Primary 2nd stage OWNER'S MANUAL



Primary 2nd stages - OWNER'S MANUAL

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1 - INTRODUCTION

For more than 70 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.

The Primary 2nd Stage must be used for underwater diving and maintained in accordance with the instructions reported in this manual related to the use, the limitations and the maintenance. The use of the primary 2nd stage implies the knowledge, understanding and the compliance to the present owner's manual. Incorrect use, use of unsuitable spare parts, alteration of the equipment or bad maintenance and storage are dangerous for health and safety of the user and invalidates the warranty, exonerating the Manufacturer from all liabilities. For everything which is not mentioned in the present manual, the general conditions of sales and warranty apply.

It has to be stressed that any Personal Protective Equipment (PPE) for respiratory protection, such as the primary 2nd stage, must always be used by specifically trained people, perfectly aware of its applications limits.



If you lose this manual or if you should require more copies, it is possible to download 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

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 text misunderstanding, misprints and/or incompleteness.

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

- Insufficient, incorrect and improper maintenance, not following the plan described in this manual
- Absence of periodic tests and checks of the 2nd stage, not following the plan described in this manual
- Incorrect and improper use of both the Primary 2nd stage and each of its components
- Use of non original spare parts
- Not observance of prescriptions collected in the owner's manual
- Alterations and/or modifications of both the Primary 2nd stage and each of its components

In the above mentioned situation, being potentially dangerous to the health and life of the users, the manufacturer is released of any responsibility and the warranty is nullified. The Manufacturer is certified ISO 9001:2015 (https://diving.oceanreefgroup.com/support/#ISO_CC).

2 - GENERAL WARNINGS / OWNER'S AND USER RESPONSIBILITIES

WARNINGS, CAUTIONS, NOTES LEGEND

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 going to 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.



This instruction manual does not replace a diving course.



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



OCEAN REEF highly recommends that you practice in a pool before using your product in open water. Diving in cold water requires special equipment and techniques. Before diving in cold water we strongly recommend you obtain adequate training from a recognized training agency. EN 250: 2014 norm defines "cold waters" as those having a temperature lower than 10° C (50° F) and requires that regulators certified for use in such conditions must be tested and approved to work properly in temperatures of 4° C (39° F).



High pressure gas systems must be handled with care. Carefully read and follow these instructions concerning OCEAN REEF SCUBA products equipment. Use of SCUBA equipment by uncertified or untrained persons is dangerous and damage to high pressure gas system components may result in serious injury or death.



Before using this product, you must have successfully received training and certification in the technique of SCUBA diving from a recognized certification agency (or any U.S. Military or government operated diving school). Use of this equipment by a person who is not certified by a recognized agency shall render all warranties, express or implied, null and void.





All dives must be planned and carried out so that at the end of the dive the diver will still have a reasonable reserve of air for emergency use. The suggested amount is usually 50 bar (725 psi).



Do not modify or alter in any way the product.



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.

In the following cases:

- Damage to some parts of the product
- Difficult to breathe
- Dizziness and/or light-headedness The dive must be aborted.



Before using the product, the user must ensure that every component has been properly inspected and maintained. (see Chapter 10 Maintenance).



All users of the product must periodically undergo training in Emergency Procedures in shallow water to maintain preparedness in the event of an actual emergency.



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, factory prescribed service for the products must be performed at least once annually by a factory trained OCEAN REEF Service Technician who is employed by an Authorized OCEAN REEF Dealer and whom keeps proper maintenance records. Repair, service, disassembly, or first stage adjustment must not be attempted by persons who are not factory trained and authorized by OCEAN REEF.

For details, contact an authorized OCEAN REEF dealer at: https://diving.oceanreefgroup.com/ shop-dealers/



All OCEAN REEF regulators can be identified via a serial number. The number is printed on the housing of the second stage and on the metal body of the first stage.



This Primary 2nd Stage is a standard downstream valve, has a dive pre-dive switch.

