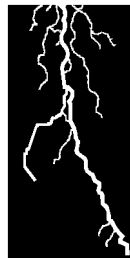


NAVY DIVE COMPUTER

Operator's Manual

English - Metric
Version 007m



Cochran

UNDERSEA TECHNOLOGY

A Division of Cochran Consulting, Inc.

Diving Into The 21st Century

NAVY DIVE COMPUTER

Operator's Manual

English Language - Metric Units

Version 007m

USER INFORMATION

For your records, please fill in the following information.

SERIAL NUMBER OF UNIT: _____
DATE OF PURCHASE: _____
PLACE OF PURCHASE: _____
ADDRESS: _____
CITY : _____
STATE: _____ ZIP CODE : _____
PHONE NUMBER: _____

Table Of Contents

Topics	Page
Figures Index	4
Product Certifications, Warranty, & Liability	5
Product Introduction	9
User & Environmental Adaptation	9
User Conservatism	9
Salt/Fresh Water Compensation	9
Altitude Acclimatization	10
Constant PO ₂ & FO ₂ Modes	10
PO ₂ /FO ₂ Blend Switching	11
Metric & Imperial Modes	11
Low Battery Indications	11
TACLITE™	12
Side Touch Contacts	12
Turning the Product On & Off	13
Warning Indications	14
Operating Modes	15
Constant PO ₂ Mode	15
PreDive Prediction Mode - PO ₂ Mode	15
Surface Mode - PO ₂ Mode	17
Subsurface Mode - PO ₂ Mode	18
Decompression Mode	18
Decompression Mode - PO ₂ Mode	18
Logbook Mode	20
Logbook Mode Screens - PO ₂ Mode	20
Training Mode	21
Constant FO ₂ Mode	22
PreDive Prediction Mode - FO ₂ Mode	22
Surface Mode - FO ₂ Mode	23
Subsurface Mode - FO ₂ Mode	24
Decompression Mode - FO ₂ Mode	25
Logbook Mode - FO ₂ Mode	26

Table Of Contents (continued)

Topics	Page
Ascent Rate Bar Graph	27
PostDive Interval Mode	29
Sleep Mode	29
Exceeding Depth Rating	29
Programming Mode	30
Touch Contacts	30
Programming Menu - Constant PO ₂ Mode	32
Programming Menu - Constant FO ₂ Mode	36
Data Storage Types & Capacity	40
User Configurable Options	40
Product Specifications	45
Cleaning the Unit	46
Changing Batteries	46
Product Assistance, Repair, & Maintenance	48
ANALYST [®] Personal Computer Interface	48

Figures Index

Figure	Page
1 Self-Test Screen	13
2 Surface Mode - No Nitrogen - Constant PO ₂ Mode	17
2a Surface Mode - Alternate Screen - PO ₂ Mode	18
3 Surface Mode - No Nitrogen - Constant FO ₂ Mode	23
3a Surface Mode - Alternate Screen - FO ₂ Mode	24
5 Surface Mode - With Nitrogen - Constant PO ₂ Mode	17
6 Surface Mode - With Nitrogen - Constant FO ₂ Mode	24
8 Subsurface Mode - Constant PO ₂ Mode	18
10 Subsurface Mode - Constant FO ₂ Mode	24
12 Ascent Bar Graph	28
13 PreDive Prediction - Constant PO ₂ Mode	16
14 PreDive Prediction - Constant FO ₂ Mode	23
16 Deco Mode - Constant PO ₂ Mode - Showing Total Time	19
16a Deco Mode - Constant FO ₂ Mode - Showing Total Time	26
17 Deco Mode - Constant PO ₂ Mode - At Zero Depth	19
17a Deco Mode - Constant FO ₂ Mode - At Zero Depth	26
19 Post Dive Interval - Constant FO ₂ Mode	29
20 Programming Mode - PO ₂ / FO ₂ Mode - Showing FO ₂	37
21 Programming Mode - PO ₂ / FO ₂ Mode - Showing PO ₂	33
22 Programming Mode - PreDive Prediction Menu	33 & 37
23 Programming Mode - Information Menu	33 & 37
24 Programming Mode - Information Display - PO ₂ Mode	33 & 37
25 Programming Mode - Setting Depth Alarm	34 & 38
26 Programming Mode - Setting Conservatism	34 & 38
27 Programming Mode - Constant FO ₂ Mode - Setting O ₂	38
28 Programming Mode - Constant FO ₂ Mode Setting Deco O ₂	34 & 38
29 Programming Mode - Constant FO ₂ Mode Setting Deco Bottom Time Benchmark	35 & 39
30 Programming Mode - Constant FO ₂ Mode Setting Deco Depth Benchmark	35 & 39
31 Programming Mode - Constant PO ₂ Mode - Setting PO ₂	34
33 Programming Mode - Setting TACLITE ON Time	35 & 39
34 Programming Mode - Logbook Menu	35 & 39
35 Logbook Mode Display	21 & 27
36 Logbook Mode Display - Deco Dive	21 & 27

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Interference Statement

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device. If not installed and used in accordance with the instructions, it may cause interference to radio communications. The limits are designed to provide reasonable protection against such interference in a residential situation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment on and off, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna of the affected radio or television.
- Increase the separation between the equipment and the affected receiver.
- Connect equipment and the affected receiver to power outlets on separate circuits.
- Consult the dealer or an experienced radio/TV technician for help.

Modifications

Changes or modifications not expressly approved by Cochran Consulting, Inc. could void the user's authority to operate the equipment.

Shielded Cables

To maintain compliance with FCC Regulations, this product is designed only for use with the ANALYST[®] interface cable (RS-232).

Copyright

All Specifications subject to change without prior notice. ANALYST[®] is a registered trademark of Cochran Consulting, Inc. Copyright 2003 by Cochran Consulting, Inc.

CE

The CE mark is used to mark conformity with the European Union EMC directive 89/336/EEC. Cochran dive instruments fulfill all the required EU directives.

PREN 13319

PREN 13319 "Diving accessories – Depth gauges and combined depth and time measuring devices – Functional and safety requirements test methods" is a European diving depth gauge standard draft. Cochran dive instruments are designed and tested to comply with this standard draft.

Limited Warranty

To the original purchaser ("OWNER") only, Cochran Undersea Technology, a division of Cochran Consulting, Inc. ("COCHRAN"), warrants this Product to be free of defects in materials and workmanship under normal SCUBA use for 12 months from the date of shipment from COCHRAN to the Authorized Dealer or Distributor. For purposes of establishing warranty eligibility, this date of shipment may be noted on the original Product box, or can be determined by contacting COCHRAN.

Any defective Product, unless cause is specifically excluded in the "Warranty Conditions and Limitations" section below, will at the sole discretion of COCHRAN, be repaired or replaced with a new or refurbished unit of comparable or better function and/or condition. COCHRAN is not responsible for any incidental or secondary damages as a result of Product malfunction.

WARRANTY CONDITIONS and LIMITATIONS

Product must have been obtained from a COCHRAN Authorized Dealer. Contact COCHRAN for verification of dealer status. This Limited Warranty is not transferable. The Warranty Registration card must be sent to COCHRAN within 15 days of purchase in order to validate Limited Warranty.

Failure to provide proper care for this Product will render this Limited Warranty null and void. Damages or malfunction resulting from accidental or deliberate abuse, tampering, battery leakage, exceeding maximum intended operating depth or other parameters, extreme heat or cold, or other conditions which COCHRAN may deem to be outside the intended scope of this Limited Warranty are not covered. Plastics, O-

rings, batteries, battery life, and flooded battery compartments are NOT covered by this Limited Warranty.

This Limited Warranty will be rendered null and void if an attempt is made to establish communications with this computer with any hardware and/or software other than the Cochran approved ANALYST® Interface.

OWNER is responsible for shipping this Product to COCHRAN for service, and paying all associated costs, including shipping, insurance, and import duties. OWNER may take Product to an Authorized Dealer to arrange service under terms of this Limited Warranty. COCHRAN will return Product to OWNER or Dealer via a method and carrier of its choosing. Costs for requested expedited return shipping will be the responsibility of OWNER. Product returned for service under terms of this Limited Warranty must be accompanied by a photocopy of the original sales receipt in order for warranty repair or replacement to be performed if the Warranty Registration Card is not on file.

STATEMENT of LIMITED LIABILITY

A mathematical model is used by this Product to calculate physiological effects of SCUBA diving related to use of compressed air or other breathing mixtures while at depth. Such effects specifically relate to nitrogen absorption into and elimination from body tissues, as well as effects of oxygen used in Enriched Air Nitrox breathing mixtures. However, because of the number of variables and the varying degrees to which they may affect individuals engaged in SCUBA diving, COCHRAN DOES NOT GUARANTEE THAT USE OF THIS PRODUCT WILL PREVENT DECOMPRESSION SICKNESS OR ANY OTHER CONDITION OR INJURY INCURRED WHILE USING THIS PRODUCT.

These influencing variables may include, but are not limited to, dehydration, obesity, age, old injuries, or other physical conditions on the part of the diver, or environmental extremes of heat or cold, or poor training, or diving practices, any of which may promote the onset of decompression sickness or other harmful effects.

Furthermore, this specific algorithm, or mathematical model, was developed by and under the auspices of the U.S. Navy. Cochran accepts no responsibility for its suitability or implementation. This device allows extremely aggressive diving practices with the accompanying high risk factor of Decompression Illness. Furthermore, the only testing of this

algorithm and product has been by the U.S. Navy for only the Constant PO_2 mode with 0.7 ata PO_2 . Although this product can be operated at PO_2 s other than 0.7 ata, the algorithm has NOT been tested and confirmed for this operation. Furthermore, this product can be operated in the Constant FO_2 mode, which has also NOT been tested and confirmed.

This Product is sold and intended to be used only as a guide, providing the TRAINED and CERTIFIED diver the information needed to make safe diving decisions. It is expressly understood that by buying and/or using this Product the Diver assumes ALL RISK as to its operability, reliability, quality, performance, accuracy, and suitability for his diving style. Furthermore, Diver recognizes that this Product is an electronic instrument being used in a hostile environment and is subject to failure, which may manifest itself in a number of ways. COCHRAN and its distributors and retailers will not be held liable for any personal injuries or other damages resulting from its use, even if COCHRAN has been advised of such occurrences or damages.

COCHRAN strongly supports and agrees with maximum depth limits of 50 meters for recreational SCUBA diving, as established by recognized training and certification agencies, and in no way encourages diving beyond these or any prudent lesser limits as may be necessitated by environmental, diver-specific, or other conditions.

Introduction

The NAVY Dive Computer ('NAVY') is quite simple to use and operate, but underneath that simplicity lies a significant level of sophistication. For the safest and most effective use of this instrument, it is important that the user fully understand the product. Please read and understand this entire manual and know the principles and practices of safe diving before using this device. The 'NAVY' is one of the first dive computers to implement a Training Mode which enables the computer to record and store data in shallow water training environments (swimming pools, shallow lakes, etc.). By using the 'NAVY', the diver specifically acknowledges that he has been adequately and thoroughly trained and certified to engage in Constant PO₂ and Nitrox diving by a professional, competent, recognized training agency.

