A Beginner's Guide to the Yaesu FT-60R/E Handy-Talkie, version 3.6

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Copyleft protect this document[1].

This is a work in progress. Please send me your comments, corrections, and question. Rick KG7MQL@gMail.com

Background

I am a proud owner of a Yaesu FT-60R VHF/UHF Dual Band Transceiver. To say this radio does a lot is an understatement. The unit comes with an Operating Manual that is about ¼" thick. I thought I had seen such manuals before. You get 5 pages in English and the rest in other languages. Well, in this case, it was all in English and all important. That is a lot to absorb.

The best way I know of learning a subject is to explain it to others. This guide will help me learn. And who knows, maybe some beginner out there will find value in it too.

You have my permission to take a black marker and blot out *words* like "simple" and "easy" from the Operating Manual. Using these words is like going to a restaurant that has a sign telling you the food tastes "good". I guess eating their food would not inform you of the fact. Nothing is simple or easy if you don't know what to do!

Appendix 2 contains an alternate Table of Contents for the Yaesu FT-60R/E Operating Manual. This might be the most useful part of the Beginner's Guide.

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[1] You are free to distribute this document but not to change it.

Contents

You Will Need

The guide is intended to supplement the FT-60 R/E Operating Manual. This booklet should be marked on the back cover with a copyright of 2013[2]. This is important because I am linking to specific pages.

As you read, look for square brackets with one or more page numbers. For example, [6,7] points you to pages 6 and 7 of the Operating Manual.
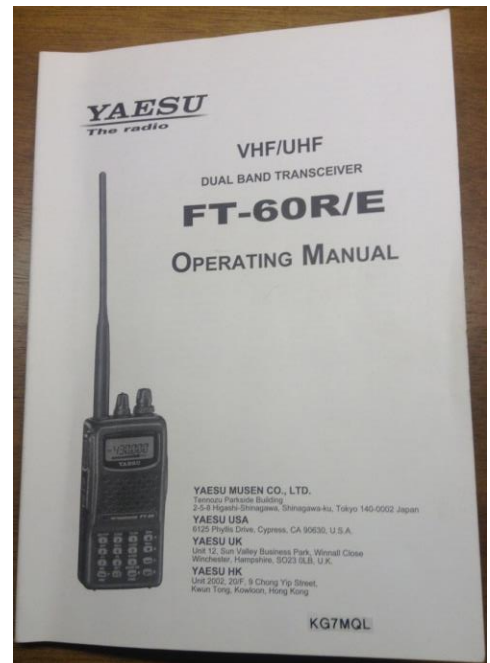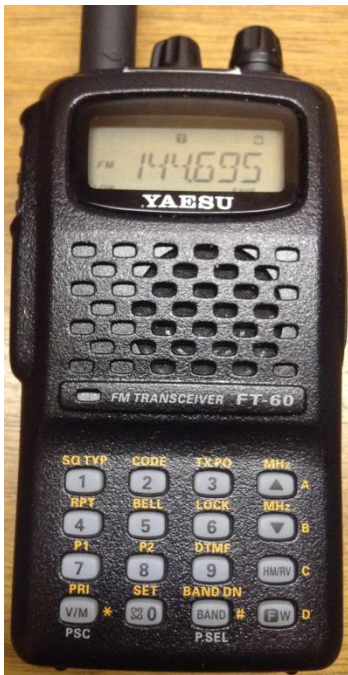
Along with a copy of the Operating Manual, you need to have your FT-60R or FT-60E in hand. It is pointless to read about a function and not try it out at the same time.

If you have an older version of the Operating Manual, the Beginner's Guide may still be of help but the page number may not match. You can locate older versions of the Operating Manual by searching the internet for "FT-60 Operating Manual" followed by the desired copyright date.

All procedures in this book were tested on my FT-60R which I bought in the USA. The FT-60E is for use within the European Union. They differ by the permanent data related to frequencies and signaling for each jurisdiction.

If you find that something does not work as specified, you may need to partially or fully reset the radio. See page 45 for details.

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[2] Barry Meyer WA9EQL tells me the 2015 version is identical.

At the bottom of some sections is a reminder of the key and knob sequence. If the reminder starts with "VFO-" it means you must be in VFO mode. "MEM-" means you must be in Memory mode. If neither is present, then the sequence works in both VFO and memory modes. All of these reminders have been collected and are presented in Appendix 1.

Each action is followed by a "/" except the last one.

"Dial" means you turn the Dial knob to select some parameter or state.

If only a key is shown, then you press it briefly. If the key is followed by " 1s" it means you press the key for about 1 second.

Appendix 2 holds an alternative Table of Contents for the FT-60 R/E Operating Manual. The topics have been organized in a different sequence so the page numbers are not always in order.

Overview

There are a huge number of functions available on the FT-60 and a limited number of keys and knobs. The solution chosen by the developers was to give almost every key three meanings [6,7]. Some meanings are selected by context while others depend on how long you hold down the key.

This time aspect was very confusing to me. You think you are pushing the right key but linger a little too long. Suddenly you are accessing a function you never saw before and have no idea how to escape. I will attempt to cover these unintended side trips as we move through the manual.

One critical thing to remember: no combination of key pushes can damage your radio with one exception.

Never press the Push To Talk key with the antenna disconnected. This can cause the transmitter part of the FT-60 to be damaged.

Operation: Switching Power On and Off [12]

If you have big fingers, it can be hard to turn the volume and power knob counterclockwise in order to turn the radio off. Listen for the click and don't be afraid to turn hard.

Operation: Adjusting the Audio Volume Level and Squelch Settings [12]

The left knob adjust audio volume. The right Dial knob has a
ring under it which controls squelch. This Dial knob is used for many functions and it is easy to let your fingers slip and turn the ring. If you find the radio is blasting noise or not picking up any conversation, check that the squelch knob setting is right.

