

The Art and Science of Building ***Catalina*** ***Yachts***



The Closer You Look
The Better It Gets!



The Catalina philosophy is straightforward: Design boats that stand up to real world conditions, sail well, are comfortable above and below, easy to maintain, and hold their value.

CATALINA YACHTS DESIGN and ENGINEERING

Unlike many builders, we design each model for long production runs, often lasting decades. We don't regularly discontinue models after only a few years, creating "orphans" and negatively affecting resale value.

We continuously improve, modify and update each design to take advantage of new materials and equipment, and to create new features. The result is a proven, refined boat. ***We listen carefully to owners and make improvements based on their collective experience and thousands of sea miles.*** The benefits to Catalina owners are proven designs with reliable systems and excellent resale value. Combine this with the camaraderie inherent in sharing experiences with many owners of the same model and you have a successful formula for thousands of Catalina sailors.

We intentionally avoid styling trends that won't stand the test of time. We rely on an understanding of ergonomics, function, and aesthetic principles to create enduring designs.

Catalina systems are designed for durability, accessibility and owner maintenance. Equipment and fittings are selected for quality from suppliers who commit to support their products after the initial sale.

Our priority is building a strong, durable boat. This starts with laminated parts. Catalina hulls and decks are solidly built with quality laminates (compare displacements to our competitors). Every competitive builder has to establish priorities; ours are laminates, structure and systems that add up to long term durability.

Every aspect of a Catalina's construction reflects this practical, common sense approach to boat building.

THE CATALINA YACHTS PHILOSOPHY

Selecting a new boat for your family's leisure time is an important decision. Regardless of what boat you finally choose, there are materials, processes and methods used in construction that reflect the builder's philosophy. All of these will have great impact on the ownership experience and resale value of your yacht.

These principles are reflected in every decision in the design, construction and equipment selection process. We believe it is important for you to know how your boat is built and why.

This knowledge will help you to make informed choices and inspire confidence in your Catalina. The features and construction described in this booklet each demonstrate Catalina's commitment to our philosophy and your comfort and safety aboard.



Catalina 14.2

MANAGEMENT AND STAFF

Catalina Yachts was founded in 1969 by Frank Butler who, with partners Sharon Day and Gerry Douglas comprise the corporate management team that, with a dedicated staff, oversee the day to day operations of the company.

The corporate management team is small, hands on, and accessible to employees and customers. The ability to listen to customers and respond to their needs and comments is reflected in Catalina's practice of continually improving each model.

The supervision and production staff at the plant are talented and experienced boat builders who take pride in building quality boats.

Catalina owners and prospective owners are welcome to visit the Largo Florida facility on tour days to observe the boat building process firsthand.

HULL CONSTRUCTION

Catalina hulls are built with high quality gel-coats for gloss and color retention. Most waterlines are molded-in gel-coat. The outside layer of the hull is laminated with vinylester resin to protect the hull from water absorption and prevent blistering.

The structural laminates are hand-laid, woven and non-woven stitched fiberglass fabrics. (Non-woven stitched fabrics are significantly stronger and create a stiffer laminate without additional weight). Hulls 44 feet and larger are cored above the waterline with double scored and coated end grain balsa for additional panel stiffness. The balsa core also adds thermal and sound insulation, without adding unnecessary weight.

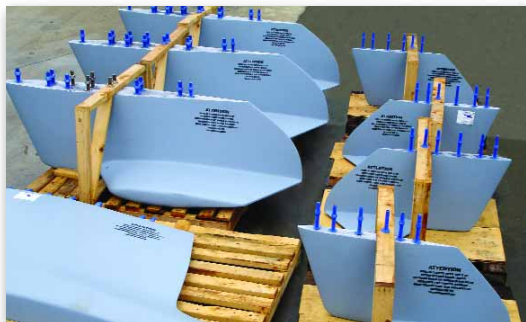


Catalina 445

LEAD KEELS - DURABLE, FAST, SAFE

Catalina uses only external ballast cast lead keels. Lead is the best material for keels; it is denser (heavier for its volume) than cast iron. Lead weighs almost twice as much per cubic inch compared to cast iron. This means a stiffer, more stable boat and more efficient keel with less wetted surface for less drag.

