

# FISH450 Tricolor

FISHFINDER

## Installation and Operation Manual

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## Important

It is vital to the performance of the FISH450 Tricolor that the transducer is installed in the best location. Please follow instructions on transducer installation very carefully.

# 1 Introduction

Congratulations on choosing the NAVMAN FISH450 Tricolor fishfinder. For maximum benefit, please read this manual carefully before installation and use. Special terms are explained in Appendix C.

## The NAVMAN FISH450 Tricolor

The FISH450 Tricolor is an ultrasonic fishfinder with powerful software and a three colour display. As well as detecting fish the unit measures water depth, boat speed, water temperature and battery voltage and has two distance logs (trip and total with one displayed at a time). With an optional fuel kit the FISH450 Tricolor is also a sophisticated yet easy to use fuel computer.

## How the NAVMAN FISH450 Tricolor finds fish and determines the depth

An installed FISH450 Tricolor has two parts:

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

The transducer generates an ultrasonic (sound) pulse, which travels down towards the bottom. When the sound pulse meets an object, such as a fish or the bottom, some of the pulse is reflected back up towards the boat and is received by the transducer. The depth of an object can be calculated by measuring the time between sending the pulse and receiving its echo.

The display unit analyses the reflections from each pulse, removes unwanted reflections (from bubbles and other noise) and displays what is in the water under the boat. The display shows three colours: **Blue** for the strongest reflections, **Red** for medium and **Green** for the weakest reflections (see section 3 - 2). These colours help users better interpret what is in the water.



There are several reasons the returned echo strength can vary. Larger fish usually return stronger echos, as do fish in the centre of the beam where the pulse is stronger. Reasons for weak echos include the fish or object being in deep water or turbid water, or in the edge of the beam where the pulse is weaker.

The unit will detect the bottom down to 1000 feet (300 metres), depending on the clarity of the water and measures depths to an accuracy of 2%.

## Assisting with navigation

The FISH450 Tricolor can be used to find fish, to locate features on the bottom such as reefs or wrecks and to help recognise favourite fishing spots from the profile of the bottom. Use the FISH450 Tricolor to assist navigation by following the depth contours marked on charts.

**IMPORTANT NOTE ON USE** - While the FISH450 Tricolor can be used as an aid to navigation, its accuracy can be influenced by many factors, including the location of the transducer. It is the user's responsibility to ensure the unit is installed and used correctly.

## How to find fish

Underwater features like reefs, wrecks and rocky outcrops attract fish. Use the FISH450 Tricolor to find these features, then look for fish by passing over the feature slowly several times using the *Zoom* screen (See section 3-1). Where there is a current, the fish will often be found downstream of the feature.

For deep sea fishing, a rapid change in temperature may indicate the edge of a warm or cold current. The temperature difference may form a barrier which fish tend not to swim through. Search for fish either side of the barrier.

## Cleaning and maintenance

The FISH450 Tricolor should be cleaned with a damp cloth or mild detergent. Avoid abrasive cleaners and petrol or other solvents.

Always cover or remove the stern mounted Aquaducer when repainting the hull. If painting over a through hull transducer with antifouling then use only one coat of paint. When repainting the transducer remove previous coats by lightly sanding.

## Temperature warning


Do not expose the unit to temperatures exceeding 50°C (122°F) or the LCD may not be useable until it cools down. *Never leave the unit exposed to high temperatures even for a few minutes. (e.g. on the dashboard of a car).*



## 2 Getting started

### Power connection

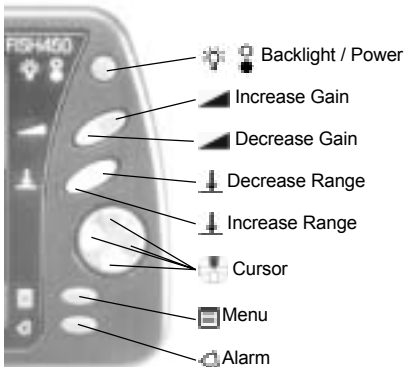
Power is supplied through the black connector. The connectors are bayonet type, push the plug into the socket then turn the collar to lock. Make sure the collar is secure for a water tight connection.

### Transducer connection

If the transducer (blue connector) is not connected when the unit is turned on, the message "No transducer detected. Enter simulation mode? Yes/No" will appear. Press the *Cursor Left*  or *Right*

 key to switch between Yes and No. (More information on the simulation mode can be found in the *Setup - Simulation* section 4-10) When you have selected your choice, press the *Menu* key  to exit and the startup sequence will continue. (Note: If the transducer was not intentionally disconnected, turn the unit off and refer to the section on *Troubleshooting* in Appendix B.)

### Names of keys





### Definition of Press and Hold

**PRESS** means to push the key for less than 1 second.

**HOLD** means to push and hold the key down for at least 1 second.

### Power on



To turn the unit on press the *Power* key.  

Note: if the *Auto Power* wire is connected (See the *Installation - Auto Power* section 5-8), then the unit will turn on automatically when the boat's power is turned on.

A title screen briefly appears which displays basic

product information, including the software version. The FISH450 Tricolor will then display the screen from the following list that was last used: *Fish History, Zoom, Sonar, Fuel* or *Data*.

### Power off

To turn the unit off, hold the *Power* key  .


A countdown box will appear. Continue holding down the *Power* key for 3 seconds until the unit turns off.

Note: if the *Auto Power* wire is connected (See *Installation - Auto Power* section 5-7) then the unit will turn off only when the boat's power turns off.






### Changing the level of backlighting

Pressing the *Backlight / Power* key activates the backlight function. A bar which indicates the backlight level appears at the bottom of the screen. Each additional press increases the backlight intensity from the current level until level 6 is reached. The next press steps to level 0 (off). The bar disappears 2 seconds after the last press of the *Backlight / Power* key.

### Language selection

To check which language is currently selected, press the *Menu* key  to display the *Main Menu*.

#### Follow these steps to change the language:

- 1 Power off the unit.
- 2 While the unit is off, hold down the *Cursor Down*  key.
- 3 Keep holding down the *Cursor Down*  key and power on the unit.
- 4 The screen displays a list of languages. Press the *Cursor Up*  or *Down*  key to highlight a language, then press the *Cursor Right*  key to select it. The FISH450 Tricolor will continue the startup sequence.

## 3 Operation

### Main Menu screen

The FISH450 Tricolor is menu driven. Press the *Menu* key one or more times until the *Main Menu* screen appears. Press the *Cursor Up* or *Down* key to highlight an option, then press the *Cursor Right* key to select it.

The FISH450 Tricolor has five main screens and a *Setup* menu which are summarised below and fully explained in the following sections.



On the right is the *Full Range Section* and to the left is the *Zoom Section*. Use this screen for taking a closer look at underwater features.

### Sonar screen (see section 3-3)

Displays the strength and depth of the echos returned from each ultrasonic pulse. This screen can also be used for manually setting the gain and colouration for the *Fish History* and *Zoom* screens.

### Fuel screen (see section 3-4)

Displays fuel consumption, fuel used, fuel remaining, fuel economy, boat speed and water depth. *Fuel Screen* will be displayed on the *Main Menu* only if the *Fuel* option has been enabled (see *Setup - Fuel* section 4-2).

### Data screen (see section 3-5)

Displays water temperature, depth, battery voltage and boat speed.

### Setup menu (see section 4)

The *Setup* menu allows customising of the FISH450 Tricolor to individual preferences.

### Fish History screen (see section 3-2)

Displays echos received over time, with the most recent events on the right of the screen. Use this screen when travelling, to find reefs, wrecks and fish.

### Zoom screen (see section 3-2)

This is like the *Fish History* screen except that the display of the water is split into two parts.

## 3-1 Alarms

Alarms can be set to suit individual preferences. Green symbols, visible at the bottom of the screen, indicate enabled alarms.

Access the *Alarms* menu by a single press of the *Alarm* key (provided the beeper is not active) or through the *Setup* screen.

Symbol	Alarm Name	Beeper cycle	Alarm condition is met when:
	Low Fuel	1/2 sec	the fuel level is less than the alarm trigger value.
	Too Shallow	1/5 sec	the depth is less than the alarm trigger value.
	Too Deep	1/2 sec	the depth is greater than the alarm trigger value.
	Fish Alarm	3 short beeps	an echo matches the profile of a fish.
	Temp Value	1/2 sec	the temperature equals the alarm trigger value.
	Temp Rate	1/2 sec	the rate of change of temperature equals the alarm trigger value.
	Low Battery	1/2 sec	the battery voltage is less than the alarm trigger value.

screen with the activated alarm(s) flashing.

- Each activated alarm's symbol will flash red. Pressing the *Alarm* key will acknowledge the alarm, stop the beeping, and remove the *Alarms* menu. This does **not** disable the alarm. The symbol will continue to flash red until the alarm condition is no longer present.

Note: The *Fish Alarm* gives three short beeps only.

