
# ATMOS 1

## DIVE COMPUTER

# OWNER'S GUIDE

## LIMITED TWO-YEAR WARRANTY

For details, refer to the Product Warranty Registration Card provided.

## COPYRIGHT NOTICE



ATMOS 1 Owner's Guide, Doc. No. 12-7127

San Leandro, Ca. USA 94577

## TRADEMARK NOTICE



## PATENT NOTICE

U.S. Patents have been issued, or applied for, to protect the following design features:
Dive Time Remaining (U.S. Patent no. 4,586,136), Data Sensing and Processing Device (U.S. Patent no. 4,882,678), and Ascent Rate Indicator (U.S. Patent no. 5,156,055). User Setable Display (U.S. Patent no. 5,845,235) is owned by Suunto Oy (Finland).

## DECOMPRESSION MODEL

The programs within the ATMOS 1 simulate the absorption of nitrogen into the body by using a mathematical model. This model is merely a way to apply a limited set of data to a large range of experiences. The ATMOS 1 dive computer model is based upon the latest research and experiments in decompression theory. **Still, using the ATMOS 1, just as using the U.S. Navy (or other) No Decompression Tables, is no guarantee of avoiding decompression sickness, i.e. "the bends."** Every diver's physiology is different, and can even vary from day to day. No machine can predict how your body will react to a particular dive profile.

# CONTENTS

## CONTENTS (continued)

# RESPONSIBLE COMPUTER DIVING

**Since the advent of dive computers, it is a common mistake to assume that the old traditional rules of diving no longer apply, but the truth is just the opposite. Keep these basic rules in mind:**

- **Plan each dive, and dive your plan - Your computer was not designed to make decisions for you, only to provide you with the information you need to make responsible decisions for yourself. This begins with a dive plan that will help you avoid a low air or decompression situation.**
- **Do not plan any dive that exceeds your training or experience level.**
- **Inspect your computer before every dive - If it shows any signs of damage or abnormal function, DO NOT dive with it until it has received factory service.**
- **Make your deepest dive first - When making repetitive dives, it is imperative to ensure that each consecutive dive is shallower than the one before. This will allow your body's slower tissues to continue outgassing nitrogen.**
- **Make the deepest part of your dive first, and gradually work your way to the surface using a "staircase" profile - The ability to perform multilevel diving is one of the most important contributions of a dive computer, and you should take advantage of it. It will increase your bottom time and at the same time decrease your risk of decompression sickness.**
- **Ascend slowly by following an ascent line whenever possible, or by ascending diagonally toward the surface - Watch the Ascent Rate Indicator closely while you ascend, and keep it in the green zone as much as possible.**
- **Make a safety stop at 15-20 feet (4.5-6 m) at the end of every dive - A safety stop of as little as 5 minutes has been shown to have a dramatic effect on the bubble formation in divers. It's important. Don't forget it.**
- **You should make every effort to complete all of your ascents with the Nitrogen Bar Graph inside the green zone to decrease your risk of decompression sickness.**
- **If you inadvertently entered Decompression Mode, you must not complete your ascent until the Nitrogen Bar Graph is at least inside the yellow Caution Zone.**
- **While you cannot provide a guarantee against the occurrence of decompression sickness, you may choose your own personal zone of caution based upon your individual age, physique, excessive weight, training, experience, etc. to reduce the statistical risk. By 'backing off' on the bar graph (maintaining fewer segments) and not pushing the limits, you can establish and adjust your personal level of conservatism and margin of safety.**

**Pay special attention to items marked with this Warning symbol.**

# WARNINGS AND SAFETY RECOMMENDATIONS

- The ATMOS 1 is not intended for use by military or commercial divers.
- The ATMOS 1 is intended for use by recreational divers who have successfully completed a nationally recognized course in scuba diving.
- It must not be used by untrained persons who may not have knowledge of the potential risks and hazards of scuba diving.
- It is NOT for use by military and commercial divers.
- It should NOT be utilized for any competitive, or repetitive square wave or decompression diving, it is intended solely for recreational use and no decompression multilevel diving.
- As with all underwater life support equipment, improper use or misuse of this product can cause serious injury or death.
- Conduct your dives in such a manner so as to insure that you continuously check the computer's proper function.
- If you do not fully understand how to use this dive computer, or if you have any questions, you should seek instruction in its use from your Authorized AERIS Dealer before you utilize this product.
- It should not be considered that the capabilities built into the ATMOS 1 provide an implied approval or consent from AERIS for individuals to exceed the defined limits for recreational diving, as agreed on by all internationally recognized training agencies.
- Never participate in sharing or swapping of a dive computer. Doing so may result in injury or death.
- The ATMOS 1 provides information based upon a personal dive profile, and therefore must not be shared between divers. It is impossible for two divers to stay precisely together underwater, and your computer's dive profile tracking of previous dives will be pertinent to you only. Nitrogen loading of a second user may be significantly different and swapping dive computers could lead to inaccurate and dangerous predictions of decompression status.
- If you exceed certain limits, the ATMOS 1 will not be able to tell you how to get safely back to the surface. These situations exceed tested limits and can result in loss of some ATMOS 1 functions for 24 hours after the dive in which a Violation occurred.
- The ATMOS 1 enters Immediate Violation Mode when a situation totally exceeds its capacity to predict an ascent procedure. These dives represent gross excursions into decompression that are beyond the boundaries and spirit of the ATMOS 1 design. If you are following these dive profiles, AERIS advises you not to use an ATMOS 1 dive computer.
- While you cannot provide a guarantee against the occurrence of decompression sickness, you may choose your own personal zone of caution based upon age, physique, excessive weight, etc., to reduce the statistical risk.

# FEATURES and DISPLAYS

# WELCOME TO AERIS AND THANK YOU FOR CHOOSING THE ATMOS 1 !

Your ATMOS 1 presents the information that you need before, during, and after your air dives using a combination of easy to read displays and identification icons. This instructional guide is intended to help you become familiar with the functions and features available and show you examples of displays that you could expect to see in the various operational modes. Relax and read through the complete owner's guide.

Remember that the rules you learned in your basic scuba certification course(s) still apply to the diving you will do while using a dive computer - some will become even more important. Technology is no substitute for common sense, and a dive computer only provides the person using it with data, not the knowledge to use it.

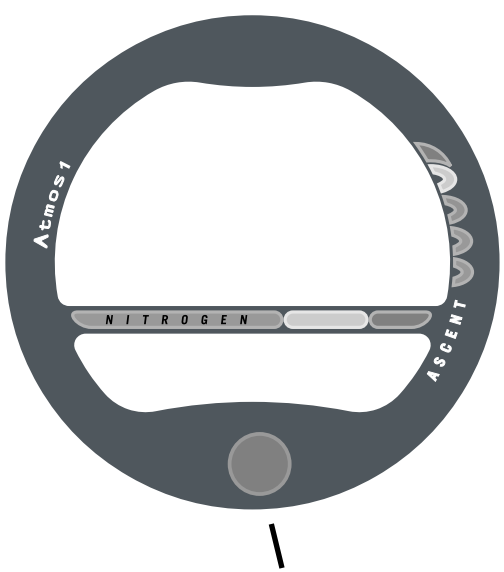


Fig. 1 - Control Button

## CONTROL BUTTON (Fig. 1)

- The Control Button is first used to Activate the ATMOS 1.

- Once activated (and while on the surface), pressing it momentarily provides you access to the Log Mode.

- Pressing it for several seconds provides access to the Set Mode which allows you to set Units of measure, Hour Format, Time of Day, and Water Activation, which are described later.

## NITROGEN BAR GRAPH

The Nitrogen Bar Graph (Fig. 2a) represents tissue loading of nitrogen, showing your relative no decompression or decompression status. As your depth and elapsed dive time increase, segments will add to the Graph, and as you ascend to shallower depths, the Bar Graph will begin to recede, indicating that additional no decompression time is allowed for multilevel diving.

The Nitrogen Bar Graph monitors 12 different nitrogen compartments simultaneously and displays the one that is in control of your dive. It is divided into a green No Decompression (normal) zone, a yellow Caution zone (also No Decompression), and a red Decompression (danger) zone.

**Deeper than 60 feet (18 m)**

| Segments Displayed | Ascent Rate = FPM | MPM |
|---|---|---|
| 0 | 0-20 | 0 - 6 |
| 1 | 21-30 | 6.5-9 |
| 2 | 31-40 | 9.5-12 |
| 3 | 41-50 | 12.5-15 |
| 4 | 51-60 | 15.5-18 |
| 5 | >60 | >18 |

**60 feet (18 m) & Shallower**

| Segments Displayed | Ascent Rate = FPM | MPM |
|---|---|---|
| 0 | 0-10 | 0 - 3 |
| 1 | 11-15 | 3.5-4.5 |
| 2 | 16-20 | 5-6 |
| 3 | 21-25 | 6.5-7.5 |
| 4 | 26-30 | 8-9 |
| 5 | >30 | >9 |

Variable Ascent Rate Indicator

## VARIABLE ASCENT RATE INDICATOR

The Variable Ascent Rate Indicator (Fig. 2b) provides a visual representation of ascent speed (i.e., an ascent speedometer).

- Green is a 'normal' rate, Yellow is a 'caution' rate, and Red is 'Too Fast' (the graphic TOO FAST will appear).
- The segments of the bar graph represent two sets of speeds that change at a reference depth of 60 feet (18m). Refer to the chart.
- At depths greater than 60 feet (18m), the bar graph will flash as a warning when the ascent rate exceeds 60 fpm (18 mpm). At depths of 60 feet (18m) and shallower, it will flash if the ascent rate exceeds 30 fpm (9 mpm).

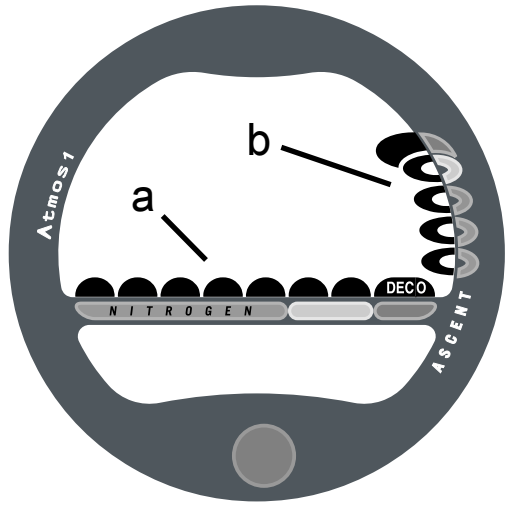



Fig. 2 - Bar Graphs

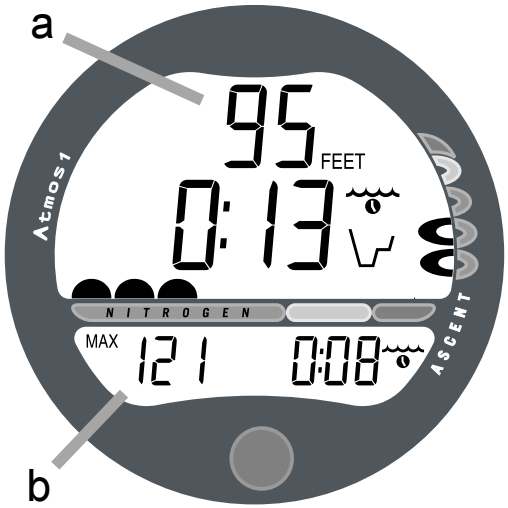



Fig. 3 - Depth Displays

## INFORMATIONAL DISPLAYS

**Each numeric and graphic display represents a unique piece of information. It is imperative that you understand the formats, ranges, and values of the information represented to avoid any possible misunderstanding that could result in error.**

### Depth Displays

- During a dive, the **Current Depth** display (Fig. 3a), indicates depths from 0 to 330 feet (99.9 meters) in 1 foot (.1 meter) increments.
- The **Maximum Depth** reached during that dive will be displayed in the lower window of the display (Fig. 3b).
- During a Decompression Dive, the required **Ceiling Stop Depth** is displayed in the lower window. Maximum Depth can be viewed by pressing the Button.

