OCEANIC®

INNOVATION FIRST

VEO 1.0 OPERATING MANUAL

CONTENTS

Contents (continued) -

Contents (continued) -

Pay special attention to items marked with this Warning symbol.

LIMITED TWO-YEAR WARRANTY

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

COPYRIGHT NOTICE

VEO 1.0 Operating Manual, Doc. No. 12-5207
©2002 Design, 2009
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 Variable 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).

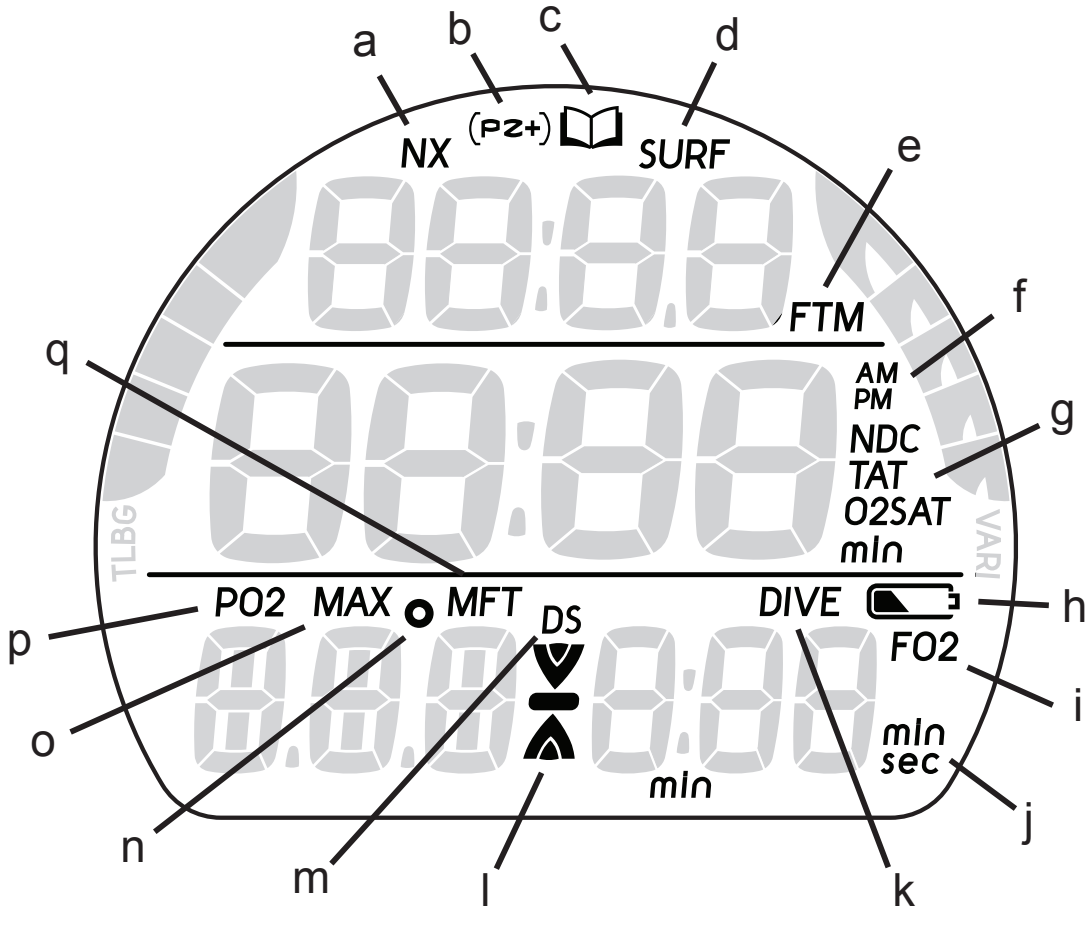
DECOMPRESSION MODEL

The programs within the VEO 1.0 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 VEO 1.0 dive computer model is based upon the latest research and experiments in decompression theory. **Still, using the VEO 1.0, 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.

Welcome to
OCEANIC
and
THANK YOU
for choosing the
VEO 1.0

FEATURES/DISPLAYS

DISPLAY LAYOUT



Icons:

a. FO2 set for Nitrox
b. Algorithm set for Pelagic Z+
c. Log Mode
d. Surface Interval
e. Depth units
f. Time of day (hr:min)
g. Time (all minutes) -
   NDC = No Deco
   TAT = Deco Total Ascent
   O2 = O2 Time Remaining
   O2SAT = %O2
h. Low Battery
i. Value is FO2
j. Time values
k. Dive # or Dive time
l. Descend, Stop, Ascend
m. Deep Stop triggered
n. Value is Temperature
o. Value is Maximum
p. Value is PO2 level
q. Depth units

CONTROL BUTTON

The Control Button allows you to select display options and access specific information when you want to see it.

BAR GRAPHS

TLBG (Tissue Loading Bar Graph)

The TLBG (Fig. 1a) 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 TLBG, and as you ascend to shallower depths, the segments will begin to recede, indicating that additional no decompression time is allowed for multilevel diving.

The TLBG monitors 12 different nitrogen compartments simultaneously and displays the one that is in control of your dive.

It is divided into a No Decompression zone (up to 3 segments displayed), a Caution zone (4 segments displayed, also No Deco), and a Decompression zone (all 5 segments displayed).

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.

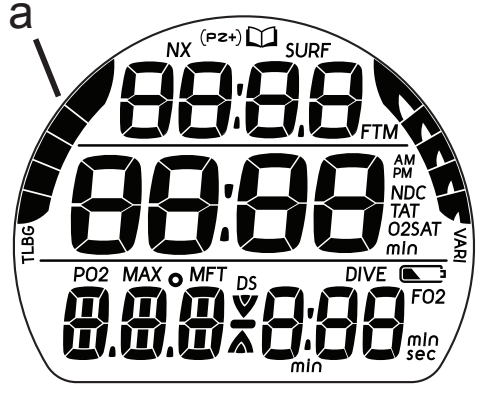


Fig. 1 - TLBG

VARI (Variable Ascent Rate Indicator)

The VARI (Fig. 2a) provides a visual representation of ascent speed (i.e., an ascent speedometer).

The segments of the VARI represent two sets of speeds which change at a reference depth of 60 FT (18 M). Refer to the chart for segment values.

WARNING: At depths greater than 60 FT (18 M), ascent rates should not exceed 60 FPM (18 MPM). At depths of 60 FT (18 M) and shallower, ascent rates should not exceed 30 FPM (9 MPM).

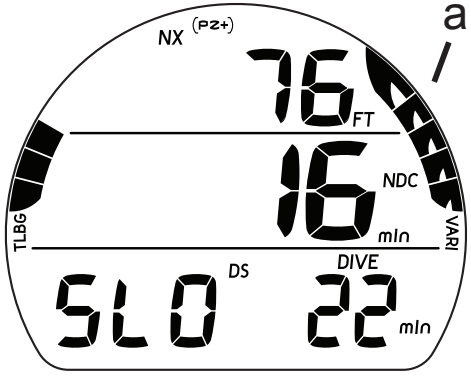


Fig. 2 - VARI

Deeper than 60 FT (18 M)			60 FT (18 M) & Shallower		
VARI	Ascent Rate		VARI	Ascent Rate	
Segments	FPM	MPM	Segments	FPM	MPM
0	0 - 20	0 - 6	0	0 - 10	0 - 3
1	21 - 30	6.1 - 9	1	11 - 15	3.1 - 4.5
2	31 - 40	9.1 - 12	2	16 - 20	4.6 - 6
3	41 - 50	12.1 - 15	3	21 - 25	6.1 - 7.5
4	51 - 60	15.1 - 18	4	26 - 30	7.6 - 9
5	60 +	18 +	5	30 +	9 +

ALPHA / NUMERIC DISPLAYS

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.

Current Depth (Fig. 3a) and Max Depth (Fig. 3b) are both displayed from 0 to 330 FT (100 M) in 1 FT (.1 M) increments on the Main Dive screens.

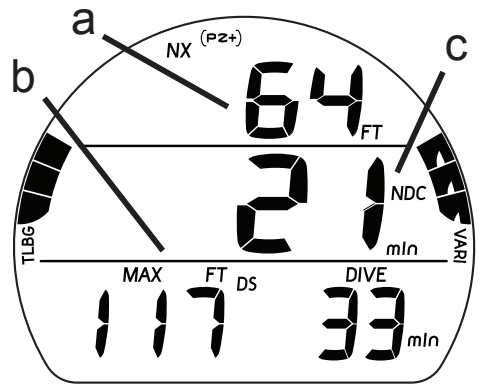


Fig. 3 - NO DECO DIVE MAIN

During cautionary situations and while at Stops (Deep, Safety, or Deco), Max Depth is replaced with more critical information such as Stop Depth (Fig. 4a), and can be seen by temporarily accessing an Alternate screen (Fig. 5a).

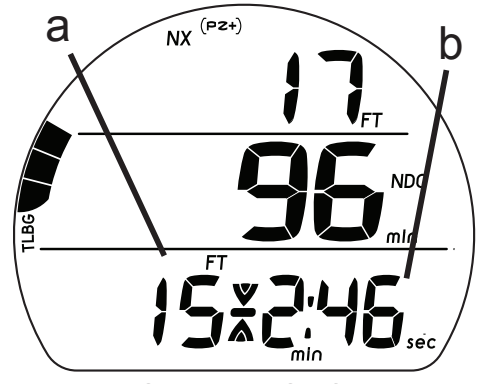


Fig. 4 - SAFETY STOP MAIN

Time displays are shown in various formats.

- Minute only - Dive Time Remaining (Fig. 3c), Elapsed Dive Time, Deco Stop.
- Minute:Second - Deep Stop, Safety Stop (Fig. 4b).
- Hour:Minute - Time of Day, Surface Interval.

To help differentiate between the formats used, min and sec icons are displayed with applicable times.

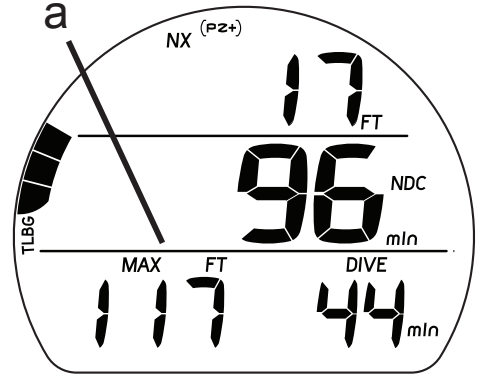


Fig. 5 - SAFETY STOP ALT1

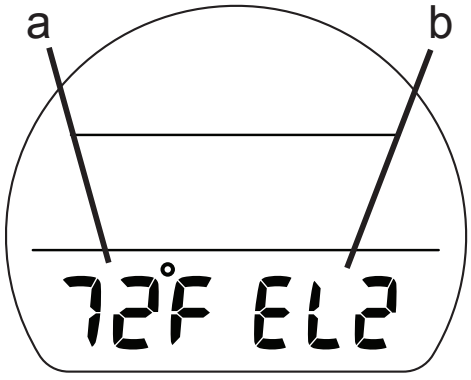


Fig. 6 - SURFACE ALT2

Ambient Temperature (Fig. 6a) can be viewed by accessing an Alternate screen while on the surface or during dives.

Altitude (Fig. 6b) is also displayed on the Alternate screen when at elevations above 3,000 feet. Altitude is not displayed at Sea level, which extends up to 3,000 feet elevation.

Altitude ranges displayed include -

EL2 - 3,001 to 5,000 feet (EL = Elevation Level)
EL3 - 5,001 to 7,000 feet
EL4 - 7,001 to 9,000 feet
EL5 - 9,001 to 11,000 feet
EL6 - 11,001 to 13,000 feet
EL7 - 13,001 feet and above

POWER SUPPLY

The VEO 1.0 utilizes one (1) type CR 2450 Lithium 3 volt cell.

Expected use life is approximately 100 hours if (1) 1 hour dive per day is conducted each time the unit is activated, up to 300 hours if (3) 1 hour dives per day are conducted.

Low Battery

Voltage level is checked upon activation and every minute during operation on the surface.

- When voltage decreases to the warning level (2.75 volts), the icon is displayed solid on the Surface Main (Fig. 7a).
- Upon decreasing to a voltage level that will no longer sustain proper operation (2.50 volts), the icon will flash 5 times and the unit will shut off.
- If a low battery condition exists when the unit is activated (by pressing the button), the graphic bAT and the icon will appear flashing for 5 seconds and the unit will shut off.
- If the button is not pressed to activate the unit prior to a dive, and a low battery condition exists, the icon will appear flashing as a warning upon descent to 5 FT (1.5 M) and no other information will be displayed.
- If a low battery condition occurs during a dive, there will be sufficient battery power to maintain operation for the remainder of that dive. The icon will appear, with the graphics CHG and BAT alternating (Fig. 8), after the dive when operation enters Surface Mode.

