

Vertex Standard

VX-537

*Hand-Held Portable
Land Mobile Transceiver*

OPERATING MANUAL



Vertex Standard LMR, Inc.

4-8-8 Nakameguro, Meguro-Ku, Tokyo 153-8644, Japan

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. After reading it, keep the manual handy for quick reference, in case questions arise later on.

We're glad you joined the **Vertex Standard** team. Call on us any time, because our business is communications. Let us help you get your message across.

Intrinsic Safety (IS) Information

- The **VX-537**, equipped with any of the following optional units, meets the requirements of ANSI/UL 913 6th Edition for Class I, Division 1, Groups A-D; Class II, Groups E-G; and Class III for hazardous locations.

Battery Packs: **FNB-29AIS, FNB-29ANIS, FNB-29ALNIS**

Speaker Microphone: **MH-50C7A**

Encryption Unit: **FVP-25**

2-Tone Sequential Decoder Unit: **F2D-8**

VX-Trunking Portable Logic Board: **VTP-50**

- When attach the **FNB-29BNIS** Battery Pack, the **VX-537** comes to meet the requirements of ANSI/UL 913 5th Edition for "Class I, II, III, Division 1, Groups C, D, E, F, G, T2C" for hazardous locations.
- Substitution of components may impair intrinsic safety.

NOTICE

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

IMPORTANT NOTICE!

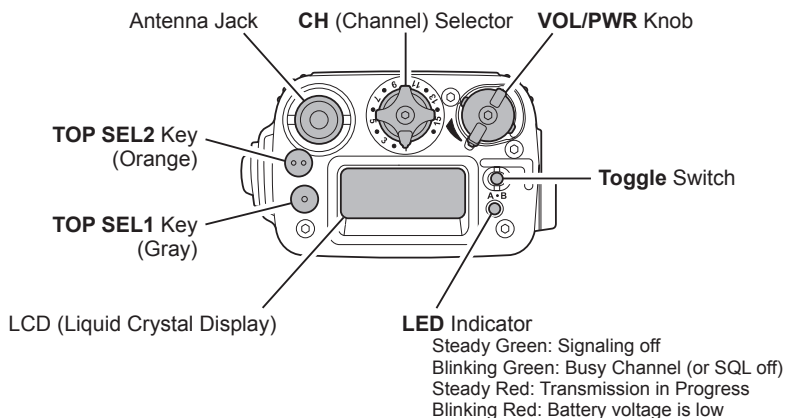
FCC RF Exposure Compliance Requirements for Occupational Use Only:

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

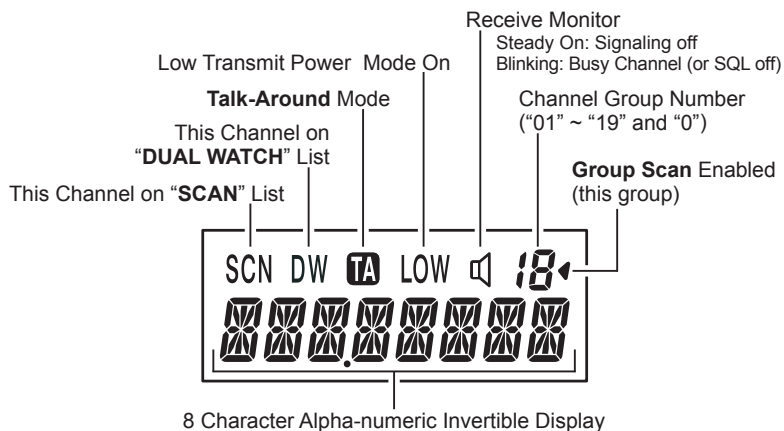
- ❑ FCC 96-326, Guidelines for Evaluating the Environmental Effects of Radio-Frequency Radiation.
- ❑ FCC OET Bulletin 65 Edition 97-01 (1997) Supplement C, Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields.
- ❑ ANSI/IEEE C95.1-1992, IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3kHz 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 (PTT) 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 PTT button.**
- **DO NOT transmit when the radio is used in a “Body Worn” configuration. It must be used ONLY for (1) when there is a 1” - 2” (2.5 to 5 cm) distance from the body during transmitting, or (2) for monitoring purposes, using the speaker only, or (3) for carrying purposes.**
- **Always use Vertex Standard authorized accessories.**

