

MTR90 SERIES MOBILE RADIO

Operating Instructions

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A GEC PLESSEY TELECOMMUNICATIONS COMPANY

5.2 SENDING A SELECTIVE CALL

To call the base or mobile, the "Call" key is pressed. This must be done when the radio is in the channel mode and the priority mode disabled.

As soon as the "Call" key is pressed, the display will flash the Selcal address code for three seconds, after which the Selcal address code will be transmitted.

When the called mobile receives the Selcal, it will acknowledge the call, activate the "Call" indicator in the display, and sound an alert tone for five seconds.

The calling mobile will receive the acknowledgement from the called radio and show "AC" (for Acknowledge) in the display for one second. The "AC" confirms to the caller that the called radio actually received the call.

5.3 MULTIPLE CALLING (FULL FEATURED VERSIONS ONLY)

If the operator wishes to call a radio with a Selcal number different from the address code that is displayed after the "Call" key is pressed, the new code may be keyed in during the period that the display is flashing. (The display will start flashing immediately following operation of the "Call" key).

If the operator pauses for more than three seconds while entering digits, the radio will return to channel mode. This enables the caller to terminate the call if desired, by not completing the digit entry.

Note that the full five digits must always be entered. The Selcal will be sent automatically three seconds after entry of the last digit.

After having changed the Selcal address code, the operator may wish to re-enter the original base address. This is achieved by pressing "Call" followed by "Recall". The base address will then be reloaded and sent three seconds later.

5.4 STATUS (FULL FEATURED VERSIONS ONLY)

When sending a Selcal, an extra tone is automatically appended to the calling address. This tone is called the "Status" tone.

The Status tone may be used to convey specific status information to the base such as: Status 1 = "unavailable", Status 2 = "ready for next job" etc.

The Status tone is set by pressing the "Status" key followed by the desired status number on the keypad. The Status tone is also sent with ANI or when acknowledging a Selcal.

6 SPECIAL "HIGH LEVEL" FUNCTIONS- FULL FEATURED VERSIONS ONLY

6.1 PROGRAMMABLE MEMORIES

The MTR90 series radio has ten user programmable channel memories. Any of the programmed radio channels may be assigned to these memory locations. Once the programmable memories are stored, they can be scanned or called up at will via the "Recall" key.

To save a channel number to the programmable memories the user selects the channel on the radio that is to be saved and then presses the "Save" key followed by the numeric key (0-9) of the memory that it is to be saved as.

As soon as the "Save" key is pressed, the display will start flashing until the memory number is entered. If no memory number is entered after three seconds has elapsed, the radio will revert to channel mode.

The radio must have no other modes selected when the memories are programmed.

To recall a programmable memory channel, press the "Recall" key followed by the numeric key (0-9) of the stored memory. Note that the radio must be in channel mode to recall a memory channel.

The radio will retain the programmable memories when switched off provided the primary power remains connected. Should the primary power be disconnected from the radio (e.g. by disconnecting the radio from the battery), the last selected channel will be retained for a period of at least 12 hours.

6.2 SCANNING

The radio is capable of scanning any or all of the ten channels as stored in the user programmable memories.

To enable scan mode, the "Scan" key is pressed. To cancel scan mode and return to channel mode, the "Scan" key is pressed again. A row of ten digits from 0 - 9 is shown at the top of the display when the scan mode is operating. The word "Scan" also appears in the display during scan mode.

If it is desirable to only scan some of the ten channels in the scan group, the unwanted channels can be removed from the scan group by pressing the numeric key corresponding to the programmable channel(s) that are to be removed while in scan mode. When this is done, the channel number will disappear from the row of digits in the display that indicate scanned channels.

To re-enable scanning of disabled channels, the numeric key for the disabled channel is pressed while in the scan mode. The channel number will reappear in the row of ten digits at the top of the display.

Note that at least one scan channel must be enabled during scan.

For example: Assume that channel 23 is saved in user programmable memory 1, channel 12 is saved in memory 2, channel 4 is saved in memory 3 and the "Scan" key is pressed.

