

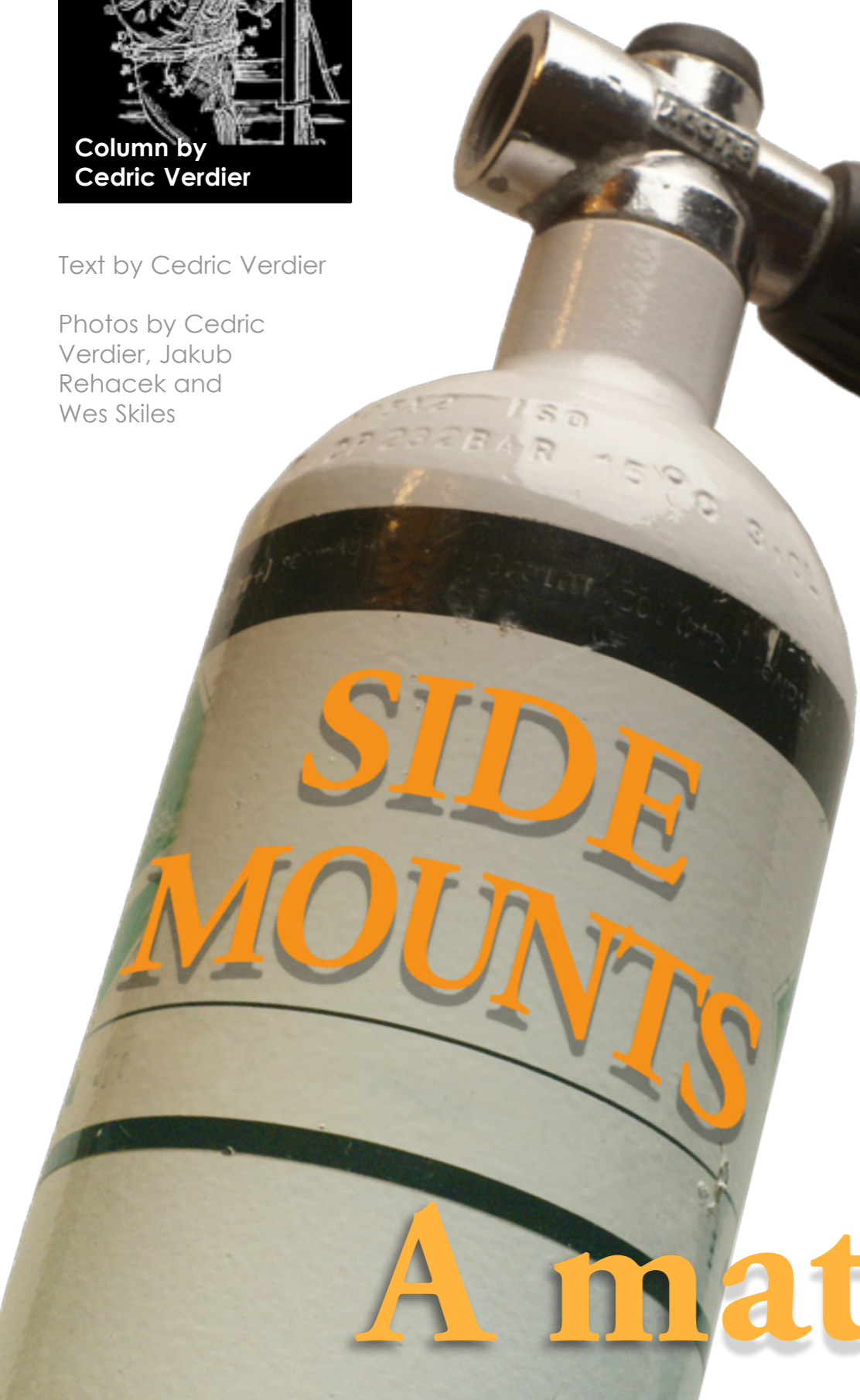


Column by Cedric Verdier

Text by Cedric Verdier

Photos by Cedric Verdier, Jakub Rehacek and Wes Skiles

Try something different...



