

# **ST60 Club House Wind Instrument Owner's Handbook**

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# Preface

## Important information

### Safety notices

**WARNING: Product installation & operation**

**This equipment must be installed and operated in accordance with the Raymarine instructions provided. Failure to do so could result in personal injury, damage to your property and/or poor product performance.**

**WARNING: Electrical safety**

**Make sure you have switched off the power supply before you start installing this product.**

**WARNING:**

**The ST60 Club House Wind is intended only for fixed, shore-based use and is not suitable for use on boats.**

### EMC conformance

All Raymarine equipment and accessories are designed to the best industry standards for use in the recreational marine environment.

The design and manufacture of Raymarine equipment and accessories conform to the appropriate Electromagnetic Compatibility (EMC) standards, but correct installation is required to ensure that performance is not compromised.

### Handbook information

To the best of our knowledge, the information in this handbook was correct when it went to press. However, Raymarine cannot accept liability for any inaccuracies or omissions it may contain.

In addition, our policy of continuous product improvement may change specifications without notice. Therefore, Raymarine cannot accept liability for any differences between the product and the handbook.



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## Introduction

Thank you for purchasing a Raymarine product. We are sure your ST60 instrument will give you many years of trouble-free operation.

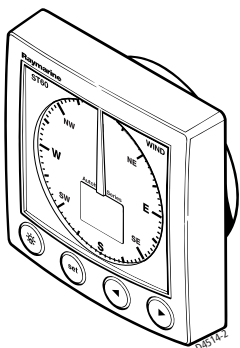
This handbook describes how to install and use the Raymarine ST60 Club House Wind instrument, which is intended for use ashore (e.g. in clubhouses or homes) to show local wind conditions. The instrument is constructed in a rugged weather proofed case and uses a sensitive and stable, combined analog and digital display, to display the wind information.

**The ST60 Club House Wind instrument is not suitable for use on boats.**

The ST60 Club House Wind instrument gives:

- Wind speed.
- Wind Angle.
- Maximum wind speed.

The ST60 Club House Wind instrument also gives high and low wind speed alarm indications.



## Mounting options

If you do not want to surface mount your ST60 instrument, options are available for:

- Flush mounting. If you have ordered the flush mounting option a low-profile bezel and four fixing screws are also provided.
- Bracket mounting.

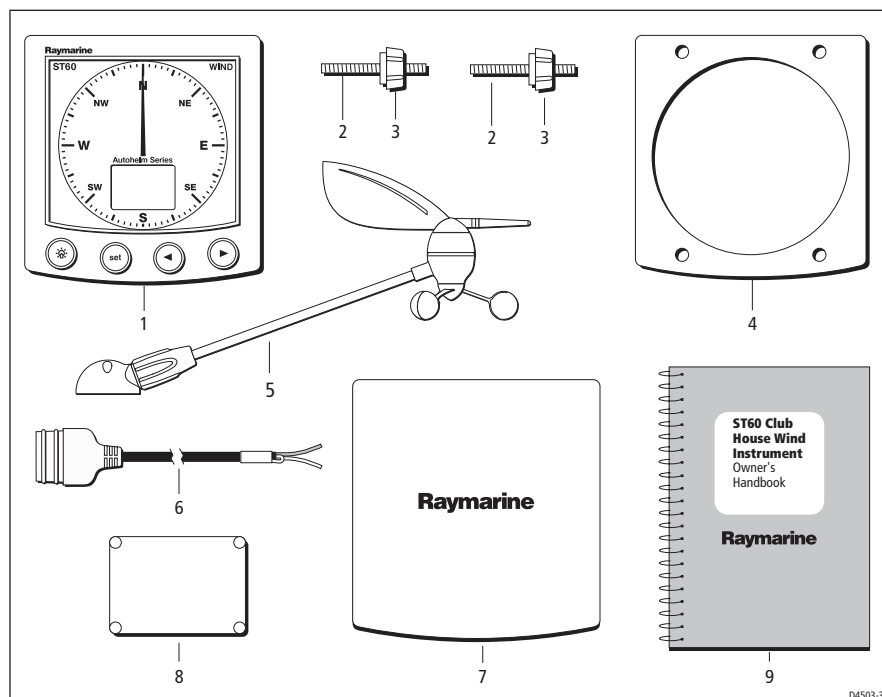
## Parts supplied

Unpack your ST60 instrument and check that the following items are present:

- Item 1, ST60 Club House Wind instrument, fitted with standard bezel for surface mounting.
- Item 2, Fixing studs (2).
- Item 3, Thumb nuts (2).
- Item 4, Gasket.
- Item 5, Wind Vane.
- Item 6, Power cable.
- Item 7, Instrument Cover.
- Item 8, Junction Box.
- Item 9, Owner's Handbook. A Warranty document and fitting templates are included in this Handbook.

Spare spade terminals are also provided, to re-terminate transducer cables if they have to be cut to facilitate installation.

**Note:** *The above packing list is for an ST60 Wind system.*





# Chapter 1: Operation & Maintenance

## 1.1 Getting started

This handbook describes how to operate, maintain and install the Raymarine ST60 Club House Wind instrument. This instrument shows the wind speed and direction.

### **CAUTION: Calibration requirement**

**The ST60 Club House Wind instrument is calibrated to factory (default) settings when first supplied. To ensure optimum performance, this product must be calibrated before use. Do NOT use the product until it has been calibrated using the procedures in *Chapter 3, Calibration*.**

## Calibration requirements

Your ST60 instrument is calibrated to factory (default) settings when first installed and must therefore be calibrated before use, in accordance with the procedures in *Chapter 3, Calibration*.


## 1.2 Normal operation

The information on the ST60 Club House Wind instrument is presented by a pointer and a digital display.

### Pointer

The pointer shows the wind direction.

### Digital display

The digital display normally shows the wind speed in either knots or meters per second. You can use the  key to select other information (see the *Normal operation* flow chart), displayed as follows:

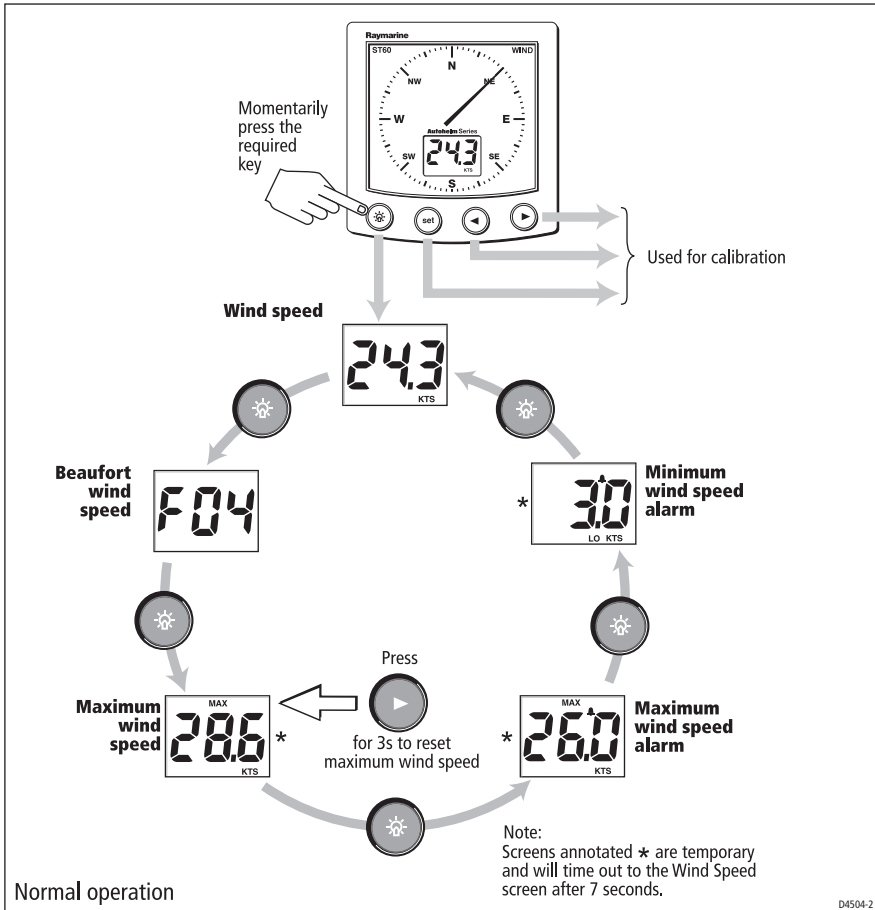
- Beaufort wind speed.
- Maximum wind speed.
- Maximum wind speed alarm.
- Minimum wind speed alarm.

