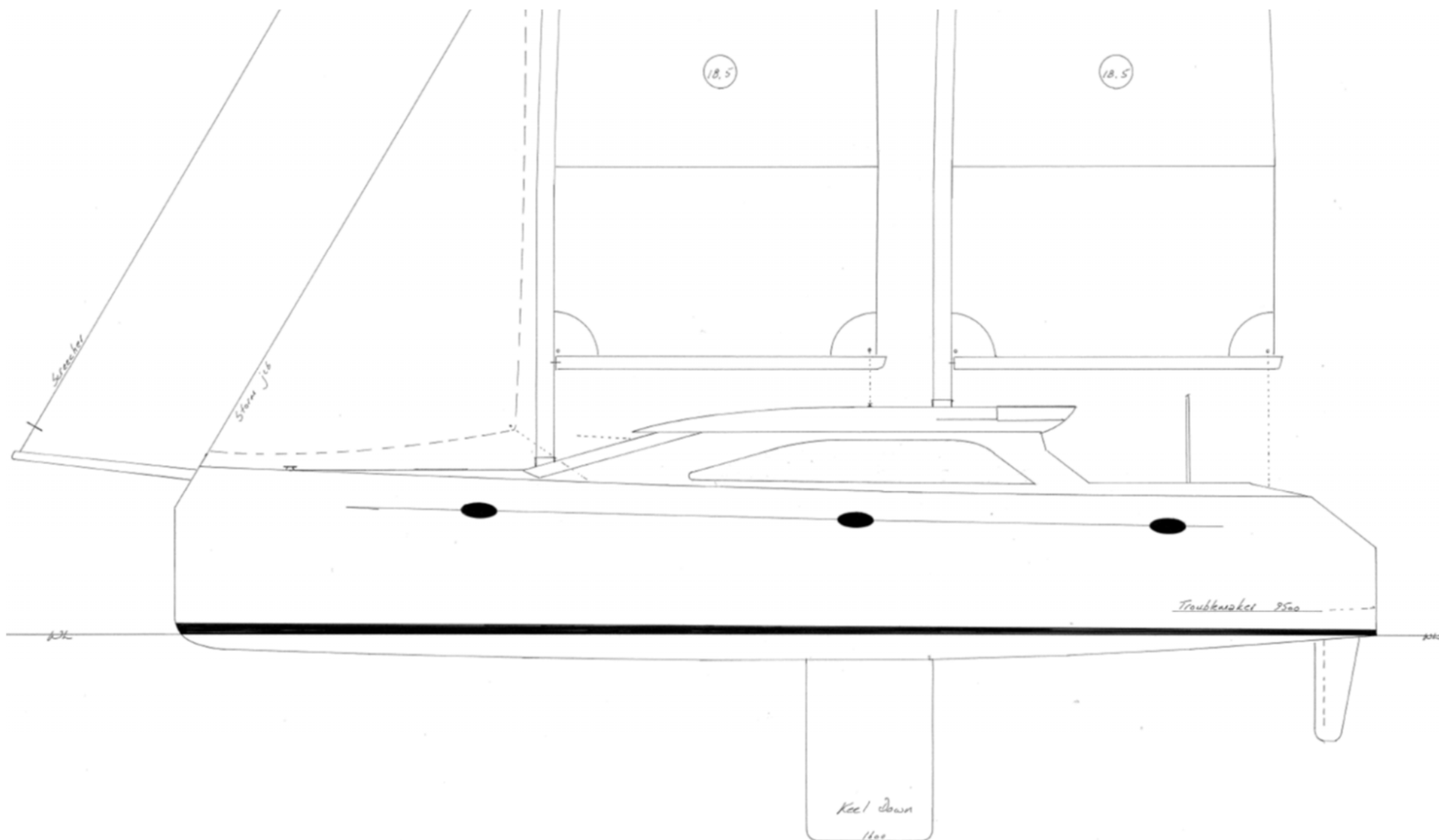


The Troublemaker 9500

Study Plans





LOA	9.50 Metres
BOA	3.00 Metres
DRAFT (Keel Up)	0.200 Metres
DRAFT (Keel Down)	1.60 Metres
Headroom (Throughout)	1.85 Metres
MAST HEIGHT	11.00 Metres
SAIL AREA (Main+Headsail)	37 Sq Metres
PAYLOAD	800 kg
DISPLACEMENT	2,250 kg
FUEL CAPACITY	20-50 Litres
WATER CAPACITY	300 Litres
MOTORS	Electric Option
SAILING SPEEDS	10—15 Knots +

The Troublemaker 950 is designed to compete with the new 30 to 32 foot mono revolution that is happening at present, but with some very unique features that make her stand out from the crowd. Once you are used to the benefits enjoyed by Multihulls such as speed, shallow draft plus the ability to dry out on secluded beaches in the Islands, a (normal) mono just does not cut it.

OK you still have the heeling but here we are aiming for a very stiff boat keeping the heel angles as low as possible. The un-stayed carbon masts help tremendously, first the low weight aloft plus having two masts keeps the centre of effort low, reducing the lever arm. The two masts are light making it easy for one person to lower them easily the support tubes carry the boom gooseneck allowing the boom and sails to remain in place when packing up. She



has the huge advantage of trail-ability with almost half the weight of her competitors.

Power to weight ratios are high making her very fast, she can be beached anywhere or walked into any shallow area drawing only 200mm with keel and rudders lifted, accommodation is equal to or better than her competitors so she's hard to go past in this size range. And did I tell you, you can build her yourself very easily from a pre-cut high tech composite kit for half the price or better.

