

# Student Diver Tool Box – Course Notes



# The Sub-Aqua Association

## Student Diver Tool Box

### Course Notes

### DeeP-Stops Edition

This text relates to the following diver grades:

Elementary Diver

Open Water Diver

Club Diver

Dive Leader, and

Dive Supervisor

by

**Bob Cole**

SAA Decompression Officer and CMAS Technical Director

This book is part of the SAA Training Programme forming the course notes and associated homework questions. There are no answers to homework questions printed within these covers. The SAA operates through the "Club System" where the Instructors act as mentors to the trainee divers. It is for the trainees to complete the answers to the questions as the course progresses and then discuss their answers with the Instructor, who will give any necessary help and advice.

**Note:** The Graphics used in this book have been taken from 32 of the main PowerPoint lectures on the SAA Instructor Tool Box CD. It is hoped that they will provide a link between the lectures and private study.

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#### IMPORTANT

Because people vary in their susceptibility to decompression illness, oxygen toxicity, and carbon dioxide retention, no set of tables or personal decompression computer (PDC) can guarantee total avoidance of diving related illnesses; even if the limitations of the tables or PDC are complied with in full. Keep in mind that diving is a risk sport!

#### Special message

Because of the dangerous nature of diving, the user takes full responsibility for any accident and no warranty concerning the advice, tables or PDCs mentioned in this book is expressed or implied. Under no circumstances will the SAA, the estate of the late Professor A A Bühlmann, the author or the publisher be liable or responsible for any consequential loss and/or damages.

#### Caution

Diving cannot be learned by just reading books. It is a practical sport which requires skills. This book provides notes for SAA Diver Trainees and is only part of the SAA's Diver Training package. Never dive beyond the limit of your training and experience without a qualified instructor.

*Never dive beyond the limit of your training and experience without a qualified instructor.*

**SAA Student Diver Tool Box - Course Notes**

## Preface

You are about to start on an amazing journey, going to places where very few people have been. You will see for yourself the wonders of the underwater world: creatures that, until now, you've only seen on TV. You will be able to explore shipwrecks and hidden caverns, even search for treasure. Not all treasure is gold! You are about to join the privileged.

To start with you must, of course, jump through a few training hoops. This is not as difficult as it may at first seem. To give you some reassurance, try to imagine that you are from another planet, and you've never seen a car, let alone driven one. Now in your mind's eye imagine someone trying to explain how to start a manual car and drive it away from stand-still, turn right at the top of the road and stop at the traffic lights. Sounds pretty difficult doesn't it? Well, you know it can be done; you're probably a driver yourself.

It's the same with diving. Of course there will be times when things don't go right and your progress may even slip. Don't give up, you'll get there. It's just a matter of practise - lots of it.

New divers get hung up on the amount of air they use when diving. Don't. You're comparing yourself with experienced divers; that's not fair. Just breathe what air you need. This training programme will show you how to plan for the safe amount of air to carry for your dive. Just be sure to do the planning. Time and experience will reduce your air consumption to the right value for your fitness. Don't try using flash techniques to reduce your air consumption, such as skip breathing, they really don't work and are more trouble than they're worth.

This tenth, seminal, year of our CMAS membership is marked by our organisations co-operating in the production of the DeeP-Stop Decompression System. This system acknowledges the production of micro-bubbles caused by diving and offers improved decompression to help deal with PFO issues. Take the time to study well and to hone your newly acquired skills. Keep in mind: Preparation is everything!



*Chance Favours the Prepared Mind.*

Kind Regards

**Bob Cole**

## Foreword

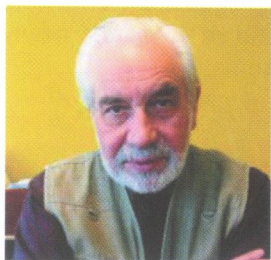
I reviewed this excellent book with a great deal of pride and nostalgia. Not because I had anything to do with it - this is my only contribution - but because it brought back memories of wonderful people. Let me explain.