For your own safety when operating OCEAN REEF life support equipment, ask you pay attention to the following:

- 1. Use the equipment according to this manual and only after having completely read and understood all instructions and warnings.
- 2. Use of the equipment is limited to the uses described in this manual or for applications approved in writing by OCEAN REEF.
- 3. Cylinders must only be filled with atmospheric compressed air, according to the EN 12021 norm. Should moisture be present in the cylinder, beside causing corrosion of the cylinder, it may cause freezing and malfunction of the regulator or other connected devices during dives. Cylinders must be transported according to local rules provided for the transport of dangerous goods. Cylinder use is subjected to the local laws regulating the use of gases and compressed air.
- OCEAN REEF products must be overhauled by qualified personnel at the set schedule. Overhauls must be documented. When making repairs and during maintenance, only OCEAN REEF replacement parts must be used.
- 5. Should the equipment be serviced or repaired without complying with procedures approved by OCEAN REEF or by untrained personnel or not certified by OCEAN REEF, or should it be used in ways and for purposes other than specifically designated, liability for the correct and safe function of the equipment transfers to the owner/user.
- 6. If operating in cold water (temperature lower than 10°C (50°F)) it will be necessary to use a regulator suited for such temperatures.

3 - WARNINGS / REMINDERS BEFORE THE DIVE

Before connecting the regulator to the cylinder, check the following:

- Check that the O-ring on the cylinder is in place on the valve and is in perfect working condition (INT WITH Yoke nipple CGA 850 version only). If it is damaged or missing, it should be replaced.
- Verify that the instrumentation and accessories have been installed correctly.

OCEAN REEF first stages are available with various cylinder valve fitting connectors (according to ISO standard): DIN: screw connection up to 300 bar INT: yoke connection up to 232 bar.



While opening the cylinder valve, the pressure gauge face must not be directed towards the user or others, in the event and risk of a pressure gauge malfunction.



If you use quick connection hose always pressurize the Neptune III or the primary 2nd stage gradually by opening the cylinder valve slowly. When opening the cylinder valve, the second stage purge button should be slightly pressed, so that the second stage valve is open.



The octopus is usually considered as an auxiliary emergency second stage to be used by the diver in case of need (Emergency auxiliary breathing device). The OCEAN REEF Octopus described in this manual is intended to be used connected to OCEAN REEF first stages - <u>Maximum depth: 50 m / 162 feet</u> (According to EN regulation).



If a SCUBA second stage is configured for and used by more than one diver at the same time, then it shall not be used at depths greater than 30 meters.



Do not push down on the purge button in low temperatures, as this may cause a second stage freeze-up.



Insert hoses into the ports and tighten using a wrench without using excessive force.



Never connect a low pressure hose to a high pressure port. These connection threads are different sizes and are not compatible. Do not use adapters of any kind to connect low-pressure devices to high-pressure ports. Doing so could cause serious damage to both the user and equipment.



Verifying quick connection hoses before the dive is imperative. Attach and detach hoses from male connections multiple times (before and after pressurizing) to ensure the connection system operates smoothly. Make sure, once finally connected, that the coupling is secure by pulling on the female part of the hose, without unlocking the quick connections. The hoses must remain assembled on the male part firmly. Always make sure you do not get dirt, sand or other material in the hose mechanism.

4 - NITROX



<u>Neptune III and Primary 2nd stages are is not CE certified to be used with NITROX!</u> SL35TX 1st stage can't be used with NITROX. Always use NITROX compatible 1st stages when NITROX is required.



The Neptune III mask and Primary 2nd stage can be used with NITROX mixes up to 40% O_2 . It is always recommended to use cleaned air from a specified cleaned air source. Note: not valid in the European Union.



The Neptune III mask and Primary 2nd stage are Nitrox compatible up to 40% of oxygen. (NOT valid in the European Countries).



To prevent severe and potentially lethal injuries DO NOT dive using Nitrox (oxygen enriched air) mixes unless you have first obtained adequate training and certification in their use by a recognized certification agency.



Maximum operating depth (MOD) and exposure times to Nitrox (oxygen enriched air) mixes are dependent upon the oxygen concentration of the mix in use.

The term Nitrox (oxygen enriched air) defines breathable mixes composed of oxygen and nitrogen and containing oxygen in a percentage higher than 21% (atmospheric air). The higher oxygen concentration limits the use of these mixes with standard scuba equipment and requires the use of materials and procedures that differ from those required by the use of atmospheric air.

USE OF NITROX MIXES OUTSIDE OF THE EUROPEAN UNION

Standard production OCEAN REEF regulators distributed to countries outside of the European Community use normal INT or DIN connections and are manufactured with materials, assembly procedures and lubricants that ensure compatibility with gas mixes containing oxygen up to 40%. In these countries, users are required to follow the same safety procedures that apply to dedicated Nitrox regulators and to comply with the regulations set by each country concerning the use on Nitrox mixes for diving.

