CLIPPER   LOG

SPEED

23.5

L   KNOTS

(ILLUM)   (SPEED)   (TRIP)   (TOTAL)

CLIPPER

SPEED
AND
# DISTANCE
LOG

INTRODUCTION

The Clipper Speed and distance log is supplied complete with display unit, paddle wheel assembly, skin fitting and blanking cap. It is intended for operation from 12V ship's supply, although, because of its low power consumption, it can be run from an external dry battery.

INSTALLING THE DISPLAY

Select a convenient position for the display on a panel or bulk-head.

The site must be flat and the cavity behind the panel must remain dry at all times. (The cable entry is deliberately not sealed to ensure adequate ventilation. This prevents misting of the display).

Cut a hole in the panel 87mm wide and 67mm deep. Bring the wiring through the hole in the panel and connect the black wire to negative and red to positive. (See Figure 1). It is wise to use a fused supply to provide protection should a fault occur. The current consumption is very small, so any supply with at least a 1/4 amp fuse is more than adequate.
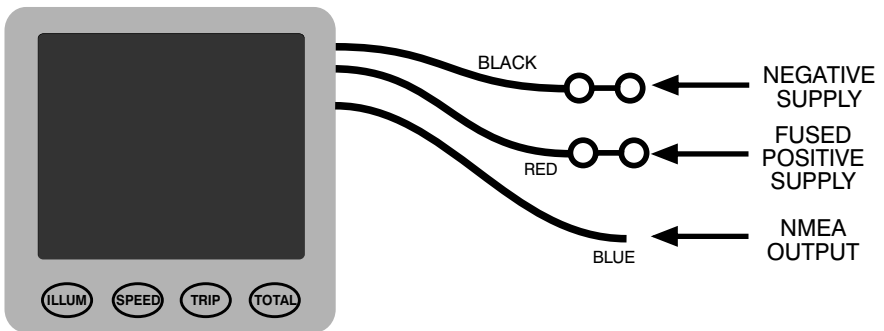
Figure 1 - Wiring Installation

Unscrew and remove the two wing nuts from the rear of the instrument and remove the stainless steel clamping bracket. Fit the "O" ring seal into the groove in the panel mounting face of the instrument. Ensure that it is correctly lying in its groove before fitting the instrument to the panel, which provides the watertight seal for the display.

Fit the instrument into the panel, fit the stainless clamp over the studs, fit and tighten the two wing nuts finger tight only.

It is important that the O-ring rubber seal makes good contact with the panel to prevent water getting behind the unit and entering the cavity behind the panel.

It is good practice to run the cables vertically downwards from the unit, even if they later have to rise to connect to the vessel's supplies. Doing so prevents any water that might get onto the cables from running back along the cables and into the unit.

INSTALLING THE PADDLE WHEEL

The paddle wheel should be installed at a point in the hull where:-

(a) It is immersed at all attitudes under power or sail.

(b) The blades of the paddle wheel are presented with a smooth flow of water corresponding to the vessel's speed through the water. On displacement hulls this is usually about amidships, but on planing hulls it should be as far aft as possible.

(c) It should be easily accessible in the bilges for cleaning and laying up. A blanking cap is provided to seal the skin fitting when the paddle wheel is removed.

(d) It is not vulnerable to damage from unforgiving surfaces such as trailers and lifting slings.

