



# TAC-100A

## DIVER NAVIGATION BOARD OPERATIONS MANUAL



***RJE International, Inc.***

YOUR SOURCE FOR DIVER NAVIGATION AND UNDERWATER RELOCATION EQUIPMENT

RJE International, March 22, 2018

TAC-100A Revision 6

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## **TAC-100A MAINTENANCE**

The TAC-100A is a very reliable piece of equipment and needs very little service. It is recommended that the board be rinsed with fresh water after every dive, wiped down with a clean cloth, and stored in a cool, dry place. Periodically, you need to disassemble the system and clean all the components separately.

The TAC-100A and its components are designed for the rigors of underwater use and should provide many years of use, but keep in mind the TAC-100A is a diving instrument and should be treated as such.

### **CUSTOMER SUPPORT**

We always welcome our customer's feedback and product improvement ideas. If you have any questions or comments, contact us at:

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# TAC-CHRON Dive Chronometer

The purpose of the TAC-CHRON, used on the TAC-100A navigation board, is to track leg time for navigation and also track the total dive time. The TAC-CHRON is a rugged and reliable dive chronometer with electro-luminescent back lighting.



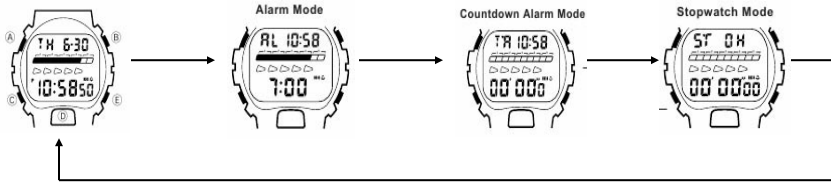
## • Functions

- A = See Modes Below
- B = See Modes Below
- C = Press to change from mode to mode
- D = To activate the backlight
- E = See Modes Below



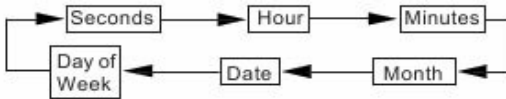
## • Modes

C = Press button to move from one mode to another. See flow below.



## • Setting Time and Date

- Press A in the timekeeping mode. The seconds digits flash on the display because they are *selected*.
- Press C to change the selection in the following sequence:



- To reset the seconds to zero (00), press E when seconds is flashing.
- To set hour, minutes, month, date, and day of week press C until they flash and then E to increase the number or B to decrease the number.
- To return to the timekeeping mode press A
- Stopwatch Mode

The stopwatch mode allows you to measure elapsed time for up to 23 hours and 59 minutes.

- Press E to start the stopwatch
- Press E to pause stopwatch
- Press E to resume stopwatch
- Press A to reset stopwatch

## WARNING

Diving is a dangerous and potentially life threatening activity. The TAC-100A series diver navigation boards must be used by a person who is certified by a recognized agency (PADI, NAUI, SSI, NASDS, YMCA, etc.). Improper use or misuse of the TAC-100A could result in serious injury or death. Do not use the TAC-100A or any of its components until you have read and fully understand instructions and safety precautions in this manual. Never rely on the TAC-100A as your sole means of underwater navigation. Always have at least one other means of underwater navigation available.

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TAC-100A Diver Navigation Board Operations Manual  
Rev 6.00 Dated March 22, 2018

# PREFACE

## PROPERTY

The information, descriptions, photos, and illustrations in this manual are the property of RJE International, Inc. Materials may not be reproduced or disseminated without prior written consent of RJE International, Inc.

## WARRANTY

RJE International, Inc. warrants the TAC-100A and associated equipment to be free of defects in material and workmanship for a period of one year from date of delivery to the original purchaser. Obligation under this warranty is limited to repair or, at the sole discretion of RJE International, replacement of any product returned to our facility or authorized distributor. All products shall be shipped to **RJE FREIGHT PREPAID** and shall be returned to customer **FREIGHT COLLECT**.

Equipment may not be returned without prior authorization which must be requested in writing. Upon authorization a Case Number will be issued. The Case Number must appear on the outside of the shipment, as well as in all pertaining correspondence. Shipments received without a Case number will be refused by RJE International. This warranty does not apply in cases where the product malfunctions as a result of mishandling or improper use.

## LIABILITY

RJE International, Inc. assumes no liability for damages, losses, or cost incurred consequentially through operation or malfunction of any RJE International, Inc. product.

## CHANGES

RJE International Inc. reserves the right to make changes in design or specifications at any time without any obligation to modify previous units. This manual is provided for information and reference purposes only and is subject to change without notice.

which is displayed on an easy to read dial with parabolic scale. Using a black face dial with luminous depth markings makes the TAC-DG series depth gauge easy to read in poor visibility.

