

KENWOOD

REMOTE CONTROLLER

RC-10

INSTRUCTION MANUAL

KENWOOD CORPORATION

Thank you for purchasing the new RC-10 Remote Controller.

This unit has been carefully engineered and manufactured to rigid quality standards, and should give you satisfactory and dependable operation for many years.

IMPORTANT:

Please read this Instruction Manual carefully before placing the unit in service.

SAVE THIS INSTRUCTION MANUAL.

Notes:

1. This unit can only be used with the products listed below. If it is connected to any other product, some or all of the functions may not work.

TM-221A/221E/221ES

TM-421A/421E/421ES

2. The alert function will not work when the RC-10 is connected to the TM-221E/221ES/421E/421ES.

3. The squelch is misadjusted. Please refer to sections 4-2. OPERATION and 6-6. ADJUSTMENT.

The following explicit definitions apply in this manual:

Note : If disregarded, inconvenience only, no risk of equipment damage or personal injury.

Caution : Equipment damage may occur, but not personal injury.

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1. BEFORE OPERATION

Safety precautions

Never remove the case unless specified in this Instruction Manual. If the internal parts are touched accidentally, a serious electric shock might occur.



Never touch internal parts.



Notes on installation

Do not place the unit in a place which is exposed to direct sunlight, near a heating appliance, etc.

Choose a location that is relatively free from vibration.



Cleaning

Do not use volatile solvents such as alcohol, paint thinner, gasoline, benzene, etc. to clean the cabinet. Use a silicone cloth or a clean dry cloth.



Silicone cloth Thinner Benzene

2. SPECIFICATIONS AND ACCESSORIES

2-1. SPECIFICATIONS

MODEL SPECIFICATIONS	RC-10
Operating temperature	-10°C to +50°C (14°F to 122°F)
Power requirements	Supply power from the transceiver MIC connector (8 VDC)
Current drain	Less than 100 mA
Dimensions (Projections included, W×H×D mm)	50×80×200 mm (2"×3-5/32"×7-7/8")
Weight	700 g (1.54 lbs)
Microphone impedance	600 ohms
Speaker impedance	8 ohms

Note:

Circuit and ratings are subject to change without notice due to advancement in technology.

2-2. ACCESSORIES

Please unpack the RC-10 carefully, and confirm that the accessories listed below are included in the box. If any of the items is missing contact the dealer where the unit was purchased.

Mounting bracket (Flat type).....	(A13-0652-14)	1 ea.
Mounting bracket (L type)	(A13-0651-13)	1 ea.
Lead with terminals.....	(E30-2104-05).....	1 ea.
Cushion (Small).....	(G13-0689-04).....	2 ea.
Cushion (Large).....	(G13-0696-14).....	1 ea.
Screws.....	(N99-0310-05).....	1 set
SEMS screw.....	.....	4 ea.
Flange nut.....	.....	4 ea.
Self tapping screw.....	.....	4 ea.
Flat washer.....	.....	4 ea.
Screwdriver	(W01-0406-14)	1 ea.
Warranty card (U.S.A. only) .....	.....	1 ea.
Instruction manual.....	(B50-8176-00).....	1 copy

After unpacking

Shipping container:

Save the boxes and packing in the event your unit needs to be transported for remote operation, maintenance, or service.

3. INSTALLATION AND CONNECTIONS

3-1. INSTALLATION

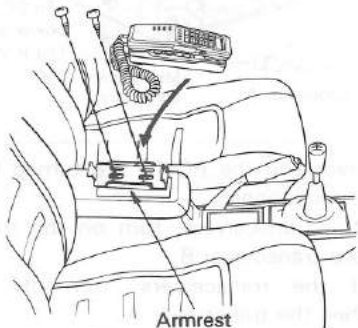
3-1-1. Armrest Installation

Attach the mounting brackets to the armrest using the self tapping screws that have been provided, or with double-sided tape.

Notes: _____

1. Select a position which permits easy operation from the drivers location.
2. The two self tapping screws supplied with the RC-10 are not used.

Secure with the two self tapping screws that have been provided or with double-sided tape.

