

# SmartCraft Gateways

For single and dual engine applications

## Installation and Operation Manual

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# NAVMAN

## Important

It is the owner's sole responsibility to install and use the gateway 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.

**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. Always ensure that adequate fuel is carried onboard for the intended trip plus a reserve to allow for unforeseen circumstances.

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**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.

This manual represents the SmartCraft gateways as at the time of printing. Navman NZ Limited reserves the right to make changes to specifications without notice.

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## 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:

- Re orient 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.

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# 1 Introduction

The Navman SmartCraft™ gateway connects one or two SmartCraft capable Mercury petrol/gasoline engines to a SmartCraft capable Navman instrument, such as the FISH 4380, FISH 4600 or TRACK-FISH 6600. The single gateway is for single engines, the dual gateway is for twin engines.

Adding the gateway extends the functions of the Navman instrument, allowing the instrument to:

- Display engine data, such as speed, RPM, pressures, tank levels.
- Control troll speed and display trim.
- Sound an alarm if it detects an abnormal engine condition.

This manual describes:

- How to install a Navman SmartCraft gateway.
- How to use the SmartCraft functions of a Navman SmartCraft capable instrument. Refer to the separate Navman instrument *Installation and Operation Manual* for information on how to install and use the instrument.

The engine data available in a system depends on the type of engine used (see section 1-1). The gateway replaces any fuel flow sensors that might be plugged into the Navman instrument.

It is vital to read this document and the associated SmartCraft and Navman installation and operation manuals before installing or using the system.

## 1-1 SmartCraft data available from different engines

The SmartCraft engine data available in a system depends on the type of engine. SmartCraft is a digital engine network provided on some later model (2002 +) Mercury and Mariner Engines, both in-board and out-board.

|                          | Engine type      |         |                 |                 |                 |        |                  |                  |                  |                  |                  |        |
|--------------------------|------------------|---------|-----------------|-----------------|-----------------|--------|------------------|------------------|------------------|------------------|------------------|--------|
| Engine data available    | 4 Stroke 30 - 60 | V-6 EFI | Optimax 75- 115 | Optimax 135-250 | Optimax 225 DTS | Verado | Mercuriser 4.3 L | Mercuriser 5.0 L | Mercuriser 5.7 L | Mercuriser 6.2 L | Mercuriser 8.1 L | 496 HO |
| Steering Angle           |                  |         |                 |                 |                 |        | ✓                | ✓                | ✓                | ✓                | ✓                | ✓      |
| Fuel level               |                  | ✓       | ✓               | ✓               | ✓               | ✓      | ✓                | ✓                | ✓                | ✓                | ✓                | ✓      |
| Oil temperature          |                  |         |                 |                 |                 | ✓      |                  |                  |                  |                  |                  |        |
| Oil Pressure             |                  |         |                 |                 |                 | ✓      | ✓                | ✓                | ✓                | ✓                | ✓                | ✓      |
| Engine Trim              |                  |         |                 | ✓               | ✓               | ✓      | ✓                | ✓                | ✓                | ✓                | ✓                | ✓      |
| Water Pressure           |                  | ✓       | ✓               | ✓               | ✓               | ✓      | ✓                | ✓                | ✓                | ✓                | ✓                | ✓      |
| Engine temperature       | ✓                | ✓       | ✓               | ✓               | ✓               | ✓      | ✓                | ✓                | ✓                | ✓                | ✓                | ✓      |
| Fuel Flow                | ✓                | ✓       | ✓               | ✓               | ✓               | ✓      | ✓                | ✓                | ✓                | ✓                | ✓                | ✓      |
| Fuel Level               |                  | ✓       | ✓               | ✓               | ✓               | ✓      | ✓                | ✓                | ✓                | ✓                | ✓                | ✓      |
| Engine voltage           | ✓                | ✓       | ✓               | ✓               | ✓               | ✓      | ✓                | ✓                | ✓                | ✓                | ✓                | ✓      |
| Pitot water (boat) speed | ✓                | ✓       | ✓               | ✓               | ✓               | ✓      | ✓                | ✓                | ✓                | ✓                | ✓                | ✓      |
| RPM                      | ✓                | ✓       | ✓               | ✓               | ✓               | ✓      | ✓                | ✓                | ✓                | ✓                | ✓                | ✓      |

## 1-1-1 Tanks and sensors

Engines can have optional level sensors fitted:

- A two-stroke engine can have one sensor fitted to its oil tank, and one additional sensor fitted to a fuel, oil, water or waste tank.
- A four stroke engine can have one or two sensors fitted to its fuel, water or waste tanks.

If level sensors are fitted: the tank levels can be

displayed; there are alarms for low tank levels; the tanks must be set up and calibrated (see following sections):

FISH 4380 : Section 3-8-1

TRACKFISH 6600 : Section 4-7-1

FISH 4600 : Section 5-7-1

## 1-2 What comes with your gateway ?

Built-in cable to the Navman instrument, 1 m (3.3 ft) long

Built-in cable to the SmartCraft system, 300 mm (1 ft.) long

### SmartCraft Gateway

#### **Gateway LEDs:**

**NAV** (orange): Flashes fast when the gateway is exchanging data with the Navman instrument and the engine key is on.

**PWR** (green): On when power and the engine key are on.

**CAN** (red): Flashes fast when the gateway is exchanging data with the SmartCraft engine(s) and

#### **Also supplied:**

- Two mounting screws (8 gauge x 5/8 inch, Pan pozi, self tapping, stainless steel);
- warranty card;
- this manual.

Holes for mounting screws



## Optional extras for SmartCraft

### **Power/fuel splitter cable**

A power/fuel splitter cable ('Y' cable) is required for Navman instruments that do not have a separate fuel sensor connector (such as the FISH 4380, see section 2-2). This cable is included in hardware packages AA005022 and AA005023 and is also available separately from your Navman dealer.



AA002237

Also see Appendix-C

## 2 Installation

A system in a boat comprises:

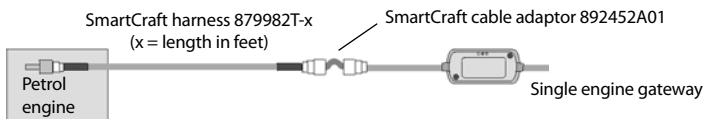
- One or two SmartCraft capable petrol/gasoline engines; the data available depends on engine type and the sensors fitted (see section 1-1).
- A single or dual engine gateway.
- A SmartCraft capable Navman instrument, such as the FISH 4380, FISH 4600 or TRACK-FISH 6600.
- Other optional Navman instruments and SmartCraft displays. See Appendix-C

**⚠ Warning: Correct installation is critical to the performance of the unit. Before starting installation, it is vital to read this manual and the documentation that comes with the other parts. Then plan the installation and select where the equipment and cables will be located.**

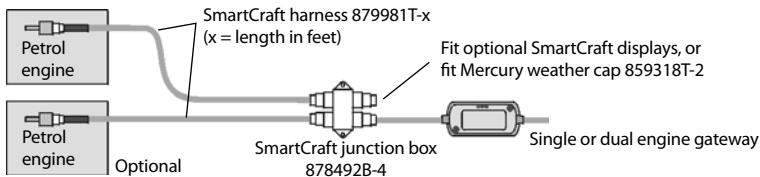
**⚠ Warning: Ensure that any holes that you cut will not weaken the boat's structure. If in doubt, consult a qualified boat builder.**

### 2-1 Connecting the gateway to the SmartCraft system

**Using a Navman cable adaptor:** Use a Navman cable adaptor in a single engine system which does not have optional SmartCraft displays. However, a SmartCraft junction box should be used if future expansion of the SmartCraft system is planned.



**Using a SmartCraft junction box:** Connect the gateway to a SmartCraft Junction box in a twin engine system or in any system with optional SmartCraft displays.



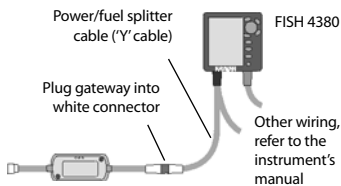
There must be two SmartCraft Terminators in any SmartCraft Installation. The Mercury harness 84-879982T-x has two terminators built-in; the Mercury harness 84-879981T-x has one terminator built-in. Terminators must be positioned at the furthest ends of the SmartCraft network.

Refer to a Mercury SmartCraft manual, such as *Wiring for SmartCraft Gauges* (Mercury part 90-879939), for details of installation configurations and requirements, alternative termination methods and additional SmartCraft components such as harnesses, junction boxes and terminators. Also see Appendix C

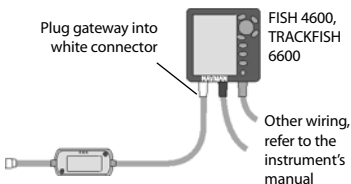
To use the SmartCraft functions, install the SmartCraft gateway (see section 2), then go to the System setup menu on the Navman Instrument and turn SmartCraft to On (See Setup > System menu).

## 2-2 Connecting the gateway to the Navman instrument

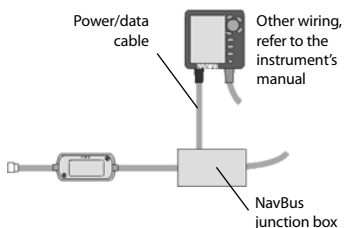
For a Navman instrument without a white fuel sensor connector (such as a FISH 4380):



For a Navman instrument with a white fuel sensor connector (such as a FISH 4600 or TRACKFISH 6600):



For any Navman instrument, using a NavBus junction box to connect to power/data cable (black power connector):



The wires from the gateway to the Navman instrument cable can be connected to the instrument's power/data cable. This option is not normally necessary. For more information, refer to your Navman dealer.

