World Sailing
Class Association

INTERNATIONAL
MIRROR
WOODEN HULL SPECIFICATION
2017

The Mirror was designed in 1962 by Barry Bucknell & Jack Holt and was adopted as an International class in 1990.

PART 1 INTRODUCTION

This document specifies the parts and rules regarding the construction of the **hull** of a wooden International Mirror dinghy and the requirements for supplied kits for wooden **hulls**.

PLEASE REMEMBER:

THESE RULES ARE **CLOSED CLASS RULES** WHERE IF IT DOES NOT SPECIFICALLY SAY THAT YOU MAY – THEN YOU SHALL NOT.

COMPONENTS, AND THEIR USE, ARE DEFINED BY THEIR DESCRIPTION.

1.1 LANGUAGE

1.1.1 The official language of the class is English and in case of dispute over translation the English text shall prevail.

1.1.2 The word “shall” is mandatory and the word “may” is permissive.

1.1.3 Except where used in headings, when a term is printed in “**bold**” the definition in the ERS applies.

1.2 ABBREVIATIONS

1.2.1

MNA	World Sailing Member National Authority
ICA	International Mirror Class Association
NCA	National Class Association
ERS	Equipment Rules of Sailing
RRS	Racing Rules of Sailing

1.3 RULES

Boats shall comply with the current Mirror class rules except that the parts incorporated into Mark 1 interior **hulls** shall comply with the rules in force when the kit was manufactured.

PART 2 WHO CAN BUILD THEM

2.1 KIT MANUFACTURERS

2.1.1 All International Mirror Dinghy kit manufacturers shall be licensed by World Sailing.

2.1.2 Licences may be issued after consultation with the MNA and the International Mirror Class Association, who shall consult the appropriate NCA, if there is one.

2.1.3 KIT OPTIONS

(a) Kit manufacturers may sell different kits options to suit their market or to comply with country regulations. For example;

(i) a complete kit including **hull**, **hull appendages**, **spars**, **sails**, fittings, **rigging**.

(ii) a “hull only” kit comprising only the **hull**.

(iii) a “classic” kit with wooden gunter mast and forward shroud blocks.

(iv) a “racing” kit without forward shroud blocks and lightweight hardwood (e.g. obeche) parts to produce a **hull** with minimum weight.

(v) Complete kits without resin.

2.1.4 The kit manufacturer shall, at his own expense, correct or replace any **hull**, **hull appendage**, **spar**, **sail** or item of **rigging** that does not comply with these **class rules** as a result of an omission or error by the kit manufacturer.

2.2 BUILDERS

2.2.1 A wooden **hull** shall be built from a kit supplied by a kit manufacturer.

2.2.2 If a mandatory **hull** part has an option (e.g. to be overlength), it may be replaced by one supplied by a kit manufacturer or fabricated by the builder. The part has to comply with these **class rules**.

2.2.3 All the mandatory **hull** parts supplied as part of the kit, or replacements, shall be incorporated into the **hull**.

2.2.4 The optional **hull** parts supplied as part of the kit may be incorporated into the **hull**.

2.2.5 Optional **hull** parts not supplied as part of the kit may be either, obtained from a kit manufacturer, or fabricated by the builder, and incorporated into the **hull**.

PART 3 HULL KIT

3.1 INTRODUCTION

3.1.1 This section defines where the design, or specification of the parts, is laid down. It also specifies what shall be, and what may be, in a kit.

3.2 PLANS

3.2.1 There are 5 drawings which detail the size of the parts of the **hull** with Mark 2 interior (interiors are defined in the Class Rules). These plans also detail the design of a basic set of **hull appendages**, some **rig** components and some fittings (e.g. mast step).

3.2.2 Part numbers refer to the numbering shown on the drawings.

3.3 GENERAL

3.3.1 A kit shall comply with these specifications.

3.3.2 A kit shall contain all the mandatory **hull** parts.

3.3.3 A kit may contain any optional **hull** parts as listed in 3.8 as the manufacturer chooses.

3.3.4 A kit shall contain parts to construct a Mark 2 interior hull.

3.3.5 Dimensions of parts shall be as shown on the plans except that,

(a) The position of the join (if any) between the bottom & topside panels may be varied by the kit manufacturer (e.g shorter aft bottom & topside panels, longer forward bottom & topside panels), so long as the combined bottom

& topside panel shapes are within the tolerance specified in 3.3.5 (b) of the combined topside and bottom panel shapes on the plans.

