

YAESU

COMMUNICATIONS RECEIVER

VR-500

OPERATING MANUAL

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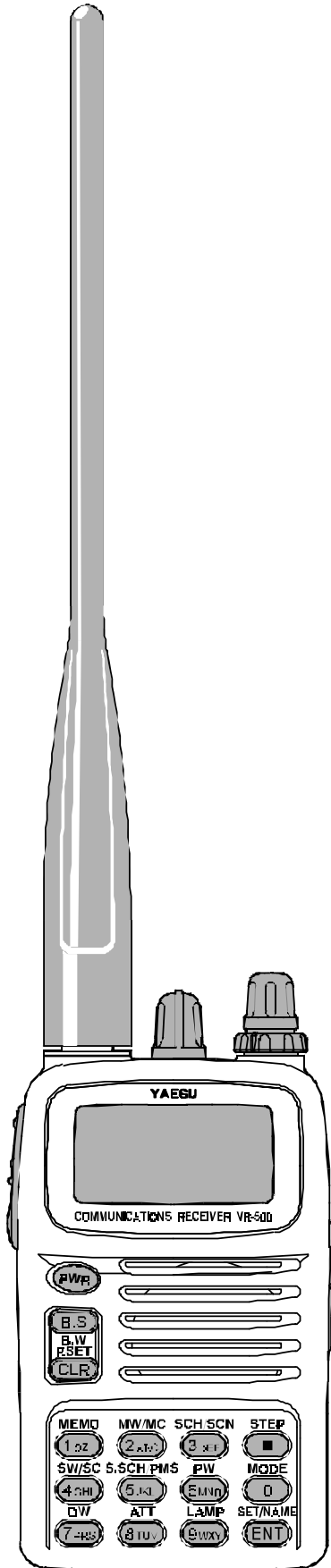
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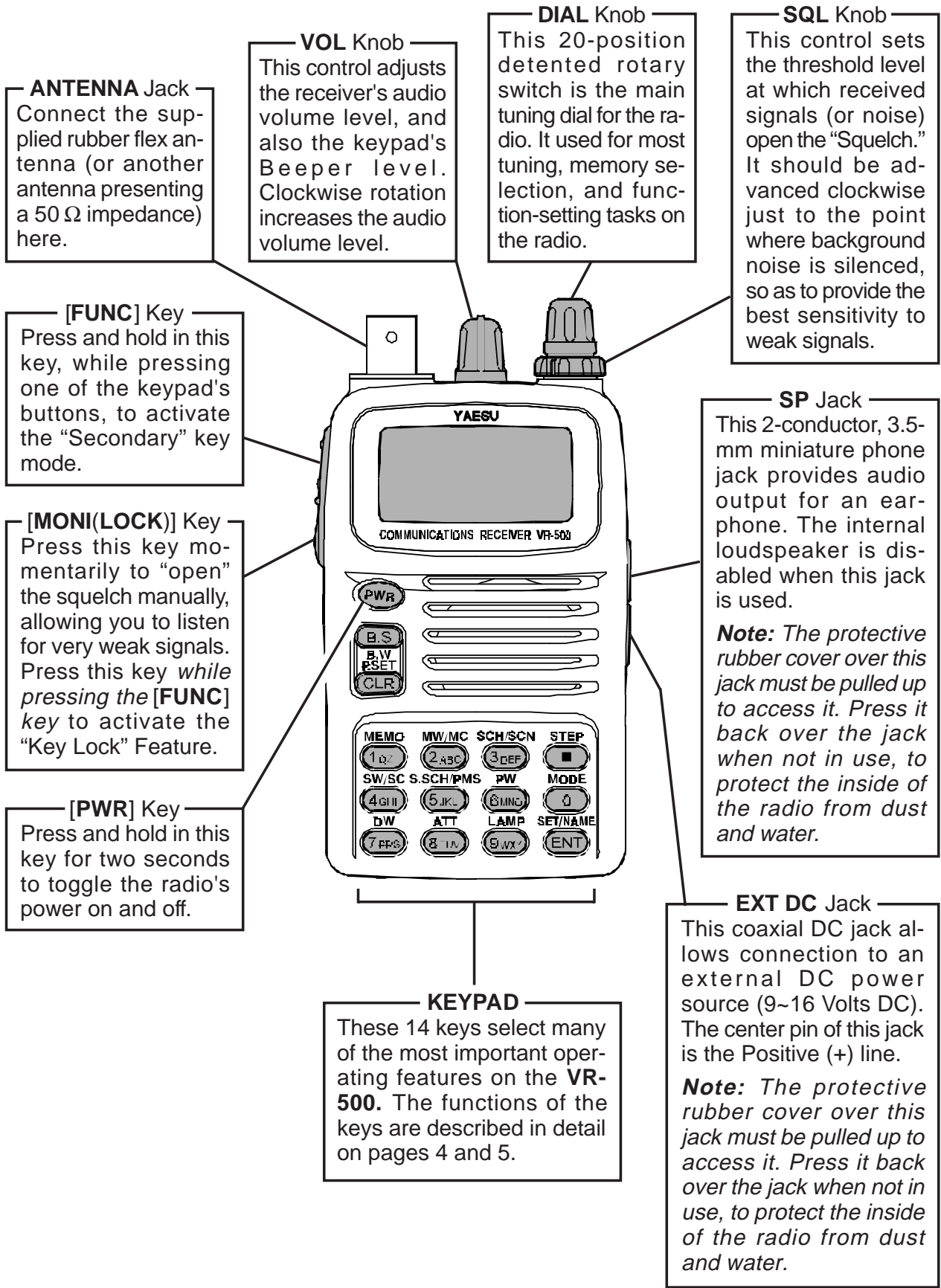
The VR-500 is a high-performance miniature communications receiver providing general coverage reception from 100 kHz to 1300 MHz on the CW, SSB (LSB and USB), AM, and FM (Wide and Narrow bandwidths) modes (this coverage includes the AM and FM broadcast bands, HF Short-wave Bands up to 16 MHz, VHF and UHF TV bands, the VHF AM aircraft band, and a wide range of commercial and public safety frequencies!).

The VR-500's small size allows you to take it anywhere - hiking, skiing, or while walking around town, and its operating flexibility brings the user many avenues of operating enjoyment.

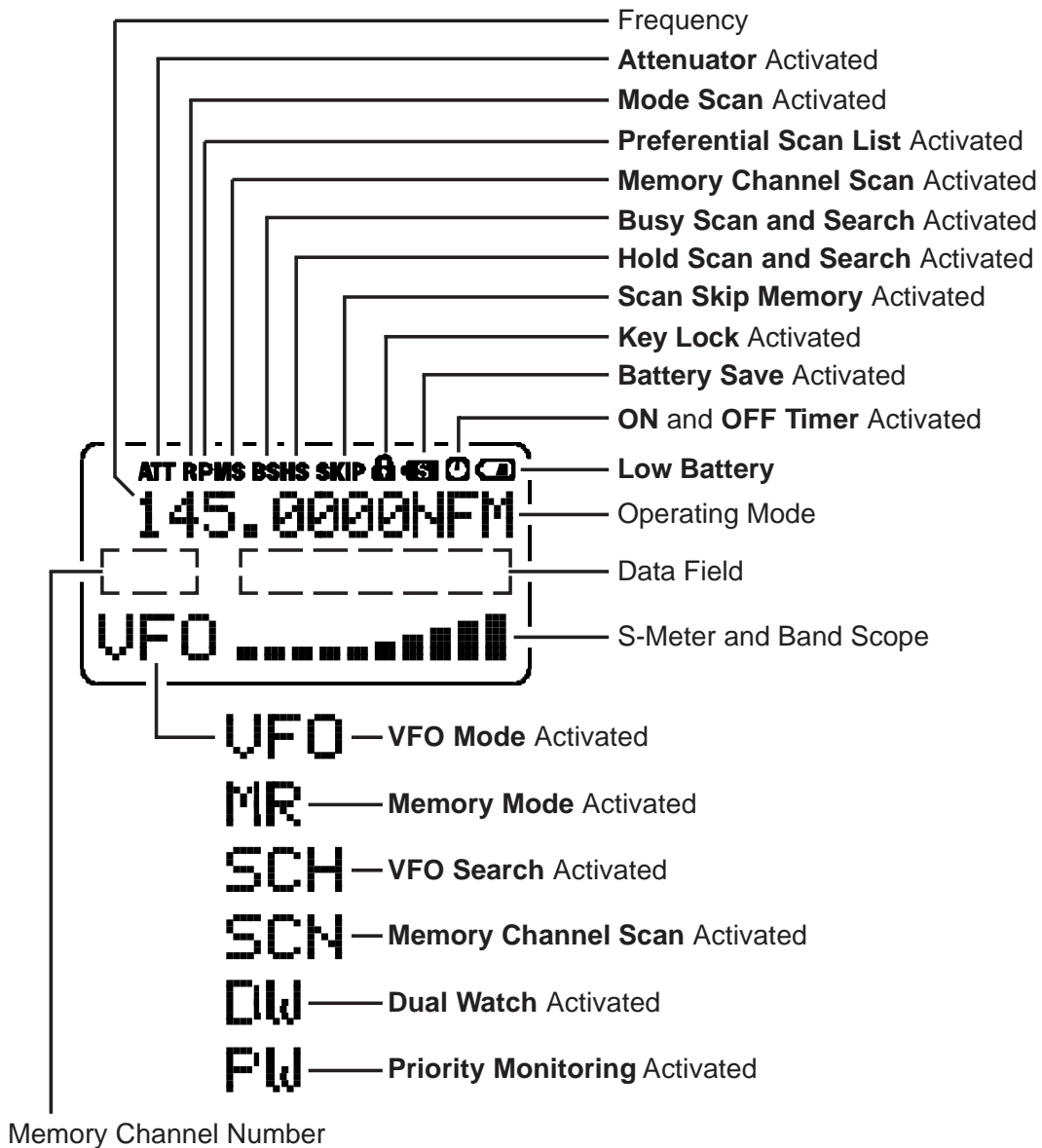
Operation of the VR-500 can be greatly simplified by utilizing the "PRESET" mode. The "PRESET" mode provides ten "starting point" frequencies (one frequency in each of ten popular listening bands), from which you may then begin manual tuning.

We appreciate your purchase of the VR-500, and encourage you to read this manual thoroughly, so as to learn about the many exciting features of your exciting new Yaesu communications receiver!

