# OPERATION

VOLUME

Rotate the volume control clockwise to adjust the volume control for a comfortable listening level. If no sound is heard, temporarily un-mute the radio by briefly rotating the Squelch Control full anti-clockwise. You can adjust the volume by listening to the receiver's background noise.
When finished, return squelch setting. (See section on setting Squelch.)

CHANNEL SELECTING
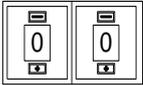
Push to select the memory channel number for the selected readout.
The channel display will Rotate and select the higher channel when the up button is pressed.
By pressing the down button the Channel display will rotate to display the lower channel selected. The selected channel is displayed.
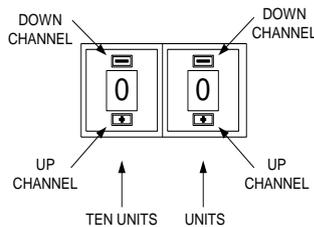
SQUELCH

The squelch is used to eliminate any annoying background noise when there are no signals present.
When no signal is received, rotate the Squelch control (SQL) fully counterclockwise first, and then rotate SQL clockwise to the point that the noise just disappears. This will provide optimum Squelch performance.

When the Squelch is Open, the receiver's background noise can be heard and 'Green RX LED' is lit on the front panel display. When the Squelch is closed, the receiver remains quiet when there are no signals present but any incoming signals will override the Squelch and be heard in the speaker

NOTE: If an incoming signal is very weak and is close to the minimum squelch level, it may become broken or "chopped" by the squelch action. To prevent this, simply open the squelch to allow the signal to be heard clearly. Alternatively, you can reduce the squelch sensitivity as described above.

When CTCSS is enabled the channel remains quiet until someone transmits using the same tone, and the 'Yellow Tone LED' lamp will be lit. When the transmission ends, the channel becomes quiet again. By using different tones, several groups of people can share the same channel without disturbing each other.

ACCESSORY SWITCH

The Accessory button is a programmable momentary switch. Which is assigned a function in software programming. (Subject to Radios firmware)
See Dealer for application notes for further information on this feature.

REPEATER SWITCH

This switch enables the MX920 to work as a repeater.
In repeater mode, the received signal is processed and retransmits at a different frequency.
Repeaters are usually located on hills, mountains or tall buildings. The increased elevation greatly improves the range of the repeater beyond that of a normal base or
Mobile. This means that the repeaters are able to receive and retransmit signals to radios that would otherwise be out of range of each other.

Receiving A Call

With the MX920 powered 'ON' the front panel blue led is lit.
- Set the audio and squelch levels as per SQUELCH and VOLUME section.
- Select the desired receiving channel as per Channel selecting section.
- When receiving a signal the 'Green RX LED' indicator lights green when the squelch is open, and audio is emitted from the speaker.
- Listen for your call sign when you hear activity, and reply promptly by identifying yourself if called. (For example: Base receiving).

Transmitting To Making A Call

With the MX920 powered 'ON' the front panel blue led is lit.
- Select the desired channel, as previously described.
- If the 'Green RX LED' indicator is on, the channel is busy and you must wait until it is free, before proceeding. If you attempt to transmit anyway, the other party may not receive your transmitted signal.
- Lift the microphone off-hook and listen to check that no one else is using the channel. You may also have to press the Monitor Key on the desktop Microphone or the Accessory button on the radio briefly, depending on the microphone used and the options programmed to your radio.
- When using the Hand-Held microphone, Hold it about 5cm from your mouth and press the Press-To-Talk (PTT) key, located on the side of the microphone (see Figure 3-1). Speak clearly into the microphone at your normal voice level, identifying yourself by your call sign, and the person you wish to contact. (For example: Base to Mobile 2.).
- The 'Red RX LED' indicator lights while transmitting.
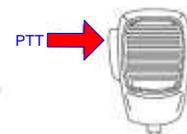- Release the PTT key when you have finished talking.

