# ALINCO ELECTRONICS INC.

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1-1-1 Mishimae, Takatsuki city, Osaka 569, Japan



VHF FM HANDHELD TRANSCEIVER

DJ-F1T/E/H

DJ-S1T/E DJ-F1TD/ED

DRY CELL PACK UNIT BATTERIES NOT INCLUDED

**UHF FM HANDHELD TRANSCEIVER** 

DJ-F4T/E/H

DJ-S4T/E DJ-F4TD/ED

DRY CELL PACK UNIT BATTERIES NOT INCLUDED

**INSTRUCTION MANUAL** 

**Caution:**Thai version does not have the connector for DTMF unit and DTMF function is not available.





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In this section, the operations using DTMF keys (Standard for F Series, Optional for S Series with ESK-1(B), [DTMF keypad]) are explained. For S Series, Optional DTMF Unit, EJ-10U is also necessary for the functions of 5-10 DSQ (Paging), 5-11 Digital Signal Message and 5-12 Automatic Dialer.

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Thank you for purchasing the "ALINCO" transceiver.

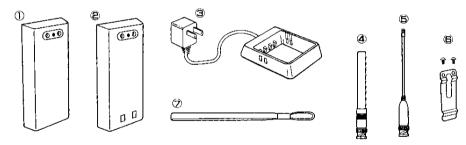
ALINCO radios and other products are ranked as some of the finest in the world. Your transceiver has been manufactured and tested very carefully at the factory and will give you satisfactory operation for many years. We are confident that you will be very satisfied with your choice of this fine ALINCO radio.

# 1. ACCESSORIES



#### 1-1 STANDARD ACCESSORIES

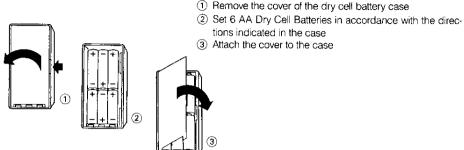
	will find the standard accessories included:
① Dry Cell Battery Case	. <b>EDH-5</b> (DJ-S1T/E, S4T/E, F1TD/ED, F4TD/ED)
© Ni-Cd Battery Pack (7.2V 700mAH)	<b>EBP-16N</b> (DJ-F1T/E, F4T/E Only)
Ni-Cd Battery Pack (12V 600mAH)	<b>EBP-18N</b> (DJ-F1T/H Only)
3 AC Wall Charger	<b>EDC-24</b> (120V, DJ-F1T, F4T Only)
	<b>EDC-25</b> (220V, DJ-F1E, F4E Only)
@ VHF Antenna	<b>EA-17</b> (DJ-F1T/E, S1T/E, F1TD/ED Only)
© UHF Antenna	<b>EA-18</b> (DJ-F4T/E, S4T/E, F4TD/ED Only)
Belt Clip (with Screws)	EBC-3
Hand Strap	



## 1-2 OPTIONAL ACCESSORIES

<ul> <li>Ni-Cd Battery Pack (12V 600mAH)</li> <li>EBP-18</li> <li>AC/DC Quick Charger (1 Hour Type)</li> <li>Mobile DC Power Cable/Charger w/Noise Filter</li> <li>EDC-34 (110V)/EDC-35 (220</li> <li>Mobile DC Power Cable/Charger</li> <li>EDC-4</li> <li>Earphone</li> <li>Earphone</li> <li>Earphone/Microphone w/PTT</li> <li>EME</li> <li>Earphone/Microphone w/PTT/VOX</li> <li>EME-10 (</li> <li>Remote Control Speaker/Microphone</li> <li>Speaker/Microphone</li> <li>Shoulder Belt w/Soft Case</li> <li>Cable for Power Supply at 13.8V</li> <li>EDC-4</li> </ul>	1-2 OF HOMAL ACCESSORIES	
<ul> <li>Ni-Cd Battery Pack (12V 600rnAH)</li> <li>EBP-18</li> <li>AC/DC Quick Charger (1 Hour Type)</li> <li>Mobile DC Power Cable/Charger w/Noise Filter</li> <li>EDC-3</li> <li>Mobile DC Power Cable/Charger</li> <li>Earphone</li> <li>Earphone</li> <li>Earphone/Microphone w/PTT</li> <li>EME</li> <li>Earphone/Microphone w/PTT/VOX</li> <li>Headset w/PTT/VOX</li> <li>Remote Control Speaker/Microphone</li> <li>Speaker/Microphone</li> <li>Shoulder Belt w/Soft Case</li> <li>Cable for Power Supply at 13.8V</li> <li>Soft Case</li> <li>DTMF Encode/Decode Unit</li> <li>Tone Squelch Unit</li> <li>EJ-10</li> <li>EDC-3</li> <li>EJ-10</li> <li>EBP-18</li> <li>ECC-3</li> <li>EDC-1</li> <li>EDC-1</li></ul>	Ni-Cd Battery Pack (7.2V 400mAH, Thin Type)	EBP-14N
<ul> <li>AC/DC Quick Charger (1 Hour Type).</li> <li>Mobile DC Power Cable/Charger w/Noise Filter.</li> <li>EDC-3</li> <li>Mobile DC Power Cable/Charger.</li> <li>Earphone.</li> <li>Earphone.</li> <li>Earphone/Microphone w/PTT</li> <li>EME</li> <li>Earphone/Microphone w/PTT/VOX</li> <li>Headset w/PTT/VOX</li> <li>Remote Control Speaker/Microphone</li> <li>Speaker/Microphone.</li> <li>Shoulder Belt w/Soft Case.</li> <li>Cable for Power Supply at 13.8V</li> <li>Soft Case.</li> <li>DTMF Encode/Decode Unit.</li> <li>Tone Squelch Unit</li> <li>EJ-10U (Built-in for DJ-F1T/E, F4T/F).</li> </ul>		
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<ul> <li>Earphone/Microphone w/PTT/VOX</li> <li>Headset w/PTT/VOX</li> <li>Remote Control Speaker/Microphone</li> <li>Speaker/Microphone</li> <li>Shoulder Belt w/Soft Case</li> <li>Cable for Power Supply at 13.8V</li> <li>Soft Case</li> <li>DTMF Encode/Decode Unit</li> <li>Tone Squelch Unit</li> <li>EMS-2</li> <li>EDC-3</li> <li>ESC-3</li> <li>DTMF Encode/Decode Unit</li> <li>EJ-10U (Built-in for DJ-F1T/E, F4T/F)</li> <li>Tone Squelch Unit</li> <li>EJ-12</li> </ul>		
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<ul> <li>Remote Control Speaker/Microphone</li> <li>Speaker/Microphone</li> <li>Shoulder Belt w/Soft Case</li> <li>Cable for Power Supply at 13.8V</li> <li>Soft Case</li> <li>DTMF Encode/Decode Unit</li> <li>Tone Squelch Unit</li> <li>EJ-10U (Built-in for DJ-F1T/E, F4T/EJ-12)</li> </ul>	Earphone/Microphone w/PTT/VOX	EME-11
<ul> <li>Speaker/Microphone</li> <li>Shoulder Belt w/Soft Case</li> <li>Cable for Power Supply at 13.8V</li> <li>Soft Case</li> <li>DTMF Encode/Decode Unit</li> <li>Tone Squelch Unit</li> <li>EJ-10U (Built-in for DJ-F1T/E, F4T/EJ-12)</li> <li>EJ-12</li> </ul>	Headset w/PTT/VOX	EME-10 (K)
<ul> <li>Shoulder Belt w/Soft Case</li> <li>Cable for Power Supply at 13.8V</li> <li>Soft Case</li> <li>DTMF Encode/Decode Unit</li> <li>Tone Squelch Unit</li> <li>EJ-10U (Built-in for DJ-F1T/E, F4T/</li> <li>Tone Squelch Unit</li> </ul>	Remote Control Speaker/Microphone	EMS-8
Cable for Power Supply at 13.8V     Soft Case     DTMF Encode/Decode Unit     Tone Squelch Unit     EJ-10U (Built-in for DJ-F1T/E, F4T/ ■ Tone Squelch Unit  ■ EJ-12	Speaker/Microphone	EMS-2Z
● Soft Case ESC-  DTMF Encode/Decode Unit EJ-10U (Built-in for DJ-F1T/E, F4T/  Tone Squelch Unit EJ-12		
■ DTMF Encode/Decode Unit		
Tone Squelch Unit     EJ-12	Soft Case	ESC-15
	DTMF Encode/Decode Unit	<b>EJ-10U</b> (Built-in for DJ-F1T/E, F4T/E)
DTMF Key Pad	Tone Squelch Unit	EJ-12U
	DTMF Key Pad	<b>ESK-1</b> (B) (Built-in for DJ-F1T/E, F4T/E)

# 1-3 SETTING DRY CELL BATTERIES TO CASE



#### 1-4 CHARGING Ni-Cd BATTERY PACK

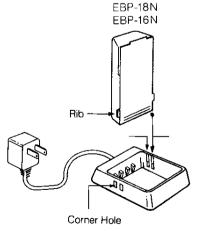
#### Installation

Slide the ribs on both side of the battery pack into the grooves of the charger, then insert it until it is put in the corner holes.

- The required charging time for fully discharged EBP-16N with EDC-24/EDC-25 is about 15 hours.
- Any of EBP-16N, Optional EBP-14N, and EBP-18N can be charged with EDC-24/EDC-25 and can be quick charged with Optional EDC-34/EDC-35.

#### Cautions

- The battery back is not charged when shipped. It must be charged before using.
- Although the battery pack can be charged while it is attached to the main unit, turn off the power of the transceiver while charging.
  - Operating the transceiver while charging will cause a damage.
- Never charge the battery packs of other makes with the charger and never charge the battery pack with the charger of other makes.
- Charging should be conducted in the temperature range of 0°C to 45°C, as incomplete charging or deterioration of battery performance may occur if charged outside this range.
- Do not modify, dismantle, incinerate or immerse the battery pack and the charger in water as this may be dangerous. Be careful not to drop the battery pack and the charger or subject them to any severe shocks.
- Never put a metal object or a wire into the battery pack and the charger and never short-circuit their terminals, as they may cause damage to the equipment or lead to heating of the battery which may cause burns.



