



CMAS

CONFÉDÉRATION MONDIALE
DES ACTIVITÉS SUBAQUATIQUES

WORLD UNDERWATER FEDERATION

CMAS Recreational Scooter Diver Course Level I

STANDARDS AND REQUIREMENTS

VERSION 2008/01

(CA 158 12/04/08)

CAUTION

The operation and handling of an underwater scooter, as well as the appropriate technical maintenance requires a certain minimum of technical understanding and knowledge, a certain minimum level of diving skills and competence and an appropriate equipment configuration. As any moving object may represent a potential danger to other persons in its vicinity, the driver must also have a distinctive feeling of responsibility for all his/her doing.

Therefore, CMAS does NOT endorse, promote or otherwise recommend the use of such devices, even at recreational diver course level, for

- *persons of less than 16 years of age*
- *divers not having at least a CMAS 2star diving certificate (or equivalent)*
- *divers without the proper training as received in a CMAS (or otherwise) sanctioned scooter diver course*
- *divers not meeting the minimum requirements for mandatory equipment and its configuration (ref. to standards and training program for CMAS scooter diver courses)*
- *diving beyond the limits as set by the diver's certification level or the operational limits set by the manufacturer of such a device (whichever applies first)*

Having appropriate private liability insurance with a minimum coverage of 2 Million Euros is absolutely mandatory. By no means and under no circumstances, must scooters or any other towing devices be used as a substitute for the lack of physical fitness.

1 Glossary of used terms and abbreviations

1.1 Equipment

BC	Buoyancy Compensator (vest, jacket)
SPG	Submersible Pressure Gauge (finimeter)
SMB	Surface Marker Buoy
a dangly	a piece of equipment loosely hanging down, not closely attached to the body

1.2 Organisations

NACD	National Association for Cave Diving
NSS-CDS	National Speleological Society – Cave Diving Section
SNSS	Scuola Nazionale di Speleologia Subacquea
CDA	Cave Diving Association of Australia
CDG	Cave Diving Group (Great Britain)
ANDI	American Nitrox Divers International
TDI	Technical Diving International
IANTD	International Association of Nitrox and Technical Divers

1.3 Certifications / Levels of Training

1.3.1. Foreign

OWD	Open Water Diver (entry diver level); equiv. to CMAS 1star
AOWD	Advanced Open Water Diver; equiv. to CMAS 2star
MSD	Master Scuba Diver ; equiv. to CMAS 3star
DM	Divemaster; approx. equiv. to a CMAS 4star

1.3.2. CMAS

Cave Diver 1	= Cavern Diver Diver certified to dive in zone 1 (daylight zone) of a cave with a permanent guideline; depth limit 20m, max. penetration 50m from surface
Cave Diver 2	= (Advanced) Cave Diver Diver certified to dive in zone 2 (zone of total darkness) of a cave; depth limit 30m, no sumps, no restrictions, max. penetration set by 2x10l tank
Cave Diver 3	= Full Cave Diver Diver certified to dive in zone 3 of a cave, which is anything beyond zone 2; depth limit 40m EAD.

1.4 Scooters designations (synonyms)

DPV	Diver Propulsion Vehicle (mainly used in US)
ADV	Advanced Diving Vehicle (used by SUEX)
UPV	Underwater Propulsion Vehicle
Propulseur	French term for underwater scooter

1.5 Other

Overhead environment	Any diving place where the direct ascent to the water surface is not possible due to natural or artificial obstructions such as caverns, caves, wrecks, mines, submerged buildings, under ice.
OOA-situation	Out-of-Air situation
OOG-situation	Out-of-Gas situation (more general term)

2 Preface

The main objectives of the Recreational Scooter Diver course are:

- 2.1 build up a basic understanding of the scooter technique
- 2.2 develop a basic understanding of the potential dangers of such devices and a corresponding feeling of responsibility
- 2.3 to handle and correctly and safely use class 1 scooters for purely recreational purposes in the open water
- 2.4 gain sufficient knowledge and practical skills for correct maintenance
- 2.5 acquire basic trouble-shooting skills and techniques

