

Horizon DS40

Digital Depth Sounder

Owner's Manual

Contains:

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



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.

THIS LIMITED WARRANTY EXTENDS ONLY TO THE PURCHASER AND IS IN LIEU OF ALL OTHER EXPRESS OR IMPLIED WARRANTIES, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

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.

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1

GENERAL INFORMATION

1.1 INTRODUCTION

The DS40 is a high quality digital depth sounder. It mounts into a two-inch diameter instrument hole and includes interchangeable round and square twist-off face plates.

Features include non-volatile programmable deep and shallow depth alarms. It features depth readings from 2.5 to 200 feet (programmable for 0.8 to 61 meters or 0.5 to 33 fathoms) on both deep and shallow depth alarms to alert the user if the water is above or below the programmed levels.

The DS40 will withstand direct water pressure on its front panel without damage.

1.2 FRONT PANEL

The front panel includes a large three-digit continuously-backlit LCD and two-button keypad. The keypad uses both tactile and audible feedback to indicate when a key is pressed. All functions are controlled entirely by these two keys.

1.3 REAR PANEL

The rear panel contains a gold-plated RCA connector for connection of the transducer. An 18-inch DC power cord with quick disconnect connectors is permanently attached. A six-foot extension power cord with quick-disconnect connectors on one end is included.

2 CONTROLS AND CONNECTIONS

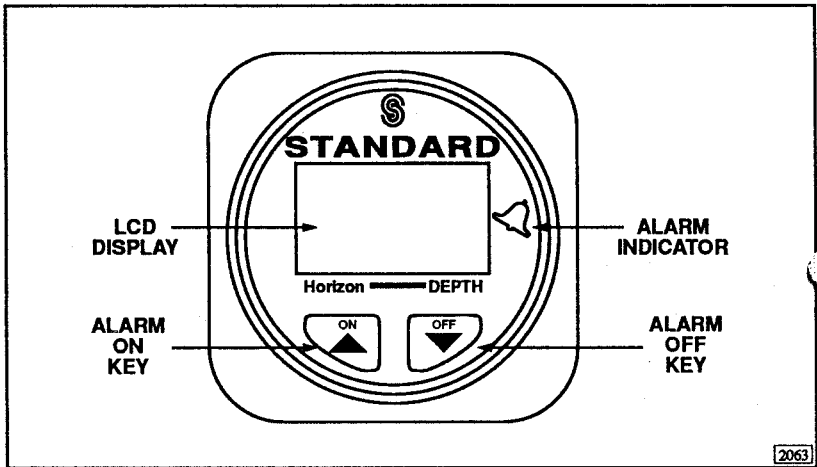


Figure 1. DS40 Front Panel

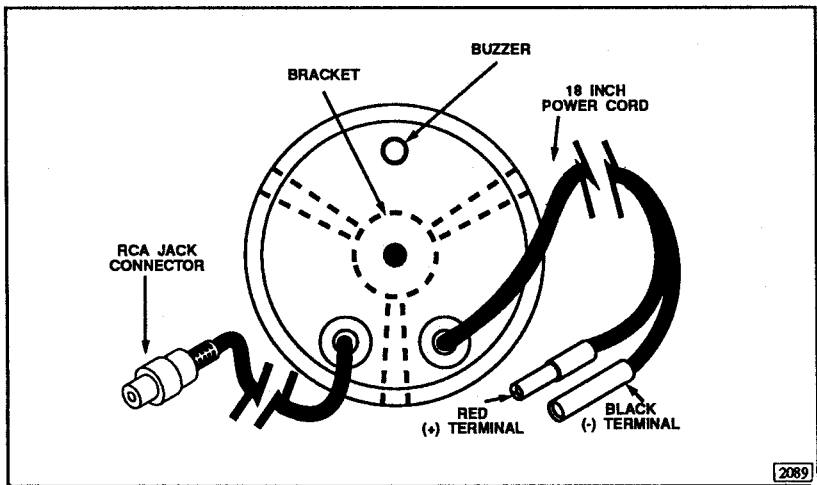


Figure 2. DS40 Rear Panel

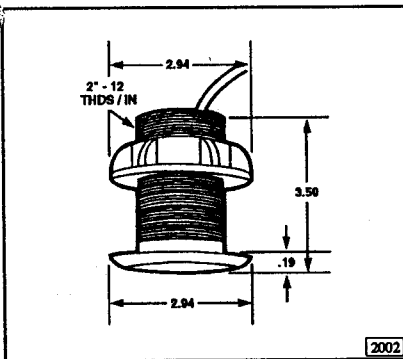
3

ACCESSORIES

3.1 PROVIDED WITH INSTRUMENT

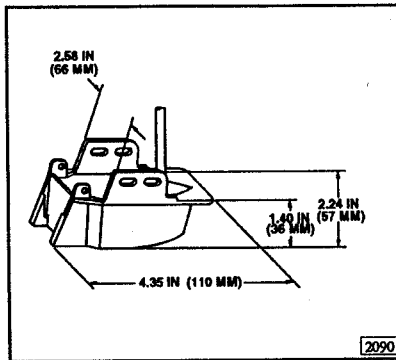
- Mounting Bracket With mounting hardware
- Twist Lock Face Plates Round and Square
- Extension Power Cord 6 feet long with quick-disconnect connectors

