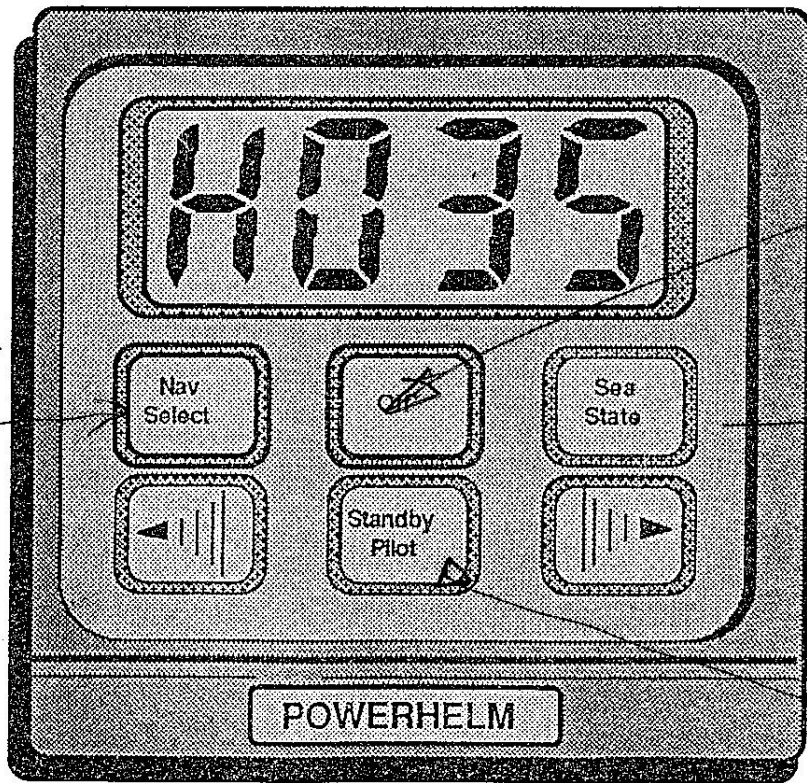


Maurcom

01-39-72-19-90.

# 707

## AUTOPILOT USER MANUAL



Power  
GPS

STOP

ETAT  
MER

2 POIS  
H. COMP  
PILOTE  
COMPAS

Compagnie Commerciale d'electronique

12 rue Charles Tellier

BP 153 13307 Marseille Cedex 14

Tel 91 67 09 90

Kelax 810 987

SARV M. De Jean

Fax 31 02 96 46

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File Reference: M4.1

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## WARNINGS

- A. All exposed moving parts relating to the steering Gear and Autopilot must be sufficiently guarded to prevent accidental catching of extremities and/or clothing.
- B. The use of an Autopilot does NOT avoid the need for normal watch-keeping.
- C. Incorrect wiring up (e.g. polarity reversal) can cause irreparable damage to some equipment and is not covered by the **Cetrek** Warranty Agreement.

**PLEASE CHECK ALL CONNECTIONS CAREFULLY BEFORE SWITCHING ON.**

**Cetrek Ltd** has prepared this manual for use by **Cetrek** personnel and distributors as a guide to the proper installation, operation and maintenance of **Cetrek Ltd** equipment.

**Cetrek Ltd** reserves the right to make changes without notice in the specifications and materials contained herein and shall not be responsible for any damages (including consequential) caused by reliance on the materials presented including but not limited to typographical errors, company policy and pricing information.

