

Underwater Trashing

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Intro

This article is not meant to be a diving manual in any way, the only safe way to learn diving is from a certified dive master who will teach you how to safely use compressed air SCUBA gear and rebreathing gear when you have mastered basic skills. She will also teach how to deal with the issues relating to decompression, safe breathing, underwater navigation, and first aid.

The worlds navies have for many years used a unusual kind of underwater breathing apparatus, the rebreather made famous by the bubble free LAR-V aided SEAL demolition raids. Very long dives with no tell-tale bubbles are possible using a rebreather. The operation is quite simple, a breathing loop consisting of a mouthpiece and hoses, air bladder, CO2 scrubber chemical canister, and pure oxygen supply. Operation is safe to nine meters, going beyond this depth will cause oxygen toxicity, seizure's, and inhalation of seawater which will lead to drowning.

This simple dive device can be made by someone with a knowledge of chemistry, pneumatic design, and a strong sense of safety quality control.

What is needed

- SodaLime - CO2 scrubber, ask at a hospital supply dealer it is used in surgery for anesthetic gas loops or at a dive shop
- Oxygen - Only use medical oxygen if possible, welding oxygen is not been guaranteed pure
- Oxygen regulator or valve with low pressure hose
- Counter Lung - One or two hot water bottles which are a little larger than your lung capacity
- Hoses - flexible non-compressible hoses to go to and from the mouthpiece
- PVC T and Dive Mouthpiece - connect to breathing hoses
- Oxygen regulator or valve - brass or chrome construction to prevent rust
- Canister - for sodalime, plumbed into bladders and breathing hoses with screen to hold sodalime tight
- several rubber one way breathing air valves

Operation

This is the way the loop works, its layout is up to you but build the counterlungs to be near your chest to prevent weird buoyancy shifts as you breathe.

1-Pre-breathe ten deep breaths of pure oxygen by flooding the system with your oxygen valve full open exhaling outside the rebreather, if you don't do this nitrogen will be in the system and you could become hypoxic.

2-After pre-breathing you will start to breath fully in the system your breath will contain unabsorbed oxygen and CO₂, this breath will flow down the the hose with a valve running into the system.

3-Before entering the scrub canister the air will enter a water trap consisting of a stocking filled with diaper stuffing which will prevent water droplets from entering the scrubber.

4-The air enters the scrubber, the moisture and CO₂ being acidic react with the alkaline sodalime binding and removing the CO₂, only oxygen is left,there is a one way valve leading to the counterlungs, an overpressure relief pop-open valve is a good idea here too. There are screens held in with large springs to keep the sodalime from rolling around and breaking apart the granules.

5-The air leaves the scrubber and enters the counterlung which allows the user to breathe in and out circulating the air, another one way valve leads upward to the air hose.

6-On exiting the counterlung the loop returns up another breathing hose to a final valve and the mouthpiece.

7-The oxygen add line can be plumbed in anywhere but after the exiting counterlung valve or in the mouthpiece are best.

It is important that the oxygen add line be after the post-scrubber canister one way valve, because if your system gets filled with water you will have a caustic cocktail in yur system, the oxygen add valve turned on to full will purge the inhalation side of the loop and allow you to emergency surface. Always try to find a way to have a normal SCUBA or spare-air set in case there is a failure. NEVER remove the mouthpiece on a dive unless you have installed a shutoff valve or you will wet your loop and the rebreather will be unusable until you get to land and can open and clean out the caustic goop.

Always surface test your new systems with a friend watching, a workout on an exercise bike is a good way to prove to your partner you are getting oxygen. Run out both scrubber and oxygen several times to determine lifespan of both and reasonable safety margins. Next test run the rebreather a few times in a pool with a helper.

Depth Gauge

Your safety depth meter is a simple design, take a 5-6cm piece of 1-2mm clear plastic tube, in a pinch a cleaned out pen ink tube will work, melt one end shut and glue down to a white piece of Plexiglas plastic. Measure half the length and mark the plastic with a white or glow paint, this is one atmosphere or 10 meter mark, WARNING! never get deep enough that your bubble shrinks to this line underwater when breathing the pure oxygen of your rebreather it is the DEATH LINE you are crossing with that bubble.

Fun Facts

- The most vulnerable parts of a ship are the prop shafts at the bearing and the moving parts of the rudder.
- Many large ships are lead out of port with tugboats.
- The easiest way to sink a ship is collision with another ship or with land.
- Sinking ships in the middle of a channel have caused millions of dollars in losses as the waterway had become unnavigable.
- Demolition charges of appropriate explosives have be placed across from each other on prop shafts and rudder parts increasing the overall shattering power.
- Large sealed and well placed thermite (23% aluminium powder and 76% iron oxide powder with a manganese or sugar/potassium chloride ignition stage) devices have welded parts of ships tight. This has destroyed the rudder actuation or prop shafts and bearings forcing the ship to stay in port for repairs.
- Glock 17's are common handguns that can operate underwater with the optional maritime kit, albeit at the risk of damaging the users eardrums and internal organs.
- many slam fire submachineguns like the old Sten's and Stearling's can also fire wet. With these weapons it is intended that the user exit the water if possible before engaging in gunfights. See also Home Made Firearms about making a slam fire submachinegun.
- If you like do dive with guns be sure you are using a ammo that has sealed primers and case mouths. This can be done with fingernail polish: polish is applied, let set for a minute, then wiped with a clean rag.
- The pig navy is known to train dolphins to perform guard duty at naval installations. They claim they are not armed and only tag swimmers for apprehension by human divers. Some claim a national inventory of 70 such dolphinsoldiers.



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Last updated: 15 March 2011

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