

Forward

Manual Scope

This manual is intended for use by experienced technicians familiar with similar types of communication equipment. It contains all service information required for the equipment and is current as of the publication date.

Product Safety and RF Exposure for Portable Two-Way Radios Compliance with RF Energy Exposure Standards

NOTICE: This radio is intended for use in occupational/controlled applications where users have been made aware of the potential for exposure and can exercise control over their exposure. This radio device is **NOT** authorized for general population, consumer or similar use.

BEFORE USING THIS RADIO, READ THE TRAINING MATERIAL BELOW WHICH CONTAINS IMPORTANT OPERATING INSTRUCTIONS FOR SAFE USAGE AND RF ENERGY AWARENESS AND CONTROL INFORMATION FOR COMPLIANCE WITH RF ENERGY EXPOSURE LIMITS IN APPLICABLE NATIONAL AND INTERNATIONAL STANDARDS.

Federal Communication Commission (FCC) Regulations

The FCC has established limits for safe exposure to radio frequency (RF) emissions from portable two-way radios. The FCC requires manufacturers to demonstrate compliance with RF exposure limits before portable two-way radios can be marketed in the U.S. When two-way radios are approved for occupational/controlled environment exposure limits, the FCC requires users to be fully aware of, and exercise control over, their exposure. Awareness and control of RF exposure can be accomplished by the use of labels, or by education and training through appropriate means, such as information and instructions in user manuals or safety booklets. Your Advanced Wireless two-way radio has an RF exposure information label in the battery compartment. The training material below includes useful information about RF exposure and helpful instructions on how to control your RF exposure.

Your Advanced Wireless two-way radio is designed and tested to comply with a number of national and international standards and guidelines (listed below) regarding human exposure to RF electromagnetic energy. In terms of measuring RF energy for compliance with FCC exposure guidelines, your radio radiates measurable RF energy only while it is transmitting (during talking), not when it is receiving (listening) or in standby mode.

Compliance and Control Guidelines and Operating Instructions for Portable Two-Way Radios

To control your exposure and ensure compliance with the occupational/controlled environment exposure limits, always adhere to the following procedures:

- * Transmit no more than 50% of the time. To transmit (talk), push the Push-To-Talk (PTT) button. To receive calls, release the PTT button. Transmitting 50% of the time or less is important since the radio generates measurable RF energy exposure only when transmitting (in terms of measuring standards compliance).

- * Hold the radio in a vertical position in front of the face with the microphone positioned at least one inch (2.5 cm) away from the lips. Keeping the radio at the proper distance is important since RF exposure decreases with increasing distance from the antenna.

- * For body-worn operation, always use the radio with the AWC Belt-Clip Part No.: 420855203393. AWC-approved accessories, antennas, and device combinations have been tested and comply with the occupational/controlled environment RF exposure limits. The use of non-AWC approved accessories may result in exposure levels that exceed the

RF exposure limits for the occupational/controlled environment.

* If you are not using a body-worn accessory and are not using the radio held in front of the face, ensure the radio is kept a minimum of 0.7 cm from the body when transmitting. Keeping the radio at a proper distance is important since RF exposure decreases with increasing distance from the antenna.

FCC license Information

Your Advanced Wireless Communications radio operates on communications frequencies which are subject to FCC (Federal Communications Commission) Rules & Regulations. FCC Rules require that all operators using Private Land Mobile radio frequencies obtain a radio license before operating their equipment. Application for license must be made on FCC form 601, and schedules D, E, and G.

FAX: Forms can be obtained by fax from the FCC Fax-On-Demand system. Call 1-202-418-0177 from your fax machine and request document number 000600 for the form, schedules, and instructions.

MAIL: Forms can be ordered by telephone, and will be sent to you by first class mail. Call the FCC Forms Hotline at 1-800-418-FORM (1-800-418-3676).

INTERNET: Form 601 and instructions can be downloaded from the FCC Forms website at: <http://www.fcc.gov/Forms/Form601/601.html>

Before filling out your Form 601 application Technical Data section, you must decide which frequency (or frequencies) you will operate on. Refer to the frequency chart on page 26.

Questions? Call the FCC for license application questions at 1-888-CALL-FCC (1-888-225-5322).

If you have any questions, call Advanced Wireless Communications:
1-800-475-5852

Notices to The User

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.

