

MCB 7270

Full-Featured Marine CB 27 MHz Radio

Operation Manual



NAVMAN

RF Emissions and Installation Notice:

This equipment has passed Australian Type Certification Standards AS4355 and AS4367. It generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

- reorient or relocate the receiving antenna.
- increase the separation between the equipment and receiver.
- connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- consult the dealer or an experienced radio/TV technician for help.

ACA Maritime Licensing Statement for both 27 MHz and VHF

1. A person must not operate (as) a maritime ship station on land.
2. A person operating a maritime ship station must use a form of identification at the start of each transmission, or series of transmissions, that clearly identifies the station.
3. Refer to the following Internet Website for more information:
<http://www.scaleplus.law.gov.au/html/instruments/0/25/pdf/2004052602.pdf>

It is the owner's sole responsibility to install and use the instrument in such a manner that will not cause accidents, personal injury or property damage.

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This manual represents the Navman MCB 7270 radio at the time of printing. Navman NZ Limited reserves the right to make changes to specifications without notice.

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1 - General Information

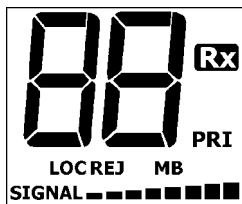
1.1 Features

Congratulations on your purchase and installation of a Navman MCB 7270 27MHz radio. It provides you with the following useful features:

- Marine band (MB) communications with a land band (CB) capability, with six favourite channels (three for each band).
- Large LCD screen with prominent (17mm high) channel display.
- Special size, highlighted symbols for Tx (transmission), Rx (reception), and X (Channel Lockout).
- Powerful transmission output (4W maximum legal).
- Adjustable brightness settings for the screen and keypad for easy use in all lighting conditions - including night time and bright sunlight.
- Adjustable backlighting for the microphone.
- Long cable for the microphone (2.3m when comfortably stretched).
- Extension cable with jack, for connection to an external speaker.
- Top centred PTT button for comfortable left- or right-handed use.
- Quick access keys on the microphone for easy selection of channels (+/-), priority channels (88/9), local mode (LOC) and favourite channel functions (3CH).
- Channel 88/9 Priority/Distress key on the radio unit and microphone.
- Special 3CH key for easy selection of your three favourite channels.
- Most recently used channel is remembered and displayed at power up.
- PSCAN facility to scan the working channel and the priority channel, or the favourite channel(s) and the priority channel (similar to a dual watch facility).
- ALL SCAN mode with busy channel lockout facility.
- Noise rejection can be activated from chassis or microphone.
- Powerful external speaker (up to 4W).
- Voltage indicator (and low battery warning) for the battery supplying the radio.
- Waterproof and submersible to comply with JIS-7.
- Meets AS4355 and AS4367 technical specifications.

1.2 Screen Symbols and Meanings

This simulation shows the location of all the symbols that may appear on the screen:



Symbol	Meaning
X	Channel is locked out (in ALL SCAN mode only).
88	Channel selected (big digits).
Tx	Transmitting on maximum power (PTT depressed).
Rx	The signal of the tuned channel is greater than the squelch setting and the audio is not muted.
CH 123	Shows which of the three favourite channels, if any, are selected. Otherwise blank.
PRI	Priority Distress/Calling channel is selected.
BAT	Voltage (shown in big digits) of the battery supplying the radio. If the battery voltage falls below 10.8V, BAT will flash continuously and the radio will sound a warning beep.
LOC	Local mode for 10-12dB reduced receiver sensitivity.
REJ	Noise rejection is on.
CB	(Citizen Band) land radio band frequencies are selected.
MB	(Marine Band) marine radio band frequencies are selected.
SCAN	The radio is in scanning mode (four scanning modes are available).
SIGNAL	The signal strength of the received channel. The bars are always shown when the radio is receiving. One bar indicates a very weak signal, eight bars indicates a very strong signal. Note that the signal strength is not shown for transmissions.

