

COMPOSITE YACHTS HAVING STEEL FRAMES AND WOOD PLANKING.

Section 21.

1. Composite Yachts built under Special Survey in accordance with the following Rules and Tables will be classed **R** for a term of years to be regulated by the description of wood materials employed, the fastenings used in their construction, and other conditions as hereafter described. Where it may be desired to make slight deviations from the requirements of the Tables, sketches showing details of the proposed equivalent arrangements are to be submitted for approval.

2. The scantlings of Wood Yachts of the 14½ Metre Class are to be interpolated from those given in the Rules.

MATERIALS.

Section 22.

1. The term of years to which a yacht will be entitled under the Tables, will be that of the lowest grade material used in her construction.

2. The various kinds of wood which may be used for the different parts of a yacht are given in Tables 12 and 28.

Materials other than those provided for in Tables will be permitted subject to the approval of the Committee.

Balsa wood not to be used in the construction of racing yachts.

"Duralumin," or similar light alloys, are not to be used for fastenings or structural items.

3. The whole of the timber is to be of good quality, properly seasoned, free from sap, shakes, and from all other defects.

4. The Table scantlings for wood are to be based on the following standard weights :—

Keel	...	...	...	...	}	38 lbs. per cubic foot (=610 kilos. per cubic metre).
Stem	Sternpost	...	...	...
Deadwood	Counter timbers	...	...	...
Planking	...	...	...	...		35 lbs. per cubic foot (=560 kilos. per cubic metre).
Decks	...	...	...	...		27 lbs. per cubic foot (=430 kilos. per cubic metre).

Where the actual weight of the timber differs from the standard weight, the Table siding or thickness is to be increased or decreased according to the following formula, viz. :—

$$\frac{(S - W)}{(W)} T$$

where S = the standard weight for the material in lbs. per cubic foot (or kilos. per cubic metre),

W = the actual weight of the material in lbs. per cubic foot (or kilos. per cubic metre),

T = the siding or thickness given in the Tables,

The Table siding or thickness is, however, not to be decreased more than 6 per cent. excepting where teak having a weight of 45 lbs. per cubic foot (720 kilos. per cubic metre) is used for *decks*, where a reduction of 12 per cent. in the thickness will be permitted.

5. The steel used in the construction of composite yachts is to be tested as required by the Society's Rules for the testing of steel. In the smaller yachts it is recommended that the steel be galvanized.

YACHTS BUILT UNDER A ROOF.

Section 23.

Yachts built under a substantial and efficient roof, kept in good repair, which is to project at each end beyond the length, and on each side beyond the breadth, a distance equal to half the breadth of the vessel, or the sides and ends to be so constructed as to be equally efficient, may have one year added to the period prescribed, provided they have been surveyed while building.

METAL FASTENINGS.

Section 24.

Three additional years will be allowed to the period prescribed, if the whole of the fastenings up to and including those in the upper deck be of copper or yellow metal.

WORKMANSHIP.

Section 25.

The workmanship is to be well executed for all grades, and is to be to the Surveyor's entire satisfaction.

KEEL, STEM, STERNPOST, AND RUDDER.

Section 26.

1. The dimensions given in the Tables for the keel are to be the minimum dimensions amidships. The keel may be tapered towards the ends to agree with the siding of the stem and sternpost.

2. The length of the keel scarph is not to be less than given in the Tables, and where the moulding is increased beyond the Table size, the length of the scarph is to be correspondingly increased.

3. The scantlings for the stem at head and at heel are to be measured under the bowsprit and at the heel respectively, and the stem is to have a uniform taper between these points. The scantlings for the sternpost are to be measured under the counter. The moulding is not to be less than required by the Tables and to efficiently house the ends of the planking. The sternpost need not extend above the counter and may be tapered downwards to suit the form of the yacht.

4. The horn timber is to be firmly attached at its forward end to the sternpost, where it is to be of not less sectional area than produced by the dimensions required for the sternpost at that part; it may be gradually reduced towards its after end where the sectional area may be three-fourths of that required at forward end.

5. The rudder is to be efficiently constructed; the diameter of the head, and the diameter of the pintles are not to be less than required by the Tables.

6. Where it is proposed to fit the rudder head of yellow metal, either of solid or tubular section, the scantlings of the same are to be submitted for approval, and where a yacht is not sheathed with copper or yellow metal an iron or steel rudder may be fitted. The diameter of the rudder head is to be

of the size given in the Tables. In such cases the siding of the sternpost may be tapered to suit the diameter of the rudder stock, provided the siding at after edge of rabbet be not less than required by the Tables.

FRAMES.

Section 27.

1. All the frames are to extend from keel to gunwale. Where a smaller spacing than that given in the Tables is approved, the sectional area of the frames, reversed frames, and floors may be correspondingly reduced. Where the outside planking is fitted of increased thickness, the spacing of the frames may be increased. See footnote to Tables 9 and 25.

2. The part of the structure abaft the sternpost is to be efficiently framed with angles of the dimensions required for main frames, and where the overhanging part is of considerable length, means must be provided to maintain a continuity of strength between the counter and the hull of the yacht.

3. Where the frames are stopped at flat plate keels, in way of lead keels, lugs are to be fitted connecting the floors and keel plates.

4. Where the frames are butted at the keel, heel pieces are to be fitted for three-quarters the yacht's length (water line) amidships of sufficient length to take three rivets in each flange on each side of the butt. Similar angle straps to be fitted if the frames are butted elsewhere.

5. Where it is intended to carry ballast between the floors, the frames are to be doubled with angles the same size as the frame angles and extending above the height of the ballast; the weight of the ballast is to be borne by the frames.

REVERSED FRAMES.