Lead keels require far less maintenance than other materials. Cast iron will rust and requires elaborate and costly maintenance. Catalina lead keels are faired and epoxy coated. External ballast lead keels will absorb the energy from an impact with rocks or other solid objects and protect the hull and structure from further unnecessary damage. Cast iron does not provide this important safety factor.



Catalina 445

DECK CONSTRUCTION

Catalina decks are high strength, light weight composite structures. Deck areas penetrated by most hardware fastenings are solid fiberglass. Core material is carefully matched to the area and function. Cabin tops and most of the weather decks are cored with end grain balsa. Very flat areas where additional stiffness is required, such as cockpit floors and stern steps, are plywood cored. High load areas such as the mast step, chainplates and stanchions are solid fiberglass.

Major hardware on deck is mounted on molded-in raised pads that contain metal plates to accept the hardware fasteners. All fastenings are coated with insulating and anti-seize compound allowing easy replacement of hardware and eliminating leaks. There are few unsightly bolts or nuts exposed on the overhead below decks.

HULL STRUCTURAL SYSTEMS

Catalina employs two types of sub sole structural systems, each specially suited to the hull design, keel and rigging loads. Both systems are designed for long term durability and strength. Because wood is subject to rot and deterioration, it is not used in the structural system of any Catalina or Morgan yacht.



Catalina 250 Hull Structure

A. The Laminated In-Place Grid System

Used primarily in boats under 35 feet, this system uses four major fiberglass molded components: the deck, deck liner, hull liner, and hull with an integral grid structure laminated as part of the hull. This system employs high density foam, fiberglass infused, transverse and longitudinal structural members that are heavily fibreglassed to the hull with multiple laminates, while the hull is still in the hull mold. The grid

becomes an integral part of the hull and distributes the mast, rigging and keel loads to the hull. These structural members will not absorb water or deteriorate over time.

B. The One-Piece Pre-Molded Grid

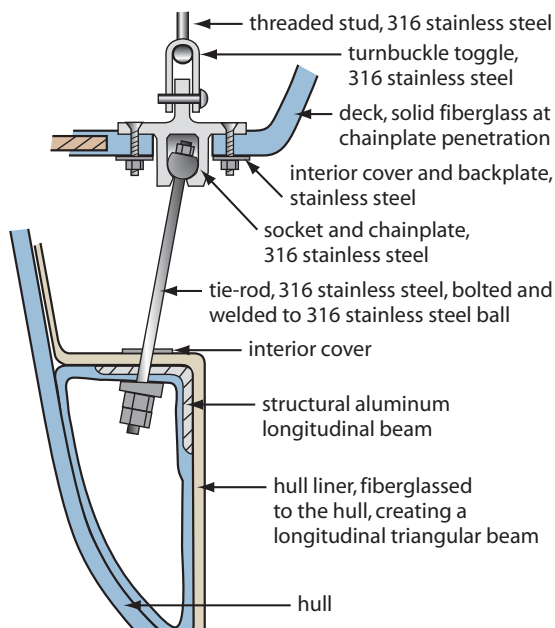
Used on most models 35 feet and larger, The grid is an engineered structure that is hand-laminated in a separate mold, using biaxial, unidirectional and non-woven fiberglass for strength and stiffness without excess weight. This one-piece structure is then bonded into the hull while the hull is in the mold. This type of grid structure is employed when the grid is more complex, and bears the additional loads of tank supports and engine mounts.

The grid structure is never compromised by the need to accommodate interior furniture, as this is the function of the hull liner, a separate molded part. Separating the structure from the accommodation allows each part to be designed without compromise for its intended function. This is a benefit of Catalina's unique five-piece construction system:

1. One piece hull
2. One piece molded grid structure
3. One piece molded hull liner
4. One piece molded deck liner
5. One piece molded deck



Catalina 445 Structural Grid

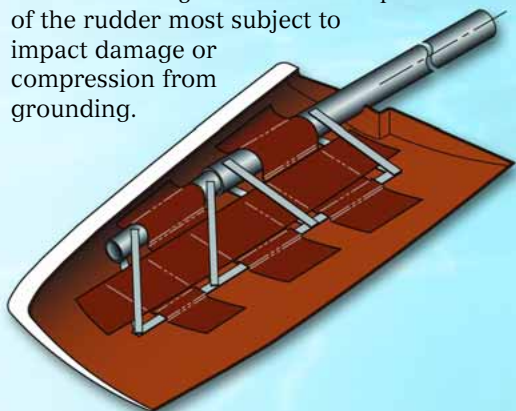


ENGINEERED RUDDER CONSTRUCTION

Catalina rudders are uniquely designed and built for durability and safety.

