

**eLEment**  
Owner's Manual

TUSA QUALITY



**T U S A**

DIVE COMPUTER

## LIMITED WARRANTY

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

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## TRADEMARK NOTICE

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## PATENT NOTICE

U.S. Patents have been issued to protect the following design features:

Dive Time Remaining (U.S. Patent no. 4,586,136), Data Sensing and Processing Device (U.S. Patent no. 4,882,678), and Variable Ascent Rate Indicator (U.S. Patent no. 5,156,055).

## CE

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

EN 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. The Element is designed to comply with this standard.

## DECOMPRESSION MODEL

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

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Pay special attention to items marked  
with this Warning symbol.



Components:

- a. Icon - DS (Deep Stop)  
Icon - Descend Arrow  
Icon - Stop Bar  
Icon - Ascend Arrow
- b. O2 Bar Graph
- c. Icons - Operating Modes
- d. Icons - Times
- e. Icons - Am/Pm
- f. Icons - Depths
- g. ASC - Ascent Rate Indicator
- h. Icon - Dive No.
- i. Icon - Low Battery
- j. Icons - Max Depth
- k. Nitrogen Bar Graph
- l. Icon - Log Mode
- m. Icon - Temperature

## LCD DISPLAY



**NOTE: The Element will enter Dive Mode upon descent to 5 FT (1.5 M) if first activated by push button or if Wet Activation was previously set ON.**

## **FEATURES and DISPLAYS**

## INTRODUCTION

Welcome to TUSA and thank you for choosing the Element !

It is extremely important that you read this manual in sequence and understand it completely before attempting to use the Element.

Remember that technology is no substitute for common sense, and a dive computer only provides the person using it with data, not the knowledge to use it.



**Be a - RESPONSIBLE DIVER at all times.**

## CONTROL BUTTON

The Control Button allows you to select display options and access specific information when you want to see it. It is also used to enter settings.

## BAR GRAPHS

### Nitrogen Loading Bar Graph (NiBG)

The NiBG (Fig. 1a) represents tissue loading of nitrogen, showing your relative no decompression or decompression status. As your depth and elapsed dive time increase, segments will add to the NiBG, and as you ascend to shallower depths, the segments will recede, indicating that additional no decompression time is allowed for multilevel diving.

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

While you cannot provide a guarantee against the occurrence of decompression sickness, you may choose your own personal zone of caution based upon age, physique, excessive weight, etc., to reduce the statistical risk.



**NOTE:** Displays associated with oxygen and the O2 Bar Graph will only appear if FO2 has been set at a value other than 'Air' (e.g., a numerical value).

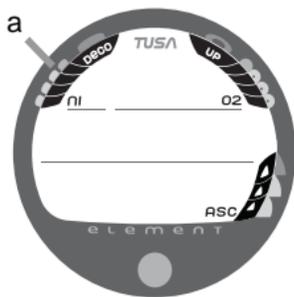


Fig. 1 - NiBG

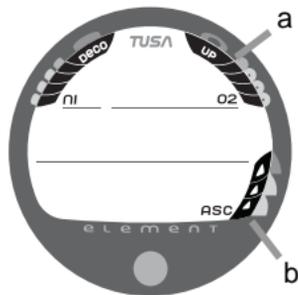


Fig. 2 - O2BG and ASC

## Oxygen Accumulation Bar Graph (O2BG)

The O2BG (Fig. 2a) represents oxygen accumulation, showing the maximum of either per dive accumulated oxygen, or 24 hour period accumulated oxygen.

As your oxygen exposure (accumulation) increases during the dive, segments will add to the O2BG, and as loading decreases, it will begin to recede, indicating that additional exposure is allowed for that dive and 24 hour period.

## Ascent Rate Indicator (ASC)

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

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

### ASC values

#### Deeper than 60 FT (18 M)

Segments Displayed	Ascent Rate =	
	FPM	MPM
0	0 - 20	0 - 6
1	21-50	6.5-15
2	51-60	15.5-18
3	>60	>18

#### 60 FT (18 M) & Shallower

Segments Displayed	Ascent Rate =	
	FPM	MPM
0	0 - 10	0 - 3
1	11-25	3.5-7.5
2	26-30	8-9
3	>30	>9



**WARNING:** At depths greater than 60 FT (18 M), ascent rates should not exceed 60 feet per minute (18 meters per minute). At depths of 60 FT (18 M) and shallower, ascent rates should not exceed 30 feet per minute (9 meters per minute).

## ALPHA / NUMERIC DISPLAYS

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

### Depth Displays

During a dive, the **Current Depth** display (Fig. 3Aa), indicates depths from 0 to 330 FT (99.9 M) in 1 FT (0.1 M) increments.

The **Maximum Depth** reached during that dive is displayed on an Alternate screen by pressing the button (Fig. 3Ba).

During a No Deco Dive Deep and Safety Stops and while in Decompression, the required **Stop Depth** is displayed on the Main (Fig. 4a).



Fig. 3A - CURRENT DEPTH



Fig. 3B - MAX DEPTH



Fig. 4 - STOP DEPTH



Fig. 5 - TIME

### Time Displays

**Time displays** are shown in hour:minute format (i.e., 1:16 represents 1 hour and 16 minutes, not 116 minutes). The colon that separates hours and minutes blinks once per second when the display is indicating real time (e.g., Elapsed Dive Time), and is solid (not blinking) when times are calculated projections (e.g., Time to Fly).

The **Main Time** display is located at the top of the display (Fig. 5a) and a **second time display** (Fig. 5b) is located in the center/right. Both displays are identified by a clock icon.

- Time of Day (Fig. 6a) can be set for 12 hour format (Am/Pm) or 24 hour format.

### Temperature Display

**Ambient Temperature** is displayed in the center/left portion of the screen (Fig. 6b) while in the Surface Mode and Log Mode, and can be viewed as part of an Alternate Display when the button is pressed while in a dive mode.



**NOTE:** The informational displays are described in detail as the various operating modes they appear in are presented throughout this manual.

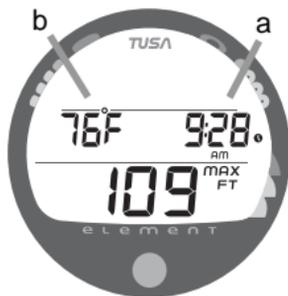


Fig. 6 - TEMPERATURE

## POWER SUPPLY

The Element utilizes one (1) type CR 2450 Lithium 3 volt cell style Battery that should provide 300 hours of continuous, or 50 activation periods, of operation.

- If you conduct 1 dive each time the unit is activated, you should obtain approximately 50 dives.
- If you conduct 3 dives each time the unit is activated, you should obtain approximately 150 dives.

## Battery Indicator

A Battery Indicator (icon) provides an indication of Low Battery condition. When power is sufficient for normal unit operation, the icon will not be displayed upon activation or during Surface Mode (Fig. 7). The icon is not displayed during any Dive Mode(s).

## Low Battery Condition

Voltage level is checked upon activation and every (1) minute during operation on the surface.

- When voltage decreases to  $< 2.75$  v and is  $> 2.50$  v, the Battery icon will be displayed solid (Fig. 8a) as a warning that the Battery is to be replaced prior to conducting any further dives.



Fig. 7 - ACTIVATION  
(no Battery icon = normal)



Fig. 8 - LOW BATTERY

- Upon decreasing to a voltage level that will no longer sustain proper operation ( $\leq 2.50$  v), the icon will flash 5 times followed by shutdown of the unit.
- If a Low Battery Condition exists when the unit is activated (by pressing the button), the graphic bAT and the Battery Indicator will appear flashing for 5 seconds followed by shutdown of the unit.
- If the button is not pressed to activate the unit prior to a dive, and a Low Battery Condition exists, the Battery Indicator will appear flashing as a warning upon descent to 5 FT (1.5 M). No other information will be displayed.
- If the unit did not display a Low Battery Condition 'prior to' entering the Dive Mode, and a Low Battery Condition occurs during the dive, there will be sufficient battery power to maintain unit operation for the remainder of 'that dive'. The Battery icon will then appear after the dive upon entry into Surface Mode.



