BARRETT 2050
ADVANCED HF SSB TRANSCEIVER

Operating and Installation Manual

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Barrett 2040,Barrett 2050 compliance

Barrett 2000 series transceivers comply to the following communications standards:-

Australian / New Zealand Standard
MF and HF radio communications
Equipment in the land mobile service utilising single sideband suppressed carrier emission
AS/NZS 4770:2000

FCC Part 90

Barrett 2000 series transceivers comply to the following EMC standard:-

EN301 489-1 V 1.4.1 (2002-08)

Barrett 2000 series transceivers comply to the following electrical safety standard:-

EN60950-1:2002

FCC RF exposure compliance statement

The Barrett 2040 Manpack Transceiver and the Barrett 2050 HF Transceiver have been tested and comply with the Federal Communications Commission (FCC) RF exposure limits for the General Population/Uncontrolled exposure environment.

In addition, it complies with the following Standards and Guidelines:

FCC 96-326, Guidelines for Evaluating the Environmental Effects of Radio-Frequency Radiation

FCC OET Bulletin 65 Edition 01-01 (2001) Supplement C, Evaluating Compliance with FCC

Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields

ANSI/IEEE C95.1-1992, IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz

ANSI/IEEE C95.3-1992, IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave

FCC RF exposure warning

To ensure optimal transceiver performance and to avoid exposure to excessive electromagnetic fields, the antenna system must be installed according to the instructions provided.

High voltages exist on the antenna during transmission and tuning. Do not touch the antenna during these activities. RF burns may result.

Install the grounding system or counterpoise as directed to prevent RF burns from any metal part of the transceiver.

Safe working distance is based on continuous exposure to CW type transmissions, as set out in the ICNIRP Exposure Guidelines (1998) for occupational exposure. Safe working distance can be reduced with normal voice communication.

 For FCC compliance, when the 2050 transceiver is used at a power level of 100 watts PEP, the antenna(s) used with this transceiver should be located at least 3 metres from the operator and should not be co-located or operating in conjunction with any other antenna or transmitter.

 For FCC compliance, when the 2040 transceiver is used at a power level of 30 watts PEP, the antenna(s) used with this transceiver should be located at least 1.5 metres from the operator and should not be co-located or operating in conjunction with any other antenna or transmitter.

FCC modulation modes

Please note that J3E Upper Sideband Mode is the only modulation mode available for operation in the United States of America.

Industry Canada modulation modes

Please note that J3E Upper Sideband Mode is the only modulation mode available for operation in Canada.

About this operating and installation manual

This manual is comprehensive, describing all aspects of the transceivers functions and should be viewed as a reference manual.
A separate abbreviated Quick Reference Guide card with primary functions is also supplied with each transceiver and should be kept at the operating position of the transceiver.

Icons and standards

Scroll keys

This manual refers to Scroll keys these keys are:-


to scroll Up


to scroll Down


to scroll Left


to scroll Right

Abbreviations and Acronyms

This term...	Means....
ALE	Automatic Link Establishment
Call history	A list containing details of the last thirty calls you have received
Station ID	The ID of the station being called (the receiving station's self ID)
GPS	Global Positioning System
HF	High Frequency
Identification Code	The unique reference identification (ID) of your transceiver (not serial number)
LCD	Liquid Crystal Display
LSB	Lower Sideband (Not available in FCC

USB	Upper Sideband
PCB	Printed Circuit Board
PIN	Personal Identification Number
PSTN	Public Switched Telephone Network
PTT button	Press-to-talk button
RDD	Radio Direct Dial
Receive only channel	A channel that allows you to receive calls but not transmit calls
Revertive signal	An acknowledgement signal automatically transmitted from a station receiving a Selcall
RF	Radio Frequency
Rx	Receive
Scan Table incoming	A list of channels used when scanning for calls
Selcall	Selective calls
Telcall	Telephone calls via the selective call protocol
Self ID	The programmed address identification number of your station. (Used by other stations to call you).
SSB	Single Sideband (a transmission format)
Transmit channel	A channel that allows you to receive and transmit calls
Tx	Transmit
USB	Upper Sideband

Introduction

The Barrett 2050 transceiver is a DSP based, 500 channel HF SSB transceiver with a frequency range of 1.6 to 30 MHz. The Barrett 2050 is designed using the latest technology enabling a physically small package with a full feature complement.

Designed to operate in the most arduous environments, as encountered in off road vehicles, vessels and aircraft, the Barrett 2050 will provide many years of efficient and trouble free service.

The Barrett 2050 supports features such as selective call (Selcall), direct dial telephone connection to base stations fitted with telephone interconnect systems (Telcall), GPS location, ALE (Automatic Link Establishment), frequency hopping, data transmission and remote diagnostics. These features make the Barrett 2050 HF transceiver one of the most economical and versatile HF transceiver available today.

The Barrett 2050 transceiver, has catered for the increased use of HF data transmission for Internet email access and point to point data applications, by providing a comprehensive data modem interface port, high speed transmit to receive switching, a high stability frequency standard and an efficient cooling system option.

The Barrett 2050 transceiver can be operated in either a local (desktop) configuration for base station applications or, with the addition of an inexpensive mobile pack, in a remote control (trunk mount) configuration for mobile applications. When coupled with the 2040 manpack adaptor the 2050 becomes a full specification military/civilian manpack.

Operating from 12 volt (13.8 VDC) DC supplies, the transmitter is rated at 125 watt PEP in voice mode and is protected from over-voltage or reverse voltage application.