Section 28.

1. Reversed frames of the scantlings required by the Tables are to be fitted on the upper edge of all floor-plates. In yachts of 12 metres rating and above, alternate reversed frames are to extend to the upper edge of the bilge stringer angle.

2. Where reversed frames are butted, efficient straps are to be fitted of sufficient length to take three rivets on each side of the butt.

3. Short double-reversed angles are to be fitted on all frames in way of the bilge stringers.

4. The framing is to be efficiently strengthened in way of masts and rigging, and in yachts of 12 metres rating and above, web frames are to be fitted on each side in way of masts and rigging, and lead keel. An efficient mast step is to be fitted to take the heel of the mast, and is to be extended to strengthen the fore part of the yacht.

5. In yachts of 10 metres rating, two frames on each side in way of the mast are to have the reversed frames extended to the upper deck.

6. In yachts of 12 metres rating and above, web frames are to be fitted in number and size as required by the Tables. There is to be an angle of the reversed frame size on the face of the web frames and the plates may be lightened by holes of a diameter not exceeding one-third the width of the plate and not less than one diameter apart. In place of the web frames additional reversed frames

may be fitted extending from keel to gunwale, there should be not less than three reversed frames fitted to consecutive frames for each web frame in yachts of 12 metres rating, and four for each web frame in yachts of 14 and 14½ metres rating.

7. Double reversed frames are to be fitted where ballast is carried on the upper edge of the floors.

FLOORS.

Section 29.

1. The floor plates are to be fitted at every frame, and are not to be of less scantlings amidships than given in the Tables. They are to be carried straight across at upper edge from side to side. They are to have an angle of not less than reversed frame size on both upper and lower edges. The angle at upper edge may be dispensed with if the floor plate be flanged, the breadth of the flange to be not less than the broader flange of the reversed frame.

2. Before and abaft the three-fourths length (water line) amidships the floor plates may be reduced in thickness as provided for in the Tables and the depth may be gradually reduced to the ends of the yacht where it may be, at fore end one-half, at sternpost three-quarters and in way of counter one-half of that given in the Tables, or angle steel floors of the size given in the Tables for Wood Yachts may be fitted at forward end and in way of counter. Where the frames at ends of yacht extend in one length from covering board to covering board, no floors are required at middle line.

3. Where the form of the yacht above the keel is very fine or narrow, the floor plates are to be increased in depth or other means provided to tie the two sides of the yacht together at this part.

4. Water courses are to be formed where required for the efficient drainage of the yacht.

BEAMS.

Section 30.

1. The beams are to be of the midship size for three-quarters the yacht's length (water line) amidships; before and abaft this length the scantlings may be reduced to the size given in the Tables for beams beyond the three-quarters length.

2. The beams are to be pillared at the middle or as near thereto as possible in yachts of 14 and 14½ metre rating.

3. Where the half beams are fitted to alternate frames they are to be attached by double lugs to the fore and aft carlings or coaming plates.

4. The beam knees are to be connected to the frames by not less than four rivets, and they are to measure across the throat not less than six-tenths of the depth required for the knees.

5. Beams under windlasses or deck houses and at the ends of large deck openings are to be of increased sizes or efficiently pillared.

6. The beams in way of masts are to be fitted to every frame, or otherwise strengthened.

PILLARS.

Section 31.

1. Pillars are to be fitted to the beams in way of mast where halliards are fastened to deck, and in yachts of 14 and 14½ metres rating, malleable steel or iron pillars are to be fitted about six frame

spaces apart; they are to have solid welded heads and heels, and are to be attached to the beams and floors by not less than two rivets.

2. Beams under windlasses, deck houses, and at ends of large deck openings are to be efficiently pillared or increased in size.

3. Where pillars are dispensed with in way of saloons or elsewhere, the beams are to be efficiently supported by girders, or otherwise strengthened as compensation.

Section 32.

KEEL PLATES.

1. In yachts of 12 metres rating and above, flat keel plates, of the scantlings required by the Tables, are to be fitted extending all fore and aft, and riveted to the frames or to angle lugs at bottom of floors. At the ends of the yacht the edges of the keel plate are to be flanged or angles fitted to take the fastenings of the outside planking. The keel plates may be reduced before and abaft the lead ballast keel as provided for in the Tables.

2. In yachts of 12 metres rating and above, having ballast keels, vertical side keel plates of the scantlings required by the Tables are to be fitted all fore and aft, riveted to the frames and connected to the flat keel plate by angles of the size required by the Tables for the upper deck stringer angles. These plates and angles may be reduced before and abaft the three-quarters length (water line) amidships, where provided for in the Tables.

Section 33.

BILGE STRINGERS.

1. In yachts of 10, 12, 14 and 14½ metres rating, a bilge stringer is to be fitted on each side formed of a single angle of the size required by the Tables.

2. The bilge stringers are to extend to the ends of the yacht, and are to be attached to breasthooks or brackets if practicable; they may be reduced in thickness beyond three-quarters the yacht's length (water line) amidships, where provided for in the Tables.

3. Short double reversed angles are to be fitted on all frames in way of the bilge stringers.

Section 34.

SHEERSTRAKE AND STRINGERS ON BEAMS.

1. Upper deck sheerstrake and stringer plates are to be fitted in all yachts and are not to be less than required by the Tables. Beyond three-quarters the yacht's length (water line) amidships, the dimensions may be gradually reduced to those required for the ends.

2. The upper deck sheerstrake is to be increased to at least one and a half times the Table depth in way of the chain plates.

3. The upper deck stringer plates are to be attached to the sheerstrake by angles of the size required by the Tables; beyond the three-quarters length amidships the angles may be reduced where provided for in the Tables.

