

TRY DIVE IN CONFINED WATER

Lesson Objectives

The objective of the practical lesson is to build up the student's comfort in and underwater on the rebreather and to introduce some of the basic skills.

Achievement Targets

At the end of this lesson the students should:

- Be able to perform pre-checks on the waterside under supervision
- Be able to correctly operate the mouthpiece
- Have started to achieve a feel for buoyancy control
- Be able to monitor the oxygen gauge or handsets correctly
- Be able to perform some basic drills under supervision including a feeling for static lung loading
- Be comfortable swimming underwater and on the surface
- Have fun!

Lesson Contents

As the students will be keen to go diving, the units should have been pre-prepared by the Instructors. The assembly must be checked and verified by the instructor prior to commencement of the lesson, the students acting as passive observers.

Waterside checks

Pre-preparation of the unit is essential to reduce the likelihood of an incident through mechanical or electrical failure.

General checks to be undertaken are:

- Check gas supplies
- Check absorbent time (ideally fresh)
- Check bailout system
- Positive and negative pressure tests
- Switch on/calibrate O₂ monitoring

CCR specific checks:

- Check O₂/diluent buttons are flush with their housings
- Switch on controllers
- Calibrate O₂ sensors

- Reconfirm O₂ sensor calibration
 - Purge system with diluent
 - Check for low O₂ audible warning at 0.4
 - Check each O₂ sensor readouts reach 0.21
 - Purge system with O₂
 - Check each O₂ sensor readouts reach 1.0
 - Recalibrate if readouts do not track each other or reach desired level

Briefing

The briefing should be structured around SEEDS with particular emphasis placed on the new information that needs to be added when diving on a rebreather. Remind students to breathe normally throughout the lesson and try to avoid the normal skip breathing techniques acquired as experienced o/c divers. Point out the need to vent via the mouth and/or nose if the loop is over pressurised but, not to breathe out through the nose whilst swimming horizontal. It is best to use mouth venting when larger volumes of gas are expelled, e.g. on ascent.

Advise students not to remove the mouthpiece underwater during try-dive exercises to prevent water ingress which can lead to a ruined session.

Kit-up with the rebreather and carry out buddy check

Demonstrate and then supervise the practice of helping each other to kit up and reinforce the importance of the buddy check, especially with the introduction of new equipment. ***Highlight the areas to practice specifically the operation of the mouthpiece, the wing and location and use of the AAS. Ensure that you brief new signals including venting, mouthpiece close/open and bubble check.***

Venting and Pre-Breathe – Water side

Demonstrate:

- Venting from the mouth by placing two fingers on the mouthpiece and pulling gently down whilst relaxing the top lip, thereby enabling the unit to vent
- Venting through the nose
- Venting from the mouth by relaxing the grip and allowing gas to escape between the mouthpiece and top lip.

Pre-breathe unit for at least 3 minutes to activate the absorbent whilst monitoring the partial pressure of gas (PO₂) or fraction of gas (FO₂) in the loop. Fit mask and get ready to enter the pool.

Entry

Use an appropriate same method to enable the students to enter the water to standing depth. Fit fins as appropriate for conditions.

Weighting

Start the weight check with the same weight as the student would use with a single tank

Check the weighting of the students, with wing/drysuit fully vented, add 2 Kg to ensure the students can submerge easily.

CCR Only - Minimum loop volume

Ensure the students breathe at minimum loop volume, i.e., the counterlung bottoms out or the ADV fires (if fitted) at the end of a normal inhalation. The students should keep this volume of gas in the counterlungs for the whole exercise adding diluent to counteract any volume decrease with increasing depth. Venting on ascent should also be practiced to ensure minimum loop volume.

Buoyancy control - standing depth

This exercise familiarises the students with the breathing pattern and differences in technique in achieving neutral buoyancy when compared to open circuit. The exercise highlights that trying to hold neutral buoyancy based on varying lung volume no longer has the desired affect.

