

10 SERVICE AND WARRANTY

Check the ends of cartridge fuses periodically for good electrical contact. Other than the occasional smear of vaseline over the power supply plug and around the handset socket, there should be no need for servicing.

RT6500 is guaranteed for 12 months from date of retail sale. If it is necessary to have the unit repaired, return it, carriage paid (preferably in its original packing) to the agent in the country of purchase with a copy of the receipted invoice showing the date of purchase.

If a fault occurs outside the country of purchase, return the unit to the official NAVICO agent in the country of use. The appointed agent will rectify the fault and make a charge for labour and return carriage and packing. Any component that has failed under the terms of the warranty may be replaced free of charge.

If your NAVICO instrument is purchased outside the country of your permanent residence, the agent is at liberty to charge for the repair, parts and labour at local rates. Reimbursement will not be made.

A list of official international NAVICO distributors and service centres is available upon request.



VHF MARINE RADIOTELEPHONE RT6500 and RT6500S

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9 FREQUENCIES OF CHANNELS

Channel Desig- -nators			USA Rx	Channel Desig- -nators			USA Rx
	Tx	INT Rx			Tx	INT Rx	
00	156.025	160.625	156.025				
60	156.025	160.625	156.025	17	156.850	156.850	156.850
01	156.050	160.650	156.050	77	156.875	156.875	156.875
61	156.075	160.675	156.075	18	156.900	161.500	156.900
02	156.100	160.700	156.100	78	156.925	161.525	156.925
62	156.125	160.725	156.125	19	156.950	161.550	156.950
03	156.150	160.750	156.150	79	156.975	161.575	156.975
63	156.175	160.775	156.175	20	157.000	161.600	161.600
04	156.200	160.800	156.200	80	157.025	161.625	157.025
64	156.225	160.825	156.225	21	157.050	161.650	157.050
05	156.250	160.850	156.250	81	157.075	161.675	157.075
65	156.275	160.875	156.275	22	157.100	161.700	157.100
06	156.300	156.300	156.300	82	157.125	161.725	157.125
66	156.325	160.925	156.325	23	157.150	161.750	157.150
07	156.350	160.950	156.350	83	157.175	161.775	157.175
67	156.375	156.375	156.375	24	157.200	161.800	161.800
08	156.400	156.400	156.400	84	157.225	161.825	161.825
68	156.425	156.425	156.425	25	157.250	161.850	161.850
09	156.450	156.450	156.450	85	157.275	161.875	161.875
69	156.475	156.475	156.475	26	157.300	161.900	161.900
10	156.500	156.500	156.500	86	157.325	161.925	161.925
70	156.525	156.525	156.525	27	157.350	161.950	161.950
11	156.550	156.550	156.550	87	157.375	161.975	161.975
71	156.575	156.575	156.575	28	157.400	162.000	162.000
12	156.600	156.600	156.600	88	157.425	162.025	157.425
72	156.625	156.625	156.625	29	-	-	157.450
13	156.650	156.650	156.650	89	-	-	157.475
73	156.675	156.675	156.675	WX01	-	-	162.550
14	156.700	156.700	156.700	WX02	-	-	162.400
74	156.725	156.725	156.725	WX03	-	-	162.475
15	156.750	156.750	156.750	WX04	-	-	162.425
75	-	156.775	156.775	WX05	-	-	162.450
16	156.800	156.800	156.800	WX06	-	-	162.500
76	-	156.825	156.825	WX07	-	-	162.525
				WX08	-	-	161.650
				WX09	-	-	161.775
				WX10	-	-	163.275
37	157.850	157.850	-				
M2	161.425	161.425	-				

8 DIAGNOSTIC CHECKLIST

Symptom	Possible Cause	Remedy
No display at switch-on	Power supply interrupted	Check power source switching, terminals and fuse. Check line fuse and connector at set.
Scan or Mem Scan locking on channel without a signal	Noise on the channel is holding the scan.	Increase the squelch level (turn clockwise). Scan will resume after 3 seconds.
Dual Watch not being entered	Working channel not selected before entering D/W. Handset off cradle.	Exit D/W, select channel and re-enter. Replace handset.
Speaker does not cut out as desired when handset is removed. OR speaker cuts out when not desired on removal of handset.	Selector in handset needs reversing.	Remove plate and reverse selector (See fig.5 and 5A).
Channel numbers will not change.	Dual Watch mode set.	Exit D/W.
Certain channel numbers not obtainable.	Certain channels not permitted and are programmed out.	Consult your national list for permitted channels.
Will not transmit on 25w but okay on 1w.	Low voltage when full transmitting current is drawn.	Check volts. Try with engine running. Check wiring.
Transmissions persistently weak.	Damaged antenna	Check nothing is touching antenna. Check all connectors.
	Defective feeder cable or connectors.	Try with separate emergency antenna.

