

Double-Band FM Transceiver

C508/C508A

SERVICE MANUAL

SCHEMATHEEK

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1. INTRODUCTION

This service manual is for use with the C508 and C508A transceivers. Information in the manual relating specifically to C508 is indicated by the notation [C508], and information in the manual relating specifically to C508A is indicated by the notation [C508A].

— Overview of transceiver —

- The C508 is a double-band FM transceiver for use with the 144 MHz and 430 MHz bands.
- The C508A is a double-band FM transceiver for use with the 144 MHz and 450 MHz bands.

— Accessories and Options —

- The accessories and options for the transceiver are listed below.

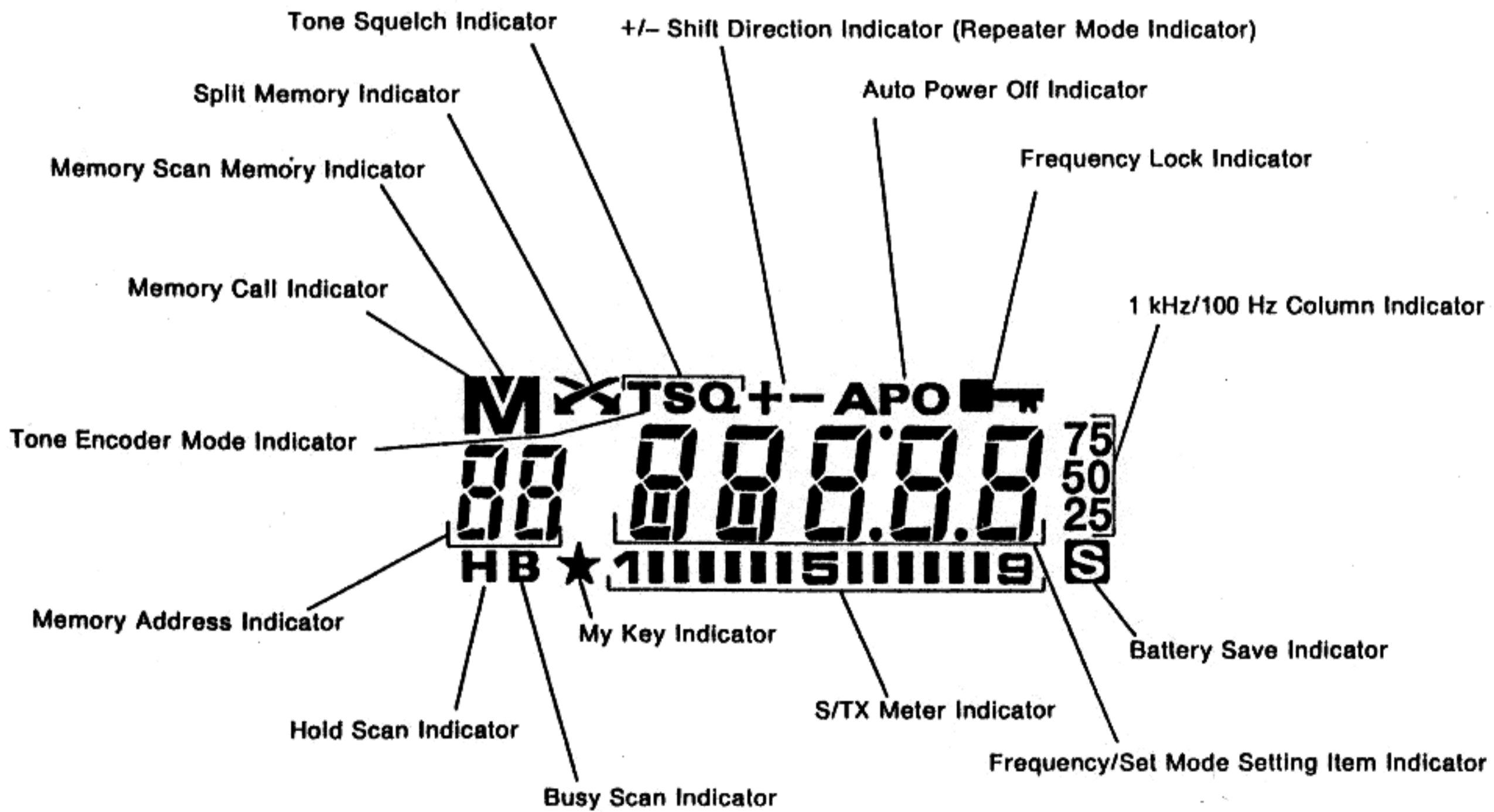
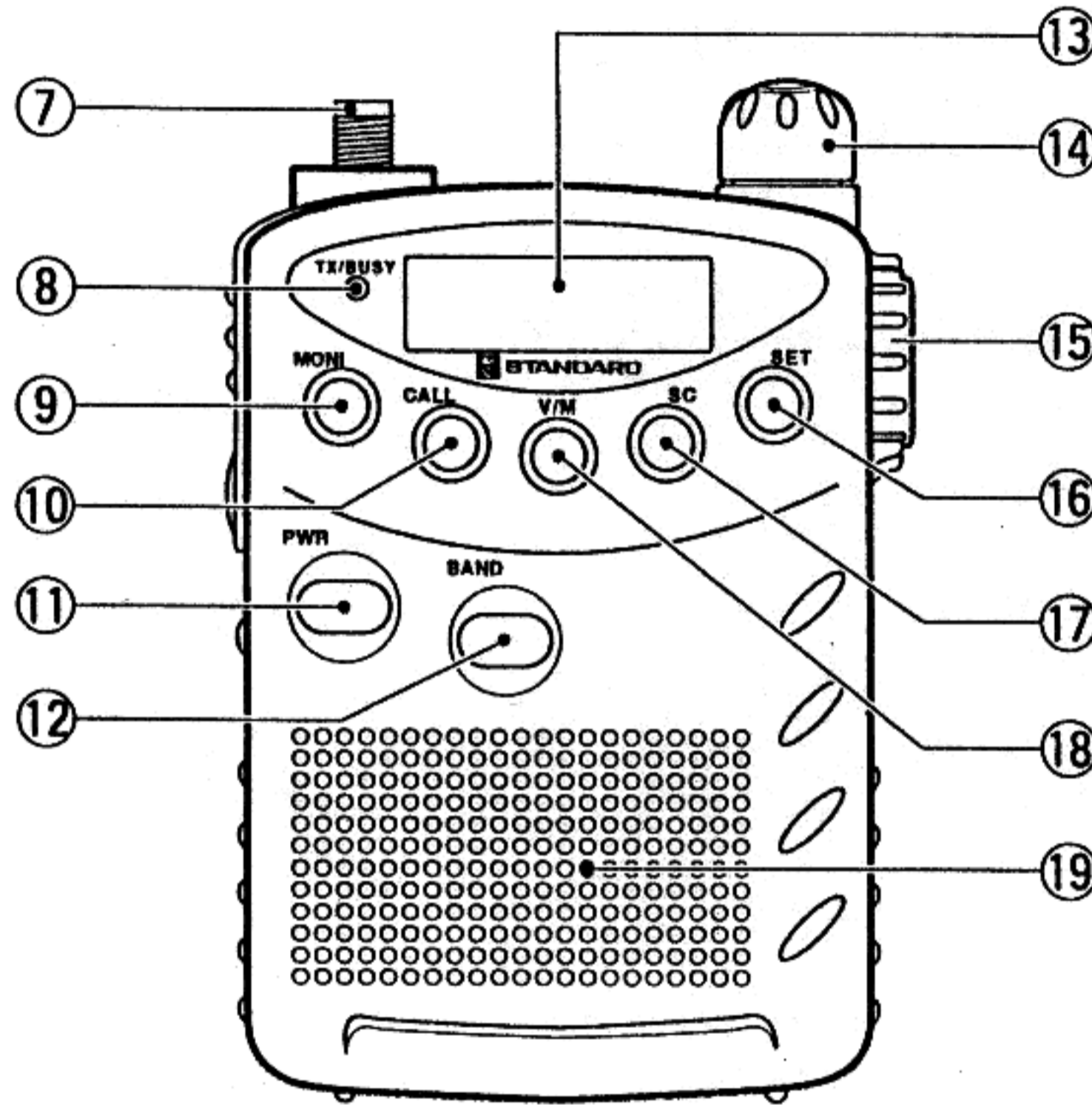
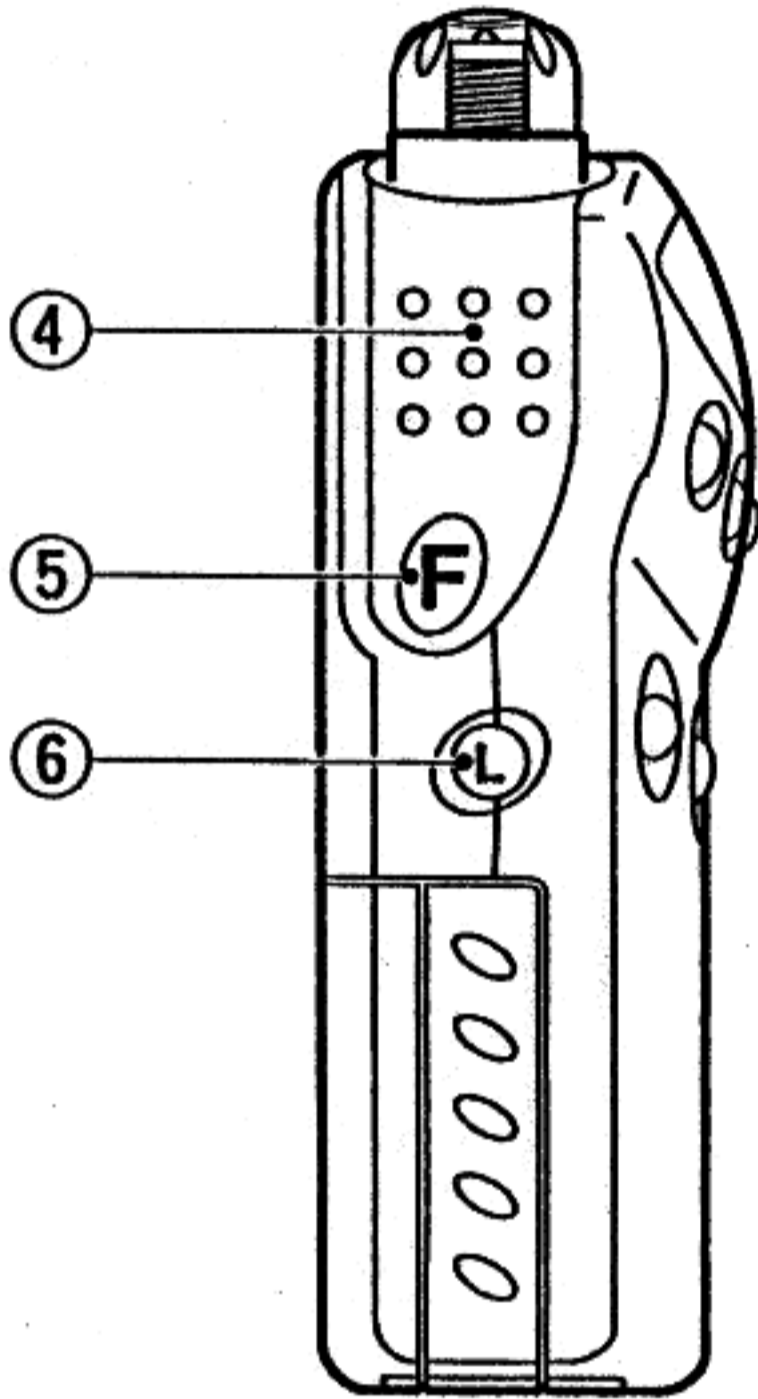
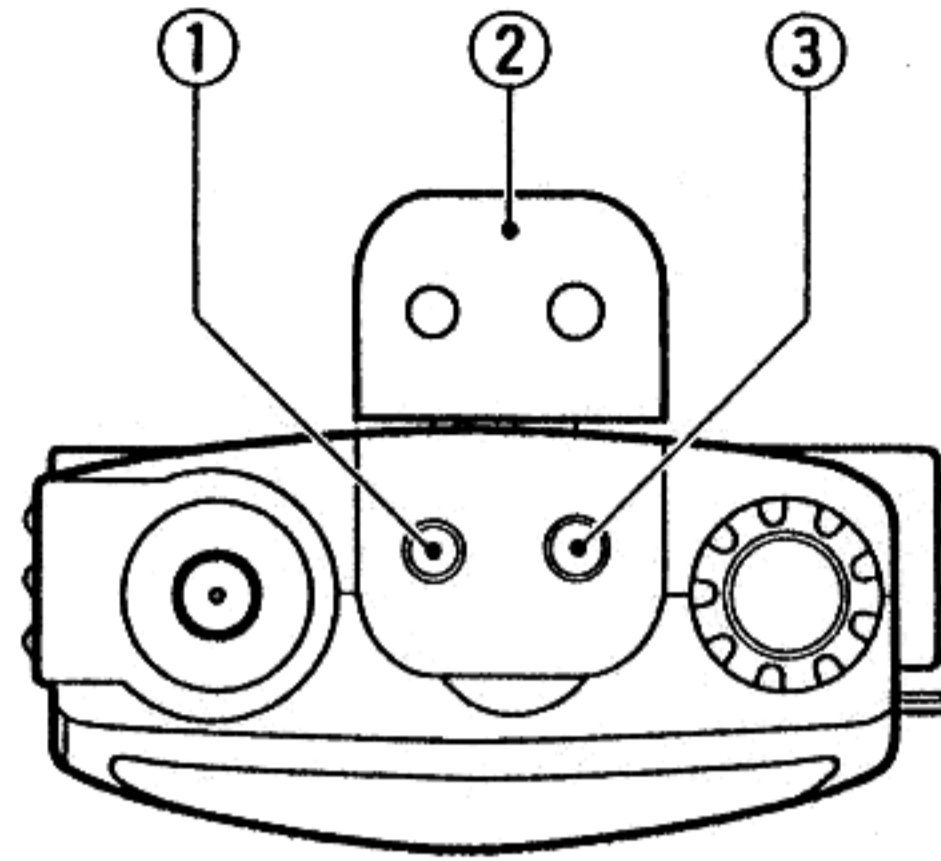
Accessories

- Antenna
- Block diagram
- Warranty card [C508A]
- Owner's manual
- Belt clip
- Hand strap
- Belt clip securing screws (2)

Options

- Microphones
 - CMP111 : Microphone and speaker
 - CMP113 : Tiepin microphone
 - CMP115 : Compact microphone and speaker
 - CMP123 : Ear microphone
- Headsets
 - CHP111 : Headset with PTT switch
 - CHP150 : Headset with VOX function
- AC chargers
 - CSA401E : Desktop charger (230 V, 50/60 Hz) [C508]
 - CSA401A : Desktop charger (120 V, 60 Hz) [C508A]
- Soft case
 - CLC502 : Soft case
- Rechargeable battery pack
 - CNB401 : 2.4 V, 500 mAh
- Helmet clip
 - CMB600 : Helmet clip
- Mobile bracket
 - CMB112 : Mobile bracket
- Tone squelch unit
 - CTN115 : Tone squelch unit

2. CONTROLS AND CONNECTIONS

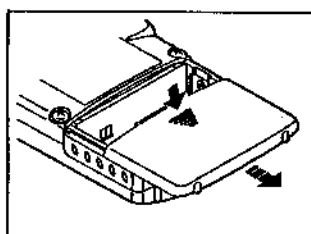


- ① External microphone connector socket (M)
This socket is for connecting an optional microphone and speaker (CMP111, CMP115), headset with PTT switch (CHP111), or headset with VOX function (CHP150).
- ② Waterproof cap
- ③ External speaker connector socket (S)
This socket is for connecting an optional microphone and speaker (CMP111, CMP115), headset with PTT switch (CHP111), or headset with VOX function (CHP150).
A speaker or earphone with an impedance of 8 Ω can be connected to this socket and used as an external speaker.
- ④ PTT switch
The transceiver switches to the transmit mode for as long as this switch is held down.
- ⑤ Function key (F)
The transceiver switches to the function mode for as long as this switch is held down.
- ⑥ Lamp key (L)
Pressing this key causes the display lamp to light for approximately five seconds.
Pressing this key when the lamp is lit causes the lamp to go dark.
- ⑦ Antenna connector socket (SMA type)
This socket is for connecting the supplied antenna.
- ⑧ TX/BUSY Indicator
This LED lights red when the transceiver is in transmit mode.
It lights green when the transceiver is in receive mode (a signal is being received).
- ⑨ Monitor key (MONI)
The transceiver's squelch function is turned off for as long as this key is held down.
- ⑩ Call key (CALL)
Pressing this key causes the transceiver to switch to the call mode and calls up the call frequency.
Pressing this key a second time causes the transceiver to return to the frequency previously in use.
Pressing this key when the transceiver is in transmit mode causes tone-burst (1750 Hz) to be output.
- ⑪ Power key (PWR)
Holding this key down for 0.3 seconds or more powers on the transceiver.
- ⑫ Band key (BAND)
Pressing this key causes the display frequency band to switch between the 144 MHz and 430 MHz [C508] or 450 MHz [C508A] bands.
- ⑬ Display
- ⑭ Rotary channel selector
This knob can be turned to set the transceiver's receive and transmit frequencies, or to set memory addresses. Also, when the transceiver is in the set mode, this knob is used to change various modes.
- ⑮ Volume control
This knob can be turned to adjust the volume of the sound from the speaker. The monitor key should be held down when adjusting the volume.
Turn clockwise to increase the volume.

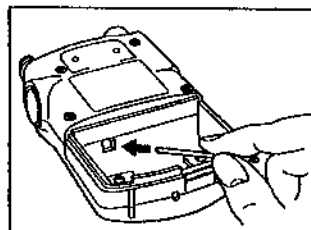
- ⑯ Set key (SET)
Pressing this key calls up the set mode (23 types). Once the set mode has been activated, the set mode type can be changed by turning the rotary channel selector.
- ⑰ Scan key (SC)
Pressing this key causes the transceiver to start scan operation.
- ⑱ VFO/MEMORY key (V/M)
Pressing this key to switch between VFO status (the transceiver's status when shipped from the factory or immediately after a reset has been performed) and the memory mode. However, this key has no effect if no data has been stored in memory.
- ⑲ Speaker

All-reset procedure

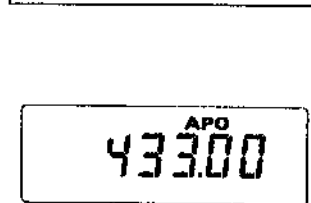
This procedure can be used to delete all data stored in memory and return the transceiver to the status it was in when shipped from the factory (initial status). The procedure is called all-reset.



1 Press the power key to power off the transceiver.



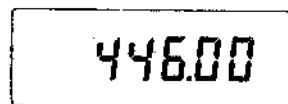
2 Remove the battery.



3 Press the reset switch.

4 Insert the battery. (Transceiver powers on.)

[C508]



[C508A]

5 Confirm that the display is in initial status.

NOTE:

- Do not press the reset switch repeatedly. Pressing the switch too many times will deplete the built-in lithium battery faster than usual.
- Should it be necessary to perform all-reset in order to service the transceiver, first obtain permission from the customer before performing all-reset.

3. THEORY OF OPERATION

3.1 PLL Block

Details of the PLL circuitry are omitted from this manual. Consequently, the PLL block is not shown in the block diagram.

The PLL block comprises a VCO circuit, crystal resonator, PLL IC, and PLL loop filter.

The oscillation frequency from the VCO circuit is applied to a varicap diode and controlled by a DC voltage.

The VCO circuit generates the transmission frequency and first local signal directly.

Based on the operating frequency set using the rotary channel selector, clock, data, and enable signals are output from pins 35, 37, and 34 of microprocessor QD01.

This output data is input to pins 11, 13, and 14 of the PLL IC.

Based on the input data, the dividing ratio and frequency are determined internally by the PLL IC.

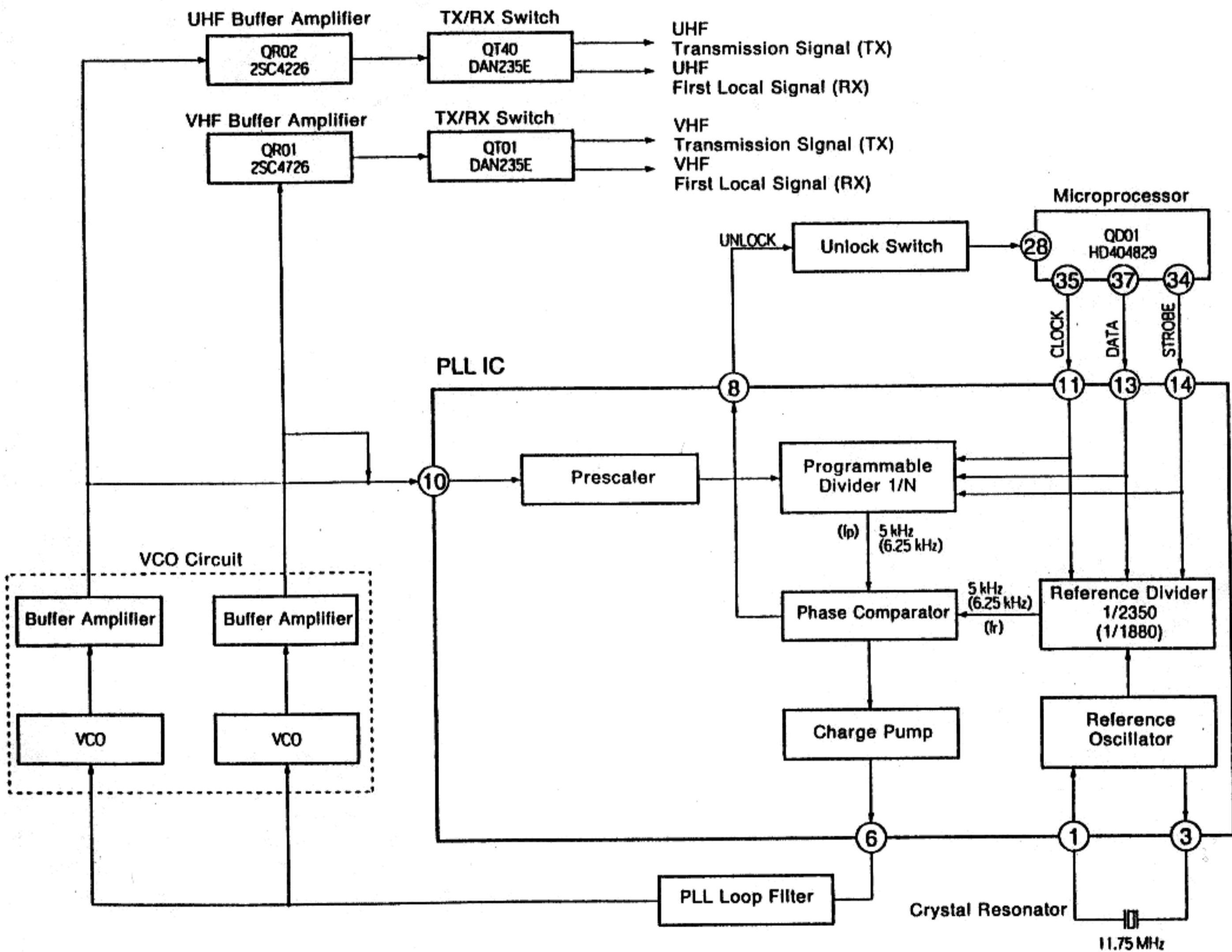


Figure 3-1 PLL Block Diagram

3.1.1 Programmable Divider

The oscillation frequency from the VCO circuit passes through pin 10 of the PLL IC, and is input to a prescaler built into the PLL IC.

The oscillation frequency is frequency divided by the prescaler using a determined division ratio (1/64 or 1/65).

After this, the oscillation frequency from the VCO circuit is input to a programmable divider built into the PLL IC. Also, data based on the operating frequency is input to the programmable divider from microprocessor QD01.

Based on the data from microprocessor QD01, the programmable divider frequency divides the oscillation frequency from the VCO circuit to 1/N to produce a comparison frequency (fp) of 5 kHz or 6.25 kHz. This comparison frequency (fp) is then input to the phase comparator built into the PLL IC.

3.1.2 Reference Divider

The reference divider is a circuit that creates a reference frequency (fr) of 5 kHz or 6.25 kHz based on data from microprocessor QD01.

The 11.75 MHz reference oscillation frequency from the crystal resonator passes through pin 1 of PLL IC QP01 and is input to the reference divider built into the PLL IC.

At this point, if the tuning step setting is 5, 10, 15, 20, 25, 30, or 50 kHz, the 11.75 MHz reference oscillation frequency is frequency divided to 1/2,350 to produce a reference frequency of 5 kHz.

If the tuning step setting is 12.5 kHz, the 11.75 MHz reference oscillation frequency is frequency divided to 1/1,880 to produce a reference frequency of 6.25 kHz. The frequency divided reference frequency (fr) is then input to the phase comparator built into the PLL IC.

3.1.3 Phase Comparator

The phase comparator built into the PLL IC compares the frequency divided comparison frequency (fp) from the programmable divider and the frequency divided reference frequency (fr) from the reference divider to determine the phase difference. As shown in Table 3-1, the phase comparator outputs a level signal (square wave) based on this phase difference.

The level signal is input to the charge pump.

Table 3-1

Output relationship	Phase comparator output level
$f_r > f_p$	High
$f_r = f_p$	High (impedance)
$f_r < f_p$	Low

fr: Reference frequency
fp: Comparison frequency

3.1.4 Charge Pump

The level signal (square wave) output from the phase comparator built into the PLL IC is input to the charge pump circuit.

The charge pump circuit charges and discharges the electrical charge accumulated in the PLL loop filter.

3.1.5 PLL Loop Filter (Low-Pass Filter)

The PLL loop filter CR integrates the level signal (square wave) output from the charge pump, converting it into a DC voltage.

The converted DC voltage is input to a varicap diode in the VCO circuit.

3.1.6 VCO Circuit

The DC voltage output by the PLL loop filter is input to a varicap diode built into the VCO circuit.

