



The hull is easily driven, and well balanced. Jackett computer-modeled over 200 hull forms before he was satisfied he'd found the hull shape with the right distribution of fore-and-aft volume—a critical factor in producing a design that's not only a strong performer, but can also support a full-fledged interior.

#### Belowdeck & Systems

Jackett did not focus his originality entirely on the speed and exterior, he has thrown some new angles into the C&C 99's interior as well. The head of the aft doubleberth is angled forward to ease access. The U-shaped galley, with a two-burner propane stove (a microwave oven is optional) and a 6.5-cubic-foot icebox, opens forward to make passing plates—and a glass of wine—to the cook easier. The C&C 99 can cruise two couples in privacy, sleep a crew of six racers or one big family, and the saloon's fold-down satin-varnished cherry table seats six for dinner. The aft-facing chart table, big enough for Chart-Kit type work, is more than adequate for the boat's mission. There's enough stowage area outboard of and under the settee seats, in the for-

from the boat's 13-foot J dimension—the 155% genoa is a big sail. So is, courtesy of the 14-foot, 6-inch spinnaker pole, the 1,026 square-foot chute.

Designer Jackett has carefully weighed and sifted the ingredients in such a way that the racing recipe is ideal for a 32-

**"It just makes sense to me that, sailing with your family on a nice sunny day in 8 knots of wind, you ought to be able to put up the spinnaker, pull the apparent wind forward, and get to where you're going ahead of the other guys."**

foot boat. The sail-area firepower is there, and so are the stability numbers; the C&C 99's righting moment is an impressive 883 ft. lb. per degree (sorry, rail meat). The boat is light and intelligent use of bi-axial and tri-axial fibers in a post-cured epoxy, composite-laminate construction has kept the structure strong and stiff.

ward cabin, and in the two hanging lockers to handle everyone's gear. Joinerwork is solid cherry, and galley and head countertop surfaces feature Granicoat, a durable and, if you happen to damage it, repairable, surface. Lest you think that, below deck, the 99 has lost the racing plot, you should know that the cabinetry



is built of weight-saving ITW Spray-core composite; the veneer of satin-finished cherry only *looks* heavy.

The C&C 99's mechanical and electrical systems are simple (easy access, easy to add additional electronics) and well executed. And the easily-manuevered boat is powered by a Volvo Penta 19-horsepower MD2020 with Saildrive; the four-sided engine access is exceptional.

#### Sailing the C&C 99

When you sail the C&C 99, the first thing you are likely to notice is the

On and off the wind, the C&C 99 is all speed and is equipped with a variety of well-thought-out features and best-of-breed equipment, including the innovative steering pedestal with Edson destroyer wheel (below).



boat's acceleration in puffs and when coming out of tacks, particularly in under 10 knots of wind: this boat has jets. The feel coming through the Edson 48-inch Destroyer wheel, (sunk into a well in the cockpit sole and bulkhead-mounted, IMS-style, to a steering pedestal) is direct and responsive. By reducing the steering ratio from the standard two turns to a single turn lock-to-lock, Jackett gave the C&C 99's steering a connected feel and a fast response. The boat is sensitive to sail trim, yet a generous amount of counterbalance in the large spade rudder takes the load out of the helm; get the trim right and the boat requires a minimum of steering. The helmsman's "throne," a 5-foot-wide seat that swings up for access through the open stern, gives the helmsman clear visibility and no excuses, and the molded-in steering pedestal, topped with a custom C&C Suunto compass, functions as a solid footbrace when steering from the windward side.

Closehailed in 6 knots of wind under mainsail and 155% genoa, the C&C 99 perks up quickly to 5 knots. The boat likes to be given a head of steam, which it will then reward with a VMG that's, well, rewarding. (Like every other performance boat with a minimum wetted-surface underbody, the drill is: get boat-speed first, go for pointing second.) With the chute up, the 99 beam-reaches at 7 knots in 10 knots of true wind. Designer Jackett reports that, during a test-drive

in 20 to 25 knots of breeze, the C&C 99 punched upwind at 6.5 knots; downwind, Jackett and crew surfed to 13 knots under wung-out genoa (The 99's speed potential is there). Under power, the C&C 99 cruises at 6.8 knots at 2,800 RPM with a top speed of 7-plus knots. Handling is crisp and controlled.