### Alarm automatically re-enables

For *Low Fuel*, *Too Shallow*, *Too Deep*, and *Low Battery*, the alarm is re-enabled when the value moves back outside the alarm condition.

With *Temp Value*, the alarm is re-enabled when the temperature is more than 0.25°C / 0.45°F above or below the trigger value.

With *Temp Rate*, the alarm is re-enabled when the rate of change of temperature falls below the trigger value by more than 0.1°C per minute / 0.2°F per minute.

### External beeper

An external beeper may be installed when a louder secondary alarm indication is required. This can be positioned anywhere on the boat. For installation details see the *Installation - Wiring* (section 5-7).

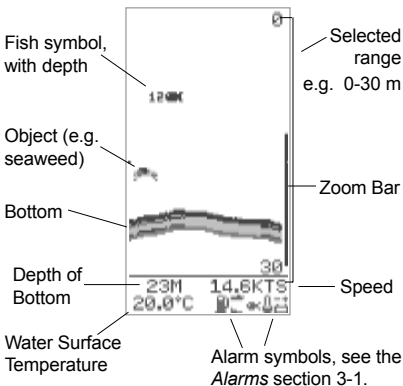
### When an alarm condition is met the following occurs:

- The beeper will sound.
- The *Alarms* menu will be displayed on the

## 3-2 Fish History and Zoom Screens

### Fish History screen

The *Fish History* screen displays the most recent signals on the right of the screen, and the oldest signals on the left. Vertically, this screen always displays between the surface and the selected depth range. This screen is often used to find fishing spots.



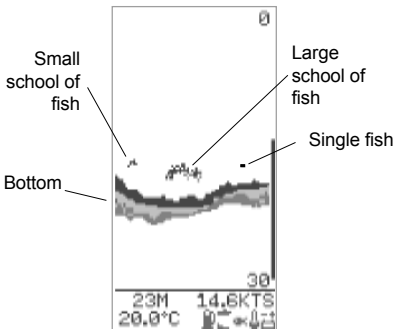
Note 1: This screen can be customised. (see *Setup - Display* section 4-6)

Note 2: The Depth of Bottom can be adjusted for *Keel Offset*. (see *Setup - Depth* section 4-3)

### Fish detection

The FISH450 Tricolor analyses all received echos and recognises the characteristic patterns returned by fish. These echos are displayed on the screen as a fish symbol. The default setting is for an associated depth to be shown with fish symbols.

Advanced users sometimes prefer to turn off the fish symbol feature and interpret the echo patterns themselves. The following is an example with fish symbols turned off:



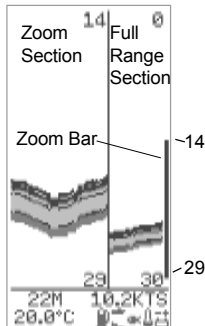
### Zoom screen

The *Zoom* screen is used to view greater detail in an area of interest (e.g. fish close to the bottom). The right portion is the *Full Range Section* and the left is the *Zoom Section*.

The *Zoom Bar*, located on the very right of the screen, determines the depth range of the *Zoom Section* and the amount of magnification:

The *Full Range Section* illustrated is 0 to 30 m and the *Zoom Bar* is between 14 and 29m. Therefore the area between 14 and 29m is enlarged in the *Zoom Section*.

To set the depth of the *Zoom Section*, move the *Zoom Bar* up or down by pressing the *Cursor Up* or *Down* key. To make the *Zoom Bar* smaller (to increase magnification), press the *Cursor Left* key. To make the *Zoom Bar* bigger (to decrease magnification), press the *Cursor Right* key.



The *Zoom Bar* can be adjusted in the *Fish History* screen before switching to the *Zoom* screen.

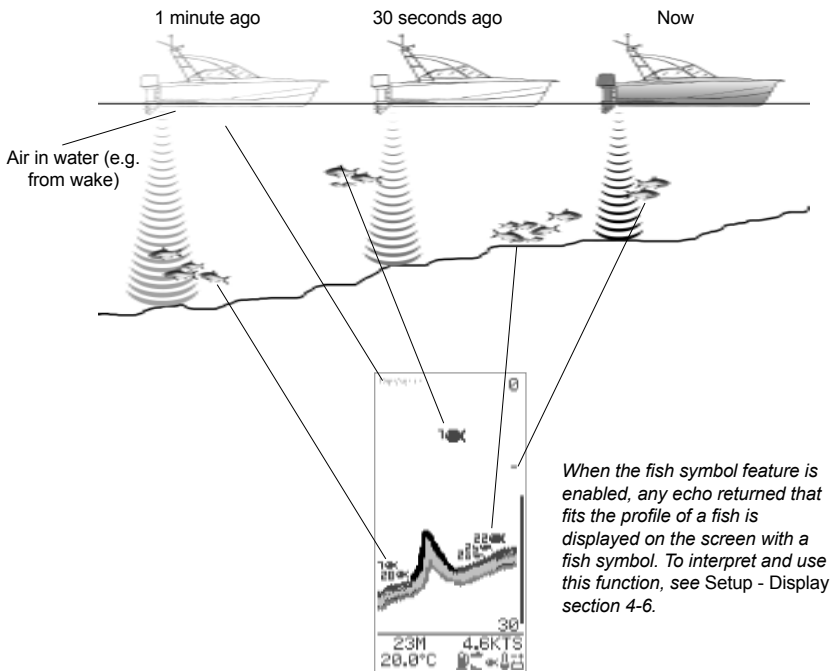
### Strength of returned echos

The three colours indicate differences in the strength of the returned echo: **blue** is the strongest, **red** is medium strength and **green** is the weakest. There are several reasons why the strength of the returned echo varies:

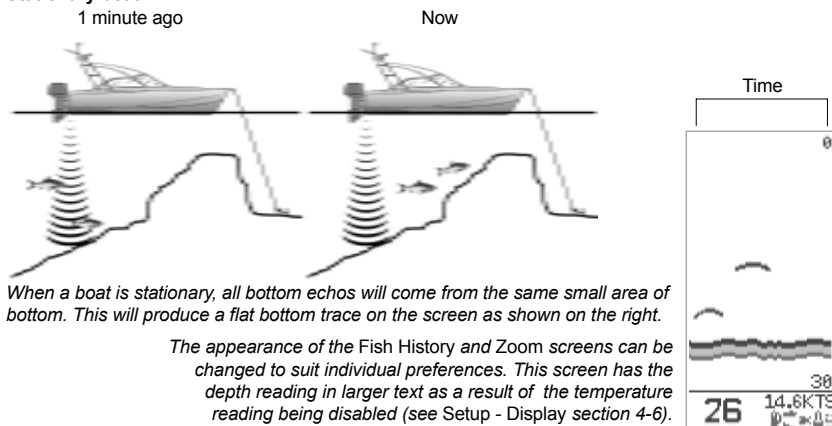
- The size of the fish, school of fish or other object.
  - The depth of the fish or object.
  - The location of the fish or object. The area covered by the ultrasonic beam is approximately cone-shaped and strongest in the centre.
  - The clarity of water. Particles or air in the water reduce the strength of the returned echo.
  - The composition or density of the object. Soft mud produces weaker echos than rock.
- 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 echos.

The FISH450 Tricolor like most fishfinders displays the most recent events on the right of the screen.

### Moving boat



### Stationary boat



Note: times indicated are for illustration only.

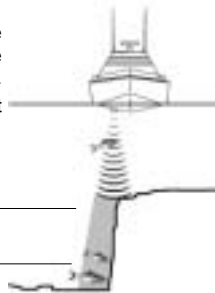
## Shadows

Shadows are areas where the ultrasonic beam cannot 'see'. These include hollows on the bottom or beside rocks and ledges where the strong echo returned off the rock obscures the weaker echo of the fish.

When looking for small objects including fish, users should consider that there are places where fishfinders cannot 'see'.

Shadow - where objects are hidden in the bottom echo. \_\_\_\_\_

These fish will be hidden in the bottom echo. \_\_\_\_\_



## Range

Range is the depth of water displayed vertically.

The FISH450 Tricolor has two range modes, *Auto Range* and *Manual Range*:


- In *Auto Range*, the unit adjusts the depth range so that the bottom is shown in the lower part of the screen. The use of *Auto Range* is recommended.
- In *Manual Range*, the range can be set by pressing the *Increase Range* or *Decrease Range* key.

To switch between *Auto Range* and *Manual Range* hold the *Increase Range* or *Decrease Range* key down until the dialogue box "Auto Range" or "Manual Range" briefly appears.

*Manual Range* is useful to prevent the screen redrawing when there are rapid changes in depth. (E.g. looking at the sea floor surrounding a pinnacle.)

## Gain

Gain controls the amount of detail displayed on the screen. The FISH450 Tricolor has two gain modes, *Auto Gain* and *Manual Gain*.

- In *Auto Gain*, the gain is automatically adjusted. The use of *Auto Gain* is recommended.
- *Manual Gain* can be set between 1 and 9, low values may not show enough detail, while too high a setting may clutter the screen. When in *Manual Gain* the gain symbol  appears followed by the gain level.