This DC voltage changes the capacitance between the electrodes of the varicap diode, thereby controlling the oscillation frequency of the VCO circuit.

— VHF band —

• Receive status

The oscillation frequency from the VCO circuit is input to buffer amplifier QR01.

The input oscillation frequency is amplified approximately 10 dB by buffer amplifier QR01 and input to TX/RX switch QT01. TX/RX switch QT01 is controlled by control signals (DC voltage) from pin 39 of microprocessor QD01. When the transceiver is in receive status, a low level signal is output from pin 39 of microprocessor QD01.

The low level output from the microprocessor is input to TX/RX switch QD14 (1/2), causing QD14 (1/2) to turn on. Also, a low level signal is output from pin 42 of QD01, causing VHF/UHF (below, V/U) RX+B switch QR18 (1/2) to turn on, which in turn causes TX/RX switch QT01 to switch to receive.

After passing through TX/RX switch QT01, the oscillation frequency is input to the base of first mixer QF04 as an approximately 50 mV first local signal (fvco).

• Transmit status

The audio signal from the microphone passes through microphone amplifier/L.P.F. QM03 and is input to VCO circuit.

The audio signal input to VCO circuit is input to a varicap diode built into the VCO circuit, where it is frequency modulated.

The frequency modulated oscillation frequency is output from the VCO circuit as the transmission signal.

The transmission signal is input to buffer amplifier QR01, where it is amplified approximately 10 dB.

The amplified transmission signal is input to TX/RX switch QT01.

TX/RX switch QT01 is controlled by control signals (DC voltage) from pin 38 of microprocessor QD01. When the transceiver is in transmit status, a low level signal is output from pin 38 of microprocessor QD01.

The low level output from pin 38 of microprocessor QD01 is input to TX/RX switch QD14 (2/2), causing QD14 (2/2) to turn on. Also, a low level signal is output from pin 42 of QD01, causing VHF/UHF (below, V/U) TX+B switch QD22 to turn on, which in turn causes TX/RX switch QT01 to switch to transmit.

After passing through TX/RX switch QT01, the transmission signal is input to transmitter circuit.

— UHF band —

• Receive status

The oscillation frequency from the VCO circuit is input to buffer amplifier QR02.

The input oscillation frequency is amplified approximately 10 dB by buffer amplifier QR02 and input to TX/RX switch QT40. TX/RX switch QT40 is controlled by control signals (DC voltage) from pin 39 of microprocessor QD01.

When the transceiver is in receive status, a low level signal is output from pin 39 of microprocessor QD01.

The low level output from the microprocessor is input to TX/RX switch QD14 (1/2), causing QD14 (1/2) to turn on. Also, a low level signal is output from pin 43 of QD01, causing V/U RX+B switch QR18 (2/2) to turn on, which in turn causes TX/RX switch QT40 to switch to receive.

After passing through TX/RX switch QT40, the oscillation frequency is input to the base of first mixer QF23 as an approximately 50 mV first local signal (fvco).

• Transmit status

The audio signal from the microphone passes through microphone amplifier/L.P.F. QM03 and is input to VCO circuit.

The audio signal input to VCO circuit is input to a varicap diode built into the VCO circuit, where it is frequency modulated. The frequency modulated oscillation frequency is output from the VCO circuit as the transmission signal.

The transmission signal is input to buffer amplifier QR02, where it is amplified approximately 10 dB.

The amplified transmission signal is input to TX/RX switch QT40.

TX/RX switch QT40 is controlled by control signals (DC voltage) from pin 38 of microprocessor QD01.

When the transceiver is in transmit status, a low level signal is output from pin 38 of microprocessor QD01.

The low level output from pin 38 of microprocessor QD01 is input to TX/RX switch QD14 (2/2), causing QD14 (2/2) to turn on. Also, a low level signal is output from pin 43 of QD01, causing V/U TX+B switch QD22 to turn on, which in turn causes TX/RX switch QT40 to switch to transmit.

After passing through TX/RX switch QT40, the transmission signal is input to transmitter circuit.

3.1.7 Unlock Detect Circuit

The microprocessor QD01 (pin28) determines whether the status of the PLL circuitry is lock or unlock according to the output level (high or low) from pin 8 of the PLL IC.

If the phase comparator built into the PLL IC detects no phase difference (PLL circuit locked), it produces a high level output. This high level output signal is input to an unlock switch, causing it to turn off.

When the unlock switch is off, a low level output signal is input to pin 28 of microprocessor QD01. The low level input causes microprocessor QD01 to determine that the PLL circuit is locked.

If there is a phase difference (PLL circuit unlocked), the phase comparator produces a low level output. This low level output signal is input the unlock switch, causing it to turn on. When the unlock switch is on, a high level output signal is input to pin 28 of microprocessor QD01.

The high level input causes microprocessor QD01 to determine that the PLL circuit is unlocked.

3.2 Receiver Block

The reception method is double-conversion super heterodyne with a first IF frequency of 23.05 MHz (lower) and a second IF frequency of 450 kHz (upper).

The receiver block comprises an RF amplifier circuit, first mixer circuit, first IF amplifier circuit, second IF circuit, and audio circuit.

The RF amplifier circuit and first mixer circuit are independent for the VHF and UHF bands.

3.2.1 RF Amplifier Circuit

— VHF band —

The reception frequency (f_{rx}) from antenna connector socket JF01 passes through a low-pass filter consisting of LT10, CT18, LT09, CT17, CT16, LT08, CT23, and CT14, and is input to an antenna switch consisting of QT07, QT08, and QT10.

The antenna switch consisting of QT07, QT08, and QT10 is controlled by control signals (DC voltage) from pin 38 of microprocessor QD01.

When a high level signal is output from pin 38 of microprocessor QD01, TX/RX switch QD14 (2/2) turns off, causing antenna switch QT08 to turn off.

When antenna switch QT08 turns off, antenna switch diodes QT07 and QT10 turn off.

When antenna switch diodes QT07 and QT10 turn off, the reception frequency is input to the receiver circuit.

The input reception frequency (f_{rx}) passes through band-pass filter LF01 and is input to RF amplifier QF02. The input reception frequency (f_{rx}) amplified by approximately 20 dB by RF amplifiers QF02 and QF03, after which it is input to a band-pass filter consisting of LF02, LF03, and LF04.

After having unwanted frequency elements removed by the band-pass filter, the reception frequency (f_{rx}) is input to the base of first mixer QF04.

— UHF band —

The reception frequency (f_{rx}) from antenna connector socket JF01 passes through a high-pass filter consisting of CT44, LT43, and CT43, and a low-pass filter consisting of CT42, LT42, CT41, and CT40, and is input to an antenna switch consisting of QT41, QT42, and QT43.

The antenna switch consisting of QT41, QT42, and QT43 is controlled by the output level from pin 38 of microprocessor QD01.

When a high level signal is output from pin 38 of microprocessor QD01, TX/RX switch QD14 (2/2) turns off, causing antenna switch QT43 to turn off.

When antenna switch QT43 turns off, antenna switch diodes QT41 and QT42 turn off.

When antenna switch diodes QT41 and QT42 turn off, the reception frequency is input to the receiver circuit.

The input reception frequency (f_{rx}) passes through band-pass filter LF20 and is input to RF amplifier QF21. The input reception frequency (f_{rx}) amplified by approximately 13 dB by RF amplifier QF21, after which it is input to band-pass filter FF20 and applied to RF amplifier QF22. It is amplified by approximately 10 dB by RF amplifier QF22, then input to band-pass filter FF21.

After having unwanted frequency elements removed by the band-pass filter, the reception frequency (f_{rx}) is input to the base of first mixer QF23.

3.2.2 First Mixer Circuit

— VHF band —

After passing through the band-pass filter consisting of LF02, LF03, and LF04, the reception frequency (f_{rx}) is input to the base of first mixer QF04. Then it is mixed with the first local signal (f_{vco}) from the VCO circuit by first mixer QF04, and first IF signals consisting of their sum and difference are created.

$$f_{rx} - f_{vco} = 23.05 \text{ (MHz)} \quad \begin{array}{l} f_{rx} : \text{Reception frequency} \\ f_{vco} : \text{First local signal} \end{array}$$

The sum and difference first IF signals created by first mixer QF04 are input to crystal filter FR01. The difference of the input first IF signals (23.05 MHz) is created by the crystal filter, and adjacent signal elements are eliminated.

After this, the first IF signal (23.05 MHz) is input to first IF amplifier QR03.

— UHF band —

After passing through band-pass filter FF21, the reception frequency (f_{rx}) is input to the base of first mixer QF23.

Then it is mixed with the first local signal (f_{vco}) from the VCO circuit by first mixer QF23, and first IF signals consisting of their sum and difference are created.

$$f_{rx} - f_{vco} = 23.05 \text{ (MHz)} \quad \begin{array}{l} f_{rx} : \text{Reception frequency} \\ f_{vco} : \text{First local signal} \end{array}$$

The sum and difference first IF signals created by first mixer QF23 are input to crystal filter FR01. The difference of the input first IF signals (23.05 MHz) is created by the crystal filter, and adjacent signal elements are eliminated.

After this, the first IF signal (23.05 MHz) is input to first IF amplifier QR03.

3.2.3 First IF Amplifier Circuit

The 23.05 MHz first IF signal difference signal created by crystal filter FR01 is input to first IF amplifier QR03. After being amplified by approximately 10 dB by QR03, the first IF signal is input to pin 16 of second IF IC QR05.

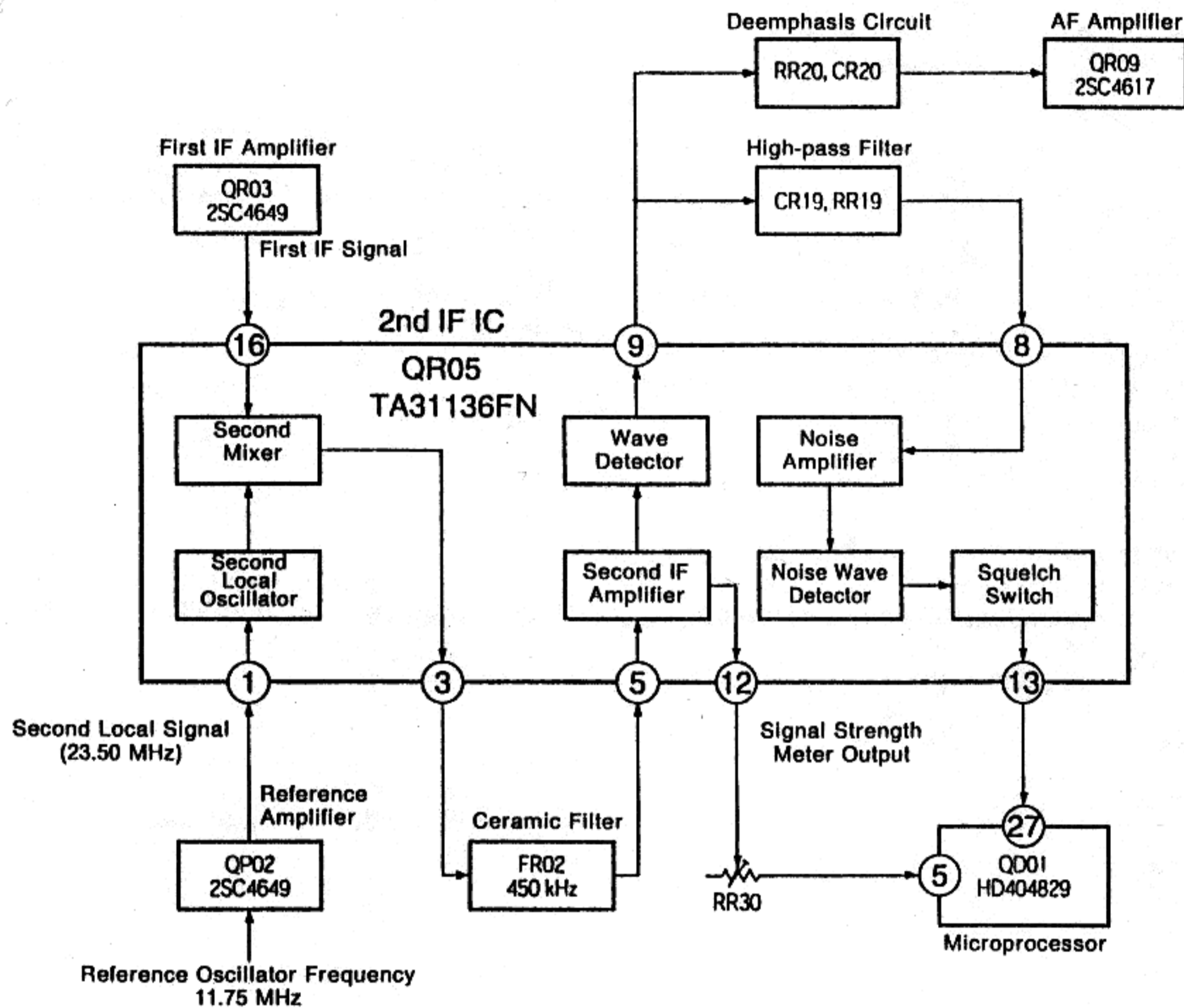


Figure 3-2 Second IF IC Block Diagram

3.2.4 Second IF Circuit

The second IF IC comprises a second local oscillator, second mixer, second IF amplifier, wave detector, signal strength meter amplifier, noise amplifier, and noise wave detector.

The first IF signal amplified by the first IF amplifier passes through pin 16 of second IF IC QR05 and is input to the second mixer built into QR05. Also, the 11.75 MHz reference oscillator frequency from the crystal resonator is input to reference amplifier QP02. The input reference oscillator frequency is boosted to twice its previous level by QP02 and becomes the 23.50 MHz second local signal.

This 23.50 MHz second local signal passes through pin 1 of second IF IC QR05 and is input to the second mixer.

The first IF signal and second local signal are mixed by the second mixer built into QR05, and the first IF signal is converted into a 450 kHz second IF signal.

After being converted to 450 kHz, the second IF signal passes through pin 3 of QR05, and, after adjacent signal elements are eliminated by ceramic filter FR02 (6 dB bandwidth ± 7.5 kHz or greater), input to pin 5 of QR05.

The input second IF signal is converted into an audio signal by the second IF amplifier and a quadrature wave detector. The result is then output from pin 9 of QR05.

The signal strength meter output from pin 12 of second IF IC QR05 is level adjusted by semi-fixed resistor RR30, after which it is applied to pin 5 of microprocessor QD01.

The LCD QD02 signal strength meter is driven based on a signal from microprocessor QD01 corresponding to the strength of the reception signal.

3.2.5 Audio Circuit

A portion of the audio signal output from pin 9 of second IF IC QR05 is input to a deemphasis circuit consisting of RR20 and CR20. The deemphasis circuit consisting of RR20 and CR20 (-6 dB/oct) performs frequency correction on the audio signal.

After passing through the deemphasis circuit, the audio signal is input to AF amplifier QR09. The audio signal input to AF amplifier QR09 is amplified by approximately 6 dB.

After this, the amplified audio signal is input to AF switch QR10.

AF switch QR10 is controlled by the output level from pin 22 of microprocessor QD01. Refer to section 3.2.6 "Squelch Circuit" for a description of AF switch QR10 control operation.

When AF switch QR10 is on, the audio signal passes through QR10 and is input to volume control RR80.

The input audio signal is level adjusted by volume control RR80 and input to pin 1 of AF power amplifier QR11.

The audio signal input to pin 1 of AF power amplifier QR11 is amplified to approximately 0.1 W and output from pin 6 of QR11.

The audio signal output from pin 6 of QR11 passes through external speaker socket JR01 and drives internal speaker ED01.

3.2.6 Squelch Circuit

A portion of the audio signal output from pin 9 of second IF IC QR05 is input to a high-pass filter consisting of CR19 and RR19.

Noise elements are extracted from the audio signal by the high-pass filter and input to pin 8 of second IF IC QR05 as the noise signal.

The noise signal input to pin 8 of second IF IC QR05 has approximately 30 kHz elements only amplified by a noise amplifier built into QR05 to create the squelch signal.

This squelch signal is converted into a DC signal by the noise wave detector built into second IF IC QR05 and then output from pin 13 of QR05.

The squelch signal output from pin 13 of second IF IC QR05 is input to pin 27 of microprocessor QD01.

— If the squelch signal input to pin 27 of microprocessor QD01 is 3 V —

A low level signal is output from pin 22 of microprocessor QD01. This low level output causes AF switch QR10 to turn on. When AF switch QR10 turns on, the audio signal is allowed to pass through and squelch operation for the transceiver is off.

— If the squelch signal input to pin 27 of microprocessor QD01 is 0 V —

A high level signal is output from pin 22 of microprocessor QD01. This high level output causes AF switch QR10 to turn off. When AF switch QR10 turns off, the audio signal is muted and squelch operation for the transceiver is on.

3.2.7 Tone Decoder

A portion of the audio signal output from pin 9 of second IF IC QR05 passes through a low-pass filter consisting of RD67 and CD69 and is input to pin 8 of CTCSS connector YD61. The audio signal passes through pin 8 of CTCSS connector YD61 and is input to the tone squelch unit (CTN115). At this point, if the IC in the tone squelch unit detects a match between the input tone signal and the transceiver's tone signal setting, a low level signal is output from pin 3 of CTCSS connector YD61.

This low level signal is input to pin 29 of microprocessor QD01, causing output signals from pins 22 and 33 of QD01 to be applied to AF switch QR10 and 3 V regulator QR13.

AF switch QR10 turns on and 3 V regulator QR13 operates, supplying power to AF power amplifier QR11 so that it operates. This causes an audio signal to be output from internal speaker ED01.

3.3 Transmitter Block

3.3.1 Microphone Amplifier

While the user depresses PTT switch ST60 and speaks into the transceiver, an audio signal is input to pin 3 of microphone amplifier QM03 (1/2) and amplified by approximately 47 dB.

Microphone amplifier QM03 (1/2) has a built-in preemphasis circuit (6 dB/oct frequency characteristics), and the high-frequency components of the audio signal are boosted and modulated. Also, the audio signal gains the -18 dB/oct frequency characteristics from low-pass filter QM03 (2/2) to limit the bandwidth.

After this, the audio signal is output from pin 7 of low-pass filter QM03 (2/2).

The output audio signal is deviation adjusted by for the VHF band by semi-fixed resistor RM07, and for the UHF band by semi-fixed resistor RM08, and then input to the VCO modulator circuit.

3.3.2 Preampifier

— VHF band —

The audio signal is input to VCO and then output from the VCO as the transmission signal.

The approximately 0 dBm transmission signal output from the VCO is input to buffer amplifier QR01 and amplified by approximately 10 dB. The amplified transmission signal is input to TX/RX switch QT01.

TX/RX switch QT01 is controlled by data from pins 38 and 42 of microprocessor QD01. When the transceiver is in transmit status, low level signals are output from pins 38 and 42 of microprocessor QD01. Refer to 3.1.6 "VCO Circuit" for a description of TX/RX switch QT01 control operation.

After passing through TX/RX switch QT01, the transmission signal is input to preamplifier QT02.

Preamplifier QT02 amplifies the approximately 1 mW transmission signal by 15 dB to approximately 40 mW.

After being amplified by preamplifier QT02, the transmission signal is input to a power amplifier consisting of QT04, QT05, and QT06.

— UHF band —

The audio signal is input to VCO and then output from the VCO as the transmission signal.

The approximately 0 dBm transmission signal output from the VCO is input to buffer amplifier QR02 and amplified by approximately 10 dB. The amplified transmission signal is input to TX/RX switch QT40.

TX/RX switch QT40 is controlled by data from pins 38 and 43 of microprocessor QD01. When the transceiver is in transmit status, low level signals are output from pins 38 and 43 of microprocessor QD01. Refer to 3.1.6 "VCO Circuit" for a description of TX/RX switch QT40 control operation.

After passing through TX/RX switch QT40, the transmission signal is input to preamplifier QT60.

Preamplifier QT60 amplifies the approximately 1.5 mW transmission signal by 15 dB to approximately 45 mW.

After being amplified by preamplifier QT60, the transmission signal is input to a power amplifier consisting of QT61, QT62, and QT63.

3.3.3 Power Amplifier

— VHF band —

The transmission signal amplified by preamplifier QT02 is input to a power amplifier consisting of QT04, QT05, and QT06.

The input transmission signal is amplified by approximately 300 mW (3.0 V power supply voltage) by the power amplifier consisting of QT04, QT05, and QT06.

The amplified transmission signal is input to an antenna switch consisting of QT07, QT08, and QT10.

The antenna switch consisting of QT07, QT08, and QT10 is controlled by the output level of pin 38 of microprocessor QD01.

When the output from pin 38 of microprocessor QD01 is low level, TX/RX switch QD14 (2/2) turns on, causing antenna switch QT08 to turn on.

When antenna switch QT08 turns on, antenna switch diodes QT07 and QT10 turn on.

When antenna switch diodes QT07 and QT10 turn on, the transmission signal is input to a low-pass filter consisting of CT23, LT08, CT16, CT17, LT09, CT18, and LT10.

After second and third order harmonics have been sufficiently attenuated from the transmission signal input to the low-pass filter, it is supplied to antenna connector socket JF01.

— UHF band —

The transmission signal amplified by preamplifier QT60 is input to a power amplifier consisting of QT61, QT62, and QT63.

The input transmission signal is amplified by approximately 300 mW (3.0 V power supply voltage) by the power amplifier consisting of QT61, QT62, and QT63.

The amplified transmission signal is input to an antenna switch consisting of QT41, QT42, and QT43.

The antenna switch consisting of QT41, QT42, and QT43 is controlled by the output level of pin 38 of microprocessor QD01.

When the output from pin 38 of microprocessor QD01 is low level, TX/RX switch QD14 (2/2) turns on, causing antenna switch QT43 to turn on.

When antenna switch QT43 turns on, antenna switch diodes QT41 and QT42 turn on.

When antenna switch diodes QT41 and QT42 turn on, the transmission signal is input to a low-pass filter consisting of CT40, LT41, CT41, LT42, CT42, CT43, and CT44.

After second and third order harmonics have been sufficiently attenuated from the transmission signal input to the low-pass filter, it is supplied to antenna connector socket JF01.

3.3.4 Tone Encoder

Serial data output from pins 37, 35, and 36 of microprocessor QD01 passes through pins 4, 5, and 6 of CTCSS connector YD61 and is input to the tone squelch unit (CTN115).

The tone squelch unit then outputs the tone signal specified by the serial data from the microprocessor. The output tone signal passes through pin 9 of CTCSS connector YD61 and is input to the modulator circuit of the VCO circuit.

3.4 Control Block

3.4.1 Microprocessor QD01

The functions of the In/Out ports of microprocessor QD01 are listed below.

Table 3-2 (1/2)

Pin no.	In/out	Port name	Description
1	-	AVcc	Power supply terminal (for A/D converter)
2	In	AN0	Analog key input (MONI/BAND)
3	In	AN1	Analog key input (V/M, SC, SET)
4	In	AN2	Analog microphone key input
5	In	AN3	Signal strength meter level detect
6	-	AVss	Ground terminal (for A/D converter)
7	In	TEST	Not used (fixed at Vcc potential)
8	In	OSC1	System clock input (2 MHz)
9	Out	OSC2	System clock output (2 MHz)
10	In	RESET	Reset terminal High : Reset
11	In	X1	Not used (fixed at Vcc potential)
12	Out	X2	Not used (open)
13	-	GND	Ground terminal
14	In	D0	Power key Input Low : Key on
15	In	D1	Call key input Low : Key on
16	In	D2	Function key input Low : Key on
17	In	D3	Lamp key input Low : Key on
18	In	D4	PTT switch input High : Key on
19	Out	D5	LAMP LED control High : LED lit
20	Out	D6	BUSY LED control High : LED lit
21	Out	D7	TX LED control High : LED lit
22	Out	D8	Reception audio output control Low : Reception audio output
23	In	D9	Rotary operation direction detect
24	In	D10/STOPC	Stop mode cancel signal detect
25	In	D11/INT0	Battery low voltage detect
26	In	RO0/INT1	Rotary operation trigger detect
27	In	RO1/INT2	Busy signal detect Low : Busy
28	In	RO2/INT3	Unlock signal detect High : Unlock
29	In	RO3/INT4	CTN tone match signal detect Low : Tone match
30	Out	R10/TOB	Receive mode control
31	Out	R11/TOC	Beep output/tone-burst (1750 Hz) output
32	Out	R12/TOD	Not used
33	Out	R13/EVNB	Audio output control High : Audio output
34	Out	R20/EVND	PLL strobe
35	Out	R21/SCK	Serial lock output
36	Out	R22/SI	CTN strobe
37	Out	R23/SO	Serial data output
38	Out	R30/SEG1	Transmit power supply control Low : Power on
39	Out	R31/SEG2	Receive power supply control Low : Power on
40	Out	R32/SEG3	PLL power supply control Low : Power on
41	Out	R33/SEG4	CTN115 power supply control High : Power on
42	Out	R40/SEG5	VHF receive power supply control Low : Power on
43	Out	R41/SEG6	UHF receive power supply control Low : Power on
44	Out	R42/SEG7	Always high
45	Out	R43/SEG8	Always high
46	Out	R50/SEG9	Not used (open)
47	Out	R51/SEG10	Not used (open)
48	Out	R52/SEG11	Not used (open)
49	Out	R53/SEG12	Not used (open)
50	Out	R60/SEG13	A/D input key power supply control High : Power on

Table 3-2 (2/2)

Pin no.	In/out	Port name	Description
51	Out	R61/SEG14	Always high
52	In	R62/SEG15	Open
53	In	R63/SEG16	Open
54	In	R70/SEG17	Open [C508]/connected to ground [C508A]
55	In	R71/SEG18	Open [C508]/connected to ground [C508A]
56	In	R72/SEG19	Not used (open)
57	In	R73/SEG20	Open [C508]/connected to ground [C508A]
58	Out	SEG21	Not used (open)
59	Out	SEG22	Not used (open)
60	Out	SEG23	Not used (open)
61	Out	SEG24	Not used (open)
62	Out	SEG25	Not used (open)
63	Out	SEG26	LCD segment signal output
64	Out	SEG27	LCD segment signal output
65	Out	SEG28	LCD segment signal output
66	Out	SEG29	LCD segment signal output
67	Out	SEG30	LCD segment signal output
68	Out	SEG31	LCD segment signal output
69	Out	SEG32	LCD segment signal output
70	Out	SEG33	LCD segment signal output
71	Out	SEG34	LCD segment signal output
72	Out	SEG35	LCD segment signal output
73	Out	SEG36	LCD segment signal output
74	Out	SEG37	LCD segment signal output
75	Out	SEG38	LCD segment signal output
76	Out	SEG39	LCD segment signal output
77	Out	SEG40	LCD segment signal output
78	Out	SEG41	LCD segment signal output
79	Out	SEG42	LCD segment signal output
80	Out	SEG43	LCD segment signal output
81	Out	SEG44	LCD segment signal output
82	Out	SEG45	LCD segment signal output
83	Out	SEG46	LCD segment signal output
84	Out	SEG47	LCD segment signal output
85	Out	SEG48	LCD segment signal output
86	Out	SEG49	LCD segment signal output
87	Out	SEG50	LCD segment signal output
88	Out	SEG51	LCD segment signal output
89	Out	SEG52	LCD segment signal output
90	Out	COM1	LCD common signal output
91	Out	COM2	LCD common signal output
92	Out	COM3	LCD common signal output
93	Out	COM4	Not used (open)
94	-	V1	LCD power supply (approx. 3 V)
95	-	V2	LCD power supply (approx. 2.2 V)
96	-	V3	LCD power supply (approx. 1.1 V)
97	-	V _{CC}	Power supply terminal
98	-	NUMO	Not used (open)
99	-	NUMO	Not used (open)
100	-	NUMG	Connected to ground

3.4.2 Beep/Tone Burst

— Beep —

The beep signal is output from pin 31 of microprocessor QD01.