These simple checks should be carried out BEFORE seeking servicing help and may save you time and expense.

Contents

	Page
1 Introduction	3
2 Specification	4
3 Installation	5
4 Operation	
4.1 RT6500	9
4.2 RT6500S	11
5 Summary Operating Guide	12
6 Notes on Transmitting	13
7 Private Channels	13
8 Diagnostic Checklist	14
9 Channel Frequency Chart	15
10 Servicing and Warranty.	16

1 INTRODUCTION

Your Navico **RT6500** or **RT6500S** VHF marine radio telephone is designed and manufactured in Britain. Versions are approved in most European countries and many other countries of the world, in many cases well exceeding the specification requirements of particular countries.

Please note that regulations vary from country to country and consequently there are small differences between versions of the radio approved in each country.

Licence applications should normally be made to the government radio regulatory department of the country in which the vessel is registered. The marine VHF purchased should also be a version type approved in that country.

To ensure best results read the entire manual before installation. Most recorded problems with VHF radios relate to antenna siting, imperfect cables, corroded cable joints and low voltage. Carefully and regularly inspect all external connections.

In common with similar instruments the unit is not waterproof and must be protected from direct rain, spray, or excessive condensation.

Thank you for choosing Navico.

2 SPECIFICATION

General

Channel capability	55 INTERNATIONAL CHANNELS. 1-28, 60-88. NOTE: Channel 70, where fitted, should be used for DSC purposes only. UK: includes channels 37 & M2 (denoted n2 on display). USA: includes 0, 29, 89, 75, 76, Wx1-10 receive only. Scandinavia: leisure or fishing channels as appropriate. Canada: Canadian & American channels.
Weight	1.3kg excluding handset
Frequency stability	± 10ppm
Power supply	12v + 30% / - 10%
Channel spacing	25kHz
Temperature range	-20 to +50 degrees C
Antenna impedance	50 ohms

Receiver

Audio response	Within +1dB and -3dB of a 6dB/octave de-emphasis characteristic from 300Hz to 3kHz.
Frequency range	156-163 MHz
Sensitivity	Typically 0.5 microvolts for 20dB SINAD.
Selectivity	Better than -70dB on adjacent channel
Hum & noise level	Better than -40dB
Spurious response attenuation	>70dB
Inter-modulation attenuation	>70dB
Audio output	2 watts maximum into extension speaker
Current consumption	Max - full volume, with illumination: 300mA Squelched - no illumination: 100mA.

Transmitter

Frequency range	156 to 163 MHz
Power output	25 watts +0/-1.5dB or 1 watt + 0/-3dB into 50 ohms.
Spurious emissions	>70dB below carrier
Current drain	Tx power 25 watts: 5.5A Tx power 1 watt: 1.3A
Hum & noise level	Better than -40dB
Modulation	Within +1dB and -3dB of a 6dB/octave pre-emphasis characteristic from 300Hz to 3kHz.

NAVICO operate a policy of continual development and reserve the right to alter and improve the specification of their products without notice.

6 GENERAL NOTES ON TRANSMITTING

First check that Dual Watch or Scan mode is not selected.

The **Power Output** key marked 1w/25w plays no part in reception. It is used before transmission to select the output power level. Whenever it is practical, use the reduced power level in consideration for other users, particularly for ranges within a mile or so, even if you use high power in establishing first contact. The chosen setting is indicated on the display as 1w or 25w.

Certain numbered channels are not available for general use. These channels will automatically be precluded from being entered on the display. Also Channels 15 and 17 can only be operated in low power. (This ensures against accidental 'spillover' of high power signal into the adjacent emergency channel).

The display indicates 'Tx' when the set itself is properly transmitting, but successful transmission is still dependant on the integrity of the antenna installation.

Never transmit with the antenna disconnected because prolonged dissipation of the high output power inside the set instead of through the antenna may damage it.