## FO2 MODE

After Activation, the Element will operate as an AIR computer without displaying information associated with oxygen calculations, unless it is set for Nitrox which is a percentage of O<sub>2</sub> (FO<sub>2</sub>) other than AIR (a numerical value between 21 and 50 %).

When set for an **FO<sub>2</sub> value of AIR** (Fig. 9), the Element will perform calculations the same as if FO<sub>2</sub> were set for 21% O<sub>2</sub>, internally accounting for O<sub>2</sub> accumulation for any subsequent Nitrox dives. However, O<sub>2</sub> related displays, warnings, and the O<sub>2</sub>BG will not appear on the display for that dive, or subsequent dives, unless FO<sub>2</sub> is set for Nitrox (a numerical value of 21 to 50 %).

Once a dive is made with the unit set as a Nitrox computer (FO<sub>2</sub> set for a numerical value), it cannot be programmed to operate as an AIR computer until 24 hours after the last dive. AIR will not be displayed as an option in the FO<sub>2</sub> Mode. However, you can set FO<sub>2</sub> for 21% for use with AIR.

When FO<sub>2</sub> is set at a **value of 21%** (Fig. 10), the unit will remain set at 21% for subsequent Nitrox dives until FO<sub>2</sub> is set to a higher value, or until it automatically turns Off 24 hours after the last dive and is reactivated.

**Setting FO<sub>2</sub> is described on Page 21.**



Fig. 9 - FO<sub>2</sub> Set for AIR



Fig. 10 - FO<sub>2</sub> Set for 21%



Fig. 11 - FO2 DEFAULT ON

## FO2 50% DEFAULT

If the FO2 Default is set to ON (Fig. 11) and FO2 is set to a value greater than 21%, the FO2 set point value will automatically revert to 50% 10 minutes after that dive. The Maximum Depth that can be achieved with a PO2 of 1.60 ATA will also be displayed.

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



Fig. 12 - FO2 DEFAULT OFF

If the Default is set to OFF (Fig. 12), the FO2 value for repetitive dives remains the same as previously set until the Set Point is manually changed.



**WARNING: During Activation and Diagnostics, if any display or function varies from the information presented here, return the Element to your Authorized TUSA Dealer for inspection.**

## **ACTIVATION and SETUP**



Fig. 13 - DIAGNOSTIC MODE



Fig. 14 - SERIAL NUMBER

## ACTIVATION



**WARNING:** If the unit is activated at elevations higher than 14,000 feet (4,270 meters), it will perform a diagnostic check and immediately shutdown.

To Activate the Element, press and release the Button.

- Upon manual activation, the unit will enter Diagnostic Mode (Fig. 13), displaying all segments of the LCD as 8's, followed by dashes ( - - ), then a countdown from 9 to 0. Diagnostic Mode checks the display and Battery voltage to ensure that everything is within tolerance and functioning properly.
- When the button is held depressed and the Diagnostic countdown reaches 00, a Serial Number screen appears displaying the unit's Serial Number and firmware code Revision Number as long as the button is held depressed (Fig. 14). Upon releasing the button, the unit shuts Off.
- After manual activation, it will also check the ambient barometric pressure, and calibrate its present depth as zero. At elevations of 3,000 feet (915 meters) or higher, it will recalibrate itself to measure depth at that higher Altitude.

### **Wet Contact Activation** (only if set ON)

The Element will also automatically activate by Wet Contact. This is accomplished by bridging the gap between contacts located on the Button's stem and back of the case.

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

### **SURFACE SEQUENCE**

While on the surface, the unit will automatically scroll through a Sequence of displays including -

- Surface Mode
- Fly Mode
- DeSat Mode
- Plan Mode

As the Surface Sequence is scrolling, you can use the button to access Log Mode and Set Mode.

### **SURFACE MODE**

Surface Mode, identified by the Surface Time icon (Fig. 15a), follows Diagnostic Mode after Activation. Information includes Surface Time with flashing colon (and clock/wave icon, Temperature (with icon and graphic C or F), Time of Day (with clock icon), and Dive Number with # icon (0 if no dive made yet).



Fig. 15 - SURFACE MODE

## SET MODE

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

To access Set Mode while the Surface Sequence is scrolling, press the button for 2 seconds.

- Upon entry into Set Mode, the Set FO2 screen will be displayed with the Set Point flashing (Fig. 16).
- If the button is not pressed during a 2 minute period while in the Set Mode, the unit will revert to Surface Mode and resume the Surface Sequence scroll.

## TO SET - FO2

Each time the unit is activated (if Off), FO2 will be automatically set for a default value of AIR which can then be changed to values between 21 and 50% in increments of 1%.

- While the Surface Sequence is scrolling, depress the button for 2 seconds.
- Release the button when the FO2 screen appears with the Set Point flashing.
- Press/release the button repeatedly to increase the FO2 value from 21 to 50% in increments of 1%, then display AIR again.



Fig. 16 - SET MODE ENTRY

- For each FO2 value that appears, the Maximum Depth that can be achieved for the PO2 Alarm Set Point will be displayed (Fig. 17a) with the graphic PO2. If FO2 is set for AIR, no Depth value will be displayed.
- Depress the button for 2 seconds to accept the FO2 Set Point displayed and advance to the Set Wet Activation screen.

### **TO SET - WET ACTIVATION**

Factory set for ON, Wet Activation can also be set OFF (disabled) to prevent inadvertent activation during travel or storage.

When set ON, the Element will automatically Activate and enter Dive Mode upon immersion in water.

- After having set and accepted the FO2 setting, the Set Wet Activation screen appears displaying the graphics ACT and WET with the Set Point flashing (Fig. 18).

-- or --

- While the Surface Sequence is scrolling, depress the button for 4 seconds to bypass Set FO2 to access the screen, then release the button.



Fig. 17 - FO2 set for 32% (130 feet allowed)



Fig. 18 - SET WET ACTIVATION

- Press/release the button (less than 2 seconds) to toggle between ON and OFF.
- Depress the button for 2 seconds to accept the Set Point and advance to Set Units Of Measure.

### **TO SET - UNITS OF MEASURE**

Factory set for Imperial, Units of can also be set for Metric.

- After having set and accepted Wet Activation, the Set Units screen appears with the Set Point flashing (Fig. 19).

-- or --

- While the Surface Sequence is scrolling, depress the button for 6 seconds to bypass Set FO2 and Set Wet Activation, then release the button.
- Press/release the button (less than 2 seconds) to toggle between Metric (M and C) and Imperial (FT and F) units.
- Depress the button for 2 seconds to accept the Units Set Point and advance to Set Hour Format.

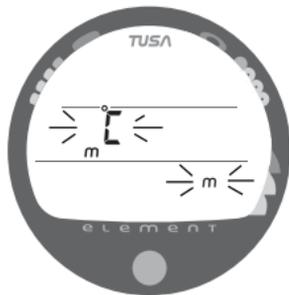


Fig. 19 - SET UNITS OF MEASURE

## **TO SET - HOUR FORMAT**

Factory set for 12 Hour (12: AM to 11: PM), the Hour Format can also be set for 24 Hour (0: to 23: hours).

- After having set and accepted Units, the Set Hour Format screen appears with the Set Point flashing (Fig. 20).

-- or --

- While the Surface Sequence is scrolling, depress the button for 8 seconds to bypass Set FO2, Wet Activation, and Units, then release the button.
- Press/release the button (less than 2 seconds) to toggle between 12 and 24.
- Depress the button for 2 seconds to accept the Set Point and advance to Set Time.



