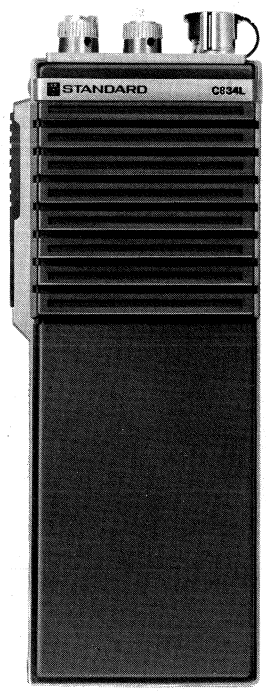
STANDARD

# 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)**

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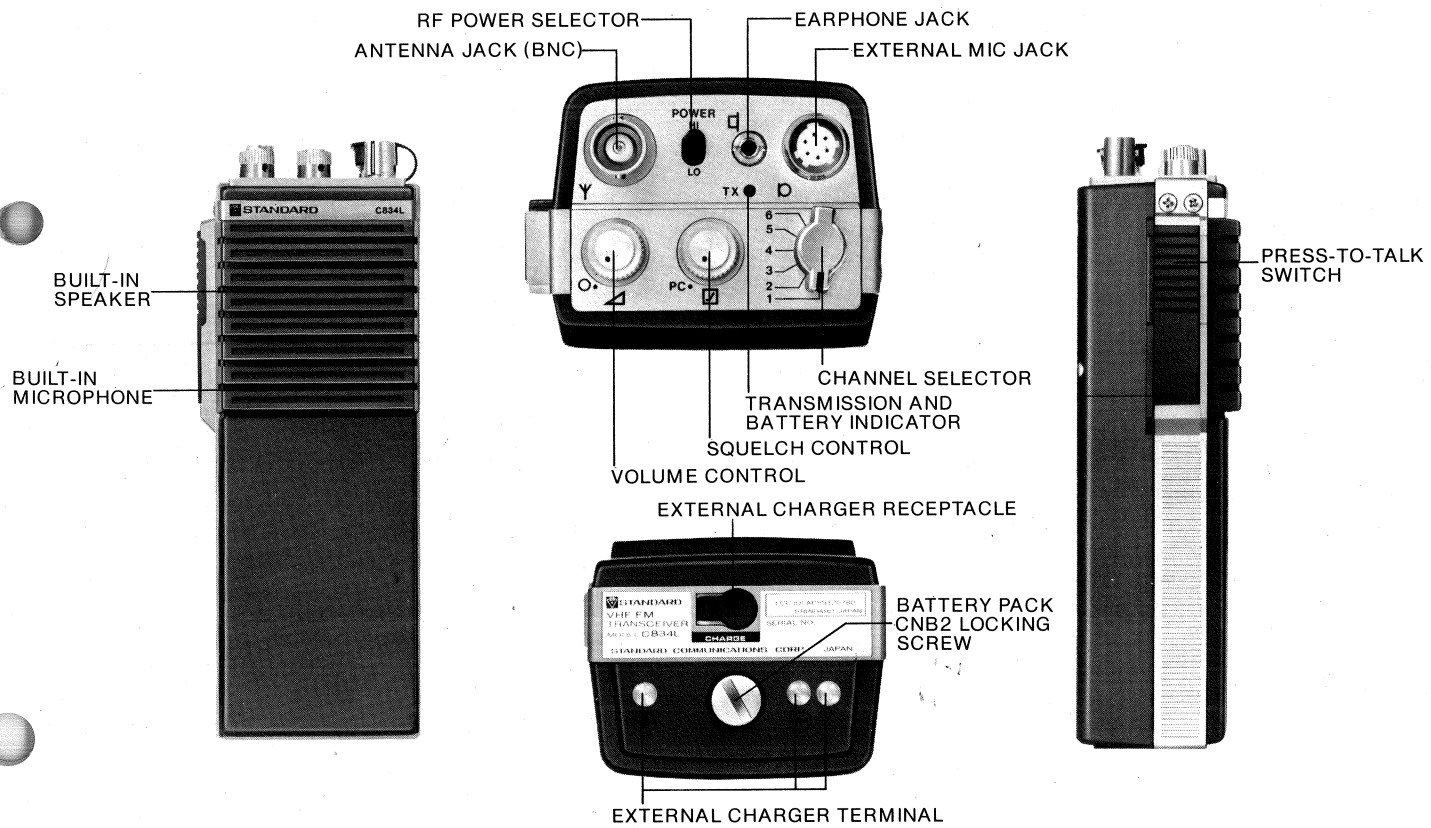
## LOCATION OF OPERATING FEATURES



# 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

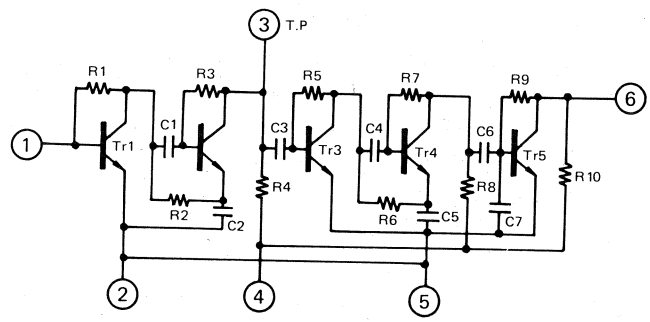
- **Crystal Filter**
  In C834L, two 21.4 MHz crystal filters are used to obtain presice sensitivity. The output of the 1st mixer is fed to the two crystal filters via matching circuits L106, F101 and F105.

- **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:
  $f_{i2} = f_{i1} - f_{o2} = 21.4 - 20.945$ 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 μpc575C2. 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 Colpitto 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.

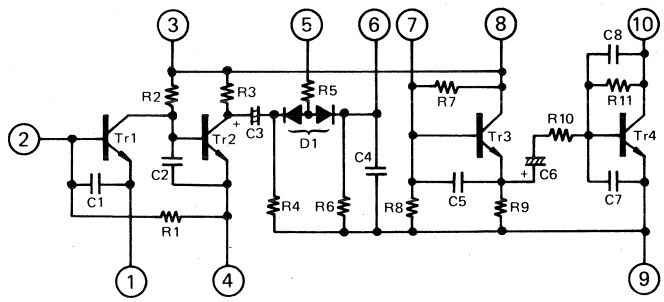
- **Modulator**
  A variable reactance modulation circuit which varies the oscillating frequency of the oscillation circuit according to the modulation signals is employed here. Since the phase changes when the high frequency signal passes through the resonance circuit, phase modulation is obtained by 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 Multipler**
  The signal from the modulator is stepped up threefold 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 $D_1$, 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 $D_1$ 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 PTTdepressed, 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

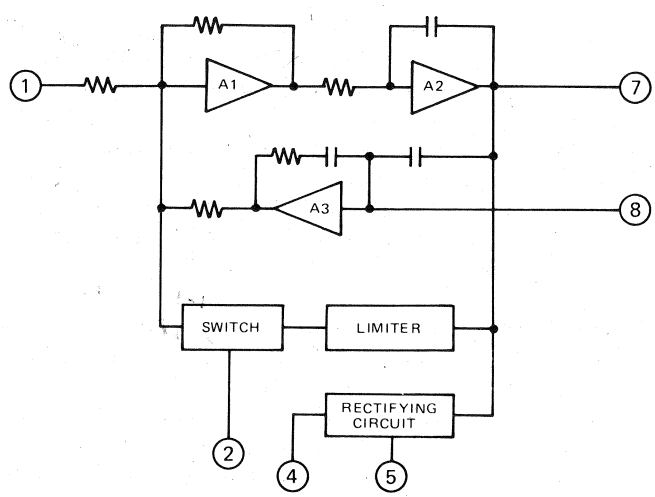
## 2.1 DECODER (RECEIVING)

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 ghe 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 $A_1$, $A_2$, and $A_3$. 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 $A_1$, 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



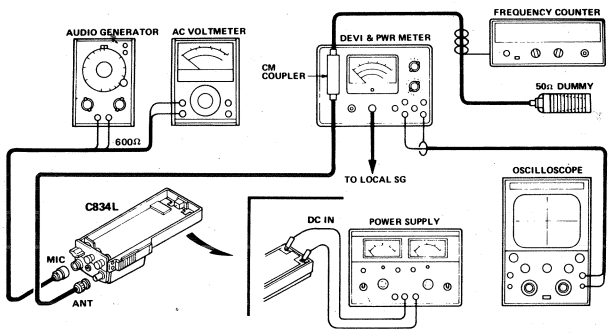
## 3. ADJUSTMENT PROCEDURES

- 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

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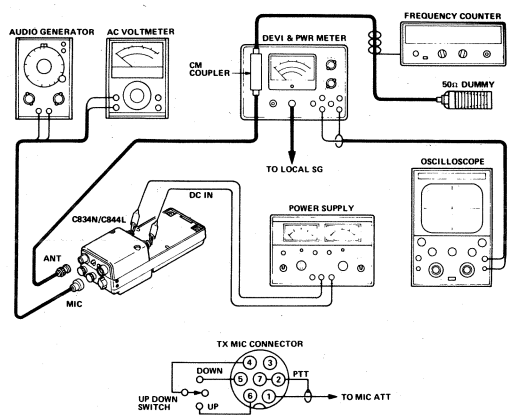
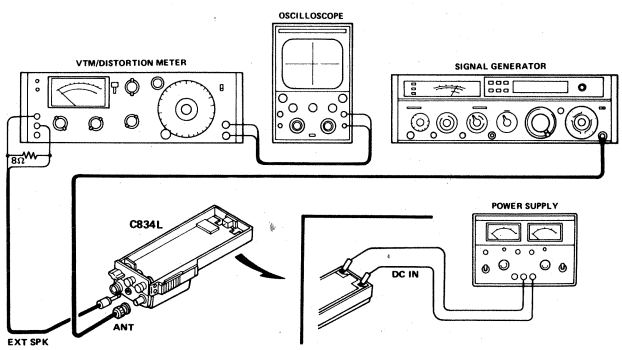



(T). (Y)