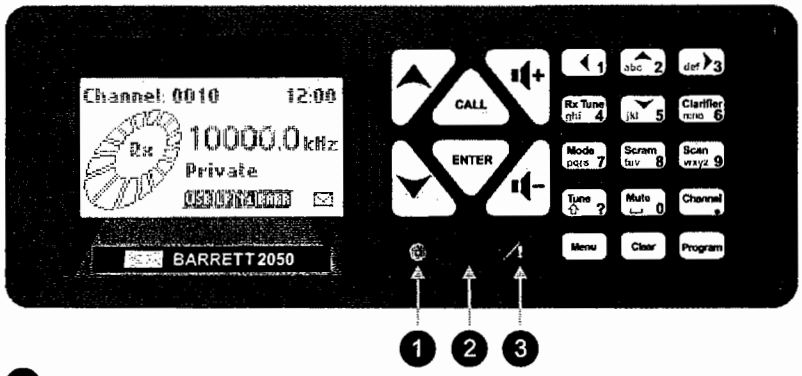
All 500 channels are available to be field or workshop programmable. Auxiliary features such as selcall, telcall, scanning, mute status, alarm system etc. can be individually enabled or disabled for every channel as required to suit your operation.

Teamed with other matching Barrett 2000 series products which include antennas, power supplies, vehicle tracking packages and HF modems, the Barrett 2050 HF transceiver becomes a powerful tool, providing solutions to many long distance communication requirements.

Operation

User controls

2050 transceiver front panel description



1. Power on/off button
2. IR port
3. Alert button

Power on/off button

The Barrett 2050 transceiver is turned on by pressing the green power button. The transceiver is turned off by again pressing the green power button.

IR port

The IR port is a serial communications port using the industry standard infra red communications protocol. This port can be used with various Barrett software products including the channel programming package.

Alert button

The Alert button is used to send Emergency Selcalls or tone calls.

Key pad

There are 23 keys on the keypad. A group of five keys in the centre access many major functions. Some keys have multiple functions assigned to them depending on when the key is pressed and for how long the key is pressed. Key functions are listed below followed by a detailed description of their functions.

Key	Key Primary function	Secondary function
	Power on/off	None
	Channel up	General scroll key
	Channel down	General scroll key
	Volume up	None
	Volume down	None
	Make a call	None
	Enter	None
	Emergency call	None
	Enter menus	None
	Transmitter tune mode	Change case HELP
	Enter clarifier tune mode	Alpha "mno" Numeric key "6"

Key	Key Primary function	Secondary function
Clear	Clear back one step	None
Channel .	Enter direct channel change mode	Decimal point
Rx Tune ghi 4	Enter tuning receiver Mode	Alpha "ghi" Numeric key "4"
Scram tuv 8	Turn scrambler on / off	Alpha "tuv" Numeric key "8"
Program	Enter program mode	None
Mute ␣ 0	Mute (squelch) selection	Alpha "space" Numeric key "0"
Mode pqrs 7	Mode select USB, LSB, AM, CW, AFSK	Alpha "pqrs" Numeric key "7"
Scan wxyz 9	Start scan, hold for 2 seconds for scan table selection	Alpha "wxyz" Numeric key "9"
◀ 1	Scroll left	Numeric key "1"
▲ abc 2	Scroll up	Alpha "abc" Numeric key "2"
def ▶ 3	Scroll right	Alpha "def" Numeric key "3"
jkl ▼ 5	Scroll down	Alpha "jkl" Numeric key "5"

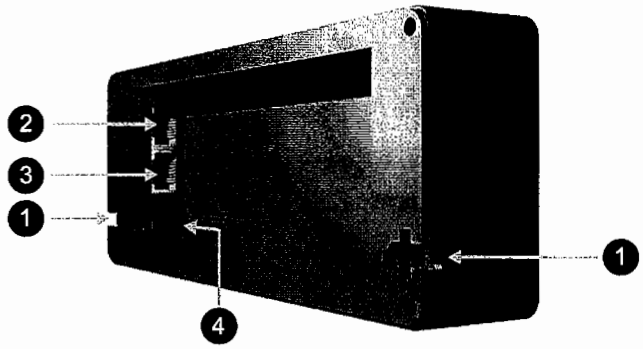
2050 transceiver control head rear view

Microphone socket

The microphone supplied with the Barrett 2050 is inserted here.
Note:- When the transceiver is supplied it is assembled in the one piece base station configuration and the microphone is already fitted. If using the 2050 in the remote control (trunk mount) configuration refer to the section "Installing the Barrett 2050 transceiver".

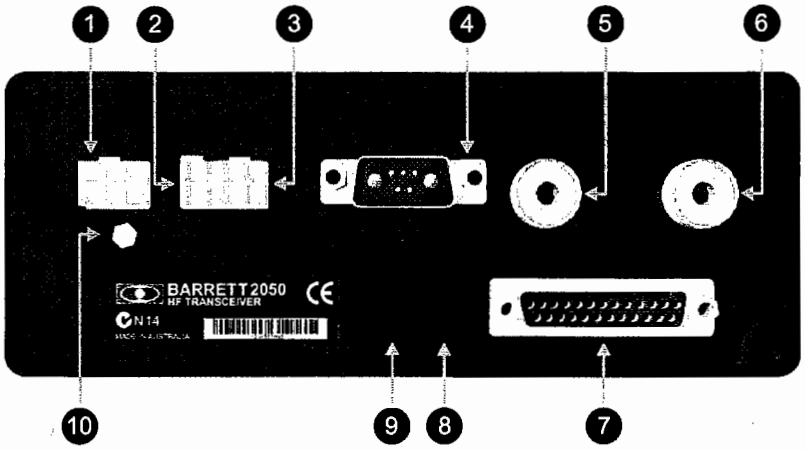
Interconnect cable

When used in a base station configuration (one piece unit, as supplied) the small interconnect cable supplied in the kit is plugged in here with the other end into the front of the main transceiver module. When used in the remote control (trunk mount) configuration the longer interconnect cable supplied is used.