### Beaufort wind speed

The appropriate Beaufort wind 'force' number, up to F12.

## Maximum wind speed

The maximum wind speed is reset at power up and can also be reset manually by pressing the > key for 3 seconds.




## Wind speed alarms

An alarm condition occurs when the wind speed either exceeds the maximum wind speed alarm threshold or falls below the minimum wind speed alarm threshold. An alarm condition is indicated by a flashing alarm icon on the digital display and an audible alarm at the instrument.


Pressing any key will cancel an alarm.

### Switching alarms on and off

Use the  key to select either the maximum or minimum wind speed alarm screen as required, then press the > key for approximately one-second, to toggle the alarm either on (i.e. so the alarm threshold value is displayed) or OFF, as required.

### Setting alarm thresholds



To set a wind speed alarm threshold:

1. Use the  key to select either the maximum or minimum wind speed alarm screen, as required.
2. Momentarily press both the < and > keys to enter the threshold adjust mode (indicated by the displayed value flashing).
3. Press either the < key or the > key to set the required wind speed.
4. Momentarily press both the < and > keys to leave the threshold adjust mode (indicated by the displayed value flashing).

## Display illumination

When the instrument is first powered up, the display illumination is set to its lowest (courtesy) level, to facilitate initial access to the keys.

To adjust the level of display illumination:

1. Hold down the  key for approximately one second, to enter the illumination-adjust mode.
2. There are four preset illumination levels. Momentarily press the  key to cycle through these levels until you reach the level you want.
3. Press any other key to leave the illumination-adjust mode.

**Note:** *The digital display will return to normal operation 7 seconds after the last key press.*

## 1.3 Maintenance

### Servicing and safety

- Raymarine equipment should be serviced only by authorized Raymarine service technicians. They will ensure that service procedures and replacement parts used will not affect performance. There are no user serviceable parts in any Raymarine product.
- Some products generate high voltages, so never handle the cables/connectors when power is being supplied to the equipment.

- When powered up, all electrical equipment produces electromagnetic fields. These can cause adjacent pieces of electrical equipment to interact with one another, with a consequent adverse effect on operation. In order to minimize these effects and enable you to get the best possible performance from your Raymarine equipment, guidelines are given in the installation instructions, to enable you to ensure minimum interaction between different items of equipment, i.e. ensure optimum Electromagnetic Compatibility (EMC).
- Always report any EMC-related problem to your nearest Raymarine dealer. We use such information to improve our quality standards.
- In some installations, it may not be possible to prevent the equipment from being affected by external influences. In general this will not damage the equipment but it can lead to spurious resetting action, or momentarily may result in faulty operation.

## **Instrument**

Certain atmospheric conditions may cause condensation to form on the instrument window. This will not harm the instrument and can be cleared by increasing the illumination setting to Level 3.

Periodically clean your ST60 instrument with a soft damp cloth. Do NOT use chemical and abrasive materials to clean the instrument.

## **Transducer**

If the windvane is removed from its mounting block for any reason, fit the blanking cover (supplied) to the windvane mounting block connector.

## **Cabling**

Examine all cables for chafing or other damage to the outer shield and, where necessary, replace and re-secure.

# **1.4 Troubleshooting**

## **Preliminary procedures**

Changes in the electronic environment may adversely affect the operation of your ST60 equipment. If you appear to have a problem, first ensure that the EMC requirements (see *Chapter 2, Installation & Calibration*) are still being met before further investigating the problem.

## Fixing faults

All Raymarine products are subjected to comprehensive test and quality assurance programmes prior to packing and shipping. However, if the instrument display is blank due to an apparent fault, check:

- The power supply.
- The security of cables and connectors.
- The fuse or circuit breaker.

## Technical support

Raymarine provides a comprehensive customer support service, on the world wide web and by telephone help line. Please use either of these facilities if you are unable to rectify a problem.

### World wide web

Please visit the Customer Support area of our web site at:

- [www.raymarine.com](http://www.raymarine.com)

As well as providing a comprehensive Frequently Asked Questions section and servicing information, the web site gives e-mail access to the Raymarine Technical Support Department and a details of the locations of Raymarine agents, worldwide.

### Telephone help line

If you do not have access to the world wide web, please call our help line.

**In the USA, call:**

- +1 800 539 5539, extension 2444 or
- +1 603 881 5200 extension 2444

**In the UK, Europe the Middle East or the Far East, call:**

- +44 (0) 23 9271 4713 (voice)
- +44 (0) 23 9266 1228 (fax)

### Help us to help you

When requesting service, please quote the following product information:

- Equipment type.
- Model number.
- Serial number.
- Software issue number.

The Software issue number can be ascertained by means of the Intermediate Calibration facility, see *Chapter 3, Calibration*.



## Chapter 2: Installation

This chapter describes how to install and calibrate the ST60 Club House Wind instrument, and associated Wind Vane transducer.

The transducer is connected to the rear of the instrument.

For advice, or further information regarding the installation of this equipment, please contact the Raymarine Product Support Department or your own National Distributor.

### 2.1 Planning your installation

Before starting the installation, spend some time considering the best positions for both transducer and instrument, such that the *Site requirements* and the *EMC installation guidelines* are satisfied.

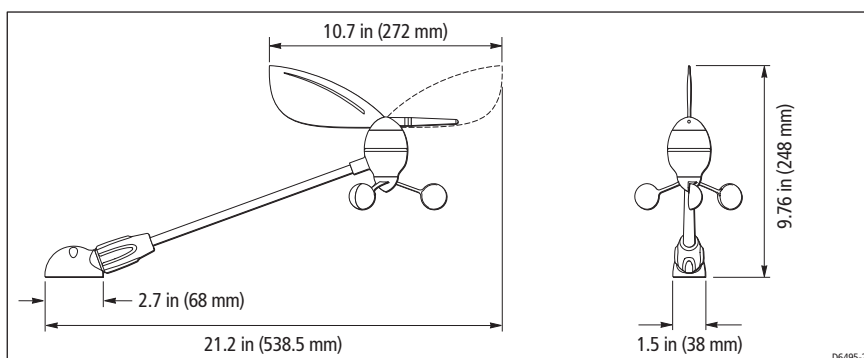
#### Site requirements

##### Wind Vane

The Wind Vane has a cable connected, and is supplied with a junction box and a set of spade terminals.

