

**GME**

*Electrophone*

# INSTRUCTION MANUAL



## ***GX294*** ***27 MHZ AM MARINE*** ***TRANSCEIVER***

Complies with Australian Standard 4367-1996  
Issue 02

**STANDARD COMMUNICATIONS  
PTY. LTD.**

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## INTRODUCTION

The GME Electrophone GX294 is a high quality 27 MHz AM marine transceiver. The GX294 is wholly designed by Standard Communications Pty. Ltd. in Australia, with special attention being given to providing protection from the harsh marine environment. The outer case is made from non-corrosive UV resistant A.B.S. and all case joins are fitted with neoprene or PVC seals. A new low profile microphone plug has been added, complete

with rubber "boot" to resist water ingress. The high intensity LED display provides good visibility under a wide range of viewing conditions. In addition, the GX294 features a Dual Watch facility, instant emergency/call channel 88 selection and an advanced impulse noise suppression circuit (ISC) to provide clean, clear reception under the noisiest electrical conditions.

## FEATURES

- **Front mounted speaker with water resistant mylar cone.** Designed specifically for the marine environment, the water resistant front mounted speaker projects the sound forward for greater clarity and less distortion.
- **Interference Suppression Circuit.** Eliminates impulse noise caused by electrical equipment and outboard motors allowing only crystal clear voice signals to be heard.
- **Dual Watch.** Allows you to monitor both the calling/distress channel (88) AND any other selected channel.
- **Channel 88 Recall.** Provides instant selection of the calling/distress channel at any time.
- **Electret Microphone.** The Electret microphone insert provides a higher voice level and an improved frequency response for crisper, clearer more natural audio.
- **Miniature microphone plug.** Utilises a 6 pin telephone style plug and socket combining superior cord grip strength with a low profile installation.
- **Ultra bright LED display.** The channel display utilises High Intensity Light Emitting Diode technology to produce a display which is easy to read under a wide range of viewing conditions.
- **Superior Receiver Performance.** The receiver has been specifically designed to provide high sensitivity to weak signals and superior noise performance with minimum background noise.
- **Designed specifically for marine use.** The GX294 is NOT a modified CB transceiver. It is entirely purpose designed as a marine transceiver with a non-corrosive housing made from UV Stabilised A.B.S. The housing features neoprene and PVC case seals to reduce the risk of water ingress should the radio be accidentally splashed or exposed to light rain or spray. In addition, the microphone plug/socket cavity is sealed with a rubber "boot" to minimise the possibility of corrosion and the push buttons are part of a rubber membrane to give total water exclusion.
- **Spare fuse holder.** A unique fuse storage bracket installed on the GX294's rear panel, retains two spare fuses to ensure that you have access to the correct fuse if you should need it.
- **Built-in Speech Processor Circuitry.** Automatically raises the average level of your transmitted voice for greater clarity and better penetration under poor signal conditions.
- **Isolated earth chassis.** Allows installation in either positive or negative earth vessels.

# SPECIFICATIONS

## GENERAL

Frequency Range:	27.68 MHz - 27.98 MHz
Frequency Control:	Phase locked loop
Frequency stability:	0.001%
No. of channels:	12; 10 fitted.
Frequencies fitted:	27.68, 27.72, 27.82, 27.86 27.88, 27.90, 27.91, 27.94 27.96, 27.98 MHz
Antenna Impedance:	50 Ohm
Antenna Connector:	S0-239 panel socket
Voltage Range:	10.8 - 15.2 Volts DC
Nominal Voltage :	12.6 Volts DC
Polarity:	Isolated chassis (positive or negative earth)
Temperature Range:	0° C to 55° C.
Internal Speaker:	8 Ohm Mylar 2 Watt
Extension Speaker:	8 Ohm with 3.5mm mono jack
Channel display:	High intensity Red LED
Current Protection:	2 Amp 3AG (30mm) fuse plus internal fusible link.
Reverse polarity and overvoltage protection:	Transient voltage regulator and shunt diode
Dual Watch Rate:	2 seconds
Dimensions:	172mm (W) x 52mm (H) x 173mm (D)

