MA-144

**MINI HAND HELD TYPE
VHF AMATEUR TRANSCEIVER**

USER'S OPERATION MANUAL

**maycom**

CONTENTS

■ ITEMS SUPPLIED

The items that accompany your radio are listed in the table below. Any damages or shortages should be advised to your supplier.
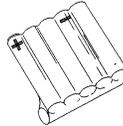
ITEM	MODEL	QTY.
Trickle Charger	DC-072W	1
Battery Charger Adapter	DC-072	1
Rechargeable Battery Pack	NH-725	1
5Cells Battery Holder	BH-175	1
Belt clip		1
Screw set for belt clip		2
Hand Strap		1
Instruction manual		1
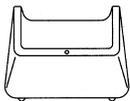
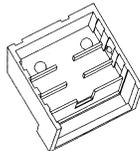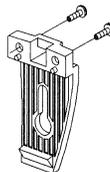(DC-072W)   (DC-072)   (NH-725)

(BH-175)   (Belt Clip &   (Hand Strap)
                    Screw set for belt clip)

(Instruction manual)

4

1. Optional Accessories

Following additional accessories are available through your supplier of the radio.

ITEM	MODEL
Vox Head Microphone	VH-02
External Speaker Microphone	ESM-03
Carrying Case	CC-150
1300 mAh NiMh Battery Pack	NH-7212
Desk Quick Charger	DC-072
Wall Charger	DW-072

Additionally, compatible External Speaker – Microphone with PTT can also be used with the radio.

IMPORTANT NOTE if you intend to use an external Speaker/Mic:

This radio uses a BTL (Bridge Tied Load) Amplifier. If you want to use an External Speaker/MIC for this radio, a 'Ground Divide External Speaker/MIC' should be used.

If you use a common Ground External Speaker/MIC for this radio, the radio may be damaged. Please seek advice from the retailer where you purchased the radio, for the suitability of your External Speaker/MIC.

■ OPTION SETTING MODE

Press and hold "FUNC" button under the condition of Power off, and then turn on the radio. To enter each option setting mode, press "FUNC + ▲ or ▼" button.
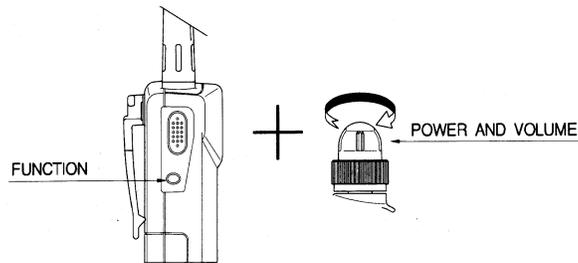
1. Channel Step Option

Press "FUNC" button at the power up the unit will enter into option Setting mode. The first option in the option set mode is Channel step option. This option let the user select from following channel steps 5KHz, 10KHz, 12.5KHz, 15KHz, 20KHz, 25KHz, 50KHz and 1MHz.

Since selecting one of the above channel steps, the unit lets the user go up, down or scan the allocated frequency spectrum in the multiple of the selected channel step.

2. Setting of Busy Channel Lock Out

When a signal is receiving at the radio, this feature is used to prohibit the transmitting.

When there is good signal present at the receive this feature prohibit the unit from transmitting

▶ Display of Operating in Busy Channel Lock Out Setting Mode.

```
bCLO-oF
```

If you press the "▲ or ▼" button in this setting mode, Busy Channel Lock Out will toggle and the changed contents will appear on the LCD.

NOTE : If you press "PTT" button on operating of Busy Channel Lock Out, error message will appear on the LCD and your radio will stay in the receiving mode.

```
BUSY b5Y LOC 01

S-RF 1 ■ 3 ■ 5
```

3. **Setting of TX Delay Option**
   In the CTCSS Tone Squelch option mode, this feature allows to keep transmitting mode in order to prevent Squelch tail when the "PTT" button is released.