4. The butts of the upper deck stringer plates and angles are to be shifted not less than two frame spaces clear of one another and of the butts of the sheerstrake.

TIE PLATES, BILGE PLATES, AND MAST DECK PLATES.

Section 35.

1. Bilge plates are to be fitted in all yachts and are to extend from the stem to the sternpost. In yachts of 12 metres rating and above diagonal tie plates are to be fitted on the outside of the frames in number and size as required by the Tables; they are to be connected to the sheerstrake and bilge plates by a double riveted attachment.

2. Deck tie plates of the size required by the Tables are to be fitted on each side of deck openings, extending all fore and aft, and diagonal tie plates in number and size as required by the Tables are to be fitted on the upper deck beams. In yawl rigged yachts an additional pair of diagonal tie plates is to be fitted in way of jigger mast. Mast deck plates are to be fitted of the thickness of the stringer plates, and the breadth of the plate outside the mast hole is not to be less than the diameter of the hole.

3. Deck tie plates in way of large deck openings are to be increased in breadth.

Section 36.

RIVETS AND RIVETING.

1. Rivets, whether of iron or steel, are to be of the best quality, and the Surveyors are to test samples of the rivets from time to time in the shipyards where they are being used. The rivets are to be in diameter as required by the Tables, and are to be increased in size under their heads to fill the rivet holes. The work is to be carefully closed with nut and screw bolts before the riveting is commenced. Unfair holes are to be properly rimed out and re-countersunk, if necessary, and not to be cut with a chisel or unduly drifted. The rivets are to be properly staved up so as to completely fill the holes, their heads are to be "laid up" close, and the points are to be left full.

2. The rivet holes are to be properly formed, and the "burr" caused by punching must be removed before the parts are fitted together for riveting.

3. The rivet holes are to be regularly and equally spaced and carefully punched from the faying surfaces, opposite each other in the adjoining parts; also the countersinking is to extend through the whole thickness of the plate or angle bar.

4. The rivets are not to be nearer the butts or edges of the plating, edges of butt straps, butt laps, or of any angle bar, than a space equal to their own diameter.

5. In the butts of plating a space equal to twice the diameter of the rivet to be between each row. All double riveting is to be chain riveting.

6. The riveting is to be in accordance with the requirements of the Tables. In all cases the thicker of the plates or angles is to regulate the size of the rivets.

7. Stringer angles are to have angle straps fitted at the butts at least treble riveted, and the butts are to be shifted clear of the butts of adjacent parts.

8. The butts of keel plates, tie plates, bilge plates, and vertical side keel plates are to be double riveted throughout, and the butts of sheerstrake and upper deck stringer plates are to be double riveted for three quarters of the length (water line) amidships and single at ends.

Section 37.**OUTSIDE PLANKING AND DECK PLANKING.**

1. No butts of outside planking are to be nearer than 5 feet (1.5 m) to each other unless there be a strake wrought between them, and then a distance of 4 feet (1.25 m) will be allowed; no butts to be in the same frame space unless there be three strakes between. A departure from this rule will be allowed at the ends of the yacht provided the arrangement be of a satisfactory character. The butts of the garboard strakes are to be kept clear of each other and of the keel scarphs.

2. Where the outside planking is fitted of increased thickness the spacing of the frames may be increased. See footnote to Tables 9 and 25.

3. Where the deck is covered with canvas and painted, the thickness of the deck planking may be $\frac{1}{8}$ of an inch (3 mm) less than given in the Table.

4. The deck planks are to be efficiently fastened to each beam and also to the stringer and tie plates. The caulking of the outside and deck planking is to be well executed, and is to be carefully tested by the Surveyor. Pine decks are to be laid with the grain vertical.

Section 38.**FASTENINGS.**

1. The bolts are to be of the diameters given in the Tables; they are to be of such a form under their heads as to prevent them from turning, and their nuts are to be of the same metal as the bolts. The nuts are to fit properly to the frames and plating, and means should be taken to prevent the nuts slackening back. When the bolts are of exceptional length the diameter is to be increased.

2. All iron fastenings are to be galvanized. When yachts are sheathed with copper or yellow metal no iron fastenings are to be used in the outside planking, keel, deadwood, stem, and sternpost.

3. The wood keel is to be attached to the keel plate by at least one bolt in each frame space, but where the siding of the keel is large, additional bolts must be fitted.

4. The spacing of the bolts in the stem and sternposts is not to exceed that of the bolts in the keel.

5. The number of bolts attaching the outside planking to the frames is to be in accordance with the requirements of the Tables. The bolts in frames and outside planking of yachts of 14 and 14 $\frac{1}{2}$ metres rating are to be increased $\frac{1}{8}$ of an inch (2 mm) in diameter beyond the size given in the Tables, where the planks are 8 inches (200 mm) or more in width.

6. The number of bolts at the butts of outside planks is to be at least as required at the frames for the same widths of plank, but there are not to be less than two bolts in each plank at the butts.

7. The breadth of the butt plates of the outside planks is not to be less than the width of the planks; the butt plates are to be riveted to the frames, or they may be fitted between the frames if made of sufficient width to overlap and be efficiently bolted to each adjoining strake of planking.

8. The deck planks are to be efficiently fastened to each beam, and also to the stringer and tie plates. The screw fastenings when of $\frac{3}{16}$ of an inch in diameter (No. 22) (9mm) or above are to have square or hexagonal heads.

9. Three additional years will be allowed to the period prescribed, if the whole of the fastenings including those in the upper deck, be of copper or yellow metal.

10. "Duralumin," or similar light alloys, are not to be used for fastenings or structural items.

