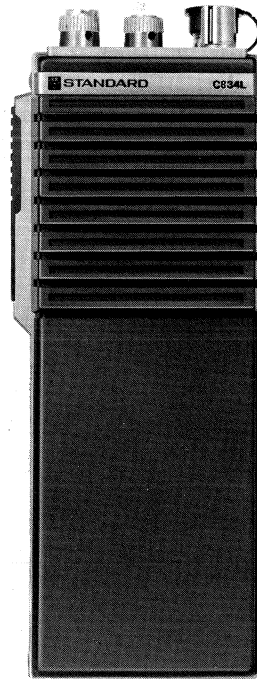




STANDARD®

VHF FM TRANSCEIVER
C834 SERIES
SERVICE MANUAL



STANDARD COMMUNICATIONS CORP.

This Service Manual describes Models C834L, C834N, C844L, TN15, CSA4, CSA5 and CSA5SL.

Applied Models

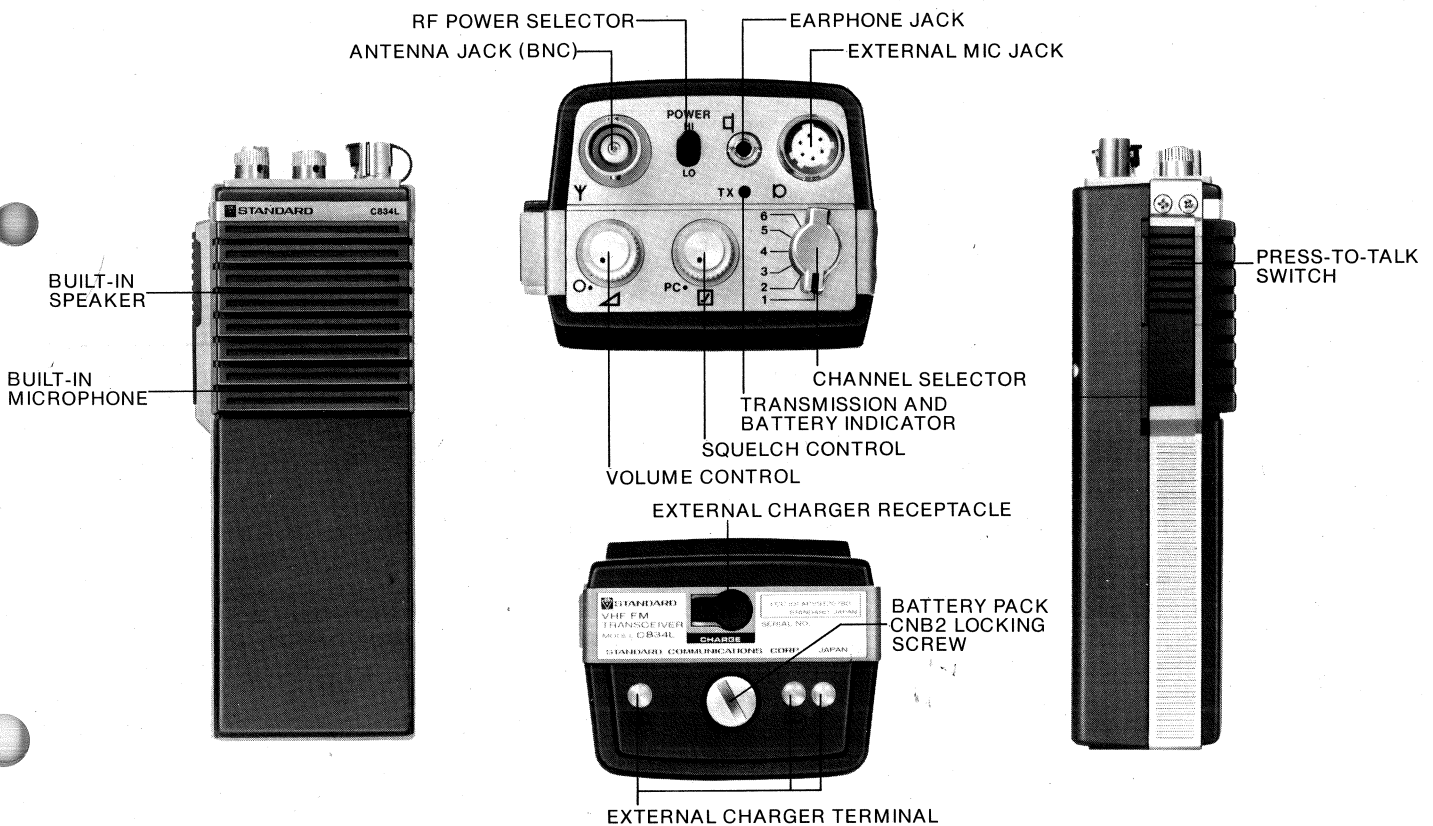
- C834N: 13 lot-01 and after (Y)
- C844L: 10 lot-01 and after (T)
- C834L: 03 lot-01 and after (E)

CONTENTS

C834L/C834N/C844L/TN15

1. CIRCUIT DESCRIPTION	1
2. TN15 CIRCUIT DESCRIPTION	3
3. ADJUSTMENT PROCEDURES	4
4. TUNING PROCEDURE	5
5. BLOCK DIAGRAM	8
6. TN15 SCHEMATIC DIAGRAM AND COMPONENT LOCATIONS	9
7. SCHEMATIC DIAGRAM	10
8. COMPONENT LOCATIONS	12
9. EXPLODED VIEW AND PARTS LIST	14
10. SPECIFICATIONS	22
CSA4	23
CSA5	26
CSA5SL	29

LOCATION OF OPERATING FEATURES



1. CIRCUIT DESCRIPTION

1.1 RECEIVER SECTION

The receiver is a double conversion super-heterodyne designed for narrow band FM reception in the frequency range of 138 ~ 174 MHz. A crystal controlled first local oscillator provides for selection of up to six operation frequencies.

- **RF**

An RF signal from the antenna is applied to RF AMP Q101 gate 1 through antenna switching circuit and RF coils Q211 and Q212. Q101 uses dual gate MOS FET 3SK51. Precise selectivity is obtained by the use of two-step coil on the input side and three-step coil on the output side. Q120 and Q125 act to protect Q101 against excessive input.

- **1st Local**

Third overtone oscillation is performed by Q109 to directly obtain the desired frequency. The frequency is amplified by buffer AMP Q110 and the spurious is eliminated by the two-step tuning circuit. This output is fed to 1st mixer Q102 gate 2.

- **1st Mixer**

A again amplified by RF AMP Q101 is fed to Q102 3SK51 gate 1 and the 1st local frequency is fed to gate 2. The 21.4 MHz difference frequency is fed to the 21.4 MHz crystal filter through the drain and L106.

$$f_c - 3f_{O1} = 21.4 \text{ MHz}$$

$$\therefore f_{O1} = \frac{f_c - 21.4}{3} \text{ MHz}$$

where, f_c = Reception frequency
 f_{O1} = 1st local crystal frequency

- **Crystal Filter**

In C834L, two 21.4 MHz crystal filters are used to obtain precise sensitivity. The output of the 1st mixer is fed to the two crystal filters via matching circuits L106, F101 and F105.

- **1st IF**

The output of the crystal filters is fed to the base of Q103. The amplified 21.4 MHz frequency is fed to the base of 2nd mixer (Q105) via L107.

- **2nd Mixer/2nd Local**

X101 and Q104 oscillate the 2nd local frequency. This oscillated output and the output of the 1st IF AMP go directly into Q105. In Q105 (2nd mixer), the frequency of 21.4 MHz is converted into 455 kHz and fed to L108.

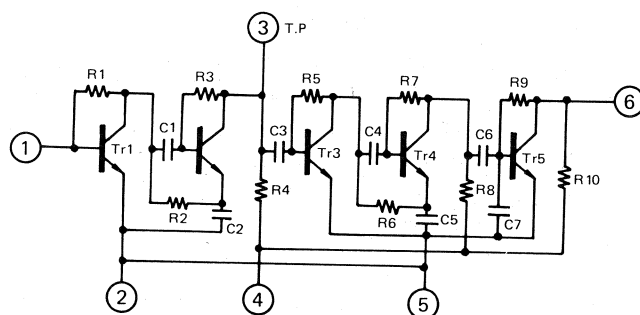
Frequency relation formula:

$$f_{i2} = f_{i1} - f_{o2} = 21.4 - 20.945 \text{ MHz}$$

- **2nd IF AMP**

The band width of the signal converted into 455 kHz by Q105 is determined by F102 and F103, goes to the input terminal of 2nd IF AMP Q106 and is amplified. The equivalent circuit and the nominal constants are shown in the figure below. It operates as a limiter as well as an AMP in TR5. This IC possesses a large voltage gain of more than 110 dB so that the limiter may act even when the signal is very weak.

EQUIVALENT CIRCUIT



- **Ceramic Filter**

The selectivity and frequency band of a receiver are determined by this filter (F102, F103).

- **Discriminator**

An FM signal from the 2nd IF AMP is demodulated into a low frequency signal by Q107, Q108 and the ceramic discriminator (F104) through C126.

- **Squelch**

The squelch circuit eliminates noise when a signal is absent or very weak. A noise rectifying squelch circuit is employed in this unit. The method utilizes the tendency that noise generated in the demodulation circuit is suppressed inversely to signal strength. The 455 kHz signal component and the noise component of about 75 kHz passing through L116, L114, C181 and C144 to be removed of their low frequency components are amplified by Q113 and Q114 and rectified by the voltage doubler diodes of Q117 and Q115, to operate the squelch switching transistor (Q118). In short, when the RF signal is fed, the noise component is decreased, the output voltage of Q117 and Q115 is lowered, and Q118 is turned OFF. SQL VOL is further fed between the base and ground of Q118 to adjust the Q117 and Q115 DC voltage.

- **AF PRE AMP/AM POWER AMP**

AF output from the demodulation circuit is fed to the speaker after being de-emphasized by R117 and C128, amplified by Q119 (AF PRE AMP), its level being properly adjusted by R001 (VOL) and its power amplified by the Q123 (AF POWER AMP) IC μ pc575C2. On the other hand, when the squelch is ON, the voltage of the IC input terminal pin (1) becomes 0V and AF output cases.

1.2 TRANSMITTER SECTION

- **Oscillator Circuit**

The oscillator circuit is a revised Colpitts type and consists of C201, C202 and Q201. The crystal is connected between the base and ground to remove the emitter output. The power source is 6V Zener diode of Q214, which is fed through decoupling to prevent frequency fluctuation owing to fluctuation of the power source voltage.

$$f_o = \frac{f_c}{12}$$

where, f_o = oscillation frequency of crystal
 f_c = transmission frequency

- **Buffer AMP**

This AMP has a buffer effect to minimize the influence upon OSC state in the above, and it also has an amplifying function. The amplified signal here is fed to the modulator through C208.

- **Modulator**

A variable reactance modulation circuit which varies the oscillating frequency of the oscillation circuit according to the modulation signals is employed here. Since the phase changes when the high frequency signal passes through the resonance circuit, phase modulation is obtained by making the input signal frequency constant and changing the resonance frequency of the L202, Q203 and L203, Q204, L204 and Q205 resonance circuit according to the modulation signal. A clear modulation without much distortion is obtained in this manner, especially when MIC input is low.

- **Frequency Multiplier**

The signal from the modulator is stepped up three-fold by Q206 and L205, L206 and is fed to Q207 base. The signal is further stepped up twofold by Q207 and L207, L208, twofold again by Q208 and L209, L210 to obtain the VHF band frequency, which is fed to the power amplifier stage.

- **Power Amplifying Circuit**

The VHF signal thus obtained is fed to the base of Q209. The voltage level is about 1.5V – 2.0V. This amplified signal passes through the coupled L213, C244 and C246 and is fed to the final transistor Q210. The power amplifier output is kept constant at 50Ω by L214, C242, C244 and the higher harmonic component is removed by the low-pass filter of L218, L217, L501, C252, C248, C249 and C501.

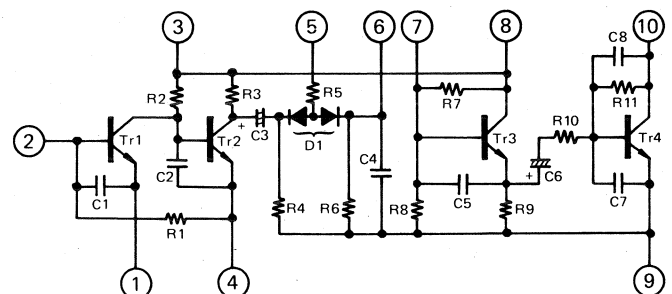
- **Mic AMP and Low-pass Filter**

The voice input of N001 (ECM), pre-emphasized by C266 and R232, is fed to the two pins, the input terminals of Q213 (hybrid IC). Roughly speaking, in this IC the input is amplified by TR1, TR2 by two steps, limited by D₁, further amplified by TR3, and

is operated as an integrator by TR4. The constants are determined so that a radio wave of high quality with little distortion is generated. As to the circuit and the constants, refer to the figure. Moreover, the IDC is arranged after the two-stage amplifier in the operation of this hybrid IC. The IDC, using a D₁ silicon diode, limits the voice level automatically at a fixed level when it shows more than a certain value. When the voice level is below the limiter level, pre-emphasis is unchanged, de-emphasis is employed by TR4, and the frequency characteristic is kept even as a result. The roll-off filter consisting of C257, L220 and C255 attenuates the high frequency above 3 kHz by 18 dB/oct, which prevents the expansion of the occupied frequency band width. Maximum frequency bias is adjusted by semi-fixed resistor R228.

When the transmission is achieved through the applied external MIC with PTT depressed, the built-in MIC is attenuated by 20 dB or so. As a result, disturbances caused by built-in MIC noise is prevented when the external MIC is employed.

Q213 EQUIVALENT CIRCUIT



NOMINAL CONSTANTS

- **RF Power Switching**

RF power is controlled by changing the collector voltage of the final transistor. When S401 is in the High Power position, the battery voltage is applied as it is. When in the Low Power position, however, it is applied to the final transistor collector through R241 and R242.

1.3 COMMON SECTION

- **Antenna Change-over Circuit**

During transmission TX +B V is applied to the switching circuit, supplying the power to R223, L215, Q211, L216 and Q212. Then Q212, Q213 are turned ON, and the RF signal is supplied to the antenna through the low-pass filter. At that time, Q212 is grounded, and the transmission output does not go into the receiver section, partly due to the RF checking effect of L216.

During reception, Q211, Q212 remain in the OFF condition because +B is not applied to the switching circuit, and the signal from the antenna goes to the receiver section front.

- **Power Supply Circuit**

Transmission and reception change-over of the power source is performed by the Q219, Q222, Q220 and Q221 circuit. When the PTT switch is OFF, Q222 is ON and Q219 is OFF, and reception +B is obtained. When the PTT switch is ON (transmission), working is reversed. Q001 is the diode for inversed connecting protection.

2. TN15 CIRCUIT DESCRIPTION

2.1 DECODER (RECEIVING)

A signal from the discriminator is applied to the pin (9) of J001 and Q109. The TONE signal is amplified by Q109 and its level is adjusted by R122, then it is fed to the 1st pin of Q102. Q110 controls the input level applied to the 1st pin by keeping the decoder band fixed according to temperature.

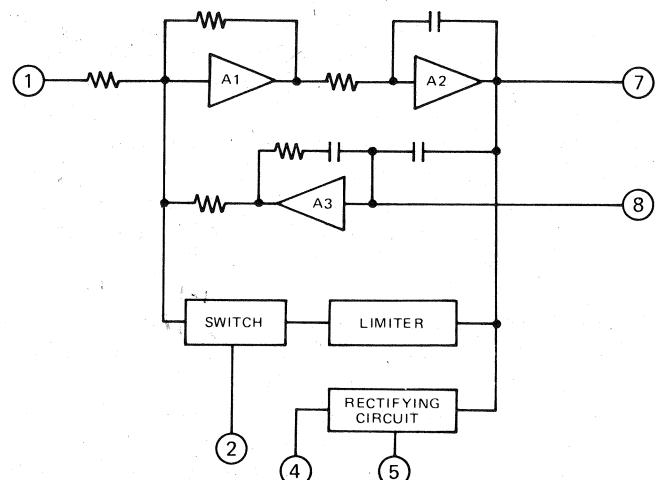
Q102 works as a band-pass filter when the 2nd pin is OPEN, and as an oscillator when it is GND. During reception, Q102 works as a band-pass filter because Q103 is OPEN. The TONE signal applied to the 2nd pin of Q102 passes through the Biquad type band-pass filter constituted by A₁, A₂, and A₃. Here the TONE frequency determined by R124 and A, B jumper alone is fed to the rectifying circuit in Q102. The TONE signal is converted into DC here to generate voltage at the 4th pin of Q102. Then Q108 is turned ON, Q112 OFF, Q113 OPEN, and the pin (8) is OPEN. The pin (8) is connected to the radio SQL SW circuit, the radio AM AMP works when it is OPEN, and does not work when a voltage is applied. When a TONE signal is absent, the 4th pin of Q102 is GND, Q108 OFF, Q112 ON, Q113 also ON, and the AF AMP of the radio does not work because the voltage is generated at pin (8) of J001.

The signal from pin (9) of J001 also goes into the high-pass filter. The TONE frequency alone is removed here so that the TONE sound from the speaker may not be heard, and only the voice signal is fed to the radio AF AMP.

2.2 ENCODER (TRANSMISSION)

During transmission, Q103 is turned ON, the 2nd pin of Q102 GND, and the switching circuit in Q102 becomes OPEN to return the voltage of the limiter circuit to A₁, and a stabilized oscillator is obtained. The level of the TONE frequency from the 7th pin of Q102 is adjusted by R110, which is then fed to the radio modulator through the 4th pin of J001.