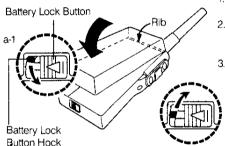
Note:

EDC-24/EDC-25



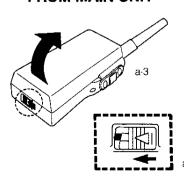
- 7. Unnecessarily prolonged charging (overcharging) may result in deterioration of battery performance.
- 8. The battery pack should be stored in a dry place with a temperature range of -20°C to +45°C. Temperatures outside this range or extremely high levels of humidity may lead to leaking of the battery liquid or resting of the metal components of the batteries.
- 9. Never charge the battery pack under the direct rays of the sun, near heater, or in a dusty or humid environment.
- 10. Normally the battery pack can be charged up to 300 times. However, the battery pack can be considered to be exhausted if the period of use drops off markedly despite being charged for the aforementioned time. When this happens, a new pack should be used.

## 1-5 ATTACHING BATTERY PACK AND DRY CELL BATTERY CASE TO MAIN UNIT



- 1. Unlock the Battery Lock Button Hock as indicated in fig. a-1.
- 2. Put the rib of the battery pack or the case into the grooves of the main unit and attach the pack or case as indicated by
- 3. Lock the Battery Lock Button Hock as indicated in fig. a-2.

# 1-6 REMOVING BATTERY PACK AND DRY CELL BATTERY CASE **FROM MAIN UNIT**



- 1. Unlock the Battery Lock Button Hock as indicated in the above fig. a-1.
- 2. Slide the Battery Lock Button as indicated in fig. a-4 and hold, then remove the pack or the case as indicated by the arrow in fig. a-3.

# 2. SPECIFICATIONS

#### **■ GENERAL**

Frequency Coverage F1T, S1T & F1TD: TX: 144.000-147.995 MHz

RX: 138.000-173.995 MHz

(AM Mode 118 - 136 MHz after Modification)

F1E, S1E & F1ED: TX: 144.000-145.995 MHz

BX: 144 000-145 995 MHz

F4T, S4T & F4TD: TX: 440.000-449.995 MHz RX: 410.000-470.000 MHz

F4E, S4E & F4ED: TX: 430.000-440.000 MHz

RX: 430.000-440.000 MHz

Memory Channel

40 Channels +1 Call Channel Channel Steps 5, 10, 12.5, 15, 20, and 25 kHz Standard Shift Frequency F1T/E & S1T/E: 600 kHz

F4T & S4T: 5 MHz F4E & S4E: 7.6 MHz

(Resettable by 5 kHz [Minimum] between 0 and 15.995 MHz)

F3E (FM) **Emission Type** Antenna Impedance 150 Ω nominal **Operating Voltage** rated 9V Microphone Impedance Speaker Impedance 2 kΩ nominal 8 Ω nominal

Dimensions

110 (H) × 53 (W) × 37 (D) mm (4.3 × 2.1 × 1.5 inch) / with Battery Pack EBP-16N or Dry Cell Battery Case

without Projections
F1T/E & F4T/E Approx. 375 g (13.2 oz) with Battery Pack EBP-16N Weight

Approx. 415 g (14.6 oz) with Battery Pack EBP-18N S1T/E & S4T/E Approx. 370 g (13 oz) with Dry Cell Battery Case

Ground Negative

#### **■ TRANSMITTER**

**Output Power** with Battery Pack FBP-16N

Hi	Mid	Low
2 W (F1T/E & S1T/E) 1.5 W (F4T/E & S4T/E)	1 W	0.1 W

#### with Battery Pack EBP-18N or at 13V

Hi	Mid	Low
5 W	1 W	0.1 W

#### with Dry Cell Battery Pack at 9V

Hi	Mid	Low
2.5 W (F1T/E & S1T/E) 2 W (F4T/E & S4T/E)	1 W	0.1 W

**Modulation System** Max. Freq. Deviation Spurious Emission Microphone

Variable Reactance Frequency Modulation ±5 kHz

Less than 60 dB below carrier

Built-in Electret Condenser

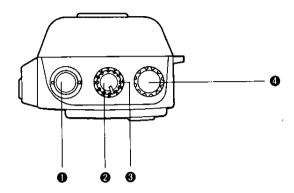
#### **■** RECEIVER

Receiving System Sensitivity Intermediate Frequencies Double-conversion superheterodyne 12 dB SINAD less than - 15 dBu

1st 23.05 MHz 2nd 455 kHz

# 3. CONTROL FUNCTIONS

#### 3-1 TOP VIEW



**1** BNC Antenna Connector

**2** ON/OFF Volume Control

Squeich Control

Dial

Attach 50 Ohms antenna to this connector.

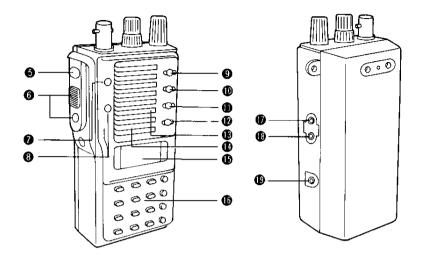
In the fully counterclockwise position, Power is OFF. Rotate clockwise to turn on Power and increase audio.

When no signal is present in the receive mode, adjust this squelch control clockwise until back ground noise just disappears.

This dial is used to change frequency by channel step in VFO mode. It can also be used to change memory number in Memory mode.

When the radio is in Dial Control Reversed Mode, the dial is used to change frequency in Memory mode (Flashing "M" mode) and memory number in VFO mode.

# 3-2 FRONT, BACK, AND SIDE VIEW



5 Function F Key

This key is used to access all secondary functions (printed in blue).

Press the F | Key and hold, then press the desired command key. Also this key is used to reset the unit. (See 4-20 Reset)

6 PTT (Press to Talk)

Press this button for transmission and speak into the microphone.

Note: On the DJ-F1E, F4E, S1E, and S4E, the lower button transmitts a Tone Burst, the upper button is the PTT (See 4-21 Tone Burst).

On the DJ-F1T, F4T, S1T, S4T, either button activates PTT.

LAMP Key

Press this key; The LCD read out will be lit for 5 seconds. Press and hold the F key and press the key. The LCD read out will be lit until the key is pressed again.

**3** MONI, BS Key

- Press this key to disengage squelch. Release the key to reengage squelch.
- 2. Press and hold the F key then press S key for Battery Save function (See 4-18 Automatic Battery Save.)

CALL, SET Key

Press this key to put the radio in the CALL Channel mode. "  $\xi$  " will appear on the LCD. Press the key again and the unit will return to VFO or Memory mode. To cancel the CALL mode, press the  $\overset{\text{CALL}}{\longrightarrow}$  key or the  $\overset{\text{VAL}}{\longrightarrow}$  key. Press and hold the |F| key and press the  $\overset{\text{CALL}}{\longrightarrow}$  key to put the unit in SET MODE. (See 4-3 (3) Set Modes).

**10** V/M, MW Key

Press the  $\begin{tabular}{ll} \begin{tabular}{ll} \begin{tabular}$ 

**1** SCAN, STEP Key

Press this key to start SCAN function. There are two basic functions (1) Memory Scan, and (2) VFO Scan. VFO Scan includes BAND & PROGRAM scanning capabilities.

Press and hold the F key then press the STEP O key (This function will work in any mode: Memory, VFO or CALL, it will not work in any scan mode.) to select a Channel step.

PO, FL/PL (Frequency Lock/PTT Lock) Key

This key is to change transmission power. There are three steps of transmission power (High/Mid/Lo).

Press and hold the Flkey and the Flag key. The will appear on the LCD. In this function the PTT, the and the keys are acceptable.

No other keys are acceptable.

Press and hold the F key and press the con key again. Then the PL will appear on the LCD. The PTT key will not accepted. All keys are acceptable to operate except the PTT.

To release this function, take the same procedures as above.

Speaker

Microphone

An electret condenser microphone is built-in. Speak into the microphone at a distance of approx. "5" when transmitting.

(B) LCD

(6) 16 Key front touch pad (Standard for DJ-F1T/E and F4T/E, Optional for DJ-S1T/E and S4T/E).

Speaker Jack

This jack is for an External Speaker.

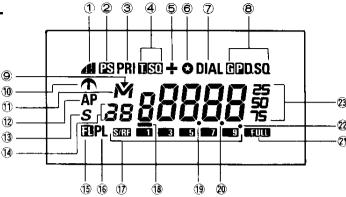
MIC Jack

This jack is for an extension microphone. ALINCO's optional accessories (EME-4, EME-11, EMS-2Z or EMS-8) are recommended.

DC IN Jack

This jack is for accessing the outside 13.8 V power source. ALINCO's optional accessories (EDC-36, EDC-37 or EDC-43) are recommended.

# 3-3 LCD PANEL



1) RF Power Indicator

Power level is indicated by 3 bars on the LCD panel.

2 PS (Program Scan)

The will appear on the LCD when the program scanning is activated.

3 PRI (Priority)

The **PRI** will appear on the LCD when the Priority function is activated. (Optional for DJ-S1T/E, S4T/E)

**4** T. SQ

The will appear when the unit is in Tone Encoder (Optional for E version) setting mode. The SQ will appear when the unit is in Tone Squelch (Optional for all models) setting mode.

" 📫 " or " 🕳 " appears to indicate shift direction

(5) " +/- "
(Transmit Shift)

when transmitting at an offset frequency.

⑥ " ♥ " (Split indicator)

Lights when split function is active.

7) DIAL

Press and hold the [F] key then press the pres

**8 DSQ (DTMF Squeich)** 

Press the Press

MEMORY Skip

Press and hold the F key, then press the key.

"will appear above the M (Memory) during memory scan. The memory number with will be skipped (Optional function for S Series).

# ① Timed Scan Indicator

When it is on, the Timed Scan is activated. When it is off, the Busy Scan will be activated.

# ① V/M (VFO/Memory)

Press the LCD. V indicates that the unit is in the VFO mode and M indicates that the unit is in the VFO mode and M indicates that the unit is in the memory mode. Flashing M indicates that a frequency is not stored in the memory number yet.

# ① AP (Automatic Power Off) Indicatos

Press and hold the F key then press the AP will appear on the LCD. The unit will automatically shut off its power after pre-programmed time (See 5-13 AP function) (Optional function for S Series).

# 13 S (Battery Save)

The " **S** " will appear when Battery Save function is activated.

