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Installation & Operating Handbook

Autohelm 200

AUTOHELM **2000**

Aulohelm 2000 is an up-to-the-minule digital liller autopilot which shares the same microprocessor technology built into our biggest and most sophisticaled fully installed pilols. II will provide precise powerful sleering for sailing yachts up lo 13m (43') LOA.

The basic system comprises the main control unit, liller drive unil and basic mounting fillings. This can be exlended by adding any of the following accessories:

- Windvane
- Radio Navigation interlace
- Hand Held Conlrol Unit

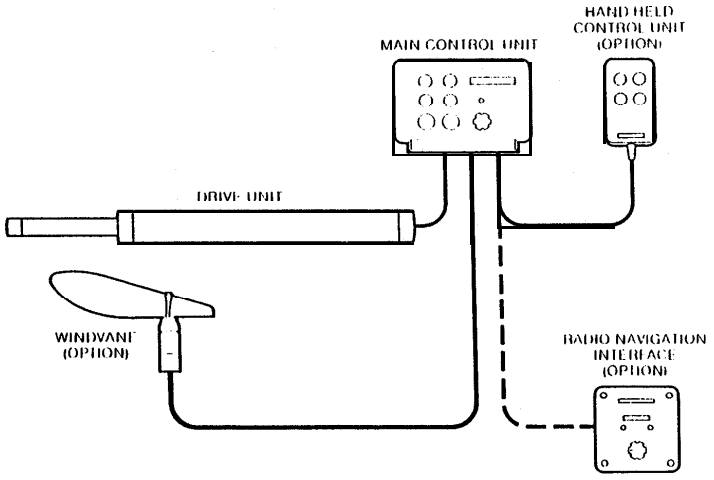
The lull system is shown below.

Cockpit and tiller conliguralions vary widely and lo ensure your Autohelm 2000 inslallalion is as neal and secure as possible a lull range of fitling accessories is available from authorised Aulohelm slockisls. Full delails are included.

In case of any difficulty please contacl our Technical Sales Deparlmenl lor assistance.

The syslem is designed for owner inslallalion which aided by the lollowing guide should prove lo be a simple and inleresling job. After filling the equipment it is only necessary lo make a single adjustment lo the control unit lo match the aulopilols response lo the steering characteristics of your vessel.

Good Sailing!



INSTALLATION

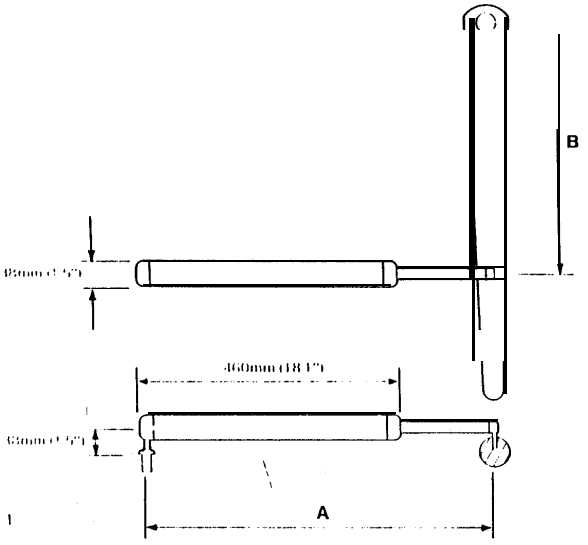


Fig. 1

DRIVE UNIT

The drive unil is mounled belween the tiller and a single allachmenl poinl 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.l):-

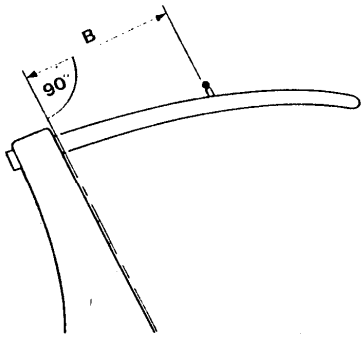
Dimension A = 620mm (24.5")
mounling socket lo tiller pin

Dimenslon B = 460mm (16")
rudder stock cenlre line to tiller pin

Clamp the tiller on the yacht's cenlre 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 circumslances it may be more convenient to mount the unit on lhe 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.

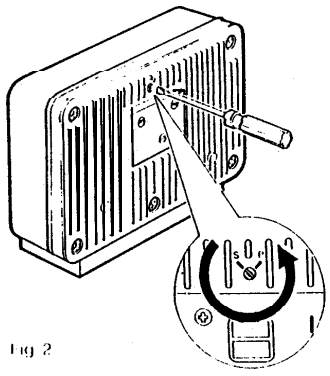


Fig 2

BASIC INSTALLATION

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

TILLER PIN (Cal No. 0001)

- Drill 6mm (¼") hole x 25mm (1") deep al point marked.
- Using a lwo part epoxy adhesive such as Araldile, bond the tiller pin into place.
- Position the shoulder of the pin 12.5mm (½") above the tiller surface.

MOUNTING SOCKET
(Cal No. D002)

- Drill 12.5mm (½") hole x 25rnrn (1") deep into the starboard cockpil seal.
- Il the structure thickness al the mounting position is less lhan 25mm (1") carefully reinforce the under surface wilh a plywood plate bonded into position.
- Install the mounling socket using lwo 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;
- Ail holes are drilled to correct size and where necessary reinforcing is provrded.

