METRIC SYSTEM.

WOOD YACHTS.

TABLE 17

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.		Plankshеer, Shelves, Bilge Stringers, and Beams.	Main piece of Rudder.
				From Top of Keel to ·60 of a Metre below Water-line. ††	From ·60 of a Metre below Water-line to Plankshеer ††		
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 560 kilos. per cubic metre when well seasoned, and American White Oak	10	9	9	12	10		10
Pitch Pine, Yellow Pine, Oregon Pine, Cowdie or Kauri Pine, Mahogany of 480 and under 560 kilos. per cubic metre 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 ·30 of a metre below water line, and in the 8 and 10 metres rating classes ·45 of a metre below water line.

TABLE 18

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.				
	mm	mm	mm	mm	mm	mm	mm
6 Metres	90	180	—	82	90	30	—
8 Metres	115	230	—	95	115	33	—
10 Metres	140	280	—	110	140	38	—
12 Metres	165	330	1070	125	165	44	32
14 Metres	190	380	1190	145	190	50	35

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.

WOOD YACHTS.

METRIC SYSTEM.

TABLE OF MINIMUM DIMENSIONS OF FRAMES.

TABLE 19

INTERNATIONAL RATING CLASSES.	BENT WOOD FRAMES ONLY.			"GROWN" FRAME TIMBERS						INTERNATIONAL RATING CLASSES.
	Siding.	Moulding.	Maximum Spacing. Centre to Centre.	"Grown" Frame Timbers.			Steel Frames and Reverse Frames in place of "Grown" Frame Timbers.		Maximum Spacing of "Grown" Frame Timbers or Steel Frames. Centre to Centre.		Bent Wood Frames.		
				Siding.	Moulding.		FRAMES.	REVERSE FRAMES.	With One Bent Wood Frame between.	With Two Bent Wood Frames between.	Siding.	Moulding.	
					At Heel.	At Head.							
	mm	mm	mm	mm	mm	mm	mm mm kg/m	mm mm kg/m	mm	mm	mm	mm	
6 Metres	29 × 21		150	29	38	29	35 × 35 × 1·28	25 × 25 × 1·15	405	510	25 × 21		6 Metres
8 Metres	41 × 32		175	41	57	41	45 × 40 × 1·83	30 × 30 × 1·44	455	560	35 × 25		8 Metres
10 Metres	54 × 41		200	57	76	57	45 × 45 × 2·54	40 × 40 × 2·02	520	620	41 × 32		10 Metres
12 Metres	—		—	70	92	70	50 × 50 × 3·48	45 × 45 × 2·38	585	685	48 × 38		12 Metres
14 Metres	—		—	86	108	86	55 × 55 × 4·34	45 × 45 × 2·71	660	760	54 × 44		14 Metres

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 kilogrammes per metre. 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 metre 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 area of the frames, floors, and beams may be correspondingly reduced.

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.
	mm	mm	mm	mm
6 Metres	17·5	175	495	610
8 Metres	23·5	200	545	660
10 Metres	31·5	230	595	710
12 Metres	37·5	—	660	775
14 Metres	39·5	—	725	840

WOOD YACHTS.

METRIC SYSTEM.

TABLE OF MINIMUM DIMENSIONS OF FLOORS.

INTERNATIONAL RATING CLASSES.	FLOORS.							
	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.††				
				Length of Arms.*		Wrought Iron.		Angle Steel.
	Moulding.	Siding.		For Length of Water Line.	At Ends.	At Throat.	At Point.	
	mm	mm	mm	mm	mm	mm	mm	mm mm kg/m
6 Metres	75 × 29		175 × 2·5	400	280	29 × 9·5	22 × 6	50 × 30 × 1·89
8 Metres	100 × 41		230 × 3·0	480	330	41 × 16	35 × 6	60 × 40 × 3·48
10 Metres	125 × 54		280 × 3·5	560	400	51 × 22	44 × 9·5	65 × 55 × 5·04
12 Metres	150 × 70		305 × 4·0 to 3·5	630	480	60 × 25	51 × 12	75 × 55 × 6·08
14 Metres	175 × 86		330 × 4·5 to 4·0	710	560	70 × 29	57 × 16	80 × 65 × 7·22

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 kilogrammes per metre. 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 metre 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.

