

Cochran

UNDERSEA TECHNOLOGY

A Division of Cochran Consulting, Inc.

Diving Into The 21st Century

www.divecochran.com

Cochran Depth Gauge Owner's Manual

English - Imperial
Ver: DGi - 1.50

For your records, please fill in the following:

Serial Number: _____

Your Name: _____

Your Contact: _____

Purchase Date: _____

Purchase Place: _____

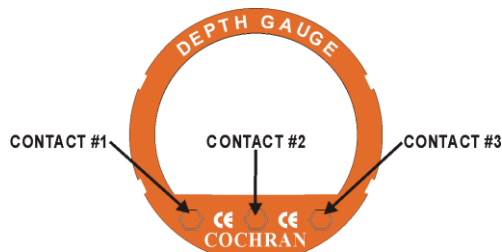
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PRODUCT INTRODUCTION: The **DEPTH GAUGE** is quite simple to use and operate, but underneath that simplicity lies a significant level of sophistication. To get the safest and most effective use of this instrument, it is important that the user fully understand the product. Please read and understand this entire manual and know the principles and practices of safe diving before using this device.

This Manual is divided into the following Sections:

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TOUCH CONTACTS:



TOUCH CONTACTS

The Contacts are used to let the user command the unit to do a number of functions, communicate with a PC for extracting information or configuring the unit, and determining water conductivity. When Contacts 1 & 2 are shorted, the **DEPTH GAUGE** can detect the difference between wet fingers, metal objects, fresh water, salt water, and a PC interface probe.

TURNING ON THE DEPTH GAUGE: Although the **DEPTH GAUGE** automatically turns on when it is submerged in water, it is **STRONGLY** recommended that the unit be manually powered up by simultaneously touching Contacts 1 and 2 for two seconds with two wetted fingers. 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 these 60 minutes, the **DEPTH GAUGE** automatically shuts off. Every time Contacts 1 & 2 are bridged with wet fingers, the unit will stay on for one full hour.

The **DEPTH GAUGE** will not turn on if the altitude is greater than 16,000 feet or if the battery voltage is less than 1.6 volts, or a fault is detected during the self-test.

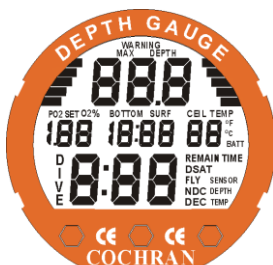


Figure 01
DIAGNOSTICS DISPLAY
(Unit Turning On)
All Segments Illuminated

As the **DEPTH GAUGE** 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 five seconds. During this time, all of the segments in the display are turned on so that the user can confirm their operability. Should a test indicate a malfunction or marginal test, the unit will turn back off again. The user should ensure that all of the display segments are on and operating correctly.

TURNING OFF THE DEPTH GAUGE: After the Post Dive Interval following a dive, the **DEPTH GAUGE** will remain on for one hour before turning off.

MAIN DEPTH GAUGE OPERATING MODES:

- Surface Interval
- Dive Mode
- Post Dive Interval
- Touch Programming

SURFACE INTERVAL:

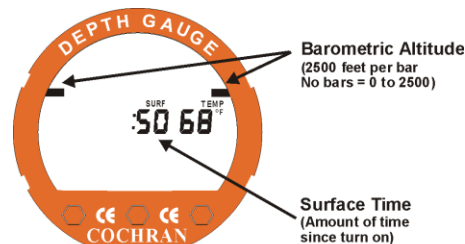


Figure 02
SURFACE MODE
No Dives

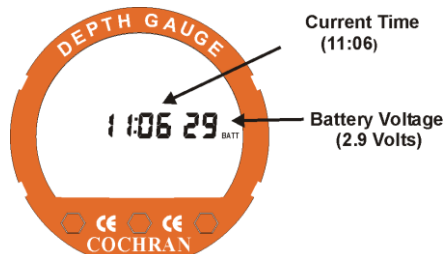


Figure 03
SURFACE MODE
ALTERNATE SCREEN

After completion of the Self-Diagnostic mode or after the Post Dive Interval following a dive, the **DEPTH GAUGE** enters the Surface Interval. This period has two screens, a Primary and an Alternate. The Primary and Alternate screen alternate ever four seconds, this cycle time is settable via Analyst[®]. The Primary Screen displays, if applicable; current Surface Time, the previous dive's Maximum Depth, the previous dive's Bottom Time, Altitude and Temperature. The Alternate Screen displays time of day, and current battery voltage. Figure 2 shows the display with no Dive. Figure 4 shows the display with a dive showing Surface time. Figure 4a shows the display with a dive showing Bottom time. Figure 3 shows the alternate screen without a Dive, figure 5 with.