The rudder starts with a 316 alloy stainless steel rudder core, centerless ground to an exacting tolerance for friction free steering.

The rudder blade is hand laminated in asymmetrical molds designed with a molded-in leading edge eliminating a vulnerable seam on the centerline. This creates a strong structure at the part of the rudder most subject to impact damage or compression from grounding.



The stainless steel structure inside the rudder is heavily glassed to the major skin and will provide a steering plane in the event of major damage to the blade. This rudder structure, unlike most other rudders, does not rely on foam or filler for the structural attachment of the blade to the rudder post (like a stick in a popsicle). This unique construction is an important safety consideration.

CHAINPLATES AND TIE RODS

These assemblies efficiently transfer rigging loads from the mast to the hull and structural system and are critical to your safety aboard. The Catalina Tie Rod Assembly is built primarily of 316 stainless steel and is designed to resolve rigging loads through the deck to the hull and tie rod structural support system.

Catalina's unique "Ball and Socket" tie rods allow perfect alignment of loads to hull structure. The ball and socket assembly is large diameter and passes through a round hole in the deck, eliminating stress risers, and through solid fiberglass which virtually eliminates potential water intrusion into the core, leaks or gel coat cracks.

The lower ends of the tie rods are secured to a longitudinal structural aluminum beam that is enclosed in a fiberglass longitudinal beam incorporated into the main cabin seat back structure extending through the main bulkhead.* The specific details of the tie rod / chainplate assemblies vary in models, due to cabin arrangement, but the same sound engineering principles are common to all models:

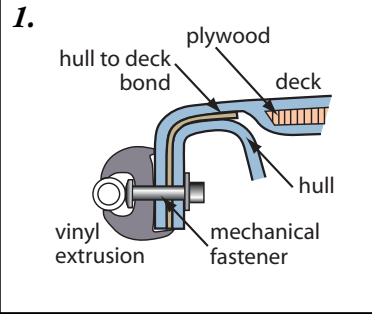
- Efficient transfer of rigging loads to the hull structure.
- No wooden bulkheads or interior components are used for mast support structure, only fiberglass, aluminum and stainless steel comprise the structure.
- Oversized system components with safety factors which exceed recognized standards.



HULL TO DECK JOINTS

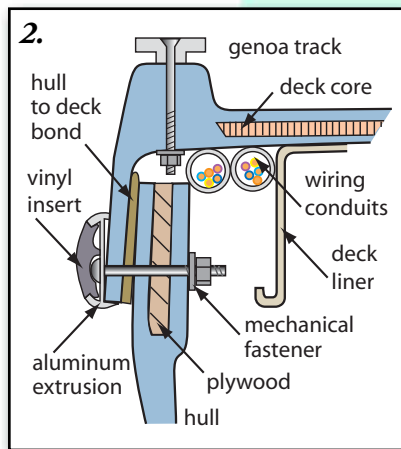
The hull to deck joint is one of the most critical connections in yacht construction. It must be above all, watertight throughout decades of service, able to take the punishment of docking impact and contribute to the strength of the boat by essentially making the hull and deck a single structure.

Because Catalina builds daysailors and bluewater boats, three distinctly different style connections are employed, each suited to the type of boat and assembly method.



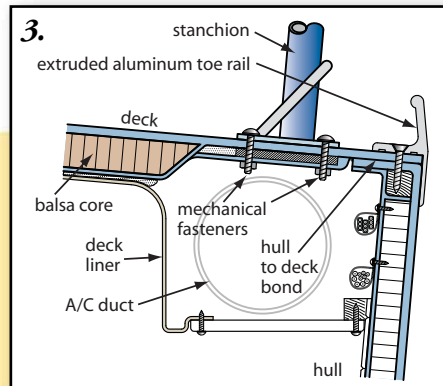
1. The External Rolled Flange

This system is appropriate for boats through twenty-five feet. The radiused contacting surfaces are joined with high strength adhesive. Monel rivets through a heavy vinyl extrusion beneath the rubrail add additional strength. The vinyl rub rail insert protects the deck from edge damage and is easily replaced, if required.



