulation ratio is maintained at 95% or lower.

F. RF METER ADJUSTMENT

- a. Adjust RV4 (RV502 on 14T303) so that the meter pointer is in the center of the red zone on meter scale. (This will indicate 3.8 watts output, the same as the wattmeter in step C.g.)

G. SWR BRIDGE ADJUSTMENT (except 14T260 & 14T304)

- a. Connect 100 ohm non-inductive resistor across antenna jack. Set RF/CAL/SWR switch to "CAL", Adjust VR4 to put meter pointer exactly on "SET" mark.
- b. Set RF/CAL/SWR switch to "SWR". Adjust RV501 so that meter pointer reads "2" on meter scale.

Receiver Alignment

Connect test equipment to the transceiver as shown in Figure 9. Unless noted otherwise, keep Delta Tune switch at "0" and ANL switch to "ON" positions for models where applicable.

A. RECEIVER SENSITIVITY ALIGNMENT

To activate the receiver without using the microphone, connect the dummy microphone plug shown in Figure 7B in place of the microphone (jumper on plug between pins 2 and 3).

VOLUME control fully clockwise. On 14T305 the microphone must be connected to the receiver.

- a. Set the signal generator output to 27.185 MHz with 1 kHz 30% modulation, use a minimum readable signal on meter.
- b. Set the transceiver on channel 19.
- c. Refer to Figures 16 – 20 and adjust T5, T6, L14, T7, T8, T9, and T10, in this order, for maximum audio output across the 8 ohm dummy speaker load. Keep reducing the generator input signal as adjustment is made to avoid inaccuracy due to AGC action. Make final adjustments at low input level. Repeat adjustment to achieve maximum alignment accuracy at low level, signal level at 1 μ V or less.
- d. After completion of step c., turn T5 core 1 turn clockwise.

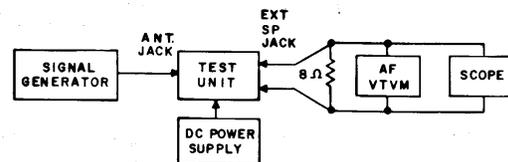


Figure 9 – Receiver Alignment Test Set-Up

B. SQUELCH CIRCUIT ADJUSTMENT

- a. With signal generator and transceiver set to channel 19, 27.185 MHz, feed a 100 μ V, 1 kHz signal modulated 30% into the RF input jack.
- b. Rotate the SQUELCH control fully clockwise.
- c. Adjust RV1, see Figures 16 – 20, for maximum audio output on VTVM and scope con-

nected across 8 ohm dummy speaker load.
Note the output level. Slowly turn RV1 to decrease the output level by 6 dB.

signal to the RF input. (Set RF/CAL/SWR switch to "RF." — on 14T270, 14T303 & 14T305)

C. S-METER ADJUSTMENT

b. Adjust RV3, see Figures 16 – 20, so that RF meter pointer reads "9" on the meter.

a. Set signal generator to produce a 100 uV

CHANNEL NO.	CHANNEL FREQ. (MHz)	"N" CODES	VCO FREQ. (MHz)	CHANNEL SW. OUTPUT							Rx 1st LOCAL FREQ. (MHz)
				A	B	C	D	A'	B'	C'	
1	26.965	330	17.18	0	1	0	1	0	0	1	37.66
2	26.975	329	17.19	1	0	0	1	0	0	1	37.67
3	26.985	328	17.20	0	0	0	1	0	0	1	37.68
4	27.005	326	17.22	0	1	1	0	0	0	1	37.70
5	27.015	325	17.23	1	0	1	0	0	0	1	37.71
6	27.025	324	17.24	0	0	1	0	0	0	1	37.72
7	27.035	323	17.25	1	1	0	0	0	0	1	37.73
8	27.055	321	17.27	1	0	0	0	0	0	1	37.75
9	27.065	320	17.28	0	0	0	0	0	0	1	37.76
10	27.075	319	17.29	1	1	1	1	1	1	0	37.77
11	27.085	318	17.30	0	1	1	1	1	1	0	37.78
12	27.105	316	17.32	0	0	1	1	1	1	0	37.80
13	27.115	315	17.33	1	1	0	1	1	1	0	37.81
14	27.125	314	17.34	0	1	0	1	1	1	0	37.82
15	27.135	313	17.35	1	0	0	1	1	1	0	37.83
16	27.155	311	17.37	1	1	1	0	1	1	0	37.85
17	27.165	310	17.38	0	1	1	0	1	1	0	37.86
18	27.175	309	17.39	1	0	1	0	1	1	0	37.87
19	27.185	308	17.40	0	0	1	0	1	1	0	37.88
20	27.205	306	17.42	0	1	0	0	1	1	0	37.90
21	27.215	305	17.43	1	0	0	0	1	1	0	37.91
22	27.225	304	17.44	0	0	0	0	1	1	0	37.92
23	27.255	301	17.47	1	0	1	1	0	1	0	37.95
24	27.235	303	17.45	1	1	1	1	0	1	0	37.93
25	27.245	302	17.46	0	1	1	1	0	1	0	37.94
26	27.265	300	17.48	0	0	1	1	0	1	0	37.96
27	27.275	299	17.49	1	1	0	1	0	1	0	37.97
28	27.285	298	17.50	0	1	0	1	0	1	0	37.98
29	27.295	297	17.51	1	0	0	1	0	1	0	37.99
30	27.305	296	17.52	0	0	0	1	0	1	0	38.00
31	27.315	295	17.53	1	1	1	0	0	1	0	38.01
32	27.325	294	17.54	0	1	1	0	0	1	0	38.02
33	27.335	293	17.55	1	0	1	0	0	1	0	38.03
34	27.345	292	17.56	0	0	1	0	0	1	0	38.04
35	27.355	291	17.57	1	1	0	0	0	1	0	38.05
36	27.365	290	17.58	0	1	0	0	0	1	0	38.06
37	27.375	289	17.59	1	0	0	0	0	1	0	38.07
38	27.385	288	17.60	0	0	0	0	0	1	0	38.08
39	27.395	287	17.61	1	1	1	1	1	0	0	38.09
40	27.405	286	17.62	0	1	1	1	1	0	0	38.10

1 = H Level (4.5 – 5.5 V)
0 = L Level (0.05 – 0.4 V)

