CARINA Notes

Preamble:

The following notes are not intended to teach you how to sail but will hopefully highlight the differences from our other yachts.

Reference Data

Lifejackets + Harnesses	7 **People**
Hull length	10.82 m / 35’ 6”
Waterline length	9.22 m / 30’ 3”
Beam	3.57 m / 11’ 10”
Draft (Keel UP)	0.72m / 2’ 4”
Draft (Keel Down)	2.18 m / 7’ 2“
Safe Air Draft	16 m / 52’6”

Sails

Main	27.0 sq m / 290 sq ft
Reefing	Single Line Reef 1 & 2 / 2 Lines – reef 3
Genoa	28.03sq m / 301.6 sq ft
Jib	Not Purchased
Gennaker	52.00 sq m / 560 sq ft

Engine	Yanmar 3YM30
kW / HP	21.3 kW / 29HP
Maximum Rpm	3000
Maximum Cruising Rpm	2500
Prop Walk in Reverse	**Mildly Port**
Diesel Capacity	182 Lts / 40 imp Gallons
Consumption	3.5 Lts /Hr
Diesel Fill Point	Starboard Side Deck

Water Capacity	205 Lts / 45 Gallons
Water Fill Point	Port Side Deck
Holding Tank Capacity	78 Lts / 17 Imp. Gallons
Waste Pump-out Point	Starboard Side Deck

Bow Anchor 15 kg Bruce	30m Chain 30m warp
Marking	every 5 m
Kedge 16kg Vetus / Fortress	35m Warp

General:

Carina is a Category A sloop with a fully variable / retractable keel. Ours is the more powerful version with a "Tall Rig" that increases the sail area by 19%.

Category A - Definition*: This craft is designed to operate in winds that may exceed wind force 8 (Beaufort scale) and in significant wave heights of 4m and above (see note below), and vessels largely self-sufficient. Abnormal conditions such as hurricanes are excluded. Such conditions may be encountered on extended voyages, for example across oceans, or inshore when unsheltered from the wind and waves for several hundred nautical miles.*

Note:
The significant wave height is the mean height of the highest one third of the waves, which approximately corresponds to the wave height estimated by an experienced observer. Some waves will be double this height.

The stability figures are excellent. There is very little difference between keel up & keel down. All the tanks are low set & the massive ballast /grounding plate / keel-raising structure is lowest of all, having been bolted from the outside of the hull. It will float in < 1Metre with the keel up but needs 2.2m with keel down. Don't forget how much water is required, especially when crossing the Port Solent cill at LW springs.

The depth indicator reads from the Waterline. (Offset +0.3m)

When handing over the wheel, remind the new helmsman of the keel position!

Steering:
The steering is precise whether motoring or sailing.

- Wheel Steering
- Rod actuated from base of pedestal
- Auto helm, internally attached to the transom, connects to Starboard Rudder shaft. The normal inter connect then runs the Port Rudder from under the pedestal.
- Emergency steering can be connected to either rudder stock. Fit with the arm pointing up for better control.
- Emergency steering arm & cap release tool are in the Port aft Locker.

Anchor/ **Windlass**:

Connect the hand controller to the point on the Port bow, ensure the switch in the fore cabin is on (Down) & the engine running.
Ease the anchor forward over the bow roller until hanging vertically before deploying normally. This is to avoid damaging the bow.
Use the normal techniques to avoid over-stressing the motor.

Adverc Battery Manager:

This device modifies the alternator output to optimise battery charging. Our other yachts have or have had one but this one has a GREEN light on the Engine panel by the last letter of the YANMAR logo. When the engine is running, the light should be out. If the light is flashing or on, it means a fault within this unit but should NOT affect normal battery charging. Just check the battery volts to confirm that charging is taking place. It should not affect your voyage.

Engine Information:

The Yanmar 3YM30 is a well proven & reliable unit. It very rarely requires the use of the glow setting except in sub-zero conditions.