INSTALLATION ACCESSORIES

Il it is not possible lo install the drive unil directly onto the cockpil seal or tiller as described, one of the lollowing accessories (or combination) will ensure a perfect installation.

PUSHROD EXTENSIONS (Fig.4)
The pushrod length may be simply exlended using one of the slandard pushrod exlensions. Drrnension C is modified as follows:-

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

Fig. 3

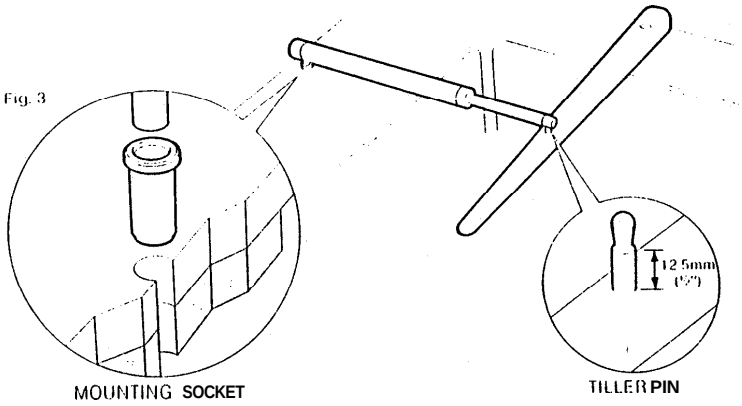
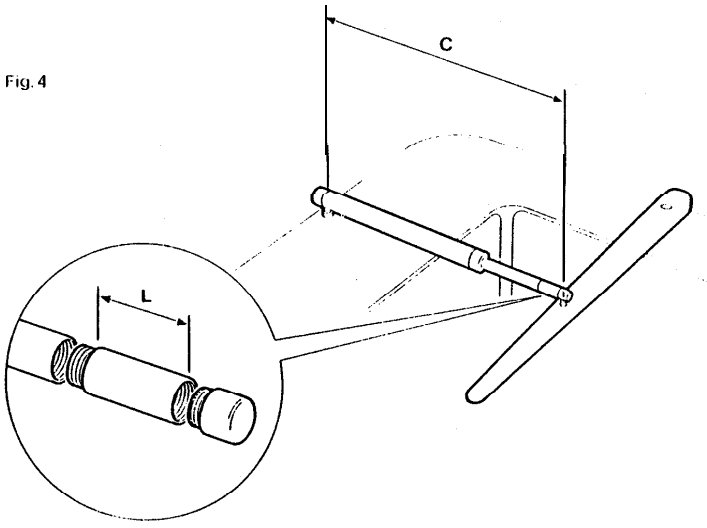


Fig. 4



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 (¼") diameter clearance holes through the centre line of the fitter.
- Install the tiller bracket using 2 x 6mm (¼") diameter bolts, nuts and washers.
- Bond the fixing bolts in place with epoxy adhesive and fully tighten the nuts.

Dimension D (below fitter)	Dimension E (above fitter)	Cat No.
25mm (1")	51mm (2")	D009
51mm (2")	76mm (3")	D010
76mm (3")	102mm (4")	**DO11**
102mm (4")	127mm (5")	D012
127mm (5")	152mm (6")	D013

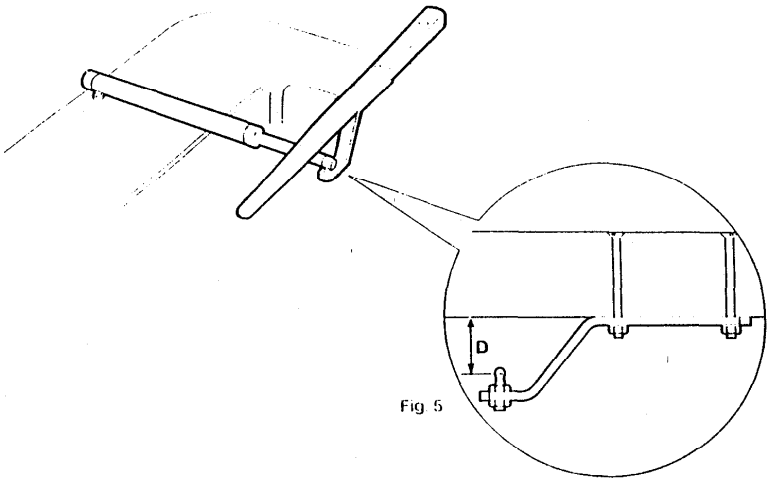
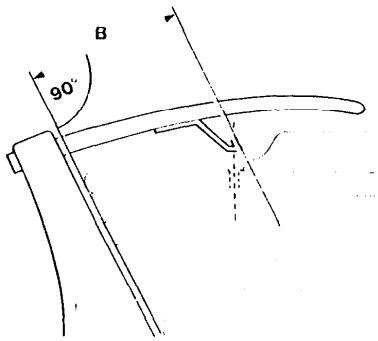


Fig 5

SLOPING TILLER



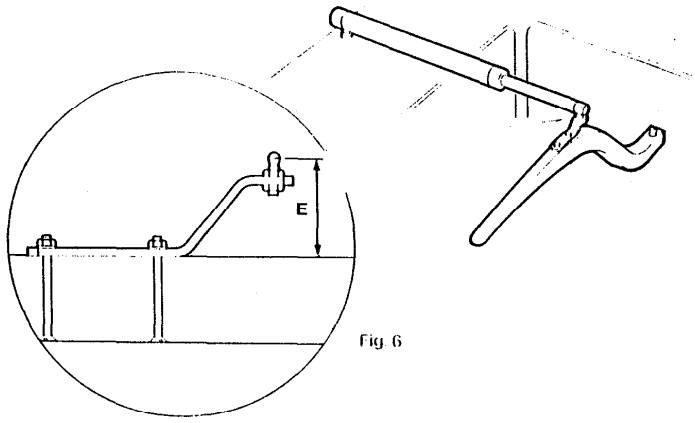


Fig 6

CANTILEVER MOUNTING (Fig.7)
Where it is nccessary to attach the autopilot lo a vertical lace such as the cockpit sidewall a cantilever socket assembly is used.