### RX ADJUSTMENT SET-UP

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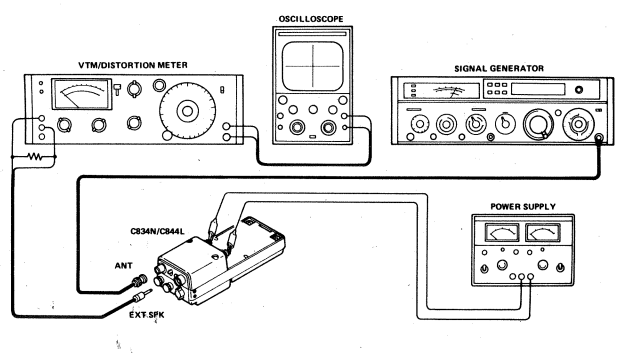



(T). (Y)

# 4. TUNING PROCEDURE

## 4.1 COMMON SECTION

### 1. STANDARD CONDITION

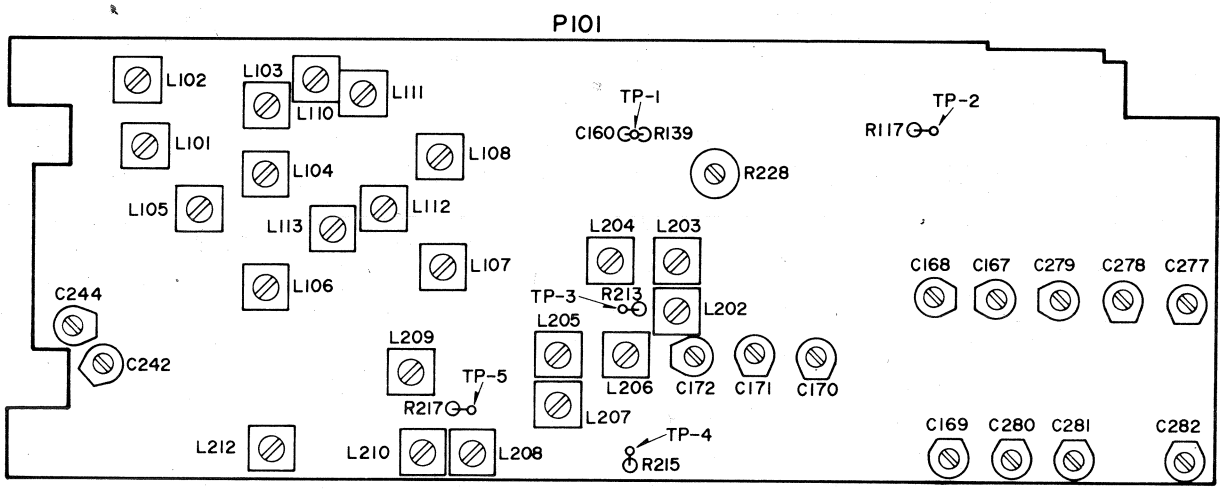
Power supply . . . . . 11.25V DC
Audio output . . . . . 0.5W
Audio load . . . . . 8Ω
**Standard modulation . . . . . Y, E: ±3.0kHz at 1kHz**
**T: ±1.5kHz at 1kHz**
ANT terminal load . . . . . 50Ω
Others . . . . . Adjust the unit with the back shield plate installed in the pattern side of the PWB.

### STANDARD ADJUSTMENT FREQUENCY

| F band | Reception frequency | Transmission frequency |
|---|---|---|
| F1 | 141.00 MHz | 141.10 MHz |
| F2 | 147.00 MHz | 147.10 MHz |
| F3 | 153.00 MHz | 153.10 MHz |
| F4 | 160.00 MHz | 160.10 MHz |
| F5 | 166.00 MHz | 166.10 MHz |
| F6 | 170.00 MHz | 170.10 MHz |
| T | 172.00 MHz | 172.10 MHz |
| N | 162.00 MHz | 162.10 MHz |

SQL control position: minimum (PC; off)

### ALIGNMENT POINTS




Non è giusto !!!
-80 dBm

## 4.2 RECEIVER SECTION

### 1. PREPARATION

1) Adjust the power supply so that 11.25V is obtained at the battery terminals. Confirm that the audio output and RF signal generator are adjusted correctly.
2) Turn the power on and confirm that noise occurs as the volume control is turned clockwise.
3) Confirm that the noise disappears as the SQL knob is turned clockwise and the SQL functions.
4) Install an Rx X'tal element to the crystal element test pins.
5) Set the rotary switch to the channel in which the X'tal element is installed.

### 2. ALIGNMENT PROCEDURE

1) Adjust the RF signal generator frequency to that of the installed X'tal element and apply a non-modulated signal of 80 dBμV to the unit.
2) Adjust the C171 so that the noise becomes minimum while observing the oscilloscope.
3) Connect the DC voltmeter to TP1 (range: 2.5V).
4) Modulate the output of the RF signal generator by ±3 kHz.
5) Adjust L111, L112, L113, L101, L102, L103, L104, L105, L106, L107 and L108 in this order so that the voltage at TP1 becomes maximum. Gradually increase the RF signal generator output and adjust so that the voltage at TP1 becomes maximum when the attenuation of the RF signal generator is 10 dB. Confirm that the sensitivity is as specified.
**NOTE: Never adjust L110.**
6) Adjust the RF signal generator output level to 20 dBμV and apply the output to the unit.
7) Connect the center meter to TP2.

8) Adjust C171 so that the center meter readings between non-signal (noise) and signal conditions are the same.
9) Disconnect the center meter form 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 connot 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 ±600Hz 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**

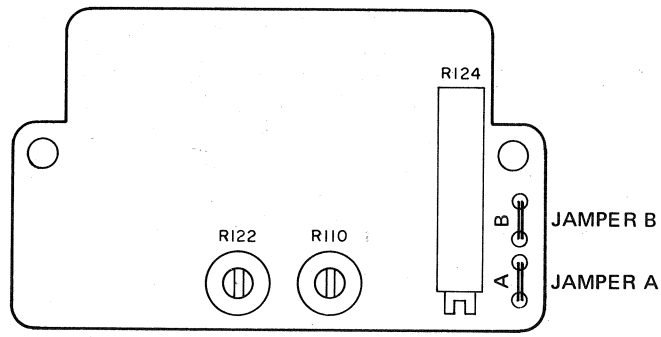
1) Fully turn R005 of the unit counterclockwise.
2) Fully turn the SQL control knob counterclockwise within the range of PC/OFF (do not turn to the click position).
3) Measure the values of 10 dBQS and 15 dBQS of the unit with TN15 installed and record the value of 15 dBQS. Adjust the ouput of GS to 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) Guradually turn R122 counterclockwise until the fresh point in which the noise disappear.
8) Adjust the SG output to 10 dBQS level (179.9 Hz, ±600Hz deviation).
9) Guradually 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.

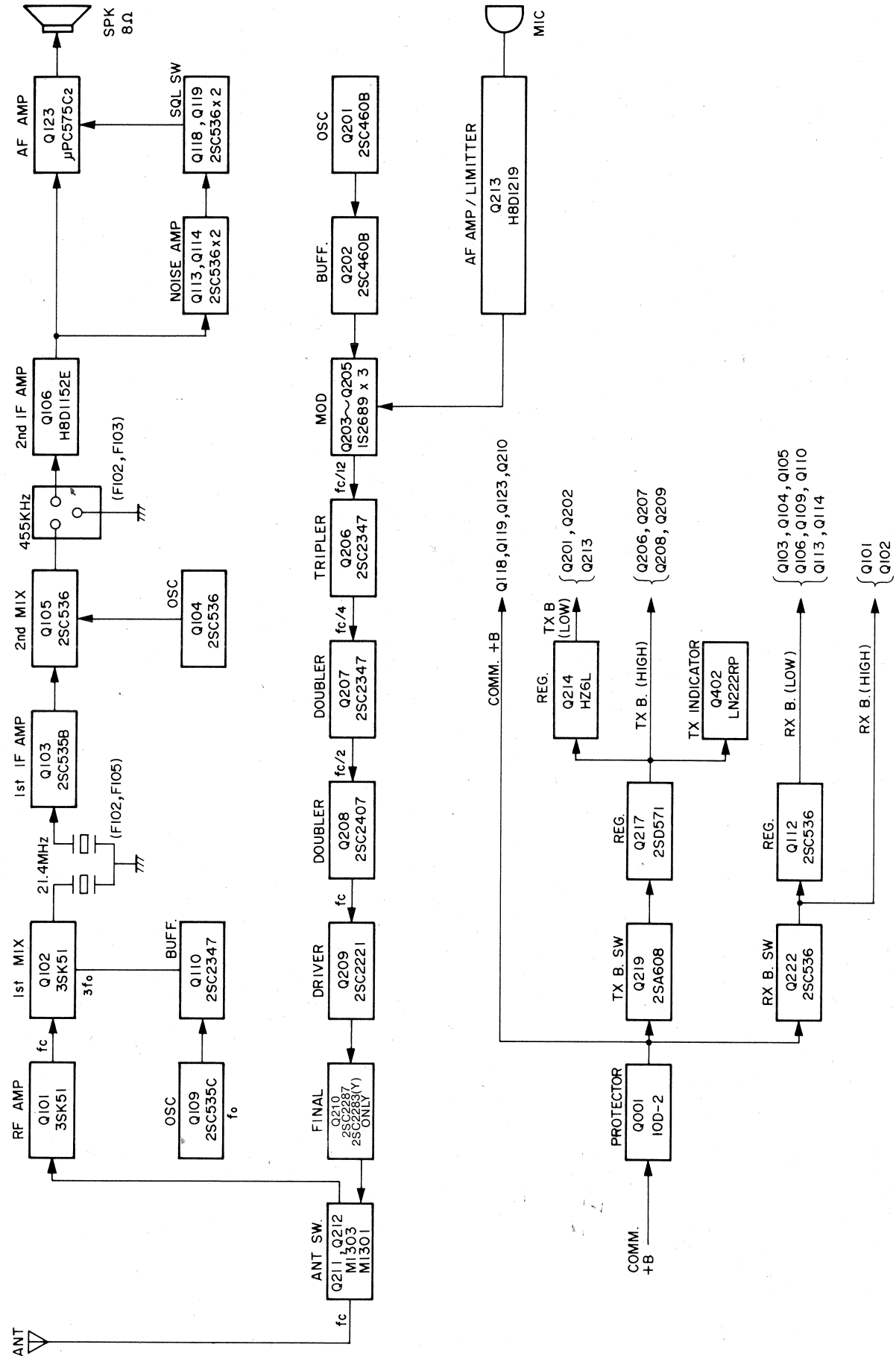
(1) Checking the transmission deviation
Install the fully adjusted TN15. Set the unit to transmission mode and confirm that the deviation is ±600 Hz ± 40%.

