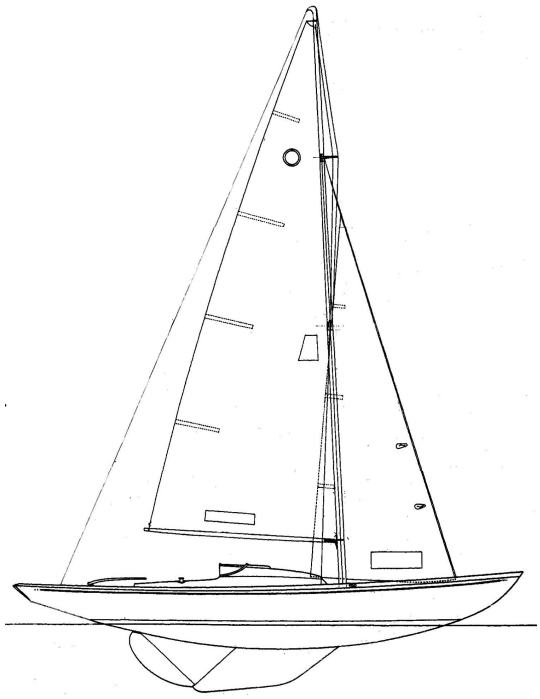
KNARR

INTERNATIONAL CLASS RULES

2025

The Knarr was designed in 1943 by Erling L. Kristofersen



Closed class rules for the Knarr class
This version is updated to reflect the ERS 2025-2028

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INTRODUCTION

Per 1st January 2023, the first day of the calendar year 70 years after the year of death of the designer Erling L. Kristofersen, the Holder of the Rights was assumed by the International Knarr Association through these class rules.

Knarr hulls, hull appendages, and rigs shall only be manufactured by manufacturers approved by the International Knarr Association, in the class rules referred to as licensed manufacturers. Equipment is required to comply with the Knarr Building Specification.

Knarr hulls, hull appendages, rigs and sails are measurement controlled.

Knarr hulls, hull appendages, rigs and sails may, after having left the manufacturer, only be altered to the extent permitted in Section C of the class rules.

Owners and crews should be aware that compliance with rules in Section C is NOT checked as part of the certification process.

Rules regulating the use of equipment during a race are contained in Section C of these class rules, in World Sailing's Equipment Rules of Sailing Part I and in the Racing Rules of Sailing.

It is the intention that future amendments to these Class Rules should endeavour to make the Knarr

- less expensive to build and/or maintain,
- equally simple to sail and race,
- safer in all aspects.

This introduction only provides an informal background, and the Knarr - International Class Rules proper begin on the next page.

PART I – ADMINISTRATION

Section A – General

A.1 LANGUAGE

A.1.1 The official language of the class is English, and in case of dispute over translation, the English text shall prevail.

A.1.2 The word "shall" is mandatory, and the word "may" is permissive.

A.2 ABBREVIATIONS

A.2.1

WS	World Sailing
MNA	WS Member National Authority
IKA	International Knarr Association
NCA	National Class Association
ERS	Equipment Rules of Sailing
RRS	Racing Rules of Sailing

A.3 AUTHORITIES

A.3.1 The international authority of the class is the IKA, which shall cooperate with the NCAs in all matters concerning these **class rules**.

A.3.2 Notwithstanding anything contained herein, the **certification authority** has the authority to withdraw a **certificate** and shall do so on the request of the IKA.

A.4 ADMINISTRATION OF THE CLASS

A.4.1 IKA has delegated its administrative functions (the **certification authority**) of the class to MNAs. The MNA may delegate part or all of its functions, as stated in these **class rules**, to an NCA.

A.4.2 In countries where there is no MNA, or the MNA does not wish to administer the class, its administrative functions, as stated in these **class rules,** shall be carried out by the IKA, which may delegate the administration to an NCA.

A.5 WS RULES

A.5.1 These **class rules** shall be read in conjunction with the ERS.

A.5.2 Except where used in headings, when a term is printed in "**bold**", the definition in the ERS applies, and when a term is printed in "*italics",* the definition in the RRS applies.

A.6 CLASS RULES VARIATIONS

A.6.1 These **class rules** shall not be varied by the notice of racing or the sailing instructions except as provided by A.6.2.

A.6.2 At the International Knarr Championship and at National Championships these **class rules** may be varied by the notice of racing and only with the agreement of the IKA.

A.7 CLASS RULES INTERPRETATION

A.7.1 Interpretation of these **class rules** shall be made by the IKA.

A.7.2 Interpretation of national prescriptions shall be made by the relevant NCA.

A.8 CLASS RULES AMENDMENTS

A.8.1 Amendments to these **class rules** are subject to the approval of the IKA.

A.9 SAIL NUMBERS

A.9.1 Sail numbers shall be issued by the MNA.

A.9.2 Sail numbers shall be issued in consecutive order starting at "1".

A.10 HULL CERTIFICATION

A.10.1 A **certificate** shall record the following information:

(a) Class
(b) **Certification authority**
(c) Sail number issued by the **certification authority**
(d) Owner
(e) **Hull** identification
(f) Builder/ manufacturer's details
(g) Date of issue of the initial **certificate**
(h) Date of issue of **certificate**

A.11 INITIAL HULL CERTIFICATION

A.11.1 For a **certificate** to be issued to **hull** not previously **certified**:

(a) **Certification control** shall be carried out by the **official certification measurer** who shall complete the appropriate documentation.
(b) The documentation and **certification** fee, if required, shall be sent to the **certification authority**.
(c) Upon receipt of a satisfactorily completed documentation and **certification** fee, if required, the **certification authority** may issue a **certificate**.

A.12 VALIDITY OF CERTIFICATE

A.12.1 A **hull certificate** becomes invalid upon:

(a) The change to any items recorded on the **hull certificate** as required under A.10.
(b) The date of expiry, if any,
(c) Withdrawal by the **certification authority**,
(d) The issue of a new **certificate**,

A.13 HULL RE-CERTIFICATION

A.13.1 The **certification authority** may issue a **certificate** to a previously certified **hull**:

(a) When it is invalidated under A.12.1 (a) or (b), after receipt of the old **certificate**, and **certification** fee if required.
(b) When it is invalidated under A.12.1 (c), at its discretion.
(c) In other cases, by application of the procedure in A.11.

A.14 RETENTION OF CERTIFICATION DOCUMENTATION

A.14.1 The **certification authority** shall:

(a) Retain the original documentation upon which the current **certificate** is based.

(b) Upon request, transfer this documentation to the new **certification authority** if the **hull** is exported.

Section B – Boat Eligibility

For a **boat** to be eligible for *racing*, it shall comply with the rules in this section.

B.1 CLASS RULES AND CERTIFICATION

B.1.1 The **boat** shall:

(a) Be in compliance with these **class rules** or the **class rules** in force at the time of first **certification**.

(b) Have a valid **hull certificate**.

(c) Have valid **certification marks** in compliance with the **class rules**.

PART II – REQUIREMENTS AND LIMITATIONS

The **crew** and the **boat** shall comply with the rules in Part II when *racing*. In case of conflict, Section C shall prevail.

The rules in Part II are **closed class rules**. **Certification control** and **equipment inspection** shall be carried out in accordance with the ERS except where varied in this Part.

Section C – Conditions for Racing

C.1 GENERAL

C.1.1 MEASUREMENT

(a) Measurements shall be carried out in accordance with the ERS.

C.2 CREW

C.2.1 LIMITATIONS

(a) The **crew** shall consist of 2-4 persons.

C.2.2 WEIGHT

Danish national prescription:

Total combined weight of the crew must not exceed a maximum of 300 kg.

C.2.3 PLACEMENT

(a) The use of any apparatus or contrivance where the purpose is to support or assist in supporting a member of the crew outboard or partially outboard is prohibited.

(b) The centre of body gravity must always be inside the toe rail (**sheerline**) or the vertical line up from the **sheerline** when heeled.

US national prescription

It is prohibited to hike further out over the sheerline than the middle of the thigh.

C.3 PERSONAL EQUIPMENT

C.3.1 MANDATORY

(a) The boat shall be equipped with a **personal flotation device** for each **crew** member to the minimum standard ISO 12402-5 (CE 50 Newton), or USCG Type III, or AUS PFD 1.