3.2 OPTIONAL



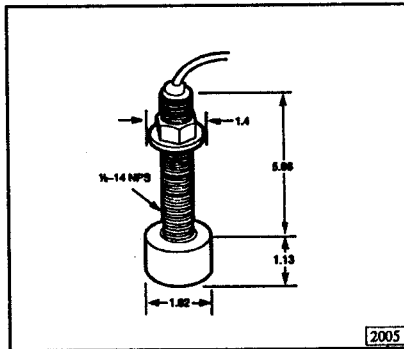
DST50

Plastic Low Profile Transducer



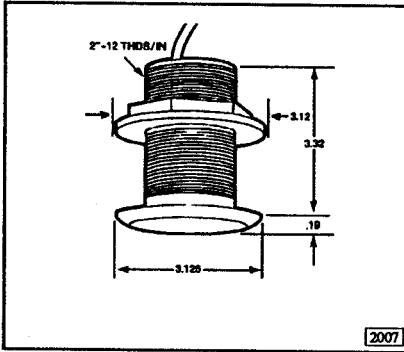
DST51

Transom Mount Transducer



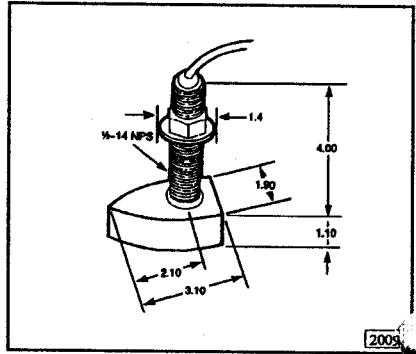
DST52

Bronze Long Stem Thru-hull Transducer



DST53

Bronze Low Profile Transducer



DST54

Bronze Wedge-Shaped Thru-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.

- Square Face Plate SCC Part Number 568001012A
- Round Face Plate SCC Part Number 568002012A
- Mounting Bracket SCC Part Number 160001020A
- Mounting Nut SCC Part Number 580010123A

4

INSTALLATION

4.1 FACE PLATE INSTALLATION

Two interchangeable twist-off face plates (round and square) come with the instrument.

1. To install a face plate:
 - a. Attach the face plate to the front panel of the instrument.
 - b. Twist the face plate clockwise until tight.
2. To remove face plate, twist it to the left until loose and detach.

4.2 INSTRUMENT INSTALLATION

The instrument can be easily installed in different types of instrument panels. Refer to Figures 3, 4, and 5 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.
 - Location should provide as much protection from the elements as possible.
 - The panel for mounting the instrument should be 1/8 to 3/4 inch thick.
 - The space behind the instrument panel must have a depth of at least 3.75 inches. See Figure 3 for dimensions of the instrument.
2. Drill a 2-inch hole on the instrument panel in the selected location.
3. With the mounting bracket removed, insert the instrument into the hole until the back of the face is flush with the outside mounting wall.
4. Slide the bracket over the body of the instrument.

