

BSAC APD Inspiration Closed Circuit Rebreather Diver Course.

This document outlines the BSAC APD Inspiration Closed Circuit Rebreather course and provides guidance and definitions specific to the BSAC APD Inspiration Rebreather Diver qualification.

Student Prerequisites

Minimum BSAC Sport Diver with Advanced nitrox or equivalent qualifications
Minimum Age 18

Definition of a BSAC APD Inspiration Rebreather Diver

A BSAC APD Inspiration Rebreather Diver is defined as a diver who is competent to:

- Conduct dives with an open circuit buddy who is a minimum of BSAC Sports Diver (or equivalent), within the restrictions of the lesser conditions already encountered by either during their training or previous experience and under the supervision of a Dive Marshal
- Conduct dives with another certified rebreather diver, within the restrictions of the lesser conditions already encountered by either during their training or previous experience and within the recommendations of the BSAC publication "Safe Diving Practices"
- Conduct dives with an appropriately qualified diver to expand their experience beyond that previously encountered. An appropriately qualified diver would normally be a minimum of BSAC Dive Leader or equivalent but may also be a BSAC Sports Diver who has additional relevant qualifications (e.g. Extended Range Diver, Rebreather Diver) gained through formal training with a recognised agency. Such dives should be under the supervision of a Dive Marshal who is ideally an experienced Inspiration CCR diver.
- Dive, subject to a progressive build up of depth experience beyond that encountered during their training to a depth limit of 40 m using air as a diluent gas.
- Plan and conduct dives requiring mandatory decompression stops up to a total maximum time of 15 minutes.
- Rescue another rebreather diver from depth to the surface (it is accepted that the students are able to rescue an open circuit diver to the surface by virtue of the course entry requirements).

BSAC CCR Inspiration Standards Issue 1.1

- Conduct dives where other divers, capable of providing assistance and rescue management skills are available at the surface.

BSAC APD Inspiration Rebreather Diver Course Outline

The Inspiration Rebreather Diver Course consists of the following elements:

- ten classroom lessons
- a theory assessment
- two dry practical lessons of 120 minutes each
- one Sheltered Water lesson of minimum duration 120 minutes
- a minimum of eight open water lessons totalling a minimum of 380 minutes depending on local conditions and student performance.

All practical training in both Sheltered and Open Water includes the achievement of specific performance standards at appropriate points throughout the lessons.

Instructor Requirements

BSAC APD Inspiration Rebreather Diver training is required to be carried out by or supervised by an Advanced Instructor who is also an approved BSAC APD Inspiration Closed Circuit Rebreather Instructor.

Assistant Rebreather Instructors

Advanced Instructors with the appropriate level of Inspiration rebreather diving experience of a minimum of 100 hours over 100 dives may act as Assistant BSAC APD Inspiration Rebreather Instructors under the supervision of an approved BSAC APD Inspiration Rebreather Instructor Trainer. The following levels of supervision will apply to the training delivered by an Assistant BSAC APD Inspiration Rebreather Instructor:

- Classroom and dry practical lessons under on-site supervision
- Sheltered Water and Open Water lessons under direct (i.e. in water) supervision.

The process and pre-requisites to qualify as a BSAC APD Inspiration Rebreather Instructor, a BSAC APD Inspiration Rebreather Instructor Trainer, or to act as an Assistant BSAC APD Inspiration Rebreather Instructor are defined in the relevant BSAC APD Inspiration Rebreather Standards and Procedures.

Student/Instructor Ratio

For practical lessons, student/instructor ratios should comply with the following guidelines:

Sheltered Water lessons

As for the Diver Training Programme, the sheltered water lesson notes assume the most likely scenario of lessons being carried out in a swimming pool, where time constraints may impose a limit. In order that all students can receive effective tuition during this time, a maximum ratio of two students per instructor is assumed.

In less favourable circumstances, this ratio may need to be reduced appropriate to the water conditions and time available.

Where water conditions allow longer lessons, the above ratios may be increased to a ratio of a maximum of four students per instructor provided that:

- all students can receive effective tuition within the time available
- underwater visibility is a minimum of 5 metres
- the instructor is of a minimum grade of BSAC APD Inspiration Rebreather Instructor
- the instructor has the assistance of another diver, minimum qualification Dive Leader and BSAC APD Inspiration Rebreather Diver, to monitor the safety and control of students
- the lesson briefing includes clear directions as to the role of the assisting diver during skills instruction

Open Water lessons

Because of the nature of the exercises being taught, the lesson contents assume a ratio of a maximum of two students per instructor, to ensure that each student receives effective tuition.