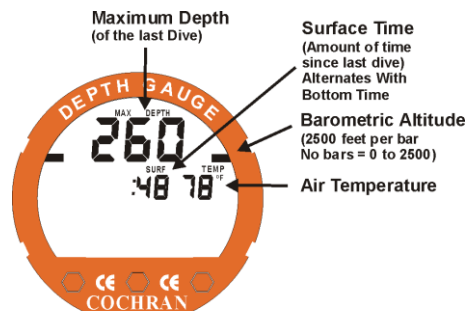


Figure 04
SURFACE MODE
with Dive
(Showing Surface Time)

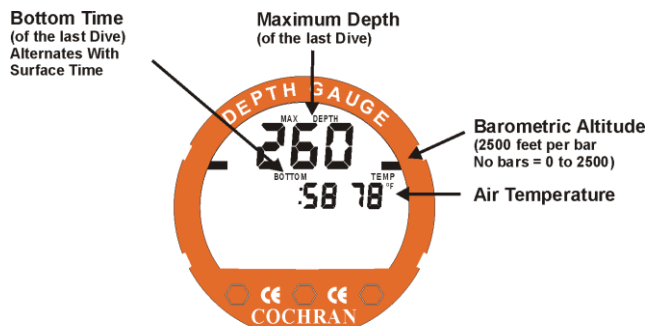


Figure 04a
SURFACE MODE
with Dive
(Showing Bottom Time)

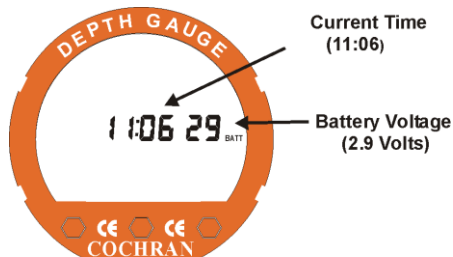


Figure 05
SURFACE MODE
ALTERNATE SCREEN
with Dive
(Showing Time)

"Surface Time" starts at zero after a dive and begins counting minutes. If another dive is started after the unit shuts off (enters the sleep mode \approx 70 minutes), the Surface Time will be zero.

"Barometric Altitude" is indicated in six ranges via the Ascent Rate Bar Graph as follows (Altitude is seamless up to 16,000 feet above sea level). The six ranges are for display purposes only: The **DEPTH GAUGE** actually senses and computes extremely small altitude changes and hence, is called "Seamless". The term "Barometric Altitude" is used instead of just "Altitude" because the **DEPTH GAUGE** measures Barometric Pressure to determine Altitude. Barometric Altitude can vary from actual Altitude by over \pm 1000 feet! Barometric Altitude is what important to the body when diving.



Figure 37
ALTITUDE BAR GRAPH

DIVE MODE:

Whether in the Surface Interval, PreDive Prediction Mode, Programming Mode or the Logbook Mode, the **DEPTH GAUGE** will automatically enter the Dive Mode whenever the unit determines that it is in water deeper than five feet.

On the Primary Screen the Surface time will be replaced with the current Bottom Time. Maximum Depth will be replaced with current Depth, displayed in one-foot increments. Bottom Time will begin once the **DEPTH GAUGE** senses that the diver has descended below five feet and continues until the diver has ascended above three feet. The maximum Bottom Time displayed is 19 hours 59 minutes.

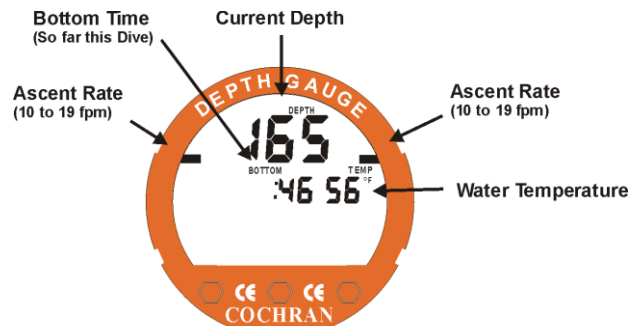


Figure 06
DIVE MODE

The Alternate Screen will display the current time, the current battery voltage and the Max Depth (so far this dive). (Figure 7)

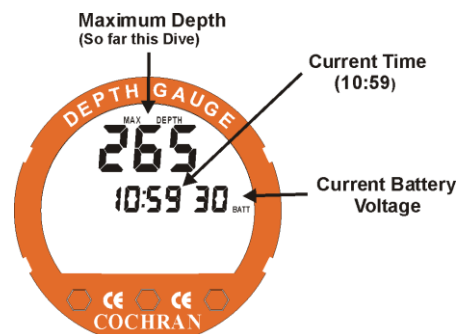


Figure 07
DIVE MODE
Alternate Screen
Showing Time

A Depth Alarm, which can be set to warn the diver should a certain depth be exceeded, is set at 130 feet from the factory. When the Depth Alarm is issued the "WARNING" legend and Depth Digits will flash on and off once per second. The maximum depth achieved on the current dive is shown as "MAX DEPTH". This is updated once per second.

