

Fig. 4.3.2l - Deleting Waypoint function (I)

Press the '4' key: the line connecting the Waypoint and the previous one is deleted, the line between the Waypoint and the next one is deleted, and a new line between the previous and the next Waypoints is shown on the screen. The delete Waypoint remains on the screen shaded until the next screen redraws:

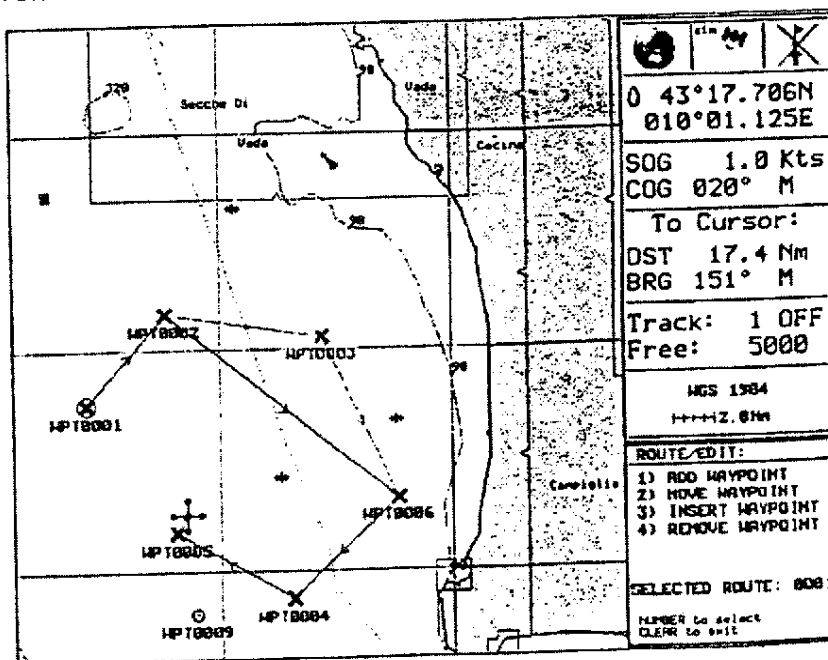
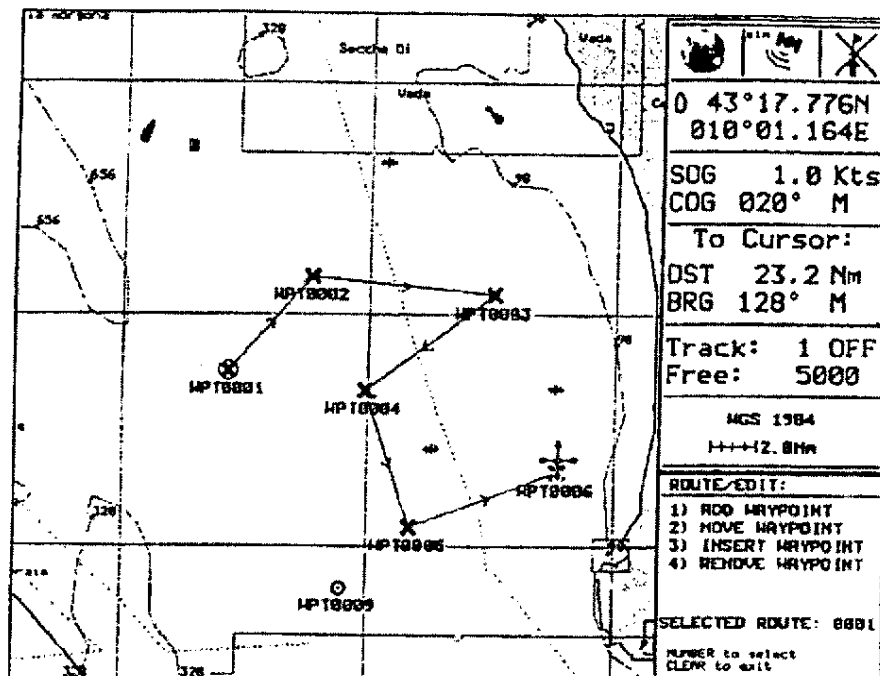


Fig. 4.3.2m - Deleting Waypoint function (II)

## REVERSE ROUTE Function

It is possible to follow a route plan in reverse by pressing the 'DATA/3' key. Reversing a route plan is typically used to return to the point where the voyage originally started, perhaps several days after having arrived at the final destination.



After pressing the 'DATA/3' key, a window is opened on the screen to advise that the selected route direction has been inverted: the first Waypoint of the route becomes the last and vice versa.

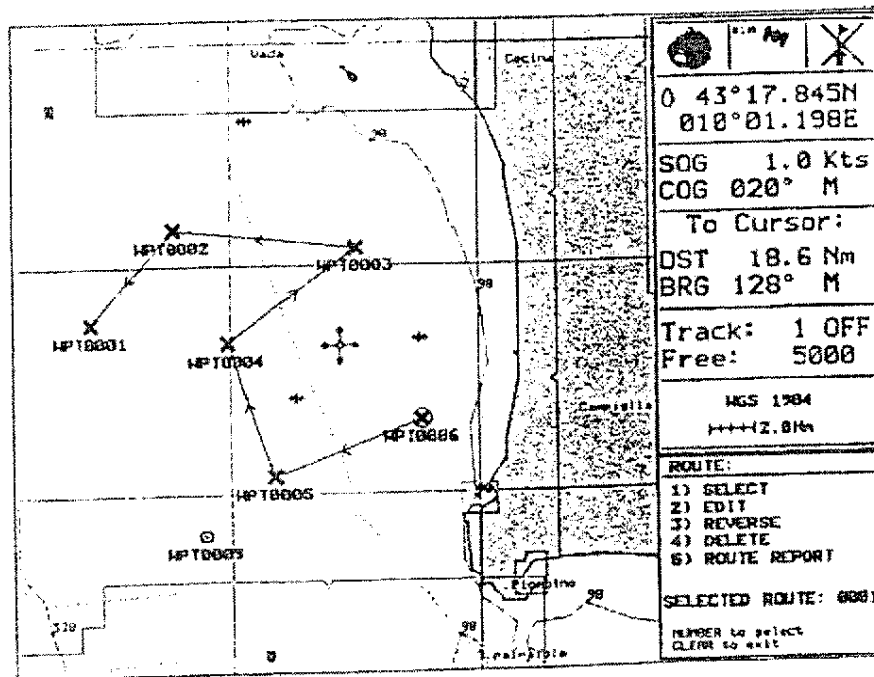


Fig. 4.3.3a - Inversion route function (II)

#### 4.3.4 DELETE ROUTE Function

To delete the active route, press the '4' key. On the screen a window is opened: select YES to confirm the deletion (NO otherwise) and then press 'ENTER'. The route remains on the screen shaded until the next screen redraws.

#### 4.3.5 ROUTE REPORT Function

To display the data report of the active route, press the 'HOME 5' key:

Fuel consumption per hour	ROUTE 0001 DATA REPORT					
	SPEED= 10.0 Kts			FUEL FLOW= 10.0/Hr		
Waypoint identifier	LEG:	LAT/LON:	DST/BRG:	TOT.DST:	ETE:	FUEL:
Waypoint position	0001 WP0006	43° 03.270N 010° 26.564E				
Distance and Bearing between the Waypoint and the previous one	0002 WP0005	43° 00.814N 010° 17.871E	7.817 Nm 259° N	7.817 Nm	000:42.86	7.8169
	0003 WP0004	43° 00.603N 010° 14.746E	6.217 Nm 341° N	13.23 Nm	001:19:24	13.233
	0004 WP0003	43° 18.809N 010° 22.521E	7.803 Nm 054° N	20.24 Nm	002:01:26	20.236
	0005 WP0002	43° 11.638N 010° 11.830E	9.867 Nm 276° N	28.29 Nm	002:45:45	28.293
Total Distance (Distance from the first Waypoint of the route)	0006 WP0001	43° 07.873N 010° 06.497E	5.477 Nm 227° N	33.77 Nm	003:22:37	33.771
Estimated Time Enroute (Time from the first Waypoint of the route)	0007	---	---	---	---	---
	0008	---	---	---	---	---
	0009	---	---	---	---	---
Fuel consumption between the Waypoint and the previous one	0010	---	---	---	---	---
	← to scroll → to select: ENTER to edit					

Fig. 4.3.5 - Route Data Report

It is possible to modify the speed and fuel consumption values, by selecting the field with the trackball and pressing the 'ENTER' key. Insert the desired value using the trackball and pressing the 'ENTER' key.

Use the trackball to select the next page.

## 4.4 The 'GOTO' key: the Target

You can tag a particular mark on the map using the Target function. In order to activate the Target function, place the cursor on desired position and then press the 'GOTO' key. On the screen a Pad Menu is shown:

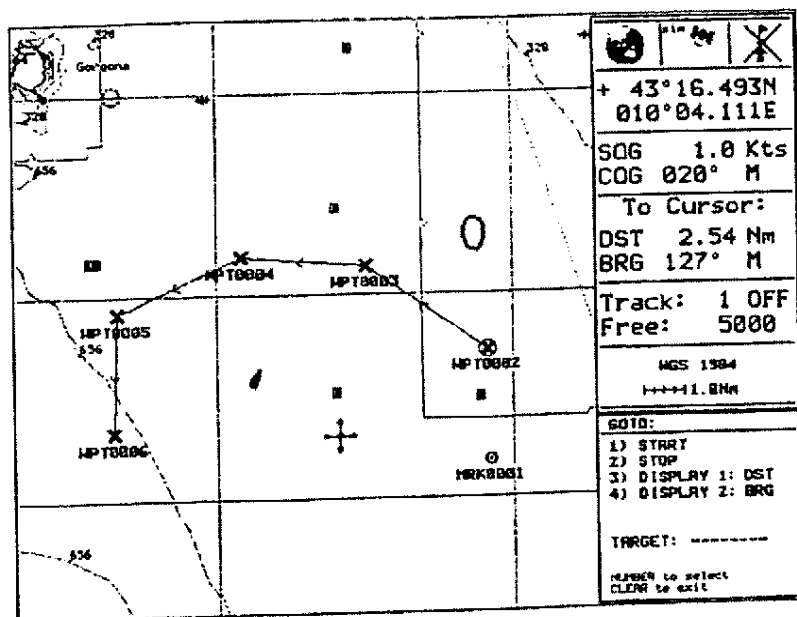


Fig. 4.4 - Target Pad Menu

#### 4.4.1 Insert Target function

Press the 'PAGE/1' to place the Target. If the position selected by the cursor is a user point (Mark, Event or Waypoint), a circle encloses the symbol:

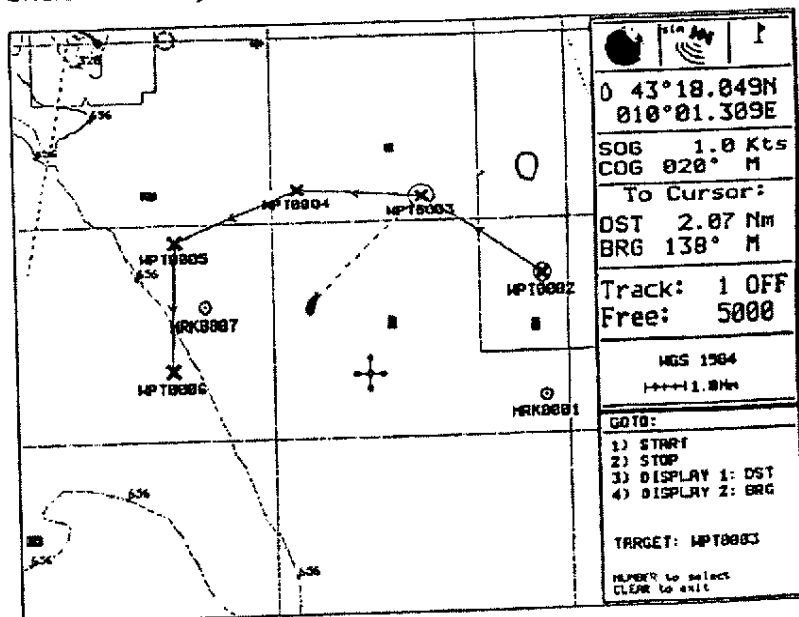


Fig. 4.4.1 - Target insertic :

If under the cursor position there is not any user point, a Mark is placed and it is enclosed in a circle. On the screen a dot line is shown, connecting the Target with the ship's position.

When the Target is placed, the navigation data are referred to this Target and the chart plotter is in Navigation mode.

If the Target is placed on a Waypoint of a route, the navigation starts to that Waypoint and then the route is followed on the set direction.

#### **4.4.2 Delete Target function**

By pressing the '2' key and confirming the action with 'ENTER', the symbol that identifies Target and the dot line disappears from the screen (if there is a Mark under the Target, the user point remains on the screen after deletion).

#### **4.4.3 Select DST/XTE/TTG function**

By pressing the 'DATA/3' key more times, it is possible to select the display of Distance to the Target (Distance = DST), the Cross Track Error (XTE) or the Time to the Target (Time To Go = TTG). the selected option appears in the Text Area (see par. 3.1.1). The default setting is DST.

#### **4.4.4 Select BRG/XTE/TTG function**

By pressing the '4' key more times, it is possible to select the display of Bearing to the Target (Bearing = BRG), the Cross Track Error (XTE) or the Time to the Target (Time To Go = TTG). The selected option appears in the Text Area (see par. 3.1.1). The default setting is BRG.

---

### **4.5 The 'PLOT/7' key: Tracking Functions**

---

Press the 'PLOT/7' key to handle the tracking functions. On the screen a Pad Menu is opened:

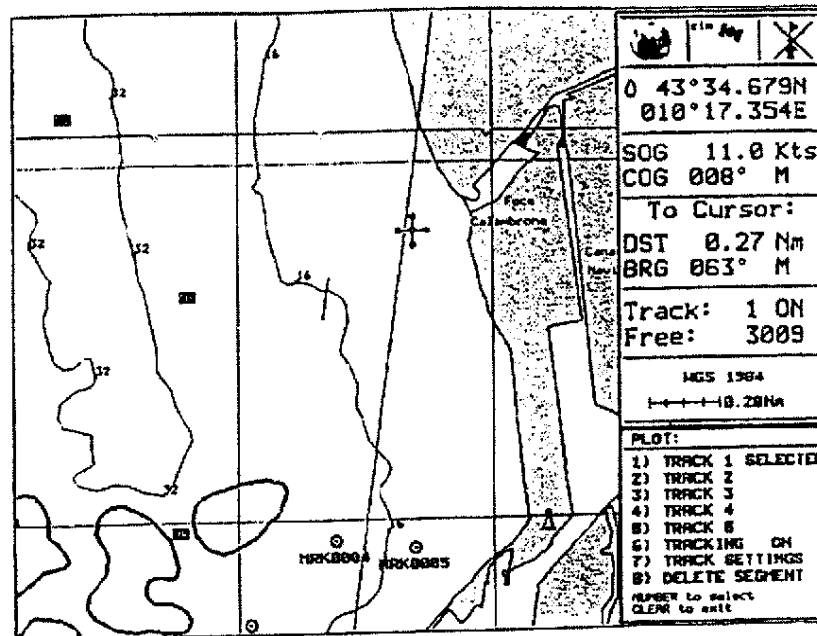


Fig. 4.5 - Plot Pad Menu

#### 4.5.1 Tracking On/Off function

By pressing the 'PAGE/1' key to enable (ON) or disable (OFF) the track storing. It is not possible to use the track storing if you are not receiving a valid fix. The selected setting appears in the Tex Area (see par. 3.1.1). The default setting is OFF.

#### 4.5.2 Track 1 - 5 function

By pressing the '2', 'DATA/3', '4', 'HOME/5', '6' it is possible to handle the track 1, 2, 3, 4 and 5 respectively. After pressing the '2' key, on the screen a new Pad Menu appears:

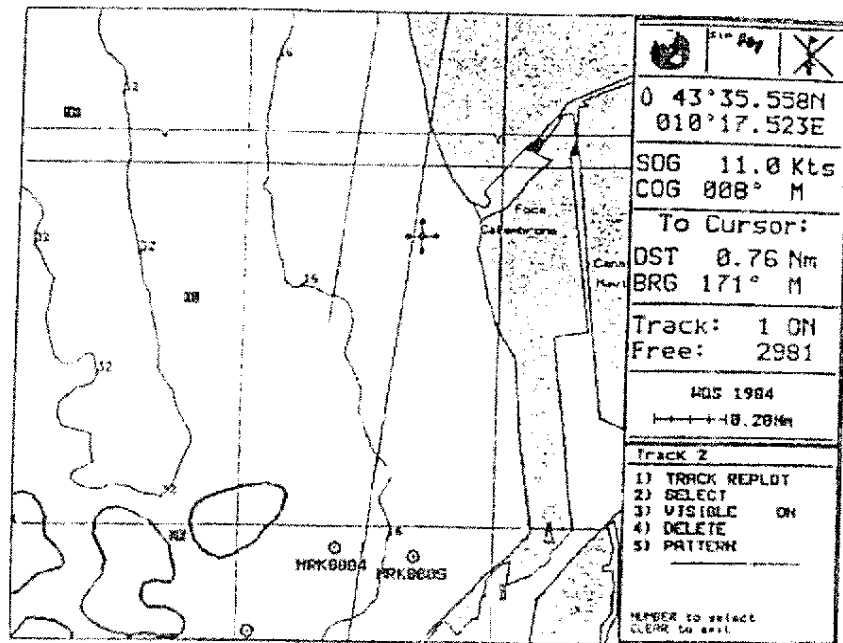


Fig. 4.5.2 - Track 1 Pad Menu

### Track Replot function

Every time the screen changes, the track can be displayed on the screen automatically: this is possible by selecting the Track Replot option by pressing the 'PAGE/1' key.

### Active Track function

This option allows to set one among the five available tracks to become the active track. To activate (ON) or deactivate (OFF) the track press the '2' key. The default setting is 1.

### Visible Track function

This option enables or disables the displaying of the past course. The 'DATA/3' key must be pressed to set ON or OFF. The default setting is ON.

### Delete Track function

It is possible to delete the active stored track by pressing the '4' key. After pressing this key key, a window is shown on the screen: select ON to confirm, or OFF to abort deleting.



### Pattern Track function

By pressing the 'HOME/5' key it is possible to select the pattern for the active track: every time the key is pressed, on the screen the selected pattern appears, wrap around.