BALLAST.**Section 39.**

1. In yachts of 12 metres rating and above, web frames are to be fitted in way of the masts and rigging and lead ballast keel, in number and size as required by the Tables.

2. Where the form of the yacht above the keel is very fine or narrow, the floor plates are to be increased in depth, or other means provided to tie the two sides of the yacht together at this part.

3. Where it is intended to carry ballast between the floors, the frames are to be doubled with angles the same size as the frame angles, and extending above the height of the ballast; the weight of the ballast is to be borne by the frames.

4. Double reversed frames are to be fitted where ballast is carried on the upper edge of the floors.

5. Where ballast in any considerable quantity is fitted, the yacht at this part is to be additionally fastened.

6. Special attention is to be paid to the fitting and fastening of lead keels. All bolts used for fastening lead ballast keels are to be of copper or yellow metal. The diameter of the bolts is not to be less than required by the Tables. It is recommended that the keel bolts be fitted alternately on opposite sides of the middle line, and wing or side bolts are to be fitted when necessary on account of the weight or form of the lead keel.

CEMENT.**Section 40.**

It is recommended that the keel plate and lower part of frames be efficiently covered with Portland cement or a suitable composition.

CEILING AND LINING.**Section 41.**

Where ceiling is fitted in yachts, it is to be secured in such a manner as to be easily removed for the purpose of Survey, or for cleaning and painting. It is recommended that the cabin fittings and lining against the side of the yacht be fitted so as to be easily removed when required.

HATCHWAYS AND MAST PARTNERS.**Section 42.**

1. All hatchways are to be properly framed, to take half beams where required, and the mast-holes to have partners at the wedging deck, the plating of which is not to be less in thickness than is required for stringer plates, and the breadth of the plate outside the mast-hole is not to be less than the diameter of the hole. The plate to be well riveted to the beams, and an angle bar or bulb angle is to be properly fitted and riveted to the plate round the mast-hole. Plates are to be fitted and riveted to the beams, where necessary, in order that the ends of the deck planks may be properly fastened.

2. Deck tie plates of the dimensions required by the Tables are to be fitted on each side of the deck openings, extending all fore and aft. They are to be riveted to the beams and connected to the fore and aft carlings or coaming plates by angles of the size required for upper deck stringer angles at ends of yachts.

Section 43.

SKYLIGHTS.

1. Skylights are in all cases to be substantially constructed, and the coamings to which they are attached are to be efficiently fastened to the beams.

2. The skylights are to be securely attached to the coamings, and the glass in them is to be efficiently protected by metal bars or gratings; in addition, further means are to be provided to prevent them from being damaged during bad weather. Any translucent material of equivalent weight may be substituted for glass in these skylights and further, if reinforced or armoured glass of suitable thickness and weight is used, the metal bars or gratings referred to above may be dispensed with.

Section 44.

PORTS AND SCUPPERS.

A sufficient number of ports and scuppers is to be fitted to relieve the deck of water, unless a space is left between the bulwarks and the plank sheer.

Section 45.

PUMPS.

Efficient pumps with lead tail pipe and rose at end are to be fitted in all yachts.

Section 46.

EQUIPMENT

1. All yachts are required to have their masts, spars and rigging in good order, and sails in sufficient number and in good condition.

2. There being much difference of practice in regard to the masting and rigging of yachts engaged in racing, rules for the same have not been formulated. These fittings are left to the judgment and experience of owners and builders.

3. Every yacht is to be provided, according to her rating, with anchors, cables, &c., in number and length as set forth in the Tables. The anchors are to be of approved design.

4. All Anchors exceeding 168 lbs. (76 kg.) in weight, including stock, and all Chain Cables for yachts of 12 metres rating and above are to be tested at a recognised Proving House, according to the requirements of the Act of Parliament and of the Society's Rules. Certificates of Test are to be produced before the yacht is classed.

By order of the Committee,

ANDREW SCOTT,
Secretary.

LONDON—9th December, 1920.

Reprinted with revisions 1949.

WOOD YACHTS.

TABLE 1

TABLE OF MAXIMUM NUMBER OF YEARS ASSIGNED TO THE DIFFERENT DESCRIPTIONS OF TIMBER.*

TIMBER.	Keel.	Stem, Sternpost, and Deadwood.	Frame Timbers and Floors.	OUTSIDE PLANKING.		Planksheer, Shelves, Bilge Stringers, and Beams.	Main piece of Rudder.
				From Top of Keel to Two Feet below Water-line. ††	From Two Feet below Water-line to Planksheer. ††		
East India Teak	16	16	16	16	16	16	
English, African, French, Adriatic, Italian, Spanish, Portuguese, and Northern Continental Oaks, and Acacia	12	12	12	12	12	12	
Mahogany of hard texture† and of not less than 35 lbs. weight per cubic foot when well seasoned, and American White Oak ...	10	9	9	12	10	10	
Pitch Pine, Yellow Pine, Oregon Pine, Cowdrie or Kaurie Pine, Mahogany of 30 or under 35 lbs. weight per cubic foot, and Pencil Cedar	—	—	—	12	10	—	
Larch	—	—	—	12	9	—	
Dantzic, Memel, Riga, and American Red Pine ...	—	—	—	9	9	—	
Spruce Fir, Swedish and Norway Red Pine ...	—	—	—	8	8	—	
White Pine, Red Cedar, and Philippine Island Cedar	—	—	—	6	6	—	
American Rock Elm	14	—	12 For bent frames only.	12	—	—	
English Elm	12	—	—	—	—	—	
Ash	—	—	12 For bent frames only.	—	—	—	

* Other materials than those provided for in the above Table will be admitted subject to the approval of the Committee.

