FISH 4500/4600
FISHFINDERS

Installation and Operation Manual

NAVMAN

www.navman.com

This is the Installation and Operation manual for the Navman FISH 4500 and FISH 4600 (here after referred to as FISH 4500/4600) fishfinders. The FISH 4500/4600 is set up with default units of feet, °F (Fahrenheit), US gallons and knots. See section 3-6 Setup > Units, to change the units.

FCC Statement

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a normal installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an output on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced technician for help.
- A shielded cable must be used when connecting a peripheral to the serial ports.

IMPORTANT

It is the owner's sole responsibility to install and use the instrument and transducer(s) in a manner that will not cause accidents, personal injury or property damage. The user of this product is solely responsible for observing safe boating practices.

NAVMAN NZ LIMITED DISCLAIMS ALL LIABILITY FOR ANY USE OF THIS PRODUCT IN A WAY THAT MAY CAUSE ACCIDENTS, DAMAGE OR THAT MAY VIOLATE THE LAW.

Governing Language: This statement, any instruction manuals, user guides and other information relating to the product (Documentation) may be translated to, or has been translated from, another language (Translation). In the event of any conflict between any Translation of the Documentation, the English language version of the Documentation will be the official version of the Documentation.

Fuel Computer: Fuel economy can alter drastically depending on the boat loading and sea conditions. The fuel computer should not be the sole source of information concerning available fuel onboard and the electronic information should be supplemented by visual or other checks of the fuel load. This is necessary due to possible operator induced errors such as forgetting to reset the fuel used when filling the tank, running the engine with the fuel computer not switched on or other operator controlled actions that may render the device inaccurate. Always ensure that adequate fuel is carried onboard for the intended trip plus a reserve to allow for unforeseen circumstances.

This manual represents the FISH 4500/4600 as at the time of printing. Navman NZ Limited reserves the right to make changes to specifications without notice.

Contents

1 Introduction

Congratulations on choosing a Navman fishfinder. For maximum benefit, please read this manual carefully before installation and use.

This manual describes how to install and set up the FISH 4500/4600 and the associated dual-frequency transom transducer. (If a through hull transducer is used, refer to the Installation Instructions supplied with that transducer.)

This manual also explains how to operate the FISH 4500/4600 effectively and provides troubleshooting information and performance tips.

Important

It is vital to the performance of the fishfinder that the transducer is installed in the best location. Please follow the installation instructions very carefully.

1-1 Benefits of the FISH 4500/4600

The FISH 4500/4600 is a high quality, dual-frequency sonar fishfinder that is supplied with a dual-frequency transducer. It uses TFT (Thin Film Transistor) technology to provide a color display for easy daylight viewing that can be dimmed for night fishing. The bracket mounting option also allows the fishfinder to be tilted and swivelled for optimum viewing.

The colors on the sonar displays are customizable, with a choice of four 16 color palettes and one 8 color palette. The colors represent different signal strengths, making the sonar displays easy to interpret.

The dual frequency capability enables the FISH 4500/4600 to operate and display:

- At a high frequency of 200 kHz.
- At a low frequency of 50 kHz.
- Both frequencies side-by-side on a split display.
- Both frequencies combined together into a single display.

This capability, combined with a variable power output of up to 600 W RMS, ensures that the FISH 4500/4600 operates effectively in shallow and deep water.

The FISH 4500/4600 can detect the bottom to a depth of 2000 feet (600 metres) depending on the clarity of the water, the ultrasonic frequency chosen and the type of transducer used.

The Navman fishfinder can be used to find fish, to locate features on the bottom such as reefs or wrecks and to help recognize favourite fishing spots from the bottom profile.

The Navman fishfinder can also assist with navigation by providing depth information to help identify the depth contours marked on charts. The FISH 4500/4600 is particularly suited to work with the TRACKER 5500/5600 - Navman's color display GPS chartplotter with worldwide coverage.

The two instruments can be connected together using either NavBus or NMEA, so they can share data.

IMPORTANT NOTE ON USE. While any fishfinder can be used as an aid to navigation, accuracy can be limited by many factors, including the location of the transducer. It is the user's responsibility to ensure the Navman fishfinder is installed and used correctly.

With the optional fuel kit, the FISH 4500/4600 also becomes a sophisticated and easy-to-use fuel computer.

All of the Navman 4000 Series fishfinders use new proprietary SBN-// Technology for sonar processing to improve Signal enhancement, Bottom recognition and Noise rejection.

SBN-// Technology uses digital adaptive filter algorithms to enhance all returned signals. At the same time, SBN-// Technology uses active noise control to reject interference, which can often be mistaken by fishfinders for true returns.

Using SBN-// Technology, the Navman fishfinder analyses the reflections from each pulse, filters false returns and displays what is in the water under the boat. See section 4-1 Interpreting the display, for more information.

1-2 How the FISH 4500/4600 works

The FISH 4500/4600 has two parts:

- the transducer attached to the hull
- the display unit.

The transducer generates an ultrasonic pulse (sound that is above the hearing range of the human ear), which travels down towards the bottom at a speed of about 4800 ft/sec (1463 m/sec), spreading out into a cone shape.

When the pulse meets an object, such as a fish or the bottom, it is partly reflected back up towards the boat as an echo. The depth of the object or bottom is calculated by the FISH 4500/4600 by measuring the time taken between sending a pulse and receiving the echo. When an echo has been returned, the next pulse is sent.

The FISH 4500/4600 converts each echo into an electronic signal, displayed as a vertical line of pixels. The most recent echo appears on the extreme right of the display, with the older echoes being scrolled towards the left, eventually disappearing off the display.

The scroll speed depends upon the water depth and scroll speed setting. See section 3-2 Setup > Sonar and section 4-1 Interpreting the display, for more information.

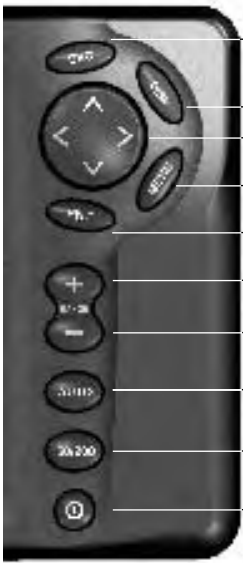
The appearance of echoes displayed are affected by:

- the fishfinder settings (frequency selected, range and gain settings)
- echoes (different fish types, different bottom types, wrecks and seaweed)
- noise (water clarity and bubbles).

See section 4-1 Interpreting the display, for more information.

2 Basic Operation

Key Names



ESC	If a menu is not displayed then go to the sonar display. If a menu is displayed then cancel any changes and return to the previous menu.
DISP	Shows the Display menu.
<, > ∧, ∨	Cursor keys move the selection highlight and change settings.
MENU	Press to show the Options menu on a display; press again to show the Setup menu.
ENT	Confirms any changes or from a sonar display shows the Gain controls.
+	Increases the Range.
–	Decreases the Range.
AUTO	Selects manual, cruising or fishing mode.
50/200	Changes the frequency between 50 kHz and 200 kHz.
⏻	Powers On and Off; shows the Backlight control.

Key Operation

The fishfinder is operated through menus.

To select a menu item:

1. Press **DISP** or **MENU**
2. Press ∧ or ∨ to move the highlight to the item.
3. Press **ENT** to select the item.

To change a number, word or setting:

1. Use the cursor keys, <, ∧, ∨, > to highlight the number, word or setting and to make the change(s).
2. Press **ENT** to confirm; **ESC** to cancel.

Power On / Auto Power

Press ⏻ to turn the fishfinder on.

If the fishfinder is wired for auto power, it turns on automatically whenever the boat's ignition is turned on. This ensures that the engine hours counter and optional fuel functions are activated. *A title display appears briefly. This is followed automatically by the Installation menu* ***the first time*** *the fishfinder is switched on. Use this menu to specify the language (see section 3-1 Setup > System) and units (see section 3-6 Setup > Units).*

At all other times, the title display is followed by the display that was used most recently.

If the transducer is not connected, the message: `Enter simulate mode?` will appear. Press < or > to switch between `Yes`, `No` or `Never`. (If the transducer was not intentionally disconnected, turn off the fishfinder and refer to the section on Troubleshooting in Appendix B.) Press **ENT** to confirm the selection and the startup sequence will continue.

Power Off

To turn the fishfinder off, hold ⏻. A countdown box appears. Continue to hold ⏻ for 3 seconds until the fishfinder turns off.

Note: *If the unit is wired for Auto Power (section 6-5 Wiring options) the fishfinder can be turned off only when the boat's ignition is turned off.*

Backlight Adjustment

The display and keys are backlit, with a choice of 16 brightness levels. To change the backlight level:

1. Press ⏻ briefly to show the display controls.
2. Press < to dim or > to brighten.
3. Press **ENT** to save setting.

Press ⏻ twice to return to the maximum backlight setting

4. Press **ESC** to exit.

Menu Note:

Some menu items in the FISH 4500/4600 menu's utilize checkboxes.

If the box is selected or 'checked' (contains a check or tick), then that function is enabled or ON.

If the box is de-selected or 'un-checked' (does not contain a check or tick), then that function is disabled or OFF.

To select or de-select a checkbox, highlight the menu item and press ENT.

Simulate Mode

An internal simulator allows users to learn how to operate the fishfinder off the water.

In Simulate mode the word `Simulate` flashes on the bottom of the display. The fishfinder generates data so that all the main displays appear to be operational.

Use `Setup > Simulate` as follows:

1. Press **MENU** twice to show the Setup menu.
2. Highlight `Simulate`.
3. Press **ENT** to select or de-select.

Manual, Fishing and Cruising Modes

Press **AUTO** to select one of the three following operating modes:

- **Cruise mode.** Use this when on the move. The FISH 4500/4600 prominently displays the water depth and automatically adjusts Range and Gain so that the bottom trace is displayed. Depth is displayed in large digits.
- **Fishing mode.** Use this when fishing. The FISH 4500/4600 prominently displays fish, the bottom profile, wrecks, rocks and all the details that help to find fish. Gain and Range are optimized automatically, increasing the sensitivity and fishfinding ability.
- **Manual mode.** Use this to fine-tune the fishfinding ability of the FISH 4500/4600. Best results are often achieved in manual mode, but practice and experience are required to obtain the optimum settings for different conditions. Gain, gain threshold, pulse length and pulse power can all be adjusted. Manual mode stores the most recent settings, so these do not have to be reset each time manual mode is selected.

