PDQ 36 Capella

Owner's Manual

PDQ YACHTS

OWNER'S MANUAL CONTENTS

This manual is the product of building more than 170 PDQs. It reflects our experience of working with the boats and their owners, and includes a great variety of ideas, improvements and, inevitably, solutions that we have shared. We hope that as you settle in to your new PDQ Capella, you will share your ideas and experiences with us so they may serve to benefit others as the experiences of others have benefited you.

We update this manual to reflect our policy of continual improvement. We are confident that it covers your vessel accurately when used in conjunction with the equipment manuals supplied. With the many possibilities of options and layouts, however, we have never built two boats that are exactly alike, so there may be points of difference in equipment and options. The equipment manufacturers also continually change their products.

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GENERAL 1

General Description 1-1

Your 36 Capella cruising catamaran combines comfortable accommodation, good performance and pleasing appearance. It is intended primarily for coastal cruising and island hopping, and is capable of offshore passages.

This is a strong, safe boat, built by experienced boat builders with best-quality materials, to the design of a professional engineer who is an experienced multihull cruiser. There are six watertight compartments: 4 forward and 2 aft. The fin keels have a sacrificial section to allow the boat to stand up to grounding at relative high speed.

The layout of the boat gives two double berths forward. A large open-plan saloon places the galley on the port side and navigation station on the starboard side. The large head is located in the starboard aft cabin. The port aft cabin is normally custom fit to individual requirements.

The "Classic" version is the original concept, providing lightweight, economical and reliable auxiliary power with two Yamaha outboard motors, specially designed for this purpose. The "LRC" or Long Range Cruiser version is equipped with Yanmar Diesel Sail drive inboard engines, for the dedicated sailors who want the additional power and security of twin Diesel engines and skeg protected rudders.

Your Warranty 1-2

The terms of your Warranty are included in your purchase contract, which should be referred to for details.

Weights and Measures 1-3

Measurements

Basic Dimensions	Standard	Metric	
LOA	36' 5"	11.1 m	
LWL	34' 4"	10.5 m	
BOA	18' 3"	5.6 m	
Beam (hull centres)	13' 0"	4.0 m	
Beam (waterline)	3' 0"	0.9 m	*
Draft - Classic	2' 10"	0.9 m	*
- LRC	2' 11"	0.9 m	*
Weight - Classic	10,000 lbs	Kg	*
- LRC	10,700 lbs	Kg	*
Height with mast above water	47' 0"	14.3 m	

* *Note: Weight and draft are dependent on equipment, fluids and stores on board*

Sail Area

Main	640 sq. ft	25.5 m²
Jib	224 sq. ft	30.2 m²
Genoa	455 sq. ft	17.6 m²

Capacities

Diesel fuel	55 US gal.	208 l.
Fresh water	85 Us gal.	321 l.
Holding Tank	35 US gal.	132 l.

Electrical

AC – 115 volts. 60 cycle, 30-amps.

DC – 12 volts. 450 amp hour service batteries: **Classic**- one start battery,

LRC- two start batteries.

SAFETY 2

Location of Safety Equipment 2-1

Please complete this section as a quick reference for others on board this vessel. Canadian and US Coast Guard requirements are listed in section 2-5.

- Distress signals and fire extinguisher charges expire and must be replaced or recharged,
- A strong bucket does double duty as a fire extinguisher and emergency bilge pump.
- Life jackets should be kept clean and dry; try them periodically.
- From time to time, try your skill at throwing your life ring or other throwable device to someone in the water.
- Develop simple instructions for reacting to emergencies such as fire, man-overboard, etc.

Fire Extinguishers:

Life Jackets:

Throw able Devices:

Visual Distress Signals:

Sound Signaling Devices:

Seacock Locations:

Propane Shut-Off Valve:

The yachts we build are a product of our experience, and the thoughts and suggestions offered by people who have chosen and used our yachts. We believe that they are among the best multihulls built in the world. Our policy of continual improvement ensures that each is better than the last.

> *Caution:* *Marine law requires that the owner must keep his vessel in a seaworthy condition, properly equipped and properly manned, and must only allow his vessel to be operated by competent persons with the ordinary requisite skill.*

In the end, therefore, enjoyment of your PDQ power yacht and your success in its operation depends on the care and quality of effort you devote to knowledge of vessel operation and the care of the yacht itself.

Knowledge

Instruction in the safe operation of a large vessel cannot be taught in the confines of this manual. Parts can be taught in classrooms, but the conscientious sailor must actively seek much knowledge on the water. Courses in navigation and seamanship are taught by:

Canadian Power and Sail Squadrons
26 Golden gate Court
Scarborough, ON. Canada
M1P 3A5
(416) 293-2438

US Power Squadrons
(800) 336-2628
in VA., (800) 245-2628

Advertisements with local contact addresses are frequently posted in yacht clubs, marine supply stores and marina bulletin boards. Boat owners in your area may have other suggestions.

These courses lay a firm foundation of knowledge in:

- Seamanship and boat handling, basic to advanced
- Regulations for prevention of collision, international and inland
- Navigation – basic to advanced
- Radio communication
- Safety at sea
- First aid
- Dealing with serious storms
- Distress communication
- Weather prediction
- Pollution control
- Respect for others on the water

Please note the US Coast Guard boating information line

(800) 368-5647 or (202) 267-0780

Also,

www.vscgboating.org

The Red Cross, St John's Ambulance Corps and others offer courses in first aid and cardio-pulmonary resuscitation (CPR), which is reassuring to know when sailing far away from home.

Statutory Requirements 2-3

Depending on where you document or register your boat and where it is operated, you and the boat will be the subject to a number of legal requirements.

These requirements include, but are not limited to:

- Complete and current documentation or registration certificates
- Required safety equipment, in good condition. (See section 2-5)
- Operating, understanding and license for VHF radio.
- Charts for the boats operating area.
- Knowledge of federal, state or provincial and local regulations respecting
  - Safety;
  - Discharge of wastes (gray water or sewage);
  - Speed and wake;
  - Noise;
- Knowledge of accident reporting requirements.
- Understanding of the obligation to render assistance to persons in distress.

Navigation Lights 2-4

Your PDQ Antares is shipped with navigation lights as required by the government of Canada, The United States and by international law.

- Masthead anchor and running light; 360 degree – white
- Mast steaming light; white
- Mast deck light; flood white
- Port running light; port forward - red
- Starboard running light; starboard/forward – green
- Stern running light; white

This conforms to the international regulations for a sailing boat under 20 meters (65' 7½") at the time of delivery. However, please note the following points.

- You are responsible for ensuring that the vessel complies with regulations currently in force
- If the navigation light regulations change, you must make the unless the current arrangement is grandfathered,
- If you cruise outside the United States or Canadian waters, you may encounter different requirements. You are responsible for meeting those requirements.
- This information is accurate at the time of publication of this manual, but not that the owner must accept responsibility for meeting legal requirements.

For safety information in the United States, contact

US Department of Transportation

US Coast Guard Information Line

(800) 368-5647

Alternatively, contact your local Coast Guard District or state boating agency and ask for the booklet, *Federal Requirements for Recreational Boating Guide.* In Canada, ask for the Canadian Coast Guard's *Safe Boating Guide.* Keep an up-to-date copy on board. Remember that regulations may change from year to year, so a regular check is highly recommended.

You are responsible for providing and maintaining safety equipment appropriate for the jurisdictions in which you are cruising. If you sail outside United States or Canadian waters, you may encounter different safety requirements. You are responsible for identifying and meeting those requirements. To assist you in managing your safety equipment, we have provided a section for you to complete *Location of Safety Items,* in section 2-1.

US Regulations

Required safety equipment includes:

- Fire extinguishers: two US Coast Guard approved B-I portable, or one US Coast Guard approved B-II portable. Check once a month to ensure they are fully charged.
- Life jackets: one type I, II, III, or V for each person aboard and one type IV throwable device.
- Visual distress signals: minimum three pyrotechnical devices for day and night use, or three pyrotechnical day devices and three pyrotechnical night devices. These should be stowed in a watertight container prominently marked *Distress Signals.* They should be tested regularly.
- Sound signaling devices: power whistle or power horn and bell.

For more information see the information booklet titled, *Federal Requirements for Recreational Boats.* Bear in mind that:

Safety equipment is your responsibility.

Canadian Regulations

- Fire extinguishers: Two Canadian Coast Guard approved. Check once a month to ensure that these are fully charged.
- Life Jackets or PFDs: One Canadian Coast Guard approved for each person aboard. One Canadian Coast Guard approved throwable device.

- Visual distress signals: Minimum three pyrotechnical devices for day or night use, or three pyrotechnical day devices as well as three pyrotechnical night devices. These should be stowed in a watertight compartment prominently marked *Distress Signals.* They must be replaced frequently in accordance with CCG regulations.
- Sound signaling devices: power whistle or power horn and bell.

For more information contact the Canadian Coast Guard.

PROPULSION AND STEERING 3

Auxiliary Engines 3-1

"Classic" Outboards

The "Classic" auxiliary engines are Yamaha 9.9 HP outboards, specially developed for auxiliary use. They are located under the cockpit lockers, and are raised and lowered by ropes in the cockpit. All controls for starting, gear-shifting and motor speed are located at the helm. Emergency stop is provided at the controls by a plastic key on a red lanyard.

The engines are 4-cycle, and oil is *not* added to the gasoline. Oil is carried in the engine sump, and the level should be checked, topped up and changed as recommended in the motor manual.

A breaker for the starter circuit and a fuse for the charging circuit are located in each outboard compartment.

Please read the manuals provided by the manufacturer before use of motors and prior to carrying out any maintenance. The motors will work better and last longer.

> *Caution:* *Incorrect operation or failure to perform required maintenance might jeopardize the manufacturer's warranty.*

Before starting the motors, make sure that the mounts are tight, and that the mounting screws are securely tied off. Check the electrical and fuel connections.

