

# West Marine



## **MARINE PRODUCTS LIMITED WARRANTY**

West Marine Product's warrants to the original purchaser only, that each new instrument 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. West Marine Product's liability under this warranty shall be limited to repair or replacement of the defective product, at West Marine Product's option, and under no circumstances shall West Marine Product's 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, West Marine Product's will repair or replace, at its option and without charge to the Purchaser, the product which upon examination by West Marine Product's shall appear to be defective or not up to factory specifications. West Marine Product's will pay all labour charges incurred in providing such warranty service. To obtain warranty service, the defective product must be returned to West Marine Product's together with proof of the date of purchase. The Purchaser must pay any transportation expenses in returning the product to West Marine Product's. West Marine Product's 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 West Marine Product's; nor does this warranty extend to products on which the serial number has been removed, defaced, or changed. West Marine Product's 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.

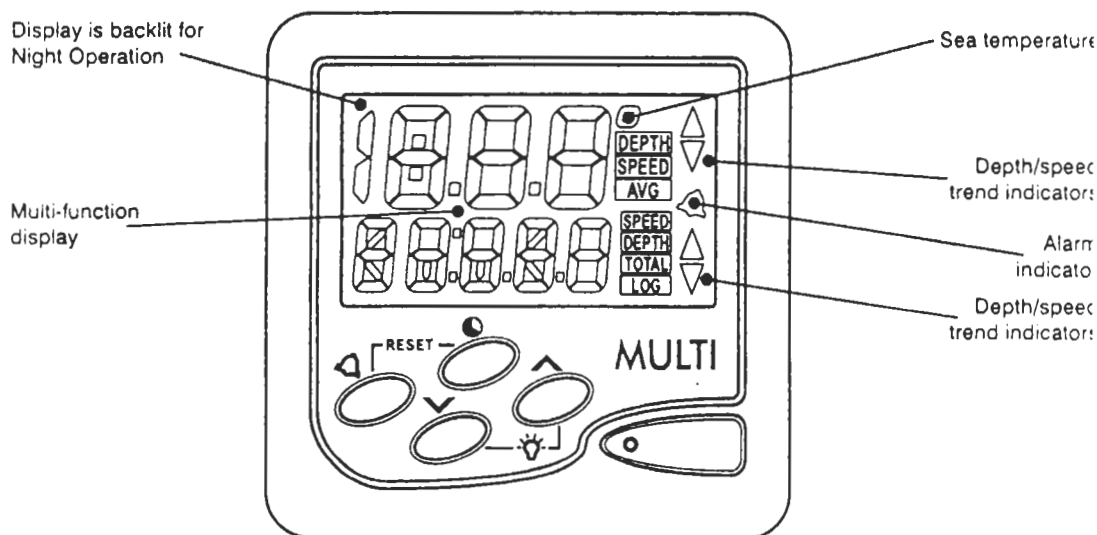
Some states do not allow limitations on the duration of the warranty or exclusions or limitations of incidental or consequential damages so these eliminations or exclusions may not apply to you. This warranty gives you specific legal rights which vary from state to state.