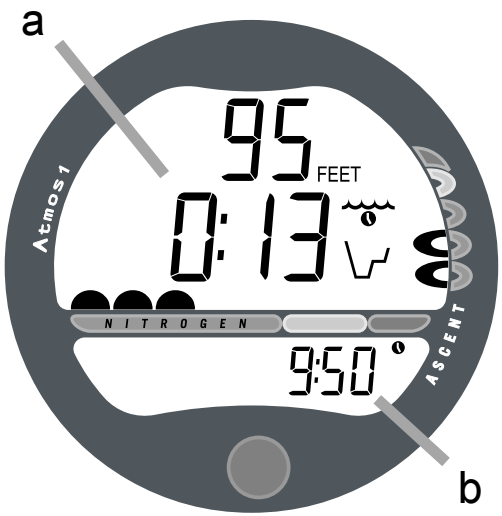



Fig. 4 - Time Displays

### Time Displays

**Time displays** are shown in hour:minute format (i.e., 1:22 represents one hour and two minutes, not 122 minutes!). The colon that separates hours and minutes blinks once per second when the display is indicating real time (e.g., Elapsed Dive Time), and is solid (non-blinking) when times are calculated projections (e.g., Time to Fly).

- The **Main Time** display (Fig. 4a) consists of large segments.
- A **second time display** (Fig. 4b) is located in the lower window.
- Both displays are identified by a clock icon.

## POWER SUPPLY

The ATMOS 1 utilizes one (1) type CR 2450 Lithium 3 volt cell that should provide 300 hours of continuous operation, or 50 activation periods, of operation. It is estimated that if you conduct 1 dive each time the unit is activated, you should obtain approximately 50 dives. If you conduct 3 dives each time the unit is activated, you should obtain approximately 150 dives.

## Low Battery Condition

Voltage level is checked upon activation and every 10 minutes during operation.

- If a Low Battery Condition exists when the unit is activated, it will perform a diagnostic check then the Battery icon will flash once per second for 5 seconds (Fig. 5) followed by shutdown of the unit.
- If the button is not pressed to activate the unit prior to a dive, and a Low Battery Condition exists, the Low Battery icon will appear flashing as a warning upon descent past 5 feet (1.5 m). No other information will be displayed.
- If the unit did not display the Low Battery icon 'prior to' entering the Dive Mode, and a Low Battery Condition occurs during the dive, the Low Battery icon will appear after the dive when the unit enters Surface Mode. There will be sufficient battery power to maintain unit operation for the remainder of 'that dive'.

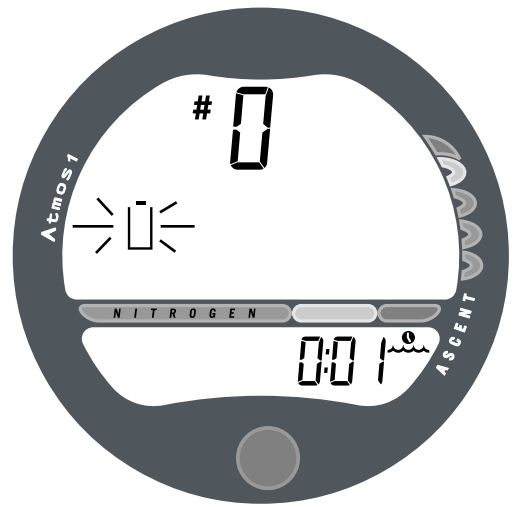
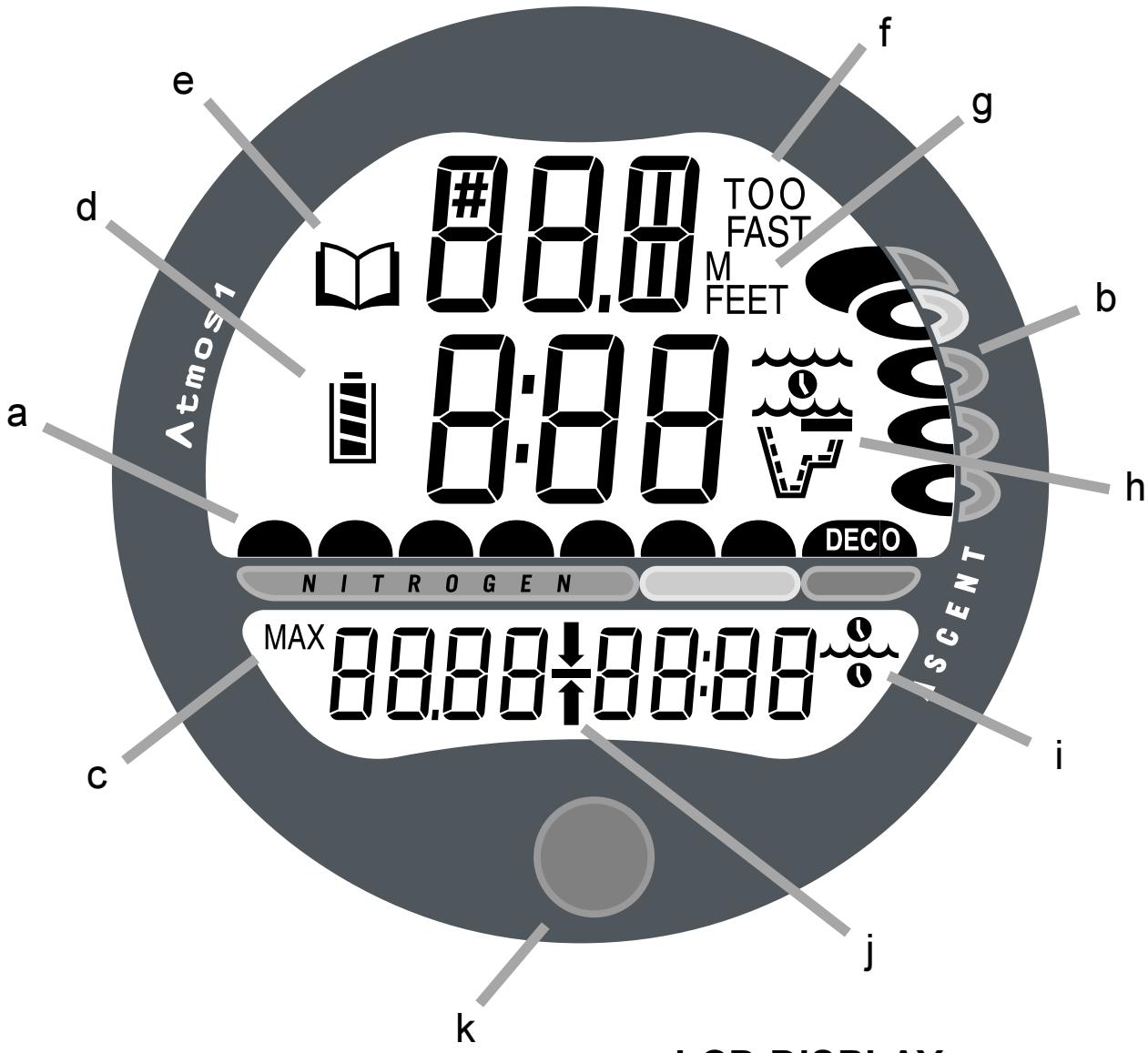



Fig. 5 - Low Battery Condition




KEY

a. Nitrogen Bar Graph
b. Ascent Rate Indicator
c. Graphic - Maximum Depth
d. Icon - Low Battery Condition
e. Icon - Log Mode
f. Graphic - Ascent Too Fast
g. Graphic - Depth Imperial/Metric
h. Icon - Operating Mode
i. Icon - Time
j. Icon - Decompression Ceiling
k. Operating Button

**LCD DISPLAY**

**WARNING: During Activation, Diagnostics, and subsequent operation, if any display or function varies from the information presented here, DO NOT dive with the ATMOS 1. Return it to your Authorized AERIS Dealer for inspection.**

# ACTIVATION and SETUP

## ACTIVATION

**To Activate the ATMOS 1 press and release the Button.**

**Backup Activation (**only if Water Activation is set ON)

As a backup, the ATMOS 1 will also automatically activate by water contact. This is accomplished by bridging the gap between contacts located on the Button stem and back of the case. The graphic H2O that will be displayed as an indication is described later.

- Upon activation, the unit will enter Diagnostic Mode (Fig. 6), displaying all segments of the LCD (as 8's), followed by dashes (- -), then a countdown from 9 to 0. Diagnostic Mode checks the display functions and battery voltage to ensure that everything is within tolerance and functioning properly.

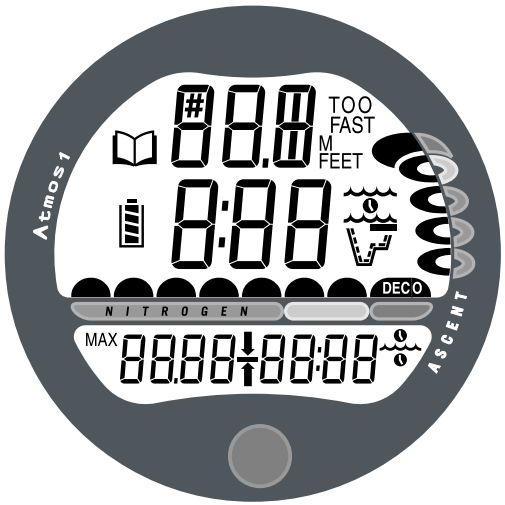



Fig. 6 - Diagnostic Mode

- After manual activation, it will also check the ambient barometric pressure, and calibrate its present depth as zero. At elevations of 2,000 feet (610 m) or higher, it will recalibrate itself to measure depth in feet of fresh water instead of feet of sea water.

**⚠ WARNING: If the unit is activated at elevations higher than 14,000 feet (4,267 meters), it will perform a diagnostic check followed by immediate shutdown.**

If no dive is made within 2 hours after initial activation, the unit will automatically deactivate. If the wet contacts are still bridged, the unit will reactivate and display the H2O graphic.

## SURFACE SEQUENCE

Immediately after completing its' Diagnostic check, the ATMOS 1 will automatically scroll through the following Sequence -

- Time of Day (displayed for 3 seconds), then -
- Surface Mode (displayed for 3 seconds), then -
- Time to Fly (displayed for 3 seconds only after a dive), then -
- Plan Mode (each depth/time is displayed for 3 seconds), then -
- The Sequence repeats for 2 hours, or until a dive is made.
- Log Mode and Set Mode can be accessed during the Sequence utilizing the Control Button. These are described later.