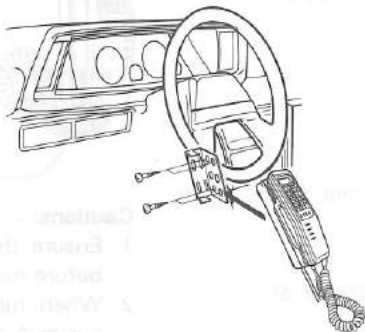


3-1-2. Center Console Installation

Secure the mounting bracket to the console using the four self tapping screws that have been provided. Double-sided tape is not recommended in this instance.

Note: _____

Select a position which permits easy operation from the drivers location.



Secure with the four self tapping screws that have been provided.

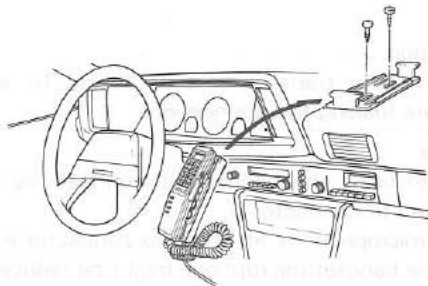
3-1-3. Dash Installation

Secure the mounting bracket to the console using the self tapping screws, or double-sided tape.

Notes: _____

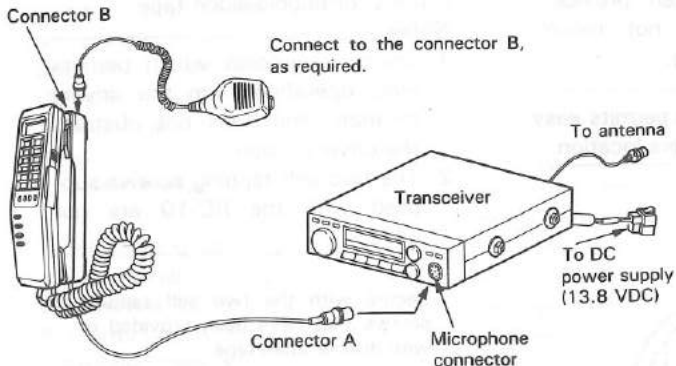
1. Select a position which permits easy operation from the drivers location, and does not obstruct the drivers vision.
2. The two self tapping screws supplied with the RC-10 are not used.

Secure with the two self tapping screws that have been provided or with double-sided tape.



3-2. CONNECTIONS

3-2-1. Single Transceiver



Caution:

Ensure the transceiver and the RC-10 are turned OFF before making the connections.

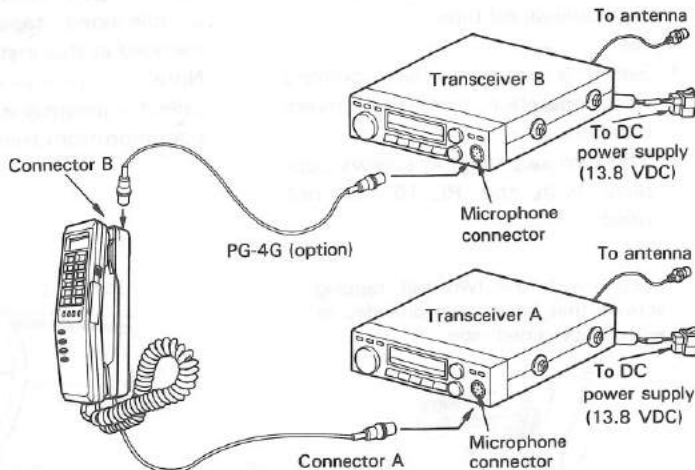
Note:

When using the handset, disconnect the microphone attached to connector B.

If a microphone is attached to connector B, the sensitivity of the handset microphone might be reduced.

3-2-2. Two Transceivers

A. Use the optional PG-4G extension cord for connection to the second transceiver.



Cautions:

1. Ensure the transceiver and the RC-10 are turned OFF before making the connections.
2. When turning on the transceivers, turn on the transceiver A and then the transceiver B.
3. When turning off the transceivers, turn off the transceiver B and then the transceiver A.

B. Connection of the lead (When installing two transceivers in a vehicle)

To reduce the possibility of alternator noise, be sure to connect the supplied ground wire as shown in Fig. 1 or Fig. 2.

Some vehicles are known to generate high noise levels. For this reason, we recommend the use of the optional PG-3B noise filter between each transceiver and the DC power cord.