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## Specification

- **Power Supply**  
10.7 to 16.6 VDC, 25 mA nominal, 35 mA with backlight on.
- **Operating temperature**  
0°C to 45°C.
- **Size of display**  
112 x 112 x 24mm (4.4 x 4.4 x 1"), overall depth 35mm (1.4") behind panel.
- **Display type.**  
Twisted Nematic (TN) grey background, 0°C to +70°C.
- **Illumination**  
Red LED switchable from key pad.
- **RF Interference**  
Less than 6 dB maximum quieting on any marine radio channel with 3 dB gain antenna within 1 meter of instrument display head (European EC specifications).
- **Depth**  
1 to 130 meters or 3 to 400ft.
- **Alarms**  
Depth shallow and deep.
- **Display unit selection**  
Feet, meters or fathoms, key pad selectable.
- **Alarm**  
Shallow and deep water. Audio and LCD flag.
- **Transducer**  
200 kHz, 600 ohm, 1500pF parallel capacitance.
- **Boat speed**  
0 to 50 knots (depending on transducer type). User selectable to display in 0.1 or 0.01 increments.
- **Speed units and resolution**  
0.0 to 19.9 and then 20 to 50 in knots, MPH or KPH.
- **Maximum speed**  
Records max. speed to 50 knots. Reset to zero via key pad or at power down.
- **Trip log**  
0 to 1999 units key pad resettable.
- **Total log**  
0 to 1999 units key pad resettable.
- **Keel Offset**  
Keel or waterline,  $\pm 9.9$  ft,  $\pm 1.6$  fathoms or  $\pm 3.0$  meters, user resettable.
- **Trend Indication**  
Arrows indicate increasing or decreasing depth and speed trends.
- **Time functions**  
Trip timer to 99 hrs and 59 minutes. Count down timers in seconds from 10 or 5 minutes.
- **Sea temperature**  
0.0°C to 37.7°C (32.0°F to 99.9°F) 10Kohm at 25°C. Tenths of a degree are displayed.
- **Output data**  
NMEA 0183 format. VHW, VLW, MTW, DBT.
- **Transducer input cables**  
Phono connector for depth, 4 pin Fuji for speed/temp transducer. 3 conductor cable for NMEA and power.



## Installation

### Location

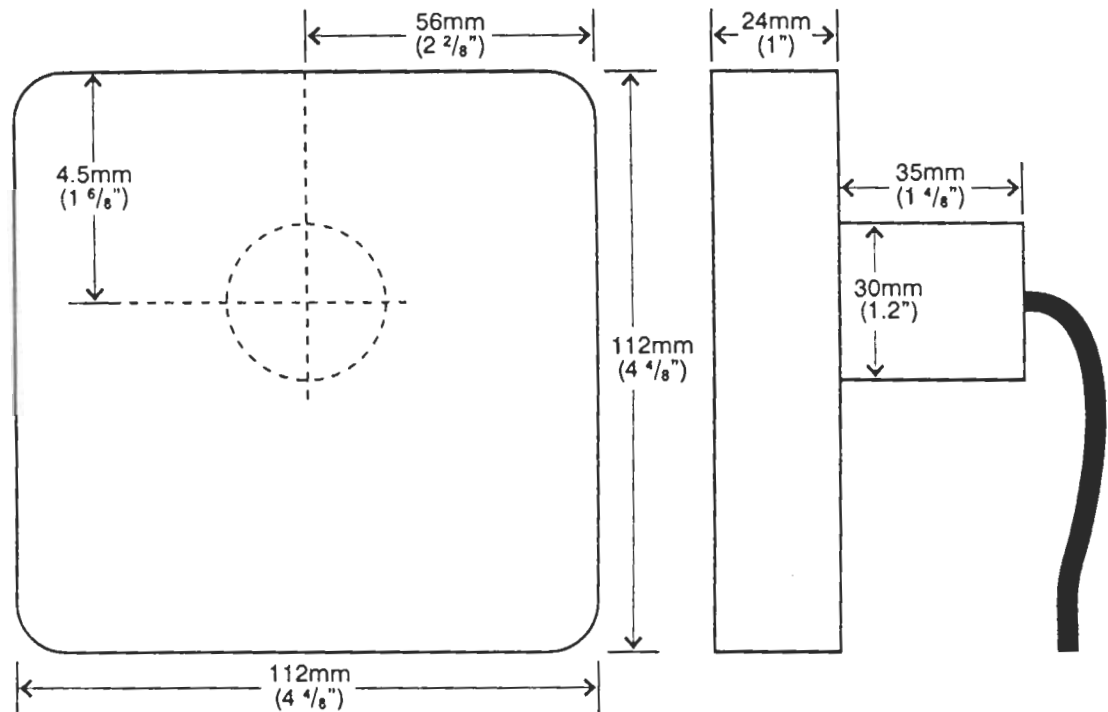
The M100 is designed for above or below deck installation. Select a position that is:

- At least 300mm from a compass
- At least 500mm from any radio
- Easy to read by the helmsman and crew
- Protected from physical damage
- Accessible to electrical cable connections

