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Installation & Operating Handbook

**Autohelm 200**

## AUTOHELM 2000

Autohelm 2000 is an up-to-the-minute digital tiller autopilot which shares the same microprocessor technology built into our biggest and most sophisticated fully installed pilots. It will provide precise powerful steering for sailing yachts up to 13m (43') LOA.

The basic system comprises the main control unit, tiller drive unit and basic mounting fittings. This can be extended by adding any of the following accessories:

- Windvane
- Radio Navigation interlace
- Hand Held Control Unit

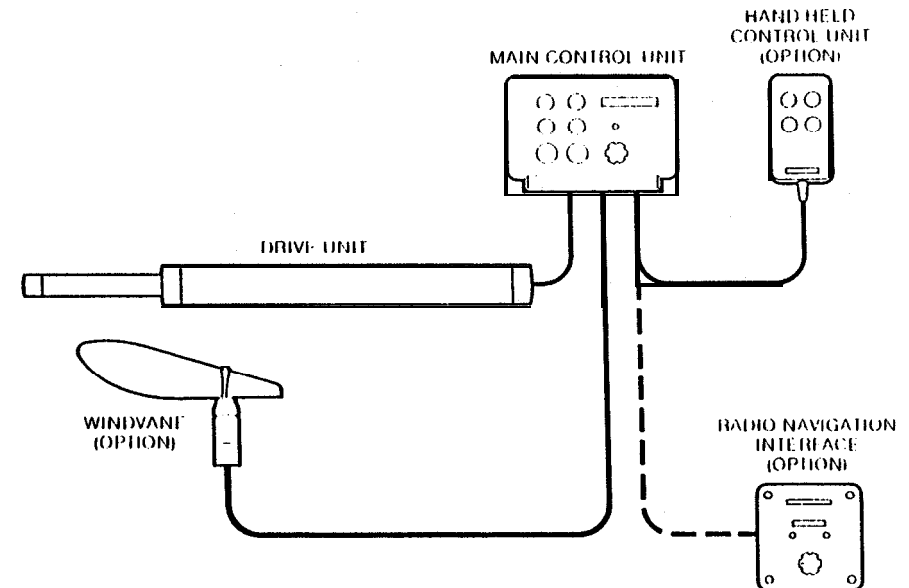
The full system is shown below.

Cockpit and tiller configurations vary widely and to ensure your Autohelm 2000 installation is as neat and secure as possible a full range of fitting accessories is available from authorised Autohelm stockists. Full details are included.

In case of any difficulty please contact our Technical Sales Department for assistance.

The system is designed for owner installation which aided by the following guide should prove to be a simple and interesting job. After fitting the equipment it is only necessary to make a single adjustment to the control unit to match the autopilot's response to the steering characteristics of your vessel.

Good Sailing!



# INSTALLATION

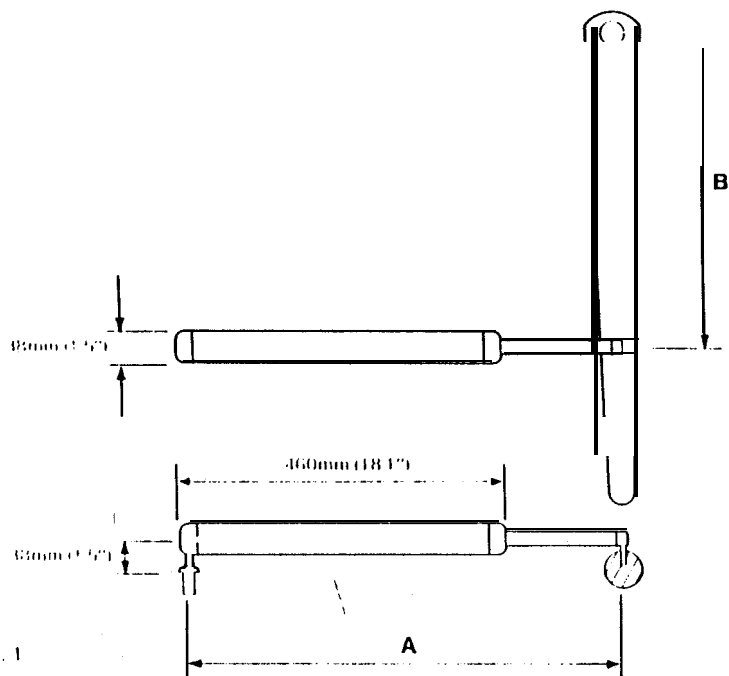


Fig. 1

## DRIVE UNIT

The drive unit is mounted between the tiller and a single attachment point on the yacht's structure. After connection to the yacht's 12 volt electrical system the unit becomes operational.

For correct installation two basic dimensions are critical (Fig.1):-

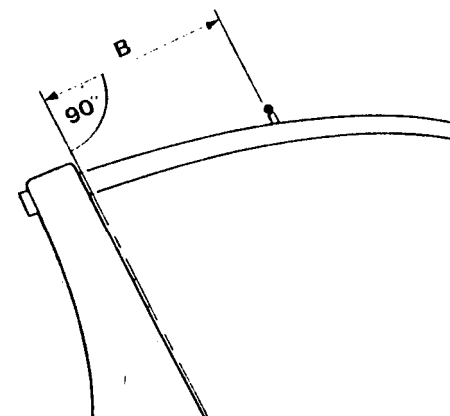
**Dimension A = 620mm (24.5")**  
mounting socket to tiller pin

**Dimension B = 460mm (16")**  
rudder stock centre line to tiller pin

Clamp the tiller on the yacht's centre line and mark off dimensions A and B (A is measured on the STARBOARD side of the cockpit) using masking tape to locate the fixing points. Ensure the measurements are at right angles as shown.

The drive unit must be mounted horizontally.

## SLOPING RUDDERSTOCK



## PORTHAND MOUNTING

In certain circumstances it may be more convenient to mount the unit on the porthand side. When this is the case, the changeover switch will require adjustment as follows. Use a screwdriver to rotate the switch anti-clockwise until the endstop is reached (Fig. 2).

Never force the changeover switch, light pressure only is required.

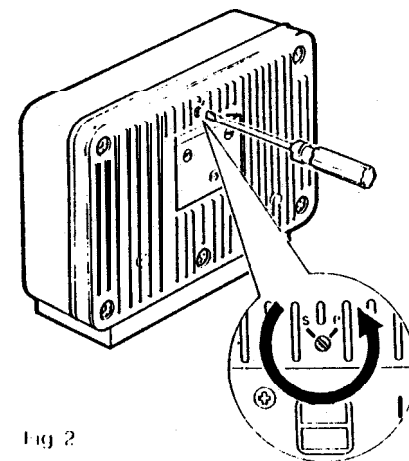


Fig. 2

## BASIC INSTALLATION

After establishing the control dimensions the Aulohelm 2000 can usually be mounted directly onto the Starboard cockpit seal (Fig 3). Proceed as follows.