User & Environmental Adaptation

The 'NAVY' is one of the new breed of Dive Computers that adapts its algorithm to the users diving environment and style as originally pioneered by COCHRAN. All of COCHRAN's newer dive computers incorporate this capability. The factors that are used for this "Adaptation" in the 'NAVY' are User Conservatism and Salt/Fresh Water Compensation.

User Conservatism

Current dive computers cannot tell if a diver is dehydrated, tired, overweight, a smoker, or has another physical issue requiring additional conservatism in the nitrogen algorithm. The 'NAVY' allows the diver to input an added degree of conservatism to the nitrogen algorithm from 0 to 50 percent in one-percent increments. Touch Contact Programming is featured.

Salt/Fresh Water Compensation (High/Low Conductivity)

There is approximately a three-percent difference in depth readings taken in salt water versus fresh water. Some dive computers are calibrated in feet of fresh water and some are calibrated in feet of seawater. Diving in a medium different from what the dive computer is calibrated will cause apparent depth errors. Only COCHRAN dive computers, including the 'NAVY', actually determine the type of diving medium and compensate the depth reading accordingly. This is

accomplished by measuring the conductivity of the water during a dive. Caution must be taken interpreting this reading since some apparent fresh water is actually high in minerals or contaminants and is correctly compensated as salt water. This commonly occurs in some caves, springs, and lakes.

Altitude Acclimatization

The 'NAVY' regularly samples the ambient barometric pressure to determine changes in altitude and adjusts its depth readings accordingly. Note that temperature and weather systems also affect barometric pressure and hence, apparent altitude. If a significant altitude change occurs, a minimum of one hour should pass before diving to allow the unit to adapt to this new altitude. Rapid changes in altitude should be avoided. The dive computer may interpret a rapid change from a high altitude to a lower altitude as a dive. Should this occur, removing the batteries for ten minutes would reset the computer, however, all tissue nitrogen loading will also be lost. The 'NAVY' has a maximum altitude capability of 4,600 meters above mean sea level.

Constant PO₂ & FO₂ Modes

Almost all other dive computers only compute using air or enriched air (Nitrox) which is referred to as "Constant FO₂" and is commonly found in open-circuit systems and in semi-closed circuit rebreathers. The 'NAVY' has this capability, but also computes using a "Constant PO₂" as commonly found in closed-circuit rebreathers. The user can select which of these two modes, or combination of these two modes is desired by using the ANALYST[®] PC interface.

If the user selects CONSTANT FO₂ mode, the Oxygen content of the Nitrox blends can be selected from 21 to 99.9 percent.

If the user selects CONSTANT PO₂ mode, the Partial Pressure of Oxygen (PO₂) can be selected between 0.5 and 1.5 ata.

Via the ANALYST[®] PC Interface, the user can specify when, or if the unit should change to a CONSTANT FO₂ mode to CONSTANT PO₂ mode at or near the surface. This is common since most divers will revert to air or enriched air at or near the surface.

It is important to recognize that if CONSTANT FO₂ mode is selected, the unit will not switch to CONSTANT PO₂ under any circumstances.

Deco PO₂/ FO₂ Mode Switching

While using the 'NAVY' in the CONSTANT PO₂ mode, it may be desirable to switch to another gas source at some point, usually during the end of the dive. This gas source may be ordinary air, or an enriched gas. This switching is automatic. Since the depth of the desired switch to the CONSTANT FO₂ blend is known ahead of time, it can be used to automatically switch the computer to the CONSTANT FO₂ Blend or back to the CONSTANT PO₂ mode should the diver descend again. This switch definition is done prior to starting a dive by programming the Deco FO₂ Blend Oxygen percentage, the minimum dive time that must expire and the absolute maximum depth of the Blend switch. Depending on surface swells, a small amount may be added to this depth to ensure that when the diver is shallower than the depth the Blend switch will actually occur. If the diver subsequently descends below this depth, the CONSTANT PO₂ mode is again assumed to be in use. The unit will automatically revert to the CONSTANT PO₂ mode at the conclusion of the PostDive Interval. If this switch depth is set to zero, the unit will not switch mode. All of these factors can be set via Touch Contact Programming or the ANALYST[®] PC interface.

Metric/Imperial Modes

The 'NAVY' can be easily selected to display either Metric or Imperial units. If the computer is displaying in Metric, the "METRIC" legend will be illuminated when the computer is on. Metric/Imperial selection is made using the ANALYST[®] software. Changing Modes does not affect any profiles or data stored in the computer.

Low Battery Indications

Fresh batteries should read about 3.2 volts on the InFormation display. When the battery voltage decays to approximately 2.1 volts, the "BATT" legend will be illuminated. It is recommended to change the batteries at this point, but several dives might still remain possible. When the battery voltage decays to approximately 1.6 volts, the "BATT" legend will begin to flash on and off. Once the "BATT" legend begins to flash the TACLITE[™] is deactivated, to conserve the remaining battery power even though the unit may be on a dive, and can not be activated until fresh batteries are installed. While there should be sufficient battery power to normally complete a dive, it is not recommended to begin a new dive until fresh batteries are installed. After the computer automatically turns itself off (enters Sleep Mode) 70 minutes after a dive, it cannot be turned back on if the battery voltage is less than 1.6 volts. Fresh batteries must

be installed. See the “BATTERY CHANGES” section of this manual for detailed information.

CAUTION!!! ACCIDENTIAL OR INTENTIONAL LOSS OF BATTERY POWER WILL CAUSE ALL PREVIOUS DIVE NITROGEN LOADING TO BE LOST. THIS WILL AFFECT NITROGEN CALCULATIONS ON NEAR-FUTURE DIVES. AFTER A BATTERY CHANGE, CONFIRM THAT NO-DECOMPRESSION TIME DATA IS REASONABLE IN THE PRE-DIVE PREDICTION MODE. IF LOSS OF NITROGEN LOADING OCCURS, COCHRAN STRONGLY RECOMMENDS THAT A PERIOD OF 24 HOURS ELAPSES BEFORE MAKING ANY SUBSEQUENT DIVES.

TACLITE™

The 'NAVY' is equipped with the TACLITE™ tactical low-light fiber-optic backlighted display. The TACLITE™ can be activated on demand. To turn the TACLITE™ on, tap the face of the 'NAVY' and the TACLITE™ will turn on for the preprogrammed number of seconds (1 to 99), then turn off. By tapping the face again the TACLITE™ will turn on again. In this fashion the TACLITE™ can be kept on for as long as wanted. The TACLITE™ will turn off when the 'NAVY' turns off. If 0 is entered the TACLITE™ will never turn on, if 99 is entered the TACLITE™ will only turn off when the 'NAVY' does. The number of seconds that the TACLITE™ stays on is settable via the Programming Mode or via the ANALYST® PC Interface, factory setting is 10 seconds.

Side Contacts

For identification purposes, put the 'NAVY' face up in the orientation that allows the display, display bezel, and product name to be read. There are three contacts on the right side of the unit. The closest contact toward the bottom of the display is Contact 1, the middle contact is Contact 2, while the contact farthest away at the top of the display is Contact 3. Contacts are used to:

- Turn the unit on by sensing wetted Contacts 1 & 2;
- Enter Logbook Mode by sensing wetted Contacts 1 & 2;
- Enter Programming Mode by sensing shorted Contacts 1 & 2;
- Select Programming options by sensing shorted Contacts 1 & 2;
- Increment Programmable options by sensing shorted Contacts 2 & 3;
- Determine water conductivity when in a dive via Contacts 1 & 2 & 3;
- Communicate with the ANALYST® PC Interface via Contacts 1 & 2 & 3.

It is important that the Contacts be kept clean and dry when the computer is not in use. Do not use solvents. Use only clean, fresh water.

Turning On The 'NAVY'

Although the 'NAVY' automatically turns on when it is submerged in water, it is **STRONGLY** recommended that the unit be manually powered up by wetting two fingers and simultaneously touching Contacts 1 and 2 just prior to a dive. This allows the diver to ensure that the unit is operating correctly and has adequate battery capacity prior to entry. Once activated, the unit will remain on for 60 minutes. If a dive is not initiated within 60 minutes, the 'NAVY' automatically shuts off. Notice that when Contacts 1 & 2 are first bridged, a short beep is issued which indicates that the unit is recognizing the touch.

The 'NAVY' will not turn on if the altitude is greater than 4,600 meters or if the battery voltage is less than approximately 1.6 volts.

As the 'NAVY' first recognizes a turn-on command, it begins a "Diagnostic" function where many aspects of the system will be exercised and tested. This procedure takes about three seconds and an audible beep is issued each second as certain tests are successfully completed. During this time, all of the segments in the display are turned on so their operability can be confirmed. The user should ensure that all of the display segments are on and operating correctly. Should a test indicate a malfunction or marginal test, the unit will turn back off.

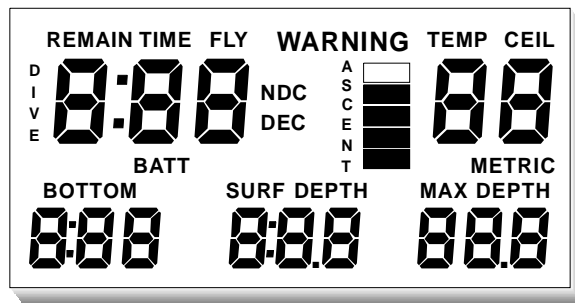


Figure 1
SELF DIAGNOSTIC DISPLAY
All Segments Illuminated

Turning Off The 'NAVY'

After a dive, the 'NAVY' will remain on for 70 minutes before automatically entering its "Sleep Mode". The 'NAVY' will automatically turn off once all residual nitrogen outgassing has been completed.

Warning Indications

Failure to observe audible and/or visual warnings and take corrective action may result in injury or death.

If the audible beeper has been disabled, the Warnings will be visual only.

- If the unit ascends faster than the selected maximum ascent rate, the hollow bar of the ascent bargraph will flash and the "WARNING" legend will illuminate. The unique audible sweep alarm will continue to sound once per second until the situation is corrected.
- If the unit descends below the user set Depth Alarm, the "WARNING" legend will illuminate and flash along with the Depth digits. The audible alarm will sound once per second for five seconds and repeats once every two minutes. The Depth alarm is not active in the Decompression Mode to avoid confusion with the "Shallower Than Ceiling" alarm.
- If the diver has less than two minutes of a No-Decompression Time remaining, the "WARNING" legend will illuminate and flash along with the Remaining NDC time digits. An audible alarm will sound once per second for five seconds and repeats once every two minutes.
- If the diver enters the Decompression Mode, an audible alarm will sound once per second for five seconds.
- During a Decompression dive, if the Depth is less than the CEILING, the "WARNING" legend will illuminate and flash along with the Depth and Ceiling digits. The unique audible sweep alarm will continue to sound once per second until the situation is corrected.
- During a Decompression dive, if the Depth is less than the CEILING, then the Depth and Ceiling digits will flash. The unique audible sweep alarm will continue to sound once per second until the situation is corrected.

