

A side-mount diver is shown in a blue underwater environment, exploring a large, rusted metal structure, likely a shipwreck. The diver is wearing a black wetsuit, a mask, and a regulator. A white scuba tank is mounted on their side. The diver is holding a flashlight that illuminates the surrounding area. The background is filled with the intricate, rusted metal framework of the wreck, covered in marine life.

Sidemount Diver

Student Guide



Acknowledgements

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Course introduction

A sidemount diver is shown exploring a large shipwreck underwater. The diver is wearing a black wetsuit, a sidemount tank, and a mask. They are holding a flashlight that illuminates the surrounding environment. The shipwreck is covered in coral and other marine life, and the water is a deep blue color. The diver is positioned in the center of the frame, swimming towards the right.

Check out your eLearning video

Introduction

Alex Warzynski is a BSAC National Instructor, he will take you through the first part of the video module.

Remember if you need to discuss any of the theory e-mail or call your instructor at your club or centre.

Video time length | 00:00 mins

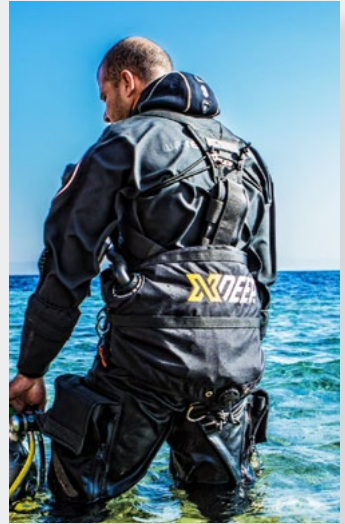
Click the image below to start watching the video.



SMT1 Course introduction

Lesson outline

- Course objectives
- Course structure
- Course outline
- Course implementation
- Course standards and assessment
- Domestic / logistics
- Course timetable



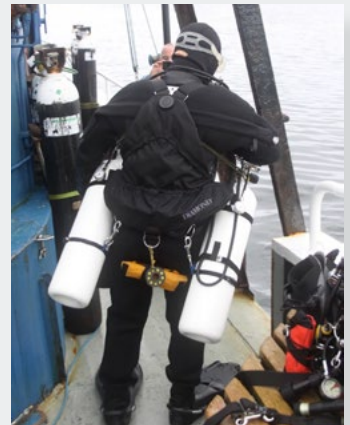
Course objectives

The primary objective of the course is to teach you how to dive safely using sidemount configuration.

There are three main components:

Relevant knowledge

This section is designed to help you understand all aspects of sidemount diving. It explains the different



equipment options, how they can be set up, and how they are rigged. With this knowledge, students will be able to make informed decisions about the type of sidemount equipment that best suits their needs.

Equipment configuration

There are several different ways sidemount equipment can be configured. Each configuration has its own advantages and disadvantages.

Which features work best will depend on the individual diver. Factors such as body size, strength, body shape, and personal diving preferences all affect whether a particular setup is suitable or not.

In-water skills

- **Emergency skills**

This section teaches you the in-water skills needed for sidemount diving, including both normal diving skills and emergency procedures. All dives must be carried out using the buddy system and must follow BSAC Safe Diving guidelines.

- **Redundancy of critical equipment**

This section explains why critical, life-support equipment should be backed up with redundant equipment, and how that equipment is used. Students will learn the principle of redundancy and why it is an important part of safe sidemount diving.

Being self-sufficient does not mean diving alone. The buddy system is still essential. A buddy provides extra support and helps solve problems, using the duplicated equipment carried by each diver.

While divers should be able to recognise and deal with problems themselves, these self-diagnosis and problem-solving skills are a backup. Good buddy awareness and teamwork remain the primary safety measures.

Course structure

Progressive build-up of skills

The course is structured to build skills gradually, with each stage supported by the relevant knowledge.

Safe sidemount diving requires more than just learning how to perform the skills. Students also need to understand the effects and consequences of their actions. A basic level of diving knowledge and skill is assumed, as outlined in the entry requirements.

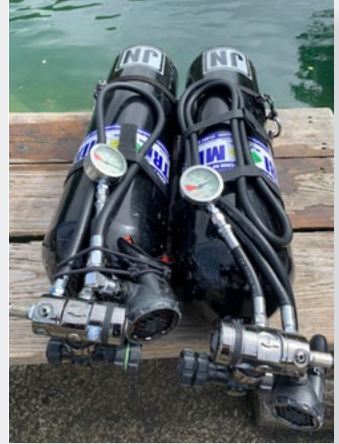
The course uses a combination of classroom theory, dry practical sessions, and in-water dives. Together, these elements are designed to teach the specific knowledge and skills needed for safe and effective sidemount diving.

4 theory lessons

- Equipment type and configurations
- Failure modes and resolution
- Supplementary information
- Way forward

Dry practicals

- Equipment configuration
- Dry runs and skills



In-water sessions

The in-water training includes sheltered water sessions. There are three sessions in total, although these may be combined or split into two sessions if required.

During these sessions, students will learn how to configure their sidemount equipment. They will also be taught the basic skills needed for sidemount diving, including how to deal with both normal situations and common problems.

Open water

The open water sessions focus on reinforcing the basic skills already learned and gradually extending them. The aim is for students to become confident and comfortable when dealing with equipment failures and other problems.

An open water assessment is included to confirm that the required skills and knowledge have been successfully achieved.

Assessment

Assessment on this course is continuous and progressive. You are assessed throughout the course rather than in a single final test.

Instructors must be satisfied that you have gained the required level of knowledge and understanding, and that they can competently perform the skills they have been taught.



There is no formal written exam for the theory component. Instead, you must demonstrate that you meet the required standards of knowledge and skills as the course progresses. This ongoing assessment is an essential part of the course.

You may choose to complete the theory element online by purchasing the Sidemount Diver eLearning course. Even if the theory is completed online, all practical skills are still assessed continuously during training.

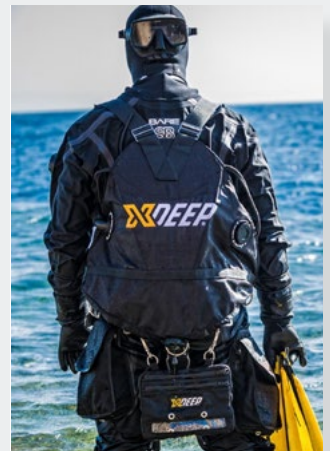
Practical skills are assessed during dives, including a specific assessment dive. Students must also show a clear understanding of the underlying theory that supports the practical skills they perform.

To successfully complete the course, you must achieve a satisfactory standard in both the theory and practical parts of the assessment.

BSAC Sidemount Diver

Competent to:

- Use sidemount configured cylinders
- Dive with any qualified diver within the limits of their qualifications
- Dive with a more experienced diver to expand experience or depth
- Plan and conduct dives with mandatory decompression
- Rescue another diver from depth - this is every diver's responsibility towards their buddy and other fellow divers
- Dive within BSAC Safe Diving guidelines



Expanding experience

Your Buddy must be qualified for the conditions

When expanding your diving experience, your buddy must be qualified for the conditions you are diving in.

Normally, an experienced buddy should have at least one of the following:

- **Dive Leader (or an equivalent qualification), or**
- **Sports Diver with additional qualifications, such as a Sidemount Diver certification or an equivalent, gained through formal training with a recognised agency.**



In practice

During the course, it is not possible to cover every condition a diver might encounter after qualifying. To safely progress beyond the conditions experienced in training, divers need to use logic and common sense when choosing their dive buddy and planning how to gain additional experience.

To gain further experience, a diver should:

- **Be appropriately qualified for the conditions, and**
- **Be actively diving in those conditions.**

When encountering new or more challenging conditions, it is helpful for newly qualified Sidemount Divers to dive with an experienced

buddy who is current in those specific conditions. This reduces the workload for the new diver and allows them to focus on managing their sidemount configuration and monitoring their buddy safely.

All under supervision of a Dive Manager

All dives should be conducted under the supervision of a Dive Manager. Ideally, the Dive Manager should be an experienced Sidemount Diver.

Course implementation

It is a necessary prerequisite that you are already experienced divers.

Mindset

You should try to approach everything with an open mind. This is especially important when learning techniques or information that may seem different from their current experience or from what they have read online.



Take your time and don't rush. Learning the basics thoroughly before moving on to more advanced skills will make progress faster and safer in the long run. In other words: go slow to go fast!

Motivation

Learning with new equipment and techniques can be exciting and motivating. Embrace the opportunity to try new approaches, as this will help you develop confidence and improve your diving skills.

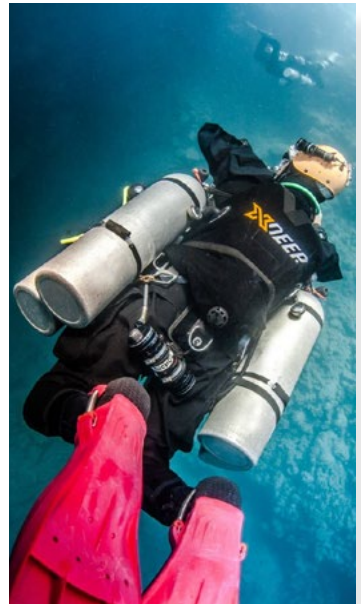
This course includes a lot of practical training, both on land and in the water. The more actively you take part, the more they will learn and benefit from the course.

Sidemount diving is more complex than diving with a single-cylinder setup. If your equipment is not properly configured, it can make skills harder to perform. It's important to carefully consider your entire sidemount setup to ensure it is safe and effective.

Waiting until the last minute to prepare your equipment can lead to rushed assembly and missed checks. Students should develop the habit of getting their gear ready well in advance of a dive. Doing so helps make careful preparation a normal part of safe diving practice.

Summary

- **Course objectives**
- **Course structure**
- **Course outline**
- **Course implementation**
- **Course standards and assessment**
- **Course timetable**
- **Domestics / logistics**



End of module quiz

1. What is the purpose of learning about sidemount equipment and its configurations?
2. Why do different sidemount configurations have advantages and disadvantages?
3. What in-water skills are taught during the course?
4. What does “redundancy of critical equipment” mean and why is it important?
5. How is the sidemount course structured to teach skills?
6. How are students assessed during the course?
7. What are the requirements for a buddy when expanding diving experience?
8. Why should newly qualified sidemount divers dive with an experienced buddy in new conditions?
9. What mindset should students have during the course?
10. Why is early preparation of equipment important in sidemount diving?

Answers on page 114

Equipment and configuration

Check out your eLearning video

Introduction

Alex Warzynski is a BSAC National Instructor, he will take you through the first part of the video module.

Remember if you need to discuss any of the theory e-mail or call your instructor at your club or centre.

Video time length | ??:?? mins

Click the image below to start watching the video.



SMT2 Equipment and configuration

Lesson objectives

You should have a good understanding of how to select, assemble and configure a safe, ergonomic, efficient and comfortable sidemount setup that supports good buoyancy and trim as well as access to all necessary controls.

Achievement targets

You should be able to:

- Understand the philosophy of sidemount configuration
- Understand sidemounted cylinder configurations
- Choose an appropriate buoyancy device
- Select appropriate regulators
- Use appropriate weighting

Lesson outline

- Philosophy of sidemount configuration
- Advantages and disadvantages
- Valves
- Buoyancy devices
- Harness
- Regulators
- Weighting
- Storage

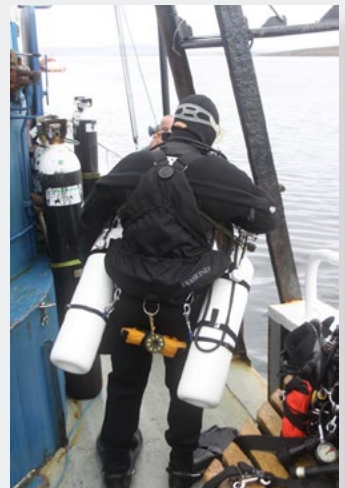


Sidemount philosophy

Developed from cave diving

Sidemount diving was originally developed by cave divers to help them pass through small passages, thanks to the low profile of the setup. Today, it has become a popular configuration for many types of diving, not just cave diving.

Sidemount diving is more complex than the single-cylinder setup that most students are already familiar with. There is more equipment to assemble, adjust, route, balance, and configure.



While there are many specific sidemount configurations, this lesson focuses on the general advantages and disadvantages of sidemount diving, giving students a broad understanding of the setup.

Appropriate for the dive and diver

Sidemount equipment must be suitable for both the type of dive and the individual diver. For example, large-capacity sidemount cylinders may be a good choice for divers with a larger body size or a high breathing rate. However, the same cylinders could be unsuitable or even unsafe for a smaller diver with a lower breathing rate.

Although larger cylinders are usually easy to manage once underwater, they can be difficult to handle on the surface, such as when carrying them or during cylinder filling.

On the other hand, cylinders with a smaller capacity may not provide enough gas for a larger diver or for the planned dive. This could limit the dive time or make the dive plan unsafe.

Commonality of equipment

When diving regularly with the same group of divers, it is helpful to have a level of common equipment. The equipment does not need to be exactly the same, but being able to swap compatible parts between setups can be very useful.

Having this flexibility reduces the risk of missing dives due to equipment problems, as replacement or spare equipment can be shared within the group if needed.

Access to control and life critical items

All important controls, such as valves, regulators, and instruments, must be easy to reach and operate. When choosing and setting up a sidemount system, divers need to carefully consider where each item is positioned to ensure quick and easy access at all times.

Minimise drag and snag

A key principle of sidemount diving is to keep equipment streamlined. This means reducing clutter, minimising drag in the water, and avoiding anything that could snag. This is achieved through thoughtful equipment configuration, tidy hose routing, and careful placement of all essential components so they are easy to access.

When carrying additional cylinders in sidemount, extra lift may be required. This is usually provided by a larger buoyancy wing, sometimes with lift capacities of up to 20 kg. However, this is not always necessary.

For example, a diver using smaller-capacity cylinders, such as 7-litre cylinders, will generally need less lift than a diver using larger 15-litre sidemount cylinders. It is important to carefully consider cylinder size and lift requirements when choosing sidemount equipment.

Typical configuration

A typical sidemount setup uses two cylinders of the same size, with one cylinder mounted on each side of the diver.

Each cylinder is completely independent and has its own regulator, pressure gauge, and low-pressure inflator hose.

Buoyancy is provided by a dedicated sidemount wing, which is designed specifically to work with this type of configuration.

Minimum necessary complexity

Diving to greater depths or for longer durations often requires larger, heavier, and more complex equipment. However, having more equipment does not automatically make a dive safer or more efficient.