### TILLER PIN (Cat No. 0001)

- Drill 6mm (1/4") hole x 25mm (1") deep at point marked.
- Using a two part epoxy adhesive such as Araldite, bond the tiller pin into place.
- Position the shoulder of the pin 12.5mm (1/2") above the tiller surface.

### MOUNTING SOCKET

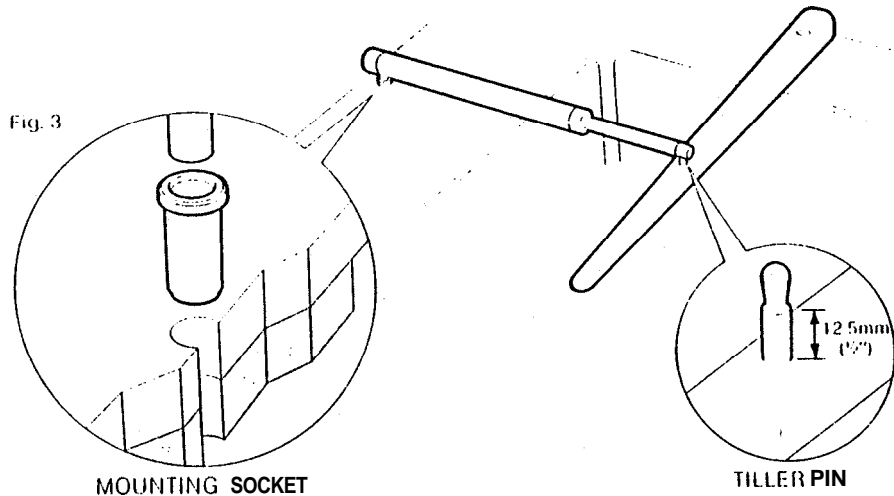
(Cat No. D002)

- Drill 12.5mm (1/2") hole x 25mm (1") deep into the starboard cockpit seal.

- If the structure thickness at the mounting position is less than 25mm (1") carefully reinforce the under surface with a plywood plate bonded into position.
- Install the mounting socket using two part epoxy adhesive.

Note The autopilot is capable of generating high pushrod loads. Ensure that:-

- The epoxy is allowed to harden thoroughly before applying any loads;
- All holes are drilled to correct size and where necessary reinforcing is provided.



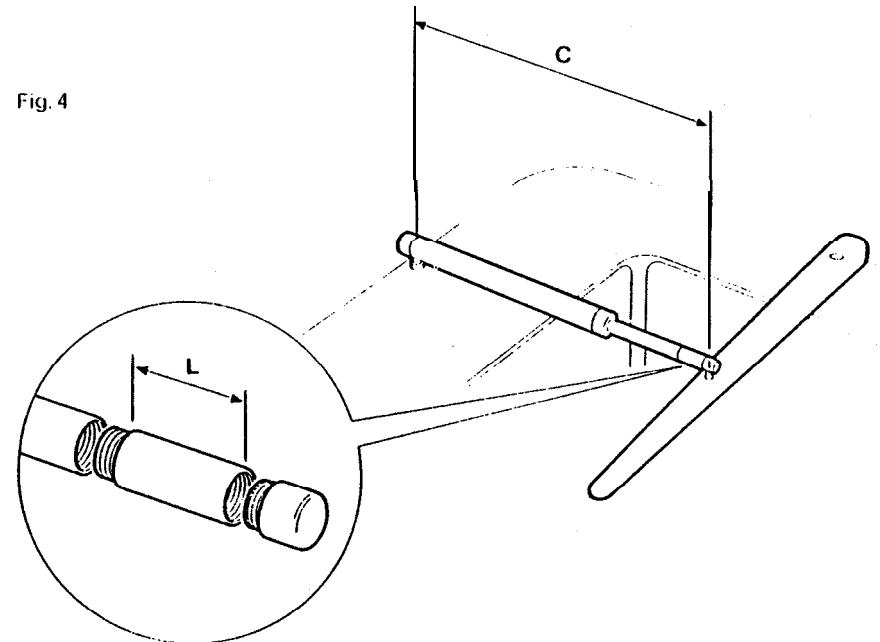
## INSTALLATION ACCESSORIES

If it is not possible to install the drive unit directly onto the cockpit seal or tiller as described, one of the following accessories (or combination) will ensure a perfect installation.

### PUSHROD EXTENSIONS (Fig.4)

The pushrod length may be simply extended using one of the standard pushrod extensions. Dimension C is modified as follows:-

Dimension C	Pushrod Extension Length L	Cat No.
622mm (24.5")	Std Dimension	—
646mm (25.5")	25mm (1")	D003
673mm (26.5")	51 mm (2")	D004
699mm (27.5")	76mm (3")	D005
724mm (28.5")	102mm (4")	D006
749mm (29.5")	127mm (5")	D007
775mm (30.5")	152mm (6")	D008



### TILLER BRACKETS (Figs.5 and 6)

Where the height of the tiller above or below the cockpit seat or mounting plane is such that standard mounting is not practical a range of tiller brackets allows the tiller pin offset to be varied.