One or more of the following statements may be applicable:

FCC WARNING

This equipment generates or uses radio frequency energy. Changes or modifications to this equipment may cause harmful interference unless the modifications are expressly approved in the instruction manual. The user could lose the authority to operate this equipment if an unauthorized change or modification is made.

INFORMATION TO THE DIGITAL DEVICE USER REQUIRED BY THE FCC

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can generate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that the interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer for technical assistance.

SAFETY INFORMATION:

Your wireless portable two-way radio has been designed using a low power transmitter. When the **PTT** switch is pressed, the radio generates radio frequency (RF) electromagnetic energy (EME). This radio is designed to comply with the FCC Report and Order FCC 96-326 (August, 1996).

User Safety Information

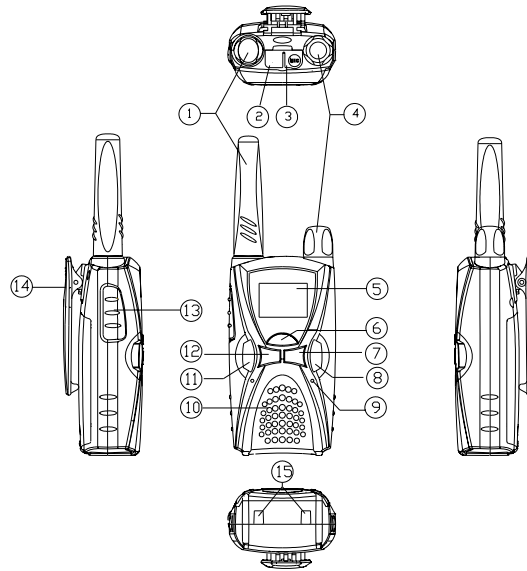
The following precautions are recommended for personnel safety:

- DO NOT transmit until all RF connectors are verified secure and any open connectors are properly terminated.
- SHUT OFF and do not operate this equipment near electrical blasting caps or in an explosive atmosphere.
- When in vehicles with an airbag, do not place a portable radio in the area over an airbag or in the airbag deployment area.
- Do not expose the radio to direct sunlight for a long time nor place it close to a heating source.
- Do not use any portable radio with a damaged antenna. If a damaged antenna comes into contact with your skin, a minor burn may result.
- This equipment should be serviced by a qualified technician only.

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Brief Introduction



1. Antenna
2. Programming Jack
3. Speaker/Mic Jack
4. Power/Volume Knob

Rotate the Power/Volume Knob clockwise until a “click” is heard to turn the radio on, fully counter clockwise to turn the radio off. When the radio is on, turn the knob to adjust volume.

5. LCD Display
Indicate operation status of the radio. (Refer to “LCD Display” for details)
6. MENU key

In standby mode, briefly press MENU key to display current channel information and hold down this key to enter menu mode. During setting, press MENU key to save and switch to the next setting.

7. “-” key
Used to select the channel/interference eliminator code downwards or change menu settings.

8. MON key
In standby mode, briefly press MON key to begin channel scanning; hold down MON key to begin monitoring.

9. MIC
10. Speaker

11. “”key (CALL key)

If Call feature is enabled, briefly press the CALL key to transmit a call signal; During setting, press CALL key to save and return to the first setting or exit; Hold down the CALL key to lock/unlock keypad.

12. “+” key

Used to select the channel/interference eliminator code upwards or change menu settings.

13. PTT button

Press and hold PTT, radio operates in transmit mode. Release PTT, radio returns to receive mode.

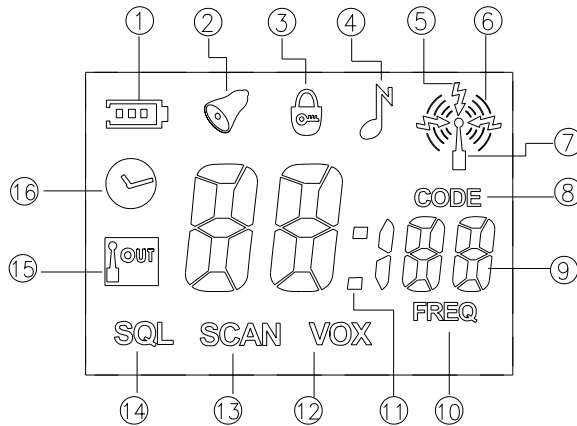
14. Belt Clip

Used to clip radio on your belt.

15. Charging Connectors

Connect the charging connectors with that on the charger to begin charging.