(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.

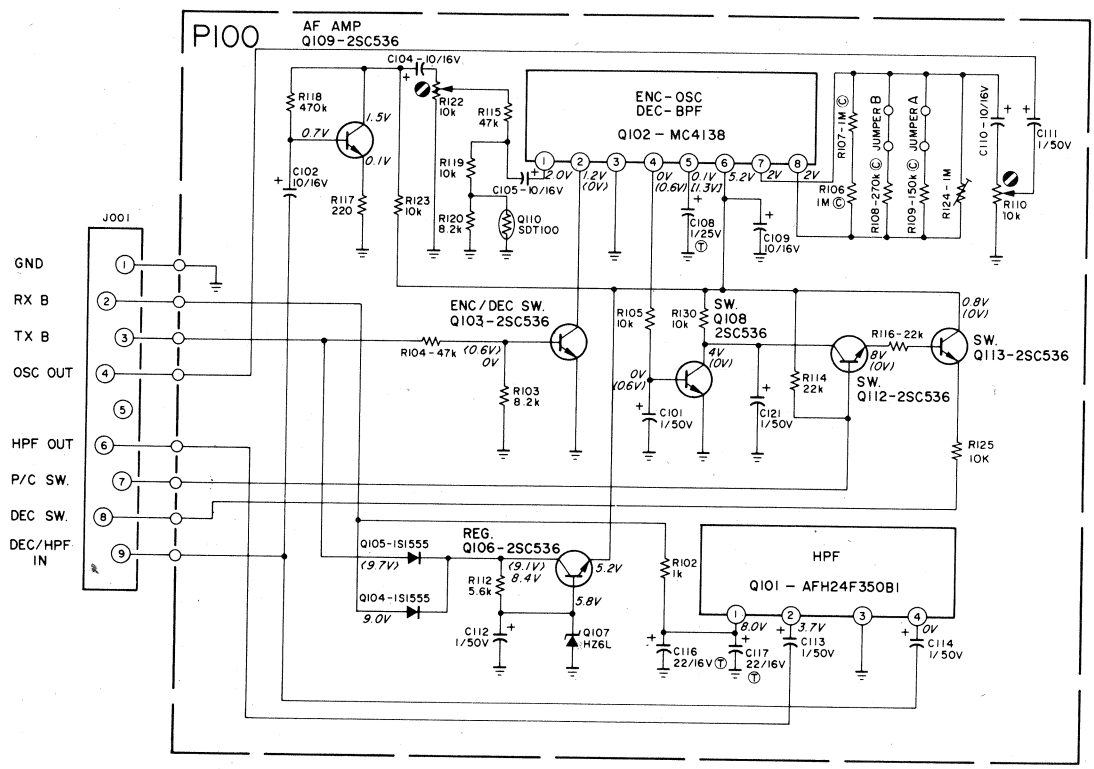
**TN15 ADJUSTING POINT**

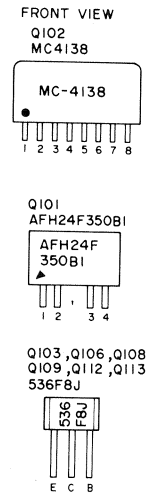


## 5. BLOCK DIAGRAM



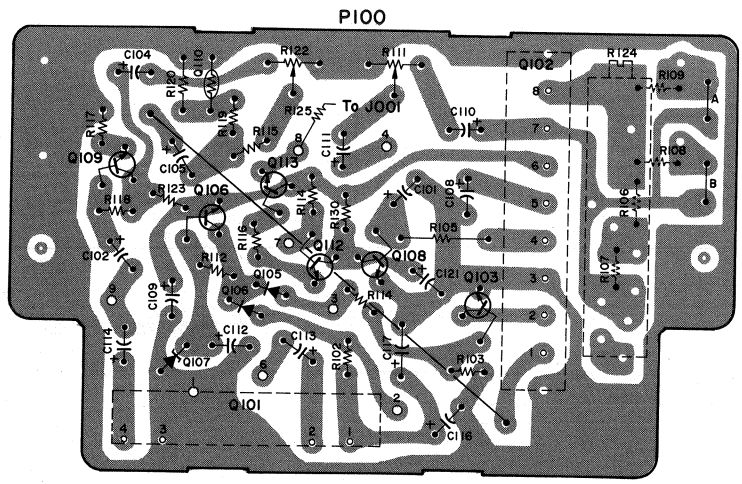
# 6. TN15 SCHEMATIC DIAGRAM AND COMPONENT LOCATIONS



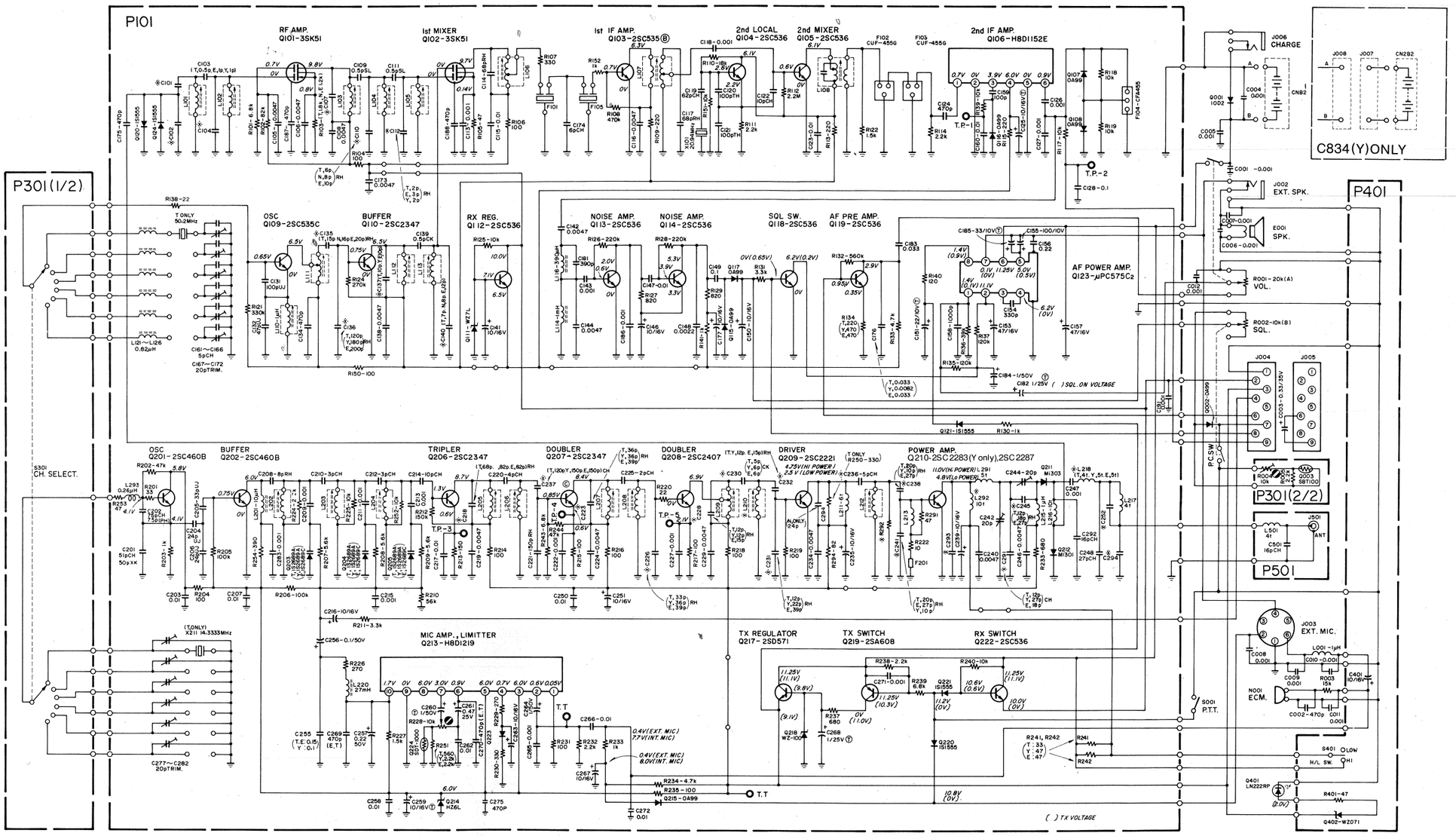




*VOLTAGE*
*( ) TX*
*( ) RX, TONE IN*
*[ ] RX, TONE OUT*

| TONE FREQUNCY | JUMPER |
|---|---|
| 250.3Hz ~ 179.9Hz | ——— |
| 173.8Hz ~ 118.8Hz | Ⓐ CUT |
| 114.4Hz ~ 67.0Hz | Ⓐ, Ⓑ CUT |



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




BOTTOM VIEW

1 : DRAIN
2 : SOURCE
3 : GATE 1
4 : GATE 2

3SK51
Q101, Q102

TOP VIEW

1 : COLLECTOR
2 : EMITTER (FLANGE)
3 : BASE

2SC2287
Q210

1 : BASE
2 : EMITTER
3 : COLLECTOR

2SC2407
Q208

1 : BASE
2 : COLLECTOR
3 : EMITTER

2SC536
Q104, Q105, Q112 ~ Q114
Q118, Q119, Q222

2SA608
Q219

1 : BASE
2 : COLLECTOR
3 : EMITTER

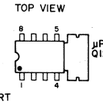
2SC535C
Q109

2SD571
Q217

2SC468
Q103, Q201, Q202

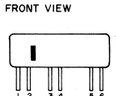
1 : COLLECTOR
2 : BASE
3 : EMITTER
2SC2221
Q209