The C&C 99's cockpit layout, perhaps the most direct face-off between a racer's needs and a cruiser's wants, has something for both camps. The primaries, Harken 44 self-tailers, are located aft, literally at the helmsman's elbow (great for shorthanded racing and cruising). The Harken 40 secondaries are situated forward, in the mid-cockpit area, otherwise known as the "grinder's zone." If the term racer/cruiser exactly describes you, the layout works; dedicated racers may opt to swap the winch positions. The rest of the cockpit, stocked with Harken's Black Magic Air Blocks, offers handy sailhandling. The coarse tune/fine tune 6:1 main-sheet swivel base is in the right spot. The windward sheeting traveler and double-ended backstay (a 32:1, Magic Box-aided option) adjustments are under the helmsman's hand. And the companionway instrument pod is easily readable by the entire crew

The keel-stepped Charleston Spar double-spreader aluminum mast offers enough fore-and-aft flexibility to blade out the mainsail in a breeze (and the black powder-coated finish,

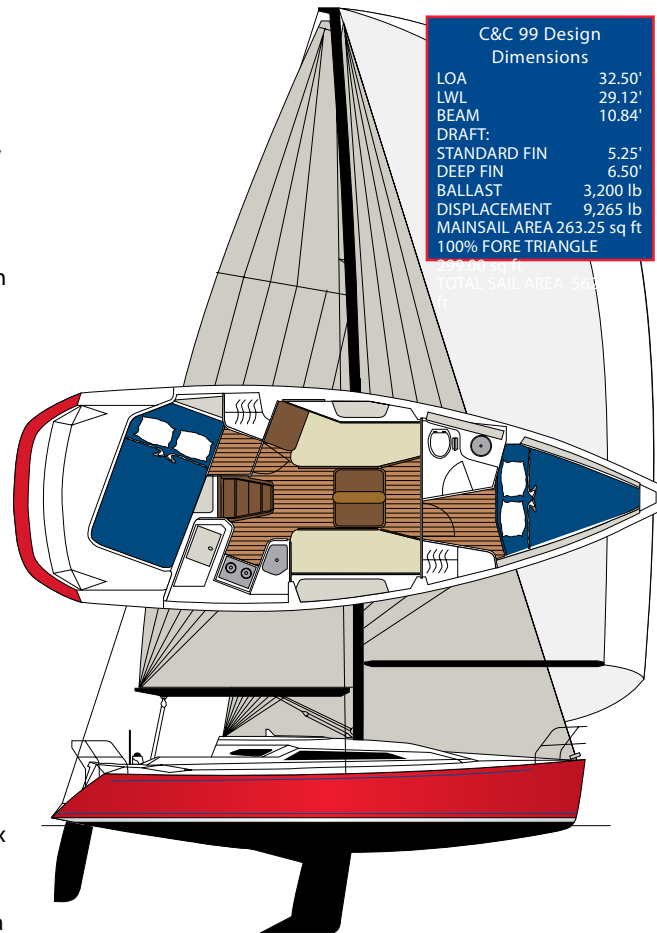


a dead ringer for carbon is one way to keep your competition guessing). All of the mast's halyards, and the boom's reef and outhaul lines, are internal. The deck layout is clean and simple; twin banks of six Spinlok XT rope clutches and Harken 32 self-tailers handle the keyboard duties. Slots in the aluminum toerail (the black, hard-anodized toerails are kinda sexy) accommodate outboard leads and spinnaker gear. Deck options include Harken adjustable (3:1) genoa lead cars and a Sparcraft solid vang. Four stainless-steel handrails on the cabintop keep kids and crew onboard and an innovative "gate" can be dropped in under the helmsman's seat for added child-proofing. Lifeline stanchion bases are secured in stainless-steel boxes that are through-bolted to the toerail and drilled and tapped into a 1-inch 6061-T6 aluminum bar that has been laminated into the inward-turning hull flange along the entire length of the boat. All deck hardware is drilled and tapped into 6061-T6 aluminum backing laminated into the deck's structure. Cruising-type deck options include such worthies as an anchor roller, hot and cold cockpit shower, and cockpit portlight for enhanced double berth ventilation.

#### Hauling the Mail

As ever with a new boat that declares itself a "racer/cruiser," the question is: How much of a racer is it? How much of a cruiser? Judging from the numbers—the design numbers that indicate high horsepower, and the high digits that the knotmeter spits out—the C&C 99 is a package that's ready to rumble. And rumble it will.