It has been a year now since I started to exclusively side-mount the off-board tanks of my rebreather—either a Megalodon CCR or an Evolution CCR. Why? Simply because it's much more convenient!

Open Circuit

A few years ago, there was no commercially available side-mount kit for open circuit cave explorers. In the dark ages of cave diving, those who wanted a sidemount configuration had to build their own equipment, mainly based on BCs and inner tubes.

Then some kits like the Armadillo or the Dive Rite came into the market and gained in popularity as there are definitely some advantages in using this kind of configuration.

Carrying each tank on the side, under the armpits, makes away with the large bulk a twinset strapped on your back is. Side-mounted tanks give a very streamlined profile when swimming horizontally or exploring low passages for a long time. Side-mounted tanks are also easier to detach and brought in front of the diver when the time comes to go through a major restriction.

Also, in some locations, you can't find a twinset with an isolation manifold, a side-mount configuration is a good alternative to the traditional independent tanks. It's simple, reliable and much easier to carry than a twinset, which is a clear benefit when you have to carry all the equipment for a long distance, either for sump diving, or for a long trip to an unexplored Cenote deep in the Mexican jungle.

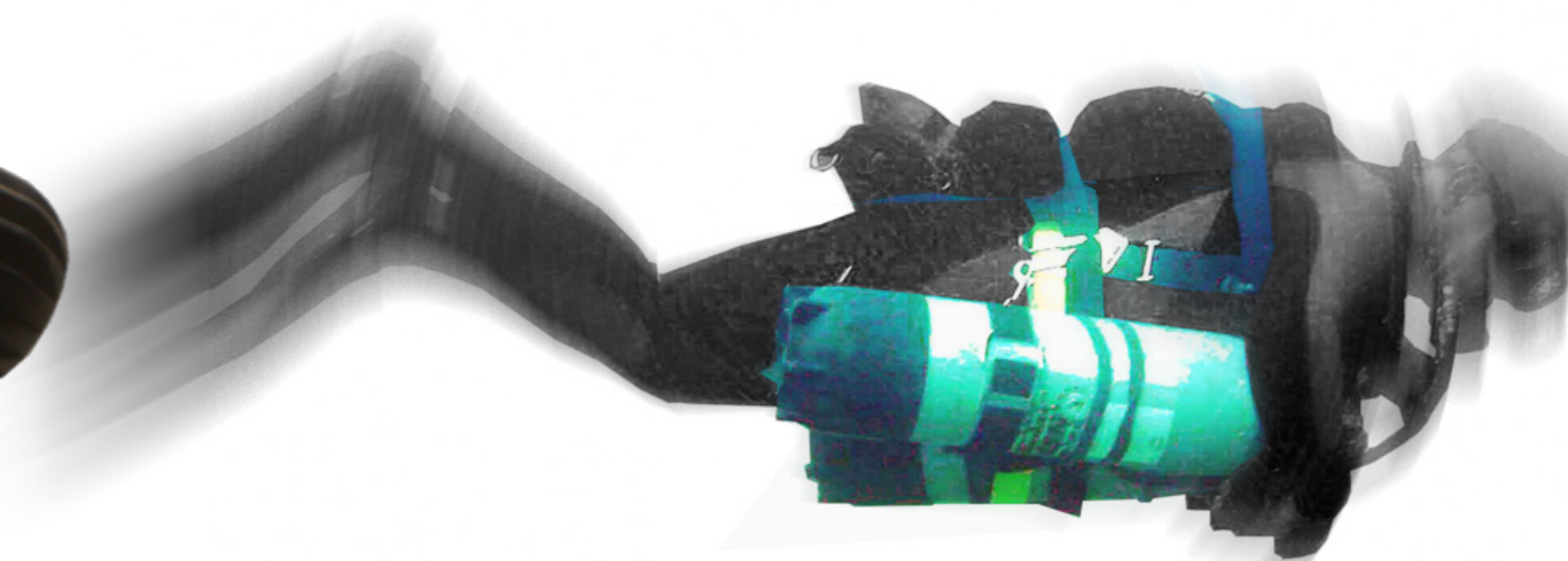
But like so many other things in diving, it takes practice and experience as the diver now has to manage two independent gas supplies instead of the traditional

twinset configuration with an isolation manifold—not really DIR but used by a fair amount of Open Circuit cave divers worldwide.