# (4) Memory Number

This unit has 40 memory capacity (0 through 39), and one Call channel. When the Call channel is activated, memory channel number will be replaced by "  $\Gamma$ ".

# (5) FL (Frequency Lock)

The " im " will appear when the Frequency Lock function is activated.

# 16 PL (PTT Lock)

The "  $\$  **PL** " will appear when the PTT Lock function is activated.

# ① S/RF (Signal/Radio Frequency)

Indicates signal strength during receiving, and the RF level during transmission.

# 18 " — " (Digital Signal Message)

The" — "symbol will appear when Digital Signal Messages are stored.

# (19) Frequency Decimal Point

When receive, transmit or offset frequency is displayed on the LCD the decimal point divides MHz and kHz.

The decimal point will flash when the unit is in the SCAN mode.

## 20 Tone Frequency Decimal Point

When Tone frequencies are displayed the decimal point divides Hz and 0.1 Hz. When Channel Steps are displayed the decimal point divides kHz and 0.1 kHz.

## 21) Full

This symbol will appear whenever either received signal or transmitter power output are at their maximum.

# ② "· · " (Unlock Dot)

when a display frequency is unlocked, this dot will be displayed on the LCD.

# 23 Frequency

Receive and transmit frequencies, offset and tone frequencies, channel steps, DSQ codes and dialer memory numbers are displayed in this area depending on the selected mode.

#### 3-4 FUNCTIONS OF KEYS

#### 1. Standard Functions

Keys		Without Pressing the F key	With Pressing the F key
ON/OFF Volume Control		ON/OFF of the Power	Reset Function
PTT	Upper	Transmitting	Automatic Dialer Function
Lower		Transmitting (DJ-F1T, F4T, S1T, S4T) Transmitting 1,750 Hz Tone (DJ-F1E, F4E, S1E, S4E)  Transmitting 1,750 Hz Tone (DJ-F1E, F4E, S1E, S4E)	Automatic Dialer Function (DJ-F1T, F4T, S1T, S4T) Transmitting 1,750 Hz Tone (DJ-F1E, F4E, S1E, S4E)
Dial		UP/DOWN of Frequency by Channel Step     Selection of Memory Channel	UP/DOWN of Frequency by 1 MHz
LAMP		ON/Automatic OFF of Lamp	ON/OFF of Lamp
MON	BS	One Touch Squelch Deactivation	ON/OFF of Battery Save Function
CALL SET		Retrieving of CALL Frequency	ON/OFF of SET MODE
V/M	MW	Selection of VFO Frequency and Memory Frequency	Writing VFO Frequency into Memory Channel     Lock Function of Memory and CALL Frequency
SCAN	I STEP	Memory Scan and Program Scan Function	Selection of Channel Step
PO FL/PL Selection of Output Power		Selection of Output Power	ON/OFF of Frequency Lock Function and PTT Lock Function

# 2. Functions in SET MODE (After pressing F + CALL SET O)

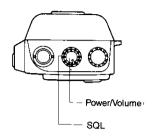
Keys		Without Pressing the F key	With Pressing the F key
LAMP		ON/OFF of Beeper	Setting of Programmable VFO Range
MONI	BS	Selection of Busy Scan and Timed Scan	
CALL S	SET		OFF of SET MODE
V/M	٧W	OFF of SET MODE	Memory Shift Function
SCAN STEP		Setting of Shift direction, Split frequency, and Offset Frequency	Dial Control Reverse Function
PO FL/PL		Setting of Tone Encoder (Optional for E version) and Tone Squelch (Optional) Functions	
Optional for	1	Frequency Programming from 1 MHz	
S Series	2	Selection of Interval between Pressing PTT and Transmitting of DTMF Code	
	3	Transmitting of DTMF Code C when PTT is released	

## 3. DTMF Keys (Optional for S Series)

	Keys	Without Pressing the F key	With Pressing the F key
1	SHIFT	Entering of 1	Setting of Shift direction and Split
2	OFF SET	Entering of 2	Setting of Offset frequency
3	REV	Entering of 3	Reverse Function
4	TONE	Entering of 4	Setting of Tone frequency
5	SKIP	Entering of 5	ON/OFF of Skip function in Memory Scan
6	T. SQ	Entering of 6	Setting of Tone Encoder/Tone Squelch
7	BEEP	Entering of 7	ON/OFF of Beeper
8	TMS	Entering of 8	Selection of Busy Scan and Timed Scan
9	APO	Entering of 9	ON/OFF of Automatic Power Off
0	DCHG	Entering of 0	Dial Control Reverse Function
<b>*</b> #	100▲	UP of Frequency by Channel Step (SCAN Start) UP of Memory Channel No. Entering of # (DTMF Code)	• UP of Frequency by 100 kHz
<b>▼</b> ×	100 ▼	DOWN of Frequency by Channel Step (SCAN Start) DOWN of Memory Channel No. Entering of * (DTMF Code)	DOWN of Frequency by 100 kHz
PRI A	DIAL M	Priority Function Entering of A (DTMF Code)	Setting of Dial No.
В	DSQ SET	Entering of B (DTMF Code)	Setting of DSQ Code
CLR C	M→V	Returning to the former Frequency     Entering of C (DTMF Code)	Cancellation of Code in Automatic Dialer Function     Memory Shift Function
G P D	DSQ MESS	Setting of DSQ Mode     Entering of D (DTMF Code)	Display of Digital Signal Message

# 4. OPERATION I

# 4-1 RECEIVING



- 1. Turn on Power with the volume control.
- 2. Adjust the volume control to desired level.
- 3. Adjust the SQL control until white noise is off.
- 4. Select desired frequency (See 4-4 Frequency Selection). When a signal is received, the "SEE" "signal level bar will appear, and the voice will be heard.

# 4-2 TRANSMITTING (1) Transmitting Procedure

- Select the desired frequency (See 4-4 Frequency Selection).
- Press the PTT key to set a transmitting mode. " State " will appear on the LCD.
- Holding the PTT key, talk to the microphone. (Approx. 5" distance)
- 4. Release the PTT key to resume a receiving mode.

Note: If the PTT key is pressed outside the TX frequency range, " off " will appear on the LCD and you can not transmit.

## (2) Transmitter Power Output Selection



LOW POWER



MID POWER



HIGH POWER

- MID power is the factory setting. Or MID power will appear after the radio is reset.
- 2. Press the PO key once to get LOW power.
- 3. Press the PO key twice to get HIGH power.
- 4. Press the FLPI O key three times to return to MID power.

Note: If the temperature of the unit goes up, the output power will be lower to protect the unit. (F4T/E)

## 4-3 OPERATIONAL MODES

## (1) Operational Modes

1. VFO Mode

×145.00

Operating frequencies key settings, and functions are selected, and Band Scan, Program Scan and VFO Priority are activated in the VFO mode.

2. Memory Mode

M :45.00

3. Call Mode

c 145.00

The Call Channels can be activated in this mode. There are two types of mode; steady " [ " on the LCD, and flashing " [ " on the LCD. You can activate the Call Priority in this mode. You can also activate the Band Scan in the flashing " [ " mode.

4. Steady Mode

M145.00

It indicates that the frequency shown on the LCD has been written into the Memory Channel and the frequency is locked. Holding the F key, press the key to set the flashing mode.

c 145.00

5. Flashing Mode



In the flashing light mode, the frequency in the Memory Channel can be changed. Band Scan can be selected in the flashing mode as in the VFO mode. Holding the F key, press the Company were considered to the steady mode.

ુદ્ધા**45.00** 

(2) Selection of Operational Modes

- 1. Press the key in VFO mode to get Memory mode.
- 2. Press the set O either in VFO mode or in Memory mode to get Call mode.
- Press the could be set to resume VFO mode or Memory mode.
- Press the <sup>™</sup> key to resume VFO mode or Memory mode.
- 5. Press the key in Memory mode to get VFO mode.

## (3) Set Modes

- The third function (Without pressing the F key) and the fourth function (With pressing the F key) of each key can be activated in this mode. Those functions are not printed on the keys (See 3-4-2. Function in Set Mode).
- Holding the F key, press the set O key. A beep sound will be heard to indicate that the unit is in Set mode. The Set mode is released by the same process.

## 4-4 FREQUENCY SELECTION

**Initial Settings** 

Initial factory channel step settings are 5 kHz for T version and 12.5 kHz for E version.

**Tunig Dial** 

Rotating the tunig dial clockwise increases the frequency one channel step for each click. Counterclockwise rotation decreases the frequency one channel step for each click. If the F key is pressed and held, frequency will increase or decrease by 1 MHz depending on direction of duning dial rotation.

## 4-5 CALL CHANNEL

The transceiver has one Call Channel which is immediately accesible by pressing the set O key. An often-used frequency of interest, such as a preffered local repeater, is usually programmed into the Call Channel.

The initial factory Call Channel settings are 145,000 MHz for F1T/E and S1T/E, 445,000 MHz for F4T and S4T, and 433,000 MHz for F4E and S4E.

- (1) Accessing the Call Channel
- Press the set O key. " [ " will appear on the LCD and the Call Channel will be accessed.
- 2. Press the san key again or the www key to return to the previous frequency and mode.
- (2) Changing the frequency in the Call Channel
- 1. Press the set to retrieve the Call Channel.
- 2. Press and hold the [F] key, and press the SWO key. A beep sound will be heard and " ☐ " starts flashing.
- 3. Enter a desired frequency.
- 4. Press and hold the F key, press the SMO key.
- A beep sound will be heard again and " [ " stops flashing.
- The frequency is now stored in the Call Channel and the radio is now in the CALL mode.

## 4-6 MEMORY

The transceiver has a total of 40 memories. The initial factory Memory Channel settings are 145.000 MHz for F1T/E and S1T/E, 445.000 MHz for F4T and S4T, and 433.000 MHz for F4E and S4E, for all memory channels.

(1) Accessing the Memory Channel

M :45.00

- Press the WW O key to get Memory Mode. Flashing " M " or Steady " M " will be appeared.
- The tuning dial may be used to select a Memory Channel number in the Memory Mode.

2. Using the tuning dial, select a desired Memory Channel

4. Enter a desired frequency to be memorized into the VFO.

5. Press and hold the F key, then press the " O key. A

6. Set the radio in Memory Mode by pressing the " Nev." M " will appear on the LCD and

beep sound will be heard. The VFO frequency is now

Return to VFO Mode by pressing the ₩ ○ key.