Figure 10 – Channel Frequency Chart

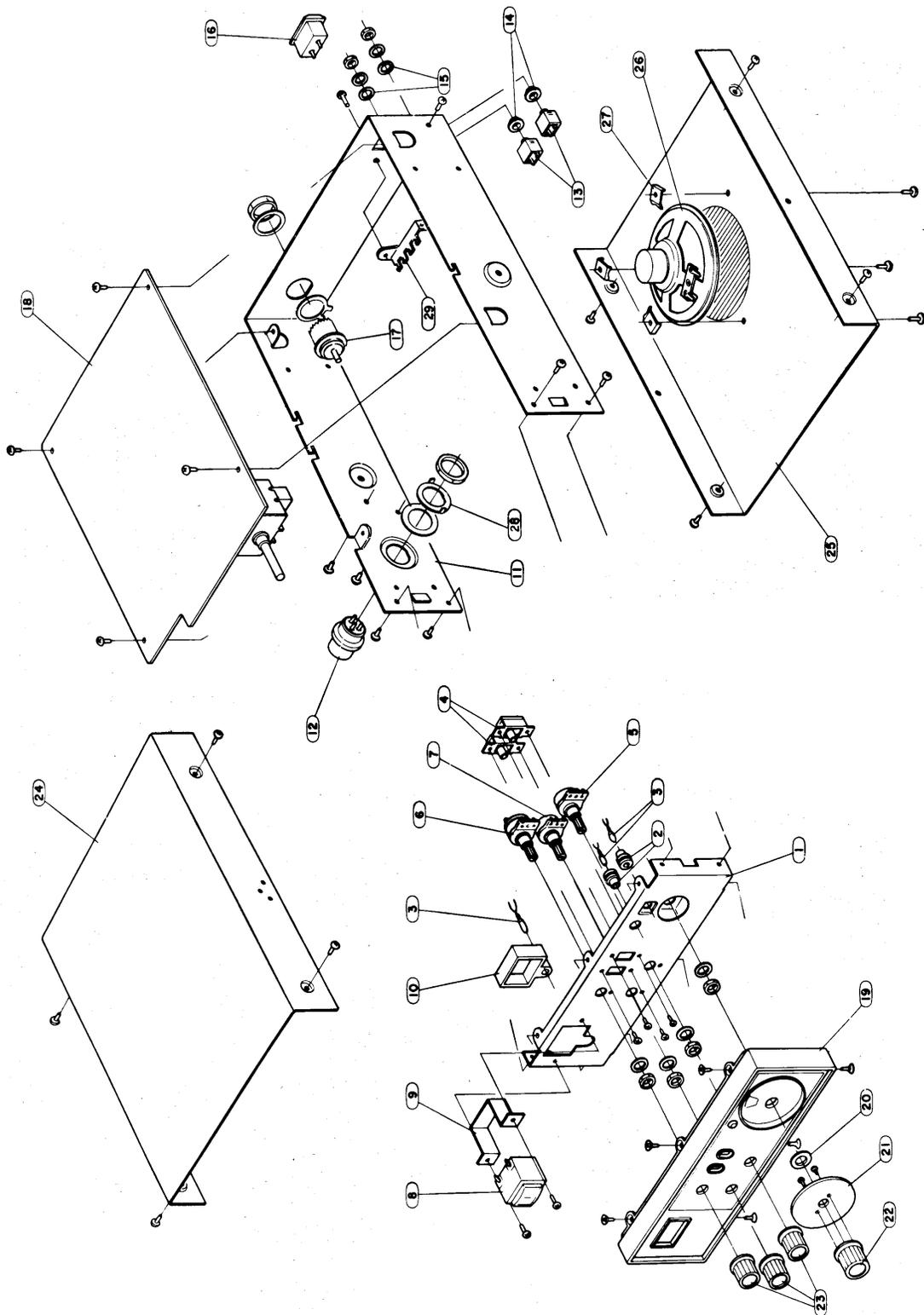


Figure 11 — Exploded View — Model 14T260

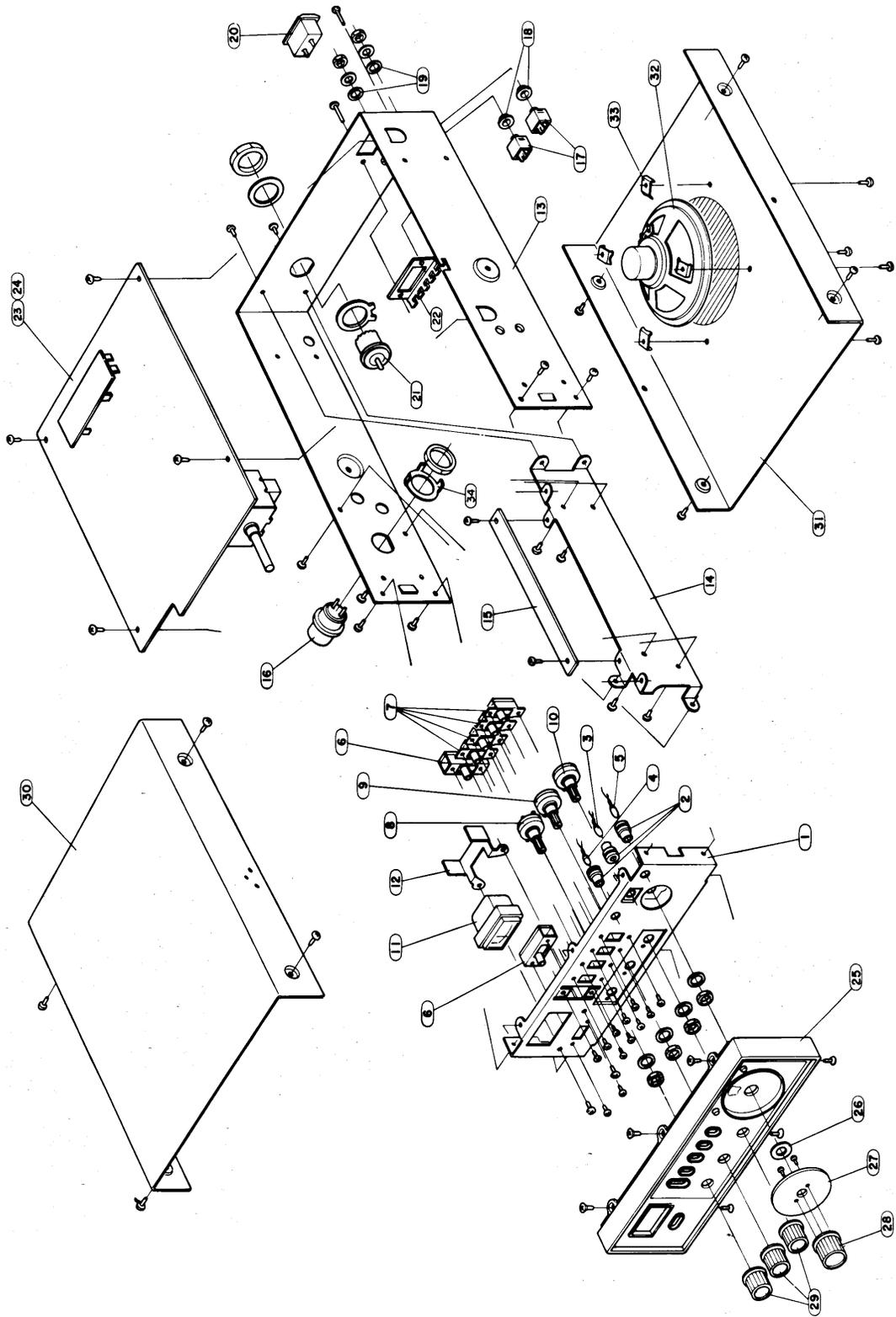


Figure 12 – Exploded View – Model 14T270

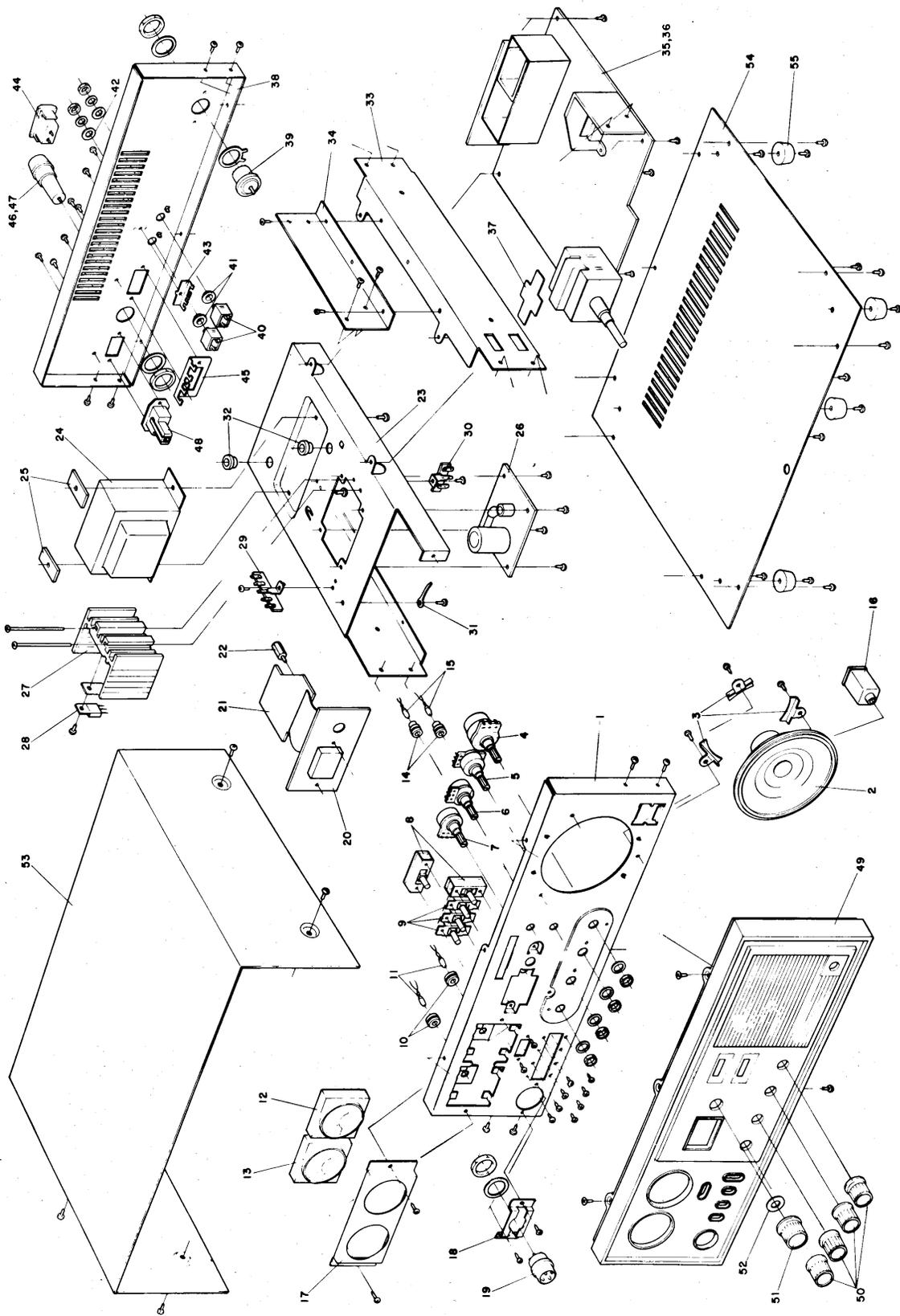


Figure 13 – Exploded View – Model 14T303

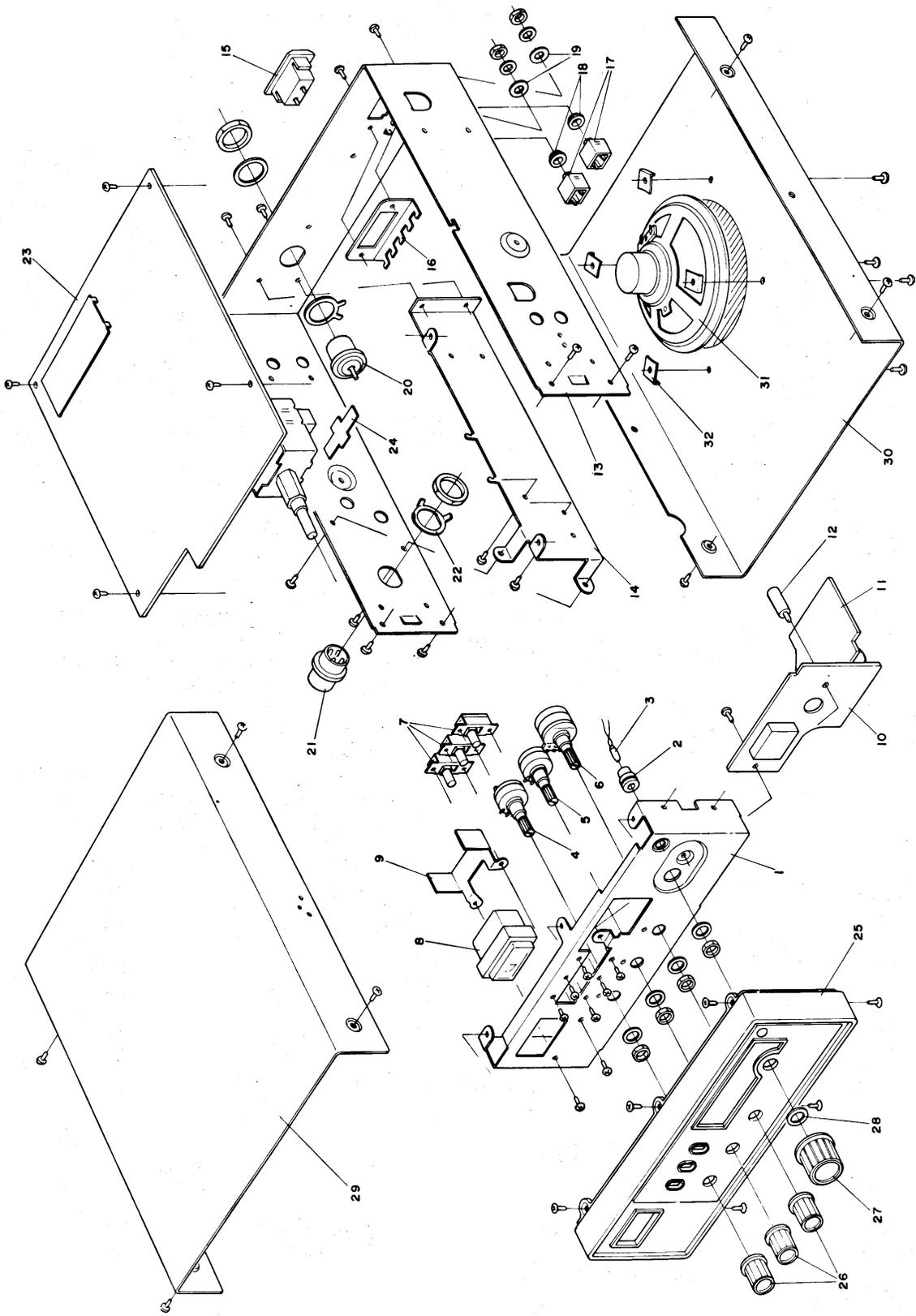


Figure 14 – Exploded View – Model 14T304

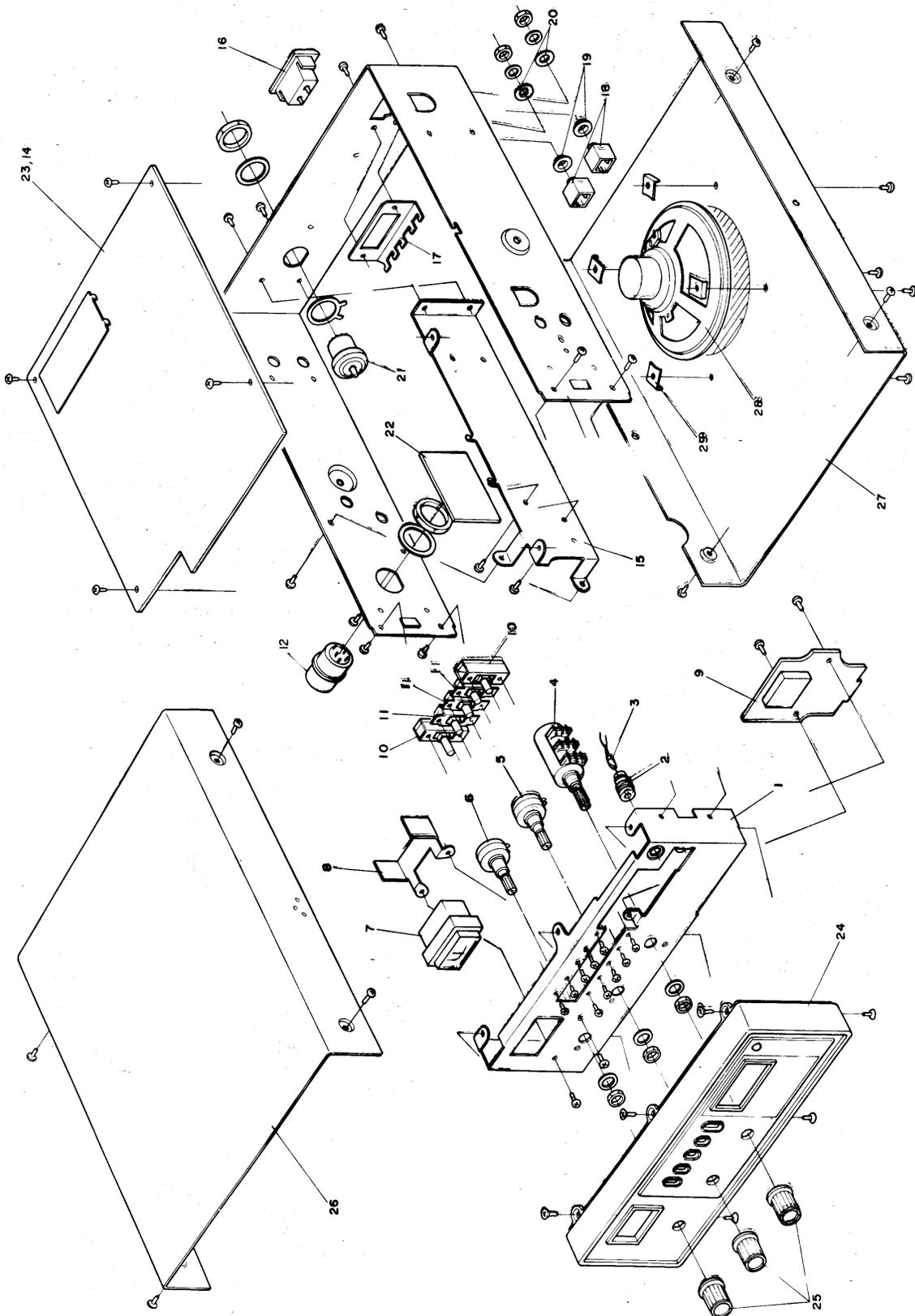


Figure 15 – Exploded View – Model 14T305

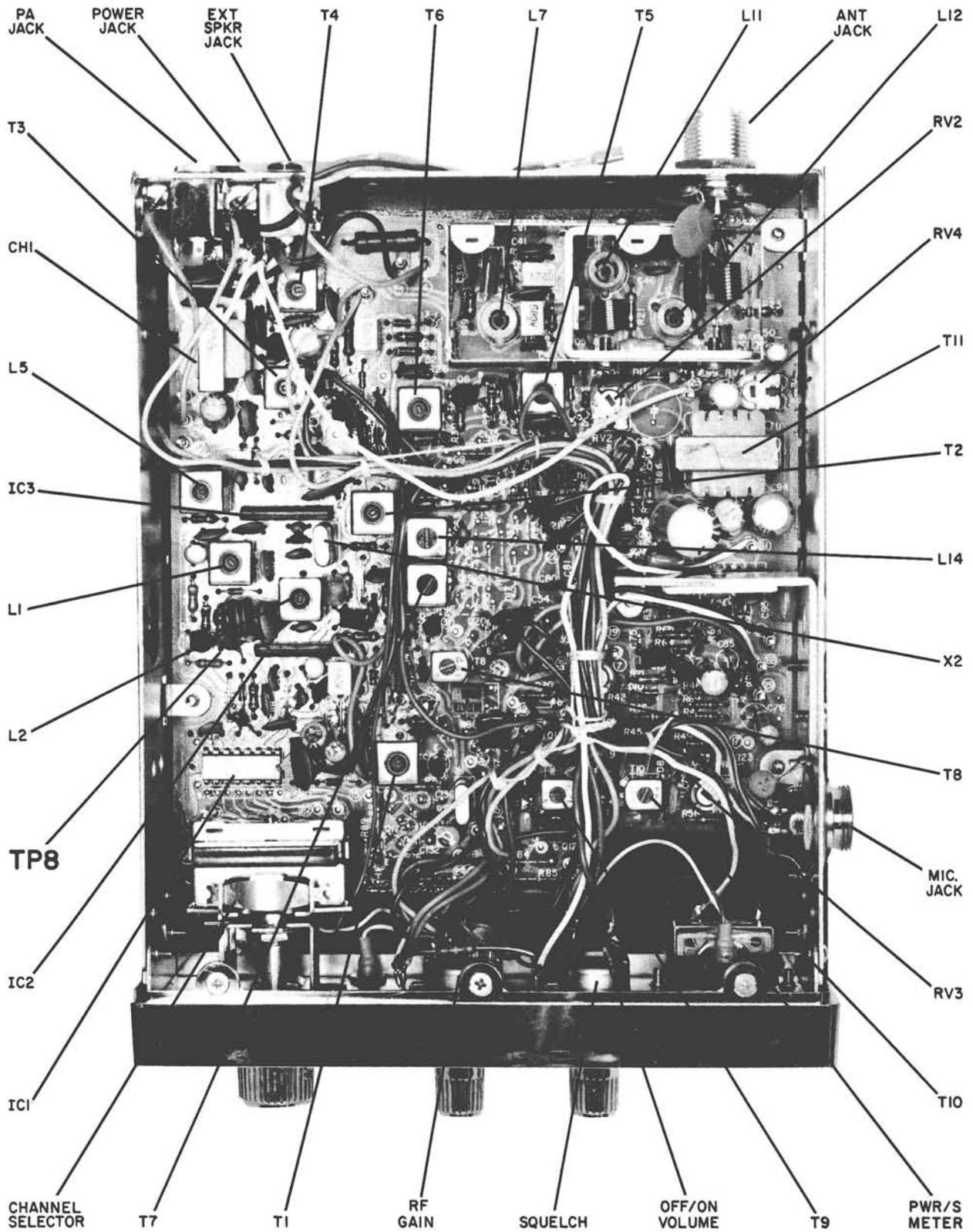


Figure 16 – Bottom (Component) View of Model 14T260

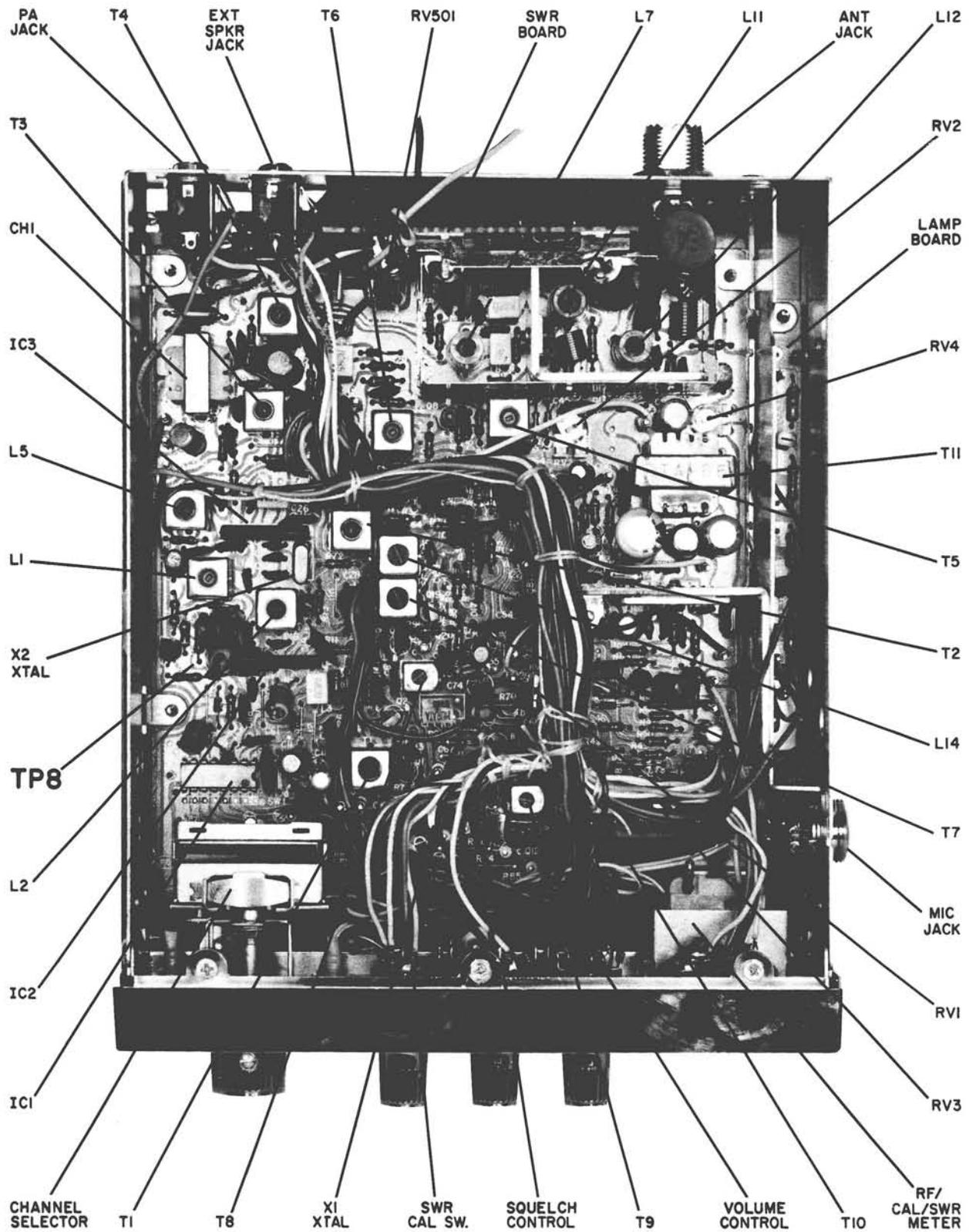


Figure 17 – Bottom (Component) View of Model 14T270

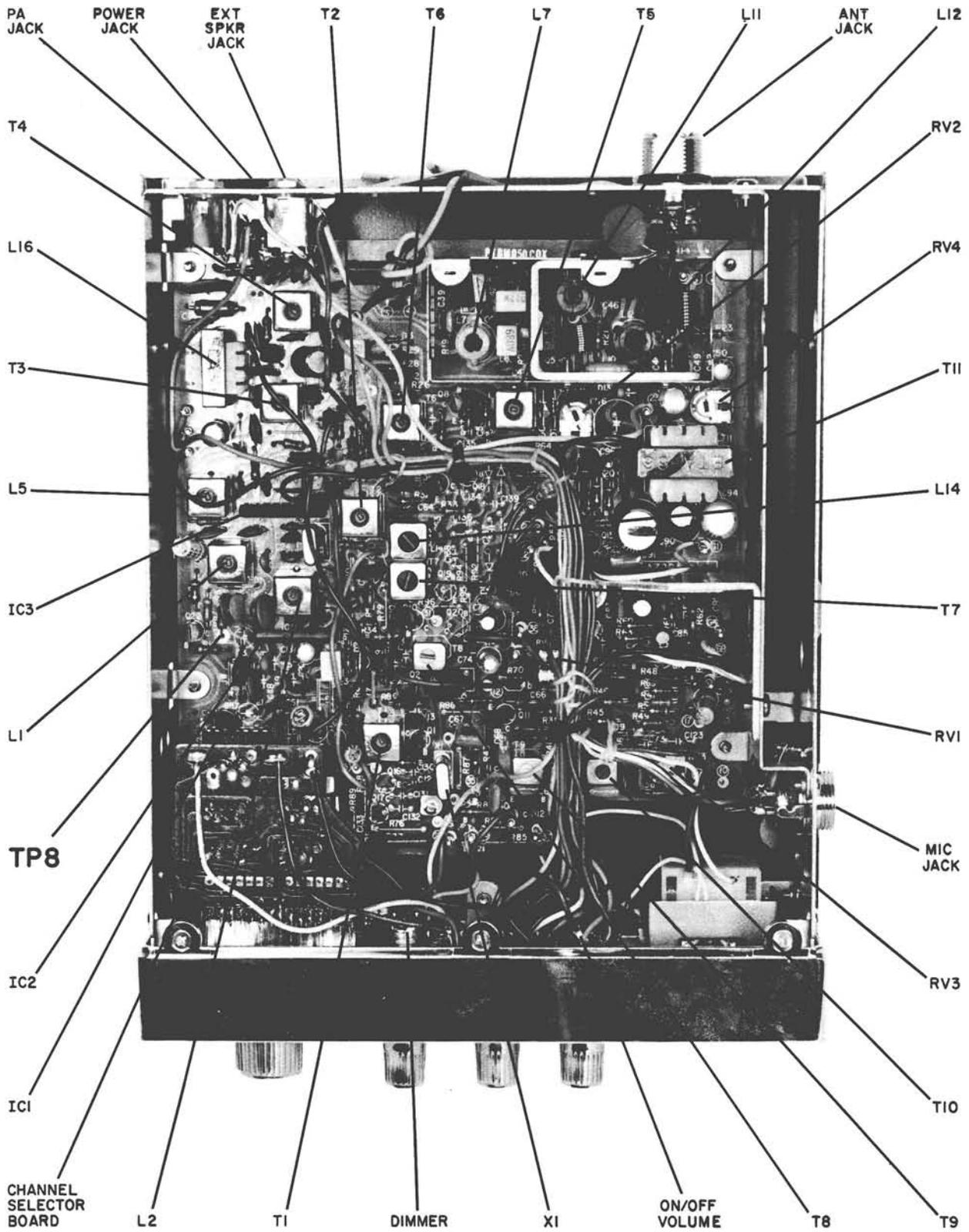


Figure 19 – Bottom (Component) View of Model 14T304

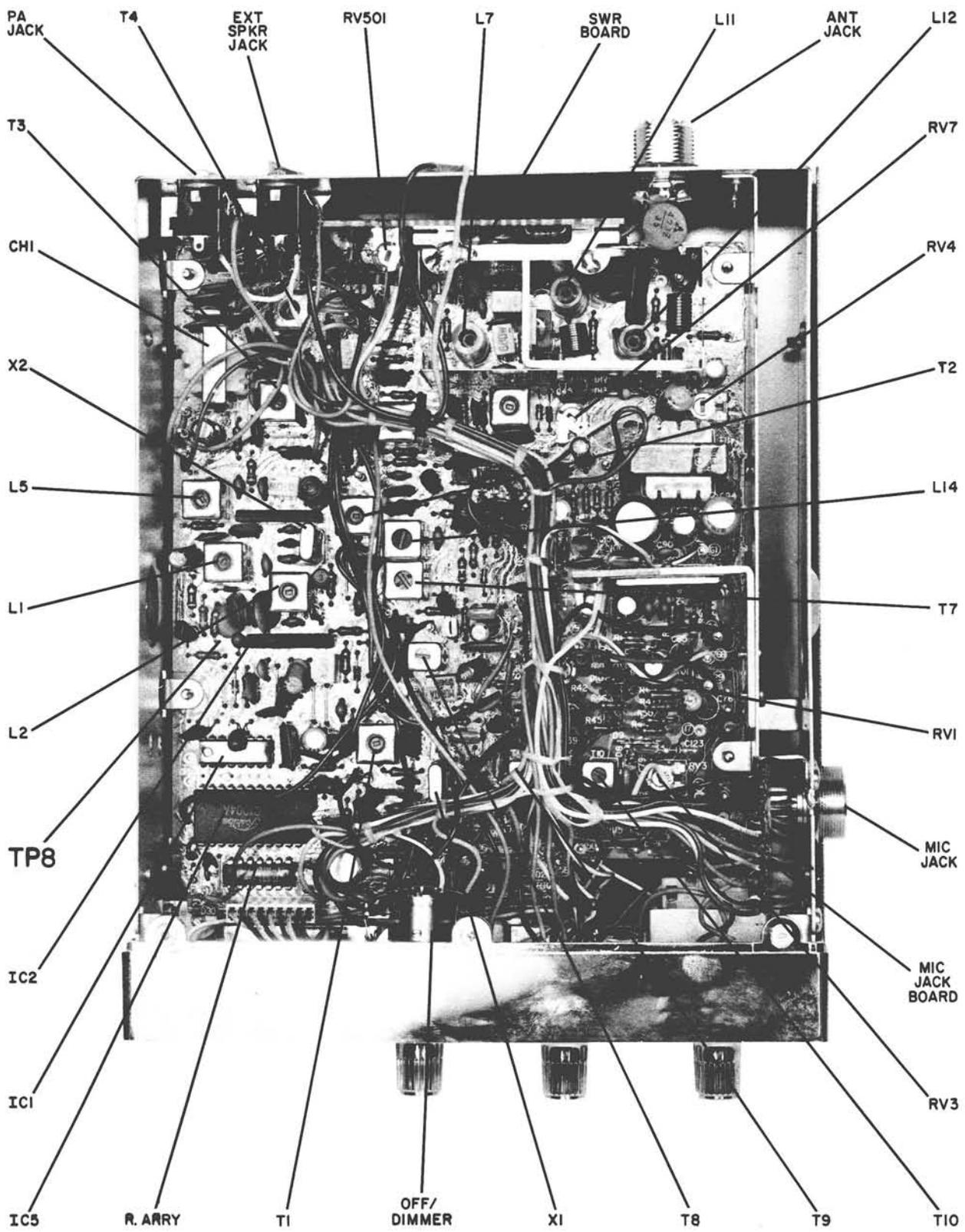


Figure 20 – Bottom (Component) View of Model 14T305

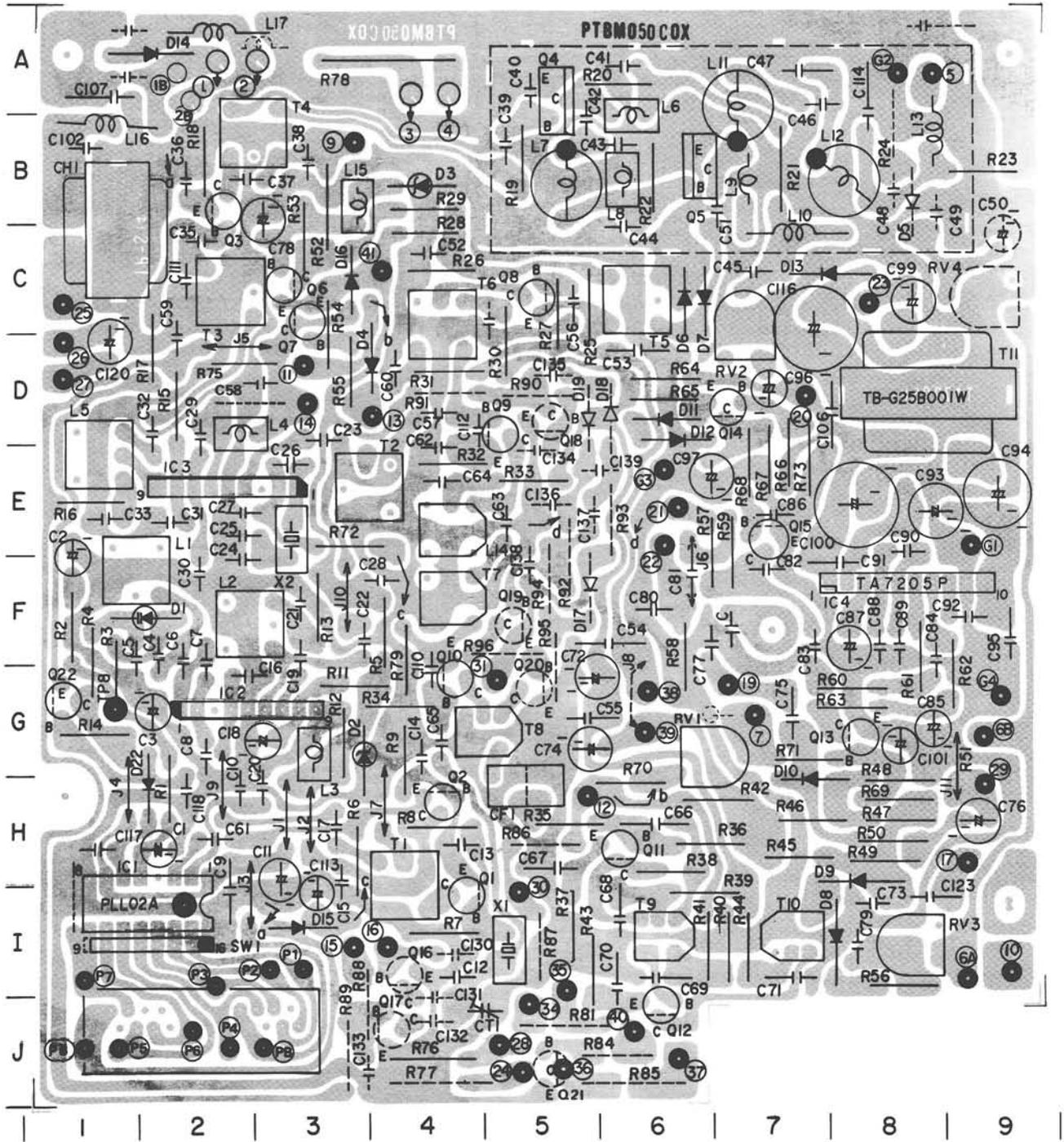


Figure 21 – Main Printed Circuit Board Except 14T305

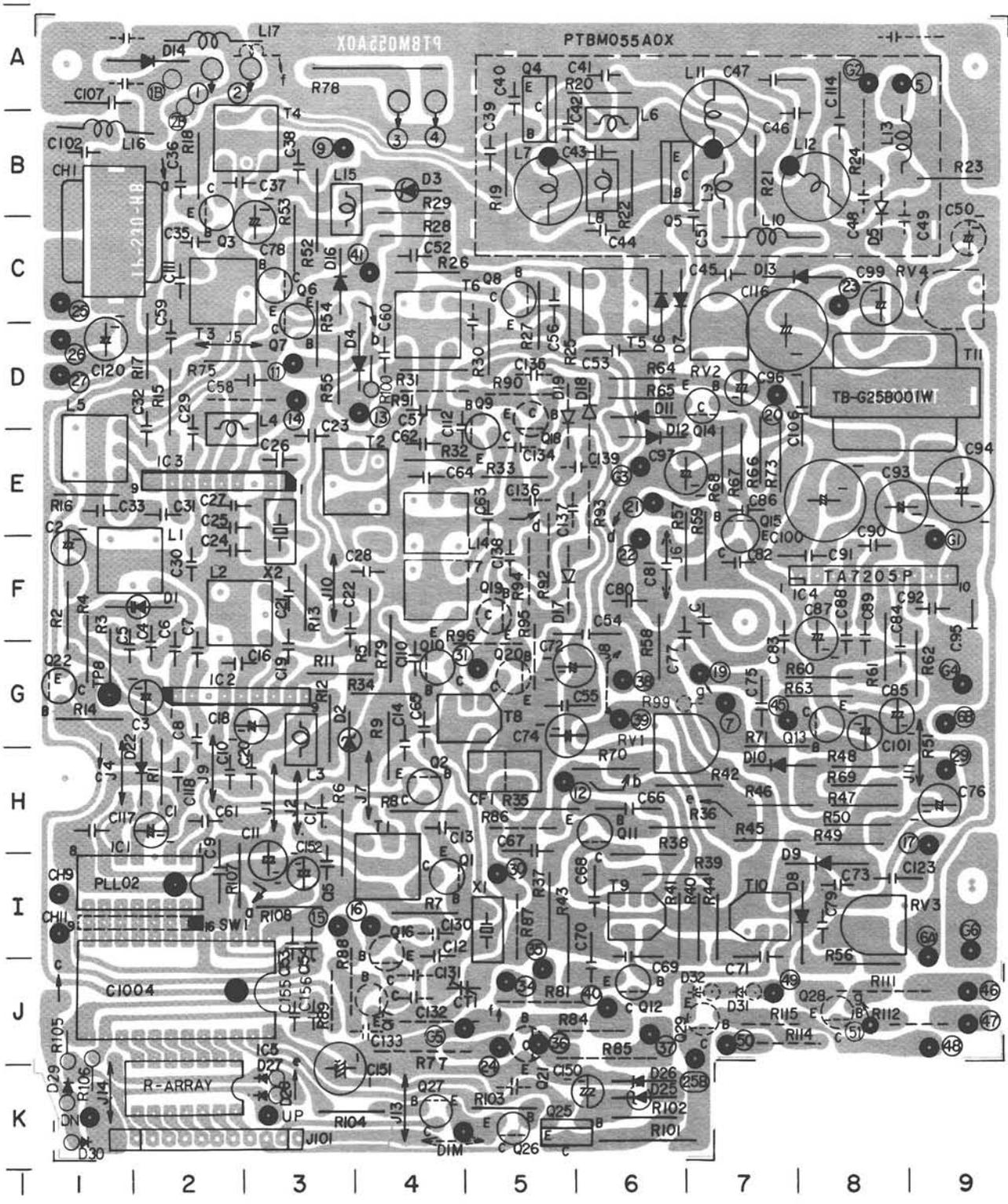


Figure 22 – Main Printed Circuit Board 14T305 only

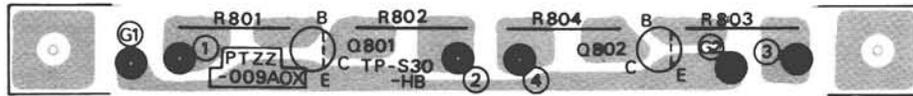


Figure 23 – Lamp Printed Circuit Board – 14T270

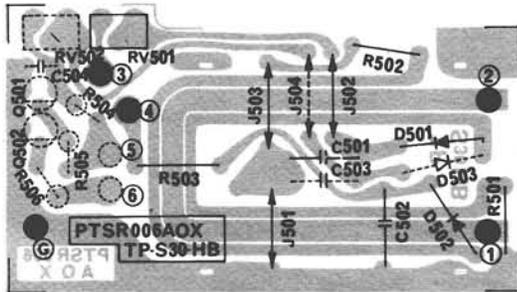


Figure 24 – SWR Printed Circuit Board – 14T270 & 14T305

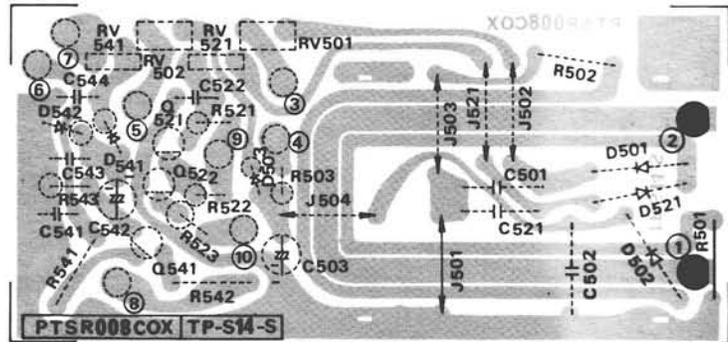


Figure 25 – SWR & MOD Meter Printed Circuit Board – 14T303

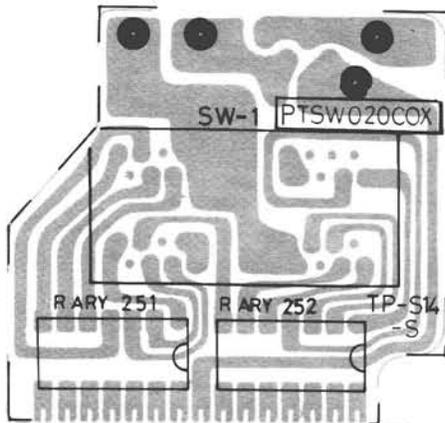


Figure 26 – Channel Selector Printed Circuit Board – 14T303

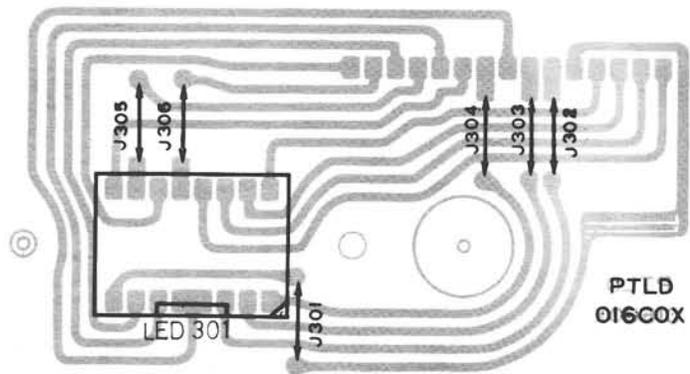


Figure 27 – LED Printed Circuit Board – 14T303

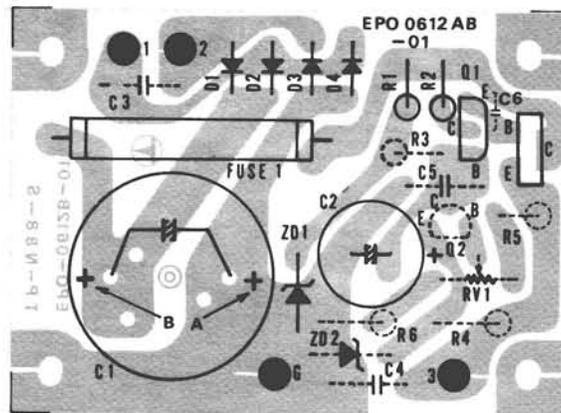


Figure 28 – Power Supply Printed Circuit Board – 14T303

