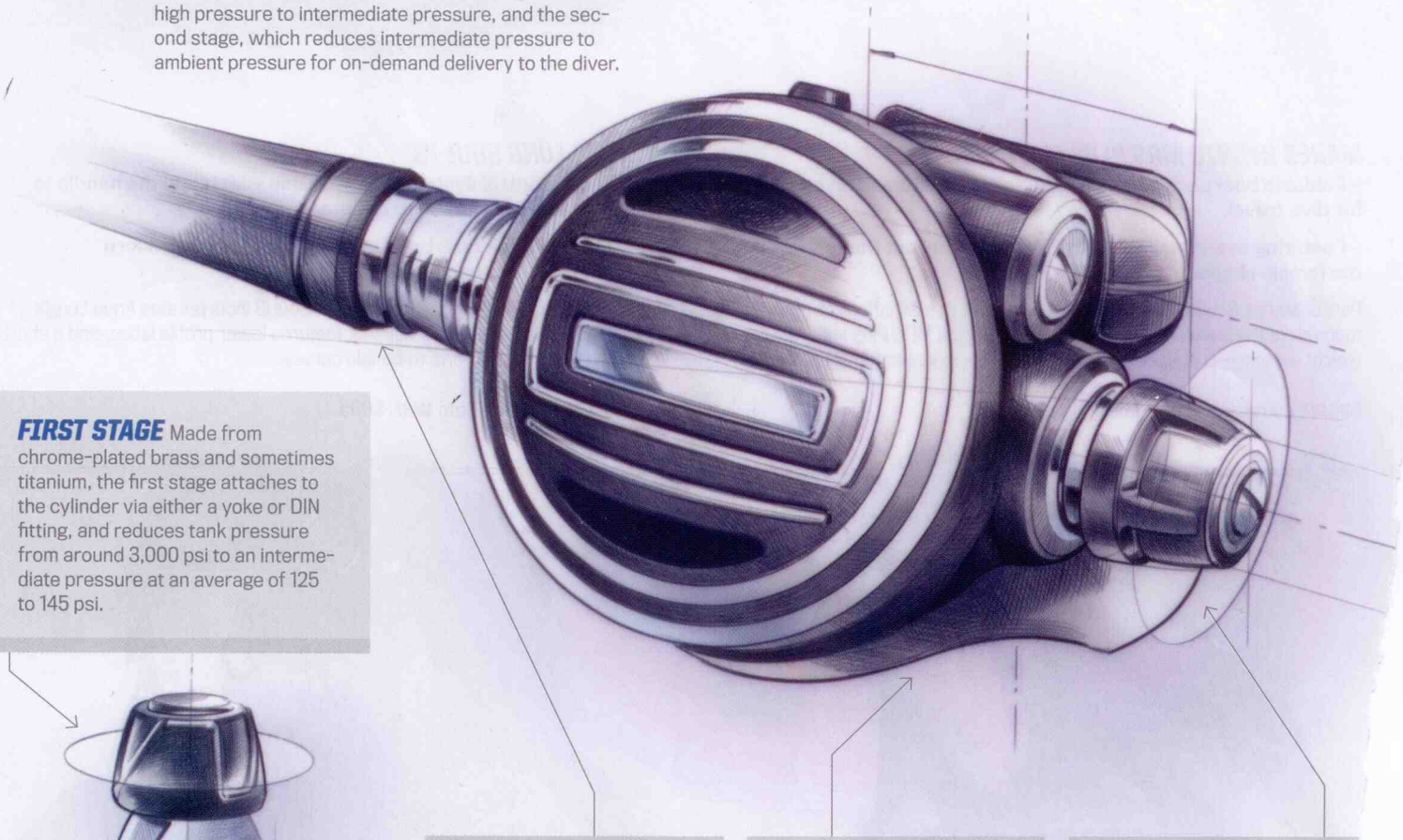
2014 GEAR GUIDE

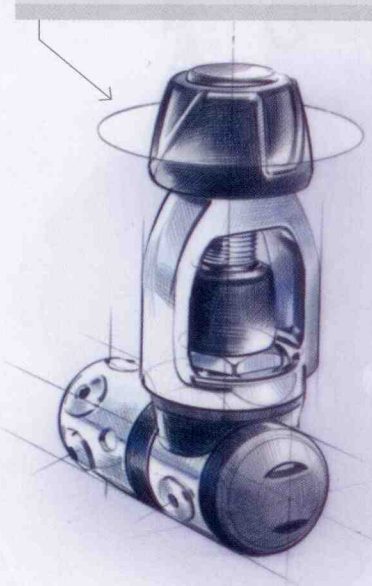
REGULATORS

Modern regulators run the gamut in size, style, features and price, but all of them offer reliable air delivery. The key is to find the reg that provides the best breathing performance at the depths you normally dive, with the features that fit your diving style.

GENERAL You can't breathe directly from a scuba tank because the high-pressure gas would damage your lungs. Hence, the need for a regulator. A reg is made up of the first stage, which reduces gas from high pressure to intermediate pressure, and the second stage, which reduces intermediate pressure to ambient pressure for on-demand delivery to the diver.