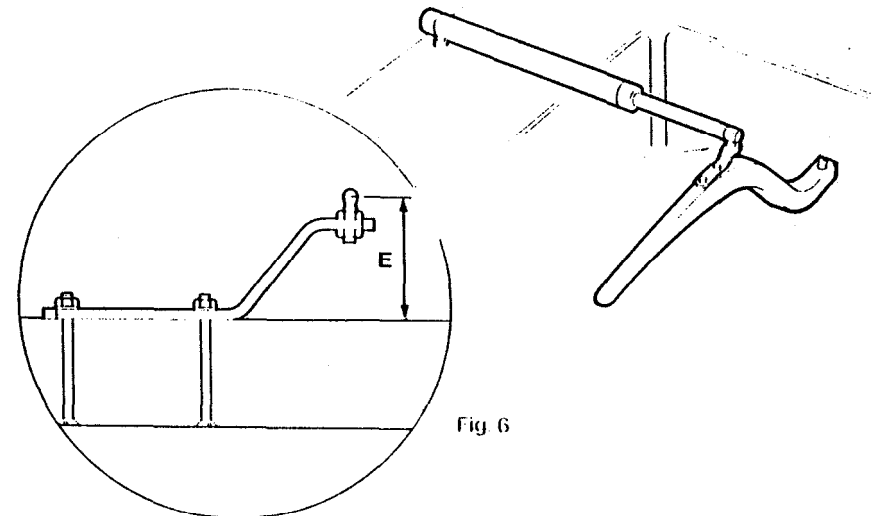
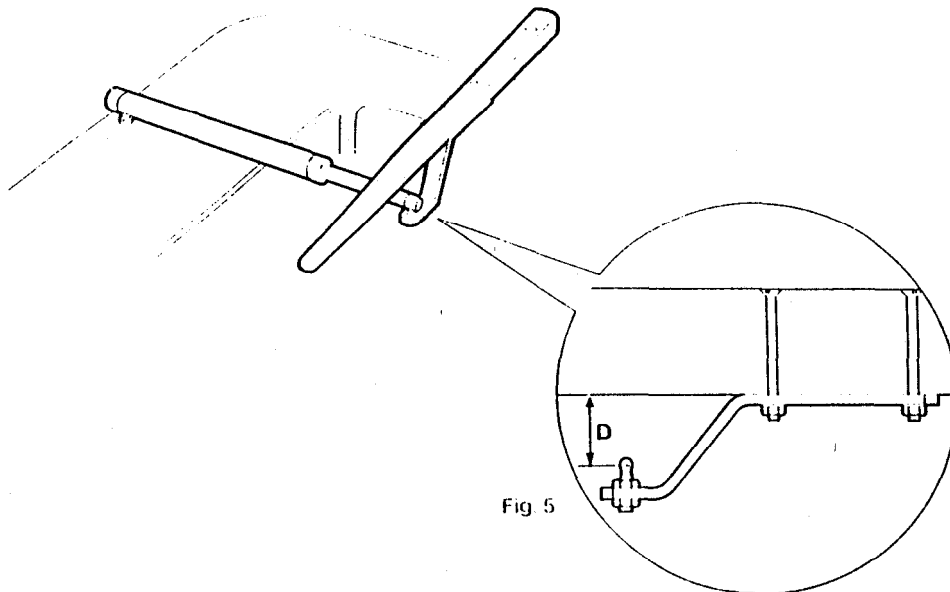
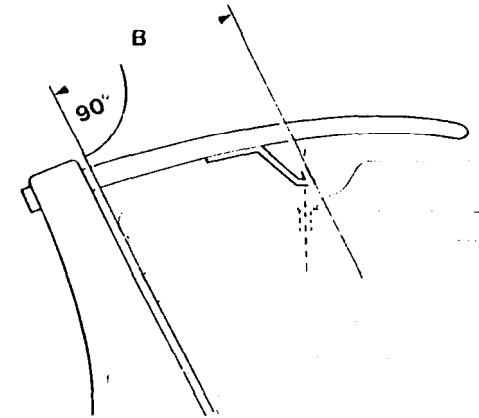
#### Installation

- Position the tiller bracket on the centre line (upper/lower) of the tiller and establish the control dimensions A and B.

- Mark off the position of the centres of the two fixing bolt holes.
- Drill two 6mm (1/4") diameter clearance holes through the centre line of the tiller.
- Install the tiller bracket using 2 x 6mm (1/4") diameter bolts, nuts and washers.
- Bond the fixing bolts in place with epoxy adhesive and fully tighten the nuts.

Dimension D (below tiller)	Dimension E (above tiller)	Cat No.
25mm (1")	51mm (2")	D009
51mm (2")	76mm (3")	D010
76mm (3")	102mm (4")	D011
102mm (4")	127mm (5")	D012
127mm (5")	152mm (6")	D013

### SLOPING TILLER



### CANTILEVER MOUNTING (Fig.7)

Where it is necessary to attach the autopilot to a vertical face such as the cockpit sidewall a cantilever socket assembly is used.

The maximum extension offset is 254mm (10") and the cantilever can be cut to the exact length necessary during mounting.

#### Installation

- Clamp the tiller on the yacht's centre line.
- Measure dimension **F (actual)**
- Refer to table to establish cutting length for cantilever rod.

Dimension F	Cut Length L
686mm (27")	51 mm (2")
711mm (28")	75mm (3")
737mm (29")	102mm (4")
762mm (30")	127mm (5")
787mm (31")	152mm (6")
813mm (32")	178mm (7")
838mm (33")	203mm (8")

- Cut cantilever rod to length **L** using a hacksaw.  
Measure **from threaded end.**

- Remove burrs **with file.**
- Temporarily assemble the cantilever by screwing the rod into the mounting flange.
- Ensure the drive unit is **horizontal** and mark off the location of the mounting flange.
- Mark and drill 3 x 6mm (1/4") clearance holes (ignore the two inner holes).
- Mount the flange using 3 x 6mm (1/4") diameter bolts with nuts and washers. Be sure to install the backing plate correctly. Bed the flange on a thin coat of silicone sealant.
- Screw the rod **firmly** into place using a tommy bar.
- Roughen the end of the rod and the inside of the cap to provide a key.
- Apply the two part epoxy adhesive provided to the rod end and cap and place the cap over the rod end.
- Ensure the hole for the drive unit mounting pin is facing **up.**
- Allow the epoxy adhesive 30 minutes to **fully** harden before applying any load.

When the Autohelm is not in use the complete rod assembly may be unscrewed, leaving the cockpit unobstructed.

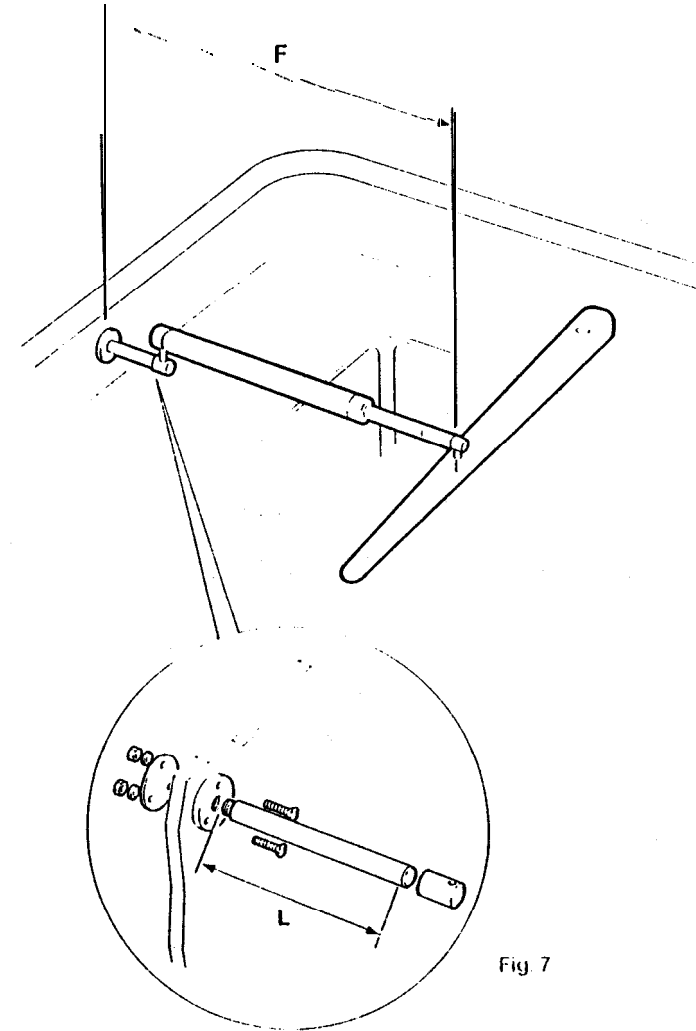


Fig. 7

## PEDESTAL SOCKET MOUNTING

It may be necessary to raise the height of the Autohelm mounting socket above the mounting surface. For this a pedestal socket assembly is used.