Alarms

Check that indicators and alarms are working normally when the key is turned to ON.

Key Switch		OFF ⇒ ON	START ⇒ ON
Engine		Before start	Running
Alarm		Sound	No sound
Indicators	Battery Low Charge Indicator	ON	OFF
	Coolant High Temperature Indicator	OFF	OFF
	Engine Oil Low Pressure Indicator	ON	OFF
	Water In Sail Drive Indicator	OFF	OFF

Stop Button

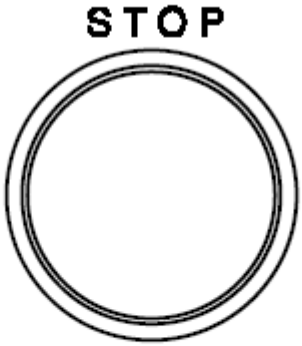
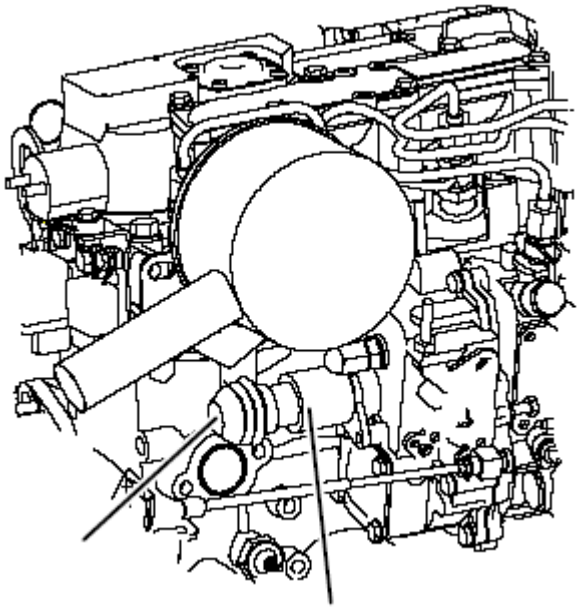


Figure 15

Push the STOP button switch to stop the engine. The key switch must be in the ON position for the stop button to operate. After the engine has come to a complete stop, you can turn the key to the OFF position.



If the engine does not STOP when this button is pushed & held, firstly check that the key is ON then operate the manual alternative on the engine itself. This can be identified by the corrugated ORANGE rubber boot on the starboard rear side of the engine. Press & hold this in to stop the engine before resorting to other methods.

Key Switch

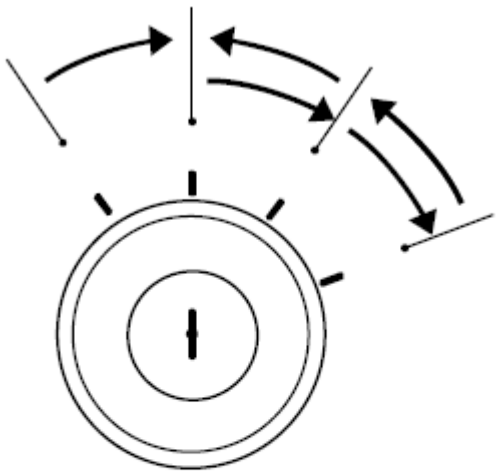


Figure 10

1 – GLOW
2 – OFF
3 – ON
4 – START

The GLOW position **(Figure 10, (1))** is the start aid position. Electric current to the glow plug is turned on. When the key is released, the switch will automatically move to the ON position.

The START position **(Figure 10, (4))** allows current to the starting motor. When starting the engine, move the key to the START position and release. The key will automatically move to the ON position.

When the key is in the OFF position **(Figure 10, (2))** the electric current is off. The key can be inserted or removed in this position.

The ON position **(Figure 10, (3))** allows electrical current to the controls and equipment and allows the engine to keep running. To stop the engine, keep the key switch in the ON position and push the stop button. After stopping the engine, turn the key to the OFF position.

