

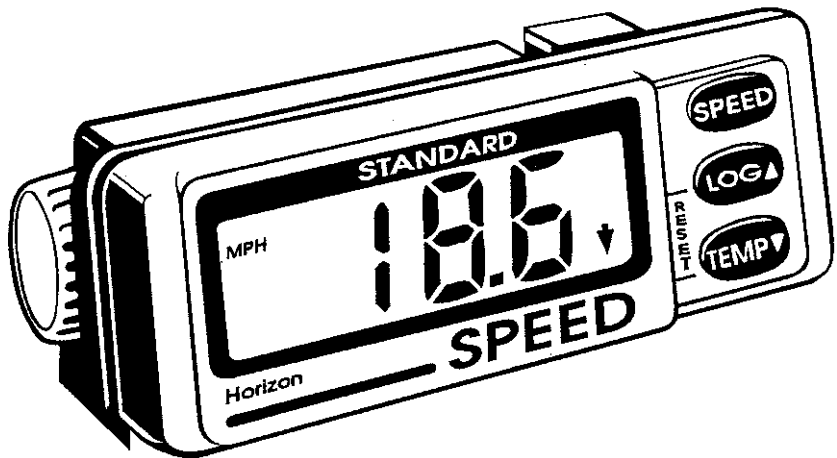
Horizon SL30

Digital Speed Log

Owner's Manual

Contains:

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



 **Standard**
Communications

Table of Contents

GENERAL INFORMATION	1
INTRODUCTION	1
FRONT PANEL	1
REAR PANEL	2
CONTROLS & CONNECTIONS	2
ACCESSORIES	5
PROVIDED WITH INSTRUMENT	5
OPTIONAL	5
REPLACEMENT PARTS	6
INSTALLATION	6
SPEED LOG INSTALLATION	6
IMPELLER INSTALLATION	11
Sailboats	12
Powerboats	12
Transom Installation	13
OPTIONAL CONNECTIONS	14
Slave Operation	14
OPERATION	15
PRIMARY OPERATION	15
Select Speed, AVG., or Temperature	15
Select MPH or KTS	16
Select T-LOG or P-LOG	17
Speed Trend Indicators	18
Select Temperature units	18
Reset AVG., T-LOG	19
Reset P-LOG	19
SECONDARY OPERATION	19
Select Lamp Intensity	20
Calibrate Speed	21
Calibrate Log	22
Calibrate Temperature	24
Select Units for Speed & Log	25
SIMULATION	26
MAINTENANCE	27
INSTRUMENT	27
IMPELLER	27
SPECIFICATIONS	27
TROUBLE SHOOTING	29

SPEED/LOG	29
TEMPERATURE	29
TROUBLE SHOOTING CHART	29

LIST OF FIGURES

Figure 1. Front Panel	2
Figure 2. Rear Panel Flush Mount Installation	7
Figure 3. Trunnion Mount Dimensions	8
Figure 4. Flush Mount Dimensions	9
Figure 5. Trunnion Mount Installation	10
Figure 6. Sailboat Impeller	12
Figure 7. Powerboat Impeller	12
Figure 8. Transom Mount Impeller Location	13
Figure 9. Slave Operation	14

SCHEMATICS

Schematics & Drawings	Centerfold
---------------------------------	------------

1 GENERAL INFORMATION

1.1 INTRODUCTION

The SL30 is a high-quality digital speed log instrument with a rectangular face plate. It mounts onto the instrument panel.

Features include:

- Speed readings from 0 to 50 knots (KTS) or 58 miles-per-hour (MPH). Speed measurement units are selectable from the front panel.
- Average (AVG.) speed reading. Averages speed since last reset and updates display every three minutes. Trend arrows indicate if speed is increasing or decreasing.
- Sea temperature readings from 32° to 99.9° Fahrenheit (0° to 37° Celsius).
- Trip log (LOG) and separate permanent travel log (P-LOG). Each log measures up to 1999 statute or nautical miles. Each log accumulates and retains distance regardless of the mode the instrument is in, until reset, even when power is off.
- Speed, log, and temperature readings can be calibrated as necessary for accuracy. Calibration is accomplished using the front panel keys.
- The SL30 will withstand direct water spray on its front panel without damage.

1.2 FRONT PANEL

The front panel includes a large backlit LCD with 3 1/2 digits, five alpha flags, and two speed trend arrows. The five alpha flags appear on the left-hand edge of the display to indicate the speed measurement units either MPH or KTS, and either of the modes: AVG., LOG, or P-LOG. The trend arrows appear on the right-hand side of the display. A three-button keypad is provided for control. All functions are controlled entirely by the three keys, including calibration. Audible and tactile feedback is provided to indicate when a key is pressed.

1.3 REAR PANEL

The rear panel contains a 12VDC power cable and a cable for connection to the impeller and temperature sensor (thermistor).

NOTE

Two SL30 instruments may be connected to one impeller by the use of an adapter cable ACS50.

2 CONTROLS & CONNECTIONS

The 3 1/2 digit display provides a visual indication of all the features available on the instrument. Any of the features can be selected by use of the three-button keypad. Selections are made by pressing one key or a combination of two keys at the same time.

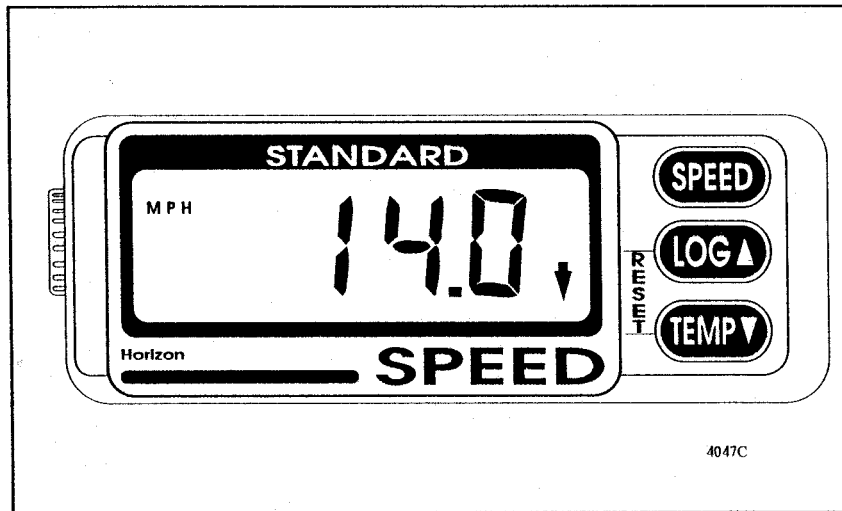


Figure 1. Front Panel

The three keys are labeled **SPEED**, **LOG**, and **TEMP**. The arrowhead icons indicate the capability of increasing or decreasing the displayed quantity or of choosing among selections for display.

OPERATING CONTROLS	
KEY	FUNCTION
SPEED	Hold the SPEED key for three seconds to select "MPH" or "KTS". Press the SPEED key to select actual speed, OR "AVG." speed
LOG ▲	Press the LOG ▲ key to select "LOG" or "P-LOG".
TEMP ▼	Hold the TEMP ▼ key for three seconds to select "°C" or "°F". Press the TEMP ▼ key to select the temperature display.
LOG ▲ TEMP ▼	To reset, choose either "AVG." speed or "LOG"; press and hold the LOG ▲ TEMP ▼ keys for three seconds. To reset the permanent log, choose P-LOG and hold the LOG ▲ TEMP ▼ keys for 15 seconds.

