

Your First Set of Gear: A Buyer's Guide

What you need to Know, from head to toe, to get the gear that's right for you.

Buying scuba equipment is an important and exciting rite of passage for all divers. The decisions can be complicated and the process intimidating. But armed with knowledge and with the support of experienced dive professionals, this can be a really fun experience.

So take a deep breath and relax. Between our advice and your instructor's help, we'll have you outfitted in no time. It's helpful to think of buying gear in two phases: first, the basic stuff you need for class; second, the major pieces of life support--regulator, BC and dive computer--that you're allowed to purchase once you've got a C-card. Let's start with the basics.

Phase One: The Basics

Mask: The one-pane oval mask of "Sea Hunt" and those old Bond films is practically a relic. In its place is a variety of styles for a world of faces. Your job: Choose the one right for yours.

What it does: The mask creates an air space in front of your eyes that allows them to focus under water. The nose pocket allows you to equalize the air pressure in your mask as you go deeper, so swim goggles just won't do the job.

What to Look For: A good watertight fit. Experts from *Rodale's Scuba Diving* have come up with this plan for foolproof mask fitting:

1. Look up at the ceiling and place the mask on your face without using the strap. It should rest evenly with no gaps.
2. Place a regulator or snorkel mouthpiece in your mouth. Does the mask still feel comfortable? Any gaps yet? (If you don't have a snorkel or regulator, trying opening your mouth a little to simulate the breathing equipment.
3. Look forward. Place the mask on your face without using the strap and gently inhale through your nose. The mask should seal easily on your face. Caution: A strong inhale will close minor leak areas and invalidate this test.
4. If the mask is still in the running, adjust the strap and put it on your face. Make sure the nose pocket doesn't touch your nose and that the skirt feels comfortable on your upper lip. Any mask that passes this test is a potential keeper.

You'll find a whole range of options on masks, including side, top and bottom panes for a wider field of vision. Some don't like the lines created in the field of vision by side panels or "gauge viewers." Some also have purge valves for venting any water that leaks in, and others have quick strap adjustments. Common criticisms of purge valves include salt and sand causing them to leak or the valves themselves interfering with equalizing procedures. Some have clear silicone skirts -- which are most popular among newer divers -- or solid color or black skirts, which help

Your Local Dive Shop (LDS)

Retail dive stores have been the focal point of local dive support since recreational diving became popular. Your local dive store can provide instruction, dive travel, local dives, inspection and repair services, compressed air, rental equipment, equipment advice and the opportunity to look at, feel, compare and test equipment before purchase. In addition, the store can back up products immediately if necessary. Personal contact is also an important part of a dive store's value. In short, a dive store is in a better position than a mail-order dealer to provide the service and support you need and should expect.

deflect glare and are popular with more experienced divers. Some are high-volume -- creating a large space between the glass and the diver's face -- which isn't as confining, while others are low-volume which are easier to clear and provide better peripheral vision.

These options (and a range of color schemes) are a matter of personal preference--just make sure the mask you choose fits right.

Cost: From \$45 to \$150

Snorkel: It seems simple enough: a curved tube that lets you breathe while floating face-down on the surface. Yet, as you look at the giant wall of snorkels at your local dive store, you'll see an array of options and features to choose from. Don't worry. Stay focused on the basics.

What It Does: As a diver, you primarily use a snorkel to conserve air in your tank when on the water's surface. In addition, many divers enjoy snorkeling as well so having a quality snorkel might be more important to you.

What to Look For: Comfort. You want a mouthpiece that feels good in your mouth and breathes dry and easy. The problem is, most attempts to keep snorkels dry also make them bulkier and harder to breathe through. The snorkel for you is one with a good compromise between ease of breathing and dry comfort. Remember, the bigger a snorkel is, the more drag it creates in the water. Also important: how the snorkel attaches to your mask. Look for a durable, yet simple and easy-to-operate attachment.

As with most technology, snorkels are getting fancier. You can find "dry" or "hyper-dry" or "semi-dry" snorkels which prevent water from entering the end of the tube. These snorkels will be more expensive, but might be an option worth considering.

