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THE INTERNATIONAL EIGHT METRE ASSOCIATION

Extract from

Lloyd's Register of shipping

Rules and Regulations
for the construction and classification of yachts of

The International 8-Metre Class

Valid for 8-Metres built between 1921 and 1949

THE INTERNATIONAL EIGHT METRE ASSOCIATION

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George Watson on Lloyd's

In 1912 the legendary naval architect George Lennox Watson summed up the question and relevance of Lloyd's scantlings and classification;

"Now, as to classing yachts at Lloyd's, I am inclined to think a classed boat will always command a better market than an unclassed vessel, because she appeals to the man in the street, and you open up a larger market; but my own opinion is that she need not necessarily be one bit better -possible not so good- as a boat built by a reputable builder, especially one who puts in brains as well as timber and steel into the structure. But, at the same time, while the expert and educated yachtsman will just as soon have an unclassed vessel built by a reputable builder as a classed one, the man on the street has a great veneration for Lloyd's which is to him like the Pommery label on a bottle of champagne, although you may get just as good drink out of a plain bottle."

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Introduction

Often Eights were built to win just one event, in the end they lasted for generations!
Very few realise that this survival is due to Lloyd's Rules and Regulations!

Since the start of the 8-Metre class in 1907, Lloyd's Register of Shipping in London has supplied and maintained the rules, regulations and scantlings for the construction and classification of 8-Metres. 90 years later, our modern 8-Metres are still built to scantlings made by Lloyd's of London. Over this entire period these rules have been an integral part of our class rules and over the same period naval architects have battled with the complex mathematical freedom of choice in materials it provided. The International Rating Class rules developed over the past 90 years, following the evolution in yacht design. With the scantlings in many ways time stood still. Their rules provided a equal weight and weight distribution for all yachts in the class, regardless of age, regardless of choice of material. This is still valid today if we compare the figures of a 1924 mahogany beauty on grown oak frames to a 1998 epoxy and foam composite racing machine. This way yachts did not become obsolete and in that respect, it must be unique in yachting that over such a long period, a class was able to develop without producing any real "rule beaters".

Today there are a great number of Eight Metres under restoration. Very few owners have access or knowledge of Lloyd's which provides key information on how to choose the correct materials and sizes for the restoration. As the complete Lloyd's rules and regulations for the construction and classification consists of well over 120 pages, and indeed they are rather complex in their reading, I have made and extract with the most important dimensions used for structures in 8-Metres. It gives a good view on what dimensions need to be used and why they were chosen. The bad part is being an extract means that just 5% of what is written in the original rules is listed here.

Never the less, I hope this extract will help owners and yards to rebuild the old boats to Class. If any questions arise than please do not hesitate to contact the IEMA.

John Lammerts van Bueren
Executive secretary IEMA
16 January 1999

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<u>Page</u>	<u>Section</u>	<u>Rule</u>	<u>Description</u>	<u>Dimensions</u>
15	2	IRC	MASTS	
15	2	IRC	HOLLOW MASTS	
			Minimum diameter of mast at half height deck to jib halyard:	180 mm
			The diameters may be reduced: At deck: 5%	171 mm
			At jib halyard: (I) 20%	144 mm
			At highest point of measurement: (A) 50%	90 mm
			A wooden mast shall be solid from the step to 300mm above the deck, except that for passing halyards a hole is permitted. The area should be added to the sectional area of this part.	
15	2	IRC	SOLID MASTS	
			If the mast is solid the above mentioned diameters may be reduced by 8%.	
			Minimum weight The minimum weight of the mast, including all fixed fittings shall be:	320 lbs
			Centre of gravity The centre of gravity shall not be lower then 0,38 of the rule height of mast above deck. Measured from deck level:	6.460 mm
			Wood yacht materials	
16	4	3	MATERIALS, GENERAL, WOOD AND METALS	
			Material other then provided in the tables are subject to approval of the committee.	
			Aluminium and other light alloys are not to be used for fastenings or structural items.	
16	4	4	The timber used is to be free from sap, shakes and all other defects.	

