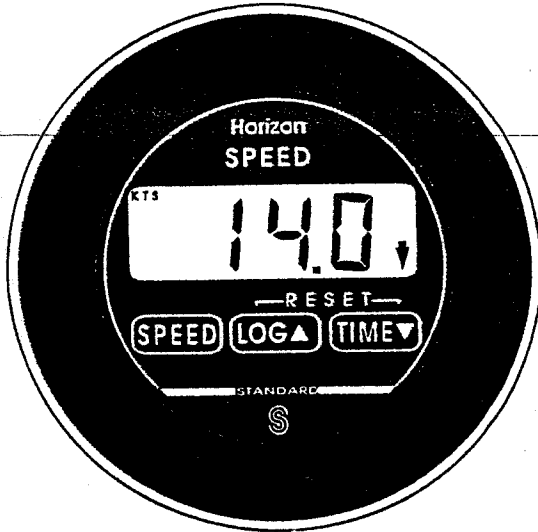


Horizon SL45

Digital Speed Log

Owner's Manual



Standard
Communications

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 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 to 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 to 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. _____

GENERAL INFORMATION	1
INTRODUCTION	1
FRONT PANEL	2
REAR PANEL	2
CONTROLS & CONNECTIONS	2
ACCESSORIES	6
PROVIDED WITH INSTRUMENT	6
OPTIONAL	6
REPLACEMENT PARTS	7
INSTALLATION	7
SPEED LOG INSTALLATION	7
IMPELLER INSTALLATION	9
General	10
Sailboats	11
Powerboats	11
Transom Installation	11
OPTIONAL CONNECTIONS	12
Slave Operation	12
Speed Output for Dead Reckoning	13
OPERATION	14
SIMULATION	14
PRIMARY OPERATION	14
Select Speed, AVG., VMG, or Temperature	15
Select MPH or KTS	16
Select T-LOG or P-LOG	16
Speed Trend Indicators	17
Five Minute Countdown	17
Ten Minute Countdown	17
Select Trip Timer	19
Reset AVG., T-LOG, Countdown and Trip Timer	19
Reset P-LOG	19
SECONDARY OPERATION	20
Select Lamp Intensity	20
Calibrate Speed	21
Calibrate Log	22
Select Temperature Units	26
Calibrate Temperature	27
Select Units for Speed & Log	28

MAINTENANCE	29
INSTRUMENT	29
IMPELLER	29
SPECIFICATIONS	30
TROUBLE SHOOTING	31
SPEED/LOG	31
TEMPERATURE	31
TROUBLE SHOOTING CHART	32
FIGURES	
1. Front Panel	3
2. Rear Panel	3
3. Mounting Dimensions	8
4. Instrument Installation	8
5. Powerboat Impeller	10
6. Sailboat Impeller	10
7. Transom Mount Impeller Location	12
8. Slave Operation	13
9. Speed Output for Dead Reckoning	13
10. SL45 Simulation Mode	14
11. Speed, AVG, VMG or Temperature Selection	15
12. MPH or KTS Selection	16
13. T-LOG or P-LOG Selection	16
14. Speed Trend Indicators	17
15. Five Minute Countdown	18
16. 10 Minute Countdown	18
17. Trip Timer	19
18. Lamp Intensity Selection	21
19. Speed Calibration	22
20. Log Calibration	25
21. Temperature Unit Selection	26
22. Temperature Calibration	27
23. Speed and Log Unit Selection	28

1	GENERAL INFORMATION
----------	----------------------------

1.1 INTRODUCTION

The SL45 is a high-quality digital speed log instrument with a 5-inch round face plate. It mounts into a 4-inch diameter instrument hole. 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 over the last three minutes. Trend arrows indicate if speed is increasing or decreasing.
- Velocity Made Good (VMG) available - only with WS45 connected.
- Sea temperature readings from 32° to 100° 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.
- Racing 5 or 10 minute countdown timer with warning bells (tone beeps).
- Trip timer: accumulates elapsed time regardless of the mode the instrument is in, until reset, or power is removed. The trip time reading is retained even when power is off.
- Speed and temperature readings can be re-calibrated as necessary for accuracy. Calibration is accomplished using the front panel keys.
- The SL45 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 one of the three modes: AVG., VMG, or 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. Audible and tactile feedback is provided to indicate when a key is pressed.

1.3 REAR PANEL

The rear panel contains a 3 1/2-foot, 12 VDC power cable with sheathed, stripped and tinned red and black wires. A 5-pin connector and a 4-pin connector are attached to the instrument. The 5-pin connector connects to a WS45 Wind Instrument to provide VMG. The 4-pin connector is used for impeller and temperature sensor (thermistor) connection.

NOTE

Two SL45 instruments may be connected to one impeller by using adapter cable ACS50.