If you don't plan on doing a lot of snorkeling, this is the one piece of gear you can skimp on. Get a simple, basic model and be done with it.

Cost: From \$15 to \$75.00

Fins: Fish don't have legs for the simple reason that fins are the best way to move through water. So if you're going to play in the fish's territory, you need a good set of flippers too.

What They Do: Fins translate power from the large leg muscles into efficient movement through water, which is 800 times denser than air.

What to Look For: Comfort and efficiency. When trying on fins, look for a snug fit that doesn't pinch your toes or bind the arches of your feet. If you can't wiggle your toes, the fins are too small.

Efficiency of fins is largely determined by their size, stiffness and design. Divers with strong leg and hip muscles can efficiently use a bigger, stiffer fin. Smaller divers or less conditioned divers will be more comfortable with smaller, more flexible fins. Finally, make sure buckles and straps are easy to use.

BONUS: Full-Foot or Open-Heel Fins?

Full-foot fins don't require dive booties and are best suited mainly for warm waters. The straps of open-heel fins can be adjusted for the different booties you may wear or for different family members and children as they grow.

Open-heel fins require less effort to put on, especially if a pull tab is added to the strap. The dive booties required with open-heel fins also provide foot protection and comfort while diving and walking.

There are 2 common principles in providing underwater thrust with fins: channeling or snap. Split fins have become much more popular in recent years because the technology improves channeling. This means your kicks are more efficient and you don't have to work as hard. The efficiency gained comes at a cost -- some complain that you'll lose a little thrust or speed, but the real cost is monetary as split fins run about \$50 - \$150 more than their paddle fin peers. Some paddle fins are designed to mimic the channeling abilities of split fins, but few do it as well. The main advantage to the channeling paddle fins is the cost. Stiffer paddle fins are banking on the "snap" principle. As you kick, the fins create a snap effect providing greater thrust but with requiring more strength.

Cost: \$65 to \$250.

Exposure Protection Suits: Form-fitting exposure suits are usually made of foam neoprene rubber (wetsuits) or spandex-like materials (skins), sometimes with a fleece lining.

What They Do: Exposure suits insulate you against the cooling effect of water, which can rob your body of heat 25 times faster than air. The thickness and type of exposure protection you need depends on dive conditions. Simple Lycra suits provide little thermal insulation, but do help protect against scrapes and stings.

What to Look For: Fit and comfort. Exposure suits should fit snugly without restricting movement or breathing. Reject any suit that's too loose, however. Gaps at the arm, leg, crotch and neck allow water to circulate and defeat the suit's ability to prevent heat loss.

Cost: Wetsuits and skins range from \$70 to \$650. Dry suits can cost from \$650 to \$2,800.

Exposure Suit Comfort Zones	
Water Temp	
75-85F	1mm neoprene / Lycra Skin / Polartec
70-85F	3mm neoprene
65-75F	5mm neoprene
50-70F	7mm neoprene
35-65F	drysuit

Once you're a newly minted diver, the anxiety you had about buying gear will likely be replaced

with a rush of excitement--a desire to max out the plastic or convert the Roth IRA into a heap of the latest and greatest in scuba gear. Fine. Having your own gear is essential to enjoy this sport fully and to maximize your comfort and safety. Just remember that your experience with equipment is

How A Wetsuit Works

A wetsuit keeps you warm in two ways:

1. **Keeping Water Out.** Any water that gets inside the suit is going to leak out again. When the water is inside, it absorbs some of your body heat. When it leaves, it takes that heat with it. So the first thing a wetsuit has to do is keep the cold ocean from flushing through it. A good fit, one that feels equally snug everywhere, is critical, so the space the ocean wants to use to flow along your skin is as small as possible.
2. **Providing Insulation Against Heat Loss.** A little science here: Solids and liquids conduct heat well; gases do not. Air, for example, is about 20 times less conductive than water. As a practical matter, good insulation--above or below water--is all about trapping air. That's why neoprene foam works so well. Gas bubbles are permanently trapped inside the "closed cells" of the wetsuit material. Other "innovations"--such as metal foils and fleece linings in suits--do nothing to enhance insulation. However, some features can help the suit do its job. They include: wrist, collar and ankle seals; sealing flaps behind zippers; pre-bent arms and legs; and smooth inner coatings to minimize water flow inside the suit.

limited. You've got to study the field and understand what you want -- and need -- out of each piece of gear.