OPERATING CONTROLS

KEY	FUNCTION						
SPEED	Press both SPEED / LOG keys and hold for three seconds to enable the secondary mode which includes lamp intensity, speed calibration, log calibration, temperature calibration, and displayed units in tenths or hundredths. Scroll to adjust.						
LOG							
"LO"=off, "L1", "L2", "L3"	<table border="0"> <tr> <td></td> <td>Scroll</td> <td>Exit</td> </tr> <tr> <td></td> <td>LOG/TEMP</td> <td>SPEED</td> </tr> </table>		Scroll	Exit		LOG / TEMP	SPEED
	Scroll	Exit					
	LOG / TEMP	SPEED					
LOG / TEMP	Press both keys to step to Speed Calibration.						
"MPH" or "KTS" "CAL"	<table border="0"> <tr> <td></td> <td>Scroll</td> <td>Exit</td> </tr> <tr> <td></td> <td>LOG/TEMP</td> <td>SPEED</td> </tr> </table>		Scroll	Exit		LOG / TEMP	SPEED
	Scroll	Exit					
	LOG / TEMP	SPEED					
LOG / TEMP	Press both keys to step to Log Calibration.						
"LOG" "CAL"	<table border="0"> <tr> <td></td> <td>Scroll</td> <td>Exit</td> </tr> <tr> <td></td> <td>LOG/TEMP</td> <td>SPEED</td> </tr> </table>		Scroll	Exit		LOG / TEMP	SPEED
	Scroll	Exit					
	LOG / TEMP	SPEED					
LOG / TEMP	Press both keys to step to Temperature Calibration. Calibrates temperature display.						
"CAL"	<table border="0"> <tr> <td></td> <td>Scroll</td> <td>Exit</td> </tr> <tr> <td></td> <td>LOG/TEMP</td> <td>SPEED</td> </tr> </table>		Scroll	Exit		LOG / TEMP	SPEED
	Scroll	Exit					
	LOG / TEMP	SPEED					
LOG / TEMP	Press both keys to step to Tenths or Hundredths Select.						
"0.0" or "0.00"	<table border="0"> <tr> <td></td> <td>Scroll</td> <td>Exit</td> </tr> <tr> <td></td> <td>LOG/TEMP</td> <td>SPEED</td> </tr> </table>		Scroll	Exit		LOG / TEMP	SPEED
	Scroll	Exit					
	LOG / TEMP	SPEED					
LOG / TEMP	Press both keys						
	Exit						

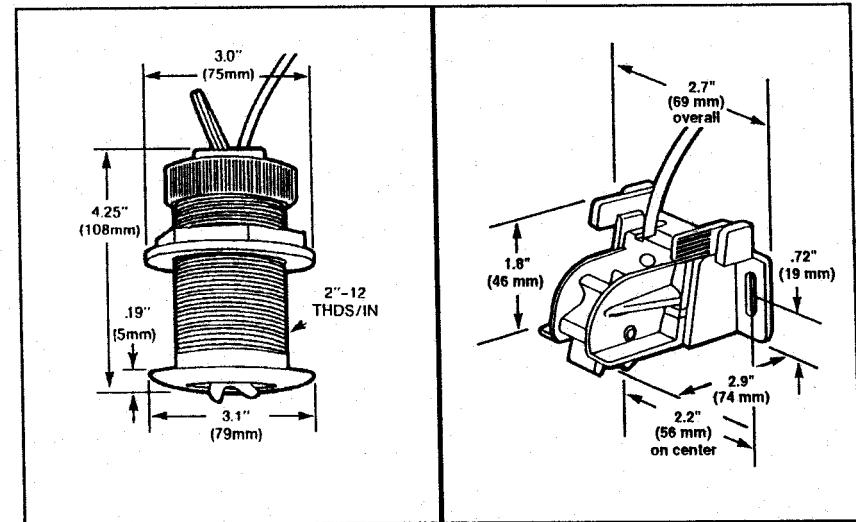
3

ACCESSORIES

3.1 PROVIDED WITH INSTRUMENT

- Power Cable
- Panel Gasket
- Trunnion Mounting Bracket
- Flush Mount Mounting Bracket
- Mounting Bracket Nuts (2)

3.2 OPTIONAL



SIA50

SIA51

Impellers:	
Thru-hull	SIA 50
Transom	SIA 51
EX345	15-Foot Impeller Extension Cable
ACS50	Adapter Cable (2 SL30's to 1 Impeller)

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.

Paddle wheel and "O" Rings, SIA50	SCC Part Number 602001009A
Thru-hull Fitting, SIA50	SCC Part Number 590170123A
Dummy Plug Assembly, SIA50	SCC Part Number M16349001A
Paddle wheel and "O" Rings, SIA51	SCC Part Number 602002009A
Power Cable	SCC Part Number 250013017A
Flush Mount Panel Gasket	SCC Part Number 108007023A
Flush Mount Bracket Stud/Washer (2)	SCC Part Number 113001003A
Flush Mount Bracket Stud/Washer Screw (2)	SCC Part Number 569004022A
Flush Mount Mounting Bracket	SCC Part Number 160004020A
Flush Mount Mounting Nuts (2)	SCC Part Number 580010123A
Trunnion Screws (2)	SCC Part Number 154001016A
Trunnion Screw Washers (2)	SCC Part Number 581003030A
Trunnion Mounting Bracket	SCC Part Number 160003020A

4 INSTALLATION

4.1 SPEED LOG INSTALLATION

The speed log can be easily installed in different types of instrument panels, see Figures 2, 3, 4, and 5. To install, perform the following steps:

1. Select a suitable location for the instrument. The following are recommended: Controls of the instrument must be accessible to the user and electrical connections should be routed to the battery as directly as possible.