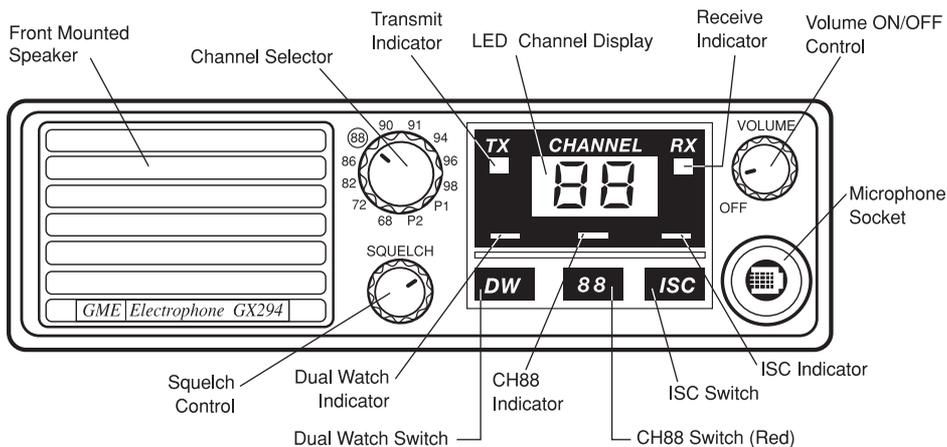
## TRANSMITTER

RF Output Power:	4 Watts maximum legal power
Modulation Mode :	AM
Modulation Sensitivity:	60% modulation @ 1 Pascal
Frequency response :	-12dB @ 300Hz, -16dB @ 3kHz (relative to 1kHz).
Hum and Noise :	Better than -40dB
Modulation Distortion:	Better than 6% @ 60% modulation
Microphone:	Electret type
Current consumption:	1.6 Amps @ full modulation
Harmonic and spurious suppression:	Better than -65dBc

## RECEIVER

System:	Dual conversion superheterodyne
IF Frequencies - 1st:	10.695 MHz
- 2nd:	455 kHz
Sensitivity :	0.5uV for 12dB SINAD (0.35 uV Typical)
Maximum S/N:	50dB @ 1mV input
Selectivity :	-36dB @ ± 6kHz, -60dB @ ± 10kHz
Image Rejection:	-90dB
Intermodulation:	-60dB
Squelch Range:	Tight = 10uV, Threshold = 0.2uV
AGC Range :	Less than 10dB change in Audio output over 1uV to 30mV RF input range.
Audio Output:	3 Watts into 8 ohms (10% dist)
Current consumption:	Full volume = 800mA, Squelched = 350mA
Spurious Emissions:	-70dBm
Hum and Noise:	-50dB @ 1mV RF input

# CONTROLS AND FUNCTIONS



■ **Volume On/Off Control.** Rotate the Volume control clockwise past the click to turn the GX294 ON. Adjust the volume control for a comfortable listening level.

■ **Squelch Control.** The squelch control is used to eliminate any annoying background noise when there are no signals present. To adjust the squelch, first rotate it fully counter-clockwise until the background noise is heard. Then advance the squelch control clockwise until the noise just disappears. The receiver will now remain quiet as long as there are no signals present, but an incoming signal will override the squelch and be heard in the speaker. As the control is advanced further clockwise, the squelch action is progressively increased and stronger incoming signals are needed to override it. To receive extremely weak signals or to disable the squelch, simply turn the control fully counter-clockwise.

■ **Channel Selector.** Select the required channel by rotating the channel selector clockwise or counter-clockwise. The selected channel is displayed on the LED channel display. Note that if full strength sunlight is falling on the channel display it may be hard to see. In this case refer to the numbers around the channel selector knob.