### Mounting

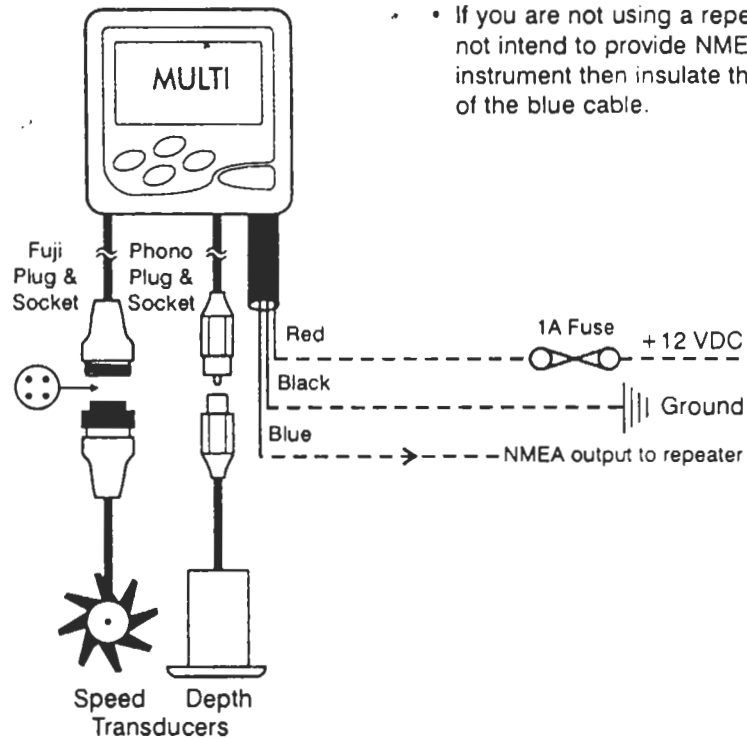
The mounting surface must be flat. Use the template to set the centre of the fixing hole.

- Drill a 32mm (1.25") diameter mounting hole through the bulkhead.
- Remove the fixing nut. Peel the protective paper off the foam gasket and attach the gasket to the rear of the instrument.
- Insert the instrument through the bulkhead. Hand tighten the nut and then finally tighten with a spanner. Do not over tighten so that the water sealing ability of the gasket is damaged.



## Wiring Connection

- Keep electrical and transducer cables away from alternator or other noise generating electrical cables. Avoid connecting the instrument to power circuits that share loads with ignition, alternators, inverters and radio transmitters. Electrical power supply connections should always be as short as possible.
- Connect the red wire to the positive supply via a 1 amp fuse or a 1 amp circuit breaker. Connect the black wire to the electrical ground. A 1 amp fuse will provide protection for up to five 100 series instruments.
- Connect the 4 pin Fuji connector to the Speed and Temperature transducer.
- Connect the RCA phono connector to the depth transducer cable connector. Do not cut or shorten the depth transducer cable. Extension cables are available if the transducer cable is too short.
- If you are not using a repeater or you do not intend to provide NMEA data to another instrument then insulate the bare wire end of the blue cable.



## Multiple Instruments

The M100 may be used as an individual instrument or connected with a number of other 100 series instruments to the 100 series repeater or to other instruments accepting NMEA 0183 data.