There is always a balance to be found. Adding unnecessary equipment can increase confusion and reduce safety and efficiency. While redundancy is important for life-critical equipment, extra items that are not essential can quickly become clutter.

Understanding which items are truly critical and which are unnecessary is an important part of safe and effective sidemount diving.

Quality of equipment

As dives become longer or deeper, the risks increase and equipment is placed under greater stress. Choosing low-quality equipment that may not perform reliably in these conditions can be a false economy.

Selecting good-quality equipment is a better long-term choice. Well-made equipment is more reliable, lasts longer, and performs consistently, even under demanding diving conditions.

Advantages of Sidemount

The following is generic and applies to all types of sidemount:

Advantages

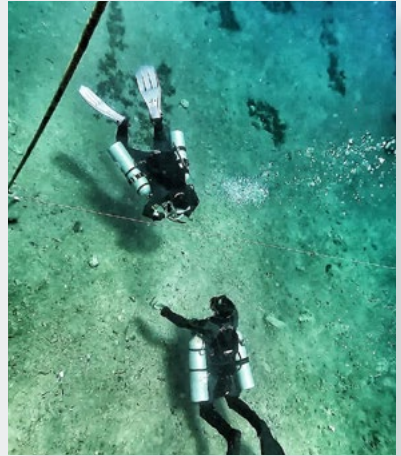
Sidemount diving allows divers to carry a larger gas supply. This increased capacity provides several important benefits, which are explained in the following sections.

Having a larger gas supply gives a diver a greater safety margin. In sidemount diving, gas is often planned using the “Rule of Thirds”.

This means using no more than two-thirds of the available gas for the dive and the return to the surface. The remaining one-third is kept as a reserve to deal with unexpected problems or emergencies, either for the diver or their buddy.

The increased gas capacity of sidemount diving can allow for longer dives. As a result, the main limits on dive duration may no longer be gas supply, but other factors such as decompression requirements, tidal conditions, water temperature, or personal comfort.

When using nitrox, the body absorbs less inert gas. This allows the diver to spend more time underwater because less gas is “used up” by decompression limits. As a result, more of the available gas can be used for the actual dive, allowing longer bottom times.



Divers with larger bodies or higher breathing rates use gas more quickly. The extra gas provided by sidemount increases their safety margin. It also helps when diving with a buddy who has a lower breathing rate, allowing both divers to stay underwater for a similar amount of time.

Sidemount diving can be adapted to suit any diver, no matter their size, body shape, or the amount of gas they need. Divers with higher breathing rates can carry larger cylinders, while those with lower breathing rates can use smaller cylinders, making the system flexible for everyone.

Sidemount diving provides a backup in gas supply when using cylinders of similar size. For example, using two 7-litre cylinders gives a diver more redundancy and safety than a single 15-litre cylinder, because each cylinder is independent and can serve as a backup in an emergency.

In sidemount diving, the cylinders are carried on each side of the diver, aligned with their centre of gravity. This balance reduces the tendency to roll in the water, which is a common issue with a single-cylinder setup - especially if a pony cylinder is attached to the side of the main cylinder.

Sidemount diving keeps the diver's profile low in the water. This makes it easier to pass through tight spaces, such as narrow swim-throughs, caves, or wrecks, and reduces the risk of snagging on obstacles.

Sidemount diving provides a cost-effective way for divers to move on to more adventurous diving, such as exploring caves or deeper wrecks. However, divers should be aware that gas costs can increase, especially if using mixed gases that include helium.

Sidemount diving is flexible and can be adapted to different types of diving. Divers can add extra cylinders or attach them to tail D-rings, depending on the requirements of the dive. This makes the system highly versatile for a variety of underwater environments.

When diving from a boat without a compressor, a partially used cylinder can be quickly swapped for a full one. This makes it easier to increase the available gas for later dives in the day.

Sidemount also makes carrying decompression cylinders convenient. These cylinders are usually clearly labelled on the shoulder to show that they contain rich decompression gas. If different gases are carried in sidemount cylinders, the diver must always check and confirm the correct gas before breathing from that cylinder.



If a diver experiences a gas supply failure from one cylinder, it is easy to switch to the other cylinder. All the equipment is within the diver's sight, making this process straightforward.

Sidemount cylinders also provide easy access to valves. This allows a diver to quickly shut down a free-flowing cylinder and prevent further gas loss. In extreme emergencies, the positioning of sidemount cylinders even allows the diver to feather the valve, helping to control the situation safely.

Sidemount equipment does not require rigid bands to attach cylinders. Instead, cam bands can be used to secure the equipment to almost any standard diving cylinder. This makes it much easier for divers to travel abroad with their gear.

Compared to conventional back-mounted twin cylinders, sidemount uses much less equipment to attach the cylinders to the diver. This means the diver can carry less overall weight, making the setup lighter and easier to manage.

Sidemount diving allows divers to use a wide range of cylinder sizes, shapes, and volumes. This flexibility helps divers choose the cylinders that best suit their body size, breathing rate, and the type of dive they plan to do.

In sidemount diving, the positioning of the cylinders makes it much easier for the diver to reach and operate the cylinder valves. This improves safety and makes managing the gas supply simpler.

In sidemount diving, each cylinder is independent, which provides a built-in backup if one gas supply fails. The system should be set up so that each cylinder can supply gas to a separate buoyancy device, such as a drysuit or wing. Ideally, both connections should use the same type of connector for simplicity and safety.

Sidemount diving is easy to adapt for different cylinder sizes, making it ideal for travel. It is also simple to hire two identical cylinders at dive destinations, which makes sidemount a convenient choice for overseas diving.



Further advantages

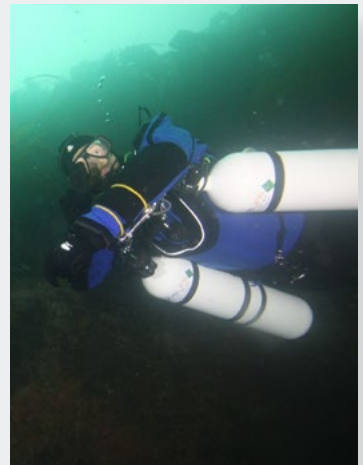
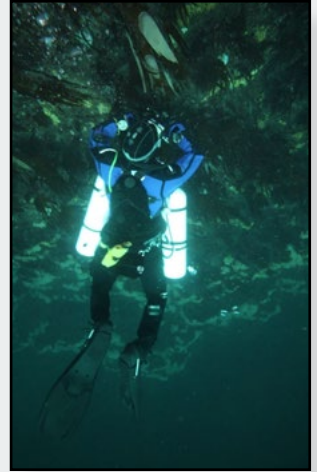
Sidemount diving offers many practical and safety benefits. In the event of a cylinder failure, gas loss can be minimised because valves are easy to reach and can be quickly shut down. Unlike conventional twin cylinders, there is no manifold or isolation valve to worry about, which simplifies management and reduces potential errors.

The system is flexible, allowing different hose lengths to suit the diver's preferences. Cylinders can be added or removed easily, and decompression cylinders can be carried conveniently and clearly identified when correctly labelled.

Sidemount setups are lighter and require less equipment to rig than conventional twin cylinders, making them easier to carry, handle, and move in the water. This improves in-water manoeuvrability and makes diving more comfortable and efficient.

The positioning of the cylinders allows divers to adjust their roll and pitch, providing excellent stability and control underwater. The system is also highly adaptable, allowing modifications for different types of diving, including boat, shore, deep, or mixed-gas dives.

Finally, sidemount has a smaller profile in the water, which reduces drag and the risk of snagging. The lower, more compact setup also makes it easier to pass through tight



spaces compared to traditional twin-cylinder configurations. Overall, sidemount diving combines safety, flexibility, and efficiency, making it suitable for a wide range of diving conditions and diver preferences.

Sidemount diving is naturally more stable in the water because the cylinders are positioned on either side of the diver, balancing the weight evenly.

However, as gas is used from each cylinder, that cylinder becomes lighter, which can affect the diver's balance and cause them to roll slightly. To reduce this effect, divers should regularly switch which cylinder they are breathing from, keeping the buoyancy more even on both sides.



Sidemount diving has a smaller profile in the water, which reduces drag when finning and makes it less likely to snag on obstacles. The diver's body helps "guard" the cylinders, hoses, and valves.

However, it is still important to configure the equipment carefully to avoid trapping lines or snagging on projections during the dive.

In sidemount diving, the cylinders are carried on the diver's sides as separate assemblies.

This setup allows cylinders to be easily removed and replaced when needed. Additionally, the diver's body helps protect the valves from impact, reducing the risk of damage.

Disadvantages of Sidemount

Disadvantages

The cost of a dedicated sidemount setup can be significant. This is mainly because the diver needs to change their equipment configuration, including buying a dedicated sidemount buoyancy wing and additional regulators and hoses.

However, the cost may be lower for divers who are moving from a twin-cylinder setup, as they will already have a second regulator and may not need to purchase as much additional equipment.

If one sidemount cylinder fails, half of the total gas supply is immediately lost. In some situations, such as a gas supply failure, all of the gas in that cylinder may be lost unless the valve can be shut down and later reopened using techniques such as valve feathering. For failures like a burst hose, the gas loss is permanent and the gas in that cylinder cannot be used.

Because of this, dive planning must assume that the diver may need to return to the surface using the gas from only one remaining cylinder. As a result, sidemount divers often need to carry more total gas than they would with manifolded cylinders to ensure they can complete the dive safely.

In sidemount diving, it is recommended to switch regularly between regulators to keep the pressure in each cylinder similar. This is often described as “leapfrogging” the pressures, so that the difference between the two cylinders is kept within about 10–20 bar. e.g.



cylinder 1: 200-180 bar, cylinder 2: 200-170bar, cylinder 1: 180-160 bar, cylinder 2: 170-150 bar, cylinder 1: 160-140 bar.

Keeping the pressures balanced is important because, if one cylinder completely fails, it ensures the maximum possible amount of gas remains available in the other cylinder. Regular pressure checks and well-practised regulator switching are therefore essential skills. Balanced cylinder pressures also make it easier to maintain good trim and stability in the water.

Sidemount diving and its associated equipment are more complex than using a single cylinder. However, the level of complexity is similar to diving with a single cylinder and a pony bottle, or with a twin-set. For sidemount to work effectively, careful attention must be given to equipment stowage and streamlining.

Because there are many variables involved in adjusting sidemount equipment, setting it up correctly can take more time than adjusting a back-mounted configuration. A proper sidemount setup normally uses two similarly rigged cylinders, either with a short hose and a long hose, or with two long hoses. To gain the full benefits of sidemount, a dedicated sidemount wing and harness system is required.

Each cylinder needs its own pressure gauge, meaning two gauges are used. Left- and right-handed valves are also required so that valve shut-downs can be carried out efficiently. Regular regulator switching is necessary, and the procedures for isolating and shutting down gas supplies are more complex than in simpler configurations.

Hose routing in sidemount is also more complex and must be planned carefully. If a single long hose is used, it must be stowed neatly to avoid snagging if it is deployed. Because the diver frequently

switches between regulators, the unused regulator must be easy to stow without restricting access or causing interference.

In sidemount diving, providing an alternate air source to a buddy can be more complicated. If the diver providing gas is already breathing from their alternate source regulator, they may need to donate that regulator to their buddy and then switch to the regulator on the other cylinder. This adds extra steps during an already stressful situation, so both the diver and the buddy must be familiar with the procedure. Regular practice of out-of-gas drills and regulator donation is essential to ensure these actions are carried out smoothly and efficiently.

If two long hoses are used, the buddy can instead take the unused regulator. This is the most common method used in general diving and does not require additional training. However, careful attention must be given to how the two long hoses are stowed, particularly to prevent snagging when a hose is deployed.

Because each cylinder is independent, each first-stage regulator must have its own pressure gauge or transmitter. Hoses should be routed carefully, and gauges must be stowed in a position that is easy to access and read for regular monitoring during the dive.

In sidemount diving, each cylinder is filled and blended as a separate single cylinder. This can result in slightly different gas mixes or fill pressures between cylinders. Because of this, sidemount divers must analyse the gas in each cylinder after filling and clearly mark the contents on the cylinder before diving.

When using cylinders with slightly different gas mixes, planning should be done using the weakest mix for decompression calculations. The richest mix should be used when calculating

maximum operating depth (MOD) and oxygen exposure, to ensure safe limits are not exceeded.

Sidemount equipment can take up more space on a boat compared to a back-mounted twin-set. The wide, flat profile of sidemount is not ideal in all situations. For example, it may make passing through narrow wreck doorways more difficult.

In addition, some sidemount configurations may not naturally support an unconscious diver face-up on the surface. This is an important consideration when planning dives and emergency procedures.

Valves

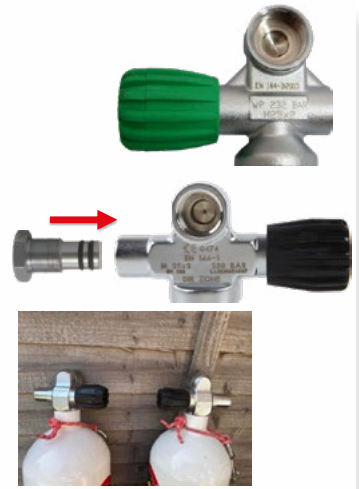
ISO 12209-2 (DIN)

Commonly known as DIN connections, these are recommended for sidemount due to the following:

- **Enclosed O-ring**

In sidemount diving, the regulator's O-ring sits in a machined groove. When the first-stage regulator is fully screwed onto the cylinder, the O-ring is completely enclosed within the assembly. This reduces the chance of the O-ring being pushed out and causing a leak, unlike with a yoke (A-clamp) type connection. Any leak that does occur is usually slower and less severe.

Because the O-ring is located on the regulator rather than the cylinder, divers tend to take more care of it, as it is part of a more delicate component of their equipment.



- **Less vulnerable to impact**

When the first-stage regulator is fitted to the cylinder in a sidemount setup, it forms a stronger, more integrated assembly that is more resistant to impact. In contrast, a yoke (A-clamp) valve can be dislodged from the cylinder, potentially causing a sudden and catastrophic loss of gas.

- **Compact**

On a yoke (A-clamp) regulator, the clamping handle sticks up, which can create a snag or impact hazard. It can also be easily mistaken for the valve handle when operating the cylinder, especially if the valve is not visible, increasing the risk of mistakes.

- **M26 nitrox valves**

The BS EN 144-3 standard defines M26 connections for nitrox cylinders, and these valves are sometimes used in the EU. However, in the UK, the M26 standard is not widely adopted.