LCD Display



1. Battery Meter, used to indicate the battery power.
2. Appears when setting the Alarm Clock or the Alarm Clock is on; Flashes when the Alarm Clock rings.
3. Appears when keypad lock is on.
4. Appears when setting the call tone.
5. Appears when receiving signals from the selected channel.
6. Appears when transmitting.
7. Appears when transmitting/receiving is enabled.
8. Indicate that the number on the LCD displays interference eliminator code and channel number. The number under it indicates current interference eliminator code.
9. Two large "8", a small "1" and two small "8" display the current channel number, interference eliminator code, frequency number, time or the status of current setting.
10. Indicate that the number on the LCD displays channel number and frequency number. The number above the icon indicates the frequency number of current channel.
11. Appears between hour and minute when LCD displays clock.
12. Appears when setting VOX or VOX feature is enabled.
13. Appears when scanning channel or setting channel scan add/delete.
14. Appears when setting squelch level.
15. Communication Range Alarm, flashes when your companion are out of range; appears when setting communication range alarm or communication range alarm is enabled.
16. Appears when setting the clock.

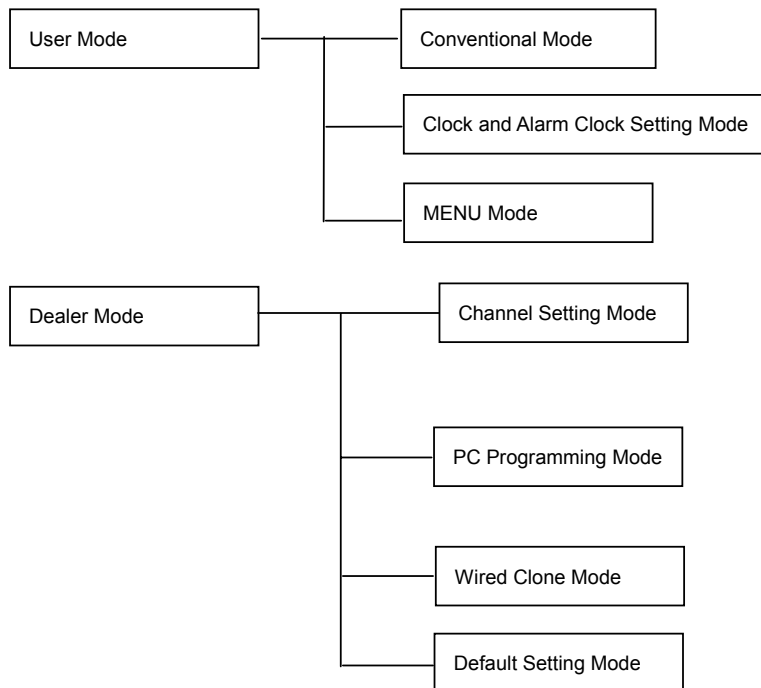
Software Description

Radio Feature Description

	Feature	Description
1	56 UHF frequencies available	Frequency Range: 461.0375 - 469.5625 MHz
2	Selectable number of available channels 1-8	User can select 1-8 frequencies from 56 available frequencies
3	Selectable 121 Interference Eliminator Codes	Include 38 CTCSS and 83 CDCSS
4	LCD Display	Display operation status and setting modes
5	LCD Backlight	
6	Keypad Lock	Pressing any key is invalid except PTT, briefly pressing MENU key and holding down CALL key.
7	VOX Feature	Only available when connected with external audio accessory.
8	Five VOX Sensitivity Levels Available	The lower the level, the higher the sensitivity.
9	Battery Power Indicator	
10	Low Battery Alert	The radio will sound alert when the battery voltage is lower than preset threshold value.
11	Channel Scan	The radio will only scan the selected 1-8 channels. If 4 channels are selected, the radio will scan these 4 channels only.
12	Battery Save (Sleep Mode)	The radio will enable battery save feature if no button is pressed and no operation takes place within 25 seconds. The radio will switch between 200ms standby mode and 600ms sleep mode.
13	Clock Display and Alarm Clock	
14	Five CALL TONES available	The radio will sound call tone when receiving a valid call. User can disable the call tone.
15	PC Programmable	In this mode, MCU is connected with PC via UART port.
16	Enable/Disable Certain Features (through PC programming)	
17	Wired Clone	MCU transfer the data in one radio to another via UART port.