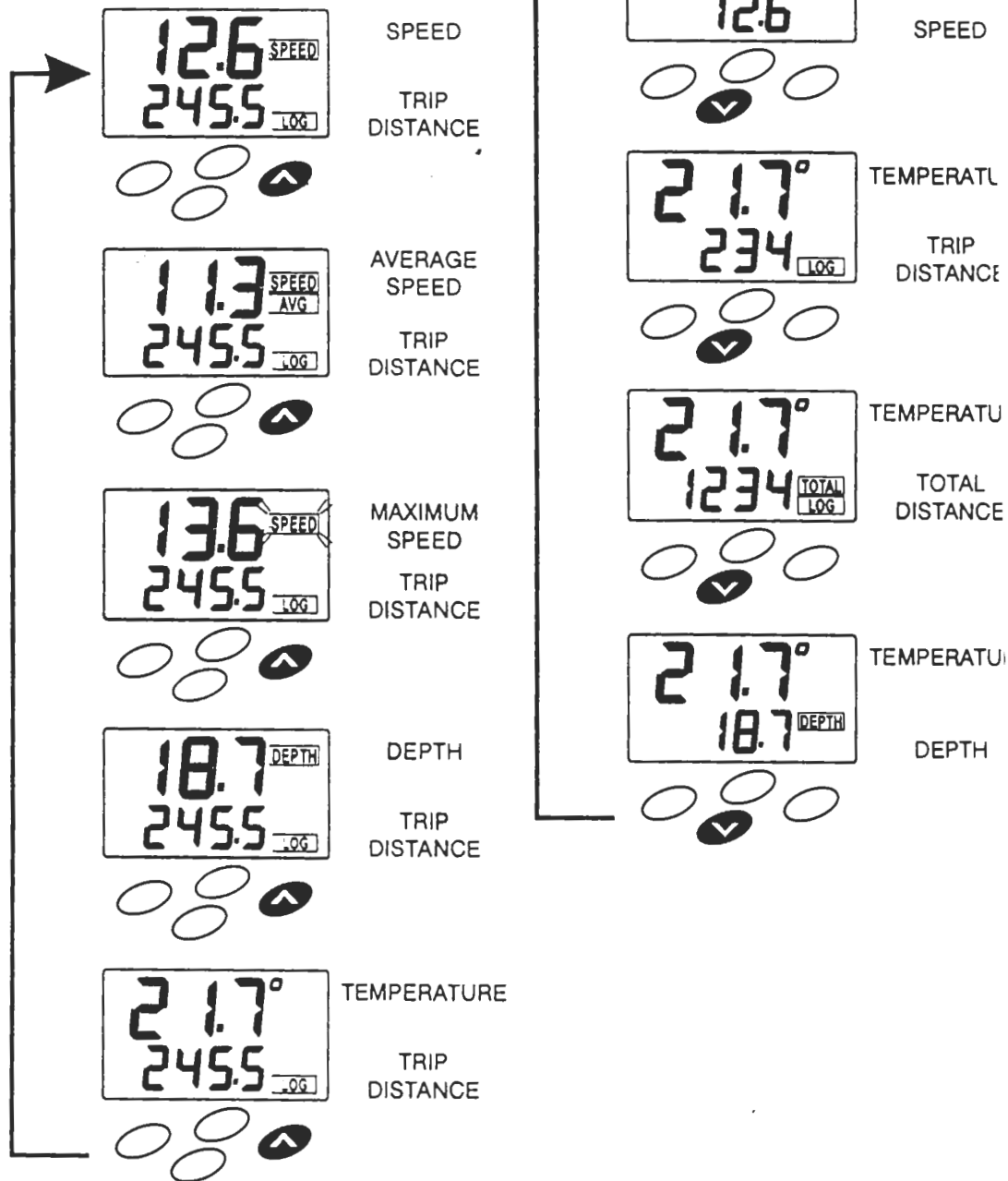
# Operation

## Changing Functions

The upper and lower display sections can be configured to display depth or speed readings. The remaining functions are dedicated to either the upper or lower display.

The **^** key selects functions dedicated to the upper display. The selection remains in memory after power down.

The **v** key selects functions dedicated to the lower display. The selection remains in memory after power down.

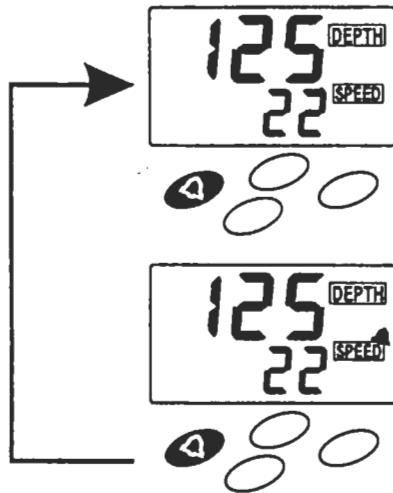


## The Depth Alarm

The shallow water alarm sounds when the depth falls below the selected value. The deep water alarm sounds when the depth exceeds the selected value. When the alarm is activated the beeper will sound continuously and the bell alarm symbol will flash.

