



*Manuale d'istruzioni
Manuel d'instructions
Gebrauchsanweisung
Manual de instrucciones
User's Manual*

Archimede II

CRESSI



User's Manual

Archimede II

ENGLISH

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1. - INTRODUCTION.

Congratulations on your purchase of the Archimedes II computer. The Archimedes II is a sophisticated computer offering numerous performance features which ensures the utmost in performance, reliability and safety.

1.1. - Main specifications.

- Algorithm. The Bühlmann ZH-L8 algorithm has been refined by Randy Bohrer in order to make available a more complicated RGBM program. The result is an algorithm very similar to ZH-L16 which is less penalizing related to water temperature and exceeding ascent rates.
- Tissues: 12 Tissues with saturation hemi-phases between 5 and 640 minutes;
- PROGRAM **DIVE**
Dive data full processing. During air or Nitrox dives (including decompression dives) two different nitrox mixtures may be utilized.
- Setting of mixtures. P02 can be set between 1.0 bar to 1.6 bar. FO2 settings between 21% to 50% and 21% to 99%.
- The Archimedes II will allow for a nitrox dive subsequent to an air dive even during de-saturation.
- Possibility of **GAGE** PROGRAM setting (depthometer/timer)
- Large UFDS display system allows for ease in reading and understanding of values.
- Replaceable display protecting screen
- Battery replacement by user
- Manual dive planning (Scrolling)
- Unit of measure changing from metric to feet and °C to °F.
- Sound and visual warning systems
- Nitrogen saturation graphic indicator
- CNS oxygen toxicity graphic indicator

- Back-luminescent display
- Dive simulator (surface interval setting for a subsequent dive)
- Calendar and clock
- Logbook (30 h or 60 dives) including dive profile
- Dive historical memory
- Reset button allows for multi diver activity.
- PC interface (optional)

1.2. - SAFETY MEASURES.

1.2.1. - Definition of danger, warning and note.

Please read the user guide thoroughly prior to using the Archimedes II.

Prior to reading the operational directions, please understand the following definitions:

⚠ DANGER: indicates a situation (or procedure) that may be dangerous to the diver's health and safety.

⚠ WARNING: indicates a situation (or procedure) that may be dangerous to the diver or damage the instrument

NOTE: stresses important information.

1.2.2. - General recommendations and safety measures.

WARNING: Read the directions! Please read users' guide carefully, including the safety measures section. Have a thorough understanding of the instrument's use, functions and limitations before using it! DO NOT use the instrument without having read each chapter of the users' guide!

⚠ DANGER: A underwater diving computer can never completely eliminate the risk of decompression sickness. The computer does not take into any account a diver's physical conditions which may vary daily. It is recommended that a medical examination is completed prior to commencing any underwater diving activities, and to assess one's own physical condition before each dive. Circumstances such as cold water temperature (less than 10°C – 50F), poor physical condition, multiple dives made on subsequent days, weariness, use of alcohol, drugs, or medication and dehydration may increase the risk of decompression sickness.. It is recommended to avoid all such situations that may increase the likelihood of decompression sickness.

WARNING: The Archimedes II should be used only by properly trained and certified divers. No computer will replace proper underwater training.

WARNING: The Cressi-sub Archimedes II computer is designed for recreational sport diving only. It is not designed for commercial use requiring increased diving activity.

WARNING: Before using the computer, please check the battery life status and the visibility of the LCD display. DO

NOT dive if the instruments' indications are not clear and if the battery is low.

WARNING: While diving, be equipped with a depth gauge, diving watch and dive tables. Additionally, check the air capacity in your diving cylinders.

⚠ DANGER: Do not dive at high altitudes before the instrument has automatically switched on the program corresponding to the altitude at which you are. Please check the altitude level on the display. Please be advised that diving at higher altitudes than 9,842 ft. above sea level involves an increase risk of decompression sickness.

⚠ DANGER: Before flying, wait until the icon "No Fly Time" on the computer display has disappeared.

WARNING: The information offered on the computer is strictly personal for the individual who used the instrument during a dive or a series of dives.

⚠ DANGER: Cressi-sub discourages the use of this instrument in decompression dives. In the event that no-decompression has been exceeded, the Archimedes II Cressi-sub computer will display information related to decompression, surfacing and surface interval times.

WARNING: Do not dive using Nitrox mixtures without checking the contents and correct O2 percentage (FO2). After doing so, set your computer with the mixture(s)' value so that it may process the decompression computations. Please be advised that the computer only accepts FO2 values to the nearest whole number. (i.e. 36% not 35.8%)

⚠ DANGER: The use of nitrox should not be undertaken without proper training. Nitrox dives will expose the diver to different risks than those of air dives, including serious physical damage and, in extreme cases, even death.

⚠ DANGER: As a safety measure the Archimedes II computer utilizes a PO₂ limit set at 1.4 bar even for air dives. Should you require an additional safety margin, it is possible to set PO₂ at lower values, down to 1.0 bar, by decrements of 0.1 bar.

WARNING: After a dive with the Archimedes II set in Gage mode (depth meter-timer). The instrument will not make saturation and de-saturation computations during the remaining 48 hours elapsing from the depth meter's use.

WARNING: Avoid diving activities that result in unsafe profiles such as "yo-yo" dives, dives with reversed profiles or several subsequent dives during subsequent days. Diving activities such as these are potentially dangerous and present a higher risk of decompression sickness.

WARNING: Please utilize the most conservative safety factor at all times. By doing so, you will dive more conservatively, which will minimize the likelihood of decompression sickness.

NOTE: While flying, the Archimedes II must be stored in the pressurized cabin.

NOTE: Cressi-sub strongly recommends that all sport diving activities be conducted within the guidelines of no-decompression diving and at a maximum depth of 132 ft. Exceeding these perimeters dramatically increases the likelihood of decompression sickness

As a result of technological advancements/changes, Cressi-sub reserves the right to modify the Archimedes II computer without notification.

1.3. - Introduction.

The Archimedes II computer is a multifunctional instrument for sport diving. It will supply information on depth, dive times, decompression status, ascent rate, and surfaces interval time between dives. Nitrogen absorption and release is continuously processed by its sophisticated software.

Information is displayed in large characters on the Archimedes II's *User Friendly Display System* (UFD). This system allows for easy and direct dialogue between the diver and the computer, ensuring a clear understanding of all the data needed at any given time.

Additionally, the computer is equipped with a watch and calendar, a multifunctional dive memory (logbook), and a dive simulator.

The Archimedes II's mathematical model can make saturation and de-saturation computations of dives carried out with air, and with up to two different nitrox mixtures. These may be selected during the dive itself. Nitrox mixture(s) dives may be set from the maximum PO₂ value between 1.0 and 1.6 bar to oxygen percentage (FOG): the primary (MIX1) between 21% - 50% for O₂, the second (MIX2) between 21%-99%.

Additionally, the computer may be set by the user for either metric (m -°C) or feet (ft. -°F).

Archimedes II Cressi-sub underwater computer may be connected to a compatible PC, by means of a Cressi-sub

interface (accessory) and its related software Cressi PC Logbook (accessory).

Please note that it is very important to read and understand the users guide and the operation of the Archimedes II. Serious damages or death can result if these guidelines are not clearly understood.

Archimedes II Cressi-sub computer's watch and calendar function (see picture 1) are always on, and the related battery consumption is unnoticeable.

Operational functions are easily visible either by depressing buttons B (Mode), A or C, or when the contacts get wet during a diving activity (the dive program turns on at a depth greater than 5 ft. and are illustrated by the figures shown on its large display.

In order to understand all the computer's functions and their meaning, the guide is divided into five main chapters, dealing with every possible situation:

- 1 - Introduction and safety measures
- 2 - Before diving
- 3 - While diving
- 4 - On surface after diving
- 5 - Care and maintenance

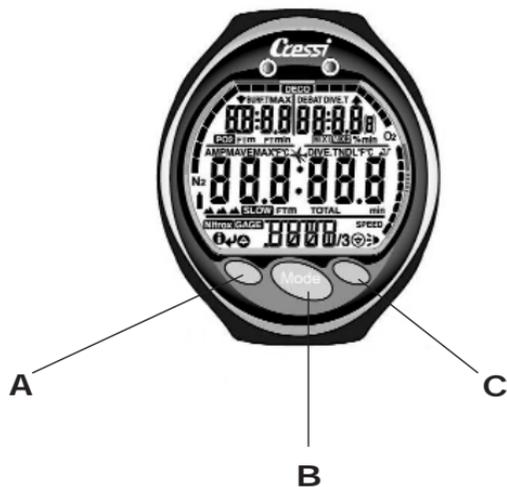
The Archimedes II is designed to be easily understood and operated. It displays only the data needed during specific situations.



2) Before diving

Foto Ghisotti

2.1. - UFDS display and controls.



Archimedes II computer is equipped with a "User Friendly Display System" (UFDS) display, which "escorts" the diver during its operation. Various icons on the display will indicate the operation that may be carried out at that moment. As an example, the "light" icon (➤) (at the bottom on the right) indicates that by depressing button C the back-illumination will be engaged. This establishes a direct "dialogue" and a clear understanding of every function.

Archimedes II's different programs are visible by repeatedly depressing button B (Mode). This is the key to operating the system. They are clearly indicated by the alpha-numeric UFDS display. Some programs have sub-menus, which are switched on by depressing buttons A and C. This will allow as well as change the setting on the surface. Depressing button C (➤) engages the display back-illumination.