Cut white connector off gateway cable. Connect five gateway cable wires (red, black, blue, orange, brown) to the same colour wires in the power/data cable. An optional Navman NavBus junction box simplifies wiring.

## 2-3 Installation

- 1 Plan the installation: select where the equipment and wiring will be installed. Ensure that gateway can be located on a panel near the Navman instrument, where it will not interfere with the operation of the boat. (eg: cables are long enough for the installation planned)
- 2 Screw the gateway to the panel using the screws provided.
- 3 Connect the gateway (see sections 2-1 and 2-2). Secure the cables at regular intervals.
- 4 Power up, set up and test the system. Check the gateway LEDs:

**NAV** (orange): Flashes fast when gateway is exchanging data with the Navman instrument and the engine key is on.

**PWR** (green): On when power and the engine key are on.

**CAN** (red): Flashes fast when gateway is exchanging data with the SmartCraft engine(s) and the engine key is on.

### Important:

- 1 Do not connect any Navman fuel sensors to the Navman instrument.
- 2 It is not necessary to wire any Navman instrument for auto power on.
- 3 The Navman SmartCraft capable instrument sends SmartCraft data to other Navman instruments connected by NavBus. To connect other instruments by NavBus, see the instrument's installation and operation manual. Turn NavBus on in all Navman instruments connected by NavBus; for example, for a Fish 4380, in the **Comms** setup menu, turn **NavBus to On**.
- 4 A gateway does not provide data for system link gauges.
- 5 To use speed troll control, the Navman instrument must have a Navman paddlewheel speed sensor connected.

## 3 Operation with a Navman FISH 4380

Before a SmartCraft gateway is connected, the FISH 4380 functions normally, with no SmartCraft functions. When a SmartCraft gateway is connected and SmartCraft is turned On (see section 3-1), SmartCraft functions become available and some standard functions change.

### SmartCraft features

#### Data displays

Engine performance and tank level displays ..... See section 3-2

#### Troll control

Automatically maintains a set engine idle RPM or idle boat speed ..... See section 3-3

#### Trim indicator

Displays the trim angle when engine trim is adjusted ..... See section 3-4

#### Alarms

SmartCraft engine fault alarms ..... See section 3-5

Engine fault list, a list of active SmartCraft engine fault alarms ..... See section 3-6

Engine fault history, a list of past SmartCraft engine fault alarms ..... See section 3-6

Tank low level alarms ..... See section 3-2

#### Setup data and calibrations

SmartCraft setup data ..... See sections 3-1 and 3-7

SmartCraft calibrations, Tanks, Trim and Steering angle ..... See section 3-8

The SmartCraft data available depends on the engine type and the sensors fitted (see section 1-1). To disable the SmartCraft functions, turn SmartCraft to Off (see section 3-1); the instrument will now use any Navman fuel sensors which are connected.

To use the SmartCraft functions and not the sonar functions, turn Sonar to Off (see section 3-1).

### Changes to standard functions with SmartCraft

- **MENU key:** When using troll control, pressing **MENU** can display the troll window. Press **MENU** a second time to display the normal menu of options.

- **Fuel display:** The fuel display functions normally, with fuel and speed data coming from the SmartCraft system rather than from separate sensors connected to the FISH 4380.

- **Fuel setup options:**

If no fuel tanks have an optional level sensor fitted (see section 1-1-1), then the Smartcraft fuel flow is used to calculate fuel remaining. The fuel setup data is the same as the standard FISH 4380. You must tell the FISH 4380 when you add or remove fuel (see the *FISH 4380 Installation and Operation* manual).

If each fuel tank has an optional level sensor fitted (see section 1-1-1), then these tank levels are used to calculate fuel remaining. In the Fuel display, *Used* changes to *Trip used*, and the only fuel setup option is *Clear trip used*. *Trip used* measures the volume of fuel used until it is reset to zero by selecting *Clear trip used* in the fuel setup menu. You do not tell the FISH 4380 when you add or remove fuel.

- **Engine hours:** Engine hours on the Log display come from the SmartCraft system. It can not be reset.

- **Simulate mode:** Data from the SmartCraft engine(s) and sensors is simulated in Simulate mode. The SmartCraft features simulated will probably differ from the features available in your system.

For more information, see the *FISH 4380 Installation and Operation* manual.

## 3-1 Setting up the FISH 4380 for Smartcraft

These features can be used only when the optional single or twin engine SmartCraft Gateway has been installed.

Press **MENU** twice to display the Setup menu, then select SmartCraft.

Press **▶** to select On or Off

Note: NavBus will be turned on when SmartCraft is turned on.

### Sonar

Select:

**Off:** The sonar transducer and the sonar functions are disabled. Choose **Off** to use the instrument's SmartCraft functions only,

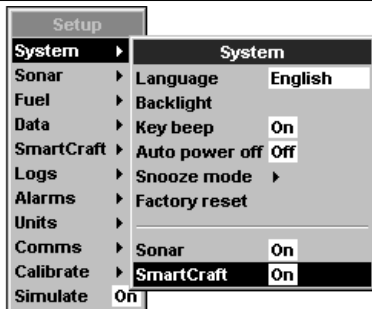
**On:** Normal sonar operation.

### SmartCraft

Select:

**Off:** The SmartCraft functions and NavBus are disabled. The instrument will now use any Navman fuel sensors which are connected.

**On:** Normal SmartCraft operation.



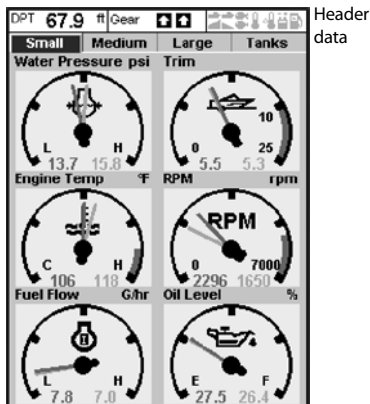
## 3-2 SmartCraft engine data displays

To display the SmartCraft data, press **MENU** and select SmartCraft, then press **>**, **+** or **-** or to select one of the four SmartCraft displays, shown below.

For the Small, Medium and Large gauges:

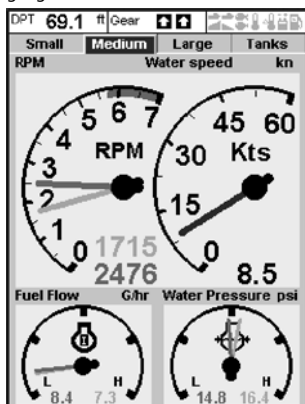
- The factory default has gauges appropriate to the type of engine. To change what gauges are displayed, see section 3-7: Gauge setup.
- If the boat has twin engines, the red needle

**Small:** Six small 'analogue' gauges:

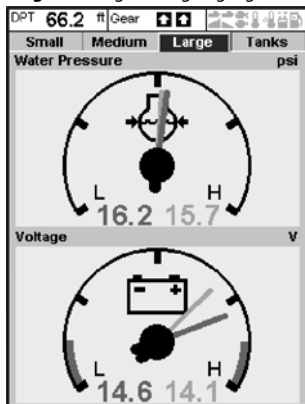


Header data

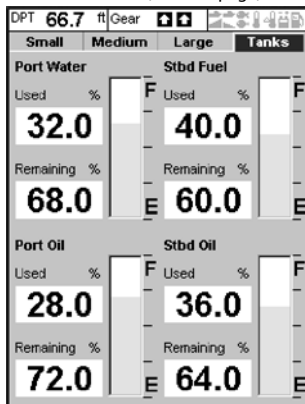
**Medium:** Two medium & two small 'analogue' gauges



**Large:** Two large 'analogue' gauges



**Tanks:** Tank levels (see next page)



## Tank level display

The tank level display shows the levels from the optional level sensors in one or two tanks per engine (see section 1-1-1).

Note:

- Each tank must be set up and calibrated (see section 3-8-1).

## 3-3 Troll control

Troll control allows adjustment of the engine's idle speed from the Navman instrument. Troll control automatically controls the engine idle speed to maintain a set engine RPM or boat speed.

To use troll control, set *Troll window* to *On idle* or *Always* and set *Troll mode* to *Speed* or *RPM* (see section 3-7). To use speed troll control, set *Speed type* to *Paddle* (see section 3-7).

To prohibit troll control, set *Troll window* to *Never* (see section 3-7).

### Engaging troll control

- 1 Set the throttle(s) to idle and the engine(s) in gear. From a main display, press **MENU** to display the Troll control window (see right).
- 2 Press **▲** or **▼** to set the desired RPM or boat speed (see notes 1 and 2).
- 3 Press **▶** to engage troll control. The FISH 4380 automatically controls RPM or speed. Or, press **◀** to leave troll control disengaged.

### Changing RPM or speed while troll control engaged

- 1 From a main display, press **MENU** to display the troll window.
- 2 Press **▲** or **▼** to change the desired RPM or boat speed (see notes 1 and 2).
- 3 Press **◀**.

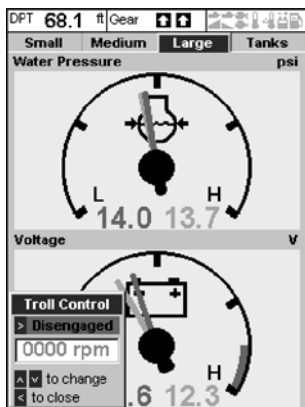
### Disengaging troll control

Either move the throttle from idle, or:

- 1 From a main display, press **MENU** to display the troll window.
- 2 Press **▶** to disengage troll control. Or, press **◀** to leave troll control engaged.



