COMPLETE VERTISONIC
USER INSTRUCTIONS

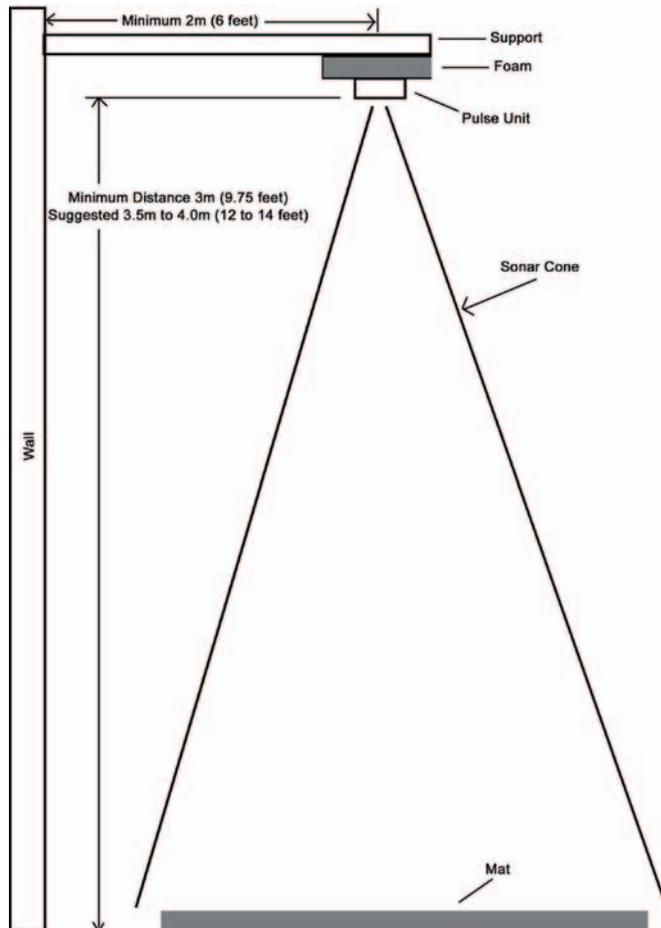## Lafayette Instrument®

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DESCRIPTION:

The Vertisonic operates on a sonar principle very similar to depth finders and fish finders. It consists of two major components, the display unit and the pulse unit. A short pulse of sound is emitted from the pulse unit, it waits for an echo (in this case from the athlete's fingertips) and measures the time between emitting the pulse and receiving an echo. This time is converted to distance by a formula that is based on the speed of sound traveling in air. The speed of sound in air is relatively constant but varies enough with temperature to effect the accuracy of the Vertisonic, so temperature is also measured and included in the formula. The temperature sensor is in the display unit of the Vertisonic, so best results are obtained when this unit is located near the sonar path in a place where temperature is relatively constant.

When the Vertisonic is turned on, it comes up in the check mode. In this mode it measures the temperature, the height of the pulse unit to the floor, which is displayed as the 'TOP=' reading, and then measures the distance from the 'TOP=' point to echoes that are closer to the pulse unit and displays this value as the 'CURR=' value which is updated until a new mode is selected. Pressing the 'CHECK' button will also put the Vertisonic in the check mode. This mode is used to measure the distance to the floor for different pulse unit heights.

The Reference mode is used to measure the standing reach of the test subject after the Vertisonic has been calibrated in the check mode. After placing the Vertisonic in the Reference mode by pressing the 'REF' button, the subject reaches as high as he can, touching the targeting string. This procedure can be repeated as often as desired in this mode with the highest value being saved and displayed until a new mode is chosen or the 'REF' button is pressed again. When the 'REF' Button is pressed again the displayed value is cleared and new reference values can be set.

The Reset/Jump mode is used to measure vertical jump. Pressing the 'RESET' button places the Vertisonic in this mode. In this mode the 'STAND HGHT' value is the value obtained in the last reference mode. The 'JUMP HGHT' is the distance from the floor of the last reading of the sonar unit that is greater than the 'STAND HGHT' value. The 'V.JUMP' value is the 'JUMP HGHT' value minus the 'STAND HGHT' value and represents the last vertical jump distance. The 'MAX' value is the largest 'V.JUMP' value obtained since the last 'STAND HGHT' value was obtained in the Reference mode. Pressing the 'RESET' button while in this mode will clear the 'JUMP HGHT' and the 'V.JUMP' values, allowing a new 'V.JUMP' value to be obtained.