C.4 ADVERTISING

C.4.1 LIMITATIONS

In accordance with WS 2024-Advertising Code sec. 5.1, no commercial advertising shall be displayed pursuant to WS 2024-Advertising Code sec. 3.2 (Advertising chosen by the Person in Charge on **hulls**, **spars** and **sails**).

C.5 PORTABLE EQUIPMENT

C.5.1 FOR USE

(a) MANDATORY

(1) One bucket that can take a minimum of 10 litres.

(2) One anchor of not less than 13.5 kg in weight or one anchor not less than 8 kg with chain (6 mm), i.e. the combined weight of anchor and chain is not less than 13.5 kg.

(3) One anchor line, not less than 30 m long. Line strength shall correspond to commercially available 12 mm three-strand synthetic anchor rope.

(b) OPTIONAL

(1) Compass – entirely self-contained unit containing heading, tactical indicator and race timer functions only.

(2) Electronic or mechanical timing devices

(3) VHF Radio(s), except when stated as mandatory by the Notice of Race or Sailing Instructions.

Danish national prescription:

(4) Tactical and navigational charts and instruments, excluding electronic wind instruments.

C.5.2 NOT FOR USE

(a) MANDATORY

(1) Towing rope minimum 10 m long of not less than 10 mm in diameter.

(2) One paddle minimum 1400 mm long and with a blade area of minimum 0.06 m^2

(b) OPTIONAL

(1) Electronic navigation devices.

(2) One outboard engine with fuel tank.

(3) Mobile (cell) phones.

(4) Other devices such as log, depth sounder and wind speed instruments.

C.6 BOAT

C.6.1 MODIFICATIONS, MAINTENANCE AND REPAIR

Routine **maintenance** and **repair** such as light **sanding**, painting and **polishing** are allowed without partial or complete re-**measurement**.

a) Fairing to remove hollows and bumps from the building process, or to remove accumulation of bottom paint, is permitted. Addition of material beyond what is reasonably necessary for fairing, and removing original construction material or re-shaping beyond symmetry, is prohibited.

b) **The boat** shall not be altered in any way except as permitted by these **class rules**.

US national prescription:

Re-measurement shall be defined as the approval of the Measurer.

C.6.2 DIMENSIONS

	Principal dimensions	Minimum	Maximum
Length (LOA)	9280 mm	9240 mm	9280 mm
Beam (BMAX)	2120 mm	2110 mm	2120 mm
Draft	1300 mm		
Freeboard	600 mm		
Length of waterline	6210 mm		6210 mm

C.6.3 WEIGHT

	Minimum	Maximum
The weight of the **boat** in dry condition. The weight shall be taken excluding **sails** and **rig** and all **portable equipment** as listed in C.5. Other equipment permanently fixed to the boat shall be included in the weight.	2225 kg	

Danish and Norwegian national Prescription

a) The weight of the **boat** shall be taken in dry condition excluding **sails**, consumables and all **personal** and **portable equipment** including as listed in C.3 and C.5.

b) Irrespective of the following parts being permanently **installed** or not, the weight shall be taken including drawers as plan **X,** the helmsman's thwart, cockpit floorboards or raised cockpit sole. Also including floorboards in the cabin, bunk tops, closures, drawers and other parts of the general arrangement below deck as per plans **A**, **C** and **H**. Including the **main sheet** and all **fittings** normally used on board whilst *racing*.

c) Other equipment permanently **installed** shall be included in the weight.

d) The equipment included in the weight shall be in its normal position whilst *racing* and shall not thereafter be removed.

	Minimum	Maximum
The weight of the **boat** as per C.6.3 (a) – (c) excluding **rig**	2,225.0 kg	
The weight of the **boat** as per C.6.3 (a) – (c) including **rig** with aluminium **spars**	2,275.5 kg	
The weight of the **boat** as per C.6.3 (a) – (c) including **rig** with wooden **spars** and as per Norwegian national prescriptions to F.3 and F.4	2,312.0 kg	

C.6.4 CORRECTOR WEIGHTS

Danish and Norwegian national prescriptions:

In (a) below, the words “either side of”. In (b) below, the prescription is “150 kg”.

(a) **Corrector weights** of material with a density not greater than lead shall be permanently **fastened** to the **hull** when the **boat** weight is less than the minimum requirement.

The **corrector weights** shall be divided in four equal parts and permanently **fastened** to either side of the vertical aft side of the cockpit shelves, as close to the top of the shelf as possible, and under the base of the berths in the forepeak 500 mm forward of forward chain plates.

(b) The total weight of such **corrector weights** shall not exceed 100 kg.

C.7 HULL

C.7.1 MODIFICATIONS, MAINTENANCE AND REPAIR

See Rule C.6.1.

US national prescription:

Re-measurement shall be defined as the approval of the Measurer.

C.8 HULL APPENDAGES

C.8.1 MODIFICATIONS, MAINTENANCE AND REPAIR

See Rule C.6.1.

US national prescription:

Re-measurement shall be defined as the approval of the Measurer.

C.8.2 LIMITATIONS

(a) Only one **keel** and one **rudder** blade shall be used during an event, except when a **hull appendage** has been lost or damaged beyond repair.

C.8.3 KEEL

(a) DIMENSIONS

	Minimum	Maximum
Maximum projection from the bottom of the **hull**	760 mm	780 mm

C.8.5 RUDDER

DIMENSIONS

	Minimum	Maximum
Length parallel to rudderstock centreline	1545 mm	1555 mm
Thickness of along the rudderstock centreline	43 mm	45 mm

8.6 BARNEY (Traveller) POST

USE:
A barney post may be fitted.

a) MANDATORY:

(1) The post shall be fitted in accordance with plans **F** and **W**.
(2) Material of post and attachment as per (b) (2) below shall be wood.

US national prescription:
Material shall be wood or aluminum with a weight not less than 3 pounds without traveler, fasteners or the bracket that it mounts to.
The height of the minimum measurement at the top surface shall be no less than 160 mm below the **sheerline**.

(3) The height at the top surface, incl. attachment as per (b) (2) below, shall be per plan W.

b) OPTIONAL:

(1) A traveller or other device(s) not to exceed 200 mm of adjustment of the main sheeting.
(2) An attachment with a flat surface perpendicular to the post for hardware not exceeding an area of 370 sq.cm with a maximum athwartship dimension of 36 cm and a max for-and-aft dimension of 23 cm.
(3) Cleats for setting the mainsheet, traveller and **backstay** adjustment.
(4) A winch and cleat for mainsheet adjustment per plan **F**.
(5) A swivel-base with cleat to adjust the mainsheet.
(6) All optional **fittings** to be directly mounted to the post.

US national prescription:
Dimensions of the post shall have the general shape as depicted in plan W, but may be enlarged to accommodate a larger traveler car, provided the travel is limited to 200 mm max.
Footpegs may be affixed to the ends of the barney post no larger than 70 mm x 230 mm.

Danish national prescription
(a) MANDATORY:
(1) A barney post shall be fitted.
(2) The post shall be fitted in accordance with plan W.
a) For the wooden Knarr the forward part of the post shall be 770 mm +/- 50 mm from the main bulkhead.

b) For the GRP Knarr the post shall be fitted in the recess in the cockpit sole.

(3) The general shape of the post shall be as depicted in plan W.

(4) The height of any part of the post or an attachment shall be minimum 90 mm below the **sheerline**.

(5) Material of post and attachment shall be wood.

(b) OPTIONAL:

(1) A traveller or other device(s) not to exceed 200 mm of adjustment of the main sheeting.
For posts which height cf. C.8.6 (a) (4) is less than 210 mm below the **sheerline**, the adjustment of the main sheeting must not exceed 170 mm.

(2) An attachment may be fitted on top of the post.
The dimensions of attachment, reinforcements and **fittings** combined must athwartship not exceed 360 mm and for-and-aft 250 mm.
Reinforcements of any material for the attachment and fittings may be fixed to the post.

(3) **Fittings** for setting the mains, traveller and **backstay** adjustment.
All **fittings** shall be commercially available.

C.8.7 COCKPIT SOLE

(1) FOR USE:
Floorboards must be fitted in the cockpit.
Danish national prescription:
If a raised cockpit sole is **installed** cf. C.8.7 (1) (b), the floorboards shall be omitted.

(a) MANDATORY:

(a) Floorboards must be made of plywood or solid wood.