To switch between *Auto Gain* and *Manual Gain*, hold the *Increase Gain* or *Decrease Gain* key down until the dialogue box "Auto Gain" or "Manual Gain" briefly appears.

See the *Sonar* screen section 3-3 for more information.

## Bottom Lock

*Bottom Lock* fixes the *Zoom Bar* to the bottom, so the bottom is always displayed in the *Zoom Section*, regardless of changes in depth.

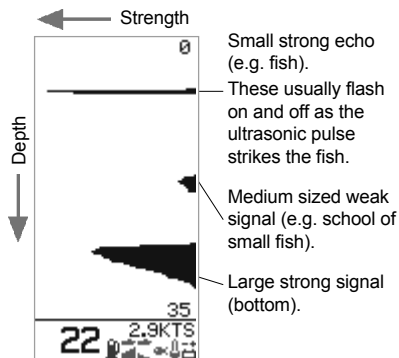
To turn *Bottom Lock* on, move the *Zoom Bar* down until it touches the bottom and the dialogue box "Bottom Lock On" briefly appears. To turn *Bottom Lock* off press the *Cursor Up* key.

Should the bottom rise to meet the *Zoom Bar* when bottom lock is off, the *Zoom Bar* will temporarily track the bottom. This condition will cease when the depth exceeds the original depth of the *Zoom Bar*.

## 3-3 Sonar screen

The *Sonar* screen displays the depth and strength of the echos returned from each ultrasonic pulse. This raw signal is enhanced by the *Colouration* and *Gain* settings and then displayed on the *Fish History* or *Zoom* screen as a single vertical row of dots.

The key to interpreting the *Sonar* screen is to look at the strength (stronger echos project further to the left) and the depth (distance down the screen) of the echos.



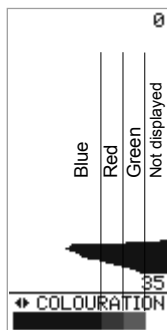
### Changing the colour thresholds

The *Colouration Bar* determines which level (strength) of echos will be displayed in **blue**, **red** or **green** on the *Fish History* and *Zoom* screens. To display the colouration bar, press the *Cursor Left* or *Right* key.

- Increase the blue part of the colouration bar by pressing the *Cursor Right* key if there are too few blue (strong) echos being displayed.
- Decrease the blue part of the colouration bar by pressing the *Cursor Left* key if there are too many blue echos being displayed.

The red and green portions of the bar graph share the remaining area equally.

The bar will automatically turn off when left for four seconds.



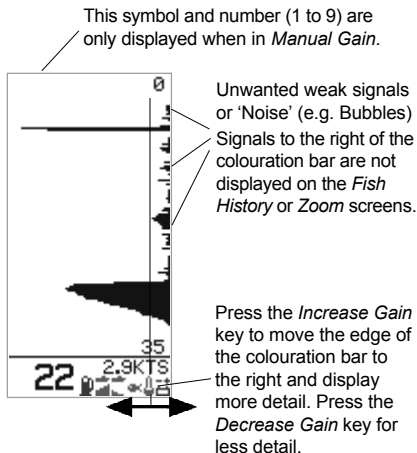
Increase the blue area by pressing the *Cursor Right* key or decrease by pressing the *Cursor Left* key

### Manual Gain adjustment

The *Sonar* screen displays all echos returned. If the *Manual Gain* value is high, the *Fish History* or *Zoom* screens may become cluttered with too many weak echos. Use *Manual Gain* to adjust the level of received echos that are displayed.

Holding the *Increase Gain* or *Decrease Gain* key for one second or longer switches between *Auto Gain* and *Manual Gain*. A dialogue box will display "*Auto Gain*" or "*Manual Gain*".

See the *Fish History* screen section 3-2 for more information on *Manual Gain* adjustment.



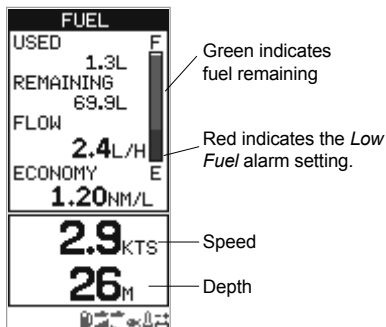
## 3-4 Fuel screen

### Fuel screen

The FISH450 Tricolor is also a petrol fuel computer. To use these fuel features, first purchase and install the optional single or twin engine fuel kit.

If *Fuel* does not appear on the *Main Menu* screen it must be enabled in the *Setup - Fuel* screen. To enable all fuel functions, change *Num Engines* to 1 (single engine) or 2 (twin engine) as appropriate. (see *Setup - Fuel* section 4 - 2)

Setup the tank size and select the fuel unit (L, USGAL, IMPGAL) to be used as outlined in the *Setup - Fuel* section.



**Used** is the total fuel used in litres or gallons since it was last cleared. This can be reset to 0 by the *Clear Used* command in the *Setup - Fuel* menu (see section 4-2).

**Remaining** is the amount of fuel remaining in the fuel tank(s) displayed in litres or gallons.

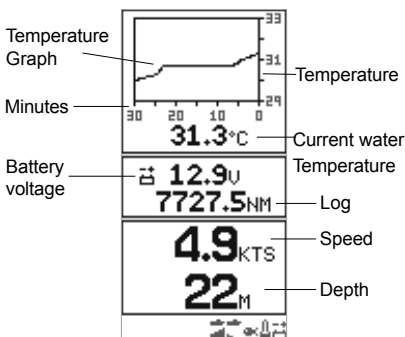
**Flow** (fuel consumption) is shown in litres or gallons per hour. For twin engine installations, the fuel flow for each engine is shown separately. This is useful for checking that both engines are under the same load.

**Economy** is the distance travelled per unit of fuel used. The FISH450 Tricolor uses boat speed and fuel consumption for this calculation. The *Economy* units are set by the units selected for speed and fuel (e.g. NM/L, NM/G, MI/L, MPG, KM/L, KM/G). Adjust the throttle and trim for the best *Economy*. The bigger the number the better the economy. CAUTION: Fuel economy can change drastically depending on boat loading and sea conditions. Always carry adequate fuel for the journey plus a sufficient reserve.

**Speed** is the current speed of the boat.

**Depth** is the current depth of the bottom.

## 3-5 Data screen



### Temperature

A graph displays the last 30 minutes of water temperature and is updated every 30 seconds. The current water temperature is displayed numerically and is updated every second.

The temperature sensor is located in the Aquaducer,

(or through-hull speed transducer) and measures the water temperature at that point. An alarm for a specific temperature or rate of change of temperature may be enabled in *Setup - Alarms* section 4-1.

### Battery

The battery voltage is displayed numerically. Monitoring this helps prevent the battery running flat without warning, particularly when using electronic devices while the battery is not charging. The battery voltage may provide an early warning of battery or alternator failure. The battery voltage will increase after the motor has started if the alternator is charging correctly.

### Log

One of two distance logs can be displayed: Trip Log or Total Log. Both logs are stored in NAVMAN's NVM (non volatile memory) when the unit is switched off. To change the which log displayed see section 4-6. The Trip log must be reset manually as most users will want to start and stop during a trip.

**Speed** is the current speed of the boat.

**Depth** is the current depth of the bottom.

## 4 Setup

The FISH450 Tricolor is menu driven.

The *Setup* menu allows the FISH450 Tricolor to be customised to each user's individual preferences.

### Alarms menu (see section 4-1) is used to:

Enable or disable alarms and set the trigger value for each alarm. Pressing the *Alarm* key from anywhere will enter the *Alarm* menu, provided the beeper is not active (in which case pressing the *Alarm* key silences the beeper).

### Fuel setup (see section 4-2) is used to:

Set the *Tank Size*, adjust the fuel remaining value (*Remaining*), set the fuel remaining value equal to tank size (*Tank Full*), clear the fuel log (*Clear Used*), set the fuel units (*Units*) (L, USGAL, IMPGAL), set the number of engines (*Num Engines*), calibrate the fuel transducer (*Fuel Calibration*) and adjust the flow averaging period (*Flow Filter*).

### Depth setup (see section 4-3) is used to:

Set the depth measurement units (M, FA, FT) and adjust *Keel Offset*.

### Temperature setup (see section 4-4) is used to:

Set the *Temperature* measurement units (°C, °F) and calibrate the temperature.

### Speed and Log setup (see section 4-5) are used to:

Set the boat speed units (MPH KPH KTS), calibrate the speed, reset the Trip Log and reset all logs.

### Display setup (see section 4-6) is used to:

Enable or disable the display of fish symbols (*Fish Symb*), speed (*Speed*) and temperature (*Temp*) on the *Fish History*, *Zoom* and *Sonar* screens. Switch between Trip Log and Total Log displayed on the Data screen. Calibrate the display colours (*Display Cal*, *Red Cal*, *Blue Cal*).