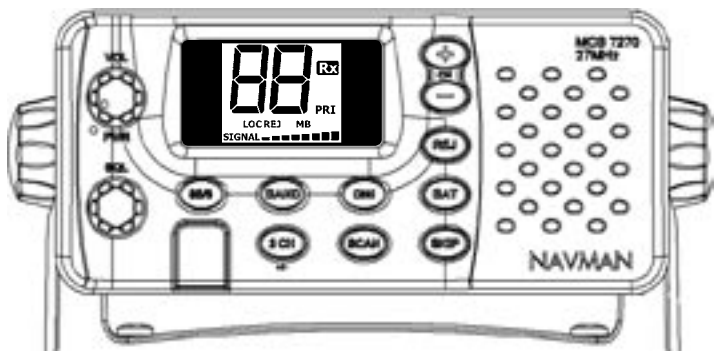
2 - Basic Operation

2.1 Key Functions



Note that some of the keys on the radio chassis are duplicated on the microphone for your convenience.

The PTT button and the LOC button are available *only* on the microphone.



Key	Function
VOL/PWR	<p>Volume and Power knob. Turn clockwise (right) to turn the radio on. Continue to turn until a comfortable volume is reached. VOL/PWR also adjusts the settings of an external speaker, if connected.</p> <p>The screen displays the most recent channel, channel band, and noise rejection setting. See Section 2.3.1 for an example.</p> <p>Turn fully anti-clockwise (left) until the knob clicks to turn the radio off.</p>

- SQL** **Squelch or Threshold Level** knob. Sets the threshold level for the minimum receiver signal.
- Turn fully anti-clockwise (left) until random noise is heard, then turn slowly clockwise (right) until the random noise disappears. Make another ¼ turn clockwise for best reception in open sea conditions.
- In areas of high noise (eg close to large cities) reception may improve if sensitivity is reduced by turning SQL slowly clockwise (right). Also see REJ (noise rejection) and LOC (Local mode) because these may also improve reception quality.
- 88/9** **Priority Channel (Australia)**. Also on the microphone. Press to cancel all other modes and tune into the priority channel (CH88 if MB is selected, or CH9 if CB is selected). See Section 2.3.6 for an example. Press 88/9 again to return to your original channel.
- In countries other than Australia, consult your dealer about your local priority channels.
- BAND** **Channel Band**. Press to toggle between marine (MB) and land (CB) channel band frequencies. The screen shows the selected channel band and radio tunes to the most recently used channel in that channel band. See Section 2.3.2 for an example. Appendix C shows the frequencies for each channel band.
- 3CH** **Three Favourite Channels**. Also on the microphone. You can store three favourite channels for marine (MB) and another three favourites for land (CB) channel band frequencies.
- To **store a favourite channel** for the first time, select the channel band, then the channel. Press and hold 3CH for at least 1.5 seconds to store it in the CH1 location. Repeat the procedure to store two more favourite channels in the CH2 and CH3 locations respectively. See Section 2.3.9 for an example.
- NOTE: If you try and add another favourite channel with 3 already stored, “FL” shows in the display. You may store a new CH3 frequency only after deleting the old one. CH1 and CH2 remain unless you delete them.**
- To **select a favourite channel**, select the channel band then press 3CH to toggle between your favourite channels. The channel band and CH1, CH2, or CH3 are displayed to show which favourite channel is currently selected.
- To **delete a favourite channel**, select it then press and hold 3CH for at least 1.5 seconds until the CH1, CH2 or CH3 symbol disappears off the screen.
- DIM** **Backlighting**. Press repeatedly to step through the settings (OFF, LOW, MED, HIGH) until the desired backlight level is obtained.
- SCAN** **Scanning Mode**. PSCAN and ALL SCAN modes are available on both land (CB) and marine (MB) channel bands.
- To **scan one channel**, select that channel then immediately press and release SCAN. The radio goes into PSCAN mode; scanning the selected channel and automatically checking the priority channel once every 4 seconds (like Dual Watch mode).
- To **scan one favourite channel**, select that channel with 3CH then immediately press and release SCAN. The radio goes into PSCAN mode; scanning the favourite channel and automatically checking the priority channel once every 4 seconds (like Dual Watch mode). See section 2.3.11 for an example.