Temperature is measured to compensate the Depth Transducer for Temperature variations. This requires that the Temperature be very slow reacting, just like the Depth Transducer and the body. This slow-reacting Temperature is what is displayed.

Bottom Time will begin once the **DEPTH GAUGE** senses that the diver has descended below five feet (see Training Mode) and continues until the diver has ascended above three feet. The maximum Bottom Time displayed is 9 hours 59 minutes.

ASCENT RATE BAR GRAPH:

The Ascent Rate bar graph and alarms are active in the Dive Mode. The five-segment bar graph is used to display the diver's rate of ascent.

Via the Analyst[®] PC Interface, the Ascent Rate Alarms and Bar Graph can be set to the users preferences.

The first option is a VARIABLE-BY-DEPTH Ascent Rate. When on, 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:

60 feet or deeper	60 feet per minute
60 to 30 feet	feet per minute equal to the depth
Less than 30 feet	30 feet per minute

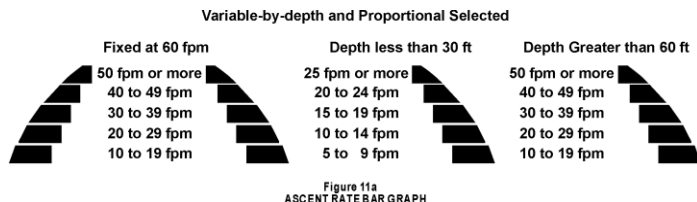
If VARIABLE-BY-DEPTH is off, the Maximum Ascent Rate Alarm and Bar Graph is specified by the user and can be from 20 to 60 fpm, in one-foot increments.

Another selection is the bar graph itself. The two selections are either FIXED or PROPORTIONAL.

With FIXED, each of the five bars indicates an additional 10 feet per minute of Ascent Rate regardless of the Maximum Ascent Rate selected.

With PROPORTIONAL, each of the five bars indicates 20% (one-fifth) of the selected Maximum Ascent Rate.

For FIXED, the maximum ascent rate is 60 feet per minute. With this setting, no bars will illuminate if a diver is ascending at a rate less than 10 feet per minute.



If the diver has an Ascent Rate that exceeds the selected maximum, the entire Ascent Rate Bar Graph will flash once per second, and the WARNING legend will illuminate.

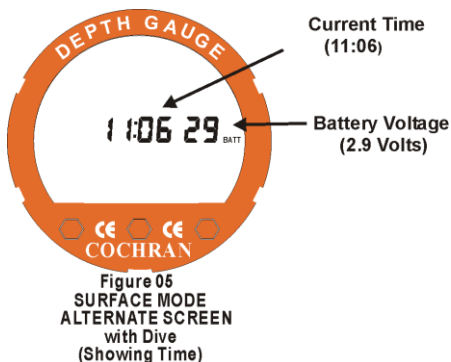
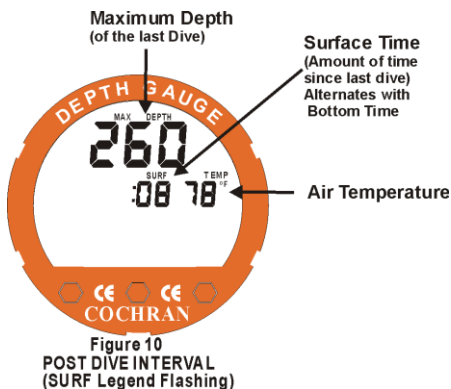
The sensitivity or responsiveness of the Ascent Rate may be selected via the Analyst®, eight different levels of sensitivity are available.

NOTE: Customizing the Ascent Rate and Ascent Rate Bar Graph are among many of the additional programmable features available when using the Analyst® PC Interface. Available features are described in the section "USER CONFIGURABLE OPTIONS".

As shipped from the factory, the Ascent Rate is set for VARIABLE-BY-DEPTH AND PROPORTIONAL.

POST DIVE INTERVAL:

During the first ten minutes (or up to thirty minutes if the unit is in the Training Mode) after a dive, the DEPTH GAUGE is in the Post Dive Interval. The flashing "SURF" legend and a Surface Time of less than ten minutes (or up to thirty if the unit is in the Training Mode) indicate this. Should another dive be commenced before the completion of the Post Dive 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 Post Dive Interval. However, when reviewing the profile with the Analyst®, the time spent on the surface in this period will be shown.