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**SECTION A.**

**PILOT OPERATION  
AND ADJUSTMENTS**

# INTRODUCTION

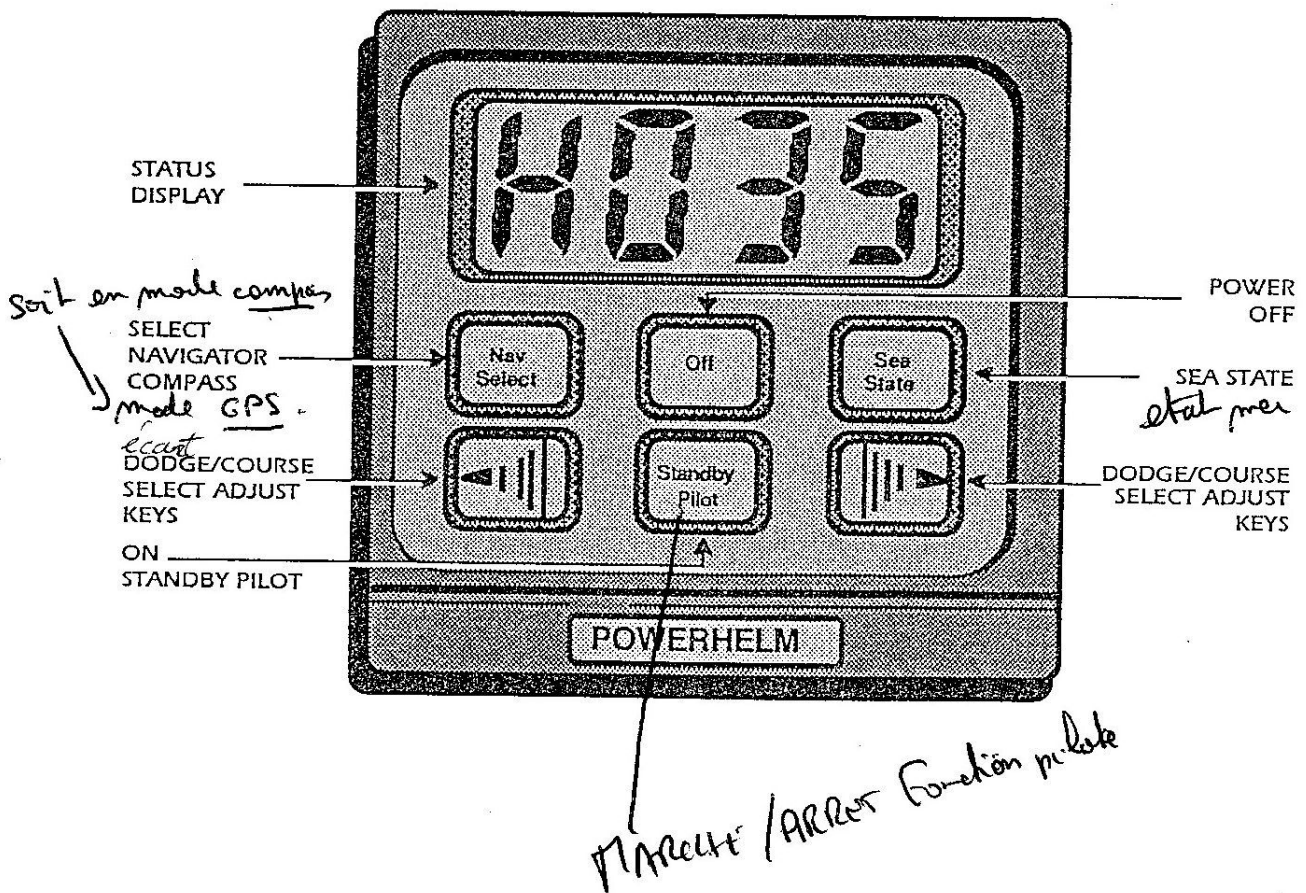
## CONGRATULATIONS

On behalf of all of us at **Cetrek** we would like to welcome you to our superb Autopilot Systems. At **Cetrek** we didn't invent the word satisfaction we just helped to define it and we hope that the autopilot that you have chosen will give you many hours of satisfaction.

Your Autopilot is simple and easy to operate ensuring that you and your friends can enjoy your boating to the full.

Happy Cruising from the Staff of **Cetrek**

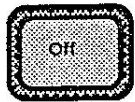





### The Keyboard



# OPERATIONS SUMMARY

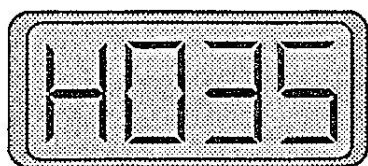
## Key Functions

Most keys have a primary function with an additional secondary function accessed by using the ◀ or ▶ key.