Out in Fairport Harbor, Ohio, where the boat is built, the C&C team loaded a new 99 onto her tailored-fit Triad road trailer, with tandem Tor-Flex axles, hydro-electric brakes and all. They linked the trailer to a



C&C 99 Design Dimensions	
LOA	32.50'
LWL	29.12'
BEAM	10.84'
DRAFT	
STANDARD FIN	5.25'
DEEP FIN	6.50'
BALLAST	3,200 lb
DISPLACEMENT	9,265 lb
MAINSAIL AREA	263.25 sq ft
100% FORE TRIANGLE	

## Cooking Up a Better Boat

Given that the gulf between America's Cup boats and the boats the rest of us sail is wide and expensive, how much high-tech is the right amount of tech? That's easy: Enough high-tech materials and construction methods to get the benefit (stronger, lighter, stiffer) but not so much high-tech that boatbuilder and boatbuyer go bust in the process. With the 99, C&C Yachts has taken a logical leap past polyester and vinylester construction: The C&C 99 is the first-ever production yacht built of vacuum-bagged, post-cured, wet-preg epoxy composite construction.

Why the leap? First, there's weightsavings. If the C&C 99 were built using polyester resin, the hull shell would weigh 1,400 pounds; in epoxy, the hull weighs 700 pounds. Then there's strength and stiffness. During destruction tests using Gougeon Brother's PRO-SET laminating epoxy, the engineers found that a given structure failed at 1,200 pounds when built with polyester, but held 12,000 pounds with PRO-SET. Plus, the adhesion, shrink, and cure-time properties of epoxy allow C&C to just plain build better boats. For example, PRO-SET's extended cure times (six hours or more) allow local reinforcing and structural members to be laid up together and cured as a unit instead of relying on the secondary bonds found when restricted by polyester and vinylester's rapid cure time.

Here's what goes into the 99's epoxy hull. First, an osmosis-resistant ISO/NPG gelcoat and a "tie coat," both specially formulated by Ferro, are sprayed into the mold (the tie coat will chemically bond the epoxy laminate to the gelcoat). Then, six-ounce cloth, bi- and tri-axial fabrics are applied by hand into the mold. Using a resin impregnation machine precisely controls "wet out" of the fabrics insuring a superior fiber-to-resin ratio—the C&C 99's laminate is approximately 55% fiber, compared to approximately 27% fiber for typical hand

lay up construction—which means more strength (fiber) and less glue-weight (resin). The 99's composite construction utilizes ATC Chemical's Core-Cell, a linear foam core with superior shear, impact, and stiffness properties, below the waterline. In the topsides (and also in the deck), the 99 uses the proven compression and insulation properties of Baltek's AL-600/10 balsa core, which is polymer-coated to control resin wet-out (thus saving even more weight).

Once the fabrics and cores are in place, the vacuum bag goes on, compressing the laminate at 12 pounds per square inch until cured. The capper of the C&C 99's epoxy construction process is the post-cure, or bake. To develop 100% of the epoxy's physical properties, the entire hull is "cooked" in a specially built oven at 140 degrees for 8 hours. Voila! A hull that's extra strong, super light—and still quite affordable for those of us not considering an America's Cup bid.

So a strong boat is good (no oil-canning in chop, no loosening of the rig in a blow). And a light boat is fast—that's a simple weight-to-horsepower calculation. But there's another way that epoxy affects the way the 99 sails: Ever hear of the vertical center of gravity (VCG)? Every non-structural pound that epoxy construction trims away from the 99's hull is another pound that goes into the keel bulb, lowering the boat's VCG. Simply put, the lower a boat's VCG, the faster and better (less pitching, less rolling, more stability) the boat sails, especially in a sea-way. The C&C 99's VCG is a mere 4 inches above the waterline—that's low. Really, really low. And that's how baked epoxy construction cooks up a better boat. Order up!



## Subtle Shades, Bold Strokes

**T**rick question: What two things make a yacht designer smile? Honest answer: 1) Going fast, and 2) Going faster. Designer Tim Jackett, a soft-spoken man with a playful sense of humor and a way of translating design concepts into boats that do what they're meant to do, admits to a healthy obsession with speed. Jackett, now the Chief Operating Officer of Fairport Yachts, builders of the Tartan and C&C lines, as well as the chief designer for both brands, grew up racing in Mentor, Ohio, just a short sail down Lake Erie from C&C Yachts operations in Fairport, and gravitated to the George Hinterhoeller-designed 24-foot Shark, a one-design he describes as "lightweight and bulletproof." In the 1970s Jackett joined the in-house design team of Tartan Yachts, contributing to projects such as the ever-popular Tartan Ten one-design and designing custom MORC (Midget Ocean Racing Club) racers. By the mid-1980s, Jackett became the chief designer of the Tartan fleet—the 3500, 3700, 4100, 4400, and 4600. Fairport Yachts relaunched the C&C line for the 1999 model year with the 121, 110, and now in 2001, the C&C 99 joins the family.

