

Gear Required for Cave/Technical Training and Expectations

Cave and Technical Diving are equipment intensive sports due to the inherent risks involved with being submerged in a water filled environment with a ceiling, either physical or physiological, that prevents a direct access to the surface. Being able to solve problems in situ is a must, and redundancy is key to survival. Anyone wishing to engage in cave or decompression diving must have redundant equipment capable of providing for a safe exit for themselves and a team member. This document will provide you with recommended gear configurations as well as the expectations I will have for you in the water.

If you are enrolling in a class, please print out the last two pages, sign it, and email a scanned copy back to me.

Although I am a side-mount instructor, I am a strong believer that divers new to any form of technical diving will be best served by beginning in a back-mount doubles configuration instead of side-mount. There are a couple of reasons I believe this:

1. While side-mount has a place in technical diving, it is best viewed as an advanced form of technical diving with a specific purpose – to get inside of areas that have minimal vertical relief, or require the removal of equipment. Beginning technical and cave divers do not need to be going into the environments that really benefit from side-mount configuration.
2. The transition from open-water single tank diving to back-mount doubles is easier. Single tank divers have already developed a certain amount of muscle memory with having a tank on their back and do not need to worry about adapting to dramatically different configuration while they are trying to learn technical diving skillsets.

If you have substantial experience diving a side-mount configuration and have taken a side-mount course from a reputable instructor, you may take your training in side-mount. But please, let's first have a conversation about it so that we can make sure some of the basics are covered (you must have a 7' host on your side-mount rig).

Having dove a basic "Hogarthian" configuration since 1995, I have found the mindset and configuration are suitable for most cave and technical dives conducted on open-circuit. This is a list of the basic equipment that you will need to assemble a doubles rig.

Mask and fins: You will need a mask that properly fits your face. You will also need a backup mask. You will need to have a pair of fins (no split fins, please). I use a Dive Rite mask with prescription lenses and either ScubaPro Jeft Fins or the Dive Rite XT fins, depending on the environment I'm diving in.

Cylinders: You will need a set of doubles with a dual-valve isolation manifold. For cave diving, I strongly recommend the Pressed Steel (PST) LP-104's. For open-ocean technical diving I

recommend either Faber LP-85's or Aluminum 80s. The manifold should be DIN to provide the most secure connection and capture the o-ring.

Regulators: You will need two high performance first stages, each with its' own second stage. The regulator that is on the right post (right shoulder) should have a 7' LP hose to donate air with. It should also have an LP inflator hose that connects to the power inflator on your wing. The regulator on the left post (left shoulder) should have a 28" LP hose that is on a bungee necklace, and it should have a pressure gauge on a 24" to 26" HP hose. If you are using a drysuit, you should run the drysuit inflator from your left post.

Backplate: You will need a backplate with continuous webbing. There should be a D-ring on either shoulder strap, and one on the left waist. There should also be a crotch-strap with a scooter D-ring on the front, and a d-ring on the rear for stowing extra gear. Backplates come in ABS plastic, Aluminum, and Stainless Steel.

I recommend Aluminum unless you are diving in a drysuit, in which case Stainless steel may be appropriate.

Dive Gear Express has put together a great tutorial on how to configure and size a backplate. It is online at <https://www.divegearexpress.com/library/articles/harness-assembly-instructions>

Wing: You will need a wing with between 40 and 55 pounds of lift. Bigger is not always better, a wing with 60 pounds of lift (or more!) may trap air and cause unnecessary drag.

I recommend the Halcyon Evolve (60#) or the Dive Rite Classic XT Wing because these wings have a clean shape that provides sufficient lift for a set of doubles. If your wing came with bungees, please remove them as they provide no benefit and cause more problems than they solve.

Note: If you are diving steel cylinders you will probably need redundant lift. That can be from a drysuit or a dual bladder wing.

Lights, Primary: You will need a primary light. I recommend one with at least four hours of burn time. I wrote an article discussing what to shop for in a primary light, it is online at: <http://www.divegainesville.org/light-are-life-support/>

I recommend the Halcyon Focus 2.0, the Dive-Rite EX35, or the Light Monkey 32w variable focus LED with a 15ah battery.

Lights, Backup: You will need a minimum of two backup lights, each should be capable of lasting at least four hours. I personally dislike rechargeable batteries in my backup lights and opt for ones with disposable batteries. I also want my backup lights to work when I need them, so I do not use lights with on/off push-buttons that may accidentally get turned on while diving (thus draining the battery).

I use the Light Monkey 2w and 3w lights, the 2w light is bright enough to get you out of a cave while riding a scooter (I wish I could tell you that I didn't have to find this out the hard way).

I recommend the Light Monkey 2w and 3w lights and the Halcyon Scout lights.

Reels, primary: You need a primary reel with at least 400' of line. L style reel or Sidewinder reel is fine. Personally, I'm not a fan of the slide-lock reels because it's easy to get sand in them and have them jam.

Reels, backup: You will need a safety reel/spool with a minimum of 125' of line on it. I use simple delrin finger spools.

Wet-notes: You will need a set of wet-notes.