1. Cable restraints for mic cable (when not used a rubber seal is provided to blank this access)
2. 2RJ-45 8 way microphone socket to suit Barrett hand microphone P/N BC200010
3. 3RJ-45 8 way for remote head interface cable
4. Speaker Jack

2050 transceiver rear panel description



1. Input for GPS receiver Barrett P/N BCA20009 for vehicle tracking/location applications.
2. Output for cooling fan unit Barrett P/N BCA20002 for high duty cycle applications such as data and email.
3. Interface for Barrett automatic tuning mobile antenna and marine automatic antenna tuners.
4. Power input and speaker output for use with 2022 power supply
5. Auxiliary antenna socket (channels can be programmed to use this socket or the main socket when using different antennas)
6. Main antenna socket
7. Auxiliary interface connector for use with external modems such as Barrett 2023 and Barrett 2024
8. Input for CW key Barrett P/N BCA20014
9. Output for loudspeaker Barrett P/N BCA20015
10. Chassis earth connection

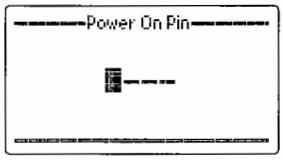
Switching on the transceiver

Switching on the transceiver – without a pin number

Press ⏻ for 1 second turns transceiver on.

Switching on the transceiver – with a pin number

Press ⏻ for 1 second turns transceiver on.



Enter the PIN number and press ENTER key

The transceiver will now be switched on, if however the incorrect PIN number was entered the following is displayed:-

This display will time out and allow the re-entry of the PIN number. If however the PIN number is entered 10 times incorrectly the transceiver will not allow PIN number entry for a period of one hour displaying the following:-

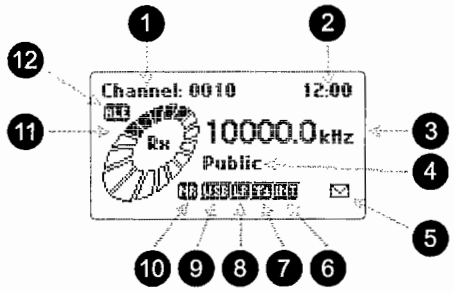
Note:- The power on PIN number would have been loaded into the transceiver during programming if the function is in use. Refer to your network administrator.

Switching off the transceiver

Press ⏻ for 1 second turns transceiver off.

Display

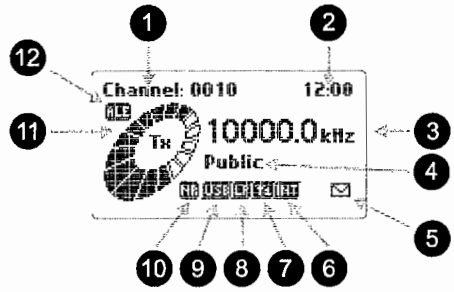
Receive mode



In receive mode the LCD display shows:-

1	Channel number	7	Antenna in use
2	Time	8	Power setting
3	Receive frequency.	9	Mode
4	Channel use	10	Noise reduction activated
5	Missed selcalls received	11	Receive signal strength
6	Selective call mode.	12	ALE active.

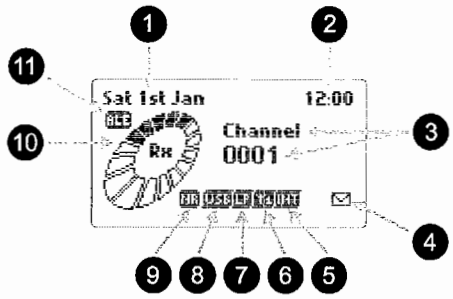
Transmit mode



In transmit mode the LCD display shows:-

1	Channel number	7	Antenna in use
2	Time	8	Power setting
3	Transmit frequency.	9	Mode
4	Channel use	10	Noise reduction activated
5	Missed selcalls received	11	Transmit power
6	Selective call mode.	12	ALE active

Secure mode

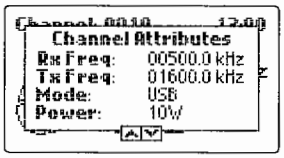


In secure mode the LCD display shows:-

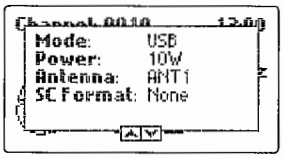
1	Date	7	Power setting
2	Time	8	Mode
3	Channel number	9	Noise reduction activated
4	Missed selcalls received	10	Receive signal strength
5	Selective call mode.	11	ALE active
6	Antenna in use		

Channel attributes

Pressing and holding down the Channel key for more than 2 seconds will reveal more details about the currently selected channel:-



Using the **Scroll keys** to scroll down will reveal further details:-



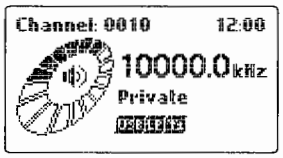
Note:- when in Secure mode the channel attributes do not show frequencies.

Adjusting the audio volume

To increase the audio volume in the loudspeaker

To decrease the audio volume in the loudspeaker

The display looks like this when adjusting the volume:-



Selecting a channel

Using channel up / down keys

Pressing the channel up or down key will select respectively the next higher or lower programmed channel. Holding down either of the keys will cause the rate of the channel change to increase.

The channel up/down keys on the microphone have the same function as the channel up/down keys on the keypad.

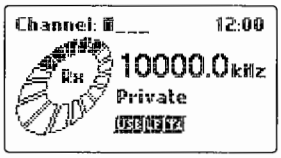
Channel up

Channel down

Note:- The microphone up/down buttons needs to be configured for channel change function either when programming the transceiver or in the **"General"** section of the protected menu.

