

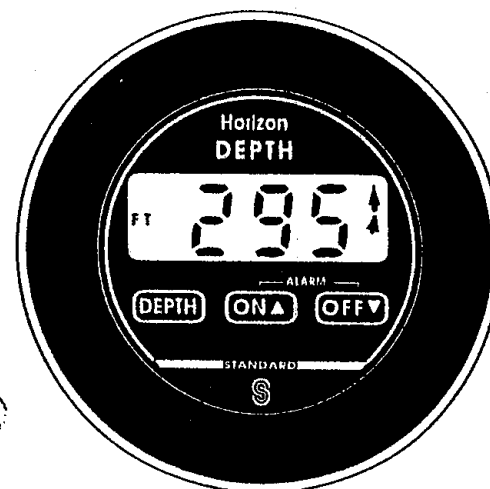
Horizon DS45

Digital Depth Sounder

Owner's Manual

Contains:

- General Information
- Accessories
- Installation
- Operation
- Maintenance
- Specifications
- Troubleshooting
- Schematic Diagram



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MARINE PRODUCTS LIMITED WARRANTY

Standard Communications Corp. (SCC) warrants to the original consumer purchaser (the Purchaser) only that each new Marine Product will be free from defects in materials and workmanship under conditions of normal use and service for a period of one (1) year from the date of delivery to the Purchaser. SCC's liability under this warranty shall be limited to repair or replacement of the defective product, at SCC's option, and under no circumstances shall SCC be liable for consequential, incidental, or other damages arising out of or in any way connected with a failure of the product to perform as set forth herein.

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In the event of a defect, malfunction, or failure of the product to conform to specifications during the one-year warranty period, SCC will repair or replace, at its option and without charge to the Purchaser, the product which upon examination by SCC shall appear to be defective or not up to factory specifications. SCC will pay all labor charges incurred in providing such warranty service. To obtain warranty service, the defective product must be returned to SCC together with proof of the date of purchase. The Purchaser must pay any transportation expenses in returning the product to SCC. SCC will examine the product and respond to the Purchaser in approximately four (4) weeks from date of receipt of the product claimed to be defective.

This limited warranty does not extend to any product which has been subjected to misuse, neglect, accident, improper installation, or subject to use in violation of the maintenance or operating instructions, if any, furnished by SCC; nor does this warranty extend to products on which the serial number has been removed, defaced, or changed. SCC reserves the right to make changes or improvements to its products during subsequent production without incurring the obligation to install such changes or improvements on previously manufactured or sold products.

Some states do not allow limitations on the duration of the warranty or exclusions or limitations of incidental or consequential damages so these limitations or exclusions may not apply to you. This warranty gives you specified legal rights which vary from state to state.

CUSTOMER RECORD

Purchase Date _____

Purchased From _____

Equipment Model No. _____

Equipment Serial No. _____

Table of Contents

GENERAL INFORMATION	1
INTRODUCTION	1
FRONT PANEL	1
REAR PANEL	1
CONTROLS AND CONNECTORS	1
ACCESSORIES	4
PROVIDED WITH INSTRUMENT	4
OPTIONAL	4
REPLACEMENT PARTS	6
INSTALLATION	6
INSTRUMENT INSTALLATION	6
TRANSDUCER INSTALLATION	8
General	8
Sailboats	9
Powerboats	10
Transom Installation	10
In-Hull Installation (DST55)	11
OPERATION	12
PRIMARY OPERATION	12
Setting Unit of Measure	12
Setting Shallow Alarm	13
Setting Deep Alarm	13
Alarm On	14
Alarm Off	14
Depth Trend Indicators	15

SECONDARY SETTINGS	16
Lamp Intensity	16
Keel Offset	17
Display Damping	18
SIMULATION	19
SPECIFICATIONS	20
MAINTENANCE	21
TROUBLE SHOOTING	21
TECHNICAL DESCRIPTION	21
TROUBLE SHOOTING CHART	22
WARRANTY	23
FIGURES	
Figure 1. Front Panel	2
Figure 2. Rear Panel	2
Figure 3. Depth Sounder Dimensions	7
Figure 4. Depth Sounder Installation	7
Figure 5. Sailboat Transducer	9
Figure 6. Powerboat	9
Figure 7. Transom Mount Transducer Location	10
SCHEMATICS	
Schematic Diagrams	Foldout

1 GENERAL INFORMATION

1.1 INTRODUCTION

The DS45 is a high-quality digital depth sounder. Features include:

- Depth readings from 3 to 400 feet with the added capability of displaying depth in metres or fathoms.
- Adjustable depth alarms to alert the user visually and audibly when the water depth is less than the shallow and greater than the deep alarm settings.
- The alarm settings are stored in memory and are preserved when power is off.
- Display damping is selectable for frequent readings at critical shallow depths and for smoother readings at greater depths.
- Trend arrows on the display indicate increasing or decreasing depth.
- The DS45 will withstand direct water spray on its front panel without damage.

1.2 FRONT PANEL

The round front panel is 5-inches in diameter. The display is a back-lit 3 1/2-digit liquid crystal display (LCD) with an alarm symbol, trend arrows, and alpha flags. It also has a three-key keypad. The keypad uses tactile and audible feedback to indicate when a key is pressed. All functions are controlled entirely by these three keys.

1.3 REAR PANEL

The rear panel contains a cable terminated with a RCA phono receptacle for connection to the transducer and a 3.5 ft. 12VDC power cable with sheathed stripped and tinned red and black wires.

