Cat. No. 19-1104

OWNER'S MANUAL

Please read before using this equipment.

HTX-400

Mini Handheld 70cm FM Amateur Transceiver

RadioShack®

FEATURES

Your RadioShack HTX-400 Mini Handheld 70cm FM Amateur Transceiver is compact and lightweight, making it easy to carry almost anywhere. The crystal controlled circuitry provides accurate and stable channel selection, making it an ideal choice for your amateur communications needs.

Note: You must have a Technician Class or higher Amateur Radio Operator's License, and a call sign issued by the FCC, to legally transmit using this transceiver. Transmitting without a license carries heavy penalties. Getting a license is easier than ever. See "Introduction to Amateur Radio" on Page 7 for more information.

Here are some of your transceiver's features.

200 mW/2 Watt Output — the transceiver automatically transmits at 200 mW output when powered by internal batteries, or at 2 Watt output when powered by an external 9-volt power source.

CTCSS (Continuous Tone Coded Squelch System subaudible tone) — helps reduce interference from other nearby systems operating on the same frequency. Encoding and decoding tone unlocks squelch when received.

Repeater Offset — lets you select an appropriate offset value to match a local repeater.

Scan — the transceiver scans frequency range and memory channels for transmissions.

Power Save — conserves battery power when the transceiver is not transmitting or receiving.

Programmable Frequency Steps — let you set the frequency increment for tuning or scanning to 5, 10, 12.5, 15, 20, 25, 50 kHz, or 1 MHz steps.

Alert Melody — you can set the radio to play a short, selectable melody when it transmits, and play the same melody when it receives a tone encoded signal.

Signal Strength Indicator — a graduated bar shows the relative strength of the received signal.

Time-Out Timer — lets you set a maximum transmission time interval from 0 to 990 seconds to make the best use of repeater transmission time.

Busy Channel Lock Out — prevents transmitting while the selected channel is receiving a signal.

TX Delay — continues transmitting to prevent noise at the end of a transmission as you release the push-to-talk (PTT) button.

Scan Delay — delays restart of scanning when the radio locks onto a channel.

Earphone Jack and External Microphone Jack — let you connect an optional earphone, external microphone, or combination headset for more flexible operation.

External Power Jack — lets you use an external power source for maximum output.

30 Memory Locations — let you store up to 30 frequencies and other settings.

Back Light — makes your transceiver easy to operate in low-light situations.

Key Lock — lets you lock the transceiver's keys to prevent accidentally changing settings.

We recommend you record your transceiver's serial number here. The number is on the transceiver's back panel.

Serial Number _____

MANUAL CONVENTIONS

Your transceiver's buttons perform multiple functions. The abbreviation or symbol for a function is printed on, below, or above each button.

To activate certain transceiver features, you must press **FUNC** (function) and another button at the same time. Those key combination instructions are printed as first button name, +, then the second button name. For example, **FUNC**+**LOCK** means hold down **FUNC** while you press **LOCK**.

Button names are printed in small, bold, capital letters such as **BEEP** or **SC**. Words, symbols, and numbers that appear on the display are printed using a distinctive typeface such as **446.000** or **BUSY**.

FCC INFORMATION

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 received, including interference that may cause undesired operation.

CONTENTS

INTRODUCTION TO AMATEUR RADIO

Your transceiver is the perfect first radio for anyone entering the exciting world of amateur radio as well as a great additional transceiver for the experienced amateur radio operator. Your transceiver opens a door for you to the world from almost anywhere! All you need is an Amateur Radio Operator's License (Technician Class or higher) issued by the Federal Communications Commission (FCC). If you do not have a license, it is easier than ever to get one and help from licensed operators is available. Here are a few tips to help you get started.

You can turn on your transceiver and scan the entire band to hear what is going on. **However, do not attempt to transmit until you get your license**. If you transmit without a license you are in violation of federal law that can lead to severe penalties. Note that ham operators take the FCC rules very seriously and want nothing to do with "bootleggers" — their term for people who operate without a license.

Find out if there is a ham radio club in your area. Most clubs welcome newcomers and are glad to help you get your license. There are thousands of clubs across the country, so there is probably one in or near your own community. Often, the staff at your local RadioShack store can help you locate a club.

If you do not hear anyone talking about a local club in your area as you listen to local transmissions, write to the American Radio Relay League (ARRL), at the following address, to find out how to contact a local affiliate. The ARRL is the national organization representing amateur radio in the United States. The league has more than 150,000 members. Most are ham operators, or members in the process of obtaining their license.

The American Radio Relay League
225 Main Street
Newington, CT 06111

http://www.arrl.org

Start studying for the license exams. Do not be intimidated by the word "study," for most people can go from knowing absolutely nothing about amateur radio to passing the Novice and Technician written exams in less than a month.