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Page	Section	Rule	Description	Dimensions
16	4	5	The table scantlings for wood are based on the following standard weights.	
			Grown frames, steamed or bentwood frames	740 kg/m ³
			Keel, stem, sternpost, deadwood counter timbers.	610 kg/m ³
			Planking, stringers, beams and knees	560 kg/m ³
			Decks	430 kg/m ³
17			Where the actual weight of the timber differs from the standard weight, the table of siding or thickness is to be increase of decreased according to the following formula:	
			$\frac{S-W}{(W)} = T$	
			S= The standard weight for the material W= The actual weight of the material T= The siding of thickness given in the Tables	
			The table siding or thickness is not to be decreased more then 6% except where teak having a weight of 720kg/m ³ is used for the decks, where a reduction of 12% will be permitted.	
18	9	2	FRAMES All dimensions are given for 75% LWL. Outside 75% LWL midships the siding of the frames may be reduced gradually.	
			Bent wood frames:	10%
			Grown frames:	20%
			Steel frames:	10%
			The frames spacing is to be the same over the full length fore and aft.	
19	9	4	Were a smaller spacing is used the siding of the frames may be reduced accordingly.	
19	9	6	Reinforcement in mast section Strengthening the section in way of the mast and	

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rigging is left to the builders and designers,
however the weight is not to be less then 11,3 kg

<u>Page</u>	<u>Section</u>	<u>Rule</u>	<u>Description</u>	<u>Dimensions</u>
20	9	14	Where bolts attaching the keel pass through the wood floors, the siding of the floors is not to be less then 4 times the diameter of the bolt at the breath of the keel.	
21	10	1	All dimensions are given for 75% LWL.	
21	10	3	The beams in way of a winch and mainsheet are not to be less then the scantlings required for mast beams.	
21	10	4	All beams are to be either dovetailed or doweled to the shelf and as far as practicle fitted to the frames.	
21	11	1	BILGE STRINGERS AND BEAM SHELVES A bilge stringer is to be fitted on each side of no less sectional area than required by the tables. Beyond 75% LWL the stringers may be gradually tapered 25% towards the ends of the yacht.	
22	12		OUTSIDE PLANKING AND DECK PLANKING	
22	12	1	No butts of outside planking are to be nearer then 1.500mm unless a strake wrought between them and then a distance of 1200mm will be allowed.	
22	13		FASTENINGS	
22	13	1-2	The through fastenings: bolts and nuts and short dump nails, the minimum diameter is:	9mm
			Where the bolts are of exceptional length, the diameter should be increased.	
22	13	4	All floors are to be attached to the keel by one or more through bolts.	
26	21		COMPOSITE YACHTS HAVING STEEL FRAMES AND WOOD PLANKING	
26	22	4	The table scantlings for wood are based on the following standard weights. Keel, stem, sternpost, deadwood counter timbers.	610 kg/m ³

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Planking, stringers, beams and knees	560 kg/m ³
Decks	430 kg/m ³

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27	22	4	Where the actual weight of the timber differs from the standard weight, the table of siding or thickness is to be increase or decreased according to the following formula:
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$$\frac{S-W}{T}$$

S= The standard weight for the material
W= The actual weight of the material
T= The siding or thickness given in the Tables

The table siding or thickness is not to be decreased more then 6% except where teak having a weight of 720kg/m³ is used for the decks, where a reduction of 12% will be permitted.