Before transmitting, double check the channel number selected to ensure it is clear of traffic, then key the handset switch while speaking. You cannot receive while transmitting, so do not forget to release the switch when listening. The switchover takes only a fraction of a second, but that is sufficient to lose a syllable. It pays to avoid single syllable answers particularly when talking to someone on a shore telephone unpractised in **Simplex Operation**, and to make clear that you are ready to listen by habitually signalling the word "over".

You may be puzzled that on some channels you will hear both sides of the conversation of another pair of stations, but on others only one, even if both are in range. This does not indicate a fault condition. Some are simplex channels, sending and receiving on the same frequency; others are duplex, transmitting on different frequencies. Again, a coastal station may leave open a key so that both sides of a duplex conversation can be heard because the received side is retransmitted.

7 PRIVATE CHANNELS (Model RT6500S only)

Where authorised to Companies or individuals by the Home Office in the UK or FCC/DOC in the USA and Canada, or other licensing authority in the country of use, **Private Channels** may be programmed by an authorised dealer. For this a charge will be made. Please consult your dealer for further information. **RT6500S** has capacity for up to 16 private channels.

5 SUMMARY OPERATING GUIDE

Reception

Switch-On

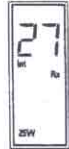


Set Vol. (7) pointer vertical, Turn squelch (8) fully anticlockwise until noise ceases, — normally approximately vertical.

RT6500S

Where different (To activate functions with yellow graphics, first key shift key 1) then function key within 2 seconds.

Change Channels



Scroll to required channel by key 5 or key 6.



Scroll to below 01 or above 88 Set Private or Weather Channels (USA) only Tx inhibited on weather channels.

Set Dual-Watch



Select required D/W channel Key 3 Ensure squelch level precludes noise on 16 (display shows 16 for an instant every 2 seconds.)

Key 1, then key 5.

Cancel Dual-Watch



Key 3 Also can cancel by: Key 6 or Key 4 or Switch 'off' and 'on'

Key 1, then key 5 or Key 6 or Key 4 switch 'off' and 'on'

Start Full Scan



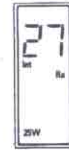
Not applicable to RT6500

Key 1, then key 6 Ensure squelch precludes noise on all channels.

Cancel Full Scan

Key 6 or Key 4 or switch off and on

Programme Memory



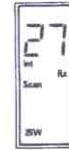
Not applicable to RT6500

Select Channel. Key 1 then Key 3 Select next channel Key 1 then key 3 Repeat as necessary

Remove a Channel from Memory.

Repeat as for programming to remove channels one at a time.

Start Memory Scan



Not RT6500

Key 1, then key 2

Stop Memory Scan

Key 6 or key 4 or switch off and on

Transmission

Set Low Power



Cancel D/W if set Key 2

Set Full Power

Key 2 again Will not change while key 9 is pressed.

RT6500S

Where different Cancel D/W or Scan Key 2

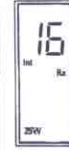
Transmit



Cancel D/W if set Key 9

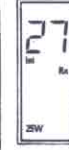
Cancel D/W or Scan Key 9

Emergency Transmit or Receive Ch. 16



Key 4 overrides any previous setting. Press Key 4 again and operation reverts to the previously selected channel.

Illumination



Key 1 — on

Key 3 — on

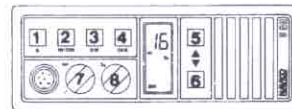
Key 1 again — off

Key 3 again — off

Key Identification



RT6500



RT6500S



Select USA Grouping



Hold key 1 while switching on (7).

3 INSTALLATION

Siting the Set.

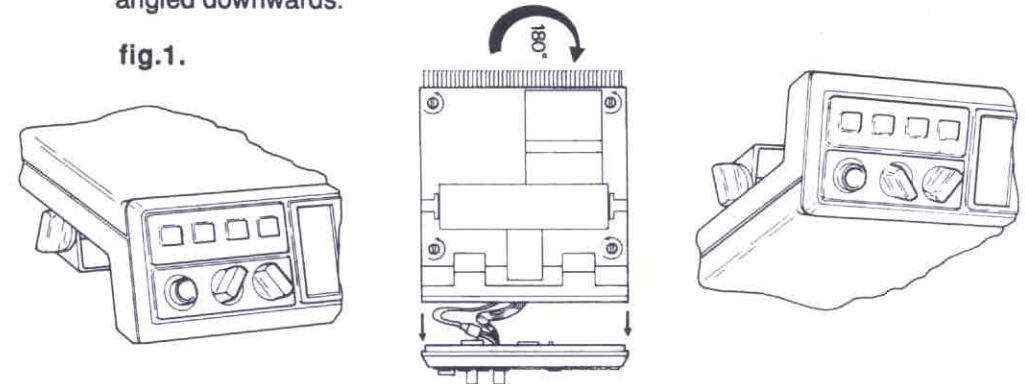
Choose a location that is free from moisture, excessive heat and vibration. Ensure that the set will have adequate air flow over the fins at the back of the product.