Fig. 20 - SET HOUR  
FORMAT

## **TO SET - TIME**

Set for factory local time, the Time can be set to values between 1:00 and 12:59 (AM/PM) or 0:00 and 23:59.

- After having set and accepted Hour Format, the Set Time screen appears with the Hour Set Point flashing (Fig. 21).

-- or --

- While the Surface Sequence is scrolling, press the button for 10 seconds to bypass Set FO2, Wet Activation, Units, and Hour Format, then release the button.
- Press/release the button repeatedly (less than 2 seconds each time) to advance the Hour Set Point in increments of 1 Hour per press of the button.
- Depress the button for 2 seconds to accept the Hour Set Point, the Minutes Set Point flashes.
- Press/release the button repeatedly (less than 2 seconds each time) to advance the Minute Set Point in increments of 1 Minute per press of the button.
- Depress the button for 2 seconds to accept the Minute Set Point and advance to Set PO2 Alarm.

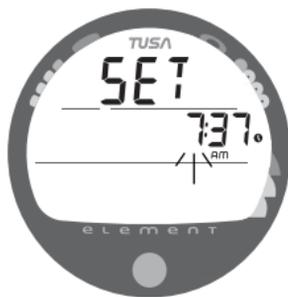


Fig. 21 - SET TIME

## **TO SET - PO2 ALARM**

Factory set for 1.60 (ATA), the PO2 Alarm can be set to values between 1.20 and 1.60 (ATA) in increments of .10 (ATA).

- After having set and accepted the Time, the Set PO2 Alarm screen appears with the Set Point flashing (Fig. 22).

-- or --

- While the Surface Sequence is scrolling, press the button for 14 seconds to bypass Set FO2, Wet Activation, Units, Hour Format, and Time, then release the button.
- Press/release the button repeatedly (less than 2 seconds each time) to advance the PO2 Alarm setting in increments of .10 (ATA) per press of the button.
- Depress the button for 2 seconds to accept the PO2 Alarm Set Point and advance to Set FO2 Default.



Fig. 22 - SET PO2 ALARM

### **TO SET - FO2 50% DEFAULT**

Factory set ON, the FO2 50% Default feature can be set to OFF. The effects of this feature being ON or OFF are described on page 16.

- After having set and accepted the PO2 Alarm Set Point, the Set FO2 50% Default screen appears with the Set Point flashing (Fig. 23).

-- or --

- While the Surface Sequence is scrolling, depress the button for 16 seconds, then release it when the Set FO2 50 screen appears with the Set Point flashing.
- Press/release the button (less than 2 seconds) to toggle between ON and OFF.
- Depress the button for 2 seconds to accept the Set Point and advance to Set No Deco Deep Stop.



Fig. 23 - SET FO2 DEFAULT

## **TO SET - NO DECO DEEP STOP (DS)**

Factory set OFF, the No Deco Deep Stop feature can be set to ON. The effects of this feature being ON or OFF are described on page 34.

- After having set and accepted the FO2 50% Default Set Point, the Set DS screen appears with the Set Point flashing (Fig. 24).

-- or --

- While the Surface Sequence is scrolling, depress the button for 18 seconds, then release it when the Set DS screen appears with the Set Point flashing.
- Press/release the button (less than 2 seconds) to toggle between ON and OFF.
- Depress the button for 2 seconds to accept the Set Point and revert to the Surface Sequence.



Fig. 24 - SET DEEP STOP



## **WARNINGS AND SAFETY RECOMMENDATIONS**

- **It should not be considered that the capabilities built into the Element provide an implied approval or consent from TUSA for individuals to exceed the defined limits for recreational diving, as agreed on by all internationally recognized training agencies.**
- **The oxygen features of the Element are intended for use by recreational divers trained for nitrox diving by an instructor certified by a recognized training agency to teach diving with nitrox.**
- **Conducting repetitive dives using enriched nitrogen-oxygen mixtures can lead to oxygen buildup, reducing oxygen tolerance while increasing the risk of pulmonary oxygen toxicity.**
- **The Element provides information based upon a personal dive profile, and therefore must not be shared between divers. It is impossible for two divers to stay precisely together underwater, and your computer's dive profile tracking of previous dives will be pertinent to you only. Nitrogen and oxygen loading of a second user may be significantly different and swapping dive computers could lead to inaccurate and dangerous predictions of decompression and oxygen accumulation status.**



## **WARNINGS:**

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

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

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

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

# **PLAN and DIVE MODES**

## PRE DIVE PLANNER

The Pre Dive Planner, which appears after Surface Mode prior to the first dive of a new activation period, provides a sequence of theoretical dive times available for depths ranging from 30 FT (9 M) to 190 FT (57 M) in 10 FT (3 M) increments.

No decompression times (limits), or NDLs, are only displayed for depths where there is at least 1 minute of theoretical dive time available at the depth, taking into account a descent rate of 60 feet (18 meters) per minute.

The Planner should be reviewed prior to every dive to help you plan your dive as required to avoid exceeding no decompression or oxygen exposure limits.

For repetitive dives, the Planner indicates adjusted dive times that are available for the next dive, based on residual nitrogen or oxygen accumulation (whichever is in control) following the last dive and surface interval. It appears after the SAT screen in the scrolling Surface Sequence (SURF > FLY > SAT > PLAN).



**WARNING:** The available dive times provided are only predictions, depending on cylinder size and air consumption rate, you may have less time available than indicated because of those and other factors.

<u>Depth</u>		<u>NDL</u>	
<u>FT (M)</u>		<u>hours:mins</u>	
30	(9)	3:17	(3:37)
40	(12)	1:49	(1:55)
50	(15)	1:05	(1:08)
60	(18)	:48	(:50)
70	(21)	:35	(:36)
80	(24)	:26	(:27)
90	(27)	:19	(:20)
100	(30)	:16	(:16)
110	(33)	:12	(:13)
120	(36)	:10	(:10)
130	(39)	:08	(:09)
140	(42)	:07	(:08)
150	(45)	:06	(:06)
160	(48)	:06	(:06)
170	(51)	:05	(:05)
180	(54)	:05	(:05)
190	(57)	:04	(:05)

NDLs at Sea Level  
for an Air Dive  
(no dive made yet)

- With each Depth displayed by the Planner, you will see either predicted no decompression limits (NDLs) based upon your previous dive profiles (if calculated to be nitrogen controlled), or predicted O<sub>2</sub> limits based upon either a single dive exposure or your 24 hour accumulation of oxygen (if calculations are controlled by O<sub>2</sub>).
- The Maximum Depth allowed for a PO<sub>2</sub> level of 1.60 (ATA) for the FO<sub>2</sub> setting will also be displayed.
- Depths greater than the Maximum Depth that can be achieved with a PO<sub>2</sub> of 1.60 ATA will not be displayed.
- If the Nitrogen Bar Graph is displayed (Fig. 25Aa), that next dive is calculated to be controlled by nitrogen loading.
- If the O<sub>2</sub> Bar Graph is displayed (Fig. 25Ba), it is calculated to be controlled by O<sub>2</sub> saturation.

**△ NOTE:** The Element will store O<sub>2</sub> accumulation data for up to 10 dives conducted during a 24 hour period. If the maximum limit for O<sub>2</sub> saturation has been exceeded for that day (24 hour period), all segments of the O<sub>2</sub>BG will flash.

Depth/Time values will not appear until the O<sub>2</sub>BG recedes into the normal zone (i.e., your daily O<sub>2</sub> dosage decreases an amount equal to the amount accumulated during the latest dive completed).

