



**AIR BAND TRANSCEIVER**

**VXA-700**

**Operating Manual**

**SPIRIT**



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## IMPORTANT NOTICE!

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### 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.
- This radio is NOT approved for use by the general population in an uncontrolled environment. This radio is restricted to occupational use, work related operations only where the radio operator must have the knowledge to control its RF exposure conditions.**
- 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 top 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.**

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#### NOTICE

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- There are no user-serviceable points inside this transceiver. All service jobs must be referred to your Authorized Service Center.
- Amateur Radio License required for operation on Amateur Radio frequencies.

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## INTRODUCTION

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The Vertex Standard **VXA-700 Spirit** is a compact, stylish, solid 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 VOR and CDI navigation features on the “NAV” band (108 ~ 117.975 MHz). What’s more, it also is operational on the Amateur Radio 144 MHz band, for those operators appropriately licensed by the FCC (or the appropriate licensing authority in your country).

The **VXA-700** includes Temperature display with our exclusive Omni-Glow™ display back-light for minimal degradation of your night vision, NOAA weather band monitoring, 8-character Alpha/Numeric Display, 102 Memory Channels, and 90 “Book Memory” Channels.

We recommend that you read this manual in its entirety, so as to understand the many features of the **VXA-700** completely. Keep this manual handy, so you may use it for reference.

**NOTE: The VXA-700’s VOR and CDI Navigation features are supplemental aids to navigation only, and are not intended to be a substitute for accurate (primary) VOR/CDI or landing service equipment.**

### 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 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. Call on us anytime, because communications is our business. Let us help you get your message across.

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## CONTROLS & CONNECTORS (TOP PANEL)

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### 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 and 2-m Amateur Band.

### ② MIC/SP Jack

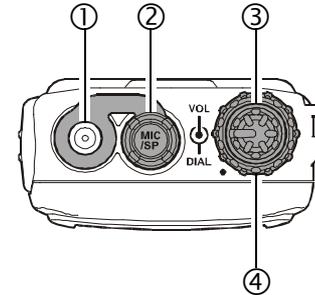
You may connect the supplied **CT-96** Headset Cable, optional **MH-44B4B** Speaker/Microphone to this jack. Never connect any Speaker/Microphone that is not recommended by the manufacturer. Because these jack connections are unique, using a Speaker/Microphone that is not specified by Vertex Standard may damage the **VXA-700**.

### ③ VOL Knob

This control adjusts the audio volume level. Clockwise rotation increases the volume level.

### ④ DIAL Selector Knob

This 20-position detented rotary switch tunes the operating frequency or selects the memory channels.



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## CONTROLS & CONNECTORS (FRONT PANEL)

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### ① LCD (Liquid Crystal Display)

The display shows the current operating conditions, including frequency, etc.

### ② PWR (Power) Switch

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

### ③ Keypad

Several keys have triple functions.

The primary functions are labeled on the key top (activated by simply pressing the key momentarily).

The secondary functions are labeled in yellow above the top edge of the key (activated by pressing the **F** key first, then the indicated key).

The third functions are labeled in black above the top edge of the key (activated by press and holding the indicated key for 2 seconds).

These functions are described in detail on the page 6.

### ④ BUSY/TX Indicator Lamp

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

You may customize the color setup via the Menu mode.

### ⑤ Loudspeaker

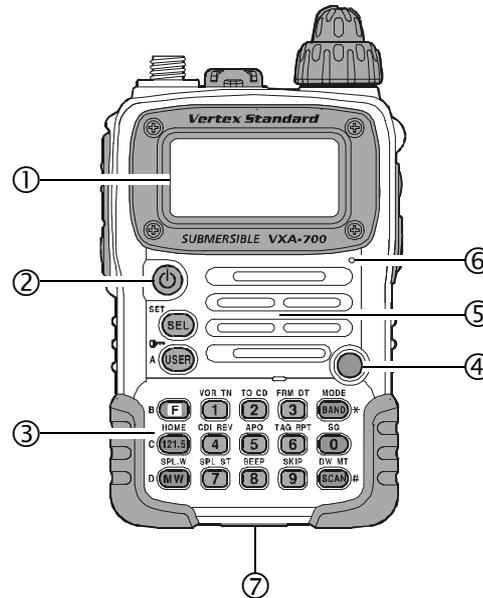
The internal speaker is located in this position.

### ⑥ Microphone

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

### ⑦ Battery Pack Latch

Open this latch for battery removal.



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## CONTROLS & CONNECTORS (SIDE PANEL)

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### ① PTT (Push To Talk) Switch

Press this button to transmit when you are operating in the COM band or 2-m amateur band. Release this button to return to the “Receive” mode. See page 15.

### ② MONITOR Switch

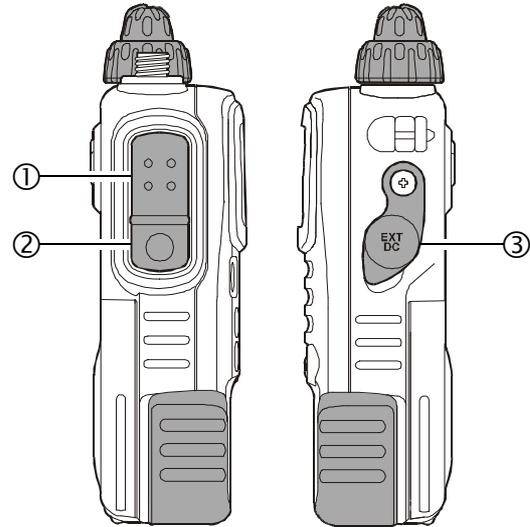
This button may be pressed to “Open” the squelch manually, allowing you to listen for very weak signals. Press and hold this button for 2 seconds to “Open” the squelch continuously. Press this button again to resume normal (quiet) monitoring. See page 17.

### ③ EXT DC Jack

When an external 12-Volt DC power source is available, you may connect the (optional) **E-DC-5B** DC Cable w/Noise Filter or **E-DC-6** DC Cable here.



*Do not connect any wire to this jack if that wire is connected directly to a 28-Volt DC source. Connecting the VXA-700 directly to a source which exceeds 15.0 Volts DC will result in damage to the unit.*



## CONTROL & CONNECTORS (KEYPAD)

		VOR TN 	TO CD 
<b>Primary Function (Press Key)</b>	Activates the “Secondary” key mode.	Frequency entry digit “1.”	Frequency entry digit “2.”
<b>Secondary Function (Press + )</b>	None	Activates VOR mode.	Selects “TO” VOR mode.
<b>Thrid Function (Press and hold key)</b>	None	Recalls Menu Item “SQL Type” (for activating the CTCSS or DCS operation).	Recalls Menu Item “TONE Set” (for selecting the CTCSS tone frequency).
	HOME 	CDI REV 	APO 
<b>Primary Function (Press Key)</b>	Selects the Emergency Channel (121.5 MHz).	Frequency entry digit “4.”	Frequency entry digit “5.”
<b>Secondary Function (Press + )</b>	Switches operation to the “Home” (favorite frequency) channel.	Activates the Course Deviation Indicator mode.	None
<b>Thrid Function (Press and hold key)</b>	None	Reverse the transmit and receive frequencies while working through a repeater.	Recalls Menu Item “APO” (for setting of the Automatic Power-Off time).
	SPL W 	SPL ST 	BEEP 
<b>Primary Function (Press Key)</b>	None	Frequency entry digit “7.”	Frequency entry digit “8.”
<b>Secondary Function (Press + )</b>	Split-Memory “Write” Command	Activates Split (Duplex) mode.	None
<b>Thrid Function (Press and hold key)</b>	Memory “Write” Command	Recalls Menu Item “Step” (for setting of the synthesizer steps).	Recalls Menu Item “Beep” (for setting of the keypad beeper).

## CONTROL & CONNECTORS (KEYPAD)

<small>FRM DT</small> 	<small>MODE</small> 		<small>SET</small> 
Frequency entry digit "3."	Select the operation band among the AIR band, Amateur band, and FM BC band in the VFO mode.	<b>Primary Function (Press Key)</b>	Select the tuning methods among the VFO, MR, BMR, and WX <sup>×1</sup> .
Selects "FROM" VOR mode.	Select the operation mode among the AM, FM, and Wide FM.	<b>Secondary Function (Press + )</b>	Enter the "Set" (Menu) mode.
Activates the DTMF Autodialer function.	None	<b>Thrid Function (Press and hold key)</b>	None
<small>TAG RPT</small> 	<small>SQL</small> 		<small>USER</small> <sup>×2</sup> 
Frequency entry digit "6."	Frequency entry digit "0."	<b>Primary Function (Press Key)</b>	Activate the Automatic Noise Limiter during AM reception.
Selects the display type (Frequency or Alpha-numeric Tag) during Memory operation.	None	<b>Secondary Function (Press + )</b>	Lock the Keypad.
Recalls Menu Item "RPT Shift" (for selecting the direction of the uplink frequency shift during repeater operation).	Recalls Menu Item "SQL" (for setting the squelch threshold level.	<b>Thrid Function (Press and hold key)</b>	Switches the frequency display between the "Large Character" and "Small Character" mode.
<small>SKIP</small> 	<small>DW MT</small> 		<sup>×1</sup> : VFO:Variable Frequency Oscillator MR: Memory Recall BMR:Pre-Programmed Memories WX:Weather Channel Memories <sup>×2</sup> : The Primary and Third function of the  key may be customized by user via the Menu mode. See page 44.
Frequency entry digit "9."	Activates the Scanner.	<b>Primary Function (Press Key)</b>	
None	Activates Dual Watch.	<b>Secondary Function (Press + )</b>	
Sets the Memory Skip (Omit) feature to the current memory channel.	Activates the "Memory Tune" mode while in the Memory Recall mode.	<b>Thrid Function (Press and hold key)</b>	

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## BEFORE YOU BEGIN

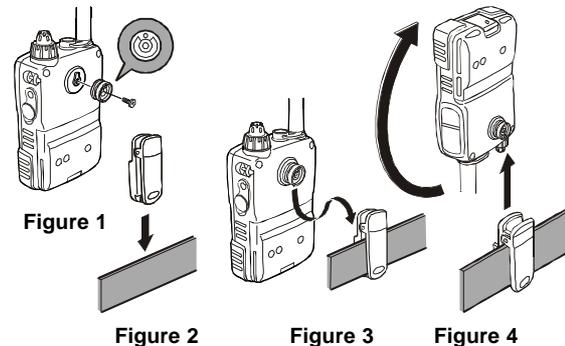
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### Precautions

- 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 (optional) **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-700** directly to a source which exceeds 15.0 Volts DC will result in damage to the unit.
- Do not dispose of the LI-ion Battery Pack in a fire. Do not carry a LI-ion 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 LI-ion pack.

### How to Install the Quick Draw Belt Clip

- Connect the hanger to the rear of the **VXA-700**, with the notch pointing directly up, using the supplied screw (Figure 1). Use only the screw included with the clip to mount the clip to the back of the **VXA-700**!
- Clip the Quick-Draw Belt Clip onto your belt (Figure 2).
- To install the **VXA-700** into the Quick-Draw Belt Clip, align the hanger with the Quick-Draw Belt Clip, and slide the **VXA-700** into its slot until a click is heard (Figure 3).
- To remove the **VXA-700** from the Quick-Draw Belt Clip, rotate the **VXA-700** 180 degrees, then slide the **VXA-700** out from the Quick-Draw Belt Clip (Figure 4).



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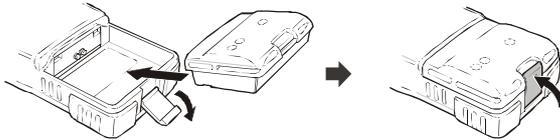
## BEFORE YOU BEGIN

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### Installation of FNB-80LI Battery Pack

The **FNB-80LI** is a high-performance Lithium-Ion battery providing high capacity in a very compact package. Under normal use, the **FNB-80LI** may be used for approximately 300 charge cycles, after which operating time may be expected to decrease. If you have an old battery pack which is displaying capacity which has become diminished, you should replace the pack with a new one.

