## REGULATOR OWNERS GUIDE



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#### PATENT NOTICE

U.S. Patents have been issued to protect the following design features: Orthodontic Mouthpiece (U.S. Patent No. 4,466,434) and Second Stage Regulator Depth Compensating Adjustment Mechanism (U.S. Patent No. 5,660,502).

#### LIMITED TWO-YEAR WARRANTY

For details, refer to the Product Registration Card provided by your Authorized Oceanic Dealer. For additional information, visit the Oceanic web site at -

http://www.OceanicWorldwide.com

#### INTRODUCTION

#### THANK YOU for choosing a Regulator product from Oceanic !

Features and operation of the various models of Oceanic regulator first and second stages currently available are described in this owner's guide, and/or any addendum or supplement provided with it.

By following the instructions in this guide, you will understand how your regulator product works, how to make best use of its features, and how to maintain it for long term use.

Some information presented may not be applicable to the specific model of regulator or accessory that you purchased.

DO NOT dive with the regulator until you have read and understand all information provided with it.

Oceanic promotes responsible diving practices and does not advocate diving beyond the limits recommended for recreational diving, Oceanic regulator equipment is designed to offer continued safe and reliable performance in the event the need arises and the recreational diving limits are exceeded.

Pay special attention to items marked with this Warning Symbol.



### WARNINGS:

- SCUBA diving is inherently dangerous. Improper use of SCUBA diving equipment may lead to injury or death.
- In order to enjoy sport SCUBA diving safely, it is imperative that you receive proper training from a recognized and accredited SCUBA training organization. This training will include information about best practices to prevent injury or death.
- If you do not fully understand how to use this Regulator, or if you have any questions, you should seek instruction in its use from your Authorized Oceanic Dealer before you utilize this product.
- This SCUBA diving Regulator reduces high pressure air stored in cylinders to a safe, breathable pressure. Care in handling the high pressure cylinder and Regulator must be taken to prevent injury or death.
- The air must be of sufficient purity to prevent injury or death. Air must equal or exceed the requirements of CGA Grade E and EN12021.
- SCUBA diving in water colder than 50°F/10°C requires special equipment, training, and preparation to prevent injury or death. See page 10 for more information relating to cold water diving.
- SCUBA diving with gasses other than compressed air requires special training and preparation to prevent injury or death. See page 8 for more information relating to diving with gasses containing higher percentage of oxygen.
- Do not use spray cleaners, solvents, or any lubricant on the Regulator.
- This Regulator must be used together with an Instrument that measures and indicates the user's air supply pressure.
- Prior to each dive inspect and test this Regulator for proper operation. If any part does not function properly, DO NOT USE!
- Service should only be undertaken by Oceanic trained and authorized personnel and facilities.

#### **CE INFORMATION**

ISO9001:2000, the CE mark, EN250:2000, EN 13949:2003, EN144-3, EN12021 - what it all means.

Many products sold in the European Union (EU) are required to be certified to meet standards authorized in accordance with the European Directive 89/686/EEC. In order to manufacture products that can receive certification to these standards, the manufacturing company must be controlled in accord with ISO9001:2000 quality management system; also recognized as an Article 11B by European Directive 89/686/EEC.

All products sold by Oceanic in the EU meet these requirements. Oceanic works with an accredited agency, called a Notified Body, named SGS. SGS audits our manufacturing processes and witnesses testing to the requirements of the standards and inspects product documentation and marking to assure full compliance with the standards.

So, it is with considerable pride that we say: EC Type examination conducted by: SGS United Kingdom Ltd, Weston - super - Mare, BS22 6WA, UK, Notified Body No. 0120.

EN250:2000 is the standard describing certain minimum performance requirements for SCUBA regulators sold in the EU. EN250:2000 testing is performed with air to a maximum depth of 165 FSW/50 MSW. Testing identifies regulators that should not be used in water colder than 50°F/ 10°C, these regulators are marked >10°C.

Components of Self Contained Underwater Breathing Apparatus as defined by EN250:2000 are:

- High pressure cylinders and valves.
- Breathing regulators (demand regulators).
- Carrying system (harnesses, buoyancy jackets, backpacks).
- Safety devices (tank contents monitors, pressure gauges, and pressure transmitters).
- Full face masks that include a breathing regulator.