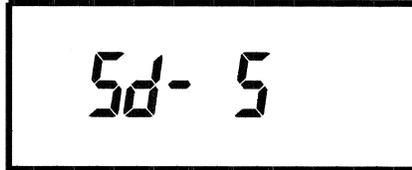   ▶ Display of TX Delay Option Setting Mode.

```
t_dY-on
```

   If you press the "▲ or ▼" button in this setting mode, TX delay option will toggle and the changed contents will appear on the LCD.

4. **SCAN Delay Time**
   This feature allows to stop the scanning for the fixed time when a signal is receiving at the radio during the scanning process after that scanning process will continue.

▶ Display of Operating SCAN Delay Time Mode

```
Sd- 5
```

If you press the "▲ or ▼" button in this setting mode, scan time will delay (or shorten) 1 second per press the button and changed contents will appear on the LCD.

5. Setting of Time-Out-Timer
If transmitting is continued over than fixed time, this feature is used to cut off the transmitting compulsorily.

▶ Display of Operating in Time-Out-Time setting mode.

```
tot-oFF
```

To change the setting time, press the "▲ or ▼" button.

6. Setting of Power Save mode
This feature allows to increase the useful life of your battery significantly.

▶ Display of Operating Power save On/Off setting Mode.

```
PS oFF
```

If you press the "▲ or ▼" button in this setting mode, power save On/Off will toggle on the LCD.

NOTE : In the option setting mode,
- A. If you hold "FUNC" button and then press "▲ or ▼" button, the next (previous) setting mode will appear on the LCD.
- B. If you press the "PTT" button, all changed contents will be stored and the radio will return for normal operation.
- C. Other buttons located on the front of the radio will not operate with the exception of the back-light button. If you press these buttons, error beep tone will sound.

7. Repeater Offset Option

Repeater off set programming for normal channel is done in the option set mode. In the normal receiving mode, press "FUNC + SC" key to either switch repeater offset on or off. However for memory and call channels the repeater off-set can be programmed by pressing "F + SC" button in the respective modes and selecting the appropriate repeater offset value from the selection there. This selection is shown below. From 0.0Hz to 2MHz(in 100KHz step) and 8MHz.

To set repeater off set for normal channels press "FUNC + ▲" button whilst in channel step option to arrive at repeater off set option. Select the appropriate repeater off set value and press "PTT" to store these values or "FUNC + ▲" button to go next option.
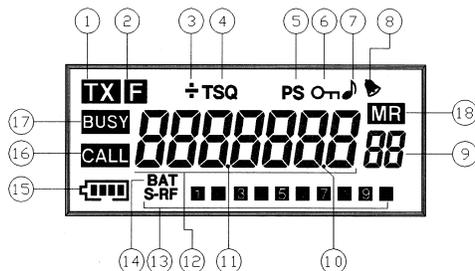
For memory and call channels if the repeater off set is not needed, then please select 0Hz repeater off set to switch the function off.

In the normal receiving mode, press "FUNC + MO" button to select either positive or negative repeater offset.

rPt. 0.0

■ DESCRIPTION OF FEATURES

● *Display Panel Features*

1. TX
Indicates that radio is in the "transmit" mode.

2. Function Mode
Indicates the "FUNC" button has been selected.

3. REPEATER
Indicates that the "REPEATER" feature has been activated.

4. TSQ
Indicates that "Tone Squelch" feature has been activated.

5. PS
Indicates that the radio is in the "Battery Save" mode.

6. Lock
Indicates the "Key Lock" feature has been activated.

7. Beep
Indicates that "Beep" tone confirmation is on.

8. Bell
Indicates that "Bell" feature has been activated.

9. Memory channel Indicator
Display the memorized channel number.

10. d2 (Dot No. 2)
This dot is used to display the "CTCSS" Frequency. (Unit : Hz)

11. d1 (Dot No. 1)
This dot is used to display the RX or TX Frequency. (Unit : MHz)

12. Channel (Frequency) Indicator
Display the channel No. or Frequency No.

13. Signal strength indicator
The radio incorporates a tenth segment incoming signal and power output meter in the LCD. When receiving a signal, the meter will indicate how strong the signal is. A week signal will be indicated by one or two segments, while a very strong signal will have 8 to 10 segments. When transmitting, the letter "TX" will appear on the LCD and 10 segments will appear on the LCD.