1. Press the Control key to get Memory Mode.

stored in the selected Memory Channel.

the frequency is stored.

(2) Entering a frequency into a Memory Channel

÷₩145.00

Memory Mode

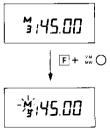
¥:46.00

VFO Mode

¥ :46.00

Memory Mode

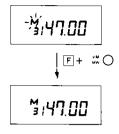
(3) Changing a Memory Channel Frequency



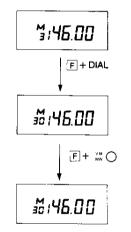
Reverse the function of the dial

DIAL

- 1. Press the Key to put the radio in Memory Mode.
- 2. Select the Memory Channel number to be changed.
- 3. When " M " is flashing, skip to step 5.
- Press and hold the | F| key, then press the beep sound will be heard, and " M " will start flashing.
- Reverse the function of the dial (See 4-14 or 5-15 Dial Control Reverse Function).
- 6. Select a frequency to be memorized by rotating the dial.
- Press and hold the F key, then press the WO key. A beep sound will be heard and "M" will be steady.
   The VFO frequency is stored now.



(4) Copying data in a Memory Channel to the other Memory Channel



- 1. Retrieve the Memory Channel whose data will be copied.
- Press and hold the F key, then rotate the dial to select a
  desired Memory Number to be memorized the data.
   Only the Memory Number changes. Do not release the F key.

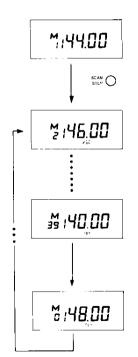
- (5) What can be stored in Memory
- 1. Frequency
- 2. Shift (offset) direction: plus (+), minus (-) or split selection.
- 3. Subaudible tone encoder, tone squelch selection.
- 4. DSQ
- 5. Subaudible tone frequency
- 6. Shift (offset) frequency

All these functions can be stored in any Memory Channel. Desired functions are entered into memory along with frequency when a Memory Channel number has been selected and the radio is in VFO mode before the

# 4-7 SCANNING

(1) Band Scan

## (2) Scans Memory (2) Memory Scan



## (3) Scanning Mode Busy Scan

Scans all frequency in a band

- Press the ssp O key. The frequency decimal point will flash indicating that scanning starts.
- 2. When a signal is received scanning will stop and remain on that frequency.
- To resume scanning rotate the tuning dial clockwise to start upward scan, counterclockwise to start downward scan.
- 4. To stop scanning press either the scan key, the will key, or the PTT key.

Scans Memory Channels

Memory Scan can be used in Memory Mode, and the Memory Channel will be skipped when " M " is flashing.

- 1. Press the 💥 🔾 key to put the radio in Memory Mode.
- Press the sem or key. The frequency decimal point will flash indicating that scanning starts.
- 3. When a signal is received scanning will stop and remain on that Memory Channel.
- To resume scanning rotate the tuning dial clockwise to start upward memory scan, counterclockwise to start downward memory scan.

When a signal is received scanning stops and remains on the busy channel. Two seconds after the signal ceases scanning resumes.

(The initial factory scanning setting is the Busy Scan).

#### **Timed Scan**

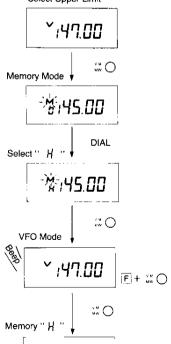
#### Selecting a Scanning Mode



## (4) Program Scan

#### **Setting Scanning Limits**

Select Upper Limit



Scanning stops on a Busy Channel. Scanning resumes five seconds later even if the channel remains busy. Scanning also resumes when the signal ceases.

- Press and hold the F key, then press the set O key. A beep indicates that the unit is in the Set Mode.
- Press the "ow O key once. The " T will appear on the LCD. The unit will scan by Timed Scan.
- 3. Press the Mont O key again. The " 

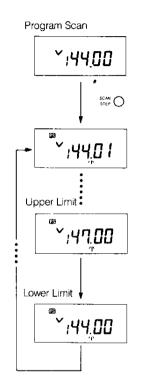
  "will disappear. The unit will scan by Busy Scan."

This function allows the unit to scan between two desired (H/L) frequencies in the VFO mode.

- Select the desired upper frequency.
- 2. Press the " \ key to put the radio in Memory Mode.
- Select the Memory Channel " H " by the dial. Rotate the downward from the Memory Channel 0, and the Memory channel " H " can be obtained.
- 4. Press the WO key to resume the VFO mode.
- 5. Holding the F key, press the Now the Upper Limit frequency is stored.
- 6. In the same manner enter the Lower Limit frequency into Memory Channel " L ". To obtain the Memory Channel " L " turn the dial downward from the Memory Channel " H ".



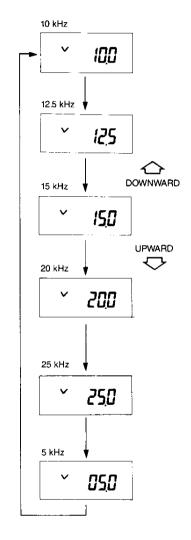
#### **Program Scanning Operation**



- 1. Press the step O key in the VFO Mode.
- " will appear on the LCD, and a frequency decimal point starts flashing. This indicates that Program Scanning is activated.
- 3. Follow steps 2-4 in Band Scan operation.

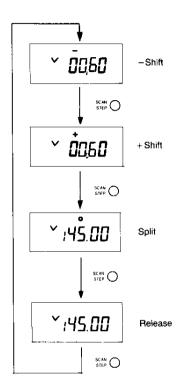
Note: Only Band Scan will be activated when the same frequency is programmed into Memory Channel "- H " and " L ", or when the frequency in the Memory Channel " L " is higher.

# 4-8 CHANNEL STEP (1) Setting Channel Step



- Holding the F key, press the sep key, the Channel Step will appear on the LCD.
- 2. Rotate the Dial clockwise or counterclockwise to change the Channel Step.
- 3. Press either the wo key or the PTT key to release the mode. Or holding the key, press the see key, the mode can also be released.
- Rotating the tuning dial will now change the VFO frequency by the set Channel Step. VFO Band Scan frequency will also change by the set Channel Step.

## 4-9 SHIFT DIRECTION AND OFFSET FREQUENCY



Almost all repeaters operate in the duplex mode. They receive on one frequency and transmit on another frequency. The difference between these frequencies is the offset, or shift frequency. The published repeater frequency is usually the repeater transmit frequency. This is the repeater frequency the repeater user selects on the LCD display.

The repeater user transmits on a frequency offset either above or below the repeater frequency.

Once the offset frequency and direction have been programmed into the transceiver they are automatically selected each time the PTT key is pressed.

- Holding the F key, press the heard to indicate that the unit is in the Set Mode.
- Every time you press the scan State O key, Shift Direction changes as the chart.
- 3. Press the www () key to release the Set Mode.

#### Entering an Offset (Shift) Frequency

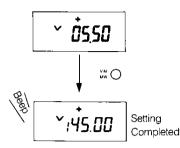


Press the state of the Set Mode. "+" or "-" will appear on the LCD.

An offset frequency will be indicated.

The initial factory offset frequency settings are 600 kHz for F1T/E and S1T/E, 5 MHz for F4T and S4T, and 7.6 MHz for F4E and S4E.

The Offset Frequency can be selected between 0 and 15.995 MHz.



- Offset Frequency may be changed by rotating the Dial for small incremental changes by the channel step at a time.
- For larger incremental frequency changes holding the F key, and rotate the Dial to increase or to decrease frequency 1 MHz each time.
- To return to the displayed repeater frequency press the "" key. A beep will be heard and the Set Mode will be released

#### Selecting Offset (Shift) Direction

- Holding the F key, then press the set O key to put the radio in the Set Mode.
- Press the scape O key until the desired offset symbol appears on the LCD.
- 3. A "+" symbol indicated an UP transmitter offset.
- 4. A "-" symbol indicates a DOWN transmitter offset.
- When neither a "+" nor a "-" symbol appears the transmitter is in the Simplex mode and will transmit on the receive frequency.
- If " aFF " appears in place of the frequency during transmit, the selected offset frequency is out-of band. The transmitter will not transmit. Reset the offset direction and the frequency.

# ~₀FF.

# 4-10 SPLIT (ODD OFFSET) OPERATION

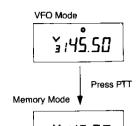
This function allows you to operate the unit by independent frequencies of receiving and transmitting.

# (1) Setting of Split Operation

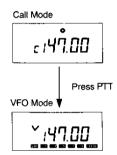


- Holding the F key, press the eard, and the unit is in the Set Mode.
- 2. Press the STAP key to get " on the LCD.
- 3. Press the  $\frac{\sqrt{M}}{M}$  key to complete the procedure.

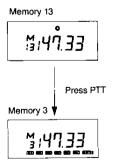
## (2) Split Operation



in VFO Mode
 Receive Frequency: VFO Frequency
 Transmit Frequency: Memory Frequency



in Call Mode
 Receive Frequency: Call Frequency
 Transmit Frequency: VFO or Memory Frequency



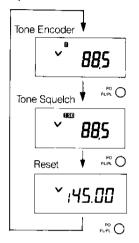
in Memory Mode
 Memory Channel 0 — 9
 Memory Channel 10 — 19
 A pair
 Memory Channel 20 — 29
 Memory Channel 30 — 39
 A pair

Note: Prior to the Split Operation in the Memory Mode or the Call Mode, the pairs above need to be set.

# 4-11 TONE ENCODER AND TONE SQUELCH

- Both Tone Encoder and Tone Squelch are optional for E version. EJ-12U (Tone Squelch Unit) is necessary.
- Tone Squelch is optional for T verision. Optional EJ-12U (Tone Squelch Unit) is necessary.

# Setting Tone Encode and Tone Squelch



- Holding the F key, then press the ear of key. A beep will be heard, and the unit is in the Set Mode.
- 3. Press the 🚟 🔘 key to release the Set Mode.