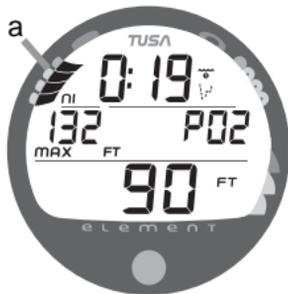


Fig. 25A - PLANNER  
NITROGEN CONTROL



Fig. 25B - PLANNER  
O<sub>2</sub> CONTROL

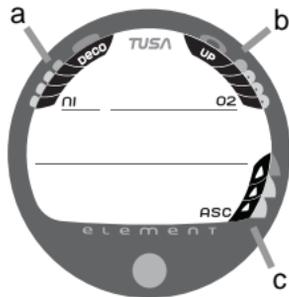


Fig. 26 - BAR GRAPHS

### **NIBG (NITROGEN LOADING BAR GRAPH)** (Fig. 26a)

As your Depth and Elapsed Dive Time (EDT) increase, the NiBG will add segments to represent the absorption of nitrogen.

While ascending to shallower depths, the number of segments displayed will begin to recede, offering a graphic representation of your multilevel diving capability.

### **O2BG (OXYGEN ACCUMULATION BAR GRAPH)** (Fig. 26b)

If FO2 was set for a numerical value (Nitrox), the O2BG will add segments to represent oxygen accumulation for that dive, or 24 hour period, whichever amount is greater.

### **ASC (ASCENT RATE INDICATOR)** (Fig. 26c)

The Ascent Rate Indicator (ASC) shows how fast you are ascending. When you exceed the maximum recommended ascent rate for the depth you are at (see chart on page 10), all segments of the ASC will flash (Fig. 27). The flashing will stop when your Ascent Rate is slowed below the alarm value.



Fig. 27 - ASCENT TOO FAST

## CONTROL OF DISPLAYS

During dives, there is a Main (default) Display with Alternate screens of information that can be accessed temporarily by pressing the button.

## NO DECOMPRESSION DIVE MODE

The Element will enter the No Decompression Dive Mode when you descend to 5 FT (1.5 M) for 5 seconds.

### No Deco Dive Main Display (Fig. 28)

Information includes Dive Time Remaining with Mode icon (Fig. 28a), Elapsed Dive Time (Fig. 28b), Current Depth (Fig. 28c), and applicable bar graphs.

- Press/release the button 1 time (< 2 seconds) to view No Deco Dive Alternate 1 Display.
- If set for Nitrox, press/release the button while viewing Alternate 1 to view Alternate 2.
- The Alternate Displays will revert to the Main after 5 seconds unless the button is pressed.
- Depress the button for 2 seconds to view a No Deco Deep Stop Preview screen for 5 seconds.

### No Deco Alternate 1 Display (Fig. 29)

Information includes Temperature, Time of Day, and Max Depth with icons.



Fig. 28 - NO DECO MAIN



Fig. 29 - NO DECO ALT 1



Fig. 30 - NO DECO ALT 2

### No Deco Alternate 2 Display (Fig. 30)

The ALT 2 display will not appear when FO2 is set for AIR. Information includes the graphic FO2, current value of PO2 with graphic PO2, and the FO2 value set (21 to 50).

### No Deco Dive DEEP STOP

On any No Deco dive in which Depth exceeds 80 FT (24 M), a Deep Stop Preview screen (Fig. 31) can be accessed that will display the graphic **DS** (meaning Deep Stop) and a recommended Stop Depth of 1/2 the Max Depth and Stop Time of 02:00 (2 minutes) with DS and STOP bar icons. It will revert to the Main after 5 seconds.

- To access the Preview screen, depress the button for 2 seconds while viewing the No Deco Main screen.
- The intent of this screen is to suggest that a stop should be made to help reduce tissue loading prior to final ascent.
- The Preview screen will not be available for display once you ascend above the calculated Stop Depth.



**NOTE: The Deep Stop is not required and although recommended, it does not have to be taken. There will be no penalty if the Stop is ignored and ascent (or other activity) is continued.**



Fig. 31 - NO DECO DEEP STOP PREVIEW

Upon ascending to within 10 FT (3 M) below the Stop Depth, the Deep Stop Main screen (Fig. 32) will automatically appear displaying the Stop Depth (1/2 Max Depth) with the 2 minute Countdown Timer that counts down from 02:00 to 0:00 (min:sec). Also displayed will be Dive Time Remaining, current Depth and applicable bar graphs.

Press and release the button (< 2 seconds) to access the ALT 1 screen that displays Elapsed Dive Time (Fig. 33), press it again to view the ALT 2 screen displaying Temperature, Time, and Max Depth (similar to figure 29), then if a Nitrox dive press it again to view ALT 3 displaying FO2 and PO2 (similar to figure 30).

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



Fig. 32 - DEEP STOP MAIN



Fig. 33 - DEEP STOP ALT 1

### No Deco Dive SAFETY STOP (Fig. 34)

Upon ascending to 20 FT (6 M) on any No Decompression dive in which Depth exceeded 30 FT (9 M), a Safety Stop screen will appear displaying a recommended Stop at 15 FT (4.5 M) with a 3 minute Countdown Timer that counts down from 03:00 to 0:00 (min:sec).

The Safety Stop will be displayed until the countdown times out, or you descend below 30 FT (9 M) during the countdown, or you surface during the countdown.

- Like the Deep Stop, there is no Penalty for surfacing prior to completing the Safety Stop.
- There is no Preview screen associated with the Safety Stop.

Safety Stop Main display information includes Dive Time Remaining with Mode icon, Stop Depth (15 FT or 4.5 M), STOP bar icon, Countdown Timer, Current Depth, and applicable bar graphs.

- Alternate displays are similar to those previously described for the Deep Stop.



Fig. 34 - NO DECO SAFETY STOP MAIN

## DECOMPRESSION DIVE MODE

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

Upon entering Decompression Mode, the Mode icon will change from No Deco to Deco (Fig. 35a).

- The UP Arrow and Deco STOP bar icons will flash until you are within 10 FT (3 M) of, and below, the required Stop Depth, then both arrow icons and the bar icon appear solid.

To fulfill your decompression obligation, you should make a safe controlled ascent to a depth (Fig. 36a) slightly deeper than, or equal to, the required Stop Depth indicated (Fig. 36b) and decompress for the Stop Time indicated (Fig. 36c).

Total Ascent Time (Fig. 36d) includes Stop Times for all required decompression ceilings and vertical Ascent Time calculated at 60 FPM (18 MPM) for depths deeper than 60 FT (18 M), and 30 FPM (9 MPM) for depths of 60 FT (18 M) and shallower.



Fig. 35 - ENTRY into DECO



Fig. 36 - DECO STOP MAIN

The amount of decompression Credit Time that you receive is dependent on Depth, with slightly less Credit given the deeper you are. You should stay slightly deeper than the Stop Depth indicated until the next shallower Stop Depth appears. Then, slowly ascend to, but not shallower than that Stop Depth.

- While in Decompression Mode, button operation and Alternate Displays are similar to those described for No Deco Stops.

### CONDITIONAL VIOLATION MODE

If you ascend shallower (Fig. 37a) than the required Decompression Stop Depth displayed (Fig. 37b), the Down Arrow and STOP bar icons, and Total Ascent Time value will flash until you descend below the required Stop Depth. Current Depth and applicable bar graphs will be displayed.

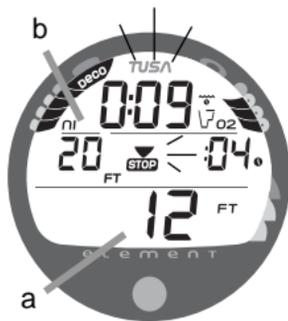


Fig. 37 - CONDITIONAL VIOLATION MAIN

If you descend below the required Deco Stop before 5 minutes have elapsed, operation will continue to function in Decompression Dive Mode.

No off gassing credit will be given during time above the Stop.

Once descent is made to below the Stop Depth, off gassing credit begins, required Deco Stop Depths and Time will decrease toward zero, then operation will revert to the No Deco Dive Mode.