If the Vertisonic is not used two minutes, it automatically enters the battery saver mode. In this mode the sonar unit is shut down and the microprocessor is placed in a static mode. The 'STAND HGHT' and 'MAX' values are retained, allowing operation to be picked up where it left off. Batter life is 200 to 1000 hours in this mode depending on the type of batteries used. Battery life in all other modes is between 20 and 100 hours.

OPERATION:

1. Locate the Vertisonic in an area free of drafts and large temperature differences between the display unit (1) and the pulse unit (2), with an area large enough for the sonar mat (4' x 4') on a level surface directly underneath the pulse unit (2). Attach a 12" velcro loop strip to the surface the sonar bracket will attach to. We suggest the edge of a basketball backboard in a gymnasium. Place sonar absorber (5) on the bracket (3) so that the end of the slot in the absorber (5) is against the end of the sonar bracket (3). Attach pulse unit (2) to bracket (3). Clip targeting string (7) into clip on the pulse unit (2). Place mat so that its center is directly underneath the targeting string (7). Locate display unit as near as possible to middle of the sonar path, outside the boundaries of the mat. Do not hold display unit in your hand because it will heat the box causing an error in measuring temperature that will affect accuracy. Tripod or wall mounting can be accomplished by using the ¼"—#20 nut on the bottom of the case, or it can be placed on a tabletop. Allow display unit to reach room temperature before proceeding.

2. Turn on the Vertisonic.

3. Clear jump area and press the 'CHECK' button. Check readings to make sure they are correct before proceeding (especially temperature).

4. Press 'REF' button and have subject stand directly underneath the targeting string. The subject should then reach as high as possible and touch the targeting string at the peak of his reach. This procedure can be repeated in this mode to obtain the highest reading. Pressing the 'REF' button will clear the displayed value and allow a new maximum to be obtained in case of error.

5. Press the 'RESET' button. The subject may then jump in any style they prefer but should attempt to touch the targeting string at the peak of the jump. The 'STAND HGHT' value is carried over from the reference mode. The 'JUMP HGHT' value is the highest the highest distance from the floor measured since the last pressing of the reset button. The 'V.JUMP' value is the difference between the 'JUMP HGHT' and 'STAND HGHT' values and represents the subject's vertical jump. The 'MAX' value is the peak "V.JUMP" value since leaving the reference mode and represents the subject's vertical jump. Pressing the 'RESET' button during this mode will clear the 'JUMP HGHT' and 'V.JUMP' values allowing a new 'V.JUMP' value to be obtained while retaining the 'MAX' and 'STAND HGHT' values.

6. Steps 4 & 5 should be repeated for each new subject.

7. If the Vertisonic does not experience any activity for one to two minutes, it will enter the battery saver mode automatically. The 'STAND HGHT' and 'MAX' value is saved in this mode and operation in the RESET/JUMP mode can be continued by pressing the 'RESET' button.

8. For maximum accuracy, repeat steps 3 through 5 often, especially if the jump area experiences a temperature change of more than a few degrees.

9.   The Vertisonic has an optional display mode. Temperature and height measurements may be displayed in either English or Metric units. While pressing and holding down the "CHECK" button, pressing the "REF" button will change the measurement units. When the Vertisonic is turned on, it will recall the measurement units last set by the user.

Lower batteries cause the Vertisonic to intermittently return to the "CHECK" mode. Batteries can be accessed by opening the door on the bottom of the display unit. The Vertisonic requires 5 AA batteries (alkaline are recommended). Battery polarity is marked on battery holders.

SPECIFICATIONS:

	English	Metric
Range:	8 to 18 ft	2.4 to 5.5 m
Accuracy: (see note 1)	+/- 0.3 in	+/- 0.76 cm
Resolution:	0.1 in	0.3 cm
Operating Temperature:	40º to 100º F	4º to 38º C
Storage Temperature:	10º to 120º F	-12º to 49º C