14. Battery remainder level meter
If you want see the battery level when you press the "PTT" button, press the monitor button with PTT button.

15. Battery
Indicates batteries are getting low. If the battery level is lower than the standard point, Battery Level Indicator will twinkle.

16. CALL
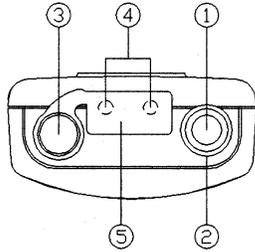Indicates the CTCSS correct call.

17. BUSY
Indicates that RF signal received.

18. Memory Mode
Indicates that the unit is operating in Memory Mode.

● *Top Panel Features*

1. Power On/Off, Volume

Turn the Volume switch clockwise to turn power on and set desired volume. Turn the Volume button counter-clockwise to turn power off.

2. Squelch

This control is to cut off or eliminate receiver background noise in the absence of an incoming signals. For maximum receiver sensitivity, it is desired that the control be adjusted only to the point where the receiver background on ambient background noise is eliminated. The incoming signals that are then received will be stronger that the background noise.

<Power and Volume>

POWER AND VOLUME

<Squelch>

SQUELCH
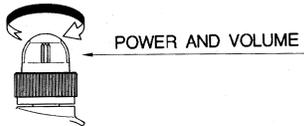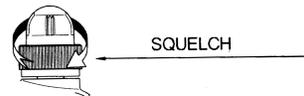
3. Antenna

This antenna provides good performance given it's overall size.
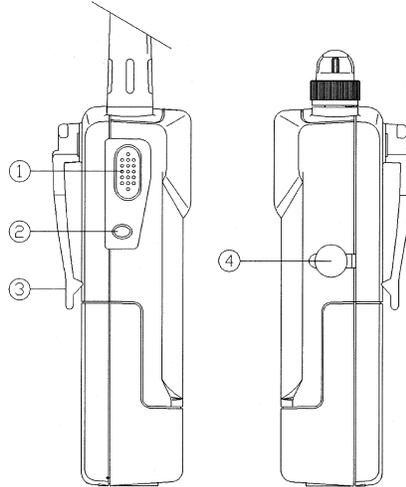
4. Microphone and Speaker Jack

For connection of optional speaker microphone accessory

5. Dust Cover

When Speaker/MIC are not being used, this prevents dirt and moisture from getting inside the radio.

12

● **Side and Back Panel Features**

1. **PTT (Push-To-Talk) Button**
   Press the "PTT" button and the transmitter is activated : you can now send a message. To receive, release the "PTT" button.

2. **Function (FUNC) button**
   This button, when used in conjunction with the buttons in the front panel, allows for access of each function. Press and hold "FUNC" button in normal mode (not memory channel mode and Call channel mode), then two small seven-segments indicates stored memory channel number.
   But, if you do not press "FUNC" button, these segments indicates current transmitting/receiving channel number.
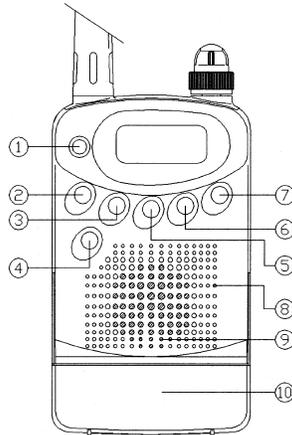
3. **Belt Clip**
   Allows for easy of carrying while attached to users belt.