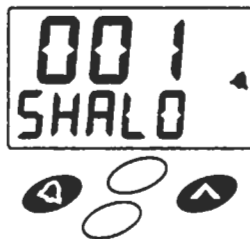
## Setting Alarms

Press the  key to switch the alarm on or off.



## Set Shallow Alarm

Press the  and  keys to enter shallow alarm mode.



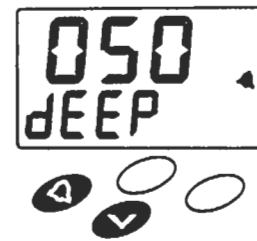
Use the  and  keys to set alarm value.

Press the  key to exit.



## Set Deep Alarm

Press the  and  keys to enter deep alarm mode.




Use the  and  keys to set alarm value.

Press the  key to exit.


### Note:


*When units are changed, the alarm values are automatically recalculated.*

## Select Temperature Units

When the top section of the display is indicating temperature, press and hold the  key for three seconds to change the units of measure between °C and °F.

## Select Depth Units

When the top section of the display is indicating depth, press and hold the  key for three seconds. The new unit of measure will be displayed for three seconds.

Alternately, when the bottom section of the display is indicating depth, press and hold the  key for three seconds. The new unit of measure will be displayed for three seconds.

Depth units can be selected in the following order; meters, feet and fathoms.

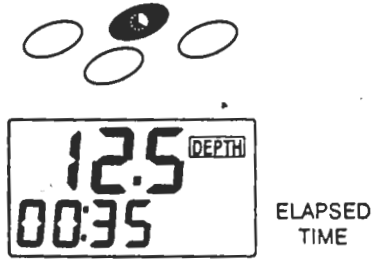
## Timer Functions

All timer functions are displayed on the lower section of the display.

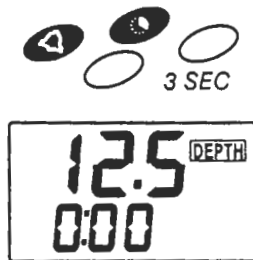
### Elapsed Timer

The elapsed timer will record time from power up. Time is displayed in hours and minutes up to 99 hours and 59 minutes.

Press the  key to show elapsed time.

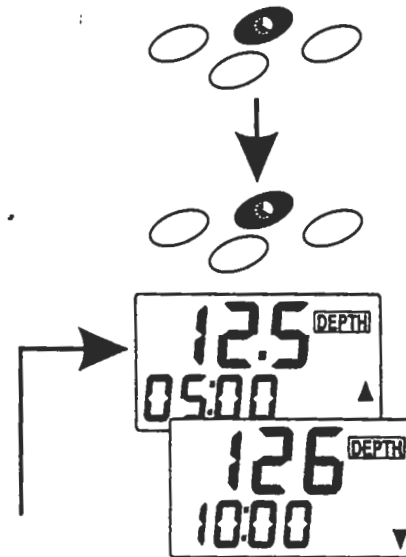



Press and hold the  and  keys for three seconds to reset the elapsed time to zero.



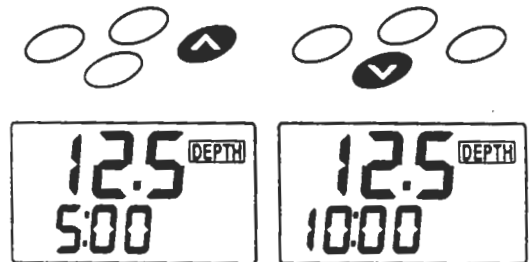
## Count Down Timers



There are two count down timers, one for 5 minutes and the other for 10 minutes. Audio beeps at 1 minute intervals from 4 minutes remaining to 1 minute remaining.



To start 5 minutes  
press the  key

To start 10 minutes  
press the  key



To reset the count down timer at any time, press and hold the  and  keys for three seconds.



The display will return to the timer selection.

### Select Speed/Log Units

Speed and distance units can be selected in the following order; Knots (nautical miles), KPH (kilometers) and MPH (statute miles).

When the top section of the display is indicating speed, press and hold the  $\wedge$  key for three seconds. The new unit of measure will be displayed for three seconds.

Alternately, when the bottom section of the display is indicating speed, press and hold the  $\vee$  key for three seconds. The new unit of measure will be displayed for three seconds.