† Mahogany of hard texture, if metal fastened, will be assigned a term of 12 years for topside planking.

†† In the 6 metres rating class the boundary may be 1'0 foot below water line, and in the 8 and 10 metres rating classes 1'5 feet below water line.

TABLE OF MAXIMUM NUMBER OF YEARS ASSIGNED TO THE DIFFERENT DESCRIPTIONS OF TIMBER*

Table with multiple columns and rows, containing data for timber descriptions and their assigned maximum years. The text is mirrored and difficult to read due to bleed-through from the reverse side.

TABLE OF MINIMUM DIMENSIONS OF KEEL, STEM, STERN POST, AND RUDDER.

INTERNATIONAL RATING CLASSES.	KEEL.			Siding and Moulding of Stem at Head and Sternpost, Siding of after Deadwood, and Diameter of Rudder Head. *	Siding and Moulding of Stem at Heel. **	Diameter of Rudder Head when of Iron or Steel. *	Diameter of Rudder Pintles.
	Moulding.	Minimum Siding Amidships.	Length of Scarph.				
6 Metres or 19.7 Feet.	inches. 3½	inches. 7	inches. —	inches. 3¼	inches. 3½	inches. 1 3/16	inches. —
8 Metres or 26.2 Feet.	4½	9	—	3¾	4½	1 5/16	—
10 Metres or 32.8 Feet.	5½	11	—	4¼	5½	1½	—
12 Metres or 39.4 Feet.	6½	13	42	5	6½	1¾	1¼
14 Metres or 45.9 Feet.	7½	15	47	5¾	7½	2	1¾

The Table scantlings for wood are to be based on the standard weights given on page 17, Section 4, Clause 5.

* Where it is proposed to fit the rudder head of yellow metal, either of solid or tubular section, the scantlings of the same are to be submitted for approval, and where a yacht is not sheathed with copper or yellow metal an iron or steel rudder may be fitted. In such cases the siding of the sternpost may be tapered to suit the diameter of the rudder stock, provided the siding at after edge of rabbet be not less than required by the Table.

** The stem is to have a uniform taper from head to heel, and the mast step should be extended to strengthen the fore part of the yacht.

INTERNATIONAL RATING CLASSES.	BENT WOOD FRAMES ONLY.			"GROWN" FRAME TIMBERS OR STEEL			
	Siding.	Moulding.	Maximum Spacing. Centre to Centre.	"Grown" Frame Timbers.			Steel Frames and Reverse Frames in place of "Grown" Frame Timbers. Frames.
				Siding.	Moulding.		
inches.	inches.	inches.	inches.	At Heel.	At Head.	inches.	
6 Metres or 19.7 Feet.	1 1/8	1 3/8	6	1 1/8	1 1/2	1 1/8	1 3/8 x 1 1/4 x .10 .86 lbs.
8 Metres or 26.2 Feet.	1 5/8	1 1/4	7	1 5/8	2 1/4	1 5/8	1 5/8 x 1 1/2 x .12 1.23 lbs.
10 Metres or 32.8 Feet.	2 1/8	1 5/8	8	2 1/4	3	2 1/4	1 3/4 x 1 3/4 x .15 1.71 lbs.
12 Metres or 39.4 Feet.	—	—	—	2 3/4	3 5/8	2 3/4	2 x 2 x .18 2.34 lbs.
14 Metres or 45.9 Feet.	—	—	—	3 3/8	4 1/4	3 3/8	2 1/4 x 2 1/4 x .20 2.92 lbs.

The Table scantlings for wood are to be based on the standard weights given on page 17, Section 4, clause 5.

The weight of each angle section is given in the Tables in pounds per linear foot. Where it is proposed to make deviations from the sizes of the angles on account of the difference in the sections in the various countries, the weight per linear foot must remain the same.

Where it may be desired to make slight deviations from the requirements of the Tables, sketches showing details of the proposed equivalent arrangements are to be submitted for approval.

The scantlings of the "grown" frame timbers and of the bent wood frames may be modified from the sizes required by the Rules, provided the sectional area is not reduced and that the mean moulding of the frames is in no case less than two-thirds the actual siding.

Where a smaller spacing than that given in the Table is approved, the sectional area of the frames, floors, and beams may be correspondingly reduced.

FRAMES IN COMBINATION WITH BENT WOOD FRAMES.					INTERNATIONAL RATING CLASSES.
Steel Frames and Reverse Frames in place of "Grown" Frame Timbers. Reverse Frames.	Maximum Spacing of "Grown" Frame Timbers or Steel Frames. Centre to Centre.		Bent Wood Frames.		
	With One Bent Wood Frame between.	With Two Bent Wood Frames between.	Siding.	Moulding.	
inches.	inches.	inches.	inches.	inches.	
1 x 1 x .12 .77 lbs.	16	20	1 x 1 3/8		6 Metres or 19.7 Feet.
1 1/4 x 1 1/4 x .12 .97 lbs.	18	22	1 3/8 x 1		8 Metres or 26.2 Feet.
1 1/2 x 1 1/2 x .14 1.36 lbs.	20 1/2	24 1/2	1 5/8 x 1 1/4		10 Metres or 32.8 Feet.
1 3/4 x 1 3/4 x .14 1.60 lbs.	23	27	1 7/8 x 1 1/2		12 Metres or 39.4 Feet.
1 3/4 x 1 3/4 x .16 1.82 lbs.	26	30	2 1/8 x 1 3/4		14 Metres or 45.9 Feet.