(b) For hull parts made out of plywood the tolerance for all dimensions (except thickness) shall be not more than 2mm.

(c) For other parts where no dimensions are specified in the Class Rules, the plans shall define the nominal size of the part.

3.3.6 IDENTIFICATION

(a) The original World Sailing (ex IYRU, ex ISAF) plaque number shall be engraved on the inside face of the aft transom horizontal doubler on the starboard side in Arabic numerals a minimum of 20 mm high.

3.4 MATERIAL SPECIFICATION DEFINITIONS

3.4.1 HIGH QUALITY MARINE PLYWOOD

(a) Marine plywood with a specification equivalent to AS/NZS 2272 or BS 1088:2003 (Marine Plywood).

(b) Plies of Gaboon (Okoumé - Acuomea Kleinea), Mahogany, Hoop pine, Meranti, Sapele or any combination of these.

3.4.2 MARINE PLYWOOD

(a) Marine plywood with a specification equivalent to AS/NZS 2272 or BS 6566, or BS 1088:2003 (Marine Plywood).

(b) Plies of Gaboon (Okoumé - Acuomea Kleinea), Mahogany, Hoop pine, Meranti, Sapele or any combination of these.

3.4.3 HARDWOOD

(a) A hardwood species, other than balsa or kapok.

3.4.4 SOFTWOOD

(a) A softwood.

3.4.5 SOLID WOOD

(a) A part made from solid wood, rather than plywood.

3.5 PART CONSTRUCTION

3.5.1 COMPOSITION

(a) Parts may be constructed from one or more pieces of wood.

(b) Each piece of wood used to construct a part may be of different species, but all shall meet the material specification of the part. For example, a thwart may be mainly Obeche with some edges made from Mahogany or other more durable timber (since edges are subject to wear and damage).

3.6 MANDATORY PARTS

3.6.1 PLYWOOD

Part Number	Description	Quantity	Thickness	Material
1	Aft bottom panel	2	4.6 to 6mm	High quality marine ply
2	Forward bottom panel	2	4.6 to 6mm	High quality marine ply
5	Aft topside panel	2	4 to 5mm	High quality marine ply
6	Forward topside panel	2	4 to 5mm	High quality marine ply
7	Aft transom panel	1	4 to 5mm	High quality marine ply
8	Forward transom panel	1	4.6 to 6mm	High quality marine ply

10	Stowage bulkhead panel	1	4 to 6mm	Marine ply
10(iv)	Stowage bulkhead doublers	2	4 to 5mm	Marine ply
10A	Mast web panel	1	4.6 to 6mm	Marine ply
11	Forward bulkhead panel	1	4 to 5mm	Marine ply
12	Aft bulkhead panel	1	4 to 5mm	Marine ply
14	Daggerboard case panels	2	4.6 to 6mm	Marine ply
13	Side tank side panel	2	4 to 5mm	Marine ply
15(i)	Aft deck beam support	1	4 to 5mm	Marine ply
18	Foredeck panels	2	4 to 5mm	Marine ply
19	Foredeck butt strap	1	4 to 5mm	Marine ply
22	Side decks	2	4 to 5mm	Marine ply
23	Aft deck panel	1	4 to 5mm	Marine ply
27	Bow shapes	2	4 to 5mm	Marine ply

3.6.2 SOLID WOOD

Parts in the table below are grouped by material and then the cross section required to form the part prior to final shaping, with the total length of each cross section calculated, enabling it to form a cutting list.