- ❑ Install the **FNB-80LI** as shown in the illustration.
- ❑ Close the Battery Pack Latch on the bottom of the radio.



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

### Battery Charging

If the battery has never been used, or its charge is depleted, it may be charged by connecting the **NC-72B/C** Battery Charger, as shown in the illustration, to the **EXT DC** jack. If only 12 ~ 16 Volt DC power is available, the optional **E-DC-5B** DC Cable (w/cigarette lighter plug) or **E-DC-6** DC Cable may also be used for charging the battery, as shown in the illustration.



The “**Now Charging . . .**” will blink in the display while the battery is being charged. When charging is finished, the display will change to indicate “**Complete**” and the **BUSY/TX** indicator will blink blue.

#### **Important Notes:**

- Do not leave the charger connected to the transceiver for continuous periods in excess of 24 hours. Long term overcharging can degrade the LI-ion battery pack and significantly shorten its useful life.
- If using a charger other than the **NC-72B/C**, or if using a battery pack other than the **FNB-80LI**, 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.

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## BEFORE YOU BEGIN

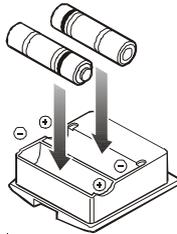
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### Installation of FBA-23 Alkaline Battery Case (Option)

The optional **FBA-23** Battery Case allows receive monitoring using two “AA” size Alkaline batteries.

To Install Alkaline Batteries into the **FBA-23**

- Slide the batteries into the **FBA-23** as shown in the illustration, with the Negative [-] side of the batteries touching the spring connections inside the **FBA-23**.
- Open the Battery Pack Latch on the bottom of the radio.
- Install the **FBA-23** as shown in the illustration, with the [+] side facing the bottom of the transceiver.
- Close the Battery Pack Latch on the bottom of the radio.



The **FBA-23** does not provide connections for charging, since Alkaline cells cannot be re-charged. Therefore, the **NC-72B/C**, **E-DC-5B**, or **E-DC-6** may safely be connected to the **EXT DC** jack when the **FBA-23** is installed.

#### *Notes:*

- The **FBA-23** is designed for use only with AA-type Alkaline cells.
- If you do not use the **VXA-700** for a long time, remove the Alkaline batteries from the **FBA-23**, as battery leakage could cause damage to the **FBA-23** and/or the transceiver.

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## BEFORE YOU BEGIN

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### Low Battery Indication

- As your battery discharges during use, the voltage will gradually become lower. When the “” icon will blink on the LCD display, the battery pack must be recharged before further use.
- Avoid recharging Li-Ion batteries before the “Low Battery” indicator is observed, as this can degrade the charge capacity of your Li-Ion 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 Li-Ion battery. This “deep cycling” practice will help to maintain longer overall battery life after many recharging cycles.

### AC Operation Using NC-72B/C (Receiving only)

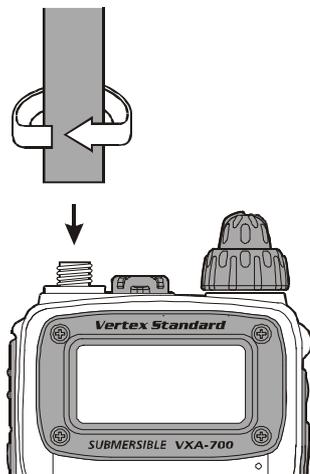
The **VXA-700** may be operated from your house current by use of the supplied **NC-72B/C** Battery Charger. The **NC-72B/C** should only be used for reception, because it is not capable of supplying sufficient current to support transmission.

To use the **NC-72B/C**, turn the transceiver off, then plug the miniature connector of the Battery Charger into the **EXT DC** jack on the side of the radio. Now plug the Battery Charger into the wall outlet. You may now turn on the transceiver.

## BASIC OPERATION

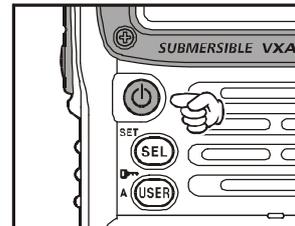
### Preliminary Steps

- ❑ 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-700**.



### Operation Quick Start

- ❑ To turn the radio on, press and hold in the **(PWR)** Switch for 3 seconds.
- ❑ The opening message will appear on the display, then frequency display will appear.
- ❑ Press the **MODE BAND** key repetitively, switch the operating band among the AIR band, 2-m Amateur band, and FM BC band each time you press the **MODE BAND** key.



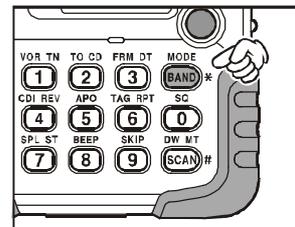
- ❑ Directly entering frequencies from the keypad is the easiest method if you know the frequency on which you wish to operate. Just enter the five digits of the frequency to move to that frequency.

**For example**, to set 134.35 MHz,

press **VOR TN** → **FRM DT** → **CDI REV** → **FRM DT** → **APO**.

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

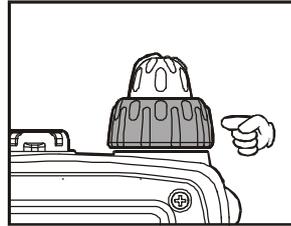
**VOR TN** → **VOR TN** → **BEEP** → **TO CD** → **SPL ST**.



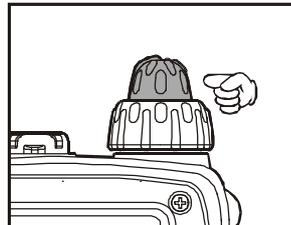
## BASIC OPERATION

**Note:** When the entered frequency is outside of the current operating band, this feature is ignored (i.e. **VXA-700** does not permit entry of a 2-m Amateur band frequency while operating in the AIR band).

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



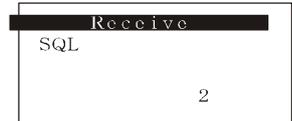
- ❑ To change frequency in 1 MHz steps, press the **[F]** key momentarily, then rotate the **DIAL** selector knob to select the MHz digit desired. Press the **[F]** key once more to resume normal channel step.
- ❑ Rotate the **VOL** knob to set the volume level. If no signal is present, press and hold in the **MONITOR** button for 2 seconds; background noise will now be heard, and you may use this noise to set the **VOL** knob for the desired audio level. Press the **MONITOR** button momentarily to silence the noise and resume normal (quiet) monitoring.



- ❑ To turn the radio off, press and hold in the **[PWR]** switch for 3 seconds.

### Squelch Adjustment

- ❑ Press and hold in the **[SO]** key for 3 seconds. This instantly recalls Menu Item "SQL:" on the AM or Narrow FM mode" or "WSQL:" on the WFM mode.
- ❑ Press the **[SEL]** key to enable adjustment of this Menu Item.
- ❑ Rotate the **DIAL** selector knob to set the squelch threshold (**0 - 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.
- ❑ When you have made your setting, press the **[SEL]** key to save the new setting, then press the **PTT** key repetitively until the radio exits to normal operation.

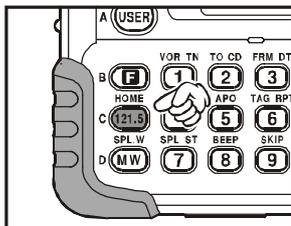


## BASIC OPERATION

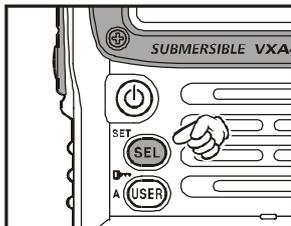
### Accessing the 121.5 MHz Emergency Frequency

The **VXA-700** can quickly access the 121.500 MHz Emergency Frequency. This function can be activated even when the keypad lock function is in use.

- ❑ To access the Emergency Frequency, press the **HOME** (121.5) key momentarily.



- ❑ To exit the Emergency Frequency, press the **SEL** key momentarily.

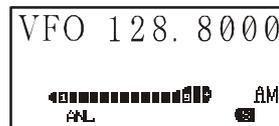


### Tuning Methods

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:

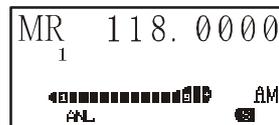
#### ○ VFO (Variable Frequency Oscillator)

The VFO is a “tuning dial” system which allows you to tune through the AIR band, 2-m Amateur band, and FM BC band using the **DIAL** selector, the Keypad, or the scanner. To select these bands, press the **MODE** (BAND) key momentarily.



#### ○ MR (Memory Recall)

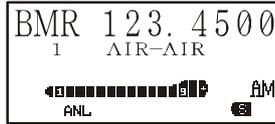
The MR (Memory Recall) mode of the **VXA-700** provides the user with the ability to store and recall as many as 102 channels in the radio's main memory bank. These memory channels may also be labeled by you with an alpha/numeric name of up to 8 characters in length, to aid in quick identification of the channel. See page 20 for details on creating alpha/numeric labels.



## BASIC OPERATION

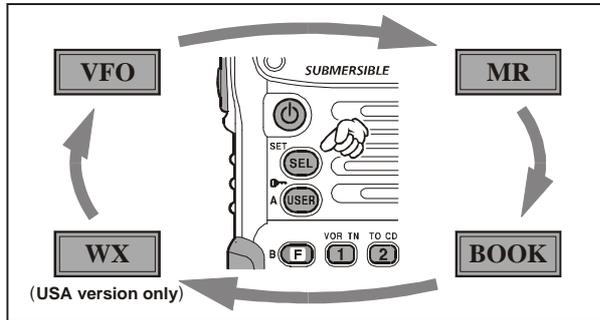
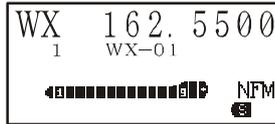
### ○ BOOK (Pre-Programmed) Memories

The Book memories are pre-programmed, either at the factory or by your Dealer (depending on your country's requirements), typically including the major AIR band station frequencies used in your area. The Book memories can be changed by the user. See page 47 for details.



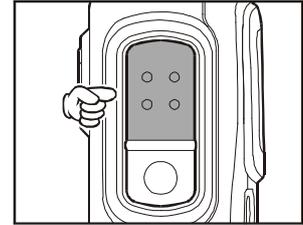
### ○ WX (Weather Channel) Memories (USA version only)

Ten Weather Channels are pre-programmed at the factory. The **VXA-700** will automatically scan this special bank when it is selected by the user.



### Transmission

- To transmit, press and hold in 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.



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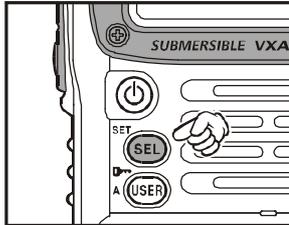
## BASIC OPERATION

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### Reception of Weather Channel Broadcasts (USA version only)

The **VXA-700** can receive VHF Weather Channel broadcasts, which may assist your flight planning. The **VXA-700** 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  key (repeatedly, if necessary) to select the Weather Channel mode. In the Weather Channel mode, “WX” will appear upper left corner of the display.



- ❑ The **VXA-700** 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 exit the Weather Channel mode, press the  key momentarily to return to the VFO mode.

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

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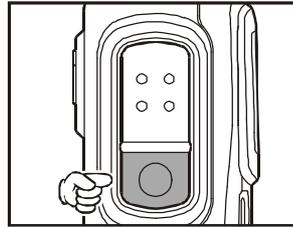
## BASIC OPERATION

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### 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.

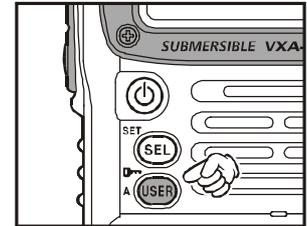


To return to normal operation, press the **MONITOR** key momentarily.

### 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 **USER** key momentarily. The “ANL” icon will appear on the display, and you should observe a reduction in the ignition noise.
- To turn the ANL feature off, press the **USER** key again; the “ANL” icon will disappear from the display.