■ **ISC Switch.** The ISC switch activates an extremely effective Interference Suppression Circuit (Noise Blanker). When selected, the ISC combines with a built in Automatic Noise Limiter (ANL) to almost totally eliminate electrical impulse interference, allowing clear reception of weak signals even under the noisiest electrical conditions.

When the ISC switch is selected, the Red LED indicator above it lights.

■ **Channel 88 Switch.** The channel 88 switch allows instant selection of the Distress and Calling frequency 27.88 MHz. When selected, 88 appears in the channel display and the red Channel 88 LED above the button lights. Pressing the 88 switch again, returns the GX294 to the last selected channel.

The channel 88 switch can be used to provide instant switching between the calling channel (88) and your local club channel as follows:

1. Select your club channel by rotating the channel selector switch (e.g. channel 94).
2. Press the **88** button in. Channel 88 will be displayed and the red channel 88 LED will light.

Now, whenever you are called on channel 88 and you wish to go to your club channel, simply press the (88) button to release the switch. When you have finished your conversation, press the (88) button in again to return to channel 88.

- **Dual Watch Switch.** The Dual Watch switch allows the GX294 to monitor channel 88 AND any other selected channel. Any signals received on channel 88 will take priority over signals on the selected channel.

When the DW switch is first selected, the DW indicator LED above the button lights and the selected channel is displayed. Then, every two seconds, the receiver quickly switches to channel 88. If there are no signals on channel 88, the receiver immediately returns to the selected channel. If a signal appears on the selected channel, it will be heard, but the receiver will continue to switch to channel 88 every two seconds and a brief interruption to the signal will be noticed each time.

If any signal is found on channel 88, the receiver will stop switching and will remain on channel 88 for as long as the signal is present. During this period the red channel 88 indicator LED will flash. When the signal has gone, the receiver will begin Dual Watching again.

Pressing the Push-to-talk button on the microphone causes the GX294 to transmit on the selected channel.

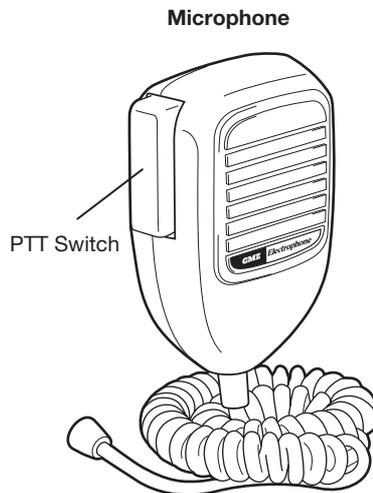
- **RX Indicator.** A green LED which lights while the GX294 is in the receiver mode and extinguishes in the transmit mode.
- **TX Indicator.** A red LED which lights only when transmitting.
- **DW Indicator.** A red LED which lights when the Dual Watch function is selected.
- **Channel 88 Indicator.** A red LED which lights when the 88 switch is selected. It also lights and flashes when channel 88 is active in the Dual watch mode.
- **ISC Indicator.** A red LED which lights when the ISC function is selected.

- **Microphone Socket.** The microphone attachment on the GX294 is a unique arrangement which utilises a 6 pin telephone style plug and socket. This provides superior cord grip strength and a low profile installation. The cord entry is then sealed against moisture by a rubber grommet.

- **LED Channel Display.** The LED channel display shows the currently selected channel.

- **Transmitting.** To transmit, press the PTT button on the microphone. Hold the microphone 2-6 cm from your mouth and slightly to one side, so that your voice does not project directly into the microphone. Speak at a normal voice level.

The GX294 has a built-in speech processor circuit which automatically controls the average level of your transmitted voice for greater clarity and better “penetration” under poor signal conditions. It is not necessary to raise your voice or shout into the microphone.



# INSTALLATION

It is advisable to spend a little time selecting the best location for your GX294. The transceiver should normally be mounted horizontally, but may be mounted vertically if desired. The bracket supplied can be fitted above or below the case allowing the GX294 to be cradled by the bracket or suspended from it. Alternatively, the GX294 can be flush mounted to a panel or bulkhead.