With the vessel out of water, drill a hole of 42mm diameter through the hull to take the paddle housing and use conventional methods for sealing. It is advisable to avoid the use of mastic materials - use a form of proprietary silicon sealant.
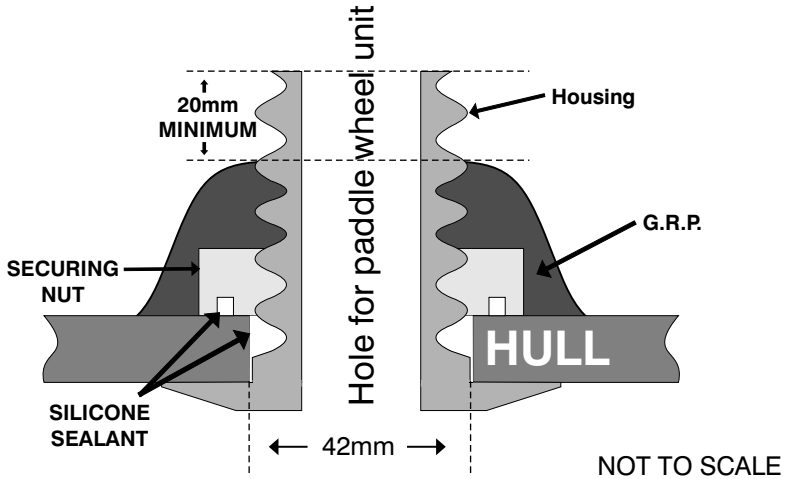
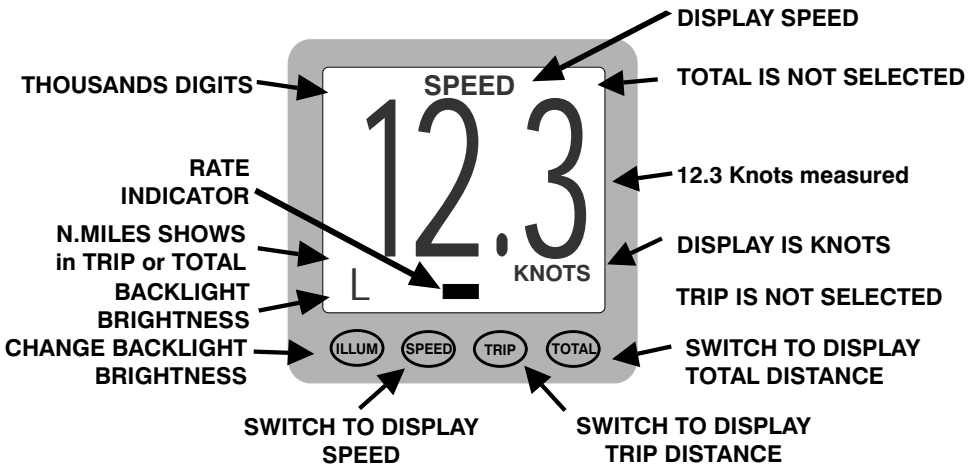*Figure 2 - Paddle Housing Installation (Sectioned view)*

The securing nut has a groove on its underside which should also be filled with sealing compound. Take care not to over tighten this nut. After the sealing compound has set, wipe off the excess and encapsulate the whole assembly in G.R.P. as shown on Figure 2. Take care to ensure that a minimum of 20mm of thread is clear at the top of the paddle housing.

The paddle wheel unit can now be slid into the housing so that it is exposed to the water flow, with the arrow pointing forward along the centre line of the vessel. It is recommended that a little silicon grease is smeared over the rubber O-ring to keep the unit free. Tighten the retaining nut onto the top of the housing, and plug the cable into the 'paddlewheel' socket on the display. For added protection it is again recommended that the plug is lightly covered with silicon grease.

GETTING STARTED

When the Clipper Distance & Log is first turned on, it automatically performs a number of self-test processes, and after a brief delay switches on the backlight illumination at the factory pre-set level. It then displays the speed in the previously selected mode of knots or MPH (as shown on Figure 3).
The factory default settings are Nautical Miles and Speed in Knots. The factory pre-set trip and total distances are both zero.

THOUSANDS DIGITS
DISPLAY SPEED
SPEED
TOTAL IS NOT SELECTED
RATE INDICATOR
12.3
12.3 Knots measured
N.MILES SHOWS in TRIP or TOTAL
DISPLAY IS KNOTS
KNOTS
BACKLIGHT BRIGHTNESS
L
TRIP IS NOT SELECTED
CHANGE BACKLIGHT BRIGHTNESS
ILLUM   SPEED   TRIP   TOTAL
SWITCH TO DISPLAY TOTAL DISTANCE
SWITCH TO DISPLAY SPEED
SWITCH TO DISPLAY TRIP DISTANCE

*Figure 3-Initial Display*

CHANGING THE OPERATING MODE

It is easy to change the displayed readings at any time, by simply pressing each key as described below. The unit maintains full measurements precision at all times whatever display mode is chosen.