After this, the beep signal is input to pin 1 of AF power amplifier QR11, where it is amplified.

The amplified beep signal is output from pin 6 of AF power amplifier QR11, passes through external speaker socket JR01, and drives internal speaker ED01.

— Tone burst (1750 Hz) —

When the transceiver is in the repeater mode, the tone-burst signal is output from pin 31 of microprocessor QD01.

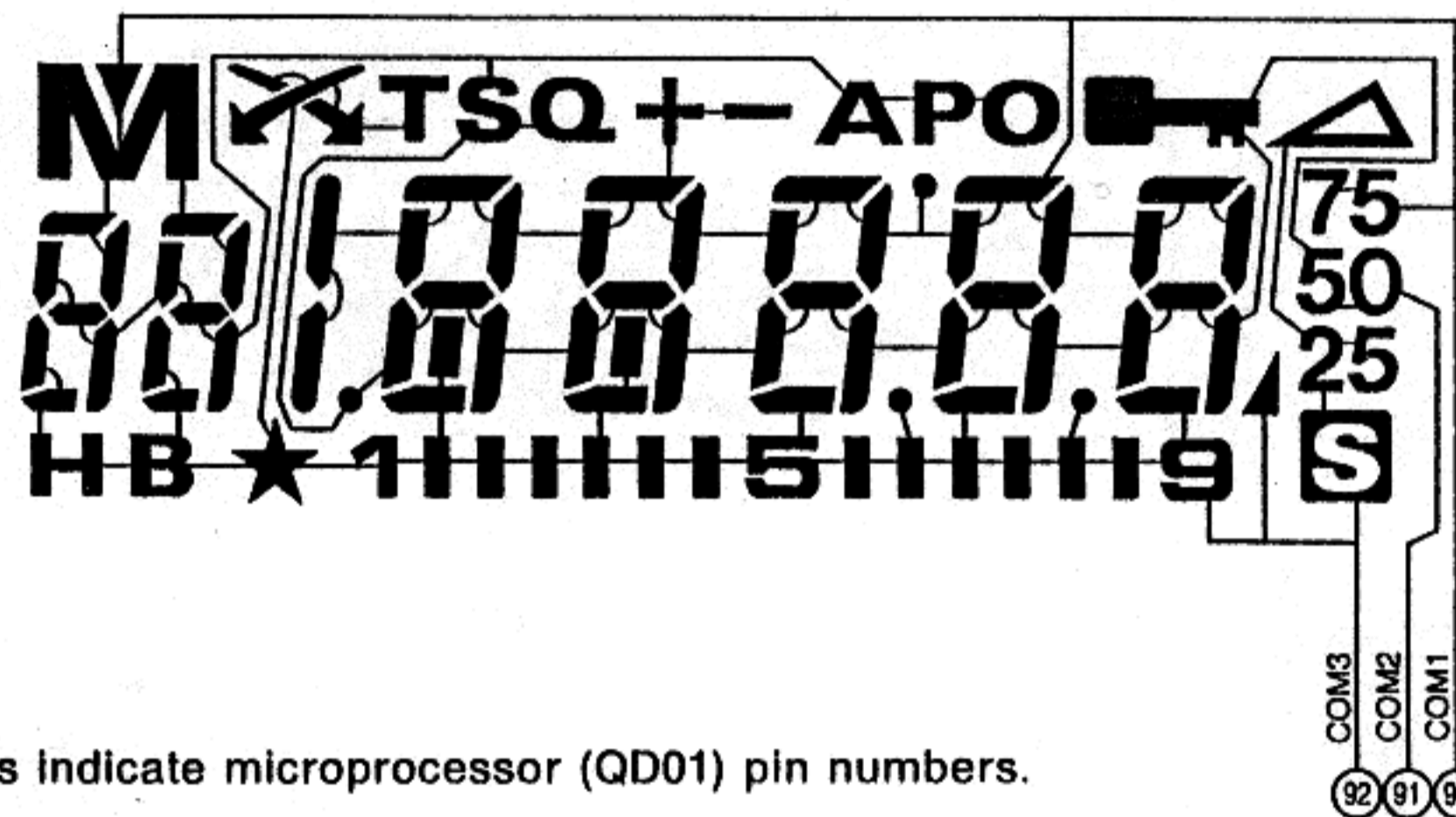
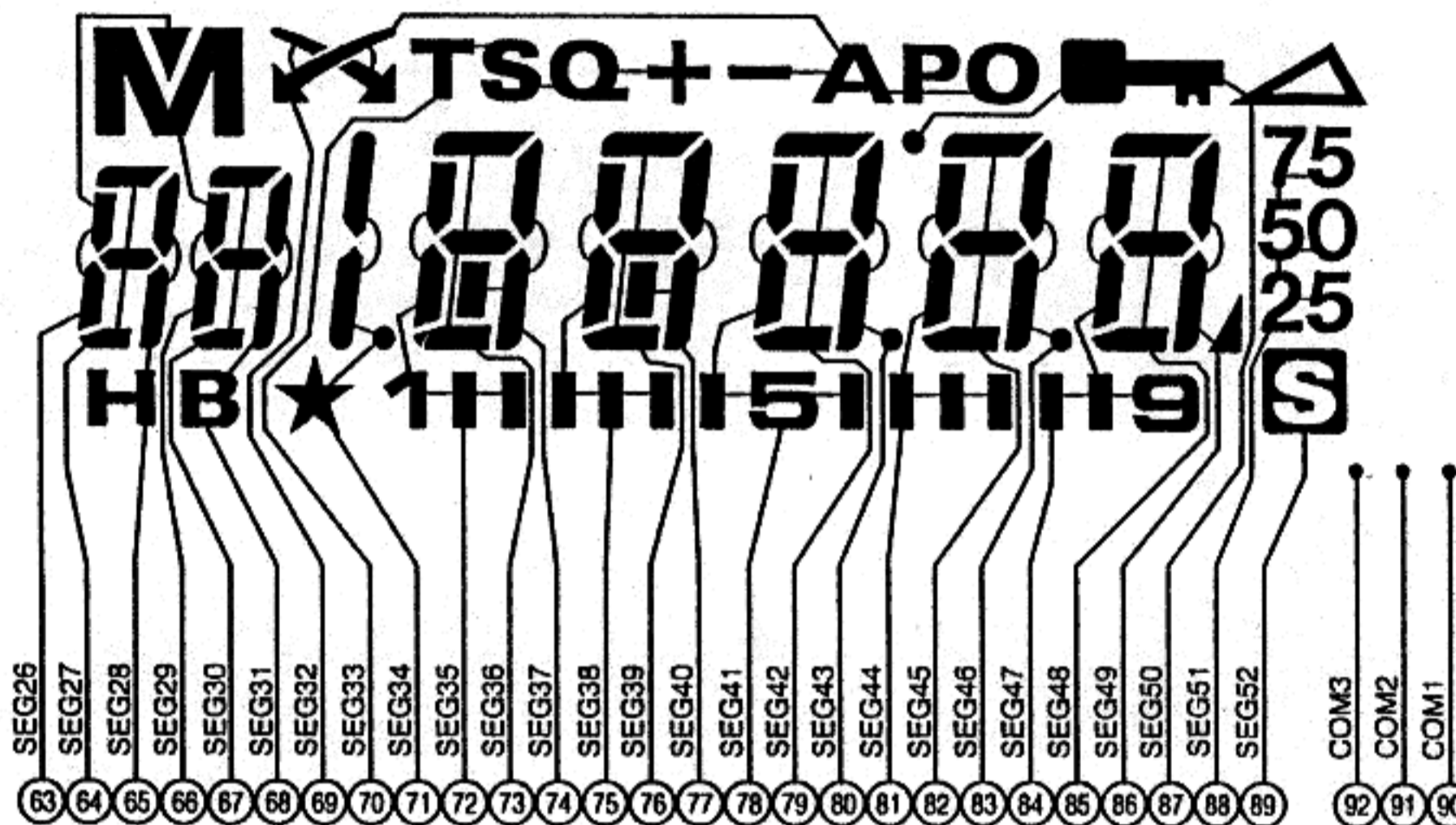
The tone burst signal from pin 31 of microprocessor QD01 passes through a low-pass filter consisting of RM11, CM12, RM12, and CM13, and is applied to semi-fixed resistor RM13.

After being level adjusted by semi-fixed resistor RM13, the signal is applied to microphone amplifier QM03 (2/2).

3.4.3 Display (LCD)

Microprocessor QD01 drives LCD QD02 directly.

The driving method is dynamic drive using 27 segment terminals, three common terminals, and a 1/3 duty ratio. The LCD segment and common connections are illustrated below.



Figures in circles indicate microprocessor (QD01) pin numbers.

Figure 3-3 LCD Pin Layout Diagram

4. DISASSEMBLY

4.1 Transceiver Disassembly

4.1.1 Removing the Front Case

NOTE: Be sure to switch off the transceiver's power before disassembling it.

- (a) Push down on the battery cover lock button in the direction indicated by the arrow, and remove the battery cover by sliding it in the direction indicated by the arrow.
- (b) Remove the four screws (A).

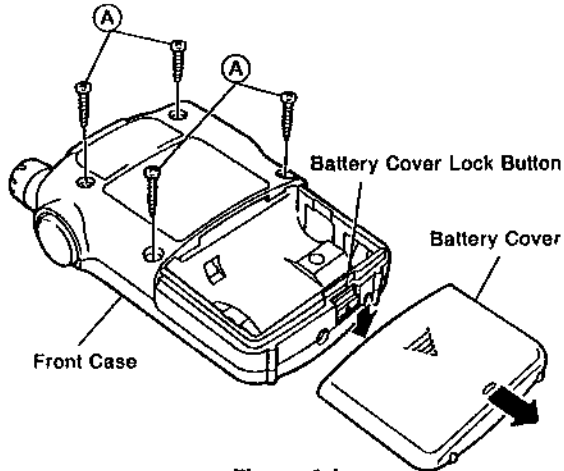


Figure 4-1

- (c) Place the transceiver so that the front case (the surface with the controls) is facing upward, then grasp the front case and open it slowly in the direction indicated by the arrow.

NOTE: When opening the front case away from the rear case, do not open the left side. Doing so could damage the flexible P.C. board. Also, be careful when handling the flexible P.C. board as it can easily be damaged if pulled or bent.

- (d) Move slide insulators YR01 and YD60 in the direction indicated by the arrow. This will allow the flexible P.C. board to be removed.
- (e) Unplug connector YD63 from socket YD62 and remove the front case.

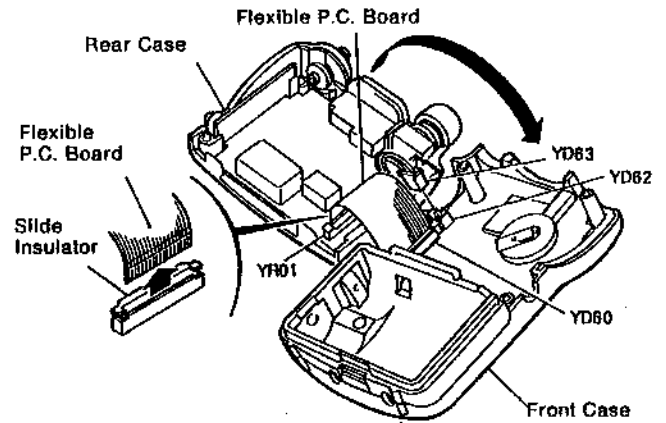


Figure 4-2

4.1.2 Removing the Battery Case

- (a) Remove the two screws (B) and the two screws (C).
- (b) Remove the battery case in the direction indicated by the arrow.

NOTE: The battery cover lock button comes off when the battery case is removed. Be careful not to lose it.

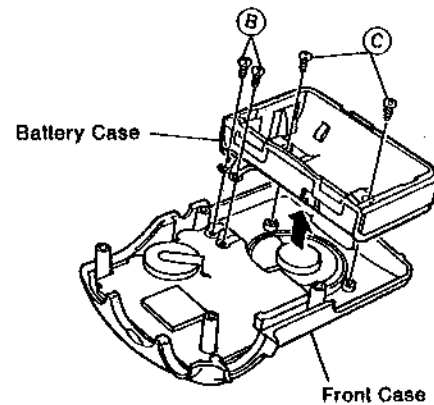


Figure 4-3

4.1.3 Removing the Control P.C. Board

- (a) Remove the solder from location ① (four places) and disconnect the two lead wires from the speaker and the two lead wires from the condenser microphone.
- (b) Remove the two screws ④ and the control P.C. board can be removed from the front case.

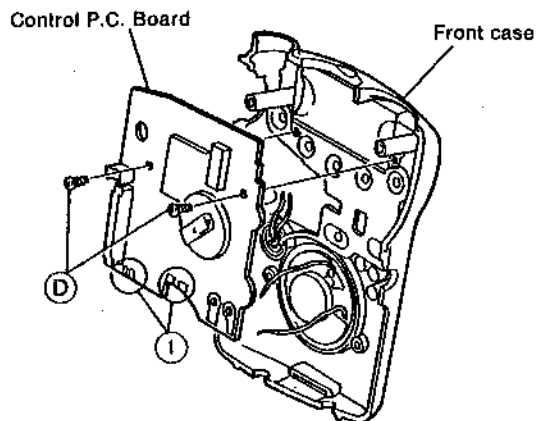


Figure 4-4

4.1.4 Removing the TX/RX P.C. Board

- (a) Remove the solder from location ② (two places).
- (b) Remove the waterproof cap.
- (c) Unplug connector YR03 from socket YR02.
- (d) Remove the three screws ⑤ and the TX/RX P.C. board can be removed from the rear case.

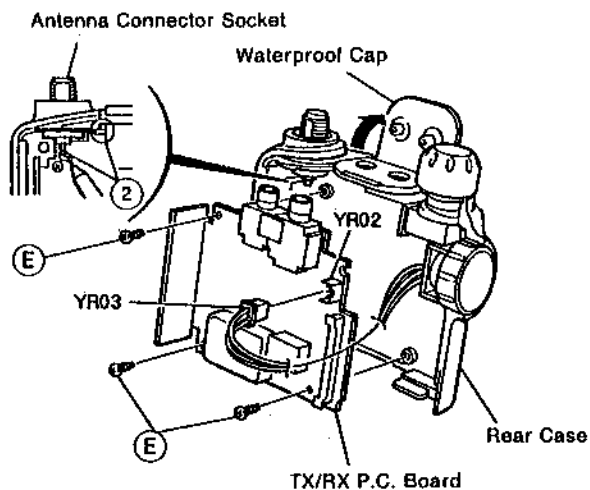


Figure 4-5

4.2 Removing the Tone Squelch Unit (CTN115)

NOTE: Before removing the tone squelch unit (CTN115), be sure to power off the transceiver.

- (a) Follow the instructions in 4.1.1 "Removing the Front Case" to put the transceiver into the state shown in Figure 4-2.
- (b) Unplug the tone squelch unit from socket YD61.

NOTE: When installing a tone squelch unit again, be sure not to insert it at an angle.

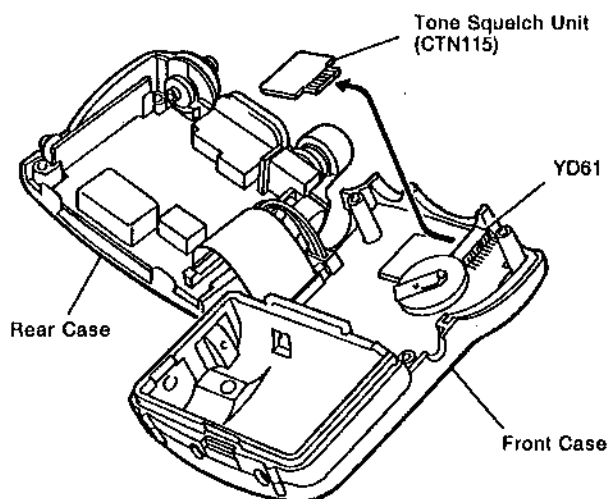
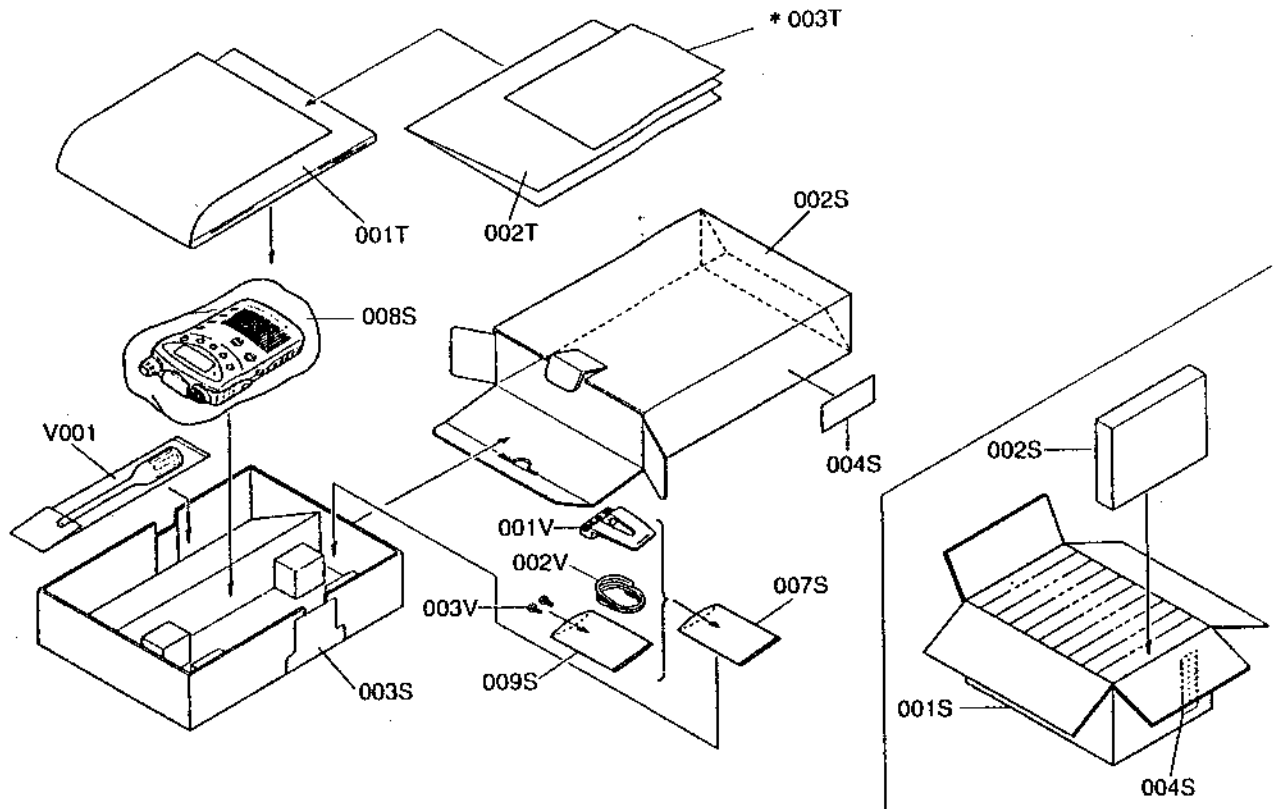


Figure 4-6

9. PACKING DIAGRAM AND PARTS LIST



* The Parts which are used for only C508A.

C508 07 < 0057 >
C508A 06 < 0057 >

REF. DESIG.	QTY	PART NO.	DESCRIPTION
PACKING			
001V	1	243B155010	BELT CLIP
002V	1	003B158010	HAND STRAP
003V	2	51102804U0	B.H.M. SCREW B2.6X4
001S	1	243B805030	MASTER CARTON [C508]
001S	1	243B805020	MASTER CARTON [C508A]
002S	1	243B801030	PACKING CASE [C508]
002S	1	243B801020	PACKING CASE [C508A]
003S	1	243B808010	CUSHION
004S	2	9524520010	LABEL FOR SERIAL NUMBER
007S	1	9010510010	POLYETHYLENE BAG FOR BELT CLIP
008S	1	9011020010	POLYETHYLENE BAG FOR TRANSCEIVER
009S	1	9010508010	POLYETHYLENE BAG FOR SCREWS
001T	1	243B851010	USER MANUAL
002T	1	243B850020	BLOCK DIAGRAM
003T	1	183B854010	WARRANTY CARD [C508A]
V001	1	YR99000080	WHIP ANTENNA (144MHZ/430MHZ)

C508 07 < 0057 >
C508A 06 < 0057 >

4. DISASSEMBLY

4.1 Transceiver Disassembly

4.1.1 Removing the Front Case

NOTE: Be sure to switch off the transceiver's power before disassembling it.

- (a) Push down on the battery cover lock button in the direction indicated by the arrow, and remove the battery cover by sliding it in the direction indicated by the arrow.
- (b) Remove the four screws **(A)**.

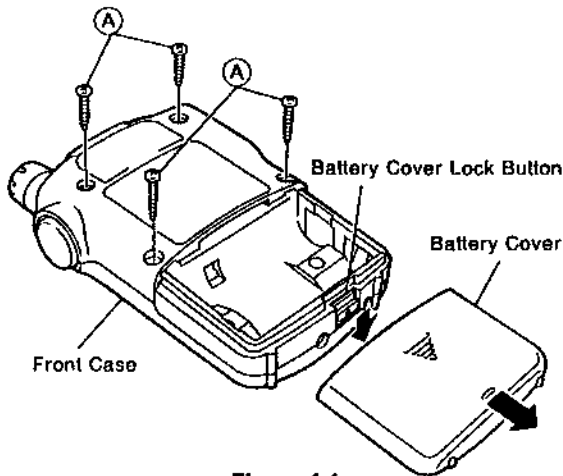


Figure 4-1

- (c) Place the transceiver so that the front case (the surface with the controls) is facing upward, then grasp the front case and open it slowly in the direction indicated by the arrow.

NOTE: When opening the front case away from the rear case, do not open the left side. Doing so could damage the flexible P.C. board. Also, be careful when handling the flexible P.C. board as it can easily be damaged if pulled or bent.

- (d) Move slide insulators YR01 and YD60 in the direction indicated by the arrow. This will allow the flexible P.C. board to be removed.
- (e) Unplug connector YD63 from socket YD62 and remove the front case.

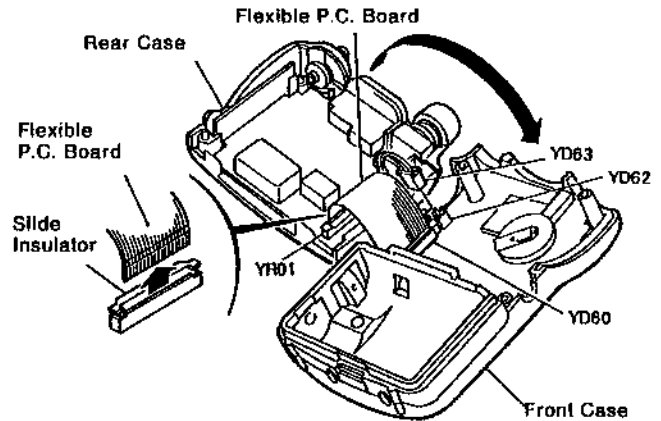


Figure 4-2

4.1.2 Removing the Battery Case

- (a) Remove the two screws **(B)** and the two screws **(C)**.
- (b) Remove the battery case in the direction indicated by the arrow.

NOTE: The battery cover lock button comes off when the battery case is removed. Be careful not to lose it.

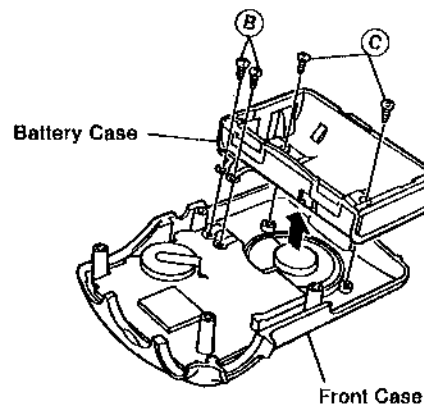


Figure 4-3

4.1.3 Removing the Control P.C. Board

- (a) Remove the solder from location ① (four places) and disconnect the two lead wires from the speaker and the two lead wires from the condenser microphone.
- (b) Remove the two screws ④ and the control P.C. board can be removed from the front case.