2 CONTROLS AND CONNECTORS

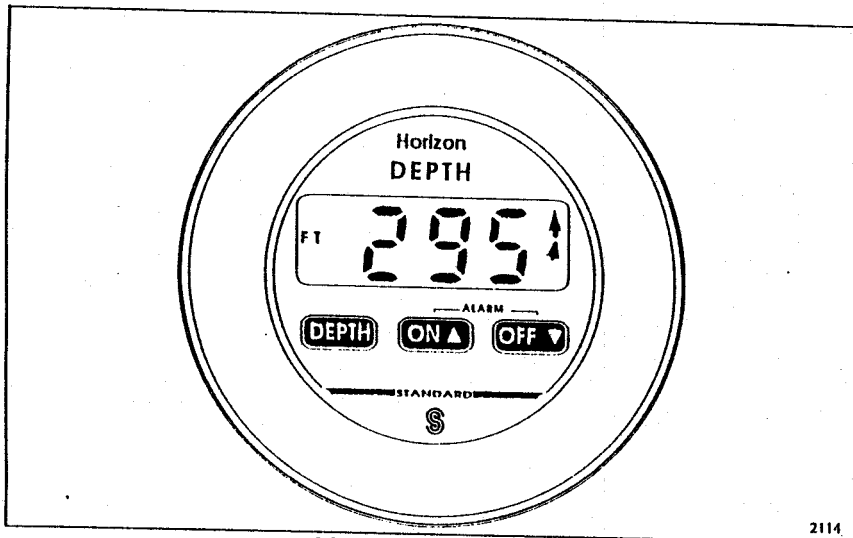


Figure 1. Front Panel

2114

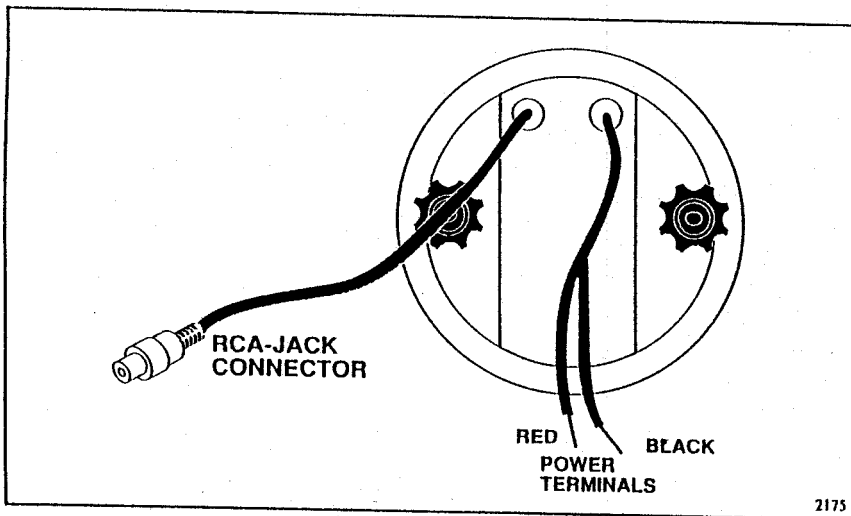


Figure 2. Rear Panel

2175

OPERATING CONTROLS

KEYS	FUNCTIONS
DEPTH	Press and hold the DEPTH key three seconds to change units "MTR", "FT.", and "FA".
ON ▲	Press the ON ▲ key to turn on the alarm.
OFF ▼	Press the OFF ▼ key to turn off the alarm.
ALARM ON ▲ OFF ▼	Press both ON ▲ OFF ▼ keys and hold for three seconds to enable the alarm setting mode. The display will alternate between "UP" and "LO". "UP"= deep and "LO"= shallow. "OFF"= alarm disabled, scroll to set depth.
Press ON ▲	— Scroll ON ▲ OFF ▼ — Exit DEPTH
or	
Press OFF ▼	— Scroll ON ▲ OFF ▼ — Exit DEPTH
DEPTH ON ▲	Press both DEPTH ON ▲ keys and hold for three seconds to enable the secondary mode which includes lamp intensity, keel offset, and damping adjustments. Scroll to adjust.
	— Scroll ON ▲ OFF ▼ — Exit DEPTH
DEPTH ON ▲	— Press both keys to step to Keel Offset.
	— Scroll ON ▲ OFF ▼ — Exit DEPTH
DEPTH ON ▲	— Press both keys to step to Damping.
	— Scroll ON ▲ OFF ▼ — Exit DEPTH

3

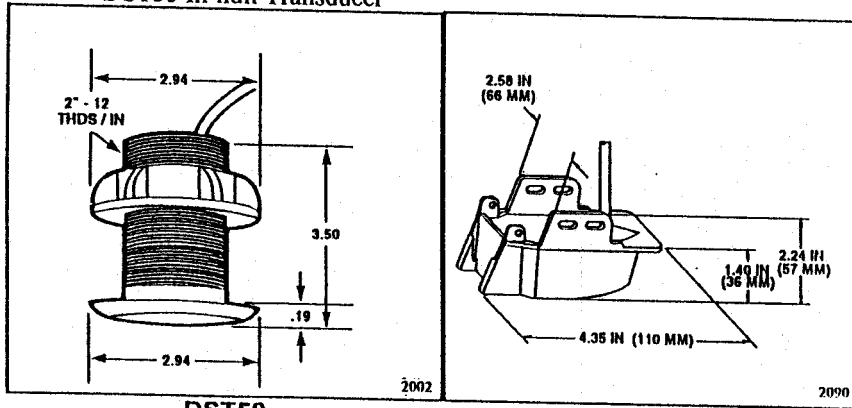
ACCESSORIES

3.1 PROVIDED WITH INSTRUMENT

- Power Cable
- Panel Gasket
- Dust Cover
- Mounting Bracket Nuts (2)
- Mounting Bracket
- Owner's Manual

3.2 OPTIONAL

- EX345D15-foot Transducer Extension Cable
- DST50 Nylon Low Profile Through-hull Transducer
- DST51 Transom Mount Transducer
- DST52 Bronze Long Stem Through-hull Transducer
- DST53 Bronze Low Profile Transducer
- DST54 Bronze Wedge-Shaped through-hull Transducer
- DST55 In-hull Transducer