Operating Modes of the 'NAVY':

PreDive Prediction Mode
Surface Mode
Subsurface Mode
Decompression Mode
PostDive Interval Mode
Logbook Mode
Training Mode
Programming Mode.
Sleep Mode

CONSTANT PO₂ OPERATING MODE**PreDive Prediction Mode - PO₂ Mode**

The PreDive Prediction Screen is accessed through the Programming menu (See Programming, page 30). This enables the diver to view the PreDive Prediction information at the touch of the Contacts. The 'NAVY' PreDive Prediction starts at 9 meters and increasing in 3-meter increments. PreDive Predictions will terminate when the No-Decompression (NDC) time prediction is two minutes or a maximum depth of 99 meters is reached. During PreDive Prediction the current PO₂ that the units is programmed for is used to compute the NDC time remaining and will influence predictions. Additional Conservatism and residual nitrogen can also affect PreDive Predictions. Once the maximum PreDive Prediction depth has been reached the unit will return to the Surface Mode. Typical PreDive predictions can be seen in the next chart.

Typical PreDive Predictions for PO2 Mode:

Depth	PO2 Set Points		
	0.7 ata	1.0 ata	1.3 ata
9	9:59	9:59	9:59
12	6:38	9:59	9:59
15	2:28	6:42	9:59
18	1:16	2:28	6:46
21	:52	1:16	2:29
24	:40	:53	1:17
27	:33	:41	:53
30	:28	:33	:41
33	:23	:28	:33
36	:19	:23	:28
39	:14	:19	:23
42	:11	:14	:19
45	:10	:11	:14
48	:08	:10	:11

For this chart, the Temperature Factor, Ascent Rate Factor, and Repetitive Dive Factor are set to off, and the Conservatism factor is set to 0%. All of these factors, in addition to any residual nitrogen, can affect the NDC predictions. NDC times shown are approximate.

Refer to the ANALYST[®] for information about how to modify parameters.

During the PreDive Prediction Mode, the unit will compute and display the maximum safe time at that depth. Also the PO₂ set point value will be displayed in the lower center of the display.

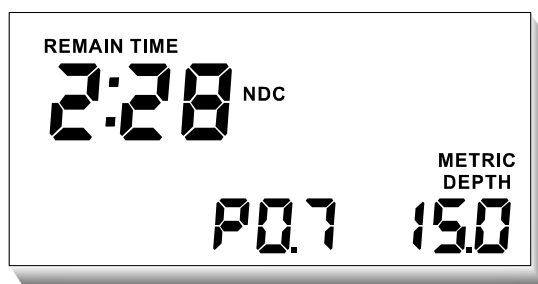


Figure 13
PRE-DIVE PREDICTION
Constant PO2 Mode

NDC Time Predict	148 mins
(2 hrs 28 mins)	
Constant PO2	0.7 ata
Depth Predict	15 mtr

Surface Mode- PO2 Mode

At the completion of the Self-Diagnostic mode or after the PostDive Interval following a dive, the 'NAVY' enters the Surface Mode. In this mode, current Surface Time, the previous dive's Maximum Depth, the previous dive's Bottom Time, current PO₂ set point value, and Temperature are displayed if applicable. Figure 2 shows the display with no residual nitrogen (a clean dive). Figure 5 shows the display with residual nitrogen (a repetitive dive). Figure 2a shows the alternate screen for both with and without residual nitrogen.

"Surface Time" starts at zero immediately after a dive and begins counting minutes. If the computer shuts off (enters Sleep Mode) and is turned on with nitrogen residual left, the Surface Time will continue to count. If the computer shuts off and is turned on with no nitrogen residual left, the Surface Time will be zero.

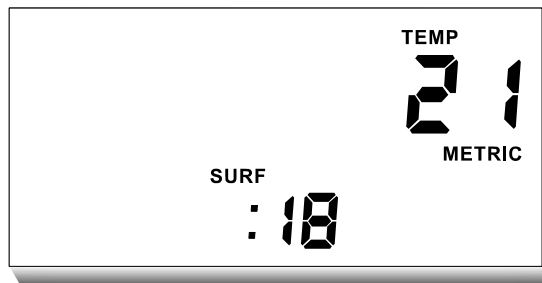


FIGURE 2
SURFACE MODE DISPLAY
Primary Screen
Constant PO₂ Mode
No Nitrogen Residual

Altitude < 600 mtr
Temperature 21 C
Surface Time 18 mins
Battery OK

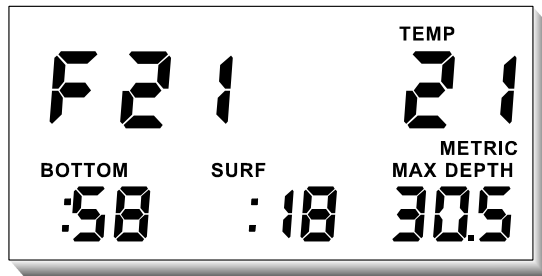


FIGURE 6
SURFACE MODE DISPLAY
Primary Screen
Constant FO₂ Mode
Residual Nitrogen
Diver Breathing 21 %
Altitude < 600 mtr
Temperature 21 C
Bottom Time 58 mins
Surface Time 18 mins
Max Depth 30.5 mtr
Battery OK



FIGURE 2a
SURFACE MODE DISPLAY
Alternate Screen
Constant PO2 Mode
Constant PO2 0.7 ata
Battery Voltage 2.9 volts

Subsurface Mode - PO2 Mode

Whether in the Surface Mode, PreDive Prediction Mode, Programming Mode or the Logbook Mode, the 'NAVY' will automatically enter the Subsurface Mode when the unit determines that it is in water deeper than two meters.

Surface Time will be replaced with current Depth displayed in 0.1-meter increments. Bottom Time will begin once the 'NAVY' senses that the diver has descended below two meters and continues until the diver has ascended above one meter. The maximum Bottom Time displayed is 9 hours 59 minutes.

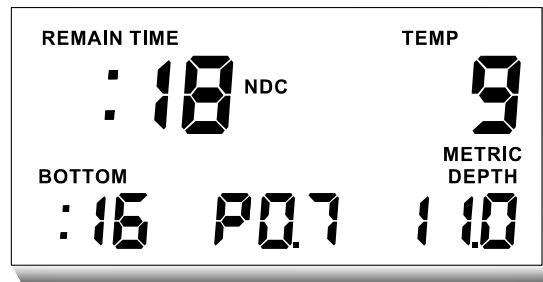


Figure 8
SUBSURFACE MODE DISPLAY
Constant PO2 Mode
Remain NDC Time 18 mins
Ascent Rate 0
Temperature 9 C
Bottom Time 16 mins
Depth 11.0 mtr
Constant PO2 0.7 ata
Battery OK

Decompression Mode - PO2 Mode

Should a no-decompression limit be overstayed, the 'NAVY' will enter the Decompression Mode. In this mode, the Ceiling digits will display the depth at which the diver must stop and not ascend above during final ascent (the "TEMP" legend and digits will be replaced with the "CEIL" legend and digits). The first Ceiling will be at 3 meters and continue in 3-meter increments to a maximum of 27 meters.

The Remaining No-decompression Time and “NDC” legend will be replaced with Decompression Time and “DEC” legend. Both STOP time and TOTAL time are displayed using the same set of digits. As shipped from the factory (can be changed via ANALYST[®]), STOP and TOTAL time will alternate at the rate of once every two seconds. In this way, the diver can view not only the time to spend at a particular STOP depth, but also the TOTAL time it will take to complete all STOPS. Clearly, the larger of the two alternating numbers is the Total Decompression Time of all stops, and the smaller of the two numbers is the time required at the current stop. At the ten foot stop, the TOTAL and STOP times may be the same and therefore appear to not alternate. When at a specific stop, the decompression time at that stop is as shown, and will count down. The Total decompression time, however, is merely an indication based on a forecast using the normal dive PO₂ or FO₂ value and the Deco Ascent Rate that has been entered via the ANALYST[®]. The times that are forecast do not include the effects of a Deco breathing gas switch, once the switch is made the displayed times are accurate for that breathing gas. The TOTAL time that is shown is usually longer than that actually required.

Predicted Decompression Time at a specific stop assumes that the diver is at the required Ceiling. However, it is not necessary to be precisely at the specified Ceiling. Outgassing credit will be given that is proportional to a depth that is deeper than the specified Ceiling. A small margin shallower than the Ceiling also exists. Should a Ceiling be violated (diver is shallower than Ceiling), the Depth and Ceiling digits will flash as a visual warning and a unique audible alarm will sound once per second. This warning will continue until the Depth has been corrected. Outgassing will continue even though the diver is shallower than the Ceiling.

If the diver surfaces before satisfying his decompression obligation, the ‘NAVY’ will continue to give outgassing credit as if it was in a dive, but at a depth of zero meters. The unit will continue to log data and perform as if actually in a dive. If in the Constant PO₂ mode and not switched to the Constant FO₂ mode, the unit will actually decompress as if it were actually at the various required decompression stops using the specified Constant PO₂. If the unit is in the Constant PO₂ mode and switched to Constant FO₂ or in the Constant FO₂ mode, the unit will decompress correctly. However, the forecasted decompression times are based on Constant PO₂ and will not be accurate. When the decompression obligation is finally satisfied, the ten-minute “PostDive Interval” will begin and the dive will terminate in ten minutes.

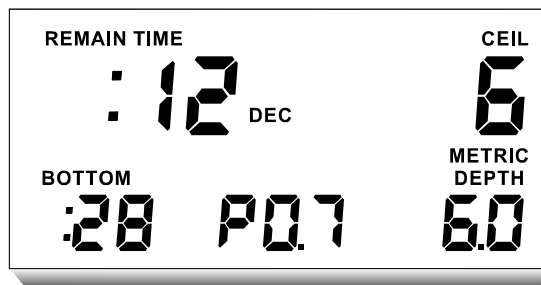


Figure 16
DECOMPRESSION MODE
Constant PO2 Mode
(Showing Total Deco Time)

Total Deco Time	12 mins
Ascent Rate	0
Stop Ceiling	6 mtr
Bottom Time	28 mins
Constant PO2	0.7 ata
Depth	6 mtr
Battery	OK



FIGURE 17
DECOMPRESSION MODE
Constant PO2 Mode
(At Zero Depth)
(CEILING & DEPTH Digits
Flashing)

Total Deco Time	12 min
Stop Ceiling	6 mtr
Bottom Time	28 mins
Depth	0 mtr
Constant PO2	0.7 ata
Battery	OK

Logbook Mode

The Logbook Mode of the 'NAVY' is accessed via the Programming Mode (see Programming Mode, page 30). This enables the diver to view the dive statistics; the 'NAVY' has the ability to provide diving data in this mode for the previous 512 dives. The most recent dive will be displayed first. To view the next dive, touch contacts 1 & 2 with wetted finger after pausing for a few seconds. Do not use a metal object such as a coin or knife-blade once in the Logbook Mode, since it will cause the unit to exit the Programming Mode.