**Note:**

*When changing speed/distance units, the log totals are NOT re-calculated. It is necessary to reset the log total to zero to maintain an accurate distance record.*

### Reset Log

With the log displayed, press and hold the  $\odot$  and  $\curvearrowright$  keys for 3 seconds.

### Reset Total Log

With the total log displayed, press and hold the  $\odot$  and  $\curvearrowright$  keys for 15 seconds.

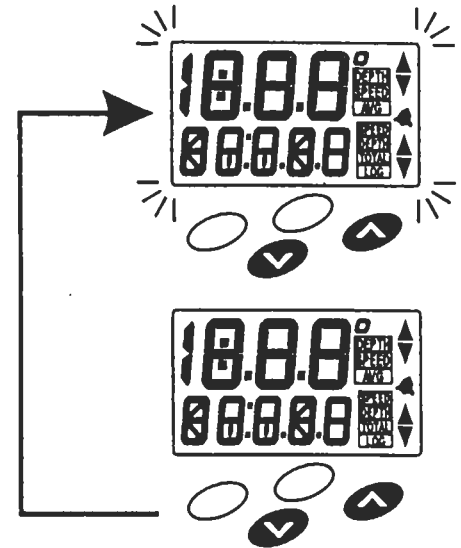
### Reset Average Speed

With average speed displayed, press and hold the  $\odot$  and  $\curvearrowright$  keys for 3 seconds.

It is possible to display average speed and a log value at the same time. In this situation the LAST function to be selected will be reset when the  $\odot$  and  $\curvearrowright$  keys are held for 3 seconds.

### Backlighting On / Off

Simultaneously press the  $\wedge$  and  $\vee$  keys to turn the backlight on. Repeat this procedure to turn the lighting off.



### Simulation Mode

The M100 has a simulation mode.

To enter this mode, hold down the  $\curvearrowright$  key then switch on the power. The instruments remain in this mode even when power is switched off.

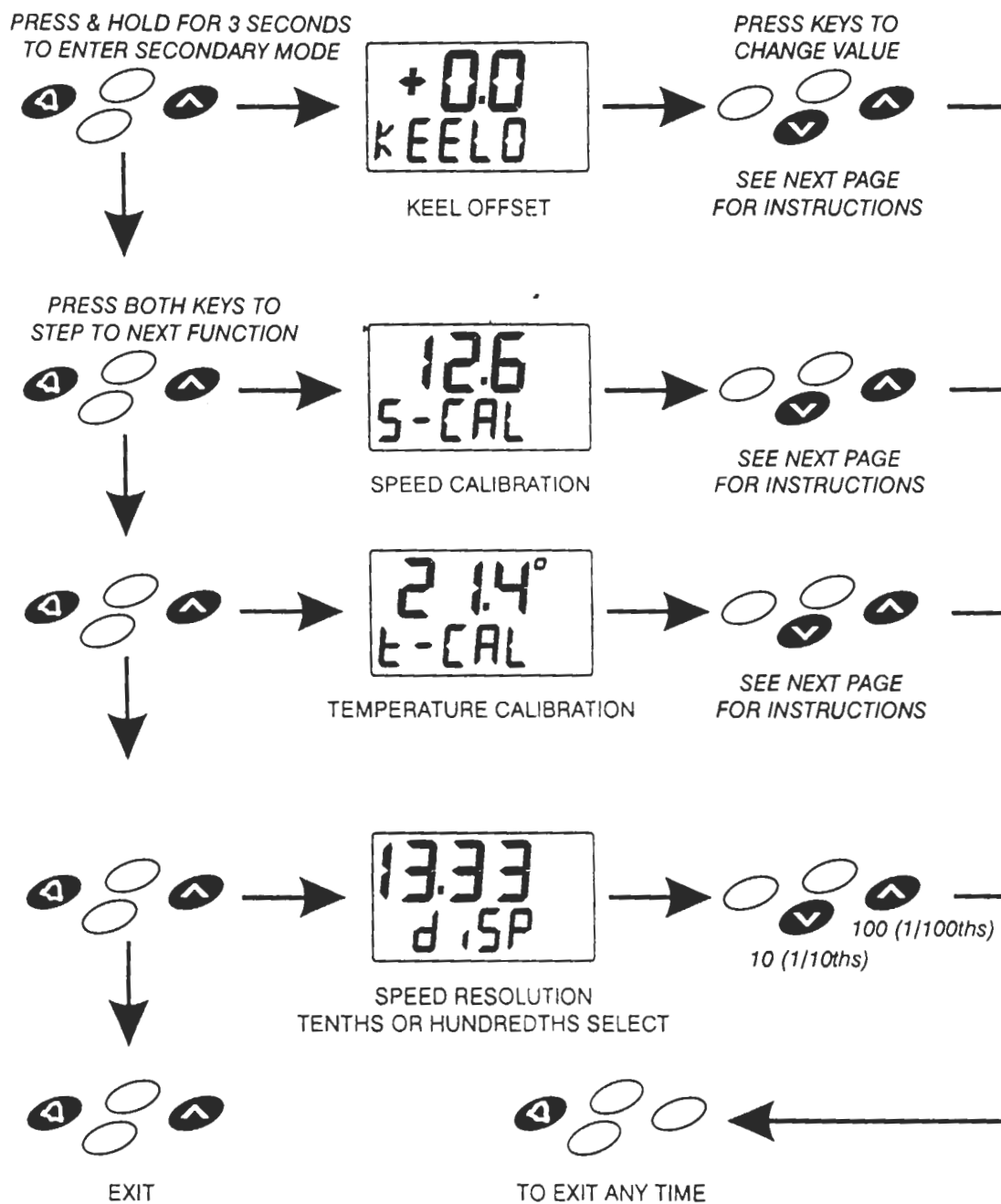
Repeat this procedure to exit simulation mode.