# (1) Setting a Tone Frequency



Access to an increasing number of repeaters is restricted by requiring that a sub-audible tone be transmitted with the input signal to open the repeater. A repeater control operator and most repeater users can advise which of 38 standard tones will activate a specific repeater.

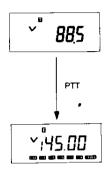
- Holding the Fikey, the press the set O key. A beep will be heard, and the unit is in the Set Mode.
- Press the Rea O key to get " T " on the LCD. A Tone Frequency will also appear.
   The initial factory tone frequency setting is 88.5 Hz.
- 3. Select a desired Tone Frequency by rotating the Dial.
- 4. Press the key to complete the setting.

## Sub-audible Tone Chart (unit: Hz)

67.0	74.0				
67.0	71.9	(4.4	77.0	79.7	82.5
85.4	88.5	91.5	94.8	97.4	100.0
103.5	107.2	110.9	114.8	118.8	123.0
127.3	131.8	136.5	141.3	146.2	151.4
156.7	162.2	167.9	173.8	179.9	186.2
192.8	203.5	210.7	218.1	225.7	233.6
241.8	250.3				

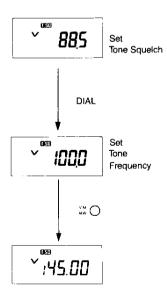


## (2) Setting the Tone Encoder



- 1. Press the Rep O key in the Set Mode.
  " will appear on the LCD.
  - A tone frequency will also appear.
- 2. Select a desired tone frequency.
- Return to the transmit frequency by pressing the key.
- 4. Press the PTT key to transmit.

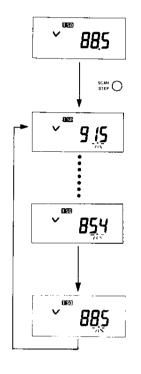
# (3) Tone Squelch



This function is used to open the receiver squelch whenever another station transmits the tone frequency the transceiver is programmed to receive. In the Tone Squelch Mode the listener may monitor a busy channel silently. Only signals transmitting the same Tone Squelch Frequency can be received.

- 1. Press the "Po O key in the Set Mode." "will appear on the LCD.
  - A tone frequency will also appear.
- 2. Repeat Steps 2 and 3 above.
- The Tone Squelch Frequency is now stored. Only signals transmitted with the selected Tone Squelch code will be heard.
- Ensure that stations the listener wishes to hear are transmitting the correct Tone Frequency or they will not be heard. heard.

# (4) Tone Scan (EJ-12U is necessary)



- 1. Press the RO key in the Set Mode.
  " and the Tone Frequency will appear on the LCD.
- 2. Press the siew key, and the frequency decimal point will flash. Then Tone Scan will start.
- 3. While scanning, if a signal is received and its Tone coincides with yours, the scanning will stop.
- To resume scanning upward rotate the dial clockwise. To resume it downward rotate the dial counterclockwise.
- 5. To release Tone Scan press either the sam key or the key.
- 6. Press the www () key to display the receive frequency.

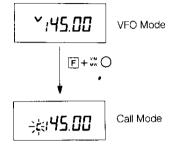
## 4-12 MEMORY SHIFT FUNCTION

This function allows you to copy Memory Data and Call Channel Data into VFO. VFO data can be copied into Call Channel.

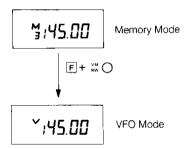
#### Setting

- Holding the F key, press the support that the unit is in the Set Mode.
- 2. Holding the F key, press the www key. Data will be copied.
- 3. Press the 💥 🔘 key to return to the original frequency.

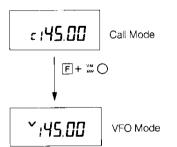
#### **Memory Shift**



 in VFO Mode: VFO data is copied into Call Channel. The mode shifts from VFO Mode to Call Channel Mode.



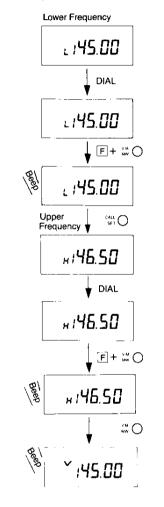
in Memory Mode:
 Data in the Memory Channel is copied into VFO. The mode shifts from Memory Mode to VFO Mode.



 in Call Channel Mode:
 Data in the Call Channel is copied into VFO. The mode shifts from Call Channel Mode to VFO Mode.

## 4-13 PROGRAMMABLE VFO RANGE FUNCTION

#### Setting



Operation frequency range can be set as desired.

- Holding the F key, press the set on key. A beep will be heard to indicate that the unit is in the Set Mode.
- 2. Holding the F key, press the " key." L " as a Memory Number will appear on the LCD and " M " or " v " will disappear.
- 3. Rotate the dial to select the desired lower frequency.
- Holding the F|key, press the SMO key. A beep will be heard indicating that the frequency is stored.
- 5. Press the set O key to change " L " into " H " on the LCD.
- 6. Repeat the 3 and 4 to set the higher frequency.
- 7. Press the KM C key to complete the setting.

Note: When a frequency goes down lower than the VFO lower frequency, it will skip to the VFO higher limit frequency. When a frequency goes up higher than the VFO higher frequency, it will skip to the VFO lower limit frequency.

Releasing

To release the function, repeat the steps (1, 2 and 4) above.

#### 4-14 DIAL CONTROL REVERSE FUNCTION

#### Setting

This function allows you to change Memory Channel in VFO Mode or to change Frequency in Flashing M Mode.

- Holding the F key, then press the set key. A beep will be heard indicating that the unit is in the Set Mode.
- 2. Holding the F key, then press the step key.
- Press the www key, the setting will be completed and the Set Mode will be released.

#### Operating

1. in VFO Mode

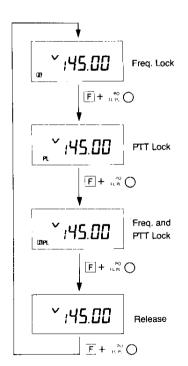
Repeating the steps (1-3) above allows you to change Memory Channel by rotating the dial.

in Flashing M Mode
 Repeating the steps (1-3) above allows you to change frequency by rotating the dial.

#### Releasing the function

1. Repeat the steps (1-3) above again to release the function.

# 4-15 FREQUENCY LOCK (FL) AND PTT LOCK (PL)



When the Frequency Lock mode is selected frequency is locked and cannot be altered.

In the PTT Lock Mode the PTT switch is disabled.

These are useful features to prevent unauthorized functioning or unintentional transmitting.

- 1. Holding the F key, then press the F key. key.
- With the key still depressed, each time the set of key is pressed the LCD will cycle through FL, PL, FL and PL, and FL/PL off.
- In the FL ON Mode, the frequency can not be changed and all control keys are locked out with the exception the PTT key, the 'AMT' key, the key, the key, the key, the key.

## 4-16 ONE TOUCH SQUELCH DE-ACTIVATION FUNCTION

Press and hold the west O key to override squelch.

In this mode weak signals below the squelch threshold may be heard.

#### 4-17 LAMP

Press the '** key to illuminate the LCD.
The lamp goes out automatically after five seconds. Lamp may
also be cancelled by pressing the key again.
To defeat the automatic Off feature press and hold the F key,
then press the LAMP key.
The Lamp will remain On until it is turned off by pressing the
LAM® kev.

# 4-18 AUTOMATIC BATTERY SAVE (BS)



**BS** Operation

This very useful feature reduces unnecessary battery drain by alternating between listening and the Battery Save Mode. If there is no operation for a period of about five seconds the BS will repeat the following cycle continuously:

- 1. Listen for a signal for about 300 mS.
- 2. Battery Save for about 700 mS.

To activate the BS function, press and hold the  $[\ddot{F}]$  key, then press the  $\stackrel{\text{MSB}}{=}$   $\bigcirc$  key. " S " will appear on the LCD. To cancel the BS function repeat the same step.

# 4-19 ON/OFF OF BEEPER

- 1. Press and hold the F key, then press the set key.
- A beep will be heard indicating that the unit is in the Set Mode.
- 3. Each time the on and Off. key is pressed the beep will cycle
- Press the www New Your New York New Yorkkey to release the Set Mode.

Note: Throughout this manual reference is made to a Beep being emitted when certain functions are activated. The Beep will sound only if the Beep function is On.

#### **4-20 RESET**

With the power off, press and hold the F key, then turn on the power. The unit will reset to initial factory settings as follows:

#### Reser Chart

	DJ-F1T/E S1T/E	DJ-F4T/E S4T/E		
VFO Frequency	145.00 MHz	445.00 MHz (T version) 433.00 MHz (E version)		
Memory Channel	1			
Channel Step	5 kHz (T version) 12.5 kHz (E version)			
Shift Direction	None			
Offset Frequency	600 kHz	5 MHz (T version) 7.6 MHz (E version)		
CTCSS Setting	None			
Tone Frequency	88.5 Hz			
DSQ Setting	None			
Call Frequency	145.00 MHz	445.00 MHz (T version) 433.00 MHz (E version)		
Memory Frequency	145.00 MHz	445.00 MHz (T version) 433.00 MHz (E version)		

# 4-21 TONE BURST (E VERSION ONLY)

Press the lower PTT key, 1,750 Hz Tone will be transmitted.

# 5. OPERATION II

In this section, the operations using DTMF keys (Standard for F Series, Optional for S Series with ESK-1, (DTMF keypadl) are explained. For S Series, Optional DTMF Unit, EJ-10 is also necessary for the functions of 5-10 DSQ (Paging), 5-11 Digital Signal Message and 5-12 Automatic Dialer.

#### 5-1 FREQUENCY SELECTION

There are two other ways to enter frequency other than the Dial (See 4-4 Frequency Selection).

#### (1) Key Pad Direct Entry

You can enter frequency by number keys (0-9).

- Enter the number of 100 MHz.
- 2. Enter the number of 10 MHz.
- 3. Enter the number of 1 MHz.
- 4. Enter the number of 100 kHz.
- 5. a) Enter the number of 10 kHz. If the Channel Step is 10 kHz or higher, a beep will be heard to indicate the entry
  - b) If the channel Step is 5 kHz, enter the number of 1 kHz, a beep will be heard to indicate the entry is done.