### Key Beep (see section 4-7) is used to:

Enable or disable a single beep which audibly confirms that a key has been pressed.

### Language setup (see section 4-8) is used to:

Set the language to one of the following: English, French, German, Spanish, Italian, Dutch, Swedish or Portuguese.

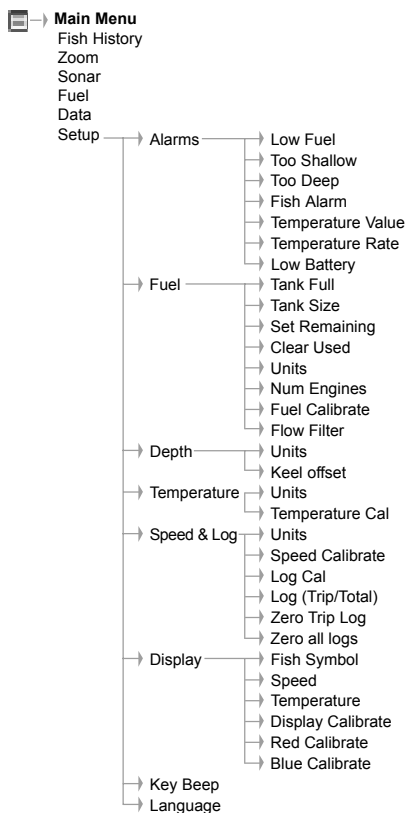
## Menu operation

To display the *Setup* screen, press the *Menu* key  one or more times until the *Main Menu* screen appears. Press the *Cursor Up* or *Down* key to highlight *Setup*, then press the *Cursor Right* key to select it. Press the *Cursor Up* or *Down* key to highlight an option, then press the *Cursor Right* key to select it.

Exit any *Setup* menu item by pressing the *Menu* key. This will display the screen one step closer to the *Main Menu*.



## Menu structure of Setup



## 4-1 Alarms

For more information on alarms see *Operation - Alarms* (section 3-1).

Access the *Alarms* menu by a single press of the *Alarm* key (provided the beeper is not active) or through the *Setup* menu screen.

### Selecting items and changing values

Press the *Cursor Up* or *Down* key to highlight an alarm, then press the *Cursor Right* key to select it.

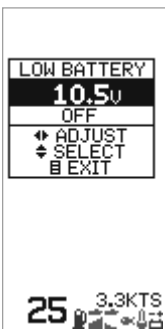
An alarm screen has a trigger value and an *On/Off* value. Press the *Cursor Up* or *Down* key to switch between them.

The highlighted value may be changed using the *Cursor Left* and *Right* key. Press the *Menu* key to save and exit once both values have been set.

The alarm value is retained even when the alarm is disabled.

### External beeper

An external beeper may be installed when a louder secondary alarm indication is required. This can be positioned anywhere on the boat. For installation details see *Installation - Wiring* (section 6-6).



Symbol	Alarm Name	Beeper cycle	Alarm condition is met when:
	Low Fuel	1/2 sec	the fuel level is less than the alarm trigger value.
	Too Shallow	1/5 sec	the depth is less than the alarm trigger value.
	Too Deep	1/2 sec	the depth is greater than the alarm trigger value.
	Fish Alarm	3 short beeps	an echo matches the profile of a fish.
	Temp Value	1/2 sec	the temperature equals the alarm trigger value.
	Temp Rate	1/2 sec	the rate of change of temperature equals the alarm trigger value.
	Low Battery	1/2 sec	the battery voltage is less than the alarm trigger value.

## 4-2 Fuel

To use these fuel features first purchase and install the optional single or twin engine fuel kit.

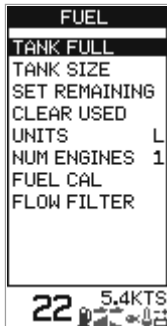
Access the *Fuel* menu through the *Setup* menu screen.

### Selecting items and changing values

Press the *Cursor Up* or *Down* key to highlight an option, then press the *Cursor Right* key to select it.

Once an option on the *Fuel* menu has been selected, its value may be changed. Press the *Cursor Left* and *Right* key to change the value, then press the *Menu* key to save and exit.

When either *Units* or *Num Engines* is highlighted, pressing the *Cursor Right* key will cycle through the available values.



### Tank Full

Select *Yes* to set fuel remaining (*Remaining*) equal to the tank capacity. **IMPORTANT:** Do this each time the fuel tank is filled or the low fuel alarm will be meaningless! When partially filling the fuel tank use *Set Remaining*.

### Tank Size

Enters the capacity of the fuel tank into the unit for use with the *Tank Full* option. It is best to measure the fuel tank size by draining, then filling with fuel in the usual manner and using the fuel dispenser's meter to measure the amount. Be aware of air pockets, particularly in underfloor tanks.

### Set Remaining

Changes the fuel remaining value. Use this feature when not filling the fuel tank to capacity, or when syphoning fuel out.

### Clear Used

Resets the fuel used (*Used*) value to 0.0. Use this to start re-measuring the amount of fuel used.

### Units

Sets the units of fuel to *L* (Litres), *USGAL* (US Gallons) or *IMP GAL* (Imperial Gallons)

### Num Engines

Sets the number of engines to 1, 2 or 0. If 0 is selected the fuel features are turned off and *Fuel* no longer appears on the main menu.

## Fuel Cal

Calibrating the fuel usage can increase the accuracy of fuel measurements from +/- 10% to better than +/- 2%. For twin engine installations calibration of each transducer is required.

Calibrating the fuel transducer requires accurate measurement of the fuel used (*Used*). This is easiest with a small portable tank. It should be noted that due to air pockets, it is very difficult to fill underfloor tanks to the same level twice. At least 15 litres should be used to ensure an accurate calibration. (The more fuel used, the more accurate the calibration will be.) Each transducer in a twin engine installation must be calibrated separately. This may be done at the same time with two portable tanks, or at different times using one tank at a time.

The procedure is as follows:

- 1) Reset the fuel used amount on the FISH450 Tricolor to 0.0 by selecting *Clear Used* in the *Setup - Fuel* menu, then selecting *Yes*.
- 2) Connect the measurement tank(s) to the engine(s) via the fuel transducer(s).
- 3) Run the engine(s) at normal cruising speed until at least 15 litres is indicated (30 for twin engines).
- 4) Check the actual amount of fuel used per engine. The easiest way to do this is to refill the tank(s) to the original level(s) and record the value(s) shown on the fuel dispenser.
- 5) Select *Fuel Cal* on the fuel menu. The amount of fuel that the FISH450 Tricolor has recorded will be displayed. Use the *Cursor Left* or *Right* key to change this to the actual fuel amount used. Press the *Menu* key when the value is set. (Repeat for the other engine in a twin engine installation).

### Flow Filter

Sets the period over which the fuel flow is averaged. Averaging can be set from 1 to 255 seconds.

Normally engines do not draw fuel from the tank at a steady rate. They draw fuel at a high rate for a few seconds until the carburettor bowl or fuel injection reservoir is full, then draw no fuel for a few seconds. If the true flow rate were displayed, it would be too erratic to read.

Usually a value of 10-15 seconds will give a satisfactory result for carburettor engines. Fuel injected engines may require a larger value.

This setting affects the flow rate (*Flow*) and *Economy* displays. It does not affect the fuel used (*Used*) measurement.

## 4-3 Depth

Access the *Depth* menu through the *Setup* menu screen.

### Units

Pressing the *Cursor Right* key when *Units* is highlighted cycles through the options: M (metres) FT (feet) or FA (fathoms).

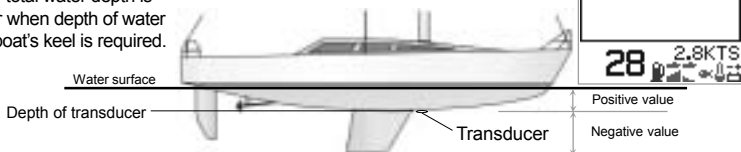
### Keel Offset

*Keel Offset* is the distance between the

location of the depth transducer and the point the displayed depth is measured from.

Press the *Cursor Up* or *Down* key to highlight *Keel Offset*, then press the *Cursor Right* key to select it. Press the *Cursor Left* and *Right* key to change the value, then press the *Menu* key to save and exit.

Use *Keel Offset* either when the transducer is located below the water surface but a display of total water depth is required, or when depth of water below the boat's keel is required.



Note: Boat illustrated uses a through hull transducer

Enter **positive** values to display depth as measured from a point **above** the transducer (e.g. Water surface).

Enter **negative** values to display depth as measured from a point **below** the transducer (e.g. keel).

## 4-4 Temperature

Access the *Temperature* menu through the *Setup* menu screen.

### Units

Press the *Cursor Right* key when *Units* is highlighted to switch between °C (Celsius) and °F (Fahrenheit).