She is designed as a bullet-proof ocean capable yacht perfect for coastal cruising. Trailer to far off locations, sail her across to New Caledonia, cruise the Pacific if you have the time or ship her to any destination... the Mediterranean or Caribbean. She is a seaworthy little cruiser, a very fast, safe club racer or strip her out, drop down the racks and you have a serious little rocket ship. She's a very versatile investment.

Inside...

This lay-out has a King size aft double bunk so you can sleep either way, fore and aft or across the boat, but cross-wise is not really ideal on a mono if you want to do a few serious sea miles. The Normal lay-out has you sleeping fore

and aft, the bunk is a Queen and you have a bedside cabinet and shelf on the hull side and a tall locker with lots of storage on the other (port) side. The fwd bunk is a Queen width aft tapering forward, still a very nice bunk and plenty of headroom in both bunks. The steps will be open backed giving full ventilation and view from the bunk, coming down below you have a big private head and shower to Starboard, I would have pressure water to all outlets as it's very easy



and not much more expensive than hand pumps. Hot water options are a solar bag on deck or heat water on the stove then pour this into a small built-in esky-type tank fed into the pressure system giving the convenience you enjoy at home.

The galley is to port, at 1500mm long the bench is a very good size with storage underneath, plus there are lockers set on the keel case. We'll have the option of a fold up galley top extension over the aft seat giving more room when preparing meals but disappearing when not in use. This seat will have storage underneath and is there to make it easy to get into the bunk, sit down take your gear off and slide in. Going forward we have a really nice saloon wrapping around both sides, this gives the option of a comfortable seat on either tack. When at anchor you have both seat areas giving a good view of the TV which is located on the



head bulkhead plus there's a comfortable dinette for 4 people and seating for six comfortably. While you often want to use the big cockpit and do so in good weather, when it's miserable or you're on a passage it's really important to have comfortable safe accommodation below. The forward area has the option of an open feel bunk integrated into the saloon area - this will work well with kids where privacy is not that important. The bunk can simply have the mattress split on centreline with a fold-up divider keeping the peace or folded flat to use as a double when required. A curtain would be a good option to add privacy set across the seat back or a hard bulkhead could be used to create a separate cabin if that is important for you.

The windows are nice and big with a hatch set in the fwd cabin slope giving very good ventilation. The side ports can be opening and a port in the transom will vent the aft double bunk area. A small non see through hatch on the cabin top will vent the head area.

Motor

Motor propulsion uses a 24 volt DC outboard motor using our well proven drop down slide system that raises the prop completely above the hull bottom and it is then in an ideal position well fwd to avoid cavitation when lowered. The house battery bank can be the new lithium type now

close to the price of AGM batteries but at 25% the weight. Solar panels would make her close to self sufficient but carrying a small DC charger would give continuous motor-ing when needed. The motor is set in the huge cockpit locker giving very easy access plus plenty of storage for a little inflatable tender, fenders, ropes etc. A transom mounted outboard motor is optional.

General

Rudders are twin kick-up type adding support when beached but giving her very true steering at speed or in big seas. We also have the fold down swim platform making her very user friendly at anchor. Water tanks are built in under the cabin sole as part of the stiff engineering and lined with food grade epoxy, weight is in the best position. Grey water tank is set next to the head and gravity or suction emptied. The Keel is a dagger configuration lifted in a solid dagger case with plenty of keel top left in the case and solidly bolted to be far better than bolt-on keels. It is lifted with a small electric winch fully retracting into the case for beaching and will have a manual backup using the anchor winch.

The keel is easily made yourself the shaft being a wooden core set into a lead bottom section this is fully glassed into a one piece unit, easily removed in case of damage. She has a max beam of 3000mm this makes her daylight Trail-able in Queensland but easily trailed from the water to yacht club storage or with our intelligent trailer she can roll through 90 degrees on her cradles to be fully legal anywhere. This makes her very versatile when combined with her un-stayed carbon masts which can be lowered in minutes allowing the options of cruising the Whitsundays, Kimberly's or simply loading her on a ship and doing the Caribbean or canals through Europe.