The location for the Wind Vane must:

- Allow reasonable access for installation and servicing.
- Be as high as possible and away from any object which may shield the Wind Vane or otherwise disturb the air flow.
- Provide a horizontal mounting surface. If a surface (e.g. mast top) is otherwise suitable but not horizontal, make up a suitable wedged packing piece to provide the necessary horizontal surface.



There must also be a viable route for the transducer cable to be routed to the instrument.

**Note:** *As you will need to manually rotate the Wine Vane as part of the linearization procedure, do not actually fit it in position yet.*

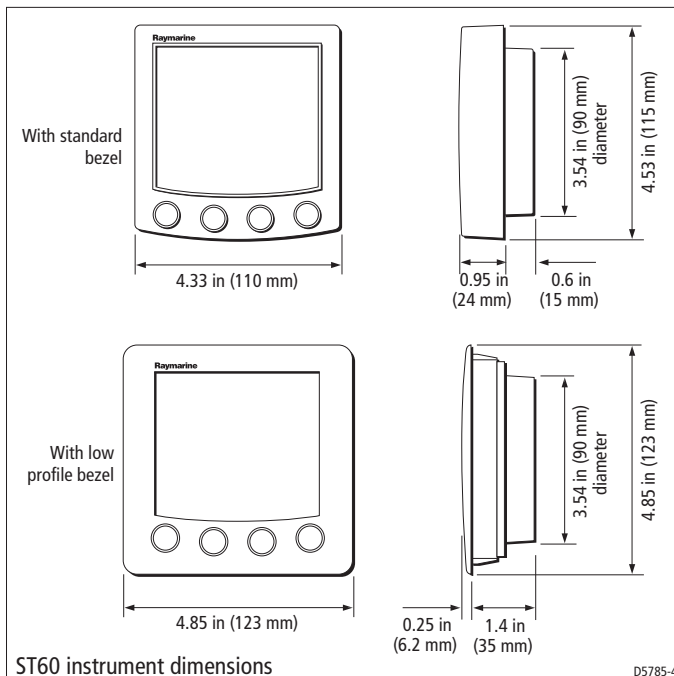
## Instrument

### CAUTION:

**The presence of moisture at the rear of the instrument could cause damage either by entering the instrument through the breathing hole or by coming into contact with the electrical connectors.**

Each instrument must be positioned where:

- It is protected against physical damage.
- It is at least 20 in (500 mm) from radio receiving equipment.
- There is reasonable rear access for installation and servicing.





## EMC installation guidelines

All Raymarine equipment and accessories are designed to the best industry standards for use in the recreational marine environment.

Their design and manufacture conforms to the appropriate Electromagnetic Compatibility (EMC) standards, but correct installation is required to ensure that performance is not compromised. Although every effort has been taken to ensure that they will perform under all conditions, it is important to understand what factors could affect the operation of the product.

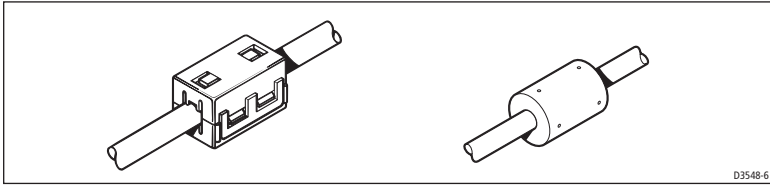
The guidelines given here describe the conditions for optimum EMC performance, but it is recognized that it may not be possible to meet all of these conditions in all situations. To ensure the best possible conditions for EMC performance within the constraints imposed by any location, always ensure the maximum separation possible between different items of electrical equipment.

For **optimum** EMC performance, it is recommended that **wherever possible**:

- Raymarine equipment and cables connected to it are:
  - At least 3 ft (1 m) from any equipment transmitting or cables carrying radio signals e.g. VHF radios, cables and antennas. In the case of SSB radios, the distance should be increased to 7 ft (2 m).
  - More than 7 ft (2 m) from the path of a radar beam. A radar beam can normally be assumed to spread 20 degrees above and below the radiating element.
- The equipment is supplied from a separate battery from that used for engine start. Voltage drops below 10 V in the power supply to our products, and starter motor transients, can cause the equipment to reset. This will not damage the equipment, but may cause the loss of some information and may change the operating mode.
- Raymarine specified cables are used. Cutting and rejoining these cables can compromise EMC performance and must be avoided unless doing so is detailed in the installation manual.
- If a suppression ferrite is attached to a cable, this ferrite should not be removed. If the ferrite needs to be removed during installation it must be reassembled in the same position.

## Suppression ferrites

The following illustration shows typical cable suppression ferrites used with Raymarine equipment. Always use the ferrites supplied by Raymarine.



## Connections to other equipment

If your Raymarine equipment is to be connected to other equipment using a cable not supplied by Raymarine, a suppression ferrite **MUST** always be attached to the cable near the Raymarine unit.

## 2.2 Installation procedure

As it is not possible to describe procedures for all possible installation scenarios, the procedures given here describe the broad requirements for installing a Wind Vane and ST60 Club House Wind instrument. Adapt these procedures as appropriate, to suit your individual requirement.

### **CAUTION:**

**Where it is necessary to cut holes (e.g. for cable routing and instrument mounting), ensure that these will not cause a hazard by weakening critical parts of any structure.**

## Unpacking

Unpack your ST60 instrument and check that the items described in the *Preface* are present.

Each ST60 instrument is supplied with a standard bezel for surface mounting. Optional mounting kits are available for flush mounting and bracket mounting the instrument. If you have ordered the flush mounting option a low-profile bezel and four fixing screws are also provided.

## Fitting the instruments

The ST60 Club House Wind instrument can be installed using one of a number of different mounting options:

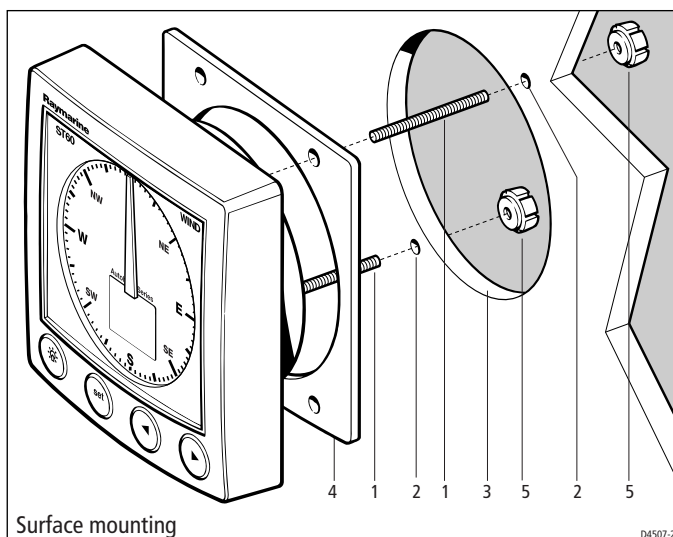
- Surface mounting. Gives a profile of approximately 0.95 in (24 mm).
- Flush mounting. Gives a profile of approximately 0.25 in (6 mm).
- Bracket mounting.