The radio will now execute the following cycle:-

Monitor memory 1 (ch 23)-if there is no signal present, monitor memory 2 (ch 12)-if there is no signal present, monitor memory 2 (ch 4)-if there is no signal present restart the channel search at memory 1.

If a signal is found on one of the channels (for example memory 1), then the display will change to "1-23". The first digit represents the memory number and the digit(s) following the dash represent the actual channel number. The radio will stay on this channel until the signal disappears and a delay of two seconds has expired, after which the scan will resume.

During the scan sequence the radio will first look for carrier on the radio channel before unmuting the radio, unless CTCSS is enabled, in which case the radio will not unmute unless the correct CTCSS tone is present as well.

Note that the presence of carrier is detected by the squelch opening, so the squelch must be set correctly prior to scan mode selection. If the squelch is left open when in scan mode, the scanning function will not operate.

6.3 PRIORITY SCAN

Priority scan enables the radio user to monitor another channel while leaving the radio operating on the working channel.

The priority feature is enabled by pressing the "Priority" key. In this mode the radio will regularly switch very briefly to the priority channel to check for signal activity. If there is no signal activity on the priority channel, the radio will switch back to the working channel.

The priority scan takes only a very short time and is virtually undetectable to the listener.

To program the priority channel, the desired channel is first selected in the usual way and then followed by pressing the "Save" and then "Priority" keys. After pressing the "Save" key the display will flash, and if the "Priority" key is pressed within three seconds, the priority channel will be programmed.

With the priority scan enabled and a signal present on the priority channel (e.g. channel 7), the radio will display "7-P" to indicate that the radio has detected a signal on channel 7 (which is the current priority channel).

The radio will stay on the priority channel until two seconds after the signal has disappeared. The priority function may be selected while the radio is in scan mode.

MTR90 (QATB VERSION)

OPERATING INSTRUCTIONS - SUPPLEMENT

INTRODUCTION

The MTR90 (QATB Version) is a standard MTR90 radio fitted with software specifically developed for the QATB Radio System.

The operation of the MTR90 (QATB Version) is therefore slightly different from the "generic" MTR90 operation described in previous paragraphs.

This supplement details the operational differences between the two versions.

Section 2.5.4 "PRIORITY" Key

The MTR90 (QATB Version) is supplied without Priority Scan option. The "Priority" key is therefore non-operational.

Section 4.2 CTCSS OPERATION - Tx Lock Out Mode

This paragraph is not applicable to the MTR90 (QATB Version).

The MTR90 (QATB Version) transmitter will be inhibited whenever signals with the correct (QATB) CTCSS tone are being received (i.e. signals generated by other QATB radios). An alert will sound when transmission attempts are made while locked out.

The "Monitor" key operates as described in paragraph 4.1.

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Section 5.3 Multiple Calling

For the MTR90 (QATB Version) only 3 digits are required to be entered when sending a Selcal sequence.

Section 6.1 Programmable Memories

The MTR90 (QATB Version) is fitted with 5 user programmable memories, (and not 10, as stated in Section 6.1). Operation is otherwise identical.

Section 6.2 Scanning

The MTR90 (QATB Version) scans a maximum of 5 user programmable frequencies (and not 10, as stated in Section 6.2).

New Feature: "Voting"

The MTR90 (QATB Version) is fitted with a "radio channel voting" feature. When on a "Voting" channel, the radio will automatically select the strongest radio base signal available, and lock onto that base for the duration of the call.

Channels 0 to 9 can be programmed as "voting" channels. When delivered ex-factory, only channels 1 to 6 are operational.

Channels 10 to 99 are "normal" (i.e. non-voted) radio channels. When delivered ex-factory, only channels 10 to 87 are operational.

MTR90 SERIES

MOBILE RADIO

Operating Instructions (QATB Version)

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1 INTRODUCTION

This manual covers the basic operation of the GPT MTR90 series of land mobile radio transceivers.