KEY	PRIMARY FUNCTION	SECONDARY FUNCTION
	To turn Pilot off <i>ARRÊT</i>	None
	1. To turn Pilot on <i>EN FONCTION</i> 2. To return to standby <i>ATTENTE</i>	None
	(5) 1. Select Course Change or dodge (3) 2. To Set Rudder Ratio <i>GAIN</i> (7) 3. To Set Response <i>EMBARSEE</i>  <i>2000 3 secondes</i> <i>ajustement par 1000 Sec.</i>	1. To Set Counter Rudder <i>(S.M) SOURCE BARRE</i> 2. To Set Trim 3. To Set Rudder deadband <i>ANGLE DE BARRE MIN MAX</i> 4. To Set Rudder Limit 5. To Select Configuration a. Displacement b. Planing c. Semi Displacement 6. To display rudder position <i>affichage ANGLE DE BARRE</i>
	To Select <i>centrale de nav?</i> Navigator or Compass Operation	1. To Set Navigator Data 2. To Set Navigator Gain
 	1. Course Change 2. Dodge	1. To Set or Select Adjustments

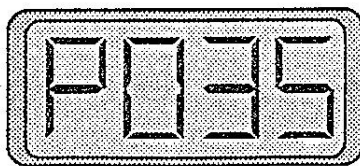
## Display

A Four Character LCD is used to indicate status. When the display is in Pilot mode a single alphabetical character on the left side indicates Pilot status.



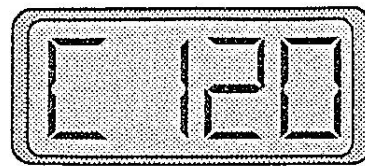
H = COMPASS HEADING

*CAP COMPAS*



P = PILOT

*CAP COMPAS*



C = PRESELECTED COURSE

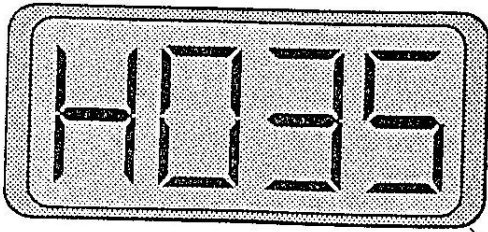
*PRESELECTION CAP*



# PILOT OPERATION

## Turning the Power On

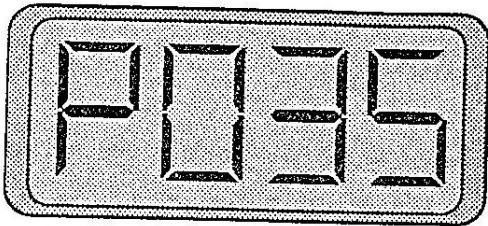
*Heading*



Press "Standby Pilot"

PILOT will self test for about 10 seconds. If an error code appears, see Section B6 (Troubleshooting Guide)

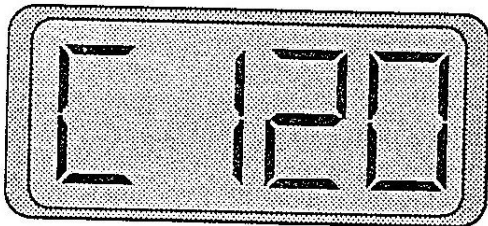
*Route on Cap Actual*  
Engage on Present Heading



Press "Standby Pilot"

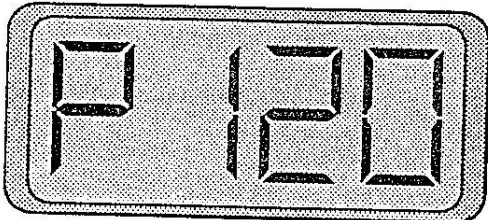
Vessel is under Pilot control and display shows selected course.

*Preselect a course*  
To Preselect a Course



Press ◀ or ▶

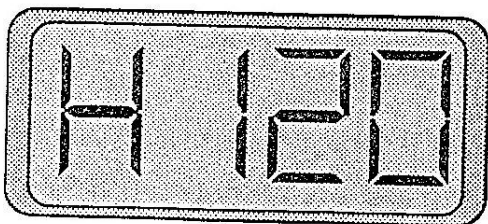
Press until required course is displayed



Press "Standby Pilot"

Vessel will turn onto preselected course.

