

HOW TO MAKE SOLO REBREATHER DIVING SAFER?

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Discussions about diving are very often boring. Always the same stories about numerous sharks dangerously close, strong current ripping a mask off or friendly dolphins playing during a deco stop. We heard them so many times. So if you want to have some fun, simply say that you dive on your own with a rebreather and wait for the reactions. You'll hear some nasty comments about you being an accident waiting to happen, and some people will show you clear signs of disapproval.

Why? Because everybody knows that CCR Solo diving is the most stupid thing to do on Earth after driving a motorbike eyes closed in Bangkok or throwing sand on Mike Tyson's face during his nap.

We all know that.

Even the stats show that most of the rebreather fatalities that occurred in the past few years involved CCR divers diving on their own.

Unfortunately, a poll on the RebreatherWorld Forum gave a very different trend.

View Poll Results: Do you solo dive with a rebreather?			
I'll never dive solo with a rebreather.		4	7.69%
I've done some solo rebreather dives, but never in an overhead environment (cave, wreck).		23	44.23%
I sometimes do solo dives with my rebreather, mainly in caves (or wreck).		8	15.38%
For most of my dives, my lovely rebreather is my only buddy.		17	32.69%

Of course, a poll only represents the opinion of a few individuals who want to answer the question. It cannot be considered as the "big picture" of the entire rebreather diver community.

Nevertheless, it shows that some rebreather divers keep on diving solo, even if the perceived risk is so high...






Why people don't dive solo with a rebreather?

Simply because that's one of the most basic rules one learns during the Open Water Diver course: "Never dive alone". It's so famous that it's almost a dogma. And it sounds so logical?

1. **Diving with a buddy is safer.** In case of problem, the buddy is very close, ready to help the rebreather diver by providing with either some gas in case of loop flooding or gas depletion, some advice about navigation, some help in finding out a leak in the loop or the gas supply, etc... A buddy is also a good way to survive in case of unconsciousness (hypoxia, hypercapnia, O2tox convulsions). The team mate will bring the unconscious rebreather diver back to the surface where one can safely breathe, speak, laugh and pay taxes.
2. **Diving with a buddy is more convenient.** The first example that comes in mind for a rebreather diver is the bubble check: any safe rebreather diver wants to be sure that there's no leak anywhere in their rig at the beginning of the dive, and a team mate is obviously very convenient to do that. He is also very handy when one needs to move a sling tank improperly clipped or remove a fishing line entangled with a tank valve.
3. **Diving with a buddy is much more fun.** Being able to share some experiences, to plan a dive together, to take pictures of each other, to play some stupid games during the long deco stops... there are so many examples showing why the buddy system has some clear benefits. And some people simply don't like to be alone.

So why diving solo with a rebreather?

If there still are some solo rebreather divers despite all the warnings you can read in most of the rebreather manuals, websites and forums, there should be some strong reasons for that. Some people think that buddies are not essential for a safe rebreather dive. Still on the RebreatherWorld forum, another poll gives us some clues:

View Poll Results: Why do you dive solo on a rebreather?			
It's better than having an OC buddy (noise, short BT)		8	12.90%
I simply like to be on my own		36	58.06%
I mainly dive in places where a buddy is useless		8	12.90%
I dive with a buddy but always loose him/her during the dive		3	4.84%
Other reason (please specify)		16	25.81%

Let's have a look at the different factors.

1. Is diving with a buddy much more fun?

It's clearly a matter of personal preference:

- **The Open Circuit buddy.** One of the problems a lot of rebreather divers have to face on a daily basis is the lack of rebreather buddies available. If you are

the only rebreather diver on a boat, chances are that you'll be buddy up with an Open Circuit diver. And that means short bottom time and a lot of noise all dive long. To be able to cope with your long bottom time, the Open Circuit diver will have to carry so many tanks that he/she will swim slower and will never be able to go through the restrictions as gracefully as you!

- **The annoying buddy.** CCR or OC diver, your buddy could really be a pain in the neck. You may be one of those people who simply like to be on their own. You like to go where you want, do what you want or change the dive plan the way you want without endless communication on the bottom. Being alone in the ocean surrounded by its creatures, exploring a fresh water cave or looking for artefacts in the silted-out room of a wreck.