2. The External Overlapping Flange

This hull to deck joint has proven durable and resistant to leaks in over fifty-thousand boats. The joint is bonded and mechanically fastened (both screwed and through-bolted) through the aluminum rub rail extrusion. The vinyl insert is easily replaced, if required. This joint is resistant to impact damage (docking) and virtually leak-proof.



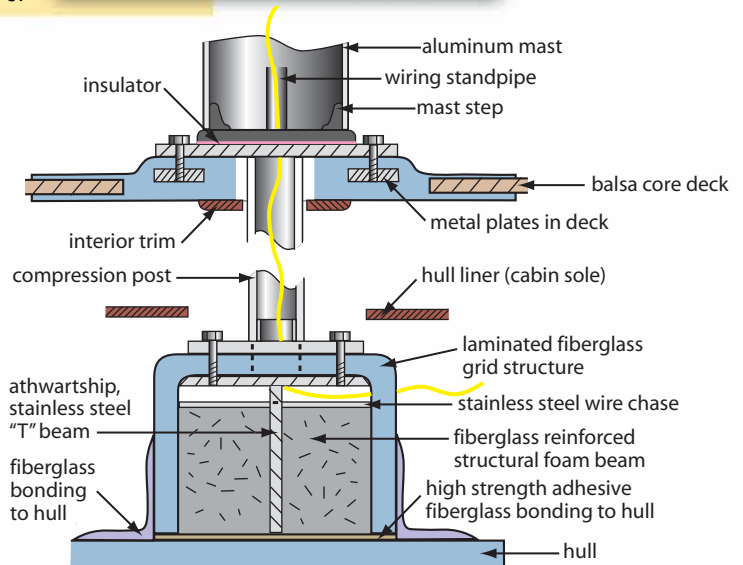
3. The Internal Flange

This connection is appropriate for larger, heavier boats, with an aluminum toe rail. This traditional joint withstands impact loads well (from docking). Aesthetically, this joint has the advantage of a very clean look and is the ultimate in strength. The joint is mechanically fastened and bonded with high strength adhesive.

TYPICAL MAST SUPPORT SYSTEM

Catalina's unique mast step compression post construction delivers the benefits of a deck-stepped mast: less mast noise in the cabin, a dry bilge, more interior space, and the compression strength of a keel-stepped mast.

This is achieved by a compression post that passes through the deck and incorporates the mast step and stand-pipe for through-deck wiring. ***This support system completely relieves the deck of compressive loads that can cause gel-coat cracks and leaks.*** By passing the compression post through the deck and welding it to the mast step, only metal components are in compression from the masthead to the sub-sole structural grid system.





Catalina 445 main cabin furniture

INTERIOR WOOD AND FINISHES

The interior of a yacht serves many functions. It must provide comfortable space for dining, sleeping and lounging, efficient space for chart work, cooking, hygiene and storage as well as house many interconnected systems. It must be attractive and inviting and reflect the traditions of yachting. This is a lot to accomplish within the space confines of the hull and requires a pragmatic approach to design, materials and finish selection to create a functional, beautiful and above all, durable interior.

Catalina interiors satisfy all the requirements, but go beyond and incorporate special features essential to our commitment to your yacht's long-term durability.