Part Number	Description	Quantity	Cross Section	Material	Length each in mm	Total length in mm including 3mm per cut
9	Deck stringers	2	15mm X 12mm	Softwood or hardwood	3430	6863
13(i)	Side tank batten	2	16mm X 13mm	Softwood or hardwood	1630	3263
8(iii)	Forward transom batten	1	23mm X 14mm	Softwood or hardwood	491	491
12(i)	Aft bulkhead batten – aft tank	1	16mm X 15mm	Softwood or hardwood	1138.5	1138.5
12(ii)	Aft bulkhead batten – side tank, vertical	2	16mm X 15mm	Softwood or hardwood	214	431
12(iii)	Aft bulkhead batten – side tank, horizontal	2	16mm X 15mm	Softwood or hardwood	170.5	344
		Total	**16mm X 15mm**	**Softwood or hardwood**		**1913.5**
10A(i)	Mast web batten – vertical forward	2	19mm X 15mm	Softwood or hardwood	393.5	790

10A(ii)	Mast web batten – horizontal under deck	2	19mm X 15mm	Softwood or hardwood	294	591
10A(iii)	Mast web batten – vertical aft	2	19mm X 15mm	Softwood or hardwood	376.5	756
		Total	**19mm X 15mm**	**Softwood or hardwood**		**1784**

20	Foredeck beam (short)	1	32mm X 15mm	Softwood or hardwood	800	800
20A	Foredeck beam (long)	1	32mm X 15mm	Softwood or hardwood	984	984
		Total	**32mm X 15mm**	**Softwood or hardwood**		**1784**

10(i)	Stowage bulkhead batten- side tank, vertical	2	18mm X 16mm	Softwood or hardwood	265	533
10(ii)	Stowage bulkhead batten – side tank horizontal	2	18mm X 16mm	Softwood or hardwood	202	407
10(iii)	Stowage bulkhead batten – bow tank horizontal	1	18mm X 16mm	Softwood or hardwood	1211	1211
26	Bow shape battens	2	18mm X 16mm	Softwood or hardwood	405	813
		Total	18mm X 16mm	Softwood or hardwood		2964

14(ii)	Daggerboard case top battens	2	20mm X 16mm	Softwood or hardwood	446.25	895.5
17	Side deck battens	2	20mm X 16mm	Softwood or hardwood	1687	3377
		Total	**20mm X 16mm**	**Softwood or hardwood**		**4272.5**

14(iii)	Daggerboard case side battens	2	25mm X 16mm	Softwood or hardwood	307	617

15	Aft deck beam	1	32mm X 16mm	Softwood or hardwood	1095	1095

14(i)	Daggerboard case bottom battens	2	24.25mm X 16.25mm	Softwood or hardwood	446.25	895.5
13(ii)	Thwart supports	2	18mm X 18mm	Softwood or hardwood	455	913
24	Inner gunwales	2	30mm X 20mm	Softwood or hardwood	3430	6863
4	Floor battens	2 mandatory, 6 recommended	45mm X 10mm	Hardwood	1625	9765
39	Rudder stock packing	1	126mm X 14mm	Hardwood	207	207
16	Outer gunwales	2	30mm X 15mm	Hardwood	3430	6863
14A(i)	Daggerboard case supports	2	52mm X 15mm	Hardwood	307.5	618
14A	Thwart	1	147.5mm X 15 to 17mm	Hardwood	828	828
33	Bilge keels	2	16mm X 15.5mm	Hardwood	1068	2139
37	Daggerboard handles	2	19.25mm X 16mm	Hardwood	202	407
21	Shroud blocks (improved design option)	2	64.5mm X 18 mm	Hardwood	300	603
31	Footrest	1	34mm X 20mm	Hardwood	519.5	519.5
8(ii)	Forward transom gunwale	1	42mm X 20mm	Hardwood	581	581
8(i)	Stem post	1	63mm X 20mm	Hardwood	207	207
32	Skeg	1	82mm X 20mm	Hardwood	663	663
7(ii)	Aft transom vertical doubler	1	88mm X 20mm	Hardwood	166.5	166.5
25	Quarter knees	2	105mm X 20mm	Hardwood	159	321

7(i)	Aft transom horizontal doubler	1	141mm X 20mm	Hardwood	1071	1071

10(v)	Stowage bulkhead drip rail	1	26.5mm X 20.5mm	Hardwood	662	662

35	Aft cross strut (not a hull part)	1	28.5mm X 24.75mm	Softwood or Hardwood, rough sawn	1371	1371

34	Forward cross strut (not a hull part)	1	30.25mm X 24.75mm	Softwood or Hardwood, rough sawn	1052	1052

3.6.3 MANDATORY PARTS MADE OF OTHER MATERIALS

3.6.3.1 A keelband, in accordance with the current Mirror class rules.

3.6.3.2 The World Sailing plaque for this hull.

3.7 CONDITIONAL PARTS

3.7.1 INTRODUCTION

(a) Parts in this section may be omitted if the conditions specified for that part to be omitted are met.. If the conditions are not met, the part is mandatory.