### Temp Cal

The temperature readout may be calibrated. Calibration requires accurate measurement of the

water temperature at the same point as the Aquaducer (or through hull speed/temperature transducer).

Press the *Cursor Up* or *Down* key to highlight *Temp Cal*, then press the *Cursor Right* key to select it. This will display the FISH450 Tricolor's temperature measurement. Press the *Cursor Left* and *Right* key to change the value to the actual water temperature, then press the *Menu* key to save and exit.

## 4-5 Speed and Log

Access the *Speed and Log* menu through the *Setup* menu screen.

### Units

Pressing the *Cursor Right* key when *Units* is highlighted will cycle through the options: KTS (knots), MPH (miles per hour) or KPH (kilometres per hour).

### Speed Cal

To calibrate speed, an accurate measurement of the boat's speed is required.

Obtain the speed either from a timed run over a known distance, or from another instrument (e.g. GPS, DGPS or calibrated speedometer). The calibrated instrument may be on board or on another boat travelling alongside.

#### Notes for accurate calibration:

- GPS speeds are only accurate enough when above 20 knots, DGPS when above 5 knots. Best results are achieved in calm conditions where there is minimal current (best at high or low tide).
- Paddlewheel devices are generally accurate enough when between 6 and 20 knots.

Continue travelling at the same speed and calibrate the speed as follows:

Press the *Cursor Up* or *Down* key to highlight *Speed Cal*, then press the *Cursor Right* key to select it. This will display the FISH450 Tricolor's uncalibrated speed measurement. Press the *Cursor Left* and *Right* key to change this to the actual speed, then press the *Menu* key to save and exit.

### Log (Select)

Selects which log is displayed on the Data screen, both the Total and Trip logs are always kept in the FISH450 Tricolor but only the selected log is displayed.

### Speed Cal

Speed may also be calibrated using Log Cal.

### Log Cal

The log may also be calibrated using Speed Cal. The Trip Log is used to perform a log calibration. First zero the trip log (see below) then travel a known distance in a straight line, stop at the destination and perform calibration as soon as practical. Best results are

achieved in calm conditions where there is minimal tide (best at high or low tide). Tidal effects may be negated by making the trip twice, once in both directions.

To perform the log calibration:

Press the *Cursor Up* or *Down* to highlight *Log Cal*, then press *Cursor Right* to select it. This will display the FISH450 Tricolor's uncalibrated Trip Log. Press the *Cursor Left* or *Right* key to change the value to the known distance, then press the *Menu* key to save and exit. The Total Log value will not be changed by the calibration, the Trip Log will return to zero.

## Zero Trip Log

Resetting the Trip Log will return the trip log value to zero. The trip log is stored in the Non-volatile memory so it retains the distance value if the unit

is switched off during a trip. Therefore, it needs to be reset manually each trip.

Press the *Cursor Up* or *Down* key to highlight *Zero Trip Log*, then press the cursor right key to select it. The message "Zero Trip Log?" will appear. Use the cursor left and right to switch between yes and no, then press the menu key to zero trip log and exit.

## Zero All Logs

Resetting both logs will return both the trip log and the total log values to zero.

Press the *Cursor Up* or *Down* key to highlight *Zero All Logs*, then press the cursor right key to select it. The message "Zero All Logs?" will appear. Use the *Cursor Left* and *Right* to switch between Yes and No, then press the *Menu* key to reset all logs and exit.

## 4-6 Display

Access the *Display* menu through the *Setup* menu screen.

### Selecting items and changing values

Press the *Cursor Up* or *Down* key to highlight an option.


If *Fish Symb*, *Speed* or *Temp* is highlighted, pressing the *Cursor Right* key will cycle through the available values.




If *Display Cal*, *Red Cal* or *Blue Cal* is highlighted, then pressing the *Cursor Right*

key will select it. Once one of these options has been selected, its value may be changed. Press the *Cursor Left* and *Right* key to change the value, then press the *Menu* key to save and exit.


### Fish Symb

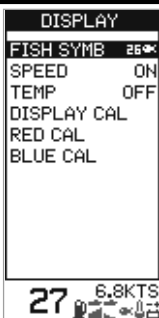
This controls how echos that match the profile of a fish are displayed on the *Fish History* and *Zoom* screens:

- Off Displays echos as dots on the screen.
-  Displays any echos returned that match the profile of a fish as a fish symbol in one of three sizes:

-  Strongest echo
-  Average echo
-  Weakest echo

Echos which are not recognised as fish are displayed as dots on the screen.

-  Displays any echos returned that match the profile of a fish as a fish symbol in one of three sizes as above. The depth of the fish is shown to the left of the symbol. Echos which



are not recognised as fish are displayed as dots on the screen.

### Speed

This turns on or off the display of speed on the *Fish History*, *Zoom* and *Sonar* screens.

### Temp

This turns on or off the display of temperature on the *Fish History*, *Zoom* and *Sonar* screens.

Disabling the temperature display increases the size of the depth displayed in the *Fish History*, *Zoom* and *Sonar* screens.

### Colour calibration

Use colour calibration to optimise the colours of the unit's display for differing light conditions.

#### Display Cal

This changes the balance of red, blue and green.

#### Red Cal

This changes red only.

#### Blue Cal

This changes blue only.



Users are advised to experiment with these values to determine the settings that best suit their individual preferences. It is essential that adjustments are made while viewing from directly in front of the screen.

### Trip Log and Total Log

To switch between the Trip Log and the Total Log press cursor down to highlight Trip Log or Total Log. Press cursor left or right to change the log displayed, then press the menu key to save and exit.

### Backlighting

The backlight intensity may be enabled then adjusted to suit individual preferences. See *Getting Started* (section 2).

## 4-7 Key Beep

The *Key Beep* function is located on the *Setup* menu. It allows the user to activate an audible beep each time a key is pressed.

Pressing the *Cursor Right* key when the word *Key Beep* is highlighted switches between *On* and *Off*.

## 4-8 Language

Access the *Language* screen through the *Setup* menu.

To select a language, press the *Cursor Up* or *Down* key to highlight it, then press the *Menu* key to save and exit.



## 4-9 Resetting to factory defaults

All settings may be reset to the manufacturer's defaults settings. (See right.)

**IMPORTANT:** Resetting to factory defaults will erase all settings you have made except fuel used (*Used*) and fuel remaining (*Remaining*).

To enter the *Default Set* screen, first power off.

Hold the *Cursor Left* key down and power on while continuing to hold it down.

The message "RESET TO FACTORY DEFAULTS?" will appear.

Use the *Cursor Left* and *Right* key to switch between *Yes* and *No*, then press the *Menu* key to continue the power on sequence.

### GENERAL

Auto Gain .....ON  
Auto Range .....ON  
Manual Gain .....5  
Bottom Lock .....OFF  
Key Beep .....OFF

### UNITS

Temperature .....°C  
Depth .....Metres  
Speed .....KTS  
Fuel .....Litres

### ALARMS

Shallow Alarm .....OFF  
Shallow Alarm Value .....3.0 m  
Deep Alarm .....OFF  
Deep Alarm Value .....20.0 m  
Fish Alarm .....OFF  
Fuel Alarm .....OFF  
Fuel Alarm Value .....20 litres  
Temp. Change Alarm .....OFF  
Temp. Change Alm Val. ....2.0 °C

Temp. Alarm .....OFF  
Temp. Alarm Value .....25.5 °C  
Low Battery Alarm .....ON  
Battery Alarm Value ...11.5 Volts

### DISPLAY

Fish Symbol .....  
Speed Display .....ON  
Temperature Display .....OFF  
Display Cal .....9  
Red Cal .....3  
Blue Cal .....3  
Backlight .....6

### FUEL

Tank Size .....70 litres  
Num Engines .....0  
Flow Filter .....10 secs

### OTHER

Keel Offset .....0.0 m  
Logs ..... Trip Log  
Language .....ENGLISH

## 4-10 Simulate

An internal simulator allows users to familiarise themselves with operating the FISH450 Tricolor off the water. When in *Simulate* mode the word "Simulate" flashes on the bottom of the screen.

When in *Simulate* the unit generates data so that all the main screens appear operational. Any changes made to the backlighting, alarms and display setup are saved, but the fuel log (*Used*)

and fuel remaining (*Remaining*) are not affected.

To turn the *Simulate* mode on, power the unit off, disconnect the blue transducer plug at the rear of unit, then power the unit on.

To turn the *Simulate* mode off, power the unit off, reconnect the blue transducer plug at the rear of unit, then power the unit on.

## 5 Installation

Correct installation is critical to the performance of the unit. There are two components to install, the FISH450 Tricolor and the transducer. The transducer which comes standard with the FISH450 Tricolor is called an Aquaducer and includes three elements: speed, temperature and ultrasonic sounder.

It is vital to read the entire installation section of this manual **and** the documentation that comes with your transducers before attempting installation.