### 4.5.3 Track Settings function

By pressing the 'PLOT/7' key it is possible to choose the track settings. After pressing the 'PLOT/7' key, on the screen a new Pad Menu appears:

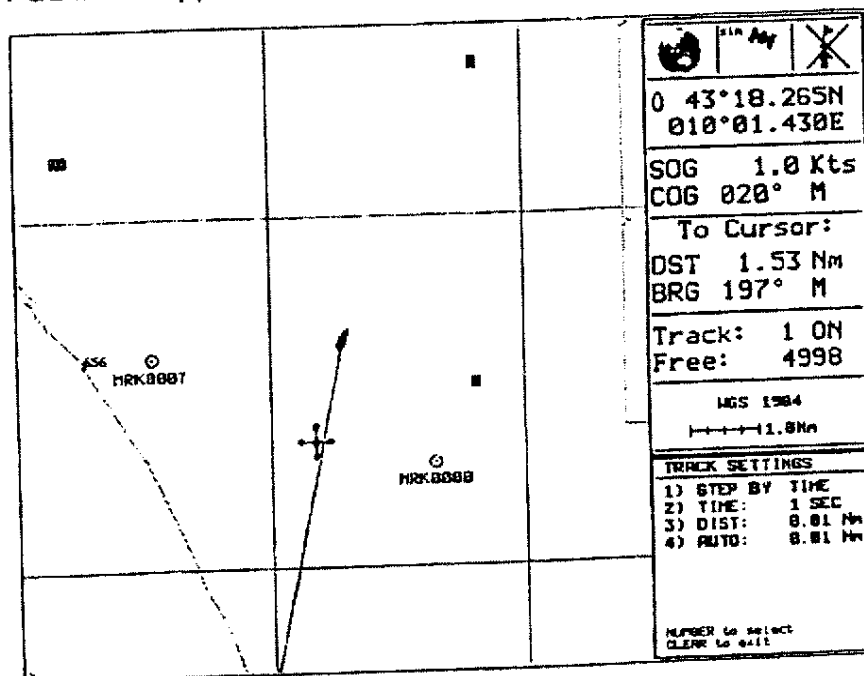


Fig. 4.5.3 - Tracking Settings Pad Menu

### Step by Time/Auto/Dist function

By pressing the 'PAGE/1' key it is possible to select the track memorizing type, **DIST** (the chart plotter can store a fix when the distance from its last stored position is greater than a defined distance), **TIME** (the chart plotter can store a fix after a defined time) or **AUTO** (the software decides when storing a position, or the basis of the straight or curved track). The default setting is **TIME**.

### Time selection function

When the tracking function is On and the type of memorizing of the track is Time, the chart plotter can store a fix after a defined

time. By pressing the '2' key it is possible to select among 1 SEC, 5 SEC, 10 SEC, 30 SEC, 1 MIN. The default setting is 1 SEC.

### Dist selection function

When the tracking function is On and the type of memorizing of the track is Distance, you can store a fix when the distance from its last stored position is greater than a defined distance. By pressing 'DATA/3' it is possible to select in the range 0.01, 0.05, 0.1, 0.5, 1.0, 2.0, 5.0, 10.0 NM/SM/KM (the unit is selected in the MENU + UNITS menu, see par. 5.6). The default setting is 0.01.

### Auto selection function

When the tracking function is On and the type of memorizing of the track is Automatic, you can store a fix when the distance from its last stored position is greater than a defined radius. By pressing the '4' key it is possible to select in the range 0.01, 0.05, 0.1, 0.5, 1.0, 2.0, 5.0, 10.0 NM/SM/KM (the unit is selected in the MENU + UNITS menu, see par. 5.6). The default setting is 0.01.

### 4.5.4 Delete Segment function

By pressing the 'USER/8' key it is possible to delete the desired track segment. After pressing the '8' key, on the screen a new Pad Menu appears:

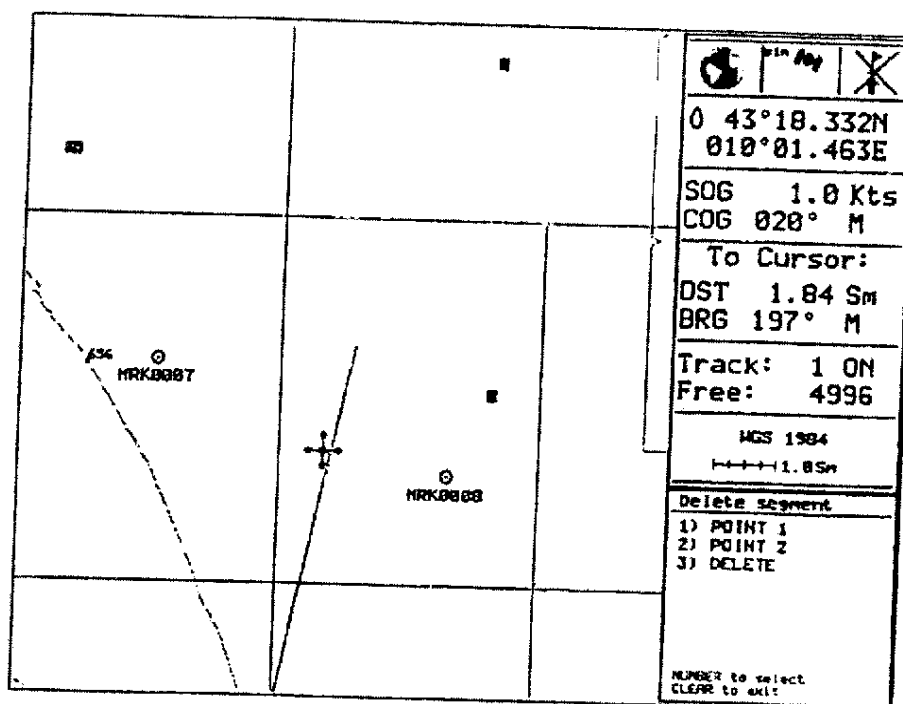


Fig. 4.5.4 - Delete Track segment Pad Menu

**Point 1 selection function**

Press the 'PAGE/1' key to select the first point of the segment to delete.

**Point 2 selection function**

Press the '2' key to select the last point of the segment to delete.

**Delete segment function**

Press the 'DATA/3' key to delete the segment.

## Main Menu

To select the Main Menu (MENU) press the 'MENU/0' key. On the left side of the screen the Main Menu is opened:

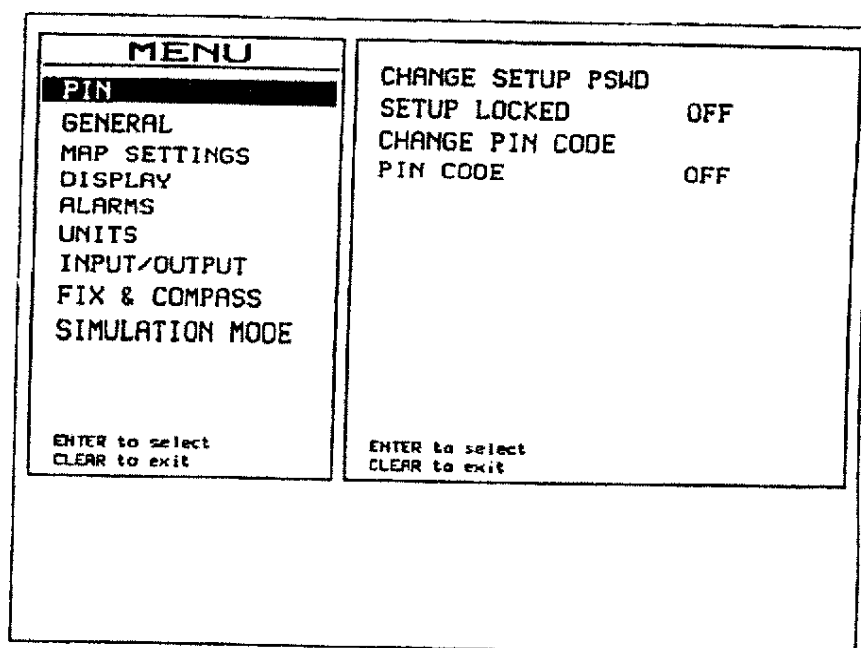


Fig. 5 - Main Menu

Each one of the 9 items, shown in the previous picture, may be displayed in reverse video screen by moving the trackball up/down and selected by pressing the 'ENTER' key (press the 'CLEAR' key to exit from Main Menu). When an item is shown in reverse video, the relative menu is shown in the right side of the screen.

## 5.1 PIN Menu

By selecting **PIN** a window with 4 items is opened on the right side of the screen:

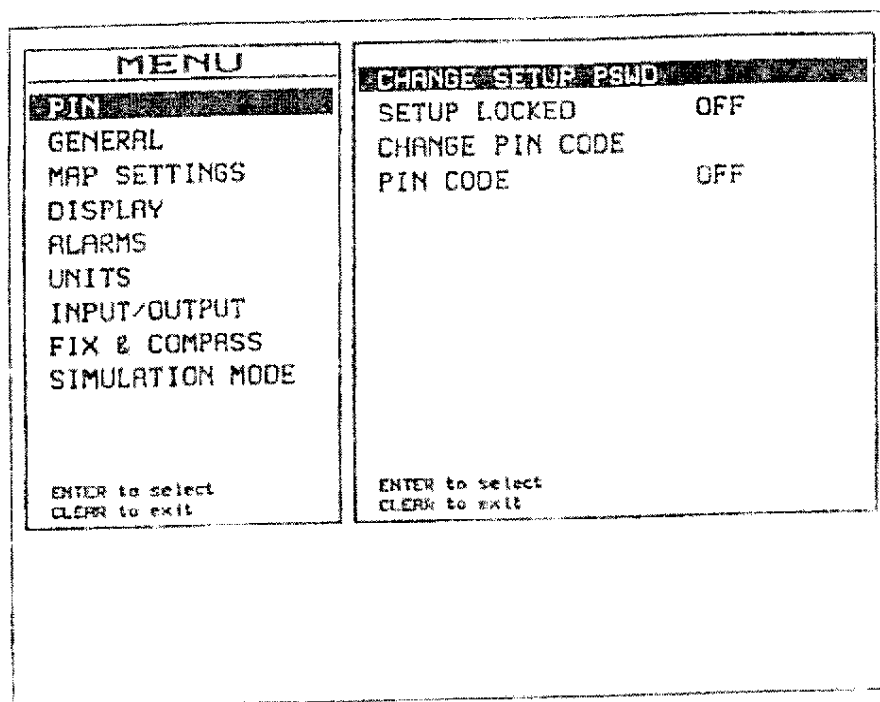


Fig. 5.1 - Pin Menu

- CHANGE SETUP PSWD** : allows to select the Password (PSWD), a numeric code of 4 digits. To insert a new password press 'ENTER', insert the "old" password using the trackball, press 'ENTER' again and use the trackball to insert the password. Then press 'ENTER' to confirm the value. The default setting is 1234.
- SETUP LOCKED** : allows to select **ON** or **OFF** to enable or disable the menu settings. When **ON**, it is not possible to modify the menu settings: a Warning message is shown on the screen. The default setting is **OFF**. This setting is protected by the password (PSWD).
- CHANGE PIN CODE** : allows to select the PIN (Personal Identifier Number) code, a numeric code of 4 digits. To insert a new PIN press 'ENTER', insert the "old" PIN using the trackball, press 'ENTER' again and use the trackball to insert the new PIN. Then press 'ENTER' to confirm the value. The default setting is 0000.

**PIN CODE** : allows to set **ON** or **OFF** the use of PIN code. When **ON** to access the chart plotter functionality after the power On it is necessary to enter the PIN code. The default setting is **OFF**. This setting is protected by the PIN code.

## 5.2 GENERAL Menu

By selecting **GENERAL** a window with 6 items is opened on the right side of the screen:

MENU	
PIN	TIME REFERENCE UTC
<b>GENERAL</b>	TIME FORMAT 24 HOUR
MAP SETTINGS	DATE FORMAT MMM-DD-YY
DISPLAY	BEEPER ON
ALARMS	LANGUAGE ENGLISH
UNITS	TEXT AREA TRACK INFO
INPUT/OUTPUT	
FIX & COMPASS	
SIMULATION MODE	
ENTER to select CLEAR to exit	ENTER to select CLEAR to exit

Fig. 5.2 - General Menu

**TIME REFERENCE** : specifies either **UTC** (**UTC** = Universal Time Coordinate) or **LOCAL**. If you select Local, to insert Local offset use the trackball, then press 'ENTER' to confirm. The default setting is **UTC**.

**TIME FORMAT** : sets you preferred time between **12 HOUR** and **24 HOUR**. The default setting is **24 HOUR**.

**DATE FORMAT** : sets you preferred date between **MMM-DD-YY** (month-day-year) and **DD-MMM-YY** (day-month-year). The default setting is **MMM-DD-YY**.

**BEEPER** : enables or disables the sound after pressing a

- LANGUAGE** : key ("beep"). The default setting is ON.  
: selects the language in which you wish information to be displayed. The selected language is used for screen labels, menus and options, but it is not affect the map information. The default setting is ENGLISH.
- TEXT AREA** : selects the information you preferred shown in the Text Area (in the right side of the screen, when maps is displayed, see par. 3.1.1) among **TRACK INFO**, **EBL & VRM**, **TIME**. The default setting is **TRACK INFO**.

### 5.3 MAP SETTINGS Menu

By selecting **MAP SETTINGS** a window with 5 items is opened on the right side of the screen:

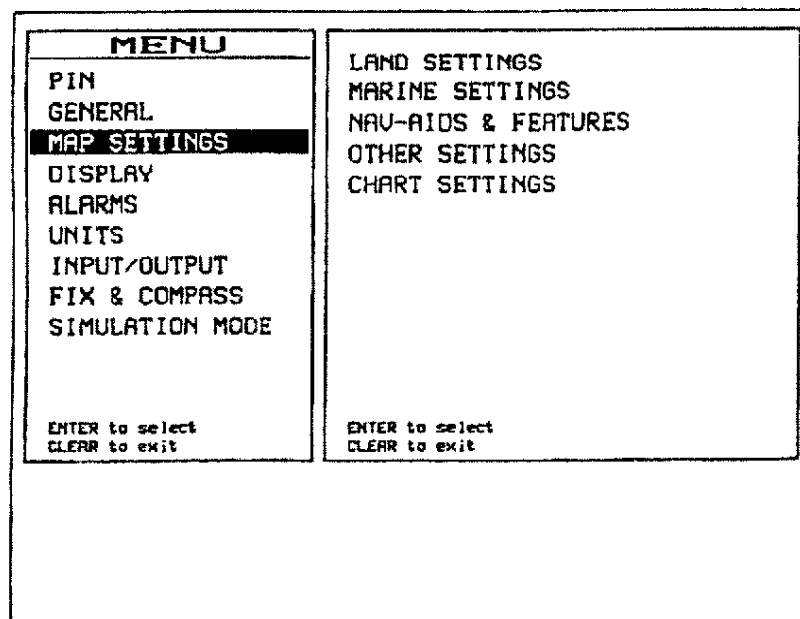


Fig. 5.3 - Map Settings Menu

#### 5.3.1 Land Settings Menu

By selecting **LAND SETTINGS** a window with 4 items is opened on the right side of the screen:

MENU	Land Settings
PIN	NATURAL FEATURES ON
GENERAL	RIVERS & LAKES ON
MAP SETTINGS	CULTURAL FEATURES ON
DISPLAY	LANDMARKS ON
ALARMS	
UNITS	
INPUT/OUTPUT	
FIX & COMPASS	
SIMULATION MODE	
ENTER to select CLEAR to exit	ENTER to select CLEAR to exit

Fig. 5.3.1 - Land Settings Menu

- NATURAL FEATURES** : enables (ON) or disables (OFF) the displaying of the Natural Features, such as dunes, hills, vegetation and salt plan. The default setting is ON.
- RIVERS & LAKES** : enables (ON) or disables (OFF) the displaying of the Rivers and Lakes. The default setting is ON.
- CULTURAL FEATURES** : enables (ON) or disables (OFF) the displaying of the Cultural Features, such as airports, bridges, roads, railways, cables and pipelines. The default setting is ON.
- LANDMARKS** : enables (ON) or disables (OFF) the displaying of the Landmarks, such as buildings and water tanks. The default setting is ON.

### 5.3.2 Marine Settings Menu

By selecting **MARINE SETTINGS** a window with 6 items is opened on the right side of the screen:



MENU		Marine Settings	
PIN		<b>TIDES AND CURRENTS</b>	ON
GENERAL		BATHYMETRIC LINES	ON
<b>MAP SETTINGS</b>		SPOT SOUNDINGS	ON
DISPLAY		BOTTOM TYPE	ON
ALARMS		DEPTH AREAS LIMIT	00033 Ft
UNITS		BATHYMETR. & SOUNDINGS RANGE	00000 Ft - 00033 Ft
INPUT/OUTPUT			
FIX & COMPASS			
SIMULATION MODE			
ENTER to select CLEAR to exit		ENTER to select CLEAR to exit	

Fig. 5.3.2 - Marine Settings Menu

- TIDES & CURRENTS** : enables (ON) or disables (OFF) the displaying of the Tides and Currents. The default setting is ON.
- BATHYMETRIC LINES** : enables (ON) or disables (OFF) the displaying of the Bathymetric Lines (Bathymetric Lines are taken from nautical charts and represent depth contours). The default setting is ON.
- SPOT SOUNDINGS** : enables (ON) or disables (OFF) the displaying of the Spot Soundings. The default setting is ON.
- BOTTOM TYPE** : enables (ON) or disables (OFF) the displaying of the Bottom Type. The default setting is ON.
- DEPTH AREAS LIMIT** : sets the desired value (in the range [0 - 30000]) for the Depth Area Limit: you set a reference depth value and software fills with gray all the bathymetric areas that have starting depth area lower than the reference value. All other bathymetric areas are white. So, if the reference depth is 0, all areas are white, if it is 99.999 all areas are grey. By moving the trackball up/down the selected value is increased/decreased, by moving it to the left/right the cursor is moved; then press 'ENTER' to confirm. The depth unit (Meters (Mt), Feet (Ft) or Fathom (FM) ) is selected by SETUP + DEPTH. The default setting is 33 Ft.