Note:

- An alarm can be set to sound if the level in a tank is low (see section 3-8-1). These alarms are in addition to any SmartCraft engine fault low level alarms (see section 3-5).

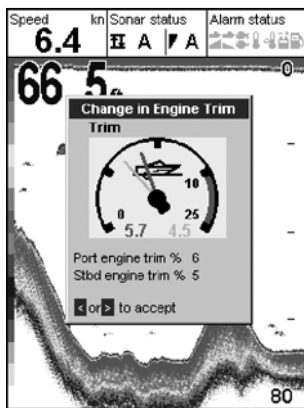


- 1 The range of engine idle RPM adjustment available for both RPM and speed mode depends on engine type. Generally this is between 600 and 1000 RPM.
- 2 In speed troll control, the boat might not reach the desired speed if the maximum RPM available for troll control is too low or if conditions are bad.
- 3 Troll control is not available on some MerCruiser™ engines.


## 3-4 Trim indicator

When the engine trim is adjusted, a trim popup window can show the new trim angle. To see this window or not, set Trim popup to *On* or *Off* (see section 3-7). The window will automatically disappear after two seconds, or else press  or  to make the window disappear.

Before use, calibrate trim (see section 3-8-2).



## 3-5 Engine fault alarms

There are many SmartCraft engine fault alarms. These alarms operate just like the other alarms in the Navman instrument; when the alarm sounds, press  to mute the alarm:

**Low reserve oil.**

**Low remote oil.**

**RPM over speed.**

**Low oil pressure.**

**High engine voltage.**

**Low engine voltage.**

A Navman instrument's low battery alarm measures the voltage the instrument; the above two alarms measure the voltage at the engine.

**Low block (water) pressure.**

**Engine overheat.**

**Low drive lube.**

(MerCruiser stern drive only).

**Water in fuel.**

**Engine Guardian™ active:** The Engine Guardian has detected a fault. The fault is displayed with the alarm.

**Engine communication lost:** The Navman instrument can not receive engine data from the SmartCraft gateway.

**Check engine:** There are many other engine fault alarms. When one of these alarms sounds, the alarm **Check engine** is displayed. For more information about the alarm, display the list of active alarms or the alarm history (see section 3-6).

### Notes:

- 1 For help when an SmartCraft alarm occurs, contact your Mercury dealer.
- 2 These SmartCraft alarms are always on. The alarm values are determined by the engine type.
- 3 A list of active faults and a fault history can be displayed (see section 3-6).



## 3-6 Engine fault lists

There are two lists of SmartCraft engine faults:

### 1 Engine faults list

A list of active engine fault alarms.

- To display the list, press **MENU** until the Setup menu is displayed, select **Smart-Craft**, then select **Engine faults**.

| Engine faults   |   |
|---|---|
| Fault description   | Fault Level   |
| Fault details   |   |
| 1) Guardian engine power limited<br>Stbd engine limited to 0% |  |
| 2) Reserve oil level low<br>Stbd engine 0% Remaining          |  |
| 3) Reserve oil level low<br>Port engine 0% Remaining          |  |
| 4) Remote oil level low<br>Port engine                        |  |
| 5) RPM over speed<br>Port engine                              |  |
| 6) Engine voltage high<br>Stbd engine                         |  |
| 7) Engine voltage low<br>Port engine                          |  |
| 8) Oil pressure low<br>Stbd engine                            |  |
| 9) Water pressure low<br>Stbd engine                          |  |
| +/- to page up / down    ENT for details                      |   |

### 2 Engine faults history

A list of nine recent engine fault alarms.

- To display the list, press **MENU** until the Setup menu is displayed, select **SmartCraft**, then select **Engine fault history**.

| Engine fault history                   |             |
|--|-------------|
| Fault description                      | Fault Level |
| Fault details                          |             |
| 1) None                                |             |
| 2) None                                |             |
| 3) None                                |             |
| 4) None                                |             |
| 5) None                                |             |
| 6) None                                |             |
| 7) None                                |             |
| 8) None                                |             |
| 9) None                                |             |
| +/- to page up / down    > for details |             |





### When a faults list or history is displayed

- Press **+** or **-** to page up and down the list.
- To display more information about a particular fault:
  - Press **▲** or **▼** to select the fault.
  - Press **▶** to display the information.
  - Press **◀** or **▶** to return to the list.
- To exit the list, press **◀**.

To clear the engine fault history:

- From a main display, press **MENU** until the Setup menu is displayed.
- Select **SmartCraft**, then select **Reset fault history**.

Each engine fault has a priority:

-  Red: Critical
-  Orange: Severe
-  Yellow: Warning
-  Black: Caution
-  Information

## 3-7 SmartCraft setup data

To go to the SmartCraft setup data, press **MENU** until the Setup menu is displayed, then select SmartCraft. The setup options are:

### Engine faults, Engine fault history, Reset fault history

See section 3-6.

### Troll window

Select from a menu:

**On idle:** Troll window is displayed when you press **MENU** and the throttle is at idle and the engine is in gear.

**Always:** Troll window is displayed when you press **MENU**.

**Never:** Troll window never displayed, troll control is not available.

### Troll mode

Press **▶** to select what troll mode controls:

**RPM:** Controls engine idle RPM.

**Speed:** Controls engine idle RPM to try to achieve the desired boat speed.

See section 3-3, notes 1 and 2

### Trim popup

Press **▶** to select:

**Off:** Trim popup window is never displayed.

**On:** Trim popup window is displayed when trim is changed.

### Trim popup filter

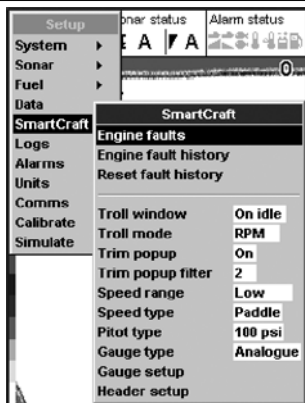
This filter can stop the trim popup window appearing because of engine vibration rather than a trim change.

Press **▶**, then press **▲** or **▼** to select a value, then press **▶**. The values are **Off** and 1 to 5.

Select **Off** or a low value first. Run the boat at a range of speeds and increase the value if vibration causes the trim popup window to appear. If the value is high, the trim window will appear slowly when trim changes.

### Speed range

Set the speed range for an analog speed gauge (see **Gauge type** below). The options are **High**, **Medium** and **Low**. A higher range displays a higher maximum speed but the display is more



compressed.

### Speed type

Press **▶** to select the source of the water (boat) speed reading:

**Pitot:** The engine's pitot sensor.

**Paddle:** A Navman paddlewheel sensor.

The pitot sensor is more accurate at high speeds but is not accurate at low speeds. The paddle wheel sensor is more accurate at low speeds. To use troll speed control, set **Speed type** to **Paddle**.

### Pitot type

Press **▶** to select 100 psi or 200psi to match the pitot type installed on the boat.

### Gauge type

Press **▶** to select the type of gauges in the Small, Medium and Large SmartCraft displays (see section 3-2):

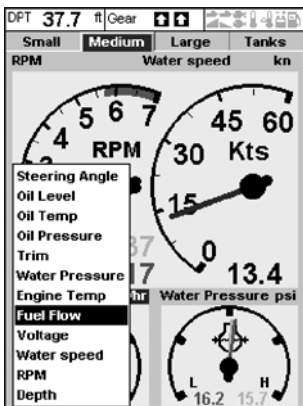
**Analogue:** Dial displays (see also **Speed range** above).

**Digital:** Number displays.

## Gauge setup

Select what data is displayed in the gauges on the three SmartCraft gauge displays. Note that the factory default has gauges appropriate to the type of engine.

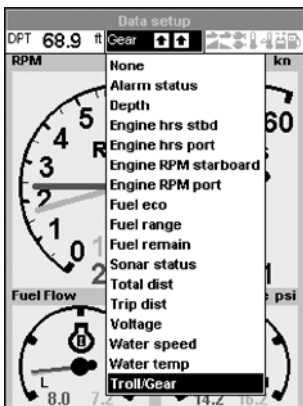
- 1 To select a gauge display. Press or until the display name (Small, Medium, Large or Tanks) turns blue.
- 2 Press or to select a gauge.
- 3 Change the gauge:
  - i Press to display a menu of options for the selected gauge (see right; the options available will depend on your engine, see section 1-1).
  - ii Press or to select an option, then press .
- 4 Repeat steps 1 to 3 to change more gauges, then press one or more times to return to the main display.



## Header setup

Select what data is displayed in the header data on the four SmartCraft displays. The display shows the header, with the selected data item highlighted.

- 1 Press or to select the header item to change.
- 2 Change the item:
  - i Press to display a menu of options for the selected item (see right; the options available will depend on your engine, see section 1-1).
  - ii Press or to select an option, then press .
- 3 Repeat steps 1 and 2 to change more header items, then press one or more times to return to the main display.



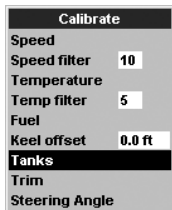
## 3-8 SmartCraft calibration

There are three SmartCraft calibrations.

### 3-8-1 Tanks calibration

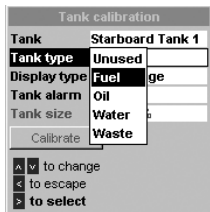
If tanks have level sensors fitted (see section 1-1-1), set the type of tank, the tank alarms and calibrate if required:

Press **MENU** until the Setup menu is displayed, then select **Calibrate**, then select **Tanks**.