(b) For the GRP-Knarr the top of the floorboards must be flush with the cockpit sole.

(b) OPTIONAL:
Raised cockpit sole is permitted.

(1) For the wooden-Knarr the top of the cockpit sole must be minimum 610 mm below the **sheerline** measured at the position of the barney post. The cockpit sole must be parallel with the waterline.

(2) For the GRP-Knarr the top of the raised cockpit sole must be maximum 80 mm above the GRP-cockpit sole.

C.9 RIG

C.9.1 MODIFICATIONS, MAINTENANCE AND REPAIR

Only routine maintenance and repair, such as painting and **polishing,** is allowed.

Light **sanding** and repainting of wooden mast is allowed.

C.9.2 FITTINGS

(a) **Fittings** are optional for all purposes specified on the plans or mentioned in the rules

C.9.3 LIMITATIONS

(a) Only one set of **spars** and **standing rigging** shall be used during an event except when an item has been lost or damaged beyond repair.

(b) The **spars** shall be built either of spruce (Picea or Abies) or aluminium grade 6005.

C.9.4 MAST

(a) DIMENSIONS

	Minimum	Maximum
Limit mark width	13 mm	-
Outer point distance	-	10250mm

(b) USE

(1) The **spar** shall be stepped in the mast step in such a way that the heel shall not be capable of moving more than 5 mm.

(2) The position of the **mast** in the fore and aft plane is free.

(3) The **mast** shall be led through the deck in the fore and aft plane and stand on a mast step immediately above the keelson or keel reinforcement.

(4) The mast hole through deck shall be constructed in such a way that movement of the **mast** in the mast hole is restricted to 20 mm in the fore and aft direction, and the **mast** may be fixed in the transverse direction. The width of the mast hole shall not exceed 105 mm.

Filler blocks may be used to achieve these dimensions.

In the event that filler blocks are used to fill the mast hole, the free opening shall be the remaining opening between the fore and aft mast block(s).

(5) The **mast spar** shall be stepped with the **mast datum point** (see F.2.4) at level (-5/+15 mm) with the upper surface of the deck.

C.9.5 BOOM

(a) DIMENSIONS

	Minimum	Maximum
Limit mark width	13 mm	-
Outer point distance	-	3400 mm

(b) USE

(1) The intersection of the aft edge of the **mast spar** and the top of the **boom spar**, each extended as necessary, shall not be below the upper edge of the mast **lower limit mark** when the **boom spar** is at 90° to the **mast spar**.

C.9.6 WHISKER POLE

(a) USE

(1) The projected length of the **whisker pole** shall not exceed 2500 mm.

C.9.7 STANDING RIGGING

(a) DIMENSIONS

The upper **shrouds** shall intersect the deck in such a way that the plane formed by the two **shrouds** pass through the free opening of the mast hole.

The lower **shrouds** shall intersect the deck at a distance measured horizontally, of 350 mm (+/- 5 mm) aft of the upper **shrouds**.

	Minimum	Maximum
Fore triangle base (J-measurement)	1980 mm	2000 mm

(b) USE

(1) Rigging links and rigging screws shall not be adjusted.

(2) **Shrouds** shall be connected to chainplates with turnbuckles.
Alternatively, the shrouds may be connected to a bar affixed to the chainplates.
Additional hardware to fasten the bar to the deck is permitted.

(3) The permanent **backstay** does not require any rigging screw and may be adjusted. The permanent **backstay** shall be led under deck.

(4) The **forestay** may be connected to a deck **fitting** with an under-deck furling system. The furling system must not be used when *racing*.

C.9.8 RUNNING RIGGING

(a) USE

(1) The **mainsail** shall be sheeted from a barney (traveller) post allowing max. 200 mm sideways travel of the **sheet** fastening point.
The height of the post shall be minimum 210 mm below the **sheerline**.
The position of the post as shown in plan F. The design and the purchase of the sheeting system is optional and systems with more than one ratio are permitted. However, all parts of the **sheet** shall be inside the cockpit and shall run directly between the **boom** and post.
The tailing end(s) may be led to cleat or jammer. Position of cleat or jammer is free. Use of winch on the post is permitted. The point of fastening on the **boom** shall be above the post. If more than one sheeting block is used, the distance between the centres of the blocks situated furthest from each other shall not exceed 250 mm.

Danish national prescription

(1) The **mainsail** shall be sheeted from the barney post.
- (a) The sheeting point(s) on the post or attachment must not be higher than 60 mm below the **sheerline**.
- (b) The height of the sheeting point(s) for other device(s) cf. C.8.6 (b) (1) must not exceed the height cf. C.8.6.(a) (4)
- (c) The sheeting point(s) shall be defined as the fixed point(s) of the sheeting system, at which the sheeting is **connected**.

(2) The design and the purchase of the sheeting system are free.
(3) All parts of the sheeting system not running between the sheeting point(s) shall be below deck level.
(4) The tailing end(s) may be led to cleat(s) or jammer(s), the position of which is free.
(5) If more than one sheeting block on the boom is used, the distance between the centres of the blocks situated furthest from each other shall not exceed 250 mm.

(2) The jib shall be hauled with the help of winches placed outside the cockpit coaming and crank handles under the deck.

Danish national prescription:

The jib shall be hauled with the help of winches placed outside the cockpit coaming or placed on the cabin top.

(3) A **vang** or rod-kick is permitted. The **vang** or rod-kick shall not be providing an upward pressure on the boom. The haul shall be **fastened** above deck and may be led aft above deck.

(4) The **foot** of the **mainsail** may be adjusted by either a **clew**, **outhaul** or a **tack** inhaul. The inhaul cringle shall not be more than 250 mm from the **tack point** and 30 mm above the **foot**. The haul shall be **fastened** above deck and may be led aft above deck.

(5) A **mainsail** Cunningham haul is permitted. The haul shall not be more than 250 mm above the **tack point** and 30 mm from the **luff**. The haul shall be **fastened** above deck and may be led aft above deck.

(6) The **sails** shall be hoisted by **halyards** by a single line running directly from the **head**, over a mast sheave to a highfield lever or purchase – on the aluminium **mast** below the exit holes – and thereafter may be led above deck to the cockpit,

(7) Cunningham haul in the jib is permitted; the haul shall be **fastened** above deck.

(8) Barber hauls (inhauler and outhauler) for the jib **sheets** are permitted; the haul shall be **fastened** above deck and may be led under deck aft of the cabin.

(9) Hook systems or **halyard** locks are prohibited.

C.10 SAIL

C.10.1 MODIFICATIONS, MAINTENANCE AND REPAIR

(a) **Sails** shall not be altered in any way except as permitted by these **class rules**.

C.10.2 LIMITATIONS

(a) Only **certified sails** with an attached **certification mark** can be used.

(b) Not more than one **mainsail** and two jibs shall be carried aboard.

(c) At Class Championship or events where **equipment control** is carried out on sails, not more than one mainsail and two jibs shall be used, except when a **sail** has been lost or damaged beyond repair.

(d) In case of loss or damage beyond repair of any **sail** during the event, the event Technical Committee or, in its absence, the Race Committee may permit the use of substitute **sails**. Such **sail** shall be **certified** and have a **certification mark** attached.

(e) Use of **sails** without the **certification mark** is prohibited.

C.10.3 MAINSAIL

(a) IDENTIFICATION

The national letters and sail numbers shall comply with the RRS except where prescribed otherwise in these **class rules**.

National letters and numbers shall be of the following minimum dimension (RRS 77 and Appendix G 1.3. a-b-c)

Height:	375 mm
Thickness:	50 mm
Width (excluding number one and letter I)	230 mm
Minimum space between characters or edge of sail:	75 mm

(b) USE

(1) The **Mainsail** shall be hoisted on a **halyard**. The arrangement shall be entirely above deck and permit hoisting and lowering of the **sail** whilst afloat. Hook or **halyard** lock is not permitted.

(2) The highest visible point of the **sail**, projected at 90° to the mast **spar**, shall not be set above the lower edge of the **mast upper limit mark,** and the **tack** shall not be set below the upper edge of the **lower limit mark**. The intersection of the **leech** and the top of the **boom spar**, each extended as necessary, shall not be behind the fore side of the **boom outer limit mark**.

(3) **Luff** of **mainsail** shall be attached to the **mast** by slides, minimum 15 and maximum 25.

