Design 037 – Basic Specification

Measurements	Metric system throughout, unless otherwise noted (screw lengths and gauges for example). All linear dimensions are given in millimetres (and "mm" is not always suffixed to the numbers).
Solid Timber	Mahogany, Brazilian or African (often now called Ghana Mahogany), or Red Meranti for solid timber work. Most other hardwoods and softwoods are suitable but avoid Teak, Iroko and European Oak for structural lamination and bonding (with the exception of the teak laid to the decks). Avoid softwoods with a high resin content (e.g. Pitchpine) or softwoods with large or loose knots. Khaya veneers are used for many laminating purposes (Red Meranti or African Mahogany would also be sui table). For timbers that are used extensively in the boat, it is preferable to choose timbers with a density of 550g/m3 or less so as not to build up excessive structure weight. Buy all timber kiln dried if possible and store in dry and well ventilated conditions. Stick between baulks/planks of timber to allow good air circulation. Moisture content of timber should be 12% or less. The timber types given in the specifications below are those considered most suitable. If you wish to build from ecologically sustainable sources, then please come back to me for a specification of suitable timbers.
Plywood	Must be WBP (water & boil proof) grade minimum. 5-ply is better than 3-ply (applies to ≤6mm thickness - thicker ply will automatically be 5-ply or more). Far Eastern WPB grade is usually satisfactory but the surface finish is not always very good. BS 1088 is marine grade - but this is not structurally necessary. If the boat is to be clear finished, choose a ply with a good face veneer (Makore, Brazilian Mahogany or similar fine grain red timber). If the boat is to be painted, good quality WBP Douglas Fir or Birch ply is satisfactory. When decoratively veneered ply is used structurally, the decorative veneers must also bonded on with be WBP grade adhesives. Plywood from ecologically sustainable sources is difficult. The only plys available that approaches this are Finnish birch ply and North American Douglas Fir ply. Both these (in the corre üct grades) are suitable structurally, but the surface veneers are not really very decorative.
Coating system	WEST™ wood epoxy materials. Use #105 Resin with #205 fast hardener (#206 slow hardener will seldom be necessary). If a clear (varnish) finish is required to larger panels then use #207 coating hardener (note different ratio mix). Minimum three coats on all structures and areas of the boat.

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Glue	WEST™ #105/#205 resin mix modified with #403 microfibres (about 7% to 10% by weight - but you will soon judge better by consistency which should be a thickish paste, but still runny). End grain and absorbent timbers to be wetted out with #105/#205 and allowe ud to stand for 15 minutes before gluing with resin/#403 mix. Pre-coated areas (where the WEST™ coating has gone off to be sanded thoroughly and any surface "sweat" removed. Timber direct from the saw is suitable for gluing. Timber from the planer can be shiny, with the surface cells compressed - roughen slightly with medium abrasive paper. See also WEST™ fact sheet.
Filleting	WEST™ #105/#205 resin mix modified with #405 filleting blend.
Decorative finishes	Clear finishes should be UV resistant. I recommend that one coat of 2-pot varnish is applied before using conventional varnishes - otherwise the conventional varnish may have difficulty in curing. The same applies to paint finishes - one coat of 2-pot first, then conventional or acrylic.
Fastenings	Very few fastenings are required. Brass or stainless countersunk wood screws are fine. Use a Stanley "screwsink" of the correct size for the screw when boring off for screws to obtain best hold and clean countersinks. Stanley "plugcutters" are avail íable for each gauge of screw and the dowels produced match the countersink made by the screwsink. Where screws are not to be dowelled over (glue dowels in with WEST™), or filled over with WEST/#407 microballons, fudge plenty of WEST™ down screw hole (a pipe cleaner is ideal for this). Wax screw if it is required to be withdrawn later.
Apron	80mm sided x 40mm moulded, laminated from 8 x 5mm laminates
Bulkheads	6mm plywood
Centrecase	9mm plywood sides, with 30 x 20 mahogany logs. 12 x 20 mahogany posts and 15 x 25 mahogany stiffeners.
Daggerboard	9mm ply with 20mm mahogany caps.
Floorboards	12mm mahogany.
Floors	20mm sided mahogany
Gunwhale cappings	10 x 22 mahogany.

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Gunwhales	12 x 40 mahogany.
Hog	100mm sided x 20mm moulded mahogany
Hull skin	9 lapstrake planks, lapped about 10 times the thickness. Planks can be ply, with a minimum thickness of 6mm (must be 5-ply minimum). 9mm ply can also be used to give a more robust hull. 6mm ply planks shoud have a 20mm lap. 9mm ply should have a 30mm lap.
Keel	Mahogany. Laminated from 25mm laminates.
Mast step	60mm sided Mahogany.
Quarter knees	20mm sided. 15mm laminated throat (5 x 3mm laminates) with solid blocking.
Rudder	9mm ply blade. Mahogany head.
Spars	Douglas fir (B C Pine) or Silver Spruce.
Stem	50mm moulded, laminated from 10 x 5mm mahogany laminates.
Stem knee	20mm sided. 15mm laminated throat (5 x 3mm laminates) with solid blocking.
Stern knee	25mm sided. 15mm laminated throat (5 x 3mm laminates) with solid blocking.
Thwarts	20mm mahogany.
Thwart knees	20mm sided. 15mm laminated throat (5 x 3mm laminates) with solid blocking.
Tiller	Mahogany, Oak or Ash.
Transom	18mm - plywood or solid mahogany.
Useful WEST™ System reading and viewing	Basic application technique VHS training video. The Gougeon Bros. on Boat Construction. WEST™ system Technical Manual.