For each tank with a level sensor, follow the steps below:

- 1 Select **Tank**, press **▶** and select the tank from the menu.
- 2 Select **Tank type**, press **▶** and select the tank type from the menu (Unused, Fuel, Water, Oil or Waste).



- 3 The raw level sensor data is the level in the tank as a percentage of the level when the tank is full (100 %). To select how the level sensor data is displayed on the **Tanks** display (see section 3-2), select **Display type**, press **▶** and select the type from the menu:

**Percentage:** Display the raw level sensor data. Note:

- If the sides of the tank are not vertical and straight, then the **Percentage**

level sensor data displayed does not correspond to the volume in the tank; for example if the sensor shows 50 %, the tank is not 50 % full.

- For **Percentage** display type, fuel **Used** and **Remaining** on the **Fuel** display can not be calculated, and are displayed as **Invalid**.

**Volume:** Display a volume calculated linearly from the sensor data, for example if **Tank size** (see below) is 500 G and the sensor shows 50 % of full, then 250 G is displayed. Choose this option only if the tank has vertical, straight sides and the tank bottom and top are flat.

**Calibrated volume:** Display a volume calculated non linearly from the sensor data. Choose this option if the tank does not have vertical, straight sides. You must calibrate the tank (see step 6 below).

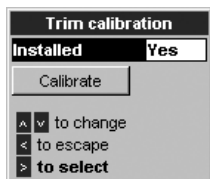
- 4 To set a low level alarm for the tank (see section 3-2):
  - i Select **Tank alarm**.
  - ii Press **▶** to turn the alarm **On** or **Off**.
  - iii Press **▲** or **▼** to set the alarm value. The alarm will sound if the alarm is **On** and the tank level is less than the alarm value.
  - iv Finally, press **◀**.
- 5 Set the tank size:
  - i Select **Tank size**.
  - ii Press **▲** or **▼** to set the tank size.
  - iii Finally, press **▶**.
- 6 If **Display type** is **Calibrated volume**, the sensor data must be calibrated.
  - i Select **Calibrate**.
  - ii Follow the instructions displayed to add measured amounts of fuel.
  - iii Finally, the display shows **Tank size** (set in step 5 above), **Actual size** (the volume of fuel you added to the tank), and asks **Is this correct?** Select:
    - **Accept** to accept the calibration

- Change to change Tank size if Tank size is not the same as Actual size.

### 3-8-2 Trim calibration

If the SmartCraft system has trim control, calibrate the trim angle display (see section 3-4):

- 1 Press **MENU** until the Setup menu is displayed, then select **Calibrate**, then select **Trim**.
- 2 Select **Installed** and press **>** to select **Yes**.
- 3 Select **Calibrate**. Follow the instructions displayed.

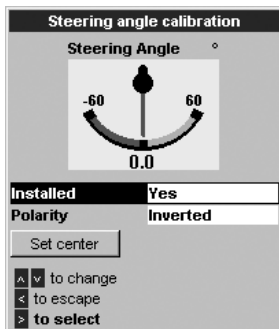


### 3-8-3 Steering angle calibration

If the SmartCraft system has a steering angle sensor, it must be calibrated.

- 1 There must be little wind and little current. Travel at a typical cruising speed.
- 2 Press **MENU** until the Setup menu is displayed, select **Calibrate**, then select **Steering angle**.

- 3 Steer the boat to port. If the display needle does not turn to port, select **Polarity** and press **>** to select the other polarity (**Normal** or **Inverted**).
- 4 Steer in a straight line, then select **Set center** to calibrate the steering angle.



## 4 Operation with a Navman TRACKFISH 6600

Before a SmartCraft gateway is connected, the TRACKFISH 6600 functions normally, with no SmartCraft functions. When a SmartCraft gateway is connected and SmartCraft is turned On (see section 4-1), SmartCraft functions become available and some standard functions change.

### SmartCraft functions

#### Data displays

Engine performance and tank level displays ..... See section 4-2

#### Troll control

Automatically maintains a set engine idle RPM or idle boat speed ..... See section 4-3

#### Trim indicator

Displays the trim angle when engine trim is adjusted ..... See section 4-4

#### Alarms

Engine fault alarms ..... See section 4-5

Engine fault list, a list of active SmartCraft engine fault alarms ..... See section 4-6

Engine fault history, a list of past SmartCraft engine fault alarms ..... See section 4-6

Tank low level alarms ..... See section 4-2-1

#### Setup data and calibrations

SmartCraft setup data ..... See sections 4-1 and 4-2

SmartCraft calibrations, Tanks, Trim and Steering angle ..... See section 4-7

SmartCraft setup data and calibrations ..... See sections 4-7 and 4-1

The SmartCraft data available depends on the engine type and the sensors fitted (see section 1-1).

### Changes to standard functions with SmartCraft enabled:

- **MENU key:** When using troll control, pressing **MENU** can display the troll window. Press **MENU** a second time to display the normal menu.
- **Fuel:** The fuel display functions normally but with fuel and speed data coming from the SmartCraft system rather than from separate sensors connected to the TRACKFISH 6600.  
If there are no optional level sensor(s) fitted to the fuel tanks (see section 1-1-1), then the Smartcraft fuel flow is used to calculate fuel remaining. The fuel setup data is the same as the standard TRACKFISH 6600. You must tell the TRACKFISH 6600 when you add or remove fuel (see the *TRACKFISH 6600 Installation and Operation* manual).  
If each fuel tank has an optional level sensor fitted (see section 1-1-1), then these tank levels are used to calculate fuel remaining. In the Fuel display, **Used** changes to **Trip used**, and the only fuel setup option is **Clear trip used**. **Trip used** measures the volume of fuel used until it is reset to zero by selecting **Clear trip used** in the fuel setup menu. You do not tell the TRACKFISH 6600 when you add or remove fuel.
- **Engine hours:** Engine hours on the Log display come from the SmartCraft system. It can not be reset.
- **Simulate mode:** Data from the SmartCraft engine(s) and sensors is simulated. The SmartCraft data simulated will probably differ from the data available in your system.

For more information, see the *TRACKFISH 6600 Installation and Operation* manual.

## 4-1 Setting up the TRACKFISH 6600 for Smartcraft

There are two SmartCraft items in the TRACKFISH 6600 System setup menu. To display the System menu, press **MENU** until the Setup menu is displayed, then select **System**.

### Sonar

Select: For normal sonar operation

De-select: To disable the sonar transducer and sonar functions. For use with the instrument's SmartCraft functions only,

### SmartCraft

Select: Normal SmartCraft operation

De-select: SmartCraft functions. The instrument will now use any Navman fuel sensors which are connected.

### Note:

SmartCraft utilises NavBus comms. NavBus will turn on if SmartCraft is turned on.



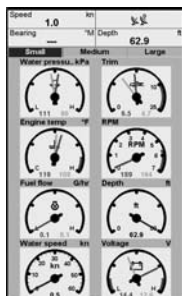
## 4-2 SmartCraft engine data displays

There are four SmartCraft engine displays, shown below.

Note: If the boat has twin engines, two needles will appear on most of the gauge displays. The red needle or number shows port engine data, green shows starboard engine data.

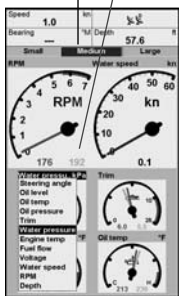
Data header display area

Engine data display area



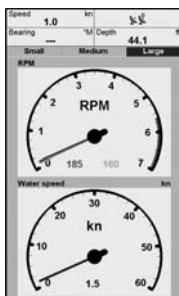
**Small:** Eight small gauges

**Diagnostics:** Shows eight small gauges. Press **DISPLAY**, select SmartCraft, then select **Diagnostics**.



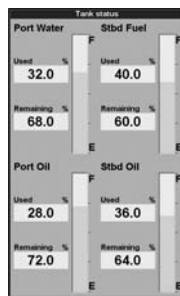
**Medium:** Two medium, four small gauges

**Cruising:** Shows two large and four small gauges. Press **DISPLAY**, select SmartCraft, then select **Cruising**.



**Large:** Two large gauges

**Engine data large:** Shows two large gauges. To display this, press **DISPLAY**, select SmartCraft, then select **Engine data large**.



**Tanks:** Tank levels

**Tank status:** Shows the levels in the tanks. To display this, press **DISPLAY**, select SmartCraft, then select **Tank status**.

## 4-2-1 Tank status display

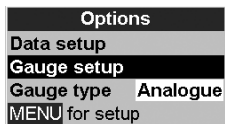
The tank level display shows the levels from the optional level sensors in one or two tanks per engine (see section 1-1-1).

Before use, each tank must be set up and calibrated (see section 4-7-1).

An alarm can be set to sound if the level in a tank is low (see section 4-7-1). These alarms are in addition to any SmartCraft engine fault low level alarms (see section 4-5).

## 4-2-2 Customising the engine data displays

To customise an engine data display, press **DISPLAY**, select **SmartCraft**, select the display to customise, and press **ENTER**. Press **MENU** to display the options:



### Data setup

Select the data item to be displayed in the data header display area (at the top of the display):

- 1 Press **▲**, **▼**, **◀** or **▶** to select the data item to change.
- 2 Select the item by pressing **ENTER**. this will display a menu of options for the selected item (the options available will depend on your engine, see section 1-1).

Press **▲** or **▼** to select an option, then press **ENTER**.