Information contained in each log will include:

- Overall Dive Number
- Minimum NDC Time
- Maximum DEC Time (Deco Dive)
- Fastest Rate of Ascent.
- Minimum Water Temperature
- Maximum Ceiling (Deco Dive)
- Bottom Time
- Surface Interval before the dive
- Maximum Depth

It is not necessary to exit the Logbook Mode prior to initiating a dive. Once the diver has descended below two meters, the 'NAVY' will immediately enter the Subsurface Mode.

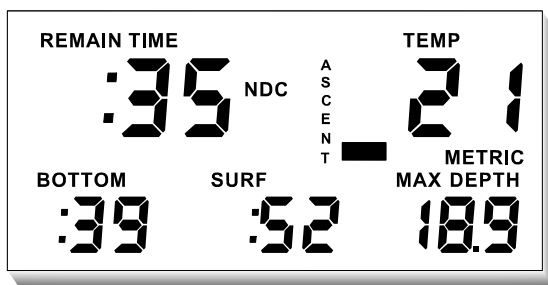


Figure 35
LOGBOOK MODE DISPLAY

Min NDC Time	35 mins
Max Ascent Rate	15 fpm
Min Temperature	21 c
Bottom Time	39 mins
Surface Time	52 mins
Max Depth	18.9 meter
Battery	OK

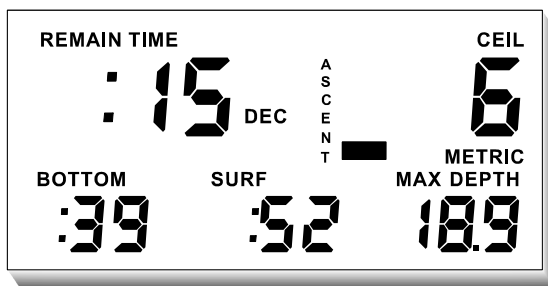


Figure 36
LOGBOOK MODE DISPLAY
(DECO DIVE)

Max Deco Time	15 mins
Max Ascent Rate	15 fpm
Deepest Ceiling	6 meter
Bottom Time	39 mins
Surface Time	52 mins
Max Depth	18.9 meter
Battery	OK

NOTE: The overall Dive Number is displayed at the lower right of the Logbook Menu screen (see figure 34a, page 36). If the logbook example is the most recent dive made, it could be identified that 235 dives had been made with that specific unit.

Confined Water Protocol (Training Mode)

The 'NAVY' is one of the first dive computers to offer an operating mode designed to record and store data from training dives performed in shallow water environments (swimming pools, shallow lakes, lagoons, etc.) or calm open water environments that have less than 30-centimeter seas. In the Training Mode, the 'NAVY' enters the Subsurface Mode at a depth of 60 centimeters instead of 1.5 meters and will exit the Subsurface Mode at 30 centimeters instead of 1 meter. Also the PostDive Surface Interval may be extended from 10 minutes up to a maximum of 30 minutes in 1-minute increments after which the dive data

is stored in the computer's memory. These changes permit the Instructor to record the complete training session, including in-water surface periods, as a single dive. The Training Mode can only be enabled/disabled via the ANALYST[®] PC Interface.

CONSTANT FO2 OPERATING MODE

PreDive Prediction Mode - FO2 Mode

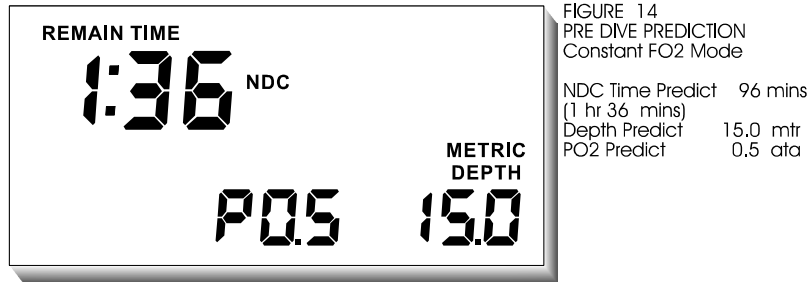
The PreDive Prediction Screen is accessed through the Programming menu (See Programming, page 30). This enables the diver to view the PreDive Prediction information at the touch of the Contacts. The 'NAVY' PreDive Prediction starts at 9 meters and increasing in 3-meter increments. PreDive Predictions will terminate when the No-Decompression (NDC) time prediction is two minutes or a maximum depth of 99 meters is reached. During PreDive Prediction the current O₂ setting, of Blend 1, that the units is programmed for is used to compute the NDC time remaining and will influence predictions. Additional Conservatism and residual nitrogen can also affect PreDive Predictions. Once the maximum PreDive Prediction depth has been reached the unit will return to the Surface Mode. Typical PreDive predictions can be seen in the next chart.

Typical PreDive Predictions for FO2 Mode:

Depth:	FO2 %			
	21%	32%	36%	50%
9	6:34	9:59	9:59	9:59
12	2:50	6:46	9:59	9:59
15	1:36	3:07	4:27	9:59
18	1:05	1:54	2:31	9:59
21	:50	1:15	1:34	5:18
24	:41	:58	1:08	(3:07)
27	:35	:47	:54	(2:15)
30	:30	:40	:45	(1:31)
33	:27	:35	:39	(1:11)
36	:23	:31	(:34)	(:58)
39	:19	:28	(:31)	(:50)
42	:15	(:25)	(:28)	(:44)
45	:13	(:21)	(:25)	(:39)
48	:11	(:18)	(:21)	(:35)

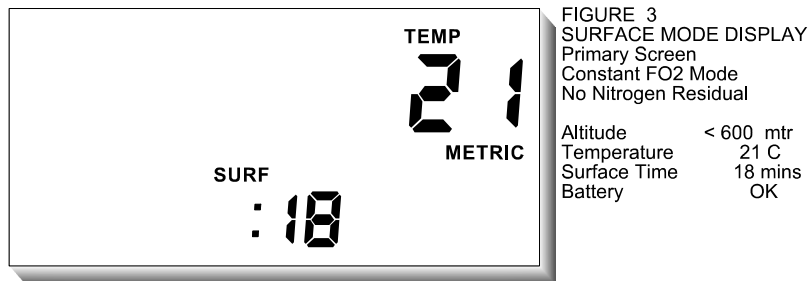
NOTE: Times in parentheses are at or above a PO₂ of 1.59 ata.

For this chart, the Temperature Factor, Ascent Rate Factor, and Repetitive Dive Factor are set to off, and the Conservatism factor is set to 0%. All of these factors, in addition to any residual nitrogen, can affect the NDC predictions. NDC times shown are approximate. Refer to the ANALYST® for information about how to modify parameters. During the PreDive Prediction Mode, the unit will compute and display the maximum safe time at and the PO₂ value at that depth.



Surface Mode- FO2 Mode

At the completion of the Self-Diagnostic mode or after the PostDive Interval following a dive, the 'NAVY' enters the Surface Mode. The Surface Mode has two screens, a Primary Screen and an Alternate Screen. You may switch to the Alternate Screen by rotating the wrist quickly or tapping firmly on the face of the WU. The Primary Screen displays, if applicable: current Surface Time, the previous dive's Maximum Depth, the previous dive's Bottom Time, the current breathing gas, and Temperature. The Alternate Screen displays the current FO₂ oxygen percentage, and current battery voltage. Figure 3 shows the display with no residual nitrogen (a clean dive). Figure 6 shows the display with residual nitrogen (a repetitive dive). Figure 3a shows the alternate screen for both with and without residual nitrogen.



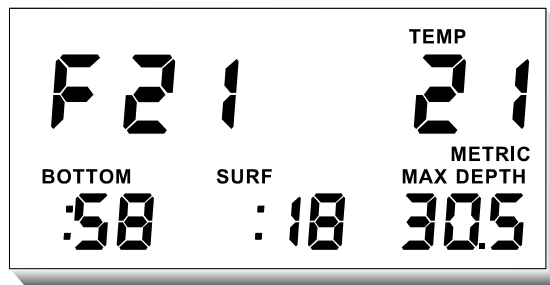


FIGURE 6
SURFACE MODE DISPLAY
Constant FO2 Mode
Residual Nitrogen

Constant FO2	21 %
Altitude	< 600 mtr
Temperature	21 C
Bottom Time	58 mins
Surface Time	18 mins
Max Depth	30.5 mtr
Battery	OK

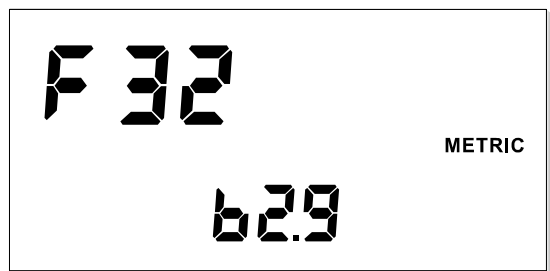


FIGURE 3a
SURFACE MODE DISPLAY
Alternate Screen
Constant FO2 Mode

Constant FO2	32 %
Battery Voltage	2.9 volts

Subsurface Mode - FO2 Mode

Whether in the Surface Mode, PreDive Prediction Mode, Programming Mode or the Logbook Mode, the 'NAVY' will automatically enter the Subsurface Mode when the unit determines that it is in water deeper than two meters.

Surface Time will be replaced with current Depth displayed in 0.1-meter increments. Bottom Time will begin once the 'NAVY' senses that the diver has descended below two meters and continues until the diver has ascended above one meter. The maximum Bottom Time displayed is 9 hours 59 minutes.

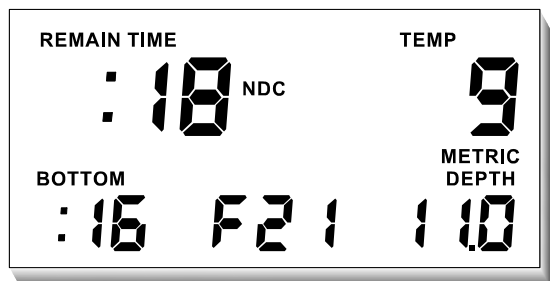


Figure 10
SUBSURFACE MODE DISPLAY
Constant FO2 Mode

Remain NDC Time	18 mins
Ascent Rate	0
Temperature	9 C
Bottom Time	16 mins
Depth	11.0 mtr
Constant FO2	21 %
Battery	OK

Decompression Mode - FO2 Mode

Should a no-decompression limit be overstayed, the 'NAVY' will enter the Decompression Mode. In this mode, the Ceiling digits will display the depth at which the diver must stop and not ascend above during final ascent (the "TEMP" legend and digits will be replaced with the "CEIL" legend and digits). The first Ceiling will be at 3 meters and continue in 3-meter increments.

The Remaining No-decompression Time and "NDC" legend will be replaced with Decompression Time and "DEC" legend. Both STOP time and TOTAL time are displayed using the same set of digits. As shipped from the factory (can be changed via ANALYST[®]), STOP and TOTAL time will alternate at the rate of once every two seconds. In this way, the diver can view not only the time to spend at a particular STOP depth, but also the TOTAL time it will take to complete all STOPS. Clearly, the larger of the two alternating numbers is the Total Decompression Time of all stops, and the smaller of the two numbers is the time required at the current stop. At the ten foot stop, the TOTAL and STOP times may be the same and therefore appear to not alternate. When at a specific stop, the decompression time at that stop is as shown, and will count down. The Total decompression time, however, is merely an indication based on a forecast using the normal dive PO₂ or FO₂ value and the Deco Ascent Rate that has been entered via the ANALYST[®]. The times that are forecast do not include the effects of a Deco breathing gas switch, once the switch is made the displayed times are accurate for that breathing gas. The TOTAL time that is shown is usually longer than that actually required.