Phase Two: Life-Support Equipment

BC/BCD (Buoyancy)

The BC is the most complex piece of dive equipment you'll own and maybe one of the most important. So choose carefully based on the style of diving you'll be doing most.

What It Does: What doesn't it do? It holds your gear in place, lets you carry a tank with minimal effort, floats you at the surface and allows you to achieve neutral buoyancy at any depth.

What to Look For: Correct size and fit. Before you try on BCs, slip into the exposure suit you'll wear most often. Look for a BC that fits snugly but doesn't squeeze you when inflated. The acid test: inflate the BC until the overflow valve vents. The BC should not restrict your breathing. While you've got the BC on, test all valves for accessibility and ease of use, then make sure the adjustments, straps and pockets are easy to reach and use.

Pay particular attention to the inflator hose. Is it easy to reach and extend over your head? Make sure there's a clear distinction between the inflate and deflate buttons and that you can operate them easily with one hand.

This is an important piece of equipment that you can expect to use for many years. Don't skimp; go for quality.

Test as many different models as you can in real diving situations before buying. Rent them if you have to.

Cost: \$300 to \$850.

Regulators: The good news: Among major-label regulators--the kind sold in dive stores--there is no junk. Regulators have been perfected to the point [hat even budget regulators can offer high performance. However, you must do your homework before buying this vital piece of gear. We can help: Rodale's Scuba Diving's Scuba-Lab has tested more than 300 regulators in thousands of breathing machine tests.

What It Does: Converts the high-pressure air in your tank to ambient pressure so you can breathe it. A regulator must also deliver air to other places, such as your BC inflator and alternate second stage.

What to Look For: High performance. The best regulators can deliver a high volume of air at depth, under heavy exertion even at low tank pressures. Some regulators also have diver-controlled knobs and switches to aid this process, so it's important to understand the controls and how they work.

Comfort. Look for a comfortable mouthpiece and have your local dive store select hoses of the right length for you.

Try as many regulators as you can in real-world diving situations. Breathing on a regulator in a dive store tells you nothing about how it will perform under water.

How Much BC Lift Do you Need?

Tropical Diving (with little or no wetsuit protection) - 12 to 24 pounds

Recreational Diving (with a full wetsuit or dry suit) - 20 to 40 pounds

Technical Diving (or diving under other demanding conditions) - 40 to 80 pounds

Cost: From \$225 to \$1,950.00

Computers: Nobody enjoys working the dive tables, but they're an invaluable tool for safe diving. Dive computers are an even better tool for the same reason a laptop is better than a slide rule.

What They Do: By constantly monitoring depth and bottom time, dive computers automatically recalculate your no-decompression status, giving you longer dive times while still keeping you within a safe envelope of no-decompression time. Computers can also monitor your ascent rate and tank pressure, tell you when it's safe to fly, log your dives and much more. That's why dive computers are almost as common as depth gauges these days.

What to Look For: User-friendliness. The most feature-packed dive computer does you no good if you can't easily and quickly access the basic information you need during a dive: depth, time, decompression status and tank pressure. Some models have both numeric and graphic displays for at-a-glance information.

Mounting options are an important feature to consider and let you position computers on your wrist, gauge console, hoses or attach them to BCs. Some computers are conservative in their calculations, automatically building in safety margins; others take you to the edge of decompression and trust you to build in your own safety margins.

Before you buy, ask to see the owner's manual and check it out. Complete and easy-to-understand instructions are important, especially on feature-packed machines.

Cost: \$300 to \$2,300.

So What's This Going To Cost Me? No doubt about it: scuba is a gear-intensive activity. But scuba gear is also built to last. When properly cared for and regularly maintained, your first set of gear could conceivably be your last. If you buy right, you'll buy once. Making sure you get gear that you are happy with should be your top priority.

