

The Manta 46

Evolution of the “Ultimate offshore cruising catamaran”

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Design: Cortland Steck N.A. www.steckyachtdesign.com

Pat Reischmann and Cortland Steck N.A. have collaborated to create the new Manta 46 as the next generation design for the original concept of the Manta 38-42 sailing catamaran. That original concept focused on the direct needs and requirements of the extended or full time live aboard cruising couple.



Starting in 1994 the original Manta design had been very successful in fulfilling those needs with 127 built by production end in 2008, and today still enjoys a loyal following with strong brand recognition.

As the catamaran market has expanded in recent years, more designs have been developed for either the charter business, or the very exclusive high performance end. Consequently there exists an ever larger gap in production designs for the extended or full time live aboard cruiser who wants to venture offshore.

Design Concept

With advancements in design and technology, particularly in communication and navigational electronics, extended or full time live aboard cruisers are expanding their horizons. Consequently they are looking for higher cruising speeds under power and sail, with more comfort, safety, and livability in offshore conditions.



To meet this requirement the new design includes the following features:

1. High bridge deck clearance to accommodate larger seas without pounding.
2. Hull fineness, underwater foils, and a displacement, that will offer an "easy" level of higher performance under sail and power than the production charter catamaran designs.
3. Livable accommodation plan with the focus on one couple with occasional guests.
4. Systems layouts designed for easy access and self- service.
5. Sail handling systems that enables either gender to single hand in any condition and any point of sail.
6. Cockpit ergonomics designed for all weather protection and 360 degree visibility and comfort, for extended watches at the helm.
7. An advanced electrical system that offers true self sufficiency for extended time offshore.
8. Robust anchoring system for dual anchors and easy deployment and retrieval.

Hull design and construction

It was determined that the overall size should be between 45-46 feet in length to remain manageable for one couple, while still possessing the ability to sail frequently at double digit speeds.



Hull design features include:

- *Fine hull shapes with an above the water full radius chine. This enables a narrow waterline while presenting a larger hull beam above the waterline for interior requirements.

- *Wave piercing “Z” bows in the hull form to provide a finer entry, and with the flared hull above reduces wave and spray on deck. These wave piercing bows are separate watertight sections that will not allow water intrusion in the event of breach from severe impact.

- *Keel/centerboard configurations offering the most versatile and damage resistant way of providing outstanding upwind performance offshore and shallow draft inshore, while still providing good bilge sump volume and rudder and drive protection.

- *Large, balanced stall resistant elliptical rudder designs, placed well aft for maximum control.

- *Integrally molded in rub rail with a replaceable polymer abrasion resistant guard.
- *Integral boarding steps molded into the forward hull for easier access from the bows when docking.
- *Resin infused composite cored construction hull, deck, and hardtop.
- *Water tight bulkheads fore and aft.

Deck

On deck the wide side decks enable easy access when moving fore and aft, and the entire surface has functional molded in non-skid.



Deck features include:

- *The traditional Manta composite crossbeam and centerline strut which provide better wave clearance, sure footing when working the forward area, and eliminate the need for a gull striker, while still providing good trampoline space.
- *Anchoring equipment is located in the fore and aft centerline strut and positioned below deck for unobstructed deck space and protection of anchoring gear.
- *Two deck anchor lockers and two bow storage lockers.

*Molded uninterrupted full length toe rails and a crowned main deck drain aft, to prevent hull streaking and standing water.

* Comfortable stern boarding steps with swim platforms for easy boarding from dinghy or floating dock, and folding/telescoping swim ladders that are stored under flush mounted hatches providing clean deck spaces.

*Ten large deck cleats to handle any mooring situation, stainless steel hand rails for the aft steps and hardtop, 32" tapered stainless steel stanchions with double life lines and gates, and port & starboard bow rail seats.

Cabin top

The cabin top has crown for the quick shedding of water and has an overhanging eyebrow providing shade to the salon windows there by reducing radiant heat.