Note: When the programmed Channel Step is:

- 5 kHz Entry of 1 kHz is necessary. Only the key and the key are available at 1 kHz. 12.5 kHz Entries of the key and the key at 10 kHz are not available. 15 kHz Entries of the  $\stackrel{\circ}{\Box}$  key, the  $\stackrel{\circ}{\Box}$ available. 20 kHz Only the key, the key. the <u>key, the</u> key, and the key are available at 10 kHz. 25 kHz Only the \_\_\_\_ key, the \_\_\_\_ key, the \_\_\_\_\_ key, and the \_\_\_\_\_ key are available at 10 kHz.
- 6. To cancel the entry data press either the cancel key or the PTT key, the frequency will return to the former one.

#### Changing the setting of entry

Frequency entry should be started from 100 MHz digit. however, you can change it from 1 MHz digit.

- 1. Holding the F key, press the set key to put the radio in the Set Mode.
- 2. Press the " in key.
- 3. By pressing the www key to release the Set Mode.
- 4. Repeat the steps of 1-3 to return the original setting.



## (2) Up/Down Key Entry

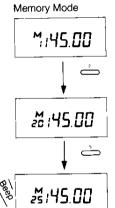
- Press the key, frequency will be increased by the Channel Step.
- Press the key, frequency will be decreased by the Channel Step.
- 3. Holding the F key, press the key. Frequency increases by 100 kHz.
- 4. Holding the F key, press the key. Frequency decreases by 100 kHz.

Note: If you hold these keys for 1-3 seconds, the radio will go into the Band Scan Mode with the exception of 100 kHz Up/Down Mode.

#### 5-2 RETRIEVING OF MEMORY CHANNEL

In Memory Mode, you can retrievé Memory Channel in two wavs.

## (1) Retrieving with Key Pad



- Enter two digits of Memory Channel Number by Key Pad.
  (Fx.)
  - Memory # 5 ... Enter "0", "5"

    Memory #16 ... Enter "1", "6"
- After entering the first digit, press the cinc Cc key or the PTT key, the Memory Channel will return to the former one.

## (2) Retrieving with Up/ Down Key

- 1. Press the key to increase Memory Channel.
- 2. Press the key to decrease Memory Channel.

# 5-3 SCANNING (1) UP/DOWN key Band Scan

**Memory Scan** 

can be activated in the Memory Mode.

#### Operation

- 1. Press the key or the key.
  2. Release the key or the key within 3 se-
- Release the key or the key within 3 seconds after the repeat starts. The frequency decimal point will flash and the scanning will start.
- If a signal is received while the scanning, the scanning will stop at the frequency.
- 4. Rotate the dial or press the key or the key to resume the scanning.
- Press the sea or the work was a key or the PTT key to release the scanning.

# (2) Selection of Scanning Mode



- 1. Pressing the F key, press the key, key, key, will appear on the LCD.

  The unit will scan by Timed Scan.
- Pressing the F key, press the will key again, will disappear. The unit will scan by Busy Scan.

The Modes can be switched while scanning.

## (3) Memory Skip



- Memory Skip allows any unnecessary Memory Channels to be skipped during Memory Scanning.
- Press the www Away key to put the radio in the Memory Mode.
- 2. Select an unnecessary Memory Channel.
- 3. Holding the F key, press the skey.
- Will appear above " M " on the LCD.
- To restore a memory channel programmed to Skip repeat Step 3.

# (4) Operation while Scanning

Switching the Scanning direction

# Switching the Scan Mode (Timed Scan and Busy Scan)

Release the Scanning

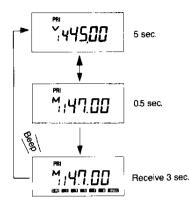
- 1. Rotate the dial clockwise or press the switch the direction upward.
- Rotate the dial counterclockwise or press the key to switch the direction downward.

Pressing the F key, press the key.

Press the KM ( key or the STEP ( key or the PTT key.

## 5-4 PRIORITY WATCH FUNCTION

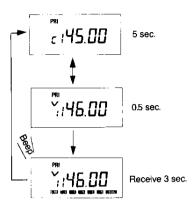
# (1) VFO Priority



In this mode a VFO frequency is received for 5 seconds and a Memory Frequency is received for 0.5 second in a continuous cycle.

- Press the W Node.
   key to put the radio in the Memory Mode.
- 2. Select a desired Memory Channel Number.
- 3. Press the DAL May be return to VFO Mode.
- 4. Enter desired VFO frequency.
- Press the Death A key to start the Priority function. In this mode the radio listens alternately to the VFO frequency for seconds and to the Memory frequency for 0.5 second.
- When a signal is received on the Memory Frequency a Beep will be heard and the sigal is held for 3 seconds.
- To stop the Priority function press the OPAL M OA key in the VFO Mode.
  - PRI " on the LCD will be disappeared.

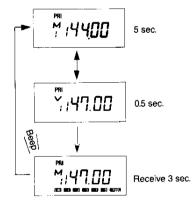
## (3) Call Priority



In this mode Call Watch cycles between the Call Channel Frequency and another frequency selected from the VFO or the Memory Channel.

- Press the www key to put the radio in either VFO Mode or Memory Mode.
- 2. Select either a desired VFO frequency or a desired Memory Channel on the LCD.
- Press the set oput the radio in Call Channel Mode.
- 4. Press the DA key to start Call Priority function.
- PRI "will appear on the LCD.
- In this mode the radio listens alternately to the Call Channel Frequency for 5 seconds and to the VFO or Memory Channel Frequency for 0.5 second.
- When a signal is received on the VFO frequency (or the Memory frequency) a beep will be heard and the signal is held for 3 seconds.
- To stop the Call Priority function press the DALW OA key in Call Channel Mode.
  - " PRI " on the LCD will be disappeared.

## (2) Memory Priority



This mode is the reverse of VFO Priority.

The Memory Frequency is received for 5 seconds and the VFO Frequency is received for 0.5 second.

- 1. Press the Company key to put the radio in the VFO Mode.
- 2. Enter a desired VFO frequency.
- Press the WM () key to put the radio in the Memory Mode.
- 4. Select a desired Memory Channel.
- Press the name OA key to start the Priority function. In this
  mode the radio listens alternately to the Memory frequency
  for 5 seconds and to the VFO frequency for 0.5 second.
- When a signal is received on the VFO frequency a Beep will be heard and the signal is held for 3 seconds.
- To stop the Priority function press the ONL ONL ONL ONL
   To stop the Priority function press the ONL ONL
   To stop the Priority function press the ONL ONL
  - PRI "on the LCD will be disappeared.

#### (4) Operations while Priority Function is active

Transmit during the 5 seconds scan cycle

Transmit during the 0.5 second scan cycle

Changing the VFO Frequency or the Memory Channel during the 5 seconds scan cycle

Releasing the Priority Function

- In every Priority the transmitter may be activated on each frequency.
- Press the PTT when the desired frequency is displayed on the LCD. When the PTT is released the Priority function resumes after 5 seconds
- When the desired frequency is displayed on the LCD, you can press the PTT to transmit, however, it results to stop the Priority Function.
- Rotate the dial to increase or decrease the VFO Frequency or the Memory Channel.

To stop the Priority Function press either the Option OA key or the Company OA key during the 5 seconds cycle or press the PTT key during the 0.5 second cycle.

# (5) Simultaneous Priority and Scan

- A. Scan can be started during the 5 second scan cycle while the Priority function is active.
- 1. While VFO Priority Function:
  - a. Program Scan

Press the STEP key in the VFO Mode.

b. Band Scan

Release the ( ) key in the VFO Mode within 3 seconds after frequency repeat is started.

- 2. While Memory Priority Function:
  - a. Memory Scan

Press the see O key in Memory Mode.

Release the ( ) key in Memory Mode with 3 seconds after frequency repeat is started.

- 3. Release while Simultaneous Priority and Scan
  - a. Press the OA key, only the Priority function will be released.
  - b. Press the Stand key, only the Scanning function will be released
- B. Priority can be started while Scanning
- While Program Scanning or Band Scanning in VFO Press the A key to start VFO Priority.

## 5-5 SETTING OFFSET FREQUENCY

The difference between the transmit frequency and the receive frequency while operation using a reapeater is called Offset Frequency.

- (1) Setting Mode of Offset Frequency
- 1. Pressing the F' key, press the ey, an Offset frequency will be displayed on the LCD. The initial factory settings and the settings after reset are 600 kHz for F1T/E and S1T/E, 5 MHz for F4T and S4T, and 7.6 MHz for F4E and S4E.

The Offset frequency can be selected between 0 and 15.995 MHz.

# (2) Selecting Offset frequency

By Channel Step

Rotate the dial clockwise or press the the Offset frequency by the Channel Step. Rotate the dial counterclockwise or press the key to decrease it by the Channel Step.

Bv 100 kHz

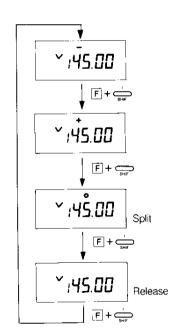
Pressing the F key, press the key to increase the Offset frequency by 100 kHz or press the key to decrease it by 100 kHz.

decreas

By 1 MHz

Pressing the F key, rotate the Dial to increase or decrease the Offset frequency by 1 MHz.

#### 5-6 SETTING OF SHIFT DIRECTION AND SPLIT



Pressing the F key, press the key. Each time the key is pressed, the Shift direction will change as the chart. See 4-10 for Split operation.

If " **oFF** " appears in place of the frequency during transmit, the selected offset frequency is out-of band. The transmitter will not transmit. Reset the offset direction and frequency.

#### 5-7 REVERSE FUNCTION

The function reverses the Transmit and Receive frequencies. The function is useful to determine if the other station is within Simplex range and you can communicate with the station without the repeater.

(1) Reverse of Shift Direction

Pressing the F key, press the key, The Transmit and Receive frequencies will be reversed and the direction will be reversed.

**Note:** If the Reversed frequency is out of the band, the function will not work and beep will be heard.

(2) Reverse of Split

- Pressing the key, press the key.

  The Transmit and Receive frequencies will be reversed.
- 2. Only the PTT key, the war O key, the key the key are available while Split Reverse. If other keys are pressed, a beep will be heard and the Split Reverse will be released.

#### 5-8 SETTING OF TONE FREQUENCY

A desired Tone frequency can be selected among 38 Standard Tone with this function.