USE OF NITROX MIXES WITHIN THE EUROPEAN UNION

Within the European Community the use of Nitrox mixes is regulated by norms EN 13949 and EN 144-3. OCEAN REEF has designed and manufactured a special regulator line that complies with the aforementioned regulations. The first and second stage regulators of this line are identified by the marking "Nitrox" and also feature components colored green to allow an immediate identification.

These regulators can be used with oxygen enriched air containing an oxygen concentration higher than 22% and up to 100% (pure oxygen), at a maximum operating pressure of 200 bar (2900 psi) or 300 bar (4351 psi) depending on the version.

Main features of Nitrox dedicated regulators

As required by European Standards, Nitrox first stage regulator connections have been designed and approved to be used exclusively with Nitrox cylinders and cylinder valves, in order to prevent confusion with the corresponding standard-production compressed air regulators. OCEAN REEF Nitrox connections comply with EN 144-3. In Nitrox first stage regulators, compatibility with high pressure oxygen (higher than 40 bar / 580 psi and up to 200 bar /2900 psi or 300 bar (4351 psi) depending on the version) is ensured by the choice of special materials used to manufacture seats, O-rings, gaskets and seals used in the high pressure first stage mechanism valves. Components are lubricated with a specific oxygen lubricant. OCEAN REEF Nitrox regulators are assembled in a dedicated area in order to comply with the high cleanliness standards required for oxygen compatibility.



Do not use Nitrox regulators with oxygen enriched air if they have been used with compressed air. There might be residues of flammable materials that could cause serious accidents.

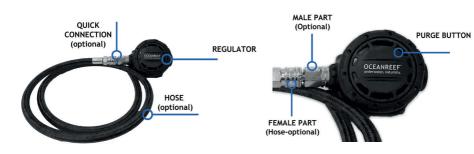
Do not use silicone grease for the lubrication of Nitrox regulators.

Second stage regulators, pressure gauges, consoles and other accessories used in combination with Nitrox first stage regulators must also be compatible with the use of Nitrox mixes.



Maintenance on regulators that use Nitrox must be performed every 100 dives or at least annually.

5 - GLOSSARY



Primary 2nd stage

6 - PRIMARY SECOND STAGE



Standard downstream valve with dive-predive switch, no adjustment knob. Weight (without hose) 230g Quick Disconnection male part *to assemble or sold separately*

Black Extraflex Quick Disconnection Hose 80cm / 32"to assemble or sold separately

Static intermediate pressure 9.5-9.8bar

Primary 2nd stage ASSEMBLY

Use a 4mm Allen wrench to remove the LP port plug on the first stage as comfortable or taught by your instructor, then screw the loose end of the primary 2nd stage hose into the open port and tighten by hand using a 14mm wrench without using excessive force.



XTRAFLEX QD HOSE 80CM /32" BLACK RUBBER BLACK HOSE 80CM / 32"

Four layer technology, inner layer non-toxic polyurethane blend. Polyester first layer reinforcement, thermo rubber jacket. Polyethylene anti-scratching reinforcement.

HOSE ASSEMBLY

120CM /48" YELLOW

Use a 4mm Allen wrench to remove the LP port plug on the first stage, then screw the loose end of the hose into the open port and tighten by hand using a 14mm wrench without using excessive force.

LEAKAGE AND FUNCTION TEST

Carefully open the cylinder valve to fully open. Close the valve a quarter turn!



Check the pressure on the pressure gauge to make sure that there is the required amount of air for the planned dive. OCEAN REEF recommends that the cylinders should be full before every dive.

If using primary breathing valve press the purge button on the breathing valve. Check that a strong flow of air is heard. Release the purge button.

If using an octopus breathing valve, press the purge button on the breathing valve. Check that a strong flow of air is heard. Release the purge button. Reset the locking lever against the valve housing.

Test the entire system for leaks with the following steps. Close the cylinder valve. Wait for one minute. Check that the needle does not fall by more than 10 bar (145 psi).

If the test has been successful - open the cylinder valve following the procedure describe above.



If leakage is greater than the specified value, the equipment must be repaired by an OCEAN REEF certified service technician.



Check the pressure gauge to ensure adequate cylinder pressure.



Check that you are able to equalize (clear your ears).



Check the integrity of the LP hoses before the dive, be sure there are no cuts, swellings, cracks, discoloration or any other kind of damages on it. In such case replace the hose before using.