CONTROLS & CONNECTORS

Top Panel

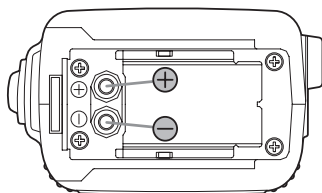
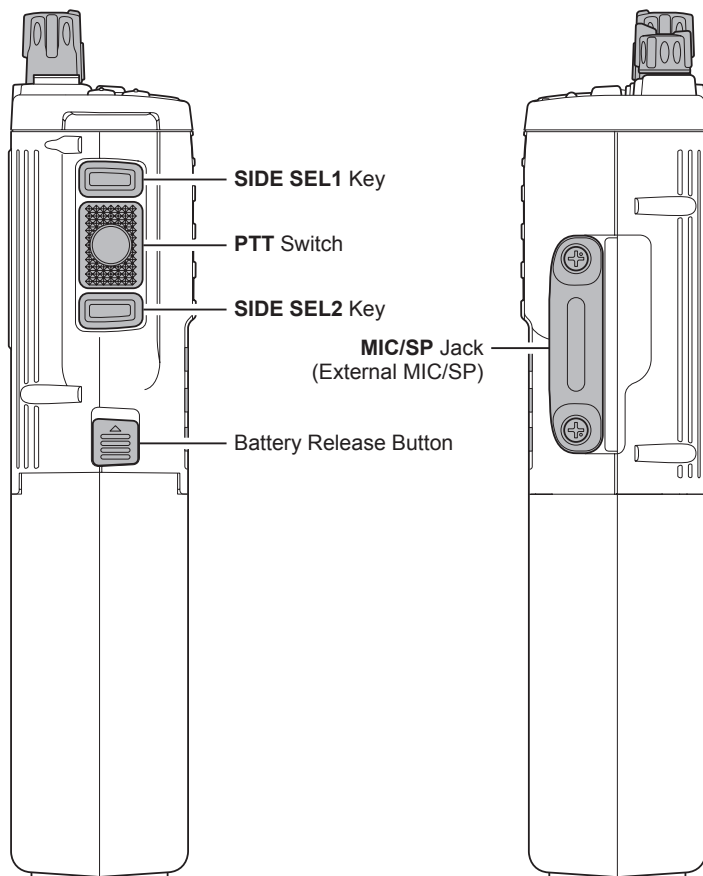


LCD



CONTROLS & CONNECTORS

Side Panels



Battery Terminals

Maximum Input Voltage:	9 V DC
Maximum Input Current:	2.5 A
Maximum Internal Capacitance:	30.33 μ F
Maximum Internal Inductance:	1 μ H

BEFORE YOU BEGIN

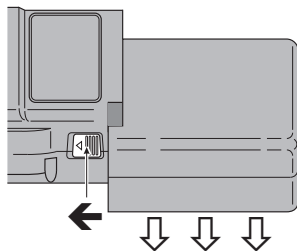
Preliminaries

If the transceiver has not been used since leaving the factory, fully charge the battery using **VAC-520** Rapid Desktop Charger before using it.

Mount the battery on the transceiver as described and shown in the illustration below. Also, install the antenna on the jack on top of the transceiver by screwing the connector into the jack until it is finger-tight.

Battery Removal & Replacement

- Make sure that the **VOL** control is set into the “off” click-stop (fully counter-clockwise, and remove the protective soft or hard case, if used).
- Grasp the transceiver with your left hand, so your palm is over the speaker and your thumb is on the Battery Release Button.
- Move the Battery Release Button in the direction indicated by the arrowhead, while using your right hand to slide the battery pack toward the side with the button. The battery pack should slide smoothly out of its track.
- To replace the Battery Pack, repeat the second and third steps above, simply sliding the battery case in the other direction after aligning the shorter side of the Battery Pack with the track below the Battery Release Button.



⚠ WARNING ⚠

- The **FBA-19** was designed as a backup battery pack, and it can be used to power the transceiver if you are in an area that does not require the use of an intrinsically safe radio. The **VX-537IS** is only intrinsically safe with the use of the **FNB-29AIS**, **FNB-29ANIS**, **FNB-29ALNIS**, or **FNB-29BNIS** battery pack.
- Do not reverse-connect the battery terminals.
- Do not parallel-connect the battery terminals.
- Do not change batteries in hazardous locations.
- To reduce the risk of explosion, recharge the batteries outside of hazardous locations.