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

installation

- Clamp the tiller on the yachl's cenlre line.
- Measure dimension **F** (actual)
- Refer lo table lo 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 (3 1")	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 lhe drive unit is **horizontal** and mark off lhe location of the mounting flange.
- Mark and drill 3 x 6mm (¼") clearance holes (ignore the two inner holes).
- Mount the flange using 3 x 6mm (¼") diameter bolts wilh nuts and washers. Be sure to install the backing plate correctly. Bed the flange on a thin coal 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 lhe 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 lacing **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.

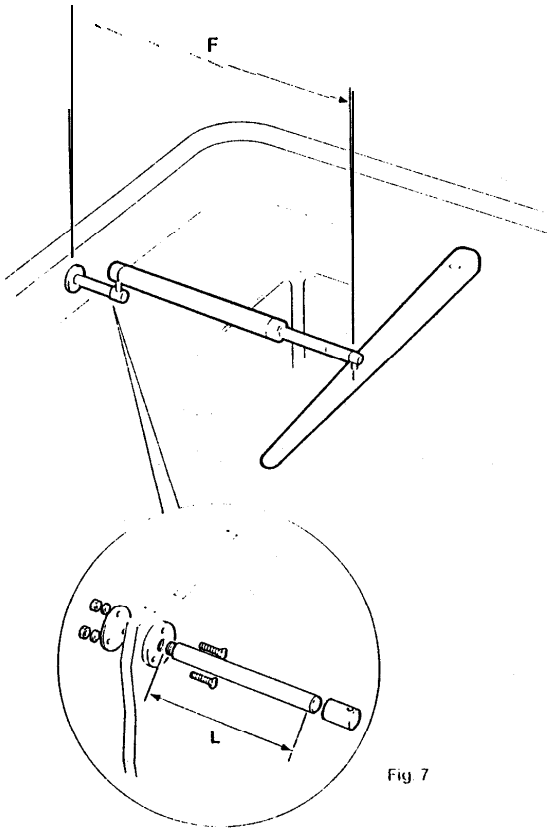


Fig. 7

PEDESTAL SOCKET MOUNTING

Il may be necessary lo raise the height ot the Autohelm mounting socket above the mounting surface. For this a pedeslal sockel assembly is used.

Selection

- Lock the tiller on the yacht's cenlre tine.
- Establish the slandard control dimensrons **A** and **B.**
- Measure dimension G (Fig.8) ensuring the Aulohetm actuator is **horizontal.**
- Setecl the appropriale pedestal socket assembly from the table shown.

Installation

- Mark oft the position of the mounling llange on the cockpil seal or counter.
- Ensure that control dimensrons A and **B** are correct
- Mark and drill 3 x 6mm (Vi") diameter clearance holes (ignore the lwo inner holes).
- Mount the ltange using 3 x 6mm (¼") diameter bolls, nuls and washers, being sure the back ptale is installed correclty. Bed the ltange on a thin coat of silicone rubber sealanl (Frg.9.)
- Screw the mounling socket lirmty into place.

When the Aulohelm is not in use the mounling sockel may be unscrewed lo leave the cockpit unobslrucled.

Dimension G	Pedestal Socket Length L	Cat No.
38mm (1.5")	Std. Dimension	—
76mm (3.0")	38mm (1.5")	DO26
89mm (3.5")	50mm (2.0")	DO27
102mm (4 .0")	64mm (2.5")	DO28
114mm (4.5")	76mm (3.0")	DO29
127mm (5.0")	89mm (3.5")	DO30

TILLER PINS

For certain non-slandard inslattations a range of litler pins is available.

Description	Sire	Cat No.
Small lhreaded titter pin	25mm (1")	D014
Extra length tiller pin	72mm (2.8")	DO20
Extra length lhreaded tiller pin	72mm (2.8")	DO21