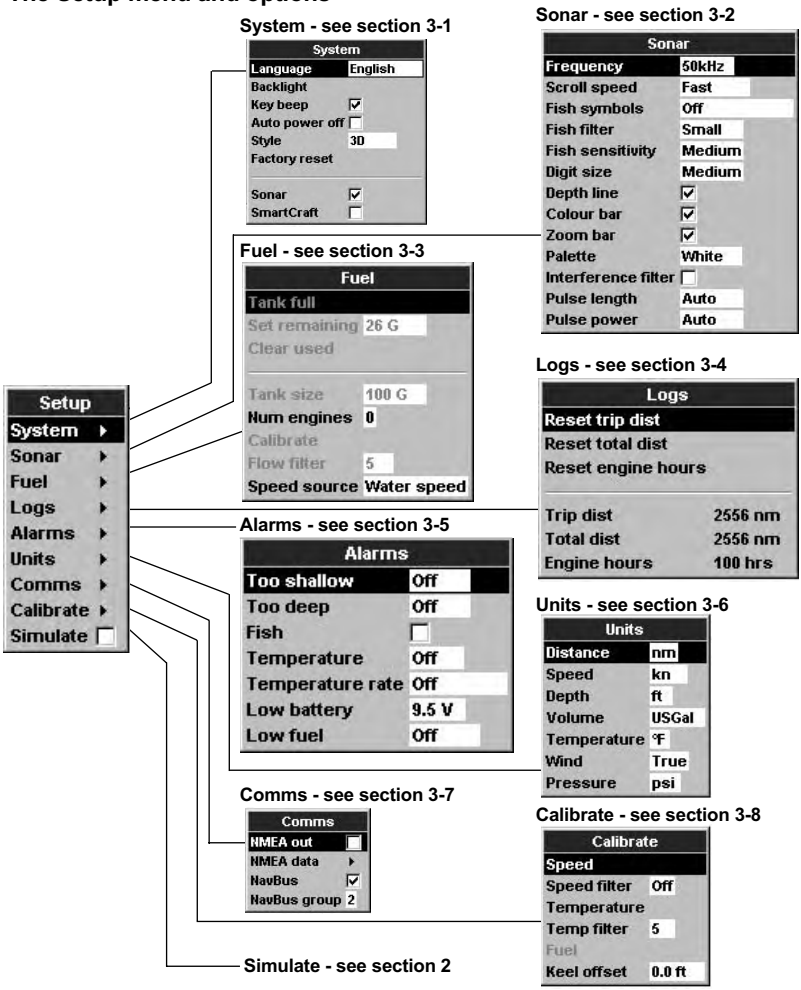
3 Setting up the FISH 4500/4600

Press **MENU** twice, to show the `Setup` menu, then select a particular option using the Λ or V cursor keys. (Section 2 Basic Operation, describes the basic use of keys.)

The Setup menu and options are summarized below. **The factory default settings are shown where applicable.**

Each Setup menu option is explained in the following sections.

The Setup menu and options



3-1 Setup > System

Press **MENU** once or more until the Setup menu is displayed, then select System:

Language

Select the language for the displays. The options are: English, Italian, French, German, Spanish, Dutch, Swedish, Portuguese, Finnish Greek and Chinese.

Tip: *In case you can't read the current language, the language setting is found at the top of the system menu.*

Backlight

The backlight control is displayed. The bar setting represents the current level of backlighting.

Key beep

Enables or disables the beep when a key is pressed.

Auto power off

Select to have the fishfinder power off automatically every time the boat's ignition is switched off. This applies only if the display unit is wired for Auto Power. See section 6-5 Wiring Options.

Style

Use this to choose the appearance of the FISH 4500/4600 interface. Select Classic to have the fishfinder interface use the same style as a TRACKER 5500/5600. Otherwise, select 3D for a strong, proportional font.

Factory reset

This option returns all of the fishfinder settings (except the language) to the default factory settings shown in section 3 Setting up the FISH 4500/4600.

A warning box asks: Are you sure? Select Yes and press **ENT** to confirm.

Sonar (FISH 4600 only)

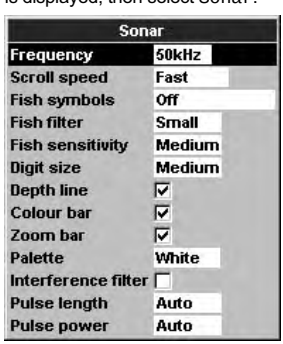
Select to enable sonar functions. Deselect if the unit is to be used as a SmartCraft only display.

SmartCraft (FISH 4600 only)

Select to enable SmartCraft functions. SmartCraft is only available with certain Mercury engines, and requires an optional SmartCraft Gateway.

3-2 Setup > Sonar

Press **MENU** once or more until the Setup menu is displayed, then select Sonar:



Frequency

There is a choice of: 200 kHz, 50 kHz and Mixed. For information about selecting a suitable frequency for the water conditions, see section 4-2 Single and Dual frequency fishfinding.

Scroll speed

Use this to set the scroll speed on the display. There is a choice of: Very Fast, Fast, Medium, Slow and Pause. The depth of the water also affects the speed of the display.

Faster scroll speeds combined with a slow boat speed (typically between 2 and 6 knots) shows the most fish detail. Medium or Slow scroll speeds result in sonar information being displayed over a longer period, but with less detail. See Section 4-1 Interpreting the display, for more information.

Fish symbols

These appear only in the main sonar displays. Fish symbols can be shown in three ways:

- As a fish symbol (On).
- As a fish symbol with the depth (On+depth). The depth is shown beside the fish symbol.
- Switched off (Off) so that echoes are not converted to fish symbols but are displayed directly.

See section 4-3 Fish detection and display, for more information about fish symbols.

Fish filter
Use this to select the minimum fish symbol size to be displayed. There is a choice of: Small, Medium and Large.

Digit size
Use this to remove or change the size of the depth display on the sonar displays. There is a choice of: Small, Medium and Large.

Fish sensitivity
Use this function to adjust the minimum fish detection level. Select High to detect maximum number of fish.

Depth line
This is a horizontal line that can be moved up or down using the ^ or v cursor keys. The depth line can be used to find the depth of a fish or other object shown. When in the Sonar Zoom display, the depth line marks the centre of the zoomed area.

If selected, it appears on all the sonar displays.

Color bar
This shows the range of colors used for the selected color palette.

If selected, it is displayed down the left hand side of all the sonar displays.

Zoom bar
This shows the vertical range that is enlarged in the Zoom section.

If selected it appears as a vertical scroll bar displayed on the right hand side of all the sonar displays.

Palette
Use this to select a color palette. Each color within the palette represents a different echo strength, as shown on the sonar displays

There is a choice of five color palettes: Black, Blue, White, Vivid and 8 color. The first four display more detail, whilst the 8 color palette shows a greater distinction of signal strength between each adjacent color. For the 16 color palette, each color covers 1.5 dB signal range. For the 8 color palette, each color covers 3 dB signal range.

Interference filter
This filters the echo signal to reduce high-level, spiky interference, such as engine noise.

Select to add filter.

Pulse length
This can be used to specify the length of the transmitted ultrasonic pulse. A short pulse length improves the display detail but contains less energy, therefore it does not penetrate as deeply into the water as a longer pulse.

There is a choice of Auto, Short, Medium or Long. The Auto setting is recommended.

Pulse power
This can be used to specify the power output of the transmitted ultrasonic pulse. Low power output conserves the boat's battery and produces a clear display in shallow water.

There is a choice of Auto, Low, Medium or High. The Auto setting is recommended.

3-3 Setup > Fuel
These features can be used only when the optional single or twin engine fuel kit has been installed.

Press **MENU** once or more until the Setup menu is displayed, then select Fuel:
It is recommended that the fuel tank capacity is measured by draining the fuel tank, then filling it to capacity. After filling, note the reading from the fuel dispenser's gauge.

Note: *Beware of air pockets, especially in underfloor tanks.*

Warning
Navman fuel kits are only suitable for petrol/gasoline engines. Fuel consumption can change drastically depending upon the boat loading and the sea conditions. Always carry adequate fuel for the journey, plus a reserve.

Tank full
Select Tank full each time the fuel tank(s) are completely refilled. When asked Are you sure? select Yes. Otherwise, the reading on the Fuel display (see section 5-6 Fuel Display) and the Low Fuel Alarm (see section 3-5 Setup > Alarms) are meaningless.

Set remaining

Before doing a partial refill of the tank or removing fuel manually from the tank (for example, by siphoning it off):

1. Note the `Remaining` reading on the Fuel display.
2. Note how much fuel is added or removed.
3. Calculate how much fuel is now in the tank.
4. Select `Set remaining` and update the reading.

It is essential to do this whenever some fuel is added or removed. Otherwise, the reading on the Fuel display (see section 5-6 Fuel Display) and the Low Fuel Alarm (see section 3-5 Setup > Alarms) are meaningless.

Clear used

Select `Clear used` to set `Used` (the amount of fuel used) to zero. Do this to start measuring the amount of fuel used over a certain time or distance. When asked `Are you sure?` select `Yes`.

Tank size

Enter the capacity of the fuel tank.

Num engines

Set the number of engines to `0`, `1` or `2`. If `0` is selected the fuel features are turned off.

Calibrate

See section 3-8 Setup > Calibrate, for information about calibrating the fuel transducer(s).

Flow filter

Most engines do not draw fuel from the tank at a steady rate. To give a stable fuel flow reading, the fishfinder calculates the flow value(s) by taking several measurements and averaging them. Use the Flow filter to set the period over which the fuel flow is averaged.

For twin engine installations, the fuel flow for each engine must be adjusted separately.

The Flow filter can be set from `0` to `30` seconds. Use the lowest value which gives a stable flow. Usually a value of 5 to 10 seconds will give a satisfactory result for two-stroke carburettor engines. Fuel injected or four-stroke engines may require a larger value.

This setting affects the `Fuel flow` and `Fuel economy` reading on the Fuel display (see section 5-6 Fuel display) but it does not affect the `Fuel used` reading.

Speed Source

Select speed input from water speed transducer or external GPS source (an external GPS source must be connected to the Fishfinder via NavBus or NMEA comms – see section 3-7 Setup > Comms.)

3-4 Setup > Logs

Press **MENU** one or more times until the `Setup` menu is displayed, then select `Logs`:

The values can be changed independently of each other. These log values are saved when the unit is turned off.

Reset trip dist

This resets the trip distance to zero.

Reset total dist

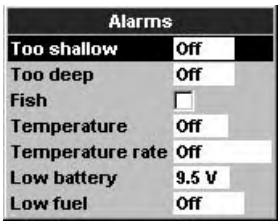
This option resets the total distance to zero.

Reset engine hours

Use this option to reset the engine hours to zero. This can be useful after an engine service or to count the engine hours between service intervals.

3-5 Setup > Alarms

Press **MENU** one or more times until the Setup menu is displayed, then select Alarms:



Trigger settings can be defined to suit the boat and individual preferences as follows:

Alarms can be set (enabled) to automatically detect certain conditions, such as the water being too shallow. Alarms that are enabled are shown as black icons in the Alarm status box on the sonar displays.

When an enabled alarm is triggered, the beeper sounds, an alarm message is displayed and the alarm status icon is shown in red.