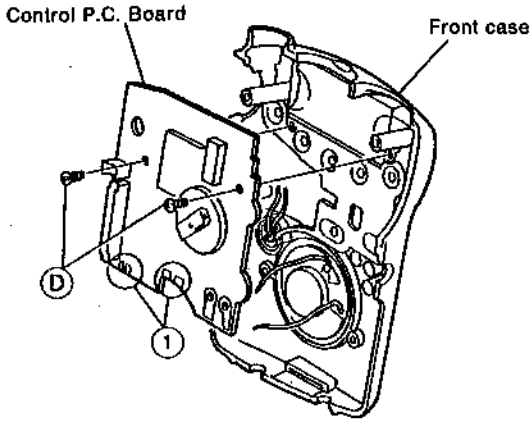


Figure 4-4

4.2 Removing the Tone Squelch Unit (CTN115)

NOTE: Before removing the tone squelch unit (CTN115), be sure to power off the transceiver.

- (a) Follow the instructions in 4.1.1 "Removing the Front Case" to put the transceiver into the state shown in Figure 4-2.
- (b) Unplug the tone squelch unit from socket YD61.

NOTE: When installing a tone squelch unit again, be sure not to insert it at an angle.

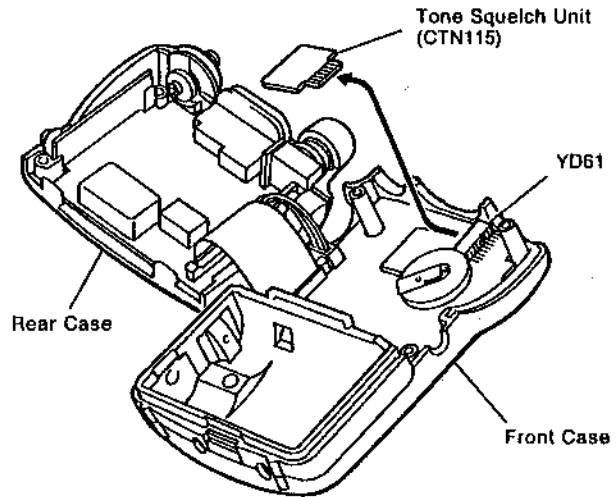


Figure 4-6

4.1.4 Removing the TX/RX P.C. Board

- (a) Remove the solder from location ② (two places).
- (b) Remove the waterproof cap.
- (c) Unplug connector YR03 from socket YR02.
- (d) Remove the three screws ⑤ and the TX/RX P.C. board can be removed from the rear case.

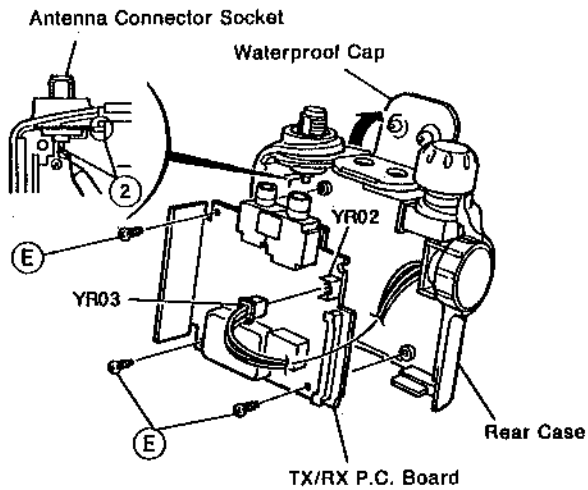


Figure 4-5

5. ADJUSTMENT

5.1 Adjustment Connection Diagrams

Make sure that all test equipment is properly calibrated.

Allow sufficient time after powering on equipment for it to warm up before performing adjustments.

— Standard conditions —

- Power supply voltage DC 3.0 V
- Audio output 25 mW
- Audio load 8 Ω
- Standard modulation frequency 1 kHz
- Modulation frequency deviation ±3.5 kHz
- Transmission load 50 Ω
- Adjustment frequencies See Table 5-1

Table 5-1

Adjustment frequencies Model	Reception		Transmission	
	VHF band	UHF band	VHF band	UHF band
C508	146.02 MHz	435.02 MHz	146.10 MHz	435.10 MHz
C508A	146.02 MHz	444.02 MHz	146.10 MHz	444.10 MHz

NOTE: 0 dBμ = 1 μV (emf)

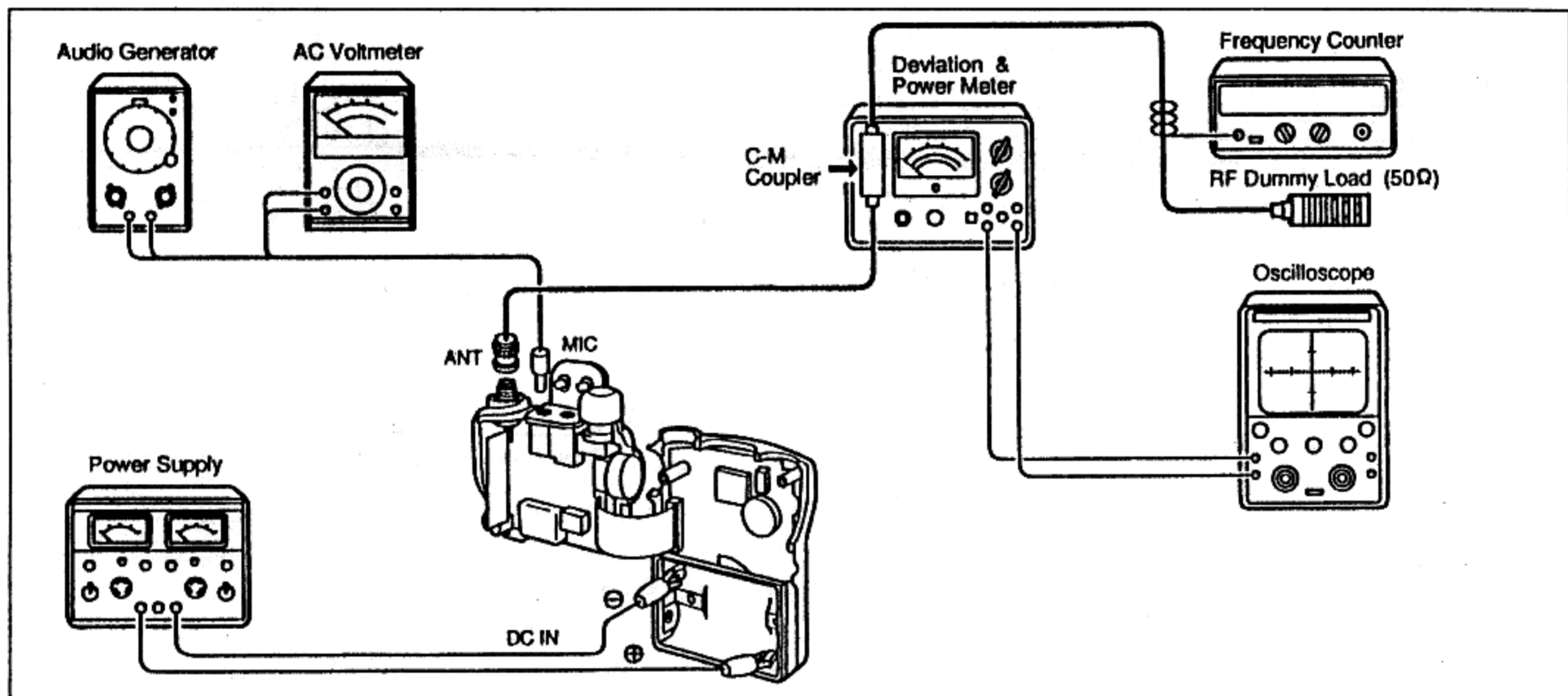


Figure 5-1 Transmission Connection Diagram

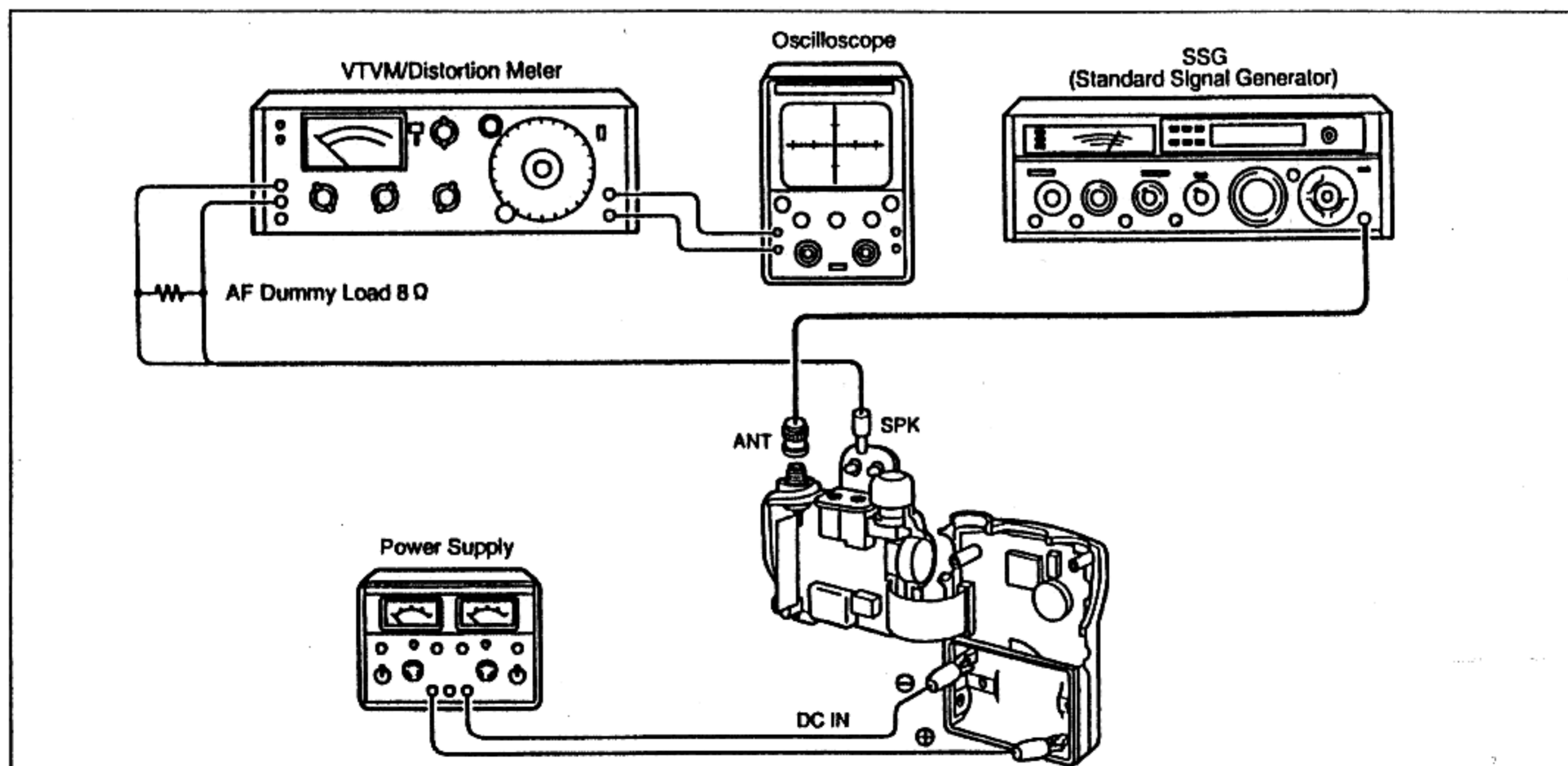


Figure 5-2 Reception Connection Diagram

5.2 Adjustment Point Diagram

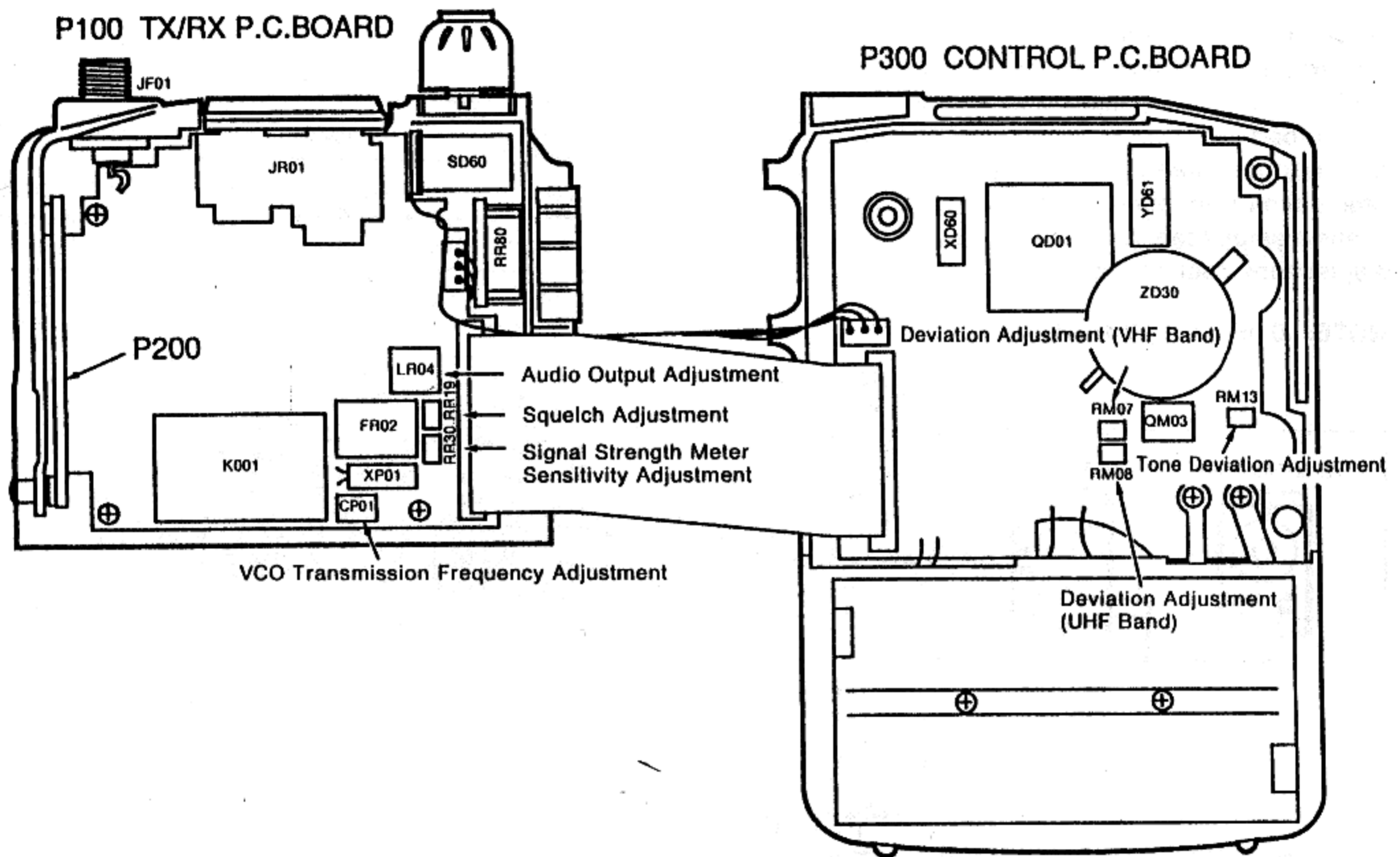


Figure 5-3 Adjustment Point Diagram

5.3 Adjustment and Confirmation

5.3.1 PLL Block

— VCO transmission frequency adjustment —

- (a) Turn CP01 three rotations clockwise before beginning adjustments.
- (b) Apply a 3.0 V power supply to the transceiver.
- (c) Set the transceiver frequency to the UHF band transmission frequency (see Table 5-1).
- (d) With the directional coupler connected to the transceiver, press the PTT switch to switch to the transmit mode.
- (e) At this point, adjust CP01 so that the frequency counter indication (local frequency) is 435.10 MHz ± 100 Hz [C508] or 444.10 MHz ± 100 Hz [C508A].
- (f) Set the transceiver frequency to 146.10 MHz.
- (g) With the directional coupler connected to the transceiver, press the PTT switch to switch to the transmit mode.
- (h) At this point, confirm that the frequency counter indication (local frequency) is 146.10 ± 100 Hz.

5.3.2 Transmitter Block

— Deviation adjustment and confirmation —

(1) UHF band

- (a) Apply a 3.0 V power supply to the transceiver.
- (b) Set the transceiver frequency to the UHF band transmission frequency (see Table 5-1).
- (c) Switch off the filter of the modulation analyzer.
- (d) Input a 1 kHz, 50 mV (OPEN) sine wave to the transceiver from the audio generator (AG).
- (e) Switch the transceiver to the transmit mode.
- (f) At this point, adjust RM08 so that the maximum deviation is ± 4.7 kHz.
- (g) Gradually reduce the output level of the audio generator (AG) until deviation is ± 3.5 kHz. At this point, confirm that the audio generator (AG) sine wave output level is between 3 mV and 7 mV (OPEN).

(2) VHF band

- (a) Apply a 3.0 V power supply to the transceiver.
- (b) Set the transceiver frequency to 146.10 MHz.
- (c) Switch off the filter of the modulation analyzer.
- (d) Input a 1 kHz, 50 mV (OPEN) sine wave to the transceiver from the audio generator (AG).
- (e) Switch the transceiver to the transmit mode.
- (f) At this point, adjust RM07 so that the maximum deviation is ± 4.7 kHz.
- (g) Gradually reduce the output level of the audio generator (AG) until deviation is ± 3.5 kHz. At this point, confirm that the audio generator (AG) sine wave output level is between 3 mV and 7 mV (OPEN).

— Tone-burst deviation adjustment —

- (a) Set the HPF of the modulation analyzer to 50 Hz and the LPF to 20 kHz.
- (b) Apply a 3.0 V power supply to the transceiver.
- (c) Set the transceiver frequency to the UHF band transmission frequency (see Table 5-1). Switch to transmit mode (unmodulated status).
- (d) While holding down the PTT switch, press the Call key (1750 Hz output status).
- (e) At this point, adjust RM13 so that the tone-burst deviation is ± 3.5 kHz. Also, confirm that the tone-burst frequency is 1750 Hz ± 10 Hz.
- (f) Set the transceiver frequency to 146.10 MHz and confirm that tone burst deviation is between ± 3.0 kHz and ± 4.0 kHz. Also, confirm that the tone-burst frequency is 1750 Hz ± 10 Hz.

— Transmission output confirmation —

- (a) Apply a 3.0 V power supply to the transceiver.
- (b) Confirm that the transmission output values are as listed in the table below.

Table 5-2

	VHF band frequency (MHz)	Transmission output value (W)	UHF band frequency (MHz)	Transmission output value (W)
C508	144.100	0.26	430.100	0.25
	146.100	0.26	435.100	0.25
	147.100	0.26	439.980	0.25
C508A	144.100	0.26	438.100	0.25
	146.100	0.26	444.100	0.25
	147.980	0.26	449.980	0.25

— Tone encoder adjustment (CTN115) —

- (a) Set the HPF of the modulation analyzer to OFF, and the LPF to 3 kHz.
- (b) Apply a 3.0 V power supply to the transceiver.
- (c) Set the transceiver frequency to the UHF band transmission frequency (see Table 5-1), and transmit with the transmitter in the tone encode mode or the tone squelch mode. (179.9 Hz tone frequency)

Setting Procedure

Press the SET key, and turn the rotary channel selector knob to display tSq: oF on the display area.

Next, hold down the FUNC key and turn the rotary channel selector knob to display tSq: on the display area.

Turn the rotary channel selector knob so that CF 88.5 is displayed on the display area.

While holding down the FUNC key, turn the rotary channel selector so that the frequency is 179.9 Hz.

- (d) Adjust RG03 (semi-fixed resistance in the tone-squelch unit) so that the tone deviation is ± 0.85 kHz.
- (e) Set the transceiver frequency to the VHF band transmission frequency (see Table 5-1). Transmit with the transmitter in the tone encode mode or the tone squelch mode. (179.9 Hz tone frequency)
- (f) Confirm that the tone deviation is between ± 0.4 kHz and ± 1.2 kHz.

5.3.3 Receiver Block

— Audio output adjustment —

- (a) Set the transceiver frequency to 146.02 MHz.
- (b) Set the standard signal generator (SSG) as follows.
 - Frequency : 146.02 MHz
 - Standard modulation frequency : 1 kHz
 - Standard frequency deviation : ± 3.5 kHz
 - Output level : +60 dB μ
- (c) Adjust LR04 so that the audio output level is maximized.

— Reception sensitivity confirmation —

- (1) VHF band
 - (a) Set the transceiver frequency to 146.02 MHz.
 - (b) Set the standard signal generator (SSG) as follows.
 - Frequency : 146.02 MHz
 - Standard modulation frequency : 1 kHz
 - Standard frequency deviation : ± 3.5 kHz
 - (c) At this point, confirm that 12 dB SINAD is approximately -10 dB μ .
 - (d) Measure 20 dB QS at frequencies of 144.02 and 147.98 MHz. At this point, confirm that the difference between the measured 20 dB QS values is 3 dB or less.
- (2) UHF band
 - (a) Set the transceiver frequency to the UHF band reception frequency (see Table 5-1).
 - (b) Set the standard signal generator (SSG) as follows.
 - Frequency : UHF band reception frequency (see Table 5-1)
 - Standard modulation frequency : 1 kHz
 - Standard frequency deviation : ± 3.5 kHz
 - (c) At this point, confirm that 12 dB SINAD is approximately -9 dB μ .
 - (d) Measure 20 dB QS at frequencies of 430.02 MHz and 439.98 MHz [C508] or 438.02 MHz and 449.98 MHz [C508A]. At this point, confirm that the difference between the measured 20 dB QS values is 3 dB or less.

— Signal strength meter sensitivity adjustment —

- (a) Set the transceiver frequency to 146.02 MHz.
- (b) Set the standard signal generator (SSG) as follows.

Frequency	: 146.02 MHz
Standard modulation frequency	: 1 kHz
Standard frequency deviation	: ± 3.5 kHz
Output level	: +15 dB μ
- (c) Adjust RR30 so that the signal strength meter registers through S9.
- (d) After once lowering the SSG output level, raise the output level slowly.
Confirm that all the signal strength meter segments register when the output level is +20 dB μ or less.
- (e) Next, set the transceiver frequency to the UHF band reception frequency (see Table 5-1).
- (f) Set the SSG frequency to the UHF band reception frequency (see Table 5-1).
- (g) After once lowering the SSG output level, raise the output level slowly.
Confirm that all the signal strength meter segments register when the output level is +20 dB μ or less.

— Squelch adjustment —

- (a) Set the transceiver frequency to 146.02 MHz.
- (b) Set the standard signal generator (SSG) as follows.

Frequency	: 146.02 MHz
Standard modulation frequency	: 1 kHz
Standard frequency deviation	: ± 3.5 kHz
Output level	: -12 dB μ
- (c) Adjust RR19 so that the oscilloscope waveform undergoes a complete level change (squelch opens).
- (d) Gradually lower the SSG output level.
After confirming that squelch closes, raise the output level again.
Confirm that squelch opens when the SSG output level is between -10 dB μ and -14 dB μ .
- (e) Next, set the transceiver frequency to the UHF band reception frequency (see Table 5-1).
- (f) Set the SSG frequency to the UHF band reception frequency (see Table 5-1).
- (g) Confirm that squelch opens when the SSG output level is between -8 dB μ and -14 dB μ .

— Tone squelch reception confirmation (CTN115) —

NOTE: Prepare a second transceiver with a tone squelch unit installed.

- (a) Set two transceivers to the same frequency.
- (b) Set the same tone frequency (any tone frequency may be used) for both transceivers.
- (c) Switch the C508/C508A only to the tone squelch mode.
- (d) Switch the other transceiver to the transmit mode.
At this point, confirm that squelch does not open on the C508/C508A when the RF signal is received.
- (e) Next, switch the other transceiver to the tone squelch mode as well.
- (f) Switch the other transceiver to the transmit mode.
At this point, confirm that squelch opens on the C508/C508A when the RF signal is received.
- (g) Cancel tone squelch mode on both transceivers.

— Beep volume confirmation —

- (a) Confirm that a beep sounds when the function key is pressed and that its volume changes when the volume control is turned.

Adj 

6. SPECIFICATIONS

6.1 General

Frequency range	VHF band 144.000 — 147.995 MHz UHF band 430.000 — 439.995 MHz [C508] 438.000 — 449.995 MHz [C508A]
Frequency type	F3
Microphone impedance	2 k Ω
Speaker impedance	8 Ω
Operating voltage range	DC 2.2 — 3.5 V
Rated voltage	DC 3.0 V
Current consumption	
Transmission	Approx. 280 mA
Reception	VHF band approx. 34 mA UHF band approx. 38 mA
SAVE 1.0 sec.	Approx. 11 mA
APO (auto power off)	Approx. 0.3 mA
Dimensions	
Excluding protrusions	58 mm (W) x 85 mm (D) x 25 mm (H)
Including protrusions	64 mm (W) x 95 mm (D) x 29 mm (H)
Weight (including battery and antenna)	Approx. 160 g

6.2 Receiver Block

Reception method	Double super heterodyne
Intermediate frequencies	First IF 23.05 MHz (lower) Second IF 450 kHz (upper)
Reception sensitivity (12 dB SINAD)	VHF band 0.2 μ V or less UHF band 0.22 μ V or less
S/N ratio at 0.5 μ V input	30 dB or greater
Squelch open sensitivity	0.2 μ V or less
Audio output	Approx. 100 mW (8 Ω /10% distortion)

6.3 Transmitter Block

Transmission output	Approx. 280 mW
Modulation method	Reactance modulation
Maximum frequency deviation	\pm 5 kHz
Spurious signal rejection ratio	-40 dB or greater
Internal microphone	Electric condenser microphone

Specifications are subject to change without notice due to product improvements.

7. PARTS LIST

- Parts list

The parts list contains information on electrical and mechanical parts.

Electrical parts are listed first, followed by mechanical parts.

