STANDARD

C5800 E/W

ALL MODE TRANSCEIVER

INSTRUCTION / MANUAL

STANDARD COMMUNICATIONS CORP.

■ INSTRUCTION MANUAL SECTION

We are confident that you will be entirely satisfied with Model C5800.

ACCESSORIES

- Hand-held microphone with UP-DOWN switch (MP-716) 1
- DC Power cord 1
- Mobile bracket 1
- Bracket mounting screw . . . . . One Set
  - Hexagon bolt 4
  - Hexagon nut 4
  - Flat washer 4
  - Spring washer 4
- Microphone hanger 1
- Microphone hanger mounting screw (3mm x 14) 4
  (3mm x 30) 4
- Plug (3.5mmϕ) 1
- Instruction manual 1
- Schematic diagram 1

■ PRECAUTIONS

INSTALLATION

1. Install the C5800 in a dry, dust-free and well ventilated place. The C5800 should not be subjected to extremely high temperatures or humidity. It must not, under any circumstances, be exposed to direct sunlight.
2. Provide adequate space behind and under the C5800 for free circulation of air.
3. In a mobile installation, exercise special care to allow enough space behind the unit for adequate heat-dissipation from the heat-sink. Take measures to ensure that the C5800 is not subjected to vibration during operation.

POWER SUPPLY

1. To C5800 is designed to operate on 13.8 VDC. Do not connect the C5800 to a 24 V batteries used in large vehicles.
2. When you wish to power the C5800 from a commercial AC outlet, use the optionally available power supply attachment.

ANTENNA

To obtain the best results from the C5800, use an antenna which has a proven performance. The SWR of antenna should be adjusted to 1.5 or below. If SWR adjustment is inadequate, the transmission power may fail to reach the specified value.

■ FEATURES

BUILT-IN LARGE CAPACITY MICROPROCESSOR

This unit incorporates a large capacity 4K byte microprocessor, never before used in mobile transceivers. The built-in large capacity microprocessor makes the C5800 a compact, high-performance and easy-to-use mobile transceiver.

Major functions of microprocessor

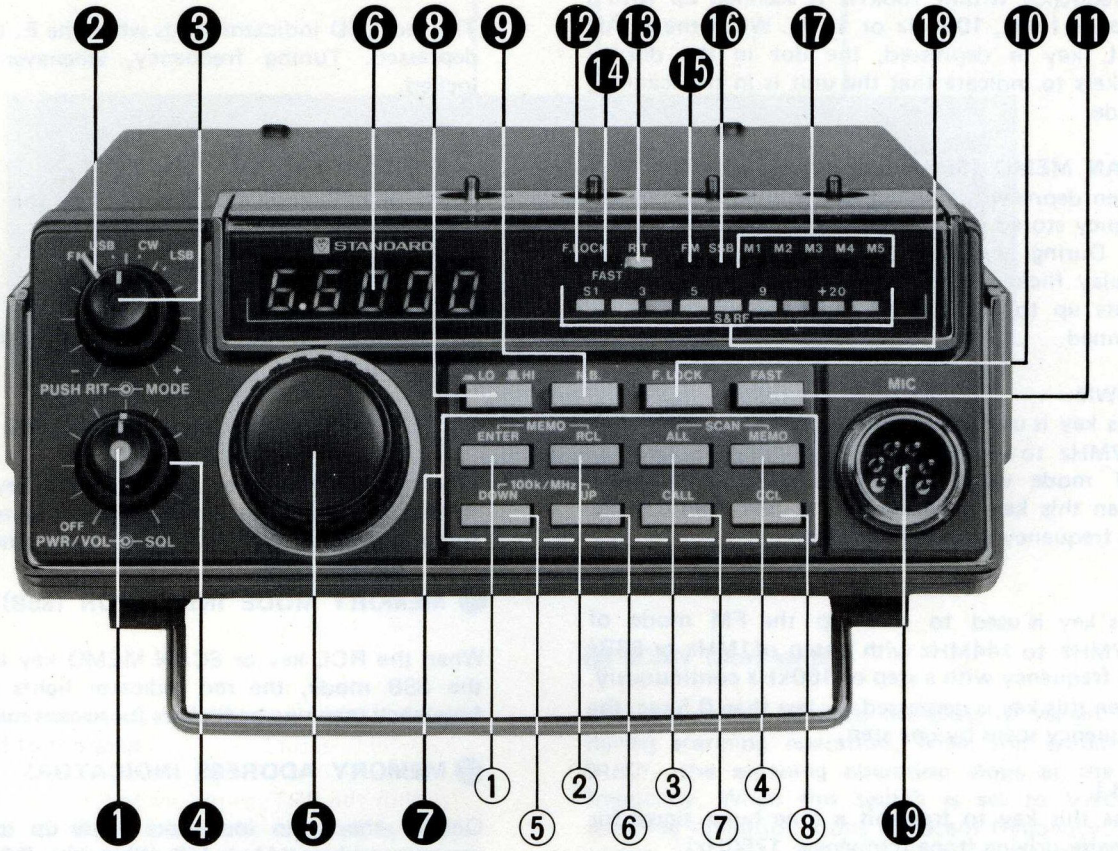
1. The frequency can be selected with an interval of 4 steps (5kHz/25kHz, 1kHz and 100Hz) in FM and 3 steps (1kHz, 100Hz and 10Hz) in SSB/CW.
2. With the FAST switch, FM mode can be stepped by 25kHz and SSB/CW mode can be stepped twice as much as the specified frequency regardless of the STEP key setting.
3. The memory can store a total of 10 channels (5 FM and 5 SSB/CW).
4. The memory scanning feature scans the frequency stored. (The LED shows the FM or SSB/CW mode.)
5. The frequency can be scanned with the UP-DOWN key.
6. 3 RPT features (S, R_1, R_2) are available.
   able.
7. With the PRT switch set to S or R1, cross operation is possible.
8. In the FM mode, frequency from 144MHz to 145.995 MHz or 144MHz to 147.999MHz can be continuously selected by 1MHz.
9. In SSB/CW mode, frequency can be selected with an interval of 100kHz.
10. FM mode within 1MHz or SSB/CW mode within 100kHz can be scanned with a step of specified frequency.
11. 3 scanning modes (BUSY, FREE, VACANT) are available and fast scanning is possible with the FAST switch.
12. The scanning speed and up or down speed change automatically according to the frequency step.
13. The F. LOCK switch locks the frequency even if the front panel key board or mic hanger is accidentally touched.

Additional features

- Memory back-up circuit which retains the memory contents even when the power switch is OFF, and back-up ON/OFF switch for use when the unit has not been used for a long time.
- When the keyboard is pressed, the unit emits a sound to facilitate operation checking.
- Transmission and reception cover a frequency of 2MHz or 4MHz.
- Traditional high-sensitivity design.
- PLL circuit ensures highly stable operation.
- SSB power module is employed in transmission circuit.
- Squelch circuit activates even in modes other than FM.
- Built-in noise blanker eliminates external noise.
- The unit's mechanical parts are built for high durabilty.
- 25W/1W selector switch facilitates 1W local QSO operation.
- CW and semi brake-in system, common to the HF unit.
- Built-in CW side tone circuit.
- The external meter terminal enables use of an analogue meter.
- Circuit is designed to overcome cross modulation.

■ PANEL FEATURES

FRONT PANEL FEATURES



❶ PWR/VOL CONTROL

This knob serves to dual purpose: a power switch and volume control. When the knob is turned fully counter-clockwise, the power to the unit is turned off.
To apply power to the C5800, rotate the knob clockwise beyond the OFF position; further clockwise rotation of the PWR/VOL control will increase output volume level.

❷ MODE SWITCH

This switch selects operation mode from USB, LSB, CW and FM.

❸ PUSH RIT SWITCH

Depress the RIT switch to turn the RIT feature ON. Depress it again to turn OFF. With this switch, the reception frequency can be changed by about ±1.2kHz without changing the transmission frequency. The center position corresponds to the RIT OFF mode. Turning the knob clockwise from the center position will change the reception frequency by +1.2kHz and turning counterclockwise will change it by -1.2kHz. The RIT feature functions in all modes. However, RIT feature is particularly useful in SSB/CW mode.

❹ SQL CONTROL

The SQL control is used to eliminate white noise heard on FM reception channels when no signals is present. Normally, this control should be turned gradually clockwise until the white noise disappears. Only the input signal can be heard from the speaker. If this control is turned fully clockwise, a weak signal cannot be heard. Do not turn this control excessively. The SQL circuit also operates in SSB mode.

❺ MAIN DIAL

This dial is used to tune in the desired operation channel frequency. When the knob is turned in either direction, tuning frequency steps up or down at the stepping intervals specified by STEP switch or FAST key. Four stepping intervals (10Hz in SSB mode, 100Hz, 1kHz in FM and SSB modes and 5/25kHz in FM mode) are available. The 50-step endless rotary switch permits channel skipping in the specified band.

❻ FREQUENCY DISPLAY

Indicates the channel frequency and scanning mode. In the 10Hz step mode, the tens digit is not displayed. When the main dial is rotated by 10 steps, the hundreds digit is incremented by 1. Observe the rotation steps of the main dial.

❼ KEY BOARD

① **MEMO ENTER (Memory enter)**
Use this key to store the desired channel frequency in the memory.
The memory can store 5 channels of FM mode and 5 channels of SSB/CW mode (total: 10 channels). It cannot store more than 5 channels of the same mode.

② **MEMO RCL (Memory recall)**
Use this key to recall the memory contents. Each time it is pressed, frequency data stored in memory addresses M1 – M5. At that time, the memory address indicator lights up in the specified order and FM or SSB memory mode indicator flickers. For details, refer to items ⓯ and ⓰ below.

③ **SCAN ALL (Scan all)**
When depressed, this key scans up over the selected MHz band in 5/25kHz, 1kHz or 100Hz in FM mode. In the SSB mode, the selected MHz band or a frequency within 100kHz is scanned up with a step of 1kHz, 100kHz or 10Hz. When the SCAN ALL key is depressed, the dot in the display flickers to indicate that the unit is in the scanning mode.

④ **SCAN MEMO (Scan memory)**
When depressed, this key scans up over the frequency stored in the memory M1— M5 sequentially. During scanning operation, the dot in the display flickers and the memory address indicator lights up to indicate the memory address to be scanned.

⑤ **DOWN**
This key is used to scan down the FM mode of 147MHz to 144MHz with a step of 1MHz or SSB/CW mode with a step of 100kHz continuously. When this key is depressed for less than 0.5 sec, the frequency scans by one step.

⑥ **UP**
This key is used to scan up the FM mode of 147MHz to 144MHz with a step of 1MHz, or SSB/CW frequency with a step of 100kHz continuously. When this key is depressed for less than 0.5 sec, the frequency scans by one step.

⑦ **CALL**
Press this key to transmit a tone burst signal for repeater driving (tone frequency: 1750Hz)

⑧ **CCL (Clear)**
This key is used to recommence all the unit operations.

❽ HI-LOW SWITCH

This switch selects transmission power between 1W and 25W in FM mode. 1W power obtains in the LOW (in) position, and 25W obtains in the HI (out) position. The 1W position of this switch will be found to be best for local communications.

❾ N. B. SWITCH

This switch is used to reduce ignition noise. Setting this switch to IN position functions the N.B. feature. Depress this switch again to turn the N.B. feature OFF. The N.B. functions in all modes.

❿ F. LOCK SWITCH (Frequency lock)

When this switch is depressed, the frequency lock feature turns ON to lock the frequency even if the UP-DOWN switch, main dial or keyboard is touched. Use this switch in the mobile operation. When it is set to ON, the F. LOCK indicator lights up. Depress the switch again to turn OFF.

⓫ FAST KEY

Use this key for rapid scanning of the frequency. When this key is depressed in the FM mode, the step frequency is changed to 25kHz regardless of frequency step switch ㉒ or channel step switch ㉙ setting, resulting in double normal speed scanning. In the SSB mode, the frequency is scanned twice as fast as the STEP switch ㉒ setting and normal speed. When this switch is set to ON, the FAST indicator lights up. Depress the switch again to turn OFF.

⓬ F. LOCK INDICATOR

The red LED indicator lights when the F. LOCK switch is depressed. Tuning frequency, whenever depressed, is locked.

⓭ RIT INDICATOR

The red LED indicator lights when the RIT switch is depressed.

⓮ FAST INDICATOR

The red LED indicator lights when the FAST switch is depressed.

⓯ MEMORY MODE INDICATOR (FM)

When the RCL key or SCAN MEMO key is set to ON in the FM mode, the green indicator lights up for stored frequency scanning or flickers for vacant memory.

⓰ MEMORY MODE INDICATOR (SSB)

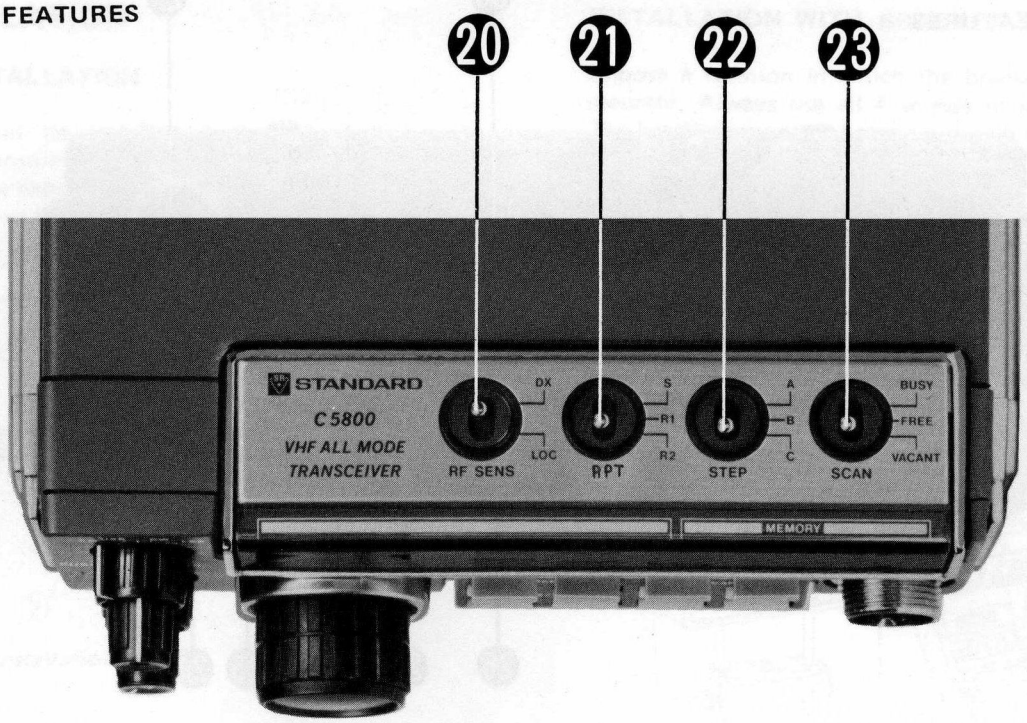
When the RCL key or SCAN MEMO key is set to ON in the SSB mode, the red indicator lights up for stored frequency scanning or flickers for vacant memory.

⓱ MEMORY ADDRESS INDICATORS

One of the green indicators lights up to indicate the memory address M1 — M5. When the RCL key is kept depressed, the indicator lights up sequentially. In the memory scanning mode, the vacant memory is skipped and the corresponding indicator does not light up.

⓲ METER

The easy-to-read meter consisting of 9 square LEDs indicates signal strength (S) and output level (RF). In the 25W transmission mode, the meter illuminates fully. In the 1W transmission mode, 2 — 4 LEDs light up. The mode of the meter (S or RF) is automatically changed according to the transmission or reception.



⑲ MIC JACK

Connect the supplied handy microphone with UP-DOWN switch (MP716) to this jack.

NOTE:
The impedance of the microphone supplied is 600Ω. When using a microphone other than the one supplied, the impedance should be the same and the quality should be better.

⑳ RF SENSE (Reception sensitivity selector)

Use this switch to select the reception sensitivity in two settings (DX and LOC). When operating the unit with the distant station, set this switch to DX. When operating the unit with near terminal, set this switch to LOC.

㉑ RPT SWITCH

This switch can select either of the simplex, repeater R1, or R2 mode of operation.
S mode: For ordinary simplex operation.
R1 mode: Shifts the reception frequency upward by 600kHz from that of the simplex operation.
R2 mode: Shifts the transmission frequency upward by 600kHz from that of the simplex operation.
S mode: Normal operation

㉒ STEP (Frequency step switch)

Use this switch to select the frequency step when changing the frequency with the microphone UP-DOWN switch or main dial.
(FM mode)
A setting: 5/25kHz step
B setting: 1kHz step
C setting: 100Hz step
(SSB mode)
A setting: 1kHz step
B setting: 100Hz step
C setting: 10Hz step
For normal operation, set this switch to A in FM mode and B or C in SSB mode.

㉓ SCAN (Scan switch)

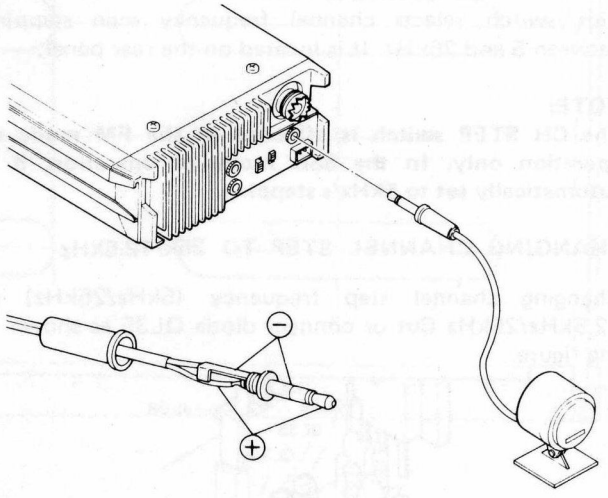
Use this switch to seek occupied or vacant frequency during scanning operation. When this switch is set to BUSY, the scanning operation stops at the occupied frequency. When this switch is set to VACANT, the scanning operation stops at vacant frequency. When this switch is set to FREE, scanning operation continues regardless of the signal.

㉔ DC PWR (DC power)

This jack accepts an external DC power source of 13.8V. Connect the external power source to this jack with the cord supplied. Observe the polarities. The red lead should be connected to the (+) and black to the (-).

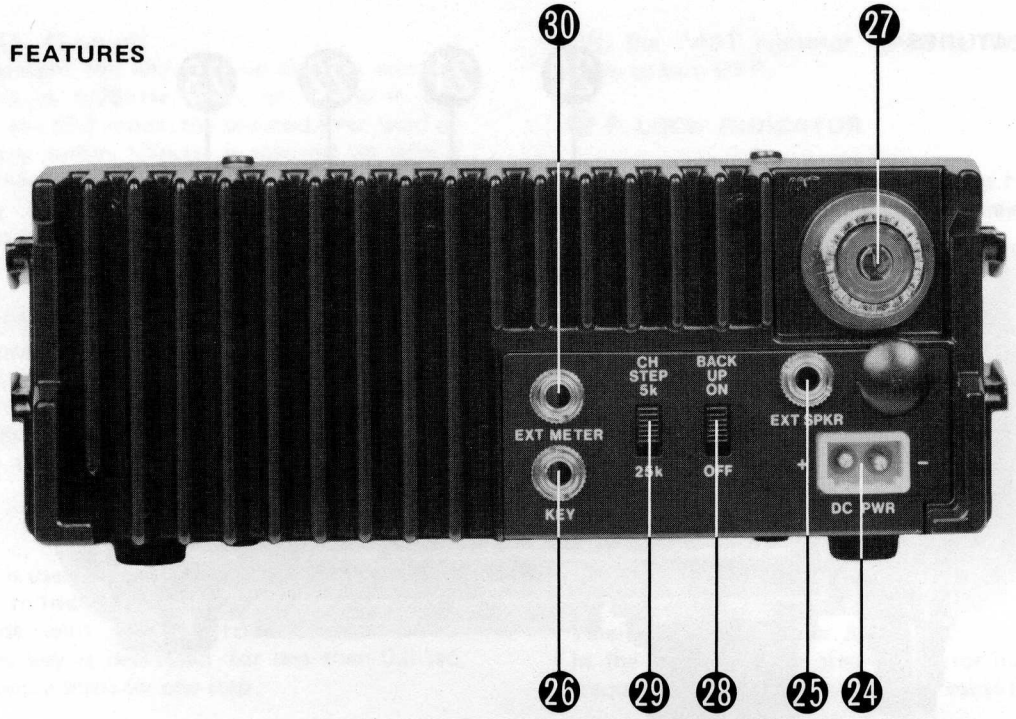
㉕ EXT SPKR (External speaker jack)

This jack accepts external speaker (option C207M). When an external speaker is connected to this jack, the built-in speaker is automatically shut OFF. To use a speaker other than C207M, connect a 3.5mmϕ plug to the speaker lead as shown below.



The impedance of the external speaker should be 4Ω or 8Ω.

REAR PANEL FEATURES



㉖ KEY (Key jack)

This jack accepts a CW key with a 3.5mmϕ plug. When using an electrical key, refer to the Instruction Manual attached to the key.

㉗ ANT RECEPTACLE

This M-type socket accepts an external antenna with an impedance of 50Ω. When using a coaxial cable, connect the cable securely.

㉘ BACK UP (Back up switch)

When an external power supply is connected to the DC PWR jack and this switch is set to ON, the contents of the memory are retained even when the power is turned OFF. When this switch is set to OFF, the stored frequency will be erased.

NOTE:
If the unit is not to be used for a long time, always set the BACK UP switch to OFF.

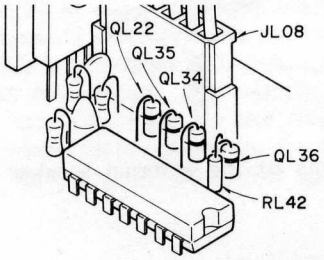
㉙ CH STEP SWITCH

This switch selects channel frequency scan stepping between 5 and 25kHz. It is located on the rear panel.

NOTE:
The CH STEP switch is effective in the FM mode of operation only. In the SSB mode of operation, it is automatically set to 5kHz's stepping.

CHANGING CHANNEL STEP TO 25k/12.5kHz

Changing channel step frequency (5kHz/25kHz) to 12.5kHz/25kHz Cut or connect diode QL35 as shown in the figure.



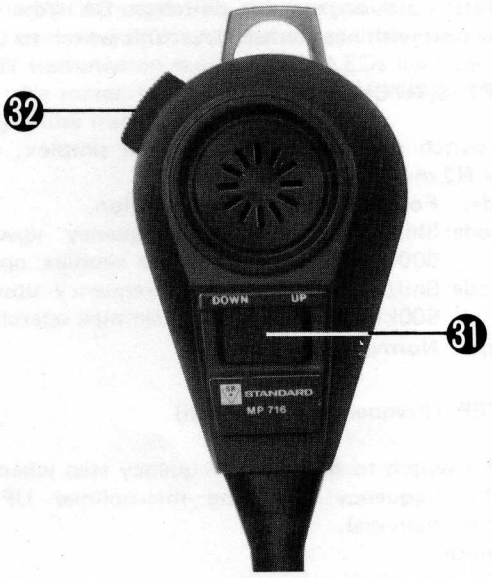
Changing Procedure

Changing the frequency range (144 – 148MHz) to 144 – 146MHz Connect diode QL36 as shown in the figure.

㉚ EXT METER (External meter jack)

This jack accepts an external ammeter of about 100μA. Connecting a DC attenuator will facilitate meter reading.

MICROPHONE FEATURES



㉛ UP-DOWN CHANNEL SWITCH

When the switch is held down, channel frequency is stepped up or down continuously.

㉜ PTT BUTTON

To put the transceiver into the transmission mode, push the PTT button. When this button is pressed twice continuously, the unit transmits a tone signal of 1750Hz in FM mode.

■ INSTALLATION

MOBILE INSTALLATION

The C5800 can be installed under the dash board, side of the console box or under the meters. Do not install in a place exposed to air conditioner outlet. Install the unit so that driving is not hampered.

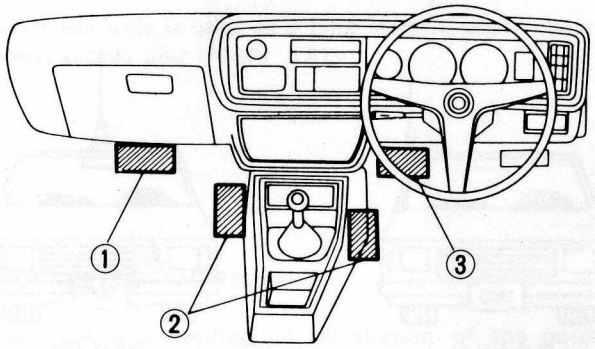
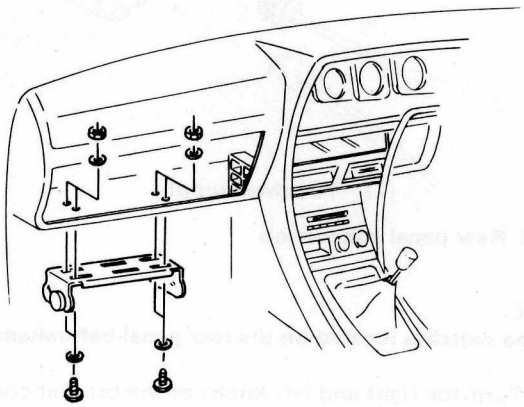


Fig. 1 Mobile installation

INSTALLATION WITH BRACKET

Choose a location in which the bracket can be installed securely. Always use all 4 screws to install the bracket. The bracket mounting holes are shown in Fig. 2.

(1) As the diameter of the mounting screw is 5mm, drill a hole with a diameter of 5.2 – 5.5mm.
(2) As shown in Fig. 3, attach the washer to the screw, pass them through the bracket and installation panel in that order and secure them with washer and nut. Use a spanner or (+) screwdriver to tighten the screw.



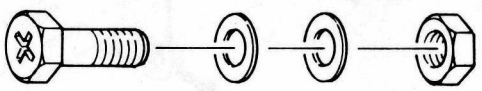


Fig. 3

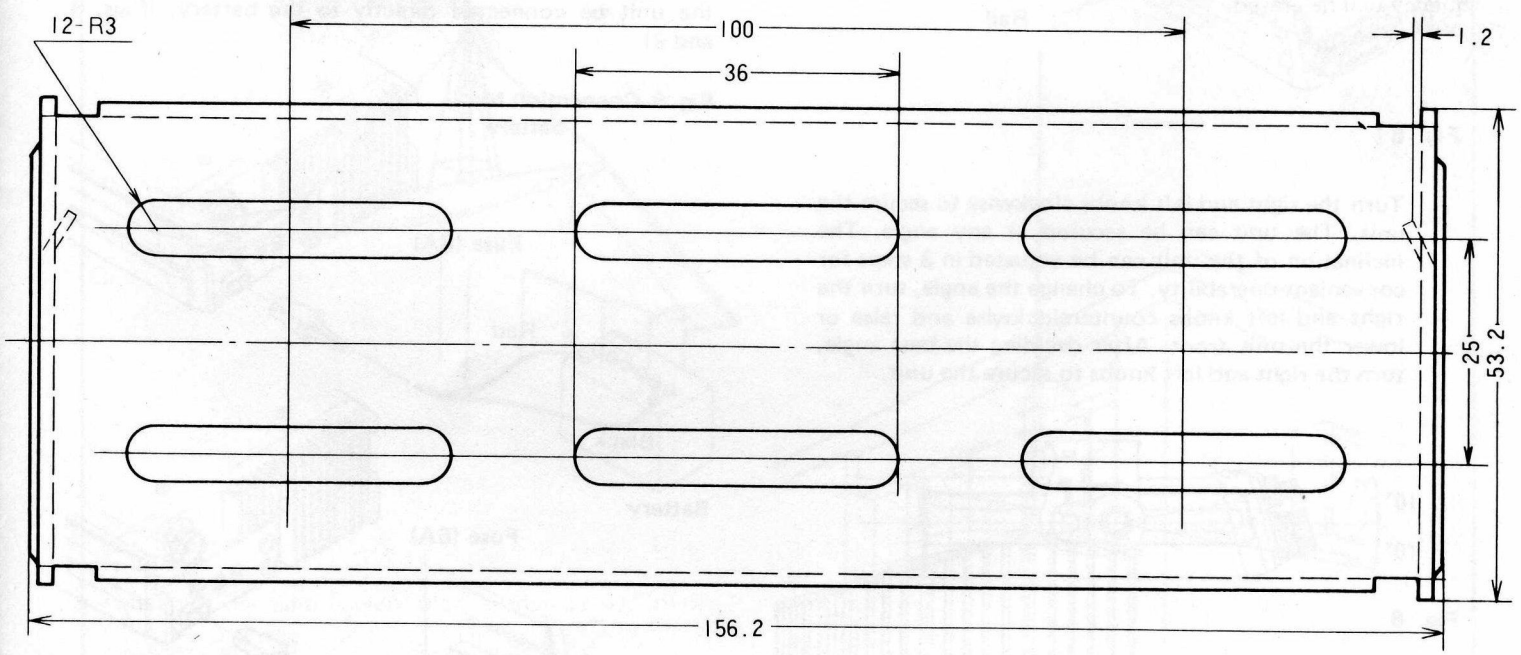


Fig. 2 Mounting holes for bracket installation (Actual size)

(3) Connect the antenna cable and power cord to the jacks located in C5800 rear panel (Fig. 4).

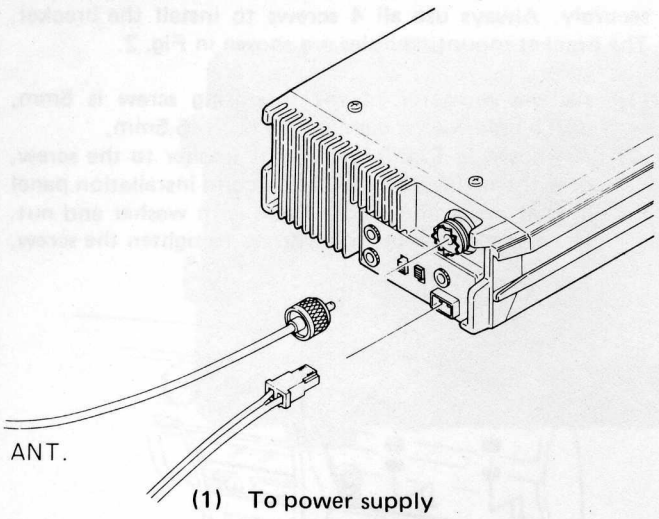


Fig. 4 Rear panel connection

NOTE:
Set the switches located on the rear panel beforehand.

(4) Turn the right and left knobs of the bracket counter-clockwise and insert the rail guide into the rail (Fig. 5).

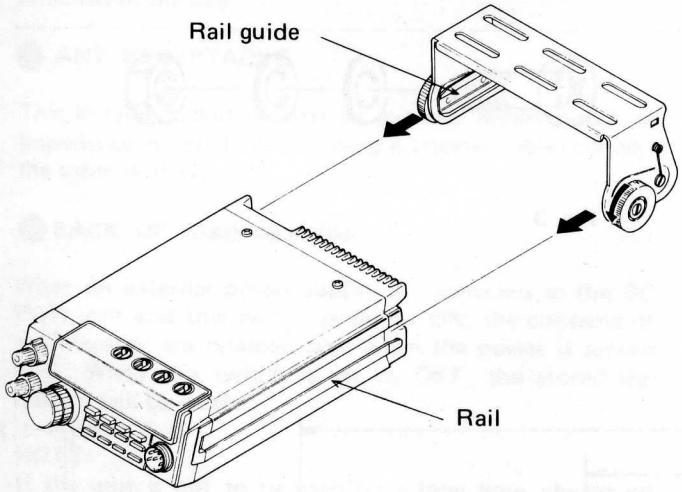


Fig. 5

Turn the right and left knobs clockwise to secure the unit. The unit can be secured at any angle. The inclination of the unit can be adjusted in 3 steps for convenient operability. To change the angle, turn the right and left knobs counterclockwise and raise or lower the unit front. After deciding the best angle, turn the right and left knobs to secure the unit.

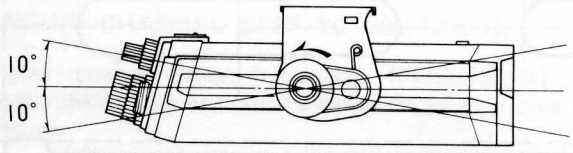


Fig. 6

ANTENNA INSTALLATION

To install an antenna to the vehicle, use an antenna base. Get one which is suitable for your car and antenna. The antenna base can be installed as shown in Fig. 7.

NOTE:
When using an antenna base, always ground it.
When routing the antenna coaxial cable, take care not to allow rain to enter the car.

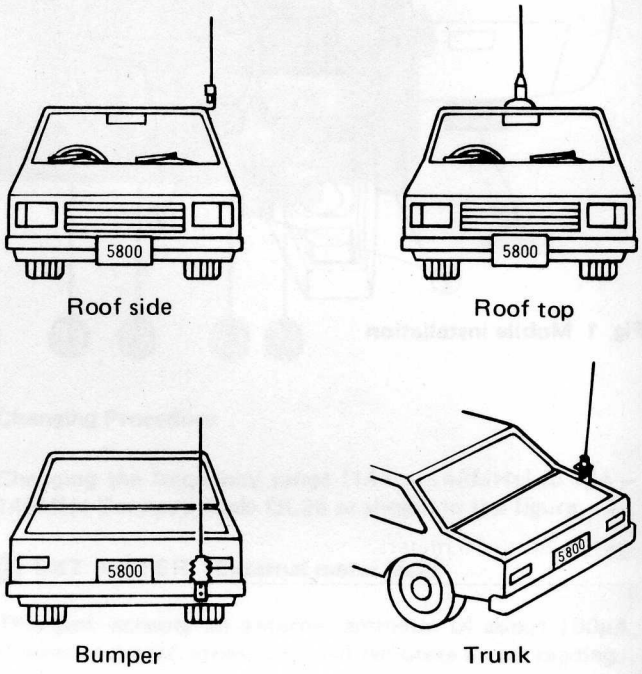


Fig. 7.

POWER CONNECTION

As the input voltage of C5800 is 13.8V, the unit cannot be used in a vehicle, such as a truck, etc, which has a 24V battery.
The unit can be connected directly to the battery or to the cigarette lighter socket. It is recommended that the unit be connected directly to the battery. (Figs. 8 and 9)

Fig. 8 Connection to battery

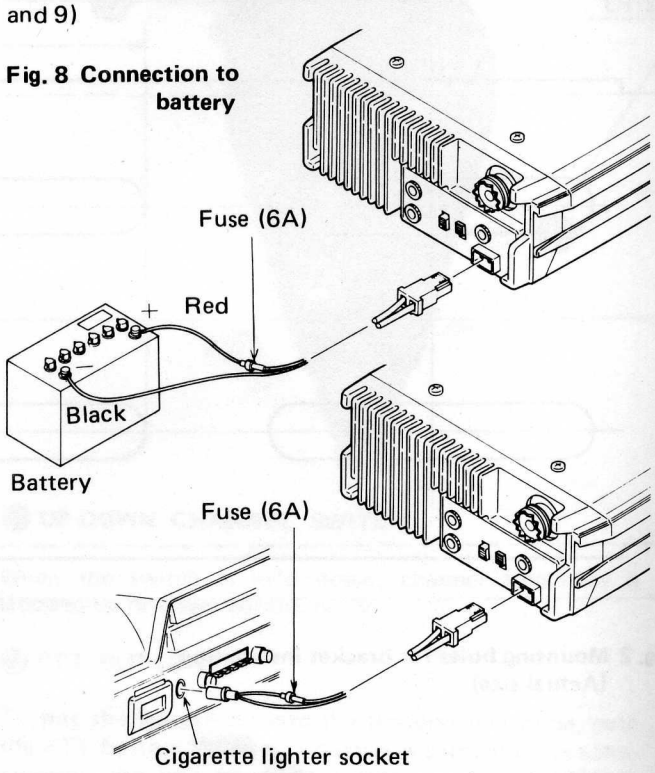


Fig. 9 Connection to cigarette lighter socket

If the unit is connected to the line which is connected to the engine key, the stored frequency cannot be maintained even when the back-up switch is set to ON.

NOTE:
C5800 has a negative a ground system; the unit cannot be used in a positive ground vehicle.