2 CONTROLS & CONNECTIONS

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

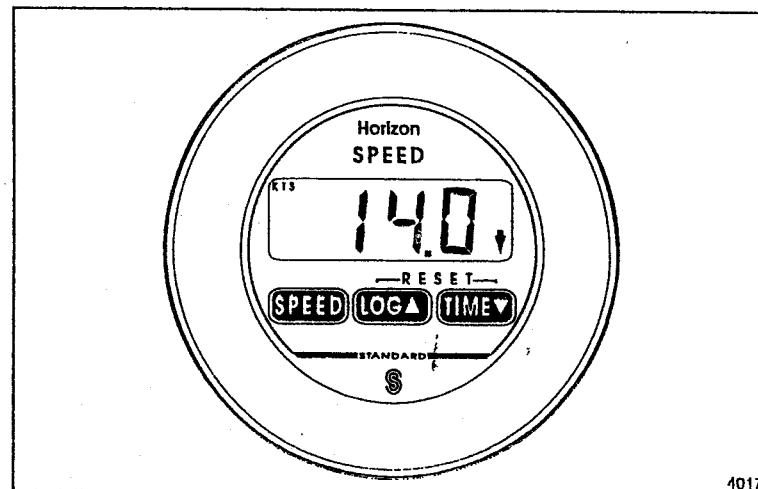


Figure 1. Front Panel

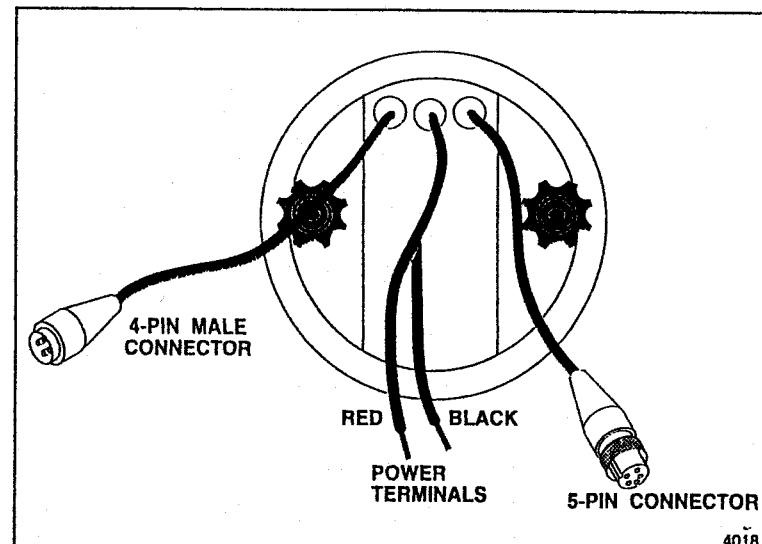


Figure 2. Rear Panel

The three keys are labeled **(SPEED)**, **(LOG)**, and **(TIME)**. The arrowheads indicate the capability of increasing or decreasing the displayed quantity or of choosing among selections for display.

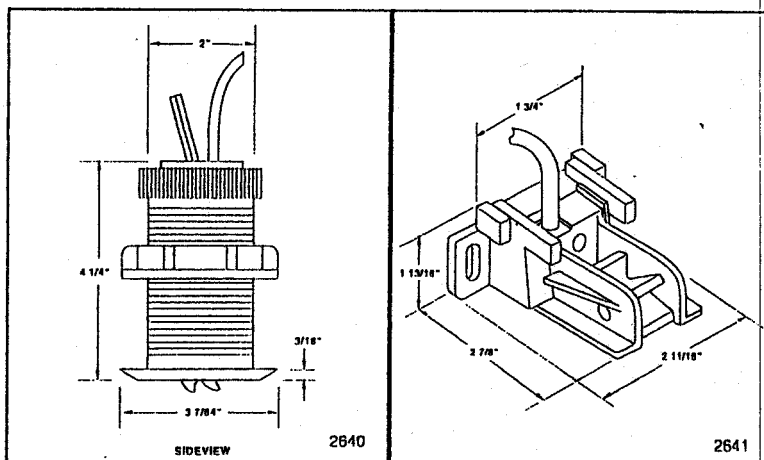
OPERATING CONTROLS															
KEY	FUNCTION														
(SPEED)	Hold the (SPEED) key for three seconds to select "MPH" or "KTS". Press the (SPEED) key to select one of four indications: actual speed, "AVG.", "VMG" (active only with WS45), or sea temperature (if activated).														
(LOG)	Press the (LOG) key to select "LOG" or "P-LOG".														
(TIME)	<p>Press (TIME) to select the countdown timers. The display will alternate between "5UP" and "10dn"</p> <p>*5UP*=Five minute countdown timer. *10dn*=10 minute countdown timer:</p> <table border="0"> <tr> <td>Press to select "5UP": (LOG)</td> <td>Display shows: "5.00"</td> <td>Press to start: (TIME)</td> </tr> <tr> <td colspan="3">or</td> </tr> <tr> <td>Press to select "10dn": (TIME)</td> <td>Display shows: "10.00"</td> <td>Press to start: (TIME)</td> </tr> </table> <p>-----</p> <p>To select trip time:</p> <table border="0"> <tr> <td>Hold for 3 seconds: (TIME)</td> <td>Display shows: "0.00"</td> <td>Press to start: (TIME)</td> </tr> </table>			Press to select "5UP": (LOG)	Display shows: "5.00"	Press to start: (TIME)	or			Press to select "10dn": (TIME)	Display shows: "10.00"	Press to start: (TIME)	Hold for 3 seconds: (TIME)	Display shows: "0.00"	Press to start: (TIME)
Press to select "5UP": (LOG)	Display shows: "5.00"	Press to start: (TIME)													
or															
Press to select "10dn": (TIME)	Display shows: "10.00"	Press to start: (TIME)													
Hold for 3 seconds: (TIME)	Display shows: "0.00"	Press to start: (TIME)													
RESET (LOG) (TIME)	To reset, choose either "AVG.", "LOG", countdown or elapsed time; press and hold the (LOG) (TIME) keys for three seconds. To reset the permanent log, choose P-LOG and press and hold the (LOG) (TIME) keys for 15 seconds.														

OPERATING CONTROLS							
KEY	FUNCTION						
(SPEED) (LOG)	Press both (SPEED) (LOG) keys and hold for three seconds to enable the secondary mode which includes lamp intensity, speed calibration, temperature units select, temperature calibration, and displayed units in tenths or hundredths. Scroll to adjust.						
"LO"=off, "L1", "L2", "L3"	<table border="0"> <tr> <td></td> <td>Scroll</td> <td>Exit</td> </tr> <tr> <td></td> <td>(LOG) (TIME)</td> <td>(SPEED)</td> </tr> </table>		Scroll	Exit		(LOG) (TIME)	(SPEED)
	Scroll	Exit					
	(LOG) (TIME)	(SPEED)					
(SPEED) (LOG)	Press both keys to step to Speed Calibration.						
"CAL"	<table border="0"> <tr> <td></td> <td>Scroll</td> <td>Exit</td> </tr> <tr> <td></td> <td>(LOG) (TIME)</td> <td>(SPEED)</td> </tr> </table>		Scroll	Exit		(LOG) (TIME)	(SPEED)
	Scroll	Exit					
	(LOG) (TIME)	(SPEED)					
(SPEED) (LOG)	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) (TIME)</td> <td>(SPEED)</td> </tr> </table>		Scroll	Exit		(LOG) (TIME)	(SPEED)
	Scroll	Exit					
	(LOG) (TIME)	(SPEED)					
(SPEED) (LOG)	Press both keys to step to Temperature Units.						
"F", "C", "OFF"	<table border="0"> <tr> <td></td> <td>Scroll</td> <td>Exit</td> </tr> <tr> <td></td> <td>(LOG) (TIME)</td> <td>(SPEED)</td> </tr> </table>		Scroll	Exit		(LOG) (TIME)	(SPEED)
	Scroll	Exit					
	(LOG) (TIME)	(SPEED)					
(SPEED) (LOG)	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) (TIME)</td> <td>(SPEED)</td> </tr> </table>		Scroll	Exit		(LOG) (TIME)	(SPEED)
	Scroll	Exit					
	(LOG) (TIME)	(SPEED)					
(SPEED) (LOG)	Press both keys to step to Tenths or Hundredths Select.						
"0.0", "0.00"	<table border="0"> <tr> <td></td> <td>Scroll</td> <td>Exit</td> </tr> <tr> <td></td> <td>(LOG) (TIME)</td> <td>(SPEED)</td> </tr> </table>		Scroll	Exit		(LOG) (TIME)	(SPEED)
	Scroll	Exit					
	(LOG) (TIME)	(SPEED)					
(SPEED) (LOG)	Press both keys — Exit						