Cabin top features include:

*Unique port & starboard folding cabin top access ladders with handrails, enabling quick and safe access to the cabin top and hardtop ladder.

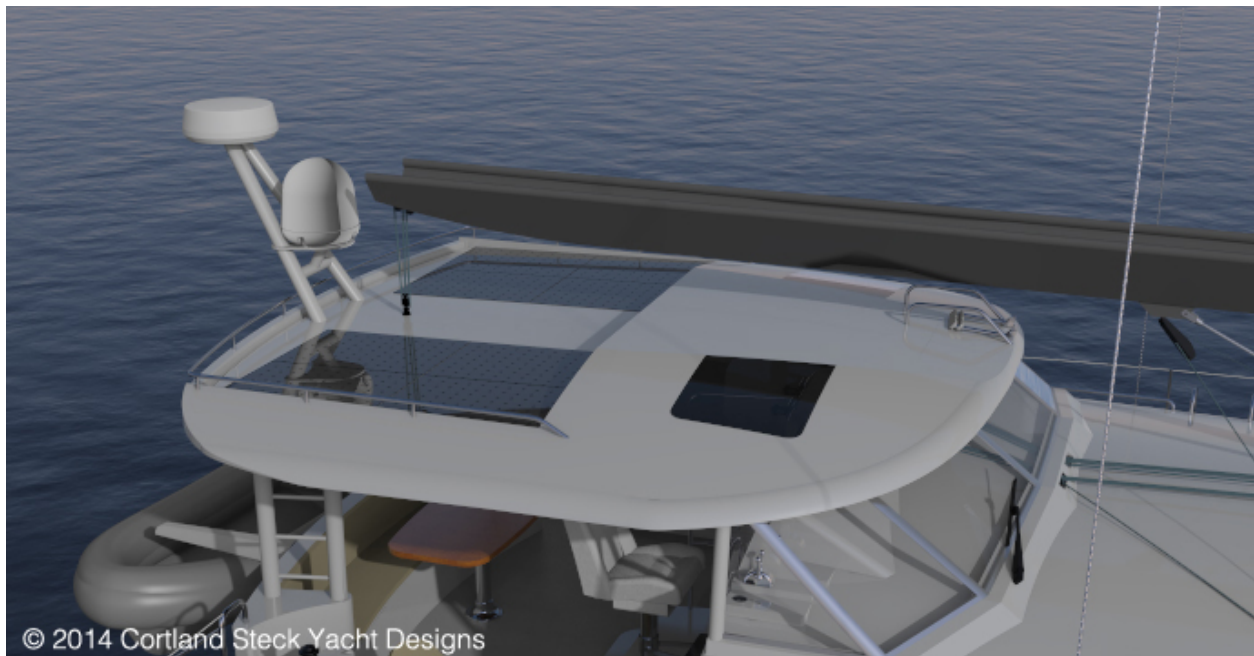
*Multiple stainless steel handrails around the hardtop for added safety.

*Tinted, laminated and tempered salon window glass for reduced interior heat, safety, and no maintenance.

*Forward centerline salon opening hatch, as well as port & starboard overhead hatches for added main salon ventilation.

Hardtop

The multi-function hardtop was a unique and integral part of the success of the original Manta design.



Hardtop features include:

*Easy access to the mainsail and electronics antenna, and attachment point for the mainsheet.

*Dedicated space for solar panels and rain water catchment section.