4. **DC Jack**
   Allows for using external DC Supply (9.0VDC Max.).

● *Front Panel Features*

1. MO, REV

1) MO (Monitor)

Press and hold the "MO (Monitor)" button in the receiving mode, and then the Audio will sound until the "MO" button is released. By pressing the monitor key any good signal can be monitored even when the incoming CTCSS call does not match your own. If the "MO" button is pressed more than one second, R/TX, SCAN Skip, channel step and repeater offset values will appear on the LCD. But, it will not appear on the LCD in the option setting mode.

▶Display of RX Tone.

<in normal mode>   <in memory mode>

▶ Display of TX Tone.

<in normal mode>   <in memory mode>

14

▶ Display of SCAN Skip Condition in Memory mode

TSQ
BUSY **SCSP** **on01**
S-RF ■ ■ ■ ■ ■
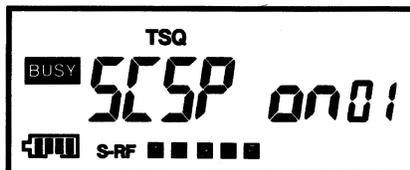
▶ Display of Repeater Information

rPt. 0.0
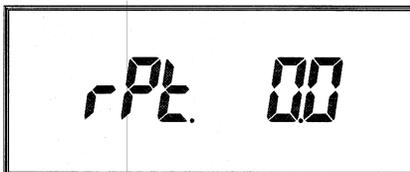
▶ Display of Channel Step

CS 0250

2. Channel Down(▼)/T.SET/Melody Select Button

1) Channel Down(▼) button
   Press the "▼" button to arrow to move to a lower Channel than is currently shown on the LCD.

2) T.SET (Tone On/Off and Select)
   This feature is used to set the parameter for Tone. Press "FUNC +▼ (T.SET)" button in normal mode to select Tone On/Off Option. Whilst in this Option, press up or down key to toggle between Tone On and Off.

15

▶ Display of Tone On/Off

```
              PS    ♪
 tOnE oF 02 MR

 ▭▯ S-RF
```

Press "FUNC + ▼(T.SET)" button again to select CTCSS RX tone Option mode. In this mode, press up/down key to select the CTCSS RX tone.

▶ Display of RX Tone

```
              PS   ♪
 rC    670 MR
                   02

 ▭▯ S-RF
```
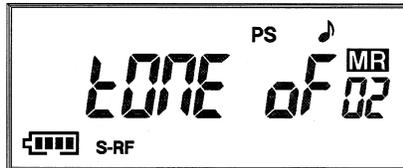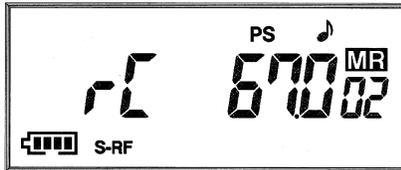
Press "FUNC + ▼(T.SET)" button again to select CTCSS TX tone option mode. In this mode, press up/down key to select CTCSS TX tone.

▶ Display of TX Tone

```
              PS   ♪
 tC    670 MR
                   02

 ▭▯ S-RF
```
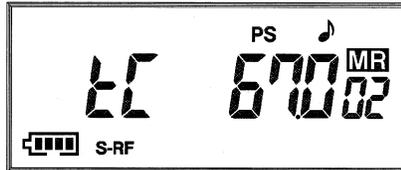
Press PTT key to store all changed parameters. The same procedure should be followed for memory and cal channels when entering the tone on/off and CTCSS parameters.

3. Channel Up(▲), ▶ Button (Frequency Selection by Cursor Function)

1) Channel Up(▲) button
Press the "▲" button to arrow to move to a higher Channel than is currently shown on the LCD.