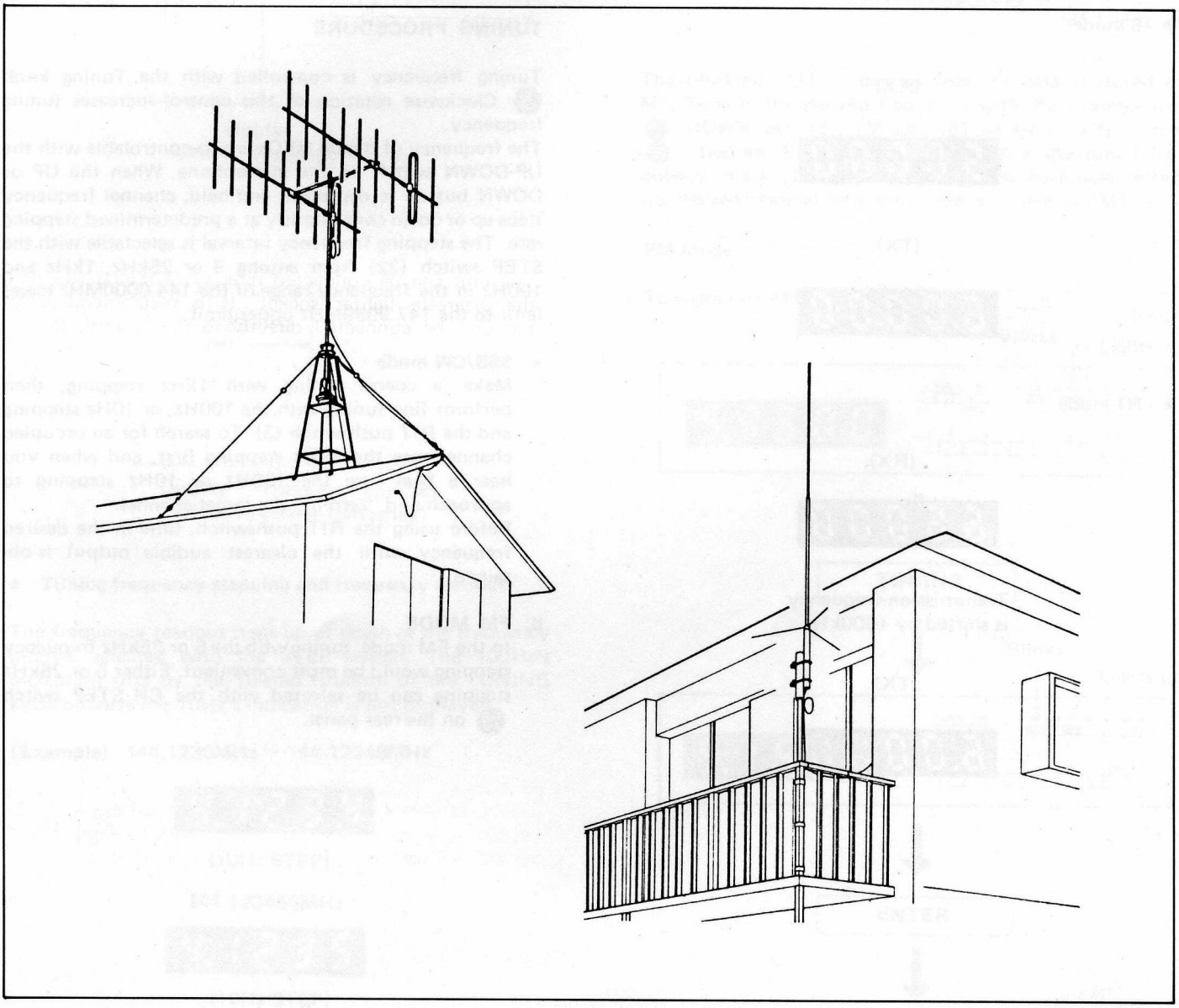
BASE STATION OPERATION

When the unit is used as a base station, use a constant power supply unit (13.8V, 6A).

INSTALLING ANTENNA

The type and method of installation of the outdoor antenna you use will greatly affect transmission and reception performances of your transceiver. Carefully select an antenna which will provide the best performance, and adjust carefully after installation.

To prevent lead-in signal loss, use as short an antenna lead-in cable as possible. Recommended cable type is the 5D-2V for up to 10 meters, and the 8D-2V or 10D-2V for up to 30 meters.



■ OPERATING INSTRUCTION

MODE SWITCH OPERATION

1. FM
This position permits operations identical to those with conventional FM transceivers operating on the 2-meter band.

2. USB (UPPER SIDE BAND)
SSB mode operations on the 2-meter band usually use the USB.

3. CW
CW (A1) mode operation is obtained by plugging a CW key into the key jack on the rear panel.

4. LSB (LOW SIDE BAND)
LSB mode operations are usually used for satellite communications.

REPEATER OPERATION

The C5800 can shift the transmission or reception frequency upward by 600kHz for repeating operation. It also has a new tone burst feature for driving the repeater.

1. S, R1 and R2 operation frequency indications

[Example] For 146.00MHz simplex operation frequency

- S mode

(RX)

(TX)

- R1 mode

(RX)

Transmission frequency
is shifted by +600kHz.

(TX)

- R2 mode

(RX)

(TX)

Reception frequency is
shifted by +600kHz.

2. CALL key feature
The CALL key is used to manually transmit the repeater driving tone burst of 1750Hz. While the key is depressed, the tone burst is on the air.

3. PTT button-operated tone burst.
The repeater driving tone burst, also, can be transmitted with use of the PTT button in place of the CALL key manual depression. Depress the PTT button two times continually. The tone burst will be on the air for around one second.

TUNING PROCEDURE

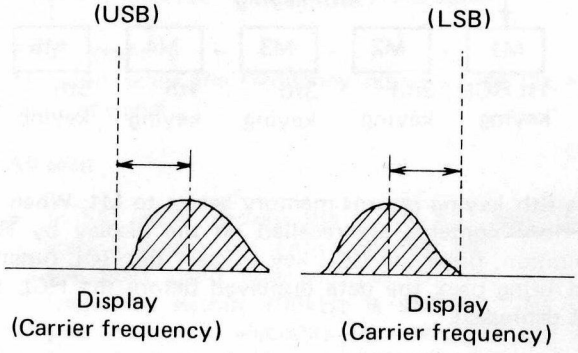
Tuning frequency is controlled with the Tuning knob ❺ Clockwise rotation of this control increases tuning frequency.
The frequency of digital VFOs is also controlable with the UP-DOWN switch on the microphone. When the UP or DOWN button is depressed and held, channel frequency steps up or down continuously at a predetermined stepping rate. The stepping frequency interval is selectable with the STEP switch (22) from among 5 or 25kHz, 1kHz and 100Hz in the frequency range of the 144.0000MHz lower limit to the 147.9999MHz upper limit.

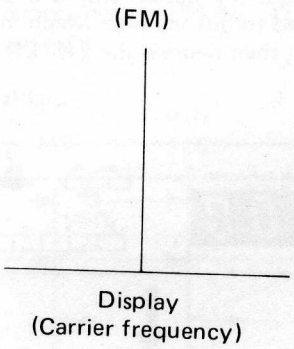
a. SSB/CW mode
Make a coarse tuning with 1kHz stepping, then perform fine tuning with the 100Hz, or 10Hz stepping and the RIT pushswitch (3). To search for an occupied channel, use the 1kHz stepping first, and when you hear a beat, use the 100Hz or 10Hz stepping to approach and "zero-in" the target channel.
Before using the RIT pushswitch, tune in the desired frequency until the clearest audible output is obtained.

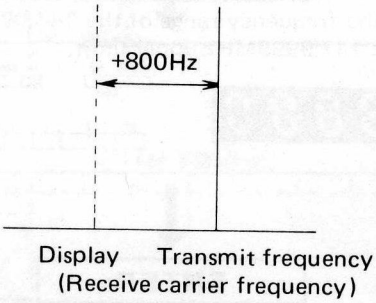
b. FM MODE
In the FM mode, tuning with the 5 or 25kHz frequency stepping would be most convenient. Either 5 or 25kHz stepping can be selected with the CH STEP switch ㉙ on the rear panel.

FREQUENCY DISPLAY

In the FM or SSB mode, the digital frequency display indicates the carrier frequency, or the exact operation frequency.
In the CW mode, the readout displays the receive carrier frequency. The transmit frequency is 800Hz higher than this receive carrier frequency.







- **Tuning frequency stepping and frequency readout**

The frequency readout steps up or down at the frequency interval selected with the STEP switch. The 100Hz's indication sifts by the 10-step rotation of the TUNING knob because the 10Hz's indication is not displayed.

[Example] 144.1230MHz ~ 144.12349MHz

(10Hz STEP)

144.123450MHz

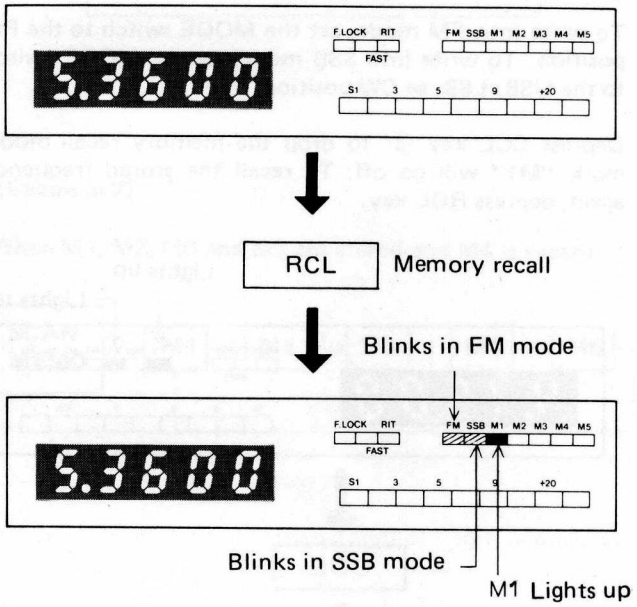
(10Hz STEP)

MEMORY OPERATIONS

The C5800 contains 10 indipendent memories, storing each 5 memories in FM mode and in SSB•CW mode.

(1) To write data into memory

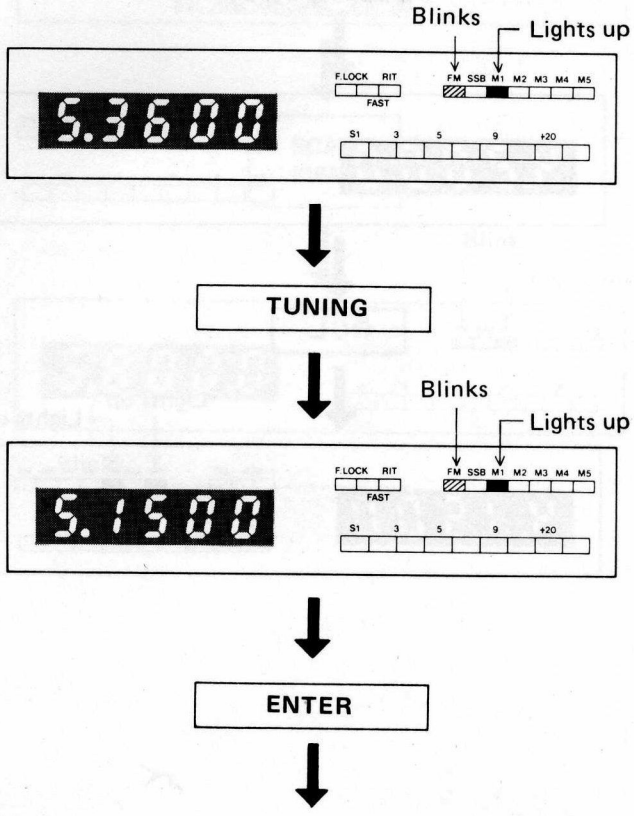
Depress the MEMO RCL key ②. When no data is stored in memory M1, the frequency displayed just before the RCL key depression will be displayed and mark "M1" will start blinking.

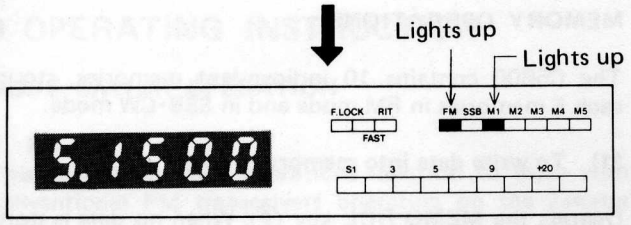


The blinking "M1" indicates that no data is stored in M1. Tune in the desired frequency with the Tuning knob ❺ DOWN key ⑤, UP key ⑥, or UP-DOWN switch ㉛. Depress ENTER key ❶ to store the tuned frequency; mark "M" will lights up. You have now stored the desired channel frequency data into memory M1.

FM Mode

To write into M1

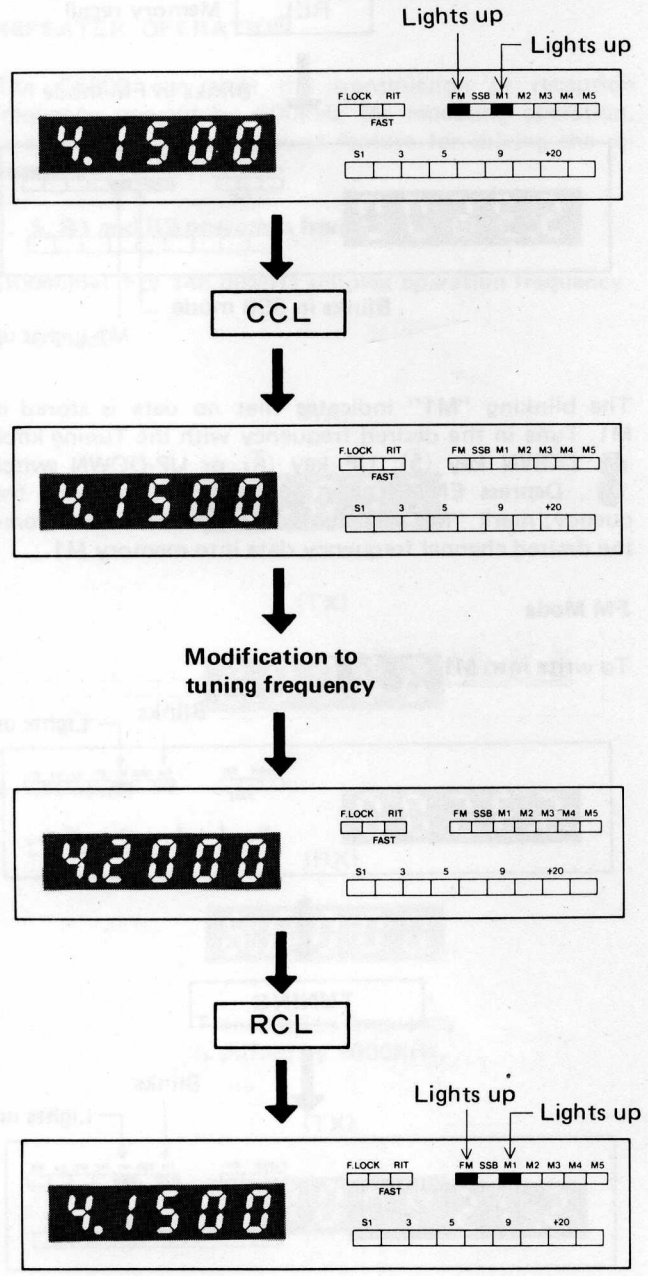




Other channel frequency data can be stored in memories M2–M5 with the same procedure as described just above.

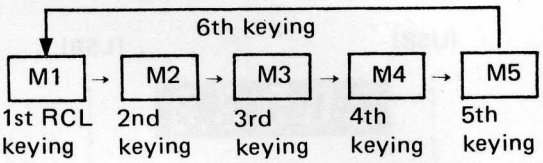
To write into FM mode, set the MODE switch to the FM position. To write into SSB mode, set the MODE switch to the USB, LSB, or CW position.

Depress CCL key ⑧ to drop the memory recall mode; mark "M1" will go off. To recall the stored frequency again, depress RCL key.



(2) MEMORY RECALL

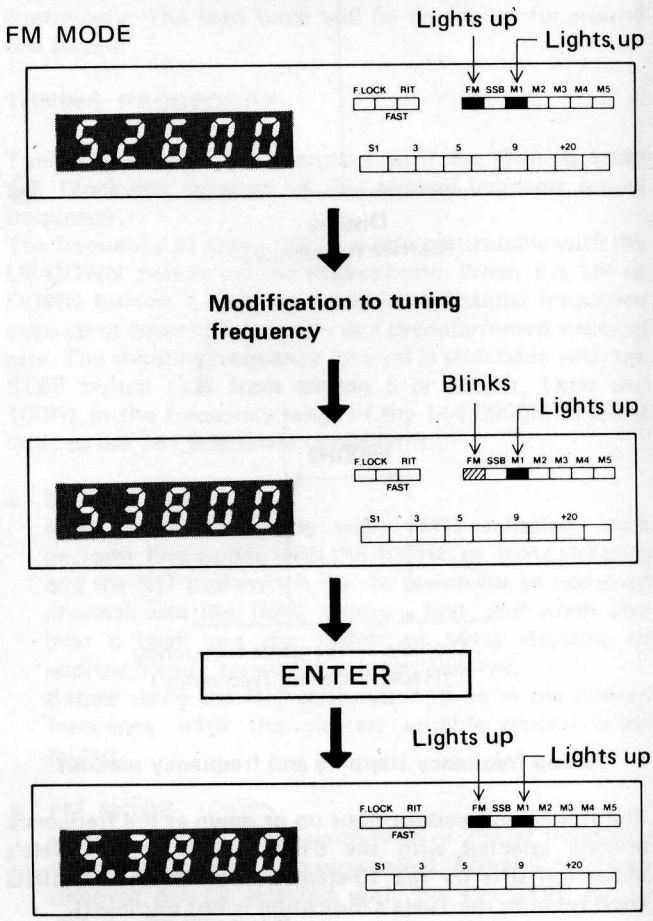
Pressing the RCL key ② initially recalls a frequency datum stored in memory M1. Pressing it a second time recalls a frequency datum stored in M2.
Each time the RCL key is depressed, frequency data are recalled sequentially from memory addresses M3 through M5.



The 6th keying returns memory access to M1. When the memory contents are recalled on the display by RCL operation, press the CCL key to clear the RCL function and bring back the data displayed before the RCL key was depressed.

(3) MEMORY REWRITING

To rewrite a frequency datum stored in a memory, first tune in the desired frequency into which memory content is to be modified, then depress the ENTER key.



When the tuning frequency is changed, "M" starts blinking to indicate that memory rewriting is ready. When you wish to suspend frequency alteration, depress the CCL key instead of the ENTER key. This will leave the memory content unchanged.

HOW TO SCAN

With C5800, 3 scanning modes are available.

- BUSY mode:
  The scanning stops when a signal is received and resumes when the signal disappears.

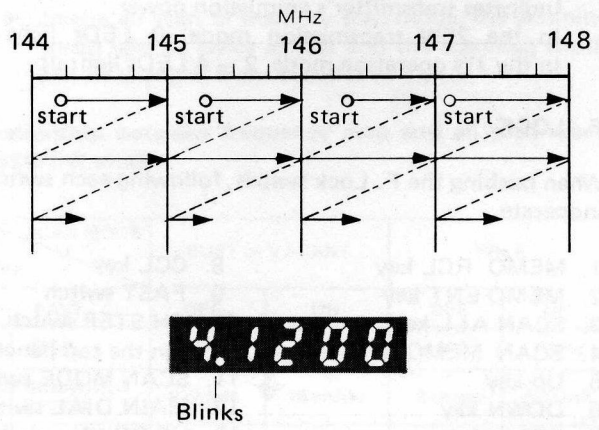
- VACANT mode:
  When a signal disappeares, the scanning stops. When a signal is received, the scanning starts again.

- FREE mode:
  The unit scans the frequency regardless of the existence of signal.

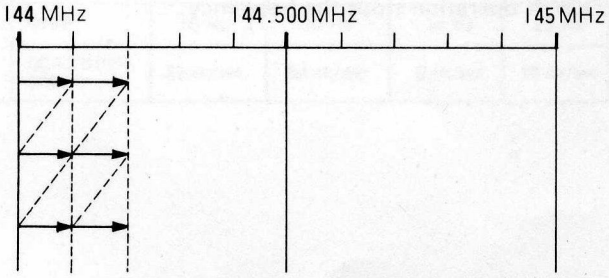
a. All scan

- In FM mode, depress the SCAN ALL key ③ to start scanning the entire channel frequencies in the MHz band now selected. In SSB mode, a frequency within 100kHz is scanned. The scan step interval is selectable with the STEP key ㉒ from 5/25kHz, 1kHz and 100Hz in FM mode and 1kHz, 100Hz and 10Hz in SSB mode.
- During scanning, MHz dot is displayed.
  When scanning stops at a busy channel in each mode, depressing the SCAN ALL key again will restart scanning.

FM



SSB

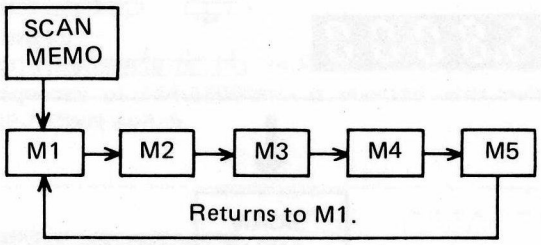


- To stop scanning, depress the CCL key ⑧ or the PTT button ㉜ . The frequency readout will stop at the frequency displayed just before the CCL key or PTT button is depressed, and the MHz dot lights up.

b. Memory scan

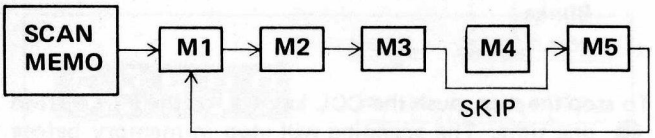
When the SCAN MEMO key ④ is depressed, channel frequencies stored in memory addresses M1—M5 are scanned sequentially. During scanning, the MHz dot flickers and the pertinent memory addresses M1—M5 are displayed in the frequency readout.
The C5800 has 5 memories in FM and SSB modes each. In any modes, the vacant memory is skipped.

[Example 1]
When frequency data are stored in memories M1 through M5 in the same mode:



[Example 2]

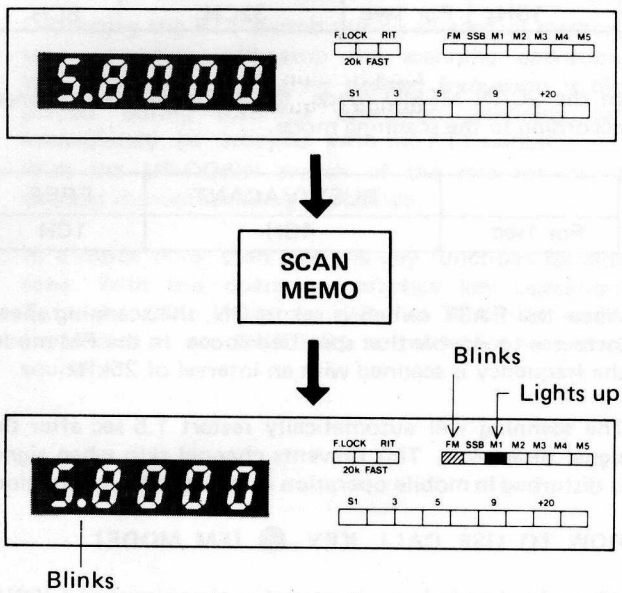
When M1, M2, M3 and M5 are stored and M4 is vacant.



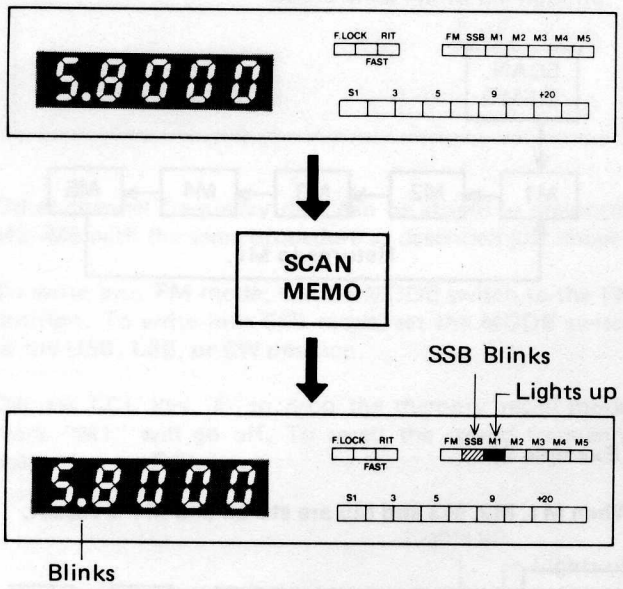
[Example 3]

When M1—M5 are all vacant, memory mode indicator flickers.

FM MODE



SSB MODE



To stop the scan, push the CCL key ❽, or the PTT button ㉜ one time. The scanning will stop in memory before pushing the PTT button.

c. Scanning speed

In SCAN ALL mode, the scanning speed changes according to the frequency step and scanning mode, resulting in easy operation.

		BUSY/VACANT	FREE
25k/5kHz	For 1sec	4CH	1CH
1kHz	For 1sec	8CH	2CH
100Hz	For 1sec	16CH	4CH
10Hz	For 1sec	32CH	8CH

In the SCAN MEMO mode, the scanning speed changes according to the scanning mode.

	BUSY/VACANT	FREE
For 1sec	4CH	1CH

When the FAST switch is set to ON, the scanning speed increases to double that specified above. In the FM mode, the frequency is scanned with an interval of 25kHz.

The scanning will automatically restart 1.5 sec after the signal disappears. This prevents channel skip when signal is disturbed in mobile operation or during communication.

HOW TO USE CALL KEY ❼ (FM MODE)

When this key is kept depressed, a tone signal of 1750Hz is transmitted. When the PTT switch of the microphone is depressed twice, a tone signal of 1750Hz is transmitted for about 1 sec.

RIT (RECEIVER INCREMENTAL TUNING) OPERATIONS

The RIT feature changes receiver's tuning frequency while keeping transmission frequency constant. The variable frequency range is approximately ±1.2kHz.
The frequency obtained at the 0 (center) position of the RIT control is almost identical to that obtained at the OFF position of the control. Turning the RIT control clockwise beyond the 0 position increases receiver's tuning frequency over the transmission freuency, and turning it counterclockwise below the 0 position decreases tuning frequency below the transmission frequency. In this case, however, the frequency readout in the display remains unchanged. The RIT control is useful when the frequency of the mate station gradually deviates from its original channel frequency during communication. In such a case, turn the RIT on and follow up the mate station until the best tuning is recovered. When communication is over, be sure to set the RIT control to OFF.

NOISE BLANKER (NB)

The N.B. switch is intended to suppress impulsive noise interference from automobiles, etc. It is especially useful for mobile operations. The NB is effective in the SSB/CW modes.

METER

a. S (Input signal strength)
Indicates received signal strength. Signal strength of approximately 15 dBμ corresponds to "S9" on the meter scale.

b. RF (Transmission power)
Indicates transmitter's emmission power.
In the 25W transmission mode, 9 LEDs light up.
In the 1W operation mode, 2 – 4 LEDs light up.

F. LOCK

When pushing the F. Lock switch, following each switches inoperate.

1. MEMO RCL key
2. MEMO ENT key
3. SCAN ALL key
4. SCAN MEMO key
5. Up key
6. DOWN key
7. CALL Key
8. CCL key
9. FAST switch
10. CH STEP switch (on the top panel)
11. SCAN MODE switch
12. MAIN DIAL switch
13. UP-DOWN switch

Depressing the F. LOCK switch during scanning or UP-DOWN operation stops the frequency.

FAST switch

When this switch is set to ON, the following operations are possible.

a. FM mode:

- The frequency step is 25kHz regardless of STEP switch ㉒ or CH STEP switch ㉙ setting.
- In the all scan mode or memory scan mode, the scanning speed will be twice as fast as normal (BUSY/VACANT mode: 8ch/sec, FREE mode: 2ch/sec).

Relationship between STEP switch and FAST switch

MODE / STEP	FM		SSB·CW	
FAST	OFF	ON	OFF	ON
A	5 kHz or 25 kHz	25 kH	1 kHz	2kHz
B	1 kHz	25 kHz	100 Hz	200 Hz
C	100 Hz	25 kHz	10 Hz	100 Hz

b. SSB/CW mode:

- The scanning speed will be twice as fast as that specified with STEP switch ㉒.
- In the all scan or memory scan mode, the scanning speed will be twice as fast and the scanning width will be changed from 100kHz to 1MHz.

Relationship between frequency step and all scan speed in SSB/CW mode

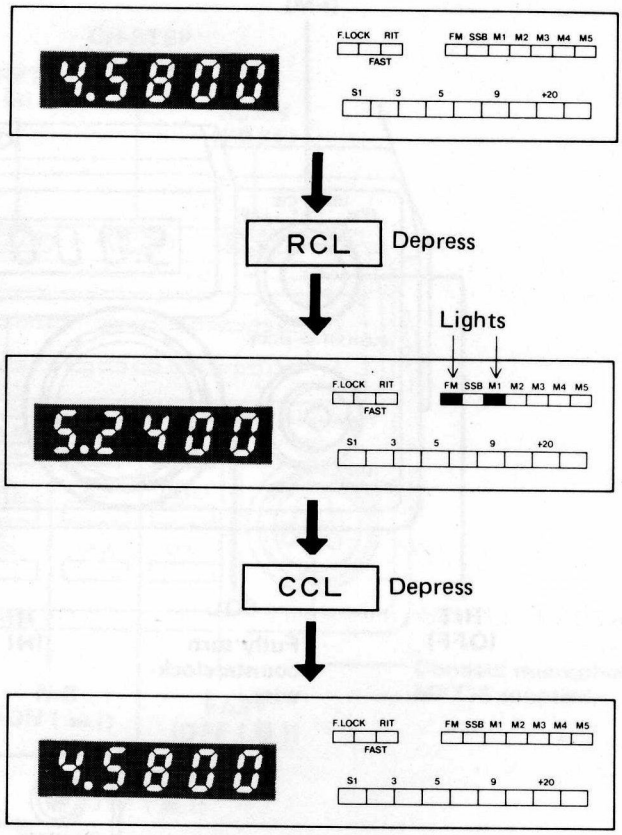
SCAN MODE / STEP		BUSY or VACANT		FREE	
FAST		OFF	ON	OFF	ON
A	STEP	1 kHz	2 kHz	1 kHz	2 kHz
	SCANNING SPEED	8 ch/sec	16 ch/sec	2 ch/sec	4 ch/sec
B	STEP	100 Hz	200 Hz	100 Hz	200 Hz
	SCANNING SPEED	16 ch/sec	32 ch/sec	4 ch/sec	8 ch/sec
C	STEP	10 Hz	20 Hz	10 Hz	20 Hz
	SCANNING SPEED	32 ch/sec	64 ch/sec	8 ch/sec	16 ch/sec

EFFECTIVE USE

a. With the RCL and CCL keys, the frequency stored in M1 and arbitrary frequency can be recalled freely in the same mode.

[Example]

When a frequency of 145.2400MHz is stored in M1 and a frequency of 144.5800MHz is selected with main dial or UP-DOWN switch.



b. Depressing the PTT switch during all scan or memory scan operation will stop the scanning operation. With this operation, when desired frequency is displayed during scanning operation, scanning can immediately be stopped with the PTT switch.

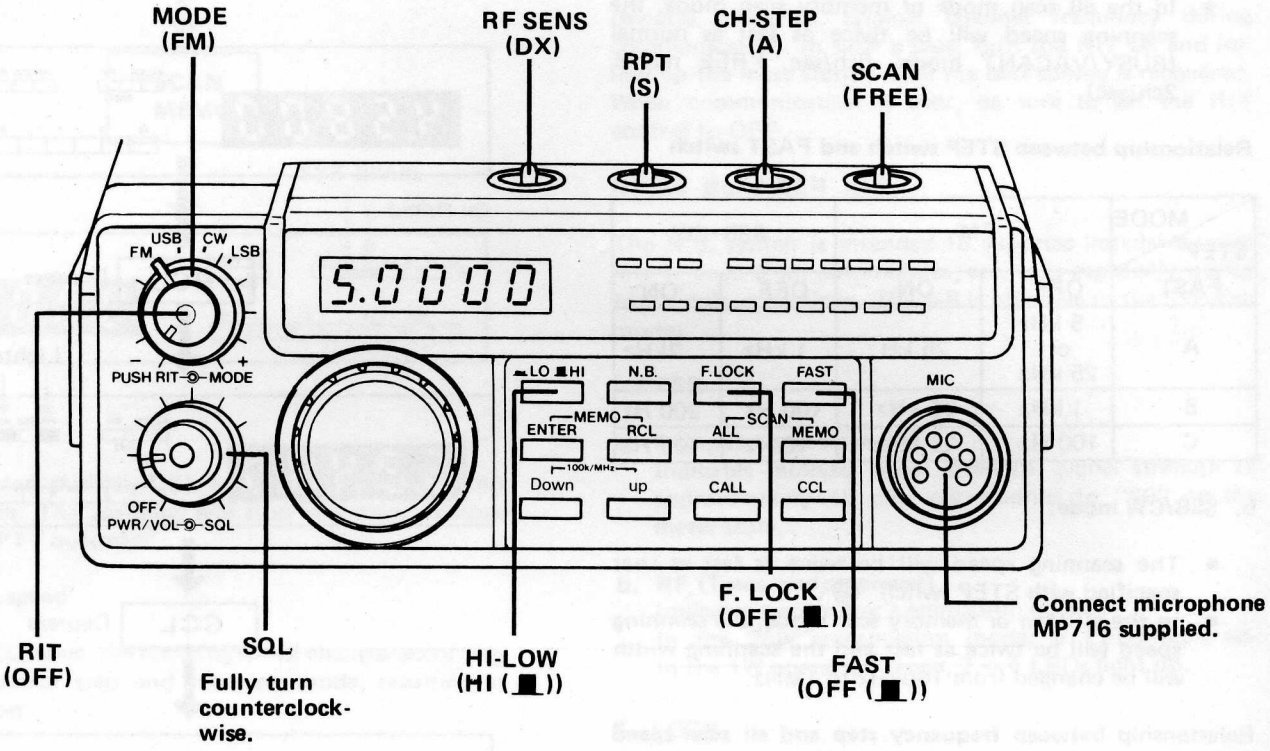
c. With the UP-DOWN switch of the microphone, 1 channel manual scanning is possible.

d. In a mode other than CW, the key functions for side tone. With this operation, practice key operation. Turn the SQL knob clockwise to eliminate reception noise or set PWR/VOL to minimum to reduce sound.

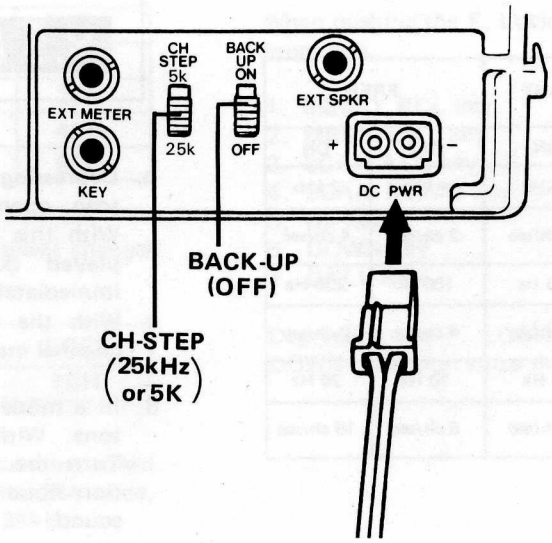
FM OPERATION

After connecting the antenna and power cord, set the switches as shown below.