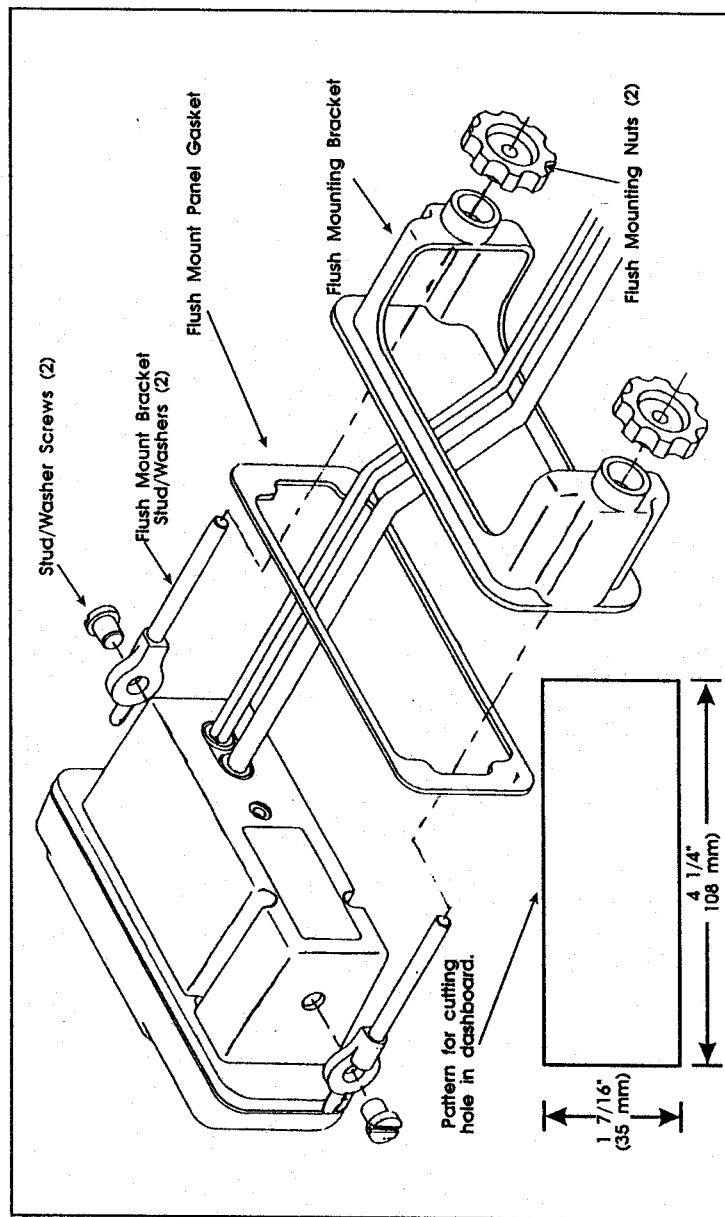


Figure 2. Rear Panel Flush Mount Installation

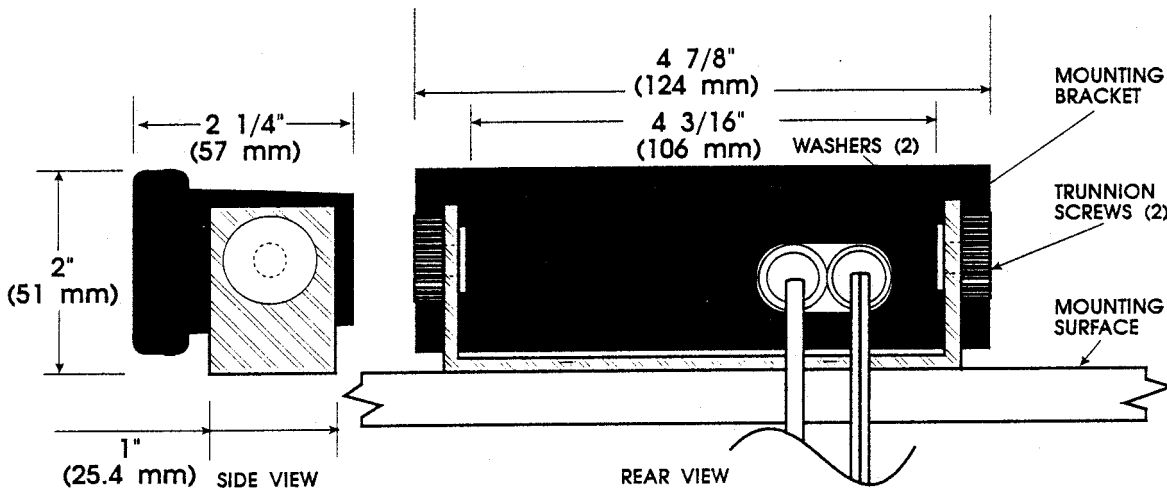


Figure 3. Trunnion Mount Dimensions

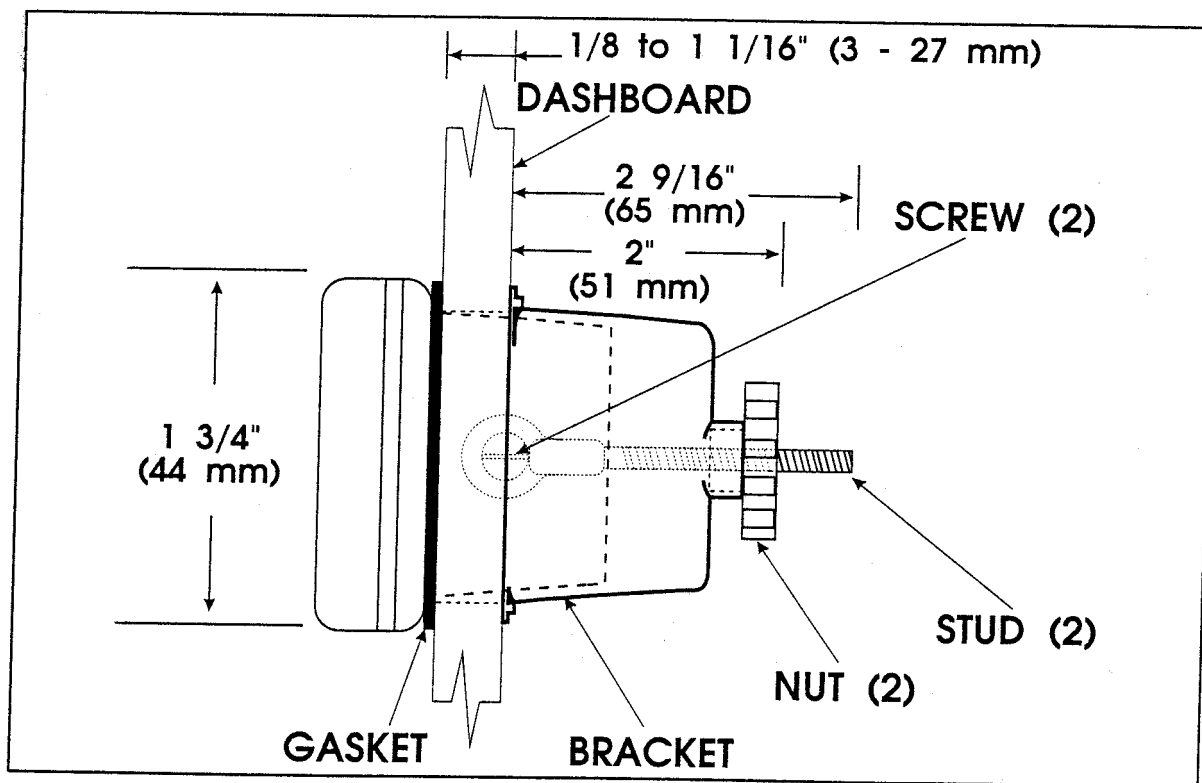


Figure 4. Flush Mount Dimensions

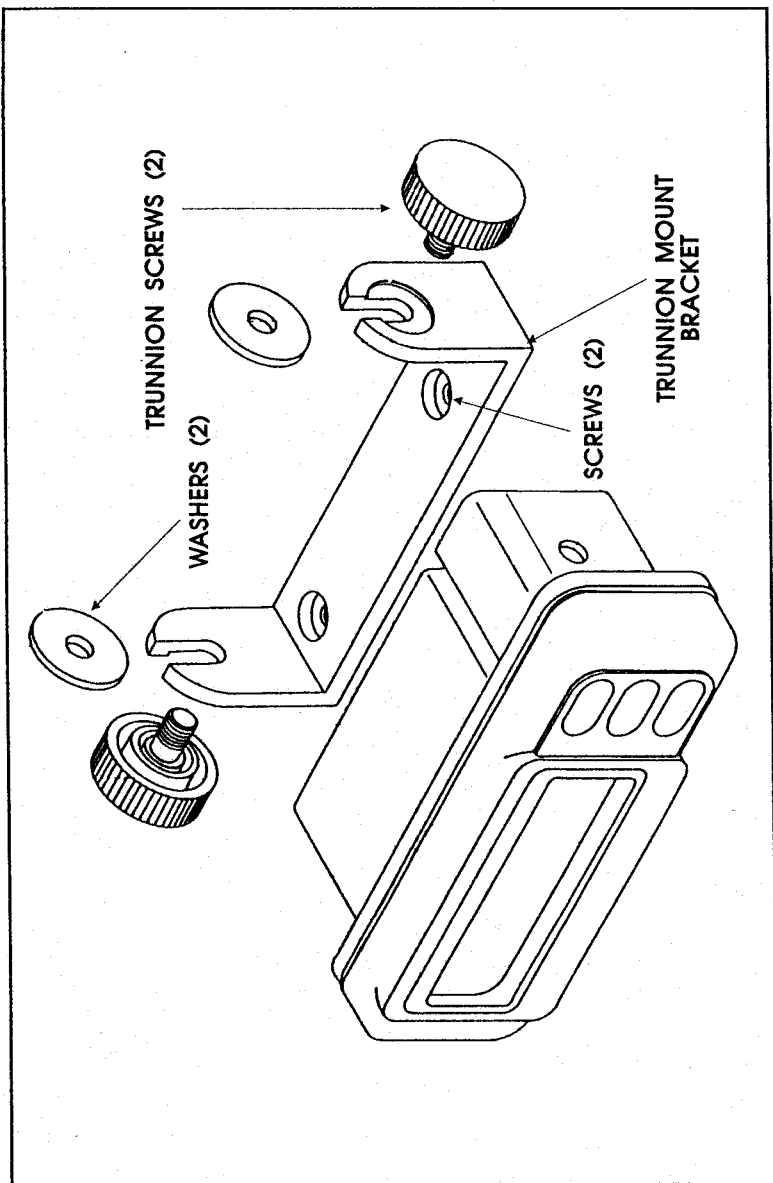


Figure 5. Trunion Mount Installation

2. Fasten the mounting bracket with the two mounting nuts.
3. 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. Connect the power cable to the 12 V power supply which is active whenever the ignition switch is on. The red lead of the power cable should be connected through a 1-ampere circuit breaker and an ON/OFF switch to the positive terminal of the power supply. The black lead should be connected to the negative terminal.

NOTE

If the impeller cable is not long enough to reach the instrument, a 15-foot extension cable, model EX345, may be added (see section 3).