3.1 PROVIDED WITH INSTRUMENT

- Power Cable
- Panel Gasket
- Dust Cover
- Mounting Bracket
- Mounting Bracket Nuts (2)

3.2 OPTIONAL



SIA50

Low Profile Through-hull
Impeller With 30-foot Cable

SIA51

Transom Mount Impeller
With 30-foot Cable

Impellers:

Through-hull.....	SIA50
Transom	SIA51
EX345	15-Foot Impeller Extension Cable
ACS50.....	Adapter Cable (2 SL45s to 1 Impeller)
ACN50.....	NMEA0183 Adapter Cable

3.3 REPLACEMENT PARTS

The following parts may be ordered from the SCC Parts Department. To order, call Toll-free Number: 1-800-366-8431.

PART	SCC PART NUMBER
Paddle wheel and "O" Rings, SIA50.....	602001009A
Through-hull Fitting, SIA50	590170123A
Dummy Plug Assembly, SIA50	M16349001A
Paddle wheel and "O" Rings, SIA51.....	602002009A
Power Cable	250013017A
Panel Gasket	108006023A
Dust Cover	Model DC45
Mounting Bracket.....	160002020A
Mounting Nuts (2)	580010223A

4

INSTALLATION

4.1 SPEED LOG INSTALLATION

The speed log can be easily installed in different types of instrument panels. To install, perform 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 should be routed to the battery as directly as possible.
 - The space behind the instrument panel must have a depth of at least two inches for mounting and access to wires.

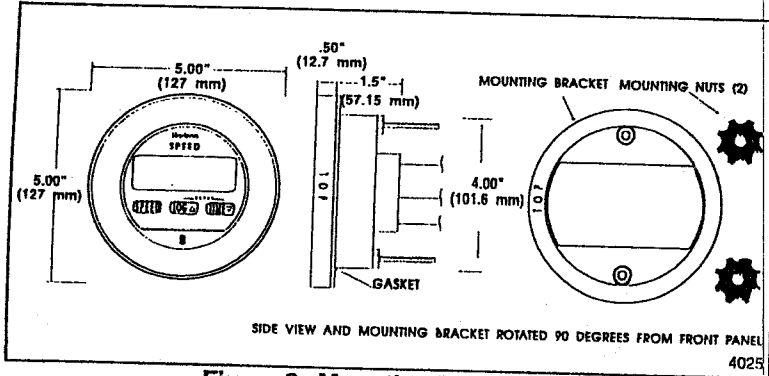


Figure 3. Mounting Dimensions

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 mounting bracket from the rear of the panel with the two mounting nuts.

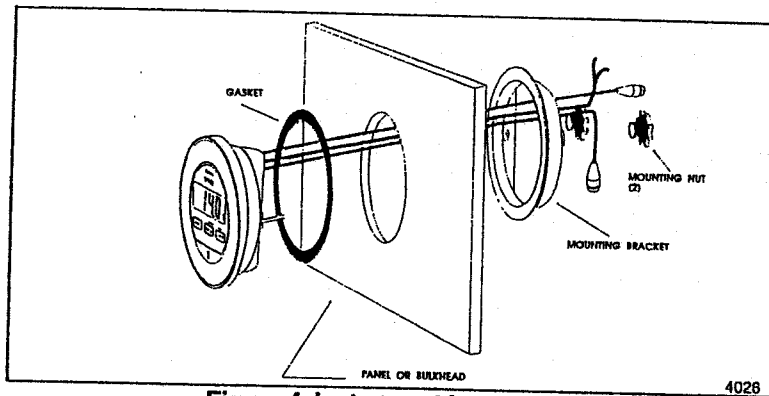


Figure 4. Instrument Installation

5. Connect the 4-pin connector to the impeller.
6. Connect the 5-pin connector to the WS45 Wind Instrument if available.
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. 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.

4.2 IMPELLER INSTALLATION

Transom-mount and through-hull impellers can be used with the SL45. See section 3 for a list of available impellers. Specific installation instructions come with each impeller.

CAUTION

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

NOTE

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.

4.2.1 General

Correct installation of the impeller is essential for optimum operation of the instrument. 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.
- 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.

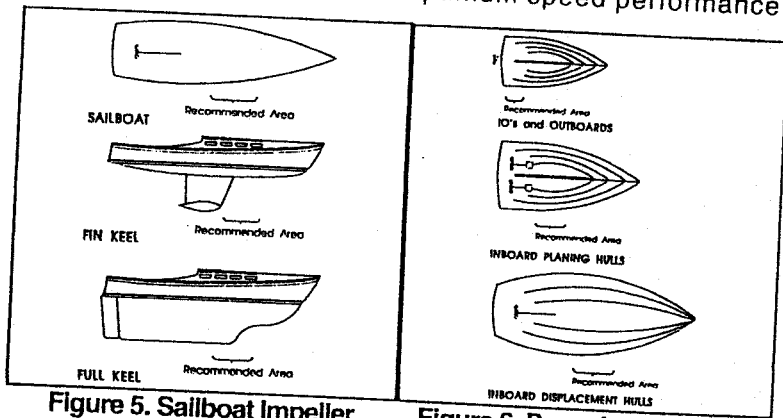


Figure 5. Sailboat Impeller

Figure 6. Powerboat Impeller

2000

2001

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).

4.2.2 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.

4.2.3 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.

4.2.4 Transom Installation

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.