The exams test your knowledge of basic radio regulations and elementary radio theory. Many clubs hold license classes which can be a fun and easy way to learn about amateur radio. There are good books, cassette tapes, computer programs, and many other study aids available. Your local RadioShack store sells *FCC License Preparation* study guides for amateur radio operator licenses. While you are no longer required to learn Morse code for a Technician Class license, we encourage you to learn it anyway so you can advance to higher levels of operating privileges.

The examiners for a Novice license test can be any two ham operators who hold a general or higher class license and who are at least 18 years old and are not related to you. There is no fee to take the Novice exam. As soon as you pass the Novice exam, you can immediately take the Technician exam. There is a small fee required for taking the Technician exam, and the test must be administered by a three-member Volunteer Examiner Team. Contact the ARRL for a schedule of exam opportunities in your area.

The Technician Class license lets you use the HTX-400 to communicate directly with other operators, and use repeaters for distant communication.

The ARRL staff helped us prepare this section of the Owner's Manual. Amateur radio is a great hobby that has enriched the lives of millions of people all over the world. The ARRL would be glad to hear from you if you need more information or would like to join!

PREPARATION

POWER SOURCES

You can operate your transceiver from either of two power sources:

- internal batteries
- vehicle battery power (using an optional DC adapter)

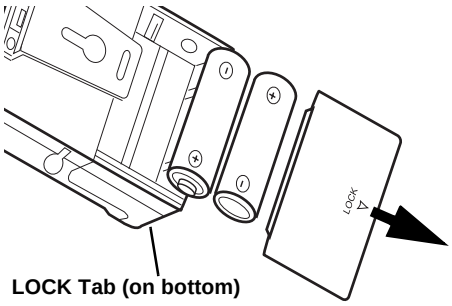
Using Internal Batteries

Your transceiver can use two AA batteries (not supplied) for power. For the best performance and longest life, we recommend RadioShack alkaline batteries.

Cautions:

- Use only fresh batteries of the required size and recommended type.
- Do not mix old and new batteries, different types of batteries (standard, alkaline, or rechargeable), or rechargeable batteries of different capacities.

Follow these steps to install batteries.



LOCK Tab (on bottom)

1. Move the **LOCK** tab in the opposite direction of the marked arrow on the bottom of the transceiver.

2. Press down and slide the battery compartment cover in the direction of the arrow marked on the cover.
3. Put the batteries into the compartment and on top of the attached ribbon according to the polarity symbols (+ and –) marked inside the compartment.
4. Replace the cover and slide the **LOCK** tab on the bottom to secure the cover.

Testing Internal Batteries

To test the battery strength, rotate **VOL/OFF** clockwise on the top of the radio until it clicks, then press **C**. **C** appears in the lower right corner of the display. Then hold down the push-to-talk button and **MO** at the same time. **BAT** appears and the graduated bar next to **BAT** indicates the battery strength. If the batteries are weak, the battery symbol shows less than 4 bars. Replace both batteries as soon as possible.

Cautions:

- Dispose of old batteries promptly and properly. Do not burn or bury them.
- If you do not plan to use the transceiver with batteries for a two week period, remove the batteries. Batteries can leak chemicals that can destroy electronic parts.

Using Vehicle Battery Power

You can operate the HTX-400 from your vehicle's battery using a DC adapter such as RadioShack Cat. No. 273-1815.

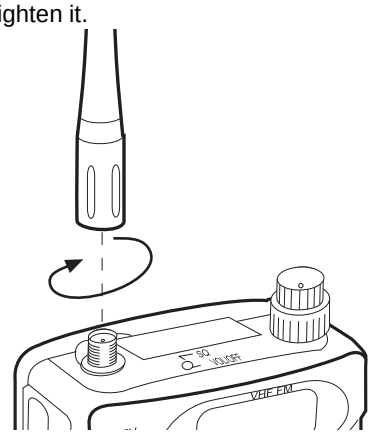
Cautions:

- You must use a power source that supplies 9 volts DC and delivers at least 800 mA. Its center tip must be set to positive, and its plug must fit the transceiver's **DC 9V** jack. The recommended adapter meets these specifications. Using an adapter that does not meet these specifications could damage the transceiver or the adapter.
- Always plug the adapter into the transceiver before you plug it into the cigarette-lighter socket, and unplug the adapter from the cigarette-lighter socket before you unplug it from the transceiver.

1. Set the adapter's voltage switch to 9V.
2. Insert the 3.8 mm outer diameter/1.1 mm inner diameter plug (Cat. No. 273-1712, not supplied) into the adapter's cord, so it reads +TIP.
3. Insert the plug into the HTX-400's **DC 9V** jack.
4. Plug the other end of the adapter into the cigarette-lighter socket in the vehicle.