2.2. - On surface, before diving.

As previously noted, the Archimedes II is always on. When diving at altitude, it is important to check that the appropriate altitude adjustments have occurred. This function is carried out automatically, updating every 10 minutes. Altitude adjustment values will be displayed as follows:

- no icon () - from 0 - 2.625 ft. (picture 1)
- from 2.625 - 5.250 ft. (picture 1-a)
- from 5.250 - 7.874 ft.
- from 7.874 - 19.685 ft.
- more than 19,685 ft. -out of range

Each icon indicates that the computer has automatically modified its own mathematical model to adjust to proper altitude.

⚠ DANGER: Diving at altitudes greater than 9,842 ft. above sea level involves an increased risk of decompression sickness.

Diving at higher altitudes than normal may cause alterations of the nitrogen balance between the human body and the environment.

It is recommended that before diving at altitude, wait at least three hours after arriving at your diving destination. This will allow a partial release of the residual nitrogen from the body. The atmospheric pressure at higher altitudes is lower than at sea level. Therefore, the diver has additional nitrogen in his body than at the lower altitudes. The excess is gradually released and the balance re-established within a couple of days. At this point it is important to check:

The low battery indicator. It should not be on or flashing (picture 2 a-b).

The computer display is operating. All liquid crystal segments should be displaying.

WARNING: Should the display show the symbol of a low battery (picture 2 a-b), the computer must NOT be used. Additionally, should it display during a dive, the diver must immediately surface. A battery replacement is required as outlined in chapter 5.

2.3. - PARAMETERS SETTING.

In order to set the dive's parameters, you must depress the central button B (Mode), and the icon relating to the *program* you want to use will be shown (picture.3): **DIVE**, for air dives (**DIVE**) or Nitrox, mixture(s), or **GAGE** if you want to use the depth meter /timer program.

NOTE: Archimedes II computer is preset on **DIVE** program.

2.3.1. - DIVE program parameters setting.

NOTE: Archimedes II computer is preset on **DIVE** program.

This is the basic program with which the Archimedes II is set. It is possible to modify its parameters by repeatedly depressing button A (**↵**), which allows you to select, in the following order, the dive's parameters relating to:

**PO2 Mix 1 -> FO2 Mix 1 -> PO2 Mix 2 -> FO2 Mix 2
-> Safety Factor -> Max Depth -> OFF/ON -> DIVE**

that is:

- PO2 Mix 1 is the partial pressure of the former of the two Nitrox mixtures, so that Archimedes II can make its decompression computations. The diver can set it on values between 1.0 bar (included) and 1.6 bar (included), by variations of 0.1 bar, obtained at each pressure of button **C** ();

NOTE: By varying of max PO2 setting (picture 3), the computer also indicates the maximum depth (MAX) that may be reached with that mixture.

WARNING: Both mixtures' PO2 factory set on a basic value (default) of 1.4 bar, both for air dives and for Nitrox mixture dives. The diver is then following the most conservative values recommended for sport dives. Different PO2 values may be set as shown in chapter 3.3. The set value will be memorized in the computer until the diver chooses another setting.

- FO2 Mix 1 is the oxygen percentage of the primary Nitrox mixture (MIX1) set on Archimedes II. The diver may vary it on values between FO2=Air (21%) – basic setting - and FO2=50 % (included), by variations of 1% O2, obtained at each depression of button C (⊕);

WARNING: Archimedes II is factory set with the primary Nitrox mixture on Air (FO2=21%) and the second additional mixture on Off (FO2= - -%)

NOTE: During the phase of parameters' setting, by depressing button C (⊕), the computer will automatically stop on standard Nitrox 1 mixture (EAN 32), with an oxygen percentage of 32%. By keeping button C (⊕) depressed, it will stop on (Air) setting. This is to allow the FO2 operations setting to be set quicker. Additionally, it is possible to set other FO2 values for the mixture (in increments of 1%) each time you depress button C (⊕). The constant depressing of button C will increase the increments rapidly.

NOTE: By varying of the mixture's oxygen percentage, the computer indicates the maximum depth (MAX) which may be reached with that mixture, since it depends on the PO2 value set.

- PO2 Mix 2 is the partial pressure of the latter of the two Nitrox mixtures (MIX2) that can be set on Archimedes II computer. It is factory set on the value of PO2=1.4, but it may

be changed by the diver on values between 1.0 bar (included) and 1.6 bar (included), by increments of 0.1 bar, following each other at each depression of button C (⊕);

- FO2 Mix 2 is the oxygen percentage of the second Nitrox mixture (MIX2) set on Archimedes II computer. It is factory set on Off (FO2= - -%) and it may be switched on only by the diver, by depressing button C (⊕), on values between FO2=Air (21%) and FO2=99% (pure oxygen), by variations of 1%, following each other at each pressure of button C (⊕))

- A Safety Factor may be set by the diver at one of three values (SF0/SF1/SF2). It is factory set at SFO.

WARNING: In order to dive more conservatively, please change your safety factor any time you feel that you are at risk of decompression sickness.

- The maximum depth alarm is set on ft. 132 and OFF by the factory (picture 4 a); it can be switched On and be modified as well as the depth at which it will start (picture 4b), by depressing button C (⊕).

At the end of the setting, depress button B (Mode) for several seconds; this will allow you to return to the normal display (picture 1).

Related topics:

- 2.5.1. - Maximum depth alarm.
- 3.1. - AIR DIVE.
- 3.2. - NITROX MIXTURES DIVE.

2.3.2 - Dive planning (PLAN).

While on the surface it is possible to go to the Plan function (PLAN) in order to visualize the remaining time available at different depths, without having to make decompression stops (curve time), only by primary mixture MIX1.

The values are given both for the first of a (possible) series of dives and during the surface interval between two or more subsequent dives; in such case, Archimedes II takes into account the residual nitrogen, therefore reducing the curve times.

When the computer is set on **DI VE** program, by depressing button B (Mode) twice, you view to the function (PLAN), as shown by the alphanumeric display. The display will show (picture 5, air; picture 5.1., Nitrox) no decompression depths times between 30 – 157 ft., in depth increments of 10 ft. This is obtained by depressing C (↻), or by manual depth decreases, each of ft. 10, by depressing button A (↵).

Depress button B (Mode) for several seconds in order to get back to the normal display (picture 1).

NOTE: PLAN function will be switched off in **GAGE** program and in this case the computer shows Error.

Related topics:

- 2.3.1. - **DI VE** program parameters setting
- 3.4. - Curve dive
- 4.1.1. - Surface interval.
- 3.5.1. - Omitted decompression stage alarm. (Error)

2.3.3. - Rapid visualisation of set data (DATA).

The INFO (i) icon on Archimedes II Cressi-sub computer

UFDS display allows you to visualize, while on the surface, every set parameter for your dive in a quick and easy manner (picture 6), when the computer is set on **DI VE** program.

By depressing button A (i), the computer will display the set PO2 and the relating maximum depth MAX (given in m or ft.); the possible setting of a safety factor (SFO/1/2); the possible oxygen percentage of the primary Nitrox (Mix 1) and the relating icon (Nitrox), or the icon (AIR) in case of an air dive. By keeping the button depressed, the computer will display the second mixture's parameters (if set) in alternative sequel, and then return to those of the primary.

Related topics:

- 2.3.1. - **DI VE** program parameters setting
- 3.1. - AIR DIVE.
- 3.2. - NITROX MIXTURES DIVE.

2.4. - GAGE program parameters setting (depth-meter/timer)

The Archimedes II computer is equipped with a third program (**GAGE** program or depth meter/timer) that may be used for both apnea (free divers) divers and for the use in technical dives with helium-based binary and ternary mixtures. In this case, the instrument gives only the dive's basic depth and dive time parameters. It does not make tissue saturation and desaturation computation, which must be programmed and computed by means of proper software and/or tables.

Cressi-sub reminds you that sport dives must be carried out within the no-decompression guidelines, and at the maximum depth of 132 ft. This is the limit of sport diving. To exceed these limits remarkably increases the risk of decompression sickness.

WARNING: Archimedes II Cressi-sub computer has been developed for sport diving use only. It is not intended for commercial or professional use requiring longer dive times and greater depths. Diving beyond the parameters of sport diving dramatically increases the risk of decompression sickness.

⚠ DANGER: Cressi-sub discourages diving with gaseous mixtures other than air without proper training. The use of "technical" multi-gas mixtures may expose the diver to different risks than those of sport diving, including serious physical damages and, in extreme cases, death.

WARNING: After a dive with Archimedes II set in **GAGE** mod. (depth meter-timer). The instrument will not make saturation and de-saturation computations during the following 48 hours.

⚠ DANGER: Should you decide to reset the instrument by depressing button RESET on the back of the computer, the nitrogen memory will be cancelled; therefore; the instrument will not be able to compute a following dive. Never use this function for at least 48 hours after the last diving activity.

To go to **GAGE** program depress button B until the **DIVE** menu is shown, then depress button C, which you may choose Archimedes II DIVE/GAGE programs (Picture 7).

NOTE: Archimedes II computer is set at the factory on **DIVE** program.

GAGE program will remain set until the diver changes the program to be used. In **GAGE** program, the INFO, PLAN and SIMU functions are swit-

ched off, while it is possible to set only a maximum depth alarm which may be switched on or off by the user by setting the instrument, following the same procedures shown in chapter 2.5.1.