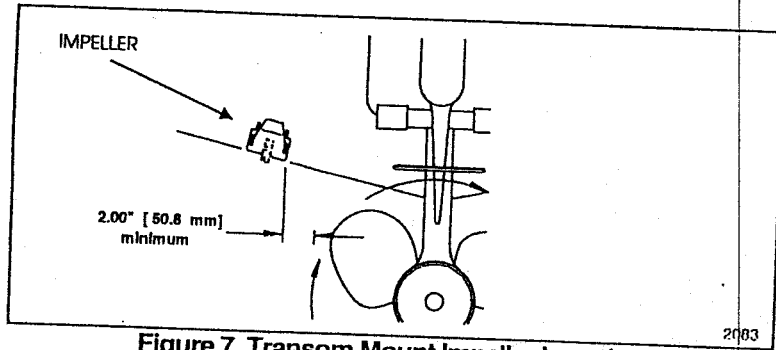


Figure 7. Transom Mount Impeller Location

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.

4.3 OPTIONAL CONNECTIONS

4.3.1 Slave Operation

Two SL45 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. See Figure 8.

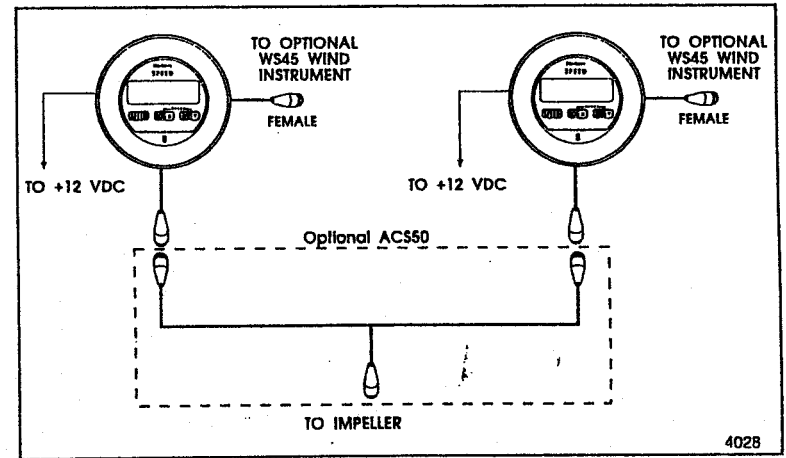


Figure 8. Slave Operation

4.3.2 Speed Output for Dead Reckoning

Speed information in NMEA0183 format is available for connection to a TRANSIT or SATNAV receiver for purposes of dead reckoning during period of absence of satellites. It requires the use of an optional ACN50 cable. See Figure 9.

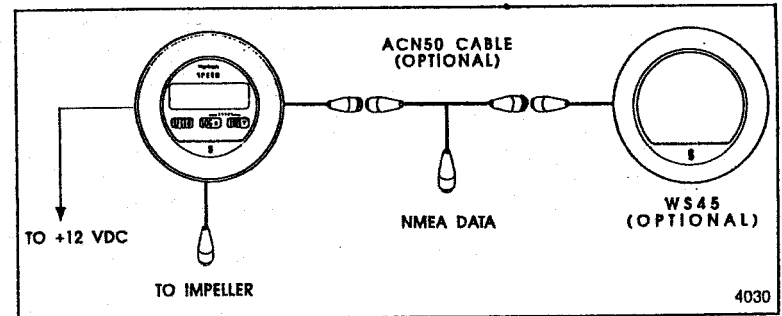


Figure 9. Speed Output for Dead Reckoning

5.1 SIMULATION

Simulation is a feature used to demonstrate the operation of the instrument. In the simulation mode, the digits on the display randomly counts up or down.

To activate the simulation mode (Refer to Figure 10.)

1. Press and hold the **SPEED** key while turning on the power of the instrument.
2. The display will start counting randomly. To disable the simulation mode, turn off the power and then press and hold the **SPEED** key while turning on the power again. The display will revert to "0.0".

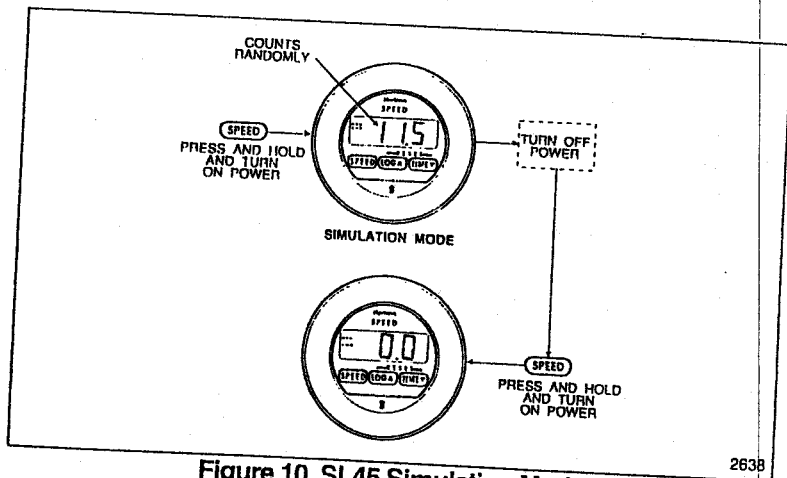


Figure 10. SL45 Simulation Mode

5.2 PRIMARY OPERATION

The units for speed (MPH or KTS), current speed, average speed, VMG, trip log, permanent log, temperature, count-

down, and trip timers can be selected and reset by the operator while the instrument is in the Primary mode.

5.2.1 Select Speed, AVG., VMG, 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 "VMG" (available only with WS45). Press **SPEED** to change to temperature in °F, or °C (if temperature is OFF, current speed will be displayed). If temperature is selected, press **SPEED** to display current speed. See Figure 11.

NOTE

The temperature display, either °F, °C, or OFF, is selected in the Secondary Mode.

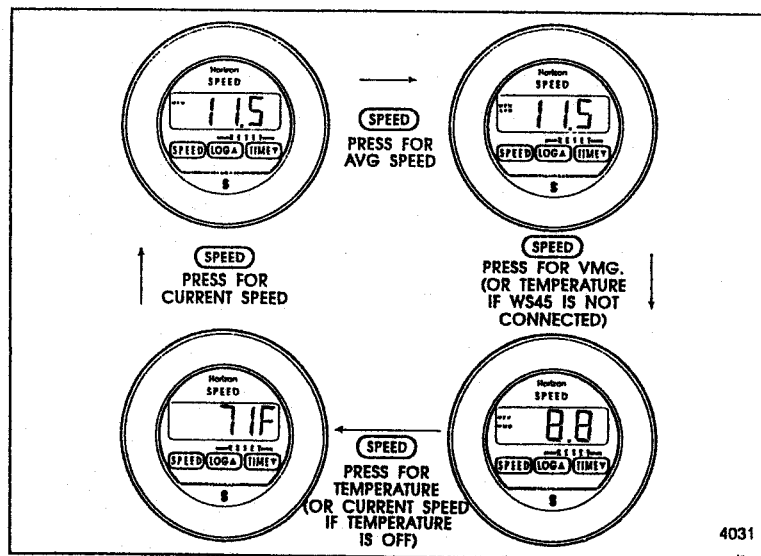


Figure 11. Speed, AVG, VMG or Temperature Selection

5.2.2 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" is 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. See Figure 12.