Controls & Connections



Display Icons & Indicators



Keypad Functions

	[1(MEMO)]	[2(MW/MC)]	[3(SCH/SCN)]
Press Key	Frequency Entry Digit "1"	Frequency Entry Digit "2"	Frequency Entry Digit "3"
Press [F/W] +	Switch to the "Memory" Mode.	Store the VFO frequency into the memory, or delete the current memory channel's data.	Start scanning.
Press [F/W] + Key for 2 seconds	None	None	None
	[4(SW/SC)]	[5(S.SCH/PMS)]	[6(PW)]
Press Key	Frequency Entry Digit "4"	Frequency Entry Digit "5"	Frequency Entry Digit "6"
Press [F/W] +	Store the VFO frequency into the "Scan Skip" memory, or delete the "Scan Skip" memory channel data.	Program and activate Preferential Memory Scan™ operation.	Activate the Priority Watch feature.
Press [F/W] + Key for 2 seconds	None	Program and activate Smart Search™ operation.	Display the operating time and total transmit time since you most recently turned the transceiver on.
	[7(DW)]	[8(ATT)]	[9(LAMP)]
Press Key	Frequency Entry Digit "7"	Frequency Entry Digit "8"	Frequency Entry Digit "9"
Press [F/W] +	Activate the Dual Watch feature.	Engage the receiver front-end attenuator.	Activate the back-lighting lamp for the display and keypad keys for 5 seconds.
Press [F/W] + Key for 2 seconds	Store the VFO frequency pair for the Dual Watch feature into the Dual Watch Memory channel.	None	None

Keypad Functions

[• (STEP)]	[B.S(B.W)]	
Input of the “Decimal Point” frequency entry digit (“•”).	Activate the Band Scope feature.	Press Key
Select the synthesizer steps to be used during VFO operation.	Select the Band Scope sweep width.	Press [F/W] +
None	None	Press [F/W] + Key for 2 seconds
[0(MODE)]	[CLR(P.SET)]	
Frequency Entry Digit “0”	Cancel the frequency entry or Menu mode setting.	Press Key
Select the operating (receiving) mode.	Toggle the operating mode between the “Preset Mode” and the “Normal Mode.”	Press [F/W] +
None	None	Press [F/W] + Key for 2 seconds
[ENT(SET/NAME)]	[MONI(LOCK)]	
Enter the frequency entry digit into the VFO.	“Open” the squelch manually	Press Key
Activate the “Set” (Menu) mode, or enable programming of the Alpha/Numeric name tag for the current memory channel.	Activate “Key Lock” feature.	Press [F/W] +
None	None	Press [F/W] + Key for 2 seconds

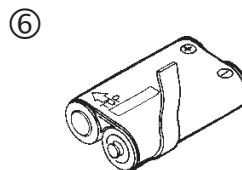
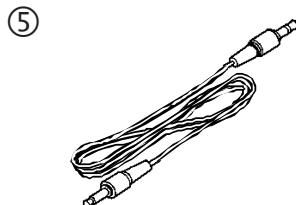
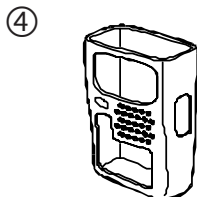
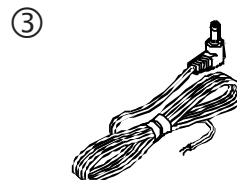
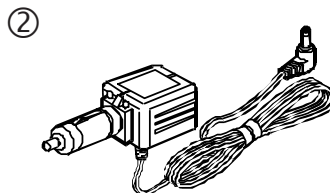
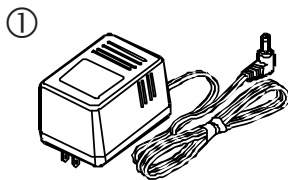
Accessories & Options

ACCESSORIES SUPPLIED WITH THE VR-500

- Antenna
- Belt Clip
- Hand Strap
- Operating Manual
- Warranty Card

AVAILABLE OPTIONS FOR YOUR VR-500

- ① **NC-60** AC Adapter
- ② **E-DC-5B** DC Cable w/Noise Filter
- ③ **E-DC-6** DC Cable; plug and wire only
- ④ **CSC-72** Soft Case
- ⑤ **CT-35** Cloning Cable
- ⑥ **FNB-59** Rechargeable Battery Pack



Availability of accessories may vary. Some accessories are supplied as standard per local requirements, while others may be unavailable in some regions. Consult your Yaesu Dealer for details regarding these and any newly-available options. Connection of any non-Yaesu-approved accessory, should it cause damage, may void the Limited Warranty on this apparatus.

Installation of Accessories

BATTERY INSTALLATION

- Referring to Figure 1, slide the Battery Cover toward the bottom to remove it.
- Referring to Figure 2, insert 2 fresh AA batteries into the Battery Holder. When installing batteries, insert the (-) end first, then press in the (+) end so the battery snaps into place. Always replace two batteries at the same time.
- Replace the Battery Cover, as shown in Figure 3.

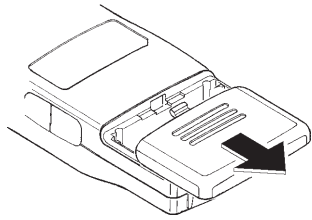


Figure 1

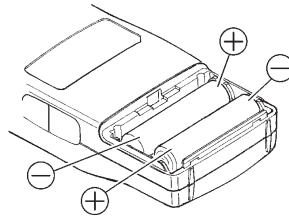


Figure 2

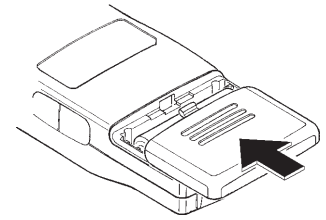
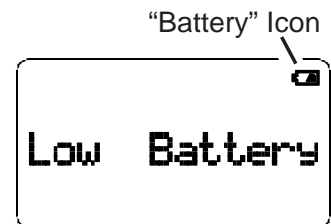


Figure 3

Note: If you do not use the **VR-500** for a long time, remove the batteries from the radio, as battery leakage could cause damage to the **VR-500**.

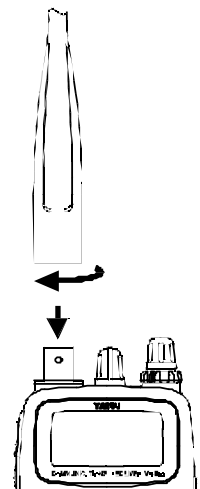
LOW BATTERY INDICATION

When the battery voltage becomes too low, the display will indicate “Low Battery” and the “Battery” icon will appear, indicating the batteries should be replaced. As battery voltage drops further, the **VR-500** will shut off.



ANTENNA INSTALLATION

- To attach the supplied antenna to the **VR-500**, grasp the base of the antenna firmly, and exert a moderate “pinching” pressure on the base as you press the antenna onto the radio's antenna connector. While exerting this pressure, rotate the antenna *clockwise* $\frac{1}{4}$ turn to lock the antenna in place.
- To remove the antenna from the **VR-500**, grasp the base of the antenna firmly, and pinch the base of the antenna while rotating the antenna *counter-clockwise* $\frac{1}{4}$ turn. You may now lift the antenna away from the radio.

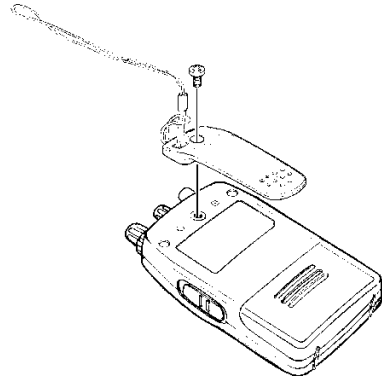


Installations of Accessories

BELT CLIP INSTALLATION

To install the Belt Clip, first place the Hand Strap into the hole at the top of the Belt Clip, then insert the mounting screw through the belt clip, and affix it snugly to the mounting hole on the back of the **VR-500**.

Do not install the supplied Belt Clip Mounting Screw if you are not installing the Belt Clip! The screw will cause a “short circuit” to the internal circuitry, causing serious damage!

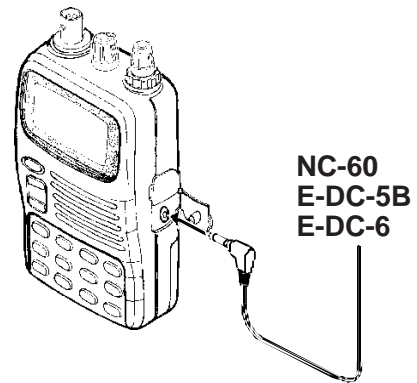


AC OPERATION USING THE OPTIONAL NC-60 AC ADAPTER

The **VR-500** may be operated from your house current by use of the optional **NC-60** AC Adapter.

To use the **NC-60**, turn the radio off, then plug the miniature connector of the AC Adapter into the **EXT DC** jack on the side of the radio. Now plug the AC Adapter into the wall outlet. You may now turn on the radio.

If 12 Volt DC power is available, the optional **E-DC-5B** or **E-DC-6** DC Cable may be used for operation. When making DC connections via the **E-DC-5B** or **E-DC-6** DC Cable, be absolutely certain to observe the proper voltage level and polarity guidelines. Do not connect this radio directly to a DC source which exceeds 15.0 Volts DC, nor to AC power of any kind.



TURNING THE POWER ON/OFF

- ① Press and hold the orange **[PWR]** Key for two seconds to turn the radio on or off.
- ② When you turn on the radio, a “Welcome” message will appear on the display for two seconds. After this interval, the frequency display will appear. Using the Menu system, you can change the “Welcome” message yourself; see page 40 for details.

ADJUSTING THE VOLUME AND SQUELCH

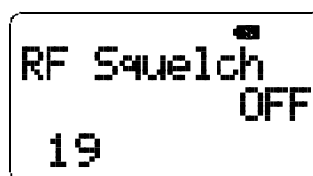
- ① Rotate the **VOL** knob to adjust the receiver's audio volume. Clockwise rotation of the **VOL** knob increases the volume level.
- ② The VR-500's Squelch system allows you to mute the receiver's audio output when no signals are being received. This reduces battery consumption, and reduces annoying background noise.
- ③ To set the squelch, turn the **SQL** knob fully counter-clockwise, then turn it clockwise just past the point where background noise is silenced. Do not rotate the **SQL** knob much beyond this threshold point; if you do, the receiver will not respond to weak signals.

RF SQUELCH SYSTEM SETUP

A special “RF Squelch” feature is provided on this radio. This feature allows you to set the squelch so that only signals exceeding a user-defined signal level will open the squelch.

To set up the RF Squelch circuit for operation, use the following procedure:

- ① From the VFO mode, press the **[ENT(SET)]** key *while pressing the* **[FUNC]** key to activate the “Set” (Menu) mode.
- ② Rotate the **DIAL** knob to select Menu #19 “[RF Squelch].”
- ③ Rotate the **DIAL** knob *while pressing the* **[FUNC]** key to select the desired signal strength level for the RF Squelch threshold (1 ~ 9 or OFF).
- ④ Press the **[ENT(SET)]** key *while pressing the* **[FUNC]** key to save your new setting and exit to normal operation.



MODE SELECTION

The **VR-500** automatically selects a default receiving mode according to the frequency band on which you are operating. However, many bands (especially HF Shortwave) may use a variety of transmission modes in a particular frequency segment.