The MTR90 is very flexible with many of its features and functions being controlled by resident software programmes, which may vary from radio to radio. The actual operation of the radio is therefore not necessarily identical to that described in these instructions.

The MTR90 is available in two prime versions: a full featured version and an "Economy" version (identified by the suffix "E", e.g. "MTR97E").

Economy versions have four function keys only, located under the display window. The full featured versions have an additional four function keys (located above the display window) plus a full 3 x 4 keypad. This document covers both versions. Differences in operation are clearly indicated.

Section 2 of this manual gives a general overview of the operation of the MTR90 radio. Sections 3 to 6 give a more detailed description of the operational features and cover specifically the extended facilities of the full featured versions.

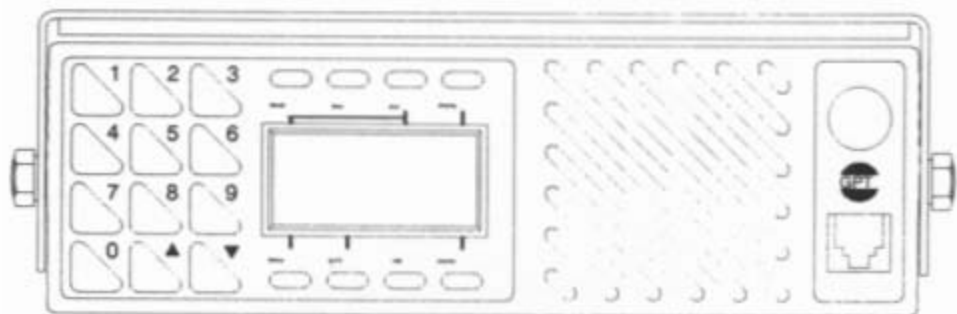


Figure 1 - Full Featured Version Front Panel

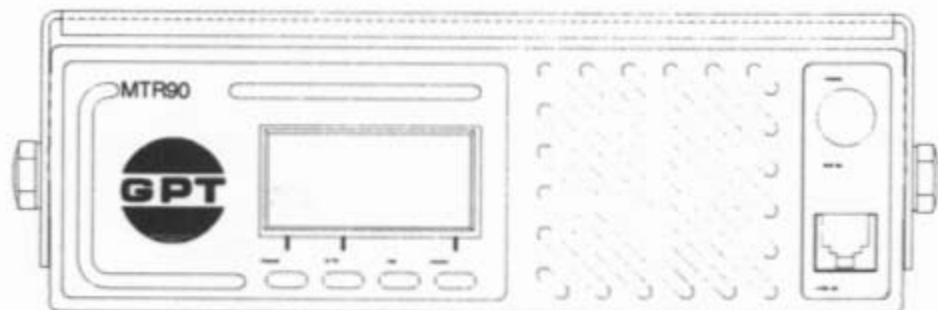


Figure 2 - Economy Version Front Panel

2 BASIC FUNCTIONS

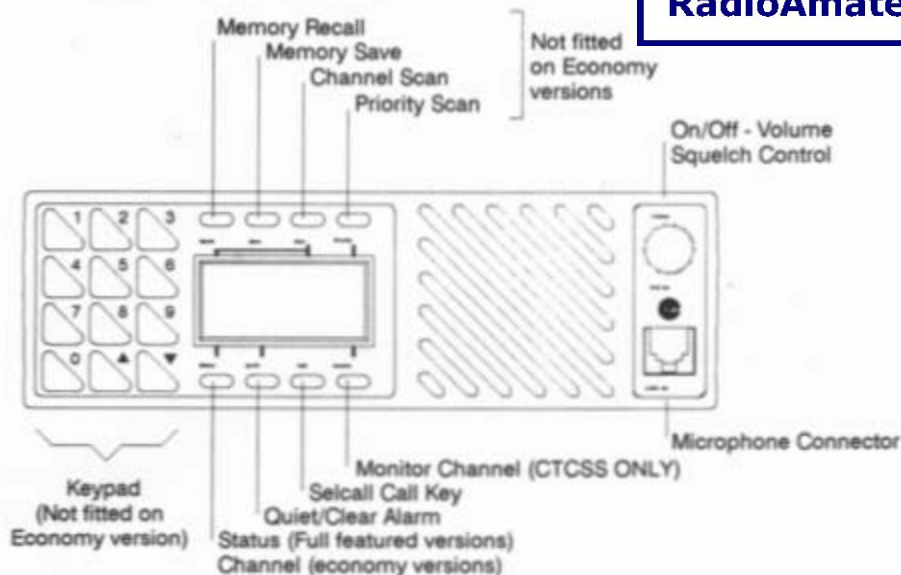


Figure 3 - MTR90 Front Panel Controls

2.1 SWITCHING ON/VOLUME/SQUELCH ADJUSTMENT

Rotate the yellow knob clockwise to turn the radio on. The LCD display will light up and indicate the channel number. The radio will now be in the receive mode. As the knob is turned further clockwise, the volume level will increase.

To adjust the squelch setting, first pull the knob outwards and whilst holding the knob out, turn the control. In the fully anti-clockwise position, the squelch is open (radio unmuted) and in the fully clockwise position the radio is muted. The squelch is usually set to a point just further clockwise than the point where the radio mutes.

Note: When the CTCSS "Monitor Mode" is enabled (refer Section 4.1), the "Monitor" key must be operated to unmute the squelch.

2.2 TO TRANSMIT