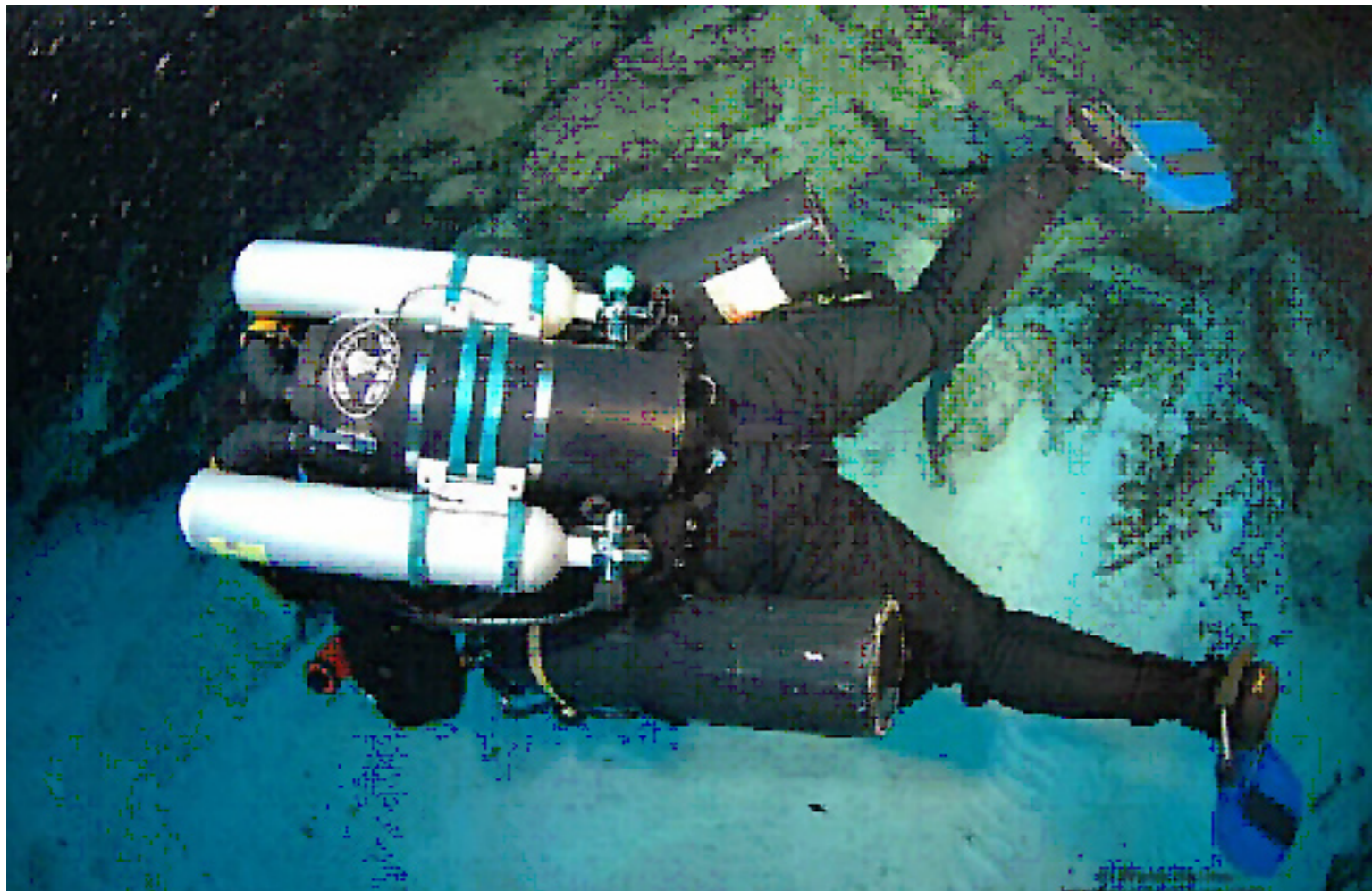
Rebreathers

Unfortunately only very few (and they are homebuilt) rebreathers can be truly side-mounted. Tanks and canisters are worn on one or both sides of the body to streamline the complete rig. Some manufacturers speak about a side-mounted rebreather as the ultimate solution for a bail-out rebreather, but nothing is commercially available yet.