CONNECTING THE ANTENNA

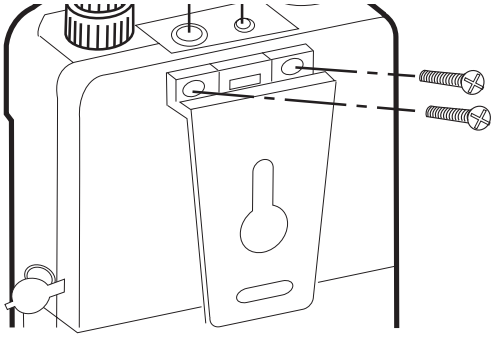
Place the threaded base socket of the supplied antenna over the antenna connector on top of the transceiver and turn the antenna clockwise to tighten it.



Caution: Do not overtighten the antenna

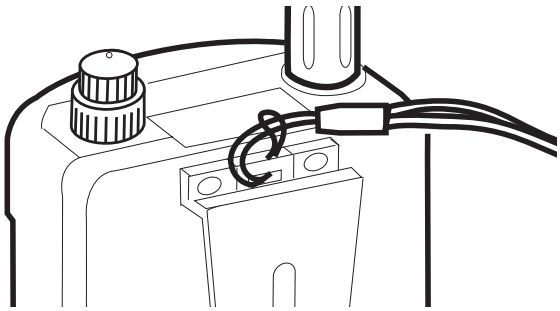
ATTACHING THE BELT CLIP

Use a Phillips screwdriver and the two supplied screws to attach the supplied belt clip to your transceiver. Do not overtighten the screws.



ATTACHING THE WRIST STRAP

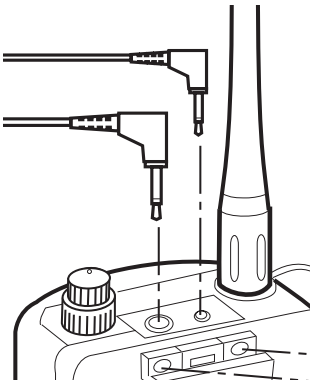
Attach the supplied wrist strap to the top of the belt clip, thread the strap's small loop through the opening in the top of the clip. Then insert the longer loop through the smaller loop. Pull on the strap until the loop is tight.



CONNECTING A MICROPHONE/ SPEAKER

You can connect an external communications headset, consisting of a microphone and speaker, to the transceiver so you can use it privately. Lift the hinged, rubber dust cover from the **MIC** and **SPK** jacks on the top of the transceiver, then insert the plug of an optional voice activated headset with microphone, such as Cat.No. 19-312, or an optional communication headset, such as Cat. No. 19-316, into the jacks.

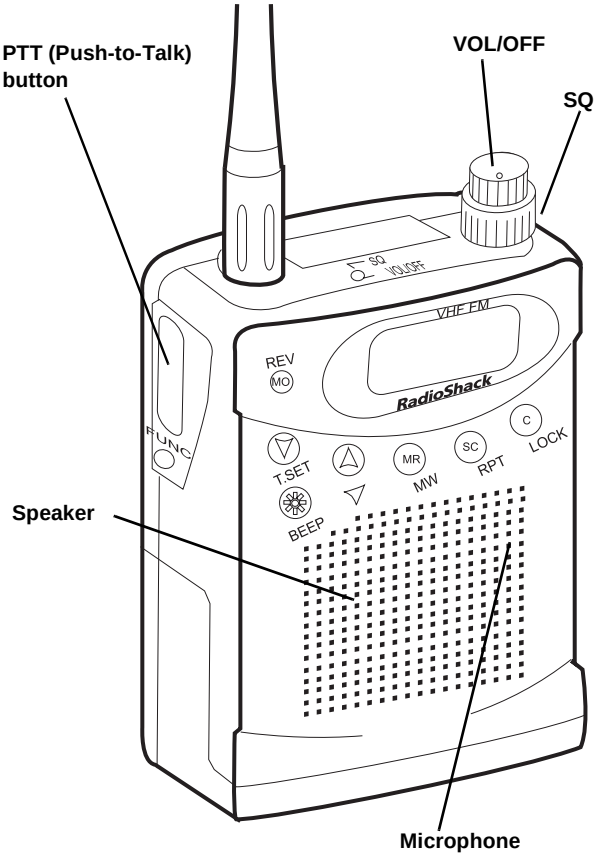
Caution: Use only microphone speaker accessories that do not share a common ground for the speaker and the microphone. Doing otherwise might damage the transceiver.



Note: Inserting the headset plug automatically disconnects the internal speaker and the push-to-talk (PTT) button.

