

## **BLUEGRASS DIVE CLUB REGULATOR CARE TIPS      Feb 9, 2010**

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**SUMMARY:** If you understand how your regulator works and how to care for it, it will last longer and perform better, ultimately letting you safely enjoy your diving more. After all, it is life support equipment, and there's no reason to sacrifice good breathing for yourself or anyone else who might need help in an emergency.

### **HOW REGULATORS WORK IN BASIC:**

1<sup>st</sup> stage regulates varying pressure in tank to a fixed amount in the hoses (120-150psi)

2<sup>nd</sup> stage delivers gas balanced to ambient pressure for breathing

Most regulators today are "downstream" demand designs, piston or diaphragm

Some 2<sup>nd</sup> stages offer adjustability to allow easier breathing and anti-freeflow control



**FIRST STAGE**



**SECOND STAGE**

### **SIMPLE CARE TIPS:**

First, read your owner's manual. The manufacturer is the first, best source for care and use tips for your regulator.

**During a trip,** all you need to do is proper rinsing in between dives. Make sure the dust cap is in place on your first stage. Use warm, fresh, clean water, either in a rinse bucket or from a low pressure hose. Dunk/rinse your regulator set in the water, keeping the 2<sup>nd</sup> stages lower than the first stage. Be sure not to press the purge button on second stages when they are under water. There's no need to soak the regulator set for a long time; we're just rinsing off the salt. Then simply lay the regulator out to dry (not in direct sunlight). Don't use forced heat (such as a hair dryer) on it. Don't hang it up by a single hose.

**When you get home from a dive trip,** this is the time to give your regulator a nice long soak to really get rid of the salt, dirt, and debris. Fill a tub or other large container with warm, fresh water. You can add a *tiny* bit of gentle soap, but it isn't necessary. Again, make sure the cap is in place on the first stage, and don't press the purge button on the second stages. Let the regulator rest in the water for a few hours, then rinse the whole thing off with warm water and lay it out to dry.

**When storing your regulator for weeks or months,** keep it in a cool, dry place (not the garage). Coil the hoses gently, not tight, and protect the unit by placing it in a padded bag. Make sure the cap is in place on the first stage. If the second stage is equipped with an anti-engraving switch, engage it.

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## **WHAT WEARS/FATIGUES:**

*Metal parts:* when drying, salt crystallizes & expands, damaging chrome & soft brass

*Plastic & rubber parts:* deform over time, get cut by dirt/debris, harden, stop sealing

*Seats:* critical points where gas flow starts and stops; will leak/blow out if not replaced

*O-rings:* some are stationary (static), some move (dynamic), but both wear out

*Hoses:* become hard, loose flex, outer casing cracks, stress at fittings, leak and fail

## **WHY BOTHER WITH ANNUAL SERVICE?**

***It's your life support equipment.*** If your regulator fails on a trip, renting one can be a frustrating inconvenience. And if a failure happens while on a dive, the situation can become catastrophic in no time.

***It's recommended by all manufacturers*** – just like caring for your car. Even if the regulator is not being used, rubber and plastic parts deteriorate and age (seals, o-rings, valve seats, diaphragms, etc.).

***It ensures you can breathe easily and effectively.*** When not serviced and tuned, a regulator can get harder to breathe. What you are “used to” may not be normal; you might be cheating yourself out of easier breathing, which is what we need to relax under water and enjoyably make a tank last longer. Conversely, an out-of-tune regulator can over pressurize and free flow, which can be a nuisance and/or a real danger.

***What happens during an annual service?*** The regulator is completely torn down to each of its individual components. O-rings, seals, and seats are discarded, and the remaining metal and plastic parts are thoroughly scrubbed and degreased in an ultrasonic cleaning machine. New soft parts from manufacturer kits are lubricated with oxygen-compatible grease and installed when the unit is reassembled. The first stage is then tuned to its proper intermediate pressure, and the second stages are tuned to the proper breathing effort. Hoses and gauges are inspected as well. For most regulators, the annual service process takes two to three hours.

## **QUESTIONS?**

Feel free to contact me with any questions at all about your regulator and other diving equipment. I am happy to advise you on performance, durability, troubleshooting, etc.

If you want to learn even more about the function, care, and repair of regulators and other scuba equipment, consider taking my PADI “Equipment Specialist” Course at New Horizons. It's a one-night program, and you learn a lot more about what you can do to care for all of your diving equipment.

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Happy Diving!!!!