GSM|mercury

PRODUCTS SERIES
OWNER'S MANUAL

OCEAN REEF

underwater, naturally.

GSM MERCURY COMMUNICATION UNIT OWNER'S MANUAL

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1 - INTRODUCTION

For more than 75 years, OCEAN REEF has been involved in the underwater diving industry. We have contributed much to this industry, from fins and snorkels to the most modern systems of underwater communication. Through the spirit of intrepid pioneers, brilliant inventors, passionate divers, and dynamic entrepreneurs, OCEAN REEF has been able to turn dreams into reality in the underwater world.

OCEAN REEF USA

MESTEL Safety ITALY

The Manufacturer has carefully worded and edited this owner's manual. However, in no event the Manufacturer will be responsible for any damage caused by the incorrect interpretation of its content, nor due to any misprints and/or incompleteness in the text.

The Manufacturer will not accept liabilities for any damage caused by:

- Insufficient, incorrect and improper maintenance, failing to comply with the manual's recommendations
- Absence of periodic tests and checks
- Incorrect and improper use
- Failing to comply with guidelines included in the owner's manual
- Alterations and/or modifications of the Vesper

If any of the above were to occur, considering these actions are potentially dangerous to the health and life of the users, the manufacturer is released of any responsibility and the warranty is void.

The Manufacturer is an ISO 9001:2015 certified company (https://diving.oceanreefgroup.com/support/#ISO_CC).

⚠ If you lose this manual or if you should require more copies, you can download it at diving.oceanreefgroup.com/support/ or contact the Manufacturer: Mestel Safety SRL, Via Arvigo 2, 16010 Sant'Olcese (GE), IT. Phone: +39 0107082011. E-mail: infoitaly@oceanreefgroup.com. Website: diving.oceanreefgroup.com

2 - GENERAL WARNINGS / OWNER'S RESPONSIBILITIES

WARNINGS, CAUTIONS AND NOTES

Pay special attention to information provided in warnings, cautions, and notes that is accompanied by these symbols:

A **WARNING** indicates a procedure or situation that, if not avoided, could result in serious injury or death to the user.

A **CAUTION** indicates any situation or technique that could cause damage to the product, and could subsequently result in injury to the user.

A **NOTE** is used to emphasize important points, tips, and reminders.

IMPORTANT

The content of this manual is based upon the latest information available at the time of print.
OCEAN REEF reserves the right to modify any products, processes and manufacturing techniques at any time. It is the technicians' responsibility to acquire the latest information and parts from OCEAN REEF for service and repairs to be performed.
If the instructions provided in the manual are unclear or difficult to understand, please contact OCEAN REEF at infoitaly@oceanreefgroup.com before using the equipment or attempting any repairs.

Carefully read this instruction manual before use, and keep it for future reference.

While this is a product of high quality, the user is not exempt from problems connected with the incorrect use of the product or failure to follow the rules of safe diving.

Do not modify or alter in any way the unit.

DO NOT USE the unit if it is overheating, if it is leaking battery fluid, if water has leaked the unit, if there is smoke coming from the unit or if any part is broken.

Before using the unit the user must ensure that the product has been properly inspected and maintained. (see Chapter 14 Maintenance, Cleaning and Storage).

OCEAN REEF refuses all responsibility for damages caused by non-compliance with the instructions contained in this manual. These instructions do not extend the warranty or the responsibilities stated by OCEAN REEF terms of sales and delivery.

In order to maintain the warranty, service and routine maintenance of the products must be performed by the end user as indicated by OCEAN REEF and described in chapter 8 MAINTENANCE, CLEANING AND STORAGE.
For details, contact an authorized OCEAN REEF dealer at: https://diving.oceanreefgroup.com/shop-dealers/

GSM Mercury communication unit is the newest in OCEANREEF range of products. Its frequencies are compatible with the other communication systems on the market. **The high quality of the product does not allow the user to ignore the problems connected with the correct use of the product and the rules for safe diving.**

⚠ Use of SCUBA equipment by uncertified or untrained persons is dangerous and can result in serious injury or death.

⚠ NEVER wash any part of the communication unit with anything else than fresh water and the compartments opened and/or unscrewed.

⚠ DO NOT apply any type of aerosol spray on the GSM Mercury communication unit. Doing so may cause permanent damage to certain components.

⚠ While surfacing from a dive continue to breathe even if you are listening to the communication unit. Lung expansion injuries may result if you ascend while holding your breath.