## Time of Day and Surface Mode (Fig. 7)

Displayed are -

- Dive Number ('0' if no dive made yet)
- Time of Day (for 3 seconds), then -
- Elapsed Surface Time (with flashing colon) and icon (for 3 seconds)
- Nitrogen Bar Graph (only after a dive is made)

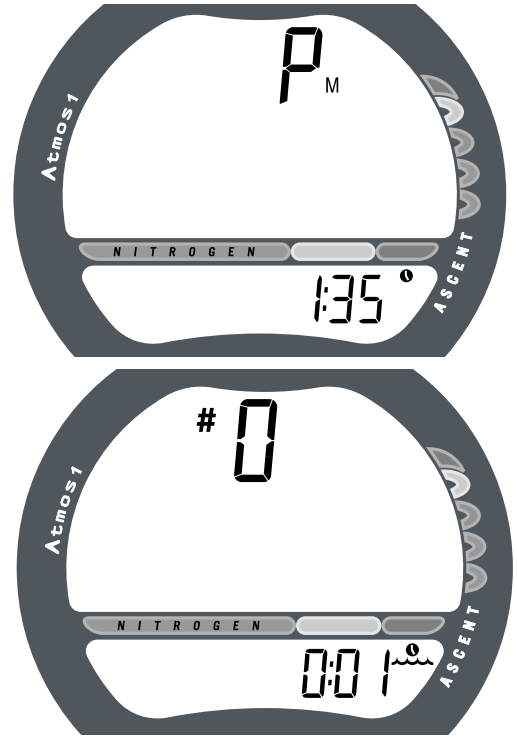
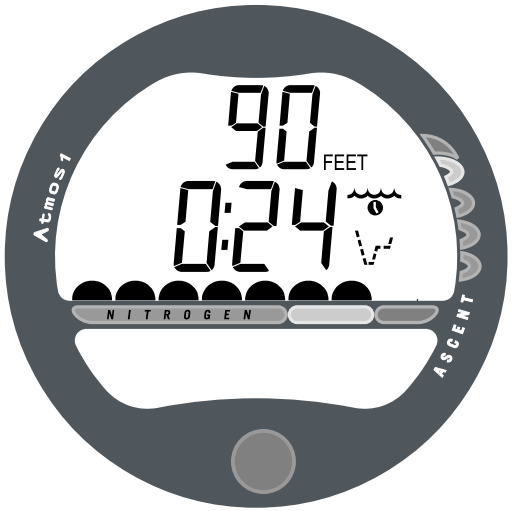



Fig. 7 - Time of Day then Surface Mode

**NOTE: If the wet contacts are bridged, the graphic 'H2O' will appear in place of the dive number '0' (Fig. 8). After the unit is rinsed and dried, '0' will replace 'H2O'.**


Fig. 8 - Surface Mode (rinse and dry the Atmos 1)




| Depth feet (meters) | | NDL hours:mins | |
|---|---|---|---|
| 30 | (9) | 4:20 | (4:43) |
| 40 | (12) | 2:17 | (2:24) |
| 50 | (15) | 1:21 | (1:25) |
| 60 | (18) | :57 | (:59) |
| 70 | (21) | :40 | (:42) |
| 80 | (24) | :30 | (:32) |
| 90 | (27) | :24 | (:25) |
| 100 | (30) | :19 | (:20) |
| 110 | (33) | :15 | (:16) |
| 120 | (36) | :13 | (:13) |
| 130 | (39) | :10 | (:11) |
| 140 | (42) | :09 | (:09) |
| 150 | (45) | :08 | (:08) |
| 160 | (48) | :07 | (:07) |

Fig. 9 - Plan Mode
(no dive made yet)

## Plan Mode (Fig. 9)

The Plan Mode provides a sequence of theoretical dive times available for depths ranging from 30 feet (9 meters) to 160 feet (48 meters) in 10 foot (3 meter) increments.

No decompression times are only displayed for depths where there is at least 3 minutes of theoretical dive time available at the depth, taking into account a descent rate of 120 feet (36 meters) per minute.

The Plan Mode should be reviewed prior to every dive to help you plan your dive as required to avoid exceeding no decompression limits. For repetitive dives, it indicates adjusted dive times that are available for the next dive, based on residual nitrogen following the last dive and surface interval.

**⚠ WARNING: The available dive times provided by the Plan Mode are only predictions. Depending on cylinder size and breathing gas consumption you may have less time available than indicated because of breathing gas quantity or other limitations.**

## SET MODE

After gaining access to Set Mode, settings can be made in sequence one after the other, or you can access a specific item that you want to set, bypassing others.

## Sequence of Settings

- Units of Measure, Hour Format (12 or 24 hour), Time of Day (hour and minute), Water Activation (On or Off).

## To Access Set Mode and enter Settings:

While the unit is scrolling through the Surface Sequence -

- Press and hold the Button for 2 seconds, release when SET FEET (or M) appears with FEET (or M) flashing.

- HINT: To bypass a parameter that you do not want to set, keep the Button depressed until the item you do want to set appears, then release it.


Fig. 10 - Set Units of Measure

To change the setting for **Units of Measure** (Fig. 10) -

- Press the Button momentarily and release to toggle between FEET and M.
- Press and Hold the Button for 2 seconds to save the setting, release when Hr and 12 (or 24) appear with 12 (or 24) flashing.

To change the setting for **Hour Format** (Fig. 11) -

- Press the Button momentarily and release to toggle between 12 and 24.
- Press and Hold the Button for 2 seconds to save the setting, release when Am (or Pm) and the Time of Day appear with the Hour value flashing.

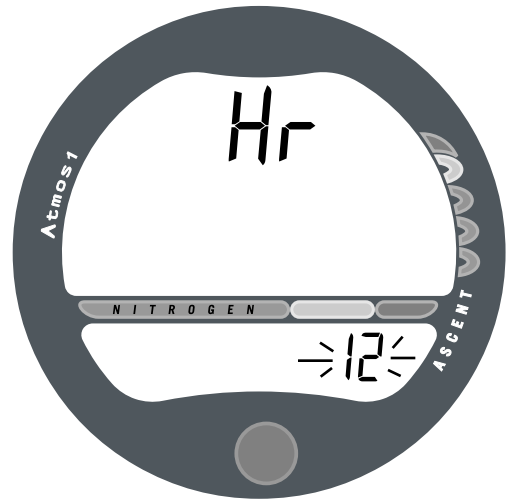



Fig. 11 - Set Hour Format

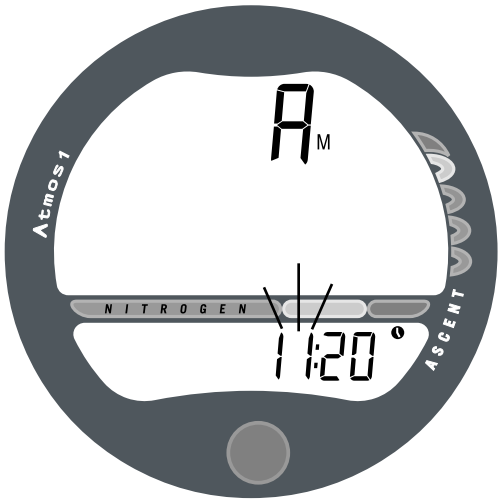



Fig. 12 - Set Time of Day

To change the setting for **Time of Day** (Fig. 12) -

- Repeatedly press the Button momentarily and release it until the correct value for Hour appears (1: to 12:, or 0: to 23:). Do Not Hold the Button depressed.
- Press and Hold the Button for 2 seconds to save the setting, release when the Minute value flashes.

- Repeatedly press the Button momentarily and release it until the correct value for Minute appears (:00 to :59). Do Not Hold the Button depressed.
- Press and Hold the Button for 2 seconds to save the setting, release when ACT, ON or (OFF), and H2O appear with ON or (OFF) flashing.


Fig. 13 - Set Minute of Day

To change the setting for **Water Activation** (Fig. 13) -

- Press the Button momentarily, and release to toggle between ON and OFF.

- Press and Hold the Button for 4 seconds to save the setting, release when Am (or Pm) and the Time of Day appear with the colon flashing. During the 4 seconds, the letters EA will appear and be bypassed.

**NOTE: EA is an External Access Mode used by the factory and has no consumer function(s).**

# DIVE MODES

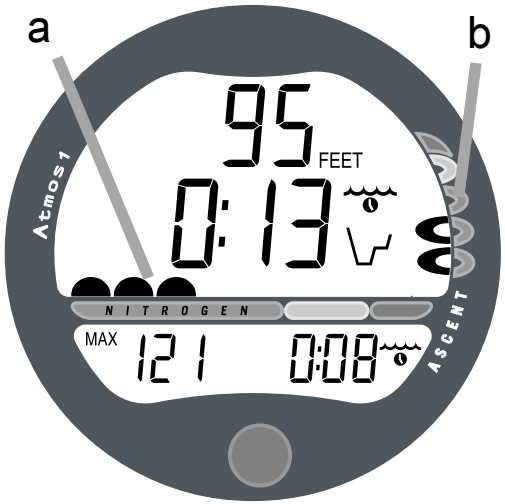



Fig. 14 - Bar Graphs

## DIVE MODE BAR GRAPHS

As your depth and elapsed dive time increase, the **Nitrogen Bar Graph** (Fig. 14a) will fill with segments (green toward red) to represent nitrogen absorption. While ascending to shallower depths, the segments of the Nitrogen Bar Graph will begin to recede, offering a graphic representation of your multilevel diving capability.

The **Variable Ascent Rate Indicator** shows how fast you are ascending (Fig. 14b). When you exceed an ascent rate of 60 fpm (18 mpm) if deeper than 60 feet (18m), or 30 fpm (9 mpm) if shallower than 60 feet (18m), it will enter the red (Too Fast) zone and all segments plus the graphic TOO FAST will flash (Fig. 15) until your ascent rate is slowed.

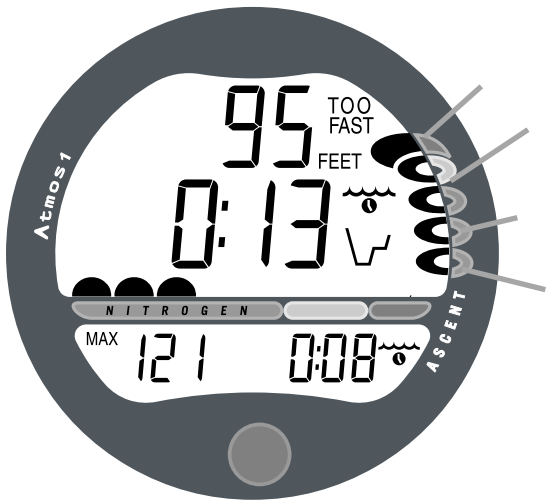



Fig. 15 - Ascent Too Fast

## CONTROL OF DISPLAYS

During dive modes, two (2) displays of information are available. The diver controls which information is on display at any given time during the dive. The diver can change from one display to the other as often as desired by pressing and releasing the Button.

During No Decompression conditions, the Display will remain until changed. During conditions in which cautionary type information is displayed (e.g., Decompression, Violations), there is a Main Display of important information relevant to the specific condition. The diver can access the other display, but it will automatically revert to the Main Display after 3 seconds.

## NO DECOMPRESSION DIVE MODE

The ATMOS 1 will enter the No Decompression Dive Mode when you descend deeper than 5 feet (1.5 meters).