When inserting the starter keys, make sure that each key goes into the correct ignition lock. (You may simplify this by colour-coding the port and starboard keys with red and green tape or a key tag) Do not try to force the key, as this may damage the ignition lock.

Ensure that the Yamaha outboards' green oil pressure lights are *on* when they are running. If the oil pressure light goes out, stop the motor as quickly as possible. A small jet of water at the back of the engine shows correct operation of the cooling system.

Disconnect the batteries before removing the motors or performing any major maintenance.

"LRC" Inboard Diesels

Auxiliary power is provided by two Yanmar 18 HP Diesel Sail drives, located in the stern of each hull, and operated from the helm. Seacocks for cooling water, fuel filters and shut-off valves are located within the engine compartments.

The Diesel's manual contains an excellent and concise summary entitled, *Basic Rules*...Please read the two-page section as a guide to other information you may need from the manual. The motors will work better and last longer if you understand their needs.

If the engine has been idle for more than a month, follow the manual's pre-start procedure for spreading lubricant through it.

When inserting the starter keys, make sure that each key goes into the correct ignition lock. (You may simplify this by colour-coding the port and starboard keys with red and green tape or a key tag) Do not try to force the key, as this may damage the ignition lock.

> *<u>Caution:</u> Incorrect operation or failure to perform required maintenance might jeopardize the manufacturer's warranty.*

Starting Batteries

These are described in section 4-2.

Fuel Systems 3-2

The fuel tank is located under the cockpit floor. The fuel gauge is energized when the starboard outboard or diesel engine is running.

Fuel pumps are mounted on the outboard motors, and these are connected to the tank via flexible lines. If the motors have not been run recently, fuel may drain form the hose, back to the tank. Squeeze the primer pump to refill it.

The system is supplied with shut-off valves and in-line filters on all fuel supply lines, located close to the engines. Check the condition of the filters regularly, changing when required. Suggested change intervals are given in the manuals.

- The Yamaha outboards use unleaded gasoline. Note that you can use gasohol containing up to 10% ethanol, but that you should not use gasohol made with methanol. No oil should be added to the gas.
- The inboard engines use Diesel fuel. A minimum grade is specified in the manual; this is not a concern in North America.

Steering 3-3

The steering consists of a stainless steel chain, pulling two stainless cables through flexible conduits, connected to a quadrant in the starboard hull. A cross-tube with ball joints connects to the port rudder. The rudders are balanced spade-type, with Schedule 40, 316 stainless steel stocks. (Maintenance recommendations are in section 7-5.)

For the LRC, the rudders are protected by skegs.

An emergency tiller is provided in case of steering failure. It can be used with either rudder by removing the deck plate located on the centerline of the hull at the very aft end of the deck. We recommend that you try fitting and using this tiller while under sail and under power at the earliest opportunity.

The PDQ 36 Capella is rigged as a masthead sloop with anodized aluminum mast and boom.

The sails are of Dacron, with covers to protect the sailcloth from unnecessary degradation by the sun. The mainsail is fully battened with lazy-jacks and two single-line reefing points. (See appendix for large scale diagram of reefing gear.) Roller furling is provided for the jib as an option.

The standing rigging is 1x19 stainless in appropriate gauges, with swaged terminals and open turnbuckles. See section 6-3 for recommendations on preparations for offshore passages.

All halyards are of rope. Two main halyards are provided. The spare is used as a topping lift.

- Maintenance suggestions are given in section 7-3
- Running rigging specifications are given in the Appendix.

Rigging Set-up

PDQ sets up the rigging for deliveries according to the following procedure.

- Take up most of the adjustment in the furling gear or forestay, so the mast is vertical or raked slightly aft.
- Take up the upper shrouds until an average man leaning hard on the can deflect them 4 to 6 inches.
- Take up the backstays until they deflect 6 to 9 inches.
- Take up the lower stays until they are snug and the mast is straight. They should have the lowest tension of all stays.
- The tautness of the baby stay should lie about midway between the uppers and lower stays.
- Install locking pins all around
- Check rigging tensions and locking pins regularly.

SHIP'S SYSTEMS 4

AC Electrical System 4-1

Note: Reference to the electrical drawings in the Appendix will assist in understanding the electrical features of the 36 Capella.

A 30-amp, 115-volt shore power connection is located at the helm. Outlets are provided in the galley, head and navigation area. Ground Fault Interrupters protect all outlets. GFIs are also provided for major appliances such as a microwave oven.

Circuit breakers on the main electrical panel control the system and its components. All items have individual breakers for easy use without over-taxing the batteries or optional inverter.

The shore power system includes galvanic isolators to prevent stray current corrosion of underwater metal parts. The isolator is located in the locker under the helm.

Schematics of the electrical system and details of the equipment are provided in the Appendix and the Owner's kit.

DC Electrical System 4-2

The 12-volt DC system is controlled by circuit breakers on the main electrical panel and navigational system. Most switches and protective breakers for individual circuits are located here and clearly labeled.

The service battery installation consists of four 6-volt batteries located in the cockpit battery locker. The helm locker holds battery switches, a 100-amp panel supply fuse, 20-amp isolator fuses and a 300-amp house battery fuse (optional) plus an emergency switch to set the batteries in parallel in case of emergency. The motors through a battery isolator charge the battery banks. The isolator, located in the locker under the helm, permits charging from multiple sources while preventing a charged battery

switches. Either motor will charge the house batteries when they are switched *on* at the battery switch.

> Caution: *If you impose a heavy demand on the battery bank for a long time, you will exhaust the battery power. You should therefore make a habit of using only one set of batteries at a time, If one set is exhausted, the other may be available.*

The electrical system uses a common ground. Schematics of the system and details of the equipment are provided in the Appendix and the Owner's kit.

Auxiliary Engine Start Batteries

In the Classic, the outboard motors share one starting battery located ahead of the port outboard. A charge isolator is used to control the input to this battery.

In the LRC, the two start batteries are located in the port and starboard lockers. A "combiner" provides automatic battery switching between multiple charging sources and batteries, according to the availability of the sources, and the state of charge of the batteries.

> Caution: *When servicing the engine start batteries, the local switches will be turned "OFF". The combiner must also be turned "OFF" at the combiner, in order to de-energize the wiring to the battery switch. Safety precautions must be observed when working around batteries, because of the presence of acid and hydrogen.*

Meters

Voltage and current meters are provided, which can be used to monitor the status of the circuits, especially when troubleshooting. Generally, a fully charged battery will indicate approximately 12.8 volts with no load connected. While charging, the voltage will be in the range 13.8 to 14.2 volts.

Bilge Pumps 4-3

The 36 Capella is supplied with two high-capacity manual bilge pumps located under the forward hatches with removable handles.

Propane Systems 4-4

The propane tanks are located in the aft locker on the port side. In addition to its manual valve, the tank in use is provided with an electronically operated solenoid valve. Supply lines feed the stove in the galley and the water heater in the starboard lazarette when propane powered.

Before any propane appliance can be used, the manual valve at the tank must be opened fully. The solenoid may then be switched to *on* at the panel

Note that the solenoid is an electrical device and will open only when there is DC electrical power available from the batteries and both the main switch and the solenoid switches are *on*. The solenoid draws a small but significant amount of power when the valve is open. To minimize the draw on the battery and for safety, the propane should be *off* unless propane devices are in use.

The manual valve on the tank should be closed when the boat is unoccupied for any length of time.

Check connections to the propane system when tanks are changed, and at least quarterly to ensure they do not leak. You can do this easily by turning off all the appliances, then turning on the tank and solenoid valve. Mix water and dish soap half-and-half, whip it up and apply a little to each connection. If the connection is leaking, bubbles will form.

Galley Stove 4-5

The standard cooking appliance is a two-burner counter-top propane unit. The propane supply must be turned on before the burners will light (see P*ropane System* above). If you have just changed a tank and there is air in the propane line, the burners may take a moment to light.

Galley Stove 4-5 (Continued)

The burners, are provided with flame-failure thermocouples to shut off gas if a burner goes out when the gas is flowing.

Caution: Propane build-up in the boat can be extremely dangerous, so ensure that the unit is correctly lit and do not leave it unattended. Check all connections regularly to ensure that they are tight

Fresh Water Systems 4-6

Hot and cold fresh water is supplied under pressure in the galley, the head, and the transom shower. The pump starts automatically when any tap is opened providing that the appropriate circuit breaker is *on* at the Main Panel.

The water tank and water filter are located under the saloon center seat. The pump is located under the starboard seat.

The shower is drained by a diaphragm pump controlled by a breaker on the main panel and a switch located in the shower enclosure, in the storage locker for the shower hose.

Water Heater 4-7

Hot water is provided in the galley and in the head. The method of heating the water varies according to the specifications of the equipment in each individual boat.

Classic

The heater may be either propane or 120 volt AC. The propane unit provides hot water on demand, with relatively low DC load, but does not store hot water. The electrical unit is specified when there is an on-board generator, or when shore-power is available when hot water is needed. This unit stores 6 gallons of hot water.

Water Heater 4-7 (Continued)

The propane heater requires the appropriate breaker switches to be *on* at the main panel, including the propane system, the heater, and the water pump. The DC ventilation blower will run automatically. If hot water is not available quickly, shut down the system and check that the propane and electrical settings are correct.

> *Caution: Never put salt water through the heater. Observe the propane safety precautions in section 4-4.*

The propane heater is located in the starboard aft locker, and the electric heater is located in the aft locker in the cockpit.

LRC

The water is heated primarily by the cooling system of the starboard engine. It can also be heated by AC electrical power from shore power or from a generator if installed. The heater stores 6 gallons of hot water. It is located in the starboard cockpit locker.

> *Caution: Never put salt water through the heater*

For details of operation and maintenance of these heating options, refer to the manufacturer's data in the Owner's kit.

