



AR2800

Instruction Manual

*Multi-purpose
Monitor Receiver*

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General

This AOR wide band scanning receiver is renowned for it's high standards of performance and range of facilities. Although offering a long list of facilities and operating modes, the receiver remains reasonably easy to operate. The display often provides 'prompts' for selected operations such as a flashing "CH" to invite you to key in a new memory channel number.

The receiver has an exceptionally wide frequency coverage from 500kHz to 600MHz then from 800MHz to 1300MHz (1.3GHz!!!). The modes available are AM, FM (narrow), FM (wide) and SSB (USB, LSB, CW) when using the Beat Frequency Oscillator (BFO). All available modes may be selected at any frequency within the receiver's coverage.

Although carefully designed, this receiver (like all receivers) suffers from a degree of internal noises known as spuri. They are a product of the receiver's circuitry and do not represent a fault.

All information such as frequency, mode, channel, etcetera is presented in an easy to see Liquid Crystal Display (LCD). The display is provided with a lamp to increase visibility.

The aerial connection is of the standard BNC type allowing straight forward connection to almost any aerial. There is also a 20dB attenuator selectable from the front panel to increase versatility especially when listening to shortwave.

There is a massive EEPROM storage (no batteries required) of 1000 memories held as 10 banks of 100 also there are 10 additional programmable search banks. Each memory will store frequency and mode, the search bands will also store the increment. Memories and search bands may be 'locked out' for the days when you don't want to listen to something you have previously programmed.

In search mode, you may lock out upto 1000 continuously occupied frequencies (100 in each of the 10 search bands) so that the frequency is skipped when next scanned. Although the search bands are pre-programmed at the factory, they may be easily re-programmed from the keypad by the user.

Accessories supplied

AC power supply

12V DC lead for mobile operation

Mobile mount

Telescopic aerial

Operating manual

Power requirements

The receiver is powered from a nominal 13.8V DC power supply, the polarity is centre positive. The supplied AC power supply is not regulated as this is provided by the receiver. Although the supplied power supply allows operation in all modes, better SSB audio quality is achieved when a separate regulated power supply is used. The current capacity of a regulated external power supply should be 1 Amp or greater.

To increase versatility and to enable portable operation, the receiver is fitted with a set of rechargeable NiCad batteries. The capacity is 600mA/hrs @ 14.4V and are not designed to be replaced by the user. They may be charged and used time and time again, 300 to 1000 operations is quite typical.

The NiCads are NOT factory charged and it is suggested they are put onto charge while you read this manual. A full charge will take about 15 to 24 hours with the receiver switched off. A set of fully charged NiCads should provide over one hour of average use, this will depend on operation style, settings such as volume will have a great effect.

Background noise may still be heard from the speaker even though the NiCads are exhausted, usually the Liquid Crystal Display (LCD) fails to operate in this condition.

The supplied AC power supply is NOT designed to power the set while charging. The receiver should be switched off while charging the NiCads using the supplied power supply. This power supply has a high "launch" voltage to allow charging of the NiCads, a separate regulated power supply will not permit charging nor will connection to a 12V car supply.

The charge rate is very low to reduce the possibility of over-charging, however you should not leave the receiver connected to the mains power supply for excessively long times when not in use. The switching between an external DC supply and internal NiCad pack is accomplished by automatic diode switching.

If you do not envisage using the NiCad batteries under any circumstances, please contact your dealer to have the pack disconnected.

Nicads are prone to 'memory effect', as a result they may have to be cycled (fully charged and used until flat) 3 or 4 times before they provide a satisfactory period of operation. Once charged, you should never leave the NiCads in a flat condition. Although you may charge the NiCads in order to 'top up' their capacity if you have only used the set for an hour or two, the NiCads should be cycled at least once per month to ensure continued long term reliability.