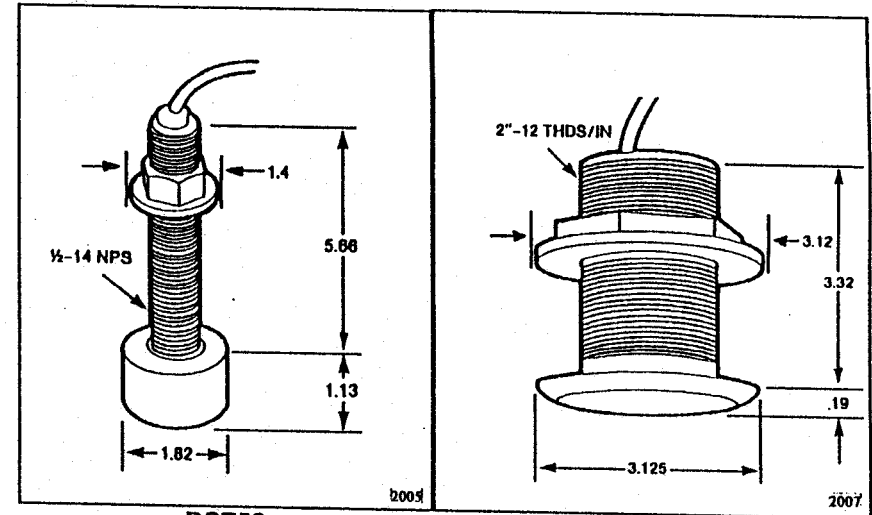


DST50

Nylon Low Profile Transducer

DST51

Transom Mount Transducer

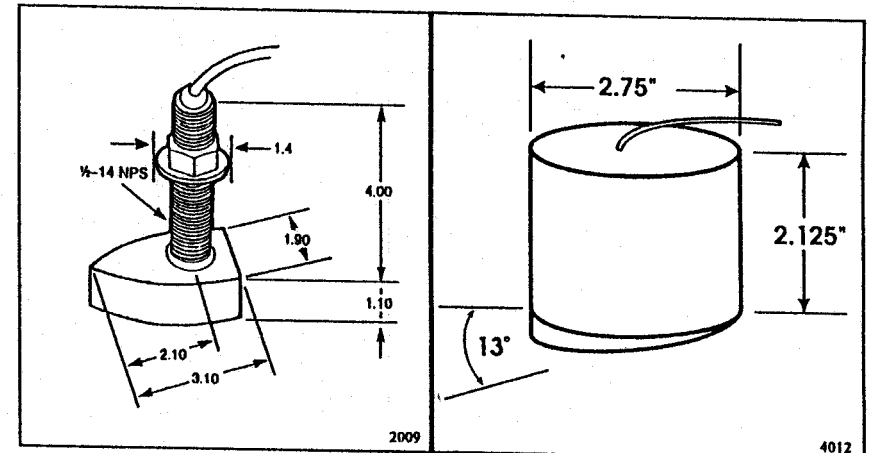


DST52

Bronze Long Stem through-hull

DST53

Bronze Low Profile Transducer



DST54

Bronze Wedge-Shaped through-hull

DST55

In-hull Transducer

3.3 REPLACEMENT PARTS

The following parts may be ordered from the SCC Parts Department. To order, call Toll-free Number: 1-800-487-2788.

Power Cable.....	SCC Part Number 250 013 017A
Panel Gasket.....	SCC Part Number 108 006 023A
Dust Cover.....	SCC Model DC45
Mounting Bracket.....	SCC Part Number 160 002 020A
Mounting Nuts (2).....	SCC Part Number 580 010 123A

4 INSTALLATION

4.1 INSTRUMENT INSTALLATION

The instrument can be easily installed in different types of instrument panels. Refer to Figures 3 and 4 for the following steps.

1. Select a suitable location for the instrument. When selecting the location for mounting, the following are recommended:
 - Controls of the instrument must be accessible to the user.
 - Electrical connections must be routed to their connections as directly as possible.
 - The space behind the instrument panel must have a depth of at least 2 1/4 inches. See Figure 3 for dimensions of the instrument.
2. Cut a 4-inch hole on the instrument panel in the selected location.
3. Install the rubber gasket provided between the rear of the instrument and the mounting surface. Insert the instrument into the hole until the back of the face is flush with the outside mounting surface.
4. Fasten the instrument with the mounting bracket and nuts provided.
5. Obtain the power from a 12 V source as directly as possible. Avoid power circuits which share loads with ignition, alternators, radio transmitters, etc.

Excessive electrical noise associated with such devices may prevent the instrument from operating properly.

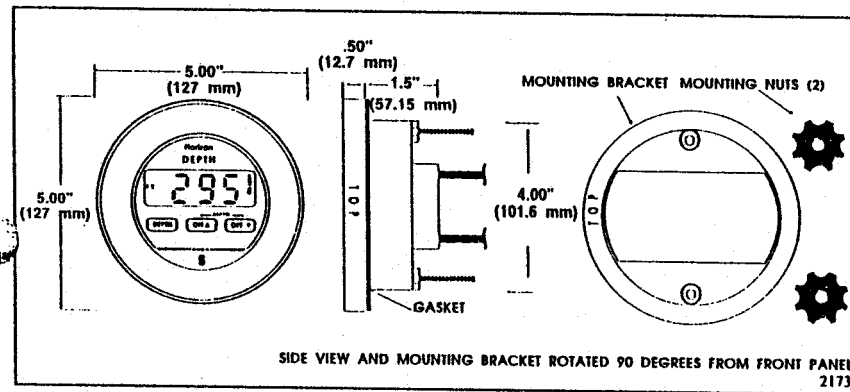


Figure 3. Depth Sounder Dimensions

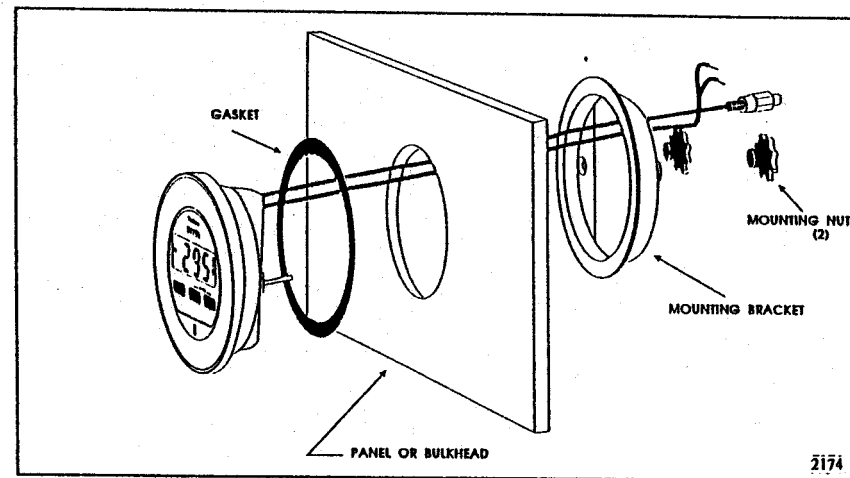


Figure 4. Depth Sounder Installation

NOTE

The instrument must be connected through a switch to provide a means of turning the instrument on and off. The red lead of the power cable should be connected to a 1-ampere circuit breaker then to the positive terminal of the power supply. The solid black lead should be connected to the negative terminal.