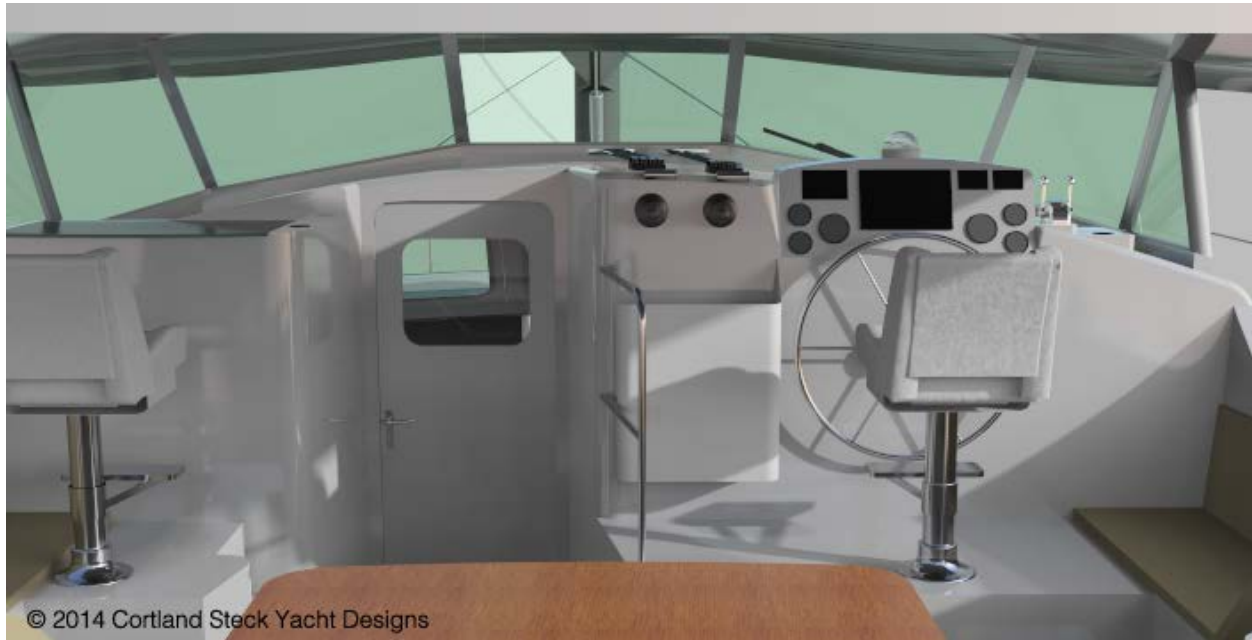
*Overhead visibility windows with retractable shades to monitor sail trim.

*Overhangs that protect the windshield and enclosure from radiant heat.

*Concealed, easily accessed, large wire runs for simplified installation of electronics

Cockpit

The cockpit is designed for maximum comfort during long passages.



Cockpit features include:

- *Two multi- adjustable helm chairs for maximum comfort on long watches, positioned to provide 360 degree visibility.

- *Helm station to starboard with a large destroyer steering wheel, and panel space for all electronics, gauges and engine shift/throttles.

- *Chart table in front of port helm chair with an acrylic top, which provides access to storage area for charts and other items.

- *Full acrylic/vinyl enclosure with U- zip panels and screens for ventilation, wing doors, and adjustable air conditioning ducting, make the cockpit another very comfortable “living room”.