NOTE: In **GAGE** function the depth indicator gives indications between 0 - 655.8 ft..

Related topics:

- 2.5.1. - Maximum depth alarm.
- 3.6. - **GAGE** program (dethometer/timer)

2.5. - Instrument general setting.

2.5.1. - Maximum depth alarm

Archimedes II computer is equipped with a maximum depth alarm preset at the factory (picture 8 a) on a value of 132 ft. This is the limit of sport dives. When the function is on (ON) (picture 8b), upon reaching the set maximum depth a sound alarm will start and the display will flash for three seconds. It is possible to switch on the alarm, or modify the maximum depth, by depressing button B, then button A (↵), selecting, in the following order, the dive's parameters relating to:

**PO2 Mix 1 -> FO2 Mix 1 -> PO2 Mix 2 -> FO2 Mix 2
-> Safety Factor -> Max Depth -> OFF/ON**

While in Max Depth menu (picture 8 a), you may modify the value of maximum depth from 0 - 325 ft., by depressing button C (⊕). When you have set the desired depth, depress button A (↵) in order to switch on or off the depth alarm by means of button C (⊕). The computer is set at the factory on the values of 132 ft. and OFF. Depressing button B (Mode) for several seconds will return back to the normal display (picture 1).

NOTE: When switched on (ON), the maximum depth alarm works in both **DIVE** and **GAGE** computing programs.

Related topics:

- 2.3.1. - **DIVE** parameters setting.
- 2.4. - **GAGE** program (depthometer/timer)

2.5.2. - Date and time adjustment (SET).

To adjust date and hour, depress button B (Mode) until the icon (**SET**) appears on the UFDS display, with the seconds' display flashing (picture 9).

By depressing button A (**↓**) view the regulation of (picture 9). 1) second, 2) minutes, 3) hour, 4) 12/24h and, in sequence, year, month and day. By depressing button A (**↓**), the function to be modified will flash and may be varied by depressing button C (**⊕**).

To revert back to the normal display (picture 1), depress button B (Mode) for several seconds.

NOTE: Always check the hour and date in order to get correct entries in your computer's logbook.

Related topics:

- 4.1.2. - Logbook.
- 3.6. - **GAGE** program (depthometer/timer)

2.5.3. - Units of measure setting.

Archimedes II computer can make computations by metric units (depth in meters and temperature in °C), or in feet and (depth in feet and temperature in °F).

To change the units of measure to be used, depress button

B (Mode) to go to the first menu of (**DIVE** or **GAGE**) program setting (picture 3). Then depress buttons A+C in sequence and keep them pressed together for about 5 seconds. An alarm and the new set unit of measure will appear on the display.

By depressing button B (Mode) for several seconds, you will return to the normal display (picture 1).



3) While diving

3. - DIVE program.

Archimedes II computer offers two DIVE computing programs; for air (DIVE AIR program) and for nitrox mixtures or EAN (Enriched Air Nitrox) dives. Archimedes II allows for use with up to two different nitrox mixtures during the same dive.

NOTE: Archimedes II computer is set at the factory on program, DIVE AIR with the primary mixture's (Mix 1) O2 value on 21% and PO2 on 1.4. The second mixture (Mix 2) is set at the factory off. Each manual variation of the manufacturer's values relating to Air program will start Archimedes II Nitrox computation program.

3.1. - AIR DIVE.

Archimedes II computer starts automatically the "Dive" program at a depth superior to (ft. 5). During a curve dive the display will show the following information (picture 10):

- ① current depth value, in meters (m) or feet (ft.)
- ② no decompression time still available is shown by the "NDL" - (No Decompression Limit) icon
- ③ maximum depth reached during the dive displayed in meters (m) or in feet (ft.), shown by the "MAX" icon
- ④ time spent diving, shown by the "DIVE T" icon
- ⑤ indicator of segmented surfacing speed
- ⑥ graph of nitrogen amount absorbed during the dive
- ⑦ graph representing CNS O2 toxicity level (see chapter 3.3.4)
- ⑧ Automatic indicator of altitude level

- ⑨ Icon of maximum depth alarm (if switched ON – see 2.5.1)
- ⑩ indicator of Nitrox mixture(s) dive
- ⑪ MIX1 or MIX2 icons identifies which Nitrox mixture is being considered by the computer to make its computations
- ⑫ (ⓘ) and (➤) icons, that is "Info" (button A) and back-illumination (button C).

Further important information are obtained by keeping pressed button A (ⓘ) during the dive, that is (picture 11):

- ① current PO2;
- ② oxygen percentage of the selected mixture (Air if FO2=21%);
- ③ maximum depth reached during the dive, in meters (m) or feet (ft.);
- ④ current temperature, expressed in °C or °F

The UFDS display show (DATA).

NOTE: When the computer is used for air dives, it is not necessary to carry out any FO2 change or setting before the following dive.

During your diving activity, light condition may not allow easy reading of the display, therefore, it is possible to switch on its back-illumination by depressing button C (➤). The display's back-illumination will last about 5 seconds and may be repeated any time you want. The battery consumption is minimal when the back-illumination is activated.

Related topics:

- 2.3. – Dive parameters setting
- 3.4.1. – Ascent rate.
- 3.3.3. – Mixture changing by diving
- 3.3.4 – CNS toxicity display.
- 3.3.5. – PO2 alarm.

3.2. - HYPER-OXYGENATED (NITROX) MIXTURES DIVE

3.2.1. - Before a Nitrox dive.

⚠ DANGER: the use of the computer with hyper-oxygenated (Nitrox) mixtures is exclusively intended for divers who have attended a full training course on the use of such mixtures.

DI VE The Nitrox program for Archimedes II computer allows making saturation and de-saturation computations for a dive by using up to two different nitrox mixtures and is switched on any time the parameters of **DI VE RR** program the primary mixture FO2 on Mix1=21% and second mixture Mix2=off, are changed. In this case the display will show (Nitrox) icon (picture 12) which will stay on during the dive and until Archimedes II remains set on Nitrox parameters.

Once Nitrox program is on, it is necessary to set Archimedes II computer with the exact values of oxygen percentage (FO2) contained in the cylinders to be used during the dive, after having analyzed their content, so the computer is able to adapt its computing algorithm according to the new set parameters.

⚠ WARNING: Archimedes II computer always keeps **DI VE RR** program switched on for air dives, until the diver sets it for the use with Nitrox mixtures (chapter 2.3.1- Dive parameters setting)

⚠ DANGER: Do not dive with cylinders containing Nitrox mixtures without checking their oxygen percentage.

⚠ WARNING: Before diving, always check the oxygen percentage of the mixture(s) set on the computer. This is done on surface by depressing button A (**ⓘ**) which allows visualization of the previously set parameters.

⚠ WARNING: Under the same dive conditions, a Nitrox mixture requires longer no decompression times than air. It is recommended to comply with the maximum depth allowed by the selected Nitrox mixture.

Related topics:

- 2.3.1. - **DI VE** parameters setting.
- 2.3.3. - Rapid visualization of set data.
- 3.3. - Nitrox parameters setting.
- 3.3.3. - Mixture changing by diving.
- 3.3.4. - CNS toxicity display.
- 3.3.5. - PO2 alarm.

3.3. - Nitrox parameters setting.

3.3.1. - Partial pressure setting (PO2).

Archimedes II is set at the factory on a basic PO2 value of 1.4 bar for both mixtures of Nitrox and air dives, in order to guarantee the maximum safety during dives.

It is possible to modify the PO2 setting on values between 1.0 bar and 1.6 bar. Should you elect to increase the dive's margin of safety, it is possible to set PO2 on lower values, down to a minimum of 1.0 bar. It is explained in paragraph 2.3. how to carry out the selection of values. To do so, depress the central button B (Mode) to the (**DI VE**) menu, shown in picture 3, and the parameters will be modified according to the following scheme: by depressing button A (**⏴**) it is possible to select, in

the following order, the dive parameters relating to:

**PO2 Mix 1 -> FO2 Mix 1 -> PO2 Mix 2 -> FO2 Mix 2
-> Safety Factor -> Max Depth -> OFF/ON**

where PO2 Mix 1 is the oxygen's partial pressure of the primary mixture (MIX1), which the diver may set, as already shown, on values between 1.0 bar and 1.6 bar, by variations of 0.1 bar. The same may be done for the second mixture's (Mix 2) PO2. By depressing button A (↵) the chosen setting is confirmed. To return to the normal display depress button B (Mode) for several seconds (picture 1).

WARNING: The computer keeps the PO2 setting on, until the diver manually resets it to different values.

Related topics:

- 2.3.1. - Dive parameters setting
- 3.3.3. - Mixture changing by diving.
- 3.3.4. - CNS toxicity display.
- 3.3.5. - PO2 alarm

3.3.2. - Nitrox mixture(s) oxygen fraction FO2 setting.

WARNING: Check the FO2 value set on the computer prior to diving!

In order to set the correct oxygen percentage contained in the Nitrox mixture(s), depress the central button B (Mode) to the (DIVE) menu, as shown in picture 3, where the parameters may be modified according to the following scheme: by depressing button A (↵) it is possible to select the dive parameters relating to:

**PO2 Mix 1 -> FO2 Mix 1 -> PO2 Mix 2 -> FO2 Mix 2
-> Safety Factor -> Max Depth -> OFF/ON**

where FO2 Mix 1 is the oxygen percentage of Nitrox primary mixture (MIX1), which can be set on values between 21% and 50%, by O2 variations of 1%. The second mixture's FO2 (FO2 Mix2) can be set to values between 21% and 99%, by O2 variations of 1%. This is done by depressing and keeping button C (⊕) depressed.