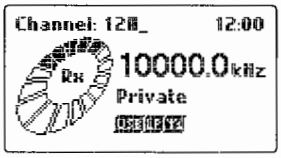
Direct channel number entry

press the Channel key

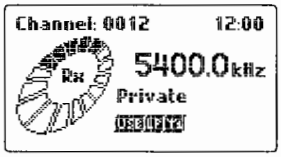


Enter the channel number required, using the numeric keys, channel range is from 1 to 9999 inclusive. Note:- **Channel zero cannot be selected**. (example selects channel 12)

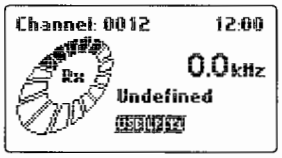
press the 1 abc 2 keys



press the ENTER key

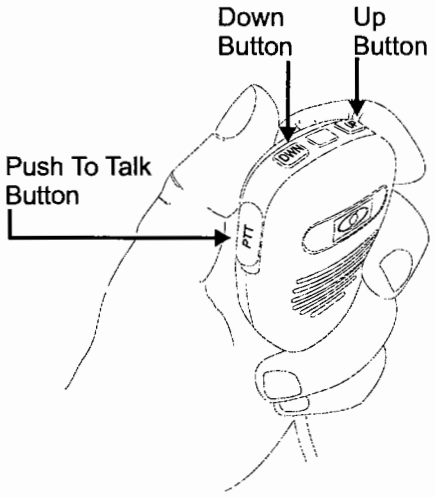


If the channel selected had not been previously programmed then the following is displayed:-



Note: Empty channels can only be accessed by direct channel selection and are not displayed when scrolling through channels.

Using the microphone



When using the microphone:-

Press and hold down the PTT (transmit) button only while talking

Hold the microphone close to your mouth

Speak clearly

Use the word 'over" to indicate you have finished speaking and release the PTT (transmit) button.

The up/down buttons can be configured in the software to control either the audio volume or channel up/down operations.

Note:- the Barrett 2050 has a transmit "time-out" facility. This facility (when programmed) allows the transmitter to be keyed in transmit mode with the PTT (transmit) switch for a set time period, after which the transceiver switches to receive until the PTT (transmit button is released and re-keyed. This facility prevents the transmitter transmitting for long periods of time if, for instance, the microphone becomes jammed between seats in a vehicle causing the PTT (transmit) switch to be held down.

Note:- Enabling, disabling and changing the time of the transmit timeout facility can be set either when programming the transceiver or in the **"General "** section of the protected menu.

Note:- The microphone up/down buttons can be configured for channel change or volume control functions either when programming the transceiver or in the "General" section of the protected menu.

Contacting another station - using selective call "Selcall" and Telcall.

General

In addition to the use of the transceiver in simple voice mode to call other stations there are several different types of selective calling systems available.

The calling systems available for the Barrett 2050 transceiver are listed below:-

International

A four and six digit selective call system, fully interoperable with the UN format published in September 2004 and fully backwards compatible with all previous Barrett 4 digit selcall protocols.
Includes Selcall , Beacon Call, Pagecall (SMS) call, transceiver lock call and RFDS tone calls.

Also if the options are fitted to the transceiver it includes:-

GPS calls, used to either transmit your position to another station or request the position of another station fitted with the GPS option and receiver.

Telcalls for direct dial telephone number calling using base stations with telephone interconnect facilities.

Person to person secure calls

OEM 1

A four and six digit selective call system compatible with other major HF manufacturers including those using encryption. Includes Selcall, Telcall, Beacon Call, Emergency call, Pagecall and GPS call.

CCIR

A four digit selective call system as specified by CCIR-493.
Includes Selcall, Beacon call, Pagecall (SMS) call and tone calls.
Also, if the options are fitted to the transceiver, it includes:-

GPS calls, used to either transmit your position to another station or request the position of another station fitted with the GPS option and receiver

Telcalls for direct dial telephone number calling using base stations with telephone interconnect facilities.

ALE FED STD 188 / MIL STD 188-141B (Option)

MIL-STD Automatic Link Establishment system, see section "Automatic Link Establishment"

Selective Call –"Selcall"

Selcall is a digital signalling system based on standard CCIR-493 for use on HF networks. Each station in an HF network is assigned an individual four or six digit ID (identification) and can be called using this ID.

Selective Call "Telcall"

Telcall uses this digital selective call system to transport a telephone number from a station on an HF network to a base station equipped with a telephone interconnect unit to initiate phone calls onto the international telephone network.

Note:- For Selcall and Telcall functions to operate the transceiver must be fitted with the selcall or telcall option and the channels enabled for selcall operation.

If **Automatic Link establishment (ALE)** is in use refer to the ALE section for operation details.

Special notes when using OEM 1 selective call protocol

All 6 digit OEM 1 protocol calls will only be decoded by other Barrett transceivers fitted with OEM 1 selcall protocol or other manufacturers' transceivers using encryption.
OEM 1 protocol 4 digit calls will be decoded by Barrett 950 transceivers, Barrett 2050 transceivers using International 4 and 6 digit selcall and other manufactures transceivers with similar CCIR 493 based selective call systems.

4 & 6 digit GPS and Status data calls use the OEM privacy key to encrypt the data. If this 8 digit key has not been programmed by the programming software a default privacy key of "99999999" is automatically used for transmission.

6 digit Pagecalls also use the privacy key but unlike the other calls the user has the option to manually enable or disable the privacy key. When disabled the data is sent as plain text. See "OEM Pagecall Key" in the protected menu "Selcall settings" section, to switch the privacy key "On" or "Off" when sending Pagecalls.

Emergency GPS data calls, both 4 & 6 digit, are automatically sent as plain text.

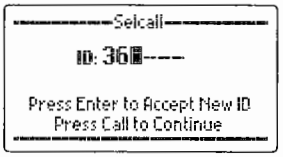
Entering station ID's and using the address and telephone books

Selcall and Telcall functions described in this section require station ID's or telephone numbers to be entered when making a call. They make use of convenient address and telephone books to allow frequently used Station ID's, station names and telephone numbers to be easily entered. This section describes how to enter station selcall IDs and telephone numbers both manually and by using use the address and telephone books.