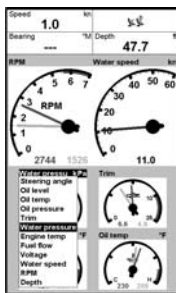


- 3 Repeat steps 1 and 2 to change more data items, then press **ESC** to return to the main display.

### Gauge setup

Select the data to be displayed in the engine data display areas (not for Tank status display).

- 1 Press **▲**, **▼**, **◀** or **▶** to select a gauge to change.
- 2 Change the gauge:
  - i Press **ENTER** to display a menu of options for the selected gauge (see right; the options available will depend on your engine, see section 1-1).
  - ii Press **▲** or **▼** to select an option, then press **ENTER**.



- 3 Repeat steps 1 to 2 to change more gauges, then press **ESC** to return to the main display.

### Gauge type

Select the type of gauges to be displayed (not for Tank status display):

**Analogue:** Dial type displays (see also section 4-7: Speed range).

**Digital:** Number type displays.

### Notes:

- 1 The factory default has gauges appropriate to the type of engine.
- 2 To further customise the three gauge displays, change **Speed range**, **Speed type** and **Pitot type** (see section 4-7).

## 4-3 Troll control

Troll control allows adjustment of the engine's idle speed from the Navman instrument. Troll control automatically controls the engine idle speed to maintain a set engine RPM or boat speed.

To use troll control, set Troll window to **On** **idle** or **Always** and set Troll mode to **Speed** or **RPM** (see section 4-7).

To use speed troll mode, set **Speed** type to **Pad-****dle** (see section 4-7).

To prohibit troll control, set Troll window to **Never** (see section 4-7).

### Engaging troll control

- 1 Set the throttle(s) to idle and the engine(s) in gear. From a main display, press **MENU** to display the Troll control window (see right).
- 2 Press **▲** or **▼** to set the desired RPM or boat speed (see notes 1 and 2).
- 3 Press **ENTER** to engage troll control. The TRACKFISH 6600 automatically controls RPM or speed. Or, press **ESC** to leave troll control disengaged.

### Changing RPM or speed while troll control engaged

- 1 From a main display, press **MENU** to display the troll window.
- 2 Press **▲** or **▼** to change the desired RPM or boat speed (see notes 1 and 2).
- 3 Press **ESC**

### Disengaging troll control

Either move the throttle from idle, or:

- 1 From a main display, press **MENU** to display the troll window. Press **←** or **→** to select **Off** (**Disengage**) and press **ENTER**
- 2 Or, press **ESC** to leave troll control engaged.



### Notes:

- 1 The Troll range of engine idle RPM adjustment available for both RPM and speed mode depends on engine type. Generally this is between 600 and 1000 RPM.
- 2 In speed troll control, the boat might not reach the desired speed if the maximum RPM available for troll control is too low or if conditions are bad.
- 3 Troll can not engage unless engine throttle(s) are in idle, and engine(s) are in gear.
- 4 Troll control is not available on some Mer-Cruiser™ engines.
- 5 To use speed troll control, the Navman instrument must have a Navman paddlewheel speed sensor connected.

## 4-4 Trim indicator

When the optional engine trim is adjusted, a trim popup window can show the new trim angle. To see this window or not, set Trim popup to **On** or **Off** (see section 4-7: Trim). The window will auto-

matically disappear after two seconds, or else press **ESC** to close the window.

Before use, calibrate trim (see section 4-7: Trim).

## 4-5 Engine fault alarms

There are many SmartCraft engine fault alarms. These alarms operate just like the other alarms in the Navman instrument; when the alarm sounds, press **ESC** to mute the alarm:

**Low reserve oil.**

**Low remote oil.**

**RPM over speed.**

**Low oil pressure.**

**High engine voltage.**

**Low engine voltage.**

A Navman instrument's low battery alarm measures the voltage at the instrument; the above two alarms measure the voltage at the engine.

**Low block (water) pressure.**

**Engine overheat.**

**Low drive lube:** (MerCruiser stern drive only).

**Water in fuel.**

**Engine Guardian™ active:** The Engine

Guardian has detected a fault. The fault is displayed with the alarm.

**Engine communication lost:** The Navman instrument can not receive engine data from the SmartCraft gateway.

**Check engine:** There are many other engine fault alarms. When one of these alarms sounds, the alarm **Check engine** is displayed. For more information about the alarm, display the list of active alarms or the alarm history (see section 4-6).

### Notes:

- 1 For help when a SmartCraft alarm occurs, contact your Mercury dealer.
- 2 These SmartCraft alarms are always on. The alarm values are determined by the engine type.
- 3 A list of active faults and a fault history can be displayed (see section 4-6).

## 4-6 Engine fault lists

There are two lists of SmartCraft engine faults:

### 4-6-1 Engine faults list

To display a list of active engine fault alarms: press **DISPLAY**, select SmartCraft, then select Engine faults.






| Engine faults   |             |
|---|-------------|
| Fault description<br>Fault details                            | Fault Level |
| 1) Guardian engine power limited<br>Stbd engine limited to 0% | !           |
| 2) Reserve oil level low<br>Stbd engine 0% Remaining          | !           |
| 3) Reserve oil level low<br>Port engine 0% Remaining          | !           |
| 4) Remote oil level low<br>Port engine                        | !           |
| 5) RPM over speed<br>Port engine                              | !           |
| 6) Engine voltage high<br>Stbd engine                         | !           |
| 7) Engine voltage low<br>Port engine                          | !           |
| 8) Oil pressure low<br>Stbd engine                            | !           |
| 9) Water pressure low<br>Stbd engine                          | !           |
| 10) Engine overheating<br>Stbd engine                         | !           |
| 11) Drive lube low<br>Port engine                             | !           |
| 12) Water in fuel<br>Stbd engine                              | !           |
| 13) Ignition fault<br>Port engine EST 7 Short                 | !           |
| 14) Ignition fault<br>Port engine EST 6 Short                 | !           |

↑↓ to page up / down **ENTER** for details

### When the faults list is displayed

- Press **+** or **-** to page up and down the list.
- To display more information about a particular fault:
  - i Press **▲** or **▼** to select the fault.
  - ii Press **ENTER** to display the information.
  - iii Press **ENTER** or **ESC** to return to the list.
- To exit the list, press **ESC**.

Each engine fault has a priority:

-  Red: Critical
-  Orange: Severe
-  Yellow: Warning
-  Black: Caution
-  Information

## 4-6-2 Engine fault history

To display a list of recent engine fault alarms, press **DISPLAY**, select SmartCraft, then select Engine fault history.

### When the Engine fault history is displayed

- Press **+** or **-** to page up and down the list.
- To display more information about a particular fault:
  - i Press **▲** or **▼** to select the fault.
  - ii Press **ENTER** to display the information.
  - iii Press **ENTER** or **ESC** to return to the list.
- To exit the list, press **ESC**.

### To clear the engine fault history:

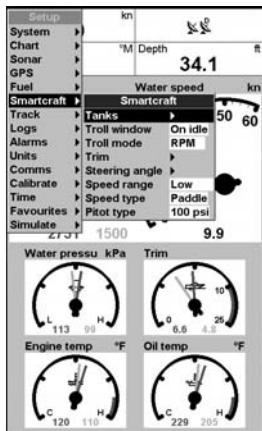
Go to the engine fault history display, press **MENU** and select Reset fault history.

| Engine fault history |               |             |
|----------------------|---------------|-------------|
| Fault description    | Fault details | Fault Level |
| 1) None              |               |             |
| 2) None              |               |             |
| 3) None              |               |             |
| 4) None              |               |             |
| 5) None              |               |             |
| 6) None              |               |             |
| 7) None              |               |             |
| 8) None              |               |             |
| 9) None              |               |             |
| 10) None             |               |             |
| 11) None             |               |             |
| 12) None             |               |             |
| 13) None             |               |             |
| 14) None             |               |             |

**+** to page up / down **ENTER** for details

## 4-7 SmartCraft setup data and calibrations

To go to the SmartCraft setup data and calibrations, press **MENU** until the Setup menu is displayed, then select SmartCraft.



### Note:

If there is more than one SmartCraft capable Navman instrument in a system, some setup data may be different in each instrument.

The setup and calibration options are:

### Tanks

Set up and calibrate the tanks (see section 4-7-1).

### Troll window

Select from a menu:

**On idle:** Troll window is displayed when you press **MENU** and the throttle is at idle and the engine is in gear.

**Always:** Troll window is displayed when you press **MENU**.

**Never:** Troll window never displayed, troll control is not available.

### Troll mode

Select what troll mode controls:

**RPM:** Controls engine idle RPM.

**Speed:** Controls engine idle RPM to try to achieve the desired boat speed.

See section 4-3, notes 1 and 2

### Trim

Set up and calibrate the trim display (see section 4-7-2).

## Steering angle

Set up and calibrate the steering angle (see section 4-7-3).

## Speed range

Set the speed range for an analog speed gauge. The options are *High*, *Medium* and *Low*. A higher range displays a higher maximum speed but the display is more compressed.

## Speed type

Select the source of the water (boat) speed reading:

**Pitot:** The engine's pitot sensor.

**Paddle:** A Navman paddlewheel sensor.

The pitot sensor is more accurate at high speeds but is not accurate at low speeds. The paddlewheel sensor is more accurate at low speeds. To use troll speed control, set *Speed type* to *Paddle*.

## Pitot type

Press to select 100 psi or 200psi to match the pitot type installed on the boat.