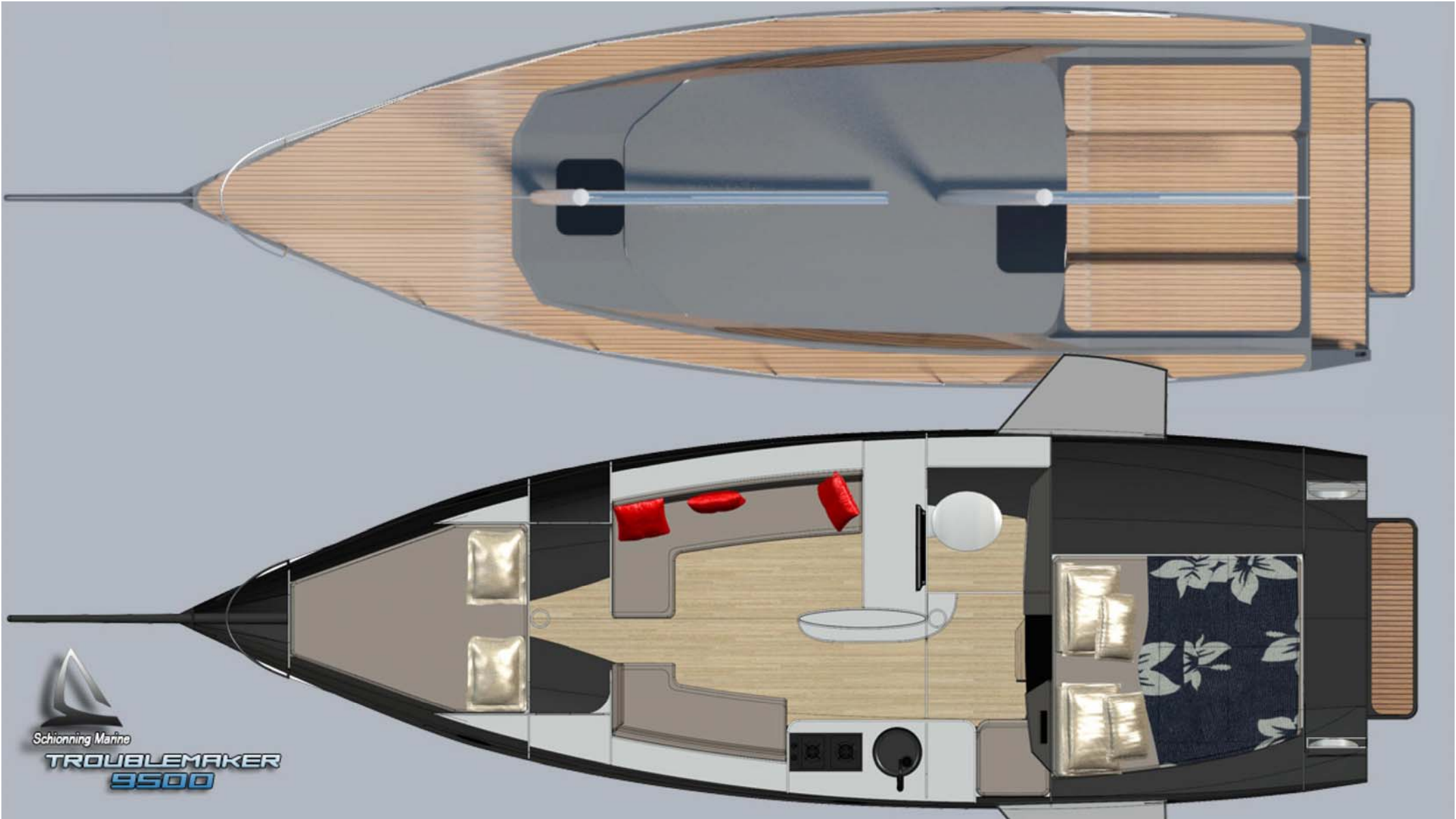
Masts

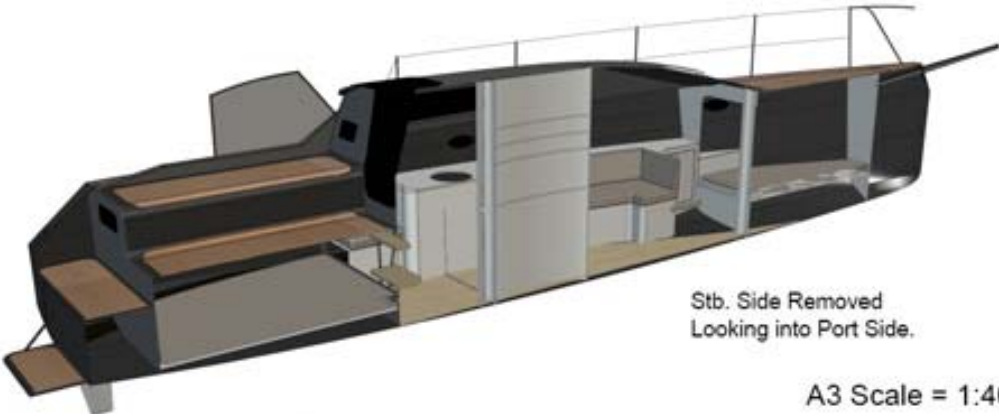
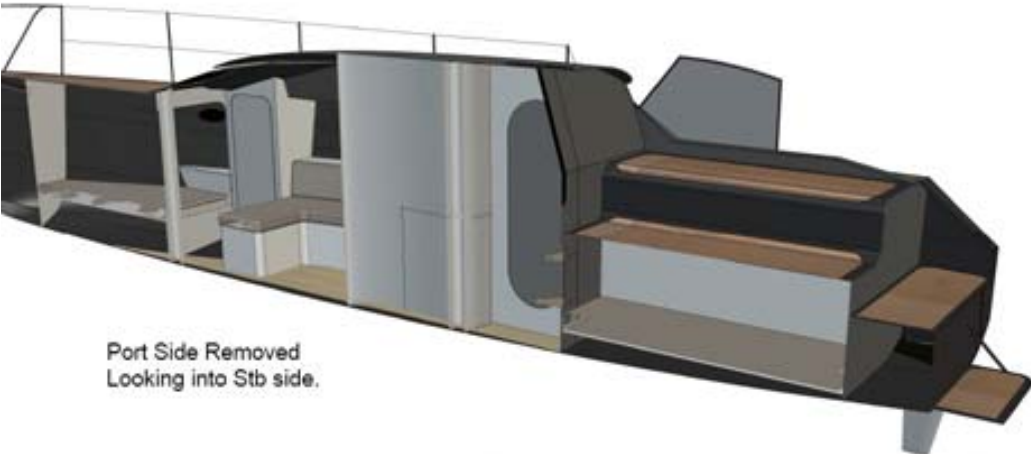
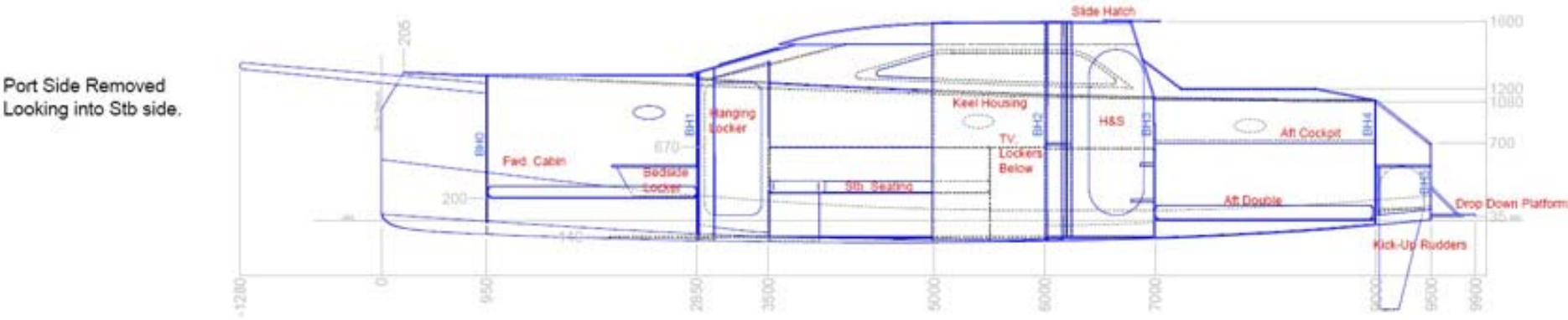
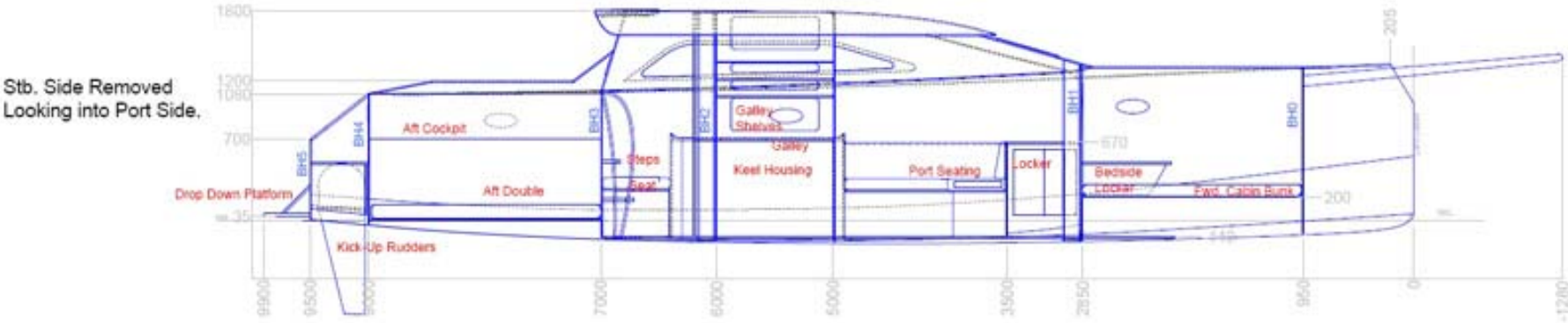
Masts use production carbon tubes and so will be very reasonably priced as there's no rigging and terminals or they can be home built in countries where supply is not available. A single mast option will be made available.