Knives: You will need two cutting devices. I have a trilobyte ez cut and a small cave knife (basically a steak knife with the blade cut down). In 2015 I had a banner year and lost 6 knives, it was the first time I lost a knife in over a decade, and it got to the point where I had to buy my wife a new set of steak knives. <http://personal.linkline.com/rlockyer/knife.jpg>

Watch: You will need a watch. I use a Casio G-Shock, which I purchased from WalMart for \$50.

Computer: You will need a way to track your nitrogen loading. I strongly recommend Shearwater computers, but I realize it's an expensive tool. If you own a Shearwater, great! Because I'm very familiar with the dive planning mode on a Shearwater, we will use it for planning our dives. If you already own another computer, please make sure you know how to program it for various nitrox mixes and know how to use the dive planning mode on it.

If you do not have a Shearwater, and do not have a multi-gas computer, you may need to purchase Dive Planning Software. I strongly recommend Multi-Deco, which is a version of the venerable Vplanner but it incorporates the Buhlmann ZHL-16 algorithm with gradient factors.

Exposure Protection: Depending on the course you are taking, you may want a drysuit. Our springs are 70° F year-round, and spending 500 minutes in the water over the course of a week can cause a large amount of thermal stress. I also recommend a decent hood.

Dan Insurance: Please have some sort of dive accident insurance. I have DAN insurance myself. Hopefully we never need to use it, but if you do...

Cave Specific Gear

You will need three line arrows and if you are enrolled in Cave 1 (Cavern/Intro), Apprentice, or Full Cave you will need at least three cookies and two jump reels.

I made my own "directional line arrow keeper" using a zip tie, a piece of surgical tube, and a bolt snap. It looks something like this, <http://extreme-exposure.com/directional-line-arrow-keeper/> but the one I made cost me about \$4 (\$3 for the bolt snap, \$1 for the piece of surgical tubing and the zip tie).

If you are enrolled in Cave 1, Apprentice, or Full Cave you will need a deco bottle with a deco reg.

Technical Specific Gear

You will need a lift-bag/SMB with at least 35# of lift. I strongly recommend the Dive Rite Hybrid Surface Marker Tube.

You will need a deco bottle with a deco regulator.

Please print out the next two pages, sign them, and send me a scanned copy.

Expectations to Graduate

My goal is that all students that graduate any of my courses can safely execute dives within the limits of their training. Although there are "minimum standards" that will be required by the certification agencies, I have certain expectations of the skills and abilities that my students can demonstrate that are not necessarily listed in the "minimum standards."

1. Proper mindset. Students must demonstrate a safe and mature attitude as well as good judgment and problem-solving ability. Examples include creating safe and prudent dive plans within the limits of time/depth/exposure, properly analyzing and marking their gases, and having properly functioning and maintained equipment. While there is definitely a physical component to technical and cave diving, a proper mindset is the most important thing and divers that lack judgment, are unable to adequately solve simple problems on the fly, or are otherwise unsafe, will not pass my class.
2. Good buoyancy and trim. This means being able to perform all skills within a 3' range (1.5' up, 1.5' down) from the target depth while also maintaining trim within 20° of horizontal. The reason for this is multi-fold; divers that are unable to maintain buoyancy may potentially hurt themselves by violating a decompression stop or dropping below the MOD of a gas. They may also potentially damage the cave environment by bumping into the ceiling or wallowing in the floor. Divers that have poor trim will be less streamlined, thus working harder, and they may also potentially cause a silt-out from prop-wash from their fins. It will be expected that to graduate from a class, you should be able to perform an S-drill neutrally buoyant and within trim.
3. Comfort and familiarity with their equipment. Under stressful situations, such as in an emergency, a diver must be able to manage their equipment, manage stress, and manage their physical condition. They should have muscle memory for where each piece of equipment is, what it's purpose is, and how to use it. A diver that has to think about where a piece of equipment is, or how to use the equipment, is expending valuable "mental bandwidth" that could detract from their ability to manage a stressful situation.
4. Ability to manage valves. This means the ability to do a valve drill, efficiently and comfortably. The reason for this is that if there is a failure during a dive, such as a free-flowing regulator, ruptured hose, etc, you should be able to manage the problem.

Above all else, every one of my students must pass the "Loved One" principle – this means I trust you to dive with one of my loved ones at this level of training.

Payment & Confirmation

Fees are based on completing the course in the minimum number of days. Signing up for a course does not guarantee certification within the minimum number of days and unfortunately, some divers may need an extra day or two to complete a course and those extra days are billed

at my daily rate. In some cases, you may be asked to come back after a period of self-study/self-practice to complete a course, but we will work out a self-study routine for you to help you achieve success.

Details: I hate having to say this, but a 50% deposit is due upon scheduling a course with full payment due by the beginning of the course. The deposit is refundable up to 30 days prior to the start of the course. Fees are for instruction only, and do not include certification processing fees (if earned), your fills, your entrance fees, or your books. Trimix courses will have an additional charge for helium. Divers that need additional days of training beyond the agency minimums, will be responsible for paying the daily standard rate.

I am available and encourage my students to contact me after training for any questions they may have regarding diving or dive planning.

Student Statement: I have read the above document and understand the expectations that will be made of me as outlined above. Additionally, I understand that I am only paying for training and signing up for a course does not guarantee I will be certified.

Student Signature: _____ Date: _____