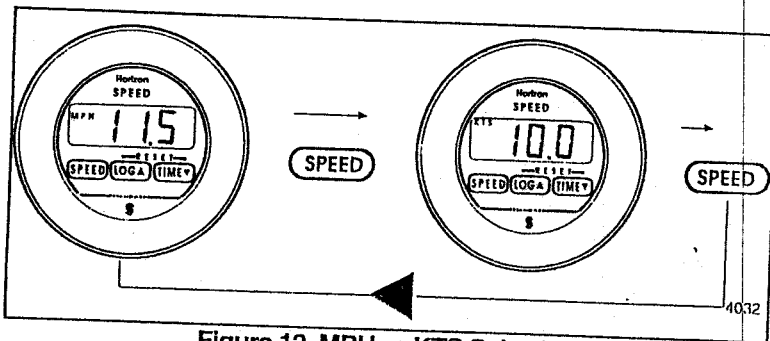


Figure 12. MPH or KTS Selection

5.2.3 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. See Figure 13.

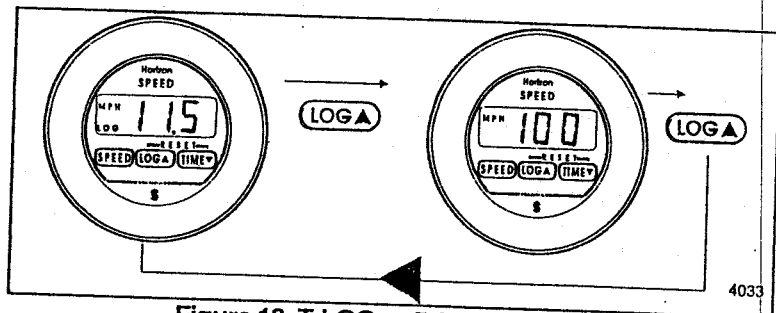


Figure 13. T-LOG or P-LOG Selection

5.2.4 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. See Figure 14.

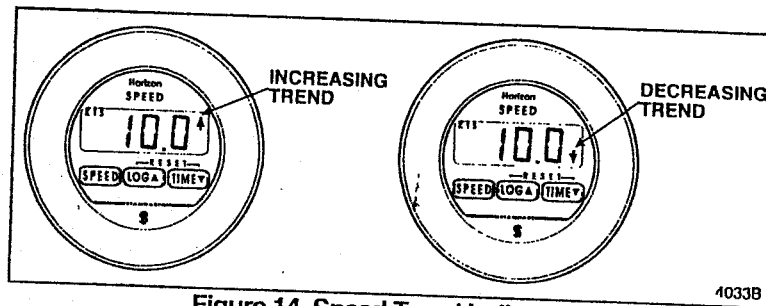


Figure 14. Speed Trend Indicators

5.2.5 Five Minute Countdown

Press the **(TIME)** key to display the indication for countdown. The "5UP" or "10dn" display will be alternating. Press the **(LOG)** key to select the five minute countdown. If the countdown is in progress and reset is desired, press the **(LOG) (TIME)** keys at the same time, hold for three seconds to reset. Press the **(TIME)** key to start the countdown timer. The five minute countdown sounds warning bells (tone beeps) on the minute: four beeps at four minutes to one beep at one minute then one beep each second from nine seconds to zero with a long beep at zero. See Figure 15.

5.2.6 Ten Minute Countdown

Press the **(TIME)** key to display the indication for countdown. The "5UP" or "10dn" display will be alternating. Press the **(TIME)** key to select the 10 minute countdown. If the countdown is in progress and reset is desired, press the **(LOG) (TIME)** keys at the same time, hold for three seconds to reset. Press the **(TIME)** key to start the countdown timer. The 10 minute countdown sounds warning bells (tone beeps)

on the minute: five beeps at five minutes to one beep at one minute then one beep each second from nine seconds to zero with a long beep at zero. See Figure 16.