Operation: Selecting the Operating Band [13]

If you see a number in the upper left hand corner, you are in Memory Mode so must change to **V**ariable **F**requency **O**scillator mode.
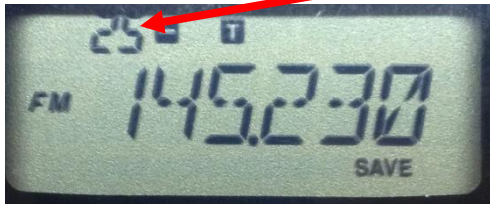
Press the V/M key (**V**ariable frequency oscillator mode/**M**emory mode) briefly and the number should go away. If V/M is held down too long, the radio will start scanning. No harm done, just let go of the V/M key and press it again briefly. You may need to press it briefly a second time.

With no number displayed in the upper left corner, you are in VFO (**V**ariable **F**requency **O**scillator) Mode. The radio can monitor any frequency from 108.000 MHz to 520.000 MHz and from 700.000 MHz to 999.9875 MHz. These two ranges are broken up into 5 bands. Note that the table shown here is slightly different from the book. All numbers are in MHz.

Knowing the correct top and bottom of each band is necessary if you plan to set up to scan an entire band [14]. For example, if you start your scan at 200.000 MHz, you will be scanning the 144 MHz band. But if you start at 200.050 MHz, you will be scanning the 250 MHz band. An alternate way to scan an entire band is presented on page 39.

Band	Frequency Range
144	108.000 - 200.000
250	200.050 - 299.9875
350	300.000 - 399.9875
430	400.000 - 520.000
850	700.000 - 999.9875

Selecting the Operating Band: VFO- **BAND** repetitively

Operation: Frequency Navigation [13]

It is essential that you are in the VFO mode before following these instructions. See page 9 for how to get to VFO mode.

1) Tuning Dial knob

As you turn the Dial knob clockwise, each click of the Dial knob moves you up in frequency. How much you move up is determined by the STEP parameter [77]. Counterclockwise moves you down in frequency by the same step size.

When the **F**W (**F**unction or memory **W**rite) key is active,
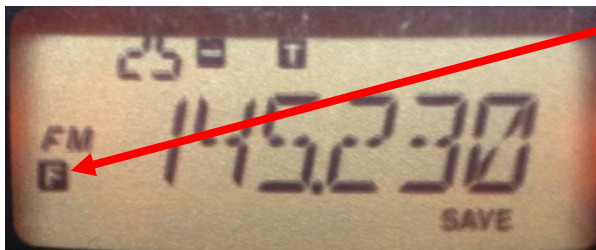
a small **F** appears in the lower left corner of the display in reverse video.

If you briefly press the **F**W key and then turn the Dial knob within 3 seconds, each click of the dial moves you 1.0000 MHz.

As long as you move the dial again within 3 seconds, you will continue to move in steps of 1.0000 MHz. If you press **F**W and within 3 seconds press it again, you will
have turned off the effect of the **F**W key.

Frequency Navigation: VFO- **FW/Dial**
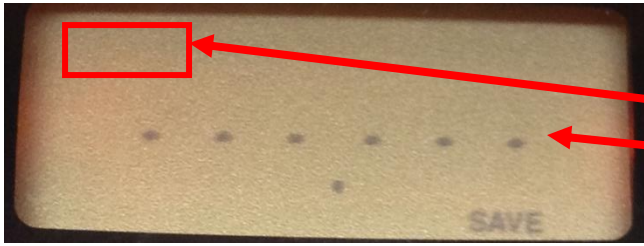
If you hold down the **F**W key too long, a number will start flashing in the upper left corner of the display and a series of dashes will appear where the frequency was displayed. Briefly press the **P**ush **T**o **T**alk key to abort[3]. You will not transmit.

2) Direct Keypad Frequency Entry [14]

You do not enter the decimal point as you enter the frequency.

If you start to enter a frequency and then change your mind, press the **P**ush **T**o **T**alk key to abort[4]. You will not transmit.

If you enter a frequency that is not a multiple of the step size [77], the radio will round it to the nearest valid value. For example, given a step size of 12.5 KHz, if you try to enter 145.5630 it will display as 145.5625 before you get a chance to enter the zero.

If you were using the VFO scanning function (see page 12), and the display stopped at an active frequency, you cannot enter a new frequency. You must first briefly press the Up or Down key before you can directly enter a frequency.

If you try to enter a frequency outside of the specified bands, the display will show **ERROR** for about 1 second and then revert back to the last valid frequency.

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[3] This is an "Easter Egg" sent to me by Steve Balch. It is a function not found in the Operating Manual.
[4] This is another "Easter Egg" sent to me by Steve Balch.

3)Scanning[14]

You must be in VFO mode to scan a range of frequencies (see page 9). If you are in Memory mode, you will scan a set of stored frequencies [37].

The scanning will begin at the current VFO frequency. If you push the Up key for about 1 second, the frequency will increment until it detects an active frequency or reaches the top of the band (see page 9). Then it will wrap around to the lowest frequency in that band.

Similarly, if you press the Down key, the frequency will decrement until it reaches an active frequency or the bottom of the band and then wrap around to the top.

If you press the up (or down) keys for less than 1 second, the displayed frequency will increase (or decrease) by the step size [77]. If you press the up or down keys for more than 1 second, scanning begins as if you let up on the key after 1 second.

Operation: Transmission [15]

While you can listen to all of these bands:

Band	Frequency Range
144	108.000 - 200.000
250	200.050 - 299.9875
350	300.000 - 399.9875
430	400.000 - 520.000
850	700.000 - 999.9875

you can only transmit on the 144 MHz and 430 MHz bands. The 144 MHz band is also called the 2 meter band and the 430 MHz band is also called the 70 centimeter band.

The FCC expects you to use the least amount of power necessary to communicate. This goal also extends the operating time of your battery.

If you press the FW key and then the TX PO (**T**ransmit **P**ower) keys and nothing happens, you might have selected a frequency outside of the valid transmit bands.

One thing that confused me was that if you select LOW or MID (medium) power levels, the display will show LOW.

Transmitting at full power for long periods of time can make the radio too hot to hold. If there is also a poor match between radio and antenna, the reflected energy can further add to the heat. In the worst case, the radio will indicate thermal overload and shut down.