BEFORE YOU BEGIN

Battery Charging

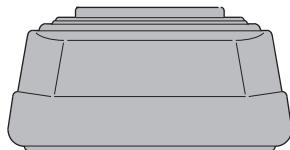
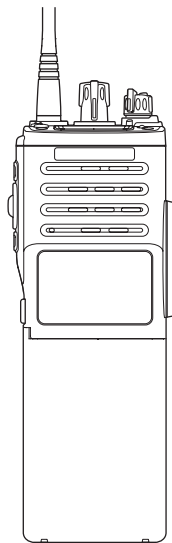
- ❑ Insert the DC plug from the AC Adapter into the DC jack on the Charger Stand's rear panel, then plug the AC Adapter into the AC line outlet.
- ❑ Insert the battery pack into the Charger Stand. If charging with the transceiver attached, the antenna jack should be at the left side when viewing the Charger Stand from the front.
- ❑ If the battery pack is inserted correctly, the LED indicator on the Charger Stand will glow red (Charging).
- ❑ When charging is completed, the red LED indicator will change to green (Fully Charged).

Important Notes!

- Do not connect an improper AC Adapter into the DC jack of the Charger Stand.
- Do not charge an improper battery (one not specifically designed for use in the **VAC-520**).
- The AC Adapter and/or Charger Stand will generate a moderate amount of heat during the charging process. This is a normal condition.
- The AC Adapter is not designed to power the transceiver for transmission.

Caution!!

- When charging a battery pack alone (not attached to the transceiver), do not allow any metal object to short the terminals on the battery pack.
- Do not allow any metal objects to short the terminals in the nest of the Charger Stand, as a short-circuit could cause overheating of the charger circuitry.



BEFORE YOU BEGIN

Low Battery Indication

- ❑ As the battery discharges during use, the voltage gradually becomes lower. When the battery voltage falls below the operating voltage range of the radio, it is time to substitute a freshly charged battery and recharge the depleted pack. The **LED** indicator on the top of the radio will blink red when the battery voltage is low.
- ❑ Avoid recharging Ni-Cd or Ni-MH batteries often with little use between charges, as this can degrade the charge capacity. We recommend that you carry an extra, fully-charged pack with you so the operational battery may be used until depletion (this “deep cycling” technique promotes better long-term battery capacity).

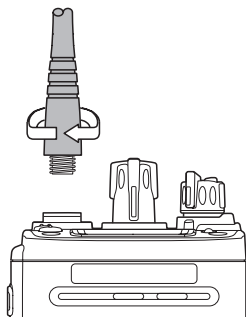
 **Caution** 

Danger of explosion if battery is replaced with an incorrect battery. Replace only with the same or equivalent type.

BASIC OPERATION

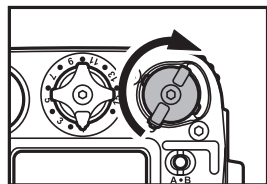
Preliminary Steps

- ❑ Install a charged battery pack onto the transceiver, as described previously.
- ❑ Screw the supplied antenna onto the Antenna jack. Never attempt to operate this transceiver without an antenna connected.
- ❑ If you have a Speaker/Microphone, we recommend that it not be connected until you are familiar with the basic operation of the **VX-537**.

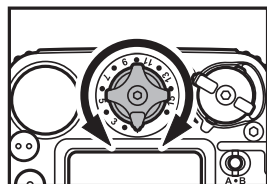


Operation Quick Start

- ❑ Turn the top panel's **VOL/PWR** knob clockwise to turn on the radio.



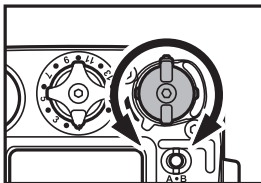
- ❑ Turn the top panel's **CH** selector knob to choose the desired operating channel. A channel name will appear on the LCD. If you want to select the operating channel from a different Memory Channel Group, press the **Soft** key assigned to the “Memory Group Up” or “Memory Group Down” function to select the Memory Channel Group containing the desired operating channel. A group name will appear on the LCD whenever the **Soft** key is pressed.



Note: Some models are programmed so that the operating channels are selected by the Soft key and the memory channel group is selected by the CH selector knob. For further details, contact your Vertex Standard dealer.

