

Text by Simon Pridmore

In the first of a new two-part series, Simon Pridmore describes a few equipment-related problems that divers commonly encounter and offers some tips on how to avoid or deal with them.

For the many dives we do which are uneventful, there is always the odd dive where something takes place that reminds us of our vulnerability. This often involves the failure of a piece of equipment and many of us are guilty of not thinking too deeply about what to do if something goes wrong or how to prevent it from happening in the first place.

In this, the first of two articles on the subject, I run through a few problems that you will probably find yourself having to deal with at some point in your diving career, and run through some precautions to take and drills to practise, so you can be as well prepared as possible. Technical divers refer to this process as planning for the “what-ifs.”

Trials & Tribulations

Part 1: Planning for Gear Malfunctions

O-ring blowout

The O-ring on the cylinder valve (if you are using a regulator with a yoke/A-clamp fitting) is a tiny but crucial link in the process of moving the air from the cylinder to your lungs. If

this O-ring is missing or damaged, a seal cannot form, and air will escape when you attach your regulator and then open the cylinder valve.

The loud hiss of high-pressure air escaping tells you that either you put

the regulator on incorrectly or you have an O-ring problem. Whichever it is, you will almost certainly immediately become the centre of unwanted attention. You can avoid this by making a point of checking

that the O-ring is in place, untornd and unfrayed, before you fit the regulator, and by positioning your regulator first stage orifice snugly over it before tightening the yoke.

O-rings are designed to last many

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Poseidon Rebreather Save-a-Dive Kit with membrane mouthpiece, service kits for breathing loop, scrubber canister housing and hoses, O-rings, CC hoses, metric multi-tool, membrane cover, T-section, complete membrane holder, T-lunginsert, Molex O₂ sensor



OMS kit with O-ring and tools



Trident Dive Deluxe and Standard Save-a-Dive kits with O-rings for tank valves, hoses, regulators and pressure gauges (above)



Trident Dive Deluxe and Standard Save-a-Dive kits with Viton (Nitrox) O-ring kits for tank valves, hoses, regulators and pressure gauges (below)

years, but in the world of scuba diving, factors such as salt, heat and humidity can reduce their lifespan considerably. If the O-ring is absent or looks shabby, replace it. Most dive shops and online stores sell a handy little bullet-shaped tin, which contains spare O-rings and a pick to help you remove the old O-ring from the tank valve. Before these kits became common, good instructors used to keep a couple of spare new O-rings on their dive watch or computer strap, knowing that a leaky O-ring often messes up carefully scheduled plans.

It is good to be self-sufficient and have your own replacement O-rings

readily on hand, so you do not have to ask for help at a time when everyone around you is getting their own gear together and has their own problems to solve. You will also be perfectly placed to help dive buddies if their cylinders start hissing at them when they set up their gear.

Underwater, it is very unusual for the cylinder valve O-ring to fail, but it has happened to me. Then, the only way to fix the problem is to shut down the valve, which is possible if you are diving doubles or carrying another cylinder containing a breathable gas for the depth you are at. If you have just one cylinder, your only option is to go

to the surface, ideally with a solicitous buddy nearby ready to hand over his or her octopus if you run out of air on the way up. There is no reason to panic, just do not delay. You do not have much hesitation time. Tests suggest that your cylinder will be completely empty in only a few minutes.

How do you know it has happened? The sound is unmistakable. It is a deafening explosion behind your head that does not stop. Glance at your pressure gauge and you will see the needle moving. Even if the explosion did not make your mind up, this is a clear sign that you need to stop wondering and head up. You will still

A New Dive Book from Simon Pridmore

"Simon Pridmore's new book, 'Technically Speaking' is an outstanding tour de force from one of modern diving's most accomplished practitioners and best-selling authors."

— David Strike, Oztek & Tekdive Convenor

"Simon has completed a complex task with consummate skill and has accurately unravelled the when's, the who's and some of the why's, much of which would have been unjustifiably lost in the mists of time if not for this work."

— Kevin Gurr, Technical Diving Inventor & Innovator

"It will take some doing to better this account of tech's first steps... as no matter how much you know or think you know; you will still find many obscure historical gems..."

— Kevin Denlay, Early Adopter & Wreck Finder

Technically Speaking is the latest book from best-selling Scuba series author Simon Pridmore. It is a selection of themed talks telling the early history of technical diving—where it came from, how it developed, how it expanded across

the world, who the important movers were and how, in the decade from 1989 to 1999, the efforts of a few determined people changed scuba diving forever.