Predicted Decompression Time at a specific stop assumes that the diver is at the required Ceiling. However, it is not necessary to be precisely at the specified Ceiling. Outgassing credit will be given that is proportional to a depth that is deeper than the specified Ceiling. A small margin shallower than the Ceiling also exists. Should a Ceiling be violated (diver is shallower than Ceiling), the Depth and Ceiling digits will flash as a visual warning and a unique audible alarm will sound once per second. This warning will continue until the Depth has been corrected. Outgassing will continue even though the diver is shallower than the Ceiling.

If the diver surfaces before satisfying his decompression obligation, the 'NAVY' will continue to give outgassing credit as if it was in a dive, but at a depth of zero meters. The unit will continue to log data and perform as if actually in a dive. If in the Constant PO₂ mode and not switched to the

Constant FO₂ mode, the unit will actually decompress as if it were actually at the various required decompression stops using the specified Constant PO₂. If the unit is in the Constant PO₂ mode and switched to Constant FO₂ or in the Constant FO₂ mode, the unit will decompress correctly. However, the forecasted decompression times are based on Constant PO₂ and will not be accurate. When the decompression obligation is finally satisfied, the ten-minute "PostDive Interval" will begin and the dive will terminate in ten minutes.

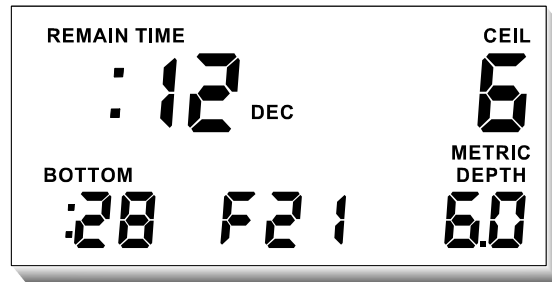


Figure 16a
DECOMPRESSION MODE
Constant FO₂ Mode
(Showing Total Deco Time)

Total Deco Time	12 mins
Ascent Rate	0
Stop Ceiling	6 mtr
Bottom Time	28 mins
Constant FO ₂	21 %
Depth	6 mtr
Battery	OK



FIGURE 17a
DECOMPRESSION MODE
Constant FO₂ Mode
(At Zero Depth)
(CEILING & DEPTH Digits
Flashing)

Total Deco Time	12 min
Stop Ceiling	6 mtr
Bottom Time	28 mins
Depth	0 mtr
Constant FO ₂	21%
Battery	OK

Logbook Mode - FO₂ Mode

The Logbook Mode of the 'NAVY' is accessed via the Programming Mode (see Programming Mode, page 30). This enables the diver to view the dive statistics; the 'NAVY' has the ability to provide diving data in this mode for the previous 512 dives. The most recent dive will be displayed first. To view the next dive, touch contacts 1 & 2 with wetted finger after pausing for a few seconds. Do not use a metal object such as a coin or knife-blade once in the Logbook Mode, since it will cause the unit to exit the Programming Mode.

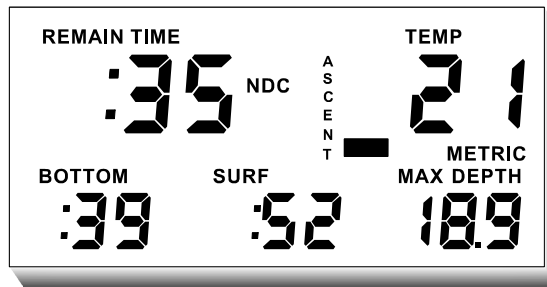


Figure 35
LOGBOOK MODE DISPLAY

Min NDC Time	35 mins
Max Ascent Rate	15 fpm
Min Temperature	21 c
Bottom Time	39 mins
Surface Time	52 mins
Max Depth	18.9 meter
Battery	OK

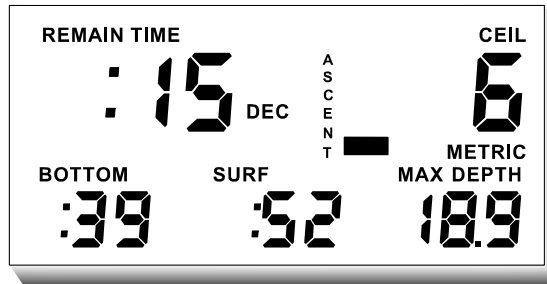


Figure 36
LOGBOOK MODE DISPLAY
(DECO DIVE)

Max Deco Time	15 mins
Max Ascent Rate	15 fpm
Deepest Ceiling	6 meter
Bottom Time	39 mins
Surface Time	52 mins
Max Depth	18.9 meter
Battery	OK

NOTE: The overall Dive Number is displayed at the lower right of the Logbook Menu screen (see figure 34a, page 36). If the logbook example is the most recent dive made, it could be identified that 235 dives had been made with that specific unit.

Ascent Rate Bar Graph

The Ascent Rate bar graph and alarms are active in both the Subsurface Mode and Decompression Mode when the depth is below 3 meters. The five-segment bar graph is used to display the diver's rate of ascent. The factory default for maximum ascent rate is 18 meters per minute. With this setting, no bars will illuminate if a diver is ascending at a rate less than 3 meters per minute. If the diver has an ascent rate of more than 18 meters per minute, the entire Ascent Rate Bar Graph will flash, and audible alarm will sound once per second, and the WARNING legend will illuminate. Each segment indicates an additional 3 meters per minute of Ascent Rate.

Via the ANALYST® PC Interface, the maximum Ascent Rates alarms can be selected from 6 to 18 meters per minute. Another ANALYST® selection pertains to the bar graph itself. The two selections given are either FIXED or PROPORTIONAL. With FIXED, each of the five bars indicates an additional 3 meters per minute of Ascent Rate regardless of the maximum Ascent Rate selected. With PROPORTIONAL, each of the five bars indicate 20% (one-fifth) of the selected maximum Ascent Rate.







A third option that is accessible via the ANALYST® PC Interface is a VARIABLE Ascent Rate. With this option, the Ascent Rate Alarm is determined by depth. As the diver ascends to shallow depths, the maximum Ascent Rate is lowered. The maximum Ascent Rates and their associated depth are:

18 meters or deeper	18 meters per minute
17.9 meters to 9 meters	meters per minute equal to the depth
Less than 9 meters	9 meters per minute

The sensitivity or responsiveness of the Ascent Rate may be selected. Via the ANALYST®, eight different levels of sensitivity are available.

GREATER THAN 18 METERS
PER MINUTE WARNING AND
TOP BAR OF GRAPH WILL FLASH

WARNING

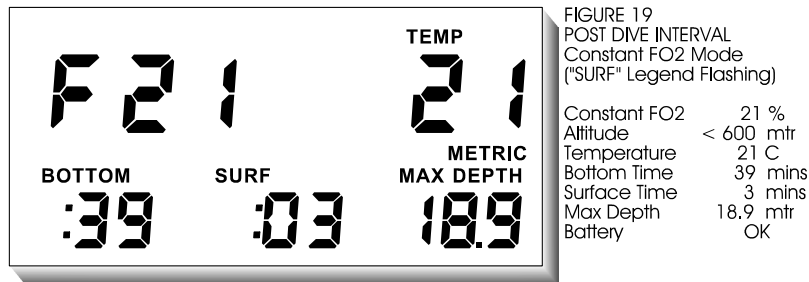
A		15 TO 18 METERS PER MINUTE
S		12 TO 15 METERS PER MINUTE
C		09 TO 12 METERS PER MINUTE
E		06 TO 09 METERS PER MINUTE
N		03 TO 06 METERS PER MINUTE
T		03 TO 06 METERS PER MINUTE

**Figure 12 Ascent Rate Bar Graph
(Fixed at 18 meters-per-minute)**

NOTE: Customizing the Ascent Rate and Ascent Rate Bar Graph are just two of the many additional programmable features available when using the ANALYST® PC Interface. See an Authorized Team Cochran Dealer for a complete demonstration. Some available features are described in the section "USER CONFIGURABLE OPTIONS".

PostDive Interval Mode

During the first ten minutes (or up to thirty minutes if the unit is in the Training Mode) after a dive, the 'NAVY' is in the PostDive Interval Mode. The flashing "SURF" legend and a Surface Time of less than ten minutes (or up to thirty minutes if the unit is in the Training Mode) indicate this. Should another dive be commenced before the completion of the PostDive Interval, that dive will be considered an extension of the previous dive. In this case, Bottom Time will NOT include the time spent on the surface in this PostDive Interval Mode. However, when reviewing the profile with the ANALYST®, the time spent on the surface in this mode will be shown. As in the normal Surface Mode the PostDive Interval Mode has a primary and alternate display screen. The primary screen will display the breathing gas that the diver is assumed to be breathing on the surface, Air (F21) and the alternate screen will display the programmed dive mode, i.e. P07, F21. The alternate screens are the same as figures 2a (page 18) and 3a (page 24).



Sleep Mode

Thirty minutes after the 'NAVY' has concluded the Post-Dive Interval the 'NAVY' will enter into a Sleep Mode. In the Sleep mode the 'NAVY' computer continues to perform out-gassing calculations and keep track of the Surface time, and Time To Fly but ceases all other activities. This is a power saving feature of the 'NAVY'. The current Surface Interval and PreDive Predictions can be viewed by turning the unit back on.

Exceeding Depth Rating

If the 'NAVY' is subjected to a depth greater than 100 meters, the 'NAVY' will display a depth of 99.0 meters. The WARNING legend will illuminate and the depth digits will flash and the computer will issue a 5-beep audible alarm once ever two minutes. Decompression calculations will be based on a depth of 99.0 meters.

NOTE: Diving the 'NAVY' to a depth of 100 meters or greater will void the 'NAVY's Limited Warranty.

Programming Mode

Touch Contacts

For identification purposes, put the 'NAVY' face up in the orientation that allows the display, display bezel, and product name to be read. There are three contacts on the right side of the unit. The closest contact toward the bottom of the display is Contact 1, the middle contact is Contact 2, while the contact farthest away at the top of the display is Contact 3.

Overview

The Programming Mode of the 'NAVY' allows the user to have access or view or program into the dive computer:

- The PreDive Prediction Mode.
- Displaying Battery voltage
- A Maximum Depth Alarm
- An Added degree of Conservatism from 0 to 50%.
- Setting oxygen percentage of blend 1 in the Constant FO2 Mode
- Setting the PO2 set point in the Constant PO2 Mode
- Setting the Deco FO2 oxygen percentage
- Setting the Deco FO2 Bottom Time Benchmark
- Setting the Deco FO2 Depth Benchmark
- Programming the On Time for the TACLITE™
- Access the Logbook Mode

NOTE: To enable the Programming Mode, the 'NAVY' must be on the Surface and not in the ten-minute Post Dive Interval.