### Selection

- Lock the tiller on the yacht's centre line.
- Establish the standard control dimensions **A** and **B**.
- Measure dimension **G** (Fig.8) ensuring the Autohelm actuator is **horizontal**.
- Select the appropriate pedestal socket assembly from the table shown.

### Installation

- Mark off the position of the mounting flange on the cockpit seal or counter.

Dimension G	Pedestal Socket Length L	Cat No.
38mm (1.5")	Std. Dimension	—
76mm (3.0")	38mm (1.5")	D026
89mm (3.5")	50mm (2.0")	D027
102mm (4.0")	64mm (2.5")	D028
114mm (4.5")	76mm (3.0")	D029
127mm (5.0")	89mm (3.5")	D030

## TILLER PINS

For certain non-standard installations a range of tiller pins is available.

Description	Size	Cat No.
Small threaded tiller pin	25mm (1")	D014
Extra length tiller pin	72mm (2.8")	D020
Extra length threaded tiller pin	72mm (2.8")	D021

- Ensure that control dimensions **A** and **B** are correct
- Mark and drill 3 x 6mm (1/4") diameter clearance holes (ignore the two inner holes).
- Mount the flange using 3 x 6mm (1/4") diameter bolts, nuts and washers, being sure the back plate is installed correctly. Bed the flange on a thin coat of silicone rubber sealant (Fig.9).
- Screw the mounting socket firmly into place.

When the Autohelm is not in use the mounting socket may be unscrewed to leave the cockpit unobstructed.

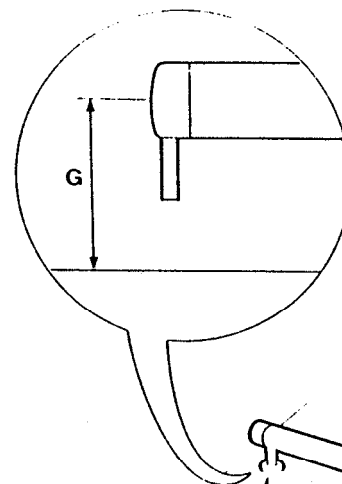


Fig. 8

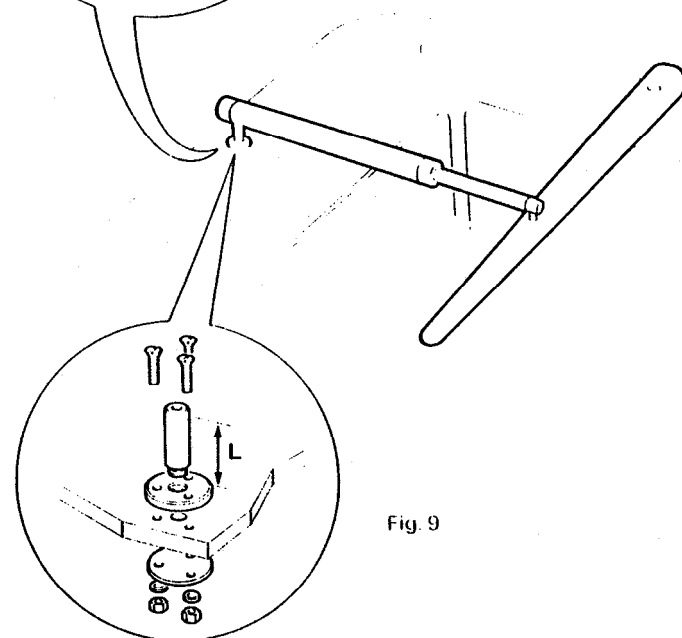


Fig. 9



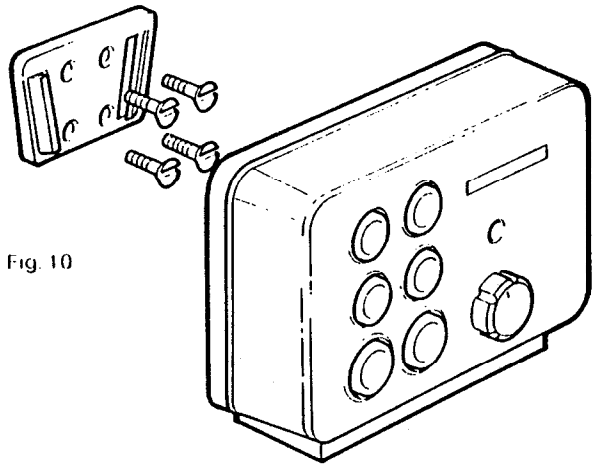


Fig. 10

**CONTROL UNIT**

The control unit slots into a permanently mounted socket sited in the cockpit. It contains a gimballed fluxgate compass and therefore has some restrictions on mounting position.

The control unit should be sited where it can be operated easily from the steering position. It should also be positioned at least 80cm (2'6") away from the main steering compass to avoid deviation of both compasses.

Deviation of the control unit fluxgate compass is less important since

headings are always adjusted by reference to the main steering compass. Nevertheless, deviation should be avoided if possible and thus the control unit should be sited as far away from other magnetic or iron devices as practical.

Having selected the best mounting site, the mounting socket may be secured to a convenient wooden or glass fibre surface using the self lapping screws provided. The mounting surface may slope away from vertical by a maximum of 45°

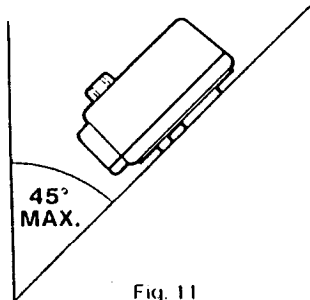


Fig. 11

**Battery Connection**

The waterproof 'Dri-Plug' supplied should be situated as close as possible to the Autohelm 2000 to minimise lead length. The Dri-Plug socket must be connected directly to the vessels electrical distribution panel and on no account paralleled into existing wiring for other equipment.

The Autohelm supply must be independently switched and protected by a 5 amp fuse or current trip.

Since the autopilot is microprocessor based it is very important that voltage losses in supply cables are minimised.

Supply cables should therefore be as short as possible and of no less size than shown in the following table.

The brown wire of the Autohelm 2000 lead should be connected to positive. If connections are accidentally reversed the Autohelm 2000 will not operate but no damage will result

Lead Length	Copper Area
Up to 2.5m (8')	1.0mm <sup>2</sup>
Up to 4.0m (13')	1.5mm <sup>2</sup>
Up to 6.5m (22')	2.5mm <sup>2</sup>

**Accessory Connection**

In common with all the Autohelm 2000's accessories, the drive unit plugs into the control unit to facilitate slowing and servicing. To ensure reliable connection each plug incorporates a locking ring which should be turned clockwise to secure.

