YAESU
FT-23R MKII
OPERATING MANUAL

Contents

Yaesu FT-23R MKII
2m Hand-Held
Cpu-Controlled FM Transceiver

The **FT-23R MKII** is an ultra compact FM hand-held for the 2m amateur band that offers the convenience of very small size and light weight combined with the features and flexibility of performance only possible with microprocessor control. A variety of rechargeable battery packs and dry cell cases are available, providing up to five watts of RF power output.

The transceiver is housed entirely in zinc and aluminum die-cast alloys, and battery cases are constructed of thick high-impact polycarbonate plastic, for professional-grade ruggedness required in the most demanding applications. Rubber gasket seals around all external controls and connectors keep out dust and rain or spray, assuring years of reliable operation even in harsh environments.

Standard microprocessor-controlled features included ten memory channels which each store repeater shifts, CTCSS (Continuous Tone Controlled Squelch System) tone frequencies and tone encode/decode selections*; busy channel and priority channel scanning; 1MHz up/down stepping; plus a top panel rotary dial for memory and frequency selection. Seven of the memories can also be programmed for non-standard repeater shifts. The LCD (Liquid Crystal Display) shows six frequency digits, memory channel selection, and CTCSS tone frequency during tone selection*, and includes a bargraph S/PO meter.

Please read this manual carefully to gain a clear understanding of the features of the **FT-23R MKII**.

*: CTCSS tone features require the **FTS-12** Tone Squelch Unit, optional in some countries.

Specifications

General

Frequency coverage (MHz): 144 to 147.9995 (versions A, C & E)
144 to 145.9875 (versions B & D)

Channel steps: 5 & 10 kHz (vers. A/D/E) or 12.5 & 25 kHz (vers. B/C)

Standard repeater shift: 600 kHz

Emission type: G3E

Supply voltage: 6.0 to 15.0 VDC

Current consumption: 19 mA Stby (Save ON); 150 mA Rceive;
1500 mA Transmit (5W); 900 mA Transmit (2W)

Antenna (BNC jack): YHA-16 rubber flex antenna

Case size (WHD): 55 x 188 x 32mm w/FNB-11H
55 x 155 x 32mm w/FNB-12/-14
55 x 133 x 32mm w/FNB-/FBA-17

Weight (approx): 430g w/FNB-17, 550g w/FNB-11H

Receiver

Circuit type: Double-conversion superheterodyne

Sensitivity: better than 0.25 µV for 12dB SINAD

Adjacent channel selectivity: better than 60dB

Intermodulation: better than 65dB

Audio output: 0.4W @8 W for 5% THD (with 12V supply)

Transmitter

Power output: 5W @12V, 2.5W @7.2V or FBA-17

Frequency stability: better than 10 ppm

Modulation system: variable reactance

Maximum deviation: ±5 kHz

FM Noise: better than –40dB @ 1 kHz

Spurious emissions: better than 60dB below carrier

Audio distortion: less than 5% @ 1 kHz, w/3 kHz deviation

Microphone type: 2-kΩ condenser

Burst tone: 1750 Hz (except version A)

Specifications may be subject to change without notice or obligation.

FNB-11H	12V, 700mAh Ni-Cd Battery Pack
FNB-12	12V, 500mAh Ni-Cd Battery Pack
FNB-14	7.2V, 1000mAh Ni-Cd Battery Pack
FNB-17	7.2V, 600mAh Ni-Cd Battery Pack
FBA-17	Dry cell Battery Case for 6 AA-size cells
NC-34B	117 VAC Compact Wall Charger for FNB-14
NC-34C	220-234 VAC Compact Wall Charger for FNB-14
NC-65B	117 VAC Compact Wall Charger for FNB
NC-65C	220-234 VAC Compact Wall Charger for FNB
NC-65F	220 VAC w/Argentine plug Compact Wall Charger for FNB
NC-65U	220-234 VAC w/UK plug Compact Wall Charger for FNB
NC-29	Desktop Quick Charger for all above FNB packs
NC-50	Dual-Slot Rapid Charger
CA-7	Charger Sleeve (required w/NC-50)
PA-6	Mobile DC Adapter/Charger for 7.2 V packs (FNB-14/-17)
MH-32$_{A2B}$	External Hand Speaker/Microphone
MH-34$_{C2B}$	External Hand Speaker/Microphone
MH-37$_{B2B}$	Earpiece/Microphone
YHA-16	Rubber flex antenna
FTS-12	CTCSS Subaudible Tone Squelch Unit
MMB-32A	Mobile Hanger Bracket

Availability of accessories may vary: some accessories are supplied asstandard per local regulations and requirements, others may be unavailable in some regions. Check with your Yaesu dealer for additions to the above list.

Controls & Connectors

① **EAR** Jack

This 2-conductor mini phone jack provides audio output for an external earphone or the optional speaker/microphone, while disabling the internal loudspeaker.

② **MIC** Jack

This 2-contact micro-mini phone jack accepts microphone input from a speaker/microphone, or other external source, while disabling the internal microphone.

③ **LOW** Power Output Button

Keep this button depressed whenever low power is sufficient for communications. Low power is 200 to 500 mW, depending on battery voltage.

④ **DIAL** Rotary Selector

This 20-position switch tunes the operating (or CTCSS tone) frequency or selects memory channels, according to the function selected by front panel keys. This knob duplicates the functions of the [▲] and [▼] keys for convenience.

⑤ **VOL/OFF** Contral

This control adjusts the volume of the receiver. Turn it fully counterclockwise (into the click stop) position to turn the transceiver off.