WHERE THE OUTSIDE PLANKING IS FITTED OF THE FOLLOWING INCREASED THICKNESS, THE SPACING OF THE FRAMES MAY BE INCREASED AS FOLLOWS:—

INTERNATIONAL RATING CLASSES.	THICKNESS OF OUTSIDE PLANKING.	SPACING OF FRAMES.		
		Bent Wood Frames only.	"Grown" Frame Timbers.	
			With One Bent Wood Frame between.	With Two Bent Wood Frames between.
inches.	inches.	inches.	inches.	
6 Metres	.66	7	19 1/2	24
8 Metres	.92	8	21 1/2	26
10 Metres	1.22	9	23 1/2	28
12 Metres	1.46	—	26	30 1/2
14 Metres	1.54	—	28 1/2	33

TABLE OF MINIMUM DIMENSIONS OF FLOORS,

WEB FRAMES, SHELVES, AND OUTSIDE PLANKING.

INTERNATIONAL RATING CLASSES.	FLOORS.								INTERNATIONAL RATING CLASSES.			
	WOOD FLOORS ON "GROWN" FRAME TIMBERS.†		STEEL PLATE FLOORS ON STEEL FRAMES AND ON "GROWN" FRAME TIMBERS.†††	WROUGHT IRON OR ANGLE STEEL FLOORS ON "GROWN" FRAME TIMBERS.††						Sectional Area of Upper Deck Shelf.***	Sectional Area of Bilge Stringer.	Thickness of Outside Planking.
	Moulding.	Siding.		Length of Arms.*		Wrought Iron.		Angle Steel.				
				For Length of Water Line.	At Ends.	At Throat.	At Point.					
inches.	inches.	inches.	inches.	inches.	inches.	inches.	inches.	inches.	sq. ins.				sq. ins.	inches.
6 Metres or 19.7 Feet.	3	1 1/8	7 x 10	16	11	1 1/8 x 3/8	7/8 x 1/4	1 3/4 x 1 1/4 x .13 1.27 lbs.	5	—	.62	6 Metres or 19.7 Feet.
8 Metres or 26.2 Feet.	4	1 5/8	9 x 12	19	13	1 5/8 x 5/8	1 3/8 x 1/4	2 1/4 x 1 3/4 x .18 2.34 lbs.	9	8	.87	8 Metres or 26.2 Feet.
10 Metres or 32.8 Feet.	5	2 1/8	11 x 14	22	16	2 x 7/8	1 3/4 x 3/8	2 1/2 x 2 1/4 x .22 3.39 lbs.	13	10	1.14	10 Metres or 32.8 Feet.
12 Metres or 39.4 Feet.	6	2 3/4	12 x 16 to 14	25	19	2 3/8 x 1	2 x 1/2	3 x 2 1/4 x .24 4.09 lbs.	17	13	1.38	12 Metres or 39.4 Feet.
14 Metres or 45.9 Feet.	7	3 3/8	13 x 18 to 16	28	22	2 3/4 x 1 1/8	2 1/4 x 5/8	3 1/4 x 2 1/2 x .26 4.85 lbs.	22	16	1.48	14 Metres or 45.9 Feet.

INTERNATIONAL RATING CLASSES.	FLOORS.								INTERNATIONAL RATING CLASSES.		
	WROUGHT IRON OR ANGLE STEEL FLOORS ON BENT WOOD FRAMES.†† †*			WEB FRAMES.**			Sectional Area of Upper Deck Shelf.***	Sectional Area of Bilge Stringer.		Thickness of Outside Planking.	
	Length of Arms.*	Wrought Iron.		Angle Steel.	Number on each side.	Breadth and Thickness of Plate.					Size of Face Angle.
		At Throat.	At Point.								
inches.	inches.	inches.	inches.	inches.	inches.	inches.	sq. ins.	sq. ins.	inches.		
6 Metres or 19.7 Feet.	11	3/4 x 5/16	5/8 x 1/4	1 x 1 x .12 .77 lbs.	—	—	—	5	—	.62	6 Metres or 19.7 Feet.
8 Metres or 26.2 Feet.	13	7/8 x 7/16	3/4 x 1/4	1 1/4 x 1 1/4 x .12 .97 lbs.	—	—	—	9	8	.87	8 Metres or 26.2 Feet.
10 Metres or 32.8 Feet.	16	1 1/8 x 9/16	7/8 x 1/4	1 1/2 x 1 1/2 x .14 1.36 lbs.	—	—	—	13	10	1.14	10 Metres or 32.8 Feet.
12 Metres or 39.4 Feet.	19	1 1/4 x 5/8	1 x 1/4	1 3/4 x 1 3/4 x .16 1.82 lbs.	3	6 x 14	1 3/4 x 1 3/4 x .12 1.38 lbs.	17	13	1.38	12 Metres or 39.4 Feet.
14 Metres or 45.9 Feet.	22	1 3/8 x 11/16	1 1/8 x 1/4	2 x 2 x .18 2.34 lbs.	4	7 x 14	1 3/4 x 1 3/4 x .14 1.60 lbs.	22	16	1.48	14 Metres or 45.9 Feet.

The Table Scantlings for wood are to be based on the standard weights given on page 17, Section 4, Clause 5.

The weight of each angle section is given in the Tables in pounds per linear foot. Where it is proposed to make deviations from the sizes of the angles on account of the difference in the sections in the various countries, the weight per linear foot must remain the same.

† A reduction in moulding could be allowed for wood floors on "grown" frame timbers abaft the stern post, but the moulding of these floors should in no case be less than the moulding of the "grown" frame timbers. Where bolts attaching the lead keel pass through the wood floors, the siding of the floors is to be not less than four times the diameter of the bolt for the breadth of the keel, and from there to be tapered to the rule siding at the ends of the floor.

