SECTION 2 SYMBOLS AND DEFINITIONS

1 Units

1.1 Units definition

1.1.1 Unless otherwise specified, the units used in the Rules are those defined in Tab 1.

2 Symbols

2.1

2.1.1 The main symbols are used in the present Rules are:

L : Rule length, in m, defined in [3.2]

L_{WL} : Waterline length, in m, measured with the ship at rest in calm water, at the full load displacement, as defined in [3.2]

L_{LL} : Length according to International Rules as defined in Pt A, Ch 2, Sec 1, [2.2.1]

L_h : Length according to EC Directive as defined in Pt A, Ch 2, Sec 1, [2.2.1]

L_{HULL} : Hull length, in m, defined in [3.3]

B : Moulded breadth, in m, defined in [3.5]

B_{WL} : Greatest moulded breadth on waterline at draught T, in m, defined in [3.5]

D : Depth, in m, defined in [3.6]

T : Full load draught, in m, defined in [3.7]

Δ : Full load displacement, in tonnes, at draught T, in sea water (density $\rho = 1,025$ t/m^3).

C_B : Total block coefficient. For catamarans, C_B is to be calculated for a single hull, assuming Δ equal to one half of the ship's displacement

$$C_B = \frac{\Delta}{1,025 L B_{WL} T}$$

C_W : Wave height, in m, defined in [3.10]

V : Maximum speed, in knots, of the yacht

LCG : Ship's longitudinal centre of gravity

a_{CG} : Design vertical acceleration, in g, defined in [3.11]

H_S : Significant wave height, in m, defined in [3.10].

3 Definitions

3.1 Moulded base line

3.1.1 The moulded base line is the horizontal reference line tangent to the upper face of bottom plating at midship.

In the case of yacht with a solid bar keel, the moulded base line is to be taken at the intersection between the upper face of the bottom plating with the solid bar keel at the middle of length L.

Table 1 : Units

Designation	Usual symbol	Units
Ship's dimensions	See [2]	m
Hull girder section modulus	Z	m^3
Density	ρ	t/m^3
Concentrated loads	P	kN
Linearly distributed loads	q	kN/m
Surface distributed loads	p	kN/m^2
Thicknesses	t	mm
Span of ordinary stiffeners and primary supporting members	ℓ	m
Spacing of ordinary stiffeners and primary supporting members	s	m
Bending moment	M	kN.m
Shear force	Q	kN
Stresses	σ, τ	N/mm^2
Section modulus of ordinary stiffeners and primary supporting members	w	cm^3
Section area of ordinary stiffeners and primary supporting members	A	cm^2

3.2 Rule length

3.2.1 The rule length L is equal to L_{WL} where L_{WL} is the waterline length measured with the yacht at rest in calm water, at the full load displacement.

3.3 Hull length

3.3.1 The hull length L_{HULL} is equal to the total hull length, from the extreme foreward part of the hull, excluding any outfitting protusing, and the extreme aft part.

3.4 Ends of rule length L_{WL} and midship

3.4.1 Fore end

The fore end (FE) of the rule length L_{WL} (see Fig 1) is the perpendicular to the full load waterline at the forward side of the stem.

3.4.2 Aft end

The aft end (AE) of the rule length L_{WL} (see Fig 1, is the perpendicular to the full load waterline at a distance L_{WL} aft of the fore end.

3.4.3 Midship

The midship is the perpendicular to the waterline at a distance $0,5L_{WL}$ aft of the fore end (see Fig 1).

3.5 Breadth

3.5.1 The moulded breadth B, in m, is the greatest moulded breadth measured amidships below the weather deck.

3.5.2 The breadth B_{WL}, in m, is the greatest moulded breadth measured amidships at full load waterline. For catamarans, B_{WL} is the breadth of each hull.

3.6 Depth

3.6.1 The depth D, in m, is the distance measured vertically on the midship transverse section, from the moulded base line to the top of the deck beam at side on the uppermost continuous deck.

3.7 Draught

3.7.1 The full load draught T, in m, is the distance, measured vertically on the midship transverse section, from the moulded base line to the full load waterline.

In the case of ships with a solid bar keel, the moulded base line is to be taken as defined in [3.1].

3.8 Lightweight

3.8.1 The lightweight, in t, is the displacement without cargo, fuel, lubricating oil, ballast water, fresh water and feed water, consumable stores, passengers and crew with their effects, but including liquids in piping.

3.9 Deadweight

3.9.1 The deadweight is the difference, in t, between the displacement, at the summer draught in sea water of density $\rho = 1{,}025$ t/m^3, and the lightweight.

3.10 Wave characteristics

3.10.1 The wave height C_W, in m, is the height crest-to-trough of the wave. This wave height is used only for scantling calculation purpose.

3.10.2 The wave height H_S, in m, is the significant wave height ($H_{1/3}$) of the considered sea-state.

3.10.3 The wave lenght L_W, in m, is the distance between two consecutive crests of the wave. This wave length is used only for scantling direct caculation purpose.

3.11 Design vertical acceleration

3.11.1 The design vertical acceleration at LCG, a_{CG} (expressed in g), is to be defined by the designer and corresponds to the average of the 1 per cent highest accelerations in the most severe sea conditions expected, in addition to the gravity acceleration.

3.12 Freeboard deck(m)

3.12.1 The freeboard deck(m) is defined in Ch 2, Sec 2, [2.2.1].

3.13 Bulkhead deck

3.13.1 The bulkhead deck is the uppermost deck up to which the transverse watertight bulkheads are carried.

3.14 Superstructure

3.14.1 The superstructure is defined in Ch 2, Sec 2, [2.2.2].

3.15 Superstructure deck

3.15.1 A superstructure deck is a deck forming the upper boundary of a superstructure.

4 Reference co-ordinate system

4.1

4.1.1 The ship's geometry, motions, accelerations and loads are defined with respect to the following right-hand co-ordinate system (see Fig 2):

- Origin: At the intersection among the longitudinal plane of symmetry of ship, the aft end of L and the baseline
- X axis: Longitudinal axis, positive forwards
- Y axis: Transverse axis, positive towards portside
- Z axis: Vertical axis, positive upwards.

4.1.2 Positive rotations are oriented in anti-clockwise direction about the X, Y and Z axes.

Figure 1 : Ends and midship

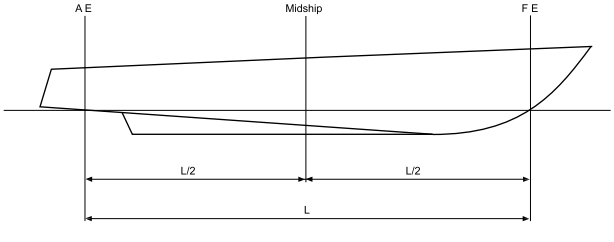

Figure 2 : Reference co-ordinate system