- **Teak** is the traditional wood for yacht cabinetry and is used extensively by Catalina for durability and beauty. Teak has been the choice for fine yachts for a century. We do not stain inferior woods to look like teak, cherry or mahogany. **We use teak.**
- **Clear finishes** are the only type we use. This allows the natural beauty of the color and grain to show. Clear finishes are easier to touch up and refinish when the time comes. Adding coats of clear varnish will not darken the interior or show touch-up areas, as will a heavily stained finish.
- **Solid teak** is used in areas subject to nicks and abrasion during the normal use of your yacht. Doors, fiddles, hand rails and other areas that will inevitably suffer wear and tear can easily be sanded out and refinished. With simple maintenance, your yacht will always look good even after years of hard use.
- **Satin varnish** doesn't show scratches and minor damage as a gloss finish does, and will still look good after years of service. It is also much easier to touch-up when needed.
- **Louver doors** are expensive to make, but add quality, beauty and ventilation to lockers. Catalina uses louvers extensively.
- **Roller bearing drawer glides** are used on drawers for smooth, effortless operation.
- **Piano and Euro-style hinges** made of stainless steel, are used on many doors and lockers for strength and durability.
- **Quality door and lock hardware** from quality manufacturers is used throughout, for durability, beauty and replacement availability.
- **High pressure laminate soles** are used in many models for a traditional look with little or no maintenance for years.
- **Varnished teak or ash batten hull ceilings** for traditional beauty and warmth



C.N.C. precision wood cutting machine



The "Mill" wood cutting and shaping department



Computer-controlled wood finish drying oven



Counter tops are hand-assembled from solid surface material and solid teak fiddles



Catalina 445 electrical panel



ELECTRICAL SYSTEMS

Well planned and installed electrical systems serve both the immediate power needs of a yacht, and provide for additional gear that will inevitably be added in the future. These important features distinguish Catalina electrical systems:

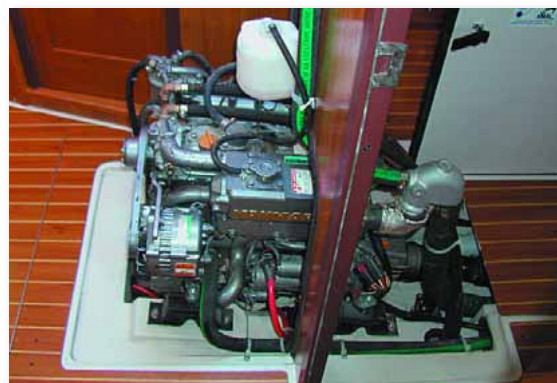
- High quality components
- Wiring is “tinned” for corrosion resistance
- Wiring is color-coded, for easy trouble-shooting
- AC and DC wire runs are segregated for safety
- Batteries are properly sized and “deep cycle” rated for long life and high capacity
- Electrical panels are logically organized, clearly labeled and allow for additional circuits to be added
- Halogen, fluorescent and L.E.D. lighting are provided for energy efficiency
- Panels and systems are engineered to comply with A.B.Y.C. recommendations
- Galvanic isolators are provided with all A.C. power systems

ENGINE INSTALLATIONS

The auxiliary engines in Catalinas are usually larger than engines found in similar size boats from other builders. This means the engines will not “work as hard” to move the boat at cruising speeds and have plenty of reserve power in adverse conditions. Engine models are selected for suitability to the application, size, weight and smooth operation.

Access is of the utmost importance for the regular maintenance and inspection necessary for reliability. All Catalina engine installations are designed with access as a priority. Fuel and water filters have easy access. Through-hull valves are logically located and labeled.

Engine panels are custom-made for Catalinas. Gauges include an hour meter, tachometer, temperature, charging voltage and fuel level. Most importantly, there are audio alarms for high engine temperature and low oil pressure. All instruments are in custom housings designed for easy viewing.



Catalina 387 engine installation

PLUMBING SYSTEMS

Catalina plumbing systems are engineered for cruising reliability and easy use. Understanding that many owners prefer to do their own maintenance and “winterization”, systems are designed for access and logically arranged.

Tank capacity is generous for extended cruising and manifolded between tanks for selective use. Components are high-quality respected brands so parts and spares are readily available. Important features in many models include:

- Large capacity water heaters (20 gallons in larger models)
- Variable speed water pumps for quiet operation
- High-quality chrome-plated fixtures from leading manufacturers
- Fresh water system filters
- Labels on all through-hull valves
- Through-hull valves clustered in accessible locations
- All through-hull valves are Marelon® to eliminate corrosion and electrolysis.



Catalina 445 one-piece fiberglass head

CONDUITS FOR WIRING AND PLUMBING

All Catalina and Morgan models have extensive conduits bonded in place or wire chases molded into the hull liner for wiring and plumbing runs throughout the vessel.