2) ▶ Button (Frequency Selection by Cursor Function)

Preferred frequency can be directly entered using cursor function in normal, memory and call mode. The preferred frequency however should be within allocated frequency of the transceiver. To enter the frequency directly using cursor function, press "FUNC + ▲" button and the second digit of the frequency display will start to flash. Now press "▲ or ▼" button to change the value. Press "FUNC + ▲" button again to make the third digit to flash and to change the value and so on until you have entered the desired frequencies The same procedure is followed for call and memory channels when selecting the desired frequency.

NOTE : If you have selected a frequency which is above or below the frequency range allowed, the unit will automatically goes to the nearest value.

4. ☼ (Lamp), BP (Beep) Button

1) ☼ (Lamp) Button

Press the "☼" button, the lamp will stay on for four seconds, after which it will turn itself off automatically. If you press another button on the front cabinet when the lamp is on, the lamp will stay on for four second from that time. If you press the "☼" button for more than one second, the lamp will stay on until you press the "☼" button once again.

2) Bell feature

To activate : Press and hold the lamp button and turn the power on. The "🔔" will appear on the LCD. The Bell melody will sound.

To deactivate : Press the "PTT" button. The "🔔" will disappear on the LCD)

3) BP (Beep) Button

This feature gives the user an audible confirmation through a short beep tone that the radio has been turned on. The unit comes with this feature already turned on. If you would like to deactivate this feature, press "FUNC + LAMP (BP)" button. To reactivate the "Beep" feature, repeat the above process. When "Beep" feature is off, the key beep tone and the error beep tone will not sound.

NOTE : Bell Melody has no relation with Beep tone.

4) Melody Call
This feature gives the user an audible confirmation through a short Melody which was set in the Melody Select.
To Activate : Press "PTT + LAMP (BP)" button.

5. MR, MW Button

This transceiver contains 30 memory locations where desired frequencies and associated parameters such as repeater off set and CTCSS tones can be programmed by the user. Desired frequencies can be programmed by two methods.

1) frequency selection by cursor function
2) While in the memory set mode use up or down key select the desired frequency.

With the second method, the up or down key can only increment or decrement the frequency in the multiples of channel step, which was programmed in the option setting mode.
Memory mode is accessed by pressing "MR" till the LCD displays the " **MR** " icon on the right and the memory number underneath it. To change the memory, frequency stored within the memory location, press "FUNC + MR(MW)" button. The " **MR** " icon will start to blink. This is memory set mode. Use the "▲ and ▼" buttons to change the frequency to that required. Whilst in MR set mode, press "SC" button to select Scan Skip function. It allows the user to scan or skip a particular memory channel. Whilst in this Scan Skip function, press "▲ or ▼" button to switch scan skip function on or off. In this mode, press "FUNC + ▼" button to select tone on/off and CTCSS tone for that particular memory channels. For other memory parameters such as repeater offset and CTCSS tones, the procedure is exactly same as for the normal channel mode.

6. SC, RPT Button

1) SC (SCAN) Button
To Activate : Press the "SC" button, not in the TONE Frequency Setting Mode, the radio will start the scanning process and stopping at any channel that is busy with signals being communicated.
It will remain on that channel during scan delay time and reactivate scanning.
- If you want to stop scanning process, simply press the "PTT" button.
- During the scanning process, the skipped channel will not be scanned.
- d1(dot 1) on the LCD will blink per 0.5 second.
- During the Down(Up) scanning process, press the "▼(▲)" button, then scanning direction will be changed to Down (Up) scanning process.
- If a signal is receiving at a certain channel in the CTCSS option mode, the scanning process will not stop if the TONE does not match with the receiving signal.

- If you press the "FUNC" button at stopping channel during the scanning process, this channel will be passed in the next scanning process.

▶ Display of Pass message

```
        PASS
 (IIII) S-RF ▪ ▪ ▪
```

NOTE : The memory channels passed from scanning process is automatically recovered when the radio is switched off and on again.