The M26 valve looks similar to a DIN valve outlet, but the thread is different, so the two are not compatible. When diving abroad and renting cylinders, divers should always check the valve outlet to make sure it works with their regulators.

Handed valves

For independent or sidemount cylinders, using handed valves makes it easier to access the valves. These valves are designed so the handles extend outward, allowing the diver to reach them more easily.

When using handed valves, it is important to mount the cylinders on the correct side of the diver. The hand-wheel should point outward, while the open valve port faces the diver's body. Modular valves, like those used in twin-set manifolds, are recommended because their extended barrel also makes it easier to attach the sidemount bungee.

Valve quality

The quality of a cylinder valve affects how easily it can be operated. A good-quality, well-maintained valve can be turned easily with just your fingertips, making it simple to open or shut off the gas.

In contrast, a poor-quality or poorly maintained valve can be difficult to turn, which may make it hard for a diver to complete an effective shutdown in an emergency.

Handle style

The style of a valve handle affects how easy it is to use. Longer, rubber handles are easier to grip and turn, especially when wet, compared to shorter, plastic handles, which can be slippery and harder to manipulate. Rubber handles are also more resistant to impact, while plastic handles can crack if struck. Most valves allow the handles to be easily replaced if needed.

Buoyancy devices

Jacket or backmount style not suitable

Traditional jacket or back-mounted buoyancy devices are not suitable for sidemount diving. Sidemount requires a dedicated wing-style buoyancy device that is designed to work with cylinders carried on the sides of the diver.



Dedicated sidemount equipment needed

Sidemount wings are buoyancy compensators specifically designed for use with sidemounted cylinders. They are usually attached to

a sidemount harness, sit in the centre of the diver's back, and are secured at the front using wing bungees. This setup ensures the cylinders are stable and the diver maintains proper trim in the water.

Buoyancy

Available in a range of sizes, although most will accommodate a wide range of divers.

Dedicated sidemount wing

A sidemount wing must be able to support the weight of full cylinders. Its buoyancy should be enough to keep a fully equipped diver afloat at the surface with their head clear of the water. When choosing a wing, the total system must be considered, including the diver's weights, accessories, and wetsuit or drysuit.



For most sidemount diving, a wing with 20 - 25 kg of lift is sufficient. However, the diver's own size and weight should be taken into account to ensure the wing provides enough buoyancy for safe surface support.

Attached to sidemount harness

The sidemount wing is attached to the sidemount harness, which keeps it securely in place. The sides of the wing are held down by the harness and wing bungees, helping to stabilise the cylinders and maintain proper trim in the water.

Vary in shape

Sidemount wings come in different shapes to help divers achieve proper trim in the water. The wing must fit the diver and the cylinders they are carrying for each dive.

Most of the buoyancy is positioned around the diver's lower back or kidneys, while the inflator is typically located under the arm for easy access and control.



Backmount style wings poor compromise

Donut, horse-shoe, and bungeed wings are not suitable for sidemount diving. These types of buoyancy compensators are designed for backmount setups and do not provide the proper support or stability needed for sidemount cylinders. Using them is a compromise that reduces the effectiveness of the sidemount configuration.

Buoyancy redundancy

Drysuit an option

When diving with a single cylinder, some divers are used to relying on their drysuit to manage changes in buoyancy as the gas in the tank is used. The drysuit allows them to add or release air to stay balanced in the water.

However, in sidemount diving with two full 12-litre cylinders, the total gas weight is over 5 kg. This is much more than a drysuit can safely

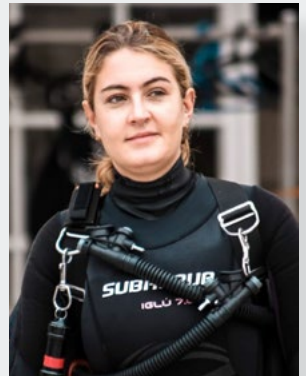
handle. Trying to add that much gas to a drysuit would be excessive and could be dangerous, especially during ascent when the gas expands.

For this reason, sidemount divers carrying two cylinders should use the buoyancy provided by their sidemount wing to manage the weight in the water. The drysuit can still help with small adjustments, but the main lift comes from the wing.

Twin bladder wing

A twin bladder wing is a type of buoyancy device that provides redundancy, especially useful when diving with a wetsuit. It has two inner bladders contained within a single outer shell.

The wing can be fitted with an additional bladder, along with its own corrugated hose and dump valve. This acts as a backup buoyancy system in case the primary bladder fails. However, only one bladder can be used at a time.



To use a twin bladder wing safely, the bladders should either:

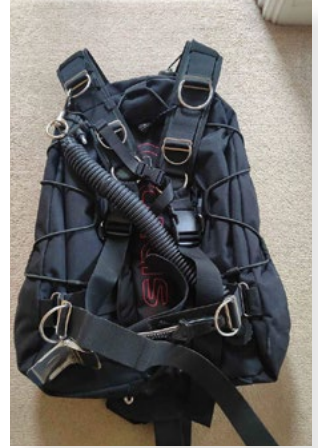
- **Be fed from separate air sources, or**
- **Keep the secondary inflator disconnected and only connect it when needed.**

This setup ensures that you have a reliable backup without interfering with normal buoyancy control.

Bungeed wings

Retract bladder in when deflated

Bungeed wings are a type of buoyancy device designed to keep the bladder neatly tucked away when it is deflated. Elastic bungee cords hold the bladder close to the backplate or harness, preventing it from flapping or catching on equipment.



Bungeed wings can be either:

- **External:**
The bladder is on the outside of the wing's outer shell.
- **Internal:**
The bladder is contained inside the wing's outer shell.

This design helps keep the wing streamlined in the water and makes it easier to manage during a dive.

Needed for very large wings

Bungee systems are especially useful for very large wings, where a deflated bladder would otherwise be bulky and awkward in the water.

Folds add drag

When a buoyancy bladder is deflated, any loose folds can create extra drag in the water, making swimming less efficient. Keeping the bladder compact - such as with bungee systems - reduces this drag and helps the diver move more smoothly through the water.

Bungees push gas out on failure

Bungee cords will push gas out of a buoyancy bladder if it fails or

bursts. The wing and controls should be inspected regularly to ensure they are in good condition.

One-piece harness

Polypropylene NOT nylon

A one-piece harness is made from a single length of relatively stiff webbing, usually 50 mm wide, to form the shoulder and waist loops. Polypropylene is used instead of nylon because it is strong and durable in water. A separate crotch strap, made from a softer material, helps prevent the sidemount wing from riding up the diver's back when it is inflated at the surface.



Advantages

The one-piece harness is strong and durable, with no weak points that could fail. Once it is properly set up, it provides a secure fit and usually requires very little adjustment to suit most divers' configurations.

The harness has wide-ranging adjustment options, allowing the fittings to be moved easily into the best position. This makes it more comfortable and convenient for the diver to use.

The one-piece harness can be adjusted to fit a single diver precisely. The waist D-rings can be moved during a dive to help balance changes in cylinder buoyancy. The webbing has no weak points created by quick-release clips, making it very strong and reliable.

Because most sidemount wing and harness setups fit close to the diver's body, it usually isn't necessary to remove the harness during a dive, unlike a twin-set setup, which can be bulkier and harder to manage.

The one-piece harness is relatively inexpensive compared to other harness systems, making it an affordable option for divers without compromising strength or reliability.

Disadvantages

The one-piece harness does not have a quick-release mechanism, so in an emergency it can be difficult to remove the sidemount wing from an incapacitated diver. Removing the harness in the water can be tricky. To address this, a cutting device should be considered as part of the harness setup. This device allows the wing to be quickly and safely removed if needed.



Crotch strap

The crotch strap is made from softer, and sometimes narrower, webbing. Its purpose is to prevent the sidemount wing from riding up the diver's back when the wing is inflated at the surface, keeping the harness secure and comfortable.

Personal preference

Choosing a sidemount buoyancy compensator (BC) is largely a matter of personal preference. However, the decision should consider the type of diving you plan to do, as different setups may be better suited to specific conditions or dive styles.

Quick-release harness

Advantages

A quick-release harness is designed for comfort and ease of use. It can be easily adjusted to fit the diver, and the emergency release clips make it simple to remove the harness in the water if needed.

Disadvantages

Quick-release harnesses have some drawbacks. The webbing can wear over time and may slip, and the fittings are often not as adjustable as a one-piece harness. The clips create potential weak points, and excess webbing can dangle in the water. Quick-release harnesses are also generally more expensive than simpler harness systems.



Strap options

Waist strap

The waist strap is an important part of a harness. On a one-piece harness, it is usually integral, forming part of the main webbing. On some adjustable harnesses, the waist strap is sewn in, allowing it to be positioned or adjusted for comfort and fit.



Crotch strap

The crotch strap is usually made from softer, and sometimes narrower, webbing. It can be attached to the waist strap using a loop or clip. While it helps keep the harness secure, it may interfere with weight jettisoning in some setups, so divers should consider this when configuring their harness.

Harness hardware

D-rings



D-rings are solid attachment points on a harness, sized to match the webbing. They allow divers to clip on and remove equipment easily. For convenience, the wire forming the D-ring should be 3-4 mm thick-thick enough to be strong, but not so thick that clips are difficult to attach. Thicker D-rings are stronger, but the extra strength isn't usually needed for diving gear. D-rings can be attached to the

harness using a tri-glide retainer or stitched in place. They are made from materials such as stainless steel, chromed brass, anodized aluminum, or plastic, and are available in a variety of types.

- **Flat D-Rings**

These lie flat against the webbing and fold out of the way when not in use. They are low-profile, but take a little practice to locate and clip onto.

- **Bent D-Rings**

These fold but have a curved shape that sticks up slightly, making it easier to attach clips. They are commonly used on sidemount wings as shoulder attachment points.

- **Fixed D-Rings:**

These are welded to the tri-glide and stick out at an angle, usually 45–90°, from the webbing. They are very easy to locate and clip onto, but because they always stick out, they can snag on equipment or the environment. Fixed D-rings are often used on sidemount wings as waist attachment points.

- **Sliding D-Rings**

These can move along the webbing. Sidemount divers using aluminum cylinders often use sliding D-rings to adjust for buoyancy changes as the cylinders are emptied, helping keep the cylinders horizontal in the water.

D-rings are usually held in place by a tri-glide retainer, which keeps them secure while allowing for some movement if needed.

Rings

Some harnesses have D-rings fixed centrally on the crotch strap. These are used to attach diver propulsion vehicles (scooters), as the weight is supported by the harness rather than the diver's arms. They are also convenient for temporarily clipping other items, although these items may hang down when the diver is horizontal. On one-piece harnesses, these D-rings are usually integral, but in some setups, they can be removable.

Number and position

A standard harness setup usually includes: one bent D-ring on each shoulder near the collarbone, a D-ring at the front of the crotch strap, a D-ring at the rear, and at least one D-ring on each side of the waist strap near the hips. Square drop D-rings are often placed on the back of the harness to attach pouches, spools, or stage cylinders. Additional D-rings can be added as needed.

It is important to take the time to adjust D-ring positions carefully so they fall naturally to hand while underwater. This helps divers build muscle memory, making it easier and quicker to clip gear on and off efficiently.

Hardware location

Minimum configuration

A basic harness setup should include at least the following D-rings: two bent D-rings on the shoulders just below the collarbone, a D-ring at the front of the crotch strap, a rear D-ring, and



D-rings on each hip. For divers using aluminum cylinders, the hip D-rings should be sliding to help adjust for changes in buoyancy as the cylinders are emptied.

Additional hardware can be added

Additional hardware can be added to a harness as needed. Common extras include rear drop D-rings, which are often used to attach pouches, spools, or stage cylinders, and rear “door handles” that can help lift or stabilize the diver when needed.

Fine adjustment needed

D-rings and other harness hardware should be positioned so they fall naturally to hand while underwater. Proper adjustment allows the diver to clip and unclip items quickly and efficiently. Sidemount harness setups are more complex to adjust than backmount setups, so taking the time to get everything in the right place is important for comfort and safety.

Regulator configuration

High-performance preferred

Sidemount diving requires at least two separate cylinders, each with its own first and second stage regulators. High-performance regulators are preferred to ensure reliability and smooth breathing. When setting up regulators, it is important to consider handedness - deciding which regulator will be on the diver's left or right side - so that the setup is comfortable and easy to use underwater.



Rotating turret on first stage

A first stage regulator with a rotating turret is recommended for sidemount diving. The rotating turret allows hoses to be repositioned for a neater setup, and it helps prevent the long hose from being pinched when it is being donated to another diver. This makes hose management easier and reduces the risk of problems underwater.



Non-handed second stages

Some second stage regulators can be used with the hose coming from either side without any changes, while others can be reconfigured before the dive to switch the hose to the opposite side. Choosing a regulator that can be positioned on either side can make hose routing simpler, depending on how the diver has set up their system. Some regulators can even be breathed comfortably in either orientation, while others require the hose to be switched over to function correctly.

Hose lengths

Standardisation

Hose lengths should be standardised wherever possible. Using hoses of consistent length makes the system easier to set up and manage, allows parts to be swapped or replaced quickly, and ensures commonality of spare



hoses. Standardised lengths also help keep hose routing neat and reduce the risk of kinks or tangles.

Long hose

A long hose should be at least 1.5 metres, with 2.1 metres being the most common length. A properly sized long hose makes it easier to share gas with another diver, allowing the donor and recipient to remain comfortable and maintain good positioning underwater.

Buoyancy feeds

Buoyancy feeds use shorter hoses than the long regulator hose. These shorter hoses connect directly to the buoyancy device, allowing the diver to control inflation and deflation easily without interfering with the breathing hoses.

Hose routing

Buoyancy feed redundancy

Since sidemount diving uses two completely independent cylinders, each first stage should supply its own separate buoyancy device. For example, the right cylinder could provide air to the drysuit, while the left cylinder feeds the buoyancy compensator (BC). This ensures redundancy - if one cylinder or first stage fails, the other can still provide buoyancy control.



When using oxygen-rich mixtures or trimix, divers may carry a separate small cylinder, usually 1–1.5 litres, specifically for drysuit inflation. This helps preserve gas from the main sidemount cylinders for breathing, ensuring better gas management during the dive.

First stage

All hoses should emerge from the first stage pointing downwards, towards the diver's body. This keeps hoses tidy, prevents loops from forming, and reduces the risk of snagging on equipment or the environment while diving.



Hoses should be routed carefully to prevent snagging and kinking. Using hoses of the correct length for the setup helps keep them neat and ensures smooth airflow from the regulators. Proper routing also makes the system safer and easier to manage underwater.