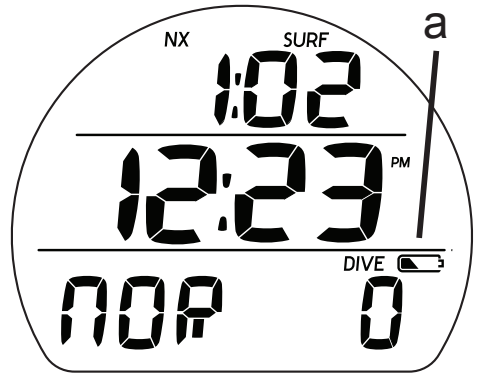


Fig. 7 - LOW BATTERY WARNING

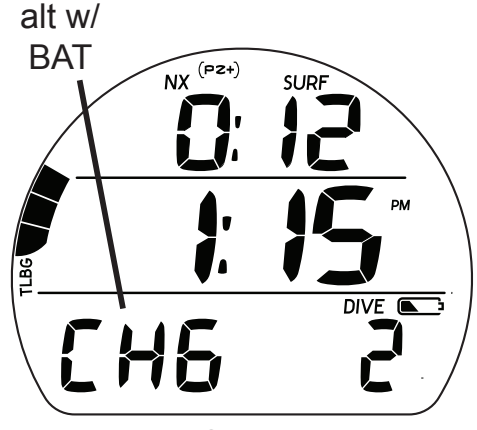


Fig. 8 - LOW BATTERY (occurred during dive)

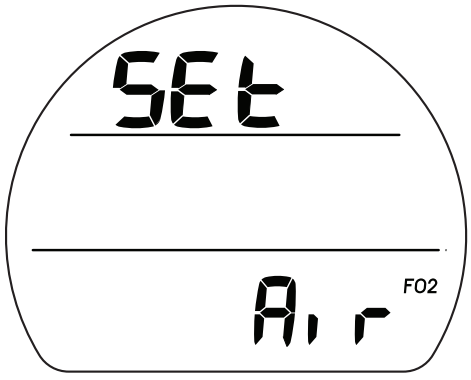


Fig. 9 - FO2 AIR

FO2 MODE

After Activation, the VEO 1.0 will operate as an Air computer without displaying information associated with oxygen calculations, unless it is set for a percentage of oxygen (FO2) other than Air (a numerical value between 21 and 50 %).

When set for Air (Fig. 9), the VEO 1.0 will perform calculations the same as if FO2 were set for 21% oxygen, internally accounting for oxygen loading for any subsequent Nitrox dives. However, oxygen related displays and warnings will not appear on the display for that dive, or subsequent dives, unless FO2 is set for a numerical value (21 to 50).

Once a dive is made with the unit set as a Nitrox computer (FO2 set for a numerical value), it cannot be programmed to operate as an Air computer until 24 hours after the last dive. Air will not be displayed as a set option, however, you can set FO2 for 21% for use with Air.

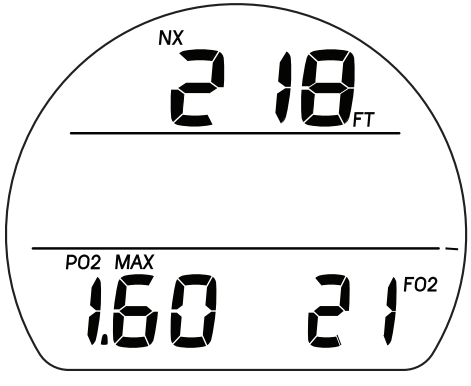


Fig. 10 - FO2 21%

When FO2 is set at a value of 21% (Fig. 10), the unit will remain set at 21% for subsequent nitrox dives until FO2 is set to a higher value, or until it automatically turns off and is reactivated.

FO2 50% Default

If the Default is turned On and FO2 is set to a value greater than 21%, the FO2 Set Point will automatically revert to 50(%) 10 minutes after that dive.

FO2 must therefore be reset for each repetitive Nitrox dive, or the value will automatically keep defaulting to 50(%) and the dives will be calculated based on 50% O2 (50% nitrogen) for oxygen calculations and 21% O2 (79% nitrogen) for nitrogen calculations.

If the Default is set to Off (Fig. 11), the FO2 value for repetitive dives remains the same as previously set until it is changed.

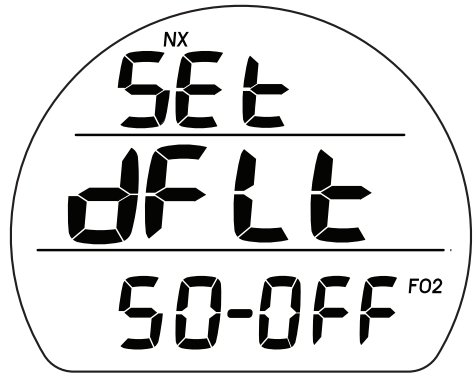


Fig. 11 - FO2 DEFAULT OFF

SURFACE MENU SELECTIONS:

- **Log (Data 1, 2, 3)**
- **Fly/Sat (hr:min)**
- **Plan (depths/times)**
- **Set FO2 (Air, 21 to 50%)**
- **Set FO2 Default (Off/On)**
- **Set PO2 Alarm (1.20 to 1.60 ATA)**
- **Set Wet Activation (On/Off)**
- **Set Units (Imperial/Metric)**
- **Set Deep Stop (On/Off)**
- **Set Algorithm (DSAT/PZ+)**
- **Set Hour Format (12/24)**
- **Set Time of Day (hr:min)**
- **Serial Number**

ACTIVATION/SETUP

ACTIVATION

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

To Activate the VEO 1.0, press and release the Button.

- The unit will enter Diagnostic mode (Fig. 12), displaying all segments of the LCD as 8's, followed by dashes (- -), then a countdown from 9 to 0. The display and battery voltage to ensure that everything is within tolerance and functioning properly.
- After manual activation, it will also check the ambient barometric pressure, and calibrate its present depth as zero. Beginning at elevations of 3,001 feet (916 meters), it will recalibrate depth and adjust calculations every 2,000 feet (610 meters).

The VEO 1.0 will also automatically activate by water contact. This is accomplished by bridging the gap between contacts located on the button and case.

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.

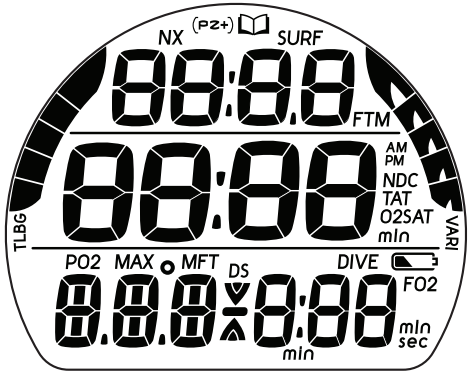


Fig. 12 - Diagnostic Mode

SURF MAIN, information includes (Fig. 13):

> Surface Interval time (hr:min) with SURF icon; if no dive yet, this is time since activation
> Time of Day (hr:min) with AM or PM icon if 12 Hour Format; no icon if 24 Hour Format
> Graphic NOR (indicates Normal mode)
> Dive number with DIVE icon, up to 12 for that operating period (0 if no dive made yet)
> NX icon, if FO2 is set for Nitrox
> (PZ+) icon, if selected, no icon if DSAT is selected
> TLBG with icon, if any after a dive
> Battery icon, if voltage is low

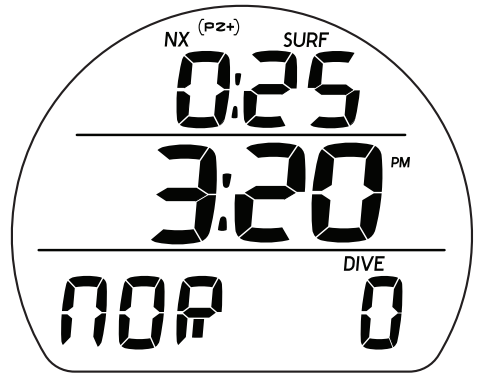


Fig. 13 - SURFACE MAIN
(no dive yet)

- B (< 2 sec) to access ALT 1.
- B (2 sec) to access Log mode, then step forward through other Surface Menu items.

Upon surfacing during dives, the Dive Main will remain on display for the first 10 minutes with Surface Interval in place of Depth (Fig. 14) after which the Surface Main will be displayed.

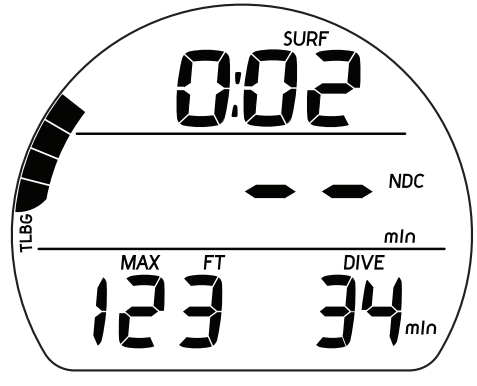


Fig. 14 - DIVE MAIN
(< 10 min on surface)

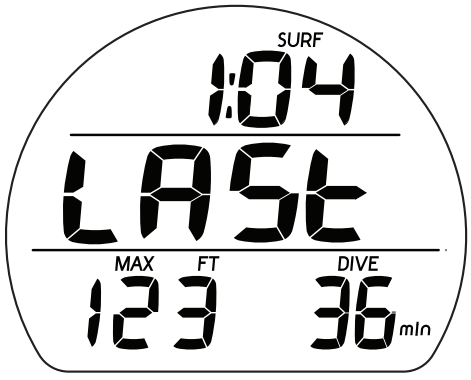


Fig. 15 - SURFACE ALT 1
(Last dive's data)

SURF ALT 1 (Last), information includes (Fig. 15):

> Surface Interval time (hr:min) with SURF icon; prior to dive previously made while still activated
> Graphic LASt
> Max Depth of dive previously made while still activated (3 dashes if MOD exceeded) with MAX and FT (or M) icons
> Elapsed Dive Time of dive previously made while still activated with DIVE and min icons, up to 999 minutes

- B (< 2 sec) to access ALT 2.
- Reverts to Main in 5 seconds if B is not pressed.

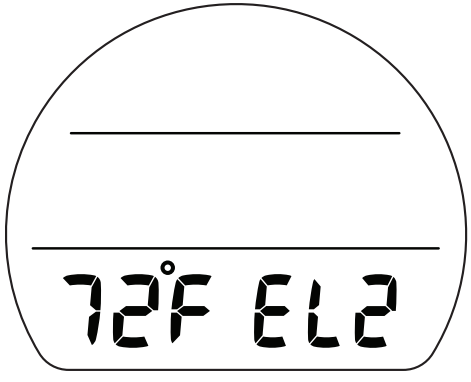


Fig. 16 - SURFACE ALT 2

SURF ALT 2, information includes (Fig. 16):

> Temperature with ° icon and graphic F (or C)
> Altitude graphic EL2 (to EL7), blank if Sea level

- B (< 2 sec) to access ALT 3.
- Reverts to Main in 5 seconds if B is not pressed.

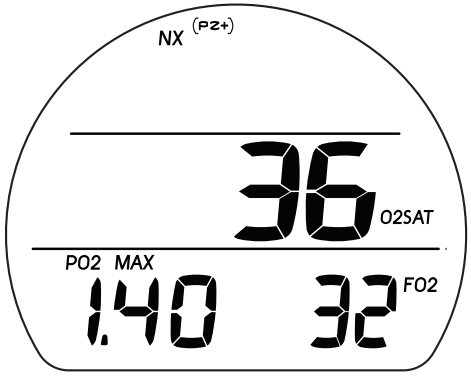


Fig. 17 - SURFACE ALT 3

SURF ALT 3, information includes (Fig. 17):

> Current %O2 with O2SAT icon
> Current PO2 alarm setting with PO2 and MAX icons
> Current FO2 setting (Air or %) with FO2 icon

- B (< 2 sec) to revert to Main.
- Reverts to Main in 5 seconds if B is not pressed.

LOG MODE

The VEO 1.0 will store up to 12 dives in its Log for viewing.

Each dive has 2 or 3 Log screens - Preview, Dive Data, and O2 Data (if a Nitrox dive).

Once the Log is full (12 dives recorded), each subsequent dive will then over write the oldest dive stored. It is suggested that you transfer the Log's data to your log book at the end of each day of diving.

Log data will not be lost when the battery is removed/replaced, however, factory service and calibration will delete the data.

The first dive conducted each time the unit is activated 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 one stored. The most recent dive will always be the first shown in the sequence.

Log Mode can be accessed after activation, prior to the first dive, and 10 minutes after surfacing from dives. It cannot be accessed during the first 10 minutes on the surface.

To access Log mode and the most recent dive's Preview screen, depress the button for 2 seconds while viewing the Surface Main screen.

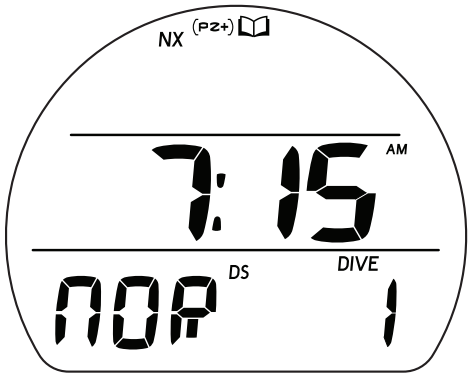


Fig. 18 - LOG PREVIEW

Log Preview, information includes (Fig. 18) -

> Log (book) icon
> PZ+, NX, DS icons - if they apply
> Time of day the dive began with AM (or PM) icon if 12 Hour Format, no icon if 24 Hour
> Graphic NOR (or VIO),
> Dive number (1 to 12) for that activation period

- B (< 2 sec) to access Log Data 1.
- B (2 sec) to access Fly/Sat, then step forward through other Surface Menu items.

Log Data 1, information includes (Fig. 19) -

> Log (book) icon
> PZ+, NX, DS icons - if they apply
> Pre dive Surface Interval (hr:min) with SURF icon
> Max Depth with MAX and FT (or M) icons
> Elapsed Dive Time with DIVE and min icons
> VARI, indicating the max ascent rate sustained for 4 consecutive seconds during the dive
> TLBG, max accumulated segment flashing, others fixd up to end of dive accumulation. All 5 flashing if Violation.

- B (< 2 sec) to access Log Data 2.
- B (2 sec) to access Fly/Sat.