ALT displays are similar to those for Deco.

### DELAYED VIOLATION MODE #1 (Fig. 38)

If you remain above a required Deco Stop Depth for more than 5 minutes, the full NiBG as well as Total Ascent Time and the Down Arrow and STOP bar icons will flash until you descend below the Required Stop Depth. This is a continuation of a Conditional Violation.

### DELAYED VIOLATION MODE #2 (Fig. 39)

The Element cannot calculate decompression times for Stop Depths much greater than 60 FT (18 M) and offers no indication of how much time spent underwater would result in the need for a greater Stop Depth.

If your Decompression obligation requires a Stop Depth between 60 FT (18 M) and 70 FT (21 M), the all segments of the NiBG will flash. Total Ascent Time will still be displayed.

You must ascend to just deeper than, and stay as close as possible to 60 FT (18 M) without causing the Total Ascent Time display to flash.

When the Required Stop Depth indicates 50 FT (15 M), etc., you can ascend to those depths and continue decompressing.



Fig. 38 - DELAYED VIOLATION #1 MAIN

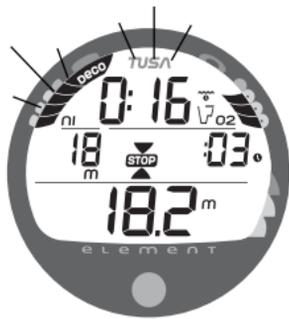


Fig. 39 - DELAYED VIOLATION #2 MAIN



Fig. 40 - DELAYED VIOLATION #3

- While in Conditional Violation Mode and Delayed Violation Modes # 1 and # 2, button operation and Alternate Displays are similar to those for Deco (or No Deco Stops).

### DELAYED VIOLATION MODE #3 (Fig. 40)

If you descend deeper than 330 FT (99.9 M), the loaded NiBG segments will flash, and the Current Depth and Max Depth displays will only indicate 3 dashes (---).

Upon ascending above 330 FT (99.9 M), the real Current Depth value will be restored, however, Max Depth will only display 3 dashes for the remainder of that dive. Also, the Log for that dive will only display 3 dashes as the Max Depth achieved.

### VIOLATION GAUGE MODE

During a Dive, if a Deco Stop much greater than 60 FT (18 M) is required, the Element would then operate with limited functions in Violation Gauge Mode during the remainder of that dive and for 24 hours after surfacing.



Fig. 41 - VIOLATION GAUGE MODE

Violation Gauge Mode turns the Element into a digital instrument without any Nitrogen or O2 monitoring functions. Only Current Depth, Max Depth, Elapsed Dive Time, and the Ascent Rate Indicator will be displayed. All segments of the NiBG and O2BG will flash as a warning of this condition (Fig. 41).

Violation Gauge Mode would be preceded by entering Delayed Violation Mode #2, or if High O<sub>2</sub> occurs while in Deco.

The Element will also enter Violation Gauge Mode 5 minutes after reaching the surface from a dive in which a Delayed Violation occurred.

On the surface, Violation Gauge Mode displays the Surface Interval, Temperature, the graphic Vio alternating with Time of Day, Dive Number, and NiBG and O<sub>2</sub>BG with all segments of both flashing (Fig. 46). It does not provide the FO<sub>2</sub>, Plan, or Time to Fly and Desaturate features.

The countdown timer that appears when you try to access Time to Fly does not represent Time to Fly. It is only provided to inform you of the time remaining before normal operation can resume with full features and functions.

**△ NOTE:** In the event that a dive is made during the 24 hour period after surfacing, a full 24 hour surface interval must then be served after that dive before all functions are restored.



Fig. 46 - VIOLATION GAUGE MODE (Surface)



Fig. 47 - HIGH PO2  
WARNING

## HIGH PO2

When partial pressure of oxygen (PO2) increases to 0.20 ATA less than the PO2 Alarm Set Point, the graphic PO2 (in place of DTR), and UP Arrow icon will appear on the Main Display (Fig. 47) until PO2 decreases. Elapsed Dive Time, Current Depth, and bar graphs will continue to be displayed.

If PO2 continues to increase and reaches the Alarm Set Point, the graphic PO2 and UP Arrow icon will flash until PO2 decreases (Fig. 48).

- Press/release the button momentarily (< 2 seconds) to view the Alternate Displays (similar to No Deco Stop screens).



Fig. 48 - HIGH PO2 ALARM

## HIGH OXYGEN ACCUMULATION

The O2BG displays either O2 accumulated during that Nitrox dive, or during the repetitive Nitrox dives you conduct during that 24 hour period, whichever of the two is greater at that time.

The O2BG offers you a convenient way to consistently monitor how close you are coming to the limits of O2 exposure. Use it as a visual reference to place a wider margin of protection between you and the Limits.

- Warning >> at 80% (240 OTU)
- Alarm >> at 100% (300 OTU)

When O2 accumulation increases to 80%, the Up Arrow icon will appear and the graphic O2 will replace DTR (Fig. 49A)

If O2 reaches 100%, the full O2BG, graphic O2, and Up Arrow icon will flash (Fig. 49B) until on the surface.

- Press/release the button momentarily (< 2 seconds) to view the Alternate Displays (which are similar to those for No Deco Stops).



Fig. 49A - O2 WARNING  
(80%)



Fig. 49B - HIGH O2 ALARM  
(100%)



## **WARNINGS AND SAFETY RECOMMENDATIONS**

- **The percentage of oxygen (FO2) in the nitrox mix being used must be 'set before each nitrox dive', unless the FO2 50% Default feature is set OFF (a user setting).**
- **The Dive Planner provides predicted times for subsequent dives. Depending on cylinder size, breathing gas consumption, and oxygen accumulation, you may have less time available than indicated because of breathing gas quantity or other limitations.**
- **Until it has shut itself off, you must not use the Element at a different Altitude than the Altitude at which it was activated. Doing so will result in an error equal to the difference in barometric pressure, and possibly a false dive mode with erroneous data.**
- **To provide proper Altitude compensation, the Element must be manually activated at the new altitude. Dive computers, such as the Element cannot sense changes in barometric pressure if activated by immersion in water at higher Altitudes.**
- **Use the Caution Zone of the Nitrogen Bar Graph as a visual reference to provide a greater margin of protection between you and the No Decompression Limits.**
- **Every effort should be made to keep each of the Bar Graphs in the normal zone throughout your dives to reduce your risk of exposure to decompression sickness, oxygen toxicity, and the effects of excessive ascent rates.**

## RESPONSIBLE COMPUTER DIVING

- Plan each dive, and dive your plan - Your computer was not designed to make decisions for you, only to provide you with the information you need to make responsible decisions for yourself. This begins with a dive plan that will help you avoid a low air or decompression situation.
- Do not plan any dive that exceeds your training or experience level.
- Inspect your computer before every dive - If it shows any signs of damage or abnormal function, DO NOT dive with it until it has received factory service.
- Make a safety stop at 15 to 20 FT (4.5 to 6 M) at the end of every dive. It's important, Don't forget it.
- You should make every effort to complete all of your ascents with the Nitrogen Bar Graph inside the normal No Decompression zone.
- If you inadvertently entered Decompression Mode, you must not complete your ascent until the Nitrogen Bar Graph is at least inside the No Decompression Caution Zone.
- While you cannot provide a guarantee against the occurrence of decompression sickness, you may choose your own personal zone of caution based upon your individual age, physique, excessive weight, training, experience, etc. to reduce the statistical risk. By not pushing the limits, you can establish and adjust your personal level of conservatism and margin of safety.

## POST DIVE MODES



Fig. 50 - TRANSITION PERIOD

## POST DIVE SURFACE MODE

When you ascend to 2 FT (0.6 M) for 1 second, the Element will enter Surface Mode and begin counting Surface Interval.