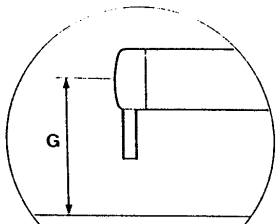


Fig. 8

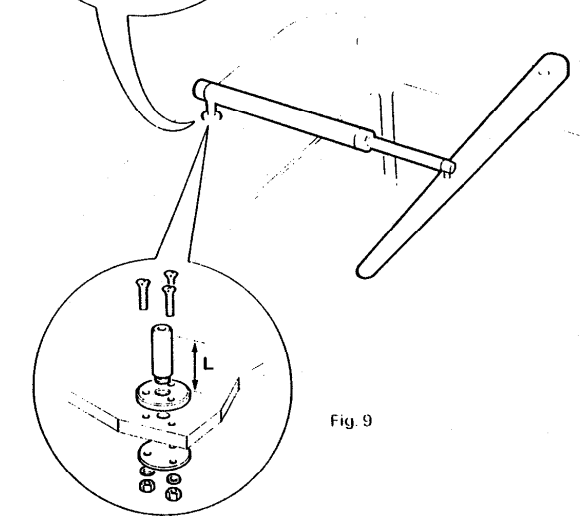


Fig. 9

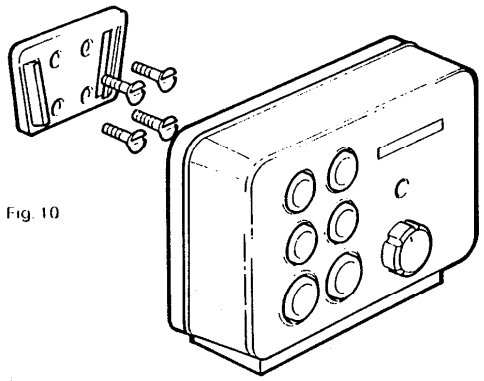


Fig. 10

CONTROL UNIT

The conlrol unit slots into a permanently mounled socket sited in the cockpit II contains a gimballed fluxgate compass and therefore has some restrictions on mounling posilion.

The control unit should be siled where it can be operated easily from the steering positron. It should also be posilioned al least 80cm (2'6") away from the main steering compass lo avoid devialion of both compasses.

Deviation of the control unit fluxgate compass is less imporlanl since headings are always adjusted by reference lo the main sleering compass. Nevertheless, deviation should be avoided if possible and thus the conlrol unit should be siled as far away from other magnetic or iron devices as practical.

Having selected the besl mounling site, the mounling sockel may be secured lo a convenient wooden or glass libre surface using the self lapping screws provided. The mounling surface may slope away from vertical by a maximum of 459

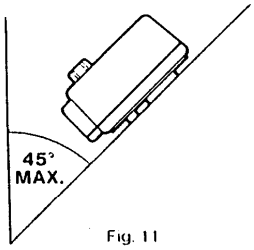


Fig. 11

Battery Connection

The waterprool 'Dri-Plug' supplied should be situated as close as possible lo the Aulohelm 2000 lo minimise lead length. The Dri-Plug sockel musl be connecled **directly lo** the vessels electrical dislribulion panel and on no account paralleled into exisling wiring for other equipment.

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

Since the autopilot is microprocessor based it is very imporlant that vollage losses in supply cables are minimised. Supply cables should therefore he 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 connecled **lo positive.** Il connections are accidenlly reversed the Aulohelm 2000 will not operate bul no damage will result

Lead Length	Copper Area
Up to 2.5m (8')	1.0mm²
Up to 4.0m (13')	1.5mm²
Up lo 6.5m (22')	2.5mm²

Accessory Connection

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

Although each accessory has a unique socket and cannot be misconnected, the drive unit should be connected lo the sockel marked **Helm,** the windvane to the socket marked Vane and the hand held remole conlrol lo the sockel marked **Remote.**

WINDVANE ATTACHMENT

The windvane attachment is normally mounted centrally on the alter rail where it can be sited in clear wind on bolh lacks. The windvane mounting masl is clamped lo the after rail by the lwo 'U' bolls provided (Fig.12). The inlerconnecling cable should be brought through the slol lo allow the windvane head to be plugged into the lop of the masl (Fig.13). The inlerconnecling cable can lhen be run back and plugged into the Aulohelm 2000.

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

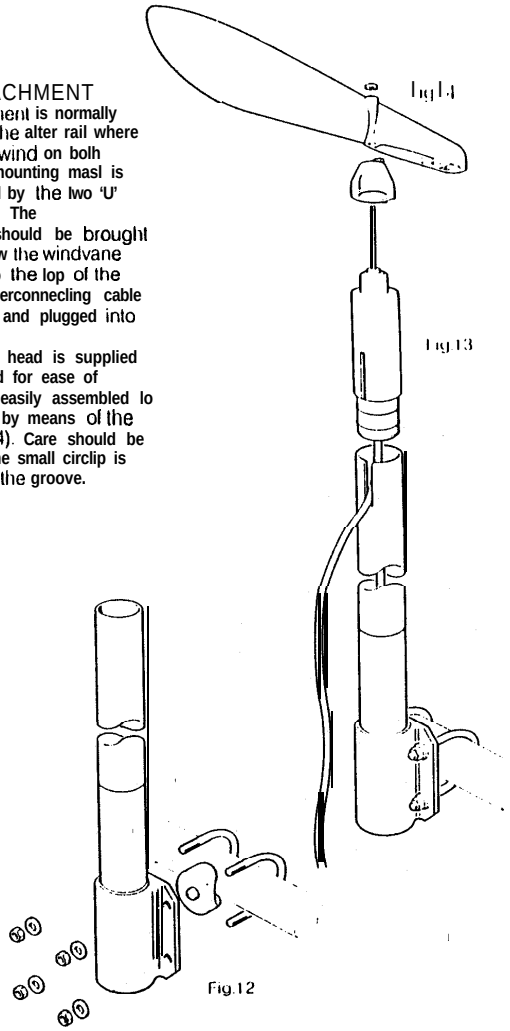


Fig.14

Fig.13

Fig.12

OPERATION

BASIC PRINCIPLES

The lollowing description of the Autohelm 2000's principle of operalion will help you lo make lull use of ils advanced lealures.

The powerful combination of a fluxgate compass and microprocessor control provides 'aulolock' course selection together wilh precise push-button course adjuslmenl.