FIRST STAGE Made from chrome-plated brass and sometimes titanium, the first stage attaches to the cylinder via either a yoke or DIN fitting, and reduces tank pressure from around 3,000 psi to an intermediate pressure at an average of 125 to 145 psi.



THE HOSE First and second stages are connected via an interstage hose. These hoses commonly have a rubberized outer layer, but braided hoses have recently become popular because they are lightweight and flexible, and coil easily.

MATERIALS Second-stage casings are normally made of thermoplastic polymers, although metal or partial-metal casings are not uncommon. Internal hard parts are usually made from stainless steel. Some higher-end models use titanium, which is corrosion-resistant and lightweight.

USER CONTROLS The dive/predive switch is useful in preventing free-flows on the surface. The breathing-resistance knob can be used to tune out positive pressure and free-flows caused by current, or modulate work of breathing as depth increases.

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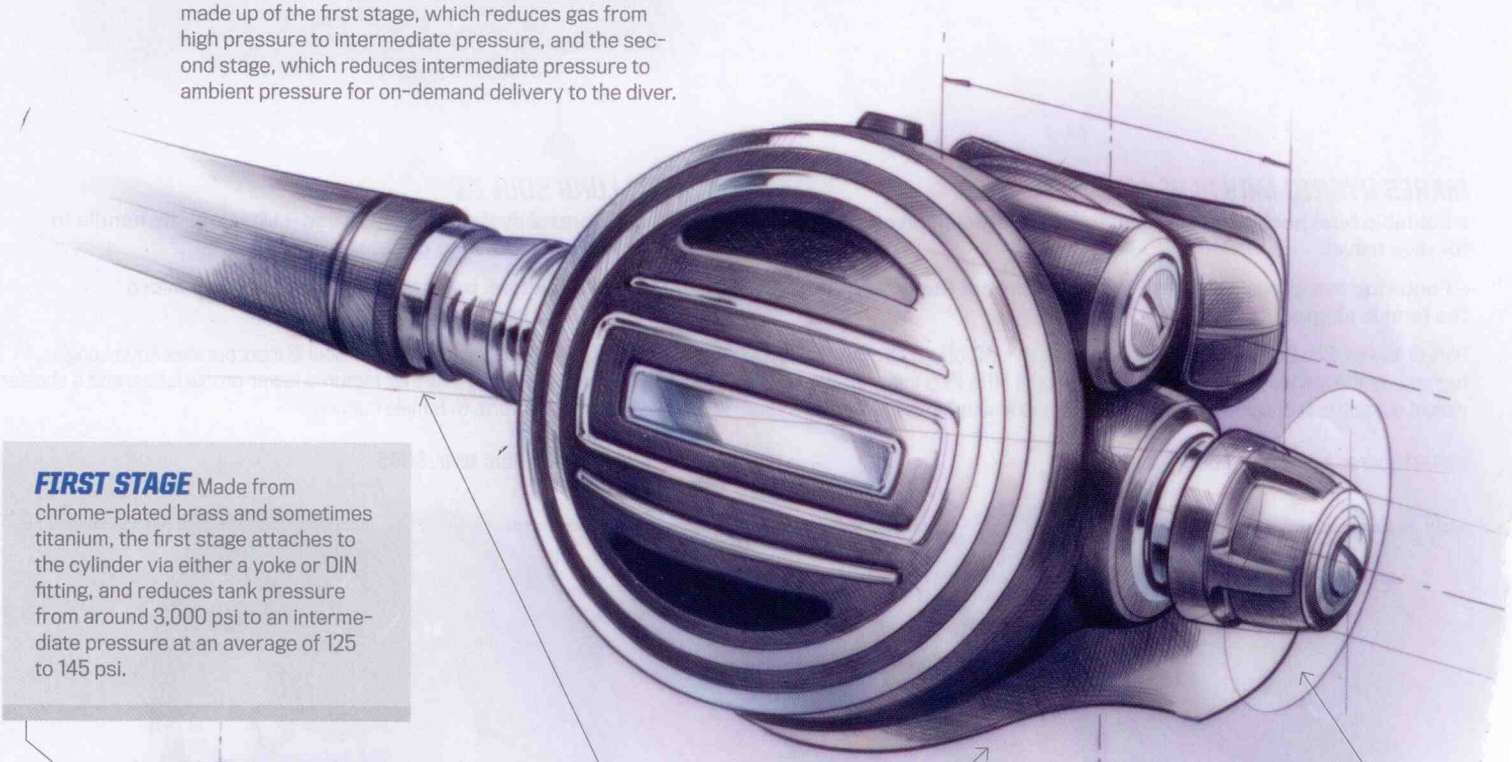