A regulator which meets the requirements of EN250:2000 has not been tested for use by more than two divers at the same time. A regulator simultaneously used by more than one diver, using any type of alternate air source in addition to the primary second stage, may not continue to meet the minimum requirements of EN250:2000, including depth and temperature performance.

EN13949:2003 is the standard that describes special qualification testing for regulators that are to be used with gasses whose oxygen content is greater than 22%. Regulators that have passed testing are marked NITROX/O2.

EN144-3 describes the M26 regulator inlet fitting and M26 valve that must be used with gasses containing over 22% oxygen sold in the EU. These inlet fittings and valves are marked with the maximum rated working pressure.

EN12021 is a standard that specifies the allowable contaminates and component gasses that make up compressed air. This standard is the equivalent of the USA Compressed Gas Association's Grade E air. Both standards allow very small amounts of contaminants that are not harmful to breathe, but can cause a problem if present in systems using gasses with a high percentage of oxygen.

Oceanic regulators are CE certified to a maximum operating depth of 50 M (165 FT).

#### NITROX/O2

Oceanic regulators sold outside of the EU are built using oxygen compatible components in a clean environment and can be used for gasses having oxygen content up to 40%.

Oxygen exposure can be toxic and can cause injury or death. Air contains 20.9% oxygen; a gas with more than 22% oxygen is considered to have a high percentage of oxygen and is called NITROX.

Safely diving with Nitrox requires additional specialized training from a recognized and accredited SCUBA training organization. Nitrox has different depth and time limits than air and these limits change with the percentage of oxygen in the Nitrox. Oceanic Nitrox dive computers can help monitor these safety limits.

Much of the information below is provided in compliance with EN13949 and EN144-3; this information documents best practices for using gasses with oxygen content above 22%.

Regulators sold in the EU and intended for use with Nitrox or oxygen must be tested to assure that the components and lubricants are safe for use in 100% oxygen at high pressure and at elevated temperature. This testing is described in EN13949:2003; regulators that have passed this testing are marked NITROX/O2. In the EU, regulators that have passed this testing are supplied with an EN144-3 M26 inlet fitting, marked with its maximum rated working pressure.

Oxygen accelerates combustion. Use of Nitrox or oxygen introduces a risk of a catastrophic fire, the risk increases with the percentage of oxygen in the gas. Special care must be taken to reduce this risk.

- The regulator and all attached accessories must be prepared for use with high percentage oxygen gasses. This preparation involves special cleaning, the use of special oxygen safe components and lubricants.
- Air used in SCUBA diving may contain minute amounts of flammable hydrocarbons that are considered safe to breathe. Over time these hydrocarbons may accumulate and represent a fire risk if used with Nitrox or oxygen. Specially filtered air is available, called hyper-filtered air. Regulators to be used with Nitrox and oxygen must not be used with normal compressed air.
- Regulators used with Nitrox or oxygen must be cleaned at least annually or any time normal compressed air has been used.
- Regulators used with gasses having oxygen content exceeding 41% must be serviced by Oceanic trained personnel in a facility equipped to oxygen clean and assemble regulators for oxygen use.

#### **DIVING IN COLD WATER**

EN250:2000 testing occurs at two water temperatures: 50°F/10°C and below 39°F/4°C.

Regulators marked >50°F/>10°C are approved for use in water 50°F/10°C or warmer.

All other regulators have been tested in water at or below 39°F/4°C and worked properly under the test conditions

#### WARNING: SCUBA diving in water colder than 50°F/10°C requires special 🗥 equipment, training, and preparation to prevent injury or death.

Training for cold water is available from a recognized and accredited SCUBA training organization.

#### WARNING: When regulators get cold and wet, freezing can occur. Regulator I freezing can result in rapid loss of air that may lead to injury or death.

During regulator use, internal heat can be lost due to pressure drop that occurs in a regulator as it reduces the high pressure gas from the cylinder to a safer breathing pressure.

There are some things that you can do to help prevent regulator freezing.

Cold water best practices that will help reduce the occurrence of regulator freezing:

- Use properly maintained, good working dive equipment designed for cold water diving.
- Use air specially dried for cold water diving in your tanks.
- Warm the regulator, tank, BC, diver insulation, and the diver before the dive.

