APPENDIX 5

USERS MANUAL

SIXTEEN (16) PAGE USER INSTRUCTIONS
FOLLOW THIS SHEET

Owner's Manual

Cat. No. 21-1804

Personal FM Transceiver

- No License Required!
- Transmit/Battery Indicator
- Automatic Squelch
- Paging Feature
- Automatic Power Save

RadioShack welcomes you to the next generation of personal communication — the Family Radio Service (FRS). FRS is a new license-free, two-way, short-range voice radio service that lets families and groups keep in touch with each other on specific reserved channels.

RadioShack®

INTRODUCTION

Your RadioShack Personal FM Transceiver is a lightweight, palm-sized radio that you can carry almost anywhere. Use it at shopping malls, amusement parks, or sports events to contact family and friends, or in a neighborhood watch for vital communications. You can talk with another person who has an FRS radio set to the same *frequency* as your transceiver. You can select one frequency from 14 FRS channels.

Your radio has *auto-squelch*, which means you won't hear anything on the channel unless someone is transmitting nearby on the same channel. But, you can turn off auto-squelch to hear weaker, distant transmissions (see Pages 4–5).

Also, if you do not transmit for over 8 seconds, the radio automatically switches to a power save mode and returns to full power when it receives a transmission or you press any key.

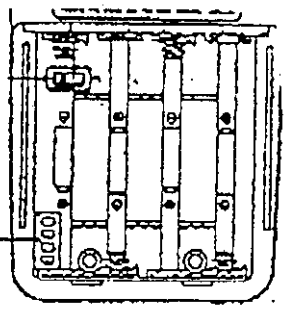
We recommend you record your radio's serial number here. The number is on the radio's back panel.

Serial Number:

SETTING THE CHANNEL

Before using the transceiver, select a channel you want to use from 14 FRS channels. To program the channel, set the DIP switch as shown below.

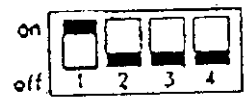
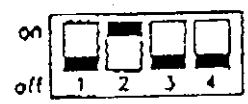
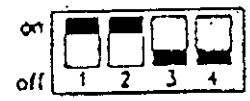
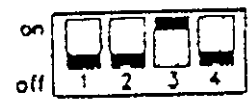
1. Slide off the battery compartment cover in the direction of the arrow on the cover.



2. To select the desired channel, set the switches as shown below.

   Example of Channel 9

   Switch: 1/off 2/off 3/off 4/on

Channel	Switch Position
1	
2	
3	
4	
5	
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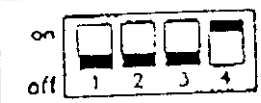
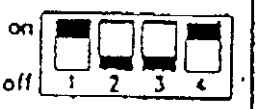
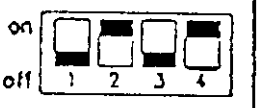
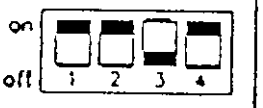
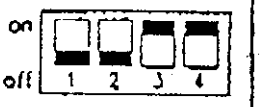
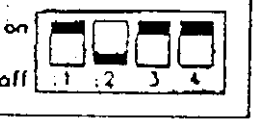
9	

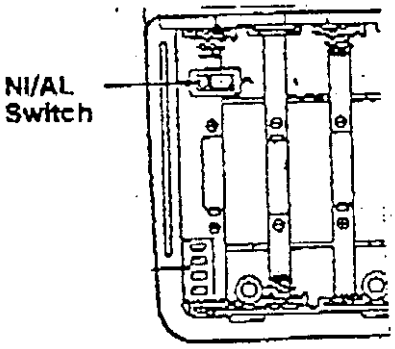
Channel	Switch Position
10	
11	
12	
13	
14	

INSTALLING BATTERIES

Your radio uses four AAA batteries for power. We recommend alkaline batteries (such as RadioShack Cat. No. 23-558).

You can also use rechargeable batteries (such as Cat. No. 23-127) in the radio. Before you use nickel-cadmium batteries, you must charge them (see "Charging Nickel-Cadmium Batteries" on Page 10).

1. Be sure the radio is off, then slide off the battery compartment cover in the direction of the arrow on the cover.
2. If you are installing alkaline batteries, use a pointed object such as a pen to set **NI/AL** inside the compartment to **AL**. Or, if you are installing nickel-cadmium batteries, set it to **NI**.



Warning: Never set **NI/AL** to **NI** if you are installing non-rechargeable batteries. Non-rechargeable batteries can get hot or explode if you try to recharge them.

3. Install the batteries, matching the polarity symbols (+ and –) inside the compartment. Then replace the cover.

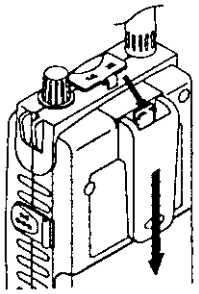
Caution: Do not mix old and new batteries, different types of batteries (standard, alkaline, or rechargeable), or rechargeable batteries of different capacities.