Deviation from course is continuously monilored by a sensitive fluxgate compass and corrective rudder is applied lo relurn the vessel lo course. The applied rudder is proporlional lo course error al any lime and lhus when the course is restored the rudder will be neulralised.

When changes in vessel lrim occur due lo varialions in wind pressure or engine throttle selling the course can only be mainlained by the application of permanenl rudder olf-set (standing helm) lo reslore balance. Il permanenl rudder olf-set is nol applied lo restore balance the vessel will bear on lo a new heading. Under these circumstances the Autohelm 2000 detects that the original course is not being restored and continues lo apply additional rudder off-set in the appropriate direction until the vessel returns lo the original treading. Aulomalic lrimming capability ensures that the originally sel course is held irrespective of any changes in balance that may occur during the course of a passage.

The Aulohelm 2000's computer also continuously monilors the pallern of applied rudder correction and can distinguish unnecessary repetilive corrections caused by pitch and roll of the vessel lrom those necessary lo mainlain the selected heading.

The computer will automatically neglect all unnecessary corrections so that aulopilol activity and power consumption is continuously oplimised al minimum levels.

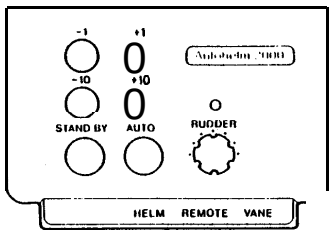
The high degree of control aulomalion made possible by the micro computer simplifies user control lo a series of push button operations.

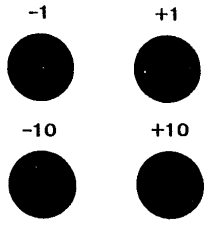
KEYPAD OPERATION

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

The basic control functions are as follows:-

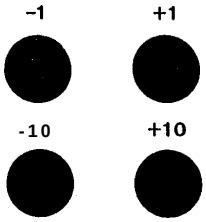
When the autopilot is switched on it wilt always start up in Stand by mode. In Stand by mode the pushrod can be exlended or retracted lo engage wilh the tiller pin using the four black bullons.





Push and hold down lo extend/retract the pushrod.

Push once lo engage the aulopilot lo maintain the current heading or push twice (wilhin 2 seconds) lo return lo the previous automatic heading.



Push lo alter course lo port (-) or slarboard (+) in increments of 1 and 10 degrees.

Push once lo disengage the autopilot and relurn to Stand by mode.

(The previous automatic heading will be memorised).

WINDVANE SYSTEM

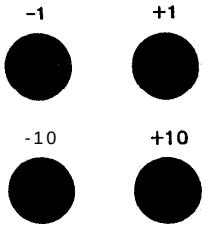
Pcrlormance under windvano has been improved by the introduction of Wind Trim.

Wilh Wind Trim the compuler uses the fluxgate compass as the primary heading reference. However, as changes occur in the apparent wind angle the compuler automatically adjusts the compass heading lo maintain the original apparent wind angle.

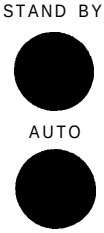
This system eliminates the ellecls of turbulence or short term wind varialions and provides smooth precise performance under windvane with minimum current consumption.

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

Push both red keys togelher once to engage the windvane and maintain the current apparent wind angle.
or
Push both red keys logelher twice to return lo the previous apparenl wind angle.



Push once to alter the vessel's heading relative lo the apparent wind in increments of 1 or 10 degrees.
Note + keys always turn the vessel to starboard.

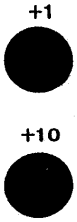


Push once lo disengage the windvane for manual sleering. (The previous apparent wind angle will be memorised).
or
Push once to change over to , automatic compass heading control and maintain the current heading.

AUTOTACK FUNCTION

The Autohelm 2000 has an automatic lacking lunction which operales in both compass and windvane mode as follows:-

Push -1 and -10 keys logelher once to iniliale a tack to port.



Push +1 and +10 keys togelher once lo initiale a lack to starboard.

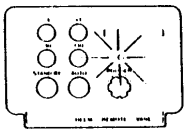
The Aulo Tack function operales by selecting a preset course change (100°) to bring the vessel onto the opposite tack.

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 sails, the vessel rnay be brought onto the desired apparenl wind angle by line adjuslmenls lo lhe course using the +/−1° keys. No adjustments should be made within 1 minule of completing the tack to allow the Autopilot to compensate for the helm trim on the new tack.

OPERATING MODE INDICATION

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



OPERATING MODE	LED FLASHING CODE
STANDBY Enables the pushrod to be positioned over the tiller pin and provides power steering.	1 second
AUTO Autopilot steers to maintain compass heading.	Continuous
WINDVANE Autopilot steers to maintain apparent wind angle. Windvane mode is also confirmed by a single beep tone emitted every 30 seconds.	3 seconds

■ 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 tone 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 tone 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

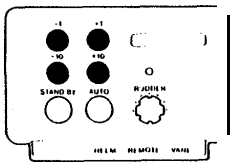
Initial sea trails should be carried out in calm conditions with plenty of sea room. The previously conducted functional test will have verified that the aulopilol is operaling correctly and that you are familiar with all of its controls.

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

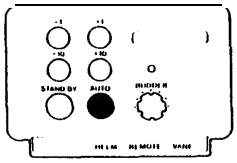
The following initial trial procedure is recommended:-

@ Steer on to the desired heading and hold the course steady.