Q102 EQUIVALENT CIRCUIT



3. ADJUSTMENT PROCEDURES

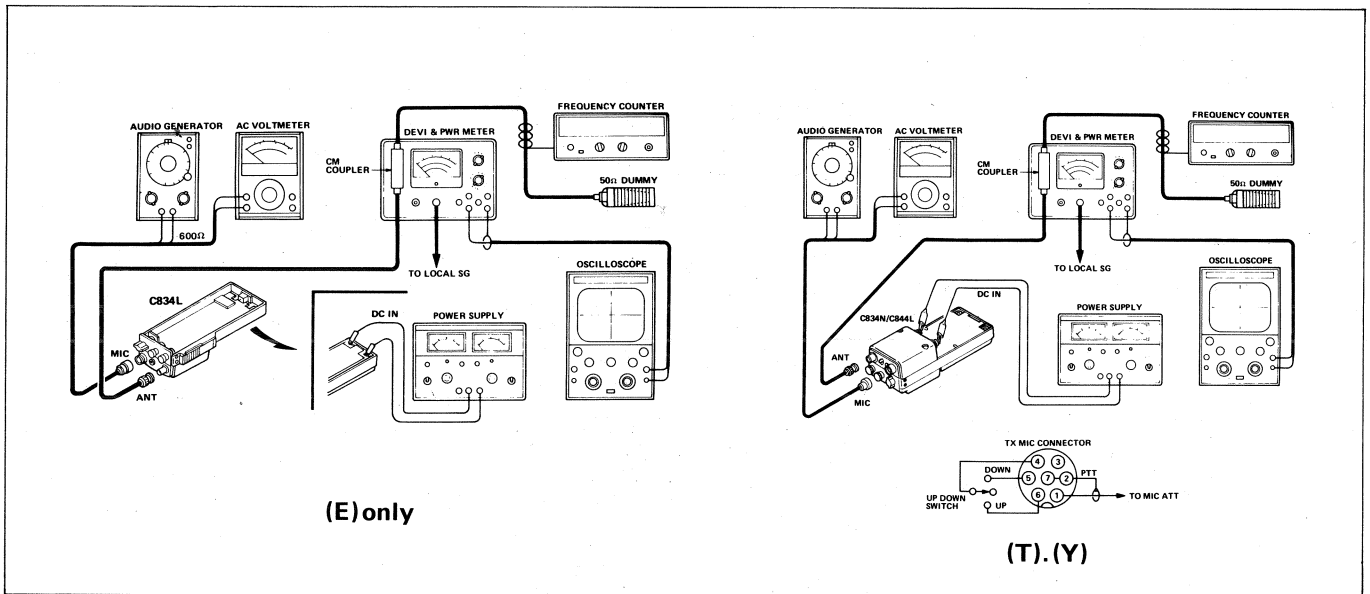
- Be sure to use correct adjustment instruments.
- Age the adjustment instruments for at least 30 minutes before use.

• ADJUSTMENT INSTRUMENTS

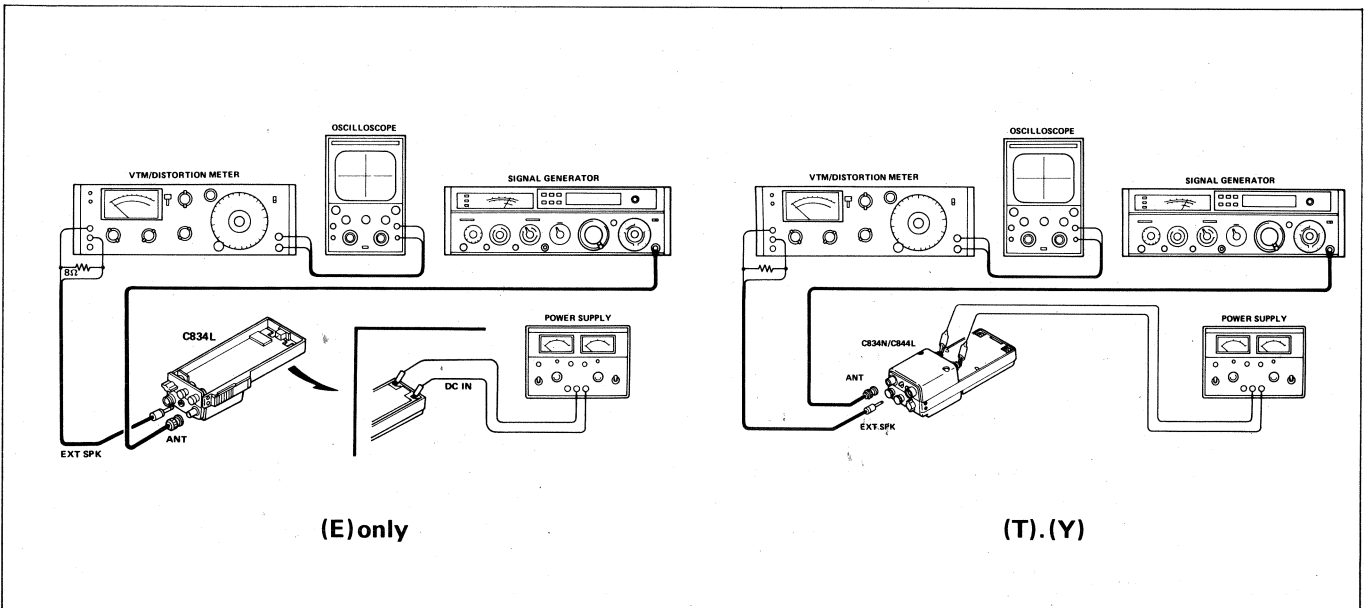
1. Signal generator RX sensitivity adjustment
2. Millivoltmeter AF output, QS and S/N measurement
3. Oscilloscope . . AF waveform and Deviation waveform observation

4. Linear detector and power meter TX power and Deviation adjustment
5. 50Ω dummy load TX output termination
6. Audio generator TX DEVI adjustment
7. Frequency counter TX and RX frequency adjustment

TX ADJUSTMENT SET-UP



RX ADJUSTMENT SET-UP



- 8) Adjust C171 so that the center meter readings between non-signal (noise) and signal conditions are the same.
- 9) Disconnect the center meter from TP2.

NOTE: When the L111, L110, L106, L107 and L108 are readjusted, always check the frequency shift with the center meter. In the non-signal condition, the center meter sometimes does not center. It should indicate the same value in the signal condition. If the L110 core is moved, adjust the core position to that of other L110.

4.3 TRANSMITTER SECTION

1. PREPARATION

- 1) Adjust the power supply so that 11.25V is obtained at the battery terminals. Confirm that the power meter, dummy load, output tester and AG are prepared.
- 2) Install a Tx X'tal element to the crystal test pins.
- 3) Set the rotary switch to the channel in which the X'tal is installed.
- 4) Set the RF power selector to Low.

2. ALIGNMENT PROCEDURE

- 1) Set the power selector to Low and turn the PTT switch on.
- 2) Connect the DC voltmeter to TP4 and adjust L202, L203, L204, L205 and L206 so that the meter reading becomes maximum (about 0.4V).
NOTE: As the maximum point is not easy to find, check carefully.
- 3) Connect the DC voltmeter to TP5 and adjust L207 and L208 so that the meter reading becomes maximum (about 0.2V).
- 4) Repeat procedures 2 and 3 several times.
- 5) Set the RF power switch to High.
- 6) Adjust L209, L210, L212, C242 and C244 so that the RF power meter reading becomes maximum.
- 7) Repeat procedure 5 several times. The RF power meter reading should be more than 5.0W (E, T)/3.0W (N).
- 8) If the current exceeds 1.4A at power peak with the voltage of 11.25V at battery terminals, turn C224 10 – 20° so that the current is 1.35A. At that time, the output power should be 5W (E, T)/3W (N).

NOTE: If the output power of 5W/3W cannot be obtained, widen or shorten L218 and L217 and readjust C242 and C244.

- 9) Set the power selector to Low and confirm that the RF power output is 0.5 – 1.5W.

NOTE: When the maximum output is obtained, confirm that the voltage at the battery terminals is 11.25V.

4.4 TRANSMISSION DEVIATION ADJUSTMENT

1. ALIGNMENT PROCEDURE

- 1) Apply a sine wave signal of 750 mV, 1 kHz to J003 mic jack.
- 2) Turn the PTT switch on.
- 3) Adjust R228 so that the max. deviation is ± 4.5 kHz (N, E)/2.25 kHz (T).
- 4) Decrease the AG output by 20 dB. Further adjust the AG output so that the max. deviation is ± 3 kHz (N, E)/ ± 1.5 kHz (T).
- 5) Increase the AG output by 20 dB.
- 6) Repeat procedures 3, 4 and 5 so that the max. deviation of ± 4.5 kHz (N, E)/ ± 2.25 kHz (T).

4.5 TRANSMISSION FREQUENCY ADJUSTMENT

1. ALIGNMENT PROCEDURE

- 1) Connect the frequency counter to the unit via a coupler.
- 2) Turn the PTT switch on.
- 3) Adjust C272 so that the frequency is 153.10 MHz.
NOTE: If the model is equipped with a crystal element, adjust the frequency precisely to that of the crystal element (within ± 20 Hz).
- 4) Check the vacant channel operation and trimmer function.

4.6 TN15 ADJUSTMENT

1. TONE FREQUENCY ALIGNMENT

- 1) Install the TN15 on the C834L.
- 2) Set an audio frequency generator (AF generator) output to the tone frequency.
- 3) Connect a deviation meter output to the vertical input of an oscilloscope, and the AF generator output to the horizontal input of the oscilloscope.
- 4) Set R110 on the TN15 to maximum.
- 5) Set up the C834L for the transmission mode. A Lissajours' figure will be obtained in the oscilloscope screen. Adjust R124 until the Lissajours' figure is stationary. Clockwise rotation of R124 increases the frequency.

NOTE: Prior to tone frequency alignment, carry out the following preliminary operations:
When the tone frequency is from:

- 250.3 ~ 179.9Hz, leave all jumpers as they are.
- 173.8 ~ 118.8Hz, remove jumper (A).
- 114.4 ~ 67.0Hz, remove jumpers (A) and (B).

2. TRANSMISSION FREQUENCY DEVIATION ALIGNMENT

- 1) Set up the unit for the transmission mode.
- 2) Turn R110 on the TN15's board counterclockwise until a deviation of $\pm 600\text{Hz}$ is obtained.

3. TN15 RECEPTION SENSITIVITY ALIGNMENT

Condition

1. SQL Adjust as specified.
2. VOL Mechanical center
3. Tone frequency 179.9 Hz
4. Voltage 11.25V (at battery terminals)
5. Reception frequency 153.00 MHz

Measuring instrument

1. SG (UHF)
2. Synthesizer AG

Procedures

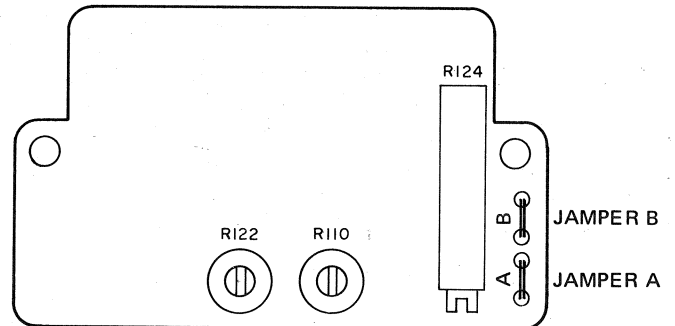
- 1) Fully turn R005 of the unit counterclockwise.
- 2) Fully turn the SQL control knob counterclockwise within the range of PC/OFF (do not turn to the click position).
- 3) Measure the values of 10 dBQS and 15 dBQS of the unit with TN15 installed and record the value of 15 dBQS. Adjust the output of GS to 15 dBQS.
- 4) Adjust the SG output to a signal of 179.9 Hz, ± 250 Hz deviation.
- 5) Set the SQL control knob to PC/OFF position (fully turn counterclockwise).
- 6) Fully turn R122 of TN15 clockwise.
- 7) Gradually turn R122 counterclockwise until the fresh point in which the noise disappear.
- 8) Adjust the SG output to 10 dBQS level (179.9 Hz, $\pm 600\text{Hz}$ deviation).
- 9) Gradually turn R004 until the fresh point in which the noise disappear.

NOTE:

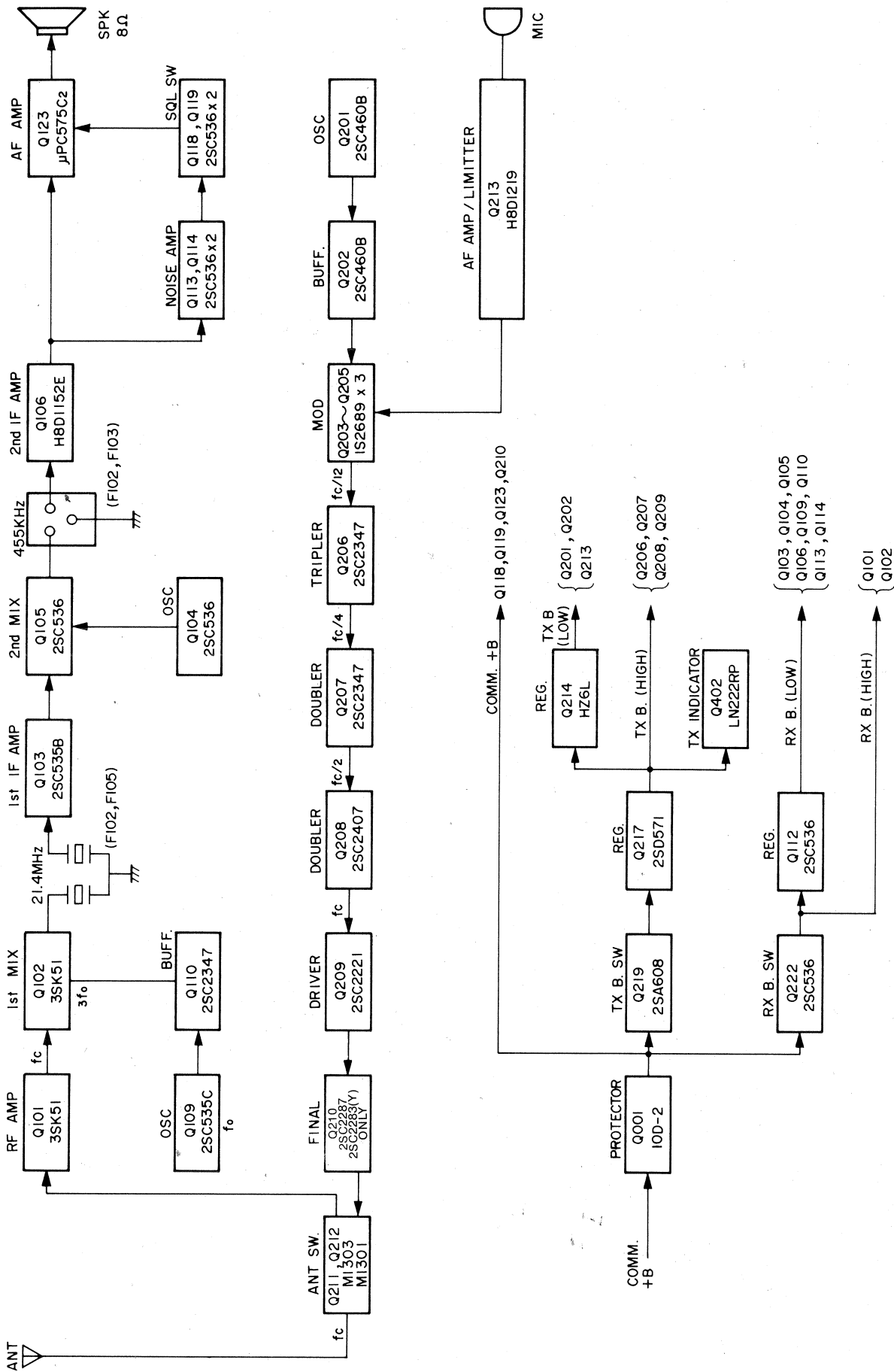
To adjust the reception sensitivity of the model in which the TN15 is not installed, use the TN15 whose tone deviation, tone frequency and reception sensitivity are fully adjusted.

- (1) Checking the transmission deviation
Install the fully adjusted TN15. Set the unit to transmission mode and confirm that the deviation is $\pm 600 \text{ Hz} \pm 40\%$.
- (2) Checking and adjusting reception sensitivity
Install the fully adjusted TN15. Adjust in the same steps of 1) – 9). In step 3), measure the value of only 15 dBQS.