⚠ Speaking can result in higher air consumption. Check your air supply periodically when communicating as this may affect your normal air consumption. ALWAYS MONITOR YOUR PRESSURE GAUGE.
Before attempting to use this device in open water you must practice using the unit in confined water (such as a pool).

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3 - PRODUCT SPEC AND VARIANTS

GSM MERCURY Product Specs
Code:OR033150

GSM Mercury, the ultrasonic communication unit, is made to fit only on the EXTENDER FRAME.
The main features are:

- Two speakers with volume adjustment
- PTT/MIC assembly for a more ergonomic use
- Two channels
- D.A.T. mode (handsfree mode)
- Rechargeable/replaceable battery
- Micro USB cable for charging the battery
- The unit is foldable into the mask for an easier storing and carrying of the mask
- 25h autonomy, 1h charging time
- 250m range of operation
- 40m depth rating (100m available soon)

- -

GSM MERCURY Dual Power Product Specs
Code: OR033155

The GSM Mercury Dual Power has the same characteristics as the GSM Mercury. Instead of having 2 channels it has the option of having channel 1 at normal power and reduced power. The unit is easily recognized thanks to a yellow sticker that reads "Dual Power".
This unit is made to fit only on the EXTENDER FRAME.
The main features are:

- Two speakers with volume adjustment
- PTT/MIC assembly for a more ergonomic use
- One channel - 2 modes (normal power / reduced power)
- D.A.T. mode (handsfree mode)
- Rechargeable/replaceable battery
- Micro USB cable for charging the battery
- The unit is foldable into the mask for an easier storing and carrying of the mask
- 25h autonomy, 1h charging time
- 250m range of operation
- 40m depth rating (100m available soon)

GSM MERCURY SWITCHBOARD

The switchboard consists of two buttons

The PTT button has 3 functions:

- During a "normal" use it is activating the transmission mode when pressed and the receiving mode when released (PTT)
- When into the program mode it is used to make the desired selection by pressing once quickly.
- When the D.A.T. mode is activated, a quick press will exit the D.A.T. mode.

The lever style button has 2 functions:

- Volume adjustment; by flipping it quickly it is increasing the receiving volume. There are 3 volume level steps, the unit is always turning on level 2, by flipping it once the volume will rise to level 3, by flipping it again it will lower to level 1… etc.

- Program mode navigation: by keeping it pressed 2 seconds the unit will enter the program mode guided by voice *"program mode"* followed by the first selection possible *"channel one"*, pressing quickly again the lever will take the unit to the next step of program *"D.A.T. mode ON"*, another quick press will exit the program mode.
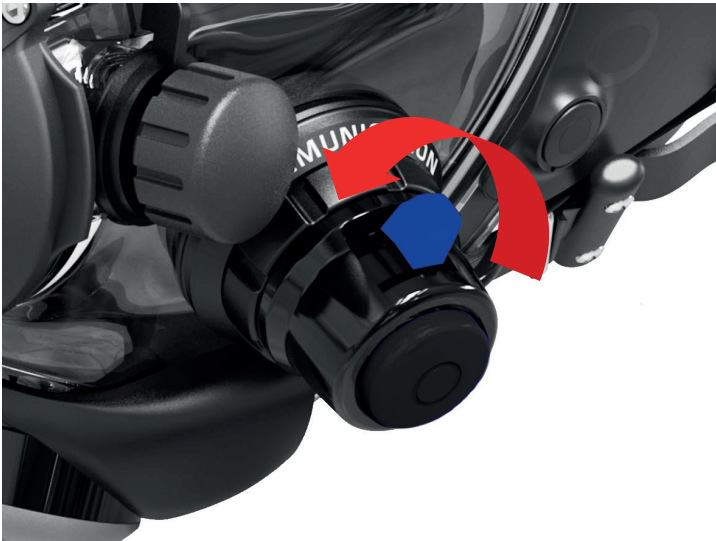
5 - FUNCTIONING SCHEME

In the following the functioning scheme of PTT/MIC is summarised.
As soon as the unit is submerged it is turning automatically ON and the diver hears a **«*unit ON*»** message. Now the unit is working in «PTT mode (D.A.T. OFF)", Volume 2.