Parts used only in C508 are indicated by the notation [C508] in the description column.

Parts used only in C508A are indicated by the notation [C508A] in the description column.

- Chip parts

Part numbers whose first three characters correspond to the following codes indicate chip parts.

- Capacitors -

DD4.....

DD5.....

DD9.....

DF9.....

DK4.....

DK5.....

DK9.....

EY.....

- Resistors -

NI.....

NN.....

NY.....

RI.....

- Semiconductors -

BA.....

HX.....

HY.....

HZ.....

- Coils -

LU.....

- Ordering replacement parts

Please supply the following information.

Part symbol (4 characters)

Part number (10 characters)

"Description"

Model and serial number

REF. DESIG.	QTY	PART NO.	DESCRIPTION
P100 TX/RX P.C.BOARD			
P100	1	W1243B1010	TX/RX P.C.BOARD
CF01	1	DD91100300	10 pF ± 0.5 pF (CH)
CF02	1	DD95220300	22 pF ± 5% (CG)
CF03	1	DD91070300	7 pF ± 0.5 pF (CH)
CF04	1	DK98102300	1000 pF ± 10%
CF05	1	DK98102300	1000 pF ± 10%
CF06	1	DK98102300	1000 pF ± 10%
CF07	1	DD91100300	10 pF ± 0.5 pF (CH)
CF08	1	DD90015300	1.5 pF ± 0.25 pF (CK)
CF10	1	DD91100300	10 pF ± 0.5 pF (CH)
CF11	1	DD90015300	1.5 pF ± 0.25 pF (CK)
CF13	1	DD95180300	18 pF ± 5% (CG)
CF14	1	DD90050300	5 pF ± 0.25 pF (CH)
CF15	1	DD90015300	1.5 pF ± 0.25 pF (CK)
CF16	1	DK98102200	1000 pF ± 10%
CF17	1	DK98102200	1000 pF ± 10%
CF18	1	DD90050300	5 pF ± 0.25 pF (CH)
CF20	1	DD90050300	5 pF ± 0.25 pF (CH)
CF21	1	DD95120300	12 pF ± 5% (CG)
CF22	1	DD90040300	4 pF ± 0.25 pF (CH)
CF23	1	DK98102300	1000 pF ± 10%
CF24	1	DD90030300	3 pF ± 0.25 pF (CJ)
CF25	1	DD95220300	22 pF ± 5% (CG)
CF26	1	DD91100300	10 pF ± 0.5 pF (CH)
CF27	1	DK98102300	1000 pF ± 10%
CF28	1	DD91100300	10 pF ± 0.5 pF (CH)
CF30	1	DK98102300	1000 pF ± 10%
CF31	1	DD90010300	1 pF ± 0.25 pF (CK)
CF32	1	DK98102300	1000 pF ± 10%
CF33	1	DD00050200	5 pF ± 0.25 pF (CH)
CF40	1	DD95380300	38 pF ± 5% (CG)
CF41	1	DD90020300	2 pF ± 0.25 pF (CK)
CF42	1	DD05101200	100 pF ± 5% (CH)
CF43	1	DD90050300	5 pF ± 0.25 pF (CH)
CF44	1	DD05150200	15 pF ± 5% (CH)
CF45	1	DD90030300	3 pF ± 0.25 pF (CJ)
CF46	1	DD90020300	2 pF ± 0.25 pF (CK)
CF47	1	DD00020200	2 pF ± 0.25 pF (CK)
CF48	1	DD00050200	5 pF ± 0.25 pF (CH)
CF49	1	DD05151200	150 pF ± 5% (CH)
CF50	1	DD90050300	5 pF ± 0.25 pF (CH)
CF51	1	DD01100200	10 pF ± 0.5 pF (CH)
CF52	1	DD05330200	33 pF ± 5% (CH)
CF53	1	DK98102200	1000 pF ± 10%
CF54	1	DD91100300	10 pF ± 0.5 pF (CH)
CF55	1	DD90040300	4 pF ± 0.25 pF (CH)
CF56	1	DK98102200	1000 pF ± 10%
CF57	1	DD00010200	1 pF ± 0.25 pF (CK)
CF58	1	DK98102300	1000 pF ± 10%
CF59	1	DD05101200	100 pF ± 5% (CH)
CF60	1	DD95101300	100 pF ± 5% (CG)
CF61	1	DK98102200	1000 pF ± 10%
CF62	1	DD91100300	10 pF ± 0.5 pF (CH)
CF63	1	DD00010200	1 pF ± 0.25 pF (CK)
CF64	1	DD90020300	2 pF ± 0.25 pF (CK)

REF. DESIG.	QTY	PART NO.	DESCRIPTION
P100 TX/RX P.C.BOARD			
CP01	1	CX11000020	TRIMM.CAP. 10 pF CTZ10A
CP02	1	DD95200300	20 pF ± 5% (CG)
CP03	1	DD95380300	38 pF ± 5% (CG)
CP04	1	DD95101300	100 pF ± 5% (CG)
CP05	1	DK98103200	0.01 μF ± 10%
CP06	1	DD95430300	43 pF ± 5% (CG)
CP07	1	DK98473200	0.047 μF ± 10%
CP08	1	EY10501810	TANTALUM CAP. 1 μF/16 V
CP09	1	EY47800470	TANTALUM CAP. 47 μF/4 V
CP10	1	DK98102300	1000 pF ± 10%
CP11	1	DK98102300	1000 pF ± 10%
CP12	1	DK98104200	0.1 μF ± 10%
CP13	1	EY10800450	TANTALUM CAP. 10 μF/4 V
CP14	1	DK98224200	0.22 μF 16 V (B)
CP15	1	DD90050300	5 pF ± 0.25 pF (CH)
CP16	1	DD90030300	3 pF ± 0.25 pF (CJ)
CP17	1	DK98473200	0.047 μF ± 10%
CR01	1	DD90050300	5 pF ± 0.25 pF (CH)
CR02	1	DK98102300	1000 pF ± 10%
CR03	1	DD91100300	10 pF ± 0.5 pF (CH)
CR04	1	DK98102300	1000 pF ± 10%
CR05	1	DD90030300	3 pF ± 0.25 pF (CJ)
CR06	1	DK98102300	1000 pF ± 10%
CR07	1	DD90040300	4 pF ± 0.25 pF (CH)
CR08	1	DK98102300	1000 pF ± 10%
CR09	1	DK98102300	1000 pF ± 10%
CR10	1	DD95390300	39 pF ± 5% (CG)
CR11	1	DK98103200	0.01 μF ± 10%
CR12	1	DK98103200	0.01 μF ± 10%
CR13	1	DK98103200	0.01 μF ± 10%
CR14	1	DK98103200	0.01 μF ± 10%
CR15	1	DD95101300	100 pF ± 5% (CG)
CR16	1	DK98103200	0.01 μF ± 10%
CR17	1	DD95221300	220 pF ± 5% (CG)
CR18	1	DD95221300	220 pF ± 5% (CG)
CR19	1	DK98102300	1000 pF ± 10%
CR20	1	DK98104200	0.1 μF ± 10%
CR21	1	DK98473200	0.047 μF ± 10%
CR22	1	DD95180300	18 pF ± 5% (CG)
CR23	1	DK98103200	0.01 μF ± 10%
CR24	1	DK98223200	0.022 μF ± 10%
CR25	1	DK98223200	0.022 μF ± 10%
CR26	1	DK98473200	0.047 μF ± 10%
CR27	1	DK98104200	0.1 μF ± 10%
CR28	1	DK98104200	0.1 μF ± 10%
CR29	1	DK98473200	0.047 μF ± 10%
CR30	1	DK98223200	0.022 μF ± 10%
CR31	1	DK98473200	4700 pF ± 10%
CR32	1	EY10501810	TANTALUM CAP. 1 μF/16 V
CR33	1	DK98104200	0.1 μF ± 10%
CR34	1	DK98104200	0.1 μF ± 10%
CR35	1	DK98223200	0.022 μF ± 10%
CR36	1	DK98153200	0.015 μF ± 10%
CR37	1	EY47500430	TANTALUM CAP. 4.7 μF/4 V
CR38	1	EY10501810	TANTALUM CAP. 1 μF/16 V
CR39	1	DD95101300	100 pF ± 5% (CG)
CR40	1	DK98223200	0.022 μF ± 10%

REF. DESIG.	QTY	PART NO.	DESCRIPTION
			P100 TX/RX P.C.BOARD
CR41	1	DK58224200	0.22 μ F 16 V
CR42	1	EY10700420	TANTALUM CAP. 100 μ F/4 V
CR43	1	DK08103200	0.01 μ F \pm 10 %
CR44	1	EY10700420	TANTALUM CAP. 100 μ F/4 V
CR45	1	DK08104200	0.1 μ F \pm 10 %
CR46	1	EY10700470	TANTALUM CAP. 100 μ F/4 V
CR47	1	DK08102300	1000 pF \pm 10 %
CR48	1	DK08102300	1000 pF \pm 10 %
CR49	1	DK08102300	1000 pF \pm 10 %
CR50	1	DK08102300	1000 pF \pm 10 %
CR51	1	DK08102300	1000 pF \pm 10 %
CR52	1	DK08103200	0.01 μ F \pm 10 %
CR53	1	DK08103200	0.01 μ F \pm 10 %
CR54	1	DK08103200	0.01 μ F \pm 10 %
CR55	1	EY22800470	TANTALUM CAP. 22 μ F/4 V
CR56	1	DK08104200	0.1 μ F \pm 10 %
CR57	1	DK58224200	0.22 μ F 16 V
CT01	1	DK08102300	1000 pF \pm 10 %
CT04	1	DK08102300	1000 pF \pm 10 %
CT05	1	DK08102300	1000 pF \pm 10 %
CT08	1	DD05180300	18 pF \pm 5 % (CG)
CT07	1	DD05150300	15 pF \pm 5 % (CG)
CT08	1	DK08102300	1000 pF \pm 10 %
CT09	1	DD05101300	100 pF \pm 5 % (CG)
CT10	1	DK08103200	0.01 μ F \pm 10 %
CT11	1	DK08102300	1000 pF \pm 10 %
CT12	1	DD05180300	18 pF \pm 5 % (CG)
CT13	1	DD05390300	39 pF \pm 5 % (CG)
CT14	1	DK08102300	1000 pF \pm 10 %
CT16	1	DD05330300	33 pF \pm 5 % (CG)
CT17	1	DD00020300	2 pF \pm 0.25 pF (CK)
CT18	1	DD05220300	22 pF \pm 5 % (CG)
CT19	1	DK08102200	1000 pF \pm 10 %
CT20	1	DD05270300	27 pF \pm 5 % (CG)
CT21	1	DD05121200	120 pF \pm 5 % (CH)
CT22	1	DK08102200	1000 pF \pm 10 %
CT23	1	DD05470300	47 pF \pm 5 % (CG)
CT24	1	DK08102200	1000 pF \pm 10 %
CT40	1	DD05120300	12 pF \pm 5 % (CG)
CT41	1	DD05180300	18 pF \pm 5 % (CG)
CT42	1	DD01090300	9 pF \pm 0.5 pF (CH)
CT43	1	DD01080300	8 pF \pm 0.5 pF (CH)
CT44	1	DD01100200	10 pF \pm 0.5 pF (CH)
CT45	1	DK08102300	1000 pF \pm 10 %
CT46	1	DK08102300	1000 pF \pm 10 %
CT48	1	DD05470300	47 pF \pm 5 % (CG)
CT49	1	DD05101300	100 pF \pm 5 % (CG)
CT50	1	DK08102200	1000 pF \pm 10 %
CT51	1	DK08102200	1000 pF \pm 10 %
CT65	1	DD01090300	9 pF \pm 0.5 pF (CH)
FF20	1	FF34350010	L.C.FILTER LFB30N11B0435B010 [C508]
FF20	1	FF34440010	L.C.FILTER LFB30N11B0444B012 [C508A]
FF21	1	FF34350010	L.C.FILTER LFB30N11B0435B010 [C508]
FF21	1	FF34440010	L.C.FILTER LFB30N11B0444B012 [C508A]

REF. DESIG.	QTY	PART NO.	DESCRIPTION
			P100 TX/RX P.C.BOARD
FR01	1	JX23003270	D235015AD1 (23.05MHz FILTER)
FR02	1	FG450301E0	CERAMIC FILTER KBF-450RS-15AC
JF01	1	YJ10003120	ANTENNA SOCKET (SMA)
JR01	1	YJ01004110	MIC/SPEAKER SOCKET LGA2510-3601
K001	1	KH054Y8010	2-BAND VCO (VHF/UHF)
LF01	1	LU24640010	INDUCTOR 64 nH LQN1A
LF02	1	LU15820030	INDUCTOR 82 nH \pm 5 % NL252018
LF03	1	LU15820030	INDUCTOR 82 nH \pm 5 % NL252018
LF04	1	LU15820030	INDUCTOR 82 nH \pm 5 % NL252018
LF20	1	LU24000010	INDUCTOR 6.8 nH LQN1A
LF21	1	LU04180040	INDUCTOR 18 nH ELJRE
LF22	1	LU04220040	INDUCTOR 22 nH ELJRE
LF23	1	LU04150040	INDUCTOR 15 nH ELJRE
LF24	1	LU04220040	INDUCTOR 22 nH ELJRE
LF40	1	LU04330040	INDUCTOR 33 nH ELJRE
LF41	1	LU03820010	INDUCTOR 82 nH MLF2012
LF42	1	LU04120040	INDUCTOR 12 nH ELJRE
LF43	1	LU04082040	INDUCTOR 8.2 nH ELJRE
LF44	1	LU04058040	INDUCTOR 5.8 nH \pm 5 % ELJRE
LF45	1	LU04068040	INDUCTOR 6.8 nH ELJRE
LF46	1	LU04100040	INDUCTOR 10 nH ELJRE
LF47	1	LU04360040	INDUCTOR 36 nH ELJRE
LF48	1	LU04100040	INDUCTOR 10 nH ELJRE
LF49	1	LU04100040	INDUCTOR 10 nH ELJRE
LP01	1	LU15102010	INDUCTOR 1 μ H NL252018
LR01	1	LU15121010	INDUCTOR 120 nH NL252018
LR02	1	LU04270040	INDUCTOR 27 nH ELJRE
LR03	1	LU15102010	INDUCTOR 1 μ H NL252018
LR04	1	LA50128010	ANTENNA COIL 5CD
LT01	1	LU15820010	INDUCTOR 82 nH NL252018
LT02	1	LU03880020	INDUCTOR 88 nH LL2012-F
LT03	1	LU03470020	INDUCTOR 47 nH LL2012-F
LT04	1	LU15102010	INDUCTOR 1 μ H NL252018
LT05	1	LU24470010	INDUCTOR 47 nH LQN1A
LT06	1	LU24170010	INDUCTOR 17 nH LQN1A
LT07	1	LU24470010	INDUCTOR 47 nH LQN1A
LT08	1	LU24580010	INDUCTOR 58 nH LQN1A
LT09	1	LU24580010	INDUCTOR 58 nH LQN1A
LT10	1	LU24580010	INDUCTOR 58 nH LQN1A
LT40	1	LU24170010	INDUCTOR 17 nH LQN1A
LT41	1	LU24170010	INDUCTOR 17 nH LQN1A
LT42	1	LU24170010	INDUCTOR 17 nH LQN1A
LT43	1	LU24170010	INDUCTOR 17 nH LQN1A
QF01	1	HZ20029210	DIODE DAN235E
QF02	1	HX342601A0	TRANSISTOR 2SC4280 (TI-07)
QF03	1	HX347261P0	TRANSISTOR 2SC4726 (P)
QF04	1	HX342601A0	TRANSISTOR 2SC4280 (TI-07)
QF20	1	HZ20029210	DIODE DAN235E

REF. DESIG.	QTY	PART NO.	DESCRIPTION
			P100 TX/RX P.C.BOARD
QF21	1	HX342201A0	TRANSISTOR 2SC4226 (R24)
QF22	1	HX342201A0	TRANSISTOR 2SC4226 (R24)
QF23	1	HX342601A0	TRANSISTOR 2SC4260 (T1-07)
QF40	1	HX347841A0	TRANSISTOR 2SC4784 (YA-07)
QF41	1	HX342601A0	TRANSISTOR 2SC4260 (T1-07)
QF42	1	HZ21105000	DIODE DAN222 or 1SS361
QF43	1	HZ20035020	DIODE MA77
QF44	1	HZ20035020	DIODE MA77
QF45	1	HZ20035020	DIODE MA77
QF46	1	HX347281P0	TRANSISTOR 2SC4728 (P)
QF47	1	HZ20029210	DIODE DAN235E
QF48	1	HZ20029210	DIODE DAN235E
QP01	1	HC10082180	IC MB1511PFV
QP02	1	HX348492B0	TRANSISTOR 2SC4849 (N,P)
QP03	1	BA12105000	DIGITAL TRANSISTOR DTA123JE or RN2105
QP04	1	HC20007210	IC UMW1
QP05	1	BA10045210	DIGITAL TRANSISTOR UMA4
QP06	1	HX117742A0	TRANSISTOR 2SA1774 (Q,R)
QR01	1	HX347281P0	TRANSISTOR 2SC4728 (P)
QR02	1	HX342201A0	TRANSISTOR 2SC4226 (R24)
QR03	1	HX348492B0	TRANSISTOR 2SC4849 (N,P)
QR04	1	HZ21105000	DIODE DAN222 or 1SS361
QR05	1	HC10352050	IC TA31136FN
QR06	1	BA20081210	DIGITAL TRANSISTOR UMX1
QR07	1	HX348172A0	TRANSISTOR 2SC4817 (Q,R)
QR08	1	HZ21105000	DIODE DAN222 or 1SS361
QR09	1	HX348172A0	TRANSISTOR 2SC4817 (Q,R)
QR10	1	HY101441A0	FET 2SJ144 (Y)
QR11	1	HC10412050	IC TA31056F
QR12	1	HX115881A0	TRANSISTOR 2SA1588 (Y)
QR13	1	HC20007210	IC UMW1
QR14	1	HX115881A0	TRANSISTOR 2SA1588 (Y)
QR15	1	HZ30008020	DIODE MA8056 - M
QR16	1	BA31001000	DIGITAL TRANSISTOR UMZ1 or HN1B01FU
QR17	1	HX348172A0	TRANSISTOR 2SC4817 (Q,R)
QR18	1	BA10040210	DIGITAL TRANSISTOR UMA8
QR19	1	HY10348000	FET 2SJ348
QT01	1	HZ20029210	DIODE DAN235E
QT02	1	HX342601A0	TRANSISTOR 2SC4260 (T1-07)
QT03	1	HZ20035020	DIODE MA77
QT04	1	HX333581B0	TRANSISTOR 2SC3358 (R24)
QT05	1	HX333581B0	TRANSISTOR 2SC3358 (R24)
QT06	1	HX333581B0	TRANSISTOR 2SC3358 (R24)
QT07	1	HZ20029050	DIODE 1SS314
QT08	1	BA20058210	DIGITAL TRANSISTOR DTC123YE
QT09	1	HX115881A0	TRANSISTOR 2SA1588 (Y)
QT10	1	HZ20035020	DIODE MA77
QT40	1	HZ20029210	DIODE DAN235E
QT41	1	HZ20029050	DIODE 1SS314
QT42	1	HZ20035020	DIODE MA77
QT43	1	BA20058210	DIGITAL TRANSISTOR DTC123YE

REF. DESIG.	QTY	PART NO.	DESCRIPTION
			P100 TX/RX P.C.BOARD
RF01	1	NP05882010	6.8 k Ω \pm 5 % 1/16 W
RF02	1	NP05882010	6.8 k Ω \pm 5 % 1/16 W
RF03	1	NP05101010	100 Ω \pm 5 % 1/16 W
RF04	1	NP05882010	6.8 k Ω \pm 5 % 1/16 W
RF05	1	NP05882010	6.8 k Ω \pm 5 % 1/16 W
RF06	1	NP05103610	10 k Ω \pm 5 % 1/16 W
RF07	1	NP05333610	33 k Ω \pm 5 % 1/16 W
RF08	1	NP05222010	2.2 k Ω \pm 5 % 1/16 W
RF09	1	NP05101010	100 Ω \pm 5 % 1/16 W
RF10	1	NP05222010	2.2 k Ω \pm 5 % 1/16 W
RF20	1	NP05124010	120 k Ω \pm 5 % 1/16 W
RF21	1	NP05470010	47 Ω \pm 5 % 1/16 W
RF22	1	NP05154010	150 k Ω \pm 5 % 1/16 W
RF23	1	NP05330010	33 Ω \pm 5 % 1/16 W
RF24	1	NP05103610	10 k Ω \pm 5 % 1/16 W
RF25	1	NP05333010	33 k Ω \pm 5 % 1/16 W
RF26	1	NP05222010	2.2 k Ω \pm 5 % 1/16 W
RF27	1	NP05221010	220 Ω \pm 5 % 1/16 W
RF28	1	NP05221010	220 Ω \pm 5 % 1/16 W
RF29	1	NP05222010	2.2 k Ω \pm 5 % 1/16 W
RF40	1	NP05103610	10 k Ω \pm 5 % 1/16 W
RF41	1	NP05103610	10 k Ω \pm 5 % 1/16 W
RF42	1	NP05103610	10 k Ω \pm 5 % 1/16 W
RF43	1	NP05103610	10 k Ω \pm 5 % 1/16 W
RF44	1	NP05104010	100 k Ω \pm 5 % 1/16 W
RF45	1	NP05471010	470 Ω \pm 5 % 1/16 W
RF46	1	NP05103610	10 k Ω \pm 5 % 1/16 W
RF47	1	NP05331010	330 Ω \pm 5 % 1/16 W
RF48	1	NP05333610	33 k Ω \pm 5 % 1/16 W
RF49	1	NP05222010	2.2 k Ω \pm 5 % 1/16 W
RF50	1	NP05222010	2.2 k Ω \pm 5 % 1/16 W
RF51	1	NP05222010	2.2 k Ω \pm 5 % 1/16 W
RF52	1	NP05101010	100 Ω \pm 5 % 1/16 W
RF53	1	NP05222010	2.2 k Ω \pm 5 % 1/16 W
RF54	1	NP05101010	100 Ω \pm 5 % 1/16 W
RF55	1	NP05222010	2.2 k Ω \pm 5 % 1/16 W
RF56	1	NP05104010	100 k Ω \pm 5 % 1/16 W
RF57	1	NP05331010	330 Ω \pm 5 % 1/16 W
RF58	1	NP05101010	100 Ω \pm 5 % 1/16 W
RP01	1	NP05101010	100 Ω \pm 5 % 1/16 W
RP02	1	NP05473010	47 k Ω \pm 5 % 1/16 W
RP03	1	NP05884010	880 k Ω \pm 5 % 1/16 W
RP04	1	NP05331010	330 Ω \pm 5 % 1/16 W
RP05	1	NP05333610	33 k Ω \pm 5 % 1/16 W
RP06	1	NP05224010	220 k Ω \pm 5 % 1/16 W
RP07	1	NP05223610	22 k Ω \pm 5 % 1/16 W
RP08	1	NP05101010	100 Ω \pm 5 % 1/16 W
RP09	1	NP05102010	1 k Ω \pm 5 % 1/16 W
RP10	1	NP05881010	880 Ω \pm 5 % 1/16 W
RP11	1	NP05222010	2.2 k Ω \pm 5 % 1/16 W
RP12	1	NP05474010	470 k Ω \pm 5 % 1/16 W
RP13	1	NP05104010	100 k Ω \pm 5 % 1/16 W
RP14	1	NP05104010	100 k Ω \pm 5 % 1/16 W
RP15	1	NP05472010	4.7 k Ω \pm 5 % 1/16 W
RP16	1	NP05472010	4.7 k Ω \pm 5 % 1/16 W
RP17	1	NP05472010	4.7 k Ω \pm 5 % 1/16 W