**\*Warning:** The TAC-DG depth gauges are designed for use in seawater. When using in freshwater, the depth reading will be approximately 0.29 inch per foot (2.4cm per meter) deeper than indicated.

### • Zero Adjustment

The TAC-DG depth gauges also have a “zero adjustment” feature that compensates for differences in temperature and ambient pressure. To make the adjustment, rotate the thumb wheel at side of gauge so that the “zero” dial marker is even with the depth indicator.

**\* Note:** When making temperature adjustment, make sure that the TAC-DG has been in the water for a few minutes before making adjustment to ensure accuracy. Also check adjustment after the end of the dive. Never make zero adjustment in ambient temperature.

### • Maintenance and Use

The TAC-DG is a precision tool and should be treated as such. Avoid violent bumps and drops that could effect the reliability of the gauge. Do not exceed the maximum depth of the depth gauge as this may damage the unit.

In addition, the TAC-DG has a max depth indicator which needs to be reset before each dive. This indicator is a red needle that is mounted on the face of the dial. To reset, turn the thumb pad in the center of the dial face counter-clock wise to “zero”.

Rinse the depth gauge after every dive and do not use chemical cleaners on the clear bezel.

## TAC100-2 UNDERWATER COMPASS

The TAC100-2 Underwater Compass is designed and manufactured for the rigors of underwater use. The rugged housing is depth compensated and should give you many years of dependable use with proper care. A black compass card with luminous heading markers allows you to maintain a course heading, even in the worst visibility. Three compass rose points, North, East, and West, are indicated by easy to read markers positioned on the outside of the compass card, allowing you to maintain your course heading.



Illuminating the compass can be achieved in two ways. One is to shine a bright light on the compass card for several minutes. This excites the luminous properties of the card and allows you to visually see the compass at night or in poor visibility conditions for a limited amount of time. The longer you excite the card with light, the longer it glows underwater. Another way to illuminate the compass is with a 6 inch "chem-light" stick (see adjustable chem-light holder on page 7). Optimum visibility of the compass is achieved when using both of these methods.

The TAC100-2 Underwater Compass requires very little care. However this is a precision instrument and should be treated as such. The compass should be periodically removed from the TAC100-1 Board and rinsed with clear water and dried with a soft cloth to maintain clear vision. If air bubbles appear in the dome or any other problems should occur, contact RJE International, Inc. for service.

## TAC-DG Analog Depth Gauge

Based on the model purchased, there are two different depth gauges supplied with the TAC-100A series diver navigation boards. The TAC-DG/80I displays depth from 0 to 80ft and is supplied with part number TAC-100AI. If you purchased the TAC-100AM, then the TAC-DG/25M is supplied with the board and it displays depth from 0-25 meters. Both the TAC-DG/I and TAC-DG/M meet the requirement of CE EN 13319 Norm.

Other depth gauges can be supplied with the TAC-100A series board. Contact a RJE International sales representative to discuss these options.

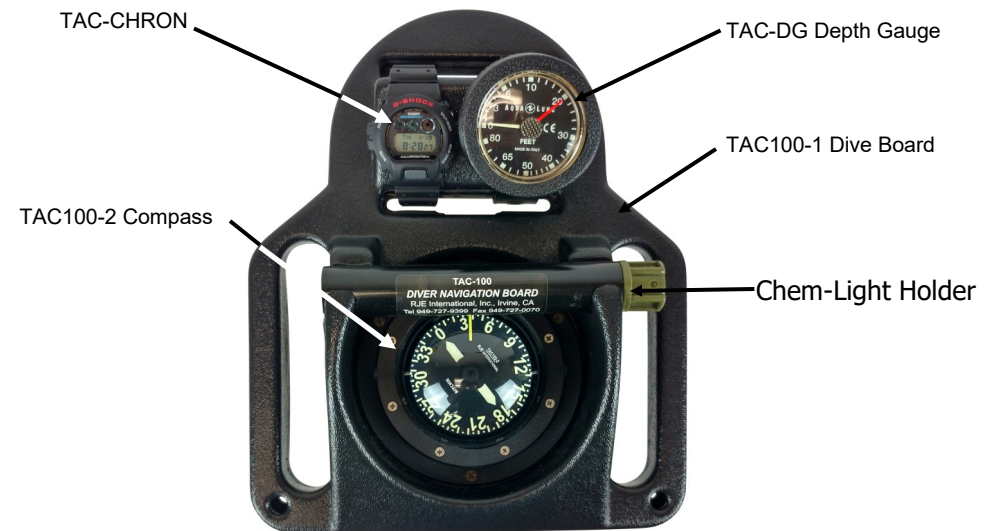
The analog depth gauge uses a copper-beryllium membrane and mechanical measuring system to provide accurate depth to the diver