Front panel



Rear panel

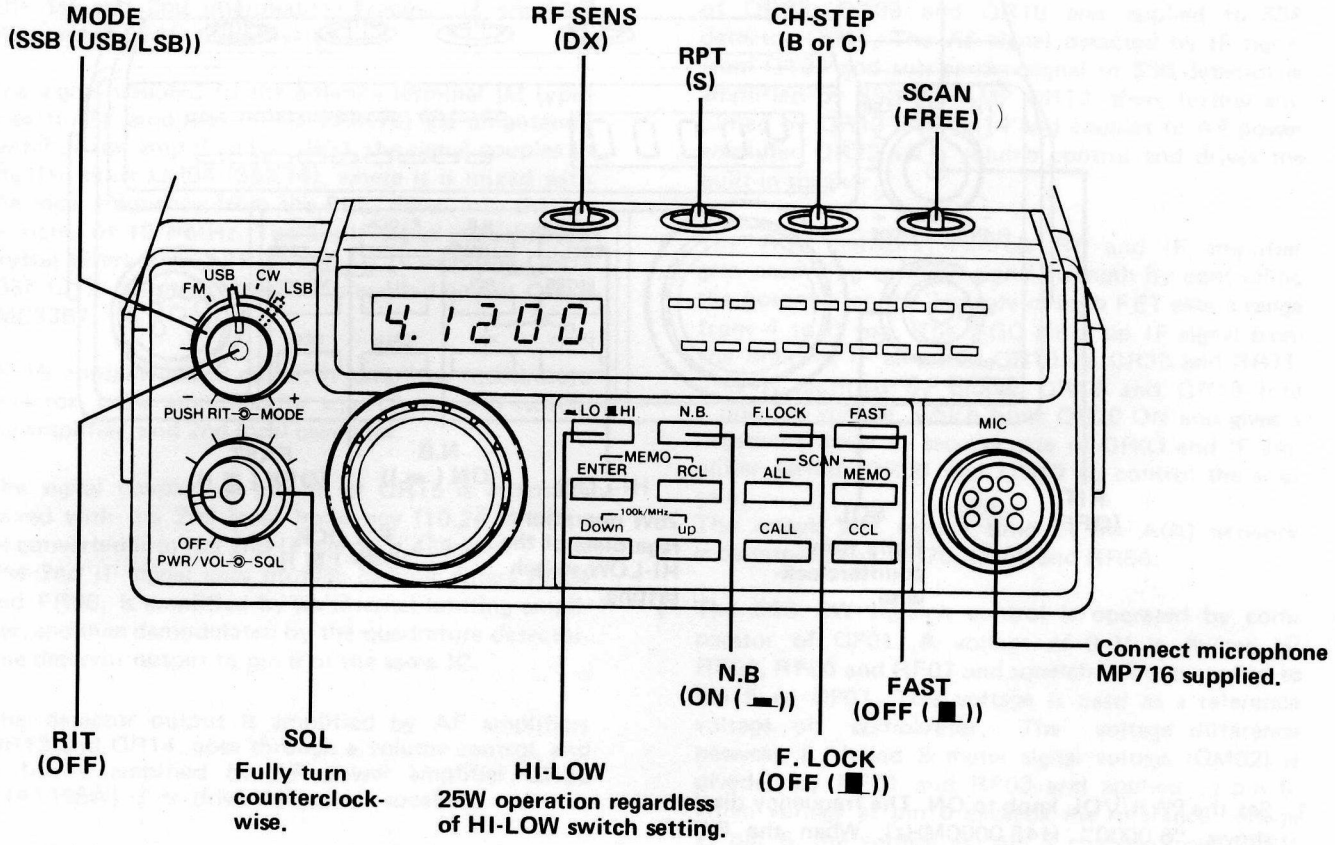


1. Set the PWR/VOL knob to ON. The frequency display shows "6.0000". When the PWR/VOL knob is further turned clockwise, voice or noise can be heard from the speaker.
2. Gradually turn the SQL knob clockwise until noise is not heard. Do not turn the SQL knob excessively.
3. Now the unit is ready for transmission or reception. When the PTT switch of the microphone is depressed, the unit enters the transmission mode and a signal of 146.0000MHz is transmitted from the antenna.

USB/LSB OPERATION

After connecting the antenna and power cord, set the switches as shown below.

Front panel



1. Set the PWR/VOL knob ON. The frequency display shows "6.0000" (146.0000MHz). When the PWR/VOL knob is further turned clockwise, voice or noise can be heard from the speaker.
2. Gradually turn the SQL knob clockwise until noise is not heard. Do not turn the SQL knob excessively.

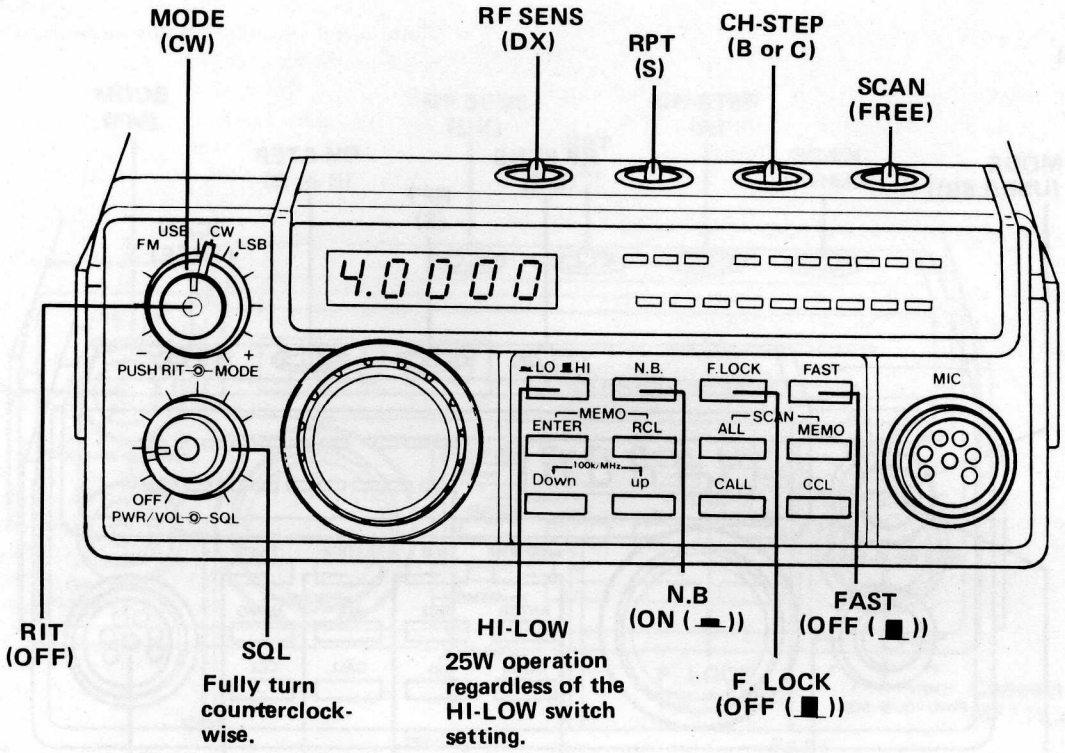
NOTE:
To receive weak signal station, turn the SQL knob counter-clockwise so that the noise can be heard.

3. Now the unit is ready for transmission or reception.
4. Adjust to the desired frequency using the main dial or UP-DOWN switch of the microphone.

CW OPERATION

After connecting the antenna and power cord, set the switches as shown below.

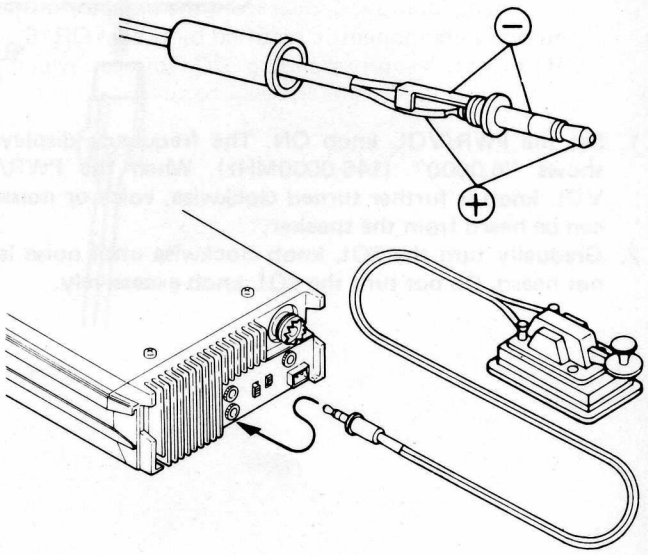
Front panel



1. Set the PWR/VOL knob to ON. The frequency display shows "6.0000" (146.0000MHz). When the PWR/VOL knob is further turned clockwise, noise can be heard.
2. Gradually turn the SQL knob clockwise until noise is not heard. Do not turn the SQL knob excessively.

NOTE:
To receive a weak signal station, turn the SQL knob counterclockwise so that the noise can be heard.

3. Adjust to the desired frequency using the main dial or UP-DOWN switch of the microphone.



Set the mode switch ❷ to CW and connect the key (CW key) to the KEY jack at the rear panel.
When the key is ON, transmission is possible. At that time, the built-in side tone circuit operates, a tone of about 800Hz can be heard from the speaker and CW signal monitoring is possible.
In the reception mode, adjust the tone of the mate terminal to about 800Hz (same as the side tone) and "zeroing-in" is possible. To connect the key, use a commercially available 3.5mmϕ plug.
With the built-in side tone circuit, key operation practice is possible. Connect the key as shown in Fig. 12, set the mode switch to other than CW and fully turn the SQL knob ❹ clockwise in the vacant channel. When the key is ON, side tone can be heard from the speaker. (When the PTT switch is depressed, the signal will be transmitted. Always use the reception mode to practice key operation.)

SERVICE MANUAL SECTION

■ THEORY OF OPERATION

RECEIVER SECTION

1. FM RECEIVER

- The FM receiver section of this unit uses the double superheterodyne system plus quadrature FM detector. The 1st and 2nd intermediate frequencies are 10.7 MHz and 455 kHz respectively.

- The signal coupled to the antenna terminal (M type) goes to RF amplifier QR03 (3SK76) via an antenna switch. After amplified by QR03, the signal couples to the 1st mixer QR04 (3SK74), where it is mixed with the local frequency from the PLL, down into the 1st IF signal of 10.7 MHz. The 1st IF signal goes through crystal filters FR01, FR02, and 1st IF amplifier QR05 (3SK101), before coupled to integrated circuit QR15 (MC3357) ⑯.

- QR15 contains a 2nd mixer, IF amplifier, quadrature detector, noise amplifier for squelch, squelch switching amplifier, and 2nd local oscillator.

- The signal coupled to pin 16 of QR15 is internally mixed with the 2nd local frequency (10.24 MHz) to be converted into the 2nd IF signal of 455 kHz.
  The 2nd IF signal goes through ceramic filters FR04 and FR05, is amplified by an internal limiting amplifier, and then demodulated by the quadrature detector. The detector output to pin 9 of the same IC.

- The detector output is amplified by AF amplifiers QR13 and QR14, goes through a volume control, and is finally amplfied by AF power amplifier QR22 (HA1366W) ④ to drive the built-in speaker.

- The squelch circuit uses QR15's internal active high-pass filter (with noise amplifier) to extract noise component (approx. 5 kHz) from the detector output. The noise component is rectified by diodes QR16 and QR17 into a corresponding DC voltage, which is coupled to pin 12. The squelch control is connnected across pin 12 and the ground to control the squelch level. When the squelch is activated (no noise heard from the speaker), pin 14 of QR15 has a high impedance; when the squelch is inactive, pin 14 is internally grounded. When the squelch is active, therefore, pin 14 of QR15 is pulled up to approximately 3.6, V via RR84. This potential makes emitter of QR13 high via QF04, turning QR13 off.
  When the squelch is inactive (noise heard from the speaker), pin 14 of QR15 is at the ground level, causing emitter of QR14 to be set low. This turns QR13 on to cause audible noise heard through the speaker.

2. SSB RECEIVER SECTION

- The SSB receiver section of this unit uses the single conversion superheterodyne system with intermediate frequency of 10.7 MHz.

- The signal coupled to the antenna terminal is amplified in much the same way as in the FM mode and appears at the output of IF amplifier QR05. The IF signal is amplified by dual gate MOS-FET (3SK101) of QR08, QR09 and QR10 and applied to SSB detector QR11. The AF signal detected by IF signal from QT07 and sub carrier signal in SSB detector is amplified by SSB AF AMP QR12, then, further amplified by QR13 and QR14 and couples to AF power amplifier QR22 via a volume control and drives the built-in speaker.

- The AGC network controls RF and IF amplifier gain according to input signal strength by controlling the potential at the 2nd gate of each FET over a range from 4 to 0 volt. The AGC picks up IF signal from the drain of IF amplifier QR10 via CR35 and RR71. This is rectified by diodes QR18 and QR19 into a positive voltage, which turns QR20 ON and gives a negative voltage to second gate of QR03 and IF amplifier QR08, QR09 and QR10 to control the amp gain.
  The attack and release time of the AGC network is determined by RR76, CR69 and RR85.

- The SSB CW squelch control is operated by comparator of QP01. A voltage of 8 V is divided by RF02, RF06 and RF07 and squelch VR and applied to pin 5 of QP01. This voltage is used as a reference voltage of comparator, The voltage difference between 8 V and S meter signal voltage (QM02) is diveded by RF01 and RF03 and applied to pin 6. When voltage at pin 6 exceeds the reference voltage at pin 6, the voltage at pin 7 changes from 13,8V to 0V and QR13 turns ON (squelch OFF).
  In the FM mode, a voltage of 8 V is applied to pin 6 via QF01 to turn the squelch OFF.

3. NOISE BLANKER (N.B.)

When the N.B. switch is set to ON in the SSB mode, a voltage of approximately +8 VDC is applied at pin 2 of JT06. The noise component picked up from the IF amplifier FR01 is amplified by N.B. amplifiers QN01, QN02 and QN03. The amplified noise is rectified by QN04 and QN05 to drive N.B. switch QN07. When N.B. switch QN07 is closed (when pulse noise input is preset), a negative voltage is applied to the 2nd gate of 1st IF amplifier QR05 to block the pulse noise input.
For signals with relatively high mean level, such as adjacent station signals or tuning signals, the AGC (QN08) provided within the N.B. network is activated to retain the amplifier QR05 gain by controlling the noise amplifier QN02 gain.

4. METER CIRCUITS

(1) SSB S meter

In the SSB mode, the S meter utilizes the AGC characteristics. The AGC voltage is applied to the gate of QM01 and QM01 changes from 4 V to 0 V according to the strength of reception signal. When the gate voltage of QM01 changes according to the AGC voltage, the source current of QM01 reduces, resulting in reduced source voltage. The reduced voltage is applied to the base of QM02, collector output is applied to pin 16 of QD01 and corresponding meter LED lights up.

(2) FM S meter

In FM mode, the 455 kHz signal which has passed FR04 and FR05 passes CR97, RR90, and QR34 and goes to QR30 and QR31 which amplify the signal. QR32 and QR33 detect the amplified signal and convert it to a DC voltage, which is applied to QD01 pin 16 via RR96 to drive the meter LED.

(3) RF meter

The transmission output is used to drive the RF meter circuit. QB07 picks up and rectifies the transmission output at a low-pass filter and the voltage obtained is applied to QD01 pin 16 to drive the meter LED.

TRANSMISSION SECTION

1. FM TRANSMISSION

- Modulating signal coming from external MIC (MP716) is applied to J301-2 of the PLL board.
  The modulating signal, after controlled with R301, is applied to MIC AMP Q501(b)-7 .
  The modulating signal applied to MIC AMP Q501(b)-7 is then applied to a VCO via Q301(a) (limiter) and Q301(b) (low-pass filter).
  The modulating signal then comes to vari-cap diode Q202 of the VCO to perform frequency modulation.

- On the other hand, the output signal of the PLL circuit comes to JT04-2 of the TX/RX board via J202-4 .
  The signal then comes from JT04-2 to the gates of QT15 and QT16 via LT21.
  QT15 and QR16 (D.B.M) mix the signal of PLL with FM SUB CARRIER to provide a carrier frequency signal. LT15 then removes spurious components from the carrier signal of the D.B.M and applies the resulting signal to linear amplifiers QT17 and QT19.

- Part of QT19's output is rectified by QT20 and QT21 for ALC/APC and applied to the base of QT22 (ALC/APC). The second gate voltage of QR08 (common to RX and TX) and QT17 is varied with the output of QT22 to keep RF output power fixed.
  The other part of the output is applied to JT02 via LT20 and further to JB01. QB02 and QB06 amplify the RF signal applied to JB01.
  The signal is then amplified up to the rated power by QB06 and supplied from 5 to an external antenna via a filter and antenna switching circuit.

2. SSB TRANSMITTER

Voice signal picked up with the external microphone (MP716) is applied to J301 of the PLL board. This signal comes to MIC AMP Q501(b)-7 via R301 and, after amplified by Q501(b), goes out from 8 to J302-1 and further to SSB MIC AMP QT11 via JT02.
The audio signal amplified by QT11 and QT12 is applied to SSB DBM QT09 which amplitude-modulates sub-carrier with the audio signal. The amplitude-modulated carrier is suppressed by balance control RT18 and CT24 and DSB (double sideband) signal is generated. The DSB signal is amplified by younger amplifier QT10 and then applied to band-pass filter FR03 to obtain SSB signal. After amplified by QR08, the SSB signal is routed from QR08(D) to LT13 via LR07. After then, operation proceeds like in FM. Namely, the signal passes QT15, QT16 (DBM), and LT15 and comes to liner amplifiers QT17 and QT15. Then the signal is amplified again by QB02 and QB06 and routed to the external antenna via the antenna switching circuit.

CW SECTION

- In CW mode, reception frequency is the same as in USB mode and transmission frequency is 800 Hz lower than reception frequency.
  If you plug a key to CW key jack J804 and operate the key, transmission mode is automatically entered.
- When the key plugged to J804 is depressed, QT28 becomes grounded. Then QT27 turns on, thereby turning on QT31. When QT31 is on, the sources of QT17 and QT10 becomes grounded.
- When QT27 turns on, QT32 and QT34 turn on and QT33 off and the PTT switch becomes on.
- When the key is released, QT38 is on, thereby turning off QT10 and QT17.
- The time constant of TX/RX is determined with CT66, RT60, RT61 and RT62.
- Key click is determined with RT55, CT63, RT56 and CT64.

SIDE TONE

- QF06 comprises a CR oscillator.
- When you depress the key, the RF26 side becomes grounded and QF11 turns on. Now a closed circuit which includes C, R, QF11 and QF06 is formed and it oscillates approximately at 800 Hz.
- The output level is determined with CF08 and RF15. The SIDE TONE signal controlled with semi-fixed variable resistor RF15 is applied to audio amplifier QR22④. QR22 operates for both TX and RX.

FINAL AMPLIFIER

- The RF signal is routed from QT19 to QB02 via the 6dB attenuator composed of RB05, RB06, and RB07. The signal is amplified by QB02 and applied to hybrid IC QB06 1 .
  The RF signal amplified by QB05 passes a low-pass filter which removes harmonic components and then it is supplied to the antenna.
- The voltage at QB06 2 is kept fixed so that the transmission output should not vary when the supply voltage varies. QB03, QB04 and QB05 compose the voltage regulator.
  An APC circuit protects QB05 from varying antenna load.
  The CM coupler of LB08 and CB27 detects traveling and reflected waves. The RF signal detected is rectified by QB10 then applied to QB11.
  QB12 controls APC AMP (QT22) and QT22 controls the RF signal coming from QT19.

COMMON SECTION

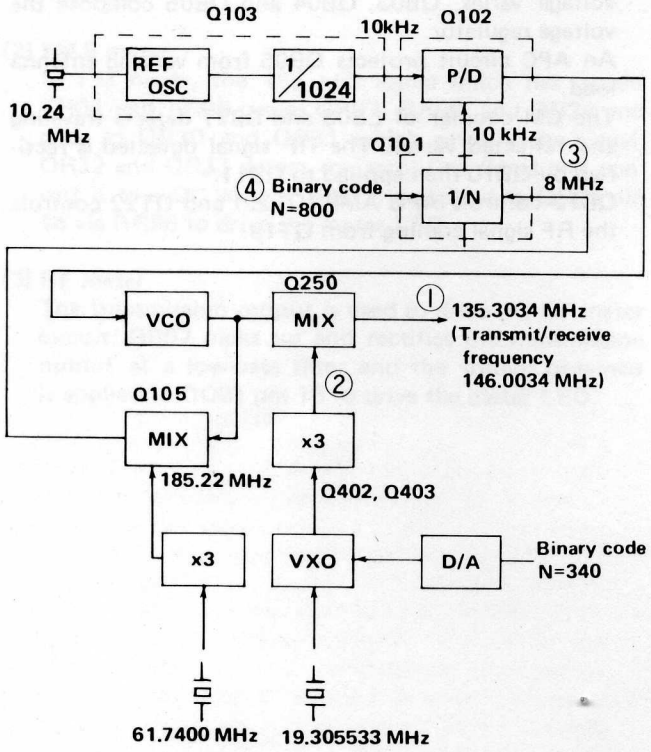
10. SUB CARRIER

XT01 (crystal), QT05, QT07 and QT08 compose an oscillating circuit. QT05 and QT07 work during both transmission and reception. QT08 works only for transmission. QT06 turns off QT05 by applying a voltage to the base during RX in FM mode so that carrier should not go out.
Output frequencies are as follows.

Mode		Output Frequency
FM:	TX	10.7 MHz
CW:	RX	
USB:	TX/RX	10.6985 MHz
LSB:	TX/RX	10.7015 MHz
CW:	TX	10.6993 MHz

PLL SECTION

The PLL block in this unit is controlled by 13 bit BCD codes and 4 bit 3 BCD digits for D/A conversion, both furnished with the internal microprocessor.
The output frequency of the PLL is 10.7 MHz lower than the frequency readout.



(Example) PLL circuit frequency system at 146.00340 MHz

NOTES:

1. **Fin frequency ③ remains unchanged over a range from 146.00000 – 146.00999 MHz.**
2. **PLL local oscillation frequency ② changes over a range from 57.92000 – 57.91001 MHz.**
3. **Output frequency ① changes over a range from 135.30000 – 135.30999 MHz.**
4. **Binary code ④ and Fin frequencies ③ change at 10 kHz interval.**
5. **In each 10 kHz span wherein binary code ④ remains unchanged, PLL local oscillation frequency ② changes to activate 1 kHz, 100 Hz and 10 Hz steps.**

TX/RX	①	②	③	④	
146.00000	135.30000	57.92000	8.0000	N=800	
146.00010	135.30010	57.91990	8.0000	N=800	
≀	≀	≀	* ≀	≀	**
146.00990	135.00990	57.91010	8.0000	N=800	
146.01000	135.01000	57.92000	8.0000	N=800	

***Changes**
****Remains unchanged**

1. PLL INTEGRATED CIRCUIT (Q106)

The PLL integrated circuit contains the following functional blocks on a single chip:

- Reference oscillator (Q103): 10.24 MHz
- Phase detector (P/D) (Q102): Phase detector
- Programmable counter (Q101): 1/N

(1) Programmable counter (Q101)

The 13 bit BCD code output from pins 19 – 31 of QL02 determines the dividing ratio, N, for the programmable counter. The signal frequency from pin 17 of Q101 coupled to pin 7 of phase detector Q102.

(MHz)	(N)	Q101 (TC9122P) Pin No.												
		15	14	13	12	11	10	9	8	7	6	5	4	3
144.000	600	0	0	1	1	0	0	0	0	0	0	0	0	0
144.010	601	0	0	1	1	0	0	0	0	0	0	0	0	1
144.020	602	0	0	1	1	0	0	0	0	0	0	0	1	0
⋮	⋮													
144.980	698	0	0	1	1	0	1	0	0	1	1	0	0	0
144.990	699	0	0	1	1	0	1	0	0	1	1	0	0	1
145.000	700	0	0	1	1	1	0	0	0	0	0	0	0	0
145.010	701	0	0	1	1	1	0	0	0	0	0	0	0	1
145.020	702	0	0	1	1	1	0	0	0	0	0	0	1	0
⋮	⋮													
145.980	798	0	0	1	1	1	1	0	0	1	1	0	0	0
145.990	799	0	0	1	1	1	1	0	0	1	1	0	0	1
147.999	999	0	1	0	0	1	1	0	0	1	1	0	0	1
144.000	600	0	0	1	1	0	0	0	0	0	0	0	0	0

(2) Phase detector (P/D) (Q102)

- The reference frequency 10 kHz (10.24 MHz x 1/1024) generated by Q103 is routed from 7 to Q102(8). The frequency sent from Q101 (programmable counter) 17 is applied to Q102 7. Q102 detects the phase difference of the two frequencies.

- A C-R integrator takes the output of Q102 from 3 and converts it to a DC voltage, which is applied to a vari-cap diode via C201. This voltage is used to vary the frequency of oscillation of the VCO.

- The DC voltage is applied also to the gate of Q140, which converts impedance and permits a voltage, which is synchronous with the VCO control voltage, to go out from the source. This voltage is applied to vari-cap diodes QT50 and QT51 of the TX/RX board via C601.

(3) VCO

A C-R integrator converts the signal sent from Q102 to a DC voltage and this voltage is applied to vari-cap diode Q201 of the VCO.
The voltage applying to Q201 controls the capacity of Q201 and, therefore, the frequency of oscillation of the VCO. The frequency will change by up to 10 MHz with the DC voltage.

(4) Local oscillator (LOCAL OSC)

In the local oscillator, the natural frequency (61.7400 MHz) of the crystal is trippled to 185.2200 MHz. The local oscillator is composed of Q421 and X420. L422 and L423 inserted in the output line remove spurious components from the trippled signal. The resulting signal is routed from L423 to the base of mixer Q105 in the loop.

(5) Mixer (Q105) in the loop

The output of the VCO passes the buffer amplifier of Q204 and Q104 and comes to the base of Q105 via L103. As a result, the output (185,2200 MHz) of LOCAL OSC is mixed with 191.220 – 195.2100 MHz (E) and 191.2200 –193.2100 MHz (W) of the VCO at the base of Q105. The output of Q105 is 6.00 – 9.99 MHz (E) or 6.00 – 7.99 MHz (W). This signal passes LPF (L104, C130 and C131), gets amplified in Q106 and Q107, passes LPF (L105, C136 and C137) again, and is finally applied to programmable counter Q101 (2).

(6) VXO circuit (Q402 and Q403)

This is an oscillator consisting of Q402 and X402 (19.3033 MHz).
Q401 is a vari-cap diode which varies output frequency, controlled by the output of D/A conversion. Voltage applying to Q401 varies at 1 kHz, 100 Hz and 10 Hz of the frequency display (channel step). (The digit of 10 Hz units is not displayed.)
The output (19.3033 MHz) of the VXO circuit is trippled to 57.91001 MHz and, after removing spurious components with L402, applied to the source of Q250.

(7) Digital-to-analog converter (D/A converter) (Q550)

This converts BCD data (3 digits) of 1 kHz, 100 Hz and 10 Hz supplied from the microprocessor to an analog voltage.
This D/A converter consists of resistors associated with each bit (R571 – R576 and R558 for 1 kHz units, R577 – R582 and R559 for 100 Hz units, R583 – R588 and R560 for 10 Hz units), resitors (R568 and R569) varying width of change, and four operational amplifiers. The voltage data (3 digit BCD) is applied to Q550 ⑥, ⑬ and ⑨. The voltage data is routed from Q550 ⑦, ⑭ and ⑧ to Q550 ③ and amplified. The output analog voltage developing at Q550 ① is applied to vari-cap diode Q401 of the VXO circuit. Controlled by this voltage, the output frequency of the VXO circuit varies from 0 to 9.99 kHz.

Table Output code of D/A conversion

BCD DATA			CODE										
			1	2	4	8	10	20	40	80	100	200	400	800
			15	16	17	18	11	12	13	14	7	8	9	10
1kHz	100Hz	10Hz	A_5	B_5	C_5	D_5	A_4	B_4	C_4	D_4	A_1	B_1	C_1	D_1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
0	0	2	0	1	0	0	0	0	0	0	0	0	0	0
⋮	⋮	⋮												
0	0	9	1	0	0	1	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	1	0	0	0	0	0	0	0
0	1	1	1	0	0	0	1	0	0	0	0	0	0	0
⋮	⋮	⋮												
0	1	9	1	0	0	1	1	0	0	0	0	0	0	0
0	2	0	0	0	0	0	0	1	0	0	0	0	0	0
0	2	1	1	0	0	0	0	1	0	0	0	0	0	0
⋮	⋮	⋮												
0	9	9	1	0	0	1	1	0	0	1	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	1	0	0	0
1	0	1	1	0	0	0	0	0	0	0	1	0	0	0
⋮	⋮	⋮												
9	9	8	0	0	0	1	1	0	0	1	1	0	0	1
9	9	9	1	0	0	1	1	0	0	1	1	0	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

(8) Shift circuit

- This shifts the PLL's output frequency by +1.5 kHz in USB mode and by -1.5 kHz in LSB mode with reference to the frequency during FM mode. This circuit also permits to vary frequency (by approximately ±1.2 kHz) with the RIT switch.

- The voltages set for each of FM, LSB, and USB modes with R504, R505 and R506 are applied to buffer amplifier Q501 (a) 3 . The output of Q501(a) is routed from ② to Q500 (d) ②. Output from Q550 (d) ① is applied to vari-cap diode Q401 of the VXO circuit.

- When the RIT switch (R802) is on (off), Q506 is on (off).

(9) Mixer (Q250) outside the loop

Output (191.2200 – 193.2100 MHz (W) or 191.2200 – 195.2100 MHz (E)) of the VCO is applied to the gate of Q250. To its source, signal (57.92000 – 57.91001 MHz) coming from the VXO and D/A converter is applied. Q250 mixes these two signals and applies the resulting signal to L250 to obtain a signal of desired frequency (133.3 – 135.29999 MHz (W) or 133.3 – 137.29999 MHz (E)).

(10) Output amplifier and unlock switch circuit

- The signal from which L250 has removed spurious components is amplified by Q251 and Q252. The amplified signal is applied to the output switching circuit via LPF (L256, C262 and C263).
The output switching circuit consisting of diodes Q252 and Q253 switches over transmission and reception modes.

- When the PLL unlocks, the DC level at Q102 4 of P/D falls and, as a result, Q160 of the unlock switching circuit turns on. This turns off Q161 and eventually turns on Q162. As a result, mixer Q250 cuts off, thereby stopping operation of output amplifiers Q251 and Q252. Thus spurious signals are cut off when the PLL is unlocked.

(11) Output switching circuit (diode switch)

During reception mode, Q252 is on because a forward voltage is applied to it. The PLL's output is now supplied to the receiver's mixer via Q252.
On the other hand, Q252 is off due to a reverse voltage applied to it so that the transmitter remains off.
During transmission mode, a reverse voltage is applied to Q252 while Q253 is on.

CONTROL SECTION

- Microprocessor (QL01)
- Expander (QL02)
- Keyboard
- Rotary switch
- Control switches

1. The control section provides the following control output

(1) PLL programmable counter control code output:
A 13-bit binary code to determine the dividing ratio (N) of the PLL programmable counter is output at pins ⑲ – ㉛ of QL02.

(2) D/A converter input code:
Three digit 4 bit code (12 bits in all) of D/A converter data is output at pins ⑦ – ⑱ of QL02.

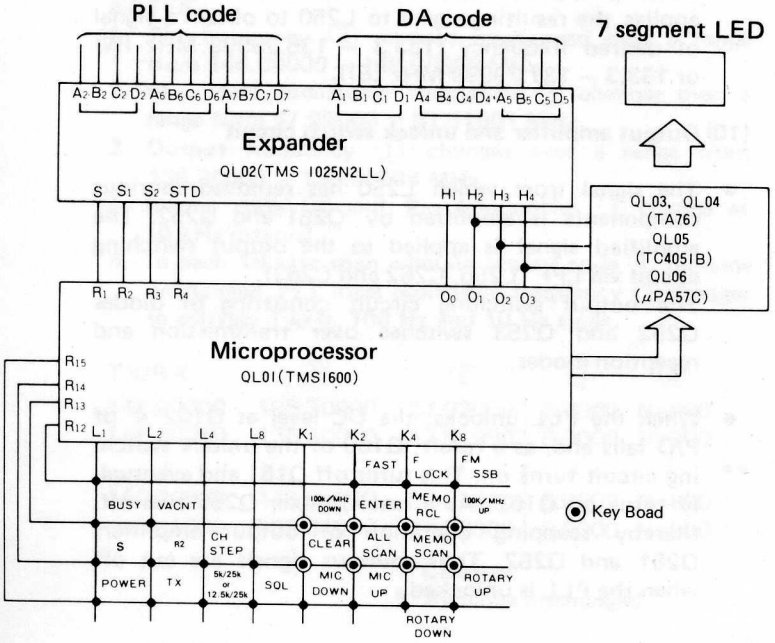
(3) 7-segment LED and memory address LED drive output:
Four digit 7-segment LED and memory address drive signal is output at pins ⑦ – ⑩, ㉖, ㉗, ㉚ – ㉟ of QL01.

(4) Buzzer drive output:
Oscillator QL11 is driven by the output at R6 of QL01. When output at R6 is H, oscillator QL11 functions.

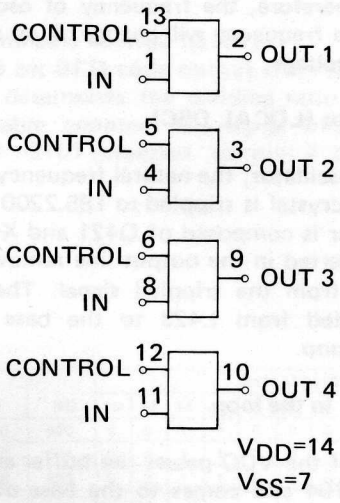
2. QL01 requires the following inputs:

(1) Initial clear:
A positive pulse applied at pin ⑰ (INIT) of QL01 clears the entire internal circuit of QL01.

(2) Matrix circuit (L_1, L_2, L_4, L_8, K_1, K_2, K_4, K_8, R_5, R_{12}, R_{13}, R_{14} and R_{15}):
The microprocessor is controlled by the matrix consists of R output and L and K input.

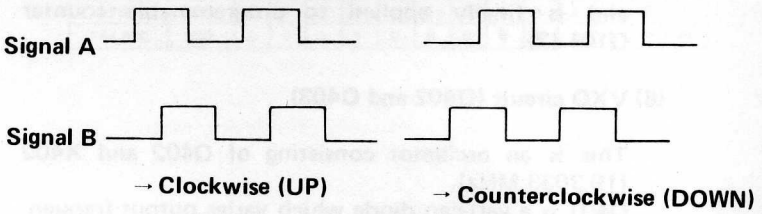


(3) IC MC14016B for analog switches are used in the matrix circuits except that of the keyboard. When a high-level signal is applied to the control terminal (see below), the IN and OUT terminals become shorted.

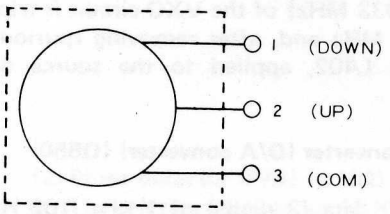


- **CHANNEL SELECTION**

(1) Channel selector knob
The rotary switch operates UP and DOWN depending on the phase difference of pulse signals.



Signal A (between 2 and 3) ...Reference clock signal
Signal B (between 1 and 3)



Rotary switch

The phase difference signal coming from the rotary switch is sent to the microprocessor via an analog switch. When the phase of the reference clock signal is fast, the matrix of R_{15}-K_8 becomes closed and UP operation starts. When the phase of the reference clock signal is slow, the matrix of R_{15}-K_4 becomes closed and DOWN operation starts.

(2) Channel UP/DOWN scanning with the MIC switch
The channel control on the microphone uses analog switche (QL12) to close matrixes R_{15}-K_2 for upward scanning, and matrix R_{15}-K_1 for downward scanning. A DC potential is applied to pins ⑬ (for UP) and ⑤ (for DOWN) of QL12 to control the analog switch.

- **KEYBOARD FUNCTIONS**

(1) Call channel (CALL CH)
Tone signal (1750 Hz) will be transmitted as long as the switch is kept depressed.

(2) 100 kHz/MHz UP

Operation starts when the matrix of R_{13}-K_8 is closed. In FM mode, frequency rises by 1 MHz each time when one depresses the switch or continuously in units of 1 MHz if the switch is kept depressed.

144.0 → 145.0 → 144.0 MHz (W version)

144.0 → 145.0 → 146.0 → 147.0 → 144.0 MHz (E version)

In SSB mode, frequency rises by 100kHz each time when one depresses the switch or continuously in units of 100 kHz if the switch is kept depressed.