BACKLIGHT SETTING

To set the display back light press the **ILLUM** key.

Pressing **ILLUM** whilst `L` is shown on the display will gradually decrease the illumination. Pressing **ILLUM** whilst `H` is shown will gradually increase the illumination.

A brief press of **ILLUM** will roster between 'L' and 'H'.
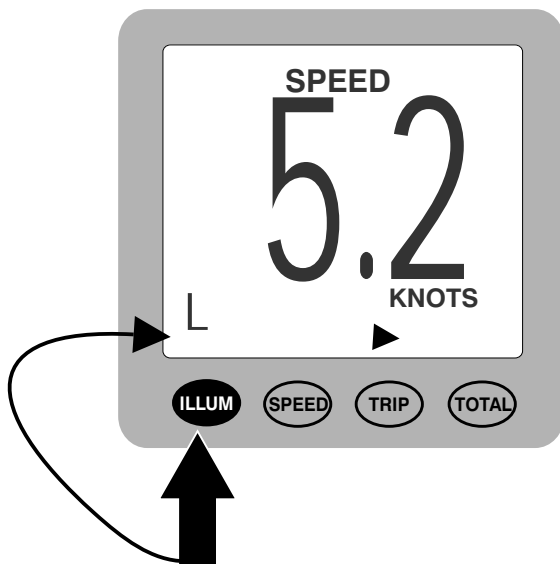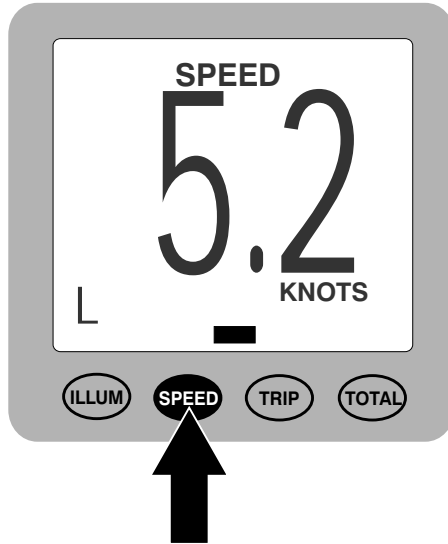

Figure 4- Backlight Setting

In common with all the other settings in the unit, the backlight setting is stored even when the unit is switched off, so that it returns to the chosen setting again whenever the unit is switched on.

DISPLAYING SPEED


Figure 5- Speed Display

If it is desired to display speed, press the button marked **SPEED**. The display changes to that shown on Figure 5, and the present speed is displayed.

The acceleration bars below the middle digit (See Figures 4 and 5) show whether the speed is reducing (left arrow lit), the same (central bar lit), or is increasing (right arrow lit). These acceleration bars are shown in the distance display modes as well as the speed display mode.

DISPLAYING TRIP DISTANCE

If it is desired to display Trip distance, press the button marked **TRIP**. The word TRIP is displayed as shown on Figure 6. The trip distance is always measured in 0.1 miles or nautical miles, depending on the setting of the unit (the setting can be changed if desired, see the section CHANGING THE UNIT`S OPERATIONAL CONFIGURATION, overleaf). Figure 6 shows the display as it would

be when nautical miles is selected. Whenever the trip distance exceeds 99.9, the number to the right of the decimal is still stored in the unit, but the display changes to show whole miles, and the decimal point is removed.
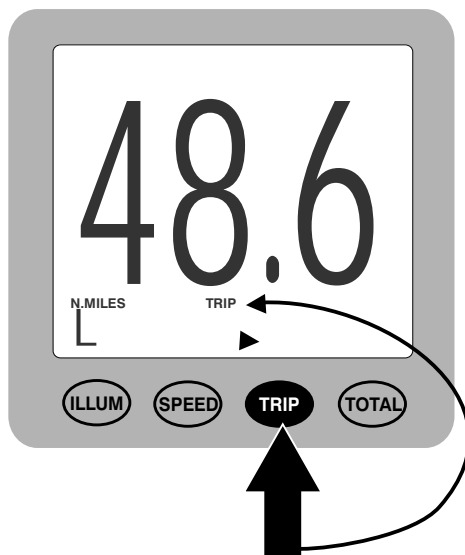
Figure 6- Trip Display

When the trip distance exceeds 999.9 (nautical miles or statute miles, whichever is selected). the trip counter rolls over to 0.00 again.