TABLE 20

WEB FRAMES, SHELVES, AND OUTSIDE PLANKING.

FLOORS				WEB FRAMES **			Sectional Area of Upper Deck Shelf. ***	Sectional Area of Bilge Stringer.	Thickness of Outside Planking.	INTERNATIONAL RATING CLASSES.
WROUGHT IRON OR ANGLE STEEL FLOORS ON BENT WOOD FRAMES.†† †*										
Length of Arms. *	Wrought Iron.		Angle Steel.	Number on each side.	Breadth and Thickness of Plate.	Size of Face Angle.				
	At Throat.	At Point.								
mm	mm	mm	mm mm kg/m		mm mm	mm mm kg/m	sq cm	sq cm	mm	
280	19 × 8	16 × 6	25 × 25 × 1·15	—	—	—	32	—	16	6 Metres
330	22 × 11	19 × 6	30 × 30 × 1·44	—	—	—	58	52	22	8 Metres
400	29 × 15	22 × 6	40 × 40 × 2·02	—	—	—	84	65	29	10 Metres
480	32 × 16	25 × 6	45 × 45 × 2·71	3	150 × 3·5	45 × 45 × 2·05	110	84	35	12 Metres
560	35 × 17	29 × 6	50 × 50 × 3·48	4	175 × 3·5	45 × 45 × 2·38	140	105	38	14 Metres

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 water line only.

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

In yachts of six metres rating having bent wood frames only, the floors may be fitted to alternate frames for the length of the water line, 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.

WOOD YACHTS.

METRIC SYSTEM.

TABLE 21

TABLE OF MINIMUM DIMENSIONS OF BEAMS, BEAM KNEES, AND DECK PLANKING.

INTERNATIONAL RATING CLASSES.	BEAMS. Spacing of Beams. — Centre to Centre.	BEAMS. THROUGH BEAMS FOR THREE-QUARTERS LENGTH (WATER LINE) AMIDSHIPS. At Middle of Beam. Moulding.	Siding.	At End of Beam.	Through Beams beyond the three-quarters length (water line) amidships. Half Beams throughout. At Middle of Beam. Moulding.	Siding.	At End of Beam.	BEAMS. HATCH END, AND MAST BEAMS. At Middle of Beam. Moulding.	Siding.	At End of Beam.	WROUGHT IRON HANGING KNEES TO DECK BEAMS.** Number on each side.	Length of Arms.* For Length of Water Line.	At Ends.	At Throat.	At Point.	Thickness of Upper Deck Planking. ***	INTERNATIONAL RATING CLASSES.
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm		mm	mm	mm	mm	mm	
6 Metres	265	44 × 29		29 × 29	35 × 22		22 × 22	57 × 38		38 × 38	3	330	280	22 × 8	19 × 5	16	6 Metres
8 Metres	300	64 × 35		35 × 35	45 × 29		29 × 29	76 × 48		48 × 48	4	410	330	25 × 13	22 × 6	22	8 Metres
10 Metres	365	73 × 48		48 × 48	51 × 38		38 × 38	89 × 60		60 × 60	5	480	380	35 × 19	32 × 6	29	10 Metres
12 Metres	430	86 × 57		57 × 57	64 × 48		48 × 48	102 × 70		70 × 70	6	560	460	44 × 22	38 × 8	35	12 Metres
14 Metres	480	89 × 63		63 × 63	67 × 51		51 × 51	114 × 79		79 × 79	7	640	530	51 × 25	44 × 8	40	14 Metres

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.

In place of the 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 three millimetres from Table thickness when covered with canvas and painted.

WOOD YACHTS. TABLE 22

TABLE OF MINIMUM DIAMETERS OF FASTENINGS.

