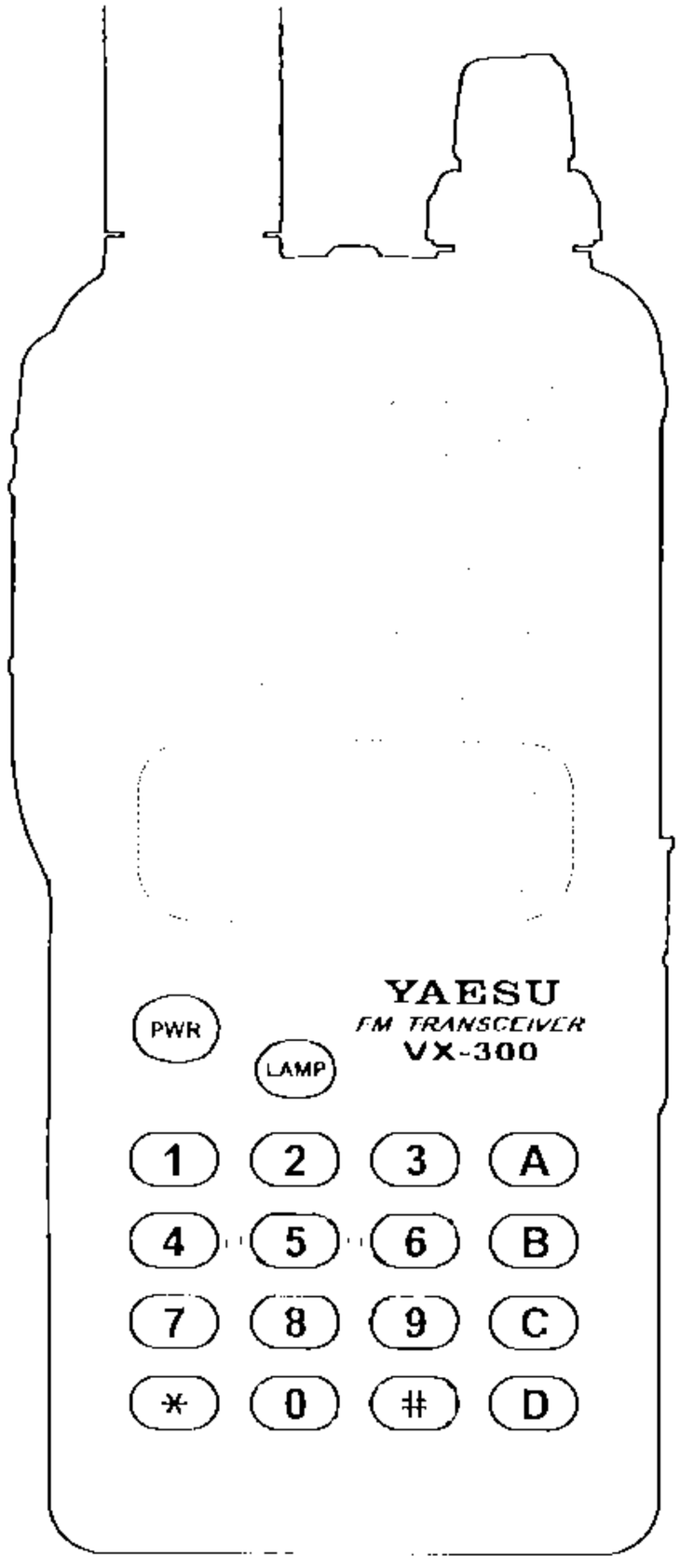


YAESU

VX-300

Programming Manual

This manual describes programming procedures for the VX-300 transceiver.

YAESU MUSEN CO., LTD.
1-20-2 Shimomaruko, Ota-Ku, Tokyo 146, Japan

YAESU U.S.A.
17210 Edwards Rd., Cerritos, CA 90703, U.S.A.
YAESU INTERNATIONAL DIVISION, (Caribbean, Mexico, Central & So. America)
7270 NW 12th St., Suite 320, Miami, FL 33126, U.S.A.

