**Vertex Standard**

AIR BAND TRANSCEIVER

# VXA-220

## Operating Manual

**Pro VI**

# CONTENTS

## NOTICE

There are no user-serviceable points inside this transceiver. All service jobs must be referred to your Authorized Service Center.

# INTRODUCTION

The Vertex Standard **VXA-220 Pro VI** is a compact, stylish, solid, submersible (IP7: 3 ft for 30 minutes) hand-held transceiver providing communication (transmit and receive) capability on the International Aircraft Communication Band ("COM" band: 118 ~ 136.975 MHz), and it additionally provides receive on the "NAV" band (108 ~ 117.975 MHz).

The **VXA-220** boasts 0.7 Watt of clean audio output from its 1.4" (36-mm) diameter loudspeaker, and it also provides 8.33 kHz synthesizer steps for the new narrow-band channel plan.

The **VXA-220** displays with our exclusive Omni-Glow™ display back-lighting for minimal degradation of your night vision, NOAA weather band monitoring, 8-character Alpha/Numeric Display, 150 Memory Channels, and 100 "Book Memory" Channels.

We recommend that you read this manual in its entirety, so as to understand the many features of the **VXA-220** completely. Keep this manual handy, so you may use it for reference.

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## Congratulations!

You now have at your fingertips a valuable communications tool-a Vertex Standard two-way radio! Rugged, reliable and easy to use, your Vertex Standard radio will keep you in constant touch with your friends and colleagues for years to come, with negligible maintenance down-time.

Please take a few minutes to read this manual carefully. The information presented here will allow you to derive maximum performance from your radio, in case questions arise later on.

We're glad you joined the Vertex Standard team. Vertex Standard products cover the entire spectrum of radio communications applications, and our worldwide support network is here to serve you. Let us help you get your message across.

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# IMPORTANT NOTICE!

## FCC RF Exposure Compliance Requirements for Occupational Use Only:

This Radio has been tested and complies with the Federal Communications Commission (FCC) RF exposure limits for Occupational Use/Controlled Exposure Environment. In addition, it complies with the following Standards and Guidelines:

❏ FCC 96-326, Guidelines for Evaluating the Environmental Effects of Radio-Frequency Radiation.

❏ FCC OET Bulletin 65 Edition 97-01 (1997) Supplement C, Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields.

❏ ANSI/IEEE C95.1-1992, IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.

❏ ANSI/IEEE C95.3-1992, IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave.

❍ When transmitting, hold the radio in a vertical position with its microphone 1 to 2 inches (2.5 to 5 cm) away from your mouth and keep the antenna at least 1 inch (2.5 cm) away from your head and body.

❍ The radio must be used with a maximum operating duty cycle not exceeding 50%, in typical Push-to-Talk configurations. DO NOT transmit for more than 50% of total radio use time (50% duty cycle). Transmitting more than 50% of the time can cause FCC RF exposure compliance requirements to be exceeded.
The radio is transmitting when the red LED on the front panel of the radio is illuminated. You can cause the radio to transmit by pressing the P-T-T button.

❍ Always use Vertex Standard authorized accessories.

① Antenna Jack

This SMA jack accepts the supplied flexible antenna, or another antenna designed to provide 50 Ohm impedance on the Aircraft Communication Band.

② **MIC/EAR** Jack

You may connect the supplied **CT-96** Headset Cable or the (optional) **MH-44B4B** Speaker/Microphone to this jack.

⚠️ *1) Never connect any Speaker/Microphone that is not recommended by the manufacturer. Because these jack connections are unique, using a Speaker/Microphone that is not specified by Vertex Standard may damage the VXA-220.*
*2) Do not allow the VXA-220 to become submerged in water while the rubber cap over the MIC/EAR jack is removed.*

③ **DIAL** Selector Knob

This 20-position detented rotary switch tunes the operating frequency or selects the memory channels. This rotary switch also adjusts the audio volume level by the setting of the Secondary function of the [**5(DIAL/▼▲)**] key. See page 18 for details.
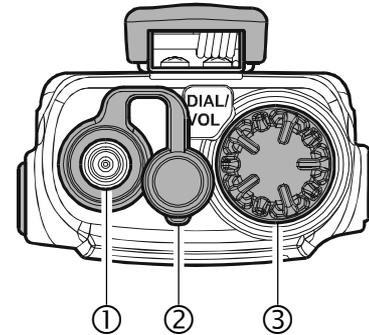
① **Loudspeaker**

The internal speaker is located in this position.

② **Microphone**

Speak across this opening in a normal voice level, while pressing the PTT switch, to transmit.

③ **LCD (Liquid Crystal Display)**

The display shows selected operating conditions, as indicated on the next page.

④ **Keypad**

The keypad is used for most radio command operations. Several keys have triple functions.

The primary functions are activated by simply pressing the key momentarily.

The secondary functions are activated by pressing the [**F**] key followed by the key.

The third functions are activated by pressing and holding in the key for 2 seconds.
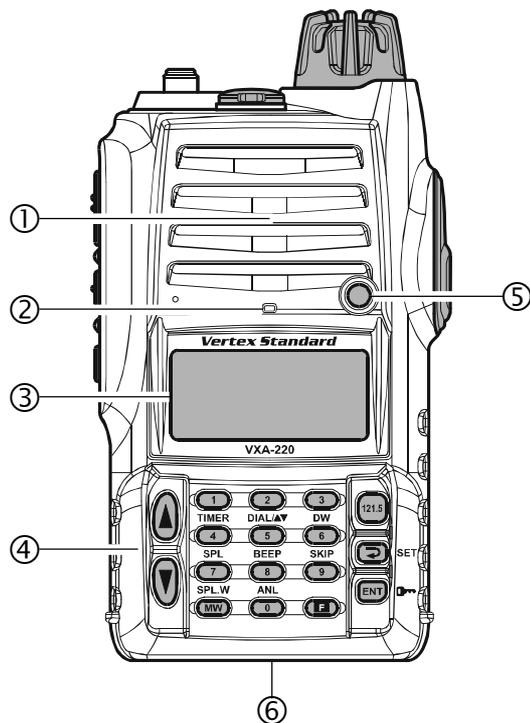
These functions are described in detail on page 6.

⑤ **BUSY/TX Indicator Lamp**

This lamp glows green when a signal is being received, and red when transmitting.

⑥ **Battery Pack Latch**

Open this latch for battery removal.

① **PTT** (Push To Talk) Switch

Press this button to transmit when you are operating in the COM band. Release this button to return to the "Receive" mode. See page 14 for details.

② **MONITOR** Switch

This button may be pressed to "open" the squelch manually, allowing you to listen for very weak signals. Press and hold this button for 2 seconds to "open" the squelch continuously. Press this button again to resume normal (quiet) monitoring. See page 17 for details.

③ **POWER** Switch

Press and hold this button for 3 seconds to toggle the transceiver's power on and off.

④ **EXT DC** Jack

When an external 12-Volt DC power source is available, you may connect the (optional) **E-DC-5B** External DC Cable here.

⚠️ *1) Do not connect any wire to this jack if that wire is connected directly to a 28-Volt DC source. Connecting the VXA-220 directly to a source which exceeds 15.0 Volts DC will result in damage to the unit, and this type of damage is not covered by the Limited warranty on this product.*

*2) Do not allow the VXA-220 to become submerged in water while the rubber cap over the EXT DC jack is removed.*

| | 1 | 2 | 3 | 121.5 |
|---|---|---|---|---|
| **Primary Function** (**Press Key**) | Frequency Entry Digit 1 | Frequency Entry Digit 2 | Frequency Entry Digit 3 | Selects Emergency Channel (121.5 MHz). |
| **Secondary Function** (**Press [F] + key**) | None | None | None | None |
| **Third Function** (**Press and Hold key**) | None | None | None | None |
| | TIMER 4 | DIAL/▲▼ 5 | DW 6 | SET ↵ |
| **Primary Function** (**Press Key**) | Frequency Entry Digit 4 | Frequency Entry Digit 5 | Frequency Entry Digit 6 | 1) Selects the Memory Display Type 2) Switches the VFO mode "A" and "B" |
| **Secondary Function** (**Press [F] + key**) | Activates the Stop Watch Timer | Exchange the functions of the DIAL and [▼]/[▲] keys | Activates the Dual Watch Feature | Activates the Set (Menu) Mode |
| **Third Function** (**Press and Hold key**) | None | None | Activates the VOX Feature | Activates the Scanner |
| | SPL 7 | BEEP 8 | SKIP 9 | 0━ ENT |
| **Primary Function** (**Press Key**) | Frequency Entry Digit 7 | Frequency Entry Digit 8 | Frequency Entry Digit 9 | Select the tuning methods among the VFO, MR, BMR, and WX |
| **Secondary Function** (**Press [F] + key**) | Activates Split (Duplex) mode. | Enable/Disable the Keypad Beeper | Allows Skipping of Channel during Scan | Activates the Key Lockout Feature |
| **Third Function** (**Press and Hold key**) | None | None | None | None |
| | SPL.W MW | ANL 0 | F | |
| **Primary Function** (**Press Key**) | None | Frequency Entry Digit 0 | Activates "Secondary" key mode. | ▲ Increase the audio level or select the operating channel※ |
| **Secondary Function** (**Press [F] + key**) | Split-Memory "Write" Command | Adjusts the Automatic Noise Limiter | Cancel the "Secondary" key mode of the [F] key. | ▼ Decrease the audio level or select the operating channel※ |
| **Third Function** (**Press and Hold key**) | Memory "Write" Command | None | None | ※: Depends on setting of the Secondary function of the DIAL▲▼ key. See page 18 for details. |

These digits provide frequency or alpha-numeric information about the channel you are using.

DW ANL SPL SKIP

### DW
This indicator confirms that "Dual Watch" is active. See page 32.

### ANL
This indicator confirms that "Automatic Noise Limiter" is active. See page 17.

### SPL
This indicator confirms that "Split" (Duplex) mode is activated. See page 34.

### SKIP
This indicator confirms that this channel will be skipped during scan. See page 31.

This icon indicates that the "Book" Memory Bank is in use. See page 15.

This icon indicates that the "Weather Alert" feature is active. See page 43.

This indicator confirms that the Key Lock is activated. See page 18.

### VOX
This indicator confirms that "VOX" system is active. See page 22.

This icon is the "Low Battery" indicator, which blinks when the battery voltage becomes too low for proper operation.