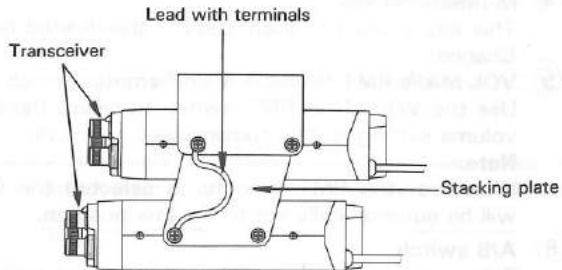


Fig. 1 When stacking plate is used.

Attach the lead to the front holes on the side of the transceivers using the SEMS screws supplied with transceiver.

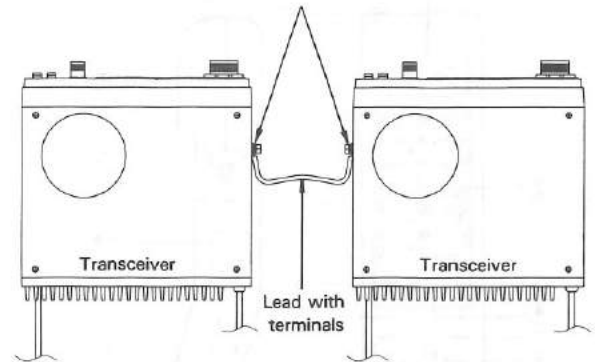
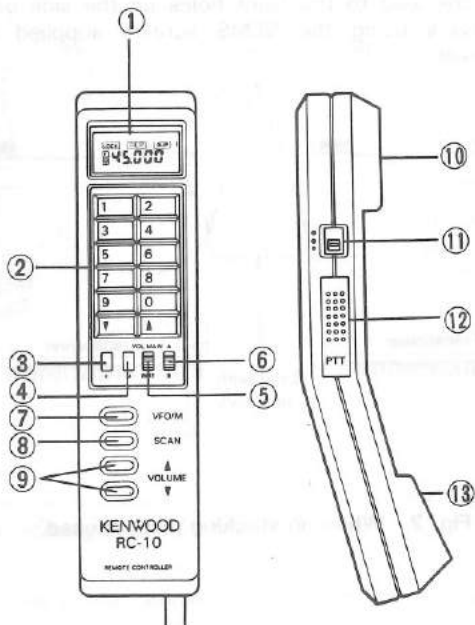


Fig. 2 When no stacking plate is used.

4. OPERATION

4-1. CONTROL FUNCTIONS

4-1-1. Handset



- ① **Display Panel**
The transmit and the receive frequencies, as well as other vital data is displayed here. (See page 8).
- ② **Keyboard**
Use the keyboard to enter the transmit or receive frequencies, to perform memory storage and or recall operations, to change frequency, or to change the Memory Channel. (See page 10).
- ③ **F (Function) key**
This key is used in conjunction with several other keys to select/activate many of the available control functions. (See page 13).
- ④ **M (Memory) key**
This key is used to store data in the desired Memory Channel.
- ⑤ **VOL MAIN/RMT (Volume Main/Remote) switch**
Use the VOL MAIN/RMT switch to select the desired volume setting for the transceiver.
Note: Whenever the RMT function is selected the volume will be automatically set to the low position.
- ⑥ **A/B switch**
This switch is used to select the desired transceiver when two units are attached to the RC-10.
- ⑦ **VFO/M (VFO/Memory Channel) key**
Each time you press the VFO/M key the system will toggle between VFO and Memory Channel operation.
- ⑧ **SCAN key**
Use this key to start or stop scanning.

⑨ **VOLUME keys**

Use these keys to adjust the volume. Pressing the ▲ key increases the volume, pressing the ▼ key decreases the volume.

Note:

Whenever the power switch OFF is selected the volume will be automatically set to the low position.

⑩ **Loud-speaker**

Allows the operator to monitor his own voice and DTMF tones. Pressing the PTT or any key will cause a audible check tone to be generated.

⑪ **Volume selection switch**

Use this switch to select one of three preset volume levels for the handset speaker.

The switch operates independently from the positioning of the transceivers VOL control and the RC-10 VOLUME keys.

⑫ **PTT (Push-To-Talk) switch**

Press this switch to initiate transmit. If you press it while the system is scanning, scan operations will be released.