Take the microphone from the hang up bracket. Press and hold the PTT key on the microphone. The display will show the symbol "XMIT" when transmitting. Speak clearly into the microphone, holding it approximately 5 cm from the mouth. The radio will return to the receive mode on release of the PTT key.

Note: The radio may be fitted with a Busy Lock Out facility, which will disable PTT operation under certain conditions. Such conditions are generally indicated by the "Busy" indicator on the display window.

2.3 TO CHANGE CHANNELS

2.3.1 Economy Versions

Press the "Channel" key. The radio will step to the next channel programmed. When it passes the highest channel number available, it will step back to the lowest channel number programmed.

2.3.2 Full Featured Versions

Refer to Section 3.

2.4 FUNCTION/MODE KEYS

2.4.1 "MONITOR" Key

Used when the CTCSS function is enabled. Refer to Sections 4.1 and 4.2 for details.

2.4.2 "Q/CLR" and "CALL" Keys

Used when Selcal is enabled. Refer to Section 5 for further details.

2.5 ADDITIONAL FUNCTION/MODE KEYS

(FULL FEATURED VERSIONS ONLY)

These are normally used in conjunction with the 3 x 4 keypad to invoke certain "high level" system functions. (See Section 6)

2.5.1 "RECALL" Key

Used to recall user programmable channel groups (See Section 6.1) or to recall pre-programmed Base Selcal address (See Section 5.3).

2.5.2 "SAVE" Key

Used to store user programmable channel groups (See Section 6.1).

2.5.3 "SCAN" Key

Starts scanning operation. (See Section 6.2)

2.5.4 "PRIORITY" Key

Starts the Priority Scan operation. (See Section 6.3)

2.6 DISPLAY

The backlit LCD display provides the following information on the radio's current status.

1. Channel number that the radio is currently set to.
2. Transmitter Active condition ("XMIT").
3. Busy status of current radio channel ("BUSY").
4. "Quiet" state of radio. (Selcal only, See Section 5.1).
5. Monitor on/off (CTCSS only, See Section 4.1).

In addition, the full featured version provides the following information:

6. Selcal address/status tone digits. (See Section 5.3 and 5.4)
7. Channels that are scanned while in scan mode.(See Section 6.2)
8. Priority scan active. (See Section 6.3)