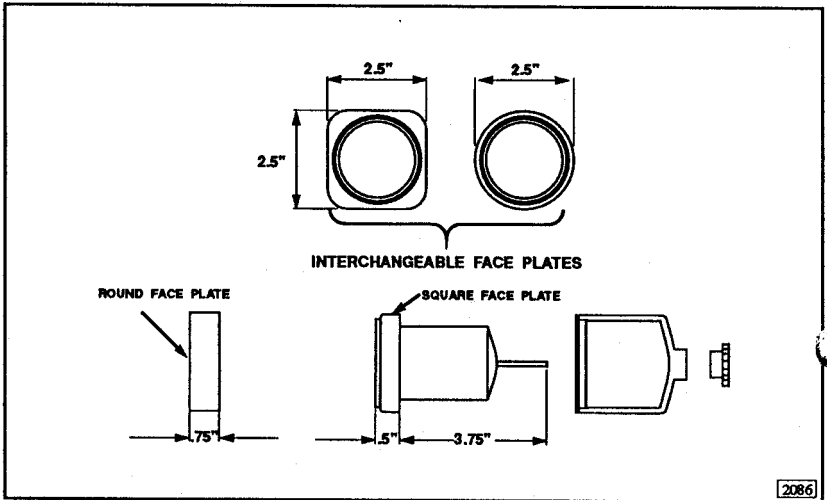


Figure 3. Depth Sounder Dimensions

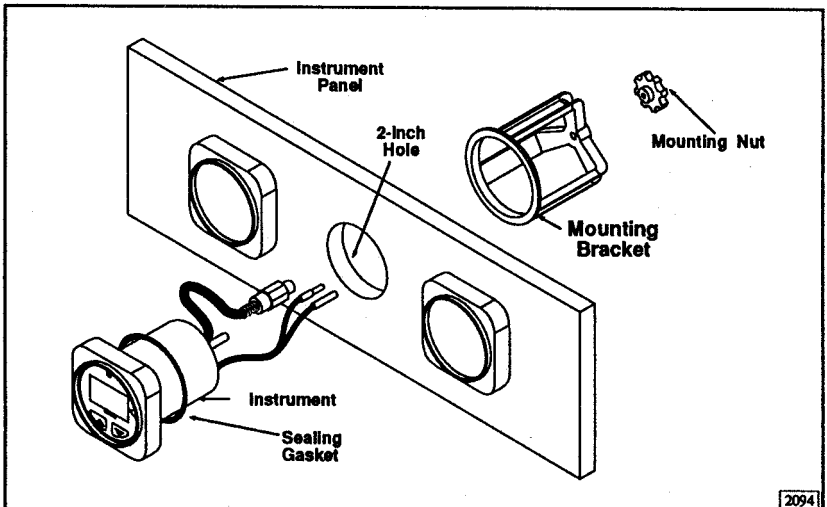


Figure 4. Depth Sounder Installation

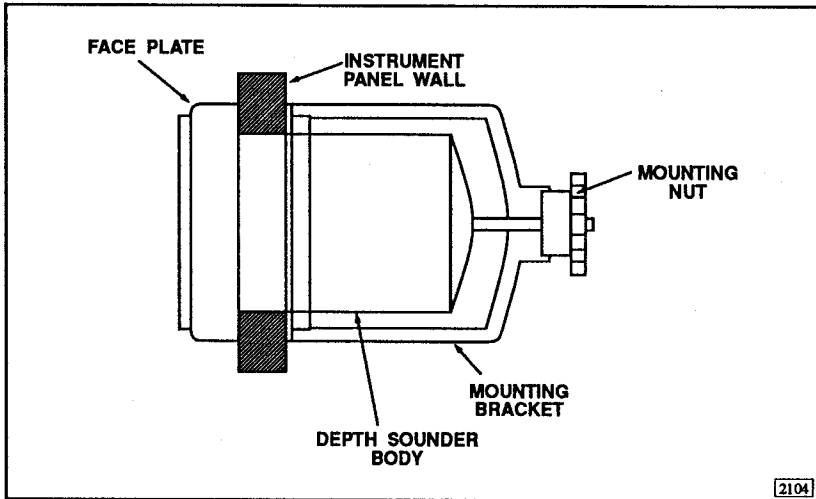


Figure 5. Side View of Mounted Depth Sounder

NOTE

Orient the bracket in such a manner that it does not cover the buzzer. See Figure 2 for correct bracket orientation.

5. Tighten the mounting nut until the bracket is secure.
6. Connect the power cord at the back of the instrument to a 12 V power supply which is active whenever the ignition switch is on. The red lead should be connected to the positive terminal of the power supply and the solid black lead should be connected to the negative terminal.
7. 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.
8. Connect the RCA phono plug on the transducer cable to the instrument.

4.3 TRANSDUCER INSTALLATION

NOTE

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

4.3.1 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 paddlewheel 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.
- 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 thru-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 thru-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 22 gauge, two-wire, shielded cable.

4.3.2 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 6.

4.3.3 Powerboats

On IO's 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 (centerline of the hull).