- Vent air from wing/drysuit and slowly descend into a kneeling position. It might be necessary to vent gas from the loop at this time to enable the student to submerge.
- Allow time to familiarize with breathing pattern. From a normal relaxed breathing pattern increase inhaled breathe pattern to demonstrate the unit will provide demanded volume.
- Deflate the wing/drysuit
- Lie forward (fin pivot position) and inflate wing/drysuit to hold neutral buoyancy. Demonstrate irrespective of size of breath that the user does not move.
- Roll to 90 degrees left hand side down whilst maintaining neutral buoyancy position. Repeat exercise rolling to the right hand side down.

Handset/gauge monitoring

- The students should check their oxygen gauge or handset displays every 1 to 4 minutes. Gas contents should be checked at least once throughout the dive.

Bubble Check

- The student completes a bubble check by lying on his/her back getting their buddy to check for gas leaks, no bubbles = no leaks, this also gets them to recognize the difference between trapped air and a leak in the loop.

Swimming underwater – to/in/from deeper water

The swimming exercise is to enhance buoyancy control by changing depth and performing various exercises.

- Constant Depth
The initial exercise is to swim underwater maintaining a constant depth. Watch for students breathing normally and ensure that the basic attitude of the diver is horizontal. Perform a number of circuits rotating the students in both a clockwise & anti-clockwise direction to gain confidence and comfort. The divers should act and behave as a buddy pair.
- Simulate decompression stop
During the exercise identify an easily identifiable visual reference point where the diver can maintain a constant depth. Adjusting buoyancy on the wing/dry-suit, demonstrate the ability to hold station simulating a decompression stop for three minute period.
- Changing depth
Continue the swimming exercise introducing step changes in depth for a minimum of 10m travel and then change to a new depth using the wing for buoyancy and venting the mouthpiece as required when ascending or manually adding diluent when descending. Ensure the students do not continually hold onto the wing controls
- Barrel rolls
Demonstrate performing barrel rolls in a clockwise and anti-clockwise direction maintaining a set depth

O2 metabolism (static/dynamic) – standing depth

This routine allows the students to monitor and understand the readings displayed on the handsets. It also gives confidence that the O2 controller can supply enough oxygen even in periods of high work.

- Monitor the oxygen gauge or handsets whilst static
- Fin against pool side monitoring PO₂ or FO₂
- Fin at maximum rate against pool side monitoring other handset

Static Lung Loading

The object of the exercise is to demonstrate the effect of static lung loading experienced when diving at different attitudes. Ideally need a depth of water > 1.5m.

- Roll onto back and demonstrate venting the unit from the mouth
- Roll onto back and demonstrate venting the unit from the nose
- Roll into handstand position
- Move into upside-down crucifix demonstrating neutral buoyancy

CCR - Use of gas addition buttons (static) – standing depth

This exercise demonstrates the position and effects of the gas addition controls

- From the kneeling position inject diluent and monitor handsets
- Vent the unit from the mouth
- Ensure stable setpoint reached before continuing
- From the kneeling position inject O₂ and monitor handsets
- Vent the unit from the nose
- Ensure stable setpoint reached before continuing
- From the kneeling position inject diluent and monitor handsets
- Vent the unit from the nose
- Ensure stable setpoint reached before continuing

Optional Exercises

If time permits and the students are interested other skills may be demonstrated such as CBL or mask clearing. Try to avoid exercises that may cause the loop to become flooded, e.g., mouthpiece removal as this may end up terminating the session.

Exit water

Exit by wading or via steps

Remove equipment

In buddy pairs dekit and place the equipment so that it is standing upright.

Switch off gas/electronics, drain exhale counterlung.

Multiple Students

If rotating units to cope with try-dive student numbers consider disinfecting the mouthpiece to prevent cross-contamination and reduce probability of spreading infections.

Debriefing

Using REAP format; make sure that everyone enjoyed the lesson on the rebreather.