Transmission Power: **FW/TXPO/DIAL/FW**

Repeater Operation

Many of the features of the FT-60 involve communicating via repeaters. Before we get into the settings related to repeater operation, let's review the basics.
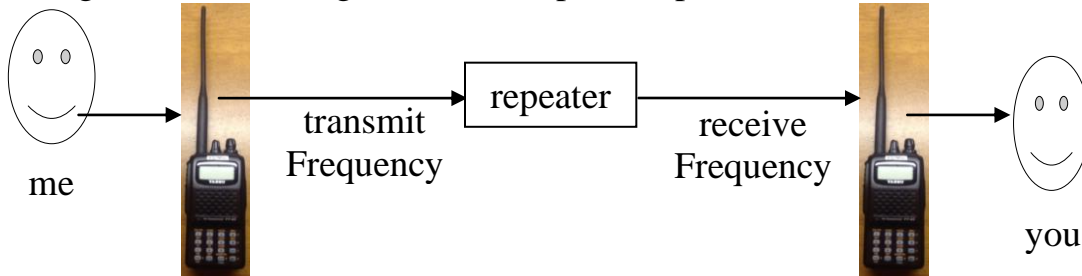
All of the repeaters I use have a specified frequency and offset.

Say the frequency is 440.000 MHz with a positive offset of 5.000 MHz. Before I press the **P**ush **T**o **T**alk key, the display shows 440.000 MHz. While I press the PTT key, the frequency rises to 445.000 MHz, a change of +5.000 MHz. This is the positive offset in action. I receive on a given frequency and transmit on a frequency 5 MHz higher. Why do that?

Consider what is happening at the repeater.
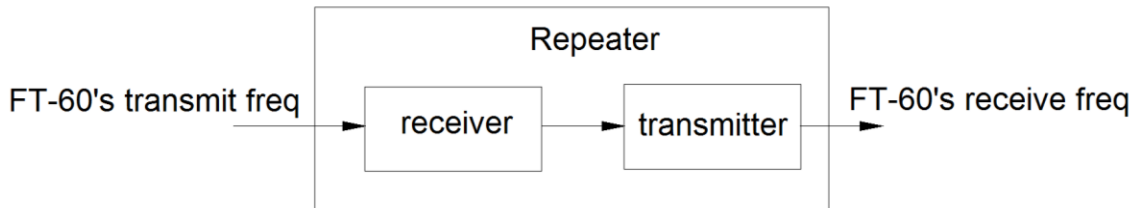
While I transmit from my FT-60, I am on 445.000 MHz (which is 440.000 + 5.000 MHz). The 440.000 MHz repeater is set up to receive at 445.000 MHz .

The output of the repeater's receiver is connected to its transmitter. Whatever comes in on the receiver immediately goes out via the transmitter but at 440.000 MHz.

By having the repeater receive at one frequency and simultaneously transmit on a different frequency, it can receive and transmit at the same time without having its receiver hearing what it is transmitting. If the repeater transmitted at the same frequency as it received, it would just spend its days listening to itself and ignoring you.

```
                        Repeater
                ┌──────────────────────────┐
FT-60's transmit freq    ┌──────────┐      ┌─────────────┐    FT-60's receive freq
─────────────────────→   │ receiver │ ───→ │ transmitter │ ───→
                         └──────────┘      └─────────────┘
                └──────────────────────────┘
```
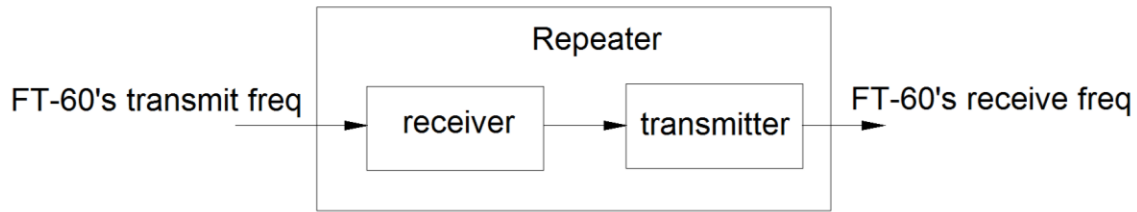
Let's think a minute about transmitting to a repeater. Say you use ½ watt of transmit power. You receive a report from your contact that your signal is "scratchy". The repeater's receiver performs a function called automatic gain control. If it receives a voice signal much larger than the background noise, it can reduce gain which reduces both your voice and the noise mixed in with it. If it receives a weak voice signal, it will amplify the weak voice signal along with the noise mixed in with it. This is why a strong signal sounds clear and a weak signal sounds noisy.

Regardless of the quality[5] of the signal into the repeater's receiver, the extracted audio passes to the repeater's transmitter. From there, the audio is transmitted at full power to your contact. The contact might receive a nice, strong signal but it might still be noisy if the audio out of the receiver was noisy.

You raise your transmit power to 2 watts and the report comes back that you sound fine. This means that the repeater's receiver got a signal from you much larger than the background noise. This is often called "full quieting". The clean signal is sent to the repeater's transmitter as before but now the contact hears a clear signal.

What if you raise your transmit power to 5 watts? Well, 2 watts was enough to get full quieting. Going higher in power simply wastes power. Your battery won't last as long. If you live in a hot climate, like I do here in Phoenix, Arizona, the radio can become too hot to hold with a bare hand. Using more transmit power than necessary is also counter to FCC guidelines.

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[5] Your signal does have to be strong enough to be recognized by the repeater but that doesn't mean it sounds very good.

Manual Repeater Shift Activation: Checking the Repeater Uplink (Input) Frequency [21]
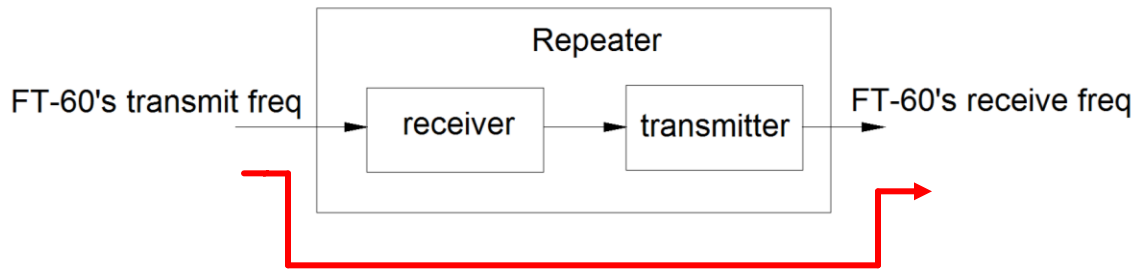
Consider the case where the signal coming into the repeater is so strong that you can receive it directly. Communicating without the repeater is called "Simplex" operation.