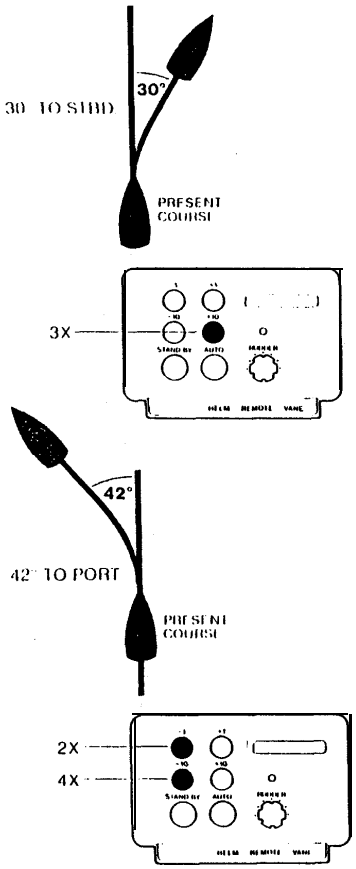
- Using the four course control keys, position and lhen place the pushrod end over the tiller pin.



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



- Alter course lo porl or starboard in multiple increments of 1 and 10 degrees.



Power Steering

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

Hand Steering

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

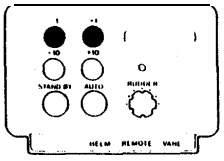
Automatic Sea State Control

During the sea trial, the operation of the automatic sea stale conlrol can be observed. When the aulopilol is initially engaged in **Auto** mode the aulopilot will respond lo all pitch and roll movemenls. During the first minute of operation, it will be noticed that repetitive movements of the vessel are gradually neglected until finally the aulopilot will respond only lo true varialions in course.

To ensure accurate course adjustment the sea stale 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 stale control may be inhibited by pressing -1 and +1 keys together once



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

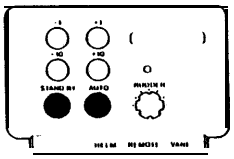
The automatic seastate control is reslored by pressing the -1 and +1 keys together.

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

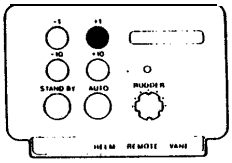
Auto-Tack Function

The following addilional trial is recommended:

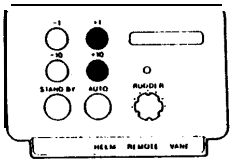
- Steer onto a constant heading approximately 10° free of close hauled
- Press Auto to lock onto the current heading or both red keys lo lock onto the apparenl wind if a vane is filled.



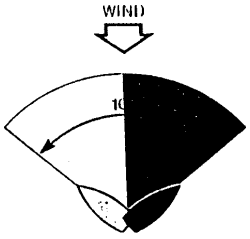
- Decrease the apparenl wind angle (using the +1 key if on the slarboard lack) until the yacht is sailing close hauled al oplimum penetration.



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



- The yacht will complete a 100° course change lo bring it onto the opposite lack.



On compleling lhe lack and having sheeted and retrimmed the sails, the vessel may be brought onlo the desired apparent wind angle by fine adjuslmenls lo the course using the +1/−1° keys. No adjuslmenls should be made within 1 minute of compleling the lack lo allow the Autopilot lo compensate for the helm trim on the new lack.

Disengagement

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

OFF-COURSE ALARM

When the autopilot is set lo either Auto or Vane mode a built in off-course alarm is automatically sel up. The off-course alarm will sound when the vessel deviales for any reason from the original course by more than 15 degrees for over 10 seconds. Il is denoled by a continuous series of bleep lones.

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 limils the alarm can only be silenced by selecting Standby.

In Vane, the alarm will sound when the wind direction changes by more lhan 15 degrees and may be accepted by pressing bolh 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 lo 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 lo put the unit in standby operating mode.

Rudder Control Adjustment

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

An excessively high rudder control selling results in oversteer which can be recognised by the vessel swinging slowly lrom side lo side of the automatic heading accompanied by excessive rudder movemenl. In addition, distinct overshool will be observed when the course is changed. This condition can be corrected by reducing the rudder control selling (rolaling rudder control anti-clockwise).

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

OPERATING HINTS

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

Il is, however, very important lo 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 gusling condilions, therefore, the course may lend lo wander slightly. particularly in the case of a sailing yacht with badly balanced sails. In the latter case, a signilicant improvement in course keeping can always be obtained by improving sail balance. Bear in mind the following imporlanl points:-

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

Il is also advisable whenever possible lo avoid sailing with the wind dead astern in very slrong winds and large seas. Ideally, the wind should be brought al least 30° away from a dead run and in severe conditions il may be advisable to remove the mainsail altogether and sail under headsait only. Providing lhese simple precautions are taken the autopilot will be able to maintain competent control in gale force condilions.

It may be noticed that the autopitol tends lo be a little less slable on northerly headings in the higher lalitudes of the norlhern hemisphere (and corivcrscly soutt ıerly headings in the southern hemisphere). This is caused by the increasing angle ol dip of the earth's magnetic field at higher latitudes which has the effect of amplifying rudder response on northerly headings. The tendency towards norlherty heading instability is usually more obvious al higher speeds and when it occurs can be corrected by reducing the rudder control selling.

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

Remember, a large ship can travel lwo miles in five minutes -just the lime it takes lo make a cup of coffee!