TOP VIEW



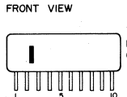
μPC575C2
Q123

FRONT VIEW



H8D1152E
Q106

FRONT VIEW



H8D1219
Q213

BOTTOM VIEW

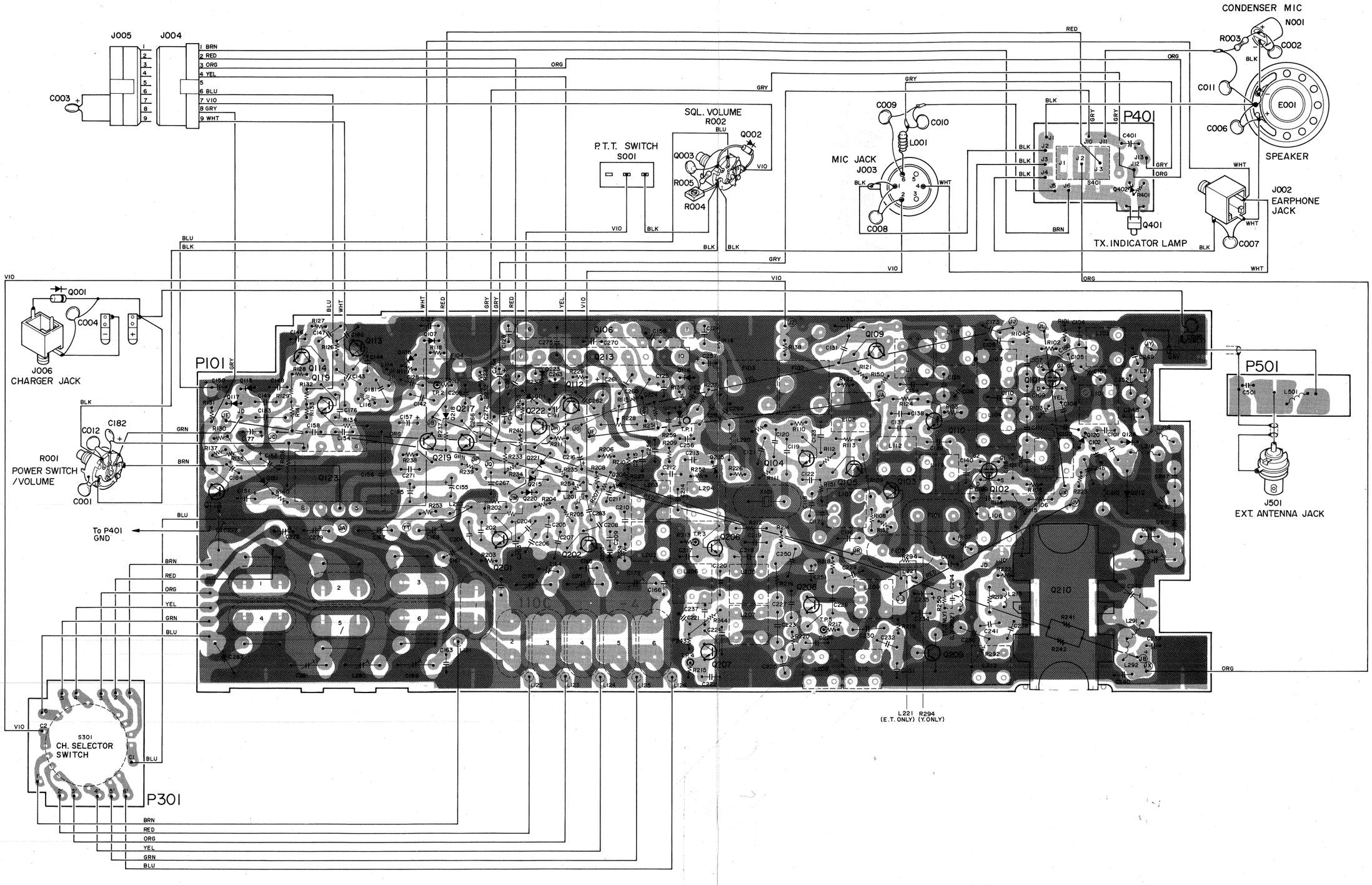
1 : EMITTER 2SC2347
2 : COLLECTOR Q110, Q206, Q207
3 : BASE

※ F CHART

| | | C101 | C102 | C104 | C107 | C110 | C112 | C135 | C136 | C137 | C140 | C218 | C223 | C226 | C228 | C230 | C231 | C232 | C236 | C237 | C238 | C241 | C245 | C247 | C249 | C252 | C291 | C293 | Q203~Q205 | L218 | L291 | L292 | R292 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C844L(T) | F6 | 10p | 33p | 2p | 8p | 6p | | 15p | 150p | 10p | 7p | 68p | 33p | 33p | 10p | 5p | 20p | 10p | 5p | 120p | 20p | 20p | 12p | 1000p | 20p | 8p | 12p | | IS2689A | 4t | | 10t | 1.8k |
| C834N(Y) | F4 | 10p | 43p | 2p | 10p | 8p | 2p | 15p | 150p | 12p | 8p | 82p | 36p | 36p | 10p | 6p | 22p | 12p | 5p | 150p | 10p | 10p | 27p | 1000p | 20p | 8p | 27p | 20p | IS2689A | 5t | 5t | 10t | |
| | F5 | 10p | 39p | 2p | 10p | 8p | 2p | 15p | 150p | 10p | 7p | 68p | 33p | 33p | 10p | 5p | 22p | 12p | 4p | 120p | 9p | 9p | 27p | 1000p | | 8p | 27p | 15p | IS2689A | 5t | 5t | 10t | |
| | F6 | 10p | 33p | 2p | 8p | 6p | | 15p | 150p | 10p | 7p | 68p | 33p | 33p | 10p | 5p | 20p | 10p | 4p | 120p | 8p | 8p | 27p | 1000p | 20p | 8p | 24p | 15p | IS2689A | 4t | 5t | 10t | |
| C834L(E) | F1 | 15p | 43p | 5p | 15p | 10p | 5p | 27p | 270p | 15p | 12p | 91p | 47p | 47p | 15p | 6p | 30p | 18p | 6p | 180p | 30p | 30p | 18p | 1000p | 20p | 8p | 20p | | IS2689D | 5t | | 6t | 680 |
| | F2 | 12p | 43p | 5p | 12p | 10p | 3p | 24p | 240p | 15p | 10p | 91p | 43p | 43p | 12p | 6p | 30p | 15p | 6p | 150p | 27p | 30p | 18p | 1000p | 20p | 8p | 20p | | IS2689D | 5t | | 6t | 680 |
| | F3 | 12p | 43p | 5p | 12p | 10p | 3p | 20p | 200p | 12p | 10p | 82p | 39p | 39p | 10p | 6p | 30p | 15p | 6p | 150p | 27p | 27p | 18p | 1000p | 20p | 8p | 18p | | IS2689C | 5t | | 6t | 820 |
| | F4 | 10p | 43p | 2p | 10p | 8p | 2p | 16p | 150p | 12p | 8p | 82p | 36p | 36p | 10p | 6p | 22p | 12p | 6p | 150p | 24p | 24p | 12p | 1000p | 20p | 8p | 12p | | IS2689A | 5t | | 10t | 1.2k |
| | F5 | 10p | 39p | 2p | 10p | 8p | 2p | 15p | 150p | 10p | 7p | 68p | 33p | 33p | 10p | 5p | 22p | 12p | 5p | 120p | 20p | 20p | 12p | 1000p | 20p | 8p | 12p | | IS2689A | 5t | | 10t | 1.2k |
| | F6 | 10p | 33p | 2p | 8p | 6p | | 15p | 150p | 10p | 7p | 68p | 33p | 33p | 10p | 5p | 20p | 10p | 4p | 120p | 8p | 8p | 27p | 1000p | 20p | 8p | 12p | | IS2689A | 4t | | 10t | 1.8k |
| | RCC | 12p | 43p | 5p | 12p | 10p | 3p | 20p | 200p | 12p | 10p | 82p | 36p | 36p | 10p | 6p | 22p | 12p | 6p | 150p | 24p | 24p | 12p | 1000p | | | 12p | | IS2689A | 5t | | 10t | 1.2k |
| | | RH | RH | RH | RH | RH | RH | RH | RH | RH | RH | RH | RH | RH | CH | CH | RH | RH | RH | RH | RH | RH | CH | | | | CH | | | | | | |

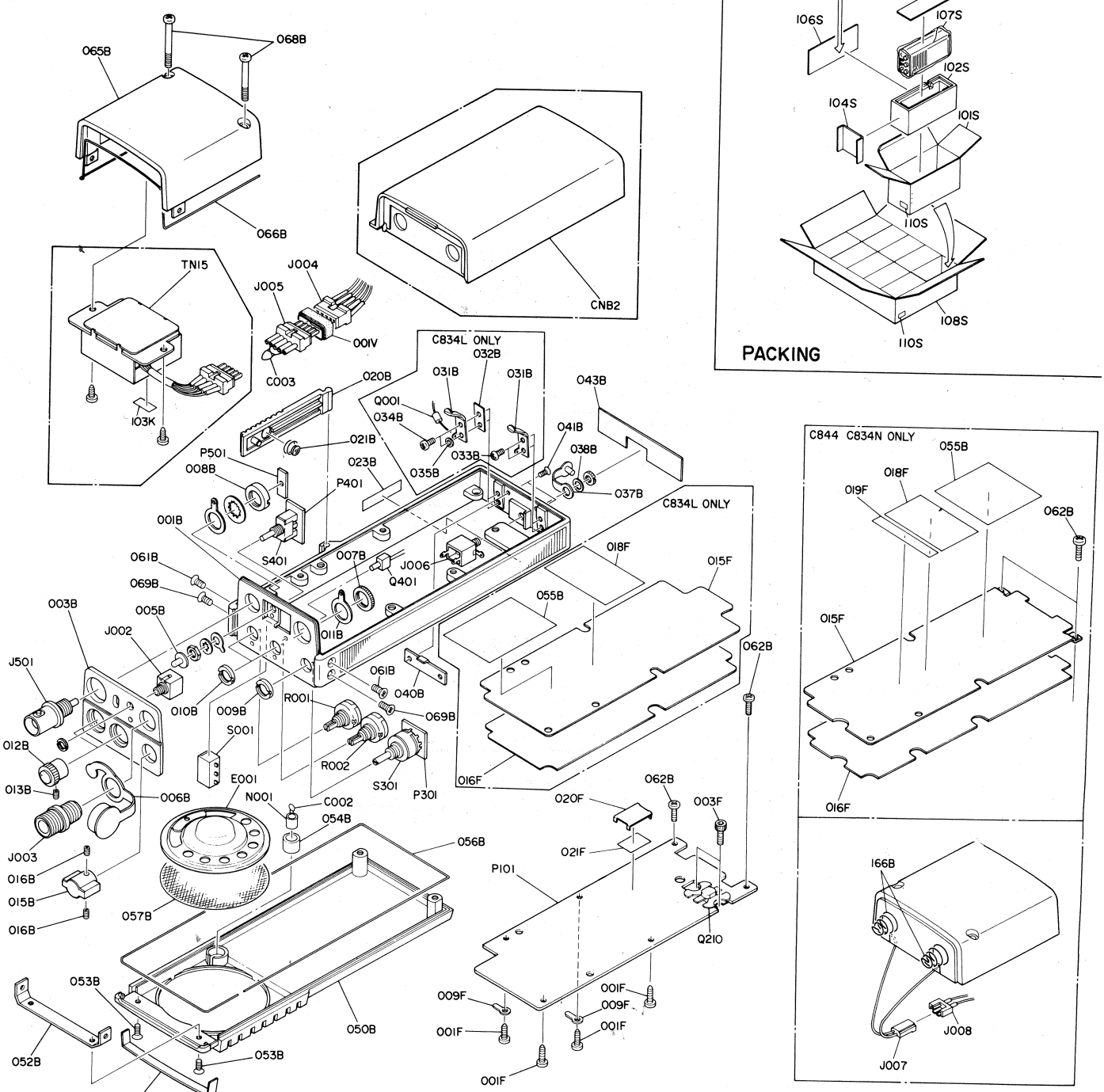
**Components and wiring are subject to change for modification without notice.**