Conclusion

She is an ideal boat on which to learn the light composite build techniques. She'll double your nest egg and you'll have a huge amount of fun using her, and a very saleable investment when moving on but be careful I think you could very easily just fall in love with this little cruiser and find she's a keeper.





















Our designs are based on cored composite construction techniques using West System epoxy resin and knitted fabrics. But given the range of today's composite technologies, which solution works best for catamarans and why?

Resin Choices

We use West System epoxys for their high strength and adhesive values. It also fully protects the boat against water absorption and it can not develop the dreaded Osmosis. We choose ATL Composite's resin systems for their superior quality, reliability and value for money. Having worked closely with the ATL Composites team and their products for many years, we know we can stand by their material solutions, and rely on great service should something unexpected happen.

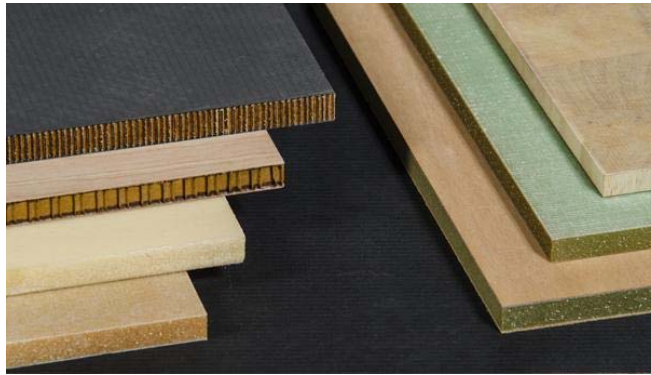
Cloths

We prefer Colan brand cloths for their quality and low resin absorption, custom made for Schionning Marine at six (6) stitches per square inch for easy wet-out and rounding corners. This may not seem important but when working with a material for an extended period of time, the small things make all the difference.

CORES - Which one to use?

The core choice is usually quite confusing. Cores have different capabilities and properties, and their benefits I feel are utilized fully in our catamaran designs. A quick look at their abilities:

Balsa end grain (150 kg/cubic metre) has exceptional qualities including very high compression strength, extremely good shear capabilities and fantastic sheer stiffness. Compressive strength is the resistance to collapsing when pressure is applied perpendicular to the surface as when pushing directly onto the material with the point of your finger. Balsa is far stronger than Foam (80kg/



cubic metre) in compression. Foam is stronger than honeycomb type cores, both the paper and the plastic.

Balsa is also far better than foam or honeycomb in sheer. This is when the core sample is held flat between your hands, one hand slid one way and the other slid the opposite way, when the core tears through the middle the core has failed in sheer. The amount of stretch you feel before the core shears is sheer stiffness. To compensate for sheer weakness the core is made thicker. So 13mm Balsa may be equal in sheer to 19mm Foam.