3.7.2 PLYWOOD

Part Number	Description	Quantity	Thickness	Material
2(i)	Forward bottom panel butt strap	2	4.6 to 6mm	High quality marine ply
6(i)	Forward topside panel butt strap	2	4 to 6mm	High quality marine ply

3.7.2.1 Conditions

(a) The bottom panel butt straps may be omitted if:

(i) one piece bottom panels are supplied or

(ii) one or both the bottom panels are lengthened to allow them to be joined with a scarf, or splice, or finger joints or similar, or

(iii) the bottom panels are joined by a glass fibre tape and resin join on both sides.

(b) The topside panel butt straps may be omitted if:

(i) one piece topside panels are supplied, or

(ii) one or both the topside panels are lengthened to allow them to be joined with a scarf, or splice, or finger joints or similar, or

(iii) the bottom panels are joined by a glass fibre tape and resin join on both sides.

3.7.3 SOLID WOOD

Part Number	Description	Quantity	Cross Section	Material	Length each in mm	Total length including 3mm per cut
7(iii)	Aft transom batten	1	16mm X 13mm	Softwood	1000	1000
3	Glue blocks	20	20mm X 17mm	Softwood	75	1557

3.7.3.1 Conditions

(a) Aft transom batten

(i) Kit Manufacturers may omit the aft transom batten if they provide an alternative method of supporting the aft edge of the aft deck (e.g., a slot in the horizontal transom doubler & lengthened aft deck)

(b) Glue blocks

(i) Kit Manufacturers may omit glue blocks if they provide an alternative method of positioning bulkheads and side tank side panels (e.g., slot and tab)

(ii) Builders may omit glue blocks.

3.8 OPTIONAL PARTS

3.8.1 PLYWOOD

Part Number	Description	Quantity	Thickness	Material
28	Mast Step	1 or 2	12mm	Marine ply
38	Rudder cheeks	2 (paired)	12mm	Marine ply

3.8.2 SOLID WOOD

Part Number	Description	Quantity	Cross Section	Material	Length each in mm	Total length including 3mm per cut
42	Tiller packing (for simple bolt extension joint, or to mount fitting designed for a flat surface on a tube tiller)	1	25mm X 10.5mm	Hardwood	103	103
39	Rudder stock packing	1	126mm X 14 to 16mm (2mm wider than blade)	Hardwood	207	207
37	Daggerboard handles	2	19.25mm X 16mm	Hardwood	202	407

21	Forward shroud blocks	2	64.5mm X 18 mm	Hardwood	135.25	270.5

3.8.3 PLYWOOD, SOLID WOOD OR OTHER MATERIALS

3.8.3.1 Parts in this section shall be made from any of the materials specified for that part.

Part No.	Description	Material
	Bow transom aft face vertical batten	Marine plywood or solid wood
	Struts, ring frames or part ring frames between any of the following - bow transom, forward bulkhead, foredeck panels, forward bottom panels.	Marine plywood or solid wood
	Additional foredeck beams or battens	Marine plywood or solid wood
	Knees between mast web battens or mast web battens and stowage bulkhead batten.	Marine plywood or solid wood
52 (suggested design of a bulkhead)	Side tank bulkheads, ring frames or struts	Marine plywood or solid wood
	Additional side deck battens	Marine plywood or solid wood
	Additional aft deck beams or battens.	Marine plywood or solid wood
	Side deck to side tank panel chamfers	Marine plywood or solid wood
36	Daggerboard	12 to 13.5mm thick marine ply or solid wood strips
40	Rudder blade	12 to 13.5mm thick marine ply or solid wood strips
41	Tiller	Optional

PART 4 HULL BUILDING

4.1 INTRODUCTION

This section specifies how a kit is put together to form a **hull**.