⑥ **SQL** Control

This knob sets the threshold level at which received signals (or noise) open the squelch. For prolonged battery life and squelch sensitivity, set this control just to the point where noise is silenced (and the **BUSY/TX** indicator on the front panel is off) when the channel is clear.

⑦ **ANTENNA** Jack

This BNC jack accepts the supplied **YHA-16** rubber flex antenna, or any other antenna designed to provide 50-ohm impedance on the 2-meter band.
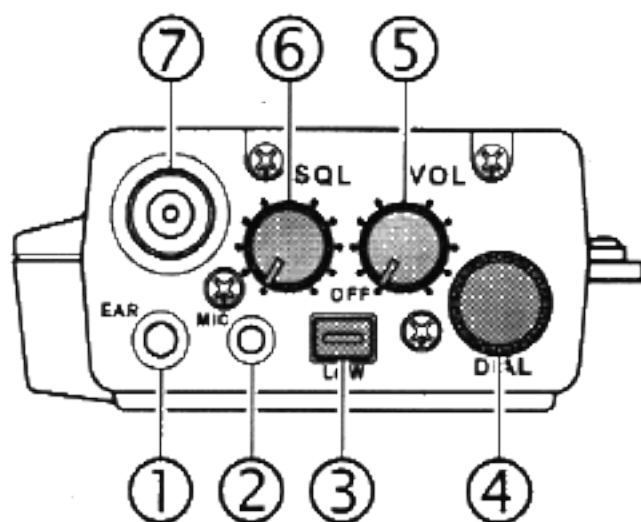
Controls & Connectors

① Monitor (Burst) Button

In the US version, this button open the noise squelch momentarily without disturbing the setting of the **SQL** control. In the European version, this button activates the 1750-Hz burst tone generator when pressed together with the **PTT** button.

② **PTT** Button

Press and hold this (Push-to-Talk) button to transmit. The **BUSY/TX** indicator glows red while transmitting.

③ Unlock Lever

Slide this mechanical lever upward to release the battery for removal.
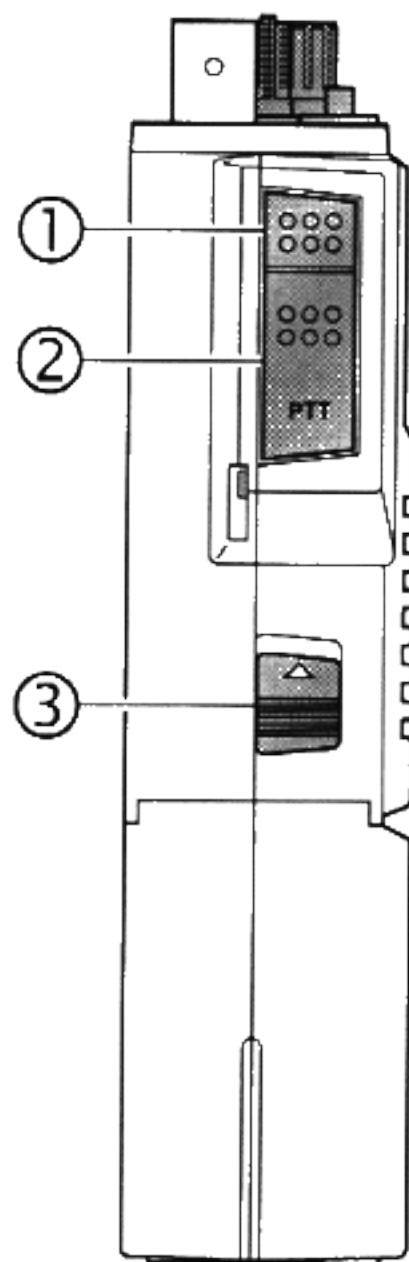
Controls & Connectors

① **BUSY/TX** Indicator Lamp

This LED indicator glows green when the noise squelch is open during reception, and red when transmitting.