You may want to remove the product from its brackets for storage in the winter so be sure to leave adequate length of cabling to make unplugging easy.

For flexibility, the RT6500 series has been designed for vertical or horizontal mounting, and for fastening down to, or up to a horizontal surface.

If mounted overhead the front panel can be inverted so that the display is angled downwards.

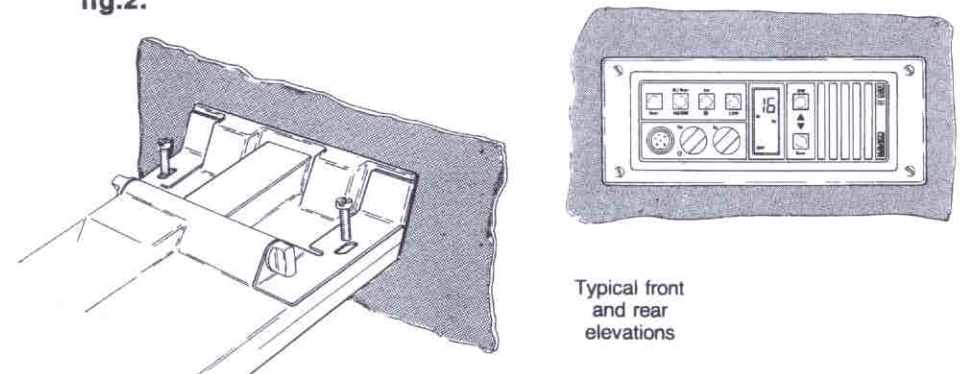
fig.1.



Loosen the four screws which clamp the two halves of the case together by 1.5 turns. **DO NOT FULLY REMOVE CASE SCREWS!** Partly separate the two halves sufficiently to ease out the front panel. Invert and replace, ensuring that the ribbon cable does not get trapped. Retighten the fastenings.

A special flush mounting bracket Navico Part No. **FMB6500** allows particularly neat installation through a vertical panel.

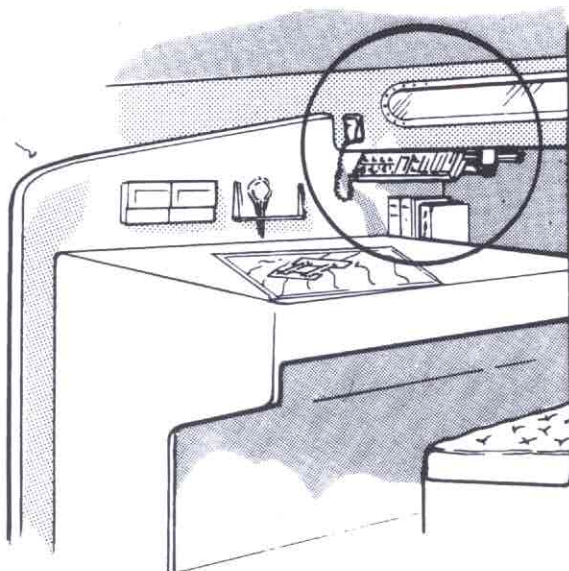
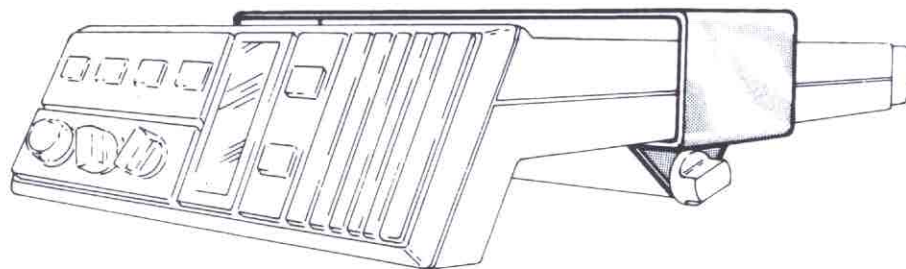
fig.2.