You can also connect an optional mono earphone, such as Cat. No. 33-175, into the **SPK** jack. This lets you use the transceiver's push-to-talk button to transmit as usual

A QUICK LOOK AT THE CONTROLS



VOL/OFF – turns the radio on/off; adjusts the volume

SQ — sets the squelch level to block weak signals

▲ or ▼ — sets the frequency or change other values

FUNC+ ▲ — directly sets the frequency

PTT (Push-to-Talk) — press to transmit and to store settings in memory

FUNC+ ▼ — accesses the subaudible tone squelch frequencies

FUNC+**REV** — reverses the offset frequency

FUNC+**PTT** — reverses the send and receive frequencies

FUNC+**LOCK** — locks/unlocks all front panel buttons

✱— turns on the backlighted display for 4 seconds

SC — starts/stops scanning and changes the frequency range

FUNC+**BEEP** — enables/disables the key tone

FUNC+**MR** — accesses a memory location for programming

FUNC+**T.SET** — accesses/sets the melody settings and CTCSS tones

FUNC+**MO** — resets all settings on power up

MO — overrides the squelch setting

C — displays the current calling frequency

C, then ▲ or ▼ — changes the calling frequency

OPERATION

UNDERSTANDING REPEATERS

Operation through a repeater, where you transmit on one frequency and receive on another, is called *duplex* operation. Operation direct to another station, where you transmit and receive on the same frequency, is called *simplex* operation.

A repeater is a station that receives a signal on one frequency (the *input* frequency) and then retransmits that signal on a different frequency (the *output* frequency). Repeater antennas are typically located at the tops of tall buildings or on antenna towers, so a relatively low-power signal can reach the repeater. The repeater retransmits the signal at a higher power. This gives your transceiver the ability to communicate over a much greater range.

To use a repeater, you must know the repeater's input and output frequencies. Repeaters are usually identified by their output frequency. Thus, a repeater that has an output frequency of 445.00 is referred to as the "445.00 repeater." To determine the input frequency, you must know the frequency *offset* (typically 600 kHz for the 70cm band) and the *offset direction* (+ if you add 600 kHz to the output, or – if you subtract 600 kHz from the output).

To determine the offset and the direction, obtain a copy of *The ARRL Repeater Handbook* (available directly from the ARRL) which lists the locations of repeaters as well as their frequency and offset information.

RECEIVING, TRANSMITTING AND SETTING SQUELCH

1. To turn on the radio, rotate **VOL/OFF** clockwise until it clicks. The transceiver sounds a tone.
2. Rotate **SQ** counterclockwise until you hear a hissing sound. Then slowly rotate **SQ** clockwise just until the noise stops.
3. Set **VOL/OFF** to a comfortable listening level.

Notes:

- If the transceiver picks up unwanted weak transmissions, rotate **SQ** slightly clockwise to decrease the transceiver's sensitivity to signals. The weak transmissions are blocked.
- Your transceiver normally tunes the range of 430.000–458.000 MHz. (To change to the extended range, see "Changing the Frequency Range" on Page 19.)
- **BUSY** appears when the transceiver finds a standard transmission. If you turn on the squelch and receive a transmission that uses the matching CTCSS (subaudible tone), **CALL** also appears.

4. You can use either manual tuning or direct frequency entry to select a specific frequency. To manually select a frequency, repeatedly press or hold down ▼ or ▲ until the display shows the desired frequency.

   To directly enter a frequency, press **FUNC**+▲ (the second digit from the left flashes), then press ▼ or ▲ to change the number. Press **FUNC**+▲ again to select the next digit. Repeat this to select each number of the frequency, then press the **PTT** button to set the selection.

   Note: Do not attempt to transmit unless you possess a valid amateur radio license.

5. To transmit, hold down the push-to-talk button, then speak into the microphone. Release the button to stop transmitting.

6. To turn off the radio rotate **VOL/OFF** counter-clockwise until it clicks.

SCANNING FOR ACTIVE FREQUENCIES

1. To search for activity on a frequency, press **SC.** The transceiver begins to scan up or down the full frequency range, and stops on active frequencies for 5 seconds.
2. To change the scan direction, press ▲ or ▼.
3. To stop on a frequency or to stop scanning completely, press **SC** again.

MONITORING A FREQUENCY

While the radio is receiving a transmission, press **MO** (monitor) to suspend the squelch setting and hear everything on that frequency. This lets you hear the signal even if the incoming CTCSS (subaudible tone) does not match your setting.

If you hold down **MO** for longer than 1 second, the set values for receive tone, transmit tone, scan skip condition (if any), repeater offset, and frequency step appear.

Release **MO** to turn on the squelch again.

