

~ PROTEUS 106 ~

10.6 METER MULTICHINE PLYWOOD/GRP SAILING CATAMARAN

This project has been “gestating” on a personal level for the last 10 years. My aim is the smallest family ocean cruising cat, that is to say with sufficient load carrying capacity to do an ocean crossing with a family, of minimum cost, and capable of amateur construction with the minimum of labour and skill. She is also aimed at being a fast, practical & enjoyable boat for local use. She is small enough for easy shorthanded use. The hull structure is “pre cut” by a CNC cutter as a kitset, or can be cut to plotted templates as a cheaper option if preferred. **The Kitset is available from CKD Boats** in Cape Town. Their quality is A1 and different ply type options are available. Since wastage is minimised (much less than hand cutting), and CKD buy much more cheaply than private buyers, one generally finds that the kit costs hardly more than buying the raw material, and then you save hundreds of hours in labour. The boat is set up on ply bulkheads and stringers and the skin is glass taped with epoxy resin along the chines, inside and out, there are no chine logs. The hull & deck is mostly 9mm ply with 12mm in the forward wingdeck and hull bottom forward. The outside is GRP/epoxy sheathed. She is simple, strong, fast, comfortable, cheap and “unsinkable”.

The interior consists of four berths (two doubles + 2 singles), a saloon settee, a practical galley with icebox, and a toilet compartment, all with standing headroom (1820 under deckstringers) . She is totally functional, and all that is needed for comfort at sea. She is configured with two machinery and keel variations: A 4 stroke 20HP outboard on a hinging nacelle is fitted for economy, as is tiller steering, with “kick up” rudders. If the motor starts to make trouble it is easily replaced. I haven’t worked out how many times you can relace it to equal the cost of diesels. However saildrive “single cylinder baby diesels” can be fitted, as can fixed mini keels. Other “choices” in the “gilded lily” approach stretch to installed toilet & holding tank versus chemical / fitted bucket , installed water tank versus fitted 20 lit container storage. However with the outboard and daggerboard combination, and simplest accommodation gear, we have the fastest boat AND the shallowest draught for the smallest outlay. People lose sight of the fact that comfort at sea revolves round some very simple “basics”, a dry bunk with good ventilation, a place to prepare hot food, a place to sit out of the sun & elements, a private toilet, standing headroom. The rest is “bells & whistles” which all come at a price of increased cost, maintainance, and degrading performance.

The rig is the simplest possible, with a pair of cap shrouds and headstay triangulated, single diamond. The sail inventory is essentially a mainsail, a roller furler jib, and a storm jib. Optional: Genneker.

Kevin Johnson a first class builder estimates 1600 hours, professional hours in a set up boatshop, to unfaired and unpainted hull, deck, joinery stage. It looks entirely possible to get this boat afloat for around \$160,000 - \$180,000 NZD with the "basic" boat professionally built, and about \$100,000 if entirely homebuilt. South African prices are likely to be lower. CNC cut kits from CKD Boats in Cape Town, a very experienced company, is available at a really competitive price. Email Roy Mc Bride (roy@comlumber.com) . Most likely you will find the cost of the CNC kit (including

shipping) is less than a private person is likely to buy the raw materials, so that the huge labour saving is more or less "free"!

Wing deck clearance to DWL (@ displ 3800 kg) is 680mm amidships and 1100mm under the cockpit. The windeck does not extend forward which is most important. Top speed broad reaching in flat water and high wind can be around 18 knots (depending more on one's nerve than anything.) and can average 8 knots on an olympic triangle, powered up in 16-18 knots breeze. Payload of crew, fuel, water, provisions in addition to the vessel complete (with sailing and safety gear, normal loose outfit and sails) is nominally about 900 kg. This figure could be increased by another 400 or so kg at the beginning of a long voyage if the boat consciously not "overpressed" when so loaded. The length/beam ratio at datum floatation is 9.07. This offers a good compromise between reasonably slim hulls and good load carrying ability. This is augmented by the additional "flare" developed in the topsides, whereby beam (and waterplane area) increases considerably with increasing immersion.

The daggerboard version is more efficient in terms of L/D on the foils. In addition the drag of the daggerboards retracted is zero, whereas the mini keels (both!) continue to offer resistance. The prod and spars are intended to be aluminium extrusions, whose inertias are specified.

The design costs \$3000 New Zealand Dollars to build one boat only. This includes 12 x A0 paper plotted full scale templates and postage. Mylar templates (which are dimensionally more stable and durable, and recommended) cost \$200 extra. The templates consist of all frames with shell deduction, stringer cutouts, access cutouts etc shown for hull, deck and superstructure, bow and stern profile, daggerboard, (or alternative keel), kick up rudder. The design consists of: 18 drawings: Lines, hydrostatics, full scale templates (+ 12 x A0 sheets), general construction drawing, parts assembly drawings, parts nesting drawings, arrangement plan and sections, deck arrangement, sail & rigging plan, dagger board & case construction, rudder construction, chain plate details, sundry joint details, doghouse & hatch details, outboard motor hinging nacelle detail, alternative keel detail. Study prints consist of General construction drawing, arrangement drawing, deck arrangement, sail & rigging plan, One typical construction section. Note: study plans will have all section information omitted (other than one "typical" section.) Cost of study plans (separate from plan purchase and license to build one boat) is \$80 New Zealand Dollars. The design has been developed to minimise labour hours and high skill requirements and high costs. The only "exotics" involve the external skins of the ply rudders and daggerboards, which are carbon, since the excessive amounts of GRP needed would make control of the shape and avoiding excess weight problematical.

LENGTH OVERALL	10.600	Meters
BEAM	6.360	Meters
DRAUGHT	0.370/1.75	Meters (dagger up/down)
DISPLACEMENT	2600/3200	Kilogr (light conditon, lght/hvy inst)
MAINSAIL	48	Sq Meters

ROLLER FURL JIB	24	Sq Meters
GENNEKER	58	Sq Meters
FRESH WATER	140	liters (installed or 20 lit containers)

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