Note:- also see section "Address and phone books – adding, editing and deleting entries"

When asked to enter a station ID:-

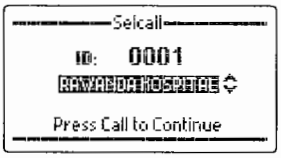
Either enter the station ID using the numeric keys (the number of the station you wish to call, see "Station ID ranges")



or if you think that station is in the address book use the **Scroll keys** to find the station you want to call:- .

then press the CALL key

or if you know the name of the station press the ENTER key and either enter the first letter of the name you want to call using the alpha keypad then use the **Scroll keys** or use the **Scroll keys** to find the name of the station you want to call
(example "r" entered):-



then press the CALL key

or press the CALL key and the last station called will be called again.

Station ID ranges

4 and six digit networks are all accommodated in the 2050 standard selcall system

Station ID range from 000000 to 999999 inclusive (the destination ID **must** be either 4 or 6 digits long)

Calling groups

In four digit format

All call	A station sending X000 will be received by stations X000 - X999 (up to 890 stations*)
Group call	A station sending XX00 will be received by stations XX00 - XX99 (up to 89 stations*)
Sub-group call	A station sending XXX0 will be received by stations XXX0 - XXX9 (up to 9 stations*)

In six digit format

All call	A station sending XXX000 will be received by stations XXX000 - XXX999 (up to 890 stations*)
Group call	A station sending XXXX00 will be received by stations XXXX00 - XXXX99 (up to 89 stations*)
Sub-group call	A station sending XXXXX0 will be received by stations XXXXX0 - XXXXX9 (up to 9 stations*)

* If using the group call system, stations cannot be programmed to have self ID's with last digits 000,00,0 as if you tried to call them a group call would occur.

Note:- All call, group call or sub-group call must be enabled, during programming, on a destination station for group calling to operate.

When asked to enter a telephone number:-

Either enter the telephone number using the numeric keypad (a number up to 16 digits)

or if you think that telephone number is in the phone book use the **Scroll keys** to find the name and number you want to call:-

or if you know the name associated with the telephone number in the phone book press the ENTER key and either enter the first letter of the name you want to call using the alpha keypad and use the **Scroll keys** or use the **Scroll keys** to find the name you want to call:-

or press the CALL key and the last phone number called will be called again.

Checking for the best channel to use between two stations - Beacon call

Before using many of the Selcall and Telcall functions in this section it is useful to know how to use the "Beacon Call" function.

"Beacon call" allows the operator to determine the signal quality between their station and a station they want to call on a particular channel, but without actually alerting the station they are doing so.

When a Beacon call is sent to another station, if the channel being used is "open", the remote station sends back a distinctive 4 tone revertive signal. The operator can judge the quality of the channel for communications purposes by the strength and clarity of this distinctive tone. Using Beacon calls on several available channels will determine which channel is best to use subsequent Selcalls or Telcalls

(Note:- both stations must be programmed for Selcall or Telcall operation)

Sending a beacon call

select the channel you think will be best to use (Refer to section Overview of HF operation)

listen for traffic on that channel, if no traffic is heard then continue.

then press the CALL key

select "Beacon Call" with the scroll keys

then press the CALL key

enter the station ID of the station you wish to Beacon call (see **"Entering station ID's and using the address and telephone books")**

then press the CALL key

wait for the beacon call to be sent.

listen for the distinctive 4 tone revertive signal from the station you have called.

If no revertive call is heard or it was difficult to hear try another channel and repeat the process until the best channel is found.

Receiving a beacon call

When a transceiver receives a beacon request call, it responds by transmitting the beacon call revertive tones. No indications occur on the transceiver. Beacon calls are **not** saved in the selcall history buffer.

Sending a selcall

select the channel you want to send the selcall on. ("Beacon call" can be used to select the best channel)

listen for traffic on that channel, if no traffic is heard then continue

then press the CALL key

select "Selcall" with the scroll keys

then press the CALL key

enter the station ID of the station you wish to call (see "**Entering station ID's and using the address and telephone books")**

then press the CALL key

wait for the selective call to be sent.

listen for revertive tone from the called station that indicates the call was successful.

If no revertive tone is heard or it was difficult to hear try another channel and repeat the process until a good channel is found.

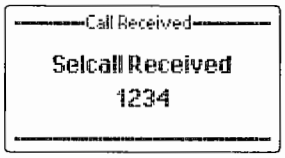
If a revertive tone is heard but you receive no verbal response from the station it may be because the operator is unavailable at the time.

Receiving a selcall

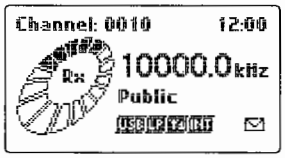
To receive a selcall your transceiver must be programmed for selective call (Selcall) and where multiple channels are in use the scan function should be activated.

Receiving a selcall directed to your transceiver

When you receive a Selcall, your station sends a revertive call (to alert the calling station that its call was received), an audible alarm is sounded, the mute (squelch) (if selected) opens and the display shows the call as follows:-



The audible alarm will sound for thirty seconds and then time out. To cancel the alarm before the time out period and to acknowledge the call, press PTT or any key. When the audible alarm times out the call received "Envelope" icon is displayed in the bottom right hand side of the display and a periodic audio reminder will be emitted:-



For details of previously received selcalls enter "Call History" by holding the 

key down for two seconds or more. Refer to the section "Call History".

Receiving All calls, Group calls and Sub-group calls

Stations can send a selective call that will alert different groupings of mobiles as follows:-

In four digit format

All call A station sending X000 will be received by stations X000 - X999 (up to 890 stations*)

Group call A station sending XX00 will be received by stations XX00 - XX99 (up to 89 stations*)

Sub-group call A station sending XXX0 will be received by stations XXX0 - XXX9 (up to 9 stations*)

In six digit format

All call A station sending XXX000 will be received by stations XXX000 - XXX999 (up to 890 stations*)

Group call A station sending XXXX00 will be received by stations XXXX00 - XXXX99 (up to 89 stations*)

Sub-group call A station sending XXXXX0 will be received by stations XXXXX0 - XXXXX9 (up to 9 stations*)

* If using the group call system, stations cannot be programmed to have self ID's with last digits 000,00,0 as if you tried to call them a group call would occur.