When choosing a suitable location, consider the following points:

1. Install the GX294 in a sheltered position. The design of the GX294 provides protection against accidental splashes and drips, but the equipment is not totally waterproof. Exposure to heavy rain, continuous spray or immersion will result in damage to the transceiver.
2. Avoid exposure to direct sunlight for prolonged periods which could cause overheating.
3. Choose a spot where the microphone and all controls are easily accessible and the loudspeaker can be heard from the normal steering position. An extension speaker may be installed if required.
4. Components and currents flowing in the GX294 create magnetic fields. To avoid interference to steering compasses or auto pilot sensors, the GX294 should be positioned at least half a meter (50cm) from such equipment.

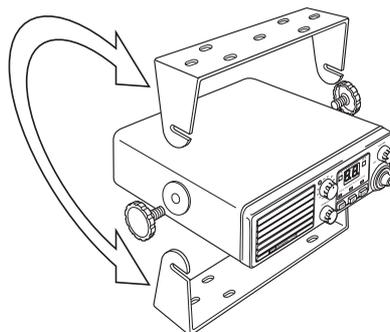
## MOUNTING

Your GX294 can be either mounted on a shelf or flush mounted into a bulkhead or panel. If flush mounting the GX294 we recommend you use the optional MK200W flush mounting kit available from your GME branch or dealer. This will help give a professional appearance to your installation.

### Shelf Mounting

Attach the bracket above or below the shelf as desired using the screws provided. Secure

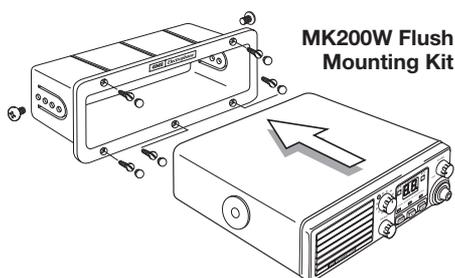
the radio to the bracket by means of the thumb screws. Remember that the fixings for overhead mounting may have to withstand heavy pounding when the vessel is in rough water or being towed on a trailer.



### Flush Mounting

*Using the MK200W flush mounting kit:*

If using the optional MK200W flush mounting kit, simply follow the instructions provided with the kit. The fully self supporting design of the MK200W greatly simplifies installation and provides a professional finish.



*Using the standard mounting bracket:*

If flush mounting the GX294 using the standard mounting bracket, we recommend the following procedure:

1. Cut a slot in the bulkhead or panel 172mm wide x 52mm high. The corners of the slot should be rounded to fit neatly with the shape of the GX294's case.

2. If not already fitted, install a small shelf behind the bulkhead to take the mounting bracket. Slide the GX294 through the slot from the front and fit the mounting bracket to the shelf from behind the bulkhead. Adjust the assembly so the radio protrudes through the slot as required and screw the bracket into that position. Mount the microphone holder in a convenient position near the transceiver. Avoid fouling other equipment with the microphone cord.