### **Note for color chart plotter**

*For the color chart plotter the Depth Areas are shown on the screen fills with three different blue. On the choice of Min and Max values in the range of Depth Limit, there are three areas: [0, Min] colored with dark blue, [Min, Max] colored in blue and [Max, 12000 Mt] colored in light blue.*

---

**BATHYMETR. & SOUNDINGS RANGE** : sets the minimum and maximum desired value for Bathymetrics and Soundings. After selecting this option by the 'ENTER' key, a window for the desired value insertion is opened, for the Min Value and then for the Max Value. By moving the trackball up/down the selected value is increased/decreased, by moving it to the left/right the cursor is moved; then press 'ENTER' to confirm. If the selected depth (selected in MENU + UNITS menu see par. 5.6) is Meters (Mt) the range is [0 - 12000], if it is Feet (Ft) the range is [0 - 39369], if it is Fathom (FM) the range is [0, 6593]. The default setting is [0 - 00033] Ft.

### **5.3.3 Nav Aids & Features Menu**

By selecting NAV AIDS & FEATURES a window with 7 items is opened on the right side of the screen:

MENU	Nav-Aids
PIN	<b>PORTS &amp; SERVICES</b> ON
GENERAL	ATTENTION AREAS CONTOUR
<b>MAP SETTINGS</b>	TRACKS & ROUTES ON
DISPLAY	LIGHTS NO SECTOR
ALARMS	BUOYS & BEACONS ON
UNITS	SIGNALS ON
INPUT/OUTPUT	CARTOGRAPH. OBJECTS ON
FIX & COMPASS	
SIMULATION MODE	
ENTER to select CLEAR to exit	ENTER to select CLEAR to exit

Fig. 5.3.3 - Nav Aids & Features Menu

- PORTS & SERVICES** : enables (ON) or disables (OFF) the displaying of Ports and Services. The default setting is ON.
- ATTENTION AREAS** : enables (ON), enables only contour (CONTOUR) or disables (OFF) the displaying of the Attention Areas. Also for the categories: FISHING FACILITY, MARINE FARM/CULTURE, MILITARY PRACTICE AREA, RESTRICTED AREA, SEAPLANE LANDING AREA, when the setting is contour a special symbol (!) is placed inside the area. When the area is small, it is identified only by the boundary. The default setting is CONTOUR.
- TRACKS & ROUTES** : enables (ON) or disables (OFF) the displaying of the Tracks & Routes. The default setting is ON.
- LIGHTS** : enables (ON), enables without sectors (NO SECTOR) or disables (OFF) the displaying of Lights. When Lights are ON, lights are shown on lighthouses and other lights that rotate, a light sector is displayed to show the range of coverage for the light. In the NO SECTOR setting, the light is shown without sector. The default setting is NO SECTOR.

- BUOYS & BEACONS** : enables (ON) or disables (OFF) the displaying of the Buoys and Beacons. The default setting is ON.
- SIGNALS** : enables (ON) or disables (OFF) the displaying of the Signals, such as radar, radio and electronic positioning system. The default setting is ON.
- CARTOGRAPH.OBJECTS**: enables (ON) or disables (OFF) the displaying of the Cartographic Objects, such as generic lines, areas and text. The default setting is ON.

#### 5.3.4 Other Settings Menu

By selecting **OTHER SETTINGS** a window with 6 items is opened on the right side of the screen:

MENU		Other Settings	
PIN		NAMES	ON
GENERAL		COMPASS	ON
<b>MAP SETTINGS</b>		CHART GENERATION	ON
DISPLAY		NEW OBJECTS	ON
ALARMS		COMPLEX OBJECT ICON	MULTIPLE
UNITS		INFO LEVEL	DETAILED
INPUT/OUTPUT			
FIX & COMPASS			
SIMULATION MODE			
ENTER to select CLEAR to exit		ENTER to select CLEAR to exit	

Fig. 5.3.4 - Other Settings Menu

- NAMES** : enables (ON) or disables (OFF) the displaying of the Names, such as names of continents, countries and cities. The default setting is ON.
- COMPASS** : enables (ON) or disables (OFF) the displaying of the Compass, showing Magnetic Variation information points. The default setting is ON.
- CHART GENERATION** : enables (ON) or disables (OFF) the displaying of the Chart Generation, showing chart generation

- and nautical publication information. The default setting is ON.
- NEW OBJECTS** : enables (ON) or disables (OFF) the displaying of the New Objects defined in software upgrades. The default setting is ON.
- COMPLEX OBJECT ICON**: sets between **MULTIPLE** and **SINGLE**. By selecting the Complex Object Icon as Multiple (Complex Object Icon Multiple), the object is shown by a single icon which represented the composed symbols; instead by selecting Single the object is represented by its all component symbols. The default setting is **MULTIPLE**.
- INFO LEVEL** : sets the desired information degree, between **DETAILED** and **BASIC**. By selecting the Basic level, information obtained by the Info function about an object is related on the particular characteristics of that objects, instead by selecting Detailed (Info Level Detailed) the information is enriched by further details. The default setting is **DETAILED**.

### 5.3.5 Chart Setting Menu

By selecting **CHART SETTINGS** a window with 4 items is opened on the right side of the screen:

MENU		CHART SETTINGS	
PIN		LAT/LON GRID	ON
GENERAL		CHART BOUNDARIES	ON
<b>MAP SETTINGS</b>		PLOTTER MODE	OFF
DISPLAY		MARK/EVENT ICONS	ON
ALARMS		USER POINTS ID	ON
UNITS			
INPUT/OUTPUT			
FIX & COMPASS			
SIMULATION MODE			
ENTER to select CLEAR to exit		ENTER to select CLEAR to exit	

Fig. 5.3.5 - Chart Settings Menu

- LAT/LON GRID** : enables (ON) or disables (OFF) the displaying of the Latitude and Longitude Grids (LAT/LON). The default setting is ON.
- CHART BOUNDARIES** : enables (ON) or disables (OFF) the displaying of Chart Boundaries. By selecting **AUTO** if we are in background charts only the first charts level contained in the G-CARD are displayed, if in a charts level contained in the G-CARD the next four charts level are displayed. The default setting is ON.
- PLOTTER MODE** : enables (ON) or disables (OFF) the Plotter Mode. The default setting is OFF.
- MARK/EVENT ICONS** : enables (ON) or disables (OFF) the displaying of the Marks and Events symbols and names. The default setting is ON.
- USER POINTS ID** : enables (ON) or disables (OFF) the displaying of the user points (Marks, Events, Waypoints) names. The default setting is ON.

## 5.4 DISPLAY Menu

By selecting **DISPLAY** a window with 9 items is opened on the right side of the screen:

MENU	
PIN	
GENERAL	
MAP SETTINGS	
<b>DISPLAY</b>	
ALARMS	
UNITS	
INPUT/OUTPUT	
FIX & COMPASS	
SIMULATION MODE	
ENTER to select CLEAR to exit	

COORDINATE SYSTEM		DDD MM.MMM
FIX DATUM	WGS 1984	
MAP DATUM	WGS 1984	
MAP ORIENTATION	NORTH UP	
COURSE LINE	OFF	
EXTERNAL WPT	OFF	
CDI SCALE	0.2 Nm	
NAVIGATION PAGE		
SOG	COG	
DTG	CTS	
XTE	STR	
POSITION SYMBOL	BOAT	
ENTER to select CLEAR to exit		

Fig. 5.4 - Display Menu

- COORDINATE SYSTEM** : sets your preferred Coordinate System among **DDD MM SS**, **DDD MM.MM**, **DDD MM.MMM**, **UTM (UTM)**, **OSGB (OSGB)**, **TD (TD)**. The default setting is **DDD MM.MMM**.
- FIX DATUM** : selects the Fix Datum among 130 items (the list of all Fix Datum available is shown in the Part A of "**C-MAP 77** Handbook"). **WGS84** is the default Fix Datum.
- MAP DATUM** : selects the Map Datum among 130 items (the list of all Map Datum available is shown in the Part A of "**C-MAP 77** Handbook") **WGS84** is the default Map Datum.
- MAP ORIENTATION** : sets the map orientation among: **NORTH UP** where the chart is displayed with North upwards. **TRACKUP** where the chart is displayed with the vessel's current heading upwards. The default setting is **NORTH UP**. If you select **TRACK UP**, insert the resolution angle for the Map Orientation in the range [5, 30] degrees. Move the trackball up/down to insert the value and move it to the left/right to move cursor; press 'ENTER' to confirm. The default setting is 15°.
- COURSE LINE** : sets you preferred time among **OFF**, **2 MIN.**, **10 MIN.**, **30 MIN.**, **1 HOUR**, **2 HOUR**, **INFINITE**. The default setting is **OFF**.
- EXTERNAL WPT** : enables (ON) or disables (OFF) the External Waypoint option. When it is ON, if the \$--BWC NMEA message is received correctly the symbol of the External Waypoint is palced on the cartography. The default setting is OFF.
- CDI SCALE** : sets you preferred CDI (Course Deviation Indicator) among 0.2, 0.5, 1.0, 2.0, 4.0, 10.0. The default setting is 0.2.
- NAVIGATION PAGE** : selects among a list of ten values, the six values displayed in the Navigation Page II (See par. 3.1.4). The possible values area: **BRG** (BRG = Bearing), **SOG** (SOG = Speed Over Ground), **COG** (COG = Course Over Ground), **STR** (Stee-ring), **CTS** (CTS = Course To Steer), **TRN** (TRN = Turning), **DTG** (DTG = Distance To Go), **VMG** (VMG = Velocity May Good), **SOA** (SOA = Speed Of Advance), **XTE** (XTE = Cross Track Error).

The default setting is SOG, COG, DTG, CTS, XTE, STR.

**POSITION SYMBOL** : selects the icon of the fix position displayed on the screen between **BOAT** and **SIGHT**.

## 5.5 ALARMS Menu

By selecting **ALARMS** a window with 6 items is opened on the right side of the screen:

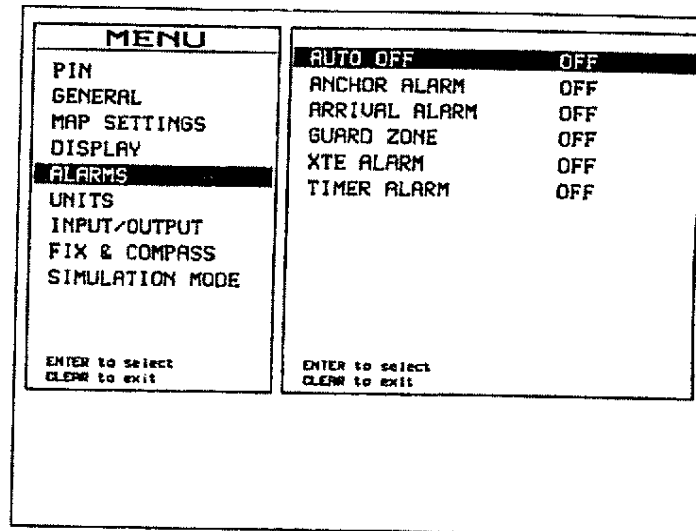


Fig. 5.5 - Alarms Menu

- AUTO OFF** : enables (ON) or disables (OFF) the automatic shutdown of the alarms when the alarm condition disappears.
- ANCHOR ALARM** : disables (OFF) or sets the alarm radius for Anchor Circle (see Anchor Alarm) and places the anchor at ship's position (a valid fix position is used). To insert the desired value use the track-ball. Then press 'ENTER' to confirm. The default setting is OFF.
- ARRIVAL ALARM** : disables (OFF) or sets the alarm radius for Target Circle (see Arrival Alarm). To insert the desired



- value use the trackball. Then press 'ENTER' to confirm. The default setting is OFF.
- GUARD ZONE** : disables (OFF) or sets the alarm radius for Danger Waypoint Circle. To insert the desired value use the trackball. Then press 'ENTER' to confirm. The default setting is OFF.
- XTE ALARM** : disables (OFF) or sets the alarm distance for the Off Course (XTE). To insert the desired value use the trackball. Then press 'ENTER' to confirm. The default setting is OFF.
- TIMER ALARM** : enables (ON) or disables (OFF) the alarm for the timer countdown.

### 5.5.1 Alarms General Conditions

The following alarms conditions may be occurred:

1. Anchor Alarm : when the ship exits from the Anchor Circle, the chart plotter emits a beep and a pop-up window is opened.
2. Arrival Alarm : when the ship enters to the Target circle, the chart plotter emits a beep and a pop-up window is opened.
3. Guard Alarm : when the ship enters to Danger Waypoint Circle, the chart plotter emits a beep and a pop-up window is opened.
4. XTE Alarm : when the ship is off course by more than the value set by the user, setting the "XTE ALARM" option (see par. 5.5), the chart plotter emits a beep and on the screen a window is displayed.
5. Timer Alarm : when the count-down expires, the chart plotter emits a beep and a pop-up window is opened.

---

## 5.6 UNITS Menu

---

By selecting **UNITS** a window with 3 items is opened on the right side of the screen:

MENU	
PIN	
GENERAL	
MAP SETTINGS	
DISPLAY	
ALARMS	
<b>UNITS</b>	
INPUT/OUTPUT	
FIX & COMPASS	
SIMULATION MODE	
ENTER to select CLEAR to exit	

DISTANCE	NM
SPEED	KTS
DEPTH	FT
ENTER to select CLEAR to exit	

Fig. 5.6 - Units Menu

- DISTANCE** : sets the distance unit among **NM** = nautical miles, **SM** = status miles e **KM** = kilometers. The default setting is NM.
- SPEED** : sets the speed unit among **KTS** = knots, **MPH** = miles per hour e **KMH** = kilometers per hour. The default setting is KTS.
- DEPTH** : sets the depth unit among **FT** = Feet, **FM** = Fathoms and **MT** = Meters. The default setting is FT.

## 5.7 INPUT/OUTPUT Menu

By selecting **INPUT/OUTPUT** a window with 4 items is opened on the right side of the screen:

MENU	
PIN	
GENERAL	
MAP SETTINGS	
DISPLAY	
ALARMS	
UNITS	
<b>INPUT/OUTPUT</b>	
FIX & COMPASS	
SIMULATION MODE	
ENTER to select CLEAR to exit	

NMEA0183 PORT1	4800-N81-N
NMEA0183 PORT2	4800-N81-N
OUTPUT FORMAT	OFF
PRINTER OUTPUT	9600
ENTER to select CLEAR to exit	

Fig. 5.7 - Input/Output Menu

- NMEA0183 PORT1** : sets the format for the navigation data input PORT1 (POWER & I/O). For example to set the Port as NMEA0183 (4800 Baud Rate, Parity None 8 Bits Number, 1 Stop Bit and Normal Polarity), you must select 4800-N81-N. The available choice is among (4800-N81-N), (9600-O81-N), (1200-N81-N), (4800-N81-I), (9600-O81-I), (1200-N81-I). The default setting is (4800-N81-N).
- NMEA0183 PORT2** : sets the format for the navigation data input PORT2 (GPS). See the previous item.
- OUTPUT FORMAT** : sets the autopilot output format among 0183, 0180, 0180/CDX or OFF. The default setting is OFF.
- PRINTER OUTPUT** : sets the Baud Rate for the printer among OFF, 300, 600, 1200, 2400, 4800, 9600. The default setting is OFF.

## 5.8 FIX & COMPASS Menu

By selecting **FIX & COMPASS** a window with 10 items is opened on the right side of the screen:

MENU	
PIN	
GENERAL	
MAP SETTINGS	
DISPLAY	
ALARMS	
UNITS	
INPUT/OUTPUT	
<b>FIX &amp; COMPASS</b>	
SIMULATION MODE	
ENTER to select CLEAR to exit	

CORRECTION OFF	
COMPUTE	
CHANGE	
POSITION FILTER	OFF
SPEED FILTER	OFF
FILTER DUMP	500
BEARINGS	MAGNETIC
MAGNETIC VARIAT.	AUTOMATIC
MAGNETIC VARIAT.	00.0 E
CALIBRATE COMPASS	
ENTER to select CLEAR to exit	

Fig. 5.8 - Fix & Compass Menu

- FIX CORRECTION** : enables (ON) or disables (OFF) the Correction from the positioning system. If the new Correction is calculated, but the Correction is not enabled, the ship's position is not changed. The default setting is OFF.
- COMPUTE CORR** : automatically corrects fixes from the positioning instrument. By placing the cursor on the ship's real position and selecting this option, the error is calculated and internally memorized for appropriate Correction, but not applied until the setting ON on fix Correction.
- CHANGE CORR** : manually corrects fixes from the positioning instrument. Once this option is selected, a window with the cursor coordinates is opened on the screen; move the trackball up/down to insert the desired value, move it to the left /right to move the cursor to the desired field, press the 'ENTER' key to accept.
- POSITION FILTER** : enables (ON) or disables (OFF) the Position Filter. The default setting is OFF.
- SPEED FILTER** : enables (ON) or disables (OFF) the Speed Filter. The default setting is OFF.
- FILTER DUMP** : sets the Filter step. Move the trackball up/down

to insert the desired value in the range [500 - 12000], move it to the left/right to move the cursor to the desired field, press the 'ENTER' key to accept. A bigger value means on heavy filter and it is applied to both position and speed filter. The default value is 500.

- BEARINGS** : selects either degrees magnetic, **MAGNETIC**, or degrees true, **TRUE**. If magnetic readings are selected the variation is computed automatically for every zone as soon as the chart displayed. The default setting is MAG.
- MAGNETIC VARIAT.** : calculates the Magnetic Variation in an automatic, **AUTOMATIC**, or manual mode, **MANUAL**. The default setting is AUTOMATIC.
- MAGNETIC VARIAT.** : selects the step for manual calculation of Magnetic Variation. To insert the desired value use the trackball: by moving it up/down the selected value is increased/decreased, by moving it to the left/right the cursor is moved to the left/right. Then press 'ENTER' to confirm.
- CALIBRATE COMPASS** : when selected a window with the Compass Calibration is opened.

<b>MENU</b>		CORRECTION OFF						
PIN		COMPUTE						
GENERAL		CHANGE						
MAP SETTINGS		POSITION FILTER OFF						
<b>CALIBRATE COMPASS</b>								
HEADINGS	N	N/E	E	S/E	S	S/W	W	N/W
DEVIATION	+00°	+00°	+00°	+00°	+00°	+00°	+00°	+00°
<b>Pin &amp; COMPASS</b>		MAGNETIC VARIAT. 00.0 E						
SIMULATION MODE		CALIBRATE COMPASS						
ENTER to select CLEAR to exit		ENTER to select CLEAR to exit						

Fig. 5.8a - Compass Calibration Menu

To modify the Compass Calibration use the trackball: move it to the left/right to move the cursor, then press 'ENTER' and move the trackball up/down to increase/decrease the element pointed by the cursor.