To scan **all three** favourite channels, press 3CH then immediately press and hold SCAN for at least 1.5 seconds. The radio goes into PSCAN mode; automatically scanning the three favourite channels (and the priority channel once every 4 seconds). The screen shows the SCAN symbol, channel band, and the channel being scanned.

To scan **all channels** within a channel band, select a channel that is not a favourite then press and hold SCAN for at least 1.5 seconds. The radio goes into ALL SCAN mode, automatically scanning about 7 channels per second (and the priority channel once every 4 seconds). See Section 2.3.7 for an example.

To **lock out** an “always busy” channel when in ALL SCAN mode, press SKIP when the radio stops at that channel. An X appears for one second on the screen to indicate a locked out channel and then scanning resumes. Note that it is not possible to skip over the priority channel. See Section 2.3.8 for an example.

When a signal is received in either PSCAN or ALL SCAN mode, scanning stops at that channel. The screen shows Rx and the signal strength. If the signal ceases for more than 4 seconds, the scan restarts.

To **cancel scanning**, press SCAN again. Note that pressing 88/9 (the priority channel) also cancels scanning.

+ CH -

Channel Select. Also on the microphone. The current channel is shown on the screen in big digits.

Press + or - repeatedly to step through the available channels one at a time, or hold down to scroll rapidly through the available channels at about 7 channels per second. See Appendix C for channel band frequencies.

REJ

Noise Rejection. Press REJ to activate the noise blanker circuit and reduce noise (e.g. from the engine spark plugs or alternator). The screen shows REJ to indicate that the noise blanker circuit is on. See Section 2.3.4 for an example.

LOC

Local Mode. Microphone only. Press to select Local mode. This reduces the receiver sensitivity and noise. The screen shows LOC to indicate that Local mode is active.

Local mode can be useful in areas of high radio noise; for example, close to cities. Local mode is not recommended for use in open sea conditions.

Press LOC again to return to normal sensitivity.

BAT

Battery Readout. Press BAT to display the voltage of the battery supplying the radio in big digits on the screen; e.g. 12.6V is displayed as 12, then after 1 second, the display changes to .60. This cycle is repeated twice then the radio returns you to the most recent mode. See Section 2.3.5 for an example.

SKIP

Lockout a Channel. You can use this only in ALL SCAN mode, if desired, to skip over a channel that is always busy.

When the busy channel is displayed on the screen, press SKIP to lock it out. The X symbol appears on the screen for one second by the channel number, then scanning resumes. See Section 2.3.8 for an example. You can lock out a maximum of 5 channels and the radio will remember them at startup.

If you are not in scanning mode and select a locked out channel, X is displayed by the channel number on the screen. See Section 2.3.8 for an example.

To **unlock** a channel, press SCAN to exit from any scanning mode (if necessary), select the locked out channel and then press SKIP. The X symbol disappears to show the channel is no longer locked out. See Section 2.3.8 for an example.

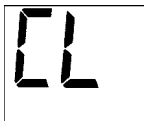
PTT **Press To Talk.** *Microphone only.* Press PTT to transmit at any time on an allowable channel. This automatically stops scanning. See Section 2.3.3 for an example.

You must release PTT to receive a signal. If it sticks, a built-in timer will automatically shut down a transmission after five minutes and sound the error beeps.

2.2 Reset to Factory Defaults

Use this to delete all your favourite channel settings, all your locked channels, and all your scan settings.

1. Turn the radio off with VOL/PWR.
2. Press and hold both SCAN and SKIP while you turn the radio on with VOL/PWR. The screen shows CL and the radio resets to the factory defaults.