Foot of **mainsail** shall be attached to the **boom** either by means of a full-length boltrope (cut-out at clew permitted) or slides, minimum 5 and maximum 12.

US national Prescription:
Loose footed main is permitted.
Attachment of the luff to the **mast** may be with either slides or bolt-rope.

(4) Any method for reducing **sail** area is permitted

C.10.4 JIB

(a) USE

(1) The **sail** shall be hoisted using a halyard. The use of the **halyard** shall be entirely above deck, and the arrangement shall permit hoisting and lowering of the **sail** whilst afloat.

(2) The jib shall be attached to the **forestay** using hanks or similar. Not more than 20 hanks or similar shall be permitted along the **luff**.

(3) The **tack** of the jib shall be secured to a fixed **fitting** at the base of the headstay.

Section D – Hull

D1 PARTS

D.1.1 MANDATORY

(a) **Hull** shell
(b) Deck
(c) Cabin roof
(d) Toe rail
(e) Bulkheads
(f) Thwarts and bench
(g) Accommodation
(h) Cockpit drawers

US national prescription:
Drawers are not required.

D.1.2 OPTIONAL

(a) Sliding hatch
(b) Handrails
(c) Portholes in cabin top
(d) Spray hood with fixtures
(e) Hatches
(f) Well for outboard engine through hull aft of drawers

D.2 GENERAL

D.2.1 RULES

(a) The Knarr shall be constructed over a plug or in a mould approved by an **official certification measurer** or a measurer acknowledged by the IKA.

All GRP parts and **keel** for the GRP Knarr shall be constructed in the moulds from Børresens Bådebyggeri A/S or in an approved mould made over the plug constructed from these moulds. The minimum construction basis for the GRP Knarr is **hull** and **keel**.

Holes not bigger than necessary for the **installation** of **fittings** and passage of lines may be made in the deck aft of the main bulkhead.

(b) If any **hull** moulding is repaired in any other way than described in C.6.1, an **official certification measurer** or a measurer acknowledged by a NCA shall verify on the **certificate** that the external shape is the same as before the repair and that no substantial stiffness, or other advantage has been gained as a result of the repair.

The measurer shall also describe the details of the repair on the **certificate**.

(c) The **hull** shall comply with the **class rules** in force at the time of initial **certification.**

(d) Epoxy, vinyl ester and aromatic fibres are not permitted.

(e) A Knarr shall be built in one of the following combinations:

1. Wooden **hull** and wooden deck.
2. GRP **hull** and GRP deck
3. GRP **hull** and wooden deck

D.2.2 CERTIFICATION

See Rule A.11.

D.2.3 MODIFICATIONS, MAINTENANCE AND REPAIR

See Rule C .6.1

D.2.4 DEFINITIONS

(a) HULL DATUM POINT

The **hull datum point** is situated at section 0, where the outside surface of the transom meets the sheer.

D.2.5 IDENTIFICATION

(a) In the wooden Knarr the sail number shall be cut on the inside of the forepart of the cabin or printed on a signboard.

(b) In the GRP Knarr the sail number shall be shown inside the hull aft of the rudder well. The year and building no. of the yard shall be on a signboard.

D.2.6 BUILDERS

(a) The **hull** shall be built by a builder licensed by the IKA.

(b) All moulds for GRP boats shall be approved by the IKA.

(c) All plugs for wooden boats shall be approved by the IKA.

D.3 HULL SHELL

D.3.1 MATERIALS

(a) The **hull** shell shall be built either from wooden planks or glass reinforced plastic (GRP) and be in accordance with the official construction plans and specifications.

(b) The wooden **hull** shall be built on a plug approved by IKA in accordance with plan **E**.

(c) The GRP **hull** shall be built in a mould approved by IKA

(d) Resin shall be polyester (not epoxy or vinyl ester).

D.3.2 CONSTRUCTION

(a) The Wooden **hull** shall be built in accordance with plan A.

Hull skin thickness shall be minimum 20 mm Douglas fir (Pseudo-tsugataxifolia), Oregon pine, or Scots Pine (Pinus sylvestris)

Frames	28 x 30 to 28 x 20 mm ash
Carling	10 x 30 to 70 x 20 mm pine

Floor timbers shall be oak

Keel plank shall be oak

(b) The GRP Knarr shall conform to the laminate specifications.

Different numbers of layers of Chopped Strand Mat are permitted as long as the total minimum weights of the laminate are as stated.

Unless otherwise specified, layers of GRP shall be 450 g per m^2 glass mat with polyester at a total weight of 1.5 kg per m^2.

HULL SHELL

2 layers of gelcoat	0,6 kg/m^2	8 layers of GRP	12,0 kg/m^2
1 layer of topcoat	0,3 kg/m^2		
	12,9 kg/m^2		

KEEL AND STEM REINFORCEMENT

Beginning 0.60 m from the stern and 0.45 m shorter for each layer, all layers with 15 cm overlap on the centreline

2 layers of GRP of	0,40 m x 8,10 m =	6,48 m^2
2 layers of GRP of	0,45 m x 7,20 m =	6,48 m^2
2 layers of GRP of	0,50 m x 6,30 m =	6,30 m^2
2 layers of GRP of	0,55 m x 5,40 m =	5,94 m^2
2 layers of GRP of	0,60 m x 4,50 m =	5,40 m^2
		30,60 m^2 ~45,9 kg

D.4 DECK

D.4.1 MATERIALS

(a) The deck shall be built either from wood or glass reinforced plastic (GRP) and be in accordance with the official construction plans and specifications. The wooden Knarr shall have a wooden deck.

(b) The wooden deck shall be built in accordance with plan **A**

(c) The GRP deck shall be built in a mould approved by IKA

D.4.2 CONSTRUCTION

(a) Deck shall be Wood.

Deck beams shall be 40 x 40-50

Cockpit aft and cabin fore shall be 40 x 50-60 mm of Pine

Half beams shall be 20 x 35 mm of Pine

The Shelf shall be 100 x 30 –70 x 20 mm of Pine

Deck shall be min. 16 mm pine or minimum 12 mm plywood.

Deck to be covered with painted canvas, vinyl, teak or other waterproof material.

(b) Cabin

Coamings and cabin side shall be min. 18 mm mahogany

Cabin roof shall be 12 mm pine on 25 x 30 mm beams or minimum 16 mm cold moulded veneer without beams.

Cabin roof to be covered with painted canvas, vinyl, teak or other waterproof material. Wooden cabin on GRP Knarr shall be in accordance with plan **A** or plan **H.**

(c) Deck GRP

Different numbers of layers of Chopped Strand Mat are permitted as long as the total minimum weights of the laminate are as stated.

Unless otherwise specified, layers of GRP shall be 450 g per m^2 glass chop strand mat with polyester at a total weight of 1.5 kg per m^2

2 layers of gelcoat (uppermost layer with anti-slip pattern can be replaced by teak)	1,0 kg/m^2
3 layers of GRP	4,5 kg/m^2
12 mm Balsa	2,0 kg/m^2
Polyester for Balsa	0,4 kg/m^2
3 layers of GRP	4,5 kg/m^2
1 layer of topcoat	0,5 kg/m^2
	12,9 kg/m^2

(d) Cabin sides and top

2 layers of gelcoat	0,6 kg/m^2
3 layers of GRP	4,5 kg/m^2
12 mm end grain Balsa	2,0 kg/m^2
Polyester for Balsa	0,4kg/m^2
3 layers of GRP	4,5 kg/m^2
(two layers used for attaching the inner shell)	12,0 kg/m^2

(e) Cabin top inner shell

2 layers of gelcoat	0,6 kg/m^2
2 layers of GRP	3,0 kg/m^2
	3,6 kg/m^2

The inner shell of GRP cabin sides and top may be omitted in return for additional layers of GRP in the outer shell corresponding to the weight of the inner shell.

(f) **Bonding hull** to deck

20 m long strips, 4 of 0,03 m, 4 of 0,05 m and 2 of 0,07 m, total width 0,46 m = 9,20 m^2

450 g glass matt with polyester at 1,6 kg/ m^2 10,7 kg

(g) Deck stiffener

One deck beam may be fitted to underside of deck, immediately aft of the mast collar. The beam shall run to the point where the deck core materiel ends, having a gradual taper. Dimensions in accordance with plan **R**.