## TRANSITION PERIOD

The first 10 minutes is, in affect, a Transition Period during which time the following information is displayed (Fig. 50):

- Surface Interval time (colon flashing) with mode icon
- Temperature (ambient) with icon and graphic C (or F)
- Time of Day with clock icon
- Number of that dive (during that activation period) with icon
- Battery icon, if a Low Battery condition exists
- NiBG, and O2BG (if a Nitrox dive)

During the Transition Period, the Log for that dive can be viewed. No other modes (e.g., Fly, Desat, Plan, Set) are accessible.

To view the Log (Fig. 51), press/release the button (less than 2 seconds).

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



Fig. 51 - LOG MODE  
(during Transition Period)

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

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

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

For the remainder of the first 2 hours after surfacing, information will continue to be displayed as the Surface Sequence, scrolling through the Surface Mode >> Fly >> Sat >> Plan screens. You will also have full access to Log and Set modes.

### **Time to Fly/Desaturate**

The Time to Fly and Desat Timers begin counting down 10 minutes after surfacing from a dive (after the Transition Period).

The FLY countdown (Fig. 52) always begins at 23:50 (hr:min) and the Desat countdown (Fig. 53) at 23:50 (maximum).

If a Violation occurred during the dive a single dash ( - ) will appear instead of the letters FLY. DeSat time will not be displayed.



Fig. 52 - TIME TO FLY



Fig. 53 - DESAT TIME

The Time to Fly counter is provided to assist you with deciding when enough surface time has elapsed to fly (or travel to higher elevations).

- After a Surface Interval of 12 hours, you may choose to fly (or travel to higher elevations), provided that your dive profile(s) did not enter decompression.
- If your diving involved decompression or a repetitive multi day profile, it is strongly recommended that you wait a full 24 hours after your last dive to add a greater degree of protection.

### Pre Dive Planner

After a dive, the Planner displays adjusted No Decompression Limits (Fig. 54) based on residual nitrogen calculated to be remaining from that and previous dives in the same series.



Fig. 54 - PLANNER  
(adjusted NDLs)

### Log Mode

The Element will store up to 12 dives in its Log for viewing. Once the Log is full (12 dives), each subsequent dive will then overwrite the oldest dive stored in the Log. It is therefore suggested that you transfer the Log's data to your log book at the end of each day of diving.

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

The first dive conducted each time the unit is Activated will be #1, therefore there may be multiple #1 dives in the Log.

Each dive has up to 3 Log screens >> Dive Identifier (Preview), Dive Data, and O2 Data (if a Nitrox dive). Dives are displayed in a reverse sequence that starts with the dive most recently recorded, back to the oldest one stored. The most recent dive will always be the first shown in the sequence.

### **To access Log Mode -**

- > Press/release the button momentarily (< 2 seconds) while the unit is scrolling through the Surface Sequence.
- > The first screen (Dive Preview/Identifier) of the most recent dive conducted will appear displaying (Fig. 55) -
  - Log Mode (book) icon
  - Time of Day, that the dive started with clock icon
  - Dive Number (for that activation period) with icon
- > While viewing the Preview screen, press/release the button momentarily (< 2 seconds) to view the second screen.



Fig. 55 - LOG PREVIEW

### **Dive Data** (the second screen) information includes (Fig. 56) -

- Log Mode icon
- Surface Interval - prior to that dive with clock/wave icon
- Temperature - minimum during the dive with icon
- Elapsed Dive Time (hr:min) with Dive mode icon
- Maximum Depth - reached during the dive with icon
- ASC - max ascent rate maintained for 4 consecutive seconds
- NiBG - nitrogen loading at the end of the dive, segment reflecting max loading during the dive will appear flashing.



Fig. 56 - LOG DIVE DATA



Fig. 57 - LOG O2 DATA

> Press/release the Button to view the third screen.

**O2 Data** (the third screen) information includes (Fig. 57) -

- Log Mode icon
- Graphic FO2 with FO2 Set Point (at bottom)
- Maximum PO2 level reached during the dive with the MAX icon and graphic PO2.
- O2BG - showing oxygen accumulated at the time you surfaced at the end of the dive.

> To access the first screen of the previous dive's Log, press/release the button momentarily (< 2 seconds).

> To return to the Surface Sequence at any time while in Log Mode, depress the button for 6 seconds, releasing it when Surface Mode appears.

The unit will automatically revert to the Surface Sequence after 2 minutes if the button is not pressed to view another Log Screen.



Fig. 58 - FLY/SAT

### AFTER THE FIRST 2 HOURS

Two hours after the last dive, the Surface Sequence will no longer be displayed. The Time to Fly and Desat countdown screens (Fig. 58) will be displayed alternately for 3 seconds each until they count down to 0:00 or another dive is made.

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

- Press/release the button to reactivate the Surface Sequence.
- The unit will again revert to the Time to Fly and Desaturation countdowns after 2 hours, if the button is not pressed.
- Surface Interval Times greater than 9:59 (hr:min) will be displayed only as Hours 10+, 11+, 12+, etc. (Fig. 59)

### **Wet Contacts**

- If the unit is not cleaned and dried prior to the Fly countdown reaching 0:00 (hr:min), or making another dive, it will shut off then automatically reactivate.
- If no dive is made after activation, the unit would shut off after 2 hours, then automatically reactivate again if wet, repeating the action until cleaned and dried.

### **RESET (CLEAR) FEATURE**

The Element is configured with a RESET feature that allows data to be cleared, including Nitrogen and Oxygen calculations and Log Mode entries.



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



Fig. 59 - SURFACE MODE  
(greater than 9:59)

## RESET PROCEDURE

- While the Surface Sequence is scrolling, press/release the button (< 2 seconds) to access the Log Mode displaying the first screen of the most recent dive (Dive Preview/Identifier).
- Press/release the button again (< 2 seconds) to access the second Log screen (Dive Data) of the most recent dive.
- Depress/hold the button while the second Log screen of the most recent dive is being displayed to access the Reset screen. The graphics **CLR** and **id** will appear with the Key Code 0000, the first 2 digits flashing (Fig. 60). Release the button.
- If necessary to change the first 2 digits, press/release the button repeatedly (< 2 seconds each time) to select the correct number.
- Depress the button for 2 seconds to save the first 2 digit number and advance to the second 2 digits, flashing.
- If necessary to change the second 2 digits, press/release the button repeatedly (< 2 seconds each time) to select the correct number.
- Once the proper Key Code has been entered, depress the button for 2 seconds to accept the Key Code, complete the Reset operation, and turn the unit Off (i.e., Clearing it).
- If an incorrect Key Code number has been entered, the unit will revert to the Surface Sequence when the button is depressed, resuming previous operation(s).



Fig. 60 - RESET (Clear)

## RESET PROCEDURE

- While the Surface Sequence is scrolling, press/release the button (< 2 seconds) to access the Log Mode displaying the first screen of the most recent dive (Dive Preview/Identifier).
- Press/release the button again (< 2 seconds) to access the second Log screen (Dive Data) of the most recent dive.
- Depress/hold the button while the second Log screen of the most recent dive is being displayed to access the Reset screen. The graphics **CLR** and **id** will appear with the Key Code XXXX, the first 2 digits flashing (Fig. 60). Release the button.
- If necessary to change the first 2 digits, press/release the button repeatedly (< 2 seconds each time) to select the correct number.
- Depress the button for 2 seconds to save the first 2 digit number and advance to the second 2 digits, flashing.
- If necessary to change the second 2 digits, press/release the button repeatedly (< 2 seconds each time) to select the correct number.
- Once the proper Key Code has been entered, depress the button for 2 seconds to accept the Key Code, complete the Reset operation, and turn the unit Off (i.e., Clearing it).
- If an incorrect Key Code number has been entered, the unit will revert to the Surface Sequence when the button is depressed, resuming previous operation(s).