3 Course Classification

The Recreational Scooter Diver Course is a basic specialty course

4 Course Prerequisites and Constraints

4.1 Prerequisites for students (for course admission)

- 4.1.1. Must be at least 16 years old
- 4.1.2. CMAS two star diver or equivalent (e.g. AOWD)
- 4.1.3. Minimum of 25 logged dives after certification as a CMAS two star diver (or equivalent)
- 4.1.4. Valid medical attest (fitness for diving) in compliance with the regulations of the national CMAS federation
- 4.1.5. Equipment as requested under "Personal equipment"
- 4.1.6. Private Liability Insurance with a minimum coverage of 2 Million Euros

4.2 Requirements for training scooters in use

All scooters used must fulfill at least all technical characteristics as defined in the "CMAS CONSTRUCTION STANDARDS FOR UNDERWATER SCOOTERS" for class 1 rated scooters.

4.3 Training Limits

- 4.3.1. Scooter use in open water only
- 4.3.2. Within diver's certification limits
- 4.3.3. Within scooter's operational limits (depth and range)

5 Entry assessment (only if deemed necessary)

An entry assessment can be utilized to verify that candidates fulfill all prerequisites with regard to theoretical knowledge, practical skills and physical performance. Candidate must successfully pass all assessment requirements before being accepted to course.

6 Aims and priorities of the training

- 6.1 To provide a basic understanding of the 3 different types of scooters, their relevant technical characteristics, their intended range of operation and their limitations, as defined in the "CMAS CONSTRUCTION STANDARDS FOR UNDERWATER SCOOTERS".
- 6.2 To provide a clear understanding of the basic functions of the scooter : mechanical, electrical and nautical (i.e. buoyancy in fresh and sea water, trim, torque, steering)
- 6.3 To provide a clear understanding of the basic scooter's maintenance
- 6.4 Proper equipment set-up for efficient scooter diving.
- 6.5 To provide a clear description of the scooter operation in open water (lake/sea) with advantages and limitations of the machine.
- 6.6 Scooter dive planning : scooter's burn time and gas planning
- 6.7 Pre-dive and post-dive operations
- 6.8 Positioning in the water and recover of the scooter
- 6.9 Correct trim and buoyancy while managing the scooter – diver's horizontal position -
- 6.10 Proper use of the scooter during the descent and ascent
- 6.11 Correct fining technique with a deactivated scooter
- 6.12 Team diving :
 - Speed adjusting
 - Signals
- 6.13 Emergency scenarios :
 - 6.13.1. **Scooter malfunctioning and how to fix the problems**
 - runaway
 - complete stop
 - flooding
 - propeller line entanglement
 - 6.13.2. **OOG situation**
 - direct ascent to the surface respecting ascent rate and deco obligations
 - 6.13.3. **How to tow a buddy with a deactivated scooter (proper signals and procedures)**

- 6.14 SMB Deploying (suggested)
- 6.15 Awareness of the environment

7 Instructor : Students Ratio

- 7.1 Theory/classroom
1:8
- 7.2 Practical
1 instructor or instructor candidate: 4 students under normal or better conditions; must be reduced to 1: 2 if situation is considerably worse
- 7.3 Note:
 - 7.3.1. assistants may only account on a basis of 1 assistant : 2 more students, but never more than for instructors.
 - 7.3.2. assistant candidates may only account on a basis of 1 assistant candidate : 1 more student.

8 Requirements for instructors/assistants

- 8.1 Responsible course director must be Recreational Scooter Instructor or Recreational Scooter Instructor CANDIDATE under supervision of a delegated supervising instructor from the national federation.
- 8.2 Assistants must be Recreational Scooter Assistants or Recreational Scooter Assistant CANDIDATES.
- 8.3 Equipment as requested under "Personal Equipment" for all staff

9 Personal Equipment

9.1 **Mandatory Equipment:**

- 9.1.1.- All standard OW equipment for dives at CMAS 2* diver level (especially buoyancy compensator, power-inflator, dive computer and compass, submersible pressure gauge!)
- 9.1.2.- Min. one (1) single 10 liter tank with two (2) separate outlets (however, one (1) double 7 liter tank set is more recommendable)
If double tanks are used: EITHER completely independent tanks OR manifold connection WITH an isolator valve
- 9.1.3.- Two (2) independent regulator rigs
- 9.1.4.- One (1) primary long hose with a min. length of 2.1m and a max. length of 3m (7-10 feet)
- 9.1.5.- Harness and crotch-strap with front-strap D-ring
- 9.1.6.- One (1) Class 1 (or higher) rated Scooter (may be rented); tow behind style suggested, but not mandatory

9.2 **Recommended (suggested) Equipment:**

- 9.2.1.- One (1) deployable surface marker buoy (SMB)

9.3 **Equipment configuration and body position**

In any case must the diver wear a harness with front crotch-strap D-ring where the scooter is clipped by means of special safety spring-clip and tow leash with proper length.