> *Caution: Care should be taken to ensure that the service batteries are not drained through the inverter when fitted. If the inverter is needed for other AC uses, the AC power to the water heater may be switched off, to minimize the load on the batteries.*

Refrigeration 4-8

An icebox located in the galley provides the stand and cold food storage. To prolong the life of the icebox, it is recommended that the door should not be opened more frequently or longer than is necessary.

Head 4-9

The toilet is a standard marine unit, manually operated.

The manufacturer's manual in the Owner's kit offers advice on operation, maintenance, spare parts and deodorant recommendations.

Holding Tank 4-10

The holding tank is located in the locker directly aft of the head and may be emptied to shore via vacuum fitting on deck or pumped overboard, as selected by the Y-valve. Before emptying the holding tank overboard, check local regulations for discharge of waste.

Flushing water is drawn from the sea through a shut-off valve in the shower locker.

Seacocks 4-11

The number and exact location of the seacocks on each Capella depend on the particular combination of equipment fitted. The Owner is advised to identify the locations of the seacocks and record them with the safety equipment in Section 2-1.

OPTIONAL EQUIPMENT 5

Anchoring Option 5-1

Anchor Package

A basic package is offered which is found effective in most conditions. Owners usually add to this according to their experience and intended cruising conditions. Suggestions for anchoring deployment are in Section 6-5

Windlass

The windlass operates on 12-volt DC power and is protected by a breaker at the helm. The relay and control switches are located at the windlass.

Sail Options 5-2

Furling Gear

The jib furling gear includes protection for the leach against ultra-violet degradation when furled.

Spinnaker

A method for flying the tri-radical asymmetrical spinnaker is included in the Appendix.

Galley Options 5-3

Refrigeration

The optional refrigeration system uses a 12-volt DC compressor charged with coolant gas (HFC 134A) to cool a plate and thus provide refrigeration.

> *Caution: Whenever you have problems with the system, this item must be checked out by a specialist*

Refrigeration requires considerable power to operate. As available power on a boat is limited, PDQ installs a unit with adequate capacity provided that you observe minor restrictions

- The refrigeration door should not be opened repeatedly or for long periods; think of what you need for the next little while before you open the door.
- Keep door seals clean and in good condition to retain cold air.

Warning: Coolant gas is dangerous when released from the compressor. If at any time a pipe breaks, switch off the unit, vent the boat thoroughly and contact a refrigeration specialist, who will deal with the problem.

The compressor is located under the saloon seats on the port side. The waste heat is removed be air-cooling. The air vents should be kept unobstructed and free of dust.

Note: Because refrigeration imposes a heavy load on the batteries, solar panels or a generator are recommended.

Oven/Broiler

When supplied, this unit is subject to the same operating and safety requirements described for the propane counter-top unit in Section 4-4 and 4-5.

Microwave

The microwave oven can be used when the AC power is available from shore, from a generator, or from the service batteries through an inverter, according to availability.

OPTIONAL & SPECIAL EQUIPMENT 5

Electronics 5-4

The electronic equipment should be operated and maintained as described in the manufacturer documents.

Caution: Identify and observe any warnings about steel objects placed too close to sensitive magnetic components.

Inverter/charger 5-5

1. Features

This has several functions:

- It inverts battery power to 115 volts AC, for appliances using this supply.
- It charges service batteries and in some cases, the generator start battery, using shore power, solar panels or the generator as available.
- It manages the several functions and provides protection for off-standard conditions.

2. Charging

The charging switch on the remote panel beside the main electrical panel must be set to "Enable", and battery charging will take place automatically, to suit the battery charging profiles

3. Inverting

When AC power is required, the INVERT switch must be set to ENABLE.

Caution: Conditions can arise where the Inverter will use battery power to run heavy loads due to failure of AC sources. Therefore, the switch should be set to DISABLE unless AC output is necessary.

4. Controls

The display switch may be OFF, which does not affect the functions of the unit. When set to DISPLAY, the status of the system can be monitored.

Inverter/charger 5-5

Caution: *The switch setting CONFIGURE should never be used in normal operation. Its only function is to modify the internal data set at the factory.*

For further information, consult the manufacturer's information in the Owner's Kit.

Generator 5-6

The Entec West Diesel Generator, model EW-4200, is rated at 120 volts +/- 5%, 35 amps, and 60 Hz +/- 1.2%. It is capable of starting motors under load, equivalent to a 16,000 BTU air conditioner, plus a second 12,000 BTU conditioner. The engine is water-cooled by seawater with a heat exchanger and a closed loop of 50/50 fresh water and permanent anti-freeze.

The generator remote controls comprise the switch START/RUN/OFF, and indicator lights for oil pressure and water temperature.

Battery – The generator does not produce DC to charge its starting battery. This is done by the DC system, through the Inverter/Charger with the charge function ENABLED, controlled by an "echo" charger.

Electric starting is provided with manual back up. The normal start procedure is as follows:

1. Turn off the AC loads at the main panel,
2. Warm up for 2-3 minutes,
3. Switch to GEN mode and add AC loads gradually.

Normal stopping is:

1. Switch off AC loads,
2. Switch off GEN mode
3. Cool off for 3-5 minutes and stop.

The manufacturer's manual should be consulted for emergency stop, manual stop and first stop.

> <u>Caution:</u> *When starting, turn over the engine for 7-10 seconds at most. If it does not start repeat once more only. The reason is, seawater may be drawn into the engine. Consult manual for remedial action.*

The unit has automatic shut down ability for low oil pressure, high coolant temperature and high exhaust manifold temperature (lack of sea water).

Warning lights give out the following information:

- All lights out – high water temperature.
- Exhaust and oil lights out – high exhaust temperature.
- Oil lights are out – low oil pressure.

If battery power is shut off, the generator stops.

Maintenance – Oil change is recommended after 75 to 100 hours, or annually. There is no oil filter. The dry air cleaner should be shaken clean when changing oil, and replaced after 250 to 300 hours. Valve clearance should be checked at the same interval.

> <u>Caution:</u> *Raw water is exposed to sand etc. in the water. The impeller and seals may therefore experience high wear, and routine replacement every second oil change is recommended.*

Generator 5-6 (Continued)

Note: *When the Diesel generator is installed in the Classic with gasoline outboard motors, a Diesel fuel tank is installed in the cockpit aft locker.*

Air Conditioning 5-7

The air conditioning unit operates on AC power and is located under the saloon settee. The unit is water-cooled, with seacock, pump and strainer located under the galley floor.

Caution: *The strainer and return air grille must be kept clean and free from obstructions. Refer to the manufacturer's manual for details of operation and maintenance.*

Caution: *If AC from shore or the generator is not available, and the inverter is switched to ENABLE, the service batteries may discharge quickly.*

OPERATION 6

Preparing for Departure Checklist 6-1

- Open seacocks as required, (See illustration in Appendix SP-03-08)
- Switch on “house” (general usage) and engine start batteries, (location, Section 4-2)
- Switch on main electrical system and required circuit breakers at the main electrical panel ,
- Open valve on propane tank, if required,
- Secure loose gear above and below deck,
- Ensure that safety gear is aboard and correctly stowed,
- Instruct guests who are unfamiliar with the boat on safety gear and fitting of life jackets. Ensure that they are wearing or have brought appropriate clothes for anticipated and possible weather,
- Check sails and sail handling gear for the correct operation,
- Check steering and engine controls for unencumbered operation. Read the notes in the manual on starting the engines and operating under power,
- Check fuel levels,
- Start the engines, allowing them to warm up until they have throttled back to a slow idle,
- Disconnect shore electrical power and stow cords,
- Cast off lines and maneuver away from the dock,
- Stow dock lines and fenders,
- Find a clear patch of water, raise the sails, than shut down the engines. In the Classic, raise the outboards.
- Enjoy yourself.

Returning to Harbour Checklist 6-2

- Switch on “ship’s” (engine starting) batteries (switch locations below the steps in each hull),
- Start engines, in the Classic, lower the outboard motors,
- Lower sail in a clear patch of water,
- Remove dock lines, fenders and boat hook from lockers and place as required,
- Return to dock or mooring and secure,
- Shut down engines, in the Classic, raise the outboard motors,
- Close valves on propane tank if the boat will be left for a prolonged period.
- Connect shore power and set required battery charging condition (section 4-1 and 4-3)
- Closing seacocks when the boat is to be left for any length of time is recommended
- Switch off 12-volt power within the boat at the electrical panel.
- If you keep the boat on salt water, hose it down to remove the salt,

If you are new to multihulls or to cruising, learn as much as you can, from books, courses or experienced people. If you live in the USA or Canada, find your local Power Squadron, who offer excellent courses on every aspect of navigation and seamanship for sail and power. Your local community college or correspondence courses may be a good source of knowledge. We also suggest:

Multihulls Magazine and *Power of Multihulls*
421 Hancock Street,
Quincy, MA, USA, 02171
Telephone: (617) 328-8181
(Highly recommended)

The Cruising Catamaran Advantage
Rod Gibbons,
Island Educational Publishing,
P.O. Box 220, Camden, ME, USA, 04843
(Mostly sail, but contains some useful information)

The Cruising Multihull
Chris White,
International Marine Publishing,
P.O. Box 220, Camden, ME, USA, 04843
(Mostly sail, but contains some useful information)

In addition to the many multihull books, there are many books that are relevant to any cruiser. Find and read as many as you can since these notes are only intended to highlight a few points. Best of all, get out with experienced owners whenever you can.

Additional information on rig setup for your PDQ (which is different from monohull setup) is found in section 3-4.

Closed-hauled

Each PDQ Antares hull is a symmetrical "torpedo" with a long keel. The hulls track well and cut through surface chop, so you will find that you can sail at 30-33 degrees apparent wind angle (in other words, *hard* on the wind). But, if you want to increase NMG (velocity made good) upwind, you will bear off, ease the sails slightly and increase speed by a third. Of course, while you won't appear to be pointing well, you will be conformably first to the weather mark! Remember, then don't pinch your PDQ Antares – the traveler should never be above the centerline, unless the wind is light and the sheet is eased. Relax, bear off, ease off and move!