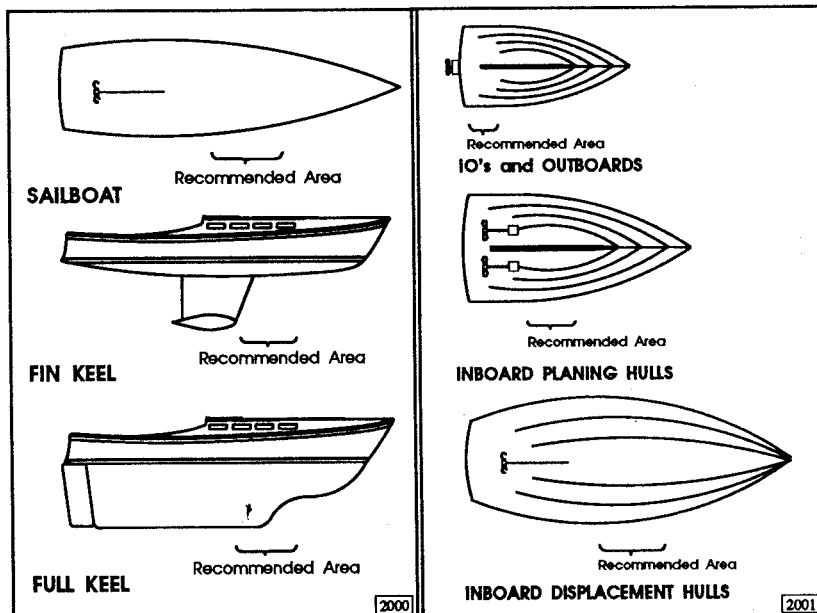


Figure 6. Sailboat Transducer

Figure 7. Powerboat Transducer

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 7.

4.3.4 Transom Installation

On transom installation, mount your transducer as close to the centerline (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.

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 8.

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.

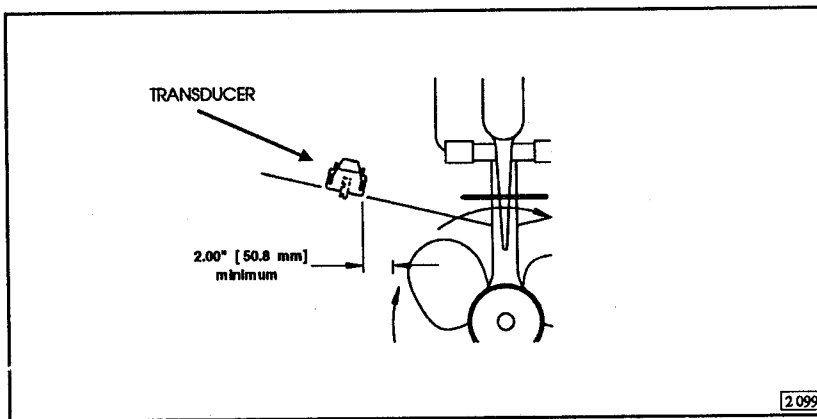


Figure 8. Transom Mount Transducer Location

4.3.5 In-Hull Installation

Transducer installation inside a solid fiberglass hull may degrade performance of depth sounder. Therefore, this type of installation is not preferred over thru-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.

To install:

After determining that the transducer will function inside the hull, construct a water box to be used for installation.

4. Use a PVC pipe with one end threaded and supplied with a screw on cap. The PVC pipe should be 1/4 inch bigger than the bottom face of the transducer.
5. Install the transducer as shown in Figure 9.
6. To receive a proper echo from the bottom, the bottom of the PVC pipe may have to be cut at the deadrise angle of the hull.

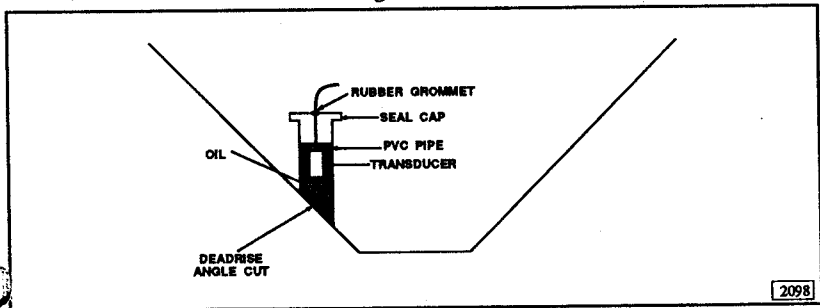
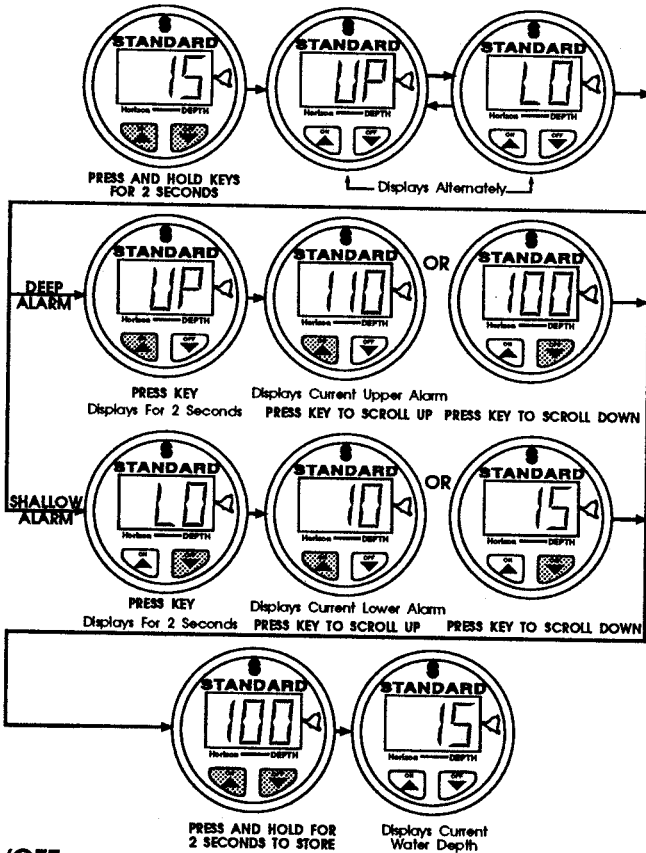