② Keypad

These eight keys select the various operating features of the transceiver during reception. A beep will sound whenever one of the keys is pressed. The labels on the faces of the keys indicate their primary functions, while the labels above six of the keys indicate alternate functions, which are activated by pressing the [F] key first, and then the other key within four seconds. In this manual, we will refer to these functions by the alternate label (above the key), prefixed by "[F] + " to remind you to press [F] first. For example, "[F] + [▼]" indicates that you should press the [F] key, followed by the [▼] key within four seconds. All key functions are described in detail in Operation chapter, and summarized on the "*FT-23R MKII Operator's Quick Reference Card.*"
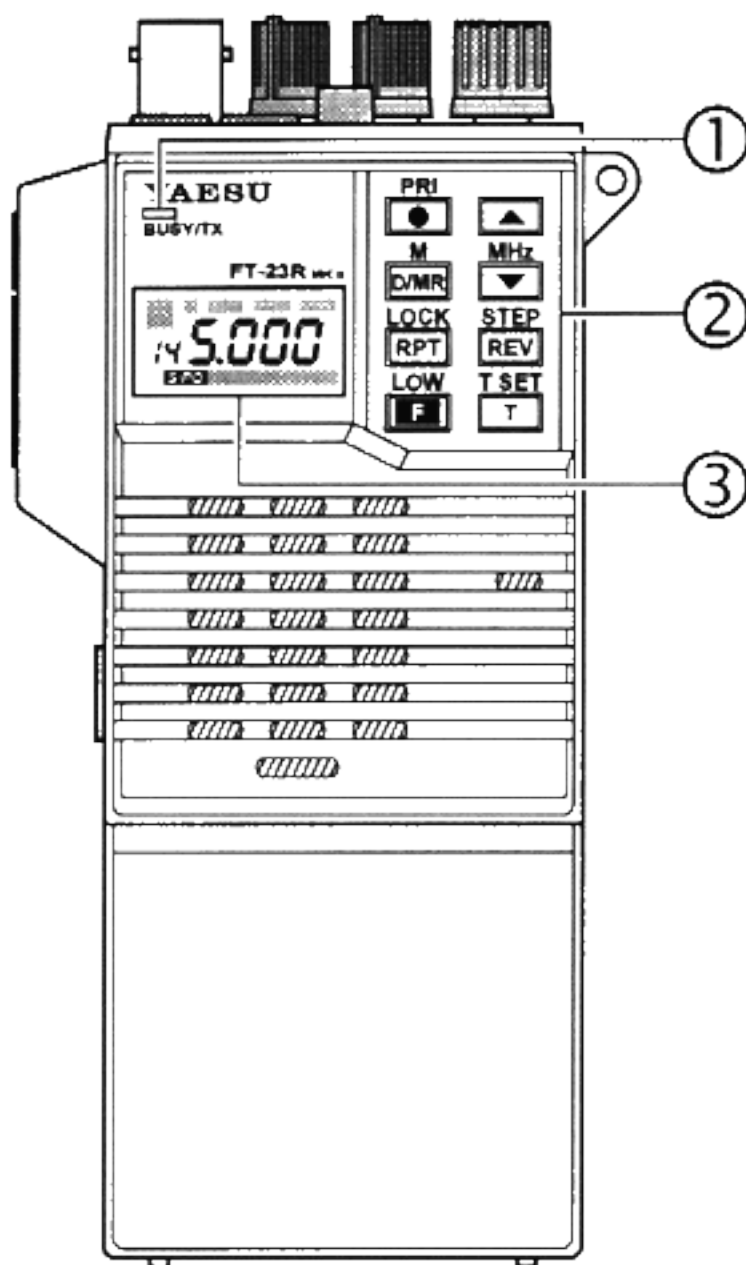
③ LCD (Liquid Crystal Display)

The display shows the selected operating conditions as indicated in the following diagram:

Keypad Function Active ──────────── Tone Squelch ENCode/DECode

Memory Channel No. ──────────── Repeater Shift Direction

──────────── Operating (or Tone) Frequency

Keypad Locked ──────────── S-Meter or Powe Output Meter

Accessories

Battery Packs, Battery Case & Chargers

The **FT-23R** MKⅡ requires the **FNB-11H** or **FNB-12** twelve-volt rechargeable Ni-Cd battery pack for the full 5-watt power output. However, where slightly lower power output (2.5 watts) is practical, the dry-cell battery case and the **FNB-14** and **FNB-17** Ni-Cd packs offer smaller size, lighter weight or extended battery charger life. Any of the Ni-Cd packs may be recharged either while attached to the transceiver or separately. Each Ni-Cd pack should be fully charged before it is used with the transceiver for the first time.

Three types of chargers are available: 15-hour compact chargers, the **NC-29** 1-hour Desktop Quick Charger and **PA-6** Mobile Adapter/Charger.

A different compact charger is required for each model pack:

Ni-Cd Pack	Voltage	Capacity	Compact Charger
FNB-11H	12V	700 mAh	**NC-65**
FNB-12	12V	500 mAh	**NC-65**
FNB-14	7.2V	1000 mAh	**NC-34**
FNB-17	7.2V	600 mAh	**NC-65**

Make certain that you use the correct compact charger for each pack. The **NC-34** compact charger is available with a "**B**" suffix for operation from 117-VAC mains, or with a "**C**" suffix for operation from 220 ~ 234VAC mains. The **NC-65** compact charger is available with a "**B**" suffix for operation from 117-VAC mains, with a "**C**" suffix for operation from 220 ~ 234VAC mains, with a "**F**" suffix for operation from 220VAC w/Argentine plug mains, or with a "**U**" suffix for operation from 220 ~ 234VAC w/UK plug mains.

NC-29 5-hour Quick Charger

The **NC-29** is a universal AC mains battery charger with quick and trickle charging modes for all of the **FNB** series Ni-Cd packs listed above. It comes wired from the mains voltage in the area sold. The quick mode is automatically selected initially, to bring the battery pack up to full charge as fast as safely possible using an internal timer. Three LED indicators show elapsed charging time after 1, 3 and 5 hours. The charger then reverts to the trickle mode (green indicator), to prevent self-discharge. The quick mode recharges a completely discharged battery in about 5 hours, depending on temperature.

CAUTION !

When using the **NC-29**, do not switch the charger off and on or remove and then replace a battery from the charger while it is charging, as this will reset the timer and may then overcharge the battery.

Accessories

PA-6 MOBILE DC ADAPTER/CHARGER
FOR FNB-14 AND FNB-17

The **PA-6** is a DC-DC adapter for use when operating the transceiver mobile, and for charging the 7.2-volt **FNB-14** and **FNB-17** Ni-Cd battery packs. The **PA-6** recharges a completely discharged **FNB-17** in about 15 hours, or trickle charges an **FNB-14** (to full charge in about 35 hours). Be careful to avoid overcharging, as the **PA-6** does not include a timer. The **PA-6** cannot be used for charging the **FNB-11H** or **FNB-12**, as the charging voltage is too low. Use only with 12-volt negative-ground electrical systems.