18	Monitor	
19	Time Out Timer	TOT time: 1 minute or 5 minutes. This feature can be disabled.
20	Auto Squelch	4 squelch levels available. Higher squelch level makes it harder for the radio to receive weak signals
21	Communication Range Alarm	The radio will sound alert when you are almost out of communication range.

Radio Modes



Functions and Operations

1. Conventional Mode

Turn the power on. If no key is pressed, the radio will enter conventional mode. In this mode, you can operate as following:

- Receive or press PTT to transmit;
- Display clock (It's set by your dealer) or channel number;
- Low battery detect and battery power indication;
- VOX feature (Only valid when connecting with external audio accessory) (It's set by your dealer);
- Communication Range Alarm (It's set by your dealer);
- Alarm Clock (It's set by your dealer);
- Briefly press CALL key to transmit a CALL (It's set by your dealer);
- Press and hold CALL key to enable/disable keypad lock (It's set by your dealer);

- Briefly press MENU key to display current channel information (frequency number and interference eliminator code); Press and hold MENU key to enter setting menu;
- Press UP/DOWN key to increase/decrease channel number;
- Briefly press MONI key to enter channel scan mode; Press and hold MONI key to begin monitor;
- Battery Save feature (It's set by your dealer).

2. Clock and Alarm Clock Setting Mode

Turn the power on while holding down CALL key and PTT key simultaneously. After 2 seconds, the radio enters clock and alarm clock setting mode.

Press UP/DOWN to select upwards/downwards. Press MENU key to save and go to next setting item. Press CALL key to save and go to the first setting item. If the current item is the first setting item, press CALL key to save and exit.

In this mode, you can operate as following:

- Select to display clock or channel number in conventional mode;
- Set hour of the clock;
- Set minute of the clock;
- Alarm clock enable/disable setting;
- Set hour of the alarm clock;
- Set minute of the alarm clock.

3. Menu Mode

In conventional mode, press and hold down MENU key to enter menu mode.

Press UP/DOWN to select upwards/downwards. Press MENU key to save and go to next setting item. Press CALL key to save and go to the first setting item. If the current item is the first setting item, press CALL key to save and exit.

In menu mode, LCD displays "T" icon indicating that you can transmit/receive. LCD displays channel information when pressing PTT to transmit. And the display returns to the setting mode before transmission when releasing PTT or time out timer is due.

In this mode, you can operate as following:

- VOX feature enable/disable and five sensitivity levels setting (It's set by your dealer);
- Call tone setting (five call tones) (It's set by your dealer);
- Button beep enable/disable (It's set by your dealer);
- Squelch level setting;
- Communication rang alarm feature enable/disable (It's set by your dealer);
- Battery type setting.

4. Channel Setting Mode

Turn the power on while holding down MON and PTT key simultaneously. After 2 seconds, the radio enters channel setting mode.

Press UP/DOWN to select upwards/downwards. Press MENU key to save and go to next setting item. Press CALL key to save and go to the first setting item. If the current item is the first setting item, press CALL key to save and exit.

In this mode, you can operate as following:

- Select channel number from 1 to 8;
- Select frequency number from 1 to 56;
- Select interference eliminator code from 0 to 121;

- Set the number of available channels from 1 to 8;
- Scan Add/Delete.

5. PC Programming Mode

Insert programming cable into the programming jack and then turn the power on, the radio enters PC programming mode.

6. Wired Clone Mode

Connect the radio with wired clone cable and then turn the power on while holding down CALL and MON key simultaneously, the radio enters wired clone mode after 2 seconds. And then press MON key to begin data transmission.

7. Default Setting Mode (It's set by your dealer)

Turn the power on while holding down “+” and “-” key simultaneously to restore the factory settings after 2 seconds.

Assembly and Disassembly for Repair

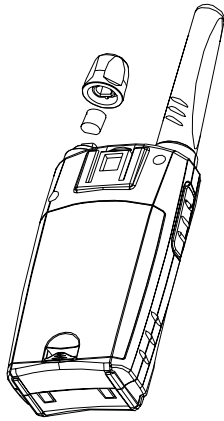


Fig. 1

Remove the power knob. See figure1.

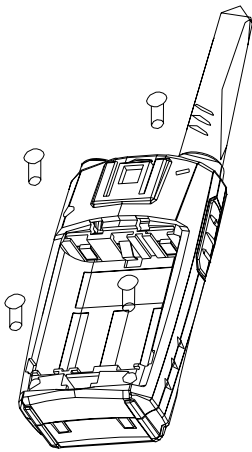


Fig. 2

Remove the four screws on the chassis. See figure 2.