### 5-1 What comes with your FISH450 Tricolor

#### Standard configuration

- FISH 450 Tricolor unit
- Power cable (2m)
- Bracket (mount, bracket, three locking knobs, plus four screws for attachment)
- Warranty Registration Card
- This Manual
- Transom mounted Aquaducer (Depth/speed/temperature) - 8m cable included
- Bracket, wedges and three screws for the Aquaducer.



### 5-2 Options and accessories

#### Optional fuel kit

- Single engine fuel kit (petrol only)
  - Fuel transducer - 8m cable included
  - Power/Fuel cable - 2m (replaces standard power cable)
- Twin engine fuel kit (petrol only)
  - Two fuel transducers - 8m cables included
  - Power/Fuel cable - 2m (replaces standard power cable)
  - Twin engine fuel adapter ("T" junction)



#### Optional through hull transducers

- Through hull transducers (replaces Transom mounted Aquaducer)
  - Through hull Speed/Temperature transducer
  - Through hull Depth transducer



#### Other options and accessories

- Extension cable
  - 4m Aquaducer extension cable
- Flush mounting kit
- Replacement paddle wheel
- Dust and sun cover



Repeater for Depth, Speed, Water Temperature, Battery Voltage. Please consult your NAVMAN dealer for more information.



Depth Repeater

## 5-3 Mounting the Aquaducer

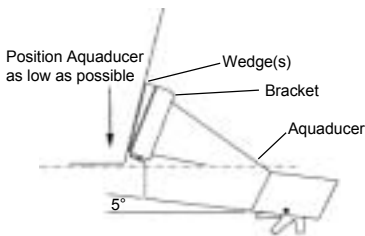
The location and angle of the Aquaducer are the most critical parts of the installation. If the location and angle are not correct, the Aquaducer can't perform at its designed potential.

### Transom mount Aquaducer

**IMPORTANT** - the Aquaducer cable cannot be cut or shortened.

The Aquaducer can be installed on any outboard or stern-drive powered boat. Inboard powered boats must be fitted with a through-hull transducer as the propeller wash interferes with the operation of transom mounted transducers. The transom mount Aquaducer has a safety "kick up" mounting bracket which will normally prevent damage to the Aquaducer should it impact the bottom or floating debris in the water.

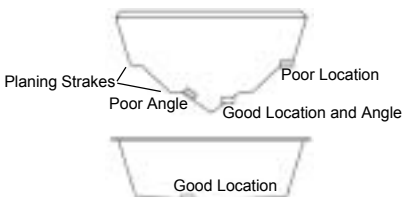
Final position of Aquaducer:



### Location

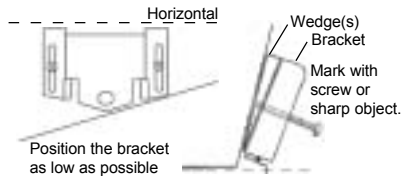
Select a position for the Aquaducer that will:

- allow the Aquaducer a smooth flow of water over its surface at all times.
- ensure a mount as deep in the water as possible.
- be clear of any interference from the trailer when launching or retrieving the boat.
- be away from planing strakes or other projections from the hull that may cause aerated water to flow over the face of the transducer.
- be away from the propeller.
- be at least 150 mm (6") away from the keel of the boat.

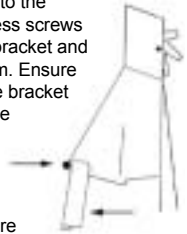


### Mounting

- **IMPORTANT** - place the Aquaducer against the transom and check that the bottom surface is angled approximately 5° forward in order to minimise the generation of bubbles through cavitation. If necessary, use one or more of the three wedges provided (one 4° and two 8°) to achieve this angle.
- Position the bracket and selected wedge(s) as low as possible without any part protruding below the hull. Mark the screw hole centres on the transom through the centre of the bracket slots. Mark them so that when the screws are tightened the screw heads sit flat on the surface of the bracket.



- Drill the two screw holes using a 3 mm drill bit. Make sure the holes are angled so that when the screws are tightened the screw heads sit flat on the surface of the bracket.
- Insert the Aquaducer into the bracket. Use the stainless screws provided to attach the bracket and wedge(s) to the transom. Ensure again that the top of the bracket is horizontal and that the bracket is as low as possible without protruding below the hull. Fill holes with a sealing compound before inserting screws. Tighten the two screws.
- Drill a hole and insert the third screw in the middle of the bracket.
- Finally push the Aquaducer down so it 'clicks' into place.
- Once in place test the Aquaducer is connected by turning the unit on. If the Aquaducer is not connected then the message "No transducer detected. Enter simulation mode? Yes/No" will appear. (see *Simulate Mode* section 4-10). Please see the section on *Troubleshooting* Appendix B.



## 5-4 Other depth and speed / temperature transducers

Correct transducer installation is critical to the performance of the unit. Most transducers come with instruction. It is important to carefully read and follow the instructions provided.

NAVMAN through-hull transducers and speed/

temperature transducers are available for the FISH450 Tricolor. These are separate transducers which require separate mounting.

Please consult your NAVMAN dealer when attempting to install other transducers.

## 5-5 Fuel transducers

### Fuel transducers

A single or twin engine fuel kit can be purchased separately. It is supplied with the "NAVMAN Fuel flow transducer installation instructions". This transducer is for use with petrol engines only.

A fuel filter must be placed on the fuel line between

the transducer and the fuel tank.

When the installation is complete, please follow the instructions in *Setup Fuel* section 4-2.

Note: Before the fuel features can be used they must be enabled by setting *Num Engines* to either 1 or 2.

## 5-6 Mounting the FISH450 Tricolor display unit

### Mounting the bracket

1. Select a position where the display head will be:

- At least 300mm away from the compass.
- At least 300mm away from any radio transmitter.
- At least 1.2 metres away from the VHF antenna.
- Easy to read by the helmsman and crew while underway. Colours are best when viewed from directly in front of the unit.
- Protected from physical damage during rough sea passages.
- Easy to access the 12 volt power source.
- Convenient to route the transducer cables.

2. Remove the round base from the centre of the bracket.

3. Affix the round base using the 4 stainless screws provided.

4. Orientate the bracket on the round base and screw down the central locking knob.

Note: There is also a flush mount kit available. Please consult your NAVMAN dealer.

### Mounting the FISH450 Tricolor

1. Attach cables.

2. Slide mounting screws into the slots on the mounting bracket. The rubber washers go between the body of the fishfinder and the mounting bracket.

### Removing the FISH450 Tricolor

You may remove your fishfinder after each use for protection against the environment or security reasons.

If you do remove the FISH450 Tricolor, ensure that the plugs left in the boat are not exposed to the elements. Keep the unit in a dry clean place.

## 5-7 Wiring connection

The FISH450 Tricolor uses a colour coded connector system:

Black connector = Power

Blue connector = Aquaducer

White connector = Fuel

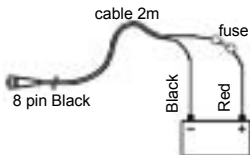
The connectors are bayonet type, push the plugs into the sockets then turn the collars to lock. Make sure the collars are secure for water tight connection.

### Important

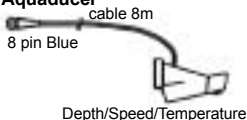
- The connection to the battery must be made via a fuse (1 amp) or circuit breaker.
- If possible, route the transducer cables away from other wiring on the boat. Electrical noise from engine wiring, bilge pumps, and other equipment can affect the unit.
- Connect the red wire of the two-core power cable to the positive supply and the black wire to the electrical ground.
- The shortest and most direct connection to the boat's battery helps to minimise voltage drop.
- If the *Auto Power* option is not used, connect the yellow *Auto Power* wire to the black ground wire.

**Warning: The FISH450 Tricolor must be run off a 12 volt battery and must not be run off a circuit without a battery.**

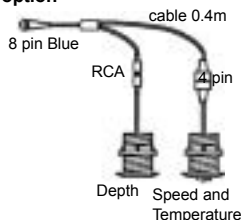
#### Standard power connection



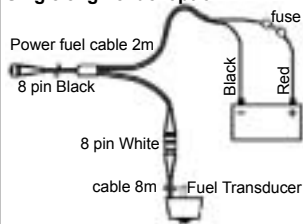
#### Standard Transom Mount Aquaducer



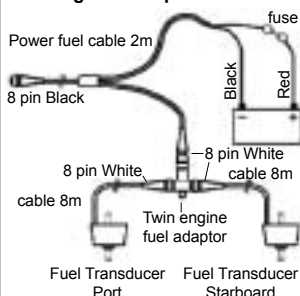
#### Through-Hull Transducers option



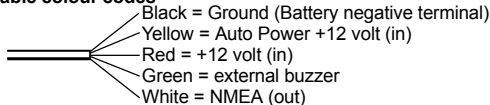
#### Single engine fuel option



#### Twin engine fuel option

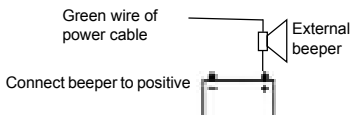


#### Power cable colour codes



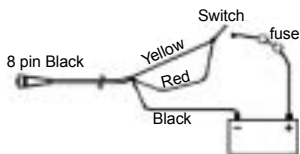
#### External beeper

A 12 volt external beeper with a built in drive circuit may be connected. The maximum current draw is 250mA.