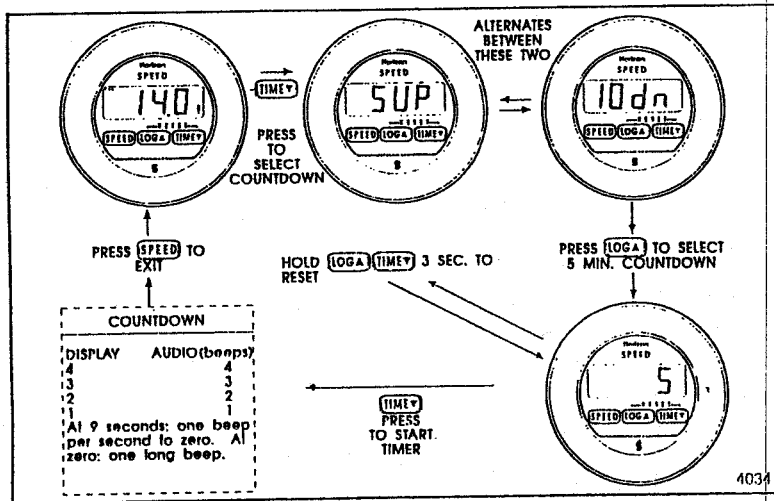


Figure 15. Five Minute Countdown

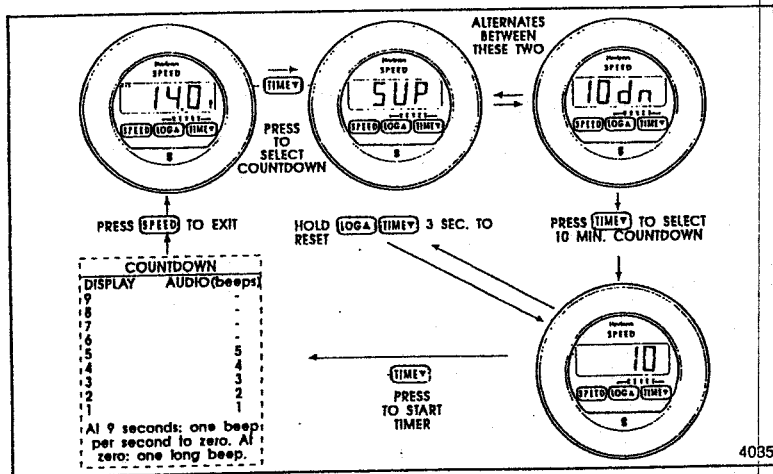


Figure 16. 10 Minute Countdown

5.2.7 Select Trip Timer

Press the **TIME** key and hold for three seconds. For the initial setting or if the trip timer has been reset, the display will indicate "0.00". If the trip timer is in progress and reset is desired, press the **LOGA** **TIME** keys at the same time, hold for three seconds to reset. Press the **TIME** key to start the timer. Press the **SPEED** key to return to the speed display. See Figure 17.

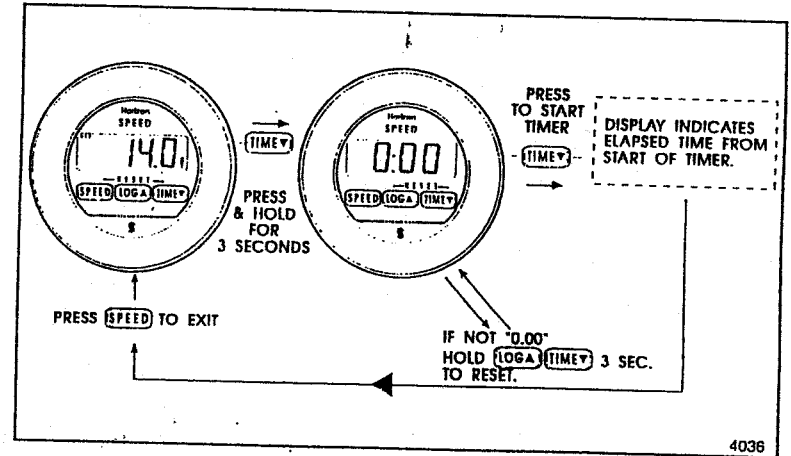


Figure 17. Trip Timer

5.2.8 Reset AVG., T-LOG, Countdown and Trip Timer

Select either "AVG.", "VMG", "LOG" countdown, or trip time to reset. Press and hold the **LOGA** **TIME** keys for three seconds to RESET.

5.2.9 Reset P-LOG

Select P-LOG for display. Press and hold the **LOGA** **TIME** keys for 15 seconds to RESET.

5.3 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 and log (speed) readings can be calibrated; the light intensity of the lamps can be adjusted; the temperature °F or °C units can be interchanged or the temperature display can be set to OFF. The speed, and T-LOG display can be set to tenths or hundredths for readings below 20 units. The secondary displays are listed below:

- Lamp intensity Adjustment
- Speed Calibration
- LOG Calibration
- Temperature °F, °C, or OFF Selection
- Temperature Calibration
- Speed/log 1/tenths or 1/hundredths units Selection.

5.3.1 Select Lamp Intensity

Press and hold the **(SPEED)(LOG)** keys for three seconds to enable the Secondary mode. One of the lamp intensity levels "L0", "L1", "L2", or "L3" will be displayed (L0=OFF). Scroll up with the **(LOG)** key or down with the **(TIME)** key to change the intensity level between 0, 1, 2, or 3. Press the **(SPEED)** key to return to the speed display. See Figure 18.

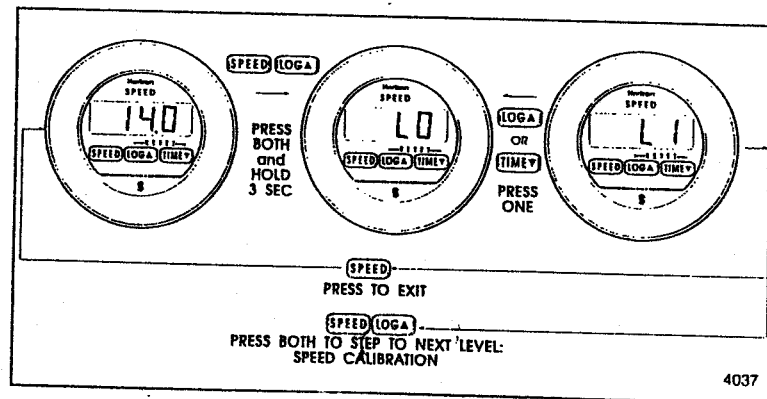


Figure 18. Lamp Intensity Selection

5.3.2 Calibrate Speed

The instrument must be calibrated after installation to ensure accurate speed, trip log, and permanent log readings. Calibration is accomplished for speed readings by changing the current speed reading to a known actual speed. For speed calibration, either MPH or KTS may be selected. Press and hold the **(SPEED)(LOG)** keys for three seconds to enable the Secondary mode. One of the lamp intensity levels "L0", "L1", "L2", or "L3" will be displayed (L0=OFF). Press the **(SPEED)(LOG)** keys, the "CAL" symbol will be displayed for three seconds, then the current speed reading will appear. Scroll up with the **(LOG)** key or down with the **(TIME)** key to change the displayed speed to the known actual speed (actual speed could be transmitted by radio from another boat alongside). Press the **(SPEED)** key to return to the speed display. See Figure 19.

NOTE

Performing speed calibration automatically calibrates log readings.