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



## 9. EXPLODED VIEW AND PARTS LIST

**C834L/C834N/C844L**



E: C834L
Y: C834N
T: C844L

| REF. DESIG. | Q'TY E | T | Y | PART NO. | DESCRIPTION |
|---|---|---|---|---|---|
| 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 | Contactor |
| 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 | 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 | 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 | 110C123010 | Contactor, Battery Terminal |
| 001F | 4 | 4 | 4 | 51282606B0 | B.H. Tapped Screw B2.6 x 6 |
| 003F | 2 | 2 | 2 | 5273030S9 | H.S. Head Bolt H3 x 5 |
| 009F | 2 | 2 | 2 | 62261240W0 | Lug |
| 015F | 1 | | | 109C109010 | Shield |
| 015F | | 1 | 1 | 109C109020 | Shield |
| 016F | 1 | | | 109C120010 | Insulator |
| 016F | | 1 | 1 | 109C120020 | Insulator |
| 018F | 1 | | | 110C861010 | Label |
| 018F | | 1 | 1 | 110C861020 | Label |
| 019F | | 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 E | T | Y | PART NO. | DESCRIPTION |
|---|---|---|---|---|---|
| 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 | YB00040040 | Connective Cord, (2P) |
| J008 | | 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 |
| | | | | | **PACKING** |
| 101S | 1 | | | 110C801010 | Packing Case C834L |
| 101S | | 1 | | 110C801040 | Packing Case C844 |
| 101S | | | 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 | 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 | 110C805060 | Master Carton |
| 110S | 1 | 1 | 1 | 9523019010 | Serial No. Card |
| 101T | 1 | | 1 | 110C851010 | Instructions |
| 102T | 1 | | 1 | 110C856010 | Schematic Diagram |
| 101V | 1 | | 1 | 110C831010 | Leather Case |
| 101V | | 1 | | 110C831020 | Leather Case without H/S |
| Z002 | 1 | | | AZ210Z91Z0 | Herical Anttenna |

E: C834L
Y: C834N
T: C844L

| REF. DESIG. | Q'TY E | T | Y | PART NO. | DESCRIPTION |
|---|---|---|---|---|---|
| | | | | | **P101-MAIN CIRCUIT BOARD** |
| P101 | 1 | 1 | 1 | YH110C1414 | P.W. Board, Main |
| | | | | | **P101-CAPACITORS** |
| C103 | 1 | | 1 | DD10010300 | Ceramic 1pF ±0.25pF |
| C103 | | 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 E | T | Y | PART NO. | DESCRIPTION |
|---|---|---|---|---|---|
| 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 | | DK26333010 | Ceramic 0.033μF ±10% |
| C176 | | | 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 | | DK26154010 | Ceramic 0.15μF ±10% |
| C255 | | | 1 | DK26104010 | Ceramic 0.1μF ±10% |

E: C834L
Y: C834N
T: C844L

| REF. DESIG. | Q'TY E | T | Y | PART NO. | DESCRIPTION |
|---|---|---|---|---|---|
| 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 | 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 | GD05122180 | 1.2KΩ |
| R103 | | 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 E | T | Y | PART NO. | DESCRIPTION |
|---|---|---|---|---|---|
| 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 | GD05471180 | 470Ω |
| R134 | | 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 |

E: C834L
Y: C834N
T: C844L

| REF. DESIG. | Q'TY E | T | Y | PART NO. | DESCRIPTION | |
|---|---|---|---|---|---|---|
| R239 | 1 | 1 | 1 | GD05682180 | 6.8KΩ | |
| R240 | 1 | 1 | 1 | GD05103180 | 10KΩ | |
| R241 | 1 | 1 | | GJ05330020 | 33Ω | 2W |
| R241 | | | 1 | GJ05470020 | 47Ω | 2W |
| R242 | 1 | 1 | | GJ05330020 | 33Ω | 2W |
| R242 | | | 1 | GJ05470020 | 47Ω | 2W |
| R243 | 1 | 1 | 1 | GD05682180 | 6.8KΩ | |
| R244 | 1 | 1 | 1 | GD05473180 | 47KΩ | |
| R250 | 1 | 1 | | GD05331180 | 330Ω | |
| R251 | 1 | | 1 | GD05221180 | 220Ω | |
| R251 | | 1 | | GD05561180 | 560Ω | |
| R252 | 1 | 1 | 1 | GD05103180 | 10KΩ | |
| R253 | 1 | 1 | 1 | GD05470180 | 47Ω | |
| R254 | 1 | 1 | 1 | GD05391180 | 390Ω | |
| R291 | 1 | 1 | 1 | GD05470180 | 47Ω | |
| R294 | | | 1 | GD05820180 | 82Ω | |
| | | | | | **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 | | HD30015010 | Zener | NZ7L |
| Q111 | | | 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 | μPC575C2 |
| 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 E | T | Y | PART NO. | DESCRIPTION | |
|---|---|---|---|---|---|---|
| Q210 | | | 1 | HT322831O0 | Transistor | 2SC2283 |
| Q210 | 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, 10KΩ |
| | | | | | **P101-MISCELLANEOUS** | |
| F101 | 1 | | 1 | XU721400M5 | Crystal Filter | 21.4MHz |
| F101 | | 1 | | XU721400N5 | Crystal Filter | 21.4MHz |
| F102 | 1 | | 1 | FG455304E0 | Ceramic Filter | CFU455E |
| F102 | | 1 | | FG455304G0 | Ceramic Filter | CFU455G |
| F103 | 1 | 1 | 1 | FG455304E0 | Ceramic Filter | CFU455E |
| F104 | 1 | 1 | 1 | FH455301E0 | Ceramic Filter | CFA455S |
| F105 | 1 | | 1 | XU721400M5 | Crystal Filter | 21.4MHz |
| F105 | | 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, | 390μH |
| L121 | 1 | 1 | 1 | LC18210030 | Choke Coil, | 0.82μH |
| L122 | 1 | 1 | 1 | LC18210030 | Choke Coil, | 0.82μH |
| L123 | 1 | 1 | 1 | LC18210030 | Choke Coil, | 0.82μH |
| L124 | 1 | 1 | 1 | LC18210030 | Choke Coil, | 0.82μH |
| L125 | 1 | 1 | 1 | LC18210030 | Choke Coil, | 0.82μH |
| L126 | 1 | 1 | 1 | LC18210030 | Choke Coil, | 0.82μH |
| L201 | 1 | 1 | 1 | LC11030060 | Choke Coil, | 10μH |
| 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) |

E: C834L
Y: C834N
T: C844L

| REF. DESIG. | Q'TY E | Q'TY T | Q'TY Y | PART NO. | DESCRIPTION |
|---|---|---|---|---|---|
| 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 | | LC13810010 | Choke Coil (15T) |
| L291 | 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 | | XH301003X0 | Crystal, RX172MHz |
| X211 | | 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) |

| REF. DESIG. | Q'TY E | Q'TY T | Q'TY Y | PART NO. | DESCRIPTION |
|---|---|---|---|---|---|
| | | | | | **F2** |
| 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% |

E: C834L
Y: C834N
T: C844L

| REF. DESIG. | Q'TY E | Q'TY T | Q'TY Y | PART NO. | DESCRIPTION |
|---|---|---|---|---|---|
| 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 | | | DD11060300 | Ceramic 6pF ±0.5pF |
| C236 | | | 1 | DD10050300 | Ceramic 5pF ±0.25pF |
| C237 | 1 | | 1 | DD45151330 | Ceramic 150pF ±5% |
| C238 | 1 | | | DD15240330 | Ceramic 24pF ±5% |
| C238 | | | 1 | DD11100330 | Ceramic 10pF ±0.5pF |
| C241 | 1 | | | DD15240330 | Ceramic 24pF ±5% |
| C241 | | | 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 | DD15270300 | Ceramic 27pF ±5% |
| C293 | | | 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 | | | LC15000012 | Choke Coil (6T) |
| L291 | | | 1 | LC14000010 | Choke Coil (5T) |
| L292 | 1 | | 1 | LC11610010 | Choke Coil (10T) |

| REF. DESIG. | Q'TY E | Q'TY T | Q'TY Y | PART NO. | DESCRIPTION |
|---|---|---|---|---|---|
| | | | | | **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 | | | DD10050300 | Ceramic 5pF ±0.25pF |
| C236 | | | 1 | DD10040300 | Ceramic 4pF ±0.25pF |
| C237 | 1 | | 1 | DD45121330 | Ceramic 120pF ±5% |
| C238 | 1 | | | DD15200330 | Ceramic 20pF ±5% |
| C238 | | | 1 | DD11090330 | Ceramic 9pF ±0.5pF |
| C241 | 1 | | | DD15200330 | Ceramic 20pF ±5% |
| C241 | | | 1 | DD11090330 | Ceramic 9pF ±0.5pF |
| C245 | 1 | | | DD15120300 | Ceramic 12pF ±5% |
| C245 | | | 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 | | | DD15120300 | Ceramic 12pF ±5% |
| C291 | | | 1 | DD15270300 | Ceramic 27pF ±5% |
| C292 | | | 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 IS2689(A) |
| L210 | 1 | | 1 | LW55016010 | Doublar Coil |
| L218 | 1 | | 1 | LL635005A0 | Coil (5T) |
| L291 | | | 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 | 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 |