The unit is always in listening phase until the diver pushes the PTT button, keeping it pressed the diver is able to communicate to other underwater or surface units activated on the same channel. Releasing the PTT button will bring the unit back lo listening phase.
When in normal use and listening phase the volume may be adjusted by quickly flipping the lever style button, the volume lever will increase cyclically from 1, 2, to 3 and back to 1.

PLEASE NOTE: The GSM Mercury Dual Power features only one channel (frequency is as per tech. specification) - but instead of channel 2 it does feature "20 meters" mode - a reduced power, channel 1, mode. : channel 1 normal power and channel 1 reduced power: "20 meters".
The menu process of accessing reduced power channel 1 of GSM Mercury Dual Power is the same as accessing channel 2 in traditional Mercury unit.

PROGRAM MODE – GSM Mercury

PROGRAM MODE - GSM Mercury Dual Power

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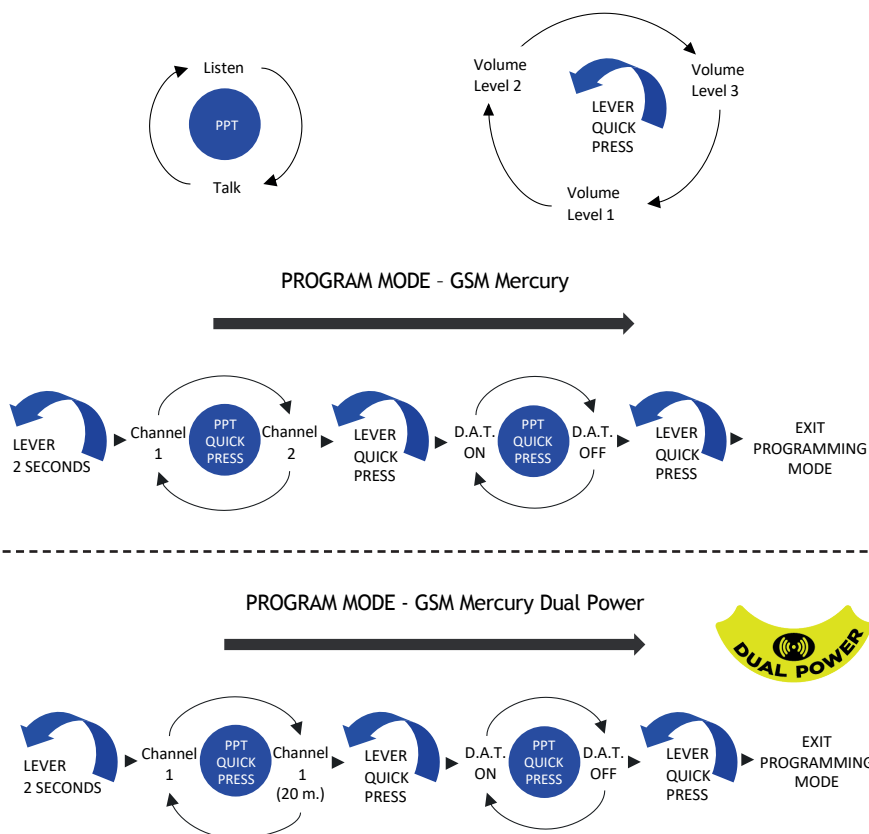
6 - ANTENNA

Main electronic housing with L speaker strap holder, wet activation screws and foldable support for EXTENDER FRAME

On the internal side there is the left ear speaker, on the external side the antenna and the two wet contacts for the automatic turning on/off of the unit, on the sides there is the strap holder to keep the left strap in a streamline position after the adjustment of the mask and the new foldable support for the extender frame to bend the communication unit towards the inside of the mask to store it in an easier and more compact way.

⚠ WARNING: Do not unscrew the wet activation from the main eletronic housing!

7 - BATTERY COMPARTMENT

Battery compartment with rechargeable Li-Ion 3.7v Battery, battery charger management electronics, strap holder and foldable support for EXTENDER FRAME

The compartment may be opened to recharge or replace the battery.

⚠️ <u>WARNING: In the compartment there are 2 seals, specifically a red o-ring on one side and a black gasket on the other, check that the two seals are in position, clean and lubricated before closing the compartment and dive.</u>

When connecting the micro usb cable to charge the battery a red LED will show battery under charge while a green LED will show battery fully charged. The micro usb cable may be connected to a wall adapter, 12v adapter, power bank, P, any 5v USB power supply.On the sides there is the strap holder to keep the left strap in a streamline position after the adjustment of the mask and the new foldable support for the extender frame to bend the communication unit towards the inside of the mask to store it in an easier way.