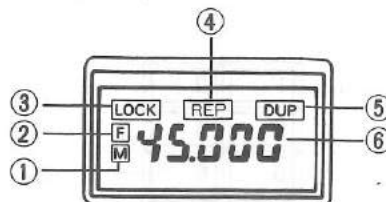
⑬ **Microphone**

Note:

When using the handset, disconnect the microphone attached to connector B.

If a microphone is attached to connector B, the sensitivity of the handset microphone might be reduced.

Display Panel



① **M indicator**

The M indicator is on whenever the memory function has been activated.

② **F indicator**

The F indicator is on whenever the F key has been pressed.

③ **LOCK indicator**

LOCK is displayed whenever the lock function has been activated.

④ **REP (Repeater) indicator (U.S.A. only)**

REP is displayed to indicate crossband repeater.

⑤ **DUP (Duplex) indicator**

DUP is displayed to indicate simultaneous crossband receive and transmit, i.e. receive on 2 m, transmit on 70 cm.

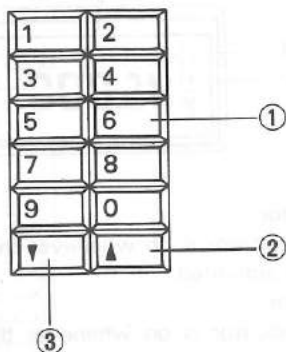
⑥ **Frequency display**

The current transmit/receive frequency is displayed.

Note:

Nothing appears in the 100 MHz column.

Keyboard



① **1 thru 0 keys**

Use these keys to enter the transmit/receive frequency, to select the Memory Channel Number, or as a DTMF keypad.

② **▲ key**

Use this key to increment the transmit/receive frequency or Memory Channel Number.

③ **▼ key**

Use this key to decrease the transmit/receive frequency or Memory Channel Number.

4-1-2. Cradle Assembly

① **Connector B**

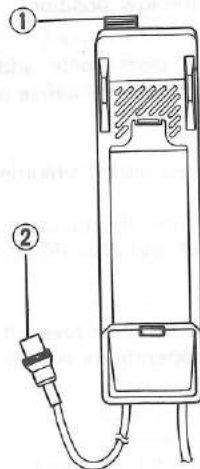
The microphone that was provided with the transceiver, or the MC-55 (8-pin) mobile microphone can be attached to this connector.

This terminal is provided for connection of a second transceiver. The use of the optional PG-4G is recommended for easy connection to the transceiver.

Note:

When using the handset, disconnect the microphone attached to connector B.

If a microphone is attached to connector B, the sensitivity of the handset microphone might be reduced.



② **Connector A**

This cable assembly should be attached to the microphone connector of the transceiver. When two transceivers are to be used in the system transceiver A should be connected to this cable.

4-2. OPERATION

4-2-1. Basic Operations (Single Transceiver)

Notes:

- The following functions cannot be adjusted/programmed from the RC-10, but they can be turned ON or OFF.
SQUELCH
CTCSS Tone Frequency
- Each time the F3 (SHIFT) function is selected the shift (offset) will advance one position, i.e. from "+" to "-" ("—" to "—" with European version) to no offset (simplex).

- Set the transceiver controls and switches as follows:

POWER switch : OFF
DC power supply switch
(Fixed station) : OFF
VOL control : Full counterclockwise
SQL control : Full counterclockwise

- Set the RC-10 controls and switches as follows:

VOL MAIN/RMT switch : MAIN
Volume selection switch : Lowest position

- Turn the transceiver and DC power supply ON. The transceiver and the RC-10 display should indicate a frequency.
- Noise or a signal can be heard from the RC-10 speaker. Select the desired volume level with the volume selection switch.
- Place the VOL MAIN/RMT switch to RMT and adjust the volume with the VOLUME ▲/▼ keys.
- Select an open frequency with the TUNING control on the transceiver.

- Adjust the squelch to the proper threshold point.

On Transceiver: Turn the SQL control on the transceiver until the noise just disappears.

On RC-10 : Refer to 6-6. ADJUSTMENT.

- Select the desired receiver frequency. See sections 4-2-3 and 4-2-4.
- To turn the system OFF, turn both the transceiver and the DC power supply OFF.