Figure 3-1   Figure 3-2

Transmit Timer

Your MX920 is fitted with a preprogrammed timer to limit the maximum length of transmissions.
When the time limit is reached, the radio sounds a warning tone, and transmission is terminated. (Subject to Radio Firmware)

INSTALLATION

Unpacking

The MX920 Radio is securely packed for transport with special end packers within a pasteboard container. Before unpacking the MX920 radio, please inspect the packaging for signs of damage and report any damage to your MX800 distributor.

Upon unpacking of the MX920 radio, please ensure that all items shipped were received, report any missing items to your MX920 distributor. All ports on the rear of the radio should be carefully examined to ensure that packaging has not become wedged inside them. It is very important to examine the fan, as operation of the radio will be affected if any packaging or shipping damage causes the fan to stop working.

Installing the Base Station System

The design of the MX920 allows it to be used in a stand-alone configuration. Ensure that it is in a secure, dry location with sufficient air space around it to allow for adequate ventilation. It is recommended that the chassis be earthed.

An optional 19inch rack mount tray is available for mounting the repeater into a 19-inch rack. If you intend to install the radio in an equipment rack consult the supplier's instructions for your system.

Power Supply

The MX920 has been design to fit an optional internal power supply (PSU). It can also be fitted with optional sealed lead acid batteries Kit for a backup battery. Automatic Backup Battery Change Over System and charger ONLY available in the 240V PSU Model. The built-in backup system supports automatic switching to an external power DC battery supply if the AC power supply fails.

Make sure the [POWER] switch on the back of the PSU is turned OFF when connecting an AC power cable and also when connecting the DC power cable for a backup battery (Refer to the Mains ratings label on the rear of the PSU module)

Note.
The MX920 will draw approximately 7 to 9Amps (band dependent) on transmit and when external power supply \ batteries are used, the gauge of the DC cable fitted to the 12V supply connector should be adequate to ensure less than 0.5V volt drop at this current.
If external batteries are used and are non-sealed Lead-acid batteries type, placement should be at least 4 m away from the repeater.

No reverse polarity protection.
Be sure both the positive (red) and negative (black) terminals are correctly connected and an inline 15Amp fuse is should be fitted on the Positive wire. See example in picture below (Not include)

15Amp Fuse   **Fuse Link**   **Inline Fuse Holder**

Antenna

In radio communications, the antenna is critical importance, effecting the output power and sensitivity.
The antenna and coax cable should be the 50ohm type, and have a Voltage Standing Wave Ratio (VSWR) of 1.5:1 or better.

CAUTION: Protect repeater from lightning by using a lightning arrestor.
NOTE: There are many publications covering antennas and their installation. Consult with your local dealer for more information and recommendations.

SWR

Each antenna is tuned for a specified frequency range and SWR may be increased if used out-of-range.
When the SWR is higher than approx. 3.0:1, the transceiver's power drops to protect the Power Amplifiers final transistor. Low SWR allows full power for transmitting. The MX920 has a software diagnostic SWR meter to monitor the Antenna SWR continuously.

Duplexer

The Mx920 with optional internal duplexer kit provides mounting for a number of different manufactures duplexers.
A duplexer is required when only one antenna is used for both transmitting and receiving. Select a duplexer according to the transmitting and receiving frequencies.
See Dealer for further information on this feature

Software Programming

The MX920 can operate in a number of different modes. The primary alternatives are full duplex, which is the default mode, repeater and simplex. Using the built-in radio configuration menu system, the operating mode is programmed for each channel.

There are a number of features that also can be enable/disabled to suit the individual system needs. This is done thought the built-in radio configuration menu system, with a Personal Computer (PC) with terminal software and a RS232 programming cable.

Note: All MX920s' are set up with a standard configuration.

Diagnostic

The MX920 has built in software to allow the user to monitor the current state of the radio.
See Dealer for application notes for further information on this feature.

You will require a Personal Computer (PC) with terminal software to monitor this and RS232 cable.

Further information can be found at;
www.spectraeng.com.au/mx920-docs.shtml