

1. TDI –Basic Closed Circuit Rebreather Instructor Course - Unit Specific- Ambient Pressure Inspiration

1.1 Introduction

This is the Instructor level certification course for Instructors wishing to teach the Ambient Pressure Inspiration closed circuit Rebreather course. The objective of this course is to train Instructors to teach recreational Rebreather diving, and to develop basic Rebreather diving skills appropriate to diving within the normal recreational depth limits for minimum decompression diving to 40 metres (130 fsw) using oxygen and an air diluent.

1.2 Qualifications of Graduates

Upon successful completion of this course, graduates may teach the TDI Closed Closed Circuit rebreather course not to exceed the manufacturers designed depth maximum of 40 metres (130 fsw) with air diluent. This course is manufacturer specific.

1.3 Who May Teach

Who may teach this course:

1. Any active TDI CCR Rebreather Instructor Trainer with an Inspiration qualification may teach this course.

1.4 Student – Instructor Ratio

Academic:

1. Unlimited, so long as adequate facility, supplies and time are provided to insure comprehensive and complete training.

Confined Water (Swimming pool-like conditions):

1. A maximum of two (2) students per Instructor. However, it is the instructor's discretion to reduce this number as conditions dictate

Open Water (Ocean, lake, quarry, spring, river or estuary):

1. A maximum of two (2) students per Instructor. However, it is the instructor's discretion to reduce this number as conditions dictate.

1.5 Student Pre-Requisites

The student must:

1. Be a minimum age of twenty one (21).
2. Show proof of minimum certification of TDI Inspiration Rebreather Diver.
3. Show proof of minimum certification of TDI Advanced Nitrox Instructor (or equivalent).
4. Show proof of 250 verified logged dives with 100 being on nitrox.
5. Show proof of minimum of one hundred (100) Inspiration Closed Circuit Rebreather logged dives to a minimum of 100 hours duration.

6. Assist on at least one complete Inspiration user course to the satisfaction of the course leader (I.T.).

1.6 Course Structure and Duration

Open Water Execution:

1. Four (4) dives.

Course Structure:

1. TDI allows instructors to structure courses according to the number of students participating and their skill level.

Duration:

1. The minimum number of classroom and briefing hours is six (6).

1.7 Administrative Requirements

The following is the administrative tasks:

1. Collect the course fees from all the students.
2. Ensure that the students have the required equipment.
3. Communicate the training schedule to the students.
4. Have the students complete the Liability Release and Medical history forms.
5. The Instructor should review the Liability Release and Medical Forms before starting on the course.

Upon successful completion of the course the Instructor must:

1. Complete the Student Registration Form and send the Registration Form to TDI HQ.
2. Award card and certificate.

1.8 Required Equipment

The following are required for this course:

1. Closed Circuit Rebreather Instructor Guide.
2. Closed Circuit Rebreather Diver Manual.
3. TDI Standards and Procedures Instructor Manual.
4. Rebreather PowerPoint Presentation Series.
5. TDI Rebreather Workslate
6. TDI Scenario Slates (14)

The following equipment is required for each student:

1. Closed circuit Rebreather. The student must own or have access to their own Inspiration rebreather
2. Depth gauge and automatic bottom timer and / or dive computer.
3. Mask, fins.
4. Exposure suit suitable for the diving environment.
5. Knife.
6. Slate and pencil.
7. Bailout bottle with a minimum capacity of three (3) litres/ twenty one (21) cubic feet

1.9 Required Subject Areas

Instructor Trainers must use the TDI Closed Circuit Rebreather Student manual, Instructor Guide, manufacturers manual and the current TDI Standards and Procedures Instructor Manual, but may

also use any additional text or materials that they feel help present these topics. The following topics must be covered during this 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.
 - Assembly and disassembly of the Inspiration.
 - Layout and design of the unit.
 - Absorbent canister design and maintenance.
 - Breathing loop de-contamination procedures.
 - Manufacturer supported additional fittings (Automatic Diluent Valve or ADV)
4. Gas Physiology.
 - Oxygen toxicity.
 - Nitrogen absorption.
 - CO₂ toxicity.
 - Gas consumption.
5. Electronic Systems Design and Maintenance.
 - O₂ metabolizing calculations.
 - Equivalent Air Depth theory revision.
 - Fuel Cells.
 - System electronics functionality and calibration procedures.
6. Dive Tables.
 - Equivalent Air Depth operation.
 - Constant PPO₂ theory.
 - CNS and awareness of OTU tracking.
7. Dive Computers.
 - Mix adjustable.
 - Constant PO₂.
 - O₂ integrated.
8. Dive Planning.
 - Operational Planning.
 - Gas requirements including bailout scenarios.
 - Oxygen limitations.
 - Nitrogen limitations.
9. Emergency Procedures.
 - Use of B.A.D.D.A.S.S.
 - Three H's problems.
 - Flooded Loop.
 - Cell Warnings
 - Battery Warnings

1.10 Required Skill Performance And Graduation Requirements

The following skills must be completed by the Instructor candidate. The maximum training depth shall not exceed the manufacturers design limit.

1. Demonstrate properly analysis of all gas mixtures to be used.
2. Demonstrate a complete systems check and Rebreather configuration.
3. Demonstrate adequate pre-dive planning.
 - Limits based on personal gas consumption.
 - Limits based on oxygen consumption and exposures at planned depth.
 - Limits based on nitrogen absorption at planned depth.
4. Properly execute the planned dive within all pre-determined limits.

5. Demonstrate the proper procedures for
 - Buoyancy control.
 - ADV use
 - Bail-out.
 - Mouthpiece removal.
 - Ascent techniques.
 - Safety stops.
 - Buddy checks.
 - Simulated emergency.
6. Properly execute the break down and maintenance of Rebreather

In order to complete this course, students must:

1. Satisfactorily complete (90% pass) the TDI Closed Circuit Rebreather Course written examination **without reference** and be able to adequately explain each answer to a prospective student.
2. Demonstrate mature, sound judgment concerning training, dive planning and execution.
3. Complete all open water requirements safely and efficiently.
4. Demonstrate proficiency in teaching the TDI Closed Circuit Rebreather Diver Program.
5. Undertake one (1) graded presentation on a Closed Circuit Rebreather topic.

1.11 Recommended Additional Reading

The following articles and books are recommended reading and allow wider understanding.

1. Richard Pyle - A Learners Guide to Closed Circuit Rebreather Operations.
2. Kenneth Donald - Oxygen & The Diver.
3. John Lamb – Oxygen Measurement for Divers.
4. Barsky, Thurlow & Ward - The Simple Guide to Rebreather Diving.
5. Bob Cole – Rebreather Diving.
6. Jeffrey Bozanic – Mastering Rebreathers.