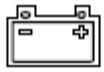


Figure 11

Battery Low Charge Indicator **(Figure 11)** - When the alternator output is too low, the indicator will light. When charging begins, the indicator will turn off. No alarm will sound for low battery charge.

Figure 12

Coolant High Temperature Indicator and Alarm **(Figure 12)** - When coolant temperature reaches the maximum allowable temperature (95˚C [203˚F] or higher), the indicator will light and the alarm will sound. Continuing operation at temperatures exceeding the maximum limit will result in damage and seizure. Check the load and troubleshoot the cooling system.

Figure 13

Engine Oil Low Pressure Indicator and Alarm **(Figure 13)** - When the engine oil pressure falls below normal, the oil pressure sensor will send a signal to the indicator causing it to light and the alarm to sound. Stop operation immediately to avoid damage to the engine. Check the oil level and troubleshoot the lubrication system.

Figure 14

Water in Sail Drive Seal Indicator and Alarm **(Figure 14)** - When seawater is detected between the seals of the sail drive, the indicator will light and the alarm will sound.

NOT APPLICABLE to CARINA

Manoeuvring under Power:

There is only wash from the yacht's movement over the twin rudders. These produce sufficient turning force from about 1.0 Kts. This can be augmented by the bow thruster. This will mean some different techniques for manoeuvring.

The gear / throttle lever Neutral is set at the 10 o'clock position i.e. AFT to reduce the chances of fouling the lever with mainsheet.

Tight Turns:

If a tight turn is required, get the yacht moving at about 2 Kts (you may have to "back-up" to give a run up) then reduce power (some power is required to counteract the drag from the rudders at large turning angles)& simultaneously apply full rudder. Keeping excess power on during the turn merely accelerates the yacht & INCREASES the turning circle.

Bow Thruster:

This is powered through the Windlass / Keel / Thruster battery isolator.

This is switched on/off from the pedestal (auto off after 20 minutes if not used) and controlled by the small joystick. The bow thruster is very useful tool to assist manoeuvring the bow. Use all the normal techniques (tide / wind / spring off etc) then augment this with the bow thruster when required. We managed to manoeuvre the yacht in quite tight spaces without recourse to the bow thruster. There are, however, some circumstances in which is essential, rather than a luxury.

Starting off with the premise that the bow thruster, is a "cure all" can lead to difficulties!

In crude terms, this is a car starter motor attached to a small propeller. Just think about how long you want to use a starter motor in a burst & apply the same logic to the bow thruster. Anticipation is required as the bow will keep moving after the thruster has stopped. Small corrective bursts are very effective. However, if you need it, use it to its potential. It has maximum limit of 3 minutes continuous use, after which it shuts down.

Sailing:

The main is fully battened & loose footed. The loose foot means there is more opportunity to create the correct depth of draught in the lower part of the sail for the wind angle / conditions. Attention to the use of the outhaul can bring large benefits in sailing performance; conversely, ignoring this aspect can have the opposite effect. Play the mainsheet & outhaul in a concerted manner.
If this is a sail control that you do not regularly adjust on the other yachts, it will bring benefits when you do.

Broadly, in light winds & off the wind there should be a deeper camber than close hauled in stronger winds.

The mainsheet is detachable from the traveller. This means it can be parked out of the cockpit when secured. Please leave it attached until the yacht is secured as the boom end projects over the side deck & could get fouled when reversing.

Upwind sailing:
The optimum heel angle appears to be when the upwind rudder is generally skimming the water surface, as was ably demonstrated in the advertising film clip shown at the dinner. If more heel is experienced, the advice is to reduce the headsail (moving the deck cars to keep the correct lead angle) to regain the optimum heel angle. This process should continue until the headsail foot is forward of the mast. If the heel is still excessive, reef the main. If the wind gets stronger, continue the process, i.e. reduce headsail further followed by taking a reef in the main.