D.5 ACCOMMODATION INNERSECTION

D.5.1 CONSTRUCTION

The accommodation shall provide reasonable berth for minimum 2 persons.

Changes in the accommodation may be made as long weight distribution and the stiffness of the hull are not altered.

Danish and Norwegian national prescription

In the GRP Knarr, the floorboards below deck may be replaced by other wooden material with a weight not exceeding 20 kg.

(a) Wooden boat
The wooden Knarr shall follow the principle in plans **A** or **C.**

(b) GRP boat
Inner sections cabin and cockpit

2 layer of gelcoat	0,6 kg/m^2
5 layers of GRP	7,5 kg/m^2
1 layer of topcoat	0,3 kg/m^2
	8,4 kg/m^2

D.6 TOE RAIL

D.6.1 MATERIALS

(a) The toe rail shall be made from wooden material with a density equal to teak or mahogany.

D.6.2 CONSTRUCTION

(a) Except at the transom, a toe rail shall be fitted and run unbroken along each gunwale. Minimum height forward of 55 mm, evenly decreasing to 35 mm aft. For GRP Knar, a toe rail of a constant height of 40 mm +/- 5 mm is permitted.

D.7 BULKHEADS

D.7.1 MATERIALS

(a) Plywood

D.7.2 CONSTRUCTION

(a) Main Bulkhead: minimum 15 mm – 8,2 kg/m2

(b) Front bulkhead minimum 9 mm – 4,9 kg/m2

(c) All other bulkheads minimum 12 mm - 6,6 kg/m2

D.8 THWARTS AND BENCH

D.8.1 MATERIALS

(a) Wood

D.8.2 CONSTRUCTION

(a) Free

US and Danish national prescription:

Cockpit seats may be as shown on Plan **N**.

D.9 DRAWERS

D.9.1 RULES

(a) Drawers in accordance with plan **X** shall be on gliders fitted to the underside of the deck.

D.9.2 DIMENSIONS

(a) Drawer size and weight

	Minimum	Maximum
Weight	7.5 kg	
Inside length	700 mm	1000 mm
Inside width	400 mm	415 mm
Inside depth	200 mm	

(b) Dimensions of gliders are free.

D.9.3 MATERIALS

Drawers and gliders shall be built of wood, plywood and/or solid wood.

D.9.4 CORRECTOR WEIGHTS

Corrector weights of material with a density not greater than lead for each drawer shall be permanently **fastened** to the inside aft upper edge of the drawer in accordance with plan **X.**

D.9.5 US national prescription

Drawers and **corrector weights** are not required.

D.10 ASSEMBLED HULL

D.10.1 FITTINGS

(a) MANDATORY

The following **fittings** shall be positioned in accordance with the measurement diagram or as stated below:

(1) Stem head fitting
(2) Forestay fitting
(3) Chain plates
(4) Tiller
(5) Mooring cleats
(6) Mast step

(7) Jib **sheet** winches placed outside the cockpit coaming with crank handles placed under the deck. Length of handles must be min. 200 mm. The position of the winches is free.

(8) One bilge pump **installed.**

(b) OPTIONAL

(1) **Halyard** winches or tensioners

(2) **Mainsail sheet** blocks, fairleads and cleats

(3) **Mainsail** Cunningham blocks, fairleads and cleats

(4) Sitting boards on deck in accordance with plan **O**

(5) Jib **sheet** blocks, fairleads and cleats

(6) Jib Cunningham blocks, fairleads and cleats

(7) Jib Barber hauler fairleads, blocks and cleats

(8) The cabin top may be fitted with a sliding hatch.

(9) Handrails.

(10) Tiller lock

(11) Stowage clips for paddle(s), **whisker pole** and other equipment

(12) Windows and openings for ventilation are permitted. Positioning is free

(13) Bilge pump(s), which may discharge through hull shell or deck

(14) Magnetic compasses

(15) A spray hood

(16) Deck clips for cockpit cover and/or tent

(17) Fore hatch. Size, position and material is free

(18) Tie-rod(s) **installed**

a) in the **hull** centre plane, just aft of the mast collar, between the underside of the deck and the mast step

and/or

b) between the chainplates and the mast step.

Tie-rod(s) may be steel rod, wire or rope and fitted with a tightening device.

(19) Mainsheet track with traveller

(20) Jib tracks

(21) Tiller extension

D.10.2 DIMENSIONS

The keel line shall be taken as the intersection line from transom to stem of the **hull** shell and the **hull** centre plane.

The sections shall be taken as vertical, transverse planes at the following positions:

Section 2: at 615 mm from **hull datum point** as defined in D.2.4

Section 5: at 1215 mm from **hull datum point** as defined in D.2.4

Section 8: at 1815 mm from **hull datum point** as defined in D.2.4

Section 11: at 2415 mm from **hull datum point** as defined in D.2.4

Section 14: at 3015 mm from **hull datum point** as defined in D.2.4

Section 17: at 3615 mm from **hull datum point** as defined in D.2.4

Section 20: at 4215 mm from **hull datum point** as defined in D.2.4
Section 23: at 4845 mm from **hull datum point** as defined in D.2.4
Section 26: at 5445 mm from **hull datum point** as defined in D.2.4
Section 29: at 6045 mm from **hull datum point** as defined in D.2.4
Section 32: at 6645 mm from **hull datum point** as defined in D.2.4
Section 35: at 7245 mm from **hull datum point** as defined in D.2.4
Section 38: at 7845 mm from **hull datum point** as defined in D.2.4
Section 41: at 8445 mm from **hull datum point** as defined in D.2.4
Extreme forward: at 9225 mm from **hull datum point** as defined in D.2.4

The baseline shall be on the **hull** centre plane at the following vertical distances (1350 mm below CWL)

	Minimum	Maximum
Hull length	9220 mm	9260 mm
Vertical distance from baseline to underside of **hull** shell;		
at section 2 :	1589 mm	
at section 5 :	1410 mm	
at section 8 :	1245 mm	
at section 11 :	1099 mm	
at section 14 :	979 mm	
at section 17 :	884 mm	
at section 20 :	821 mm	
at section 23 :	796 mm	
at section 26 :	812 mm	
at section 29 :	875 mm	
at section 32 :	989 mm	
at section 35 :	1139 mm	
at section 38 :	1324 mm	
at section 41 :	1573 mm	
Vertical distance from baseline to underside of **keel** at section 17	30 mm	40 mm
Hull beam on **sheerline** at section 20	2125 mm	
Longitudinal distance from **hull datum point** as defined in D.2.4 to intersection of **keel** trailing edge and **hull**	2475 mm	
Gunwale rubbing strakes:		
Depth	8 mm	12 mm
Width	18 mm	22 mm
Deck camber at sections 26 - 29	85 mm	90 mm

Section E – Hull Appendages

E.1 PARTS

E.1.1 MANDATORY

(a) **Keel**

(b) **Rudder**

E.2 GENERAL

E.2.1 RULES

(a) **Hull appendages** shall comply with the **class rules** in force at the time of **certification**.

E.2.2 MODIFICATIONS, MAINTENANCE AND REPAIR

(a) See Rule C.6.1

(b) Wooden Knarrs may remove pitch from deadwood.

E.3 KEEL

E.3.1 RULES

(a) The **keel** shall comply with the **class rules** in force at the time of the initial **certification** of the **hull.**

E.3.2 MANUFACTURERS

(a) Manufacturers shall be licensed by the IKA.

E.3.3 MATERIALS

(a) The **keel** shall be of cast iron

(b) The **keel** may be covered with GRP or epoxy

E.3.4 CONSTRUCTION

(a) The **keel** shall be manufactured from a pattern approved by the IKA.

(b) The **keel** shall be in accordance with plan A.

E.3.5 FITTINGS

(a) MANDATORY

Keel bolts must be of stainless steel with a diameter of minimum 16 mm, maximum 20 mm.

E.3.6 DIMENSIONS

	Minimum	Maximum
Height	835 mm	845 mm
Length	2615 mm	2635 mm

E.3.7 WEIGHTS

	Minimum	Maximum
Keel weight wooden boats excl. **keel** bolts	1260 kg	1300 kg
Keel weight GRP boats incl. **keel** bolts	1280 kg	1320 kg

E.4 RUDDER BLADE, RUDDER STOCK AND TILLER

E.4.1 RULES

(a) The **rudder** blade shall comply with the **class rules** in force at the time of **certification**.