YAESU EUROPE B.V.
Snipweg 3, 1118DN Schiphol, The Netherlands

YAESU UK LTD.
Unit 2, Maple Grove Business Centre,
Lawrence Rd., Hounslow, Middlesex, TW4 6DR, U.K.

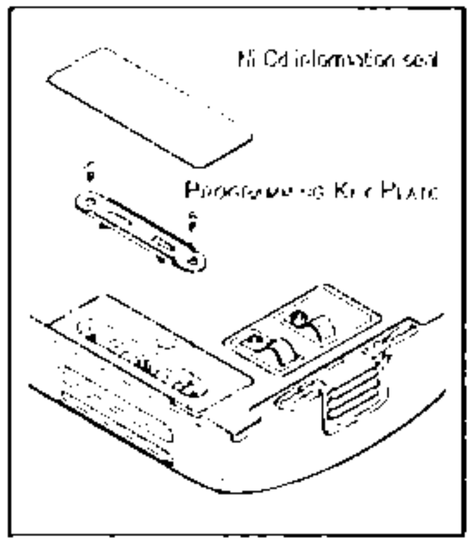
YAESU GERMANY GmbH
Am Kronberger Hang 2, D-65824 Schwalbach, Germany

YAESU HK LTD.
11th Floor Tsim Sha Tsui Centre, 66 Mody Rd.,
Tsim Sha Tsui East, Kowloon, Hong Kong

❒ Entering the Field Programming Mode

Here's how to set up the VX-300 for the Field Programming Mode:

1. Turn the VX-300 off, and remove the battery.
2. Peel off the Ni-Cd information seal from the back side of the VX-300, and remove the two screws exposed by the removal of the seal.
3. Mount the PROGRAMMING KEY PLATE into the VX-300, using the two screws removed in the previous step.
4. Replace the battery, and turn on the VX-300 *while pressing* the **PTT** button.
5. Enter the following four digit password from the keypad: [**0**]-[**3**]-[**0**]-[**0**].
   The VX-300 is now operating in the Field Programming Mode.
6. When programming of the radio has been completed, remove the PROGRAMMING KEY PLATE from the VX-300, and replace the two screws on the VX-300.
7. Affix the new Ni-Cd information seal, and replace the battery.



❒ Grouping Memories

Initially, the VX-300 is configured with one bank of 99 memory slots. You can program up to nine memory banks to hold different groups of memories. This is the procedure for establishing memory groups, and allocating the number of channels to those groups:

1. Press the [**D**] key momentarily, then press the [**LAMP**] key.
2. Turn the **Outer Ring** of the knob on the top of the radio until "GRP -16-" is displayed, then press the [**LAMP**] key again.
3. Press the [**LAMP**] key again to clear Bank 1 to zero slots, then turn the **Outer Ring** to allocate the number of channel slots you need in Bank 1 ("GRP 1 xx").
4. Press the [**LAMP**] key again to display Bank 2 (it always shows "0" slots at this point), and turn the **Outer Ring** to allocate the number of channel slots you need in Bank 2 ("GRP 2 xx").
5. Repeat Step 4 as many times as necessary to allocate the desired number of channels to the number of Banks to be used.
6. Finally, press and hold in the [**LAMP**] key for ½ second to save the new channel allocations, then press the **PTT** button to return to the frequency display.

❒ Frequency Programming

Simplex Memory Storage

1. Press the [#] key to show the "**A**" or "**B**" icon near the top center of the display.
2. Turn the **Outer Ring** to set the desired frequency.
3. Once the frequency has been selected, set up the following functions, if needed:
   - ❍ *Naming Memories* (see page 3)
   - ❍ *Offset Frequencies and Shift Direction* (see page 4)
   - ❍ *Tone Squelch Operation and Ringer Function* (requires the optional Tone Squelch Unit FTS-26; see pages 4~5)
4. Press and hold in the [**D**] key for ½ second, then turn the **Outer Ring** to select the desired slot for storage.
   If the frequency to be stored is in a channel Bank different from the current one, press and hold in the [**D**] key for ½ second; immediately thereafter, press in the [**D**] key *momentarily*, and turn the **Outer Ring** to select the required Bank. Now press the [**D**] key again momentarily, and rotate the **Outer Ring** to select the desired channel slot.
5. Press the [*] key momentarily to store the displayed data into the selected memory slot.