- 9.3.1.- **Correct equipment configuration** is a crucial factor for safe diving in general and becomes a must when diving with the scooter. As a rule, gear configuration should guarantee a very good streamlining and no elements should protrude or be left dangling.

- 9.3.2.- **The diver's position** during the dive must be more as horizontal as possible (posture and buoyancy always derive from correct equipment configuration and adequate training). This ensures safety, longer running times, scooter speed and cruise comfort.

Be especially careful when setting out your equipment especially as regards : hoses, regulators, stages, SPGs, audible alarms, light cords, reels and so on; making sure they do not dangle and that they cannot come into contact with the propeller or entangle themselves on the bottom or on your buddy, creating possibly serious hazard situations

10 Course Facilities & Supporting Material

- 10.1 A class room suitable to match the needs of the course
- 10.2 Open water (lake/sea), minimum visibility 5m and max depth 15m
- 10.3 At least one class 1 rated scooter per any participant, instructors and assistants included
- 10.4 At least one fully operational class 1 spare scooter for backup, replacement and for emergency towing exercises
- 10.5 Suitable handouts or a manual given to every student; all this teaching material must be accredited/endorsed by the CMAS TC
- 10.6 The document "CMAS CONSTRUCTION STANDARDS FOR UNDERWATER SCOOTERS"

11 Final Knowledge (Theory) Evaluation

Theoretical knowledge will be evaluated with one single, written test, consisting of 20 MC questions on the main topics as listed under "aims and priorities of the training".

In order to pass, the student must have a scoring of at least 80% (correct answers).

12 Final Skills Evaluation

At the end of the class the candidate has to demonstrate to be confident with scooter diving in all these steps:

- 12.1 Scooter dive planning
- 12.2 Pre-dive and post-dive operations
- 12.3 Positioning in the water and recover of the scooter
- 12.4 Proper use of the scooter during the descent and ascent
- 12.5 Speed adjusting
- 12.6 Signals
- 12.7 Emergency scenarios :
- 12.8 Scooter malfunctioning /OOG situation
- 12.9 Towing the buddy with a deactivated scooter/ towing multiple scooters
- 12.10 SMB Deploying (suggested)
- 12.11 Awareness of the environment

13 Minimum Course duration

- 13.1 Minimum of 2 days
- 13.2 Theory/Classroom: 4.0 hrs
- 13.3 Dives: Minimum 3 dives with a minimum of 180 min. total duration
Not more than 2 dives per day

14 Certification

- 14.1 CMAS double-sided card
- 14.2 wall certificate in A4 format (left to the decision of the national federation)

15 Quality Control

Compliant with CMAS Standards and the relevant procedures of the national CMAS federation

Training Program

1. Minimum Course duration

- 1.1 Minimum of 2 days
- 1.2 Theory/Classroom : 4.0 hrs
- 1.3 Dives : Minimum 3 dives with a minimum of 180 min. total duration
Not more than 2 dives per day

2. Course Content

2.1 Theory

- 2.1.1. Basic functions of the scooter: mechanical, electrical and nautical (i.e. buoyancy in fresh and sea water, trim, torque, steering)
- 2.1.2. Basic scooter's maintenance
- 2.1.3. Proper equipment set-up for efficient scooter diving.
- 2.1.4. Scooter dive planning :scooter's burn time and gas planning.

2.2 Practical

- 2.2.1. Pre-dive and post-dive operations
- 2.2.2. Positioning in the water and recover of the scooter
- 2.2.3. Proper use of the scooter during the descent and ascent
- 2.2.4. Speed adjustment
- 2.2.5. Signals
- 2.2.6. Emergency scenarios:
 - Scooter malfunctioning
 - OOG situation
 - Towing the buddy
- 2.2.7. Awareness of the environment