Say you are receiving a signal *from* the repeater and want to see if you can directly receive the signal being broadcast *to* the repeater. The repeater's transmitted frequency is offset from the frequency of the signal being received by the repeater as explained on page 15. By using the HM/RV key [21], you can jump from the repeater's transmitted frequency to the repeater's received frequency. The - indicator flashes until you press HM/RV a second time.

If you found that the signal being received by the repeater was sufficiently strong, you could move to a nearby frequency and free up the repeater for others to use.

Repeater Operation: Repeater Shifts [19]

Repeater Operation: Automatic Repeater Shifts (ARS) [19]

You must be in VFO mode (see page 9) in order to access this function.

In many cases you lock in a choice by pushing FW or V/M. But here you press the **P**ush **T**o **T**alk key to lock in your Automatic Repeater Shifts choice and return to VFO mode. In this case, pressing the **PTT** key does not cause the radio to transmit.

If you manually set an offset for a channel but have ARS active, then after you move to a different channel, ARS may change your manual setting if it does not agree with it.

Repeater Operation: Manual Repeater Shift Activation [20]

Manual Repeater Shift Activation: Checking the Repeater Uplink (Input) Frequency [21]

See page 17.

CTCSS/DCS Operation: CTCSS Operation [22]

Use the Dial knob.

I was confused by the Yaesu FT-60 Operating Manual's paragraph labeling of this section until I made the following changes:

- Step 2: put "a" after the 2
- Step 3: cross out 3 and put "b" in its place
- Step 3-1 ("You may notice a REV TN") cross out "1)" and put "c" in its place
- Step "2)" ("You may notice a DCS") cross out "2)" and put in "d" in its place
- Step 4: cross out 4 and make it 3
- Step 5: cross out 5 and make it 4
- Step 6: cross out 6 and make it 5
- Step 7 [23]: cross out 7 and make it 6

With this new labeling, it is clearer to me that rotating the Dial knob brings up various options.

I once ran into a repeater that supposedly required a CTCSS tone that was not in the table. I know of no way to set such a tone on the FT-60.

CTCSS Operation: **FW/1/DIAL to TONE/PTT/FW/2/DIAL to PL/FW**

CTCSS/DCS Operation: DCS Operation [23]
CTCSS/DCS Operation: Tone Search Scanning [24]
CTCSS/DCS Operation: Split Tone Operation [25]
CTCSS/DCS Operation: Tone Calling (1750 Hz) [26]

Memory Mode [27]

We have a memory space that contains user defined frequencies. Each address is called a Channel and they are numbered from 000 to 999. Each Channel holds a frequency plus other parameters. Let's focus on just frequency for now.

Channel 000	145.000 MHz
Channel 001	145.500 MHz
Channel 002	435.000 MHz
Channel 003	435.500 MHz
Channel 004	145.800 MHz

If I retrieve the data held in Channel 002, I will get 435.000 MHz in this example.

This channel memory space doesn't really have a name. The figure on [27] just refers to the individual channels and calls them Standard Memory Channels.

We also have a memory space that contains collections of what I call "pointers". A pointer is just a channel number. This space is divided into 10 Memory Banks.

For example, I could have a Memory Bank like this:

Pointer to Channel 010
Pointer to Channel 007
Pointer to Channel 042
Pointer to Channel 073
Pointer to Channel 128

I added "Pointer to" in the above table in order to differentiate these entries from the Channel Memory shown at the top of this page.

By selecting this Memory Bank, I will have access to only channels 10, 7, 42, 73, and 128. This would be handy if only these channels are operational within a given town. Change towns and I could change Memory Banks.

Any of the Memory Banks can contain a pointer to any Channel. So if you liked, all 10 Memory Banks could point to Channel 042.

The diagram on [27] implies that you can store both Standard Memory Channels pointers and PMS Memory Channel pointers in one or more Memory Banks. This is not correct. You can only store Standard Memory channels to Memory Banks.

Referring to the figure on [27], you see that following the Standard Memory Channels there are the PMS Memory Channels. As you turn the tuning knob to sequence through the channels, you should see 1 through 999, then 0 which is really 000, and then the L/U pairs of registers[6]. When I first got my radio, I seem to remember seeing the L/U pairs. But when I recently looked for them, they were gone. A partial reset of the radio restored them (see [64] and page 45).

Lesson learned: if the radio does not work as described, there might be damage to the data and/or software image that can be corrected by a reset. See page 44 for details on the different levels of reset. Doing a factory reset should be a last resort as this will erase your data.

Not shown in the figure on [27] is another set of memories used by the Smart Search Operation [48]. See also page 44.

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[6] See page 25 for an explaination of L/U.

Memory Mode: Memory Storage [28]

This section deals with storing frequencies and associated data into channels. It is not dealing with storing pointers. The task is performed in VFO mode.

If you are rotating the tuning Dial knob clockwise starting at Channel 1, then expect to see 1 through 999, then 0, and then the L/U pairs of registers.

Note: Channel 1 has a special meaning if you plan to use the Memory Channel Priority function. You may want to leave it blank for now (see page 42 for details).
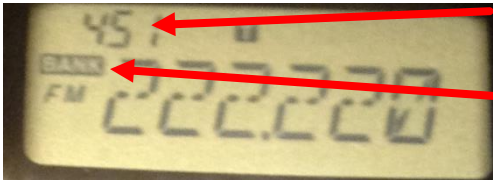
Memory Storage: MEM- **FW 1s/DIAL/FW**

## Memory Mode: Storing Independent Transmit Frequencies ("Odd Splits") [28]

Memory Mode: Memory Recall [29]

If you do not see a number in the upper left corner, then you are in VFO mode. Briefly press the V/M key and a number should appear.