NOTE: By keeping button C (⊕) depressed, the computer automatically stops on the value of the first of the two standard Nitrox mixtures (EAN 32), corresponding to 32% oxygen.

NOTE: By varying the oxygen mixture percentage, the computer will display the maximum depth (MAX) that may be reached with that mixture.

This depth varies according to the set PO2.

Depress button C (⊕) to manually set percentages of other mixtures different from the standard ones.

Depress button A (↵) in order to confirm the desired percentage, which will appear on the display.

Depress button B (Mode) for several seconds to return to the normal display (picture 1).

NOTE: It is possible to modify the Nitrox mixture(s) setting even during the surface interval (*with de-saturation in progress*) (Picture 12a).

This feature is important, especially for divers who carry out a series of subsequent dives; it allows the modification of one mixture after having carried out a first air dive without having to wait until full de-saturation.

It is important to comply with and understand the following:

- ① At the end of a dive, the previously set mixture(s) oxygen percentage FO2 will be stored in the memory *only* during the first ten minutes of the surface interval. Should another dive be carried out within this period of time, it will be interpreted by the computer as a continuation of the previous dive.

NOTE: It is not possible to go to **GAGE** program within the first 10 minutes after having ended a dive.

NOTE: It is NOT possible to set any variation of the mixture(s) FO2 within the first 10 minutes after having ended a dive.

Additionally, it is not possible to get to the (DIVE) parameters setting menu and therefore to modify the previously set percentage, within the first 10 minutes of surface interval.

- ② 10 minutes after the completion of the dive, the computer resets the FO2 percentage/s on a safety value of 99%, waiting for the user to set the correct value relating to the new mixture(s). The display will show "--" as in (picture 12b).

The diver must analyze the following dive's mixture and set the new FO2 value on the computer.

Should you neglect to set the new FO2 value on the computer, you would be warned by the PO2 alarm (picture 13), at a depth of m 4 (ft. 13) (toxicity limit of a EAN 99 mixture, with PO2 value set on 1.4), the FO2 automatically resets the O2 limit value of 99%. This is done to warn the diver and correctly reset his dive's parameters, by surfacing at once. Should the dive be continued, a second PO2 alarm at 1.6 bar (that is at 20 ft.) would start.

- ③ Should the FO2 value be set and no dive carried out, the computer will store the set value in the memory until the current day's midnight, when it will reset it on 99% (picture 12b)

Related topics:

- 2.3.1. - **DIVE** parameters setting
- 3.3.1. - PO2 setting
- 3.3.4. - CNS toxicity display.
- 3.3.5. - PO2 alarms
- 4.1.1. - Surface interval.

3.3.3. - Mixture changing while diving.

Archimedes II computer can make computations relating to the saturation and de-saturation of a dive carried out using up to two nitrox mixtures. In the previous chapters, it has been shown how to set the basic PO2 and FO2 parameters of the primary mixture MIX1 and the (possible) second mixture MIX2, before the dive.

NOTE: Archimedes II computer *always* starts the computations relating to the dive on the primary mixture MIX 1.

While diving, it is possible to change from the primary mixture MIX1 to the second mixture MIX2, by depressing button B for more than 5 seconds, until the icon of the new mixture stops flashing. At this point, the mixture change will be shown by the new value, shown by the MIX2 icon, on the UFDS display (pictures 14a and 14b).

The same procedure may be used to carry out the opposite change; this will change to the primary mixture MIX1, when the computer is set on the second mixture MIX2.

⚠ DANGER: As a safety measure, in order to avoid the involuntary setting of nitrox mixtures at depths where they might be toxic (excessive PO₂), Archimedes II does not allow the mixture change if the new mixture's PO₂ is higher than the one set on the computer (1.4 bar = default value). The maximum PO₂ alarm will sound if you attempt to set nitrox mixtures at depth.

⚠ DANGER: Should both mixtures' FO₂ values be set and no dive carried out, the computer will store the set values in the memory until the current day's midnight, when they both will be reset on a value of 99%.

⚠ DANGER: After 10 minutes from the end of a dive, the computer resets the mixtures' FO₂ on a safety value of 99%, waiting for the user to set the correct values relating to the new mixtures. The display will show "--" in the place of FO₂%, as in (picture 12b).

⚠ DANGER: Always check, prior to diving, the FO₂ and PO₂ values of both set mixtures! While on the surface, it is possible to check their values, by depressing button A (↵), which visualizes the previously set parameters.

⚠ DANGER: do not dive with bottles containing Nitrox mixtures, without having personally checked their oxygen percentage.

Related topics:

- 2.3.1. - **DI VE** program parameters setting
- 3.3.1. - PO₂ setting
- 3.3.2. - Nitrox mixture/s oxygen fraction FO₂ setting

- 3.3.4. - CNS toxicity display.
- 3.3.5. - PO₂ alarms.

3.3.4. - CNS toxicity display

Archimedes II computer is display a graph of the Central Nervous System toxicity level as to the oxygen level. Its toxicity level is bound with the oxygen's partial pressure and with the exposure to high oxygen partial pressures (PO₂). Picture 15 represents the UFDS display's 8 pixels column, which shows the increasing accumulated oxygen quantities. When all 8 pixels light up, 100% of the maximum tolerance allowable to the CNS has occurred and serious danger of an oxygen intoxication exists.

It is important to understand, monitor, and control the oxygen toxicity level.

In order to reduce the risk of oxygen toxicity, Archimedes II displays a graph which is easy to be read in any situation. When the oxygen level reaches warning values, next to the maximum allowable toxicity (corresponding to 7 of 8 lighted pixels), the graph starts flashing along with the display, and an alarm starts sounding which lasts 15 seconds, showing the proximity of a CNS toxicity level.

When the eighth pixel lights up, a second (100%) alarm starts sounding. At this time the graph and display flash and the alarm sounds, until the diver surfaces, letting the oxygen partial pressure decrease.

When the eighth pixel turns off and the graph stops flashing, the alarm will be entered in the Logbook.

NOTE: The result of the computation is the oxygen composition is approximated to the nearest whole number.

NOTE: The computation of CNS toxicity shown by the relating graph, takes into account both mixtures used during the dive. By using highly nitrox mixtures during the decompression, the toxicity level may be reached during the final phase of the dive. In this case, the alarm will sound after the seventh pixel has lit up: the diver must quickly change over to the bottom mixture and the computer must be consequently reset.

⚠ DANGER: Do not use nitrox mixtures during diving activities without proper training by certified training agencies.

Related topics:

- 3.1. - AIR DIVE.
- 3.2. - NITROX MIXTURES DIVE.
- 3.3.1. - PO2 partial pressure setting..
- 3.3.2. - Oxygen fraction FO2 setting.
- 3.3.5. - PO2 alarms.
- 4.1.2. - Logbook.

3.3.5. - PO2 alarm.

Archimedes II computer is able to constantly monitor another basic parameter relating to oxygen, and that is O2 partial pressure value (PO2). Oxygen toxicity may be caused both by an excessive accumulation (CNS toxicity, seen in the previous chapter) and by exceeding the maximum PO2, which is exceeding the maximum depth allowed by the mixture used. As already seen, the PO2 limit value is set by the diver in a range between 1.0 bar and 1.6 bar. Archimedes II considers the 1.6 bar value as the partial pressure maximum allowable limit and, according to the used mixture, automati-

cally signals the maximum depth which may be reached. Remember that even by using air, you may reach the oxygen toxicity limit. Such limit varies according to the set PO2. Archimedes II is manufactured with a preset value of 1.4 bar, whose corresponding maximum depth is 1834 ft. in air. It is possible to set the computer on other PO2 values, up to a maximum of 1.6 bar. Archimedes II is equipped with two kinds of PO2 alarms:

- ① By reaching the limit depth relating to the set PO2 (from 1.0 bar to 1.6 bar), a sound alarm will start lasting 15 seconds while the display will be flashing, showing the (PO2) icon and the reached PO2 limit value, at the top on the left (picture 16).
- ② A second alarm will start by achieving the depth equivalent to PO2 of 1.6 bar and will last 15 seconds. The display will be flashing and will stop only when the diver will reach a depth lower than the limit one.

Both alarms will be entered in the Logbook.

Related topics:

- 3.1. - AIR DIVE.
- 3.2. - NITROX MIXTURES DIVE.
- 3.3.1. - PO2 partial pressure setting.
- 4.1.2. - Logbook.

3.4. - Curve dive.

3.4.1. - Ascent rate.

Archimedes II Cressi-sub computer's algorithm considers different ascent rates according to the depth. The speed is

shown on the display by a segmented indicator at the bottom on the right, which functions according to following table:

Depth	No segment	1 segment	2 segments	3 segments
0ft → 19.3ft	0.0 ft 12.8 ft/min	- 13.1 ft/min 19.3 ft/min	- 19.7 ft/min 25.9 ft/min	- 26.2 ft/min ()
19.7ft → 58.7ft	0.0 ft 19.3 ft/min	- 19.7 ft/min 25.9 ft/min	- 26.2 ft/min 39 ft/min	- 39.4 ft/min ()
59ft → 5ft	0.0 m 25.9 ft/min	- 26.2 ft/min 36 ft/min	- 39.4 ft/min 52.1 ft/min	- 52.4 ft/min ()

If, during surfacing, the maximum allowed ascent rates are exceeded, the display will show different segments, showing the ascent rate increasing level. Additionally, the alarm will sound, the UFDS display will start flashing (SLD) icon (picture 17), as well as the flashing segmented ascent rate and current value indicator.