These ten years saw the greatest shake-up the sport has ever seen but technical diving's road to universal acceptance was anything but smooth, many obstacles had to be overcome and there were times when even viewed in retrospect, it seemed that its advocates might fail in their mission. Ultimately, success came down to per-

severance, people power, good timing and more than a little luck.

Available in hardback, paperback and ebook at **Amazon Worldwide, Apple, Kobo, and Tolino.** See **SimonPridmore.com**



be able to breathe through the regulator as you ascend—while the air lasts. Do not bother with your safety stop if you are on a no-deco dive. It is infinitely better to miss it than run out of air underwater.

Reduce risk by doing these things:

- Check your cylinder valve O-ring before every dive;
- Replace broken O-rings when you detect even a slight leak;
- Avoid going into deco when you are diving with only one cylinder; and
- Practise air-sharing ascents with your buddies from time to time.

Regulator free-flow

Having discussed one way by which you can quickly lose the air in your cylinder during a dive, I should also mention another way. Your regulator is designed with a downstream valve so that, if it fails, air will pour out of your scuba cylinder uncontrollably until it is empty. When you first learnt to dive, your instructor told you this was a good thing, and you went along with that because, at the time, you were more worried about suddenly having no air to breathe rather than having too much.

Of course, it is not a good thing.

NASA astronauts practice buddy-breathing during an under-sea training session (right). If you have a free-flowing regulator, move towards the surface with minimum delay and with your buddy right beside you in case you need his or her octopus.

In your beginner course, you probably simulated the experience of breathing across the powerful stream of air coming from a free-flowing regulator, while sitting on the seabed or the bottom of a pool. This is good training in one respect, in that, having done this in a controlled environment, you will know what to do if it happens for real.

On the other hand, the training is flawed in that this exercise might mislead you into thinking that the

thing to do if you have a free-flowing regulator is to stay where you are. In fact, as with a blown valve O-ring, unless you have an independent air source to switch to, rather than stay where you are and breathe in more carefully, the thing to do is to move towards the surface with minimum delay, again ideally with your buddy right beside you.

Proactive measures you can take to make sure your regulator does not free-flow include:



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Divers check their dive gear. When it comes to mouthpiece malfunctions, precautions one can take before every dive is to check the mouthpiece and the cable tie holding it in place, as well as carry spares of each in your save-a-dive kit.

- Keeping your octopus well secured to your BCD so it never drags in the sand or against the reef and gets damaged;
- Keeping your octopus' venturi-effect lever (if there is one) at negative when it is not in use;
- Rinsing out both regulator second stages well, post-dive; and
- Keeping your regulator well maintained. Have it serviced at the first sign of a problem.

Mouthpiece malfunction

Staying with regulator problems, second-stage mouthpieces can be the cause of unusual issues. The rubber

can split, and you can find yourself inhaling a fine mist of seawater with each breath, or the cable tie securing the mouthpiece can snap, leaving the mouthpiece attached to the regulator by friction only. At some point, that will not be enough, and the two parts will separate, leaving you with a mouthpiece between your teeth, a mouthful of water and nothing to breathe.

Even a small defect can turn out to be more than just an inconvenience. A diver once approached me and said that he loved the sport but was going to quit because after every dive he would get chest pains and

flu symptoms for about 24 hours. I checked his regulator mouthpiece. Sure enough, there was a tiny split, so we changed it and the problem disappeared. During each dive, the diver had been inhaling seawater with every breath and giving himself a bizarre form of self-induced bronchopneumonia.

Precautions:

- Make a point of checking both the mouthpiece and the cable tie that holds it in place, as part of your pre-dive equipment check; and
- Carry spares of each in your Save-a-Dive kit.



COMPOSITE BY G. SYMES

Runaway cylinder

This is something that happens much more frequently than it should. You are swimming along, when suddenly you feel unbalanced, and the regulator in your mouth starts to tug your head backwards. Your buddy points at you in horror, then disappears from view. The next thing you feel is someone shoving you from behind. At this point, you realise that your cylinder must have slipped out of the BCD cam strap, and your buddy is trying to push it back in.

If you have no buddy around, you can fix this yourself. If you are close to the seabed, first make sure the seabed is not covered with fragile marine life. Find an empty patch of sand or

rock. Then, settle down on your knees, reach behind you with your right hand to support the cylinder, undo the BCD and shrug it off as if you were removing a jacket, left arm first, keeping your teeth tightly clamped onto the regulator mouthpiece.

