The Real Issues for Offshore and Extended Sailing

This section is devoted to the discussion of offshore issues that have been developed by Shannon as a basis of our current design of blue water yachts. The formulation of our thoughts is based on our experience with tracking Shannon owners as they have sailed the oceans of the world in Shannon yachts for thirty one years.

Calls and letters from our loyal and dedicated owners from distant ports have continued to provide us with feedback that is so important to the evolution of our yachts.

Comfort and speed underway, a safe vessel, and a rested crew, make for an exciting and safe passage. We welcome you to peruse this section and call us for more information about Shannon blue water yachts

Seaworthy Hull Design

An offshore hull must be designed for both speed and a comfortable motion.

The forward sections of the hull beneath the waterline must be "vee'd" with a fine entry to avoid pounding in a seaway. Flat forward sections, influenced by inshore rating rules, punish and fatigue the crew during extended passages. The mid sections must be full enough to allow the placement of tanks near the centerline and below the waterline. Tanks placed in the ends of a boat affect the trim as fluids are consumed and weights change. The aft sections must have enough buoyancy to overcome the constantly changing weights of crew in the cockpit and gear in the lockers. The hull design must be able to accommodate the necessary weight that is required for tankage, gear, equipment, machinery, etc. In the 21st century it is not difficult to design a light racing boat that will go fast, but an offshore cruising yacht must be able to carry the necessary tonnage and still provide fast passages on all points of sail and in all wind speeds. The keel must be strong enough to go aground without undue concern about unseen, collateral damage from keel bolt sheering. The base of the keel should be flat and parallel with the waterline so the boat will stand on its bottom to "dry out" against a pier. The rudder should be mounted on a rugged skeg for protection. The propeller should be mounted in an aperture to avoid having an exposed propeller and shaft. A bent propeller blade can be field-repaired if necessary, but a badly bent propeller shaft requires hauling the boat and professional help and machinery is not readily available in many parts of the world. Finally, the hull design must incorporate low center of gravity along with form stiffness to be able to carry sail in heavy weather.

Safe Deck Design

Deck designs that are influenced by round the buoy racing are both tiring and dangerous.

The ability to get around the side decks easily on a moving boat in the dark is absolutely critical. Genoa tracks, blocks and shrouds placed in the middle of the side decks have no place on an offshore cruising boat. The perceived reason for placing sheeting tracks and inboard shrouds on a sailboat down a deck

is to obtain a better "sheeting angle" for windward sailing. While it is true that a close sheeting angle coupled with a violin tight headstay will allow a sailboat to point a few degrees higher in a racing situation, the advantage is mostly lost when a boat has a roller furling headsail installed. It is impossible to obtain the necessary luff tension on any roller furling gear to warrant the dangerous negatives of cluttering the side decks. Shannons point as high as boats with inboard shrouds and sheeting if the other boat has roller furling. Inboard sheeting (with roller furling) has a great deal to do with "fashion" and very little to do with performance.

The deck design should also incorporate toe rails that are not too high to trap whitewater coming over the deck. High bulwarks can retain tons of seawater that creates a dangerous situation as it slowly drains. The trunk sides of the cabin should not slope too much for style sake as this creates a slippery place to lose footing. A flush deck with no raised trunk cabin provides very little sea protection to those in the cockpit. The companionway should be placed close to the centerline and away from the side of the hull. There should be a clear, continuous run from the cockpit to the bow for jacklines, so the crew can use safety harness without unhooking. Shannons have full length, useable handrails on the trunk cabin top and all lifeline stanchions and pulpits are 30" high

The Cockpit

The cockpit design is the most critical aspect of a sailboat.

Without a doubt the safety and comfort of the crew is a key element in the ability of a sailing yacht to go long distances. Fatigue is the major factor in accidents and navigational errors aboard boats. Experienced cruisers know that 90% of daylight hours in the tropics are spent in the cockpit. Therefore, the ability to sit, lean, lay and stand comfortably must be designed into a cockpit. The seats must have seatbacks high enough to support a person's back in a normal sitting position. The distance between the cockpit seats must be less than 30" so a person can brace themselves easily with their legs when the boat heels. The "Tee" shaped cockpits on the Shannon 43 and 47 have raised wings on the aft side of the fore and aft seats that provides another transverse seat back to sit and lounge while facing forward. The cockpit sole at the helm is angled to create a level place when the boat is heeling. The helm seat is curved to prevent slipping when heeled. The entire cockpit on Shannon's is surrounded by strong, high coamings to protect the crew from boarding seas.