## 4-7-1 Tanks setup and calibration

Set up and calibrate tanks with level sensors fitted (see section 1-1-1):

- 1 Press until the Setup menu is displayed, select *SmartCraft*, then select *Tanks*.
- 2 For each tank in the boat, select *Tank*, select

| Tanks             |                  |
|-------------------|------------------|
| Tank              | Starboard tank 1 |
| Tank type         | Fuel             |
| Display type      | Percentage       |
| Tank alarm        | Off              |
| Tank size         | 5 G              |
| Calibrate         |                  |
| Reset calibration |                  |

the tank to set up, then set up and calibrate the tank.

### Note:

The displayed Tank size unit uses the setting selected in the Navman instrument. To change to a different unit type, use the Setup > Units menu in the Navman instrument.

For each tank, the options are:

## Tank type

Select the tank type (*Unused*, *Fuel*, *Water*, *Oil* or *Waste*).

## Display type

The data from the level sensor in each tank is the depth in the tank as a percentage of the depth when the tank is full. If the sides of the tank are not vertical and straight, or if the tank top and bottom are not flat, then the level sensor data does not correspond to the volume in the tank; for example if the sensor shows 50 %, the tank is not 50 % full.

The *Display type* option selects how the level sensor data is displayed:

**Percentage:** Display the percentage level sensor data. The default is the percentage level sensor data. If the tank is calibrated, then a calibrated percentage is displayed.

**Volume:** Display a volume calculated from the sensor data. The default is a linear calculation, for example if the tank holds 500 G and the sensor shows 50 % of full, then 250 G is displayed. This is correct if the sides of the tank are vertical and straight and the tank top and bottom are flat. If this is not so, calibrate the tank (see *Calibrate* below).

## Tank size

Set the tank size:

- i Set the tank size: press or to select a digit, then press or to change the digit.
- ii Press .

## Tank alarm

To set a low level alarm for the tank:

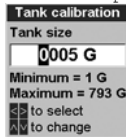
- i Set the alarm value: press or to select a digit, then press or to change the digit. To turn the alarm off, set the alarm value to 0. If the alarm value is greater than zero, the alarm will sound if the tank level is less than the alarm value.
- ii Press .

## Calibrate

Calibrate the tank readings if the sides of the tank are not vertical and straight, or if the tank top and bottom are not flat. The following procedure requires the tank to be filled from empty. The

Tank Calibration screen will display an amount of fuel to add to the tank - select **OK** each time the measured amount is added. This will happen a number of times.

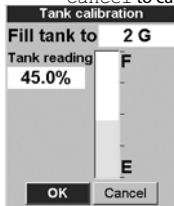
- i Enter the tank size (volume).
- ii Follow the on-screen instructions displayed to add measured amounts of fuel. Select **OK** each time the measured amount is added.
- iii The display shows Tank calibration - Tank profile and asks Is this correct?.



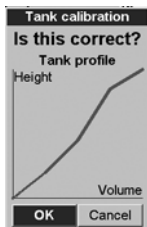
rect?.

Select:

- **OK** to accept the calibration
- **Cancel** to cancel.



- iv. If the actual tank size did not match that in step (i), then change the tank size from the menu.



## Reset calibration

Reset the tank calibration to the default - the displayed volume is calculated linearly from the sensor data (see Display type above). Any tank calibration data will be lost.

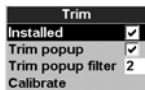
## 4-7-2 Trim setup and calibration

Set up and calibrate a SmartCraft trim control (see section 4-4). Press **MENU** until the Setup menu is displayed, then select **SmartCraft**, then select **Trim**. The options are:

### Installed

Select: Trim sensors are installed in the engine(s).

De-select: No trim sensors installed in the engine(s).



### Trim popup

Select: Trim sensors are installed in the engine(s).

De-select: Trim popup window is never displayed.

### Trim popup filter

This filter can stop the trim popup window appearing because of engine vibration rather than a trim change.

Press **ENTER**, then press **▲** or **▼** to select a value, then press **ENTER**. The values are *Off* and 1 to 5.

Select *Off* or a low value first. Run the boat at a range of speeds and increase the value if vibration causes the trim popup window to appear. If the value is high, the trim window will appear slowly when trim changes.

### Calibrate

Follow the on-screen instructions displayed to calibrate the displayed trim angle, and press **ENTER** as required.

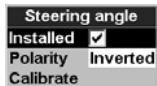
## 4-7-3 Steering angle setup and calibration

Set up and calibrate the SmartCraft steering angle display. Press **MENU** until the Setup menu is displayed, then select **SmartCraft**, then select **Steering angle**. The options are:

### Installed

Select: Steering angle sensor installed.

De-select: No steering angle sensor installed.

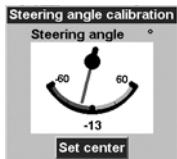


### Polarity

Steer the boat to port. If the steering angle pointer does not move to port, choose the other polarity (Normal or Inverted).

### Calibrate

- 1 There must be little wind and little current. Travel at a typical cruising speed.
- 2 Steer in a straight line, then select **Calibrate** to calibrate the steering angle.



- 3 Press enter when steering in a straight line.

## 5 Operation with a Navman FISH 4600

Before a SmartCraft gateway is connected, the FISH 4600 functions normally, with no SmartCraft functions. When a SmartCraft gateway is connected and SmartCraft is turned On (see section 5-1), SmartCraft functions become available and some standard functions change.

### SmartCraft functions

#### Data displays

Engine performance and tank level displays ..... See section 5-2

#### Troll control

Automatically maintains a set engine idle RPM or idle boat speed ..... See section 5-3

#### Trim indicator

Displays the trim angle when engine trim is adjusted ..... See section 5-4

#### Alarms

SmartCraft engine fault alarms ..... See section 5-5

Engine fault list, a list of active SmartCraft engine fault alarms ..... See section 5-6

Engine fault history, a list of past SmartCraft engine fault alarms ..... See section 5-6

Tank low level alarms ..... See section 5-2-1

#### Setup data and calibrations

SmartCraft setup data ..... See sections 5-6 and 5-8

SmartCraft calibrations, Tanks, Trim and Steering angle ..... See section 5-7

SmartCraft setup data and calibrations ..... See sections 5-7 and 5-1

The SmartCraft data available depends on the engine type and the sensors fitted (see section 1-1).

### Changes to standard functions with SmartCraft enabled:

- **MENU key:** When using troll control, pressing **MENU** can display the troll window. Press **MENU** a second time to display the normal menu.

- **Fuel:** The fuel display functions normally but with fuel and speed data coming from the SmartCraft system rather than from separate sensors connected to the FISH 4600.

If there are no optional level sensor(s) fitted to the fuel tanks (see section 1-1-1), then the Smartcraft fuel flow is used to calculate fuel remaining. The fuel setup data is the same as the standard FISH 4600. You must tell the FISH 4600 when you add or remove fuel (see the *FISH 4500/4600 Installation and Operation* manual).

If each fuel tank has an optional level sensor fitted (see section 1-1-1), then these tank levels are used to calculate fuel remaining. In the Fuel display, *Used* changes to *Trip used*, and the only fuel setup option is *Clear trip used*. *Trip used* measures the volume of fuel used until it is reset to zero by selecting *Clear trip used* in the fuel setup menu. You do not tell the FISH 4600 when you add or remove fuel.

- **Engine hours:** Engine hours on the Log display come from the SmartCraft system. It can not be reset.
- **Simulate mode:** Data from the SmartCraft engine(s) and sensors is simulated. The SmartCraft data simulated will probably differ from the data available in your system.

For more information, see the *FISH 4500/4600 Installation and Operation* manual.

## 5-1 Setting up the FISH 4600 for Smartcraft

There are two SmartCraft items in the FISH 4600 System setup menu. To display the System menu, press **MENU** until the Setup menu is displayed, then select **System**.

### Sonar

Select: For normal sonar operation

De-select: To disable the sonar transducer and sonar functions. For use with the instrument's SmartCraft functions only,

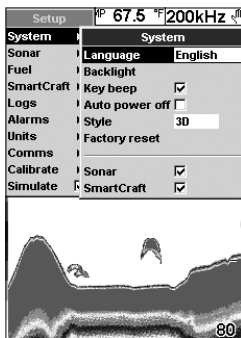
### SmartCraft

Select: Normal SmartCraft operation

De-select: SmartCraft functions. The instrument will now use any Navman fuel sensors which are connected.

### Note:

SmartCraft utilises NavBus comms. NavBus will turn on if SmartCraft is turned on.

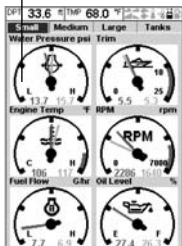


## 5-2 SmartCraft engine data displays

There are four SmartCraft engine displays, shown below.

**Note:** If the boat has twin engines, two needles will appear on most of the gauge displays. The red needle or number shows port engine data, green shows starboard engine data.

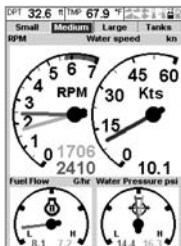
Engine data display area



**Small:** Eight small gauges

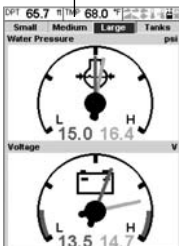
Shows eight small gauges. Press **DISP**, select SmartCraft, then select Small.

Data header display area



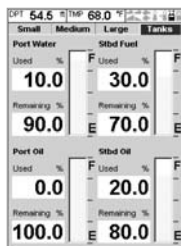
**Medium:** Two medium, four small gauges

Shows two large and four small gauges. Press **DISP**, select SmartCraft, then select Medium.