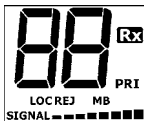
2.3 Sample Screens

The following sections show typical screens and explain each example.

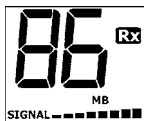
2.3.1 Power Up Sequence Screens

The left hand screen shows the startup screen that appears for 1.5 seconds after the radio is powered up.

The startup screen is followed by a screen that shows the software version and then the most recent settings. In this example, the radio tunes to channel (86) in the marine (MB) channel band. The radio is receiving (Rx) at maximum signal strength.



Startup screen

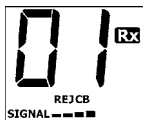


Most recent settings

2.3.2 Channel Band Selection Screens

The left hand screen shows the radio set to receive (Rx) on the land (CB) channel band. The radio tunes to the most recently used channel. Noise rejection (REJ) is on and the signal strength is shown (SIGNAL).

The right hand screen shows the radio receiving on CH 86 in the marine (MB) channel band.



CB channel band



MB channel band

2.3.3 Transmission Screen

The screen shows a 4W transmission (Tx) being made on marine (MB) channel band, priority channel 88 (PRI).

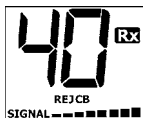
The signal strength is *not* shown for transmissions



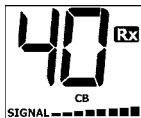
2.3.4 Noise Rejection Selection Screens

The left hand screen displays the REJ symbol, indicating that the noise blanker circuit is on and noise reduction is active.

The right hand screen does not show REJ, meaning that the noise blanker circuit is off.



Noise rejection on



Noise Rejection Off

2.3.5 Battery Voltage Screens

The battery voltage (BAT) is shown in big digits over two screens. In this example, a battery voltage of 12.60V is displayed.

The first screen displays the battery symbol (BAT) and the whole volts (12) reading for one second. After one second the next screen appears, showing BAT and the partial volts (.60) reading for one second. This cycle is repeated twice.



Whole volts

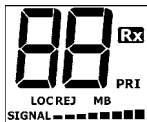


Partial volts (note the decimal point)

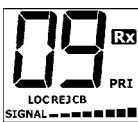
2.3.6 Priority Channel Screens (Australia)

The left hand screen shows the radio receiving (Rx) on the marine (MB) channel band priority (PRI) channel 88. The signal strength is at maximum, noise rejection mode (REJ) and local mode (LOC) are selected.

The right hand screen shows the radio receiving on the land (CB) channel band priority (PRI) channel 09.



Priority channel 88

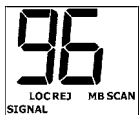


Priority channel 09

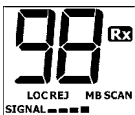
2.3.7 ALL SCAN Mode Screens

The left hand screen shows the radio in ALL SCAN mode (SCAN) for the marine (MB) channel band. Noise rejection mode (REJ) and local mode (LOC) are selected.

The right hand screen shows the radio stopped in ALL SCAN mode (SCAN) to receive (Rx) on Channel 98 at the signal strength shown. The radio remains on this channel for 4 seconds and then resumes scanning (unless you press SCAN to cancel the ALL SCAN mode and remain on that channel).



ALL SCAN mode



Receiving in ALL SCAN mode

2.3.8 Locked Out and Unlocked Channel Screens

The left hand screen shows the radio in normal mode when a locked out channel has been selected. The X symbol appears next to the channel number to show that the channel is locked out.

To unlock the channel, just press SKIP and the X symbol disappears (right hand screen).



Locked Out (Normal)



Unlocked (Normal)

2.3.9 Store Favourite Channels Screens

The screens show three favourite channels being stored on the marine (MB) channel band; Channel 72 is favourite channel 1 (CH 1), channel 82 is favourite channel 2 (CH 2) and channel 86 is favourite channel 3 (CH 3).