High-pressure gauge (SPG) hoses are usually shorter than regulator hoses and need careful routing to avoid kinks. Proper positioning ensures accurate readings and prevents damage to the hose, keeping the system safe and reliable.

Some first stage regulators can be modified with a “5th port.” This extra port allows hoses to be routed with a smaller bend radius, reducing strain on the hoses and making the setup neater and less likely to kink.

Short hose

From first stage, round neck

The short hose runs from the first stage, around the diver's neck. It is shorter than a standard regulator hose and is usually held in place with a necklace. This keeps the regulator secure, easy to find, and ready for use at all times.

Second stage

A 90° fitting on the second stage helps improve hose routing by allowing the hose to lie more naturally along the diver's body. This reduces strain on the hose and keeps the setup tidy. The fitting also helps with tactile identification, making it easier for the diver to recognise and select the correct regulator by feel, especially in low visibility.



Long hose

stowage

Must be deployed quickly

When a long hose is not in use, the excess length must be stowed neatly. It is essential that the hose can be deployed quickly and smoothly, without snagging, if it needs to be donated to an out-of-gas diver. Proper stowage helps ensure fast, safe gas sharing in an emergency.



Bungeed storage

In a typical sidemount setup, the long hose is attached to the right cylinder. To keep the system streamlined and ensure the hose can be deployed easily, the excess hose is secured to the cylinder using bungee, inner tube, or purpose-made cylinder bands. The hose is usually routed across the chest, over the left shoulder, and behind the head. This routing allows the long hose to be deployed quickly and smoothly to an out-of-gas diver when needed. The long hose regulator will normally have a bolt snap attached to it with a breakaway.

An alternative setup routes the regulator hose directly from the cylinder to the diver's mouth. This requires the hose to be looped twice and secured to the cylinder. While this configuration can work, it creates extra hose loops and increases the risk of snagging, making it less desirable for many sidemount divers.

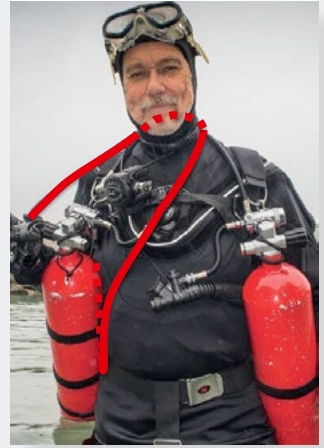
Short hose routing

The short hose regulator is normally attached to the left cylinder and routed behind the diver's head into the mouth. A hose shorter than standard recreational length is recommended to keep the setup streamlined. The regulator is usually held on a bungee necklace around the neck and fitted with a 90° elbow, which helps with hose routing and allows the diver to identify the regulator by touch, especially in low visibility.

Hog looped stowage

Used for long hose

Hog-looped stowage is commonly used for the long hose. The hose runs down the cylinder, then across the chest, and behind the neck before reaching the regulator. This routing keeps the hose tidy and streamlined while allowing it to be deployed quickly and smoothly when needed.



Hog-looped long hose stowage allows fast and easy access when donating gas to another diver. The hose can be restowed by the diver without assistance, and the large, smooth bends in the hose reduce stress, helping prevent kinks and snagging.

When out of the water, the long hose may hang loose and be less well controlled. Divers should be aware of this and manage the hose carefully to prevent tangling, damage, or snagging on equipment or surroundings.

Independent cylinders

Both regulators used during dive

In sidemount diving, the cylinders are independent, and both regulators are used during the dive. Each regulator is treated as a primary regulator so that gas is taken evenly from both cylinders. This balanced gas use helps maintain an adequate



reserve in each cylinder and keeps the diver's weight distribution even, preventing unwanted changes to lateral trim.

Divers are advised to switch between regulators regularly during a sidemount dive. This “leap-frogging” ensures that the pressures in the two cylinders are kept close, usually within 10–20 bar of each other. Maintaining similar pressures in both cylinders helps keep gas use balanced and prevents one cylinder from being emptied much faster than the other.

It is important to keep the pressure in both sidemount cylinders within about 10 bar of each other. This helps maintain balanced gas use, ensuring that neither cylinder is depleted too quickly and keeping the diver's trim and buoyancy stable.

Regulator stowage

Both regulators need to be easily accessible, since swapping between them is done regularly during a dive. Regulators can be secured on a bungee necklace around the neck or attached to D-rings using suitable clips. If a bungee necklace is used, it may degrade over time, so it should be inspected carefully before each dive. Breakaway clips can also be used to allow quick release if needed.

2 pressure gauges needed

Each sidemount cylinder must have its own pressure gauge or transmitter so the diver can monitor gas levels easily. Commonly, SPGs are fitted on short hoses, typically 6–9 inches long, which keeps them close at hand. Care should be taken to protect these hoses and gauges from damage during the dive.

Regulator necklaces

Easy to locate regulator

A regulator necklace keeps a regulator close to the diver's neck, making it easy to locate and access quickly. This is especially useful during sidemount diving, where frequent regulator swaps are required.



Must be the right length

The regulator necklace must be the correct length so that the regulator rests just under the diver's chin. This ensures it is easy to reach and keeps the hose tidy and streamlined.



Commercial versions in different lengths

Commercial regulator necklaces are available in different lengths to suit divers of varying sizes and preferences. Choosing the correct length ensures the regulator sits comfortably and is easy to access while diving.

Bungee cord simple and cheap

Bungee cords are a simple and inexpensive way to make a regulator necklace. The length can be adjusted using a fisherman's knot behind the head. The regulator is secured to



the bungee using a cable tie on the mouthpiece or an overhand knot with an extra turn to prevent slipping.

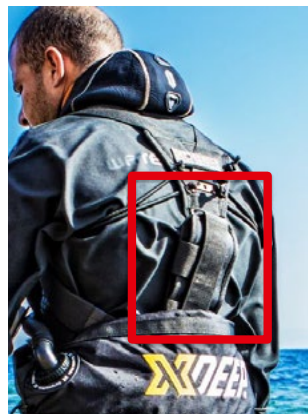


Non-ditchable weight

When switching from a single cylinder to a sidemount setup, the diver is heavier in the water, so the amount of weight carried should usually be reduced. In some cases, the reduction is enough that no extra lead is needed.

However, divers must consider that a sidemounted cylinder may be handed off to another diver. If the diver loses weight in this way, they still need to maintain neutral buoyancy.

For dives with significant decompression, carrying all weight as detachable can be risky. Accidental loss could cause a rapid, uncontrolled ascent. It is therefore best to carry enough detachable weight to make the diver positively buoyant if needed, while the rest of the weight is securely attached and not removable.



Fixed to the spine of the harness

Non-detachable weight can be carried in secure pouches attached directly to the sidemount wing. Because this weight is permanently fixed, it makes the entire sidemount setup heavier and more difficult to handle out of the water. However, these pouches can often be moved to different positions on the wing to help fine-tune the diver's trim in the water.

Trim weights

Many sidemount harnesses include built-in weight pockets positioned along the spine to help with weight distribution and trim. Additional small pouches can be added to the harness webbing, or weights can be attached using bungee or weight plates. When starting sidemount diving, it is important to make small, gradual adjustments to both the amount and placement of weight. This allows the diver to refine trim and achieve better balance in the water over time.

Cylinder position

The standard cylinder position for sidemount diving consists of a single independent cylinder on each side of the diver's torso.

Influences trim and valve access

The position of weights and accessories can affect both the diver's trim and their ability to reach cylinder valves easily. Attaching a boltsnap to the lower part of equipment



helps keep items secure while maintaining good balance and clear access to valves during the dive.

Boltsnaps are usually attached to the lower part of each cylinder using a cam band or a jubilee band. The boltsnap is then clipped to the waist D-ring on the corresponding side of the harness, helping to keep the cylinder secure and correctly positioned during the dive.



The top of each sidemount cylinder is held in place by a bungee attached to the harness. This bungee keeps the cylinder secure and properly aligned with the diver's body, allowing it to move slightly as the cylinder becomes lighter while still maintaining good trim and control.

In some sidemount configurations, a boltsnap may be used at the top of the cylinder instead of a bungee. This provides an alternative method of securing the cylinder to the harness, depending on the diver's preference and equipment setup.

Aluminium cylinders become more buoyant as they empty, so their position needs to be adjusted during the dive. Moving the attachment point as the cylinder lightens helps maintain good trim and keeps the cylinder aligned with the diver's body.



When using aluminium cylinders, the waist D-rings can slide along the harness to compensate for changes in buoyancy as the gas is used. The lower

part of the cylinder is clipped to the waist D-ring, while the cylinder valve is held under the diver's armpit by a length of sidemount bungee attached to the wing. This allows the cylinder position to be adjusted easily during the dive, helping maintain good trim.

Storage

Suit pockets

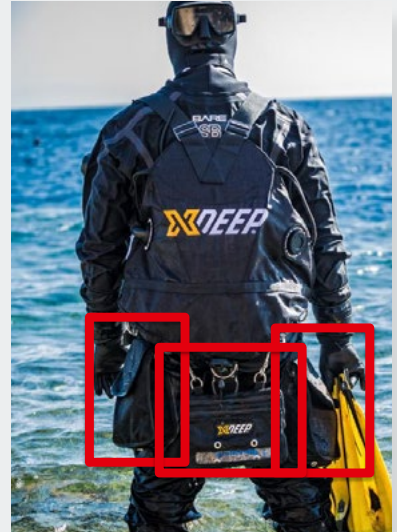
Suit pockets provide convenient storage for small items such as spools, markers, or cutting devices. Keeping equipment in suit pockets helps maintain a streamlined profile and ensures essential items are easy to access during the dive.

Cargo pouch

Cargo pouches can be used to store additional equipment during a dive. They may need to be removed or opened to access the contents, and any equipment used should be restowed securely afterwards to maintain a tidy and streamlined setup.

Torch canister

A torch canister is usually stored at the rear of the harness. This keeps the torch secure, out of the way, and easily accessible when needed during the dive.



Quiz 1

What is are the disadvantage of a One-piece harness?

With a long hose how must it be stowed?



Answers on page 115

Summary

- ✓ Philosophy of sidemount configuration
- ✓ Advantages and disadvantages
- ✓ Valves
- ✓ Buoyancy devices
- ✓ Harness
- ✓ Regulators
- ✓ Weighting
- ✓ Storage



End of module quiz

1. Why is a drysuit alone not suitable for buoyancy control in sidemount diving with two cylinders?
2. What is the purpose of a twin bladder wing?
3. Why are bungees used on very large wings?
4. What are the main advantages of a one-piece harness?
5. What is a disadvantage of a one-piece harness in an emergency?
6. Why are sliding D-rings used with aluminium sidemount cylinders?
7. Why should each sidemount cylinder have its own pressure gauge or transmitter?
8. What is the purpose of using a long hose in sidemount diving?
9. Why are both regulators used during a sidemount dive?
10. Why is some weight carried as non-ditchable in sidemount diving?

Answers on page 115

Failure modes and resolution

Check out your eLearning video

Failure modes and resolution

Alex Warzynski is a BSAC National Instructor, he will take you through the first part of the video module.

Remember if you need to discuss any of the theory e-mail or call your instructor at your club or centre.

Video time length | 00:00 mins

Click the image below to start watching the video.



SMT3 Failure modes and resolution

Lesson objectives

This lesson builds on the equipment lesson and looks at the way sidemount provides redundancy for more adventurous diving.

Increased buddy awareness becomes more important with more adventurous diving. Communication before, during and after the dive is examined in some detail.

The failure modes of sidemount are identified, and how the diver and the buddy solve each using the equipment available.

Achievement targets

At the end of this lesson, students should understand the need for:

- **Buddy communication at a level used for more arduous diving**
- **Sidemount failure modes**
- **How to deal with specific problems**
- **Understand the BSAC policy on using a primary donate AS technique**

Lesson outline

- The buddy system
- Self-reliance
- Communication
- Problem solving
- Mendable failures
- Non-mendable failures
- Primary donate



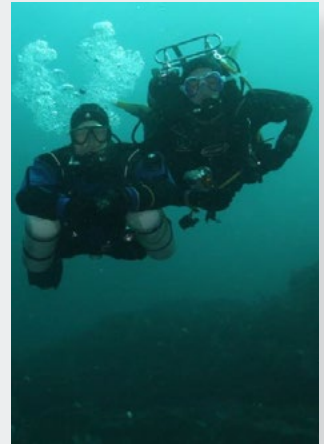
The buddy system

Increased risk

As dive depth and duration increase, so does the level of risk. Deeper dives and longer bottom times place greater demands on divers and equipment. Using the buddy system becomes increasingly important to help manage these risks, providing assistance, awareness, and support throughout the dive.

Sidemount adds to safety

Sidemount diving can improve safety by providing a larger gas supply and built-in equipment redundancy. Having independent cylinders and regulators gives the diver more options if a problem occurs. However, this does not replace the need for a buddy. Sidemount diving is not a substitute for solo diving, and problems should still be managed as a team whenever possible.



Buddy system tried and tested

The buddy system is a proven and reliable way to keep divers safe. When both divers carry redundant, life-critical equipment, they have more options to deal with problems effectively. This shared redundancy allows the buddy pair to work together to manage equipment failures or emergencies in a controlled and safe manner.

Self-reliance

Sidemount diving encourages self-reliance, but it is not the same as solo diving. If a buddy is unable to help, a sidemount diver can manage many problems independently by using their redundant equipment. To do this safely, regular practice and ongoing maintenance of problem-solving skills are essential parts of sidemount training and diving.

Communication

Increased exposure - be meticulous

As dive depth and duration increase, divers are exposed to greater risk. This makes clear communication and careful preparation as a buddy pair even more important. Being meticulous before and during the dive helps ensure both divers understand the plan, equipment, and procedures, reducing the chance of misunderstandings or problems underwater.



Pre-dive

Before the dive, it is important to understand any limitations set by the Dive Manager. These may include restrictions such as the available slack water window, site opening hours, or a required time to return to base. These factors must be considered during dive planning so the buddy pair can conduct the dive safely and within agreed limits.

Once the dive plan has been agreed with your buddy, it should be logged with the Dive Manager. This is especially important if the dive is longer than usual, as it ensures that someone on the surface is aware of the plan and can respond appropriately if needed.

A thorough buddy briefing using the SEEDS framework is essential before every dive. Even with experienced divers, this briefing helps identify any changes in equipment, agree on special signals, and assign specific roles during the dive, such as who will deploy the DSMB. A clear briefing improves teamwork and reduces the chance of confusion underwater.

When diving with a new buddy, it is important to spend a few minutes examining each other's equipment. This helps both divers quickly locate essential items, such as inflators or dump valves, in the water. Being familiar with each other's kit can make handling emergencies faster and safer.