### No Decompression Dive Mode - Display #1 (Fig. 16)

Upper window - Current Depth, Dive Time Remaining (and Mode icon), and the Bar Graphs.
Lower window - Maximum Depth and Elapsed Dive Time.

- press and release the Button to view Display #2.

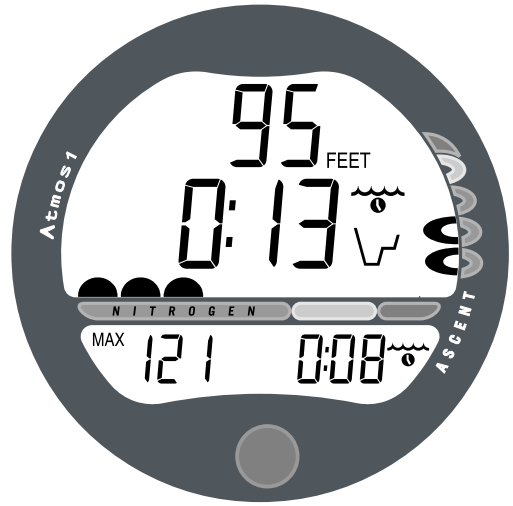



Fig. 16 - No Deco #1

### No Decompression Dive Mode - Display #2 (Fig. 17)

Upper window - Current Depth, Dive Time Remaining (and Mode icon), and the Bar Graphs.
Lower window - Time of Day.

- press and release the Button to view Display #1.

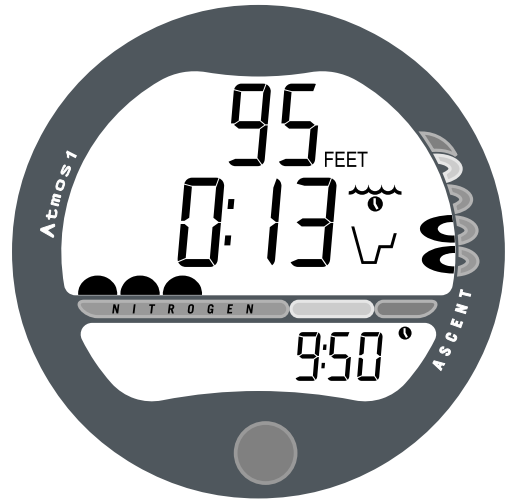



Fig. 17 - No Deco #2

**WARNING: Making decompression dives without the proper preparation and training will place you in an unnecessarily dangerous situation.**

**Existing data for making planned decompression dives is extremely limited, and virtually non-existent for repetitive decompression diving.**

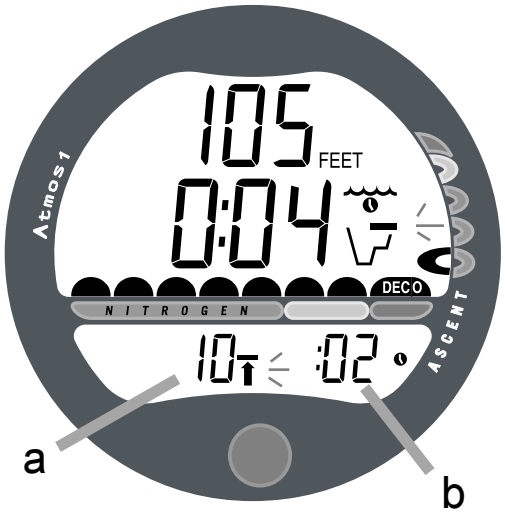



Fig. 18 - Entry into Decompression

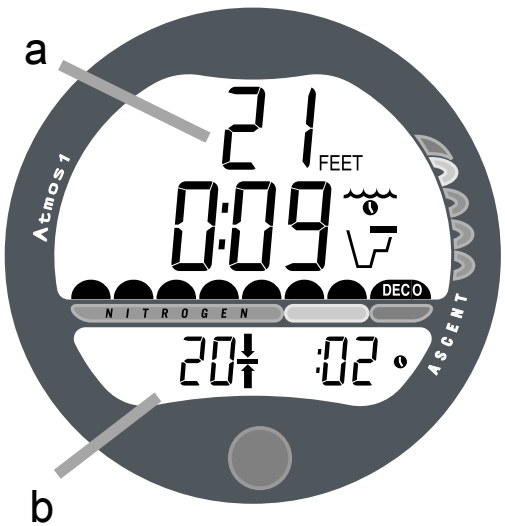



Fig. 19 - Deco #1 (Main)

**⚠ Decompression diving greatly increases your risk of decompression sickness.**

## DECOMPRESSION DIVE MODE

The ATMOS 1 is designed to help you by providing a representation of how close you are to entering decompression. Decompression Dive Mode activates when theoretical No Decompression time/depth limits are exceeded.

Upon entering Decompression Mode, you should begin a safe controlled ascent to a depth slightly deeper than, or equal to, the Required Ceiling Stop Depth indicated (Fig. 18a) and decompress for the Stop Time indicated (Fig. 18b).

- The UP Arrow will flash if you are greater than 10 feet (3 m) deeper than the Required Ceiling Stop Depth.

### Decompression Dive Mode - Main Display #1 (Fig. 19)

The amount of decompression **credit time** that you receive is dependent on Depth, with slightly less credit given the deeper you are. You should stay slightly deeper (Fig. 19a) than the Required Stop Depth indicated (Fig. 19b) until the next shallower Stop Depth appears. Then, you can slowly ascend to, but not shallower than that indicated ceiling Stop Depth.

(continued page 23)

Upper window - Current Depth, Total Ascent Time, and Bar Graphs.

- Total Ascent Time includes Stop Times required at all ceilings and vertical Ascent Time calculated at 60 fpm (18 mpm) for depths greater than 60 feet (18 m), and 30 fpm (9 mpm) for depths of 60 feet (18 m) and shallower.

Lower window - Required Ceiling Stop Depth and Time.

- While within 10 feet (3 m) of, and below, the Stop Depth, both Arrows and the Deco Bar appear solid.
- Press the Button to view Display #2.

**Decompression Dive Mode - Display #2** (Fig. 20)

Upper window - Current Depth, Total Ascent Time, and Bar Graphs.

Lower window - Maximum Depth and Elapsed Dive Time.

- Press the Button to view Display #1.

**NOTE: While in Decompression Mode, the ATMOS 1 will automatically revert to the Main Display (#1) after 3 seconds unless the Button is pressed again.**

**WARNING: If you exceed certain limits, the ATMOS 1 will not be able to tell you how to get safely back to the surface. These situations exceed tested limits and can result in loss of some ATMOS 1 functions for 24 hours after the dive in which a Violation occurred.**

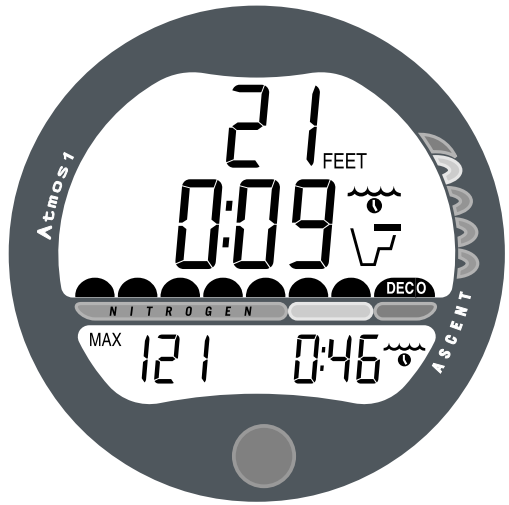



Fig. 20- Deco #2

## VIOLATION MODES

Violation Modes that the ATMOS 1 can enter are termed - Conditional, Delayed, and Immediate. Permanent Violation Mode and Gauge Mode are continuations of these.

**WARNING: It is important to understand each different Violation Mode and how to carry out emergency procedures in the event that you enter one.**

**NOTE: While in Violation Mode, the Alternate Display can be viewed by pressing the button. It will automatically revert to the Main Display after 3 seconds.**

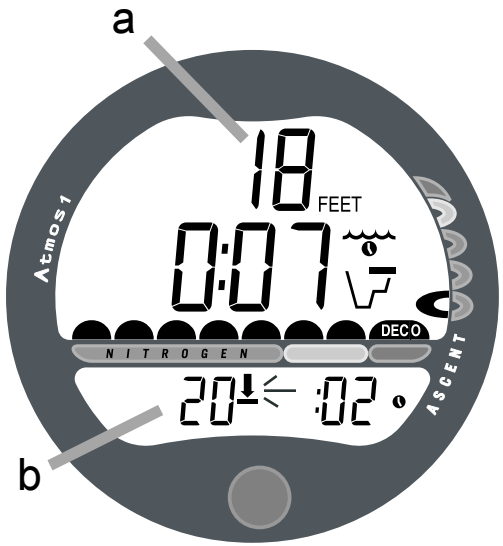



Fig. 21 - Conditional Violation

### Conditional Violation Mode

The ATMOS 1 will enter the Conditional Violation Mode **if you ascend to a depth shallower (Fig. 21a) than the Required Decompression Ceiling** Stop Depth displayed (Fig. 21b). The Down Arrow, Deco Bar, and the Total Ascent Time display will flash until you descend below the Required Stop Depth. Also displayed will be Current Depth and applicable Bar Graphs.

If you descend below the required decompression ceiling before 5 minutes have elapsed, the ATMOS 1 will continue to function in Decompression Dive Mode. In this case, no off-gassing credit will be given, and for each minute above the ceiling $1^{1}/_{2}$ minutes of **Penalty Time** will be added to Required Stop Time.

The added Penalty (decompression) Time will then have to be worked off first, before obtaining off-gassing credit.

Once the Penalty Time is worked-off, and off-gassing credit begins, required decompression Stop Depths and Time will decrease toward zero, then the Nitrogen Bar Graph will recede into the yellow Caution Zone and the ATMOS 1 will revert to the No Decompression Dive Mode.

Fig. 22 - Delayed Violation #1

**Delayed Violation Mode #1** (Fig. 22)
**If you remain above the Required Ceiling Stop Depth for 'more than 5 minutes',** the Nitrogen Bar Graph and Total Ascent Time display will flash until you descend below the Required Stop Depth. This is a continuation of a Conditional Violation.

**Delayed Violation Mode #2** (Fig. 23)
The ATMOS 1 cannot calculate decompression times for Stop Depths much greater than 60FT (18M) and offers no indication of how much time spent underwater would result in the need for a greater Stop Depth.

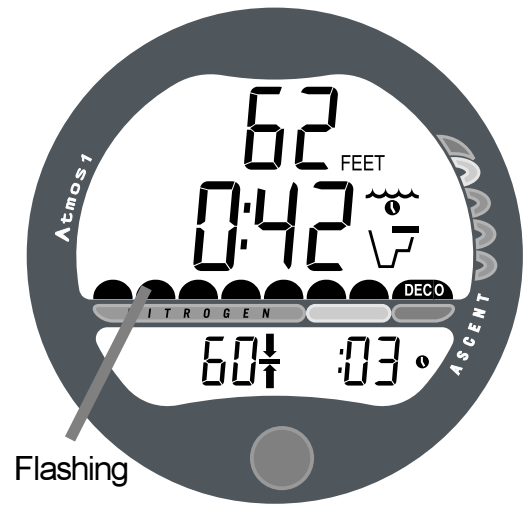


Fig. 23 - Delayed Violation #2

**If your Decompression obligation requires a Ceiling Stop Depth 'between' 60 feet (18 meters) and 70 feet (21 meters),** the Nitrogen Bar Graph will flash. Total Ascent Time will still be displayed.

