

# HULLO

HULL BRANCH No 14  
BRITISH SUB-AQUA CLUB  
NEWS LETTER No 159  
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## THE RNLI FLARE DEMONSTRATION THAT TOOK PLACE AT THE SHIP INN - DUNSWELL FRIDAY 20TH APRIL 07

Jillian Dyson had arranged for Mr Tony Clare from the RNLI to come and give a talk and demonstration on the safe release of flares, and I have to say at this point that I had never realised how many different types are available for different situations.

Proceedings got underway by

7.30pm and, as usual, there was a roaring brazier, to keep warm by, in the bar garden.

The event was attended by about forty members including Paul Chapman and a couple of colleagues from the MCA.

Terry Blythe very kindly brought his disco equipment and provided radio microphone which made the talk/demonstration all the more audible.

Jo Hodge, very successfully, sold £48.00 worth of raffle tickets and

with the \$0.00 contributed from the pie and peas supper we made a total of £88.00 for the RNLI which was a marvelous way of saying

“thank you”

The raffle prize was a meal for two and a bottle of wine donated by *The Ship* and won by a Mr Nick Marshall, a regular at *The Ship* and he im-

mediately gave the prize to his favourite barmaid.

I would like, finally, to thank Jillian for organising the event, everybody who helped out especially Tony Clare from the RNLI, and last but certainly not least, to the members for supporting the event

p.s. I think Andy Bannister might be going a bit soft as he went home earlier than usual!



*Johnno*

## REBREATHERS, ARE THEY FOR ME?

As many will have noticed, Rebreathers seem to be the “in thing” in diving, and with our club. To the uninitiated they seem very complex, expensive, and have a bad track record for safety. In answer to these basic questions, one could answer: not really, yes, and possibly but they have been given a bad press!

### Lets start with the basics.....

Rebreathers have been around for a long time, far longer than SCUBA. The first successful piece of equipment dates back to the mid 1800's. Basically a rebreather recirculates expired breath, removing CO<sub>2</sub>, and adding oxygen to replace that metabolised. CO<sub>2</sub> is removed by passing the gas over a “scrubber” material, usually Calcium Hydroxide, which binds the CO<sub>2</sub> to the granules. The resultant material is basically chalk.

Early rebreathers were all “oxygen rebreathers”. That is, they only used oxygen as the breathing gas. This keeps things simple, as can be seen from the chest mounted apparatus of Hans Hass, and Cmdr Lionel Crabbe ( a noted underwater bomb disposal diver of WW2). This consisted of a small oxygen cylinder, and breathing bag. The volume of gas in the bag decreased as the oxygen was metabolised, so when you could completely empty the bag on a breath in, you manually added more oxygen to “the loop”. This basic system is still used today with many Navies. Fitting a regulator to the breathing bag or “counter lung”, automatically adds oxygen when required. The down side of this system is that you are limited to a maximum (safe) operating depth of 6m.

Next came Semi-closed Circuit Rebreathers SCR's. This type of unit uses a nitrox

mix, which is re-breathed, the gas in the loop having passed through a scrubber. A constant supply of fresh nitrox is added at a predetermined rate. The excess gas is vented from the loop through a dump valve, maintaining a constant pressure within the counter lung. This means that the actual gas breathed in, or Inspired Partial Pressure, is somewhat less than the mix in the cylinder. The benefit of this is that the use of the supply gas is constant, regardless of depth. A diver would therefore set his preferred nitrox mix ( the cylinder fill and flow rate of the gas), which would give him a total duration time of the unit, regardless of the depth he was diving to. This obviously makes gas consumption calculations much easier than open circuit SCUBA. The actual amount of nitrox used is far less than SCUBA, as much of the gas is re-used. Usually SCR units are purely mechanical, so there is no risk of electronic failure through flooding etc.

Closed Circuit Rebreathers CCR's, are the relative new kids on the block. Generally they utilise electronics to automatically add oxygen to the breathing loop, as and when required. A “Diluent” gas, usually air, makes up the bulk of the gas being rebreathed. Oxygen is added by a solenoid valve, when the electronics dictate. The benefit of this is that a CCR is extremely efficient in its usage of gas, AND a diver is always breathing the optimum nitrox mix for the depth he is at. By adding oxygen only when required, the partial pressure of oxygen (PPO<sub>2</sub>) is constant. This means that at depth, the actual nitrox mix in the loop will drop, and as the diver moves shallower, it will increase. Using a suitable diving computer, the ppO<sub>2</sub> can be tracked, thus vastly reducing decompression times, another big plus for CCR's.

## So, What's The Catch?

Well, firstly, you need specialised training for the type, and model of rebreather unit you decide to use. BSAC now do unit specific courses for the main brands of unit, both SCR and CCR's. If you choose a more eclectic model, you may find it hard to find a course that is specific to that unit. Having said that, there are more similarities than not between models of SCR and CCR. The main differences being the electronics on CCR models. Some dive operations, especially in the USA will require a Unit Specific qualification before they will let you dive from their boat, or hire their gear.

Secondly, cost. The training alone will set you back several hundred pounds, plus the cost of hiring your chosen unit (if you haven't already acquired one). Next there is the outlay for your rebreather. There are many models on the market, and most of these are also available second hand. Expect to pay anything from £800 for a second hand Drager Dolphin, to £4000 for a new Inspiration, or £6500 for a Megladon. There is also consumables to consider, such as the scrubber medium, and oxygen cells. Expect your scrubber lime costs to be £7-£10 a fill, which may do you two dives, then again, it may only do you one, depending on duration of the dive, temperature, size of the scrubber canister etc. O2 sensors should be changed annually, and will cost £50-£60 each. A CCR unit may have 3 or 4 of these, and if they get wet, you may be changing them all at the same time! The good news is that you will use less nitrox!!

## Conclusion

Rebreathers are a fantastic tool, but you would need to consider how you dive, as to whether you could justify the expense.

If you have a lot of spare cash, want a new challenge in your diving, and enjoy endless hours of tinkering and cleaning, then a rebreather will satisfy all these requirements! If you plan to do deep dives, long dives, or both, and want to work up to using trimix, then a CCR *could* be more cost effective than open circuit scuba. Then again you would need to do a lot of dives to recoup the cost compared to scuba gear!

For someone diving from a RIB, in the North Sea, then I would argue that it is not really worth buying a CCR, on purely cost grounds. The duration and deco benefit that a CCR gives is not realised in the average club dive. If you think the average weekend dive is between 30 and 40m, with a narrow slack window, and a RIB full of buddies also wanting a dive, then it is easier to stick to open circuit, or perhaps a SCR.

If on the other hand, you dive with like-minded buddies, purely for the challenge and experience of a CCR, then charter a hard boat, or nominate a non-diving boat handler for the day.

Rebreathers certainly aren't rocket science. They are however quite different to open circuit scuba, and suitable training is needed. Once you have taken a training course, you will see that contrary to popular belief, they are actually quite safe. They usually give you plenty of warning when there is a problem, unlike SCUBA. Sadly it seems that most fatalities are a result of user error, becoming complacent and missing a simple, yet vital action, such as turning on an O2 cylinder, or incorrect use of electronics.

It seems that cost is really the limiting factor..... Or is it?

Continued next time.....

*Chris Storey*

**BRITISH SUB-AQUA CLUB - HULL BRANCH No 14**  
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