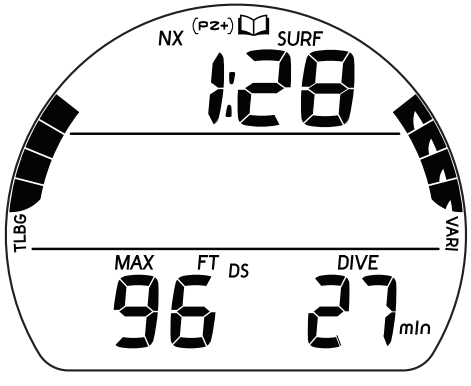


Fig. 19 - LOG DATA 1

Log Data 2, information includes (Fig. 20) -

> Log (book) icon
> Temperature with ° icon and graphic F (or C)
> Altitude graphic SEA (or EL2 to EL7)

- B (< 2 sec) to access Log Data 3 (if Nitrox) or the previous dive's Log Preview screen (if Air).
- B (2 sec) to access Fly/Sat.

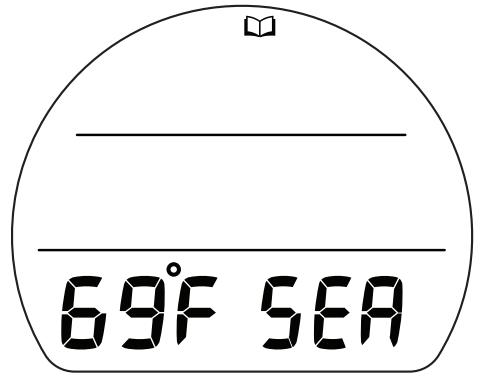


Fig. 20 - LOG DATA 2

Log Data 3 (only if Nitrox), information includes (Fig. 21) -

> Log (book) icon
> PZ+ (if it applies), NX icons
> O2 accumulation (%) at end of dive with O2SAT icon
> Highest PO2 value during dive with MAX and PO2 icons
> FO2 setting (Air or 21 to 50)

- B (< 2 sec) to access the previous dive's Log Preview, or revrt to the Main after the last screen available.
- B (2 sec) to access Fly/Sat.

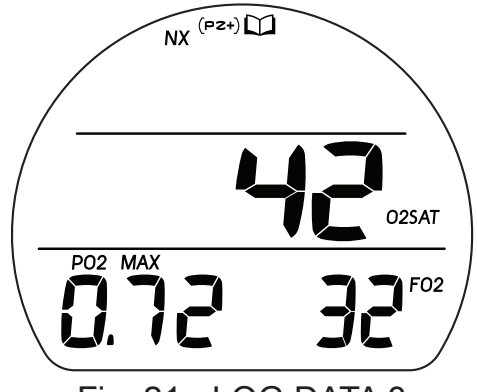


Fig. 21 - LOG DATA 3

Fig. 22A - FLY/SAT TIME
(hr:min times shown)

FLY/SAT TIME

Time to Fly is a countdown timer that begins counting down from 23:50 to 0:00 (hr:min) 10 minutes after surfacing from a dive.

Time to Dsaturate, also a countdown timer, provides calculated time for tissue desaturation (Dsat) at sea level. It also begins counting down 10 minutes after surfacing from a dive, counting down from a maximum of 23 to 10 (hr), then 9:59 to 0:00 (hr:min).

It generally starts at times much lower than 23 hours and reaches 0:00 prior to the Fly countdown reaches 0:00.

> When other screens are displayed while on the surface, the countdowns continue in the background.
> SAT is not displayed after a Violation dive.
> In the event that Time to Dsaturate still remains at the end of 24 hours, any remaining time will be cleared.

Fig. 22B - FLY/DSAT TIME
(no Dsat time remaining)

Fly/Sat, information includes (Fig. 22A, B):

> Graphic FLY with Time to Fly (hr:min), - : - - if no dive yet
> Graphic SAT with Dsaturate Time (hr:min, hr only if => 10), - : - - if no dive yet, 0:00 if no time remaining

- B (2 sec) to access Plan, then step forward through other menu items.

PLAN MODE

No Deco Dive Times (NDLs/OTLs) in Plan Mode are based on -

> the algorithm selected (DSAT or PZ+)
> the FO2 set
> any residual nitrogen or oxygen remaining from previous dives

Plan Lead-in, information includes (Fig. 23A, B):

> Graphic PLAN
> PO2 alarm value set (ATA) with PO2 icon, blank if Air
> FO2 Set Point, graphic Air or numeric value (21 to 50), with FO2 icon
> NX icon, blank if Air
> (PZ+) icon, if selected, no icon if DSAT is selected

- B (< 2 sec) to access PDPS.
- B (2 sec) to step forward to Set FO2, then other Menu items.

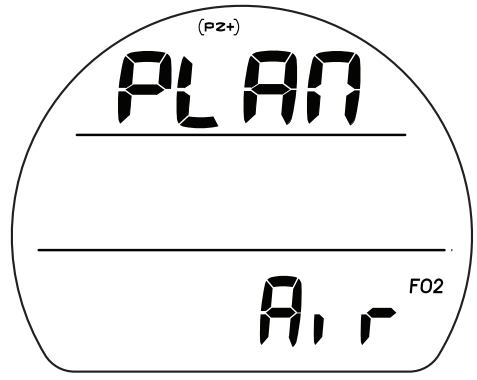


Fig. 23A - PLAN LEAD-IN
(FO2 set for Air)

*If less then 1 minute time is available, dashes will be displayed for time, and Depth values will flash.

PDPS (Pre Dive Planning Sequence)

The PDPS displays Depths and allowable No Deco Dive Times (up to 999 minutes), NDC (nitrogen) or O2 time, whichever is in control. It will sequence through PDPS screens displaying Depths from 30 to 190 FT (9 to 57 M) with Plan times* based upon the previous dive profiles in a series of repetitive dives and taking into account descent and ascent rates of 60 FPM (18 MPM).

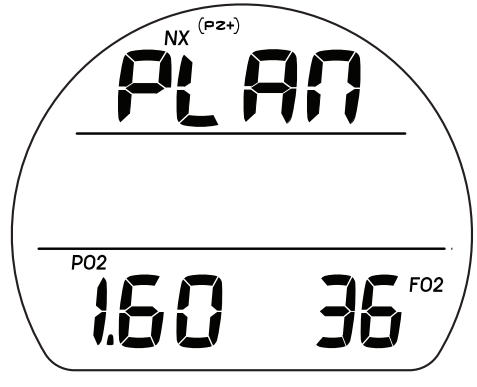


Fig. 23B - PLAN LEAD-IN
(FO2 set for Nitrox)

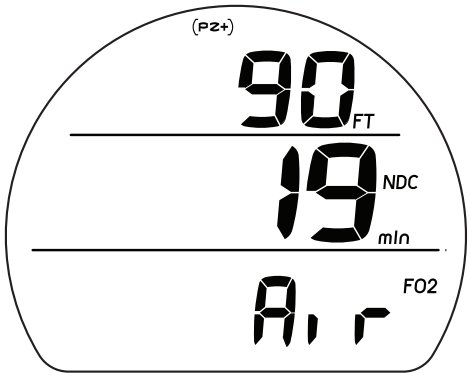


Fig. 24 - PDPS
(FO2 set for Air)

PDPS, information includes (Fig. 24A, B):

> Plan Depth value with FT (or M) icon
> Dive Time allowed with NDC (or O2) and min icons
> Max Depth allowed for the PO2 alarm value set with MAX and FT (or M) icons, blank set for Air
> FO2 Set Point, graphic Air or numeric value (21 to 50), with FO2 icon
> (PZ+) icon, if selected, no icon if Dsat is selected
> NX icon, blank if Air

- B (< 2 sec repeatedly) to step upward through PDPS screens one at a time from 30 to 190 FT (9 to 57 M) in increments of 10 FT (3 M), continuing the step through until exit from the PDPS.
- B (2 sec), at any time, to exit the PDPS and revert to the Plan Lead-in screen.

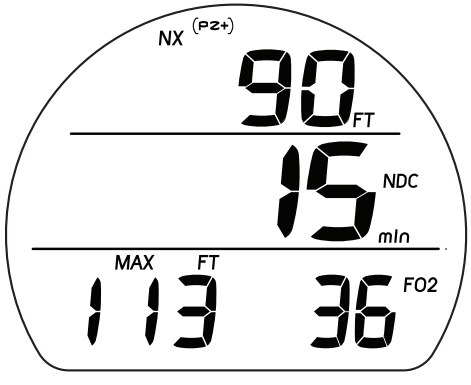


Fig. 24 - PDPS
(FO2 set for Nitrox)

FO2 MODE

FO2 and the FO2 50% Default are described on pages 14/15.

To access Set FO2, depress B for 2 seconds while the Plan Lead-in screen is displayed or 4 times while viewing Surface Main.

SURF Main >> Log >> Fly >> Plan >> Set FO2

SET FO2, information includes (Fig. 25A, B):

> Graphic SEt if Air; or Max Depth allowed for the PO2 alarm set with FT (or M) and NX icons if Nitrox
> PO2 alarm value set (ATA) with PO2 and MAX icons, blank if Air
> Graphic Air, or numeric FO2 Set Point value if Nitrox, flashing, with FO2 icon

- B (< 2 sec repeatedly) to step upward through Set Points one at a time from Air to 21 through 50 (%) in increments of 1(%).
- B (2 sec) to save the setting and access Set FO2 Default.

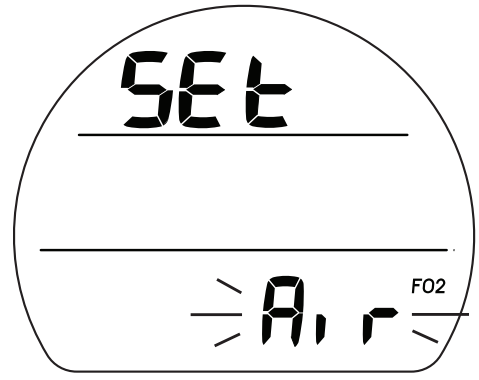


Fig. 25A - SET FO2
(Air setting)

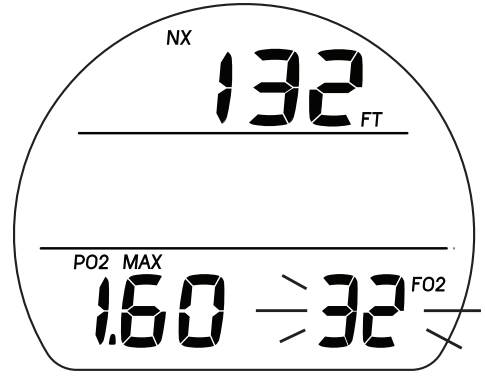


Fig. 25B - SET FO2
(Nitrox setting)

SET FO2 DEFAULT, information includes (Fig. 26):

> Graphics SEt, dFLt, and 50 -
> Graphics OFF (or ON) flashing
> NX and FO2 icons

- B (< 2 sec) to toggle between OFF and ON.
- B (2 sec) to save the setting and access Set PO2 Alarm.

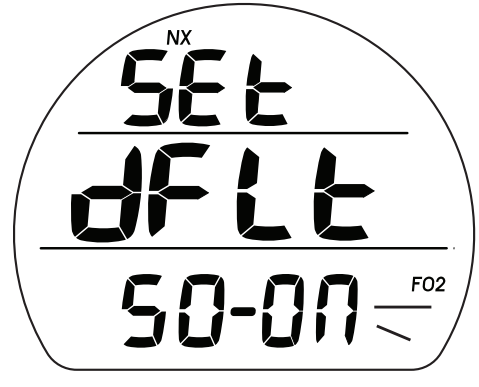


Fig. 26 - SET FO2 DEFAULT

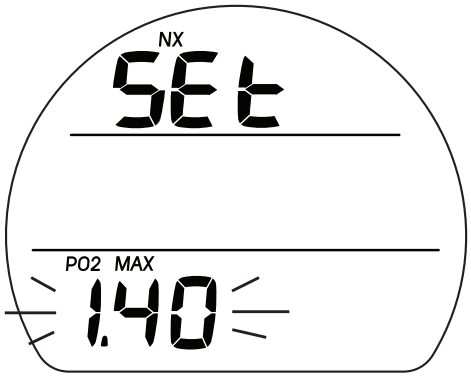


Fig. 27 - SET PO2 ALARM

SET PO2 ALARM, information includes (Fig. 27):

> Graphic SEt with NX icon
> Set Point value (ATA) flashing with PO2 and MAX icons

- B (< 2 sec) to step upward through Set Points from 1.20 to 1.60 one at a time.
- B (2 sec) to save the setting and access Set Wet Activation.

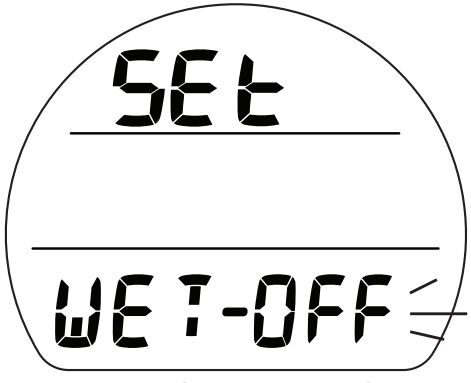


Fig. 28 - SET WET ACTIV

SET WET ACTIVATION, information includes (Fig. 28):

> Graphics SEt and WET -
> Set Point ON (or OFF) flashing

- B (< 2 sec) to toggle between OFF and ON.
- B (2 sec) to save the setting and access Set Units.