A full set of equipment -- including regulators, exposure suits, a gear bag, a scuba cylinder, and everything else you'll need -- will run from \$1,500 to \$3,000. Add in a dive computer and you can get a great set of quality equipment for less than \$2,500. Buying a package usually saves money, and you'll often have access to promotions and specials that will include free or deeply discounted equipment. Don't be afraid to negotiate with your local dive store.

Invest Wisely. Yes, owning your own gear requires a considerable investment. But you can expect quality gear to last, literally, for years. You aren't buying running shoes or roller blades that

When You Get It, Take Care of It!

Scuba gear is designed to be rugged and durable. Most items will last you many years—if you take care of them properly. Some top tips from old pros:

- Immerse your gear in fresh, clean water after use.
- Partially fill your BC with fresh water, slosh it around, and then drain.
- Allow each item to dry thoroughly before storing in a cool, dry and clean area.
- Avoid prolonged exposure to sunlight, heat and chlorinated water.
- Do not allow contact with petroleum products or other solvents.
- Protect your gear from physical shock when transporting it, especially on airlines.
- At least once per year have your BC, reg and computer serviced by your dive store.
- Do not allow moisture into the air intake of your regulator's first stage, and do not depress the purge on your 2nd stage unless the unit is pressurized.
- Inspect each item of gear well before a planned dive trip so there is time for repairs.
- Do not dive if your equipment is less than 100% reliable.

eventually wear out and have to be replaced. When properly cared for and maintained, your gear should last as long as you want it to. Now that's a bargain.

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Sources:

Rodale's Scuba Diving
Your Eco Dive Center Instructors

Equipment Dictionary

aluminum-80	The most common scuba cylinder, so named because it is supposed to hold 80 cubic feet of air. In actuality, it usually holds about 77.4 cubic feet. annual - The required yearly visual inspection for scuba tanks. Also, a similar checkup for regulators.
BC	Buoyancy compensator. Also known as a BCD, or buoyancy control device.
boot (tank boot)	Protective covering on the bottom of a tank. The boot prevents the tank from damaging other equipment, dive boats or swimming pools. Most boots also prevents a tank from rolling, or helps steel tanks stand up.
booties	Footwear for divers.
bottle	Another word for scuba tank. Most often used to refer to a "pony bottle," a small tank used by divers as an alternate air source.
console	A unit attached to a hose from the regulator first stage for holding and displaying instruments, including dive computer, depth gauge and compass.
cylinder	Another word for a scuba tank.
doubles	Two tanks linked together for use on a single dive. The cylinders are connected to each other by a manifold valve system.
DPV	Diver propulsion vehicle, an underwater scooter.
dump	A valve used to deflate a BC.
farmer john	Wetsuit pants that extend over the upper body and shoulders (similar to overalls).
first stage	The part of the regulator that attaches to the tank and reduces the pressure of the air in the tank to an intermediate pressure.
free flow	An unwanted loss of air from a regulator.
glow stick	A chemical light stick usually attached to the tank valve during a night dive so a diver can be seen in the dark by his buddy and other divers. Also called a cyalume stick.
hydro	Short for "hydrostatic test." A pressure test for scuba tanks, performed in water depending on local regulations. In the United States, scuba tanks are "hydro'ed" every 5 years.
lead	The weights worn to offset a diver's positive buoyancy.
mil	Short for millimeter, usually used in reference to wetsuit thickness (i.e., a three-mil suit).

octopus	A backup or secondary regulator second stage.
o-ring	A pliable ring that forms a high-pressure seal on tank valves. Also used on underwater cameras and other equipment to provide a waterproof seal.
port	An opening in the regulator first stage for hose attachment.
Primary	The main regulator second stage, as opposed to the backup or octopus second stage.
quick disconnect	Anyone of several different types of fittings that can be used to remove a hose or strap quickly with one hand.
rebreather	An underwater breathing unit that recycles a breathing gas, removing carbon dioxide and adding oxygen.
second stage	The part of the regulator at the end of the hose that includes the mouthpiece. The second stage reduces the pressure in the hose to a breathable pressure.
shorty	A one-piece wetsuit with short legs and short sleeves.
spg	Submersible pressure gauge.