NOTE: All audible and visual alarms are suspended while the 'NAVY' is in the Programming Mode. Upon exiting the Programming Mode all alarms are reactivated.

NOTE: Once a value has been changed and the next menu option selected, the new value is stored.

NOTE: It is strongly recommended that the Programming Mode is activated again and a complete review of what was stored is accomplished.

NOTE: If the 'NAVY' is left in the Programming mode for five minutes without the contacts being touched, the unit will automatically exit the Programming Mode and return to the Surface Mode. Once this occurs the 'NAVY' will retain the modified programmed settings that have been stored. Options that have not been modified will retain their previous settings.

Programming Mode - Procedure

Contacts 1, 2, & 3 are for programming sequences.

To begin the programming sequence:

1. Turn the unit on;
2. Using a coin or other conductive metal object, briefly bridge Contacts 1 and 2 until a short beep is heard and the Programming Menu is seen in the display. The Programming Menu options depend on whether the unit is in the PO2 or FO2 mode and are displayed in sequence each time that Contacts 1 & 2 are bridged with a **coin** the menu increments to the next selection. The program option is displayed on the upper row of the display. The current setting for this option is displayed in the lower right of the display.
3. To change the displayed menu options information, bridge Contacts 1 & 2 with wetted fingers. This will cause the current setting to flash or in the case of multi-digit numbers, the least significant digit.
4. Using a coin or other conductive metal object, bridge Contacts 2 & 3 to toggle the selection or increment the numeric value. A confirmation beep will sound with each increment.
5. Next using wetted finger, bridge Contacts 1 & 2 to select the next digit, once selected the digit will flash to identify that it is being programmed. Bridge Contacts 2 & 3 till the desired value is displayed.
6. Repeat step 5 until all digits have been programmed.
7. To save the changes that have been made bridge Contact 1 & 2 with a coin or other conductive metal object. Once the next programming option is displayed the changes have been saved.
8. To increment through the PreDive Prediction option, bridge Contacts 1 & 2 with wetted fingers. Each time the Contacts are bridged the PreDive Prediction Depth will increment 3 meters and display the NDC time for that depth (see figure 13 & 14). The prediction depth will continue until a depth is reached which has less than two minutes of NDC time or a maximum depth of 99 meters is reached. To exit from the PreDive Prediction Mode bridge Contacts 1 & 2 with a coin.

All programming sequences use the same routine of using Contacts 1 and 2 to SELECT the next programming sequence and Contacts 2 and 3 to INCREMENT the specified value.

Programming Mode Menu - PO2 Mode

The following table lists the various programming choices with their display identification and figure number. The Programming sequence and choices are determined by the selection of PO2 or FO2 Mode. This table assumes Programming choice #1 is PO2

Identification	Description	Figure
PO2 / FO2	Toggles between PO2 Mode and FO2 Mode	21
PdP	PreDive Prediction	22
InF	Battery voltage, Mode & Mode Value	23
dEP AL	Depth Alarm. Maximum allowable value is 99 meters	25
Con	Added Conservatism. Maximum allowable value is 50%.	26
PO2 1	PO2 value. Allowable values 0.5 to 1.50	31
EAn 2	Deco FO2 Oxygen percentage, Allowable value 21 to 99.9 in 0.1 increments	28
dEC b	Bottom Time Benchmark for Deco FO2 switching, Maximum allowable value is 999 minutes	29
dEC d	Depth Benchmark for Deco FO2 switching, Maximum allowable value is 99 meters	30
TAc dL	TACLITE™ On Time. Allowable values 00 to 99	33
LoG	Logbook	35

Programming Mode Screens - PO2 Mode

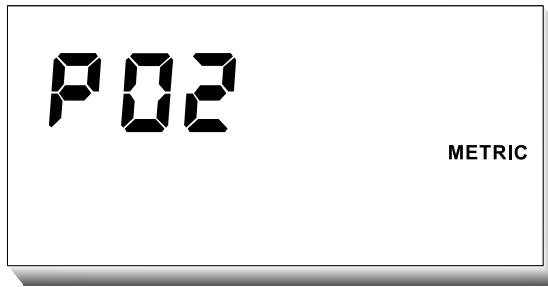


Figure 21
PROGRAMMING MODE
(FO2/PO2 - Showing PO2)



Figure 22
PROGRAMMING MODE
(PreDive PREDICTION MENU)



Figure 23
PROGRAMMING MODE
(Information Display Menu)



Figure 24
PROGRAMMING MODE
(Information Display)

Battery Voltage 2.9 volts



Figure 25
PROGRAMMING MODE
(Setting Depth Alarm)

Depth Alarm 38 mtr

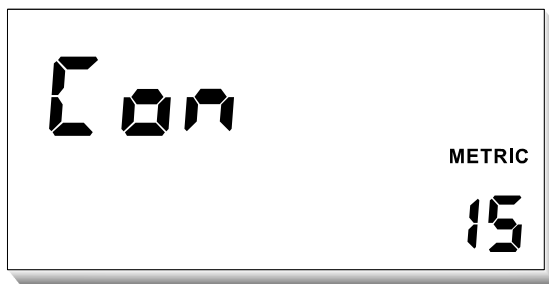


Figure 26
PROGRAMMING MODE
(Setting Conservatism)

Conservatism 15 %

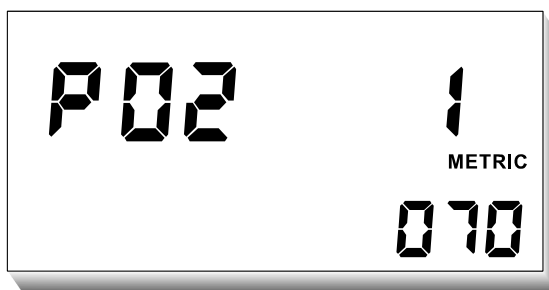


Figure 31
PROGRAMMING MODE
(Constant PO2 Mode)
(Setting PO2 Value)

Set Point PO2 070 ata

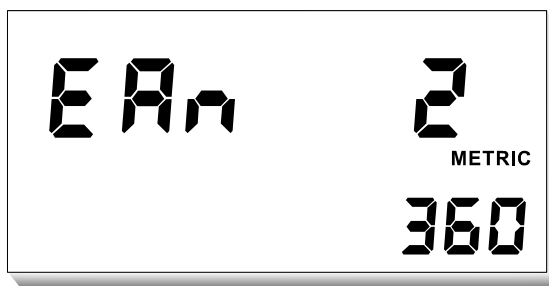


Figure 28
PROGRAMMING MODE
(Constant FO2 Mode)
(Setting Deco Blend -
Oxygen %)

Oxygen Percentage 36 %

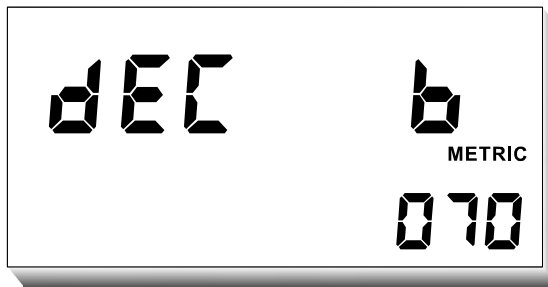


Figure 29
PROGRAMMING MODE
(Constant FO2 Mode)
(Setting Deco Blend -
Time Benchmark)

Bottom Time 70 min.

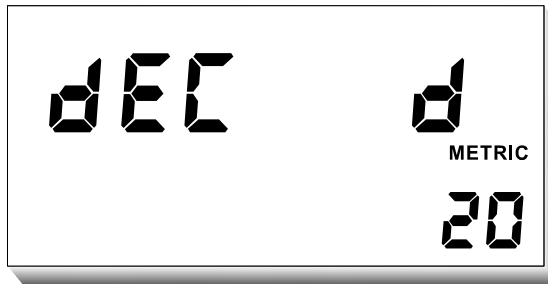


Figure 30
PROGRAMMING MODE
(Constant FO2 Mode)
(Setting Deco Blend -
Depth Benchmark)

Depth 20 feet

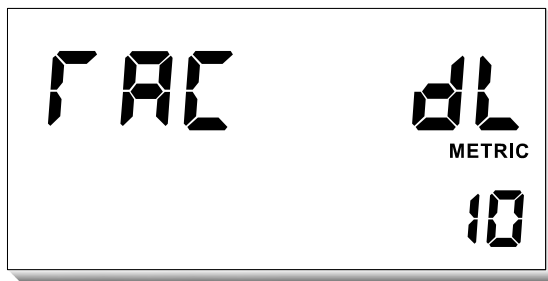


Figure 33
PROGRAMMING MODE
(Setting TACLITE On Time)

On Time 10 sec



Figure 34
PROGRAMMING MODE
(Logbook MENU)



Figure 34a
PROGRAMMING MODE
(Logbook)

Dive Number 235

Programming Mode Menu - FO2 Mode

The following table lists the various programming choices with their display identification and figure number. The Programming sequence and choices are determined by the selection of PO2 or FO2 Mode. This table assumes Programming choice #1 is FO2

Identification	Description	Figure
PO2 / FO2	Toggles between PO2 Mode and FO2 Mode	20
PdP	PreDive Prediction	22
InF	Battery voltage, Mode & Mode Value	23
dEP AL	Depth Alarm. Maximum allowable value is 99 meters	25
Con	Added Conservatism. Maximum allowable value is 50%.	26
EAn 1	Oxygen percentage of Blend, Allowable value 21 to 99.9 in .1 increments.	27
EAn 2	Deco FO2 Oxygen percentage, Allowable value 21 to 99.9 in 0.1 increments.	28
dEC b	Bottom Time Benchmark for Deco FO2 switching, Maximum allowable value is 999 minutes.	29
dEC d	Depth Benchmark for Deco FO2 switching, Maximum allowable value is 99 meters.	30
TAc dL	TACLITE™ On Time. Allowable values 00 to 99.	33
LoG	Logbook	35

NOTE: If the 'NAVY' is left in the Programming mode for five minutes without the contacts being touched, the unit will automatically exit the Programming Mode and return to the Surface Mode. Once this occurs the 'NAVY' will retain the modified programmed settings that have been stored. Options that have not been modified will retain their previous settings.