If you see a number in the upper left corner, then you are in Memory mode and can proceed. Note that BANK is displayed below the number. This means that within Memory mode you are within one of the 10 Memory Banks. You are limited to scrolling through the channels stored in the selected BANK. See page 35 for how to select a Memory Bank.
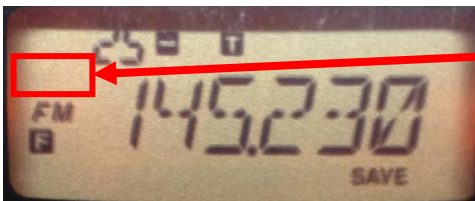
If you do not see BANK displayed below the number, then you are in Memory mode but "NO BANK" has been selected. This state lets you scroll through all Channels which is handy if you can't remember the channel numbers. See page 35 for how to select NO BANK.

Regardless of what Bank you are in, you can recall channels 1 through 999 by entering the Channel number and then pressing FW. To recall channel 000 you must enter 1000.

If you look back to the figure on [27], you will notice a dashed line joining the Standard Memory Channels to the PMS Memory Channels. The reason for this line becomes evident as you recall PMS Memory Channels. The last paragraph of Memory Mode: Memory Recall [29] explains the details. I can't say that it is all that user friendly.

> Memory Recall VFO- **VM/Dial**
> Memory Recall: MEM- **Dial**
> Memory Recall: MEM- **keypad numbers/FW**

Mapping of channel names to key strokes
This is useful when directly entering memory locations via keypad.

Channel	Number to access this channel
1	1
2	2
…	…
999	999
000	1000

Note: Channel 000 will display in the upper left corner as 000 and not as 1000.

See **[40]** for how Lower and Upper Program Memory Channels are used.

Lower Program Memory Channel	Number to access this channel
L01	1001
L02	1003
L03	1005
…	…
L50	1099

Upper Program Memory Channel	Number to access this channel
U01	1002
U02	1004
U03	1006
…	…
U50	1100

In the general cases we have:

$Lower\ channel\ access\ number = 999 + 2x$ and

$Upper\ channel\ access\ number = Lower\ channel\ access\ number + 1$

Where x is the channel number for the L/U pair.

For example, if we want to store data in L03 and U03, $x = 03$ so the
Lower channel access number $= 999 + (2 \times 3) = 1005$ and the
Upper channel access number is 1006.

Memory Mode: HOME Channel Memory [29]

Step "6" will only work if step "1" was previously executed. However, if REV/HM is set to REV, you can press FW and then HM/RV to bring up the HOME channel.

Memory Mode: Labeling Memories [30]

The sequence works but I will add a few comments that might make it clearer. Along with the generic steps necessary to label a memory, I will use Channel Memory 000 to illustrate the steps.
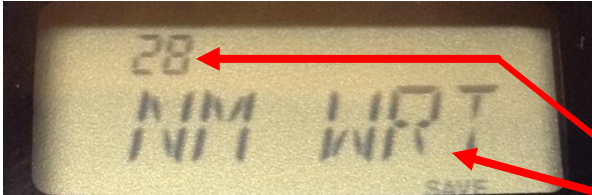
Step 2: *briefly* press the FW key, and then hold down the 0 key until the display changes.
This new display will have
a number in the upper left corner and
some text.

Step 3: When you rotate the Dial knob, the number and text should change. Stop when you get to 28, **NaMe WRiTe**. There does not seem to be a time limit for how long you stay in the SET mode.
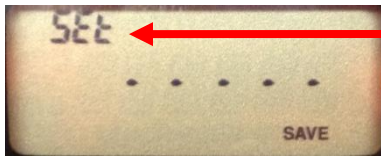
Step 4: It says to "press the FW key momentarily to display the previously stored label (if any)". Even if you do not want to see the previously stored label, you must execute this step.
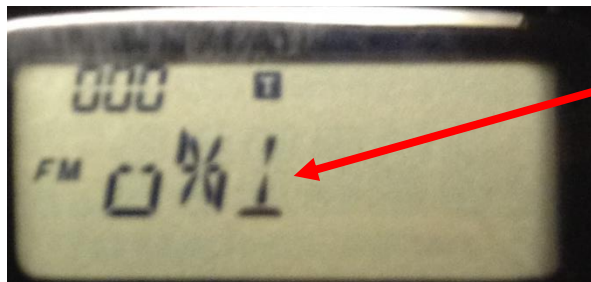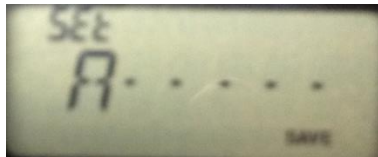
In Step 1, I selected Channel Memory 000. Here you see the previous name assigned to this address.
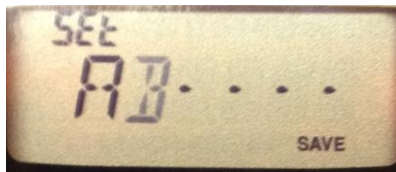
Step 5: I briefly pressed the FW key which replaces the previous name with all dots.

 ← In the upper left corner it says **SEt**.

 Step 6: I rotated the Dial knob and now see "A" as the first character of the new name.

 Step 7: I pushed the FW key and then turned the Dial knob until I saw "B".

 Step 8 is really not a step. It is a note telling you that the down key lets you move back to a previously input character.

 What they don't mention is that you can also use the up key to move to a character position to the right of your present location. You will hear a higher than normal frequency beep if you try to move beyond the defined characters.

They also don't mention that pressing the **P**ush **T**o **T**alk key now will abort the function. This does not cause you to transmit.

Step 10: Here you see that I have pressed and held the FW key for about 1 second which terminates the character input mode. If I had input all 6 characters, I would not need to do this step.

As you turn the Dial knob clockwise, you will see the following sequence:

[21 special characters] [0 - 9] [7 more special characters] [A - Z]

Step 11: By pressing the
Push **T**o **T**alk key, we save the new name to Channel Memory 000. So here is another case where you press **PTT** and not FW so save information.

You only can have 6 alpha-numeric characters for the tag but this can be enough if you do at little economizing. When the tag I want to input is too long, I start to remove vowels. So, for example, "Maricopa" becomes "MRCPA".