- 1. Pressing the F key, press the TONE key, a Tone frequency will be appeared on the LCD.
- Press the key or rotate the dial clockwise to increase the Tone frequency. Press the key or rotate the dial counterclockwise to decrease it.
- Press the will be released.
   key or the PTT key, the setting mode will be released.

Sub-audible Tone Chart (Unit; Hz)

× 885

67.0	71.9	74.4	77.0	79.7	82.5
85.4	88.5	91.5	94.8	97.4	100.0
103.5	107.2	110.9	114.8	118.8	123.0
127.3	131.8	136.5	141.3	146.2	151.4
156.7	162.2	167.9	173.8	179.9	186.2
192.8	203.5	210.7	218.1	225.7	233.6
241.8	250.3				

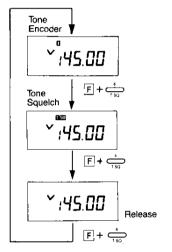
#### 5-9 TONE ENCODER AND TONE SQUELCH

- Both Tone Encoder and Tone Squelch are optional for E version. EJ-12U (Tone Squelch Unit) is necessary.
- Tone Squelch is optional for T version.
   EJ-12U (Tone Squelch Unit) is necessary.

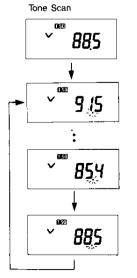
Pressing the F key, press the key. Tone settings will cycle each time the key is pressed as the chart. See 4-11 for Tone Encoder and Tone Squelch functions.

- 1. Pressing the F key, press the size key, " list " will appear on the LCD.
- 2. Pressing the F key, press the quency will appear on the LCD.
- Press the step of key, the frequency decimal point will flash and Tone Scan will start.
- While scanning, if a signal is received and its Tone coincides with yours, the scanning will stop.
- 5. To resume scanning upward rotate the dial clockwise or press the key. To resume it downward rotate the dial counterclockwise or press the press the key.
- dial counterclockwise or press the press the key.

  6. Press the step C key again or the key, the scanning will be released.



Tone Scan (EJ-12U is necessary).



#### 5-10 DSQ FUNCTION: PAGING

Optional DTMF Unit EJ-10U is also necessary for S Series. This mode is used for paging or code squelch.

# (1) Paging Function Group Calling

Use this mode to call all members of a specific group.

#### Private Call in a group

In this mode a single person in a group is called.

#### Private Call

In this mode a single person is called.

## (2) Code Squelch Function

By transmitting a frequency with three digits code the unit will be operating the same function as a tone squelch function.

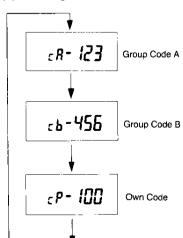
## (3) DSQ Code

- Three Digit Group Code
   This code is common to all members of the group.
   This code is also used as a Code Squelch.
- 2. Three Digit "Own" Code
  This is a personal code to receive private calls.
- Three Digit "Other's" Code \_ This code is used to call a specific person. It is the other person's "Own" code.

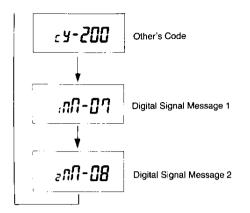
16 numbers, letters and symbols can be used for the codes. They are:

An " # " will appear on the LCD when " \* " is entered and " # " appears when " # " is entered. " # " is used as a "Wild Card" (See (8) in this section).

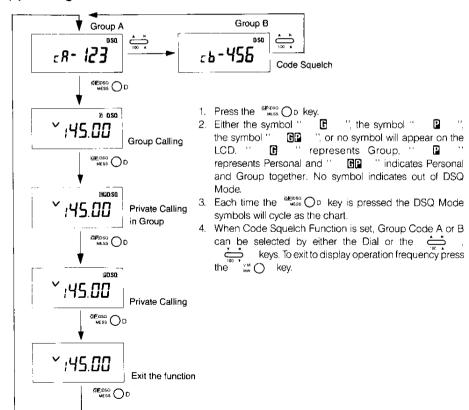
# (4) Setting DSQ Code



- Press and hold the F key, then press the SQ Code will appear on the LCD.
- By rotating the dial clockwise, the DSQ Code will cycle as the chart.
- A: Group Code A
- B: Group Code B
- P: Own Code
- Y: Other's Code
- 1M: Digital Signal Message 1
- 2M: Digital Signal Message 2
- 3. Holding the F key, pressing the will also cycle as the chart.
- Press the "M O key to return to display frequency, the setting mode will be released.



## (5) Setting DSQ





## (6) Operation of Paging

#### <TRANSMITTING> **Before Transmitting**



Group Code A

- 1. Holding the Fikey, press the Passer OB key to put the radio in the DSQ Code setting mode.
- 2. Set Group Code, Own Code, Others Code.
- 3. Press the Key to return to the operation frequency.

# cP- 100

Own Code



Other's Code

#### Transmitting (Group Calling)



Select Group Code



Set Group Calling

#### Transmitting (Private Calling in a Group)





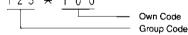
Private Calling in a Group

#### Transmitting (Private Calling)



Private Calling

- 1. Press the TPIOSO OP key to display Group Code on the LCD.
- 2. By rotating the Dial, select either Group Code A, or Group Code B.
- 3. Press the sess Op key until " If " and **DS0** "appear on the LCD.
- 4. When the above setting (1-3 Before Transmitting) is complete the DSQ code is transmitted automatically when the PTT key is pressed. The transmitted DSQ code is shown  $123 \times 100$



- 1. Press the TPIOSO OP key to display Group Code.
- 2. By rotating the Dial, select either Group Code A, or Group
- and " **DSO** " appear on the LCD.
- Select Group Code 4. When the PTT key is pressed the DSQ code is transmitted automatically. The transmitted DSQ code is shown here:



- Press the SP pso Op key until " "and" **DSO** " appear on the LCD.
- 2. When the PTT key is pressed the DSQ code is transmitted automatically. The transmitted DSQ code is shown here:

#### <RECEIVING>

#### Receiving (Group Call)



#### Receiving (Private Call in a Group)



#### Receiving (Private Call)



#### Transmitting the DSQ code

#### When "Other's" Code is not confirmed



#### To receive DSQ coded calls select either Group Calling, ff ", or Private Calling, " ", or Private calling in a Group, " GP ".

- 1. When the received DSQ code matches the Group Code " flashes on the LCD and a Beep sounds to alert the listener to an incoming call.
- 2. When an incoming call is received the DSQ code is displayed on the LCD. The displayed code will be the Group code.
- 1. When an incoming DSQ coded call matches both the Group code and the highest digit of the "Own Code" " will flash on the LCD and a Beep will alert the listener to an incoming private call. The DSQ code will be displayed on the LCD.
- 1. When an incoming DSQ coded call matches the Own code " will flash on the LCD and a Beep sounds to alert the listener to an incoming call.
- 2. The "Other's Code" will be displayed on the LCD.

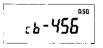
#### When the PTT key is pressed the selected DSQ code will be transmitted with the signal.

When the "Other's" private DSQ code is not confirmed an F '' will appear on the LCD instead of " ... "...

# (7) Code Squelch Operation



Select Code Squelch Code



Set Code Squelch

- 1. Press and hold the F key, then press the 050 SET OB key to select the DSQ code setting mode.
- You can select either Group Code A or Group Code B. 2. Enter a three digit Code Squelch code using the key pad.
- 3. Press the ( key to return the LCD to frequency.
- 4. Press the σρίσσο Ο key until "DSQ" appear on the LCD.
- 5. When the PTT key is pressed the Code Squelch code is transmitted automatically with the signal.

6. If received Code Squelch signal matches the set Code



Receiving

- Squelch code "DSQ" will flash on the LCD and a Beep sounds to alert the listener to an incoming signal 7. The Group Code will be displayed on the LCD.
- 8. Press the www ( ) key to return the LCD to frequency.

#### (8) Wild Card Function

The " # "(" # ") symbol is a wild card that may be substituted for any one of numbers, letters or symbols used in DSQ codes. " # " may also be used to represent all three code digits. " # " may also replace the group code in group calling and the code squelch code in the Code Squelch mode.

#### Example:

- 1. Enter the Group Code A " 1 # 5 ".
- 2. Select the Code Squelch mode.
- If the incoming coded call is any one of the following groupings the call will be received: "105 through 195", "1A5 through 1D5", "1 ≠ 5 " or "1 # 5 ".
- **Note:** 1. The time delay to transmit the DSQ code after the PTT key is pressed is about 450 mSec.
  - Transmission time of the DSQ code is about 360 mSec.
  - To activate the DSQ function properly adjust squelch control clockwise until " State" will disappear on the LCD.
  - LCD should display the operating frequency while DSQ function is activated.

## (9) Selecting time delay

You can select the time delay to transmit the DSQ code after pressing the PTT key.

- Holding the F key, then press the set o key to put the radio in Set Mode.
- Press the sorting sprox. 450 mSec. to approx. 750 mSec.
- Press the www o key to return to display operating frequency.
- By the same steps the delay can be returned to approx. 450 mSec.

## (10) Transmitting DTMF Signal C Function

This function allows you to transmit a DTMF tone (" [ "] automatically for a bit of time after the PTT is released.

- Holding the F key, then press the set oput the radio in Set Mode.
- 2. Press the sey.
- 3. Press the key to complete the step.
- 5. By the same steps, the functions can be released:

#### 5-11 DIGITAL SIGNAL MESSAGE FUNCTION

Digital Signal

Message

This function allows you to send or receive messages consits of 2 digit code in Paging mode. Optional DTMF Unit EJ-10U is necessary for S Series.

# (1) Setting transmit message

Two messages can be stored in the transmitter memory.

- 1. Holding the F key, then press the <sup>DSQ SET</sup> OB key to put the radio in DSQ Code set mode.
- 2. Rotate the Dial to select a message memory channel.
- 3. Enter the two digit message code.
- 4. Press the www ( ) key to release the setting mode.



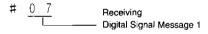
#### Transmitting Digital Signal Message

:nn-nn



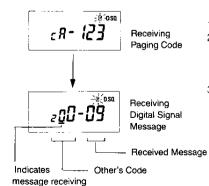
- Set a transmitting message.
- Set Paging Function. (See to 5-10 (6) Operation of Paging).
- 3. Press the PTT key to transmit the DSQ code.
- Holding the PTT key, press either the <sup>541</sup>/<sub>651</sub> key or the <sup>141</sup>/<sub>651</sub> key.