Figure 9. In-Hull Installation

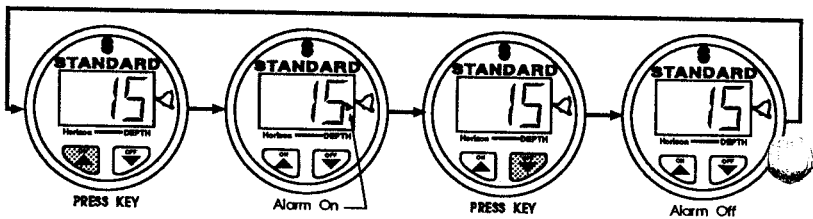
QUICKSTART

This is only a quick reference guide. For detailed operation, refer to section 5 of this manual.
 NOTES: 1. When power is applied, depth is displayed. 2. Shaded key indicates key to be pressed

ALARM SETTING:



ALARM ON/OFF:



5.1 GENERAL

1. Whenever power is applied the depth sounder is active and water depth is continuously displayed.
2. If the depth exceeds 200 feet or the hull is in turbulent water the display will indicate:



5.2 ALARM SETTING



Two types of alarm can be set; the Deep Alarm and Shallow Alarm. The Deep Alarm can be set as high as 200 feet while the Shallow Alarm can be set as low as 3 feet.

Whenever the water depth is greater than the Deep Alarm setting, an alarm will sound and the display will alternate between the current depth and "UP" every other second.

Whenever the water depth is lesser than the Shallow Alarm, an alarm will sound and the display will alternate between the current depth and "LO" every other second.

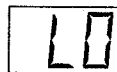
If the alarm timer is enabled (see section 5.3.3), the alarm will stop sounding after 5 seconds.


5.2.1 Deep Alarm


1. To set the alarm, press the  and  keys simultaneously for two seconds. The display will alternately show:





and





2. To set the Deep Alarm, press the  key. The display will show:



3. After two seconds the display will indicate the current Deep Alarm depth.
4. To select the desired Deep Alarm depth, press the  key to increase the reading or the  key to decrease the reading. If either key is held depressed for more than two seconds, the reading will increase or decrease rapidly.

NOTE

If the reading is increased one step above 200, the display will indicate "OFF" and the Deep Alarm will be disabled.


5. When the Deep Alarm is set, exit by pressing the  and  keys simultaneously for 2 seconds. The display will now indicate the current water depth.


5.2.2 Shallow Alarm

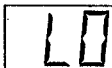
1. To set the alarm, press the  and  keys simultaneously for two seconds. The display will alternately show:





and





2. To set the Shallow Alarm, press the  key. The display will show:



3. After two seconds the display will indicate the current Shallow Alarm depth.
4. To change the setting, press the  key to increase the reading or the  key to decrease the reading. If either key is held depressed for more than 2 seconds, the reading will increase or decrease rapidly.

NOTE

If the reading is decreased one step below 3, the display will indicate OFF and the Shallow Alarm will be disabled.



- When the Shallow Alarm is set, exit by pressing the  and  keys simultaneously for 2 seconds. The display will now indicate the current water depth.

5.2.3 Anchor Alarm

When a boat is anchored, the deep and shallow alarms can be set a few feet above and below the anchor depth. In doing so, the alarm will sound and alert you when the boat drifts.

5.2.4 Alarm On/Off


Whenever power is applied to the unit the alarms are in the state they were left in when the unit was turned off. The alarms turn off when the deep and shallow alarms are set.



- To turn the alarm on, press the  key. An arrow on the lower right corner of the display will illuminate (next to the alarm indicator) to indicate that the alarm is on.
- To turn the alarm off, press the  key. The arrow in the lower right corner of the display will extinguish.