There are no walk-throughs in the cockpit or transom to compromise the integrity and safety of the boat and crew. Opening up the aft end of a cockpit for a walk-through to the transom for swimming is fine for a yacht sailed in sheltered waters, but the potential danger to the crew in offshore sailing from following seas is considerable.

The cockpit designs on all Shannons incorporate a method of launching an emergency life raft without having to leave the safety of the cockpit.

Shade from the harmful effects of UV have to be a priority for any cockpit design. There are several bimini designs for owners to choose from. Finally, there must numerous scuppers to safely drain the cockpit.

Single Handed Sail Plan

The most important issue for long distance sailing is that one person must be able to sail the boat without assistance in all wind and sea conditions.

A husband/wife sailing team on a long passage means one person is below resting or cooking while the other person is above deck sailing. An offshore boat's rig must accommodate sail changing, reefing and tacking by one person without jeopardizing safety. Dependence on an autopilot for sail management can be dangerous if the unit fails, especially when the person on watch is out of the cockpit on deck. At

Shannon, Walt Schulz has been dealing with the real issues of short handed sailing in boats over 38 feet since 1975 . No company in the marine industry has more experience than Shannon in setting boats up for husband/wife sailing teams to go long distances confidently without additional crew. The Shannon Scutter and Sketch rigs were developed by Walt 1995 as an evolutionary milestone in his quest to perfect short-handed sailing. The Scutter rig became a reality because of the recent improvement in the dependability of roller furling gear. Be aware that in spite of all the hype and the claims, a large (135%-150%) genoa cannot be reefed down to make a safe working jib. A genoa can only be successfully reefed by 30% before the sail loses shape and becomes worthless with no drive into the wind. A conventional sloop with a roller furled genoa on a single headstay cannot be reefed down to create a working jib that can claw off a lee shore or beat into strong headwinds for long periods of time. A small spitfire jib hanked on a babystay added to the foredeck of a sloop is fine as a storm survival sail, but it is too small and too far aft for sailing into the wind. A staysail on a cutter rig has the same limitations. On the Shannon Scutter and Sketch a real working jib is placed on the bowsprit forward of the genoa. By placing the jib forward, helm is reduced and the high cut jib will easily tack through the slot in front of the genoa. A Shannon is sailed normally with the genoa up to winds of about 20 knots. When the wind increases, the genoa is reefed (a 130% genoa becomes approximately a 100% genoa.) As the wind climbs the reefed genoa is completely furled, and the working jib is rolled out. If necessary in true storm conditions, the working jib can also be reefed by 30% to become an effective heavy weather jib. In addition, Shannons are equipped with a removable storm jib inner forestay for extreme conditions. The Shannon Scutter and Sketch rigs create four useable headsail combinations all available without leaving the cockpit. Another feature of the new Scutter and Sketch rigs is the control of main halyard and reef lines from the cockpit.
Thus, all sails, headsails and mainsail can be set, reefed and furled by one person from the cockpit.

Our video on the Shannon Pilot 43 shows the ease in which sails can be raised and lowered by one person all from the cockpit.

For those looking for the ultimate in short-handed rigs, Shannon is one of the few builders that has real world experience designing and building two masted ketch/Sketch rigs. There are more Shannon ketches sailing the oceans of the world than other two mast rigs from any company in business today.

Bullet-Proof Construction

Unlike automobile and house construction, there are no government mandated minimum building standards for yacht construction.

Even the voluntary standards that are used by some builders in the US and in Europe are intended for the low-end mass production yachts. Shannon's construction techniques and building materials have set the benchmark for quality offshore yachts. Shannon has been building composite linear PVC foam cored one piece hulls since 1981. In the test tank of the oceans of the world, Shannons have been up on reefs, rocks, breakwaters, coral heads and even picked up and dropped off a pier by Hurricane Andrew without holing the hull to prove the strength and integrity of our construction methods. There is no balsa wood used in any Shannon hull and deck. The one piece decks are built using rigid closed cell foam sandwiched in between two rugged fiberglass laminates. The hull to deck joint on Shannons is comprised of an internal hull flange which receives the deck that is both bolted on 8" centers as well as being bedded in adhesive bonding compound. All structural bulkheads are attached to the hull with continuous fiberglass filaments that are threaded through the bulkheads and tabbed using vinylester resin. The ballast lead is internal and encapsulated creating a second hull skin above the lead. Water tanks are 316L stainless steel, and fuel tanks are 5052 marine alloy. All tanks are designed and placed to be removable without having to cut the boat apart using a chainsaw. All the solid hardwood furniture, fiddles and joinerwork are both glued and screwed with non-ferous fastenings. The polished bronze or stainless steel portlights all open and are fitted with armor plate glass. The electrical system on all Shannons is fully bonded and wiring is tinned copper strand, color coded and accessible. The companionway sliding hatch and weatherboards are custom designed to withstand the rigors of crashing following seas and