144.0 → 144.1 --------➔ 144.9 → 145.0 ---➔145.1-➔145.9 → 144.0 MHz (W version)

144.0-➔144.1-➔144.9 → 145.0 → 145.1 -➔145.9 → 146.0 → 146.1-➔146.9 → 147.0 → 147.1-➔147.9 → 144.0 MHz (E version)

(3) 100 KHz/1 MHz DOWN

Operation starts when the matrix of R_{13}-K_1 is closed. In FM mode, frequency falls by 1 MHz each time when one depresses the switch or continuously in units of 1 MHz if the switch is kept depressed.

144.0 → 145.0 → 144.0 MHz (W version)

144.0 → 147.0 → 146.0 → 145.0 → 144.0 MHz (E version)

In SSB mode, frequency falls by 100 kHz each time when one depresses the switch or continuously in units of 100 kHz if the switch is kept depressed.

144.0 → 145.9-➔145.1 → 145.0 → 144.9 -➔144.1 → 144.0 MHz (W version)

144.0 → 147.9-➔147.1 → 147.0 → 146.9 -➔146.1 → 146.0 → 145.9-➔145.1 → 145.0 → 144.9-➔144.1 → 144.0 MHz (E version)

(4) Cancel (CCL)

The CCL switch is effected by closing matrix R_{14}-K_1. It cancels the MEMO RCL, SCAN ALL and SCAN MEMO features.

(5) SCAN MEMO

The SCAN MEMO feature is effected by closing matrix R_{14}-K_4. This feature scans frequencies stored in internal memories.

(6) SCAN ALL

The SCAN ALL feature is activated by closing matrix R_{14}-K_2. This feature scans up a 1 MHz frequency span at the displayed FM frequency stepping interval. In SSB mode, this feature scans up a 100 kHz frequency span.

(7) MEMO RCL

The MEMO RCL feature is effected by closing matrix R_{13}-K_4. This feature recalls stored frequency data.

(8) MEMO ENTER

The MEMO ENTER feature is effected by closing matrix R_{13}-K_2. This feature stores a displayed data into the internal memory.

• FUNCTIONS OF SWITCHES

1. Switching over SCAN modes

(1) BUSY SCAN

BUSY SCAN mode is entered when the matrix of R_{13}-L_1 is closed.

(2) VACANT SCAN

VACANT SCAN mode is entered when the matrix of R_{13}-L_2 is opened.

(3) FREE SCAN

FREE SCAN mode is entered when both of matrices R_{13}-L_1 and R_{13}-L_2 are closed.

2. RPT mode

(1) S (simplex)

The matrix of R_{14}-L_1 is closed. The transmission frequency is the same as the reception one.

(2) R1 (Repeater)

In the R_1 setting, matrix R_{14}-L_1 and matrix R_{14}-L_2 are opened. The transmission is carried out on the frequency indicated on the S dial setting and reception frequency is 600 kHz higher than that of transmission. The transmission and reception frequencies are indicated by the dial according to the operation.

(3) R2 (Repeater)

In the R_2 setting, matrix R_{14}-L_2 is closed. The reception is carried out on the frequency indicated on the S dial setting and transmission frequency is 600 kHz higher than that of the reception. The transmission and reception frequencies are indicated by the dial according to the operation.

3. Switching channel step

(1) A

At position A, matrix R_{14}-L_4 is closed. The channel step is 10 kHz in FM mode and 1 kHz in SSB mode.

(2) B

At position B, matrices are open. Channel step is the one specified by channel step switch in FM mode and 100 Hz in SSB mode.

(3) C

At position C, matrix R_{14}-L_8 is closed. Channel step is 100 Hz in FM mode and 10 Hz in SSB mode. The digits of 10 Hz units cannot be read.

4. FAST

FAST operates when matrix R_{12}-K_2 gets closed. In FM mode, the channel step selected with the channel step switch works.

In SSB mode, it is twice as large as that selected with the channel step switch.

Scanning speed will be doubled if the switch is depressed during MEMO SCAN or ALL SCAN.

5. F-LOCK

When matrix R_{12}-K_4 becomes closed, F-LOCK mode will be entered and the frequency which has just been displayed continues to appear. As long as the matrix is closed, the microprocessor inhibits all operations except switching RPT.

6. MODE switching

When the MODE switch is set at USB/CW or LSB, matrix R_{12}-K_8 is left open. The matrix is closed when the switch is set at the FM position. The microprocessor identifies the current operation mode (SSB or FM) from this matrix state and provides operation in the MEMO SCAN, MEMO RCL or SCAN ALL mode.

FM (High)/SSB (Low) signal is given to QS12 of the power supply and it supplies required voltages to the units under the control of the microprocessor.

• OTHER FEATURES

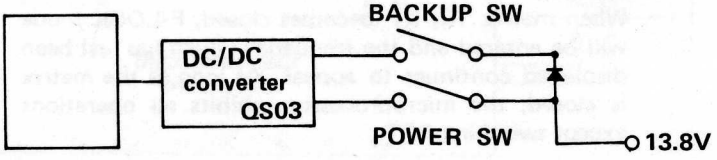
1. Switching between 5 and 25 kHz stepping intervals is controlled by S804.
   Closing matrix R_{15}-L_4 selects 25 kHz stepping interval.
   Opening matrix R_{15}-L_4 selects 5 kHz stepping interval.

2. Control section in the TX mode
   - During transmission, matrix R_{15}-L_2 is closed and all inputs are cancelled to maintain IC condition.
   - The analog switch QL13 is turned ON/OFF according to transmission +B.

3. Chip select switch (CS)
   - Matrix R_{15}-L_1 is closed.
   - The switch is coupled to power switch.
   - The analog switch QL13 is turned ON according to switch +B.

   Analog switch ON: Normal operation
   Analog switch OFF: Stops the controller operation and erases display. The memory contents are maintained.

4. Back up circuit
   The microprocessor is powered by DC/DC converter (QS03). The reference voltage of DC/DC converter is commonly used for input voltage and back up power. Namely, in the condition in which the back up power is supplied even when the power switch is OFF, the memory is backed up.



3. DISPLAY SECTION

The segment drive ICs QL03 and QL04 drive the segment output from microprocessor (QL01) and 5-digit 7-segment LED is dinamically driven.

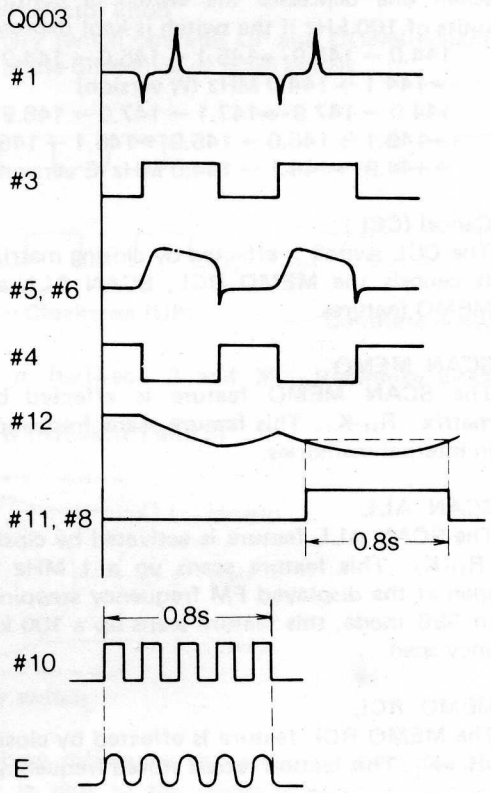
4. TONE BURST GENERATOR

When the PTT switch is used:

When the PTT switch is pressed initially, the potential at terminal A in the schematic diagram lowers. This causes pin 1 of Q003 to lower momentarily, causing pin 3 of Q003 to rise. As a result, pins 5 and 6 of Q003 also rise, which lowers pin 4 of Q003. The potential at pins 12 and 13 of Q003 starts dropping but does not reach its lowest level, leaving the tone burst circuit inactive.

When the PTT switch is pressed twice consecutively, the potential at pins 12 and 13 of Q003 goes to its lowest level. This causes pin 11 of Q003 to rise, activating the tone burst generator. The potential at pins 12 and 13 of Q003 gradually increases, and pin 11 of Q003 is maintained at a high level for 0.8 seconds. This means that the tone burst signal is transmitted for only 0.8 seconds when the PTT switch is pressed a second time.

The output of the tone burst generator is level-adjusted by R010, then applied to the PLL modulator via R011 and C006.



When the CALL button on the 5800 is used

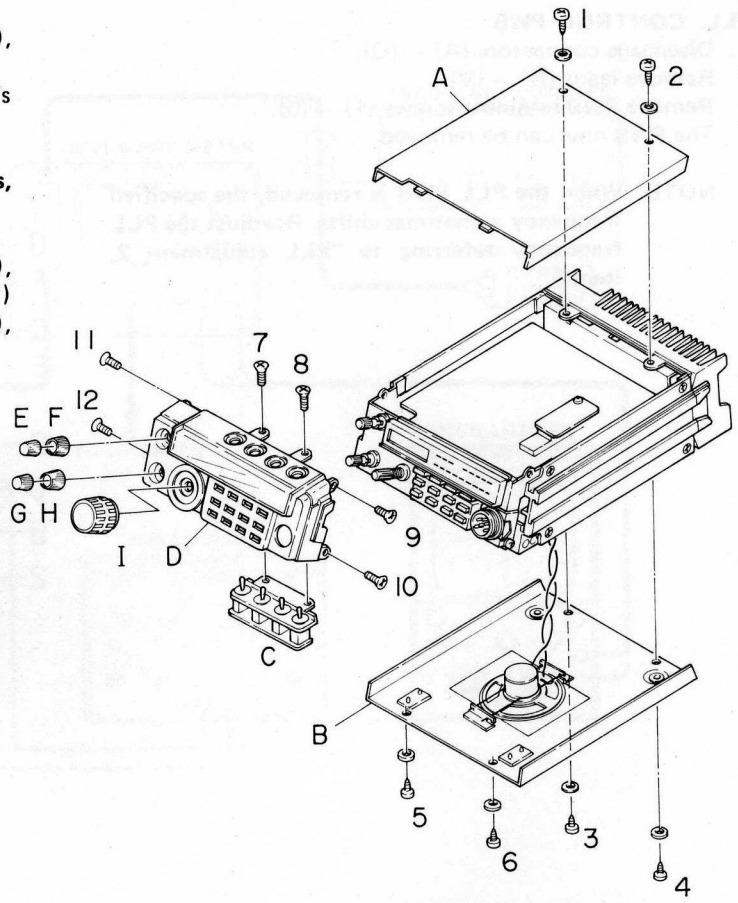
- Pushing the CALL button applies a voltage, +8 V, to terminal B in the schematic diagram. This brings up the potential at the base of Q001, turning it on and therefore causing terminal A to lower, putting transceiver in the TX mode.
- As a high level is applied to pins 5 and 6 of Q003 through Q002, pin 4 of Q003 is maintained at a low level while the CALL button is held down.
  Pins 12 and 13 of Q003 are lowered, raising pins 11 and 8, which activate the tone-burst generator.
- When the CALL button is released, Q001 is turned off. This causes terminal A to rise, putting the transceiver in the RX mode.

1. Disassembling case

1. To remove top panel A, remove screws (1) and (2).
2. To remove bottom plate B, remove screws (3), (4), (5) and (6).
   When the above parts are removed, the C5800's interior can be seen.

   NOTE: Take care not to damage the speaker leads, etc.

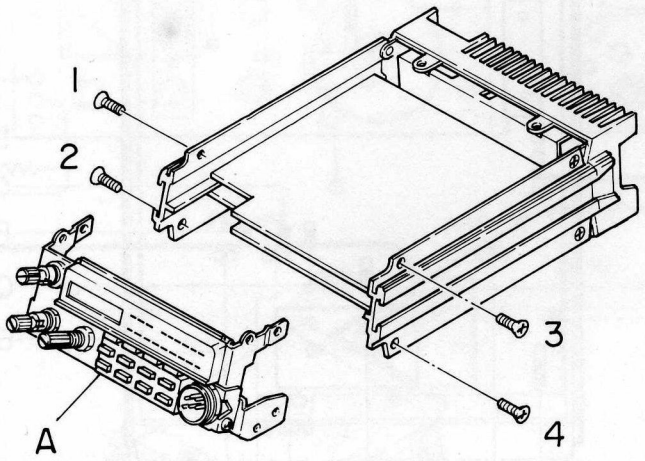
3. To remove front panel D, remove knobs (E), (F), (G), (H) and (I), remove switch retaining screws (7) and (8) and remove front panel retaining screws (9), (10), (11) and (12).



2. Removing front bracket

Remove front bracket retaining screws (1) – (4).

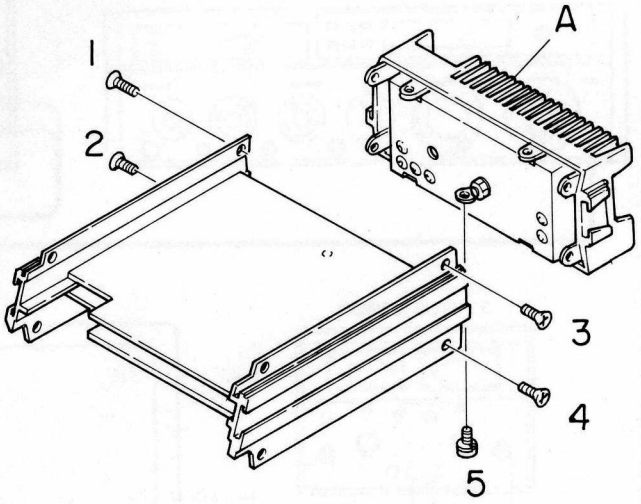
NOTE: Take care not to damage the wiring.



3. Removing heat sink

Remove heat sink retaining screws (1) – (4).

NOTE: Take care not to damage the wiring.

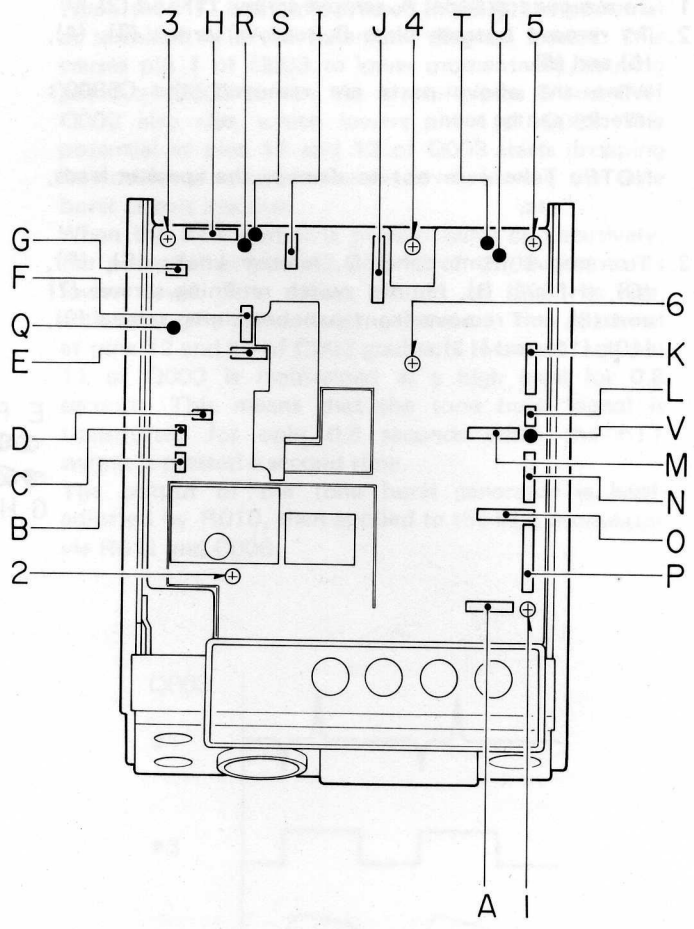


4. Removing PWBs

PLL. CONTROL PWB

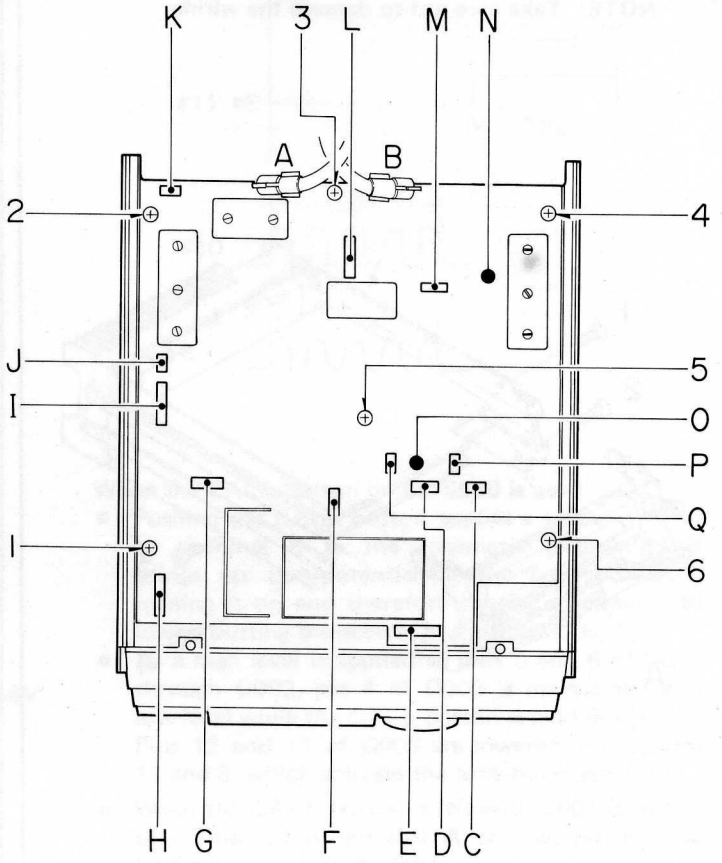
1. Disengage connectors (A) – (Q).
2. Remove leads (R) – (V).
3. Remove PWB retaining screws (1) – (5).
   The PWB now can be removed.

NOTE: When the PLL PWB is removed, the specified frequency sometimes shifts. Readjust the PLL frequency referring to "PLL adjustment 2, item 5".

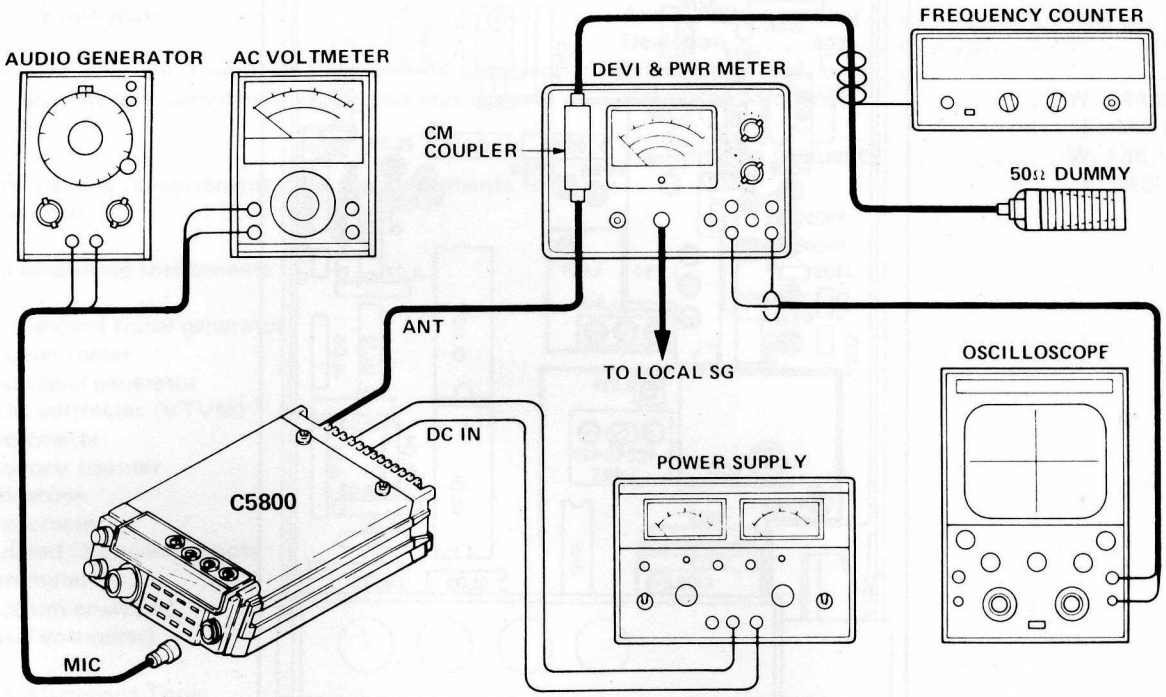


RX AND TX PWB

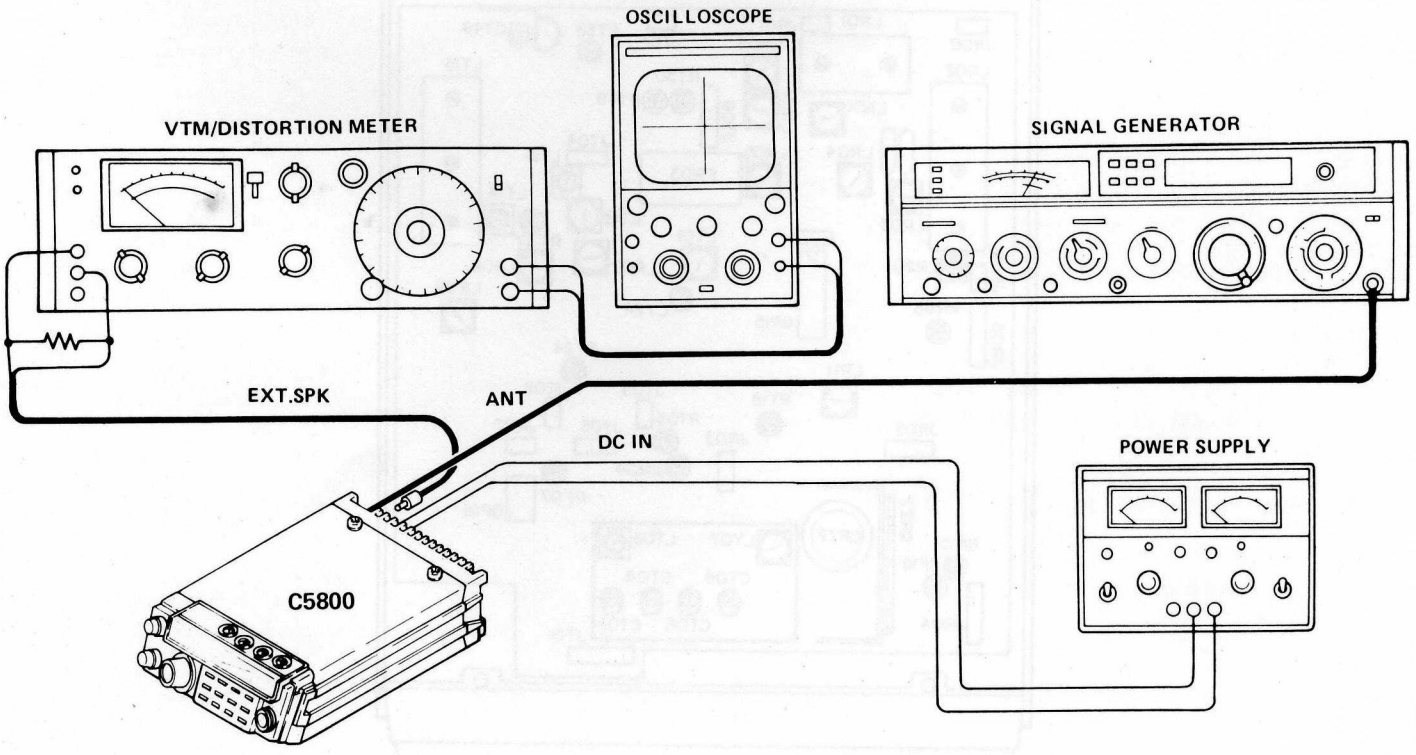
1. Remove coaxial cables (A) and (B).
2. Disengage connectors (C) – (P).
3. Remove PWB retaining screws (1) – (6).
   The PWBs now can be removed.



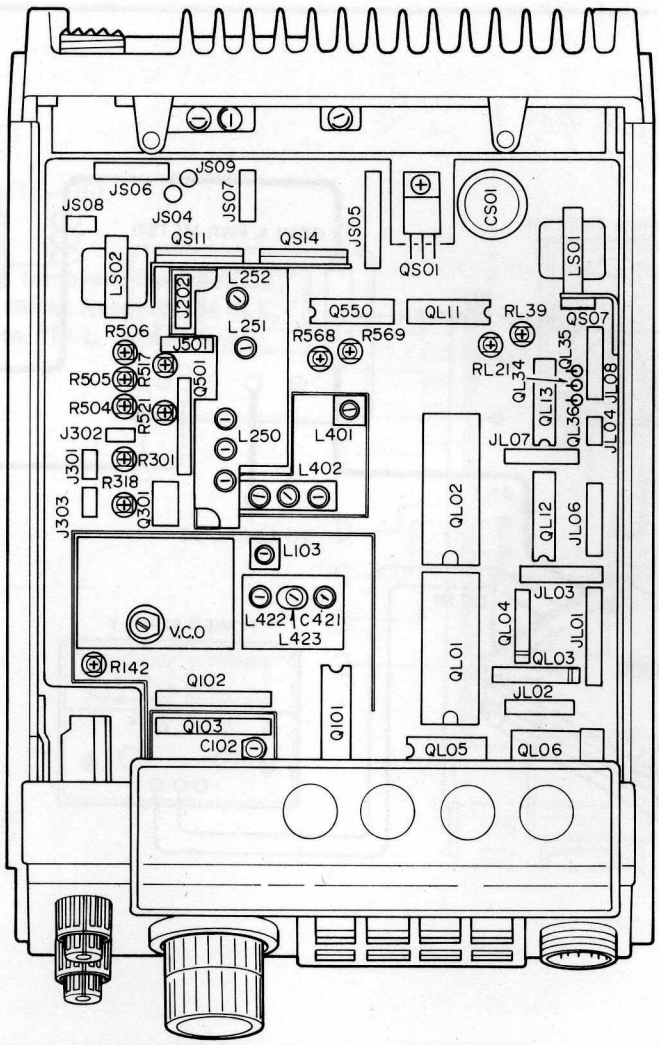
TX ADJUSTMENT SET-UP

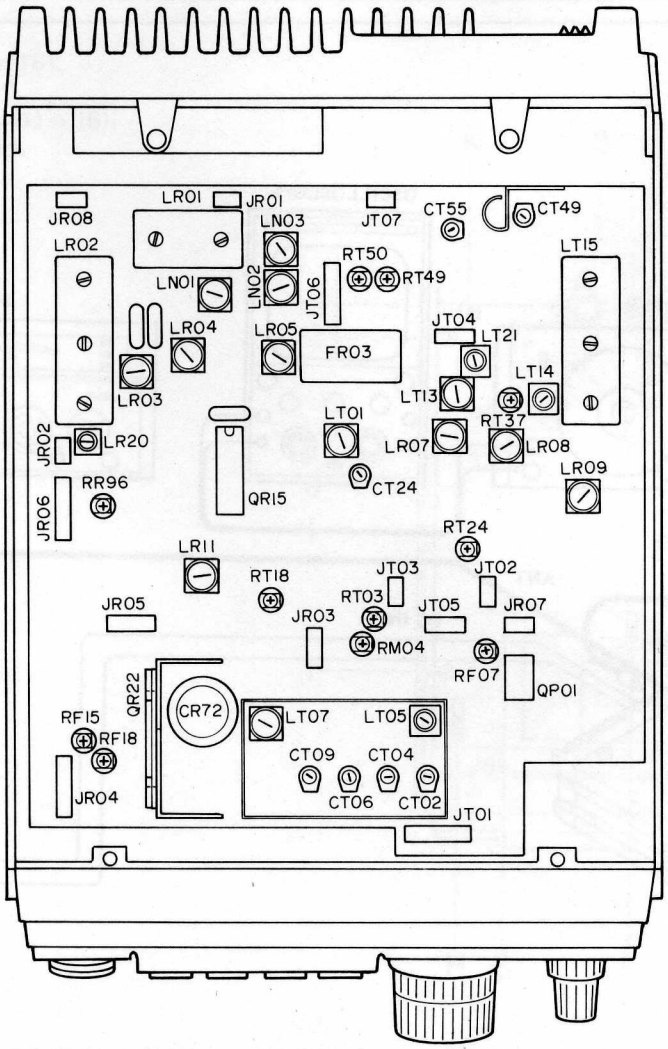


RX ADJUSTMENT SET-UP



ADJUSTING POINT





■ ALIGNMENT PROCEDURE

CONDITIONS

- All adjustments have been completed prior to shipment. Further adjustments should be limited to a necessary minimum.
- Make sure that all measuring instruments required for alignment are completely calibrated and operate normally.
- Before starting measurement, idle the instruments for half an hour.

Required Measuring Instruments

1. VHF standard signal generator
2. RF power meter
3. Audio signal generator
4. AC/DC voltmeter (VTVM)
5. RF voltmeter
6. Frequency counter
7. Oscilloscope
8. Galvanometer
9. Regulated DC power supply
10. DC ammeter
11. (Spectrum analyzer)
12. (Digital voltmeter)

Required Alignment Tools

1. Philips screwdriver: for casing and boards
2. Standard screwdriver: for trimmer resistor and IF adjustment
3. Non-metallic standard screwdriver: for RF and trimmer capacitor adjustment
4. Box screwdriver: for support (2.6, 3.0 mm)

For RF circuit and frequency adjustment, use a non-metallic screwdriver.

Standard Condition

Supply voltage	13.8 V
Audio output	0.5 W (1.4 V, 4 Ω)
Audio output loading	4 Ω
Deviation	±3.5 kHz
Transmitter load	50 Ω
Reception frequency	W: 144.900 MHz, E: 145.900 MHz
Transmission frequency	W: 145,100 MHz, E: 146.100 MHz

Precautions for adjustment

1. For PLL and RX adjustments, select reception mode unless otherwise specified.
2. After PLL and sub carrier adjustments, make adjustment for transmission and reception.
3. During reception adjustment, never move LR01 and LR02 except when they are to be replaced.
4. In frequency adjustment, adjust exactly to the units of 10 Hz.
5. Perform PLL, transmission, and reception adjustments in the order described in this manual. If you do them in a wrong order, conditions would vary.
6. Before adjusting PLL frequency, warm up the equipment for at least three minutes after turning on power.

CONTROL SECTION

1. Reset voltage adjustment

(1) Set supply voltage at 7.0 V. Turn RL39 fully counter-clockwise.
(2) Adjust RL21 so that the frequency indicator LEDs blink.

2. Chip switch adjustment

(1) Set supply voltage at 10.2 V. Adjust RL39 so that the frequency indicator LEDs go out.

PLL SECTION

PLL ADJUSTMENT 1

Condition:

(1) Dummy load . . . . . .
(2) Frequency . . . . . 144.00 MHz, 146.00 MHz
(3) SQL . . . . . MIN
(4) VOL . . . . . MIN
(5) MODE . . . . . FM
(6) RPT MODE . . . . . S
(7) RIT . . . . . OFF
(8) Power supply . . . . . 13.8 V
(9) STEP . . . . . A

1. Comparative oscillation adjustment

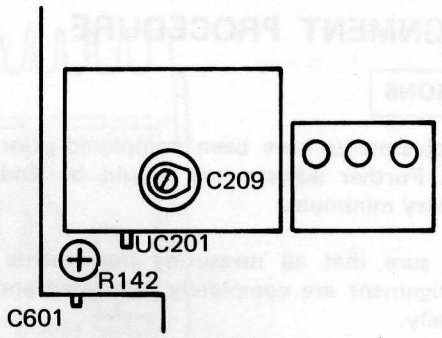
(1) Set the MODE switch to FM and set the reception frequency to 146.000 MHz (6.0000).
(2) Connect a frequency counter to J101 and adjust C102 so that the frequency counter reading is 10.240 MHz.

2. Programmable counter

(1) Connect an RF VTVM across R129 (TP) and adjust L422, L423 and L103 so that the maximum meter reading is obtained.
(2) Repeat above procedure a few times.

3. VCO alignment

(1) Set the reception frequency to 144.0000 MHz (4.0000).
(2) Connect a precision DC voltmeter to C201 (VCO board) and adjust C209 so that the voltmeter reads 2.5 V.



4. Transmission tracking voltage adjustment

(1) Tune the receiver to 144.0000 MHz (4.0000).
(2) Connect a digital voltmeter to C601 (through-type capacitor). Adjust R142 so that the digital meter reads 2.5 V.

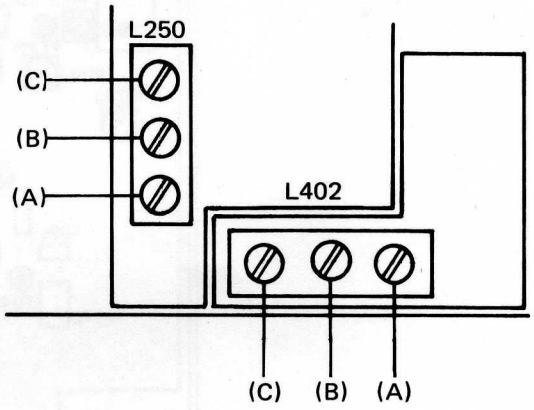
Caution: Be sure to perform this adjustment after VCO adjustment.

5. VCO frequency adjustment

(1) Tune the receiver to 144.0000 MHz (4.0000).
(2) Connect a frequency counter to J201 (TP) and adjust C421 so that the frequency counter reads 191.2200 MHz as the VCO frequency.

6. PLL output adjustment

(1) Tune the receiver to 146.0000 MHz (6.0000).
(2) Connect an RF VTVM or detector to J203 (TP) and adjust L402, L250, L251 and L252 so that the reading becomes maximum.
(3) Repeat adjustment a few times.
(4) Turn the core (B) of L402 backward by a half turn.
(5) Turn the core (C) of L402 backward by a quarter turn.
(6) Tune the receiver to 144.0000 MHz (4.0000) and adjust L251 and L252 so that the RF VTVM or detector reading becomes maximum.
(7) Tuning the receiver alternately to 144.0000 MHz and 147.9950 MHz, adjust the core (C) of L250 so that the RF VTVM or detector reading becomes fixed.



PLL ADJUSTMENT 2

Condition:

(1) Dummy load . . . . . 50 Ω
(2) Frequency . . . . . 146.00999 MHz, 146.01000 MHz
(3) SQL . . . . . MIN
(4) VOL . . . . . MIN
(5) MODE . . . . . FM, USB, LSB
(6) RPT MODE . . . . . S
(7) RIT . . . . . OFF (ON)
(8) Power supply . . . . . 13.8 V
(9) STEP C

NOTE: When the PLL PCB is replaced, always carry out procedure in item 5 below.

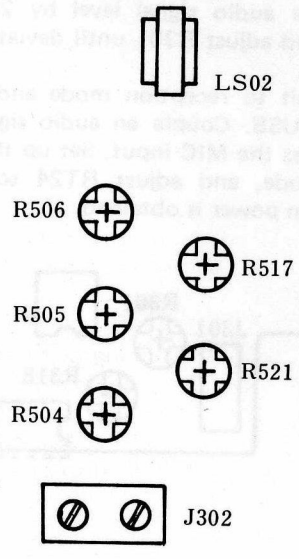
1. Output frequency adjustment

(1) Set the mode switch at LSB and tune the receiver to 146.00999 MHz (6.0099). (Set CH STEP at C.)
(2) Connect a frequency counter to J203 (TP). Turn R568 and R569 fully clockwise.
(3) Adjust L401 so that the frequency counter reads 135.30999 MHz
(4) Turn R568 and R569 fully counterclockwise. Make coarse adjustment with R505 and fine adjustment with R521 so that the frequency counter reads 135.30999 MHz.
(5) Tune the receiver to 146.01000 MHz (6.0100). Make coarse adjustment with R569 and fine adjustment with R568 so that the frequency counter reads 135.31000 MHz.

2. PLL output frequency shift adjustment

(1) Adjust the frequency to 146.0000 MHz and adjust trimmer capacitor so that the frequency counter reads as follows.