Spinnakers

Spinnakers are generally not considered to be a cruising sail for monohulls because of the complexity of the pole and the high guy loads. On a catamaran, you can use one quite simply.

The gear is simple; turning blocks on the aft quarter of each hull is snatch blocks at each bow. Forget the pole. The sail is tacked to the guy (which is led from the windward bow)

and sheeted to the opposite stern. The width of the boat makes control relatively easy. If you can, borrow a sail and try it. An asymmetric chute (often known as a "cruising chute") with a sock or snuffer is ideal. (See SP-01-01 in the Appendix)

Safety for Conditions

Catamarans are inherently sensitive both to weight and to weight distribution. The PDQ Antares is designed to carry a load of people, their food, baggage of approximately 2,000lbs, evenly distributed through the vessel. Large quantities of personal effects and stores can seriously effect the gross weight. This is of little consequence while at the dock or while making a Sunday afternoon trip around the harbour with a group on board. For longer passages, you should exercise good

Safety for Conditions
(Continued)

seamanship by balancing weather conditions, crew experience and skill against the vessel's load. In other words, safe loading is a relative condition, which depends on variables that only you are in a position to evaluate and decide upon.

Sailing in Strong Winds

Sailing in strong winds in a well built, well-equipped boat can be exciting. There is however, a point when strong winds become excessive. A major part of good seamanship is knowing when enough is enough.

It is not possible to be precise about when sail area should be reduced. Crew skills and attitude, the stability of the wind and the state of the sea will all affect boat handling decisions. In dealing with a high or rapidly rising wind, the goal is to reduce the wind's power on your boat and, by responding to changes quickly and smoothly, maintain everyone's confidence in your collective ability to deal with the weather.

Changes should begin to happen early in the rising wind speed. If changes are made in good time, no one becomes alarmed, their confidence remains high and they cope better.

- De-power the main by flattening it with the outhaul,
- Raise the traveler and ease the sheet, so the main's upper section twists off to leeward.

When do you reef? An old rule of thumb that's still worth remembering says, "reef when it first occurs to you." Do it before people start getting worried, and do it before it becomes a struggle.

Sailing in Strong Winds
(Con'd)

As an *indication*, we have found that the boat is more comfortable when the reef is taken at 20 to 22 knots true wind in flat water. When reaching, the reef can be put off until true wind speed of 25 knots. With two reefs in, the boat will heel conformably with the water transom 1 to 2 feet above the water.

As the wind rises:

- Take the first reef
- Limit your boatspeed
- Station a person on the traveler, ready to ease the main in gusts.
- Reef again to suit the gusts. (Sail loading rises with the square of the wind speed, so a 10-knot gust on top of a 25-knot wind will *double* the wind pressure)
- Put a crew member on the jib sheet
- Reduce sail to the absolute minimum.

We have found this reefing combination to maintain good balance.

- At 25 knots true winds; first reef in the main, jib rolled 4 to 6 turns.
- At 30 knots true winds; second reef in the main, jib rolled to another 4 to 6 turns.
- Over 40 knots; run off at 120º to 140º apparent wind angle under jib alone.

Be specifically careful when traveling fast downwind as the boat speed can reduce a 30-knot blow to an apparently reasonable 18-knot breeze. If you are caught in a squall while traveling downwind, use the main to blanket the foresails and get them down before rounding onto a reach. Speed is also discussed in the heavy-weather section below.

Heavy Weather and Offshore Safety

One of the keys to surviving in bad weather is to keep your boat speed down. In a monohull, lying a hull or heaving to generally does this. Neither of these techniques is recommended for the catamaran. With no heel angle to reduce the weight of the wind on the mast and rigging, and to reduce the lateral resistance of the hull and keels, the full forces of the storm bears on the boat and increases the likelihood of damage or capsize.

Heavy Weather and Offshore Safety
(con'd)

If the sea room is available, running before the storm is appealing, providing speed can be controlled and the crew is not too tired. The problem is that in extreme conditions, even with no sails up, the surfing speed down larger waves may increase to dangerous levels. This is the time to use a drogue deployed on 300 feet of line from the stern, balanced with a small amount of sail to give a steady speed for control. The article, *Drogues and Sea Anchors* by Ian Johnson and Cathy Hawkins, (*Multihulls*, May-June 1989) provides more detail. If a drogue is not available, you can also trail the anchor line between the hulls, with the bight streaming aft in a huge U.

The ultimate choice for surviving the worst is the parachute sea anchor. This is deployed on a bridle from the bow. If you are considering a trip offshore, please read, *The Parachute Anchoring System*, published by Chiodi Advertising and Publishing Inc., Boston, MA, USA, and follow Charles Chiodi's advise – "Get the system and don't leave dock without it."

All this talk of heavy weather and survival sounds alarming. Remember that all accounts show that yachts of any type are almost always tougher than the crew. The crew, often with fatal results has abandoned many, and the yachts have been found

Heavy Weather and Offshore Safety
(con'd)

later, afloat and intact. The infamous 1979 Fastest Race was a good example of this phenomenon. Learn to trust your boat, and if the unthinkable happens, stay with it.

Multihull Safety

The big racing multihulls are so impressive that when they run into trouble, it is widely reported. However, this bears no relation to the safety of production cruising vessels, any more than the accidents of Nascar or Formula 1 car racing reflect the safety of the cars we drive daily. In fact, the insurance industry, which uses actual numbers, treats production monohulls and multihulls equally. Production multihulls have an excellent safety record, and the owner can enhance this by practicing good seamanship.

Cruising Under Power 6-4

Be sure to follow the operating and maintenance instructions laid down in the engine handbook.

Once you have read the manufacturer's engine manual, you are ready to go.

Maneuvering Under Power

Away from the dock, put one engine in reverse gear and one ahead, both at low speed, the boat will rotate around a point just forward of the helm.

Cruising under power, you will find that a single engine (it doesn't matter which one) is adequate and extremely economical for relaxed cruising. The single engine will carry you along at about 6 knots depending on your cruising inventory and the state of the boat's bottom. Together, two engines will push a lightly laden PDQ Capella at 7 to 8 knots in calm conditions. Forty knots of wind on the bow will slow progress to 3to 4 knots over the ground. Fuel consumption should average 0.57 gallons per engine hour.

Cruising Under Power 6-4 (Continued)

Engine Resonance

If the engines are running at speeds that are close to one another, you will hear a resonant "beat" to the engine noise. Slowly adjust the speed of one engine upward or downward until the speed match and the beat disappears.

Anchoring 6-5

Anchors are very much an item of individual preference. The bottom you normally anchor over will profoundly sway your choice of anchor. Here, we offer recommendations, not hard and fast rules.

One practical solution, offered as an option, consists of a 45-pound CQR anchor, with 50 feet of 10-mm chain and 250 feet of ? inch nylon rope.

All catamarans anchoring should use a bridle system. To use the bridle, pay out anchor rode to the required scope. Using a spare length of ½ inch line, tie a rolling hitch around the anchor rode, then take the bitter end of this bridle line through the fair lead on the opposite bow. Tighten the bridle line until the anchor rode and bridle line intersects amidships. Alternatively, secure the bridle line and pay out the anchor rode.

Docking 6-6

A catamaran at a dock can use its wide beam to tie up effectively. The secret is to tie the bow and stern lines to the hull furthest from the dock. The resulting length of line allows the cat to rise and fall freely to waves or tide without snubbing. Spring lines also must be made as long as possible. (See Appendix)

When docking with pilings, bow or stern-to, the same principle can be used. (Illustration in Appendix).

Handling, Storing and Transport on Shore 6-7

A drawing, in the Appendix, suggests how to lift and store the Capella on shore

Care must be taken with the LRC to avoid fouling the Saildrive with slings. The slings should be lashed to the toe-rail with light line, to prevent slippage.

The ground should be level, and some protective material must be placed on the blocking, such as softwood, with rubber or carpet on top, to protect the hulls.

Transportation on shore should be entrusted to professional boat movers.

MAINTENANCE AND REPAIR 7

The Importance of Preventative Maintenance 7-1

Your boat lives in a very harsh environment, comprising air (oxygen), salt water, and sunshine (heat, ultra-violet light). Some of the wear-and-tear occurs whether or not the boat is in use; while other wear depends on how often and how hard you use your boat.

The presence of so many variables makes for unpredictable maintenance forecasting. The following list has been compiled as a guide, to be used in conjunction with the data provided by the manufacturers of engines and other mechanical and electrical apparatus. As always, there is no substitute for a sound knowledge of your boat, common sense and an observant eye.

For more information on maintenance, we recommend Nigel Calder's *Boatowner's Mechanical & Electrical Manual.*

Records

It is strongly recommended that detailed records be kept of all routine maintenance and all repairs and replacements. A format for this is included in the Appendix (A-2)

Suggested Schedules 7-2

This overall schedule should be combined with equipment manufacturers' recommendations, which take precedence. Maintenance for the engines is based on a combination of use and elapsed time, rather than on a rigid schedule, so you should develop a plan based on their manuals and the way you use your boat.

<u>Caution</u>: Note particularly any checks or maintenance required during the break-in period, such as the 50-hour service.

Weekly:

- Check all fasteners on lifelines and nets. Replace any damaged items. Check that lifelines are tight. (Section 7-7)
- Check running rigging, as you use it, for excessive wear. (Section 7-3)
- Flush rope clutches, blocks etc., with fresh water. (Section 7-3)
- Check batteries. Ensure that the electrolyte is topped up and all connections are tight. (Section 7-6)
- Check fuel, engine control and exhaust systems. (Section 7-4)

Quarterly:

- Check running rigging for wear.
- Clean rope clutches and winches with fresh water and re-grease where required.
- Check lifelines for corrosion and tighten or replace as required, Check the net for chafe.
- Check standing rigging, looking carefully for damaged or bent wire, and cracked swages or bent turnbuckles. Check and reset tensions as required. Clean turnbuckle threads and oil lightly
- Check propane supply lines, connections and fittings for leaks. Make sure all fittings are tight and in good physical condition.
- Check that fresh water hose connections are not leaking. Check for signs of corrosion in hose clamps and fasteners. Clear foreign matter that could cause blockages.
- Check tightness of window fasteners. The screws should be snug but do not over tighten them.
- Check all watertight compartments for signs of water entry. Move loss gear as required to get a clear view.
- Check operation of all seacocks – open and shut them several times to ensure smooth operation.