Offwind / Downwind:

Apart from the usual actions with sails / preventer, we have the option to use the furling Gennaker from the short bowsprit. A Gennaker may be though of as a flatter cruising chute. It is capable of shy reaching but will not happily fly as far downwind as a cruiser chute. If you have used the short bowsprit on Jocalia, you will have realised what an important contribution it makes to getting sail set ahead of the Jib / forestay. The only means of tightening the luff is to use the halyard. Ease the halyard as the yacht moves towards the limit of downwind to allow it to fly even more forward of the forestay & to increase the fullness of the sail.

The recommendation is that rolled gennaker should not be left rigged for periods when not in use as there is a possibility that it might deploy un-commanded. The deck pads / halyards / sheets & other associated gear are very robust.

Hoist the rolled gennaker in the usual way then start the unfurling by use of the continuous line, then pull out the sheet.

To furl, first de-power the sail completely then furl in. It may be necessary to blanket the gennaker with either the Genoa or Main to really de-power this sail. Release any tension in the sheets as this will prevent the upper section of the sail from furling correctly. This works best when the halyard is TIGHT. This appears to be counter–intuitive but remember that the gennaker winds itself around it's own stay, merely driven from the tack.
Finally, drop the rolled gennaker to the deck. I think it should be pretty obvious to decide whether this is something that needs doing immediately or can be delayed.

Shallow water Operations:

Sailing:

If sailing, rather than motoring, in shallow water is required, the recommendation is to raise the keel no more ½ way, giving a draft of about 4 ft. This configuration ensures that the keel should touch bottom before either of the rudders when heeled over. It also gives you the opportunity to "escape"!

Can be great fun but needs careful planning. Really check that there are no obstructions. We noted that Portsmouth harbour reveals quite a few obstacles at low water.

Motoring:

Having motored in shallow water (say <50% Max Draft), check the seawater strainer for silt / weed contamination at the first sensible opportunity. It is simple to look down through the clear top of the strainer. This should also be inspected following encounters with weed or at anytime blockage is suspected (engine note change etc.)

Use of Toilet when very shallow or dried out:

The inlet & the outlet are pretty much at the lowest point on the hull and will suck up any mud / debris & there will be no room for the effluent! Consider shutting these sea cocks. Select the holding tank. Apply water into the bowl from the showerhead then pump out into the holding tank.

Keel Operations: [1 Red LED = Fully Down / 2 RED LEDs + 6 Green LEDs = Fully UP]

The keel is normally switch operated from the pedestal. A series of red & green LEDs indicate the approximate position. The indicating system has a separate switch that powers the LED indicators only. The keel lift mechanism will function with or without the indicator lights.
When the keel is fully down there will be 1 Red LED on to indicate the system is powered. When away from fully down another Red LED appears followed by an increasing number of green LEDs until all the LEDs are illuminated, indicting the keel is fully up. An electric switch runs a hydraulic pump that pumps the keel up, it descends by gravity. The hydraulic ram works on a "Spectra" rope that links to the keel. This allows the keel to move up, if necessary. The ram is angled beside the keel trunk port.

The hydraulic pump has a manual back up located under floor by the navigator table. There is a fuse in this compartment. If this blows, it is indicative of a serious problem. Resort to manual operation until the electrical issue is resolved.

To Raise Keel Manually: Open the access panel; by the electrics panel. Retrieve the long handle from under the navigator seat. Insert the handle into the pump arm and pump consistently backwards and forwards until fully raised. This will take about 110 pumps!

To Lower Keel Manually: Remove the wooden plate under the floorboard. This reveals the pump electric master switch, 7.5 amp fuse & hydraulic control valve (Fwd). Release the hydraulic valve by turning anti-clockwise and the keel will drop under its own weight, braked by a restrictor valve in the hydraulic system (this is pre-set & must not be adjusted). Close

the valve by turning clockwise when the keel is down – this prepares it for being raised subsequently.