The radio's range decreases as the battery power decreases. To ensure maximum range, keep fresh batteries in the radio.

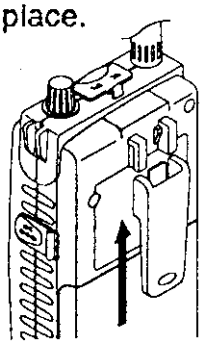
USING THE BELT CLIP

You can use the supplied belt clip to make your transceiver easier to use when you are on the go.

To remove the belt clip from the transceiver, while pulling the tab, slide the belt clip down.



To attach the belt clip to the transceiver, slide it up until it locks into place.



USING THE RADIO

Antenna

To talk, hold down PTT (push to talk). Speak into the microphone when the TX indicator lights. When you finish speaking, release PTT.

Note: If the TX indicator lights when you are not holding down PTT, replace or recharge the batteries.

To hear everything happening on a channel, including weak transmissions, hold down **MON**. Release **MON** to turn auto-squelch back on.

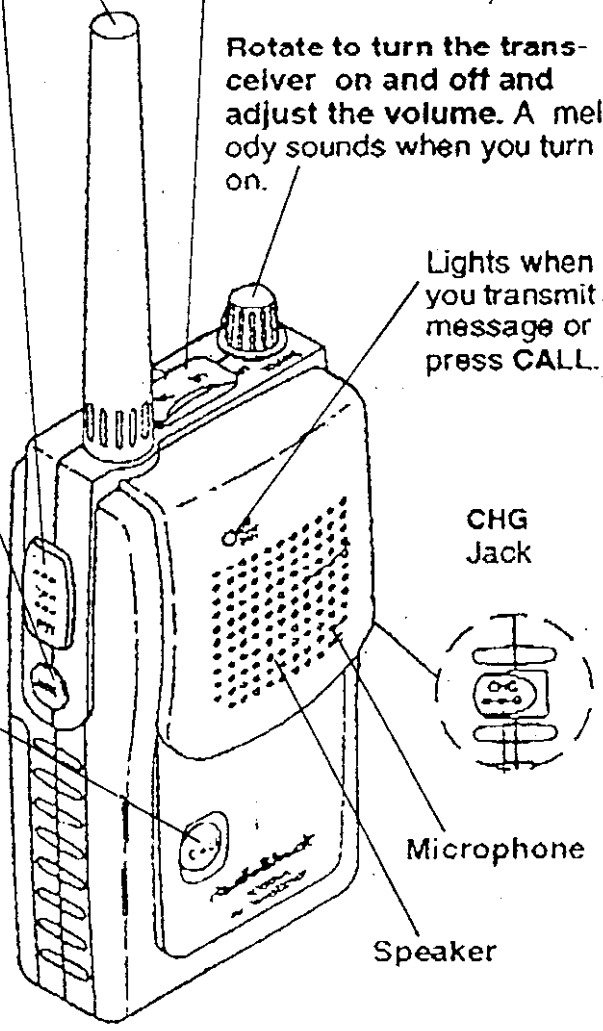
You can cause a paging tone to sound on all radios tuned to the same FRS channel as you set on your transceiver. To send a page, press **CALL**.

Important: The FCC does not allow you to send a continuous tone for more that 10 seconds at a time on FRS frequencies. Therefore, do not hold down **CALL** for more than 10 seconds.

Connect an optional headset with microphone (such as Cat. No. 19-312) or microphone and earphone communication headset (such as Cat. No. 19-315) into the **MIC** and **SPK** jacks. This automatically disconnects the internal speaker and **PTT**. Or, you can connect a mono earphone (such as Cat. No. 33-177) into **SKP** jack.

Rotate to turn the transceiver on and off and adjust the volume. A melody sounds when you turn it on.

Lights when you transmit a message or press **CALL**.



CHG Jack

Microphone

Speaker

CHARGING NICKEL-CADMIUM BATTERIES

The transceiver has a built-in circuit that lets you recharge nickel-cadmium batteries while they are in the transceiver. To charge the batteries, set **NI/AL** to **NI**, install the nickel-cadmium batteries in the transceiver, and connect an external AC adapter, such as RadioShack Cat. No. 273-1455, to the transceiver's **CHG** jack.

Warning: Do not connect the adapter to the transceiver if you have non-rechargeable batteries (such as alkaline batteries) installed in the transceiver and **NI/AL** is set to **NI**. Non-rechargeable batteries will get hot and can eve explode if you try to recharge them.

Cautions: The recommended AC adapter supplies 9 volts and delivers at least 300 milliamps. It has a barrel plug with a center negative tip that correctly fits the transceiver's **CHG** jack. Using an adapter that does not meet these specifications could damage the transceiver or the adapter.

1. Turn **VOLUME** counter-clockwise until it clicks to make sure power is turned off.
2. Plug the adapter's 5.5 mm outside diameter/2.1 mm inside diameter barrel plug into your transceiver's **CHG** jack.
3. Plug the other end of the adapter into a standard AC outlet.