▶ Display of EMPTY message

```
       TSQ           ♪
       EMPty  03
 (IIII) S-RF ▪ ▪ ▪ ▪
```

If only one channel remains due to the passing of channels from the scanning process, the process will stop and "EMPTY" message will appear on the LCD.

NOTE : Other buttons located on the front of the radio will not operate. If you press these buttons, error beep tone will sound.

2) RPT(Repeater On/Off)
This feature is used to switch the Repeater Offset On/Off, which was set in the option setting mode.
To operate: Press "FUNC + SC(RPT)" button. "+(-)" icon will be On/Off.

▶ Display of Repeater On

```
          ÷
       145025 0
 (IIII) S-RF ▪ ▪ ▪ ▪
```

▶ Display of Repeater Off

```
    145.0250
▯▮▮▮  S-RF  ▮▮▮▮▮
```

7. C, LOCK

Call channel is activated if "C" button is pressed whilst in normal mode or memory mode. The default call channel frequency is 146.520 MHz.
The user can set his own call channel frequency and associated parameters such repeater off set and CTCSS tones.
To set the Call frequency and its associated parameters, press and hold the "C" button more than two second. The MR icon will start to flash indicating that the call frequency and associated parameters are ready to be programmed.
Press "▲ or ▼" button to change the call frequency or by using cursor function described above. The CTCSS tone and other function can be selected in the way as described for memory mode. After entering the parameters, press either "PTT" or "C" button to store the changed parameters.

8. Electric Microphone

Front mounted, electrostatic condenser microphone for clear high quality transmission power. You should hold the radio 2-4 inches from your mouth and speak in a normal voice.

9. Speaker

If there is any unforeseen fault in the microphone connections the unit will switch off power to the audio amplifier and it will display SHORT to indicate short circuit.

10. Battery Case

See "Batteries" for installation instruction.(Page 22)

- TX/RX reverse function (FUNC + PTT)

This function can only be activated in normal receiving mode and when repeater offset is on. If the repeater off set is switched on then the TX frequency is equal to the normal frequency and +/- repeater offset frequency. However, if the repeater offset is off, the RX frequency is equal to the TX frequency. When the repeater offset is on and "FUNC + PTT" button is pressed in normal receiving mode the TX frequency will become RX frequency and RX frequency will become TX frequency.

▶ Display of Repeater On   ▶ Display of Repeater Offset
                                       at 100KHz
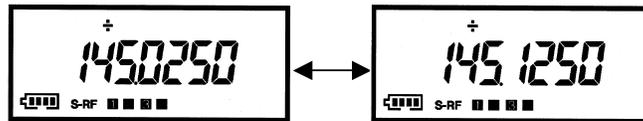
■ INSTALLATION

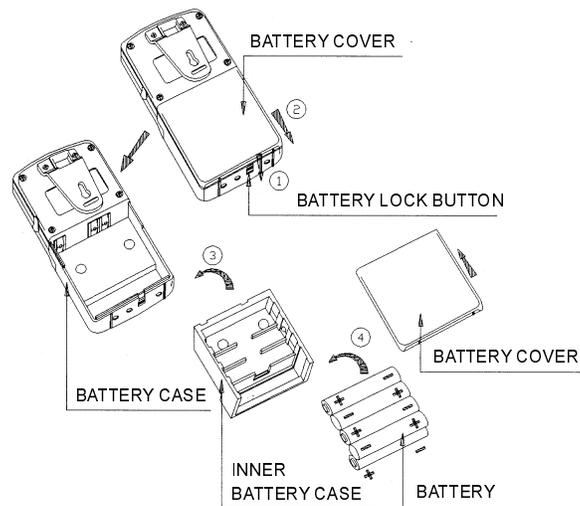### ● *Ni-MH Pack(Rechargeable battery) Installation*

1. Press down the battery lock button on the bottom side of the radio (①)
2. Slide the battery cover to open battery compartment. (②)
3. Extract the inner battery case from the back of the radio. (③)
4. Insert the Ni-MH pack into the battery case. (④)
   (The bottom side of Ni - MH pack should be inserted firstly.)
5. Refit the battery cover back on by sliding upwards (②).
6. Press the battery lock button upward to lock the battery case.