E.4.2 DEFINITIONS

(a) The **rudder** shall be in accordance with plan **G-2023.**
US national prescription
The **rudder** shall be in accordance with plan **V**. All dimensions are the minimum.
US national prescription
Plan **V** and Section A-A.

E.4.3 MANUFACTURERS

(a) Manufacturers of **rudders** shall be licensed by the IKA or the NCA.

E.4.4 MATERIALS

(a) The **rudder** blade shall be of solid wood, plywood or GRP or plywood covered with GRP.

(b) The rudderstock shall be of a solid round stainless steel rod.

(c) The tiller shall be of wood

E.4.5 CONSTRUCTION

(a) The GRP **rudder** blade shall be manufactured in a mould approved by the IKA or the NCA.

(b) The rudderstock shall be as per Plan **G** or in full length.

(c) The **rudder** shall be fixed, preventing it from coming loose from the lower bearing. The method and fittings are free.

(d) The shape of the aftermost 10 mm of the trailing edge is free.

(e) All curves, however, shall be fair curves without any concavity and edges.

US national prescription

The rudder shall be in accordance with plan V. All dimensions are the minimum.

US national prescription

Plan V and Section A-A

E.4.6 FITTINGS

(a) MANDATORY

(1) Rudderhead tiller **fitting**

(b) OPTIONAL

(1) A tiller extension with connecting **fitting**

E.4.7 Dimensions

(a) The rudderstock shall be minimum 25 mm in diameter.

E.4.8 WEIGHT

	Minimum	Maximum
Weight of rudder, including rudderstock	18,5 kg	22,5 kg

Danish and Norwegian national prescription:

E.4.9 MEASURING

(a) For measurement of the **rudder,** the following shall be applied:

Measuring stations from the upper edge of the **rudder** measured perpendicular to the rudderstock centreline: mm	Distance from the rudderstock centreline to the trailing edge. Tolerance +/- 2 mm. mm
140	325
305	370
555	390
805	375
1055	315
1305	210

(b) Measured along the trailing edge from the lowest point and 222 mm +/- 5 mm up, the thickness 10 mm from the trailing edge must be 14 mm +/ - 1 mm.

(c) At the measuring points below, the thickness must not be less than 40 mm. Tolerances as per Plan **G-2023**.

Measuring stations from the upper edge of the **rudder** measured perpendicular to the rudder stock centreline: mm	Distance from the trailing edge. Tolerance +/-5 mm. mm
555	290
1055	215

(d) The measuring points in E.4.9 (c) are mandatory. Any other measuring point may be included in the measuring.

Section F – Rig

F.1 PARTS

F.1.1 MANDATORY

(a) **Mast**

(b) **Boom**

(c) Standing **rigging**

(d) Running **rigging**

F.1.2 OPTIONAL

(a) **Whisker pole**

F.2 GENERAL

F.2.1 RULES

(a) The **spars** and their **fittings** shall comply with the **class rules** in force at the time of **certification** of the **spar**.

F.2.2 MODIFICATIONS, MAINTENANCE AND REPAIR

(a) **Spars** shall not be altered in any way except as permitted by these **class rules**.

(b) Routine maintenance, such as light **sanding** and painting, is permitted without re-**measurement**.

F.2.3 CERTIFICATION

(a) No **certification** of standing and running **rigging** is required.

F.2.4 DEFINITIONS

(a) MAST DATUM POINT

The **mast datum point** is situated 800 mm below the upper edge of the **lower limit mark.** This point is to be clearly marked on the aft side of the mast.

F.2.5 MANUFACTURER

(a) Mast and boom shall be supplied by a mast/boom builder approved by the NCA.

US national prescription:

The approved supplier of the aluminum mast and boom is Z-Spar/US Spars.

F.3 MAST

F.3.1 MATERIALS

(a) The wooden **spar** shall be spruce (Picea or Abies)

(b) The aluminium **spar** shall be built of aluminium grade 6005.

(c) The aluminium **spar** shall be painted white.

US national prescription:

The **mast** may either be clear anodised or painted.

F.3.2 CONSTRUCTION

(a) The wooden **spar** shall be laminated with a minimum thickness per layer of 20 mm after planning. The same quality and species of wood shall be used in each layer. Lamination shall be in one direction only, but the direction of lamination is free.

(b) The aluminium **spar** shall be a single extrusion using 6005 quality aluminium at a minimum weight of 2.3 kg/m.

(c) Fitting the **mast spar** with a thin layer of shock-absorbing material from minimum 100 mm above the deck to maximum 2,000 mm above the deck is permitted, provided that the material fitted has no significant influence on the physical properties of the **mast spar**.

F.3.3 FITTINGS

(a) MANDATORY

(1) Masthead **fitting**
(2) **Shroud** tangs
(3) A set of fixed **spreaders**
(4) A set of jumpers
(5) A **mainsail halyard** sheave box
(6) A jib **halyard** sheave box
(7) Gooseneck
(8) **Whisker pole fitting**
(9) **Vang fitting**
(10) Heel **fitting**.

(b) OPTIONAL

FOR USE

(1) One mechanical wind indicator
(2) Compass bracket
(3) Adjustments for **halyard** tensioning
(4) A navigation light at the masthead is permitted. On a wooden **mast spar**, the electric wire may be led through a groove covered with a wooden strip, rubber sealant or the like. On the aluminium **mast spar**, the wire may be led inside the mast.
(5) **Halyard** sheave box at masthead.

NOT FOR USE

(6) Masthead **halyard**.

F.3.5 DIMENSIONS

Wooden **mast**	Minimum	Maximum
Limit mark width	13 mm	-
Mast datum points to **lower point**		800mm
Lower point to **upper point**		9450 mm
Spreader length	640 mm	-
Jumpers length	400 mm	-
Jumper angle	145°	155°

The dimensions and layout of the wooden **mast** are shown on plan **L.**
A certain play of the **spreaders** in the **mast fitting** is acceptable. A straight line between the centre of the **spreader** ends shall go through the **mast**.
The longitudinal tolerance for the wooden **mast** is +/-10 mm, and the tolerance of the cross section is +/- 2 mm.

Aluminium **mast**	Minimum	Maximum
Mast length above **mast datum point**	10,590 mm	10,610 mm
Mast spar deflection in longitudinal plane when loaded with 10 kg at the **spreaders**	45 mm	55 mm
Mast spar cross section between **mast** heel and 7900 mm above **mast datum point**;		
Fore-and-aft	120 mm	125 mm
Transverse	80 mm	85 mm
Limit mark width	13 mm	-
Lower limit mark		800 mm
Upper limit mark	-	10,250 mm
Distance between **lower** and **upper limit marks**	-	9,450 mm
Forestay height	7,740 mm	7,750 mm
Shroud height	7,740 mm	7,750 mm
Whisker pole fitting:		
Height	670 mm	700 mm
Projection	-	2.500 mm
Spreader;		
Length	640 mm	650 mm
Height	4745 mm	4755 mm
Jumpers length	400 mm	405 mm
Distance between jumper stays at the end of jumper struts	830 mm	840 mm
Inertia Y-axis	143 cm^4	-
Inertia X-axis	69 cm^4	-

The dimensions and cross-section of the aluminium **spars** are shown on plan **M.**

F.3.6 WEIGHTS

Aluminium **mast**	Minimum	Maximum
Spar weight	38,6 kg	-
Mast tip weight	14,0 kg	-

Norwegian national prescription:		
Aluminium **mast** with compensation weight (equals **corrector weight**) cf. Plan **Y.**	Minimum	Maximum
Spar weight	68,5 kg	
Mast tip weight measured excluding mast step	24,0 kg	
Mast centre of gravity height measured excluding mast step	4300 mm	4330 mm
Internal tube for lead rope	Inner diameter	Dimensions of lead rope
Below jumper **fitting**	36 mm	Length 7900 mm, 3.0 kg/m.
Above jumper **fitting**	22 mm	Length 2500 mm, 1.1 kg/m.
Total weight of lead ropes	Minimum 26.5 kg.	

F.4 BOOM

F.4.1 MATERIALS

(a) The wooden **spar** shall be spruce (Picea or Abies).

(b) The aluminium **spar** shall be built of aluminium grade 6005.