RESETTING THE TRIP DISTANCE TO ZERO

The trip distance is stored in the unit even when it is switched off. The trip distance can be reset to zero at any time by pressing the **TRIP** button once to get to the trip display, and then pressing **TRIP** again continuously. If the button is kept steadily pressed, a number 5 is shown, then 4, then 3, then 2, then 1, then zero. The trip distance is reset when the count reaches zero. If you change your mind about resetting the distance, remove your finger from the trip button before the count falls to zero, whereupon the display returns

to the original trip reading. If the finger is left on the TRIP button after zero is displayed, F (for Finished) is shown to remind you that the trip distance clear is cleared. Normal operation of the trip reading is resumed when the finger is lifted.

Note that any fractional distance in the trip distance when it is cleared is stored for adding to the total when new trip distances are measured. This is so there is no loss of total distance if frequent trip resets are done

DISPLAYING TOTAL DISTANCE

Total distance is stored only in whole miles or nautical miles, depending on the setting of the unit (see below), If it is desired to display Total distance, press the button marked **TOTAL**. The accumulated distance is displayed, and the word **TOTAL** shown (see Figure 7). If the total distance is more then 999. the thousands (with 000 following the number) are shown at the top left of the display, which is showing 2105 nautical miles total on Figure 6.
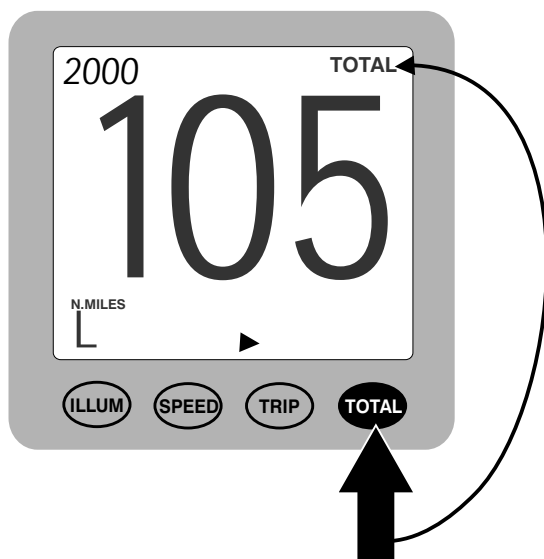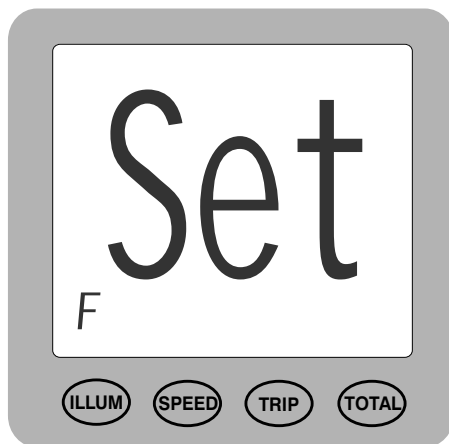

Figure 7- Total Distance Display

If the total distance logged is greater then 9999, the display rolls over to 0 again. Whenever the total distance is less than 1000, none of the thousands digits are displayed.

CHANGING THE UNIT`S OPERATIONAL CONFIGURATION

Configuration describes the settings held permanently in the unit to affect how it operates. To get into the configuration mode, press and keep held pressed the **ILLUM** button while the unit is switched on. When the button is released, the word "SET" is displayed (see Figure 8).

Pressing **ILLUM** again returns the unit to its normal operating mode, as stored before it was switched off, but with any new settings also active and stored permanently. Any of the following changes can be made from the "SET" configuration mode, which is ended by the press on the **ILLUM** button to return to normal operation.