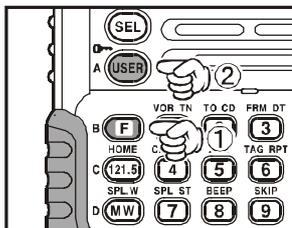


## BASIC OPERATION

### LOCK Function

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

- To activate the lock feature, press **F** → **USER**.
- In the LOCK mode, the “**🔒**” icon will appear on the display.
- To turn the lock feature off, press **F** → **USER** again.
- You can still access the 121.500 MHz Emergency Frequency when the LOCK function is on. Simply press the **HOME** **121.5** key momentarily (this key never locks). Pressing this key also unlocks the radio.



### Beep On/Off

The **VXA-700**'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):

- Press and hold the **BEEP** **B** key for 2 seconds. This instantly recalls Menu Item “**Beeper.**”
- Press the **SEL** key to enable adjustment of this Menu Item.
- Rotate the **DIAL** selector knob to select the desired selection.
  - On:** Sounds a keypad beeper corresponding to a musical note.
  - DTMF:** Sounds a keypad beeper corresponding to a DTMF tone.
  - Off:** Keypad beeper is “off.”
- When you have made your selection, press the **SEL** key to save the new setting, then press the **PTT** key repetitively until the radio exits to normal operation.



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## BASIC OPERATION

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### Receive Battery Saver Setup

An important feature of the **VXA-700** 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-700** 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, then press the **SEL** key to activate the Menu (“SET”) mode.
- ❑ Rotate the **DIAL** selector knob to select Menu Item “**3. Receive**,” then press the **SEL** key.
- ❑ Rotate the **DIAL** selector knob to select Sub Menu Item “**5. RX Save**,” then press the **SEL** key.
- ❑ Press the **SEL** key again 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 **SEL** key to save the new setting, then press the **PTT** key repetitively until the radio exits 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.

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## MEMORY OPERATION

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The **VXA-700** provides 102 user-programmable Main memories, labeled “MR1” through “MR100”, “MRLch,” and “MRUch,” and up to 90 pre-programmed memories, designated “Book” Memories, labeled “BMR1” through “BMR90.”

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

### Memory System Operation

The **VXA-700**'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  key for 2 seconds. The display will indicate “MR” and a channel number will blink on the LCD.
- ❑ Within five seconds of pressing the  key, rotate the **DIAL** selector knob to select the desired memory channel number for storage. In order to prevent writing over memory channels, an “+” icon will appear at the right of the channel number to indicate if the memory channel is vacant.
- ❑ Now press and hold in the  key for 2 seconds; you will now see the blinking “A” character on the LCD. To attach an alpha/numeric name (label) to the memory, proceed to the next step; otherwise press and hold in the  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 125 available characters (including letters, numbers, and special symbols). When the desired first character appears, press the  key momentarily to select it and move on to the next character.

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## MEMORY OPERATION

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- ❑ Select succeeding characters in the same manner, pressing the  key momentarily after each selection.
- ❑ After entering the entire name (eight characters maximum), press the  key for 2 seconds to save all data for the channel and exit.

### Recalling the Memories

- ❑ Press the  key, repeatedly if necessary, until “MR” (Memory Recall) appears on the display. In the MR mode, you will see the previously-selected channel number appearing at the bottom of the “MR” icon on the LCD.
- ❑ Rotate the **DIAL** selector knob to select the desired memory channel.
- ❑ You may change the readout structure of the Memory display between “Frequency Indication” and “Frequency Indication plus Alpha-numeric Label” by pressing  →  key.
- ❑ To exit the Memory mode, press the  key three times to return to the VFO mode.

*Note:* In either the Memory mode or the “Book” Memory mode, you can change memory channels in 10-channel steps: press the  key momentarily, then rotate the **DIAL** selector knob. The “” icon will show at the right edge of the display when the 10-channel-step tuning mode is active. Press the  key once more to resume normal channel selection in one-channel steps.

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## SCANNING OPERATION

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### Basic Scan

The **VXA-700** allows you to scan automatically in the VFO\*<sup>1</sup>, Main Memory, “Book” Memory, or Weather Channel\*<sup>2</sup> 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 current operating band (AIR band, 2-m Amateur band, or FM BC band). Furthermore, on the AIR band, 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 the  key momentarily to start the automatic scanner upward (toward a higher frequency or a higher channel number).
- When the scanner encounters a signal, scanning pauses and the radio remains on that channel until one sec-

ond after the signal disappears, after which scanning will resume.

- While the scanner remains paused on a frequency, the decimal point of the frequency display 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  key momentarily.

The **VXA-700**'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  key to start the manual scanner. Scanning will continue as long as the key is depressed.
- Release the  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-700** will switch to the automatic scanner mode.

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## SCANNING OPERATION

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### 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 and hold the  key for 2 seconds. The “◀” icon will appear at the left of the frequency display, indicating that the channel is to be ignored during scanning.
- Later, to re-enable the memory channel for scanning, repeat the first two steps. The “◀” 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.

### Programmable (Band Limit) Memory Scan (PMS)

This feature allows you to set sub-band limits for either scanning or manual VFO operation. For example, you might wish to set up a limit of COM band (118.000 MHz to 136.975 MHz). Here’s how to do this:

- Set the radio to the VFO mode by pressing the  key and set the radio to the AIR band by pressing the  key, if necessary.
- Using the techniques learned earlier, store 118.000 MHz into Memory Channel “Lch” (the “Lch” designates the Lower sub-band limit).
- Likewise, store 136.975 MHz into Memory Channel “Uch” (the “Uch” designates the Upper sub-band limit).
- Switch to the Memory mode by pressing the  key once, then rotate the **DIAL** to select Memory Channel “Lch.”
- Press and hold in the  key for 2 seconds to start PMS operation; the “MR” label will be replaced by “PMS” in the upper left-hand corner of the display.
- Tuning and scanning (pressing the  key) will now be limited within the just-programmed range.

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## DUAL WATCH OPERATION

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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-700** looks for activity on each channel.

- To start Dual Watch, press  → .
- 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.

- 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  → .
  - If you wish, you may use both the Dual Watch and Scan features simultaneously. To do this, start the Dual Watch first, then start the Scanner.
- \* The “Priority” channel is defined as the last-used Memory Channel (when using the VFO and “Book” memory modes) or Memory Channel “1” (when using the Main Memory mode).

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## PRIORITY DUAL WATCH OPERATION

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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 the Menu Item “**PRI Time.**” See page 54 for details.
- Irrespective of which channel is currently being received, when the **PTT** button is pushed transmission will always occur on the Priority channel.

Before initiating Priority Dual Watch, Menu Item “**DW/PRI**” must be set to the “**PRI**” mode (instead of “**DW**”). See page 54 for details.

- ❑ To start Priority Dual Watch, press  → . The “**DW**” icon will appear on the display.
- ❑ While receiving on the “current” (non-Priority) channel, pressing the **PTT** button once causes the radio to switch to the Priority channel and cancels Dual Watch. Press the **PTT** button 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  → .

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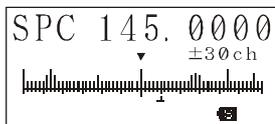
## SPECTRUM SCOPE MONITOR

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If you assign the Spectrum Scope Monitor feature to the  key (see page 44), you may view operating activity on channels above and below the current operating channel in the VFO mode.

The display indicates the relative signal strength on channels immediately adjacent to the current operating frequency.

- Set the radio to the VFO mode by pressing the  key, if necessary.
- Press (or press and hold in) the  key to activate the Spectrum Scope Monitor.



- Once the Spectrum Scope Monitor is activated, press the  key to change the visible bandwidth between  $\pm 15$  channel and  $\pm 30$  channel (default:  $\pm 30$  channels). The visible bandwidth, however, depends on the selected channel step size, so match the channel step to those typically used in your area.
- To turn the Spectrum Scope Monitor off and operate on the centered (and displayed) channel, simply press **PTT** switch.

**Note:** Audio output will be interrupted during Spectrum Analyzer operation. This is normal.

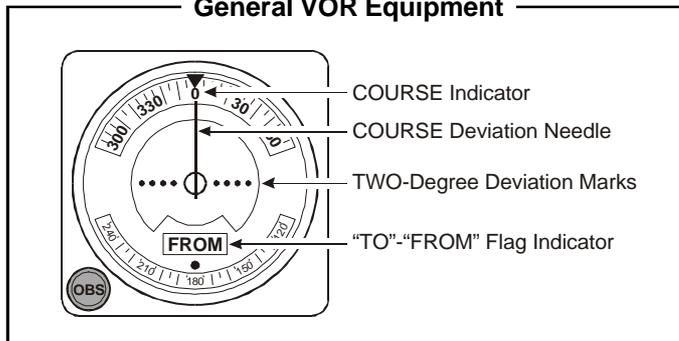
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## NOTE

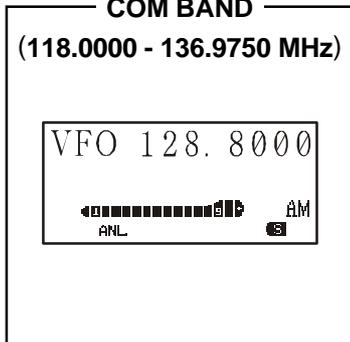
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# ADVANCED OPERATION (VOR NAVIGATION: AIR BAND)

## General VOR Equipment

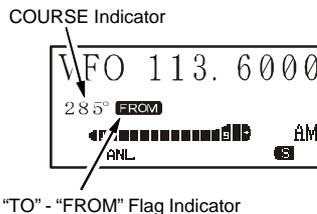


## COM BAND (118.0000 - 136.9750 MHz)

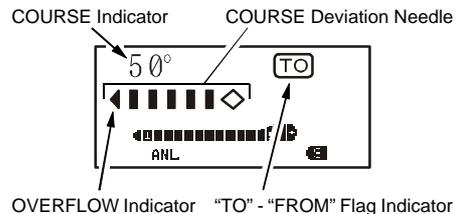


## NAV BAND (108.0000 - 117.9750 MHz)

### VOR MODE



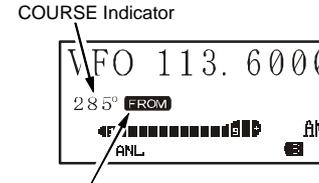
### CDI MODE



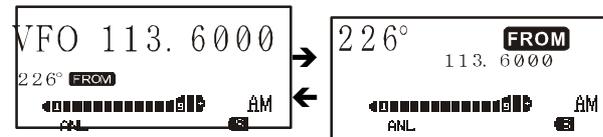
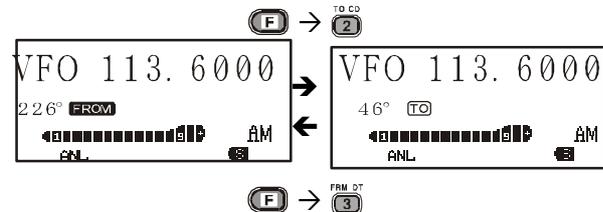
## ADVANCED OPERATION (VOR NAVIGATION: AIR BAND)

### To Select the VOR Mode

- ❑ When entering the NAV band (108.000 - 117.975 MHz), the **VXA-700** selects the VOR mode automatically. The “Course Indicator” will appear on the display, and the “TO” or “FROM” indicator will appear at the right of the “Course Indicator” on the display.  
*Note:* The “**COURSE INDICATOR**” indicates “--°” when either your aircraft is too far away from the VOR station or if the frequency is not correctly set to that of the VOR station. Conversely, the “Course Indicator” will indicate “**Loc**” when a localizer signal is being received.
- ❑ The “**TO**” or “**FROM**” flag indicators indicate whether the VOR navigation information is based on a course leading to the VOR station or leading away from the VOR station.
- ❑ To change the flag from “**TO**” to “**FROM**” or vice versa, press the **F** → **TO CO** **2** or **F** → **FRM DT** **3** keys, respectively.
- ❑ The (small) frequency indication may be toggled to display using larger characters (but “**COURSE INDICATOR**” and “**TO**”/“**FROM**” flag are reduced in size), if you assign the “**XFER**” feature to the **USER** key. See page 44 for details.