4-2-2. Distinguishing the VFO mode from the Memory Channel mode

While it is relatively simple to determine VFO or Memory Channel operation from the display of the transceiver it is also possible to select the desired mode from the RC-10. Pressing the 1 thru 0 keys on the RC-10 will result in the following displays:

VFO mode:

TRANSCEIVER	DISPLAY
TM-221A	X . - - -
TM-221E/ES TM-421A	4X . - - -
TM-421E/ES	3X . - - -

Memory Channel mode: All frequency digits are displayed except for the 100 MHz column.

4-2-3. Direct Frequency Entry

While in the VFO mode you can enter the transmit and the receive frequencies directly from the keyboard.

Note: _____

With the TM-221A

If you enter a frequency directly with the RC-10 when connected to the TM-221A no automatic offset selection will occur.

U.S.A. version:

The lowest frequency that can be programmed into the TM-221A is 138.000 MHz and the highest frequency that can be programmed is 173.995 MHz.

(With the TM-421A, the limits are 438.000 - 449.995 MHz.)

Trying to program a frequency below or above these frequencies will result in the limits described above.

Example 1:

Trying to enter a frequency of 128.125 MHz will result in an operating frequency of 138.125 MHz.

Example 2:

Trying to enter a frequency of 175.050 MHz will result in an operating frequency of 173.050 MHz.

Example 3:

Attempting to use an offset that would exceed the tuning range stated above will result in simplex communications on the displayed receiver frequency.

European version:

The lowest frequency that can be programmed into the

TM-221E/221ES is 144.000 MHz and the highest frequency that can be programmed is 145.995 MHz.

(With the TM-421E/421ES, the limits are 430.000 - 439.995 MHz.)

Example: RC-10 connected to TM-221E/221ES

Press	Display	Result
5	45.---	*1
8	45.8--	
1	45.812.5	*2

Notes:

- *1. If you press any number from 0-4 a 4 will appear in this position. If you press any number from 5-9 a 5 will appear in this position.
- *2. When the 0 thru 9 keys are pushed, the frequencies below 10 kHz are indicated as shown below.

Press	Frequency (kHz)
0	00
1	12.5
2	25
3	37.5
4	37.5

Press	Frequency (kHz)
5	50
6	62.5
7	75
8	87.5
9	87.5

Other version:

The lowest frequency that can be programmed into the TM-221A is 144.000 MHz and the highest frequency that can be programmed is 147.995 MHz.

(With the TM-421A, the limits are 430.000 - 439.995 MHz.)

4-2-4. Increasing/Decreasing the VFO frequency

When operating in the VFO mode you can increase the displayed frequency by pressing the ▲ key, and decrease the displayed frequency by pressing the ▼ key.

4-2-5. Changing Memory Channels

You can increase or decrease the Memory Channel by pressing the ▲ or the ▼ keys. Each time you press one of these keys the Memory Channel Number will increase or decrease by one.

4-2-6. Function Keys

Pressing the 2-9 or 0 keys within five seconds of pressing the F key (i.e. F indicator ON) will cause the following functions to occur:

	TM-221A/421A	TM-221E/221ES/421E/421ES
F and 2	Squelch OFF/ON	
F and 3	Shift Selection	
F and 4	Reverse ON/OFF	
F and 5	Tone ON/OFF	
F and 6	CTCSS ON/OFF	_____
F and 7	Memory Channel Lockout ON/OFF	
F and 8	Key Lock (RC-10 only)	
F and 9	Crossband Repeater ON/OFF (U.S.A. only, see section 4-2-9.)	
F and 0	Duplex operation ON/OFF (See section 4-2-8.)	

When the F and 3 key are pressed, the shift modes cycle from “+” to “-” [“-” to “- -” (European version)] to simplex (no indicator).

Repeat when releasing each function.

4-2-7. Basic Operations (Two Transceivers)

1. Connect the transceivers as shown in figure. (See section 3-2-2)

Cautions:

1. When turning on the transceivers, turn on the transceiver A and then the transceiver B.
2. When turning off the transceivers, turn off the transceiver B and then the transceiver A.
2. Other functions are the same as in sections 4-2-1 thru 4-2-6.
3. You can select which transceiver you wish to use with the A/B switch.

4-2-8. Duplex Operations

When two transceivers are connected, you can transmit and receive crossband simultaneously, i.e. duplex operations.