## 5-8 Auto Power wiring connection

To have the FISH450 Tricolor turn on automatically when the boat's power is switched on, connect both the yellow and red wires to the boat's power switch. Use this in conjunction with the fuel option to ensure that the FISH450 Tricolor is turned on and measuring fuel flow whenever the engine is running. The *Backlight / Power* key will no longer be able to be used to turn the unit off.



## Appendix A - Specifications

### Depth range

- 0.6 m (2 ft) to 300 m (1000 ft)

### Display type

- 3 Colour LCD
- Screen resolution 160 high x 80 wide (pixels)
- White multi-level back lighting

### Supply voltage

- 10 to 16.5 V dc

### Supply current

- 180 mA max (full backlighting)

### Operating temperature

- 0 to 50°C (32 to 122°F)

### Maximum transducer cable length

- 12 m (39 ft)

### Supplied transducer cable length

- 8 m (26 ft)

### Typical depth acquisition time from startup

- 2 seconds at 30 metres

### Depth accuracy

- Better than 2%

### Transducer frequency

- 200 kHz

### Transducer power

- 400 Watts nominal @ 13.8V DC (During Burst)

### Receiver sensitivity

- Better than 20 micro volts RMS
- Dynamic range 4.0 million to 1 (120dB)

### Temperature measurement range

- 0-37.7°C (32-99.9°F) Resolution 0.1 units

### Speed range

- 1-50 kn (mph, kph)

### Speed resolution

- 0.0 to 19.9, 20 to 50

### Log range

- 0.0 to 99999.9 units

### Log resolution

- 0.1 units

### Environment rating

- Immersion in 1 metre of water for 30 mins. (IP67)

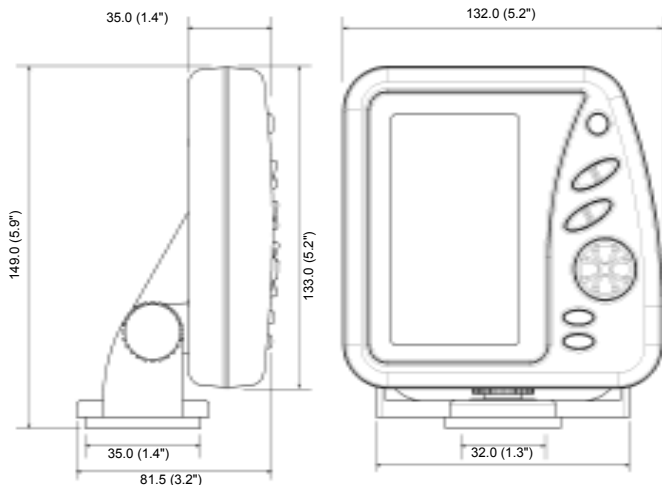
### Communications

- NMEA 0183 (Ver 2.0) 4800 Baud

### NMEA output

NMEA (0183 format) is a standard for interfacing marine electronic devices. The FISH450 Tricolor can output the following data:

- DBT (Depth Below Transducer)
- DPT (Depth and Keel offset)
- TDK (Depth Talon Technology - proprietary)
- TKV (Speed Talon Technology - proprietary)
- VHW (Speed)
- MTW (Water temperature)
- XDR (Battery voltage and fuel flow)



## Appendix B - 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 unit back to the manufacturer for repair. Please follow this troubleshooting section before contacting the nearest NAVMAN dealer.

There are no user serviceable parts. Specialised methods and testing equipment is required to ensure that the unit is reassembled correctly and is waterproof. **Users who service the FISH450 Tricolor themselves will void the warranty (see appendix D).**

Repairs to the FISH450 Tricolor may only be carried out by a service centre approved by Talon Technology. If it is found that the unit 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](http://www.navman.com).

### 1. The fishfinder won't turn on:

- a) The FISH450 Tricolor is designed to operate on 12 volt battery systems, where the voltage may vary from 10 to 16.5 volts. If an excessive voltage is supplied to the unit, a resettable fuse will be tripped, turning the unit off.
- b) Check the power cable connector at the back of the unit is securely plugged in and the collar is locked in place. The collar must be secure for water tight connection.
- c) Measure the battery voltage. 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 or squashed sections.
- e) Make certain the power cable's red wire connects to the positive battery terminal and the black wire to the negative battery terminal or ground. (If wired for *Auto Power*, then ensure the red and yellow wires are connected to the boat's power switch. Also check the boat's power switch circuit. See *Auto Power* section 5-8.)
- 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. Test the fuse or replace

it with a fuse known to be good.

### 2. The fishfinder operates erratically:

- a) Check the Aquaducer does not have debris (eg weed, plastic bag etc.) caught around it.
  - b) The Aquaducer may have been damaged during launching, running aground or while underway with debris etc. If the Aquaducer has been impacted, it may have been kicked up on the bracket. If it has not been physically damaged, push it back down so it 'clicks' into place.
  - c) When in water less than 2 feet (0.6m) the bottom and depth readings may become inconsistent and erratic. This depth is measured from the transducer and does not allow for any *Keel Offset* setting.
  - d) *Manual Gain* may be set too low, which may cause weak bottom echo, or no fish signals. If you have the *Auto Gain* disabled try increasing the gain.
  - e) Ensure the bottom surface of the Aquaducer is angled approximately 5° forward and as low as possible in order to minimise the generation of bubbles through cavitation. See *Mounting the Aquaducer* section 5-3.
  - f) Check the transducer and power cable connectors at the back of the unit are securely plugged in and the collar is locked in place. The collar must be secure for water tight connection.
  - g) Inspect the transducer and power cables from end to end for damage such as cuts, breaks or squashed sections.
  - h) Ensure there is not another fishfinder or depth sounder turned on, which may interfere with the FISH450 Tricolor.
  - i) Electrical noise from the boat's engine or an accessory may be interfering with the transducer(s) and/or the FISH450 Tricolor. This may cause the unit to automatically decrease the gain unless using *Manual Gain*. The unit thus eliminates weaker signals such as fish or even the bottom from the display. This may be checked by switching off other instruments, accessories (e.g. fridges) and the motor until the offending device is located. To stop problems from electrical noise, try:
    - Rerouting the power and transducer cable(s) away from the boat's other electrical wiring.
    - routing the unit's power cable directly to the battery instead of through a fuse block or ignition switch.
- ### 3. Bottom is not displayed:
- a) In *Manual Range* and the depth reading is displayed, check that the depth is not greater than the range selected. (see section 3-2)
  - b) The depth may be outside the fishfinder's range.

While in *Auto Range*, the unit will flash the last depth displayed, then display “---” to indicate that there is no bottom detected. A display of the bottom should reappear when it is shallower than 300m (1000 ft).

#### **4. Bottom echo disappears or erratic digital reading while your boat is moving:**

- a) Ensure the bottom surface of the Aquaducer is angled approximately 5° forward and as low as possible in order to minimise the generation of bubbles through cavitation. See *Mounting the Aquaducer* section 5-3.
- b) The transducer may be in turbulent water. Air bubbles in the water disrupt the echos returned, interfering with the FISH450 Tricolor's ability to find the bottom or other targets. This often happens when you reverse the boat. The transducer must be mounted in a smooth flow of water in order for the unit to work at all boat speeds.
- c) Electrical noise from the boat's motor can interfere with the FISH450 Tricolor. Try some suppression spark plugs.

#### **5. Fuel Used and/or Remaining amount(s) seem incorrect:**

- a) Running the engine without the FISH450 Tricolor turned on will result in the fuel used (*Used*) not being recorded. This means that the fuel remaining (*Remaining*) value will read higher than what is actually in the tank. Installing the unit in the *Auto Power* configuration will solve this problem, as the unit is powered on and off automatically when the vessel's power is switched on and off.
- b) Incorrect readings may be caused by fuel surging back and forward through the transducer in rough seas. Try installing a one way valve between the fuel transducer(s) and the fuel tank.
- c) Fuel *Remaining* must be set to the amount of fuel on board after every refuelling.
- d) Air pockets when filling the tank may have caused the tank to not fill completely.
- e) Calibrate the fuel transducer after 100 litres have been run through - so the turbine shaft beds into the bearings correctly.
- f) Fuel transducers wear out over time and should be replaced every 5000 litres of fuel.
- g) Also check all other fuel problems listed in the troubleshooting guide.

#### **6. No/low fuel flow (*Flow*) indicated:**

- a) Check the fuel cable connectors are securely plugged in and the collar is locked in place. The collar must be secure for water tight connection.
- b) The fuel transducer(s) must be installed after a fuel filter or they may clog. To clear a clogged fuel transducer(s) remove the transducer(s) from the line and gently blow through the transducer(s)

in the opposite direction to the fuel flow.