Figure 8 - Configuration Setting Display

SWITCHING BETWEEN NAUTICAL AND STATUTE MILES

The distance setting can be switched between statute miles and nautical miles (and back again as often as needed) for both trip and total distances. Press the **SPEED** button to switch between the two modes. When nautical miles are selected, the words N.MILES are displayed, and the unit displays knots when showing speed. When statute miles are selected, the unit displays MPH when showing speed. Switching between the two distance settings does not reset the stored trip and total distances, which are shown in the correct units when the normal display mode is chosen.

DISPLAYING AVERAGED READINGS

It is sometimes preferable to display averaged speed readings instead of instantaneous measurements. When averaged speed is displayed, the speed shown is the short-term average of several readings, whereas in fast display mode, the reading changes whenever there is a change in measurement. Using averaged readings reduces the variability of the displayed speed whenever small speed changes occur. The display mode is switched between Fast and Averaged by pressing the **TRIP** and **TOTAL** keys together, as shown on Figure 9. The letter F (for Fast) or A (for Averaged) shows which display mode will be used when speed is being measured.
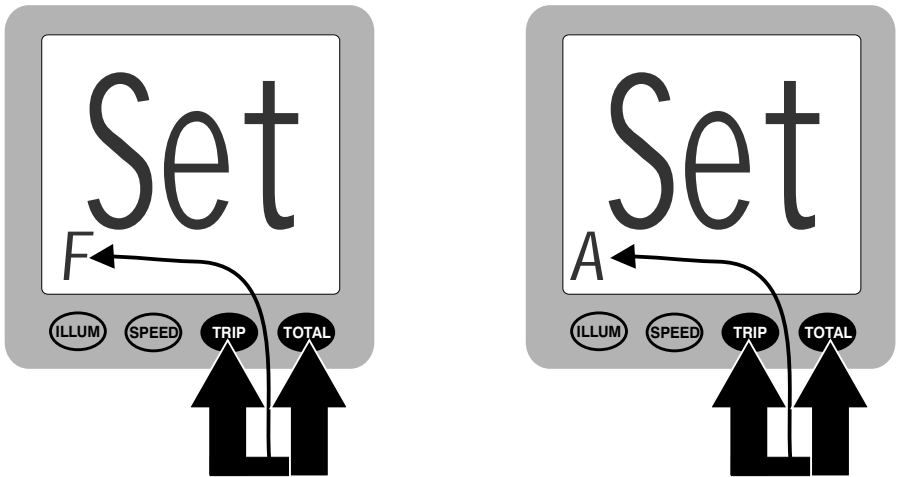
***Figure 9 -Switching between Fast and Averaged
speed display modes***

CHANGING THE CALIBRATION

The calibration factor determines the number of revolutions of the
paddle wheel required to represents 0.1 miles or nautical miles. The
calibration of the unit is set up in the factory and the value is stored
in the unit's memory. However, the type of hull and the position of
the paddle may affect the performance and cause the speed (and
distance) to over-read or under-read.

Press the **TRIP** button to see the calibration factor, which is pre-set
to 100 in the factory, to give correct readings in free flow conditions.
The same factor is used for speed and distance measurements. The
facror can be increased to 150% or decreased to 70% in 1% steps.

Any changes are automatically applied to both speed and distance measurements, and are always permanently stored in the unit even when it is switched off.

If the factory-fresh unit (with a pre-set calibration factor of 100) is found to under-read by, for example, 6% the calibration factor must be increased by 6% to 106 to corect the under reading, The calibration factor is increased by pressing the **TOTAL** button, and decreased by pressing the **SPEED** button.

The general rule is that if the unit over-reads, the factor must be reduced, and if it under reads, the factor must be increased. The percentage error in the readings is the same percentage change which must be entered. Any changes affect both speed and distance correctly.

When the correct calibration factor has been entered, press **TRIP** to return to the "SET" display, and to store the new calibration factor for future use.

CALIBRATION EXAMPLE

Calibration is never easy because of the effects of currents and tides. Because the unit measures the distance travelled through the water, there can be significant errors in measured speed and distances over the ground if currents are flowing. Calibration can be done by measuring a test speed with the unit and comparing its reading with a known speed. Another method is to traverse a know distance (preferably twice in opposite directions to cancel the effect of currents) and to compare the unit's measurement with the known distance.