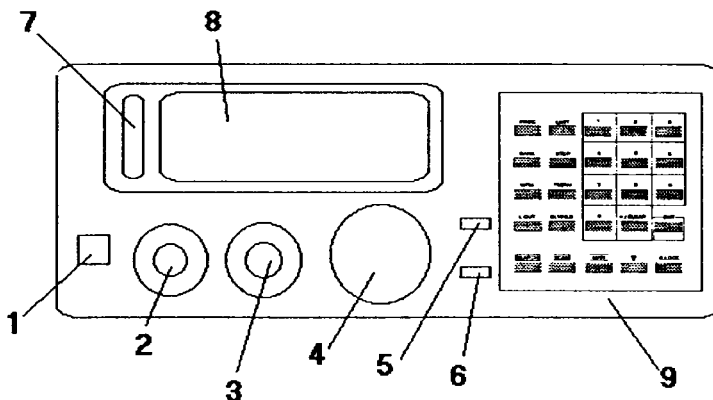
Controls

The receiver is housed in an attractive, strong plastic cabinet. Controls for operation are located on the front face of the cabinet.

Front panel:

- 1. POWER switch.** Located on the lower left-hand side of the front panel. The receiver is switched ON when this switch is depressed and OFF when pressed a second time.
- 2. VOL (volume) and MS (main shift) controls.** The volume control is the inner knob of the dual concentric rotary controls located on the front face of the cabinet. It is used to set the required audio output from the receiver. When turned fully clockwise the volume is at maximum, when rotated anti-clockwise the volume is reduced to a minimum.

The main shift control (MS) is the outer knob of the dual concentric rotary controls. It is only used for Single Side Band (SSB) reception, please see the section on SSB for a fuller explanation. It's normal position is 12 o'clock.



- 3. SQL (squelch) and FS (fine shift) control.** This squelch control is the inner knob of the dual concentric rotary controls located on the front face of the cabinet. The control is used to eliminate unwanted background noise on unoccupied frequencies. It is also used by the receiver to decide when to stop during scan and search modes.

The squelch control needs careful setting to achieve optimum operating performance. Rotate the control clockwise until the background noise just disappears, this is the most sensitive setting of the control. In practice the control is usually rotated a little further clockwise to avoid stopping on noise or very weak and unreadable signals. If the control is rotated too far clockwise then weak signals will be totally lost and only strong signals will be heard.

The fine shift control (FS) is the outer knob of the dual concentric rotary controls. It is only used for SSB operation and it's action is similar to that of the MS control. The normal position for this control is 12 o'clock. Please see the SSB section for a fuller explanation.

4. UP/DOWN (tuning) control. Located on the front face of the cabinet, this rotary control allows 'manual' tuning of frequencies displayed on the receiver. The control has a convenient click operation, the tuning increment can be programmed from the front panel keypad.

5. ATT (attenuator) switch. The switch has two positions marked as OFF and ON. For most situations the OFF position is used where the receiver is at its most sensitive.

When operating the receiver in the presence of strong signals such as those from TV, broadcast, taxi, police etcetera, some interference may be experienced. This interference can take many forms such as an increase in background noise, desensitising of the receiver or mixing of many stations together.

The cure for most of these effects is to use the attenuator switch in the ON position. This reduces the level of signals reaching the receivers circuitry and helps the set cope with strong signals. When receiving on shortwave using long wire aerials, dipoles or similar this switch should be in the ON position (especially when using SSB).

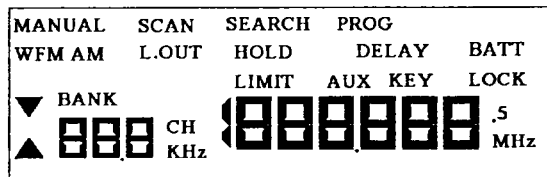
The addition of the attenuator switch to the receiver allows the set to be sensitive when required for weak signal listening and provide a reduction in overloading when necessary.

6. BFO (Beat Frequency Oscillator) switch. This switch activates the internal BFO to enable reception of SSB transmissions while in the AM (Amplitude Modulation) mode. The switch has two positions, ON and OFF. The normal position for this switch is OFF. Please refer to the SSB section for a fuller explanation.

7. S-meter (Signal meter). This vertical line of LEDs (Light Emitting Diodes) is located to the left of the display. When the receiver is tuned to a signal this indicator provides an indication of receive signal strength.