DRY-CELL BATTERY CASE

The **FBA-17** dry-cell battery case may be used with six "AA" (UM-3) batteries, but these provide only reduced power, and must not be with rechargeable cells (because they lack the necessary safety circuits provided in the **FNB** series).
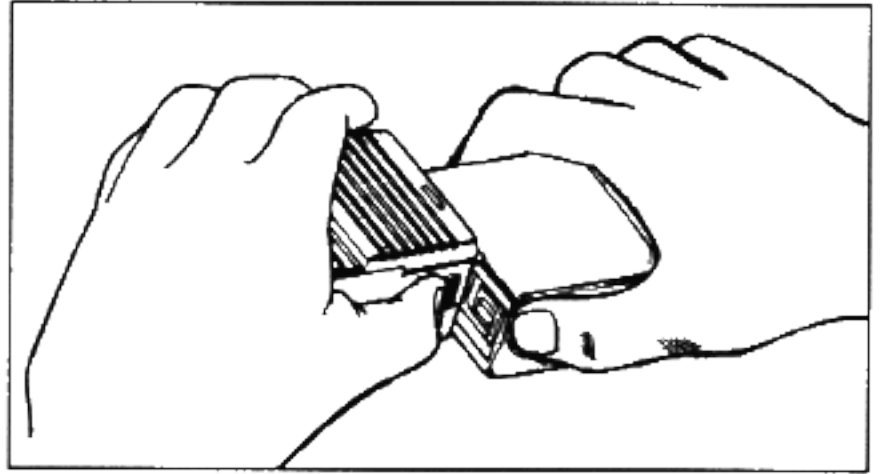
In some countries, one or more of above may be supplied with the transceiver. If you need a battery, contact your nearest Yaesu dealer to purchase the desired battery pack or case. We do not recommend the use of any other type of battery with the **FT-23R MKII**, and using another type may affect your warranty.

> **CAUTION !**
> Never allow the terminals of the battery pack or case to be short-circuited!

Accessories

BATTERY REMOVAL & REPLACEMENT

❏ Make sure that the **VOL** control is set into the **OFF** click-stop, and remove the protective soft or hard case, if used.

❏ Grasp the transceiver with your left hand, so your palm is over the speaker and your thumb is on the **UNLOCK** button.

❏ Move the **UNLOCK** button in the direction indicated by the arrowhead, while using your right hand to slide the battery case toward the side with the **UNLOCK** button. The battery case should slide smoothly out of its track.

To open the **FBA-17** battery case, place both of your thumbs on the tracks on top of the case and gently pry the tracks apart. Always replace all six batteries, paying attention to the polarity indicated inside the case.

Do not attempt to open any of the rechargeable Ni-Cd packs.

To replace the battery case or Ni-Cd pack, repeat the second and third steps above, simply sliding the battery case in the other direction after aligning the shorter side of the battery case with the track below the **UNLOCK** button.

Accessories

MH-32A2B & MH-34C2B SPEAKER/MICROPHONE

A Speaker/Mic can increase operating convenience and extend communications range. Each is equipped with a dual plug connector which mates with the **EAR** and **MIC** jacks on the top panel of the transceiver, disabling the internal speaker and microphone. The speaker/mic cable allows the transceiver to be left clipped to your belt, or to be held overhead above obstructions for improved performance. Also, using a speaker/mic for mobile operation allows the transceiver to be left in the **MMB-32A** Mobile Hanger.

Hold the Speaker/Mic close to your ear during reception; or if preferred, connect an external earphone to the plug on the Speaker/Mic, attenuating the audio from its loudspeaker. To transmit just hold the Speaker/Mic close to your mouth and close the **PTT** switch on the microphone.

ANTENNA CONSIDERATIONS

While the supplied **YHA-16** rubber flex antenna is convenient for short-range portable operation, the standard BNC connector allows for use of a higher gain antenna to extended range in base or mobile operation. Any antenna used with the **FT-23R** MKII should have an impedance close to 50 ohms on the 2m amateur band. If a feedline is used, it should be good quality 50-ohm coax. Obtaining a proper fit with some BNC plugs may require removing the rubber gasket around the antenna jack on the transceiver.

This chapter describes the various transceiver functions in detail. After studying these descriptions, keep the "*FT-23R мкп Operator's Quick Reference Card*" handy in case you need to refresh your memory.

PRELIMINARY OPERATING INFORMATION

Before operating the transceiver for the first time;

☐ Charge the battery pack completely (if using Ni-Cd batteries) as described on page 7. If using an **FBA-17** dry-cell battery case, install the batteries as described on page 9.

☐ Connect the **YHA-16** rubber flex antenna to the antenna jack on the top of the transceiver. Never operate the transceiver without an antenna connected.

☐ We suggest you do not connect the Speaker/Mic, if you have one, until you are familiar with basic operation.

☐ Before proceeding, please read the "*Control & Connectors*" chapter, if you have not already, to familiarize yourself with the functions of the controls.

When the front panel keys are pressed during reception, a beep will sound. If the keypad beeper begins to sound continuously the battery pack should be recharged or batteries replaced.

If you have trouble getting the transceiver to work as described, see "*In Case of Problems*", on page 19.

SQUELCH SETUP

☐ Set the **SQL** control fully counterclockwise, rotate the **VOL** control out of the click-stop and adjust for a comfortable volume on the noise or received signal.

☐ The **BUSY/TX** indicator LED should glow green, indicating that the squelch is open. If a signal is present, rotate the **DIAL** selector on the top panel to a channel where only noise is heard.