In this situation, surfacing must be stopped until the (SLD) icon disappears and the computer shows its normal display.

⚠ DANGER: Surfacing too fast dramatically increases the risk of air embolism. Cressi-sub recommends that at the end of each dive, engage in a "safety stop" of 3-5 minutes at 10 ft– 20 ft., which will be assisted by the computer (see chapter 3.4.2)

WARNING: Do not engage in a follow up dive after a surfacing interval if the (SLD) icon has been on! The computations for the next dive might be invalidated by exceeding the maximum ascent rate.

Related topics:

- 2.5.3. - Units of measure setting.
- 3.4.2. - Safety stop.
- 4.1.2. - Logbook.

3.4.2. - Safety Stop (STOP).

Archimedes II is automatically programmed to signal a safety stop after each dive at a greater depth than 32 ft., as recommended by training agencies and the most recent studies on diving physiology. A stop should be carried out at a depth between 10 ft – 20 ft., and to last as long as signalled by the computer.

NOTE: Cressi-sub recommends that after each dive, a safety stop of 3-5 minutes at 10 – 20 ft be conducted.

The stop is indicated on the display by the (STOP) icon (picture 18); on such occasion, the display indicates how many minutes the stop must last and the depth at which it has to be conducted.

Although the safety stop is not mandatory, they are highly recommended. In the event that ascent rates have been exceeded, additional safety times should be conducted.

⚠ DANGER: It is very important that ascent rates be carefully monitored after a safety stop. Rapid ascent rates, after a safety stop, are very dangerous and can result in air embolism.

Related topics:

- 2.5.3. - Units of measure setting.
- 3.4.1. - Surfacing speed.

3.4.3. - Decompression forewarning.

Any time the available no decompression time shown by the "ndL" display decreases to 3 minutes (picture 19), Archimedes II will engage an alarm and the display flashes for several seconds notifying the diver that they are approaching no

decompression limits, therefore beginning a decompression requirement.

Related topics:

- 3.5. - Decompression dive.

3.5. - Decompression dive (DECO).

⚠ DANGER: Do not use this instrument to dive beyond the no decompression limits! Cressi-sub discourages the use of this instrument for decompression dives.

In the event that you have exceeded the no decompression limits, your Archimedes II computer will assist with specific information related to surfacing and related decompression information. Upon violating the no decompression limits, the computer will sound an alarm lasting several seconds, and the display changes as in picture 20 , giving the diver the following information:

- ① (**DECO** replaces “NDL” icon on the UFDS display, showing that no decompression has been violated and decompression stops must be taken.
- ② Depth of first decompression stage (the deepest), given in meters (m) or feet (ft.). It may vary from a maximum of 98 ft. to a minimum of 10 ft., by decreases in increments of 10 ft..
- ③ Time in minutes for first decompression stage (the deepest).
- ④ (**TOTAL**) icon informs the total surfacing time which included all decompression stops and proper ascent rates between stops and from the last stop to the surface.

- ⑤ “DIVE. T” icon giving the total time spent while diving.
- ⑥ Graph showing the nitrogen absorbed during the dive: in this case it is fully lit up until next “DECO” icon.

⚠ DANGER: DO NOT surface above a decompression depth.

To avoid ascending to a depth above the decompression depth, you should ascend to a depth slightly deeper than the stage decompression depth requirement.

You should consider the amount of gas needed to successfully complete all decompression requirements.

During rough sea conditions, it may be difficult to comply with the decompression stage requirements without exceeding them. Cressi-sub recommends that shallowest depth (nearest the surface) be at depth of about 13–16 ft., even though decompression will take slightly longer. Archimedes II will automatically calculate this.

Related topics:

- 2.5.3. - Units of measure setting.
- 3.1. - AIR DIVE.
- 3.2. - NITROX MIXTURES DIVE.
- 3.4.1. - Ascent rate.
- 3.3.4. - CNS toxicity display.
- 3.3.5. - PO2 alarms.
- 4.1.2. - Logbook.

3.5.1. - Omitted Decompression stage alarm.

If the decompression stage is missed by surfacing above the depth given by the computer, an alarm will sound and the display will flash until the diver descends back to the proper depth (ceiling) or below it (picture 21).

The computer allows a maximum time of 3 minutes to correct this dangerous situation; during this time, the alarm will continue sounding. In the event that the diver does not descend to the proper depth (after 3 minutes) the computer display "Error" program and won't be usable for the next 48 hours. The only functions working will be Logbook/Profile and History.

⚠ DANGER: Should this happen, you must not dive for the next 48 hours.

In the event that you feel any symptoms of decompression sickness or air embolism, you should contact emergency medical services as available in your area. Additionally, DAN (Divers Alert Network) or your local hyperbaric chamber center should be contacted.

Related topics

- 3.1. - AIR DIVE.
- 3.2. - NITROX MIXTURES DIVE.
- 3.5. - Decompression dive.
- 3.3.4. - CNS toxicity display.
- 3.3.5. - PO2 alarms.
- 4.1.2. - Logbook.

3.6. - GAGE program (depthometer/timer).

Archimedes II computer is equipped with a third dive computing program (GAGE program). This function is especially

useful for apnea (free diving) divers as well as for technical dives with helium-based binary and ternary mixtures. Please be advised that Archimedes II in GAGE program mode does compute any saturation and de-saturation computations. It functions only as a basic instrument offering depth and time functions. During a dive conducted using the Gage mode, proper decompression software must be utilized according to proper dive tables.

Cressi-sub reminds you that sport dives must be carried out within the no decompression guidelines, and at the maximum depth of 132 ft., which is the limit of *sport* diving: to exceed such limits dramatically increases the risk of decompression sickness!

WARNING: Archimedes II computer has been developed for sport diving only. It is not intended for commercial or professional use requiring longer dive times, and greater diving depths. Diving beyond the parameters of sport diving dramatically increases the risk of decompression sickness.

⚠ DANGER: Cressi-sub discourages diving with gaseous mixtures other than air without proper training. The use of "technical" multi-gas mixtures may expose the diver to different risks than those of sport diving, including serious physical damages and, in extreme cases, death.

Archimedes II computer's GAGE diving program starts the depth meter/timer functions automatically at depths deeper than 5.0 ft., showing the following information on its display (picture 22):

- ① current depth value, in meters (m) or feet (ft.). The depth meter's operative range reaches a depth of m 199.9 (ft. 656).

- ② dive time, shown by the "DIVE T" icon, given by the timer in minutes and seconds.
- ③ maximum depth reached during the dive given in meters (m) or feet (ft.), shown by the "MAX" icon.
- ④ segmented ascent rate indicator
- ⑤ icon of maximum depth alarm (if ON – please see 2.5.1)
- ⑥ **GAGE** computing program icon

Additional important information may be obtained by depressing button A (↵) depressed during the dive, representing (picture 23):

- ① Maximum depth reached during the dive, given in meters (m) or feet (ft.);
- ② Current temperature, expressed in °C or °F ; by keeping button B depressed it is possible to read the time in hours and minutes. The UFDS display will show (T: ME) (picture 24).

WARNING: The computer will not compute any saturation and de-saturation computation during the remaining 48 hours elapsing from the end of the **GAGE** program dive.

⚠ DANGER: Should you decide to reset the instrument by pressing button RESET on the computer's back, the nitrogen memory will be cancelled. Therefore, the instrument will not be able to compute a following dive. Never use this function at least 48 hours after the last diving activity.

Related topics:

- 2.4. - **GAGE** program parameters setting (depthometer/timer)
- 2.3. - Parameters setting
- 2.5.1. - Maximum depth alarm
- 2.5.2. - Date and time adjustment
- 2.5.3. - Units of measure setting
- 4.1. - Data processing
- 4.1.1. - Surface interval (SURFT DESAT, ✖)
- 4.1.2. - Logbook

4) On surface after a dive



Foto Ghisotti

4.1. - Data processing.

This chapter deals with all the “on surface” functions, including data processing after a dive, both in **DIVE** and in **GAGE** programs. By depressing button B (Mode), it is possible to track the following functions: (**LOG**) - logbook (please see chapter 4.1.2.). (**HIST**) - dive history memory (please see 4.1.3.). (**PROF**) - Dive profile (please see chapter 4.1.4.). Data PC transfer by means of the interface (optional) (please see chapter 4.1.5.).

4.1.1. - Surface interval.

After a dive in **DIVE** program (a depth greater than 5 ft.), the UFDS display will offer the following information (picture 25):

- ① De-saturation time, given in hours and minutes by the (**DESAT**) icon;
- ② “Don’t Fly” (**✖**) icon.

If the “Don’t Fly” icon is displayed, flights or travel to higher altitudes than the current altitude must be avoided, so long as it is visible on the display.

WARNING: DAN (Divers Alert Network) and UHMS (Undersea and Hyperbaric Medical Society) advise a surface interval time of between 12 and 24 hours for no decompression dives, and a surface interval of 48 hours after a decompression dive or especially fatiguing dives.