Mode switch	Frequency counter reading	Trimmer capacitor
FM MODE	135.30000 MHz	R504
USB MODE	135.30150 MHz	R506
LSB MODE	135.29850 MHz	R505



3. RIT alignment

(1) Set the MODE switch to LSB and adjust the frequency to 146.0000 MHz. Set the RIT knob to the mechanical center.
(2) Turn the RIT ON and adjust R517 so that the frequency counter reads the same value in RIT OFF.
(3) Confirm that the RIT adjustable range is more than ±1.1 kHz.

NOTE: RIT adjustment can be carried out in receiver adjustment.

TRANSMITTER SECTION ALIGNMENT

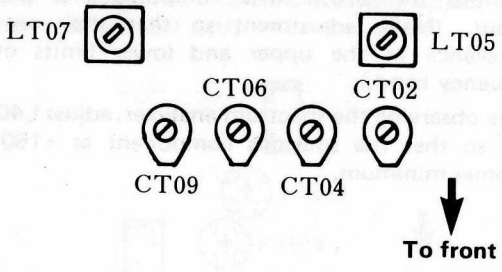
Condition:

(1) Dummy load . . . . . 50 Ω
(2) Frequency . . . . . 146.100 MHz
(3) SQL . . . . . MIN
(4) VOL . . . . . MIN
(5) MODE . . . . . FM
(6) RPT MODE . . . . . S
(7) RIT . . . . . OFF
(8) Power supply . . . . . 13.8 V
(9) STEP C

1. Sub-carrier frequency adjustment

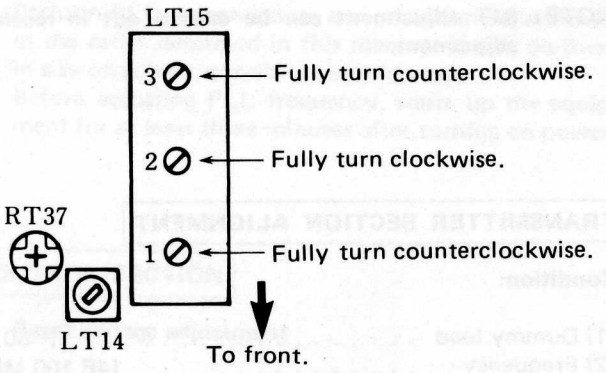
(1) Set the MODE switch to FM and adjust the frequency to 146.0000 MHz. Connect a frequency counter to RR44.
(2) Set the CT02 to mechanical center and set the unit to transmission mode. Adjust LT05 so that the frequency counter reads 10.70000 MHz.
(3) Set the unit to reception mode and set the MODE switch to USB. Adjust CT09 so that the frequency counter reads 10.69850 MHz.
(4) Set the MODE switch to CW and set the unit to transmission mode. Adjust CT06 so that the frequency counter reads 10.69930 MHz.
(5) Set the unit to reception mode and adjust CT04 so that the frequency counter reads 10.6985 MHz.
(6) Set the MODE switch to LSB and adjust CT04 so that the frequency counter reads 10.70150 MHz.
(7) Disconnect the frequency counter from RR44 and connect an RF VTVM or galvanometer. Set the unit to the FM mode. Set the unit to the transmission mode and adjust LT07 so that the RF VTVM reads the maximum value.

NOTE: In the transmission mode, the FM mode cannot be changed.



2. Younger adjustment

(1) Set the unit to USB mode and adjust the frequency to 144.000 MHz. Connect an RF power meter to JT07.
(2) Set CT49, CT55 and RT24 to the mechanical center, fully turn RB04, RT49 and RT50 counterclockwise and RT75 clockwise.
(3) Preset LT15 as follows.



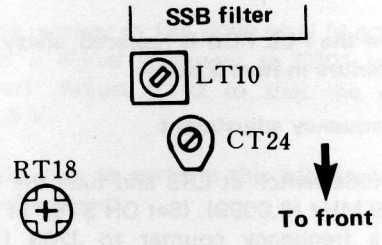
(4) Connect a DC voltmeter between source of QT15 and QT16 and set the unit to transmission mode. Adjust RT37 so that the DC voltmeter reads 0 V.
(5) Set the unit to the reception mode and to the FM mode. Connect an RF VTVM or galvanometer to gate 1 of QT17.
(6) Set the unit to transmission mode and adjust LT10, LR07, LT13, LT21 and LT14 so that the RF VTVM reads the maximum value. Then, adjust LT15 from the input side. Then turn LT15 ② core 1/2 turn clockwise.
(7) Disconnect the RF VTVM from the gate of QT17 and adjust CT49 and CT55 so that the RF power meter reads the maximum value (approx. 250 mW).

3. RF power adjustment

(1) Connect the coaxial cable of the booster to JT07 and an RF power meter to the antenna terminal. Turn RB08 fully counterclockwise and set R301 (of PLL side) to its mechanical center.
(2) Apply audio signal of 1,500 Hz and approximately 5 mV to the microphone terminal and transmit the signal in USB mode.
(3) Adjust RT24 so that RF power reads 20 W or so.
(4) Adjust LT10, LR07, LT13, LT21, LT14, LT15, CT49 and CT55 so that the RF power reads maximum.
(5) Select FM mode and check that RF output power is 30 W or more.
(6) Connect a DC voltmeter to the HOT side of RB08. Adjust RB07 so that the voltmeter reads a minimum.
(7) Adjust RB03 so that the RF output just starts to decrease.
(8) Using a spectrum analyzer, fine adjust RT37 to minimize the ±10.7 MHz components of the RF output. (Make adjustment so that they are well in balance at the upper and lower limits of the frequency band.)
(9) While observing the spectrum analyzer, adjust L402 Ⓒ core so that the spurious component at ±150 kHz becomes minimum.

4. SSB carrier suppression adjustment

(1) Set the unit to reception mode and set the MODE switch to LSB. Set CT24 to the mechanical center.
(2) Do not apply audio signal to the MIC jack and set the unit to the transmission mode. Adjust RT18 so that the spectrum analizer RF output indicates the minimum carrier. Adjust CT24, RT18, CT24 and RT18 in this order so that the carrier becomes minimum (approx. -50 dB).
(3) If the carrier is more than -45 dB, repeat adjustment. Confirm that the carrier is less than -45 dB in LSB mode.



5. RF power adjustment

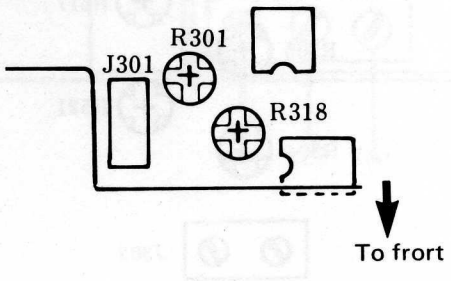
(1) Adjust RT75 so that RF output power reads 30 W. (FM mode)
(2) Set the Hi-Lo switch at Lo. Adjust RT49 so that RF output power reads 1.0 W. Next, resetting the switch at Hi, adjust RT50 so that RF output power reads 27W. (Repeat this step a few times.)

6. TX meter adjustment

(1) Set the MODE switch to FM.
(2) Set the Hi-Lo switch to Lo. Adjust RB12 so that the fourth LED of the meter go out.
(3) Check that all LEDs light at Hi power.

7. FM deviation and SSB transmission power adjustment

(1) Set the MODE switch to FM. (Repection)
(2) Apply an audio frequency signal of 1 kHz, 30 mV to the MIC jack.
(3) Fully turn R301 clockwise, set the unit to transmission mode, and adjust R318 so that ±5 kHz of deviation is obtained.
Reduce the audio signal level by 20 dB to 3 mV (1 kHz), and adjust R301 until deviation of ±3.5 kHz is obtained.
(4) Set the unit to reception mode and set the MODE switch to USB. Couple an audio signal of 1.5 kHz, 3 mV across the MIC input. Set up the unit to transmission mode, and adjust RT24 so that 25 W of transmission power is obtained.



7. Tone burst adjustment

(1) Tune the receiver to 146.0000 MHz (6.0000).
(2) Select FM mode. Depress the CALL key to enter transmission mode.
(3) Connect a frequency counter to the AF output terminal of galvanometer. Adjust R007 so that the frequency counter reads 1,750 Hz.
(4) Adjust R010 so that tone deviation becomes ±3.5 kHz.
(5) Release the CALL key and reception mode is entered.
(6) In SSB (USB, CW and LSB) mode, check that tone deviation does not work.

8. Burst time adjustment

(1) Depress microphone PTT switch twice continuously (keep it depressed at the second time). Adjust R005 so that tone deviation work for 1.0 second.
(2) Check that tone deviation does not work if PTT switch is depressed once.

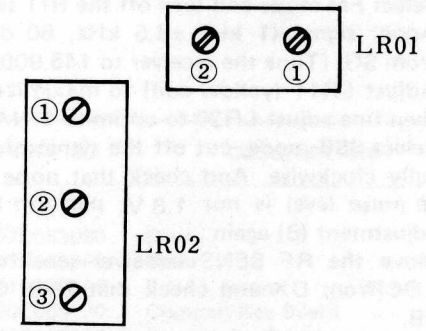
RECEIVER SECTION ALIGNMENT

Condition:

(1) Dummy load . . . . . 4 Ω
(2) Frequency . . . . . 145.90 MHz
(3) SQL . . . . . MIN
(4) VOL . . . . . –
(5) MODE . . . . . USB
(6) RPT MODE . . . . . S
(7) RIT . . . . . OFF
(8) Power supply . . . . . 13.8 V
(9) DX/LOCAL switch . . . . . DX

1. SSB sensitivity alignment

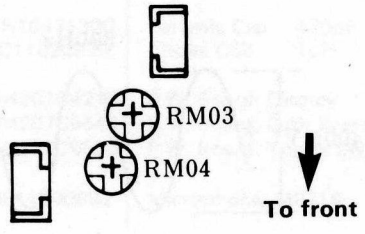
(1) Set the unit to the USB mode and apply an audio signal of 1,000 Hz to the HOR terminal of the oscilloscope to obtain Lissahous' figure.
(2) Set RR36 to the mechanical center and adjust the reception frequency to 145.9000 MHz. Set the SENS switch to DC.
(3) Adjust the SG output to 10 dB S/N and connect to the unit. Adjust LR01 so that the audio output is the maximum.
(4) Adjust the reception frequency to 144.0200 MHz and receive a signal. Adjust core (1) of LR02 so that the audio output is the maximum.
Adjust the reception frequency to 147.9000 MHz and adjust core (2) of LR02.
Adjust the reception frequency to 144.0200 MHz and adjust core (3) of LR02.
(The SG output level should be adjusted so that the audio output level should be adjusted so that the audio output is 10 dB S/N.)
To readjust, adjust core (2) of LR01 so that the peak is at 145.9000 MHz.



(5) Recieve a frequency of 145.9000 MHz and adjust LR01, LR02, LR03, LR04, LR05, LR07, LR08 and LR09 in this order so that the audio output is the maximum. Repeat this procedure a few times.

- **10 dB S/N corresponds to -14 dB.**

(6) Shut off the SG signal, do not receive any signal and fully turn the VOL knob clockwise. Adjust RR36 so that the noise is 1.8 V.



(7) Confirm that there is no sensitivity difference at 144.02, 145.90 and 147.90 MHz. If there is a difference, repeat procedures (1) – (4).

2. S meter adjustment

(1) Select USB mode and set RM04 to the mechanical center.
(2) Apply SG output (4 dB, unmodulated) to the unit and adjust RM03 so that one meter LED just lights.
(3) Apply SG output (15 dB, unmodulated) to the unit and adjust RM04 so that six meter LEDs light. (Repeat steps (2) and (3) a few times.)
(4) Apply a SG output of -2 db, AF 1kHz, 3.5 kHz dev. to the unit. Set RR96 to mechanical center and adjust RR90 so that only one LED lights up.
(5) Apply a SG output of +15 dB and adjust RR96 so that six LEDs light up.
(6) Repeat above procedures a few times.

3. Noise blanker adjustment

(1) Select USB mode and turn on the NB switch. Do not apply any signal.
(2) Connect an oscilloscope to QN06 (TP). Adjust LN01, LN02 and LN03 to make waveform largest.
At this time, check that no waveform appears in FM mode.

4. SSB SQL adjustment

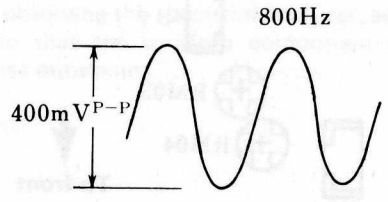
(1) Select FM mode and set SQL at the threshold. Do not apply any signal.
(2) Switching over to USB mode, adjust RF07 so that the threshold be reached.

5. FM sensitivity adjustment

(1) Select FM mode and turn off the RIT switch.
(2) Apply signal (1 kHz ±3.5 kHz, 60 dB) to the unit from SG. (Tune the receiver to 145.9000 MHz.)
(3) Adjust LR11 (yellow coil) to maximize audio output, then fine adjust LR20 to optimize SINAD.
(4) Select SSB mode, cut off the signal of SG. Turn VOL fully clockwise. And check that noise level is 1.4 V. If noise level is not 1.8 V, perform SSB sensitivity adjustment (6) again.
(5) Move the RF SENS (receiver sensitivity) switch to LOC from DX and check that 20dB QS becomes +5 dB.

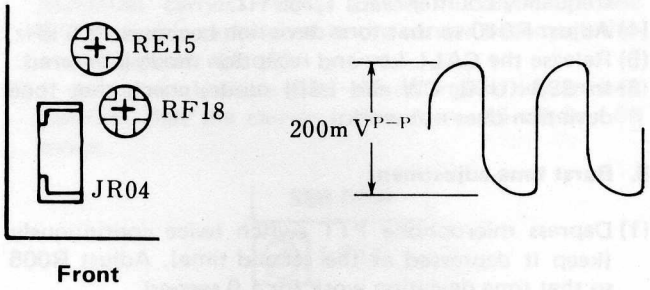
6. Side tone volume adjustment

(1) Select FM mode, turn on the SQL switch. Plug the CW plug to the KEY jack. Leave the ANT connector removed.
(2) Adjust RF15 so that audio output becomes 400 mVp-p.
(3) Check that frequency is approximately 800 Hz.



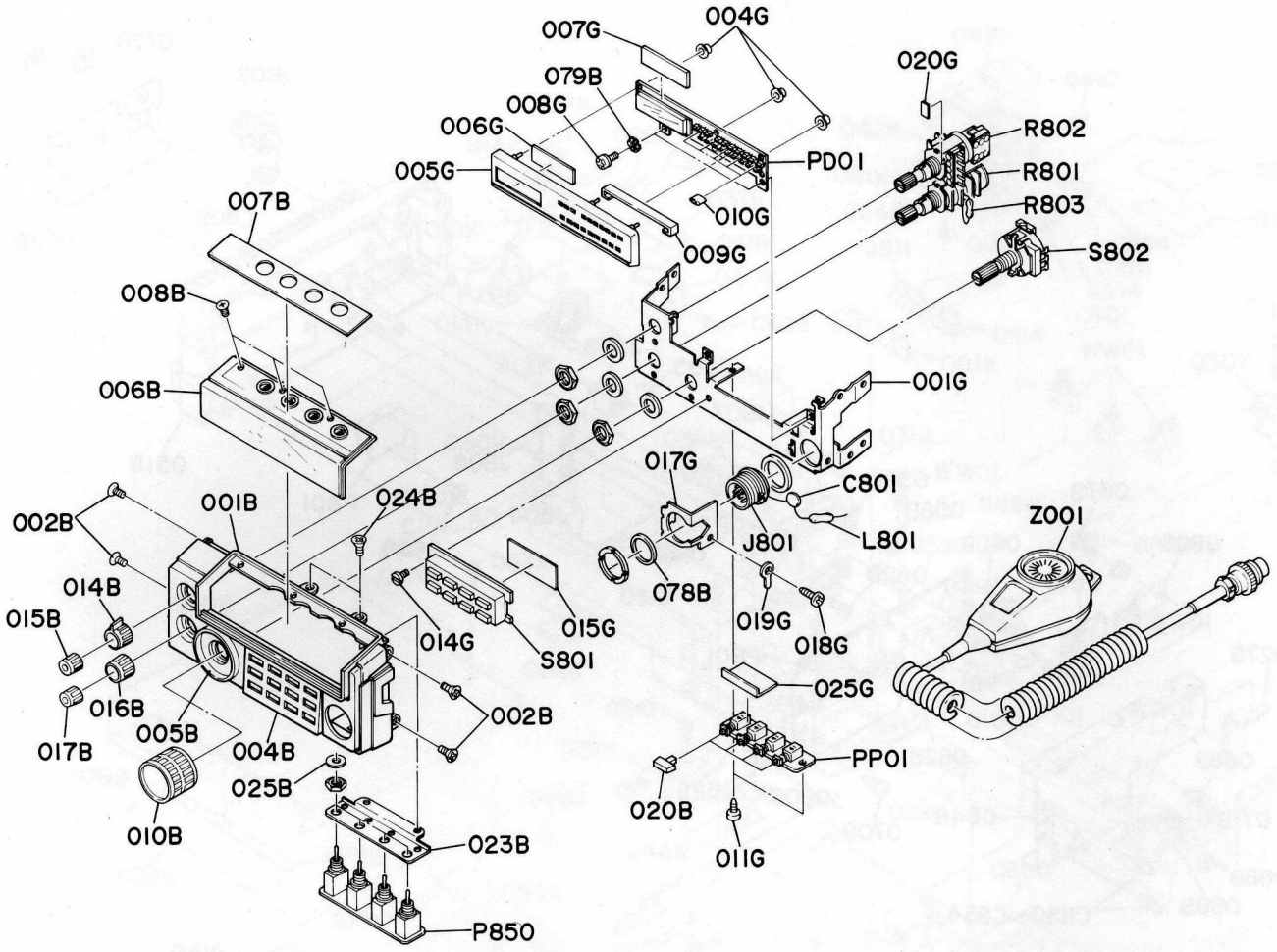
7. Buzzer sound volume adjustment

(1) Set VOL and SQL at MIN. Depressing the key, adjust RF18 so that the audio output of the buzzer becomes 200 mVp-p.



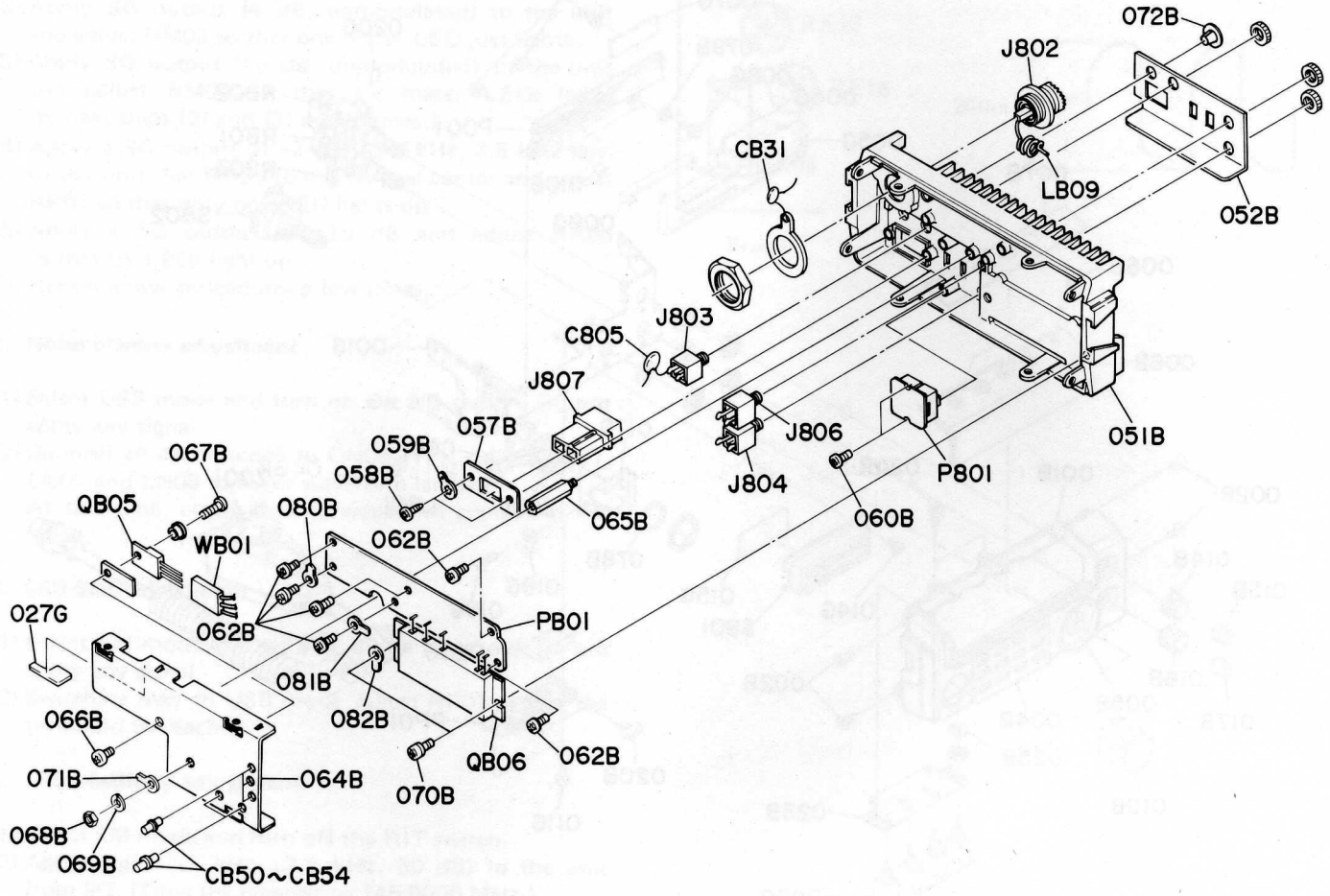
■ EXPLODED VIEWS AND PARTS LISTS

[P01-99] ESCUTCHEON RELATED



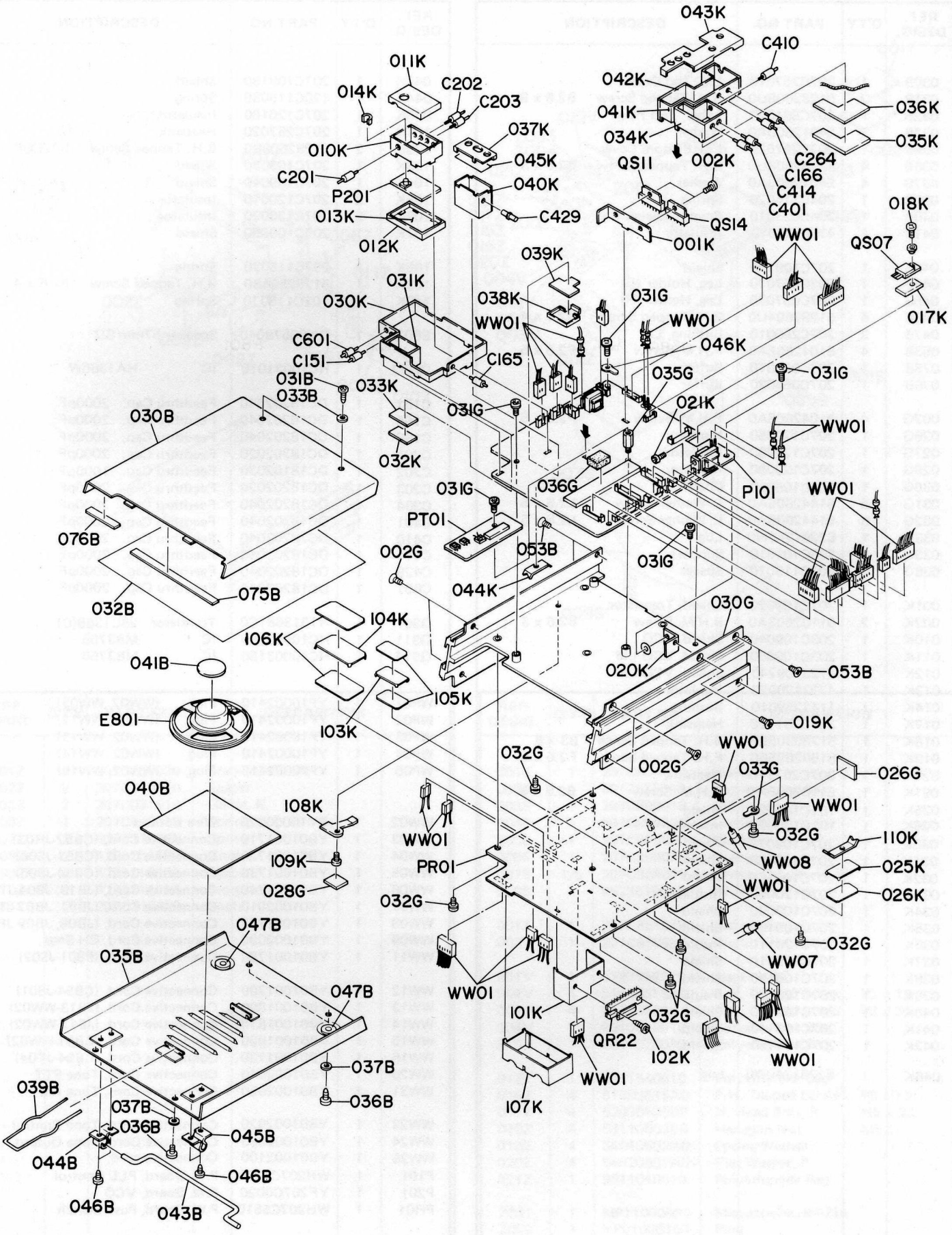
REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
A	1	207C064400	Front Case Assembly
001B	1	207C064010	Case, Front
004B	1	207C063030	Escutcheon, Front (Mould)
005B	1	207C353010	Ring, CH
006B	1	207C053010	Cover, Front (Acryl)
007B	1	207C063040	Escutcheon, Front (Alumi)
002B	4	51042605A0	F.H.M. Screw F2.6 x 5
008B	3	51040203A0	F.H.M. Screw F2 x 3
010B	1	200C154500	Knob, CH
014B	1	4785154010	Knob, MODE
015B	1	4723154010	Knob, RIT
016B	1	4723154030	Knob, SQL
017B	1	4723154020	Knob, VOL
020B	4	207C270010	Button, Push Switch
023B	1	207C160010	Bracket, Toggle Switch
024B	2	51042605A0	F.H.M. Screw F2.6 x 5
025B	4	207C053030	Cover, Toggle Switch
078B	1	207C118050	Spacer
079B	2	54050200R0	T.L. Washer, OR
001G	1	207C105020	Chassis, Front
004G	3	56302030G0	Eyelet
005G	1	207C053070	Cover, LED
006G	1	207C053020	Cover, Filter
007G	1	207C118040	Spacer
008G	2	51100204A0	B.H.M. Screw B2 x 4

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
009G	1	207C053050	Cover
010G	5	207C053060	Cover
011G	2	51100204A0	B.H.M. Screw B2 x 4
014G	1	200C005030	Clamper, Key Board
015G	1	207C118030	Spacer, Key Board
017G	1	207C160060	Bracket, Mic Jack
018G	1	51282605B0	B.H. Tapped Screw B2.6 x 5
019G	1	62261240W0	Lug
020G	1	207C120030	Insulator
025G	1	207C120070	Insulator
J801	1	YJ10001850	Jack, Mic (7P)
R801	1	RD12030100	Resistor 20KΩ, Variable
R802	1	BR11020020	Resistor 1KΩ(B), Variable (VR-SW) Compo.
S801	1	SK09080020	Key Board Switch
S802	1	SR01500010	Rotary Switch, 50 Position
C801	1	DK16471300	Ceramic Cap. 470pF ±10%
L801	1	LC11020020	Choke Coil 1μH
PD01	1	WH207C4210	P.W. Board, Display
PP01	1	WH207C5540	P.W. Board, Push Switch
P850	1	WH207C5530	P.W. Board, Toggle Switch
Z001	1	MP11000692	Microphone, MP716



REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
050B	2	51042606S0	Spring washer
051B	1	207C267100	Heatsink
052B	1	207C265020	Indicator, Name Plate
057B	1	207C160050	Bracket, DC Power Jack
058B	2	51282606B0	B.H. Tapped Screw B2.6 x 6
059B	1	62030049W0	Lug
060B	2	51060204A0	P.H.M. Screw P2 x 4
062B	6	51442605A0	L. Washer Screw L2.6 x 5
064B	1	207C109170	Shield
065B	1	207C101010	Support
066B	1	51102604A0	B.H.M. Screw B2.6 x 4
067B	1	51102608A0	B.H.M. Screw B2.6 x 8
068B	1	53112603A0	Hexagon Nut
069B	1	54042602A0	Spring Washer
070B	2	51100305A9	B.H.M. Screw B3 x 5
071B	1	62261240W0	Lug
072B	1	74560019C0	Bushing
080B	1	62261240W0	Lug
081B	1	62261240W0	Lug
082B	1	62031340W0	Lug
CB50	1	DC18202040	Feedthru 2000pF
CB51	1	DC18202040	Feedthru 2000pF
CB52	1	DC18202040	Feedthru 2000pF
CB53	1	DC18202040	Feedthru 2000pF
CB54	1	DC18202040	Feedthru 2000pF
CB55	1	DC18202040	Feedthru 2000pF
027G	1	207C120060	Insulator

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
CB31	1	DD15220300	Ceramic Cap. 22pF ±5%
QB05	1	HT403132A0	Transistor 2SD313
QB06	1	HC10018200	IC M57727A
LB09	1	LC15000150	Choke Coil, 3T
WB01	1	YB00050040	Connective Cord
C805	1	DK18102030	Ceramic Cap, 1000pF
J802	1	YJ10000780	Jack, Antenna
J803	1	YJ01000570	Jack, EXT SP
J804	1	YJ01000570	Jack, CW KEY
J806	1	YJ01000570	Jack, EXT METER
J807	1	YB00090040	Connective Cord, DC
PB01	1	WH207C5520	P.W. Board, Booster
P801	1	WH207C5550	P.W. Board, Rear Switch


043K
C410
011K
042K
014K
C202
C203
041K
036K
037K
034K
035K
010K
045K
002K
C264
C201
040K
C166
C414
P201
C429
C401
013K
QS14
018K
012K
001K
WW01
QS07
039K
031K
038K
031G
030K
WW01
WW01
017K
C601
046K
C151
C165
035G
031G
031B
033K
033B
021K
031G
030B
WW01
032K
036G
P101
WW01
031G
PT01
053B
002G
031G
044K
030G
104K
106K
020K
053B
041B
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E801
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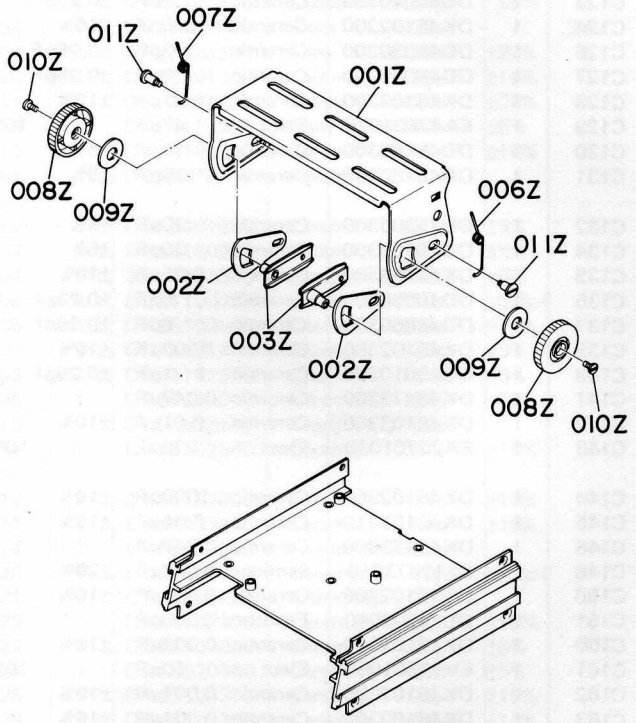
032G
047B
032G
WW07
035B
WW01
047B
101K
032G
037B
QR22
102K
WW01
039B
036B
107K
037B
045B
044B
046B
046B
043B

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
030B	1	207C257010	Lid, Top Cover
031B	2	51282608U0	B.H. Tapped Screw B2.6 x 8
032B	1	207C861020	Label, Test Point
033B	2	54012600A0	Washer
035B	1	207C257020	Lid, Bottom Cover
036B	4	51282608U0	B.H. Tapped Screw B2.6 x 8
037B	4	54012600A0	Washer
039B	1	204C115020	Spring
040B	1	204C053010	Cover, Speaker Net
041B	1	4736120010	Insulator
043B	1	207C109180	Shield
044B	1	207C057020	Leg, Holder (L)
045B	1	207C057030	Leg, Holder (R)
046B	4	51282604U0	B.H. Tapped Screw B2.6 x 4
047B	2	207C259010	Bushing, Leg
053B	4	51042605A0	F.H.M. Screw F2.6 x 5
075B	1	207C056010	Buffer
076B	1	207C056020	Buffer
002G	4	51042605A0	F.H.M. Screw F2.6 x 5
026G	1	207C120050	Insulator
027G	1	207C120060	Insulator
028G	1	207C120080	Insulator
030G	1	207C105030	Chassis, H
031G	5	51442605A0	L. Washer Screw L2.6 x 5
032G	6	51442605A0	L. Washer Screw L2.6 x 5
033G	1	62261240W0	Lug
035G	1	208C101010	Support
036G	1	207C118070	Spacer
001K	1	207C109020	Shield, Transistor
002K	2	51102603A0	B.H.M. Screw B2.6 x 3
010K	1	203C109040	Shield, VCO
011K	1	203C109060	Shield, VCO Lid
012K	1	4723109240	Shield, VCO Lid
013K	1	4723120020	Insulator
014K	1	1143259010	Bushing
017K	1	207C267120	Heatsink
018K	1	51280308B0	B.H. Tapped Screw B3 x 8
019K	1	51502605B0	F.H. Tapped Screw F2.6 x 5
020K	1	207C267110	Heatsink
021K	1	51102605A0	B.H.M. Screw B2.6 x 5
025K	1	101C109230	Shield
026K	1	101C120020	Insulator
030K	1	207C109070	Shield
031K	1	207C109080	Shield
032K	1	207C109160	Shield
033K	1	207C120090	Insulator
034K	1	207C109090	Shield
035K	1	207C109100	Shield
036K	1	207C120110	Insulator
037K	1	207C109110	Shield
038K	1	207C109120	Shield
039K	1	207C120120	Insulator
040K	1	207C109130	Shield
041K	1	207C109140	Shield
042K	1	207C109150	Shield
046K	1	62261240W0	Lug