You must ascend to just deeper than, and stay as close as possible to, 60 feet (18 meters) without causing the Total Ascent Time display to flash. When the Required Stop Depth indicates 50 FT/ 15 M, etc., you can ascend to those depths and continue decompressing.

**WARNING: Special training, equipment, and support are necessary for diving deeper than the maximum recommended sport diving depth limit(s).**

**Delayed Violation Mode #3** (Fig. 24)

**If you descend deeper than 330 feet (99.9 meters),** the Nitrogen Bar Graph will flash, and the Current Depth and Max Depth displays will only indicate 3 dashes ( - - -).

Upon ascending above 330 feet (99.5 meters), the Current Depth display will be restored, however Max Depth will only display 3 dashes for the remainder of that dive. The Log for that dive will also only indicate 3 dashes as the Max Depth achieved.

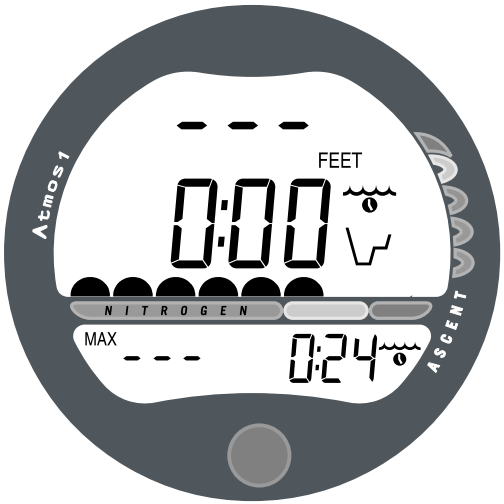



Fig. 24 - Delayed Violation #3

## Immediate Violation Mode and Gauge Mode

**WARNING: The ATMOS 1 enters Immediate Violation Mode when a situation totally exceeds its capacity to predict an ascent procedure. These dives represent gross excursions into decompression, and an ATMOS 1 should not be used for the dives.**

During a Dive, if a ceiling much greater than 60FT (18M) is required, an **Immediate Violation Mode** will be entered. This situation would be preceded by entering Delayed Violation Mode #2, previously described. The ATMOS 1 would then operate with limited functions in **Gauge Mode** during the remainder of that dive and for 24 hours after surfacing.

**Gauge Mode** turns the ATMOS 1 into a digital instrument without any decompression monitoring functions. Only Current Depth, Max Depth, Elapsed Dive Time, and the Ascent Rate Indicator will be displayed (Fig. 25). The full Nitrogen Bar Graph will flash as a warning of this condition.

- Alternate displays are not available while in Gauge Mode.

The ATMOS 1 will also enter an **Immediate Violation Mode** 5 minutes after reaching the surface from a dive in which a Delayed Violation occurred.

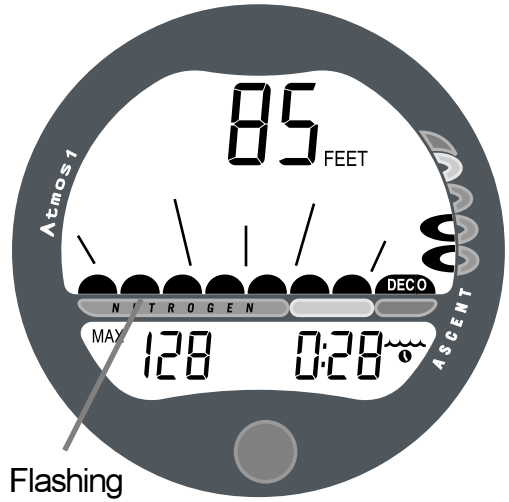


Fig. 25 - Gauge Mode (during a dive)

On the surface, **Gauge Mode** displays the Dive Number and Surface Interval, and the full Nitrogen Bar Graph flashing (Fig. 26). It does not provide the Plan Mode or the Time to Fly feature.

The **Countdown Timer** that appears with a single dash (-)during the Surface Sequence is only provided to inform you of the time remaining before normal ATMOS 1 operation can resume with full features and functions.

**This condition is considered a Permanent Violation, and in the event that a dive is made during the 24 hour period, a full 24 hour surface interval must then be served before all functions are restored.**

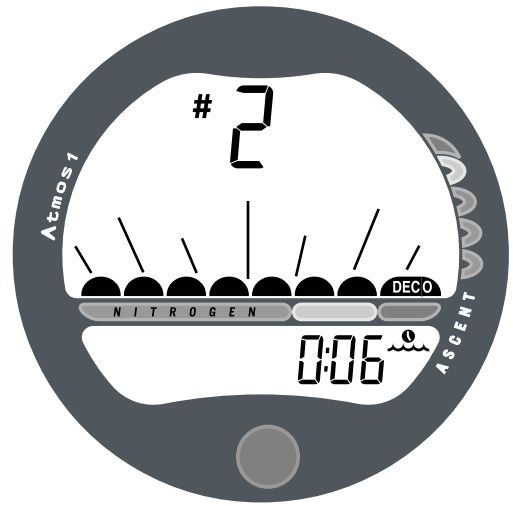


Fig. 26 - Gauge Mode (after surfacing)

## ⚠ WARNINGS AND SAFETY RECOMMENDATIONS

- **The Plan Mode provides predicted times for subsequent dives. Depending on cylinder size and breathing gas consumption, you may have less time available than indicated because of breathing gas quantity or other limitations.**

- **Until it has shut itself off, you must not use the ATMOS 1 at a different Altitude than the Altitude at which it was activated. Doing so will result in an error equal to the difference in barometric pressure, and possibly a false dive mode with erroneous data.**

- **To provide proper Altitude Compensation, the ATMOS 1 must be manually activated at the new altitude. Dive computers, such as the ATMOS 1 cannot sense changes in barometric pressure if activated by immersion in water at higher altitudes.**

- **Use the Yellow Caution Zone of the Nitrogen Bar Graph as a visual reference to provide a greater margin of protection between you and the No Decompression Limits.**

- **Keeping each of the Bar Graphs in the green throughout your dives can help reduce your risk of exposure to decompression sickness and the effects of excessive ascent rates.**

## ⚠ WARNINGS AND SAFETY RECOMMENDATIONS

- **There are few legitimate excuses for making unplanned Decompression dives, and the consequences of this type of diving can be severe. By making an unplanned Decompression dive without the necessary preparation and training, you will have placed yourself in an unnecessarily dangerous situation. Allow a surface interval of at least 24 hours before reentering the water in the event a dive requires emergency decompression.**

- **By entering decompression, you automatically impose a "ceiling" above you which you cannot immediately ascend beyond, denying you free access to the surface.**

- **Exiting the water with the Nitrogen Bar Graph in the red decompression zone greatly increases the risk of decompression sickness, and may result in injury or death.**

- **Existing data for making planned decompression dives is extremely limited, and virtually nonexistent for repetitive decompression diving.**

- **Special training, equipment, and support are necessary for planned decompression diving and diving deeper than the maximum recommended sport diving limit(s).**

- **Decompression diving, or diving deeper than the maximum recommended sport diving limit(s), will greatly increase your risk of decompression sickness.**

## ⚠ WARNINGS AND SAFETY RECOMMENDATIONS

- **If your ATMOS 1 stops working for any reason, it is important that you have anticipated this possibility and are prepared for it. This is an important reason for not pushing the no decompression limits, and a critical reason to avoid entering decompression.**

- **If you dive in situations where your trip would be ruined or your safety would be jeopardized by losing the use of your ATMOS 1, an analog or digital backup instrument system and use of standard air tables is highly recommended.**

# POST DIVE MODES

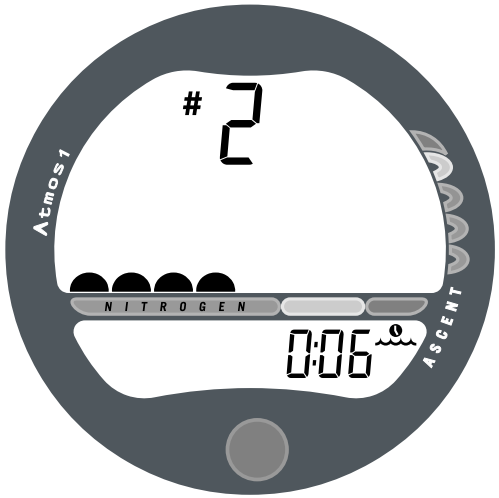



Fig. 27 - Transition Period

## POST DIVE SURFACE MODE

When you ascend to 3 feet (1 meter) or shallower, the ATMOS 1 will enter Surface Mode and begin counting your surface interval.

## TRANSITION PERIOD

The first 10 minutes is, in affect, a Transition Period during which time the following information is displayed (Fig. 27):

- 'Number' of that dive (during that activation period)
- Surface Interval time (colon flashing) and icon (flashing)
- Nitrogen Bar Graph ( indicating current nitrogen loading)

During the Transition Period, Log Mode can be accessed. No other modes (e.g., Fly, Plan, Set) are accessible.


Fig. 28 - Log Mode

## To view that dive's Log

Refer to page 35 for a description of the Log Mode displays.

- Press the Button to view the first display screen (Fig. 28).
- Press the Button again to view the Data screen
- Press the Button again to return to Surface Mode.
- The unit will revert to Surface Mode after 2 minutes if the button is pressed

Log Data will not be stored in the unit's memory until the 10 minute Transition Period on the surface is completed.

Once 10 minutes have elapsed, the Surface Mode icon and Surface Interval time display colon stop flashing indicating that the Dive and Transition Period are completed, and a subsequent descent will be considered a new dive.

If you descend during the 10 minute Transition Period, time underwater will be considered a continuation of that dive. The time at the surface (if less than 10 minutes) will not be added as Dive Time.

Fig. 29 - Time to Fly

## AFTER THE TRANSITION PERIOD (THE FIRST 2 HOURS)

For the remainder of the **first 2 hours after surfacing**, information will continue to be displayed as the Surface Sequence, scrolling through Time of Day/Surface Mode / Time to Fly/Plan Mode . You will have full access to Log Mode and Set Mode.

## Time to Fly

The Time to Fly Countdown Timer begins counting down 10 minutes after surfacing from a dive (after the Transition Period) displaying the word 'FLY' and a countdown that begins at 23:50 (Fig. 29) and counts down to 0:00 (hr:min).

- If a violation occurred during the dive a single dash ( - ) will appear instead of the letters FLY (Fig. 30).

Fig. 30 - Fly Mode
(after a Violation)

**As you should be aware from your own training, the longer you wait to fly (or travel to higher elevations) after diving, the more you will reduce your exposure to decompression sickness.**

**After a surface interval of 12 hours, you may choose to fly (or travel to higher elevations), provided that your dive profile(s) did not enter decompression.**

**If your diving involved decompression or a repetitive, multi day profile, it is strongly recommended that you wait a full 24 hours after your last dive to add a greater degree of protection.**

## Plan Mode

Plan Mode now provides 'adjusted' No Decompression Limits (Fig. 31) based on residual nitrogen calculated to be remaining from the previous dives.