Note:- All call, group call or sub-group call must be enabled, during programming, on a destination station for group calling to operate

Receiving an "All call " , "Group Call", "Sub-Group Call"

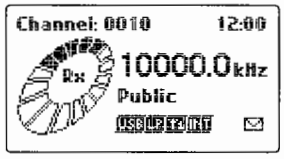
When you receive any of the calls above an audible alarm is sounded, the mute (squelch) (if selected) opens and the display shows the call type as follows:-

"All call"

"Group call"

"Sub-group call"

In all group calls the audible alarm will sound for thirty seconds and then time out. To cancel the alarm before the time out and to acknowledge the call press PTT or any key. When the audible alarm times out the call received "envelope" icon is displayed in the bottom right hand side of the display:-



For details of previously received selcalls enter "Call History" by holding the 

key down for two seconds or more. Refer to the section "Call History".

Emergency calls

All selcall emergency calls are transmitted by pressing the ⚠ button for more than two seconds and less than ten seconds and releasing, the alarm sequence starts upon button release.

The action of the emergency call button depends on transceiver programming:-

Selective call alarm that only transmits on the currently selected channel.

Transmits the emergency selcall sequence once on each press of the ⚠ button.

If a GPS receiver is fitted and enabled the GPS position is also sent in the call.

Selective call alarm that transmits and automatically changes to a selection of channels

Transmits the emergency selcall sequence twice on each channel programmed as an emergency channel, repeating this sequence until the transceiver is switched off

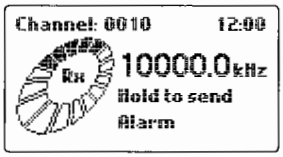
If a GPS receiver is fitted and enabled the GPS position is also sent in the call.

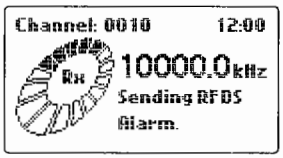
Note:-In all of the alarms above, after the alarm has been activated by using the ⚠ button, there is no indication that an alarm is being sent for security purposes.

Royal Flying Doctor Service (RFDS) alarm

Two-tone alarm 880Hz + 1320Hz continuous (Australian use only) – alerts the Royal Flying Doctor Service on RFDS channels.

Press the ⚠ button for more than two seconds and less than ten seconds.





The RFDS alarm will continue transmitting for 10 seconds even if you have released the ⚠ button.

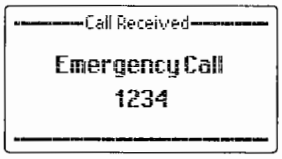
To cancel the RFDS alarm press the [Clear] key or the ⚠ button.

Note:- A momentary press of the ⚠ button initiates RFDS alarm test mode which emits the audio tones but does not transmit them. Another momentary press of the ⚠ button or the [Clear] key cancels the RFDS alarm test mode.

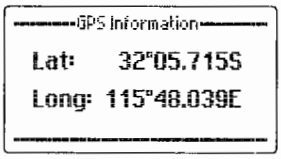
Note:- Emergency call settings are set during transceiver programming from the programming software only.

Receiving an emergency call

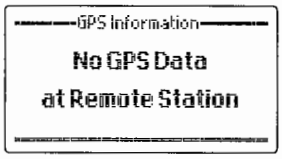
Barrett transceivers that receive the emergency selcall emit a distinctive audio alarm and display the following:-



If the transceiver sending the emergency selcall is fitted with a GPS receiver the position will also be displayed as illustrated below :-



If the transceiver sending the emergency selcall was not fitted with GPS or no data is available the following is displayed:-



Direct dial telephone calls - Telcalls

Transceivers equipped with the Telcall option can direct dial telephone numbers and receive calls from telephone users through a Barrett telephone interconnect base stations.

Note:- If ALE is in use refer to the ALE section for details.

Making a direct dial telephone call - sending a Telcall

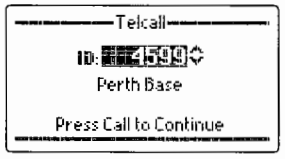
select the channel you want to send the Telcall on. ("Beacon call" can be used to select the best channel)

listen for traffic on that channel, if no traffic is heard then continue.

press the CALL key

select "Telcall" with the scroll keys

then press the CALL key



enter the station ID of the station you wish to make the phone call through (see "**Entering station ID's and using the address and telephone books**")

then press the CALL key

enter the telephone number you want to call (see **"Entering station ID's and using the address and telephone books")**

then press the CALL key

wait for the Telcall to be sent.

listen for revertive tone from the called station that indicates the call was successful.

If no revertive call is heard try another channel and repeat the process.

When the call is successful wait for telephone connection to be made and proceed with call..

When the call is complete or if the line is busy send a "Hang Up" call.

Last number redial

press the CALL key twice

the last telephone number sent will is displayed:-

then press the CALL key and the Telcall sequence will be re-sent.

Hang-up call

When a call to a telephone interconnect base station has been completed the caller should **"hang up"** by sending a "hang up" code:-

press the CALL key

select "Hangup" with the scroll keys

then press the CALL key

When the hang-up selcall has completed transmitting, listen for hang-up revertive signal, confirming the "hang up" was successful, if not heard repeat the above procedure.

Note:- If the hang up call is un-successful for any reason the telephone interconnect will time out and hangup itself.

Making a preset (abbreviated number) telephone call

A base station equipped with telephone interconnect facilities is also capable of making preset (abbreviated number) telephone calls. Preset (abbreviated) telephone numbers are stored in the telephone interconnect unit and are accessed by sending a standard selcall using a specific selcall number.

select the channel you want to send the "hang up" call on. ("Beacon call" can be used to select the best channel)

listen for traffic on that channel, if no traffic is heard then continue

press the CALL key

select "Selcall" with the scroll keys

enter the selcall number representing the preset (abbreviated number as described below - Preset (abbreviated) selcall numbering:-

then press the 

key

wait for the selective call to be sent.

listen for revertive tone from the called station that indicates the call was successful.