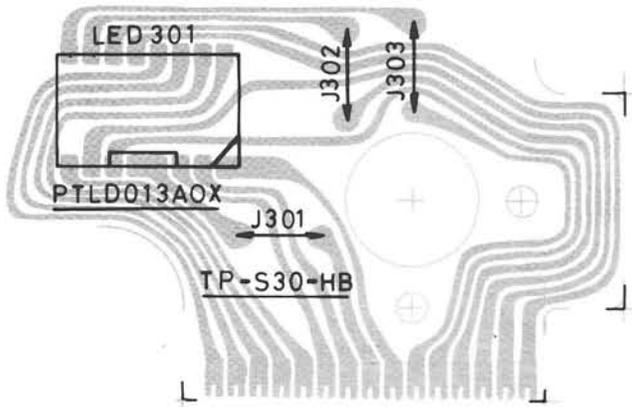


Figure 29 – LED Printed Circuit Board – 14T304

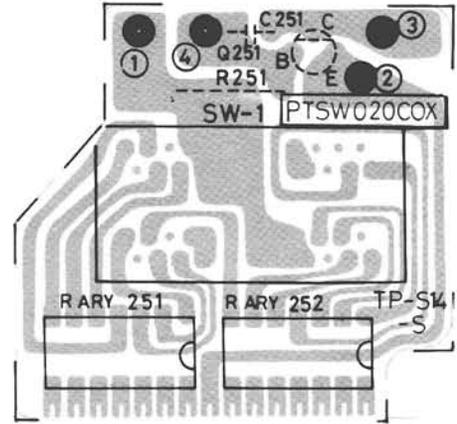


Figure 30 – Channel Selector Printed Circuit Board – 14T304

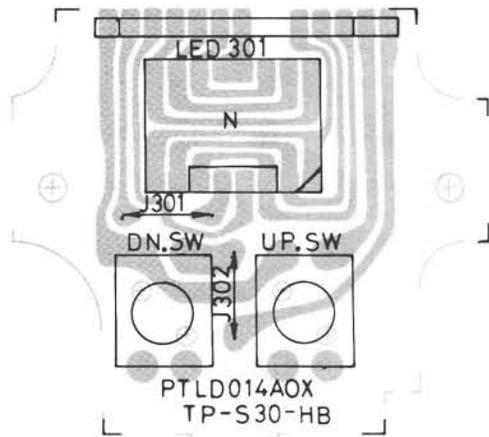


Figure 31 – LED Printed Circuit Board – 14T305

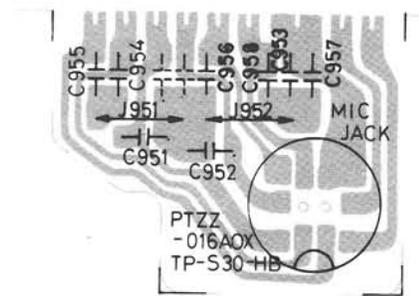


Figure 32 – Microphone Jack Printed Circuit Board – 14T305

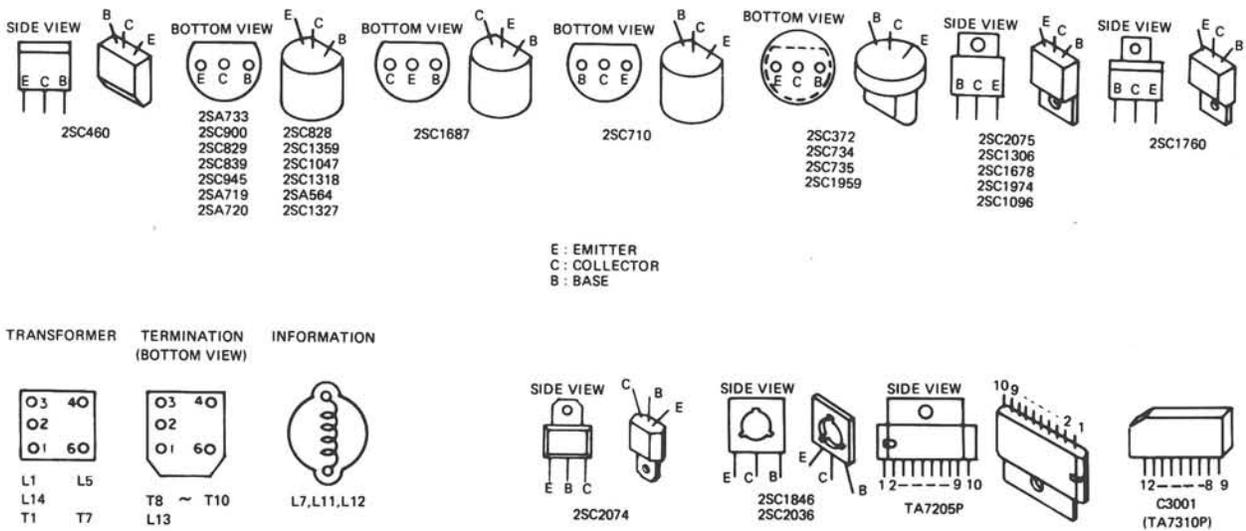


Figure 33 – Semiconductor Terminal Connections

Replacement Parts

NOTE: Location column pertains to grid coordinates shown in printed circuit board diagrams Figures 21 and 22 on Pages 25 and 26.

SYMB. NO.	STOCK NO.	DESCRIPTION	LOCATION	SYMB. NO.	STOCK NO.	DESCRIPTION	LOCATION
		CAPACITORS					
C1	742688	.1 uF, 10 v, AROX (14T303 & 14T305 only)	H2	C40	742532	330 pf, 50 v, CER (Except 14T303)	A5
C1	122522	.1 uF, 10 v, Elyt. (Except 14T303 & 14T305)	H2	C40	742071	330 pf, 50 v, CER (14T303 only)	A5
C2	742072	10 uF, 16 v, Elyt.	F1	C41	742070	.01 uF, 50 v, CER	A6
C3	742553	0.22 uF, 10 v, AROX	G2	C42	426475	120 pf, 10%, 50 v, CER	B5
C4	741788	68 pf, 10%, 50 v, Ceramic	F2	C43	437367	220 pf, 5%, 50 v, Ceramic	B6
C5	742070	.01 uF, 50 v CER	F2	C44	426475	120 pf, 10%, 50 v, CER	C6
C6	741807	22 pf, 10%, 50 v Ceramic	F2	C45	742070	.01 uF, 50 v, CER	C7
C7	437367	220 pf, 5%, 50 v, Ceramic	F2	C46	426475	120 pf, 10%, 50 v, CER (Except 14T260)	A7
C8	426475	120 pf, 10%, 50 v, CER	G2	C47	741776	270 pf, 10%, 500 v, Mica (Except 14T260)	A7
C9	741779	.047 uF, 10%, 50 v, Ceramic (Except 14T303)	I2	C47	431425	120 pf, 500 v, Mica (14T260 only)	A7