BATTERY COVER

BATTERY LOCK BUTTON

BATERY CASE   Ni-MH PACK   BATTERY COVER
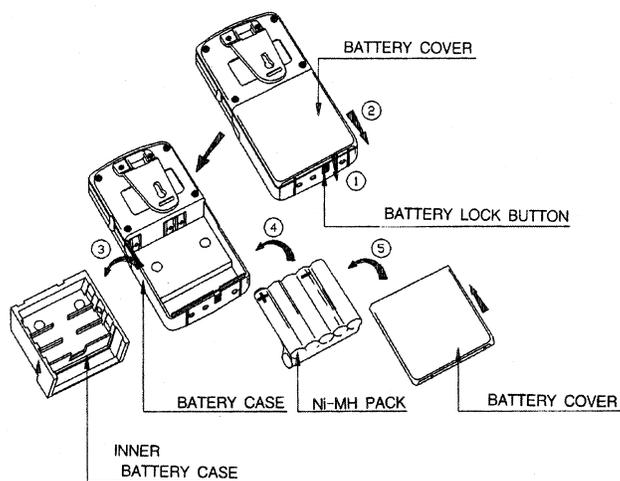
INNER
BATTERY CASE

● Alkaline Battery Installation

1. Press down the battery lock button on the bottom side of the radio (①)
2. Slide the battery cover to open battery compartment (②)
3. Install the inner battery case into the back of the radio, ensuring that it is home properly) (③)
4. Fit the batteries into the inner battery case, observing the polarity of the batteries (④)
5. Refit the battery cover back on by sliding upwards (②), then press the battery lock button upward to lock the battery case shut.

BATTERY COVER

BATTERY LOCK BUTTON

BATTERY COVER

BATTERY CASE

INNER
BATTERY CASE   BATTERY

● Belt Clip Installation
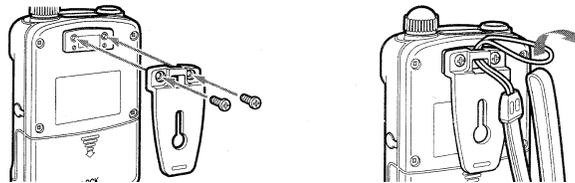
■ CHARGING BATTERY PACK

Warning : Alkaline batteries are NOT suitable for recharging.
Do Not operate charger when alkaline batteries are installed
Any attempt to recharge alkaline batteries in the radio may cause
severe damage, and will make any warranty void.

NOTE : Before using any type of charger with the radio, make sure the
type of batteries installed are Ni-MH only.

● Desktop Charger

The charger supplied with the radio is a trickle charger (DC-072W) which
takes up to 12 hours to fully charge the unit.

1. Place the charger where it is unlikely to be disturbed and plug the cable
   from the adapter into the rear socket as shown.

DC-072W Charger
(Back View)
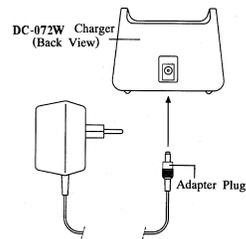
Adapter Plug

2. Plug the AC adapter into the mains AC outlet.
3. Insert the MA-144 unit into the slot of charger.
   When unit is inserted correctly and the power supply is on, the
   charging indicator will light red and charging starts.

LED Lamp

24
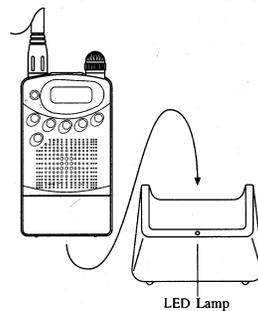
4. The time taken to fully charge the unit with the Desktop Charger is
   approximately 12 hours. Should the unit be left on charge for an
   extended period of time (more than 20 hours), the life of battery
   pack is in danger of being shortened.