Bring the whole setup around to the front of your body, keeping it very close to you (especially if your weights are in the BCD), and refit the cam strap calmly (and tightly this time) before donning the BCD again and resuming your dive.

Even if the seabed is not close, you may be surprised at how, with a little practice, you can master this drill while staying neutrally buoyant in midwater.

Try doing it in a pool or shallow confined water first. The drill will improve your buoyancy control as well as boost your underwater confidence. Do not practise it alone though. Get a buddy to watch over you. Then, do the same for them while they try it.

Of course, it is much better if your cylinder never falls out at all. One way to reduce the likelihood of this happening is to soak the cam-strap with water before you lock it down onto the cylinder. But, the best way, and the method most guaranteed to have a 100 percent success rate, is to buy a BCD with twin cam-straps. Then the whole last section of this article becomes irrelevant.

NEW 4 in 1!

Simon Pridmore has released a new single-volume e-book, bringing together four books in his bestselling Scuba series:

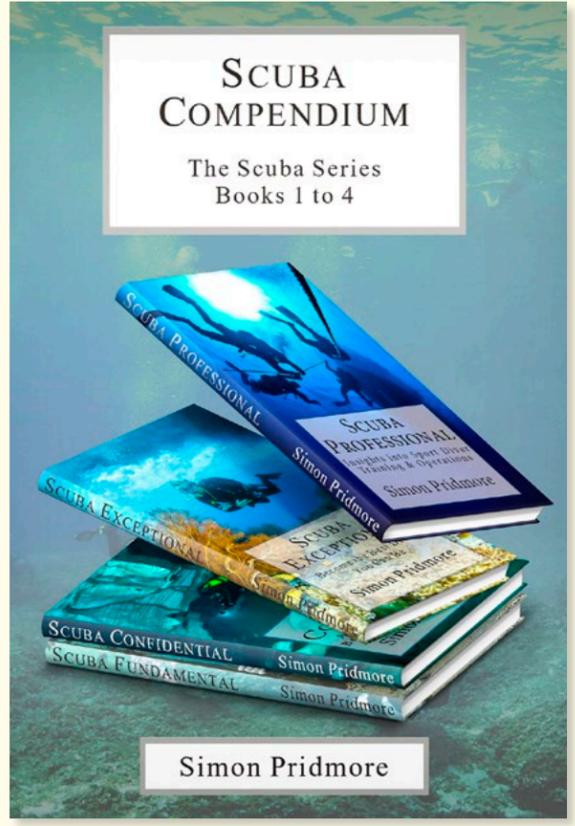
- *Scuba Fundamental – Start Diving the Right Way*
- *Scuba Confidential – An Insider's Guide to Becoming a Better Diver*
- *Scuba Exceptional – Become the Best Diver You Can Be, and*
- *Scuba Professional – Insights into Sport Diver Training & Operations*

As Simon puts it, this is “a remastering and repackaging of the original albums rather than a greatest hits.” Nothing is missing. *Scuba Compendium* gives e-book readers the advantage of being able to access all the knowledge contained in the four books in one place, making this a unique and easily searchable work of reference for divers at every level.

Simon has always promoted the idea of safer diving through the acquisition of knowledge, which is why he has chosen to release this highly accessible version. If you have read his work before, you will know that he provides divers with extremely useful advice and information, much

In my column in the next issue, I will go through a few more equipment trials and tribulations. □

Simon Pridmore is the author of the international bestsellers *Scuba Fundamental: Start Diving the Right Way*, *Scuba Confidential: An Insider's Guide to Becoming a Better Diver*, *Scuba Exceptional: Become the Best Diver You Can Be*, and *Scuba Professional: Insights into Sport Diver Training & Operations*, which are



of it unavailable elsewhere; his points often illustrated by real life experiences and cautionary tales. He examines familiar issues from new angles, looks at the wider picture and borrows techniques and procedures from other areas of human activity.

E-book File Size: 5298 KB
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now available in a compendium. He is also the co-author of the *Diving & Snorkeling Guide to Bali* and the *Diving & Snorkeling Guide to Raja Ampat & Northeast Indonesia*. His recent published books include *The Diver Who Fell From The Sky*, *Dive into Taiwan*, *Scuba Physiological: Think You Know All About Scuba Medicine? Think Again!* and the *Dining with Divers* series of cookbooks. For more information, please see his website at: **SimonPridmore.com**.