Paper Honeycomb (50kg/cubic metre) is very efficient and lighter than the other core choices. This can be used for external use but needs extreme care to prevent water penetration. Ideally it is used for all internal furniture and smaller bulkheads. Should water get into the core you lose 50% of its values. It can be suction dried and restored back to full strength, though this can be a long process. Paper Honeycomb has similar strength and sheer ability in the vein lines and about 80% across the veins compared to Foam.

Our hull skin thickness is quite thin, we therefore find the core works harder and it's stiffness is noticed in the finished structure (sheer stiffness). Generally a balsa or WRC shell is noticeably stiffer than a foam boat using equivalent laminates. Balsa has very good values and we can produce a shell using

a very light laminate. It will be very stiff and very resilient to fatigue.

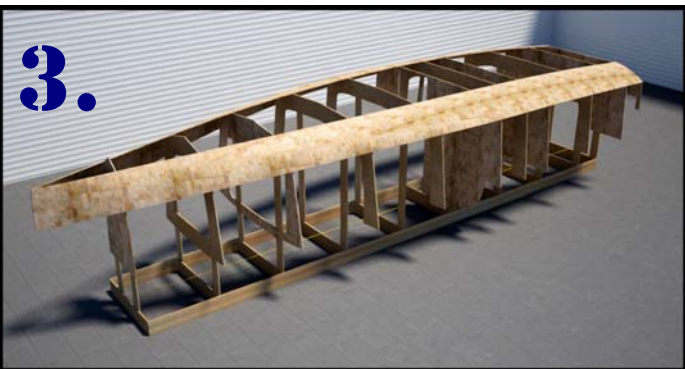
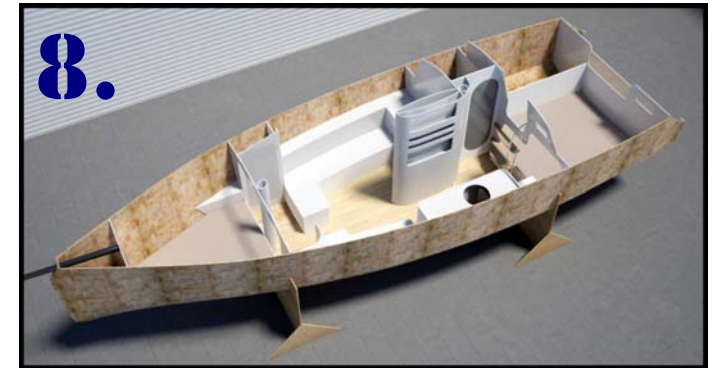
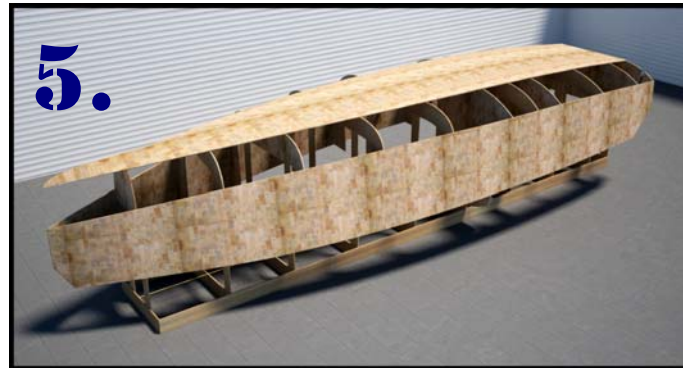
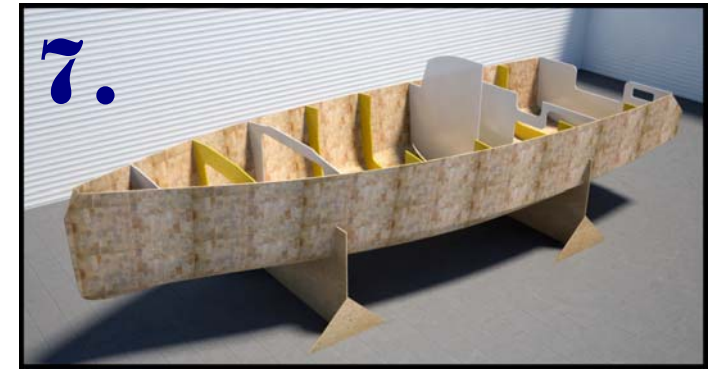
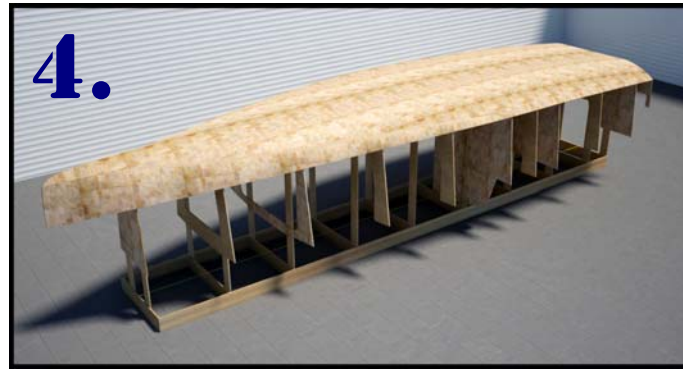
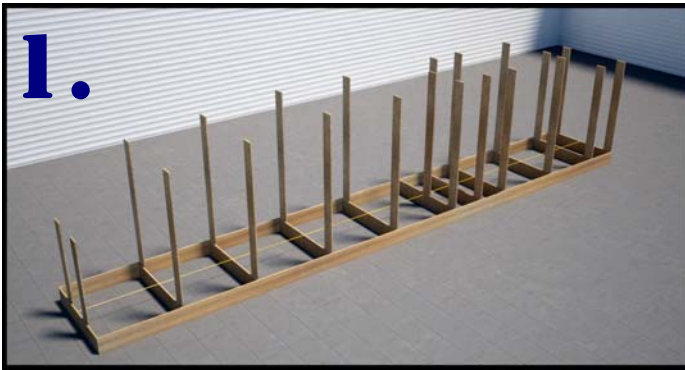
There are many boats sailing that are built from **foam** so even with its poorer values it works well. Initially one would expect this cat shell to be lighter as it is ½ the weight of Balsa. We do have to compensate for its weaknesses and will then add at least double the reinforcement on the outside to spread that compression load over more core and need a triaxial type weave to compensate for the veneer content that runs fore and aft on the Durakore. Secondly, we need to increase the Core thickness to compensate for the shear value, usually neutralizing the weight advantage. Thirdly, foam absorbs a lot more resin into the open surface cells than timber and so increases weight. Fourth, foam is an inert type material tending to follow the surface and not naturally stay fair, fairing usually uses more bog and again adds weight. Fifth, because of the inert characteristics, foam requires a much more complex control mould, this takes a lot more time and is slightly expensive.