If you want to change the receiving mode, press the **[0(MODE)]** key *while pressing the* **[FUNC]** key. The receiving modes available are:



Basic Operation

FREQUENCY NAVIGATION

Tuning DIAL

Rotating the **DIAL** allows frequency tuning in the steps pre-programmed at the factory. Clockwise rotation of the **DIAL** causes the radio to be tuned to toward a *higher* frequency, while counter-clockwise rotation will *lower* the operating frequency.

If you rotate the **DIAL** while pressing the [**FUNC**] key, the frequency will change in 1 kHz steps (SSB/CW) or 1 MHz steps (AM/NFM/WFM). This feature is extremely useful for making rapid frequency excursions over the wide tuning range of the radio. This step size (1 MHz) can be changed; see the “Changing the Channel Steps” section on page 15 for details.

Direct Keypad Frequency Entry

The desired operating frequency may be entered directly from the keypad.

To enter a frequency from the keypad:

- ① Enter the “MHz” portion of the frequency on which you wish to operate.
- ② Enter the decimal point after the “MHz” portion by pressing the [**• (STEP)**] key.
- ③ Enter four more digits to complete the frequency.
- ④ If there are “zeroes” at the end of the frequency, you may press the [**ENT (SET/NAME)**] key after the final non-zero digit.

Examples:

To enter 146.5200 MHz: Press [1] → [4] → [6] → [•] → [5] → [2] → [0] → [0].

To enter 810 kHz: Press [•] → [8] → [1] → [0] → [0].

To enter 445.4000 MHz: Press [4] → [4] → [5] → [•] → [4] → [ENT].

VFO SEARCH

The VFO Search feature causes the radio to scan the band, looking for active frequencies.

Before initiating a VFO Search, set the Squelch so that background noise is silenced. If you are hearing background noise, the VFO Search feature will not initiate scanning.

From the VFO mode, press the [3(SCH/SCN)] key *while pressing the [FUNC] key*. The radio will initiate a VFO Search, tuning toward a *higher* frequency, and will stop when it receives a signal strong enough to break through the Squelch threshold. The radio will then hold on that frequency according to the setup of the “RESUME” mode.



To verify and/or modify the “RESUME” mode, again press the [3(SCH/SCN)] key *while pressing the [FUNC] key*. The current “RESUME” mode is indicated at the top of the Display (except for “Pause,” which is the default setting).

The following “RESUME” modes are available:

Pause → Busy → Hold → Pause → ...

- Pause** (Default): In this mode, the VFO search will halt on a signal it encounters, and will hold there for 5 seconds. If you do not take action to disable the VFO search within that time period, the VFO search will resume even if the station is still active.
- Busy:** In this mode, the VFO search will halt on a signal it encounters. Two seconds after the carrier has dropped because the other station(s) ceased transmission, the VFO search will resume. In this mode, the “**BS**” (**B**usy **S**earch) icon will appear at the top of the display.
- Hold:** In this mode, the VFO search will halt on a signal it encounters. It will not restart unless you re-initiate a VFO search. In this mode, the “**HS**” (**H**old **S**earch) icon will appear at the top of the display.

To stop the VFO search manually, just rotate the **DIAL** one click.

Changing the Direction of VFO Search Scanning

If you wish to reverse the direction of the scan (i.e. toward a *lower* frequency, instead of a *higher* frequency), rotate the **DIAL** one click to stop the VFO search, then rotate the **DIAL** one click *in the counter-clockwise direction*. The VFO search direction will be reversed.

*Note: If VFO Search has “paused” on a busy channel, it is only necessary to rotate the **DIAL** one click in the counter-clockwise direction.*

To revert to VFO search toward a *higher* frequency once more, rotate the **DIAL** one click, then rotate it one click clockwise. If paused on a busy channel, just rotate the **DIAL** one click clockwise.

Press the [CLR(P.SET)] key to cancel the VFO search.

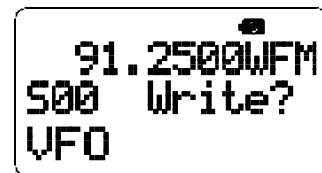
Basic Operation

How to Skip (Omit) a Frequency During VFO Search

If the VFO search stops on a frequency or frequencies that you do not need (such as a spurious radiation from a television), such frequencies can be “skipped” during VFO Search scanning. This is accomplished by storing these frequencies in a special “Frequency Skip Memory Bank” reserved for this purpose.

To skip a frequency during VFO Search scanning:

- ① While VFO Search is stopped on the frequency that you do not need, press the [4(SW/SC)] key *while pressing the [FUNC] key*. The display will indicate “Snn WRITE?” as a request for command confirmation (see next step).

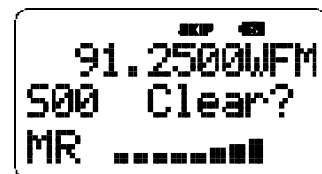


- ② Now, press the [4(SW/SC)] key *while pressing the [FUNC] key again*, to store the frequency into the VFO Frequency Skip Memory (VFO Frequency Skip Memory Write), it is to be ignored during VFO search.

Note that the VR-500 has 100 VFO Frequency Skip Memory Channels (channel number “S00 ~ S99”).

To re-institute the frequency into the VFO search loop:

- ① Press and hold in the [FUNC] key, then press the [1(MEMO)] key, repeatedly if necessary, to recall the VFO Frequency Skip Memory mode (“Snn” will appear at the left side of the display).
- ② Rotate the **DIAL** knob to select the channel to be re-instituted.
- ③ Press the [4(SW/SC)] key *while pressing the [FUNC] key*. The display will indicate “Snn CLEAR?” as a request for command confirmation (see next step).
- ④ Now, press the [4(SW/SC)] key *while pressing the [FUNC] key again*; this action will *delete* the channel from the VFO Frequency Skip Memory, so as to *re-institute* the frequency into the VFO Search scanning loop.

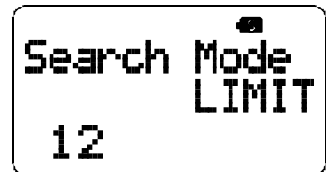


Pre-Programmable Frequency Search

The VR-500 allows you to program up to ten band segments within which VFO Search scanning can be limited. This allows your radio's search to be concentrated on the most active band segments in your local area, without wasting time in unused frequency segments.

To confine your search within one of the pre-programmed segments, you must first set Menu #12 (“[Search Mode]”) to the “LIMIT” option, per the following procedure:

- ① Press and hold in the **[FUNC]** key; while holding it in, press the **[ENT(SET/NAME)]** key to activate the “Set” (Menu) mode.
- ② Rotate the **DIAL** knob to select Menu #12 [Search Mode].
- ③ Press and hold in the **[FUNC]** key; while holding it in, rotate the **DIAL** knob to select “LIMIT” as the VFO Search mode.
- ④ Press the **[CLR(P.SET)]** key to exit to the VFO mode.



The VR-500 has been pre-programmed at the factory with default band limits. These are grouped as “Search Band Memories” per the list below.

Search Band Memory #	Pre-Programmed Frequency Range	Search Band Memory #	Pre-Programmed Frequency Range
0	0.5200 ~ 1.8000 MHz	5	50.0000 ~ 54.0000 MHz
1	1.8000 ~ 3.6000 MHz	6	88.0000 ~ 108.0000 MHz
2	3.6000 ~ 10.5000 MHz	7	144.0000 ~ 148.0000 MHz
3	10.500 ~ 21.0000 MHz	8	430.0000 ~ 450.0000 MHz
4	21.0000 ~ 30.0000 MHz	9	1240.0000 ~ 1300.0000 MHz

Here is the procedure for initiating VFO Search Scanning within one of the above bands:

- ① Press and hold in the **[FUNC]** key; while holding it in, press the **[3(SCH/SCN)]** key; the radio will begin VFO Search Scanning (at this point, the frequency range is unimportant).
- ② While VFO Search is active, press (momentarily) the key corresponding with the *Search Band Memory* as shown above. The VFO Search will now shift to the band segment within the *Pre-Programmed Frequency Range* associated with that memory number. For example, if you press **[7]** after initiating VFO Search Scanning, the search will be limited to the frequency range 144.0-148.0 MHz. While VFO Search Scanning is in progress, you may change ranges by just pressing one of the numbered keys momentarily; the radio will jump to that range instantaneously, and will immediately begin VFO Search Scanning inside the new range.
- ③ Other aspects of the VFO Search feature within the pre-programmed band limits, such as the “Resume” mode, are the same as during “regular” VFO Search Scanning.
- ④ Press the **[CLR(P.SET)]** key to halt the search and return to manual tuning via the **DIAL** knob.



Basic Operation

You can customize the Pre-Programmed Frequency Range for any of the bands shown on the previous page, so as to allow you to scan just the band segments you want.

To program the Pre-Programmed Frequency Ranges :

- ① Select the *Lower Frequency Limit* for the Pre-Programmed Frequency Range using direct keypad frequency entry or the main tuning **DIAL**.
- ② Press and hold in the [**FUNC**] key; while holding it in, press the [**3(SCH/SCN)**] key for 2 seconds. The display will indicate “SCH A Write!” briefly, then the frequency display will return.
- ③ Next, select the *Higher Frequency Limit* for the Pre-Programmed Frequency range.
- ④ Press and hold in the [**FUNC**] key; while holding it in, press the [**3(SCH/SCN)**] key for 2 seconds. The display will indicate “SCH B Write!”
- ⑤ Now press the [**3(SCH/SCN)**] key *momentarily* while pressing the [**FUNC**] key. This activates the VFO Search Scanning mode.
- ⑥ Finally, press and hold in (for 2 seconds) in the numbered key of the Search Band Memory into which you wish to store these band limits.

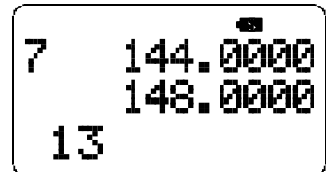
Example: Store the band limits 9.450 MHz and 9.850 MHz into Search Band Memory #2.

- ① Select 9.450 MHz as the *Lower Frequency Limit* using direct keypad frequency entry. Press [**9**] → [**.**] → [**4**] → [**5**] → [**ENT(SET/NAME)**].
- ② Press and hold in the [**FUNC**] key; while holding it in, press the [**3(SCH/SCN)**] key for 2 seconds. The display will indicate “SCH A Write!” briefly, then the frequency display will return.
- ③ Next, select 9.850 MHz as the *Higher Frequency Limit*.
- ④ Press [**9**] → [**.**] → [**8**] → [**5**] → [**ENT(SET/NAME)**].
- ⑤ Press and hold in the [**FUNC**] key; while holding it in, press the [**3(SCH/SCN)**] key for 2 seconds. The display will indicate “SCH B Write!”
- ⑥ Now press the [**3(SCH/SCN)**] key *momentarily* while pressing the [**FUNC**] key. This activates the VFO Search Scanning mode.
- ⑦ Finally, press and hold in the [**2(MW/MC)**] key for 2 seconds.