4. Connect the 4-pin connector to the impeller.

4.2 IMPELLER INSTALLATION

Correct installation of the impeller is essential for optimum operation of the instrument. Transom-mount and through-hull impellers can be used with the SL30. See section 3 for a list of available impellers. Specific installation instructions come with each impeller. Select a location for the impeller using the following guidelines:

Non-aerated (bubble-free) water must flow across the impellers face at all speeds if good speed performance is to be achieved

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

It is wise to check the operation of the impeller before installation. To check; plug in the impeller, apply power to the instrument, spin the paddle wheel, and check the instrument for a speed/temperature reading.

Never position the impeller directly behind shafts, struts, fittings and depth transducers, since water turbulence in these areas can adversely affect speed performance.

If the boat has bottom paint and has been used, inspect for areas where paint erosion has taken place. Erosion is caused by turbulent waters and these areas are unsuitable impeller mounting locations.

Keep the impeller away from the engine to reduce electrical interference.

The paddle wheel of the impeller may be painted with a very thin coat of bottom paint to retard marine growth. Periodic removal and cleaning of the impeller is essential to maintain optimum speed performance.

4.2.1 Sailboats

On sailboats, the impeller should be mounted close to the centerline of the hull and ahead of the keel by 12 to 24 inches (300 to 600 mm) so that the flow disturbance caused by the keel does not affect the flow of water past the paddle wheel.

4.2.2 Powerboats

On inboard-outboards, impellers mounted close to the engine usually yield good results. On inboards, always mount the impeller well ahead of the propeller. Turbulence from propellers seriously degrades impeller performance.

On displacement hull powerboats (such as trawlers), the impeller should be mounted well aft and close to the keel to ensure that the impeller is in contact with the 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.

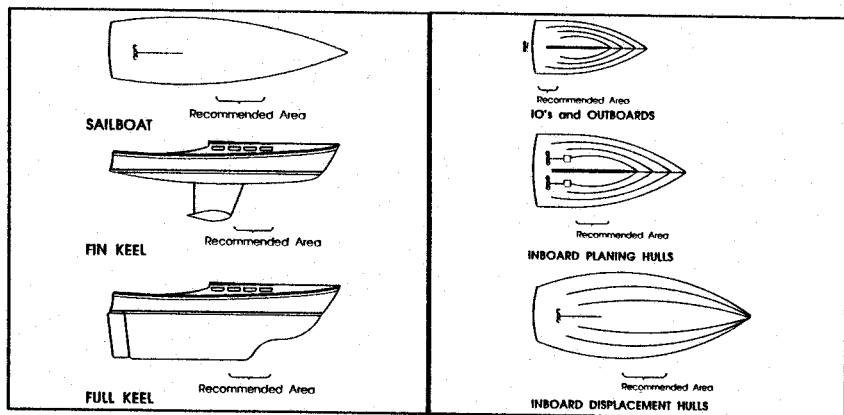


Figure 6. Sailboat Impeller Figure 7. Powerboat Impeller

4.2.3 Transom Installation

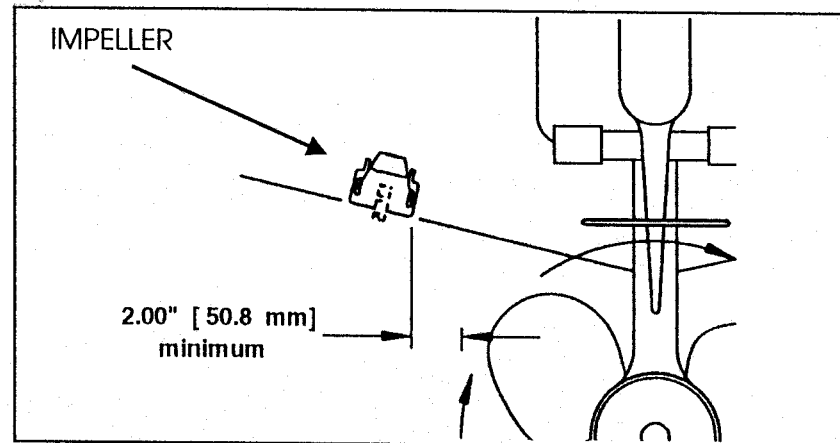


Figure 8. Transom Mount Impeller Location

NOTE

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

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

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

On single drive installations, mount the sensor 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 sensor at least 2 inches (50 mm) beyond the swing radius of the propeller.

4.3 OPTIONAL CONNECTIONS

4.3.1 Slave Operation

Two SL30 instruments may be used together using an optional cable (ACS50) to share one impeller, which will provide each instrument with speed/log and water temperature information.