## To Return to Manual Control



Press "Standby Pilot"

Autopilot drive is disengaged and the vessel can now be steered manually.

Note: if adjustment mode has been selected it will be necessary to press "Standby Pilot" to disengage pilot.

IN CASE OF EMERGENCY PRESS "Off"

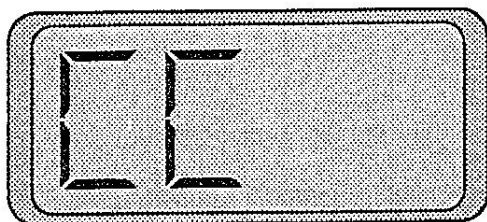
## FUNCTION OF ◀▶ KEYS

These keys have three functions in normal pilot operation they can be set to either operate as dodge keys, or course change keys. When changing pilot settings or adjustments these keys actuate the change.

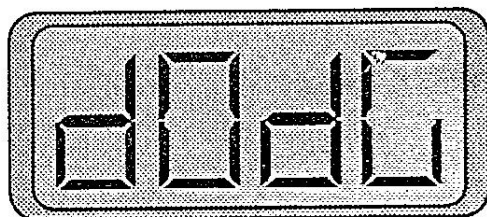
### Setting Keys for Normal Operation

Press "Sea State"

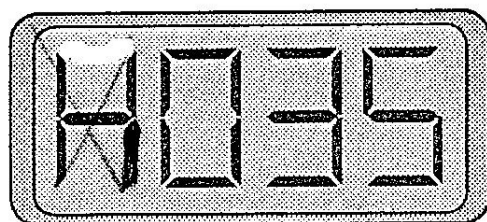
Press ◀ or ▶



The top display indicated that when the pilot is returned to normal operation the ◀ ▶ keys will when pressed, commence a permanent course change.



*Schaffenaar*  
The lower display indicates that dodge mode selected. When the key is pressed, rudder will be applied for as long as the key is held. The vessel will return to the original course when the key is released

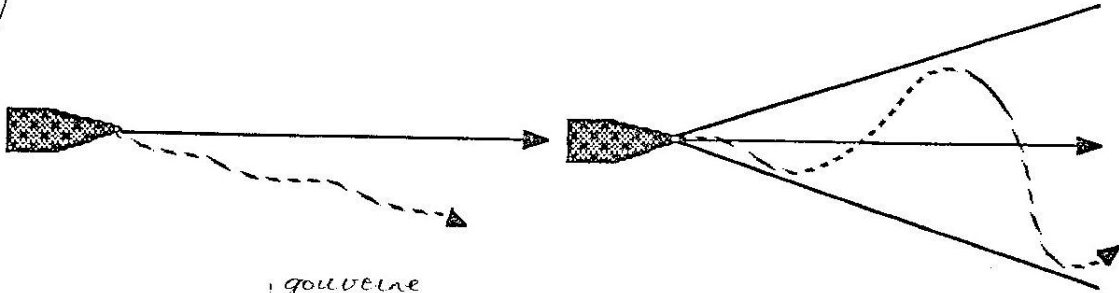


Press "Standby Pilot"

The display returns to normal pilot operation

# SEA STATE ADJUSTMENTS

Rudder  
*Gain*



*gouverne*  
**Boat Understeering**

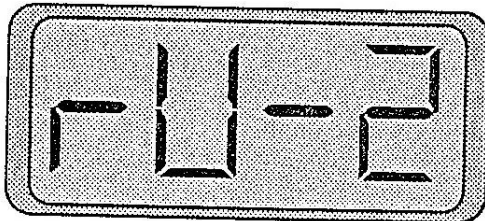
Vessel repeatedly drifts off course to one side and is only loosely controlled by pilot.

**REMEDY:** Increase rudder setting.

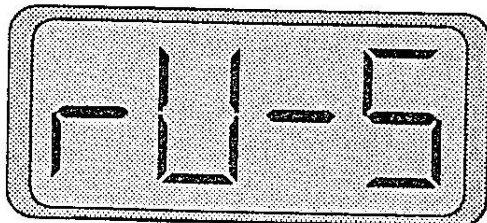
**Boat Oversteering**



Vessel builds up oscillations from side to side of required course.