Basic Operation

You can check the frequency ranges of the Search Band Memories quickly, to see if you want to re-program other ranges. To do this:

- ① From the VFO mode, press the **[ENT(SET)]** key while pressing the **[FUNC]** key to activate the “Set” (Menu) mode.
- ② Rotate the **DIAL** knob to select Menu #13 [SRCH Memory].
- ③ Rotate the **DIAL** knob while pressing the **[FUNC]** key to review the programming of the Search Band Memories. The Search Band *Number* (0 ~ 9) will appear at the left side of the display, while the current frequency range for that Search Band Memory will appear at the right side of the display.
- ④ Press the **[ENT(SET)]** key while pressing the **[FUNC]** key to exit to normal operation.

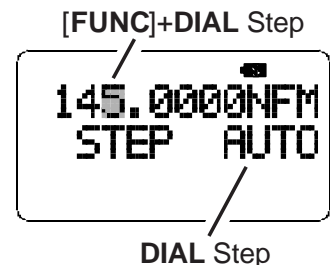


CHANGING THE CHANNEL STEPS

This radio's synthesizer provides the option of utilizing channel steps of 0.05/0.1/1/5/6.25/9/10/12.5/15/20/25/30/50/100 kHz per step, as well as an automatic step selection based on the current listening frequency (“AUTO”). Additionally, the digit of the frequency to be changed during “Fast” tuning may be selected, so as to allow rapid frequency excursions at the rate you prefer.

To change the channel steps:

- ① Press the **[•(STEP)]** key (momentarily) while pressing the **[FUNC]** key.
- ② Rotate the **DIAL** knob to select the desired frequency step side for normal tuning via the **DIAL** knob.
- ③ If you want to change the frequency digit which changes during “Fast” tuning, press and hold in the **[FUNC]** key; while holding it in, rotate the **DIAL** knob to select the “blinking” digit to be changed during fast tuning.*
- ④ Press the **[•(STEP)]** key while pressing the **[FUNC]** key to save the new setting and exit to normal operation.



- * To verify the new “Fast” step setting, complete the above procedure. Now press and hold in the **[FUNC]** key; while holding it in, rotate the **DIAL** knob; the digit selected in step ③ above will change with each click of the **DIAL** knob.

Basic Operation

PRESET MODE

Operation of the VR-500 can be greatly simplified by utilizing the “PRESET” mode. The PRESET mode provides ten “starting point” frequencies (one frequency in each of ten popular listening bands), from which you may then begin manual tuning.

To operate in the PRESET mode:

- ① Press the [**CLR(P.SET)**] key (momentarily) while pressing the [**FUNC**] key to change the VR-500 operating mode to PRESET.
- ② Now just press one of the numbered keys on the keypad to recall the Pre-Programmed Frequency corresponding to that key, as shown below.

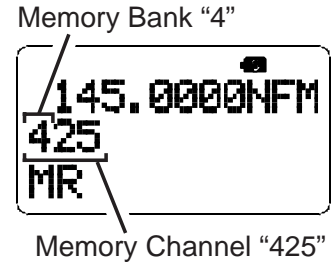
Channel Number	Pre-Programmable Frequency
1	0.5200 MHz (AM)
2	3.5000 MHz (LSB)
3	7.0000 MHz (LSB)
4	14.0000 MHz (USB)
5	50.0000 MHz (CW)
6	88.0000 MHz (WFM)
7	144.0000 MHz (CW)
8	430.0000 MHz (NFM)
9	1240.0000 MHz (NFM)
•	Weather Channel
0	This is a special “PRESET” key which toggles through the Pre-Programmed Frequencies, per the following selections:

- ③ Once you have chosen a PRESET band segment, you can move off of the Pre-Programmed Frequency by rotating the **DIAL** knob. However, you cannot perform direct frequency entry, as each keystroke will select a new Pre-Programmed band segment.
- ④ Press the [**CLR(P.SET)**] key again, while pressing the [**FUNC**] key, to disable the PRESET mode and return to normal operation.

Memory Mode

The VR-500 provides 1000 “standard” memory channels, numbered “000” through “999.” Memory channels may be used to store frequencies of particular interest, for convenient recall without the need to scan through an entire operating band.

These memories are partitioned into ten Memory Banks, each holding up to 100 memory channels. The Memory Bank number is the first digit of the Memory Channel number, so Memory Channel 005 is in Memory bank “0,” while Memory Channel 425 is in Memory Bank “4.”



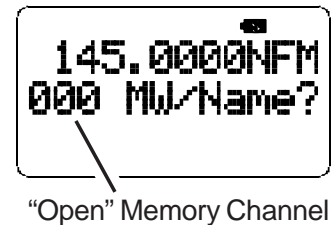
MEMORY STORAGE

Two forms of memory storage are available on the VR-500:

- “Simple” memory storage automatically memorizes the desired frequency into the next-available unused memory channel register (without regard to any particular memory channel number).
- “Designated” memory storage allows you to assign the frequency data to any desired memory channel number.

Simple Storage

- ① While operating in the VFO mode, select the desired frequency and reception mode (AM, NFM, etc.) for the station to be memorized.
- ② Press and hold in the [**FUNC**] key, then press the [**2(MW/MC)**] key momentarily. The microprocessor will automatically select the next-available “open” memory channel (a memory register on which no data has been stored). On the left side of the display, a three-digit number will appear, indicating the channel number which will be used for channel data storage. On the right side, “MW/NAME?” will appear (“MW” stands for “**M**emory **W**rite”).
- ③ If you wish to append an alpha-numeric label (name) to the channel, press and hold in the [**FUNC**] key, then press the [**ENT(SET/NAME)**] key. Now skip to step ③ of the **Labeling Memories** section below, and perform steps ③ through ⑦.
- ④ Now, press the [**2(MW/MC)**] key once more while still holding in the [**FUNC**] key. This stores the frequency into the memory. “WRITE!” will appear on the right side of the display, to confirm that the frequency data was successfully stored.



*Note: You must press the [**2(MW/MC)**] key per this step whether or not you are appending an alpha-numeric label to a memory.*

Memory Mode

Designated Memory Storage

If you wish to store the frequency into a particular memory channel number, use the “Designated Memory” storage procedure:

- ① While operating in the VFO mode, select the desired frequency and reception mode (AM, NFM, etc.) for the station to be memorized.
- ② Press the **[2(MW/MC)]** key while pressing the **[FUNC]** key.
- ③ If you wish to append an alpha-numeric label (name) to the channel, press and hold in the **[FUNC]** key, then press the **[ENT(SET/NAME)]** key. Now skip to step ③ of the **Labeling Memories** section on page 20, and perform steps ③ through ⑦.
- ④ Now enter the three-digit memory channel number to be “stored” from the keypad. When you touch the third digit of the memory channel number, “Write!” will appear at the right side of the display, confirming that the frequency data has been stored into the designated memory channel.

Example: Store 162.550 MHz into Memory Channel 005:

- ① Use the keyboard to enter the desired frequency.
Press **[1] → [6] → [2] → [.] → [5] → [5] → [ENT(SET/NAME)]**.
- ② Press the **[FUNC]** key, then press **[2(MW/MC)]**. A channel number will appear at the left side of the display, and “MW/Name?” will appear at the right side.
- ③ Now press **[0] → [0] → [5]**. The display will indicate “005 Write!” momentarily, after which the display will revert to 162.550 MHz, which is the current VFO frequency. Memory storage into channel #005 is now complete.

Example: Store 162.450 MHz into Memory Channel 010, and append the label "NOAA 450" to the channel data:

- ① Use the keyboard to enter the desired frequency.
Press **[1] → [6] → [2] → [.] → [4] → [5] → [ENT(SET/NAME)]**.
- ② Press the **[FUNC]** key, then press **[2(MW/MC)]**. A channel number will appear at the left side of the display, and “MW/Name?” will appear at the right side.
- ③ Press the **[FUNC]** key, then press **[ENT(SET/NAME)]**. You may now release the **[FUNC]** key.
- ④ You will observe a space blinking on the LCD; this indicates that you are in the alpha-numeric label entry mode.
- ⑤ Press **[6 MNO] → [6 MNO]** to enter “N” as the first character. Now press the **[FUNC]** key; while holding it in, rotate the **DIAL** one click clockwise to move on to the next digit.
- ⑥ Press **[6 MNO] → [6 MNO] → [6 MNO]** to enter “O” as the next character. Rotate the **DIAL** one click clockwise while holding in the **[FUNC]** key to move on to the next character.

Memory Mode

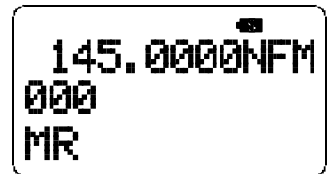
- ⑦ Press [**2 ABC**] to enter “A” as the next character. Rotate the **DIAL** one click clockwise while holding in the [**FUNC**] key to move on to the next character.
- ⑧ Press [**2 ABC**] to enter “A” as the next character. Now rotate the **DIAL** *two clicks* clockwise while holding in the [**FUNC**] key to insert a space and to move on to the next character.
- ⑨ We now need to change from letters to numbers, so release the [**FUNC**] key, and then rotate the **DIAL** one click so that “123” appears in the upper right-hand corner of the display.
- ⑩ Press the [**4 GHI**] key to enter “4” as the next character. Rotate the **DIAL** one click clockwise while holding in the [**FUNC**] key to move on to the next character.
- ⑪ Press the [**5 JKL**] key to enter “5” as the next character. Rotate the **DIAL** one click clockwise while holding in the [**FUNC**] key to move on to the next character.
- ⑫ Press the [**0**] key to enter “0” as the final digit of the alpha-numeric label.
- ⑬ Press [**ENT (SET/NAME)**] to save the alpha-numeric information.
- ⑭ Finally, press and hold in the [**FUNC**] key; while holding it in, press [**0**] → [**1**] → [**0**]. The display will indicate “010 Write!” momentarily, after which the display will revert to 162.450 MHz, which is the current VFO frequency.

You still are operating in the VFO mode, and you may store other channel frequencies into other memory channel registers in the same manner. To recall these memories, proceed to the next section.

MEMORY RECALL

Recall of memorized channels is very simple:

- ① Press the [**1 (MEMO)**] key momentarily while pressing the [**FUNC**] key. You may now release the [**FUNC**] key. “MR” will appear in the bottom left-hand corner of the display, indicating that you are now operating in the **Memory Recall** mode.
- ② Rotate the **DIAL** knob to select the desired memory channel, or enter the desired three-digit memory channel number from the keypad.



To return to the VFO mode from the Memory mode, just press the [**CLR (P.SET)**] key. “VFO” will appear in the bottom left-hand corner of the display.

Memory Mode

LABELING MEMORIES

You may wish to append an alpha-numeric “Tag” (label) to a memory or memories, to aid in recollection of the channel frequency's significance (such as a Broadcast Station name, etc.). Alpha-numeric labels may be appended at the time of storage of the frequency data, or at a later time. In either case, the storage process is basically identical.