Many builders fasten wiring and plumbing to interior modules before installing them into the hull; this makes adding or replacing wiring and plumbing difficult or impossible. Catalina bonds separate conduits for A.C. wiring, plumbing and L.P.G., making additions or replacements possible without damage or disassembly.



Catalina 445 molded-in wire chases



QUALITY ASSURANCE

Catalina is the most vertically integrated company in the sailboat manufacturing industry. We have the ability to design, engineer and manufacture many components in-house. This results in savings to the customer by the control of production costs with in-house manufacturing of many components. We occasionally purchase some of these components from quality outside sources to ensure supply meets demand.

Inner-spring mattresses. Catalina manufactures its own mattresses and cushions. The inner-coil springs in the mattress are coated to protect against rust and corrosion: fabrics and padding are protected against moisture and mildew, and mattresses are custom-designed to fit perfectly. Fitted sheets are standard equipment in many models.

Sails. Catalina manufactures sails. A complete and advanced in-house sail loft cuts and sews Catalina sails to exacting specifications. By installing one of the first computer-controlled plotting and cutting tables in the U.S., sails fit and shape perfectly, and furl and unfurl easily.

Canvas. The Catalina canvas shop designs, sews, fits and installs canvas covers, dodgers and biminis. That's why they look good and fit perfectly.

Woodwork and cabinetry. Catalina maintains complete woodworking shops, creating solid teak moldings, louver doors, drawers and cabinets in-house.

Interior and cockpit cushions. Cushions are manufactured in-house by Catalina's expert staff using quality materials and state of the art equipment.

Catalina Yachts
catalinayachts.com

SUPPLIER RELATIONSHIPS

Catalina maintains valued alliances with key suppliers to insure quality and aftermarket service for Catalina owners. Catalina's staff works closely with many suppliers to ensure that the components they supply are especially suited to the application in each model. Many suppliers make custom versions of their products for Catalinas, or have developed new products especially for Catalina models that have become "standards" in the industry. Catalinas and Morgans use components from the sailing industry's leading companies, and many others who are committed to supporting their products and Catalina owners. Below is a sampling of Catalina's valued suppliers:

**BOMAR
BOWV**

LEWMAR

SCHAEFER
LEGENDARY STRENGTH

EDSON
Better By Design

MAXWELL

SELÉN
for sailing

FORESPAR
MARINE PRODUCTS THAT PERFORM

MOEN
Buy it for looks. Buy it for life®

SouthCoast
MARINE PRODUCTS, INC.

GERHAEUER
MARINE HARDWARE

JABSCO

SPARGRAFT

HARKEN

**OCEAN
EQUIPMENT**

YANMAR
marine

JSI

Raymarine

Fischer Panda
Generators

INDEL

Marvair
AMERICA'S INC.
ISO 9001 2000 REGISTERED COMPANY

MarsMetal
SPECIALTY CASTING DIVISION

frigoboat
Marine Refrigeration

Whale
WATER SYSTEMS SPECIALIST

RECOGNIZED Certifications

CE International Marine Certification. All Catalina yachts above 30 feet have earned certification from the Institute Recreational Craft Directive 94/35/CE. In category A OCEAN it is stipulated that all Catalina models above 30 feet are designed for extended voyages where conditions may exceed wind force 8 Beaufort scale (34 to 40 knots), significant wave heights of above 4 meters, and vessels are largely self-sufficient.

ABYC ABYC Standards. The American Boat & Yacht Council (ABYC) is a non-profit member-supported organization which develops and publishes voluntary standards and recommended practices for boat and equipment design, construction, service, and repair. ABYC Standards and Recommended Practices for Small Craft:

- Cover all aspects of a boat related to safety and function
- Place emphasis on mechanical and electrical systems

NMMA National Marine Manufacturers Association Yacht Certification. NMMA maintains an active Certification Program using ABYC standards that assures consumers that boats, trailers, and equipment meet mandatory and voluntary safety and engineering standards, through an ongoing program of mandatory vessel inspections.

Notes: 1. The processes, materials and techniques described in this brochure do not necessarily apply to all models.

2. Many of the items manufactured by Catalina "in-house" are also purchased from outside suppliers.

3. Catalina reserves the right to change the processes, materials and techniques in this brochure at any time without notice.

4. Drawings are for illustrative purposes only.