

IMPORTANT SERVICE INFORMATION

Read this manual before attempting to setup or use this instrument. It contains important information regarding safe installation and use. Keep this manual for future reference. Also save the carton, packing and proof of purchase to simplify and accelerate any needed action. If you need assistance or service, call (800) 888-8990 between 8:00 a.m. and 4:30 p.m. Pacific Standard Time, Monday through Friday. You can also visit our web site at: www.nwbphones.com for tech support and information on our products.

**THIS SYMBOL IS INTENDED TO ALERT THE USER
OF THE PRESENCE OF IMPORTANT OPERATING
AND MAINTENANCE (SERVICING) INSTRUCTIONS
IN THE OWNER'S MANUAL.**

99150

CARTON CONTENTS

- 99150 Two-Way Radio
- User-Replaceable Belt Clip*
- User's Manual

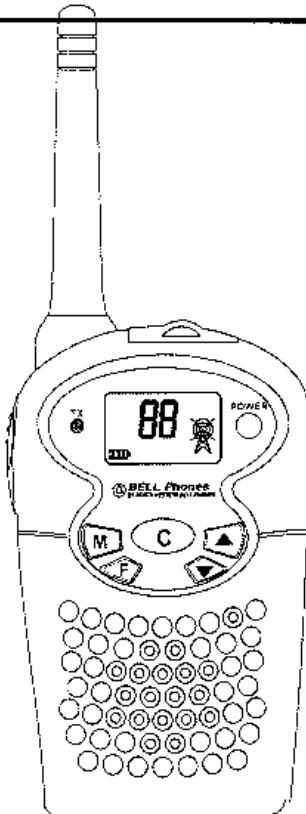
* - Attached to the unit at the time of packaging.



BELL® Phones

BY NORTHWESTERN BELL PHONES

99150



Congratulations on your selection of the 99150 from Northwestern Bell Phones. This quality Family Radio Service two-way radio, like all Genuine BELL® products, has been designed to give you many years of continuous service and represents the best value for your money. It requires little maintenance and is easy to setup and operate.

FCC NOTICE

Warning: Adjustment to this unit or replacement of any transmitter component (crystal, semiconductor, etc.) to this unit that could result in a violation of the rules.

NOTE: 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 radiate 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 TV 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 needed.
- Consult the manufacturer for technical assistance.

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.

SAFETY INFORMATION: Your wireless hand-held portable transceiver contains a low power transmitter. When the Push-to-Talk (PTT) button is pushed it sends out radio frequency (RF) signals. In August 1996, the Federal Communications Commissions (FCC) adopted RF exposure guidelines with safety levels for hand-held wireless devices.

IMPORTANT: To maintain compliance with the FCC's RF exposure guidelines hold the transmitter and antenna at least 1

inch (2.5centimeters) from your face and speak in a normal voice, with the antenna pointed up and away from the face. If you wear the handset on your body while using the headset accessory, use only the supplied belt clip for this product and when transmitting, take it out of the belt to ensure that the antenna is at least 1 inch (2.5 centimeters) from your body.

Use only supplied antenna. Unauthorized antennas, modifications, or attachments could damage the transmitter and may violate FCC regulations.

FCC WARNING: This equipment generates or uses radio frequency energy. Changes or modifications not expressly approved in writing cause harmful interference and void the user's authority to operate this equipment.

FRS PRODUCT DESCRIPTION

The Family Radio Service (FRS) is the newest generation in personal two-way communications. FRS radios operate in license-free radio band (no FCC license is needed for FRS operation), on any of the 14 license-free channels.

The 99150 is a lightweight, palm-sized two-way radio that can be used up to about two miles with family or friends at park, shopping malls, sporting events, concerts, any indoor or outdoor activity!

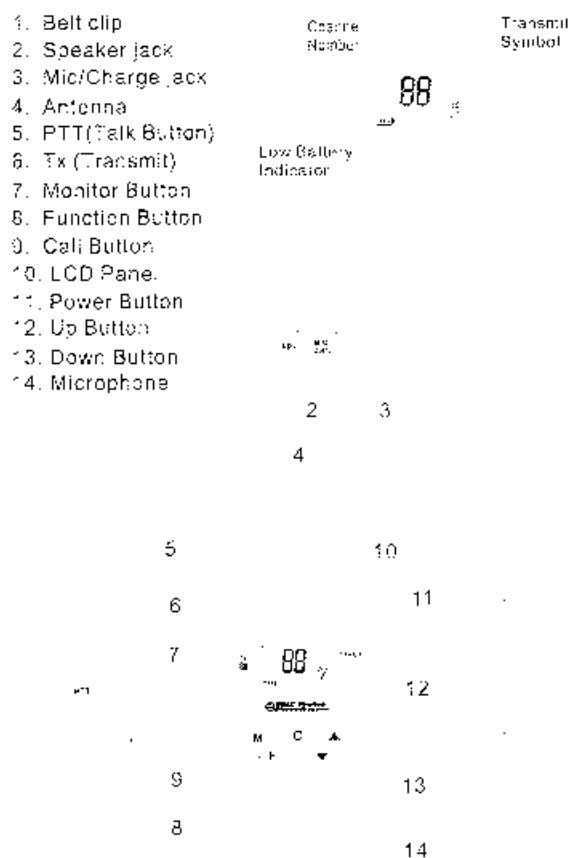
The 99150 is compatible with other two-way radios using the FRS frequency band (operating in the frequency range from 462.5625 MHz to 467.7125 MHz).