So what, in a nutshell, is Jackett's design philosophy? He believes in doing what makes good sense, working from his experience and the real-world performance of his designs and the construction methods and materials used in putting them together. But that doesn't mean Jackett restricts his design development to mincing steps; he has the fortitude to commit to a bold stroke, as long as it's been preceded by plenty of careful thought. For example, in the C&C 99 Jackett has embraced both epoxy construction (see "Cooking Up a Better Boat") and Volvo Penta's Saildrive. Widely accepted by European sailors, Jackett points out that the Saildrive's direct engine-to-drive train connection results in reduced noise and vibration, less drag than a conventional shaft-and-strut arrangement, and more thrust (the Saildrive's propeller is 90 degrees to the water flow, maximizing efficiency). If customers need educating about Saildrive or, for that matter, the thrust of the reborn C&C line, Jackett sees happily to that. After all, he has lots of "this is why it's better" reasons to back up his commitment to change.

Jackett's *modus operandi* at the drawing board (at the computer, we mean) is to incorporate subtle shadings into his bold design strokes. For example, at deck level the stern of the C&C 99 is wide—very wide. But by designing the right amount of flare and hollow into the topsides aft and augmenting that with a pronounced fullness in volume forward, Jackett achieved a balance of beam and volume that keeps the C&C 99 on its fore-and-aft lines when heeled, defusing the type of bow down, rudder-out behavior seen in many IMS boats.

Like a lot of designers, Jackett works from experience, too—not a bad way to go when you consider that even the most sophisticated computer design program has yet to draw a line that it didn't like. The rudder on the C&C 99, for instance, is large, perhaps larger than it strictly needs to be, but Jackett took special pains to end up with a balanced boat, and thus a balanced rudder—and thus the rudder works as a lifting surface. The keel fin, poured and machined to the designer's exacting tolerances by Mars Metal, features a NASA-inspired bulb and a double-duty feature that's typically Jackett: special attention has been given to the keel attachment area to strengthen it and reduce interface turbulence.

Another of Jackett's favorite things is to sail his boats in the same world in which his customers sail. "It just makes sense to me that, out with your family on a nice sunny day in 8 knots of wind, you ought to be able to put up the spinnaker, pull the apparent wind forward, and get to where you're going ahead of the other guys." Jackett did exactly that on a recent weekend with the C&C 99—smoking up to and around a group of 40-foot-plus performance-cruising boats: "Now that's what I call cruising." Jackett, who has three kids, may also be thinking ahead. "Your fourteen-year-old son or daughter, who's going to take over the driving from you, should feel like he or she is steering something fun when they get on the wheel." It's safe to assume that, when computer-modeling the 99, minivans and middling steps were the last thing on Tim Jackett's mind.

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# C&C 99: the Recipe for SPEED

When you sail the C&C 99, the first thing you notice is the boat's acceleration in puffs and when coming out of tacks: this boat has jets.

**E**verybody knows the recipe for a fast boat: take an easily-driven hull shape, build it light, and pile on a cloud of sail. Easy, right? Sure, if you want a stripped-out racer. But if you want speed *and* more than a dash of interior, you might find yourself looking at forty-footers to find a palatable compromise—until now. C&C Yachts is unleashing a new 32-footer on the unsuspecting sailing public that will truly race with the raciest and cruise with the cruisiest. Meet the C&C 99.

Balancing blistering speed with luxurious comfort in a 32-footer—now there's a design challenge. But this challenge is exactly what Tim Jackett the designer behind the rebirth of the C&C Yachts line (the 40-foot C&C 121 and the 36-foot C&C 110) has devoted himself to equaling during the past year. The goal was "simple". Create a 32-foot racer/cruiser that is raceable with family and friends (no need to recruit 1,200 pounds of rail meat), cruiseable in civilized fashion (6-

foot, 2-inch headroom, real galley, enclosed head), and so stylish and sporty the front slip at the club will be yours. Did Jackett succeed? Let's take a look.

First, the C&C 99 does indeed have all the racing ingredients. The easily-driven canoe-body hull has minimum wetted surface, a long, flat run aft to promote

catching waves (moderate air) and surfing (heavy air), and a near-plumb bow to maximize waterline. The boat is light enough (9,265 pounds) to accelerate in light air and jump out of its wave train in heavy. And Jackett has, indeed, piled on a cloud of sail; the masthead-rigged 99 has a sail area-to-displacement ratio of 23.4, a fair wallop of which comes



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