

SDM SPECIAL SERIES ON REGULATORS

DX 500

ProSub DX 500



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Although ProSub isn't exactly a household word among divers, you may already have used one of its regulators without being aware of it. ProSub is an original equipment manufacturer (OEM) with ten years of experience producing regulators that are sold under other labels. In its Gardena, California plant ProSub manufactures both breathing systems and buoyancy devices. Four years ago the company began marketing two of its own regulators, the Maxair I and the Proair I. The Maxair I had a cylindrical, balanced second stage and was the top of the line. The Proair I, a more conventional design, was the better seller. In 1986, the ProSub brass decided to forego the premium market and concentrate instead on an inexpensive, basic regulator. Both units were discontinued in favor of the second generation ProSub DX 500.

What do you get when you buy this regulator? You get mainstream design, including a balanced piston first stage and a downstream second stage with a plastic housing. There are few bells and whistles, although the DX 500 has four low pressure ports on a swivel, along with two high pressure ports. A choice of colors is available for the cover. The entire package

comes in at a \$190 list price.

The first stage layout will look familiar to close observers of the regulator scene. Like many others it is based on the original flow-through, balanced piston design—introduced 22 years ago—that has become an industry standard. For the DX 500 first stage, ProSub engineers made several changes. To improve flow characteristics, they enlarged the bore and reduced the length of the stainless steel piston. A series of smaller ports was placed in the perimeter of the first stage body to allow injection of silicone grease into the ambient pressure chamber. This provides protection against environmental contamination, as well as against freezing at low temperatures. On the swivel cap, four low pressure ports are angled to reduce stress on the hoses. Two high pressure ports are on the first stage body, giving the diver a choice of either side for mounting the submersible pressure gauge and instrument console. The hefty yoke will support more than 3,500 psi, while the European version with a DIN fitting is good for 4,000 psi. Intermediate pressure is 135 psi.

The second stage is the same as that of the Proair, except the case is now made from an ultra-lightweight

resin. The cover on our test model was yellow, one of five choices available. The others are blue, flamingo pink, silver and black. Orange is used for the octopus version, which also has an orange silicone mouthpiece and a longer hose.

The most unusual feature of the second stage is its lockdown purge button. On all downstream second stages, the soft low pressure poppet eventually becomes worn because of spring pressure against the valve seat during storage. Ultimately, this will cause air leakage from the second stage and require replacement of the poppet at annual overhaul time. Manufacturers have come up with all sorts of devices to keep the purge button depressed, thereby relieving stress on the poppet. The first ones were small plastic spoons or keys the owner had to set in place manually. They were often lost or ignored. Later, tabs or plungers were built into the second stage cover. ProSub has developed the most effective and simplest solution yet. By depressing and rotating the button to line it up with the arrows molded in the surrounding ring, the purge button is locked down and remains that way until it is rerotated. If you forget to release it, the freeflow

that begins as soon as the air is turned on will remind you.

Mechanically, the second stage follows general industry design for a lever-actuated, downstream valve. The diaphragm, exhaust valve and mouthpiece are all made of silicone. Surrounding the second stage case is a hefty split ring, made from a chromed brass casting. Two hex screws have to be loosened to remove it. It is used instead of a conventional thinner single ring to provide more protection for the plastic case when it is being transported in the diver's bag.

Our test procedures showed the DX 500 to be a steady performer with few surprises. Breathing effort remained the same in most positions. There was a slight freeflow when I descended head down, a common characteristic in most regulators. Breathing effort in-

creased significantly when on I was on my back looking up, but that, too, is typical of conventional second stages. A pleasant surprise was the absence of water leakage in this position.