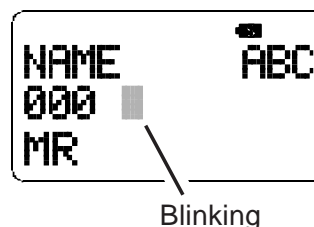
An example of alpha-numeric label programming was presented earlier in summary form. The section to follow will describe the process in more detail.

To label a previously-stored memory channel:

① Recall the memory channel on which you wish to append a label.

② Press the **[ENT(SET)]** key while pressing the **[FUNC]** key to enable programming of the name tag. You will notice the first entry's place blink.

③ In the upper right-hand corner of the LCD, you will also observe either “ABC” or “123.” If “ABC” is present, this indicates that you are set up to enter *letters*; if “123” is present, this indicates that you are set up to enter *numbers*. Rotate the main tuning **DIAL** so that “ABC” or “123” appears, based on the label you wish to program.



④ Press the keyboard to enter the desired letter or number.

Example 1: If you selected “ABC” in the previous step, press the **[2(MW/MC)]** key repeatedly to toggle among the six available characters:

A → B → C → a → b → c → A . . .

Example 2: If you selected “123” in the previous step, press the **[2(MW/MC)]** key to enter the digit “2.”

⑤ Rotate the **DIAL** knob clockwise while pressing the **[FUNC]** key to move the next character.

⑥ Repeat steps ③ to ⑤ to program the remaining letters or numbers of the desired label. A total of eight characters may be used in the creation of a label.

⑦ When you have completed the creation of the label, press the **[ENT(SET)]** key momentarily to save the label.

MEMORY CHANNEL SCAN

While using the Memory (“MR”) mode, press the [3(SCH/SCN)] key while pressing the [FUNC] key to initiate Memory Channel Scanning. As with VFO Search, the scanner will halt on any signal encountered that is strong enough to open the squelch; it will then resume scanning according to the setting of the “RESUME” mode, described previously.



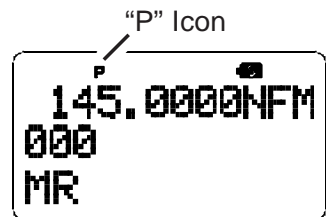
While Memory scanning, you can initiate Memory Bank Scanning, whereby only the channels in one of the ten Memory Banks will be scanned. To do this, start Memory Scanning per the above procedure, then press one of the numbered keys (e.g. press [3] to scan in Memory Bank 3 — channels 300 ~ 399).

Preferential Memory Scan (PMS)

This radio also allows you to set up a “Preferential Scan List” of channels which you can “flag” within the memory system. These channels are designated by a “P” icon when you have selected them, one by one, for the Preferential Scan List.

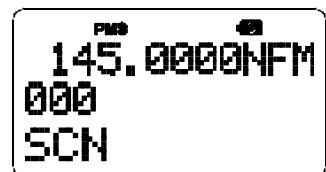
Here is the procedure for setting up the Preferential Scan List:

- ① Press the [1(MEMO)] key while pressing the [FUNC] key to enter the Memory mode, if you are not using memories already.
- ② Rotate the **DIAL** knob to select the channel which you wish to add to the Preferential Scan List.
- ③ Press the [5(S.SCH/PMS)] key while pressing the [FUNC] key. The “P” icon will appear at the top of the display, indicating that the channel is now in the Preferential Scan List.
- ④ To remove a channel from the Preferential Scan List, repeat the above procedure: rotate the **DIAL** knob to select the channel which you wish to delete from the Preferential Scan List, then press the [5(S.SCH/PMS)] key while pressing the [FUNC] key (the “P” icon will disappear).



To initiate Preferential Memory Scan:

- ① Press the [3(SCH/SCN)] key while pressing the [FUNC] key to begin Memory Channel Scanning.
- ② Once you have engaged Memory Channel Scanning, press the [5(S.SCH/PMS)] key while pressing the [FUNC] key to initiate *Preferential Memory Scanning*. Only the channels which have a “P” icon appended to the channel number will now be scanned.
- ③ To return to *normal* Memory Channel Scanning, just press the [5(S.SCH/PMS)] key while pressing the [FUNC] key (the scanner will again scan *all* memory channels).



Memory Mode

Memory Bank Scanning

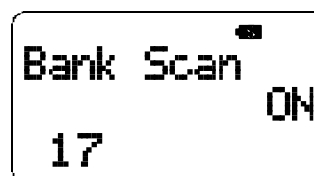
This feature allows you to scan one or more Memory Banks during Memory Channel Scanning, while ignoring other banks. For example, you may wish to load broadcast stations into certain Memory Banks for convenient recall, but *ignore* them during scanning (as they are always active, the scanner will halt on every such station).

To set up scanning of certain Memory Banks:

- ① If you are in the Memory mode, change to the VFO mode by pressing the [CLR (P.SET)] key.
- ② Press the [ENT(SET/NAME)] key while pressing the [FUNC] key to activate the “Set” (Menu) mode.
- ③ Rotate the **DIAL** knob to select Menu #18 [Bank Link].
- ④ Rotate the **DIAL** knob while pressing the [FUNC] key to select the Memory Bank which you wish to include while scanning. Now *release* the [FUNC] key.
- ⑤ Rotate the **DIAL** knob a few clicks; you will observe an underline (“_”) icon toggling on and off below the Memory Bank number. The “_” indicates that the Memory Bank is now in the Preferential Bank Scanning List.
- ⑥ Now again press and hold in the [FUNC] key, and rotate the **DIAL** knob to select other Memory Banks to be included in (or excluded from) the Preferential Bank Scanning List. Release the [FUNC] key, and rotate the **DIAL** knob to apply or remove the underline from the selected Memory Bank.
- ⑦ Press the [ENT(SET)] key when all selections have been made.
- ⑧ Now rotate the **DIAL** knob to select Menu #17 [Bank Scan].
- ⑨ Rotate the **DIAL** knob while pressing the [FUNC] key to set this Menu Item to “ON.”
- ⑩ Press the [CLR (P.SET)] key to exit to normal VFO operation.
- ⑪ Press the [1(MEMO)] key while pressing the [FUNC] key to enter the Memory mode.
- ⑫ Press the [3(SCH/SCN)] key while pressing the [FUNC] key to initiate Memory Bank Scanning. Only the channels in the Memory Bank which have an underline (“_”) below the Memory Bank number will be scanned.
- ⑬ To return to *normal* Memory Channel Scanning, first press the [CLR (P.SET)] key to return to the VFO mode, then re-enter the “Set” (Menu) mode by pressing the [ENT(SET/NAME)] key while holding in the [FUNC] key. Rotate the **DIAL** knob to select Menu #17, and set Menu #17 to “OFF” by pressing the [FUNC] key and rotating the **DIAL** knob one click. Press the [CLR (P.SET)] key to exit the Menu mode.



Underline (“_”) Icon

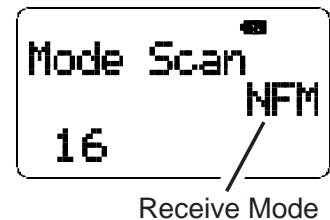


Mode Scan

The VR-500 may be programmed to scan only those Memory Channels on which a particular emission mode has been programmed (such as NFM, AM, etc.).

To set up Mode Scanning:

- ① Switch to the VFO mode by pressing the **[CLR (P.SET)]** key.
- ② Press the **[ENT(SET)]** key while pressing the **[FUNC]** key to activate the "Set" (Menu) mode.
- ③ Rotate the **DIAL** knob to select Menu #16 [Mode Scan].
- ④ Rotate the **DIAL** knob while pressing the **[FUNC]** key to select the Receive Mode which you wish to scan during Memory Scanning (all channels set to other modes will be ignored).
- ⑤ Press the **[CLR (P.SET)]** key to exit to normal operation.
- ⑥ Press the **[1(MEMO)]** key while pressing the **[FUNC]** key to enter the Memory mode.
- ⑦ Press the **[3(SCH/SCN)]** key while pressing the **[FUNC]** key to initiate Mode Scanning. Only the channels which were stored with the same Receive Mode will be scanned.
- ⑧ To return to *normal* Memory Channel Scanning, re-enter the "Set" (Menu) mode, and set Menu #16 to OFF.

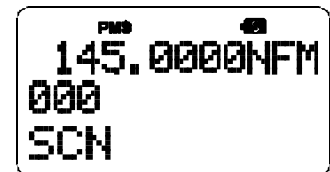


DELETING MEMORY CHANNELS

You may wish to delete a certain Memory Channel's data, when you no longer have a reason to recall that channel.

To delete a channel's data:

- ① Recall the Memory Channel to be deleted.
- ② Press the **[2(MW/MC)]** key while pressing the **[FUNC]** key. You will observe "Clear?" on the display.
- ③ Press the **[2(MW/MC)]** key again while pressing the **[FUNC]** key to delete the Memory Channel.



Important Note: Deleted Memory Channel data can not be restored.

Memory Mode

ALPHA-NUMERIC MEMORY RECALL

You can use the VR-500's powerful microprocessor system to search for Memory Channels according to their alpha-numeric label. In the example below, we shall set up the VR-500 to find all channels programmed with "POLICE" as an alpha-numeric label (e.g. POLICE 1, POLICE 2, etc.).

- ① Set the radio to the VFO mode by pressing the **[CLR(P.SET)]** key.
- ② Press the **[ENT(SET/NAME)]** key while pressing the **[FUNC]** key to activate the "Set" (Menu) mode.
- ③ Rotate the **DIAL** knob to select Menu #15 [Find Name].
- ④ Rotate the **DIAL** knob one click while pressing the **[FUNC]** key to enable setup of Alpha-Numeric Memory Recall.
- ⑤ Program the alpha-numeric "label" which you wish to recall using the **DIAL** knob and keypad, as described previously. In this case, program "POLICE" as the label. Now press the **[ENT(SET/NAME)]** key (do not press the **[FUNC]** key in this step).
- ⑥ Now press the **[CLR(P.SET)]** key to exit to normal operation.
- ⑦ Press the **[1(MEMO)]** key while pressing the **[FUNC]** key to return to the Memory mode.
- ⑧ Rotate the **DIAL** knob. You will observe that only channels beginning with "POLICE" are now appearing on the display.
- ⑨ To return to *normal* Memory Recall operation, re-enter the "Set" (Menu) mode, select Menu #15, then clear the alpha-numeric "Tag." The easiest way to do this is to enter **[•(STEP)]** (from the "ABC" selection option) for each digit in the alpha-numeric label within Menu #15.