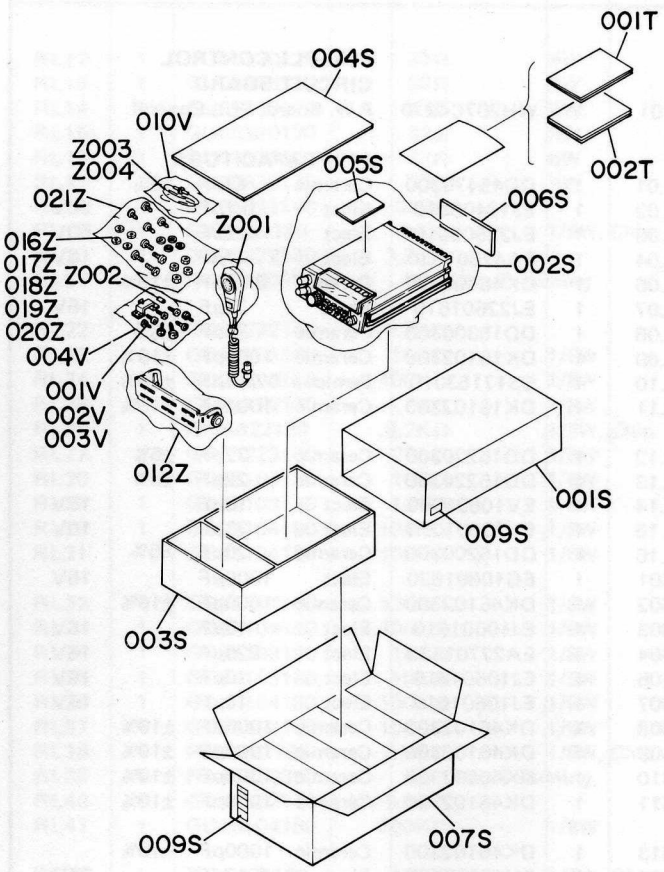
REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
043K	1	207C109180	Shield
044K	1	120C115030	Spring
045K	1	207C120100	Insulator
101K	1	207C267020	Heatsink
102K	2	51282608B0	B.H. Tapped Screw B2.6 x 8
103K	1	207C109030	Shield
104K	1	207C109040	Shield
105K	2	207C120010	Insulator
106K	2	207C120020	Insulator
107K	1	205C109050	Shield
108K	1	207C115030	Spring
109K	1	51282604B0	B.H. Tapped Screw B2.6 x 4
110K	1	102C115030	Spring
E801	1	QK00578040	Speaker,57mm 8Ω
QR22	1	HC10031010	IC HA1366W
C151	1	DC18202040	Feedthru Cap. 2000pF
C165	1	DC18202040	Feedthru Cap. 2000pF
C166	1	DC18202040	Feedthru Cap, 2000pF
C201	1	DC18202020	Feedthru Cap. 2000pF
C202	1	DC18102030	Feedthru Cap. 1000pF
C203	1	DC18202020	Feedthru Cap. 2000pF
C264	1	DC18202040	Feedthru Cap. 2000pF
C401	1	DC18202040	Feedthru Cap. 2000pF
C410	1	DC18202040	Feedthru Cap. 2000pF
C414	1	DC18202040	Feedthru Cap. 2000pF
C429	1	DC18202040	Feedthru Cap. 2000pF
C601	1	DC18202040	Feedthru Cap. 2000pF
QS07	1	HT313681C0	Transistor 2SC1368(C)
QS11	1	HC10003180	IC MB3756
QS14	1	HC10003180	IC MB3756
WP01	1	YP10002410	Plug, (WW02, WW03)
WP02	1	YP10002410	Plug, (WW02, WW12)
WP03	1	YP10002410	Plug, (WW02, WW13)
WP04	1	YP10002410	Plug, (WW02, WW14)
WP05	1	YP10002410	Plug, (WW02, WW15)
WW02	1	BY10000020	Wire Harness
WW03	1	YB01001710	Connective Cord, (CB52-JR03)
WW04	1	YB01001720	Connective Cord, (CB51-JS06)
WW05	1	YB01001730	Connective Cord, (CB54-JS06)
WW06	1	YB01001740	Connective Cord, (JB13, J804-JT06)
WW07	1	YB01002010	Connective Cord, (JB01, JB02-JT07)
WW08	1	YB01001750	Connective Cord, (JB08, JB09-JR01)
WW09	1	YB01002030	Connective Cord, CH Step
WW11	1	YB01001780	Connective Cord, (P801-JS02)
WW12	1	YB01001790	Connective Cord, (CB54-J801)
WW13	1	YB01001800	Connective Cord, (JB13-WW02)
WW14	1	YB01001810	Connective Cord, (JB12-WW02)
WW15	1	YB01001820	Connective Cord, (CB51-WW02)
WW16	1	YB01001730	Connective Cord, (CB54-JT04)
WW20	1	YB01002040	Connective Cord, Tone PTT
WW21	1	YB01002050	Connective Cord, Tone FM
WW23	1	YB01002020	Connective Cord, Tone Control
WW24	1	YB01002080	Connective Cord, Tone Output
WW25	1	YB01002100	Connective cord,
P101	1	WH207C4220	P.W. Board, PLL Control
P201	1	YF207C0020	P.W. Board, VCO
PR01	1	WH207C5510	P.W. Board, Push Switch

[M02-99] BRACKET



REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
001Z	1	207C160020	Bracket, Mobile
002Z	2	207C118010	Spacer
003Z	2	207C051510	Guide, K
006Z	1	207C115010	Spring
007Z	1	207C115020	Spring
008Z	2	4723154120	Knob
009Z	2	4723118050	Spacer
010Z	2	4723114010	Stopper
011Z	2	207C112020	Shaft

[H01-00] PACKAGING



REF. DESIG.	Q'TY	PART NO.	DESCRIPTION	
001S	1	207C804020	Sleeve	
002S	1	9012535010	Polyethylene Bag	
003S	1	207C809010	Cushion	
004S	1	207C809020	Cushion	
005S	1	207C809030	Cushion	
006S	1	207C809040	Cushion	
007S	1/5	207C805020	Master Carton, (1/5)	
009S	3	9523019010	Serial No. Card	
001T	1	207C851010	Instructions	
002T	1	207C856020	Circuit Diagram	
001V	1	4723155010	Hager, Mic	
002V	4	51400315A0	B.H. Tapped Screw	P3 x 15
003V	4	51400330A0	B.H. Tapped Screw	P3 x 30
004V	1	9010510010	Polyethylene Bag	
010V	1	9011020010	Polyethylene Bag	
012Z	1	9011540010	Polyethylene Bag	
016Z	4	51380515A0	P.H. Tapped Screw	P5 x 15
017Z	4	52030520B9	H. Head Bolt, P	H5 x 20
018Z	4	53110503E9	Hexagon Nut	M5
019Z	4	54040502A0	Spring Washer	
020Z	4	54020501A0	Flat Washer, P	
021Z	1	9011010010	Polyethylene Bag	
Z001	1	MP11000690	Microphone, MP716	
Z002	1	YP01000150	Plug	
Z003	1	YC02500090	A.C. Power Cord	
Z004	1	FS10600600	Fuse, 6A	

ELECTRICAL PARTS LIST

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
			P101-PLL CONTROL CIRCUIT BOARD
P101	1	WH207C4210	P.W. Board, PLL Control
			P101-CAPACITORS
CL01	1	DD45470300	Ceramic 47pF ±5%
CL02	1	EJ10405010	Elect 0.1μF 50V
CL03	1	EJ22505010	Elect 2.2μF 50V
CL04	1	EA47601630	Elect 47μF 16V
CL06	1	DK46103300	Ceramic 0.01μF ±10%
CL07	1	EJ22601610	Elect 22μF 16V
CL08	1	DD15300300	Ceramic 30pF ±5%
CL09	1	DK16102300	Ceramic 1000pF ±10%
CL10	1	DS17153010	Semicon 0.015μF ±20%
CL11	1	DK16102300	Ceramic 1000pF ±10%
CL12	1	DD15220300	Ceramic 22pF ±5%
CL13	1	DD15220300	Ceramic 22pF ±5%
CL14	1	EV10601660	Elect 10μF 16V
CL15	1	EV33601060	Elect 33μF 10V
CL16	1	DD15200300	Ceramic 20pF ±5%
CS01	1	EG10801620	Elect 1000μF 16V
CS02	1	DK46102300	Ceramic 1000pF ±10%
CS03	1	EJ10601610	Elect 10μF 16V
CS04	1	EA22701630	Elect 220μF 16V
CS06	1	EJ10601610	Elect 10μF 16V
CS07	1	EJ10601610	Elect 10μF 16V
CS08	1	DK46102300	Ceramic 1000pF ±10%
CS09	1	DK46102300	Ceramic 1000pF ±10%
CS10	1	DK46102300	Ceramic 1000pF ±10%
CS11	1	DK46102300	Ceramic 1000pF ±10%
CS13	1	DK46102300	Ceramic 1000pF ±10%
CS14	1	EV47403560	Elect 0.47μF 35V
CS15	1	DK46103300	Ceramic 0.01μF ±10%
CS17	1	DK46102300	Ceramic 1000pF ±10%
CS18	1	DK46102300	Ceramic 1000pF ±10%
CS20	1	DK46102300	Ceramic 1000pF ±10%
CS21	1	DK46102300	Ceramic 1000pF ±10%
CS22	1	DK46102300	Ceramic 1000pF ±10%
CS23	1	DK46102300	Ceramic 1000pF ±10%
CS24	1	DK46102300	Ceramic 1000pF ±10%
CS25	1	DK46102300	Ceramic 1000pF ±10%
CS26	1	DK46103300	Ceramic 0.01μF ±10%
CS27	1	DK46103300	Ceramic 0.01μF ±10%
CS28	1	DK46103300	Ceramic 0.01μF ±10%
CS29	1	DK46103300	Ceramic 0.01μF ±10%
C101	1	DD45270300	Ceramic 27pF ±5%
C102	1	CT12000020	Trimming 20pF
C103	1	DD45330300	Ceramic 33pF ±5%
C104	1	DD45300300	Ceramic 30pF ±5%
C105	1	EV10601060	Elect 10μF 10V
C106	1	EV10403560	Elect 0.1μF 35V
C107	1	DK46103300	Ceramic 0.01μF ±10%
C108	1	EA10701030	Elect 100μF 10V
C111	1	DK16102300	Ceramic 1000pF ±10%
C112	1	DK16102300	Ceramic 1000pF ±10%
C113	1	DK16102300	Ceramic 1000pF ±10%
C114	1	DK16102300	Ceramic 1000pF ±10%
C115	1	DK16102300	Ceramic 1000pF ±10%
C116	1	DK16102300	Ceramic 1000pF ±10%
C117	1	DK16102300	Ceramic 1000pF ±10%
C118	1	DK16102300	Ceramic 1000pF ±10%
C119	1	DK16102300	Ceramic 1000pF ±10%
C120	1	DK16102300	Ceramic 1000pF ±10%

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
C121	1	DK16102300	Ceramic 1000pF ±10%
C122	1	DK16102300	Ceramic 1000pF ±10%
C123	1	DD40020300	Ceramic 2pF ±0.25pF
C124	1	DK46102300	Ceramic 1000pF ±10%
C126	1	DD40030300	Ceramic 3pF ±0.25pF
C127	1	DD40030300	Ceramic 3pF ±0.25pF
C128	1	DK46103300	Ceramic 0.01μF ±10%
C129	1	EA47601030	Elect 47μF 10V
C130	1	DD45160300	Ceramic 16pF ±5%
C131	1	DD45160300	Ceramic 16pF ±5%
C132	1	DD15300300	Ceramic 30pF ±5%
C134	1	DD15300300	Ceramic 30pF ±5%
C135	1	DK46103300	Ceramic 0.01μF ±10%
C136	1	DD40050300	Ceramic 5pF ±0.25pF
C137	1	DD40050300	Ceramic 5pF ±0.25pF
C138	1	DK46102300	Ceramic 1000pF ±10%
C139	1	DD10010300	Ceramic 1pF ±0.25pF
C141	1	DK48473300	Ceramic 0.047μF
C142	1	DK46103300	Ceramic 0.01μF ±10%
C143	1	EA22701030	Elect 220μF 10V
C144	1	DK46102300	Ceramic 1000pF ±10%
C145	1	DK46103310	Ceramic 0.01μF ±10%
C146	1	DK48473300	Ceramic 0.047μF
C148	1	DS17473010	Semicon 0.047μF ±20%
C150	1	DK16102300	Ceramic 0.001μF ±10%
C151	1	DC18202040	Feedthru 2000pF
C160	1	DK16102300	Ceramic 0.001μF ±10%
C161	1	EV10601060	Elect 10μF 10V
C162	1	DK16102300	Ceramic 0.001μF ±10%
C163	1	DK16102300	Ceramic 0.001μF ±10%
C164	1	DK46102300	Ceramic 0.001μF ±10%
C165	1	DC18202040	Feedthru 2000pF
C166	1	DC18202040	Feedthru 2000pF
C167	1	DK46102300	Ceramic 0.001μF ±10%
C168	1	DK46102300	Ceramic 0.001μF ±10%
C169	1	DK46102300	Ceramic 0.001μF ±10%
C170	1	DK46102300	Ceramic 0.001μF ±10%
C171	1	DK46102300	Ceramic 0.001μF ±10%
C172	1	DK46102300	Ceramic 0.001μF ±10%
C173	1	DK46102300	Ceramic 0.001μF ±10%
C174	1	DK46102300	Ceramic 0.001μF ±10%
C175	1	EV10601060	Elect 10V
C250	1	DD45470300	Ceramic 47pF ±5%
C251	1	DK41100300	Ceramic 10pF ±0.5pF
C252	1	DK46103300	Ceramic 0.01μF ±10%
C253	1	DK45300300	Ceramic 30pF ±5%
C254	1	DK46102300	Ceramic 1000pF ±10%
C255	1	DK16102300	Ceramic 1000pF ±10%
C256	1	DK46102300	Ceramic 1000pF ±10%
C257	1	DK46102300	Ceramic 1000pF ±10%
C258	1	DK46102300	Ceramic 1000pF ±10%
C259	1	DK46102300	Ceramic 1000pF ±10%
C260	1	DK46102300	Ceramic 1000pF ±10%
C261	1	DK46103300	Ceramic 0.01μF ±10%
C262	1	DD15220300	Ceramic 22pF ±5%
C263	1	DD15220300	Ceramic 22pF ±5%
C264	1	DC18202040	Feedthru 2000pF
C265	1	DD45220300	Ceramic 22pF ±5%
C301	1	DK46102300	Ceramic 1000pF ±10%
C302	1	EJ22505010	Elect 2.2μF 50V
C303	1	EJ10505010	Elect 1μF 50V

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION		
C304	1	EJ22505010	Elect	2.2μF	50V
C305	1	DK46471300	Ceramic	470pF ±10%	
C307	1	DK15103330	Ceramic	0.01μF ±5%	
C308	1	EV22403560	Elect	0.22μF	35V
C309	1	DF17823300	Film	8200pF ±20%	
C310	1	DK46391300	Ceramic	390pF ±10%	
C311	1	DS17472010	Semicon	4700pF ±20%	
C312	1	DF15473300	Film	0.047μF ±5%	
C313	1	DK46102300	Ceramic	1000pF ±10%	
C401	1	DC18202060	Feedthru	2000pF	
C402	1	DD45101300	Ceramic	100pF ±5%	
C403	1	DD45160300	Ceramic	16pF ±5%	
C404	1	DD45101300	Ceramic	100pF ±5%	
C405	1	DD41100300	Ceramic	10pF ±0.5pF	
C406	1	DK16102300	Ceramic	1000pF ±10%	
C407	1	DD45181300	Ceramic	180pF ±5%	
C408	1	DD45181300	Ceramic	180pF ±5%	
C409	1	DD15220300	Ceramic	22pF ±5%	
C410	1	DC18202040	Feedthru	2000pF	
C411	1	DK46103300	Ceramic	0.01μF ±10%	
C412	1	DK46103300	Ceramic	0.01μF ±10%	
C413	1	DK46103300	Ceramic	0.01μF ±10%	
C414	1	DC18202040	Feedthru	2000pF	
C420	1	DD41100300	Ceramic	10pF ±0.5pF	
C421	1	CT12000020	Trimming	20pF	
C422	1	DK46122300	Ceramic	1200pF ±10%	
C423	1	DD15101050	Ceramic	100pF ±5%	
C424	1	DD15620360	Ceramic	62pF ±5%	
C425	1	DK46103300	Ceramic	0.01μF ±10%	
C426	1	DK46103300	Ceramic	0.01μF ±10%	
C427	1	DK46103300	Ceramic	0.01μF ±10%	
C428	1	DD40005300	Ceramic	0.5pF ±0.25pF	
C429	1	DC18202040	Feedthru	2000pF	
C430	1	DD40030330	Ceramic	3pF ±0.25pF	
C501	1	DK16102300	Ceramic	1000pF ±10%	
C502	1	DK46102300	Ceramic	1000pF ±10%	
C504	1	DK46471300	Ceramic	470pF ±10%	
C506	1	DK46102300	Ceramic	1000pF ±10%	
C507	1	DK46102300	Ceramic	1000pF ±10%	
C551	1	DK46102300	Ceramic	1000pF ±10%	
C552	1	EV22403560	Elect	0.22μF	35V
C553	1	DF17473300	Film	0.047μF ±20%	
C554	1	DK18472310	Ceramic	4700pF	
C555	1	DK18472310	Ceramic	4700pF	
C556	1	DK46103300	Ceramic	0.01μF ±10%	
C557	1	EV10403560	Elect	0.1μF	35V
C558	1	DK46102300	Ceramic	1000pF ±10%	
C559	1	DK46103300	Ceramic	0.01μF ±10%	
C560	1	EJ10601610	Elect	10μF	16V
C601	1	DC18202040	Feedthru	2000pF	
			P101-RESISTORS		
			(All Resistors are ±5% and ¼W)		
RL01	1	GD05473187	47KΩ	1/8W	
RL02	1	GD05103187	10KΩ	1/8W	
RL03	1	RI05103180	10KΩ	1/8W, Chip	
RL04	1	RI05103180	10KΩ	1/8W, Chip	
RL05	1	RI05103180	10KΩ	1/8W, Chip	
RL06	1	RI05103180	10KΩ	1/8W, Chip	
RL07	1	RI05103180	10KΩ	1/8W, Chip	
RL08	1	RI05103180	10KΩ	1/8W, Chip	
RL09	1	RI05103180	10KΩ	1/8W, Chip	
RL11	1	GU05330120	33Ω	½W	

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION	
RL12	1	GU05330120	33Ω	½W
RL13	1	GU05330120	33Ω	½W
RL14	1	GU05330120	33Ω	½W
RL15	1	GU05330120	33Ω	½W
RL16	1	GU05330120	33Ω	½W
RL17	1	GU05330120	33Ω	½W
RL18	1	GD05331140	330Ω	
RL19	1	RI05102180	1KΩ	1/8W, Chip
RL20	1	GD05332140	3.3KΩ	
RL21	1	RA05020350	5KΩ(B), Trimming	
RL22	1	GD05222140	2.2KΩ	
RL23	1	GD05103180	10KΩ	1/8W
RL24	1	GD05104180	100KΩ	1/8W
RL25	1	GD05472180	4.7KΩ	1/8W
RL26	1	RI05822180	8.2KΩ	1/8W, Chip
RL27	1	GD05223180	22KΩ	1/8W
RL28	1	GD05103180	10KΩ	1/8W
RL29	1	GD05103180	10KΩ	1/8W
RL30	1	GD05104180	100KΩ	1/8W
RL31	1	GD05104180	100KΩ	1/8W
RL32	1	GD05104180	100KΩ	1/8W
RL33	1	GD05104180	100KΩ	1/8W
RL34	1	GD05103180	10KΩ	1/8W
RL35	1	GD05103180	10KΩ	1/8W
RL36	1	GD05104180	100KΩ	1/8W
RL37	1	GD05104180	100KΩ	1/8W
RL38	1	RI05222180	2.2KΩ	1/8W, Chip
RL39	1	RA05020350	5KΩ(B), Trimming	
RL40	1	GD05562140	5.6KΩ	
RL41	1	GD05104180	100KΩ	1/8W
RS01	1	RI05103180	10KΩ	1/8W, Chip
RS02	1	RI05103180	10KΩ	1/8W, Chip
RS03	1	RI05103180	10KΩ	1/8W, Chip
RS04	1	RI05104180	100KΩ	1/8W, Chip
RS05	1	RI05103180	10KΩ	1/8W, Chip
RS06	1	GD05222140	2.2KΩ	
RS07	1	RI05103180	10KΩ	1/8W, Chip
RS08	1	RI05222180	2.2KΩ	1/8W, Chip
RS11	1	RI05103180	10KΩ	1/8W, Chip
RS12	1	GD05102140	1KΩ	
RS13	1	RI05103180	10KΩ	1/8W, Chip
RS14	1	RI05222180	2.2KΩ	1/8W, Chip
RS15	1	RI05103180	10KΩ	1/8W, Chip
RS16	1	GD05222140	2.2KΩ	
RS17	1	RI05103180	10KΩ	1/8W, Chip
RS18	1	RI05222180	2.2KΩ	1/8W, Chip
RS19	1	RI05104180	100KΩ	1/8W, Chip
RS20	1	GD05022140	2.2Ω	
RS21	1	R105562180	5.6KΩ	1/8W, Chip
R101	1	GD05222140	2.2KΩ	
R102	1	RI05272180	2.7KΩ	1/8W, Chip
R103	1	RI05271180	270Ω	1/8W, Chip
R104	1	GD05682140	6.8KΩ	
R105	1	GD05333140	33KΩ	
R106	1	RI05472180	4.7KΩ	1/8W, Chip
R107	1	RI05472180	4.7KΩ	1/8W, Chip
R108	1	RI05472180	4.7KΩ	1/8W, Chip
R109	1	RI05472180	4.7KΩ	1/8W, Chip
R110	1	RI05472180	4.7KΩ	1/8W, Chip

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
R111	1	RI05472180	4.7KΩ 1/8W, Chip
R112	1	RI05472180	4.7KΩ 1/8W, Chip
R113	1	RI05472180	4.7KΩ 1/8W, Chip
R114	1	RI05472180	4.7KΩ 1/8W, Chip
R115	1	RI05472180	4.7KΩ 1/8W, Chip
R116	1	RI05472180	4.7KΩ 1/8W, Chip
R117	1	RI05472180	4.7KΩ 1/8W, Chip
R118	1	RI05472180	4.7KΩ 1/8W, Chip
R119	1	RI05224180	220KΩ 1/8W, Chip
R120	1	RI05561180	560Ω 1/8W, Chip
R121	1	GD05224180	220KΩ 1/8W, Chip
R122	1	GD05222140	2.2KΩ
R123	1	GD05101140	100Ω
R124	1	RI05154180	150KΩ 1/8W, Chip
R125	1	RI05152180	1.5KΩ 1/8W, Chip
R126	1	RI05154180	150KΩ 1/8W, Chip
R127	1	GD05561140	560Ω
R128	1	GD05101140	100Ω
R129	1	GD05103140	10KΩ
R130	1	RI05471180	470Ω 1/8W, Chip
R131	1	GD05101140	100Ω
R140	1	GD05105140	1MΩ
R141	1	RI05471180	470Ω 1/8W, Chip
R142	1	RA02020220	2KΩ(B), Trimming
R143	1	RC00000140	0Ω
R144	1	RC00000140	0Ω
R160	1	GD05222140	2.2KΩ
R161	1	GD05333140	33KΩ
R162	1	RI05563140	56KΩ
R163	1	GD05563140	56KΩ
R164	1	RC00000120	0Ω
R250	1	RI05563140	56KΩ
R251	1	RI05152180	1.5KΩ 1/8W, Chip
R252	1	RI05104180	100KΩ 1/8W, Chip
R253	1	GD05223140	22KΩ
R254	1	R105223180	22KΩ 1/8W, Chip
R255	1	GD05390140	39Ω
R256	1	RI05820180	82Ω 1/8W, Chip
R257	1	RI05682180	6.8KΩ 1/8W, Chip
R258	1	GD05333140	33KΩ
R259	1	GD05101140	100Ω
R260	1	RI05222180	2.2KΩ 1/8W, Chip
R261	1	GD05561140	560Ω
R262	1	RI05102180	1KΩ 1/8W, Chip
R263	1	RC00000120	0Ω
R301	1	RA01020370	1KΩ(B), Trimming
R302	1	RI05152180	1.5KΩ 1/8W, Chip
R303	1	GD05472140	4.7KΩ
R304	1	RI05472180	4.7KΩ 1/8W, Chip
R305	1	RI05334180	330KΩ 1/8W, Chip
R306	1	GD05472140	4.7KΩ
R307	1	RI05223180	22KΩ 1/8W, Chip
R308	1	RI05104180	100KΩ 1/8W, Chip
R309	1	RI05472180	4.7KΩ 1/8W, Chip
R310	1	RI05472180	4.7KΩ 1/8W, Chip
R311	1	GD05105180	1MΩ 1/8W
R312	1	RI05123180	12KΩ 1/8W, Chip
R313	1	RI05123180	12KΩ 1/8W, Chip
R314	1	RI05333180	33KΩ 1/8W, Chip
R315	1	RI05822180	8.2KΩ 1/8W, Chip

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
R316	1	RI05822180	8.2KΩ 1/8W, Chip
R317	1	R105103180	10KΩ 1/8W, Chip
R318	1	RA01030560	10KΩ(B), Trimming
R319	1	RI05563180	56KΩ 1/8W, Chip
R320	1	RI05473180	47KΩ 1/8W, Chip
R321	1	RI05104180	100KΩ 1/8W, Chip
R322	1	RC00000140	0Ω
R401	1	GD05473140	47KΩ
R402	1	GD05562140	5.6KΩ
R403	1	RI05562180	5.6KΩ 1/8W, Chip
R404	1	GD05101140	100Ω
R405	1	GD05331140	330Ω
R406	1	RI05472180	4.7KΩ 1/8W, Chip
R407	1	GD05223140	22KΩ
R408	1	GD05102140	1KΩ
R409	1	GD05821140	820Ω
R410	1	RC00000120	0Ω
R411	1	RC00000140	0Ω
R420	1	GD05222140	2.2KΩ
R421	1	GD05152140	1.5KΩ
R422	1	GD05471140	470Ω
R423	1	GD05151140	150Ω
R424	1	GD05471180	470Ω 1/8W
R501	1	RI05152180	1.5KΩ 1/8W, Chip
R502	1	RI05152180	1.5KΩ 1/8W, Chip
R503	1	RI05152180	1.5KΩ 1/8W, Chip
R504	1	RA01030560	10KΩ(B), Trimming
R505	1	RA01030560	10KΩ(B), Trimming
R506	1	RA01030560	10KΩ(B), Trimming
R507	1	GD05104140	100KΩ
R508	1	GD05332140	3.3KΩ
R509	1	GD05103140	10KΩ
R510	1	GD05103140	10KΩ
R511	1	GD05223140	22KΩ
R512	1	GD05272140	2.7KΩ
R513	1	GD05183140	18KΩ
R514	1	GD05153140	15KΩ
R515	1	GD05473140	47KΩ
R516	1	RI05123180	12KΩ 1/8W, Chip
R517	1	RA05020350	5KΩ(B), Trimming
R518	1	GD05472140	4.7KΩ
R519	1	RI05472180	4.7KΩ 1/8W, Chip
R520	1	RI05562180	5.6KΩ 1/8W, Chip
R521	1	RA01010110	100Ω(B), Trimming
R551	1	GD05331140	330Ω
R552	1	GD05331140	330Ω
R553	1	GD05103180	10KΩ 1/8W
R554	1	GD05273180	27KΩ 1/8W
R555	1	GD05103180	10KΩ 1/8W
R556	1	GD05103180	10KΩ 1/8W
R557	1	GD05103180	10KΩ 1/8W
R558	1	GM51410030	100KΩ
R559	1	GM51410020	10KΩ
R560	1	GM51410010	1KΩ
R561	1	GD05103180	10KΩ 1/8W
R562	1	GD05103180	10KΩ 1/8W
R563	1	GD05103180	10KΩ 1/8W
R564	1	RI05823180	82KΩ 1/8W, Chip
R567	1	GD05222187	2.2KΩ 1/8W
R568	1	RA01030560	10KΩ(B), Trimming

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
R569	1	RA01050110	1MΩ(B), Trimming
R570	1	GD05103180	10KΩ 1/8W
R571	1	GM51410030	100KΩ
R572	1	GM51420030	200KΩ
R573	1	GM51439030	390KΩ
R574	1	GM51410020	10KΩ
R575	1	GM51447030	470KΩ
R576	1	GM51433030	330KΩ
R577	1	GM51410030	100KΩ
R578	1	GM51420030	200KΩ
R579	1	GM51439030	390KΩ
R580	1	GM51410020	10KΩ
R581	1	GM51447030	470KΩ
R582	1	GM51433030	330KΩ
R583	1	GM51410030	100KΩ
R584	1	GM51420030	200KΩ
R585	1	GM51439030	390KΩ
R586	1	GM51410020	10KΩ
R587	1	GM51447030	470KΩ
R588	1	GM51433030	330KΩ
R589	1	GD05152180	1.5KΩ 1/8W
			P101-SEMICONDUCTORS
QL01	1	HC10020370	IC TMS1600
QL02	1	HC10015370	IC TMS1025N2LL
QL03	1	HC10011210	IC TA76
QL04	1	HC10011210	IC TA76
QL05	1	HC405105B0	IC TC4051B
QL06	1	HC10016060	IC μPA57C
QL07	1	HD20023100	Diode 10E-1
QL08	1	HD20002020	Diode MA522
QL09	1	HT305360F0	Transistor 2SC536F
QL10	1	HT305360F0	Transistor 2SC536F
QL11	1	HC401101B0	IC HD14011B
QL12	1	HC401601B0	IC HD14016B
QL13	1	HC401601B0	IC HD14016B
QL14	1	HD20011050	Diode 1S1555
QL15	1	HD20011050	Diode 1S1555
QL16	1	HD20011050	Diode 1S1555
QL17	1	HD20011050	Diode 1S1555
QL18	1	HD20011050	Diode 1S1555
QL19	1	HD20011050	Diode 1S1555
QL20	1	HD20011050	Diode 1S1555
QL21	1	HD20011050	Diode 1S1555
QL22	1	HD20011050	Diode 1S1555
QL23	1	HD20011050	Diode 1S1555
QL24	1	HD20011050	Diode 1S1555
QL25	1	HD20011050	Diode 1S1555
QL26	1	HD20011050	Diode 1S1555
QL27	1	HD20011050	Diode 1S1555
QL28	1	HD20011050	Diode 1S1555
QL29	1	HD20011050	Diode 1S1555
QL30	1	HD20011050	Diode 1S1555
QL31	1	HD20011050	Diode 1S1555
QL32	1	HD20011050	Diode 1S1555
QL33	1	HV00002060	Varistor VD1212
QL34	1	HD20011050	Diode 1S1555
QL35	1	HD20011050	Diode 1S1555

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
QS01	1	HC10029060	IC μPC14308
QS02	1	HD20023100	Diode 10E-1
QS03	1	HC10016370	IC TL496C
QS04	1	HD20023100	Diode 10E-1
QS06	1	HF200611A0	F.E.T. 2SK61(GR)
QS07	1	HT313681C0	Transistor 2SC1368(C)
QS08	1	HD30019010	Zener HZ4LL(A)
QS09	1	HD20023100	Diode 10E-1
QS10	1	HC10022060	IC μPC78L08
QS11	1	HC10003180	IC MB3756
QS12	1	HT309451Q0	Transistor 2SC945(Q)
QS13	1	HT309451Q0	Transistor 2SC945(Q)
QS14	1	HC10003180	IC MB3756
QS15	1	HT106731B0	Transistor 2SA673(B)
QS16	1	HD20011050	Diode 1S1555
QS17	1	HT106731B0	Transistor 2SA673(B)
QS18	1	HD20011050	Diode 1S1555
QS21	1	HT106731B0	Transistor 2SA673(B)
QS22	1	HD20011050	Diode 1S1555
QS23	1	HD20011050	Diode 1S1555
QS24	1	HD20011050	Diode 1S1555
QS25	1	HD20011050	Diode 1S1555
QS26	1	HD20011050	Diode 1S1555
QS27	1	HT106731B0	Transistor 2SA673(B)
QS28	1	HD20011050	Diode 1S1555
QS29	1	HT106731B0	Transistor 2SA673(B)
QS30	1	HD20011050	Diode 1S1555
QS31	1	HT106731B0	Transistor 2SA673(B)
QS32	1	HD20011050	Diode 1S1555
QS33	1	HD20011050	Diode 1S1555
QS34	1	HT309451Q0	Transistor 2SC945(Q)
QS35	1	HD20011050	Diode 1S1555
Q101	1	HC10047050	IC TC9122P
Q102	1	HC10063050	IC TC5081AP
Q103	1	HC10023050	IC TC5082PL
Q104	1	HT305351B0	Transistor 2SC535(B)
Q105	1	HT305351B0	Transistor 2SC535(B)
Q106	1	HT304601B0	Transistor 2SC460(B)
Q107	1	HT304601B0	Transistor 2SC460(B)
Q108	1	HD10005020	Diode OA99
Q140	1	HF200301C0	F.E.T. 2SK30A(Y)
Q160	1	HT107331R0	Transistor 2SA733(R)
Q161	1	HT309451Q0	Transistor 2SC945(Q)
Q162	1	HT309451Q0	Transistor 2SC945(Q)
Q250	1	HF202411C0	F.E.T. 2SK241(GR)
Q251	1	HF401011B0	F.E.T. 3SK101(GR)
Q252	1	HT323481O0	Transistor 2SC2348
Q253	1	HD20010060	Diode 1SS53
Q254	1	HD20010060	Diode 1SS53
Q301	1	HC10003090	IC NJM4558D
Q401	1	HD40002060	Varicap 1S2208
Q402	1	HT304601B0	Transistor 2SC460(B)
Q403	1	HT304601B0	Transistor 2SC460(B)
Q404	1	HH00019020	Thermistor
Q421	1	HT305351B0	Transistor 2SC535(B)
Q501	1	HC10014090	IC NJM4558S
Q502	1	HD20011050	Diode 1S1555
Q503	1	HD20011050	Diode 1S1555
Q506	1	HT309451Q0	Transistor 2SC945(Q)
Q507	1	HT20011050	Diode 1S1555
Q508	1	HT20011050	Diode 1S1555
Q510	1	HT309451Q0	Transistor 2SC945(Q)
Q511	1	HT309451Q0	Transistor 2SC945(Q)
Q512	1	HD20011050	Diode 1S1555
Q550	1	HC10010090	IC NJM2902N

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
			P101-MISCELLANEOUS
JL01	1	YJ07000480	Jack, (8P)
JL02	1	YJ07000460	Jack, (6P)
JL03	1	YJ07000470	Jack, (7P)
JL04	1	YJ07000420	Jack, (2P)
JL05	1	YP10002210	Plug, (1P)
JL06	1	YJ07000460	Jack, (6P)
JL07	1	YJ07000460	Jack, (6P)
JL08	1	YJ07000460	Jack, (6P)
JS01	1	YP10002210	Plug, (1P)
JS02	1	YP10002210	Plug, (1P)
JS03	1	YP10002210	Plug, (1P)
JS04	1	YP10002210	Plug, (1P)
JS06	1	YJ07000460	Jack, (6P)
JS07	1	YJ07000440	Jack, (4P)
JS08	1	YJ07000420	Jack, (2P)
JS09	1	YP10002210	Plug, (1P)
JS10	1	YP10002210	Plug, (1P)
J101	1	YP10002210	Plug, (1P)
J201	1	YP10002210	Plug, (1P)
J202	1	YJ07000440	Jack, (4P)
J203	1	YP10002210	Plug, (1P)
J301	1	YJ07000420	Jack, (2P)
J303	1	YJ07000420	Jack, TAIKO TL-25 (2P)
J501	1	YJ07000440	Jack, (4P)
LS01	1	LC25850010	Choke Coil, 5.8mH
LS02	1	LC25850010	Choke Coil, 5.8mH
LS03	1	LC15030020	Choke Coil, 50μH
L101	1	LC11050040	Choke Coil, 1mH
L102	1	LC11050040	Choke Coil, 1mH
L103	1	LA70280220	Antenna Coil, PLL Loop
L104	1	LC14720050	Choke Coil, 4.7μH
L105	1	LC11820040	Choke Coil, 1.8μH
L250	1	LA70270040	Antenna Coil, PLL Mixer Out
L251	1	LA70280150	Antenna Coil, PLL Buff.
L252	1	LA70280160	Antenna Coil, PLL Output
L253	1	LC11030060	Choke Coil, 10μH
L254	1	LC11030060	Choke Coil, 10μH
L255	1	LC11030060	Choke Coil, 10μH
L256	1	LK635005A3	Coil, 5T
L257	1	LC15000120	Choke Coil, 5T
L401	1	LA70360030	Antenna Coil, VXO
L402	1	LA70270050	Antenna Coil, VXO Output
L420	1	LC11020020	Choke Coil, 1μH
L421	1	LC11020020	Choke Coil, 1μH
L422	1	LA70280220	Antenna Coil, Loop OSC
L423	1	LA70280220	Antenna Coil, Loop OSC
X101	1	XB112003L0	Crystal, 10.24MHz
X402	1	XC117002G0	Crystal, 19.3033MHz
X420	1	XB301047B0	Crystal, 61.7400MHz