### F
This indicator confirms that *Secondary* Key Function is active. See page 6.

## Precautions

❍ This apparatus is capable of two-way communication on channels used for critical aviation safety communications. Therefore, it is important that this radio be kept away from children or other unauthorized users at all times.

❍ When making DC connections via the supplied **E-DC-5B** DC cable, be absolutely certain to observe the proper voltage level and polarity guidelines. Do not connect this radio directly to any 24 ~ 28 Volt DC source, nor to AC power of any kind. Connecting the **VXA-220** directly to a source which exceeds 15.0 Volts DC will result in damage to the unit. The Limited Warranty for this product does not cover damage caused by the application of improper voltage.

❍ Do not dispose of the Ni-MH Battery Pack in a fire. Do not carry a Ni-MH Battery Pack in your pocket, where keys or coins could short the terminals. This could create a serious fire/burn danger, and possibly cause damage to the Ni-MH pack.

❍ Although the **VXA-220** is designed to be water resistant, the enclosure is not "waterproof." Do not allow the radio to become submersed in water, and do not expose it and/or its Ni-MH Battery Pack to water spray under pressure.

## Battery Installation and Removal

❏ To install the battery, hold the transceiver with your left hand, so your palm is over the speaker and your thumb is on the top of the Belt Clip. Insert the battery pack into the battery compartment on the back of the radio while tilting the Belt Clip outward, then close the Battery Pack Latch until it locks in place with a "Click."



Insert the Battery Pack

**Close the Battery Pack Latch**
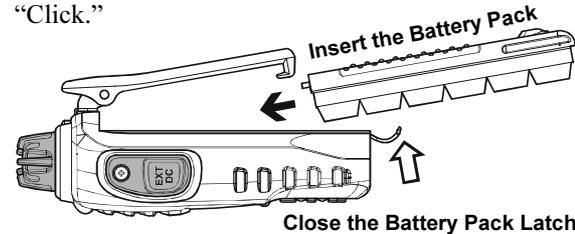
❏ To remove the battery, turn the radio off and remove any protective cases. Open the Battery Pack Latch on the bottom of the radio, then slide the battery downward and out from the radio while unfolding the Belt Clip.

⚠ **Do not attempt to open any of the rechargeable Ni-MH packs, as personal injury or damage to the Ni-MH pack could occur if a cell or cells become accidentally short-circuited.**

## Battery Charging

It is necessary to charge the Ni-MH battery fully before its first use. Follow these procedures:

❒ Install the supplied **FNB-83** Ni-MH battery pack onto the transceiver. Ensure that the transceiver is switched off.

❒ Plug the **NC-88B** or **PA-48C** Battery Charger into the AC line outlet, then insert the cable plug into the jack located on the left side of the **CD-32** Charger Cradle.

❒ Insert the transceiver and battery pack into the **CD-32**; the antenna jack should be at the left side when viewing the charger from the front.

❒ If the transceiver and battery pack are inserted correctly, the RED indicator on the **CD-32** will glow. A fully-discharged pack will be charged completely in 10 hours.
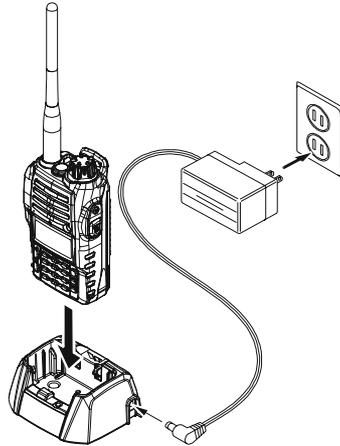
**Important Notes:**

❍ The **NC-88B/PA-48C** is not designed to power the transceiver for operation (reception or transmission).

❍ Do not leave the charger connected to the transceiver for continuous periods in excess of 24 hours. Long term overcharging can degrade the Ni-MH battery pack and significantly shorten its useful life.

❍ If using a charger other than the **NC-88B/PA-48C/ CD-32**, or if using a battery pack other than the **FNB-83**, follow the appropriate instructions provided with the charger/battery. Contact your Dealer if you have any doubts about the appropriateness of the particular charger or battery pack you intend to use.

## Low Battery Indication

❒ As your battery discharges during use, the voltage will gradually become lower. When the battery voltage is becoming too low for reliable operation, the "🔋" icon will blink on the LCD display, indicating that the battery pack must be recharged before further use.

❒ Avoid recharging Ni-MH batteries before the "🔋" indicator is observed, as this can degrade the charge capacity of your Ni-MH battery pack. Vertex Standard recommends that you carry an extra, fully-charged pack with you so you will not lose communications capability due to a depleted Ni-MH battery.

## Installing the FBA-25A Alkaline Battery Case

The supplied **FBA-25A** Battery Case allows operation of the **VXA-220** using six "AA" size Alkaline batteries.

When installing batteries, insert the (–) end first, then press in the (+) end so the battery snaps into place. Always replace all six batteries at the same time, paying attention to the polarity indicated inside the case.

⚠ **The FBA-25A must not be used with rechargeable cells. The FBA-25A does not contain the thermal and over-current protection circuits (provided in the "FNB" series of Ni-MH Battery Packs) required when utilizing Ni-Cd and Ni-MH cells.**

## Preliminary Steps

❍ Install a charged battery pack onto the transceiver, as described previously.

❍ Screw the supplied antenna onto the Antenna jack. Never operate this transceiver without an antenna connected.

❍ If you have an optional Speaker/Microphone or headset, we recommend that it not be connected until you are familiar with the basic operation of the **VXA-220**.
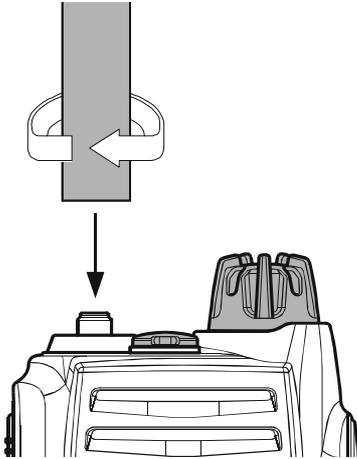
## Operation Quick Start

❏ To turn the radio on, press and hold in the [**POWER**] Switch of for 3seconds.
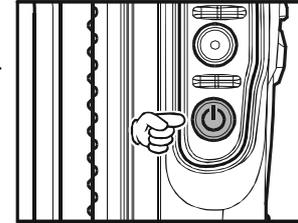
❏ A channel frequency should appear on the display. If not, press the [**ENT(○┅)**] key (repeatedly, if necessary) so that "**- VFO -**" appears on the display, followed by a channel frequency.
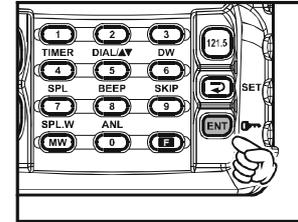
❏ Directly entering frequencies from the keypad is the easiest method if you know the frequency on which you wish to operate. Just enter the five digits of the frequency to move to that frequency. However, there is a short-cut for frequencies ending in zero - press the key after the last non-zero digits.
For example, to set 134.35 MHz,
Press [**1**] → [**3**] → [**4**] → [**3**] → [**5**].
To set 118.00 MHz:
Press [**1**] → [**1**] → [**8**] → [**ENT(○┅)**].

To set 118.275 MHz, you do not need to press the final "5" in the frequency:

[**1**] → [**1**] → [**8**] → [**2**] → [**7**].

❒ You may also turn the top panel's **DIAL** selector knob※1 to choose the desired operating frequency. The channel frequency will appear on the LCD.



❒ Press the [▼]/[▲] key※2 to set the volume level. If no signal is present, press and hold the [**MONITOR**] button for 2 seconds; background noise will now be heard, and you may use this noise to set the desired audio level. Press the [**MONITOR**] button momentarily to silence the noise and resume normal (quiet) monitoring.
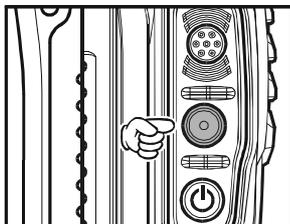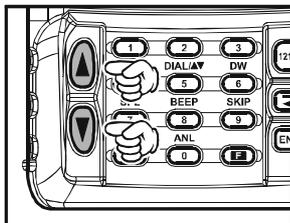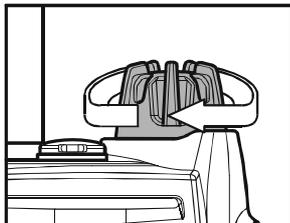




※1: If you change a function of **DIAL** and [▼]/[▲] key by pressing the [**F**] key followed by the [**5**(**DIAL/▼▲**)] key, you may choose the operating frequency by pressing the [▼]/[▲] key.

※2: If you change a function of **DIAL** and [▼]/[▲] key by pressing the [**F**] key followed by the [**5**(**DIAL/▼▲**)] key, you may set the volume level by turning the **DIAL** selector knob.

❒ To turn the radio off, press and hold in the [**POWER**] switch for 3 seconds.
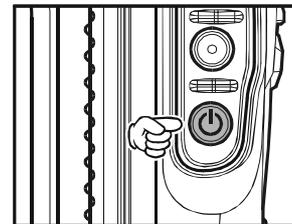
## Squelch Adjustment

❏ Press the [**F**] key momentarily, then press the [↩(**SET**)] key to activate the Menu (SET) mode.

❏ Rotate the **DIAL** selector knob to select Menu Item "SQL."

❏ Press the [**ENT(0→)**] key to enable adjustment of this Menu item.

❏ Rotate the **DIAL** selector knob to set the squelch threshold (0 to 8) so that the receiver is just silenced. A higher number indicates that a higher signal level is required in order to open the squelch.

❏ Press the [**ENT(0→)**] key to save your new setting.

❏ Press the **PTT** switch to exit the Menu ("SET") mode.
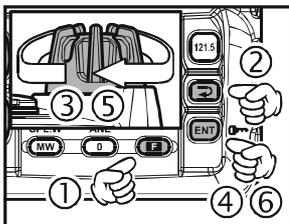
## Accessing the 121.5 MHz Emergency Frequency

The **VXA-220** can quickly access the 121.500 MHz Emergency Frequency. This function can be activated even when the keypad lock function (described on page 18) is in use.

❏ To access the Emergency Frequency, press the [**121.5**] key momentarily.

❏ To exit the Emergency Frequency, press the [**ENT(0→)**] key.
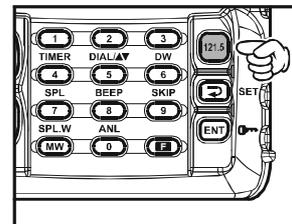
## Transmission

❏ To transmit, press and hold the **PTT** switch. Speak into the microphone area of the front panel grille in a normal voice level.