Storing an Independent Tx Frequency (other than "standard" repeater offsets)

All memories can be programmed to utilize an independent transmit frequency.

1. Store the receive frequency using the method already described under *Simplex Memory Storage* (any offset frequencies and shift direction will be ignored).
2. Tune to the desired transmit frequency.
3. Press and hold in the [**D**] key for ½ second to display the receive frequency's memory slot number (seen at the right side of the display) again.
4. Press and hold in the **PTT** button while pressing the [*] key momentarily (this does not key the transmitter) to store the transmit frequency into the selected memory slot.

FREQUENCY PROGRAMMING TIPS

① ***1 MHz Tuning Increments***

If you press the [**D**] key momentarily before rotating the **Outer Ring** while in the "VFO" mode, 1 MHz tuning increments can be obtained. These are ideal for rapid navigation over a wide frequency range.

② ***Tuning Step Increments***

The tuning steps utilized during frequency programming should obviously be compatible with the standard channel spacing in your region. Should you need to change the channel increments:

1. Press the [**D**] key momentarily, then press the [**7**] key. The indication "STEP x" will appear on the display.
2. Turn the **Outer Ring** to select the desired synthesizer step, then press the [**7**] key again to save the new setting and exit.

③ ***Direct Keypad Entry***

You can also enter a frequency directly from the keypad by keying in four or five digits: the last two MHz digits (10's and 1's), and two or three kHz digits (100's and 10's). How many digits you need to enter depends on your tuning steps (with 5- or 15-kHz steps, you have to enter five digits).

❍ Naming Memories

You can assign name tags up to four characters long to any desired memories.

To assign the name:

1. Recall the memory channel you wish to name by pressing the [✳] key momentarily and rotating the **Outer Ring** as needed.
2. Press the [**D**] key momentarily, then press the [**LAMP**] key.
3. Turn the **Outer Ring** to indicate "NAME -02-" on the display.
4. Press the [**LAMP**] key again momentarily, then turn the **Outer Ring** so that "- - - - ON" appears.
5. Press the [**LAMP**] key again momentarily. An underline cursor will appear at the leftmost digit location. Now turn the **Outer Ring** to select the first character of the channel label being programmed.
6. With the desired (first) character displayed, press the [**LAMP**] key momentarily. The cursor will move one digit to the right. Now turn the **Outer Ring** to select the next character.
7. Repeat the above steps until you have entered all the characters you want (up to four).
8. Press and hold in the [**LAMP**] key for ½ second to store the name in the memory, then press the **PTT** button to return to the frequency display.

❍ Offset Frequencies and Shift Direction

You can program repeater shifts for any memory channel, if desired.

1. Press the [**D**] key momentarily, then press the [**LAMP**] key.
2. Turn the **Outer Ring** to display "SHIFT -06-" to set up the *magnitude* of the repeater shift.
3. Press the [**LAMP**] key again momentarily. The indication "SHIFT 0.00" will appear on the display.
4. Turn the **Outer Ring** to select the desired repeater offset.
5. Press the [**LAMP**] key again momentarily to save the default repeater shift value.
6. Now turn the **Outer Ring** to display "RPTR -05-" for the purpose of establishing the repeater shift *direction* (plus or minus shift).
7. Press the [**LAMP**] key again, then turn the **Outer Ring** to select the required shift direction: "+RPT," "SIMP," or "-RPT."
8. Press the [**LAMP**] key again momentarily to save the shift direction, then press the **PTT** button to return to the frequency display.