REF. DESIG.	QTY	PART NO.	DESCRIPTION		
P100 TX/RX P.C.BOARD					
RR01	1	NP05103810	10 k Ω	$\pm 5\%$	1/16 W
RR02	1	NP05103810	10 k Ω	$\pm 5\%$	1/16 W
RR03	1	NP05221610	220 Ω	$\pm 5\%$	1/16 W
RR04	1	NP05223610	22 k Ω	$\pm 5\%$	1/16 W
RR05	1	NP05470810	47 Ω	$\pm 5\%$	1/16 W
RR06	1	NP05103810	10 k Ω	$\pm 5\%$	1/16 W
RR07	1	NP05103810	10 k Ω	$\pm 5\%$	1/16 W
RR08	1	NP05101810	100 Ω	$\pm 5\%$	1/16 W
RR09	1	NP05223610	22 k Ω	$\pm 5\%$	1/16 W
RR10	1	NP05470810	47 Ω	$\pm 5\%$	1/16 W
RR11	1	NP05471810	470 Ω	$\pm 5\%$	1/16 W
RR12	1	NP05152810	1.5 k Ω	$\pm 5\%$	1/16 W
RR13	1	NP05224610	220 k Ω	$\pm 5\%$	1/16 W
RR14	1	NP05224610	220 k Ω	$\pm 5\%$	1/16 W
RR15	1	NP05102810	1 k Ω	$\pm 5\%$	1/16 W
RR16	1	NP05154810	150 k Ω	$\pm 5\%$	1/16 W
RR17	1	NP05472810	4.7 k Ω	$\pm 5\%$	1/16 W
RR18	1	NP05224610	220 k Ω	$\pm 5\%$	1/16 W
RR19	1	NY01030300	TRIMM.RESISTOR 10 k Ω MVR22		
RR20	1	NP05332610	3.3 k Ω	$\pm 5\%$	1/16 W
RR21	1	NP05474810	470 k Ω	$\pm 5\%$	1/16 W
RR22	1	NP05153810	15 k Ω	$\pm 5\%$	1/16 W
RR23	1	NP05333810	33 k Ω	$\pm 5\%$	1/16 W
RR24	1	NP05471810	470 Ω	$\pm 5\%$	1/16 W
RR25	1	NP05884810	880 k Ω	$\pm 5\%$	1/16 W
RR26	1	NP05152810	1.5 k Ω	$\pm 5\%$	1/16 W
RR28	1	NP05474810	470 k Ω	$\pm 5\%$	1/16 W
RR29	1	NP05103810	10 k Ω	$\pm 5\%$	1/16 W
RR30	1	NY01040300	TRIMM.RESISTOR 100 k Ω MVR22		
RR31	1	NP05105810	1 M Ω	$\pm 5\%$	1/16 W
RR32	1	NP05224610	220 k Ω	$\pm 5\%$	1/16 W
RR33	1	NP05153810	15 k Ω	$\pm 5\%$	1/16 W
RR34	1	NP05153810	15 k Ω	$\pm 5\%$	1/16 W
RR35	1	NP05474810	470 k Ω	$\pm 5\%$	1/16 W
RR36	1	NP05152810	1.5 k Ω	$\pm 5\%$	1/16 W
RR37	1	NP05471810	470 Ω	$\pm 5\%$	1/16 W
RR38	1	NP05474810	470 k Ω	$\pm 5\%$	1/16 W
RR39	1	NP05474810	470 k Ω	$\pm 5\%$	1/16 W
RR40	1	NP05471810	470 Ω	$\pm 5\%$	1/16 W
RR41	1	NP05474810	470 k Ω	$\pm 5\%$	1/16 W
RR42	1	NP05473810	47 k Ω	$\pm 5\%$	1/16 W
RR43	1	NP05471810	470 Ω	$\pm 5\%$	1/16 W
RR44	1	NP05153810	15 k Ω	$\pm 5\%$	1/16 W
RR45	1	NP05102810	1 k Ω	$\pm 5\%$	1/16 W
RR46	1	NP05474810	470 k Ω	$\pm 5\%$	1/16 W
RR47	1	NP05155810	1.5 M Ω	$\pm 5\%$	1/16 W
RR48	1	NP05153810	15 k Ω	$\pm 5\%$	1/16 W
RR49	1	NP05105810	1 M Ω	$\pm 5\%$	1/16 W
RR50	1	NP05101810	100 Ω	$\pm 5\%$	1/16 W
RR51	1	NP05101810	100 Ω	$\pm 5\%$	1/16 W
RR52	1	NP05471810	470 Ω	$\pm 5\%$	1/16 W
RR53	1	NP05220610	22 Ω	$\pm 5\%$	1/16 W
RR54	1	NP05224610	220 k Ω	$\pm 5\%$	1/16 W
RR55	1	NP05883810	88 k Ω	$\pm 5\%$	1/16 W

REF. DESIG.	QTY	PART NO.	DESCRIPTION		
P100 TX/RX P.C.BOARD					
RT01	1	NP05102810	1 k Ω	$\pm 5\%$	1/16 W
RT02	1	NP05151810	150 Ω	$\pm 5\%$	1/16 W
RT03	1	NP05470810	47 Ω	$\pm 5\%$	1/16 W
RT04	1	NP05102810	1 k Ω	$\pm 5\%$	1/16 W
RT05	1	NP05471810	470 Ω	$\pm 5\%$	1/16 W
RT06	1	NP05151810	150 Ω	$\pm 5\%$	1/16 W
RT07	1	NP05470810	47 Ω	$\pm 5\%$	1/16 W
RT08	1	NP05470810	47 Ω	$\pm 5\%$	1/16 W
RT09	1	NP05221610	220 Ω	$\pm 5\%$	1/16 W
RT10	1	NP05470810	47 Ω	$\pm 5\%$	1/16 W
RT40	1	NP05102810	1 k Ω	$\pm 5\%$	1/16 W
RT41	1	NP05151810	150 Ω	$\pm 5\%$	1/16 W
XP01	1	JX11001210	CA - 301M (11.75MHZ CRYSTAL)		
YR01	1	YJ07000850	SOCKET 33 PIN IL - FPR - 33S - VF		
YR02	1	YJ07005170	SOCKET 3 PIN IL - Z - 3P - S125T3 - E		
W100	1	WE243B1000	FLEXIBLE P.C.BOARD		
P200 UHF TX/SWITCH P.C.BOARD					
P200 UHF TX/SWITCH P.C.BOARD					
CT60	1	DK06102300	1000 pF	$\pm 10\%$	
CT61	1	DD01100300	10 pF	$\pm 0.5\%$	(CH)
CT62	1	DD05180300	18 pF	$\pm 5\%$	(CG)
CT63	1	DD05200300	20 pF	$\pm 5\%$	(CG)
CT64	1	DD05101300	100 pF	$\pm 5\%$	(CG)
CT66	1	DK06102300	1000 pF	$\pm 10\%$	
CT67	1	DK06102300	1000 pF	$\pm 10\%$	
CT68	1	DK06102300	1000 pF	$\pm 10\%$	
CT69	1	DK06102300	1000 pF	$\pm 10\%$	
CT70	1	DK06102300	1000 pF	$\pm 10\%$	
CT71	1	DK06103200	0.01 μ F	$\pm 10\%$	
CT72	1	DK06102300	1000 pF	$\pm 10\%$	
CT73	1	DK06102300	1000 pF	$\pm 10\%$	
CT74	1	DK06102300	1000 pF	$\pm 10\%$	
CT75	1	DK06102300	1000 pF	$\pm 10\%$	
CT78	1	DD00020300	2 pF	$\pm 0.25\%$	(CK)
CT77	1	DD00020300	2 pF	$\pm 0.25\%$	(CK)
LT80	1	LU04220040	INDUCTOR 22 nH ELJRE		
LT81	1	LU04150040	INDUCTOR 15 nH ELJRE		
LT82	1	LU04050040	INDUCTOR 5.8 nH $\pm 5\%$ ELJRE		
LT83	1	LU15121010	INDUCTOR 120 nH NL252018		
LT84	1	LU24000010	INDUCTOR 8.8 nH LQN1A		
LT85	1	FC00020020	FERRITE CORE HF30ACB201200		
LT86	1	LU24150010	INDUCTOR 14.7 nH LQN1A		
QT80	1	HX342261A0	TRANSISTOR 2SC4226 (R24)		
QT81	1	HX333581B0	TRANSISTOR 2SC3356 (R24)		
QT82	1	HX333581B0	TRANSISTOR 2SC3356 (R24)		
QT83	1	HX333581B0	TRANSISTOR 2SC3356 (R24)		
QT84	1	HZ20035020	DIODE MA77		
QT85	1	HX115881A0	TRANSISTOR 2SA1588 (Y)		
RT80	1	NP05102810	1 k Ω	$\pm 5\%$	1/16 W

REF. DESIG.	QTY	PART NO.	DESCRIPTION
P200 UHF TX/SWITCH P.C.BOARD			
RT81	1	NP05220610	22 Ω $\pm 5\%$ 1/16 W
RT82	1	NP05151610	150 Ω $\pm 5\%$ 1/16 W
RT83	1	NP05470610	47 Ω $\pm 5\%$ 1/16 W
RT84	1	NP05102610	1 k Ω $\pm 5\%$ 1/16 W
RT85	1	NP05220610	22 Ω $\pm 5\%$ 1/16 W
RT86	1	NP05221610	220 Ω $\pm 5\%$ 1/16 W
ST80	1	SP01011820	PUSH SWITCH SKQDAA (PTT SWITCH)
ST81	1	SP01011820	PUSH SWITCH SKQDAA (FUNC SWITCH)
ST82	1	SP01011820	PUSH SWITCH SKQDAA (LAMP SWITCH)
P300 CONTROL P.C.BOARD			
P300	1	W1243B1036	CONTROL P.C.BOARD
CD01	1	DK98102300	1000 pF $\pm 10\%$
CD02	1	DK98473200	0.047 μ F $\pm 10\%$
CD03	1	DK98103200	0.01 μ F $\pm 10\%$
CD04	1	EY15700470	TANTALUM CAP. 150 μ F/4 V
CD05	1	EY10700470	TANTALUM CAP. 100 μ F/4 V
CD06	1	DK98103200	0.01 μ F $\pm 10\%$
CD07	1	EY10700670	TANTALUM CAP. 100 μ F/6.3 V
CD08	1	DK98103200	0.01 μ F $\pm 10\%$
CD09	1	EY10700470	TANTALUM CAP. 100 μ F/4 V
CD10	1	DK98102300	1000 pF $\pm 10\%$
CD11	1	EY10403510	TANTALUM CAP. 0.1 μ F/35 V
CD12	1	EY10600450	TANTALUM CAP. 10 μ F/4 V
CD13	1	DK98102300	1000 pF $\pm 10\%$
CD14	1	DK98103200	0.01 μ F $\pm 10\%$
CD15	1	DK98103200	0.01 μ F $\pm 10\%$
CD16	1	DK98103200	0.01 μ F $\pm 10\%$
CD17	1	DK98103200	0.01 μ F $\pm 10\%$
CD18	1	DK98103200	0.01 μ F $\pm 10\%$
CD19	1	DK98103200	0.01 μ F $\pm 10\%$
CD20	1	DK98103200	0.01 μ F $\pm 10\%$
CD21	1	DK98103200	0.01 μ F $\pm 10\%$
CD22	1	DK98103200	0.01 μ F $\pm 10\%$
CD23	1	DK98103200	0.01 μ F $\pm 10\%$
CD24	1	DK98103200	0.01 μ F $\pm 10\%$
CD30	1	DK98103200	0.01 μ F $\pm 10\%$
CD31	1	EY22600470	TANTALUM CAP. 22 μ F/4 V
CD32	1	DK98104200	0.1 μ F $\pm 10\%$
CD33	1	DK98102300	1000 pF $\pm 10\%$
CD34	1	DK98104200	0.1 μ F $\pm 10\%$
CD35	1	DK98102300	1000 pF $\pm 10\%$
CD36	1	DK98102300	1000 pF $\pm 10\%$
CD37	1	DK98102300	1000 pF $\pm 10\%$
CD38	1	DK98103200	0.01 μ F $\pm 10\%$
CD50	1	DK98102300	1000 pF $\pm 10\%$
CD51	1	DK98102300	1000 pF $\pm 10\%$
CD52	1	DK98102300	1000 pF $\pm 10\%$
CD53	1	DK98102300	1000 pF $\pm 10\%$
CD60	1	DK98102300	1000 pF $\pm 10\%$

REF. DESIG.	QTY	PART NO.	DESCRIPTION
P300 CONTROL P.C.BOARD			
CD61	1	DK98102300	1000 pF $\pm 10\%$
CD62	1	DK98102300	1000 pF $\pm 10\%$
CD63	1	DK98103200	0.01 μ F $\pm 10\%$
CD64	1	DK98103200	0.01 μ F $\pm 10\%$
CD65	1	DK98103200	0.01 μ F $\pm 10\%$
CD66	1	DD95390300	39 pF $\pm 5\%$ (CG)
CD67	1	DD95430300	43 pF $\pm 5\%$ (CG)
CD68	1	DK98103200	0.01 μ F $\pm 10\%$
CD69	1	DK98473200	0.047 μ F $\pm 10\%$
CD70	1	DK98103200	0.01 μ F $\pm 10\%$
CD71	1	DK98223200	0.022 μ F $\pm 10\%$
CD72	1	DK98102300	1000 pF $\pm 10\%$
CD74	1	DK98103200	0.01 μ F $\pm 10\%$
CD75	1	DK98103200	0.01 μ F $\pm 10\%$
CD76	1	DK98103200	0.01 μ F $\pm 10\%$
CM01	1	DK98102300	1000 pF $\pm 10\%$
CM02	1	DK98102300	1000 pF $\pm 10\%$
CM03	1	DK98472300	4700 pF $\pm 10\%$
CM04	1	DK98104200	0.1 μ F $\pm 10\%$
CM05	1	DD95101300	100 pF $\pm 5\%$ (CG)
CM06	1	DK98104200	0.1 μ F $\pm 10\%$
CM07	1	DK98472300	4700 pF $\pm 10\%$
CM08	1	DD95331300	330 pF $\pm 5\%$ (CG)
CM09	1	DK98104200	0.1 μ F $\pm 10\%$
CM10	1	DK98102300	1000 pF $\pm 10\%$
CM11	1	DK98472300	4700 pF $\pm 10\%$
CM13	1	DK98472300	4700 pF $\pm 10\%$
CM14	1	DK98104200	0.1 μ F $\pm 10\%$
CM15	1	DK98102300	1000 pF $\pm 10\%$
CM16	1	EY10501610	TANTALUM CAP. 1 μ F/16 V
CM17	1	DK98103200	0.01 μ F $\pm 10\%$
CM18	1	EY22600470	TANTALUM CAP. 22 μ F/4 V
CM20	1	DK98102300	1000 pF $\pm 10\%$
CM21	1	DK98102300	1000 pF $\pm 10\%$
CM22	1	EY10600450	TANTALUM CAP. 10 μ F/4 V
CM23	1	DK98223200	0.022 μ F $\pm 10\%$
ED01	1	GK00282030	SPEAKER 28 MM ϕ
JD01	1	YU01001700	ZEBRA CONNECTOR
LD01	1	LU81104610	INDUCTOR 100 μ H CM-5
NM01	1	MS50000410	MICROPHONE UNIT WM- 62A
Q001	1	HD20031010	DIODE V06C
Q002	1	KH039Y9010	CTCSS UNIT (CTN115)
QD01	1	HU243BH10F	MICROPROCESSOR HD404829
QD02	1	HQ20512530	DISPLAY UNIT E- 4270
QD10	1	HC10058530	IC PST9018N (RESET IC)
QD11	1	HZ20054020	DIODE MA720
QD12	1	HC91203980	IC ELM9535B (DC/DC- CONVERTOR)
QD13	1	HC10038530	IC S81332HG (3.2V REGULATOR)
QD14	1	BA10045210	DIGITAL TRANSISTOR UMA4
QD15	1	BA20080210	DIGITAL TRANSISTOR UMG2
QD16	1	HC20007210	IC UMW1
QD17	1	BA12105000	DIGITAL TRANSISTOR DTA123JE or RN2105
QD18	1	BA30001210	DIGITAL TRANSISTOR UMC5
QD19	1	BA10059210	DIGITAL TRANSISTOR UMB4
QD20	1	BA10059210	DIGITAL TRANSISTOR UMB4

REF. DESIG.	QTY	PART NO.	DESCRIPTION
P300 CONTROL P.C. BOARD			
QD21	1	BA10045210	DIGITAL TRANSISTOR UMA4
QD22	1	BA10045210	DIGITAL TRANSISTOR UMA4
QD30	1	HZ20039050	DIODE 1SS378
QD31	1	HC10414050	IC TC7S88FU
QD32	1	BA20055210	DIGITAL TRANSISTOR DTC114YE
QD33	1	HC10414050	IC TC7S88FU
QD34	1	HY21829000	FET 2SK1829
QD35	1	BA10014210	DIGITAL TRANSISTOR DTA144EU
QD36	1	HZ21105000	DIODE DAN222 or 1SS361
QD37	1	HZ20011020	DIODE MA728
QD50	1	HI10094210	L.E.D. SML- 110MT (BACK LIGHT FOR LCD)
QD51	1	HI10094210	L.E.D. SML- 110MT (BACK LIGHT FOR LCD)
QD52	1	HX348172A0	TRANSISTOR 2SC4817 (Q.R)
QD53	1	HI10094300	L.E.D. BRPG1204W (TX/BUSY LAMP)
QD54	1	HC20007210	IC UMW1
QM01	1	HZ30008020	DIODE MA8058 - M
QM02	1	HZ30008020	DIODE MA8058 - M
QM03	1	HC10159210	IC BA4510F (DUAL OP- AMP)
QM04	1	BA20057210	DIGITAL TRANSISTOR UMG5
QM05	1	BA12105000	DIGITAL TRANSISTOR DTA123JE or RN2105
QM08	1	HY21829000	FET 2SK1829
RD01	1	NP05022810	2.2 Ω ± 5 % 1/16 W
RD02	1	NN05010810	1 Ω ± 5 % 1/16 W
RD03	1	NP05473810	47 k Ω ± 5 % 1/16 W
RD04	1	NP05473810	47 k Ω ± 5 % 1/16 W
RD05	1	NP05101810	100 Ω ± 5 % 1/16 W
RD06	1	NP05222810	2.2 k Ω ± 5 % 1/16 W
RD07	1	NP05103810	10 k Ω ± 5 % 1/16 W
RD08	1	NP05103810	10 k Ω ± 5 % 1/16 W
RD30	1	NP05474810	470 k Ω ± 5 % 1/16 W
RD31	1	NP05474810	470 k Ω ± 5 % 1/16 W
RD32	1	NP05102610	1 k Ω ± 5 % 1/16 W
RD33	1	NP05104810	100 k Ω ± 5 % 1/16 W
RD34	1	NP05105810	1 M Ω ± 5 % 1/16 W
RD35	1	NP05474810	470 k Ω ± 5 % 1/16 W
RD36	1	NP05105810	1 M Ω ± 5 % 1/16 W
RD37	1	NP05102610	1 k Ω ± 5 % 1/16 W
RD38	1	NP05104810	100 k Ω ± 5 % 1/16 W
RD39	1	NP05102610	1 k Ω ± 5 % 1/16 W
RD40	1	NP05104810	100 k Ω ± 5 % 1/16 W
RD41	1	NP05334810	330 k Ω ± 5 % 1/16 W
RD42	1	NP05102610	1 k Ω ± 5 % 1/16 W
RD43	1	NP05224810	220 k Ω ± 5 % 1/16 W
RD44	1	NP05224810	220 k Ω ± 5 % 1/16 W
RD45	1	NP05224810	220 k Ω ± 5 % 1/16 W
RD50	1	NP05022810	2.2 Ω ± 5 % 1/16 W
RD51	1	NP05472810	4.7 k Ω ± 5 % 1/16 W
RD52	1	NP05472810	4.7 k Ω ± 5 % 1/16 W
RD53	1	NP05100810	10 Ω ± 5 % 1/16 W
RD54	1	NP05103810	10 k Ω ± 5 % 1/16 W
RD55	1	NP05472810	4.7 k Ω ± 5 % 1/16 W
RD56	1	NP05103810	10 k Ω ± 5 % 1/16 W
RD57	1	NP05472810	4.7 k Ω ± 5 % 1/16 W
RD58	1	NP05330810	33 Ω ± 5 % 1/16 W
RD60	1	NP05224810	220 k Ω ± 5 % 1/16 W

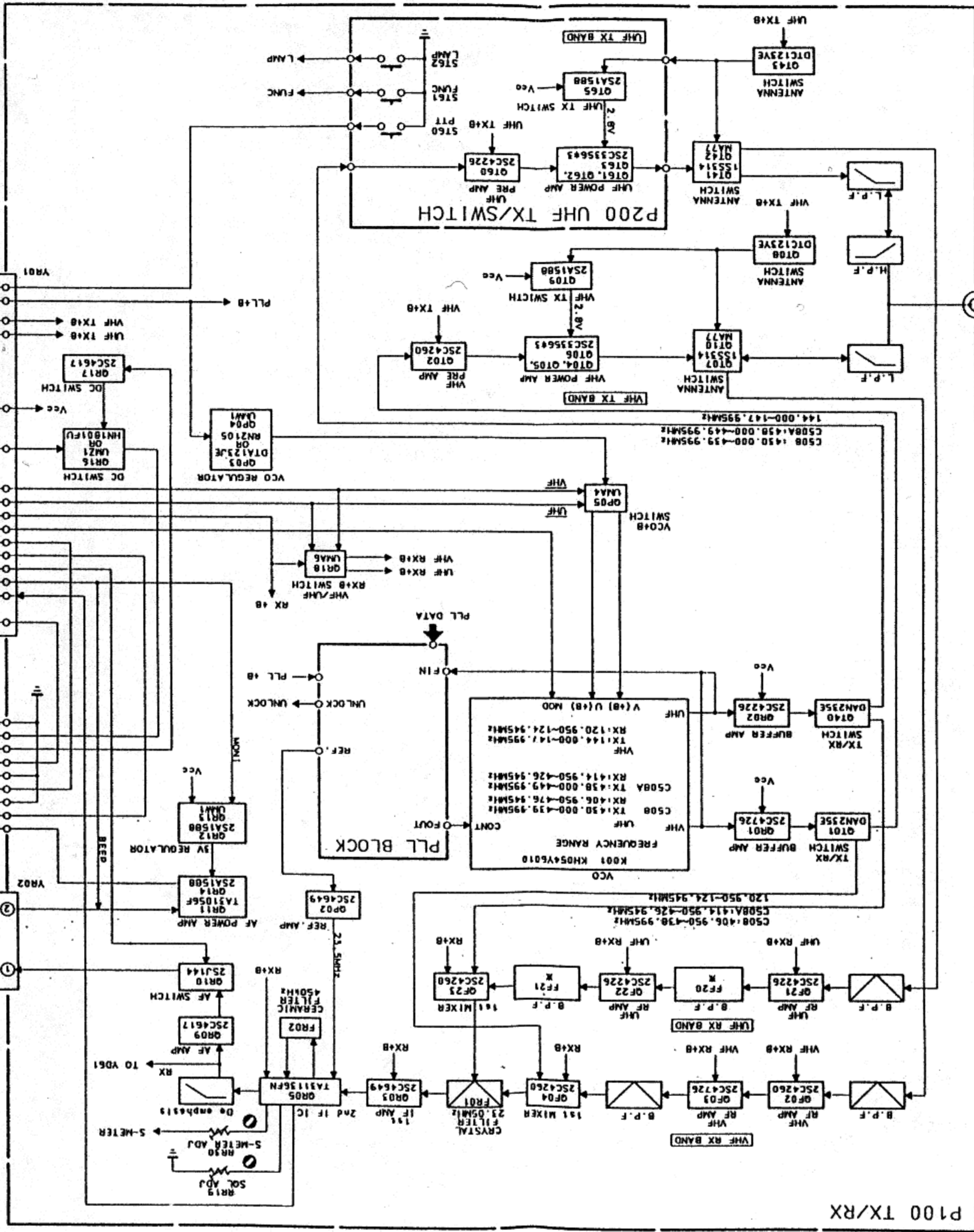
REF. DESIG.	QTY	PART NO.	DESCRIPTION
P300 CONTROL P.C. BOARD			
RD61	1	NP05102610	1 k Ω ± 5 % 1/16 W
RD62	1	NP05102610	1 k Ω ± 5 % 1/16 W
RD63	1	NP05101810	100 Ω ± 5 % 1/16 W
RD64	1	NP05102610	1 k Ω ± 5 % 1/16 W
RD65	1	NP05102610	1 k Ω ± 5 % 1/16 W
RD66	1	NP05105810	1 M Ω ± 5 % 1/16 W
RD67	1	NP05103810	10 k Ω ± 5 % 1/16 W
RD68	1	NP05473810	47 k Ω ± 5 % 1/16 W
RD69	1	NP05473810	47 k Ω ± 5 % 1/16 W
RD76	1	NP05000810	0 Ω ± 5 % 1/16 W [C508A]
RD77	1	NP05000810	0 Ω ± 5 % 1/16 W [C508A]
RD79	1	NP05000810	0 Ω ± 5 % 1/16 W [C508]
RD80	1	NP05103810	10 k Ω ± 5 % 1/16 W
RD81	1	NP05103810	10 k Ω ± 5 % 1/16 W
RD82	1	NP05103810	10 k Ω ± 5 % 1/16 W
RD83	1	NP05104810	100 k Ω ± 5 % 1/16 W
RD84	1	NP05104810	100 k Ω ± 5 % 1/16 W
RD85	1	NP05104810	100 k Ω ± 5 % 1/16 W
RM01	1	NP05333810	33 k Ω ± 5 % 1/16 W
RM02	1	NP05684810	680 k Ω ± 5 % 1/16 W
RM03	1	NP05471810	470 Ω ± 5 % 1/16 W
RM04	1	NP05154810	150 k Ω ± 5 % 1/16 W
RM05	1	NP05223810	22 k Ω ± 5 % 1/16 W
RM08	1	NP05153810	15 k Ω ± 5 % 1/16 W
RM07	1	NY01030300	TRIMM.RESISTOR 10 k Ω MVR22
RM08	1	NY01030300	TRIMM.RESISTOR 10 k Ω MVR22
RM09	1	NP05104810	100 k Ω ± 5 % 1/16 W
RM10	1	NP05153810	15 k Ω ± 5 % 1/16 W
RM11	1	NP05000810	0 Ω ± 5 % 1/16 W
RM12	1	NP05473810	47 k Ω ± 5 % 1/16 W
RM13	1	NY03340300	TRIMM.RESISTOR 330 k Ω MVR22
RM14	1	NP05104810	100 k Ω ± 5 % 1/16 W
RM15	1	NP05103810	10 k Ω ± 5 % 1/16 W
RM16	1	NP05103810	10 k Ω ± 5 % 1/16 W
RM17	1	NP05473810	47 k Ω ± 5 % 1/16 W
RM18	1	NP05104810	100 k Ω ± 5 % 1/16 W
RM19	1	NP05471810	470 Ω ± 5 % 1/16 W
RM20	1	NP05474810	470 k Ω ± 5 % 1/16 W
SD30	1	SP01011820	PUSH SWITCH SKQDAA (RESET SWITCH)
XD00	1	FQ02004040	CERAMIC VIB. CSAC2.0MGC200
YD00	1	YJ07009850	SOCKET 33 PIN IL- FPR- 33S- VF
YD01	1	YJ07009860	SOCKET 9810S- 09Y901 (FOR CTCSS UNIT)
YD02	1	YJ07005170	SOCKET 3 PIN IL- Z- 3P- S125T3- E
ZD30	1	ZB09130010	LITHIUM BATTERY CR1632- 1HE

REF. DESIG.	QTY	PART NO.	DESCRIPTION
			P400 AF VOLUME P.C.BOARD
P400	1	W1243B1040	AF VOLUME P.C.BOARD
RR80	1	RB01030490	VARIABLE RESISTOR 10 K Ω RK08H1110(B)
YR03	1	YB00309090	CONNECTIVE CORD FOR AF VOLUME
			P500 ROTARY SWITCH P.C.BOARD
P500	1	W1243B1050	ROTARY SWITCH P.C.BOARD
SD80	1	SR01200110	ROTARY SWITCH EC09P20
YD83	1	YB00501380	CONNECTIVE CORD FOR ROTARY SWITCH