## 5.9 SIMULATION Menu

By selecting **SIMULATION MODE** a window with 3 items is opened on the right side of the screen:

MENU	
PIN	
GENERAL	
MAP SETTINGS	
DISPLAY	
ALARMS	
UNITS	
INPUT/OUTPUT	
FIX & COMPASS	
<b>SIMULATION MODE</b>	
ENTER to select CLEAR to exit	

SPEED	21.0 Kts
HEADING	300° M
SIMULATION MODE	OFF
ENTER to select CLEAR to exit	

Fig. 5.9 - Simulation Menu

- SPEED** : sets the desired value for speed. To insert value use the trackball: move it up/down to increase/decrease value, move it to the left/right to move the cursor left/right. Then press 'ENTER' to confirm. The default setting is 01.0 Kts.
- HEADING** : sets the desired value for heading. To insert value use the trackball: move it up/down to increase/decrease value, move it to the left/right to move the cursor left/right. Then press 'ENTER' to confirm. The default setting is 000° M.

# Chapter 6

## User Data Menu

By pressing the 'USER' key a special menu is activated for the handling of floppy disk.

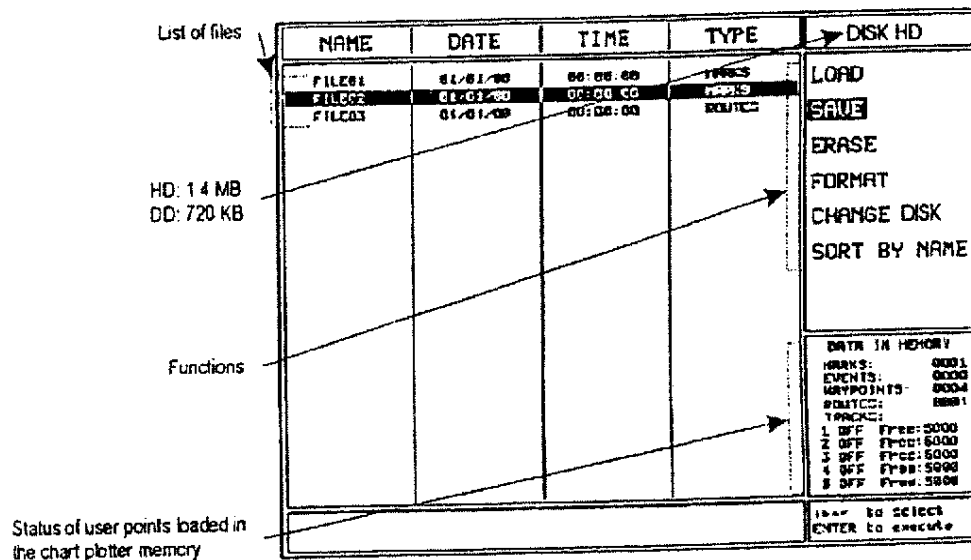


Fig. 6 - User Data Menu

### LOAD

: loads from floppy disk a desired group of use points, for example a file of routes. Before selecting this option, choose the file name in the list shown on the screen, using the trackball.

### SAVE

: stores on floppy disk the desired group (file) of user points, for example a file of routes, presented on screen. After selecting this option, a window is opened on the screen, to insert the file name and the type of data to save.

## SIMULATION MODE

activates (ON) or deactivates (OFF) the Simulation. The activation is possible only if values for required settings for speed and heading have been inserted. When Simulation is set On, on the screen a window for the insertion of the initial point appears.

MENU	
PIN	
GENERAL	
MAP SETTINGS	
DISPLAY	
ALARMS	
UNITS	
INPUT/OUTPUT	
FIX & COMPASS	
<b>SIMULATION MODE</b>	
ENTER to select CLEAR to exit	

SPEED	21.0 Kts
HEADING	300° M
<b>SIMULATION MODE</b>	<b>OFF</b>
	<b>ON</b>
Starting Point:	
04°25.716N	
008°56.399E	
ENTER to select CLEAR to exit	

Fig. 5.9a - Simulation Menu with starting point

Sets the desired coordinates using the trackball and the press the 'ENTER' key. The default setting is OFF and after a power off the Simulation Mode is set to OFF.

### Note for color chart plotter

For the color chart plotter in the Main Menu another item is present to modify the Mark, Waypoint, Event and track color, the COLOR MENU. Note that also the color of the existed user points or tracks is changed when you modify the color by the menu:

MARK COLOR	: allows to select the color for the <u>Mark</u> .
EVENT COLOR	: allows to select the color for the <u>Event</u> .
WAYPOINT COLOR	: allows to select the color for the <u>Waypoint</u> .
TRACK COLOR	: allows to select the color for the <u>track</u> line.
ALT. TRACK COLOR	: allows to select the color for the alternate <u>track</u> .



NAME	DATE	TIME	TYPE	DISK HD
FILE01	01/01/80	00:00:00	MARKS	LOAD
FILE02	01/01/80	00:00:00	MARKS	SAVE
FILE03	01/01/80	00:00:00	ROUTES	ERASE
				FORMAT
				CHANGE DISK
				SORT BY NAME

**ERASE FILE**

Are you sure ?

**YES**      NO

**DATA IN MEMORY**

MARKS: 0001

EVENTS: 0000

WAYPOINTS: 0004

ROUTES: 0001

TRACKS:

1 OFF Free:5000

2 OFF Free:5000

3 OFF Free:5000

4 OFF Free:5000

5 OFF Free:5000

↑↑↑ to select

ENTER to execute

Fig. 6b - Delete File function

## FORMAT

Select YES and then press 'ENTER' to confirm.  
 : formatting floppy disk must be done before using  
 a new floppy disk: this operation prepares the  
floppy disk to receive and store information.

NAME	DATE	TIME	TYPE	DISK HD
FILE01	01/01/80	00:00:00	MARKS	LOAD
FILE02	01/01/80	00:00:00	MARKS	SAVE
FILE03	01/01/80	00:00:00	ROUTES	ERASE
				FORMAT
				CHANGE DISK
				SORT BY NAME

**FORMAT DISK**

All data will be lost.  
Are you sure ?

**YES**      NO

**DATA IN MEMORY**

MARKS: 0001

EVENTS: 0000

WAYPOINTS: 0004

ROUTES: 0001

TRACKS:

1 OFF Free:5000

2 OFF Free:5000

3 OFF Free:5000

4 OFF Free:5000

5 OFF Free:5000

↑↑↑ to select

ENTER to execute

Fig. 6c - Format function

NAME	DATE	TIME	TYPE	DISK HD
FILE01	01/01/80	00:00:00	MARKS	LOAD SAVE ERASE FORMAT CHANGE DISK SORT BY NAME
FILE02	01/01/80	00:00:00	MARKS	
FILE03	01/01/80	00:00:00	ROUTES	

**SAVE FILE**

Name: **FILE04**    Type: **ROUTES**

↑↓←→ to select  
ENTER to accept

DATA IN MEMORY	
MARKS:	0001
CVCHTS:	0000
WAYPOINTS:	0004
ROUTES:	0001
TRACKS:	
1 OFF	Free:5000
2 OFF	Free:6000
3 OFF	Free:5000
4 OFF	Free:5000
5 OFF	Free:5000

↑↓←→ to select  
ENTER to execute

Fig. 6a - Save File function (1)

Choose the file name. At first a default name ("FILEXX") is shown: press 'MENU' and then use the trackball to insert the desired name. Press 'ENTER' to confirm. Use the trackball to select the type of data to save on floppy disk, press 'MENU' and rotate the trackball to select among EVENTS, MARKS, TRACK and ROUTES; press the 'ENTER' key to confirm the save. By pressing 'ENTER' again the window disappears from the screen.

### Note

When naming a file, you may have trouble finding a name that uniquely identifies the file's contents. Dates, for example, are often used in filenames; however, they take up several characters, leaving you with little flexibility. The secret is to find a compromise, a point where you can combine a date with a word, creating a unique filename. The maximum length of the filename is 8 characters. The characters may be numbers (0, ..., 9), letters (A, ..., Z) and spaces (for example legal identifiers are "ABC", "AA", "12121212", "A B C", "1 A 1", and so on.

### DELETE

: just as you may need to save files, you may also need to remove old or unnecessary files to clean up your floppy disk. When you want to erase a file from floppy disk, you can use this option. Remember, though, that this option permanently erases the file.

# Chapter 7

## The Chart Plotter

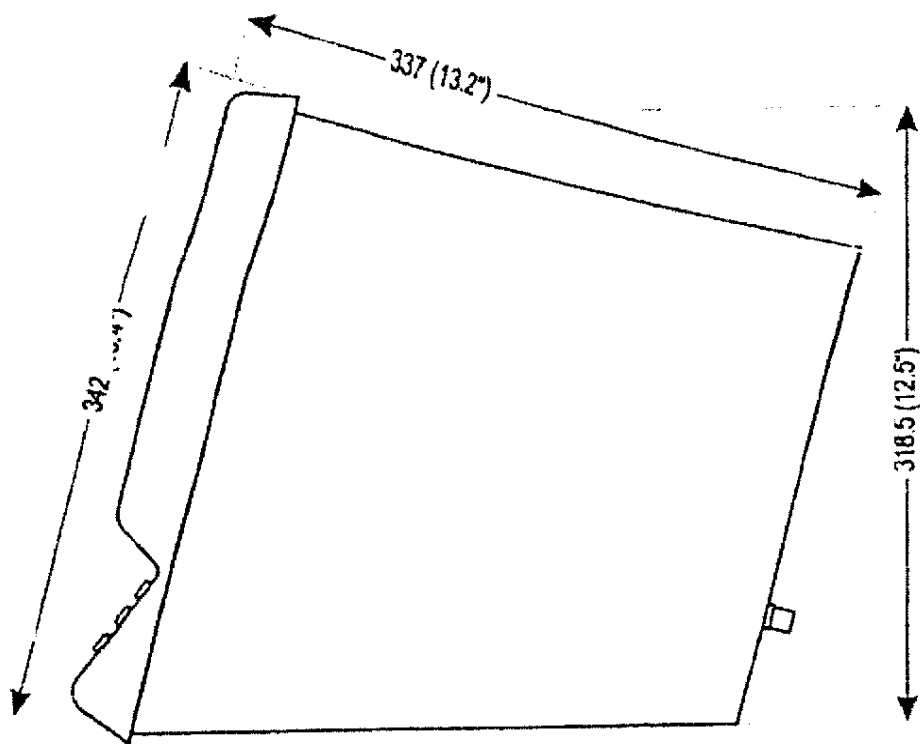
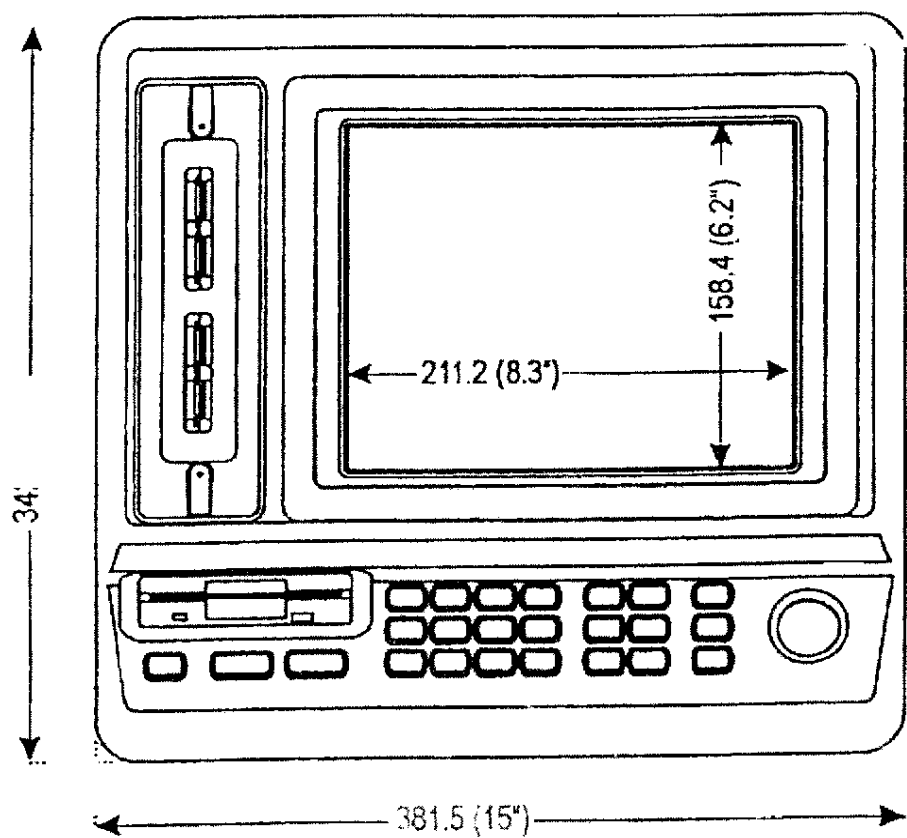
### 7.1 Features

The technical specifications of the chart plotter are:

- Power consumption (mono) .... : 25 Watt (Max), 10 - 35  
Volt dc
- Power consumption (color) ..... : 15 Watt (Max), 10 - 35  
Volt dc
- Interface ..... : NMEA-0183
- Autopilot Interface ..... : NMEA-0180  
NMEA-0180/CDX  
NMEA-0183 (\*)
- Display (mono) ..... : 12" CRT
- Display (color) ..... : LCD 10,4" TFT Color
- Display Resolution ..... : 640 x 480 pixels
- Cartography ..... : **C-MAP NT C-CARD**
- Operational temperature range : 0/+55 gradi Celsius
- Memory ..... : Non volatile with battery  
back-up
- Keyboard ..... : Silicon rubber, backlight
- Weight ..... : 8,5 Kg.
- Floppy disk ..... : 3" 1/2 1.4 MB
- Dimensions: (mm[inch])

**CHANGE** : Press the 'ENTER' key to confirm the formatting  
: allows to change the floppy disk present into the  
drive. After selecting this option, insert the floppy  
disk and then press the 'ENTER' key to confirm.

**SORT**  
**BY NAME/TYPE/DATE** : allows to order the contents of the floppy disk  
directory (by name, type or date). Each time the  
'ENTER' key is pressed, one among the three  
possible sorts is selected.



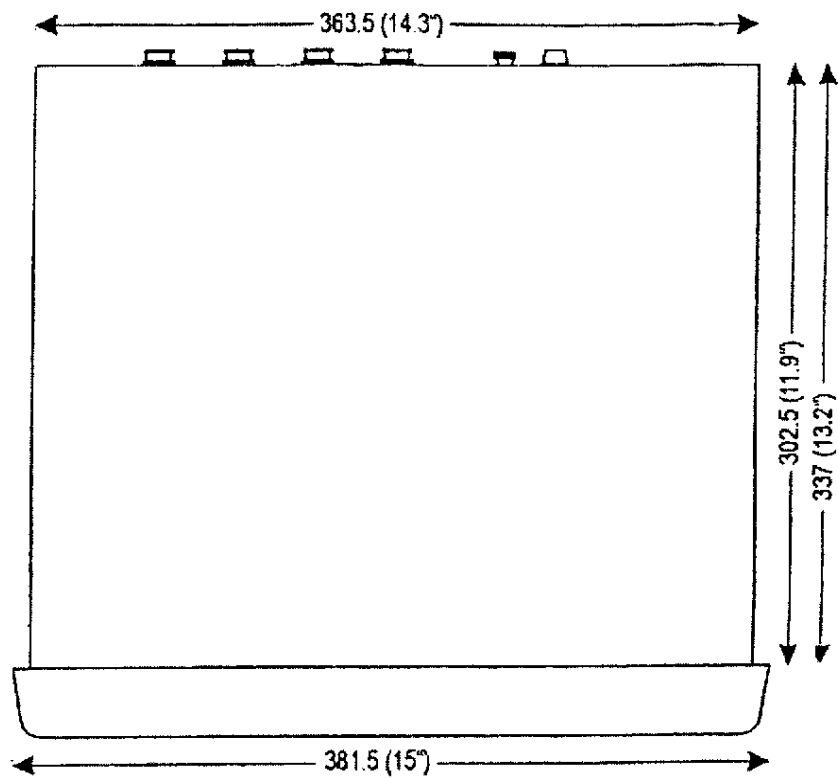
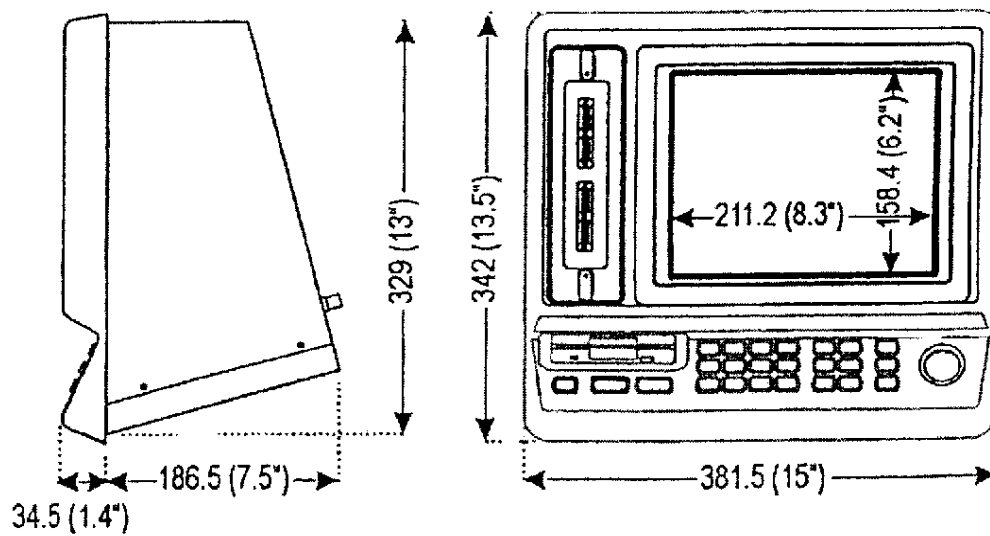
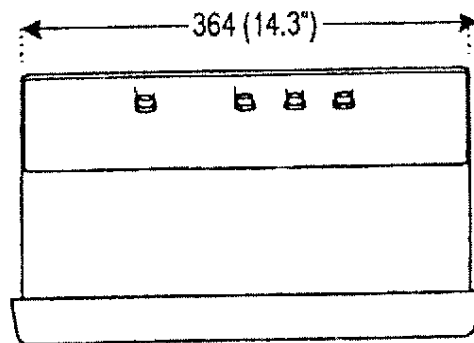