Annually:

- Check steering fasteners. (Section 7-5)
- Check rudder alignment. Make sure rudders are correctly positioned. Ensure that rudders are operating smoothly.
- Check Diesel mounting bolts and shaft alignment.
- Check and lubricate turnbuckles. Replace any defective or corroded parts. Renew all tape over cotter pins.
- Check electrical wiring for loose connections and corrosion. Check all fuses and their terminals for corrosion and signs of heat damage. (Section 7-6)
- Clean seacocks. After cleaning all seacocks, open and close them ten times to prove smooth operation.
- Check the condition of corrosion-protection zinc anodes on underwater parts, of the auxiliaries.

Sails

You can extend the life of the sails by doing the following:

- Protect from the sun when not in use. The jib has a cover built in. Use the sail cover for the main sail.
- Dry them before storing them for more than a few days.
- Do not allow them to flap or flog unnecessarily, when drying them or when becalmed. This fatigues the fabric and wears out the stitches, rapidly running your sails' effectiveness

Standing Rigging

The rigging should be maintained at the tensions described in Section 3-4, for security and to maintain good sailing qualities. You will find that the standing rigging will stretch noticeably in the first weeks and again in the first strong blow.

At the beginning of the season or quarterly, all turnbuckles should be cleaned and checked for stress cracks. Oil them lightly with fine machine oil. Make sure all turnbuckles are pinned. All cotter pins should be in place, bent back and properly taped. Cotter pins should not be re-used; replace them with new ones.

You should inspect all swages quarterly. To prepare for any voyage offshore, have the swages x-rayed or replaced with Norseman fittings.

Running Rigging

When lines show signs of wear,, remove them from their hardware and turn them end-for-end. This shifts the wear point to a different part of the line and it will last longer. Whenever a line shows signs of wear, inspect its hardware to ensure that there is not a rough spot or a jammed sheave.

The PDQ Capella is supplied with lengths of line for sheets that we have found correct for a variety of situations. They may give you a long tail in everyday conditions, but we recommend that you keep these lengths when replacement is required. Replace any line that shows obviously broken strands. The running rigging specifications are included in the Appendix

Line Handling Gear

Flush the mainsheet gear and travelers with fresh water weekly. The winches require regular maintenance at quarterly intervals or they will become difficult to use and may corrode.

- Strip the winch and degrease it with a mild degreasing agent. (Available from any auto supply store).
- Re-grease the bearings with a small amount of Teflon-based marine gel lubricant. Do not over grease; the spaces in bearing race should be full of grease, but non- bearing areas should be clean.
- Make sure that the grease is fully worked into the bearing surfaces. Remove any excess grease after working in.

The clutches and line organizers do not require service as such, but should be kept clean. In salt water, hose them down with fresh water weekly.

Approximately quarterly, clean and lightly grease the sheave and cam bearings with a Teflon-based marine gel lubricant. Make sure the gel is fully worked into the working parts. Remove any excess.

Engines 7-4

If you give you auxiliaries the attention worthy of a complex (and expensive) device, they will give a long and reliable life. Whether you do the work yourself, or have it done (by a qualified mechanic), follow the maintenance recommendations in the manual. Pay particular attention to break-in requirements.

"Classic" Outboard Motors

- Change the oil and clean the oil filters after 10 hours of break-in, then every 100 hours thereafter. You can change the oil in the outboards on the water by holding a 2-quart milk carton under the drain hole to catch the oil. Each fuel supply line has its own filter, so the motor's internal fuel filter will last well, but check it when you do oil changes.
- Flush the outboard's cooling system's periodically with fresh water. Hose attachments to supply fresh water to the intake are available in most marine supply stores
- Do not be alarmed if the engines appear to idle at slightly different speeds. Resetting of the idle speed is a simple adjustment, covered completely in the engine manual.

"LRC" Diesels

- The Diesels have a closed-circuit cooling system that prevents seawater from contacting the engine proper. Check the coolant level periodically and replace it annually. Also check the cooling water seacocks. They should operate freely and be clear of fouling.
- Check oil levels in the gear cases and the engine sump. Dipstick locations are shown in the engine manual. Change the oil and filter according to the schedule in the manual.
- The saildrive leg is faired to the hull be an external rubber boot. Loss of this boot has no effect on the hull's watertight integrity, but will allow marine growth to take up residence in an area not normally painted with antifouling. Check it annually and re-glue if required

Steering 7-5

Inspect the steering periodically for loosened locknuts and cables. Pay particular attention to the rod ends connecting the tiller arms to the rudder bar. Motor vibration tends to loosen fasteners, so the more you travel under power, the more frequently you should inspect this area.

Every year:

- Grease the ball joints with a small of Teflon based gel lubricant.
- Remove the pull-pull cables, degrease them with a cleaning agent (available from any auto supply store), inspect them for chafe and broken strands, re-grease them with a Teflon-based marine gel lubricant, replace and re-adjust them. You can also achieve the same end by pouring a small amount of SAE 90 oil on the cable at the sheaves on the floor of the helm locker. The oil will simply migrate down the cable.

Service Systems 7-6

Electrical Systems

Although it may seem that there is little maintenance to be done on an electrical system, many electrical problems emanate from simple loose connections. You can therefore stave off many problems by developing the habit of checking connections whenever you enter a space where they are visible or reachable, then tightening any that are loose.

All wiring is tin-plated copper and therefore will be very resistant to corrosion. However, all wires should be checked periodically for corrosion and chafing and replaced if necessary. Preventative care consists of making sure that gear is not allowed to rest on or rub against any electrical wiring and preventing the exposure of wiring to any unnecessary wetness.

If an electrical device is performing poorly or seems hot, check its connections. If connections or fasteners are tight, check the wire with a Multimeter or call an

electrician. If a device's circuit breaker trips regularly, inspect the wiring for an obvious short or have the unit inspected by a repair facility. Do not try to defeat the purpose of the circuit breaker or you could create a hazard.

Periodically, check the batteries' electrolyte and top it up with water – more often if you find yourself adding significant amounts. Use distilled water; tap water may contain minerals that shorten a battery's life. Disconnect the batteries, clean their terminals, coat the mating surfaces with Vaseline and reconnect them.

> *Caution: Observe safety precautions when working on or near batteries, which contain acid and hydrogen.*

If any modifications or additions are required, we suggest calling the factory or consulting an experienced marine electrician. If you are considering any changes, even if you do not intend to do the work yourself, we recommend reading a book on marine electrical systems so you understand what is involved.

Water and Propane Systems

Check the hose connections of the fresh water system quarterly. Hose clamps should be tight, but not so tight that the hose material appears crushed.

We recommend that you close seacocks any time you leave the boat. If you choose not to do this, the seacocks should be opened and closed at least quarterly, to ensure they will close if necessary. Annually, or whenever the boat is out of the water, inspect the seacocks for growths or blockages, then lubricate them with a Teflon lubricant or vegetable oil.

Connections in the propane lines should be checked when changing tanks, and at least quarterly, to ensure they do not leak. You can do this easily by turning off all the

appliances, then turning on the tank and solenoid valve. Apply a little soapy water to each connection. If the connection is leaking, bubbles will form.

Lifelines, Stanchions & Nets

You should inspect all lifelines weekly to ensure that turnbuckles, pelican hooks, stanchion bases, locknuts and other parts are properly tightened and secured. Engine vibration tends to loosen fasteners, so the more you travel, the more frequently you should inspect for loose parts.

Every three months, you should inspect the lifelines for abrasion and corrosion. Watch out for the start of corrosion under plastic coverings. They may show initial swelling.

Check the forward nets weekly to ensure that securing bolts and rigging are firmly tightened. Check the net's stitching for chafe every quarter.

Antifouling Paint

Our standard antifouling paint is Pettit ACP 50. This is an exfoliation-style antifouling paint that will gradually lose its effectiveness over time and exposure.

We strongly recommend that you remove the majority of the paint with a sander before you repaint. We recommend the use of a random-orbit sander connected to a vacuum. This combination all but eliminates airborne dust and makes the job far less unpleasant.

- Sand carefully with an orbital sander, never a disc sander. If you sand through or otherwise damage the Interprotect 2000 epoxy undercoat, the extended warranty becomes void.
- Protect yourself when sanding and painting by wearing protective clothing, safety glasses and breathing mask.
- Please dispose of toxic dust and left over paint correctly. Check local laws for appropriate procedures.

Topsides &Deck

The topside and deck should be washed with non-abrasive cleaners. A small amount of ordinary dish soap in a pail of water is sufficient for normal use. If there are any scuff marks on the hull or deck, these can often be removed with acetone. Acetone will attack the windows and plastics, so use caution – apply it and wipe it away. Never allow puddles of acetone to form.

To clean windows, use Windex (or similar mild glass cleaner) and a soft cloth. Never use Soft Scrub, Scrub 'N Shine, or similar products to clean the windows as these cleaners contain fine abrasives and chlorine bleach, which breaks down the outer layer of plastic windows and makes them permanently foggy. Marine stores have specialized cleaners that contain UV filters.

An alternative is aerosol shaving soap, such as Gillette foamy, because it is fine milled soap that can't scratch and leaves no residue.

Window fasteners should be checked quarterly. They should be snug, but be careful not to make them so tight that the material is distorted; this will cause leaks.

Hatches

Check that all hatches are working correctly. Make sure the hinges are still tight, allowing the hatch to remain open, and adjust them if needed. Examine the seals for any sign of damage.