❍ Tone Squelch Operation

1. Pressing the [**B**] key selects the CTCSS operating mode for the channel being programmed:
   "**T**" = CTCSS Encoder
   "**T SQ**" = CTCSS Decoder
   The first press of the [**B**] key activates the Encoder, while a second press of the [B] key will add the Decoder function (the optional FTS-26 Tone Squelch Unit must be installed in order for the Decoder function to be available).
2. Now that the CTCSS mode has been chosen, it is time to set the CTCSS frequency to be used. Press the [**D**] key momentarily, then press the [**B**] key. The indication "RX 88.5" will appear on the display.
3. Turn the **Outer Ring** to set the CTCSS *Decoder* tone frequency you require.
4. Press the [**D**] key again to change the display to "TX 88.5."
5. Turn the **Outer Ring** to set the CTCSS *Encoder* tone frequency you require.
   Note: If you are unsure of the CTCSS tone being used on the repeater system, press and hold in the [**B**] key for ½ second to initiate "Tone Search" operation. When a signal is received which bears a CTCSS tone, the radio will lock onto that tone and show it on the display.
6. Press the [**B**] key to save the new settings and exit.

❒ Dual Watch

1. Press the [**D**] key momentarily, then press the [**LAMP**] key.
2. Turn the **Outer Ring** to display "M DW -24-" on the LCD.
3. Press the [**LAMP**] key again, then turn the **Outer Ring** to select "M DW on" to allow the end user to activate Dual Watch.
4. Press the [**LAMP**] key again to save the new setting, then press the **PTT** button to return to the frequency display.

❒ Low Transmit Power

1. Press the [**D**] key momentarily, then press the [**LAMP**] key.
2. Turn the **Outer Ring** to display "M PW -25-" on the LCD.
3. Press the [**LAMP**] key again, then turn the **Outer Ring** to select "M PW on" so that the end user will be allowed to select Low transmitter power, if desired.
4. Press the [**LAMP**] key again to save the new setting, then press the **PTT** button to return to

❒ DTMF Autodialer

1. Press the [**D**] key momentarily, then press the [**LAMP**] key.
2. Turn the **Outer Ring** to display "MDMF -26-" on the LCD.
3. Press the [**LAMP**] key again, then turn the **Outer Ring** to select "MDMF on" to allow user access to the DTMF Autodialer.
4. Press the [**LAMP**] key again momentarily to save the new setting, then press the PTT button to return to the frequency display.

❒ Busy Channel Lock Out (BCLO)

The VX-300 may be set up to prevent the transmitter from functioning whenever a signal is being received.

To Activate BCLO:

1. Press the [**D**] key momentarily, then press the [**LAMP**] key.
2. Turn the **Outer Ring** to display "LOUT -18-" on the LCD.
3. Press the [**LAMP**] key again, then turn the **Outer Ring** to select between "BCLO" (disables the transmitter when a signal is present; if CTCSS Decode is active, the tones must match), "BTLO" (disables the transmitter when a signal is present that is without a CTCSS tone or which carries a CTCSS tone different from the one selected on this radio), or "oFF"(disables the Busy Channel Lock Out function).
4. Press the [**LAMP**] key again to save the new setting, then press the **PTT** button to return to the frequency display.

❒ Time-out Timer (TOT)

The time-out timer shuts off the transmitter after continuous transmission of 1 to 10 minutes. This is a very useful feature which prevents a "locked microphone" condition from inconveniencing other users.

To Activate TOT:

1. Press the [**D**] key momentarily, then press the [**LAMP**] key.
2. Turn the **Outer Ring** to display "TOT -17-" on the LCD.
3. Press the [**LAMP**] key again. The "TOT x" indication will appear on the display.
4. Turn the **Outer Ring** to select 1, 2, 3, 4, 5, or 10 (minutes), or Off.
5. Press the [**LAMP**] key again to save the new setting, then press the **PTT** button to return to the frequency display.