When I decided, in 1976, to found the SAA, on the strength of my position as editor of Britain's top independent diving magazine, I realised I could not handle it alone. Then a young chap called Len Charlton, who had just started work on the magazine, offered to help out. On the strength of this we launched the "Independent List" as it was called. However, Len immediately left to run a diving school in the East for a few years! I was left pondering whether I, bring up two kids and with a full-time job in addition to the magazine, could possibly manage on my own.

I need not have worried. From all quarters of the independent sub-aqua scene, there "surfaced" divers who were dedicated to making sure that the SAA would eventually emerge as one of the world's finest diving organisations. It represents Britain on the CMAS or World Underwater Federation, and has long been instrumental in developing diver training.

I certainly won't try to name all those divers here, because the list is too long; one day the fascinating story will be told. Typical of them was Bob Cole, who to my memory, was Diver of the Year in our early days. And whereas the ravages of time seem to have caught up with most of us, Bob is still making valuable contributions, such as the one you are reading here.

Which is why I am immensely proud of what the SAA has achieved - and Bob, thanks for the memories.



Leo Zanelli, Founder of the SAA

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The production of this Instructor Manual (Tool Box) has involved many dedicated hard-working people. And on behalf of the membership the National Council would like to thank them all for their hard work and dedication.

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## Further Reading

Title	Publisher	Author	ISBN
SAA Bühlmann DeeP-Stop System		Bob Cole	0 9532904 8 4
SAA Nitrox Diving	SAA	Bob Cole	0 9519337 7 9
SAA First Aid Diver	SAA	Helen Vosper	0 95329 04 1 7
SAA Chartwork and Nav	SAA	SAA Team	0 9519337 2 8
SAA Oxygen Admin	SAA	SAA Team	0 9519337 87
Rebreather Diving	SAA	Bob Cole	0 9519337 9 5
Extended Range Nitrox	SAA	Bob Cole	0 9532904 4 1
Club Diver Manual - Let's Dive	SAA	Colin Brittain	0 9532904 3 3
SAA Instructor Guide	SAA	SAA Team	0 9159337 5 2
Boat Handling Course Manual	SAA, BSAC, Scotsac & PADI Combined Diving Agencies		
The Physiology and Medicine of Diving	Saunders	Bennett & Elliott	0 7020 1589 X
Oxygen and the Diver Human Biology	SPA Ltd Collins	Ken Donald Boyle Indge & Senior	1 85421 176 5 000 329 0956
The Decompression Matrix	Dive Info Co	Bob Cole	0 9520934 2 1
Resuscitation for the Citizen 7th Ed. 06	Resuscitation Council (UK) RC (UK)		
Royal Navy Dining Manual	MoD		BR 2806
NOAA Diving Manual	Best Publishing	J Joiner Ed.	0 941332 70 5
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To the Reader.

You are about to start on an amazing journey, going to places where very few people have been. You will see for yourself the wonders of the underwater world: creatures that, until now, you've only seen on TV. You will be able to explore shipwrecks and hidden caverns, even search for treasure. Not all treasure is gold! You are about to join the privileged. However, keep in mind: Preparation is everything!

Chance Favours the Prepared Mind.

Good Luck and Safe Diving.

**Bob Cole**

SAA Decompression Officer and CMAS Technical Director

#### Diving Hand Signals

Diver hand/light

use a lamp to  
an OK signal.



#### Hoods and Gloves

- Generally, hoods are either wet or semi-dry.
- In the UK most divers wear neoprene wet gloves.
  - Semi-dry hood and Dry gloves with inner insulation.
  - Semi-dry hood in Dry-Glow.
  - Buys the reflective patches.
  - Industrial gloves.
  - Cycling gloves.



#### Exiting the water



#### Where the gas goes

- The red and white line around the diver's body shows the insulation provided by the underclothing.
- The blue shows where the injected air goes.
  - To the highest point.
- Adding more air simply makes the situation worst.
  - Check out the BEO!
- The diver may become unstable!



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