5.3 SECONDARY SETTINGS

5.3.1 Feet/Meter/Fathom Selection

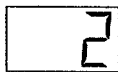
The water depth may be displayed in feet, meters or fathoms. To select the display unit, perform the following:

- Remove the power from the instrument.
- Press and hold the  key.

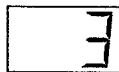
- While holding the  key, apply power to the instrument.
- Release the  key. The display will indicate the current display unit with:







for feet



for meters







for fathoms

- To select the display unit desired, press the  key to increase the number or the  key to decrease the number.
- To exit the FEET/METER/FATHOM mode, press the  and  key simultaneously for two seconds. The display will now indicate the current water depth in the selected display unit.

5.3.2 Keel/Surface Offset



An offset may automatically be added to or subtracted from the depth reading to compensate for the location of the transducer, allowing the instrument to accurately indicate the water depth relative to the bottom of the keel or the surface of the water.

The number entered as KEEL/SURFACE OFFSET will be in the same unit as the depth indication. If feet is selected as the unit of measure, the keel offset will be displayed in feet. To program, perform the following:

- Remove the power from the instrument.
- Press and hold the  key. While holding the  key, apply power to the instrument. The display will indicate the current keel offset.
- To select the desired keel offset, press the  key to increase the number or the  key to decrease the number. If either key is held depressed for more than 2 seconds, the number will increase or decrease rapidly.



NOTE

The KEEL/SURFACE OFFSET can be programmed for -9.9 through 9.9 feet in 0.1 foot steps. When programmed for a negative offset, "-" will be indicated on the left side of the display.

4. To exit KEEL/SURFACE OFFSET mode, press the  and  keys simultaneously for 2 seconds. The display will now indicate the current water depth.

5.3.3 Alarm Timer



The DEEP and SHALLOW alarms may be programmed to turn off automatically five seconds after they start. To turn on the 5 SECOND ALARM TIME OUT TIMER, perform the following:

1. Remove power from the instrument.
2. Press and hold the  and  keys simultaneously.
3. While holding both keys, apply power to the instrument. If the timer is off, the display will indicate:



OFF

If the timer is on, the display will indicate:



On

4. To turn on the TIMER, press either the  or  key until the display indicates:

On

5. To turn off the TIMER, press either the  or  key until the display indicates:

OFF

6. To exit the ALARM TIMER mode, press and hold the  and  keys simultaneously for 2 seconds. the display will now indicate the current water depth.

6**SPECIFICATIONS****Size**

| | |
|--|---|
| Mount | 2-inch diameter hole |
| Interchangeable Twist Lock Face Plates | 2.5-inch diameter round 2.5-inch square |
| Depth behind face plate | 3.75 inches max. |
| Display | 3-character LCD |
| Color | Black with texture on bezel |
| Backlighting | Red-colored diffused lighting for the display |
| Water Integrity | Front and sides will withstand direct spray Rear panel will withstand minor water spray |
| Depth/Alarm Range | 2.5 to 200 feet (2.5 to 19.9 feet in tenths, 20 to 200 feet in whole numbers) 0.8 to 61 meters (0.8 to 9.9 meters in tenths, 10 to 61 meters in whole numbers) 0.5 to 33 fathoms (0.5 to 9.9 in tenths, 10 to 33 in whole numbers) |
| Alarm Timer | 5 seconds or continuous (selectable) |
| Sensitivity | 3 mV max. above 30 feet (controlled by AGC) |
| Transmit Power | .25 watts nominal (RMS) |
| Transducer | 200 kHz 1900 pF/600 ohm parallel |
| Display Updating | .1 second |
| Operating Voltage | 13.8 VDC \pm 20% |
| Operating Temperature | 0° to 50° C |
| Current Drain | .50 mA max. |
| RF Interference | < 6 dB Quieting on any marine radio (with 3 dB gain antenna) within 1 meter of the DS40. |

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

TROUBLESHOOTING

8.1 TECHNICAL DESCRIPTION

The transmitter generates a pulse (200 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.