“TO” - “FROM” Flag Indicator



**USER** (Assigned the “**XFER**” feature)

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## ADVANCED OPERATION (VOR NAVIGATION: AIR BAND)

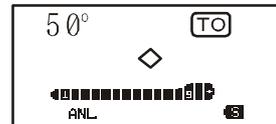
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### Flying to a VOR Station

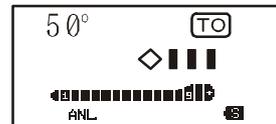
The **VXA-700** can indicate the deviation from the direct course to a VOR station.

- ❑ Select a VOR station on your aeronautical chart and turn the **DIAL** selector knob (or enter the frequency directly with the keypad) to the frequency of the VOR station.
- ❑ To indicate the deviation between your current flight path and the desired course, press **(F)** → **(4)** <sup>CDI REV</sup> to change to the CDI (Course Deviation Indicator) mode. The “**COURSE DEVIATION ARROW**” will appear on the display when your aircraft is off the direct course to the VOR station.
- ❑ When your aircraft is off course to the *right*, the Course Deviation Arrow display will show bars to the left side of the diamond (“|||◇”). When your aircraft is off course to the *left*, the Course Deviation Arrow display will show bars to the right side of the diamond (“◇|||”). Correct your course until no bars appear on either side of the CDI “diamond” (only “◇”) will be visible when the heading is correct).
- ❑ To return to the DVOR mode, press **(F)** → **(1)** <sup>VOR™</sup>.

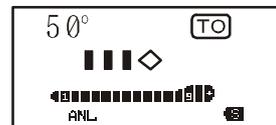
### The Aircraft is “ON COURSE”



### OFF COURSE to the “right” 6 degrees

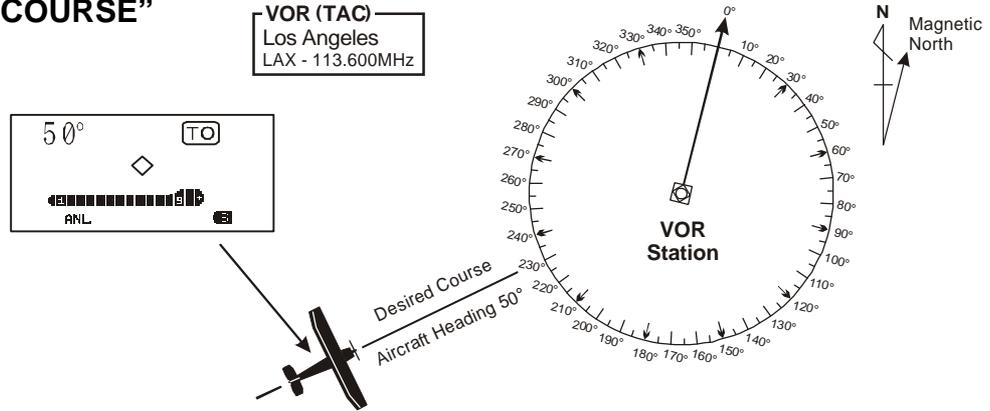


### OFF COURSE to the “left” 6 degrees

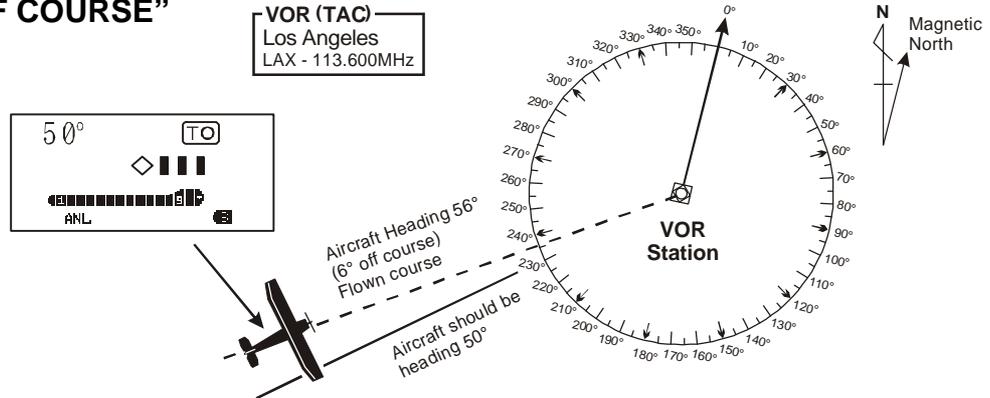


# ADVANCED OPERATION (VOR NAVIGATION: AIR BAND)

The Aircraft is "ON COURSE"



The Aircraft is "OFF COURSE"



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## ADVANCED OPERATION (VOR NAVIGATION: AIR BAND)

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### Entering a Desired Course

The **VXA-700** can also be configured to indicate the deviation from the desired course, not only the deviation from the path to the VOR station.

- Set the frequency to the desired VOR station.
- Change the “**TO**” or “**FROM**” indication to “**TO**,” if it is not in that mode already.
- Press **(F)** → **(4)** <sup>CDI REV</sup> key to change to the CDI mode.
- Set the desired course to the VOR station using the **DIAL** selector knob or keypad (three-digit input; e.g. for 47°, press **(0)** <sup>SD</sup> → **(4)** <sup>CDI REV</sup> → **(7)** <sup>SPL ST</sup>).

**Note 1:** The (“|||◇”) or (“◇|||”) indication will appear on the display when your aircraft is off the desired course.

**Note 2:** When your heading is correct, the **ABCS** function (see below) may be more useful than the course input option.

- The Course Deviation Arrow points to the right when your aircraft is off course to the left, and it points to the left when your aircraft is off course to the right.

**Note 1:** To get back on course, fly right more than the number of degrees indicated by the **COURSE DEVIATION ARROW**.

**Note 2:** If the overflow indicator “▶” appears on the right side, select a heading plus 10 degrees to the desired course; if the overflow indicator “◀” appears on the left side, select a heading minus 10 degrees.

#### Auto Bearing Center System (ABCS) Mode

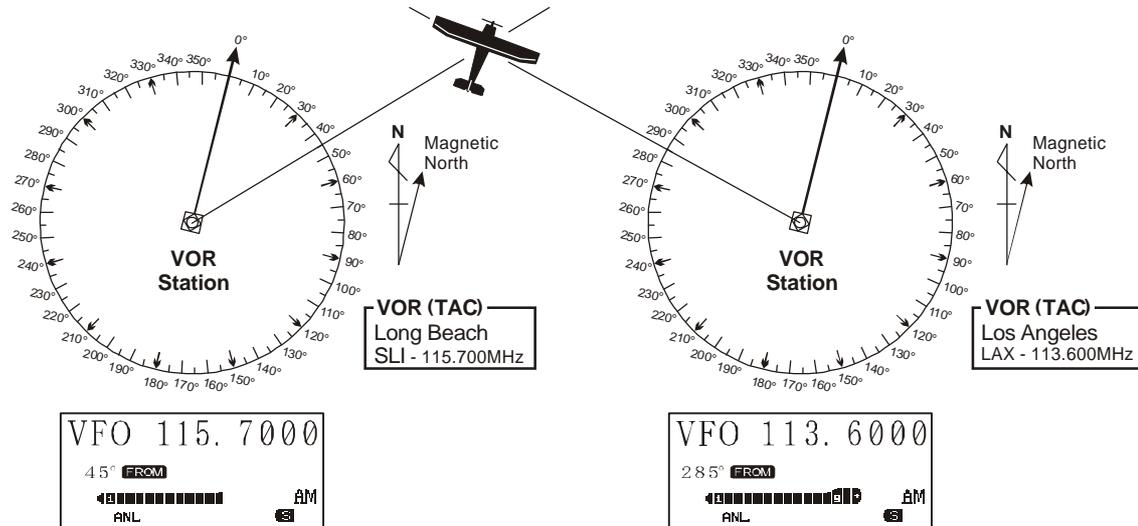
In the CDI mode, the Auto Bearing Center System (ABCS) adds or subtracts the number of degrees indicated by the CDI from the Omni Bearing Selector (OBS).

## ADVANCED OPERATION (VOR NAVIGATION: AIR BAND)

### Position Cross-checking

- Select two VOR stations on your aeronautical chart.
- Set the frequency of one of the VOR stations in the VOR mode. The course indicator will show the course deviation from the VOR radial. Note the radial you currently are on.
- Now set the frequency of the other VOR station in the VOR mode. Note the radial from the station you are on.
- Extend the radials from each VOR station on the chart. Your aircraft is located at the point where the lines intersect.

### Cross-checking Position



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## ADVANCED OPERATION (VOR NAVIGATION: AIR BAND)

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### Split Operation

The split operation feature allows you to transmit a call to a Flight Service Station using the COM band frequencies, while receiving a VOR station (in the NAV band). VOR stations equipped with this capability typically are shown, on navigation charts, with the voice calling frequency in parenthesis above the navigation frequency.

- ❑ Press the **DIAL** selector knob, repeatedly if necessary, to select the VFO mode.
- ❑ Set the desired VOR station's frequencies in the NAV band (108.000 - 117.975 MHz) using the **DIAL** selector knob or keypad.
- ❑ Press  → . The “” 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  key for 2 seconds to save the transmit frequency and return to the NAV band frequency.
- ❑ Press and hold in the **PTT** switch to transmit on the split transmit frequency.
- ❑ Release the **PTT** switch to return to the receive mode.
- ❑ To disable the “Split” function, set the receiving frequency to any frequency outside of the NAV band (the “” icon will disappear).

*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.

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## ADVANCED OPERATION (AMATEUR RADIO BAND)

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**NOTICE! An Amateur Radio License is required for operation on Amateur Radio frequencies.**

### Repeater Operation

Repeater stations, usually located on mountaintops or other high locations, provide a dramatic extension of the communication range for land-based low-powered hand-held or mobile transceivers. The **VXA-700** includes a number of features which make repeater operation simple and enjoyable.

#### *Repeater Shifts*

Your **VXA-700** has been configured, at the factory, with the repeater shift set to 600 kHz on the 2-m amateur band.

Depending on the part of the band in which you are operating, the repeater shift may be either downward (–) or upward (+), and one of these icons will appear at the bottom of the LCD when repeater shifts have been enabled.

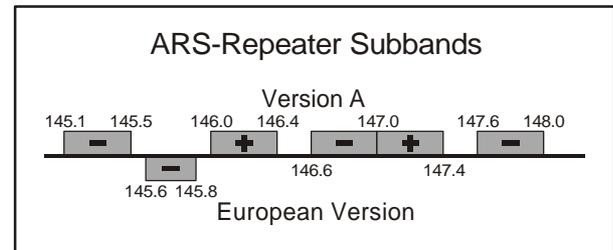
#### *Automatic Repeater Shift (ARS)*

The **VXA-700** provides a convenient Automatic Repeater Shift feature, which causes the appropriate repeater shift to be automatically applied whenever you tune into the designated repeater sub-bands in your country. These sub-bands are shown at the right.

If the ARS feature does not appear to be working, you may have accidentally disabled it.

To re-enable ARS:

- Press the **[F]** key, then press the **[SET]** key to activate the Menu (“SET”) mode.
- Rotate the **DIAL** selector knob to select Menu Item “4. Transmit,” then press the **[SET]** key.
- Rotate the **DIAL** selector knob to select Sub Menu Item “3. ARS,” then press the **[SET]** key.
- Press the **[SET]** key again to enable adjustment of this Menu Item.
- Rotate the **DIAL** selector knob to select “ON” (to enable Automatic Repeater Shift).
- When you have made your selection, press the **[SET]** key to save the new setting, then press the **PTT** key repetitively until the radio exits to normal operation.



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## ADVANCED OPERATION (AMATEUR RADIO BAND)

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### *Manual Repeater Shift Activation*

If the ARS feature has been disabled, or if you need to set a repeater shift direction other than that established by the ARS, you may set the direction of the repeater shift manually.