27	26	KEEL, STEM, STERNPOST AND RUDDER No particular comments outside the tables.
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TABLES WITH MINIMUM DIMENSIONS

	T20	Thickness of outside planking:	22 mm
	T21	Thickness of deck planking:	22 mm
g2	T18	Keel, amidships: Stem at head and sternpost:	115x230 mm 95x95 mm
		Rudderhead, diameter: After deadwood, siding: Stem at heel	95 mm 95 mm 115x115 mm
		Diameter of iron or steel rudderhead:	33 mm
G3	T18	MINIMUM DIMENSIONS BENT WOOD FRAMES:	41X32 MM
		Maximum spacing, etc (all bentwood construction) Grown frames width:	175 mm 41 mm

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Grown frame thickness at heel:

57 mm

Grown frame thickness at head:

41 mm

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G4	T19		MINIMUM DIMENSIONS STEEL FRAMES IN COMBINATION WITH BENT WOOD	
			Steel frames in place of grown frames:	45x40x1,83mm
			Reverse frames in place of grown frames:	30x30x1,44mm
			Maximum spacing between grown frame timbers or steel frames, Centre to centre:	
			With one bent frame:	455 mm
			With two bent frames:	560 mm
			Dimensions of bent wood frames:	35x25 mm
g4	T19		When the thickness of the outside planking is increased to 23,5mm the spacing may be increased as follows.	
			Bent wood frames only:	200 mm
			Grown frame timbers	
			With one bent frame:	545 mm
			With two bent frames:	660 mm
	T20		MINIMUM DIMENSIONS OF FLOORS	
			Wood floors on grown frame timbers	100x41 mm
			Steel plate floors on steel frames and on grown frames	230x3,0mm
			Angle steel floors on grown frame timbers	
			At throat	41x16 mm
			At point:	35x6
			Angle steel:	60x40x3,48mm
			Angle steel floors on bent wood frames	
			At throat	22x11 mm
			At point:	19x6mm
			Angle steel:	30x30x1,44mm
			Sectional area of upper deck shelf:	58 mm
			Sectional area of bilge stringer:	52 mm
	T20		Thickness of outside planking:	22 mm
	T21		MINIMUM DIMENSIONS OF BEAMS	
			Spacing of beams, centre to centre:	300 mm
			Through beams for 75% LWL amidships: At the middle of beam:	64x35 mm

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At the end of beam: 35x35 mm

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T21			MINIMUM DIMENSIONS OF BEAMS (Continued)	
			Through beams beyond 75% LWL amidships:	
			At the middle of beam:	45x29 mm
			At the end of beam:	29x29 mm
			Mast beams and hatch end beams:	
			At the middle of beam:	76x48 mm
			At the end of beam:	48x48 mm
			Wrought iron hanging knees to deck beams	
			Number on each side:	4
			Length of arms for LWL:	410 mm
			Length of arms beyond LWL:	330 mm
			At throat:	25x13 mm
			At point:	25x6 mm
T21			Thickness of deck planking:	22 mm
T22			MINIMUM DIAMETER OF FASTENINGS	
			Bolts in keel, deadwood, stem, sternpost, throats of floors on grown frames and breasthooks.	13 mm
			Bolts in scarphs of keel, arms of floors, on grown frames and heel of grown frames to deadwood:	9 mm
			Bolts in shelves, arms of floors, bentwood frames, bilge stringers, beam knees, and heel of bent wood frames to deadwood:	6 mm
			Frame timbers and outside planking	
			<u>In grown frames</u>	
			Bolts:	6 mm
			Screws:	7 mm
			<u>In bent wood frames</u>	
			Bolts:	4 mm
			Screws:	4,5 mm

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T23			MINIMUM NUMBER OF FASTENINGS ATTACHING OUTSIDE PLANKING TO FRAMES:	
			Width of plank 75 - 100 mm	double
			Width of plank 100 - 125 mm	double
			Width of plank 125 - 150 mm	double
			Width of plank 150 - 175 mm	treble
			Width of plank 175 - 200 mm	treble
			Width of plank 200 - 250 mm	treble
T24			Minimum diameter of copper or yellow metal bolts attaching lead ballast keels	
			Please refer to the original table 24	