

BASIC CLOSED CIRCUIT REBREATHER DIVER COURSE UNIT **SPECIFIC – BUDDY INSPIRATION**

INTRODUCTION

This is the entry-level certification course for recreational divers wishing to utilize the AP Valves Buddy Inspiration Closed Circuit Rebreather

COURSE OBJECTIVES

The objective of this course is to train recreational divers in the benefits, hazards and proper procedures for rebreather diving on the Buddy Inspiration CCR and to develop basic rebreather diving skills appropriate to diving within the normal recreational depth limits of 40 meters for no decompression diving

QUALIFICATION OF GRADUATES

Upon successful completion of this course, graduates may engage in diving activities utilizing the Buddy Inspiration Rebreather to a maximum depth of 40msw, utilizing a normoxic O₂ content diluent

WHO MAY TEACH

An active ITDA Closed Circuit Rebreather Instructor with a Buddy Inspiration Instructor rating may teach this course

STUDENT / INSTRUCTOR RATIO

1. CLASSROOM
Unlimited, so long as adequate facility, supplies and additional time are provided to ensure comprehensive and complete training
2. OPEN-WATER
A maximum of 2 students per active ITDA Instructor is allowed or 4 with a certified assistant. The ratio should be reduced as required due to environmental and operational constraints. All dives must be carried out in accordance with HSE ACOPS

STUDENT PRE-REQUISITES

1. A minimum of 18 years of age
2. Have a verified log with a minimum of 70 dives
3. Minimum certification level of Decompression Nitrox Diver or equivalent at the Instructors discretion

REQUIRED COURSE MINIMUMS

1. CLASSROOM
 - a) Minimum of 6 hours for academic development and a further 2 hours for equipment maintenance workshop
2. CONFINED WATER TRAINING
 - a) A minimum of 120 minutes training in confined water
3. OPEN-WATER TRAINING
 - a) A minimum of 360 minutes in water time to be completed over 6-8 dives, 60 minutes of in water time may be credited from Introductory Rebreather Course at the Instructors discretion
 - b) Pass the written exams with a pass score of 80% or higher. The exam may be given orally if not available in a language the student understands

REQUIRED EQUIPMENT

The following equipment is required for each student:

1. A Buddy Inspiration Rebreather
2. Mask, fins and a suitable line-cutting device
3. Slate and pencil
4. Depth gauge and timer
5. Lift bag and reel
6. Exposure suit adequate for the open-water environment where training will be conducted
7. Access to an oxygen analyser
8. Adequate weight
9. Bailout gas supply (may be the on-board diluent supply or an externally carried redundant air source)

REQUIRED SUBJECT AREAS

The following topics must be covered during the course. The ITDA Rebreather Manual, where available, is required for use but Instructors may use any additional text or materials they feel will represent the topic in an educational manner. The manufacturers approved slide set is mandatory for the course

1. HISTORY AND EVOLUTION OF REBREATHERS
2. COMPARISON OF OPEN CIRCUIT, CLOSED CIRCUIT and SEMI CLOSED CIRCUIT REBREATHER SYSTEMS AND THE BENEFITS / PROBLEMS WITH EACH
3. PRACTICAL MECHANICS OF THE SYSTEM
 - a) Assembly and disassembly of the Buddy Inspiration
 - b) Layout and design of the unit
 - c) Scrubber design and maintenance
 - d) Electronic systems design and maintenance
 - e) System electronics functionality and calibration procedures
 - f) Breathing loop de-contamination procedures
4. GAS PHYSIOLOGY
5. OXYGEN TOXICITY
 - c) Nitrogen absorption
 - d) CO₂ toxicity
 - e) Gas consumption
6. FORMULA WORK
 - a) O₂ metabolizing calculations
 - b) Equivalent air depth theory
 - c) Constant PPO₂ theory
 - d) CNS tracking
 - e) OTU tracking
7. DIVE TABLES
 - a) Equivalent air depth
 - b) Dive computers
 - c) Mix adjustable
 - d) Constant PO₂
 - e) O₂ integrated
8. DIVE PLANNING
 - a) Operational planning
 - b) Gas requirements including bailout scenarios
 - c) Oxygen limitations
 - d) Nitrogen limitations

REQUIRED OPEN-WATER SKILLS

The students during open-water training dives must complete the following skills:

1. Verify diluent and O₂ cylinder contents using O₂ analyzer where appropriate
2. Demonstrate correct pre-dive planning procedures including:
 - a) Limits based on system performance
 - b) Limits based on oxygen exposures at chosen PPO₂ levels

- c) Limits based on nitrogen absorption at planned depth and PPO₂ level
- d) Bailout procedures
- e) Mouthpiece familiarity drills
- f) Gas shutdowns and loss of gas
- g) Broken hoses
- h) Flooded scrubber
- i) Scrubber CO₂ breakthrough
- j) Semi-Closed mode
- k) Use of BC/suit for buoyancy control
- l) Effective management of loop breathing volume
- m) Pre-dive checks
- n) Stop at 5m on descent for leak bubble check
- o) Electronics systems monitoring for PO₂ levels
- p) Proper execution of the dive within all pre-determined dive limits
- q) Demonstration of safety stops at pre-determined depths
- r) Post dive clean of unit to avoid contamination and spread of disease

PROGRAM LIMITS

- 1. No dives deeper than 40msw
- 2. No dives shallower than 6msw
- 3. Dive PO₂ not to exceed manufacturer recommendation or a working limit of 1.4 BAR
- 4. All dives to be non decompression dives
- 5. All dives to be completed within CNS% limits with a recommended maximum of 80% of the total PO₂ CNS limit
- 6. All appropriate safety stops to be conducted with a minimum 3 minutes at 6msw to be conducted
- 7. The student is only certified for use of the Buddy Inspiration

GRADUATION REQUIREMENTS

In order to complete the course and achieve the module 1 Buddy Inspiration Rebreather rating the student must:

- 1. Complete to the instructor's satisfaction all confined and open water skill development sessions.
- 2. Demonstrate mature, sound judgment concerning dive planning and execution.
- 3. Satisfactorily complete the written examination with a pass mark of greater than 80%.
- 4. Course must be completed within 4 months from the starting date.
- 5. Complete the CCR introductory course again if there has been a period of 6 months diving inactivity following certification as a module 1 Inspiration diver.

SUPPORT MATERIALS

- 1. Student registration
- 2. Rebreather manual
- 3. AP valves Buddy Inspiration user manual
- 4. PC slides set
- 5. Richard Pyle's - A Learners Guide to Closed Circuit Rebreather Operations
- 6. AP Valves manufacturers update