Fig. 7.1 - Monocromatic chart plotter dimensions





*Fig. 7.1a - Color chart plotter dimensions*

---

**Note**

(\*) In accordance with Standard NMEA-0183 V.2.00

---

The following items are shipped with the chart plotter:

- Power supply and I/O cable 1,5 mt./5.9"  
cable code: CBC0FS0702 (monochrome version)
- 2 GPS cables 1 mt./3.9"  
cable code: CBC0FS0603
- Desktop Brackets
- External packaging
- Instruction manual

---

## **7.2 Installation**

---

To install the chart plotter:

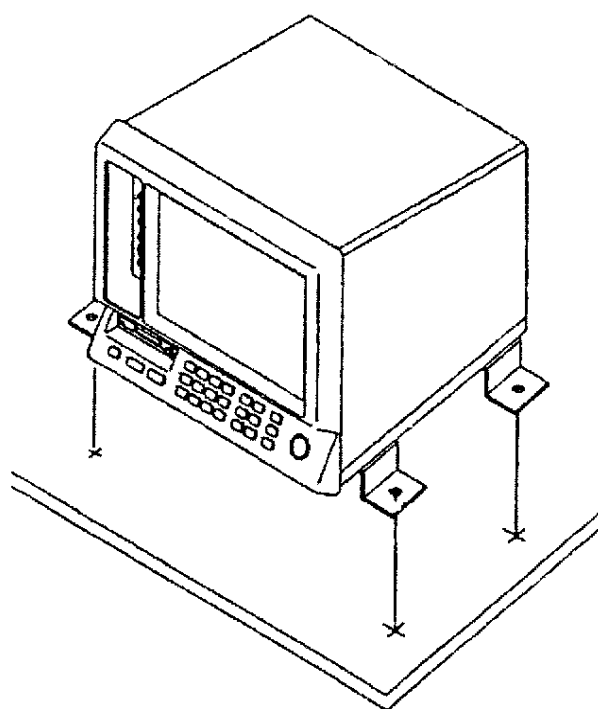
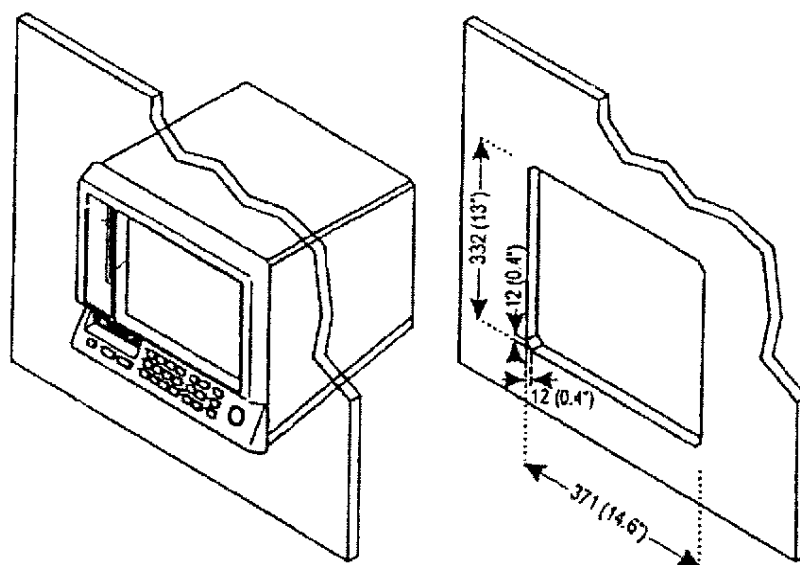


Fig. Monocromatic hart plotter stallation ype



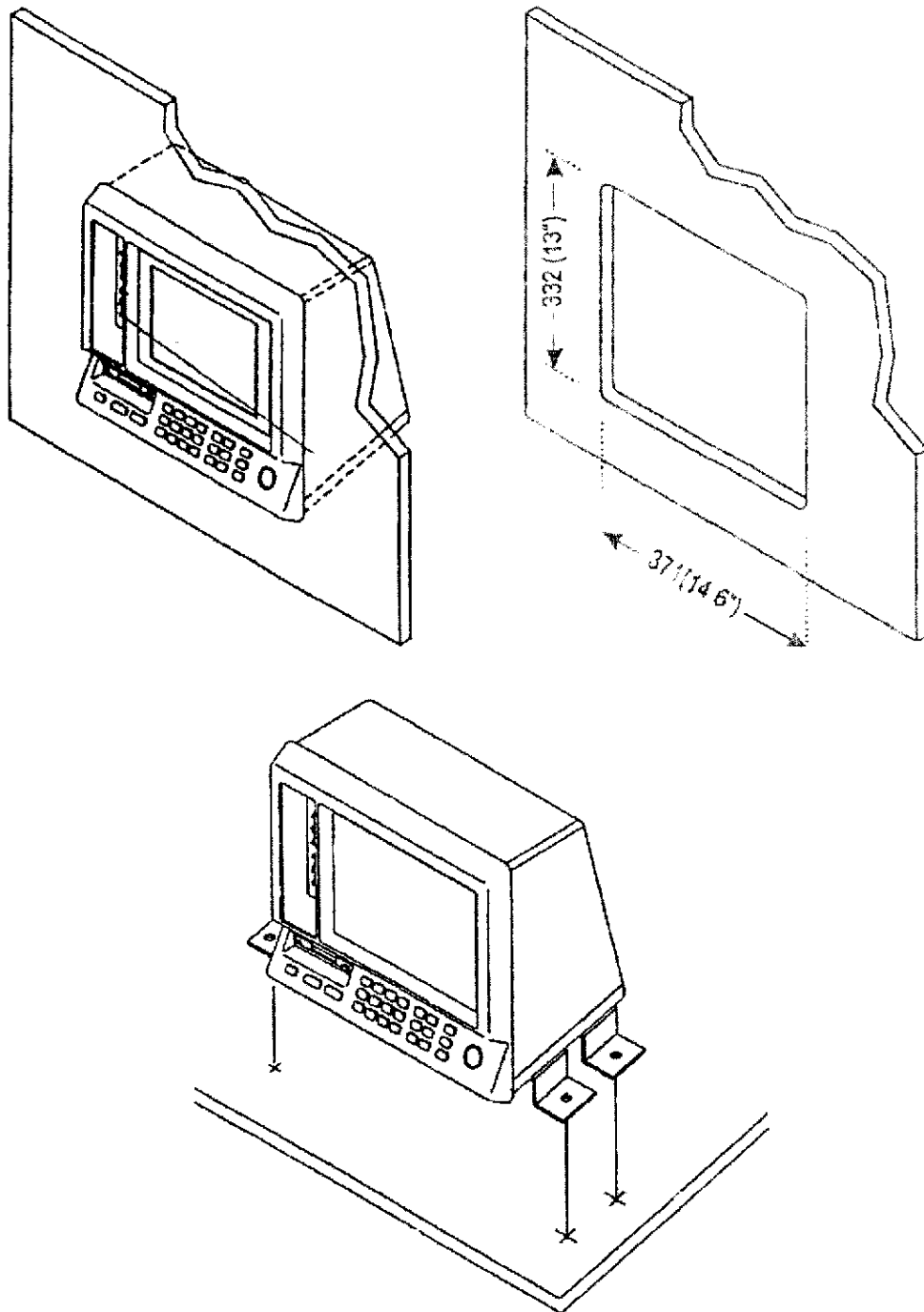
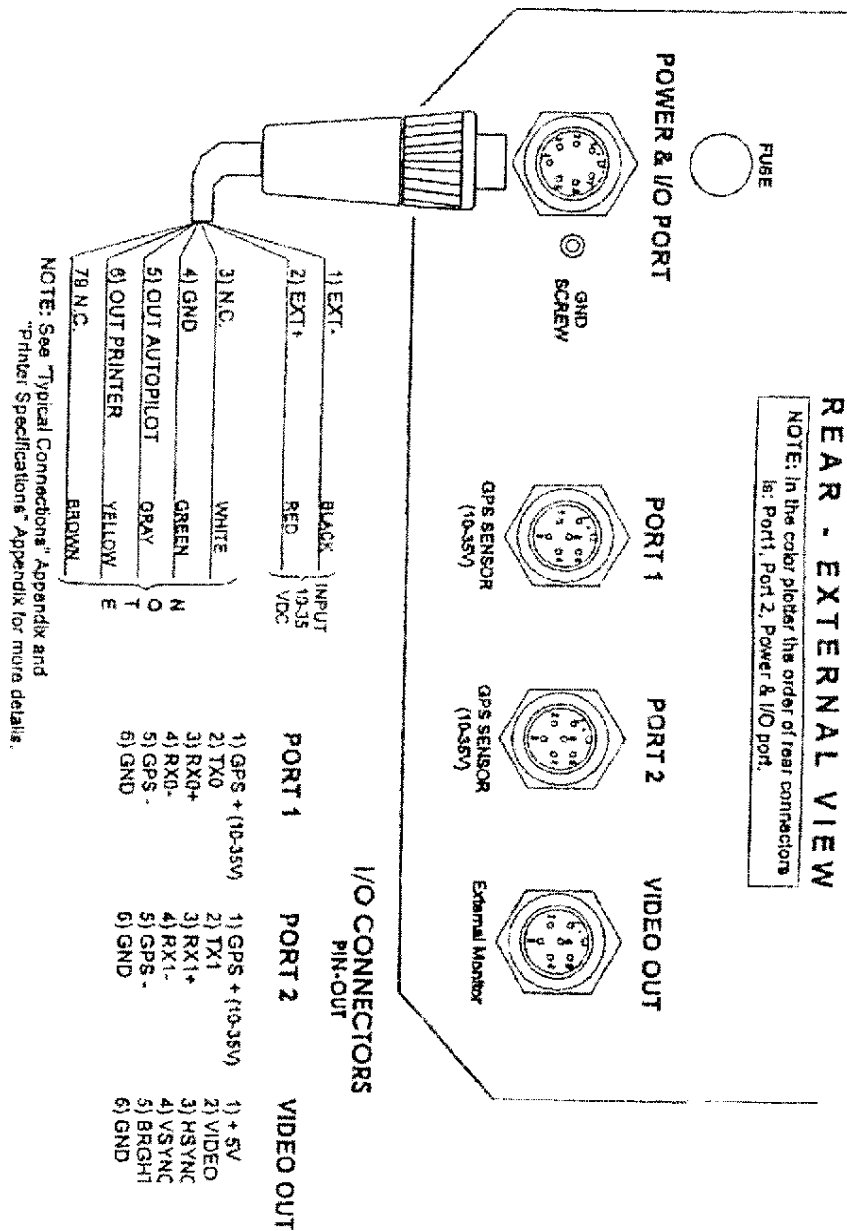


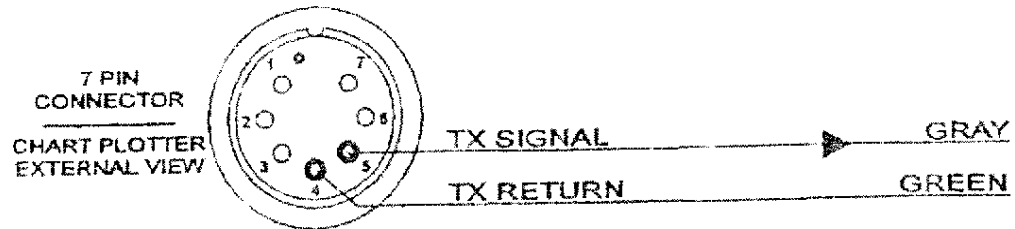
Fig 2a - Color chart plotter installation type

## 7.3 External Wiring



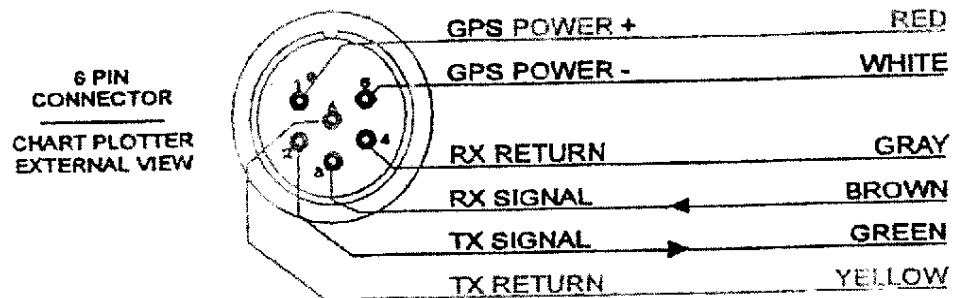
## 7.4 Typical Connections - "POWER & I/O" Connector

### OUTPUT (AUTOPILOT)



### GPS SENSOR (10-35V)

#### GPS PORT



#### NOTE:

Wire colors are referred to the supplied 6-wires cable.

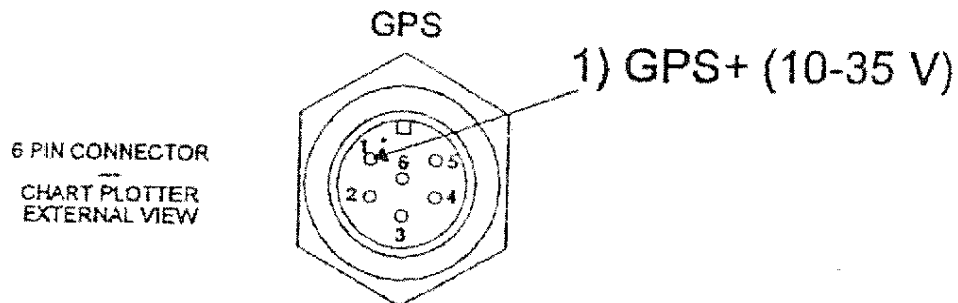
# WARNING!!!

The "GPS Port" on this unit supplies a 10-35Vdc voltage (on pin 1) to power a GPS Sensor.

## Caution

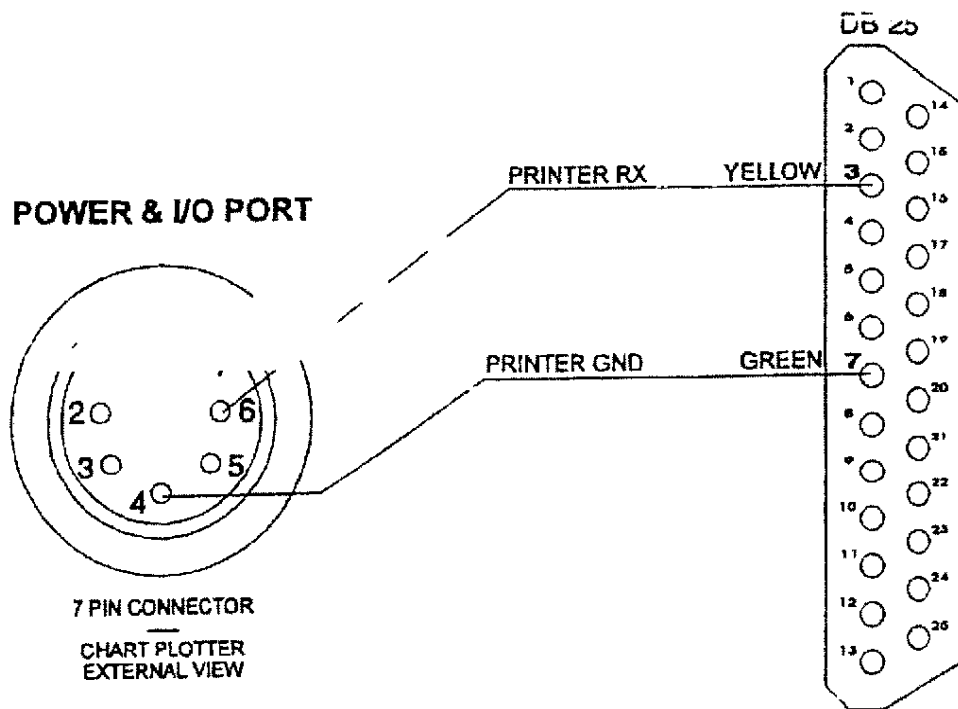
Do not attempt to connect a 5Vdc GPS Sensor to this port as the over voltage will cause serious damage to the GPS Sensor.

If you have any doubts as to the GPS Sensor operating voltage, please contact your local agent before you complete this installation.



## 7.5 Printer Settings

The printer must be connected to the chart plotter via a serial cable with 2 wires from the 7 Pin Conxall Connector as shown in the following figure:



The printer serial interface RS232 must be initialized in the following mode:

- 8 bit data
- 1 stop bit
- no parity
- 4800 Baud
- Data protocol : Ready/Busy
- Carrier detect : Disabled
- Clear to send : Disabled
- Data set ready: Disabled
- CR definition : CR only
- LF Definition : LF only
- Page Length : 11"

We support printers compatible with one of the following formats:

- EPSON LQ 2500
- IBM PROPRINTER XL24 in AGM mode.

---

## SYSTEM TEST

---

---

### A.1 How System Test works

---

If you have connected your position-finding according to the instructions, and chosen the proper menu selection for your device, and are still having problems with your chart plotter, the extended auto-test should help determine the problem.