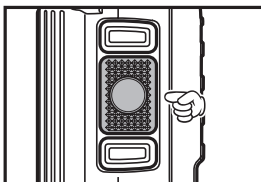
BASIC OPERATION

- ❑ Rotate the **VOL/PWR** knob to set the volume level. If no signal is present, press and hold in the **Soft** key assigned to the Monitor function for more than 2 seconds; background noise will now be heard, and you may use this to set the **VOL/PWR** knob for the desired audio level.



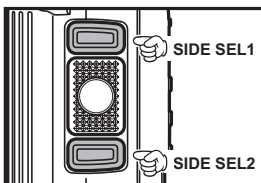
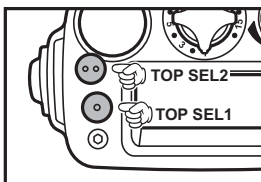
Press and hold in the **Soft** (Monitor) key for more than 2 seconds (or press the **Soft** (Monitor) key twice) to quiet the noise and resume normal (quiet) monitoring.

- ❑ To transmit, press and hold in the **PTT** switch. Speak into the microphone area of the lower left-hand corner of the front grill in a normal voice level. To return to the Receive mode, release the **PTT** switch.



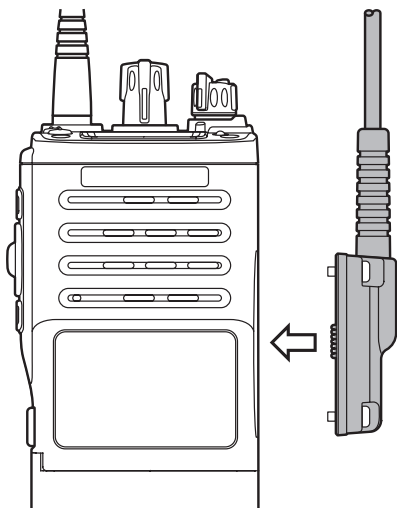
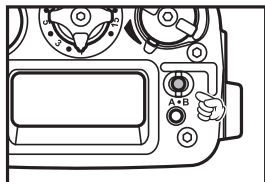
- ❑ Press the **Soft** key assigned to the “Scan” function or switch the **Toggle** Switch to the assigned “Scan” position (when so programmed by your dealer) to start the scanner. The scanner rapidly steps through each of the dealer-programmed channels, looking for incoming calls.

- ❑ Press the **TOP SEL1/TOP SEL2** key on the top panel or **SIDE SEL1/SIDE SEL2** key on the side panel to activate one of the pre-programmed functions which may have been enabled at the time of programming by the dealer. Similarly, when using the 16-key version, the **[A]**, **[B]**, **[C]**, and **[D]** function keys may be used to activate one of these functions, if programmed by the dealer. See the next section for details regarding the available features.



BASIC OPERATION

- ❑ Switch the top panel's **Toggle** switch to the [A], [B], or [Center "●"] position to activate one of the pre-programmed functions which may have been enabled at the time of programming by the dealer. When this switch is in the [A], [B], or [Center "●"] position, the feature programmed (by your dealer) to that switch position will be engaged. See the next section for details regarding the available features.
- ❑ Press the **DTMF** keys on the telephone keypad, while pressing the **PTT** switch, to send DTMF tones (16-key version only).
- ❑ If a **MH-50c7A** Speaker/Microphone is available, remove the plastic cap and its two mounting screws from the right side of the transceiver, then align the connector of the Speaker/Microphone on the transceiver body; secure the connector pin using the screws supplied with the Speaker/Microphone. Hold the speaker grille up next to your ear while receiving. To transmit, press the **PTT** switch on the Speaker/Microphone, just as you would on the main transceiver's body, and speak into the microphone on a normal voice level.



Do not remove/install the MH-50c7A Speaker/Microphone in a hazardous location.

Note: *Save the original plastic cap and its mounting screws. They should be reinstalled when not using the Speaker/Microphone.*

ADVANCED OPERATION

Soft Key and Toggle Switch Functions

The **VX-537** includes the [TOP SEL1], [TOP SEL2], [SIDE SEL1], and [SIDE SEL2] Keys, and the **Toggle** Switch, while the 16-key version additionally provides [A], [B], [C], [D] function Keys. The **Soft** key and **Toggle** switch functions can be customized, via programming by your Vertex Standard dealer, to meet your communications/network requirements. Some features may require the purchase and installation of optional internal accessories. The possible **Soft** key and **Toggle** switch programming features are illustrated at the bottom and next page, and their functions are explained on page 13. For further details, contact your Vertex Standard dealer. For future reference, check the box next to each function that has been assigned to the **Soft** key and **Toggle** switch on your particular radio, and keep it handy.