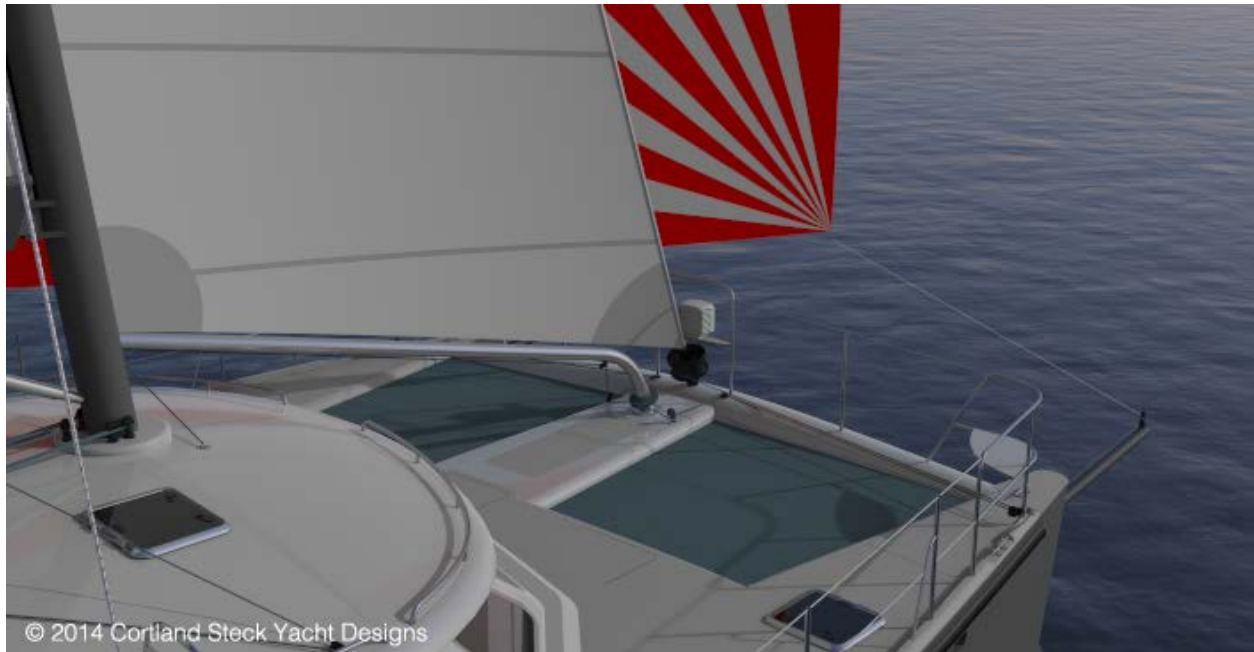
- *Cockpit cushions with a built in adjustable back rest creating four lounge areas in the cockpit.

- *Tempered glass windshield with wiper/washer at the helm position for all weather visibility.

- *Large storage areas with hinged lids and gas struts, located under the aft cockpit seating and cockpit sole.

Sail Handling

As with the original Manta, single handed sailing capability is a standard feature. All sail handling can be conducted from the safety of the cockpit by one person.



Sail handling features include:

*All halyards, reefs, sheets, boom vang and boom brake lines lead to the helm through sheet stoppers, to manual and electric winches mounted on the vertical cockpit bulkhead, feeding to an integral line bin.

*Carbon fiber, tapered round mast section, without spreaders, that provides less weight and wind resistance aloft, a lower center of gravity, less interference with mainsail shape, and natural depowering.

*Composite wing boom, wide enough to accommodate the flaked mainsail incorporating an integral cover, single line reefing, adjustable boom vang for twist control on any point of sail, lazy jacks, and boom brake/preventer.

*Chafe free exits for all running rigging on mast and boom.

*Self-tacking roller furling jib equipped with a Hoyt boom with integral boom brake/preventer, for twist control on any point of sail.

