



technical matters

Seven Deadly Sins of a Rebreather Diver

Text by Cedric Verdier

Except if you spent a few years in a catholic church or a few hours enjoying the movie with Brad Pitt and Morgan Freeman, the seven deadly sins are often considered a notion of the past. In the modern world, examples of pride or envy don't seem to immediately drive the sinner to hell, and lust is all over the Internet.

Nevertheless, they should be regarded as valid for a rebreather diver using a CCR or SCR. Looking at the statistics and the accident reports, the seven deadly sins of a rebreather diver can surely help you to buy an express ticket to hell. First class. One way.



DETAIL FROM HIERONYMUS BOSCH'S THE SEVEN DEADLY SINS AND THE FOUR LAST THINGS. C.1450-1516

Gluttony

Our body needs food. Our body needs oxygen, too. But too much food or too much oxygen can also kill you sooner or later. A setpoint too high on an eCCR, exceeding the MOD on an SCR, or simply exceeding the physiological limits of oxygen

exposure can lead a rebreather diver to oxygen toxicity and its various manifestations (acute Oxygen Toxicity poisoning on the Nervous System, whole body toxicity and its effects on the lungs, O₂-induced myopia).

- Limit your oxygen exposure.

Gluttony: Simply exceeding the physiological limits of oxygen exposure can lead a rebreather diver to oxygen toxicity...

Lust

Nitrogen is like having sex. It can give us a lot of fun, but it can also impair our judgement. Deep air divers are sometimes compared to drug-addicted people, and there is a good reason for that. An Equivalent Narcotic Depth too high is a good way for a rebreather diver to make a mistake while using his/her unit. And, for a same depth, a rebreather diver is always more prone to Nitrogen Narcosis than his fellow Open Circuit diver. Why? Because even with the most efficient scrubber, the CO₂ level in the loop will always be higher than in a second stage. And that will increase the susceptibility to inert-gas narcosis.

- Don't expose yourself to excessive Nitrogen Narcosis.

Lust: Nitrogen is like having sex. It can give us a lot of fun, but it can also impair our judgement.



Detail from Hieronymus Bosch's *The Seven Deadly Sins and the Four Last Things*. c.1450-1516

Greed

Scrubber material is cheap. So, why pushing the limits? Why try to save some money when your



safety is much more important? A diver who has invested in a rebreather and the proper training to use it, shouldn't try to extend the duration of his/her scrubber beyond the manufacturer's recommendations. CO₂ is a nasty gas, and nobody really wants to experience signs and symptoms of hypercapnia. A CO₂ hit is one of the worst things that could happen to a rebreather diver at depth.

- Change your scrubber in time.

Greed: Scrubber material is cheap... Why try to save some money when your safety is much more important?

'Avarice' print engraving from Jacob Matham's series *The Vices* c.1587

DETAIL FROM *DESIDIA* (SLOTH), 1558, BY PIETER VAN DER HEYDEN AFTER BRUEGEL



Sloth: *A rebreather diver who doesn't properly take care of his/her unit is an accident waiting to happen.*

more things to do and to control than his/her fellow Open Circuit scuba diver. Keeping a good buoyancy control, checking the functioning of the unit and properly operat-

ing the rebreather are all parts of a normal rebreather dive. How to avoid task-loading? Take your time. Don't try to do several things simultaneously. All actions have to be done much slower with a rebreather: descending, ascending, swimming and even breathing.

- Avoid task-loading at depth.

Pride

With experience and logged dives, some rebreather divers become overconfident. After having followed a check-list for a hundred times, one may have the feeling he/she doesn't need it anymore. Or one might think

that some parts of it can safely be skipped as nothing ever happened during the hundred dives before. The positive/negative pressure tests are cut



Pride: *With experience and logged dives, some rebreather divers become overconfident.*

Pride, from the *Seven Deadly Sins* by Jacob Matham, circa 1592

'Envy' in *The Seven Vices* by Giotto, 1306 fresco in the Cappella degli Scrovegni or the Arena Chapel in Padua, Italy

short. The different components of the unit are too quickly checked. Or the rebreather diver only relies on his/her memory to follow the various steps of the check-list and simply forgets some of them. Then he/she will maybe dive on a partially inspected rebreather...

- Always use your check-list before each dive.

Envy

The desire to go deep or to explore new environments is a normal behaviour for most rebreather divers. Nevertheless, this has to be done properly and only after completing the adequate training. Diving deep with a rebreather doesn't seem very complex. Just use the appropriate helium-based mix and follow the computer! Unfortunately, nothing is that simple when it comes to proper

- Be trained for the equipment you use and the environment you dive in.

By using the previous rules, a diver could expect to avoid the seven deadliest sins of rebreather diving—a good way to keep your head on your shoulders and to avoid being sent to hell sooner than expected...

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7 Deadly Sins



Envy: *The desire to go deep or to explore new environments is a normal behaviour for most rebreather divers.*



Wrath: *Anger comes from a lack of control of events. Task loading, overexertion and stress could happen to any diver..*

Sloth

If complacency kills, laziness is one of the accomplices to the murder. A rebreather diver who doesn't properly take care of his/her unit is an accident waiting to happen. A rebreather is an expensive and delicate piece of equipment. So, a proper maintenance schedule is a must. It's a life support system, and it needs to be regularly serviced as such. A lot of its components can fail (o-rings, electronics, valves, etc) and their failure may remain unnoticed until a small problem triggers a life-threatening situation.

- Maintain and service your rebreather properly.

Wrath

Most of the time, in our daily lives, anger comes from a lack of control of events. Task loading, overexertion and stress could happen to any diver, but a rebreather diver has