6. Connect the RCA phono plug on the transducer cable to the instrument.

4.2 TRANSDUCER INSTALLATION

CAUTION

The installation of a transducer is a job for a professional boat yard. The following is an informational guideline on the installation of transducers.

4.2.1 General

Correct installation of the transducer is essential for optimum operation of the instrument. Select a location for the transducer using the following guidelines:

- Non-aerated water (bubble-free) water must flow across the face of the transducer at all speeds if good depth performance is to be achieved.
- Never position the transducer directly behind shafts, struts, fittings and paddle wheel speed transducers because water turbulence underneath the transducer face can adversely affect depth performance.
- Keep the transducer cable away from the engine to reduce electrical interference.
- If the boat has bottom paint applied and has been used, inspect for areas where paint erosion has taken place. Erosion is caused by turbulent water and these areas are unsuitable transducer mounting locations.

NOTE

It is very important that the mounting location have reasonable access from inside the vessel since the transducer will require tightening from inside the hull.

- Plastic through-hull transducers should be mounted in fiberglass and metal hulls only. Under no circumstances should they be used in wood hulls. Swelling of the wood may overstress the plastic housing.
- Do not use a fairing block of any type when mounting the plastic low profile transducer. Hauling or impact can cause structural failure of the housing assembly.
- Do not expose a plastic through-hull transducer to solvents. Strong solvents such as acetone and methylene chloride attack many types of plastics and dramatically reduce the strength of plastic parts. Accumulation of grease or grime may be removed with a damp cloth and mild household detergents.

NOTE

Transducer cable may be extended but depth performance may be affected. Use the EX345D extension cable.

4.2.2 Sailboats

On sailboats, the transducer should be mounted where the acoustic beam will not be shaded by the keel. A spot forward of the keel is usually best. Try to find an accessible spot with a minimum deadrise angle. See Figure 5.

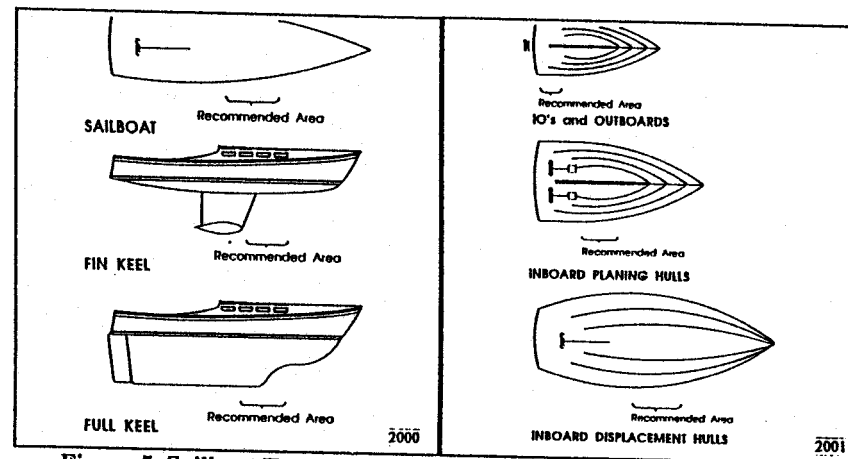


Figure 5. Sailboat Transducer

Figure 6. Powerboat

4.2.3 Powerboats

On inboard-outboards, transducers mounted close to the engine usually yield good results. On inboards, always mount the transducer well ahead of the propeller. Turbulence from propellers seriously degrades transducer performance. Make sure that the transducer is not shaded by the prop shaft(s).

On displacement hull powerboats (such as trawlers), the transducer should be mounted amidships, relatively close to the keel (center line of the hull).

On planing powerboat hulls, the transducer should be mounted well aft and close to the keel to ensure that the transducer is in contact with water at higher boat speeds. If the vessel is capable of speeds greater than 25 knots, you may wish to review installation location and operational results on similar boats before proceeding. See Figure 6.

4.2.4 Transom Installation

On transom installation, mount your transducer as close to the center line (keel) of the boat as possible. On slower, heavier displacement boats, positioning the transducer farther from the keel is acceptable.

On two-drive installations, install the transducer between drives.