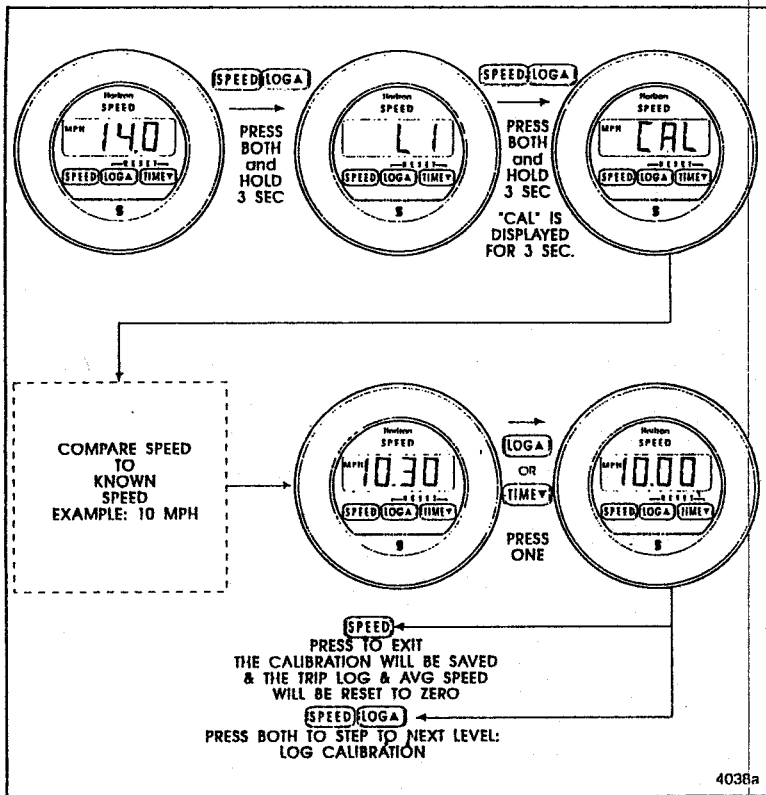


Figure 19. Speed Calibration

5.3.3 Calibrate Log

The instrument must be calibrated after installation to ensure accurate speed, trip log, and permanent log readings. Calibration is accomplished for log and speed readings by calibrating the trip log reading. For log calibration, MPH or KTS may be selected. See Figure 20.

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 knots 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)(LOGA)** keys to select the Secondary mode. The lamp intensity level "L0", "L1", "L2", or "L3" will be displayed.
5. Press **(SPEED)(LOGA)** keys again momentarily to step to the speed calibration function. "CAL" will be displayed.
6. Press **(SPEED)(LOGA)** 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. To reset the trip log and start the calibration process, press and hold the **(LOG)** **(TIME)** keys for three seconds. Once the calibration process has been started, it must be completed in the following manner to avoid corrupting the existing calibration.
8. If 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 **(TIME)** key.
9. Press the **(SPEED)** key to save and exit the calibration or press the **(SPEED)** **(LOG)** keys to advance to the select temperature units mode.

NOTE

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

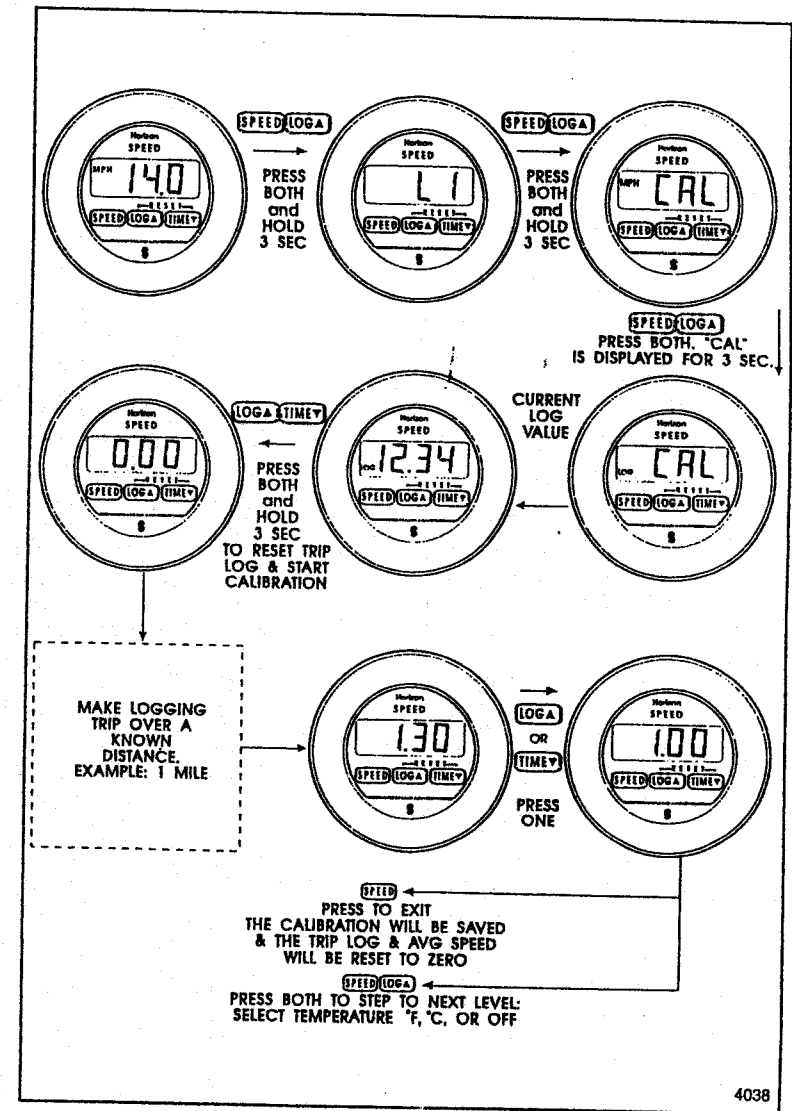


Figure 20. Log Calibration

5.3.4 Select Temperature Units

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 **(SPEED)(LOG)** keys again momentarily to step to the speed calibration function. "CAL" will be displayed. Press the **(SPEED)(LOG)** keys, the "LOG" "CAL" symbols will be displayed. Press the **(SPEED)(LOG)** keys, the temperature units "°F", "°C", or "OFF" will be displayed. Select either °F, °C, or OFF by pressing the **(LOG)** key to scroll up, or the **(TIME)** key to scroll down. Press the **(SPEED)** key to exit and save the calibration or press the **(SPEED)(LOG)** keys to advance to the calibrate temperature mode. See Figure 21.