Press **ENT** or **ESC** to acknowledge the alarm, stop the beeper and close the alarm window. This does not disable the alarm.

Alarms automatically re-enable

The Too shallow, Too Deep and Low battery alarms automatically re-enable when the value moves outside the alarm trigger setting.

The Temperature alarm automatically re-enables when the temperature is more than 0.45°F (0.25°C) above or below the alarm trigger setting.

The Temperature rate alarm automatically re-enables when the rate of temperature change falls below the trigger setting by more than 0.2°F (0.1°C) per minute.

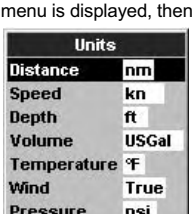
Symbol	Alarm Name	Beeper Cycle	Alarm condition is met when the:
	Too shallow	1/5 sec	depth is less than the alarm trigger value
	Too deep	1/2 sec	depth is greater than the alarm triggervalue
	Fish	1 short beep	echo matches the profile of a fish
	Temp.	1/2 sec	temperature equals the alarm triggervalue
	Temp. rate	1/2 sec	rate of change of temperature equals the alarm trigger value
	Low battery	1/2 sec	battery voltage is less than the alarm trigger value
	Low fuel	1/2 sec	fuel remaining equals the alarm trigger value

Flashing light and/or external beeper

If a secondary alarm indicator is required, a flashing light and/or external beeper can be installed. These can be positioned anywhere suitable on the boat. See section 6-5 Wiring options.

3-6 Setup > Units

Press **MENU** one or more times until the Setup menu is displayed, then select Units:



The default units are shown in this example.

Distance

Select from:
- nm (nautical miles)
- mi (miles)
- km (kilometres)

Speed

Select from:
- kn (knots)
- mph (miles per hour)
- kph (kilometres per hour)

Depth

Select from:
- ft (feet)
- m (metres)
- fa (fathoms)

Fuel

Select from:
- Litres
- USGal (US gallons)
- ImpGal (Imperial Gallons)

Temperature

Select either:
- °F (Fahrenheit)
- °C (Celsius)

Wind

- True
- Apparent

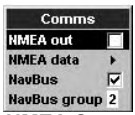
Pressure

- kPa
- psi

3-7 Setup > Comms

Use this feature when the FISH 4500/4600 is connected to other Navman instruments through NavBus or any compatible NMEA instrument.

Press **MENU** once or more until the `Setup` menu is displayed, then select `Comms`:



NMEA Out

NMEA is generally used with third party instruments. Select to transmit NMEA sentences (see Appendix A - Specifications).

NMEA data

Use this to specify which NMEA sentences will be transmitted (see Appendix A - Specifications and section 5-7 Data display, for information about how to display NMEA data).

NavBus

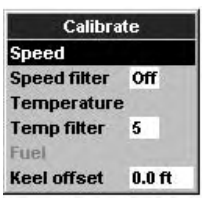
NavBus is the preferred method for connecting the FISH 4500/4600 to other Navman instruments. Select if the instruments are connected using NavBus.

NavBus Group

Use this when a group of Navman instruments are connected together using NavBus, to specify a group of instruments for backlighting, if required. Then, if the backlight setting on one instrument in the group is adjusted, the other instruments change automatically. Otherwise, select `0`.

3-8 Setup > Calibrate

Press **MENU** once or more until the `Setup` menu is displayed, then select `Calibrate`:



The fuel options can be calibrated only when the optional single or twin engine kit is installed on petrol/gasoline engines.

Speed

Calibration may be required because different hull shapes have different flow characteristics.

Obtain an accurate measurement of the boat's speed from a GPS receiver; or by following another boat travelling at a known speed; or by making a timed run over a known distance.

Note: for accurate calibration:

- The speed from a GPS receiver should be greater than 5 knots.
- The speed from another paddlewheel transducer should be between 5 and 20 knots.
- Best results are achieved in calm conditions where there is minimal current (best at high or low tide).

Use the cursor keys to display the speed readout box, then increase or decrease the readout to match the independent speed value.

Speed Filter

Increase this setting to stabilise an erratic speed reading. Decrease to improve reading responsiveness. The speed filter can be set from 0 to 30 seconds.

Temperature

The factory settings should be sufficiently accurate for normal usage. To calibrate the temperature readout, first measure the water temperature with a thermometer known to be accurate.

Use the cursor keys to display the temperature readout box, then increase or decrease the value to match the measured temperature. The temperature can be set from 32° to 99.9°F (0° to 37.7°C) with a resolution of 0.1° unit.

To change the units between °F (Fahrenheit) or °C (Celsius), see section 3-6 Setup > Units.

Temp filter

Increase this setting to stabilise an erratic temperature reading. Decrease to improve reading responsiveness. The temperature filter can be set from 0 to 30 seconds.

Fuel

Warning:

Extreme precautions must be observed when carrying out this procedure.
Failure to do so could create hazardous conditions that can cause serious personal or property damage.

Calibrating the fuel usage can improve the accuracy of fuel measurements.

Twin engine installations require each fuel transducer to be calibrated. This can be done at the same time with two portable tanks or at different times using one portable tank.

Calibrating the fuel transducer(s) requires accurate measurement of the fuel consumption. This is best done using a small portable tank. At least 4 gallons (15 litres) of fuel should be used to ensure an accurate calibration.

It is often very difficult to fill underfloor tanks to the same level twice due to air pockets, so the more fuel used, the more accurate the calibration.

To calibrate the fuel transducer(s), perform the following steps:

1. Record the level of the fuel in the tank(s).
2. Connect the portable tank(s) to the engine through the fuel transducer(s).
3. Run the engine at normal cruising speed until at least 4 gallons (15 litres) of fuel has been used per engine.
4. Check the actual amount of fuel used per engine by refilling the portable tank(s) to the original level and noting the reading(s) from the fuel dispenser's gauge.
5. Select `Fuel`. Use the cursor keys to change the reading for each engine to match that on the fuel dispenser's gauge.
6. Press **ENT** when the reading is correct.

Note: If the fuel calibration options appear to give erroneous readings after a while, first check that the fuel sensor has been installed correctly according to the installation instructions supplied with it. Then see Appendix B - Troubleshooting.

Keel offset

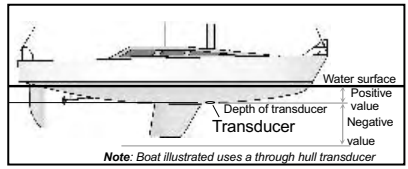
Keel offset is a depth correction representing the vertical distance between the depth transducer and the location from which the depth is to be measured.

Enter a **positive** keel offset value when the transducer is located below the water surface but the total depth is required.

Enter a **negative** keel offset value when the depth below the deepest part of the boat is required (such as the keel, the rudder or the propeller) and the transducer is located closer to the water surface.

Use the cursor keys to select `Keel offset`, then press > to display the Keel offset box.

Use the ∧ or ∨ cursor keys to adjust the value.



***Note**: Boat illustrated uses a through hull transducer*

4 Using the FISH 4500/4600

This section explains how to interpret the sonar displays, when and why to use the different frequencies and how fish are detected and displayed.

It also describes Gain and Range and shows examples of some of the different sonar displays. Also see section 1-2 How the FISH 4500/4600 works.

4-1 Interpreting the display

The sonar displays do not show a fixed distance travelled by the boat; rather, they display a history, showing what has passed below the boat during a certain period of time.

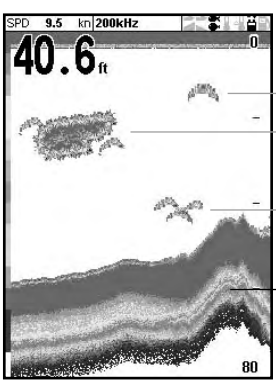
The history of the sonar signal displayed depends on the depth of the water and the scroll speed setting.

In shallow water, the echoes have a short distance to travel between the bottom and the boat. In deep water, the history moves across the display more slowly because the echoes take longer to travel between the bottom and the boat. For example, when the scroll speed is set to `Fast`, at depths over 1000 ft. (300 m) it takes about 4 minutes for each vertical line of pixels to move across the display, whereas at 20 ft. (6 m) it takes only about 15 seconds.

The scroll speed can be set by the user to display either a longer history with less fish information or a shorter history with more fish details. See section 3-2 Setup > Sonar.

If the boat is anchored, the echoes all come from the same area of bottom. This produces a flat bottom trace on the display.

The screen shot shows a typical sonar display with the Fish symbols turned `Off`.

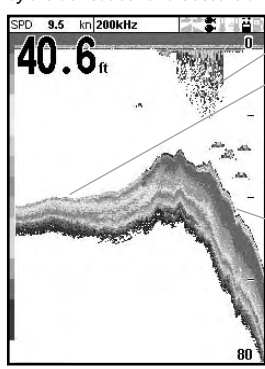


Strength of echoes

The colors indicate differences in the strength of the echo. The strength varies with several factors, such as the:

- Size of the fish, school of fish or other object.
- Depth of the fish or object.
- Location of the fish or object. (The area covered by the ultrasonic pulse is a rough cone shape and the echoes are strongest in the middle.)
- Clarity of water. Particles or air in the water reduce the strength of the echo.
- Composition or density of the object or bottom.

Note: *Planing hulls at speed produce air bubbles and turbulent water that bombard the transducer. The resulting ultrasonic noise may be picked up by the transducer and obscure the real echoes.*

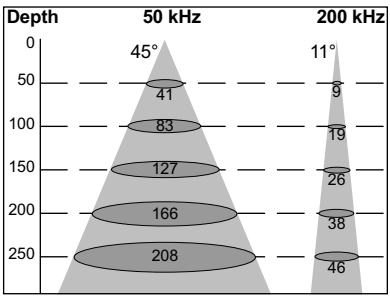


Bottom types

Mud, weed and sandy bottoms tend to weaken and scatter the sonar pulse, resulting in a weak echo. Hard, rocky or coral bottoms reflect the pulse, resulting in a strong echo. See section 5-3 Sonar Bottom display.

Frequency and cone width

The pulse generated by the FISH 4500/4600 transducer travels down through the water, spreading outwards to form a rough cone shape. However, the cone width is dependent upon the frequency of the pulse; at 50 kHz it is 45°, whereas at 200 kHz it is 11°. The chart shows how the cone width varies over depth for each frequency used. Figures are approximate.