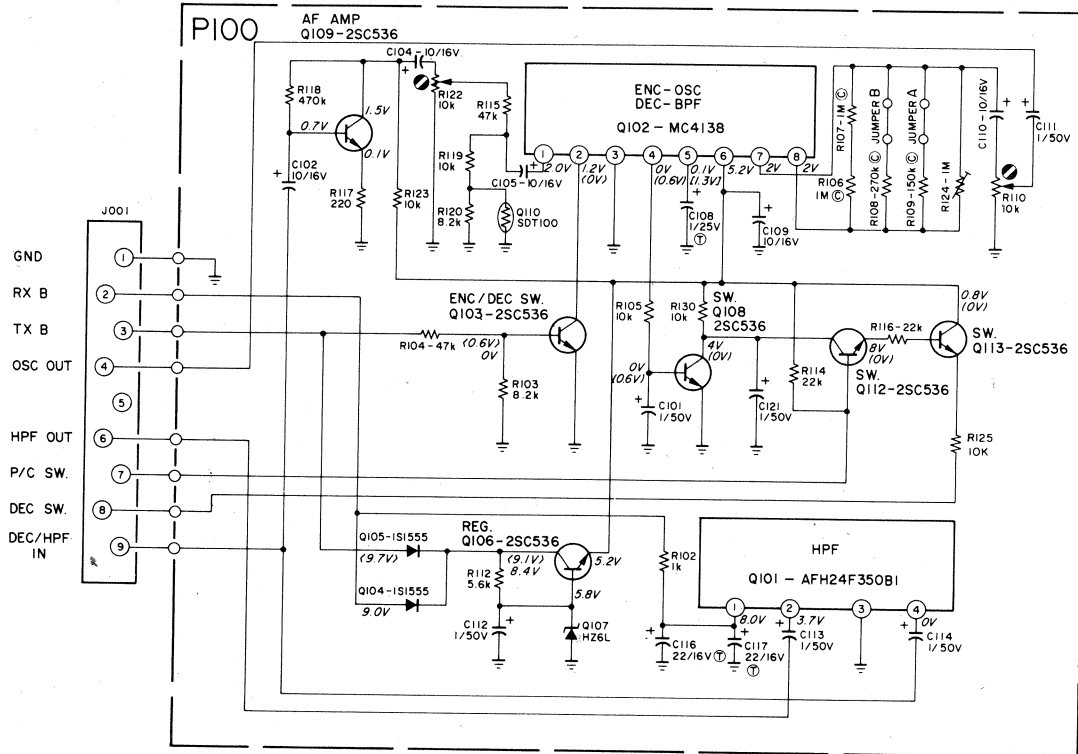
TN15 ADJUSTING POINT



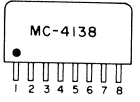
5. BLOCK DIAGRAM



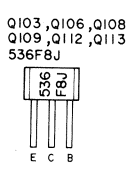
6. TN15 SCHEMATIC DIAGRAM AND COMPONENT LOCATIONS



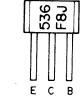
FRONT VIEW
Q102
MC4138



Q101
AFH24F350B1

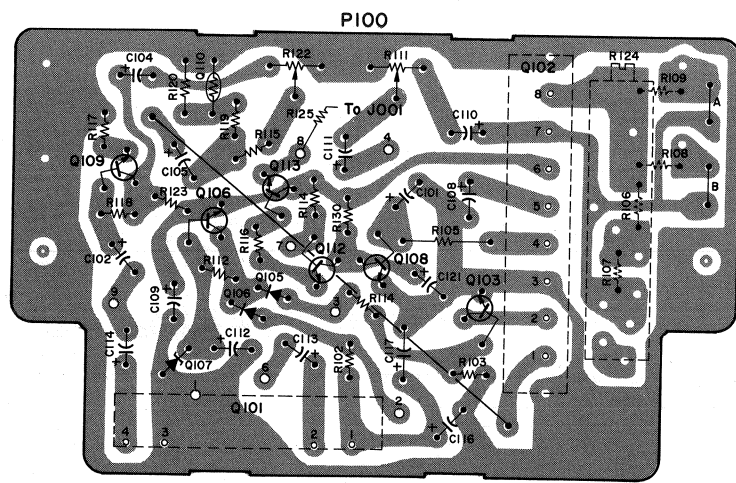


Q103, Q106, Q108
Q109, Q112, Q113
536F8J

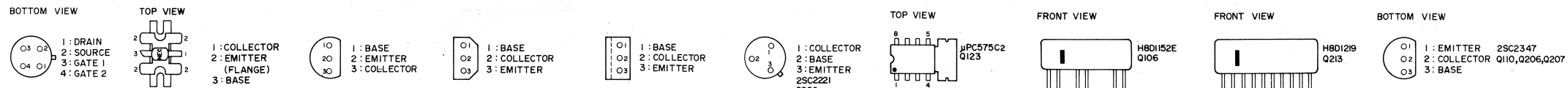
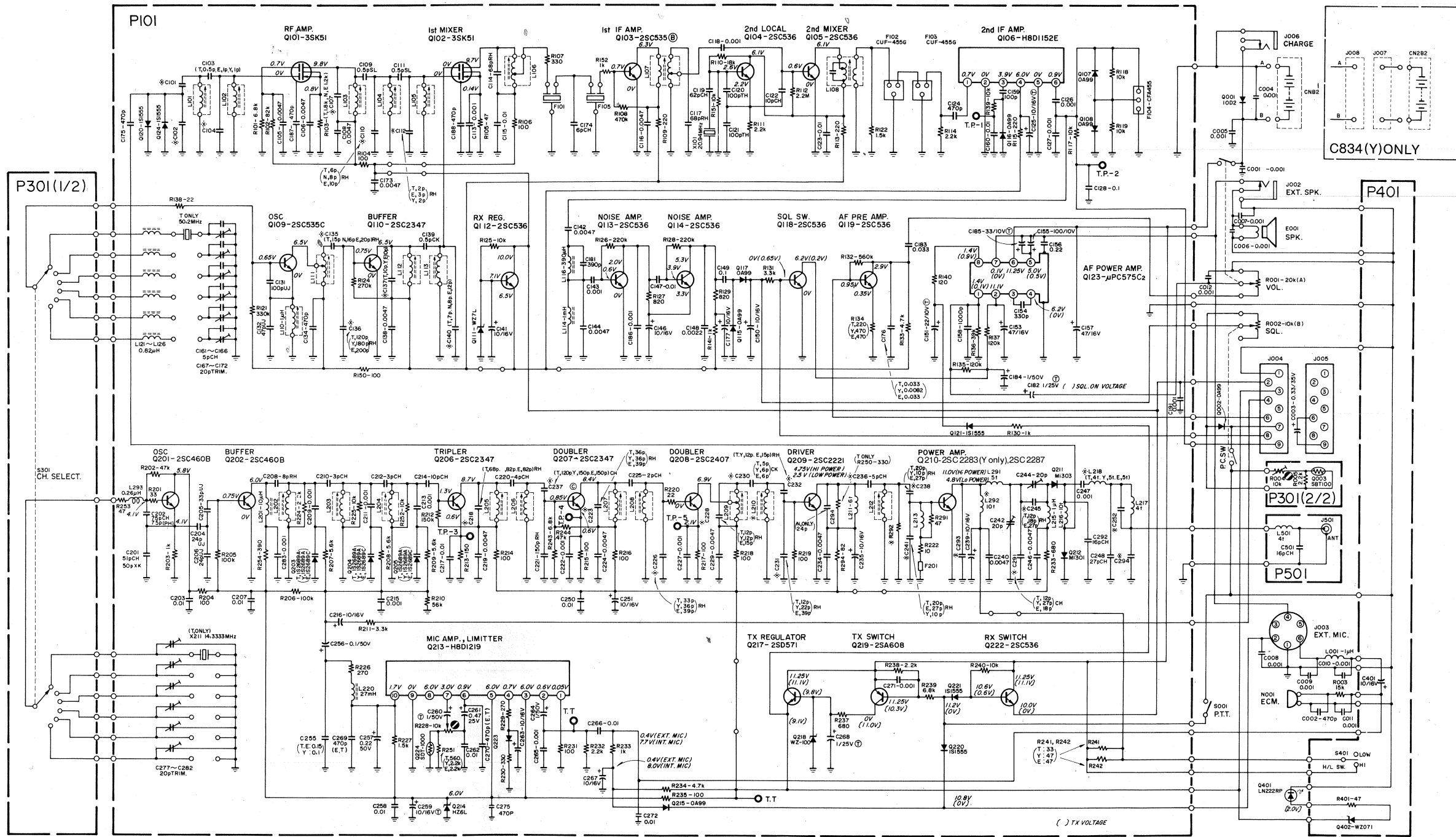


VOLTAGE
() TX
() RX, TONE IN
() RX, TONE OUT

TONE FREQUENCY	JUMPER
250.3Hz ~ 179.9Hz	_____
173.8Hz ~ 118.8Hz	(A) CUT
114.4Hz ~ 67.0Hz	(A), (B) CUT



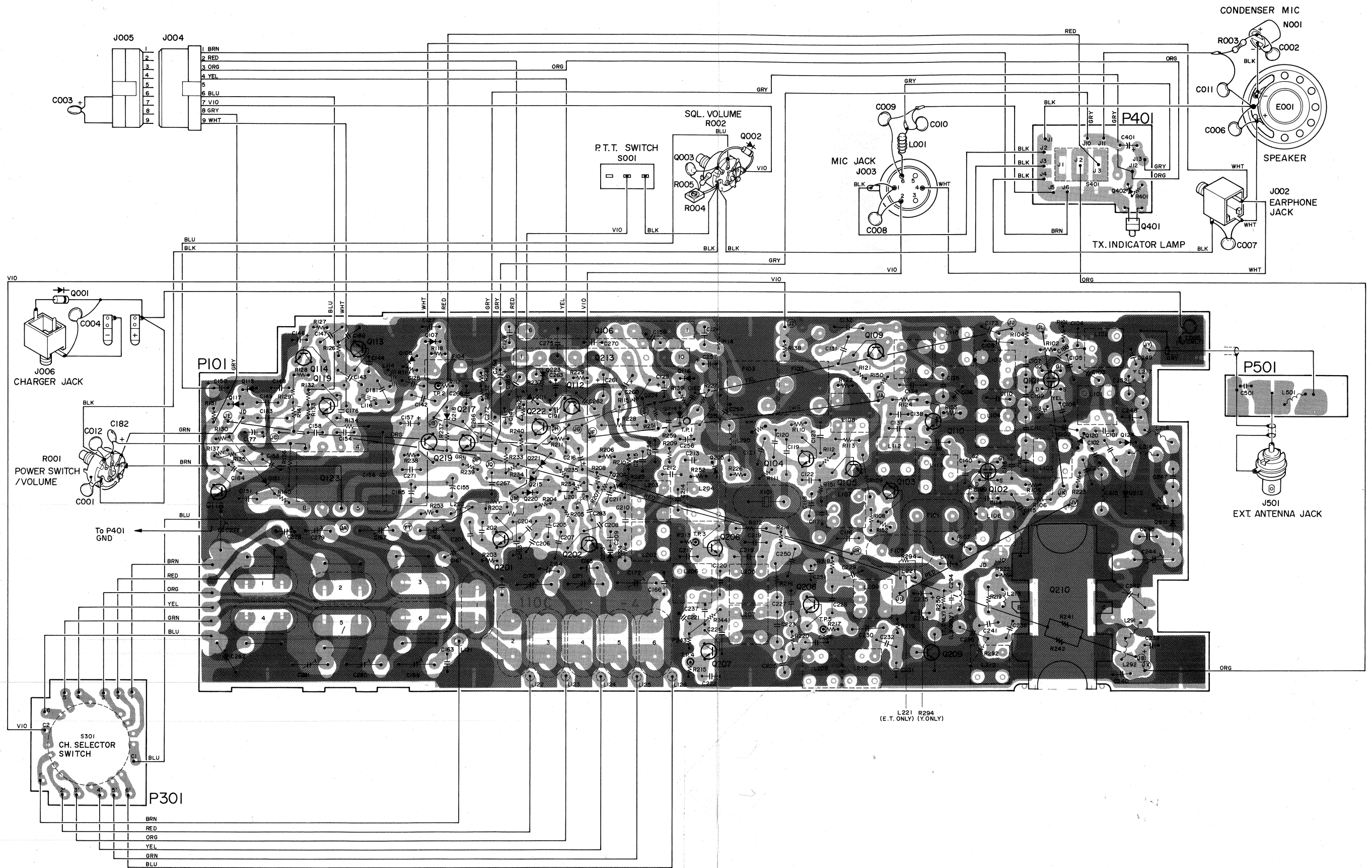
7. SCHEMATIC DIAGRAM (MODEL C834L(E), C834N(Y) and MODEL C844L(T))



Model	C101	C102	C103	C104	C107	C110	C112	C135	C136	C137	C140	C155	C156	C157	C158	C159	C160	C161	C162	C163	C164	C165	C166	C167	C168	C169	C170	C171	C172	C173	C174	C175	C176	C177	C178	C179	C180	C181	C182	C183	C184	C185	C186	C187	C188	C189	C190	C191	C192	C193	C194	C195	C196	C197	C198	C199	C200	C201	C202	C203	C204	C205	C206	C207	C208	C209	C210	C211	C212	C213	C214	C215	C216	C217	C218	C219	C220	C221	C222	C223	C224	C225	C226	C227	C228	C229	C230	C231	C232	C233	C234	C235	C236	C237	C238	C239	C240	C241	C242	C243	C244	C245	C246	C247	C248	C249	C250	C251	C252	C253	C254	C255	C256	C257	C258	C259	C260	C261	C262	C263	C264	C265	C266	C267	C268	C269	C270	C271	C272	C273	C274	C275	C276	C277	C278	C279	C280	C281	C282	C283	C284	C285	C286	C287	C288	C289	C290	C291	C292	C293	C294	C295	C296	C297	C298	C299	C300	C301	C302	C303	C304	C305	C306	C307	C308	C309	C310	C311	C312	C313	C314	C315	C316	C317	C318	C319	C320	C321	C322	C323	C324	C325	C326	C327	C328	C329	C330	C331	C332	C333	C334	C335	C336	C337	C338	C339	C340	C341	C342	C343	C344	C345	C346	C347	C348	C349	C350	C351	C352	C353	C354	C355	C356	C357	C358	C359	C360	C361	C362	C363	C364	C365	C366	C367	C368	C369	C370	C371	C372	C373	C374	C375	C376	C377	C378	C379	C380	C381	C382	C383	C384	C385	C386	C387	C388	C389	C390	C391	C392	C393	C394	C395	C396	C397	C398	C399	C400	C401	C402	C403	C404	C405	C406	C407	C408	C409	C410	C411	C412	C413	C414	C415	C416	C417	C418	C419	C420	C421	C422	C423	C424	C425	C426	C427	C428	C429	C430	C431	C432	C433	C434	C435	C436	C437	C438	C439	C440	C441	C442	C443	C444	C445	C446	C447	C448	C449	C450	C451	C452	C453	C454	C455	C456	C457	C458	C459	C460	C461	C462	C463	C464	C465	C466	C467	C468	C469	C470	C471	C472	C473	C474	C475	C476	C477	C478	C479	C480	C481	C482	C483	C484	C485	C486	C487	C488	C489	C490	C491	C492	C493	C494	C495	C496	C497	C498	C499	C500	C501	C502	C503	C504	C505	C506	C507	C508	C509	C510	C511	C512	C513	C514	C515	C516	C517	C518	C519	C520	C521	C522	C523	C524	C525	C526	C527	C528	C529	C530	C531	C532	C533	C534	C535	C536	C537	C538	C539	C540	C541	C542	C543	C544	C545	C546	C547	C548	C549	C550	C551	C552	C553	C554	C555	C556	C557	C558	C559	C560	C561	C562	C563	C564	C565	C566	C567	C568	C569	C570	C571	C572	C573	C574	C575	C576	C577	C578	C579	C580	C581	C582	C583	C584	C585	C586	C587	C588	C589	C590	C591	C592	C593	C594	C595	C596	C597	C598	C599	C600	C601	C602	C603	C604	C605	C606	C607	C608	C609	C610	C611	C612	C613	C614	C615	C616	C617	C618	C619	C620	C621	C622	C623	C624	C625	C626	C627	C628	C629	C630	C631	C632	C633	C634	C635	C636	C637	C638	C639	C640	C641	C642	C643	C644	C645	C646	C647	C648	C649	C650	C651	C652	C653	C654	C655	C656	C657	C658	C659	C660	C661	C662	C663	C664	C665	C666	C667	C668	C669	C670	C671	C672	C673	C674	C675	C676	C677	C678	C679	C680	C681	C682	C683	C684	C685	C686	C687	C688	C689	C690	C691	C692	C693	C694	C695	C696	C697	C698	C699	C700	C701	C702	C703	C704	C705	C706	C707	C708	C709	C710	C711	C712	C713	C714	C715	C716	C717	C718	C719	C720	C721	C722	C723	C724	C725	C726	C727	C728	C729	C730	C731	C732	C733	C734	C735	C736	C737	C738	C739	C740	C741	C742	C743	C744	C745	C746	C747	C748	C749	C750	C751	C752	C753	C754	C755	C756	C757	C758	C759	C760	C761	C762	C763	C764	C765	C766	C767	C768	C769	C770	C771	C772	C773	C774	C775	C776	C777	C778	C779	C780	C781	C782	C783	C784	C785	C786	C787	C788	C789	C790	C791	C792	C793	C794	C795	C796	C797	C798	C799	C800	C801	C802	C803	C804	C805	C806	C807	C808	C809	C810	C811	C812	C813	C814	C815	C816	C817	C818	C819	C820	C821	C822	C823	C824	C825	C826	C827	C828	C829	C830	C831	C832	C833	C834	C835	C836	C837	C838	C839	C840	C841	C842	C843	C844	C845	C846	C847	C848	C849	C850	C851	C852	C853	C854	C855	C856	C857	C858	C859	C860	C861	C862	C863	C864	C865	C866	C867	C868	C869	C870	C871	C872	C873	C874	C875	C876	C877	C878	C879	C880	C881	C882	C883	C884	C885	C886	C887	C888	C889	C890	C891	C892	C893	C894	C895	C896	C897	C898	C899	C900	C901	C902	C903	C904	C905	C906	C907	C908	C909	C910	C911	C912	C913	C914	C915	C916	C917	C918	C919	C920	C921	C922	C923	C924	C925	C926	C927	C928	C929	C930	C931	C932	C933	C934	C935	C936	C937	C938	C939	C940	C941	C942	C943	C944	C945	C946	C947	C948	C949	C950	C951	C952	C953	C954	C955	C956	C957	C958	C959	C960	C961	C962	C963	C964	C965	C966	C967	C968	C969	C970	C971	C972	C973	C974	C975	C976	C977	C978	C979	C980	C981	C982	C983	C984	C985	C986	C987	C988	C989	C990	C991	C992	C993	C994	C995	C996	C997	C998	C999	C1000
-------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	-------