CONFINED WATER PROTOCOL (Training Mode): The DEPTH GAUGE is one of the first dive devices to offer an operating mode designed to record and store data from training dives. That is, dives performed in shallow water environments (swimming pools, shallow lakes, lagoons, etc.) or calm open water environments that have less than 1-foot seas. In the Training Mode, the DEPTH GAUGE enters the Dive Mode at a depth of 2 feet instead of 5 feet and will exit the Dive

Mode at 1 foot instead of 3 feet. Also the Post Dive Surface Interval may be extended, via the Analyst® from 10 minutes up to a maximum of 30 minutes in 1-minute increments after which the dive data is stored in the unit'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 Professional Edition of the Analyst® PC Interface.**

CLOCK MODE: The Clock operating mode of the DEPTH GAUGE is NOT enabled when shipped from the factory. It can be enabled via the Analyst® P.C. Interface or at an Authorized Cochran Dealer.

TOUCH PROGRAMMING MODE: Can only be accessed when the unit is in the Surface Interval and allows the user to view or program into the unit:

- Setting Date Clock Time
- A Maximum Depth Alarm
- Access the Logbook Mode

While all DEPTH GAUGE configurations share certain programming features others are dependent upon the specific configuration of the unit. Refer to the appropriate manual section for the relevant programming menu items.

TOUCH PROGRAMMING - CLOCK: When the DEPTH GAUGE is placed into the Clock mode it will display the time of day in an am/pm day format. The clock will continue to run when the DEPTH GAUGE is in the Dive Mode. The DEPTH GAUGE can be placed into the Clock Mode from the Dive Mode when the unit is in the Normal Surface Interval.

NOTE: This Time of Day clock is the same clock that is used to time stamp dives. Modifying the Time of Day clock and/or the Date will affect the Local Time/Date as viewed via the Analyst®.

CLOCK PROGRAMMING PROCEDURE:

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 the CLoCK Menu is seen on the display (fig 30).
3. To enter the Clock submenu, bridge Contacts 1 & 2 with wetted fingers. This will cause the unit to display the CLoCK dAtE selection (fig 31).
4. Using a coin or other conductive metal object, bridge Contacts 1 & 2 to access the month of the CLoCK Date setting screen fig 32.
5. Bridge Contacts 1 & 2 with wetted fingers. This will cause the months tens digit to flash.
6. Shorting Contacts 2 & 3 with a coin will increment the numeric value; continue until the required value is displayed.
7. 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.
8. To select the Day short Contacts 1 & 2 with a coin, increment as in step 6 and 7 (fig 34).
9. Repeat step 5 through 7 until all digits have been programmed.
10. To select the Year short Contacts 1 & 2 with a coin, increment as in step 6 and 7 (fig 33).
11. Repeat step 5 through 7 until all digits have been programmed.
12. To set the Time short Contacts 1 & 2 with a coin, increment as in step 6 and 7 (fig 40).
13. Repeat step 5 through 7 until all digits have been programmed.
14. To save the changes that have been made and to enter the Clock Display Mode, bridge Contact 1 & 2 with a coin or other conductive metal object. Once the next programming option is displayed the changes have been saved.

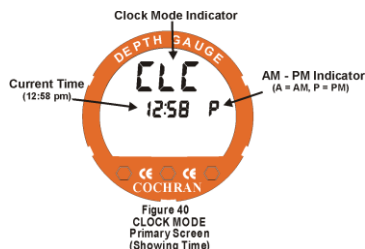
To exit the Clock Mode Bridge contacts 1 & 2 with wetted fingers and the unit will return to the Surface Display.

NOTE: Ensure that the DEPTH GAUGE is in the Surface Mode before commencing a dive.

Figures 30, 31, 32, 33, 34 and 41 show how the Clock programming display screens appear.



Figure 40 shows how the Clock display screen appears.



NOTE: Once the DEPTH GAUGE is placed in Clock Mode the unit will remain in that mode until exited by the diver.

TOUCH PROGRAMMING MODE:

NOTE: To enable the Programming Mode, the DEPTH GAUGE must be on the Surface and not in the Post Dive Interval.

NOTE: All visual alarms are suspended while the DEPTH GAUGE 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 what was stored is reviewed.

NOTE: If the DEPTH GAUGE 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 Interval. Once this occurs the DEPTH GAUGE will retain the modified programmed settings but options that have not been modified will retain their current settings.

TOUCH 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 the Programming Menu is seen on the display. The Menu options are displayed in sequence, incrementing to the next selection each time that Contacts 1 & 2 are bridged with a coin. 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 reprogram the displayed menu values, 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 will flash. The clock will toggle between on and off.
4. Using a coin or other conductive metal object, bridge Contacts 2 & 3 to increment the numeric value. 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 shown.
5. Repeat step 5 until all digits have been programmed.
6. 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.