The end result using Foam in my experience is always a heavier shell with less stiffness. Professional builders can achieve a good result but usually use vacuum bagging and very good molds to achieve this. The Wilderness 1230 has a foam option. It weighs 200kg less than the Balsa version.

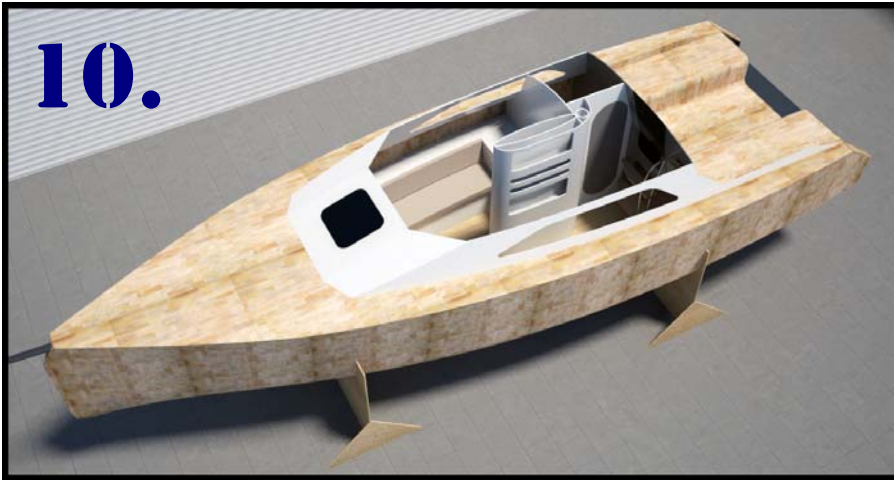
Honeycomb needs to be much thicker and needs much heavier laminates which makes it a silly choice for cat shells. (Nomex excluded)

Western Red Cedar has all the advantages of strip Durakore, but has a real weight penalty because of its higher core weight.

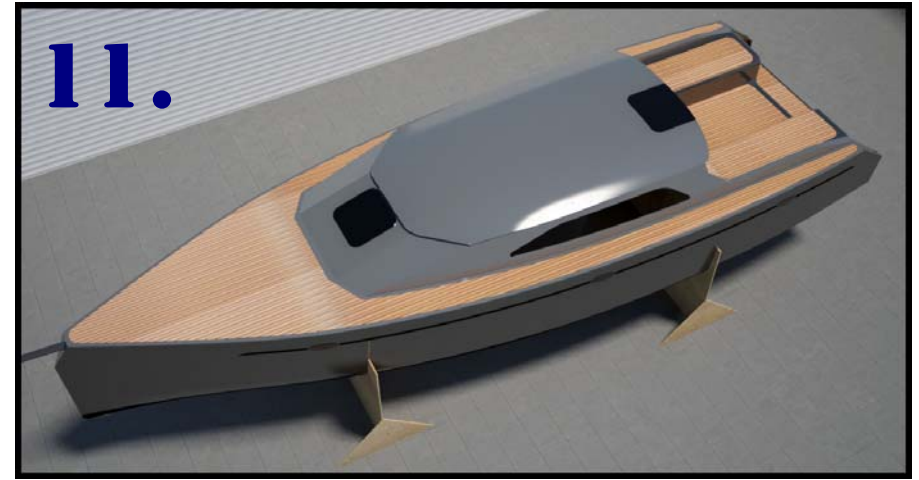
These are the reasons we prefer Durakore and Duflex Panels for our home built designs.