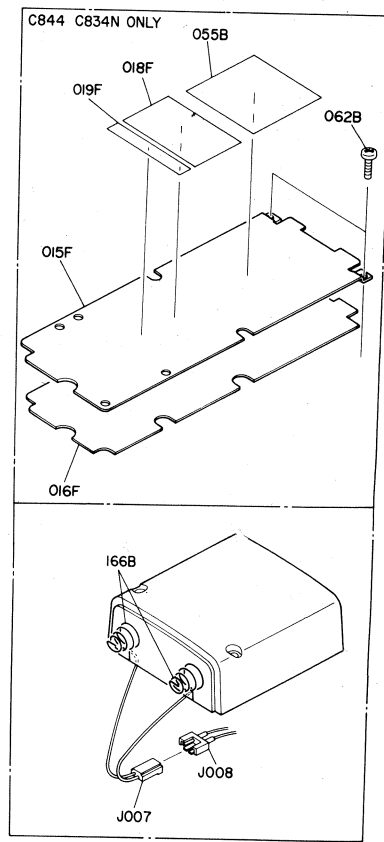
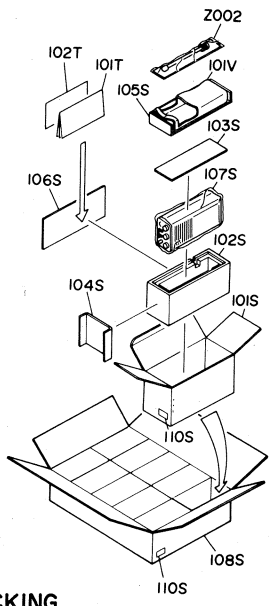
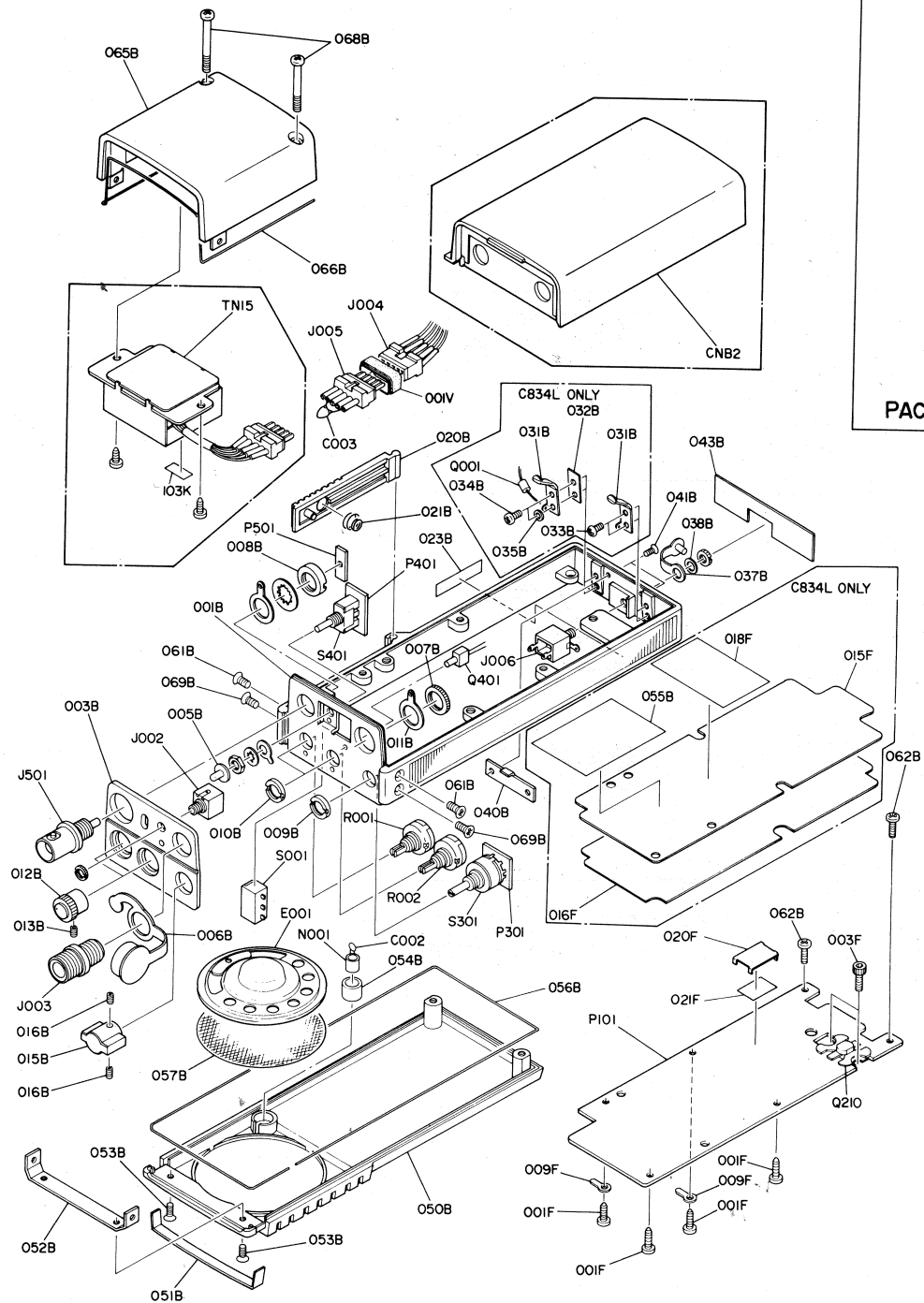
Components and wiring are subject to change for modification without notice.

8. COMPONENT LOCATIONS (MODEL C834L(E), C834N(Y) and MODEL C844L(T))



9. EXPLODED VIEW AND PARTS LIST

C834L/C834N/C844L



REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	E	T	Y		
001B	1	1	1	109C401010	Frame
003B	1	1	1	109C063010	Escutcheon
005B	1	1	1	4736154060	Knob, Power
006B	1	1	1	109C053020	Cover
007B	1	1	1	53228059E0	S.C. Nut
008B	1	1	1	53228119E0	S.C. Nut
009B	1	1	1	53226019E0	S.C. Nut
010B	2	2	2	53227069E0	S.C. Nut
011B	1	1	1	62100019E0	Lug
012B	2	2	2	109C154010	Knob
013B	2	2	2	51692603Q0	Socket Screw, HP M2.6 x 3
015B	1	1	1	3782154040	Knob
016B	2	2	2	51692603Q0	Socket Screw, HP M2.6 x 3
020B	1	1	1	109C270010	Button, PTT
021B	1	1	1	109C115010	Spring
023B	1	1	1	3729861040	Label
031B	2			109C123010	Contacto
032B	1			109C120020	Insulator
033B	2			51062603E0	P.H.M. Screw P2.6 x 3
034B	2			50062604B0	Screw 2.6 x 4
035B	1			59260505P0	Washer
037B	1	1	1	109C053030	Cover
038B	1	1	1	59046502G9	Washer
040B	1	1	1	109C114010	Stopper
041B	2	2	2	51040205E0	F.H.M. Screw F2 x 5
043B	1			110C265020	Indicator
043B	1			110C265040	Indicator
043B	1			110C265030	Indicator
050B	1	1	1	109C064010	Case, Front
051B	1			110C203020	Name Plate
051B	1			110C203040	Name Plate
051B	1	1	1	110C203030	Name Plate
052B	1	1	1	109C160010	Bracket
053B	2	2	2	51042605E0	F.H.M. Screw F2.6 x 5
054B	1	1	1	109C259010	Bushing, Mic
055B	1	1	1	109C861010	Label, Crystal Location
056B	1	1	1	109C277010	Packing
057B	1	1	1	4791107010	Sheet
061B	2	2	2	51142605C0	O.C.H.M. Screw O2.6 x 5
062B	2	2	2	51102608E0	B.H.M. Screw B2.6 x 8
065B	1			109C064020	Case, Rear
065B	1	1	1	109C064030	Case, Rear
066B	1	1	1	109C277020	Packing
068B	2	2	2	51063019L9	P.H.M. Screw P3 x 19
069B	2	2	2	51142605C0	O.C.H.M. Screw O2.6 x 5
166B	2	2	2	110C123010	Contacto, Battery Terminal
001F	4	4	4	51282606B0	B.H. Tapped Screw B2.6 x 6
003F	2	2	2	52730305S9	H.S. Head Bolt H3 x 5
009F	2	2	2	62261240W0	Lug
015F	1			109C109010	Shield
015F	1	1	1	109C109020	Shield
016F	1			109C120010	Insulator
016F	1	1	1	109C120020	Insulator
018F	1			110C861010	Label
018F	1	1	1	110C861020	Label
019F	1	1	1	110C120030	Insulator
020F	1	1	1	110C109010	Shield
021F	1	1	1	110C120010	Insulator
001V	1	1	1	109C056020	Buffer, (9P) Plug

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	E	T	Y		
C001	1	1	1	DK16102300	Ceramic Cap. 0.001μF ±10%
C002	1	1	1	DK16471300	Ceramic Cap. 470pF ±10%
C003	1	1	1	EV33403560	Elect Cap. 0.33μF 35V
C004	1	1	1	DK18102300	Ceramic Cap. 0.001μF
C006	1	1	1	DK18102300	Ceramic Cap. 0.001μF
C007	1	1	1	DK18102300	Ceramic Cap. 0.001μF
C008	1	1	1	DK18102300	Ceramic Cap. 0.001μF
C009	1	1	1	DK18102300	Ceramic Cap. 0.001μF
C010	1	1	1	DK18102300	Ceramic Cap. 0.001μF
C011	1	1	1	DK18102300	Ceramic Cap. 0.001μF
C012	1	1	1	DK18102300	Ceramic Cap. 0.001μF
E001	1	1	1	QK00508010	Speaker 8Ω 50mm
J002	1	1	1	YJ01001020	Jack, Earphone
J003	1	1	1	YJ10001600	Jack, Mic (6P)
J004	1	1	1	YJ10000520	Jack, Tone (9P)
J005	1	1	1	YP10001060	Plug, (9P)
J006	1	1	1	YJ01001020	Jack, Charge
J007	1	1	1	YB00040040	Connective Cord, (2P)
J008	1	1	1	YJ07000420	Jack, TL-25 (2P)
L001	1	1	1	LC11020020	Choke Coil, 1μH
N001	1	1	1	MS50000100	Mic Unit, E.C.M.
Q001	1	1	1	HD20001100	Diode, 10D2
Q002	1	1	1	HD10005020	Diode, OA99
Q003	1	1	1	HH00007030	Thermister SDT100
R001	1	1	1	RB12030020	Variable Resistor, 20KΩ(A) VOL.
R002	1	1	1	RB11030070	Variable Resistor, 10KΩ(B) SQL.
R003	1	1	1	GD05153180	Resistor 15KΩ ±5% 1/8W
R004	1	1	1	RA01030520	Trimming Resistor, 10KΩ
R005	1	1	1	RG05222180	Resistor 2.2KΩ ±5% 1/8W
S001	1	1	1	SM01020210	Mini Switch, PTT
101S	1			110C801010	Packing Case C834L
101S	1			110C801040	Packing Case C844
101S	1	1	1	110C801050	Packing Case C834N
102S	1	1	1	109C809010	Cushion
103S	1	1	1	109C807010	Cushion Lid
104S	1	1	1	110C803010	Partitioner (side)
105S	1	1	1	110C803020	Partitioner (upper)
106S	1	1	1	110C807010	Reinforcement
106S	1			109C807020	Reinforcement
107S	1	1	1	9011525010	Polyethylene Bag for Set
108S	1			110C805020	Master Carton
108S	1			110C805050	Master Carton
108S	1	1	1	110C805060	Master Carton
110S	1	1	1	9523019010	Serial No. Card
101T	1			110C851010	Instructions
102T	1			110C856010	Schematic Diagram
101V	1			110C831010	Leather Case
101V	1			110C831020	Leather Case without H/S
Z002	1			AZ210Z91Z0	Herical Antenna

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	E	T	Y		
P101	1	1	1	YH110C1414	P101-MAIN CIRCUIT BOARD P.W. Board, Main
P101-CAPACITORS					
C103	1	1	1	DD10010300	Ceramic 1pF ±0.25pF
C103	1	1	1	DD10005370	Ceramic 0.5pF ±0.25pF
C105	1	1	1	DS17472010	Semicon 4700pF ±20%
C106	1	1	1	DS17472010	Semicon 4700pF ±20%
C108	1	1	1	DS17472010	Semicon 4700pF ±20%
C109	1	1	1	DD10005370	Semicon 0.5pF ±0.25pF
C111	1	1	1	DD10005370	Semicon 0.5pF ±0.25pF
C113	1	1	1	DK46102300	Ceramic 1000pF ±10%
C114	1	1	1	DD45680330	Ceramic 68pF ±5%
C115	1	1	1	DS17103010	
C116	1	1	1	DS17472010	Semicon 4700pF ±20%
C117	1	1	1	DD45680330	Ceramic 68pF ±5%
C118	1	1	1	DK16102300	Ceramic 1000pF ±10%
C119	1	1	1	DD15620300	Ceramic 62pF ±5%
C120	1	1	1	DD15101350	Ceramic 100pF ±5%
C121	1	1	1	DD15101350	Ceramic 100pF ±5%
C122	1	1	1	DD11100300	Ceramic 10pF ±0.5pF
C123	1	1	1	DS17103010	Semicon 0.01μF ±20%
C124	1	1	1	DK16471300	Ceramic 470pF ±10%
C125	1	1	1	EV10601660	Elect 10μF 16V
C126	1	1	1	DK16102300	Ceramic 1000pF ±10%
C127	1	1	1	DK16102300	Ceramic 1000pF ±10%
C128	1	1	1	DK26104010	Ceramic 0.1μF ±10%
C131	1	1	1	DD15101360	Ceramic 100pF ±5%
C132	1	1	1	DD15470360	Ceramic 47pF ±5%
C134	1	1	1	DK16471300	Ceramic 470pF ±10%
C138	1	1	1	DS17472010	Semicon 4700pF ±20%
C139	1	1	1	DD10005370	Ceramic 0.5pF ±0.25pF
C141	1	1	1	EJ10601610	Elect 10μF 16V
C142	1	1	1	DS17472010	Semicon 4700pF ±20%
C143	1	1	1	DS17102010	Semicon 1000pF ±20%
C144	1	1	1	DS17472010	Semicon 4700pF ±20%
C146	1	1	1	EV10601060	Elect 10μF 10V
C147	1	1	1	DS17103010	Semicon 0.01μF ±20%
C148	1	1	1	DS17222010	Semicon 2200pF ±20%
C149	1	1	1	DK26104010	Ceramic 0.1μF ±10%
C150	1	1	1	EJ10601610	Elect 10μF 16V
C151	1	1	1	EV22601060	Elect 22μF 10V
C153	1	1	1	EA47601630	Elect 47μF 16V
C154	1	1	1	DK16331300	Ceramic 330pF ±10%
C155	1	1	1	EA10701030	Elect 100μF 10V
C156	1	1	1	DK27224010	Ceramic 0.22μF ±20%
C157	1	1	1	EA47601630	Elect 47μF 16V
C158	1	1	1	DK16102300	Ceramic 1000pF ±10%
C159	1	1	1	DD45101300	Ceramic 100pF ±5%
C160	1	1	1	DA17103010	Ceramic 0.01μF ±20%
C161	1	1	1	DD10050300	Ceramic 5pF ±0.25pF
C162	1	1	1	DD10050300	Ceramic 5pF ±0.25pF
C163	1	1	1	DD10050300	Ceramic 5pF ±0.25pF
C164	1	1	1	DD10050300	Ceramic 5pF ±0.25pF