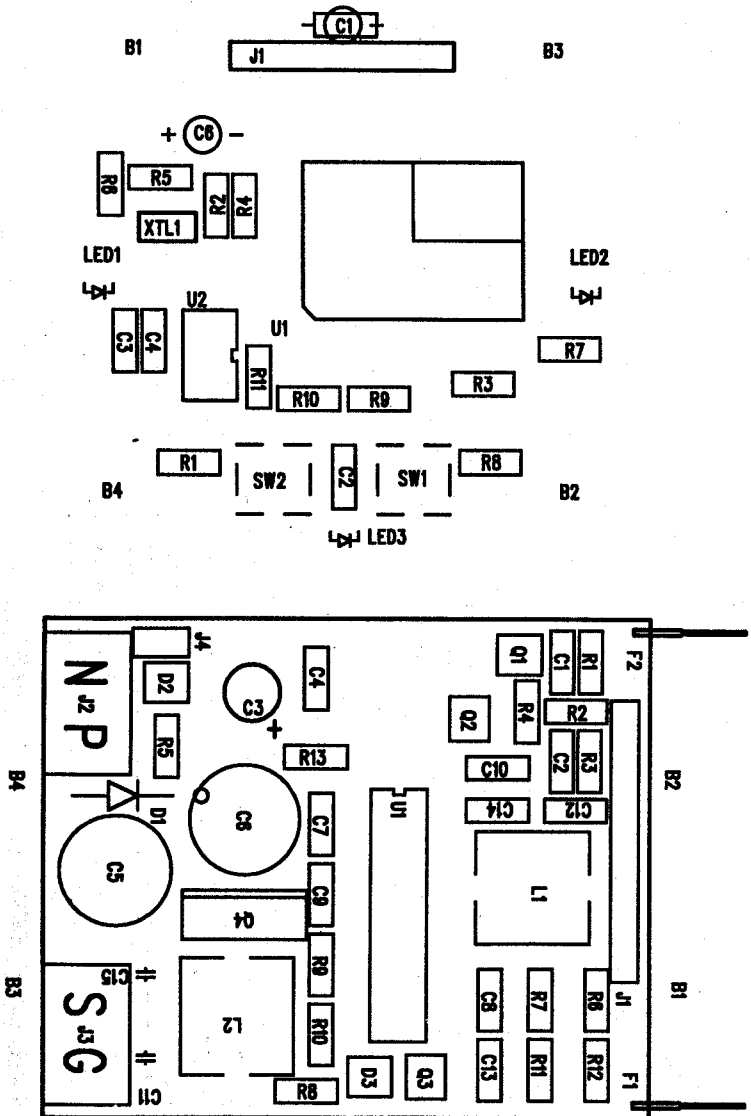
The sound energy bounces off the bottom and returns to the transducer. The stop watch clicks off and the time is forwarded to the microcomputer of the instrument.

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.