- ③ Surface time (**SURFT**), displayed in hours and minutes, means the current surface interval time.
- ④ graph showing the tissues residual nitrogen after the dive.

NOTE: Should a dive begin with less than 10 minutes of surface interval time, Archimedes II will consider this a continuation of the previous dive; the dive’s count and dive time computation will restart from where they had stopped.

NOTE: Dives carried out after at least 10 minutes of surface are considered as a new dive.

Should the dive be carried out in **GAGE** or depth meter/timer program, the computer will not supply any data relating to de-saturation and will process any saturation and de-saturation computations during the following 48 hours elapsing from the **GAGE** program dive. They are given by the surface time (**SURFT**) icon, in hours and minutes, which indicates the current surface time (picture 26).

By depressing button B (Mode) twice, you view to the dive planning program, represented on the UFDS display by (**PLAN**) icon (picture 5b), as seen in chapter 2.4. It will take into account the residual tissues’ nitrogen, and will modify the no decompression time, making them shorter than those given for the first dive.

NOTE: PLAN function does not function in **GAGE** computing program (depth meter/ timer).

At the end of de-saturation, the lateral bar, representing the residual nitrogen, will be empty, representing the full elimination of residual nitrogen that may affect following dives.

Related topics:

- 2.3.2. - Dive planning.
- 3.1. - AIR DIVE.
- 3.2. - NITROX MIXTURES icon.

4.1.2. - Logbook (LOG).

Archimedes II computer memorizes data relating to the last 30 hours' dives (or to the last 60 dives) both in **DIVE** and **GAGE** programs. The data is entered every 30 seconds into the Logbook (dive journal). This may be activated on the surface by repeatedly depressing button B (Mode), until the (LOG) icon appears on the UFDS display (picture 27).

NOTE: Dives lasting less than 30 seconds (data entering interval) will not be memorized.

Archimedes II logbook is a multifunction instrument that can be viewed on three different display modes. A full range of information relating to the dives starts with the most recent dive in chronological order.

The normal UFDS display shows the **LOG** function, and the following information is given:

- ① Dive's year
- ② Dives' date (month and day)

NOTE: The first of the daily dive series' is given in brackets with 1 (as dive 1), the second with 2 (dive 2), and so on.

- ③ Maximum depth reached during the dive, given in meters or feet.
- ④ Dives' number: the most recent dive's information are given first. When more than 60 dives are carried out, the oldest dives are cancelled out.
- ⑤ Graph of the residual nitrogen at the end of the dive in **DIVE** program. Should the dive be inside the "green" it is

classified a no decompression dive. Should it enter the "red" zone, it is classified a decompression dive.

- ⑥ Indicator of altitude level at which the dive has been carried out (see chapter 2.2.).
- ⑦ The **Nitrox** icon will appear when an EAN x (Nitrox) mixture dive has been carried out in **DIVE** program.
- ⑧ Indicator of CNS O2 toxicity at the end of the dive in **DIVE** program (see chapter. 3.3.4).

All three display modes show the icons relating to the alarms which may have engaged during the dive. These icons would display as follows:

(**PO2**) (PO2) alarm; (**SDW**) (maximum surfacing depth alarm) and so on.

To view the second logbook display mode, depress button C (**Ⓢ**) on the UFDS display. The (**LOG**) icon is replaced by the dive's number, followed by the second logbook display mode. It displays the following information (picture 28):

- ① Dive's starting hour (the hour at which the computer has gone below 5 ft.), and the function relating to the set computing program ("DIVE" o "GAGE") has started;
- ② Dive's end hour (the hour at which the computer has gone below 5. ft).
- ③ Dive's average depth (AVE) in meters or feet.
- ④ Dive's total time, given in minutes by the "DIVE T." icon.

To return to the first display mode, depress button A (**Ⓐ**). To view the third logbook display mode, depress button B (**Ⓑ**)

on the UFDS display. The second display mode giving the dive's number followed by (...-2) will be replaced by the dive's number followed by "...-3", that is, the third logbook display mode, which displays the following information (picture 29):

- ① Mixture used for the dive in **DIVE** program: if an air dive, (**AIR**) will appear, if a Nitrox mixture dive, the display FO2 and the icon relating to the given mixture (MIX1 or MIX2), automatically alternating both values, starting from the primary one (pictures 30 a – b)

NOTE: Should the second Nitrox mixture MIX2 not be set, the computer will give only the FO2 value of the primary mixture.

- ② Water temperature recorded during the dive at the maximum depth, given in °C or °F.
- ③ Surface interval given in hours and minutes.
- ④ The use of a safety factor (SF1/2) during a dive in **DIVE** program.

To view the previous dive recorded in the logbook, depress and hold button C (**C**); in a rapid sequence you can view to the first logbook display mode relating to the previous dive.

By depressing and holding button A (**A**), you will enter into a rapid sequence to the first logbook display mode relating to the immediately subsequent dive.

Relating topics:

- 2.3.1. - **DIVE** program parameters setting.
- 2.5.3. - Units of measure setting.
- 2.5.2. - Date and hour adjustment.
- 3.1. - AIR DIVE.
- 3.4.1. - Ascent rate.

- 3.2. - NITROX mixtures dive.
- 3.3.4. - CNS toxicity display.
- 3.3.5. - PO2 alarms.
- 3.6. - **GAGE** program.
- 4.1.1. - Surface interval.

4.1.3. - Dive historic memory (**HIST**).

Archimedes II computer is equipped with a dive history memory for both **DIVE** and **GAGE** program dives; this is the (**HIST**) function. In order view this function, depress repeatedly button B (Mode), until the (**HIST**) icon appears on the UFDS display UFDS (picture 31). The program will display the following information:

- ① total time of all dives carried out, in hours;
- ② maximum depth reached during all dives (given in meters or feet);
- ③ total number of dives, given by the "DIVE" icon.

The (**HIST**) function is able to store up to 999 dives, after which it will cancel the memory and restart from zero. This value may be modified by means of the (optional) interface software.

Related topics:

- 2.5.3. - Units of measure setting.
- 3.1. - AIR DIVE.
- 3.2. - NITROX MIXTURES DIVE.
- 4.1.5. - Data PC transfer: compatible PC interface.

4.1.4. - Dive profile (PROF).

The dives' detailed profile carried out in both **DIVE** and **CAGE** programs and stored in the logbook's memory, is entered by repeatedly depressing button B (Mode), until the **(PROF)** icon appears on the UFDS display (picture 32). The display will automatically show any information relating to depth, time and decompression of the most recent dive stored in the logbook, therefore allowing to scan the dive's profile in detail, even without the (optional) interface. The dive profile's information will automatically appear with a 30 seconds' interval between each other. To view the immediately previous dive's profile depress button C (⏪); to get to the immediately subsequent dive's profile press button A (⏩).

NOTE: The display will display all icons relating to the alarms which have possibly engaged during the dive, like **(PO2)** (PO2 alarm), **(SLOW)** (maximum surfacing speed alarm) and so on.

Related topics:

- 2.5.2. - Date and hour adjustment.
- 2.5.3. - Units of measure setting.
- 3.1. - AIR DIVE.
- 3.2. - NITROX MIXTURES DIVE.
- 4.1.2. - Logbook.
- 4.1.5. - Data PC transfer: compatible PC interface.

4.1.5. - Data PC transfer: compatible PC interface.

Archimedes II computer may be interfaced with a PC having following specifications:

- operating systems: Windows 98 *second edition*, Windows 2000, Windows ME, Windows XP (Windows is a Microsoft Inc. registered trademark);
- CPU: Pentium II 266 Mhz or superior;
- RAM of at least 64 MB or superior (recommended);
- Video resolution: 800x600 or superior (recommended).

By connecting the Cressi-sub (optional) interface hardware to a USB port and installing Cressi (optional) PC Logbook software, it is possible to download any information stored in Archimedes II to your PC. In order to do so, you must enter into the Archimedes II "PC" function, by repeatedly depressing button B (Mode), until the **(PD)** icon appears (picture 33).

By following the directions, you can easily download your own dives' profile for viewing, printing or modifying by means of the (optional) interface. This may be also used for training, by means of a dive simulator contained in Cressi (optional) PC Logbook software of its (optional) PC interface.

Related topics:

- 4.1.2. - Logbook.
- 4.1.3. - Dive historic memory.
- 4.1.4. - Dive profile.

4.1.6. - Instrument reset.

The instrument may be completely reset, by depressing the small button on the back of the instrument, shown as "RESET" (picture 34). This will result in information relating to nitrogen absorption and time/date to be cancelled.



fig. 34

WARNING: By resetting the instrument, all computations relating to current de-saturation are cancelled! Do not reset your instrument if it has to be used to compute subsequent dives!

NOTE: Dive logbook, profile and historic memory remain stored in the memory even after the instrument's reset.

The setting will revert back to the values set at the factory (Dive Air program, that is FO₂=21% and PO₂=1.4 bar, maximum depth alarm on m 40 (ft. 132), not working).

Such function may be especially useful in case of instrument's renting by Diving Centres.

Related topics:

- 2.3.1. - **DIVE** program parameters setting.
- 2.5.2. - Date and hour adjustment.
- 4.1.1. - Surface interval.
- 4.1.2. - Logbook.
- 4.1.3. - Dive historic memory.
- 4.1.4. - Dive profile.