C9	436354	470K pf, 10%, 50 v CER Plate (14T303 only)	I2	C48	742533	2 pf, 50 v, CER	B8
C10	742524	47 pf, 50 v, CER	H2	C49	742084	.0047 uF, 50 v, CER	B8
C11	742077	47 uF, 10 v, Elyt.	H3	C50	742076	1 uF, 50 v, Elyt. (Except 14T303)	C9
C12	742528	4 pf, 50 v, CER (Except 14T260 & 14T304)	I4	C50	137903	1 uF, 20%, 50 v, CER Plate (14T303 only)	C9
C12	742525	18 pf, 50 v, CER (14T260 & 14T304)	I4	C51	437390	27 pf, 50 v, CER	B7
C13	741754	.001 uF, 10%, 50 v, Film Mylar	H4	C52	742070	.01 uF, 50 v, CER	C4
C14	741788	68 pf, 10%, 50 v, Ceramic	G4	C53	741779	.047 uF, 10%, 50 v, Ceramic (Except 14T303)	D6
C15	742070	.01 uF, 50 v, CER	I3	C53	436354	470K pf, 10%, 50 v, CER Plate (14T303 only)	D6
C16	437381	33 pf, +50-10%, 50 v Ceramic	G3	C54	741780	.047 uF, 10%, 50 v, Film Mylar	F6
C17	741766	12 pf, 10%, 50 v, Ceramic (Except 14T303)	H3	C55	741779	.047 uF, 10%, 50 v, Ceramic (Except 14T303)	G5
C17	245245	47 pf, 5%, 75 v, CER Plate (14T303 only)	H3	C55	436354	470K pf, 10%, 50 v, CER Plate (14T303 only)	G5
C18	742076	1 uF, 50 v, Elyt. (Except 14T303)	G3	C56	742070	.01 uF, 50 v, CER	C5
C18	137903	1 uF, 20%, 50 v, CER Plate (14T303 only)	G3	C57	742069	10 pf, 50 v, CER	D4
C19	741754	.001 uF, 10%, 50 v, Film Mylar	F3	C58	742070	.01 uF, 50 v, CER	D3
C20	741754	.001 uF, 10%, 50 v, Film Mylar	H3	C59	742070	.01 uF, 50 v, CER (Except 14T304)	D2
C21	742526	100 pf, 100 v, Film-Styroflex	F3	C60	742070	.01 uF, 50 v, CER (Except 14T304)	D4
C22	423295	2 pf, 5%, 50 v, CER Disc	F4	C61	742070	.01 uF, 50 v, CER (Except 14T304)	H2
C23	742527	7 pf, 50 v, CER	D3	C62	742070	.01 uF, 50 v, CER	E4