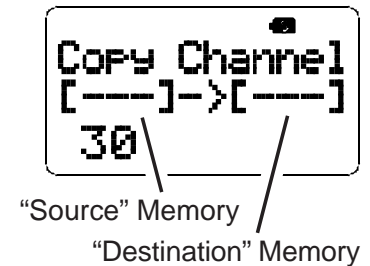


Important Note: You can recall Memory Channels alpha-numerically using just one or two letters of a label within Menu #15. In the above example, if you programmed "PO" in Menu #15 instead of "POLICE," you could then recall channels such as "PONTIAC," "PORTER," "PORTLAND," and "POWER" in addition to "POLICE." But if you set "POR" in Menu #15, only "PORTER" and "PORTLAND" would be recalled.

MEMORY CHANNEL COPYING

This feature allows to copy and paste the Memory Channel data between any two desired Memory Channels.

- ① Set the radio to the VFO mode by pressing the [**CLR(P.SET)**] key.
- ② Press the [**ENT(SET/NAME)**] key while pressing the [**FUNC**] key to activate the “Set” (Menu) mode.
- ③ Rotate the **DIAL** knob to select Menu #30 [Copy CH].
- ④ Rotate the **DIAL** knob one click clockwise while pressing the [**FUNC**] key to enable the setup of Memory Channel Copying.
- ⑤ Key in the *Source* Memory Channel number (three digits) from the keypad, then key in the *Destination* Memory Channel number (three digits) from the keypad. Memory Channel Copying is now complete.
- ⑥ Press the [**CLR(P.SET)**] key to exit to normal operation.



MEMORY CHANNEL SWAP

This feature allows you to swap (exchange) Memory Channel data between any two Memory Channels.

- ① Set the radio to the VFO mode by pressing the [**CLR(P.SET)**] key.
- ② Press the [**ENT(SET/NAME)**] key while pressing the [**FUNC**] key to activate the “Set” (Menu) mode.
- ③ Rotate the **DIAL** knob to select Menu #31 [Swap CH].
- ④ Rotate the **DIAL** knob one click clockwise while pressing the [**FUNC**] key to enable the setup of Memory Channel Swap.
- ⑤ Key in the two Memory Channel numbers (each three digits) to be swapped from the keypad.
- ⑥ Memory Channel Swap is now complete.
- ⑦ Press the [**CLR(P.SET)**] key to exit to normal operation.

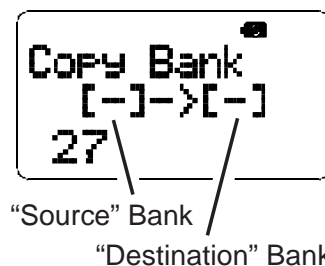


Memory Mode

MEMORY BANK COPY

This feature allows you to copy and paste the all Memory Channels in a particular Memory Bank to a different Memory Bank.

- ① Set the radio to the VFO mode by pressing the [CLR(P.SET)] key.
- ② Press the [ENT(SET)] key while pressing the [FUNC] key to activate the “Set” (Menu) mode.
- ③ Rotate the **DIAL** knob to select Menu #27 [Copy Bank].
- ④ Rotate the **DIAL** knob while pressing the [FUNC] key to enable the setup of Memory Bank Copy.
- ⑤ Key in the *Source* Memory Bank number (one digit) from the keypad, then key in the *Destination* Memory Bank number (one digit) from the keypad.
- ⑥ Memory Bank Copy is now complete.
- ⑦ Press the [CLR(P.SET)] key to exit to normal operation.



MEMORY BANK SWAP

This feature allows to swap (exchange) all the Memory Channels in any two Memory Banks.

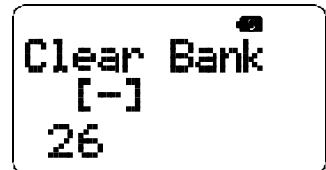
- ① Set the radio to the VFO mode by pressing the [CLR(P.SET)] key.
- ② Press the [ENT(SET)] key while pressing the [FUNC] key to activate the “Set” (Menu) mode.
- ③ Rotate the **DIAL** knob to select Menu #28 [Swap Bank].
- ④ Rotate the **DIAL** knob while pressing the [FUNC] key to enable the setup of Memory Bank Swap.
- ⑤ Key in the two Memory Bank numbers (each one digit) to be swapped from the keypad.
- ⑥ Memory Bank Swap is now complete.
- ⑦ Press the [CLR(P.SET)] key to exit to normal operation.



CLEARING OF A MEMORY BANK

This feature allows to mask (clear) the all memory channels in the desired memory bank at the same time.

- ① Set the radio to the VFO mode by pressing the [**CLR(P.SET)**] key.
- ② Press the [**ENT(SET)**] key while pressing the [**FUNC**] key to activate the “Set” (Menu) mode.
- ③ Rotate the **DIAL** knob to select Menu #26 [Clear Bank].
- ④ Rotate the **DIAL** knob one click clockwise while pressing the [**FUNC**] key to enable the setup of Memory Bank Clearing.
- ⑤ Key in the memory bank number (one digit) to be cleared from the keypad.
- ⑥ The display will now indicate “Clear ...” for about four seconds. Thereafter, clearing of the prescribed Memory Bank will be complete.
- ⑦ Press the [**CLR(P.SET)**] key to exit to normal operation.



Important Note: A cleared Memory Bank can not be restored. All data for that bank will have to be re-entered.

MEMORY CHANNEL CHECK

This feature allows you to view the number of Vacant Memory Channels in the each Memory Bank (or all Memories).

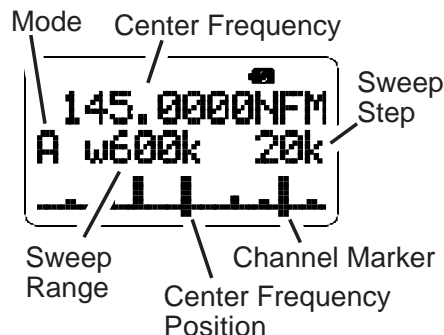
- ① Set the radio to the VFO mode by pressing the [**CLR(P.SET)**] key.
- ② Press the [**ENT(SET)**] key while pressing the [**FUNC**] key to activate the “Set” (Menu) mode.
- ③ Rotate the **DIAL** knob to select Menu #29 [Vacant Memory].
- ④ Rotate the **DIAL** knob while pressing the [**FUNC**] key to review the number of Vacant Memory Channels in the each Memory Bank. The total number of available Memory Channels will also be displayed after the display of Bank #9's available space.
- ⑤ Press the [**CLR(P.SET)**] key to exit to normal operation.



Band Scope

If you have to be away from your radio for a while, the Band Scope allows viewing of operating activity on channels above or below the current operating channel (in the VFO mode).

The display will indicate the relative signal strengths of signals on channels immediately adjacent to the current operating frequency. A convenient “Channel marker” can then be used to zero in on one of the stations displayed; when you turn off the Band Scope, the VR-500 will be set to the frequency set by the Channel Marker.



While the Band Scope is engaged, reception is not possible, as the incoming RF energy is diverted to the Band Scope.

Two basic operating modes for Band Scope are available:

“A” Mode:

Sweep range is selectable (300 kHz or 600 kHz),

Sweep steps are selectable (9/10/12.5/20/25/50 or 100 kHz).

Therefore, the Sweeping channels are flexible (e.g. 3 channels @ [Sweeping range: 300 kHz, Sweeping step: 100 kHz] + 60 channels @ [Sweeping range: 600 kHz, Sweeping step: 10 kHz]).

Range	Step	Channels	Range	Step	Channels
540 kHz	9 kHz	60	270 kHz	9 kHz	30
600 kHz	10 kHz	60	300 kHz	10 kHz	30
	12.5 kHz	48		12.5 kHz	24
	20 kHz	30		20 kHz	15
	25 kHz	24		25 kHz	12
	50 kHz	12		50 kHz	6
	100 kHz	6		100 kHz	3

“B” Mode:

Sweeping channel capacity is fixed (60 channels),

Sweeping Steps are selectable (50/100/1k/5k/6.25k/9k/10k/12.5k/15k/20k/25k/30k/50k or 100 kHz).

Therefore, the Sweeping range is flexible (e.g. 3 kHz @ [Sweeping step: 50 Hz] + 6 MHz @ [Sweeping step: 100 kHz]).

Step	Range	Step	Range
50 Hz	3 kHz	12.5 kHz	750 kHz
100 Hz	6 kHz	15 kHz	900 kHz
1 kHz	60 kHz	20 kHz	1.2 MHz
5 kHz	300 kHz	25 kHz	1.5 MHz
6.25 kHz	375 kHz	30 kHz	1.8 MHz
9 kHz	540 kHz	50 kHz	3 MHz
10 kHz	600 kHz	100 kHz	6 MHz

While the Band Scope mode is engaged (see next section), press the **[0(MODE)]** key while holding in the **[FUNC]** key to toggle the Band Scope mode between “A MODE” and “B MODE.”

To ACTIVATE THE BAND SCOPE

- ① Set the radio to the VFO mode by pressing the [**CLR(P.SET)**] key, if necessary.
- ② Press the [**B.S(B.W)**] key momentarily.

When the Band Scope is activated, rotate the **DIAL** knob to move the Channel Marker.

When the Band Scope is activated, you can select the Sweep steps by the rotating the **DIAL** knob while pressing the [**FUNC**] key. The Sweep range may be set by pressing the [**B.S(B.W)**] key while pressing the [**FUNC**] key (“**A**” mode only).

Two methods of turning off the Band Scope are available:

- ① Press the [**B.S(B.W)**] key to turn the Band Scope off and operate on the channel which the Channel Marker has marked.
- ② Press the [**CLR(P.SET)**] key to turn the Band Scope off and operate on the *centered* (and displayed) channel (with no effect from the Channel Marker).

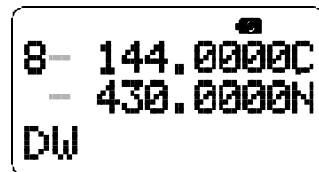
Dual Watch

The Dual Watch feature allows you to monitor two frequencies, with the radio rapidly switching between the two channels, looking for activity. As with scanning operation, the VR-500 will halt when one of the channels becomes occupied by a signal strong enough to open the Squelch.

The Dual Watch system includes special memories which can store up to ten pairs of Dual Watch frequencies. These memories are pre-programmed at the factory, but can quickly be programmed by you for monitoring of your favorite frequencies on a priority basis.

To activate Dual Watch:

- ① Press the **[7(DW)]** key while pressing the **[FUNC]** key. The radio will begin Dual Watch operation.
- ② Once you have initiated Dual Watch operation, press the key corresponding to the *Dual Watch Memory* as shown below. Dual Watch will cause the radio to switch back and forth (rapidly) between the Pre-Programmable Frequency pair selected (for example, if you press **[8]**, Dual Watch will switch every 0.2 second between 144.000 MHz and 430.000 MHz).