Typical front and rear elevations

For mounting under a side deckhead the Navico deckhead mounting bracket **DMB6500** provides easy mounting.

fig.3.



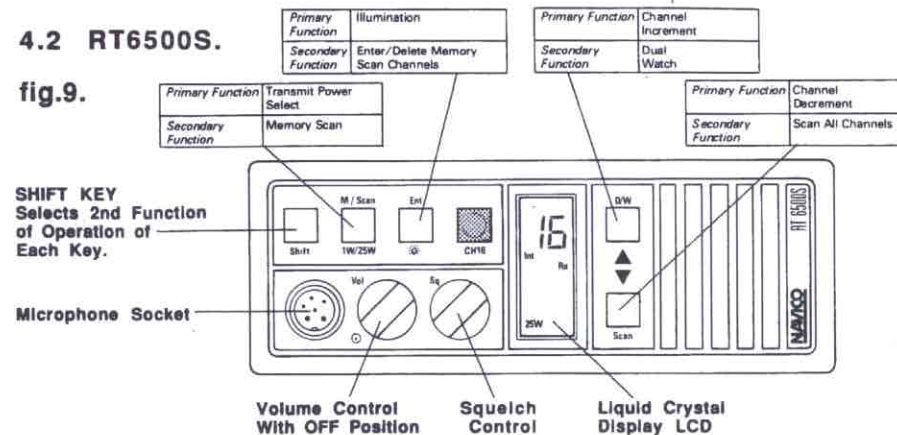
Power Cable

Your Navico **RT6500/S** is designed to operate from the ship's 12 volt d.c supply. There is a fuse located in the positive (red) cable rated at 7.5A. This will blow if power is accidentally reversed. Keep battery leads as short as possible. Extension leads up to 3 metres long require 2.5mm² (13 AWG) wire. Longer runs should use thicker cable.

For use on 24 volts use a Navico **SMR1208** voltage converter. For use with a.c. mains (220/240V a.c.) use a Navico **PSU1208** power supply.

4.2 RT6500S.

fig.9.



Note: WHITE printing (below key) denotes PRIMARY function of key, YELLOW printing (above key) denotes SECOND function of key.

Shift Key

Certain keys operate in two levels, the first level indicated by white printing underneath the key, the second level by yellow printing over the key. To access second level functions, first press the Shift key, release, then press the required second-level key within 2 seconds.

Illumination, Transmit Power, Channel 16, Channel Up, Channel Down, Volume and Squelch : for operation refer to **RT6500** instructions.

M. Scan (Used after the Shift Key)

Selects operation of scanning user selected channels. Cancel by pressing Shift, then M.Scan, or pressing just the Channel Down key.

Ent (Used after Shift Key)

This enters the displayed channel into the scan memory. **NOTE:** If this channel is already in scan memory then this action will delete the displayed channel.

D/W (Used after Shift Key)

Selects Dual Watch operation. Refer to **RT6500** instructions. To cancel press Channel Down key.

Scan (Used after Shift Key)

Selects scanning of all channels in receive. To cancel press Channel Down key.

For either scan mode, if the receiver has locked onto an unwanted channel press the Up key to continue scanning. The receiver will lock the scan onto any channel that has opened the squelch. Selecting transmit is **NOT** possible when Dual Watch, Scan or Mem Scan is selected.

Antenna Installation.

Use a marine VHF antenna with 50 ohm impedance. Ensure all cabling from the antenna is 50 ohm. Under no circumstances use domestic TV cable or connectors. Use only 50 ohm impedance connectors to join antenna cable. Navico part DP1 is a suitable waterproof through-deck connector.

Ensure that the antenna is at least 1 metre away from the RT6500 and as far as possible from sources of interference. The range of your VHF is related to the height of the antenna.