C24	741781	33 pf, 10%, 50 v, Ceramic	F2	C63	423295	2 pf, 5%, 50 v, CER Disc	E5
C25	742528	4 pf, 50 v, CER	E2	C64	742070	.01 uF, 50 v, CER	E4
C26	742529	560 pf, 50 v, Film Styroflex (14T260 & 14T305)	E3	C65	742525	18 pf, 50 v, CER	G4
C26	742071	330 pf, 50 v, Ceramic (14T270, 14T303 & 14T304)	E3	C66	741782	2.2 pf, 10%, 500 v, Ceramic	H6
C27	742530	390 pf, 50 v, CER	E2	C67	741780	.047 uF, 10%, 50 v, Film Mylar (Except 14T260)	H5
C28	742070	.01 uF, 50 v, CER	F4	C68	741780	.047 uF, 10%, 50 v, Film Mylar (Except 14T260 & 14T304)	I6
C29	423291	68 pf, 50 v, CER	D2	C69	741780	.047 uF, 10%, 50 v, Film Mylar (Except 14T260 & 14T304)	I6
C30	742531	56 pf, 50 v, CER	F2	C70	741780	.047 uF, 10%, 50 v, Film Mylar	I6
C31	742070	.01 uF, 50 v, CER	E2	C70	742076	1 uF, 50 v, Elyt. (14T304 only)	I6
C32	423295	2 pf, 5%, 50 v, CER Disc	D2	C71	741780	.047 uF, 10%, 50 v, Film Mylar	I7
C33	742070	.01 uF, 50 v, CER	E1	C72	742068	10 uF, 16 v, Elyt.	G5
C35	437367	220 pf, 5%, 50 v, Ceramic (14T305 only)	C2	C73	741789	.022 uF, 10%, 50 v, Film Mylar (14T305 only)	I8
C35	423291	68 pf, 50 v, CER (14T260, 14T270 & 14T303)	C2	C73	742534	6800 pf, 50 v, Film, Mylar (Except 14T305)	I8
C35	742531	220 pf, 50 v, CER (14T304 only)	C2	C74	742074	3.3 uF, 25 v, Elyt. (Except 14T303)	G5
C36	742070	.01 uF, 50 v, CER (14T260, 14T270 & 14T303)	B2	C74	166477	3.3 uF, 25 v, Elyt. (14T303 only)	G5
C36	426475	120 pf, 50 v, CER (14T304 only)	B2	C75	741755	.01 uF, 10%, 50 v, Film Mylar (14T305 only)	G7
C37	741763	100 pf, 10%, 50 v, Ceramic	B2			(Continued on Page 38)	
C38	742070	.01 uF, 50 v, CER	B3				
C39	741755	.01 uF, 10%, 50 v, Film Mylar	B5				