Function	Toggle Switch (Position)		
	A	(Center "●")	B
None			
Channel Scan			
Dual Watch			
High / Low Power			
Talk Around			
TX Saver Off			
LCD Invert			
Encryption Off*			
Lock			
Follow-Me Scan			
Group Recall Shortcut	Group 1 Group 2 Group 3	Group 1 Group 2 Group 3	Group 1 Group 2 Group 3

※: Requires Encryption Unit

ADVANCED OPERATION

Function	Soft Key							
	TOP SEL1	TOP SEL2	SIDE SEL1	SIDE SEL2	[A]	[B]	[C]	[D]
None								
Channel Scan								
Dual Watch								
High / Low Power								
Talk Around								
TX Saver Off								
LCD Invert								
Encryption Off ^{×1}								
Follow-Me Scan								
Group Up								
Group Down								
Channel Up								
Channel Down								
Call / Reset ^{×2}								
Speed Dial								
Emergency			---	---	---	---	---	---
Monitor								
Lamp								
ACC1			---	---				
ACC2								

×1: Requires Encryption Unit

×2: 16-Key version only

ADVANCED OPERATION

Description of Operating Functions

Channel Scan

The Scanning feature is used to monitor multiple signals programmed into the transceiver. While scanning, the transceiver will check each channel for the presence of a signal, and will stop on a channel if a signal is present.

One key or switch may be assigned to the **Scan** function, as follows:

- One of the **Soft** keys may be assigned for **Scan** operation; or
- The **Toggle** switch may have one position assigned to the **Scan** function.

To activate scanning:

- Press the assigned **Soft** key, or set the **Toggle** switch to the assigned position.
- The scanner will search the channels, looking for active ones; it will pause each time it finds a channel on which someone is speaking.

To stop scanning:

- Press the assigned **Soft** key, or set the **Toggle** switch to a different position.
- Operation will revert to the channel to which the **CH** knob is set.

*Note: Your dealer may have programmed your radio to stay on one of the following channels if you press the **PTT** switch during scanning pause:*

- Current channel (“Talk Back”)
- “Last Busy” channel
- “Priority” channel
- “Home” channel
- “Scan Start” channel

ADVANCED OPERATION

Dual Watch

The **Dual Watch** feature is similar to the **Scan** feature, except that only two channels are monitored:

- The current operating channel; and
- The “Priority” channel.

To activate Dual Watch:

- Press the assigned **Soft** key, or set the **Toggle** switch to the assigned position.
- The scanner will search the two channels; it will pause each time it finds a channel on which someone is speaking.

To stop scanning:

- Press the assigned **Soft** key, or set the **Toggle** switch to a different position.
- Operation will revert to the channel to which the **CH** knob is set.

High/Low Power

Press the assigned **Soft** key or switch the **Toggle** Switch to the assigned position to set the radio’s transmitter to the “Low Power” mode, thus extending battery life. Press the assigned **Soft** key again or switch the **Toggle** switch to the other Position to return to “High Power” operation when in difficult terrain.

Talk Around

Press the assigned **Soft** key or switch the **Toggle** switch to the assigned position to activate the Talk Around feature when you are operating on duplex channel systems (separate receive and transmit frequencies, utilizing a “repeater” station). The Talk Around feature allows you to bypass the repeater station and talk directly to a station that is nearby. This feature has no effect when you are operating on “simplex” channels, where the receive and transmit frequencies are already the same.

Note that your dealer may have made provision for “Talk Around” channels by programming “repeater” and “Talk Around” frequencies on two adjacent channels. If so, the key may be used for one of the other Pre-Programmed Functions.

ADVANCED OPERATION

TX Save Off

Press the assigned **Soft** key or switch the **Toggle** switch to the assigned position to disable the Transmit Battery Saver, if you are operating in a location where high power is almost always needed.

The Transmit Battery Saver helps extend battery life by reducing transmit power when a very strong signal from an apparently nearby station is being received. Under some circumstances, though, your hand-held radio may not be heard well at the other end of the communication path, and high power may be necessary at all times.