Holding Tank Operation:

The selector valve is in the aft cabin, easily accessible from the toilet. It has 2 positions – out to sea or into the tank – both clearly labelled. There is a waste tank level indicator on the rear face of the toilet hand basin. The LED provides a convenient night light for the area. The holding tank can be pumped out manually with the dedicated Whale type bilge pump located next to the selector. It doesn't take very long, even with the tank full. Just pump until it feels "dry". It uses the same toilet outlet seacock as direct operations. Therefore this cock must be open to pump out to sea. If closed, it will soon be apparent from the disgusting mess coming up from the toilet!! Keeping paper out of the holding tank makes very good sense.

The holding tank may also be vacuumed out if you can find a sanitation station. Starboard Deck Fitting (same side as Diesel).

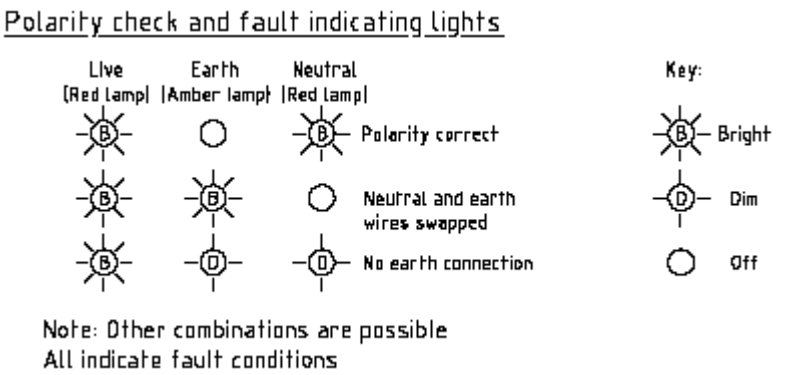
The toilet / shower is generously sized. It makes a good storage are for foul weather gear

Electrical Panel

DC Systems

- The gauges need to be selected on
- Illumination of the switch lights is controlled by its own switch
- The keel position indicator has its own switch
- All functioning switches are labelled

AC Systems



- 240 Volt Circuit Breaker is in the Lazarette.

Battery Isolators:

These are located in bottom of the forward port wardrobe of the aft cabin.
There are 4 Isolators:

1. Services
2. Thrust / Keel / Windlass
3. Emergency link.
4. Engine.

Emergency Link:
As this implies, it is only to be used should the starter battery fail. Use the key from the Thrust/Keel/Windlass isolator. After successful engine start, this should be DISCONNECTED again. [This prevents problems associated with the starter battery from affecting the domestic bank, which powers the navigation, radios etc!]. Reconnect the Thrust / Keel / Windlass.

Forward of the isolators are 2 Circuit Breakers:

1. Bilge Pump
2. Maintained.

[The bilge pump & Eberspacher air heater are "hot wired" i.e. permanently connected to the services battery through these CBs.]

When leaving the yacht ensure that the Eberspacher is NOT in programme mode or it will run the heater even though the battery isolators are off, unless the Maintained CB is also pulled.
The checklist requires both these CBs to be pulled when leaving the yacht at the end of a trip to prevent the heater from running.

Sea cocks:

Only 3 sea cocks are below the waterline:

1. The engine inlet (Aft cabin port floor panel)
2. Toilet Inlet (Aft cabin port floor panel)
3. Toilet Outlet (Aft cabin Stbd floor panel)

The rest are all above the waterline & can remain open.