This can be useful for comparison with other stations and to monitor fluctuating radio propagation from day to day. *The S-meter does NOT function in WFM (Wide band Frequency Modulation).*

8. DISPLAY. Located on the front of the cabinet, it is a Liquid Crystal Display (LCD). Comprehensive information such as frequency, mode, channel etcetera is displayed in an easy to understand format. The display is illuminated with a small internal lamp to enhance visibility.



Due to the necessary design requirements of this multi-display, visibility may be poor from certain angles. Slightly lifting the front of the cabinet can improve visibility.

9. KEYBOARD. Located on the front of the cabinet to the right of the Liquid Crystal Display. The keyboard is laid out in a logical manner and is split into numeric and command areas.

0 to 9 The keys 0 to 9 plus the decimal point (.) are used for entering frequency, step size, memory channel number, bank number and so on.

The same keys are used in the bank select mode, in which case the numbers 0 to 9 correspond to the programmed frequency and memory channels.

(.) / CLEAR Press once to select a decimal point when entering frequency information. Press twice to clear an incorrect entry.

ENT Used to ENTER a frequency after selection from the keypad. Also used to complete other programming operations such as memory changes.

SEARCH Used to start the programmed frequency search operation. It is also used to manually advance the search process when stopped on an unwanted frequency.

SCAN Used to start the memory bank scanning operation. It is also used to manually advance the scan process when stopped on an unwanted channel.

MAN Used to engage the MANUAL mode of the receiver, in this mode the user can change parameters such as frequency, channel increment or directly select a memory channel. Each further press of the MAN key will cause the receiver to advance one step through the scan bank.

When the receiver is first switched on, it is a good idea to press the MAN key so that the receiver enters a 'known state' of operation.

PROG Used to set the bottom point while programming the search and scan modes.

LIMIT Used to set the high point while programming the search and scan modes. Also used in manual mode to select the AUX function (engaging priority channel operation).

STEP Used to enter the desired tuning step (increment) while in manual or search modes. For example 5kHz, 12.5kHz, 25kHz, 100kHz etc.

BANK Used to select the desired BANK while in scan or search mode.

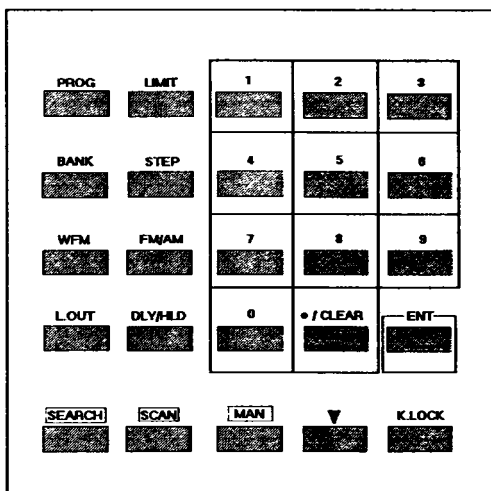
FM/AM Selects either FM (Frequency Modulation) or AM (Amplitude Modulation). AM is generally used by aircraft both on VHF and UHF, FM is used by most other services.

WFM Selects WFM (Wide band Frequency Modulation). Mainly used by VHF stereo broadcast stations.

L-OUT Press once to LOCK OUT a frequency or memory channel. Pressing a second time generally unlocks the frequency or memory channel. This key has multiple functions so be careful with its use.

Up to 100 frequencies in each of the 10 search banks can be locked out, a total of 1000 frequencies.

It is possible by miss-operation, to inadvertently lock out an entire search bank instead of a single frequency. Once a complete search bank is locked out it requires EVERY SINGLE FREQUENCY LOCKED OUT of the search bank to be unlocked before the bank can be searched again.



There are other ways to limit the banks omitted in search and scan mode.

DLY/HLD Used in scan and search modes to select DELAY and HOLD. When HOLD is shown on the display, the scan or search stops on a busy channel and remains there even if the signal has gone. When DELAY is shown on the display, the scan or search stops and pauses on a busy channel for a couple of seconds before automatically moving off again.