☐ Adjust the **SQL** control just to the point where the noise is silenced and the LED is extinguished. (If the **SQL** control is set further clockwise, sensitivity to weak signals will be reduced.)

Now, whenever a signal reaches the receiver that is strong enough to open the squelch, the **BUSY/TX** indicator will glow green.

Note that while receiving, one or more bargraph segments may appear along the bottom of the display, indicating signal strength of received signals. This indication is not affected by the squelch setting, so even squelched signals will have some indication. If you notice more than one or two bargraph segments appearing while the squelch is closed, try reducing the squelch control setting (if you want to hear weak signals).

The Monitor switch on the USA versions (just above the **PTT** switch) allows you to check

Operation

Squelch Setup

for channel activity beneath the squelch level and to adjust the volume without having to adjust the squelch: just press the Monitor switch and the noise squelch will open (this does not open the tone squelch, however, if the **FTS-12** Tone Squelch option is installed and activated, as descried later).

The **FT-23R** MKII includes an automatic power saver system, which reduces battery consumption by turning the receiver on (for 300 milliseconds) and off (for 600 milliseconds) when the channel is clear and the squelch is closed. The power saver will not affect voice-mode operation*, except to prolong the charge life of your batteries.

✻: For Packet, the Power Saver should be disabled, Ask your Yaesu dealer for details.

Transmitting

Press the **LOW** button to select low power output. When you wish to transmit, wait until the channel is clear (**BUSY/TX** LED off), and squeeze the **PTT** switch on the side of the transceiver while speaking into the microphone (just below the keypad on the front panel). During transmission the **BUSY/TX** indicator will glow red, and the bargraph will now show relative transmitter power output. Release the **PTT** switch to receive.

If you find that more power is required, set the **LOW** button to the undepressed (▪) position. However, we recommend that whenever communication is possible with low power, you should keep the **LOW** button depressed (▬) to both conserve battery life and minimize possible interference to other stations.

"Dial" and "Memory" modes

The **FT-23R** MKII has two different operating status, referred to as the "Dial mode" and the "Memory mode", which affect the functions of most of the controls. It is important to know which state is currently active when changing frequencies. To determine which state is active, look at the upper left corner of the display. When the Memory mode is active, a Memory number appears. To switch operating states, press **[D/MR]** key.

FREQUENCY & STEP SELECTION

To select a new operating frequency, the transceiver must be in the Dial mode (see box, above). If you see a Memory number, press the [**D/MR**] key to switch to Dial mode. There are two ways to select your operating frequency: by the **DIAL** selector on the top, or with the [▲] and [▼] keys. For continuous tuning, press and hold the [▲] or [▼] key for more than ½-second. One-Megahertz giant steps are also available: just press [**F**] + [▲] or [**F**] + [▼] (and hold the second key for repeated stepping), or press [**F**] and rotate the **DIAL** selector.

Channel steps are 5 or 10 kHz in versions A, D and E, and 12.5 or 25 kHz in versions B and C. To change from one step size to the other for your version, press [**F**] + [**STEP**]*. In the 12.5/25 kHz versions a small .5-kHz digit is displayed at the right end of the frequency.

✷: If nothing happens when you press a key, see if there is a small "*L*" at the lower left corner of the display. If so, press [**F**] + [**LOCK**] to unlock the keys.

Operation

MEMORY STORAGE & RECALL

The **FT-23R** мкɪɪ offers ten programmable memory channels, numbered [0] through [9]. To store a frequency in memory:

☐ Select the desired frequency in the Dial mode as described above,

☐ Press [F] + [M] (the Memory number will blink) and select the desired Memory number for storage using the **DIAL** selector or [▲] / [▼] keys,

☐ Press [D/MR] to store the Dial frequency into the selected Memory: The Memory number should disappear, and operation will continue in the Dial mode.

Once you press [F] + [M] in the above procedure, while the Memory number is blinking, you have a maximum of four seconds between **DIAL** selections or keystrokes until you press [D/MR]. If you time out, a memory number will be displayed after you press [D/MR] (and nothing new will have been stored in the memory). Simply start again. Remember that when you store data in memory, the data previously stored in that channel (if any) erased.

Example: to store 145.00 MHz in channel [0]

☐ Press [D/MR] once if a Memory number is displayed, to select the Dial mode. Then use the **DIAL** selector or [▲] and [▼] keys to select 145.000 on the display.

☐ Press [F] + [M] and then rotate the **DIAL** knob until [0] is displayed (blinking) at the upper left corner.

☐ Press [D/MR]. There should now be no memory number displayed. If there is, you timed out and should start again.

To recall prestored memories press [D/MR], if necessary, to select the Memory mode (Memory number is displayed), and then rotate the **DIAL** selector or press the [▲] and [▼] keys, which select the memories when in the Memory mode (as opposed to frequency selection in the Dial mode). Only prestored memories are displayed: empty memories are skipped.

To exit the Memories and return to Dial mode, press [D/MR].

Call Channel Memory [0]

Memory [0] is special "Call Channel Memory", which can be instantly recalled from any mode just pressing the [●] key. Press [D/MR] when finished to return to the previously selected mode.

Operation

Tune to the repeater's output frequency, and then press the [RPT] key: once for "+" shift (to transmit 600 kHz above your receive frequency), and again for "−" shift (to transmit 600 kHz below your receive frequency). Pressing [RPT] again will return to simplex. A "+" or "−" is displayed at the upper right corner when standard repeater shift is selected, and when the PTT switch is pressed to transmit, the displayed frequency will shift 600 kHz up or down, if in band. If the resulting transmit frequency is outside of the ham band, "*Err*" is displayed instead.