❒ Squelch Threshold Level

This function silences background noise when no signal is present.

To Set the Squelch Threshold Point:

1. Press the [**D**] key momentarily, then press the [**0**] key. The indication "SQL x" will appear on the display.
2. Turn the **Outer Ring** to set the squelch threshold (0 to 8) so that the receiver is just silenced. A higher number indicates that a higher signal level is required in order to open the squelch, so you may connect a signal generator to the antenna jack and inject a signal, if desired, to set the squelch threshold to a higher value than that which simply silences noise in the no-signal condition.
3. Press the [**0**] key to save the new setting and exit to the frequency display.

❒ Scan Resume Mode

The VX-300's scanner may be configured in one of two ways which causes scanning to resume once it has stopped on a carrier: either ⓣ after 5 seconds of "pausing" after halting on the signal, or ⓒ after the incoming signal stops transmitting (carrier drops out).

To Set the Scan Resume Mode:

1. Press the [**D**] key momentarily, then press the [**LAMP**] key.
2. Turn the **Outer Ring** to display "RESM -08-" on the LCD.
3. Press the [**LAMP**] key again to display the current setting ("5" or "CArr"), then turn the **Outer Ring** to choose the desired setting.
4. Press the [**LAMP**] key again to save the new setting, then press the **PTT** button to return to the frequency display.

❒ Beeper on/off

The keypad's beep tone generator can be disabled, should the user require that the VX-300 not emit any sounds.

To Disable the Keypad Beeper:

1. Press the [**D**] key momentarily, then press the [**9**] key. The indication "BEEP on" will appear on the display.
2. Turn the **Outer Ring** to select "BEEP off" to disable the beep tone generator.
3. Press the [**9**] key to save the new setting and exit .

❒ Battery Saver

The Battery Saver system reduces current drain during squelched monitoring by "putting the receiver to sleep" after the squelch closes, and then "waking it up" periodically to check for incoming signals. You can select from ten monitor/sleep ratios, from 1:1 to 1:10, or the ABS (Automatic Battery Saver) function, which automatically sets up a "sleep" ratio based on analysis of the incoming signal activity patterns.

To Activate the Battery Saver:

1. Press the [**D**] key momentarily, then press the [**4**] key. The "RSAV x" indication will appear on the display.
2. Turn the **Outer Ring** to select from the available ratios, or AbS, or oFF. When the Battery Saver is enabled, "***SAVE***" will appear near the bottom right of the display, blinking when the saver is functioning.
3. Press the [**4**] key to save the new setting and exit.

The procedures which follow are commonly-used features which may be pre-set on behalf of the user.

❒ Memory Hiding & Unhiding

There may be a need to "hide" a memory temporarily. For example, if a user has a need for two different sets of frequencies, each set being used for six months out of the year, it may be easier to install the total channel requirement, then "hide" the un-needed channels on a periodic basis. If you store a memory and hide it, the data you stored is still there and can be restored, until you overwrite it or reset the CPU. However you cannot hide Bank 1/ Channel 1 (this memory must always be accessible).

To Hide a Memory:

1. Press the [**D**] key momentarily, then press the [**LAMP**] key.
2. Turn the **Outer Ring** to display "MCLR -03-."
3. Press the [**LAMP**] key once more, then turn the **Outer Ring** to display the memory slot to be hidden at the right. "SET" appears at the left if the memory slot is not hidden. If "CLR" appears instead, it indicates that the selected slot is already hidden (or has not yet been used).
4. Press the [**LAMP**] key momentarily, then turn the **Outer Ring** one click, so that "CLR" is displayed.
5. Press the [**LAMP**] key again momentarily to save the new setting, then press the PTT button to return to the frequency display (If you were previously operating on the memory you just hid, operation will shift automatically to Bank 1/Channel 1).