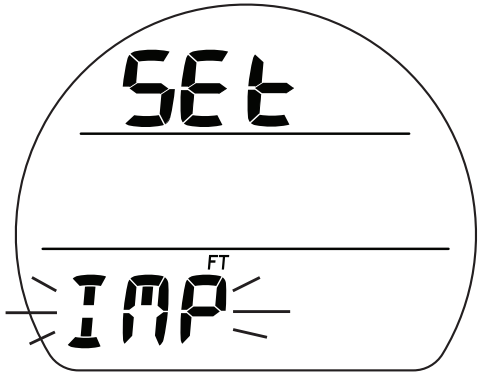


Fig. 29 - SET UNITS

SET UNITS, information includes (Fig. 29):

> Graphic SEt
> Set Point IMP (Imperial) or MET (Metric) flashing with FT (or M) icon

- B (< 2 sec) to toggle between IMP and MET.
- B (2 sec) to save the setting and access Set DS.

SET DEEP STOP (DS), information includes (Fig. 30):

> Graphics SEt and DS with DS and Stop arrow/bar icons
> Set Point ON (or OFF) flashing

- B (< 2 sec) to toggle between OFF and ON.
- B (2 sec) to save the setting and access Set Algorithm.

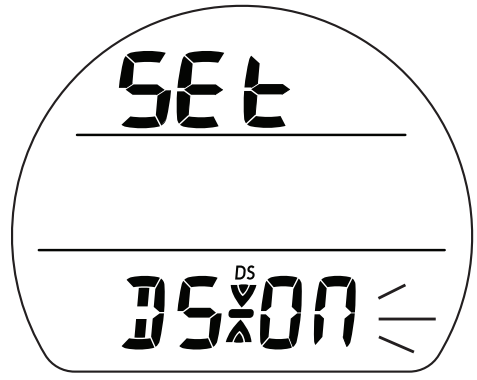


Fig. 30 - SET DEEP STOP

SET ALGORITHM, information includes (Fig. 31):

> Graphics SEt and ALGO
> Set Point graphic PZ+ (or DSAT) flashing

- B (< 2 sec) to toggle between PZ+ and DSAT.
- B (2 sec) to save the setting and access Set Hour Format.

This feature allows selection of the algorithm to be used for nitrogen and oxygen calculations for Plan and DTR values. The setting locks in for 24 hours after dives.

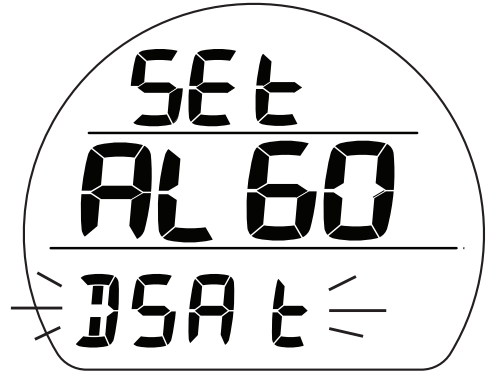


Fig. 31 - SET ALGORITHM

SET HOUR FORMAT, information includes (Fig. 32):

> Graphics SEt and HR -
> Set Point 12 (or 24) flashing

- B (< 2 sec) to toggle between 12 and 24.
- B (2 sec) to save Set Point and access Set Time.

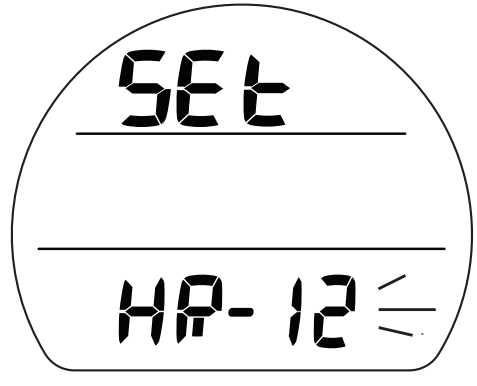


Fig. 32 - SET HOUR FORMAT

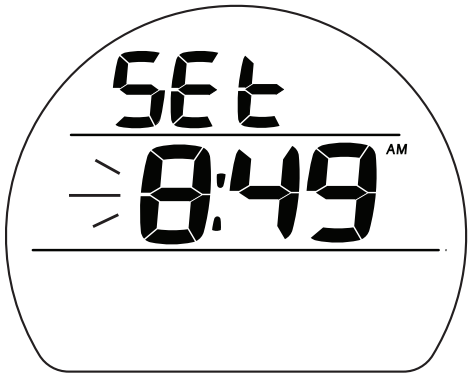


Fig. 33 - SET TIME

SET TIME, information includes (Fig. 33):

> Graphic SEt

> Time of Day (hr:min), Hour digits flashing, with AM (or PM) icon if 12 Hour Format, no icon if 24 Hour Format

- B (< 2 sec repeatedly) to step upward through Hour Set Points one at a time from 12: (AM) to 11: (PM), or 0: to 23: if 24 Hour Format, in increments of 1: (hr).
- B (2 sec) to save the Hour Set Point and flash the Minute digits.
- B (< 2 sec repeatedly) to step upward through Minute Set Points one at time from :00 to :59 in increments of :01 (min).
- B (2 sec) to save the Time Set Point and access SN.
- S (2 sec) to revert to Set Hour Format.

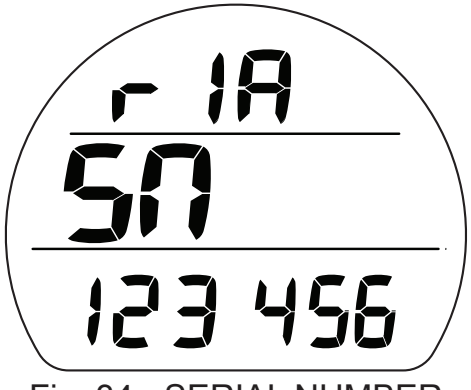


Fig. 34 - SERIAL NUMBER

SERIAL NUMBER

Information displayed on this screen should be recorded and kept with your sales receipt, it will be required in the event that your VEO requires factory service.

Serial Number, information includes (Fig. 34):

> Graphic r1A (or higher), indicating the revision level of the firmware (VEO's operating software)

> Graphic SN with the factory programmed serial number

- B (2 sec) to step forward to Surface Main.
- B (< 2 sec) to access Clear (Reset).

CLEAR (RESET)

The VEO is configured with a feature that allows data to be cleared, including nitrogen and oxygen calculations and Log entries. This is intended for facilities using the VEO for rental or training activities, not for general use by individual divers.

WARNING: Reset after a dive and subsequent use for a repetitive dive conducted by the same diver could result in serious injury or death.

Upon access, a factory assigned code number is displayed with the graphics CLR and id, all solid (Fig. 34).

Reset procedure:

- B (2 sec) to start the first 2 digits (left) flashing.
- B (< 2 sec repeatedly) shall step upward through the first digits (left) one at a time.
- B (2 sec) shall save the first 2 digits (left) and the second 2 digits (right) shall flash.
- B (< 2 sec repeatedly) shall step upward through the second digits (right).
- B (2 sec) shall save the Reset Code, Clear the unit, and turn it Off.

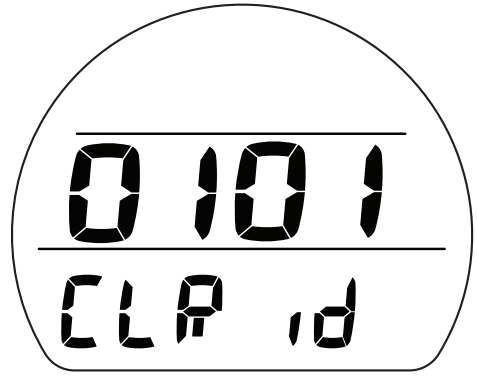


Fig. 34 - SERIAL NUMBER

DIVE MODE FEATURES

ALGORITHM

The VEO is configured with 2 algorithms which allows you to choose which set of NDLs (No Deco Limits) will be used for nitrogen/oxygen calculations and displays relating to Plan and DTR (Dive Time Remaining).

You can select to use either the DSAT or the PZ+. The selection will lock in for 24 hours after the last dive.

DSAT has been the standard used by Oceanic in all of its dive computers until this time. It features NDLs that are based on exposures and test data which also formed validation for the PADI RDP. It imposes restrictions for repetitive Deco dives, considered more risky.

PZ+ (Pelagic Z+) performance is based on Buhlmann ZHL-16c. It features NDLs that are considerably more conservative especially at shallower depths.

To create even greater margins of safety with respect to decompression, No Deco Deep and Safety Stops can be included for No Deco dives.

DEEP STOP (DS), No Deco only

When the DS selection is set On, it will trigger during No Deco dives when you descend to 80 FT (24 M), then calculate (and continually update) a Stop Depth equal to 1/2 the Max Depth.

While 10 FT (3 M) deeper than the calculated DS, you will be able to access a DS Preview screen that will display the current DS Stop Depth/Time.

Upon initial ascent to within 10 FT (3 M) below the calculated Stop Depth, a DS screen displaying a Stop Depth at 1/2 the Max Depth will appear with a Countdown Timer beginning at 2:00 (min:sec) and counting down to 0:00.

> If you descend 10 FT (3 M) below, or ascend 10 FT (3 M) above, the calculated Stop Depth for 10 seconds during the countdown, the No Deco Main will replace the DS Main display and the DS feature will be disabled for the remainder of that dive. There is no Penalty if the DS is ignored.
> In the event that you enter Deco, exceed 190 FT (57 M), or a High O2 condition (=> 80%) occurs, the DS will be disabled for the remainder of that dive.
> The DS is disabled during a High PO2 Alarm condition (=> Set Point).

SAFETY STOP (SS), No Deco only

Upon ascent to 20 FT (2 M) for 1 second on a No Deco dive in which Depth exceeded 30 FT (9 M) for 1 second, a SS screen will appear an the Main display with a countdown beginning at 3:00 (min:sec).

- In the event that you descend 30 FT (9 M) for 10 seconds during the countdown, or the countdown reaches 0:00, the No Deco Main screen will replace the SS Main screen which will reappear upon ascent to 20 FT (3 M) for 1 second.
- In the event that you enter Deco during the dive, complete the Deco obligation, then descend below 30 FT (9 M); the SS Main will appear again upon ascent to 20 FT (2 M) for 1 second.
- If you ascend to 18 FT (7 M) for 10 seconds prior to completing it, the SS will be canceled for the remainder of that dive.
- There is no Penalty if you surface prior to completing the SS or ignore it.

DTR (DIVE TIME REMAINING)

The VEO constantly monitors No Deco status and O2 Accumulation, and will display whichever Time is the least amount available as DTR on the No Deco Dive Main screen. The Time being displayed will be identified by the NDC or O2 icon.

NDC (No Deco DTR)

NDC is the maximum amount of time that you can stay at your present Depth before entering Deco. It is calculated based on the amount of nitrogen absorbed by hypothetical tissue compartments.

The rates each of these compartments absorb and release nitrogen is mathematically modeled and compared against a maximum allowable nitrogen level.

Whichever one is closest to this maximum level is the controlling compartment for that Depth. Its resulting value (NDC) will be displayed as DTR (Fig. 35a). It will also be displayed graphically as the TLBG (Fig. 35b).

As you ascend, the TLBG segments will recede as control shifts to slower compartments. This is a feature of the decompression model that is the basis for multilevel diving, one of the most important advantages that Oceanic dive computers offer.

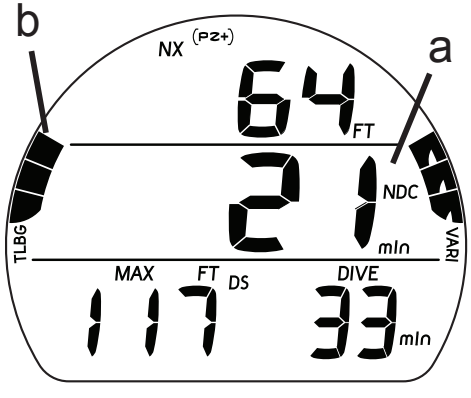


Fig. 35 - DTR (NDC)

OTR (O2 DTR)

When set for Nitrox operation, O2 during a dive is displayed on an ALT screen as a % of allowed saturation (Fig. 36a) identified by the O2SAT icons.

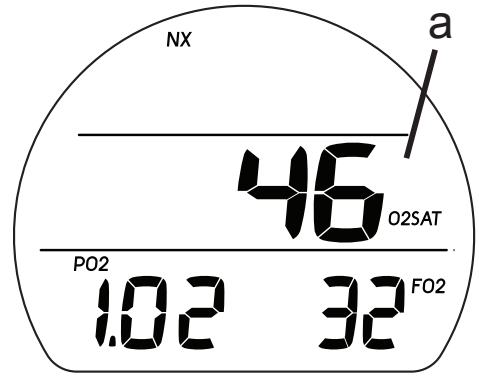


Fig. 36 - DIVE ALT 3

The limit for O2 exposure (100%) is set at 300 OTU (oxygen tolerance units) per dive or 24 hour period. As time before reaching the limit decreases, % O2 increases and OTR (O2 DTR) decreases.

When OTR becomes less than the NDC, calculations for the dive will be controlled by O2 and OTR will be displayed as DTR on the Main (Fig. 37a), identified by the O2 and min icons.