* (See Page 45)

SYMB. NO.	STOCK NO.	DESCRIPTION	LOCATION	SYMB. NO.	STOCK NO.	DESCRIPTION	LOCATION
C75	742075	.0047 uF, 50 v, Film Mylar (14T303 only)	G7	C111	425839	82 pf, 50 v, CER (14T305 only)	
C75	741786	.0022 uF, 10%, 50 v, Film Mylar (Except 14T303)	G7	C111	741777	82 pf, 50 v, CER (Except 14T305)	
C76	742076	1 uF, 50 v, Elyt. (Except 14T303 & 14T304)	H9	C113	742076	1 uF, 50 v, Elyt. (Except 14T303 & 14T305)	I3
C76	137903	1 uF, 20%, 50 v, CER Plate (14T303 only)	H9	C113	137903	1 uF, 20%, 50 v, CER Plate (14T303 only)	I3
C77	423283	100 pf, 50 v, CER	F6	C114	105310	390 pf, 500 v, CER (14T303 & 14T305)	A8
C78	742079	47 uF, 16 v, Elyt.	B3	C114	427797	390 pf, 500 v, CER (14T260 only)	A8
C79	741789	.022 uF, 10%, 50 v, Film Mylar (Except 14T270 & 14T303)	I8	C114	426853	390 pf, 500 v, 5%, Mica (14T270 only)	A8
C79	437396	.022 uF, 10%, 50 v, Mylar Film (14T303 only)	I8	C114	742565	90 pf, 500 v, 10%, Ceramic (14T304 only)	A8
C80	742078	.0022 uF, 50 v, CER (Except 14T303)	E6	C117	426478	4700 pf, 10%, 50 v, CER Plate (14T303 & 14T305)	H1
C80	249942	2200 pf, 10%, 50 v, W5R, CER Plate (14T303 only)	F6	C117	432515	4700 pf, 20%, 50 v, Ceramic (14T260 & 14T304)	H1
C81	741789	.022 uF, 10%, 50 v, Film Mylar (Except 14T270 & 14T303)	F6	C117	423274	1000 pf, 50 v, Ceramic (14T270 only)	H1
C81	437396	.022 uF, 10%, 50 v, Mylar Film (14T303 only)	F6	C118	742536	.022 uF, 50 v, CER	H2
C82	437367	220 pf, 5%, 50 v Ceramic	F7	C120	742085	33 uF, 16 v, Elyt.	D1
C83	741755	.01 uF, 10%, 50 v, Film Mylar	F7	C123	437365	.068 uF, 10%, 50 v, Mylar Film (14T303 only)	I8
C84	742078	.0022 uF, 50 v, CER (Except 14T303)	F8	C130	742078	.0022 uF, 50 v, CER (14T270 & 14T305)	I4
C84	249942	2200 pf, 10%, 50 v, W5R, CER Plate (14T303 only)	F8	C130	249942	2200 pf, 10%, 50 v, W5R, CER Plate (14T303 only)	I4
C85	741793	3.9 uF, 25 v, Tantalum	G8	C131	741761	39 pf, 10%, 50 v, Ceramic	J4
C86	742584	.47 uF, 10 v, AROX (14T305 only)	E7	C132	423293	15 pf, 50 v, CER (14T305 only)	J4
C86	742535	.47 uF, 10 v, AROX (Except 14T305)	E7	C132	741810	15 pf, 10%, 50 v, Ceramic (14T270 & 14T303)	J4
C87	741794	33 uF, 6.3 v, Elyt.	F8	C133	742078	.0022 uF, 50 v, CER (14T270 & 14T305)	J4
C88	423291	68 pf, 50 v, CER	F8	C133	249942	2200 pf, 10%, 50 v, W5K, CER Plate (14T303 only)	J4
C89	423291	68 pf, 50 v, CER	F8	C134	742554	3 pf, 50 v, Ceramic	E5
C90	423283	100 pf, 50 v, CER	F8	C135	437367	220 pf, 5%, 50 v, Ceramic	D5
C91	741795	.068 uF, 10%, 50 v, Film Mylar (Except 14T303)	F8	C136	235204	3300 pf, 10%, 200 v, Y5F, CER Disc (14T303 & 14T305)	E5
C91	437365	.068 uF, 10%, 50 v, Mylar Film (14T303 only)	F8	C136	742555	3300 pf, 10%, 200 v, Y5F, CER Disc	E5
C92	423283	100 pf, 50 v, CER	F9	C137	742070	.01 uF, 50 v, CER	E5
C93	742079	47 uF, 16 v, Elyt.	E8	C138	742070	.01 uF, 50 v, CER	F5
C94	741797	220 uF, 16 v, Elyt.	E9	C139	437367	220 pf, 5%, 50 v, Ceramic	E5
C95	741795	.068 uF, 10%, 50 v, Film Mylar (Except 14T303)	F9	C141	742070	.01 uF, 50 v (14T303 & 14T305)	
C95	437365	.068 uF, 10%, 50 v, Mylar Film (14T303 only)	F9	C150	742068	10 uF, 16 v, Elyt. (14T305 only)	K6
C96	742074	3.3 uF, 25 v, Elyt. (Except 14T303)	D7	C151	122727	47 uF, 6.3 v, Elect (14T305 only)	K3
C96	166477	3.3 uF, 25 v, Elyt. (14T303 only)	D7	C152	742688	.1 uF, 10 v, AROX (14T305 only)	I3
C97	742077	47 uF, 10 v, Elyt.	E6	C153	742688	.1 uF, 10 v, AROX (14T305 only)	I3
C99	742081	47 uF, 25 v, Elyt.	C8	C154	742688	.1 uF, 10 v, AROX (14T305 only)	I3
C100	742080	1000 uF, 16 v, Elyt. (Except 14T303)	E8	C155	742578	.047 uF, 125 v, Variable (14T305 only)	J3
C100	740844	1000 uF, 16 v, Elyt. (14T303 only)	E8	C156	742578	.047 uF, 125 v, Variable (14T305 only)	J3
C101	741794	33 uF, 6.3 v, Elyt.	G8	C201A	742088	180 pf, 500 v, Mica (Except 14T303)	SWR
C102	742070	.01 uF, 50 v, CER	B1	C201	230245	150 pf, 5%, 500 v, Mica (14T303 only)	
C106	741779	.047 uF, 10%, 50 v, Ceramic (Except 14T303)	D8	C201B	742499	7 pf, 500 v, CER	RP
C106	436354	470K pf, 10%, 50 v, CER Plate (14T303 only)	D8	C202	742087	.01 uF, 50 v, CER (Except 14T260)	†
C107	741779	.047 uF, 10%, 50 v, Ceramic (Except 14T303)	A1	C202	742569	.047 uF, 50 v, CER (14T260 only)	†
C107	436354	470K pf, 10%, 50 v, CER Plate (14T303 only)	D8	C203	742087	.01 uF, 50 v, CER	†
C110	742570	18 pf, 50 v, CER	G4	C204	742087	.01 uF, 50 v, CER	†
				C205	742569	.047 uF, 50 v, CER (Except 14T260 & 14T270)	†
				C205	742087	.01 uF, 50 v, CER (14T260 & 14T270)	†
				C206	742087	.01 uF, 50 v, CER	RP
				C207	742087	.01 uF, 50 v, CER	RD
				C208	742084	.0047 uF, 50 v, CER	RP

(Continued on Page 39)

RP• On rear panel

SWR• On SWR board

†• Connected between chassis and case

* (See Page 45)

SYMB. NO.	STOCK NO.	DESCRIPTION	LOCATION	SYMB. NO.	STOCK NO.	DESCRIPTION	LOCATION
C209	742084	.0047 uF, 50 v, CER	RP	D22	741741	Diode - Type 1S1555 (Except 14T270)	H2
C210	742084	.0047 uF, 50 v, CER	RP	D25	741738	Diode - Type ZM2205 (14T305 only)	K6
C211	742084	.0047 uF, 50 v, CER (Except 14T305)	FP	D26	741741	Diode - Type 1S1555 (14T305 only)	K6
C212	742084	.0047 uF, 50 v, CER (Except 14T305)	FP	D27	741741	Diode - Type 1S1555 (14T305 only)	K2
C213	742084	.0047 uF, 50 v, CER (14T303 only)	FP	D28	741741	Diode - Type 1S1555 (14T305 only)	K2
C214	742084	.0047 uF, 50 v, CER (14T303 only)	FP	D29	741741	Diode - Type 1S1555 (14T305 only)	K1
C251	742070	.01 uF, 50 v, CER (14T304 only)	LC1	D30	741741	Diode - Type 1S1555 (14T305 only)	K1
C501	426027	10,000 pf, 20%, 50 v, CER Disc (14T303 & 14T305)	SWR	D33	741741	Diode - Type 1S1555 (14T305)	
C501	742557	10,000 pf, 20%, 50 v, CER Disc (14T270 only)	SWR	D501	112524	Diode - Type 1N60 (14T270 & 14T305)	SWR
C502	426027	10,000 pf, 20%, 50 v, CER Disc (14T303 & 14T305)	SWR	D501	112524	Diode - Type 1N60 (14T303)	SWR
C502	742557	10,000 pf, 20%, 50 v, CER Disc (14T270 only)	SWR	D502	112524	Diode - Type 1N60 (14T303)	SWR
C503	426027	10,000 pf, 20%, 50 v, CER Disc (14T305 only)	SWR	D502	112524	Diode - Type 1N60 (14T270 & 14T305)	SWR
C541	742084	.0047 uF, 50 v, CER (14T303 only)	SWR	D541	112524	Diode - Type 1N60 (14T303)	SWR
C542	436354	0.47 uF, 50 v, Electrolytic (14T303 only)	SWR	D542	112524	Diode - Type 1N60 (14T303)	SWR
C543	742084	.0047 uF, 50 v, CER (14T303 only)	SWR	IC1	741686	I.C. - Type PLL02A	I2
C544	742084	.0047 uF, 50 v, CER (14T303 only)	SWR	IC2	742510	I.C. - Type TA731P	G3
C951	742084	.0047 uF, 50 v, CER (14T305 only)	MRB	IC3	742510	I.C. - Type TA731P	E2
C952	742084	.0047 uF, 50 v, CER (14T305 only)	MRB	IC4	741687	I.C. - Type TA7205P	F8
C953	742084	.0047 uF, 50 v, CER (14T305 only)	MRB	IC5	742619	I.C. - Type C1004T (14T305 only)	J3
C954	742084	.0047 uF, 50 v, CER (14T305 only)	MRB	J1	742497	Connector - Jack, Ant	H3
C955	742084	.0047 uF, 50 v, CER (14T305 only)	MRB	J1	742665	Connector - Jack, Ant (14T303 only)	H3
C956	742084	.0047 uF, 50 v, CER (14T305 only)	MRB	J2	741815	Connector - Jack, Microphone (Except 14T305)	I3
C957	742084	.0047 uF, 50 v, CER (14T305 only)	MRB	J3	742498	Connector - Jack, Ext, SP	I3
C958	742084	.0047 uF, 50 v, CER (14T305 only)	MRB	J4	742498	Connector - Jack, Ext, SP	H1
CF1	741812	Filter, CER	H5	J5	741819	Connector - Jack, D.C. (Except 14T260 & 14T303)	RP
CH1	741691	Coil, Choke	B1	J7	742666	Connector - Jack, Phone (14T303 only)	H4
CR1	742591	Module (14T303 only)		J951	742667	Connector - Jack, Mic (14T305 only)	MRB
CT1	741721	Capacitor, Trimmer	J4	L1	742514	Coil - RF	F2
D1	741689	Diode - Type ITT410	F2	L2	741720	I.F. , T	F2
D2	741738	Diode - Type ZM2205	G3	L3	741697	Coil - R.F.	G3
D3	741739	Diode - Type RD9.1E	B4	L4	742515	Coil - Peaking, 1 UH	D3
D4	741741	Diode - Type 1S1555	D4	L5	742516	Coil - RF-27, MHZ	E1
D5	112524	Diode - Type Special	BA	L6	741695	Coil - R.F.	A6
D6	741741	Diode - Type 1S1555	C6	L7	741696	Coil - R.F.	B5
D7	741741	Diode - Type 1S1555	C7	L8	741697	Coil - R.F.	B6
D8	112524	Diode - Type Special	I8	L9	741703	Coil - R.F.	B7
D9	112524	Diode - Type Special	H8	L10	741698	Coil - R.F.	B7
D10	741741	Diode - Type 1S1555 (Except 14T305)	H7	L11	741699	Coil - R.F.	A7
D11	741741	Diode - Type 1S1555 (Except 14T260 & 14T305)	D6	L12	741700	Coil - R.F.	B8
D12	741741	Diode - Type 1S1555 (Except 14T304)	D6	L13	742517	Coil - R.F.	A9
D13	166593	Diode - Type V06C	C7	L14	742521	Coil - R.F. (Except 14T260)	E4
D14	741740	Diode - Type 1S1885	A2	L14	742551	Coil - R.F. (14T260 only)	E4
D15	741741	Diode - Type 1S1555 (14T260) R111 47 ohms on 14T303	I3	L15	741697	Coil - R.F.	B3
D16	741741	Diode - Type 1S1555 (Except 14T270)	C3	L16	741702	Coil - R.F.	B1
D17	741741	Diode - Type 1S1555 (Except 14T260 & 14T304)	F6	L17	741702	Coil - R.F.	A3
D18	112524	Diode - Type Special (Except 14T260 & 14T304)	D6	L201	742605	Coil (14T303 only)	
D19	112524	Diode - Type Special (Except 14T260 & 14T304)	D5	LED	742618	Diode - Type SL122, LED (14T304 & 14T305)	FP
				LED301	742568	Diode - Type SL122	FP
				M	741831	Meter - D.C. with Lamp (14T270 & 14T305)	FP