4.2 BUILDING

4.2.1 HULL SHELL PANELS

(a) The method of holding shell panels in place prior to gluing shall be using either:

(i) Stitching along the joins (i.e. with copper wire or similar), or

(ii) by means of a jig, or

(iii) by self positioning and locking joins (i.e. slot and tab or similar), or

(iv) any combination of the above.

(b) Each part shall be used for its intended purpose.

4.2.2 JOINS

(a) The outside of all joins between **hull** shell panels, other than the forward bottom panel to aft bottom panel & forward topside panel to aft topside panel joins, shall be reinforced with at least one layer of glass fibre tape and resin.

(b) The inside of the joins between the bottom panels and the topside panels for a minimum distance of 1000mm from the bow transom panel, and along the centreplane between the bottom panels shall be reinforced with one or more layers of glass fibre tape and resin.

(c) The inside of all joins between **hull** shell panels not covered by 4.2.2 (b) shall be reinforced with either:

(i) One or more layers of glass fibre tape and resin, or

(ii) A glue fillet, or

(iii) A glue fillet plus one or more layers of glass fibre tape and resin.

(d) The method of making all other joins between kit parts not covered by 4.2.2 (a), (b) and (c) is optional.

4.2.3 FASTENERS

(a) Parts may be fastened together with any combination of either:

(i) Nails, or

(ii) Staples, or

(iii) Screws, or

(iv) Dowels

4.2.4 ADHESIVES

(a) The type of adhesive used to glue wooden parts together is optional.

(b) The type of resin used to reinforce joints or make glue fillets is optional.

4.2.5 GLASS FIBRE TAPE

(a) The type of glass fibre tape used to reinforce joins is optional.

4.2.6 SURFACE FINISH

(a) **Hulls** may be painted, varnished, resin coated, oiled, waxed or a combination of these methods.

(b) The type of paint, varnish, resin or oil is optional.

4.3 MODIFICATIONS DURING BUILDING

(a) Parts may be trimmed to fit with adjoining parts of the kit if necessary, as long as they comply with these specifications

(b) Parts, other than hull shell panels, whose size is controlled by dimensions in the class rules may be reduced in size to the permitted minimums.

(c) The following parts, whose size is not controlled by dimensions in the class rules, may be modified as follows:

(i) Aft transom horizontal doubler, edges may be rounded off.

(ii) Quarter knees, daggerboard knees, all battens and supports may have their cross sections reduced in area.

(iii) The thwart supports, the drip rail & the stem post may be tapered and their cross sections reduced in area.

(iv) Butt straps may be rounded or chamfered.

(d) Forward bottom panels may be reduced in thickness (within the limit specified in 3.6.1) to facilitate bending.

(e) Deck support, bow shape, bulkhead, mast web, side tank panel battens and beams may be fixed to other parts by joints.

(f) **Hull** shell panels may be rebated or chamfered along the chines to allow external taped joints to lie flush with the hull surface.

(g) **Hull** shell panels may be rebated or chamfered along the transom chines to allow external taped joints to lie flush with the hull surface.

(h) **Hull** shell panels may be rebated or chamfered along butt strap joints and the joint may be reinforced with glass fibre tape and resin.

(i) The bow transom rubbing strake may be mounted proud of the bow transom with the bow shapes mounted flush with the top of the rubbing strake and reduced in size by a corresponding amount.

(j) The inner gunwales and forward topside panels may be rebated to allow the bow shapes to be mounted flush with the gunwale rubbing strakes.

(k) The side deck battens may run fore and aft or be cut up and run athwartships.

(l) The aft deck beam and support may run athwartships or be cut up and run fore and aft.

(m) The daggerboard cut-outs in the aft bottom panels may be enlarged to accommodate the daggerboard case side panels if these extend past the daggerboard case bottom battens.

(n) The daggerboard cut-outs in the aft bottom panels may be repositioned so long as the daggerboard case position is within the permitted measurements.

(o) The top edge of the aft transom panel and horizontal transom doubler may be capped with any material.

(p) The top edge of the topside panels may be capped with any material.

(q) The leading edge of the bow transom rubbing strake may be rebated and any material inserted.

(r) Parts may be coated in resin prior to assembly.