The transmitted Digital Signal Message code is shown here:



ressing the	SET O	key:	Digital Signal Message	1
ressina the	V.M. ( )	kev:	Digital Signal Message:	2

#### Receiving Digital Signal Message



- 1. Set Paging Function.
- In the Paging Function mode when the " # " code and two digit DTMF code are received after Other's Code" are sent from sender, "Other's Code" and Digital Signal Message will display on the LCD.
- 3. " " will also appear on the LCD.



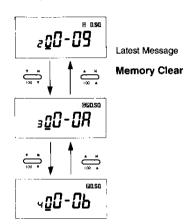
#### Releasing Alarm and Flashing Alert

- 2. Press any key except the with the later. key to silence the alarm.

#### **Digital Signal Message Memory**

- 1. You can store up to three received digital Signal Messages in the memory.
- The first 2 channels store the messages in received order. The third channel stores the latest one.
- 3. No same messages are stored again.

#### Displaying Digital Signal Message Memory



- Holding the F key, then press the depict Op key. The latest message will appear on the LCD.
- Rotate the Dial clockwise/counterclockwise to display next/previous message on the LCD display.
- 3. Press the key to do the same as above.
- Holding the F

  key, then press the C

  key. The memory will be cleared.
- When all memories are cleared " " on the LCD will disappear.
- 3. LCD displays operation frequency.

#### Release of Display mode

Press the  $\begin{tabular}{ll} $\omega = 0$ & key, the mode will be released and the frequency will appear on the LCD. \end{tabular}$ 

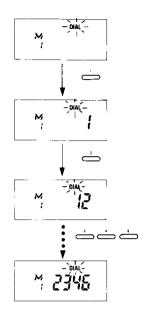
# Transmitting while Digital Signal Message is Displayed

While a Digital Signal Message is displayed, press the PTT key, a signal will be transmitted in the displayed DSQ setting (Pager). Other's code will be changed to the displayed other's code. The frequency will be displayed.

## 5-12 AUTOMATIC DIALER FUNCTION

The F Series offers four automatic dialer channel. Optional DTMF Unit, EJ-10U is necessary for S Series. Telephone numbers can be entered in these memory. One of these memories is used for DTMF monitoring.

#### **Entering a Telephone Number**



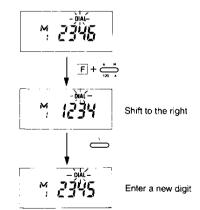
- 1. Holding the F key, then press the A key. The unit is in Dial No. Entering Mode, and " DIAL" will flash.
- Rotate the dial clockwise/counterclockwise to increase/decrease the memory number.
- 16 numbers, letters and symbols can be used for the codes.

They are:  $\boxed{0} \rightarrow \boxed{9}$ ,  $\boxed{A} \rightarrow \boxed{D}$ ,  $\boxed{*}$  and  $\boxed{\#}$ .

An "  $\boxed{\#}$  " will appear on the LCD when "  $\boxed{*}$  " is entered and "  $\boxed{\#}$  " will appear when "  $\boxed{*}$  " is entered.

- 5. You cannot enter the code into Dial Memory 4.
- The entered number is stored by pressing the key. The LCD will return to frequency and " DIAL " becomes steady indicating that the dialer memory contains a stored number.

# Modification of Dial No. while entering



- 1. Pressing the |F| key, press the key. Each time the key is pressed, the code shift to the right by 1 digit.

  Pressing the |F| key, press key to shift the code to
- the left by 1 digit.

  2. Press the key or the key until the digit that should be modified disappears.
- Enter a new digit. The code will shift to the left by 1 digit and the new digit will appear.
- **EX.** ① "1, 2, 3, 4, 6" were entered. "2, 3, 4, 6" are displayed.
  - 2 "6" should be modified to "5".
  - ③ Shift the code until "1, 2, 3, 4" are displayed.
  - ④ Enter "5".

#### Clearing of Entered Code

Pressing the F key, press the was Oc key, the entire entered code in the channel will be cleared.

# Transmitting a stored Telephone Number

- 1. Holding the F key, then press the DALW OA key.
- 2. Rotate the dial to select Dial Memory No. to transmit.
- 3. Press the " \ key to return to the frequency.
- 4. Holding the PTT key, press the F key.
- The selected telephone number will be transmitted automatically.

The intervals between each transmitted dialing number are approx. 60 mSec.

#### **DTMF Monitoring Function**

This function allows you to decode the DTMF code in Dial Memory 4 on the LCD.

- 1. Set either DSQ mode or DIAL mode.
- If the unit receives DTMF code it will be displayed on the LCD.

#### Displaying decoded DTMF Code

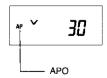


- 1. Holding the F key, then press the A key.
- 2. Rotate the Dial to select Memory Channel No. 4.
- 3. Holding the F key, then press the key. The decoded code will be shifted to the right.
- 4. Holding the [F] key, then press the decoded code will be shifted to the left.
- 5. Press the 💥 🔾 key to return to the frequency.
- After reversing the Dial control (See 5-15) in the Dial No. Entering mode (F) + (Rev OA), the code can be shifted by the dial. Follow the same steps to return the dial control to change Memory No.

# 5-13 AUTOMATIC POWER OFF (APO) FUNCTION

The APO function prevents inadvertent waste of battery power when the radio is left ON unintentionally.

## Setting APO



# 3. Press the key to activate the APO function.

Holding the F key, then press the AP "will appear on the LCD.
 The initial factory APO timer setting is 30 Minutes.

4. To cancel APO pressing the Fikey, press the again. " AP " on the LCD will disappear.

2. By rotating the Dial, APO timer can be set in the range of 5

#### **Automatic Power OFF**



- After the set time of APO of no activity passes, a beep will be heard and the LCD goes off except "AP".
   Battery power is now OFF, then "AP" will disappear.
- 2. To turn radio ON again, turn OFF the power switch then turn ON the power again.
- APO function will be cancelled.

to 60 minutes by 5 minutes step.

# 5-14 MEMORY SHIFT FUNCTION

- Pressing the F key, press the the data will be copied to CALL channel and the radio will be in CALL mode.
- Pressing the F key, press the " Oc key in Memory mode, the data will be copied to VFO and the radio will be in VFO mode.
- Pressing the F key, press the control of key in CALL mode, the data will be copied to VFO and the radio will be in VFO mode.

# 5-15 DIAL CONTROL REVERSE FUNCTION

Pressing the Fkey, press the seems key, the function of the dial in the mode will be reversed as follows and by the same step it will return to the original function.

#### **VFO Mode**

Frequency Selection - Memory Channel No. Selection

#### Memory (FLashing M) Mode

Memory Channel No. Selection→Frequency Selection

#### Dial No. Setting Mode

Dial Memory No. Selection → Dial No. Shift

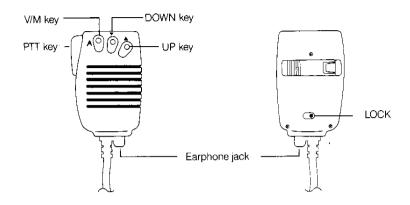
#### 5-16 ON/OFF OF BEEPER

- Pressing the F key, press the tell wey, no beep will be heard even if any key is pressed.
- 2. Pressing the F key, press the key again, beep will work.

# 6. REMOTE CONTROL MICROPHONE

(Optional Speaker/Microphone EMS-8 is necessary.)

The operation of Optional EMS-8 is explained in this section.



V/M key Selection of VFO mode and Memory Mode

Completion of the settings

**UP key** Increases frequency or Memory channel No.

DOWN key Decreases frequency or Memory channel No.

**LOCK** Locks the V/M key, the UP key, and the DOWN

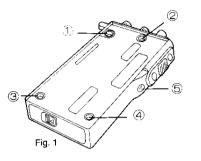
key on the EMS-8.

Note ① Holding the UP/DOWN key for 1-3 second will start Scanning.

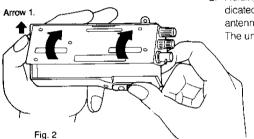
- ② Frequency Lock function of the main unit can not work in the EMS-8.
- ③ Connecting or disconnecting of EMS-8 to the main unit while the power is on may change the frequency and the Memory channel No. Connect or disconnect it to the main unit after the power is turned off.

# 7. ATTACHING OPTIONAL ACCESSORIES

# 7-1 DTMF UNIT EJ-10U (Standard for F Series) AND TONE SQUELCH UNIT EJ-12U

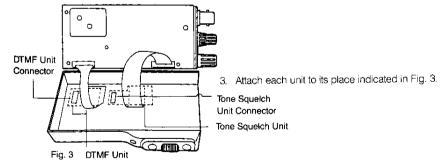


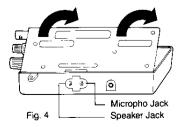
1. Remove the 5 screws in the Fig. 1



2. Holding the Battery Pack (Dry Cell Battery Case) Lock as indicated by Arrow 1. in Fig. 2, open the unit by holding the antenna connector as Fig. 2.

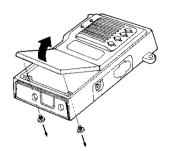
The unit will be as Fig. 3.





- Insert the speaker jack and the microphone jack in their holes and close the unit as Fig. 4.
- 5. Attach the 5 screws removed in 1.

# 7-2 DTMF KEY PAD ESK-1 (B) (Standard for F Series)



- Follow the steps 1 and 2 in 7-1.
   Remove the 2 screws in Fig. 5 and 6.
- 3. Remove the cover as in Fig. 5 (Push the cover through the screw hole with a sharp-pointed object.)
- 4. Attach the keypad to the unit as in Fig. 7.
- 5. Attach the 2 screws removed in 2.
- 6. Follow the steps 4 and 5 in 7-1.

Fig. 5

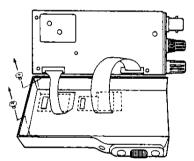


Fig. 6

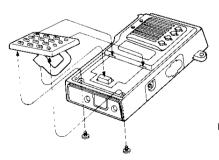


Fig. 7