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	E	T	Y		
C165	1	1	1	DD10050300	Ceramic 5pF ±0.25pF
C166	1	1	1	DD10050300	Ceramic 5pF ±0.25pF
C167	1	1	1	CT12000100	Trimming 20pF
C168	1	1	1	CT12000110	Trimming 20pF
C169	1	1	1	CT12000110	Trimming 20pF
C170	1	1	1	CT12000110	Trimming 20pF
C171	1	1	1	CT12000110	Trimming 20pF
C172	1	1	1	CT12000110	Trimming 20pF
C173	1	1	1	DS17472010	Semicon 4700pF ±20%
C174	1	1	1	DD11060300	Ceramic 6pF ±0.5pF
C175	1	1	1	DK16471300	Ceramic 470pF ±10%
C176	1	1	1	DK26333010	Ceramic 0.033μF ±10%
C176	1	1	1	DS17822010	Semicon 8200pF ±20%
C177	1	1	1	EV10601060	Elect 10μF 10V
C181	1	1	1	DK16391300	Ceramic 390pF ±10%
C182	1	1	1	EV10502560	Elect 1μF 25V
C183	1	1	1	DK26333010	Ceramic 0.033μF ±10%
C184	1	1	1	EJ10505010	Elect 1μF 50V
C185	1	1	1	EV33601060	Elect 33μF 10V
C186	1	1	1	DK16102300	Ceramic 1000pF ±10%
C187	1	1	1	DK16471300	Ceramic 470pF ±10%
C188	1	1	1	DK16471300	Ceramic 470pF ±10%
C191	1	1	1	DK16102300	Ceramic 1000pF ±10%
C201	1	1	1	DD15500110	Ceramic 50pF XK
C202	1	1	1	DD45750320	Ceramic 75pF ±5%
C203	1	1	1	DS17103010	Semicon 0.01μF ±20%
C204	1	1	1	DD15240360	Ceramic 24pF ±5%
C205	1	1	1	DD15330360	Ceramic 33pF ±5%
C206	1	1	1	DD15240360	Ceramic 24pF ±5%
C207	1	1	1	DS17103010	Semicon 0.01μF ±20%
C208	1	1	1	DD11080330	Ceramic 8pF ±0.5pF
C209	1	1	1	DK16102300	Ceramic 1000pF ±10%
C210	1	1	1	DD10030300	Ceramic 3pF ±0.25pF
C211	1	1	1	DK16102300	Ceramic 1000pF ±10%
C212	1	1	1	DD10030300	Ceramic 3pF ±0.25pF
C213	1	1	1	DK16102300	Ceramic 1000pF ±10%
C214	1	1	1	DD11100300	Ceramic 10pF ±0.5pF
C215	1	1	1	DK16102300	Ceramic 1000pF ±10%
C216	1	1	1	EJ10601610	Elect 10μF 16V
C217	1	1	1	DS17103010	Semicon 0.01μF ±20%
C219	1	1	1	DS17472010	Semicon 4700pF ±20%
C220	1	1	1	DD10040300	Ceramic 4pF ±0.25pF
C221	1	1	1	DD45151330	Ceramic 150pF ±5%
C222	1	1	1	DK16102300	Ceramic 1000pF ±10%
C224	1	1	1	DS17472010	Semicon 4700pF ±20%
C225	1	1	1	DD10020300	Ceramic 2pF ±0.25pF
C227	1	1	1	DK16102300	Ceramic 1000pF ±10%
C229	1	1	1	DS17472010	Semicon 4700pF ±20%
C234	1	1	1	DS17472010	Semicon 4700pF ±20%
C235	1	1	1	EJ10601610	Elect 10μF 16V
C239	1	1	1	EJ10601610	Elect 10μF 16V
C240	1	1	1	DS17472010	Semicon 4700pF ±20%
C242	1	1	1	CT12000090	Trimming 20pF
C244	1	1	1	CT12000090	Trimming 20pF
C246	1	1	1	DS17472010	Semicon 4700pF ±20%
C248	1	1	1	DD15270300	Ceramic 27pF ±5%
C250	1	1	1	DS17103010	Semicon 0.01μF ±20%
C251	1	1	1	EJ10601610	Elect 10μF 16V
C255	1	1	1	DK26154010	Ceramic 0.15μF ±10%
C255	1	1	1	DK26104010	Ceramic 0.1μF ±10%

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	E	T	Y		
C256	1	1	1	EJ10405010	Elect 0.1μF 50V
C257	1	1	1	EJ22405010	Elect 0.22μF 50V
C258	1	1	1	DS17103010	Semicon 0.01μF ±20%
C259	1	1	1	EV10601660	Elect 10μF 16V
C260	1	1	1	EV10502560	Elect 1μF 25V
C261	1	1	1	EJ47405010	Elect 0.47μF 50V
C262	1	1	1	DS17103010	Semicon 0.01μF ±20%
C263	1	1	1	EJ10601610	Elect 10μF 16V
C264	1	1	1	EJ10505010	Elect 1μF 50V
C265	1	1	1	DK16102300	Ceramic 1000pF ±10%
C266	1	1	1	DS17103010	Semicon 0.01μF ±20%
C267	1	1	1	EJ10601610	Elect 10μF 16V
C268	1	1	1	EV10502560	Elect 1μF 25V
C269	1	1	1	DD45471370	Ceramic 470pF ±5%
C270	1	1	1	DD45471370	Ceramic 470pF ±5%
C271	1	1	1	DK16102300	Ceramic 1000pF ±10%
C272	1	1	1	DK46102300	Ceramic 1000pF ±10%
C275	1	1	1	DD45471370	Ceramic 470pF ±5%
C277	1	1	1	CT12000110	Trimming 20pF
C278	1	1	1	CT12000110	Trimming 20pF
C279	1	1	1	CT12000110	Trimming 20pF
C280	1	1	1	CT12000110	Trimming 20pF
C281	1	1	1	CT12000110	Trimming 20pF
C282	1	1	1	CT12000110	Trimming 20pF
C283	1	1	1	DK16102300	Ceramic 1000pF ±10%
C292	1	1	1	DD45160300	Ceramic 16pF ±5%
C293	1	1	1	DD15200300	Ceramic 20pF ±5%
C294	1	1	1	DD15240300	Ceramic 24pF ±5%
P101-RESISTORS (All Resistors are ±5% and 1/8W)					
R101	1	1	1	GD05122180	1.2KΩ
R102	1	1	1	GD05823180	8.2KΩ
R103	1	1	1	GD05122180	1.2KΩ
R103	1	1	1	GD05182180	1.8KΩ
R104	1	1	1	GD05101180	100Ω
R105	1	1	1	GD05470180	47Ω
R106	1	1	1	GD05101180	100Ω
R107	1	1	1	GD05331180	330Ω
R108	1	1	1	GD05474180	470KΩ
R109	1	1	1	GD05221180	220Ω
R110	1	1	1	GD05183140	18KΩ ¼W
R111	1	1	1	GD05222180	2.2KΩ
R112	1	1	1	GD05225180	2.2MΩ
R113	1	1	1	GD05221180	220Ω
R114	1	1	1	GD05222180	2.2KΩ
R115	1	1	1	GD05221180	220Ω
R117	1	1	1	GD05103140	10KΩ ¼W
R118	1	1	1	GD05103180	10KΩ
R119	1	1	1	GD05103180	10KΩ
R121	1	1	1	GD05224180	220KΩ
R122	1	1	1	GD05152180	1.5KΩ
R124	1	1	1	GD05274180	270KΩ
R125	1	1	1	GD05103180	10KΩ
R126	1	1	1	GD05224180	220KΩ
R127	1	1	1	GD05821180	820Ω

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	E	T	Y		
R128	1	1	1	GD05224180	220KΩ
R129	1	1	1	GD05821180	820Ω
R130	1	1	1	GD05102180	1KΩ
R131	1	1	1	GD05332180	3.3KΩ
R132	1	1	1	GD05564180	560KΩ
R133	1	1	1	GD05472180	4.7KΩ
R134	1	1	1	GD05471180	470Ω
R134	1	1	1	GD05221180	220Ω
R135	1	1	1	GD05124180	120KΩ
R136	1	1	1	GD05393180	39KΩ
R137	1	1	1	GD05124180	120KΩ
R138	1	1	1	GD05220180	22Ω
R139	1	1	1	GD05103180	10KΩ
R140	1	1	1	GD05121180	120Ω
R141	1	1	1	GD05102180	1KΩ
R150	1	1	1	GD05101180	100Ω
R151	1	1	1	GD05103180	10KΩ
R152	1	1	1	GD05102180	1KΩ
R153	1	1	1	GD05101180	100Ω
R201	1	1	1	GD05330180	33Ω
R202	1	1	1	GD05473180	47KΩ
R203	1	1	1	GD05102180	1KΩ
R204	1	1	1	GD05101180	100Ω
R205	1	1	1	GD05104180	100KΩ
R206	1	1	1	GD05104180	100KΩ
R207	1	1	1	GD05562180	5.6KΩ
R208	1	1	1	GD05562180	5.6KΩ
R209	1	1	1	GD05562180	5.6KΩ
R210	1	1	1	GD05563180	56KΩ
R211	1	1	1	GD05332180	3.3KΩ
R212	1	1	1	GD05154180	150KΩ
R213	1	1	1	GD05151140	150Ω ¼W
R214	1	1	1	GD05101180	100Ω
R215	1	1	1	GD05101140	100Ω ¼W
R216	1	1	1	GD05101180	100Ω
R217	1	1	1	GD05101140	100Ω ¼W
R218	1	1	1	GD05101180	100Ω
R219	1	1	1	GD05101180	100Ω
R220	1	1	1	GD05220180	22Ω
R222	1	1	1	GD05100180	10Ω
R223	1	1	1	GD05681180	680Ω
R224	1	1	1	GD05222180	2.2KΩ
R225	1	1	1	GD05103180	10KΩ
R226	1	1	1	GD05271180	270Ω
R227	1	1	1	GD05152180	1.5KΩ
R228	1	1	1	RA01030440	10KΩ, Trimming
R229	1	1	1	GD05271180	270Ω
R230	1	1	1	GD05331180	330Ω
R231	1	1	1	GD05101180	100Ω
R232	1	1	1	GD05222180	2.2KΩ
R233	1	1	1	GD05102180	1KΩ
R234	1	1	1	GD05472180	4.7KΩ
R235	1	1	1	GD05101140	100Ω ¼W
R237	1	1	1	GD05681180	680Ω
R238	1	1	1	GD05222180	2.2KΩ

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION	
	E	T	Y			
R239	1	1	1	GD05682180	6.8K Ω	
R240	1	1	1	GD05103180	10K Ω	
R241	1	1	1	GJ05330020	33 Ω	2W
R241	1	1	1	GJ05470020	47 Ω	2W
R242	1	1	1	GJ05330020	33 Ω	2W
R242	1	1	1	GJ05470020	47 Ω	2W
R243	1	1	1	GD05682180	6.8K Ω	
R244	1	1	1	GD05473180	47K Ω	
R250	1	1	1	GD05331180	330 Ω	
R251	1	1	1	GD05221180	220 Ω	
R251	1	1	1	GD05561180	560 Ω	
R252	1	1	1	GD05103180	10K Ω	
R253	1	1	1	GD05470180	47 Ω	
R254	1	1	1	GD05391180	390 Ω	
R291	1	1	1	GD05470180	47 Ω	
R294	1	1	1	GD05820180	82 Ω	
P101-SEMICONDUCTORS						
Q101	1	1	1	HF400511P0	F.E.T.	3SK51
Q102	1	1	1	HF400511O0	F.E.T.	3SK51
Q103	1	1	1	HT305351B0	Transistor	2SC535(B)
Q104	1	1	1	HT305360F0	Transistor	2SC536(F)
Q105	1	1	1	HT305360F0	Transistor	2SC536(F)
Q106	1	1	1	HC10012230	IC	H8D1152F
Q107	1	1	1	HD10005020	Diode	OA99
Q108	1	1	1	HD10005020	Diode	OA99
Q109	1	1	1	HT305351C0	Transistor	2SC535C
Q110	1	1	1	HT323471O0	Transistor	2SC2347
Q111	1	1	1	HD30015010	Zener	NZ7L
Q111	1	1	1	HD30023090	Zener	WZ071
Q112	1	1	1	HT305360F0	Transistor	2SC536(F)
Q113	1	1	1	HT305360F0	Transistor	2SC536(F)
Q114	1	1	1	HT305360F0	Transistor	2SC536(F)
Q115	1	1	1	HD10005020	Diode	OA99
Q116	1	1	1	HD10005020	Diode	OA99
Q117	1	1	1	HD10005020	Diode	OA99
Q118	1	1	1	HT305360F0	Transistor	2SC536(F)
Q119	1	1	1	HT305360F0	Transistor	2SC536(F)
Q120	1	1	1	HD20011050	Diode	1S1555
Q121	1	1	1	HD20011050	Diode	1S1555
Q123	1	1	1	HC10037060	IC	μ PC575C2
Q124	1	1	1	HD20011050	Diode	1S1555
Q201	1	1	1	HT304601B0	Transistor	2SC460B
Q202	1	1	1	HT304601B0	Transistor	2SC460B
Q206	1	1	1	HT323471O0	Transistor	2SC2347
Q207	1	1	1	HT323471O0	Transistor	2SC2347
Q208	1	1	1	HT324071O0	Transistor	2SC2407
Q209	1	1	1	HT322211O0	Transistor	2SC2221

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION	
	E	T	Y			
Q210				HT322831O0	Transistor	2SC2283
Q210	1	1	1	HT322871O0	Transistor	2SC2287
Q211	1	1	1	HD20005200	Diode	MI303
Q212	1	1	1	HD20001200	Diode	MI301
Q213	1	1	1	HC10004230	IC	H8D1219
Q214	1	1	1	HD30008010	Zener	HZ6L
Q215	1	1	1	HD10005020	Diode	OA99
Q217	1	1	1	HT405711O0	Transistor	2SD571
Q218	1	1	1	HD30072090	Zener	WZ100
Q219	1	1	1	HT106082A0	Transistor	2SA608
Q220	1	1	1	HD20011050	Diode	1S1555
Q221	1	1	1	HD20011050	Diode	1S1555
Q222	1	1	1	HT305360F0	Transistor	2SC536(F)
Q223	1	1	1	HD10005020	Diode	OA99
Q224	1	1	1	HH00008030	Thermistor	SDT-1000, 10K Ω
P101-MISCELLANEOUS						
F101	1	1	1	XU721400M5	Crystal Filter	21.4MHz
F101	1	1	1	XU721400N5	Crystal Filter	21.4MHz
F102	1	1	1	FG455304E0	Ceramic Filter	CFU455E
F102	1	1	1	FG455304G0	Ceramic Filter	CFU455G
F103	1	1	1	FG455304E0	Ceramic Filter	CFU455E
F104	1	1	1	FH455301E0	Ceramic Filter	CFA455S
F105	1	1	1	XU721400M5	Crystal Filter	21.4MHz
F105	1	1	1	XU721400N5	Crystal Filter	21.4MHz
F201	1	1	1	FC90050010	Ferrite Core	
L101	1	1	1	LW55016020	Doublar Coil	
L102	1	1	1	LW55016020	Doublar Coil	
L103	1	1	1	LW55016010	Doublar Coil	
L104	1	1	1	LW55016020	Doublar Coil	
L105	1	1	1	LW55016020	Doublar Coil	
L106	1	1	1	LI55016190	I.F.T. Coil	
L107	1	1	1	LI55016190	I.F.T. Coil	
L108	1	1	1	LI55016200	I.F.T. Coil	
L110	1	1	1	LW55016080	Doublar Coil	
L111	1	1	1	LW55016010	Doublar Coil	
L112	1	1	1	LW55016020	Doublar Coil	
L113	1	1	1	LW55016020	Doublar Coil	
L114	1	1	1	LC11050040	Choke Coil,	1mH
L116	1	1	1	LC13940010	Choke Coil,	390 μ H
L121	1	1	1	LC18210030	Choke Coil,	0.82 μ H
L122	1	1	1	LC18210030	Choke Coil,	0.82 μ H
L123	1	1	1	LC18210030	Choke Coil,	0.82 μ H
L124	1	1	1	LC18210030	Choke Coil,	0.82 μ H
L125	1	1	1	LC18210030	Choke Coil,	0.82 μ H
L126	1	1	1	LC18210030	Choke Coil,	0.82 μ H
L201	1	1	1	LC11030060	Choke Coil,	10 μ H
L202	1	1	1	LA55016050	Antenna Coil	
L203	1	1	1	LA55016050	Antenna Coil	
L204	1	1	1	LA55016050	Antenna Coil	
L205	1	1	1	LW55016030	Doublar Coil	
L206	1	1	1	LW55016030	Doublar Coil	
L207	1	1	1	LW55016020	Doublar Coil	
L208	1	1	1	LW55016020	Doublar Coil	
L209	1	1	1	LW55016050	Doublar Coil	
L211	1	1	1	LC15000012	Choke Coil	(6T)

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	E	T	Y		
L212	1	1	1	LW55016010	Doublar Coil
L213	1	1	1	LC13810010	Choke Coil (15T)
L215	1	1	1	LC11020070	Choke Coil, 1μH
L216	1	1	1	LC11610010	Choke Coil (10T)
L217	1	1	1	LL635004A0	Coil (4T)
L220	1	1	1	LC22760010	Choke Coil, 27mH
L221	1	1	1	LC13810010	Choke Coil (15T)
L291	1	1	1	LC12800010	Choke Coil (3T)
L293	1	1	1	LC13010022	Choke Coil, 0.26μH
X101	1	1	1	XZ42094505	Crystal, 20.945MHz
X111	1	1	1	XH301003X0	Crystal, RX172MHz
X211	1	1	1	XH103003X0	Crystal, TX172MHz
F1					
C101	1			DD15150330	Ceramic 15pF ±5%
C102	1			DD45430330	Ceramic 43pF ±5%
C104	1			DD10050330	Ceramic 5pF ±0.25pF
C107	1			DD15150330	Ceramic 15pF ±5%
C110	1			DD11100330	Ceramic 10pF ±0.5pF
C112	1			DD10050330	Ceramic 5pF ±0.25pF
C135	1			DD15270330	Ceramic 27pF ±5%
C136	1			DD45271330	Ceramic 270pF ±5%
C137	1			DD15150330	Ceramic 15pF ±5%
C140	1			DD15120330	Ceramic 12pF ±5%
C218	1			DD45910330	Ceramic 91pF ±5%
C223	1			DD15470330	Ceramic 47pF ±5%
C226	1			DD15470330	Ceramic 47pF ±5%
C228	1			DD15150300	Ceramic 15pF ±5%
C230	1			DD11060300	Ceramic 6pF ±0.5pF
C231	1			DD15300330	Ceramic 30pF ±5%
C232	1			DD15180330	Ceramic 18pF ±5%
C236	1			DD11060300	Ceramic 3pF ±0.5pF
C237	1			DD45181330	Ceramic 180pF ±5%
C238	1			DD15300330	Ceramic 30pF ±5%
C241	1			DD15300330	Ceramic 30pF ±5%
C245	1			DD15180300	Ceramic 18pF ±5%
C247	1			DK16102300	Ceramic 1000pF ±10%
C249	1			DD15200300	Ceramic 20pF ±5%
C252	1			DD11080300	Ceramic 8pF ±0.5pF
C291	1			DD15200300	Ceramic 20pF ±5%
R292	1			GD05681180	Resistor 680Ω ±5% 1/8W
Q203	1			HD40018090	Varicap 1S2689(D)
Q204	1			HD40018090	Varicap 1S2689(D)
Q205	1			HD40018090	Varicap 1S2689(D)
L210	1			LW55016010	Doublar Coil
L218	1			LL635005A0	Coil (5T)
L292	1			LC15000012	Choke Coil (6T)
F3					
C101	1			DD15120330	Ceramic 12pF ±5%
C102	1			DD45430330	Ceramic 43pF ±5%
C104	1			DD10050330	Ceramic 5pF ±0.25pF
C107	1			DD15120330	Ceramic 12pF ±0.5pF
C110	1			DD11100330	Ceramic 10pF ±0.5pF
C112	1			DD10030330	Ceramic 3pF ±0.25pF
C135	1			DD15200330	Ceramic 20pF ±5%
C136	1			DD45201330	Ceramic 200pF ±5%
C137	1			DD15120330	Ceramic 12pF ±5%
C140	1			DD11100330	Ceramic 10pF ±0.5pF
C218	1			DD45820330	Ceramic 82pF ±5%
C226	1			DD15390330	Ceramic 39pF ±5%
C226	1			DD15390330	Ceramic 39pF ±5%
C228	1			DD11100300	Ceramic 10pF ±0.5pF
C230	1			DD11060300	Ceramic 6pF ±0.5pF
C231	1			DD15300330	Ceramic 30pF ±5%
C232	1			DD15150330	Ceramic 15pF ±5%
C236	1			DD11060300	Ceramic 6pF ±0.5pF
C237	1			DD45151330	Ceramic 150pF ±5%
C238	1			DD15270330	Ceramic 27pF ±5%