So, for most of the units, the canis-



A matter of convenience



a big bungee loop coming from the top of the backplate. The goal is to hold the tanks just under the armpit along the axis of the body.

The off-board tanks

Instead of a sling tank rig, the attachment is very simple. A cam-band with a dog clip is positioned in the middle of the tank (depending on the size of the tank and the diver). This clip will be connected to the "butt-plate". No hardware is really necessary on the tank valve as the bungee loop does all the work. Nevertheless, some people prefer to have a clip here, mainly when they carry the tank on land or want to stage it somewhere. The cam-band can also be used to put a lead weight to offset the buoyancy of the tank. With an aluminium 80 (11 liter), it's only necessary for an Open Circuit diver who will breathe the gas in the tank. A full bail-out tank (that is not supposed to be used during the dive) will stay neutrally buoyant all dive long.



How to use it

I toyed around with the idea of a sidemount kit for my CCRs for quite a while. My first attempt was a homebuilt project based on an old OMS butt-mounted EDS (the soft plate you use to store SMBs and small canister) I found in Thailand. The idea was good, but the final result didn't last more than 20 dives.

Everything fell apart during a dive. That was all it took to convince me that while the configuration was clearly interesting for a rebreather diver, the manufacture had to be much stronger.

My next project was to use the local Thai industry, find a small workshop that could understand my poor drawing skills and my even poorer Thai lan-

ter has to be carried on the back. Therefore mounting the cylinders on the side doesn't really change much in regards to streamlining. Or does it?

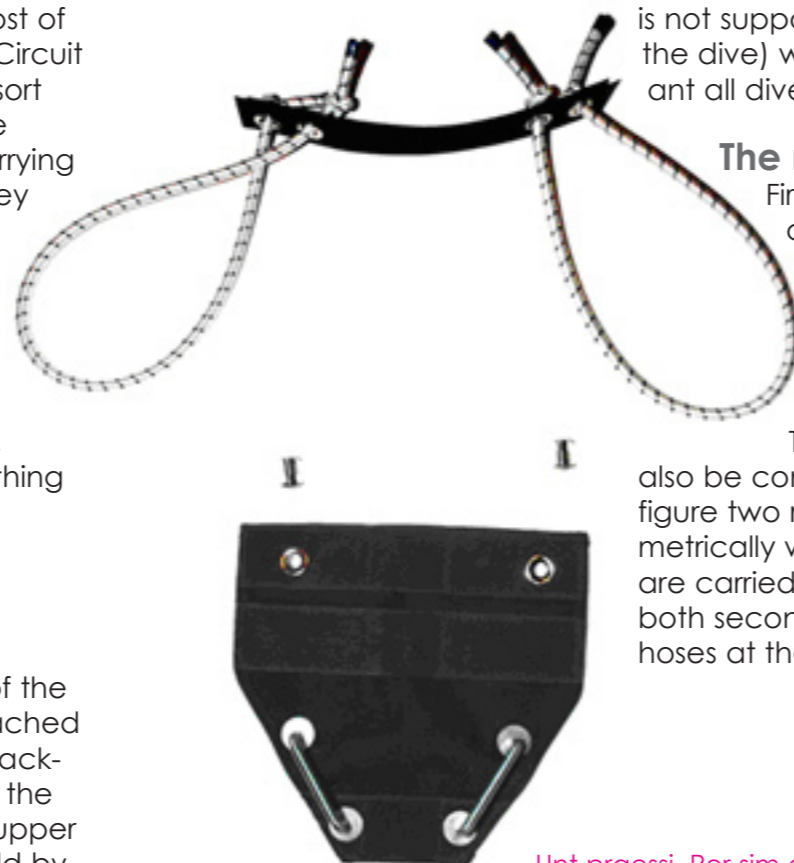
In fact, most of the Closed Circuit Rebreathers on the market use very small on-board cylinders either inside the casing or simply attached to a central canister. In either case, side-mounting these tanks do not make much of a change. You can save a little bit of space on your back, but then you need longer LP hoses everywhere, and it becomes difficult to keep your rebreather as simple as possible. I tried it and didn't like it.