▼ The DOWN key causes the scan or search to reverse from its usual ascending operation and move downwards. Holding the key for more than a second while the receiver is stopped in scan or search mode causes the receiver to continue operation but in a downward direction.

K.LOCK The KEY LOCK disables all other keyboard functions. The facility is handy if the receiver is required to operate on a single channel and is located in a coat pocket. Accidental change of frequency or mode is prevented. Pressing the key a second time cancels the function.

Rear panel

ANT (aerial) connector. This is a standard BNC type. It's operation is like a bayonet (push and twist) and is mounted on the rear face of the case. The supplied aerial may be connected to this point or a mobile / base system.

In elevated locations or when close to transmitters, you may encounter overloading (refer to "5" the attenuator switch on the front panel).

When connecting long wire aerials for shortwave, you need only connect the wire to the centre pin of the BNC plug. Connecting the outer screen of the BNC plug to a GOOD EARTH point can improve reception and reduce noise.

DC12V (DC power input) socket. Located on the rear of the case, the socket is of the dual concentric type and is CENTRE POSITIVE. The provided power supply or DC lead should be connected to this point.

Any suitable regulated DC supply of 11 to 15 volts and 1 Amp (or more) current capacity may be connected to this socket. Superior SSB audio quality is gained by using such a device.

EXT SPKR (external speaker) socket. Located on the rear face of the cabinet. This is a standard 3.5mm mono socket. Either an earphone or small external speaker may be connected, when in use the internal speaker is automatically disconnected. The impedance of an external device should be 8 OHMS or greater.

AF SCAN (Audio Frequency scan) switch. This control may be used in search and scan modes and is located on the rear face of the case. There are two positions ON and OFF.

AF scan can be used to force the receiver to continue search and scan when blank carriers are encountered. The audio scan circuit will not prevent the receiver from stopping on modulated carriers such as cellnet control channels or certain noise types.

When activated, the audio scan allows the receiver to STOP when a signal is encountered with a deviation level above 0.5kHz Search and scan resumes when the deviation level drops below 0.4kHz

Operation

After unpacking the receiver, ensure the power switch is switched off then connect the power supply to the DC input on the rear of the case.

The receiver should be switched on by depressing the power switch. With the squelch control turned fully anti-clockwise to allow sound from the speaker, the volume should be adjusted to a comfortable level. It is never a good idea to switch on the receiver with an earphone connected.

The squelch control should be rotated clockwise until the background noise is just cancelled. This is known as 'threshold' and is the most sensitive setting for the squelch control. If you find setting the squelch difficult, try removing the aerial from the receiver.

It is best to press the MAN (manual) key at this time to place the receiver in a known state of operation.

Manual mode

1. To ENTER a FREQUENCY.

Key in the digits and use the decimal point after the MHz. You don't have to enter the following zeros as they will be added automatically after pressing the decimal point and enter. In fact you can usually leave out the decimal point when entering a round MHz.

If you key in an 'out of range' frequency, a frequency error message is displayed 'Fr .Err'

MAN (frequency in MHz) ENTER

Example: MAN - 131.000 ENTER

Or: MAN - 131. - ENTER

2. Tuning the receiver.

Turn the rotary control on the front face of the cabinet. Rotating the control clockwise advances the displayed frequency while anti-clockwise operation lowers the displayed frequency. The display will show an up or down arrow as appropriate.

3. To change the frequency STEP (increment).

This is used with the rotary tuning control, the default is 12.5 kHz. It is good to start at a round number such as 131.000

STEP (tuning step in kHz) ENTER

Example: STEP - 25 - ENTER

You can select any desired step in multiples of 5kHz and 12.5kHz between the limits of 5 and 995 kHz.

4. To change MODE.

It is worth noting that when you change mode while a memory bank number is showing, the contents of that memory are often automatically updated. For this reason it is worth keeping one memory channel reserved as a 'note pad' and dialled in before you start manual operation. Perhaps memory channel 000 would be a good choice. An easy way of preventing this is to "twiddle" the rotary UP/DOWN tuning control. This extinguishes the memory location from the display so preventing unwanted over-write.