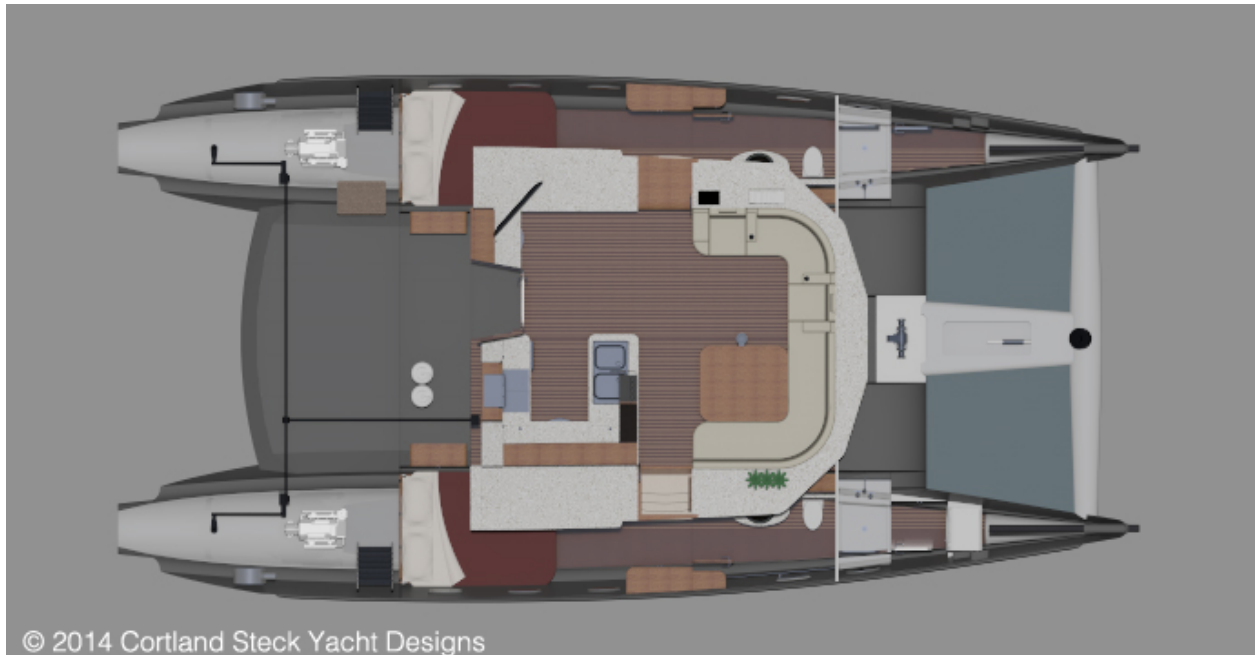
*Optional dual carbon telescoping bow sprits, connected with an adjustable bridle, to enable moving the tack of the Code Zero sail to windward or leeward, for more efficient off wind sailing.

*Jib furling, jib outhaul, jib boom brake, and Code Zero bridle control lines lead to the aft cockpit, where there are winches port and starboard for trimming the sail.

*Full batten mainsail with three reef point, and furling jib with vertical battens.

Interior

The interior layout is focused on the needs of the live aboard couple with occasional guests and offers two equal staterooms, with large heads and separate shower stalls in each hull. There is a work room with space for an optional water maker and bow thruster to port, and a laundry room with a combo washer/dryer to starboard.



Interior features include:

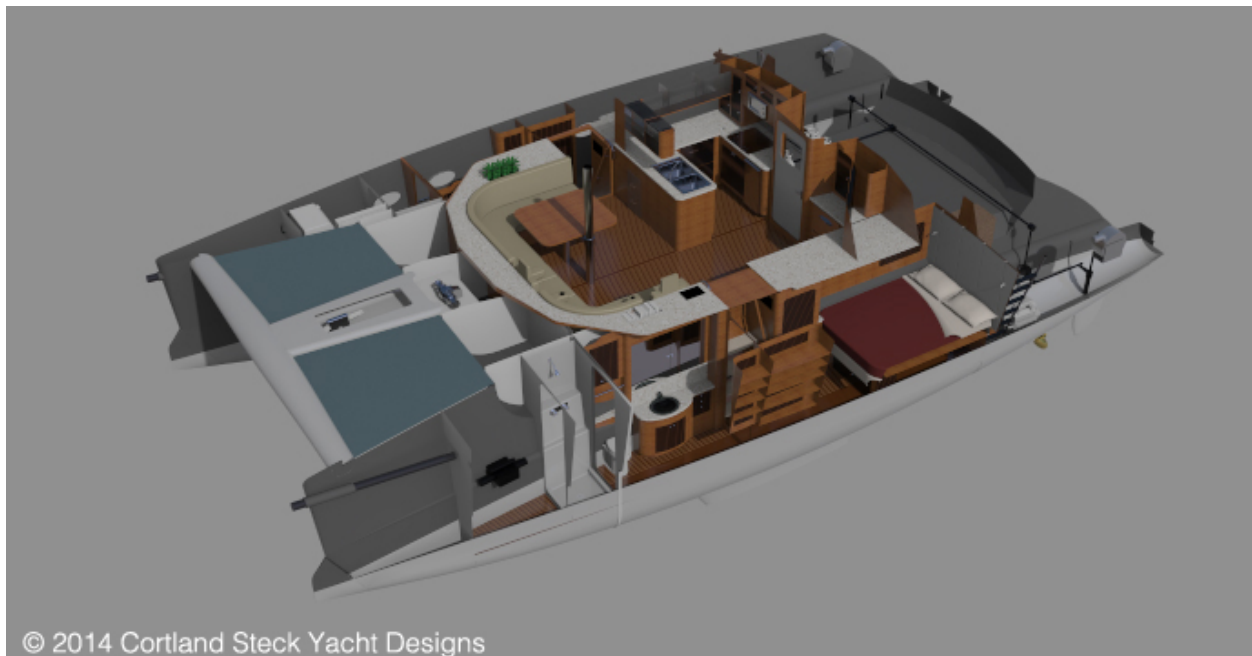
- *Sliding privacy doors leading to both port & starboard staterooms.
- *Queen size berths in each stateroom with large storage underneath.
- *Large hanging locker space in both staterooms.
- *Main salon settee with two built in recliners with foot and arm rests.
- *Adjustable settee table that converts into an extra double berth.
- *Settee and berth bottoms hinged with gas strut supports for access to storage underneath.
- *Mini blinds for main salon windows for privacy and reduction of radiant heat.
- *All opening ports and hatches have screens and sliding privacy/ sun shade.
- *U- shaped galley with large double sink, dedicated multiple upper and lower storage cabinets, and large counter space.
- * 12 cubic feet of high efficiency refrigeration/freezer/ice making, in sliding drawer appliance space.
- *Four burner propane stove with a choice of oven or extra storage space below.
- *Convection/microwave, and trash compactor.

*Double drawer filing cabinet.

*Locking companion entrance door with roll away screen

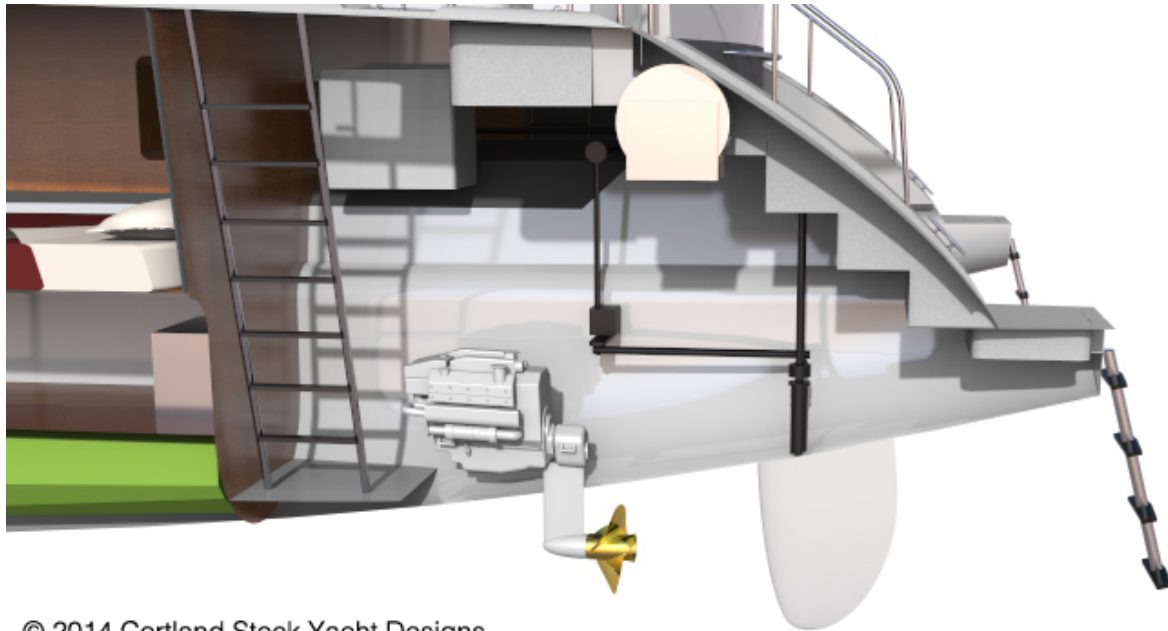
* 42" flat screen TV positioned for easy viewing from anywhere in the salon and galley with wiring for optional TV's in staterooms.