To Restore a Memory:

1. Press the [**D**] key momentarily, then press the [**LAMP**] key.
2. Turn the **Outer Ring** to display "MCLR -03-" on the LCD.
3. Press the [**LAMP**] key momentarily, then turn the **Outer Ring** to display the memory slot you want to restore at the right. "CLR" appears at the left if the memory slot is hidden. If "SET" appears, it indicates that the selected slot is already unhidden.
4. Press the [**LAMP**] key momentarily, then turn the **Outer Ring** one click, so that "SET" is displayed on the LCD.
5. Press the [**LAMP**] key again momentarily to save the new setting, then press the PTT button to return to the frequency display.

When you have hidden some memories, be careful not to overwrite them accidentally: you will not be able to recover the previous contents if you do.

❍ Ringer Function

The Ringer function works in conjunction with the CTCSS Decoder, providing an alert bell when a matching CTCSS tone is received (superimposed on an incoming carrier). The "Bell" icon will also appear on the display to alert the user that a call came in, should the user not hear the Ringer while away from the radio.

To Activate the Ringer Function:

1. Press the [**D**] key momentarily, then press the [**LAMP**] key.
2. Turn the **Outer Ring** to display "BELL -13-" on the LCD.
3. Press the [**LAMP**] key again. The display will now show the default "BELL oFF" condition.
4. Turn the **Outer Ring** to select "BELL on" (which activates the feature).
5. Press the [**LAMP**] key again momentarily to save the new setting, then press the **PTT** button to return to the frequency display.

❒ BUSY/TX LED Disable

You can disable the BUSY/TX LED to conserve battery power.

To Disable the BUSY/TX LED:

1. Press the [**D**] key momentarily, then press the [**LAMP**] key.
2. Turn the **Outer Ring** to display "LGT -14-" on the LCD.
3. Press the [**LAMP**] key again. The "LGT on" indication will appear on the display.
4. Turn the **Outer Ring** to select "LGT off," which disables the LED.
5. Press the [**LAMP**] key once again to save the new setting, then press the **PTT** button to return to the frequency display.

❒ Display Lamp Mode

You can change the Display Illumination so that it lights up the LCD (for 5 seconds) every time a key is pressed or the Outer Ring is turned. Alternatively, it may be set up such that the LAMP button turns the illumination on and leaves it on until the LAMP key is pushed again.

To change the Illumination Setup:

1. Press the [**D**] key momentarily, then press the [**LAMP**] key.
2. Turn the **Outer Ring** to display "LAMP -15-" on the LCD.
3. Press the [**LAMP**] key again, then turn the **Outer Ring** to select between "5SEC" (the lamp lights for 5 seconds every time a key is pressed or the Outer Ring is Turned), "KEY" (the keypad and knob activate the lamp for 5 seconds), or "TGL" (the LAMP button toggles the lamp on and off).
4. Press the [**LAMP**] key again to save the new setting, then press the **PTT** button to return to the frequency display.

❒ DTMF Autodial Memory Programming

The VX-300 provides ten memories, numbered 0 through 9, for storing DTMF tone sequences of up to 15 digits each. These can be used for remote DTMF control or for telephone numbers when operating in a system patched through to the public telephone network.

To Store a DTMF Memory:

1. Press the [**D**] key momentarily, then press the [**3**] key to display the "TEL" icon on the display.
2. Press and hold in the [**D**] key for ½ second, then press one of the numbered keys corresponding to the DTMF autodial memory number you want to store. The right side of the display will show "x CH."
3. Press and hold in the [**D**] key for ½ second (the right side of the display will blink), and then key in the phone number you want to store. As you do so, the left side of the display will show the digit location number incrementing automatically as the entered digit is displayed to the right of it.
4. When the last digit of the phone number has been entered, press the [**LAMP**] key momentarily to terminate entry.
5. Turn the **Outer Ring** to review your stored number (or press the key corresponding to that memory to replay it). To store another DTMF Autodialer memory, press another numbered key to select a DTMF memory slot to store, if desired, repeating steps 3 and 4 above for each DTMF memory location.
6. Press the [**LAMP**] key momentarily to return to the frequency display.