Although each accessory has a unique socket and cannot be misconnected, the drive unit should be connected to the socket marked Helm, the windvane to the socket marked Vane and the hand held remote control to the socket marked Remote.

## OPERATION

### WINDVANE ATTACHMENT

The windvane attachment is normally mounted centrally on the alter rail where it can be sited in clear wind on both lanks. The windvane mounting mast is clamped to the alter rail by the two 'U' bolts provided (Fig.12). The interconnecting cable should be brought through the slot to allow the windvane head to be plugged into the top of the mast (Fig.13). The interconnecting cable can then be run back and plugged into the Autohelm 2000.

Note The windvane head is supplied with the vane detached for ease of packing. The vane is easily assembled to the head and secured by means of the circlip provided (Fig.14). Care should be taken to ensure that the small circlip is correctly located into the groove.

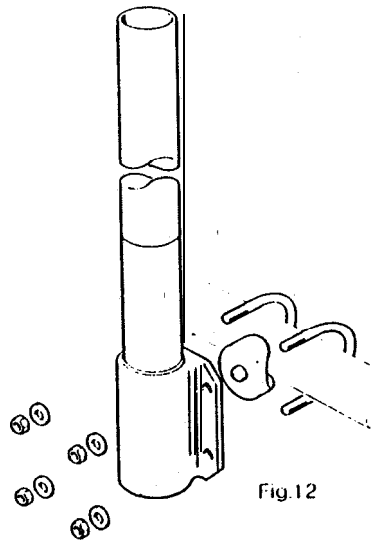


Fig.12

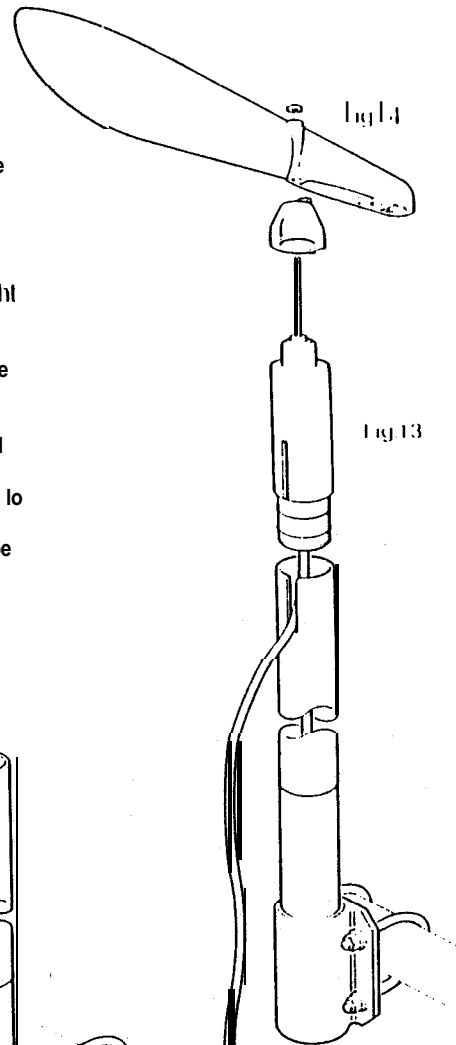


Fig.13

### BASIC PRINCIPLES

The following description of the Autohelm 2000's principle of operation will help you to make full use of its advanced features.

The powerful combination of a fluxgate compass and microprocessor control provides 'autolock' course selection together with precise push-button course adjustment.

Deviation from course is continuously monitored by a sensitive fluxgate compass and corrective rudder is applied to return the vessel to course. The applied rudder is proportional to course error at any time and thus when the course is restored the rudder will be neutralised.

When changes in vessel trim occur due to variations in wind pressure or engine throttle setting the course can only be maintained by the application of permanent rudder off-set (standing helm) to restore balance. If permanent rudder off-set is not applied to restore balance the vessel will bear on to a new heading. Under these circumstances the

Autohelm 2000 detects that the original course is not being restored and continues to apply additional rudder off-set in the appropriate direction until the vessel returns to the original heading. Automatic trimming capability ensures that the originally set course is held irrespective of any changes in balance that may occur during the course of a passage.

The Autohelm 2000's computer also continuously monitors the pattern of applied rudder correction and can distinguish unnecessary repetitive corrections caused by pitch and roll of the vessel from those necessary to maintain the selected heading.

The computer will automatically neglect all unnecessary corrections so that autopilot activity and power consumption is continuously optimised at minimum levels.

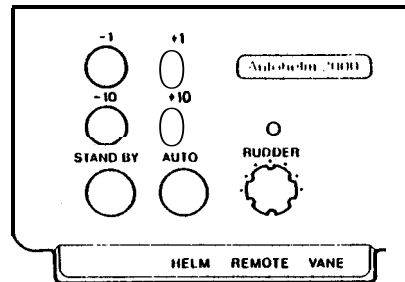
The high degree of control automation made possible by the micro computer simplifies user control to a series of push button operations.

## KEYPAD OPERATION

Full control of the Autohelm 2000 is provided via a simple six button key pad.

The basic control functions are as follows:-

When the autopilot is switched on it will always start up in Stand by mode. In Stand by mode the pushrod can be extended or retracted to engage with the tiller pin using the four black buttons.



<p style="text-align: center;">-1                      +1</p> <p style="text-align: center;">●                      ●</p> <p style="text-align: center;">-10                     +10</p> <p style="text-align: center;">●                      ●</p>	<p>Push and hold down to extend/retract the pushrod.</p>
<p style="text-align: center;">AUTO</p> <p style="text-align: center;">●</p>	<p>Push once to engage the autopilot to maintain the current heading or push twice (within 2 seconds) to return to the previous automatic heading.</p>
<p style="text-align: center;">-1                      +1</p> <p style="text-align: center;">●                      ●</p> <p style="text-align: center;">-10                     +10</p> <p style="text-align: center;">●                      ●</p>	<p>Push to alter course to port (-) or starboard (+) in increments of 1 and 10 degrees.</p>
<p style="text-align: center;">STAND BY</p> <p style="text-align: center;">●</p>	<p>Push once to disengage the autopilot and return to Stand by mode. (The previous automatic heading will be memorised).</p>

## WINDVANE SYSTEM


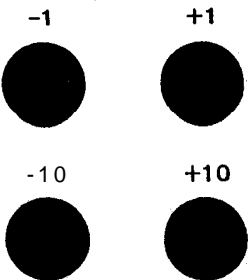


Performance under windvane has been improved by the introduction of Wind Trim.