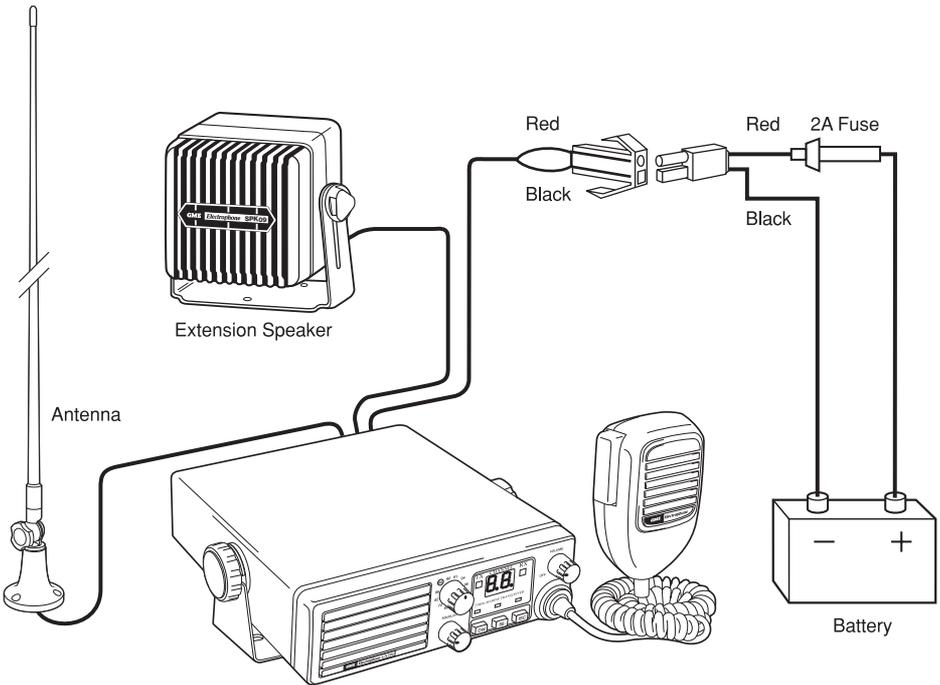
### Power Connections

The GX294 can be installed in vessels with either positive or negative ground electrical

systems. The radio's positive (RED) lead must be connected to the positive (+) side of the electrical system and the negative (BLACK) lead must connect to the negative (-) side. Reversal of these connections will cause the fuse to blow and may seriously damage the transceiver and void the warranty.

If the fuse blows at any time, FIT ONLY THE CORRECT 2 AMP 3AG (30mm) type. Two spare fuses are clamped to the GX294's rear panel.

If the power leads are not long enough they can be extended using at least 4mm outside diameter cable.



## DISCONNECTING THE MICROPHONE

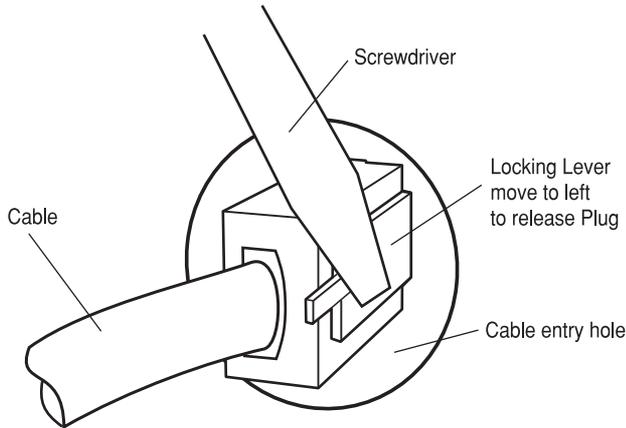
It is recommended that the microphone be left permanently connected to the GX294, but if it must be disconnected proceed as follows:-

1. Insert a small screwdriver between the rubber boot and lip of the raised area on the front panel.
2. Ease the rubber boot out of the cable entry hole and slide it along the cable away from the front panel.

3. Identify the plug locking lever, work the screwdriver blade behind it and move the lever towards the plug body, at the same time gently pull the plug from the socket.

( See diagram below )

If required, replacement microphones are available with plug and rubber boot already fitted.



## ANTENNA INSTALLATION

**NEVER TRANSMIT WITHOUT AN ANTENNA CONNECTED OTHERWISE DAMAGE MAY RESULT TO THE TRANSCEIVER.**

It is essential to select a good quality high efficiency 27 MHz marine antenna. A poor quality antenna or one not designed for the 27 MHz marine band will give very poor performance and could cause damage to the transceiver. Standard 27 MHz CB antennas are NOT suitable.

GME manufacture a wide range of antennas suitable for every application. These include small antennas for runabouts, swivel bases for various mounting positions, larger antennas for cruisers and even antennas designed specifically for yachts.

All GME antennas are pretuned thereby eliminating the need for ground planes and tuning units. You do not even need to be concerned with the construction of your craft. All GME antennas are suitable for aluminium, fibreglass, ferro cement or timber construction.