Memory Mode: To Display the alpha-numeric "Tag" (label): [30]

In step "1" they say to set the radio to Memory Recall mode. See page 24 for how to do this action.

Note in step "6" that you lock in the change by pressing the **P**ush **T**o **T**alk key on the side of the radio. In most other functions, pressing **PTT** aborts the function and data is often entered by pressing **F**W.

The decision to display frequency or tag is on a single channel basis. It is not possible to set all of the channels the same way with a single operation.

Memory Mode: Memory Offset Tuning [31]

This is the infamous "tun" mode that so many people accidently enable. Exit the "tun" mode by briefly pressing the **BAND** key.

The intent here is that you bring up a stored channel while in Memory Mode and then can use it as a starting point for *tun*ing to a different frequency.

In this example, I start with my desired channel, 36.

I then briefly press the **BAND** key until

I see "*tun*" (tune) in the display. This means I can now

rotate the Dial knob and the frequency will change.

Clockwise moves me up in frequency in steps defined by STEP [77].

Counterclockwise moves me down in frequency in steps defined by STEP [77].

When done, you can either press **BAND** again which will take you back to the stored frequency or press and hold the FW key to store the new frequency in memory (see step "5.").

Memory Mode: Deleting Memories [32]

Channel 000	145.000 MHz
Channel 001	~~145.500 MHz~~
Channel 002	435.000 MHz
Channel 003	435.500 MHz
Channel 004	145.800 MHz

We are talking about deleting entries in the Channel memory here and *not* about deleting pointers to this channel memory from within Memory Banks. That topic will be covered on page 36.

Refer to page 21 for more detail on Channel Memory versus Memory Banks.

Channel 001	(blank)

When the contents of a given Channel has been deleted, you will be unable to see that Channel number until you store a new frequency in that location.

The above also applies to the **U**pper and **L**ower register sets.

Deleting Memories: **FW 1s/DIAL/HMRV briefly**

Memory Mode: Moving Memory Data to the VFO [32]

This function moves a frequency stored in a Channel Memory into the Variable Frequency Oscillator register. Once in the VFO register, it acts the same as if you entered the frequency via the keypad. It also sets the offset, PL, and power to the values stored in this Channel Memory location.

When you follow the sequence correctly, the display will show **VFO-IN** for about 2 seconds.

Memory Mode: Memory Bank Operation [33]

Channel 000	145.000 MHz
Channel 1	145.500 MHz
Channel 2	435.000 MHz
…	…
Channel 999	145.800 MHz

Recall from page 21 that we have a memory that holds frequencies and optionally, repeater offset, PL, transmit power level, and name. I will call this the *Channel Memory*.

Each memory location is called a Channel and they are numbered 1 through 999 plus 000 (which is accessed by entering 1000).

We also have memories that hold pointers to the Channel Memory. There are 10 of these memories and are called Memory Banks. Each of these Memory Banks can hold anywhere from zero to all channels.

Notice in this example, Channel 7 appears in both Bank 1 and 2. There are no limitations on how many Banks contain pointers to the same Channel.

BANK 1
Channel 7
Channel 42
Channel 73
Channel 128

BANK 2
Channel 7
Channel 256
Channel 144
Channel 312
Channel 888

• • •

BANK 10
Channel 312
Channel 100

If you attempt to store the same Channel pointer a second time in a given Bank, you will delete the pointer in that Bank. See the next page for details.

Memory Mode: Assigning Memories to a Memory Bank [33]

This should really say: Assigning Memories to *One or More* Memory Banks

The basic idea is that you identify a single Memory Channel and then select which Bank you want to store its pointer. You can then either store the pointer in another Bank or terminate the function.

There is a twin function that will be presented on page 36: removing a pointer. You identify a pointer from within a bank and go through the same logic. The software understands that since the pointer is already in this Bank, you really want to remove it. So the Store/Remove logic is really a form of toggling a pointer on and off in a given Bank.

1. You must first recall the Memory Channel so that its pointer can be stored in a Bank. See page 24 for how to recall a Memory Channel.
2. Press and hold the **BAND** key for about one second. You will then see *SEL* flashing in the upper left corner and the current BANK displayed. In this example, "NO BANK" was selected. This is a reasonable choice since this gives you access to all Channels.
3. You have less than 3 seconds to turn the tuning knob and select the Bank you want. If in doubt, just start turning the knob back and forth. Then turn it to the desired Bank. As long as the knob is moving, you won't time out.
4. After you have selected the desired Bank, press the FW key for about1 second until you hear a beep.
5. The SEL indicator will continue to flash. This means you can select a *different* Bank and store the channel in it. In this way you can store the selected channel pointer in as many different Banks as you like. If you are done, either press the **PTT** key or wait 3 seconds.
6. You will go back to seeing the selected Memory Channel and you are no longer storing this pointer in Banks.

Assigning Memories to a Memory Bank: **Ch#/BAND 1s /knob/FW 1s/PTT**

Memory Mode: Memory Bank Recall [33]

1. Insure you are in Memory Mode by pressing V/M as necessary (see page 24)
2. Press and hold the BAND key until you see either "BANK" or "NO BANK". The SEL indicator will be flashing.
3. Within 3 seconds, rotate the Dial knob to select the Bank you want to recall. If the Bank number is flashing, it means this bank is empty so you cannot select it.
4. Momentarily press the V/M key to select this Bank.
5. If you selected a Bank, you should now see BANK displayed. If you selected NO BANK, then this indicator will not show.
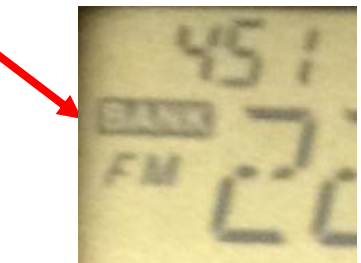
xxx

Memory Bank Recall: **BAND 1s /knob/VM**

Memory Mode: Removing Memories from a Memory Bank [34]

I would call this function "Removing *Channel pointers* from a Memory Bank". This function should not be confused with deleting the actual Channel data (page 36).

This function is the twin of *adding* Channel pointers to a Memory Bank (see page 34).