2. Is diving with a buddy much more convenient?

Most of things that are easier to do with a buddy can also be done on your own. It's very often a matter of preparation:

- If you zip your dry suit alone, simply use a front entry zip.
- If gearing up your rebreather is a nightmare, use a bench at the right height, asks a member of the boat crew to help you or simply gear up at the surface if there is no current.
- How to check for bubbles in your back? You can simply use a small mirror or do a bubble check in a water tank or on the surface before you're actually gear up.
- Even complex tasks like surveying a cave can be done by divers on their own. It's just a little bit more consuming

3. Is diving with a buddy much safer?

According to Bob Halstead "looking at some accidents and fatalities, it looks like buddies sometimes increase the risk of a dive, either directly through unpredictable or unreliable actions, or indirectly, through an unfounded belief that security is enhanced by numbers alone, regardless of the training or state of mind of the buddy". I saw CCR divers going much deeper than their level of experience would allow them, just because they felt safer with someone else with the same lack of experience and the same inability to react appropriately in case of emergency. The same divers diving solo would have been scared and would have been much more reasonable. Sometimes, the buddy can even affects the safety of the dive, by improper decision or behaviour, unsafe practice or lack of experience, excessive stress or panic.

Unfortunately very often, you see buddies that are incompatible, or spending their dives looking for each other. Some divers, who claim to be a team on the boat, ignore each other in the water. Others are over-dependant on their buddies or may fight in case of emergency; or don't even recognize distress in their team mate. Stats are also full of divers left alone when a problem occurs, most of the time because their buddy simply panicked. Just being together is not enough.

Divers have to be able to recognize a problem and do something about it. Will an Open Circuit diver be able to recognize signs of hypoxia in his/her team mate and efficiently assist by injecting some safe gas in the loop? Or to understand that a

rebreather diver having trouble to slow down his breathing pattern maybe needs something else than simply stopping to swim?

Therefore the buddy system works better if both members of the team are competent rebreather divers with similar experience, interest and equipment.

How to make solo CCR diving safer?

Theoretically, the buddy acts as a kind of safety factor. He/she is not essential, but has the purpose of preventing problems by recognizing them and stopping their development or performing a rescue. Therefore, being alone does not affect the risks of the dive (DCS, current, contaminated breathing loop, etc). You just don't have the additional safety factor that a proper buddy could give you. However, don't forget that an improper buddy might actually be an additional risk factor.

If you consider that in most instances, a competent solo rebreather diver is safer than the average buddy dive, is there any way to improve this safety?

1. Training

All rebreather divers should be trained primarily as self-sufficient divers during their basic rebreather course. But that's often not enough to become a competent solo diver. So far, some training agencies designed specific courses for solo Open Circuit diving. There is no such thing for rebreather divers. And even if some other continuing education rebreather courses deal with that to a certain extend, none of them publicly endorse solo rebreather diving. A proper training course could help in really becoming self-sufficient by providing the student with more opportunities to practise some worst-case scenarios in a controlled environment and by adding more techniques to deal with any kind of emergencies.

2. Experience

Obviously a lot of experience is required to properly start to dive on your own. Two things will come with experience: The ability to evaluate the risk of a specific dive, and the ability to solve the problems with a lower level of stress. When one has dived in many different environments, it becomes easier to understand what could go wrong and to anticipate the potential problems. An experienced rebreather diver will also be able to stay calm while dealing with on of those problems, staying away from stress and panic, keeping their breathing rate quite normal.

3. Equipment

Obviously, being able to come back to the surface in case of complete rebreather failure is necessary. Therefore a bail-out option has to be thoroughly planned according to the dive parameters (depth, time, decompression obligation, current, etc). The Open Circuit option is still the most popular way. Unfortunately depending on the dive, the necessary amount of gas becomes huge and the perfect bail-out rebreather has still to be designed. For the time being, only a handful of homebuilt rebreathers are available on the market, mainly used by cave rebreather divers.

Becoming unconscious, and the associated risk of drowning, is also a big concern in the rebreather diving community. It looks like more and more rebreather divers use Full Face Masks or neck straps to make sure that they will not lose their mouthpiece. Adding a Bail-Out Valve (OC/DSV) is also a way to quickly react to some situations like severe hypercapnia while avoiding (or delaying) the unnecessary stress to close the DSV and switch to another regulator.

But we still have the case of the unconscious rebreather diver, on the bottom, in a wreck or a cave, with the airway well protected by a FFM. This diver is still safe as long as he's breathing and has some gas to breathe. But he could remain there, unnoticed, for quite a while before anybody at the surface starts to look for him, as it's well known that rebreather divers have huge bottom times.

So what's the solution to avoid this situation? A proper pre-dive discussion with the surface support about the planned bottom time? A dive light always on, to help the rescue divers to quickly locate the missing rebreather diver? A strobe clipped on the back of the unit? A waterproof beacon emitting a signal that will be located at the surface?

That's maybe one of the issues to be addressed in order to make solo rebreather diving safer. Because as soon as you dive in a tight cave, a low visibility quarry or inside a deep wreck, your buddy cannot do a lot to help you in case of emergency. You're pretty much already a solo rebreather diver...

References

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