ST60 instruments can also be mounted behind a suitably prepared panel, so that just the instrument dial and keys are visible.

## Surface mounting

To surface mount your ST60 instrument (see the *Surface mounting* illustration):

1. Ensure that:
  - The selected location is clean, smooth and flat.
  - There is sufficient space behind the location to accommodate the rear of the instrument and connectors.
2. Apply the surface mount template (supplied at the rear of this handbook) to the selected location and mark the centers for the fixing studs (1) and the aperture (3) that will take the rear casing of the instrument.
3. Drill out the two 0.2 in (5 mm) fixing stud clearance holes (2).
4. Cut out the clearance hole (3) then remove the template.
5. Peel off the protective sheet from the self-adhesive gasket (4) then stick the gasket into position on the rear of the instrument.
6. Screw the two fixing studs into the threaded sockets on the rear of the instrument.
7. Mount the assembled instrument, studs, bezel and gasket into the panel. Secure from behind with the thumb nuts (5).



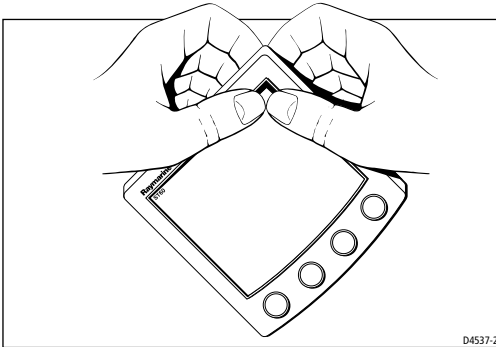
## Flush Mounting

The Flush Mounting Kit uses a low-profile bezel to reduce the fitted profile of the instrument, to approximately 0.25 in (6 mm) above the panel fascia.

### Fitting the low-profile bezel

In order to flush-mount your ST60 instrument, you must first replace the standard bezel with the low-profile bezel as follows:

1. Hold the instrument in both hands with the display towards you.

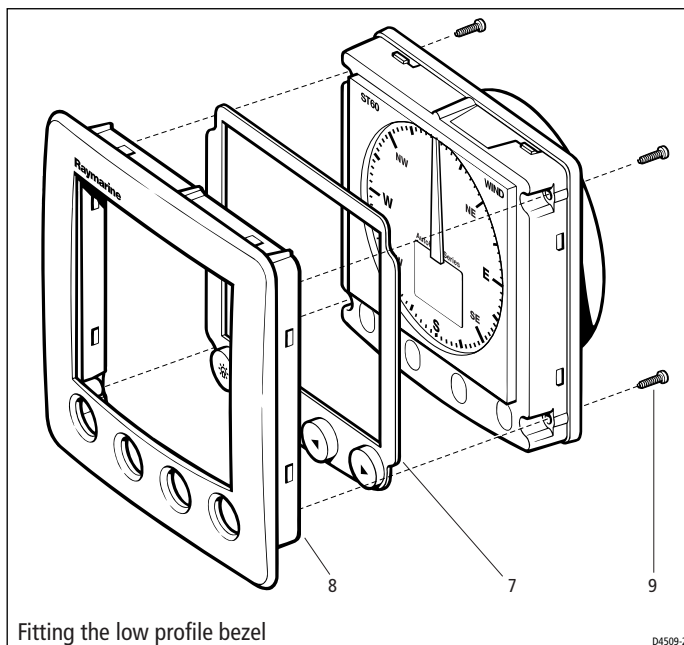


2. Using both thumbs, gently press an upper corner of the instrument from the bezel, then remove the bezel from the instrument. Retain the rubber keypad which is released when the bezel is removed.
3. Place the instrument face upwards on a flat surface and place the rubber keypad (7) in position around the display window (i.e. so that each key outline is located over its associated key on the instrument).
4. Snap the low-profile bezel (8) in position over the instrument, so that the rubber keys are correctly located in the holes on the bezel.

### CAUTION:

**It is essential that only screws of the correct size are used to secure the instrument to the bezel. Failure to observe this caution could result in damage to both the instrument and the bezel.**

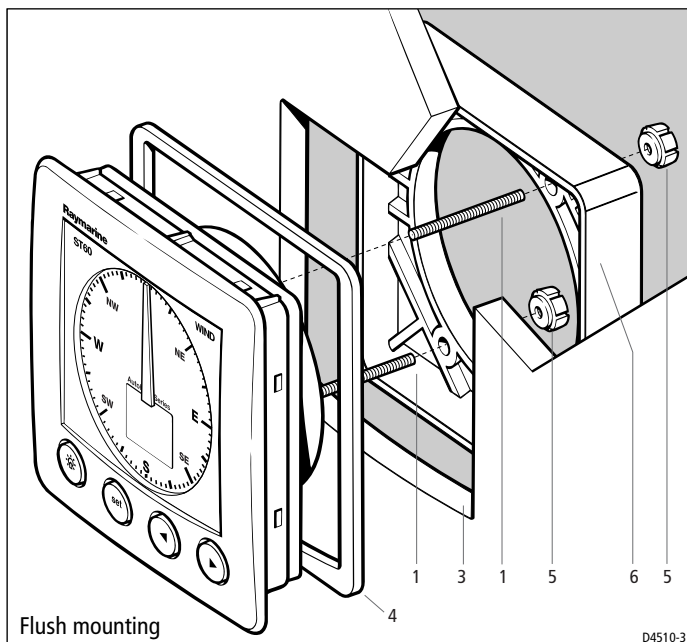
5. Using the four, self-tapping screws (9) provided, secure the instrument and bezel together. Fit the screws from the rear of the instrument and tighten them sufficiently to secure the instrument and bezel together. **DO NOT OVERTIGHTEN.**



### Flush mounting procedure

Flush mount your instrument (see the *Flush mounting* illustration) as follows:

1. Assemble the ST60 instrument and low-profile bezel as described under *Fitting the low-profile bezel*.
2. Ensure that:
  - The panel on which you intend to mount the instrument is between 0.12 in (3 mm) and 0.78 in (20 mm) thickness.
  - The selected location is clean, smooth and flat.
  - There is sufficient space behind the location to accommodate the rear of the instrument and connectors.
3. Apply the flush mount template (supplied at the rear of this handbook) to the selected location and mark out the aperture into which the assembled instrument and bezel will sit.
4. Cut out the aperture (3) for the assembled instrument and bezel and remove the template.
5. Peel off the protective sheet from the self-adhesive gasket (4) then stick the gasket into position on the rear of the bezel.



6. Screw the two fixing studs (1) into the threaded sockets on the rear of the instrument.
7. Mount the assembled instrument, studs, bezel and gasket into the panel.
8. Locate the flush mount bracket (6) onto the fixing studs and secure the assembly to the panel with the thumb-nuts (5).