CHANGING THE FREQUENCY RANGE

You can change the standard transmit frequency range from 430–450 MHz to an extended range of 420–450.000 MHz.

To set the transceiver to its extended range, turn off the transceiver. Then hold down **SC** and turn on the transceiver again.

To return to the standard frequency range, turn the transceiver off then hold down SC and turn it on again.

LOCKING THE KEYPAD

To lock the transceiver's keypad so you do not accidentally change a setting, press **FUNC**+**LOCK**. 🔑 appears. This locks all buttons except push-to-talk, ✳, **VOL**, and **SQ**. Press **FUNC** + **LOCK** again to unlock the keypad.

LIGHTING THE DISPLAY

Press ✳ to turn on the display backlight for about 4 seconds. If you press any key while the light is on, the light remains on for about 4 seconds more. Press down ✳ for more than 1 second to have the light remain on until you press ✳ again.

TURNING THE KEY TONE ON AND OFF

The transceiver is preset to sound a beep each time you press a key. To turn off the beep, press **FUNC**+**BEEP**. ♪ disappears. To restore the key tone, press **FUNC**+**BEEP** again.

USING MEMORY LOCATIONS

You can store one special calling-frequency, and up to 30 of your most often used frequencies and their associated settings, in the transceiver's memory.

Using the Calling-Frequency Memory Location

The calling-frequency memory location lets you quickly jump to a specific frequency at any time. The default calling frequency is 446.00 MHz. You can record your own frequency into memory as well as other settings associated with that frequency, such as the repeater offset and CTCSS tone.

1. Press **C** to display the current calling frequency.

2. To change the frequency, hold down **C** until MR and **C** flash.
3. Directly enter or press ▼ or ▲ to select the desired frequency. If you want to enter a repeater frequency see "Understanding Repeaters" on Page 17.
4. Press **C** to store the selected frequency in memory.
5. To program the repeater offset for the selected frequency, press **FUNC+SC**. To change the value, press ▲ or ▼. Select 0 Hz if you want to remove the offset. To store the setting, press **C** or **PTT**.

   While MR and **C** appear, you can program other settings such as CTCSS tones (see "Using Subaudible Tone Squelch" on Page 24.)

To enable the calling frequency, press **C** at any time. The transceiver immediately goes to that frequency with the settings you programmed. To exit the calling frequency mode, press **C** again.

USING STANDARD MEMORIES

Your transceiver has 30 standard memories that you can use to store frequencies for quick access. You can also store other settings such as repeater offset, CTCSS tones, and frequencies to pass or lock out during scanning.

Storing a Transmit/Receive Frequency

1. Press **MR** to enter the memory setting mode. MR and the last used memory location appear.
2. Repeatedly press ▲ or ▼ to select the desired memory location. **------** appears if the memory location is empty.
3. Press **FUNC**+**MR**. The selected memory location and MR flash.

4. To select a different frequency than that displayed, repeatedly press ▲ or ▼ or use direct frequency entry.
5. To store the setting, press **PTT**. MR and the memory location stop flashing and your entry is stored.
6. Press **MR** to exit the memory mode.

Storing a Repeater Offset Frequency

To store a repeater offset frequency for the stored transmit/receive frequency, follow these steps.

1. Press **MR.** MR and the last used memory location number appear.
2. Repeatedly press ▲ or ▼ to select the desired memory location.
3. Press **FUNC**+**MR**. The selected memory location and MR flash.
4. Press **FUNC+SC**. **rPt** appears. To change the offset value, press ▲ or ▼. Select **0 Hz** for no offset.
5. To store the setting, press **PTT**.

Storing a Scanning Skip Setting

The transceiver is preset to include all memory locations during memory scanning. But you can set the transceiver to have it skip a location during scanning.

1. Press **MR**. MR and the last used memory location appear.
2. Repeatedly press ▲ or ▼ to select the desired memory location.
3. Press **FUNC**+**MR**. The selected memory location and MR flash.
4.

5. If you want to set scanning to skip the memory location, press **SC**, then press ▼ or ▲ so **SCSP ON** (scan skip) appears.

   To include the displayed location in a scan press ▼ or ▲ so **SCSP oF** appears.

6. When you finish, press **SC** again, then press **PTT** to store the setting.

Scanning Standard Memory Locations

1. Press **MR (**so MR appears), then press **SC**. The transceiver scans all locations except the ones you programmed to pass during scanning.
2. To change the scanning direction, press ▲ or ▼.
3. To stop scanning, press **SC** again.

Locking Out (Skipping) Locations During Memory Location Scanning

When you scan the 30 standard memory locations, you can set the transceiver to lock out a location while scanning.

When the transceiver stops at a memory location you want to skip, press **FUNC**. **PASS** briefly appears and the transceiver continues to scan, locking out (skipping) that location from then on. Repeat this for each location you want to skip.