- Open the tank valve slowly to reduce internal pressure drop cold.
- Do not use the BC inflator, Suit fill, or purge button before going diving.
- Keep the primary second stage dry before taking the first breath.
- Do not breathe from the regulator until you are in the water.
- Do not remove the regulator from you mouth while diving.
- Do not allow an alternate air source to free flow.
- Remove the regulator from your mouth when the dive is over.

Remember to rewarm all equipment and yourself before a second dive.

#### SETUP & DIVE

A SCUBA regulator reduces the high pressure air stored in a cylinder to breathing pressure using two pressure reduction valves.

The First Stage valve automatically reduces the High Pressure air to a lower pressure which fills the hoses; this is called Intermediate Stage Pressure (ISP). The ISP is routed by low pressure hoses to the primary second stage which reduces the ISP to breathing pressure, also called ambient pressure. The ISP is also routed in other low pressure hoses to BC inflators, Dry Suit fill valves, and to Alternate Air second stages.

The Second Stage, also called a Demand Valve, closes and stops air flow when the diver is exhaling, and opens to supply air when the diver inhales. These are very simple valves and very dependable.

We strongly recommend that the installation of accessories be done by Oceanic trained personnel in an authorized service facility.

## **WARNING:** Improper installation of accessories may result in injury or death.

Additional information is supplied in this manual for cold water diving and diving using Nitrox.

#### **REGULATOR FIRST STAGES**

#### WARNING: Failure to prepare your First Stage properly for use in harsh environmental conditions, such as being subjected to sediment or the possible buildup of ice, or salt crystals, may result in injury or death.

Operation of your first stage is not visible when using a regulator. The first stage converts the tank's high pressure air to an intermediate pressure of approximately 140 psi that can be handled by the regulator second stage to deliver a smooth flow of breathing gas upon demand (i.e., when you inhale). Intermediate pressure gas is also available for inflation of a BC or dry suit.



WARNING: Under no circumstances should adjustment of an Oceanic first stage regulator be performed by anyone other than an Authorized Oceanic Dealer. Doing so may cause failure underwater, resulting in injury or death.

#### Preparation to mount a regulator on a cylinder.

- Inspect the tank valve for contamination or damage, clean or replace as required.
- If diving with a DIN inlet fitting, check the sealing o-ring on the regulator DIN inlet fitting (refer to Fig. 3a) for damage and replace if required.
- Check the regulator inlet for contamination and clean or return to an authorized service facility if required.



WARNING: High pressure cylinders present a risk of injury or death. Care must be taken to avoid impact to the cylinder or valve. Always open cylinder valves very slowly. Always point the valve outlet away from persons when openina.

#### Mounting a regulator with a yoke inlet fitting (Fig. 1):

- Turn the yoke screw/knob to remove the inlet protector cap and remove the inlet protector cap from the sealing face of the regulator inlet fitting. Check the sealing face of the regulator inlet fitting for damage and service as required.
- Place the regulator on the valve so the regulator inlet sealing face mates with the o-ring on the valve face. Check the hose orientation to assure that the primary second stage hose will be routed over the diver's right shoulder.
- Tighten the yoke screw/knob to seal the regulator to the cylinder, finger tight only.
- If a pressure gauge is attached, assure it is not facing a person.
- Slowly open the cylinder valve. It should take a few seconds to pressurize the regulator.
- Once a regulator is pressurized, fully open the valve and turn clockwise 1/2 turn.
- Check the pressure gauge, and while observing the pressure gauge, take a few breaths from the regulator. The pressure indicator should not move while breathing. Read the Diving in Cold Water section for cold water best practices, which prohibit test breathing.

#### Removing a regulator with a yoke inlet fitting (Fig. 2):

- After the valve has been depressurized, loosen the yoke/screw knob enough to remove the regulator.
- Dry the inlet protector cap and place it over the regulator inlet.
- Tighten the yoke/screw knob to secure to inlet protector cap.