Make sure the chart plotter is turned off. While pressing and holding any other key, turn the chart plotter on. A new menu will appear on the display:

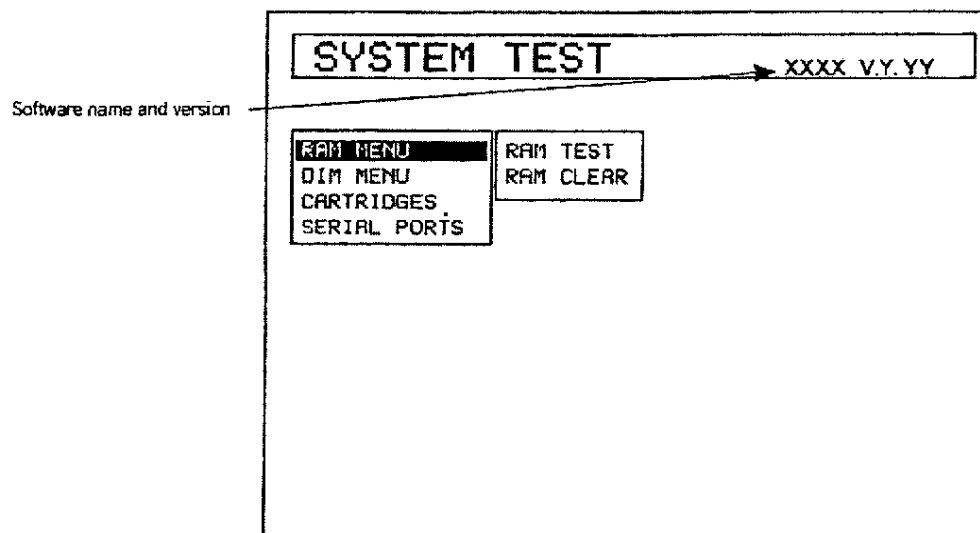


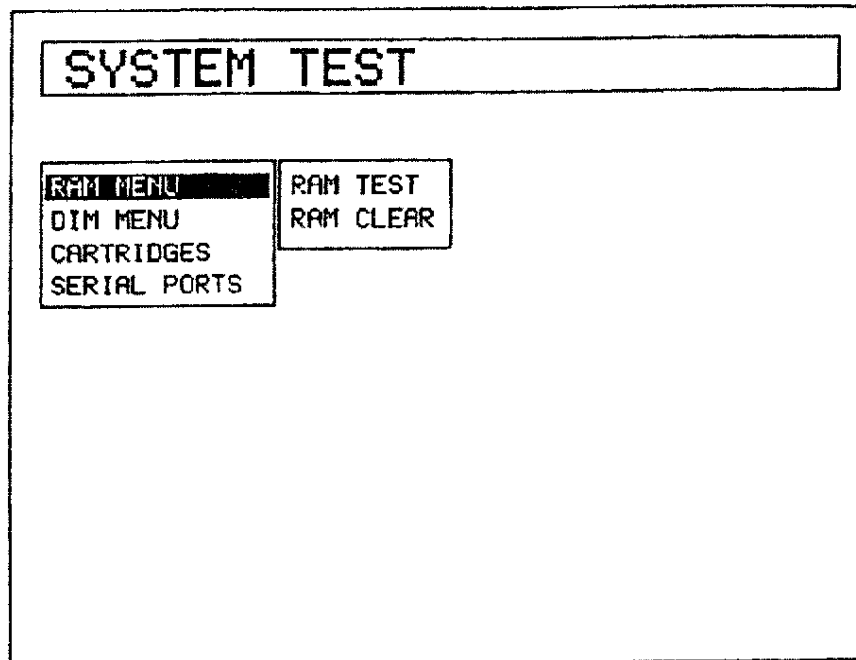
Fig. A.1 - System Test

Use the trackball to select the desired test: this will display in reverse video and with the relative menu window. To choose the test press the 'ENTER' key. To exit from any submenu press the 'CLEAR' key.

To exit from the System Test turn off the chart plotter.

#### **A.1.1 RAM MENU**

This test verifies the integrity of the memories and if desired during this test all the internal memory can be erased and the default setting restored.



*Fig. A.1.1 - RAM Menu*

The first item of the RAM Menu verifies the integrity of the RAM

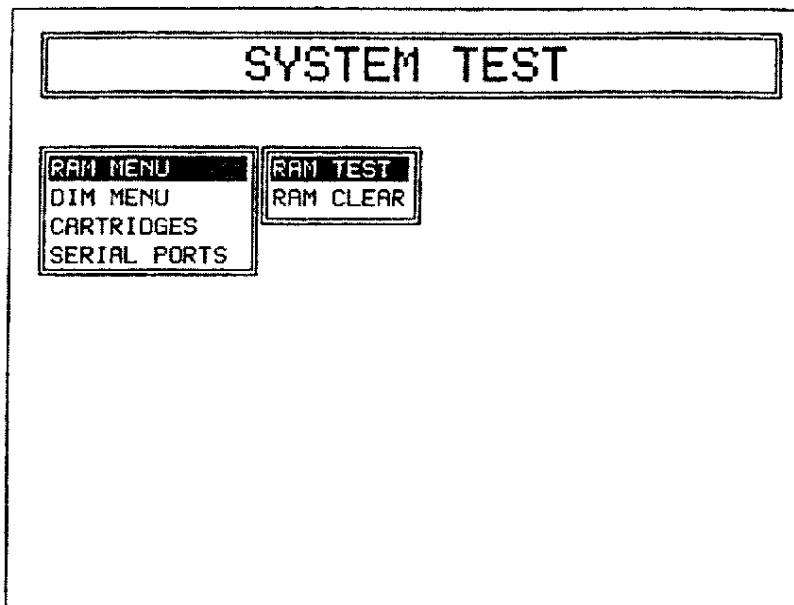


Fig. A.1.1a - RAM Test (I)

Press the 'ENTER' key:

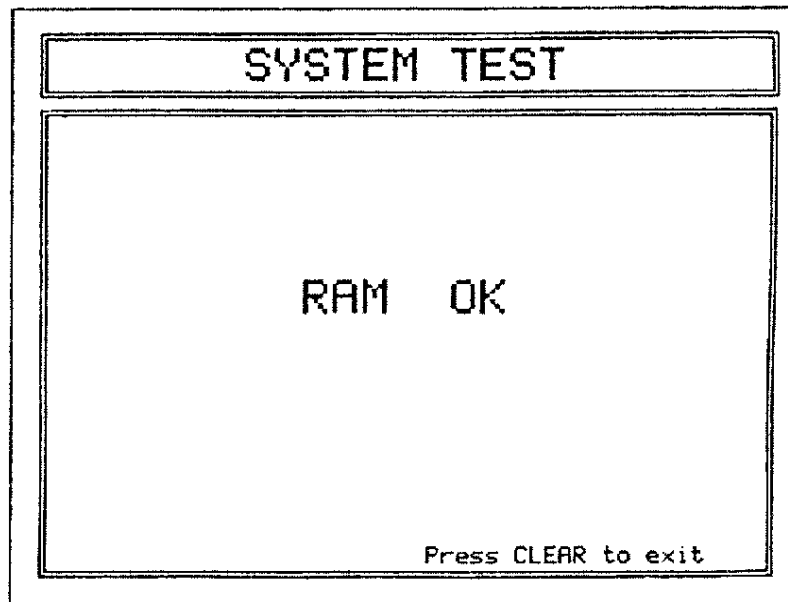


Fig. A.1.1b - RAM Test (II)

If on the screen the message "ERROR" appears, the RAM is physically damaged.



The second item allows to clear internal memory. If the char plotter exhibits unusual behavior, or appears to be malfunctioning, it may be possible to correct the problem by clearing RAM. This operation will erase all Marks, Events, Routes, stored track plots and destinations. It will also return all selections (Input Data Format, Autopilot selection, etc.) to original default values.

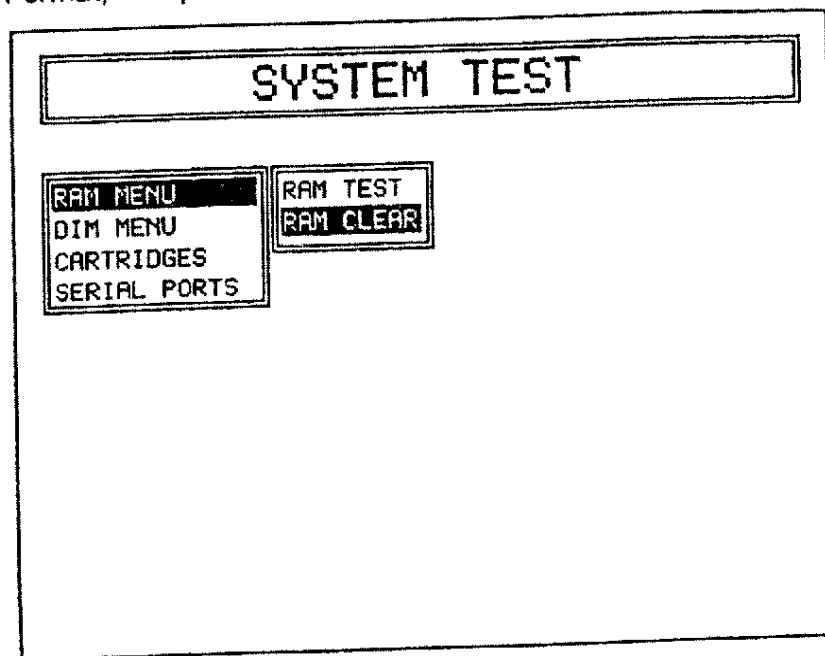
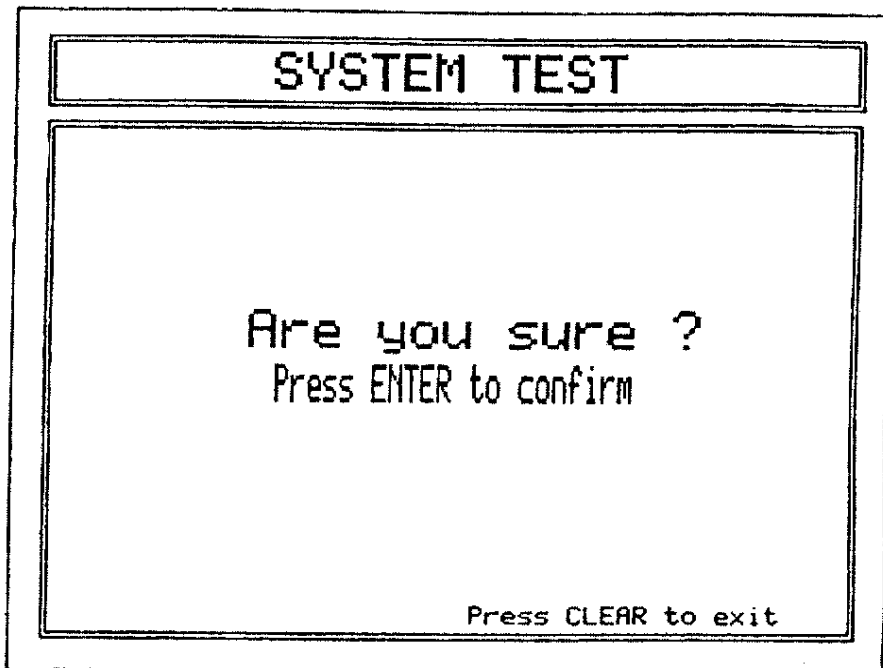


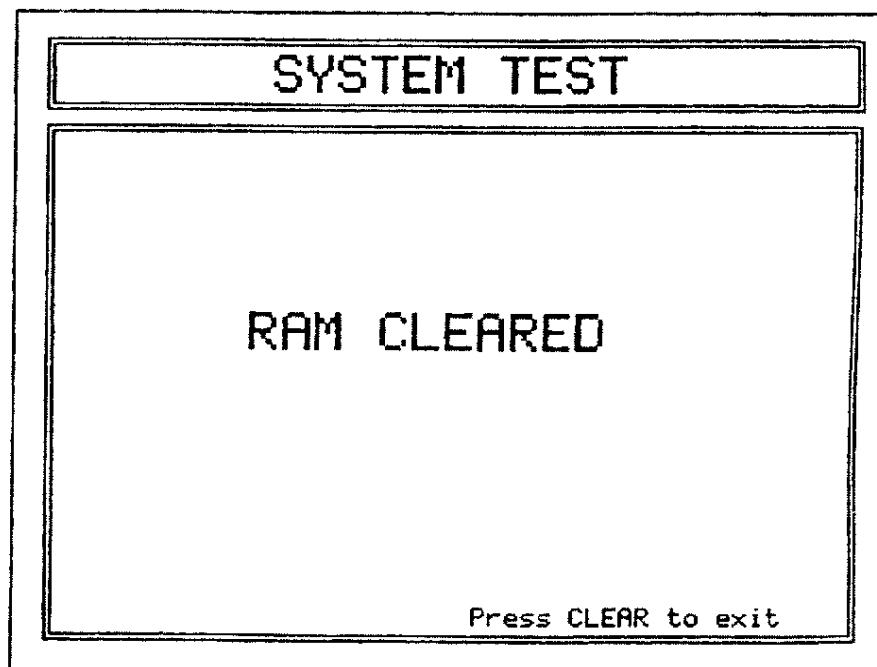
Fig. A.1.1c - Clearing RAM (1)

Press 'ENTER' key:



*Fig. A.1.1d - Clearing RAM (II)*

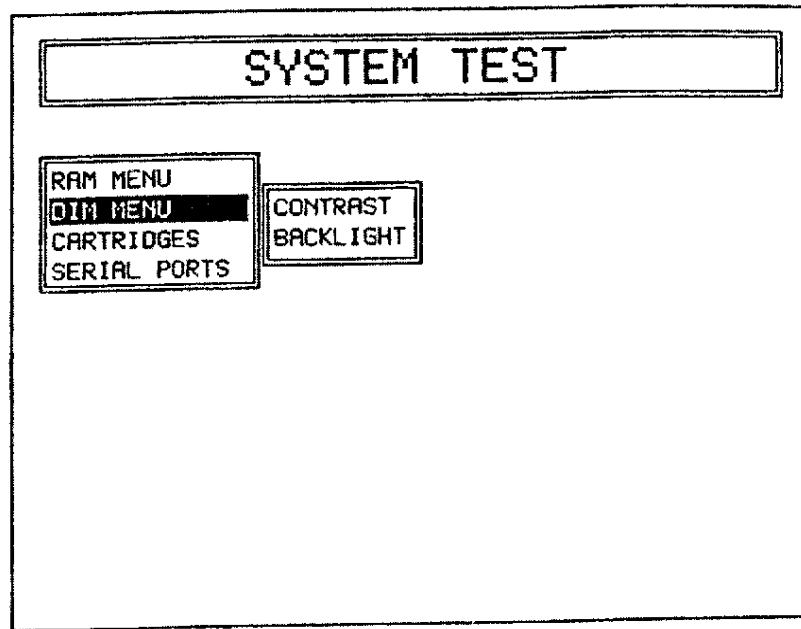
To confirm your decision to clear RAM, press 'ENTER' (but if at this time you do not wish to clear RAM press 'CLEAR'):



*Fig. A.1.1e - Clearing RAM (III)*

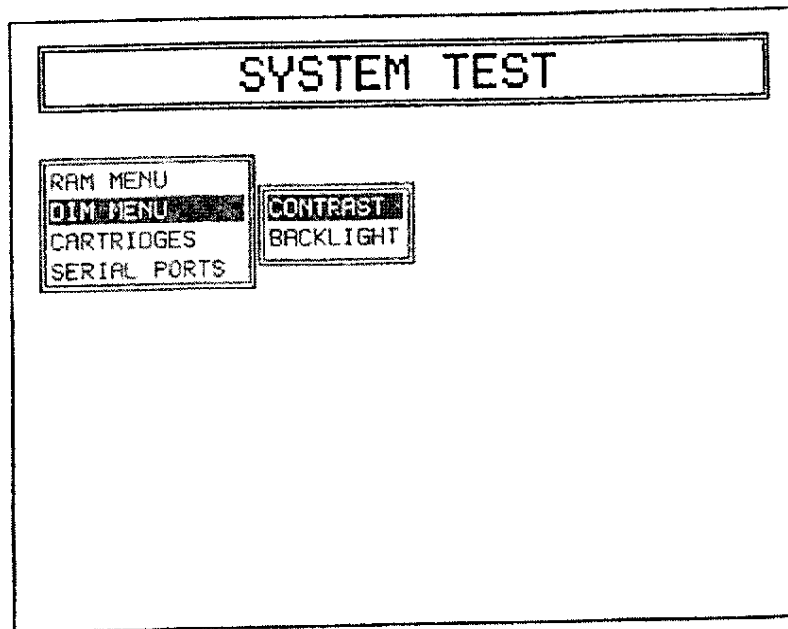
### A.1.2 DIM MENU

The DIM MENU allows to select value for contrast and backlight.



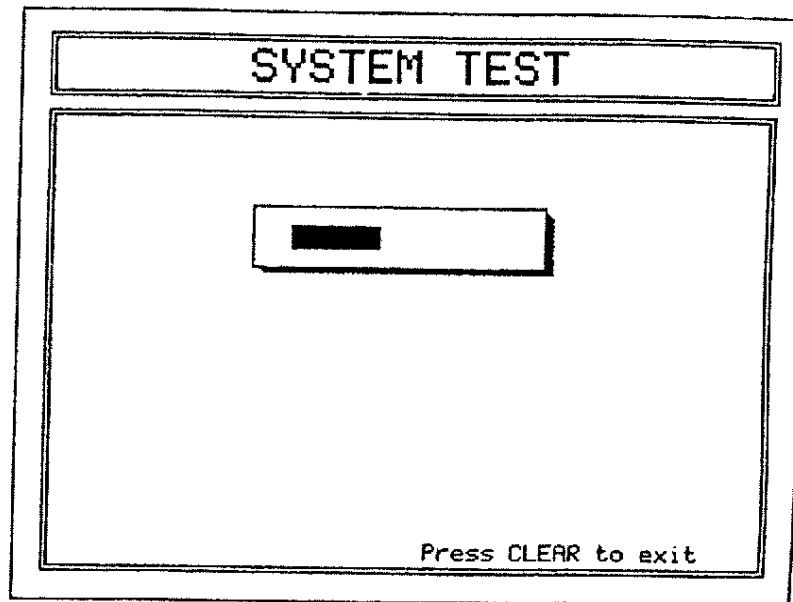
*Fig. A.1.2 - DIM Menu*

The first item allows to set the contrast (this item is NOT available on the color chart plotter):



*Fig. A.1.2a - Contrast setting (1)*

Press 'ENTER':



*Fig. A.1.2b - Contrast setting (II)*

Each time you rotate the trackball to right, the screen will decrease brightness, instead of to left it will increase brightness.

The second option allows to set the backlight.

### **A.1.3 CARTRIDGES**

The CARTRIDGES Menu allows to check the G-CARD and its connector.