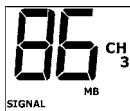
Three favourite channels can also be set for the land (CB) channel banks, giving a total of six stored favourite channels.



Favourite CH 1



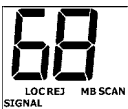
Favourite CH 2



Favourite CH 3

2.3.10 PSCAN Working Channel Screen

The screen shows the radio in PSCAN mode, set to scan (SCAN) one working channel on the marine (MB) channel band while automatically checking the priority channel once every 4 seconds (just like Dual Watch mode). Noise rejection mode (REJ) and local mode (LOC) are selected.



2.3.11 PSCAN Favourite Channel Screen

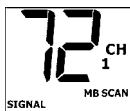
The screen shows the radio in PSCAN mode, set to scan (SCAN) favourite channel 1 (CH 1) on the marine (MB) channel band while automatically checking the priority channel once every 4 seconds (just like Dual Watch mode).



Scan CH 1



Scan priority channel



Return to CH 1

Appendix A - Technical Specifications

GENERAL

Compliance:	AS4355 and AS4367
Frequency range:	26.965 - 27.980 MHz
Frequency stability:	.001%
Phase locked loop	
Dual Watch, Favourite 3 Channel Scan, All Scan CH88/9 Recall	
LCD display (viewing area):	30 x 25 mm (black on silver)
LCD and microphone keys backlight	
Backlighting control:	4 levels (OFF, LOW, MED, HIGH)
Dimensions (without trunnion):	162 x 75 x 157mm
Weight (with microphone):	1.2kg
Waterproof level:	JIS-7
Built-in MCU Processor	
Built-in Speech Processor circuitry	
Last Channel memory	
SO-239 Antenna connector:	50Ω
Input voltage:	10.8 to 16.3V DC
Operating temperature range:	0°C to 55°C
Extension speaker cable with covered jack	
Fused DC power cable with quick disconnect terminals	
Reverse polarity protection	

TRANSMITTER

RF output power at 12.6V DC:	4W maximum legal power
Modulator mode:	AM (A3E)
Modulation sensitivity:	60% modulation @ 1 Pascal (microphone)
Hum & Noise:	Better than 10% @ 60% modulation
Current drain:	2.0 amps @ full modulation
Spurious & Harmonic Suppression:	Better than -65dB

RECEIVER

Dual Conversion Superhetrodyne	
Sensitivity:	0.5uV for 12dB SINAD
IF frequencies:	First: 10.7MHz; Second: 450KHz
Selectivity:	-36dB @ ±6KHz, -60dB@±10KHz
Image rejection:	70dB
Intermodulation rejection:	60db (20KHz channel specification)
SQ range:	Tight = 10uV; Threshold = 0.3uV
Audio output:	1W @ 16Ω, external 4W @ 4Ω
Current drain:	800mA full volume, 350mA squelched
Spurious emissions:	-57dBm
Hum & Noise:	better than -50dB/1mV input

Specifications are subject to change without notice.

Appendix B - Troubleshooting

1. The radio will not power up.

A fuse may have blown OR there is no power getting to the radio unit.

- a) Check the power cable for cuts, breaks, or squashed sections.
- b) If the power cable is fine, replace the 3 Amp fuse (1 spare fuse is supplied).
- c) Check the voltage of the battery that supplies the radio (see BAT in Section 2.1). It should be at least 10.8V DC.

2. The radio unit blows the fuse when the power is switched on.

The power wires may have been reversed.

- a) Check that the red wire is connected to the positive battery terminal, and the black wire is connected to the negative battery terminal.

3. The speaker makes popping or whining noises when the engine is running.

Electrical noise may be interfering with the radio unit.

- a) Re-route the power cables away from the engine.
- b) Add a noise suppressor to the power cable.
- c) Use resistive spark plug wires and/or use an alternator whine filter.

4. No sound from the external speaker.

- a) Check that the external speaker cable is physically connected.
- b) Check the soldering of the external speaker cable.