**Note:**

*Settings that are made while in simulation mode will remain in effect after returning to normal mode.*

## Secondary Functions

The secondary modes provide access to keel offset, calibration of boat speed, calibration of sea temperature and speed display options of 1/10th or 1/100th units.



*If no key is pressed for 10 seconds, the instrument will exit secondary mode and return the display to normal. Changes made will not be saved.*

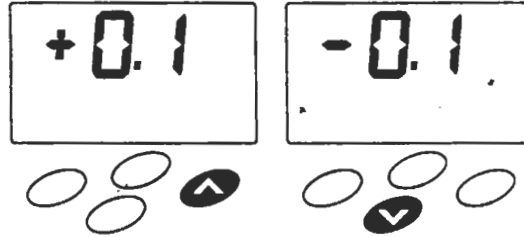
## Calibration Procedures

### Keel Offset

The D100 will normally display the depth of water below the face of the transducer. You may introduce a keel offset to reduce the displayed depth or a waterline offset to increase the displayed depth.

Follow the Secondary Functions chart to reach Keel Offset mode.

Use the  $\wedge$  or  $\vee$  key to set the required value.



When required value is displayed press the  $\square$  key. The value will be stored in memory.

**Note:**

*When the depth units are changed the keel offset value will automatically be recalculated.*

### Calibrate Temperature Display

To adjust the temperature displayed.

Follow the Secondary Functions chart to reach Temperature Calibration mode.



To increase reading press the  $\wedge$  key.

To decrease reading press the  $\vee$  key.

To enter the calibration setting into memory and exit press the  $\bullet$  key.

## Speed Calibration

### Speed Comparison Method

Use the following sequence to adjust the speed displayed to match that of another craft or speed displayed on a GPS receiver.

Follow the Secondary Functions chart to reach Speed Calibration mode.



To increase reading press the  $\wedge$  key.

To decrease reading press the  $\vee$  key.

To enter the calibration setting into memory exit press the  $\bullet$  key.

### Log Calibration Method

Set your log to zero and travel a known distance between two points. *If there is any tidal current you should travel the same course in both directions to find the average distance.*

You may calculate a correction factor as follows:

$$\text{correction factor} = \frac{\text{Known distance}}{\text{distance from log}}$$

For example, if you have travelled over a known distance of 1 mile but your log reading is giving a correction factor of 1.25. Then your correct boat speed will be the indicated speed multiplied by 1.25.