knockdowns. The structure under the cockpit was engineered to hold the weight of a water filed cockpit. Over-sized self-tailing winches and deck hardware are standard, not extras that can add tens of thousands of dollars to the final cost of the boat. The thru-bolts of all deck hardware on Shannons are accessible without having to cut apart the interior woodwork, a common problem on many top-end sailbots built with no provision for long-term maintenance. At the same time, Shannon emphasizes sophisticated building methods to keep weight down without sacrificing structural integrity as a heavy boat is a slow boat. The fact that there are so many Shannons still sailing across oceans decades after they were built without major refits is testimony to the longevity of our bullet proof construction methods.

Seagoing Interior Design

Interior layouts that look good in a magazine or at a boat show can be a dismal failure in a seaway.

Fatigue brought on by a lack of sleep and inadequate food preparation is a bigger problem than inadequate construction scantlings during storm conditions offshore. Explaining the complexity and dynamics of offshore interior design and construction is difficult in a short paragraph. It is the sum of one hundred small items that make an interior a success in the ocean as well as at anchor. For instance, a good ergonomically designed settee for sitting does not make a comfortable adult berth. Thus, all the settee berths on Shannons have a slide-out feature to widen the settee for sleeping. In addition, lee cloths to prevent people from falling out of the berth must be factored into the design and construction. Also, the minimum length of berths on Shannons is 6'-7" so people over 6' tall can sleep with a proper pillow. The galley must be laid out so a 5' tall person can reach, brace, and work without undo exertion. The ability to prepare and cook meals in a seaway is critical for long distance sailing. All Shannons have a "U" shaped galley, deep double sinks, 3/4 burner propane stoves with ovens and ice box/refrigeration with side opening doors. The head/toilet room must be designed so people can brace themselves when the boat is heeling. A head design that mimics a condo or a motor home may look nice at the dock, but will be impossible to use when the boat is sailing. Storage space is another important item for passage making. Lockers that have no ventilation are a breeding ground for mold and mildew. Shannons have louvered vents on locker doors, as well as wood ceilings covering hull surfaces set away from the fiberglass to keep lockers and their contents dry. Finally, effective utilization of space based on the priorities of each individual owner has always been a Shannon hallmark.

Keels and Centerboards

Keel design and construction issues are often overlooked until there is a major problem.

With so many Shannon owners sailing in remote and poorly charted areas, keel draft and susceptibility to grounding are paramount concerns. Shannons have internal lead ballast meaning the lead is cast and installed in a keel cavity in the one piece hull. The lead is then encapsulated with fiberglass creating another hull skin over the ballast. On a Shannon, continuous fiberglass filaments from the sheer/deck run down the hull across the bottom of the keel and back up the other side. The lead ballast is held in place by the fiberglass structure of the hull. Unlike Shannon, 90% of the sailboats being built today have lead keels bolted to the bottom of the hull. There can be significant problems for boat owners with bolt-on keels. When a boat goes aground the sheer loads on the keel bolts is tremendous and there is no way to ascertain any damage to the bolts without removing the entire keel. The upward force on the aft top edge of a bolt on keel can create structural damage to the hull. And if the boat with a bolt on keel has a centerboard with a slot in the lead, the soft lead can close around the board when running aground. While bolting the keel on a sailboat is a cost effective construction method, Shannon does not use this technique because of the stated problems for owners going aground. When a Shannon runs aground, and many have in the past 25 years, the damage (if any) can be quickly observed and field repaired easily.

Almost 75% of Shannons have a keel/centerboard configuration. Experienced owners have chosen a centerboard because of the reduced draft benefits. Depth of water is a real issue in practically every part of the world. Carrying over 6' foot of draft on a vessel precludes many of the pretty cruising places like the Bahamas, the Florida Keys, the Chesapeake, northern Europe and many others. The centerboard design and engineering on a Shannon is perfect for exploring. For instance, the centerboard and its pin on a Shannon can be removed without hauling the boat. The lifting mechanism is a simple-to-use and easy-to-maintain cable lead to winch in the cockpit. There are no complicated hydraulic arms holding the board down on a Shannon, so the board is free to swing up if the bottom is encountered. Once again, the keel/centerboard design on a Shannon has been real world tested and proven since 1981.