On the other hand, side-mounting comes in really handy when it comes to changing the position of the off-board sling tanks and bail-out tanks that most rebreath-

er divers carry with them. Most of the divers rely on the Open Circuit bail-out option as the last resort to come back to the surface alive, and it often means carrying at least one or two tanks. They are usually clipped on the chest and waist D-rings and, honestly, it's not a good place for them. Their valves protrude, and the cylinders push on the front-mounted counterlungs, increasing the Work Of Breathing and uselessly opening the OverPressure Valve.

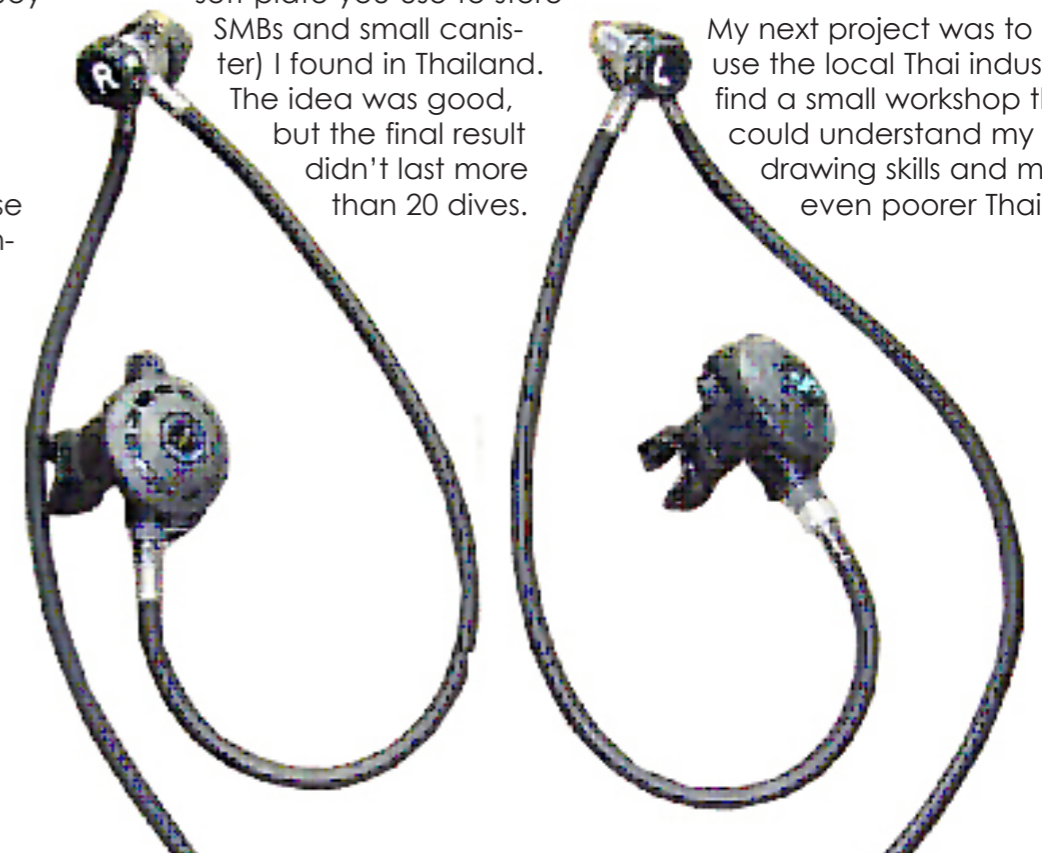
Anatomy of a Side-mount kit

The "butt-plate": The core of the kit is an additional plate attached to the bottom of the usual backplate as an extension to clip the lower part of the tanks. The upper part of the tanks is simply held by