Power: 5 AA Alkaline batteries

70 milliamperes in operating modes

5 milliamperes in battery saver mode

Note 1: Accuracy is affected by the temperature measurement. See description section for more information.
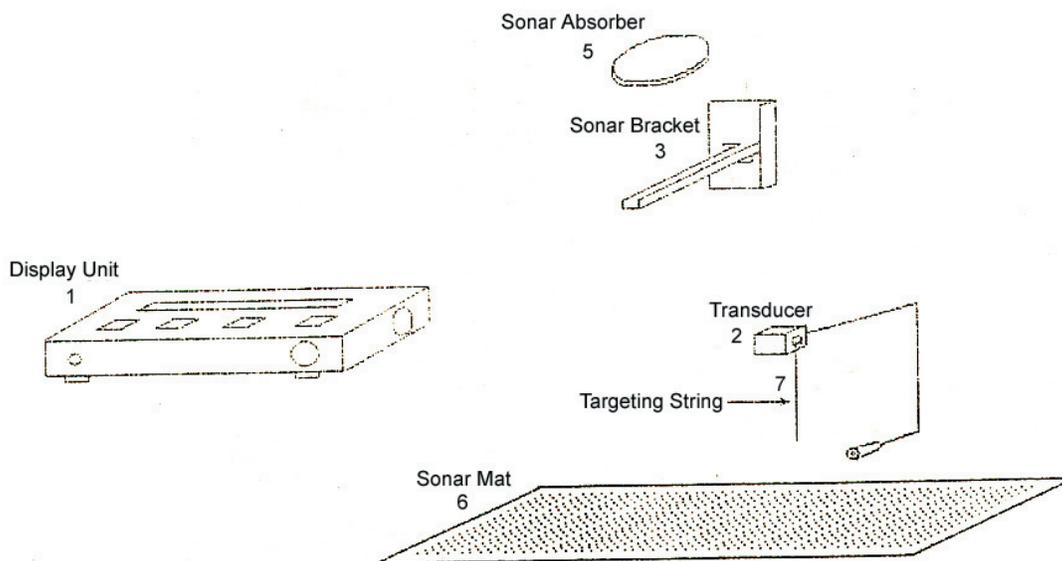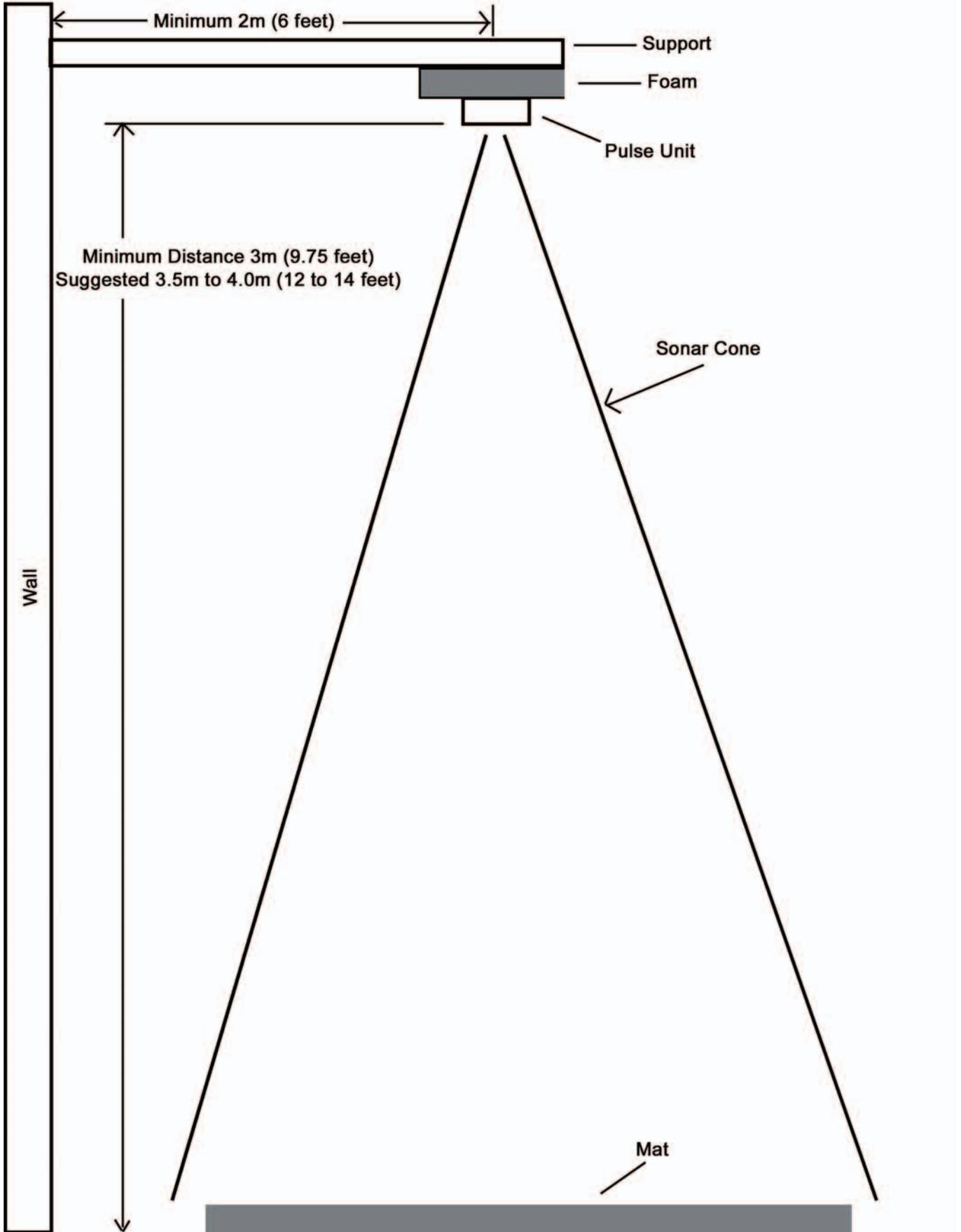