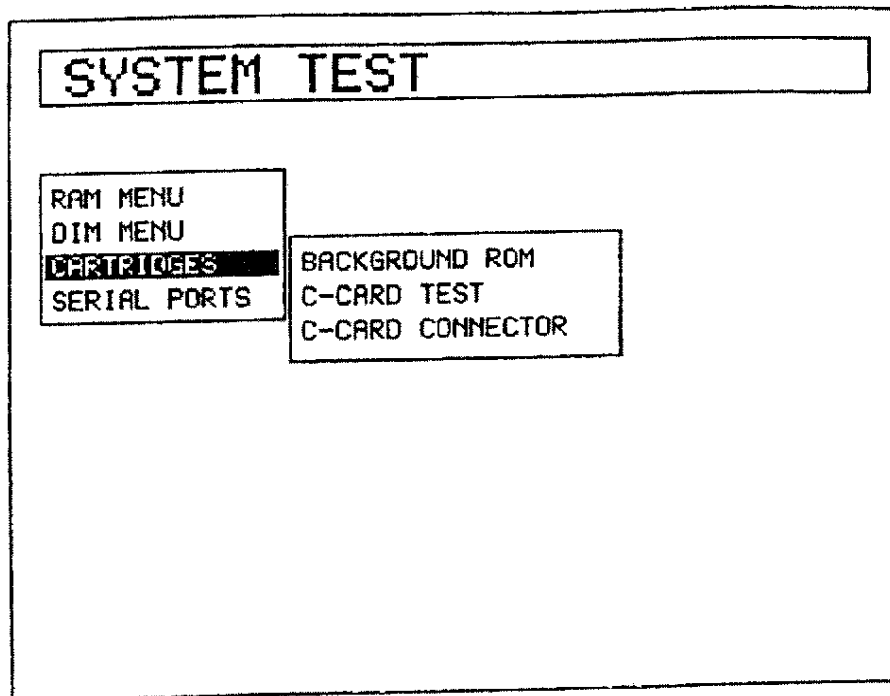


Fig. A.1.3 - C-CARD Menu

The first item allows to test the background charts:

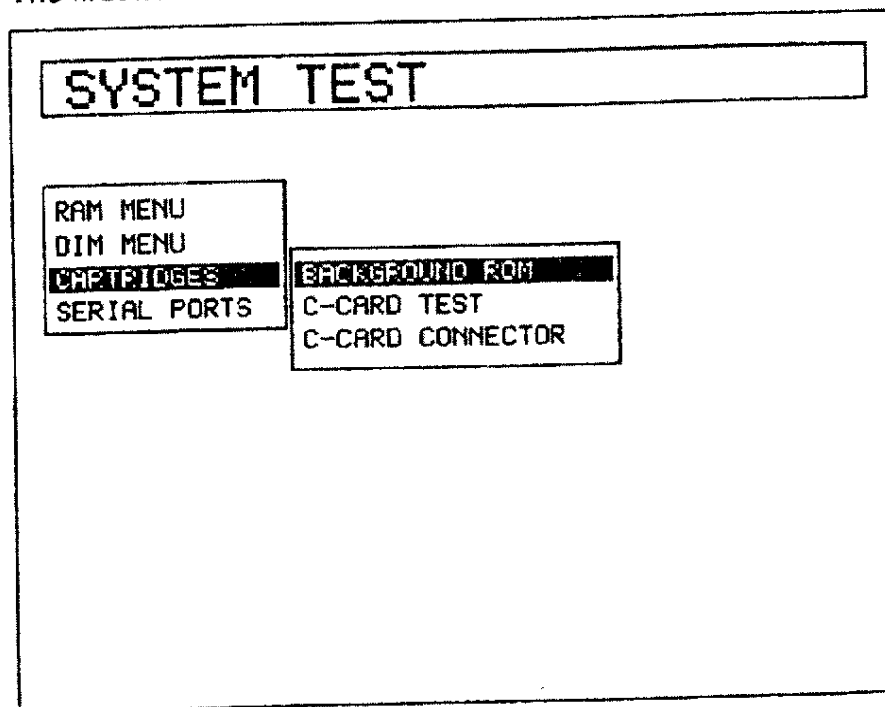
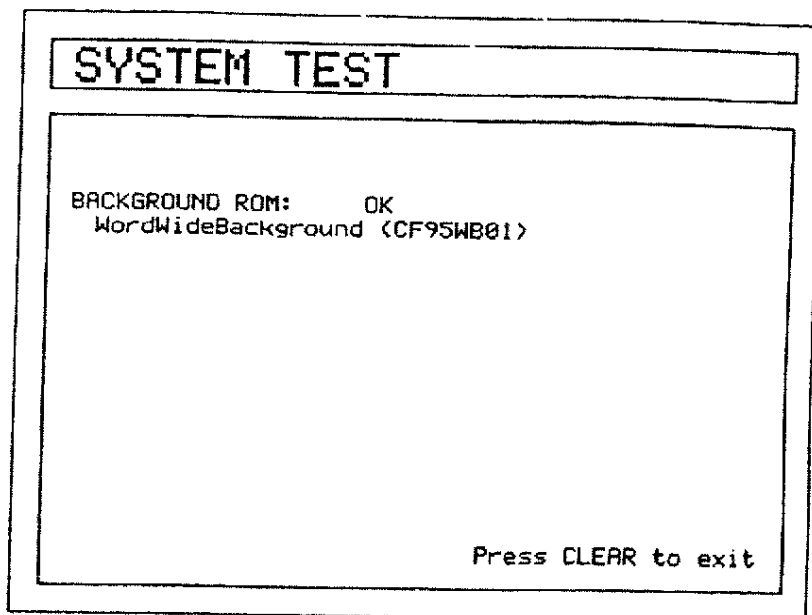


Fig. A.1.3a - Background Rom Test (1)

Press the 'ENTER' key:



*Fig. A.1.3b - Background Rom Test (II)*

There are two possible results:

1. if there is a G-CARD inserted in the slot and there is not a malfunction, the name of the cartridge zone and the message "OK" are shown.
2. if there is a G-CARD inserted in the slot, but it is a damaged cartridge, the name of the cartridge zone and the message "Faulty" are shown.

The second item allows to test the G-CARD:

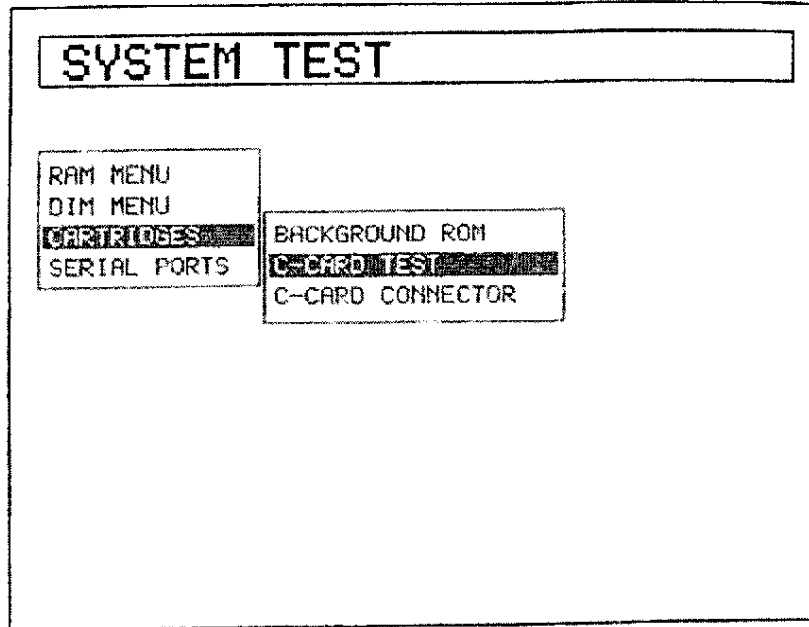


Fig. A.1.3c - C-CARD Test (I)

Press 'ENTER':

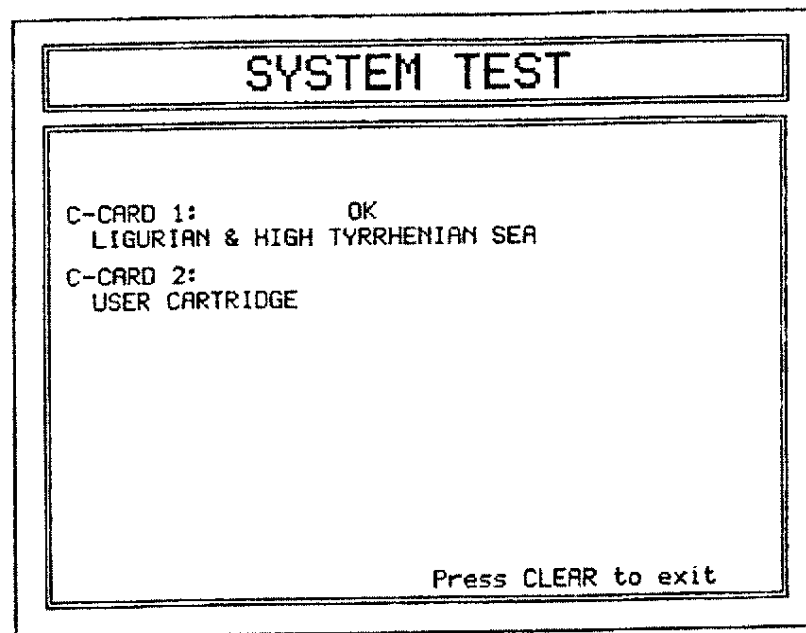


Fig. A.1.3d - C-CARD Test (II)

## Note

The chart plotter has four slots for the G-CARDs, so in the previous figure there are C-CARD 1, C-CARD 2, C-CARD 3 and C-CARD 4.

There are the possible results:

1. if there is a G-CARD inserted in the slot and there is not a malfunction, the name of the cartridge zone and the message "OK" are shown.
2. if there is a G-CARD inserted in the slot, but it is a damaged G-CARD, the name of the G-CARD zone and the message "Faulty" are shown.
3. if there is not any G-CARD inserted in the slot, the message "not present" is shown.

The G-CARD Connector Test indicates if there is a malfunction in the connector. It is used during production.

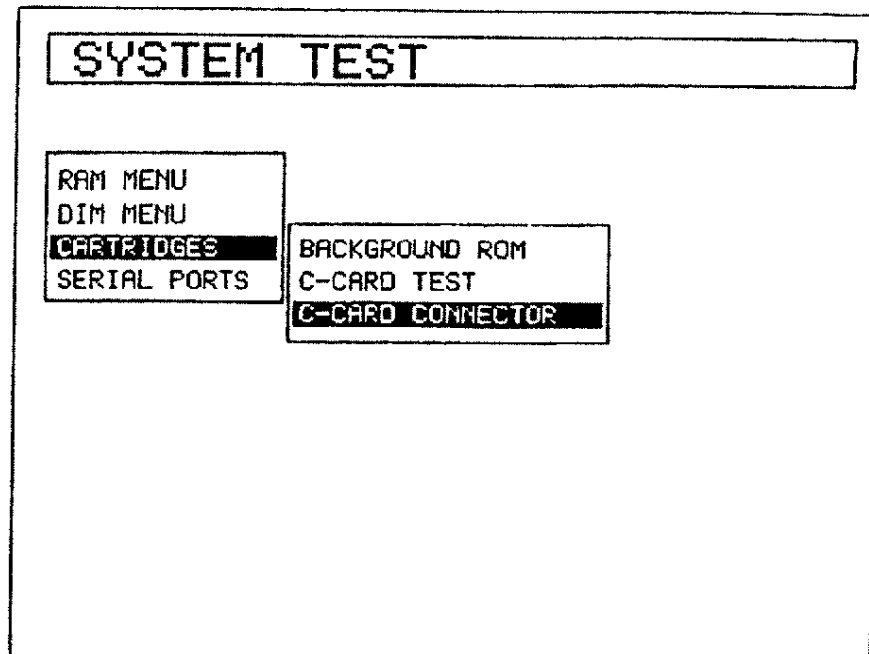
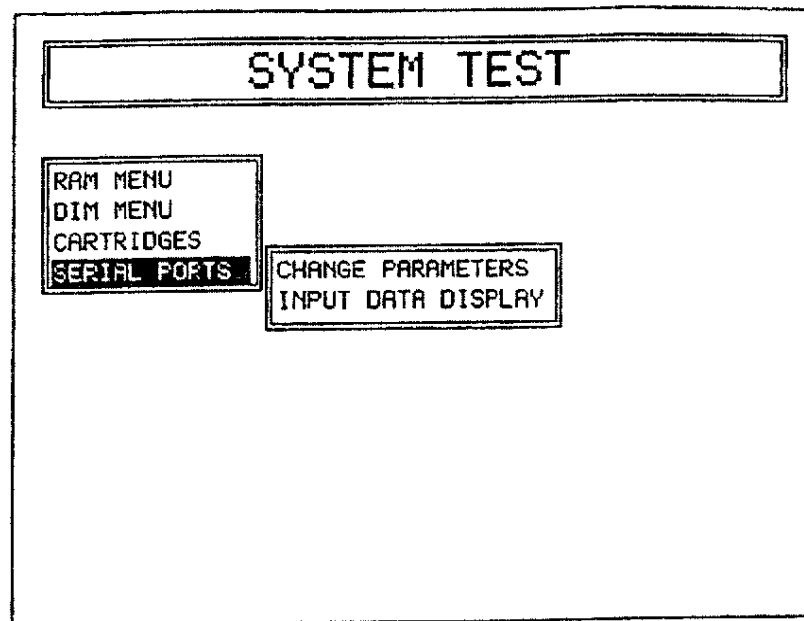


Fig. A.1.3c - Test on G-CARD connector

### A.1.4 SERIAL PORTS

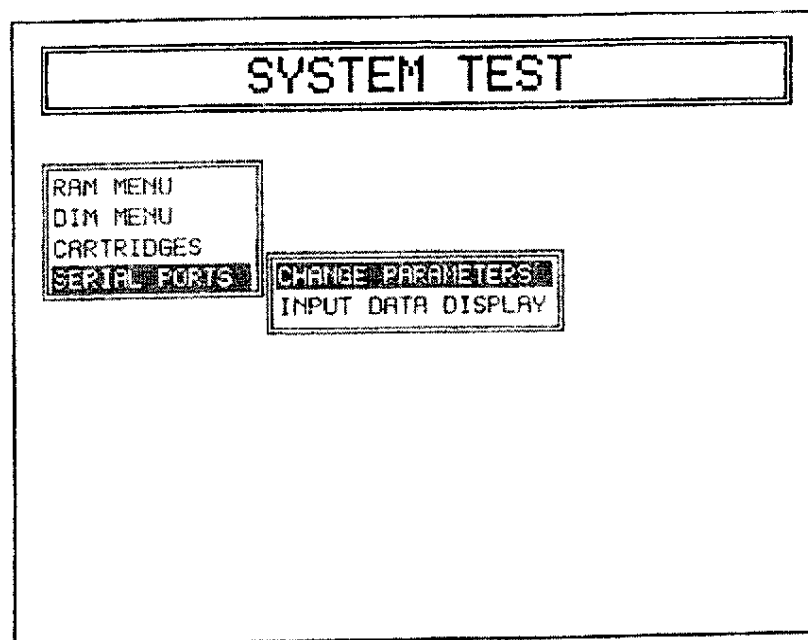
If you are having problems receiving data from the position-finding instrument, this test should help determine the problem. When you select this test a new menu will appear:





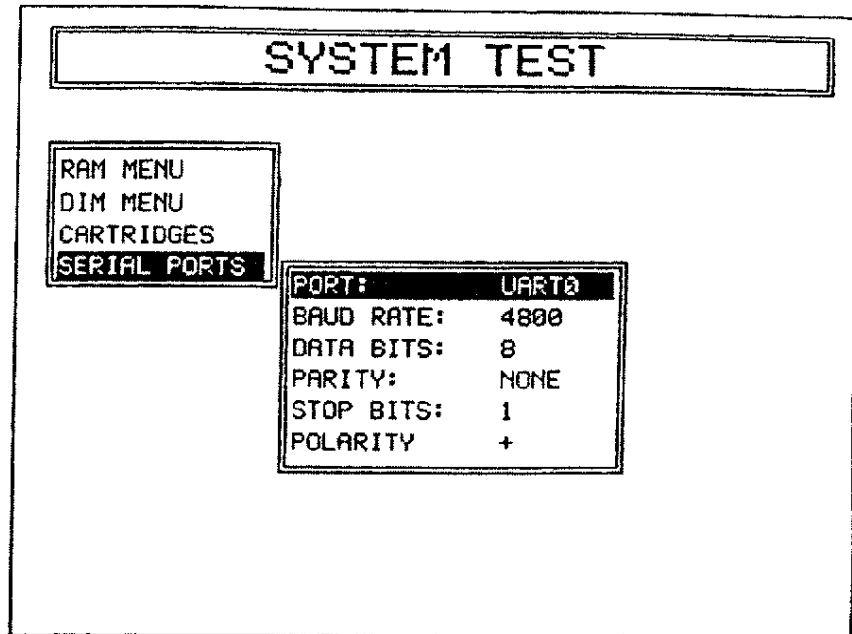
*Fig. A.1.4 - Serial Port Menu*

Press 'ENTER'. The first item allows to change the parameters of the serial interface:



*Fig. A.1.4a - Change parameters (1)*

Press 'ENTER':



*Fig. A.1.4b - Change parameters (II)*

This menu allows to select the **PORT** (Signal Source) between UART0 (POWER & I/O Port) or UART1 (GPS Port), the **BAUD RATE** between 4800 or 9600, the **DATA BITS** (Word Length) between 7 or 8, the **PARITY** between EVEN, ODD or NONE, the **STOP BITS** between 1 or 2, the **POLARITY** between + or -.

The second item allows the chart plotter to act as a computer terminal and display the incoming data exactly as it received.