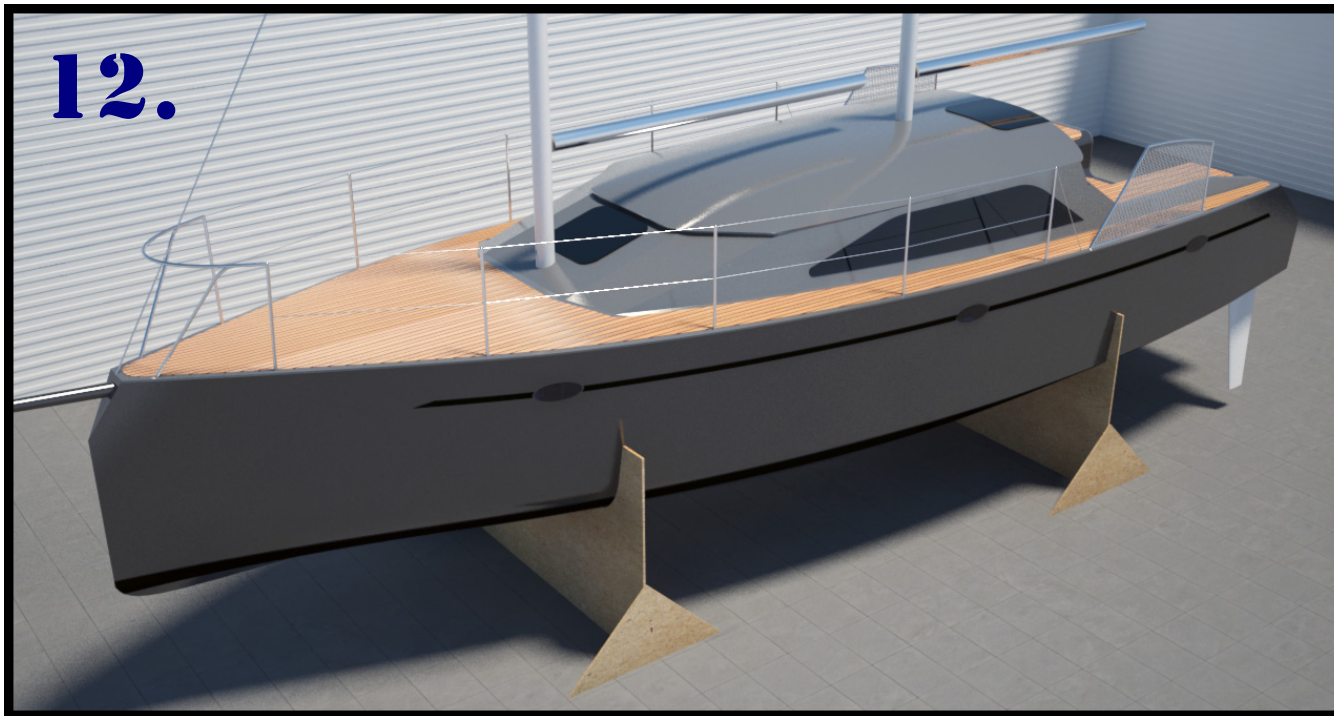
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The success of our designs I feel, stems from the practical common sense approach of a boat builder, coupled with many years of live aboard experience and over 100,000 nautical miles in some of the worst conditions in the world. This experience makes one aware of the power of the sea and the need for a boat to be able to survive these conditions, protect her crew physically and psychologically as well as being a fast comfortable vehicle for all the good times. I am sure you will find our designs reflect our sailing and live-aboard experience and will give you the offshore confidence to sail safely anywhere in the world. Multihulls are *'beautiful, safe, cruising boats'*. We hope you find them as exciting as we do.

WHAT MAKES A GOOD MULTIHULL?

Choosing a design can be difficult so we hope that this introduction helps clear the way a little.

Cat design is not just a matter of two hulls floating a cabin above the water. Only in fairly recent years have the basic elements of design and an understanding of their effect on the use and performance of the finished boat been properly understood.

*The basic principles of good design should **ALL** be present in the boat you're considering building or buying. These will blend together to produce an excellent and safe multihull.*

THE BASICS ELEMENTS OF A GOOD DESIGN:

Good Engineering Our boats are well proven. With over 400 Schionning cats on the water, and many performing under extreme stress whilst racing, we proudly claim we have never had a structural engineering failure of any sort

in our designs. We work with some of the best Aerospace engineers in the composite industries to achieve this.

Flat Decks The flatter deck lines have a number of advantages. Secure footing while reefing, anchoring and in rough conditions. Life lines should be at a sensible protective height instead of set down a level. A flat deck is great for socializing, sunbathing or as a kids playground too.

Buoyancy Buoyancy distribution is the placement of buoyancy in the hulls. Our designs have between 50 and 60 separate sealed buoyancy tanks built into every shell so they are almost unsinkable. Most old designs hobbyhorse (rock fore and aft), this makes them uncomfortable and inefficient. Modern designs have the buoyancy pushed towards the hull ends damping down the hobby-horsing tendencies and giving a lot more safety downwind where the buoyant hulls stop nose-diving. Coupled with a lot of reserve buoyancy higher up in the forward hulls this adds an enormous amount of safety and gives you confidence when sailing off the wind.

A soft 'V'd entry quickly picking up reserve buoyancy with lots of reserve higher up is an ideal combination.

Good Bridgedeck Clearance High Bridgedeck Clearance is essential. A short cabin length with long hull overhangs is a good safety feature. Good clearance on a cruising cat is 600mm – 800mm, a Performance cat 700mm – 900mm and a Racing cat 800mm – 1000mm. Chamfer panels add high reserve buoyancy and need less clearance than a similar cat without them. They also reduce wave slamming and add strength.

SAILING ABILITY AND PERFORMANCE

Power to weight ratios show how well a cat will sail in light conditions. As wind strength increases, one reefs the power to stay at safe acceptable speeds (this is different for different people).

The **Bruce Number** is a commonly used value and very useful in comparing cats, displacement is not always reliable and will vary with load. A Bruce Number = 1 is very slow, 1.3 – 1.4 is a good cruising value, 1.5 – 1.9 reflects a very fast cat. Boats like the French 60' Tri's and "Club Med" are running to extremes like 2.3.

A light and efficient cat can often sail out of trouble and outrun severe weather patterns, shorten passage times and avoid bad weather by getting there in the existing weather window. Most good designs will tack through 90 degrees at a speed of 8 – 10 knots while reaching at 10 - 13 knots comfortably with Main and No. 1 in 15 knots of wind.