†† Where bolts attaching the lead keel pass through wrought iron floors, these floors in way of the bolts should not be less than four times the diameter of the bolt.

Where it may be desired to make slight deviations from the requirements of the Tables, sketches showing details of the proposed equivalent arrangements are to be submitted for approval.

Where a smaller spacing than that given in the Table is approved, the sectional area of the frames, floors, and beams may be correspondingly reduced.

A floor is to be fitted on every grown frame throughout the yacht.

Where yachts are constructed with "grown" and intermediate bent wood frames, a floor is to be fitted to every bent wood frame for the length of the waterline only.

Where yachts are constructed with bent wood frames only, a floor is to be fitted to every frame for the length of the waterline and to every third frame at ends.

In yachts of 6 metres rating having bent wood frames only, the floors may be fitted to alternate frames for the length of the waterline, and to every third frame at ends.

†* In yachts of 6 metres rating an oak floor may be fitted at each bolt attaching lead keel, in place of the iron or steel floors required by the Table, see also Section 9, paragraph 13.

††† Where steel plate floors are fitted on "grown" frame timbers, the reversed angle at top of floor is to extend up the frame to the same height as required for arms of wrought iron floors.

* The length of arms of floors at ends of yacht need not exceed one-third the length of the frame.

** For reversed frames in lieu of web frames see Section 9, paragraph 8.

*** In place of fitting a shelf and clamp, an alternative arrangement could be adopted consisting of plate knees at the ends of each beam, with a steel sheerstrake of the same scantlings as required for composite yachts fitted between the framing and the outside planking.

TABLE OF MINIMUM DIMENSIONS OF BEAMS,

INTERNATIONAL RATING CLASSES.	BEAMS.								
	Spacing of Beams. — Centre to Centre.	THROUGH BEAMS FOR THREE-QUARTERS LENGTH (WATER LINE) AMIDSHIPS.		Through Beams beyond the three- quarters length (water line) amid- ships. Half Beams throughout.			HATCH END, AND M		
		At Middle of Beam.		At Middle of Beam.		At Middle of Beam.		At Middle of Beam.	
		Moulding.	Siding.	Moulding.	Siding.	Moulding.	Siding.	Moulding.	Siding.
inches.	inches.	inches.	inches.	inches.	inches.	inches.	inches.	inches.	
6 Metres or 19.7 Feet.	10½	1¾ × 1⅛	1⅛ × 1⅛	1⅛ × 7⁄8	7⁄8 × 7⁄8	2¼ × 1½			
8 Metres or 26.2 Feet.	12	2½ × 1⅜	1⅜ × 1⅜	1¼ × 1⅛	1⅛ × 1⅛	3 × 1⅞			
10 Metres or 32.8 Feet.	14½	2⅞ × 1⅞	1⅞ × 1⅞	2 × 1½	1½ × 1½	3½ × 2⅜			
12 Metres or 39.4 Feet.	17	3⅜ × 2¼	2¼ × 2¼	2½ × 1⅞	1⅞ × 1⅞	4 × 2¾			
14 Metres or 45.9 Feet.	19	3½ × 2½	2½ × 2½	2⅝ × 2	2 × 2	4½ × 3⅛			

The Table scantlings for wood are to be based on the standard weights given on page 17, Section 4, Clause 5.

Where it may be desired to make slight deviations from the requirements of the Tables, sketches showing details of the proposed equivalent arrangements are to be submitted for approval.

Where a smaller spacing than that given in the Table is approved, the sectional area of the frames, floors, and beams may be correspondingly reduced.

BEAM KNEES, AND DECK PLANKING.

INTERNATIONAL RATING CLASSES.	BEAMS.						Thickness of Upper Deck Deck Planking. ***	INTERNATIONAL RATING CLASSES.	
	HATCH END, AND MAST BEAMS.	Number on each side.	WROUGHT IRON HANGING KNEES TO DECK BEAMS. **			At Throat.			At Point.
			Length of Arms.*		At Ends.				
			For Length of Water Line.	At Ends.					
At End of Beam.	inches.	inches.	inches.	inches.	inches.	inches.			
6 Metres or 19.7 Feet.	1½ × 1½	3	13	11	7⁄8 × 5⁄16	¾ × 3⁄16	.62	6 Metres or 19.7 Feet.	
8 Metres or 26.2 Feet.	1⅞ × 1⅞	4	16	13	1 × ½	7⁄8 × ¼	.87	8 Metres or 26.2 Feet.	
10 Metres or 32.8 Feet.	2⅜ × 2⅜	5	19	15	1⅜ × ¾	1¼ × ¼	1.14	10 Metres or 32.8 Feet.	
12 Metres or 39.4 Feet.	2¾ × 2¾	6	22	18	1¾ × 7⁄8	1½ × 5⁄16	1.38	12 Metres or 39.4 Feet.	
14 Metres or 45.9 Feet.	3⅛ × 3⅛	7	25	21	2 × 1	1¾ × 5⁄16	1.56	14 Metres or 45.9 Feet.	

In place of wrought iron hanging knees required by the Table, steel angles of equal weight may be fitted.

*The length of arms of hanging knees at ends of yacht need not exceed one-third the length of the frame or beam.

**In yachts of 6 metres rating, oak knees may be fitted in lieu of the iron knees required by the Table, see Section 10, paragraph 4.

***Upper deck planking may be reduced one-eighth inch from Table thickness when covered with canvas and painted.

TABLE OF MINIMUM DIAMETERS OF FASTENINGS.