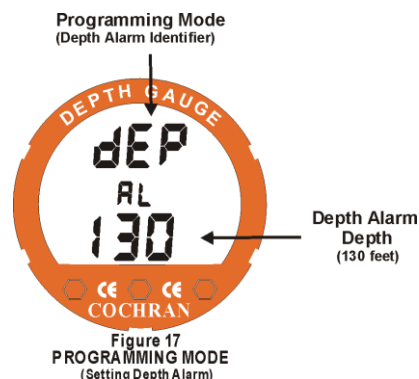
All programming sequences use the same routine of using Contacts 1 and 2 to SELECT the next programming sequence and Contacts 2 and 3 to INCREMENT the specified value.

PROGRAMMING MENU:

The following table lists the various programming choices with their display identification and figure number.

Identification	Description	Figure	Page
CLC	Clock – if enabled	30	5
dEP AL	Depth Alarm, Max value is 328 or 656 feet (depending upon configuration)	16	8
LOG	Logbook	24	8

TOUCH PROGRAMMING - DEPTH ALARM: The Depth Alarm allows the diver to select a maximum depth below which the diver does not wish to descend before an alarm is issued. This depth can be set from 0 to 328 or 0 to 656 feet in one-foot increments (depending upon configuration).



TOUCH PROGRAMMING - LOGBOOK MODE: The Logbook of the DEPTH GAUGE has two screens, a Primary Screen and an Alternate Screen. The Logbook is accessed via the Touch Contact Programming (see page 15). This enables the diver to view dive statistics; the DEPTH GAUGE has the ability to provide diving data for the most recent 256 dives. The most recent dive will be displayed first. To view the next dive, touch the 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 since it will cause the unit to exit the Logbook and return to the Surface Interval.

Information contained in the Logbook include:

Overall Dive Number	Minimum Water Temperature
Fastest Rate of Ascent	Surface Interval Before Dive
Bottom Time	Ending Battery Voltage
Maximum Depth	

The Dive Number that is displayed on the Logbook Menu screen (Figure 25) permits the diver to identify the number of dives made with that DEPTH GAUGE. If the example shown is the most recent dive made, it can be identified that 136 dives have been made with this unit.

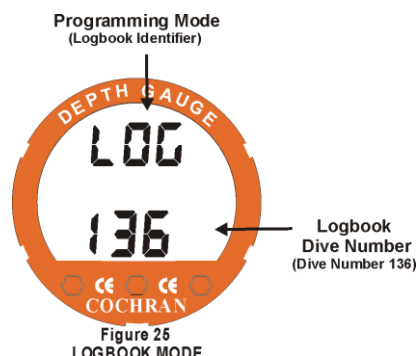


Figure 26 shows that dive 136 started at 10:18 AM on the 8th of October 2005.

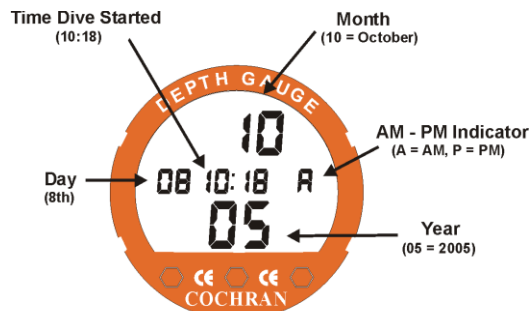


Figure 26
LOGBOOK Mode
Alternate Screen
(Date & Time Stamp)

Figures 27 & 28 display the Logbook of a Dive.

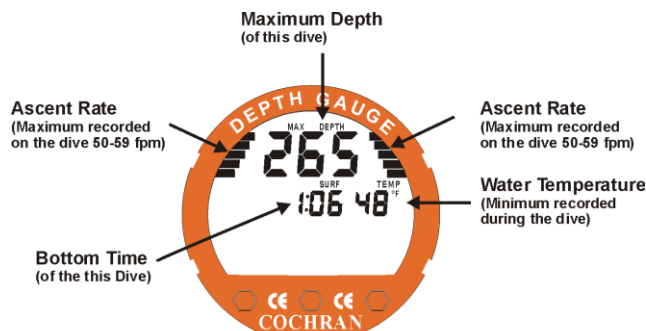


Figure 27
LOGBOOK MODE
(Normal Dive)

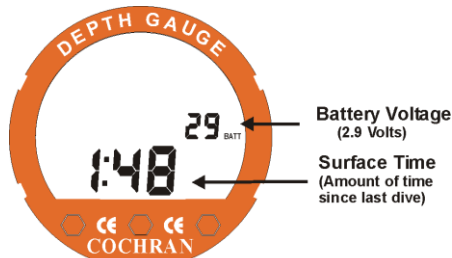


Figure 28
LOGBOOK MODE
(Alternate Screen)

WARNING INDICATIONS: Failure to observe visual warnings and take corrective action may result in injury or death. In general, if the WARNING legend is flashing, some other digits will be flashing to indicate the anomaly.