INTERNATIONAL RATING CLASSES.	DIAMETER OF FASTENINGS.							INTERNATIONAL RATING CLASSES.
	Bolts in Keel, Deadwood, 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.	
	mm	mm	mm	mm	mm	mm	mm	
6 Metres	10	7	5	5	5·0	3·0	4·0	6 Metres
8 Metres	13	9	6	6	7·0	4·0	4·5	8 Metres
10 Metres	16	10	7	7	9·0	4·5	6·0	10 Metres
12 Metres	17	12	9	7	10·0	5·0	6·5	12 Metres
14 Metres	19	13	10	8	11·0	5·5	7·0	14 Metres

* The bolts in the throats of floors on bent wood frames are to be 2 mm 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 23

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

WIDTH OF PLANKS.	ACTUAL THICKNESS OF PLANKS IN MILLIMETRES.		
	12 and under 25	25 and under 38	38 and under 51
mm 75 and under mm 100	Double	Double and Single	Double and Single
100 and under 125	Double	Double and Single	Double and Single
125 and under 150	Double	Double	Double and Single
150 and under 175	Treble	Double	Double
175 and under 200	Treble	Treble	Double
200 and under 250	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.

WOOD YACHTS. TABLE 24

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

35·3 times the Product of the Sectional area of lead keel in square metres, and the fore and aft spacing of bolts in metres.	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
	mm	mm	mm	mm	mm	mm	mm
Under ·5	14	14	14	16	19	22	25
·5 and under ·8	14	14	16	19	22	25	29
·8 and under 1·2	14	16	19	22	25	29	32
1·2 and under 1·7	16	19	22	25	29	32	35
1·7 and under 2·3	19	22	25	29	32	35	38
2·3 and under 3·0	22	25	29	32	35	38	41
3·0 and under 3·8	25	29	32	35	38	41	44
3·8 and under 4·7	29	32	35	38	41	44	48
4·7 and under 5·7	32	35	38	41	44	48	51
5·7 and under 6·8	35	38	41	44	48	51	54
6·8 and under 8·0	38	41	44	48	51	54	57

* The diameters of the bolts attaching lead keels are to be at least three millimetres 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.

COMPOSITE YACHTS. METRIC

TABLE OF MINIMUM DIMENSIONS OF KEEL, STEM, STERN POST, RUDDER, FRAMES, REVERSED FRAMES, FLOORS, AND WEB FRAMES.

SYSTEM. TABLE 25

INTERNATIONAL RATING CLASSES.	WOOD KEEL, STEM, STERNPOST, AND RUDDER.							STEEL FRAMING.							INTERNATIONAL RATING CLASSES.
	WOOD 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.	Frames.	Reversed Frames.	Maximum Spacing of Frames, — Heel to Heel.	FLOOR PLATES.		WEB FRAMES.		
	Moulding.	Minimum Siding Amidships.	Length of Scarph.								Depth at Centre.	Thickness.	Number on each Side.	Breadth and Thickness of Web Plate.	
	mm	mm	mm	mm	mm	mm	mm	mm mm kg/m	mm mm kg/m	mm	mm	mm		mm	
10 Metres	140	280	—	110	140	38	—	45 × 45 × 2·71	40 × 40 × 2·02	355	275	3·5	—	—	10 Metres
12 Metres	160	310	1040	125	160	44	32	50 × 45 × 3·24	45 × 45 × 2·38	380	300	4·0 to 3·5	3	150 × 4·0	12 Metres
14 Metres	180	340	1120	145	180	50	35	50 × 50 × 3·84	45 × 45 × 2·71	400	325	4·5 to 4·0	3	205 × 4·5	14 Metres

The Table scantlings for wood are to be based on the standard weights given on page 25, Section 22, clause 4.

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

The weight of each angle section is given in the Tables in kilogrammes per metre. 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 metre 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.

* 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.

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.
	mm	mm
10 Metres	29	380
12 Metres	35	400
14 Metres	40	420

COMPOSITE YACHTS. METRIC SYSTEM.

TABLE 26

TABLE OF MINIMUM DIMENSIONS OF STEEL PLATING AND ANGLES, AND OF OUTSIDE PLANKING.