**Large:** Two large gauges

Shows two large gauges. To display this, press **DISP**, select SmartCraft, then select Large.



**Tanks:** Tank levels

Shows the levels in the tanks. To display this, press **DISP**, select SmartCraft, then select Tanks.

## 5-2-1 Tank status display

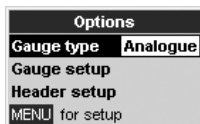
The tank level display shows the levels from the optional level sensors in one or two tanks per engine (see section 1-1-1).

Before use, each tank must be set up and calibrated (see section 5-7-1).

An alarm can be set to sound if the level in a tank is low (see section 5-7-1). These alarms are in addition to any SmartCraft engine fault low level alarms (see section 5-5).

## 5-2-2 Customising the engine data displays

To customise an engine data display, press **DISP**, select **SmartCraft**, select the display to customise. Press **MENU** to display the available options; Gauge type, Gauge setup, and Header setup, then press **ENT**.



### Gauge type

Select the type of gauges to be displayed (not for Tank status display):

**Analogue:** Dial type displays (see also section 5-7: Speed range).

**Digital:** Number type displays.

### Notes:

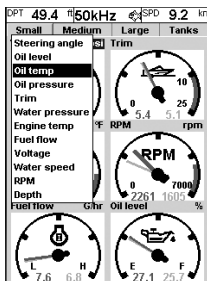
- 1 The factory default has gauges appropriate to the type of engine.
- 2 To further customise the three gauge displays, change **Speed range**, **Speed type** and **Pitot type** (see section 5-7)

### Gauge setup

Select the data to be displayed in the engine data display areas (not for Tank status display).

- 1 Press **▲**, **▼**, **◀** or **▶** to select a gauge to change.
- 2 Change the gauge:
  - i Press **ENT** to display a menu of options for the selected gauge (see above; the options available will depend on your engine, see section 1-1).

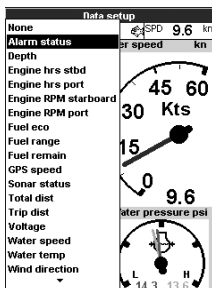
- ii Press **▲** or **▼** to select an option, then press **ENT**.
- 3 Repeat steps 1 to 2 to change more gauges, then press **ENT** to return to the main display.



### Header setup

Select the data item to be displayed in the data header display area (at the top of the display):

- 1 Press **▲**, **▼**, **◀** or **▶** to select the data item to change.
- 2 Select the item by pressing **ENT**. This will display a menu of options for the selected item (the options available will depend on your engine, see section 1-1).  
Press **▲** or **▼** to select an option, then press **ENT**.
- 3 Repeat steps 1 and 2 to change more data items, then press **ESC** to return to the main display.



## 5-3 Troll control

Troll control allows adjustment of the engine's idle speed from the Navman instrument. Troll control automatically controls the engine idle speed to maintain a set engine RPM or boat speed.

To use troll control, set Troll window to **On idle** or **Always** and set Troll mode to **Speed** or **RPM** (see section 5-7).

To use speed troll mode, set **Speed type** to **Paddle** (see section 5-7).

To prohibit troll control, set **Troll window** to **Never** (see section 5-7).

### Engaging troll control

- 1 Set the throttle(s) to idle and the engine(s) in gear. From a main display, press **MENU** to display the Troll control window (see right).
- 2 Press **▲** or **▼** to set the desired RPM or boat speed (see notes 1 and 2).
- 3 Press **ENT** to engage troll control. The FISH 4600 automatically controls RPM or speed. Or, press **ESC** to leave troll control disengaged.

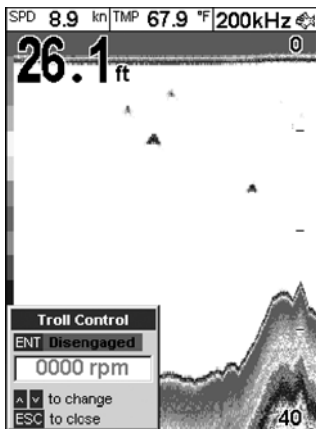
### Changing RPM or speed while troll control engaged

- 1 From a main display, press **MENU** to display the troll window.
- 2 Press **▲** or **▼** to change the desired RPM or boat speed (see notes 1 and 2).
- 3 Press **ESC**

### Disengaging troll control

Either move the throttle from idle, or:

- 1 From a main display, press **MENU** to display the troll window. Press **←** or **→** to select **Off (Disengage)** and press **ENT**
- 2 Or, press **ESC** to leave troll control engaged.



### Notes:

- 1 The Troll range of engine idle RPM adjustment available for both RPM and speed mode depends on engine type. Generally this is between 600 and 1000 RPM.
- 2 In speed troll control, the boat might not reach the desired speed if the maximum RPM available for troll control is too low or if conditions are bad.
- 3 Troll can not engage unless engine throttle(s) are in idle, and engine(s) are in gear.
- 4 Troll control is not available on some Mer-Cruiser™ engines.
- 5 To use speed troll control, the Navman instrument must have a Navman paddlewheel speed sensor connected.

## 5-4 Trim indicator

When the optional engine trim is adjusted, a trim popup window can show the new trim angle. To see this window or not, set Trim popup to **On** or **Off** (see section 5-7: Trim). The window will automatically disappear after two seconds, or else press

**ESC** to close the window.

Before use, calibrate trim (see section 5-7: Trim).

## 5-5 Engine fault alarms

There are many SmartCraft engine fault alarms. These alarms operate just like the other alarms in the Navman instrument; when the alarm sounds, press **ESC** to mute the alarm:

- Low reserve oil.
- Low remote oil.
- RPM over speed.
- Low oil pressure.
- High engine voltage.
- Low engine voltage.

A Navman instrument's low battery alarm measures the voltage at the instrument; the above two alarms measure the voltage at the engine.

- Low block (water) pressure.
- Engine overheat.
- Low drive lube (MerCruiser stern drive only).
- Water in fuel.
- Engine Guardian™ active: The Engine

Guardian has detected a fault. The fault is displayed with the alarm.

**Engine communication lost:** The Navman instrument can not receive engine data from the SmartCraft gateway.

**Check engine:** There are many other engine fault alarms. When one of these alarms sounds, the alarm **Check engine** is displayed. For more information about the alarm, display the list of active alarms or the alarm history (see section 5-6).

### Notes:

- 1 For help when a SmartCraft alarm occurs, contact your Mercury dealer.
- 2 These SmartCraft alarms are always on. The alarm values are determined by the engine type.
- 3 A list of active faults and a fault history can be displayed (see section 5-6).

## 5-6 Engine fault lists

There are two lists of SmartCraft engine faults:

### 5-6-1 Engine faults list

To display a list of active engine fault alarms: press **DISP**, select SmartCraft, then select Engine faults.

| Engine faults  |             |
|--|-------------|
| Fault description  | Fault Level |
| Fault details  |             |
| 10) Engine overheating<br>Stbd engine                      |             |
| 11) Drive lube low<br>Port engine                          |             |
| 12) Water in fuel<br>Stbd engine                           |             |
| 13) Ignition fault<br>Port engine EST 7 Short              |             |
| 14) Ignition fault<br>Port engine EST 6 Short              |             |
| 15) Fuel injector fault<br>Port engine Injector 7 Short    |             |
| 16) Air injector fault<br>Port engine Air injector 7 Open  |             |
| 17) Air injector fault<br>Port engine Air injector 7 Short |             |
| 18) Knock sensor fault<br>Stbd engine                      |             |
| to page up / down  for details                             |             |

### When the faults list is displayed

- Press **+** or **-** to page up and down the list.
- To display more information about a particular fault:
  - i Press **▲** or **▼** to select the fault.
  - ii Press **ENT** to display the information.
  - iii Press **ENT** or **ESC** to return to the list.
- To exit the list, press **ESC**.

Each engine fault has a priority:

- Red: Critical
- Orange: Severe
- Yellow: Warning
- Black: Caution
- Information

## 5-6-2 Engine fault history

To display a list of recent engine fault alarms, press **DISPLAY**, select SmartCraft, then select Engine fault history.

### When the Engine fault history is displayed

- Press **+** or **-** to page up and down the list.
- To display more information about a particular fault:
  - i Press **▲** or **▼** to select the fault.
  - ii Press **ENT** to display the information.
  - iii Press **ENT** or **ESC** to return to the list.
- To exit the list, press **ESC**.

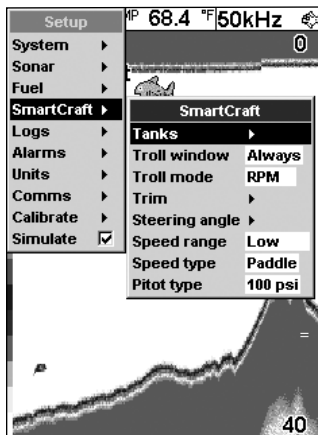
### To clear the engine fault history:

Go to the engine fault history display, press **MENU** and select Reset fault history.

| Engine fault history                |             |
|-------------------------------------|-------------|
| Fault description                   | Fault Level |
| 1) None                             |             |
| 2) None                             |             |
| 3) None                             |             |
| 4) None                             |             |
| 5) None                             |             |
| 6) None                             |             |
| 7) None                             |             |
| 8) None                             |             |
| 9) None                             |             |
| + to page up / down ENT for details |             |

## 5-7 SmartCraft setup data and calibrations

To go to the SmartCraft setup data and calibrations, press **MENU** until the Setup menu is displayed, then select SmartCraft.