Search Band Memory	Pre-Programmable Frequency Pair
0	0.5200 MHz (AM) / 1.8000 MHz (AM)
1	1.8000 MHz (AM) / 3.6000 MHz (LSB)
2	3.6000 MHz (LSB) / 10.5000 MHz (AM)
3	10.5000 MHz (AM) / 21.0000 MHz (USB)
4	21.0000 MHz (USB) / 30.0000 MHz (NFM)
5	30.0000 MHz (NFM) / 50.0000 MHz (CW)
6	88.0000 MHz (WFM) / 108.0000 MHz (AM)
7	50.0000 MHz (CW) / 144.0000 MHz (CW)
8	144.0000 MHz (CW) / 430.0000 MHz (NFM)
9	430.0000 MHz (NFM) / 1240.0000MHz (NFM)

- ③ Dual Watch will halt when the VR-500 receives a signal strong enough to break through the Squelch threshold. The radio will then hold on that frequency according to the setting of the “RESUME” mode, described previously.
- ④ To stop Dual Watch manually, just rotate the **DIAL** knob one click. If you like, you can then tune manually back and forth between the two Dual Watch memories by rotating the **DIAL** knob.
- ⑤ Press the **[CLR(P.SET)]** key to cancel Dual Watch operation and return to the previous operating mode (VFO or Memory).

You can change any or all of the Dual Watch frequency pairs in accordance with your operating preferences.

To program a Dual Watch Memory frequency pair:

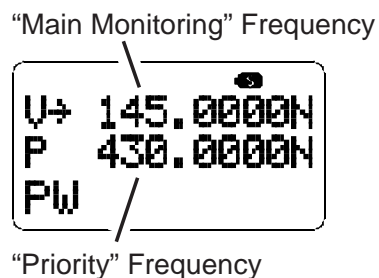
- ① Select one of the frequencies you wish to utilize for Dual Watch, using the keypad or main **DIAL**.
- ② Press and hold in the **[7(DW)]** key for 2 seconds while pressing the **[FUNC]** key. “DWA Write!” (Dual Watch Channel “**A**”) will appear on the display.
- ③ Now select the second frequency you wish to utilize for Dual Watch.
- ④ Press and hold in the **[7(DW)]** key for 2 seconds while pressing the **[FUNC]** key. “DWB Write!” (Dual Watch Channel “**B**”) will appear on the display.
- ⑤ Press the **[7(DW)]** key while pressing the **[FUNC]** key, to activate Dual Watch between the above frequency pair.
- ⑥ Now, store this frequency pair into one of the ten available Dual Watch Memory registers. Just press and hold in the key corresponding to the Dual Watch Memory into which you want to store this Frequency Pair (e.g. press **[5]** to store this pair into Dual Watch Memory #5).

Priority Monitoring

The “Priority” feature, which is somewhat similar to Dual Watch, allows you to monitor a VFO frequency while checking a “Priority Memory” channel every five seconds for activity. If the Priority Memory channel becomes active with a signal strong enough to open the Squelch, the radio will halt on that frequency and will hold there in accordance with the setting of the “RESUME” mode, described previously.


To set up Priority Monitoring:

- ① Select the frequency you wish to be the “Priority” frequency, using the keypad or main **DIAL**.
- ② Press and hold in the **[6(PW)]** key for 2 seconds, while pressing the **[FUNC]** key, to store the frequency into the Priority Memory Channel.
- ③ Select the desired “main monitoring” frequency on the VFO.
- ④ Press the **[6(PW)]** key while pressing the **[FUNC]** key to activate Priority Channel monitoring. The display will show both the VFO frequency and the Priority Memory Channel frequency, with a small arrow indicating the frequency being monitored. Every five seconds, you will notice the arrow jumping to the Priority Memory frequency. If activity appears on the Priority Memory, the radio will hold on that frequency per the programming of the “RESUME” mode.
- ⑤ Press the **[CLR(P.SET)]** key to cancel Priority Monitoring operation.

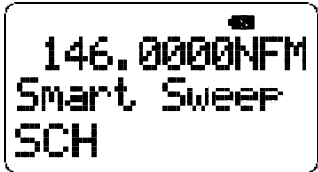


The Smart Search™ feature allows you to load frequencies automatically according to where activity is encountered by your radio. The radio includes a special 31-channel Smart Search™ Memory Bank which is separate from the main memory system.

To set up Smart Search™ operation:

- ① Set the radio to the VFO mode by pressing the [**CLR(P.SET)**] key, if necessary.
- ② Tune the radio to the *lower* frequency limit for the Smart Search™ sweep.
- ③ Press and hold in the [**5(S.SCH)**] key for 2 seconds while pressing the [**FUNC**] key, then press the [**1(MEMO)**] key to store the *Lower* frequency limit into the Smart Search™ “L” memory. 
- ④ Tune the radio to the *Starting* frequency for the Smart Search™ sweep.
- ⑤ Press and hold in the [**5(S.SCH)**] key for 2 seconds while pressing the [**FUNC**] key, then press the [**2(MW/MC)**] key to store the *Start* frequency into the “S” Smart Search™ memory.
- ⑥ Tune the radio to the *Upper* frequency limit for the Smart Search™ sweep.
- ⑦ Press and hold in the [**5(S.SCH)**] key for 2 seconds while pressing the [**FUNC**] key, then press the [**3(SCH/SCN)**] key to store the *Upper* frequency into the Smart Search™ “U” memory.

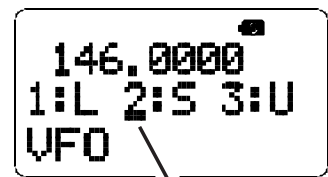
To initiate Smart Search operation:

- ⑧ Press and hold in the [**5(S.SCH)**] key for 2 seconds while pressing the [**FUNC**] key, then press the [**ENT(SET)**] key. Smart Search scanning will now begin. 

All channels where activity is present (up to 15 in each direction) will be loaded into the Smart Search™ memories. Whether or not all 31 memories are filled, the Smart Search™ scan will stop after one sweep in each direction.
- ⑨ Now you can turn the **DIAL** to select the Smart Search™ memories.
- ⑩ To disable Smart Search™ operation, press the [**CLR(P.SET)**] key.

Note: You can display the Lower/Start/Upper frequencies for the Smart Search™ feature.

To do this, press and hold in the [**5(S.SCH)**] key for 2 seconds while pressing the [**FUNC**] key; now turn the **DIAL**, which will cause the underline bar (“_”) to move among the three choices. The corresponding frequency will simultaneously displayed.

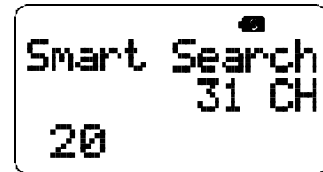


Underline Bar “_”

Smart Search™

The Smart Search™ feature has 31 channels available as a default channel capacity. Several other channel capacity values are available, using the Menu system:

- ① Set the radio to the VFO mode by pressing the [**CLR(P.SET)**] key, if necessary.
- ② Press the [**ENT(SET)**] key while pressing the [**FUNC**] key to activate the “Set” (Menu) mode.
- ③ Rotate the **DIAL** knob to select Menu #2 [Smart Search].
- ④ Rotate the **DIAL** while holding in the [**FUNC**] key to review the number of channels allocated for Smart Search operation. You may select 11, 21, 31, or 41 channels.
- ⑤ When you have made your selection, press the [**CLR(P.SET)**] key to exit to normal operation.



SYSTEM RESET

- ① Turn the radio off.
- ② Press and hold the **[FUNC]** and **[MONI(LOCK)]** keys while turning the radio on.
- ③ Press the **[1(MEMO)]** key.
- ④ Press the **[ENT(SET)]** key to reset the all settings to their factory defaults (press the **[CLR(P.SET)]** key to cancel the Reset procedure).

FUNCTION/MENU RESET

(To reset the Function mode and Set mode settings to their factory defaults)

- ① Turn the radio off.
- ② Press and hold the **[FUNC]** and **[MONI(LOCK)]** keys while turning the radio on.
- ③ Press the **[2(MW/MC)]** key.
- ④ Press the **[ENT(SET)]** key to reset the Function mode and Set mode settings to their factory defaults (press the **[CLR(P.SET)]** key to cancel the Reset procedure).

Set Mode

The VR-500 “Set” mode is an easy-to-use Menu system, which allows customization of many VR-500 configuration parameters.

Use the following “generic” procedure to engage the “Set” (Menu) mode:

- ① Set the radio to the VFO mode by pressing the [**CLR(P.SET)**] key.
- ② Press the [**ENT(SET/NAME)**] key while pressing the [**FUNC**] key to activate the “Set” (Menu) mode. The Menu Item number and a brief title for the Menu Item will appear on the display.
- ③ Rotate the **DIAL** knob to select the Menu Item you wish to work on.
- ④ Rotate the **DIAL** knob *while pressing the* [**FUNC**] key to change the value or condition for the selected Menu Item.
- ⑤ Press the [**CLR(P.SET)**] key to save the new setting and exit to normal operation.

Set Item 1 [Receive Mode]

Function: Select the Receiving mode

Available Values: AUTO/ MANUAL

AUTO: The VR-500 automatically selects the optimum mode according to the frequency band where the frequency is set.

MANUAL: You select the receiving mode manually by repeatedly pressing the [**0(MODE)**] key while pressing the [**FUNC**] key.

Default: AUTO

Set Item 2 [Lock Mode]

Function: Enable/disable the DIAL Lock during keypad lock feature active

Available Values: Key: Only the keypad's keys will be locked out.

Dial/Key: The keypad's keys and the DIAL will be locked out.

Default: Key+Dial

Set Item 3 [Key Lamp]

Function: Enable/disable the keypad's illumination when the LCD's Lamp is active.

Available Values: ALL: Both the keypad and the LCD will be illuminated.

Display: Just the LCD will be illuminated.

Default: ALL

Set Item 4 [Lamp Mode]

Function: Select the LCD Lamp Mode

Available Values: AUTO/TOGGLE

AUTO: Pressing the [**9(LAMP)**] key while pressing the [**FUNC**] key illuminates the LCD/Keypad for 5 seconds.

TOGGLE: Pressing the [**9(LAMP)**] key while pressing the [**FUNC**] key toggles LCD/Keypad lamp On/Off.

Default: AUTO

Set Item 5 [Save]

Function: Select the Battery Save Interval (“sleep” ratio)
Available Values: OFF/1:4(1sec)/1:12(3sec)/1:20(5sec)/1:2887sec)/1:36(9sec)
Default: 1:4(1sec)

Note that the VR-500 receiving time is 250 ms when the Battery Save on.

Set Item 6 [OFF Timer]

Function: Set the “Sleep Timer” Time
Available Values: OFF/30/60/90 sec
Default: OFF

Set Item 7 [ON Timer]

Function: Set the ON Timer time
Available Values: OFF ~ 24:00
Default: OFF

The ON timer turns on the radio at the programmed time (30 min/step).

Note that this is not the time of day when the radio will turn on; it is the number of hours and minutes until the radio turns on.

Set Item 8 [Scan Resume]

Function: Set the Delay time for scan
Available Values: 1sec ~ 12sec
Default: 5 sec

This Set Item defines the length of time the scanner will hold on a frequency.