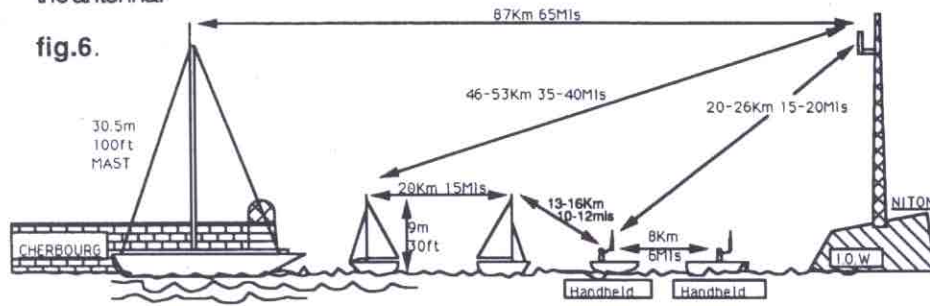
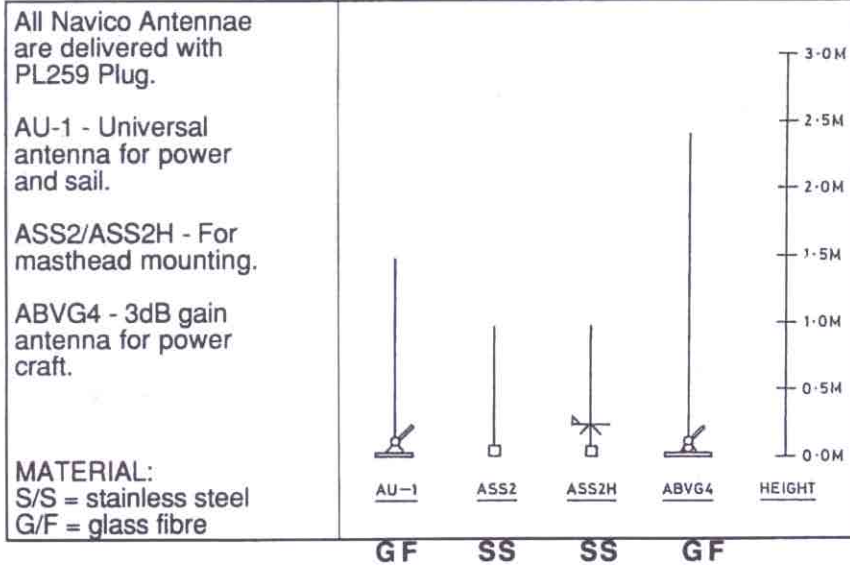


fig.6.

Connect the antenna cable to the rear panel by a PL259 connector.

Navico antennas:

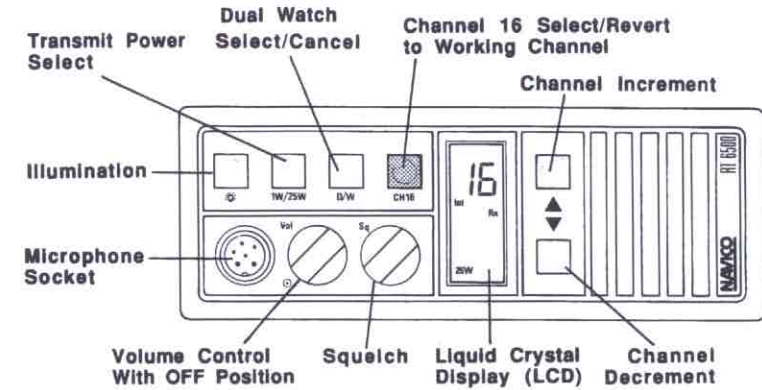
fig.7.



4 OPERATION

4.1 RT6500

fig.8.



Illumination

Alternate presses of this key switches the illumination on and off. When selecting illumination on, hold the key depressed until required level of background illumination of the LCD is achieved.

Transmit Power.

Alternate presses of this key selects 1 watt or 25 watts output power of the transmitter. An LCD legend confirms your selection.

NOTE: In the USA, FCC require that channels 13 and 67 are, on channel selection, limited to 1 watt (even if the operator was previously working another channel at 25 watts).

If the operator requires transmission on 25 watts, 25 watts must be selected after channel 13 or 67 has been chosen. The set will then transmit on 25 watts for as long as the PTT (Press to Talk) switch is held down. As soon as the operator releases the PTT, the set will automatically revert to 1 watt.

During long periods of working channels 13 or 67, the operator will have to select 25 watts every time to transmit at full power, otherwise the set will automatically restrict transmission to 1 watt.

This system of working is to ensure the operator makes a conscious decision before attempting to transmit at full power on the prescribed channels of 13 and 67.

Dual Watch

Alternate presses of this key selects Dual Watch or cancels Dual Watch. An LCD legend confirms selection of Dual Watch.