INTERNATIONAL RATING CLASSES.	STEEL PLATING AND ANGLES.										Thickness of Outside Planking.	INTERNATIONAL RATING CLASSES.
	THICKNESS OF FLAT KEEL PLATE.		UPPER DECK SHEERSTRAKE AND STRINGER PLATE.			VERTICAL SIDE KEEL PLATES AND BILGE PLATES.		Diagonal Tie Plates on Outside of Frames between Sheerstrake and Bilge Plate, and on Upper Deck Beams from Stringer to Stringer. Also Dimensions of Longitudinal Tie Plates on Upper Deck.			Keel Angles, also Upper Deck and Bilge Stringer Angles.		
	In way of Ballast Keel.	Before and Abaft Ballast Keel.	For three-quarters length (water line) amidships.	At Ends.		For three-quarters length (water line) amidships.	At Ends.	Number of Pairs of Diagonal Tie Plates.		Breadth and Thickness. Also thickness of Butt Plates to Outside Planking.				
				Forward End.	After End.			On Frames.	*On Upper Deck Beams.					
	mm	mm	mm	mm	mm	mm	mm			mm	mm	mm	kg/m	mm	
10 Metres	—	—	260 × 3·0	140 × 3·0	100 × 3·0	180 × 3·0	125 × 3·0	—	2	85 × 3·5 to 3·0	45 × 45 × 3·09 to 2·72			26	10 Metres
12 Metres	6·5	4·0	300 × 3·5	190 × 3·0	155 × 3·0	190 × 3·5	155 × 3·0	2	2	90 × 4·0 to 3·5	50 × 50 × 3·93 to 3·51			32	12 Metres
14 Metres	7·0	4·5	350 × 4·0	215 × 3·5	180 × 3·5	200 × 4·0	155 × 3·5	3	2	100 × 4·5 to 3·5	55 × 55 × 4·34 to 3·93			38	14 Metres

The Table Scantlings for wood are to be based on the standard weights given on page 25, Section 22, clause 4.

The weight of each angle section is given in the Tables in kilogrammes per metre. 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 metre 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.

* In yawl rigged yachts an additional pair of diagonal tie plates is to be fitted in way of jigger mast.

COMPOSITE YACHTS.

TABLE 27

TABLE OF MINIMUM DIMENSIONS OF BEAMS, PILLARS, DECK PLANKING, FASTENINGS, AND BEAM KNEES.

INTERNATIONAL RATING CLASSES.	STEEL BEAMS AND STEEL OR IRON PILLARS. BEAMS FITTED AT ALTERNATE FRAMES. Through Beams for three-quarters length (water line) amidships.	STEEL BEAMS AND STEEL OR IRON PILLARS. BEAMS FITTED AT ALTERNATE FRAMES. Through Beams beyond the three-quarters length (water line) amidships. Half Beams throughout.	STEEL BEAMS AND STEEL OR IRON PILLARS. BEAMS FITTED AT EVERY FRAME. Through Beams for three-quarters length (water line) amidships.	STEEL BEAMS AND STEEL OR IRON PILLARS. BEAMS FITTED AT EVERY FRAME. Through Beams beyond the three-quarters length (water line) amidships. Half Beams throughout.	STEEL BEAMS AND STEEL OR IRON PILLARS. HOLLOW PILLARS. Outside Diameter and Thickness.	Thickness of Upper Deck Planking. With Beam at every Frame.	Thickness of Upper Deck Planking. With Beams at alternate Frames.	DIAMETER OF FASTENINGS. Bolts in Keel, Deadwood, Stem, and Sternpost.	DIAMETER OF FASTENINGS. Bolts in Frames and Outside Planking.	DIAMETER OF FASTENINGS. Screws in Beams and Deck Planking.	INTERNATIONAL RATING CLASSES.
	mm mm kg/m	mm mm kg/m	mm mm kg/m	mm mm kg/m	mm	mm	mm	mm	mm	mm	
10 Metres	55 × 40 × 3·24	50 × 40 × 2·71	50 × 30 × 2·50	50 × 30 × 2·20	—	31	35	15	9	7·5	10 Metres
12 Metres	70 × 50 × 4·60	55 × 45 × 3·47	55 × 30 × 3·02	55 × 30 × 2·71	—	35	39	16	10	8·0	12 Metres
14 Metres	80 × 55 × 5·36	65 × 50 × 3·93	65 × 40 × 3·47	55 × 30 × 3·02	42 × 4·5	39	43	17	†11	8·5	14 Metres

The weight of each angle section is given in the Tables in kilogrammes per metre. 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 metre 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 bolts in frames and outside planking of yachts of 14 and 14½ metres rating are to be increased two millimetres in diameter beyond the size given in the Table, where the planks are 200 mm or more in width.