1. If you press the F key and then the 0 key the DUP indicator will turn ON in the display, as a reminder you are working crossband duplex.
2. The transceiver you select with the A/B switch will be the receiver. When you press the PTT switch, the other transceiver will transmit and the appropriate transmitter frequency will appear in the display.

Note: _____

If you change the A/B switch during transmit the transceiver will unkey.

3. Press the F key and then the O key again to cancel duplex operation. The DUP indicator will turn OFF.

Cautions: _____

1. When turning on the transceivers, turn on the transceiver A and then the transceiver B.
2. When turning off the transceivers, turn off the transceiver B and then the transceiver A.

4-2-9. Crossband Repeater Function (U.S.A. only)

IMPORTANT: _____

When used in this mode you must ensure that all applicable FCC regulations are observed. The sections that pertain to repeater operation are:

- Section 97.85 Specifies excluded frequencies
- Section 97.67 (c) Specifies power output limitations
- Section 97.85 (e) Details requirements for control operator.
- Section 97.86 (d) Concerns Auxiliary operations.

Before operating the transceiver as a repeater you should review these sections.

1. Press the F key and then the 9 key to activate the repeater mode. RPT will appear in the display as a reminder.

2. The transceiver that is not currently receiving a signal becomes the transmitter regardless of the A/B switch setting.
3. The hang up time is set to three seconds, and the timeout timer to three minutes.
4. The PTT switch is disabled when the repeater mode has been activated.
5. You can cancel the repeater mode by pressing the F key and then the 9 key. The RPT indicator will turn OFF.

Cautions: _____

1. When turning on the transceivers, turn on the transceiver A and then the transceiver B.
2. When turning off the transceivers, turn off the transceiver B and then the transceiver A. Do not turn both transceivers OFF or ON at the same time.

4-3. MEMORY

4-3-1. Memory Entry

Note: _____
Memory Channels A thru d cannot be programmed from the RC-10.

1. Ensure the radio is in the VFO mode and then select the desired operating frequency.
2. Press the M key. The M indicator will turn on in the display.
3. Press the numeric keypad that corresponds to the Memory Channel you want the data to be stored in 0 thru 9. You must do this within five seconds of pressing the M key or the operation will not be performed. If you take too long you must repeat steps 2 and 3.

4-3-2. Memory Recall

When operating in the Memory Channel mode you can recall any Memory Channel by simply pressing the corresponding key 0 thru 9.

By pressing the 9 or the 0 key, and then pressing the ▲ or the ▼ keys you can access Memory Channels A thru d.

4-4. REPEATER

4-4-1. With the TM-221A/421A

1. The REV indicator should be OFF before starting repeater operations.
2. Select the desired Tone Frequency at the transceiver.
3. Select the repeater frequency.
4. Select the desired transmitter offset (SHIFT) by pressing the F key and then the 3 key.
5. Turn the TONE ON by pressing the F and then the 5 key.
6. Pressing the PTT switch will initiate transmit.

4-4-2. With the TM-221E/221ES/421E/421ES

In Europe a 1750 Hz tone is used in transmit. To transmit 1750 Hz, press the M key while pressing the PTT switch. In the United Kingdom a 1750 Hz tone burst at the beginning of each transmission is used.

Since use of this tone is required in the Europe and the United Kingdom, an 1750 Hz tone encoder is included as standard equipment.

4-4-3. Autopatch (U.S.A. only)

1. The accompanying chart illustrates the relationship of the numeric keypad when used as a DTMF pad.
2. To use the keypad as a DTMF pad press the PTT switch. The radio will remain keyed for approximately two seconds after each key is pressed so you can release the PTT switch if desired.

KEY	DTMF
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7

KEY	DTMF
8	8
9	9
▲	#
▼	*
VFO/M	A
SCAN	B
VOLUME ▲	C
VOLUME ▼	D

6. MAINTENANCE AND ADJUSTMENT

6-1. GENERAL INFORMATION

This unit has been factory aligned and tested to specification before shipment. Under normal circumstances the unit will operate in accordance with these operating instructions. All adjustable parts were preset at the factory and should only be readjusted by a qualified technician with proper test equipment. Attempting service or alignment without factory authorization can void the warranty. When operated properly, this product will provide many years of service without requiring realignment. The information in this section gives some general service procedures which can be accomplished without sophisticated test equipment.