Press FM/AM to select FM (Frequency Modulation) or AM (Amplitude Modulation)

Press W-FM to select Wide Band FM

There is no need to press enter but there is no negative effect should you do so.

5. Single Side Band (SSB) mode.

This advanced mode is a special form of communications used for point-to-point contact mainly on shortwave, this includes long range oceanic air traffic, marine and amateur band. Amateur band radio enthusiasts also use SSB to increase the distance covered (DX-Long Distance) on the VHF 144MHz (2m) band and UHF 432MHz (70cm) band.

SSB is divided into two main types, Upper Side Band (USB) and Lower Side Band (LSB). Morse code, which is sometimes referred to as continuous wave (CW) may also be received in the SSB mode. Received audio may sound a little strange at first (many people comment that it sounds like Micky Mouse or Donald Duck), this is normal. With a little practice you will soon get used to the tone, results can be very surprising so stick with it.

A Beat Frequency Oscillator (BFO) is used in the AM mode. The MS (Main Shift) and FS (Fine Shift) controls are used for fine tuning and clarifying the received signal. Although the receiver is compact and features no specific SSB filter the results are very good.

1. Press **MAN** to enter manual mode
2. Ensure the **MS** and **FS** controls are in the **12 o'clock position**
3. For shortwave reception and using an external aerial, switch the **ATTENUATOR ON**
4. Select **AM** mode using the **FM/AM** button
5. **Switch ON the BFO**
6. **Key in the required frequency (to the nearest 5 kHz).** A good place to start listening is the 20m Amateur band (14.000 to 14.350 MHz USB). Although you may not be able to enter the exact frequency (such as 4.722 MHz so you must select 4.720 or 4.725), the MS and FS controls will effectively allow you to tune in between the gaps to provide continuous coverage throughout the receivers range.
7. Program a 5 kHz step size (this is the smallest step size that you can select)
STEP - 5 - ENTER

8. Open the squelch by rotating the SQUELCH control fully anti-clockwise so that background noise is heard.

9. Use the rotary tuning control to tune as close to the desired frequency as possible, clockwise rotation increases the displayed frequency.

10. Rotate the MS control to further resolve the received signal. Clockwise rotation increases the received frequency. The range of the MS control is approximately -4kHz to +6kHz with zero being in the 12 o'clock position. (This means that ALL frequencies can be covered).

It does take a bit of getting used to:

USB - Clockwise rotation of the tuning, MS and FS controls increase frequency but lowers the pitch

LSB - Clockwise rotation of the tuning, MS and FS controls increase frequency and increases the pitch

11. Adjust the FS control for further and finer adjustment of pitch until the received signal is more natural in sound.

If the signal is particularly distorted and impossible to clarify, rotate the MS control 1 or 2 divisions in each direction and try again. Some practice will be necessary.

It is not possible to store SSB frequencies into memory. You may store them as AM but fine tuning will be required each time they are recalled.

Memory mode

The receiver has 1000 memory channels arranged in 10 banks of 100 memories. The banks are numbered 0 to 9.

1. It is possible to ENTER both frequency and mode into MEMORY.

(Memory BANKS start at 0 and continue through 1, 2, to 9. Memory CHANNELS start at 00 and continue through 01, 02, to 99).

MAN PROG (memory bank and channel) ENTER

Example: To enter the displayed frequency into MEMORY BANK 1, CHANNEL 52.

MAN - PROG - 152 - ENTER

Again, there is no need to press enter but there is no negative effect should you do so.

2. To enter a new frequency and mode into memory.

MAN (frequency in MHz) ENTER (mode) PROG (memory bank and channel number)

Example: To enter 145.600 MHz, FM mode into MEMORY BANK 0 and CHANNEL 55.

MAN - 145.6 - ENTER - FM - PROG - 055

N.B. Remember the displayed frequency can sometimes be automatically written into the current memory channel when the mode is changed. Make sure you don't accidentally over write a wanted memory channel in this manner.