When installing the antenna, make sure that it is well clear of any metal rails or rigging, as these will detune it and reduce performance.

The cable should be fed through a small hole in the cabin or deck. The rubber grommet supplied provides a tidy fit and can be sealed with silastic. The PL259 type antenna plug should be screwed to the antenna jack on the rear of the GX294. DO NOT CUT THE COAX CABLE. If the supplied cable is too long, coil it up out of the way. Shortening the cable will adversely affect the antenna's tuning.

# OPERATING ON THE 27MHZ MARINE BAND

## Normal Operating Procedure

Most calls to other vessel or stations are made on channel 88. After listening to ensure channel 88 is clear, call the other station, repeating both call signs three times.

e.g. "Coast Guard, Coast Guard, Coast Guard,  
This is –  
Seaspray, Seaspray, Seaspray,  
Over."

Once contact has been established, move straight to another channel (e.g. 91 or 94) to continue your conversation leaving channel 88 clear for emergencies or further calls. Don't forget to return to channel 88 or select dual watch when you have finished otherwise you may miss other calls meant for you.

## Emergency Procedures

All emergency calls should be made on channel 88. There are three main types of Emergency call.

### 1. "MAYDAY, MAYDAY, MAYDAY"

This call should be used where you are in grave and imminent danger and require

immediate assistance. You should call MAYDAY three times followed by your vessels name or callsign three times. Then state your position, a brief description of your vessel, the nature of the emergency, the number of people on board and their condition. If you hear no reply, repeat the call at short intervals because someone may be able to hear you but you might not be able to receive their reply.

After contact has been made, follow any instructions given to you.

### 2. "PAN PAN, PAN PAN, PAN PAN"

Use this call when an emergency situation exists but there is no immediate danger. The call should be made the same way as the MAYDAY call. If you hear no reply repeat the call at regular intervals.

### 3. "SECURITE, SECURITE, SECURITE" (Pronounced Say-cure-e-tay).

This call is used to warn other shipping of dangers or hazards e.g. bad weather, container adrift etc. The call may be made to a local monitoring station or to all ships in the area.

## MARINE CHANNEL ASSIGNMENTS

CHANNEL	FREQUENCY	USE
68	27.680 MHz	Commercial, ship-shore-ship
72	27.720 MHz	Professional fishing
82	27.820 MHz	Professional fishing
86	27.860 MHz	Secondary distress and safety
88	27.880 MHz	Primary distress and calling only
90	27.900 MHz	Domestic ship-shore-ship
91	27.910 MHz	Domestic ship-shore-ship
94	27.940 MHz	Club events, ship-shore-ship
96	27.960 MHz	Ship to ship
98	27.980 MHz	Rescue organisations

# GME ELECTROPHONE APPROVED ACCESSORIES

## 27 MHz MARINE ANTENNAS

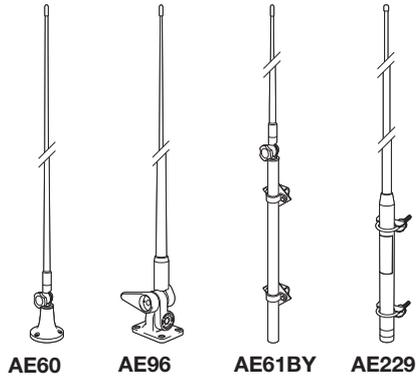
**AE60** - 1.8 Mtr Pretuned Antenna - white.  
Comes with lead & plug.