To clean hatches, follow the suggestion given for the windows, above. Clean gaskets only with mild soap and water, and be sure the soap is completely removed.

Graphic Striping

All the stripes are a 3M vinyl product that can be serviced at any of the 3M franchises called Trim-line. These are an automotive supply company, but they are willing to help with any problem.

Interior 7-8

The woodwork is coated with three coats of hand-rubbed urethane varnish and can be kept lustrous with occasional applications of vinegar and water. It can be cleaned like normal domestic furniture. If damaged, it can be sanded and touched up with similar urethane varnish. Test for compatibility in an unseen area.

The interior fiberglass surfaces can be washed and waxed in the same way as a car body. Scratched can be removed by buffing with automotive car compound.

The headliner is a tough vinyl product. It can be cleaned like plastic inside a car, using Armor-All, Windex or similar products. Automotive vinyl specialists can often repair tears or other damage.

The melded fabric can be cleaned like carpeting by brushing, vacuuming or steam cleaning. Household spot removers can be used on stains. Test the cleaner on an inconspicuous area and follow the directions.

Upholstery can be kept tidy with frequent brushing or vacuuming. Stains can be removed with household spot cleaner on an inconspicuous area and following the directions.

Note the products to avoid or use with care, as directed under *Topsides and Decks, previous*. Be careful when using cleaners that contain bleach. Surfaces like countertops are unaffected by bleach, but many flexible or clear plastics are ruined by concentrations as small as two or three capfuls in a pail of water.

Winterize 7-9

Winter storage where freezing can occur requires that all water must be drained or replaced with appropriate anti-freeze fluid. This includes all services such as the fresh water (hot and cold) systems, the toilet, refrigerator, air conditioning, engines, generator, etc., which contain water or are water-cooled.

The various manufacturer manuals must be used to ensure that the correct products and procedures are used.

Recommended Spare Parts 7-10

The following items should be considered a bare minimum of spare running repair parts. You will find more comprehensive lists in the books listed in section 6-3 and in many other cruising books.

- Engine drive belts
- Fuses
- Engine oil and filters
- Fuel filters
- Gasket compound
- Impellers for engine water pump
- Crimp connectors, butt and terminal type, 12 & 14 gauge wire
- Heat-shrink tubing
- Miscellaneous fasteners
- Miscellaneous line
- Miscellaneous wire
- Penetrating oil
- Anchor and miscellaneous shackles
- Sail tape, whipping twine
- Silicone sealant
- Spare fuel can and funnel
- Teflon-based marine gel lubricant
- Generator impeller and seals
- Other parts recommended by equipment manufacturers

Recommended Tools 7-11

We recommend that you buy good quality tools such as Sears or similar reputable name brand. "Bargain" tools are prone to damaging that material you are working on, or breaking when you most need them.

Tool	Type	**Sears Part No.**
Screwdrivers	Phillips – large	32216
	Phillips - #1	
	Phillips - #2	32229
	Robertson - #1	32247
	Robertson - #2	32248
	Standard flat	32168
	Jeweler's flat	32283 (set)
	Jeweler's Phillips	
Vice Grips	10"	
Crescent wrench	8"	40133
	12"	40135
Wrenches	17mm	41310
	12mm	41306
	10mm	41304
	8mm	41302
	3/4"	
	9/16"	
	1/2"	40727 (set)
	7/16"	
	3/8"	
	5/16"	40602
Hacksaw, blade holder		90337
Scissors		22297
Allen key set	Metric	4193
	Standard	40193
Feeler gauges		
Multi-meter		
Electrical repair kit (wire strippers, crimpers)		
110v/12v Multimeter		
12v Test light		

Troubleshooting 7-12

Boats, like the weather, are the nexus of many forces and possibilities, and as with the weather, troubleshooting a boat's ills may be as much an art as a science. This section is not a comprehensive guide to every difficulty you may encounter on or near the water. It deals only some problems that have vexed other PDQ owners.

Engine Won't Start	
Won't turn over	Safety interlock engaged. Move the shift quadrant to neutral and re-try.
	Battery power is off or insufficient. Check the battery switches. Read "no electricity – no DC power" below.
Turns over, won't run	Consult the more extensive troubleshooting sections of the engine manual
	Check the fuel levels and fuel connections. Ensure that the fuel filter is not blocked.
Engine stops suddenly	Turn off ignition. Raise engine and check prop for obstructions. The most common causes are crab-trap or other fishing lines that have fouled the prop.
Difficulty in raising or lowering sails	Check that the luff groove is not blocked and the luff groove is not encrusted with dirt or salt. Clear it by hosing it with fresh water.
	Ensure that the halyard lead is fair (not around another halyard or a deck fitting.)
	Ensure that the sail is feeding correctly and has not pulled out of its luff groove or had a slide fitted upside down.
	Run the halyard up and down with a light load (for instance, with a light load on a

Difficulty in raising or lowering sails (Con'd)	retrieval line) to ensure the masthead sheave is turning freely. If it is not, do not attempt to raise the sail; you may damage the halyard or further damage the sheave. Return to your mooring and hoist someone to the masthead to clear the problem. If the problem is persistent and minor, consider the use of a luff groove lubricant.
Genoa won't unfurl completely	The optional roller headsail most often fails to unfurl because the furling line is jammed at the bottom of the furling drum. Keep a light tension on the furling line when you unfurl; the line will then wind smoothly onto the drum and the sail will unfurl completely.
Can't get rigging sorted out	The procedure for setting up the standing rigging is described in Section 3-4. A diagram of the reefing is in the Appendix.
Steering is heavy	Make sure the autopilot is completely disengaged. Check the rudders to be sure you haven't picked up some obstruction of the rudder for stiffness in the stocks. Make sure that nothing is blocking the steering quadrant or the quadrant connecting rod. Any object that could conceivably cause a problem should be firmly secured or removed from the space
Can't get water out of the boat	Make sure that the electrical pumps are switched *on* at the main panel and at the helm station. Use the portable manual pump

Troubleshooting 7-12 (Continued)

No electricity – no DC power	Check the main breaker for DC power at the electrical panel. Indicator light should be glowing brightly. If this is not on, check the battery switch. Turn one or more batteries on. Check panel supply fuse.
	Check battery levels at electrical panel. If power is low, change to another battery or use emergency parallel switch to connect the discharged batteries in parallel (battery location, and electrical information, Section 4-2)
No AC power	If you are at the dock and plugged into shore power, check your connections. A heavy load on the batteries can quickly exhaust them. Also, if the shore power fails, the optional inverter will take over the supply of AC power by drawing from the batteries. This will quickly exhaust any connected batteries
	Check the AC power switch on the main electrical panel. The AC indicator light should be brightly lit. If the light is dim, the shore power has failed or you are drawing AC power from the batteries via the optional inverter. Turn off AC devices and re-establishing shore power or your batteries will quickly exhaust.
	Check connections at the vessel and shore ends. Plugs should be in and locked at both ends.
	Check on/off switch or indicator lights (if any) at shore supply. If shore supply is a ground Fault Interrupter (GFI), press the Test button. If the Reset button does not pop out, press the reset button and try the

No AC power (Con't)	test again. If this does not cause the reset button to pop, there is no power available. Speak to the dock manager. If there is power coming to the boat, and the circuit breakers are on, but there is no supply on board, check the circuits with a Multimeter, or consult a competent electrician.
Switch on the electrical panel (circuit breaker) won't stay on.	Switches on the electrical panel are circuits breakers are intended to trip (turn off0 when there is a fault in the circuit. Don't defeat or circumvent them. If the breaker trips only when the light or device is turned on, there is an electrical fault in the light or device. Have it repaired or replaced. If a breaker trips continually and particularly if it trips when lights and appliances on that circuit are turned off, the problem is probably a shorted wire. Have it inspected by a good electrician.
Lights don't work	If only light that doesn't work, the bulb, the switch or the wiring may be faulty (in that order of probability). If other lights also refuse to work, check the breaker for the lights for DC power at the electrical panel in the navigation station. Indicator lights should be glowing brightly (see *No electricity – no DC power* in this section.)
Water won't heat up	Refer to Section 4-7, to make sure that all of the elements in the water heating system are functioning correctly.

Shower fills with water	The main power switch and circuit Breaker or the sump pump must be switched on (see Section 4-8). The shower sump's filter must be cleaned.
VHF is on but does not transmit	Check the connections at the base of the mast.