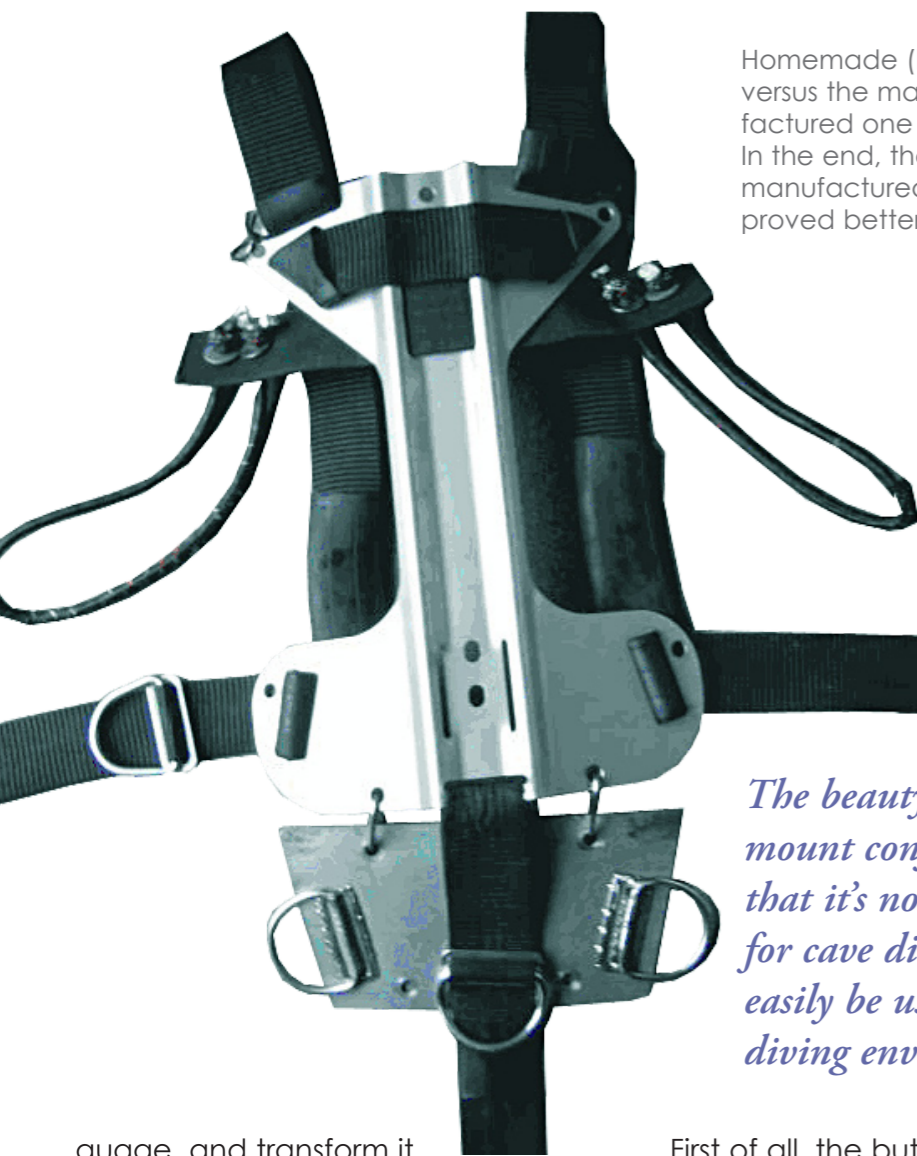


The regulators

First stage and second stage, a small SPG and a LP hose with a quick connect fitting (if the rebreather has this option). That's it. It could also be convenient to configure two regulators symmetrically when two tanks are carried. It helps to have both second stages and LP hoses at the place.