- If the diver is ascending faster than the selected maximum ascent rate, then the top bar of the ascent bar graph will flash and the "WARNING" legend will illuminate.
- If the diver descends below the user set Depth Alarm, the Depth digits will flash.
- If the battery voltage goes below 2.4 volts, the "BATT" legend will begin to flash on and off once per second.
- If the dive unit determines that either the Depth or Temperature sensor is malfunctioning. The "WARNING" and "SENSOR" legends will illuminate. The Screen will also display either "DEPTH" and/or "TEMP".

SENSOR WARNING: The DEPTH GAUGE has the capability of monitoring the integrity of its sensors, both the low-pressure (depth/altitude) and the temperature. When the unit detects an error in one of the transducers, the diver is alerted to this condition by the illumination of the "WARNING" and "SENSOR" legends. The "DEPTH" Legend will illuminate to indicate the low-pressure transducer or the "TEMP" legend for the temperature transducer (see figure 18a). The "WARNING" legend, along with either the Temperature digits or the Depth digits and the Legend will flash once per second. In the highly unlikely situation where both sensors are detected as having errors, both the "DEPTH" and "TEMP" legends will illuminate. This warning will be issued whether the unit is in the Surface Mode, Dive Mode, or Post Dive Interval. In the unlikely case that your unit issues one of these warnings the unit should be returned to the factory for evaluation and/or repair.

Figure 39 shows a Sensor Warning, in this case a Depth Sensor, as it would be displayed in the Dive Mode. If the Sensor Warning was for the temperature sensor it would display "TEMP".

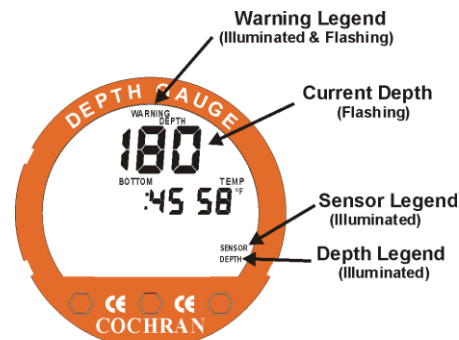


Figure 39
SENSOR WARNING

TOUCH CONTACT PROGRAMMING SCREENS: The following are all of the screens that the DEPTH GAUGE is capable of presenting in the Touch Programming Mode.



Figure 16
PROGRAMMING MODE
(Depth Alarm Menu)



Figure 24
PROGRAMMING MODE
(Log Book Menu)

DATA STORAGE TYPES & CAPACITY: The DEPTH GAUGE has the following internal distinct data storage activities that can be recalled, viewed, and stored with the Analyst® PC computer interface:

- **Current Variable Information:** Local Time, Altitude, Battery voltage, and Current unit Temperature,
- **Current Configuration Data:** As can be seen in "USER CONFIGURABLE ITEMS", below.
- **Historical Totals Summaries:** Dive Time, Number of Dives, Number of Warnings, Maximum Depth, Maximum Depth Dive Number.
- **Each Dive Beginning Statistics:** Local Time Clock, Dive Number, Surface Time, Altitude, Battery Voltage. Capacity is the most recent 256 dives.
- **Each Dive Ending Statistics:** Bottom Time, Max Depth, Average Depth, Max Ascent Rate, Max A/R Time, Max A/R Depth, Min Temperature, Average Temperature, Maximum Temperature, Min Battery Voltage, number of Warnings. Capacity is the most recent 256 dives.
- **Each Dive Configuration Data:** Full and complete configuration of the system. Capacity is the most recent 256 dives.
- **Profile Graphical Information:** Depth Graph, Ascent Rate Graph, Temperature Graph, Capacity is 180 hours at one second sampling (dependent upon memory configuration).
- **Inter-Dive Events:** Number of Initializations, Unit Activation, Altitude Changes of 500 Feet, Temperature Changes of 10 degrees, Low Batteries, Sensor Malfunction, Analyst® interface with Depth Gauge.

INTER-DIVE EVENTS: The DEPTH GAUGE stores important information between dives, even when the unit is not turned on. The information is stored as acquired and is called an "Inter-Dive Event". Some Inter-Dive events are:

- Initialization of the unit.
- The unit is turned on
- Low batteries
- Altitude Changes of over 500 feet
- Temperature Changes of 10 degrees
- Sensor Malfunction
- Analyst® P.C. Communication

USER CONFIGURABLE ITEMS: The number of and which configurable options are viewed is determined by the **DEPTH GAUGE's** configuration.

Caution: Items that can be changed via Touch Contact Programming may be different from their factory settings.

By using the optional 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 your 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 **DEPTH GAUGE** may be ordered either way as shipped from the factory.

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. From the factory this set to 'Proportional' (percentage).