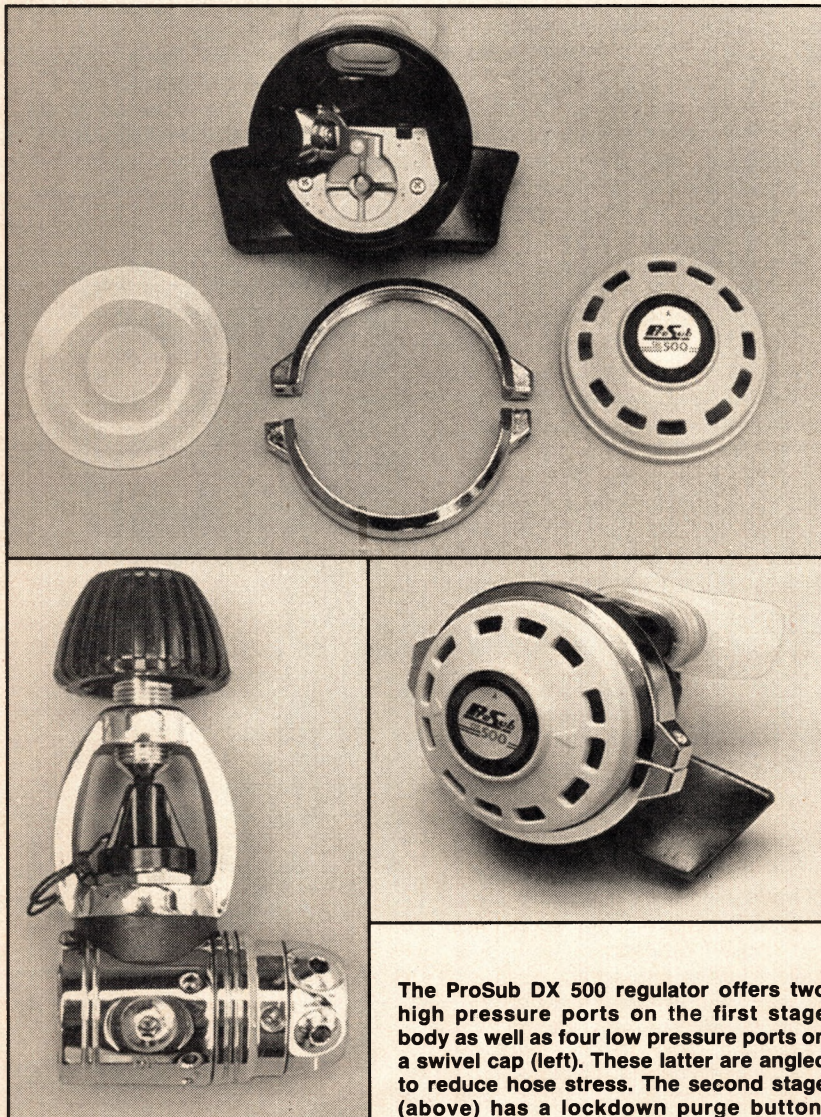
Clearing the second stage of intentionally induced water required just a small puff of air. Pushing the purge button supplied enough to do the job automatically, without wasting any. Slowly sipping air provided a smooth, even flow, with a normal cracking effort (the amount of suction needed to start the flow). At a depth of 80 feet, the DX 500 provided enough air for hard swimming with a heavy breathing rate, although effort was greater than my comparison regulator, a premium-priced model. When tank pressure reached 300 psi, breathing effort increased noticeably.

The bite tabs on the silicone mouth-

piece of the DX 500 are very thin. This keeps the diver's front teeth close together, creating a mechanical obstruction to airflow and increasing turbulence. If this were my regulator, I would replace the mouthpiece with one that has thicker bite tabs. That would be an easy, low cost method of improving breathing performance.

There are lots of regulators on the market that are similar to the ProSub. To make an intelligent choice, a diver should compare the features of each one. What does the DX 500 have going for it? It is made in the USA, by a company with ten years' experience in this field—one that concentrates only on regulators, buoyancy compensators and instruments. Its uncomplicated, basic design should provide reliability and easy service. The purge button lockdown device is certainly a mark in its favor. A one owner, limited lifetime guarantee is offered, as long as the mandatory annual service is performed. For a diver on a limited budget, or one just getting started, ProSub's list price of \$190 represents an attractive option.

For more information contact ProSub at 341 East Alondra Boulevard, Gardena, California 90248. ☎



The ProSub DX 500 regulator offers two high pressure ports on the first stage body as well as four low pressure ports on a swivel cap (left). These latter are angled to reduce hose stress. The second stage (above) has a lockdown purge button.

PROSUB DX 500

First stage:

Type.....Balanced, flow-through piston
Maximum pressure3,500 psi
MaterialsChrome plated brass body
Stainless steel piston
High pressure portsTwo, $\frac{7}{16}$ "
Low pressure portsFour, $\frac{3}{8}$ "
on swivel end cap
Intermediate pressure135 psi
Environmental protectionStandard, silicone injection ports
Hose length26"

Second stage:

TypeDownstream, lever action
MaterialsCase and cover: lightweight resin
Diaphragm, exhaust valve and mouthpiece: silicone
Valve seat: neoprene
ColorYellow, blue, black, silver, flamingo pink, orange (octopus)
Special feature.....Rotating lockdown purge button
Warranty ..One-owner limited lifetime
Price.....\$190