E: C834L
Y: C834N
T: C844L

| REF. DESIG. | Q'TY E | T | Y | PART NO. | DESCRIPTION |
|---|---|---|---|---|---|
| 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 | | DD10050300 | Ceramic 5pF ±0.25pF |
| C236 | | | 1 | DD10040300 | Ceramic 4pF ±0.25pF |
| C237 | 1 | 1 | 1 | DD45121330 | Ceramic 120pF ±5% |
| C238 | 1 | 1 | | DD15200330 | Ceramic 20pF ±5% |
| C238 | | | 1 | DD11080330 | Ceramic 8pF ±0.5pF |
| C241 | 1 | 1 | | DD15200330 | Ceramic 20pF ±5% |
| C241 | | | 1 | DD11080330 | Ceramic 8pF ±0.5pF |
| C245 | 1 | 1 | | DD15120300 | Ceramic 12pF ±5% |
| C245 | | | 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 | | DD15120300 | Ceramic 12pF ±5% |
| C291 | | | 1 | DD15240300 | Ceramic 24pF ±5% |
| C293 | | | 1 | DD45150300 | Ceramic 15pF ±5% |
| R292 | 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 | Doublar Coil |
| L218 | 1 | 1 | | LL635004A0 | Coil (4T) |
| L218 | | | 1 | LL635005A0 | Coil (5T) |
| L291 | | | 1 | LC14000010 | Choke Coil (5T) |
| L292 | 1 | 1 | 1 | LC11610010 | Choke Coil (10T) |

| REF. DESIG. | Q'TY E | T | Y | PART NO. | DESCRIPTION |
|---|---|---|---|---|---|
| | | | | | **P301-ROTARY SWITCH CIRCUIT BOARD** |
| P301 | 1 | 1 | 1 | YH110C1422 | P.W. Board, Rotary Switch |
| S301 | 1 | 1 | 1 | SR02060120 | Rotary Switch |
| | | | | | **P401-POWER SWITCH CIRCUIT BOARD** |
| P401 | 1 | 1 | 1 | YH110C1432 | 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 | HI10025020 | L.F.D. LN222RP |
| Q402 | 1 | 1 | 1 | HD30023090 | Diode WZ071 |
| S401 | 1 | 1 | 1 | SC01020380 | Switch, RF Power (Hi-Low) |
| | | | | | **P501-ANTENNA CIRCUIT BOARD** |
| P501 | 1 | 1 | 1 | YH110C1442 | 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 ± 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 8Ω
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. ±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 μV
3. Squelch sensitivity ..... 0.25 μV
4. Mod. acceptance bandwidth ..... ±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

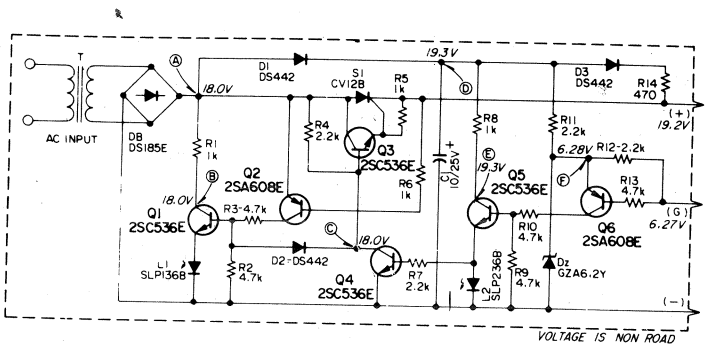
When a commercial AC power source is coupled to the primary input (AC INPUT) of the transformer and the battery pack (Y) is connected to the charger (X) output terminals, transistor Q3 is turned on due to the base current supplied via resistor R4. This turns thyristor S1 on to start battery charging.

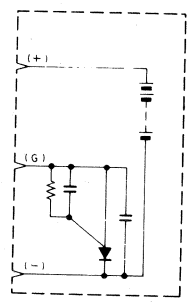
Since the battery is connected to the charger output, transistor Q2 is turned on. This causes to supply a base current to transistor Q1, turning it on and thus lighting the charging indicator lamp (L1).

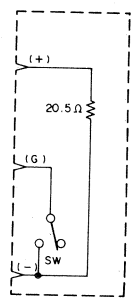
As the battery is charged up close to its full capacity, there is a sudden rise in battery temperature due to its internal chemical reaction. When the batterv temperature reaches the prescribed value, thermal thyristor S2 senses it and turns itself on. This brings down the base potential of transistor 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 ($D_B$) via diodes D1 and D2 and resistor R11.

## 2. SCHEMATIC DIAGRAM

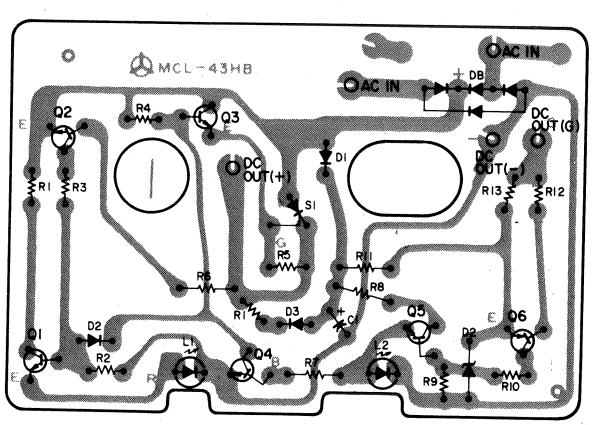


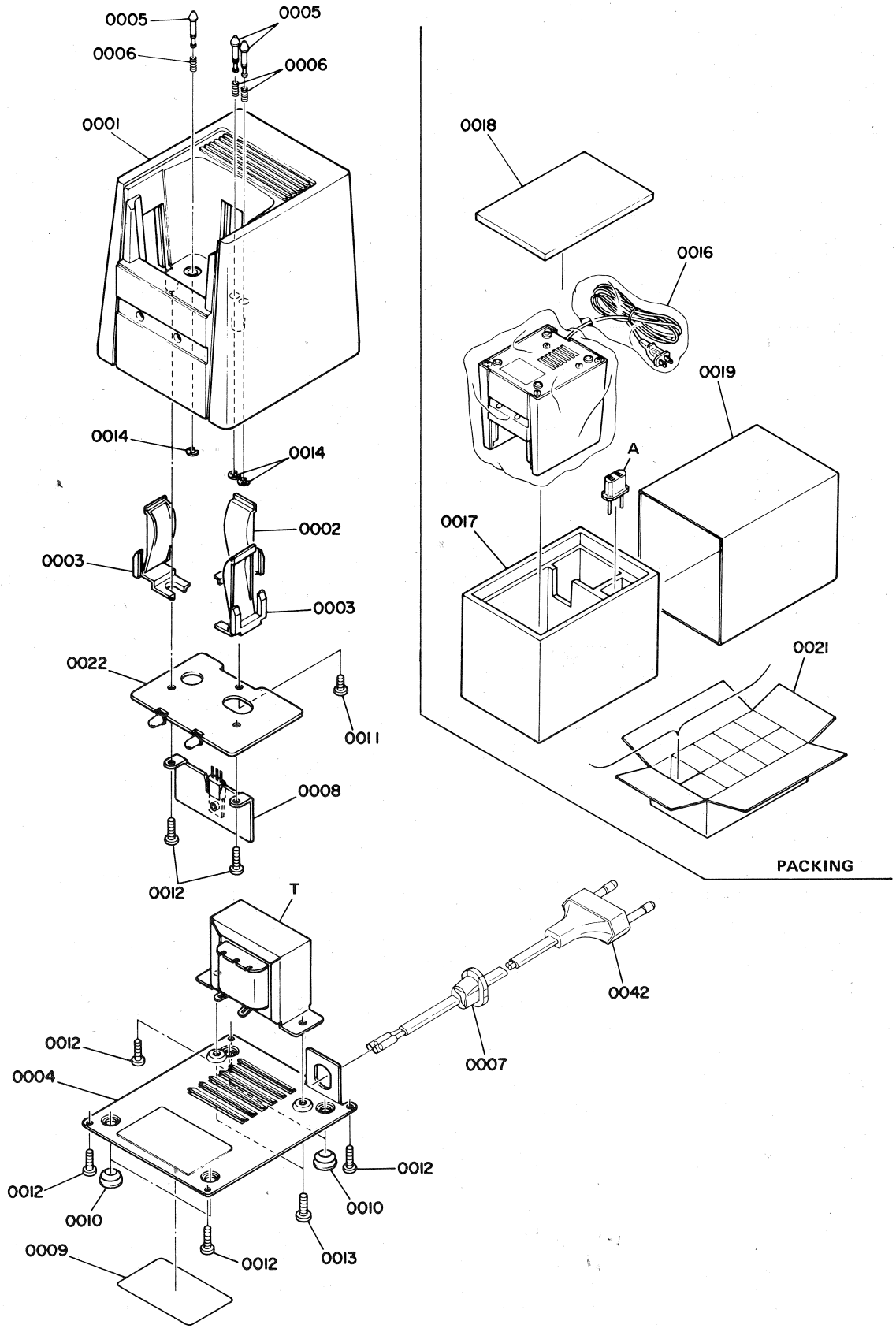




| TEST POINT | BATTERY ROAD | | RESISTOR ROAD | |
|---|---|---|---|---|
| | RAPID | TRICKLE | RAPID | TRICKLE |
| (+) | 12.95V | 12.51V | 9.8V | 0.9V |
| (G) | 6.24V | 0.7V | 6.2V | 0V |
| A | 13.2V | 13.06V | 10.4V | 10.9V |
| B | 5.6V | 13.05V | 2.2V | 10.9V |
| C | 13.2V | 0.07V | 10.4V | 0.06V |
| 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