Buddy check

Before every dive, a full buddy check must be carried out using the BAR format. This ensures all critical systems are working properly.

- **Buoyancy**

Check that the BCD inflates and deflates correctly, that the inflator hose is connected, and that all dump valves work.

- **Air/Gas**

Confirm the cylinder valve is open, there is enough pressure, the regulators breathe smoothly, and the correct gas is being used.

- **Releases**

Make sure all weight systems, buckles, and clips are secure. Each diver should also know the location and operation of their buddy's releases.

Performing a thorough BAR check helps prevent problems underwater and ensures both divers are ready to dive safely.

In addition to the buddy check, each diver should perform a personal top-to-toe equipment check. This ensures that all required gear is present, fitted correctly, and working properly. Doing this self-check helps prevent accidents caused by missing, forgotten, or incorrectly worn equipment.

Before entering the water, divers should practice using the alternate air source on dry land. This includes locating and deploying the alternate air source, checking that the hose routing allows easy use, and simulating both giving air to a buddy and breathing from it. The buddy should also know where the alternate air source is and how to use it in an emergency.

During the dive

Good buddy positioning

Maintaining good buddy positioning contributes to a safer and more relaxed dive for both divers. Staying close enough to observe each other and communicate easily allows for quick assistance if needed and enhances overall dive enjoyment.

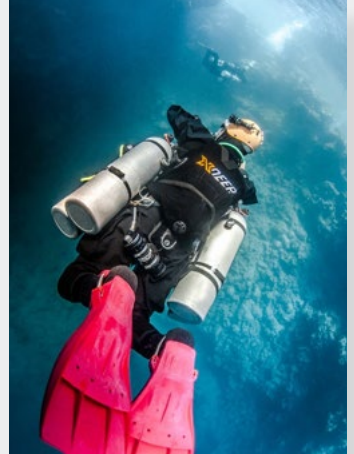
Swimming side by side helps divers maintain visual contact and communicate more easily. It also makes it simpler to indicate changes in direction or stops to look at something interesting. Using agreed hand signals or light signals ensures both divers understand the planned movements and can respond safely together.

When one diver follows the other, it can be harder to maintain visual contact and communicate. Changes of direction or stops may be less obvious, so it is important to use clear, agreed signals and stay close enough to respond quickly if something happens.

In low-visibility, dark, or dim conditions, dive lights help divers stay together. Divers should follow each other with the light visible and use short, pre-agreed signals to communicate. All signals should be discussed and understood during the dive briefing to ensure clear and safe communication underwater.

During a dive, the torch beam should be held steady and pointed where the buddy can see it clearly. The light should only be moved intentionally to highlight something of interest. Keeping the light steady helps the buddy maintain orientation and ensures clear communication throughout the dive.

The “OK” signal is given by moving the dive light in a circular motion. The buddy responds with the same motion to confirm they understand and that everything is fine. This signal shows that a diver is safe, ready, or that a situation is normal.



To get your buddy's attention during routine situations - like starting the ascent, performing a gas check, or pointing out something interesting - a slow, deliberate waggle of the light is used. This can be up-and-down or side-to-side. The slow waggle signals that you need attention but does not mean there is an emergency.

In an emergency, the dive light is moved rapidly from side to side. When this signal is seen, the buddy must immediately prepare to share gas. This involves taking the long-hose regulator from the mouth or its stowed position and offering it to the diver in need.

Problem solving

Equipment malfunction rare

Even well-prepared buddy pairs can experience equipment problems underwater, though modern, well-maintained gear rarely fails. Sidemount diving provides built-in redundancy, which increases safety and makes it more likely that any problem can be managed successfully. Practising responses to potential failures before the dive ensures both divers are ready to handle issues calmly and effectively.



Two types of failure

Equipment failures fall into two categories. Some problems can be safely fixed underwater, allowing the dive to continue. Other problems cannot be solved during the dive and mean the dive must be aborted. Knowing which type of failure has occurred is essential for deciding the correct response.

Regardless of the type of failure, clear communication with your buddy is essential. The buddy must understand the problem and be ready to help if needed. For issues involving gas loss, the first step is to close the affected cylinder valve and signal the team to alert them to the problem.

Fixable failures

Unseated first stage or unscrewed hose

A first stage may become unseated from the cylinder valve if knocked, or not tightened sufficiently. If it has, then the dive can continue, while carefully monitoring the regulator in case it leaks again.



After moving to a working regulator, the diver should first depressurise the faulty regulator. Then, tighten the first stage to make sure it is properly seated, and reopen the cylinder valve. Finally, check whether the leak has stopped before continuing the dive.

If the leak stops after adjustment, the regulator can be used again, but it should be monitored closely for any recurrence. If the leak continues, the dive must be aborted to ensure safety.

If the leak cannot be stopped after trying to fix it, the affected cylinder valve must be closed immediately, and the dive should be safely aborted. The diver and buddy should follow standard ascent procedures, watch each other closely, and share gas from the working cylinder as needed.

Free flow

If a regulator starts free-flowing at depth, it can quickly drain gas from the cylinder. The diver should immediately turn off the faulty regulator and switch to a working one. Acting quickly helps preserve gas and gives time to deal with the problem safely.

If a regulator starts free-flowing, first turn it off. Once it is depressurised, slowly reopen the cylinder valve to check if the free flow has stopped. This allows the diver to determine whether the regulator can be used again safely.

If the free-flowing regulator stops after checking, the dive can continue. The diver should monitor the regulator and cylinder valve closely for any further free flows to ensure it remains safe to use.

After dealing with a free-flowing regulator, a gas check should be performed to make sure there is enough gas to complete the dive safely. If there is any doubt, the dive should be shortened in case the regulator starts free-flowing again.

If the regulator continues to free-flow, the cylinder valve should be closed and the dive aborted. In some cases, the valve can be partially reopened using a “feathering” technique to allow the diver to safely breathe while ascending, but the dive should still be terminated.

If a regulator is free-flowing, a diver can sometimes control the gas using a technique called “feathering.” This means slowly opening the cylinder valve just enough to breathe while minimising gas loss. Feathering gives the diver time to deal with the problem or prepare for a safe ascent. This technique should only be used by trained divers and as part of a well-practised procedure.

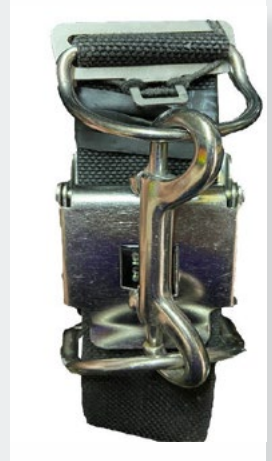
Loose regulator hose

If a regulator hose becomes loose and starts leaking, the problem can usually be fixed by purging the regulator to relieve pressure and then tightening the hose by hand. If the diver carries a suitable tool, it can also be used to ensure a secure fit. After tightening, check the regulator to make sure the leak has stopped before continuing the dive.

Fixable failures

Harness fault

If a quick-release clip breaks during a dive, a temporary repair can be made using a spare double-ended bolt snap. To do this, clip one end of the bolt snap into a D-ring on one side of the broken clip and the other end into the D-ring on the opposite side. This restores functionality until a proper repair can be made.



Using a temporary bolt snap repair provides a secure connection, which may allow the dive to continue safely. However, if the repair is not reliable or the situation cannot be managed safely, the dive should be aborted.

Broken mask

A broken mask can greatly increase the risk during a dive. Clear vision is essential for safe navigation and ascent, so divers should carry a spare mask whenever possible. Having a backup allows the diver to continue the dive safely or complete the ascent without compromising safety.

Torch fault

On dark or overhead dives, a torch is essential for finding the exit and staying aware of your surroundings. Divers should always carry at least one backup torch in case the primary fails.

If the primary torch fails, the diver should immediately switch to the backup. If no backup is available, or if both torches fail, the dive must be safely aborted to ensure the diver's safety.

Non-fixable failures

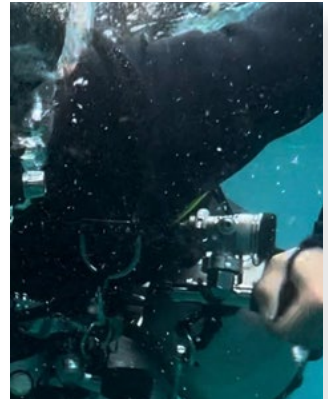
Gas loss

This may be due to an empty cylinder caused by poor gauge monitoring, a first stage failure, a second stage free flow or cessation of supply, a broken mouthpiece, a burst hose, or a fitting coming unscrewed.

If a cylinder runs out of gas, the diver must immediately switch to a working cylinder or their alternate air source. They should also signal their buddy to make them aware of the situation.

If the first stage of a regulator stops delivering gas properly, the diver should switch to another regulator or cylinder and inform their buddy immediately.

If the regulator you are breathing from stops working correctly, switch to your backup regulator or another cylinder and inform your buddy. The faulty regulator can be isolated, and a safe ascent made.



If gas is escaping uncontrollably from a regulator, close the affected cylinder if possible. Switch to a working regulator and alert your buddy to the problem.

If gas stops flowing for any reason - such as a valve being accidentally closed - switch immediately to another gas source and inform your buddy.

If the mouthpiece of your regulator is damaged or comes off, switch immediately to a backup regulator and let your buddy know.

If the hose connecting your regulator to the cylinder bursts, switch immediately to a working regulator and inform your buddy.

If a connection or hose is loose and causing a gas leak, tighten it if possible. If the leak cannot be fixed, switch to an alternative gas source and signal your buddy.

Resolution

In all gas-related emergencies, the top priority is to switch to a working gas source if one is available. Stay calm and communicate clearly with your buddy. If no safe gas source is available, the dive must be safely aborted. Always inform your buddy when switching cylinders, and if necessary, terminate the dive to maintain safety.

Cylinder neck O-ring failure

If a cylinder neck O-ring fails, it usually does not cause a rapid loss of gas. However, the leak should be monitored and addressed at the surface to prevent further problems.

Resolution

On a sidemount setup, cylinder valves are easy to access, so it is usually



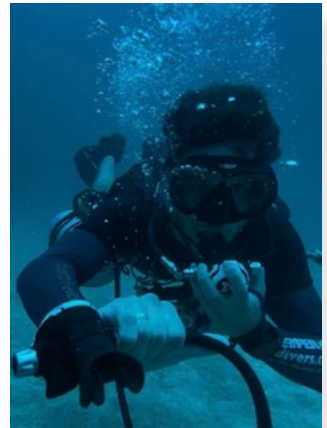
straightforward to identify which side the leak is coming from. Inform your buddy about the problem and communicate clearly what is happening. If the leak cannot be safely managed, the dive should be aborted.

If an O-ring fails, the dive should be ended. Consider carefully breathing from the cylinder with the failed O-ring to preserve as much gas as possible in the working cylinder. If no buddy is present, extra caution is needed, and the dive must be terminated safely.

Sometimes a problem is first noticed as a drop in pressure on the cylinder gauge. In this situation, the same rules apply: stay calm, manage your gas carefully, and end the dive in a controlled, safe manner.

Total loss of gas

Although rare, total gas loss can happen. Causes include inattentive monitoring of gas, a faulty pressure gauge, a rapid catastrophic leak, multiple equipment failures, or a poor-quality gas fill that cannot be breathed safely. Regularly checking gauges, maintaining equipment, and using reliable gas fills helps reduce the risk.



Resolution

If a diver experiences a total loss of gas, they should switch immediately to their buddy's alternate air source and begin a controlled ascent. This ensures a safe return to the surface while maintaining gas supply.

After surfacing following a gas emergency, manually inflate your buoyancy compensator to ensure you are positively buoyant. This

helps keep you safe and stable on the surface while waiting for assistance or completing the dive exit.

Broken fin-strap

A broken fin strap is usually inconvenient but not dangerous, as you can still swim with one fin. However, the dive should be ended, and a controlled ascent started. Using spring straps can help prevent this problem, as they are more reliable and less likely to fail.

Instrument failure

Failures of modern dive computers are rare, but they can happen. For long decompression dives, it is recommended to carry a backup computer. This ensures that you can continue to monitor depth, time, and decompression obligations safely if the primary computer fails.

It is also important to have the dive plan written on a slate or wet-notes so it can be referenced underwater if needed.

If a diver's own computer is unavailable, they can follow their buddy's computer - provided the buddy is using a similar gas mix and has planned a similar dive profile. This allows the diver to safely control their ascent using the buddy's information.

In addition to mandatory decompression stops, it is a good idea to include precautionary stops during the ascent. These extra stops help account for variations in the dive profile and provide an additional safety margin, reducing the risk of decompression-related issues.



Flooded suit

A sidemount diver should be weighted so that, even if the drysuit floods, there is enough buoyancy to make a controlled ascent and stay safely afloat at the surface. Proper weighting ensures the diver remains safe in this situation.

If the suit floods, the diver is at increased risk of hypothermia. It is important to make an efficient but controlled ascent to minimise further heat loss while staying safe in the water.

Buoyancy compensator failure

If the primary buoyancy bladder fails, the diver can use their drysuit or the secondary bladder in the wing as an alternative source of buoyancy.

A buoyancy compensator can fail for several reasons, including:

- **A hole in the bladder**
- **Failure of the air feed supply**
- **A split corrugated hose**
- **Cracked plastic fittings**
- **A broken tie wrap**



Knowing these potential issues helps divers inspect their equipment and respond appropriately if a problem occurs underwater.

If any of the issues above occur, the diver should use their redundant buoyancy to stay safe. Having backup buoyancy ensures the diver can maintain control and ascend safely.

Primary donate

If a diver plans to donate their regulator - either from their mouth or from a stowed position - and the buddy is not familiar with this method, the diver must ensure the buddy understands and is comfortable with the procedure before the dive. This helps prevent confusion and ensures safe gas sharing in an emergency.



Ensure buddy is happy with technique

If a buddy has not been trained in an alternate air source technique that requires action by the donor, they must hold at least a BSAC Sports Diver qualification (or an equivalent) before participating. This ensures they have the necessary skills to respond safely in an emergency.

It is not sufficient to wait until just before entering the water to tell a buddy that you will give them your regulator if they run out of gas. Any use of an alternate air source technique must be discussed and fully understood by both divers well before the dive to ensure safety.

Both divers must practice the alternate air source technique on land or in a controlled environment before the dive. This “dry run” ensures that the buddy receiving the regulator is confident in using it correctly in an out-of-gas situation.