(s) One central limber hole, plus one limber hole per floor batten may be made in the footrest.

(t) The aft transom scuppers may be enlarged to the maximum size permitted.

(u) One hole in each gunwale rubbing strake may be made for the attachment of a bow protector.

(v) One hole in each outer gunwale may be made for the passage of spinnaker twinning lines.

(w) Two holes in the stowage bulkhead maybe made for the stowage of oars.

(y) Mounting blocks and backing plates for fittings are permitted and may be attached by joints, glue, glue fillets, glass tape and resin, fastenings or any combination of these.

(x) A chamfer may be introduced to the join between the side decks and the side tank side panels.

PART 5 RECOMMENDATIONS

5.1 FOR KIT MANUFACTURERS

5.1.1 CONSTRUCTION MATERIAL QUANTITIES

(a) The recommended quantities and materials are as follows

(i) Glass tape, 58m X 40mm open weave.

(ii) Glass tape, 9m X 40mm, fine weave or open weave.

(iii) 6m of copper wire for cutting into 62mm to 100mm lengths

(iv) 4kg pack of epoxy resin

(v) 0.05Kg of any collodia silica

(vi) 0.1Kg of any microfibres

(vii) 0.1Kg of any glass spheres or microballons

(b) If wood glue is to be used in place of thickened epoxy resin, the recommended quantities are as follows

(i) 250g tin any powder glue plus the corresponding amount of glue hardener

(c) To make one kit, it takes, approximately (as it depends on nesting of the panels within the sheets):

(i) 5 sheets of 2500mm X 1220mm X 5mm marine plywood

or

(ii) 2.5 sheets of 2500mm X 1220mm X 5mm marine plywood plus, 2.5 sheets of 2500mm X 1220mm X 4mm marine plywood.

or

(iii) 2 sheets of 2500mm X 1220mm X 6mm marine plywood plus, 3 sheets of 2500mm X 1220mm X 4mm marine plywood.

5.1.2 HARDWOOD SPECIES

(a) Suitable species are: mahogany, obeche, ash, beech.

5.1.3 SOFTWOOD SPECIES

(a) Suitable are: pine, sitka spruce, clear douglas fir.

5.1.4 IDENTIFICATION

(a) It is recommended that each part be marked with its part number to allow it to be identified by the builder.

5.1.5 ICA RECOMMENDATIONS

(a) It is recommended that gaboon (okoume) marine plywood is used throughout as it has been found to produce the lightest and stiffest hulls.

(b) It is recommended that the bottom panels are 5mm thick.

(c) It is recommended that the bottom panels are 5 ply, rather than 3 ply

(d) It is recommended that the skeg, bilge keels, stem post and rubbing strakes are made from durable hardwood.

(e) It is recommended that the skeg does not have a hole.

(f) It is recommend that kits contain 6 floor battens

(g) It is recommended that forward shroud blocks and the corresponding cut outs in the side decks & inner gunwales (the ones at 2126mm) are omitted from kits.

(h) It is recommended that kits include side tank bulkheads.

(i) It is recommended that manufacturers provide an alternative design and/or arrangement of side deck battens to the traditional fore and aft batten.

(j) It is recommended that kits produce boats that weigh close to, or up to, 3Kg below, the minimum hull weight.

(k) It is recommended that epoxy resin be used rather than polyester or other alternatives.

(l) It is recommended that thickened epoxy resin be used as the wood glue and to create fillets.

(m) The use of metal fastenings to hold parts together is not recommended.

(n) The use of 6mm marine plywood is not recommended, because it may result in hulls that are overweight and may not bend sufficiently to form the bow of the boat. It is acceptable for markets where 5mm cannot be obtained locally and may need to be reduced in thickness to facilitate bending.

(o) It is recommended that kits include a daggerboard, rudder & tiller assembly.

(p) It is recommended that a tiller made of 25mm outside diameter anodised alloy tube, to be permanently attached to the rudder stock, is supplied. The "classic" alternative is one made from 18mm thick hardwood.

(q) It is recommended that a hole for hatch into front tank is cut in forward bulkhead on port side (easier for right handed sailors to put hatch cover on standing outside the boat & to work inside the tank with the boat upside down).