With Wind Trim the computer uses the fluxgate compass as the primary heading reference. However, as changes occur in the apparent wind angle the computer automatically adjusts the compass heading to maintain the original

apparent wind angle.



This system eliminates the effects of turbulence or short term wind variations and provides smooth precise performance under windvane with minimum current consumption.

When a windvane system is fitted, a new layer of control functions is automatically opened as follows:-

	<p>Push both red keys together once to engage the windvane and maintain the current apparent wind angle. or Push both red keys together twice to return to the previous apparent wind angle.</p>
	<p>Push once to alter the vessel's heading relative to the apparent wind in increments of 1 or 10 degrees. Note + keys always turn the vessel to starboard.</p>
<p>STAND BY</p>  <p>AUTO</p> 	<p>Push once to disengage the windvane for manual steering. (The previous apparent wind angle will be memorised). or Push once to change over to automatic compass heading control and maintain the current heading.</p>

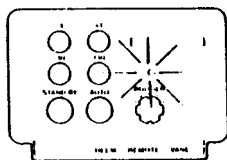
## AUTOTACK FUNCTION

The Autohelm 2000 has an automatic tacking function which operates in both compass and windvane mode as follows:-

	<p>Push -1 and -10 keys together once to initiate a tack to port.</p>
	<p>Push +1 and +10 keys together once to initiate a tack to starboard.</p>
<p>The Auto Tack function operates by selecting a preset course change (100°) to bring the vessel onto the opposite tack. During the tack, the Off Course Alarm may sound. This indicates the autopilot is adjusting trim to acquire the new course. On completing the tack and having sheeted and retrimmed the</p>	<p>sails, the vessel may be brought onto the desired apparent wind angle by line adjustments to the course using the +/-1° keys. No adjustments should be made within 1 minute of completing the tack to allow the Autopilot to compensate for the helm trim on the new tack.</p>

### OPERATING MODE INDICATION

The operating mode of the Autohelm 2000 is indicated by a flashing LED as follows:-



OPERATING MODE	LED FLASHING CODE
<b>STANDBY</b> Enables the pushrod to be positioned over the tiller pin and provides power steering.	1      1      1
<b>AUTO</b> Autopilot steers to maintain compass heading.	[REDACTED]
<b>WINDVANE</b> Autopilot steers to maintain apparent wind angle. Windvane mode is also confirmed by a single beep tone emitted every 30 seconds.	[REDACTED]   [REDACTED]   [REDACTED]

ON     OFF    SECONDS    1    2    3    4    5    6

### Hand Held Control Unit (Cat No. 2076)

An optional hand held control unit can be plugged into the control unit to provide full course change capability from anywhere on board. The unit duplicates the main control units four course change keys and may be used in both Stand by and Auto modes. The operation of the main control unit is unchanged when the hand held control unit is connected.

### Radio Navigation Interface (Cat No 2075 - NMEA format)

This interface may be used with any radio navigation system that outputs cross track error to either the NMEA 0180, 0182 or 0183 standard. It supervises the Autohelm 2000 to maintain the preselected track set on the radio navigation system. Full operating details are supplied with each interface.

Your main distributor or Nautech's Product Support Department will be able to advise you of Radio Navigation Systems with suitable autopilot output.

### FUNCTIONAL TEST PROCEDURE

After completing the installation you should carry out the following functional test to familiarise yourself with the system before attempting sea trials.

Plug the Autohelm 2000 into the power socket and switch on the electrical supply. The unit will emit a short beep lone to indicate that it is active and the LED will flash to indicate Stand by operating mode.

Ensure the mounting pin is engaged in the socket. Using the four course control keys to extend or retract the pushrod position the end over the tiller pin. The unit will emit a short beep lone on each press of a key to confirm valid entries. Place the pushrod end on the tiller pin, and press the +10 key. The tiller should move to port. If the tiller moves to starboard, the changeover switch is incorrectly set and must be adjusted as described on page 3.

Press Auto to place the autopilot under compass control. The LED will be lit constantly to indicate that the unit is in Auto mode. If the yacht is swinging about its mooring, you will see that small variations in heading cause the unit to apply corrective action to the rudder. Press Stand by to return the unit to Stand by mode.

**Rudder Control Adjustment**  
 Before attempting sea trials the rudder control must first be adjusted to the setting shown below.



This setting will provide stable control for initial sea trials and may, if necessary, be fine tuned later (see page 25).

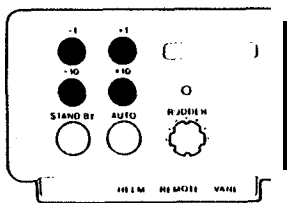
# SEA TRIALS

Initial sea trials should be carried out in calm conditions with plenty of sea room. The previously conducted functional test will have verified that the autopilot is operating correctly and that you are familiar with all of its controls.

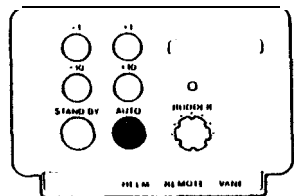
During first sea trials, the vessel will be constantly changing heading, and it is, therefore, very important to maintain a constant look-out.

The following initial trial procedure is recommended:-

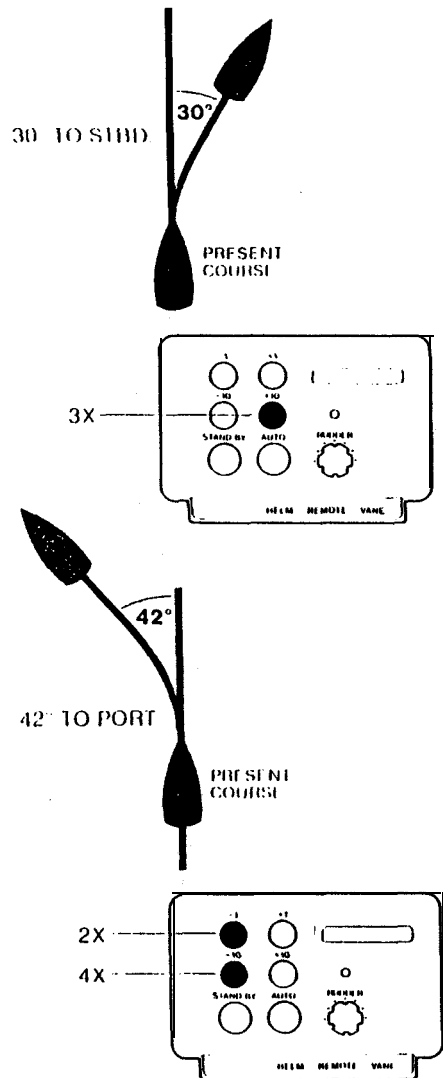
- Steer on to the desired heading and hold the course steady.
- Using the four course control keys, position and then place the pushrod end over the tiller pin.



- Press Auto to lock on to the current heading. In calm sea conditions a perfectly constant heading will be maintained.