OXYGEN EXPOSURE LIMITS
(from NOAA Diving Manual)

PO2	Max Duration Single Exposure		Max Total Duration 24 Hour Day	
(ATA)	(min)	(hr)	(min)	(hr)
0.60	720	12.0	720	12.0
0.70	570	9.5	570	9.5
0.80	450	7.5	450	7.5
0.90	360	6.0	360	6.0
1.00	300	5.0	300	5.0
1.10	240	4.0	270	4.5
1.20	210	3.5	240	4.0
1.30	180	3.0	210	3.5
1.40	150	2.5	180	3.0
1.50	120	2.0	180	3.0
1.60	45	.75	150	2.0

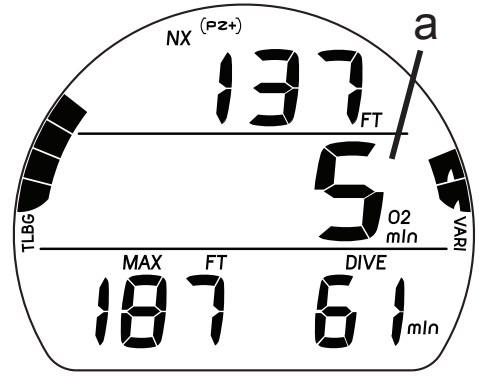


Fig. 37 - DTR (OTR)

DIVE MODES

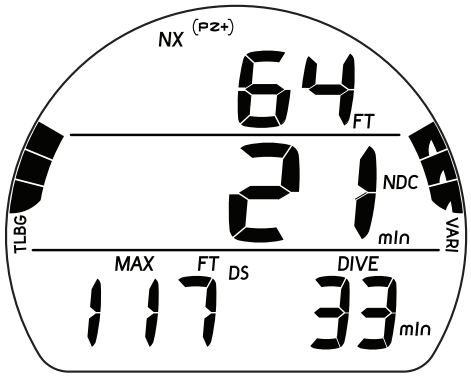


Fig. 38 - NO DECO MAIN

NO DECO MAIN, information includes (Fig. 38) -

> Current Depth with FT (or M) icon
> DTR (min) with NDC (or O2) and min icons
> Max Depth with MAX and FT (or M) icons
> EDT (Elapsed Dive Time) with DIVE and min icons
> TLBG with icon
> VARI while ascending
> NX, (PZ+), DS icons - those that apply

- B (< 2 sec) to access ALTs.
- B (2 sec) to access Deep Stop Preview, if triggered.

Upon ascending to 2 FT (0.6 M) during a dive, Surface Interval time will be displayed with the SURF icon flashing for the first 10 minutes and NDC will be displayed as 2 dashes (Fig. 39).

- B (< 2 sec) to access Dive ALTs.

After 10 minutes elapse, operation will revert to Surface Mode and full access given to the Surface Menu items.

If a descent is made to 5 FT (1.5 M) for 5 seconds, the dive will be continued. Surface time will not be added to Dive Time.

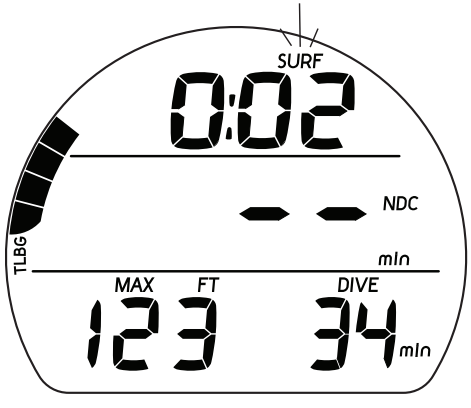


Fig. 39 - NO DECO MAIN
(on surface < 10 min)

NO DECO ALT 1, information includes (Fig. 40) -

> Time of Day (hr:min), with AM (or PM) icon if 12 Hour Format, no icon if 24 Hour Format
> Temperature with ° icon and graphic F (or C)

- B (< 2 sec) to access ALT 2 (if Nitrox).
- Revert to Main in 5 sec, if B not pressed.

Fig. 40 - NO DECO ALT 1

NO DECO ALT 2 (if Nitrox), information includes (Fig. 41) -

> NX icon
> % O2 with O2SAT icons
> Current PO2 value (ATA) with PO2 icon
> FO2 Set Point with FO2 icon

- 5 sec or B (< 2 sec) to revert to Main.

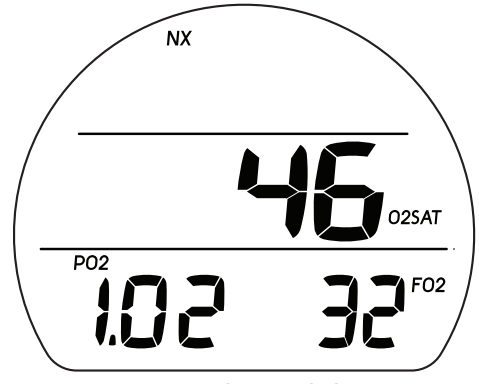


Fig. 41 - NO DECO ALT 2

DEEP STOP PREVIEW, information includes (Fig. 42) -

> same as Main except Max Depth and EDT replaced by -
> Stop Depth with FT (or M) icon, DS icon, and Stop Time as 2:00 with min and sec icons

- 5 sec or B (< 2 sec) to revert to Main.

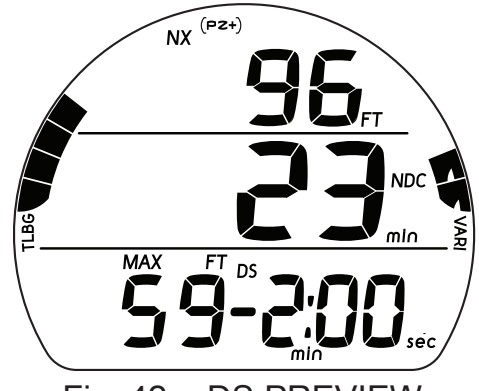


Fig. 42 - DS PREVIEW

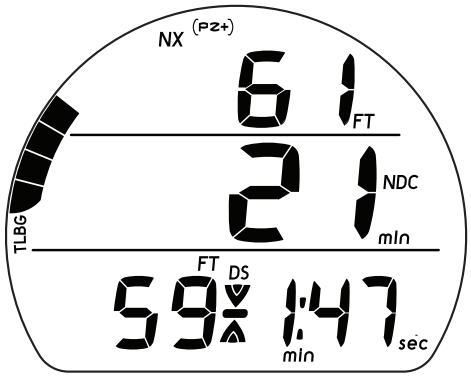


Fig. 43 - DS MAIN

DEEP STOP MAIN, information includes (Fig. 43) -

> Current Depth with FT (or M) icon
> DTR (min) with NDC (or O2) and min icons
> Stop Depth with FT (or M) icon
> Stop icon (arrows/bar) and DS icon
> Stop Time with min and sec icons, counting down
> TLBG with icon
> NX, (PZ+) icons - those that apply

- B (< 2 sec) to access ALTs**.

*** DS features up to 3 ALT displays which are similar to the No Deco Main, ALT1, and ALT2 displays, respectively.*

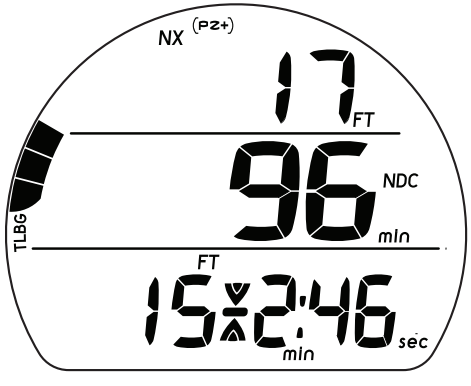


Fig. 44 - SS MAIN

SAFETY STOP MAIN, information includes (Fig. 44) -

> Current Depth with FT (or M) icon
> DTR (min) with NDC (or O2) and min icons
> Stop Depth with FT (or M) icon
> Stop icon (arrows/bar)
> Stop Time with min and sec icons, counting down
> TLBG with icon
> NX, (PZ+) icons - those that apply

- B (< 2 sec) to access ALTs**.

*** SS features up to 3 ALT displays which are similar to the No Deco Main, ALT1, and ALT2 displays, respectively.*

DECOMPRESSION MODE

Decompression mode activates when theoretical No Decompression time and depth limits are exceeded.

Upon entry into Deco, the full TLBG will flash (Fig. 45) for 10 seconds. The Up Arrow icon will flash if > 10 FT (3 M) below the required Stop Depth.

> Once within 10 FT (3 M) below the required Stop Depth (stop zone), the full Stop icon (both Arrows with Stop Bar) will be displayed solid.

To fulfill your decompression obligation, you should make a safe controlled Ascent to a depth slightly deeper than, or equal to, the required Stop Depth indicated and decompress for the Stop Time indicated.

The amount of decompression credit time that you receive is dependent on Depth, with slightly less credit given the deeper you are below the Stop Depth indicated.

You should stay slightly deeper than the required Stop Depth indicated until the next shallower Stop Depth appears. Then, you can slowly ascend to, but not shallower than that indicated Stop Depth.

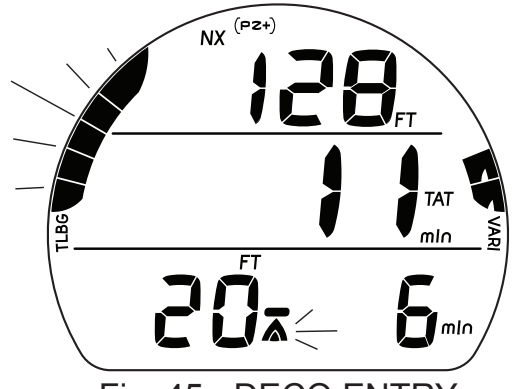


Fig. 45 - DECO ENTRY

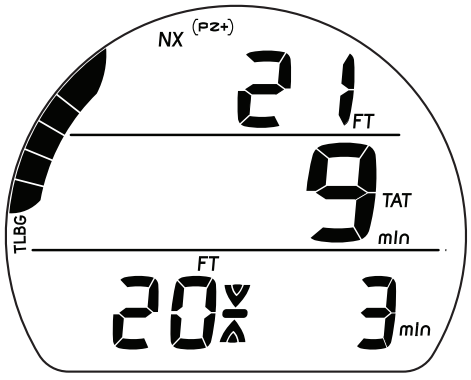


Fig. 46 - DECO STOP MAIN

DECO STOP MAIN, information includes (Fig. 46) -

> Current Depth with FT (or M) icon
> TAT (Total Ascent Time)* with TAT and min icons
> Stop Depth with FT (or M) icon
> Stop icon (arrows/bar)
> Stop Time with min icon
> Full TLBG with icon
> NX, (PZ+) icons - those that apply

**TAT includes Stop Times at all required Deco Stops plus vertical Ascent Time based on the max rate allowed.*

- B (< 2 sec) to access ALTs.

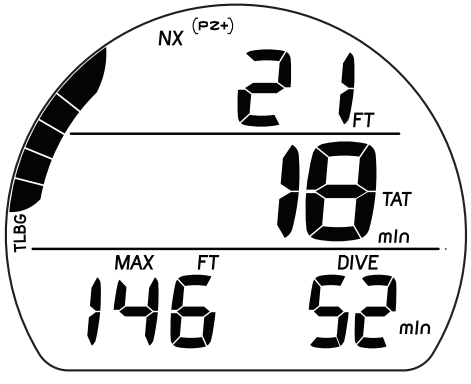


Fig. 47 - DECO STOP ALT 1

DECO STOP ALT 1, information includes (Fig. 47) -

> Current Depth with FT (or M) icon
> TAT (min) with TAT and min icons
> Max Depth with MAX and FT (or M) icons
> EDT (Elapsed Dive Time) with DIVE and min icons
> Full TLBG with icon
> NX, (PZ+) icons - those that apply

- B (< 2 sec) to access ALT 2.
- Revert to Main in 5 sec, if B not pressed.

Fig. 48 - DECO STOP ALT 2

DECO STOP ALT 2, information includes (Fig. 48) -

> Time of Day (hr:min)
> Temperature with ° icon and graphic F (or C)

- B (< 2 sec) to access ALT 3 (if Nitrox).
- Revert to Main in 5 sec, if B not pressed.

Deco Stop Alt 3 (if Nitrox), information includes (Fig. 49) -

> NX icon
> % O2 with O2SAT icons
> Current PO2 value (ATA) with PO2 icon
> FO2 Set Point with FO2 icon

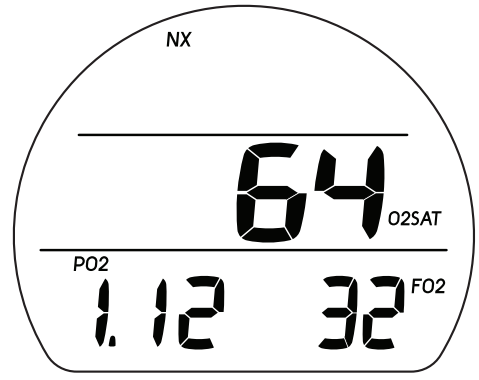


Fig. 49 - DECO STOP ALT 3

- 5 sec or A (< 2 sec) to revert to Main.

CV (CONDITIONAL VIOLATION)

Upon ascent above the required Deco Stop Depth, operation will enter CV during which no off gassing credit will be given.

The Stop Depth and Down Arrow icon will flash (Fig. 50) until descent to below the required Stop Depth (within stop zone), then full Stop icon (Stop Bar with both Arrows) will be on solid.

CV ALTs are similar to Deco.

If you descend deeper than the required Deco Stop before 5 minutes elapse, Deco operation will continue with no off gassing credit given for time above the Stop. Instead, for each minute above the Stop 1-1/2 minutes of penalty time will be added to required Stop Time.

> The added penalty (deco) time will have to be worked off before obtaining off gassing credit.

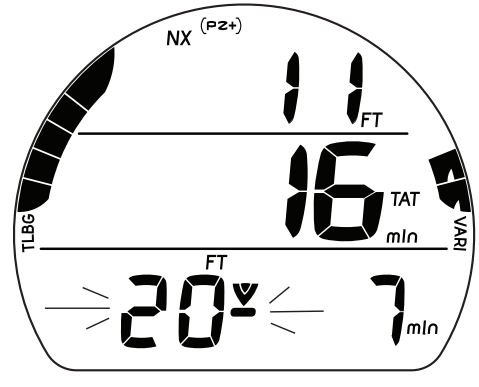


Fig. 50 - CV MAIN

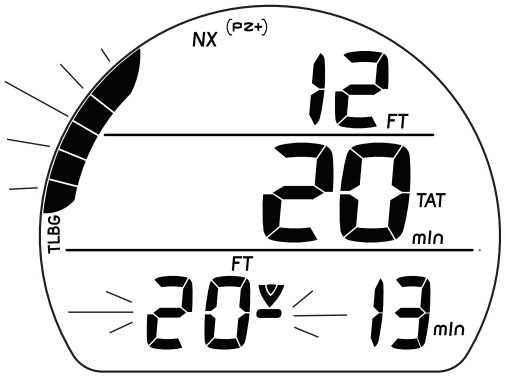


Fig. 51 - DV1 MAIN

> Once the penalty time is worked off, and off gassing credit begins, required Deco Stop Depths and Time will decrease toward zero. The TLBG will recede into the No Deco zone and operation will revert to No Deco mode.