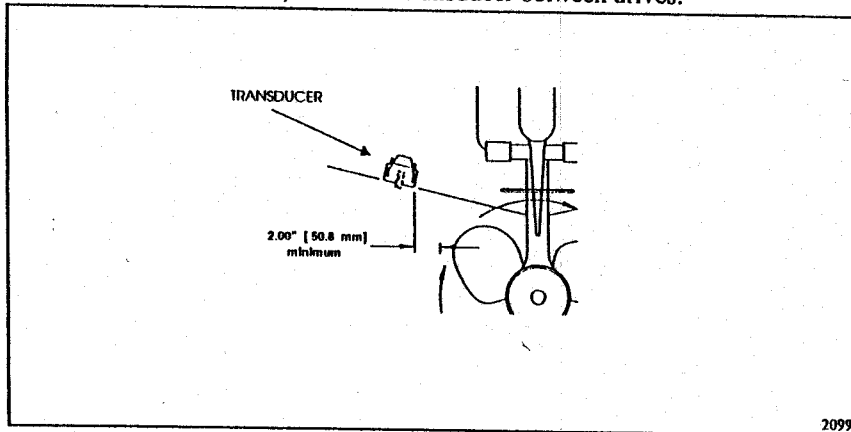
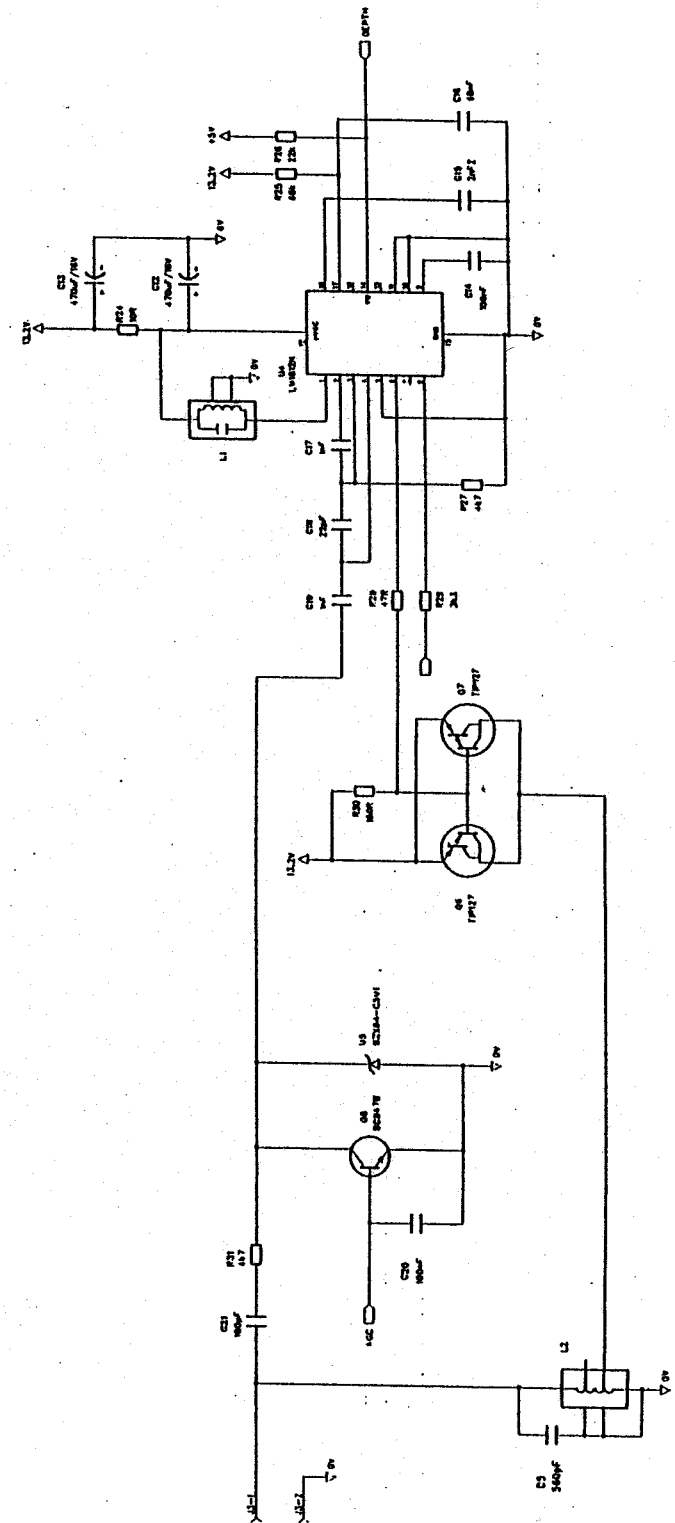
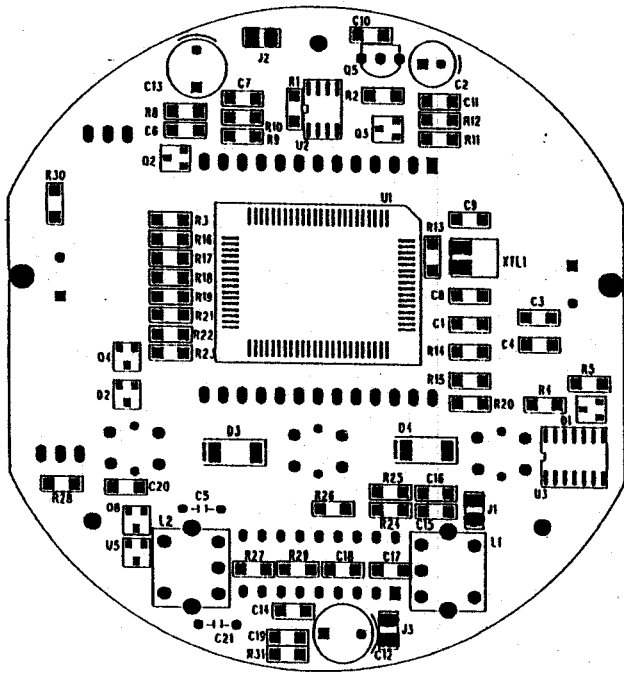


Figure 7. Transom Mount Transducer Location





DS 45 PCB COMPONENT OVERLAY

On single drive installations, mount the transducer on the side of the boat where the propeller blade is rotating upwards (usually the left or port side) to minimize cavitation. If feasible, mount the transducer at least 2 inches (50 mm) beyond the swing radius of the propeller. See Figure 7.

4.2.5 In-Hull Installation (DST55)

NOTE

Do not mount transducer directly behind any strakes, ribs, intakes or outlets for live wells and engine cooling water, and any protrusion that may cause turbulence or cavitation.

Transducer installation inside a solid fiberglass hull may degrade performance of the depth sounder. Therefore, this type of installation is not preferred over through-hull and transom installations.

Should the user desire to perform an in-hull installation, perform the following test to determine its suitability.