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
			P201-VCO CIRCUIT BOARD
P201	1	YF207C0020	P.W. Board, VCO
			P201-CAPACITORS
C201	1	DC18202020	Feedthru 2000pF
C202	1	DC18202020	Feedthru 2000pF
C203	1	DC18202020	Feedthru 2000pF
C205	1	DD10050300	Ceramic 5pF ±0.25pF
C206	1	DD15180300	Ceramic 18pF ±5%
C207	1	DD10010300	Ceramic 1pF ±0.25pF
C208	1	DD11080300	Ceramic 8pF ±0.5pF
C209	1	CT11000120	Trimming 10pF
C210	1	DD11090310	Ceramic 9pF ±0.25pF
C211	1	DD15150300	Ceramic 15pF ±5%
C212	1	DD11100300	Ceramic 10pF ±0.5pF
C213	1	DD11100300	Ceramic 10pF ±0.5pF
C215	1	DD10030300	Ceramic 3pF ±0.25pF
C216	1	DK16102300	Ceramic 1000pF ±10%
C217	1	EJ47502510	Elect 4.7μF 25V
C218	1	DK16102300	Ceramic 0.001μF ±10%
C219	1	DK16102300	Ceramic 0.001μF ±10%
			P201-RESISTORS
			(All Resistors are ±5% and ¼W)
R201	1	GD05104140	100KΩ
R202	1	GD05221140	220Ω
R203	1	GD05104140	100KΩ
R204	1	GD05561140	560Ω
R205	1	GD05473140	47KΩ
R206	1	GD05103140	10KΩ
R207	1	GD05101140	100Ω
R208	1	GD05101140	100Ω
			P201-SEMICONDUCTORS
Q201	1	HD40001060	Varicap 1SV50
Q202	1	HD40001060	Varicap 1SV50
Q203	1	HF201251B0	F.E.T. 2SK125(4)
Q204	1	HT305351B0	Transistor 2SC535(B)
			P201-MISCELLANEOUS
L201	1	LL22307100	Coil, 10T
L202	1	LA70350040	Antenna Coil, VCO 1.5T
L203	1	LC11220030	Choke Coil, 1.2μH
			P801-REAR SWITCH CIRCUIT BOARD
P801	1	WH207C5550	P.W. Board, Rear Switch
C801	1	DK16471300	Ceramic 470pF ±10%
C802	1	DK16102300	Ceramic Cap, 1000pF ±10%
C803	1	DK16102300	Ceramic Cap, 1000pF ±10%
C804	1	DK16102300	Ceramic Cap, 1000pF ±10%
C805	1	DK18102030	Ceramic Cap. 0.001μF
C806	1	DC18202060	Feedthru, 2000pF
C807	1	DC18202040	Feedthru 2000pF
Q801	1	HD20001100	Diode 10D-2
Q802	1	HD20023100	Diode 10E-1
S803	1	SS02020430	Slide Switch, Back Up
S804	1	SS02020430	Slide Switch, CH Step

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
			P850-TOGGLE SWITCH CIRCUIT BOARD
P850	1	WH207C5530	P.W. Board, Toggle Switch
S850	1	SC01020390	Switch, DX/Local
S851	1	SC01030020	Switch, VFO
S852	1	SC01030020	Switch, CH/STEP
S853	1	SC01030020	Switch, SCAN
			PB01-BOOSTER CIRCUIT BOARD
PB01	1	WH207C5520	P.W. Board, Booster
			PB01-CAPACITORS
CB01	1	DD41100300	Ceramic 10pF ±0.5pF
CB02	1	DD45160300	Ceramic 16pF ±5%
CB03	1	DD45130300	Ceramic 13pF ±5%
CB04	1	DK46102300	Ceramic 1000pF ±10%
CB05	1	EJ47502510	Elect 4.7μF 25V
CB07	1	DK46102300	Ceramic 1000pF ±10%
CB09	1	DK46102300	Ceramic 1000pF ±10%
CB10	1	DK16102300	Ceramic 1000pF ±10%
CB11	1	EV22602060	Elect 22μF 20V
CB12	1	DK46102300	Ceramic 1000pF ±10%
CB13	1	DK46102300	Ceramic 1000pF ±10%
CB14	1	EV22602060	Elect 22μF 20V
CB15	1	DK46102300	Ceramic 1000pF ±10%
CB16	1	EV22602060	Elect 22μF 20V
CB17	1	DF95220500	Chip Mica 22pF ±5%
CB18	1	DF95220500	Chip Mica 22pF ±5%
CB19	1	DF95220500	Chip Mica 22pF ±5%
CB20	1	DF95220500	Chip Mica 22pF ±5%
CB21	1	DK46102300	Ceramic 1000pF ±10%
CB22	1	DD45220300	Ceramic 22pF CH
CB23	1	DK46102300	Ceramic 1000pF ±10%
CB24	1	DK46102300	Ceramic 1000pF ±10%
CB25	1	DF95220500	Chip Mica 22pF ±5%
CB26	1	DK46102300	Ceramic 1000pF ±10%
CB27	1	DD40005300	Ceramic 0.5pF ±0.25pF
CB28	1	DK46102300	Ceramic 1000pF ±10%
CB29	1	EA22601630	Elect 22μF 16V
CB30	1	DD15220300	Ceramic 22pF ±5%
CB31	1	DD15220300	Ceramic 22pF ±5%
CB32	1	DK46102300	Ceramic 1000pF ±10%
CB33	1	EA10505030	Elect 1μF 50V
CB34	1	DK46102300	Ceramic 1000pF ±10%
CB35	1	DK46103300	Ceramic 0.01μF ±10%
CB36	1	DK46102300	Ceramic 1000pF ±10%
CB37	1	DK46103300	Ceramic 0.01μF ±10%
CB38	1	DK46102300	Ceramic 1000pF ±10%
CB39	1	DK16102300	Ceramic 1000pF ±10%
CB40	1	EV10403560	Elect. 0.1μF 35V
CB41	1	EV10502560	Elect. 1μF 25V
CB50	1	DC18202040	Feedthru 2000pF
CB51	1	DC18202040	Feedthru 2000pF
CB52	1	DC18202040	Feedthru 2000pF
CB53	1	DC18202040	Feedthru 2000pF
CB54	1	DC18202040	Feedthru 2000pF
CB55	1	DC18202040	Feedthru 2000pF

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
			PB01-RESISTORS (All Resistors are ±5%)
RB01	1	RI05471180	470Ω 1/8W, Chip
RB02	1	RI05470180	47Ω 1/8W, Chip
RB03	1	RI05681180	680Ω 1/8W, Chip
RB04	1	RI05100180	10Ω 1/8W, Chip
RB05	1	GD05221147	220ϕHM
RB06	1	GD05121147	120ϕHM
RB07	1	RA05010200	500ϕHM
RB08	1	RA05030160	50KΩ, Trimming
RB09	1	RI05103180	10KΩ 1/8W, Chip
RB10	1	GD05103140	10KΩ ¼W
RB11	1	R105103180	10KΩ 1/8W, Chip
RB12	1	RA01040310	100KΩ, Trimming
RB13	1	GD05151180	150Ω 1/8W
RB14	1	GD05151180	150Ω 1/8W
RB15	1	GD05390180	39Ω 1/8W
			PB01-SEMICONDUCTORS
QB01	1	HD20011050	Diode 1S1555
QB02	1	HT325381O0	Transistor 2SC2538
QB03	1	HD30018090	Zener BZ110
QB04	1	HF201921B0	F.E.T. 2SK192(GR)
QB05	1	HT403132A0	Transistor 2SD313
QB06	1	HC10018200	IC M57727A
QB07	1	HD10005020	Diode OA99
QB08	1	HD20003200	Diode MI402
QB09	1	HD20003200	Diode MI402
QB10	1	HD10005020	Diode OA99
QB11	1	HT309451Q0	Transistor 2SC945(Q)
QB12	1	HT309451Q0	Transistor 2SC945(Q)
			PB01-MISCELLANEOUS
JB01 ~ JB13	13	YP10002210	Plug, (1P)
JB15	1	YP10002210	Plug (1P)
LB01	1	LK635003A0	Coil, 3T
LB02	1	LL635002A0	Coil, 2T
LB03	1	LL635004A0	Coil, 4T
LB04	1	LC22411040	Choke Coil, 4T
LB05	1	LC22411040	Choke Coil, 4T
LB06	1	LC13620010	Coil, 3.6μH
LB07	1	LC11520040	Choke Coil, 4T
LB08	1	LM42506010	Twist Coil
LB09	1	LC15000150	Choke Coil, 3T
WB01	1	YB00050040	Connective Cord, (3P)
			PD01-DISPLAY CIRCUIT BOARD
PD01	1	WH207C4220	P.W. Board, Display
			PD01-CAPACITORS
CD01	1	EJ10601610	Elect 10μF 16V
CD02	1	DK18103310	Ceramic 0.01μF
			PD01-RESISTORS (All Resistors are ±5% and 1/8W)
RD01	1	GD05103180	10KΩ
RD02	1	GD05104180	100KΩ
RD03	1	GD05391180	390Ω
RD04	1	GD05331180	330Ω
RD05	1	GD05821180	820Ω
RD06	1	GD05821180	820Ω
RD07	1	GD05821180	820Ω
RD08	1	GD05331180	330Ω
RD09	1	GD05331180	330Ω
RD10	1	GD05331180	330Ω
RD11	1	GD05331180	330Ω
RD12	1	GD05331180	330Ω
RD13	1	GD05821180	820Ω

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
			PD01-SEMICONDUCTOR
QD01	1	HC10062050	IC TA7612AP
QD02	1	HI10021030	L.E.D. SL-2526, 7 SEG.
QD03	1	HI10022030	L.E.D. SLP159(B), Red
QD04	1	HI10022030	L.E.D. SLP159(B), Red
QD05	1	HI10022030	L.E.D. SLP159(B), Red
QD06	1	HI10023030	L.E.D. SLP259(B), Green
QD07	1	HI10022030	L.E.D. SLP159(B), Red
QD08	1	HI10023030	L.E.D. SLP259(B), Green
QD09	1	HI10023030	L.E.D. SLP259(B), Green
QD10	1	HI10023030	L.E.D. SLP259(B), Green
QD11	1	HI10023030	L.E.D. SLP259(B), Green
QD12	1	HI10023030	L.E.D. SLP259(B), Green
QD13	1	HI10023030	L.E.D. SLP259(B), Green
QD14	1	HI10023030	L.E.D. SLP259(B), Green
QD15	1	HI10023030	L.E.D. SLP259(B), Green
QD16	1	HI10023030	L.E.D. SLP259(B), Green
QD17	1	HI10023030	L.E.D. SLP259(B), Green
QD18	1	HI10023030	L.E.D. SLP259(B), Green
QD19	1	HI10022030	L.E.D. SLP159(B), Red
QD20	1	HI10022030	L.E.D. SLP159(B), Red
QD21	1	HI10022030	L.E.D. SLP159(B), Red
			PP01-PUSH SWITCH CIRCUIT BOARD
PP01	1	WH207C5540	P.W. Board, Push Switch
C821	1	DK18103310	Ceramic Cap, 0.01μF
R820	1	GD05821180	Resistor 820Ω ±5% 1/8W
R821	1	GD05821180	Resistor 820Ω ±5% 1/8W
R822	1	GD05332180	Resistor 3.3KΩ ±5% 1/8W
R823	1	GD05392140	Resistor 3.9KΩ ±5% 1/4W
S820	1	SP02020580	Push Switch, PWR
S821	1	SP02020580	Push Switch, N.B
S822	1	SP02020580	Push Switch, F. LOCK
S823	1	SP02020580	Push Switch, 20K/FAST
			PR01-TX/RX CIRCUIT BOARD
PR01	1	WH207C5510	P.W. Board, TX/RX
			PR01-CAPACITORS
CF01	1	EA10601630	Elect 10μF 16V
CF02	1	DK46103300	Ceramic 0.01μF ±10%
CF03	1	DF17123300	Film 0.012μF ±20%
CF04	1	DS17103010	Semicon 0.01μF ±20%
CF05	1	DS17103010	Semicon 0.01μF ±20%
CF06	1	DK16471300	Ceramic 470pF ±10%
CF08	1	DK46103300	Ceramic 0.01μF ±10%
CF10	1	EA47502530	Elect 4.7μF 25V
CF11	1	DK46472300	Ceramic 4700pF ±10%
CF12	1	DK46332300	Ceramic 0.0033μF ±10%
CF13	1	DS17103010	Semicon 0.01μF ±20%
CF14	1	EV22403560	Elect 0.22μF 35V
CM01	1	DK46103300	Ceramic 0.01μF ±10%
CM02	1	DK46102300	Ceramic 1000pF ±10%
CM03	1	EV47403560	Elect 0.47μF 35V

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
CN01	1	DK48473300	Ceramic 0.047μF
CN02	1	DK46102300	Ceramic 0.001μF ±10%
CN03	1	DK48473300	Ceramic 0.047μF
CN04	1	DK48473300	Ceramic 0.047μF
CN05	1	DK48473300	Ceramic 0.047μF
CN06	1	DK48473300	Ceramic 0.047μF
CN07	1	DD45330300	Ceramic 33pF ±5%
CN08	1	DD45331300	Ceramic 330pF ±0.5pF
CN09	1	EA10505030	Elect 1μF 50V
CN12	1	EA22601630	Elect 22μF 16V
CN13	1	DK48473300	Ceramic 0.047μF
CP01	1	DF15103300	Film 0.01μF ±5%
CP02	1	EA47601630	Elect 47μF 16V
CP03	1	EA47601030	Elect 47μF 10V
CP04	1	EA10702530	Elect 100μF 25V
CP05	1	EA47601030	Elect 47μF 10V
CR01	1	DD45101300	Ceramic 100pF ±5%
CR02	1	DK46102300	Ceramic 0.001μF ±10%
CR03	1	DK46102300	Ceramic 0.001μF ±10%
CR04	1	DK46102300	Ceramic 0.001μF ±10%
CR05	1	DK46102300	Ceramic 0.001μF ±10%
CR06	1	DK46102300	Ceramic 0.001μF ±10%
CR07	1	DD45200300	Ceramic 20pF ±5%
CR08	1	DD45200300	Ceramic 20pF ±0.5pF
CR09	1	DS17103010	Semicon 0.01μF ±20%
CR10	1	DK46102300	Ceramic 0.001μF ±10%
CR11	1	DK46103300	Ceramic 0.01μF ±10%
CR12	1	DD41060300	Ceramic 6pF ±0.5pF
CR13	1	DK46102300	Ceramic 1000pF ±10%
CR14	1	DK46103300	Ceramic 0.01μF ±10%
CR15	1	DK46103300	Ceramic 0.01μF ±10%
CR16	1	DK46103300	Ceramic 0.01μF ±10%
CR17	1	DK46103300	Ceramic 0.01μF ±10%
CR18	1	DD45430300	Ceramic 43pF ±5%
CR19	1	DK46103300	Ceramic 0.01μF ±10%
CR20	1	DD45120300	Ceramic 12pF ±5%
CR21	1	DK46102300	Ceramic 0.001μF ±10%
CR22	1	DK46103300	Ceramic 0.01μF ±10%
CR23	1	DK48473300	Ceramic 0.047μF
CR24	1	DK46103300	Ceramic 0.01μF ±10%
CR25	1	DD45101300	Ceramic 100pF ±5%
CR26	1	DK46103300	Ceramic 0.01μF ±10%
CR27	1	DK46103300	Ceramic 0.01μF ±10%
CR28	1	EA22601630	Elect 22μF 16V
CR29	1	DK46103300	Ceramic 0.01μF ±10%
CR30	1	DK48223300	Ceramic 0.022μF
CR31	1	DK46103300	Ceramic 0.01μF ±10%
CR32	1	DD45101300	Ceramic 100pF ±5%
CR33	1	DK46103300	Ceramic 0.01μF ±10%
CR34	1	DK48223300	Ceramic 0.022μF
CR35	1	DD45470300	Ceramic 47pF ±5%
CR36	1	DK46103300	Ceramic 0.01μF ±10%
CR37	1	DK46103300	Ceramic 0.01μF ±10%
CR38	1	DS17103010	Semicon 0.01μF ±20%
CR39	1	DF15473300	Film 0.047μF ±5%
CR40	1	EA22601630	Elect 22μF 16V

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
CR41	1	DF15682300	Film 6800pF ±5%
CR42	1	EV10502560	Elect 1μF 25V
CR43	1	DF15473300	Film 0.047μF ±5%
CR44	1	EA22601630	Elect 22μF 16V
CR45	1	DF15103300	Film 0.01μF ±5%
CR46	1	DF15332300	Film 3300pF ±5%
CR47	1	EA10701630	Elect 100μF 16V
CR48	1	EJ10405010	Elect 0.1μF 50V
CR49	1	DD45360300	Ceramic 36pF ±5%
CR50	1	DD45560330	Ceramic 56pF ±5%
CR51	1	DK48223300	Ceramic 0.022μF
CR52	1	EV10502560	Elect 1μF 25V
CR53	1	DD45120300	Ceramic 12pF ±5%
CR54	1	DD45430330	Ceramic 43pF ±5%
CR55	1	DD45151300	Ceramic 150pF ±5%
CR56	1	EV10502560	Elect 1μF 25V
CR57	1	EV10502560	Elect 1μF 25V
CR58	1	DS17473010	Semicon 0.047μF ±20%
CR59	1	DS17332020	Semicon 3300pF ±20%
CR60	1	DK16471300	Ceramic 470pF ±10%
CR61	1	EA10505030	Elect 1μF 50V
CR62	1	DS17152010	Semicon 1500pF ±20%
CR63	1	DS17473010	Semicon 0.047μF ±20%
CR64	1	EA10701030	Elect 100μF 10V
CR65	1	DK46103300	Ceramic 0.01μF ±10%
CR66	1	DK46472300	Ceramic 4700pF ±10%
CR67	1	DK46471300	Ceramic 470pF ±10%
CR68	1	EA10601630	Elect 10μF 16V
CR69	1	EQ33505030	Elect 3.3μF 50V
CR70	1	EA33601630	Elect 33μF 16V
CR71	1	DK46332300	Ceramic 3300pF ±10%
CR72	1	EG10801620	Elect 1000μF 16V
CR73	1	EV10601060	Elect 10μF 10V
CR74	1	EA10701030	Elect 100μF 10V
CR75	1	DS17104010	Semicon 0.1μF ±20%
CR76	1	EA22701630	Elect 220μF 16V
CR77	1	EA10505030	Elect 1μF 50V
CR78	1	DK46102300	Ceramic 0.001μF ±10%
CR79	1	EV10403560	Elect 0.1μF 35V
CR80	1	EA47601030	Elect 47μF 10V
CR81	1	DK46332300	Ceramic 3300pF ±10%
CR82	1	DK46103300	Ceramic 0.01μF ±10%
CR83	1	DK18102030	Ceramic 1000pF
CR84	1	DK46102300	Ceramic 1000pF ±10%
CR86	1	AK16102300	Ceramic 0.001μF
CR85	1	DK16102300	Ceramic 0.001μF ±10%
CR89	1	DK46103300	Ceramic 0.01μF ±10%
CR90	1	DK46102300	Ceramic 1000pF ±10%
CR91	1	DD40040330	Ceramic 4pF ±0.5pF
CR92	1	DS17103010	Ceramic 0.01μF ±10%
CR93	1	DK46103300	Semicon 0.01μF ±10%
CR94	1	DD45220300	Ceramic 22pF ±5%
CR95	1	DK48223300	Ceramic 0.022μF
CR96	1	DK48223300	Ceramic 0.022μF
CR97	1	DK46103300	Ceramic 0.01μF ±10%
CR98	1	DK46103300	Ceramic 0.01μF ±10%
CT01	1	DK46103300	Ceramic 0.01μF ±10%
CT02	1	CT12000020	Trimming 20pF
CT03	1	DK46103300	Ceramic 0.01μF ±10%
CT04	1	CT12000020	Trimming 20pF
CT06	1	CT12000020	Trimming 20pF
CT07	1	DK46103300	Ceramic 0.01μF ±10%
CT08	1	DD45200300	Ceramic 20pF ±5%
CT09	1	CT12000020	Trimming 20pF
CT10	1	DK46103300	Ceramic 0.01μF ±10%
CT11	1	DD45510330	Ceramic 51pF ±5%

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
CT12	1	DK46103300	Ceramic 0.01μF ±10%
CT13	1	DD45510330	Ceramic 51pF ±5%
CT14	1	DK46103300	Ceramic 0.01μF ±10%
CT15	1	DK46103300	Ceramic 0.01μF ±10%
CT16	1	EA33505030	Elect 3.3μF 50V
CT17	1	DK46103300	Ceramic 0.01μF ±10%
CT18	1	DK46103300	Ceramic 0.01μF ±10%
CT19	1	DK46103300	Ceramic 0.01μF ±10%
CT20	1	DD45470300	Ceramic 47pF ±5%
CT21	1	DK46103300	Ceramic 0.01μF ±10%
CT22	1	DK46103300	Ceramic 0.01μF ±10%
CT23	1	DD45300300	Ceramic 30pF ±5%
CT24	1	CT11000020	Trimming 10pF
CT25	1	DD15330310	Ceramic 33pF ±5%
CT26	1	DK46103300	Ceramic 0.01μF ±10%
CT27	1	DK46103300	Ceramic 0.01μF ±10%
CT28	1	DD45101300	Ceramic 100pF ±5%
CT29	1	DF15473300	Film 0.047μF ±5%
CT30	1	DD45101300	Ceramic 100pF ±5%
CT31	1	EA10505030	Elect 1μF 50V
CT32	1	EA47502530	Elect 4.7μF 25V
CT33	1	EV33503560	Elect 3.3μF 35V
CT34	1	DK46103300	Ceramic 0.01μF ±10%
CT35	1	DK46103300	Ceramic 0.01μF ±10%
CT36	1	DD45220300	Ceramic 22pF ±5%
CT37	1	DD45220300	Ceramic 22pF ±5%
CT38	1	DK46103300	Ceramic 0.01μF ±10%
CT39	1	DK46103300	Ceramic 0.01μF ±10%
CT40	1	DK46103300	Ceramic 0.01μF ±10%
CT41	1	DK46103300	Ceramic 0.01μF ±10%
CT42	1	EJ47502510	Elect 4.7μF 25V
CT45	1	DD45200300	Ceramic 20pF ±5%
CT46	1	DS17103010	Ceramic 0.01μF ±10%
CT47	1	DK46103300	Ceramic 0.01μF ±10%
CT48	1	DK46103300	Ceramic 0.01μF ±10%
CT49	1	CT12000020	Trimming 20pF
CT50	1	DK46103300	Ceramic 0.01μF ±10%
CT51	1	DK46103300	Ceramic 0.01μF ±10%
CT52	1	DK46102300	Ceramic 0.001μF ±10%
CT53	1	EJ47502510	Elect 4.7μF 25V
CT54	1	DK46103300	Ceramic 0.01μF ±10%
CT55	1	CT12000020	Trimming 20pF
CT56	1	DD40030300	Ceramic 3pF ±0.25pF
CT57	1	DK46102300	Ceramic 0.001μF ±10%
CT58	1	DK46102300	Ceramic 0.001μF ±10%
CT59	1	DK46103300	Ceramic 0.01μF ±10%
CT60	1	EA22601630	Elect 22μF 16V
CT61	1	DK46103300	Ceramic 0.01μF ±10%
CT62	1	EA22601630	Elect 22μF 16V
CT63	1	EA10505030	Elect 1μF 50V
CT64	1	EV10601060	Elect 10μF 10V
CT65	1	DK46103300	Ceramic 0.01μF ±10%
CT66	1	EA22601630	Elect 22μF 16V
CT67	1	DK46103300	Ceramic 0.01μF ±10%
CT68	1	DD40030300	Ceramic 3pF ±0.25pF
CT69	1	DK48103300	Ceramic 0.01μF
CT72	1	DK46102300	Ceramic 1000pF ±10%
CT73	1	DK46103300	Ceramic 0.01μF ±10%
CT74	1	DK46102300	Ceramic 1000pF
CT75	1	DK46102300	Ceramic 1000pF ±10%
CT76	1	EA10601630	Elect 10μF 16V
CT77	1	DK18102030	Ceramic 1000pF
CT78	1	DK46102300	Ceramic 1000pF ±10%

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
CT80	1	DK46102300	Ceramic 1000pF ±10% E.W
CT82	1	DK46102300	Ceramic 1000pF ±10%
CT83	1	DD45130330	Ceramic 13pF ±5%
CT84	1	DD40050300	Ceramic 5pF ±0.25pF
CT85	1	DD15150330	Ceramic 15pF ±5%
CT86	1	DD15150330	Ceramic 15pF ±5%
CT87	1	EV10601060	Elect 10μF 10V
CT88	1	DK16102300	Ceramic 0.001μF
CT89	1	DK16102300	Ceramic 0.001μF
CT90	1	DK16102300	Ceramic 0.001μF
CT91	1	DK16151300	Ceramic 150pF
			PR01-RESISTORS
			(All Resistors are ±5% and ¼W)
RF01	1	RI05185180	1.8MΩ 1/8W,
RF02	1	GD05185140	1.8MΩ
RF03	1	GD05474140	470KΩ
RF04	1	GD05123140	12KΩ
RF05	1	GD05185140	1.8MΩ
RF06	1	GD05394140	390KΩ
RF07	1	RA02040080	200KΩ, Trimming
RF08	1	GD05103140	10KΩ
RF09	1	RI05223180	22KΩ 1/8W,
RF10	1	GD05562140	5.6KΩ
RF11	1	GD05103140	10KΩ
RF12	1	GD05184180	180KΩ 1/8W
RF13	1	GD05103140	10KΩ
RF14	1	RI05103180	10KΩ 1/8W,
RF15	1	RA05030310	50KΩ(B), Trimming
RF16	1	RI05104180	100KΩ 1/8W,
RF17	1	RI05154180	150KΩ 1/8W,
RF18	1	RA02030180	20KΩ(B), Trimming
RF19	1	GD05103140	10KΩ
RF20	1	RI05222180	2.2KΩ 1/8W,
RF21	1	GD05472140	4.7KΩ
RF22	1	GD05123140	12KΩ
RF23	1	GD05472140	4.7KΩ
RF24	1	RI05223180	22KΩ 1/8W,
RF25	1	GD05102180	1KΩ 1/8W,
RF26	1	GD05224140	220KΩ
RF27	1	GD05223140	22KΩ
RM01	1	GD05474140	470KΩ
RM02	1	RI05222180	2.2KΩ 1/8W,
RM03	1	RA05030310	50KΩ(B), Trimming
RM04	1	RA05040130	500KΩ(B), Trimming
RM05	1	GD05472140	4.7KΩ
RM06	1	GD05221140	220Ω
RM07	1	RI05472180	4.7KΩ 1/8W,
RM08	1	GD05224140	220KΩ
RM09	1	RI05224180	220KΩ 1/8W,
RM10	1	RI05333180	33KΩ 1/8W,
RN01	1	GD05474140	470KΩ
RN02	1	RI05104180	100KΩ 1/8W,
RN03	1	GD05101140	100Ω
RN04	1	GD05331140	330Ω
RN05	1	GD05101140	100Ω
RN06	1	GD05474140	470KΩ
RN07	1	RI05104180	100KΩ 1/8W,
RN08	1	RI05101180	100Ω 1/8W,
RN09	1	RI05333180	33KΩ 1/8W,
RN10	1	GD05103140	10KΩ

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
RN11	1	GD05224140	220KΩ
RN12	1	RI05224180	220KΩ 1/8W,
RN16	1	RI05123180	12KΩ 1/8W,
RN17	1	GD05472180	4.7KΩ 1/8W
RP01	1	GD05104140	100KΩ
RP02	1	RI05104180	100KΩ 1/8W,
RP03	1	RI05104180	100KΩ 1/8W,
RP04	1	GD05104140	100KΩ
RP05	1	GD05103140	10KΩ
RP06	1	RI05103180	10KΩ 1/8W,
RP07	1	GD05561140	560Ω
RR01	1	RI05104180	100KΩ 1/8W,
RR02	1	RI05104180	100KΩ 1/8W,
RR03	1	RI05274180	270KΩ 1/8W,
RR04	1	RI05151180	150Ω 1/8W,
RR05	1	RI05101180	100Ω 1/8W,
RR06	1	RI05101180	100Ω 1/8W,
RR07	1	RI05272180	2.7KΩ 1/8W,
RR08	1	RI05103180	10KΩ 1/8W,
RR10	1	RI05473180	47KΩ 1/8W,
RR11	1	RI05101180	100Ω 1/8W,
RR14	1	RI05101180	100Ω 1/8W,
RR15	1	GD05332180	3.3KΩ 1/8W,
RR16	1	RI05681180	680Ω 1/8W,
RR17	1	RI05561180	560Ω 1/8W,
RR19	1	GD05473140	47KΩ
RR20	1	RI05473180	47KΩ 1/8W,
RR21	1	RI05151180	150Ω 1/8W,
RR22	1	RI05223180	22KΩ 1/8W,
RR23	1	GD05101140	100Ω
RR24	1	GD05103180	10KΩ 1/8W,
RR25	1	RI05472180	4.7KΩ 1/8W,
RR26	1	GD05333140	33KΩ
RR27	1	RI05681180	680Ω 1/8W,
RR28	1	GD05104140	100KΩ
RR29	1	RI05333180	33KΩ 1/8W,
RR30	1	RI05221180	220Ω 1/8W,
RR31	1	RI05103180	10KΩ 1/8W,
RR32	1	RI05221180	220Ω 1/8W,
RR33	1	GD05473140	47KΩ
RR34	1	GD05333140	33KΩ
RR35	1	RI05221180	220Ω 1/8W,
RR36	1	RA01030520	10KΩ(B), Trimming
RR37	1	GD05221140	220Ω
RR38	1	RI05103180	10KΩ 1/8W,
RR39	1	RI05333180	33KΩ 1/8W,
RR40	1	RI05221180	220Ω 1/8W,
RR41	1	RI05472180	4.7KΩ 1/8W,
RR42	1	RI05221180	220Ω 1/8W,
RR44	1	GD05471140	470Ω
RR45	1	RI05562180	5.6KΩ 1/8W,
RR46	1	GD05471140	470Ω
RR47	1	RI05684180	680KΩ 1/8W,
RR48	1	R105681180	680Ω 1/8W,
RR49	1	RI05472180	4.7KΩ 1/8W,
RR50	1	GD05223140	22KΩ
RR51	1	RI05473180	47KΩ 1/8W,
RR52	1	RI05153180	15KΩ 1/8W,
RR53	1	GD05472140	4.7KΩ
RR54	1	RI05562180	5.6KΩ 1/8W,

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
RR55	1	RI05153180	15KΩ 1/8W,
RR56	1	R105221180	220Ω 1/8W,
RR57	1	RI05272180	2.7KΩ 1/8W,
RR58	1	RI05562180	5.6KΩ 1/8W,
RR59	1	RI05102180	1KΩ 1/8W,
RR60	1	RI05102180	1KΩ 1/8W,
RR61	1	RI05222180	2.2KΩ 1/8W,
RR62	1	RI05473180	47KΩ 1/8W,
RR63	1	RI05222180	2.2KΩ 1/8W,
RR64	1	GD05123140	12KΩ
RR65	1	GD05103140	10KΩ
RR66	1	GD05334140	330KΩ
RR67	1	RI05392180	3.9KΩ 1/8W,
RR68	1	GD05682140	6.8KΩ
RR69	1	RI05333180	33KΩ
RR70	1	RI05822180	8.2KΩ 1/8W,
RR71	1	GD05102140	1KΩ
RR72	1	GD05473140	47KΩ
RR73	1	RI05331180	330Ω 1/8W,
RR74	1	GD05103140	10KΩ
RR75	1	RI05102180	1KΩ 1/8W,
RR76	1	RI05471180	470Ω 1/8W,
RR77	1	GD05103140	10KΩ
RR78	1	RI05102180	1KΩ 1/8W,
RR79	1	RI05103180	10KΩ 1/8W,
RR80	1	RI05221180	220Ω 1/8W,
RR81	1	RI05223180	22KΩ 1/8W,
RR82	1	RI05101180	100Ω 1/8W,
RR83	1	GD05681140	68Ω
RR84	1	GD05222180	2.2KΩ 1/8W
RR85	1	GD05105140	1MΩ
RR86	1	RI05104180	100KΩ 1/8W,
RR87	1	GD05680140	68Ω
RR88	1	GD05102140	1KΩ
RR89	1	GD05103180	10KΩ 1/8W
RR90	1	RA04730100	47KΩ, Trimming
RR91	1	GD05103140	10KΩ
RR92	1	GD05823140	82KΩ
RR93	1	GD05222140	2.2KΩ
RR94	1	GD05684140	680KΩ
RR95	1	GD05222140	2.2KΩ
RR96	1	RA01050110	1MΩ, Trimming
RR97	1	GD05224180	220KΩ 1/8W,
RT01	1	RI05104180	100KΩ 1/8W,
RT02	1	RI05104180	100KΩ 1/8W,
RT03	1	RI05104180	100KΩ 1/8W,
RT04	1	RI05104180	100KΩ 1/8W,
RT05	1	GD05392140	3.9KΩ
RT06	1	RI05333180	33KΩ 1/8W,
RT07	1	RI05153180	15KΩ 1/8W,
RT08	1	RI05563180	56KΩ 1/8W,
RT09	1	RI05153180	15KΩ 1/8W,
RT10	1	RI05473180	47KΩ 1/8W,
RT11	1	RI05332180	3.3KΩ 1/8W,
RT12	1	RI05102180	1KΩ 1/8W,
RT13	1	RI05101180	100Ω 1/8W,
RT14	1	RI05102180	1KΩ 1/8W,
RT15	1	GD05823140	82KΩ
RT16	1	GD05330140	33Ω
RT17	1	RI05101180	100Ω 1/8W,
RT18	1	RA01010110	100Ω(B), Trimming
RT19	1	RI05221180	220Ω 1/8W,
RT20	1	RI05221180	220Ω 1/8W,

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
RT21	1	GD05682140	6.8KΩ
RT22	1	GD05101140	100Ω
RT23	1	RI05101180	100Ω 1/8W,
RT24	1	RA05020350	5KΩ(B), Trimming
RT25	1	GD05154140	150KΩ
RT26	1	GD05152140	1.5KΩ
RT27	1	GD05392140	3.9KΩ
RT28	1	GD05223140	22KΩ
RT29	1	GD05102140	1KΩ
RT30	1	RI05331180	330Ω 1/8W,
RT31	1	GD05223140	22KΩ
RT32	1	GD05562140	5.6KΩ
RT33	1	R105562180	5.6KΩ 1/8W,
RT34	1	GD05103180	10KΩ 1/8W
RT35	1	GD05103140	10KΩ
RT36	1	GD05103140	10KΩ
RT37	1	RA05010220	500Ω(B), Trimming
RT38	1	GD05332140	3.3KΩ
RT39	1	GD05101140	100Ω
RT40	1	RI05152180	1.5KΩ 1/8W,
RT41	1	RI05103180	10KΩ 1/8W,
RT42	1	RI05470180	47Ω 1/8W,
RT43	1	RI05101180	100Ω 1/8W,
RT44	1	RI05470180	47Ω 1/8W,
RT45	1	RI05152180	1.5KΩ 1/8W,
RT46	1	GD05100140	10Ω
RT47	1	RI05333180	33KΩ 1/8W,
RT48	1	GD05154140	150KΩ
RT49	1	RA05030310	50KΩ(B), Trimming
RT50	1	RA01040330	100KΩ(B), Trimming
RT51	1	RI05153180	15KΩ 1/8W,
RT52	1	RI05473180	47KΩ 1/8W,
RT53	1	R105333180	33KΩ 1/8W,
RT54	1	RI05103180	10KΩ 1/8W,
RT55	1	RI05103180	10KΩ 1/8W,
RT56	1	RI05562180	5.6KΩ 1/8W,
RT57	1	RI05103180	10KΩ 1/8W,
RT58	1	RI05333180	33KΩ 1/8W,
RT59	1	RI05103180	10KΩ 1/8W,
RT60	1	RI05104180	100KΩ 1/8W,
RT61	1	RI05473180	47KΩ 1/8W,
RT62	1	RI05473180	47KΩ 1/8W,
RT63	1	RI05123180	12KΩ 1/8W,
RT64	1	GD05104140	100KΩ
RT65	1	R105682180	6.8KΩ 1/8W,
RT66	1	RI05101180	100Ω 1/8W,
RT68	1	RI05103180	10KΩ 1/8W,
RT69	1	GD05562140	5.6KΩ
RT70	1	GD05153140	15KΩ
RT71	1	GD05103180	10KΩ 1/8W
RT73	1	RI05562180	5.6KΩ 1/8W,
RT74	1	GD05103140	10KΩ
RT80	1	R105104180	100KΩ 1/8W,
RT81	1	GD05563140	56KΩ
RT82	1	GD05563140	56KΩ