Ventilation Everywhere

A sailboat has unique dynamics relative to temperature and humidity.

Unlike a house that only deals with inside and outside temperatures, a boat must also deal with a third element - water temperature. In addition, a boat is also generally closed-up in inclement weather further complicating the problem. The ice tea glass on a hot summer day is an excellent example of two different temperatures (the cold fluid inside and the warm air outside) that results in condensation. Similarly, clothing, books, gear and equipment inside lockers and drawers, and shelves onboard a fiberglass hull will absorb condensation that ultimately results in mold and mildew. Preventing condensation by proper ventilation is a priority at Shannon. All Shannons have foam core composite construction in the hull and deck to insulate against the air and water temperatures. There are no fiberglass interior liners or pans which trap condensation on the interior surfaces of cabins and lockers. All the vertical surfaces on the hull are held away from the fiberglass with 3/4" air space between the hull and the 1/2" wood "ceilings". All the lockers on Shannons including the galley lockers have wood ceilings. There is no vinyl or carpet glued to the hull to cover the fiberglass (and to absorb condensation.) All the locker and cabinets have louvers to allow the free movement of air. All the portlights are openings with bug screens. Every Shannon has a minimum of four deck dorade type baffled cowl ventilators to force fresh air into the cabins even in bad weather. Overhead opening hatches with screens are also included for fair weather ventilation. In addition, there can be numerous 12VDC fans carefully placed for a steady movement of air. With so many Shannon owners living aboard in the tropics and the far north, we have to put more emphasis on ventilation than any other builder.

Fuel and Water Tanks

In addition to the amount of fuel or water a tank will hold, the placement of the tanks in the hull is also critical

Putting tanks up in the bow or far aft will create trim problems as the levels and weights change through usage. The fuel and water tanks in Shannons are all placed low in the hull and near the center axis of the

waterline. As fuel and water quantities increase and decrease there is no change in sailing trim on a Shannon. A good rule of thumb for comfortable, non-rationing, long ocean passages is a gallon of water per person a day for washing and eating. So four people on a 20 day trans-Atlantic passage will require at least 80 gallons of fresh water without water conservation. Another factor is the availability of fresh water. In many parts of the Caribbean, Pacific islands and Far East potable water can be difficult to obtain. All Shannons, regardless of length, have enough water tank capacity to enable two people to live aboard for two months without concern. Since capacity and redundancy are as critical as trim, Shannons have multiple water tanks each with its own shut off to allow water management. All water tanks in Shannons are custom 316L stainless steel and have a remote gauge plus the backup of an access plug for checking with a dipstick. Fuel capacity also must both sufficient range and provide for the contingency of only bad fuel being available. Shannons have over 500 miles of powering range at cruising speed with standard fuel tanks. The range can be considerably increased by a small reduction in speed. All Shannons have over-sized engines to compensate for heavy alternator loads, refrigeration compressors and horsepower overrating by engine manufactures. The fuel tanks are made of 5052 marine alloy since stainless steel reacts adversely to diesel fuel. The total fuel capacity can be divided into two or more tanks depending on the model. The fuel lines of all tanks go to a fuel manifold with individual isolator valves for both the pick up and return lines. Finally, in keeping with Shannon's philosophy of total access, the fuel tanks also can be removed without destructive consequences.

Anchors

The importance of having more than one anchor hooked up and ready to set cannot be overstated.

In the middle of the night during a line squall with the boat dragging, getting a second anchor down quickly and safely is imperative. In addition to having a second anchor on the bow, the ultimate security is provided if that second anchor is of a different type. The bowsprit on a Shannon accommodates both a plow type anchor and a Danforth type anchor. The theory is a plow will hold on certain kinds of bottom ground with the Danforth being superior on other bottoms. Thus, if one anchor is dragging the other anchor will grab. Having two anchors at the ready gives the ability to set both anchors roughly at 90 degrees in a Bahamian moor to limit swinging in a crowded anchorage. Placing both rodes in rollers on the end of the bowsprit will enable a Shannon to swing in a very small circle when necessary. The chain locker on Shannons is divided to segregate both anchor rodes. For anchoring or mooring for long periods of time Shannons are set up with the ability to use a pennant off the bobstay fitting which is placed on the bow at the waterline. The bobstay pennant allows a Shannon to swing freely without any chafe gear or concern if the boat is going to be left for weeks or months. Perhaps, Shannon's attention to all the issues of anchoring underscores the company's dedication and focus on the needs of long distance sailors. Crossing an ocean comfortably and safely is important, but just as important is the ability to drop anchor once you get there with ease and peace of mind