## INTRODUCTION

The TAC-100A Diver Navigation Board was developed and is used by divers for accurately navigating underwater. Highly reliable and rugged, the TAC-100A consists of three major components: a rugged high impact plastic board with adjustable chem-light holder (p/n TAC100-1), a large underwater compass (p/n TAC100-2), an analog depth gauge (TAC-DG/25M or TAC-DG/80I) and a chronometer (p/n TAC-CHRON). The TAC-100A series diver navigation boards come in two models, the TAC-100AI which uses the TAC-DG/80I imperial depth gauge that reads for 0-80ft and the TAC-100AM that uses the TAC-DG/25M metric depth gauge that reads from 0-25M. The TAC-100A is supplied in a padded carrying bag (p/n TAC100-4).

**\*Warning:** Check for which model depth gauge is mounted on the TAC-100A to insure that you understand how to read the depth gauge before diving.

The TAC-100A allows the diver to monitor depth, direction and leg time. By using this information, a diver can plot and follow a planned course during a dive with a high level of reliability.



TAC-100-A Dive Navigation Board

# USING A TAC-100A DIVER NAVIGATION BOARD

Navigating with the TAC-100A is simple once you understand the principle “elapsed time” as a method of underwater navigation. The key to using “elapsed time” is knowing how long it takes to swim a known distance in a set frame of time. For example, if you consistently travel 30 ft.(10M) in 20 seconds, then you can estimate the distance you travel by timing the length of your swim over a given compass heading. To be fairly accurate, you must set this “benchmark” by swimming in a normal relaxed pace.

Once you have established this “benchmark”, the TAC-100 allows you to plot and follow a predetermined pattern or course for your dive instead of randomly swimming around. To understand how to plot a course, you must understand how the components of the TAC -100A work together.

Depth and time are tracked on the TAC-DG depth gauge and the TAC-CHRON Chronometer. Course heading is monitored by the large underwater compass mounted in the center of the TAC100-1 navigation board. The compass card has white luminous digits on a black background for better contrast in poor visibility, and the three compass rose points, North, East, and West, are highlighted. An adjustable chem-light holder is provided to illuminate the compass for night dives.

Now let's plot a dive to see how the TAC-100A really works. We are able to cover a distance of 30 ft. (10m) in 20 seconds, which is our benchmark. Using this benchmark, let's plot a dive to a reef that is located north of the shoreline, 270 ft.(82m) offshore in 40 ft.(12m) of water. In planning this dive, we will explore the reef in a westerly direction and then return to our entry point.

For the first leg of the dive we will plot a course along a heading of 0° north for 3 minutes. We should cover a distance of 270 ft. and be on the reef. Now for leg 2, we will plot a course on a heading 270° west for 10 minutes. This means we cover a distance of 900 ft. while exploring the reef. After the end of leg 2, it's time to start planning our return to the entry point. But first, let's plan on exploiting the area between the reef and shoreline. To do this, we plot our next course heading for leg 3 on a heading of 180° south for 1 minute. This means we will transverse 90 ft (27m) along the bottom toward the shore. Here, we will turn to a heading of 90° east for 10 minutes which places us back in the middle of leg 1. Now, all we do is turn to a heading of 180° south and head for shore.

By plotting your dives this way, you become much more efficient underwater and can truly optimize your bottom time. If you have to map an underwater site, the TAC-100A becomes an effective tool for the job.

## TAC100-1 NAVIGATION BOARD

The TAC100-1 Navigation Board is a rugged high impact plastic board that is the base for the TAC-100A Navigation System. The TAC100-2 Underwater Compass, TAC-CHRON, and TAC-DG/80I or TAC-DG/25M are all mounted onto the TAC100-1 to complete the system. The hardware used to mount the TAC100-2 Underwater Compass is made out of non-corrosive material and should provide you with many years of service.

## ADJUSTABLE CHEM-LIGHT HOLDER

The TAC100-1 has an adjustable chem-light holder (p/n TAC100-1-4) installed above the TAC100-2 Underwater Compass. The holder requires a standard green 6 inch chemical light stick or chem-light to illuminate the compass during night diving. The holder is adjustable and allows you to control the amount of light that illuminates the compass. Installation of the chem-light is simple.

- Remove the light tube holder from the round black housing mounted over the compass. Bend the chem-light stick until the glass capsule is broken and shake.
- Now load the chem-light stick into the light tube holder and slide the holder with the chem-light back into the housing. To adjust the amount of light, simply rotate the light tube holder.