❏ To return to the receive mode, release the **PTT** switch.
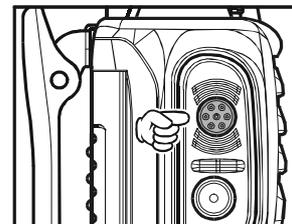
## Tuning Methods

Throughout this manual, you will see references to several different frequency setting methods. Each will be particularly useful in a particular operating situation, and they are described below:

❍ **VFO (Variable Frequency Oscillator)**

The VFO is a "tuning dial" system which allows you to tune through the NAV or COM bands using the **DIAL** selector knob, the Keypad, or the scanner. The **VXA-220** has two VFOs which are called VFO-A and VFO-B. Press the [ ⮔ (**SET**)] key momentarily to switch between VFO-A and VFO-B. You may set VFO-A to the NAV band, and VFO-B to the COM band, if you like.
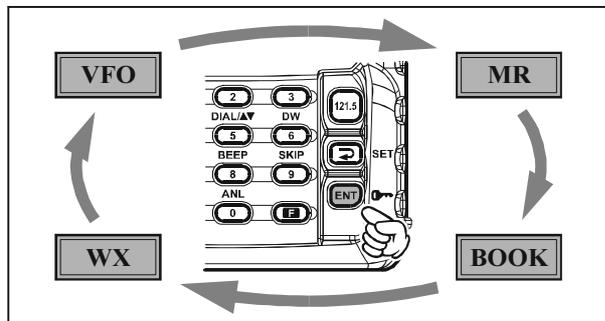


❍ **MR (Memory Recall)**

The MR (Memory Recall) mode of the **VXA-220** provides the user with the ability to store and recall as many as 150 channels in the radio's main memory bank. These memory channels may also be labeled by you with an alpha/numeric name of up to 8 characters in length, to aid in quick identification of the channel. See page 26 for details on creating alpha/numeric labels.

❍ **BOOK (Pre-Programmed) Memories**

The Book memories are pre-programmed, either at the factory or by your Dealer (depending on your country's requirements), typically including the major COM and NAV band station frequencies used in your area (See page 48 for channel list). The Book memories can be changed by the user. See page 36 for details.

❍ **WX (Weather Channel) Memories**

Ten Weather Channels are pre-programmed at the factory. The **VXA-220** will automatically scan this special bank when it is selected by the user.
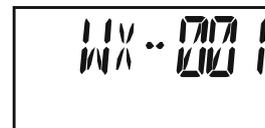
# ADVANCED OPERATION

## Reception of Weather Channel Broadcasts

The **VXA-220** can receive VHF Weather Channel broadcasts, which may assist your flight planning. The **VXA-220** includes a ten-channel auto-search feature, which simplifies access to Weather Channels when you are in an unfamiliar location.

❒ To receive Weather Channels, press the [**ENT(0⇥)**] key (repeatedly, if necessary) to select the Weather Channel mode. In the Weather Channel mode, "**- WX -**" will appear on the display.
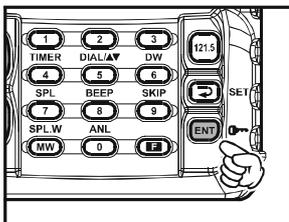
❒ The **VXA-220** will now scan quickly through the ten standard Weather Channels, and will stop on the first active station found.

❒ If there are two or more weather channels audible in your area, you may select the alternate channel(s) by pressing the **PTT** switch. Pressing the **PTT** switch re-initiates the scanning process.

❒ If there are no Weather Channels in your area, the scanner will not stop. Press the [**MONITOR**] button to stop the scanner.

❒ You can also select Weather Channels manually by rotating the **DIAL** selector knob※.

❒ To confirm the current Weather Channel frequency, press the [⤺(**SET**)] key momentarily. The display changes to frequency indication. Press the [⤺(**SET**)] key again to return to normal display.

❒ To exit the Weather Channel mode, press the [**ENT(0⇥)**] key momentarily to return to the VFO mode.

※: If you change a function of **DIAL** and [▼]/[▲] key by pressing the [**F**] key followed by the [**5(DIAL/▼▲)**] key, you may select Weather Channels by pressing the [▼]/[▲] key.

*Note 1*: In the event of extreme weather disturbances, such as storms and hurricanes, the NOAA (National Oceanic and Atmospheric Administration) sends a weather alert accompanied by a 1050 Hz tone and subsequent weather report on one of the NOAA weather channels. You may setup the Alert function when receiving the Weather Alert signal via Menu Item "WXAF," if desired. See page 43

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for details.

***Note 2***: The Weather Channel mode memorizes the last Weather Channel you have used, and will retain this information until the radio is turned off.

## Monitor Key

When listening to a very weak signal from an aircraft or ground station, you may observe the signal disappearing periodically as the incoming signal strength becomes too weak to override the squelch threshold setting.

To disable the squelch temporarily, press and hold the

[**MONITOR**] key for 2 seconds on the left side of the radio, just below the **PTT** button. The squelch will remain open and you should have a better chance of hearing weak signals.
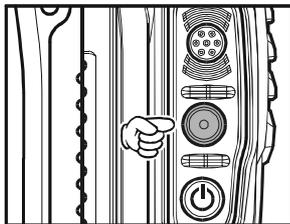
To return to normal operation, press the [**MONITOR**] key momentarily.

## ANL (Automatic Noise Limiter) Feature

For reduction of impulse noise, such as that produced by an engine's ignition system, the ANL feature may prove helpful.

❒ To activate the ANL feature, press the [**F**] key followed by the [**0**(**ANL**)] key. The "***ANL***" icon will appear on the display, and you should observe a reduction in the ignition noise.

❒ To turn the ANL feature off, repeat the above step (press the [**F**] key followed

by the [**0**(**ANL**)] key); the "***ANL***" icon will disappear from the display.
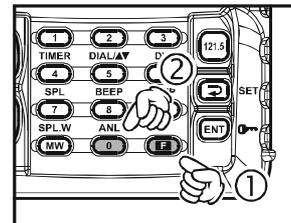
## LOCK Function

The lock function prevents accidental changes to the frequency setting and the keypad controls.

❒ To activate the lock feature, press the [**F**] key followed by the [**ENT(🔑)**] key. The "🔑" icon will appear on the display

❒ To turn the lock feature off, repeat the above step (press the [**F**] key followed by the [**ENT(🔑)**] key); the "🔑" icon will disappear from the display.

❒ You can still access the 121.500 MHz Emergency Frequency when the LOCK function is on.
Simply press the [**121.5**] key momentarily (this key *never* locks). Pressing this key also unlocks the radio.

You may choose the lockout configuration according to your operating preferences. See page 43 for details.
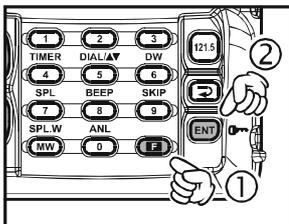
## DIAL and [▼]/[▲] key Swap Configuration

In the factory default, the **DIAL** selector knob selects the operating frequency and the memory channel, and the [▼]/[▲] key adjust the audio volume level. However, you may exchange the function of the **DIAL** selector knob and [▼]/[▲] key; as a result, adjust the audio volume level by the **DIAL** selector knob, and selects the operating frequency and the memory channel by the [▼]/[▲] key.

Press the [**F**] key followed by the [**5(DIAL/▼▲)**] key to toggle the **DIAL** and [▼]/[▲] key configurations.
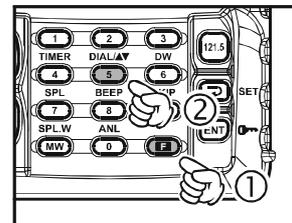
# ADVANCED OPERATION

## Receive Battery Saver Setup

An important feature of the **VXA-220** is its Receive Battery Saver, which "puts the radio to sleep" for a time interval, periodically "waking it up" to check for activity. If somebody is talking on the channel, the **VXA-220** will remain in the "active" mode, then resume its "sleep" cycles. This feature significantly reduces quiescent battery drain, and you may change the amount of "sleep" time between activity checks using the Menu System:

❒ Press the [**F**] key momentarily, then press the [↻(**SET**)] key to activate the Menu ("SET") mode.

❒ Rotate the **DIAL** selector knob to select Menu Item "RSAV."

❒ Press the [**ENT(○➝)**] key to enable adjustment of this Menu Item.

❒ Rotate the **DIAL** selector knob to select the desired "duty cycle" (receive:sleep). The selections available are 1:1, 1:2, 1:3, 1:4, 1:5, and ABS✳ or oFF. The default value is 1:1.
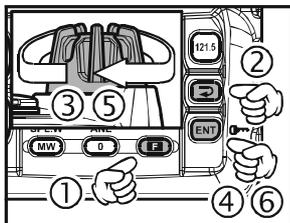
❒ When you have made your selection, press the [**ENT(○➝)**] key to save the new setting, and then press the PTT key to exit to normal operation.

✳: ABS: Automatic Battery Saver, based on activity on the receiver.

The setting of 1:5 will promote the greatest conservation of battery capacity, but the receiver's response time to incoming calls will be slowed somewhat.

*Note*: This feature does not operate during Scan or Dual Watch.

# ADVANCED OPERATION

## Beep On/Off

The **VXA-220**'s key/button beeper provides convenient audible feedback whenever a button is pressed. Each key and button has a different beep pitch, and each function has a unique beep combination.

When you are scanning, the beeper will be heard each time the scanner halts on a busy channel. This may be distracting in some environments; if you want to turn the beeper off (or back on again):

❒ To disable the beeper, press the [**F**] key followed by the [**8**(**BEEP**)] key. The "**BEEP OFF**" notation will appear on the display for 3 seconds.

❒ To turn the beep on, repeat the above step (press the [**F**] key followed by the [**8**(**BEEP**)] key); the "**BEEP ON-**" notation will appear on the display for 3 seconds.
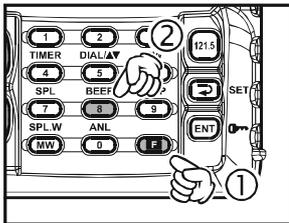
You may turn the beeper on and off via the Menu Item "**BEEP**."

The **VXA-220** provides for adjustment of the Beep level via the Menu. To adjust the Beep level:

❒ Press the [**F**] key momentarily, then press the [⤺(**SET**)] key to activate the Menu ("SET") mode.