Water Depth	Cone width at 50 kHz	Cone width at 200 kHz
10	8	2
20	**16**	**4**
30	25	6
40	**33**	**7**
50	41	9
60	**50**	**11**
70	58	13
80	**66**	**15**
90	74	17
100	**83**	**19**
150	127	26
200	**166**	**38**
300	249	58
400	**331**	**77**
500	414	96
600	**497**	**116**
700	580	135
800	**663**	**154**
900	746	173
1000	**828**	**192**

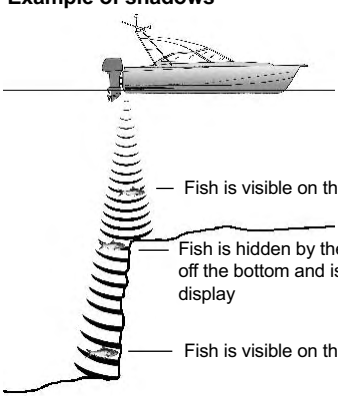
The differences in the cone width affect what is displayed. See section 4-2 Single and Dual Frequency fishfinding.

Shadows

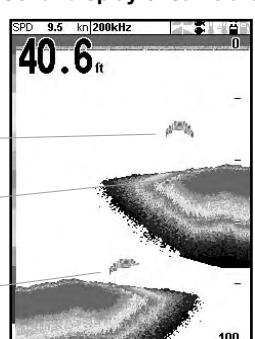
Shadows are created around areas where the ultrasonic beam cannot 'see'. These areas include hollows on the bottom or beside rocks and ledges, where the strong echoes returned off the rocks obscure the weak echoes of the fish and may also create a double bottom trace. See following for an example of the sonar display in such an environment. A double bottom trace is shown on the display.

When looking for fish with the wide angled 50 kHz frequency, be aware of increased shadows. Use the high frequency 200 kHz in areas that have rocks and ledges because this frequency reduces the shadow effect considerably.

Example of shadows



Sonar display of same area



4-2 Single and Dual frequency fishfinding

When to use 200 kHz

The 200 kHz frequency is especially suitable for use in shallow and medium depth water, typically less than 500 ft. (150 m) and while running at speed.

At 200 kHz, the narrow cone reduces any noise caused by air bubbles.

The 200 kHz frequency generates a higher definition pulse which produces little shadow and returns excellent detail over a small area of bottom. Therefore, it gives excellent bottom discrimination capability and is particularly good at showing individual fish, including bottom dwellers.

When to use 50 kHz

The 50 kHz frequency is particularly suitable for use in deep water, typically greater than 500 ft. (150 m).

At 50 kHz, the cone covers an area of water about four times wider than the 200 kHz cone and penetrates to a greater depth with minimal loss of the return signal.

However, it produces a lower definition display with more shadow compared to the 200 kHz frequency. This means that a group of small fish, for example, could be displayed as a single item, while any fish very close to the bottom may not be found at all.

This frequency is useful for getting a deep, wide overview of the area so that any areas of interest can be identified and then examined in detail with the 200 kHz frequency.

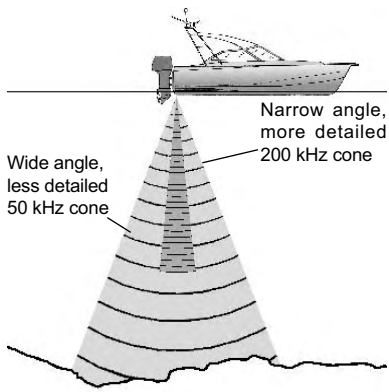
When to use 50/200 kHz

Operating the FISH 4500/4600 at both 50 kHz and 200 kHz simultaneously on a split display can be very useful when operating in shallow to medium water, typically less than 500 ft. (150 m), because the 50 kHz section of the display shows the general area, while the 200 kHz section can be viewed simultaneously for a more detailed look at any interesting feature.

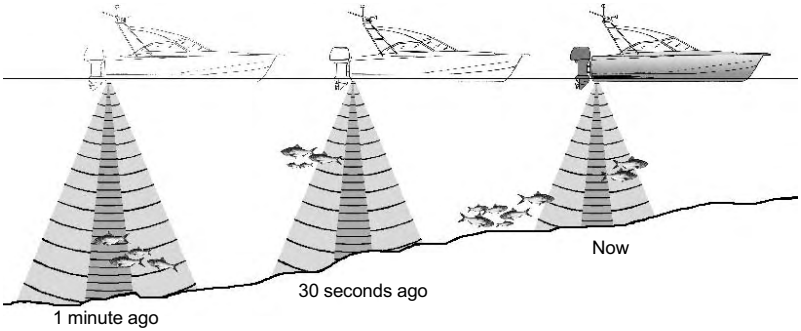
Mixed frequency

The Mixed frequency combines the 200 kHz and the 50 kHz echoes on one sonar display, filling in detailed echoes in the centre of the sonar cone.

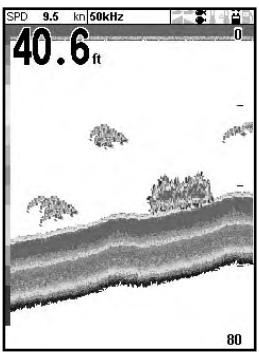
Mixed frequency



Comparison of the same fish scenario displayed at different frequencies:

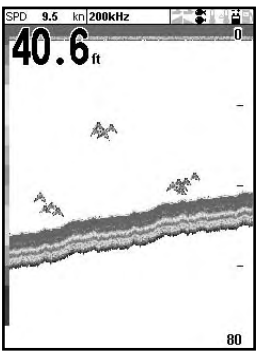


50 kHz display



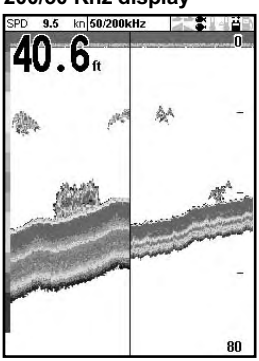
Note the wider bottom trace

200 kHz display



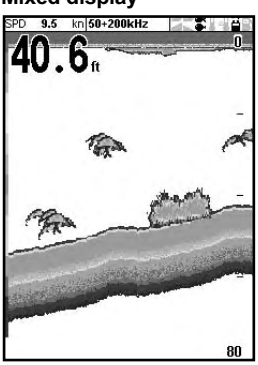
Note the smaller, defined fish arches and more bottom detail.

200/50 Khz display



Dual screen

Mixed display



4-3 Fish detection and display

Where to find fish

Underwater features like reefs, wrecks and rocky outcrops attract fish. Use the 50 kHz or 50/200 kHz frequency display to find these features, then look for fish by passing over the feature slowly several times using the Zoom display (see section 5-2 Sonar Zoom display). If there is a current, the fish will often be found downstream of the feature.

When fishing with the FISH 4500/4600 with the Fish symbols `Off`, a weak fuzzy band may appear between the bottom trace and surface. This might indicate a thermocline - a rapid change in water temperature, such as the edge of a warm or cold current. The temperature difference can form a barrier which the fish may not swim through. In fresh water, fish often collect around a thermocline.

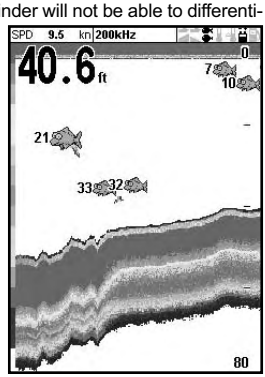
Fish symbols

The fish symbol can be customized or switched off altogether so that the echoes are not converted to fish symbols on the display. See section 3-2 Setup > Sonar. The differences between Fish symbol `On` and `Off` are:

Fish symbols `On`

Using Navman's SBN-*//* sonar technology the fishfinder analyses all echoes and eliminates most false signals and clutter so that remaining targets are most likely fish. Depending on the strength of the remaining echoes, they are displayed as either small, medium or large fish symbols - with or without depth. While the SBN-*//* processing is very sophisticated it is not foolproof - there will be times when the fishfinder will not be able to differentiate between large air bubbles, rubbish containing air, fishing floats etc. and genuine fish.

The following picture shows the Sonar display with the Fish symbol: `On` + `depth`:



Fish symbols `Off`

For experienced users this always provides the best information as every echo is displayed, whether it is surface clutter, a thermocline or a fish.

The picture in section 4-1 Interpreting the display, shows the Sonar display with the Fish symbols `Off`. The fish appear as arches.

Fish arches

In good conditions and with Fish symbols `Off`, a fish passing through the cone-shaped ultrasonic pulse is displayed as a fish arch. The 50 kHz frequency uses a wider cone than the 200 kHz frequency. This makes the fish arches easier to see.

A fish arch occurs when a fish enters the weak edge of the sonar cone, generating a weak echo that is displayed as the first pixel of the fish arch. As the fish moves closer to the middle of the cone, the distance between the transducer and the fish reduces and the echo is displayed at progressively shallower depths, producing the start of an arch. When the fish passes directly beneath the middle of the cone, the echo becomes strongest and thickest. As the fish passes out of the middle of the cone the reverse happens with a progressively weaker and deeper echo.

There are many reasons why fish arches may not be seen. For example:

- Poor transducer installation (see *Transom Transducers Installation Guide*).
- If the boat is anchored then fish will tend to show on the display as horizontal lines as they swim into and out of the transducer sonar beam. Slow speeds in deeper water give the best fish arch returns.
- Range is important. It will be much easier to see fish arches when using zoom mode to concentrate on a particular section of water, rather than just displaying everything from the surface to the bottom. Zooming increases screen resolution and is necessary for good fish arches.
- It is difficult to get fish arches in shallow water as the transducer sonar beam is very narrow near the surface and fish do not stay within the beam long enough to display an arch. Several fish in shallow water tend to display as randomly stacked blocks of pixels.
- Wave motion may result in distorted fish arches.

4-4 Gain

Gain (sensitivity) controls the amount of detail displayed on the FISH 4500/4600. Understanding how to set suitable Gain settings is important for optimum performance.

The Navman fishfinder has two gain modes, Auto Gain and Manual Gain. Normally the best results are obtained in Manual Gain, but practice and experience are required to obtain the optimum settings for different conditions. Therefore, the use of Auto Gain is strongly recommended when learning to use the fishfinder or when travelling at speed.

- In Auto Gain, the gain adjusts automatically to compensate for water depth and clarity.
- In Manual Gain, the gain can be adjusted by the user to compensate for water depth and clarity.

High Gain settings may amplify the normal background noise until it appears as random pixels.

Changing between Auto and Manual

To change between Auto Gain and Manual Gain:

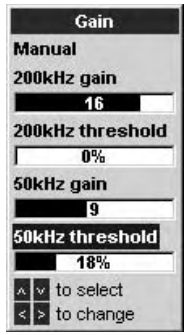
1. From any Sonar display, press **ENT**.
2. Use the ∧ or ∨ cursor keys to highlight `Auto` or `Manual`, then use the < or > cursor keys to select the required mode.

Adjusting Gain and Threshold settings

The gain settings and the threshold settings can be adjusted independently for each frequency (50kHz and 200 kHz).

Use threshold to eliminate colors in the sonar display.

1. From any Sonar display, press **ENT**.
2. Use the ∧ or ∨ cursor keys to highlight the desired setting, then use the < or > cursor keys to change it.