Set Item 9 [Contrast]

Function: Setting of the Display Contrast Level
Available Values: 1/14 ~ 14/14
Default: 7/14

Set Item 10 [Key Beep]

Function: Enable/disable the Keypad Beeper
Available Values: ON/OFF
Default: ON

Set Item 11 [LANGUAGE]

Function: Display the language for Set mode
Available Values: ENGLISH (stationary value)

Set Mode

Set Item 12 [Search Mode]

Function: Select the VFO Scan Type

Available Values: VFO/LIMIT

VFO: The VFO scanner activates the frequencies between the 0.1 MHz and 1300 MHz.

LIMIT: The VFO scanner activates the frequencies between the pre-programmed frequencies.

Default: VFO

Set Item 13 [SRCH Memory]

Function: Display the desired frequency pair from the “Search Band” Memory

- ① Recall Set Item 13, then rotate the **DIAL** knob while pressing the **[FUNC]** key.
- ② As you rotate the **DIAL** knob, the ten numbered “Search Band Memory” numbers will be displayed, along with the frequencies contained in those memories.
- ③ Press the **[CLR(P.SET)]** key to return to the Menu item selection mode.

Set Item 14 [Monitor]

Function: Enable/disable the AF Power Amplifier when the squelch off.

Available Values: OFF/ON

Default: OFF

Note that you can reduce the squelch on/off (pop) noise when this feature on.

Set Item 15 [Find Name]

Function: Looking up a word in a memory tag

Set Item 16 [Mode Scan]

Function: Select the Operating Mode for scanning

Available Values: OFF/NFM/WFM/AM/USB/LSB/CW

Default: OFF

Set Item 17 [Bank Scan]

Function: Enable/disable Memory Bank Scanning.

Available Values: OFF/ON

Default: OFF

Set Item 18 [Bank Link]

Function: Set the Bank Link Feature

Set Item 19 [RF Squelch]

Function: Adjust the RF SQL threshold level

Available Values: OFF/1 ~ 9

Default: OFF

Set Item 20 [Smart Search]

Function: Select the Smart Search Memory Bank Size (# of channels)

Available Values: 11/21/31/41 Channels

Default: 31 Channels

Set Item 21 [SSRCH Mode]

Function: Select the Smart Search operating mode

Available Values: SINGLE/CONTINUE

SINGLE: The VR-500 sweeps once in each direction starting on the current frequency. All channels where activity is present are loaded into the Smart Search memories. Whether or not all memories are filled, the search stops after one sweep in each direction.

CONTINUE: The VR-500 makes a sweep in each direction as with the "SINGLE" mode, but if all channels not filled after the first sweep, the VR-500 continues sweeping until they all filled.

Default: SINGLE

Set Item 22 [Flex Step]

Function: Enable/disable the "flexible" frequency step feature

Available Values: ON/OFF

Default: OFF

OFF: When you change the receive mode, the channel steps remain the same.

Example: With the radio on 14.0125 MHz (USB), change the receive mode to NFM from LSB. Rotate the **DIAL** knob; the frequency steps will be:

14.0125 → 14.1125 → 14.2125 → 14.3125 ••• (MHz)

ON: When you change the receive mode, the VFO frequency will increment according to the *current* receive mode.

Example: With the radio on 14.0125 MHz (USB), change the receive mode to NFM from USB. Rotate the **DIAL** knob; the frequency steps will be:

14.0125 → 14.1000 → 14.2000 → 14.3000 ••• (MHz)

Set Mode

Set Item 23 [Opening Bell]

Function: Select the opening “Beep” sequence when the VR-500 is powered on.

Available Values: OFF/1/2/3

OFF: No beep

1: “Pi” (Single Beep)

2: “Po-Pi” (Two Beeps, Low → High pitch)

3: “Pi-Pi” (Two Beeps, both High pitch)

Default: 1

Set Item 24 [Opening Msg]

Function: Select the Opening Message when the VR-500 is powered on.

Available Values: OFF/User/Default

OFF: No Opening Message

User: Set by user via Set Item #25 (see below)

Default: “YAESU VR-500”

Default: Default

Set Item 25 [Msg Edit]

Function: Program the Opening Message.

Opening Message Programming:

- ① After selecting Set Item 25, rotate the **DIAL** knob one click clockwise while pressing the [**FUNC**] key to enable programming of the opening message. You will notice the first entry's place blink.
- ② Rotate the **DIAL** knob to select the character type (the selections are “ABC” [alphabet] and “123” [numeric]).
- ③ Press the keyboard to enter the desired letter or number.

Example 1: If you select the “ABC” character type in the previous step, press the [**2(MW/MC)**] key repeatedly to toggle among the six characters:

A → B → C → a → b → c → A . . .

Example 2: If you select the “123” character type in the previous step, press the [**2(MW/MC)**] key to enter the digit “2”.

- ④ Rotate the **DIAL** knob clockwise while pressing the [**FUNC**] key to move to the next character.
- ⑤ Repeat steps ② to ④ to program the remaining letters or numbers of the desired message. A total of eight characters may be used in the creation of a message.
- ⑥ When you have completed the creation of the message, press the [**ENT(SET)**] key momentarily to save the message.

Set Item 26 [Clear Bank]

- Function:** Clear (mask) all the Memory Channels in a particular Memory Bank.
- ① After selecting Set Item 26, rotate the **DIAL** knob one click clockwise while pressing the [**FUNC**] key to enable the Memory Bank Clear function.
 - ② Key in the Memory Bank number (one digit) to be cleared (masked) from the keypad.
 - ③ You will see “Clear ...” on the display for a few seconds. The selected Memory Bank is now cleared out.
 - ④ Press the [**ENT(SET)**] key while pressing the [**FUNC**] key to exit to normal operation.

Set Item 27 [Copy Bank]

- Function:** Copy all Memory Channels in a particular Memory Bank and paste them to another (different) Memory Bank.
- To do this:
- ① After selecting Set Item 27, rotate the **DIAL** knob one click clockwise while pressing the [**FUNC**] key to enable memory clearing.
 - ② Key in the *Source* Memory Bank number, then key the *Destination* Memory Bank number (each one digit) from the keypad.
 - ③ Memory Bank Copy is now complete.
 - ④ Press the [**ENT(SET)**] key while pressing the [**FUNC**] key to exit to normal operation.

Set Item 28 [Swap Banks]

- Function:** Swap the all Memory Channels in the desired Memory Bank.
- To do this:
- ① After selecting Set Item 28, rotate the **DIAL** knob one click clockwise while pressing the [**FUNC**] key to enable the Memory Bank Swap.
 - ② Key in the two Memory Bank numbers (one digit each) to be swapped, using the keypad.
 - ③ Memory Bank Swap is now complete.
 - ④ Press the [**ENT(SET)**] key while pressing the [**FUNC**] key to exit to normal operation.

Set Mode

Set Item 29 [Vacant Memory]

Function: Display the number of vacant Memory Channels in each Memory Bank (and total vacant Memories in all Banks.)

To do this:

- ① After selecting Set Item 29, rotate the **DIAL** knob while pressing the **[FUNC]** key to display the number of vacant memories.
- ② Press the **[ENT(SET)]** key while pressing the **[FUNC]** key to exit to normal operation.

Set Item 30 [Copy Channel]

Function: Copy and paste the desired memory channel

To do this:

- ① After selecting Set Item 30, rotate the **DIAL** knob one click clockwise while pressing the **[FUNC]** key to enable the Memory Channel Copy.
- ② Key in the *Source* Memory Channel number (three digits) from the keypad, then key in the *Destination* Memory Channel number (three digits) from the keypad.
- ③ Press the **[ENT(SET)]** key while pressing the **[FUNC]** key to exit to the normal operation.

Set Item 31 [Swap Channels]

Function: Swap the Memory Channel data between the desired Memories.

To do this:

- ① After selecting Set Item 28, rotate the **DIAL** knob one click clockwise while pressing the **[FUNC]** key to enable the Memory Channel Swap.
- ② Key in the two Memory Channel number (each three digit) to be swapped from the keypad.
- ③ Memory Channel Swap is now complete.
- ④ Press the **[ENT(SET)]** key while pressing the **[FUNC]** key to exit to normal operation.

Set Item 32 [Meter Symbol]

Function: Select the S meter symbol

Available Values: ■■■/■■■/ >>>

Default: ■■■

Specifications

Frequency Range:	0.1000 MHz ~ 1299.9995 MHz (Cellular Blocked)		
Receiving Mode:	NFM/WFM/AM/SSB/CW		
Antenna Impedance:	50 Ω unbalanced, BNC receptacle		
Channel Step:	0.05/0.1/1/5/6.25/9/10/12.5/15/20/30/50/100 kHz		
Operating Temp.:	-10 °C ~ +50 °C		
Sensitivity:	0.1 ~ 5 MHz:	AM	1.5 μ V (10 dB S/N)
		SSB/CW	0.6 μ V (10 dB S/N)
	5 ~ 370 MHz:	AM	1.0 μ V (10 dB S/N)
		SSB/CW	0.5 μ V (10 dB S/N)
		NFM	0.5 μ V (12dB SINAD)
		WFM	1.5 μ V (12 dB SINAD)
	370 ~ 520 MHz:	SSB/CW	0.5 μ V (10 dB S/N)
		NFM	0.5 μ V (12dB SINAD)
		WFM	1.8 μ V (12 dB SINAD)
	520 ~ 1300 MHz:	SSB/CW	0.8 μ V (10 dB S/N)
		NFM	1.2 μ V (12dB SINAD)
		WFM	3.0 μ V (12 dB SINAD)
Memory Channels:	Regular Memories:	1000 Channels	
	“Skip” Memories:	100 Channels	
	Search Band Memories:	10 Channels	
	Dual Watch Memories:	10 Channels	
	Priority Memory:	1 Channel	
Supply Voltage:	2.2 ~ 3.5 V DC; Inner Battery (Nominal: 3.0 V DC)		
	9.0 V DC ~ 16.0 V DC (EXT DC)		
Current Consumption:	115 mA (Receive)		
	55 mA (Standby, Saver off)		
	15 mA (Standby, Saver on)		
AF Output:	90 mW (@Battery)		
	125 mW (@EXT DC)		
Case Size:	58 × 95 × 30 mm (W × H × D) w/o knob		
Weight:	Approx. 220 g w/battery & antenna		

Specifications are subject to change without notice.

1. Changes or modifications to this device not expressly approved by Yaesu Musen could void the user's authorization to operate this device.
2. This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions; (1) this device may not cause harmful interference, and (2) this device must accept any interference including interference that may cause undesired operation.
3. The scanning receiver in this equipment is incapable of tuning, or readily being altered, by the User to operate within the frequency bands allocated to the Domestic public Cellular Telecommunications Service in Part 22.

This device complies with RSS-210 of Industry Canada. Operation is subject to the following two conditions: (1) this device may not cause interference; and (2) this device must accept any interference, including interference that may cause undesirable operation of this device.

YAESU

... leading the way.SM

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