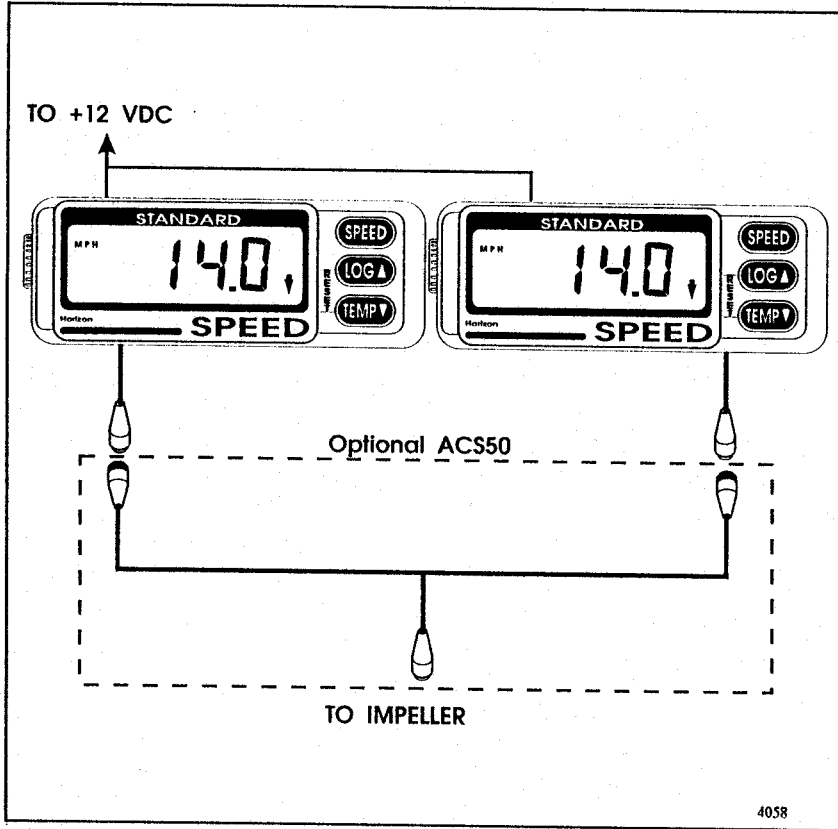
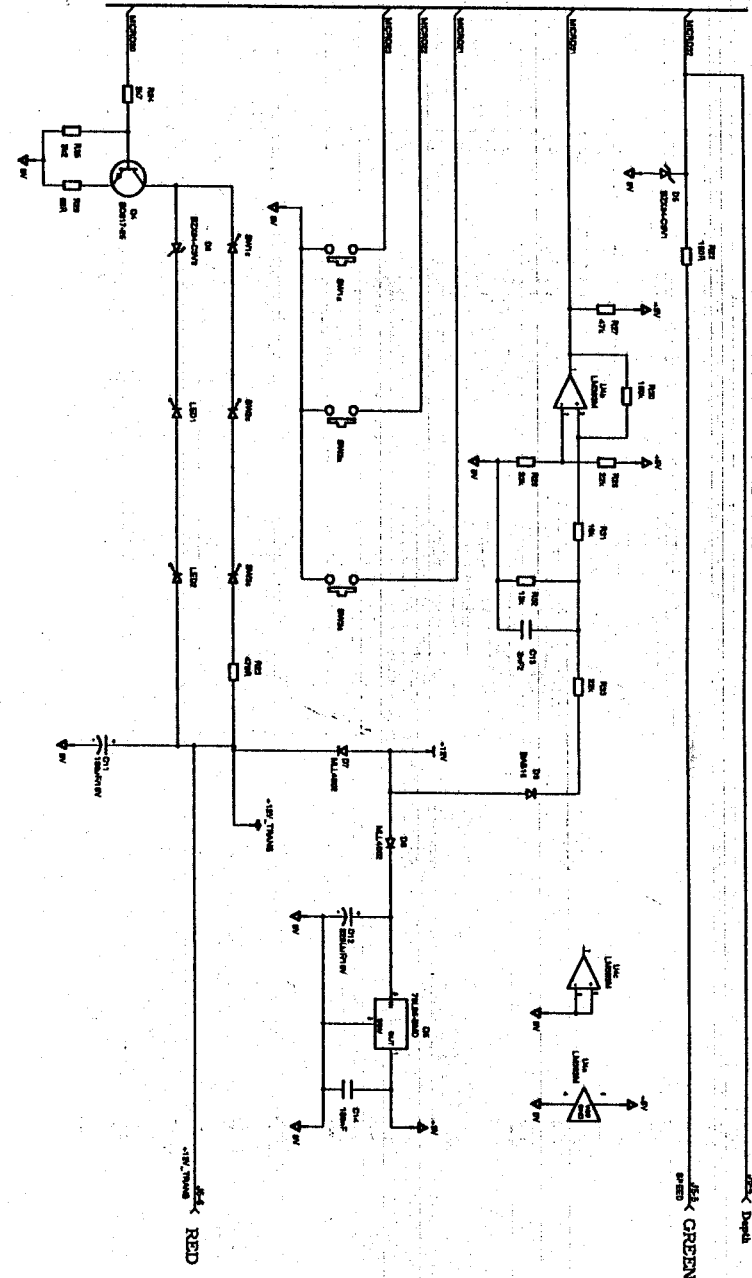
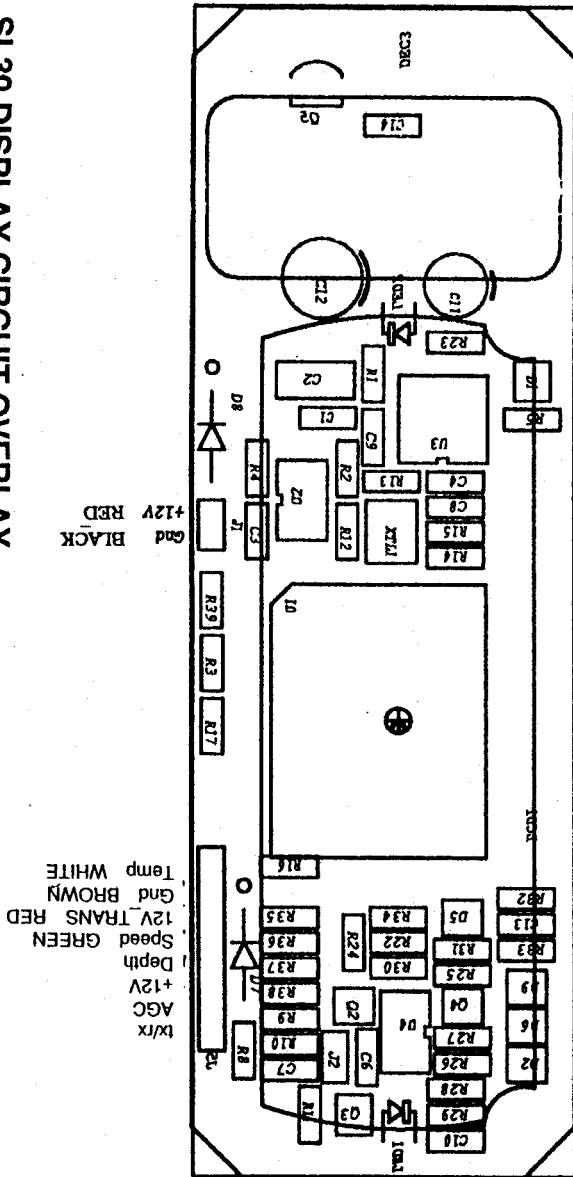


Figure 9. Slave Operation



SL30 DISPLAY CIRCUIT DIAGRAM PART 2



5

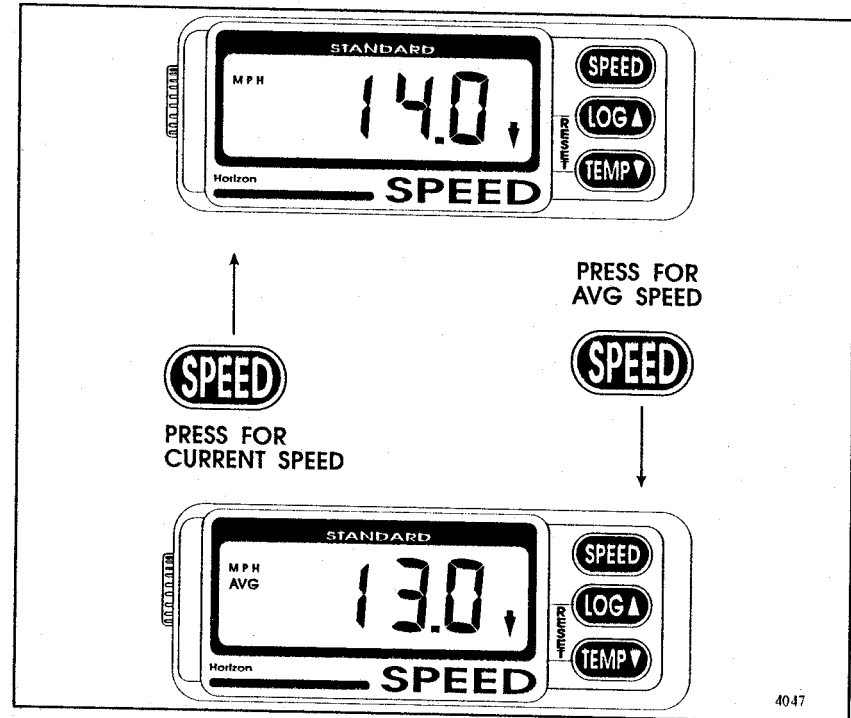
OPERATION

5.1 PRIMARY OPERATION

The units for speed (MPH or KTS), current speed, average speed, trip log, permanent log, and temperature can be selected and reset by the operator while the instrument is in the Primary mode.

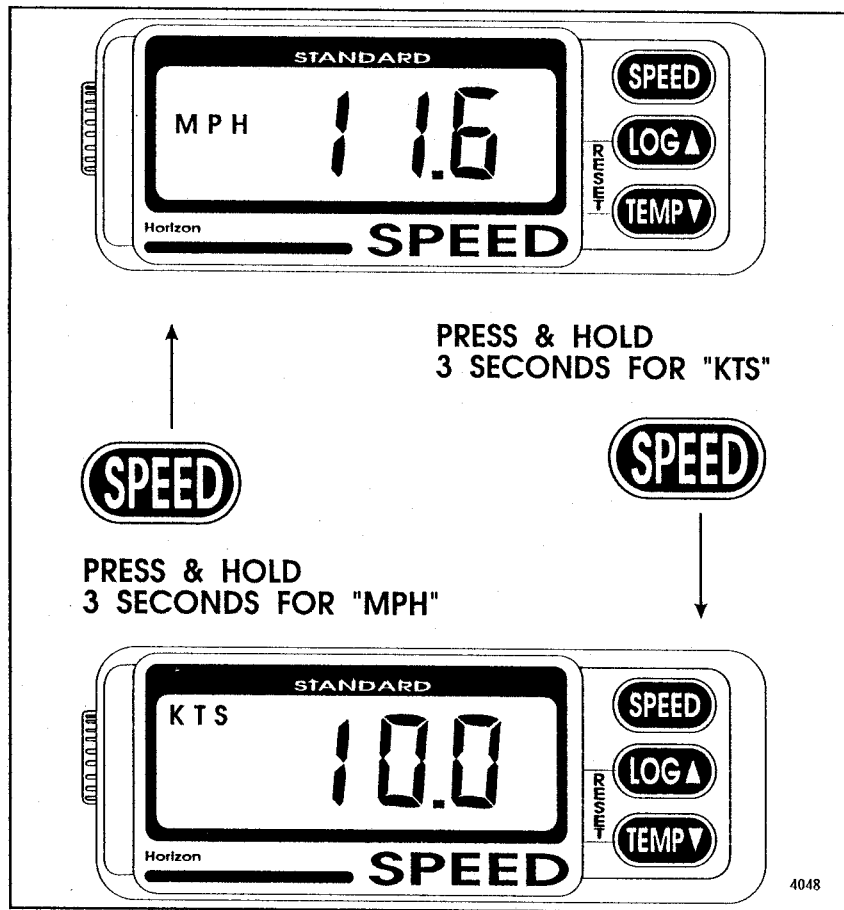
5.1.1 Select Speed, AVG., or Temperature

The instrument begins operation when power is applied. Speed is displayed. Press the **SPEED** key to change from current speed to "AVG." speed; press **SPEED** to change from "AVG." to current speed. The first reading after a RESET of "AVG" speed occurs after a 3-minute delay during which the display indicates "0.0".