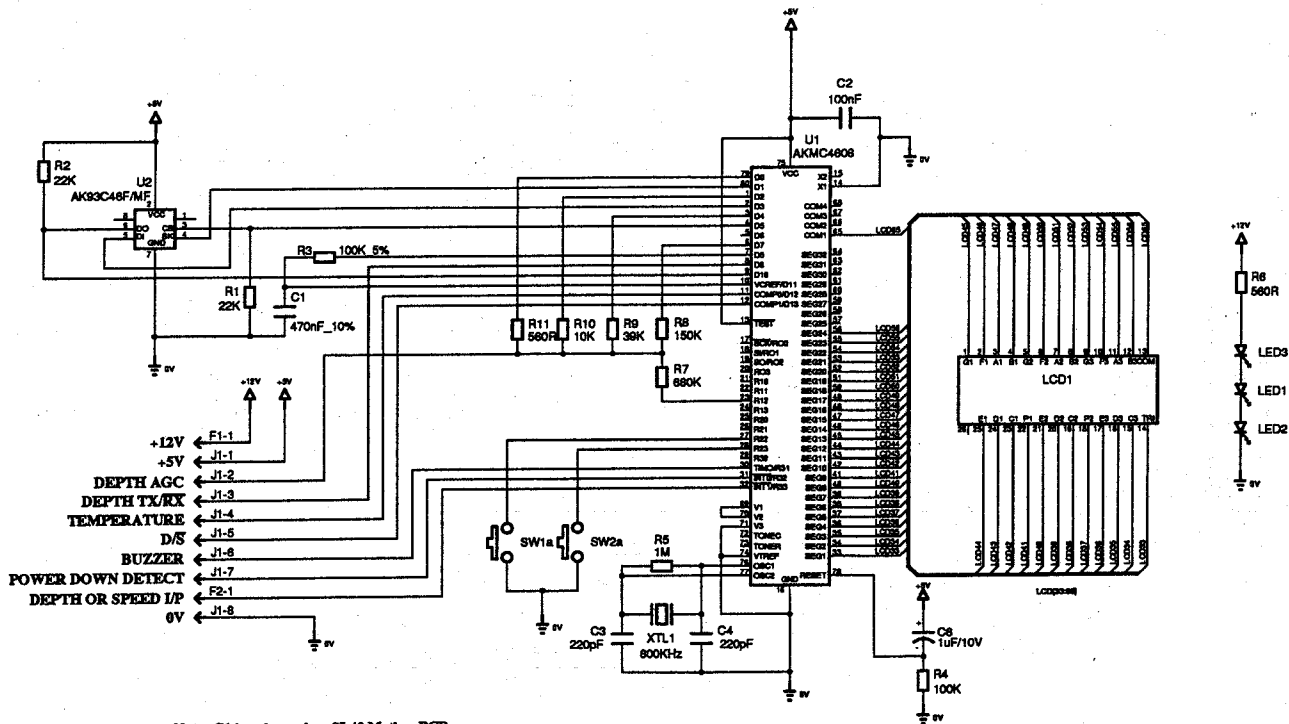
8.2 TROUBLESHOOTING CHART

| PROBLEM | SOLUTION |
|--|---|
| No Display | Check DC power connections with voltmeter. |
| No Depth Reading (--) At All Depths | Check transducer for growth or multiple coats of paint. Check the transducer cable for cuts and sharp bends. 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. |
| Erratic Readings Only When Engine Is Running | Reroute DC and transducer cables away from engine, ignition wires, and battery cables. Add feed-thru filter capacitor on the positive terminal of the ignition coil. Add alternator whine filter to alternator. Replace spark plug wire with resistive type. |

CIRCUIT SCHEMATICS

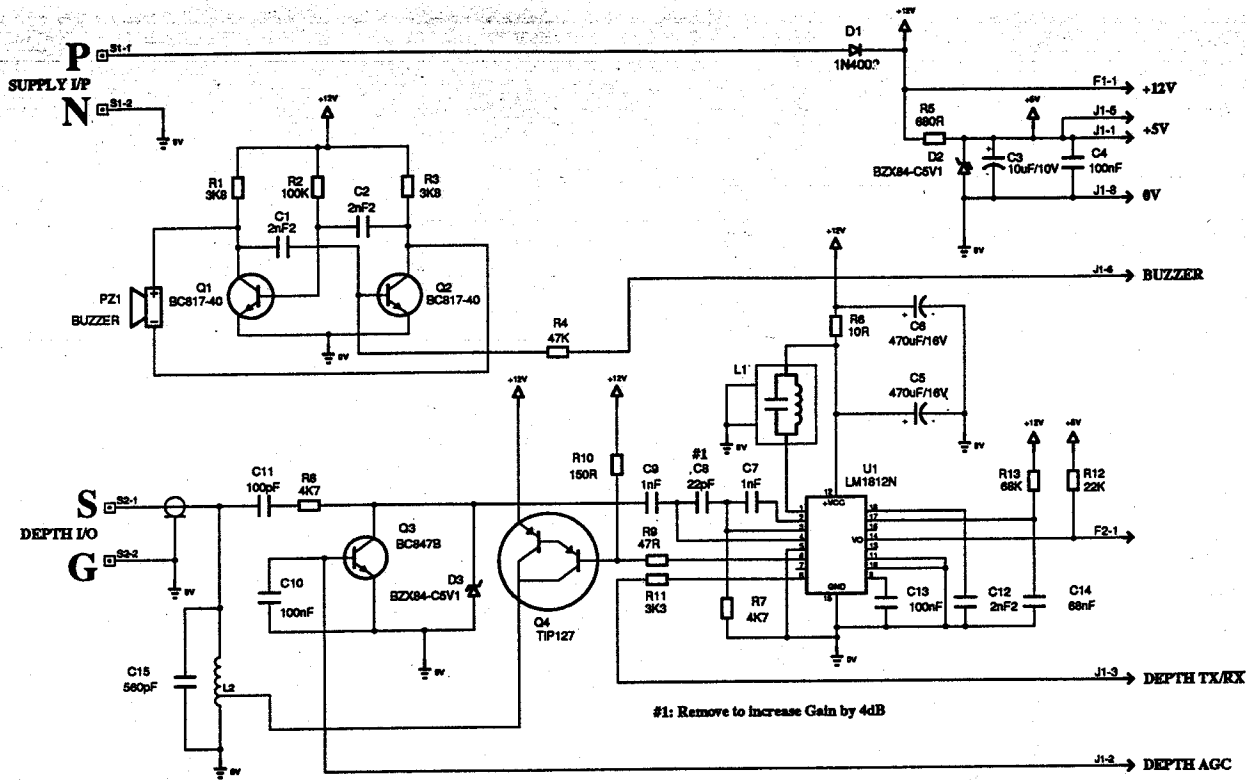


P = +12V input
 N = 0V input
 S = Transducer
 G = Braid



Note: C1 is only used on SL40 Mother PCB

Display Mother PCB 40 Series



Depth Sounder Daughter PCB DS40



Standard Communications

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Telephone 213/532-5300

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