Fig. 1







Fig. 3

#### Mounting a regulator with a DIN inlet fitting (Fig. 3).

- Remove the DIN inlet protector cap.
- Insert the DIN inlet fitting into the DIN valve and check the hose orientation to assure that the primary second stage hose will be routed over the diver's right shoulder.
- If a pressure gauge is attached, assure it is not facing a person.
- Turn the DIN hand wheel clockwise to seal, finger tight only.
- Slowly open the cylinder valve, it should take a few seconds to pressurize the regulator.
- Once the regulator is pressurized, fully open the valve and turn clockwise 1/2 turn.
- Check the pressure gauge, and while observing the pressure gauge take a few breathes from the regulator. The pressure indicator should not move while breathing. Read the Diving in Cold Water section for cold water best practices, which prohibit test breathing.Regulator removal from a cylinder after the dive.
- Turn the valve hand wheel clockwise to close the valve.
- Press the regulator purge valve to depressurize the valve, confirm with the pressure gauge.



Fig. 4

#### Removing a regulator with a DIN inlet fitting (Fig. 4):

- After the valve has been depressurized, loosen the DIN hand wheel and remove the regulator.
- Dry the inlet protector cap and place it over the regulator DIN inlet.
- Assure that the protective cover is secure on the DIN inlet.

#### SECOND STAGE WITH VENTURI SWITCH

#### Adjustments prior to entering the water.

 If present, set the dive-pre-dive Venturi switch (Fig. 5/6\_a) to positive (+) or dive, and turn the breathing effort adjustment knob (Fig. 3/4\_b) counter clockwise until it stops and then turn it clockwise one turn.

#### Adjustments during the dive.

• The breathing effort adjustment knob (Fig. 5/6\_b) can be turned to change the breathing effort to suit the diver's comfort.

#### Adjustments after the dive.

- If present, set the dive-pre-dive Venturi switch to or pre-dive.
- Press the regulator purge valve to depressurize the valve, confirm with the pressure gauge.



Fig. 5



#### OMEGA 3 SECOND STAGE

The Omega 3 is a high performance servo-valve assisted second stage regulator with a side-exhaust. Inhalation ports surround the main valve, providing greater surface area, less resistance to breathing gas flow, and higher flow rates creating more natural, easier breathing than other types of second stages, regardless of depth.

## NOTE: Due to the Omega 3's servo design, a short hiss may be heard upon being pressurized. This is normal for the Omega 3.

There is no difference in breathing or relative wetness whether you are upside down or right-side-up. This makes it ideal for side mount, bailout, or as an octopus. Additionally, the unique side-exhaust directs bubbles away from your field of view.

Excess water is expelled by normal breathing in most all situations. If necessary, excess water is expelled by tilting your head to the left (lowering the exhaust valve) when exhaling. Upon entering the water, free-flow can occur if the diaphragm (Fig. 7a) is placed in the water before water has a chance to enter the mouthpiece.

▲ NOTE: It is important to realize that free-flows caused by entering the water with the diaphragm section (Fig. 7a) submerged before the mouthpiece is not a defect or flaw. In fact it means that your regulator is tuned correctly. It is no different than submerging a standard regulator diaphragm (purge cover) first with the mouthpiece pointed up. The only difference is where the diaphragm is positioned on a Omega 3. One benefit over a standard second stage, due to its diaphragm location, is it won't accidently purge while swimming into a strong current or outflow. Just remember, when the regulator is out of your mouth on the surface, position the diaphragm upwards above the mouthpiece.

The best way to enter the water with the Omega 3 is with it in your mouth. If this is not convenient, point the diaphragm end up, and immerse the mouthpiece first to ensure that water fills the body before pressure is exerted on the diaphragm that may cause it to free-flow.

Additionally, the Omega 3 is equipped with a Dive/Pre-Dive switch (Fig. 7b) to reduce valve sensitivity. Turn the switch clockwise until it stops for the Dive setting and counterclockwise 30° until it clicks for the Pre-Dive setting.

Use of the Pre-Dive setting should mitigate any free-flows when walking or giant striding into the water.

When planning to resurface, switch back to the Pre-Dive setting and/or remove the Omega 3 from your mouth while still underwater to flood the second stage with water, preventing free-flow.



#### POST DIVE

After use, the regulator must be cleaned and dried before storage.

Before cleaning the regulator, assure that the inlet protector cap is in place. If equipped with a breathing effort adjustment knob, the knob should be turned clockwise until it clicks.

The best way to clean the regulator is to place the regulator on a cylinder, pressurize the regulator, then immerse the regulator and the cylinder in a container of warm fresh water and soak for 30 minutes or more.