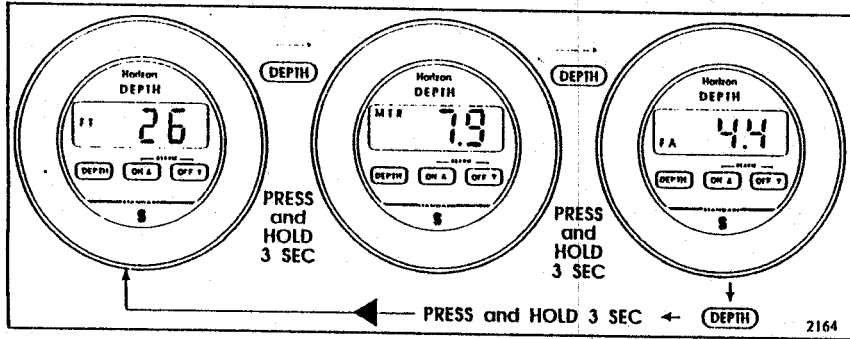
1. Fill a thin plastic bag with mineral oil and suspend the transducer in the oil.
2. Hold the bag against the hull while the boat is moored and underway and check the reading on the instrument. The reading should be relatively constant.
3. The bag may have to be moved around the hull to find the best mounting location.
4. See instructions provided with the transducer for additional information.

5 OPERATION

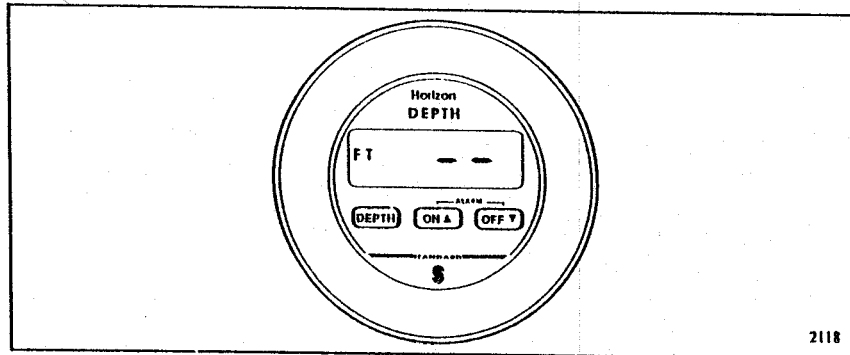
5.1 PRIMARY OPERATION

5.1.1 Setting Unit of Measure

To select the unit of measure, press and hold the **DEPTH** key for three seconds. The display changes. Depth can be displayed in feet, metres, or fathoms.

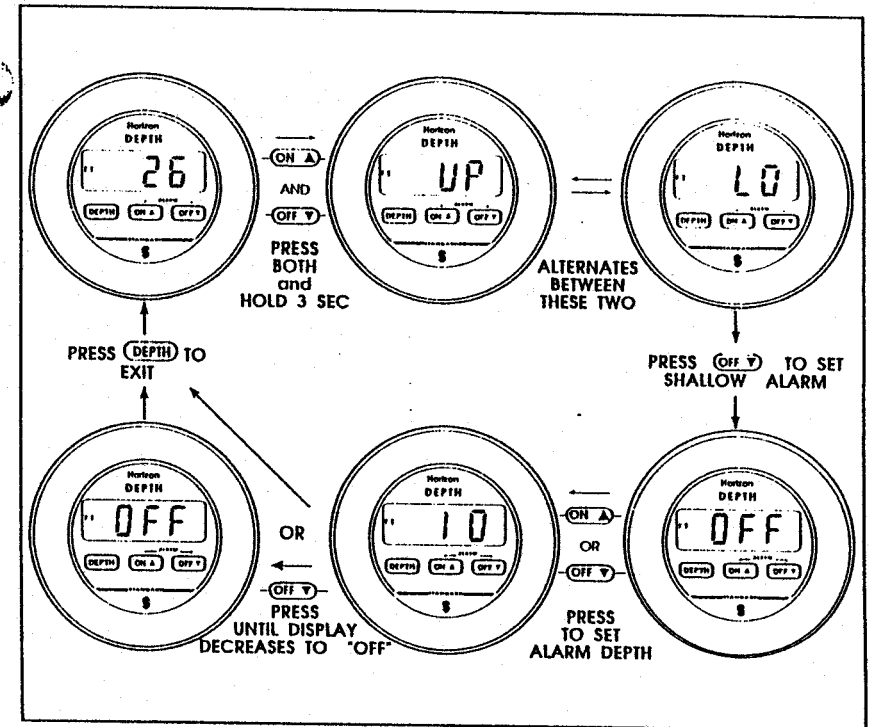


If the water depth is greater than 400 feet or if too much aerated water is passing over the transducer (refer to sections 4.2.2, 4.2.3, 4.2.4), the numeric section of the display will show two horizontal lines.



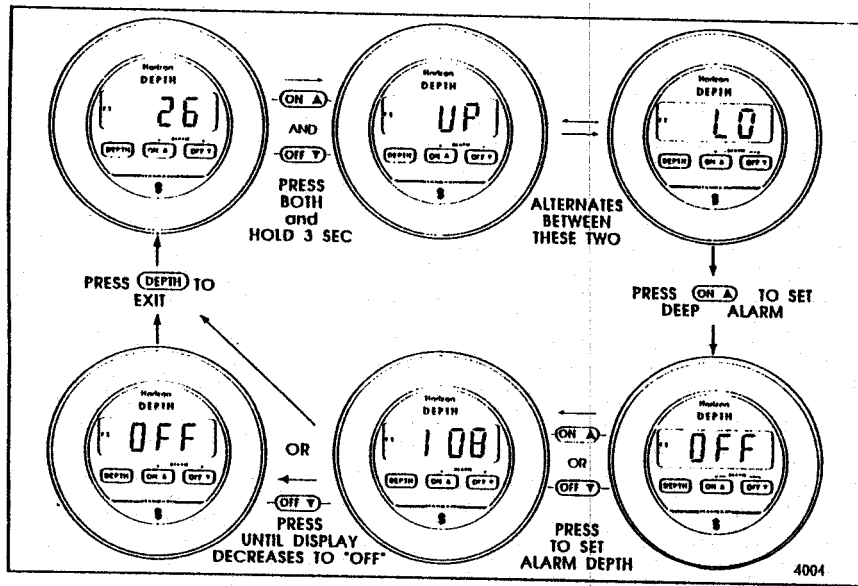
5.1.2 Setting Shallow Alarm

Press and hold both the **ON A** **OFF V** keys for three seconds to enable the alarm mode. Press the **OFF V** key to select the shallow alarm. "LO" displays momentarily. Press either the **ON A** or **OFF V** key to change the setting. Press the **DEPTH** key to exit to normal operation. Or to disable the shallow alarm, press the **OFF V** key until the display decreases to "OFF".