3. To RECALL the contents of a previously stored memory channel.

It is worth noting that frequencies are often already stored in the receivers memory bank when you unpack it, this is part of the testing conducted during manufacturer and preparation for sale.

MAN BANK (bank and channel number)

Example: To recall the contents of memory BANK 1, CHANNEL 52.
(Remember, you must have something stored first).

MAN - BANK - 152

4. To CLEAR the contents of a previously stored memory channel.

MAN CLEAR ENTER PROG (memory bank and channel)

Example: To clear the memory contents of BANK 1, CHANNEL 20

MAN - CLEAR - ENTER - PROG - 120

5. Memory LOCKOUT.

You can lockout a memory channel while in manual mode by first selecting the memory channel then press 'L.OUT'. Lockout is confirmed by a flashing 'L.OUT' on the display.

Later on (while in SCAN mode) you may no longer wish to listen to a specific memory channel. Press the 'L.OUT' key to skip over the channel.

To reinstate the channel at a later date, unlock the channel in MANUAL mode by keying in the channel location and pressing 'L.OUT' again. Lockout status is confirmed by a flashing 'L.OUT' on the display.

6. Auxiliary (PRIORITY) Channel.

Any one of the 1000 memory channels previously programmed may be used as the auxiliary (AUX). When activated, the receiver will 'pop over' to the priority channel to check for activity regardless of the current displayed frequency or mode. The facility can be useful for keeping an eye on a distress frequency while scanning another frequency band.

To select the desired memory location.
MAN LIMIT PROG (memory bank and channel) ENTER

Example: Assume you wish to select memory bank 1 channel 25 as the auxiliary

MAN - LIMIT - PROG - 125 - ENTER

To activate the AUX function

Press **MAN - LIMIT**

The 'AUX' indicator appears on the front panel to confirm status. To de-activate the AUX function repeat the process

Press **MAN - LIMIT**

Under some circumstances there may be a 'click' heard from the internal speaker while the priority function is in use. This is normal and a product of the facility, it is NOT a fault.

Scan mode

Manually changing frequency is a slow process. In order to 'catch' brief bursts of communications such as from control towers to aircraft requires a faster method of frequency change.

For this reason and to increase pleasure of operation the memories may be automatically scanned under control of the receiver's microprocessor. The receiver is capable of scanning many memory channels per second.

It is usually convenient to 'group' all similar frequencies together to enable their selection independently from other programmed channels. For example you could store ALL VHF airband frequencies in memory bank 1 instead of randomly throughout the 1000 memories.

1. To SCAN all memories.

(Not what you would normally do, you would normally want to listen to a specific type of activity. It is however a good starting point).

Press **SCAN**

The receiver starts scanning all programmed memory channels, it will not try to scan un-occupied channels. It could potentially take a long time to complete its full scan if you have programmed all the 1000 memory channels, even though the receivers scan process is very rapid.

You need to set the squelch to cancel the background noise before the set is free to scan. The receiver finds it difficult to differentiate between weak signals and background noise so careful and continuous re-adjustment of the squelch control may be necessary.

Problems with scanning

If for some reason your receiver refuses to scan the bank you want and instead jumps to another bank, you have probably accidentally used PROGRAM BANK SCAN. To clear the apparent problem key in the following:

SCAN - BANK - PROG - 0 - LIMIT - 9 - ENTER

2. Program BANK SCAN.

When you grow tired of scanning all memory channels you can specify the start point.

SCAN BANK (bank number)

Example: To start scanning at memory BANK 5

SCAN - BANK - 5

The receiver will start at bank 5 but will then move onto bank 6 then bank 7 etcetera until all 1000 channels have been scanned and the receiver starts back on bank 5 again.

To PROGRAM a specific SCAN BANK.

SCAN BANK PROG (start bank number) LIMIT (end bank number) ENTER

Example: To SCAN between BANK 1 and BANK 5

SCAN - BANK - PROG - 1 - LIMIT - 5 - ENTER

In the same way you can program the receiver to scan only one bank, maybe BANK 1 where you may have programmed VHF airband frequencies.