RED LED

GREEN LED
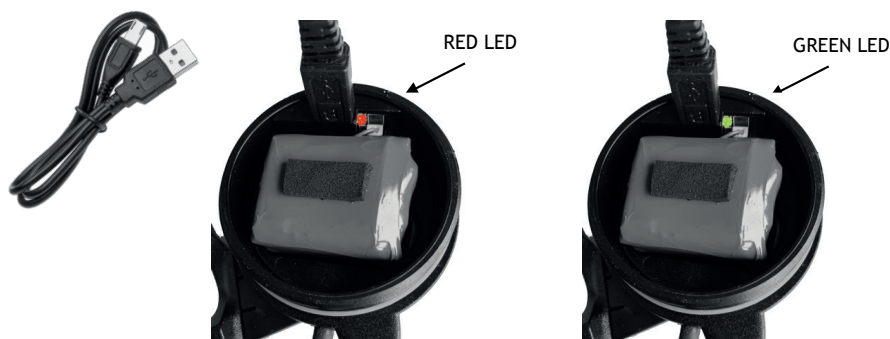
8 - MOUNTING THE GSM MERCURY ON THE EXTENDER FRAME

Start removing from the Extender Frame both side connections, as shown in the picture below.

Begin mounting the L, antenna earphone of the Mercury. Securing it to the Extender Frame exactly like a neutral or an earphone support. Bridges have L and R written on them for identification. Finish by screwing firmly the bridges on the inside.

Be careful to insert the support in the correct position with no gap between the support and the frame.
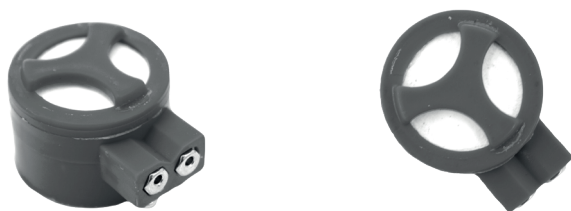
Proceed connecting the PTT/MIC on the COMMUNICATION side port of the mask by screwing it on. The crown around the PTT will turn until flush.

Last, connect the battery compartment to the right side of the Extender Frame by having the cable connecting the two ears passing **underneath** the straps into the face seal groove.

9 - BLUE-MIC MICROPHONE

The GSM Mercury uses a dynamic microphone, "Blue-Mic" encapsulated and protected by a hydrophobic membrane.
The Blue-MIC is assembled to be less invasive and delicate than any other underwater microphone.
It is still possible to detach and replace by using two screws.
The microphone allows dependable clear reproduction of the human voice. It removes unnecessary noise such as the noise of bubbles being exhaled from the mask.
Its design is very similar to the D-Mic but allows a better audio clarity.

The Blue-Mic microphone uses a hydrophobic membrane that allows air to pass through while protecting the microphone from water. This membrane also reduces the "muffling" effect allowing a phonic performance that is very high. Another characteristic of the hydrophobic membrane is its mechanical strength. The Blue-Mic is fitted with a membrane that is designed to handle pressure of more than 1bar (14.7 PSI). If the membrane brakes, the microphone will flood causing transmission to stop.

OCEANREEF IDMs masks are designed to operate with "balanced" pressure. If the mask is removed underwater the microphone WILL NOT suffer any damage. However, continuing to descend WITHOUT the mask sealed on the face, the microphone may result in exceeding the 1 bar mechanical resistance of the membrane, so damaging permantly the microphone (in relation to the depth at which the mask is removed). Ascending must be done in accordance with the dive tables or dive computer to avoid decompression problems.

The communicator and microphone should be rinsed with fresh water (immersed, high pressure water is not reccomended as it can damage components) after each dive and should be placed in a well ventilated area that is not exposed to direct sunlight to dry.
Blue-Mic does not have a polarity restriction when assembled on the PTT contacts. Be careful to unscrew the two screws before removing it.
Clean the microphone contacts and lubricate them on a timely base.

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10 - REPLACING THE BLUE-MIC

Remove the PTT/MIC assembly from the mask, unscrew few threads of the two little side screws and pull off the Blue-Mic. Replace with the new one being careful not to overtighten the little screws to avoid damages to the contacts and to mount the microphone in the same direction.
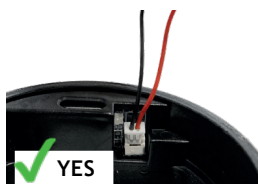

11 - REPLACING THE BATTERY

The battery is replaceable by disconnecting the white plug.