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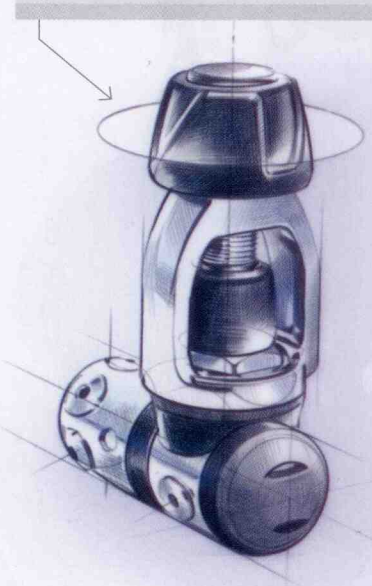

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Out of the Box

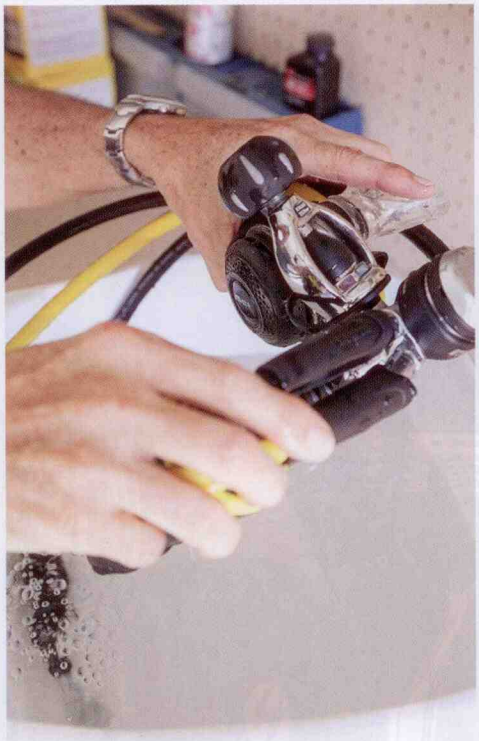
1 Check the first stage to make sure all ports have plugs that are screwed in tight. Inspect the second stage for a tight casing cover and exhaust tee, and make sure the mouthpiece is secured with a clamp or zip-tie. Some divers take this opportunity to gently wash the mouthpiece in warm, slightly soapy water.

2 Mount the first stage on a tank, then install the primary second stage and octopus to the low-pressure ports on the right side that offer the best hose routing. Do the same with the BC and drysuit inflator hoses on the left side, while connecting your SPG/console to the most convenient high-pressure port.

3 With all hoses tightened, slowly turn on the tank valve. Depress the purge button, work the user controls, and breathe through both the primary second stage and octopus to make sure everything functions properly.

4 Visually inspect all egulator hoses to ensure here are no cracks, nd make sure there are o holes or tears in the outhpiece or cracks in e second-stage housing.

) Disconnect the gulator from the tank, lace the dust cover, ale forcefully and hold acuum. The reg should in either a small trickle air or no air at all.



HOW TO CARE FOR REGULATORS

- **FIRST, MAKE SURE** the dust cap is in place. Never, ever allow water to seep into the first stage's inner workings.
- **GIVE THE REG A QUICK RINSE** with a low-pressure water hose to wash away any salt or sand. Then soak the reg in fresh water for 10 to 20 minutes to loosen or dissolve any residual dirt struggling to hold on.
- **DURING THE SOAK PHASE,** give the second stage a couple of swishes (without depressing the purge button) to get water flowing through the mouthpiece and exhaust tee. Then remove the reg and give it a final rinse. Pull back the hose protectors so you can get at those connections.
- **GIVE BOTH FIRST AND SECOND STAGES** a gentle shake to clear any excess water from the yoke and exhaust tee. If there's a tank handy, run some air through the system to blow out any residual water. Then towel off the reg while inspecting for damage or wear, coil it loosely, and lay it (don't hang it) out of direct sunlight.
- **REMEMBER, REGS ARE** made to get wet. Sitting in the closet for too long collects dust, dries out O-rings and stiffens user controls. Go diving often – both you and your reg will be happier for it.

What You Need to Know About a First Stage

1 Piston and diaphragm

These are two approaches to first-stage design that accomplish the same goal. One uses a rigid piston to move air, the other a soft diaphragm. Both have been around for decades and are proven performers; however, diaphragm systems are often preferred by divers who frequent cold or contaminated waters.

2 Unbalanced, balanced or overbalanced

Unbalanced first stages are low cost but don't compensate for tank-pressure changes, so as the SPG's needle drops, breathing resistance increases. Balanced first stages are able to maintain a steady intermediate pressure, regardless of cylinder pressure, so breathing will be as easy at 500 psi as it is at 3,000 psi. Overbalanced first stages take it a step further by progressively increasing intermediate pressure as depth and gas density increases.

3 Number of ports

More ports provide more hose-routing options. Some regs have only one high-pressure port and just a few low-pressure ports; for some divers, this is enough, but divers who like to hook up redundant systems or who dive in a drysuit will need more.

4 DIN vs. yoke

The yoke fitting screws onto the standard K-valve found on most aluminum 80s, while a DIN fitting screws into a specially threaded DIN valve. DIN fittings attach to the tank more securely and are designed to withstand higher pressures.

5 Environmental kits

These kits keep water out of the first stage, preventing contamination in dirty water or icing in cold water. Keeping water out can also reduce the need for maintenance.