(Continued on Page 40)

FP• On front panel

MRB• On microphone rec. board

RP• On rear panel

SWR• On SWR board

* (See Page 45)

SYMB. NO.	STOCK NO.	DESCRIPTION	LOCATION	SYMB. NO.	STOCK NO.	DESCRIPTION	LOCATION
M	741846	Meter - D.C. (14T260 only)	FP	Q251	742567	Transistor - Type 2SC1383 (14T304 only)	LCI
M	742560	Meter (14T304 only)	FP	Q501	112524	Diode - Type 1N60 (14T303 only)	SWR
M1	742675	Meter - S/MOD (14T303 only)	FP	Q502	112524	Diode - Type 1N60 (14T303 only)	SWR
M2	742677	Meter - RF/CAL/SWR (14T303 only)	FP	Q541	742703	Transistor - Type 2SC945AP (14T303 only)	SWR
PL1	741818	Lamp - Pilot (14T260 & 14T270)	FP	Q541	112524	Diode - Type 1N60 (14T303 only)	SWR
PL1	742679	Lamp (14T303 only)	FP	Q542	112524	Diode - Type 1N60 (14T303 only)	SWR
PL1	742561	Lamp (14T304 only)	FP	Q801	742558	Transistor - Type 2SC945RQ (14T270 only)	LB
PL2	741833	Lamp - Pilot (14T305 only)	FP	Q802	742558	Transistor - Type 2SC945RQ (14T270 only)	LB
PL2	741818	Lamp - Pilot (14T260 only)	FP				
PL2	741832	Lamp - Pilot (14T270 only)	FP				
PL2	742679	Lamp (14T303 only)	FP				
PL3	741818	Lamp - Pilot (14T260 only)	FP				
PL3	742678	Lamp (14T303 only)	FP				
PL4	74254	Lamp (14T303 only)	FP				
PT	742648	Transformer (14T303 only)					
Q1	742544	Transistor - Type 2SC710DE (Except 14T303)	I4	R1	107972	3300 Ohm, 5%, 1/4 w, Comp	H2
Q1	742624	Transistor - Type 2SD313 (14T303 only)	I4	R2	108864	470 Ohm, 5%, 1/4 w, Comp	F1
Q2	742544	Transistor - Type 2SC710DE	H2	R3	426112	22000 Ohm, 5%, 1/4 w, Comp	G1
Q3	741731	Transistor - Type 2SC1687	B2	R4	108871	47000 Ohm, 1/4 w, Comp (Except 14T260)	F1
Q4	742537	Transistor - Type 2SC1360 (Except 14T270)	A5	R5	426216	68 Ohm, 5%, 1/4 w, Comp (14T303 & 14T305)	F4
Q4	742545	Transistor - Type 2SC1846 QRS (14T270 only)	A5	R5	108861	100 Ohms, 5%, (14T260 & 14T270)	F4
Q5	741732	Transistor - Type 2SC1306 (Except 14T260)	B6	R6	426215	680 Ohms, 1/4 w, 5%, Comp	H3
Q5	742511	Transistor - Type 2SC1360 (14T260 only)	B6	R7	219467	27000 Ohm, 5%, 1/4 w, Comp	I4
Q6	741856	Transistor - Type 2SC1318	C3	R8	108869	15000 Ohm, 5%, 1/4 w, Comp	H4
Q7	742546	Transistor - Type 2SA719PQR	C3	R9	219459	1500 Ohm, 5%, 1/4 w, Comp	G4
Q8	742547	Transistor - Type 2SA1047BC (Except 14T303)	C5	R11	227959	82 Ohm, 5%, 1/4 w, Comp	G3
Q8	742622	Transistor - Type 2SC1047BCC (14T303 only)	C5	R12	108866	2200 Ohm, 5%, 1/4 w, Comp	G3
Q9	742548	Transistor - Type 2SC1359BC	D5	R13	227744	150 Ohm, 5%, 1/4 w, Comp	F3
Q10	741726	Transistor - Type 2SC710D	G4	R14	218762	1000000 Ohm, 5%, 1/4 w Comp	G1
Q11	741726	Transistor - Type 2SC710D	H6	R15	108860	47 Ohm, 5%, 1/4 w, Comp	D2
Q12	742549	Transistor - Type 2SC829BC	J6	R16	108861	100 Ohm, 5%, 1/4 w, Comp	E1
Q13	741737	Transistor - Type 2SC828P	G8	R17	108869	15000 Ohm, 5%, 1/4 w, Comp (14T304 & 14T305)	D2
Q14	741729	Transistor - Type 2SA719Q	D7	R17	239954	5600 Ohms, 2%, 1/4 w, Film (Except 14T304 & 14T305)	D2
Q15	742512	Transistor - Type 2SC945(L)PO	E7	R18	426216	68 Ohm, 5%, 1/4 w, Comp	B2
Q16	742544	Transistor - Type 2SC710DE (Except 14T260 & 14T304)	J4	R19	108861	100 Ohm, 5%, 1/4 w, Comp	B5
Q17	742544	Transistor - Type 2SC710DE (Except 14T260 & 14T304)	J4	R20	218758	220 Ohm, 5%, 1/4 w, Comp (Except 14T260)	A6
Q18	166906	Transistor - Type 2SC829C (14T270 & 14T303)	D5	R21	135726	10 Ohms, 5%, 1/4 w, Film (14T303 & 14T305)	B7
Q19	742008	Transistor - Type 2SA733P.Q. (Except 14T260 & 14T304)	F5	R21	239417	10 Ohms, 5%, 1/2 w, Film - Metal Oxide (14T260, 14T270 & 14304)	B7
Q20	742550	Transistor - Type 2SC1327T.U (Except 14T260 & 14T304)	G5	R22	426216	68 Ohm, 5%, 1/4 w, Comp	B6
Q21	742558	Transistor - Type 2SC945RQ (14T303 & 14T305 only)	J5	R23	108871	47000 Ohm, 5%, 1/4 w, Comp (Except 14T260)	B9
Q22	742513	Transistor - Type 2SC900U	G1	R23	742522	57K Ohms (14T260 only)	B9
Q25	742623	Transistor - Type 2SC1096-3SL (14T305 only)	K5	R24	426215	680 Ohms, 1/4 w, 5%, Comp	B8
Q26	742621	Transistor - Type 2SC735GR (14T305 only)	K5	R25	219458	330 Ohms, 5%, 1/4 w, Comp	C6
Q27	742621	Transistor - Type 2SC735GR (14T305 only)	K4	R26	108865	1000 Ohm, 5%, 1/4 w, Comp (Except 14T260)	C4
				R27	426215	680 Ohms, 1/4 w, 5%, Comp	C5
				R28	108871	47000 Ohm, 5%, 1/4 w, Comp	C4
				R29	107972	3300 Ohm, 5%, 1/4 w, Comp	B4
				R30	108861	100 Ohm, 5%, 1/4 w, Comp	C5
				R31	219460	1800 Ohm, 5%, 1/4 w, Comp	D4
				R32	227741	560 Ohm, 5%, 1/4 w, Comp	E4

(Continued on Page 41)

FP• On front panel

LB• On lamp board

LCI• On LED chan. ind. board

SWR• On SWR board

SYMB. NO.	STOCK NO.	DESCRIPTION	LOCA-TION	SYMB. NO.	STOCK NO.	DESCRIPTION	LOCA-TION
R33	108864	470 Ohm, 5%, 1/4 w, Comp	F5	R77	133240	270 Ohms, 2%, 1/2 w, Film (14T260 only)	J4
R34	232389	470000 Ohm, 5%, 1/4 w, Comp	G4	R77	742015	150 Ohms, 1W, Film-Metal Oxide (14T270 only)	J4
R35	108865	1000 Ohm, 5%, 1/4 w, Comp	H5	R77	435050	150 Ohms, 1%, 1 w, Film (14T304 only)	J4
R36	426213	4700 Ohm, 5%, 1/4 w, Comp	H6	R78	742643	15 Ohm, 5%, 2 w, Film (14T305 only)	
R37	108864	470 Ohm, 5%, 1/4 w, Comp	I5	R78	742552	15 Ohms, 2 w, Film-Metal Oxide (Except 14T305)	
R38	108871	47000 Ohm, 5%, 1/4 w, Comp	H6	R79	426112	22K Ohms, 5% (14T304 only)	F4
R39	218758	220 Ohm, 5%, 1/4 w, Comp	I6	R80	108867	6800 Ohm, 5%, 1/4 w, Comp	
R40	427563	3900 Ohm, 5%, 1/4 w, Comp	I7	R81	133240	270 Ohms, 2%, 1/2 w, Film (14T260 & 14T303 only)	J5
R41	108869	15000 Ohm, 5%, 1/4 w, Comp	I6	R82	426213	4700 Ohms, 5%, (14T303 only)	
R42	426219	33000 Ohm, 5%, 1/4 w, Comp	H6	R84	108869	15000 Ohm, 5%, 1/4 w, Comp (14T305 only)	J6
R43	218758	220 Ohm, 5%, 1/4 w, Comp	I5	R84	218499	10K Ohms, 5% (14T303 only)	J6
R44	108860	47 Ohm, 5%, 1/4 w, Comp	I7	R85	133240	270 Ohms, 2%, 1/2 w, Film (14T303 only)	J6
R45	426112	22000 Ohm, 5%, 1/4 w, Comp	H7	R85	741725	330 Ohm, 1/2 w, Film Metal Oxide (14T305 only)	J6
R46	232687	270000 Ohm, 5%, 1/4 w, Comp (Except 14T303 & 14T304)	H7	R86	107972	3300 Ohm, 5%, 1/4 w, Comp (14T303 & 14T305)	H5
R47	108871	47000 Ohm, 5%, 1/4 w, Comp	H8	R86	219465	8200 Ohms, 5% (14T270 only)	H5
R48	427566	68,000 Ohm, 1/4 w, 5%, Comp	H8	R87	107972	3300 Ohm, 5%, 1/4 w, Comp (14T270 & 14T305)	I5
R49	426219	33000 Ohm, 5%, 1/4 w, Comp	H8	R88	218499	10000 Ohm, 5%, 1/4 w, Comp (Except 14T260 & 14T304)	J4
R50	108871	47000 Ohm, 5%, 1/4 w, Comp	H8	R89	218499	10000 Ohm, 5%, 1/4 w, Comp (14T270, 14T303 & 14T305)	J3
R51	218499	10000 Ohm, 5%, 1/4 w, Comp	G9	R90	223769	100000 Ohm, 5%, 1/4 w, Comp (Except 14T260 & 14T304)	
R52	135726	10 Ohms, 5%, 1/4 w, Film (Except 14T260 & 14T304)	B3	R91	108865	1000 Ohm, 5%, 1/4 w, Comp (Except 14T260 & 14T304)	
R52	239417	10 Ohms, 5%, 1/2 w, Film-Metal Oxide (14T260 & 14T304)	B3	R92	241991	560,000 Ohm, 5%, 1/4 w, Comp (Except 14T260 & 14T304)	F5
R53	108865	1000 Ohm, 5%, 1/4 w, Comp	C3	R93	223769	100000 Ohm, 5%, 1/4 w, Comp (Except 14T260 & 14T304)	E6
R54	433018	390 Ohms, 5%, 1/4 w, Comp	D3	R94	243304	820,000 Ohm, 5%, 1/4 w, Comp (Except 14T260 & 14T304)	F5
R55	218499	10000 Ohm, 5%, 1/4 w, Comp	D3	R95	426213	4700 Ohm, 5%, 1/4 w, Comp (Except 14T260 & 14T304)	F5
R56	426234	820 Ohms, 10%, 1/4 w, Fixed Comp	I8	R96	426112	22000 Ohm, 5%, 1/4 w, Comp (Except 14T260 & 14T304)	F5
R57	219467	27K Ohms, 5%, (Except 14T305)	E6	R98	219459	1500 Ohms, 5%, (14T303 only)	
R58	239954	5600 Ohm, 2%, 1/4 w, Film (Except 14T260 & 14T305)	G6	R99	218499	10000 Ohm, 5%, 1/4 w, Comp (14T305 only)	G5
R58	108870	18000 Ohms, 5% (14T305 only)	G6	R100	107972	3300 Ohm, 5%, 1/4 w, Comp (14T305 only)	G7
R59	107972	3300 Ohm, 5%, 1/4 w, Comp	F7	R101	742627	47 Ohm, 5%, 1 w, Film (14T305 only)	K6
R60	108866	2200 Ohms, 5% (Except 14T305)	G8	R102	108865	1000 Ohm, 5%, 1/4 w, Comp (14T305 only)	K6
R61	426234	820 Ohms, 10%, 1/4 w, Fixed Comp	G8	R103	107972	3300 Ohm, 5%, 1/4 w, Comp (14T305 only)	K5
R62	108860	47 Ohm, 5%, 1/4 w, Comp	G9	R104	107972	3300 Ohm, 5%, 1/4 w, Comp (14T305 only)	K3
R63	218499	10000 Ohm, 5%, 1/4 w, Comp	G8	R105	108861	100 Ohm, 5%, 1/4 w, Comp (14T305 only)	J1
R64	108860	47 Ohm, 5%, 1/4 w, Comp	D6	R106	108861	100 Ohm, 5%, 1/4 w, Comp (14T305 only)	J1
R65	108865	1000 Ohm, 5%, 1/4 w, Comp	D6				
R66	426213	4700 Ohm, 5%, 1/4 w, Comp (Except 14T303)	E7				
R66	108871	47K Ohms, 5% (14T303 only)	E7				
R67	108870	18000 Ohm, 5%, 1/4 w, Comp (Except 14T260 & 14T270)	E7				
R67	426112	22K Ohms, 5% (14T260 only)	E7				
R67	219460	1800 Ohms, 5% (14T270 only)	E7				
R68	108865	1000 Ohm, 5%, 1/4 w, Comp	E7				
R69	426112	22000 Ohm, 5%, 1/4 w, Comp	H8				
R70	426112	22000 Ohm, 5%, 1/4 w, Comp (Except 14T304)	H6				
R71	219460	1800 Ohm, 5%, 1/4 w, Comp (Except 14T260)	G7				
R72	219459	1500 Ohms, 5% (Except 14T303 & 14T305)	E3				
R73	426213	4700 Ohm, 5%, 1/4 w, Comp	H7				
R74	426112	22K Ohms, 5% (14T260 only)	H7				
R75	426213	4700 Ohm, 5%, 1/4 w, Comp	D3				
R76	133240	270 Ohms, 2%, 1/2 w, Film (14T260 & 14T270 only)	J4				
R77	230014	150 Ohm, 5%, 1 w, Film (14T305 only)	J4				