You can check the frequency to be used for transmission without pressing the PTT switch: just press [REV] to reverse transmit and receive frequencies. If two beeps sound and the frequency does not change, the repeater shift is out-of-band. If both frequencies are in band, the shifted frequency will be displayed, and the "+" or "−" at the upper right will blink, signifying that the transmit and receive frequencies are reversed. Using this reverse function allows you to check the repeater input frequency to see if you can work a particular station direct (on a simplex frequency, of course). Press [REV] again to return to the original repeater shift.

Once standard repeater shift is activated in the Dial mode, it can be stored in any memory along with the frequency (as described in the preceding section). Then whenever that memory is recalled, the stored shift will be active (the "+" or "−" will be displayed). The reverse function cannot be stored in memory, although both [RPT] and [REV] can be pressed to temporarily change repeater operation on a memory that includes repeater shift, the new setting will not be stored. Repeater functions can also be activated temporarily on simplex memories, if required.

Non-Standard Repeater Splits

Memories 0 through 6 can also store an independent transmit frequency, for operation on repeaters with non-standard shift. To do this, first store the receive frequency as described in Memory Storage & Recall. Then retune the Dial to the desired transmit frequency, and repeat the storage procedure, but this time hold the PTT switch at the last step (when you press [D/MR] the last time while the memory number is blinking). Now when you recall the memory, "−+" will be displayed together at the upper right. The [RPT] key will be disabled while operating on the odd-split memory, but the [REV] key will still function as described above.

Operation

Before starting the scanner, make sure the **SQL** control is set to squelch off the noise on a clear channel. As with frequency selection, two different modes of scanning are available: band scanning or memory scanning. In both modes, scanning is manually activated and deactivated by the [▲] or [▼] key. Just press and hold the key for more than ½-second to start the scanner. If the transceiver is in the Dial mode, band scanning will result. If a memory number is displayed, the transceiver is in the Memory mode, and only prestored memories will be scanned.

The scanner pause on any channel where a signal is found strong enough to open the squelch, and resumes about two seconds after the channel becomes clear. To stop the scanner, press any one of [▲], [▼], [D/MR] keys or the **PTT** switch.

For memory scanning, it is sometimes useful to be able to scan only certain memories. To use this feature, you can "hide" any memory from the scanner (except Memory [0]) without erasing it altogether. To hide a memory, press [F] + [D/MR], select the memory to hide, and press [F] + [D/MR] again while the Memory number is blinking. The display reverts to memory [0], and the hidden memory can no longer be selected or scanned.

To unmask a hidden memory, just repeat the same steps you took to hide it: press [F] + [D/MR], select the Memory number to unmask, and press [F] + [D/MR] again.

PRIORITY CHANNEL MONITORING

The Priority function allows periodic checking for activity on a "priority channel" while operating on another frequency in the Dial mode, or other memories. When the receiver senses a signal on this priority channel, operation will automatically shift to that frequency, for as long as a carrier is received. If you transmit while the squelch is open on the priority channel, priority monitoring is cancelled and operation stays on the priority channel.

The squelch must first be set the receiver is silent on a clear channel, and the priority channel frequency must be stored in a memory (this must be Memory [1] if you plan to operate on other memories while priority monitoring). Press [D/MR], if necessary, to select the desired Dial or Memory mode, and tune to the frequency or select the memory you want to operate on while priority monitoring. Press [F] + [PRI] to activate priority channel monitoring. A "*P*" will appear in the memory window at the upper left corner of the display, and about every five seconds the displayed frequency will shift to priority channel briefly while the receiver checks for a signal.

As long as no signal appears on the priority channel to open the squelch, you can tune, transmit and receive on the Dial, or select and operate on other memories (although the memory number is not displayed). If a station you wish to talk with appears on the priority channel, press the **PTT** switch momentarily while receiving his signal, to stop priority monitoring on that frequency.

Otherwise, to cancel priority monitoring, press [D/MR].

Operation

TONE SQUELCH OPERATION

The **FT-23R** MKII can be used to silently monitor for calls on busy channels when the optional **FTS-12** Tone Squelch Unit is installed. A general description and installation instructions are on Page 22.

To check and optionally set the tone frequency, press [F] + [T SET]. The tone frequency will be displayed (in Hz), with a leading zero if that tone selection is a high-Q type. To change the selected tone frequency, rotate the **DIAL** selector or press [▲] or [▼] until the display shows the tone frequency you require (the display will step through the standard EIA tones, listed in the table below). Press [T] to return to the operating frequency display when the tone frequency is selected.

To activate the tone squelch functions press the [T] key. With one press, "**ENC**" (encode) will be displayed and the tone generator will be activated for transmission. Press [T] again and both "**ENC**" and "**DEC**" (decode) will be displayed together as the tone squelch system is activated for both transmission and reception (only signals sending the matching tone frequency will open the squelch). Pressing [T] once more disables tone squelch features.

Once you have the tone squelch set up the way you want it, you can store it in memory (or the call channel) by pressing [F] + [M], select the memory to store, and [M] again. Afterwards, to change a setting stored in memory, just recall the memory, reset the tone frequency or function, and press [F] + [M] and then [M] alone.