**REMEDY:** Decrease rudder setting.



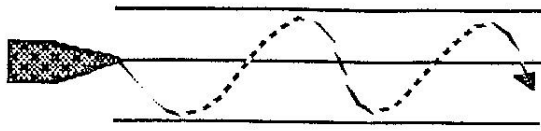
Press "Sea State" twice



Press  or  to increase or decrease setting.

## Response

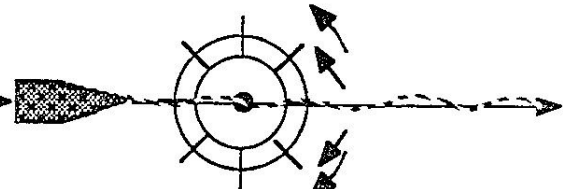
*Embardeco*



*crer route*

**Boat Wanders Over Course**

Vessel moves a long way from course before correction.



*same*

**Excessive Helm Movements**

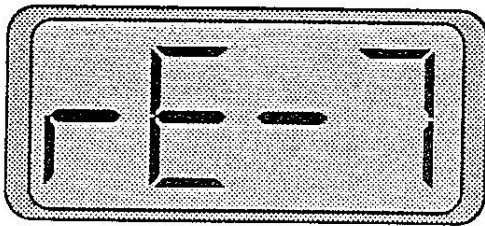
Vessel holds course but helm switches rapidly back and forwards.

**REMEDY:** Decrease response setting.

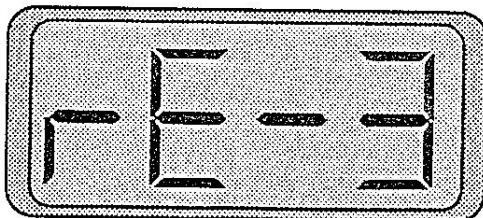
**REMEDY:** Increase response setting.



This is the pilot's "weather" control. You will need to open the "response" (i.e. increase) in heavy seas or slow speeds and close it (i.e. decrease) in calm seas or high speeds.

**Note:** Proper setting of this control has a marked effect on steering system wear and tear and in sailing craft also upon battery life. Aim to set this control so that the autopilot-controlled helm movements are of roughly the same frequency and magnitude as those performed by hand when steering manually.



Press "Sea State" three times



Press  or  to increase or decrease setting.

## PILOT INSTALLATION ADJUSTMENTS

1. **Counter rudder**

*counter bar*  
*quantité*  
*réponse*  
This adjusts the amount of counter rudder movement as a function of rate of change of course. Increase this setting to reduce overshoot on large course changes. May cause overactive helm operation if set too high.

2. **Trim**

*rythme*  
*garder*  
This sets the rate at which standing helm will be applied when this is required to keep the boat on a straight course. Increase the setting to increase rate at which standing helm applied.

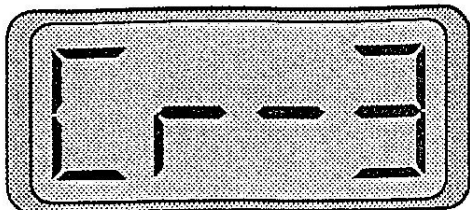
3. **Rudder deadband**

*Gouvernail anale mort*  
*usure*  
This sets the minimum rudder displacement acceptable from required position and is used where steering systems have slack due to wear or system design. Set this to the minimum value which avoids unnecessary hunting of the rudder.

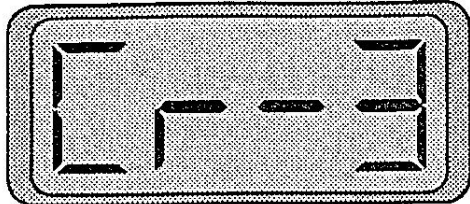
4. **Rudder limit**

This sets the maximum rudder movement obtainable under pilot control. The range is from 3 to 30° (or 5 to 45° if jumper P2 fitted in 930-628)

## To Select Pilot Adjustments

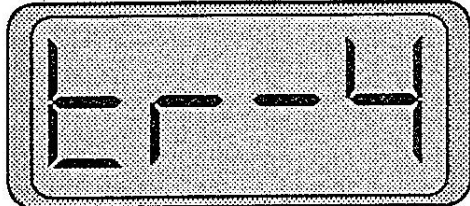


Press "Sea State" hold for three seconds.