Major Equipment, Data and Contacts A-1

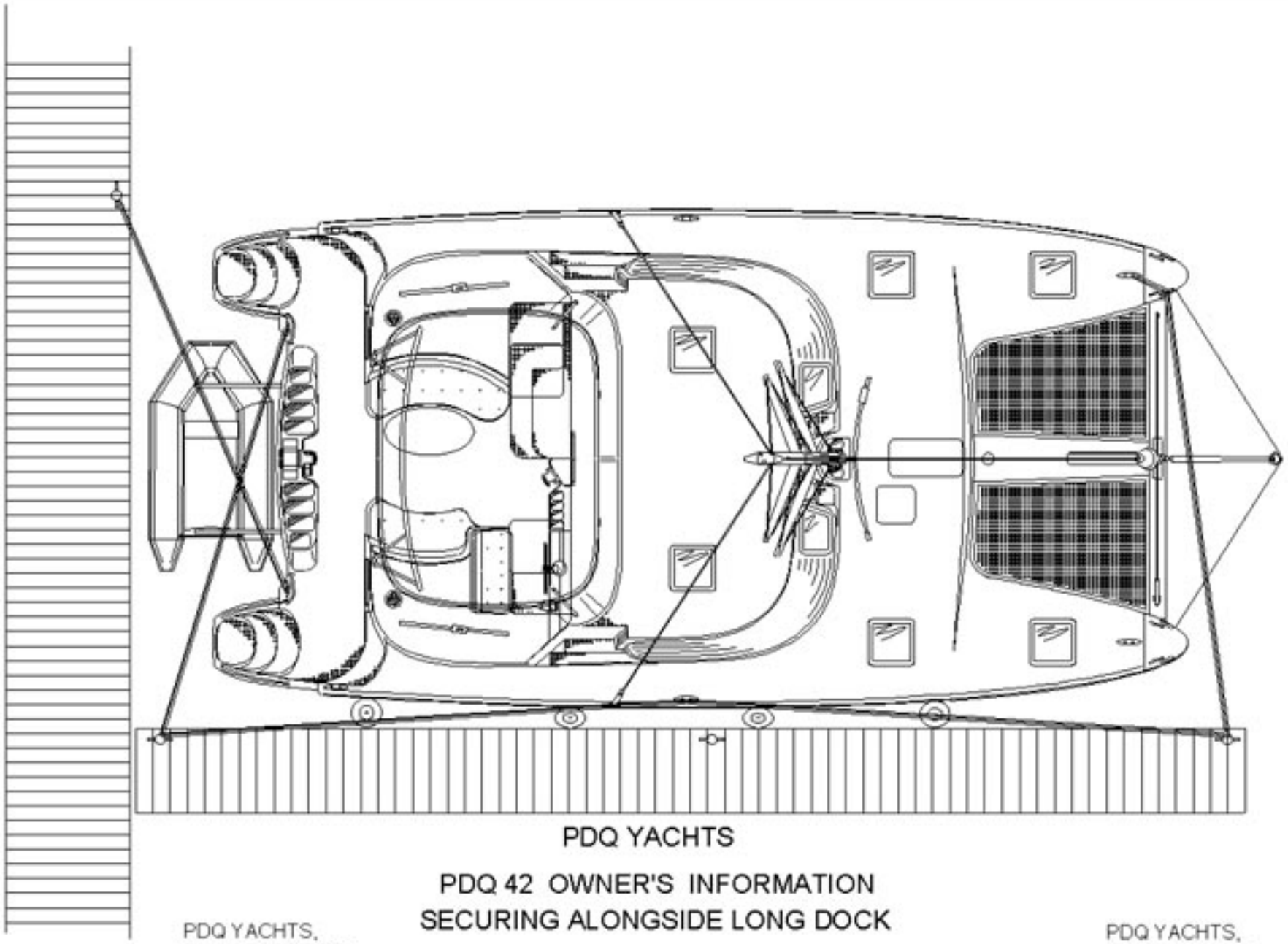
Manufacturer	Equipment	Model No.	Serial No.	Contact	Data Included

Maintenance & Repair Record A-2

	Engine Hours			
Date	Port	Starboard	Work Done	By

Drawings & Data Sheets A-3

"Classic" Electrical Distribution Diagram	EL-06 (specific to actual boat)
"LRC" Electrical Distribution Diagram	EL-06 (specific to actual boat)
Wiring Code	EL-01-01
Tying Up Alongside	SA-04-07
Tying Up Fore and Aft	SA-04-07
Lifting and Storage on shore	
Reefing Gear	See Selden Manual
Asymmetric Spinnaker Deployment	SP-01-01
Running Rigging Specifications	

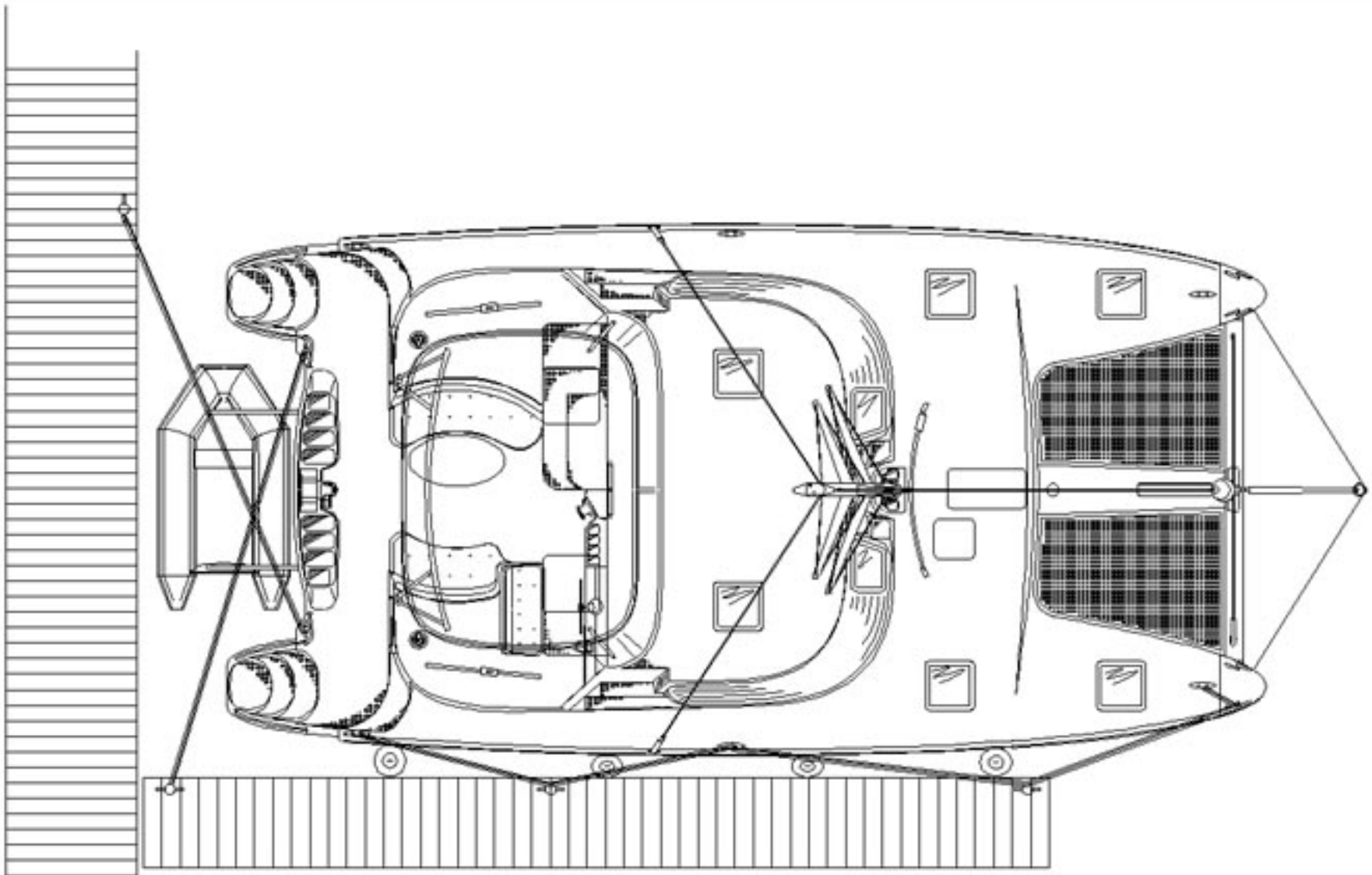


PDQ YACHTS

PDQ 42 OWNER'S INFORMATION
SECURING ALONGSIDE LONG DOCK

PDQ YACHTS,
PH. 905-430-2582
FAX 905-430-8306
WWW.PDQYACHTS.COM

PDQ YACHTS,
202 S. BLAIR ST.
WHITBY ONTARIO
CANADA L1N8X9



PDQ YACHTS

PDQ 42 OWNER'S INFORMATION

SECURING ALONGSIDE SHORT DOCK

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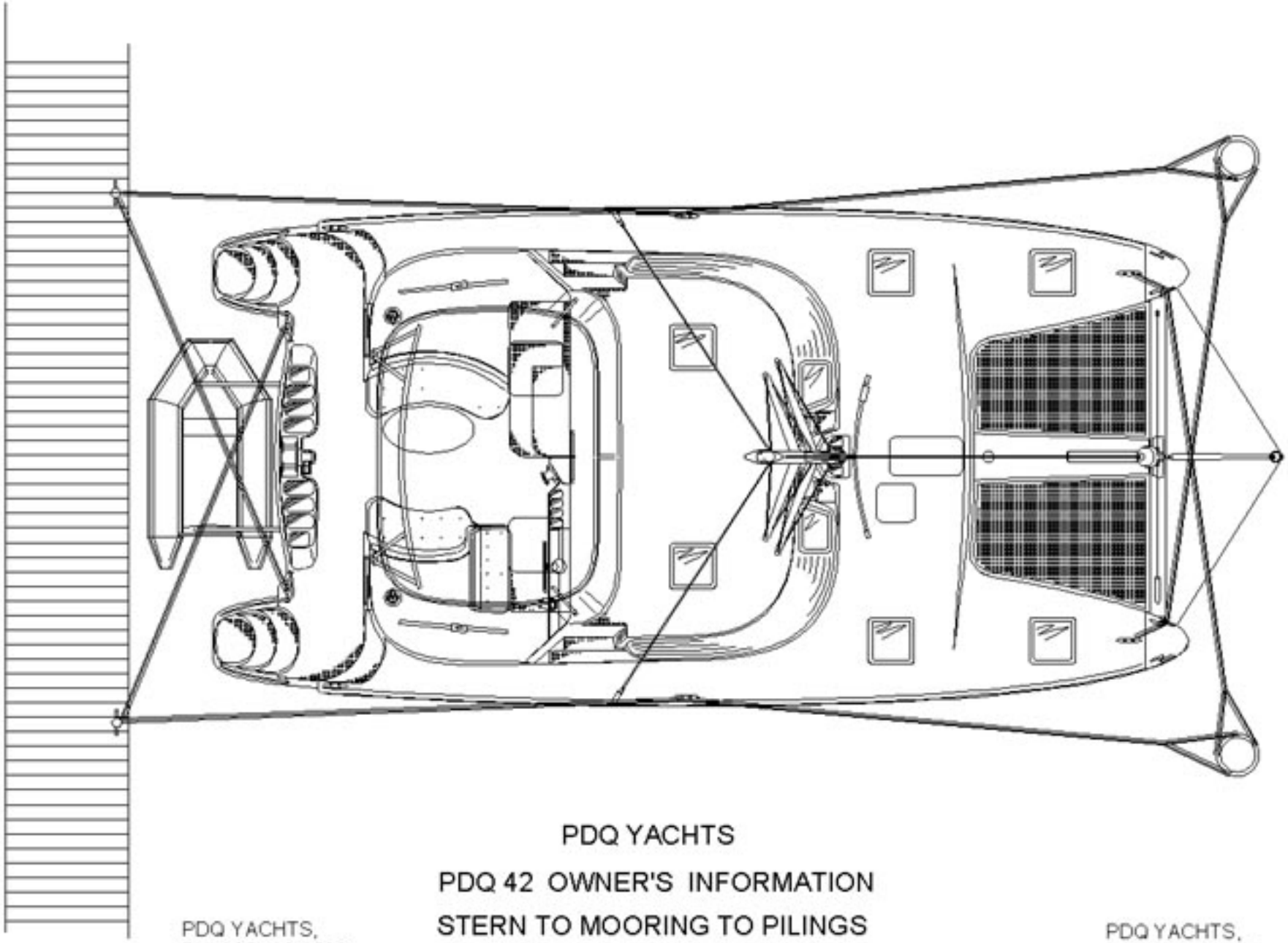