1. Move to the Bank containing the Channel pointer you wish to remove (see page 35)
2. Press and hold down the BANK key until you see SEL flashing and BANK followed by a number. This should be the Bank you have selected.
3. Within 3 seconds, press FW and hold it down until you hear a beep.
4. The selected Channel pointer has now been removed from this Bank.

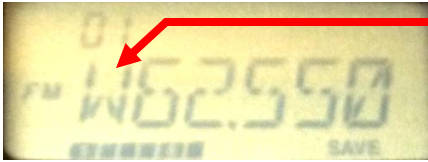Removing Memories from a Memory Bank: **BANK/FW**

Memory Mode: Memory Only Mode [34]

Weather Broadcast Channels [34]

Pressing the "1" key long enough brings up the set of weather broadcast channels. You can do this even when the radio is scanning.

Hold down the "1" key until you see a "W" as the first character followed by a number. This number is the frequency except that the leading "1" has been replaced with the letter.

Briefly press down the
Up or
Down keys to start scanning of the weather channels. Scanning will stop at the first active channel. Either tap the up or down key or

turn the tuning knob one click to start up scanning again. If not scanning, turning the Dial knob moves you through the weather channels one at a time.
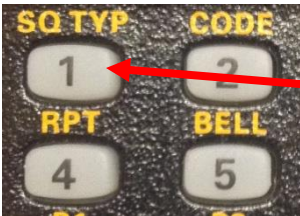
You can exit the Weather function by pressing and holding the "1" key. This will take you back to the mode you were in before entering the function.

The Operating Manual says that pressing the V/M will also cause you to exit the function. I found that this does not always work.

Francis Riegler contacted me because he found a discrepancy between what was displayed on his radio and the table on page 34 of the manual. I found a second one. #02 displays W62.400 but the book says 165.400. #07 displays W62.525 but the books says 165.525. I guess the book is wrong. Thanks Francis!

Scanning [35]

The Operating Manual says that when the scanning function stops when an active channel is found and you are then able to talk to the station if desired. This depends on frequency. The Specifications [79] show the wide range of receive frequencies and the relatively narrow range of transmit frequencies.

Scanning: VFO Scanning [35]

Manual VFO Scan

When an active channel is detected, scanning will pause or stop depending on the Scan-Resume technique [35] defined. This state is indicated by flashing the decimal point.

You can cancel scanning by briefly pressing the **PTT** key. This does not cause the radio to transmit.

Programmed VFO Scan [36]

You must start out in the VFO mode (page 9). You press and hold the BAND key for 1 second and will see a "P" in the upper left corner of the display. You have less than 3 seconds to turn the Dial knob before you revert back to VFO mode.
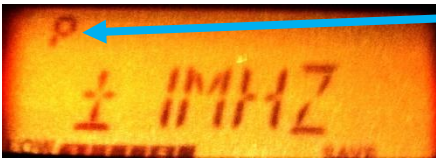
As you turn the tuning Dial knob, the display will show various bandwidths for the Programmed VFO scanner: ±1 MHz, ±2 MHz, and ±5 MHz. I assume this is the bandwidth of the receiver. Do not confuse the bandwidth with the amount the VFO advances as it moves along the band.

You are also shown the option "ALL", PMS*X* (**P**rogrammable **M**emory **S**can, *X* is a number), and "BAND". Select ALL if you want to scan all 5 bands.

When Programmed VFO Scanning is occurring, you will see PSC (**P**rogrammed **SC**anning) in the upper left corner.

Select BAND if you only want to scan the band that contains the initial VFO frequency.

Here you see a frequency within the 144 MHz band. The VFO would scan from 108.000 MHz to 200.000 MHz and then repeat.

Scanning: Memory Scanning [37]

When you cancel scanning by pressing the **PPT** key, you do not transmit.

Even when the display is showing a name rather than a frequency, pause is indicated by a flashing decimal point.

Scanning: How to Skip (Omit) a Channel during Memory Scan Operation [37]

I see no parallel function for skipping individual frequencies while in VFO scan mode.
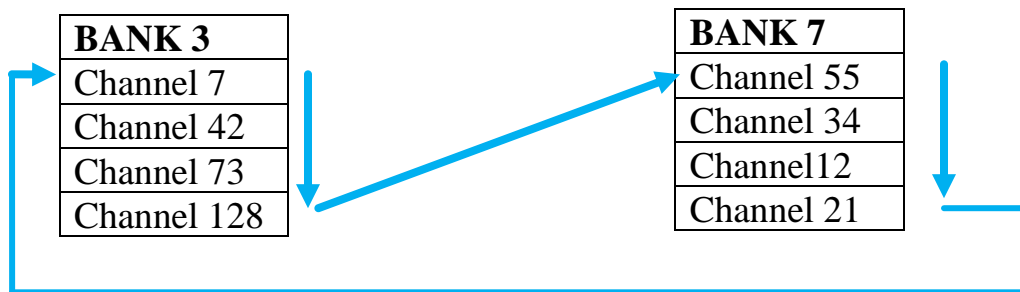
Scanning: Preferential Memory Scan [38]

This feature lets you mark any Channel to be on the preferential memory scan list. You can then enable Preferential Memory Scan and only channels on the list will be scanned.

This appears to give the user the same functionality as placing all of these Channel pointers in a single Bank and then scanning that bank. So in a way, you get one extra Bank with this feature.

Scanning: Memory Bank Scan [39]

I would call this Memory Bank **Link** Scan. If you just want to know how to do Memory Bank Scanning, see page 40 and [37].

This function lets you link 2 or more Banks together for the purpose of Channel scanning. So you might have Bank 3 populated with Channels near one town and Bank 7 populated with Channels near an adjacent town. If you are between these two towns, you might want to link Bank3 and Bank 7 so you scan both sets of Channels as if they were in the same Bank. A given Bank can only be in the Link Scan list once. If a given Bank is in the list and you attempt to put it in again, this action will remove that Bank from the list.