6-2. SERVICE

Should it ever become necessary to return the equipment to your dealer or service center for repair, pack it in its original box and packing, and include a full description of the problems involved. Also include your telephone number. You need not return accessory items unless directly related to the service problem.

Service note:

Dear OM, if you desire to correspond on a technical or operational problem, please make your note short, complete, and to the point, and PLEASE make it readable.

Please list: Model and Serial Number.

The problem you are having.

Please give sufficient detail to diagnose. Information such as other equipment in the station, meter readings and anything else you feel might be useful in attempting diagnosis.

Caution:

Do not pack the equipment in crushed newspapers for shipment. Extensive damage may result during shipment.

Notes:

1. Record the Date of Purchase, Serial Number and Dealer from whom purchased.
2. For your own information, retain a written record of any maintenance performed on the unit.
3. When claiming warranty service, please include a photocopy of the bill of sale, or other proof of purchase showing the date of sale must accompany the radio.

6-3. CLEANING

The keys and case of the equipment are likely to become soiled after extended use. The keys and case should be cleaned with a neutral soap and warm water. Use a neutral soap (no harsh chemicals) and a damp cloth.

6-4. IN CASE OF DIFFICULTY

SYMPTOM	PROBABLE CAUSE	ACTION
The power switch is turned ON, but nothing appears on the display.	Connector A is not connected to the microphone connector of the transceiver.	Ensure the connector is properly secured.
Two transceivers are connected and the A/B switch is moved, but the LCD does not change.	The power switches of the two transceivers were not turned on in the proper sequence (i. e. transceiver A must be turned on first.)	Turn off both transceivers then turn on transceiver A and then transceiver B.
The volume of your voice monitored through the handset speaker is low.	The volume selection switch is set to the lowest position.	Increase the volume setting.
Can not access to repeater.	Setting of the TONE, SHIFT, REV are wrong. Wrong Tone Frequency is selected.	Refer to Section 4-4.
Simplex communications are desired but pressing the PTT switch results in a transmitter offset.	Operation on a repeater channel has just been completed and the offset was set to "+" or "-", ("-" to "-" with European version).	Select "simplex" by using the F and 3 function unit no offset indicator appears in the display.
Sensitivity of the handset microphone is low.	A microphone is connected to connector B.	Unplug the microphone from connector B.

6-5. ORDERING SPARE PARTS

When ordering replacement or spare parts for your equipment, be sure to specify the following:

Model and serial number of your equipment.

Schematic number of the part.

Printed circuit board number on which the part is located.

Part number and name, if known, and quantity desired.

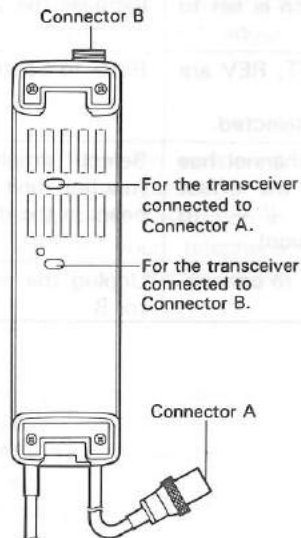
Part numbers for most replacement parts is contained in the service manual (available as an option from your dealer).

6-6. ADJUSTMENT

6-6-1. Squelch Level

The squelch threshold of each transceiver can be independently adjusted from the RC-10.

Insert the supplied screwdriver into the appropriate hole and turn the screwdriver slowly until the noise just disappears.



7. OPTIONAL ACCESSORY

■ PG-4G EXTENSION CORD

Model RC-10

Serial No. _____

Date of Purchase _____

Dealer _____

KENWOOD

KENWOOD CORPORATION

Shionogi Shibuya Building, 17-5, 2-chome Shibuya, Shibuya-ku, Tokyo 150 Japan

KENWOOD U.S.A. CORPORATION

2201 E. Dominguez Street, Long Beach, California 90810 U.S.A.

KENWOOD ELECTRONICS DEUTSCHLAND GMBH

Rembrücker Str. 15, 6056 Heusenstamm, West Germany

KENWOOD ELECTRONICS BENELUX N.V.

Mechelsesteenweg 418 B-1930 Zaventem, Belgium

KENWOOD ELECTRONICS AUSTRALIA PTY. LTD.

(INCORPORATED IN N.S.W.)