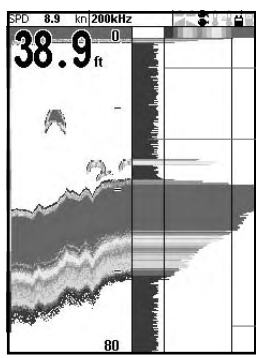


Note: *The Gain mode automatically changes to Manual Gain if the gain or threshold settings are adjusted by the user*

Obtaining the best results

To obtain the best detection capability for both fish and bottom we recommend the use of the Sonar A-Scope display:

1. Set the threshold to 0%.
2. Adjust the gain until the threshold line is just to the right of the unwanted noise.



4-5 Range

Range is the vertical depth displayed on the FISH 4500/4600.

The Navman fishfinder has two range modes, Auto Range and Manual Range:

- In Auto Range, the fishfinder adjusts the depth range automatically so the bottom is always shown in the lower part of the display. The use of Auto Range is recommended for normal conditions.
- In Manual Range, the fishfinder shows only a selected depth range. In areas of rapidly changing bottom depth, such as the sea floor around pinnacles, it can be useful to prevent the display from rescaling to always show the bottom. If the bottom is deeper than the specified depth range, it will not be shown on the display.

Changing the Range Mode

Press the **+** or **-** key to change to Manual Range mode and to increase or decrease the range to the desired depth. Values can be set between 10 ft. (3 m) to 2000 ft. (600 m).

To change from the current mode:

1. From any Sonar display, press **MENU** to display the Options menu.
2. Highlight `Range`, then use the cursor keys to select `Auto` or `Manual`.
3. Press **ENT** to confirm.

Zoom Range and Zoom Offset

On the Sonar Zoom and Sonar Bottom displays, a vertical bar is shown on the far right of the display. This is the zoom bar. The zoom bar shows the zoom range; that is, the area that is magnified.

Use the < or > cursor keys to adjust the zoom range.

Use the ∧ or ∨ cursor keys to adjust the zoom offset.

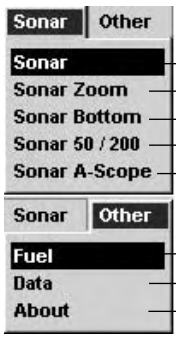
5 The Displays

Press **DISP** to show the Display menu. Use < or > to select display tab, then select a particular display using the ∧ or ∨ cursor keys.

The Display menu is summarized here and each display is shown in the following sections.

Most displays have an Options menu so that relevant features can be changed quickly.

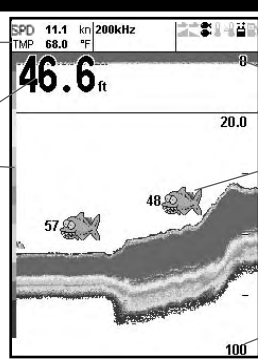
The Display menu



Note: *Refer to Section 3-2 Setup > Sonar, for information about customizing features on the sonar displays.*

- Sonar display at a single or mixed frequency (section 5-1)
- Sonar split display with zoomed section (section 5-2)
- Sonar flat bottom trace in zoomed section (section 5-3)
- Sonar split display with 50 and 200 frequencies (section 5-4)
- Sonar split display with echo strength (section 5-5)
- Fuel data (section 5-6)
- Water temperature and depth history and boat data (section 5-7)
- Product and wiring information (section 5-8)

5-1 Sonar display



Data header, set up to show the boat speed, water temp etc.

Depth (medium size digits)

Color bar

Surface

Depth line

Fish symbols with depth

Bottom

Range

To show the Sonar display, press **DISP** and select `Sonar` Tab, select `Sonar` and press **ENT.**

This display scrolls from right (most recent echoes) to left (oldest echoes) at the selected frequency (see section 3-2 Setup > Sonar).

To change items, press **MENU** until the `Options` menu is shown.

`Gain` is explained in section 4-4 Gain.

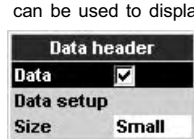
`Range` is explained in section 4-5 Range.

`A-scope` is explained in section 5-5 Sonar A-Scope display.

Data header

The data header can be selected on or off.

When selected, it is a customizable feature that can be used to display up to 12 data items, such as boat speed or fuel used.



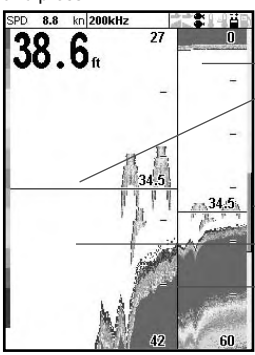
To customize the size of the Data header, highlight `Size` and press **ENT.** There is a choice of `Small`, `Medium`, `Large`.

To customize the data items to be displayed:

1. Highlight `Data setup` and press **ENT.** The Data header increases in size to display all twelve data fields. Some data fields may be blank.
2. Use the cursor keys to move from data field to data field.
3. Press **ENT** at any data field to show the list of data items that can be displayed there.
4. Highlight the required data item and press **ENT**. The data item is immediately displayed in that data field.
5. Press **ESC** when finished and the Data header resizes automatically.

5-2 Sonar Zoom display

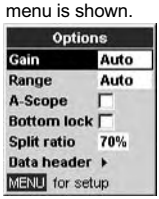
To show the Sonar Zoom display, press **DISP** and select `Sonar` Tab, select `Sonar Zoom` and press **ENT.**



The split display shows the sonar history on the right side and the zoom section on the left.

The zoom bar on the far right shows the area that is magnified in the zoom section. See section 4-5 Range, for information about adjusting the Zoom Range and Zoom Offset.

To change items, press **MENU** until the `Options` menu is shown.



Gain

`Gain` is explained in section 4-4 Gain.

Range

`Range` is explained in section 4-5 Range.

A-Scope

`A-Scope` is explained in section 5-5 Sonar A-Scope display.

Bottom lock

If `Bottom lock` is selected, the zoom section moves so the bottom is always displayed in the zoom section, regardless of changes in depth.

If `Bottom lock` is not selected, the bottom will not be displayed in the zoom section when it is outside the range covered by the zoom bar.

Using the Bottom Lock and the A-Scope features together can be a powerful aid in recognising the type of bottom.

Split Ratio

Use this to change the split ratio between the zoom and the sonar history sections displayed. The default split ratio is 50%.

1. Highlight `Split Ratio` and press **ENT**. A left arrow and right arrow appear on either side of the divider line.
2. Use the < or > cursor keys to adjust the position of the divider line, then press **ENT**. The adjustable range of the split ratio is from 20% to 80%.

Data header

`Data header` is explained in section 5-1 Sonar display.

5-3 Sonar Bottom display

To show the Sonar Bottom display, press **DISP** and select Sonar Tab, select Sonar Bottom and press **ENT.**

This shows a split display, with the sonar history on the right side and the zoom section on the left. The bottom signal is shown as a flat trace in the centre of the zoom section.

Showing the bottom as a flat trace can make it easy to compare the echo strengths shown in the bottom signals. This can help to identify the type of bottom and objects close to the bottom.

The zoom bar can only indicate the zoom range. It cannot indicate the zoom offset as this changes for each sounding displayed on the display. The zoom bar is fixed in the middle of the display.

See section 4-5 Range, for information about adjusting the Zoom Range and Zoom Offset.

To change items, press **MENU** until the Options menu is shown.

Gain is explained in section 4-4 Gain.
Range is explained in section 4-5 Range.
A-scope is explained in section 5-5 Sonar A-Scope display.
Data header is explained in section 5-1 Sonar display.
Bottom lock and Split ratio are explained in section 5-2 Sonar Zoom display.

5-4 Sonar 50/200 display

To show the Sonar 50/200 display, press **DISP** and select Sonar Tab, select Sonar 50/200 and press **ENT.**

This shows a split display, with the 50 kHz sonar history on the left side and the 200 kHz sonar history on the right side. Gain settings can be set independently for each frequency. Range settings apply to both sections of the display.

To change items, press **MENU** until the Options menu is shown. Gain is explained in section 4-4 Gain.

Range is explained in section 4-5 Range.

A-scope is explained in section 5-5 Sonar A-Scope display.

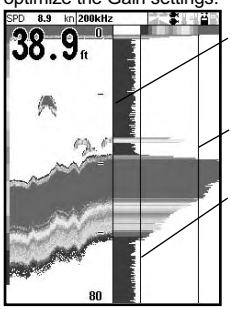
Data header is explained in section 5-1 Sonar display.

Split ratio is explained in section 5-2 Sonar Zoom display.

5-5 Sonar A-Scope display

To show the Sonar A-Scope display, press **DISP** and select Sonar Tab, select Sonar A-Scope and press **ENT.**

Use this to analyse the sonar data in detail and optimize the Gain settings.



Divider line between sonar history and A-scope

Gain setting (strongest echo for display)

Gain threshold (weakest echo for display)

The user can define the level of the weakest and strongest echoes to be shown on the sonar displays, by using the Gain and Threshold settings. See section 4-4 Gain, for more information.

The strength of an echo at a particular depth is shown by the length of the horizontal line at that depth. A strong echo produces a long line whereas a weak echo produces a short line.

To change items, press **MENU** until the Options menu is shown.

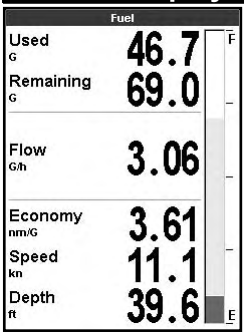
Gain is explained in section 4-4 Gain.
Range is explained in section 4-5 Range.
Data header is explained in section 5-1 Sonar display.
Split ratio is explained in section 5-2 Sonar Zoom display.

Fish recognition

The echo strengths shown on the A-scope can be useful in recognising the type of fish. Different species of fish have different sizes and shapes of swim bladders. The air in the swim bladder reflects the ultrasonic pulse, so the strength of the echo varies between fish species according to the size and shape of the swim bladder.

When fishing among a school of fish and catching them, note the fish species and the strength of the echo that it returns on the A-scope. Then, when that particular echo is seen at future times on the fishfinder, it is likely to be the same fish species.

5-6 Fuel display



To show the Fuel display, press **DISP** and select `Other` Tab, select `Fuel` and press **ENT.**

There are no options.

(See section 3-3 Setup > Fuel for information about setting up the fuel values. If the number of engines is set to `0`, the fuel features are turned off.)

`Used` shows total fuel used since this was last reset with the `Clear Used` command.

`Remaining` shows the amount of fuel remaining in the tank(s).

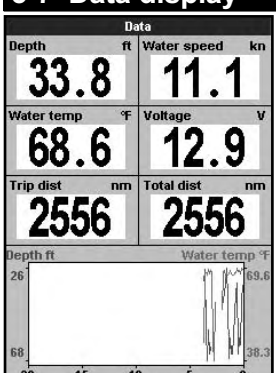
`Flow` shows the fuel consumption per hour. For twin engine installations, the fuel flow for each engine is shown separately. This is useful for checking that both engines are under the same load.