Example: SCAN - BANK - PROG - 1 - LIMIT - 1 - ENTER

This effectively has excluded banks 0, 2, 3, to 9 without actually locking them out and is the preferred method of programmed bank scan.

3. Memory LOCKOUT.

If during scan the receiver stops on a memory channel that you no longer wish to listen to, you may press the "L.OUT" key to skip over the channel. Lockout is confirmed by a flashing "L.OUT" on the display.

To reinstate the channel at a later date you may unlock the channel in MANUAL mode by keying in the channel location and pressing "L.OUT" again.

4. Memory group lockout.

Choose the lowest channel number of the group you wish to lock out. For example, to lock out the group between 500 and 510

MAN - BANK - 500 - L.OUT

MAN (the receiver now advances to the next memory) **L.OUT**

MAN - L.OUT

MAN - L.OUT etcetera

This is a short cut version of normal memory lockout, a flashing "L.OUT" sign appears on the display to confirm each channel status.

5. Memory bank lockout (ALL 100 memories).

You can lock out a whole group at once.

MAN BANK (bank and channel number) BANK L.OUT

The bank/channel number can be any location in the desired bank. (In other words, to lock out the whole of BANK 5, you could select any location between 500 and 599).

Example: **MAN - BANK - 512 - BANK - L.OUT**

To release memory bank lockout a similar process is carried out.
MAN BANK (lowest bank/channel number) L.OUT

Example: **MAN - BANK - 500 - L.OUT**

The flashing 'L.OUT' disappears from the display to confirm operation. Any channel which was individually locked out remains locked out and unaffected by the previous operation.

Turning the rotary tuning control during scan causes the process to be cancelled. The receiver *remains in memory select mode so that you can manually step through the memory channels using the rotary control.* This is a very convenient feature.

Search mode

The receiver has the ability to search between ten sets of user definable frequency limits known as SEARCH BANKS.

For your convenience these have been pre-programmed during manufacture to suite your local market requirements. The search banks may be reprogrammed by you at any time from the keypad. If you choose, the programming of these search banks need not have any relationship to any front panel legend, this ensures maximum flexibility of operation.

In search mode, you may define the lower and upper frequency limits, mode of operation and step size (increment) between 5 kHz and 995 kHz in multiples of 5 kHz or 12.5 kHz.

1. To SEARCH all banks.

(Again you wouldn't normally want to listen everything at once. It is however a good starting point). Press **SEARCH**

The receiver starts searching all programmed search banks. It could potentially take a long time to complete its full search process of all banks, even though the receiver's search process is very rapid.

You need to carefully set the squelch to cancel the background noise before the set is free to search. The receiver finds it difficult to differentiate between weak signals and background noise so careful and continuous re-adjustment of the squelch control may be necessary.

Rotation of the UP/DOWN tuning control during search cancels the operation. The receiver remains in the current search bank and you may manually tune through the band using the rotary control.

Problems with searching.

If for some reason your receiver refuses to search the bank you want an instead jumps to another bank you have probably accidentally used PROGRAM SEARCH BANK. To clear the apparent problem key in the following:

SEARCH - BANK - PROG - 0 - LIMIT - 9 - ENTER

If you still have problems, look at the sections on releasing search bank lockout and search frequency lockout.

2. Program SEARCH BANK.

When you grow tired of searching through all programmed banks, you can specify the start point. SEARCH BANK (bank number)

Example: To start searching at SEARCH BANK 5

SEARCH - BANK - 5

The receiver will start at search bank 5 but will then move onto bank 6 then bank 7 etcetera until all banks have been searched and the receiver starts back on bank 5 again.

To PROGRAM a specific SEARCH BANK.

SEARCH BANK PROG (start bank number) LIMIT (end bank number) ENTER

Example: To SEARCH between BANK 1 and BANK 5

SEARCH - BANK - PROG - 1 - LIMIT - 5 - ENTER

In the same way you can program the receiver to search only one bank, maybe BANK 1 where you may have programmed the limits for the VHF airband.