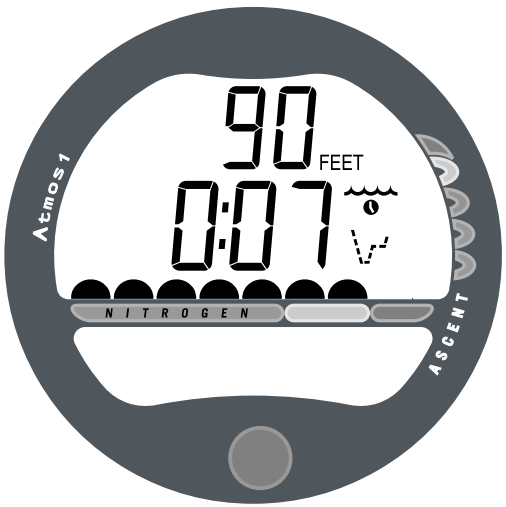



Fig. 31 - Adjusted NDLs

## Log Mode

Information from up to 9 dives is stored in the **Log** for viewing. Each subsequent dive will then overwrite the oldest dive stored in the Log. It is therefore suggested that you transfer the Log's data to your log book at the end of each day of diving. The first dive conducted after each Activation will be #1, therefore there may be multiple #1 dives in the Log.

Dives are displayed in a reverse sequence that starts with the dive most recently recorded back to the oldest of the dives stored. Thus, your most recent dive will always be the first shown in the sequence. Each dive has two Log screens - Number / Time of Day started and Dive Data. After 9 dives are accumulated, each subsequent dive will overwrite the oldest dive in the Log (i.e., the most recent dive deletes the oldest). Log information will not be lost when the battery is removed, however, factory service and calibration will delete the data.

**Button Control in Log Mode -**

- The Control Button is used to access Log Mode and advance through the displays of data.
- To return to the Surface Sequence at any time while in Log Mode, press the Button for 2 seconds, releasing it when the current Time of Day/Surface Mode appear.
- The unit will automatically revert to the Surface Sequence after 2 minutes if the Button is not pressed to view another Log Screen.

**To access the Log Mode and view the First Screen** (Fig. 32) -

- Press the Button momentarily during the Surface Sequence.
- The first screen of the most recent dive will appear displaying -
  - the Log Mode icon
  - Dive Number
  - Time of Day the dive started
- Press the Button momentarily to view the Second Screen.


Fig. 32 - Log Mode

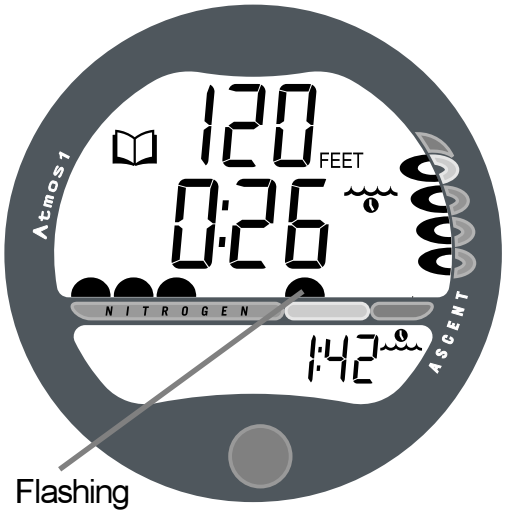



Fig. 33 - Log Dive Data

**Dive Data (the second screen) includes** (Fig. 33) -

- Log Mode icon
- Maximum Depth - reached during that dive (and icon)
- Elapsed Dive Time (and icon)
- Surface Interval - prior to that dive (and icon)
- Variable Ascent Rate Indicator - showing the maximum ascent rate maintained for 4 consecutive seconds during the dive.
- Nitrogen Bar Graph - showing tissue nitrogen loading at the time you surfaced at the end of the dive. Also, the segment that reflects the maximum loading during the dive will appear flashing.

**To access the first screen of the previous dive's Log -**

- Press the Button momentarily.

## AFTER THE FIRST 2 HOURS

Two hours after the last dive the Surface sequence will no longer be displayed. The Time to Fly countdown (Fig. 34) will be displayed until it counts down to 0:00 (hr:min) or another dive is made.


Fig. 34 - Time to Fly Countdown

**To access other modes or enter settings -**

- Press the Button to reactivate the Surface Sequence.
- The unit will again revert to the Time to Fly countdown after 2 hours, if the Button is not pressed.

**WARNING: DO NOT attempt to change the Battery during the first 10 minutes after surfacing from a dive. Doing so will result in loss of calculated data for repetitive dives.**

# CARE, MAINTENANCE, and SERVICE


Fig. 35 - Activation Contacts Wet


Fig. 36 - Activation Contacts Dried

## WET CONTACTS

If the graphic **H2O** appears during the Fly Mode countdown (Fig. 35), it is an indication that the water activation contacts are bridged (still wet) and the unit must be rinsed in fresh water and thoroughly dried.

- Once the unit is dry, the graphic **H2O** will disappear from the display (Fig. 36).

- If the unit is not cleaned and dried prior to the countdown reaching 0:00 (hr:min), or making another dive, it will shut off then automatically reactivate. The graphic H2O would then appear in place of Dive Number when Surface Mode is displayed during the scrolling Surface Sequence. If no dive is made, the unit would shut off after 2 hours, then automatically reactivate again, repeating the action until cleaned and dried.

## CARE AND CLEANING

Protect your ATMOS 1 from shock, excessive temperatures such as the trunk of a car during a hot day, chemical attack, and tampering. Protect the lens against scratches with a transparent Instrument Lens Protector. Small scratches will naturally disappear underwater.

**CAUTION: Never spray aerosols of any kind on, or near, the instrument. The propellants may chemically attack the plastic.**

Soak and rinse the ATMOS 1 in fresh water at the end of each day of diving, and check to ensure that the areas around the low pressure (depth) sensor (Fig. 37) and button are free of debris or obstructions. To dissolve salt crystals, use lukewarm water or a slightly acidic white vinegar/water bath. After removal from the bath, place the unit under gently running water and towel dry before storing. Transport your unit cool, dry, and protected.

⚠ **WARNING: Never force any object through any slots or holes of the Housing. Doing so may damage the depth sensor, possibly resulting in erroneous depth and/or dive time remaining displays.**

## INSPECTIONS AND SERVICE

Your ATMOS 1 should be **inspected annually** by an Authorized AERIS Dealer who will perform a factory prescribed function check and inspection for damage or wear. To keep the 2 year limited warranty in effect, this inspection must be completed one year after purchase (+/- 30 days).

AERIS recommends that you continue to have this inspection performed every year to ensure it is working properly.

The costs of annual inspections are not covered under the terms of the 2 year limited warranty.

Fig. 37 - Depth Sensor

**⚠ WARNING: If you are in doubt about the accuracy of your ATMOS 1's depth readings, DO NOT attempt to dive with it until it has been inspected by AERIS Customer Service.**

It is possible to damage the depth sensor of the ATMOS 1 if it is not pressure tested properly. Ensure that the Dealer adheres to the following warning.

**⚠ WARNING: Ensure that the ATMOS 1 is never pressure tested in an air environment. Doing so may damage the depth sensor, possibly resulting in erroneous depth or time readings.**

## To Obtain Service

Take you ATMOS 1 to an Authorized AERIS Dealer or send it to the nearest AERIS Regional Distributor Facility.

## To return your ATMOS 1 to AERIS:

- Record all dive data in the Log. All data will be erased when it receives factory service.
- Package it using a protective cushioning material.
- Include a legible note stating specific reason for return, your name, address, daytime phone number, serial number, and a copy of your original sales receipt and Warranty Registration Card.
- Send freight prepaid and insured using a traceable method to the nearest AERIS Regional Service Facility, or to AERIS.
- Non-warranty service must also be prepaid (call for an estimate). COD is not accepted.
- If you have any questions regarding service, call AERIS Customer Service at (510) 346-0010, 8 to 5 PST, or E-mail them to info@diveaeris.com.

**WARNING: If a Low Battery Condition is indicated prior to a dive, DO NOT attempt to dive with the ATMOS 1 until the battery is replaced.**

**NOTE: The procedures that follow must be closely adhered to. Damage due to improper battery replacement is not covered by the ATMOS 1's 2 year warranty.**

## BATTERY REPLACEMENT

The battery compartment should only be opened in a dry and clean environment with extreme care taken to prevent the entrance of moisture or dust.

As an additional precautionary measure to prevent formation of moisture in the battery compartment, it is recommended that the battery be changed in an environment equivalent to the local outdoor temperature and humidity (e.g., do not change the battery in an air conditioned environment then take it outside during a hot sunny day).

The ATMOS 1 will continue to function on real time for a period of 8 seconds after the battery is removed, maintaining settings and Nitrogen calculations for a repetitive dive. By having a new battery ready to insert prior to removing the depleted one from the unit, you can take advantage of this enhanced feature.

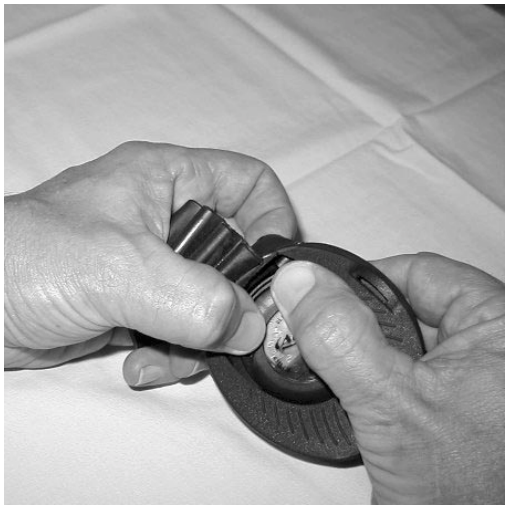


Fig. 38 - Removal from Boot

## Module Removal from Boot

- DO NOT use tools or lubricants. Doing so could damage the module or boot.
- Use care not to drop the module when it dislodges from the boot.
- Turn the unit over so the back is facing you.
- Using the fingers of your left hand, lift and pull the top (upper/front portion) of the Boot back toward you while simultaneously pressing the top (upper/right portion) of the module away with your right thumb (Fig. 38).
- Press firmly until the upper/right tab of the module slides out of the retaining lip inside the boot.
- Repeat for the left side to dislodge the module from the Boot.

## Preliminary Inspection

- Inspect the Button, Lens, and Housing to ensure they are not cracked or damaged.
- If there is any sign of moisture in the module, DO NOT use the ATMOS 1 until it receives proper service by an Authorized AERIS Dealer, or the AERIS factory.

Fig. 39 - Ring Removal

## Battery Hatch Removal

- Locate the Battery Compartment on the back of the Housing.
- While applying steady inward pressure on the clear Battery Hatch, rotate the Hatch Ring clockwise 10 degrees by pressing on the upper/right arm of the Ring with a small blade screwdriver (Fig. 39).

(continued on page 43)

**NOTE: If available, an adjustable face spanner tool or a pair of pointed pliers can be used instead of the screwdriver by inserting the tips of the tool in the small holes in the Ring (Fig. 40).**

Fig. 40 - Ring Removal (alternate)

- Lift the Hatch Ring up and away from the Housing.
- Remove the clear Battery Hatch.

## Battery Removal

- Remove the Retaining Bar located across the lower portion of the Battery (Fig. 41a).
- Remove the Hatch O-ring. DO NOT use tools
- Using care not to damage the Battery Contacts (Fig. 41 b/c), slide the Battery up and out of the right side of the Battery Compartment.