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
			PR01-SEMICONDUCTORS
QF01	1	HD20011050	Diode 1S1555
QF02	1	HD20011050	Diode 1S1555
QF03	1	HD20011050	Diode 1S1555
QF04	1	HD20011050	Diode 1S1555
QF05	1	HD20011050	Diode 1S1555
QF06	1	HT309451Q0	Transistor 2SC945(Q)
QF07	1	HT309451Q0	Transistor 2SC945(Q)
QF08	1	HD20011050	Diode 1S1555
QF09	1	HD20011050	Diode 1S1555
QF10	1	HT309451Q0	Transistor 2SC945(Q)
QF11	1	HD20011050	Diode 1S1555
QM01	1	HF200301C0	F.E.T. 2SK30A(Y)
QM02	1	HT107331Q0	Transistor 2SA733(Q)
QM03	1	HD20011050	Diode 1S1555
QM04	1	HV00002060	Diode VD1212
QN01	1	HT305351B0	Transistor 2SC535(B)
QN02	1	HT315831F0	Transistor 2SC1583(F)
QN03	1	HT304601B0	Transistor 2SC460(B)
QN04	1	HD10005020	Diode OA99
QN05	1	HD10005020	Diode OA99
QN06	1	HD10005020	Diode OA99
QN07	1	HT800571O0	Transistor MPSA13P
QN08	1	HT309451Q0	Transistor 2SC945(Q)
QP01	1	HC10003090	IC NJM4558D
QP02	1	HT309451Q0	Transistor 2SC945(Q)
QP03	1	HT107331Q0	Transistor 2SA733(Q)
QP04	1	HD20011050	Diode 1S1555
QP05	1	HD20011050	Diode 1S1555
QP06	1	HD30033090	Zener WZ052
QR01	1	HD20011050	Diode 1S1555
QR02	1	HD20011050	Diode 1S1555
QR03	1	HF400761O0	F.E.T. 3SK76
QR04	1	HF400742A0	F.E.T. 3SK74
QR05	1	HF401011B0	F.E.T. 3SK101(GR)
QR06	1	HD20011050	Diode 1S1555
QR07	1	HD20011050	Diode 1S1555
QR08	1	HF401011B0	F.E.T. 3SK101(GR)
QR09	1	HF401011C0	F.E.T. 2SK101(BL)
QR10	1	HF401011B0	F.E.T. 3SK101(GR)
QR11	1	HD20013060	Diode ND487R1-3R
QR12	1	HT318421F0	Transistor 2SC1842(F)
QR13	1	HT318421F0	Transistor 2SC1842(F)
QR14	1	HT318421F0	Transistor 2SC1842(F)
QR15	1	HC10015170	IC MC3357P
QR16	1	HD20005060	Diode 1SS16
QR17	1	HD20005060	Diode 1SS16
QR18	1	HD10005020	Diode OA99
QR19	1	HD10005020	Diode OA99
QR20	1	HT309451Q0	Transistor 2SC945(Q)
QR21	1	HD20011050	Diode 1S1555
QR22	1	HC10031010	IC HA1366W
QR23	1	HD20011050	Diode 1S1555
QR24	1	HD20011050	Diode 1S1555
QR25	1	HD20011050	Diode 1S1555
QR30	1	HT309451Q0	Transistor 2SC945(Q)
QR31	1	HT309451Q0	Transistor 2SC945(Q)
QR32	1	HD10005020	Diode OA99
QR33	1	HD10005020	Diode OA99
QR34	1	HH00018020	Thermistor ERT-D2FHL-332S
QR35	1	HD20001200	Diode MI301
QR36	1	HD10004020	Diode OA91

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
QT01	1	HD20011050	Diode 1S1555
QT02	1	HD20011050	Diode 1S1555
QT03	1	HD20011050	Diode 1S1555
QT04	1	HD20011050	Diode 1S1555
QT05	1	HT304601B0	Transistor 2SC460(B)
QT06	1	HT309451Q0	Transistor 2SC945(Q)
QT07	1	HT304601B0	Transistor 2SC460(B)
QT08	1	HT304601B0	Transistor 2SC460(B)
QT09	1	HD20013060	Diode ND487R1-3R
QT10	1	HF201611A0	F.E.T. 2SK161(GR)
QT11	1	HT318421F0	Transistor 2SC1842(F)
QT12	1	HT318421F0	Transistor 2SC1842(F)
QT13	1	HD20011050	Diode 1S1555
QT14	1	HD20011050	Diode 1S1555
QT15	1	HF201610A0	F.E.T. 2SK161(GR1)
QT16	1	HF201610A0	F.E.T. 2SK161(GR1)
QT17	1	HF401011B0	F.E.T. 3SK101(GR)
QT18	1	HD20011050	Diode 1S1555
QT19	1	HT320531A0	Transistor 2SC2053
QT20	1	HD10005020	Diode OA99
QT21	1	HD10005020	Diode OA99
QT22	1	HT305361F0	Transistor 2SC536(F)
QT23	1	HD20011050	Diode 1S1555
QT27	1	HT107331Q0	Transistor 2SA733(Q)
QT28	1	HD20011050	Diode 1S1555
QT30	1	HD20011050	Diode 1S1555
QT31	1	HT309451Q0	Transistor 2SC945(Q)
QT32	1	HT309451Q0	Transistor 2SC945(Q)
QT33	1	HT309451Q0	Transistor 2SC945(Q)
QT34	1	HT309451Q0	Transistor 2SC945(Q)
QT35	1	HD20011050	Diode 1S1555
QT36	1	HD20011050	Diode 1S1555
QT37	1	HD20011050	Diode 1S1555
QT38	1	HT107331Q0	Transistor 2SA733(Q)
QT39	1	HV00002060	Varistor VD1212
QT41	1	HD20011050	Diode 1S1555
QT42	1	HD20011050	Diode 1S1555
QT50	1	HD40005090	Varicap 1S2339
QT51	1	HD40005090	Varicap 1S2339
			PR01-MISCELLANEOUS
FR01	1	XU410700M5	Crystal, 10.7MHz
FR02	1	XU410700M5	Crystal, 10.7MHz
FR03	1	XV710700S3	Crystal, 10.7MHz CSSB
FR04	1	FG455304F0	Ceramic Filter, CFU-455F
FR05	1	FG455304F0	Ceramic Filter, CFU-455F
JR01	1	YJ07000360	Jack, Pin
JR02	1	YJ07000420	Jack, (2P) TL-25
JR03	1	YJ07000430	Jack, (3P) TL-25
JR04	1	YJ07000450	Jack, (5P) TL-25
JR05	1	YJ07000440	Jack, (4P) TL-25
JR06	1	YJ07000450	Jack, (5P) TL-25
JR07	1	YJ07000420	Jack, (2P) TL-25
JR08	1	YJ07000420	Jack, (2P) TL-25
JT01	1	YJ07000450	Jack, (5P) TL-25
JT02	1	YJ07000420	Jack, (2P) TL-25
JT03	1	YJ07000420	Jack, (2P) TL-25
JT04	1	YJ07000430	Jack, (3P) TL-25
JT05	1	YJ07000430	Jack, (3P) TL-25
JT06	1	YJ07000450	Jack, (5P) TL-25
JT07	1	YJ07000360	Jack, Pin
JT08	1	YP10002210	Plug, (1P)
JT09	1	YP10002210	Plug, (1P)

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
LN01	1	LI71016100	I.F.T. Coil, 7P NB Black
LN02	1	LI71016120	I.F.T. Coil, 7P NB Green
LN03	1	LI71016180	I.F.T. Coil, 7P NB Black
LP01	1	LC25650010	Choke Coil, 5.6mH
LR01	1	LA15030020	Antenna Coil
LR02	1	LA15040050	Antenna Coil
LR03	1	LI71016100	I.F.T. Coil, 7P IF Filter Black
LR04	1	LI71016100	I.F.T. Coil, 7P IF Filter Black
LR05	1	LI71016120	I.F.T. Coil, 7P IF Green
LR06	1	LC11050040	Choke Coil, 1mH
LR07	1	LI71016150	I.F.T. Coil, 7P IF Red
LR08	1	LI71016150	I.F.T. Coil, 7P IF Red
LR09	1	LI71016160	I.F.T. Coil, 7P IF White
LR11	1	LI71016090	I.F.T. Coil, 7P IF Yellow
LR12	1	LC11050040	Choke Coil, 1mH
LR13	1	LC11050040	Choke Coil, 1mH
LR20	1	LA55016080	Antenna Coil
LT01	1	LC13940010	Choke Coil, 390μH
LT02	1	LC13940010	Choke Coil, 390μH
LT03	1	LC13940010	Choke Coil, 390μH
LT04	1	LC13940010	Choke Coil, 390μH
LT05	1	LA70360020	Antenna Coil
LT06	1	LC13940010	Choke Coil, 390μH
LT07	1	LI71016120	I.F.T. Coil, 7P IF Green
LT08	1	LC13940010	Choke Coil, 390μH
LT09	1	LC11030020	Choke Coil, 10μH
LT10	1	LI71016120	I.F.T. Coil, 7P
LT11	1	LC11030020	Choke Coil, 10μH
LT12	1	LC11050040	Choke Coil, 1mH
LT13	1	LI71016120	I.F.T. Coil, 7P Balanced Mix
LT14	1	LA70280230	Antenna Coil, 7K
LT15	1	LA15040040	Antenna Coil
LT16	1	LC12010010	Choke Coil, 0.2μH
LT17	1	LL635004A0	Coil, 4T
LT18	1	LL635002A0	Coil, 2T
LT19	1	LL635004A0	Coil, 4T
LT20	1	LL635002A0	Coil, 2T
LT21	1	LA55016080	Antenna Coil
LT22	1	LC11040010	Choke Coil, 100μH
XR01	1	XA21024504	Crystal, 10.245MHz
XT01	1	XB111001G0	Crystal, 10.7MHz

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
			PT01-TONE BURST CIRCUIT BOARD
PT01	1	YF203C0020	P.W. Board, Tone Burst
			PT01-CAPACITORS
C001	1	DK26103020	Ceramic 0.01μF ±10%
C002	1	DK26104010	Ceramic 0.1μF ±10%
C003	1	EV33501660	Elect 3.3μF 16V
C004	1	DK26333010	Ceramic 0.033μF ±10%
C005	1	DK16471300	Ceramic 470pF ±10%
C006	1	DK26473010	Ceramic 0.047μF ±10%
C007	1	DK16102300	Ceramic 0.001μF ±10%
C009	1	EV47501660	Elect 4.7μF 16V
			PT01-RESISTORS **(All Resistors are ±5% and 1/8W)**
R001	1	GD05103180	10KΩ
R002	1	GD05104180	100KΩ
R003	1	GD05105180	1MΩ
R004	1	GD05224180	220KΩ
R005	1	RA01030520	10KΩ, Trimming
R006	1	GD05824180	820KΩ
R007	1	RA04730100	47KΩ, Trimming
R008	1	GD05473180	47KΩ
R009	1	GD05821180	820Ω
R010	1	RA01030530	10KΩ, Trimming
R011	1	GD05683180	68KΩ
R012	1	GD05224180	220KΩ
			PT01-SEMICONDUCTORS
Q001	1	HT305360F0	Transistor 2SC536(F)
Q002	1	HD20011050	Diode 1S1555
Q003	1	HC409317B0	IC MC14093B
Q004	1	HD20011050	Diode 1S1555
Q005	1	HT305360F0	Transistor 2SC536(F)

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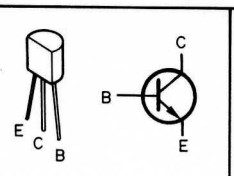
(W01-99)	**Assembly and Wiring**
(T01-99)	**Adjustment**
(X01-00)	**Correction**

PIN LOCATIONS



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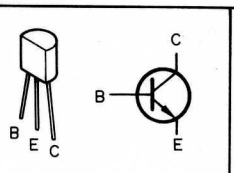
2SC945(Q)
2SC536F
2SCI842F



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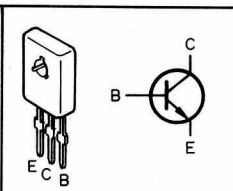

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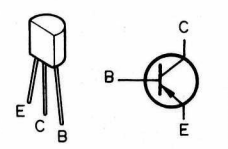

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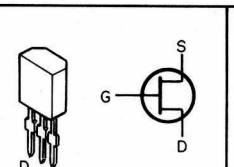

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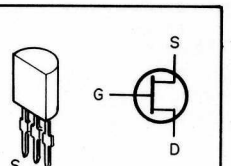

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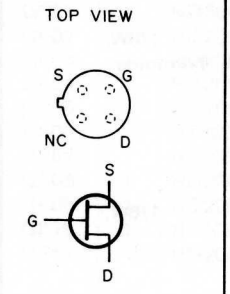

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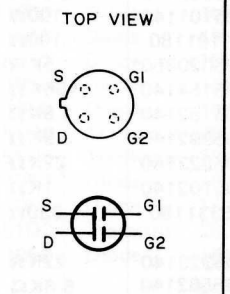

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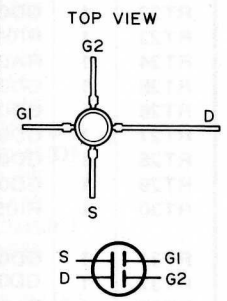

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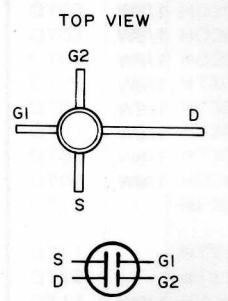

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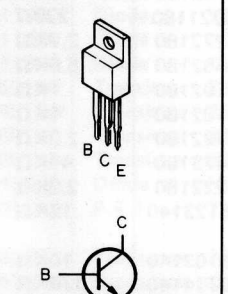

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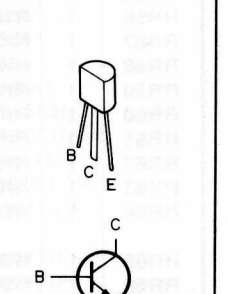

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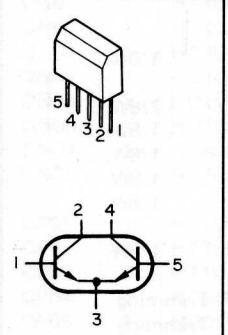

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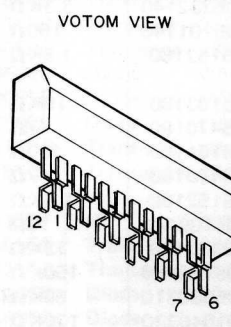

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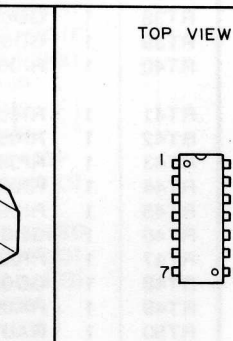

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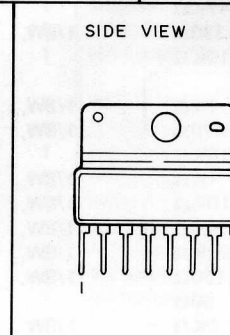

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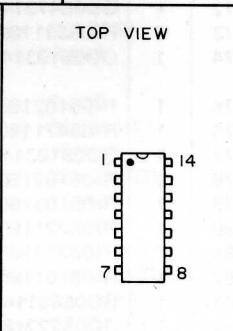

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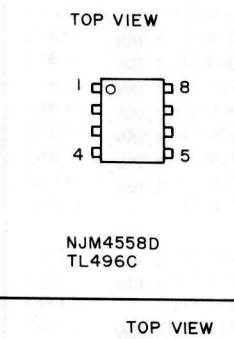

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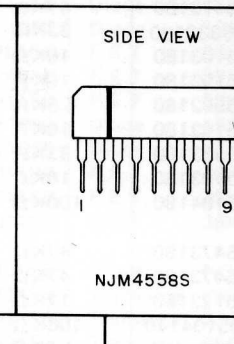

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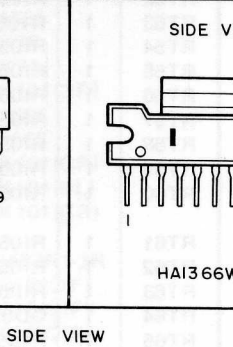

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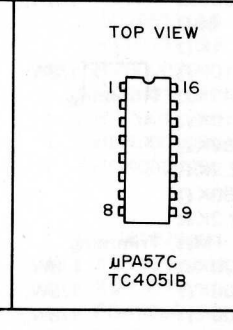

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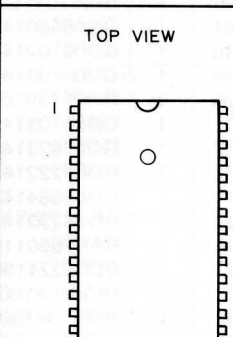

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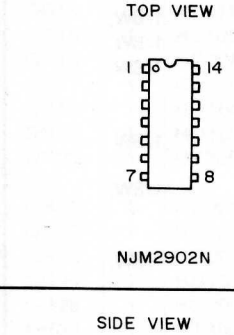
TMSI025N2LL



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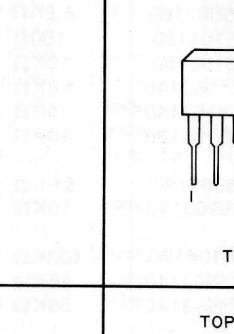

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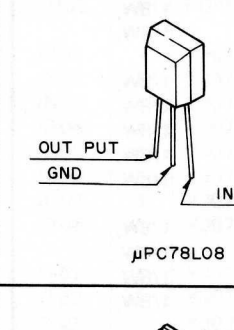

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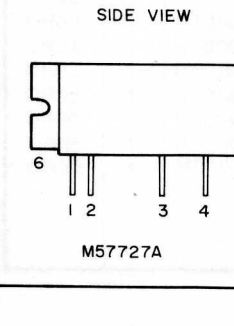

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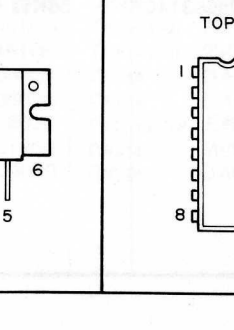

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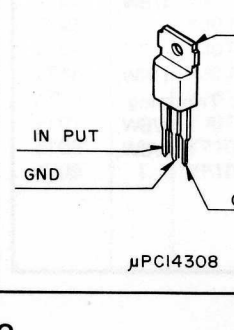

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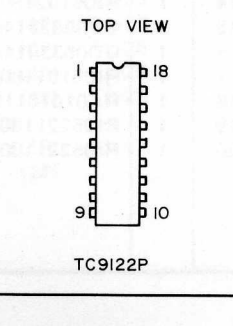
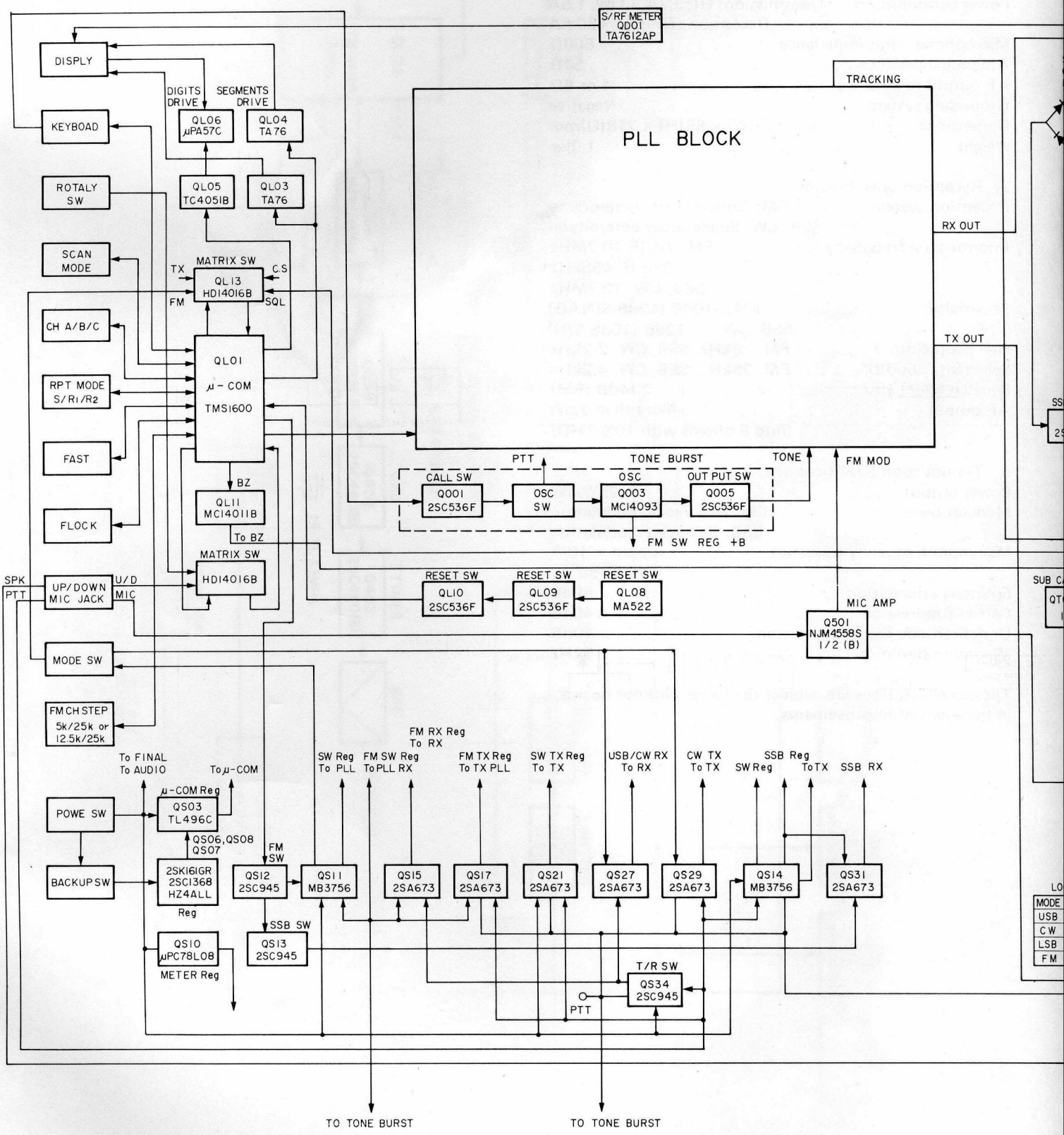
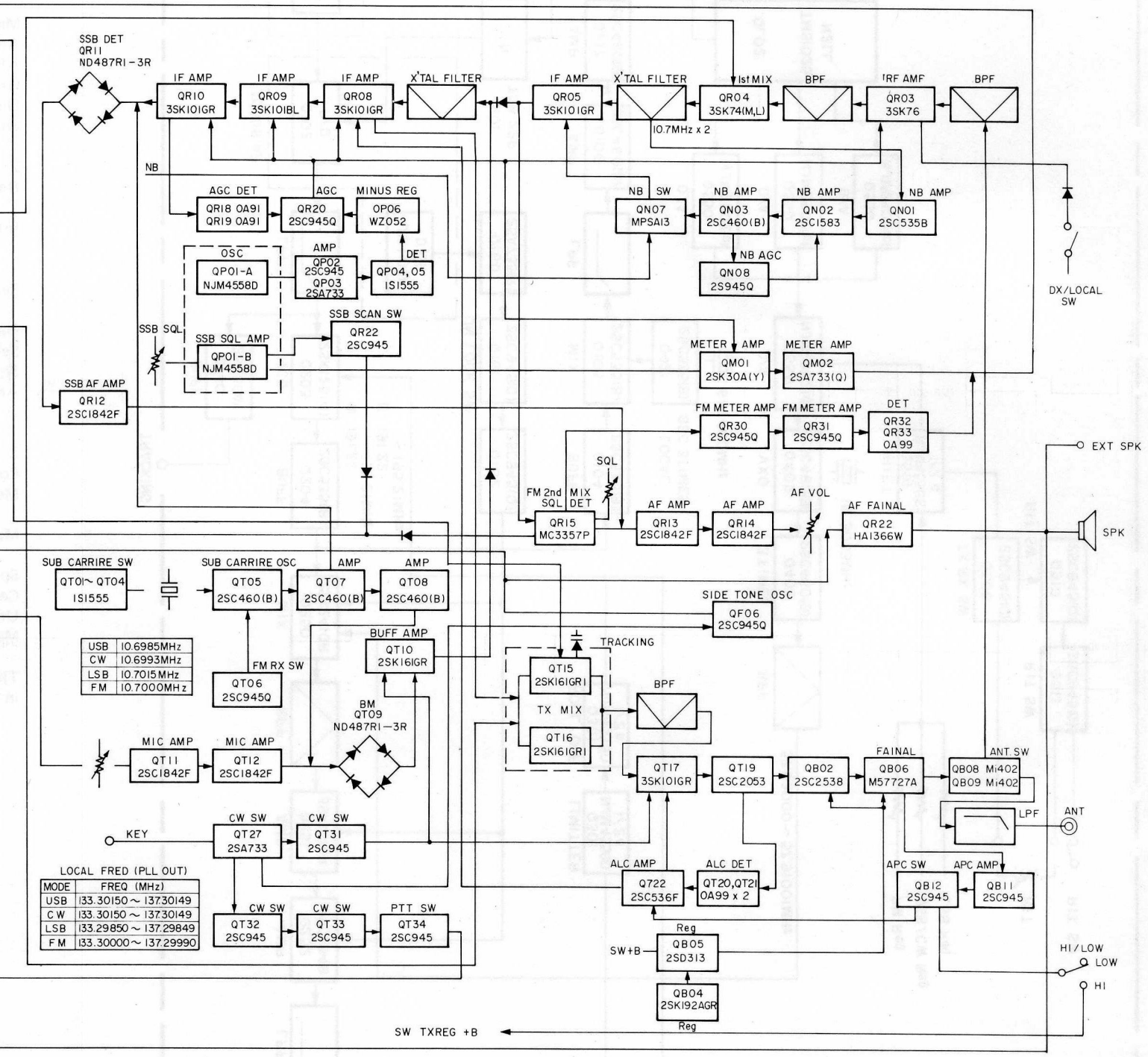
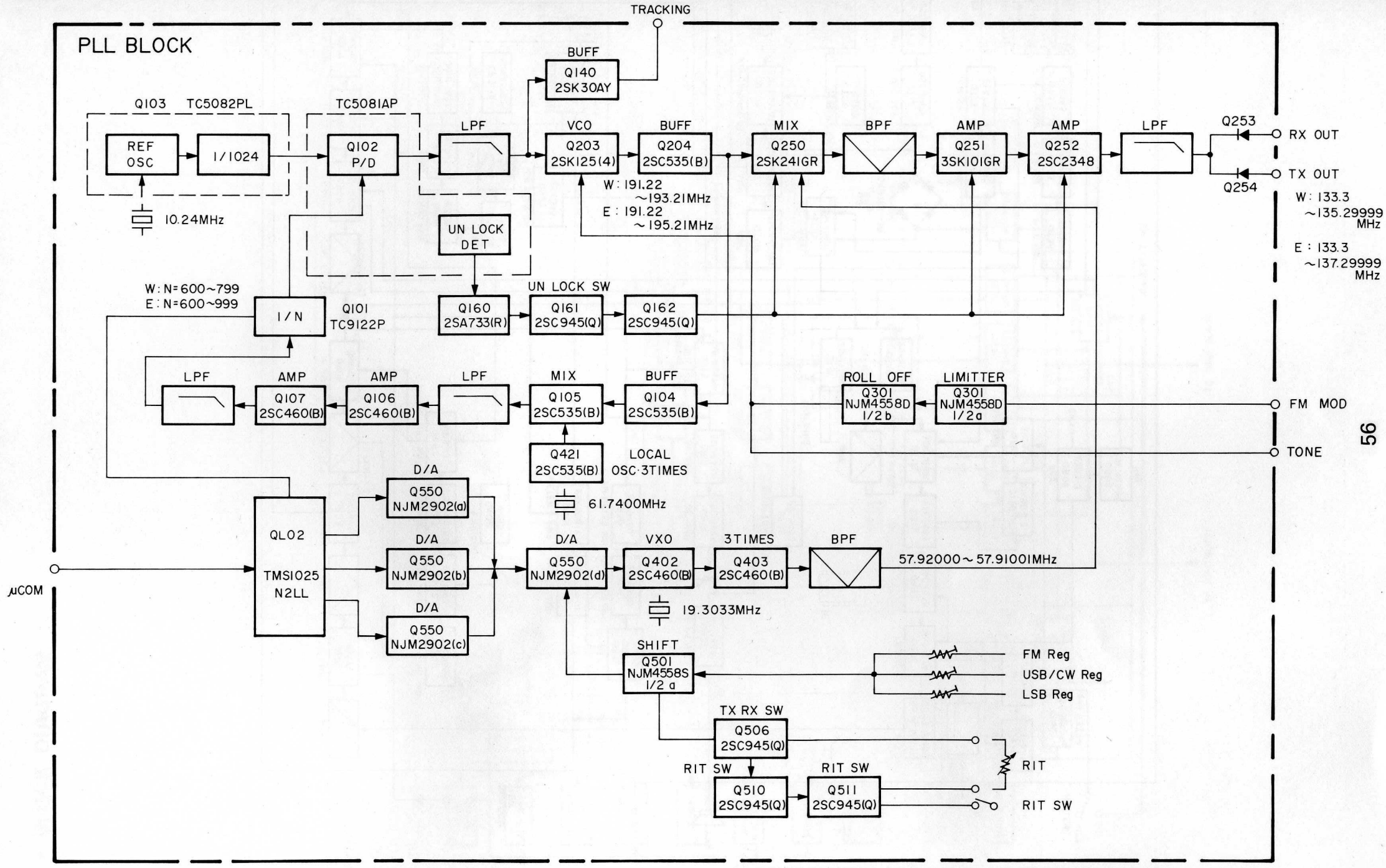


TC9122P

■ BLOCK DIAGRAM




SSB DET
QR11
ND487RI-3R
IF AMP
QR10
3SK101GR
IF AMP
QR09
3SK101BL
IF AMP
QR08
3SK101GR
X'TAL FILTER
IF AMP
QR05
3SK101GR
X'TAL FILTER
10.7MHz x 2
1st MIX
QR04
3SK74(M,L)
BPF
RF AMP
QR03
3SK76
BPF
NB
AGC DET
QR18 0A91
QR19 0A91
AGC
QR20
2SC945Q
MINUS REG
QP06
WZ052
NB SW
QN07
MPSAI3
NB AMP
QN03
2SC460(B)
NB AMP
QN02
2SC1583
NB AMP
QN01
2SC535B
NB AGC
QN08
2S945Q
DX/LOCAL SW
OSC
QP01-A
NJM4558D
AMP
QP02
2SC945
QP03
2SA733
DET
QP04,05
IS1555
SSB SQL
SSB SQL AMP
QP01-B
NJM4558D
SSB SCAN SW
QR22
2SC945
METER AMP
QM01
2SK30A(Y)
METER AMP
QM02
2SA733(Q)
SSB AF AMP
QR12
2SC1842F
FM METER AMP
QR30
2SC945Q
FM METER AMP
QR31
2SC945Q
DET
QR32
QR33
0A99
EXT SPK
SQL
FM 2nd SQL
MIX DET
QR15
MC3357P
AF AMP
QR13
2SC1842F
AF AMP
QR14
2SC1842F
AF VOL
AF FAINAL
QR22
HA1366W
SPK
SUB CARRIRE SW
QT01~QT04
IS1555
SUB CARRIRE OSC
QT05
2SC460(B)
AMP
QT07
2SC460(B)
AMP
QT08
2SC460(B)
SIDE TONE OSC
QF06
2SC945Q
BUFF AMP
QT10
2SK161GR
TRACKING
QT15
2SK161GR1
TX MIX
QT16
2SK161GR1
BPF
FM RX SW
QT06
2SC945Q
USB 10.6985MHz
CW 10.6993MHz
LSB 10.7015MHz
FM 10.7000MHz
BM
QT09
ND487RI-3R
MIC AMP
QT11
2SC1842F
MIC AMP
QT12
2SC1842F
QT17
3SK101GR
QT19
2SC2053
QB02
2SC2538
FAINAL
QB06
M57727A
ANT SW
QB08 Mi402
QB09 Mi402
LPF
ANT
KEY
CW SW
QT27
2SA733
CW SW
QT31
2SC945
LOCAL FRED (PLL OUT)
MODE FREQ (MHz)
USB 133.30150~137.30149
CW 133.30150~137.30149
LSB 133.29850~137.29849
FM 133.30000~137.29990
ALC AMP
Q722
2SC536F
ALC DET
QT20,QT21
0A99 x 2
APC SW
QB12
2SC945
APC AMP
QB11
2SC945
CW SW
QT32
2SC945
CW SW
QT33
2SC945
PTT SW
QT34
2SC945
Reg
SW+B
QB05
2SD313
QB04
2SK192AGR
Reg
HI/LOW
LOW
HI
SW TXREG +B


PLL BLOCK
TRACKING
BUFF
Q140
2SK30AY
Q103
TC5082PL
TC5081AP
REF
OSC
1/1024
Q102
P/D
LPF
VCO
Q203
2SK125(4)
BUFF
Q204
2SC535(B)
MIX
Q250
2SK241GR
BPF
AMP
Q251
3SK101GR
AMP
Q252
2SC2348
LPF
Q253
Q254
RX OUT
TX OUT
W: 133.3
~135.29999
MHz
E: 133.3
~137.29999
MHz
10.24MHz
W: 191.22
~193.21MHz
E: 191.22
~195.21MHz
UN LOCK
DET
W: N=600~799
E: N=600~999
1/N
Q101
TC9122P
Q160
2SA733(R)
UN LOCK SW
Q161
2SC945(Q)
Q162
2SC945(Q)
LPF
AMP
Q107
2SC460(B)
AMP
Q106
2SC460(B)
LPF
MIX
Q105
2SC535(B)
BUFF
Q104
2SC535(B)
ROLL OFF
Q301
NJM4558D
1/2b
LIMITTER
Q301
NJM4558D
1/2a
FM MOD
TONE
Q421
2SC535(B)
LOCAL
OSC·3TIMES
61.7400MHz
D/A
Q550
NJM2902(a)
QL02
TMS1025
N2LL
D/A
Q550
NJM2902(b)
D/A
Q550
NJM2902(c)
D/A
Q550
NJM2902(d)
VXO
Q402
2SC460(B)
3TIMES
Q403
2SC460(B)
BPF
57.92000~57.91001MHz
19.3033MHz
μCOM
SHIFT
Q501
NJM4558S
1/2 a
FM Reg
USB/CW Reg
LSB Reg
TX RX SW
Q506
2SC945(Q)
RIT
RIT SW
Q510
2SC945(Q)
RIT SW
Q511
2SC945(Q)
RIT SW

SPECIFICATIONS

1. General Specifications

Transmission frequency	144.00000 – 147.99999MHz (E) 144.00000 – 145.99999MHz (W)
Type of emission	FM (F_3), SSB (A_3J), CW (A_1)
Frequency stability	±300Hz within 1 – 60 minutes after power on 50Hz every 30 minutes
Power supply	13.8VDC
Power consumption	Transmission: HI;3.7A, LOW; 1.5A Reception standby: 450mA
Microphone input impedance	600Ω
Antenna inpedance	50Ω
AF output impedance	4 or 8Ω
Grounding system	Negative
Dimensions	149(W) x 55(H) x 218(D)mm
Weight	1.9kg

2. Reception Specifications

Reception system	FM: Double super heterodyne SSB, CW: Single super heterodyne
Intermediate frequency	FM: 1st IF 10.7MHz 2nd IF 455kHz SSB, CW: 10.7MHz
Sensitivity	FM: -10dB (12dB SINAD) SSB, CW: -12dB (10dB S/N)
Pass bandwidth	FM: ±6kHz, SSB, CW: 2.2kHz
Selectivity (60dB)	FM: 25kHz, SSB, CW: 4.2kHz
Squelch selectivity	-14dB (FM)
AF output	More than 2.0W (into 8 ohoms with 10% THD)

3. Transmission Specifications

Power output	25W/1W
Modulation	FM: Reactance modulation SSB: Balanced modulation
Maximum frequency tolerance	±10ppm x 10^{-6} (-10 - +50°C)
Spurious attenuation	60dB
Carrier suppression	40dB
Undesired side band suppression	40dB
Maximum deviation	±5kHz

These specifications are subject to change without notice in the event of improvements.