Unt praessi. Per sim dolorperci bla



Homemade (left) versus the manufactured one (right). In the end, the manufactured one proved better

The beauty of a side-mount configuration is that it's not only designed for cave diving. It can easily be used in any diving environment

guage, and transform it into a shiny and almost indestructible Stainless Steel "butt-plate". The concept of a Side-mount configuration is quite simple, and I became the happy owner of a Side-mount kit. The result was not that bad, but not as cheap as I expected in this part of the world. The plate looked nice, but the welded D-rings were not all that practical. The only black bungee I could find came from a motorbike shop, and the quality was questionable.

The kit I use now is the Armadillo CCR Side-mount kit designed by Jakub Rehacek. It comes from a completely different world, and I sometimes wonder why people like me even attempt to built their own equipment when people like Jakub can do it much better for almost the same price, in less time and with so much less hassle!

First of all, the butt-plate is not made of metal, so it doesn't hurt my back anymore, and it doesn't add any weight to the usual butt-heavy rebreather diver position. Consequently, the trim is better and the rig is still as robust as my previous one. The two rings onto which the tanks are clipped on are much more accessible as they slightly protrude on the back. And there's even a place to put the crotch strap!

The attachment strap holds two bungee loops that are actually much thicker and more elastic than the ones I used, and it definitely helps to quickly and safely attach the tank valves. I don't know how many times I used to squeeze my fingers between the valve and the bungee before. So, all in all, Jakub made a wonderful kit really adapted to rebreather divers. I would have preferred black bungee, but that is a minor detail...



The CCR Side-mount kit is clearly simple to use, but most divers need a few dives to properly adjust the tanks and the regulators. A good idea is to measure the distance between one's armpit and waist, as it will be the distance between the cam band and the tank valve.

Only a little bit of practise is necessary to clip the tanks at the surface or to remove them underwater. The trim is great. You really feel streamlined, as there is no tank in front of you. Everything is under your arm, but the bail-out second stages are still ready to be deployed within seconds. With Aluminium 80s (11L) tanks, you can easily go through restrictions or small passages you will never imagine doing with conventional sling tanks. With Aluminium 40s (5.5L) tanks, you simply forget them, as you don't feel them at all.

The beauty of a CCR Side-mount configuration is that it's not only designed for cave diving. It can easily be used in any diving environment.

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On Friday night, Frédéric and Jean-Michel Vallon went on a dive and brought back some photographs, so we spent the first part of Saturday studying their images in preparation for the task ahead. Then, we went on the test dive bringing the stretcher down to a depth of 25 meters.

The end of the afternoon was then dedicated to the preparing of all the gear, analysing the gases, planning the stages and decompression stops under the watchful eye of the camera. That day, the outside temperature did not make it above 0° C (32° F), so we enjoyed being inside the relative warmth of the cave.

The next morning, we were joined by Michel Labat and his small team. Their task was to photograph the evacuation as the stretcher exited the sump. We completed the last preparations and suited up.

The conditions were a bit tricky with four divers trampling around in the confined space of the nar-

row sump. The rebreather divers had to go in while trying to balance the stretcher. Our main concern was whether we had enough space for the stretcher at the bottom. If we inflated it too much, the handling would become very challenging. We took the stretcher down around noon. I was in the front, Jean-Michel was in the rear, while Olivier Lanet oversaw the management of gases and stops. Frederic handled the camera and acted as the fourth man.

The beginning of the descent went quickly through a small gallery sloping at 45 degrees. Olivier did not have enough space to keep his position through this section, so Jean-Michel had to untie the ropes in his place.

Handling the stretcher was difficult. It was necessary to make stops, as our victim (Michel Ribera,



A Stretcher In Deep Water

That's it! We managed to take a stretcher to a depth of 54 meters and a total distance of more than 450 meters. What a human and technical achievement!

By Jean-Pierre Baudu
Spéléo Secours Français
Reporting by Michel Ribera
Photos by SSF

Vaucluse, Southern France – The calendar shows it is the weekend of December 29-30, 2007. We have already spent long evenings and weekends in preparing this test. With Frédéric Martin, we finally wanted to do a live test of our stretcher under the real conditions of a real current dive.