INTERNATIONAL RATING CLASSES.	DIAMETER OF FASTENINGS.						
	Bolts in Keel, Dead-wood, Stem and Sternpost, Throats of Floors on "Grown" Frames, and Breasthooks. **	Bolts in Scarphs of Keel, Arms of Wrought Iron Floors on "Grown" Frames, and of Breasthooks, and Heel of "Grown" Frame Timbers to Deadwood.	Bolts in Deck Shelves, Arms of Wrought Iron Floors on Bent Wood Frames, Bilge Stringers, Beam Knees, and Heel of Bent Wood Frames to Deadwood. *	FRAME TIMBERS AND OUTSIDE PLANKING.†			
				In "Grown" Frame Timbers.		In Bent Wood Frames.	
				Bolts.	Screws.	Bolts.	Screws.
6 Metres or 19.7 Feet.	inches. $\frac{6}{16}$	inches. $\frac{9}{32}$	inches. $\frac{3}{16}$	inches. $\frac{3}{16}$	inches. .20 (No. 11)	inches. .11 (12 B.W.G.)	inches. .15 (No. 7)
8 Metres or 26.2 Feet.	$\frac{8}{16}$	$\frac{11}{32}$	$\frac{4}{16}$	$\frac{4}{16}$	.28 (No. 16)	.15 (9 B.W.G.)	.18 (No. 9)
10 Metres or 32.8 Feet.	$\frac{10}{16}$	$\frac{13}{32}$	$\frac{9}{32}$	$\frac{9}{32}$	.36 (No. 22)	.18 (7 B.W.G.)	.23 (No. 13)
12 Metres or 39.4 Feet.	$\frac{11}{16}$	$\frac{15}{32}$	$\frac{11}{32}$	$\frac{9}{32}$	.39 (No. 24)	.20 (6 B.W.G.)	.26 (No. 15)
14 Metres or 45.9 Feet.	$\frac{12}{16}$	$\frac{8}{16}$	$\frac{6}{16}$	$\frac{5}{16}$	.42 (No. 26)	.22 (5 B.W.G.)	.28 (No. 16)

* The bolts in the throats of Floors on Bent Wood Frames are to be $\frac{1}{16}$ of an inch larger in diameter than those in the arms.

** The sizes of wood keel bolts are to be increased throughout by one-eighth of an inch (4 mm.) above the sizes given in the Tables.

† Short dump or nail fastenings are to be of the same diameter as required by the Table for bolt fastenings; where these short fastenings are of square section, they are to be of not less sectional area than required when round.

The points of the plank copper fastenings may be turned over instead of being clenched on Rooves, on the Bent Wood Frames, in Yachts of 10 Metres Rating and under.

TABLE OF MINIMUM NUMBER OF FASTENINGS ATTACHING OUTSIDE PLANKING TO FRAMES.

WIDTH OF PLANKS.	ACTUAL THICKNESS OF PLANKS IN INCHES.		
	.5 and under 1.0	1.0 and under 1.5	1.5 and under 2.0
inches. 3 and under 4	Double	Double and Single	Double and Single
4 and under 5	Double	Double and Single	Double and Single
5 and under 6	Double	Double	Double and Single
6 and under 7	Treble	Double	Double
7 and under 8	Treble	Treble	Double
8 and under 10	Treble	Treble	Treble

The number of fastenings at the butts of outside planks is to be at least as required at the frame timbers for the same width of plank, but there is not to be less than two through bolt fastenings in each plank at the butts.

TABLE OF MINIMUM DIAMETERS OF COPPER OR YELLOW METAL BOLTS ATTACHING LEAD BALLAST KEELS.*

Product of the Sectional area of lead keel in square feet, and the fore and aft spacing of bolts in feet.	DIAMETER OF BOLTS WHERE NO WING OR SIDE BOLTS ARE FITTED.†						
	PROPORTION OF DEPTH OF LEAD KEEL TO BREADTH AT THE UPPER EDGE.						
	Under 1·0	1·0 and under 1·5	1·5 and under 2·0	2·0 and under 2·5	2·5 and under 3·0	3·0 and under 3·5	3·5 and under 4·0
	inches. 9 16	inches. 9 16	inches. 9 16	inches. 5 8	inches. 3 4	inches. 7 8	inches. 1
Under ·5	9 16	9 16	9 16	5 8	3 4	7 8	1
·5 and under ·8	9 16	9 16	5 8	3 4	7 8	1	1 1/8
·8 and under 1·2	9 16	5 8	3 4	7 8	1	1 1/8	1 1/4
1·2 and under 1·7	5 8	3 4	7 8	1	1 1/8	1 1/4	1 3/8
1·7 and under 2·3	3 4	7 8	1	1 1/8	1 1/4	1 3/8	1 1/2
2·3 and under 3·0	7 8	1	1 1/8	1 1/4	1 3/8	1 1/2	1 5/8
3·0 and under 3·8	1	1 1/8	1 1/4	1 3/8	1 1/2	1 5/8	1 3/4
3·8 and under 4·7	1 1/8	1 1/4	1 3/8	1 1/2	1 5/8	1 3/4	1 7/8
4·7 and under 5·7	1 1/4	1 3/8	1 1/2	1 5/8	1 3/4	1 7/8	2
5·7 and under 6·8	1 3/8	1 1/2	1 5/8	1 3/4	1 7/8	2	2 1/8
6·8 and under 8·0	1 1/2	1 5/8	1 3/4	1 7/8	2	2 1/8	2 1/4

* The diameters of the bolts attaching lead keels are to be at least two sixteenths of an inch larger than required by the Table for stem and sternpost bolts. Bolts fitted at a larger angle than 30° to the vertical are to be excluded in measuring the fore and aft spacing and may be of a smaller diameter than the ordinary bolts.

† Where wing or side bolts are fitted the keel bolts may be of reduced size, but are in no case to be less in diameter than required by column one.