If no revertive call is heard or it was difficult to hear try another channel and repeat the process until a good channel is found.

Preset (abbreviated) selcall numbering

Enter xxxxAA or xxAA where xxxx or xx is the (four) six or (two) four digit selcall ID of the base station equipped with telephone interconnect facilities and AA represents the preset telephone number (between 1 and 98)

Example:-

Entering 4523 will instruct a telephone interconnected base station with a four digit Selcall ID of 45XX to call preset (abbreviated) number stored as 23 in the telephone interconnect.

Entering 342547 will instruct a telephone interconnected base station with a six digit Selcall ID of 3425XX to call preset (abbreviated) number stored as 47 in the telephone interconnect.

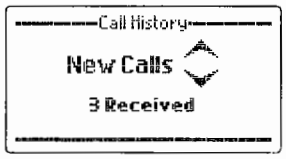
Note:-
When using preset (abbreviated) number dialing, your network supervisor will issue you with a list of the preset numbers and the phone numbers they will dial when using a particular telephone interconnected base station.

Call history

Whenever a Selcall, Telcall, All call, Group call, Sub group call, Pagecall, Statcall GPS or Emergency call is received or transmitted its details are held in a first in first out call history buffer.
Received calls that have not been viewed before are held in a section called "New Calls", received calls that have been viewed are held for future viewing in the "Call inbox" all transmitted calls are stored in the "Call Outbox". Each history buffer can store up to 30 entries.

Call history can be entered as follows:-

Either Press and hold the CALL key for 2 seconds:-



Or Select Call history in the Standard Menu section

Note:- A full description of navigating the call history section is described in the Standard Menu section of this manual.

Scanning channels

Scanning allows a HF transceiver to monitor several channels for incoming calls. It is particularly useful as the nature of HF signal propagation means that not all channels are available for communications at one time. For instance, a station calling a station that is in scanning can send a "Beacon call" on any channel knowing the station it is calling is monitoring all its available channels. A response from the scanning station will only occur on channels that are "open" for communication.

Stations in scan can also monitor channels for voice activity or signals received that has a signal strength over a preset level.

Selcall Scan

When a selcall signal is detected, and the channel has selcall enabled, no matter which mute type is selected the transceiver will stop scanning and decode the selcall. The transceiver will only stop scanning when a selcall is detected.

Signal strength scan (SSL scan)

If the signal strength mute (squelch) is active and a signal with a level greater than the pre-set threshold is received the scan will halt. Scan will remain halted while the signal level stays above the preset threshold. Once the signal decreases below the pre-set threshold level, for a period greater than the scan dwell period, scanning will resume.

Voice (syllabic) scan

If the audio mute (squelch) is active and is opened scanning will halt. Scanning will remain halted while the audio mute is open. Once the mute closes, for a period greater than the scan dwell period, scanning will resume.

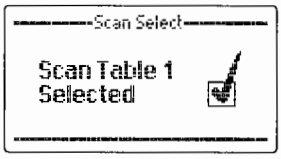
The Barrett 2050 transceiver has up to eight scan tables available each table being able to be programmed with up to thirty channels. (See Menus and Programming for details on channel entry)

Selecting a Scan table

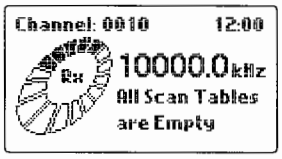
press the Scan wxyz 9 key for more than two seconds

use the scroll keys to select the scan table number

then press the ENTER key



Note:- If no scan tables are programmed the following is displayed:-



Initiating scan

Momentarily press the Scan wxyz 9 key.

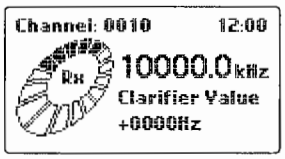
Alternatively scan may be programmed as a default condition so when the transceiver is switched on, scan is automatically initiated, or after a period of inactivity, i.e. no key presses, the transceiver returns to scan.

Clarifier

The clarifier is used to finely tune the receiver on the selected channel to compensate for received signals from other stations that are off frequency.

The receiver can be tuned in the clarifier mode in steps of 1Hz to frequencies up to -1KHz and +1KHz of the assigned channel frequency, depending on programming. (see note below)

Clarifier mno 6 to enter clarifier tune mode.



▲ or abc 2 tune clarifier up

▼ or jkl 5 tune clarifier down

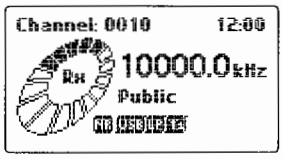
Note:- There are five clarifier ranges available, these ranges can be set either when programming the transceiver or in the **"RF Settings"** section of the protected menu.

Note:- The clarifier value is set to zero when the channel is changed or the transceiver is turned off.

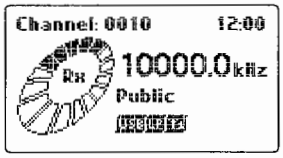
Noise reduction selection

The DSP noise reduction system is enabled and disabled by momentary pressing the Scram tuv 8 key.

When the noise reduction system is selected the display shows a small square to the right of the mode indication notated NR as below:-



The DSP noise reduction system is disabled by momentary pressing the Scram tuv 8 key.



Note:- There are three levels of noise reduction available, these levels can be set either when programming the transceiver or in the **"Audio Settings"** section of the protected menu.

Mute (squelch) selection

There are three mute (squelch) modes:-

Audio (syllabic) mute (squelch) – the receiver audio is enabled when speech is detected on the selected channel.

Note:- The syllabic mute sensitivity can be set to three levels, these levels can be set either when programming the transceiver or in the **"Mute Settings"** section of the protected menu.