Before you use nickel-cadmium batteries for the first time, charge them at least 24 hours to bring them to a full charge.

Discharged batteries take about 10 to 18 hours to fully recharge.

Notes:

- Nickel-cadmium batteries last longer and deliver more power if you occasionally let them fully discharge.
- To prevent damaging nickel-cadmium batteries, never charge them in an area where the temperature is above 113°F or below 40°F.

Important: At the end of a rechargeable battery's useful life, it must be recycled or disposed of properly. Contact your local, county, or state hazardous waste management authorities for information on recycling or disposal programs in your area. Some options that might be available are: municipal curb-side collection, drop-off boxes at retailers such as your local RadioShack store, recycling collection centers, and mail-back programs.

SPECIFICATIONS

Channel 14

Channel Frequencies:

Channel 1	462.5625 MHz
Channel 2	462.5875 MHz
Channel 3	462.6125 MHz
Channel 4	462.6375 MHz
Channel 5	462.6625 MHz
Channel 6	462.6875 MHz
Channel 7	462.7125 MHz
Channel 8	467.5625 MHz
Channel 9	467.5875 MHz
Channel 10	467.6125 MHz
Channel 11	467.6375 MHz
Channel 12	467.6625 MHz
Channel 13	467.6875 MHz
Channel 14	467.7125 MHz

Power Output .....100 mW ERP

Battery Life:

Alkaline	24 Hours (1050 mAh)
NiCd	8 Hours (250 mAh)

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

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

CARE

To enjoy your radio for a long time:

- Handle it gently.
- Keep it away from dust, moisture, and temperature extremes.
- Clean it with a damp cloth. Do not use harsh chemicals.

FCC INFORMATION

Important: Do not open your radio to make any internal adjustments. Your radio is set up to transmit a regulated signal on an assigned frequency. It is against the law to alter or adjust the settings inside the radio to exceed those limitations. Any adjustments made to your radio must be made by a qualified technician using the proper test equipment. To be safe and sure:

- Never open your radio's case.
- Never change or replace anything in your radio except the batteries.

Your radio might cause TV or radio interference even when it is operating properly. To determine whether your radio is causing the interference, turn it off. If the interference goes away, your radio is causing it. Try to eliminate the interference by:

- Moving your radio away from the receiver
- Calling your local RadioShack store for help

Using your transceiver as described in this manual exposes you to RF energy well below the FCC's recommended limits.

Limited Ninety-Day Warranty

This product is warranted by RadioShack against manufacturing defects in material and workmanship under normal use for ninety (90) days 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.

RadioShack Customer Relations, Dept. W,
100 Throckmorton St., Suite 800, Fort Worth, TX 76102

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Fort Worth, Texas 76102
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APPENDIX 6

TRANSMITTER ALIGNMENT

TWO (2) PAGE ALIGNMENT PROCEDURE FOLLOWS THIS SHEET

7. Alignment instructions

WARNING

Any repairs or adjustments should be made under the supervision of a qualified radio-telephone technician.

TRANSMITTER

1. Power Supply Voltage

The Power supply voltage should be set for 6.0 VDC measured at the radio during transmit. Periodically check the power supply voltage during the alignment procedure.

2. Frequency Setting

A. Connect a frequency counter or Communications Service Monitor to the antenna connector through an RF power attenuator (5 watt minimum rating, 20 dB minimum attenuation).
B. Depress the PTT switch.
C. Adjust the TCXO-1 trimmer capacitor such that the output frequency is equal to the channel frequency with a maximum error of +/- 200 Hz.
D. Release the PTT switch.

3. Output Power Alignment.

A. Set the power supply voltage for 6.0 VDC.
B. Connect a Communications Service Monitor or a watt meter and dummy load to the antenna connector.
C. Depress the PTT switch.
D. To be convinced for 0.5 Watt(50 ohm load) output power with a maximum error of - 0.15 Watts.
E. Release the PTT switch.

4. Deviation Adjustment.

A. Connect an audio generator .
The audio frequency should be set at 1 KHz.
B. Connect an FM deviation meter or Communications Service Monitor to the antenna connector through an RF power attenuator (5 watt minimum rating, 20 dB minimum attenuation). Set the monitor to read peak deviation.
C. Depress the PTT switch.
D. Adjust RV3 for +/- 2.5KHz maximum deviation.
E. Release the PTT switch.

RECEIVER

NOTE:
Insure that the proper channel has been selected before proceding with the alignment procedure.

1. Power Supply Voltage

The proper voltage for testing is 6.0 VDC.

2. Receiver Alignment

A. Connect an RF signal generator or Communications Service Monitor to the antenna connector.
B. Connect a SINAD meter and oscilloscope across the speaker terminals.
C. Set the output level of the RF signal generator for -47 dBm. the generator should be set for +/- 1.5 KHz deviation of a 1 KHz tone.
D. Set the audio output level for 0.6 Vrms. by adjusting volume.
E. Adjust L11 for maximum audio output.
F. Adjust L11 for minimum audio distortion.