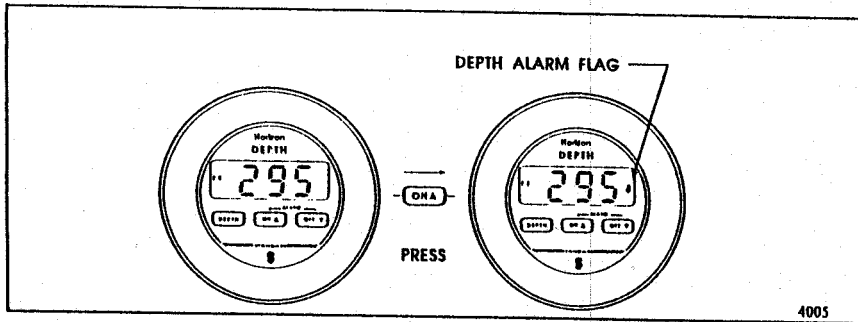
5.1.3 Setting Deep Alarm

Press and hold both the **ON A** **OFF V** keys for three seconds to enable the alarm mode. Press the **ON A** key to set the deep alarm. "UP" displays momentarily. Press either the **ON A** or **OFF V** key to change the setting. Press the **DEPTH** key to exit. Or to disable the deep alarm, press the **OFF V** key until the display decreases to "OFF".



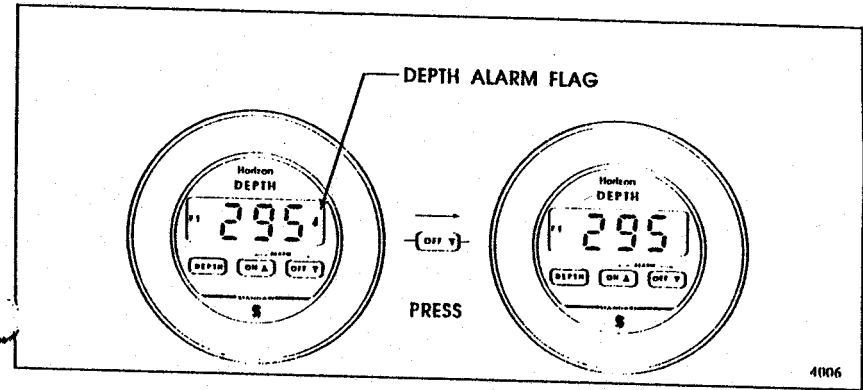
5.1.4 Alarm On

To turn on the alarm, press the **ON A** key. The alarm flag will appear.



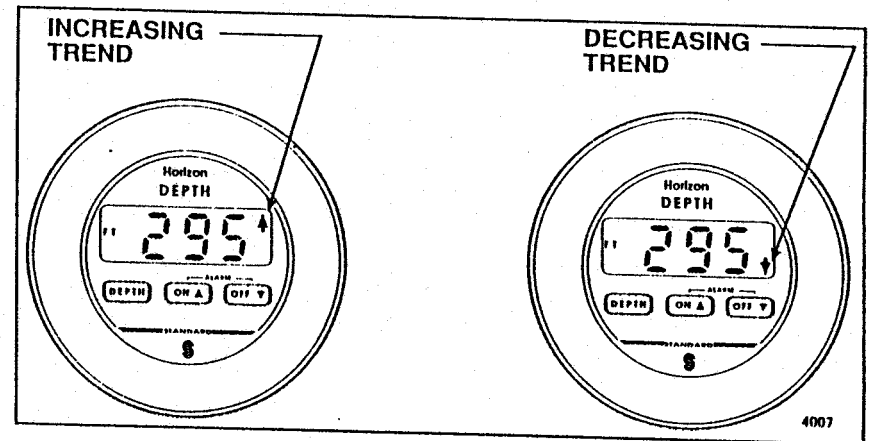
5.1.5 Alarm Off

To turn off the alarm, press the **OFF Y** key. The alarm flag of the display will disappear.



5.1.6 Depth Trend Indicators

If there is a continuing increase or decrease in water depth, a trend arrow will be displayed to show the direction of change.



5.2 SECONDARY SETTINGS

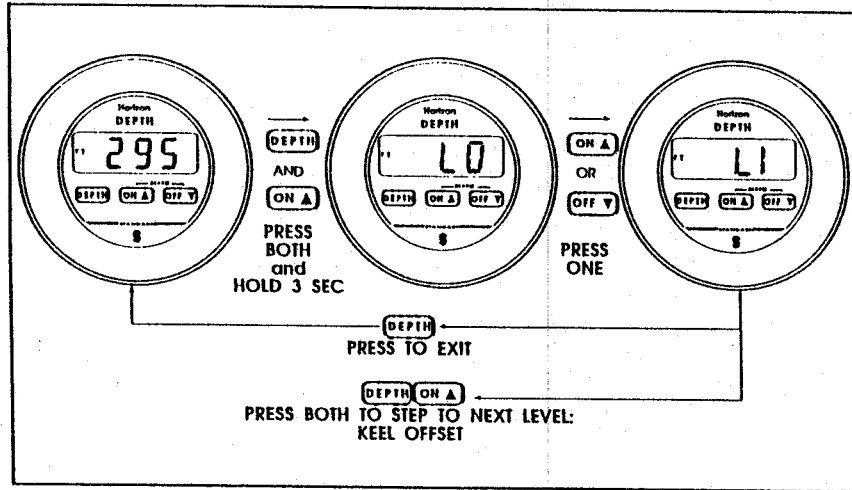
To access the secondary settings, press and hold the **DEPTH** and **ON** keys for three seconds. Succeeding depressions of the **DEPTH** and **ON** keys will step the display through each level of the secondary settings.

The levels accessible, in succession, are:

- Lamp Intensity
- Keel Offset
- Display Damping

5.2.1 Lamp Intensity

Press and hold the **DEPTH** and **ON** keys for three seconds to go to the LAMP mode. To adjust the lamp intensity, press the **ON** or **OFF** key. Intensities of 1, 2 or 3 can be selected; 0=off. Press the **DEPTH** key to exit, or press the **DEPTH** and **ON** keys to advance to the keel offset mode.