BEAM KNEES.

		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
Depth of Beam	...	30	40	45	50	55	65	70	75	80	
Depth of Knee	...	130	140	150	165	180	190	200	215	230	

The beam knees are to be connected to the frames by not less than four rivets, and are to measure across the throat not less than 60 per cent. of the depth required for the knees.

COMPOSITE YACHTS.

TABLE 28

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

TIMBER.	Keel.	Stem, Sternpost, and Deadwood.	OUTSIDE PLANKING.		Main Piece of Rudder.
			From Top of Keel to ·60 of a Metre below Water-line.††	From ·60 of a Metre below Water-line up to and including Plankshеer.††	
East India Teak	16	16	16	16	16
English, African, French, Adriatic, Italian, Spanish, Portuguese, and Northern Continental Oaks and Acacia	12	12	12	12	12
Mahogany of hard texture † and of not less than 560 kilos. per cubic metre when well seasoned, and American White Oak	10	9	12	10	10
Pitch Pine, Yellow Pine, Oregon Pine, Cowdie or Kauri Pine, Mahogany of 480 and under 560 kilos. per cubic metre 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	—	—
English Elm	12	—	—	—	—

* 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 10 metres rating classes the boundary may be ·45 of a metre below water line.

TABLE 29

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

WIDTH OF PLANKS.	ACTUAL THICKNESS OF PLANKS IN MILLIMETRES.		
	12 and under 25	25 and under 38	38 and under 51
mm mm 75 and under 100	Double	Double and Single	Double and Single
100 and under 125	Double	Double and Single	Double and Single
125 and under 150	Double	Double	Double and Single
150 and under 175	Treble	Double	Double
175 and under 200	Treble	Treble	Double
200 and under 225	—	Treble	Treble
225 and under 250	—	Treble	Treble

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

COMPOSITE YACHTS. TABLE 30

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

35·3 times the product of the sectional area of lead keel in square metres and the fore and aft spacing of bolts in metres.	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
	mm	mm	mm	mm	mm	mm	mm
Under ·5	14	14	14	16	19	22	25
·5 and under ·8	14	14	16	19	22	25	29
·8 and under 1·2	14	16	19	22	25	29	32
1·2 and under 1·7	16	19	22	25	29	32	35
1·7 and under 2·3	19	22	25	29	32	35	38
2·3 and under 3·0	22	25	29	32	35	38	41
3·0 and under 3·8	25	29	32	35	38	41	44
3·8 and under 4·7	29	32	35	38	41	44	48
4·7 and under 5·7	32	35	38	41	44	48	51
5·7 and under 6·8	35	38	41	44	48	51	54
6·8 and under 8·0	38	41	44	48	51	54	57

* The diameters of the bolts attaching lead keels are to be at least four millimetres 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.

TABLE 31

TABLE OF DIMENSIONS OF BUTT STRAPS, WIDTH OF LAPS, AND SPACING OF RIVETS.

		mm	mm	mm	mm
Thickness of Plating or Angles ...		2·5 and under 4·0	4·0 and under 5·0	5·0 and under 6·5	6·5 and under 7·5
Diameter of Rivets		8	9	11	13
Breadth of Double riveted butt straps*		110	130	145	165
,, ,, Single riveted butt straps ...		65	75	90	100
,, ,, Double riveted butt laps ...		55	65	75	90
,, ,, Single riveted butt laps ...		38	44	51	57
MAXIMUM SPACING OF RIVETS FROM CENTRE TO CENTRE.	In butts of sheerstrake, keel plate, stringers, tie plates, bilge plates, and vertical side keel plates ...	32	38	44	52
	In upper deck stringer angles and keel angles	36	40	50	58
	In frames, reversed frames, floors, and beams	56	63	77	91

* Double riveted butt straps are to be one millimetre thicker than the plates they connect.