LCD Invert

Pressing the assigned **Soft** key or switch the **Toggle** switch to the assigned position inverts the LCD display to backward-facing readout (the backward display is convenient for viewing when wearing the transceiver on your belt). Press the assigned **Soft** key again or switch the **Toggle** switch to the other Position-return the LCD display to frontward-facing readout.

Encryption Off

Press the assigned **Soft** key or switch the **Toggle** switch to the assigned position to turn off the optional voice encryption unit temporarily, for use when an incorrect setting of (or failure in) the encryption system at one end of the communication path has made it impossible to talk to the other station.

Remember that disabling the encryption will mean that your transmissions are no longer secure. Return to the encrypted mode as soon as possible, and do not discuss any critical or confidential information while in the non-encrypted mode of operation.

Lock

Switch the **Toggle** switch to lock the top-panel keys; this can be enabled to prevent radio settings from being disturbed.

ADVANCED OPERATION

Follow-Me Scan

“Follow-Me” Scan feature checks a User-assigned Priority Channel regularly as you scan the other channels. Thus, if only Channels 1, 3, and 5 (of the 8 available channels) are designated for “Scanning,” the user may nonetheless assign Channel 2 as the “User-assigned” Priority Channel via the “Follow-Me” feature.

To activate “Follow-Me” scanning, first select the channel you want to designate as the “User-Assigned Priority Channel” and Switch the **Toggle** switch to the assigned position. Then turn the **CH** selector knob to the “Scanning Start” channel which has been programmed by your dealer to activate the scanner. When the scanner stops on an “Active” channel, the User-assigned Priority Channel will automatically be checked every few seconds; if activity is found on the User-assigned Priority Channel, the radio will switch between it and the Dealer-Assigned Priority Channel, if any.

Follow-Me DW

To set up a “Dual Watch” frequency pair using the “Follow-Me” feature, select a channel using the **CH** selector knob. Now press the assigned **Soft** key; pressing the assigned **Soft** key locks the current channel as the User-assigned Priority Channel. Now rotate the **CH** selector knob to another channel (not the “Scanning Start” channel). Your radio will now switch back-and-forth between the currently-selected channel (shown on the **CH** selector knob) and the User-assigned Priority Channel.

During “Follow-Me” scanning (after you have pressed the key), you can set up the “Dual Watch” feature by rotating the **CH** selector knob to another channel. The radio will then scan back and forth between the original User-assigned Priority Channel and the newly-selected channel.

The Priority Channel you have assigned (before pressing the key) will be retained in memory until you change it.

ADVANCED OPERATION

Channel Group Selection

The **VX-530** is capable of separating its 512 memory channels into any of 16 Groups. There is no limit as to the number of channels which may be assigned to each Group. The Dealer will have made the Group assignment at the time of channel programming. At the same time, one of the **Soft** Keys will be assigned as the Channel Group Selection key.

To change Channel Groups, press the assigned **Soft** key to step through the available Groups. Once the desired Group is reached, rotate the **CH** selector knob to select the desired channel within the selected Group.

You may wish to have the Scanner (described previously) pass through more than one Group during the scanning process (normally, scanning is performed within the current group only). To include the current Group in the scanning loop, **press and hold in** the assigned **Soft** key for one second.

To remove a Group from Group Scan, press and hold in the assigned **Soft** key again for one second.

Multi-Group Scanning is only possible if you are using the “User Scan” list.

The **VX-530** has two scanning “lists:” the “Dealer Scan” list and the “User Scan” list. The “Dealer Scan” list is a fixed group of stations which will be included when scanning is activated. The “User Scan” list is a different list, initially arranged by the Dealer, which may be modified by the User (if, for example, you want to delete one or more of these channels from the scanning list).

To edit the User Scan list, press and hold in the **Soft** key (assigned to the Group Up/Down function) to delete the current Memory Group from the Scanning. Alternatively, press and hold in the “Scan” **Soft** key for one second to delete the Current Memory channel from the Scanning loop.

When you delete a Group or channel, “-SKIP-” will appear on the LCD for one second after pressing the **Soft** key. To restore a particular channel to your scanning list, press and hold in the **Soft** key again for one second; “-STOP-” will appear on the LCD for one second after pressing the **Soft** key.

ADVANCED OPERATION

Call/Reset

This feature, if enabled, allows the user to change the 3-digit Page Call code, used to call other similarly-equipped stations. Press the Dealer-assigned **Soft** key, followed by the three digits representing the Page Call code of the station you wish to call. Three tones will be heard after the last key is pressed (the new code will now be transmitted).