When Dual Watch is selected the receiver monitors both the selected channel and channel 16 (indicated on LCD). Reception on channel 16 takes priority over the selected channel until transmission is finished, when the set reverts to monitoring both channels. In this mode of operation small, regular interruptions to reception on the selected channel will be heard.

Dual Watch can be cancelled by pressing the Channel Down key, as well as pressing the Dual Watch key again.

If the squelch is open then the set will automatically lock on channel 16 when operating in Dual Watch.

Channel 16

This key overrides any other setting of the radio to bring the status of the radio to channel 16 and ready to transmit at 25 watts.

A useful feature is that if, whilst working a channel, you need to make a call on channel 16, simply press this key to select channel 16. When contact is made and you need to go back to the working channel, simply press the channel 16 key again and the RT6500 will revert to the working channel previously selected.

Channel Up Key ▲

Increments channel to next channel number programmed in the radio. On reading the highest channel number, the sequence jumps to the lowest and continues incrementing. Single presses of this key increment by one channel. Hold key down and a fast change will occur.

Channel Down Key ▼

Operates similarly to Channel Up key, but channel is decremented.

Volume

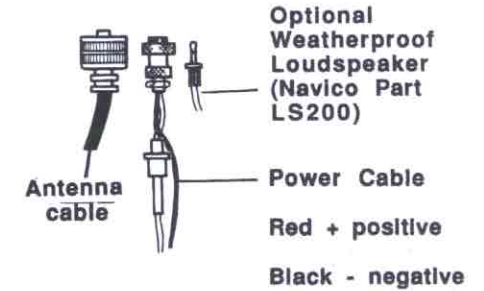
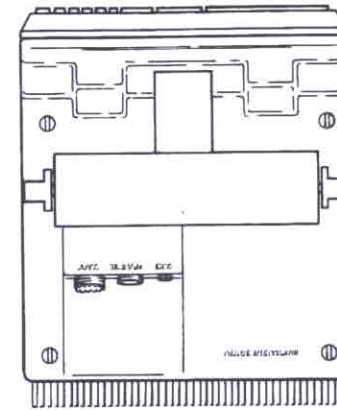
In its fully anti-clockwise position the RT6500 will be off. On rotating the knob clockwise the radio powers up in channel 16.

Squelch

This control is a device for making reception kinder on the ear by suppressing general atmospheric and receiver background noise. When this control is rotated clockwise, all signals below a certain strength will be rejected. A good strength signal will open up the receiver allowing reception to take place. The squelch should be reduced (turning anti-clockwise) when searching for a weak signal.

Telephone Handset.

fig.4.



A novel feature of the telephone handset is a concealed microswitch which can transfer audio output from the speaker to the earpiece of the handset when it is lifted from its cradle. Alternatively you may elect to have audio in both the earpiece and the loudspeaker. The choice is made (see fig.5) by removing the small plate (held by two screws) on the handset, turning the two-position switch (fig.5A), with a small screwdriver, and replacing the plate. The selector is factory-set to a fully anti-clockwise position which affects the automatic muting. When altering the selector, less than one complete turn is needed as illustrated. Be gentle and use a well fitting screwdriver.

fig.5.

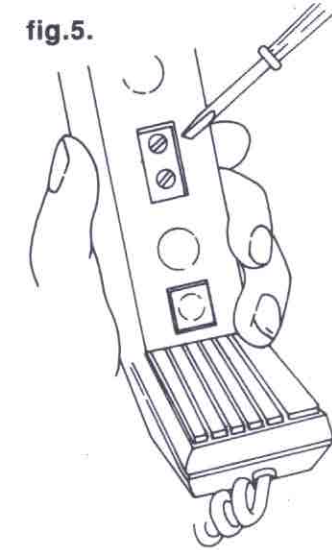
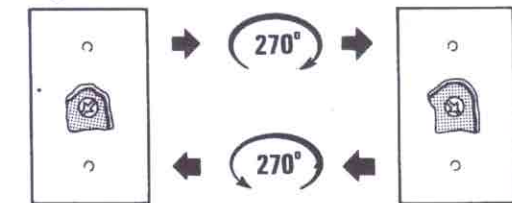


fig.5A.



If the choice is made to mute the loudspeaker on lifting the handset then automatic cancelling of Dual Watch or Scan Mode will also take place.