Programming Mode Screens - FO2 Mode



Figure 20
PROGRAMMING MODE
(FO2/PO2 - Showing FO2)

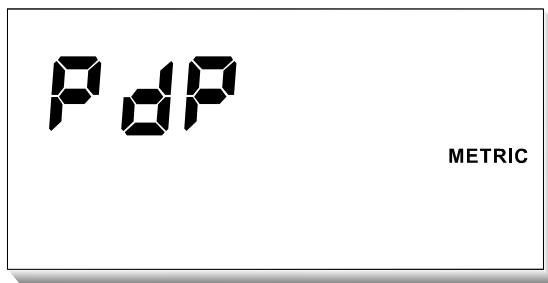


Figure 22
PROGRAMMING MODE
(PreDive PREDICTION MENU)

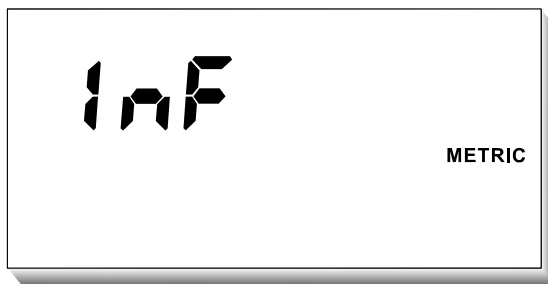


Figure 23
PROGRAMMING MODE
(Information Display Menu)



Figure 24
PROGRAMMING MODE
(Information Display)

Battery Voltage 2.9 volts

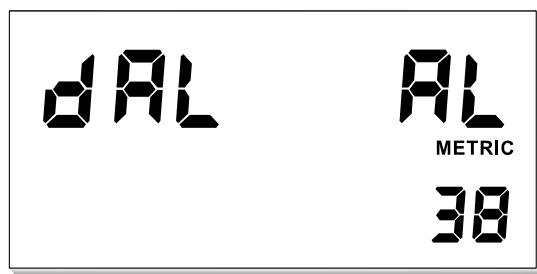


Figure 25
PROGRAMMING MODE
(Setting Depth Alarm)

Depth Alarm 38 mtr

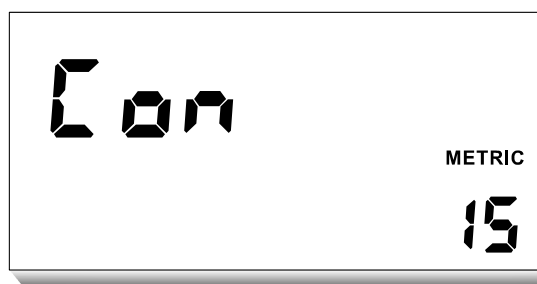


Figure 26
PROGRAMMING MODE
(Setting Conservatism)

Conservatism 15 %

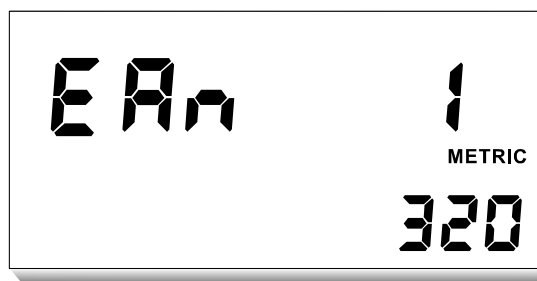


Figure 27
PROGRAMMING MODE
(Constant FO2 Mode)
(Setting Blend 1 Oxygen %)

Oxygen Percentage 32 %

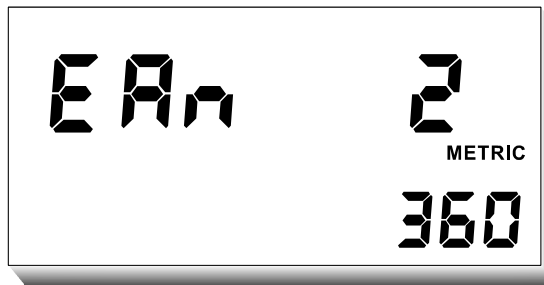


Figure 28
PROGRAMMING MODE
(Constant FO2 Mode)
(Setting Deco Blend -
Oxygen %)
Oxygen Percentage 36 %



Figure 29
PROGRAMMING MODE
(Constant FO2 Mode)
(Setting Deco Blend -
Time Benchmark)
Bottom Time 70 min.



Figure 30
PROGRAMMING MODE
(Constant FO2 Mode)
(Setting Deco Blend -
Depth Benchmark)
Depth 7 mtr



Figure 33
PROGRAMMING MODE
(Setting TACLITE On Time)
On Time 10 sec

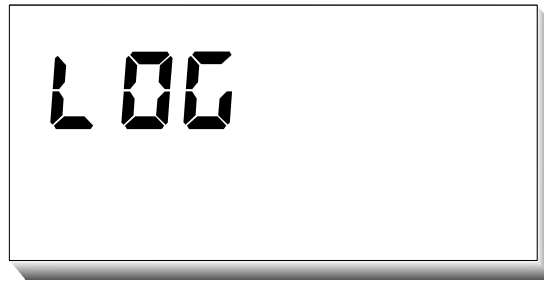


Figure 34
PROGRAMMING MODE
(Logbook MENU)

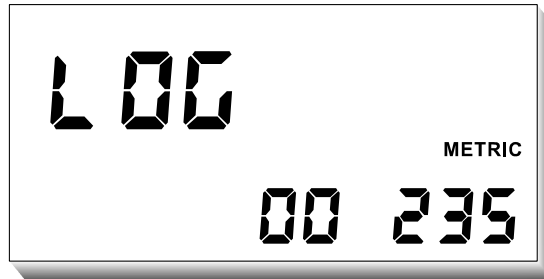


Figure 34
PROGRAMMING MODE
(Logbook MENU)

Dive Number 235

Data Storage Types & Capacity

The 'NAVY' has the following internal distinct data storage activities that can be recalled, viewed, and stored with the ANALYST® PC Interface:

- **Current Variable Information:** Local Time, Altitude, Battery voltage, and 9 tissues loading.
- **Current Configuration Data:** As can be seen in USER CONFIGURABLE ITEMS, below.
- **Historical Totals Summaries:** Dive Time, Number of Dives, Number of Marginal Dives, Number of Warnings, Decompression Dives, and Decompression Time.
- **Each Dive Beginning Statistics:** 9 tissues loading, Local Time Clock, Dive of Day, Dive Number, Surface Time, Altitude, Time to Fly, and Battery Voltage. Capacity is the most recent 512 dives.
- **Each Dive Ending Statistics:** 9 tissues loading, Bottom Time, Max Depth, Average Depth, Min NDC Time, Max Deco Time, Max Deco Ceiling, Missed Ceiling, Missed Deco Time, Max PO₂, Max Ascent Rate, Max A/R Time, Max A/R Depth, FO₂ Blend Switch Depth, Min Temperature, Max Temperature, Min Battery Voltage, Time to Fly, and Number of Warnings. Capacity is the most recent 512 dives.

- **Each Dive Configuration Data:** Configuration of the system, including FO₂ Blend Oxygen %, FO₂ Blend Activate Depth, User Conservatism. Capacity is the most recent 512 dives.
- **Profile Graphical Information:** Depth Graph, Ascent Rate Graph, Temperature Graph, and PO₂ Graph. Capacity is 550 hours at one second sampling. Uploading to a PC often via the ANALYST[®] prevents earlier data from being overwritten by more recent data from being lost.

User Configurable Items

By using the ANALYST[®] Personal Computer Interface, the user has the ability to change the following items:

Dive Time/Date Stamp: This is the internal clock setting that is used by the system to time-stamp each individual dive as it occurs. Due to changes in battery voltage and temperature, the internal Time of day clock may slowly drift from the ideal. It is recommended that this clock be periodically set to local time via the ANALYST[®].

Metric or Imperial: The diver may select whether the data is computed and displayed in Metric or Imperial units. The 'NAVY' may be ordered either way as shipped from the factory.

Select Touch Contact Programming (Enabled or Disabled): This option enables or disables the Touch Contact Programming feature. If 'Disabled', all changes and information will only be available via the ANALYST[®] Personal Computer Interface. As shipped from the factory, this is set to 'Disabled'.

Selectable Ascent Rate Bar Graph (Fixed or Proportional): This option determines whether the Ascent Rate bar graph indicates the speed of ascent or the percentage of the selected maximum ascent rate. The 'NAVY' is shipped from the factory as FIXED (speed).

Selectable Variable-By-Depth Ascent Rate Alarm (On or Off): This option gives the diver the ability to utilize a fixed ascent rate warning or a warning based on depth. Should the diver prefer the fixed ascent rate warning, the diver can select the maximum ascent rate limit which, can be selected from 6 to 18 meters per minute (See next topic). As shipped from the factory, this is set to OFF. If the VARIABLE rate is selected then the warning will illuminate based on the following table:

DEPTH	AVERAGE ASCENT RATE
18 meters and deeper	18 meters per minute (mpm)
17.9 to 9 meters	same as depth
Shallower than 9 meters	9 meters per minute (mpm)

Selectable Fixed Ascent Rate Alarm Limit: If Variable-By-Depth Ascent Rate Alarm was set to OFF from the above topic, the user may enter the desired Ascent Rate for the alarm to sound. The 'NAVY' is shipped from the factory as FIXED with an 18 meters per minute alarm.

Ascent Rate for Deco Predictions (20 to 60): This option allows the diver to select the ascent rate to be used in the forecasting of the displayed Total Decompression time. The 'NAVY' is shipped from the factory with this option set to 30.

Ascent Rate Responsiveness (0 to 7): This option determines the responsiveness or sensitivity of the Ascent Rate Bar Graph. Zero is highly responsive and seven is very slow. This feature is set to three as shipped from the factory.

Remaining Time Responsiveness (0 to 7): This determines the responsiveness of the Remaining Time information that is displayed. Zero is highly responsive and seven is very slow. This feature is set to three as shipped from the factory.

Max Depth Alarm (0 to 99): This option allows the diver to select a maximum depth below which, the diver does not wish to descend before an alarm is sounded. This function is disabled when in the Decompression Mode. As shipped from the factory, the Depth Alarm is set for 40 meters. This option may also be set via the Touch Contact Programming method.

Select Decompression Time Display (Total, Stop, Both): There are three options for the manner in which the decompression time is displayed.

If **TOTAL** is selected, the decompression time displayed will indicate the total time that is to be spent in decompression, including the ascent to the surface. Watch the Ceiling depth change in order to identify when to ascend to the next stop depth.

If **STOP** is selected, the decompression time displayed will indicate the time that must be spent at the current Ceiling. When this time is 0:00, the Ceiling depth will decrease and the new stop time will be displayed.

If **BOTH** is selected, the **TOTAL** time and **STOP** time will alternate at the rate of once every 2 seconds. From the factory, the unit is set to **BOTH**.

Select Ceiling Display in 1 Foot Increments (On or Off): This option allows the diver to select when in the Decompression Mode the Ceilings are displayed as 1 = 10, 2 = 20, 3 = 30 etc. (On) or as 10, 20, 30 etc (Off). From the factory this option is set to Off.

Select Display Backlight On Time (0 to 99): This option allows the user to set the amount of time, in seconds, that the TACLITE™ stays on once activated. If this option is set to "0" the TACLITE™ will never activate, if set to "99" the TACLITE™ will be on all the time and only turn off when the 'NAVY' does. From the factory this is set to 10. This option may also be set via the Touch Contact Programming method.

Select Audible Beeper Alarm (On or Off): This allows the user to enable or disable the Audible Alarms and beeper. As shipped from the factory, this is set to "Off".

Selectable NDC Conservatism (0% to 50%): This feature will allow the diver to input an added degree of conservatism to the decompression algorithm from 0 to 50 percent in one-percent increments. This may be desirable if the diver is dehydrated, tired, or has some other factor that warrants added conservatism. This option may also be set via the Touch Contact Programming method. Conservatism is set to zero as shipped from the factory.