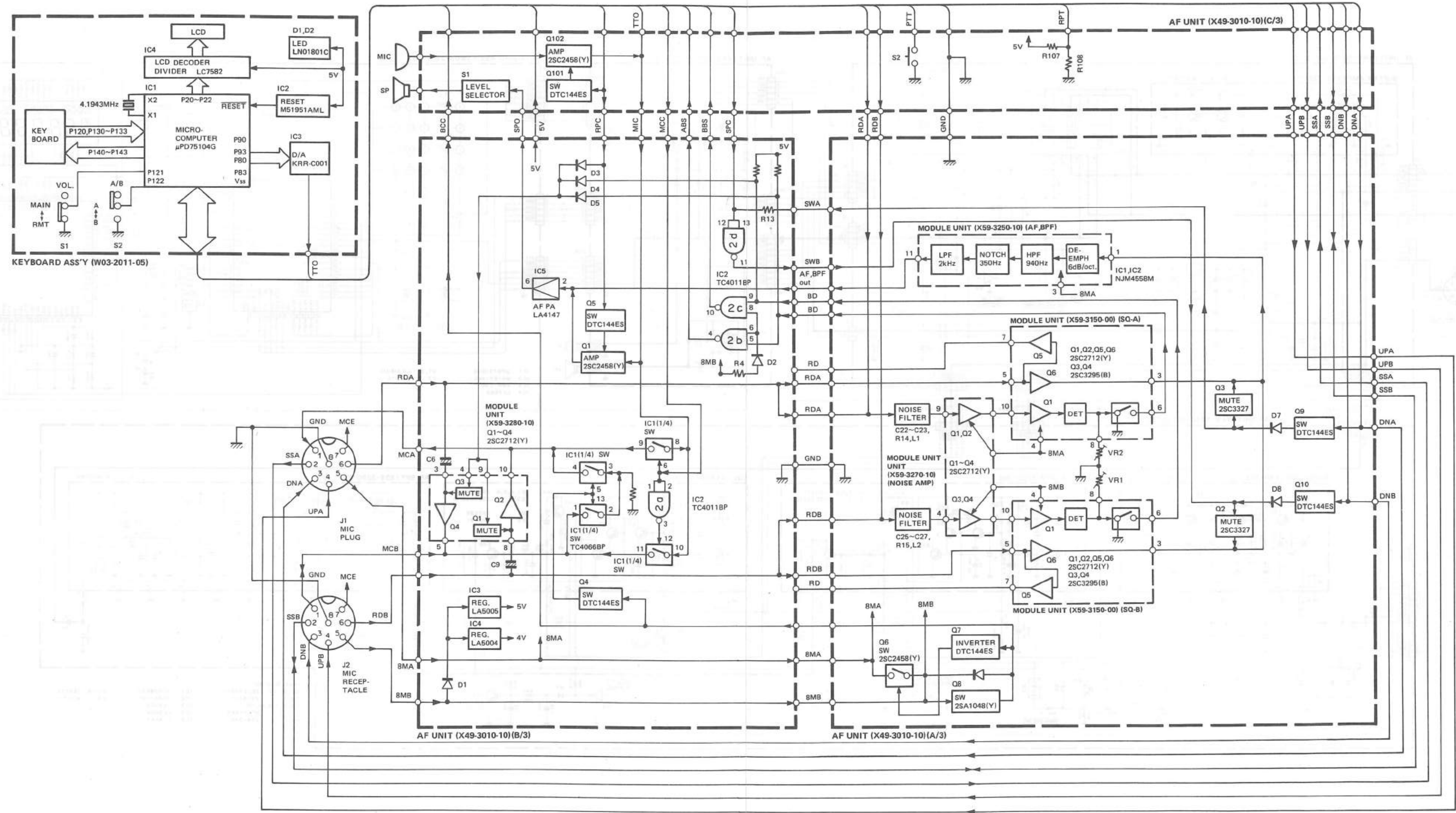
4E. Woodcock Place, Lane Cove, N.S.W. 2066 Australia

KENWOOD

5. BLOCK DIAGRAM AND CIRCUIT DIAGRAM

5-1. BLOCK DIAGRAM

MARQAI0 TIUQI0 5-7



5-2. CIRCUIT DIAGRAM

BLOCK DIAGRAM AND CIRCUIT DIAGRAM
BLOCK DIAGRAM