TOTE BAG (Cat No. D089)

A special zip top padded bag made from lough PVC is available lo protect and stow your Aulohetm and is available from Autohetm slockisls.

Warning

- Do not slow your Aulohelm 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. Therelore no mainlenance whatsoever will be required. Should a fault develop the autopilot's plugabilily ensures that only the defective unit need be returned.

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

Since the control unit is lhe 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 wilt be carried out speedily and al moderate cost. The drive unit has proven lo 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 al 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 lhal a fault has developed in the vane head.

LIMITED WARRANTY

Naulech or ils appointed Distributors or Service Cenlres will, subject lo the condilions below, rectify any failures in this product due to faulty manufacture which become apparent within two years ot its puchase date.

Equipment used in lhe country of purchase should be sent directly to the aulhorised Distributor for that country or its appointed Service Cenlres. 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 Dislributor or its appoinled Service Centres in the country in which the product is being used. Il will then be serviced and returned direct lo 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 lo one of the Authorised Service Centres. You will find a list enclosed.

Each service cenlre is trained and equipped lo provide expert allenlion 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
0243 511070

Hamble River/ Southampton Water
B K Electro Marine
Stone Pier Yard
Shore Road
Warsash
Hampshire
048 95 2170

Hutson Marine Electronics
Mercury Yacht Harbour
Satchell Lane
Hamble
Hampshire
0703 455129

Isle of Wight
Lecmar Marine Electronics
Ancasta Marine
Cowes
Iow
0983 293996

Lymington/Poole
Greenham Marine Ltd
KingSalternsLane
Lymington
Hampshire
0590 75771

Danlea Electronics
Cobbs Quay
Poole
Dorset
0202 673880

Greenham Marine Ltd
Quay West Mauna
23 West Quay Road
Poole
Dorset
0202676363

Devon
Burwin Marine Electronics
Island Street
Salcombe
054 884 3321

Greenham Marine Ltd
Watersports Centre
Queen Anne Battery
Coode
Plymouth
0752 228114

Marine Electronics Systems
Putridge
Buckland Brewer
Bideford
North Devon
0805 22870

Ocean Marine Servicer
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
Severnside Trading Estate
Avonmouth
Bristol
0272 821441

South Wales
Caxios Instrumentation Ltd
Lion Way
Enterprise Park
Llansamlet
Swansea
a792 797898

Dale Sailing Co Ltd
Dale
Haverfoid 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
Clwyd
0492 68 536

Merseyside
Robbins Marine Radio Services
North East Coburg Dock
Liverpool
051709 5431

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

Northern Ireland
Belfast Lough Marine Electronics
55 Belfast Road
Carnckfergus
co Antrim
09603 65565

Eire
A E Brunker
20 Oakwood Park
Dublin 11
(001 342590

Rider Services
Glenbrook
Passage West
Co Cork
010 353 2184 11/6

Isle of Man
Bevan Ltd
Steampacket Building
East Quay
Ramsey
Isle of Man
0624 812583

S/W Scotland
Boat Electrics & Electronics
145 Temple Hill
Troon
Ayrshire
0292 315355

Western Scotland
Jeik Rutherford
Yacht Electrical and
Electronic Services
Largs Yacht Haven
Irvine 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

OVERSEAS REPRESENTATIVES

Humberside
Electronics Marine Ltd
Y/A Wright Docks
Hull
0482 25163

Norfolk/Suffolk
Greenham Marine Ltd
Windboats Yard
Grangewalk
Wroxham
Norfolk
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

Essex
Mantsbrite Marine Electronics
19d Spital Road
Maldon
Essex
0621 53003

Kent
Heron Marine Services
129 Broadway
Herne Bay
Kent
0227 361255

East Sussex
D M S Seatronics
Brighton Marina
Brighton
0273 605166

Channel Islands
Boatworks +
Castle Emplacement
St Peter Port
Guernsey
0481 26071

Jersey Marine Electronics
Unit 2
La Folie
St Helier
Jersey
0534 21603

Mainbrayce Ltd
Inner Harbour
Braye
Alderney
048 182 2772

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Trimer S.A.
Uruguay 1 S M de Oro 20 10/40
1425 Buenos Aires
Argentina
Tel (010 54 1) 774 3728/4470
Telex (0)7 31 21653 IREMER AR

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Solo Marine Pty Ltd
11 Green Street
Revesby NSW 2212
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Tel (010 61 2) 774 5255
Telex 007 71 127045 SOLMAR AA
Far (01061 2) 7745291

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Werner Ober-Yachtelektronik
A 6890 Lustenau
Reichsstrasse 38
Austria
Tel (010 43) 5577 2419
Fax (010 43) 5577 24195

Barbados
C.O. Williams Electrical Co. Ltd
Warrens
St Micheal
Barbados
Tel (010 1 809) 425 2250
Telex 007 392 2366 COW WB
Fax (010 1 809) 474 0374

Belgium
West Diep Yachting Centre SPRL
B 8450 Nieuwpoort
Louisweg 2
Belgium
Tel (010 32 58) 23 40 61
Fax. (010 32 5815823 9246

Bermuda
Marine Communications
72 Pitts Bay Road
Pembroke HM 06
Bermuda
Tel 010 1 809) 295-0558
Telex 007 290 3795 MARCO BA
Fax: (010 1 8091292 0079

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Fast Yachts
Control S A
Industria E Comerico
P O Box 12700
Sao Paulo-SP
Brazil
Tel (010 55) 11 5211944
Telex 007 38 1124612 CNTO BR
Fax- (010 55) 11 5482070