*Excellent static and dynamic ventilation, with eight opening hatches, ten recessed opening ports, and eight day/night solar vents.



Engine room

Since full time cruisers routinely perform their own maintenance, separate engine rooms with adequate working space, ventilation, lighting, and headroom are a must.



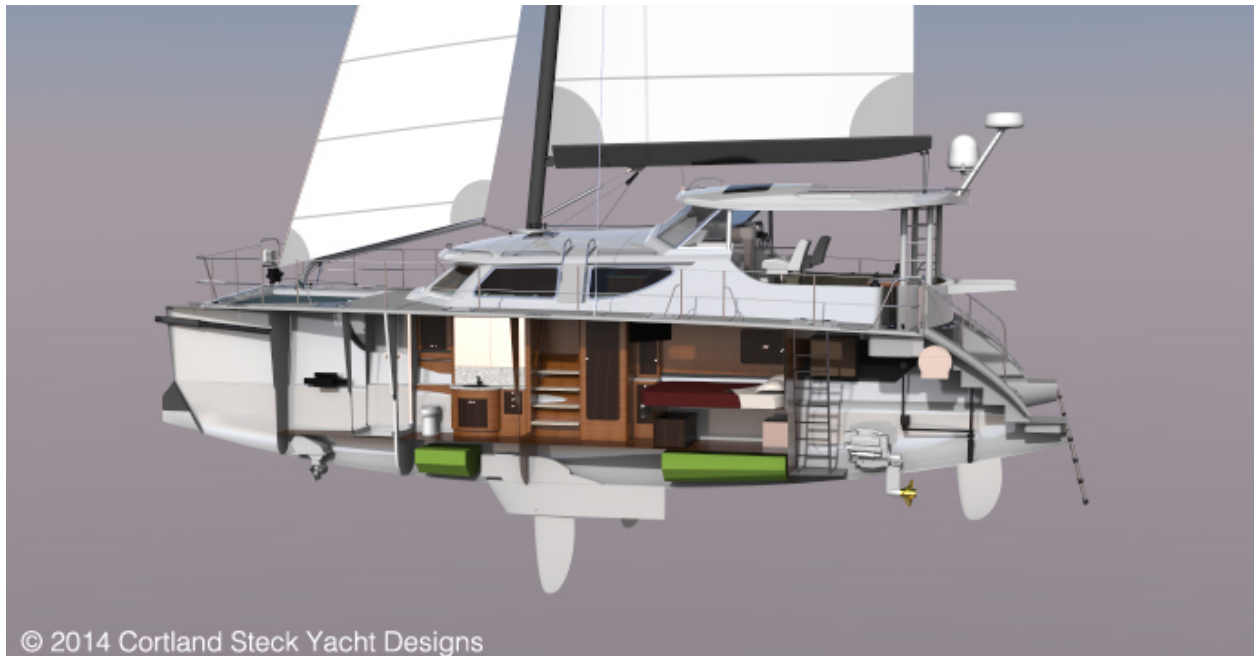
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Engine room features include:

- *Engine room access available through a large deck hatch and integral ladder.
- *Ventilation provided by the opening hatch, or an adjustable duct which can be opened to allow air conditioning in with the hatch closed.
- *Port engine room houses the 8-9 kW 120 VAC generator on a sliding shelf providing easy service, the 10 kW isolation transformer is located in the starboard engine room.
- *Both engine rooms have retractable shore power cord reels each holding 50' of shore power cord, and mini fold out tool trays, and storage shelves for tools, oil, spare parts etc.
- *Structural lift points in the overhead in each engine room for lifting engines.

Mechanical/Electrical/ Plumbing

For ease of service and maintenance, unobstructed access to all systems and equipment is a priority.



Mechanical

Mechanical systems are installed with a high priority for reliability and ease of servicing.

Mechanical system features include:

- *Auxiliary power supplied by two 50 hp. diesel engines with sail drives and folding propellers.
- *Mamba geared linkage steering connecting both rudders, for an extremely durable and maintenance free steering system.
- * 12 VDC oil change pumps on all engines.
- *Fuel polishing system to service fuel tank.
- *Electronic engine shift/throttles with optional remote control.
- *Anchor windlass with dual chain rode's and a gypsy that services an on deck chafe free anchor roller.
- *Fixed 12 VDC electric davits that position the dingy high enough for security in any condition.
- *Optional retractable bow thruster and water maker.

Electrical

The electrical system is designed for complete electrical self-sufficiency.

Electrical system features include:

- *120 VAC power supplied through either a port or starboard 50 amp shore power cord, and 8-9 kW AC generator.
- *12 VDC power supplied through a 1200 amp main house battery bank. Engines have their own start batteries isolated from the house bank.
- * 850 watts of solar panels on the hardtop. Additional charging is supplied through an inverter/charger and high output engine alternators. All charging devices utilize state of the art smart regulation.
- *Electrical panel located in the main salon and provides all AC/DC breakers, and digital monitoring for all AC/DC information.
- *10 kW Isolation transformer, lightning strike prevention, and surge protection for electrical circuits.
- *LED interior, exterior and running lights for reduced power consumption.
- *Powerful remote controlled spotlight mounted on the centerline bow rail.

Plumbing

All plumbing is installed for easy access to fittings and connections.

Plumbing system features include:

- *Fresh water system includes polyethylene pipe and distribution manifolds in the salon and both hulls.
- *Variable speed 12 VDC fresh and salt water pumps.
- *Self –cleaning strainer/seawater chest for ac pump and saltwater wash down.
- *Two 12 VDC electric freshwater heads with 50 gal holding tanks below port and starboard cabin soles, y- valve, macerators, and deck access for pump out.
- *Sealed shower gray water sumps with automatic pumps.
- *Bilges and engine rooms with high capacity electric and manual bilge pumps.
- *Two 20 lb. propane bottles in molded- in vented lockers for galley stove.
- *20 gal 120 VAC water heater with engine heat exchanger located under port aft berth.

*Plumbing for water captured from hardtop to water tank.

*150 gal. water tank below port cabin sole.

*150 gal. fuel tank below starboard cabin sole.

*Hot and cold deck shower at transom steps.

*Auto salt water anchor chain wash down, and fresh and salt water bibs in foredeck locker.

Conclusion:

Once produced the Manta 46 will provide a higher level of quality and performance than charter oriented production catamarans, while still offering competitive value.

This will be accomplished by developing intelligent tooling that focuses on creating well thought out composite components. The results will yield a product with a better fit and finish of high quality fiberglass and pre-fabricated wood joinery components, while offering a sizable reduction of assembly man-hours.

As a design and concept, the Manta 46 can truly be regarded as a “second home,” that is ready to go global cruising anywhere in the world in comfort and style.



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