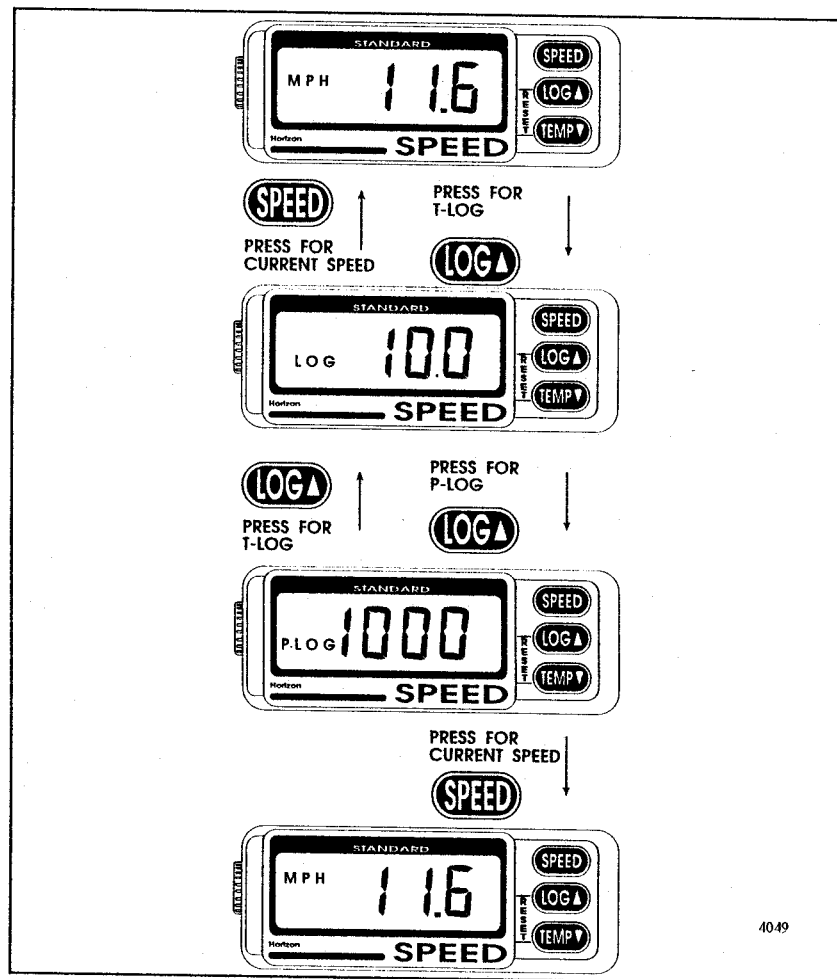
5.1.2 Select MPH or KTS

While the display is indicating speed in "MPH", press the **SPEED** key and hold for three seconds to change the indication to speed in "KTS"; when "KTS" are displayed, hold the **SPEED** key for three seconds to change to "MPH". When "MPH" is displayed the log readings are in statute miles. With "KTS" displayed, the log readings are in nautical miles.



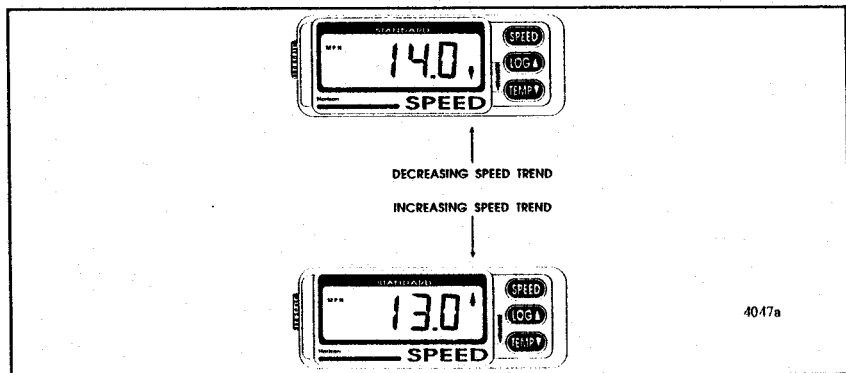
5.1.3 Select T-LOG or P-LOG

Press the **LOG** key to select the display indication for the permanent log "P-LOG"; press **LOG** again to return to the trip log "LOG". Press the **SPEED** key to return to the speed display.



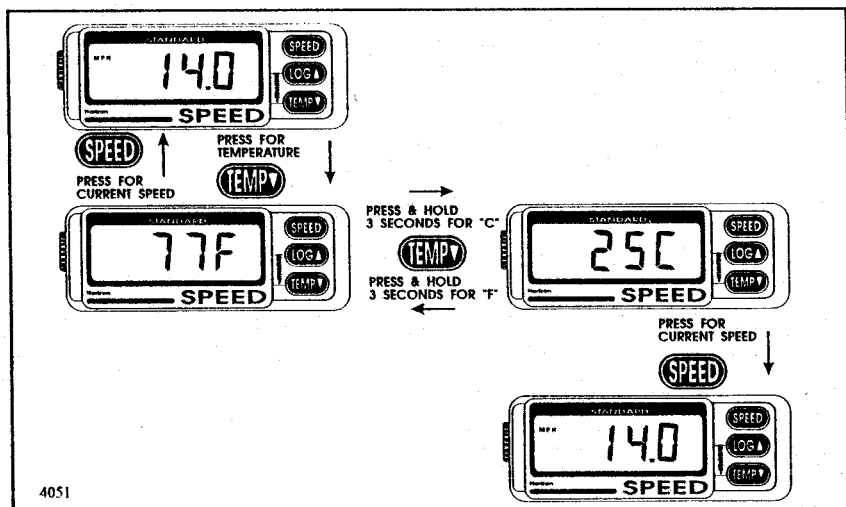
5.1.4 Speed Trend Indicators

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



5.1.5 Select Temperature units

Press the **TEMP** key and hold for three seconds. Press the **SPEED** key to return to the speed display.



5.1.6 Reset AVG., T-LOG

Select either "AVG.", "LOG" to reset. Press and hold the **LOG/TEMP** keys for three seconds to RESET.

5.1.7 Reset P-LOG

Select P-LOG. Press and hold the **LOG/TEMP** keys for 15 seconds to RESET.

5.2 SECONDARY OPERATION

The Secondary mode provides the capability for the operator to calibrate, adjust, or change units of the operating displays of the Primary mode: the temperature, log, and speed readings can be calibrated; the light intensity of the lamps can be adjusted; the speed display can be set to tenths or hundredths for readings below 20 units. The Secondary displays are listed below:

- Lamp intensity adjust
- Speed Calibration
- LOG calibration
- Temperature calibration
- Speed/log tenths or hundredths units select.

5.2.3 Calibrate Log

Either MPH or KTS may be selected for calibration.

NOTE

Performing LOG calibration automatically calibrates speed readings.

If performed under ideal conditions, this method of calibration offers very good accuracy. An instructive chart follows the step-by-step instructions.