❒ Rotate the **DIAL** selector knob to select Menu Item "**BPLV**."

❒ Press the [**ENT**(🔒)] key to enable adjustment of this Menu item.

❒ Rotate the **DIAL** selector knob to select the desired beep level (1, 2, or 3).
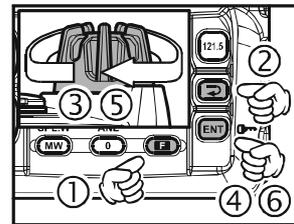
❒ When you have made your selection, press the [**ENT**(🔒)] key to save the new setting, and then press the **PTT** key to exit to normal operation.

## Changing the Channel Steps

The **VXA-220**'s synthesizer provides the option of utilizing channel steps of 8.33/25 kHz per step (default: 25 kHz). If you need to change the channel step size, the procedure to do so is very easy.

❒ First set the **VXA-220** to the operating band (NAV or COM) on which you wish to change the channel steps.

❒ Press the [**F**] key momentarily, then press the [⮌(**SET**)] key to activate the Menu ("SET") mode.

❒ Rotate the **DIAL** selector knob to select Menu Item "**STEP**."

❒ Press the [**ENT**(⊶)] key to enable adjustment of this Menu item.

❒ Rotate the **DIAL** selector knob to select the new channel step size.

❒ When you have made your selection, press the [**ENT**(⊶)] key to save the new setting, and then press the **PTT** key to exit to normal operation.
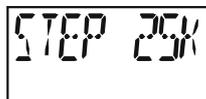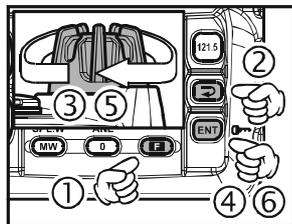
**Important Note**

1) When you select the channel step to 8.33 kHz, the channel display differs from actual operating frequency; see the chart below. However, the operator (pilot, tower, control, etc) will call out the frequency according to what the display indicates.

| Operating Frequency | Display | |
|---|---|---|
| | 8.33 kHz Step | 25 kHz Step |
| 1xx.0000 MHz | 1xx.005 MHz | 1xx.000 MHz |
| 1xx.0083 MHz | 1xx.010 MHz | |
| 1xx.0166 MHz | 1xx.015 MHz | |
| 1xx.0250 MHz | 1xx.030 MHz | 1xx.025 MHz |
| 1xx.0333 MHz | 1xx.035 MHz | |
| 1xx.0416 MHz | 1xx.040 MHz | |
| 1xx.0500 MHz | 1xx.055 MHz | 1xx.050 MHz |
| 1xx.0583 MHz | 1xx.060 MHz | |
| 1xx.0666 MHz | 1xx.065 MHz | |
| 1xx.0750 MHz | 1xx.080 MHz | 1xx.075 MHz |
| 1xx.0833 MHz | 1xx.085 MHz | |
| 1xx.0916 MHz | 1xx.090 MHz | |

2) The 8.33 kHz step allows the radio to receive only, and the transmit function is disabled.

3) The adjacent channel selectivity will be slightly degraded while receiving using 8.33 kHz channel steps.

## VOX Operation

The VOX system provides automatic transmit/receive switching based on voice input to the microphone when using the after- market Headset. With the VOX system enabled, you do not need to press the **PTT** switch in order to transmit.

*Note*: The VOX system does not function when using just the internal microphone; an external headset must be used.

❒ *Press and hold* the [**6**(**DW**)] key for *3 seconds* to activate the VOX system. The "VOX" icon will appear on the display.
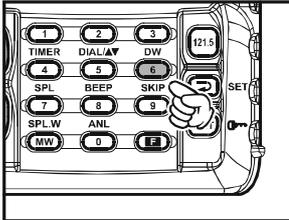
❒ Without pressing the **PTT** switch, speak into the microphone on the Headset in a normal voice level. When you start speaking, the transmitter should be activated automatically. When you finish speaking, the transceiver should return to the receive mode (after a short delay).

❒ To cancel VOX and return to **PTT** operation, press and hold the [**6**(**DW**)] key for 3 seconds; the "VOX" icon will disappear from the display.

The **VXA-220** provides for adjustment of the VOX Gain via the Menu, to prevent accidental transmitter activation in a noisy environment. To set the VOX Gain:

❒ Press the [**F**] key momentarily, then press the [↩(**SET**)] key to activate the Menu ("SET") mode.
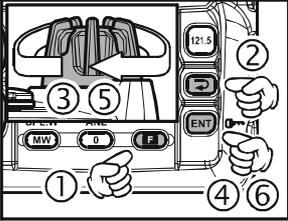
❒ Rotate the **DIAL** selector knob to select Menu Item "**VSNS**."

❒ Press the [**ENT**(⊙⊓)] key to enable adjustment of this Menu item.

❒ While speaking into the microphone on the Headset, rotate the **DIAL** selector knob to the point where the transmitter is quickly activated by your voice, without causing background noise to activate the transmitter.

❒ When you have selected the optimum setting, press the [**ENT**(⊙⊓)] key to save the new setting, and then press the **PTT** switch to exit to normal operation.

# ADVANCED OPERATION

The **VXA-220** also provides for adjustment of the "Hang-Time" of the VOX system (transmit-receive delay after the cessation of speech) via the Menu. The default delay is one second. To set a different delay time:

❒ Press the [**F**] key momentarily, then press the [⤵(**SET**)] key to activate the Menu ("SET") mode.
❒ Rotate the **DIAL** selector knob to select Menu Item "**VDLY**."
❒ Press the [**ENT(⊶)**] key to enable adjustment of this Menu item.
❒ Rotate the **DIAL** selector knob to select the delay time among "05," "10," "15," and "20" (representing 0.5, 1.0, 1.5, and 2.0 sec).
❒ When you have made your selection, press the [**ENT(⊶)**] key to save the new setting, and then press the **PTT** switch to exit to normal operation.
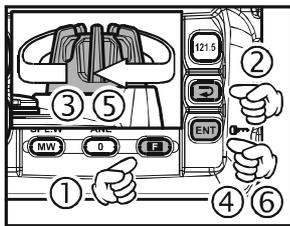
## Side Tone Feature (MONITORING YOUR VOICE)
When using the after-market Headset, you may monitor your transmitted voice from the headset for monitoring.

To set the side tone (monitor) level:

❒ Press the [**F**] key momentarily, then press the [⤵(**SET**)] key to activate the Menu ("SET") mode.
❒ Rotate the **DIAL** selector knob to select Menu Item "**STLV**."
❒ Press the [**ENT(⊶)**] key to enable adjustment of this Menu item.
❒ Rotate the **DIAL** selector knob to select the desired monitoring level (1, 2, or 3).
❒ When you have made your selection, press the [**ENT(⊶)**] key to save the new setting, and then press the PTT key to exit to normal operation.
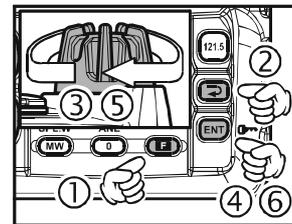
## Timer Operation

The **VXA-220** is provided a "Stop Watch" timer and a "Count Down" timer. These can be used for a variety of time-keeping purposes.

❒ Press the [**F**] key followed by the [**4**(**TIMER**)] key to activate the Timer Mode.
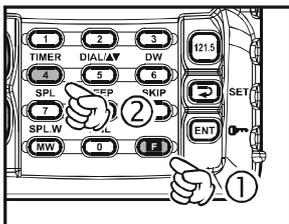
❒ Press the [⤺(**SET**)] key toggle the Timer between the "**Stop Watch**" and "**Count Down**" timer modes.



"**STOP WATCH**" **TIMER**          "**COUNT DOWN**" **TIMER**

❒ If you select the "**Count Down**" timer, rotate the **DIAL** knob to set the values for the timer (1 minutes - 60 minutes).

❒ The Timer is designed to start/stop/reset repeatedly whenever you press the [**ENT**(⌐)] key.

❒ In the "**Count Down**" timer mode, an alert will sound and the timer will stop when the "**Count Down**" timer reaches "**00 00 00**."

❒ To disable the Timer Mode, press the [**F**] key followed by the [**4**(**TIMER**)] key again.

# MEMORY OPERATION

The **VXA-220** provides 150 user-programmable "Main" memories, labeled "**CH-001**" through "**CH-150**," and up to 100 pre-programmed memories, designated "Book" Memories. The "📖" icon appears when the "Book" Memory Mode is activated.

The Main memories and "Book" Memories can be assigned alpha-numeric names of up to eight characters.

## Memory System Operation

The **VXA-220**'s Main Memory system allows the user to store, label, and recall channel frequencies which you may want to use frequently. You may store VFO frequencies, Book Memory frequencies, and/or Weather Channel frequencies (USA version only) into the Main Memory system.

## Memory Storage

❒ Select the desired frequency in the VFO mode, or recall the Book Memory channel or Weather channel to be stored in the Main Memory.

❒ ***Press and hold*** in the [**MW**(**SPL-W**)] key for 2 seconds. The memory channel number will blink on the LCD.
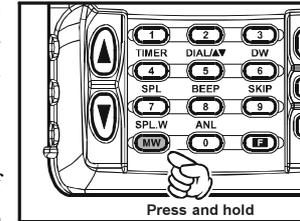
❒ Within five seconds of pressing the [**MW**(**SPL-W**)] key, rotate the **DIAL** selector knob to select the desired memory channel number for storage. In order to prevent writing over memory channels, an "underline" will appear under the hyphen (located between "CH" and the channel number) to indicate a vacant memory channel.

❒ Now press and hold in the [**MW**(**SPL-W**)] key for 2 seconds; you will now see blinking "**A**" on the LCD.

To attach an alpha/numeric name (label) to the memory, proceed to the next step; otherwise press

and hold in [**MW**(**SPL-W**)] for 2 seconds to save the entry and exit.

❒ To label a memory with an alpha/numeric name, the next step is to use the **DIAL** selector knob to select any of the 48 available characters (including letters, numbers, and special symbols). When the desired first character appears, press the [**ENT**(🔑)] key momentarily to move on to the next character.

❒ Select succeeding characters in the same manner, pressing the [**ENT**(🔑)] key momentarily after each selection.