`Economy` is the distance travelled per unit of fuel used. The Fishfinder calculates this using the fuel used and boat speed (water speed or GPS speed - which ever is selected as the speed source – see section 3-3 Setup > Fuel).

The bigger this number, the better the fuel economy. Adjust the throttle and trim to achieve the best fuel economy.

Note: when water speed is selected as the speed source, calibration of the boat speed measurement is essential for an accurate fuel economy reading – see section 3-8 Setup > Calibrate.

5-7 Data display



To show the Data display, press **DISP** and select `Other` Tab, select `Data` and press **ENT.**

This shows a graph of the water temperature and depth over the last 20 minutes and selected data items.

The graph is useful for locating warm and cold spots in the water.

To change data items:

1. Press **MENU** until the `Options` menu is shown.
2. Highlight `Data setup` and press **ENT**.
3. Use the cursor keys to move from data field to data field.
4. Press **ENT** at any data field to show the list of data items that can be displayed there.
5. Highlight the required data item and press **ENT**. The data item is immediately displayed.
6. Press **ESC** when finished.

5-8 About display

To show the About display, press **DISP,** select `Other` Tab, select `About` and press **ENT.** There are no options.

This shows the fishfinder model number, the software and hardware versions and wiring information.

Note the software version before contacting your Navman dealer for technical advice.

For more information on wiring, see section 6-5 Wiring options.

For more information on NMEA and NavBus, see section 6-6 Systems of several instruments.

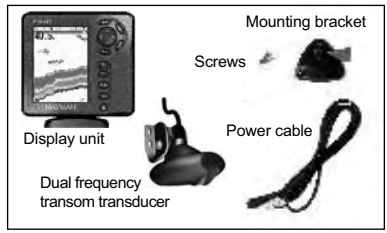
6 Installation and Maintenance

Correct installation is critical to the performance of the FISH 4500/4600. There are two components to install, the display unit and the transducer. It is vital to read the entire installation section of this manual before attempting to install the components.

6-1 What comes with this product?

Standard configuration:

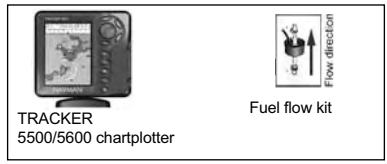
- FISH 4500/4600 display unit
- Power cable
- Mounting bracket (screws included)
- Warranty registration card
- This manual
- Sun cover for display unit
- Flush mounting kit
- Dual frequency transom transducer (includes cable kit and screws)
- Transom Mount Transducer Installation Manual.



6-2 Options and Accessories

- TRACKER series of chartplotters
- Through hull dual frequency transducer
- Through hull speed/temperature transducer
- Fuel flow kit (single or twin engine)
- Replacement paddle wheel
- SmartCraft Gateway
- REPEAT 3100 (see section 6-6 Systems of several instruments).
- Diesel 3200 for fuel flow on diesel engines

Please consult your Navman dealer for more information.



6-3 Mounting and removing the display unit

There are two mounting arrangements:

- **Flush mounting** requires a solid panel with access behind for wiring and mounting screws. After flush mounting, the FISH 4500/4600 cannot be tilted or moved after installation to reduce any unwanted glare or reflections. Carefully select the best viewing position before installation. This would generally be in a shaded area.
- **Bracket mounting** requires a panel for mounting the bracket. Ensure that the panel is not likely to deform and is not subject to excessive vibration. The bracket can be tilted and rotated so the FISH 4500/4600 can be removed after each use.

Select a position where the display unit will be:

- At least 4" (100 mm) away from the compass.
- At least 12" (300 mm) away from any radio transmitter.
- At least 4 ft. (1.2 m) away from any antenna.
- Easy to read by the helmsman and crew while underway.
- Protected from physical damage during rough sea passages.
- Easy to access the 12 / 24 V DC power source.
- Convenient to route the transducer cables.

Flush Mounting

1. Cut a hole in the bulkhead for the display unit using the flush mount template.
2. Drill four holes for the mounting studs using the flush mount template.
3. Screw the four studs into the brass inserts in the back of the display unit.
4. Sit the display unit in place and fit the washers and nuts to the studs.

Bracket Mounting

1. Fix the mounting bracket onto the boat using the three stainless steel screws. Do not overtighten the screws, as the bracket may not rotate.
2. Push the display unit onto the mounting bracket and tighten it firmly using the knob on the mounting bracket.
3. Attach the cables.

Removing the display unit

The display unit can be removed after each use for protection against the environment or security reasons.

When removing the display unit, ensure that the plugs left in the boat are not exposed to the elements. Push the attached dust covers over the exposed ends of the plugs. Keep the display unit in a dry clean place such as the optional Navman carry bag.

6-4 Power and transducer connections

The FISH 4500/4600 has three sockets located on the rear of the display unit. These are for the:

- Power/data cable (black locking collar)
- Optional fuel transducer cable (white locking collar)
- Transducer cable (blue locking collar).

The collars must be locked for a watertight connection.

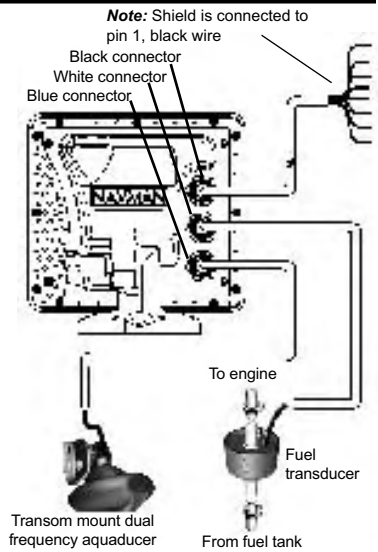
The **power cable** has a black 8 pin connector plug. Push this plug into the upper socket, which has a black nut, then turn the collar to lock.

The **optional fuel transducer cable** has a white 8 pin connector plug. Push this plug into the middle socket, which has a white nut, then turn the collar to lock. (If the fuel transducer cable is not being installed, leave the dust plug in place.)

The **sonar transducer cable** has a blue 6 pin connector plug. Push this plug into the lower socket, which has a blue nut, then turn the collar to lock. Do not cut the cable. If necessary, extend the cable by adding a Navman 13 ft. (4 m) extension cable (a maximum of one cable can be used).

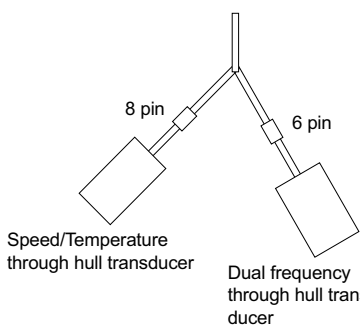
If possible, route the transducer cable away from other wiring on the boat. Electrical noise from engine wiring, bilge pumps and other electrical equipment can affect the display unit. The shortest and most direct connection to the boat's battery helps to minimise voltage drop.

Ensure that cable connections do not lie in the bilge. Secure the cable(s) at regular intervals.



Through hull transducers

Through hull transducers are supplied with 'Y' adapter cable for connection of both transducers into the blue connector.



6-5 Wiring Options

The rear of the fishfinder has three connectors: Black - for Power and Comms; White - for Fuel and SmartCraft; and Blue for the Sonar Transducer. The supplied Power cable connects to the Black connector, and contains eight wires as follows:

	Power		Fuel / SmartCraft*
	Black (8-pin)		**White** (8-pin)
Pin	Wire Color	Function	Function
1	Black	GND (power & NMEA)	GND (NMEA 2)
2	Brown	(not used)	+9V DC Output
3	White	NMEA out	NMEA 2 in
4	Blue	NavBus (-) or NMEA 1 in	Fuel - Single or Port / SmartCraft*
5	Red	+10-32V in – via 2A fuse Positive power IN	(not used)
6	Orange	NavBus (+)	Fuel - Starboard / SmartCraft*
7	Yellow	Auto power in Connect to pin 5 to enable Auto Power ON	NAVBUS / Fuel detect (do not use)
8	Green	External Buzzer / Light out Switched to GND – 200mA max.	(not used)

Six wiring options are described in this section:

- **Basic wiring.** This does not start the fishfinder automatically when the boat ignition is switched on and it disables the engine hours counter.
- **Auto power wiring.** This must be used for the engine hours and fuel computer options.
- **Secondary Alarm wiring**
- **Fuel kit wiring**
- **Comms wiring**

Note: *If a wire color is not specifically mentioned, it is not used in that wiring option.*

Note: *The cable shield is connected to Pin 1 (black wire) and does not need to be grounded.*

*****Note:*** *SmartCraft only available on FISH 4600.*

Warning
2 Amp fuses must be positioned where shown in the wiring diagrams.

Basic wiring

This requires the FISH 4500/4600 to be powered on manually with the ⏻ key.

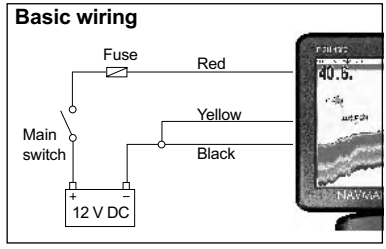
Black wire: Connect this to the negative battery terminal.

Red wire: Connect this to the positive battery terminal after the main switch. Fit a 2 Amp fuse as shown.

Yellow wire: Connect this to the black wire.

This disables the engine hours counter.

Power on the fishfinder manually whenever the main switch is on.



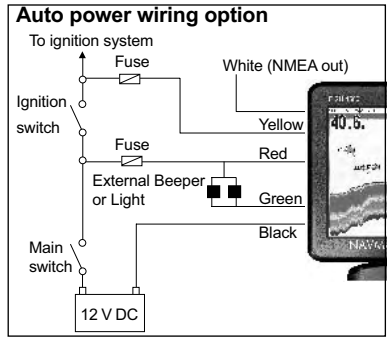
Auto power wiring option

Black wire: Connect this to the negative battery terminal.

Red wire: Connect this to the positive battery terminal after the main switch. Fit a 2 Amp fuse as shown.

Yellow wire: To enable the engine hours counter and fuel counter; and to start the fishfinder automatically when the ignition is turned on, connect the yellow wire to the ignition system through a 2 Amp fuse.

Note: *The fishfinder cannot be turned off while the ignition is on.*



Secondary alarm wiring option

Green Wire: Use this to connect a secondary alarm indicator such as a flashing light or external beeper with a built-in drive circuit. See the Auto power wiring diagram.

If the external beeper or light requires more than 200 mA total, fit a relay. Consult your Navman dealer for more advice.

Fuel kit wiring

See the *Fuel Kit Installation Guide* for information about the fuel transducer cable.

Wire the power cable for Auto power (as described in this section) to make sure the fuel counter starts as soon as the engine starts.