Selective call mute (squelch) – the receiver audio is enabled after a selcall sent to the unit has been received and decoded successfully

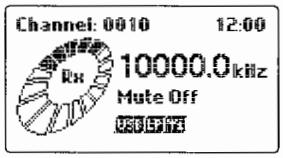
Signal Strength Level (SSL) mute (squelch) – the receiver audio is enabled when the received signal strength exceeds the nominated threshold level.

Note:- The signal strength mute level can be set to three levels, these levels can be set either when programming the transceiver or in the **"Mute Settings"** section of the protected menu.

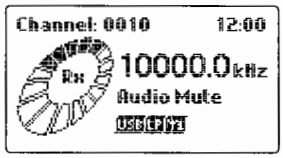
The current mute (squelch) state is displayed the first time the mute key Mute ␣ 0 is pressed.

To change the mute state, while the mute state is still displayed from the first press of the mute key, press the mute key again to scroll through to the required mute state.

Press the Mute ␣ 0 key



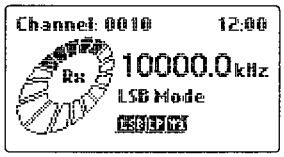
Press the Mute ␣ 0 key



Mode selection

The mode key changes the mode of operation - LSB, USB, AM, CW or AFSK of the selected channel. The mode key will only temporarily set the mode for a selected channel, the mode reverting to that channel's programmed mode after the channel is changed, or the transceiver is turned off.

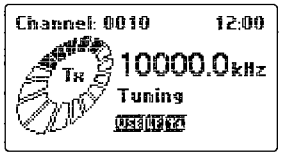
Press the Mode pqrs 7 key repeatedly to select the required mode:-



Note:- If the IF filter option is physically fitted and enabled in software, it will automatically be selected when CW and AFSK mode is selected.

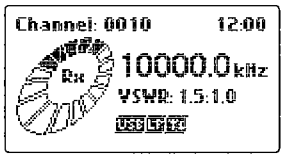
Tune

Press and hold down the Tune ? key to tune:-



When tuning, the transceiver will transmit, at the power level selected, a carrier on the channel selected, at **1.6 kHz above the Suppressed Carrier Frequency (SCF)** (displayed frequency) of that channel.

When the tune key is released the display shows the antenna VSWR.



Advanced selective call functions

Requesting another station's GPS position

select the channel you want to send the GPS request call on. ("Beacon call" can be used to select the best channel)

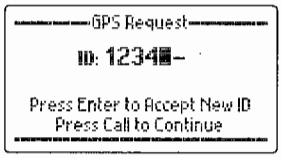
listen for traffic on that channel, if no traffic is heard then press the 

key

select "GPS Request" with the scroll keys

then press the 

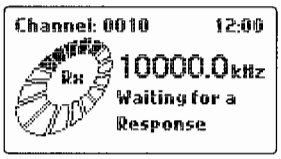
key



enter the identification of the station you want to request the GPS position from (see **"Entering station ID's and using the address and telephone books")**

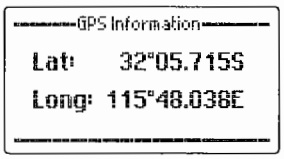
then press the 

key

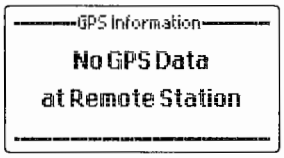


Wait for the station you called to send back its position data after which the following will be displayed:-

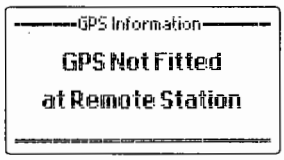
The station called GPS position:-



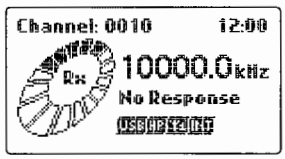
or – the following error messages:-



The GPS unit is not providing data to the remote transceiver



There is no GPS receiver fitted to the remote transceiver



There was no response from the remote station

Sending your GPS position to another station

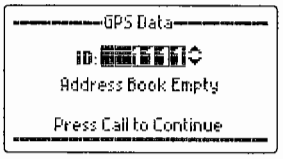
select the channel you want to send the GPS call on. ("Beacon call" can be used to select the best channel)

listen for traffic on that channel, if no traffic is heard then continue.

press the CALL key

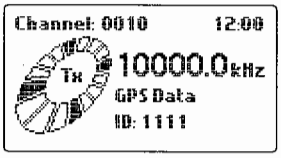
select "GPS Send" with the scroll keys:-

then press the CALL key



enter the identification of the station you want to send your GPS position to (see **"Entering station ID's and using the address and telephone books")**

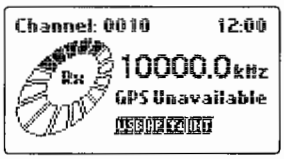
then press the CALL key



Your GPS position will is now be transmitted, wait for a revertive tone from the remote station to confirm the call was received, if no revertive tone is heard repeat the process or change to another channel and repeat the process.

Note:- The GPS interface option BCO205004 must be fitted and the GPS receiver P/N BCA20009 must be connected and receiving position information when using the GPS call option.

Note:- If the display indicates that the GPS is unavailable as shown below you cannot select the selective call function "GPS data.



Text messaging – "Pagecall", "SMS"

Pagecall allows messages of up to 32 characters to be sent or received to and from other transceivers with Pagecall facilities.

Sending a "Pagecall" "SMS"

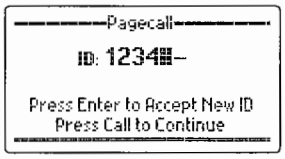
select the channel you want to send the Pagecall on. ("Beacon call" can be used to select the best channel)

listen for traffic on that channel, if no traffic is heard then continue.

press the CALL key

select "Pagecall" with the scroll keys

then press the CALL key



enter the identification of the station you want to send the Pagecall to (see **"Entering station ID's and using the address and telephone books")**

then press the CALL key

type in your messages using the alpha numeric keys

then press the CALL key