At the same time, we had to observe the rules set forth by the Spéléo Secours Français—the French Cave Diving Association. We set up a trimix dive, with nitrox decompression and oxygen.

The group Spéléo-Ragaïe was there to shoot a film and brought in hundreds of meters of electric cables, dozens of spotlights and cameras everywhere. The cave seemed to be transformed into a film studio.

Our group was made up of ten divers, and we didn't have one quiet moment as we had to bring in 70 tanks, of which the biggest was a 50-liter heavyweight and the smallest was a 2-liter tank. Two of our divers use rebreathers.





commenced the ascent two minutes later.

Suddenly, at 50 meters, everything stirred up, and I had no idea of where I was. I had a grip on the stretcher, and I could only hope that my team member had the life line in his hands. Minutes seemed endless while I sat in the middle of that cloud clenching my fists.

Finally, we got out of the fog, and I saw Jean-Michel's hand grasping the life line. Everything was fine, and the continuation of the ascent was just going to be very physical.

At 30 metres, we reached our first stop and change of tanks. We now breathed 40 percent nitrox after using Trimix 21/37 for the bottom parts. Sebastien Rocheil, Carlos Placido and Thomas Parnet now joined us to assist us during the ascent up to six meters while Olivier oversaw the decompression.

We ascended slowly, three meters at a time. At 24 meters,

Olivier joined me and informed me that the computer did not indicate the planned stops. Apparently, some handling error had messed up the computer. I took out my backup tables and joined the stretcher to assist in the ascent.

We connected the oxygen and hoses. Everything went well. Meanwhile, other team members collected the tanks at the bottom and brought them out. The stretcher finally made it up 93 minutes after it went in.

It was a good experience. We achieved our objective, made a deep dive with our stretcher, using different gases, while handling a team member's rebreather or open system. This simulation also allowed us to test the full face mask, the safety set-up, the dry garment and the team work.

Points to be improved are the balancing of the stretcher in constricted spaces, the location of tanks, the protection of the VR3 against the manipulation band and the communication with the victim during the landings. If everything had gone perfectly, we would have already been at -100m.

But still, we negotiated the narrow passages of a 450-meter siphon with a stretcher and took it down to a depth of 54 meters of depth: This is a record! The next exercise will take place in March where we will attempt to carry the stretcher across a sump of 1400 meters. ■

Michel Ribera acted as the victim in this valuable exercise



X-RAY MAG co-editor) had trouble equalizing his ears. The gallery then became horizontal for 45 meters. We reached the lowest point at a depth of 46 meters and turned the stretcher around. We kicked up some sediment in the process, but the visibility remained very good, and we ascended to 40 meters to re-position the stretcher.

The final stretch was in a gallery sloping downwards at a 45-degree angle, so we brought the stretcher forward slowly. We made it to 54 meters, and I decided to turn around. After crossing out our checklists, we

Finally here, it seems: Ambient Pressure Diving put their long-awaited Bailout Mouthpiece on display



Other News From the Tech Diving World

— seen at BOOT

Not the very latest news, but almost. The Sentinel can in many respects be seen as the younger sibling of the high-end Ouroboros Closed Circuit Rebreather.

The Sentinel came about because more recreational divers want to move into rebreathers, but the vast majority of divers will never be able to fully utilize the performance of the advanced and costlier units. The Sentinel is a bid to make a rebreather more cost effectively but still have an acceptable (and high) degree of performance and be designed for a wider spectrum of the general diving market.

The Sentinel comes with an intelligent but simple to use life-support system (LSS), which provides the user with a simple Check-and-Dive functionality that makes the Sentinel the quickest and safest LSS to prepare for diving.

It uses intelligent monitoring and design experience to determine the appropriate tests and checks that the diver needs to perform to get the LSS ready for diving. Any problems or remedial action are described clearly on the full-colour graphics screen. ■

Sentinel is available in 3 user levels:

- Level 1 - 40m no decompression
- Level 2 - 60m Normoxic
- Level 3 - 100m Trimix