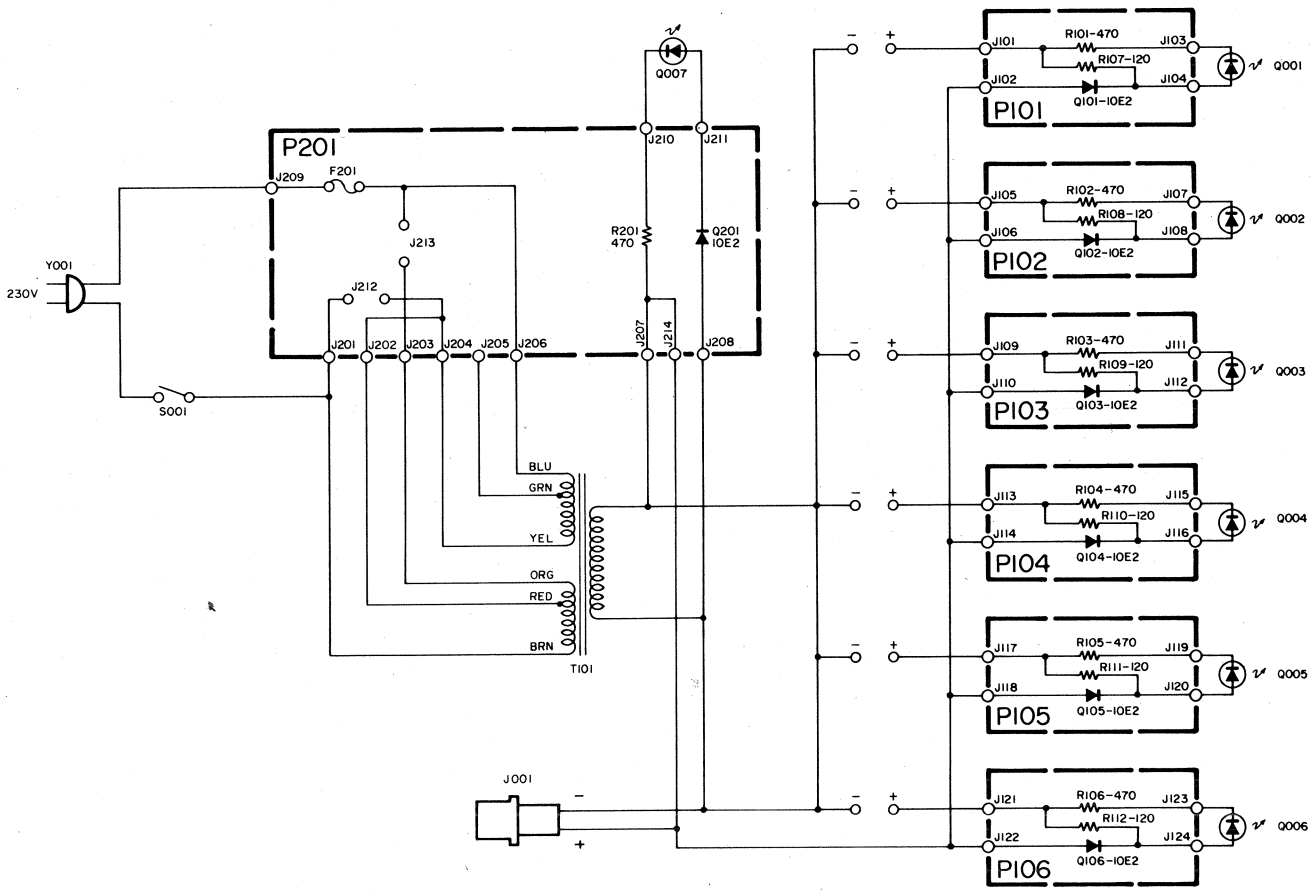
E: C834L
Y: C834N
T: C844L

| 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 |

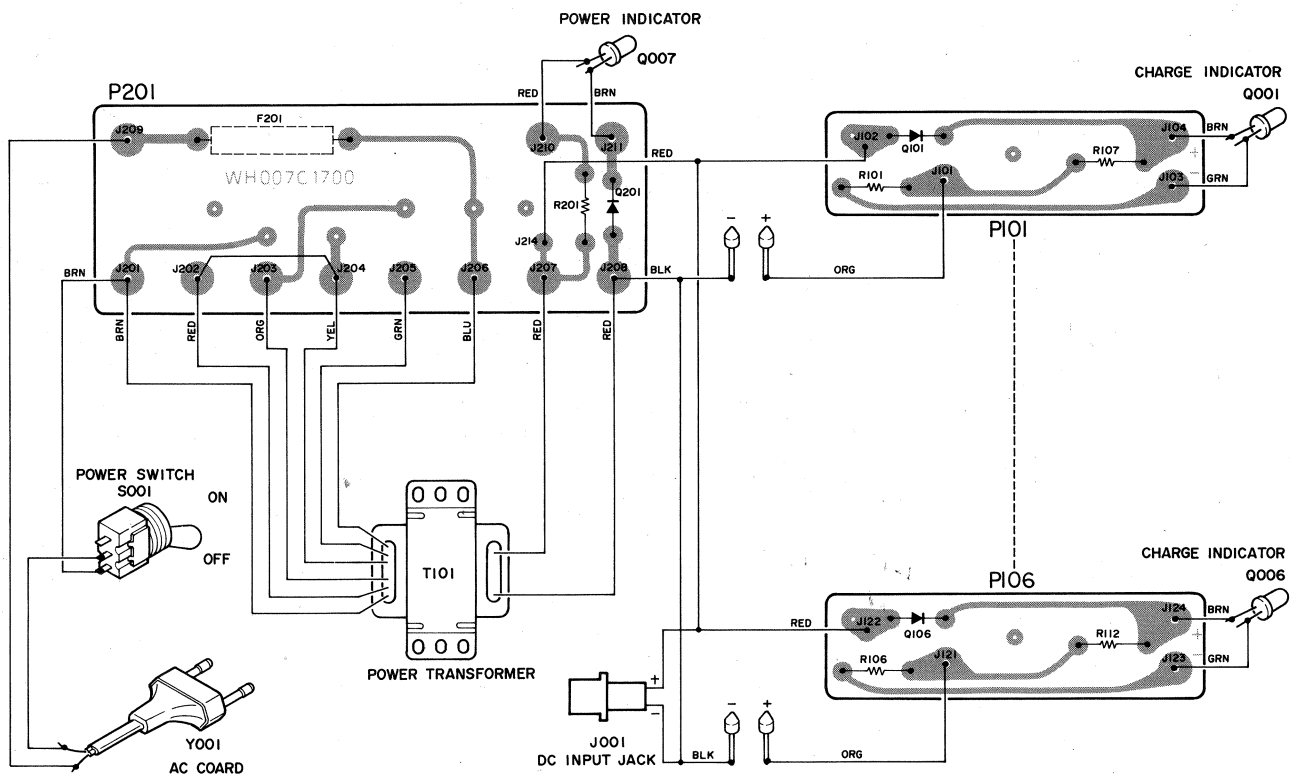
| REF. DESIG. | Q'TY | PART NO. | DESCRIPTION |
|---|---|---|---|
| 0022 | 1 | YF206Z001R | P.W. Board, Main |
| C1 | 1 | EA10602530 | Elect Cap. 10μF 25V |
| R1 | 1 | GD05102140 | Resistor 1KΩ ±5% ¼W |
| R2 | 1 | GD05472140 | Resistor 4.7KΩ ±5% ¼W |
| R3 | 1 | GD05472140 | Resistor 4.7KΩ ±5% ¼W |
| R4 | 1 | GD05222140 | Resistor 2.2KΩ ±5% ¼W |
| R5 | 1 | GD05102140 | Resistor 1KΩ ±5% ¼W |
| R6 | 1 | GD05102140 | Resistor 1KΩ ±5% ¼W |
| R7 | 1 | GD05222140 | Resistor 2.2KΩ ±5% ¼W |
| R8 | 1 | GD05102140 | Resistor 1KΩ ±5% ¼W |
| R9 | 1 | GD05472140 | Resistor 4.7KΩ ±5% ¼W |
| R10 | 1 | GD05472140 | Resistor 4.7KΩ ±5% ¼W |
| R11 | 1 | GD05222140 | Resistor 2.2KΩ ±5% ¼W |
| R12 | 1 | GD05222140 | Resistor 2.2KΩ ±5% ¼W |
| R13 | 1 | GD05472140 | Resistor 4.7KΩ ±5% ¼W |
| R14 | 1 | GD05471140 | Resistor 470Ω ±5% ¼W |
| 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