❒ After entering the entire name (eight characters maximum), press the [**MW**(**SPL-W**)] key for 2

LAX F55

seconds to save all data for the channel and exit.

| ALPHA-TAG CHARACTORS | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| A | B | C | D | E | F | G | H | I | J | K | L |
| M | N | O | P | Q | R | S | T | U | V | W | X |
| Y | Z |  | < | > | + | ⁻ | ∗ | / | Δ | µ | Σ |
| \| | - | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
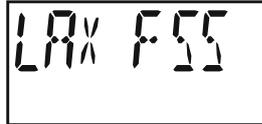
*Note*: If you have transferred a Weather Channel directly to memory, the "WX-01 ~ WX-10" labels utilize the alphanumeric memory, and other labels may not be stored.

# MEMORY OPERATION

## Recalling the Memories

❏ Press the [**ENT(0┉)**] key, repeatedly if necessary, until "**- MR -**" (Memory Recall) appears on the display. In the MR mode, you will see "CH-" and the previously selected channel number appearing on the LCD.
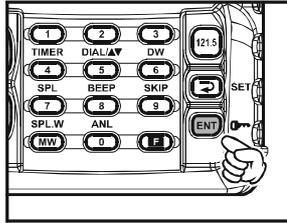
❏ Rotate the **DIAL** selector knob※ to select the desired memory channel.

❏ You may change the title structure of the Memory display type among:
1. Channel Indication (sequential Channel Number, e.g. CH-001, CH-002, etc.);
2. Frequency Indication (e.g. 122.500); or
3. Alphanumeric Label (e.g. LAX FSS).

❏ To change the Memory display title, press the [↩(**SET**)] key repeatedly, if necessary, until you get the desired display title structure.
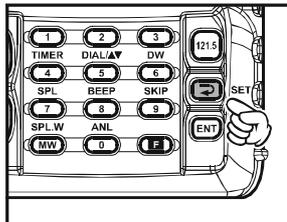
❏ To exit the Memory mode, press the [**ENT(0┉)**] key three times to return to the VFO mode.

※: If you change a function of **DIAL** and [▼]/[▲] key by pressing the [**F**] key followed by the [**5**(**DIAL/ ▼▲**)] key, you may select the memory channel by pressing the [▼]/[▲] key.

"**CHANNEL INDICATION**"

"**FREQUENCY INDICATION**"
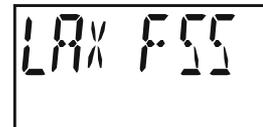
"**ALPHANUMERIC LABEL**"

## Deleting Memories

You may delete any of the memories (except for memory channel "001"). The procedure for deleting a channel is quite simple.

❏ Press the [**F**] key momentarily, then press the [⮌(**SET**)] key to activate the Menu ("SET") mode.

❏ Rotate the **DIAL** selector knob to select Menu Item "**MCLR**."

❏ Press the [**ENT**(⊶)] key, then rotate the **DIAL** selector knob to recall the memory channel to be erased.

❏ Press the [**ENT**(⊶)] key to clear the Memory channel (the Memory channel number will return to "001").
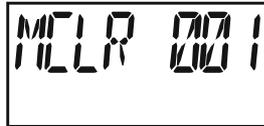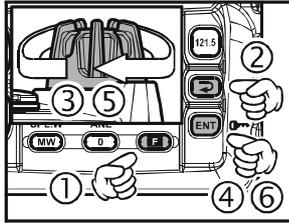
⚠ *Important Notice*: An "erased" channel cannot be restored, and "CH-001" cannot be erased, as it is used for "Priority Channel" operation.

# SCANNING OPERATION

The **VXA-220** allows you to scan automatically in the VFO※1, Main Memory, "Book" Memory, or Weather Channel※2 modes. It pauses on signals encountered, so you can talk to the station(s) on that frequency, if you like.

※1: In the VFO mode, the automatic scanner is only available in the COM band (118.000 - 136.975 MHz); when the scanner reaches the uppermost frequency in the COM band, it will revert to the bottom end of the COM band and repeat the scanning process until you cancel the scanning process.

※2: USA version only.

If you wish to scan in the NAV band (108.000 - 117.975 MHz), you can do so manually, as described below.

Scanning operation is basically the same in each of the above modes.

❐ ***Press and hold in*** the [⮐(**SET**)] key for *2 seconds* to start the automatic scanner upward (toward a higher frequency or a higher channel number).
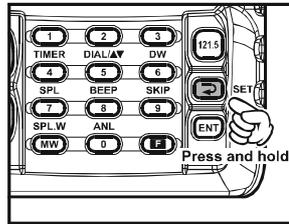
❐ When the scanner encounters a signal, the scanner will halt on that channel and will hold there for five seconds, after which scanning will resume.

❐ While the scanner remains paused on a frequency, the decimal point of the frequency displays blinks. The display will be illuminated unless the Scan Lamp Feature is turned off.

❐ To change the scan direction, turn the **DIAL** selector knob one click in the opposite direction※.

❐ To stop the automatic scanner, press the **PTT** switch or the [**ENT**(⊶)] key momentarily. You may also just press the [⮐(**SET**)] key.
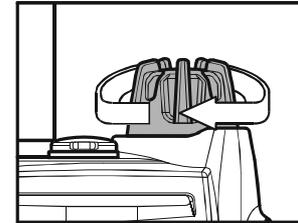
※: If you change a function of **DIAL** and [▼]/[▲] key by pressing the [**F**] key followed by the [**5**(**DIAL/▼▲**)] key, you may change the scan direction by pressing the [▼]/[▲] key in the opposite direction.

The **VXA-220**'s automatic scanner is not operational in the NAV band (108.000 - 117.975 MHz), because the NAV stations (ILS, etc.) transmit constantly (thereby causing the scanner to stop repeatedly). However, you can scan manually in the NAV band, per the following procedure:

❒ Press and hold the [⊃(**SET**)] key for 2 seconds to start the manual scanner. Scanning will continue as long as the key is depressed.

❒ Release the [⊃(**SET**)] key to stop the manual scanner immediately.

*Note*: When scanning upward in frequency, when the frequency reaches the COM Band (118.000 - 136.975 MHz) via manual scanning, the **VXA-220** will switch to the automatic scanner mode.

## Channel-Skip Scanning

Continuous-carrier stations like ATIS (Automatic Terminal Information Service) or Weather Broadcast stations inhibit scanner operation. Since these stations are always active, the scanner will be halted repeatedly on their channels. Such channels can be set to be "skipped" during Memory scanning (MR, Book or WX modes), if you like, so as not to interfere with automatic channel scanning:

❒ Recall the Memory Channel to be skipped during scanning.

❒ Press the [**F**] key followed by the [**9**(**SKIP**)] key. The "*SKIP*" icon will appear on the display, indicating that the channel is to be ignored during scanning.
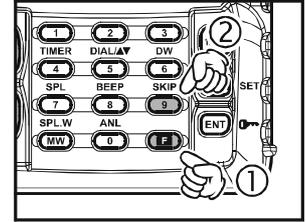


❒ You can also designate a channel to be skipped while scanning. When the receiver is halted on a channel that you wish to skip, press and hold the [⊃(**SET**)] key for 2 seconds (the "*SKIP*" icon will appear next to the channel to be skipped).



❒ Later, to re-enable the memory channel for scanning, repeat the first two steps. The "*SKIP*" icon will disappear by the channel you have just re-enabled.

*Note*: A memory set to be "skipped" is still accessible for manual memory selection using the **DIAL** selector knob or [▼]/[▲] key, if you change a function of **DIAL** and [▼]/[▲] key by pressing the [**F**] key followed by the [**5**(**DIAL/▼▲**)] key.

# DUAL WATCH OPERATION

The Dual Watch feature automatically checks for activity on a "priority" channel※ while you are operating on another channel. During Dual Watch operation, the current channel and the Priority channel will each be polled for a 500 ms interval, as the **VXA-220** looks for activity on each channel.

❒ To start Dual Watch, press the [**F**] key followed by the [**6**(**DW**)] key. The "*DW*" icon will appear on the display.
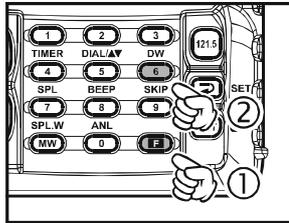
❒ While receiving on the "current" channel (not the Priority channel), you may push the **PTT** switch at any time to transmit on that channel.

❒ When a signal is received on the Priority channel, operation immediately shifts to the Priority channel, the "*DW*" icon will blink, and the display will become illuminated unless the Scan Lamp Feature is turned off.

❒ While receiving on the priority channel, if you momentarily press the **PTT** switch, Dual Watch will be disabled. You may then transmit on the Priority Channel.

❒ To stop Dual Watch, press [**F**] key followed by the [**6**(**DW**)] key.

※: The "priority" Channel is defined as the last-used Memory Channel (when using the VFO mode) or Memory Channel "001" (when using the Main Memory or Book Memory modes).

Similar to Dual Watch operation (described on previous page), Priority Dual Watch is an enhanced version which includes the following additional features:

❍ The receiving time interval (ratio) between the current channel and the Priority channel may be customized via Menu Item "**PRTM**." See page 41 for details.

❍ Irrespective of which channel is currently being received, when the **PTT** switch is pushed transmission will always occur on the Priority channel.

Before initiating Priority Dual Watch, Menu Item "**DWMD**" must be set to the "**PRI**: Priority" mode (instead of "**DW**: Dual Watch"). See page 41 for details.

❒ To start Priority Dual Watch, press the [**F**] key followed by the [**6**(**DW**)] key. The "*DW*" icon will appear on the display.

❒ While receiving on the "current" (non-Priority) channel, pressing the **PTT** switch once causes the radio to switch to the Prior-

ity channel and cancels Dual Watch. Press the **PTT** switch again to transmit on the Priority channel.
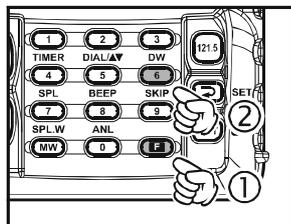
❒ When a signal is received on the Priority channel, reception immediately shifts to the Priority channel, the "*DW*" icon will blink, and the display will become illuminated unless the Scan Lamp Feature is turned off.

While receiving on the priority channel, if you momentarily press the **PTT** switch, Priority Dual Watch will be disabled. You may then transmit on the Priority Channel.

❒ To stop Priority Dual Watch, press the [**F**] key followed by the [**6**(**DW**)] key.