To return all skip settings to their stored settings, simply turn the radio off then on again.

Note: You cannot lock out all memory locations. One location is always active. If you lock out all but two active locations and then lock out one more, **EMPTY** briefly appears and scanning stops.

USING SUBAUDIBLE TONE SQUELCH

Your HTX-400 can transmit and receive a low-level, selectable subaudible tone at the same time as it transmits (TX) or receives (RX) a regular signal. This special tone lets you listen only to other units set to the same tone frequency when you use the radio in a line-of-sight transmit and receive situation. It also lets you match your radio to the subaudible tone frequency used by a local repeater.

To enable TX and RX tones for your radio, follow these steps.

1. Press **FUNC**+▼. **tONE oF** appears. (The tone is preset to off.)
2. Press ▼ or ▲ to turn the option on. **tONE on** appears.
3. To set a receive (RX) tone press **FUNC**+▼. **rC** appears. Then press ▼ or ▲ to select a tone frequency from the list on Page 25.
4. To set a transmit (TX) tone press **FUNC**+▼. **tC** appears. Then, press ▼ or ▲ to select a tone frequency from the list on Page 25.
5. Press **PTT** to store all the settings.

To select and store a CTCSS subaudible tone in a memory location press **MR**. **MR** and the last used memory location appear. Then follow Steps 1 – 5 above.

Subaudible Tone Frequencies (MHz)

67.0	114.8	186.2
69.3	118.8	189.9
71.9	123.0	192.8
74.4	127.3	196.6
77.0	131.8	199.5
79.7	136.5	203.5
82.5	141.3	206.5
85.4	146.2	210.7
88.5	151.4	218.1
91.5	156.7	225.7
94.8	159.8	229.1
97.4	162.2	233.6
100.0	167.9	241.8
103.5	173.8	250.3
107.2	179.9	254.1
110.9	183.5	

REVERSING THE OFFSET

When you turn on the repeater offset, the HTX-400 uses the last offset direction you set. To change the offset direction, press **FUNC**+**REV**. **+** appears in the display for a positive offset (the transmit frequency is above the receive frequency) and **–** appears for a negative offset (the transmit frequency is below the receive frequency).

REVERSING THE TRANSMIT AND RECEIVE FREQUENCIES

To swap the input and output frequencies, press **FUNC+PTT**. For example, if you have set the radio to repeater operation on 446.940 with a negative offset, the radio would normally receive on 446.94 and transmit on 446.340 MHz. After you press **FUNC**+**PTT** the radio will receive on 446.340 and transmit on 446.940. This feature is useful if you want to determine whether you are close enough to another station to communicate on a simplex frequency. While the other station is transmitting, reverse the frequencies. If you can still hear the other station, you are hearing them directly and do not need to use the repeater.

MELODY OPTIONS

Your radio can alert the receiver you are transmitting to by starting that transmission with one of five selectable melodies. You can also set your radio to play that same melody to announce that you are receiving a transmission from a radio with the same settings as yours. This lets you use the CTCSS to keep the radio silent until the radio receives the CTCSS tone you have set. Then, receiving the tone triggers the audio and activates the receive alert melody.

Using the Transmit Melody Alert

Follow these steps to select a transmit melody.

1. Turn on the radio. Make sure you are not in memory mode.
2. Hold down **FUNC** and press **T.SET** four times. **MEL** and a number from **1** to **5** appear.
3. Press ▼ or ▲ to display the number of the melody you want to use. Each time you change the setting, the transceiver sounds the selected melody.
4. Press **PTT** to lock your setting and exit the menu.

Your selection is stored even after you turn off the radio.

To transmit the selected melody alert, press ✳ while pressing **PTT**.

Using the Receive Melody Alert

To have the transceiver play the selected transmit alert melody when it receives a call rotate **SQ** counterclockwise until you hear a hissing sound. Then slowly rotate **SQ** clockwise just until the noise stops. Turn off the radio then press ✳ while you turn on the radio. appears.

The first time the radio receives a call, it plays the selected melody and turns off the feature. To turn on the melody again, hold down ✳ then turn off the radio and then on again.

SPECIAL FEATURES

USING THE SPECIAL FEATURES

The transceiver has several advanced features that give you additional control and convenience while using your transceiver.