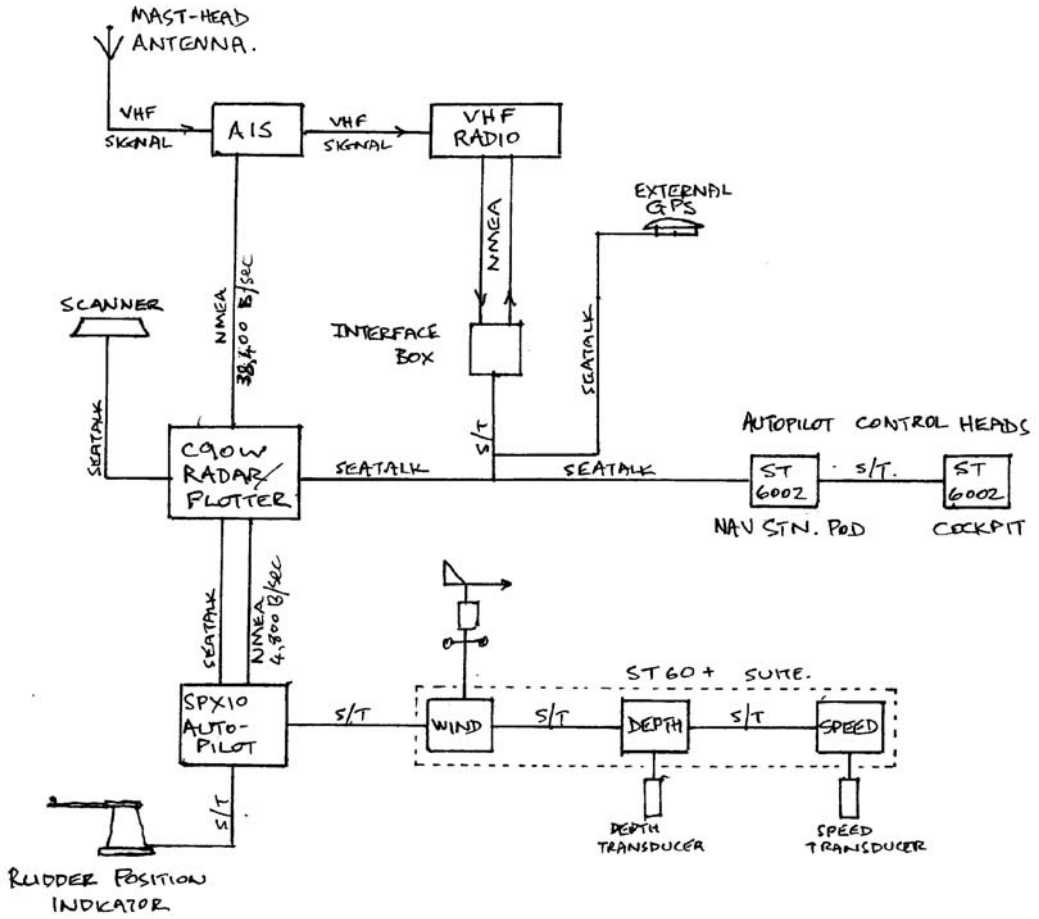
Summary:

This is a very capable yacht. She has a fast, comfortable ride. The quality of the fittings & the finish are all very good. Every significant piece of equipment is clearly labelled. We have all been impressed with her performance.

We hope you will enjoy sailing her.

Fair Winds,
Chris Williams 13/08/2010

Carina's Navigation Electronics – SeaTalk and NMEA Networking
The diagram below shows the SeaTalk (ST) and NMEA 0183 connections between Carina's electronic equipments.



Carina's SeaTalk and NMEA Connection Diagram

Carina's Raymarine and COMAR electronic equipments are connected using a combination of Raymarine's proprietory Seatalk protocol and NMEA 0183.

Auto-Pilot – Raymarine SPX10

This is a course computer with 2 control heads (at nav table and cockpit), and connections to the ST60+ instruments (wind, depth and speed), rudder indicator, external GPS, and C90W plotter. It has ST connections, and NMEA IN/OUT ports working at 3 speeds of 4,800 B/s, 9,600 B/s and 38,400 B/s. It can process NMEA sentences and ST data but cannot convert them in the way that the plotter and interface box can.

Radar/Plotter – Raymarine C90W

To conserve battery power, the power and data connections are arranged so that the A-P, GPS, VHF radio, and instruments can function independently of the plotter. The plotter's internal GPS is disabled to avoid interference with the preferred external GPS. For radar operation, and particularly MARPA, fast heading data (boat's own course, heading etc) is provided by the SPX10 course computer via its 4.800 B/s NMEA output.