# SPLIT OPERATION

The split operation feature allows you to transmit a call to a Flight Service Station using the COM band frequencies, while receiving an ATIS broadcast (in the NAV band). The ATIS broadcasts are used by airports to notify arriving and departing pilots of the current surface weather conditions, landing and departing runways, runway and taxiway conditions, communication frequencies and other information of importance to arriving and departing aircraft.

## Programming a Transmit Frequency

❒ Press the [**ENT**(�㊀)] key, repeatedly if necessary, to select the VFO mode.

❒ Set a NAV band frequency (108.000 - 117.975 MHz), such as the ATIS broadcast using the **DIAL** selector knob✳ or keypad.

❒ Press the [**F**] key followed by the [**MW**(**SPL-W**)] key. The "*SPL*" icon will blink, and the transmit frequency will appear on the display.
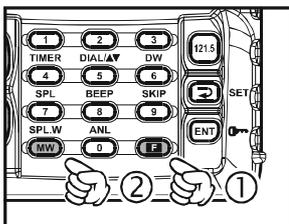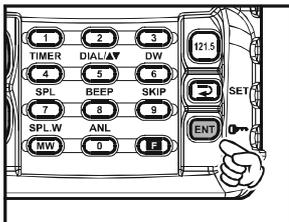
❒ Now set your radio's transmit frequency, where the Flight Service Station will be listening for calls, using the **DIAL** selector knob✳ or keypad.

❒ Press and hold in the [**MW**(**SPL-W**)] key for 2 seconds to save the transmit frequency and return to the NAV band frequency.

✳: If you change a function of **DIAL** and [▼]/[▲] key by pressing the [**F**] key followed by the [**5**(**DIAL/▼▲**)] key, you may set the operating frequency by pressing the [▼]/[▲] key.

*Note*: You have now stored the separate transmit frequency, but you have not yet activated the split-frequency function; go on to the next section.

## Operating in the Split Mode

❒ It is assumed that you have already set the desired VOR station's frequencies (in the NAV band) per the above instructions.

❒ Press the [**F**] key fol-
lowed by the [**7**(**SPL**)]
key to turn on the
"Split" function. The
"***SPL***" icon will appear
on the display.

❒ Press and hold in the
**PTT** switch to transmit on
the split transmit fre-
quency.

❒ Release the **PTT** switch to
return to the receive mode.

❒ To disable the "Split" function, press the [**F**] key fol-
lowed by the [**7**(**SPL**)] key again.
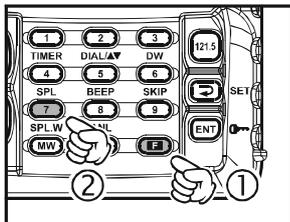
*Note*: A split frequency can be programmed into each memory channel independently. Set a transmit frequency before programming the memory channel, if desired. The split function on/off setting can also be programmed into a memory channel.

The **VXA-220**'s Book Memories also allow the user to store, label, and recall channel frequencies which you may want to use frequently while the **VXA-220** is in the Field Programming mode.

Memory Storage into the Book Memory
❒ Press and hold the **PTT** and [**ENT(0▬)**)] key while turning the radio on, to activate the Field Programming Mode.
❒ Select the desired frequency to be stored in the Book Memory.
❒ Press and hold in the [**MW(SPL-W)**] key for 2 seconds. The book memory channel number will blink on the LCD.
❒ Within five seconds of pressing the [**MW(SPL-W)**] key, rotate the **DIAL** selector knob to select the desired memory channel number for storage. In order to prevent writing over memory channels, an "underline" will appear under the hyphen (located between "BOOK" and the channel number) to indicate a vacant memory channel.
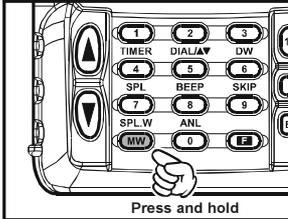
❒ Now press and hold in the [**MW(SPL-W)**] key for 2 seconds; you will now see blinking "**A**" at the left side of the LCD. To attach an alpha/numeric name (label) to the memory, proceed to the next step; otherwise press and hold in the [**MW(SPL-W)**] key for 2 seconds to save the entry and exit.
❒ To label a memory with an alpha/numeric name, the next step is to use the **DIAL** selector knob to select any of the 48 available characters (including letters, numbers, and special symbols). When the desired first character appears, press the [**ENT(0▬)**)] key momentarily to move on to the next character.
❒ Select succeeding characters in the same manner, pressing the [**ENT(0▬)**)] key momentarily after each selection.
❒ After entering the entire name (eight characters maximum), press the [**MW(SPL-W)**] key for 2 seconds to save all data for the channel.
❒ Repeat this procedure to store additional frequencies into the Book Memory section, as desired.
❒ Turn the radio off, then turn the radio back on again to begin normal operation.

# CPU RESETTING

In some instances of erratic or unpredictable operation, the cause may be corruption of data in the microprocessor (due to static electricity, etc.). If this happens, resetting of the microprocessor may restore normal operation. Note that all memories will be erased if you do a complete microprocessor reset, as described below.

To clear all memories and other settings to factory defaults:

❒ Turn the radio off.
❒ Press and hold in the [**ENT**(🔑)] key and the [**MONI-TOR**] button, while turning the radio on.

# NOTE

The Menu system allows certain aspects of your radio's configuration to be customized for your personal operating convenience. We do not recommend that any of the default settings be changed, however, until you are thoroughly familiar with the operation of the **VXA-220**.

1. Press the [**F**] key momentarily, then press the [↻(**SET**)] key to activate the Menu ("SET") mode.
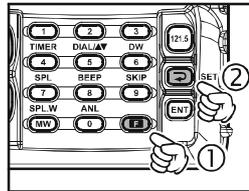
2. Rotate the **DIAL** selector knob to select the Menu Item (feature) you wish to view and/or modify.
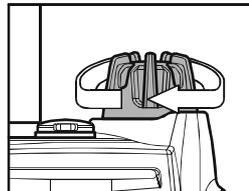
3. Once you have selected the desired Menu Item, press the [**ENT**(⊶)] key to enable adjustment of this Menu Item. The current setting value will be blinking.
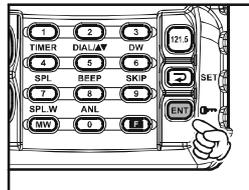
4. Rotate the **DIAL** selector knob to change the setting of the item ("on" to "oFF," etc.).
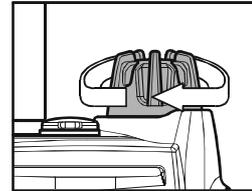
5. Press the [**ENT**(⊶)] key to save your new setting.
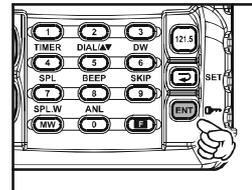
6. If you need to change more than one Menu item, repeat steps 2 - 5.

7. Press the **PTT** switch to exit the Menu ("SET") mode.
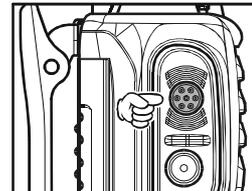
## MENU Listing

A listing of the Menu items available via the SET mode may be found below.

# MENU ("SET") MODE

| MENU | FUNCTION | Available Values | DEFAULT |
|------|----------|------------------|---------|
| SQL | Squelch Level Setting. | 0 ~ 8 | 6 |
| MCLR | Memory Channel Clear ("MR" memory only). | – | – |
| RESM | Scan-Resume Mode Setting. | 5S / CAR | 5S |
| SCNL | Scan Lamp On/Off (while paused). | on / oFF | on |
| BEEP | Keypad Beeper On/Off. | on / oFF | on |
| RSAV | Selects the Receive-mode Battery Saver "sleep" ratio. | 1:1 ~ 1:5 / oFF / ABS | 1:1 |
| LAMP | Display and Keypad Illumination Mode. | KEY / oFF / CNT | KEY |
| SFT | CPU Clock Shift. | on / oFF | oFF |
| PRTM | Selects the Priority Checking Time. | 05 / 10 / 15 / 20 / 25 / 30 | 20 |
| DWMD | Selects the Dual Watch/Priority Function. | DW / PRI | DW |
| POBP | Select the Power on Beep. | MD1 / MD2 / MD3 / oFF | MD1 |
| IMIC | Internal Microphone On/Off. | on / oFF | oFF |
| EMRG | Emergency channel On/Off. | on / oFF | on |
| TOT | Setting of the Time-Out Timer countdown time. | 1 / 3 / 5 / oFF | oFF |
| DIMM | Setting of the display brightness level. | LV1 ~ LV4 | LV3 |
| WXAF | Selects the Alert functions when receiving the Weather Alert Signal on the WX channel. | BP / LED / B+L / oFF | oFF |
| VOX | Enables/disables VOX operation. | on / oFF | oFF |
| VDLY | Selects the VOX delay ("hang") time. | 05 / 10 / 15 / 20 | 10 |
| VSNS | Sets the VOX sensitivity. | 1 ~ 8 | 4 |
| LOCK | Selects the control locking lockout combination. | K / KD / P / PD / PK / PKD / D | K |
| STEP | Selects the synthesizer steps. | 25 kHz / 8 kHz | 25 kHz |
| BPLV | Sets the Beep level. | 1 ~ 3 | 2 |
| STLV | Sets the Side Tone level. | 1 ~ 3 | 3 |

# MENU ("SET") MODE

## [SQL]
**Function**: Squelch Level Setting.
**Available Values**: 0 ~ 8
**Default Setting**: 6
Select a setting for this Menu item which just silences the receiver when no signal is present. Use the lowest setting which will keep the receiver quiet between incoming transmissions.

## [MCLR]
**Function**: Memory Channel Clear ("MR" memory only).
To clear a Memory channel:
❒ Select the Menu Item MCLR.
❒ Press the [ENT(🔑)] key, then rotate the **DIAL** selector knob to recall the memory channel to be erased.
❒ Press the [ENT(🔑)] key to clear the Memory channel (the Memory channel number will return to "001").
*Important Notice*: An "erased" channel cannot be restored, and "CH-001" cannot be erased, as it is used for "Priority Channel" operation.

## [RESM]
**Function**: Scan-Resume Mode Setting.
**Available Values**: 5S/CAR
**Default Setting**: 5S
"5S" (5-Second Pause) mode:
    the scanner will halt for five seconds only, after which scanning will resume (whether or not the other station is still transmitting).
"CAR" (Carrier Drop) mode:
    the scanner will remain halted for as long as there is a carrier present on the channel; after the carrier drops at the end of the other station's transmission, the scanning will resume.