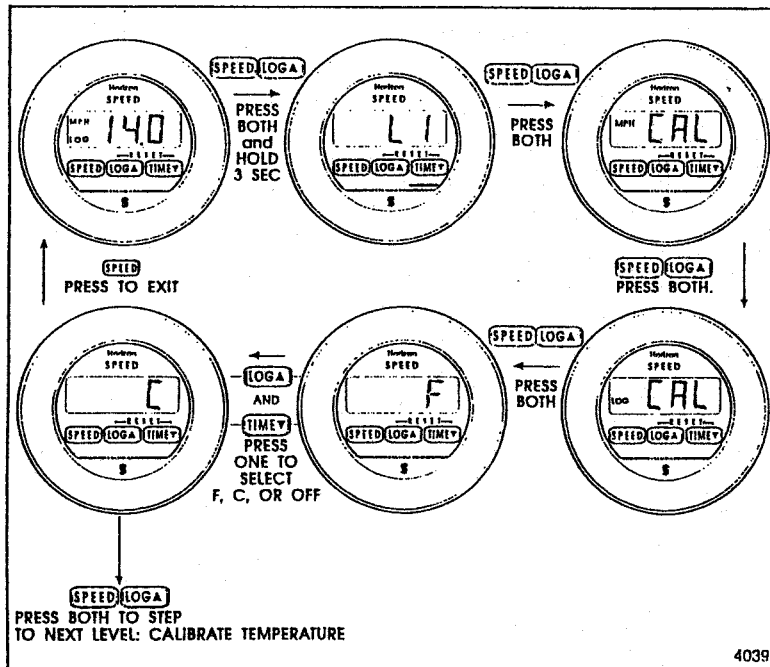


Figure 21. Temperature Unit Selection

5.3.5 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 **(SPEED)(LOG)** keys again momentarily to step to the speed calibration function. "CAL" will be displayed. Press the **(SPEED)(LOG)** keys, the "LOG" "CAL" symbols will be displayed. Press the **(SPEED)(LOG)** keys, the temperature units "°F", "°C", or "OFF" will be displayed. Press either the **(LOG)** or **(TIME)** key to select °F or °C. Press the **(SPEED)(LOG)** keys; "CAL" will be displayed. Scroll up with the **(LOG)** key or down with the **(TIME)** key to correct the temperature reading that appears after about three seconds. Press **(SPEED)** to return to the speed display. See Figure 22.

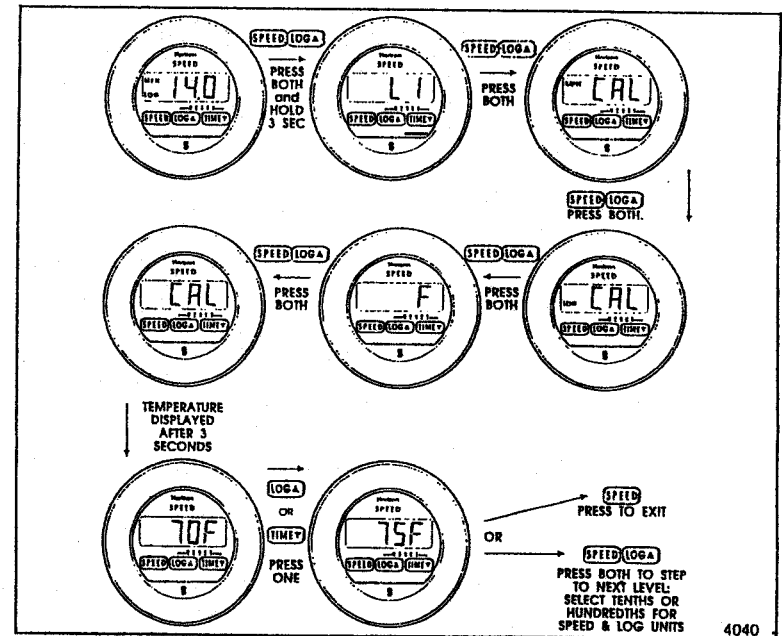


Figure 22. Temperature Calibration

5.3.6 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 **(SPEED)(LOG)** keys, the speed "CAL" symbol will be displayed. Press the **(SPEED)(LOG)** keys, the "LOG" "CAL" symbols will be displayed. Press the **(SPEED)(LOG)** keys, the temperature units "°F", "°C", or "OFF" will be displayed. Press the **(SPEED)(LOG)** keys, temperature "CAL" will be displayed. Press the **(SPEED)(LOG)** keys, "0.0" or "0.00" will be displayed; press the **(LOG)** or **(TIME)** key to select. Press **(SPEED)** to return to the speed display. See Figure 23.

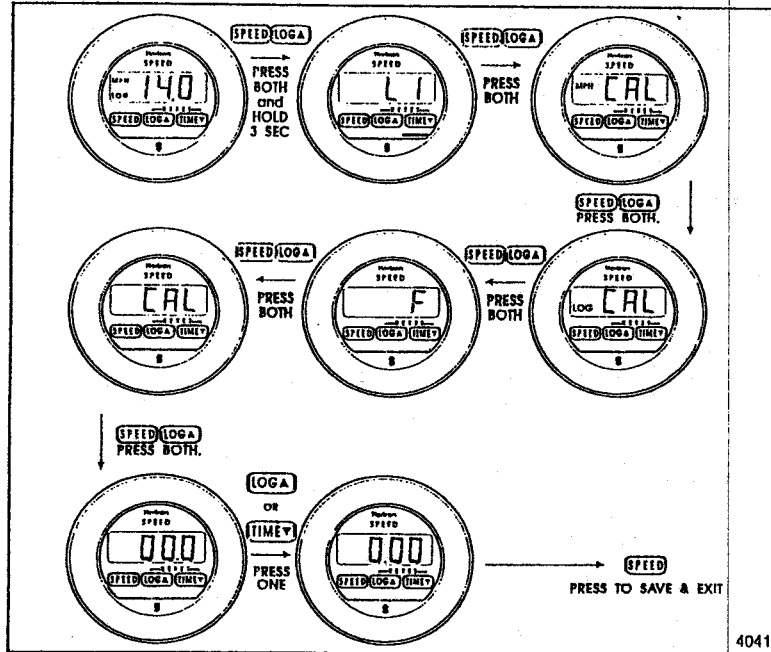


Figure 23. Speed and Log Unit Selection

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
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
Back lighting Diffused lighting for the display
Water Integrity Front will withstand direct spray
"VMG" speed function Only with input from WS45
0 to 99.9 MPH or KTS
NMEA Output with ACN50 optional cable. \$VWVHW
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
(read in whole numbers)
non-volatile, resettable
Trip timer (elapsed time) 0 to 19 hours 59 minutes
non-volatile, resettable
5 or 10 minute countdown timer:
10-minute timer: beep count at and below 5 minutes
on the minute
5-minute timer: beep count below 5 minutes on the minute
both timers: individual beep below 10 seconds on the second

Sea temperature Sensor 10 kohm thermistor
at 77° F (25° C)
Sea temperature Range 32° to 100° F
(0° to 37° 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 SL45

8 TROUBLESHOOTING

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