CAUTION

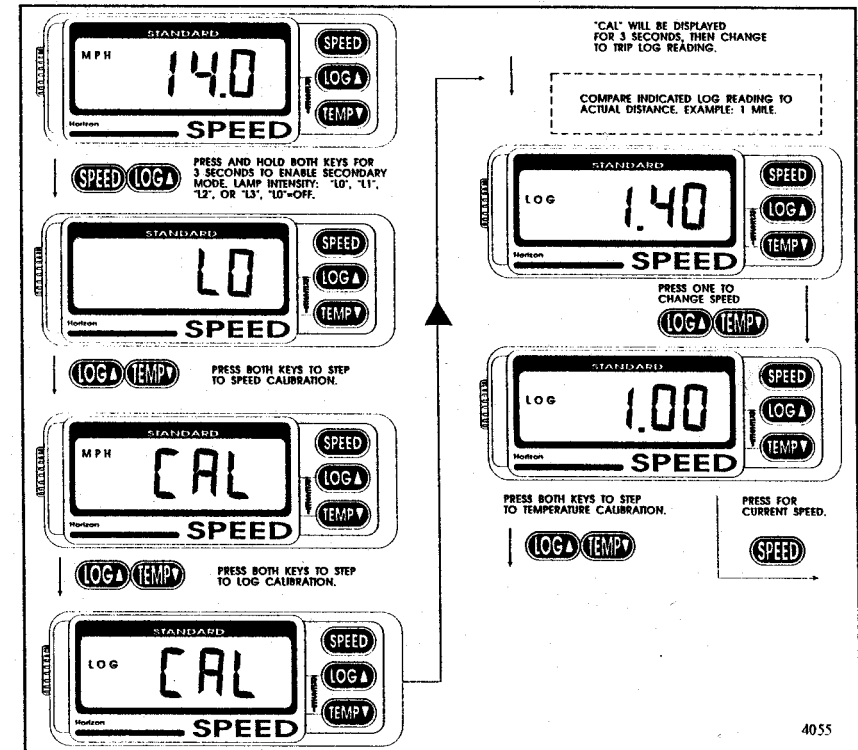
If this procedure is performed in an area with tidal flow, it is advisable to cover the course in both directions, record the total distance and then divide by two. This will remove any error introduced by tidal flow. If possible perform this procedure in an area with no tidal flow or slack water.

1. Select two points on a chart between which you can travel.
2. Measure on the chart the distance between these two points.
3. If the chart is published in nautical miles, select "KTS" as the unit of measure for speed. If statute miles is the unit of measure, select MPH as the unit of measure for speed.
4. Press and hold for three seconds the **SPEED**/**LOG** keys to select the Secondary mode. The lamp intensity level "L0", "L1", "L2", or "L3" will be displayed.
5. Press **LOG**/**TEMP** keys again momentarily to step to the speed calibration function. "MPH" or "KTS" and "CAL" will be displayed.
6. Press **LOG**/**TEMP** keys again momentarily to step to the log calibration function. The "LOG" "CAL" display will be present for three seconds, then "LOG" and the trip log reading will be displayed.
7. If the trip log reading is not zero, press and hold the **LOG**/**TEMP** keys for three seconds to reset the trip log and start the calibration process/distance run. To abort the calibration, press the **SPEED** key to exit to the boat speed display.

8. If, after completing the log run, the distance on the chart is less than or greater than the displayed distance, adjust the trip log reading to the correct value (rounded off to the units displayed) by pressing either the **LOG** or **TEMP** key.
9. Press the **SPEED** key to save and exit the calibration or press the **LOG**/**TEMP** keys to advance to the temperature calibration mode.

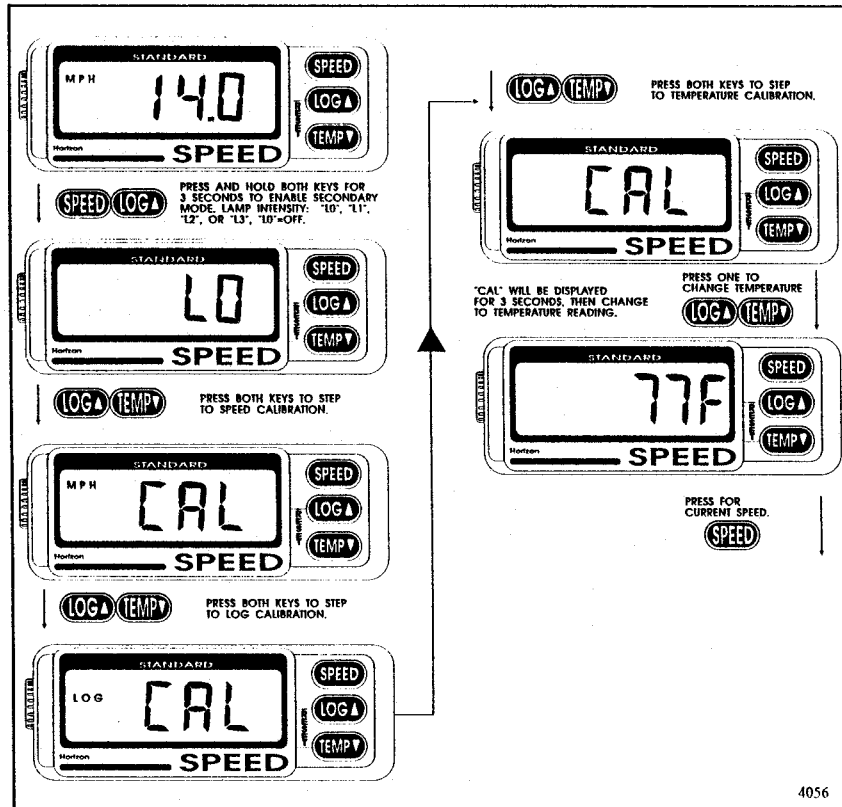
NOTE

After calibration, the trip log and average speed will be reset to zero.



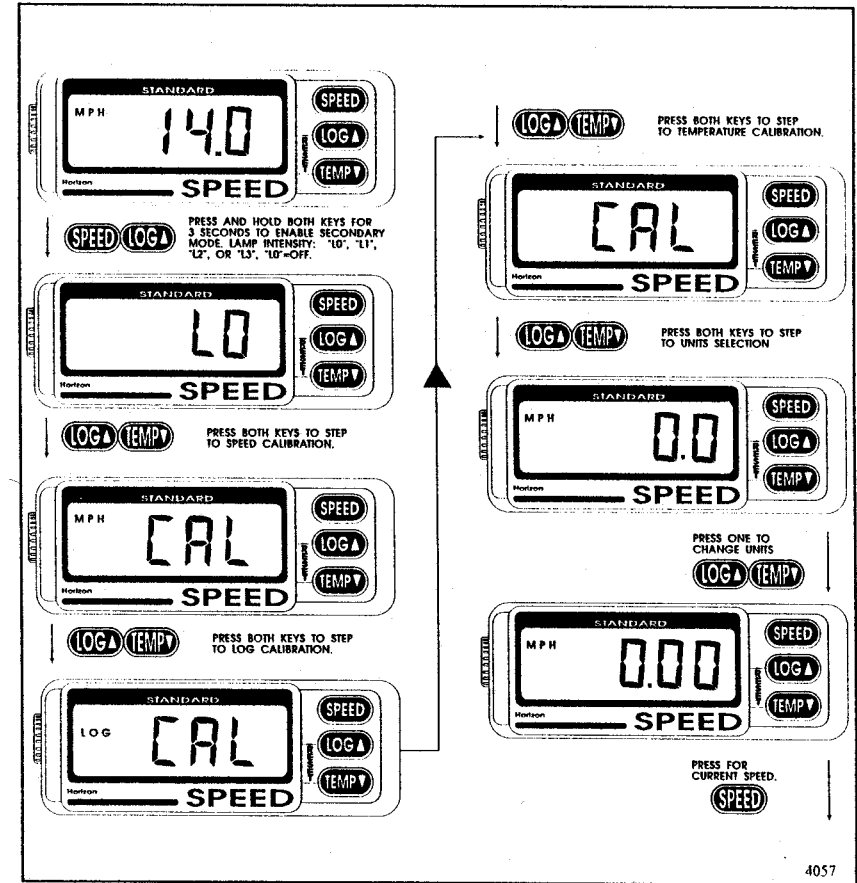
5.2.4 Calibrate Temperature

Press the **SPEED**/**LOG** keys and hold for three seconds, one of the lamp intensity levels "L0", "L1", "L2", or "L3" will be displayed. Press **LOG**/**TEMP** keys momentarily to step to the speed calibration function; "MPH" or "KTS" and "CAL" will be displayed. Press the **LOG**/**TEMP** keys, the "LOG" and "CAL" symbols will be displayed. Press the **LOG**/**TEMP** keys; "CAL" will be displayed and then the display will change to show temperature units "°F" or "°C". Scroll up with the **LOG** key or down with the **TEMP** key to correct the temperature reading that appears after about three seconds. Press **SPEED** to return to the speed display or press the **LOG**/**TEMP** keys to advance to the units selection mode