   Contact your dealer for an optional Fast Desktop Charger (DC-072)
   to charge batteries in 60 minutes.

● Wall Charger

The Wall Charger accessory is an optional extra for this radio.
NOTE : Only use Wall Charger model DW-072 for this radio.

1. Plug the charger in the mains AC outlet and place the radio where it is
   unlikely to be disturbed.
2. Insert the plug from the charger into the DC jack of the radio, charging
   will begin. Charging takes approximately 12 hours.

3. Remove charger from radio after no more than 30 hours, if the charger
   is connected for much longer than this time, this will result in
   over-charging
   Over-charging batteries will shorten their life span.
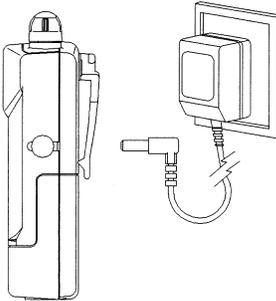
■ TO RECEIVE

If you have just transmitted, then release the "PTT" button. If you have not transmitted, just leave the radio on and receive on your selected channel. If a signal is received for more than 20 milliseconds in the receiving mode, BUSY will appear on the LCD and audible tone will sound. In the CTCSS option, CALL will appear on the LCD and an audible tone will sound after checking the TONE (Correct Call).

■ TO TRANSMIT

Press and Hold the "PTT" button to transmit the signal.

A. If Busy Channel Lock Out Option is on in the receiving mode, Busy Lock Error Message will appear on the LCD and the radio will stay in receiving mode even though you try to transmit the signal.
B. If Time-Out-Time option is on, the continuous transmitting time will be limited by this option.

■ CTCSS TONE TABLE

NO.	FREQ(Hz)	NO.	FREQ(Hz)	NO.	FREQ(Hz)
1	67.0	17	114.8	33	186.2
2	69.3	18	118.8	34	189.9
3	71.9	19	123.0	35	192.8
4	74.4	20	127.3	36	196.6
5	77.0	21	131.8	37	199.5
6	79.7	22	136.5	38	203.5
7	82.5	23	141.3	39	206.5
8	85.4	24	146.2	40	210.7
9	88.5	25	151.4	41	218.1
10	91.5	26	156.7	42	225.7
11	94.8	27	159.8	43	229.1
12	97.4	28	162.2	44	233.6
13	100.0	29	167.9	45	241.8
14	103.5	30	173.8	46	250.3
15	107.2	31	179.9	47	254.1
16	110.9	32	183.5	48	NO TONE

■ SPECIFICATION

1. GENERAL
FREQUENCY COVERAGE

VERSION	RECEIVE	TRANSMIT
EUROPE	144.000-146.000MHz	144.000-146.000MHz
ITALY	136.000-174.000MHz*	144.000-148.000MHz
THAILAND	144.000-146.000MHz	144.000-146.000MHz
U.S.A	118.000-174.000MHz*	144.000-148.000MHz
KOREA	144.000-146.000MHz	144.000-146.000MHz
AUSTRALIA	144.000-148.000MHz	144.000-148.000MHz
ASIA	136.000-174.000MHz*	144.000-148.000MHz

* Guaranteed frequency range is 144-148MHz

FREQUENCY GENERATION ----- PLL SYNTHESIZER
FREQUENCY STABILITY --------- +/- 5ppm
OPERATING TEMPERATURE --- 10℃ TO +55℃
POWER SOURCE ------------------ DC 3.0V TO 9V
MODULATION -----------------------

2. RECEIVER SECTION

J

1 %

@1 %   1   1 Ω

3. TRANSMITTER SECTION

%
. .
....
....