After practicing on land, the alternate air source procedure should be repeated at the surface in the water. This reinforces the technique

and ensures both divers are confident using it under real conditions. The drill only needs to be done once at the start of a series of dives, but it must be repeated with each new buddy.

Primary take (taken from mouth)

Under no circumstances should a regulator be taken directly from the donor's mouth. This is not an acceptable procedure and must never be used.

Quiz 1

How is the "OK" signal given with a dive light?

What should divers do if they are paired with a new buddy?



Answers on page 117

Summary

- ✓ The buddy system
- ✓ Self-reliance
- ✓ Communication
- ✓ Problem solving
- ✓ Mendable failures
- ✓ Non-mendable failures
- ✓ Primary donate



End of module quiz

1. Why is the buddy system especially important on deeper or longer dives?
2. How does sidemount diving improve safety?
3. What is the purpose of a pre-dive buddy briefing using the SEEDS framework?
4. What should divers do when using a new buddy?
5. What are the three main areas checked in a BAR buddy check?
6. How should divers practice the alternate air source (AAS) technique?
7. What are the two types of equipment failure underwater?
8. How should a diver respond to a free-flowing regulator?
9. What should a diver do if their mask or torch fails?
10. What is the rule regarding taking a regulator directly from a donor's mouth?

Answers on page 117

A sidemount diving tank is the central focus, resting on a rocky beach. The tank is black with blue and yellow accents, featuring the 'XOPEED' brand name. Two regulators are mounted on the tank, with hoses and B-cylinders attached. In the background, a diver in a black wetsuit stands on the beach, looking towards the camera. The scene is set against a backdrop of mountains and a clear sky, suggesting a coastal diving location.

TS Supplementary information

[Go back](#)

Check out your eLearning video

Introduction

Alex Warzynski is a BSAC National Instructor, he will take you through the first part of the video module.

Remember if you need to discuss any of the theory e-mail or call your instructor at your club or centre.

Video time length | 00:00 mins

Click the image below to start watching the video.



TS SUPP - Supplementary information

Module objectives

This module goes into more detail about sidemount and twin-set diving, and other items that are not specific to sidemount and twin-set diving, but are useful additions to make challenging diving easier.

Achievement targets

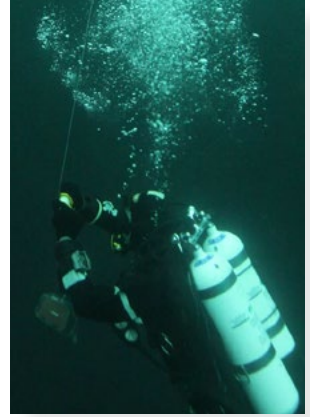
At the end of this module you should:

- **Understand different cylinder types**
- **Understand BC inflation and deflation options**
- **Understand how to choose gauges and hoses**
- **Appreciate different types of weighting**
- **Understand how to use ancillary equipment**

Lesson outline

The module covers the following subjects:

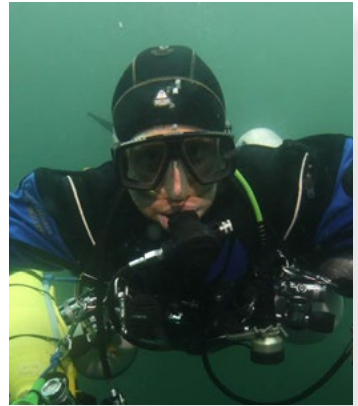
- **Cylinder types**
- **BC inflation and deflation**
- **Gauges and hoses**
- **Weighting**
- **Ancillary equipment**



Disadvantages

Less convenient for multi-gas diving

This setup is less convenient for dives that use multiple gases. When all cylinders are sidemounted, there is less overall capacity, and it becomes more complicated to carry additional decompression cylinders. Divers also need to take extra care to correctly identify each cylinder before using it.



Face down at surface

Even when the wing is fully inflated, divers may tend to float face-down at the surface. In calm conditions, it is usually easy to turn the diver over during a rescue. However, in more challenging conditions, such as those often found in UK sea diving, this can make a rescue more difficult and less effective.

Wide profile

The width of a fully equipped sidemount diver can be a problem in the confined space of a dive boat. There may not be enough room for all divers to sit and kit up at the same time. The wider profile can also make it harder to pass through narrow spaces, such as wreck doorways.

Longer to kit up

Fitting the harness and wing, and then attaching each sidemount cylinder, takes longer than using a back-mounted twinset, which can be put on in a single step.

Dedicated sidemount setup

The most effective sidemount setups are usually highly specialised and are not easily adapted for other types of diving.

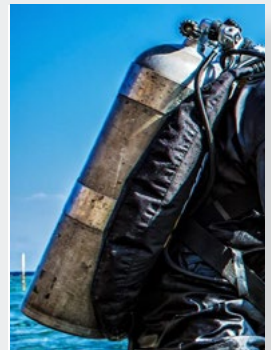
Complex adjustment

Because there are many variables in how the harness and cylinders are fitted, the equipment must be carefully adjusted for each individual diver. This takes practice and can be time-consuming.

Cylinders

Materials

Diving cylinders are made from either steel or aluminium. In UK diving, steel cylinders are more commonly used because divers usually wear drysuits, and steel cylinders reduce the amount of lead weight needed.



Pressures

Diving cylinders are commonly rated to working pressures of 207, 232, or 300 bar. Aluminium cylinders are usually manufactured with a working pressure of 207 or 232 bar. Steel cylinders are available in 232 or 300 bar versions.

Although 300 bar cylinders may appear attractive because they hold more gas, they can be extremely heavy. This extra weight may mean the diver cannot carry any ditchable weight. They are also difficult to handle on land, and some filling stations are unable to provide a full 300 bar fill.

Shape

Aluminium cylinders have a flat base, which means a cylinder boot is not needed for them to stand upright. The metal is thicker at the base to help absorb impacts during normal diving use.

Steel cylinders commonly have a rounded base. If they need to be stood upright without leaning against a support, a cylinder boot must be fitted.

Steel cylinders with a concave base are becoming more common. This design creates a flat base, allowing the cylinder to stand upright without support.

If a cylinder boot is not fitted, the paint on the cylinder can be easily damaged and may need frequent repair.



Whenever a twinset is stood upright, even if it has boots or a flat base, care must be taken to prevent it from falling over. The twinset should be secured to a solid object. If this is not possible, it should be laid down so that it cannot fall over.

Cylinders with the same gas capacity are available in dumpy, standard, and tall versions to suit divers of different heights.



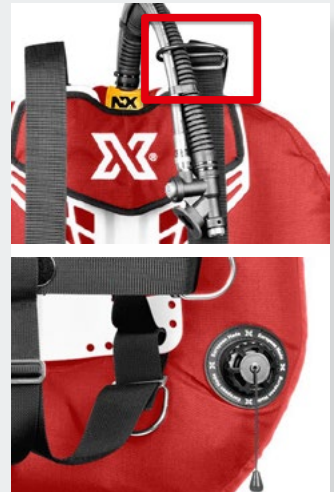
BC inflation and deflation

Corrugated hose

The corrugated hose is attached to the harness using an elastic loop. This keeps it in place and makes it easy to find and use when needed.

The hose should be long enough for the diver to reach their mouth comfortably. It should allow easy manual inflation without being too long.

For twin-set cylinders, the corrugated hose elbow should be positioned in the center between the cylinders. If it is off to one side, it could get trapped between the left cylinder and the diver.



Dump valves

All buoyancy wings have an over-the-shoulder corrugated hose inflator and at least one lower dump valve. These lower dumps allow

the BC to release air effectively when the diver is lying flat or upside down.

Some buoyancy wings have extra upper dump valves. These can be operated quickly by an external pull cord, or by pulling the corrugated hose, which opens a valve in the elbow using an internal cord.

Gauges

Simple, robust pressure gauge

A simple, sturdy, and easy-to-read pressure gauge is usually better than a large console.

Instruments

Instruments should be worn on the wrist so they are easy to see and access during the dive.

Instruments should be simple to operate, so the diver can read and use them easily underwater.

Instruments should be worn securely so that no console hangs down. This reduces the risk of entanglement and makes them easier to access.



Hose types - Rubber

Rubber hoses are a common type of diving hose, known for being durable and reliable. Knowing their advantages and disadvantages helps divers choose the right hose and use it safely and efficiently underwater. The main benefits and limitations of rubber hoses are outlined below.



Advantages

Rubber hoses are widely available, making them easy to replace or repair when needed. They have a smooth surface but still provide a good grip, which makes them comfortable and reliable to handle underwater.

Rubber hoses do not float, which helps prevent them from getting tangled and keeps the diver's equipment streamlined.

Rubber hoses can be cut to custom lengths, allowing divers to create a setup that fits them personally and works efficiently underwater.

Disadvantages

Rubber hoses can harden in cold water, which makes them less flexible and harder to handle. They also require a large bend radius, meaning they cannot be bent sharply without risking damage or kinking.

Additionally, they are usually available in only one color, which limits options for color-coding equipment.

Hose types - Braided

Braided hoses are a popular choice for divers because they are more flexible than traditional rubber hoses. This flexibility makes them easier to route and handle underwater, while still providing reliable performance. The main advantages and potential disadvantages of braided hoses are outlined below.

Advantages

Braided hoses remain flexible even in cold water, which makes them easier to handle and route during a dive. They also allow a tighter bend radius, which is useful for bungee stowage and keeping hoses neatly secured.

Braided hoses remain flexible even in cold water, making them easier to handle and route during a dive. Additionally, braided hoses are available in a wide range of colors, allowing divers to easily identify and customize their equipment.



Disadvantages

Braided hoses can float, which may affect hose routing and the diver's trim if not managed properly. They can also slip out of stowage if not secured correctly. The braided outer layer can wear away suit seals over time if it rubs against them repeatedly. Because they have no outer protective cover, braided hoses are more easily damaged than rubber hoses. Additionally, braided hoses cannot be cut to custom lengths, which limits flexibility when configuring equipment.

Lower-cost braided hoses can degrade internally. If they are bent too tightly, they may fold flat and restrict or even completely cut off the gas supply.

Quiz 1

What are the advantages of a rubber hose?

Which equipment is used for inflation and deflation?

Answers on page 119



Ditchable weight

Weightbelt

A standard diving weightbelt positions the lead around the diver's centre of mass. Adding or removing weight from the belt has less effect on the diver's trim than adding or removing weight further away from the centre of mass.



When a weightbelt is used with a crotch strap, it can get caught and make an emergency jettison more difficult. In this case, the diver may need to undo both the waist strap and the crotch strap before releasing the weightbelt.

Weight pouches

Weight pouches are attached directly to the harness, allowing the diver to carry lead in a secure and convenient way.

Quick-release weight pouches can be threaded onto the harness. Like the integrated weight systems on jacket-style BCs, the weights are first placed in a pouch, then inserted into a pocket on the harness and secured with a quick-release system. These pockets take up space on the waist strap and may make it harder to access D-rings.



A weight harness is a dedicated harness worn specifically to carry weight pouches. It must be fitted so that it does not interfere with the main diving harness.

A separate weight harness allows the diver to carry a large amount of weight and helps prevent a weightbelt from slipping. These harnesses are especially useful when a diver needs extra weight or when a normal weightbelt tends to slip due to the diver's body shape.



Ancillary equipment

Storage

Items clipped to D-rings often dangle when the diver is swimming horizontally. Since many wings and harnesses no longer include pockets for storing gear, divers need to think carefully about where to stow their equipment to keep it secure and out of the way.

Snug without dangling

All equipment should be stowed snugly so it does not dangle or move around. When standing with a twin-set, a simple lean forward should not cause gear to shift from its stowed position. Items that need to be accessed quickly should be prioritised, followed by equipment used more frequently, while less frequently used items should be stored last.



When using an alternate air source technique that requires giving your regulator to another diver, the hand that donates it should always remain free. Only items that are quickly accessible should be handled with that hand, so it is available immediately if the regulator needs to be passed.

Snoopy loops

Snoopy loops are short pieces of inner tube, either bought commercially or made from sections of a mountain bike inner tube about 25 mm long. They can be used to hold items, such as torches, snugly to the harness, with the torch clip attached to a D-ring.



When threading a harness into the backplate, several snoopy loops should be added along the harness. This way, if one loop breaks, a spare can be used without having to unthread the entire harness.

Waist storage pouch

A pouch threaded onto the waist strap provides a convenient place to store small items within easy reach.

Leg pouch

A leg pouch is threaded onto the waist strap and hangs down to the side. It has an extra piece of narrow webbing with a quick-release buckle that wraps around the leg to keep it securely in place.



Tail plate

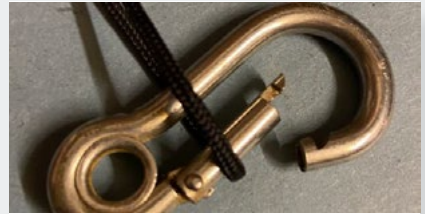
A tail plate made of fabric is attached to the bottom of the backplate, providing a place to secure items. Care must be taken when sitting down with a twin-set, as the cylinders can crush any items stored on the tail plate.



Clips

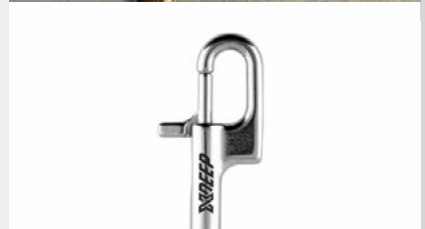
Avoid self-opening types

Open-gate and self-opening clips can create a line trap hazard. A line can easily slide along the clip, open the gate, and become trapped, increasing the risk of entanglement.



Piston clips

Clips should have a positive opening action so they do not open accidentally. Slider-operated P-clips are recommended, as many designs have wide openings and long triggers that are easy to operate, even when wearing thick or cold-water gloves.



Stainless-steel clips are durable and resistant to corrosion, making them longer lasting than plain brass clips, which can degrade over time. Applying a small amount of lubricant occasionally helps keep the clips working smoothly.

Practising in a dry environment by clipping and unclipping items from D-rings helps build muscle memory. With regular practice, divers should be able to do this quickly and accurately without needing to look.

Cutting devices

Large knife on leg

Wearing a large, traditional diver's knife on the leg can create a snag hazard, which increases the risk of entanglement during a dive.

Mounting a knife on the leg should be avoided, as it can be difficult to reach quickly in an emergency.



Harness mounted knife

A small, sharp knife mounted on the harness is preferable, as it reduces the risk of snagging compared to a large knife worn on the leg.

A harness-mounted knife should be positioned so it can be reached with either hand, ensuring it is accessible quickly in an emergency.