INTERNATIONAL RATING CLASSES.	RIVETING OF BUTT ATTACHMENTS.		
	Butts of Keel Plate, Tie Plates, and Vertical Side Keel Plates.	Butts of Sheerstrake, and Upper Deck Stringer Plate.	
		For three-quarters length (water line) amidships.	At Ends.
10, 12, and 14 Metres	Double riveted throughout.	Double	Single

METRIC SYSTEM.

TABLE 32

TABLE OF MINIMUM WEIGHTS OF ANCHORS, AND SIZES OF CHAINS AND HAWSERS, FOR YACHTS INTENDED FOR RACING IN THE INTERNATIONAL RATING CLASSES.

INTERNATIONAL RATING CLASSES.	ANCHORS.				CHAIN CABLES.		HEMP OR MANILLA HAWSERS.			INTERNATIONAL RATING CLASSES.
	Number.	WEIGHT, INCLUDING STOCK.			Length. *	Diameter.	MINIMUM WEIGHT.		Length.	Circumference.		
		1st Anchor.	2nd Anchor.	3rd Anchor.			Stud Link.	Short Link.				
		kg	kg	kg	m	mm	kg	kg	m	mm	mm	
6 Metres	1	14	—	—	—	—	—	—	30	50	—	6 Metres
8 Metres	2	20	15	—	60	8	78	85	45	60	—	8 Metres
10 Metres	2	31	23	—	85	10	169	181	65	70	50	10 Metres
12 Metres	2	45	34	—	100	11	267	292	75	75	50	12 Metres
14 Metres	2	61	45	—	120	13	403	450	85	80	60	14 Metres

All Anchor Stocks must be of acknowledged and approved description, and be one-fourth the weight of the Anchor.

There should be included in the weights of Chain Cables two end Shackles to each Cable; that is, four for each outfit which contains two Cables.

* The length of chain cable given in the Table may be slightly modified provided the diameter and weight required by the Rules be not departed from.

All Anchors exceeding 76 kilogrammes 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.

For Anchor and Chain Cable Proving Establishments, see following pages.

PROVING ESTABLISHMENTS.

The following Proving Establishments are recognised by the Committee of Lloyd's Register for the Testing of Anchors and Chains while licensed by the Ministry of Transport for that purpose :—

Principal Superintendent	Mr. H. Murphy (Stationed at Netherton).	
NETHERTON (near Dudley)—Lloyd's Proving House	Superintendent,	Mr. H. Murphy.
LOW WALKER-ON-TYNE—Lloyd's Proving House	ditto	Mr. R. J. Vogan.
CHESTER (Saltney)—Lloyd's Proving House	ditto	Mr. S. Bolton.
GLASGOW—Lloyd's Proving House	ditto	Mr. L. L Wright.
CARDIFF—Lloyd's Proving House	ditto	Mr. F. W. Dovey.
CRADLEY HEATH—Lloyd's Proving House	ditto	Mr. H. Phillips.

N.B.—Yachts supplied with Anchors and Chain Cables tested at any of the Proving Establishments in the above list, will have the notation of "Lloyd'sA.&C.P." in the Yacht Register, signifying that the Anchors and Chain Cables have been tested at a machine under the control of the Committee of Lloyd's Register of Shipping.

The following Machines have been recognised by the Committee for the testing of Anchors and Chain Cables supplied to yachts of other than British Registry :—

In Germany and Japan and in countries which were occupied by forces from these nations, information regarding the proving establishments is still incomplete and their names have only been included if inspection has been carried out since the war.