FTS-12 Tone Frequencies (Hz)			
67.0	100.0	141.3	203.5
71.9	103.5	146.2	210.7
74.4	107.2	151.4	218.1
77.0	110.9	156.7	225.7
79.7	114.8	162.2	233.6
82.5	118.8	167.9	241.8
85.4	123.0	173.8	250.3
88.5	127.3	179.9	
91.5	131.8	186.2	
94.8	136.5	192.8	

In Case of Problems

FT-23R MKII operation is not complicated, but it is still possible to get lost, at least until you have had the chance to learn the various functions of the keypad and display. If the display shows nothing at all, check the power switch (**VOL** control), and if necessary, remove the battery pack and check that the contacts are clean. If all appears to be physically in order, recharge or replace the batteries.

Fortunately, the display itself includes enough symbols and function indicators to let you know what is going on as long as power is applied, so it is well worthwhile to study the display diagram on page 5 carefully. For example, if the frequency display changes unexpectedly when you transmit (or if "*Err*" appears), check for a small "+" or "−" at the upper right-hand corner. Also, if only a few seemingly non-sensical digits appear, press [T] to disable the tone squelch setting feature.

Attempting an illegal command (such as activating the tone squelch when the **FTS-12** is not installed), will cause two beeps to sound. If pressing a key appears to do nothing, first check for a small "*L*" at the lower left, which indicates if the keypad is locked. If you see this, press [F] + [LOCK] to unlock the keys. If the "*L*" is not there, press [D/MR], which will terminate any partially entered commands. If you still cannot enter data, check the **BUSY/TX** indicator to see if it is red, indicating that the transceiver is transmitting. Releasing the **PTT** switch should return the set to receive. If still nothing happens, switch the transceiver off, and then back on.

To avoid confusion resulting from inadvertent key presses, set the keypad lock on (press [F] + [LOCK]) if you set the transceiver down while it is on, and then remember to set the lock back off when you wish to enter data.

If none of these measures helps, contact your Yaesu Dealer for assistance.

Getting the Most from Your Batteries

How long the batteries last between charges or replacement depends largely on your operating habits, and how you care for the battery pack (if using a Ni-Cd pack).

The **FT-23R** MKⅡ offers a variety of ways to conserve battery power, and thus to extend the life of each charge. Knowing how to use these features can be critical in emergencies.

Obviously, turning the set off when not in use saves battery life, and can also prevent damage that might result to the batteries if they are over-discharged.

Keeping the receiver squelched automatically activates the power saver function, requiring only about 15% of the power needed when listening to a signal or noise. So when listening for a call, choose a quiet frequency and close the squelch on background noise. The **FTS-12** Tone Squelch option is useful for creating your own quiet channel if the entire band is crowded. Also, use the lowest possible volume setting when listening to signals. In noisy environments, use an earphone so you can keep the volume low.

Keeping the **LOW** power switch on the top panel depressed requires about 60% less current when transmitting, so it is a good idea to develop the habit of always keeping this switch depressed, switching to high power only if low power fails to get through. If you live in a location where high power is almost always needed, consider replacing the antenna with a higher gain type instead of opting for high power (the result on transmissions is the same). Make sure that any external antenna is designed for 50-ohms impedance at the operating frequency.

As the battery discharges, the voltage drop when transmitting will increase. When battery voltage drops to around 6.5V, the beeper will begin to sound continuously, indicating that the batteries should be replaced or recharged as soon as possible.
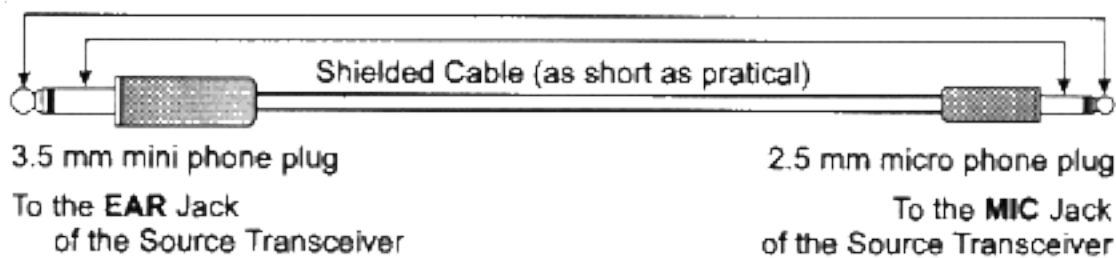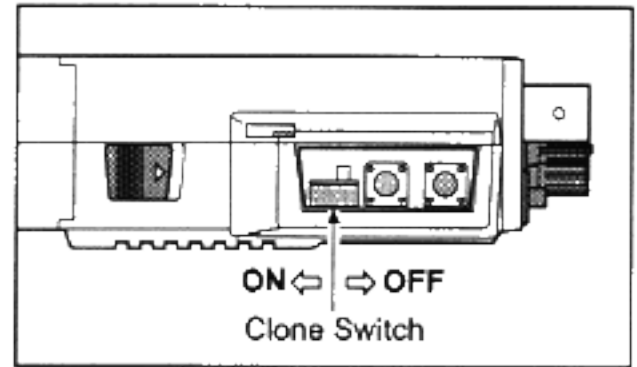
If using rechargeable batteries, do not keep operating once the beeper has come on, as this could cause over-discharge of the cells and destroy the pack. However, recharging Ni-Cd batteries often, with little use in between charges, can also shorten the useful life of the cells. Therefore the best way to get the most out of your Ni-Cds is to use the battery pack just until the beeper comes on, and then immediately give the pack a full recharge. Unfortunately this is not always convenient, since it can be hard to tell exactly when the charge will run out. One solution to this problem is to carry an extra, fully charged pack with you if you do not wish to have operation interrupted.