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 of from 20 to 60 feet per minute (See next topic). As shipped from the factory, this is set to ON. If the VARIABLE rate is selected then the warning will illuminate based on the following table:

DEPTH	AVERAGE ASCENT RATE
60 feet and deeper	60 feet per minute
60 to 30 feet	same as depth
Shallower than 30 feet	30 feet per minute

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 be issued.

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

Max Depth Alarm: This option allows the diver to select a maximum depth below, which the diver does not wish to exceed before an alarm is issued. This option may also be set via the Touch Contact Programming. As shipped from the factory, the Depth Alarm is set for 130 feet.

Select Alternate Screen Viewing Time (3 to 10): This option allows the diver to set the amount of time that the Alternate Screen will be viewed. From the factory this is set to 4.

Selectable Show Depth Only (Enabled or Disabled): This option allows the diver to not have the Bottom Time shown during the dive. As shipped from the factory, this is set to 'Disabled'.

Confined Water Protocol (Training Mode) - (Enabled or Disabled): This option enables the Training Mode for the **DEPTH GAUGE**. In this mode the **DEPTH GAUGE** will enter the Dive Mode at 2 feet instead of 5 feet and exit the Dive Mode at 1 foot instead of 3 feet. The Training Mode also permits the selection of an increased Post Dive 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'. **This option can only be 'Enabled' via the Professional Edition of the Analyst®.**

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 Post Dive 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. **This option can only be set via the Professional Edition of the Analyst®.**

Select Clock Functions (ON or OFF): This option allows the diver to enable or disable the time of day Clock. If set to "ON", the clock time & date can be set via Touch Contact Programming method. As shipped from the factory, this is set to "OFF".

Enter Clock Time: This allows the diver to set the Depth Gauge clock's time & date to that of the P.C.

Restore Original Configuration Settings: This allows the diver to restore the original factory default settings with a single command.

SPECIFICATIONS:

Computation Period	Once every second
Activation	Manual and Water
Maximum Depth	Over 328 or 656 feet, 1 foot increments (Depends upon unit configuration)
Depth Accuracy	+/- 1% of full scale (+/- 3.3 feet or +/- 6.6 feet) (Depends upon unit configuration)
Maximum Altitude	16,000 feet, seamless
Altitude Accuracy	+/- 1000 feet
Temperature Display	0 to 99 degrees F, 1 degree increments
Temperature Accuracy	+/- 2% of full scale after the unit has stabilized 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
Dive Summary Storage	up to 256 Dives
Dive Profile Storage	up to 180 Dive hours at one second sampling depending on configuration
Profile Sampling	1 second increment
Typical Battery Life*	Over 1000 dive hours under normal diving conditions or 1 year (whichever is first) With Clock Mode on, Battery Life is over 1000 dive hours or one year.

* With fresh new ENERGIZER® brand alkaline batteries

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

ENHANCEMENTS: The Dive Profile Storage memory capacity can be upgraded from a base of 20 hours to 180 hours.

CLEANING THE DEPTH GAUGE: Clean the unit with fresh water only after each use. Towel dry the unit; 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, or permanently fog the lens.

CHANGING BATTERY: The batteries should be changed when the 'BATT' legend is seen or battery voltage reaches 2.4volts as can be seen on the Alternate Screen in the Surface Interval or on the Information Display. The unit will operate until the battery voltage drops below 2.0 volts. Only use fresh, name brand N-Cell size alkaline batteries for maximum battery life. At this time, *Eveready Energizer* Alkaline is recommended. 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 every two years regardless of battery condition.

To replace the batteries in the **DEPTH GAUGE**:

1. Remove the unit from its boot.
2. Make certain the case is dry.
3. Unscrew and remove the outer base ring.
4. Separate the bottom of the **DEPTH GAUGE** from the case assembly.
Extreme care should be taken to avoid damaging the wiring cable, which connects the battery contacts and the depth sensor to the electronics in the main unit.
5. Install replacement batteries in the orientation shown in figure 40.

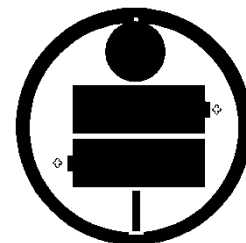


FIGURE 42

6. Ensure there is no dirt or debris on the O-rings or the mating surface and that the O-rings are properly installed.
7. Replace the bottom of the **DEPTH GAUGE** on the main unit ensuring that the index tab on the base is fitted to the index slot of the lens.
8. Carefully align the threads and screw the outer ring on hand tight.