Fig. 60 - RESET (Clear)

**GENERAL**

## CARE AND CLEANING

Protect your Element from shock, excessive temperatures, chemical attack, and tampering. Protect the lens against scratches with a transparent Instrument Lens Protector. Small scratches will naturally disappear underwater.

- Soak and rinse the Element in fresh water at the end of each day of diving, and check to ensure that the areas around the low pressure (depth) sensor (Fig. 61a) and button are free of debris or obstructions.
- To dissolve salt crystals, use lukewarm water or a 50% white vinegar/50% fresh water bath. After removal from the bath, place the unit under gently running water and towel dry before storing.
- Transport your unit cool, dry, and protected.

## INSPECTIONS AND SERVICE

Your Element should be **inspected annually** by an Authorized TUSA Dealer who will perform a factory prescribed function check and inspection for damage or wear. To keep the product's warranty in effect, this inspection must be completed one year after purchase (+/- 30 days). TUSA recommends that you continue to have this inspection performed every year to ensure it is working properly.

### To Obtain Service

Take your Element to an Authorized TUSA Dealer.

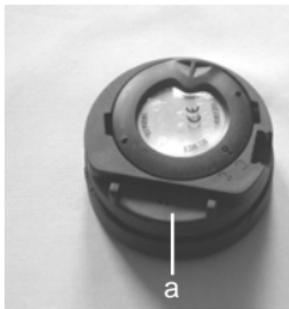


Fig. 61 - BACK OF CASE

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

### **MODULE REMOVAL FROM BOOT**

If the Module is in a Console, bend the rubber Console Boot back to expose the edge of the Module. If the Boot is flexible enough to permit, you may bend it back far enough to scoop the Module out with your finger. Otherwise, it may be necessary to insert a blunt screwdriver until the tip rests just underneath the Module. DO NOT pry the Module from the Console! Slowly increase the pressure under the Module by releasing the tension on the rubber Boot. The Module will slide up the screwdriver and exit the Console.

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

### **BATTERY REPLACEMENT**

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

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

 **NOTE:** If the old Battery can be removed and the new one inserted within **8 seconds**, nitrogen and oxygen calculations and settings, will be retained for repetitive dives.

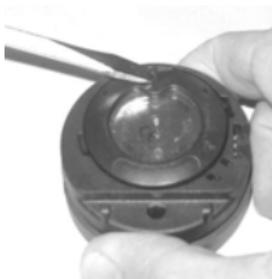


Fig. 62 - RING REMOVAL

### Battery Hatch Removal

- Locate the Battery Compartment on the back of the Module.
- While applying steady inward pressure on the center of the Battery Hatch, rotate the Hatch Retaining Ring 10 degrees clockwise using a flat blade screwdriver (Fig. 62) or a Battery Hatch Tool.
- Lift the Hatch Ring up and away from the Housing, or turn the Module over to allow it to drop out into your hand.
- Remove the Battery Hatch.

### Battery Removal

- Remove the Retaining Bar located across the lower portion of the Battery (Fig. 63a).
- Remove the Hatch O-ring. **DO NOT** use tools
- Using care not to damage the Battery Contacts (Fig. 63b/c), slide the Battery up and out of the Battery Compartment.

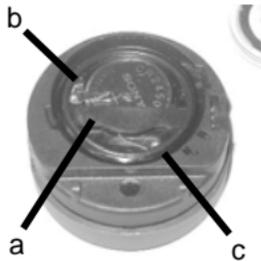


Fig. 63 - HATCH REMOVAL

### Inspection

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



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

### Battery Installation

- Slide a new 3 volt type CR2450 Lithium Battery, negative (-) side down into the Battery Cavity. Slide it in from the right side and ensure that it slides under the contact clip on the left rim of the cavity (Fig. 64).
- Orient the Retaining Bar across the lower portion of the Battery and carefully push it down into position (Fig. 65).

### Battery Hatch and Hatch Retaining Ring Installation

- Replace the Hatch O-ring with a new one which must be a genuine TUSA part.
- Lightly lubricate the new Hatch O-ring with silicone grease and place it on the inner rim of the Battery Hatch (Fig. 66). Ensure that it is evenly seated.
- Slide the Hatch Retaining Ring, top portion first (small opening), onto your thumb.
- Carefully place the Battery Hatch (with O-ring) into position on the rim of the Battery Compartment, then press it evenly and completely down into place with your same thumb.



Fig. 64 -INSERTING BATTERY



Fig. 65 - INSERTING RETAINING BAR



Fig. 66 - O-RING ON RIM OF HATCH



Fig. 67 -ENGAGING the  
RETAINING RING TABS

- Maintain the Battery Hatch securely in place and, using your other hand, slide the Retaining Ring down off your thumb and into position around the Battery Compartment.
- The tabs on the Retaining Ring fit down into the two slots located at the 2 and 8 o'clock positions.
- Using your fingers, turn the Ring counter clockwise 5 degrees until the tabs engage (Fig. 67), then tighten it 5 more degrees by turning it counter clockwise using the Battery Hatch Tool (Fig. 68).
- While tightening the Retaining Ring, exert continuous inward pressure on it until it is secured in the proper position. A small symbol located on the Ring should be aligned with the Locked symbol located on the Housing (Fig. 68a)

### Inspection

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

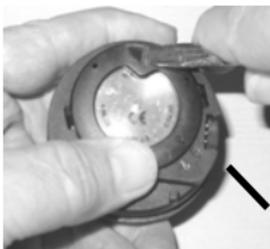


Fig. 68 -TIGHTENING the  
RETAINING RING



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

## RETURNING THE MODULE TO BOOT

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

## UNEXPECTED LOSS OF DISPLAYED INFORMATION

If your Element stops working for any reason, it is important that you have anticipated this possibility and are prepared for it. **This is an important reason for not pushing the No Decompression and Oxygen Limits, and a critical reason to avoid entering Decompression.**

If you dive in situations where your trip would be ruined or your safety would be jeopardized by losing the use of your Element, a backup instrument system is highly recommended.



## ALTITUDE COMPENSATION

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

The Element automatically compensates for decreased ambient pressures for Altitudes between 3,001 feet (916 meters) and 14,000 feet (4,270 meters). Its program contains a high altitude algorithm that reduces no decompression and oxygen exposure limits to add a larger zone of caution.

The Element senses ambient pressure when it is activated, every 15 minutes while it is activated, or every 30 minutes when it is not activated. At an Altitude of 3,001 feet (916 meters), it will automatically recalibrate itself to measure depth in meters (feet) of fresh water rather than feet (meters) of sea water. It will then readjust the no decompression and oxygen limits at additional intervals of 1,000 feet (305 meters). When returning to lower Altitudes, diving should not be conducted until the unit automatically clears of any residual nitrogen and oxygen loading and resets to operate at the new lower Altitude.