The polarization of the plug has an orientation. **Do not force it if it is hard to push it down.**

12 - CHECKING BEFORE USE

- Once the battery has been charged and the compartment lid has been closed properly, wet your fingers and touch the two wet contact screws (On/Off switch contacts) to turn on the unit. You will hear a voice saying *"CHANNEL ONE"* indicating activation.

- When the unit is turning on it will always and automatically go on channel one and volume level 2. The unit will turn off immediately when the contacts are released (or when the unit is going out of the water).
  Keep your fingers on the wet contact screws.
  Run another finger along the antenna. You will hear a *"zzzzzz"* type sound coming from the speaker.
  Push the level style button to increase the volume to 3, 1 and back to level 2.

- Bring the antenna transducer near the antenna of another active unit (about 5 cm / 2 inches), keeping your fingers on the On/Off contacts. You should also be able to hear the communication when the unit is not immersed in water.
  Pushing the PTT button you will hear a *"beep"* indicating that you can transmit, speak keeping the PTT button pressed and check that the other unit is receiving.
  Do the opposite operation to check the receiving of your GSM Mercury.

- Flip and hold for two seconds the level style button, you will enter the "program mode", check the settings of your unit and exit by following the instruction at page 6.

⚠ If you need to use the D.A.T. mode remember that only one diver per time should use the DAT mode!
Disregarding this direction will cause communication to be confused and useless.

⚠ A repeated voice signal *"Battery Low"* (about every 30 seconds) means that the battery is running low. You still have about 2 hours depending on your use prior to recharge.

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13 - BASIC INSTRUCTIONS FOR UNDERWATER COMMUNICATION

The GSM Mercury is activated for reception as soon as it is immersed in water, and it turns off a few seconds after it dries out.
When it is switched on, this is confirmed by a message *"CHANNEL ONE"*.
Push the PTT button and the activation of the transmission phase is anticipated by a *"beep"*, wait until this is over before speaking.
When a message is incoming from your buddy or from the surface you'll hear the *"beep"* that anticipate the transmission, breath slowly to avoid bubbles to disturb communication.

⚠ Notes:

- Inform your buddies before switching to a different transmission channel!
- When speaking to other divers, remember that they are primarily diving. It is best to attract their attention before sending a message.
- Talking and listening while underwater requires practice. With experience, divers will become more proficient in the use of the communications system.
- Speak slowly, and pronounce each word clearly. Speak only after having sent a call impulse by pressing the PTT button. It is advisable to practice in a swimming pool before using the device in open water.
- Bubbles, and especially small air bubbles moving close to the antenna, could reduce the transmitting power.
- Obstacles, such as rocks, may reduce your communication range.
- It is normal to receive a background noise in certain moments. Movements of sand and pebbles on the seabed, marine motors, cetaceans, and other sources can create vibrations in the water which give rise to a range of ultrasonic waves that can be picked up by the GSM Mercury.
- Communication clarity and distance may depend on the environment.
- In confined environments - such as pools with different kinds of "reflecting materials" such as metal, or when diving in confined spaces that are equipped with strong water filtration systems, sometimes the quality can be affected greatly. Often, the use of a reduced power unit, such as the GSM Dual Power offers a solution to the issue, by reducing the refraction thanks to a less powerful communication signal traveling in confined environment. Other options to reduce distortions on the communications are the Damper filters to place on the antennas of the units.
- It is not a cellular phone, so expect to speak slowly and clearly for maximum clarity. Sounds of the water may make it difficult to hear perfectly. Talk slowly and take your time. Signal end of your communication to tell your listeners they are now free to reply i.e. "OVER".
- Being it a Push To Talk system, like a walkie-talkie unit, if one person talks, all other units can only listen. One at a time talking.
- Speaking in the mask for prolonged sentences may result in "need to catch breath" feeling. This is normal, due to speaking in a mask. It is like trying to speak after or while running. Take your time. Rest and breathe. Always remember that you are in water and follow safe and healthy behaviors.
- When using the device in shallow water, you may experience difficulty communicating because:
    1. The surface is full of air bubbles formed by the waves.
    2. The underwater sand is causing ultrasonic noise due to waves.