- c) Inspect the fuel cable(s) from end to end for damage such as cuts, breaks or squashed sections.
- d) Check that the fuel filter(s) in the line are clean.
- e) Ensure that the fuel flow transducer(s) has not been exposed to excessive heat or vibration.

#### **7. Only one flow rate value shown for a twin engine installation:**

- a) In the *Setup Fuel* menu *Num Engines* must be set to 2.

#### **8. Erratic fuel flow readings:**

- a) The mounting position of the fuel flow transducer must not be too close to the fuel pump(s) and not subject to excess vibration.
- b) Check for air leaks in the fuel hose(s) or fuel pick-up(s) in the tank(s).
- c) The filtering level (averaging) has not been set to suit the engine(s). In the *Setup Fuel* menu, increase the *Flow Filter* value until a steady flow rate is indicated. Check the fuel flow (*Flow*) readings are not zero.

#### **9. No fuel economy reading:**

- a) For the FISH450 Tricolor to be able to calculate an economy reading, the boat must be displaying a speed greater than zero.
- b) Check the paddlewheel on the Aquaducer is spinning freely. Check that the two magnets in the paddlewheel are in place.

#### **10. Over temperature warning message displayed:**

- a) Error message. “Warning: Temperature exceeding 70°C. Reduce temperature to improve colour clarity.” Press the *Alarm* key to acknowledge message and reduce the temperature of the unit.

#### **11. If the unit beeps when turned on but nothing is displayed:**

- a) The unit may be operating, but the display's calibration settings (*Red Cal*, *Blue Cal*, *Display Cal*). See section 4-6) may have been set too high or low. Reset the display defaults so the unit displays normally. While the unit is off, hold the *Cursor Right* key and while holding it, hold the *Power On* key. See section 4-9 for default values.

#### **12. The unit is setup in such a way that the user is not sure what to adjust to get it operating normally:**

- a) The units factory defaults can be restored to reset the unit a known configuration. See *Resetting to factory defaults* section 4-9.

#### **13. The wrong language is displayed:**

- a) See *Getting Started* section 2 on how to change the language without using the menu system.
- b) See *Setup Language* section 4-8.

## Appendix C - Glossary

**Aquaducer** is the name of NAVMAN's transducer which comes standard with the FISH450 Tricolor. It combines temperature, speed and an ultrasonic sensors to form a compact transom mounted transducer solution.

**Bottom Lock** is a feature of the FISH450 Tricolor for the *Zoom* screen which adjusts the *Zoom Bar* so the bottom is always displayed at the bottom of the screen regardless of changes in depth. See *Fish History and Zoom Screens* section 3-2.

**Depth Sounder** - A device for measuring the depth using ultrasonics. The FISH450 Tricolor is a depth sounder as well as a fishfinder.

**DGPS** - Differential Global Positioning System. A very accurate satellite and land beacon navigational tool. See your NAVMAN dealer for more information.

**Gain** (sensitivity) is the amount of detail (or level of echo returned) the fishfinder displays on the screen.

**GPS** - Global Positioning System. A satellite navigational tool. See your NAVMAN dealer for more information.

**Keel Offset** is the difference between the depth of the transducer, and the depth displayed.

**Main Screens** include Fish History, Zoom, Sonar,

Fuel and Data.

**NMEA** - National Marine Electronics Association

**NMEA 0183** - A standard for interfacing marine electronic devices.

**NVM** (Non Volatile Memory) stores the settings and data in your FISH450 Tricolor. This data is stored while the unit is turned off so the data is retained when you switch it on.

**Range** is the depth of water displayed.

**Repeater** - a display that repeats information from a primary instrument (eg a FISH450 Tricolor). NMEA output for data that can be repeated is listed in the Specifications - Appendix A.

**Sensitivity** - see gain

**Sonar** - A system for detecting underwater objects using ultrasonics.

**Sounder** - Another name for a depth sounder.

**Strakes** are the ridges that run from bow to stern. Often called planing strakes.

**Turbid, turbidity** - used to describe water which is has a high amount of noise and is difficult to 'see' through. This can be caused by air in water (e.g. from another boats wake) or muddy water.

**Ultrasonic** - Sounds which are above the range of the human ear.

## Appendix D - Conditions of Sale & Warranty

IMPORTANT: Some of the following terms and conditions vary from country to country. Please check with your NAVMAN dealer from whom you purchased your product.

### A. Conditions of Sale

Except to the extent otherwise required by the laws of the country in which the accompanying product ("the product") is sold the manufacturer of the product Talon Research & Development Co. Limited ("Talon Technology") - has no liability in respect of the product beyond the warranty hereunder provided. Where liability may not be excluded but may be limited to repair or replacement or the supply of equivalent goods or for the payment of the cost of replacing the goods or of acquiring equivalent goods, liability is so limited.

### B. Manufacturers warranty

Warranty Period - 1 year from the date of purchase.

Extent of warranty - Subject to the following conditions Talon Technology will rectify any defect occurring in the product of which notice in writing is received by Talon Technology or its approved distributor within the Warranty Period.

#### Conditions:

- 1) Repairs may only be carried out by a Service Centre approved by Talon Technology.

- 2) Repairs as above will be carried out at no cost to the owner subject to these conditions.
- 3) The cost of returning the goods to an approved dealer shall be met by the owner.
- 4) Warranty does not extend to accessories or defects or injuries caused or resulting from causes not attributable to faulty parts or the manufacturer of the product including, but not limited to, defect or injuries caused by or resulting from misuse, abuse, neglect, accidental damage, incorrect installation, water damage, use of consumables other than those approved by Talon Technology or any alterations to the product not approved by Talon Technology.
- 5) No warranty claim accepted without sales documentation.
- 6) Talon Technology may, at its discretion, replace the product instead of repairing it.

### C. Acceptance of Conditions of Sale

In consideration of this warranty the purchaser accepts the limitations of liability as set out in the conditions of sale.

## Appendix E - How to contact us

More information is available on-line at our website [www.navman.com](http://www.navman.com)

#### Distributors:

##### Europe:

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##### New Zealand

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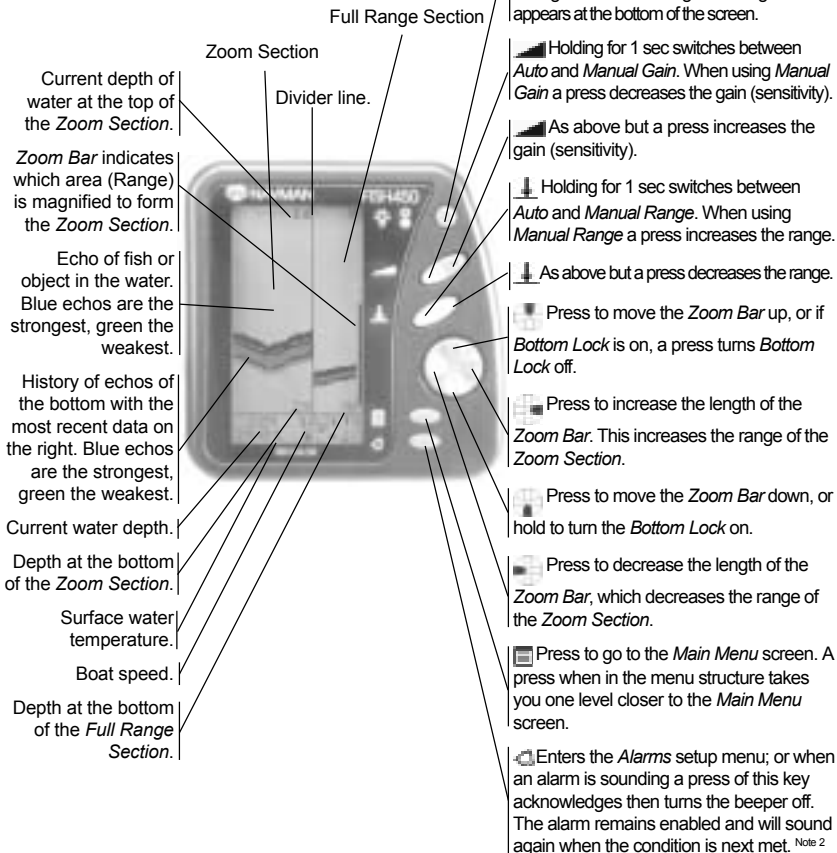


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## Appendix F - Quick reference

An example of the *Zoom* screen is shown below. The *Full Range Section* displays the water depth (Range) between 0 to 30 metres. The *Zoom Section* displays a range of depth between 14 and 29 metres. Keys may have different uses in other screens.



Note 1: The Power on & Power off functions of this key are disabled if wired for the 'auto power option'. (see *Installation - Auto Power* section 5-8)

Note 2: Refer to the *Setup - Alarms* section for more information.

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Lat 36° 48.422' S



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