Check that the ends of the hose are correctly tightened to the OCEAN REEF first and second stage before starting the dive.



Open the cylinder valve, don the equipment en put the second stage in your mouth, breathe deeply a few times to ensure that the system is operating correctly. When the mouthpiece is out of the mouth, simply pressing the purge button may trigger the Venturi effect and cause a regulator free-flow. The free-flow can be stopped by covering the mouthpiece opening with a finger.



With the LP hose plugged in press the purge button of the 2nd stage and check that the air flows freely. Release the button and check that air stops flowing.

8 - DURING A DIVE



Breathe normally through your mouth. Breathing must be continuous, without holding one's breath.

CHECKS DURING DIVING

- Periodically check the pressure gauge.
- Make sure that other equipment does not interfere with the operation of or access to the necessary controls and components.
- Check for leaks.

PURGING

The diver should be facing straight ahead, with the exhaust valve being the LOWEST part of the system while holding the top side of the mask with his/her palm.



The dive should be planned with the intention of not using a reasonable reserve of air for emergency use. The minimum recommended pressure that should be left in the cylinders upon dive completion is usually 50 bar (725 psi).

9 - AFTER DIVING/ POST DIVE PROCEDURES

Close the cylinder valve and drain the system by pushing on the purge button of each second stage. Once the system has been depressurized disconnect the first stage regulator from the valve.

All inlets must be closed with the provided protective caps to avoid the entry of debris, dirt or moisture. If the cylinder valve is equipped with a reserve system the rod should be put in the "open" position (fully lowered) to indicate that the cylinder needs to be filled.

DISMANTLING

The apparatus should be cleaned as described in the section 13 titled MAINTENANCE, CLEANING, DECONTAMINATION AND STORAGE, before, carry out the following:

- 1. Close the cylinder valve by turning the cylinder valve handle clockwise until it reaches following its end position.
- 2. Thoroughly vent the system by pressing the purge button on the breathing valve.
- 3. Disconnect the regulator(s) from the cylinder(s).
- 4. Make sure the dust cover is firmly in place to keep water out of the first stage.
- 5. Carefully rinse the regulator with fresh, gently flowing water. Do not press the purge button.
- 6. Do not pull on the hoses when the regulator is still attached to the tank and, after removing the hoses, avoid storing them on a tight loop.
- 7. When the regulator is not connected, the cylinder valve must be fitted with a plug.
- 8. Damp equipment should be thoroughly dried if it is to be stored in the backpack for more than a few hours.



If you accidentally press the purge button during the rinsing procedures, then attach the regulator to the tank and press the purge button for 10-15 seconds to purge any water or debris from regulator.

10 - MAINTENANCE, CLEANING, DISINFECTION, CARE AND STORAGE

10.1 MAINTENANCE, CLEANING, DISINFECTION

The Primary 2nd stage will work perfectly if the periodic program of maintenance, cleaning and disinfection collected in table 1 is applied during its whole life from the first use. General and visual inspection are related to the check that all the components and parts are not damaged, without any wear and tear. No damages must be detected on mouthpiece, cover, purge valve, hoses and QDs. If damages are detected, the product cannot be used until repair.

TYPE OF ACTION	FIRST USE	BEFORE EACH USE	AFTER A DIVE	MONTHLY	EVERY YEAR	EVERY 2 YEARS	EVERY 5 YEARS
GENERAL FUNCTION CHECK	х	х					
GENERAL AND VISUAL INSPECTION	х	х		x			
LEAK TEST		х					
DISINFECTION		х	х				
CLEANING / RINSE			х				
REGULATOR * SERVICING					х		

Table	1:	Periodic	maintenance	program
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*These actions can be performed by an authorized OCEAN REEF Servicing Center.

For optimum longevity of the product and the proper functioning of its parts we recommend rinsing the mask thoroughly in fresh water after every use.



Do not use silicone grease on silicone components, as this may cause some parts to deform. In addition, do not use silicone grease on components in the high pressure area of the first stage as this would compromise the compatibility with Nitrox mixes.

Equipment should be disinfected, especially when it comes into contact with the face, eyes or mouth. This includes but is not limited to:

- Second stage regulator (Octopus), primary second stage and internal surfaces
- Snorkel
- BCD oral inflator
- Mask



Cleaning frequency must ensure to the user a good protection and the right functionality. When using any disinfectant, be sure to follow the manufacturer's instructions for use. Follow this with a thorough rinse in fresh water, and allow the equipment to dry completely before use. Since some chemicals can damage surfaces, they should be tested prior to use for each individual item or surface. After disinfecting, one must take care not to contaminate the equipment, such as by handling it when storing. Therefore, dry, pack and store any sanitized equipment in a disinfected bag or container using washed/sanitized hands.