To do this:

- Press the **F** key, then press the **SEL** key to activate the Menu (“SET”) mode.
- Rotate the **DIAL** selector knob to select Menu Item “4. Transmit,” then press the **SEL** key.
- Rotate the **DIAL** selector knob to select Sub Menu Item “1. RPT Shift,” then press the **SEL** key.
- Press the **SEL** key again to enable adjustment of this Menu Item.
- Rotate the **DIAL** selector knob to select the desired shift among “-RPT,” “+RPT,” and “Simplex.”
- When you have made your selection, press the **SEL** key to save the new setting, then press the **PTT** key repetitively until the radio exits to normal operation.

### *Changing the Default Repeater Shifts*

If you travel to a different region, you may need to change the default repeater shift so as to ensure compatibility with local operating requirements.

To do this, follow the procedure below:

- Press the **F** key, then press the **SEL** key to activate the Menu (“SET”) mode.
- Rotate the **DIAL** selector knob to select Menu Item “4. Transmit,” then press the **SEL** key.
- Rotate the **DIAL** selector knob to select Sub Menu Item “2. Shift Width,” then press the **SEL** key.
- Press the **SEL** key again to enable adjustment of this Menu Item.
- Rotate the **DIAL** selector knob to select the new repeater shift magnitude.
- When you have made your selection, press the **SEL** key to save the new setting, then press the **PTT** key repetitively until the radio exits to normal operation.

**Note:** If you just have one “odd” split that you need to program, don’t change the “default” repeater shifts using this Menu Item!

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## ADVANCED OPERATION (AMATEUR RADIO BAND)

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### *Checking the Repeater Uplink (Input) Frequency*

It often is helpful to be able to check the uplink (input) frequency of a repeater, to see if the calling station is within direct (“Simplex”) range.

To do this, just press and hold the  key for 2 seconds. You’ll notice that the display has shifted to the repeater uplink frequency. Press the  key again to cause operation to revert to normal monitoring of the repeater downlink (output) frequency.

### **CTCSS Operation**

Many repeater systems require that a very-low-frequency audio tone be superimposed on your FM carrier in order to activate the repeater. This helps prevent false activation of the repeater by radar or spurious signals from other transmitters. This tone system, called “CTCSS” (Continuous Tone Coded Squelch System), is included in your **VXA-700**, and is very easy to activate.

The CTCSS setup involves two actions: setting the *Tone Mode* and then setting of the *Tone Frequency*. These actions are set up by using the  and  keys, or Menu Items (**SQL Type**) and (**TONE Set**).

- Press and hold the  key for 3 seconds. This instantly recalls Menu Item (**SQL Type**).
- Press the  key again to enable adjustment of this Menu Item.
- Rotate the **DIAL** selector knob so that “T” appears at the bottom right corner on the display; this activates the CTCSS Encoder, which allows repeater access.  
*Note:* You may notice an additional “DCS” icon appearing while you rotate the **DIAL** selector knob in this step. We’ll discuss the Digital Code Squelch system shortly.
- Rotating the **DIAL** selector knob in above step will

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## ADVANCED OPERATION (AMATEUR RADIO BAND)

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occasionally cause “TSQ” to appear. When “TSQ” appears, this means that the Tone SQuelch system is active, which mutes your **VXA-700**’s receiver until it receives a call from another radio sending out a matching CTCSS tone. This can help keep your radio quiet until a specific call is received, which may be helpful while operating in congested areas.

- ❑ When you have made your selection of the CTCSS tone mode, press the  key momentarily, then rotate the **DIAL** selector knob one click clockwise to select Menu Item (**TONE Set**). This Menu selection allows setting of the CTCSS tone frequency to be used.
- ❑ Press the  key to enable the adjustment of the CTCSS frequency.
- ❑ Rotate the **DIAL** selector knob until the display indicates the Tone Frequency you need to be using (ask the repeater owner/operator if you don’t know the tone frequency).
- ❑ When you have made your selection, press the  key to save the new setting, then press the **PTT** key repetitively until the radio exits to normal operation.  
*Note:* Your repeater may or may not re-transmit a CTCSS tone - some systems just use CTCSS to control access to the repeater, but don’t pass it along when transmitting. If the S-Meter deflects, but the **VXA-700**

is not passing audio, repeat steps “1” through “3” above, but rotate the **DIAL** selector knob so that “SQL” disappears - this will allow you to hear all traffic on the channel being received.

CTCSS TONE FREQUENCY (Hz)							
67.0	69.3	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	241.8	250.3	–	–

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## ADVANCED OPERATION (AMATEUR RADIO BAND)

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### DCS Operation

Another form of tone access control is Digital Code Squelch, or DCS. It is a newer, more advanced tone system which generally provides more immunity from false paging than does CTCSS. The DCS Encoder/Decoder is built into your **VXA-700**, and operation is very similar to that just described for CTCSS. Your repeater system may be configured for DCS; if not, it is frequently quite useful in Simplex operation if your friend(s) use transceivers equipped with this advanced feature.

**Note:** Just as in CTCSS operation, DCS requires that you set the **Tone Mode** to DCS and that you select a **“tone” Code**.

- Press and hold the  key for 2 seconds. This instantly recalls Menu Item (SQL Type).
- Press the  key again to enable adjustment of this Menu Item.
- Rotate the **DIAL** selector knob until “DCS” appears on the display; this activates the DCS Encoder/Decoder.
- Press the  key momentarily, then rotate the **DIAL** selector knob two clicks clockwise to select Menu Item (DCS Set).

- Press the  key again to enable adjustment of this Menu Item.
- Rotate the **DIAL** selector knob until the desired DCS Code (a three-digit number). Ask the repeater owner/operator if you don’t know DCS Code; if you are working simplex, just set up the DCS Code to be the same as that used by your friend(s).
- When you have made your selection, press the  key to save the new setting, then press the **PTT** key repetitively until the radio exits to normal operation.

**Note:** Remember that the DCS is an Encode/Decode system, so your receiver will remain muted until a matching DCS code is received on an incoming transmission. Switch the DCS off when you’re just tuning around the band!

DCS CODE									
023	025	026	031	032	036	043	047	051	053
054	065	071	072	073	074	114	115	116	122
125	131	132	134	143	145	152	155	156	162
165	172	174	205	212	223	225	226	243	244
245	246	250	251	252	255	261	263	265	266
271	274	306	311	315	325	331	332	343	346
351	356	364	365	371	411	412	413	423	431
432	435	445	446	452	454	455	462	464	465
466	503	506	516	523	526	532	546	565	606
612	624	627	631	632	654	662	664	703	712
723	731	732	734	743	754	–	–	–	–

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## ADVANCED OPERATION (AMATEUR RADIO BAND)

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### ARTS (AUTOMATIC RANGE TRANSPONDER SYSTEM)

#### Operation

The ARTS feature uses DCS signaling to inform both parties when you and another ARTS-equipped station are within communications range. This may be particularly useful during Search-and Rescue situations, where it is important to stay in contact with other members of your group.

Both stations must set up their DCS codes to the same code number, then activate their ARTS feature using the command appropriate for their radio. Alert ringers may be activated, if desired.

Whenever you push the **PTT**, or every 25 (or 15) seconds after ARTS is activated, your radio will transmit a signal which includes a (subaudible) DCS signal for about 1 second. If the other radio is in range, the beeper will sound (if enabled) and the display will show “**In Service**” as opposed to the out of range display “**Out Service**” in which ARTS operation begins.

Whether you talk or not, the polling every 15 or 25 seconds will continue until you de-activate ARTS. When ARTS is de-activated, DCS will also be deactivated (if you were not using it previously in non-ARTS operation).

If you move out of range for more than one minute (four pollings), your radio will sense that no signal has been received, three beeps will sound, and the display will revert to “**Out Service**.” If you move back into range, your radio will again beep, and the display will change back to the “**In Service**” indication.

During ARTS operation, your operating frequency will continue to be displayed, but no changes may be made to it or other settings; you must terminate ARTS in order to resume normal operation. This is a safety feature designed to prevent accidental loss of contact due to channel change, etc.

Here is how to activate ARTS:

#### Basic ARTS Setup and Operation

- Set your radio and the other radio(s) to the same DCS code number, per the discussion on page 39.
- Press the **(F)** key, then press the **(SET SEL)** key to activate the Menu (“SET”) mode.
- Rotate the **DIAL** selector knob to select Menu Item “**4. Transmit**,” then press the **(SET SEL)** key.
- Rotate the **DIAL** selector knob to select Sub Menu Item “**4. ARTS**,” then press the **(SET SEL)** key.
- Press the **(SET SEL)** key again to enable adjustment of this Menu Item.

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## ADVANCED OPERATION (AMATEUR RADIO BAND)

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- ❑ Rotate the **DIAL** selector knob to select the ARTS mode (**RX**, **TX**, or **TRX**).

**RX:** Use this mode if you only want your radio to listen, and not poll the other station (in which case their radio should be set to the “TX” mode). Here, your radio will beep and display “**In Service**” or “**Out Service**” to indicate the state of connection.

**TX:** Likewise, this puts your radio into a *transmit-only* “beacon” mode where you won’t hear the polling beeps (but you can still hear when the other station talks). When activated, you have *no display of whether the other station is in range*, or not (“**In Service**” and “**Out Service**” do not appear).

**TRX:** Activates the ARTS feature with both operating modes.

**Off:** Disables the ARTS feature.

- ❑ Press the **SEL** key to save the new setting, then press the **PTT** key repetitively until the radio exits from Menu (“Set”) mode and ARTS operation has commenced.
- ❑ Every 25 seconds, your radio will transmit a “polling” call to the other station. When that station responds with its own ARTS polling signal, the display

will change to “**In Service**” to confirm that the other station’s polling code was received in response to yours.

- ❑ To exit the ARTS operation, recall the Menu Item “**4. Transmit**” then Sub Menu “**4. ARTS**,” and set it to “**Off**.”

### **ARTS Polling Time Options**

The ARTS feature may be programmed to poll every 25 seconds (default value) or 15 seconds. The default value provides maximum battery conservation, because the polling signal is sent out less frequently. To change the polling interval:

- ❑ Press the **F** key, then press the **SEL** key to activate the Menu (“SET”) mode.
- ❑ Rotate the **DIAL** selector knob to select Menu Item “**4. Transmit**,” then press the **SEL** key.
- ❑ Rotate the **DIAL** selector knob to select Sub Menu Item “**5. ARTS Intvl**,” then press the **SEL** key.
- ❑ Press the **SEL** key again to enable adjustment of this Menu Item.
- ❑ Rotate the **DIAL** selector knob to select the desired polling interval (**15** or **25** seconds).
- ❑ Press the **SEL** key to save the new setting, then press the **PTT** key repetitively until the radio exits to normal operation.

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## MISCELLANEOUS SETTING

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### Changing the Channel Step

The **VXA-700**'s synthesizer provides the option of utilizing channel steps of 5/10/12.5/15/20/25/50/100 kHz per step, any number of which may be important to your operating requirements. The **VXA-700** is set up at the factory with different default steps on each operating band which probably are satisfactory for most operation. However, if you need to change the channel step increments, the procedure to do so is very easy.

- Press and hold in the  key for 2 seconds. This instantly recalls Menu Item (Step).
- Press the  key again to enable adjustment of this Menu Item.
- Rotate the **DIAL** selector knob select the new channel step size.
- When you have made your selection, press the  key to save the new setting, then press the **PTT** key repetitively until the radio exit to normal operation.

### Changing the Operating Mode

The **VXA-700** provides for automatic mode changing when the radio is tuned to different operating frequencies. However, on the 2-m amateur band, should an unusual operating situation arise in which you need to change between the available operating modes (FM-Narrow and AM), you may do so by pressing the  →  repeatedly.

*Note:* The Air band is fixed in the “AM” mode, while the FM BC band is fixed in the “Wide FM” mode.

### Automatic Power-Off (APO) Feature

The APO feature helps conserve battery life by automatically turning the radio off after a user-defined period of time within which there has been no dial or key activity. The available selections for the time before power-off are 0.5/1/8 hours, as well as APO Off.

The default condition for the APO is OFF, and here is the procedure for activating it:

- Press the  key, then press the  key to activate the Menu (“SET”) mode.
- Rotate the **DIAL** selector knob to select Menu Item “6. Misc Setup,” then press the  key.
- Rotate the **DIAL** selector knob to select Sub Menu Item “1. APO,” then press the  key.