British Virgin Islands
Cay Electronics
P O Box 345
Road Town
Tortola
British Virginislands
Tel (010 1 809 49) 42400
Telex 007 255510 100 6891 ESL UD
Fax (010 1809 49) 44707

Canada
Iom Taylor Co Ltd.
72 Duran Avenue
IorontoM6K 31 I
Ontario
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Tel (010 1 416) 530 1811
Telex 007 21 065243 12 IOMTAYCO TOR
far (010 1 416) 530 4345

Canary Islands
Nordest
C/S Juan Bautista 57
Santa Cruz de Tenerife
Canaryislands
Tel (010 34 22) 284 871
Telex 007 52 92230 COCIN E
Fax (010 34 22) 287 311

Cyprus
Mercury Divers Co. Limited
53 Spyrou Araouzou Street
P O Box 469
Limassol
Cyprus
Tel (010 357 51) 65492
Telex 007 605 4976 MERCDIVE CY

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Oy Maritim AB
Veneentekijantie 1
SF ~ 00210 Helsinki
Finland
Tel (010 358) 0 673331
Telex 007 57 124788 MARIT SF
Fax (010 358) 0 6927917

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S.D. Marine Electronique
17-25 Rue Barian
78500 Sartrouville
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Tel: (010 33) 1 3914 6833
Telex: 007 42 698347 SDMELEC
Fax (010 33) 1 3913 3022

Gibraltar
Service
Bond Instrumentation
The Dockyard
Gibraltar
Tel (010 350) 73701
Telex 007 405 2373 GIBRLP GK
Far: (010 350) 73726

Sales
H. Sheppard & Co.
Waterport
Gibraltar
Tel (010 350) 77183
Telex: 007 405 2324 MARINA GK

Greece
Piraeus Electronic
46 Akti Moutsopoulou
Marina Zeas
185 36 Piraeus
Greece
Tel (010 301) 453 10 27/418 17 97
Telex: 007 601 241219 DORI GR
Fax: (010 301) 418 1091

Holland
Boomsma's Handelmaatschappij B.V
P O Box Nr 50128
1305 AC Almere Haven
Holland
Tel (010 31 3240) 11524
Telex no744 70171 GI BO NL
Fax (010 31 3240) 11519

Hong Kong
Far East Yacht Specialists Limited
M2 Floor
Baskerville House
22 Ice I louse Street
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Tel: ~010852~525701515 229394
Telex: 007 802 65925 KREMA HX

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Daymola 7
125 ReyAjavik
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Tel (010 3541) 84077
Telex 007 501 2 334 BOLIXIS
Fax (010 3541)29323

Israel
Briza Yacht & Marine Supply
Tel Aviv P 0. Box 39232
Israel
Tel (010 9721320 259913284432
Telex: 265871
(Quote ref 137AUR) MONREF G

Italy
Deck Marine
VialeCerdosa 155
20151 Milano
Italy
Tel (010 392) 308 7229
Telex: 007 43 353147 DECK I
Fax: (010 392) 301 3398

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J.M.J. Limited
2F Inago Bldg 370
Hayama ~ Ishiki
Miura
Kanagawa
Japan
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Telex: 007 72 3852532 JMJPN I
Fax: 010 81 468 76 1044

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156 Ta'Xbiex Seafront
Yacht Marina
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Tel (010 356) 35591
Telex: 007 406 994 YOTS MW

Netherlands Antilles
Radio-Holland Caribbean N V
PO. Box 146
Philipsburg
St. Maarten
Netherlands Antilles
Tel (010 599) 522589
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Marine Corail Pacifique
BP 848 Noumea
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Telex 007 706 3120 CONIRANS NM
Fax (010 687) 27 68 43

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89 Wait AU Road
Takapuna
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Telex 007 74 60324 LUSTY NZ
Fax: (010 64 9) 444 3798

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Haakli Gartagresgt 5
1500 Moss
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Fax (010 47) 9 274152

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4000 Porto Codex
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Tel (010 351 2) 209479
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Engineering Pte Ltd
67 Ayer Rajah Crescent 07-01
Singapore 0513
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Central Boating Pty Limited
81 Bree Street
Cape Town 8001
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Tel (010 27 21) 248026/7/8
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far (010 27 21) 242564

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Fax: (010 34 3) 323 5062

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Nya Varvet
S-421 71V. Frolunda
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Fax: (010 46 31) 292789

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8002 Zurich Enge
Switzerland
Tel (010 41 1) 202 8044
Telex 007 45 816598 YASY CH
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Taipei
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M Burhanettin Tekdag
Hayrettin Iskelesi Cad 1-7
80680 Besiktas
Istanbul
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Telex 00760726613 IRIM TR

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New Whitfield Street
Guilford, CI 06437
USA
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Telex: 007 230643 804 IMI
Fax: (010 1203) 453 6109

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2084 Rellingen
Siemenstrasse 35
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Telex 007 41 2189160 FERPI D
Fax (010 49 4101) 301214

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Nelson's Dockyard
Antigua
WestIndies
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Telex (007 393) 2142/2119
DYRDBIT AK/YACHTS AK
Fax: (010 1 809) 46 31524

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Yachting Consulting
Botut Cicin-Sain
M Tita 85
Opatija
Yugoslavia
Tel ~0103851~713506
Telex: 007 62 24215 TEHRI YU