(Continued on Page 42)

SYMB. NO.	STOCK NO.	DESCRIPTION	LOCATION	SYMB. NO.	STOCK NO.	DESCRIPTION	LOCATION
R107	223769	100000 Ohm, 5%, 1/4 w, Comp (14T305 only)	I2	S4	741817	Switch - Slide (Except 14T260)	FP
R108	426112	22000 Ohm, 5%, 1/4 w, Comp (14T305 only)	I3	S5	741817	Switch - Slide (Except 14T260 & 14T304)	FP
R111	113524	2700 Ohms, 5% (14T303 only)	J8	S6	741834	Switch, Slide (14T270 only)	FP
R112	219467	27000 Ohm, 5%, 1/4 w, Comp (14T305 only)	J9	S6 (VR2)	742639	Resistor, Variable, Linear 10K Ohms & Switch (SQ/PA) (14T303 only)	FP
R201	223769	100000 Ohm, 5%, 1/4 w, Comp		S7	741817	Switch, Slide (14T270 only)	FP
R202	223769	100K Ohms, 5%, (14T270 & 14T304)	FP		742509	Switch, Rotary (14T260 only)	FP
R203	230014	150 Ohms, 1 w, Film (14T303 only)	FP	SP	741830	Speaker (Except 14T260 & 14T303)	CB
R204	230014	150 Ohms, 1 w, Film (14T303 only)	FP	SP	741845	Speaker (14T260 & 14T303)	CB
R251	239954	5600 Ohms (14T304 only)	LC1	SW1	742571	Switch, Rotary, Channel (14T303 & 14T304)	FP
R501	227959	82 Ohm, 5%, 1/4 w, Comp (Except 14T260 & 14T304)	SWR		742509	Switch, Rotary (14T260 only)	FP
R501	259954	5600 Ohms, 1/4 w, (14T304 only)	SWR	T1	742518	Transformer - R.F.	I4
R502	227959	82 Ohm, 5%, 1/4 w, Comp (Except 14T260 & 14T304)	SWR	T2	742519	Transformer - R.F.	E4
R503	219460	1800 Ohm, 5%, 1/4 w, Comp (14T303 & 14T305)	SWR	T3	741712	Transformer - R.F.	C2
R503	108865	1000 Ohms, 5% (14T270 only)	SWR	T4	741713	Transformer - R.F.	B3
R541	239455	1200 Ohms, 5%, 1/4 w, Film (14T303 only)	SWR	T5	741714	Transformer - R.F.	C6
R542	218499	10K Ohms, 5% (14T303 only)	SWR	T6	742520	Transformer - R.F.	C4
R543	219459	1500 Ohms, 5% (14T303 only)	SWR	T7	742521	Transformer - R.F.	F4
R801	218499	10K Ohms, 5%, (14T270 only)	SWR	T8	741717	I.F.T. 455 KHZ	G4
R802	133240	270 Ohms, 2%, 1/2 w, Film (14T270 only)	LB	T9	741718	I.F.T. 455 KHZ	I6
R803	108869	15K Ohms, 5% (14T270 only)	LB	T10	741719	I.F.T. 455 KHZ	I7
R804	741725	330 Ohms, 1/2 w, Film-Metal Oxide (14T270 only)	LB	T11	741690	Transformer - A.F. Output	D8/9
	742566	Resistor, Array, 1800 Ohms, X7, 1/4 w (14T303)	LC	VR1	742637	Resistor, 1000 Ohm, Var Linear (14T305 only)	FP
	742566	Resistor, Array, 1800 Ohms, X7, 1/4 w (14T304)	K2	VR1	742495	Resistor, 50K Ohm, Var, Linear (14T260 only)	FP
	742625	Resistor, Array, 180 Ohms (14T305)	K2	VR1	741828	Resistor, 10K Ohm, Var (14T270 & 14T304)	FP
RV1	741707	Resistor, 10,000 Ohm, Var	G7	VR1	742636	Resistor, 50K Ohm, Var, Linear-Vol (14T303 only)	FP
RV2	742508	Resistor, 10000 Ohm, Var Linear	D7	VR2	742638	Resistor, 10000 Ohm, Var Linear (14T305 only)	FP
RV3	741709	Resistor, 20,000 Ohm, Var	I8	VR2	742496	Resistor, 10K Ohm, Var, Linear (14T260 only)	FP
RV4	741709	Resistor, 20,000 Ohm, Var (Except 14T303)	C4	VR2	741829	Resistor, 10K Ohm, Var (14T270 & 14T304)	FP
RV501	742631	Resistor, 5000 Ohm, Variable (14T303 & 14T305)	SWR	VR2	742639	Resistor, 10K Ohm, Var Linear-SQ/PA (14T303 only)	FP
RV501	742556	Resistor, 2000 Ohms, Variable Linear (14T270)	SWR	VR3	741829	Resistor, 10000 Ohm, Var Linear (14T270 & 14T305)	FP
RV502	742628	Resistor, Semi-Fixed, 20K Ohms "Power"	SWR	VR3	741844	Resistor, 100K Ohm, Var (14T260 & 14T303)	FP
RV541	742635	Resistor, Semi-Fixed, 20K Ohms "Mod"	SWR	VR3	742559	Resistor, 20K Ohm, Var, Linear (14T304 only)	FP
S1 (VR1)	742637	Resistor, 1000 Ohm, Var Linear Switch (14T305 only)	FP	VR4	741843	Resistor, 10K Ohm, Var, Linear-SWR (14T303 only)	FP
S1 (VR1)	742495	Resistor, 50K Ohms, Var Linear Switch (14T260 only)	FP	VR4	742559	Resistor, 20K Ohm, Var, Linear (14T304 only)	FP
S1 (VR1)	741828	Resistor, 50K Ohms, Var & Switch (14T270 only)	FP	X1	742506	Crystal - 10.24000 MHZ	I5
S2	741817	Switch, Slide (14T304 only)	FP	X2	742507	Crystal - 10.69500 MHZ	E3
S2	741834	Switch, Slide (14T270 only)	FP				
S2	742645	Switch (14T303 & 14T305)	FP				
S3	741817	Switch - Slide (Except 14T260)	FP				

(Continued on Page 43)

CB• On bottom of case

FP• On front panel

LB• On lamp board

SWR• On SWR board

* (See Page 45)

PRODUCTION CHANGES

The listings given below show components which were changed during production. Over each column is given the serial numbers of the units in which the particular values appear.

14T303

Serial Nos. 16000001 to 16008000

Serial Nos. 16008001 and above

SYMB. NO.	STOCK NO.	DESCRIPTION	SYMB. NO.	STOCK NO.	DESCRIPTION
		CAPACITORS			CAPACITORS
C7	437367	220 pf, 5%, 50 v, Ceramic	C7	742071	330 pf, 50 v, Ceramic
C8	426475	120 pf, 10%, 50 v, Ceramic	C8	427831	150 pf, 10%, 50 v, Ceramic
C16	437381	33 pf, +50-10%, 50 v, Ceramic	C16	-	Not used
C113	137903	1 uF, 20%, 50 v, CER	C113	742070	.01 uF, 50 v
R72	-	-	D5	741741	Diode Type 1S1555 (Replaces R72)
R111	108860	47 ohms, 5%, 1/4 w, Comp.	R111	113524	2700 ohms, 5%, 1/4 w

14T304

Serial Nos. 17000001 to 17010000

Serial Nos. 1701001 and above

SYMB. NO.	STOCK NO.	DESCRIPTION	SYMB. NO.	STOCK NO.	DESCRIPTION
		CAPACITORS			CAPACITORS
C7	437367	220 pf, 5%, 50 v, Ceramic	C7	742071	330 pf, 50 v, Ceramic
C8	426475	120 pf, 10%, 50 v, Ceramic	C8	427831	150 pf, 10%, 50 v, Ceramic
C16	437381	33 pf, +50-10%, 50 v, Ceramic	C16	-	Not used
C17	741766	12 pf, 10%, 50 v, Ceramic	C17	245245	47 pf, 5%, 75 v
C35	742531	220 pf, 50 v, CER	C35	423291	68 pf, 50 v, CER
C40	742532	330 pf, 50 v, CER	C40	742530	390 pf, 50 v, CER
C75	741786	.0022 uF, 10%, 50 v, Mylar	C75	742075	0047 uF, 50 v, Mylar
C113	742076	1 uF, 50 v, Elyt.	C113	742070	.01 uF, 50 v
C141	-	-	C141	742070	.01 uF, 50 v
C201A	742088	180 pf, 500 v, Mica	C201A	230245	150 pf, 5%, 500 v, Mica

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Serial Nos. 15000001 to 15010000

Serial Nos. 15010001 and above

SYMB. NO.	STOCK NO.	DESCRIPTION	SYMB. NO.	STOCK NO.	DESCRIPTION
		CAPACITORS			CAPACITORS
C7	437367	220 pf, 5%, 50 v, Ceramic	C7	742071	330 pf, 50 v, Ceramic
C8	426475	120 pf, 10%, 50 v, Ceramic	C8	427831	150 pf, 10%, 50 v, Ceramic
C16	437381	33 pf, +50-10%, 50 v, Ceramic	C16	-	Not used
C17	741766	12 pf, 10%, 50 v, Ceramic	C17	245245	47 pf, 5%, 75 v
C26	742529	560 pf, 50 v, Film	C26	742071	330 pf, 50 v, Ceramic
C40	742532	330 pf, 50 v, Ceramic	C40	742530	390 pf, 50 v, Ceramic
C142	-	Not used	C142	423283	100 pf, 50 v, Ceramic
C201A	742088	180 pf, 500 v, Mica	C201A	230245	150 pf, 5%, 500 v, Mica