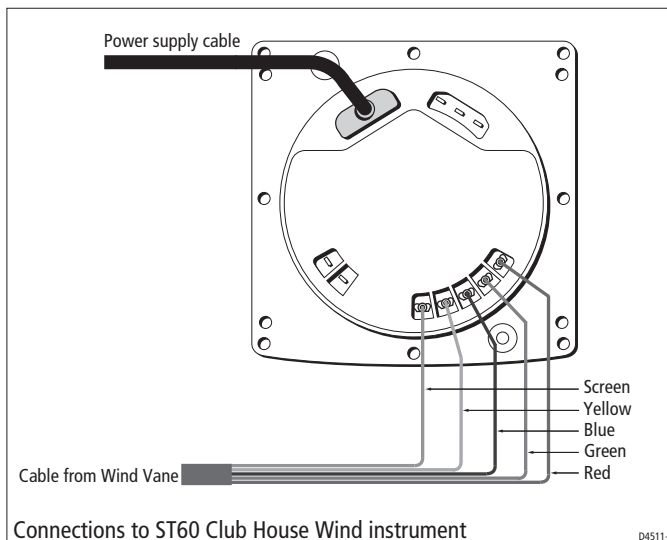
### Bracket Mounting Kit

A Control Unit Mounting Bracket (Part No. E25009) enables you to mount your ST60 instrument in locations where other forms of mounting are impractical. Although this provides a useful alternative method for securing your instrument, it is only suitable for use in positions where the instrument will not be exposed to water.

To bracket mount your ST60 instrument, do so in accordance with the Control Unit Mounting Bracket Instruction Sheet.

### Connections at the instrument

The connections to the ST60 Club House Wind instrument are shown in the following illustration.



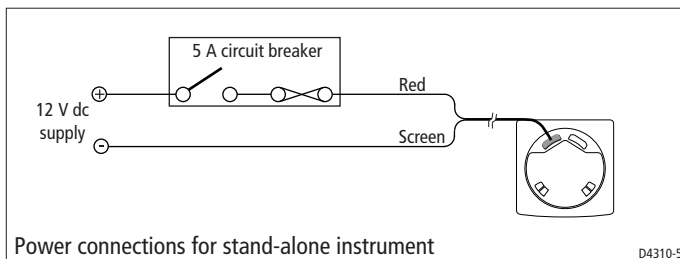
## Power supply connections

The ST60 Club House Wind instrument requires a 12 V dc power supply capable of providing at least 2 A and protected by a 0.5 A fuse.

Power cables are available in 2 m and 9 m lengths.

To fit a power cable:

1. Ensure the intended power source is switched off.
2. Run the power cable from the instrument to a suitable 12 V dc power source.



If the cable has not already been trimmed at the power supply end:

- i. Cut the cable to length and trim back an appropriate amount of the outer sheath.
  - ii. Cut back and insulate the yellow wire.
3. Connect the screen to the power supply 0 V terminal.

4. Connect the red wire via a 3 A circuit breaker to the power supply +12 V terminal.
5. Insert the power cable connector into one of the SeaTalk connectors at the rear of the instrument.

## Linearization

This procedure ensures that the sensors in the Wind Vane are correctly calibrated to record rotation of the Wind Vane, then compensates for any small errors which may exist in the alignment of the wind transducer. As this procedure necessitates manual rotation of the Wind Vane, carry out this procedure, before fitting the Wind Vane in its operational location.

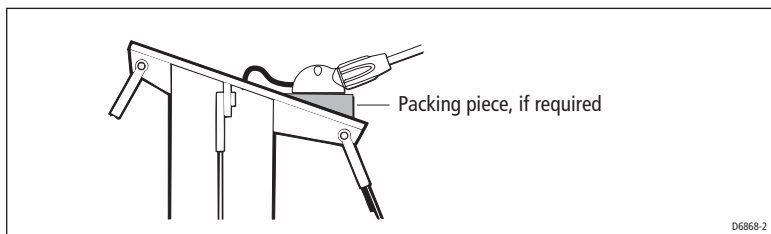
To carry out the linearization and alignment procedure:

1. Referring to the *Connections to ST60 Club House Wind instrument* illustration, temporarily connect the Wind Vane to the instrument.
2. Power-up the ST60 Club House Wind instrument.
3. Manually rotate the vane for two rotations, so that each rotation takes approximately 15 seconds. This procedure automatically linearizes the wind-vane. A successful linearization is indicated by the digital display flashing and the buzzer sounding three beeps.

## Fitting the Wind Vane

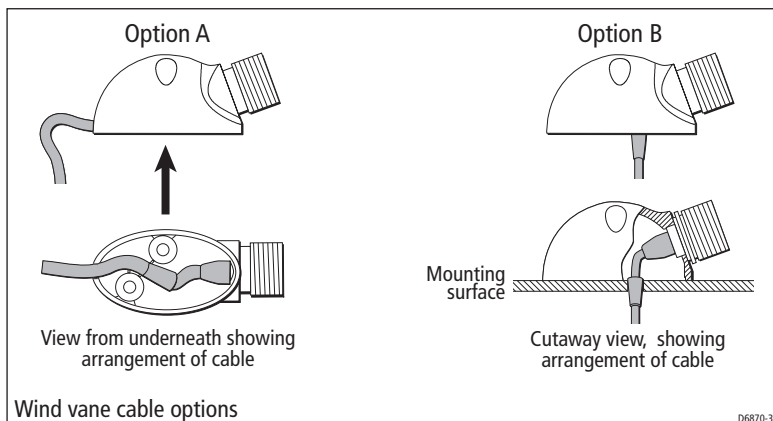
**Note:** Do NOT remove the connector cap from the wind vane base connector, until you are ready to fit the wind vane arm.

The wind vane base must be horizontal. If necessary, make up a suitable packing piece to provide a horizontal mounting surface.



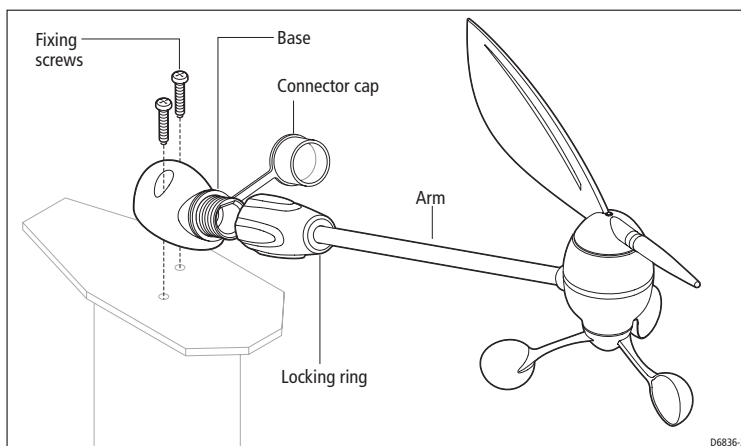
You can fit your wind vane so the cable leaves the wind vane base either from the rear (option A), or from underneath (option B), as in the following *Wind vane cable options* illustration.





A wind vane is typically mounted on a mast top, as follows:

1. Mark the mounting surface for drilling. The recommended method for doing this depends on which cable option you intend to use:
  - For cable option A, place the wind vane base in the intended position, with the front end facing forwards, and mark the position of the two fixing screw holes.
  - For cable option B, use the template at the rear of this handbook, to mark the position of the two fixing screw holes and the cable hole.



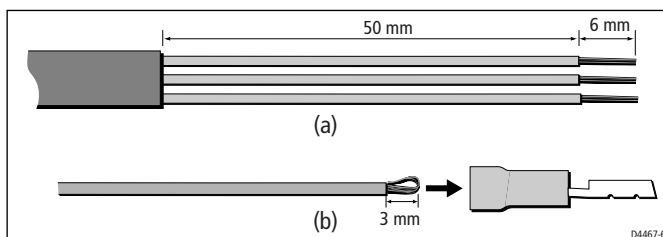
2. Drill the mounting surface for the cable option you intend to use:
  - For cable option A, drill a 4 mm hole at each of the marked locations for the fixing screw holes.