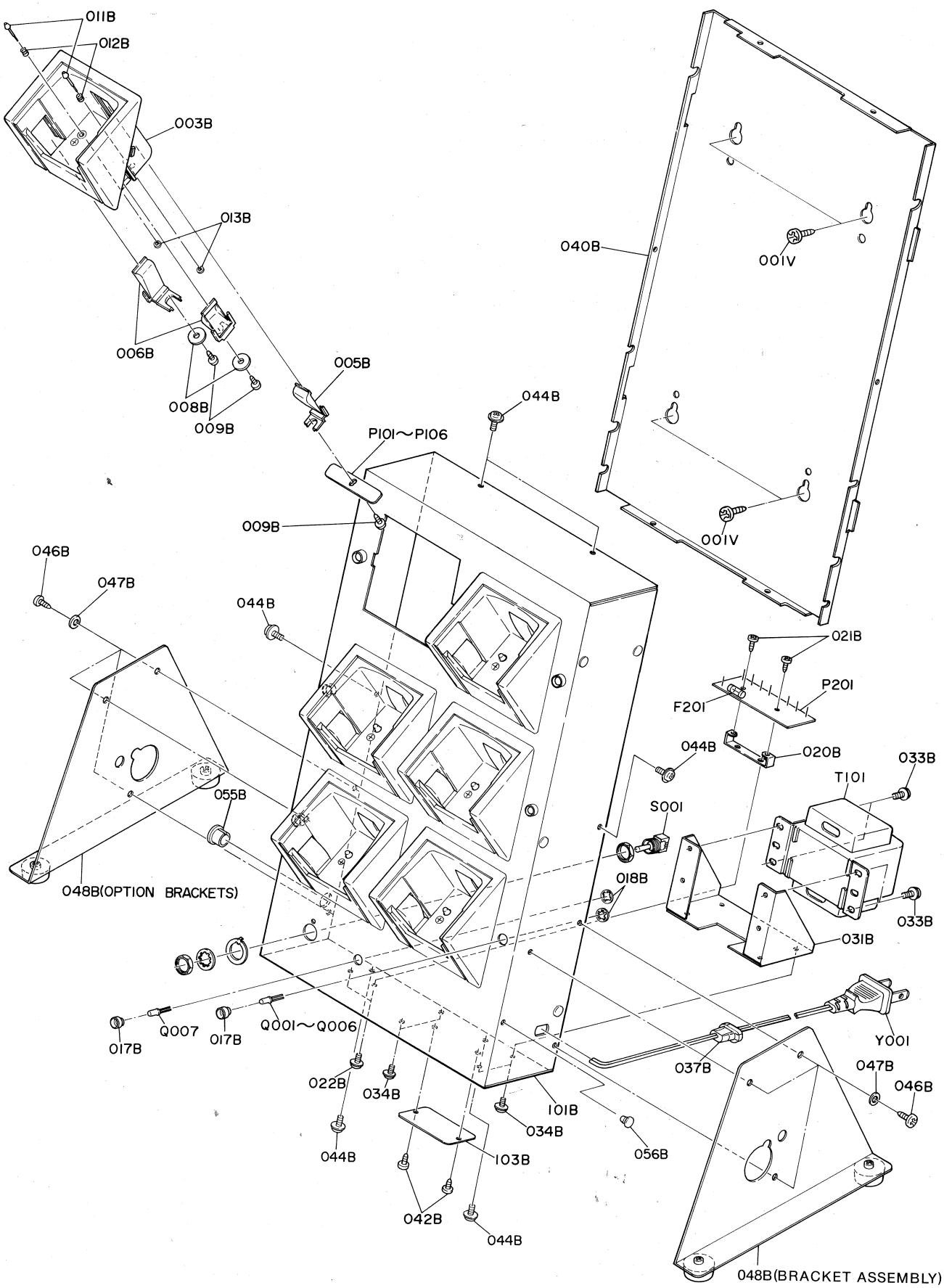
### 1. SCHEMATIC DIAGRAM




### 2. CIRCUIT BOARD DIAGRAM



## 3. EXPLODED VIEW AND PARTS LIST



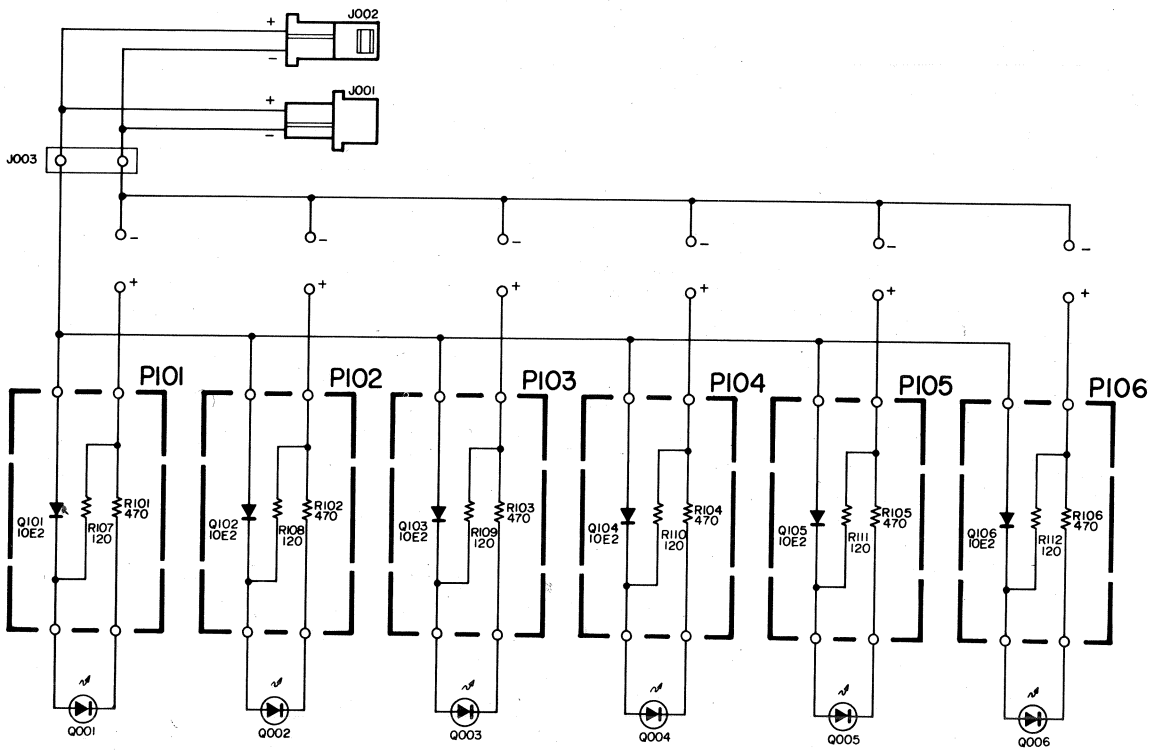
| REF. DESIG. | Q'TY | PART NO. | DESCRIPTION |
|---|---|---|---|
| 003B | 6 | 007C064010 | Case |
| 005B | 6 | 206Z271010 | Holder |
| 006B | 12 | 206Z271020 | Holder |
| 008B | 12 | 54110149A0 | Flat Washer, L. |
| 009B | 18 | 51280306B0 | B.H. Tapped Screw B3 x 6 |
| 011B | 12 | 206Z123010 | Contactor |
| 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 | 5148030S9 | F. Washer Screw F3 x 6 |
| 031B | 1 | 007C160010 | Bracket, Transf. |
| 033B | 4 | 51470408A9 | L. Washer Screw L4 x 8 |
| 034B | 4 | 5148030S9 | 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 | 5148030S9 | 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 |

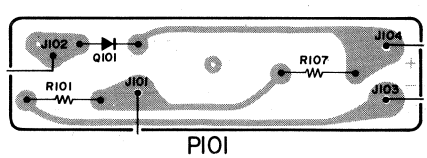
| | |
|---|---|
| (W01-99) | Assembly and Wiring |
| (T01-99) | Adjustment |
| (X01-00) | Correction |

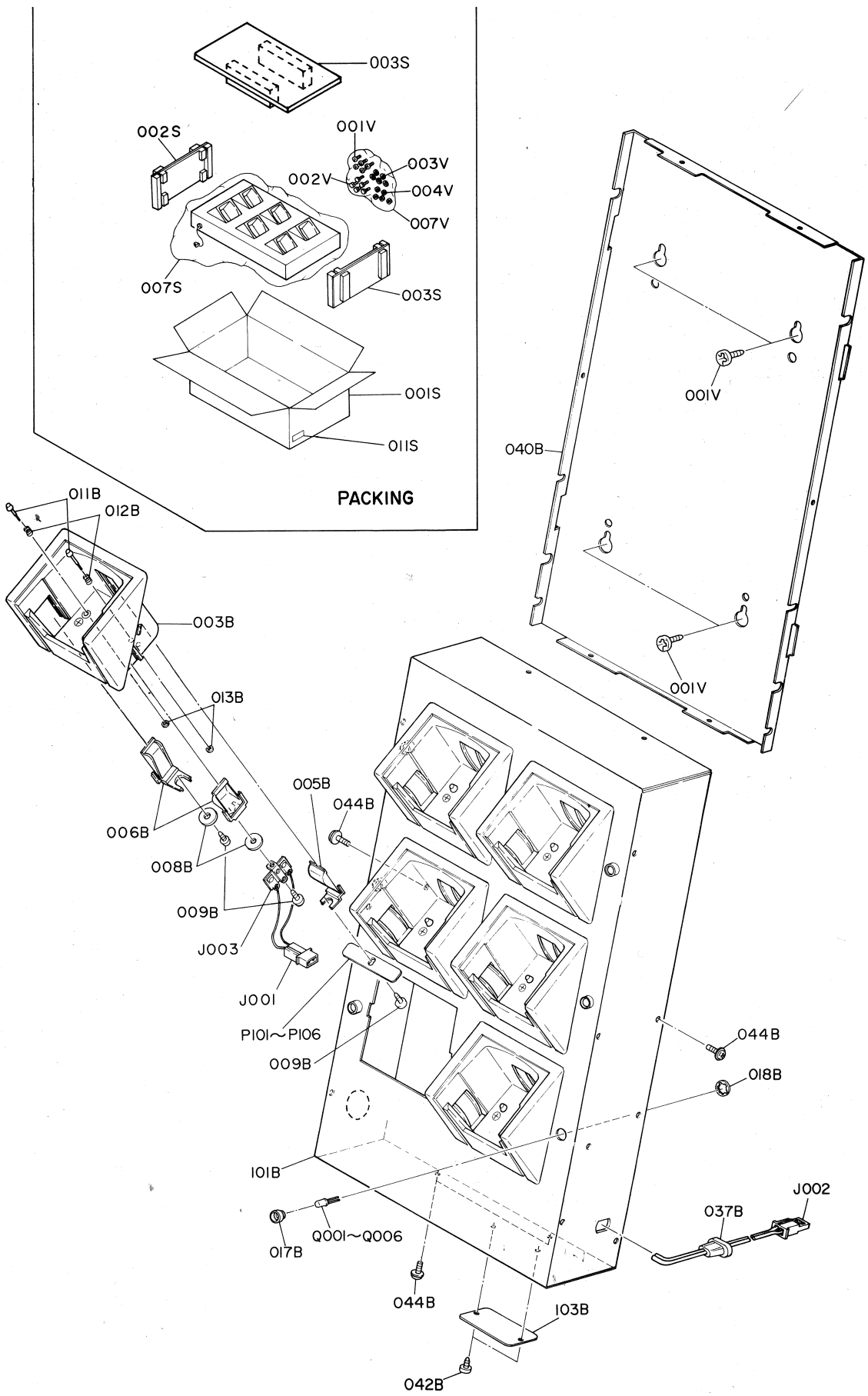
## MODEL CSA5SL

## 1. SCHEMATIC DIAGRAM




## 2. CIRCUIT BOARD DIAGRAM




003S
002S
001V
003V
002V
004V
007V
007S
003S
001S
011S
PACKING
040B
001V
001V
011B
012B
003B
013B
005B
044B
006B
008B
009B
J003
J001
P101~P106
009B
044B
018B
101B
J002
037B
017B
Q001~Q006
044B
103B
042B

| 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 | Contactor |
| 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 | 5148030659 | 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 |