**AE60B** - 1.8 Mtr Pretuned Antenna – black whip for ultra violet protection.  
Comes with lead and plug.

**AE61BY** - 1.8 Mtr Pretuned Yacht Antenna.

**AE96** - 2.5 Mtr Pretuned Antenna with two-way swivel base.  
Comes with lead & plug.

**AE229** - 1/2 Wave Aluminium 26 – 28 MHz Base Antenna.



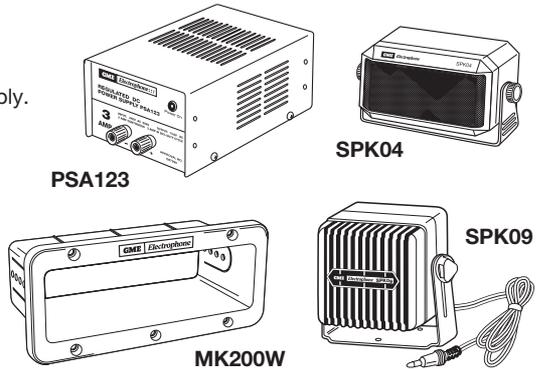
## ACCESSORIES

**PSA123** - 2 Amp continuous Power Supply.

**SPK04** - 4 Ohm extension speaker with flush mounting plug & 1.7 meter lead.

**SPK09** - 4 Ohm Box type extension speaker with lead and plug.

**MK200W** - Flush Mounting Kit.



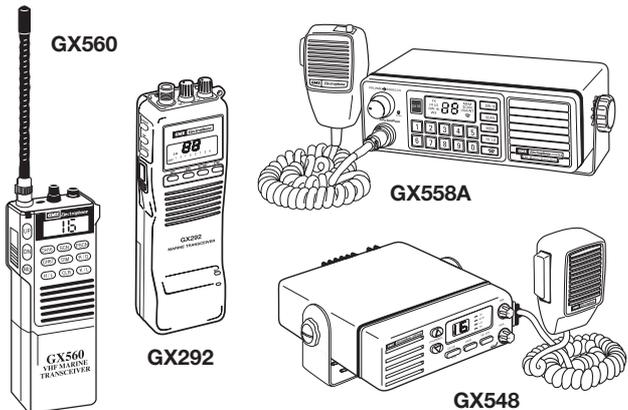
# OTHER QUALITY GME ELECTROPHONE PRODUCTS

**GX558A** - 54 Channel VHF Transceiver with fist microphone LCD display and built-in Seaphone.

**GX548** - 54 Channel VHF Transceiver with fist microphone and LED display.

**GX292** - 27 Mhz AM Handheld Transceiver.

**GX560** - Handheld 54 Channel VHF Transceiver, 3 Watt/ 1 Watt output.



# WARRANTY

**GME ELECTROPHONE** limit this warranty to the original purchaser of the equipment.

**GME ELECTROPHONE** warrant this product to be free from defects in material and workmanship for a period of twelve (12) months from the date of purchase from their authorised dealer.

Should the product require servicing during this period, all labour and parts used to effect repairs will be supplied free of charge. **GME ELECTROPHONE** reserve the right to determine whether damage has been occasioned by accident, misuse or improper installation whereby the warranty would be void, including:

Transceivers which have been damaged due to:

- (a) Incorrect or reverse polarity connection to a battery or power supply.
- (b) Connection to incorrect supply voltage.
- (c) Operation without an antenna or by

connection to an antenna which has been incorrectly installed, resulting in damage to the transceiver's output transistors.

- (d) Effects of water or moisture penetration.
- (e) Non-factory modifications.
- (f) Use of incorrect replacement fuse.

Procedure followed by claimant:-

In the event of a defect occurring during the twelve (12) month warranty period, the original purchaser may return the defective unit along with suitable proof of purchase date (i.e. receipt, docket, credit card slip etc.) and a full description of the defect to the Dealer from whom the unit was purchased.

All freight charges incurred for transportation by the Dealer or **GME ELECTROPHONE** are the purchaser's responsibility.

The Dealer may be able to repair the defect or may forward unit to the closest authorised **GME ELECTROPHONE** Service Depot in your particular State.

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## GME ELECTROPHONE AFTER SALES SERVICE

Your ELECTROPHONE transceiver is especially designed for the environment encountered in marine installations. The use of all solid state circuitry, careful design and rigorous testing, result in high reliability. Should failure occur however, **GME ELECTROPHONE** maintain a fully equipped service facility and spare parts stock to meet the customer's requirements long after expiry of the warranty period.



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