- For cable option B, drill a 4 mm hole at each of the marked locations for the fixing screw holes and an 8 mm hole at the marked location for the cable.
3. Referring to the *Wind vane cable options* illustration, route the cable correctly for the option you are using, then secure the wind vane base, using the two self-tapping fixing screws.
  4. Insert the wind vane arm into the wind vane base connector and tighten the locking ring securely by hand.

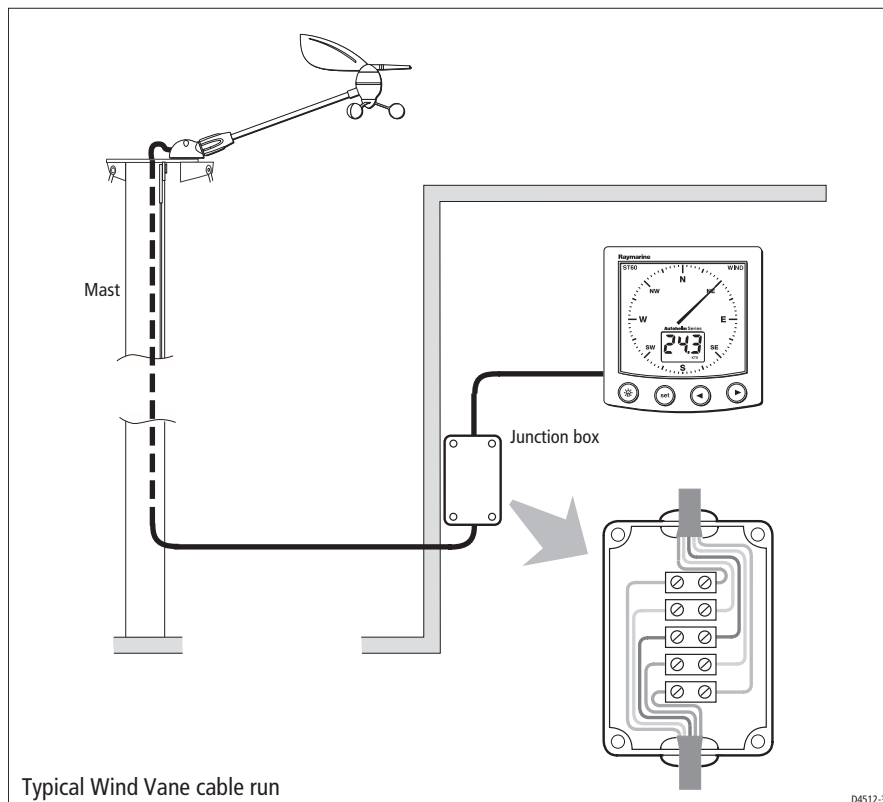
## Running transducer cable

The Wind Vane is supplied with sufficient cable already connected, to run from the mounted position to the ST60 Club House Wind instrument. The manner in which you run the cable will depend on the locations of the transducer and instrument. The following guidelines are provided:

- Where cables are fed through holes, always use grommets to prevent chafing.
- Secure long cable runs so they do not present a hazard.
- Although the transducer cable is fitted with spade connectors for direct connection to the rear of the instrument, it may be necessary to remove these to facilitate installation e.g. if you want incorporate a junction box in the cable run or if the cable has to be routed through narrow apertures. Extra spade connectors are provided, to replace any that are removed when running the cable. When fitting spade connectors, prepare the cable as at (a) in the following illustration, then fold back the wire strands and insert into the spade connector as at (b). Ensure the wire strands do not extend beyond the rear of the spade connector insulation, then crimp the connector to the wire.



D4467-6



Referring to the *Connections to ST60 Club House Wind instrument* illustration, connect the Wind Vane cable to the instrument.



# Chapter 3: Calibration

## 3.1 Introduction

The ST60 Club House Wind instrument is set up with factory-programmed default settings, so in order to optimize performance at a particular installation, the procedures in this Chapter must be carried out immediately after the completion of installation.

Where practicable, the calibration procedures are presented diagrammatically to show the sequence of key presses and the resulting displays. Adjustment instructions are given as applicable.



### EMC conformance

Always check the installation before use to make sure that it is not affected by radio transmissions or other external electro-magnetic influences.


In some installations, it may not be possible to prevent the equipment from being affected by external electro-magnetic influences. Although this will not damage the equipment, it can lead to spurious resetting action, or momentarily may result in faulty operation.

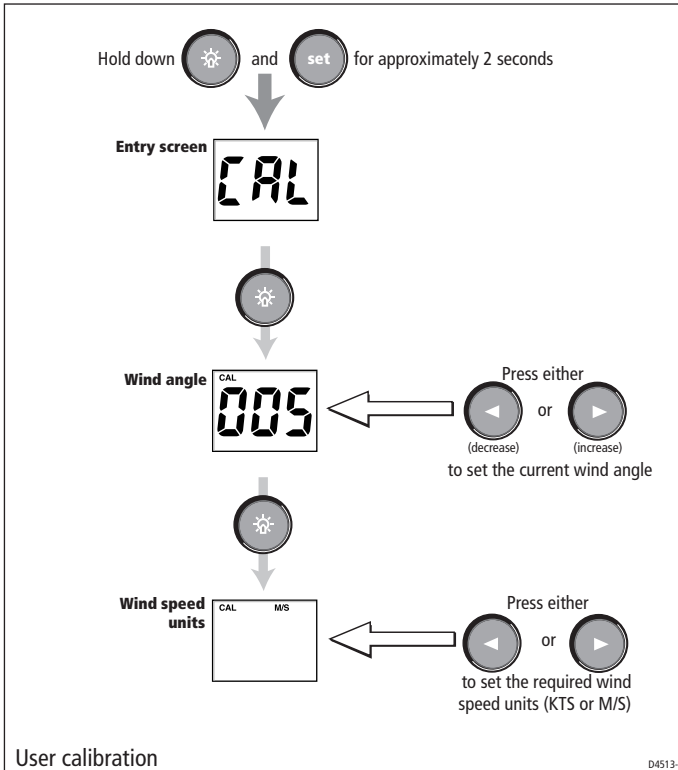
## 3.2 User calibration

The User calibration procedure enables you to align the wind transducer and select the required wind speed units.

To calibrate your system, hold down the  and **set** keys for approximately 2 seconds to enter the calibration mode, then press the  key to select the wind angle screen. This initially shows zero.

Referring to the *User calibration* flow diagram, proceed as follows:

1. Observe the wind vane to determine the wind direction.
2. At the instrument, use the < and > keys to set the pointer to the current wind direction, As you do this, the wind angle screen (on the digital display) shows the wind vane offset angle.
3. Press the  key to select the wind speed units screen.
4. Use the < and > keys to select the units you want, either knots ( KTS ) or meters per second ( M /S).



## Leaving User calibration

Hold down the and **set** keys for 2 seconds to save your settings, exit calibration and resume normal operation.

## 3.3 Intermediate calibration

The intermediate calibration screen enables you to check the instrument software version number. This information is normally required if you request parts or repairs

To check the instrument software version number, hold down the and **set** keys for approximately 4 seconds.