External GPS – Raymarine RS125
The plotter includes a built-in RS125 GPS, but because of signal strength inconsistencies in the confines of the saloon, an external type mounted in the coach roof area has been installed on Carina.

Interface Box – Raymarine E85001
This device is mounted inside the nav table instrument pod, and broadly speaking converts ST to NMEA 0183 and vice versa. It is powered via its connection to the ST network (ST is a 3 wire power and data system). The plotter can do these conversions but advantage cannot be taken of the facility because the plotter is likely to be switched OFF more than ON.

VHF Radio – Raymarine 55E
The VHF radio requires 'real-time' lat & long data to auto-transmit boat's current position in the event of an MOB situation for instance, but the Ray 55E can only accept this data in NMEA 0183 format - normally provided by the plotter. However for reasons stated above, it has to be provided by the interface box. As well as receiving position data, the VHF radio also auto-sends lat and long to the plotter when the MOB button is pressed. If ON the plotter will note this position and display it on screen.

The Ray 55E includes the ATIS feature which allows European Inland Waterways Traffic Controllers to monitor the boat's position and identity via data contained at the end of each VHF transmission.
Carina's VHF ATIS feature has been 'dealer-programed' by Greenham Regis, meaning the facility can be enabled /disabled (switched on/off) by the user via the radio's set-up menu (refer to manual).
Carina's ATIS number is 9235077481 – ie the MMSI number prefixed with a 9.
Note that ATIS must only be enabled when in European inland waterways, and must not be used outside inland waterways (eg in open sea).
Enabling of ATIS via the menu automatically disables DSC , dual-watch, tri-watch and scan functions – and limits to 1w output transmissions on channels 6, 8, 10, 11, 12, 13, 14, 15, 71, 72, 74, 76, 77, (and 31 if available).

AIS – COMAR 'multi'
The unit is mounted inside the nav table instrument pod.
It can be switched ON and OFF independently of the plotter at the 12v DB (at the ex GPS CB), but to display target position and information the plotter must be 'AIS enabled' by the user via the plotter MENU.

Required data connections are: NMEA 0183 (38,400 B/s) AIS to plotter, and NMEA 0183 (4,800 B/s) fast heading/GPS data to the plotter from the Auto-Pilot (SPX10) and external GPS (RS125). Very simply, the AIS unit converts target lat/long position, speed, course, etc received in short bursts of VHF signal data to NMEA sentences readable by the plotter and displayed in chart mode. This data is computed with fast heading/GPS data from the A-P to display positions of own ship and targets.

The VHF input is from the mast-top antenna with a straight-through connection to a socket connecting to the VHF radio. The AIS VHF signal is teed off this direct link and amplified to compensate for insertion loss. This arrangement ensures that even when the AIS is switched off, the VHF feed to the VHF radio is unaffected.

Navtex –Furuno NX300D

The Navtex is not shown in the diagram above because it has no connection to ST or NMEA. There is provision for NMEA GPS input but there seemed no real benefit in having an additional lat/long read-out.

The antenna is mounted on a stainless steel mast at the pushpit, and is different from other Navtex antennae in that it works on electro-magnetic principles (H type) as opposed to electrostatic (E type), and is much more effective in weak signal conditions.

Gas Alarm – Marinecare Dual Watch

This is the same model as in Jocalia, but has only one LPG sensor. It is not hot-wired (permanently connected to the service battery) – same as Jocalia and 4Top, but is connected downstream of the service battery main isolator and 100A fuse (at the 12v DIN rail) and protected by an in-line fuse.

When energised after switching on the service battery the periodic beep is cancelled by depressing the Test Reset button for 3 seconds.

The CO sensor is in the control box and the LPG sensor is located at the aft end of the keel hydraulics enclosure below the saloon floor, just forward of the companionway steps. An audible and visual alarm are activated when CO or LPG are detected.

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