## [SCNL]
**Function**: Scan Lamp On/Off (while paused).
**Available Values**: on/oFF
**Default Setting**: on
If you set this function to "on," the lamp will be illuminated whenever the scanner pauses. The lamp will go off automatically when scanning resumes.

## [BEEP]
**Function**: Keypad Beeper On/Off.
**Available Values**: on/oFF
**Default Setting**: on

## [RSAV]

**Function**: Selects the Receive-mode Battery Saver "sleep" ratio.
**Available Values**: 1:1 ~ 1:5/oFF/ABS※
**Default Setting**: 1:1

The setting of 1:5 will promote the greatest conservation of battery capacity, but the receiver's response time to incoming calls will be slowed somewhat.

※ABS: Automatic Battery Saver, based on activity on the receiver.

*Note*: This feature does not operate during Scan or Dual Watch.

## [LAMP]

**Function**: Display and Keypad Illumination Mode.
**Available Values**: KEY/oFF/CNT
**Default Setting**: KEY

"KEY" mode:  The illumination lamp will be activated for 5 seconds when any front panel key or the **DIAL** knob is operated.
"oFF" mode:  Disables the illumination lamp.
"CNT" mode:  Illuminates the Display/Keypad continuously.

## [SFT]

**Function**: CPU Clock Shift.
**Available Values**: on/oFF
**Default Setting**: oFF

This function is only used to move a spurious response "birdie" should it fall on a desired frequency. Consult your Vertex Standard dealer for details regarding this function.

## [PRTM]

**Function**: Selects the Priority Checking Time.
**Available Values**: 05/10/15/20/25/30 (0.5/1/1.5/2/2.5/3 sec.)
**Default Setting**: 20 (2 seconds)

This Menu item allows you to define how often the Priority Channel will be checked for activity.

*Note*: The Dual Watch Polling time is 500 mS (fixed).

## [DWMD]

**Function**: Selects the Dual Watch/Priority Function.
**Available Values**: DW/PRI
**Default Setting**: DW

"DW" mode: The **VXA-220** will activate the Dual Watch feature when you press the [**F**] key followed by the [**6**(**DW**)] key.
"PRI" mode: The **VXA-220** will activate the Priority feature when you press the [**F**] key followed by the [**6**(**DW**)] key.

## [POBP]
**Function**: Select the Power on Beep.
**Available Values**: MD1/MD2/MD3/oFF
**Default Setting**: MD1
*Note*: You will hear the different selections as you rotate the **DIAL** selector knob.

## [IMIC]
**Function**: Internal Microphone On/Off.
**Available Values**: on/oFF
**Default Setting**: oFF
This controls the status of the radio's internal microphone when an external microphone (such as the **MH-44A4B** Speaker Microphone or an aviation headset connected via the **CT-60** Headset Cable) is in use. In most applications, set this Menu Item to "oFF" for proper operation (this disables the internal microphone). The internal microphone will still function normally when the external microphone is disconnected.

## [EMRG]
**Function**: Emergency channel On/Off.
**Available Values**: on/oFF
**Default Setting**: on
This controls the operation of the Emergency [**121.5**] key. When set to "oFF," this key will not function. You can still use the frequency 121.5 MHz either by entering it on the keypad in the VFO mode, or by recalling it on a previously-stored memory channel.

## [TOT]
**Function**: Setting of the Time-Out Timer countdown time.
**Available Values**: 1/3/5/oFF (minutes)
**Default Setting**: oFF
The Time-Out Timer shuts off the transceiver after continuous transmission exceeds the programmed time.

## [DIMM]
**Function**: Setting of the display brightness level.
**Available Values**: LV1 ~ LV4
**Default Setting**: LV3

## [WXAF]

**Function**: Selects the Alert functions when receiving the Weather Alert Signal on the WX channel.

**Available Values**: BP/LED/B+L/oFF

**Default Setting**: oFF

BP:    Sounds a loud beep when receiving the Weather Alert Signal.

LED:   Flashes the back light of the Display/Keypad when receiving the Weather Alert Signal.

B+L:   Sounds a loud beep and flashes the back light of the Display/Keypad when receiving the Weather Alert Signal.

oFF:   Disables the Alert function.

To stop the loud beep and/or back light flashing, press any key (except [▼]/[▲] key)

When the Weather Alert function is activated, the "((A))" icon will appear on the display.

## [VOX]

**Function**: Enables/disables VOX operation.

**Available Values**: on/oFF

**Default Setting**: oFF

## [VDLY]

**Function**: Selects the VOX delay ("hang") time.

**Available Values**: 05/10/15/20 (x0.1 sec)

**Default Setting**: 10 (x0.1 sec)

## [VSNS]

**Function**: Sets the VOX sensitivity.

**Available Values**: 1 ~ 8

**Default Setting**: 4

## [LOCK]

**Function**: Selects the control locking lockout combination.

**Available Values**: K/KD/P/PD/PK/PKD/D

**Default Setting**: K

K: Keypad, D: **DIAL** knob, P: **PTT** switch

(Other selections are combinations of these lock-out choices)

## [STEP]

**Function**: Selects the synthesizer steps.

**Available Values**: 25 kHz/8 kHz

**Default Values**: 25 kHz

## [BPLV]

**Function**: Sets the Beep level.

**Available Values**: 1~ 3

**Default Setting**: 2

## [STLV]

**Function**: Sets the Side tone level.

**Available Values**: 1 ~ 3

**Default Setting**: 3

# ACCESSORIES & OPTIONS

## Supplied Accessories

| | |
|---|---|
| Ni-MH Battery Pack (7.2V, 1400mAh) | **FNB-83** |
| Battery Charger | **NC-88B** or |
| | **PA-48C** |
| Charger Cradle | **CD-32** |
| Helical Antenna | **ATV-10** |
| DC Cable w/Noise Filter | **E-DC-5B** |
| Alkaline Battery Case | **FBA-25A** |
| Headset Cable | **CT-96** |
| Antenna Adapter (SMA to BNC) | **CN-3** |
| Operating Manual | |
| Warranty Card | |

## Available Options

| | |
|---|---|
| **ATV-10** | Helical Antenna |
| **MH-44B4B** | Speaker Microphone |
| **FNB-83** | Ni-MH Battery Pack (7.2V, 1400mAh) |
| **FBA-25A** | Alkaline Battery Case |
| **NC-88B**※ | Battery Charger |
| **PA-48C**※ | Battery Charger |
| **CD-32** | Charger Cradle |
| **E-DC-5B** | DC Cable w/Noise Filter |
| **E-DC-6** | DC Cable; plug and wire only |
| **CT-96** | Headset Adapter |
| **CN-3** | Antenna Adapter (SMA to BNC) |

※: "**B**" suffix is for use with 120 VAC or "**C**" suffix is for use with 230-240 VAC.

*Availability of accessories may vary. Some accessories are supplied as standard per local requirements, while others may be unavailable in some regions. Consult your Vertex Standard Dealer for details regarding these and any newly-available options.*

*Connection of any non-Vertex Standard-approved accessory, should it cause damage, may void the Limited Warranty on this apparatus.*

↑ External Antenna

**Headset**
(not supplied)

**CN-3**
Antenna Adapter

**CT-96**
Headset Cable

**PTT Switch** (not supplied)
An external PTT switch is
required for use with an avia-
tion headset.

**E-DC-5B**
DC Cable w/Noise Filter

Vertex Standard

VXA-220
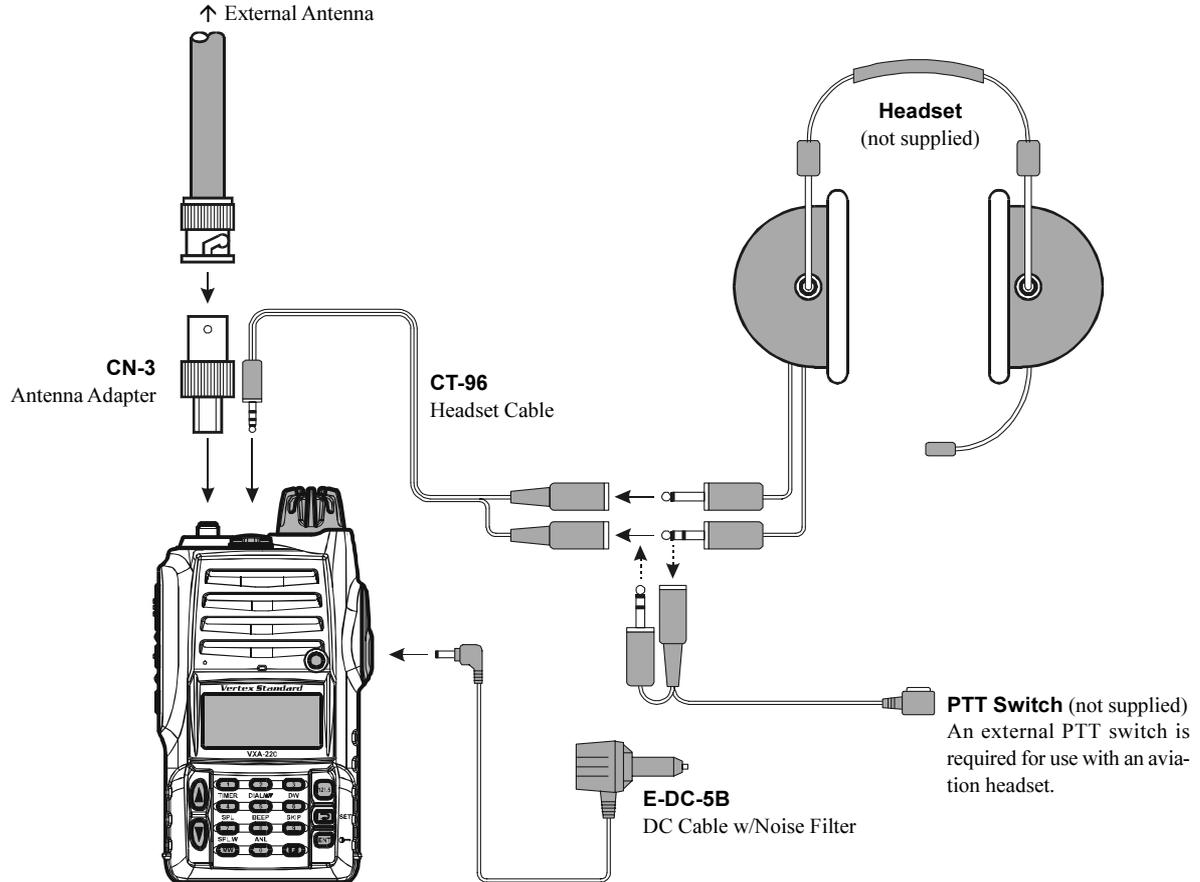
# TROUBLESHOOTING

| QUESTION | ANSWER |
|---|---|
| When connecting the **CT-96** headset cable between the radio and a headset, the red transmit LED on the radio turns on and the radio cannot be operated. | This happens when the connector on the **CT-96** headset cable is simply pushed into the **MIC/EAR** jack. The jack must be screwed into the **MIC/EAR** jack to make proper contacts within the radio. |
| Can I purchase the optional PTT Switch from Vertex Standard? | Contact your Aviation dealer for details on purchasing an aftermarket Push-To-Talk switch. |
| Will my headset work with this radio? | The **CT-96** headset cable is made to operate with most headsets; however to be concretely sure check with the headset manufacturer providing the wiring shown below. Please confirm the connections and connector sizes are correct. |