Hold down the and **set** keys for 2 seconds to resume normal operation.

## 3.4 Dealer calibration

The Dealer calibration procedures enable the following parameters to be set:

- Wind angle and speed response.
- Wind speed calibration.
- Boat show mode on/off.

Dealer calibration also gives access to the Factory defaults screen. This enables you to re-apply the factory settings if you want to reset the instrument to a known operating condition.

To commence Dealer calibration, hold down the  and **set** keys together for approximately 12 seconds, to select the Dealer calibration entry page (see *Dealer calibration* diagram, sheets 1 and 2). Then momentarily press the < and > keys to proceed with the calibration. As the calibration progresses, use the  key to move from screen to screen.

### Response settings

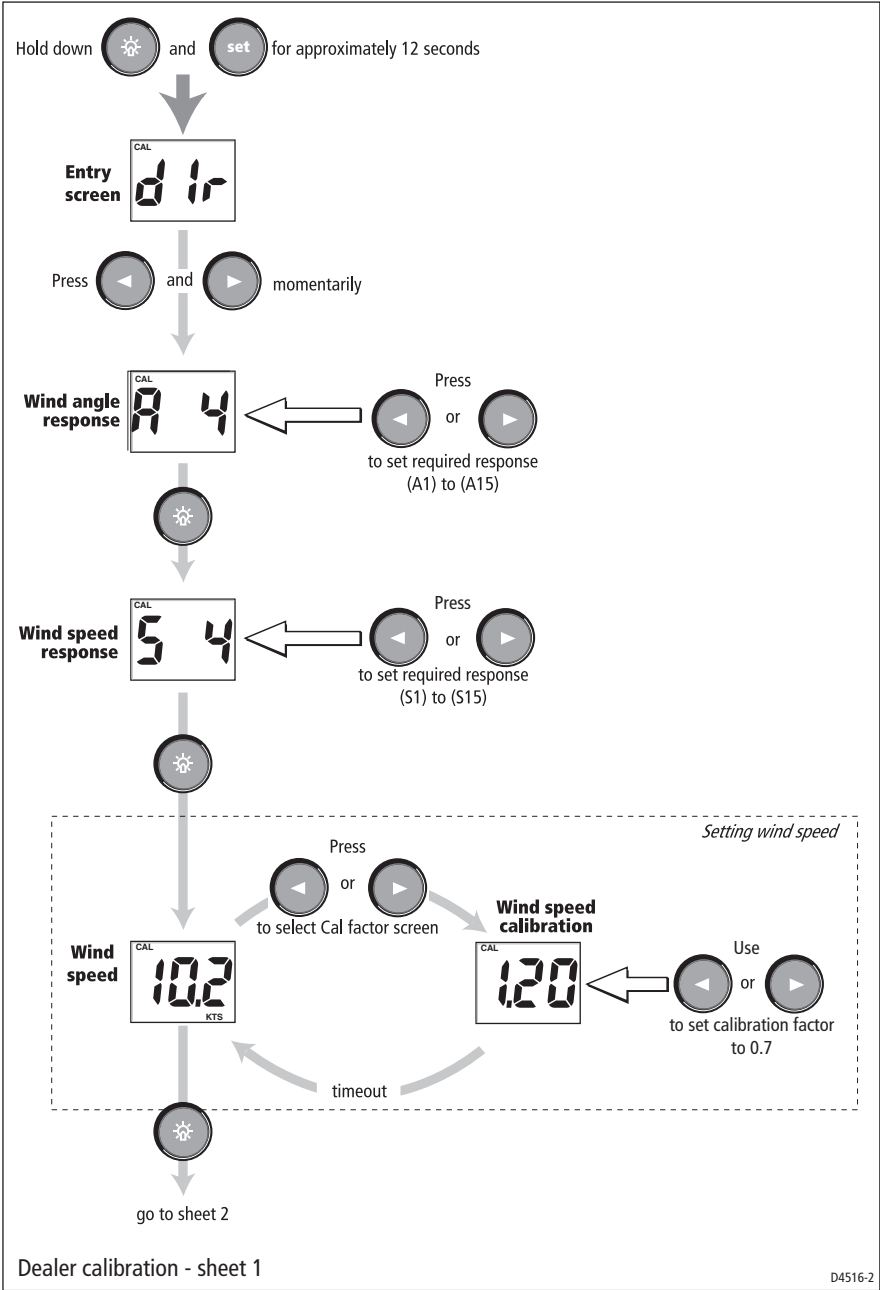
The response values for wind speed and angle, determine the frequency at which information is updated. A low number provides a smooth response and a high number a much livelier response with rapid pointer movement.

Use the < (decrement) and > (increment) keys to set the required value. Response values are from 1 to 15.

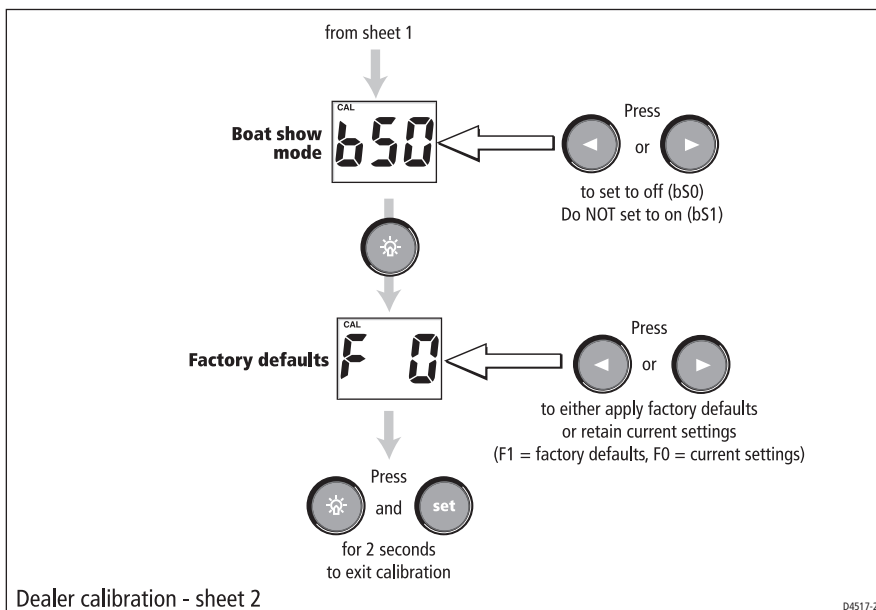
### Wind speed

The Wind speed and Wind speed calibration screens are used to set the correct value for the wind speed. On entry (from the Wind speed response screen), the current value for wind speed is displayed. Set the correct wind speed value, by applying a calibration factor as follows:

1. Use the < (decrement) and > (increment) keys to switch from the Wind speed screen to the Wind speed calibration screen.
2. Use the < (decrement) key or > (increment) key to set the wind speed calibration factor to 0.7.
3. Timeout to the Wind Speed screen, and if further adjustment is necessary, repeat steps 1 and 2.







## Boat show mode

### CAUTION:

**Do NOT enable this mode. It must only be used for demonstration purposes.**

Ensure that the Boatshow Mode is set to bS0 (disabled). If necessary, press the < or > key to achieve this.

## Factory defaults

You can use this screen to reset the operating parameters to the factory default values. Use the < and > keys to make the required selection.