The receiver squelch of the other station will be opened, and you can begin communication.

Speed Dial

Your Dealer may have pre-programmed Auto-Dial telephone number memories into your radio.

To dial a number, press the Dealer-assigned **Soft** key for Speed Dialing, then press the numbered key corresponding to the Auto-Dial memory number list provided by your Dealer. The DTMF tones sent during the dialing sequence will be heard in the speaker.

Emergency

The **VX-530** includes an “Emergency” feature which may be useful if you have someone monitoring on the same frequency as your transceiver’s channel. For further details contact your Vertex Standard dealer.

Monitor

Press the assigned **Soft** key to override both Tone and DCS Squelch. Press and hold in the assigned **Soft** key for more than 2 seconds to override both Noise and Tone/DCS Squelch. Press and hold in the assigned **Soft** key for more than 2 seconds to quiet the noise and resume normal (quiet) monitoring.

Lamp

Press the assigned **Soft** key to illuminate the Keypad/LCD for five seconds.

ACC 1

Press the assigned **Soft** key to toggle the accessory output port “on” and “off” to enabling/disabling the optional device.

ADVANCED OPERATION

ACC 2

Turn the accessory output port “on” while pressing the assigned **Soft** key to enabling the optional device.

ARTS (Auto Range Transpond System)

This system is designed to inform you when you and another ARTS-equipped station are within communication range.

During ARTS operation, your radio automatically transmits for about 1 second every 25 seconds (the interval is programmed by the Dealer) in an attempt to shake hands with the other station.

If you move out of range for more than two minutes, your radio senses that no signal has been received, a ringing beeper will sound, and “OUT OF SERVICE” will scroll on the LCD. If you subsequently move back into range, as soon as the other station transmits, your beeper will sound, and “IN SERVICE” will scroll on the LCD.

DTMF Paging System

This system allows paging and selective calling, using DTMF tone sequences.

When your radio is paged by a station bearing a tone sequence which matches yours, your radio’s squelch will open and the alert ringer will sound (unless you have disabled it).

The three-digit code of the station which paged you will be displayed on your radio’s LCD.

ACCESSORIES & OPTIONS

MH-50C7A	Speaker/Microphone
FNB-29A	7.2 V/1700 mAh Ni-Cd Battery Pack
FNB-29AL	7.2 V/1700 mAh Ni-Cd Battery Pack (Long Size)
FNB-29AIS	7.2 V/1700 mAh Ni-Cd Battery Pack (Intrinsically Safe Battery)
FNB-29ALIS	7.2 V/1700 mAh Ni-Cd Battery Pack (Intrinsically Safe Battery: Long Size)
FNB-29BNIS	7.2 V/2450 mAh Ni-MH Battery Pack (Intrinsically Safe Battery)
VAC-520B	Rapid Desktop Charger (120 VAC)
VAC-520C	Rapid Desktop Charger (240 VAC)
VAC-6520	Rapid 6-Unit Multi Charger
CD-10	Rapid Vehicular Charger
VCM-1	Mobile Mounting Bracket for VAC-520
CS-500B	Overnight Desktop Charger (120 VAC)
CS-500C	Overnight Desktop Charger (240 VAC)
FBA-19	6 AA Size Battery Case
ATU-5D	UHF Antenna (450 ~ 470 MHz)
ATU-5EF	UHF Antenna (470 ~ 490 MHz)
FVP-25	Encryption Unit
F2D-8	2-Tone Sequential Decoder Unit
F5D-14	5-Tone Sequential Decoder Unit
CE65	Radio to Computer Programming Software
SVC65	Alignment Software
CT-71	Radio to Computer Programming Cable
CT-72	Radio to Radio Programming Cable
VTP-50	VX-Trunk II VX-Trunking Portable Logic Board
CLIP-2	Belt Clip
SBC-1	Swivel Belt Adaptor (Requires LCS-2)
LCS-2	Swivel Belt Attachment
CN-7	Antenna Jack Adaptor (Stud to BNC)

The following optional units are not available for intrinsically safe use, because they do not have an IS rating. If any of the optional units listed below is used with the VX-537, the radio is no longer intrinsically safe, and must not be used in hazardous locations.

Battery Packs:	FNB-29A and FNB-29AL
Alkaline Battery Tray:	FBA-19
5-Tone Sequential Decoder Unit:	F5D-14

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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