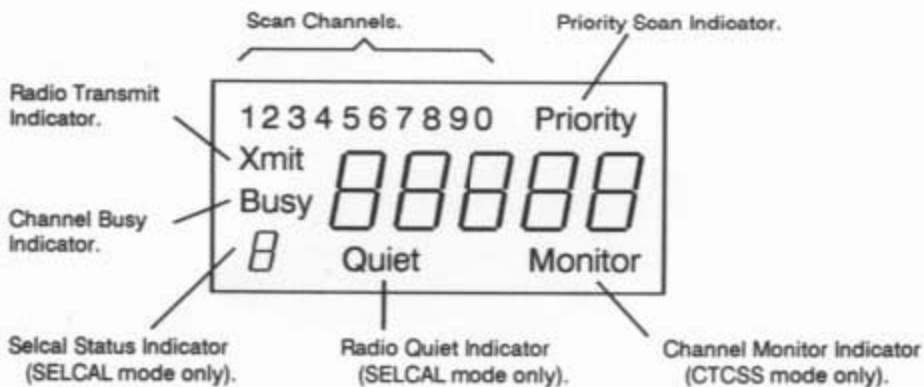


Figure 4 - LCD Display Indicators

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3 CHANNEL SELECTION - FULL FEATURED VERSIONS ONLY

3.1 "DIRECT ENTRY" METHOD

To select a radio channel, the channel number is entered into the keypad. Only pre-programmed channels will be accepted by the radio.

If (e.g.) channel 3 is required, the "3" key on the keypad is pressed. If the radio is programmed with less than 30 channels, channel 3 will be instantly selected and indicated by the LCD display.

If the radio is programmed for 30 or more channels, a flashing bar will appear alongside the entered 3 to indicate that there is an additional key to be pressed (e.g. now press "7" to select channel 37). Alternatively, if no further key is pressed the flashing bar will disappear after 2 seconds and channel 3 will be accepted.

Note that if a non-programmed channel is selected, the radio will remain on the present channel.

3.2 "CHANNEL STEP" METHOD

An alternative way to change channels is to use the up/down arrow keys located on the lower right of the 3 x 4 keypad.

Pressing the "Up arrow" key will increment the channel to the next if there is a higher channel programmed. If a higher channel is not available, the radio will step back to the lowest programmed channel.

Pressing the "Down arrow" key will decrement the selected channel if there is a lower channel programmed. If a lower channel is not programmed, the radio will step back to the highest programmed channel number.

For example, if the radio is currently displaying channel 2 and channel 5 is to be selected, the "Up arrow" key would be pressed 3 times IF channel 3 and 4 are programmed in the radio.

The radio will memorise the last selected channel after power is switched off, provided that primary power remains connected. Should the primary power be disconnected from the radio (e.g. by disconnecting the radio from the battery), the last selected channel will be retained for a period of at least 12 hours.

4 CTCSS OPERATION

4.1 MONITOR MODE

If CTCSS is enabled, traffic will not be heard unless it has the correct CTCSS tone.

When the monitor function is active, the word "MONITOR" is displayed in the lower right hand corner of the display and all traffic on the channel will be heard. This enables the user to monitor the channel before transmitting.

To cancel the Monitor state, the "Monitor" key is pressed again.

The monitor function can be selected while the radio is scanning or when it is in the channel mode.

4.2 TX LOCK OUT MODE

If the "Tx Lock Out" mode is enabled, the transmitter will be inhibited whenever signals from other user groups (i.e. without the correct CTCSS tone) are being received. The "Monitor" key on the radio will be disabled. As a result, radio users will not be able to overhear radio traffic of other user groups on the radio channel, nor will they be able to transmit if another user group is using the channel. An alert will sound when Tx attempts are made while locked out.

5 SELCAL OPERATION

5.1 RECEIVING A SELECTIVE CALL

If the radio user does not want to listen to radio traffic not directed to him/her, the radio may be placed in "Quiet" mode.

Quiet mode is set by pressing the "Q/Clr" key on the front panel. Once set, the Quiet mode may be cancelled by pressing this key once more.

When the radio is in the Quiet state, the display will show "Quiet" in the lower right hand corner area.

Once the radio is in "Quiet" mode, a Selcal to the radio will unmute the audio.

When a call is received, the word "CALL" will flash in the display until it is cleared by either pressing the PTT button or the "Q/Clr" key. A five second audible alert tone will sound after the call is received.