If a cylinder is not available, assure that the inlet protector cap is securely in place and immerse in a shallow container of warm water and soak for 30 minutes or more.

After cleaning, wipe the regulator with a towel and hang to air dry.

Do not store the regulator with hoses tightly coiled.

#### **REPAIRS and SERVICE**

# MARNING: DO NOT attempt to disassemble or repair the first or second stages, or to adjust the first stage. Doing so could cause malfunction while underwater resulting in serious injury or death. It will also void the regulator's limited warranty.

In the event that any component of your regulator assembly requires any form of repair or service, return it to your local Authorized Oceanic Dealer for professional service by a trained technician authorized to perform Oceanic factory authorized service.

Once each year your complete regulator assembly should be inspected and serviced by an Authorized Oceanic Dealer. More frequent service is recommended if you dive in severe conditions or more frequently than an average diver (see guidelines).

Annual Service consists of:

- Inspection
- Complete disassembly
- Thorough cleaning and evaluation of reusable parts
- Replacement of non-reusable parts
- Complete reassembly
- Final adjustment and testing

Costs for routine inspection and Annual Service are understood to be a normal part of operation, and are not covered by the regulator's limited warranty.

If Warranty Service is requested, or routine service parts are requested in accordance with a Registered Service Agreement, present the appropriate documents (i.e., card, receipts, and service records) to the Authorized Oceanic Dealer when the regulator is delivered for service.

#### ADDITIONAL SPECIFICATIONS FOR CONNECTING COMPONENTS TO OCEANIC REGULATOR FIRST STAGES

#### Second Stage (Primary or Octopus):

- Nominal Source Pressure = 140 psi (9.5 BAR) ± 5 psi (.5 BAR)
- Maximum Source Pressure = 155 psi (11 BAR)
- Thread Size = 3/8 24 UNF
- Inhalation Effort = 1.1 to 1.3 ciw\* (cubic inches of water)
  - \* Delta 3 model = adjustable from 0.0 to 2.5 ciw
- Exhalation Effort = 1.1 ciw\*
  - \* Omega II and Zeta models = 1.1 to 1.3 ciw
- Flow Rate = 30+ scfm (standard cubic feet per minute)
- · Work of Breathing is equal to or better than USNavy and CEN

#### Pressure Gauge or Pressure Transmitter:

- Maximum Source Pressure = 5000 psi (350 BAR)
- Thread Size = 7/16 20 UNF

#### GUIDELINE FOR OCEANIC REGULATOR EQUIPMENT MINIMUM SERVICE INTERVALS

Due to variations of use and storage time that Oceanic Regulator equipment may be subjected to, the Guidelines and defined Intervals given herein are subject to the discretion of the owner of the specific product. Inspection and/or service indicated must be performed only by an Authorized Oceanic Dealer.

Personally owned equipment used for recreational diving activity:

Equipment used 100 dives or less per year should be serviced at least once per year. Equipment used more than 100 dives per year should be serviced after 100 dives prior to further use. Equipment stored more than 6 months should be inspected/serviced as required, prior to use.

Equipment used for dive training and/or consumer rental activities: Equipment should be inspected prior to every use. Equipment should be serviced at least once every 6 months regardless of use. Equipment should be serviced after 100 dives prior to further use. Equipment stored for more than 3 months should be inspected/serviced as required, prior to use.

#### Regardless of ownership or intended use:

Equipment should be inspected/serviced if it displays any signs of leakage, malfunction, free flowing, any signs of deterioration, or improper performance or breathing effort.

Equipment should be inspected/serviced if the first stage inlet filter shows any sign of residue or discoloration.

#### RECORDS

First Stage Model	
First Stage Serial #	
Second Stage Model	
Second Stage Serial #	
Octopus Model	
Octopus Serial #	
Date of Purchase	
Oceanic Dealer	
Dealer Phone No.	

#### **INSPECTION / SERVICE RECORD**

First Stage Serial Number:	
Second Stage Serial Number:	
Octo Serial Number:	
Date of Purchase:	
Purchased from:	

Below to be filled in by an Authorized Oceanic Service Facility:

Date	Service Performed	Dealer / Technician

#### **OCEANIC WORLD WIDE**

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