For twin engine installation a T-connector needs to be installed on the fuel transducer cable.

Comms wiring

NMEA wiring option:

NMEA out: White wire - Use this, if desired, to connect the Fishfinder to other NMEA instruments such as Navman's REPEAT 3100. (See section 6-6 Systems of several instruments.)

NMEA-1 in: Blue wire – Use this, if desired, to connect a NMEA instrument to the Fishfinder such as an external GPS source. Note however, to use NMEA-1 in, NavBus must be disabled in the Comms menu – see section 3-7 Setup > Comms.

NavBus wiring option:

NavBus (-): Blue wire: and;

NavBus (+): Orange wire: Use this, if desired, to connect the fishfinder to other Navman instruments such as Navman's REPEAT 3100. (See section 6-6 Systems of several instruments.)

NMEA and NavBus option:

If both NMEA and NavBus are to be used, then use the following:

NMEA out: White wire - NMEA out

NMEA in: NMEA-2 in (White connector)

NavBus: Blue wire - NavBus(-) and Orange wire NavBus(+)

In all cases, both NMEA and NavBus reference to Black wire (GND)

6-6 Systems of several instruments

Several Navman instruments can be connected together to share data.

The FISH 4500/4600 is particularly suited to work with the TRACKER 5500/5600 - Navman's color display GPS chartplotter with worldwide coverage.

There are two ways of connecting instruments together; NavBus or NMEA.

NavBus

NavBus is a Navman proprietary system that allows systems of multiple instruments to be built using a single set of transducers. When instruments are connected by NavBus:

- If the units, alarms or calibration are changed in one instrument, then the values will automatically change in all instruments of the same type.
- Each instrument can be assigned to a group of instruments. Then, if the backlight setting is changed in one group, it will automatically change for the other instruments in that group. However, the backlight setting will not change for instruments in different groups.
- If an alarm sounds, mute it by clearing the alarm on any instrument which can display that alarm.

NMEA

NMEA is an industry standard for marine instrument connections. Data sent by one instrument over an NMEA line can be read and displayed by another instrument that accepts NMEA 0183 Version 2. It is not as flexible as NavBus as it requires dedicated connections between instruments.

Please contact your Navman dealer for information on Navman's full range of NMEA enabled instruments and connection options.

REPEAT 3100

Repeater for depth, speed, water temperature and battery voltage. Accepts NavBus or NMEA data inputs from other instruments.

DEPTH 2100

Depth Repeater

TRACKER 5500/5600

Color GPS Chartplotter with worldwide coverage

6-7 Cleaning and maintenance

The FISH 4500/4600 screen is covered by a proprietary anti-reflection coating. To avoid damage, clean the screen **only** with a damp cloth and mild detergent when dirty or covered in sea salt. Avoid abrasive cleaners, petrol or other solvents.

Cover or remove a transom-mounted transducer when repainting the hull. If painting over a through hull transducer with antifouling paint, use only one coat of paint. Remove the previous coat of antifouling paint by sanding it lightly.

To optimize performance, avoid walking on or jamming cables and connectors. Keep the transducer free of weed, paint and debris. Do not use a high pressure water blast on a speed sensor paddlewheel as it may damage the bearings.

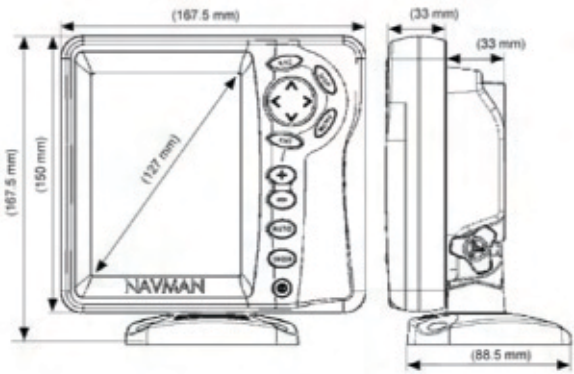
When not in use, the FISH 4500/4600 can be removed from the installation bracket and stored in the Navman carry bag, or left on the installation bracket and securely covered with the sun cover supplied.

Appendix A - Specifications

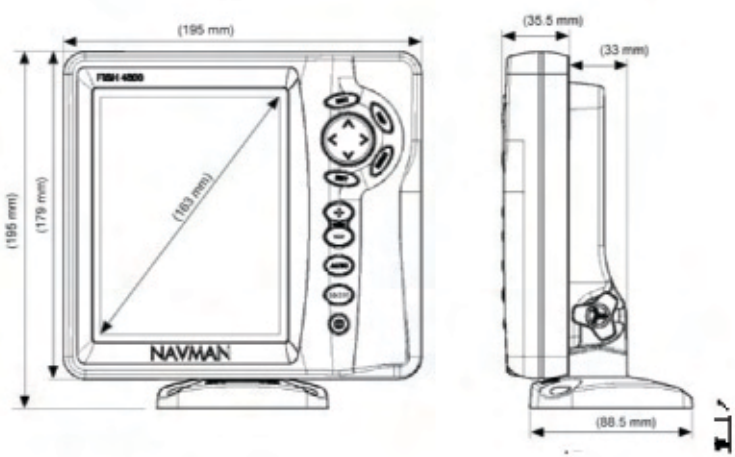
Specifications	FISH 4500	FISH 4600
Display type:	TFT Color Screen Resolution 320 high x 234 wide(pixels) CCFL multi-level backlighting	
Display size:	5.0" (127mm) diagonal	6.4" (163mm) diagonal
Supply voltage:	10.5 to 32 V DC	
Supply current at 13.8 V:	400 mA min - no backlighting 800 mA max - full backlighting	450 mA min - no backlighting 850 mA max - full backlighting
Operating temperature:	32° to 122°F (0° to 50°C)	
Environment:	IP67	
Standards Compliance EMC:	USA FCC Part 15 Class B Europe (CE) EN50081-1 and EN50082-1 New Zealand and Australia (C Tick) AS-NZS 3548	
Depth:	2 ft (0.6 m) to 2000 ft (600 m) with supplied transducer. Depth capabilities depend on type of transducer used and installation and water clarity. Depth to 3300 ft (1000 m) may be achieved under optimal conditions and using a 1000W dual element transducer.	
Output power:	Variable, up to 600 W RMS	
Dual Transducer frequency:	200 kHz / 50 kHz	
Receiver sensitivity:	Better than 10 micro volts RMS Dynamic range 4.0 million to 1 (120 dB)	
Typical depth acquisition time from startup:	2 seconds at 100 ft (30 m)	
Transom transducer cable length:	33 ft (10 m)	
Temperature measurement range:	32° to 99.9°F (0° to 37.7°C) Resolution of 0.1° unit	
Speed range:	1 to 50 kn (57.5 mph, 96.6 kph)	
Communications:	NMEA 0183 (Ver 2.0) 4800 baud NavBus	
NMEA Output: NMEA (0183) is a standard for interfacing marine electronic devices. The Navman fishfinder can output the following sentences	DBT (Depth Below Transducer) DPT (Depth and Keel offset) VHW (Speed) VLW (Distance traveled – Total & Trip) MTW (Sea Water temperature) XDR (Battery voltage and fuel flow)	
Fuel Computer: (optional fuel transducer(s) required)	Outboard carbureted two stroke and EFI petrol/gasoline engines: 30 to 300 hp Outboard four stroke petrol/gasoline engines: 90 to 300 hp Inboard petrol/gasoline engines: 50 to 300 hp Minimum flow rate: 1.3 U.S. gallons per hour (5 litres per hour) Maximum flow rate: 34 U.S. gallons per hour (130 litres per hour)	
SmartCraft Support:	No	Yes

Apéndice B – Dimensions

FISH 4500



FISH 4600



Appendix C - Troubleshooting

This troubleshooting guide is written with the assumption that the user has read and understood the relevant sections in this manual.

It is possible in many cases to solve difficulties without having to send the display unit back to the manufacturer for repair. Please follow this troubleshooting section before contacting the nearest Navman dealer.

There are no user serviceable parts. Specialized methods and testing equipment are required to ensure that the display unit is reassembled correctly and is waterproof. Users who service the product themselves will void the warranty.

Repairs to the product may only be carried out by a service centre approved by Navman. If the product must be sent into a service centre for repair, it is essential to send in the transducer(s) at the same time.

More information can be found on our Website: www.navman.com.

1. The fishfinder won't turn on:

a) The FISH 4500/4600 is designed to operate on a 12/24 volt battery system, where the voltage may vary from 10 to 35 volts. If an excessive voltage is supplied, a fuse will be tripped, turning the display unit off. Check the fuse.

b) Check that the power cable connector at the back of the display unit is securely plugged in and the collar is locked in place. The collar must be secure for watertight connection.

c) Measure the battery voltage while the battery is under load - turn on some lights, radio or other electrical equipment connected to the battery. If the voltage is less than 10 volts:
   - the battery terminals or wiring on the terminals may be corroded.
   - the battery may not be charging correctly or may need replacing.

d) Inspect the power cable from end to end for damage such as cuts, breaks, squashed or trapped sections.

e) Ensure that the red wire is connected to the positive battery terminal and the black wire to the negative battery terminal. If wired for the Auto Power option, ensure the yellow wire is connected to the ignition circuit. Also check the boat's main switch circuit (see section 6-5 Wiring options).

f) Check for corrosion on the power cable connector and clean or replace if required.

g) Check fuses that are placed in line with the power cable. A fuse can be blown despite appearing to be good or the fuse may be corroded. Test the fuse or replace it with a fuse known to be good.

2. The fishfinder won't turn off:

The fishfinder may have been wired for Auto power. In this case, the fishfinder cannot be turned off while the ignition power is on. (See Auto power wiring in section 6-5 Wiring options.)