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## MISCELLANEOUS SETTING

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- Press the  key again to enable adjustment of this Menu Item.
- Rotate the **DIAL** selector knob to select the desired time period after which the radio will automatically shut down.
- When you have made your selection, press the  key to save the new setting, then press the **PTT** key repetitively until the radio exits to normal operation.

When the APO is activated, the “” icon will appear at the center bottom on the LCD. If there is no action by you within the time interval programmed, the microprocessor will shut down the radio automatically.

Just press and hold in the  (**PWR**) switch for 3 seconds to turn the transceiver back on after an APO shutdown, as usual.

### Transmitter Time-Out Timer (TOT)

The TOT feature provides a safety switch which limits transmission to a pre-programmed value. This will promote battery conservation by not allowing you to make excessively-long transmissions, and in the event of a stuck **PTT** switch (perhaps if the radio or a Speaker/Mic is wedged between aircraft’s seats) it can prevent interference to other users as well as battery depletion. As configured at the factory the TOT feature is set to OFF, and here

is the procedure for activating it:

- Press the  key, then press the  key to activate the Menu (“SET”) mode.
- Rotate the **DIAL** selector knob to select Menu Item “4. Transmit,” then press the  key.
- Rotate the **DIAL** selector knob to select Sub Menu Item “6. T.O.T.” then press the  key.
- Press the  key again to enable adjustment of this Menu Item.
- Rotate the **DIAL** selector knob to set the Time-Out Timer to the desired “Maximum TX” time (1 minute, 3 minutes or 5 minutes).
- When you have made your selection, press the  key to save the new setting, then press the **PTT** key repetitively until the radio exit to normal operation.

*Note:* Since brief transmissions are the mark of a good operator, try setting up your radio’s TOT feature for a maximum transmission time of 1 minute. This will significantly improve battery life, too!

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## MISCELLANEOUS SETTING

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### Programming the Key Assignments

The  key is a user-programmable key that may be set up for a pair of functions you use particularly frequently. The default  key functions, as set up at the factory, have been assigned to the ANL feature (press key) and to the “Large Font” feature (press and hold key) at the factory. These may be changed by the user, if you wish to utilize another function or functions.

To program the function assigned to a key:

- Press the  key, then press the  key to activate the Menu (“SET”) mode.
- Rotate the **DIAL** selector knob to select Menu Item “5. Key Set,” then press the  key.
- Rotate the **DIAL** selector knob to select Sub Menu Item “4. USER 1” (for the “press key” function) or “5 USER 2” (for the “press and hold key” function), then press the  key.
- Press the  key again to enable adjustment of this Menu Item.
- Rotate the **DIAL** selector knob to select the function you wish to assign to the button you selected in the previous step. The available choices are:

**ANL:** Activates the Automatic Noise Limiter in the AM mode.

**TX Power:** Selects the FM transmit power output level on the 2-m Amateur band.

**ARTS:** Instantly recalls the “ARTS” Menu Item.

**XFER:** Exchanges the display locations between the “frequency” and “Alpha-numeric Tag” modes while operate on the “Memory,” “Book Memory,” and “WX” modes. This also may be used to exchange the display location between the “frequency” and “Course Indicator and TO/FROM flag” options while operating on the “NAV” band.

**SPEC Start:** Activates the Spectrum Scope Monitor feature.

**Large Font:** Switches the frequency display between the “Large Character” and “Small Character” modes.

**None**

- When you have made your selection, press the  key to save the new setting, then press the **PTT** key repetitively until the radio exits to normal operation.

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## MISCELLANEOUS SETTING

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### Display Customization

#### Display Contrast

The LCD's contrast may be adjusted using the Menu.

- Press the **(F)** key, then press the **(SEL)** key to activate the Menu (“SET”) mode.
- Rotate the **DIAL** selector knob to select Menu Item “1. Display,” then press the **(SEL)** key.
- Rotate the **DIAL** selector knob to select Sub Menu Item “4. Contrast,” then press the **(SEL)** key.
- Press the **(SEL)** key again to enable adjustment of this Menu Item.
- Rotate the **DIAL** selector knob to adjust the contrast. As you make the adjustment, you will be able to see the effects of your changes.
- When you have made your selection, press the **(SEL)** key to save the new setting, then press the **PTT** key repetitively until the radio exits to normal operation.

#### Display Dimmer

The LCD illumination may be adjusted using the Menu, as well.

- Press the **(F)** key, then press the **(SEL)** key to activate the Menu (“SET”) mode.
- Rotate the **DIAL** selector knob to select Menu Item “1. Display,” then press the **(SEL)** key.
- Rotate the **DIAL** selector knob to select Sub Menu Item “5. Dimmer,” then press the **(SEL)** key.
- Press the **(SEL)** key again to enable adjustment of this Menu Item.
- Rotate the **DIAL** selector knob to adjust the display illumination for a comfortable brightness level. As you make the adjustment, you will be able to see the effects of your changes.
- When you have made your selection, press the **(SEL)** key to save the new setting, then press the **PTT** key repetitively until the radio exits to normal operation.

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## MISCELLANEOUS SETTING

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### TX/BUSY Indicator Customization

Default **TX/BUSY** illumination colors have been assigned at the factory. These may be changed by the user, if you wish to utilize another custom-designed color hue. The Red, Green, and Blue elements of each color's composition may be adjusted individually!

- Press the **F** key, then press the **SEL** key to activate the Menu ("SET") mode.
- Rotate the **DIAL** selector knob to select Menu Item "1. Display," then press the **SEL** key.
- Rotate the **DIAL** selector knob to select Sub Menu Item "8. RX LED" when you wish to change the BUSY indicator's color, or Sub Menu Item "9. TX LED" when you wish to change the TX indicator's color, then press the **SEL** key.
- Press the **SEL** key again to enable adjustment of the selected Menu item.

- Rotate the **DIAL** selector knob to adjust the "R" (red) element of the color; you will be able to see the effects of your changes. The degree of color hue is designated in a numerical scale of "000" through "255," and you may adjust the display's red component until it is just the way you want it. As you make the adjustment, you will be able to see the effects of your changes.
- Press the **SEL** key again, then rotate the **DIAL** selector knob to adjust the "G" (green) element of the color.
- Repeat the process described above to adjust the "B" (blue) element of the color.
- Press the **SEL** key to save the new setting, then press the **PTT** key repetitively until the radio exits to normal operation.

**Note:** You may also change the indicator's color of the Emergency lamp, Weather Alert lamp, and Over-Heating lamp by the Menu Items. See page 51 for details.

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## FIELD PROGRAMMING MODE

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The **VXA-700**'s "Book" Memories also allow the user to store, label, and recall channel frequencies which you may want to use frequently by placing the **VXA-700** into the "*Field Programming mode.*"

- Press and hold in both the **PTT** switch and  key, while turning the radio on, to activate the Field Programming Mode. "FD" will appear at the upper left corner on the display.
  - Select the desired frequency to be stored in the Book Memory.
  - Press and hold in the  key for 2 seconds. The display will indicate a "Book" memory channel number will blink on the LCD.
  - Within five seconds of pressing the  key, rotate the **DIAL** selector knob to select the desired memory channel number for storage. In order to prevent writing over memory channels, a " ←" icon will appear at the right of the channel number to indicate if the memory channel is vacant.
- Now press and hold in the  key for 3 seconds; you will now see the blinking "A" character on the LCD. To attach an alpha/numeric name (label) to the memory, proceed to the next step; otherwise press and hold in the  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 125 available characters (including letters, numbers, and special symbols). When the desired first character appears, press the  key momentarily to select it and move on to the next character.
  - Select succeeding characters in the same manner, pressing the  key momentarily after each selection.
  - After entering the entire name (eight characters maximum), press the  key for 2 seconds to save all data for the channel.
  - Turn the radio off, then turn the radio back on again to begin normal operation.

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## CPU RESETTING

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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:

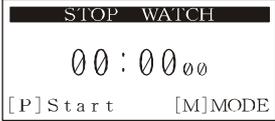
1. Turn the radio off.
2. Press and hold in the  key, and the **MONITOR** button, while turning the radio on.

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## TIMER MODE

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The **VXA-700** is provided the “**STOP WATCH**” timer and “**COUNT DOWN**” timer. These can be used for a variety of time-keeping purposes.

1. Press and hold in the  key while tuning the radio on, activate the Timer Mode.
2. Press the **MONITOR** key to toggle the Timer between “**STOP WATCH**” timer and “**COUNT DOWN**” timer. If you select the “**COUNT DOWN**” timer, rotate the **DIAL** knob to set the values for the timers (1 minutes –59 minutes).
3. Press the **PTT** switch to start/stop the timer.
4. Turning the radio off, then on again, will return the **VXA-700** to normal operation.

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## MENU (“SET”) MODE

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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-700**.

Here is the procedure for initiating Menu configuration changes:

- Press the **(F)** key, then press the **(SEL)** key, to activate the Menu (“SET”) mode.
- Rotate the **DIAL** selector knob to select the “Main” Menu, then press the **(SEL)** key.
- Rotate the **DIAL** selector knob to select the “Sub” Menu item you wish to view and/or modify, then press the **(SEL)** key.
- Once you have selected the desired Menu Item, press the **(SEL)** key once to view the current setting for the item.
- Rotate the **DIAL** selector knob to change the setting of the item (ON to OFF, etc.).
- Press the **(SEL)** key again to save your new setting.
- Press the **PTT** key repetitively until the radio exits to normal operation.

# MENU (“SET”) MODE

## MENU Listing

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

	Set Mode Item	Function	Available Values*
1. Display	1. Scan Lamp	Enables/Disables the Scan lamp while paused during scanning.	On/Off
	2. Backlight	Selects the Display illumination Mode.	Key/Off/On
	3. Large Font	Selects the frequency display between the "Large Character" and "Small Character" modes.	Off/On
	4. Contrast	Setting of the display contrast.	00 - 15 (06)
	5. Dimmer	Setting of the display brightness level.	LV 1 - LV 4 (LV 3)
	6. Meter Symbol	Selects the S- & TX PO meter symbol.	Four patterns
	7. Display Mode	Selects the display of the sensor units' information.	Off/Temp/Volt
	8. RX LED	Edits the BUSY indicator color.	—
	9. TX LED	Edits the TX indicator color.	—
	10. EMG LED	Edits the Emergency lamp color.	—
	11. Alert LED	Edits the Weather Alert lamp color.	—
	12. TEMP LED	Edits the Over Heating lamp color.	—
2. Sound	1. Beeper	Select the Keypad beeper tone.	On/DTMF/Off
	2. Bell	Enables/disables the Bell Ringer function.	On/Off
	3. Power On Beep	Selects the Power-on beep.	Off/1/2/3
	4. ARTS Beep	Selects the beep option during ARTS operation.	On/Off
3. Receiver	1. SQL	Sets the Squelch threshold level for the AM and FM Narrow modes.	0 - 8 (2)
	2. WSQL	Sets the Squelch threshold level for the Wide FM mode.	0 - 8 (1)
	3. Resume	Selects the Scan Resume mode.	5secs/Busy
	4. DW/PRI	Selects the Dual Watch/Priority Function.	DW/PRI
	5. RX Save	Selects the Receive-mode Battery Saver "sleep" ratio.	ABS:1:1/2:1/3:1/4:1:5/ Off
	6. Step	Setting of the synthesizer steps.	5k/10k/12.5k/15k/20k/ 25k/50k/100k
	7. SQL Type	Selects the Tone Encoder and/or Decoder mode.	Off/T/SQL/DCS
	8. TONE Set	Setting of the CTCSS Tone Frequency.	50 standard CTCSS tones.
	9. DCS Set	Setting of the DCS Code.	104 standard DCS codes.
	10. PRI Time	Selects the Priority Checking Time.	500ms/1s/1.5s/2s/ 2.5s/3s
	11. SPECT Width	Selects the visible bandwidth of the Spectrum Analyzer.	±30ch±15ch