REF. DESIG.	QTY	PART NO.	DESCRIPTION
			MECHANISM
001B	1	243B064130	FRONT CASE [C508]
001B	1	243B064120	FRONT CASE [C508A]
002B	1	243B158010	WINDOW
003B	1	243B122010	STICKER FOR FRONT CASE,WINDOW
004B	1	243B202010	NET FOR SPEAKER
005B	1	243B151010	INTRODUCER FOR CONTROL P.C.BOARD
006B	1	243B274010	REFLECTOR
007B	1	243B270020	KEY BUTTON
008B	4	51971704U0	P TITE SCREW P1.7X4
009B	1	243B056010	BUFFER FOR LCD
011B	1	243B064030	BATTERY CASE
012B	1	243B154040	BATTERY LOCK KNOB
013B	1	243B123010	CONTACTOR +
014B	1	243B123020	CONTACTOR -
015B	1	243B123030	CONTACTOR -
016B	1	243B123040	CONTACTOR +
017B	1	243B123050	CONTACTOR +,-
018B	1	243B056030	BUFFER FOR SPEAKER
019B	2	51970204U0	P TITE SCREW P2X4
020B	2	243B056080	BUFFER FOR BATTERY - CONTACTOR
031B	1	243B270010	PTT BUTTON
032B	1	243B160030	BRACKET FOR PTT BUTTON
041B	1	243B084020	REAR CASE
042B	1	243B087010	CAP FOR MIC&SPEAKER SOCKET
043B	1	243B180010	BRACKET FOR MIC&SPEAKER
044B	1	243B011010	NUT FOR ANTENNA SOCKET
045B	1	243B154030	CHANNEL KNOB
046B	4	51250212U0	P.H.M. SCREW P2X12
047B	1	302C011020	NUT FOR CHANNEL
048B	1	243B881040	LABEL [C508]
048B	1	243B881030	LABEL [C508A]
050B	3	51901803A0	B.H.TAP. SCREW B1.8 x3
051B	1	243B122030	STICKER FOR PTT BUTTON,REAR CASE
061B	1	243B180020	BRACKET FOR VOLUME
062B	1	243B154010	VOLUME KNOB A
063B	1	243B154020	VOLUME KNOB B
064B	1	243B122020	VOLUME KNOB A + B
065B	1	243B107010	SHEET FOR VOL KNOB
066B	1	51821405A0	P.H.M. SCREW P1.4X5
067B	1	51901402U0	B.H.TAP. SCREW B1.4 x2
071B	1	243B257010	LID FOR BATTERY CASE
081B	1	003B122020	STICKER FOR CRYSTAL
082B	1	243B056040	BUFFER FOR LITHIUM BATTERY
083B	1	243B123080	GND CONTACTOR FOR TX/RX P.C.BOARD
084B	1	243B107020	SHEET FOR REAR CASE
085B	1	243B118010	LEAF SPRING FOR ROTARY CHANNEL
086B	1	243B056050	BUFFER FOR CTCSS UNIT
0001	1	003B122030	STICKER FOR CONTROL P.C.BOARD

C508 07 < 0057 >
C508A 06 < 0057 >

10. BLOCK DIAGRAM



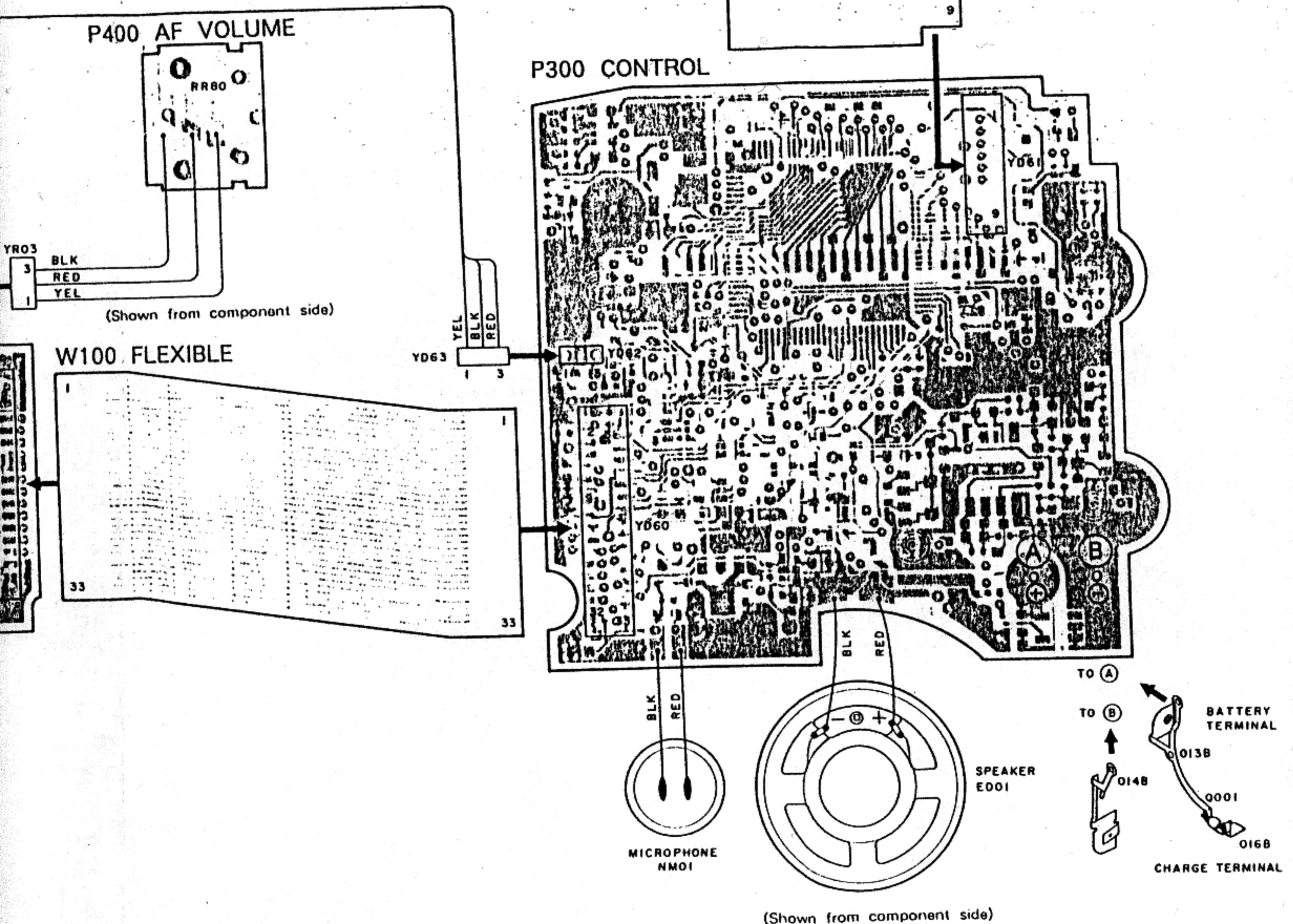
X CONTRAST CHART

REF. DESIG.	FF20	FF21
MODEL	LF830N1180435B010	LF830N1180444B012
C508	LF830N1180435B010	
C508A	LF830N1180444B012	

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 Beh. T. Hultermans
 Postbus 4228
 5604 EE Eindhoven

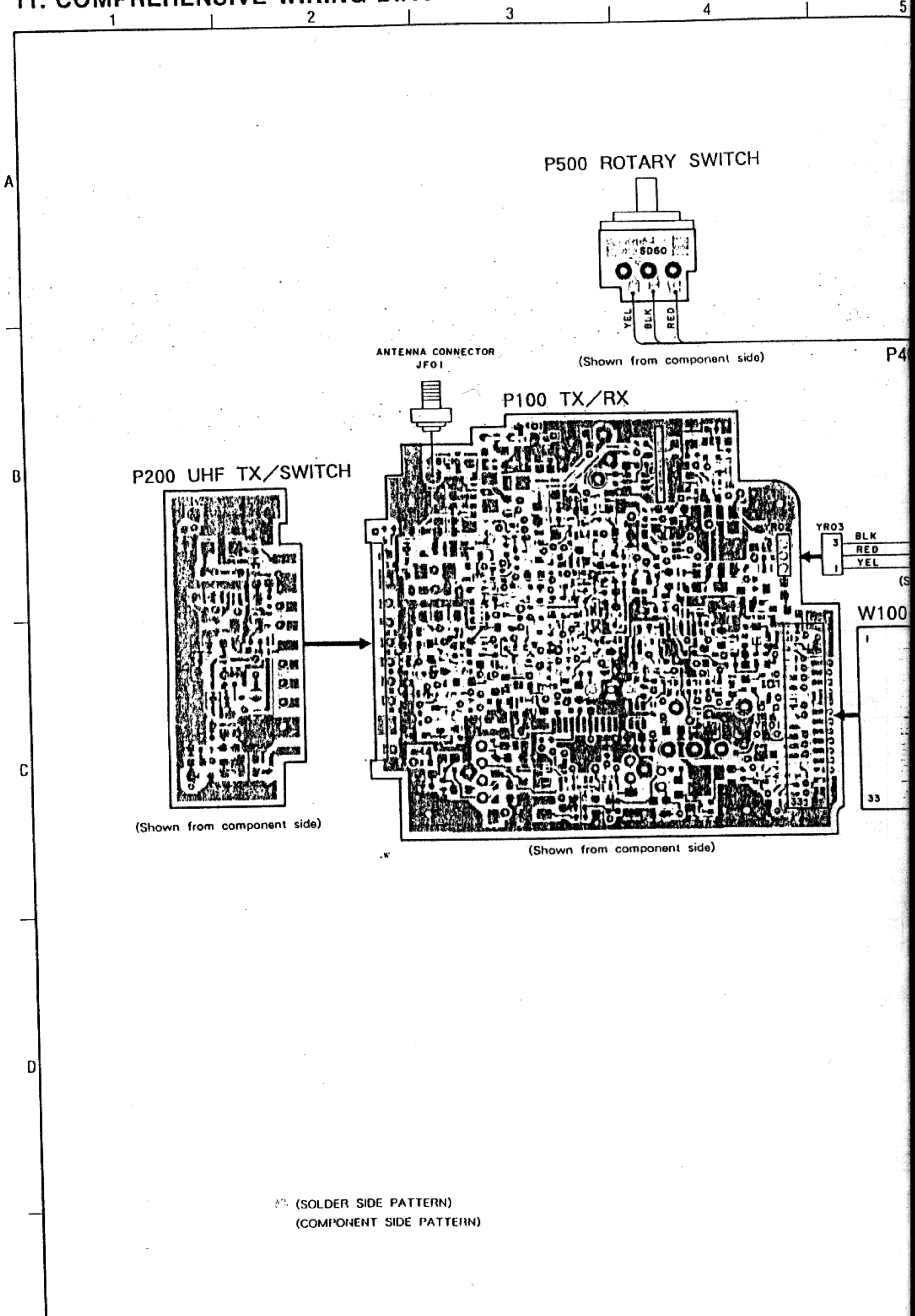
Q002 TONE SQUELCH (CTN115)

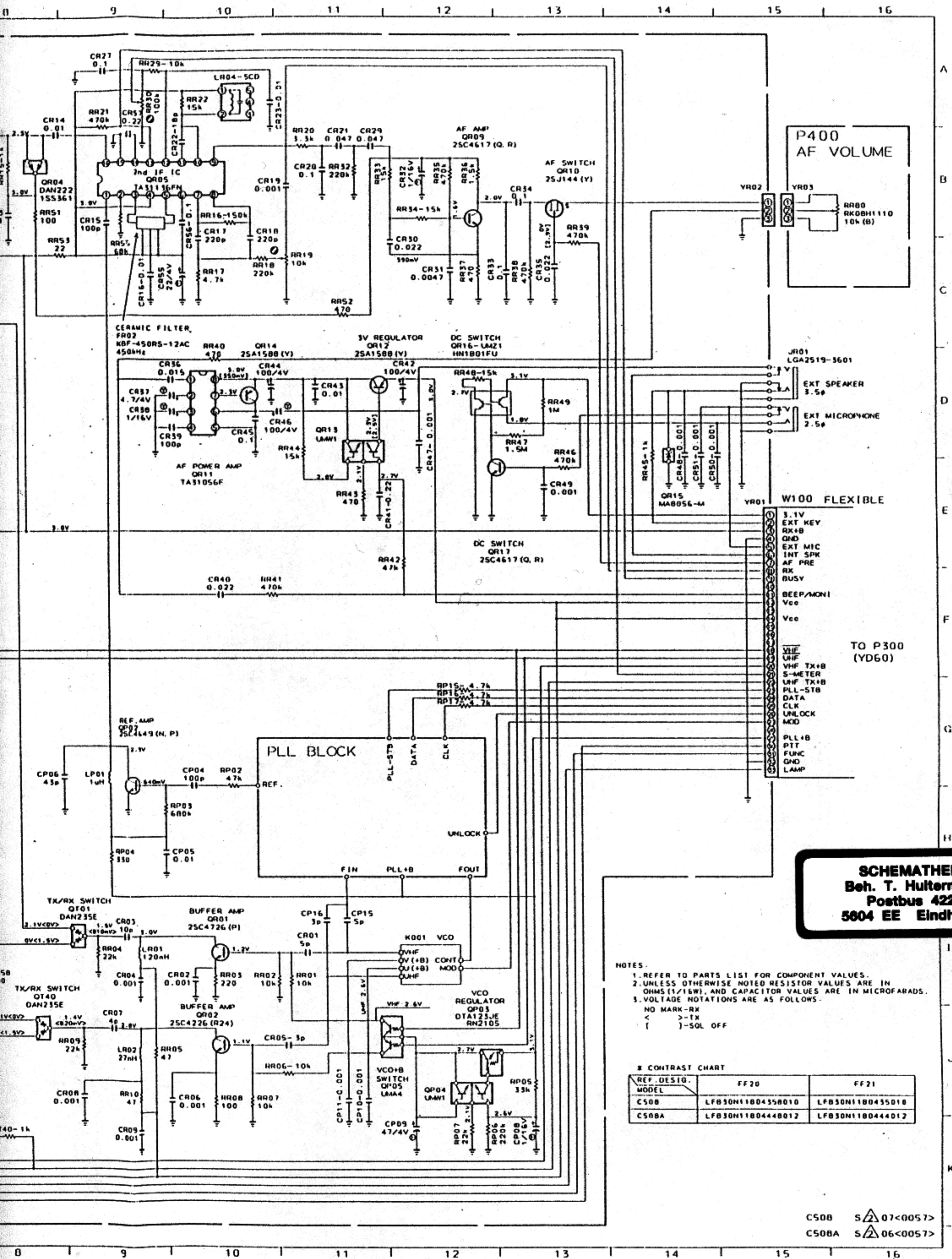


(Shown from component side)

W243B100 P 0
 C508 07 < 0057 >
 C508A 06 < 0057 >

11. COMPREHENSIVE WIRING DIAGRAM





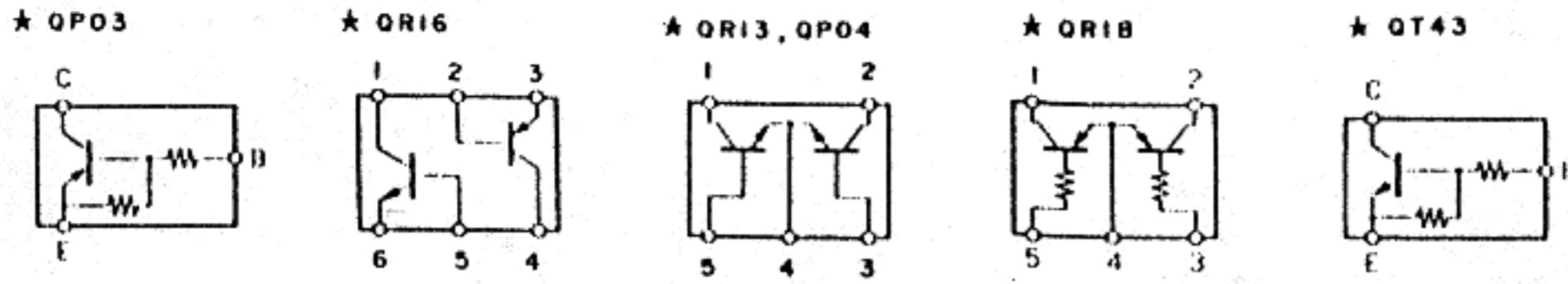
SCHEMATHEEK
 Beh. T. Hultermans
 Postbus 4228
 5004 EE Eindhoven

- NOTES:
1. REFER TO PARTS LIST FOR COMPONENT VALUES.
 2. UNLESS OTHERWISE NOTED RESISTOR VALUES ARE IN OHMS (1/16W), AND CAPACITOR VALUES ARE IN MICROFARADS.
 3. VOLTAGE NOTATIONS ARE AS FOLLOWS:
 NO MARK - RX
 < - TX
 [] - SOL OFF

CONTRAST CHART

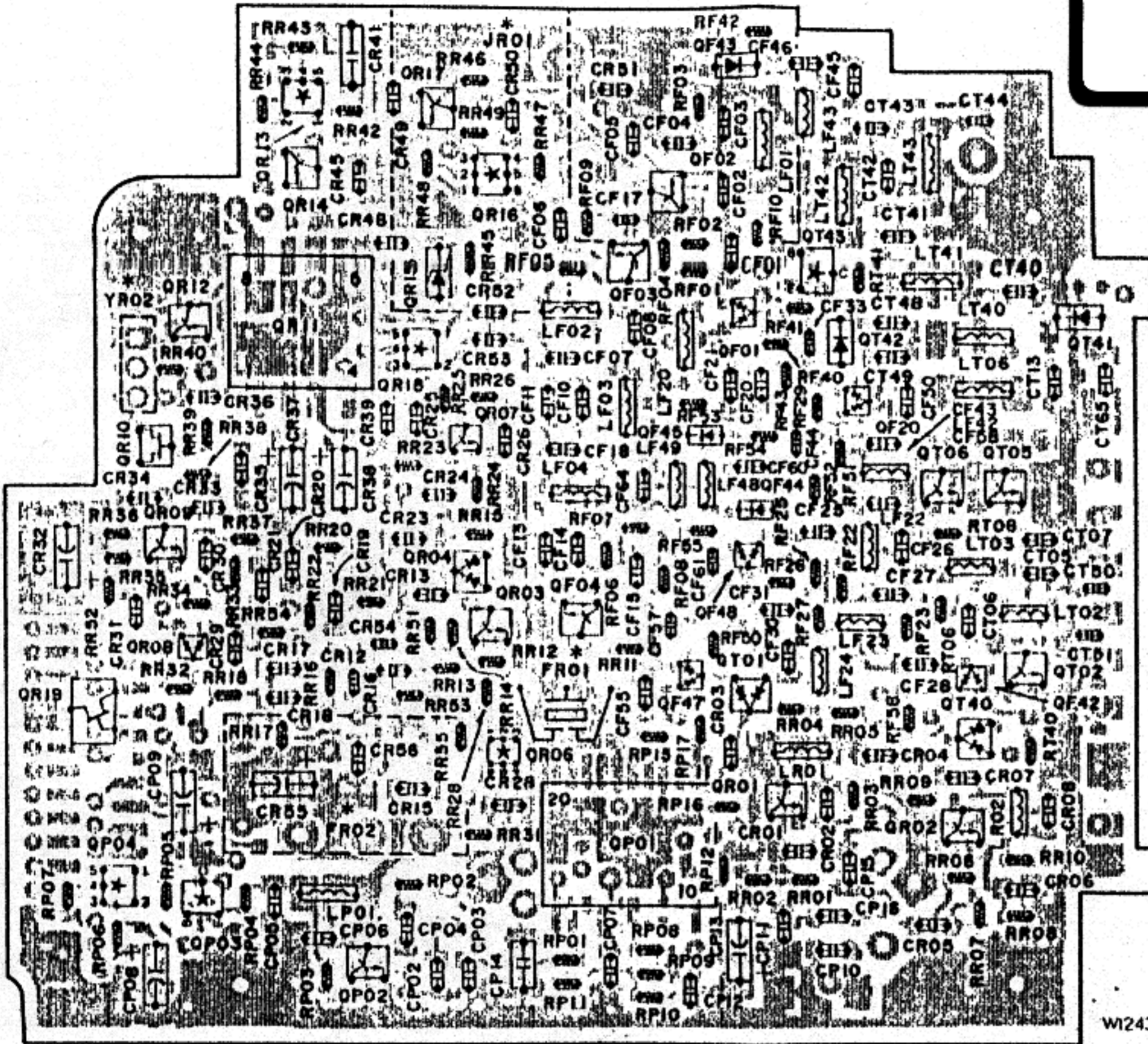
REF. DESIG. MODEL	FF20	FF21
C50B	LFB30N11804358010	LFB30N1180435010
C50BA	LFB30N11804448012	LFB30N1180444012

C50B S Δ 07<0057>
 C50BA S Δ 06<0057>



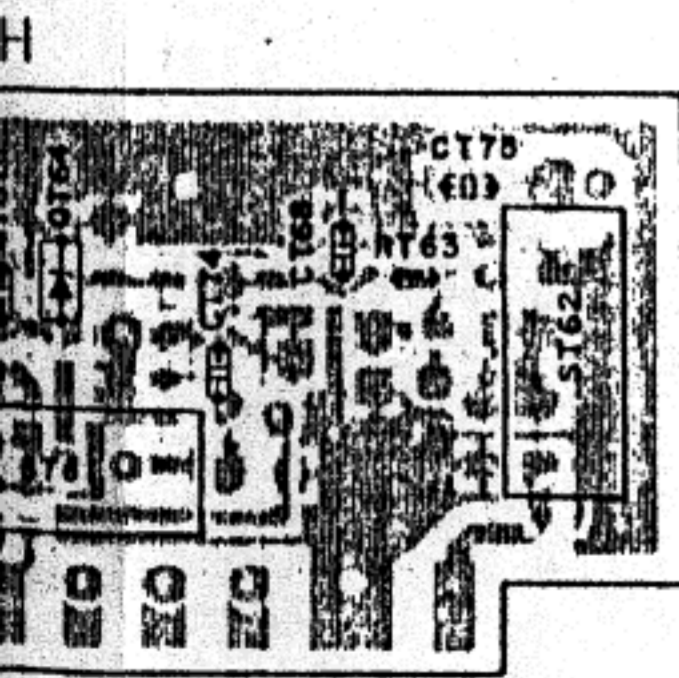
P100 TX/RX

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 Postbus 4228
 5004 EE Eindhoven



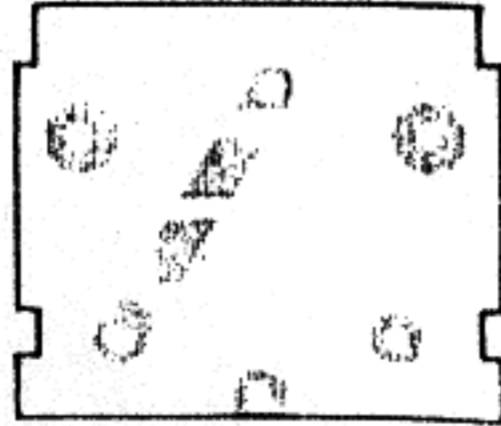
W1243B1010

(Shown from solder side)
 * : Mounted on component side



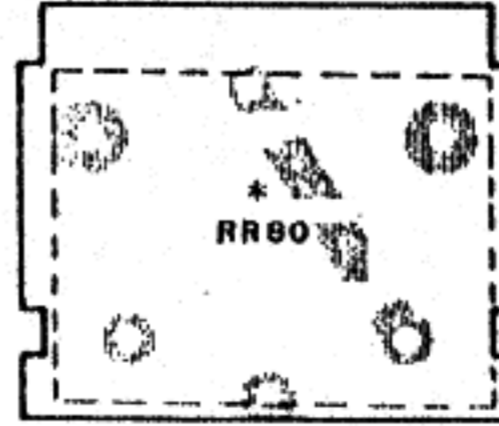
W1243B1020

P400 AF VOLUME



(Shown from component side)

P400 AF VOLUME



W1243B1030

(Shown from solder side)

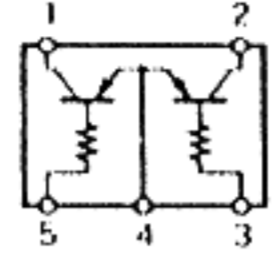
CSOB 07-0057

W1243B100 P 0 CSOBA 06-0057

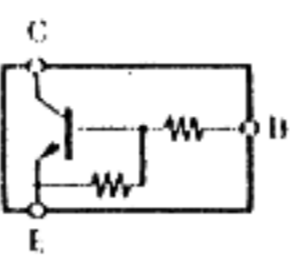
m solder side)