To set any of the features follow these steps. For detailed information on any feature, see its section on the following pages

1. Turn off the transceiver then hold down **FUNC**. Turn on the transceiver, then release **FUNC**. This accesses the special features menu.
2. The transceiver displays the special feature settings in this order:

Feature	You see
Frequency Step — the increment by which you set to scan the 2-meter band.	**CS**
Repeater Offset — the difference between the repeater's transmit and receive frequency.	**rPt**
Power Save — turns off power to the receiver section and conserves battery power.	**PS**
Time-Out Timer — limits your transmission time to a repeater in case you forget.	**tot**
Scan Delay Time — delays scanning restart time.	**Sd**
Transmit Delay — prevents squelch tail noise	**t.dY**
Busy Channel Lockout — prevents transmitting while the radio is receiving.	**bCLO**

3. Press ▲ or ▼ to change the selected feature's settings.
4. To change to another feature setting, repeatedly press **FUNC**+▲ or **FUNC**+▼until you see that setting. Then repeat Step 3.
5. To store all customized settings and return to the normal display, press **PTT**.

Frequency Step

To change the scanning frequency increment, with **CS** and a frequency step (such as **.0100** for 10 kHz) displayed, press ▲ or ▼ until you reach the desired setting. You can change the frequency step to 5 kHz, 10 kHz, 12.5 kHz, 15 kHz, 20 kHz, 25 kHz, 50 kHz, or 1 MHz.

Repeater Offset

To use a local repeater, once you have determined that repeater's offset, press **FUNC**+▲ or **FUNC**+▼ until you see **rPt** and the current offset frequency are displayed. Then press ▲ or ▼ to select the desired frequency step.

You can change the offset frequency from 0.0 Hz to 2 MHz (in 100 kHz steps) or 8MHz. The normal offset for the 2-meter band is 600 kHz (0.6 MHz).

Note: Once you set the offset frequency, you can turn this feature on or off by pressing **FUNC**+**SC** while the transceiver is not in the memory or calling frequency mode.

Power Save

This feature lets the radio conserve battery power by turning off power to the receiver section and periodically turning it on to check for a transmission. With **PS** and the current status (**on** or **oFF**) displayed, press ▲ or ▼ to turn this feature on or off.

Time-Out Timer

When you communicate using repeaters, you should keep your transmissions as brief as possible. Most repeaters have built-in timers that limit single transmissions to 3 minutes or less. You can set the transceiver to stop transmitting and sound a beep if you exceed a set time limit with a single transmission.

To select a value for the time-out timer, with **tot** and the current setting displayed, press ▲ or ▼ to choose a value from 0 to 990 seconds.

Scan Delay Time

If during scanning you encounter a signal which stops, this feature delays the continuation of scanning to allow time for the signal to restart. With **Sd** and the current delay time shown, press ▲ or ▼ to select the delay time (1 to 30 seconds).

Transmit Delay Time

All receivers make a noise called squelch tail, which is a brief noise that your target receiver might produce the moment you release the **PTT** button. This noise is generated when the transmitter's carrier ceases and before the normal squelch takes over. Your radio's transmit delay time feature lets transmitting continue for an extra moment when you use the CTCSS tone squelch setting, to prevent the squelch tail noise.

With **t.dy** and the current status displayed, press ▲ or ▼ to turn this feature on or off.

Busy Channel Lockout

This feature sets the transceiver so you cannot transmit while it is receiving a signal. With the radio's preset value **bCLO oF** displayed, press ▲ or ▼ to change the display to **bCLO oN** and turn the feature on. Repeat this step to change the display back to **bCLO oF** and disable the lockout feature.

TROUBLESHOOTING

If your transceiver is not working as it should and it displays an error message, these suggestions might help you eliminate the problem. If the transceiver still does not operate properly, take it to your local RadioShack store for assistance.

You see	Possible Cause	Remedies
S-SHORT	If the transceiver detects any fault in an external microphone connection, it automatically switches off power to the audio amplifier and displays **S-SHORT** to indicate a short circuit.	Remove the connected microphone and replace it or use the internal microphone.
PLL-Error	Indicates a PLL circuit malfunction due to a defect in the VCO circuit or bias supply.	Turn power off then on again.
EEP-Error	The EPROM information needs to be reset.	Reset the transceiver. See “Resetting the Transceiver” on Page 34.

CARE AND MAINTENANCE

Your RadioShack HTX-400 Mini Handheld 70cm FM Amateur Transceiver is an example of superior design and craftsmanship. The following suggestions will help you care for your transceiver so you can enjoy it for years.

Keep the transceiver dry. If it gets wet, wipe it dry immediately. Liquids might contain minerals that can corrode the electronic circuits.

Use and store the transceiver only in normal temperature environments. Temperature extremes can shorten the life of electronic devices, damage batteries, and distort or melt plastic parts.

Keep the transceiver away from dust and dirt, which can cause premature wear of parts.

Handle the transceiver gently and carefully. Dropping it can damage circuit boards and cases and can cause the transceiver to work improperly.

Use only fresh batteries of the required size and recommended type. Batteries can leak chemicals that damage your transceiver's electronic parts.