Select Constant Mode O₂ Computations (FO₂ or PO₂): This allows the user to select between the Constant PO₂ and Constant FO₂ modes. Only the 0.7 ata PO₂ mode has been tested. This option may also be set via the Touch Contact Programming method. As shipped from the factory, this is set to Constant PO₂.

Enter PO₂ for Constant PO₂ Computations (.50 to 1.50): This allows the user to experiment with different PO₂'s. Only 0.7 ata has been tested. This option may also be set via the Touch Contact Programming method. As shipped from the factory, this is set to 0.7.

Enter Blend Oxygen % in FO₂ Nitrox Mixture (21.0 to 99.9): For Constant FO₂ mode, This option allows the user to enter the desired Oxygen percentage for the FO₂ Blend in 0.1% increments. Values from 21.0% to 99.9% may be entered. This option may also be set via the Touch Contact Programming method. As shipped from the factory, this is set to 21.0%.

Enter Deco Blend Oxygen % in FO₂ Nitrox Mixture (21.0 to 99.9): For Constant FO₂ mode, This option allows the user to enter the desired Oxygen percentage for the FO₂ Deco Blend in 0.1% increments. For Constant PO₂ mode, this option specifies the FO₂ blend percentage if and when the unit switches to FO₂ computations. Values from 21.0% to 99.9% may be entered. This option may also be set via the Touch Contact Programming method. As shipped from the factory, this is set to 21.0%.

Enter FO₂ Deco Blend Ascent Time Activation (0 to 999): Enter the bottom time benchmark (in minutes), for the Constant FO₂ mode, which the diver will need to be beyond for switching to the FO₂ Deco Blend. For the Constant PO₂ mode this is the bottom time which the diver must be beyond in order to switch from the Constant PO₂ mode to the Constant FO₂ Deco mode. This option may also be set via the Touch Contact Programming method. The factory setting is 600.

Enter FO₂ Deco Blend Ascent Depth Activation (0 to 99): For the Constant FO₂ mode, enter the depth benchmark, which the diver will need to be above for switching to the FO₂ Deco Blend. For the Constant PO₂ mode this is the depth at which the unit switches from the Constant PO₂ mode to the Constant FO₂ mode. If set to zero the unit will not switch from the Constant PO₂ mode. This option may also be set via the Touch Contact Programming method. As shipped from the factory, this is set to 0.

Program attached Unit to Stay Awake (On or Off): If this option is set to 'On', the 'NAVY' will not enter the Sleep Mode nor automatically turn off once all residual nitrogen outgassing has been completed. The unit will have to be turned off via the ANALYST®. As shipped from the factory, this is set to "Off".

One Zone Altitude NDC Compensation (On or Off): If this option is set to 'On', regardless of altitude all NDC compensation is treated as if at sea level. As shipped from the factory, this is set to "On".

Confined Water Protocol (Training Mode) - (Enabled or Disabled): This option enables the Training Mode for the 'NAVY'. In this mode the 'NAVY' will enter the Subsurface Mode at 60 centimeters instead of 1.5 meters and exit the Subsurface Mode at 30 centimeters instead of 1 meter. The Training Mode also permits the selection of an increased PostDive Interval period from 10 to 30 minutes in one-minute increments. These changes permit the Instructor to record a complete training session, including in-water surface periods, as a single dive. As shipped from the factory, this is set to 'Disabled'.

Training Mode Post Dive Interval Period (10 to 30): If the Training Mode is enabled this allows the user to select the duration of the PostDive Interval period from a minimum of 10 minutes to a maximum of 30 minutes in one-minute increments. As shipped from the factory, this is set to 10.

Initialize Unit and Zero Nitrogen Values: If this option is selected, the attached dive computer will be reinitialized and all residual nitrogen loading values will be zeroed.

Wake up the attached Unit: This option permits the dive computer to be turned on while attached to the P.C.

Specifications

Algorithm	NAVY VVAL-18
Tissue Compartments	9
Computation Period	Once per Second
Activation	Manual and Water
Depth Display	99.9 meters, 0.1 meter increments
Depth Accuracy	+/- 1.0% of full scale (+/- 1 meter)
Maximum Altitude	4,600 meters, seamless
Altitude Accuracy	+/- 300 meters
Temperature Display	0 to 37 deg C., 1-degree increments
Temperature Accuracy	+/- 2.0% of full scale (+/- 1.2 deg C after the unit stabilizes from a change in temperature)
Surface Time	0 to 9:59 hrs/mins, 1-minute increments
Bottom Time	0 to 9:59 hrs/mins, 1-minute increments
No-Deco Time	0 to 9:59 hrs/mins, 1-minute increments
Decompression Time	0 to 9:59 hrs/mins, 1-minute increments
Decompression Ceiling	0 to 27 meters, 3-meter increments
Dive Summary Storage	512 Dives
Dive Profile Storage	550 Dive hours at one second sampling
Profile Sampling	1-second increments
Typical Battery Life	1000 dive hours or 1 year, TACLITE off 50+ hours or 1 year, TACLITE on

NOTE: Specifications are additionally +/- one least significant display digit due to rounding. Specifications are subject to change without notice.

Cleaning the 'NAVY'

Clean the unit after each use with fresh water. Towel the unit dry, never use air pressure to dry the unit, this could damage the unit and will void the warranty. Do not use chemicals to clean the case or lens as this may damage the unit, and/or permanently fog the lens.

Battery Changes

The batteries should be changed when the 'BATT' legend is seen or battery voltage reaches approximately 2.1 volts as can be seen on the Alternate Screen in the Surface Mode or on the Information Display. The unit will run until the battery voltage drops below approximately 1.6 volts. Use only fresh, name brand N-Cell size Alkaline batteries for maximum battery life. At this time, *Eveready Energizer* Alkaline is recommended. Do not use batteries with battery condition indicators. When under pressure, the tester can activate and cause excessive battery drain. The tester can also cause a poor battery contact due to the larger size of the battery with the tester. Do not use Lithium or rechargeable batteries, which may damage the computer and void the warranty. Be sure to confirm that the batteries are REALLY new and have not been sitting on a shelf losing life. Cold temperatures tend to shorten apparent battery life. Change batteries annually regardless of their condition.

CAUTION!!! It is not recommended that the batteries be changed while the 'NAVY' is in the ten minute Post Dive Interval following a dive.

CAUTION!!! DO NOT ALLOW THE 'NAVY' TO HAVE LOW OR NO BATTERIES FOR ANY EXTENDED PERIOD OF TIME! ACCIDENTIAL OR INTENTIONAL LOSS OF BATTERY POWER WILL CAUSE ALL PREVIOUS DIVE NITROGEN LOADING TO BE LOST. THIS MAY AFFECT NITROGEN CALCULATIONS ON NEAR-FUTURE DIVES. AFTER A BATTERY CHANGE, CONFIRM THAT NO-DECOMPRESSION TIME DATA IS REASONABLE DURING THE PRE-DIVE PREDICTION MODE. IF LOSS OF NITROGEN LOADING OCCURS, COCHRAN STRONGLY RECOMMENDS THAT A PERIOD OF 24 HOURS ELAPSES BEFORE MAKING ANY SUBSEQUENT DIVES.

Inspect the battery cap O-rings for nicks and scratches. If either O-ring is damaged carefully remove both O-rings and replace with new silicone O-rings. Lightly lubricate each end of the batteries with silicone grease or petroleum jelly to help minimize corrosion and therefore extend battery life.

When reinstalling the battery cap, lubricate the O-rings lightly and slowly twist the cap into place using a USA quarter. Press the quarter into the battery cap slot firmly to prevent slipping and damaging the slot. Ensure that there is no dirt or debris on the O-rings or the mating surfaces and that the O-rings are properly installed on the battery cap.

As the battery cap is screwed in, carefully observe that the double O-rings install correctly. Ask a Team Cochran Dealer for a demonstration.

It is best to have the new batteries ready to immediately install since the 'NAVY' was designed to allow for battery changes without resetting and losing any nitrogen residuals. This period of time is typically 45 seconds, but varies with temperature and the voltage of the batteries being replaced. It can be significantly less if batteries are not replaced promptly when the 'BATT' legend first comes on. Again care should be taken not to activate the TACLITE™ during battery replacement, if the TACLITE™ is activated it will significantly reduce the time that the 'NAVY' allows for battery changes without losing nitrogen residuals.

If the batteries are allowed to discharge too low, or if removed for too long, the 'NAVY' may enter a state where it will not turn on even with new batteries. If this occurs, remove the batteries and allow the unit to set for 30 minutes and then install fresh batteries. This will, of course, erase any residual accumulated nitrogen from previous dives making the next dive appear as a 'clean' dive. This procedure could also effect the Internal Time of Day Clock's settings and these settings should be verified via the ANALYST® P.C. Interface.

Product Assistance, Repair & Maintenance

If it is suspected that the 'NAVY' is not operating correctly, please contact your dealer, distributor, or our Customer Support Department in the USA for assistance at 972.644.6284 or FAX details to 972.644.6286 or E-mail details to service@divecochran.com. Most problems can be resolved without returning the unit. The unit may also be returned to the place of purchase and request the dealer to contact us. If this is not possible or is inconvenient due to a change in location, contact us for the name of the nearest Team Cochran Authorized Dealer.

- **NEVER TEST OR SUBJECT THE PRODUCT TO PRESSURIZED AIR!**
- **NEVER REMOVE THE LENS FROM THE UNIT!**
- **ONLY USE FRESH WATER TO CLEAN UNIT! NEVER USE SOLVENTS!**
- **DO NOT USE A SCREWDRIVER TO REMOVE BATTERY CAP!**
- **ALWAYS KEEP FRESH BATTERIES INSTALLED!**
- **ALWAYS USE 1.5 VOLT ALKALINE BATTERIES!**
- **LUBRICATE BATTERY ENDS WITH THIN FILM OF SILICONE GREASE!**

Replacement Parts

Batteries (2)	1.5 VDC Alkaline 'N' cells
Battery Cap O-rings	Part Number 19930
Battery Cap Assembly	Part Number 19934
Wrist Strap (long, black)	Part Number 19951
Pins (2), Replacement	Part Number 19949
Retractor Only	Part Number 15925
Retractor with Compass	Part Number 15935
Lens Protector (Pkg. of 3)	Part Number 15400

ANALYST® Personal Computer Interface

The ANALYST® Personal Computer Interface is a complete hardware/software system that uploads data from the Cochran 'NAVY' unit to an IBM or compatible Personal Computer with a Windows® 95/98/NT operating system. The ANALYST® Personal Computer Interface allows the diver to retrieve dive data, customize the dive computer and also to enter and store additional information for each dive in a logbook database. Take a few minutes to install the ANALYST® software that was supplied with the 'NAVY' dive computer.



1758 Firman Drive
Richardson, Texas 75081, USA
Phone 972-644-6284
Fax 972-644-6286
www.divecochran.com

PN 4200812 - Imperial
PN 4200822 - Metric