14 - MAINTENANCE, CLEANING AND STORAGE

14.1 MAINTENANCE AND CLEANING

The GSM Mercury will work perfectly if the periodic program of maintenance and cleaning collected in Table 2 is applied during its whole life from the first use.
General and visual inspection means checking that all the components and parts are not damaged, and verifying there is not any wear and tear. No damages must be detected on the product. If damages are detected, the product cannot be used until repair.

TYPE OF ACTION	FIRST USE	BEFORE EACH USE	AFTER A DIVE
GENERAL FUNCTION CHECK	X	X	
GENERAL AND VISUAL INSPECTION	X	X	
CLEANING / RINSING			X

Table 2: Periodic maintenance program

⚠️

For optimum longevity of the unit and the proper functioning of its parts, we recommend rinsing thoroughly with fresh water after every use. DO NOT clean the Unit with any abrasive materials.
No chemical should be used. We recommend drying the product with a soft, clean cloth.

⚠️

- Do not use solvents (such as diluents) to clean the unit. They can cause irreparable damage. Only use neutral detergents.

- Use fresh water to remove the seawater from your GSM Mercury after each use. The product must be stored completely dry.

- Do not expose the unit to direct sunlight for prolongued periods of time.

- Do not leave the unit in your car. Take in the consideration that the unit is dark color and may become very hot if left under direct sunlight. Handle with caution.

- Do not keep the unit in places that are too hot or too cold, such as near air conditioners.

- Do not keep the unit near magnetic fields.

- Do not allow it to fall or be knocked around.

- Make sure there is no dirt, debris or water in any part of the unit, especially in the battery housing or under the o-ring. If any dirt, debris or water is found, remove it.

- When recharging/replacing the battery, check the o-ring. If it is damaged, replace it. The O-ring must be lubricated with synthetic lubricant (i.e Christo-lube).

- Do not dismantle or repair the communication unit by yourself.

- Before rinsing the unit, make sure the battery compartment is properly closed.

- If not used for a long period, remember to charge the battery at least once every 6 months.

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- Follow the former instructions for the correct maintenance of the microphone and the battery housing.
- Routinely, clean the microphone contacts and check the integrity of the hydrophobic membrane and the casing. If the microphone is flooded, it CANNOT BE recovered and must be replaced.
- Do not touch the hydrophobic membrane with any sharp object that may damage it.

14.2 STORAGE

The GSM Mercury should be stored in a ventilated environment preferably between 0°C (32°F) and +40°C (104°F), avoiding the direct action of sunlight, pollution, dirt, etc.

15 - TECHNICAL SPECIFICATION

- Type: Wireless ultrasonic
- Activation: Automatic
- Transmission: PTT/D.A.T.
- Receiving: Automatic/D.A.T.
- Speaker volume adjustment: 3 levels.
- Charging time from fully discharged 1h
- Autonomy: 25h
- System Type: H-SSB
- Frequency: ch1 32.768 KHz, ch2 41.000 KHz
- Working range: 250 m/800 ft
- Low battery autonomy: 2h
- Low battery alarm: "Battery Low" warning every 30 seconds
- D.A.T. mode: 30 sec transmittion-20 s receiving

16 - WARRANTY

1. The OCEAN REEF communication units electronic device is guaranteed to be free of material or manufacturing defects for a period of 24 months from the time the unit is purchased.
2. For the duration of the above mentioned warranty, the Company's responsibility is limited to replacement of any parts that are defective and that have not been used incorrectly or handled negligently. The product must be returned to the outlet from which it was bought.
3. Even during the warranty period, this warranty shall not be valid where:
   • Damage was caused by incorrect handling or carelessness.
   • Damage is caused by the unit falling after it was purchased.
   • Damage caused by fire, earthquake, floods, lightning, or other natural disasterspollution or electrical charges.
   • The product has not been serviced as required.
   • The product has been tampered with or has been repaired/serviced with non-original parts.
   • The warranty card is lost or not found.

You can find a copy of this and other OCEAN REEF manuals online on our website.
In order to limit our paper consumption, and as a part of our environmental friendly and responsible approach, OCEAN REEF recommends, in case you lose or damage this manual, to consult the documentation present online rather than print it out.

Please refer to our web site:
diving.oceanreefgroup.com/support/

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Release 1.3

NOTES:

NOTES:

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Operating the unit

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OCEAN REEF
underwater, naturally.
S A F E T Y

protection equipment
e n g i n e e r i n g
e l e c t r o n i c s

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