Line cutters

A secondary cutting device, such as a line cutter, is useful for cutting monofilament and provides an alternative if a knife is difficult to use.

Line cutters should be positioned so they can be reached with either hand and mounted in a place where they are easy to access when needed.

Inspect for corrosion

Both knives and line cutters need regular inspection and maintenance. Even though stainless steel is hard, it can still be affected by corrosion over time.

Drysuit pockets

Permanently attached pockets on the drysuit are a popular option. They can be fixed to the front of the leg or in line with the outside seam.

Front pockets - Advantages

Front pockets are useful because their contents are easy to see, allowing the diver to locate items quickly. A simple glance down makes it easy to check what is stored in them.

It can be difficult to remove items from front pockets when the knees are bent or raised, which can make them less accessible in certain positions.

Front pockets can create drag in the water, which may reduce streamlining and make swimming less efficient.

Front pockets can catch on inflatable tubes or other equipment, especially when a diver is climbing out of the water onto a small boat.

Outside pockets - Advantages

Outside pockets are positioned in the slipstream of the diver's shoulders, which reduces drag and helps the diver stay streamlined while moving underwater.



Outside pockets are also easy to access, allowing the diver to reach items quickly and efficiently.

Disadvantages

The contents of outside pockets are not easily visible, which makes it harder for the diver to quickly identify and locate items.

Pocket closure

Zips - Advantage

Zip closures are secure, helping to keep items in the pockets and prevent them from falling out during a dive.

Disadvantages

Zips can sometimes fail in the closed position, making pockets difficult or even impossible to open during a dive.

Another disadvantage of zips is that the sliders can break off, which can make the pocket unusable.

Zips can be difficult to operate with cold or thick gloves, making it harder for the diver to access the pocket during a dive.

Velcro - Advantage

Velcro closures fail in the open position, so the contents of the pocket remain accessible even if the closure wears out or degrades.



Disadvantage

Velcro can catch on some gloves, making it more difficult to open or close pockets during a dive.



Bungee loop to secure items

A bungee loop can be used to keep items secure inside a pocket. When accessing equipment, all items should be removed and unclipped first, and any remaining items should then be restowed securely.

Over shorts for wetsuits

Over-shorts can be worn over a wetsuit to add extra pockets and attachment points. This improves equipment storage and accessibility without permanently altering the wetsuit.

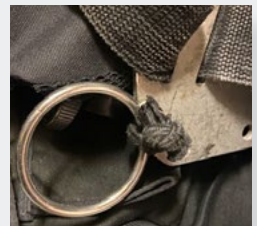


DSMB, reel or spool

Stow without dangling

A DSMB with a reel or spool must be stowed securely to prevent it from dangling. Proper stowage reduces the risk of snagging and helps prevent the reel or spool from accidentally deploying during the dive.

A ring, fixed to the side of the backplate, can be used to secure a large reel. This prevents the



reel from dangling while swimming horizontally, improving both safety and streamlining.

Backup DSMB and spool

A backup DSMB and finger spool can be stored easily in a pocket, keeping them out of the way until they are needed.



The backup DSMB and spool should be practiced regularly to maintain familiarity and ensure the diver can deploy them correctly when needed.

DSMB colour

When communication with surface support is required, a brightly colored DSMB, such as red or orange, should be used. This ensures the diver is clearly visible and can signal their position effectively.

A red or orange DSMB is used for normal ascents. In typical UK sea conditions, a buoy about 1.2 m long and fairly wide makes it easy for surface support to track the diver. For longer or deeper dives that involve extended decompression stops, carrying a DSMB is essential, and having a backup is recommended.

A single yellow DSMB signals that the diver needs additional gas, alerting surface support or other divers to a potential problem.



A yellow DSMB indicates a problem or fault. When sent up on the same line as the orange DSMB, it signals that there is an issue that requires further attention.

When using DSMBs to communicate with surface support, signals should be agreed on in advance. These signals are not universal, so divers need to coordinate with the surface team—for example, by ensuring an extra cylinder of dive gas is available in case of an emergency.

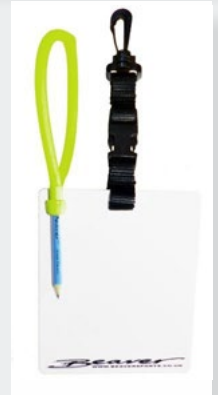
Run time notes

Slates

Single-piece slates are made of hard plastic and can be written on underwater. The notes can be erased, allowing the slate to be reused multiple times.

Single-piece slates should be stored in a pouch or pocket. They should not be left dangling from a D-ring, as this can create a snag or drag hazard.

Multi-page flip-style slates can be worn on the wrist, offering a large writing area while using minimal space. They are convenient for taking notes frequently underwater.



Wetnotes

Waterproof notebooks, often with a fabric cover, are made from plastic paper. Divers can write several dive plans in the notebook and choose the one they need.



Turning pages underwater can be tricky because wet pages stick together, so trimming alternate top and bottom corners makes it easier to flip through them. The cover usually has a small pocket for decompression tables and extra pouches for pencils, cable ties, whistles, and other small items.

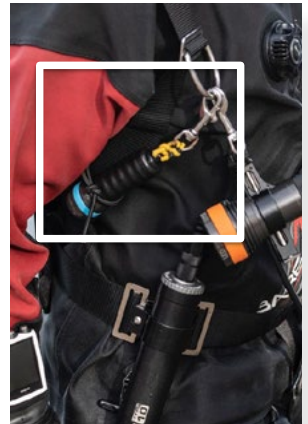


Lighting

LED small, bright, long lasting

Modern LED dive lights are small, bright, and long-lasting. They are more reliable and efficient than traditional incandescent lights.

In an umbilical-style light, the light head is separate from the battery pack and connected by a cable. The switch may be on the light head or on the battery pack. A large battery pack can sometimes also supply power to a heating system.



If the switch is on the battery pack, it must be positioned so that it is easily accessible during the dive.

When the battery pack needs to be accessible, it can be mounted on the waist strap and secured with an extra buckle. This makes it easy for the diver to reach the battery when needed.

The battery can be mounted upside-down on the backplate, which can improve streamlining and balance. Proper setup ensures that all gear stays secure and does not interfere with movement underwater.

When the light's switch is on the head, the battery pack does not need to be accessed during the dive. In this case, it can be mounted on the side of the cylinders using cam bands or brackets.

Care should be taken to ensure the light and its umbilical do not create extra drag or a snag hazard. While holding an umbilical-style light, it can interfere with deploying the long hose and may become entangled. Divers should practise both long hose deployment and proper cable management to avoid problems underwater.

Handheld and backup lights

Compact, powerful handheld LED lights are available that provide a long burn time, making them useful as primary or backup lights during a dive.

Handheld and backup lights should be stowed neatly on the harness to prevent them from dangling and creating a snag or drag hazard.

Tucking handheld or backup lights into a snoopy loop is an effective way to keep them secure. A secondary clip can also be used to hold the torch close to the body and prevent it from moving around.

Small LED torches can be stored in a pocket or pouch, or clipped to a D-ring on the harness and secured with a snoopy loop. They do not need to be extremely bright, but they must be reliable and have a long burn time. Budget torches with multiple modes often fail prematurely, which can happen at critical moments.

Overhead - primary plus 2 x backup

When diving in an overhead environment, it is recommended to carry a large primary torch along with two backup torches. Adequate lighting is essential, as it would be very difficult to see or navigate to an exit without it.

Quiz 2

Where should you mount a cutting device?

What runtime notes are available?

Answers on page 119



Summary

The module covered the following subjects:

- ✓ **Cylinder types**
- ✓ **BC inflation and deflation**
- ✓ **Gauges and hoses**
- ✓ **Weighting**
- ✓ **Ancillary equipment**



End of module quiz

1. What are the two main materials used for diving cylinders?
2. Why are steel cylinders more commonly used in UK diving?
3. What are the common working pressures for diving cylinders?
4. What is the purpose of a cylinder boot?
5. How should a twin-set be positioned if it cannot be secured?
6. Why is the corrugated hose on a twin-set positioned centrally?
7. Name two advantages of rubber hoses.
8. What is one disadvantage of braided hoses compared to rubber hoses?
9. How should items be stowed when using a twin-set?
10. Why should the donating hand be kept free when giving an alternate air source?

Answers on page 119

The way forward

Check out your eLearning video

The way forward

Alex Warzynski is a BSAC National Instructor, he will take you through the first part of the video module.

Remember if you need to discuss any of the theory e-mail or call your instructor at your club or centre.

Video time length | ??:?? mins

Click the image below to start watching the video.



SMT4 The way forward

This lesson does not require visual aids to be used (although they are provided) as it is expected that this is performed at the dive site and not in a classroom.

Lesson outline

- Development
- Keeping current
- Logistics
- Other BSAC courses
- SMG
- Open forum



Development and keeping current

Written report on your performance

Your instructor will provide each you with an individual written report using the forms in the instructor resources. The report will highlight good points, as well as areas for improvement. Any equipment or skills that need attention will be noted, along with suggestions on how

to make improvements. This report serves as a record of the diver's progress.

Keep current

Sidemount skills can become rusty if they are not practised regularly. Regular practice keeps key skills smooth, efficient, and builds confidence. Practising a skill during a dive is a good way to maintain proficiency, but always make sure your buddy knows what you are doing before starting.

Qualification logistics

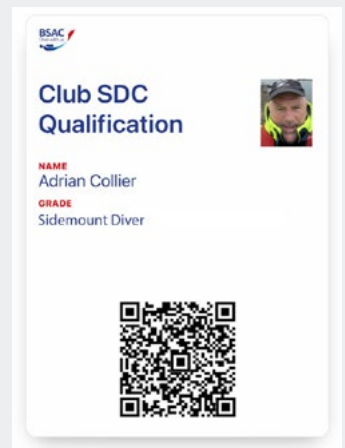
Qualifications are issued by BSAC HQ. The instructor should complete the details on the BSAC website using the student's URN from their course packs.

Qualification application form

- Completed by the instructor online
- Needs your URN (Your invoice number from Shopify e.g. #1234BSAC from your purchased course pack)
- Your name
- Your membership
- Photo (if not at HQ)

eCard

- Once validated download to phone wallet



Once the instructor has certified you can log in to MyBSAC (Sport80) under Skill Development Qualifications to see their new qualification. By clicking the three dots next to the qualification, they can choose to save an eCard to their phone wallet. Other options are also available, such as printing a QCard version.

QCard



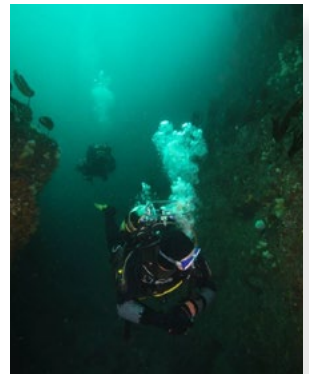
- Once validated print you own folded card

Other BSAC courses

Of relevance to the Sidemount course is:

Twin-set

This course teaches divers how to safely use back-mounted cylinders. It covers selecting the right equipment, setting it up correctly, and adjusting buoyancy, trim, and weights. Students learn to check their gear, communicate with a buddy, and handle emergencies such as regulator or cylinder failure. The course includes theory, dry practicals, and in-water sessions to practice both normal skills and emergency drills. Divers also learn safe gas management, buddy procedures, and how to use alternate air



sources. Successful completion is recorded in MyBSAC, with options for an eCard or printable QCard.

Accelerated Decompression Procedures (ADP)

Sidemount diving lets divers carry more gas, enabling longer dives that may require extended decompression stops. The ADP course teaches how to safely carry and use a richer decompression gas to reduce the time needed for these stops.

Deeper Diving

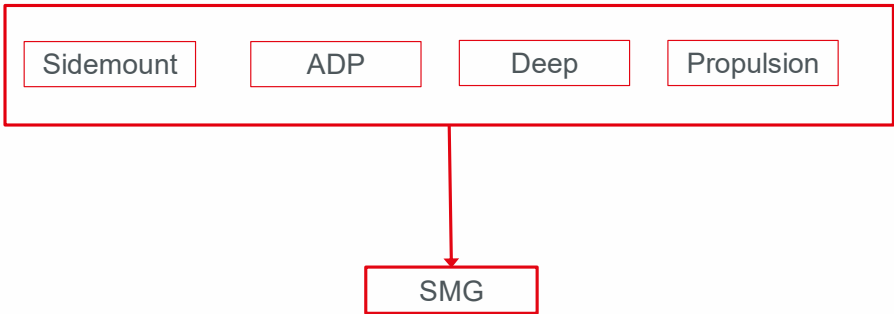
For dives deeper than 30 meters, using trimix offers several benefits. It reduces the density of the breathing gas and lowers the effects of nitrogen narcosis, making the dive safer, more comfortable, and more enjoyable.

Propulsion

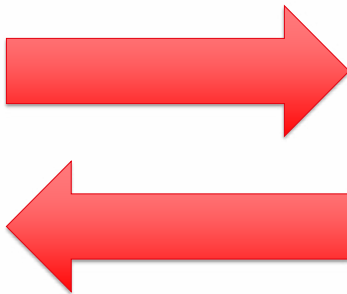
Divers should learn a variety of advanced finning techniques to suit different conditions. This helps them position themselves with fine control and move efficiently during a dive.

Modular Sports Mixed Gas

If the student completes the ADP, Deeper Diving and Propulsion courses in addition to the Twin-set course, then they can apply for a Sports Mixed Gas qualification, allowing them to dive a back gas containing >20% oxygen, and <40% helium with a single decompression gas of up to 100% oxygen.



Open forum/group discussion



You had the opportunity to give feedback to the instructor, ask questions, and discuss any issues or observations about the course, the dives, or the performance of both themselves and the instructor.