DV 1 (DELAYED VIOLATION 1)

If you remain shallower than a Deco Stop Depth for more than 5 minutes, operation will enter DV 1* which is a continuation of CV with penalty time still being added. The full TLBG will flash (Fig. 51) until descent is made to slightly deeper than the Stop.

DV ALTs are similar to those for Deco.

**The difference is that 5 minutes after surfacing from the dive, operation will now enter Violation Gauge Mode.*

> Stop Depth and Down Arrow icon continue to flash until descent to below the required Stop Depth, then full Stop icon will be on solid.

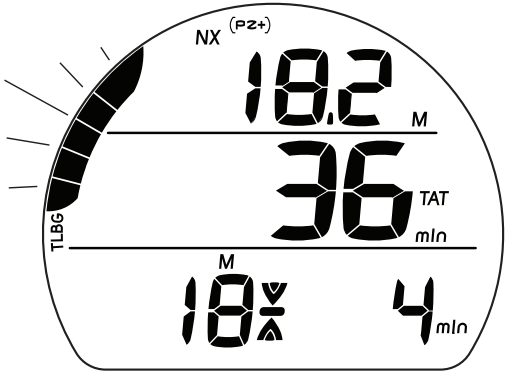


Fig. 52 - DV2 MAIN

DV 2 (DELAYED VIOLATION 2)

If the calculated Deco obligation requires a Stop Depth between 60 FT (18 M) and 70 FT (21 M), operation will enter DV 2.

The full TLBG will flash (Fig. 52) for 10 seconds.

> Up Arrow icon flashes if 10 FT (3 M) deeper than the required Stop Depth.

> Once within 10 FT (3 M) of and below the required Stop Depth, the Stop icon (both Arrows with Stop Bar) will be displayed solid.

DV 3 (DELAYED VIOLATION 3)

If you descend deeper than the MOD*, the Up Arrow will flash, and Current Depth and Max Depth will only indicate 3 dashes (- - -) signifying that you are Too Deep (Fig. 53).

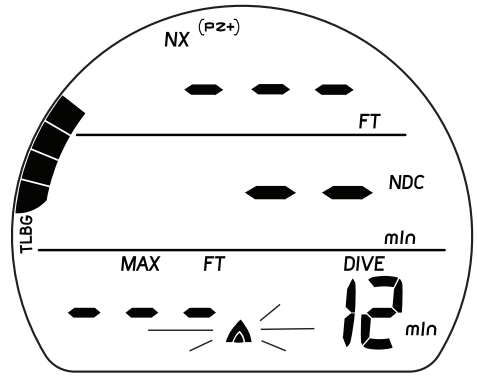


Fig. 53 - DIVE MAIN (> MOD)

**MOD is the Max Operating Depth at which the VEO can properly perform calculations or provide accurate display information. Refer to the Specifications in the back.*

Upon ascending above the MOD, Current Depth will be restored, however, Max Depth will continue to be displayed as dashes for the remainder of that dive. The Log for that dive will also display dashes for Max Depth.

VGM (VIOLATION GAUGE MODE)

During NORM dives, operation will enter VGM when Deco requires a Stop Depth greater than 70 FT (21 M).

Operation would then continue in VGM during the remainder of that dive and for 24 hours after surfacing. VGM turns the VEO into a digital instrument without any decompression or oxygen related calculations or displays.

Upon activation of VGM, the graphic VIO and Up Arrow icon will flash.

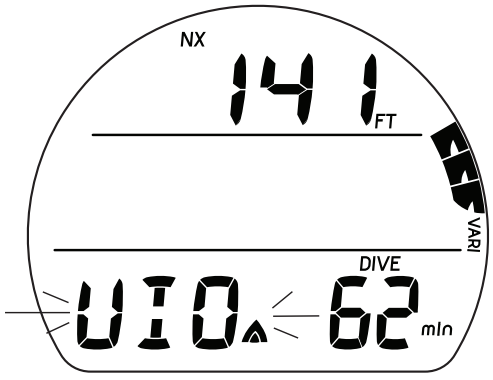


Fig. 54 - VGM ACTIVATED
(during first 10 seconds)

VGM Dive Main, information includes (Fig. 54) -

> Current Depth with FT (or M) icon
> Graphic VIO (in place of Max Depth which moves to Alt 1) with Up Arrow icon, flashing until on surface
> EDT with DIVE and min icons
> NX icon - if it applies
> VARI while ascending

- B (< 2 sec) to access ALTs (similar to those for Deco).

VGM on Surface

Upon surfacing, the VGM Dive Main will remain on display for 10 minutes with Surface Interval Time displayed in place of Current Depth with the SURF icon flashing. The graphic VIO will also still be displayed flashing.

Operation will also enter VGM 5 minutes after surfacing from a dive in which a Delayed Violation occurred.

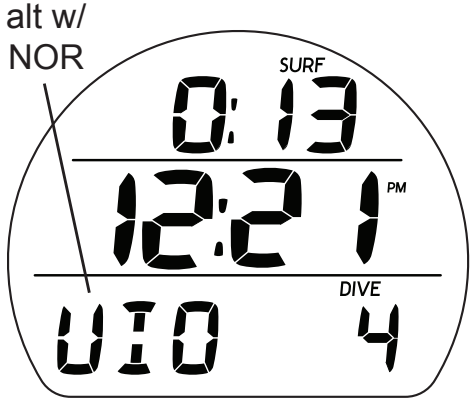


Fig. 55 - VGM SURF MAIN
(> 10 min SI)

After 10 minutes elapse, VIO alternates with NOR (Fig. 55) until the unit shuts off after 24 hours with no dives.

> A full 24 hour continuous surface interval must then be served before all functions are restored.

HIGH PO2

Warning >> at Alarm Set Point value minus .20 (1.00 to 1.40).
Alarm >> at Set Point value, except in Deco then at 1.60 only.

When PO2 (partial pressure of oxygen) increases to the Warning level; the Up Arrow icon will flash, and the PO2 value will flash (in place of max Depth) for 10 seconds (Fig. 56).

After 10 seconds, Max Depth is restored. The Up Arrow remains on solid until PO2 decreases below the Warning level.

If PO2 continues to increase and reaches the Alarm Set Point, the PO2 value will again replace Max Depth (Fig. 57).

- > Max Depth will then be available on the ALT 1 display.
- > The PO2 value and Up Arrow icon will flash until PO2 decreases below the Alarm Set Point.

High PO2 in Deco (Fig. 58)

- > The PO2 Alarm Set Point does not apply when in Deco.
- > If PO2 reaches 1.60 while at a Deco Stop, the PO2 value (1.60) with icon will alternate with Deco Stop Depth/Time once each minute*. *

**PO2 on for 10 seconds, Deco Stop Depth/Time on for 50 seconds until PO2 decreases below 1.60, then PO2 will not be displayed.*

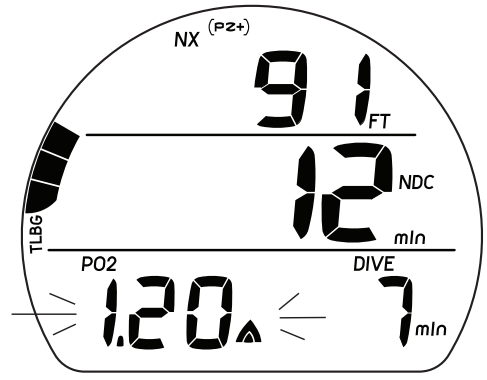


Fig. 56 - PO2 WARNING

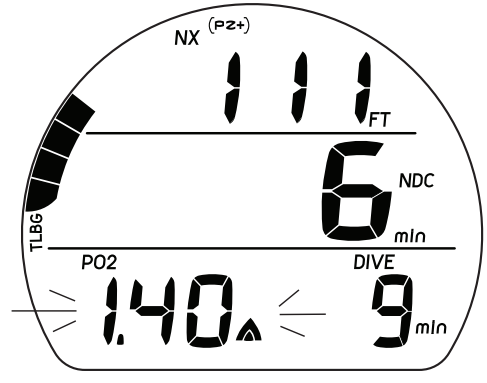


Fig. 57 - PO2 ALARM
(until < Set Point)

alt w/ Stop Depth/Time

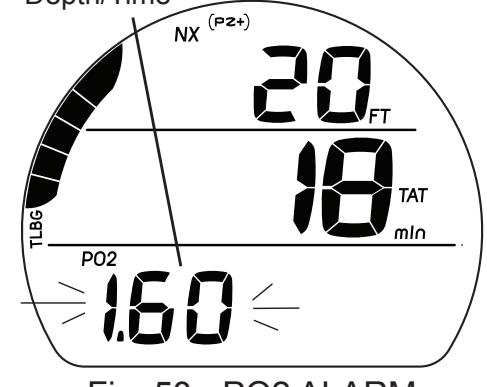


Fig. 58 - PO2 ALARM
(at Deco Stop)

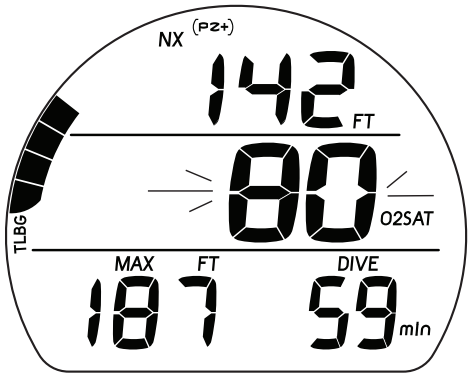


Fig. 59 - O2 WARNING

HIGH O2

Warning >> when 80 to 99% (240 OTU).
Alarm >> at 100% (300 OTU).

When O2 reaches the Warning Level; the O2 value will flash (in place of DTR) for 10 seconds (Fig. 59).

> After 10 seconds, DTR will be restored.

If O2 reaches the Alarm level; the O2 value will flash (in place of DTR) and the Up Arrow icon will flash (Fig. 60) until on the surface.

High O2 during Deco

When O2 reaches the Warning Level while in Deco, the O2 value will flash (in place of TAT) for 10 seconds.

> After 10 seconds, TAT will be restored.

If O2 reaches the Alarm level; the O2 value will flash (in place of TAT) and the Up Arrow icon will flash until on the surface.

Max Depth and EDT will be displayed in place of Deco Stop Depth/Time, and the full TLBG will continue to be displayed.

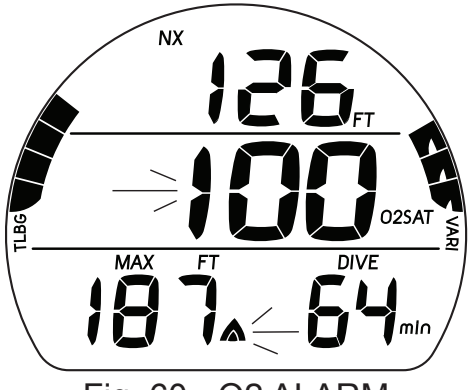


Fig. 60 - O2 ALARM

High O2 on Surface

Upon ascent to 2 FT (0.6 M) for 1 second (surfacing), the Dive Main screen is displayed for 10 minutes with access to the Dive ALTs allowed.

- > O2 values < 100% will not be displayed on the Main. They can be viewed on the ALT screen.
- > If O2 is 100%, the value will flash on the Main in place of DTR (during first 10 minutes) or Time of Day (after 10 minutes, Fig. 61) until it is < 100%, then it will be replaced with the applicable value.
- > If you surface due to 100% O2 without having completed the Deco obligation, the full TLBG and O2 value (100) will flash for the first 10 minutes, then operation will enter VGM for 24 hours.

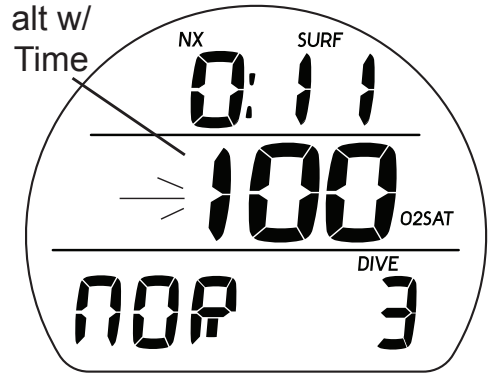


Fig. 61 - SURF MAIN
(> 10 min after dive)

OCEANIC WORLD WIDE

OCEANIC USA
2002 Davis Street
San Leandro, CA 94577
Tel: 510/562-0500
Fax: 510/569-5404
Web: www.OceanicWorldwide.com
E-mail: hello@oceanicusa.com

OCEANIC UK
Devon, United Kingdom
Tel: (44) 1404-891819 Fax: +44 (0) 1404-891909
Web: www.OceanicUK.com
E-mail: helpyou@oceanicuk.com

OCEANIC NORTHERN EUROPE
Augsburg, Germany
Tel: +49 (0) 821 810342 0 Fax: +49 (0) 821 810342 29
Web: www.oceanic.de
E-mail: office@oceanic.de

OCEANIC FRANCE
Nice, France
Tel: +33.(0)4 93 72 43 00 Fax: +33.(0)4 93 72 43 05
E-mail: info@subaquadis.fr

OCEANIC ITALY
Genova, Italy
Tel: +39 010 545 1212 Fax: +39 010 518 4232
Web: www.oceanicitalia.com
E-mail: info@oceanicitalia.com

OCEANIC AUSTRALIA
Rosebud, Victoria, Australia
Tel: 61-3-5986-0100 Fax: 61-3-5986-1760
Web: www.OceanicAUS.com.au
E-mail: sales@OceanicAUS.com.au

OCEANIC HAWAII and MICRONESIA
Kapolei, Hawaii
Tel: 808-682-5488 Fax: 808-682-1068
E-mail: lbell@oceanicusa.com

OCEANIC ASIA PACIFIC
Singapore
Tel: +65-6391-1420 Fax: +65-6297-5424
E-mail: info@oceanicasia.com.sg

OCEANIC JAPAN
Yokohama Kanagawa-Prev, Japan
Tel: 03-5651-9371
E-mail: mamoru@jecee.com

GENERAL

CARE AND CLEANING

Protect your VEO from shock, excessive temperatures, exposure to chemicals, and tampering. Protect the lens against scratches with a Instrument Lens Protector. Small scratches will naturally disappear underwater.