❒ Clock Shift

In the unlikely event that CPU clock noise is present on a particular operating frequency programmed into the radio, you can shift the CPU clock frequency to avoid the CPU clock noise, which normally is so weak that it is inaudible even if the radio is tuned exactly to its frequency.

To Shift the CPU Clock Frequency:

1. Press the [**D**] key momentarily, then press the [**LAMP**] key.
2. Turn the **Outer Ring** to display "SFT -19-" on the LCD.
3. Press the [**LAMP**] key again. The "SFT off" indication will appear on the display.
4. Turn the **Outer Ring** to select "SFT on" to shift the CPU clock frequency.
5. Press the [**LAMP**] key again to save the new setting, then press the **PTT** button to return to the frequency display.

❒ DTMF Sequential Output

If this function is activated, multiple DTMF autodial memories will be transmitted sequentially when the appropriate keys are pressed in succession. For example, if the telephone system interface controller requires an "access code" prior to dialing, it might be entered into Autodialer Memory 1, and the telephone numbers in Autodialer Memories 2 through 5. The user can then press [**1**] → [**2**] to dial the access code plus the telephone number assigned to Memory 2, [**1**] → [**3**] to dial the access code plus the telephone memory assigned to Memory 3, etc., *without* having to wait for the access code to be finished before pressing the telephone number's memory key.

To Activate Sequential DTMF Autodial Operation:

1. Press the [**D**] key momentarily, then press the [**LAMP**] key.
2. Turn the **Outer Ring** to display "DCNT -20-" on the LCD.
3. Press the [**LAMP**] key again momentarily. The "DCNT off" indication will appear on the display.
4. Turn the **Outer Ring** to select "DCNT on" (to enable to sequential dialing).
5. Press the [**LAMP**] key again momentarily to save the new setting, then press the **PTT** button to return to the frequency display.

When the following Menu items are set to On," they will be enabled from the keypad in the Memory Only Mode. These are functions which may be accessed by the user *only* if that function is switched on by the Dealer/Installer using the setup procedures below.

❒ Channel Skip Scanning

1. Press the [D] key momentarily, then press the [**LAMP**] key.
2. Turn the **Outer Ring** to display "M CH -21-" on the LCD.
3. Press the [**LAMP**] key again, then turn the **Outer Ring** to select "M CH on" to allow the end user to designate channels to be "skipped" during scanning.
4. Press the [**LAMP**] key again to save the new setting, then press the **PTT** button to return to the frequency display.

❒ Reverse Tx/Rx Frequencies on the Split Memory Channel

1. Press the [D] key momentarily, then press the [**LAMP**] key.
2. Turn the **Outer Ring** to display "M RV -22-" on the LCD.
3. Press the [**LAMP**] key again, then turn the **Outer Ring** to select "M RV on" to allow the end user to be able to reverse the transmit and receive frequencies on the split memory channel(s).
4. Press the [**LAMP**] key again to save the new setting, then press the **PTT** button to return to the frequency display.

❒ Scanning

1. Press the [D] key momentarily, then press the [**LAMP**] key.
2. Turn the **Outer Ring** to display "M SC -23-" on the LCD.
3. Press the [**LAMP**] key again, then turn the **Outer Ring** to select "M SC on" to allow the end user to activate scanning.
4. Press the [**LAMP**] key again to save the new setting, then press the **PTT** button to return to the frequency display.

❒ Automatic Power Off (APO)

The Automatic Power Off system turns the radio off after a half hour, an hour, or eight hours of key inactivity.

To Activate the Automatic Power Off Function:

1. Press the [**D**] key momentarily, then press the [**5**] key. The "APO x" indication will appear on the display.
2. Turn the **Outer Ring** to select 0.5H, 1H, 8H, or oFF. When the APO is activated, the "Timer" icon will appear at the lower right corner of the display.
3. Press the [**5**] key to save the new setting and exit.