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	E	T	Y		
C101	1			DD15120330	Ceramic 12pF ±5%
C102	1			DD45430330	Ceramic 43pF ±5%
C104	1			DD10050330	Ceramic 5pF ±0.25pF
C107	1			DD15120330	Ceramic 12pF ±5%
C110	1			DD11100330	Ceramic 10pF ±0.5pF
C112	1			DD10030330	Ceramic 3pF ±0.25pF
C135	1			DD15240330	Ceramic 24pF ±5%
C136	1			DD45251330	Ceramic 240pF ±5%
C137	1			DD15150330	Ceramic 15pF ±5%
C140	1			DD11100330	Ceramic 10pF ±0.5pF
C218	1			DD45910330	Ceramic 91pF ±5%
C223	1			DD15430330	Ceramic 43pF ±5%
C226	1			DD15430330	Ceramic 43pF ±5%
C228	1			DD15120300	Ceramic 12pF ±5%
C230	1			DD11060300	Ceramic 6pF ±0.5pF
C231	1			DD15300330	Ceramic 30pF ±5%
C232	1			DD15150330	Ceramic 15pF ±5%
C236	1			DD11060300	Ceramic 6pF ±0.5pF
C237	1			DD45151330	Ceramic 150pF ±5%
C238	1			DD15270330	Ceramic 27pF ±5%
C241	1			DD15300330	Ceramic 30pF ±5%
C245	1			DD15180300	Ceramic 18pF ±5%
C247	1			DK16102300	Ceramic 1000pF ±10%
C249	1			DD15200300	Ceramic 20pF ±5%
C252	1			DD11080300	Ceramic 8pF ±0.5pF
C291	1			DD15200300	Ceramic 20pF ±5%
R292	1			GD05681180	Resistor 680Ω ±5% 1/8W
Q203	1			HD40018090	Varicap 1S2689(D)
Q204	1			HD40018090	Varicap 1S2689(D)
Q205	1			HD40018090	Varicap 1S2689(D)
L210	1			LW55016010	Doublar Coil
L218	1			LL635005A0	Coil (5T)
L292	1			LC15000012	Choke Coil (6T)
F3					
C101	1			DD15120330	Ceramic 12pF ±5%
C102	1			DD45430330	Ceramic 43pF ±5%
C104	1			DD10050330	Ceramic 5pF ±0.25pF
C107	1			DD15120330	Ceramic 12pF ±0.5pF
C110	1			DD11100330	Ceramic 10pF ±0.5pF
C112	1			DD10030330	Ceramic 3pF ±0.25pF
C135	1			DD15200330	Ceramic 20pF ±5%
C136	1			DD45201330	Ceramic 200pF ±5%
C137	1			DD15120330	Ceramic 12pF ±5%
C140	1			DD11100330	Ceramic 10pF ±0.5pF
C218	1			DD45820330	Ceramic 82pF ±5%
C226	1			DD15390330	Ceramic 39pF ±5%
C226	1			DD15390330	Ceramic 39pF ±5%
C228	1			DD11100300	Ceramic 10pF ±0.5pF
C230	1			DD11060300	Ceramic 6pF ±0.5pF
C231	1			DD15300330	Ceramic 30pF ±5%
C232	1			DD15150330	Ceramic 15pF ±5%
C236	1			DD11060300	Ceramic 6pF ±0.5pF
C237	1			DD45151330	Ceramic 150pF ±5%
C238	1			DD15270330	Ceramic 27pF ±5%

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	E	T	Y		
C241	1			DD15270330	Ceramic 27pF ±5%
C245	1			DD15180300	Ceramic 18pF ±5%
C247	1			DK16102300	Ceramic 1000pF ±10%
C249	1			DD15200300	Ceramic 20pF ±5%
C252	1			DD11080300	Ceramic 8pF ±0.5pF
C291	1			DD15180300	Ceramic 18pF ±5%
R292	1			GD05821180	Resistor 820Ω ±5% 1/8W
Q203	1			HD40017090	Varicap 1S2689(C)
Q204	1			HD40017090	Varicap 1S2689(C)
Q205	1			HD40017090	Varicap 1S2689(C)
L210	1			LW55016010	Doublar Coil
L218	1			LL635005A0	Coil (5T)
L292	1			LC15000012	Choke Coil (6T)
F4					
C101	1	1		DD11100330	Ceramic 10pF ±0.5pF
C102	1	1		DD45430330	Ceramic 43pF ±5%
C104	1	1		DD10020330	Ceramic 2pF ±0.25pF
C107	1	1		DD11100330	Ceramic 10pF ±0.5pF
C110	1	1		DD11080330	Ceramic 8pF ±0.5pF
C112	1	1		DD10020330	Ceramic 2pF ±0.25pF
C135	1	1		DD15160330	Ceramic 16pF ±5%
C136	1	1		DD45151330	Ceramic 150pF ±5%
C137	1	1		DD15120330	Ceramic 12pF ±5%
C140	1	1		DD11080330	Ceramic 8pF ±0.5pF
C218	1	1		DD45820330	Ceramic 82pF ±5%
C223	1	1		DD15360330	Ceramic 36pF ±5%
C226	1	1		DD15360330	Ceramic 36pF ±5%
C228	1	1		DD11100300	Ceramic 10pF ±0.5pF
C230	1	1		DD11060300	Ceramic 6pF ±0.5pF
C231	1	1		DD15220330	Ceramic 22pF ±5%
C232	1	1		DD15120330	Ceramic 12pF ±5%
C236	1	1		DD11060300	Ceramic 6pF ±0.5pF
C236	1	1		DD10050300	Ceramic 5pF ±0.25pF
C237	1	1		DD45151330	Ceramic 150pF ±5%
C238	1	1		DD15240330	Ceramic 24pF ±5%
C238	1	1		DD11100330	Ceramic 10pF ±0.5pF
C241	1	1		DD15240330	Ceramic 24pF ±5%
C241	1	1		DD11100330	Ceramic 10pF ±0.5pF
C245	1	1		DD15270300	Ceramic 27pF ±5%
C247	1	1		DK16102300	Ceramic 1000pF ±10%
C249	1	1		DD15200300	Ceramic 20pF ±5%
C252	1	1		DD11080300	Ceramic 8pF ±0.5pF
C291	1	1		DD15120300	Ceramic 12pF ±5%
C291	1	1		DD15270300	Ceramic 27pF ±5%
C293	1	1		DD45200300	Ceramic 20pF ±5%
R292	1			GD05122180	Resistor 1.2KΩ ±5% 1/8W
Q203	1	1		HD40016090	Varicap 1S2689(A)
Q204	1	1		HD40016090	Varicap 1S2689(A)
Q205	1	1		HD40016090	Varicap 1S2689(A)
L210	1	1		LW55016010	Doublar Coil
L218	1	1		LL635005A0	Coil (5T)
L291	1	1		LC15000012	Choke Coil (6T)
L291	1	1		LC14000010	Choke Coil (5T)
L292	1	1		LC11610010	Choke Coil (10T)
F6					
C101	1	1	1	DD11100330	Ceramic 10pF ±0.5pF
C102	1	1		DD45330330	Ceramic 33pF ±5%
C102	1	1		DD45430330	Ceramic 43pF ±5%
C104	1	1	1	DD10020330	Ceramic 2pF ±0.25pF
C107	1	1	1	DD11080330	Ceramic 8pF ±0.5pF
C110	1	1	1	DD11060330	Ceramic 6pF ±0.5pF
C135	1	1	1	DD15150330	Ceramic 15pF ±5%
C136	1	1	1	DD45151330	Ceramic 150pF ±5%
C137	1	1	1	DD11100330	Ceramic 10pF ±0.5pF
C140	1	1	1	DD11070330	Ceramic 7pF ±0.5pF

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	E	T	Y		
F5					
C101	1	1		DD11100330	Ceramic 10pF ±0.5pF
C102	1	1		DD45390330	Ceramic 39pF ±5%
C104	1	1		DD10020330	Ceramic 2pF ±0.25pF
C107	1	1		DD11100330	Ceramic 10pF ±0.5pF
C110	1	1		DD11080330	Ceramic 8pF ±0.5pF
C112	1	1		DD10020330	Ceramic 2pF ±0.25pF
C135	1	1		DD15150330	Ceramic 15pF ±5%
C136	1	1		DD45151330	Ceramic 150pF ±5%
C137	1	1		DD11100330	Ceramic 10pF ±0.5pF
C140	1	1		DD11070330	Ceramic 7pF ±0.5pF
C218	1	1		DD45680330	Ceramic 68pF ±5%
C223	1	1		DD15330330	Ceramic 33pF ±5%
C226	1	1		DD15330330	Ceramic 33pF ±5%
C228	1	1		DD11100300	Ceramic 10pF ±0.5pF
C230	1	1		DD10050300	Ceramic 5pF ±0.25pF
C231	1	1		DD15220330	Ceramic 22pF ±5%
C232	1	1		DD15120330	Ceramic 12pF ±5%
C236	1	1		DD10050300	Ceramic 5pF ±0.25pF
C236	1	1		DD10040300	Ceramic 4pF ±0.25pF
C237	1	1		DD45121330	Ceramic 120pF ±5%
C238	1	1		DD15200330	Ceramic 20pF ±5%
C238	1	1		DD11090330	Ceramic 9pF ±0.5pF
C241	1	1		DD15200330	Ceramic 20pF ±5%
C241	1	1		DD11090330	Ceramic 9pF ±0.5pF
C245	1	1		DD15120300	Ceramic 12pF ±5%
C245	1	1		DD15270300	Ceramic 27pF ±5%
C247	1	1		DK16102300	Ceramic 1000pF ±10%
C249	1	1		DD15200300	Ceramic 20pF ±5%
C252	1	1		DD11080300	Ceramic 8pF ±0.5pF
C291	1	1		DD15120300	Ceramic 12pF ±5%
C291	1	1		DD15270300	Ceramic 27pF ±5%
C292	1	1		DD45150300	Ceramic 15pF ±5%
R292	1			GD05122180	Resistor 1.2KΩ ±5% 1/8W
Q203	1	1		HD40016090	Varicap 1S2689(A)
Q204	1	1		HD40016090	Varicap 1S2689(A)
Q205	1	1		HD40016090	Varicap 1S2689(A)
L210	1	1		LW55016010	Doublar Coil
L218	1	1		LL635005A0	Coil (5T)
L291	1	1		LC14000010	Choke Coil (5T)
L292	1	1		LC11610010	Choke Coil (10T)
F6					
C101	1	1	1	DD11100330	Ceramic 10pF ±0.5pF
C102	1	1		DD45330330	Ceramic 33pF ±5%
C102	1	1		DD45430330	Ceramic 43pF ±5%
C104	1	1	1	DD10020330	Ceramic 2pF ±0.25pF
C107	1	1	1	DD11080330	Ceramic 8pF ±0.5pF
C110	1	1	1	DD11060330	Ceramic 6pF ±0.5pF
C135	1	1	1	DD15150330	Ceramic 15pF ±5%
C136	1	1	1	DD45151330	Ceramic 150pF ±5%
C137	1	1	1	DD11100330	Ceramic 10pF ±0.5pF
C140	1	1	1	DD11070330	Ceramic 7pF ±0.5pF

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	E	T	Y		
C218	1	1	1	DD45680330	Ceramic 68pF ±5%
C223	1	1	1	DD15330330	Ceramic 33pF ±5%
C226	1	1	1	DD15330330	Ceramic 33pF ±5%
C228	1	1	1	DD11100300	Ceramic 10pF ±0.5pF
C230	1	1	1	DD10050300	Ceramic 5pF ±0.25pF
C231	1	1	1	DD15120330	Ceramic 12pF ±5%
C232	1	1	1	DD11100330	Ceramic 10pF ±0.5PF
C236	1	1	1	DD10050300	Ceramic 5pF ±0.25pF
C236	1	1	1	DD10040300	Ceramic 4pF ±0.25pF
C237	1	1	1	DD45121330	Ceramic 120pF ±5%
C238	1	1	1	DD15200330	Ceramic 20pF ±5%
C238	1	1	1	DD11080330	Ceramic 8pF ±0.5pF
C241	1	1	1	DD15200330	Ceramic 20pF ±5%
C241	1	1	1	DD11080330	Ceramic 8pF ±0.5pF
C245	1	1	1	DD15120300	Ceramic 12pF ±5%
C245	1	1	1	DD15270300	Ceramic 27pF ±5%
C247	1	1	1	DK16102300	Ceramic 1000pF ±10%
C249	1	1	1	DD15200300	Ceramic 20pF ±5%
C252	1	1	1	DD11080300	Ceramic 8pF ±0.5pF
C291	1	1	1	DD15120300	Ceramic 12pF ±5%
C291	1	1	1	DD15240300	Ceramic 24pF ±5%
C293	1	1	1	DD45150300	Ceramic 15pF ±5%
R292	1	1	1	GD05182180	Resistor 1.8KΩ ±5% 1/8W
Q203	1	1	1	HD40016090	Varicap 1S2689(A)
Q204	1	1	1	HD40016090	Varicap 1S2689(A)
Q205	1	1	1	HD40016090	Varicap 1S2689(A)
L210	1	1	1	LW55016010	Double Coil
L218	1	1	1	LL635004A0	Coil (4T)
L218	1	1	1	LL635005A0	Coil (5T)
L291	1	1	1	LC14000010	Choke Coil (5T)
L292	1	1	1	LC11610010	Choke Coil (10T)

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	E	T	Y		
P301	1	1	1	YH110C1422	P301-ROTARY SWITCH CIRCUIT BOARD P.W. Board, Rotary Switch
S301	1	1	1	SR02060120	Rotary Switch
P401	1	1	1	YH110C1432	P401-POWER SWITCH CIRCUIT BOARD P.W. Board, Power Switch
C401	1	1	1	EJ10601610	Elect Cap. 10μF 16V
R401	1	1	1	GD05470180	Resistor 47Ω ±5% 1/8W
Q401	1	1	1	H110025020	L.F.D. LN222RP
Q402	1	1	1	HD30023090	Diode WZ071
S401	1	1	1	SC01020380	Switch, RF Power (Hi-Low)
P501	1	1	1	YH110C1442	P501-ANTENNA CIRCUIT BOARD P.W. Board, Antenna
C501	1	1	1	DD15160300	Ceramic Cap. 16pF ±5%
J501	1	1	1	YJ10001620	Jack, Antenna
L501	1	1	1	LC13400010	Choke Coil (4T)

[No. 164-22]

(W01-99)	Assembly and Wiring
(T01-99)	Adjustment
(X01-00)	Correction

10. SPECIFICATIONS

ITEM

General

1. Type	VHF Business use
2. Number of Channels	6 CH max.
3. Frequency range	138 ~ 174 MHz
4. Supply voltage	DC 11.25V \pm 15% (Negative ground) CNB2 Ni-Cd Battery Pack
5. Power consumption	
Transmission	{ Hi - 700 mA (Y), 1.4A (L) Lo - 450 mA (Y), 750 mA (L)
Reception	Less than 250 mA
Standby	Less than 19 mA
6. Internal speaker	5 cm Dynamic 8 Ω
7. Dimensions	163 mm (H) x 63 mm (W) x 45.5 mm (D)
8. Weight	750 grams (including batteries)

Transmitter Section

1. Type of emission	16F3 (Max. Dev. \pm 5 kHz)
2. RF power	3W (Y) 5W (L)
3. Output impedance	50 ohms
4. Type of modulation	Reactance modulation
5. Spurious emission	50 dB
6. Mod. distortion	7% max.
7. Hum & Noise	50 dB
8. Frequency stability	0.0005%

Receiver Section

1. Receiver system	Double conversion superheterodyne
	1st IF 21.4 MHz
	2nd IF 455 kHz
2. 20 dB QS sensitivity	0.5 μ V
3. Squelch sensitivity	0.25 μ V
4. Mod. acceptance bandwidth	\pm 6.5 kHz
5. Selectivity (EIA)	70 dB
6. Intermodulation	65 dB
7. Audio output power	0.5W (10% THD) 0.8W (max. volume)

MODEL CSA4

1. THEORY OF OPERATION

When a commercial AC power source is coupled to the primary input (AC INPUT) of the transformer and the battery pack (Y) is connected to the charger (X) output terminals, transistor Q3 is turned on due to the base current supplied via resistor R4. This turns thyristor S1 on to start battery charging.