### Note:

If there is more than one SmartCraft capable Navman instrument in a system, some setup data may be different in each instrument.

The setup and calibration options are:

### Tanks

Set up and calibrate the tanks (see section 5-7-1).

### Troll window

Select from a menu:

**On idle:** Troll window is displayed when you press **MENU** and the throttle is at idle and the engine is in gear.

**Always:** Troll window is displayed when you press **MENU**.

**Never:** Troll window never displayed, troll control is not available.

### Troll mode

Select what troll mode controls:

**RPM:** Controls engine idle RPM.

**Speed:** Controls engine idle RPM to try to achieve the desired boat speed.

See section 5-3, notes 1 and 2

### Trim

Set up and calibrate the trim display (see section 5-7-2).

## Steering angle

Set up and calibrate the steering angle (see section 5-7-3).

## Speed range

Set the speed range for an analog speed gauge. The options are *High*, *Medium* and *Low*. A higher range displays a higher maximum speed but the display is more compressed.

## Speed type

Select the source of the water (boat) speed reading:

**Pitot:** The engine's pitot sensor.

**Paddle:** A Navman paddlewheel sensor.

The pitot sensor is more accurate at high speeds but is not accurate at low speeds. The paddlewheel sensor is more accurate at low speeds. To use trol speed control, set *Speed type* to *Paddle*.

## Pitot type

Press to select *100 psi* or *200psi* to match the pitot type installed on the boat.

## 5-7-1 Tanks setup and calibration

Set up and calibrate tanks with level sensors fitted (see section 1-1-1):

- 1 Press until the Setup menu is displayed, select *SmartCraft*, then select *Tanks*.

| Tanks             |                  |
|-------------------|------------------|
| Tank              | Starboard tank 1 |
| Tank type         | Fuel             |
| Display type      | Percentage       |
| Tank alarm        | Off              |
| Tank size         | 5 G              |
| Calibrate         |                  |
| Reset calibration |                  |

- 2 For each tank in the boat, select *Tank*, select the tank to set up, then set up and calibrate the tank.

### Note:

The displayed Tank size unit uses the setting selected in the Navman instrument. To change to a different unit type, use the Setup > Units menu in the Navman instrument.

For each tank, the options are:

## Tank type

Select the tank type (*Unused*, *Fuel*, *Water*, *Oil* or *Waste*).

## Display type

The data from the level sensor in each tank is the depth in the tank as a percentage of the depth when the tank is full. If the sides of the tank are not vertical and straight, or if the tank top and bottom are not flat, then the level sensor data does not correspond to the volume in the tank; for example if the sensor shows 50 %, the tank is not 50 % full.

The *Display type* option selects how the level sensor data is displayed:

**Percentage:** Display the percentage level sensor data. The default is the percentage level sensor data. If the tank is calibrated, then a calibrated percentage is displayed.

**Volume:** Display a volume calculated from the sensor data. The default is a linear calculation, for example if the tank holds 500 G and the sensor shows 50 % of full, then 250 G is displayed. This is correct if the sides of the tank are vertical and straight and the tank top and bottom are flat. If this is not so, calibrate the tank (see *Calibrate* below).

## Tank size

Set the tank size:

- i Set the tank size: press or to select a digit, then press or to change the digit.
- ii Press .

## Tank alarm

To set a low level alarm for the tank:

- i Set the alarm value: press or to select a digit, then press or to change the digit. To turn the alarm off, set the alarm value to 0. If the alarm value is greater than zero, the alarm will sound if the tank level is less than the alarm value.
- ii Press .

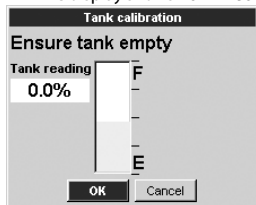
## Calibrate

Calibrate the tank readings if the sides of the tank are not vertical and straight, or if the tank top and bottom are not flat. The following procedure requires the tank to be filled from empty. The Tank Calibration screen will display an amount of fuel to add to the tank - select **OK** each time the measured amount is added. This will happen a number of times.

- i Enter the tank size (volume).



- ii Follow the on-screen instructions displayed to add measured amounts of fuel. Select **OK** each time the measured amount is added.
- iii The display shows **Tank calibration**



- Tank profile and asks **Is this correct?**

Select:



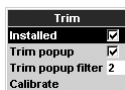
- **OK** to accept the calibration
  - **Cancel** to cancel.
- iv. If the actual tank size did not match that in step (i), then change the tank size from the menu.

## Reset calibration

Reset the tank calibration to the default - the displayed volume is calculated linearly from the sensor data (see Display type above). Any tank calibration data will be lost.

## 5-7-2 Trim setup and calibration

Set up and calibrate a SmartCraft trim control (see section 5-4). Press **MENU** until the Setup menu is displayed, then select **SmartCraft**, then select **Trim**. The options are:



### Installed

Select: Trim sensors are installed in the engine(s).

De-select: No trim sensors installed in the engine(s).

### Trim popup

Select: Trim sensors are installed in the engine(s).

De-select: Trim popup window is never displayed.

### Trim popup filter

This filter can stop the trim popup window appearing because of engine vibration rather than a trim change.

Press **ENT**, then press **▲** or **▼** to select a value, then press **ENT**. The values are **Off** and **1** to **5**.

Select **Off** or a low value first. Run the boat at a range of speeds and increase the value if vibration causes the trim popup window to appear. If the value is high, the trim window will appear slowly when trim changes.

### Calibrate

Follow the on-screen instructions displayed to calibrate the displayed trim angle, and press **ENT** as required.

## 5-7-3 Steering angle setup and calibration



Set up and calibrate the SmartCraft steering angle display. Press **MENU** until the Setup menu is displayed, then select SmartCraft, then select Steering angle. The options are:

### Installed

Select: Steering angle sensor installed.

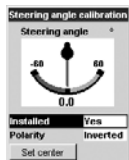
De-select: No steering angle sensor installed.

### Polarity

Steer the boat to port. If the steering angle pointer does not move to port, choose the other polarity (Normal or Inverted).

### Calibrate

- 1 There must be little wind and little current. Travel at a typical cruising speed.
- 2 Steer in a straight line, then select Calibrate to calibrate the steering angle.



- 3 Press enter when steering in a straight line.

## Appendix A - Specifications

### Physical

- Size 130 x 62 x 26 mm (5.1 x 2.4 x 1.0 in).
- Operating temperature 0 to 50°C (32 to 122°F).
- Built-in cable to the Navman instrument, 1 m (3.3 ft) long.
- Built-in cable to SmartCraft and engine, 300 mm (1 ft) long.

### Electrical

- Power supply 9.0 to 30 V DC, 50 mA.

### Interfaces

- NavBus connection to Navman instruments.
- CAN bus connection to SmartCraft system.

### Standards compliance

- **EMC compliance**

**USA (FCC):** Part 15 Class B.

**Europe (CE):** EN50081-1, EN50082-1, EN55024, EN55022, ISO7637-1.

**New Zealand and Australia (C Tick):** AS-NZS 3548.

### Cable to Navman instrument

| Wire   | Signal                              |
|--------|-------------------------------------|
| Red    | Power positive, 9 to 30 V DC, 50 mA |
| Black  | Power negative                      |
| Brown  | Power positive from instrument      |
| Orange | NavBus +                            |
| Blue   | NavBus -                            |
| Green  | No connection                       |
| Yellow | No connection                       |
| White  | No Connection                       |

## Appendix B - Troubleshooting

### 1 No SmartCraft functions available or SmartCraft data is zero or is not displayed

- a Boat engine key is off.
- b Review installation; check the gateway LEDs are working (see section 2)
- c SmartCraft is disabled in the Navman Instrument. See Setup > System menu.

### 2 Some SmartCraft data is not available:

The data available depends on engine type (see section 1-1).

### 3 Can not start troll control:












- a Some MerCruiser engines do not support troll control.
- b Set engine to idle and in gear (see section Troll Control).
- c Set `Speed type` to `Paddle` (see section Troll Control).
- d To use speed troll control, the Navman instru-

ment must have a Navman paddlewheel speed sensor connected.

### 4 Trim window is slow to appear, or appears when trim does not change:

Change the trim filter (see section Trim Setup and Calibration).

## Appendix C - Mercury SmartCraft accessories

|   |  |   |
|---|--|---|
|  |           |    |
| <p><b>859318T1</b><br/>Termination resistor</p>                                   | <p><b>892452A01</b><br/>SmartCraft cable adaptor<br/>(male/male)</p>                       | <p><b>892453A01</b><br/>SmartCraft cable adaptor<br/>(female/female)</p>            |
|  |           |    |
| <p><b>8784924</b><br/>SmartCraft junction box<br/>- 4 way</p>                     | <p><b>8784926</b><br/>SmartCraft junction box<br/>- 6 way</p>                              | <p><b>8784928</b><br/>SmartCraft junction box<br/>- 8 way</p>                       |
|  |           |    |
| <p><b>879968T</b> (6, 10, 15, 20, 30)<br/>SmartCraft wiring harness</p>           | <p><b>879981T</b> (10, 15, 20, 30)<br/>SmartCraft wiring harness with<br/>1 terminator</p> | <p><b>879982T</b> (20, 30)<br/>SmartCraft wiring harness with<br/>2 terminators</p> |
|  |          |   |
| <p><b>859743T2</b><br/>SmartCraft accessory<br/>harness (fuel/oil)</p>            | <p><b>859318T2</b><br/>SmartCraft weather cap</p>  |   |