However, suppose, for example, a go-and-return test distance measured by the unit was found to be 12.5 miles, and the distance is known(from charts) to be 11.9 miles. The unit is over-reading. Doing the division (measured divided by known) gives 100 X (12.5/11.9) = 105. This value is the effective calibration factor. To Correct the over-reading, the unit`s calibration factor must be reduced by 5 to force the unit`s calibration to match the outside world.

Get into configuration mode, and press **TRIP.** Suppose the calibration factor is already set to the factory preset value of 100. To reduce it by 5, press the **SPEED** Button 5 times to reduce the unit`s calibration factor to 95 (which is 5 less than the original calibration factor of 100). Likewise, if the calibration factor has previously been adjusted to be 104, pressing the **SPEED** button five times will reduce the factor to 99 to make a 5% reduction in the calibration factor.

Press **TRIP** to store the new calibration factor, and return the unit to the "SET" configuration mode. Note that the new calibration factor applies ony to new measurements. It does not apply retrospectively to any measurements already made and stored in the trip and distance stores.

RETURNING TO NORMAL OPERATING MODE

Press the **ILLUM** button to return the unit to normal measurements of speed in the mode which has been set up. All the settings are stored, and will return again whenever the unit is switched on. Returning to configuration setting from normal operation is not available. if further configuration changes are desired, they can be made onyl by swithcing the unit off and then on again with **ILLUM** pressed during the start-up time, as described above.

REMOTE REPEATER FACILITY

A repeating display unit is available for use with the Clipper speed and distance log.

NMEA OUTPUT

The Clipper Log has an NMEA output version 0183 sending sentences $VWVHW and $VWVLW. The blue lead is the NMEA output positive.

CLIPPER LOG REPEATER

Connect the Clipper Log Repeater as follows:

Red wire to positive (+12V)
Silver/Black wire to negative
Blue wire to Blue wire on Clipper Log master unit (NMEA)

The log repeater repeats all information from the Clipper log master unit.

To set the display back light press the **ILLUM** key.

Pressing **ILLUM** whilst `L` is shown on the display will gradually decrease the illumination. Pressing **ILLUM** whilst `H` is shown will gradually increase the illumination.

A brief press of **ILLUM** will roster between 'L' and 'H'.

To view the master unit trip info press **TRIP**
To view the master unit trip info press **TOTAL**
Press **SPEED** to view the master unit speed.

No engineering settings are available.

IMPORTANT READ THIS BEFORE
UNPACKING INSTRUMENT

Prior to unpacking this instrument read and fully understand the installation instructions. Only proceed with the installation if you are competent to do so. Nasa Marine Ltd. will not accept any responsibility for injury or damage caused by, during or as a result of the installation of this product. Any piece of equipment can fail due to a number of causes. Do not install this equipment if it is the only source of information and its failure could result in injury or death. Instead return the instrument to your retailer for full credit. Remember this equipment is an aid to navigation and not a substitute for proper seamanship. This instrument is used at your own risk, use it prudently and check its operation from time to time against other data. Inspect the installation from time to time and seek advice if any part thereof is not fully seaworthy.

LIMITED WARRANTY

Nasa Marine Ltd. warrants this instrument to be substantially free of defects in both materials and workmanship for a period of one year from the date of purchase. Nasa Marine Ltd. will at its discretion repair or replace any components which fail in normal use within the warranty period. Such repairs or replacements will be made at no charge to the customer for parts and labour. The customer is however responsible for transport costs. This warranty excludes failures resulting from abuse, misuse, accident or unauthorised modifications or repairs. In no event shall Nasa Marine Ltd. be liable for incidental, special, indirect or consequential damages, whether resulting from the use, misuse, the inability to correctly use the instrument or from defects in the instrument. If any of the above terms are unacceptable to you then return the instrument unopened and unused to your retailer for full credit.

Name _____

Address _____

_____

Dealer Name _____

Address _____

_____

Date of Purchase _____

Proof of purchase may be required for warranty claims.

Nasa Marine Ltd.
Boulton Road, Stevenage, Herts SG1 4QG England

Declaration of Conformity
NASA Marine Ltd declare this product is in compliance with the essential requirements of R&TTE directive 1995/5/EC.
The original Declaration of Conformity certificate can be requested at info@nasamarine.com
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