	Set Mode Item	Function	Available Values*
4. Transmit	1. RPT Shift	Set the Repeater Shift Direction.	Simplex / -RPT / +RPT
	2. Shift Width	Sets the magnitude of the Repeater Shift.	00kHz - 9.95MHz (0.6kHz)
	3. ARS	Enables/disables the Automatic Repeater Shift function.	On/Off
	4. ARTS	Enables/disables ARTS operation.	Off / RX / TX / TRX
	5. ARTS Intvl	Selects the polling interval during ARTS operation.	15secs / 25secs
	6. T.O.T	Setting of the Time-Out Timer Countdown Time.	Off / 1min / 3min / 5min
	7. TX Power	Selects the TX Output Power on the FM mode.	Low1 / Low2 / Low3 / High
5. Key Set	1. Lock Mode	Selects the Control Locking lockout combination.	DIAL / KEY / KEY+DIAL / PTT / DIAL+PTT / KEY+PTT / ALL
	2. [MON]	Selects the MONITOR button (just below the PTT switch) function.	MON / T.CALL
	3. [121.5]	Selects the primary [121.5(HOME)] key function	121.5HOME
	4. USER 1	Programming the [USER] key assignment (momentary-press mode).	ANL / TX Power / ARTS / XFER / SPEC Start / Large Font/None
	5. USER 2	Programming the [USER] key (press and holding) assignment.	
6. Misc Setup	1. APO	Selects the Auto Power Off time (time before power goes off).	Off / 0.5h / 1h / 8h
	2. Emergency	Selects the Emergency feature.	121.5 / LED+121.5 / LED
	3. WX Alert	Selects the Alert functions when receiving the Weather Alert Signal on the WX Channel.	Alert Off / Beep / LED / Beep+LED
	4. TEMP Unit	Selects the measurement units for the Temperature sensor.	°F / °C
	5. TEMP Check	Enables/Disables the Over-Heating Alarm	Off / On
	6. TEMP Set	Program the threshold temperature for the "High-Temperature" indicator.	[32.0 °F (0 °C)] - [230.0 °F (110 °C)]
7. Option	1. Internal MIC	Internal Microphone On/Off	Off / On
	2. TEMP Offset	Correcting the Thermometer setting	[-22.8 °F (-12.7 °C)] - [+22.8 °F (+12.7 °C)]
	3. Clock Shift	CPU Clock Shift	Off / On

---

## MENU (“SET”) MODE

---

### 1. DISPLAY

---

#### 1. Scan Lamp

**Function:** Enables/Disables the Scan lamp while paused during scanning.

**Available Values:** On/Off

**Default Setting:** On

#### 2. Backlight

**Function:** Selects the Display illumination Mode.

**Available Values:** Key/Off/On

**Default Setting:** Key

**Key:** Illuminates the Display Lamp for 5 seconds when any front panel key is pressed.

**Off:** Disables the Display lamp.

**On:** Illuminates the Display lamp continuously.

#### 3. Large Font

**Function:** Selects the frequency display between the “Large Character” and “Small Character” modes.

**Available Values:** Off/On

**Default Setting:** Off

#### 4. Contrast

**Function:** Setting of the display contrast.

**Available Values:** 00 - 15

**Default Setting:** 06

#### 5. Dimmer

**Function:** Setting of the display brightness level.

**Available Values:** LV 1 - LV 4

**Default Setting:** LV 3

#### 6. Meter Symbol

**Function:** Selects the S- & TX PO meter symbol.

**Available Values:** Four patterns



**Default Setting:** 

#### 7. Display Mode

**Function:** Selects the display of the sensor units’ information.

**Available Values:** Off/Temp/Volt

**Default Setting:** Off

**Off:** Disables the sensor information.

**Temp:** Indicates the current temperature inside the transceiver’s case.

**Volt:** Indicates the battery voltage and battery type.

---

## MENU (“SET”) MODE

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### 8. RX LED

**Function:** Edits the BUSY indicator color.

**Available Values:** Individual adjustments of the Red, Green, and Blue color hue may be performed, on a numerical scale of “000” to “255.” See page 46 for details.

**Default Setting:** Green (R000, G111, B000)

### 9. TX LED

**Function:** Edits the TX indicator color.

**Available Values:** Individual adjustments of the Red, Green, and Blue color hue may be performed, on a numerical scale of “000” to “255.” See page 46 for details.

**Default Setting:** Red (R111, G000, B000)

### 10. EMG LED

**Function:** Edits the Emergency lamp color.

**Available Values:** Individual adjustments of the Red, Green, and Blue color hue may be performed, on a numerical scale of “000” to “255.” See page 46 for details.

**Default Setting:** White (R127, G127, B127)

### 11. Alert LED

**Function:** Edits the Weather Alert lamp color.

**Available Values:** Individual adjustments of the Red, Green, and Blue color hue may be performed, on a numerical scale of “000” to “255.” See page 46 for details.

**Default Setting:** Green (R000, G127, B000)

### 12. TEMP LED

**Function:** Edits the Over Heating lamp color. This is a display seen when the temperature exceeds the threshold set via the “TEMP Set” setting (see page 58).

**Available Values:** Individual adjustments of the Red, Green, and Blue color hue may be performed, on a numerical scale of “000” to “255.” See page 46 for details.

**Default Setting:** Light Blue (R127, G000, B127)

---

## 2. SOUND

### 1. Beeper

**Function:** Select the Keypad beeper tone.

**Available Values:** On/DTMF/Off

**Default Setting:** On

On: Enables the keypad beeper.

DTMF: Enables the keypad beeper with DTMF tones.

Off: Disables the keypad beeper.

### 2. Bell

**Function:** Enables/disables the Bell Ringer function.

**Available Values:** On/Off

**Default Setting:** Off

---

## MENU (“SET”) MODE

---

### 3. Power On Beep

**Function:** Selects the Power-on beep.

**Available Values:** Off/Mode 1/Mode 2/Mode 3

**Default Setting:** Mode 1

### 4. ARTS Beep

**Function:** Selects the beep option during ARTS operation.

**Available Values:** On/Off

**Default Setting:** On

## 3. RECEIVE

---

### 1. SQL

**Function:** Sets the Squelch threshold level for the AM and FM Narrow modes.

**Available Values:** 0 - 8

**Default Setting:** 2

### 2. WSQL

**Function:** Sets the Squelch threshold level for the Wide FM mode.

**Available Values:** 0 - 8

**Default Setting:** 1

### 3. Resume

**Function:** Selects the Scan Resume mode.

**Available Values:** 5secs/Busy

**Default Setting:** 5secs

5secs: The scanner will hold for 5 seconds, then resume whether or not the other station is still transmitting.

Busy: The scanner will hold until the signal disappears, then will resume when the carrier drops.

### 4. DW/PRI

**Function:** Selects the Dual Watch/Priority Function.

**Available Values:** DW/PRI

**Default Setting:** DW

### 5. RX Save

**Function:** Selects the Receive-mode Battery Saver “sleep” ratio.

**Available Values:** ABS/1:1/1:2/1:3/1:4/1:5/Off

**Default Setting:** ABS

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 cannot be activated during Scan or Dual Watch/Priority operation.

---

## MENU (“SET”) MODE

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### 6. Step

**Function:** Setting of the synthesizer steps.

**Available Values:** 5k/10k/12.5k/15k/20k/25k/50k/100k

**Default Setting:** Depends on the operating band.

### 7. SQL Type

**Function:** Selects the Tone Encoder and/or Decoder mode.

**Available Values:** Off/T/TSQ/DCS

**Default Setting:** Off

**T:** CTSCC Encoder

**TSQ:** CTCSS Encoder/Decoder

**DCS:** Digital Coded Squelch Encoder/Decoder

**Note:** This Menu Item is only selectable on the Amateur Band (you may only access this Menu item while operating on the Amateur band).

### 8. TONE Set

**Function:** Setting of the CTCSS Tone Frequency.

**Available Values:** 38 standard CTCSS tones.

**Default Setting:** 67.0Hz

### 9. DCS Set

**Function:** Setting of the DCS Code.

**Available Values:** 106 standard DCS codes.

**Default Setting:** 023

### 10. PRI Time

**Function:** Selects the Priority Checking Time.

**Available Values:** 500ms/1s/1.5s/2s/2.5s/3s

**Default Setting:** 2s

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

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

CTCSS TONE FREQUENCY (Hz)							
67.0	69.3	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	241.8	250.3	–	–

DCS CODE									
023	025	026	031	032	036	043	047	051	053
054	065	071	072	073	074	114	115	116	122
125	131	132	134	143	145	152	155	156	162
165	172	174	205	212	223	225	226	243	244
245	246	250	251	252	255	261	263	265	266
271	274	306	311	315	325	331	332	343	346
351	356	364	365	371	411	412	413	423	431
432	435	445	446	452	454	455	462	464	465
466	503	506	516	523	526	532	546	565	606
612	624	627	631	632	654	662	664	703	712
723	731	732	734	743	754	–	–	–	–

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## MENU (“SET”) MODE

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### 11. SPECT Width

**Function:** Selects the visible bandwidth of the Spectrum Analyzer.

**Available Values:**  $\pm 30\text{ch}/\pm 15\text{ch}$

**Default Setting:**  $\pm 30\text{ch}$

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### 4. TRANSMIT

---

#### 1. RPT Shift

**Function:** Set the Repeater Shift Direction.

**Available Values:** Simplex/-RPT/+RPT

**Default Setting:** Simplex

**Note:** This Menu Item is only selectable while operating on the Amateur Band.

#### 2. Shift Width

**Function:** Sets the magnitude of the Repeater Shift.

**Available Values:** 00kHz – 9.95MHz (50kHz/step).

**Default Setting:** 600kHz

**Note:** This Menu Item is only selectable while operating on the Amateur Band.

#### 3. ARS

**Function:** Enables/disables the Automatic Repeater Shift function.

**Available Values:** On/Off

**Default Setting:** On

#### 4. ARTS

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

**Available Values:** Off/RX/TX/TRX

**Default Setting:** Off

Off: Disables the ARTS feature.

RX: Use this mode if you only want your radio to listen, and not poll the other station (in which case their radio should be set to the “TX” mode). Here, your radio will beep and display “In Service” or “Out Service” to indicate the state of connection.

TX: Likewise, this puts your radio into a *transmit-only* “beacon” mode where you won’t hear the polling beeps (but you can still hear when the other station talks). When activated, you have *no display of whether the other station is in range*, or not (“In Service” and “Out Service” do not appear).

TRX: Activates the ARTS feature with both operating modes.

#### 5. ARTS Itvl

**Function:** Selects the polling interval during ARTS operation.

**Available Values:** 15secs/25secs

**Default Setting:** 25secs

---

## MENU (“SET”) MODE

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### 6. T.O.T

**Function:** Setting of the Time-Out Timer Countdown Time.

**Available Values:** Off/1min/3min/5min

**Default Setting:** Off

The Time-Out Timer shuts off the transceiver after continuous transmission exceeds the programmed time.

### 7. TX Power

**Function:** Selects the TX Output Power on the FM mode.

**Available Values:** Low1/Low2/Low3/High

**Default Setting:** High

## 5. KEY SET

---

### 1. Lock Mode

**Function:** Selects the Control Locking lockout combination.

**Available Values:** DIAL/KEY/KEY+DIAL/PTT/DIAL+PTT/KEY+PTT/ALL

**Default Setting:** KEY

### 2. [MON]

**Function:** Selects the **MONITOR** button (just below the **PTT** switch) function.

**Available Values:** MON/T.CALL

**Default Setting:** MON

**MON:** Pressing the **MONITOR** button causes the Noise/Tone Squelch to be over-ridden, allowing you to listen for weak or non-encoded signals.

**T.CALL:** Pressing the **MONITOR** key activates a 1750-Hz burst tone, used for repeater access in some countries (predominantly in Europe).