ASSISTANCE, REPAIR & MAINTENANCE: The Cochran **DEPTH GAUGE** does not require an Annual Maintenance, but if you suspect that your **DEPTH GAUGE** is not operating correctly, please contact our Customer Support Department in the USA for assistance at 972.644.6284 or FAX the details to 972.644.6286 or E-mail them 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 the dealer requested 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! (Voids Warranty)**
- **ONLY USE FRESH WATER TO CLEAN UNIT! NEVER USE SOLVENTS!**
- **DO NOT USE A SCREWDRIVER TO REMOVE BATTERIES! (Voids Warranty)**
- **ALWAYS KEEP FRESH ENERGIZER® BRAND BATTERIES INSTALLED!**
- **LUBRICATE BATTERY ENDS WITH THIN FILM OF SILICONE GREASE!**

REPLACEMENT PARTS:

'N' Cell Alkaline Batteries (2)	P/N 19931
Base O-ring - Parker 2-033	P/N 18971
Retractor Only	P/N 15940

ANALYST® Personal Computer Interface

The ANALYST® V4.XX Personal Computer Interface is a complete hardware/software system that uploads data from the Cochran **DEPTH GAUGE** to an IBM or compatible Personal Computer with a Windows® 95/98/NT/ME/2000 & XP operating system. The ANALYST® Personal Computer Interface allows the diver to retrieve dive data, customize the dive computer and also to enter and store information for each dive in a logbook database.

FCC LABEL

This device has been tested and verified to comply with Part 15, Class B, 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: This product is designed to be used only with the Analyst® interface cable (USB or RS-232) to maintain compliance with FCC Regulations.

PATENT INFORMATION: Protected under one or more Foreign or US patents.

5,899,204	5,794,616
5,617,848	5,570,688

Other patents may be pending.

All specifications are subject to change without prior notice. Analyst® is a registered trademark of Cochran Consulting, Inc. Energizer is a registered trademark of the Eveready Battery Co., St. Louis MO. Copyright 2005 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 Consulting, Inc. ("COCHRAN") represents this Product to be free of defects in materials and workmanship under normal recreational SCUBA use for 24 months from the original date of shipment from COCHRAN. Units that are used for Rental, Commercial, or Military purposes are warrantied to be free of defects in materials and workmanship for 12 months from the original date of shipment from COCHRAN. 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 or directly from COCHRAN. Contact COCHRAN for verification of dealer status. This Limited Warranty is not transferable.

The product must be registered with COCHRAN within 15 days of purchase in order to validate Limited Warranty. The product can be registered via the COCHRAN website (www.DiveCochran.com/ProductRegistration).

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, exposure to harmful chemicals such as hydrocarbons, or other conditions which COCHRAN may deem to be outside the intended scope of this Limited Warranty are not covered.

This Limited Warranty does NOT cover plastics, O-rings, batteries, battery life, and flooded battery compartments.

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

The 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 US OWNER or US 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 is not on file.

STATEMENT of LIMITED LIABILITY:

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.

These products must be handled with care and properly maintained to assure the optimum performance. Users must possess the proper training for SCUBA diving activities and should be fully educated in the operation of this product. Users are encouraged to possess and utilize a redundant (backup) unit for their dive planning and execution. Divers are always encouraged to dive with a buddy at all times.

COCHRAN strongly supports and agrees with maximum depth limits of 130 feet 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.

THE WARRANTY AND REMEDIES SET FORTH ABOVE ARE EXCLUSIVE AND IN LIEU OF ALL OTHERS, WHETHER ORAL OR WRITTEN, EXPRESSED OR IMPLIED. COCHRAN UNDERSEA TECHNOLOGY SPECIFICALLY DISCLAIMS ANY AND ALL IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

No Cochran Undersea Technology dealer, agent, or employee is authorized to make any modification, extension, or addition to this warranty.

METRIC/IMPERIAL MODES: If the **DEPTH GAUGE** is computing and displaying in Metric, the "TEMP" °C legend will be illuminated when the unit is on. Metric/Imperial selection is made using the Analyst® software. Changing Modes does not affect any profiles or data stored in the depth Gauge.

LOW BATTERY INDICATIONS: Fresh ENERGIZER® brand alkaline batteries should read about 3.2 volts on the Alternate Screen and/or the

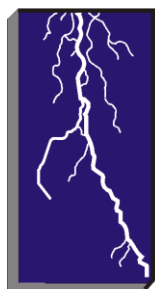
InFormation Screen. When the battery voltage drops to 2.4 volts, the "BATT" legend will begin to flash on and off. It is recommended to change the batteries at this point, but several dives might still remain possible. When the battery voltage decays to 2.0 volts, the "BATT" legend will continue to flash on and off. While there should be sufficient battery power to normally complete a dive, it is not recommended to begin a new dive until fresh ENERGIZER® brand alkaline 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 2.0 volts. Fresh ENERGIZER® brand alkaline batteries must be installed. See the "BATTERY CHANGES" section for details on how to change batteries.

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Diving Into The 21st Century

Cochran DEPTH GAUGE Owner's Manual

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