The 99150 is a 14-channel UHF two-way radio, featuring a multi-functional LCD panel (which indicates the current channel and various radio status icons).

Please read this user's manual thoroughly to get most out of your 99150 two-way radio.

NOTE: The maximum transmission range will vary depending on terrain and environment. Range will be greater in open fields, while the range is shorter within/around buildings or large structures.

99150 CONTROLS DIAGRAM



DESCRIPTION

Battery Compartment -Houses four "AAA" type batteries (not included).

Battery Cover Latch -Secures the battery cover in place.

Belt Clip -For your convenience, a belt clip is included to secure the radio to a belt or any other convenient location.

LCD (Liquid Crystal Display) Panel -A multifunctional display which shows channel and other radio status/icons.

Function (F) Button -Allows you to program channels.

MONITOR (M) Button -Lets you listen in on a channel for weak signals.

PTT (Push To Talk) Button / Switch -Used for transmitting (making a call).

TX /RX LED -Illuminates in red when transmitting (TX).

UP/(▲) and DOWN (▼) Buttons -Used for changing channels, and you can increase or decrease the volume level.

Power button -Push and hold this button to turn on/turn off the unit.

INSTALLATION

Battery installation

1. Remove the belt clip by pulling the tab on the top of the clip back, and sliding belt clip up and off the unit.
2. Pull battery cover from the battery compartment.
3. Install four "AAA" type batteries (not included). Position the batteries according to the polarity markings on the plastic.
4. Reinstall the battery cover. Snap the belt clip into place.

NOTES:

-Alkaline batteries are recommended for longer usage
-When the 99150 is not being used, conserve battery power by push and hold the power button.
-Remove the batteries if the unit will not be used for a long period of time .

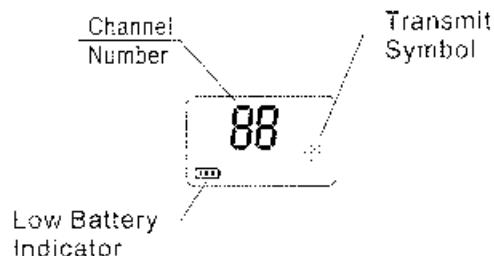
Installing the Belt Clip

1. Slide the belt clip into place into the belt clip slot.
2. Ensure you hear a click, to indicate that it is securely in place.

Removing the Belt Clip

1. Pulling the tab on the top of the clip back.
2. Slide belt clip up and off the unit.

LCD PANEL DISPLAY



OPERATION

Turning the Unit ON

Push and hold the power button. An audible tone will generate and the RF channels indicate on the LCD.

Turning the Unit OFF

Push and hold the power button. The LCD panel will turn blank.

Adjust the speaker Volume

- Push the (▲) up button to increase volume
- Push the (▼) down button to decrease volume

Receiving a Call

The unit is continuously on receive when the unit is ON. When you receive a call on the current channel you are using, the LCD panel will show the Receive icon.

NOTE: You

Transmitting a Call

1. Push and hold the PTT button switch to transmit. The TX LED will light up in red and the LCD transmit icon will flash.
2. While holding the PTT button, speak in a normal voice about 2 to 3 inches away from the microphone
3. Release the PTT button when you have finished transmitting.

NOTE: In order for other people to receive your transmission, they must also be on the same channel you are currently using. Refer to the "Changing Channels" section for more information.

Changing Channels

The 99150 has 14 available channels. To change channels:

1. Press the F key until the channel number digit flashes on the LCD panel.
2. While the channel number is flashing,
 - Press the UP (▲) key to increase the channel number.
 - Press the DOWN (▼) key to decrease the channel number.

-----Press the F key to select the desired channel.

NOTE: Refer to the "FRS Channel Table" section of this manual for detailed frequency listings.

MONITOR

You can use the MONITOR feature to listen in for weak signals in the current channel, or for adjusting the speaker volume.

- Press the M(MONITOR) button for normal monitoring.
- Press and hold the M for at least three seconds for continuous monitoring.

•
•
•
•
•

Battery Level / Low Battery Indication

-The LCD panel displays the battery power level according to the number of squares inside the battery symbol.
-When the battery level is low, the battery icon will flash to indicate that the batteries need to be changed.

Calling (paging) the other radio

To send a page

- Make sure both units are on.
- Press and release the CALL button on the front of your radio.