Dry Practical Lessons

To ensure that the student can fully participate in the exercises and receives effective tuition, the lesson contents assume a ratio of two students per instructor. If this student ratio is exceeded extra time must be allowed to ensure all students complete the skills to the required standard.

Equipment Configuration

For Sheltered Water training, the following student equipment configuration is assumed:

- an APD Inspiration Closed Circuit Rebreather
- access to an Alternate Air Source (AAS) demand valve and cylinder contents gauge
- mask, fins and snorkel
- weightbelt or integrated weights where necessary

When progressing to Open Water lessons the equipment should also include:

- depth gauge and watch/timer or decompression computer
- a delayed surface marker buoy and reel
- an additional surface detection aid (e.g. a folding flag)
- protective clothing where appropriate

When conducting dives to a depth greater than 20 metres, an independent bailout gas supply, sufficient to facilitate a safe return to the surface should be carried by each diver.

Instructors

Instructors should wear similar equipment in type and configuration to their students and carry appropriate open circuit bailout gas supply, sufficient to support the students in the event of an emergency.

Definitions

Certain terms are used throughout this section of the manual which are defined as follows:

Sheltered Water - a well-maintained swimming pool or water, which provides similar conditions, e.g. is generally less than 6m deep, with a stepped or gently shelving open bottom of firm composition, has adequate visibility (minimum 5m), and is free from significant water movement from either waves or currents. Within sheltered water depths are defined as follows:

standing depth - water that is between waist and chest deep allowing students to either stand comfortably or to kneel and be fully submerged

deeper water - water that is from approximately 2m to 6m in depth

Open Water - water encompassing conditions beyond those defined for sheltered water, including a variety of topography and underwater life, and which may have noticeable water movement due to waves or current (max 0.5kn). Visibility will generally be in excess of 4m but may, on appropriate occasions, be less.

Depth should not exceed 20 m during phase one (Open water lessons 1 – 4) of the open water dives when off-board bailout gas is generally not a requirement and 30 m during phase two (Open water lessons 5 – 8) of the open water dives when off –board bailout gas is a requirement.

Lesson Sequencing

Classroom lessons are structured to provide the pre-requisite knowledge appropriate to their counterpart practical lessons. Classroom and practical lessons should therefore be run in an integrated sequence.

- InT1 Classroom Lesson Course Overview
- InT2 Classroom Lesson Introduction to Rebreathers
- InT3 Classroom Lesson The Inspiration Rebreather

- InP1 Dry practical Lesson Preparing an Inspiration

(The above lessons must be completed before progressing to InS1

- InS1 Practical Lesson Confined Water Skills

- InT4 Classroom lesson Physics and Physiology
- InT5 Classroom lesson Dive conduct
- InT6 Classroom lesson Diagnostics and Resolutions

- InO1 Open Water Lesson 1
- InO2 Open Water Lesson 2

- InP2 Dry practical lesson Owner maintenance workshop

- InO3 Open Water Lesson 3
- InO4 Open Water Lesson 4 Skills Assessment

- InT7 Classroom lesson Dive Planning

- InO5 Open Water Lesson 5
- InO6 Open Water Lesson 6

- InT8 Classroom lesson Dive Marshalling liaison
- InP3 Dry practical lesson First Aid

- InO7 Open Water Lesson 7
- InO8 Open Water Lesson 8 Final skills assessment

The lessons have been developed for complete flexibility, for example, the Senior Instructor may decide to run a full day's theory and dry practical sessions followed by consecutive days of confined and open water lessons and assessments. Lessons InT8, InT9, InP2 and InP3 may be carried out at convenient points as evening sessions after diving or, in the case of InP3, as a practical session during a surface interval between dives or as a theory lesson.

In addition to the above, where training has been interrupted for a significant period or was carried out in dissimilar conditions, refresher/orientation lessons may be required. This should be conducted prior to any open water training.

Open Water Lessons

Some Open Water lessons involve multiple ascents. Where these require an ascent to the surface, decompression considerations dictate that wherever practicable they be performed at the start of diving activities and before diving to any greater depth.