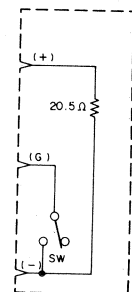
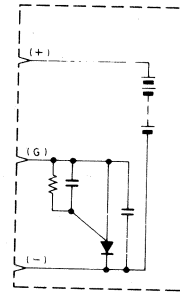
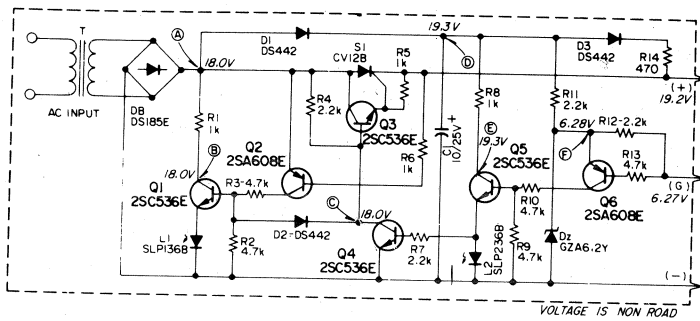
Since the battery is connected to the charger output, transistor Q2 is turned on. This causes to supply a base current to transistor Q1, turning it on and thus lighting the charging indicator lamp (L1).

As the battery is charged up close to its full capacity, there is a sudden rise in battery temperature due to its internal chemical reaction. When the battery temperature reaches the prescribed value, thermal thyristor S2 senses it

and turns itself on. This brings down the base potential of transistor Q6 and turns it on, causing Q5 to be turned on also. This lights the charging end indicator lamp (L2) in green. The voltage applied across the indicator lamp (L2) is coupled across the base and emitter of transistor Q4, turning it on. This brings down the base potential of Q3 and turns it off. As a result, the gate potential is removed from the charging control thyristor (S1), causing to stop charging at the next half cycle of the primary power supply. At the same time, transistor Q1 is turned off and hence the charging indicator lamp (L1) goes out.

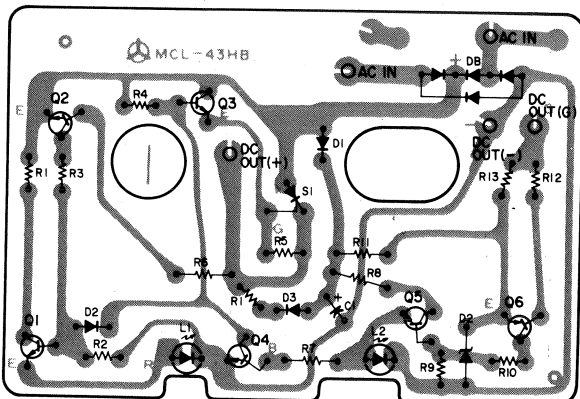
After charging is completed, a trifle charging current is supplied from the positive output of the diode bridge (Dg) via diodes D1 and D2 and resistor R11.

2. SCHEMATIC DIAGRAM

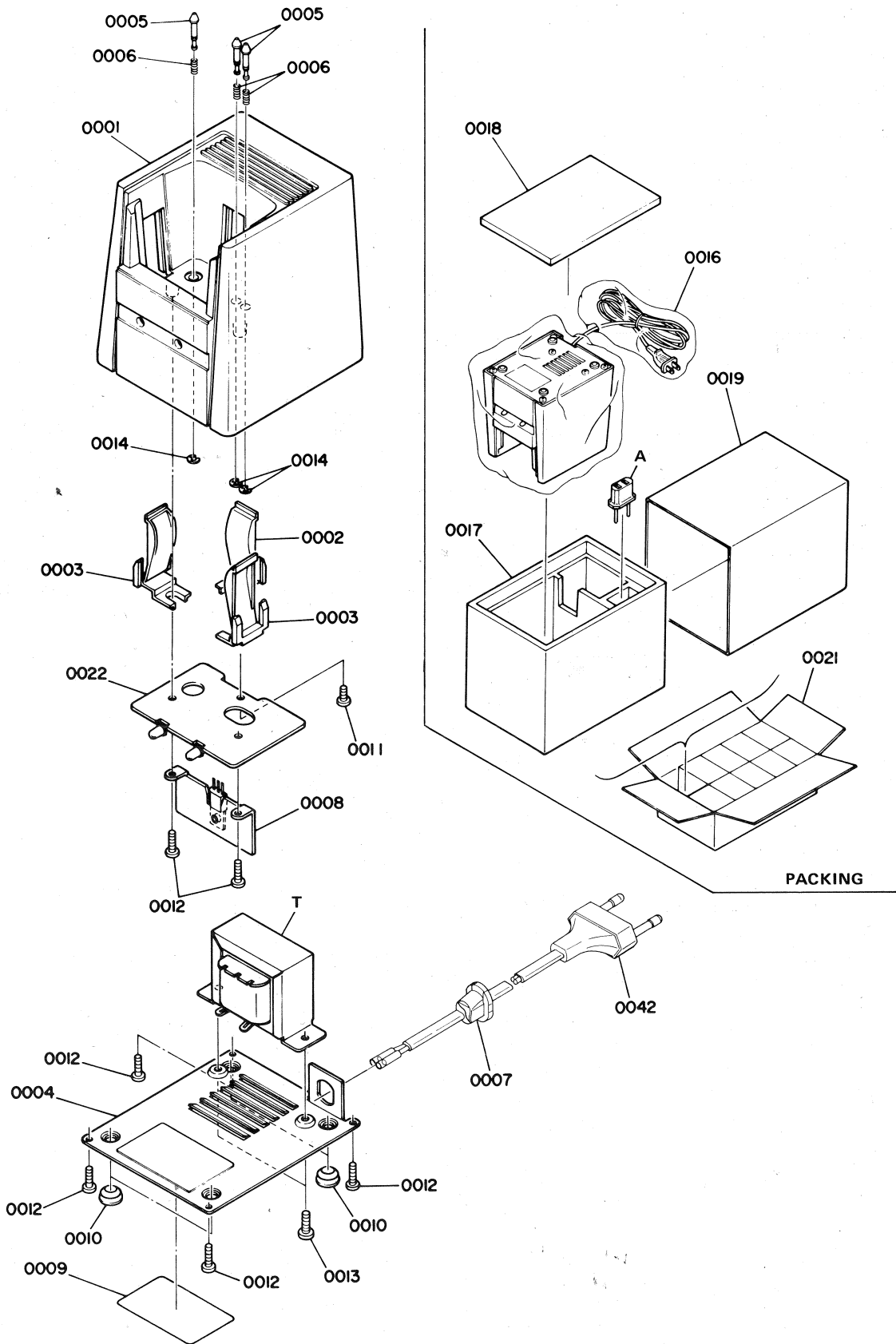


TEST POINT	BATTERY ROAD		RESISTOR ROAD	
	RAPID	TRICKLE	RAPID	TRICKLE
(+)	12.95V	12.51V	9.8V	0.9V
(G)	6.24V	0.7V	6.2V	0V
A	13.2V	13.06V	10.4V	10.9V
B	5.6V	13.05V	2.2V	10.9V
C	13.2V	0.07V	10.4V	0.06V
D	13.3V	17.5V	15.6V	16.3V
E	13.3V	2.25V	15.6V	3.7V
F	6.25V	6.2V	6.2V	5.9V

3. CIRCUIT BOARD DIAGRAM



4. EXPLODED VIEW AND PARTS LIST

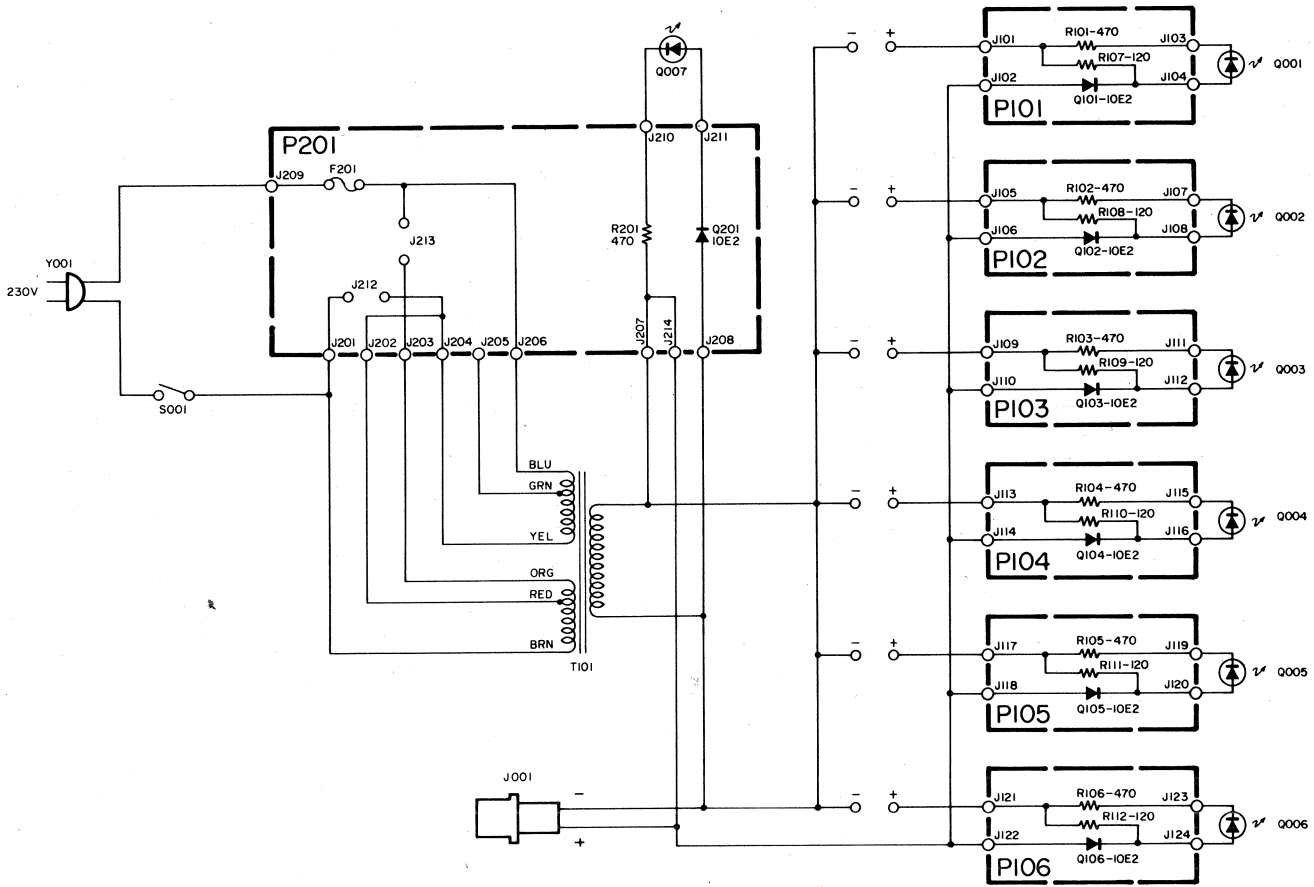


REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
0001	1	206Z064020	Case
0002	1	206Z271010	Holder A
0003	2	2068271020	Holder B
0004	1	206Z257010	Lid
0005	3	206Z123010	Terminal
0006	3	206Z115010	Spring
0007	1	206Z259010	Bushing
0008	1	206Z267010	Hert Sink
0009	1	206Z861030	Lavel
0010	4	206Z057010	LEG
0011	1	51300306U0	Screw M3 x 6
0012	6	51300308U0	Screw M3 x 8
0013	2	51300408B0	Screw M4 x 8
0014	3	64001500R0	Ring E
0042	1	YC01800230	A.C. Power Cord

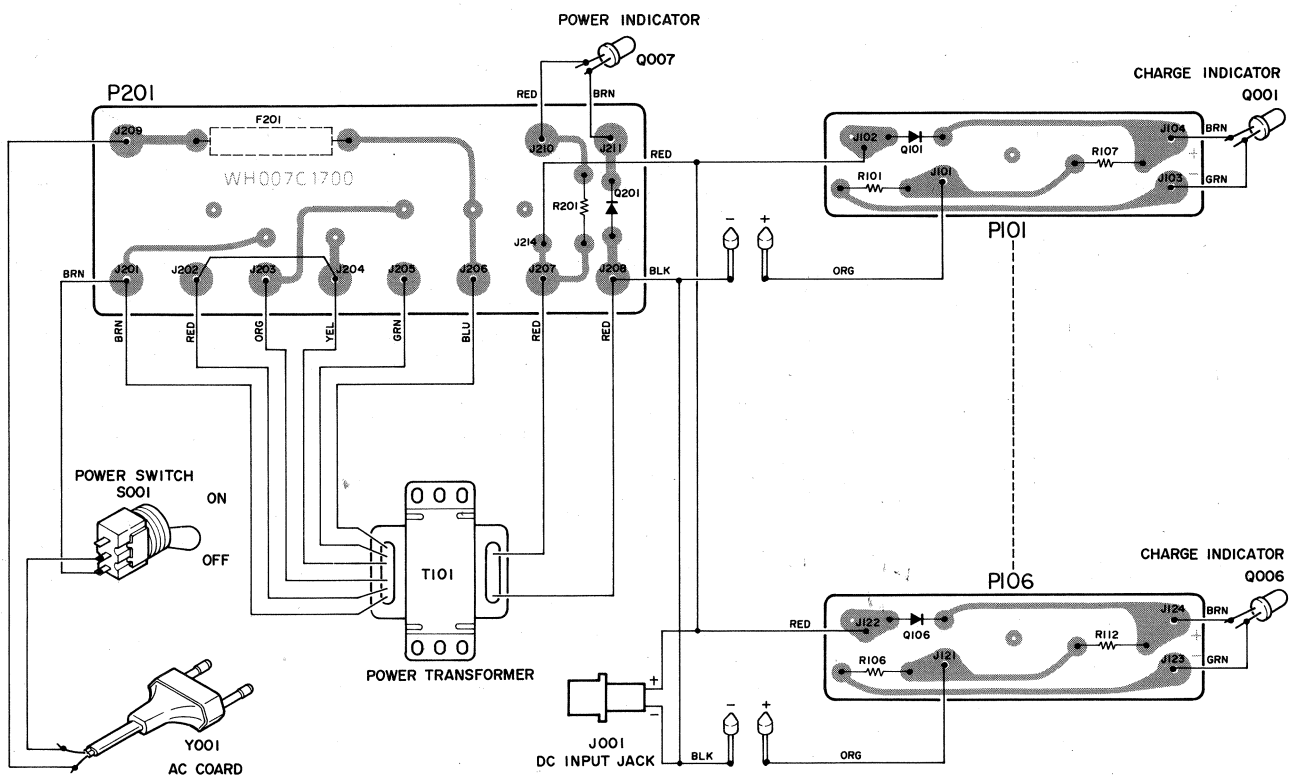
REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
0022	1	YF206Z001R	P.W. Board, Main
C1	1	EA10602530	Elect Cap. 10 μ F 25V
R1	1	GD05102140	Resistor 1K Ω \pm 5% $\frac{1}{4}$ W
R2	1	GD05472140	Resistor 4.7K Ω \pm 5% $\frac{1}{4}$ W
R3	1	GD05472140	Resistor 4.7K Ω \pm 5% $\frac{1}{4}$ W
R4	1	GD05222140	Resistor 2.2K Ω \pm 5% $\frac{1}{4}$ W
R5	1	GD05102140	Resistor 1K Ω \pm 5% $\frac{1}{4}$ W
R6	1	GD05102140	Resistor 1K Ω \pm 5% $\frac{1}{4}$ W
R7	1	GD05222140	Resistor 2.2K Ω \pm 5% $\frac{1}{4}$ W
R8	1	GD05102140	Resistor 1K Ω \pm 5% $\frac{1}{4}$ W
R9	1	GD05472140	Resistor 4.7K Ω \pm 5% $\frac{1}{4}$ W
R10	1	GD05472140	Resistor 4.7K Ω \pm 5% $\frac{1}{4}$ W
R11	1	GD05222140	Resistor 2.2K Ω \pm 5% $\frac{1}{4}$ W
R12	1	GD05222140	Resistor 2.2K Ω \pm 5% $\frac{1}{4}$ W
R13	1	GD05472140	Resistor 4.7K Ω \pm 5% $\frac{1}{4}$ W
R14	1	GD05471140	Resistor 470 Ω \pm 5% $\frac{1}{4}$ W
D1	1	HD2001703R	Diode DS442
D2	1	HD2001703R	Diode DS442
D3	1	HD2001703R	Diode DS442
DB	1	HE2000103R	Diode DS185E
DZ	1	HD3000203R	Diode GZA6.2Y
Q1	1	HT305361E0	Transistor 2SC536E
Q2	1	HT106081OR	Transistor 2SA608E
Q3	1	HT305361E0	Transistor 2SC536E
Q4	1	HT305361E0	Transistor 2SC536E
Q5	1	HT305361E0	Transistor 2SC536E
Q6	1	HT106081OR	Transistor 2SA608E
L1	1	HI1001703R	L.E.D. SLP136B
L2	1	HI1001803R	L.E.D. SLP236B
S1	1	HB0000101R	Thyristor CV12B
T	1	TS1481313R	Transformer
PACKING			
001S	1	206Z851010	Instructions
0017	1	206Z809010	Cushion
0018	1	206Z809020	Cushion
0019	1	206Z804030	Sleeve
0020	1	206Z807010	Reinforcing
0021	1	206Z805030	Master Carton
A	1	YJ0400086R	Jack, AC Adaptor