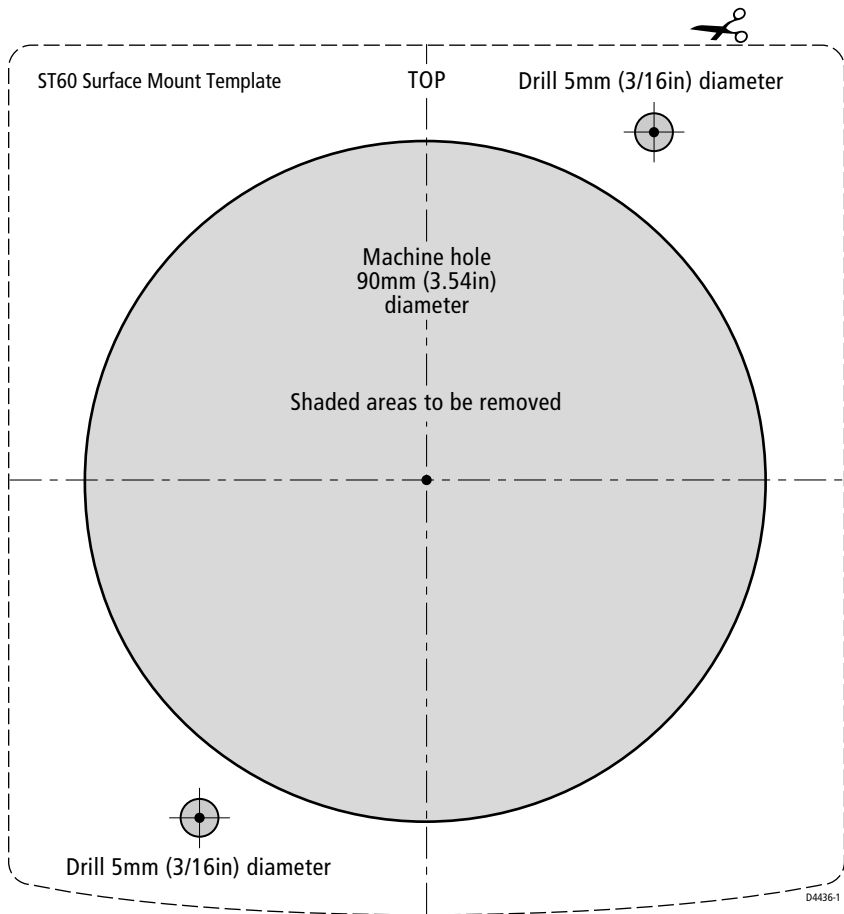
Note that the selection you make at this screen will be applied when you exit the screen, so be sure you make the correct selection.

If you want to apply the factory defaults, ensure the display shows F1, but **if you want to retain the current values, ensure that the display shows F0**.

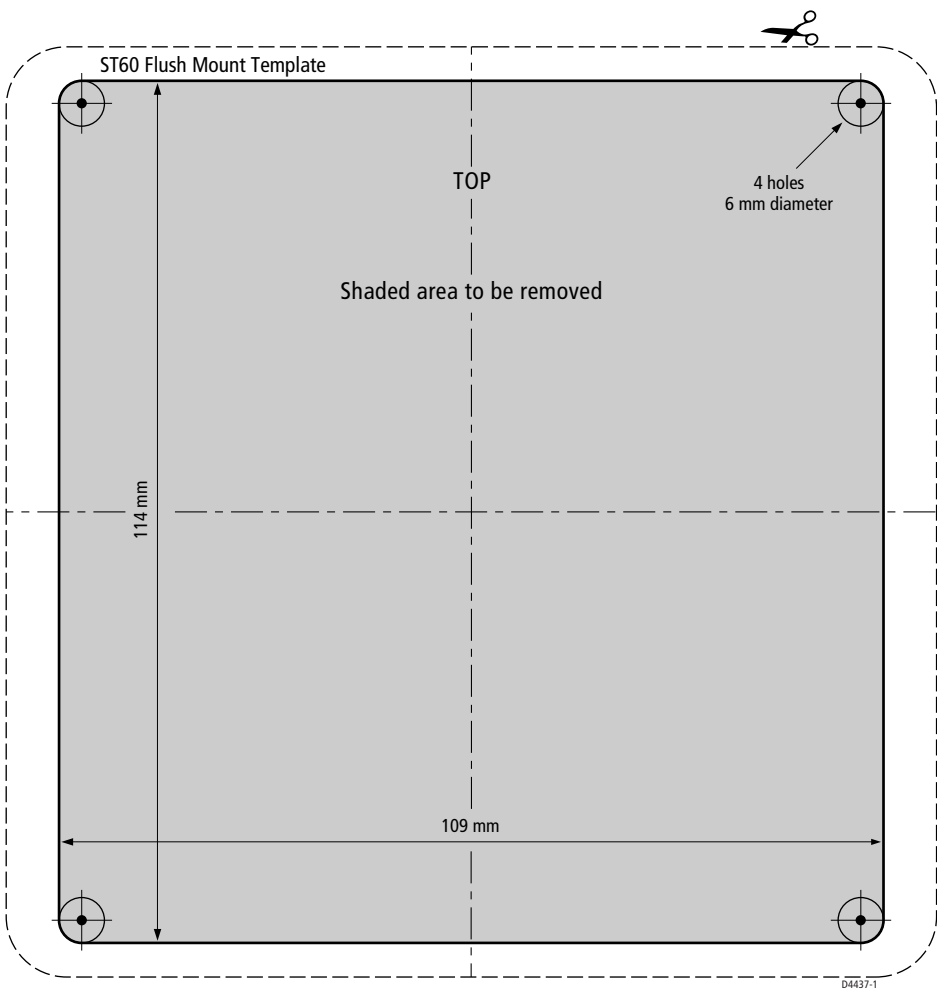
## Leaving Dealer calibration

Hold down the and **set** keys for 2 seconds to save your changes, exit Dealer calibration and resume normal operation.

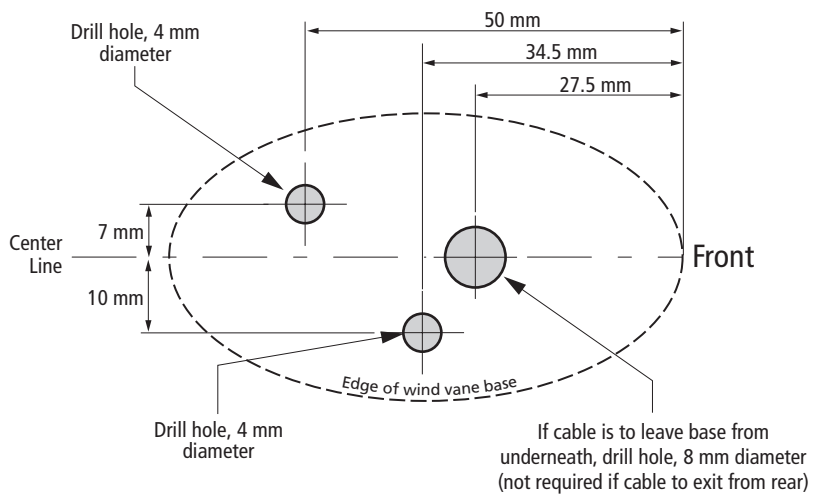












Wind vane drilling template

D6955-1