- Soak and rinse the VEO 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. 62a) and button are free of debris or obstructions.
- To dissolve salt crystals, use lukewarm water or a slightly acidic bath (50% white vinegar/50% fresh water). After removal from the bath, place the VEO under gently running fresh water and towel dry before storing.
- Transport your VEO cool, dry, and protected.

INSPECTIONS AND SERVICE

Your VEO should be inspected annually by an Authorized Oceanic 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).

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

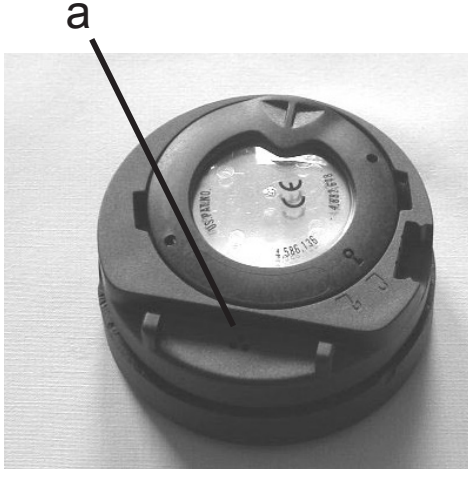


Fig. 62 - CASE BACK

The costs of annual inspections, or inspections relating to water tight integrity, are not covered under the terms of the 2 year limited warranty.

To Obtain Service:
Take your VEO to your local Authorized Oceanic Dealer.

If required to return your VEO to the Oceanic USA factory:

- Obtain an RA (Return Authorization) number by contacting Oceanic USA at 510/562-0500 or send an e-mail to service@oceanicusa.com.
- Record all dive data in the Log. All data will be erased during factory service.
- Package it using a protective cushioning material.
- Include a legible note stating the specific reason for return, your name, address, daytime phone number, serial number(s), and a copy of your original sales receipt and Warranty Registration.
- Send freight prepaid and insured using a traceable method.
- Non-warranty service must be prepaid. COD is not accepted.
- Additional information is available on the Oceanic web site OceanicWorldwide.com or on the local Oceanic web site that serves your global region.

The procedures that follow must be closely adhered to. Damage due to improper battery replacement is not covered by the VEO's warranty.

MODULE REMOVAL FROM BOOT

If the module is in a console, bend the rubber console boot back to expose the edge of the module. If the boot is flexible enough to permit, you may bend it back far enough to scoop the module out with your finger. Otherwise, it may be necessary to insert a blunt screwdriver until the tip rests just underneath the module.

DO NOT pry the module from the console! Slowly increase the pressure under the module by releasing the tension on the rubber boot. The module will slide up the screwdriver and exit the console.

If the module is in a wrist boot, it will be necessary to peel the lips of the boot downward off the module while applying pressure from underneath, working it out slowly.

△ **NOTE: When the battery is replaced within 8 seconds, settings and calculations for repetitive dives are retained in memory for repetitive dives.**

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.

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).

Battery Cover Removal

- Turn the module over to expose the Battery Cover.
- While applying steady inward pressure on the center of the Battery Cover, rotate the Retaining Ring 10 degrees clockwise by pressing against the upper tab of the Ring with a small blade screwdriver (Fig. 63).
- Lift the Ring up and away from the Housing, or turn the Module over to allow the Ring to drop out into your hand.
- Remove the Battery Cover.

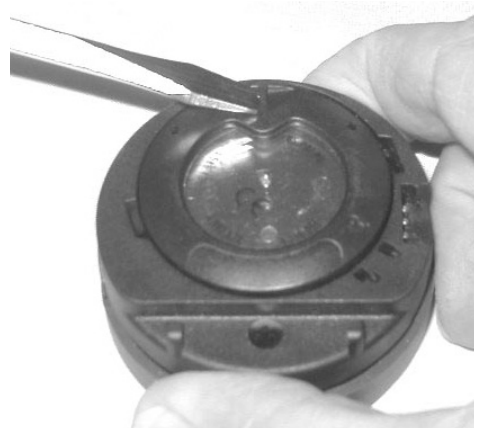


Fig. 63 - COVER RING

Battery Removal

- Remove the Retaining Bar located across the lower portion of the Battery (Fig. 64a).
- Remove the Cover O-ring. DO NOT use tools.
- Slide the Battery up and out of the Battery Compartment.

Inspection

- Closely check all of the sealing surfaces for any signs of damage that might impair proper sealing.
- Inspect the Button, Lens, and Housing to ensure they are not cracked or damaged.

WARNING: If damage or corrosion is found, return your VEO to an Authorized Oceanic Dealer, and DO NOT attempt to use it until it has received factory prescribed service.

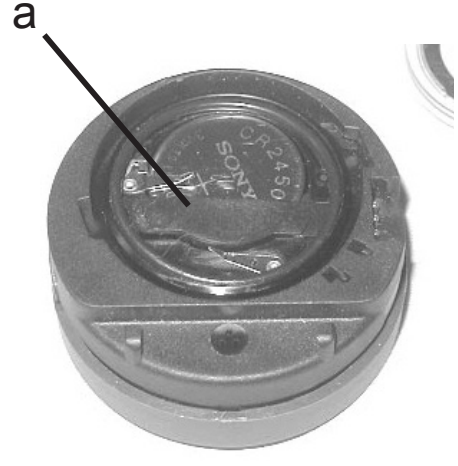


Fig. 64 - RETAINING BAR

Fig. 65 - BATTERY

Battery Installation

- Slide a new 3 volt type CR2450 Lithium Battery, (-) negative side down into the Battery Compartment. Slide it in from the right side and ensure that it slides under the contact clip on the left rim (Fig. 65).
- Orient the Retaining Bar across the lower portion of the Battery and carefully push it down into position (Fig. 66).

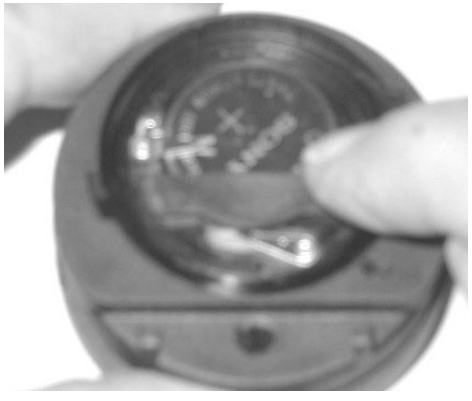


Fig. 66 - RETAINING BAR

Battery Hatch and Hatch Retaining Ring Installation

- Lightly lubricate a new Cover O-ring* with silicone grease and place it on the inner rim of the Battery Cover (Fig. 67). Ensure that it is evenly seated.

**The O-ring must be a genuine Oceanic part that can be purchased from an Authorized Oceanic Dealer. Use of any other O-ring will void the warranty.*

- Slide the Cover Ring, top portion first (small opening), onto your thumb.
- Carefully place the Battery Cover (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.
- Maintain the Battery Cover securely in place and, using your other hand, slide the Cover Ring down off your thumb and into position around the Battery Compartment.
- The tabs on the Cover Ring fit down into the two slots located at the 2 and 8 o'clock positions.

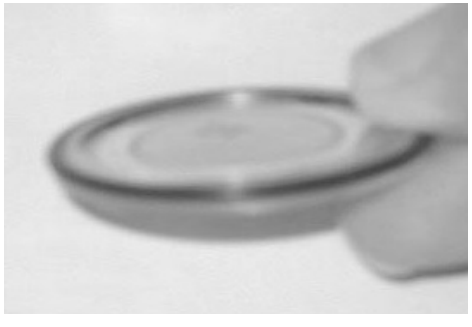


Fig. 67 - COVER O-RING

- Using your fingers, turn the Ring counter clockwise 5 degrees until the tabs engage (Fig. 68), then tighten it 5 more degrees by turning it counter clockwise with the aide of a small blade screwdriver (Fig. 69).
- While tightening the Retaining Ring, exert continuous inward pressure on it until it is secured in the proper position. A small symbol located on the Ring should be aligned with the Locked symbol located on the Housing (Fig. 70a).

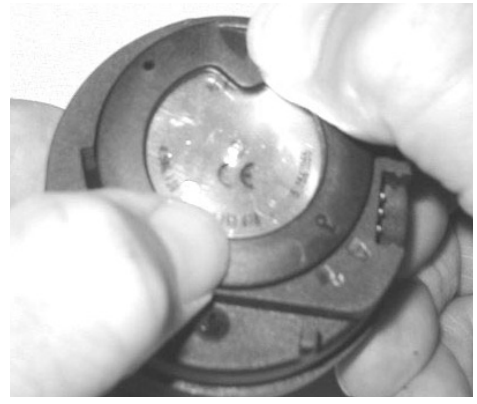


Fig. 68 - TABS ENGAGE

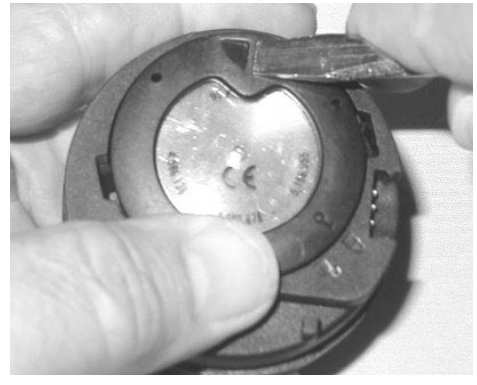


Fig. 69 - TABS TIGHT

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 the unit to an Authorized Oceanic Dealer for a complete evaluation before attempting to use it.

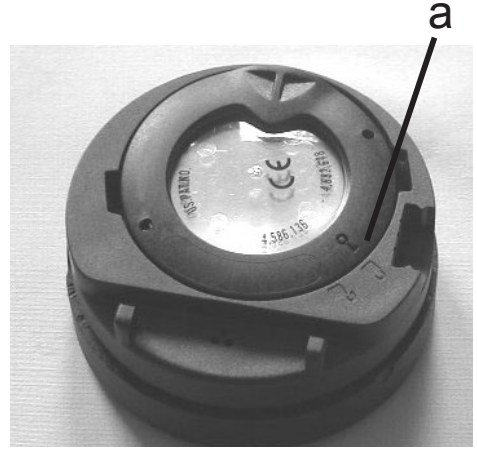


Fig. 70 - RING SECURE

RETURNING THE MODULE TO BOOT

- If the boot was fitted with a spacer and it was previously removed, replace the spacer into the boot.
- Orient the module over the opening in the boot, and dip the bottom edge into it while pressing the top edge with the palm of your hand. Stop pressing when the bottom edge of the module has just entered the boot.
- Correct the alignment of the module as needed so that it is straight.
- Press the module completely into place with your thumbs, watching the alignment, until it snaps into place.

ALTITUDE SENSING AND ADJUSTMENT

Altitude (i.e., ambient pressure) is measured upon activation and every 15 minutes until a dive is made.

- > Measurements are only taken when the unit is dry.
- > Two readings are taken, the second reading 5 seconds after the first. The readings must be within 1 foot (30 cm) of each other to record that ambient pressure as the current Altitude.
- > No adjustments are made during any time that the Wet Contacts are bridged.
- > When diving in high altitude waters from 3,001 to 14,000 feet (916 to 4,270 meters), the VEO automatically adjusts to these conditions providing corrected Depth, and reduced No Deco and O2 Times at intervals of 1,000 feet (305 meters).
- > At Sea Level, calculations are based upon an Altitude of 6,000 feet.
- > All adjustments for Altitudes greater than 11,000 feet (3,355 meters) are then made to allowable dive times for 14,000 feet (4,270 meters).
- > The VEO will not function as a Dive Computer above 14,000 feet (4,270 meters).