(c) The aluminium **spar** shall be painted white.

US national prescription:

The **spar** may either be clear anodized or painted.

F.4.2 CONSTRUCTION

The dimensions and layout of the wooden **boom** are shown on plan **L.**

The longitudinal tolerance for the wooden **boom** is +/- 5 mm.

(a) The wooden **spar** may be laminated with a maximum of four layers of wood. Glue based on resorcinol phenol resin or similar weather-resistant glue shall be used.

(b) The aluminium **spar** extrusion shall include a fixed sail groove, which shall be integral with the spar.

F.4.3 FITTINGS

(a) MANDATORY

(1) Not more than two mainsheet blocks with attachments

(2) Clew **outhaul** blocks and attachments

(3) **Vang fitting**
(4) Gooseneck attachment

(b) OPTIONAL
(1) **Whisker pole** stowage fittings
(2) Reef lines
(3) Chafe pads

F.4.5 DIMENSIONS

Aluminium **boom**			
Boom spar must be as plan **M,** and between the **outer limit mark** and 3300 mm forward of the **outer limit mark**, the cross section must fit into the dimensions below.			US national prescription:
	Minimum	Maximum	Maximum
Vertical	94,5 mm	100 mm	118mm
Transverse	68,5 mm	72 mm	86 mm
Inertia Y-axis	64 cm^4	153 cm^4	
Inertia X-axis	30 cm^4	73 cm^4	
Approved profile: Dimensions as Z-Spars 160			Dimensions as Z-Spars 204

The dimensions and layout of the wooden **spar** are shown on plan **L**.
The longitudinal tolerance for the wooden **spar** is +/- 5 mm, and the tolerance of the cross section is +/- 2 mm.

F.4.6 WEIGHTS

Aluminium **boom**	Minimum	Maximum
Danish national prescription: **Spar weight**	6.5 kg	7.7 kg.

Norwegian national prescription for aluminium **boom** with compensation weight (equals **corrector weight)** cf. Plan **Z:**	Minimum	Maximum
Spar weight	10.0 kg	10.5 kg
Centre of gravity from **outer point**	1600 mm	

F.5 WHISKER POLE

F.5.1 MANUFACTURER

(a) Manufacturer is optional.

F.5.2 MATERIALS

(a) The **spar** shall be of wood or aluminium grade 6005.

F.5.3 CONSTRUCTION

(a) The **whisker pole** may be in laminated or solid wood.

(b) The **whisker pole** may be of aluminium tubing.

F.5.4 FITTINGS

(a) **Fittings** are optional.

F.5.5 DIMENSIONS

Wooden pole:	Minimum	Maximum
Whisker pole spar cross section		
Middle diameter	40 mm	-
End diameter	28 mm	-

Aluminium pole	Minimum	Maximum
Whisker pole spar cross section		
Diameter	35 mm	-

F.6 STANDING RIGGING

F.6.1 MATERIALS

(a) The standing **rigging** shall be of standard non-faired 19-strand stainless steel wire.

F.6.2 CONSTRUCTION

(a) MANDATORY

(1) **Forestay** of non-faired 19 strand stainless steel wire

(2) **Shrouds** of non-faired 19 strand stainless steel wire

(3) **Backstay** of non-faired 19 strand stainless steel wire

(4) Jumper stays of non-faired 19 strand stainless steel wire

F.6.3 FITTINGS

(a) MANDATORY

(1) **Forestay** rigging link

(2) **Shroud** rigging screws

(3) Jumper rigging screws

(b) OPTIONAL

(1) **Backstay** adjustment

F.6.4 DIMENSIONS

	Minimum	Maximum
Forestay diameter	5 mm	6 mm
Shroud diameter	5 mm	6 mm
Backstay diameter	3 mm	4 mm
Jumper stay diameter	4 mm	5 mm

F.7 RUNNING RIGGING

F.7.1 MATERIALS

(a) Materials are optional.

F.7.2 CONSTRUCTION

(a) MANDATORY

(1) **Mainsail halyard**

(2) **Mainsail sheet**

(3) **Vang**

(4) **Headsail halyard**

(5) Jib **sheets**

(b) OPTIONAL

FOR USE

(1) **Mainsail** Cunningham line

(2) **Mainsail outhaul**

(3) Jib Cunningham line

(4) Single-line jib barber haulers capable of moving the **sheet** athwartships.

NOT FOR USE

(5) **Halyard** from mast top for asymmetric **spinnaker**.

F.7.3 FITTINGS

OPTIONAL

(1) One block or eye in each jib barber hauler to run on jib **sheet**

Section G – Sails

G.1 PARTS

G.1.1 MANDATORY

(a) **Mainsail**

(b) Jib

G.2 GENERAL

G.2.1 RULES

(a) **Sails** shall be made and measured in accordance with WS's Equipment Rules of Sailing Section G, except otherwise specified in the **class rules** in force at the time of **certification**.

G.2.2 CERTIFICATION

(a) The **official certification measurer** shall **certify** mainsails and jibs in the **tack** and shall sign and date the **certification mark**.

(b) An MNA may appoint one or more persons employed at a sailmaker to measure and **certify sails** produced by that manufacturer in accordance with the principles of the WS In-house Certification Programme.

G.2.3 SAILMAKER

(a) Sailmaker is optional.

(b) The weight in g/m^2 of the **body of the sail** shall be indelibly marked near the **tack** by the sailmaker together with the date and his signature or stamp.

G.3 MAINSAIL

G.3.1 IDENTIFICATION

(a) The class insignia shall have the following dimensions and placed above the national letters and numbers. The class insignia shall be placed back-to-back.

Class Insignia:

1) A circular ring with an outer diameter of: 400 mm

2) Thickness: 65 mm

(b) The national letters and numbers see rule C.10.3

G.3.2 MATERIALS

(a) The **ply** fibres shall consist of synthetic Polyester woven into a sailcloth with a cloth weight of not less than 310 gr/m^2 (7,24 oz/Sailmaker Square yard – 28,5" x 36"). Transparent panels with a total area not exceeding 1,0 m^2. Windows shall not be less than 150 mm from any edge of the sail.

(b) **Sail reinforcement** shall consist of woven Polyester ply fibres woven into sailcloth.

US national prescription
The use of 3Di sails is allowed. The total dry weight of the mainsail, including battens, shall be at least 9.07 kg. (20 pounds). This does not modify the sailcloth weight as stated in G.3.2 (a)

G.3.3 CONSTRUCTION

(a) The construction shall be: **soft sail**, **single ply sail**.

(b) The **body of the sail** shall consist of the same **woven ply** throughout.

(c) The **sail** shall have four (4) batten pockets in the **leech**.

(d) The **sail** may be constructed so that it can be reefed.

(e) The following are permitted: Stitching, glues, tapes, bolt ropes, corner eyes, headboard with fixings, Cunningham eye or pulley, **batten pocket patches**, batten pocket elastic, batten pocket end caps, mast and boom slides, leech line

with cleat, **windows**, tell tales, sail shape indicator stripes and items as permitted or prescribed by other applicable *rules*.

(f) The **leech** shall not extend aft of straight lines between:

(1) the **aft head point** and the intersection of the **leech** and the upper edge of the nearest **batten pocket,**

(2) the intersection of the **leech** and the lower edge of a **batten pocket** and the intersection of the **leech** and the upper edge of an adjacent **batten pocket** below,

(3) the **clew point** and the intersection of the **leech** and the lower edge of the nearest **batten pocket**.