Channels scan

Your FRS unit can for 14 channels. To scan the unit:

- Push and hold the Function button more than 4 seconds.
- Channel indicator will change continue.
- Once received any signal scan will stop and listen for 10second
- Press PTT button and talk on that channel(scan will automatically stop) or press UP key to scan continue.
- To stop the scan: press Function button.

SPECIFICATIONS

1. Channels available: 14 channels (see channel table)
2. Output Power (TX): 0.5W (FCC Maximum)
3. Battery Life : 20 Hours (typical)

FRS CHANNEL TABLE

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

TROUBLESHOOTING

SYMPTOM	SOLUTION
Dose not turn on.	<ul style="list-style-type: none"> •...Check batteries. Ensure that the batteries are installed properly. •...The batteries may be weak. Replace old batteries with four new "AAA" Alkaline batteries.
Reception is weak.	<ul style="list-style-type: none"> •...Press up button to increase speaker volume. •...The receiving signal may be weak and out of range. If this happens, press the MONITOR key.
Cannot change channels.	<ul style="list-style-type: none"> •...To change channels, press and hold the F key first until the Channel digit flashes on the LCD PANEL. Then, press the UP or DOWN keys to channels.
Range is limited	<ul style="list-style-type: none"> •...Batteries may be weak. Replace with new batteries if the battery level indicator is low. •...The maximum range will vary depending on terrain and environment. Open fields provide the maximum range, while buildings and other structures may limit the range significantly.
Sound distortion problems	<ul style="list-style-type: none"> •...If you are transmitting, speak in a normal tone of voice, 2 to 3 inches away from the microphone. •...If you are receiving, lower the volume control to a comfortable level.



Distributed Exclusively Worldwide by Unical Enterprises, Inc., Industry, California, USA
20231-02240A www.nwbphones.com

TECHNICAL DESCRIPTION

Model : 99150

- **Receiver Section**

Radio Frequency signal received by the antenna(ANT1), passing through the Low Pass Filter (L1-L3, C2-C4). The R.F.(Radio Freq.) signal is then amplified by Low Noise Amplifier Q1 and passes through a Band Pass Filter FL1(465mHZ.).The Filtered signal within the range of 462mHZ.-467mHZ. is then mixed with the first Local Oscillator signal from the V.C.O. (Voltage Controlled Oscillator) Circuit (Q9-Q11,D7,L18), through Q3, a portion of V.C.O. signal is then feedback to the PLL IC2 for phase comparison generating a stable RX Frequency, the output signal is filtered by FL2(21.7mHZ.) which is the first Intermediate Freq.(I.F.) and is then amplified by Q4.The I.F. signal is fed to the discriminator IC1, KA3361 pin 16 which is then mixed with the second Local Oscillator supplied by crystal X1(21.25mHZ.) to produced a reduced second I.F. signal which is then filtered by FL3(CFW450HTW). Demodulated signal is recovered through correct adjustment of I.F. tank coil IFT1 and the internal discriminator circuit of IC1 (3361).The recovered Audio signal is outputted at pin 9 of IC1 and then processed through filtering done by IC103B circuit, the fully recovered audio signal is then further amplified by Power Amplifier I.C. 101. An audible sound is therefore produce by the speaker SPK100, which can be varied from minimum to maximum through the key function (up/down) and process by the CPU IC102.

- **Transmitter Section**

Switch SW1 (PTT) when push triggers the Transmitter Circuit "ON", the voice signal generates by the surrounding noise passes through the Microphone MIC100 where mechanical to electrical transformation occurs, the electrical transformed signal is then filtered by a Band Pass Filter IC103A,D, and C. The output signal is Modulated by a modulator circuit with a varactor diode D7 and L18.The external components from Q9-Q11 form a V.C.O. Circuit which generates the required oscillating frequency for transmission, a portion of this signal is feedback to the PLL IC2 pin 14 for phase comparison in order to produce a stabilized TX frequency .The modulated signal is then amplified by a Cascaded Amplifier Circuit Q7 and Q8 and again amplified by Q5 and Q6 to produced a sufficient Radio Frequency signal emitted by the Antenna(ANT1).

- **Call Transmission**

By pushing the **CALL** key, a signal is detected by the CPU IC102, a **CALL data** is then produced by the CPU IC102. This data passes through the Band Pass Filter IC103C and modulated by the varactor diode D7 and L18.The signal follows it's conventional **transmission section** path through the antenna.

- **Battery Low Detection**

Battery Low Detection is controlled by the CPU IC102 as detect on the LCD 100, however a voltage divider circuit R111 and R110 serve as the stabilize reference voltage for the CPU IC102 to process its detection.

- **Squelch Detection**

Supported by the Linear I.C. Circuit IC1, variable resistor SVR1 sets the level of detection and Diode D3 acts as a comparator circuit interface with the CPU IC102.

- **Power Supply**

Supply voltage of 6 Volts d.c. is needed to power **"ON"** the whole circuitry, by four (4) batteries "AAA" size.