3. The fishfinder operates erratically:

a) Check that the transducer does not have debris (e.g. weed, plastic bag) caught around it.

b) The transducer may have been damaged during launching, running aground or while underway with debris etc. If the transducer has been impacted, it may have been kicked up on the bracket. If it is not physically damaged, reset the transducer back to its original position. (See the *Transom Transducer Installation Guide*.)

c) When the transducer is less that 2 ft. (0.6 m) from the bottom, the depth readings may become inconsistent and erratic.

d) Manual Gain may be set too low, which may cause weak bottom echo or no fish signals. If in Manual Gain, try increasing the Gain.

e) Ensure the back of the bottom surface of the transducer is slightly lower than the front and the front is as deep in the water as possible in order to minimize the generation of bubbles through cavitation. (See the *Transom Transducers Installation Guide*.)

f) Check the transducer and power cable connectors at the back of the display unit are securely plugged in and the collars are locked in place. The collars must be secure for watertight connection.

g) Inspect the power cable from end to end for damage such as cuts, breaks, squashed or trapped sections.

h) Ensure there is not another fishfinder or depth sounder turned on, which may interfere with this fishfinder.

i) Electrical noise from the boat's engine or an accessory may be interfering with the transducer(s) and/or the Navman fishfinder. This may cause the fishfinder to

Appendix D - Como entrar em contacto connosco www.navman.com

NORTH AMERICA

BNT - Marine Electronics
30 Sudbury Rd, Acton, MA 01720.
Toll Free: +1 866 628 6261
Fax: +1 978 897 8264
e-mail: sales@navmanusa.com
web:www.navman.com

OCEANIA

Australia

Navman Australia Pty. Limited
Suite 2, 408 Victoria Road
Gladesville NSW 2111, Australia.
Ph: +61 2 9879 9000
Fax: +61 2 9879 9001
e-mail: sales@navman.com.au
web: www.navman.com

New Zealand

Absolute Marine Ltd.
Unit B, 138 Harris Road,
East Tamaki, Auckland.
Ph: +64 9 273 9273
Fax: +64 9 273 9099
e-mail: navman@absolutemarine.co.nz

Papua New Guinea

Lohberger Engineering,
Lawes Road, Konedobu.
PO Box 810, Port Moresby.
Ph: +675 321 2122
Fax: +675 321 2704
e-mail: loheng@online.net.pg
web: www.lohberger.com.pg

LATIN AMERICA

Argentina

Costanera Uno S.A.
Av Pte Ramón S. Castillo y Calle 13
Zip 1425 Buenos Aires, Argentina.
Ph: +54 11 4312 4545
Fax +54 11 4312 5258
e-mail:
purchase@costanerauno.com.ar
web: www.costanerauno.ar

Brazil

Equinautic Com Imp Exp de Equip Nauticos Ltda.
Rua Ernesto Paiva, 139
Clube dos Jangadeiros
Porto Alegre - RS - Brasil
CEP: 91900-200.
Ph: +55 51 3268 6675
+55 51 3269 2975
Fax: +55 51 3268 1034
e-mail:
equinautic@equinautic.com.br
web: www.equinautic.com.br

Realmarine
Estrada do Joa 3862,
Barra da Tijuca, Rio de Janeiro,
Brazil. CEP: 22611-020.
Ph: +55 21 2483 9700
Fax: +55 21 2495 6823
e-mail: tito@realmarine.com.br
web: www.realmarine.com.br

Chile

Equimar
Manuel Rodrigurez 27
Santiago, Chile.
Ph: +56 2 698 0055
Fax +56 2 698 3765
e-mail: mmontecinos@equimar.cl

Mera Vennik
Colon 1148, Talcahuano,
4262798, Chile.
Ph: +56 41 541 752
Fax +56 41 543 489
e-mail: meravennik@entel.chile.net

Mexico

Mercury Marine de Mexico
Anastacio Bustamente #76
Interior 6 Colonia Francisco Zarabia,
Zapapan, Jalisco, C.P. 45236 Mexico.
Ph: +52 33 3283 1030
Fax: +52 33 3283 1034
web: www.equinautic.com.br

Uruguay

Alvaro Bermudez, Nautica
11300 Montevideo, Uruguay.
Ph & Fax: +59 82 628 6562
e-mail: alvaro@nautica.com.uy

ASIA

China

Peaceful Marine Electronics Co. Ltd.
Guangzhou, Hong Kong, Dalian,
Qingdao, Shanghai
1701 Yanjiang Building
195 Yan Jiang Zhong Rd. 510115
Guangzhou, China.
Ph: +86 20 3869 8839
Fax: +86 20 3869 8780
e-mail: sales@peaceful-marine.com
web: www.peaceful-marine.com

India

Access India Overseas Pvt. Ltd.
A-98, Sector 21,
Noida - 201 301, India.
Ph: +91 120 244 2697
TeleFax: +91 120 253 7881
Mobile: +91 98115 04557
e-mail: vkapil@del3.vsnl.net.in

Esmario Export Enterprises
Block No. F-1, 3rd Floor, Surya Towers
Sardar Patel Rd, Secunderbad 500 003.
Ph: +91 40 2784 5163
Fax: +91 40 2784 0595
e-mail: gjfeee@hd1.vsnl.net.in
web: www.esmario.com

Korea

Kumhomarine Technology Co. Ltd.
#604-842, 2F, 1118-15, Janglim1-Dong,
Saha-Gu, Busan, Korea.
Ph: +82 51 293 8589
Fax: +82 51 265 8984
e-mail: info@kumhomarine.com
web: www.kumhomarine.com

Maldives

Maizan Electronics Pte. Ltd.
Henveyru, 08 Sosunmagu.
Male', Maldives.
Mobile: +960 78 24 44
Ph: +960 32 32 11
Fax: +960 32 57 07
e-mail: ahmed@maizan.com.mv

Singapore and Malaysia, Brunei, Indonesia and Phillipines

RIQ PTE Ltd.
Blk 3007, 81 Ubi Road 1, #02-440,
Singapore 408701.
Ph: +65 6741 3723
Fax : +65 6741 3746
e-mail: riq@postone.com

Taiwan

Seafirst International Corporation
No. 281, Hou-An Road, Chien-Chen
Dist. Kaohsiung, Taiwan R.O.C.
Ph: +886 7 831 2688
Fax: +886 7 831 5001
e-mail: seafirst@seed.net.tw
web: www.seafirst.com.tw

Thailand

Thong Electronics (Thailand) Co. Ltd.
923/588 Ta Prong Road, Mahachai,
Muang, Samutsakhon 74000, Thailand.
Ph: +66 34 411 919
Fax: +66 34 422 919
e-mail: sales@thongelectronics.com
admins@thongelectronics.com
web: www.thongelectronics.com

Vietnam

HaiDang Co. Ltd.
763 Le Hong Phong St. Ward 12
District 10, Hochiminh City, Vietnam
Ph: +84 8 863 2159
Fax: +84 8 863 2524
e-mail: haidang-co@hcm.vnn.vn
web: www.haidangvn.com

MIDDLE EAST

Lebanon and Syria

Balco Stores
Balco Building, Moutran Street,
Tripoli (via Beirut). - Lebanon
P.O. Box: 622.
Ph: +961 6 624 512
Fax: +961 6 628 211
e-mail: balco@cyberia.net.lb

United Arab Emirates Kuwait, Oman, Iran, Saudi Arabia, Bahrain and Qatar

Abdullah Moh'd Ibrahim Trading, opp
Creak Rd. Baniyas Road, Dubai.
Ph: +971 4 229 1195
Fax: +971 4 229 1198
e-mail: sales@amitdubai.com

AFRICA

South Africa

Pertec (Pty) Ltd (Coastal Division)
16 Paarden Eiland Road.
Paarden Eiland, 7405
PO Box 527,
Paarden Eiland, 7420
Cape Town, South Africa.
Ph: +27 21 508 4707
Fax: +27 21 508 4888
e-mail: info@kfa.co.za
web: www.pertec.co.za

EUROPE

France, Belgium and Switzerland

Plastimo International
15, rue Ingénieur Verrière,
BP435,
56325 Lorient Cedex.
Ph: +33 2 97 87 36 36
Fax: +33 2 97 87 36 49
e-mail: plastimo@plastimo.fr
web: www.plastimo.fr

Germany

Navimo Deutschland
15, rue Ingénieur Verrière
BP435- 56325 Lorient Cedex.
Ph: +49 6105 92 10 09
+49 6105 92 10 10
+49 6105 92 10 12
Fax: +49 6105 92 10 11
e-mail:
plastimo.international@plastimo.fr
website: www.plastimo.de

Italy

Navimo Italia
Nuova Rade spa, Via del Pontasso 5
16015 Casella Scrivia (GE).
Ph: +39 1096 80162
Fax: +39 1096 80150
e-mail: info@nuovarade.com
web: www.plastimo.it

Holland

Navimo Holland
Industrieweg 4,
2871 JE Schoonhoven.
Ph: +31 182 320 522
Fax: +31 182 320 519
e-mail: info@plastimo.nl
web: www.plastimo.nl

United Kingdom

Navimo UK
Hamilton Business Park
Bailey Road, Hedge End
Southhampton, Hants S030 2HE.
Ph: +44 01489 778 850
Fax: +44 0870 751 1950
e-mail: sales@plastimo.co.uk
web: www.plastimo.co.uk

Sweden, Denmark, Finland and Norway

Navimo Nordic
Lundenvägen 2,
473 21 Henån.
Ph: +46 304 360 60
Fax: +46 304 307 43
e-mail: info@plastimo.se
web: www.plastimo.se

Spain

Navimo España
Avenida Narcís Monturiol, 17
08339 Vilassar de Dalt,
Barcelona.
Ph: +34 93 750 75 04
Fax: +34 93 750 75 34
e-mail: plastimo@plastimo.es
web: www.plastimo.es

Portugal

Navimo Portugal
Avenida de India N°40
1300-299 Lisbon.
Ph: +351 21 362 04 57
Fax: +351 21 362 29 08
e-mail: plastimo@siroco-nautica.pt
web: www.plastimo.com

Other countries in Europe

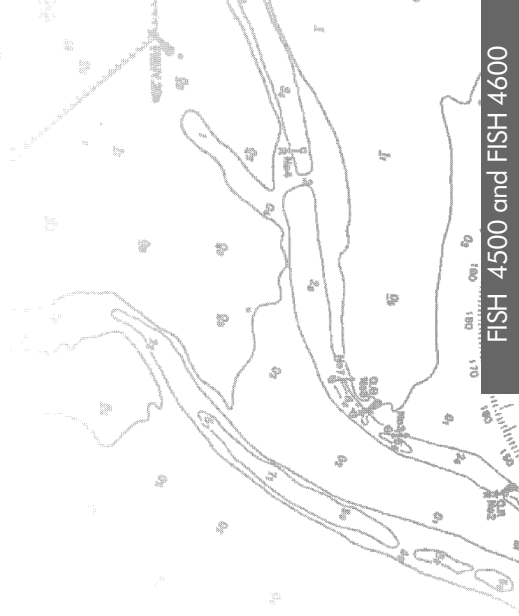
Plastimo International
15, rue Ingénieur Verrière BP435
56325 Lorient Cedex, France.
Ph: +33 2 97 87 36 59
Fax: +33 2 97 87 36 29
e-mail:
plastimo.international@plastimo.fr
web: www.plastimo.com

HEADQUARTERS

Navman NZ Limited
13-17 Kawana St.
Northcote.
P.O. Box 68 155,
Newton,
Auckland,
New Zealand.
Ph: +64 9 481 0500
Fax: +64 9 481 0590
e-mail: marine.sales@navman.com
web: www.navman.com

Made in New Zealand
MN000201D

LF 000150A English
LF 000154A Spanish
LF 000159A Portuguese



FISH 4500 and FISH 4600

Lon 174° 44.535`E

Lat 36° 48.404`S

NAVMAN

FC CE