A
B
C
D

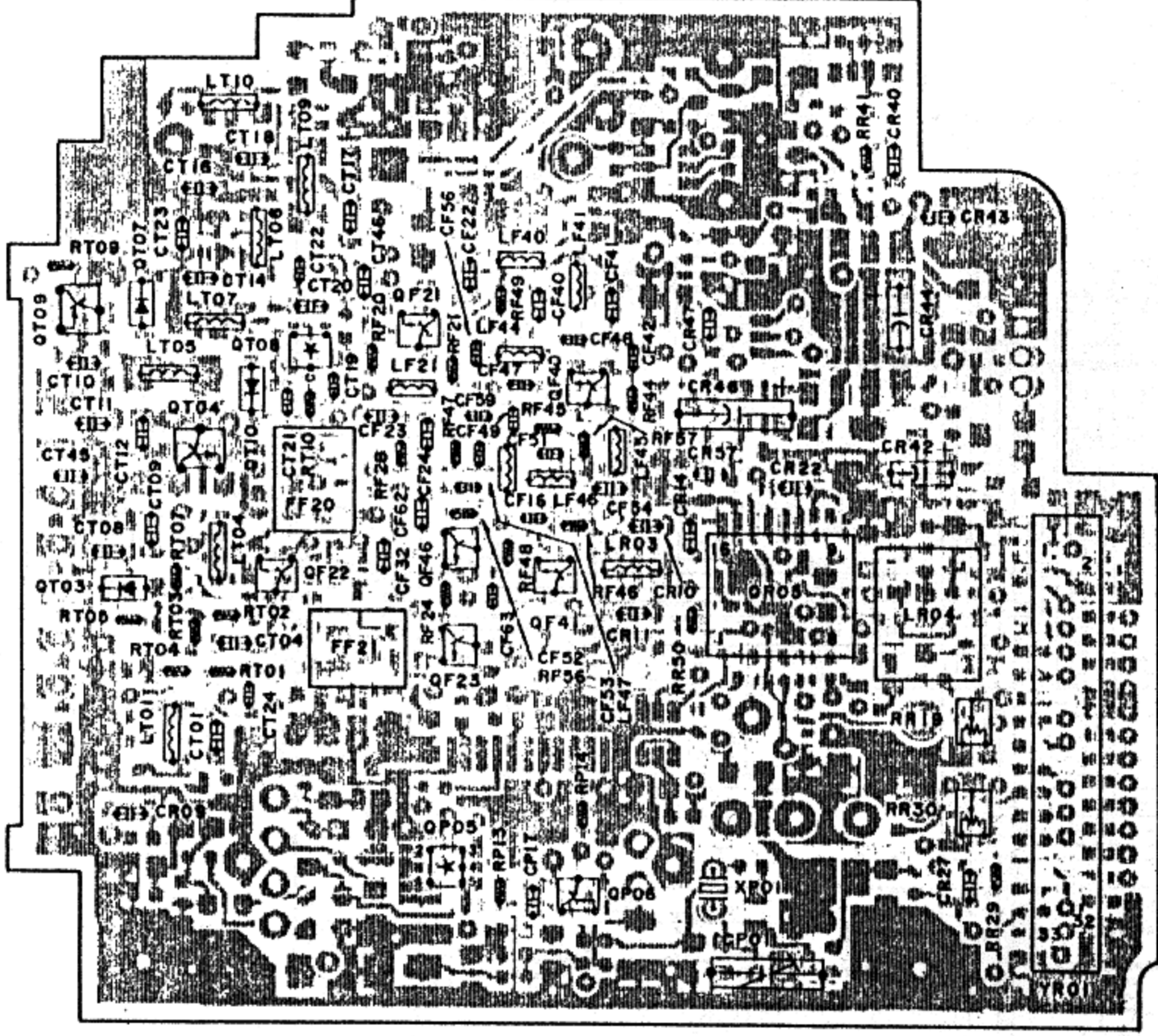
★ QP05



★ QT08

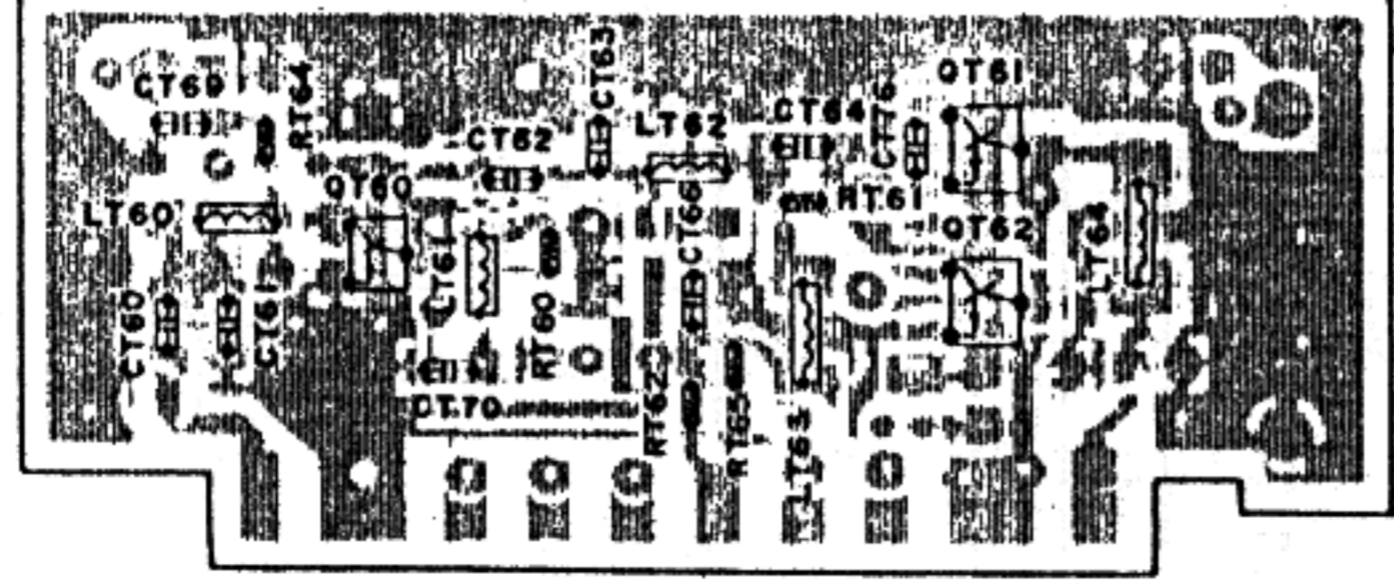


P100 TX/RX



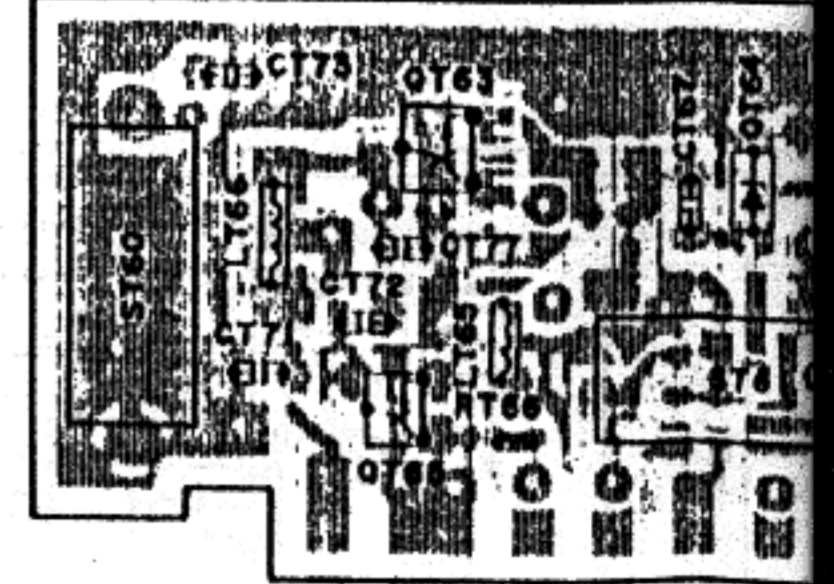
(Shown from component side)

P200 UHF TX/SWITCH



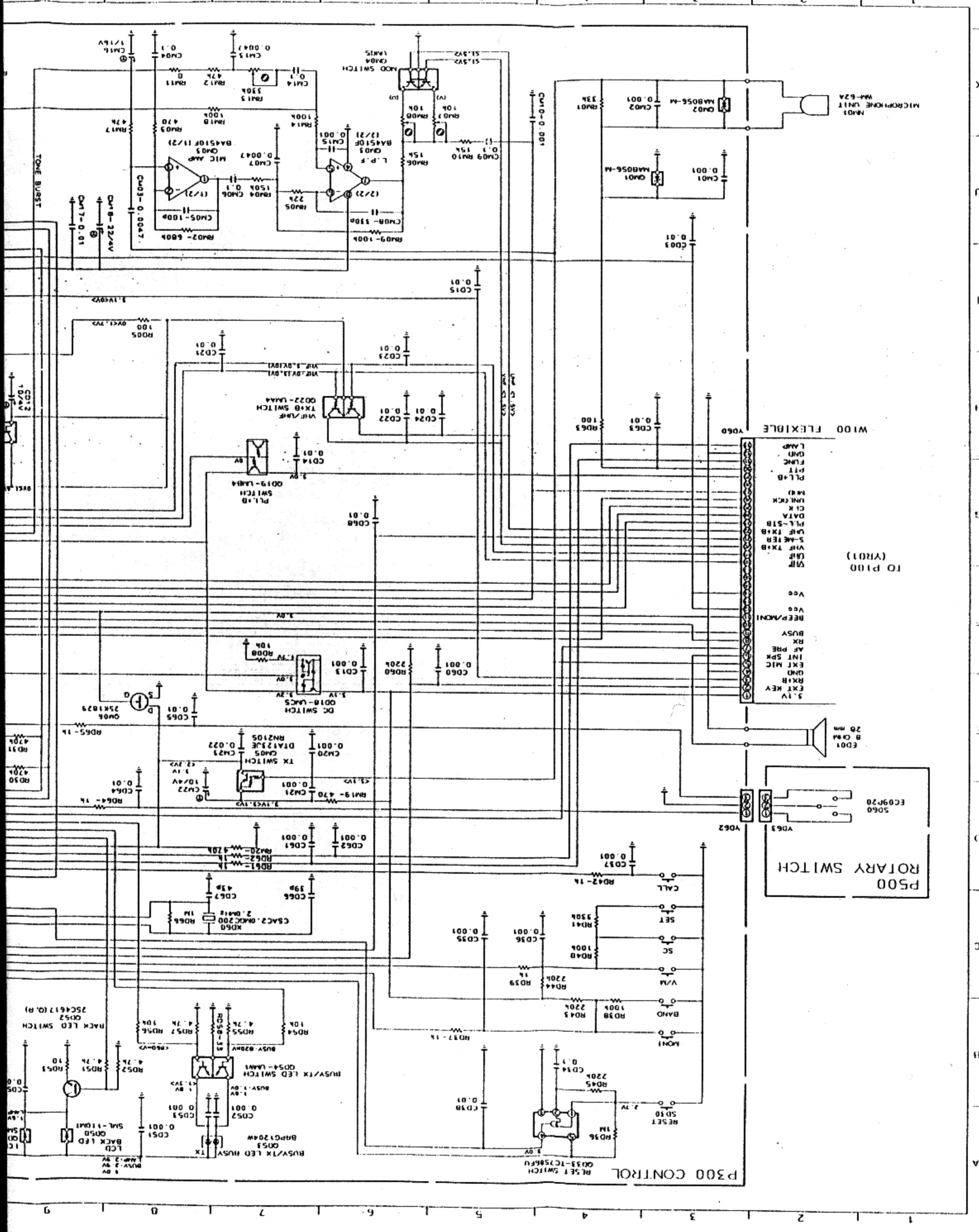
(Shown from component side)

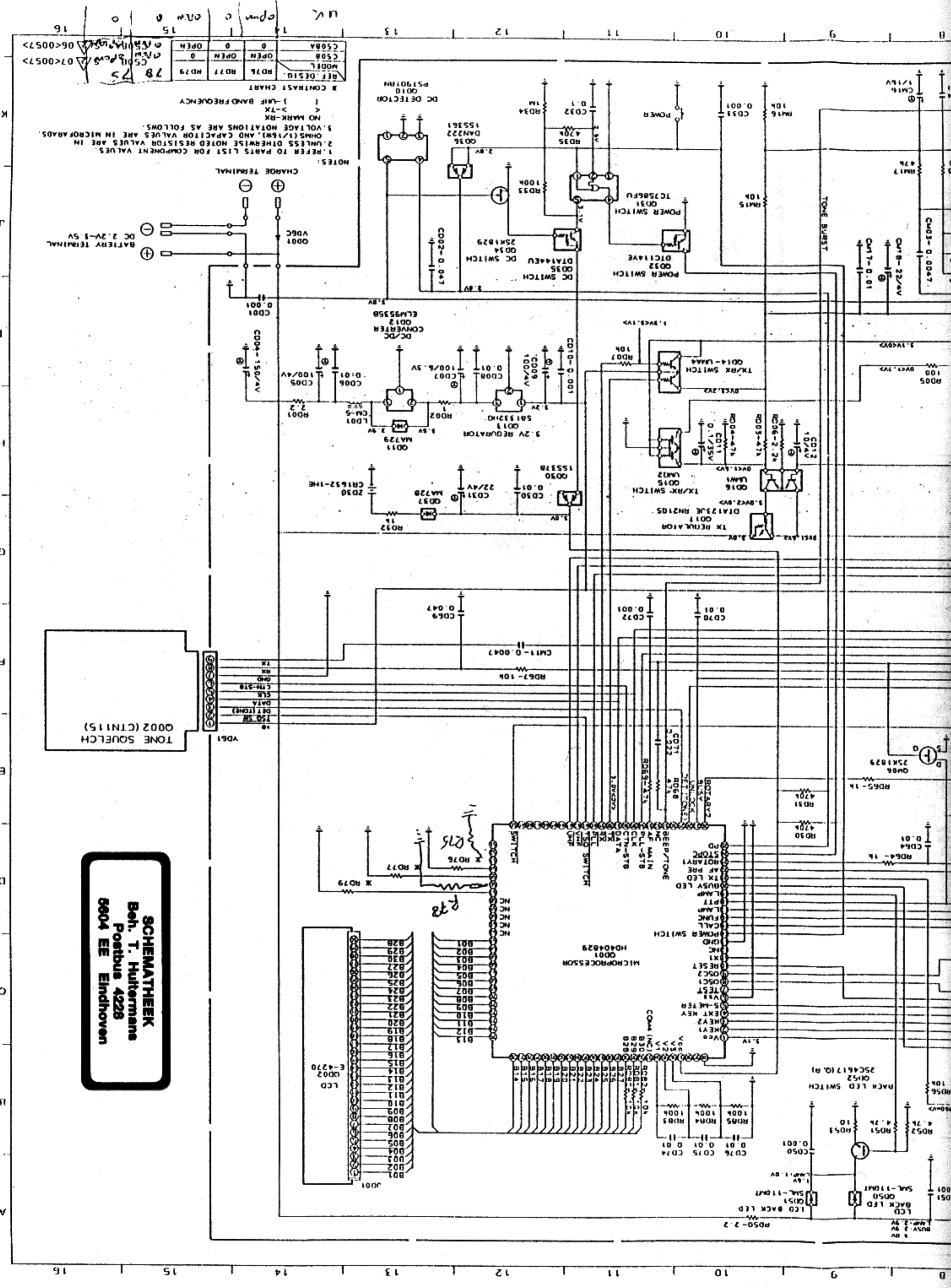
P200 UHF TX/SWITCH



(Shown from solder side)

(SOLDER SIDE PATTERN)
(COMPONENT SIDE PATTERN)





REF. DESIG. RD76 RD77 RD79

C508A	0	OPEN
C508	0	OPEN
C509	0	OPEN

CONTRAST CHART

1. REFER TO PARTS LIST FOR COMPONENT VALUES.
 2. UNLESS OTHERWISE NOTED RESISTOR VALUES ARE IN OHMS (1/6W), AND CAPACITOR VALUES ARE IN MICROFARADS.
 3. VOLTAGE NOTATIONS ARE AS FOLLOWS:
 < -TX
 > -RX
 NO MARK - RX
 1 - UHF BAND FREQUENCY

NOTES:

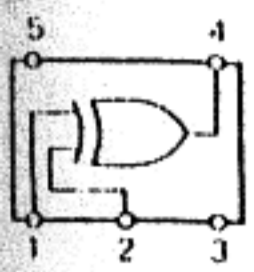
CHARGE TERMINAL

BATTERY TERMINAL

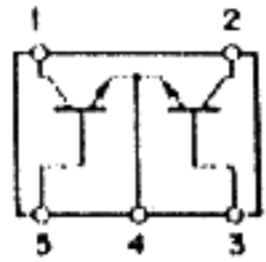
DC 2.2V-3.5V

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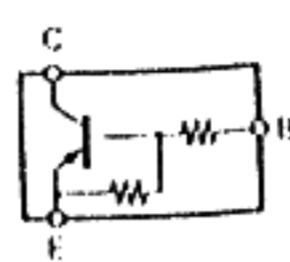
★ QD31, QD33



★ QD54

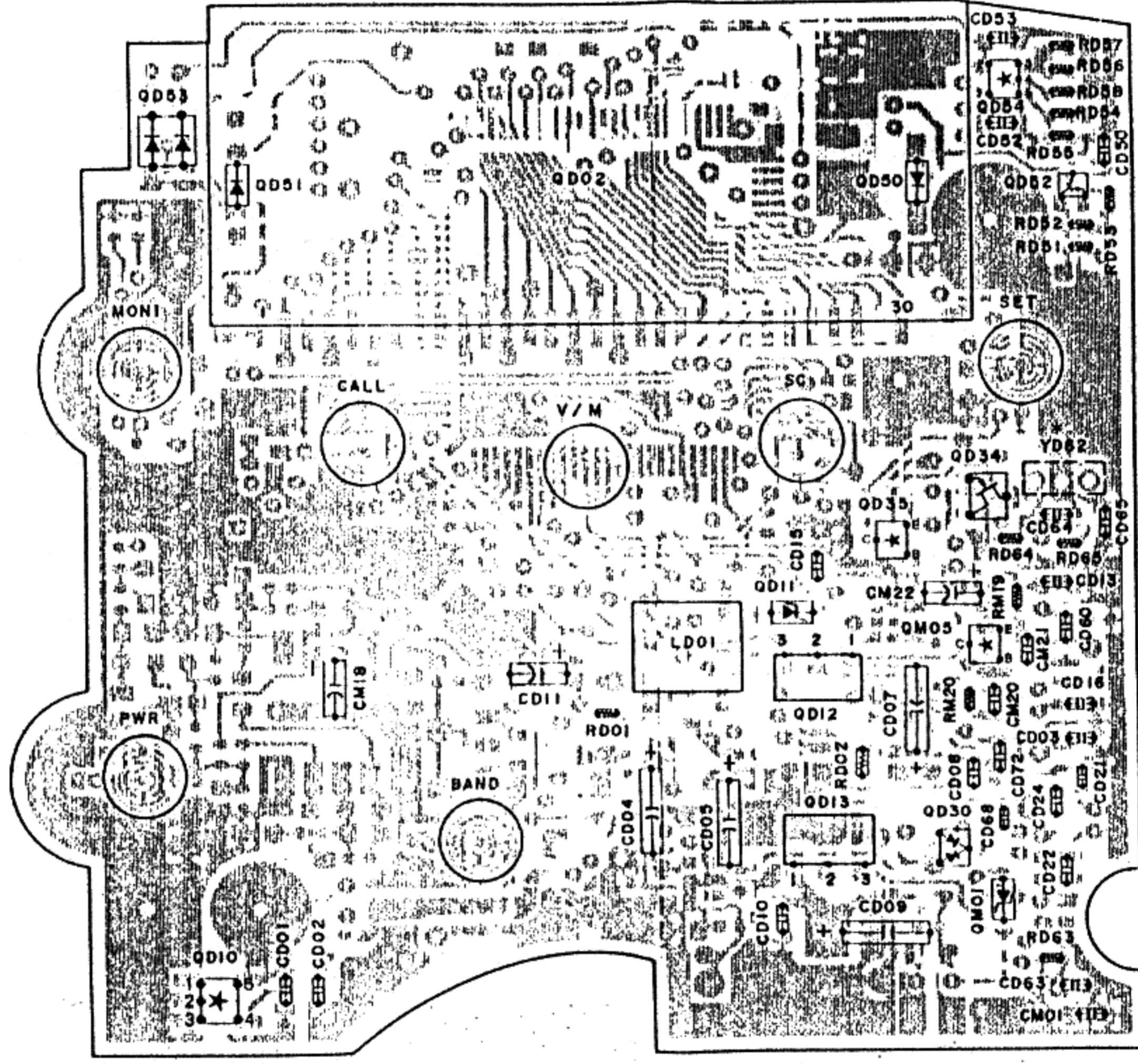


★ QD35



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P300 CONTROL



W1243B1030

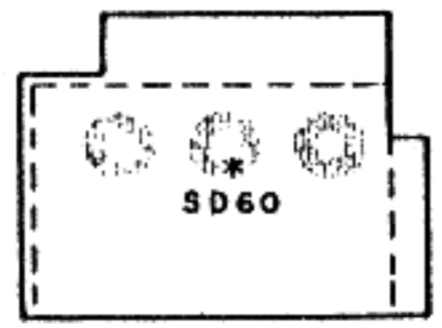
(Shown from solder side)
* Mounted on component side

W1243B100 P 0
C501 01 < 0057 >
C501A 06 < 0057 >

147D
O
X

C.Board.
P.C.Board.

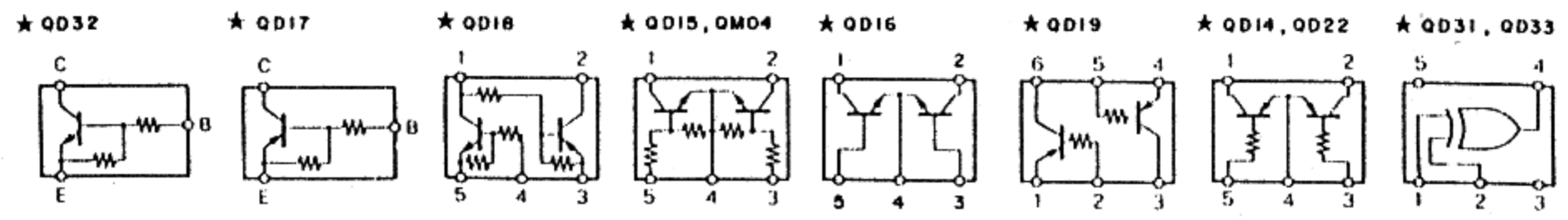
P500 ROTARY SWITCH



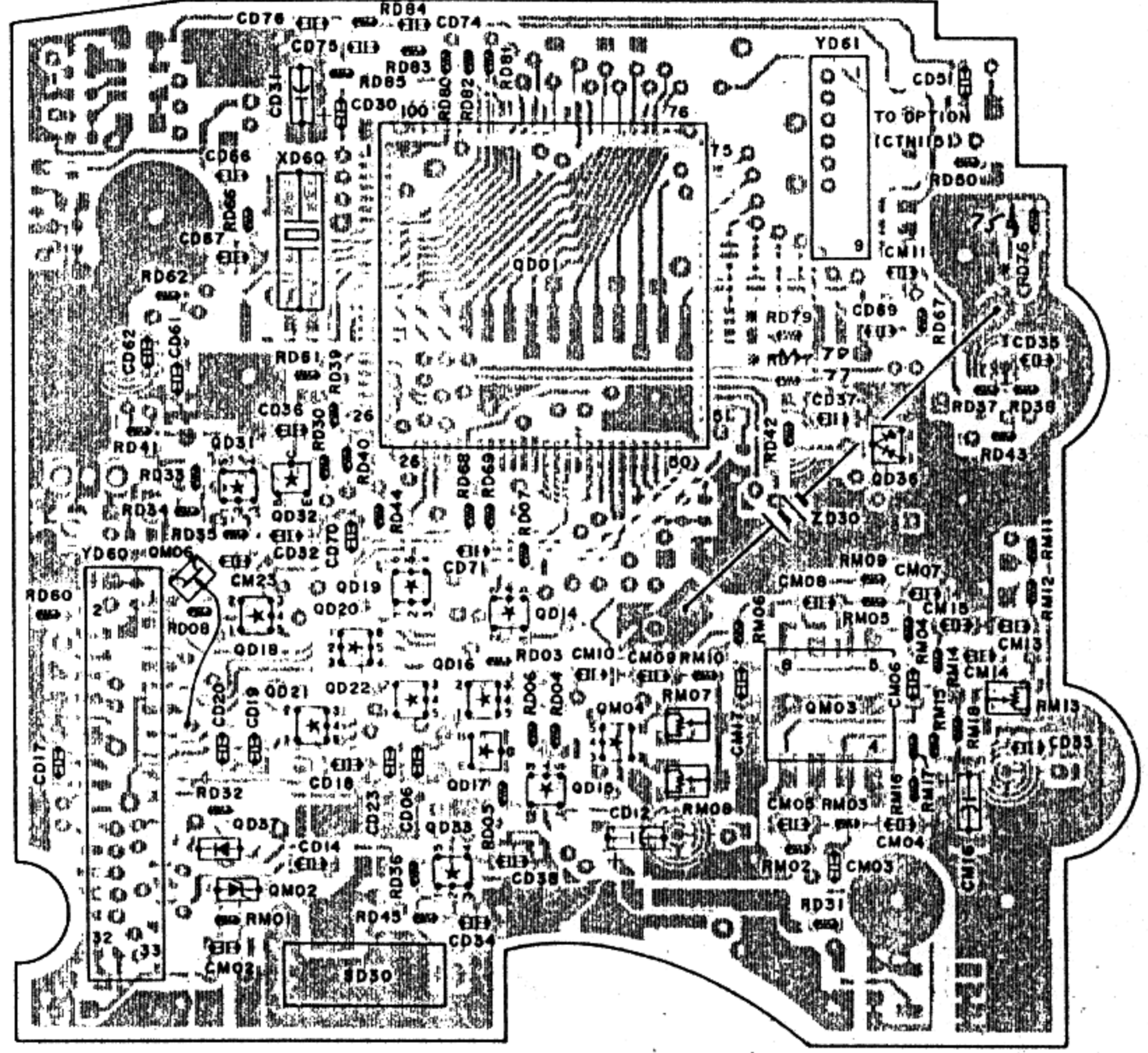
W1243B1050

(Shown from solder side)

1 2 3 4 5



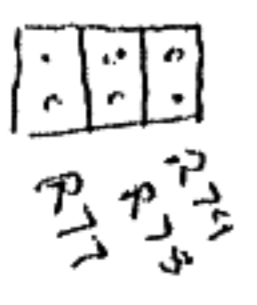
P300 CONTROL



(Shown from component side)

REF. DESIG.	RD76	RD77	RD79
C50B	X	X	O
C50BA	()	()	X

() The parts which are mounted on the P.C.Board.
 X The parts which are not mounted on the P.C.Board.



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 77
 78
 79

(SOLDER SIDE PATTERN)
 (COMPONENT SIDE PATTERN)