 **WARNING: The Element will not sense ambient pressures or provide Altitude compensation when it is wet. DO NOT dive at any different Altitude until the unit shuts off and is reactivated at the new Altitude.**

**If the unit is activated at elevations higher than 14,000 feet (4,270 meters), it will perform a diagnostic check followed by immediate shutdown.**

## SPECIFICATIONS

### CAN BE USED AS

- Air Computer
- Nitrox Computer

### DIVE COMPUTER PERFORMANCE

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

### OPERATIONAL MODES

- Activation/Diagnostic
- Serial Number
- Surface
- Time to Fly Countdown
- Desaturation Countdown
- Pre Dive Planner  
30 to 190 FT (9 to 57 M)
- Dive Log (Preview, Dive Data, O2 Data)
- Reset
  
- Set FO2 (Air, 21 to 50%)
- Set Wet Activation (On / Off)
- Set Units of Measure (Imperial / Metric)
- Set Hour Format (12 / 24)
- Set Time (Hour, Minute)
- Set PO2 Alarm (1.20 to 1.60 ATA)
- Set FO2 50% Default (On/Off)
- No Decompression Dive:
  - Main
  - Alt # 1
  - Alt # 2 - only if nitrox dive
  - Deep Stop - for dives deeper than 80 FT (24 M)
  - Safety Stop - for dives deeper than 30 FT (9 M)
- Decompression Stop:
  - Main
  - Alt # 1
  - Alt # 2
  - Alt # 3 - only if a nitrox dive
- Violation - Conditional, Delayed # 1, # 2, and # 3
- High PO2
- High O2

## SPECIFICATIONS (CONTINUED)

### DISPLAY RANGE/RESOLUTION

#### Numeric Displays:

	Range:	Resolution:
• Dive Number	0 - 12	1
• Depth	0 - 330 FT (99.9 M)	1 FT (0.1 M)
• Maximum Depth	0 - 330 FT (99.9 M)	1 FT (0.1 M)
• FO2 Set Point	Air, 21 - 50 %	1 %
• PO2 Value	0.00 - 5.50 ATA	.01 ATA
• Dive Time Remaining	0:00 - 9:59 hr:min	1 minute
• Total Ascent Time	0:00 - 9:59 hr:min	1 minute
• Decompression Stop Time	0:00 - 9:59 hr:min	1 minute
• Elapsed Dive Time	0:00 - 9:59 hr:min	1 minute
• Surface Time	0:00 - 9:59 hr:min ( > 9:59 hr:min SI is displayed as Hours only 10-, 11-, 12-, etc.)	1 minute
• Dive Log Surface Interval	0:00 - 25:59 hr:min	1 minute
• Time to Fly	23:50 - 0:00 hr:min* (* starting 10 min after the dive)	1 minute
• Time to Desaturate	23:50 (maximum) - 0:00 hr:min* (* starting 10 min. after the dive)	1 minute
• Temperature	0 to 99°F (- 9 to 60°C)	1°

#### Special Displays:

	Occurrence
• Diagnostic Display	After Manual Activation
• Serial Number Display	After Diagnostics (if the Button is held depressed until screen appears)
• Out of Range (- - -)	> 330 FT (> 99.9 M)
• Gauge Mode Countdown Timer	23:50 to 0:00 hr:min (after Violation)

## SPECIFICATIONS (CONTINUED)

### BAR GRAPHS

#### Nitrogen Bar Graph

	segments
• No Deco Normal zone	3
• No Deco Caution zone	1
• Decompression Warning zone	1

#### Oxygen (O<sub>2</sub>) Bar Graph:

	segments
• Normal zone	3
• Caution zone	1
• Danger zone	1

#### Variable Ascent Rate Indicator: 60 FT (18 M) & Shallower

	segments	FPM	MPM
	0	0 - 10	0 - 3
• Normal Zone	1	11 - 25	3.5 - 7.5
• Caution Zone	2	26 - 30	8 - 9
• Too Fast Zone (flashing)	3 (all)	> 30	> 9

#### Deeper than 60 FT (18 M)

	segments	FPM	MPM
	0	0 - 20	0 - 6
	1	21 - 50	6.5 - 15
	2	51 - 60	15.5 - 18
	3 (all)	> 60	> 18

### OPERATIONAL PERFORMANCE

#### Function:

Accuracy:

- Depth  $\pm 1\%$  of full scale
- Timers 1 second per day

#### Dive Counter:

- Displays Dives #1 to 12, 0 if no dive made yet.
- Resets to Dive #1, upon reactivation after having shut off.

## SPECIFICATIONS (CONTINUED)

### OPERATIONAL PERFORMANCE (continued)

#### **Dive Log Mode:**

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

#### **Altitude:**

- Operational from sea level to 14,000 feet (4,270 meters) elevation
- Samples Ambient Pressure every 30 minutes when not activated, when manually activated, and every 30 minutes while activated. Does not sample Ambient Pressure while it is wet.
- Adjusted No Decompression and O2 Limits and recalibration of depth readings at elevations between 3,001 feet (916 meters) and 14,000 feet (4,270 meters) at intervals of 1,000 feet (305 meters).

#### **Power:**

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

#### **Activation:**

- Manual - push button (recommended)
- Automatic - by immersion in water (if set ON)
- WET graphic indicates Wet Contacts are bridged (unit must be dried prior to transport or storage)
- Cannot be manually activated deeper than 4 FT (1.2 M), if the Water Activation feature is set OFF.
- Cannot be activated at elevations higher than 14,000 feet (4,270 meters)

#### **Shut Off:**

- Automatically shuts Off if no dive is made within 2 hours after initial activation. Reactivation required.
- Automatically shuts Off 24 hours after last dive (will reactivate if wet).
- Cannot be shut Off manually.

## SPECIFICATIONS (CONTINUED)

### OPERATIONAL PERFORMANCE (continued)

#### **Setting FO2:**

- Automatically set for AIR<sup>1</sup> upon activation
- Remains set for AIR unless an FO2 numerical value is set
- Nitrox Set Points from 21 to 50 %
- If set for 21%, remains set for 21% until changed
- If set for >21%, it reverts to 50% 10 minutes after the dive, if the FO2 Default is ON. If the FO2 Default is OFF, the value will remain at the value set for that activation period.

#### **Operating Temperature:**

- The Element will operate in waters having **temperatures** between 32°F and 140°F (0 and 60°C). At extremely low temperatures, the LCD may become sluggish, but this will not affect its accuracy. If stored or transported in extremely low temperature areas (below freezing), you should warm the module and its battery with body heat before diving.

## TUSA INTERNATIONAL CONTACTS

Tabata USA, Inc  
2380 Mira Mar Avenue  
Long Beach, CA 90815  
Tel: 562-498-3708  
Fax: 562-498-0415  
www.tusa.com  
info@tusa.com

Tabata Europe Corporation B.V.  
Den Brielstraat 2 B, 1055 RV  
Amsterdam, The Netherlands  
Tel: 31-(0)20 68 15 955  
Fax: 31-(0)20 68 24 527  
www.tusa.nl  
info@tusa.nl

Tabata Australia PTY Ltd.  
Unit 11, 86 Falconer St.  
West Ryde, N.S.W. 2114 Australia  
Tel: 61-(0)2-9807-4177  
Fax: 61-(0)2-9808-1638  
www.tusa.com.au  
info@tabata.com.au

Tabata Co. Ltd. Japan  
1-3-17 Higashikomagata, Sumida-ku  
Tokyo, Japan 130-0005  
Tel: 81-(0)3-3624-2816  
Fax: 81-(0)3-3623-9902  
www.tusa.net  
info@tabata.co.jp

Tabata Taiwan Co. Ltd.  
54-8 Hsutsogang, Nankang Vil.  
Tayuan Hsiang, Tao Yuan Hsien  
Taiwan R.O.C.  
Tel: 886-(0)3-386-5100  
Fax: 886-(0)3-386-5103  
info@mail.tabata.com.tw

# SERVICE RECORD

Serial No. & Rev. No. \_\_\_\_\_

Date of Purchase \_\_\_\_\_

Purchased From \_\_\_\_\_

Below to be filled in by an Authorized TUSA Dealer:

Date	Service Performed	Dealer / Technician

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## TUSA QUALITY

### **Worldwide Contacts:**

Tabata USA, Inc. [www.tusa.com](http://www.tusa.com)

Tabata Australia Party Ltd. [www.tusa.com.au](http://www.tusa.com.au)

Tabata Europe Corporation B.V. [www.tusa.nl](http://www.tusa.nl)

Tabata Mfg. Co. Ltd. [www.tusa.net](http://www.tusa.net)

Tabata Co. Ltd. Japan. [www.tusa.net](http://www.tusa.net)

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