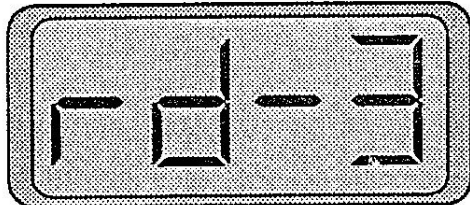


Press "Sea State" repeatedly to display adjustment required

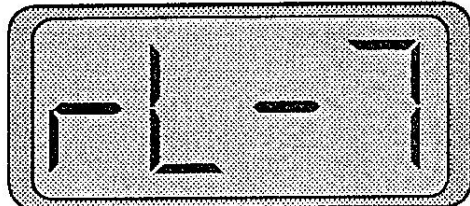
Counter Rudder *Corde barre ?*



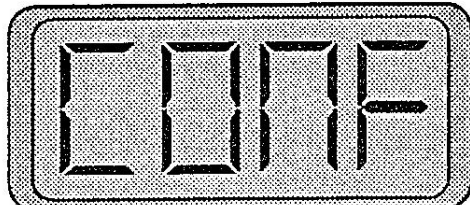
Trim *Ecart*



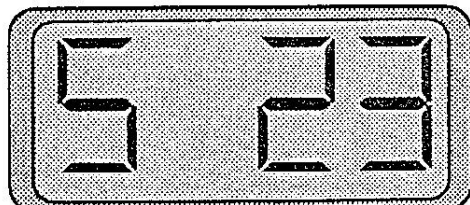
Rudder Deadband *Angle de barre mini*



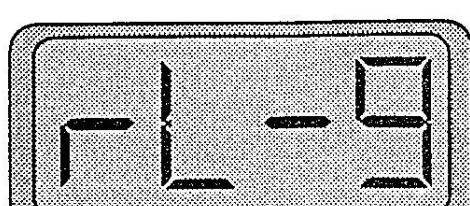
Rudder Limit *Angle de barre max*



Initial Configuration



Rudder Position



## To Change Pilot Adjustments

Press ◀ or ▶ to increase or decrease setting.

## INITIAL CONFIGURATION

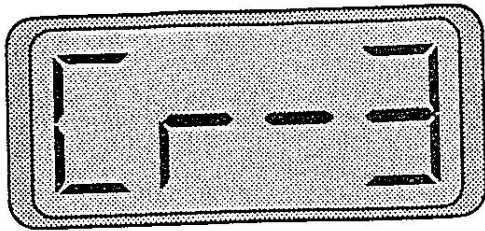
The pilot is programmed to enable the Installation Adjustments and Sea State settings to be preset for Planing, Semi Displacement or Displacement craft. These settings can be preselected as below. These settings are for general guidance. Some adjustment will usually be required to tune the autopilot to a specific vessel to obtain the best performance.

The Preset levels are:

		Planing	Semi Displacement	Displacement
Rudder Ratio	<i>Gain</i>	3	4	5
Response	<i>Embardee</i>	0	0	0
Counter Rudder	<i>after same</i>	0	1	2
Trim	<i>Leant</i>	2	2	2
Rudder Deadband	<i>Angle min</i>	1	1	1
Rudder Limit	<i>Angle max</i>	6	6	6
NMEA Gain		5	5	5

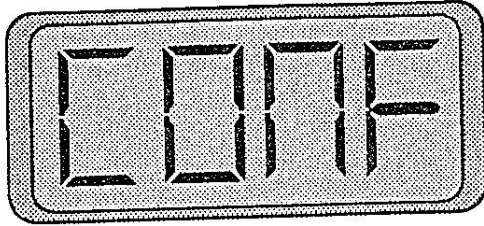
NMEA Gain only operational if navigator option fitted.