G.3.4 DIMENSIONS

	Minimum	Maximum
Leech length	-	9700 mm
Half width (MGM)	-	2130 mm
Three-quarter width (MGU)	-	1170 mm
One-quarter-width (MGL)		2860 mm
Top width	-	120 mm
Mass of **ply** of the **body of the sail**	310 g/m^2	
Primary reinforcement	-	430 mm
Secondary reinforcement:		
From **sail corner** measurement points	-	1300 mm
For **flutter patches**	-	115 mm
For **chafing patches**	-	200 mm
For **batten pocket patches**	-	200 mm
at a reefing point adjacent to **luff** or	-	900 mm
leech	-	900 mm
Tabling width	-	40 mm
Seam width	-	40 mm
Window area	-	1,0 m^2
Window to **sail edge**	150 mm	
Extension of headboard from **head point**		120 mm
Batten pocket length:		
Uppermost pocket:		
Full length permitted	-	-
Second **batten pocket** from top:		
Inside	-	1000 mm
Outside	-	1050 mm
Third **batten pocket** from top:		
Inside	-	1400 mm
Outside	-	1450 mm
Lowermost **batten pocket**:		
Inside	-	1400 mm

	Minimum	Maximum
Outside	-	1450 mm
Batten pocket width:		
Inside	-	65 mm
Outside	-	80 mm
Head point to intersection of **leech** and centreline of uppermost **batten pocket**	1900 mm	2000 mm
Clew point to intersection of **leech** and centreline of lowermost **batten pocket**	1900 mm	2000 mm
Distance between centrelines of intermediate pockets:	1900 mm	2000 mm

G.4 JIB

G.4.1 MATERIALS

(a) The **ply** fibres shall consist of synthetic Polyester woven into a sailcloth with a cloth weight of not less than 310 gr/m^2 (7,24 oz/Sailmaker Square yard – 28,5" x 36"). Transparent panels with a total area not exceeding 0,5 m^2. Windows shall not be less than 150 mm from any edge of the sail.

(b) **Sail reinforcement** shall consist of woven Polyester ply fibres woven into sailcloth.

US national prescription
The use of 3Di sails is allowed. The total dry weight of the jib, including battens, shall be at least 4.76 kg (10.5 pounds). This does not modify the sailcloth weight as stated in G.4.1.a

G.4.2 CONSTRUCTION

(a) The construction shall be: **soft sail**, **single ply sail**.

(b) The **body of the sail** shall consist of the same **woven ply** throughout.

(c) The jib shall have three (3) **batten pockets** in the **leech**.

(d) The **leech** shall not extend beyond a straight line from the aft **head point** to the **clew point**.

(e) The following are permitted: Stitching, glues, tapes, corner eyes, hanks, batten pocket elastic, **batten pocket patches**, batten pocket end caps, leech line with cleat, **windows**, tell tales, sail shape indicator stripes and items as permitted or prescribed by other applicable *rules*.

G.4.3 DIMENSIONS

	Minimum	Maximum
Luff length		6900 mm
Leech length		6700 mm
Foot length		2600 mm
Foot median		6820 mm
Upper width taken from the **leech** 2950 mm from the **head point** to the nearest point on the **luff**		1135 mm

	Minimum	Maximum
Lower width taken from the **leech** 4800 mm from the **head point** to the nearest point on the **luff**		1850 mm
Top width	-	45 mm
Foot irregularity	-	40 mm
Mass of **ply** of the **body of the sail**	310 g/m^2	-
Primary reinforcement		360 mm
Secondary reinforcement:		
From **sail corner** measurement points		1080 mm
For **flutter patches**		150 mm
For **chafing patches**		200 mm
For **batten pocket patches**		200 mm
Tabling width		40 mm
Seam width		40 mm
Window area	-	0,5 m^2
Window to **sail edge**	150 mm	
Batten pocket length:		
Uppermost pocket:		
May be full length	-	-
Intermediate pocket:		
Inside		600 mm
Outside		650 mm
Lowermost pocket:		
Inside		800 mm
Outside		850 mm
Batten pocket width:		
Inside	-	65 mm
Outside	-	80 mm
Head point to intersection of **leech** and centreline of uppermost **batten pocket**	1600 mm	1700 mm
Distance between intersection of **leech** and uppermost, lowermost and intermediate **batten pockets**:	1600 mm	1700 mm
Clew point to intersection of **leech** and centreline of lowermost **batten pocket**	1600 mm	1700 mm

PART III – APPENDICES

PLANS:

Plan A Wooden Knarr construction - 1943
Plan B Sail Plan – 16.10.1950
Plan C Wooden Knarr interior layout – 20.11.1964
Plan D Lines Drawing - 23.12.1958
Plan E Wooden–plug - 10.11.1961
Plan F Traveller post for main sheeting - January 1964
Plan G Rudder – 24.10.1952
Plan G-2023 Rudder – 05.05.2023
Plan H GRP Knarr by Børresen – 20.05.1973
Plan J Sail Plan by Børresen – 20.05.1973
Plan K Sails – revised November 1989
Plan L Spars and Struts – Wooden mast – March 1990
Plan M Aluminium Spars – June 2009 - rev. 31.05.2025
Plan N Shortened cockpit seats
Plan O Sitting board
Plan P Sails – Measurement Form with long battens - 2010 – rev. March 2015
Plan Q Jumper details for Alu mast – 16.10.2010
Plan R Wooden Deck beam for GRP Knarr – Deck camber – 12.01.2010
Plan S Mast Step GRP Knarr – 26.01.2011
Plan T Hull Profile definition – 27.04.2010
Plan U Sheerline – 27.04.2010
Plan V Rudder – 26.01.2011
Plan W Traveller post for main sheet – 25.08.2011
Plan X Drawers and compensation weights – 03.12.2012
Plan Y Compensation weights and centre of gravity of the aluminium mast with compensation weight – 25.01.2015
Plan Z Compensation weight and centre of gravity of the aluminium boom with compensation weight – 25.01.2015

PART IV – APPENDICES – RULE CHANGES

RULE CHANGES

For 2019:
Mainsail, third batten pocket from top:
Inside 1400 mm,
Outside 1450 mm.

For 2020:
Front page updated to: ERS 2017 – 2020

National prescriptions are inserted throughout

Sec. A.7 and A.8 deleted

C.8.6 New section

C.9.7 (3) The word ”may” is replaced by ”shall”

C.9.8. (a) (1) Rewritten

C.9.8. (a) (6) New section

C.10.4. (a) (6) New section

For 2023:
Front page updated to: ERS 2021 – 2024

Throughout the rules:
The word “Drawing” [letter] changed to Plan [letter]
The abbreviation “ICA” changed to “IKA”

A.6.1 Wording replaced

A.6.2 New section

A.7 New section

A.8 New section

C.2.3 (b)
Wording replaced
US national prescription added

C.4.1 Rewritten

C.5.1 (a) (1) word “fixed” replaced with “installed”

C.5.2.(b) (2) the words “with fuel tank” added

C. 6.3 Danish national prescription added

C. 6.4 Danish national prescription added

C. 8.1 Danish national prescription added

C. 8.5 Danish national prescription added

C. 8.6 Danish national prescription added

C.8.7 New section

C.9.8 (a) (1) Danish and US national prescriptions added

C.9.8 (a) (2)
Rewritten.
Danish national prescription added

D. 5.1 Danish national prescription added

D.8.2 US and Danish national prescriptions added

D.10 (1) (a) Added the words “or as stated below”

D.10 (1) (a) (7)
Added the words “placed outside the cockpit coaming with crank handles placed under the deck. Length of handles must be min. 200 mm. The position of the winches is free”

E.4.2 US and Danish national prescriptions added

E.4.5 Danish national prescription added

E.4.9 New section with Danish national prescription added.

F.3.6 Danish national prescription added

F.4.5 Danish national prescription added

F.4.6 Danish national prescription added

G.3.2 (b) US national prescription added

G.4.1 US national prescription added

Part III, Section H: Plan G-2023 added

For 2024:

An update to print in **bold** terms, where the definition in the ERS applies, has been made throughout.

In the introduction, the change of "Holder of the Rights" to IKA is explained.
"Holder of the Rights" amended to IKA throughout.

C.6.3 The Danish National Prescription adopted by Norway.

C.6.4 The Danish National Prescription adopted by Norway.

C.8.1 The US National Prescription adopted by Norway and Denmark

C.9.7 (b) (2) The US National Prescription adopted by Norway

D.5.1 The Danish National Prescription adopted by Norway

E.2.2 (c) The US National Prescription adopted by Norway

E.4.2 The Danish National Prescription adopted by Norway

E.4.5 The Danish National Prescription adopted by Norway

E.4.9 The Danish National Prescription adopted by Norway

F.3.6 Norwegian National Prescription rewritten

F.4.6 Norwegian National Prescription rewritten

For 2025:

Front page updated to: ERS 2025 – 2028

A further update to print in **bold** terms, where the definition in the ERS applies, has been made throughout.

Several minor amendments:
See the separate document "Appendix MA-2025"; in addition, a minor amendment to Plan M cf. the minor amendment to Rule F.4.5.