❒ Locking Selections

The degree to which controls and/or switches can be locked out by the user can be programmed according to the requirements of the user.

To Assign the Locking Scheme:

1. Press the [**D**] key momentarily, then press the [**LAMP**] key.
2. Turn the **Outer Ring** to display "LOCK -12-" on the LCD.
3. Press the [**LAMP**] key again. Any of " KL ", " DL ", and/or " PL " may be displayed at the top right on the display.
4. Turn the **Outer Ring** to select the items to lock:
   " KL " = KEYPAD Lock
   " DL " = DIAL (Outer Ring) Lock
   " PL " = PTT Lock
5. Press the [**LAMP**] key again to save the new setting, then press the **PTT** button to save the new setting and return to the frequency display.

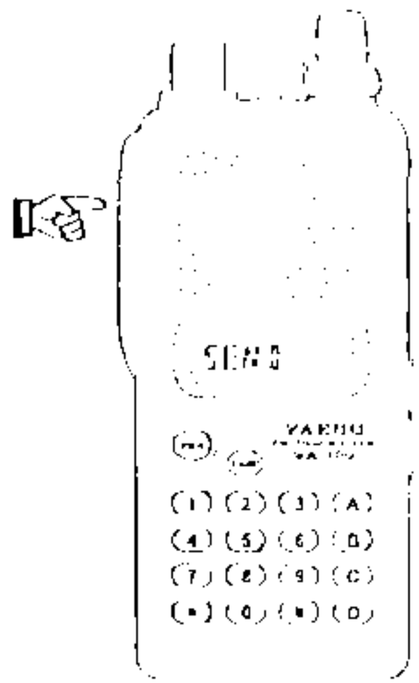
Once all frequency and operating configurations have been successfully stored into one VX-300, the memory contents may be cloned to another VX-300 unit or units, thus dramatically reducing programming time when setting up a fleet.

To Clone Memory Contents from one VX-300 to another VX-300:

1. Connect the MIC/EAR jacks of the two VX-300 together using a cable with a 4-contact plug at each end.
2. With both VX-300 transceivers turned off, turn each radio on while pressing and holding in *both* the **PTT** button and the [**LAMP**] key. "CLON" will appear on both VX-300s.
3. Press the **MONI** button of the *destination* VX-300; "LOAD" will appear on the display.
4. Press the **PTT** button on the *source* VX-300. "SEND" will appear (blinking) on this VX-300, and the display on the destination VX-300 should also start blinking as data is transferred.
5. If successful, "CLON" will reappear on both displays. Otherwise, one of the errors below may appear:

   ERR1 = cable or connection problem.
   ERR4 = low voltage: the EEPROM requires at least 3V to write. Try replacing the battery.

6. After correcting the problem, if you want to try cloning again, press the **PTT** button to reset the source VX-300, or turn the destination VX-300 off and back on (while holding the **PTT** button and [**LAMP**] key).



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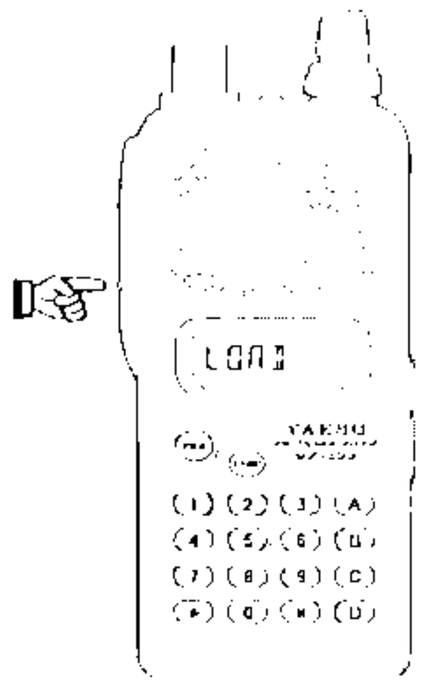

Destination

YAESU

...leaging the way.[SM]

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