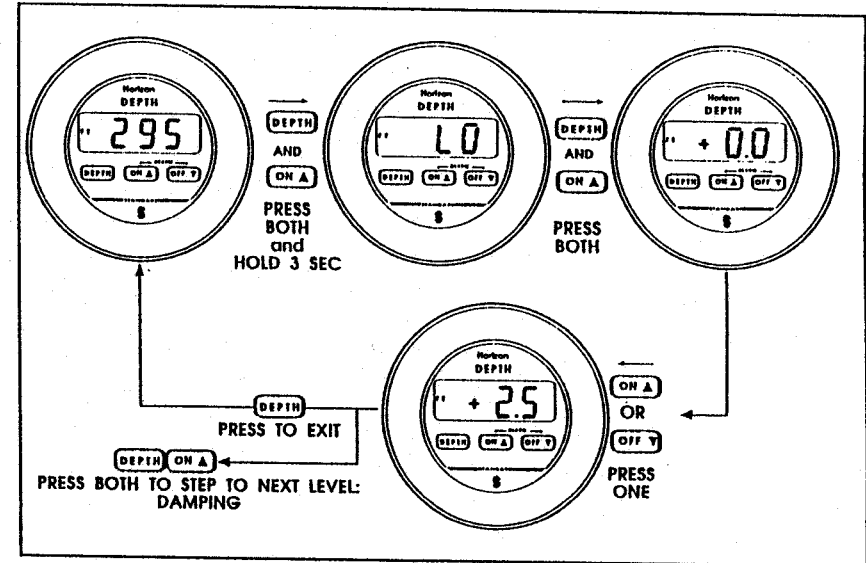


5.2.2 Keel Offset

In the Secondary mode, with the Lamp Intensity level displayed, press the **DEPTH** and **ON** keys to step to the Keel Offset display; "+0.0" will be displayed for adjustment. Keel Offset can be adjusted for any of the following situations. Displayed depth will be adjusted accordingly.

- Depth below the water line (positive adjustment depending on how many feet the transducer is below the water line)
- Depth below the keel (negative adjustment depending on how many feet the keel is below the bottom of the transducer)
- Depth below the transducer (set offset to 0.0)

Press the **ON** or **OFF** key to set the offset depth. Press the **DEPTH** key to exit, or press the **DEPTH** and **ON** keys to advance to the Display Damping mode.



6 SPECIFICATIONS

Size	
Dimensions	5"W x 2"D x 5"H
Face Plate diameter	5-inches (127mm)
Mount	4-inch (101.6 mm) diameter hole
Depth behind panel	2.25 inch (56.2 mm)
Display	Liquid Crystal
.....	3 1/2 digit numeric 0.75 in. (18 mm) high
Color	Black with textured bezel
Water Integrity	Front will withstand direct spray
Depth Display	3 - 19.9, 20 - 400 feet
.....	1 - 9.9, 10 - 125 metres
.....	0.5 - 9.9, 10 - 70 fathoms
Accuracy	±2%
Alarms	Depth shallow and deep, adjustable, non-volatile
Options (keypad selectable):	
Illumination Intensity Level	3-step
Damping Level	5, 10, & 15%
Keel Offset	Adjustable, ±10 feet
Trend Indication	Up and down arrows
Sensitivity	0.15 mV RMS at 30+ feet
Transducer	Transom, through-hull option, or In-hull options
.....	600 ohm, 1500 pF parallel impedance
Frequency	203 ± 1 kHz
Operating Voltage	13.8 VDC ± 20%
Operating Temperature	32° to 122° F (0° to 50° C)
Current Drain	70 mA nominal
Output Power	50 watts RMS
RF Interference	6 dB maximum quieting on any marine
.....	radio channel with 3 dB antenna
.....	within 1 metre of the DS45

7 MAINTENANCE

Your depth sounder is designed for years of trouble-free operation assuming proper installation and care are provided. Following the operation and installation guidelines in this manual should ensure optimum performance of the instrument.

In the unlikely event that the instrument shall fail to perform or shall need servicing, please contact the following:

Factory Repair Facility
SCC - Standard Communications Corp.
4876 W. North Temple St.
Salt Lake City, Utah 84116
Telephone No. 1-800-366-4566
FAX No. 1-801-359-4122

8 TROUBLE SHOOTING

8.1 TECHNICAL DESCRIPTION

The transmitter generates a pulse (203 kHz) which is supplied to the transducer. The transducer converts these pulses into ultrasonic sound energy and radiates this energy towards the bottom of the sea.

At exactly the moment the energy leaves the transducer, the internal stop watch starts and the transmitter is turned off and the receiver is turned on.

The sound energy bounces off the bottom and returns to the transducer. The internal clock of the microcomputer determines depth based upon the time it takes to receive a return echo.

The microcomputer converts the time to depth and displays this information on the instrument. The longer it takes for the energy to reach the bottom and return to the transducer, the deeper the water.

8.2 TROUBLE SHOOTING CHART

PROBLEM	SOLUTION
No Display	Check DC power connections and DC polarity with voltmeter.
No Depth Reading (--) At All Depths	<ol style="list-style-type: none"> 1. Check transducer for growth or multiple coats of paint. 2. Check the transducer cable for cuts and sharp bends. 3. Substitute the transducer with a known good SCC transducer, hold it over the side of the boat into the water and see if instrument functions. This isolates cause of problem (transducer or instrument).
Erratic Readings While Moored	Check transducer for growth or multiple coats of paint.
Erratic Readings While Underway	Cavitation (air) under the face of the transducer. Review installation and reinstall if necessary.
When power is applied, display right-hand digit counts up or down.	See paragraph 5.3 SIMULATION.
Erratic Readings Only When Engine Is Running	<ol style="list-style-type: none"> 1. Reroute DC and transducer cables away from engine, ignition wires, and battery cables. 2. Add feed-through filter capacitor on the positive terminal of the ignition coil. 3. Add alternator whine filter to alternator. 4. Replace spark plug wire with resistive type.