PZ+ ALGORITHM >> NDLS (HR:MIN) AT ALTITUDE (IMPERIAL)

Altitude (feet)	0 to 3000	3001 to 4000	4001 to 5000	5001 to 6000	6001 to 7000	7001 to 8000	8001 to 9000	9001 to 10000	10001 to 11000	11001 to 12000	12001 to 13000	13001 to 14000
Depth (FT)												
30	3:17	2:30	2:21	2:14	2:08	2:02	1:57	1:52	1:47	1:39	1:34	1:29
40	1:49	1:21	1:15	1:11	1:08	1:05	1:02	1:00	0:57	0:55	0:53	0:51
50	1:05	0:53	0:51	0:49	0:47	0:44	0:42	0:39	0:37	0:35	0:34	0:33
60	0:48	0:37	0:35	0:33	0:32	0:30	0:28	0:26	0:24	0:23	0:22	0:21
70	0:35	0:26	0:24	0:23	0:21	0:20	0:19	0:18	0:17	0:16	0:16	0:14
80	0:26	0:19	0:18	0:17	0:16	0:15	0:14	0:13	0:12	0:11	0:11	0:10
90	0:19	0:15	0:14	0:13	0:12	0:11	0:10	0:10	0:09	0:09	0:08	0:08
100	0:16	0:11	0:10	0:10	0:09	0:09	0:08	0:08	0:07	0:07	0:07	0:07
110	0:12	0:09	0:08	0:08	0:08	0:07	0:07	0:07	0:06	0:06	0:06	0:05
120	0:10	0:08	0:07	0:07	0:07	0:06	0:06	0:06	0:05	0:05	0:05	0:05
130	0:08	0:07	0:06	0:06	0:06	0:05	0:05	0:05	0:05	0:05	0:04	0:04
140	0:07	0:06	0:05	0:05	0:05	0:05	0:05	0:04	0:04	0:04	0:04	0:04
150	0:06	0:05	0:05	0:05	0:05	0:04	0:04	0:04	0:04	0:04	0:04	0:03
160	0:06	0:05	0:05	0:04	0:04	0:04	0:04	0:04	0:04	0:03	0:03	0:03
170	0:05	0:04	0:04	0:04	0:04	0:04	0:03	0:03	0:03	0:03	0:03	0:03
180	0:05	0:04	0:04	0:04	0:03	0:03	0:03	0:03	0:03	0:03	0:03	0:03
190	0:04	0:04	0:04	0:03	0:03	0:03	0:03	0:03	0:03	0:03	0:03	0:00

PZ+ ALGORITHM >> NDLS (HR:MIN) AT ALTITUDE (METRIC)

Altitude (meters)	0 to 915	916 to 1220	1221 to 1525	1526 to 1830	1831 to 2135	2136 to 2440	2441 to 2745	2746 to 3050	3051 to 3355	3356 to 3660	3661 to 3965	3966 to 4270
Depth (M)												
9	3:37	2:41	2:31	2:23	2:16	2:10	2:04	1:59	1:54	1:50	1:43	1:37
12	1:55	1:27	1:21	1:15	1:12	1:08	1:05	1:03	1:00	0:58	0:55	0:54
15	1:08	0:55	0:53	0:51	0:49	0:47	0:44	0:42	0:39	0:37	0:36	0:34
18	0:50	0:39	0:37	0:35	0:33	0:32	0:30	0:28	0:26	0:24	0:23	0:22
21	0:36	0:28	0:26	0:24	0:23	0:21	0:20	0:19	0:18	0:17	0:16	0:16
24	0:27	0:20	0:19	0:18	0:17	0:16	0:15	0:14	0:13	0:12	0:11	0:11
27	0:20	0:16	0:15	0:13	0:12	0:11	0:11	0:10	0:09	0:09	0:09	0:08
30	0:16	0:12	0:11	0:10	0:09	0:09	0:09	0:08	0:08	0:07	0:07	0:07
33	0:13	0:09	0:09	0:08	0:08	0:07	0:07	0:07	0:07	0:06	0:06	0:06
36	0:10	0:08	0:07	0:07	0:07	0:06	0:06	0:06	0:05	0:05	0:05	0:05
39	0:09	0:07	0:06	0:06	0:06	0:06	0:05	0:05	0:05	0:05	0:05	0:04
42	0:08	0:06	0:06	0:05	0:05	0:05	0:05	0:05	0:04	0:04	0:04	0:04
45	0:06	0:05	0:05	0:05	0:05	0:04	0:04	0:04	0:04	0:04	0:04	0:04
48	0:06	0:05	0:05	0:04	0:04	0:04	0:04	0:04	0:04	0:03	0:03	0:03
51	0:05	0:04	0:04	0:04	0:04	0:04	0:04	0:03	0:03	0:03	0:03	0:03
54	0:05	0:04	0:04	0:04	0:04	0:03	0:03	0:03	0:03	0:03	0:03	0:03
57	0:05	0:04	0:04	0:03	0:03	0:03	0:03	0:03	0:03	0:03	0:03	0:03

DSAT ALGORITHM >> NDLS (HR:MIN) AT ALTITUDE (IMPERIAL)

Altitude (feet)	0 to 3000	3001 to 4000	4001 to 5000	5001 to 6000	6001 to 7000	7001 to 8000	8001 to 9000	9001 to 10000	10001 to 11000	11001 to 12000	12001 to 13000	13001 to 14000
Depth (FT)												
30	4:20	3:21	3:07	2:55	2:45	2:36	2:28	2:21	2:15	2:10	2:04	1:58
40	2:17	1:43	1:36	1:30	1:25	1:20	1:16	1:12	1:09	1:06	1:03	1:01
50	1:21	1:03	1:00	0:58	0:55	0:52	0:48	0:45	0:43	0:41	0:39	0:37
60	0:57	0:43	0:40	0:38	0:36	0:34	0:33	0:31	0:30	0:29	0:28	0:27
70	0:40	0:31	0:30	0:28	0:27	0:26	0:24	0:23	0:22	0:20	0:19	0:18
80	0:30	0:24	0:23	0:21	0:20	0:19	0:18	0:17	0:16	0:16	0:14	0:13
90	0:24	0:19	0:18	0:17	0:16	0:15	0:14	0:13	0:12	0:11	0:10	0:10
100	0:19	0:15	0:14	0:13	0:12	0:11	0:10	0:10	0:09	0:09	0:08	0:08
110	0:16	0:12	0:11	0:10	0:09	0:09	0:08	0:08	0:08	0:07	0:07	0:07
120	0:13	0:09	0:09	0:08	0:08	0:08	0:07	0:07	0:07	0:06	0:06	0:06
130	0:11	0:08	0:08	0:07	0:07	0:07	0:06	0:06	0:06	0:06	0:05	0:05
140	0:09	0:07	0:07	0:06	0:06	0:06	0:06	0:05	0:05	0:05	0:05	0:05
150	0:08	0:06	0:06	0:06	0:05	0:05	0:05	0:05	0:05	0:04	0:04	0:04
160	0:07	0:06	0:05	0:05	0:05	0:05	0:05	0:04	0:04	0:04	0:04	0:04
170	0:07	0:05	0:05	0:05	0:04	0:04	0:04	0:04	0:04	0:04	0:04	0:03
180	0:06	0:05	0:05	0:04	0:04	0:04	0:04	0:04	0:04	0:03	0:03	0:03
190	0:05	0:04	0:04	0:04	0:04	0:04	0:04	0:03	0:03	0:03	0:03	0:03

DSAT ALGORITHM >> NDLS (HR:MIN) AT ALTITUDE (METRIC)

Altitude (meters)	0 to 915	916 to 1220	1221 to 1525	1526 to 1830	1831 to 2135	2136 to 2440	2441 to 2745	2746 to 3050	3051 to 3355	3356 to 3660	3661 to 3965	3966 to 4270
Depth (M)												
9	4:43	3:37	3:24	3:10	2:58	2:48	2:39	2:31	2:24	2:18	2:12	2:07
12	2:24	1:52	1:44	1:37	1:30	1:25	1:21	1:17	1:13	1:10	1:07	1:04
15	1:25	1:06	1:03	1:00	0:57	0:55	0:52	0:49	0:46	0:43	0:41	0:39
18	0:59	0:45	0:42	0:40	0:38	0:36	0:34	0:32	0:31	0:30	0:29	0:28
21	0:41	0:33	0:31	0:29	0:28	0:27	0:26	0:24	0:23	0:21	0:20	0:19
24	0:32	0:26	0:24	0:22	0:21	0:20	0:19	0:18	0:17	0:16	0:15	0:14
27	0:25	0:19	0:18	0:17	0:16	0:16	0:14	0:13	0:12	0:12	0:11	0:10
30	0:20	0:16	0:15	0:13	0:12	0:12	0:11	0:10	0:10	0:09	0:09	0:08
33	0:17	0:12	0:11	0:11	0:10	0:09	0:09	0:08	0:08	0:08	0:07	0:07
36	0:14	0:10	0:09	0:09	0:08	0:08	0:07	0:07	0:07	0:06	0:06	0:06
39	0:11	0:08	0:08	0:07	0:07	0:07	0:06	0:06	0:06	0:06	0:05	0:05
42	0:09	0:07	0:07	0:07	0:06	0:06	0:06	0:05	0:05	0:05	0:05	0:05
45	0:08	0:06	0:06	0:06	0:06	0:05	0:05	0:05	0:05	0:05	0:04	0:04
48	0:07	0:06	0:06	0:05	0:05	0:05	0:05	0:04	0:04	0:04	0:04	0:04
51	0:06	0:05	0:05	0:05	0:05	0:04	0:04	0:04	0:04	0:04	0:04	0:04
54	0:06	0:05	0:05	0:04	0:04	0:04	0:04	0:04	0:04	0:03	0:03	0:03
57	0:05	0:04	0:04	0:04	0:04	0:04	0:04	0:03	0:03	0:03	0:03	0:03

SPECIFICATIONS

CAN BE USED AS

- Dive Computer (Air or Nitrox)

DIVE COMPUTER PERFORMANCE

- Buhlmann ZHL-16c based PZ+, or DSAT based, algorithm
- No Deco limits closely follow PADI RDP
- Decompression in agreement with Buhlmann ZHL-16c and French MN90
- No Deco Deep Stops - Morroni, Bennett
- Deco Deep Stops (not recommended) - Blatteau, Gerth, Gutvik
- Altitude - Buhlmann, IANTD, RDP (Cross)
- Altitude corrections and O2 limits based on NOAA tables

OPERATIONAL PERFORMANCE

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

Dive Counter:

- Displays Dives #1 to 12
- Resets to Dive #1, upon diving (after 24 hours with no dives)

Dive Log Mode:

- Stores 12 most recent dives in memory for viewing
- After 12 dives, adds 13th dive in memory and deletes the older dive

Altitude:

- Operational from sea level to 14,000 feet (4,270 meters) elevation
- Measures ambient pressure every 30 minutes when inactive, upon activation, every 15 minutes while activated.
- Does not measure ambient pressure when Wet.
- Compensates for Altitudes above sea level beginning at 3,001 feet (916 meters) elevation and every 1,000 feet (305 meters) higher.

SPECIFICATIONS (CONTINUED)

Power:

- (1) 3 vdc, CR2450, Lithium battery (Panasonic or equivalent)
- Shelf life — Up to 5 years (dependent on battery manufacturer)
- Replacement — User (annual recommended)
- Use Life — 100 dive hours if (1) 1 hour dives per dive day to 300 hours if (3) 1 hour dives per day

Battery Icon:

- Warning - icon on solid at 2.75 volts, Battery change recommended
- Alarm - icon on flashing at 2.50 volts, change the Battery

Activation:

- Manual - push button (recommended), required prior to dive if Wet Activation is set OFF.
- Automatic - by immersion in water (if Wet Activation is set ON)
- Cannot be manually activated deeper than 4 FT (1.2 M), if Wet Activation is set OFF.
- Cannot operate at elevations higher than 14,000 feet (4,270 meters)

Operating Temperature:

- Out of the water - between 20 °F and 140 °F (-6 and 60 °C).
- In the water - between 28 °F and 95 °F (-2 and 35 °C).

TLBG	segments
• No Deco Normal zone	1 to 3
• No Deco Caution zone	4
• Decompression zone	5 (all)

VARI	60 FT (18 M) & Shallower			Deeper than 60 FT (18 M)		
	segments	FPM	MPM	segments	FPM	MPM
	0	0 - 10	0 - 3	0	0 - 20	0 - 6
• Normal zone	1	11 - 15	3.5 - 4.5	1	21 - 30	6.5 - 9
Normal zone	2	16 - 20	5 - 6	2	31 - 40	9.5 - 12
Normal zone	3	21 - 25	6.5 - 7.5	3	41 - 50	12.5 - 15
• Caution zone	4	26 - 30	8 - 9	4	51 - 60	15.5 - 18
• Too Fast zone (flashing)	5 (all)	> 30	> 9	5 (all)	> 60	> 18

SPECIFICATIONS (CONTINUED)

NUMERIC DISPLAYS:	Range:	Resolution:
• Dive Number	0 to 12	1
• Depth	0 to 330 FT (100 M)	1 FT (.1/1 M)
• FO2 Set Point	Air, 21 to 50 %	1 %
• PO2 Value	0.00 to 5.00 ATA	.01 ATA
• Dive Time Remaining	0 to 999 min	1 minute
• Total Ascent Time	0 to 999 min	1 minute
• No Deco Deep Stop Time	2:00 to 0:00 min:sec	1 second
• No Deco Safety Stop Time	3:00 to 0:00 min:sec	1 second
• Deco Stop Time	0 to 999 min	1 minute
• Elapsed Dive Time	00 to 999 min	1 minute
• Surface Interval Time	0:00 to 23:59 hr:min	1 minute
• Time to Fly & Desat	23:50 to 0:00 hr:min* (* starting 10 min after the dive)	1 minute
• Temperature	0 to 99°F (-18 to 60°C)	1°
• Time of Day	0:00 to 23:59 hr:min	1 minute
• Violation Countdown Timer	23:50 to 0:00 hr:min	

MOD (Max Operating Depth):	Limit:
• Norm	330 FT (100 M)

INSPECTION / SERVICE RECORD

Serial Number: _____

Firmware Rev: _____

Date of Purchase: _____

Purchased from: _____

Below to be filled in by an Authorized Oceanic Dealer:

Date	Service Performed	Dealer / Technician

DESIGNED BY OCEANIC CALIFORNIA

2002 Davis Street
San Leandro,
California, 94577
USA

800-435-3483
www.OceanicWorldwide.com

Doc. No. 12-5207-r02 (6/14/10)