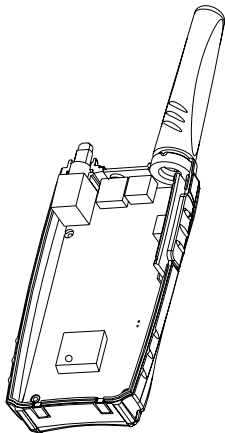


Fig. 3

The disassembled unit is shown as figure 3.

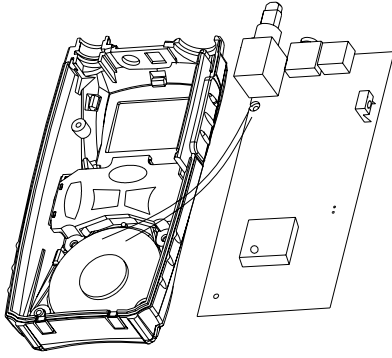
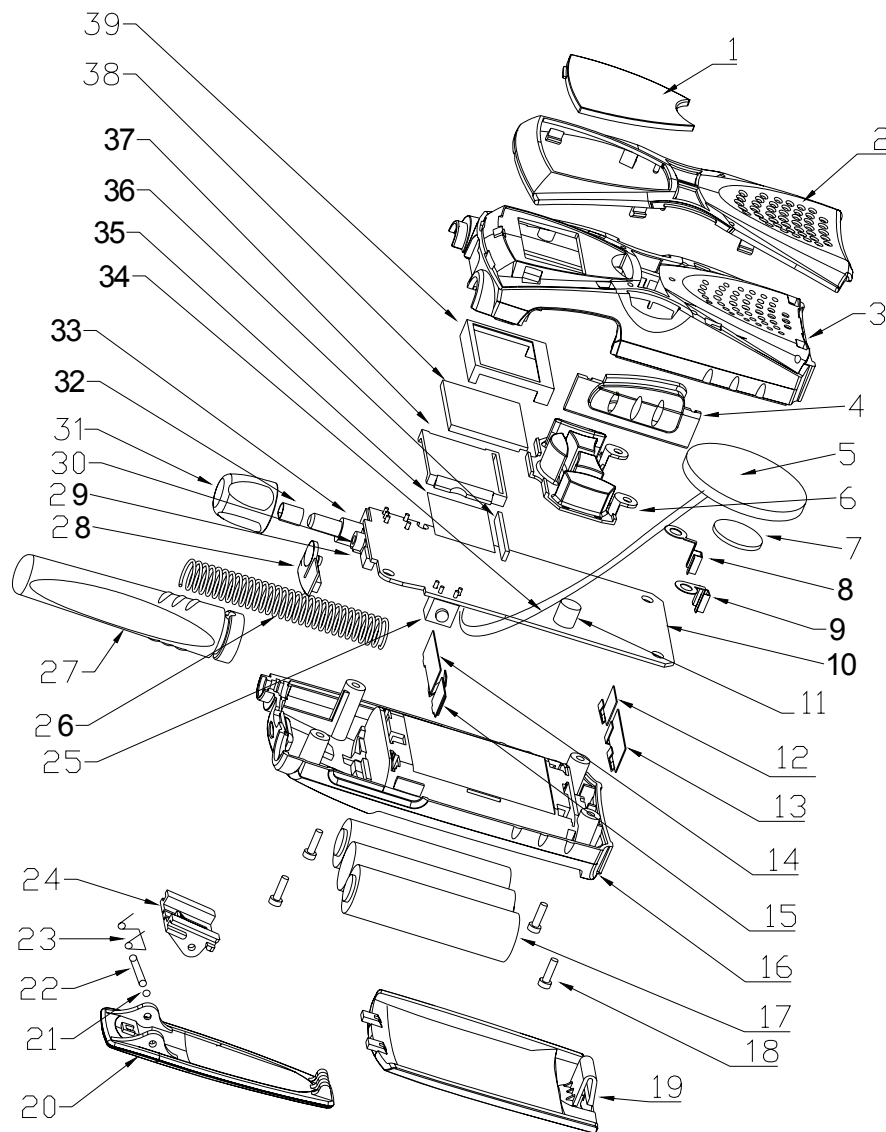


Fig. 4

Take out the antenna spring, antenna cover and PCB. See figure 4.

Exploded View



Packing