- Alter course to port or starboard in multiple increments of 1 and 10 degrees.



## Power Steering

- Press **Stand by** and **practice** power steering using the four course control keys.
- Press **Auto twice** (within 2 seconds) to return to the original automatic heading.

## Hand Steering

- Press **Stand by** and **lift** the autopilot from the tiller pin for return to hand steering.

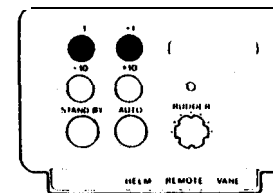
## Automatic Sea State Control

During the sea trial, the operation of the automatic sea state control can be observed. When the autopilot is initially engaged in **Auto** mode the autopilot will respond to all **pitch** and roll movements. During the **first minute** of operation, it will be noticed that repetitive movements of the vessel are gradually neglected until **finally** the autopilot will respond only to true variations in course.

To ensure **accurate** course adjustment the sea state control is automatically reset whenever a 10 degree course change is executed.

## Sea State Inhibit

Where **maximum** course keeping accuracy is required the automatic sea state control may be inhibited by pressing **-1** and **+1** keys together once



Autopilot **activity** and therefore power consumption will be increased but course keeping accuracy will be maximised.

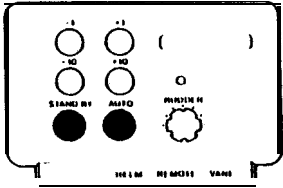
The automatic **seastate** control is restored by pressing the **-1** and **+1** keys together.

**Note** Engaging the autopilot (pushing **Auto**) or engaging the **windvane** (both red keys **together**) will always **restore** the **automatic** sea state control.

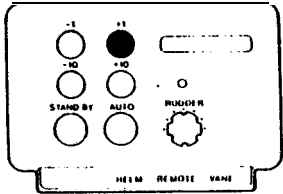
### Auto-Tack Function

The following additional trial is recommended:

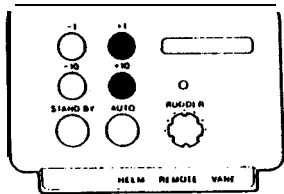
- Steer onto a constant heading approximately  $10^\circ$  free of close hauled
- Press Auto to lock onto the current heading or both red keys to lock onto the apparent wind if a vane is fitted.



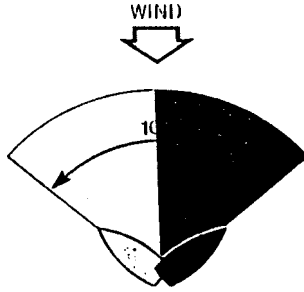
- Decrease the apparent wind angle (using the +1 key if on the starboard tack) until the yacht is sailing close hauled at optimum penetration.



- Prepare to tack and then press the +1 and +10 keys together (if on the starboard tack) to initiate a tack to starboard.



- The yacht will complete a  $100^\circ$  course change to bring it onto the opposite tack.



On completing the tack and having sheeted and retrimmed the sails, the vessel may be brought onto the desired apparent wind angle by fine adjustments to the course using the +1/-1° keys. No adjustments should be made within 1 minute of completing the tack to allow the Autopilot to compensate for the helm trim on the new tack.

### Disengagement

The pushrod is held into engagement with the tiller pin by the weight of the actuator unit. This method of engagement is secure and has been adopted for safety reasons to allow the pushrod to be easily disengaged when manual override becomes necessary.

### OFF-COURSE ALARM

When the autopilot is set to either Auto or Vane mode a built in off-course alarm is automatically set up. The off-course alarm will sound when the vessel deviates for any reason from the original course by more than 15 degrees for over 10 seconds. It is denoted by a continuous series of bleep tones.

The alarm will be silenced if the vessel returns to within 15 degrees of the original course.

In Auto, if the vessel does not return within these limits the alarm can only be silenced by selecting Standby.

In Vane, the alarm will sound when the wind direction changes by more than 15 degrees and may be accepted by pressing both red keys together. This will silence the alarm and advance the off course alarm datum to the current compass heading.

### CURRENT LIMITING AND CUTOUT

If the autopilot is driven into its end stops, the drive will be pulsed to prevent overloading the motor. If the pilot is left in this condition for 30 seconds the microprocessor will automatically cut out power to the motor and sound the alarm continuously.

To restore the autopilot for normal operation the standby key must be pressed to put the unit in standby operating mode.

### Rudder Control Adjustment

The rudder control setting recommended on page 21 will provide stable control for initial sea trials. However, sailing craft can vary widely in their response to the helm and further adjustment of the rudder control setting may improve the Autohelms steering characteristics.

An excessively high rudder control setting results in oversteer which can be recognised by the vessel swinging slowly from side to side of the automatic heading accompanied by excessive rudder movement. In addition, distinct overshoot will be observed when the course is changed. This condition can be corrected by reducing the rudder control setting (rotating rudder control anti-clockwise).

Similarly, an insufficient rudder control setting results in understeer which gives sluggish steering performance and is particularly apparent when changing course. This is corrected by increasing the rudder control setting (rotating rudder control clockwise). These tendencies are most easily recognised in calm sea conditions where wave action does not mask basic steering performance. The rudder control setting is not over critical and should be set to the lowest setting consistent with accurate course keeping. This will minimise actuator movements and hence reduce power consumption.

## OPERATING HINTS

The Autohelm 2000's computer continuously optimises automatic steering performance eliminating the need for operator supervision.

It is, however, very important to understand the effect of sudden trim changes on steering performance. When a sudden change in trim occurs the automatic trim compensation system requires approximately 60 seconds to apply the necessary rudder off-set to restore the automatic heading. In gusting conditions, therefore, the course may tend to wander slightly, particularly in the case of a sailing yacht with badly balanced sails. In the latter case, a significant improvement in course keeping can always be obtained by improving sail balance. Bear in mind the following important points:-

- Do not allow the yacht to heel excessively.
- Ease the mainsheet traveller to leeward to reduce heeling and weather helm.
- If necessary reef the mainsail a little early.

It is also advisable whenever possible to avoid sailing with the wind dead astern in very strong winds and large seas. Ideally, the wind should be brought at least 30° away from a dead run and in severe conditions it may be advisable to remove the mainsail altogether and sail under headsail only. Providing these simple precautions are taken the autopilot will be able to maintain competent control in gale force conditions.

It may be noticed that the autopilot tends to be a little less stable on northerly headings in the higher latitudes of the northern hemisphere (and conversely southerly headings in the southern hemisphere). This is caused by the increasing angle of dip of the earth's magnetic field at higher latitudes which has the effect of amplifying rudder response on northerly headings. The tendency towards northerly heading instability is usually more obvious at higher speeds and when it occurs can be corrected by reducing the rudder control setting.

Passage making under automatic pilot is a very pleasant experience which can lead to the temptation of relaxing permanent watch. This must always be avoided no matter how clear the sea may appear to be.