Speaker
PJ-055
(accepts 0.25" phone plug)

Microphone
PJ-068
(accepts 0.206" phone plug)

Ground
MIC
PTT
Speaker

3.5 mm Plug

**Headset Note**:
Earphone (speaker) Impedance: 8 Ω or above
MIC Impedance: 150 Ω ±20%
PTT pressed: Ground
PTT not pressed: Open
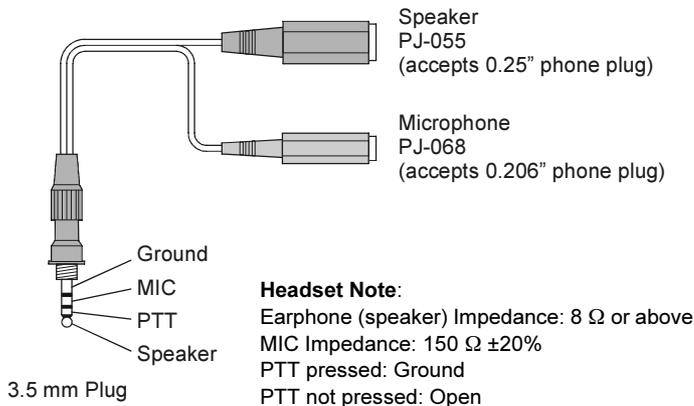
# BOOK MEMORY CHANNEL LIST (FACTORY DEFAULT)

| CH No. | ALPHA TAG | FREQUENCY (MHz) | NOTE | CH No. | ALPHA TAG | FREQUENCY (MHz) | NOTE |
|---|---|---|---|---|---|---|---|
| 001 | AIR-AIR | 123.450 | Unofficial Air-Air | 031 | ARTCC 07 | 136.175 | Air Traffic Control General Use |
| 002 | AIR-AIR | 131.800 | Air to Air | 032 | ARTCC 08 | 136.225 | Air Traffic Control General Use |
| 003 | ARINC 01 | 136.500 | Aeronautical Enroute Channel | 033 | ARTCC 09 | 136.250 | Air Traffic Control General Use |
| 004 | ARINC 02 | 136.525 | Aeronautical Enroute Channel | 034 | ARTCC 10 | 136.300 | Air Traffic Control General Use |
| 005 | ARINC 03 | 136.550 | Aeronautical Enroute Channel | 035 | ARTCC 11 | 136.325 | Air Traffic Control General Use |
| 006 | ARINC 04 | 136.575 | Aeronautical Enroute Channel | 036 | ARTCC 12 | 136.350 | Air Traffic Control General Use |
| 007 | ARINC 05 | 136.600 | Aeronautical Enroute Channel | 037 | ARTCC 13 | 136.400 | Air Traffic Control General Use |
| 008 | ARINC 06 | 136.625 | Aeronautical Enroute Channel | 038 | ARTCC 14 | 136.425 | Air Traffic Control General Use |
| 009 | ARINC 07 | 136.650 | Aeronautical Enroute Channel | 039 | ARTCC 15 | 136.450 | Air Traffic Control General Use |
| 010 | ARINC 08 | 136.675 | Aeronautical Enroute Channel | 040 | FAS | 122.000 | Enroute Flight Advisory Service |
| 011 | ARINC 09 | 136.700 | Aeronautical Enroute Channel | 041 | FOREST | 122.925 | Forest Management |
| 012 | ARINC 10 | 136.725 | Aeronautical Enroute Channel | 042 | FSS | 123.600 | Flight Service Station |
| 013 | ARINC 11 | 136.750 | Aeronautical Enroute Channel | 043 | HLC AIR | 123.025 | Helicopter Air to Air |
| 014 | ARINC 12 | 136.775 | Aeronautical Enroute Channel | 044 | INTL G/C | 130.700 | International Gulf/Caribbean |
| 015 | ARINC 13 | 136.800 | Aeronautical Enroute Channel | 045 | INTL NY | 129.900 | International New York |
| 016 | ARINC 14 | 136.825 | Aeronautical Enroute Channel | 046 | INTL SF | 131.950 | International San Francisco |
| 017 | ARINC 15 | 136.850 | Aeronautical Enroute Channel | 047 | MIL TWR | 126.200 | Military Tower |
| 018 | ARINC 16 | 136.875 | Aeronautical Enroute Channel | 048 | RESCUE | 123.100 | Search and Rescue |
| 019 | ARINC 17 | 136.900 | Aeronautical Enroute Channel | 049 | RESCUE T | 122.900 | Training Search and Rescue |
| 020 | ARINC 18 | 136.925 | Aeronautical Enroute Channel | 050 | SCHOOL 1 | 123.300 | Flight Schools |
| 021 | ARINC 19 | 136.950 | Aeronautical Enroute Channel | 051 | SCHOOL 2 | 123.500 | Flight Schools |
| 022 | ARINC 20 | 136.925 | Aeronautical Enroute Channel | 052 | UNICOM 1 | 122.700 | Unicom-Airports without towers |
| 023 | ARINC 21 | 136.950 | Aeronautical Enroute Channel | 053 | UNICOM 2 | 122.725 | Unicom-Private Airports |
| 024 | ARINC 22 | 136.975 | Aeronautical Enroute Channel | 054 | UNICOM 3 | 122.750 | Unicom-Air to Air |
| 025 | ARTCC 01 | 136.000 | Air Traffic Control General Use | 055 | UNICOM 4 | 122.800 | Unicom-Airports without towers |
| 026 | ARTCC 02 | 136.025 | Air Traffic Control General Use | 056 | UNICOM 5 | 122.950 | Unicom-Airports with towers |
| 027 | ARTCC 03 | 136.050 | Air Traffic Control General Use | 057 | UNICOM 6 | 123.000 | Unicom-Airports without towers |
| 028 | ARTCC 04 | 136.075 | Air Traffic Control General Use | 058 | UNICOM 7 | 123.050 | Unicom-Heliports |
| 029 | ARTCC 05 | 136.125 | Air Traffic Control General Use | 059 | UNICOM 8 | 123.075 | Unicom-Heliports |
| 030 | ARTCC 06 | 136.150 | Air Traffic Control General Use | - | --- | --- | - - - |

You may change the display among the "Alpha Tag", "channel Number", and "Frequency" by pressing the [⮐(SET)] key.

## General

| | |
|---|---|
| **Frequency Range**: | TX:  118.000 - 136.975 MHz, |
| | RX:  108.000 - 136.975 MHz, |
| | Weather Channels (WX-01 - WX-10: USA version only) |
| **Channel Spacing**: | 25 kHz / 8.33 kHz (8.33 kHz: RX only) |
| **Emission Type**: | TX: AM, |
| | RX: AM & FM (FM: for receiving the Weather Channels, USA version only) |
| **Supply Voltage**: | 6.0 - 15.0 VDC |
| **Current Consumption** (approx.): | 250 µA (power off), |
| | 35 mA (battery saver on, saver ratio 1:5) |
| | 60 mA (squelch on), |
| | 200 mA (receive), |
| | 850 mA (transmit 1.5 W Carrier) |
| **Temperature Range**: | +14 °F to + 140 °F (–10 °C to +60 °C) |
| **Case Size** (WxHxD): | 2.36 x 4.09 x 1.2 inches (60 x 104 x 30.5 mm) w/o knob & antenna |
| **Weight** (approx.): | 12.7 oz (360 grams) with FNB-83, antenna, and belt clip |

## Receiver

| | |
|---|---|
| **Circuit Type**: | Double-conversion superheterodyne |
| **IFs**: | 47.25 MHz & 450 kHz |
| **Sensitivity**: | AM: Better than 0.8 µV (for 6 dB S/N with 1 kHz, 30 % modulation) |
| | FM; Better than 0.4 µV (for 12 dB SINAD) |
| **Selectivity**: | More than 8 kHz/–6 dB |
| **Adjacent CH. Selectivity**: | Less than 25 kHz/–60 dB |
| **AF Output** (Internal speaker): | 0.7 W @ 16 Ohms, 10 % THD |

## Transmitter

**Power Output** (@ 7.2 V):       5 W (PEP), 1.5 W (Carrier Power)
**Frequency Stability**:       Better than ±10 ppm (+14 °F to + 140 °F [−10 °C to +60 °C])
**Modulation System**:       Low Level Amplitude Modulation
**Spurious Emission**:       >60 dB below carrier
**Int. Microphone Type**:       Condenser
**Ext. Mic. Impedance**:       150 Ohms

*Specifications are subject to change without notice or obligation.*

# NOTE

Part 15.21: Changes or modifications to this device not expressly approved by Vertex Standard could void the user's authorization to operate this device.

# Vertex Standard

**VERTEX STANDARD CO., LTD.**
4-8-8 Nakameguro, Meguro-Ku, Tokyo 153-8644, Japan

**VERTEX STANDARD U.S.A. Inc.**
6125 Phyllis Drive, Cypress, California 90630, U.S.A.

**YAESU UK LTD.**
Unit 12, Sun Valley Business Park, Winnall Close
Winchester, Hampshire, SO23 0LB, U.K.

**VERTEX STANDARD HK LTD.**
Unit 1306-1308, 13F., Millennium City 2,  378 Kwun Tong Road,
Kwun Tong, Kowloon, Hong Kong

**VERTEX STANDARD（AUSTRALIA）PTY., LTD.**
Tally Ho Business Park, 10 Wesley Court, East Burwood, VIC, 3151

Printed in Japan

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