AUSTRALIA	Falkiner Machinery Co., Proprietary Ld., South Brisbane, Queensland (for testing chains up to 100 tons).
BELGIUM	Adh. Demanet. Gosselies, Belgium (for testing chains up to 260 tons).
,, ...	Ed. Demaret & Fils, Heppignies, Nr. Fleurus.
,, ...	The Engineering Co., Rue des Indes, Antwerp.
,, ...	Mercantile Marine Engineering & Graving Dock Co., Antwerp.
,, ...	Société Anonyme de Anciens Etablissements Wattelar-Francq, Jumet.
CANADA	Canada Chain & Forge Co., Ld., Granville Island, Vancouver, B.C.
,, ...	Dominion Chain Co., Ld., Niagara Falls, Ontario.
,, ...	McKinnon-Columbus Chain, Ld., St. Catherine's, Ontario.
FRANCE.....	Etablissement Sirot-Mestreit. St. Amand-les-Eaux (Nord).
,, ...	Paoli (J.) & Co., Marseilles.
,, ...	Société Anonyme des Chaineries de St. Amand-les-Eaux, Etablissements Dorémieux Fils & Cie., St. Amand-les-Eaux (Nord).
GERMANY	Hansa Kettenfabrik Haunschild & Co., Dortmund.
,, ...	Hutten Werk Horde A.G., Dortmund-Hoerde (for the testing of anchors only).
,, ...	Stulcken (H.C.) Sohn, Schiffswerft und Maschinenfabrik, Hamburg.
,, ...	Theile (J.D.), Schwerte-Ruhr.
HOLLAND	Koninklijke Nederlandsche Grofsmederij, Leiden.
,, ...	N.V. Anker-& Ketting-Industrie "Schiedam" (Managing Director-P. Th. Verhoeff) Schiedam.
ITALY	Acciaieria e Ferriera del Caleotto S.p.A., Lecco.
,, ...	Società Pignone, Works at Leghorn, Head Office at Florence.
JAPAN	Kobe Steel Works, Kobe (for the testing of anchors only).
,, ...	Kokko Chain & Steel Manufacturing Co., Ld., Osaka.
SPAIN	Forjas de San Martin de Pedro Framis, Barcelona (for testing chains up to 16 tons).
,, ...	Hijos di Vicinay, S. en C., Ochandiano, Vizcaya.
,, ...	J. M. Olavari, 11, Bilbao. Works at Durango, Vizcaya.
,, ...	Cadenas y Forjádos, S.A.
SWEDEN	Gunnebo Bruks Aktiebolag Gunnebobuck Västervik (for testing chains up to 20 tons).
,, ...	Ljusne Woxna Aktiebolag, Ljusne.
,, ...	Jarnbirger A/B, Orsa.
,, ...	Ramnas Bruks Aktiebolag, Ramnäs.
,, ...	Statens Provningsanstalt (Government Establishment), Stockholm.
UNITED STATES.....	American Chain Co., Braddock, near Pittsburgh, Pa., and York Pa. (for testing chains up to 22 tons).
,, ,,	Baldt Anchor, Chain and Forge Division of the Boston Metals Co., Chester, Pa.
,, ,,	Bellingham Chain & Forge Co., South Bellingham, Wash.
,, ,,	Buckeye Steel Castings Co., Columbus, Ohio (for breaking tests on chain cables only).
,, ,,	Carroll Chain Co., Columbus, Ohio.
,, ,,	Cleveland Chain & Manufacturing Co., Cleveland, Ohio.
,, ,,	Continental Chain Corporation, Fieldsboro, N.J.
,, ,,	General Steel Casting Corporation, Eddystone, Pa. (for the testing of anchors only).
,, ,,	Johnson-Farmer Chain Co., Lebanon, Pa.
,, ,,	Jones & Laughlin Steel Co., Pittsburgh, Pa.
,, ,,	Knoxville Iron Co., Knoxville, Tenn.
,, ,,	National Eire Co., Eire, Pa. ((for the testing of anchors only).
,, ,,	National Malleable and Steel Castings Co., Sharon, Pa.
,, ,,	Penn Steel Castings Corporation, Chester, Pa. (for the testing of anchors only).
,, ,,	Portland Chain Manufacturing Co., Portland, Or.
,, ,,	Round California Chain Corporation, Ld. South San Francisco, California.
,, ,,	Seattle Chain Co., 6921, East Marginal Way, Seattle, Wash.
,, ,,	Taylor (S.G.) Chain Company, Hammond, Indiana.
,, ,,	United States Chain & Forging Co., Pittsburg, Pa.
,, ,,	Woodhouse Chain Works, Trenton, N.J.