Remember, a large ship can travel two miles in five minutes - just the time it takes to make a cup of coffee!

### TOTE BAG (Cat No. D089)

A special zip top padded bag made from tough PVC is available to protect and stow your Autohelm and is available from Autohelm stockists.

#### Warning

- Do not stow your Autohelm in a locker liable to flooding by the bilge water.
- Do not leave your Autohelm in a damp locker over the winter lay up period.

## MAINTENANCE

All moving parts of the system have been lubricated for life at the factory. Therefore no maintenance whatsoever will be required. Should a fault develop the autopilot's plugability ensures that only the defective unit need be returned.

Before this is done please double check that the power supply cable is sound and that all connections are tight and free from corrosion.

Since the control unit is the most complex, there is a very high probability that if a fault has occurred it is in this unit

which should therefore be returned for repair, which will be carried out speedily and at moderate cost. The drive unit has proven to be extremely reliable and is very unlikely to develop a fault. If however the drive unit is suspected of being faulty it may be checked by connecting 12V across the sockets at the end of the drive unit cable and ensuring the motor runs normally.

In the case of a sailing yacht fitted with a windvane system if a fault occurs only in vane mode then it is likely that a fault has developed in the vane head.

## LIMITED WARRANTY

Nautech or its appointed Distributors or Service Centres will, subject to the conditions below, rectify any failures in this product due to faulty manufacture which become apparent within two years of its purchase date.

Equipment used in the country of purchase should be sent directly to the authorised Distributor for that country or its appointed Service Centres. The product will then be serviced free of charge and returned promptly direct to the sender.

Equipment used outside the country of purchase can be either:-

- a. Returned to the Distributor or Dealer in whose country or from whom the equipment was originally purchased • it will then be serviced free of charge and promptly returned direct to the sender, or

- b. The product can be returned freight pre-paid to the authorised Distributor or its appointed Service Centres in the country in which the product is being used. It will then be serviced and returned direct to the sender on the basis that the Distributor or Service Centre will supply any parts used free of charge but the sender will be invoiced for the necessary labour and return shipment at the local rate.

## CONDITIONS

The warranty is invalid if:-

- a. The product has been misused, installed or operated not in accordance with the standards defined in this manual.
- b. Repairs have been attempted by persons other than Nautech approved Service personnel.

## AFTER SALES SERVICE

Should for any reason your Autohelm 2000 require attention ensure that you return it to one of the Authorised Service

Centres. You will find a list enclosed.

Each service centre is trained and equipped to provide expert attention to your Autohelm 2000.



# SERVICE CENTRES — UK, Eire and Channel Islands

## **Factory Service**

**Nautech Ltd**  
Anchorage Park  
Portsmouth  
Hampshire  
0705 693611

## **Portsmouth/Chichester Harbour**

**Greenham Marine Ltd**  
Emsworth Yacht Harbour  
Thorney Road  
Emsworth  
Hampshire  
0243 378314

**Pennant Marine**  
Chichester Marina  
Chichester  
West Sussex  
0743 511070

## **Hamble River/Southampton Water**

**B K Electro Marine**  
Stone Pier Yard  
Shore Road  
Worsash  
Hampshire  
048 95 2170

**Hudson Marine Electronics**  
Mercury Yacht Harbour  
Satchell Lane  
Hamble  
Hampshire  
0703 455129

## **Isle of Wight**

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Ancasta Marine  
Cowes  
IOW  
0983 293996

## **Lymington/Poole**

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King Salterns Lane  
Lymington  
Hampshire  
0590 75771

**Dantlea Electronics**  
Cobles Quay  
Poole  
Dorset  
0202 673880

**Greenham Marine Ltd**  
Quay West Marina  
23 West Quay Road  
Poole  
Dorset  
0202676363

## **Devon**

**Burwin Marine Electronics**  
Island Street  
Sacombe  
054 884 3321

## **Greenham Marine Ltd**

Watersports Centre  
Queen Anne Battery  
Coxide  
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0752 228114

## **Marine Electronics Systems**

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Buckland Brewer  
Bideford  
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0805 22870

## **Ocean Marine Services**

43 Bretonside  
Plymouth  
0752 23922

## **Quay Electrics (Teignmouth) Ltd**

The Sail Loft  
Pump Street  
Brixham  
080 45 3030

## **Cornwall**

**Mylor Marine Electronics**  
Mylor Yacht Harbour  
Falmouth  
Cornwall  
0326 74001

## **Severn & Bristol Channel**

**A N D Electronics**  
Unit 302  
Dene Road  
Sevenside Trading Estate  
Ayrmouth  
Bristol  
0272 821441

## **South Wales**

**Caxios Instrumentation Ltd**  
Lion Way  
Enterprise Park  
Llansanct  
Swansea  
0792 797898

## **Dale Sailing Co Ltd**

Dale  
Haverford West  
Dyfed  
064 65 349

## **North & West Wales**

**Rowlands Marine Electronics Ltd**  
The Outer Harbour  
Pwllheli  
0758613193

## **Sailtronic Marine**

Church Street  
Glan Conwyn  
Colwyn Bay  
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0492 68 536

## **Merseyside**

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Liverpool  
051709 5431

## **Lancashire**

**John N Jones Ltd**  
Marine Electronics Services  
190 Dock Street  
Fleetwood  
03917 5241

## **Northern Ireland**

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55 Belfast Road  
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co Antrim  
09603 65565

## **Eire**

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Dublin 11  
0001 342590

## **Rider Services**

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0624 812583

## **S/W Scotland**

**Boat Electrics & Electronics**  
145 Temple Hill  
Troon  
Ayrshire  
0292 315355

## **Western Scotland**

**Jell Rutherford**  
Yacht Electrical and  
Electronic Services  
Largs Yacht Haven  
Inver Road  
Largs  
Ayrshire  
0475686091

## **Northern Scotland**

**B P Instrumentation Ltd**  
Greenbank Road  
East Tullos  
Aberdeen  
0224 874003

## **Shetland Isles**

**H Williamson & Sons**  
(Scalloway) Ltd  
Main Street  
Scalloway  
Shetland  
059588645

## **S/E Scotland**

**Forth Area Marine Electronics**  
Electronics Centre  
Port Edgar  
South Queensferry  
Edinburgh  
0313314343

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Grangewalk  
Wroxham  
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06053 2238

**R & J Marine Electronics**  
2 Birch Avenue  
Dovercourt Bay  
Harwich  
0255 502849

**R & J Marine Electronics**  
c/o Suffolk Yacht Harbour  
Levington  
Ipswich  
047 388 737

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19d Spital Road  
Maldon  
Essex  
0621 53003

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129 Broadway  
Herne Bay  
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0227 361255

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0273 605166

**Channel Islands**  
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**Jersey Marine Electronics**  
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0534 21603

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