Example: **SEARCH - BANK - PROG - 1 - LIMIT - 1 - ENTER**

This effectively has excluded banks 0, 2, 3, to 9 without actually locking them out and is the preferred method of programmed bank scan.

3. Search frequency lockout.

If during search the receiver stops on a frequency that you no longer wish to listen to, you may press the 'L.OUT' key to skip over the frequency. It will be skipped over on the next search.

Up to 100 frequencies may be locked out of each search bank. Be careful not to get carried away and lock out ALL of the frequencies in the bank, if you do then the search facility will not function.

4. Search bank lockout.

SEARCH BANK (bank number) BANK L.OUT

Example: To lockout search bank 4

SEARCH - BANK - 4 - BANK - L.OUT

To release search bank lockout a similar process is carried out.

SEARCH BANK (bank number) L.OUT

Example: To release search bank 4

SEARCH - BANK - 4 - L.OUT

NOTE: To cancel this operation requires ALL locked out frequencies to be released, for this reason it is suggested that you use program search bank where possible as an alternative.

5. Releasing search bank lockout (or individually locked out frequencies).

To release a locked out search bank, you first need to unlock ALL locked out frequencies in the search banks. To make this process easier, it is possible to scroll through the locked out frequencies.

To scroll through the locked out frequencies

SEARCH - BANK - PROG - L.OUT

The first of the locked out frequencies will appear on the display. The 'L.OUT' indicator will also be flashing on the display to show status.

You must release the locked out frequencies one at a time

Press **L.OUT**

The display will clear and step to the next locked out frequency. Repeat this process until the 'L.OUT' indicator is steady on the display and the BANK indicator is flashing.

Press **L.OUT**

The 'L.OUT' indicator will disappear and the receiver will start searching.

6. Reprogramming search bank limits.

Before you change and pre-programmed limits, it may be a good idea to note the existing band data so that the receiver may be re-programmed to its initial state at a later date. In fact you may be happy with the pre-programming of the search banks, in which case you will not need to carry out this process.

Assume that you want to reprogramme SEARCH BANK 2 to cover a specific part of the 70cm Amateur Radio band. The desired parameters are:
432.000 - 433.500 MHz, 25 KHz steps and FM.

**SEARCH PROG (start frequency) LIMIT (stop frequency) ENTER (search step in KHz) ENTER (mode)
ENTER (bank number) ENTER SEARCH**

Example: **SEARCH - PROG - 432.000 - LIMIT - 433.500 - ENTER - 25 - ENTER - FM - ENTER - 2 - ENTER - SEARCH**

The previously stored information will be over-written. You will notice that the display prompts you to enter information.

7. Storing search frequencies into memory.

When searching you may find an interesting frequency and want to return to it later. Press **DLY/HLD** so that the 'HOLD' indicator appears on the display

Press **ENTER**

Select memory bank and channel

Example: the receiver stops on 935.200 MHz and you wish to enter the frequency into memory location 123

ENTER - 123

Specification

Frequency ranges	500 kHz - 600 MHz & 800 MHz - 1300 MHz
Frequency steps	5kHz to 995 kHz in 5 or 12.5 kHz steps
Sensitivity	FM approx 0.5uV or better across most of the range AM (and SSB) approx 3uV or better across most of the range
Receiving modes	AM, FM (narrow) and FM (wide) and USB, LSB, CW with the BFO
Memory channels	1000 arranged in 10 banks of 100
Memory scan speed	Approx 20 channels per second
Scan delay time	Approx 2 seconds
Search banks	10 pre-programmed by may be reprogrammed by the user
Search speed	Approx 40 steps per second
Priority channel (AUX)	Any one of the 1000 memories may be used as the priority. Sampling time is approx every 2 seconds.
Audio output	> 500mW at 10% distortion
Power supply	11-16V DC from external power supply (provided) Also fitted with internal NiCad cells 14.4V @ 600mA/h
Aerial input	50 OHM BNC connector
Size	150 x 55 x 180mm approx
Weight	1050g approx this includes NiCads

*Instruction Manual
version 1.02*

Specifications are subject to change without notice due to continuous development of the receiver

E & OE



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