5. BAT flashes continuously and a warning beep sounds.

The power supply to the radio is too low.

- a) Press BAT to check the voltage of the battery that supplies the radio (see BAT in Section 2.1). It should be at least 10.8V DC.
- b) Check the alternator on the vessel.

6. Poor reception or excessive noise interfering with the radio signal.

The radio sensitivity and noise elimination capabilities may need adjusting. Section 2.1 provides basic information on adjusting squelch (SQL knob), noise rejection (REJ key) and local and normal sensitivity (LOC key). However, if you continue to have problems, try the following sequence:

- a) Ensure that LOC and REJ are both off (not shown on the LCD). Turn SQL to about halfway between the minimum and maximum settings.
- b) Turn SQL slowly clockwise (right) to reduce sensitivity. If this does not solve the problem, turn SQL anticlockwise (left) to about halfway again and continue to the next step.
- c) Press REJ to start noise rejection. Turn SQL slowly clockwise (right) to reduce sensitivity. If this does not solve the problem, turn SQL anticlockwise (left) to about halfway again and continue to the next step.
- d) Press LOC to switch into Local mode and reduce the radio sensitivity and range. Turn SQL slowly clockwise (right) to reduce sensitivity. If this does not solve the problem, the CB antenna may need to be moved for optimum performance in situations where the interference source cannot be isolated or eliminated.

7. F1 is displayed when trying to transmit.

The transmission power supply is too low or too high.

- a) Press BAT to check the battery voltage (see BAT in Section 2.1 for more information if necessary). It should be at least 10.8V DC.
- b) Check the alternator on the vessel.

Appendix C - Radio Channels

The MCB 7270 radio is a marine band (MB) radio that includes a land band (CB) capability. The MCB 7270 radio should be installed in a boat and operated from a boat.

The marine band (MB) should be used to communicate with other boats and coast guard stations. The land band (CB) should be used from the boat only to communicate with individuals or organisations based on the land.

If you require a radio only for land-based communications, use a CB radio.

C.1 MARINE (MB) FREQUENCIES

CHANNEL	FREQUENCY (MHz)	TRAFFIC TYPE	SHIP TO SHIP	SHIP TO SHORE
	AUSTRALIA			
68	27.680	Commercial & Charter. Calling and working.	Yes	Yes
72	27.720	Professional fishing. Calling and working.	Yes	Yes
82	27.820	Professional fishing. Calling and working.	Yes	Yes
86	27.860	DISTRESS, safety and calling. Supplementary to 27.880	Yes	Yes
88	27.880	DISTRESS, safety and calling.	Yes	Yes
90	27.900	Non-commercial clubs & groups only. Calling and working.	No	Yes
91	27.910	Non-commercial clubs & groups only. Calling and working.	No	Yes
94	27.940	Non-commercial club events. Calling and working.	Yes	Yes
96	27.960	Non-commercial organisations. Calling and working.	Yes	No
98	27.980	Recognised Rescue Organisations (eg Surf Rescue). Calling and working.	Yes	Yes

C.2 LAND (CB) FREQUENCIES

CB CHANNEL	FREQUENCY (MHz)
	AUSTRALIA
1	26.965
2	26.975
3	26.985
4	27.005
5	27.015
6	27.025
7	27.035
8	27.055
9	27.065 (Emergency)
10	27.075
11	27.085 (Calling)
12	27.105
13	27.115
14	27.125
15	27.135
16	27.155 (see Note 1)
17	27.165
18	27.175
19	27.185
20	27.205
21	27.215
22	27.225
23	27.255
24	27.235
25	27.245
26	27.265
27	27.275
28	27.285
29	27.295
30	27.305
31	27.315
32	27.325
33	27.335
34	27.345
35	27.355
36	27.365
37	27.375
38	27.385
39	27.395
40	27.405

Note 1: Do not transmit on CH16. (CH16 should be used only for a listening watch because it is reserved for transmissions that use SSB, not AM).

NORTH AMERICA

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