A special function of the **FT-23R** мкⅡ allows memories stored in one transceiver to be transferred to another set without re-entering data from the keypad. This function requires a user-constructed cable to connect the **EAR** jack on the source transceiver to the **MIC** jack on the transceiver to be programmed, and the Clone switch inside the rubber **PTT** switch cover to be set to ON, as shown below.

Cloning Procedure

☐ Turn the power switch off, and carefully pry out the rubber cover over the **PTT** switch. Locate the Clone miniature slide switch in the lower part of the opening, and set this switch to its alternate position. Repeat with the other transceiver.

☐ Connect the **EAR** jack of the source transceiver to the **MIC** jack of the target transceiver using a 2-conductor shielded cable.

ON⇦ ⇨OFF
Clone Switch

Shielded Cable (as short as pratical)

3.5 mm mini phone plug
To the **EAR** Jack
of the Source Transceiver

2.5 mm micro phone plug
To the **MIC** Jack
of the Source Transceiver

☐ Turn on the transceivers. All display digits should be blinking.

☐ Press the [▼] key on the target transceiver . The display should stop blinking and remain either on or off (either is acceptable).

☐ Press the [▲] key on the source transceiver. The data from Memory [0] in the source transceiver should now appear on the display of the target transceiver, as all other memory data is being transferred (If not, check your cable).

☐ If "*Err*" is displayed on the target transceiver, switch the power off and on, and repeat the last two steps.

☐ After the data has been transferred (a few seconds), turn the radio off, reset the Clone switches to their original position, and replace the rubber covers.

Installation of Option
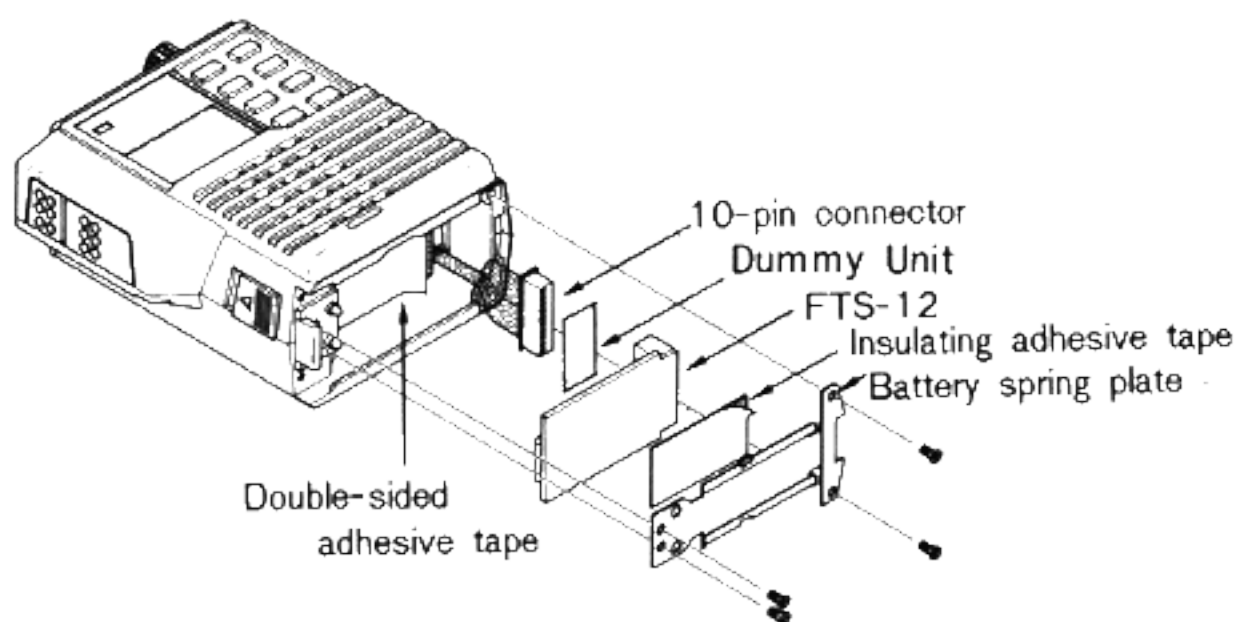
FTS-12 TONE SQUELCH UNIT INSTALLATION

The **FTS-12** is a subaudible CTCSS (Continuous Tone-Controlled Squelch System) which offers programmable selection of 37 tones for transmission and filter/detectors for reception. Transmit-only (encode) and transmit/receive (encode/decode) modes are selectable from keys on the transceiver. Installation is descrived here, while Tone Squelch operation is described on page 17.

Make sure the transceiver is off. Remove the hard or soft case, if used, and remove the battery pack as described on page 9.

1. Remove the four screws affixing the battery spring plate on the bottom of the transceiver and carefully remove the plate.
2. Locate and remove the small "Dummy Unit" circuit board connected to the 10-pin connector in the compartment on the bottom of the transceiver. It is not needed when the **FTS-12** is installed.
   *Note: If the **FTS-12** is later removed, the Dummy Unit must be replaced in the 10-pin connector to allow normal operation.*
3. Connect the plug in the transceiver to the **FTS-12**.
4. Locate the double-sided adhesive tape that is already installed inside the compartment on the bottom of the transceiver, and remove the paper cover from the tape. Then mount the **FTS-12** by pressing the flat surface of the IC (on the **FTS-12**) against the tape (see below).
5. Apply the (supplied) insulating adhesive tape to the battery spring plate.
6. Replace the battery spring plate and its four screws, and the battery pack.

YAESU
... leading the way.[SM]