(r) Bermuda rig and alloy boom is recommended rather than gunter rig and wooden boom.

(s) Tiller extensions with normal, commercially available, universal joints are recommended rather than using a with simple bolt joint envisaged in the plans.

5.1.6 FASTNER QUANTITIES

(a) See 5.1.5 (m). If a kit manufacturer intends to supply metal fastenings, the recommended quantities and materials are as follows. Sizes shown are recommended and should be matched as closely as possible.

No	Length	Diameter	Description
460	18mm	1.63mm	brass panel pins
180	18mm	1.63mm	copper nails.
72	25mm	1.63mm	copper nails
5	31mm	2.03mm	copper nails
36	9mm or 12mm	3.5mm	Brass, Stainless Steel (grade A4) or Silica Bronze countersunk head screws
14	12mm or 22mm	3.5mm	Brass, Stainless Steel (grade A4) or Silica Bronze countersunk head screws
6	18mm	3.5mm	Brass, Stainless Steel (grade A4) or Silica Bronze countersunk head screws
8	25mm	3.5mm	Brass, Stainless Steel (grade A4) or Silica Bronze countersunk head screws
31	8mm	4.0mm	Brass, Stainless Steel (grade A4) or Silica Bronze countersunk head screws
12	12mm	4.0mm	Brass, Stainless Steel (grade A4) or Silica Bronze countersunk head screws
38	25mm	4.0mm	Brass, Stainless Steel (grade A4) or Silica Bronze countersunk head screws
46	31mm	4.0mm	Brass, Stainless Steel (grade A4) or Silica Bronze countersunk head screws

4	50mm	4.0mm	Brass, Stainless Steel (grade A4) or Silica Bronze countersunk head screws
4	25mm	3.5mm	Stainless Steel (grade A4) countersunk head screws
4	18mm	4.0mm	Stainless Steel (grade A4) countersunk head screws
1	18mm	4.0mm	Stainless Steel (grade A4) pan head screws

5.2 FOR BUILDERS

5.2.1 ICA RECOMMENDATIONS

(a) It is recommended that inexperienced builders reinforce joins made with fillets with glass tape and resin.

(b) It is recommended that inexperienced builders reinforce the visible side of joins between deck panels, deck panels to topside panels, deck panels to bulkheads or side tank side panels and between bulkheads and side tank side panels and bottom panels with glass tape and resin

(c) It is recommended that alloy tube tillers are be secured to the rudder stock with fibreglass tape and resin.

PART 6 OTHER ITEMS ON PLANS

The plans include the traditional design of some rig components and fittings. For the sake of completeness the material specification of these part is detailed below.

6.1 WOOD PARTS

6.6.1 PLYWOOD

Part Number	Description	Quantity	Thickness	Material
44	Tiller extension pad	1	4mm to 5mm	Marine ply
49	Gaff jaws	2	12mm	Marine ply
50	Gaff jaws packing	2	4 to 5mm	Marine ply

6.6.2 SOLID WOOD

Parts in the table below are grouped by material and then the cross section required to form the part prior to final shaping, with the total length of each cross section calculated, enabling it to form a cutting list.

Part Number	Description	Quantity	Cross Section	Material	Length each in mm	Total length in mm including 3mm per cut
51	Boom	1	42mm X 42mm	Softwood (Douglas fir recommended)	2289	2289
48	Gaff	2 (pair)	44mm X 22.5mm	Softwood, must be clear of knots etc. (Clear douglas fir recommended)	2795	5593
43	Tiller extension	1	20mm X 17.5mm	Hardwood	691	691
46	Gunter mast top plug	1	50mm X 50mm	Hardwood	270	270
47	Gunter mast bottom plug	1	50mm X 50mm	Hardwood	491	491
		Total	**50mm X 50mm**	**Hardwood**		**761**

6.2 OTHER MATERIALS

Part Number	Description	Quantity	Dimensions	Material
Not shown	Gunter mast tube	1	14 SWG X 50mm OD circular section X 3082mm	Anodised alloy tube
Not shown	Gunter mast sheave	1	40mm or less X 10mm	Plastic
Not shown	Gunter mast sheave axle	1	50mm long	Alloy tube or wood