Wipe the transceiver with a damp cloth occasionally to keep it looking new. Do not use harsh chemicals, cleaning solvents, or strong detergents to clean the transceiver.

Modifying or tampering with the transceiver's internal components can cause a malfunction and might invalidate its warranty and void your FCC authorization to operate it. If your transceiver is not performing as it should, take it to your local RadioShack store for assistance.

RESETTING THE TRANSCEIVER

If the transceiver's display locks up or does not work properly after you connect power, you might need to reset the transceiver.

Caution: This procedure clears all the information you have programmed into the transceiver. Before you reset the transceiver, try turning it off then on again to see if it begins working properly.

To reset the transceiver, turn it off then hold down **FUNC** +**MO** and turn it on again. **`iniTial`** appears to confirm the reset operation. Release **FUNC**+**MO**.

SPECIFICATIONS

GENERAL

Frequency:
- RX ..... 420–470 MHz
- TX ..... 430–450 MHz

Frequency Generation ..... PLL Synthesizer
Frequency Stability ..... ± 5 ppm
Operating Temperature ..... 14° to 131° F (–10° to 55° C)
Power Source ..... DC 3.0V to 9V
Modulation F3E
Impedance ..... 50 ohm
Dimensions (HWD) ..... 2 1/4 × 3 3/8 × 1 1/16 inches
85 × 58 × 26.5 mm
Weight (without batteries) ..... 4.2 oz (120 g)

RECEIVER

Circuit Type ..... Dual Conversion, Superheterodyne
IF Frequency:
- 1st IF ..... 30.85 MHz
- 2nd IF ..... 450 kHz

Sensitivity ..... 0.22 µV for 12 dB SND
Selectivity ..... 50 dB Min.
Spurious and Image Rejection ..... 60 dB Min.
Intermodulation ..... 60 dB Min.
Distortion ..... 10% Max.
S/N Ratio ..... 40 dB Min.
Audio Output @10%THD ..... 150 mW 16 Ohm, BTL

TRANSMITTER

Power Output ..... 200 mW, DC 3.0V/2W, DC 9.0V
Distortion 5%
Deviation ..... ± 5 kHz
S/N Ratio ..... 40 dB
Current Drain ..... 800 mA

Specifications are typical; individual units might vary. Specifications are subject to change and improvement without notice.

Limited One-Year Warranty

This product is warranted by RadioShack against manufacturing defects in material and workmanship under normal use for one (1) year from the date of purchase from RadioShack company-owned stores and authorized RadioShack franchisees and dealers. EXCEPT AS PROVIDED HEREIN, RadioShack MAKES NO EXPRESS WARRANTIES AND ANY IMPLIED WARRANTIES, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO THE DURATION OF THE WRITTEN LIMITED WARRANTIES CONTAINED HEREIN. EXCEPT AS PROVIDED HEREIN, RadioShack SHALL HAVE NO LIABILITY OR RESPONSIBILITY TO CUSTOMER OR ANY OTHER PERSON OR ENTITY WITH RESPECT TO ANY LIABILITY, LOSS OR DAMAGE CAUSED DIRECTLY OR INDIRECTLY BY USE OR PERFORMANCE OF THE PRODUCT OR ARISING OUT OF ANY BREACH OF THIS WARRANTY, INCLUDING, BUT NOT LIMITED TO, ANY DAMAGES RESULTING FROM INCONVENIENCE, LOSS OF TIME, DATA, PROPERTY, REVENUE, OR PROFIT OR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, EVEN IF RadioShack HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Some states do not allow the limitations on how long an implied warranty lasts or the exclusion of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

In the event of a product defect during the warranty period, take the product and the RadioShack sales receipt as proof of purchase date to any RadioShack store. RadioShack will, at its option, unless otherwise provided by law: (a) correct the defect by product repair without charge for parts and labor; (b) replace the product with one of the same or similar design; or (c) refund the purchase price. All replaced parts and products, and products on which a refund is made, become the property of RadioShack. New or reconditioned parts and products may be used in the performance of warranty service. Repaired or replaced parts and products are warranted for the remainder of the original warranty period. You will be charged for repair or replacement of the product made after the expiration of the warranty period.

This warranty does not cover: (a) damage or failure caused by or attributable to acts of God, abuse, accident, misuse, improper or abnormal usage, failure to follow instructions, improper installation or maintenance, alteration, lightning or other incidence of excess voltage or current; (b) any repairs other than those provided by a RadioShack Authorized Service Facility; (c) consumables such as fuses or batteries; (d) cosmetic damage; (e) transportation, shipping or insurance costs; or (f) costs of product removal, installation, set-up service adjustment or reinstallation.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

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