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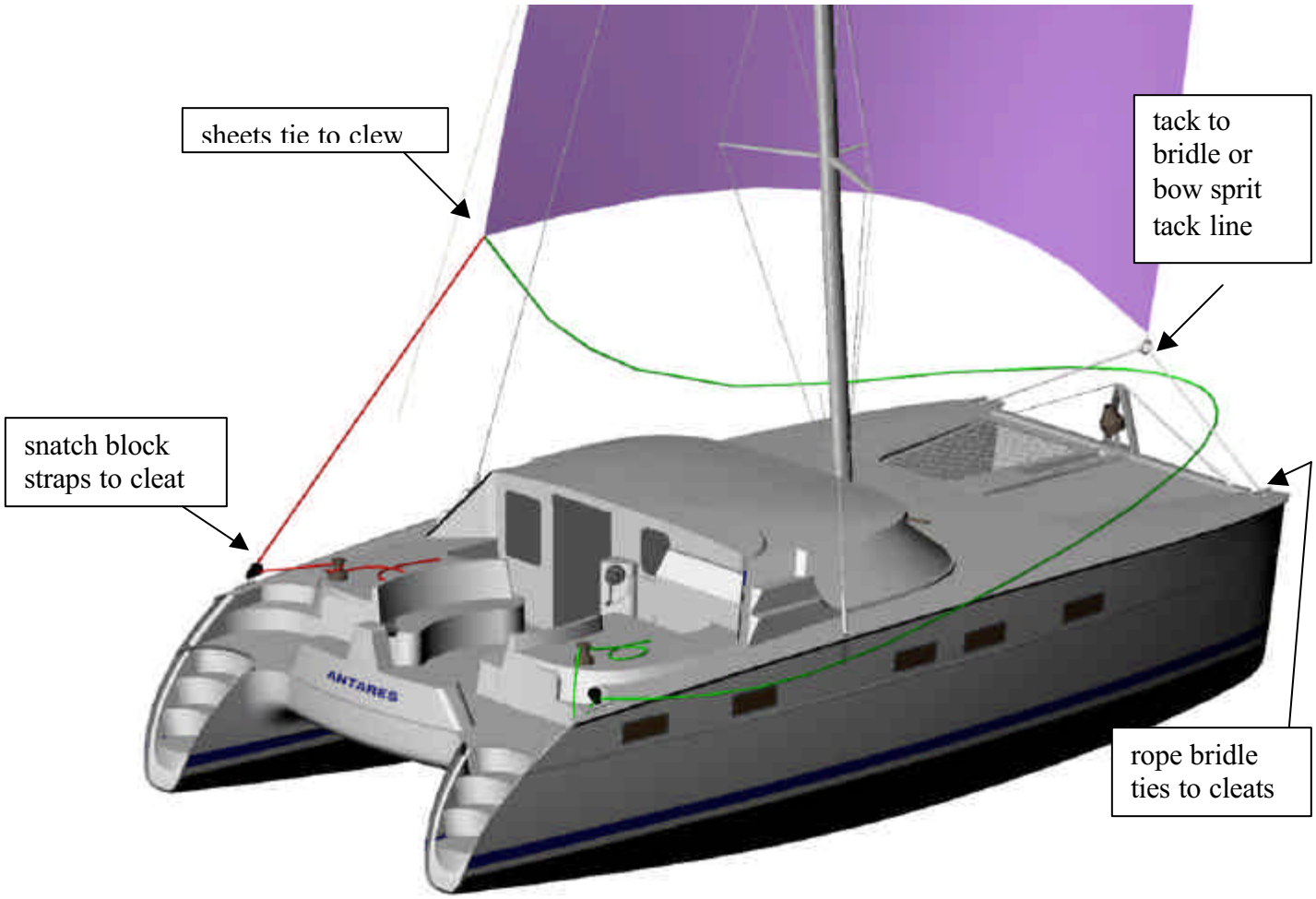
PDQ Yachts

Assymetric Spinnaker Deployment Suggestions



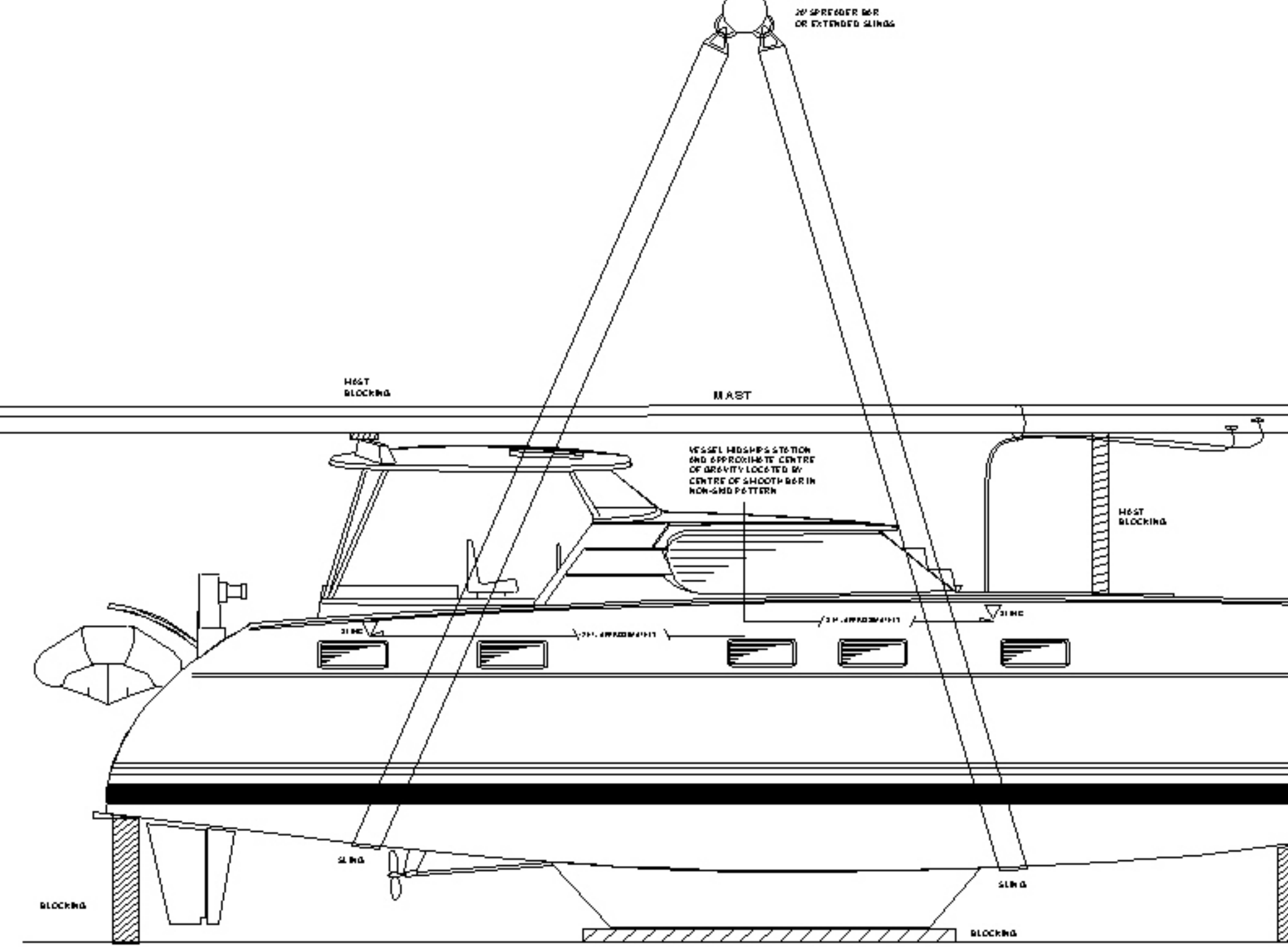
The diagram above is for guidance in setting the asymmetric spinnaker of your catamaran.

The sheeting blocks are strap head and can be made down to the aft cleats.

The windward sheet is carried outside the rigging to bring the clew of the sail around foreward when jibing.

The tack of the sail is secured by a rope bridle. The bridle may be fitted with a snap shackle tied at center. The bridle is made down to the bow cleats

The sheets are handled by the genoa winchs.


20' SPREADER BAR
OR EXTENDED SLINGS
MAST
HEAD
BLOCKING
VESSEL MIDSHIPS STATION
AND APPROXIMATE CENTRE
OF GRAVITY LOCATED BY
CENTRE OF SMOOTH BAR IN
NON-SKID PATTERN
HEAD
BLOCKING
SLING
SLING
BLOCKING
BLOCKING

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Index
(Continued)