4.2. - Simulator.

4.2.1. - DIVE simulator program (SIMU)

Archimedes II is equipped with a simulator program (SIMU), which allows the diver to become acquainted with the computer's different functions. The simulator program allows personal dives' planning.

The program is entered by repeatedly depressing button B (Mode), until the (SIMU) icon appears on the UFDS display UFDS (picture 35): The display showing (possible) surface interval starts flashing, waiting for a value to be set by the diver. Depress button A (↵) to enter the simulation program without surface interval, that is without data on residual nitrogen, or depress button C to extend the surface time previous to the simulated dive.

At this point, it is possible to simulate multi-levelled dives (picture 36), by depressing button C () ⊕ increase depth, or button A () ⊕ surface, by verifying in real time what the display shows during the dive's different stages, including both sound and visible alarms. At the end of the simulated dive, the computer will give the relating surface and de-saturation time, and it is possible to simulate the subsequent dive's progress as well. By depressing button B you view the display of subse-

quent dive's simulation, with de-saturation in progress.

Should the simulation be carried out with Nitrox mixtures, refer to all information seen in the chapters dealing with Nitrox mixtures; it is possible to simulate the mixture change as well as in reality, by depressing button B for more than 5 seconds (picture 37).

If you want to reset the simulator, depress buttons A+C one after the other during the simulation itself.

NOTE: The simulation is carried out with the dive parameters set in (DIVE) function (see chapter 2.3.).

NOTE: The simulation is carried out at a speed six times greater than the actual one. This equates to 10 seconds on the simulator or the same as one real diving minute, while the variations of depth are each m 2 (ft. 6).

Related topics:

- 2.3. - Parameters setting.
- 2.3.2. - Dive planning
- 3.1. - AIR DIVE.
- 3.4. - Curve dive.
- 3.5. - Decompression dive.
- 3.2. - NITROX MIXTURES DIVE.
- 3.3.4. - CNS toxicity display.
- 3.3.5. - PO2 alarms.
- 4.1.1. - Surface interval.
- 4.2.2. - Surface interval dive simulator.

4.2.2. - Surface interval dive simulator.

Should the computer contain residual nitrogen (de-saturation time is still in progress), Archimedes II allows modifying of the

surface interval in order to simulate a subsequent dive. As noted in the previous chapter, the simulator program is entered by repeatedly depressing button B (Mode), until the **SIMU** icon appears on the UFDS display (picture 35). The display mode instructs you to set a new surface interval, by means of UFDS display icons: by depressing button C (⊕), the surface interval will increase, while by depressing button A (←), the chosen value is confirmed. When this has been done, Archimedes II will show the simulation display (picture.36), as seen in the previous chapter, allowing you to simulate a subsequent dive.

Related topics:

- 2.3. - Parameters setting.
- 2.3.2. - Dive planning
- 3.1. - AIR DIVE.
- 3.4. - Curve dive.
- 3.5. - Decompression dive.
- 3.2. - NITROX MIXTURES DIVE.
- 3.3.4. - CNS toxicity display.
- 3.3.5. - PO2 alarms.
- 4.1.1. - Surface interval.
- 4.2.2. - Surface interval dive simulator.

5. - CARE AND MAINTENANCE.

Archimedes II has been designed to operate in extreme conditions with extensive underwater use. You should remember that it is a precision instrument deserving appropriate care. Please avoid any violent shock, protect it from extreme heat sources, always wash it in fresh water after using, dry it carefully, do not store it wet, and avoid contact with heavy equipment, like diving cylinders.

WARNING: Always wash the instrument in fresh water after using.

NOTE: Please always wash the instrument in fresh water after using.

The buttons do not need any particular care; never grease them with oil or spray of any kind.

NOTE: Check the battery case housing compartment through its transparent lid; should any signs of moisture be visible, please have the instrument checked by an authorized Cressi-sub retailer.

Should you notice any possible anomaly in functioning, do not use the instrument to dive and have it checked by an authorized Cressi-sub retailer.

Related topics:

- 5.1. - Battery replacement.
- 7. - Warranty.

5.1. - **Battery replacement.**

Replacing the battery is easily done by the consumer, not requiring special service. It must be done any time the instrument's display shows the run-down battery symbol, both fixed and flashing (picture 2 a-b), as already seen in this guide.

WARNING: By replacing the battery, all information relating to de-saturation, time and date will be cancelled. Reset the time and date, in order to get correct entries in your computer's logbook. Please do not replace the battery when de-saturation is in progress, since all information rela-

ting to de-saturation computing would be cancelled. In this case, please check the amount of de-saturation hours and do not dive after battery replacement during a corresponding amount of hours. After battery replacement, all settings go back to the values set at the factory (Dive Air program: F02=21% and PO2=1.4 bar, maximum depth alarm on 132 ft., not working).

To replace battery, unscrew the transparent battery cover on the back of the instrument by use of a coin (picture 38). Remove the lid and check battery and its encasement. Should you note traces of corrosion due to water entry, have the instrument checked by an authorized Cressi-sub dive retailer.

If everything appears in good condition, remove battery by holding the computer face down. Replace battery complying with its polarity (note that an incorrect polarity will cause the losing of information on calibre and memory!) and replace the battery encasement's lid as well (picture 39). The battery encasement is watertight and is not connected to the instrument's core; before closing the cover, check that there is no soiling on it and apply a thin layer of silicone lubricant to the o-ring. (picture 40 a-b).



fig. 38



fig. 39



fig. 40 a



fig. 40 b

NOTE: Different factors affect the battery life. For example: time of storage before acquiring the instrument, the dive time, the use of back-illumination, the battery's quality and temperature.

NOTE: Do not over tighten the battery cover! Over tightening of the cover does not create a better seal; to the contrary, it can result in cracking of the cover or difficulty in removing the cover in the future.

NOTE: Check the instrument's hermetic sealing! The battery's lid is transparent, in order to allow the easy viewing into the battery compartment.

WARNING: Any anomaly or water infiltration due to incorrect battery replacement will void the warranty.

Related topics:

- 5. - Care and maintenance.
- 7. - Warranty.

6. - TECHNICAL SPECIFICATIONS.

Algorithm: Bühlmann ZH-L8

Standard fabrics: 12

Hemi-saturation time: from 5 to 640 minutes

Dimensions and weight: Diameter: 62 mm - Height: 24 mm - Weight: 115 g

Depth sensor::

- Sea water setting (fresh water depths are about 3% lower)
- Measuring field: 0-325 ft., measured every second
- GAGE function measuring field: 0-656 ft.
- Precision: +/- 1% (T 20°C - 68 F)
- Reading resolution: 0-328 ft.
- Surface interval: from 0 to 48 hours
- Altitude functions monitoring: from 0 to 19.684 ft., measured every 10 minutes
- Dive time: from 0 to 999 minutes
- Data entering interval: 30 seconds (it may be modified by means of (optional) interface program)

TERMOMETER:

- Resolution: 33 °F
- Measuring field: 23 °F + 104 °F
- Precision: +/- 35,6 °F/10min change °T

WATCH:

- Precision: +/- 30 seconds month average
- 24 hours display

BATTERY:

Li/MnO2 CR 2032 - 3V battery. 2 years average life (by 50 yearly dives)

NOTE: Different factors affect the battery average life. For example: the time of storage before acquiring the instrument, the dive time, the use of back-illumination, the battery's quality itself, whose average life varies according to temperature.

6.1. - DECOMPRESSION TABLES

At the end of a dive, the computer will continue processing data for a subsequent dive. This is possible since the computer keeps recording nitrogen absorption of "standard" tissues, taken as reference. Each tissue absorbs and releases nitrogen at different speeds, indicated by the so-called "hemi-saturation times" (the time taken to reach a tissue 50% saturation). Archimedes II uses 12 standard tissues, on which the mathematical model computations are carried out, in any stage of dive, surfacing and subsequent dives.

6.1.1. - No decompression tables by the first dive in a series.

Depth (m)	Depth (ft)	AIR	EAN1 (32%) (PO ₂ =1.4bar)	EAN2 (36%) (PO ₂ =1.4bar)
9	30	200	200	200
12	40	104	200	200
15	50	66	117	182
18	60	47	74	92
21	70	35	55	65
24	80	25	41	50
27	90	19	32	38
30	100	16	24	--
33	110	13	19	--
36	120	11	--	--
39	130	9	--	--
42	140	8	--	--
45	150	7	--	--
48	160	7	--	--

7. - WARRANTY.

The Cressi-sub Archimedes II computer is warranted for manufacturing materials and defects for a period of two years from the purchase date. The warranty DOES NOT include damages caused by improper use, by inattentive maintenance or modifications/repairs carried out by unauthorized personnel and is automatically suspended when the correct maintenance procedures described by the present users' guide are not followed. The warranty cannot be transferred by the first purchaser to a third party. A purchase receipt (with purchase date) from an authorized Cressi-sub dealer is required for warranty service. Any unwarranted repairs will be carried out at the buyer's expense.

The warranty does not include any document or warranty granted by retailers or agents beyond the present warranty's terms.

No retailer or agent is authorized to carry out any variation to the present warranty or to grant an additional one.