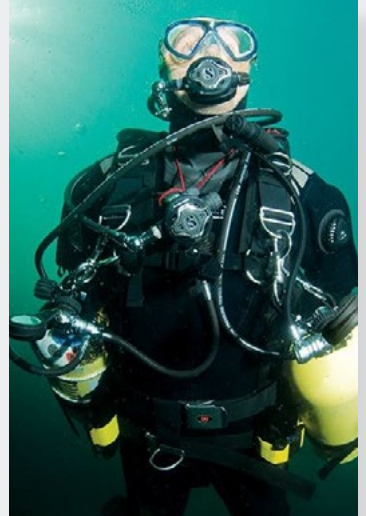
Chance to feed back

- Student to instructor
- Instructor to student
- Student to student

- **Points about the course**
- **Course content**
- **Course delivery**
- **Venue**

Summary

- ✓ **Development**
- ✓ **Keeping current**
- ✓ **Logistics**
- ✓ **Other BSAC courses**
- ✓ **SMG**
- ✓ **Open forum**



End of
module
quiz
answers



Go back

SMT1

End of module quiz answers

1. The purpose is to help students understand all aspects of sidemount diving, including equipment options, setup, and rigging, so they can make informed choices about the equipment that best suits their needs.
2. Different configurations suit different divers because factors like body size, strength, shape, and personal diving preferences affect which setup works best.
3. Students are taught normal sidemount diving skills and emergency procedures, all carried out using the buddy system according to BSAC Safe Diving guidelines.
4. Redundancy means having backup life-support equipment. It is important for safety, allowing divers and their buddies to handle problems if equipment fails.
5. The course builds skills progressively, combining theory lessons, dry practical sessions, and in-water dives, so students learn both the practical skills and the consequences of their actions.
6. Assessment is continuous and progressive. Students are assessed on both theory and practical skills throughout the course rather than through a single final exam. Practical skills are evaluated during dives, including a specific assessment dive.
7. A buddy must be qualified for the conditions, ideally a Dive Leader or a Sports Diver with additional formal qualifications such as Sidemount Diver, and be actively diving in those conditions.

8. Diving with an experienced buddy reduces workload for the new diver, allowing them to focus on managing their sidemount configuration and monitoring their buddy safely.
 9. Students should be open-minded, willing to learn techniques that may differ from previous experience, and take a steady, deliberate pace to build strong foundational skills.
 10. Preparing equipment in advance avoids rushed assembly and missed checks. Making early preparation a habit ensures safe and effective dives.
-

SMT2

Quiz 1 answers

1. No quick-release in emergency, Removal in water tricky, Carry a cutting device
 2. Bungeed storage - excess hose secured to cylinder
-

End of module quiz answers

1. Both regulators are treated as primary regulators so that gas is drawn evenly from both cylinders. This helps maintain balanced reserves and prevents trim issues caused by uneven weight distribution.
2. A twin bladder wing provides buoyancy redundancy. It contains two inner bladders within one outer shell, allowing a backup buoyancy source if the primary bladder fails.

3. Bungees help retract the bladder when it is deflated. This reduces folds in the wing, which would otherwise create drag and make swimming less efficient.
4. A one-piece harness is strong, durable, inexpensive, and has no weak points such as quick-release clips. Once adjusted, it requires minimal further adjustment and fits closely to the diver's body.
5. Because it has no quick-release clips, it can be difficult to remove from an incapacitated diver. For this reason, carrying a cutting device is recommended.
6. Aluminium cylinders become more buoyant as they empty. Sliding D-rings allow the cylinder attachment point to be adjusted during the dive to maintain good trim and balance.
7. Each cylinder is independent, so the diver must monitor the gas pressure in both cylinders separately to ensure safe and balanced gas use.
8. A long hose (typically 2.1 m) allows easy gas sharing during an out-of-gas situation. It provides enough distance for both divers to remain comfortable and controlled during an exit.
9. Both regulators are treated as primary regulators so that gas is drawn evenly from both cylinders. This helps maintain balanced reserves and prevents trim issues caused by uneven weight distribution.
10. Carrying all weight as ditchable can be risky, especially during decompression dives, as accidental loss could cause a rapid ascent. A mix of detachable and securely fixed (non-ditchable) weight improves safety and buoyancy control.

SMT3

Quiz 1 answers

1. Make a circular motion with the light. The buddy responds the same way to confirm understanding and that everything is fine.
2. Take a few minutes to examine each other's kit, locate essential items like inflators or dump valves, and understand how the equipment is set up in case of an emergency.

End of module quiz answers

1. As dive depth and duration increase, the risk to divers and equipment also increases. The buddy system provides assistance, awareness, and support to manage these risks safely.
2. Sidemount provides a larger gas supply and built-in equipment redundancy. Independent cylinders and regulators give divers more options if a problem occurs. However, it does not replace the need for a buddy.
3. A SEEDS briefing identifies changes in equipment, agrees on special signals, and assigns specific roles during the dive, such as who will deploy the DSMB, helping prevent confusion underwater.
4. Spend a few minutes examining each other's equipment so that essential items like inflators and dump valves can be quickly located in an emergency.

5. Buoyancy – BCD inflates/deflates, inflator hose connected, dump valves work.
Air/Gas – Cylinder valve open, pressure sufficient, regulators breathe smoothly, correct gas.
Releases – All weight systems, buckles, and clips are secure, and each diver knows their buddy's releases.
 6. First on land in a “dry run,” locating and deploying the AAS and simulating giving and receiving air. Then repeat the procedure at the surface in the water before the dive.
 7. Fixable failures – Can be safely resolved underwater, allowing the dive to continue.
Non-fixable failures – Cannot be resolved underwater and require the dive to be aborted.
 8. Turn off the faulty regulator, switch to a working regulator, depressurise and check the faulty regulator, and if the free flow continues, close the cylinder and abort the dive. Feathering the valve can be used by trained divers to ascend safely.
 9. Mask: Switch to a spare mask to continue safely or complete the ascent.
Torch: Switch to a backup torch immediately. If no backup is available, abort the dive.
 10. Under no circumstances should a regulator be taken directly from a donor's mouth. This is not an acceptable procedure and must never be used.
-

TS SUPP

Quiz 1 answers

1. Easily available
Smooth, but grip
Do not float
Cut to custom lengths
 2. Corrugated house and dump valves
-

Quiz 2 answers

1. So it is accessible with both hands
 2. Slates and wet notes
-

End of module quiz answers

1. One large primary torch plus two backup torches.
2. Because divers usually wear drysuits, and steel cylinders reduce the amount of lead weight needed.
3. 207, 232, or 300 bar. Aluminium cylinders: 207 or 232 bar; Steel cylinders: 232 or 300 bar.
4. To allow steel cylinders with rounded bases to stand upright without leaning on a support.
5. It should be laid down so it cannot fall over.

6. So it does not get trapped between the left cylinder and the diver.
7. They are durable and do not float; they can also be cut to custom lengths.
8. They can float, slip out of stowage, abrade suit seals, have no protective cover, and cannot be cut to custom lengths.
9. Snugly against the body, prioritising items needed quickly first, then frequently used items, and finally less frequently used items.
10. So it is available immediately to give the regulator without being occupied.



Dry practical - Equipment configuration

SMP1 Dry practical - Equipment configuration

Lesson objectives

This lesson builds on the equipment lesson and reviews the individual's equipment configurations. Students should be encouraged to view their equipment holistically as a total system, the components of which must all work efficiently and in conjunction with each other.

This lesson is a hands-on workshop led by the instructor. Its purpose is to work interactively with students to establish a safe, efficient, and workable sidemount configuration in readiness for the confined water lesson by adjusting and changing the assembly.

The instructor should supervise and work interactively with the students as they prepare their equipment.

The instructor should remember that what may work for them may not always work for the student and should strive to be flexible within the criteria of safe, efficient, reliable and workable.

At the end of this lesson, both the student and instructor should be happy that their equipment configuration produces a safe, efficient, reliable and comfortable system.

Achievement targets

At the end of this lesson, students should have a safe, efficient equipment configuration that:

- **Is comfortable**
- **Minimises drag**
- **Minimises snag potential**
- **Protects more vulnerable equipment**
- **Prioritises access to primary and redundant life support systems**
- **Is appropriate for the dive**
- **Fits the diver**
- **Has a logical, neat system of ancillary equipment stowage**
- **Supports self-sufficiency within the buddy system**
- **Is configured to support emergency and rescue actions**

Dry practical - Dry runs

SMP2 Dry practical - Dry runs

Lesson objectives

Performing life-critical skills such as valve safety drills is difficult to teach underwater without a dry run, as small changes in technique can make a big difference to the student's performance.

A series of dry runs will enable effective instruction, picking up problems that can be addressed easily out of the water before the skill is repeated in water.

At the end of this session, the instructor should be satisfied that the student is able to perform each drill competently and confidently.

Achievement targets

At the end of this lesson, students should be able to perform critical sidemount skills:

- **Regulator switching**
- **Valve manipulation**
- **Valve feathering**
- **Alternate source**
- **Problem-solving**

A photograph of two divers in sidemount configuration underwater. The divers are wearing black wetsuits, black fins, and two white scuba tanks on their sides. They are positioned vertically, with one diver above the other. The water is clear and blue-green. A thick rope is visible on the left side of the frame, extending from the top to the bottom. The text 'Practical - Sheltered water dive' is overlaid in white on the left side of the image.

Practical - Sheltered water dive

[Go back](#)

SMP3 Practical - Sheltered water dive

As the configuration and adjustment of sidemount equipment are more complex than for backmounted equipment, this dive may need to be split into two to allow exit from the water to make adjustments and then re-entry to practice skills.

Depth: Maximum 10m

Duration: Minimum 60 minutes

Lesson objective

The objective of the sheltered water module is to introduce the student to using sidemount, adjust their weighting and trim, and build up familiarity with the essential drills needed to use sidemount safely.

The instructor should be using a similar configuration to the students.

Achievement targets

At the end of this module, the student should:

- **Be able to perform pre-dive checks on the waterside and surface under supervision**
- **Have adjusted their weight and trim to be neutral and flat in the water**
- **Have performed descent drills**
- **Be able to balance gas usage with independent cylinders using regulator switching**
- **Be able to use an alternate source both as donor and recipient**
- **Be able to perform a valve drill**
- **Be able to use the valve feathering technique**
- **Further develop their buoyancy, aiming to be neutral during drills**
- **If using aluminium cylinders, adjust the clipping position to compensate for buoyancy changes**
- **Position themselves for good buddy communication throughout the dive**
- **Deploy a DSMB neutrally buoyant**
- **Know their breathing rate**

Open Water Dive - Skills consolidation

SMP4 Open Water Dive - Skills consolidation

Lesson objectives

The objective of the skills consolidation module is to practice sidemount skills to refine them and introduce problem-solving as a buddy pair and as an individual.

Before donning the equipment, the instructor should remove the clipped-on trim weights used to adjust weight in the sheltered water module and use the student's own weights to position them permanently.

Achievement targets

At the end of this module, the student should:

- **Be able to perform pre-dive checks on the waterside and surface under supervision**
- **Have performed descent drills**
- **Be able to balance gas consumption using independent cylinders**

- **Using an alternate source, swim horizontally and ascend a few metres as donor and recipient, neutrally buoyant**
- **Be able to perform a valve drill neutrally buoyant**
- **Be able to use the valve feathering technique**
- **Adjust the position of aluminium cylinders to maintain good trim**
- **Use of appropriate propulsion techniques throughout the dive. Demonstration of frog kick, one anti-silting technique (modified frog or flutter), helicopter turns. Back kick desirable but not a performance standard.**
- **Problem-check their buddy's equipment and communicate effectively**
- **Solve problems with their own equipment**
- **Position themselves for good buddy communication throughout the dive**
- **Deploy a DSMB neutrally buoyant**
- **Ascend and hold a 3-minute simulated decompression stop**

Open Water Dive - Assessment

[Go back](#)

SMP5 Open Water Dive - Assessment

Lesson objectives

The objective of the assessment module is for the students to demonstrate they can plan and conduct a dive using sidemount and solve problems during the dive, using the skills developed in the previous modules.

Achievement targets

- At the end of this module, the student should:
- Have planned a suitable dive profile and dive plan
- Be able to perform pre-dive checks on the waterside and surface
- Have performed descent drills
- Be able to balance gas consumption using independent cylinders
- Cylinder position adjustment for aluminium cylinders
- Have developed their buoyancy and trim to a proficient level
- Problem-solve equipment failures
- As a buddy pair

- **Independently**
- **Dived showing good buddy positioning and communications**
- **Followed the dive plan**
- **Made a controlled ascent deploying a DSMB neutrally buoyant as a buddy pair**
- **Performed a stop with a controlled slow ascent to the surface**



Qualification card

BSAC photo-ID qualification cards are a universally accepted and convenient proof of qualification.

Obtaining your QCard (qualification card)

Once you have successfully completed all the training your instructor will be able to apply for your qualification and digital card online.

Please be aware that you must supply the following information to them:

- Your full name
- Your BSAC membership number
- You should ensure your MyBSAC profile has a photo uploaded for your digital qcard.

Not able to download your digital qcard?

It can take time to process all qualifications so please allow 2 weeks from submission from instructor to viewing your qualification in your MyBSAC Profile.

Please contact qcards@bsac.com with the following if you cannot see your qualification on MyBSAC with:

- Your full name
- Your BSAC membership number
- The qcard you are expecting, i.e Dive Leader
- The name of the instructor who submitted the application
- The completion date of the training

Shop online at bsac.com/shop



Login to MyBSAC ([BSAC.com/mybsac](https://bsac.com/mybsac)) to obtain:

- Secure online ordering
- Up to 35% discount for all BSAC members
- Training packs, merchandise, decompression tables, BSAC manuals and lots more
- Buying online from the BSAC shop supports our work in underwater heritage, marine conservation and protecting our seas

Let's grow the love of British diving together



After your course...

Go and use your newly acquired skills

Go diving... with the support of your club, you will be able to encounter a fascinating variety of wildlife and shipwrecks in seas, rivers, quarries, lochs and lakes. Plus, you will be able to dive anywhere in the world with your internationally-recognised qualification.

Progress your diver training... you can quickly move onto your next grade in BSAC's Diver Training Programme.

We recommend for your next course

Deeper Diving

To start the course, discuss your options with your Training Officer/ Diving Officer of your branch, your Regional Coach or local BSAC Partnership Centre...

Learn new specific skills... you could also develop specific skills such as safety and rescue, wreck diving or driving a dive boat.

Other courses you may like

Sidemount Diver

Twin-set Diver

Propulsion

To book and pay for your Skill Development Course simply click on the link to get going...

bsac.com/events



Diver benefits. . .



Regal Dive
THE DIVING HOLIDAY SPECIALISTS

Scuba Travel
SINCE 1988

blue o two
DIVE TRAVEL

Diverse TRAVEL

Dive travel discounts



Dive kit discounts



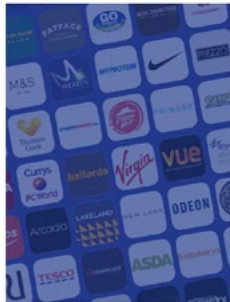
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Specialist course discounts



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Member insurance



SCUBA magazine

. . . Don't forget as a BSAC member, you get access to exclusive scuba and snorkelling -related benefits and prices.

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Enjoy your
diving...





Keep in touch

To know more about BSAC membership and keeping in touch, contact:

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If you have a question about further training or any diving matter, contact:

Diving Resources Team

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