Enter the simulation mode by holding down the  $\square$  key at power up. When speed is selected the simulator mode the display will indicate fixed calibration speed, for example 10.0 knots.

Follow the Secondary Functions chart to reach Speed Calibration mode.

Use the  $\wedge$  to set the displayed speed to a new value. For our example, this new speed would be 10.0 x 1.25 which is 12.5 knots.

To enter the calibration setting into memory exit press the  $\bullet$  key.

To exit simulation mode, remove the power then hold the  $\square$  key at power up.

## Troubleshooting Chart

### No display:

Check DC power connections and DC polarity with voltmeter. Voltage must be between 10.7 and 16.6 volts.

### No speed reading:

1. Remove speed impeller from through hull, spin paddlewheel manually and check for reading.
2. Check for fouling on paddle and through hull.
3. Check for break in cable.

### Low or high speed reading:

1. Check calibration.
2. Inspect for damage to paddlewheel or fouling of fitting or paddle.

### Erratic speed reading:

1. Is there clear water flow over paddlewheel ?
2. Is paddlewheel aligned fore and aft correctly ?

### No, or inaccurate temperature reading:

1. Check calibration
2. Check for break in cable.

### No depth reading (--) at all depths:

1. Check transducer for growth or multiple coats of paint.
2. Check the transducer cable for cuts and sharp bends.
3. Substitute the transducer with a known good 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 depth readings (while moored):

Check transducer for growth or multiple coats of paint.

### Erratic depth readings (while underway):

Cavitation (air) under the face of the transducer. Review installation and reinstall if necessary.

### When power is applied display digit counts up or down:

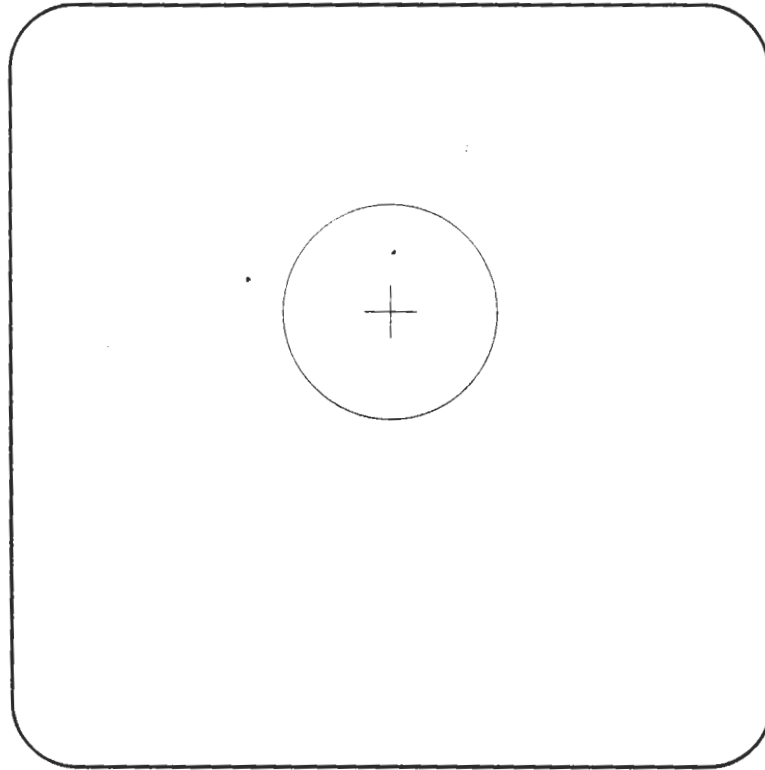
See the section on Simulation Mode.

### Erratic readings when engine is running:

1. Reroute power and transducer cables away from ignition wires and battery cables.
2. Add feed-through filter capacitor on the positive terminal of the ignition coil.
3. Add alternator whine filter to alternator.
4. Replace spark plug wire with resistive type.



## M100 TEMPLATE



Photocopy this template and affix the copy to the surface before drilling

## ACCESSORY PART NUMBERS

267221	Panel Gasket
267247	Dust Cover
267254	15' Speed Ext Cable
318800	15' Depth Ext Cable

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