MODEL CSA5

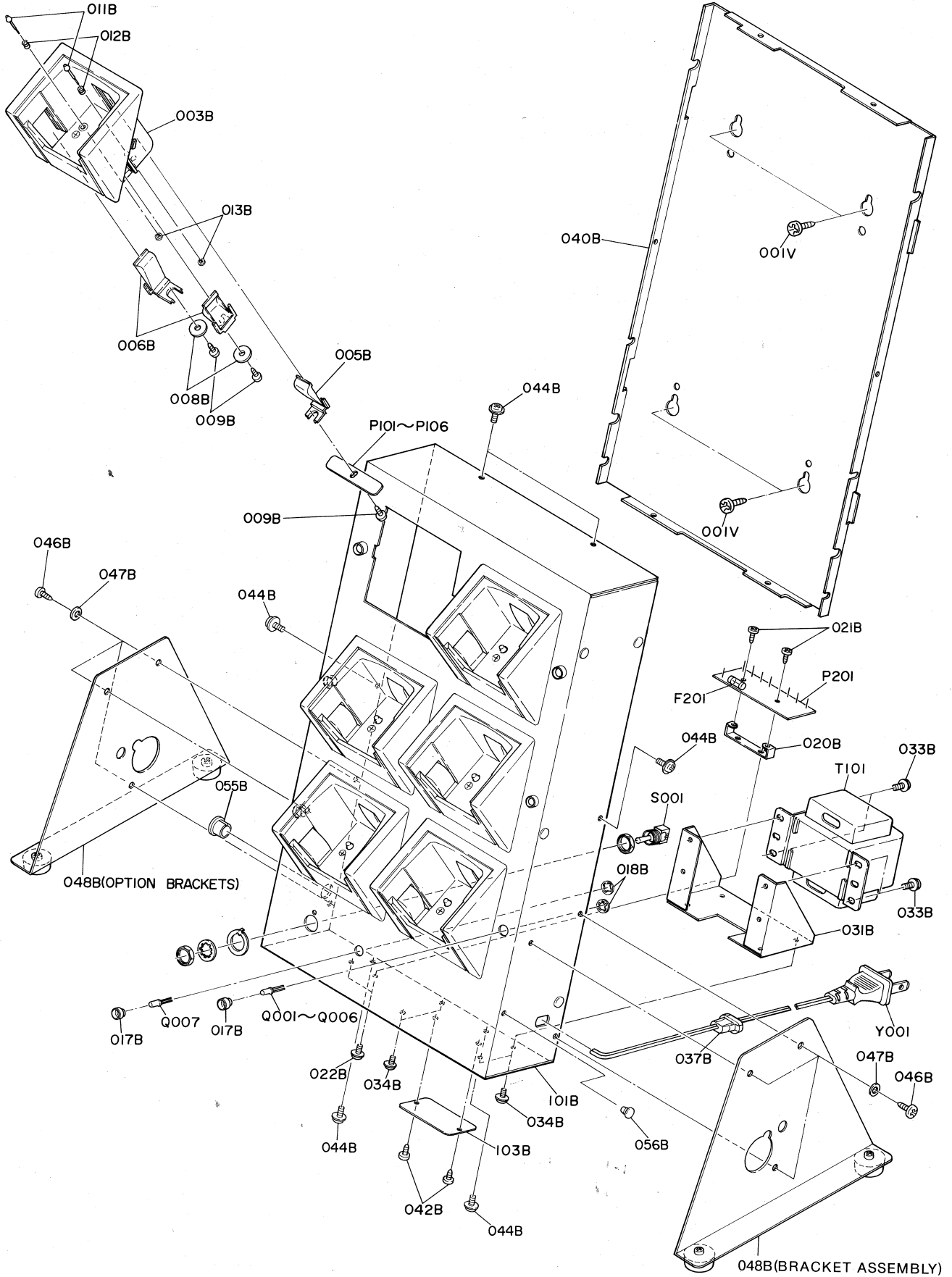
1. SCHEMATIC DIAGRAM



2. CIRCUIT BOARD DIAGRAM



3. EXPLODED VIEW AND PARTS LIST



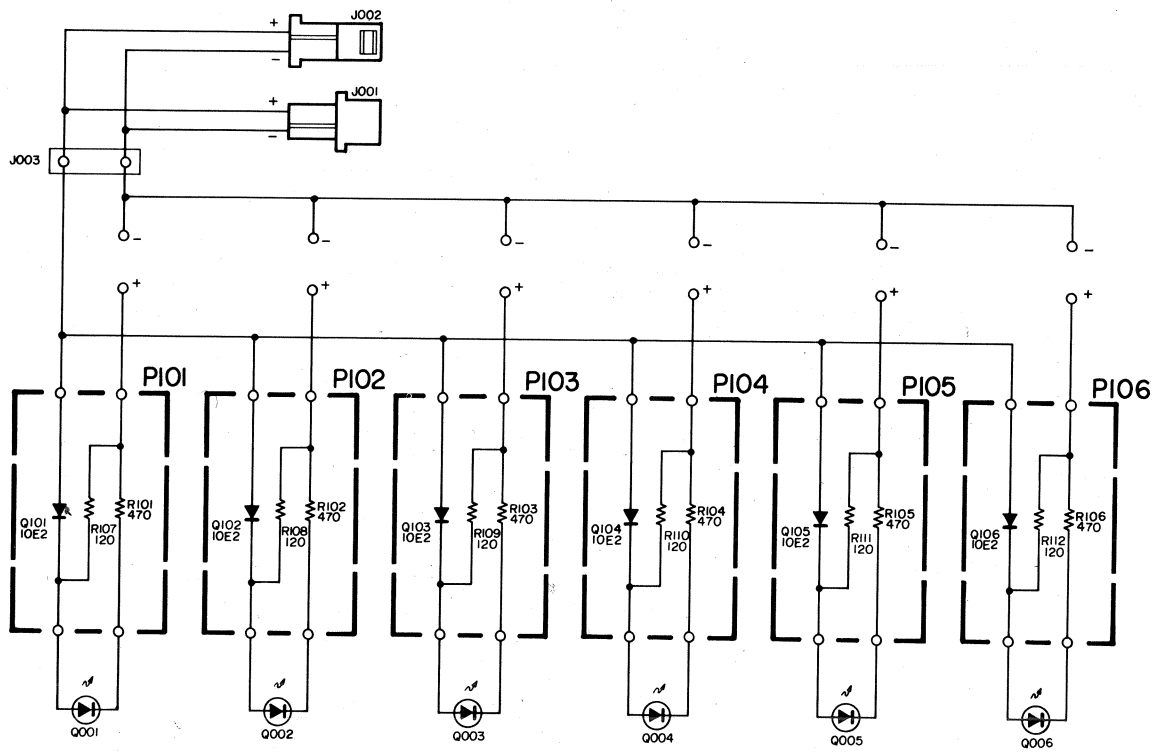
REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
003B	6	007C064010	Case
005B	6	206Z271010	Holder
006B	12	206Z271020	Holder
008B	12	54110149A0	Flat Washer, L.
009B	18	51280306B0	B.H. Tapped Screw B3 x 6
011B	12	206Z123010	Contactora
012B	12	206Z115010	Spring
013B	12	64001500R0	RG Ring, E Type
017B	7	007C353010	Ring, LED
018B	7	64020600Q0	RG Ring, CS Type
020B	1	3889160110	Bracket
021B	2	5110306A9	B.H.M. Screw B3 x 6
022B	2	51480306S9	F. Washer Screw F3 x 6
031B	1	007C160010	Bracket, Transf.
033B	4	51470408A9	L. Washer Screw L4 x 8
034B	4	51480306S9	F. Washer Screw F3 x 6
037B	1	1455259070	Bushing
040B	1	007C257010	Lid, Bottom Case
042B	2	51280306B0	B.H. Tapped Screw B3 x 6
044B	6	51480306S9	F. Washer Screw F3 x 6
046B	6	51280408U0	B.H. Tapped Screw B4 x 8
047B	6	54020401S0	Flat Washer, P.
048B	1	007C160400	Bracket Assembly
055B	1	74170019G0	Bushing
055B	10	74420029G0	Bushing
101B	1	007C064030	Case, Top
103B	1	007C265020	Indicator, Model
Q001	1	HI10006300	L.E.D. Red
Q002	1	HI10006300	L.E.D. Red
Q003	1	HI10006300	L.E.D. Red
Q004	1	HI10006300	L.E.D. Red
Q005	1	HI10006300	L.E.D. Red
Q006	1	HI10006300	L.E.D. Red
Q007	1	HI10007300	L.E.D. Green
S001	1	SC01020320	Power Switch
J001	1	YB00120040	Connective Cord
T101	1	TS16704010	Power Transformer
Y001	1	YC01800230	A.C. Power Cord
PACKING			
001S	1	007C801020	Packing Case
002S	1	007C809010	Cushion
003S	1	007C809020	Cushion
004S	1	007C807010	Reinforcing
007S	1	9013550010	Polyethylene Bag
008S	1	9011020010	Polyethylene Bag
010S	4	007C805020	Master Carton
001T	1	007C851010	Instructions
001V	4	51380516G0	P.H. Tapped Screw P5 x 16
002V	1	9010510010	Polyethylene Bag

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
P101	1	YF007C0010	P.W. Board, LED
R101	1	GD05471140	Resistor 470Ω ±5% ¼W
R107	1	GD05121140	Resistor 120Ω ±5% ¼W
Q101	1	HD20001100	Diode 10D2
P102	1	YF007C0010	P.W. Board, LED
R102	1	GD05471140	Resistor 470Ω ±5% ¼W
R108	1	GD05121140	Resistor 120Ω ±5% ¼W
Q102	1	HD20001100	Diode 10D2
P103	1	YF007C0010	P.W. Board, LED
R103	1	GD05471140	Resistor 470Ω ±5% ¼W
R109	1	GD05121140	Resistor 120Ω ±5% ¼W
Q103		HD20001100	Diode 10D2
P104	1	YF007C0010	P.W. Board, LED
R104	1	GD05471140	Resistor 470Ω ±5% ¼W
R110	1	GD05121140	Resistor 120Ω ±5% ¼W
Q104	1	HD20001100	Diode 10D2
P105	1	YF007C0010	P.W. Board, LED
R105	1	GD05471140	Resistor 470Ω ±5% ¼W
R111	1	GD05121140	Resistor 120Ω ±5% ¼W
Q105		HD20001100	Diode 10D2
P106	1	YF007C0010	P.W. Board, LED
R106	1	GD05471140	Resistor 470Ω ±5% ¼W
R112	1	GD05121140	Resistor 120Ω ±5% ¼W
Q106	1	HD20001100	Diode 10D2
P201	1	YF007C0020	P.W. Board, Fuse
R201	1	GD05471140	Resistor 470Ω ±5% ¼W
Q201	1	HD20001100	Diode 10D2
F201	1	FS20300700	Fuse 3A

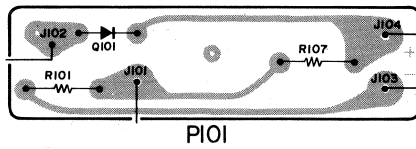
(W01-99)	Assembly and Wiring
(T01-99)	Adjustment
(X01-00)	Correction

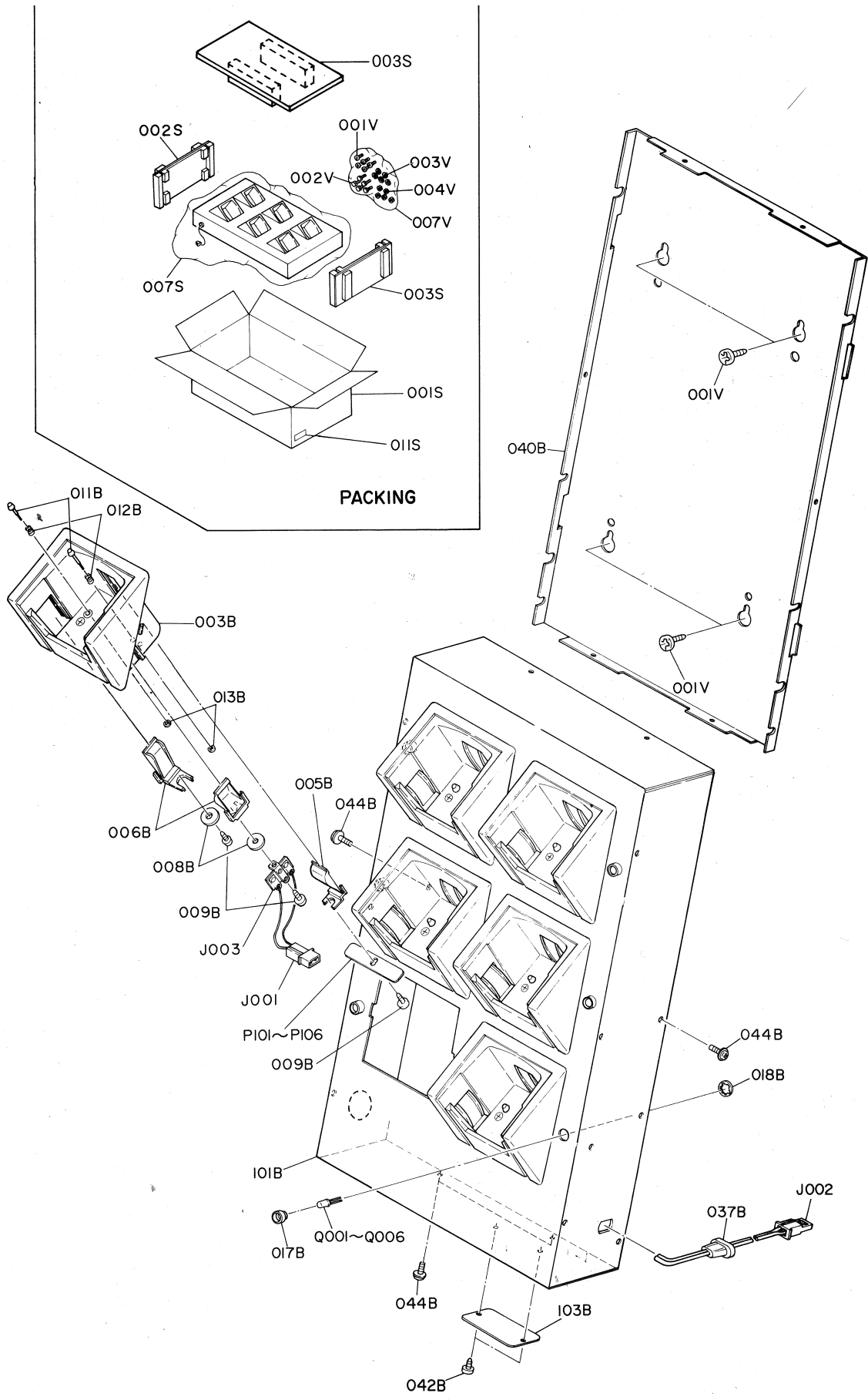
MODEL CSA5SL

1. SCHEMATIC DIAGRAM



2. CIRCUIT BOARD DIAGRAM





REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
003B	6	007C064010	Case
005B	6	206Z271010	Holder
006B	12	206Z271020	Holder
008B	12	54110149A0	Flat Washer, L.
009B	18	51280306B0	B.H. Tapped Screw B3 x 6
011B	12	206Z123010	Contacto
012B	12	206Z115010	Spring
013B	12	64001500R0	RG Ring, E Type
017B	6	007C353010	Ring
018B	6	64020600Q0	RG, Ring, CS Type
037B	1	1455259070	Bushing
040B	1	007C257010	Lid, Bottom Case
042B	2	51280306U0	B.H. Tapped Screw B3 x 6
044B	6	51480306S9	F. Washer Screw F3 x 6
101B	1	007C064050	Case, Top
103B	1	007C265050	Indicator
J001	1	YB00120040	Connective Cord
J002	1	YC00250020	AC Power Cord
J003	1	YL01030150	Terminal (3P)
Q001	1	HI10006300	L.E.D., Red
Q002	1	HI10006300	L.E.D., Red
Q003	1	HI10006300	L.E.D., Red
Q004	1	HI10006300	L.E.D., Red
Q005	1	HI10006300	L.E.D., Red
Q006	1	HI10006300	L.E.D., Red
PACKING			
001S	1	007C801040	Packing Case
002S	2	007C809010	Cushion
003S	1	007C809030	Cushion
007S	1	9013555010	Polyethylene Bag
011S	2	9523019010	Serial NO. Card
001V	4	51380516G0	P.H. Tapped Screw B5 x 16
002V	5	52010410A9	H. Head Bolt H4 x 10
003V	5	54040402A0	Spring Washer
004V	5	53110403A9	Hexagon Nut M4
007V	1	9010510010	Polyethylene Bag

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
P101	1	WH007C1710	P.W. Board, LED
R101	1	GD05471140	Resistor 470Ω ±5% ¼W
R107	1	GD05121140	Resistor 120Ω ±5% ¼W
Q101	1	HD20001100	Diode 10D2
P102	1	WH007C1720	P.W. Board, LED
R102	1	GD05471140	Resistor 470Ω ±5% ¼W
R108	1	GD05121140	Resistor 120Ω ±5% ¼W
Q102	1	HD20001100	Diode 10D2
P103	1	WH007C1730	P.W. Board, LED
R103	1	GD05471140	Resistor 470Ω ±5% ¼W
R109	1	GD05121140	Resistor 120Ω ±5% ¼W
Q103		HD20001100	Diode 10D2
P104	1	WH007C1740	P.W. Board, LED
R104	1	GD05471140	Resistor 470Ω ±5% ¼W
R110	1	GD05121140	Resistor 120Ω ±5% ¼W
Q104	1	HD20001100	Diode 10D2
P105	1	WH007C1750	P.W. Board, LED
R105	1	GD05471140	Resistor 470Ω ±5% ¼W
R111	1	GD05121140	Resistor 120Ω ±5% ¼W
Q105		HD20001100	Diode 10D2
P106	1	WH007C1760	P.W. Board, LED
P106	1	GD05471140	Resistor 470Ω ±5% ¼W
R112	1	GD05121140	Resistor 120Ω ±5% ¼W
Q106	1	HD20001100	Diode 10D2

(W01-99)	Assembly and Wiring
(T01-99)	Adjustment
(X01-00)	Correction