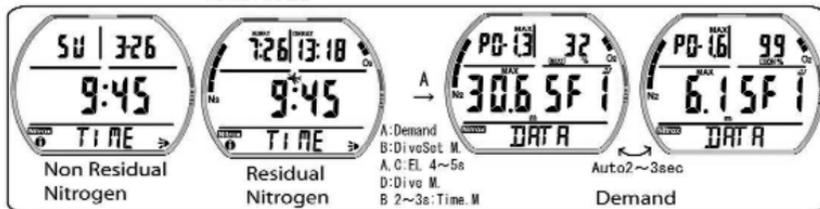
In the event of product malfunction occurring, contact your authorized Cressi-sub retailer supplying your name and a copy of the purchase receipt from a authorized Cressi-sub dealer.

Please be advised the warranty is only valid if the Archimedes II is purchased from an authorized Cressi-sub dealer.

Please always keep the present users' guide for your Archimedes II.

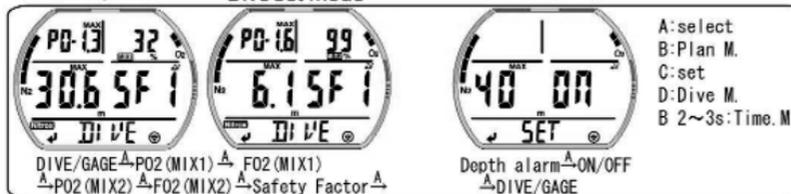
Archimede2 Flow Chart DIVE Mode

Time mode



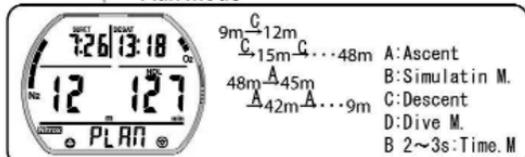
Mode

Dive Set mode



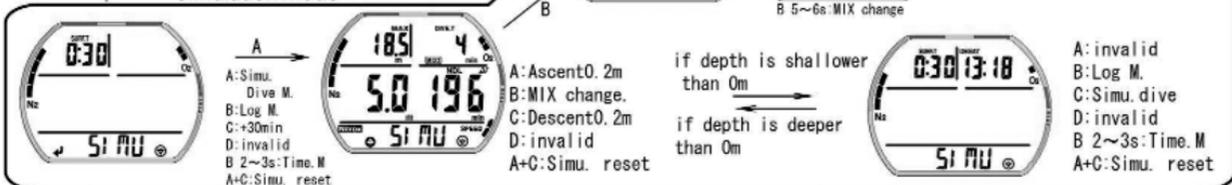
Mode

Plan mode

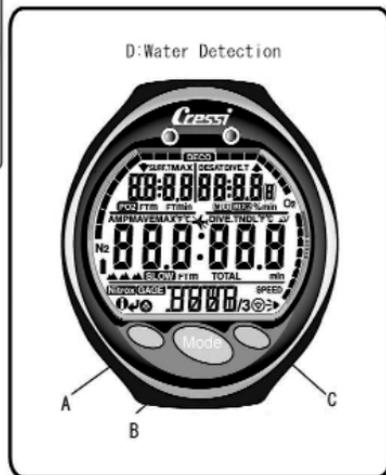


Mode

Simulation mode



D: Water Detection



Mode Log mode

A: Dive N(P3) → N(P2) → N(P1)
 → Dive N+1(P3) → N+1(P2) → N+1(P1)
 B: History M.
 C: Dive N(P1) → N(P2) → N(P3)
 → Dive N-1(P1) → N-1(P2) → N-1(P3)
 D: Dive M.
 Hold A: N(P1) → N+1(P1) → N+2(P1) →
 Hold C: N(P1) → N-1(P1) → N-2(P1) →
 B 2~3s: Time. M

Mode History mode

A: invalid
 B: Profile M.
 C: invalid
 D: Dive M.
 B 2~3s: Time. M

Dive Mode

A: Demand B: MIX change A, B, C: EL 4~5s D: Time M(OFF)

Demand
 Hold B
 Non Deco
 Decompression warning
 Safety Stop
 MIX change
 B 5~6s: MIX change
 Ascent rate warning
 PO2 Limited warning
 OLI level warning

Mode Profile mode

A: N → N+1 → N+2 →
 B: PC Transfer M.
 C: N → N-1 → N-2 →
 D: Dive M.
 B 2~3s: Time. M

Time Set mode

A: select
 B: Time M.
 C: set
 D: Dive M.
 B 2~3s: Time. M

Decompression stop violation warning

Time Mode

Archimede2 Flow Chart **GAGE** Mode

Time mode

Non Residual Nitrogen

Residual Nitrogen

A: invalid
B: DiveSet M.
A, C: EL 4~5s
D: Dive M.
B 2~3s: Time, M

Mode

Dive Set mode

DIVE/GAGE \xrightarrow{A} MaxDepth
 \xrightarrow{A} ON/OFF \xrightarrow{A} DIVE/GAGE

A: select
B: Plan M.
C: set
D: Dive M.
B 2~3s: Time, M

Mode

Log mode

P1

P2

P3

A: Dive N (P3) → N (P2) → N (P1)
→ Dive N+1 (P3) → N+1 (P2) → N+1 (P1)
B: History M.
C: Dive N (P1) → N (P2) → N (P3)
→ Dive N-1 (P1) → N-1 (P2) → N-1 (P3)
D: Dive M.
Hold A: N (P1) → N+1 (P1) → N-2 (P1) →
Hold C: N (P1) → N-1 (P1) → N-2 (P1) →
B 2~3s: Time, M

Mode

History mode

A: invalid
B: Profile M.
C: invalid
D: Dive M.
B 2~3s: Time, M

Mode Profile mode

A: N→N+1→N+2→
 B: PC Transfer M.
 C: N→N-1→N-2→
 D: Dive M.
 B 2~3s: Time. M

Mode PC Transfer mode

A: invalid
 B: TimeSet. M.
 C: invalid
 D: invalid
 B 2~3s: Time. M

Time Set mode

second^A→minute
 hour^A→minute
 12H/24H^A

year^A month^A
 day^A

A: select
 B: Time M.
 C: set
 D: Dive M.
 B 2~3s: Time. M
 A+C: all segment display and contrast adjust

Time Mode

Dive Mode

A, B: Demand A, B, C: EL 4~5s D: Time M(OFF)

Demand

Ascent rate warning



Fig. 1



Fig. 1.a



Fig. 2.a



Fig. 2.b



Fig. 3



Fig. 4.a



Fig. 4.b



Fig. 5



Fig. 5.a

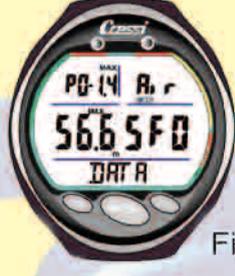


Fig. 6

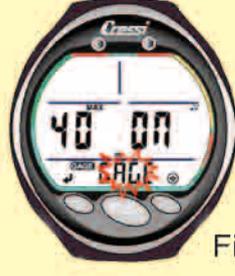


Fig. 7



Fig. 8.a



Fig. 8.b



Fig. 9



Fig. 10



Fig. 11



Fig. 12.a

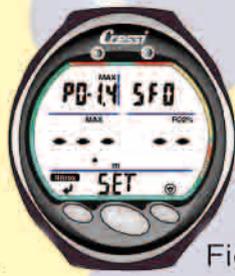


Fig. 12.b



Fig. 13



Fig. 14.a



Fig. 14.b



Fig. 15



Fig. 16



Fig. 17



Fig. 18



Fig. 19



Fig. 20



Fig. 21



Fig. 22



Fig. 23



Fig. 24



Fig. 25



Fig. 26



Fig. 27



Fig. 28



Fig. 29



Fig. 30.a



Fig. 30.b



Fig. 31

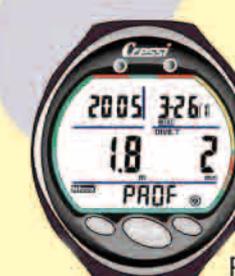


Fig. 32

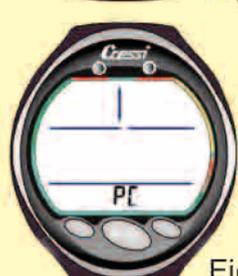


Fig. 33



Fig. 35

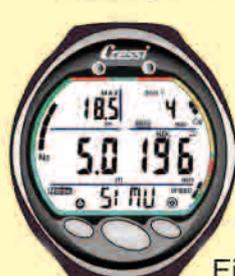


Fig. 36

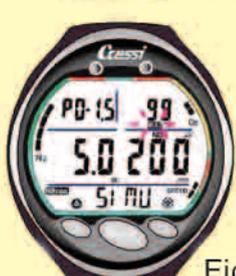


Fig. 37a

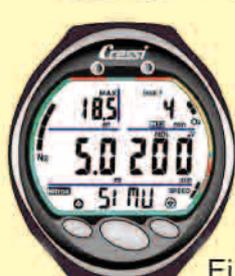


Fig. 37b

NOTA: Per effettuare il cambio delle unità di misura vedere cap. 2.5.3.
 REMARQUE: Pour effectuer le changement de l'unité de mesure cap. 2.5.3.
 HINWEIS: Zur Einstellung der Masseinheiten bitte Kapitel 2.5.3 lesen.
 NOTA: Para efectuar el cambio de las unidades de medida consultar cap. 2.5.3.
 NOTE: In order to change the units of measure to be used cap. 2.5.3.

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