### 3. [121.5]

**Function:** Selects the  key function.

**Available Values:** 121.5/HOME

**Default Setting:** 121.5

**121.5:** Pressing this key instantly recall a 121.5 MHz “Emergency” channel.

**HOME:** Pressing this key instantly recalls a favorite “Home” channel.

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## MENU (“SET”) MODE

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### 4. USER 1

**Function:** Programming the  key assignment (momentary-press mode).

**Available Values:** ANL/TX Power/ARTS/XFER/SPEC Start/Large Font/None

**Default Setting:** ANL  
See page 44 for details.

### 5. USER 2

**Function:** Programming the  key (press and holding) assignment.

**Available Values:** ANL/TX Power/ARTS/XFER/SPEC Start/Large Font/None

**Default Setting:** Large Font  
See page 44 for details.

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## 6. MISC SETUP

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### 1. APO

**Function:** Selects the Auto Power Off time (time before power goes off).

**Available Values:** Off/0.5h/1h/8h  
**Default Setting:** Off

### 2. Emergency

**Function:** Selects the Emergency feature.

**Available Values:** 121.5/LED+121.5/LED

**Default Setting:** LED+121.5

121.5: Pressing the  key momentarily, accesses the 121.5 MHz Emergency Frequency.

LED+121.5: Pressing the  key momentarily, accesses the 121.5 MHz Emergency Frequency and flashes the **BUST/TX** lamp.

LED: Pressing the  key momentarily, flashes the **BUST/TX** lamp.

### 3. WX Alert

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

**Available Values:** Alrt Off/Beep/LED/Beep+LED

**Default Setting:** Alrt Off

Alrt Off: Disables the Alert function

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

LED: Illuminate the **BUST/TX** lamp when receive the Weather Alert Signal

Beep+LED: Sounds a loud beep and illuminates the **BUSY/TX** lamp when receiving the Weather Alert Signal.

---

## MENU (“SET”) MODE

---

### 4. TEMP Unit

**Function:** Selects the measurement units for the Temperature sensor.

**Available Values:** °F/°C

**Default Setting:** °F

### 5. TEMP Check

**Function:** Enables/Disables the Over-Heating Alarm

**Available Values:** Off/On

**Default Setting:** Off

### 6. TEMP Set

**Function:** When the “TEMP Check” Menu item is set to “On,” and the temperature passes through the threshold set in this step, the **BUSY/TX** indicator will change colors, to alert you to the high temperature condition. The color of the “High Temperature” indication is set via the “TEMP LED” Menu setting (page 52).

**Available Values:** [32.0 °F (0 °C)] - [230.0 °F (110 °C)]

**Default Setting:** [122.0 °F (50 °C)]

**NOTE:** When the temperature reaches approximately 220 °F (105 °C), the radio will disable transmission, to allow the radio to cool off.

## 7. OPTION

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### 1. Internal MIC

**Function:** Internal Microphone On/Off

**Available Values:** Off/On

**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-96** 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.

### 2. TEMP Offset

**Function:** Correcting the Thermometer setting

**Available Values:** [-22.8 °F (-12.7 °C)] - [+22.8 °F (+12.7 °C)]

**Default Setting:** 0.0 °F (0.0 °C)

This allows you to calibrate the internal thermometer with a known-to-be-accurate source.

---

## MENU (“SET”) MODE

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### 3. Clock Shift

**Function:** CPU Clock Shift

**Available Values:** Off/On

**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.

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## SPECIFICATIONS

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### *General*

<b>Frequency Range:</b>	TX 118.000 - 136.975 MHz (COM Band), 144.000 - 148.000MHz (Amateur Band) RX 88.000 - 108.000MHz (FM BC Band), 108.000 - 117.975 MHz (NAV Band), 118.000 - 136.975 MHz (COM Band), 144.000 - 148.000MHz (Amateur Band), Weather Channel (WX-01 - WX-10)
<b>Channel Spacing:</b>	5/10/12.5/15/20/25/50/100 kHz
<b>Emission Type:</b>	TX: AM & FM, RX: AM & FM
<b>Supply Voltage:</b>	4.5 - 15.0 VDC
<b>Current Consumption (approx.):</b>	250 $\mu$ A (Power off), 35 mA (Battery saver on, save ratio 1:5), 60 mA (Squelch on), 180 mA (Receive). 1.7A/950 mA/650 mA/400 mA (Transmit FM: 5W/2.5W/1W/0.3W @ 7.4V) 800 mA (Transmit AM: 1.5W Carrier @ 7.4V) 400 mA (Transmit AM: 0.3W Carrier @ 4.5V)
<b>Temperature Range:</b>	+14° F to +140° F (-10° C to +60° C)
<b>Case Size (WxHxD):</b>	2.36" x 3.78" x 1.12" (60 x 96 x 28.5 mm) w/FNB-80LI
<b>Weight (approx.):</b>	9.9 oz. (280 grams) with FNB-80LI, antenna

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## SPECIFICATIONS

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### *Receiver*

<b>Circuit Type:</b>	Double-conversion Superheterodyne
<b>IFs:</b>	35.4 MHz & 450 kHz ( AM / NFM ), 45.65 MHz & 10.7MHz ( WFM )
<b>Sensitivity:</b>	88-108 MHz: < 2 $\mu$ V (for 12 dB SINAD with 1 kHz tone @ 22.5 kHz deviation) 108 MHz-138 MHz: < 1 $\mu$ V (for 6 dB S/N with 1 kHz tone @ 30 % modulation) 144-148 MHz: < 0.32 $\mu$ V (for 12 dB S/N with 1 kHz tone @ 3.5 kHz deviation) WX-01 - WX-10: < 0.4 $\mu$ V (for 12 dB S/N with 1 kHz tone @ 3.5 kHz deviation)
<b>Selectivity:</b>	AM/NFM: < 8 kHz/-6 dB, WFM: < 200 kHz/-6 dB
<b>Adjacent Ch. Selectivity:</b>	AM/NFM: > 25 kHz/-60 dB, WFM: > 300 kHz/-20 dB
<b>AF Output:</b>	0.4W @ 8 Ohms, 10 % THD

### *Transmitter*

<b>Power Output:</b>	118 MHz-138 MHz: AM: 5.0 W (PEP), 1.5 W (Carrier Power) @ 7.4 V 144-148 MHz: FM:5.0 W @ 7.4 V, AM: 4.0 W (PEP), 1.3 W (Carrier Power) @ 7.4 V
<b>Frequency Stability:</b>	Better than $\pm 10$ ppm (14° F to 140° F/-10° C to +60° C)
<b>Modulation System:</b>	AM: Low Level Modulation, FM: variable reactance
<b>Maximum deviation:</b>	$\pm 5$ kHz
<b>Spurious Emission:</b>	> 60 dB below carrier
<b>Int. Microphone Type:</b>	Condenser
<b>Ext. Mic. Impedance:</b>	150 Ohms

*Specification are subject to change without notice.*

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## ACCESSORIES & OPTIONS

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### Supplied Accessories

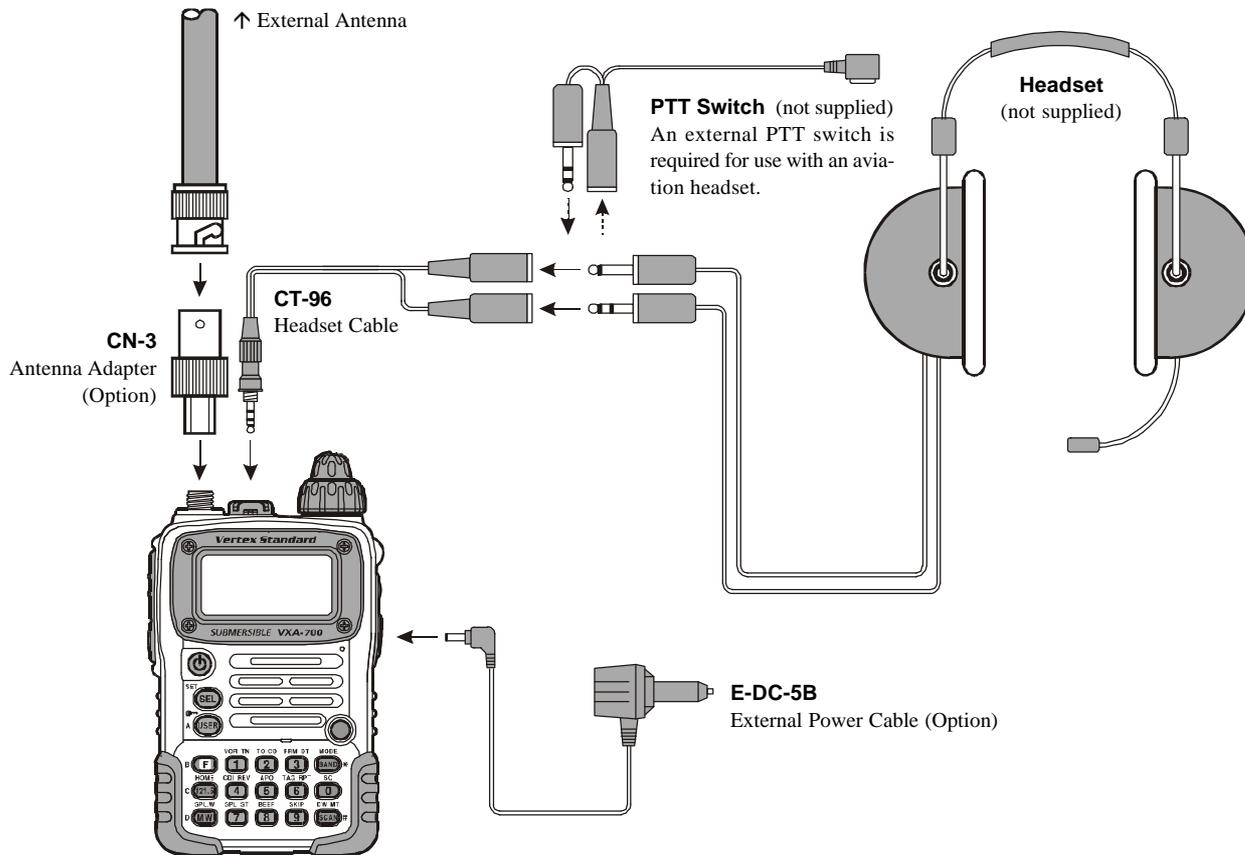
LI-ion Battery Pack (7.2V, 700 mAh) <b>FNB-80LI</b> .....	1
Battery Charger <b>NC-72</b> .....	1
Helical Antenna <b>ATV-9</b> .....	1
Headset Cable <b>CT-96</b> .....	1
Operating Manual .....	1
Warranty Card .....	1

### Available Options

<b>MH-44B4B</b>	Speaker Microphone
<b>FBA-23</b>	Alkaline Battery Case
<b>CD-15</b>	Desktop Rapid Charger
<b>E-DC-5B</b>	DC Cable w/Noise Filter
<b>E-DC-6</b>	DC Cable; plug and wire only
<b>CN-3</b>	Antenna Adapter (SMA to BNC)

- *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.*

## ACCESSORIES & OPTIONS



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## IN CASE OF DIFFICULTY

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Most operational difficulties can be solved by your Vertex Avionics dealer. Please contact your dealer first for advice and assistance.

If the dealer is unable to assist you, you may contact us at Vertex Standard USA. We can be reached by telephone at (714) 827-7600 (ask the operator for Avionics Product Support).

If your radio requires repair, it must be sent to Vertex Standard USA. Please note the following:

- A Return Authorization is NOT required for repairs, either in or out of warranty. There is no need to contact us before sending a radio for repair.
  - Please enclose a note describing the problem(s) with the radio, your name and shipping address (no P.O. Box numbers), and a telephone number at which we can reach you during business hours.
  - Please also enclose a copy of your purchase receipt to establish the warranty date. Radio mainframes are warranted for three years. Accessory items (batteries, antennas, chargers, etc.) are warranted for one year.
- Repair turnaround averages about 7 to 10 working days in our shop, excluding time in shipping. This time will vary, based on our current workload.
  - We can provide repair estimates upon your request. There is no additional charge for the estimate if you authorize the repair. If you decline the repair after requesting an estimate, an estimate fee equal to our current schedule for 1/2 hour of labor will be charged.
  - We return-ship warranty repairs via UPS ORANGE (“3 Day Select”) service at our expense. Non-warranty repairs are returned via UPS BROWN (ground service) at your expense.
  - The above information applies to repair procedures in the United States and Canada only. If you are in any other country, please contact your dealer for specific information and instructions.

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.



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