Daggerboards are efficient and allow very shallow draft for beaching. With a strong reinforced bottom and with kick up rudders, it's easy to beach our cats. Should you want shallow keels to protect inboard motors, then a combination of shallow keels and fixed rudders are a good option, daggerboards would still be fitted as usual.

Low Drag is a good characteristic. Slim hulls reduce drag and are efficient. A good cruising cat would have a Waterline beam to length ratio of 11.5 to 12.5:1. A performance cruising cat 12.5 to 14:1 and a racing cat 14 to 20:1.

It is important to note that **ALL** these elements must be present in a design to make any of them valid. For example, a design can be really good looking, have high bridge-deck clearance

A Note From The Designer

Troublemaker 9500



a powerful rig and sail plan and be built reasonably light and show a fair displacement, but then have an 8:1 Beam to Length ratio. She'll be a good looking, powerful boat but it will be impossible to go forward, except slowly!

There is no reason why a good modern design does not have all of these features. If you find some of these lacking it is usually for the wrong reasons. A lot of cats have very little bridge-deck clearance because the designer is concentrating on a low profile cat which looks good or being dictated by interior accommodation and ignoring the fact that the boat will pound badly at sea. This is not only noisy and uncomfortable but can well be the cause of structural problems. Our designs have been developed around these practical elements of good design and then we accommodate personal comforts and lifestyle choices.

WHICH DESIGN...

We have many different design ranges. All incorporate the elements of good design discussed above so choosing a style, size and layout comes next. Layouts and some things like steering position can often easily be changed so don't be put off if you really like a particular design but find a few small elements you don't like, talk to us and we'll see if we can incorporate your choices.

We've taken particular care with the balance of construction methods in our designs, making them light and strong yet easy to build in small sections, most of which are manageable by a group of friends when they need turning over and moving. The blend of strip planking and light flat panels kept in single plane form, makes building easy and quick and produces a finished catamaran of classic good looks which will not date quickly, giving you very good investment security.

CAN I AFFORD TO BUILD?

One of the first steps in changing your dream into reality is figuring out whether you can afford the boat (or more likely, how much money you 'don't' have!). Two realities here are, firstly, two similar sized boats with similar displacement, built of similar materials, will cost much the same to build. Designers' estimates of materials are often inaccurate and sometimes minimized to lead one to believe their design will be cheaper to build. This is definitely not the case, ***similar boat, similar price!*** Your choice should therefore be towards the boat that suits you best and is a good investment. Secondly, we know a lot of people who could not afford their boat at the onset so don't be discouraged. Once you start building it is surprising how you focus your interest, spare time and money into your new project. With our new owner-builders we suggest they start with the smaller items which can be built in the garage, carport, (lounge?) etc. These initial items use very little material and money but use a lot of time, so at the early stages you can get a lot done while you wait for your old boat or car or house etc. to sell. These items are; dagger-boards and cases, motor pod, forward beam and catwalk, cabin roof, rudders, dinghy etc. The experience and confidence gained building these bits speeds up the second stage of larger items and gets the whole project finished much sooner.

Good luck with your research and project, don't hesitate to contact us should you need further information or a chat about our designs.

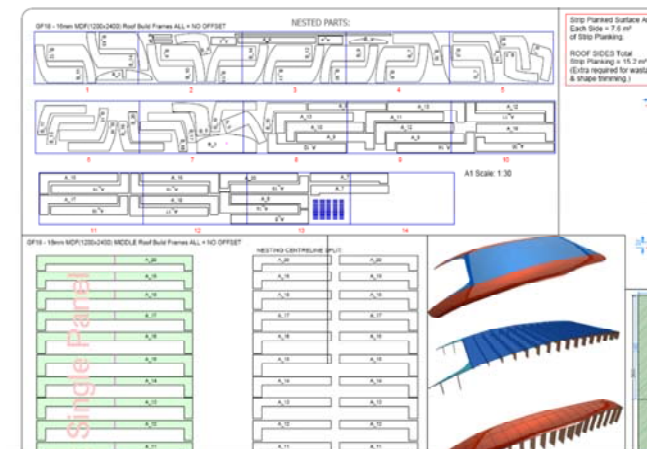
Jeff Schionning



Wilderness 1340X

Plans and Ordering

Troublemaker 9500



Advice is readily available to help with your design choice and various options available.

COST OF PLANS:

The Troublemaker 9500 plans are included in the price of the pre-cut kit. The kit is AUD\$39,000.00 Ex-GST, current as of November 2016.

UNLIMITED BACK UP SERVICE: Our back-up service is unlimited, our professional boat builder (Jeff Schionning) will be here to guide you through any problems throughout your entire project. Email and phone support is available during business hours Monday to Friday.

HOW TO ORDER PLANS: We require a signed and faxed or mailed PLAN ORDER FORM with every plan order. This form explains the terms and conditions and plans will not be mailed until a signed order form is received.

PAYMENT: WE ACCEPT: Bank cheques or direct deposit into our bank account. Please email info@schionningdesigns.com.au for our account details. Credit cards are not accepted for plan purchases.

PLAN DELIVERY: Plans are delivered electronically on a USB drive via mail, or the plan files can be downloaded. The plans consist of A1 and A3 plan sheets and the A4 boat building manual, all in PDF format. Other delivery options can be arranged if required.

Building a boat is definitely a challenge but with good plans, our helpful friendly support and the modern materials available, it's never been easier. The investment of time and money is very worthwhile, offering a rich life experience, fun reward when you launch her and financially you can certainly stand to gain substantially.

We look forward to hearing from you again and wish you the very best with your project.



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