For an efficient cleaning of any part of the equipment, soaking in clean warm water (around $40^{\circ}C/100F^{\circ}$) adding a colourless not perfumed hand washing liquid soap is suggested.

Afterwards, rinse deeply under fresh water to remove any soap residual and allow the perfect drying in a safe and clean environment.

10.2 CARE

- 1. Ensure that the high pressure inlet of the first stage regulator is closed with the special protective cap.
- 2. Should water accidentally enter the low pressure hose, connect the regulator to the cylinder, open the valve and press the second stage purge button down until all water has been expelled.
- 3. Dry your regulator completely in a dry ventilated place, away from heat and direct sunlight. Care of regulators when not in use:
- 1. Make sure that the high pressure inlet protective cap is in the correct position.
- 2. Keep the regulator in a dry place, away from heat and direct sunlight. The mouthpiece should be periodically immersed in a disinfecting solution and rinsed with fresh water to completely remove the disinfectant. Do not use disinfectant substances that could damage the mouthpiece.

10.3 STORAGE

All the components should be stored in a ventilated environment preferably between $-10^{\circ}C$ ($14^{\circ}F$) and $+50^{\circ}C$ ($122^{\circ}F$), avoiding the direct action of sunlight, pollution, dirt, etc. For both storage and transportation the use of the original carrying backpack is suggested.

11 - TROUBLESHOOTING - EMERGENCY PROCEDURE

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PROBLEM	PROBABLE CAUSE	SOLUTION
After opening the cylinder valve the pressure gauge shows zero.	 Empty cylinder. Malfunctioning pressure gauge. Malfunctioning cylinder valve. 	Fill the cylinder. Have the pressure gauge replaced by an OCEAN REEF authorized technician. Have the cylinder valve checked by an OCEAN REEF authorized technician.
HP or IP leak.	Damaged O-rings.	Have the O-rings replaced by an OCEAN REEF authorized technician. Avoid over-tightening the connections.
Valve leak.	Defective valve or stem.	Have the valve checked by an OCEAN REEF authorized technician.
No air supply.	Malfunctioning regulator (first or second stage).	Have the regulator checked by an OCEAN REEF authorized technician.
The regulator free flows.	Unwanted Venturi effect.	Cover the mouthpiece with a finger or direct the mouthpiece opening down submerging it. Purge button has sand stuck inside. 1st stage intermediate pressure higher than 138 -> 142 psi / 9.5 -> 9.8 bar.
If the free flows continues.	Malfunctioning regulator.	Regulator requires servicing*. Do not begin the dive (or if already in the dive, end it) and have the regulator checked by an OCEAN REEF authorized technician.
Regulator hard to breathe	Malfunctioning regulator.	1st stage intermediate pressure lower than 138 -> 142 psi / 9.5 -> 9.8 bar.
If still hard to breathe	Malfunctioning regulator.	Regulator requires servicing*. Do not begin the dive (or if already in the dive, end it) and have the regulator checked by an OCEAN REEF authorized technician.



* OCEAN REEF recommends that the regulator be serviced at least once a year, or after 100 dives. This should only be performed by an authorized OCEAN REEF service center which uses original spare parts. This also applies to any periodic servicing.



In case of persistence of these problems and failure to resolve, contact an authorized OCEAN REEF technician.

For more information visit our website at: diving.oceanreefgroup.com/shop-dealers/

12 - WARRANTY

- 1. The OCEAN REEF primary second stage 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 warranties, 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, along with the warranty card.
- 3. Even during the warranty period, this warranty shall not be valid where:
 - Damage was caused by incorrect handling or carelessness.
 - Damage was caused by the mask falling after it was purchased.
 - Damage caused by fire, earthquake, floods, lightning, or other natural disasters.
 - The warranty card is not produced.
 - Your name, the date of purchase, and the distributor's name do not appear on the warranty card.
 - The product has not been serviced as required through an OCEAN REEF authorized service center.
 - The product has been tampered with or has been repaired/serviced with non-original parts.

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: <u>diving.oceanreefgroup.com/support/</u>





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NOTES:

NOTES:





protection equipment
mengineering
electronics

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