**CAUTION: A metal object (tool) should NOT be used to pry the Battery from the Battery Compartment.**

## Inspection and Cleaning

- Closely check all of the sealing surfaces for any signs of damage that might impair proper sealing.
- Inspect the Buttons, Lens, and Housing to ensure they are not cracked or damaged.
- If it is necessary to clean the Battery Compartment, flush it and all components with a solution of 50% white vinegar and 50% fresh water. Rinse with fresh water, and allow to dry overnight, or blow dry with a hair dryer (set at 'no heat').

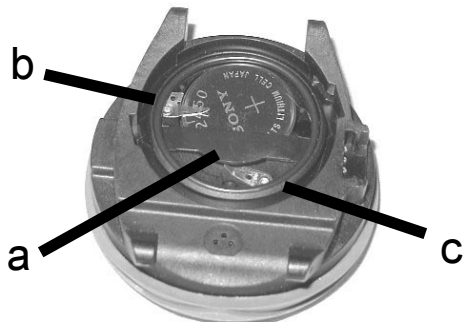



Fig. 41 - Battery Compartment


Fig. 42 -Battery Installation

**WARNING: If damage, moisture, or corrosion is found, it is recommended that you return your ATMOS 1 to an Authorized AERIS Dealer, and DO NOT attempt to use it until it has received factory prescribed service.**

## Battery Installation

- Slide a **new** 3 volt type CR2450 Lithium Battery, negative (-) side down into the Battery Cavity. Slide it in from the right side and ensure that it slides under the contact clip on the left rim of the cavity.
- Orient the Retaining Bar across the lower portion of the Battery and carefully push it down into position (Fig. 42).

## Battery Hatch and Hatch Ring Installation

- Replace the Hatch O-ring with new. This O-ring must be a genuine AERIS part that can be purchased from an Authorized AERIS Dealer. Use of any other O-ring will void the warranty.
- Lightly lubricate the **new** Hatch O-ring with silicone grease and place it on the inner rim of the Battery Hatch. Ensure that it is evenly seated.
- Slide the Hatch Ring, top portion first (small opening), onto your thumb.
- Carefully place the Battery Hatch (with O-ring) into position on the rim of the Battery Compartment, then press it evenly and completely down into place with your same thumb (Fig. 43).

Fig. 43 - Hatch Installation

- Maintain the Battery Hatch securely in place and, using your other hand, slide the Hatch Ring down off your thumb and into position around the Battery Compartment. The tabs on the Ring fit down into the slots located at the 2 and 9 o'clock positions.
- Using your fingers, turn the Ring counter clockwise 5 degrees until the tabs engage, then tighten it 5 more degrees by turning it counter clockwise with the aide of a small blade screwdriver, pressing against the upper/left arm of the Ring (Fig. 44).


Fig. 44 - Hatch Ring Orientation

**NOTE: If available, an adjustable face spanner tool or pair of pointed pliers can be used by placing the tips in the small holes of the Ring (Fig. 45).**

## Inspection

- Activate the unit and watch carefully as it performs a full diagnostic and battery check, and enters Surface Mode. Observe the LCD display to ensure it is consistently clear and sharp in contrast throughout the screen.

**WARNING: If there are any portions of the display missing or appearing dim, or if a Low Battery Condition is indicated, return your ATMOS 1 to an Authorized AERIS Dealer for a complete evaluation before attempting to use it.**


Fig. 45 - Hatch Ring Installation

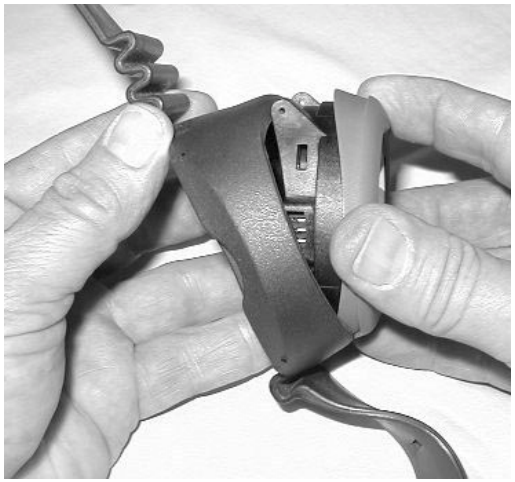


Fig. 46 - Lower Portion of Module

## Installing the Module into a Boot

- DO NOT use tools or lubricants, doing so could damage the module or boot.
- Hold the Module over the Boot (both facing you).
- Slide the lower/front portion of the Module down into the cavity of the Boot (Fig. 46).
- Place the fingers of your left hand inside the upper/back portion of the Boot.
- Carefully stretch and pull the top (upper/front portion) of the Boot upward and toward you while simultaneously pressing the top (upper/right portion) of the Module into the Boot (Fig. 47).
- Press firmly until the upper/right arm of the Module slides over the retaining lip inside the Boot.
- Repeat for the left side.
- Ensure that the edges of the Boot (front and back) are not curled and the pressure sensor opening is clear.

Fig. 47 - Upper Portion of Module

# REFERENCE

## DECOMPRESSION MODEL

The Decompression Model used by the ATMOS 1 is based on the no decompression multilevel repetitive dive schedules successfully tested by Dr. Ray Rogers and Dr. Michael Powell. These tests did not include repetitive dives deeper than 90 feet (27 meters) or decompression dives. Due to the present unavailability of statistical data, ATMOS 1 decompression predictions are based on U.S. Navy theory.

## TISSUE COMPARTMENT CONTROL

The ATMOS 1 tracks twelve tissue compartments with halftimes ranging from 5 to 480 minutes. The Nitrogen Bar Graph always displays the controlling compartment that is the only one important at that time. Think of the Nitrogen Bar Graph as twelve separate transparent displays laid on top of one another. The compartment that has filled up fastest is the only one the viewer can see from the top.

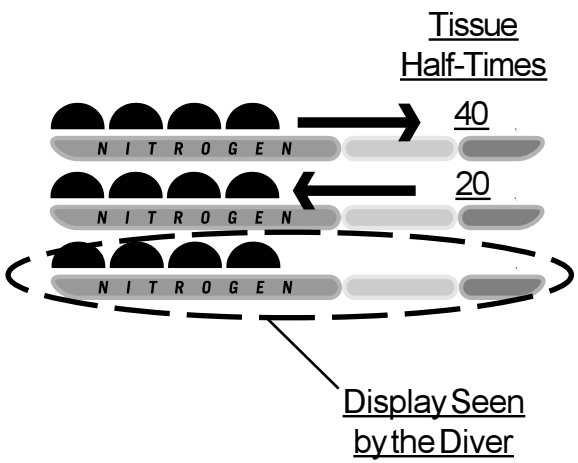



Fig. 48 - Tissue Compartment Control Hand Over

At any particular point, one compartment may be absorbing nitrogen, while another that was previously higher may be off-gassing. Figure 48 illustrates one compartment "handing over" control to another compartment at a different depth. This feature of the Decompression Model is the basis of multilevel diving, one of the most important contributions the ATMOS 1 offers you.

## NO DECOMPRESSION LIMITS

Note how the No Decompression Limits for the ATMOS 1 are contrasted with the U.S. Navy limits (Fig. 49). The ATMOS 1's Dive Planner does not scroll past 160 feet (48 meters), or to depths at which projected dive time is less than one minute .

**⚠ WARNING: Using the ATMOS 1, just as using the U.S. Navy (or other) No Decompression Tables, is no guarantee of avoiding decompression sickness (i.e., the bends).**

**⚠ WARNING: AERIS advocates responsible diving practices . Decompression diving is inherently hazardous and greatly increases your risk of decompression sickness - even when performed according to the computer's calculations. In the event that you must make an emergency decompression dive, you must not make another dive for at least 24 hours.**

| Depth feet (meters) | Atmos 1 NDL hours:mins | | U.S.N NDL hours:mins |
|---|---|---|---|
| 30 (9) | 4:20 | (4:29) | - - - |
| 40 (12) | 2:17 | (2:21) | 5:10 |
| 50 (15) | 1:20 | (1:23) | 3:20 |
| 60 (18) | :57 | (:58) | 1:40 |
| 70 (21) | :40 | (:41) | 1:00 |
| 80 (24) | :30 | (:31) | :50 |
| 90 (27) | :24 | (:25) | :40 |
| 100 (30) | :19 | (:19) | :30 |
| 110 (33) | :15 | (:16) | :25 |
| 120 (36) | :13 | (:13) | :20 |
| 130 (39) | :11 | (:11) | :15 |
| 140 (42) | :09 | (:09) | :10 |
| 150 (45) | :08 | (:08) | :10 |
| 160 (48) | :07 | (:07) | :05 |
| 170 (51) | - - - | | :05 |
| 180 (54) | - - - | | :05 |
| 190 (57) | - - - | | - - - |

Fig. 49 - No Decompression Limits

## ALTITUDE DIVING

Diving at high altitude requires special knowledge of the variations imposed upon divers, their activities, and their equipment by the decrease in atmospheric pressures. AERIS recommends completion of a specialized Altitude training course by a recognized training agency prior to diving in high altitude lakes or rivers.

Atmospheric pressure decreases as altitude increases above sea level. Weather systems and ambient temperature also affect barometric pressures. Consequently, depth reading instruments that do not compensate for the decrease in pressure indicate depth readings shallower than the depth they are actually at.

The ATMOS 1 automatically compensates for decreased ambient pressure when manually activated at high altitudes up to 14,000 feet (4,267 meters). Its program contains a high altitude algorithm that reduces no decompression limits to add a larger zone of caution.

Whenever the ATMOS 1 is manually activated at altitudes higher than 2,000 feet (610 meters), it will automatically recalibrate itself to measure depth in feet of fresh water rather than feet of sea water. Therefore, when returning to lower altitudes, diving should not be conducted until the unit automatically clears of any residual nitrogen and oxygen loading and resets to operate at the new altitude.

⚠ **WARNING: Altitude compensation provided by the ATMOS 1 takes place when the unit is manually activated. If the ATMOS 1 is activated by immersion/descent in water, it will not provide the Altitude compensation. DO NOT dive at any different altitude until the unit shuts off and is manually activated. It will recalibrate automatically when manually reactivated at the new altitude.**

## FLYING AFTER DIVING

In 1990 the Undersea and Hyperbaric Medical Society (UHMS) published a set of guidelines aimed at minimizing the possibility of decompression sickness due to **flying** too soon **after diving**. The UHMS suggests* divers using standard air cylinders and exhibiting no symptoms of decompression sickness wait 24 hours after their last dive to fly in aircraft with cabin pressures up to 8,000 feet. (2,440 meters).

*excerpted from "The UHMS Flying After Diving Workshop"

The two exceptions to this recommendation are:

- If a diver had less than 2 hours total accumulated dive time in the last 48 hours, then a 12 hour surface interval before flying is recommended.
- Following any dive that required a decompression stop, flying should be delayed for at least 24 hours, and if possible, for 48 hours.

Since the 1990 UHMS guidelines were introduced, data from the Diver's Alert Network (DAN) was introduced that resulted in DAN's position** that "A minimum surface interval of only 12 hours would be required in order to be reasonably assured a diver will remain symptom free upon ascent to altitude in a commercial jet airliner (altitude up to 8,000 feet/2,440 meters). Divers who plan to make daily, multiple dives for several days, or make dives that require decompression stops, should take special precautions and wait for an extended surface interval beyond 12 hours before flight".