Where lessons involve ascents from deeper than 10 m, these should be performed early in the lesson and they should be terminated at a depth of 6 m.

Instructors should ensure that the impact on decompression considerations for the remainder of the particular lesson, and on any subsequent diving activities, is taken into account.

To ensure that students receive experience in a range of conditions, the open water dives must include 4 conditions from the following, appropriate to the local conditions in which they will subsequently be diving:

- **shelving shore dive** - dive commencing and ending at a gently shelving shore requiring a wading entry/exit
- **steep shore dive** - dive commencing with a deep-water entry and ending with a deep-water exit

- **dive using shot line** - dive commencing with a deep-water entry, using a shot line as the only visual reference for the descent and ascent, and ending with a deep-water exit
- **drift dive** - dive in moving water in the speed range between 0.25 and 0.5kn
- **small boat dive** - dive from a boat of less than 8 m overall length, where water entry is via a backward roll and egress from the water requires removal of equipment in the water
- **large boat dive** - dive from a boat of greater than 8 m overall length, where the water entered is via a stride entry and egress from the water is accomplished via ladder without removal of any equipment except, possibly fins
- **wall dive** - dive along a vertical or near vertical wall with no solid bottom closer than 4 m below the divers
- **dive in protective clothing** - dive wearing either a wet suit or dry suit
- **Wreck dive** – dive on a wreck but with no penetration of the wreck

Only one of the above conditions may be logged per dive.

The BSAC APD Inspiration Rebreather Diver syllabus includes a minimum of 8 open water lessons, which should total a minimum of 380 minutes underwater time. Each lesson should have a minimum duration of 30 minutes.

When the total lessons duration time of 380 minutes cannot be achieved in 8 dives (eg; cold water conditions) the number of dives will require to be extended.

The sheltered water lesson

The sheltered water lesson involves a minimum of 120 minutes and is in addition to the open water lessons. This lesson may be split into two lessons where time constraints apply.

Adapting Lessons for Differing Conditions

The sheltered water lesson contents have been based on the most common conditions of a swimming pool containing warm water. As with the BSAC Diver training program however, the BSAC APD Inspiration Rebreather Diver Sheltered Water training may be carried out in other conditions. The main impact on the lesson will be that due to buoyancy and restriction of movement of any protective clothing. The objective of keeping the task of buoyancy control as simple as

possible by using the minimum number of volumes of gas should be maintained. In practical terms this means:

- minimal protective clothing or wet suits – buoyancy control and CBL using the Inspiration wing BC
- dry suits - buoyancy control using the gas in the suit; CBL using the gas in the Inspiration wing BC
- surface support - BC in all cases For most Open Water lessons the content is not affected by different standards of protective clothing.

For most open water lessons the content is not affected by different standards of protective clothing. In those few instances where some adaptation may be required this is addressed at the end of the relevant lesson notes.

Dry Practical Lesson – Preparing a Rebreather

Before undertaking this lesson, students require a complete APD Inspiration Closed Circuit Rebreather.

Depth Experience

Newly qualified Inspiration Rebreather Divers, wishing to increase their depth experience, should be encouraged to do so in a progressive manner, in increments of approximately 5m. They should be accompanied on such dives by a diver holding a minimum qualification of Dive Leader, and all such dives should be performed under the supervision of a Dive Marshall who is ideally an experienced Inspiration Rebreather Diver.

Performance Assessments and Standards

BSAC APD Inspiration Rebreather Diver training includes a specific theory assessment, two assessment dives and continuous assessment of the practical skills.

Practical Assessments

As in Diver training, where specific performance standards are required to be achieved, these are identified in the lesson notes by the words “competent and confident”. Where these words appear in the lesson content, students should have progressed sufficiently to be able to achieve the specified performance standards without supervision, as applicable to the water conditions appropriate to that lesson.

The appropriate performance standards are therefore incorporated into the relevant lesson notes.

During the lessons, students should also be monitored for any deterioration in skills learned during basic Diver training. Where necessary, corrective instruction should be provided to re-establish the appropriate performance standard.

Theory Assessment

The theory assessment can be undertaken any time after the completion of the classroom lessons but must be successfully completed before the end of the course. A pass mark of 80% must be achieved.

A written assessment is not always the most suitable check for transfer of knowledge. The BSAC has produced independent guidelines to ensure all candidates are fairly treated and their needs are catered for.