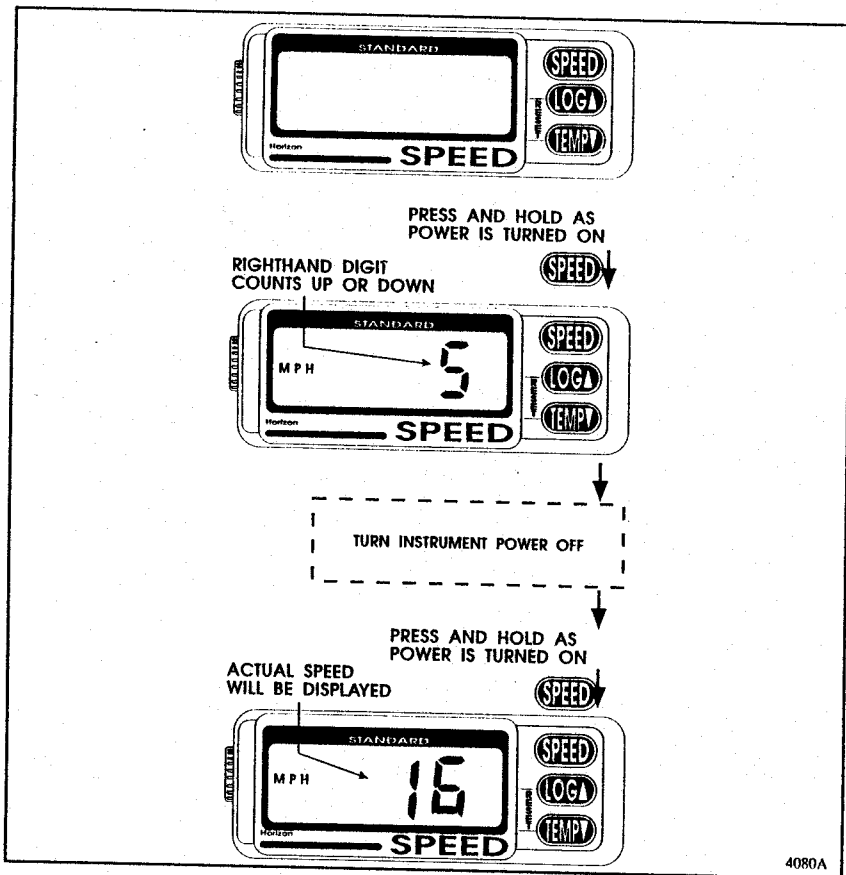
5.2.5 Select Units for Speed & Log

The units in the speed and log modes may be set to tenths or hundredths. Press the **SPEED**/**LOG** keys and hold for three seconds, one of the lamp intensity levels "L0", "L1", "L2", or "L3" will be displayed. Press the **LOG**/**TEMP** keys, the speed "MPH" or "KTS" and "CAL" symbols will be displayed. Press the **LOG**/**TEMP** keys, the "LOG" and "CAL" symbols will be displayed. Press the **LOG**/**TEMP** keys, temperature "CAL" will be displayed. Press the **LOG**/**TEMP** keys, "0.0" or "0.00" will be displayed; press the **LOG** or **TEMP** key to select. Press **SPEED** to return to the speed display.



5.3 SIMULATION

Simulation is a feature used to demonstrate the operation of the instrument. The owner may activate the simulation mode by holding the **SPEED** key down and turning on power to the instrument. Simulation is in operation when the right-hand digit of the display counts up or down one digit at a time. To disable the simulation mode, turn off the power and hold the **SPEED** key down as power is turned on.



6

MAINTENANCE

6.1 INSTRUMENT

Your instrument is designed for years of trouble-free operation assuming proper installation and care of the unit are provided. Following the installation and operation 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

6.2 IMPELLER

It may be necessary to paint the through-hull, paddle wheel and impeller shaft with anti-fouling paint in high-growth areas. Use mineral-spirits based paint (not ketone-based paint). To remove growth, use a stiff brush or putty knife. Wet sand the impeller face with #220 or finer grade sandpaper to remove smaller growth.

7

SPECIFICATIONS

Size

Dimensions	4.875W x 2.25D x 2H inches (124W x 57D x 51H mm)
Mounts.	Flush/Trunnion
Flush Mount	4.25 x 1.375 inch (108 x 35 mm) hole
Depth behind panel	2.25 inch (57 mm)
Display	Liquid Crystal
	3 1/2 digit numeric 0.75 in. (19 mm) high, 5 alpha icons

Color	Black or White
Back lighting	Diffused, display/keypad
Water Integrity	Front will withstand direct spray
Impeller	
SIA50	22,000 pulses/nautical mile
SIA51	20,500 pulses/nautical mile
Speed Range	0 to 58 mph or 50 knots
	0.0 to 19.9 knots read in tenths
	or 0.0 to 19.99 read in hundredths
	20 to 50 (58 MPH) read in whole numbers
TRIP-LOG Range ..	0 to 1999 Statute or Nautical miles, non-volatile, resettable
	(0.00 to 19.99 read in hundredths
	20.0 to 99.9 read in tenths
	100 to 1999 read in whole numbers)
	non-volatile, resettable
PERMANENT-LOG Range	0 to 1999 Statute or Nautical miles
	(0.0 to 99.9 read in tenths,
	20 to 1999 read in whole numbers)
	non-volatile, resettable
Sea temperature Sensor	10 kohm thermistor at 77°F (25°C)
Sea temperature Range	32.0° to 99.9°F (0 to 37.7°C)
Operating Voltage	13.8 VDC ± 20%
Operating Temperature	32° to 122 °F (0 to 50°C)
Current Drain	60 mA nominal.
RF Interference	< 6 dB Quieting on any marine radio channel
	(with 3 dB gain antenna) within 1 meter of the SL30.

8

TROUBLE SHOOTING

8.1 SPEED/LOG

Speed and distance selections are displayed on the LCD display based on calculations made by the instrument microcomputer. As the boat moves forward through the water, the paddle on the impeller rotates. Magnets in alternating blades of the paddle rotate past a hall-effect device potted in the body of the impeller. Each time a magnet passes the hall-effect device, the device generates a pulse which it sends to the microcomputer. The microcomputer then converts the pulses to miles per hour or knots depending on the units selected for the instrument.

Distance is calculated based on the speed and time, provided by the internal clock of the instrument.

8.2 TEMPERATURE

A temperature-sensitive device called a thermistor is mounted in the impeller body. As the water and thermistor change temperature, the electrical resistance changes. This change is recognized by the microcomputer and accurate temperature is displayed on the LCD.

8.3 TROUBLE SHOOTING CHART

PROBLEM	SOLUTION
No Display	Check DC power connections with voltmeter.
No Speed or Log Reading	Check and make sure that the paddle wheel on the impeller is not stuck or fouled with growth.
Inaccurate Speed Readings	Re-calibrate. Check paddle wheel for fouling.

Erratic Speed Readings with Engine Running	<p>Reroute DC and impeller cables away from engine, ignition wire, and battery cables.</p> <p>Add feed-through filter capacitor on the positive terminal of the ignition coil.</p> <p>Add alternator whine filter to alternator.</p> <p>Replace spark plugs or spark plug wires with resistive type.</p>
Erratic Speed Reading	<p>Check and make sure that the impeller is situated fore and aft correctly in the through-hull.</p> <p>Review the installation for possible erratic water flow over the impeller.</p>
No, or Inaccurate Temperature Reading	Check calibration.
Impeller Cable Not Long Enough	Add extension cable to increase cable length.