## To Select Initial Configuration

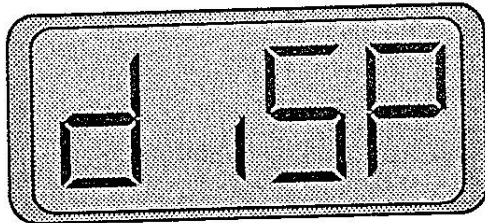


Press "Sea State" hold for three seconds

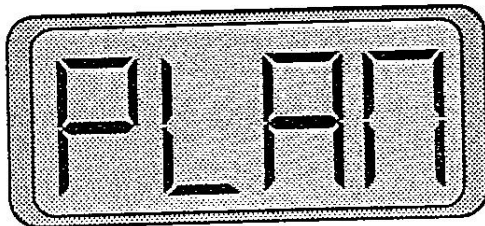
Press "Sea State" repeatedly until configuration displayed



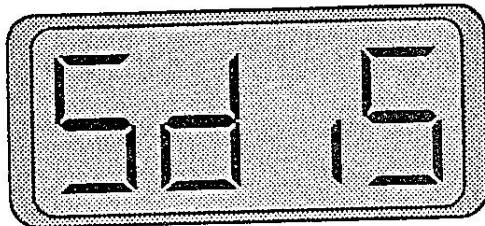
Press ◀ or ▶ to select configuration required



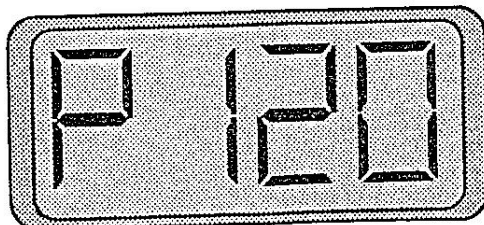
Displacement



Planing



Semi-Displacement



Press "Standby Pilot" to return to normal display

Select display indicating the configuration required, then pressing "Standby Pilot" will store selected configuration



## OPERATION OF 930-797 REMOTE CONTROL

For the 930-797 to operate, the autopilot must be switched on.

### **To Engage/Disengage Pilot**

By pressing the **RED** and **GREEN** buttons together the Pilot can be engaged or disengaged remotely using the 930-797.

### **Dodge Control**

1. Press **SELECT**, if Dodge light not lit.
2. Press and hold **RED** button to dodge to port, **GREEN** button to dodge to starboard.
3. To return to course, release button

### **Course Change**

1. Press **SELECT**, if course light not lit.
2. To change course to left, press **RED** button; to right, press **GREEN** button.

New course selected is indicated on the 930-707 display.

**Note:** Vessel will often turn slower than the course is being changed. Release button before course required is reached and approach course by short applications of button. Display on keyboard will indicate course selected instantly.

## ALARM AND FAULT DISPLAYS

### Alarms

Alarm conditions are indicated as below:-

DISPLAY	FAULT	ACTION
	Low battery voltage	To clear Alarm press any key except "Off". Check ship's battery charger system.
	Failure of Motor .	Check motor supply
	Navigator Alarm Condition	Switch off pilot. Navigator control can only be resumed when alarm condition removed.
	Data Overflow	To clear alarm press any key except 'Off'. (Will not affect pilot operation.)
	Navigator data lost	Check navigator outputting. If fault not cleared, select compass control of pilot
	No navigator data	Check navigator programmed to output available correct data.

## System Faults

Certain system faults are indicated on the keyboard. If system faults are displayed:-

Press "**Standby Pilot**". This can clear the fault condition if it is only a temporary fault. If this fails to clear, see Troubleshooting Guide, Section B6.

The system faults are indicated by numbers indicated below. Faults with a number greater than 128 will result in the pilot being switched automatically to 'Standby'

DISPLAY	FAULT
** F002	Back-up memory fault
** F128	Ram memory error.
** F129	Eprom - error
F198	Rudder Reference Fault
F224	No rudder movement indicated
F225	Rudder reference amplifier fault

\*\* These faults indicate serious hardware malfunction. If this persists and cannot be cleared then a **Cetrek** distributor should be consulted. See Section B6 for Troubleshooting information