Figure 1: Vertisonic Assembly

Figure 2: Vertisonic Set-up Diagram

Minimum 2m (6 feet)

Support

Foam

Pulse Unit

Minimum Distance 3m (9.75 feet)
Suggested 3.5m to 4.0m (12 to 14 feet)

Sonar Cone

Wall

Mat

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Notes:

Ordering Information:

All phone orders must be accompanied by a hard copy of your order. All must include the following information:
1) Complete billing and shipping addresses
2) Name and department of end user
3) Model number and description of desired item(s)
4) Quantity of each item desired
5) Purchase order number or method of payment
6) Telephone number

DOMESTIC TERMS

There is a $50 minimum order. Open accounts can be extended to most recognized educational institutions, hospitals and government agencies. Net amount due 30 days from the date of shipment. Enclose payment with the order; charge with VISA, MasterCard, American Express; or pay COD. We must have a hard copy of your order by mail or fax. Students, individuals and private companies may call for a credit application.

INTERNATIONAL PAYMENT INFORMATION

There is a $50 minimum order. Payment must be made in advance by: draft drawn on a major US bank; wire transfer to our account; charge with VISA, MasterCard, American Express; or confirmed irrevocable letter of credit. Proforma invoices will be provided upon request.

RETURNS

Equipment may not be returned without first receiving a Return Goods Authorization Number (RGA).

When returning equipment for service, please call Lafayette Instrument to receive a RGA number. Your RGA number will be good for 30 days. Address the shipment to: Lafayette Instrument Company, 3700 Sagamore Parkway North, Lafayette, IN 47904, U.S.A. Shipments cannot be received at the PO Box. The items should be packed well, insured for full value, and returned along with a cover letter explaining the malfunction.

Please also state the name of the Lafayette Instrument representative authorizing the return. An estimate of repair will be given prior to completion ONLY if requested in your enclosed cover letter. We must have a hard copy of your purchase order by mail or fax, or repair work cannot commence.

WARRANTY

Lafayette Instrument guarantees its equipment against all defects in materials and workmanship to the ORIGINAL PURCHASER for a period of one (1) year from the date of shipment, unless otherwise stated. During this period, Lafayette Instrument will repair or replace, at its option, any equipment found to be defective in materials or workmanship. If a problem arises, please contact our office for prior authorization before returning the item. This warranty does not extend to damaged equipment resulting from alteration, misuse, negligence or abuse, normal wear or accident. In no event shall Lafayette Instrument be liable for incidental or consequential damages. There are no implied warranties or merchantability of fitness for a particular use, or of any other nature. Warranty period for repairs or used equipment purchased from Lafayette Instrument is 90 days.

DAMAGED GOODS

Damaged equipment should not be returned to Lafayette Instrument prior to thorough inspection.

When a shipment arrives damaged, note damage on delivery bill and have the driver sign it to acknowledge the damage. Contact the delivery service, and they will file an insurance claim. When damage is not detected at the time of delivery, contact the carrier and request an inspection within 10 days of the original delivery. Please call the Lafayette Instrument Customer Service Department for a return authorization for repair or replacement of the damaged merchandise.

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