Both the UHMS and DAN agree that "There can never be a flying after diving rule that is guaranteed to prevent decompression sickness completely. Rather, there can be a guideline that represents the best estimate for a conservative . . . surface interval for the vast majority of divers. There will always be an occasional diver whose physiological makeup or special diving circumstances will result in the bends".

**excerpted from "DAN's Position on Recreational Flying After Diving"

To reduce the risk of developing decompression sickness after a single no decompression dive, current guidelines suggest waiting 12 hours prior to exposure to atmospheric pressures equivalent to 1,000 feet (330 meters) above sea level, or greater. When repetitive dives are conducted during the same day, or period of days, it is suggested that the interval be increased to a minimum of 24 hours. Note that land travel to higher elevations after diving must also be considered as an exposure to altitude.

## OPERATING TEMPERATURE

The ATMOS 1 will operate in almost any **temperature** diving **environment** in the world, between 32 °F and 140 °F (0 and 60 °C). At extremely low temperatures, the LCD may become sluggish, but this will not affect it's accuracy. If stored or transported in extremely low temperature areas (below freezing), you should warm the module and its battery with body heat before diving.

## CONCLUSION

The ATMOS 1 is an informational tool whose entire worth depends on understanding all of its features and functions, and using it correctly.

**Learn how to use it and use it wisely.**

**Be a Responsible Diver at all times !**

# SPECIFICATIONS

## NO DECOMPRESSION MODEL

**Basis:**
- Modified Haldanean Algorithm
- 12 tissue compartments

**Data Base:**
- Diving Science and Technology (DSAT) - Rogers/Powell

**Performance:**
- Tissue compartment halftimes (mins.) Spencer's "M" values 5, 10, 20, 40, 80, 120, 160, 200, 240, 320, 400, 480
- Reciprocal subsurface elimination
- 60 minute surface credit control for compartments faster than 60 minutes
- Tissue compartments tracked up to 24 hours after last dive

**Decompression Capabilities:**
- Decompression stop ceilings at 10, 20, 30, 40, 50, 60 ft (3, 6, 9, 12, 15, 18 m)

**Altitude Algorithm:**
- Based on NOAA tables

## OPERATIONAL MODES

- Activation/Diagnostic

- Surface Sequence:
  - Time of Day
  - Surface Mode
  - Time to Fly Countdown
  - Plan Mode
- Dive Log (Time, Data)

- Set Mode:
  - Units of Measure (Imperial / Metric)
  - Hour Format (12 / 24)
  - Time (Hour, Minute)
  - Water Activation (On/Off)
  - External Access (EA) - factory use

- No Decompression Dive

- Decompression Dive

- Violations:
  - Conditional
  - Delayed
  - Immediate/Gauge

# SPECIFICATIONS (CONTINUED)

## DISPLAY RANGE/RESOLUTION

| **Numeric Displays:** | Range: | Resolution: |
|---|---|---|
| • Dive Number | 0 - 9 | 1 |
| • Depth | 0 - 330 ft (0 - 99.9 m) | 1 ft (.1 m ) |
| • Max Depth | 330 ft (99.9 m) | 1 ft (.1 m ) |
| • Dive Time Remaining | 0:00 - 9:59 hr:min | 1 minute |
| • Total Ascent Time | 0:00 - 9:59 hr:min | 1 minute |
| • Decompression Stop Time | 0:00 - 9:59 hr:min | 1 minute |
| • Elapsed Dive Time | 0:00 - 9:59 hr:min | 1 minute |
| • Surface Time | 0:00 - 23:59 hr:min | 1 minute |
| • Dive Log Surface Interval | 0:00 - 23:59 hr:min | 1 minute |

| **Numeric Displays:** | Range: | Resolution: |
|---|---|---|
| • Time to Fly | 23:50 - 0:00 hr:min* (*starting 10 min after the dive) | 1 minute |

| **Special Displays:** | Occurrence |
|---|---|
| • Diagnostic Display | After Manual Activation |
| • Out of Range (---) | >330 feet (>99.9 meters) |
| • Gauge Mode Countdown Timer | 23:50 to 0:00 hr:min (after violation) |

## BAR GRAPHS

| **Nitrogen Bar Graph:** | segments |
|---|---|
| • No Decompression zone (green) | 5 |
| • No Deco Caution zone (yellow) | 2 |
| • Decompression Warning zone (red) | 1 |

# SPECIFICATIONS (CONTINUED)

## DISPLAY RANGE/RESOLUTION (continued)

**Variable Ascent Rate Indicator:**

| | 60 feet (18 m) & Shallower | | | Deeper than 60 feet (18 m) | | |
|---|---|---|---|---|---|---|
| | segments | feet/min | meters/min | segments | feet/min | meters/min |
| | 0 | 0 - 10 | 0 - 3 | 0 | 0 - 20 | 0 - 6 |
| • Normal Zone (Green) | 1 | 11 - 15 | 3.5 - 4.5 | 1 | 21 - 30 | 6.5 - 9 |
| • Normal Zone (Green) | 2 | 16 - 20 | 5 - 6 | 2 | 31 - 40 | 9.5 - 12 |
| • Normal Zone (Green) | 3 | 21 - 25 | 6.5 - 7.5 | 3 | 41 - 50 | 12.5 - 15 |
| • Caution Zone (Yellow) | 4 | 26 - 30 | 8 - 9 | 4 | 51 - 60 | 15.5 - 18 |
| • Too Fast Zone (Red - flashing) | 5 | > 30 | > 9 | 5 | > 60 | > 18 |

## OPERATIONAL PERFORMANCE

| **Function:** | Accuracy: |
|---|---|
| • Depth | ±1% of full scale |
| • Timers | 1 second per day |

**Dive Counter:**
- Displays Dives #1 to 9, 0 if no dive made yet
- Resets to Dive #1, upon diving (after 24 hours')

**Dive Log Mode:**
- Stores 9 most recent dives in memory for viewing
- After 9 dives, adds 10th dive in memory and deletes the first dive

**Altitude:**
- Operational from sea level to 14,000 feet (4,267 meters) elevation
- Compensates for altitude only if manually activated at that altitude (no compensation if activated by immersion in water)
- Recalibration of depth readings from 'feet of sea water' to 'feet of fresh water' when manually activated at elevations greater higher than 2,000 feet (610 meters) elevation

# SPECIFICATIONS (CONTINUED)

## OPERATIONAL PERFORMANCE (continued)

**Power:**

| | |
|---|---|
| • Battery | 1 - 3 vdc, type CR2450 Lithium battery |
| • Shelf life | Up to 5 years |
| • Replacement | User replaceable (annual recommended) |
| • Life expectancy | 100 dive hours (if 1 - 1 hour dive per dive day) to over 300 dive hours (if 3 - 1 hour dives per dive day) |

**Activation:**

- Manual - push button (recommended)
- Automatic - by immersion in water (as a backup, if set ON)
- Cannot be activated at elevations higher than 14,000 feet (4,267 m)
- Cannot be manually activated below 4 feet (1m), if the Water Activation feature is set OFF).

**Shutoff:**

- Automatically shuts off if no dive is made within 2 hour after manual activation. Reactivation required.
- Automatically shuts off 24 hours after last dive (will reactivate if the H2O graphic is displayed).
- Cannot be shut off manually.

## ACCESSORIES

Optional items available from your Authorized AERIS Dealer:

- Lens Protector (computer module) - adheres to lens face, prevents scratches
- Battery Kit - includes 1 battery, 1 battery hatch o-ring, silicone grease

# GLOSSARY

**Algorithm -** A step-by-step mathematical formula designed to accomplish a particular result (i.e. Dive Time Remaining in the ATMOS 1).
**Alternate Display -** Additional information accessible by pressing a control button.
**Altitude Dive -** A dive made at an elevation above sea level (2,000+ ft. / 610+ m.) where a different set of no decompression tables is used .
**Ascent Rate -** The speed that a diver ascends toward the surface.
**Caution Zone -** The yellow sections of the Nitrogen Bar Graph and Variable Ascent Rate Indicator that give a visual warning of a diver's proximity to decompression limits and ascent rate, respectively.
**Ceiling -** See decompression ceiling.
**Clean Dive -** A dive preceded by 24 hours of no diving activity.
**Competitive Dive -** A dive conducted for profit or prize.
**Compartment -** A term applied to the hypothetical modeling of nitrogen absorption in the tissues (more accurate than the term "tissue" because dive computer models have no direct relation to human tissues).
**DCS -** Abbreviation for decompression sickness, i.e., "the bends".
**DECO -** Abbreviation for Decompression.
**Decompression Ceiling -** The shallowest depth a diver may reach upon ascent without risking decompression sickness.
**Decompression Stop -** The depth(s) at which a diver must pause during ascent to allow absorbed nitrogen to escape naturally from the tissues.
**Depth Sensor -** an electro-mechanical device that converts water pressure into an electrical signal, that is converted to a visual depth display.
**Diagnostic Mode -** The first display seen on dive computers after initial activation during which time a self-check for internal faults is performed.
**Display -** A visual readout of information.
**Dive Log Mode -** A computer display of previous dive information.
**Dive Time Remaining -** A display of the time before a diver must surface based on no decompression status.
**Elapsed Dive Time -** The total time spent underwater during a dive between 5 feet (1.5 meters) on initial descent to 3 feet (1 meter) on final ascent.

# GLOSSARY (CONTINUED)

**Icon -** a small pictorial representation of an operational mode
**LCD -** Abbreviation for liquid crystal display, an easily viewed low voltage display usually found on dive computers
**Maximum Depth -** The deepest depth attained during a dive.
**Mode -** A specific set of functions in a dive computer.
**Multi-level Dive -** A type of dive profile where the diver spends various times at different depths (opposite of a "Square Wave" dive profile).
**Nitrogen Bar Graph -** A graphic display of simulated nitrogen absorption on AERIS dive computers.
**NOAA -** Abbreviation for National Oceanic and Atmospheric Administration.
**No Deco -** Abbreviation for No Decompression.
**No Deco Time Remaining -** The amount of dive time remaining based on no-decompression status.
**No Decompression -** Any part of a dive where the diver can surface without requiring a decompression stop.
**Out of Range -** The point at which a dive computer can no longer supply correct dive information.
**Plan Mode -** A display of available dive times at 10 foot (3 meter) intervals from 30 to 160 feet. (9 to 48 meters) used when dive planning.
**Repetitive Dive -** Any dive that takes place within 12 hours of a previous dive.
**Safety Stop -** A depth at which a diver may choose, but is not required, to pause during ascent to allow absorbed nitrogen to escape naturally from the tissues.
**Square Wave Dive -** A type of dive profile where the entire dive is spent at one depth between descent and ascent.
**Tissue -** See Compartment.
**Tissue Compartment -** See Compartment.
**Transducer -** An electro-mechanical device in a dive computer that acts as a depth or pressure sensor.
**Transition Period -** The first 10 minutes of surface time after ascending above 3 feet (1 meter) from a dive.
**Variable Ascent Rate Indicator -** A display that shows ascent rate as a bar graph alongside a color coded indicator.

# SERVICE RECORD

**Serial Number** _____

**Date of purchase** _____

**Purchased from** _____


**Below to be filled in by an Authorized AERIS Dealer:**

| Date | Service Performed | Dealer / Technician |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
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