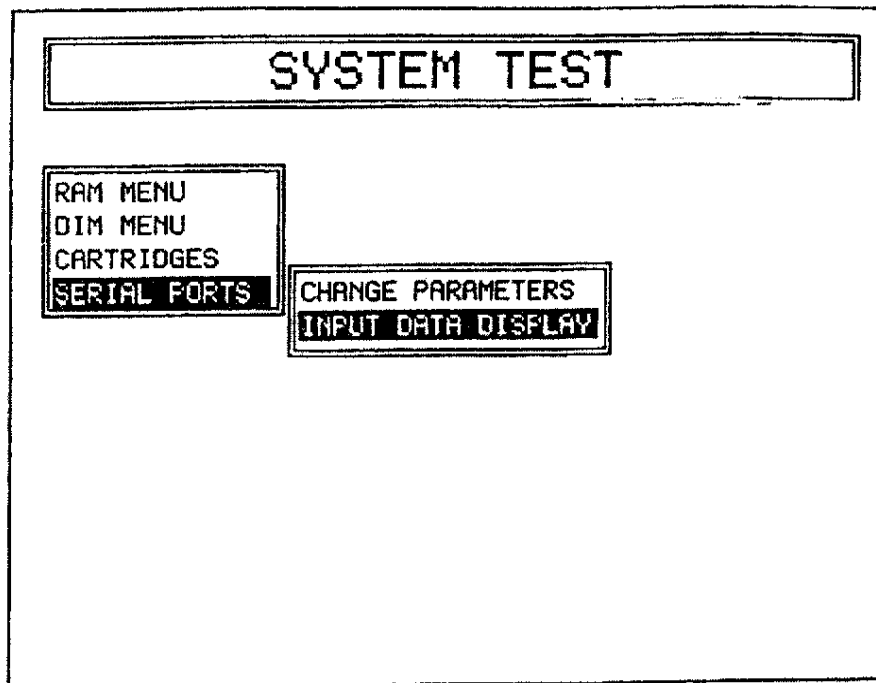


Fig. A.1.4c - Input Data Display (I)

Press 'ENTER':

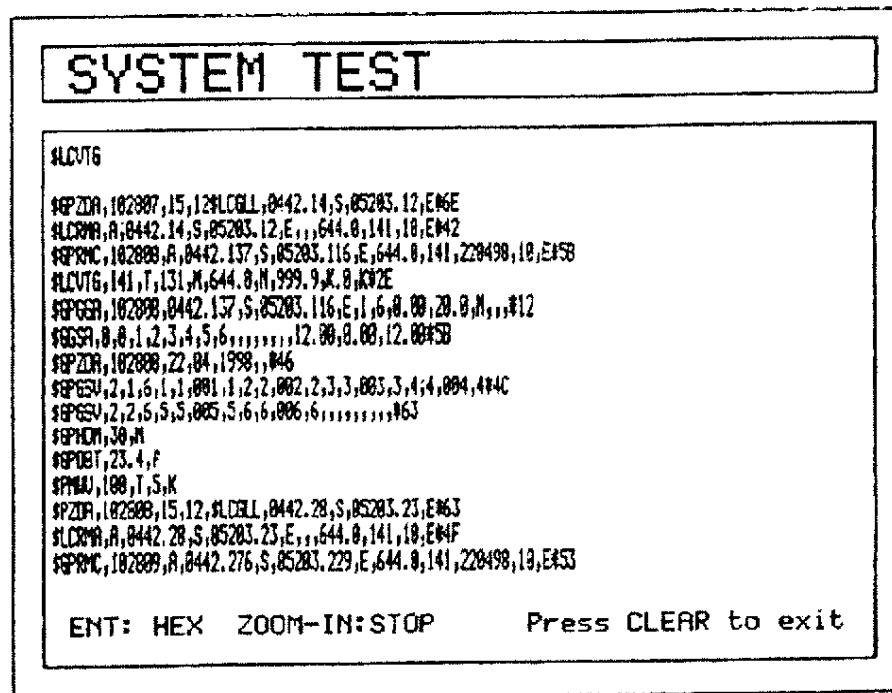


Fig. A.1.4d - Input Data Display (II)

If the data displayed on the screen is unrecognizable, you may have selected the wrong input parameters for your particular

receiver, for example, NMEA-0182 instead of NMEA-0183. Check your receiver manual to be sure that you have selected the proper interface format. If the screen is blank, you may have a broken connection, and no data is being received.

Use the 'ZOOM IN' key to stop (or continue after pause) data displaying, the 'ENTER' key to show data in hex or ASCII mode (normal or small) and the 'CLEAR' key to exit.

---

# GLOSSARY

---

This Glossary explains the terms that may be unfamiliar to the reader. Terms underlined are shown in the Glossary.

## Anchor Alarm

The chart plotter sounds the alarm whenever the distance from the anchor position to the boat's current position exceeds the value chosen by menu.

## Arrival Alarm

Specifies the radius of a circle around the Waypoint: when your vessel reaches this circle the alarm sounds.

## BRG = Bearing

It is the angle between the Nord, True or Magnetic, and a Waypoint. It represents the direction to follow.

## Chain

The Loran chains are groups of transmitting stations that use timed radio pulse transmissions. In each of these chains there is a master station and two or more slave or secondary stations. Stations belonging to a same chain transmit pulses in timing groups: each chain is identified by a different time base. The time base of each chain is called the Group Repetition Interval or GRI.

## Charting

Mode of operation in which all operations refer to the position of the cursor. It is used to prepare the navigation and allows you to plan your course. You do not need to have a position finding device connected to your chart plotter in order to use this mode of operation. When in Charting mode the cursor reaches one edge of the screen, the chart will move in order to show the part of the chart the cursor has been moved to.

## COG = Course Over Ground

The actual direction of your vessel's calculated movement over the ground.

## Compass Calibration

The variation table is used to match a magnetic value readout on the chart plotter comparable with the value given by the compass of the boat. In other words, because of the compass of the boat must be compensated (due to the iron masses, ...) we use the same values given by the chart plotter. This means that, for example, if the BRG to the next Waypoint readout in the chart plotter display is "X" MAG degree, if you steer the boat reading "X" MAG degree from the compass, you are driving toward the next Waypoint well.

## Complex Object Icon

Current official documentation S57 supports "Complex Object". Complex objects are nautical object not containing attributes, but grouping other (element) objects in one logical unit. For example, Navigation aid, float, is the name of one complex object that should group all the navigation aid objects floating in the sea: lights, buoys, radar reflector. Very often, navigational aid objects are grouped in complex objects. This does not mean that object usually belonging to complex objects can not exist ever

as simple instances. One buoy or tower can exist both as stand alone object as it can exist as a part of one Navigational Aid, fixed or floating complex object.

The decision when one object will be encoded in one or another way is influenced by many rules on paper charts. Sometimes, it is better to in one way, sometimes in another. Therefore, there can happen that one buoy on one scale level in one chart belong to a complex object, and on the more detailed level in another chart the same object with the same coordinates can be stand alone object.

#### Complex Object Icon Detailed

If object is "BUOY, GENERIC", "BUOY, CARDINAL", "BUOY, SAFE WATER", "BUOY, ISOLATED DANGER", "BUOY INSTALLATION", "BUOY, LATERAL", "BUOY, SPECIAL PURPOSE", the symbol that appears on the screen is the complex object "BUOY".

If the objects are "TOWER", "LIGHT", "RADAR REFLECTOR", "FOG SIGNAL", "RADAR TRANSPONDER BEACON", "RADIO STATION\_REF", "RADAR STATION", the displayed symbol is the complex object "NAVIGATIONAL MARK FIXED". If the objects are "BUOY, GENERIC", "BUOY, CARDINAL", "BUOY, SAFE WATER", "BUOY, ISOLATED DANGER", "BUOY INSTALLATION", "BUOY, LATERAL", "BUOY, SPECIAL PURPOSE", "LIGHT", "RADAR REFLECTOR", "FOG SIGNAL", "RADAR TRANSPONDER BEACON", "RADIO STATION\_REF", "RADAR STATION", the displayed symbol is the complex object "NAVIGATIONAL MARK FLOATING".

If the objects are "BEACON, CARDINAL", "BEACON, SAFE WATER", "BEACON, ISOLATED DANGER", "BEACON, GENERIC", "BEACON, LATERAL", "BEACON, SPECIAL PURPOSE", "LIGHT", "RADAR REFLECTOR", "FOG SIGNAL", "RADAR TRANSPONDER BEACON", "RADIO STATION\_REF", "RADAR STATION", the displayed symbol is the complex object "LIGHT HOUSE".

#### Correction

The chart plotter can automatically correct fixes from the positioning instrument which have a low accuracy level (use this function carefully as misuse can cause positioning errors). To compute the fix error in automatic mode, move the cursor to the ship's real position and then follow the appropriate procedure. It is also possible to compute the fix error in manual mode. Once you compute the error, you may turn the fix correction On or Off.

#### XTE = Cross Track Error

The distance from the ship's present position to the closest point on a line between the origin and destinations Waypoints of the navigation leg being travelled.

#### CTS = Course To steer

The optimum direction the boat should be steered in order to efficiently make headway back to the course line while also proceeding toward the destination Waypoint.

#### Datum

The Latitude and Longitude lines printed on any map are based on certain models of the shape of the earth: these models are called "Datum" or "Coordinate Systems". There are many different Datum in use, each one gives different Lat/Lon positions for an identical point on the surface of the earth (for more information see Part A of "C-MAP 21 Handbook").

#### Dead Reckoning

The process of determining the position of the ship at any instant by applying to the last well-determined position the run that has since been made, usually based on the recent history of speed (SOG) and heading (COG) measurements.

**Default** \_\_\_\_\_  
Indicates a value when the user has not defined a particular value. The user can modify this value using the menu settings.

**Depth Contours** \_\_\_\_\_  
Lines that connect points at same depth.

**DGPS = Differential GPS** \_\_\_\_\_  
The *Differential GPS* or simply DGPS is a sophisticated form of GPS, which provides even greater positioning accuracy than standard GPS (for more information see Part B of "C-MAP 37 Handbook").

**DTG = Distance To Go** \_\_\_\_\_  
The actual distance to reach the Target.

**EBL = Electronic Bearing Line** \_\_\_\_\_  
The EBL is a dot line: the origin of the line is the ship's position if the system is in Navigation mode or the cursor position if in Charting mode. Entering Navigation mode, the EBL is placed on the ship position and it follows the ship.

**Event** \_\_\_\_\_  
User point refers to the ship's position. It is simply a way of marking where the boat is.

**External Waypoint** \_\_\_\_\_  
The coordinates of a Waypoint, received from a GPS or a Loran connected to the chart plotter, can be stored into the plotter, if the GPS or the Loran are NMEA-0183 protocol compatible and support the \$BWC sentence (this symbol remains on the screen for 30 seconds). The user may save it by placing a Waypoint or a Mark onto that symbol. As soon as the chart plotter receives another \$BWC sentence with the coordinates of a new Waypoint, the symbol moves to the new point.

**File** \_\_\_\_\_  
A file is a collection of information (of the same type) stored on a floppy disk. Each file must have a unique name, ideally one that describes its contents. The names of your files are kept in a directory on each floppy disk. If you want to know which files are on your floppy disk, you can use the floppy disk option.

**Floppy disk** \_\_\_\_\_  
The floppy disk drive is used by the chart plotter to save user data: it is the most convenient medium for storing and retrieving your information.  
The 3.5" floppy disk has rigid plastic cover with metal shields that guard the disk from dirt and fingerprint.  
You can "write protect" the floppy disk to preserve the accidental storage of information on disk. The floppy disk has a write protect notch; this notch can be covered with a built-in tab. If the write protection notch is covered by the tab, no data can be written (saved) to the floppy disk.  
You should store floppy disk in a safe place, away from dust, moisture, magnetism and extreme temperatures.  
Be sure to label each floppy disk you use, since labels help you identify what data is on the disk and remind you that the disk has information stored on it.  
Before a new floppy disk can be used, you must format it, by selecting the format disk option provided by the chart plotter. This function initializes the floppy disk and prepares it for storing information. Remember that if a disk is not blank, formatting it destroys any data already on the floppy disk.

#### Formatting

Formatting floppy disk must be done before using a new floppy disk; this operation prepares the floppy disk to receive and store information. Before you start the formatting procedure, insert a new floppy disk into the slot and follow the appropriate procedure. Be sure to label it; the label will remind you that you have formatted the floppy disk, and will help you identify its contents. A used floppy disk can also be formatted; if a used floppy disk is formatted, however, all previously stored data on the floppy disk will be lost completely. Formatting a floppy disk destroys all information on it.

#### From-To (A-B)

The function From-To allows you to calculate distance and bearing between two given points.

#### GPS = Global Positioning System

The GPS is a satellite based navigation system operated by the US Department of Defense. It gives the navigator a position 24 hours a day, 365 days a year under any weather conditions (for more details see Part B of "C-MAP 87 Handbook").

#### HDG = Heading

The horizontal direction in which a ship actually points or heads at any instant (see also COG).

#### HDOP = Horizontal Dilution Of Precision

HDOP is the index for position-fixing accuracy. The smaller the HDOP value, the more accurately position can be fixed. (for more details see Part B of "C-MAP 87 Handbook").

#### Info Level Detailed

The information shown is: production information (source of data); digitalization information (quality of information); survey information; ECDIS visualization scale, range, (eventual) external graphic file.

#### Latitude

The angular distance North or South of the equator measured by lines encircling the earth parallel to the equator in degrees from 0° to 90°.

#### LAT/LON

Coordinate system using Latitude and Longitude coordinates to define a position on earth.

#### Longitude

The angular distance East or West of the prime meridian (greenwich meridian) as measured by lines perpendicular to the parallels and converging at the poles from 0° to 180°.

#### Loran

The Loran Chains are groups of transmitting stations that use timed radio pulse transmissions.

#### Magnetic Variation

The difference in degrees between the True North and the Magnetic North.

#### Magnetic Deviation

The angle between the Magnetic North and the Compass North.



- Map Rotation** \_\_\_\_\_  
You can select the normal orientation of your chart according to your personal preference. The orientation can be North-Up and Track-Up.  
- North-Up: the map is shown with North upwards. This is the standard orientation for the map;  
- Track-Up: the map is shown with the currently selected course leg upwards. If you change course, the chart will rotate to keep the course upwards.
- Mark** \_\_\_\_\_  
Marks are reference points related to cursor position.
- MOB = Man OverBoard** \_\_\_\_\_  
The Man Overboard function is an important function should someone or something falls overboard.
- Navigation** \_\_\_\_\_  
In Navigation mode all operations refer to the ship's position. It monitors the navigation, provided a positioning instrument is connected and working properly. When the ship's position will eventually reach one edge of the screen, the chart will shift in order to scroll in the direction the vessel is moving to. Unlike the Charting mode, when the cursor "bumps" the edge of the chart, no redrawing will take place. Your boat will never leave the chart while in Navigation mode.
- NMEA-0183** \_\_\_\_\_  
The NMEA-0183 Data Interface Standard was developed by the National Marine Electronics Association of America. It is an international standard that enables equipment from many different manufactures to be connected together and to share information (for more details see Part B of **C-MAP 2D** Handbook").
- OSGB** \_\_\_\_\_  
A coordinate system describing only Great Britain. Generally used with GBR36 datum, which also described only Great Britain. This coordinate system cannot be used in any part of the world.
- Pan** \_\_\_\_\_  
This function allows you the video window changed: the point indicated by the cursor or by the ship's position, depending on the set operation mode (Charting or Navigation) will shift to the center of the screen.
- Plotter Mode** \_\_\_\_\_  
You can select the Plotter Mode On which allows you to zoom-in and pan everywhere regardless the existence of data. While in virtual cartography (Plotter Mode On), setting Plotter Mode Off from menu, the chart plotter displays the previous scale level with charts. The same behaviour exiting from charts coverage panning with the cursor (in Charting) or due to a ship movement (in Navigation) while in Plotter Mode Off. When Plotter Mode On, it is also possible to have virtual cartography between two subsequent scale levels with charts.
- Position Filter** \_\_\_\_\_  
The chart plotter can filter the fix received from a positioning device. In case of a jittering fix this option makes the ship's position more stable and track smoother. This is called Position Filter. The chart plotter can set the filter step for the position.
- Rolling Road Scale** \_\_\_\_\_  
3D (Threedimensional) representation of the ship's movement related to a Target shown the Cross Track Error too.

Route	Sequece of <u>Waypoint</u> connecting by segments.
Simulation	The Simulation mode allows you to use your chart plotter without a valid position fix. It simulates the boat movement, so that you can practice using the controls in safety.
SOG = Speed Over Ground	A calculation of the rate of movement of the ship over the ground.
Speed Filter	The chart plotter can filter the speed of the ship, to regularize the speed. The chart plotter can set the filter step for the speed.
STR = Steering	The difference between <u>COG</u> and <u>CTS</u> . If COG is 25° and CTS is 30°, then STR is 5° right.
Target	To tag on the chart the point which the ship goes to, you can use a special Mark, called the Target.
TD = Time Difference	<u>Loran-C</u> positions are determined by precise timing of the intervals between reception of pulses trasmitted by pairs of stations in the selected <u>chain</u> . Between any two stations a ship must be located somewhere along a line of possible positions where the measured Time Difference, TD, between arrival of pulses from those stations would be observed. The TD is measured from the time of reception of the master station signal to the time of reception of the slave station signal.
Time Line	The location where the ship will be after the time set by the user.
Track	As long as the chart plotter is connected to a positioning instrument, it will store all points in its memory. The chart plotter can store a fix when the distance from its last stored position is greater than a defined distance or after a defined time. A line connects such points and represents the past course, called the track of the ship. Every time the screen changes, for example after a pan or <u>zoom</u> operation, the track can be displayed on the screen.
TRN = Turning	The difference between <u>COG</u> and <u>BRG</u> . If COG is 80° and BRG is 75°, then TRN is 5° left.
User Point	A user point is a place on the chart identified by its coordinates and displayed on the screen with a reference symbol.
UTC = Universal Time Coordinated	A time scale based on the rotation of the earth that is disseminated by most broadcast time services.
UTM = Universal Transverse Mercator	Metric Grid system used on most large and intermediate scale land topographic charts and maps.

**VMG = Velocity May Good**  
The Velocity May Good is the component of the velocity that is in the direction of the destination.

**VRM = Variable Range Marker**  
The VRM is a circle and its radius is determined by the user. The circle's center is the ship's position if the system is in Navigation mode or the cursor position if in Charting mode. Entering Navigation mode, the VRM is placed on the ship position and it follows the ship.

**Waypoint**  
In navigational terms a Waypoint is any point to which one intends to navigate at some time. A sequence of Waypoints makes up a route plan, sometimes called a planned route.

**WGS-84 = World Geodetic System 1984**  
Coordinates System or Datum developed by the Defense Mapping Agency (DMA) (for more information see Part A of "**C-MAP 2D** Handbook").

**Zoom-In**  
The zoom in function shows more detail in a smaller area.

**Zoom-Out**  
The zoom out function operates similarly to the zoom in function, except in the reverse, showing a wider but less detailed view.

---

## **CE CONFORMITY**

---

This product satisfies the basic requirements of Electromagnetic Compatibility and Safety required by the Directives.

89/336/EEC of 3rd May 1989 with subsequent modifications (Directive 92/31/EEC of 28th April 1992 and Directive 93/68/EEC of 22nd July 1993.

Having been designed in conformity with the requirements of the following reference Norms:

EN 60945	sec. 4.5.3	CONDUCTED INTERFERENCE
EN 60945	sec. 4.5.4	RADIATED INTERFERENCE
EN 60945	sec. A3	LIMITS TO CONDUCTED AUDIO FREQUENCY

Conformity with the above basic requirements is certified by means of the CE mark fixed on the product.

Details of test results, product declaration and production control documents are available upon request.

The CE mark was introduced in 1995.

Your attention is drawn to the following actions that could compromise the characteristics of the product:

Incorrect electrical supply.

Incorrect installation, incorrect or improper uses, or, in any case not in accordance with the warnings given in the User Manual supplied with the product.

Replacement of original components or accessories with another of a type not approved by the manufacturer, or carried out by unauthorized personnel.

---