BANK 3
Channel 7
Channel 42
Channel 73
Channel 128

BANK 7
Channel 55
Channel 34
Channel12
Channel 21

Scanning: Weather Alert Scan [39]

Scanning: Programmable (Band Limit) Memory Scan (PMS) [40]

Scanning: "Priority Channel" Scanning (Dual Watch) [41]

While primarily monitoring one Channel, you can periodically check another channel for activity.

VFO Priority

1. See page 24 for how to recall a memory channel.
2. Briefly press V/M and you should go to VFO mode
3. Briefly press FW and the briefly press V/M
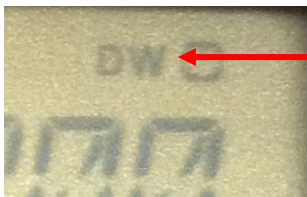
The **D**ual **W**atch indicator will then become visible.

About every 4 seconds the radio jumps to the Dual Watch channel to check for activity.

If you are in VFO mode with Dual Watch active and change to Memory mode, you deactivate Dual Watch.

You can manually change the VFO but scanning does not work.

Memory Channel Priority

This is the first mention of the fact that Memory Channel 1 is special. Whatever is in Memory Channel 1 will be used as the Priority Channel. The book says it checks the Priority Channel every 5 seconds but I see more like 3 or 4 seconds. I'm sure this varies depending on what else the radio is doing.

HOME Channel Priority

WX Channel Priority[42]

You are free to select any Memory Channel to be the Priority Channel rather than being confined to Memory Channel 1.

An aside:
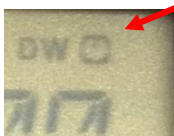
I kept forgetting to turn off the radio so just set it up to Auto Power Off after 0.5 hours. That turned on this clock icon.

Scanning: Priority Revert Mode [42]

You must be in Dual Watch mode in order to use this function. Note that the setting is entered by pressing **PTT**.

Scanning: Automatic Lamp Illumination on Scan Stop [43]

Note that the setting is entered by pressing **PTT**.

Scanning: Band Edge Beeper [43]

Note that the setting is entered by pressing **PTT**.

EPCS (Enhanced Paging and Code Squelch) [44]

Storing the CTCSS Tone Pairs for EPCS Operation

Activating the Enhanced Paging and Code Squelch System Paging Answer Back

Emergency Features: Emergency Channel Operation [46]

Emergency Automatic ID (EAI) Feature[46,47]

Smart Search Operation [48]

Setting the Smart Search Mode [48]

Storing Smart Search Memories

Internet Connection Feature [49]

I have heard a lot of interest in this feature but it is always related to how to turn *off* *WiRes™*. The most detailed instructions can be found at

http://wa3fkg.blogspot.com/2010/02/something-every-ft-60-owner-should-know.html

The basic idea is to first insure that the memory location used to hold the transmitted DTMF string is empty. Then tell the software to use this memory location when WiRES is active. So if WiRES is not active, no harm done. If it accidently gets activated, no tones are transmitted.

It is not clear if you still get the initial 0.1 second blanking at the start of the transmission if there is nothing to transmit.

ARTS™ (Automatic Range Transponder System) [51]

Basic ARTS Setup and Operation

ARTS Polling Time Options [52]

ARTS Alert Beep Option [52]

CW Identifier Setup [53]

This feature of ARTS automatically transmits your call sign in CW every 10 minutes. Too bad it only works if ARTS is active.

Dual Tone Multi Frequency (DTMF) [54,55] (Echolink)

John Powell wanted to access Echolink. Here is how he did it:

1. Verify you are within range of a repeater that is connected to Echolink. If in doubt, check your Echolink app or program on your desktop computer. You do have to be registered with them to gain access.
2. Press FW and then the "9" button (it has "DTMF" above the key). If you see MEM, you fell into memory mode (Memory Mode: Memory Storage [28]). The word CODE should appear on the screen for less than one second. If you do not see CODE, repeat step 1.
3. Hold down the transmit key.
4. Press the "9" button four times.
5. Release the transmit key.

Echolink should respond. If it does not, repeat the procedure.

Reset Procedure [64]

There are a total of 4 levels of reset. The lowest level resets the Set Menu mode data to factory defaults. The highest level clears everything.

If you have all radio data stored on a PC and can restore via a cable, then you might as well clear everything first. But if you must manually input data, I recommend you start with the lowest level reset, see if that fixed the problem, and escalate as needed.

Jack Travis suggested removing the battery from the radio (for a few seconds) and then putting it back in. He has found that this solves 90% of his errant software behavior problems.

Acknowledgments

Thanks to the following people for making suggestions and corrections to this guide: Brian Scott (N0PGH),Jardy Dawson (WA7JRD), Jack Travis (AE8P), Sam Cook (ACØOK/R), David Audley (KB3DRA), Dale Martin (KG5U) and Jeff Vanderklipp (N8OSS). Thanks to Nicole Crosby (N7XBY) for reading the guide so closely that she found typos no others saw. Thanks to Francis Riegler for finding the discrepancy between what is displayed for weather radio frequencies and what is shown on page 34 of the manual.

Thanks to Dennis Bruna (K0DGB) for the suggestion to put my contact information where it would be easy to find.

Thanks to Gustavo Merle for pointing out that the table of contents was "dead" and providing a way to fix it.

Thanks to Dean Herrington for finding typos and suggesting improvements to clarity.

Thanks to Ernie Murphy (NH7L) for pointing out a clarity issue.

Thanks to Geof Schwer for finding a typo that has been there since day 1.

Thanks to Jim Weisgram (KJ7DMV) for suggesting a change to improve clarity. I used it verbatim.

Thanks to John Powell for figuring out how to access Echolink and sharing it with us.

I welcome your comments and questions.

If you wish to be contacted each time I update this guide, email me with just "FT-60 Alias" in the subject line.

Rick Sparber
KG7MQL@gmail.com
Rick.Sparber.org

Appendix 1: Operation Reminders

Cases

Appendix 2: Alternate Table of Contents for the FT-60 R/E Operating Manual

See next page.

Print 2 pages per sheet double sided. The print sequence should be pages 52, 49, 50, 51. Be careful to have the back right-side-up with respect to the front. Fold in half so it makes a booklet and trim the bottom to fit inside the Operating Manual.

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Yaesu FT-60 R/E Operating Manual

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