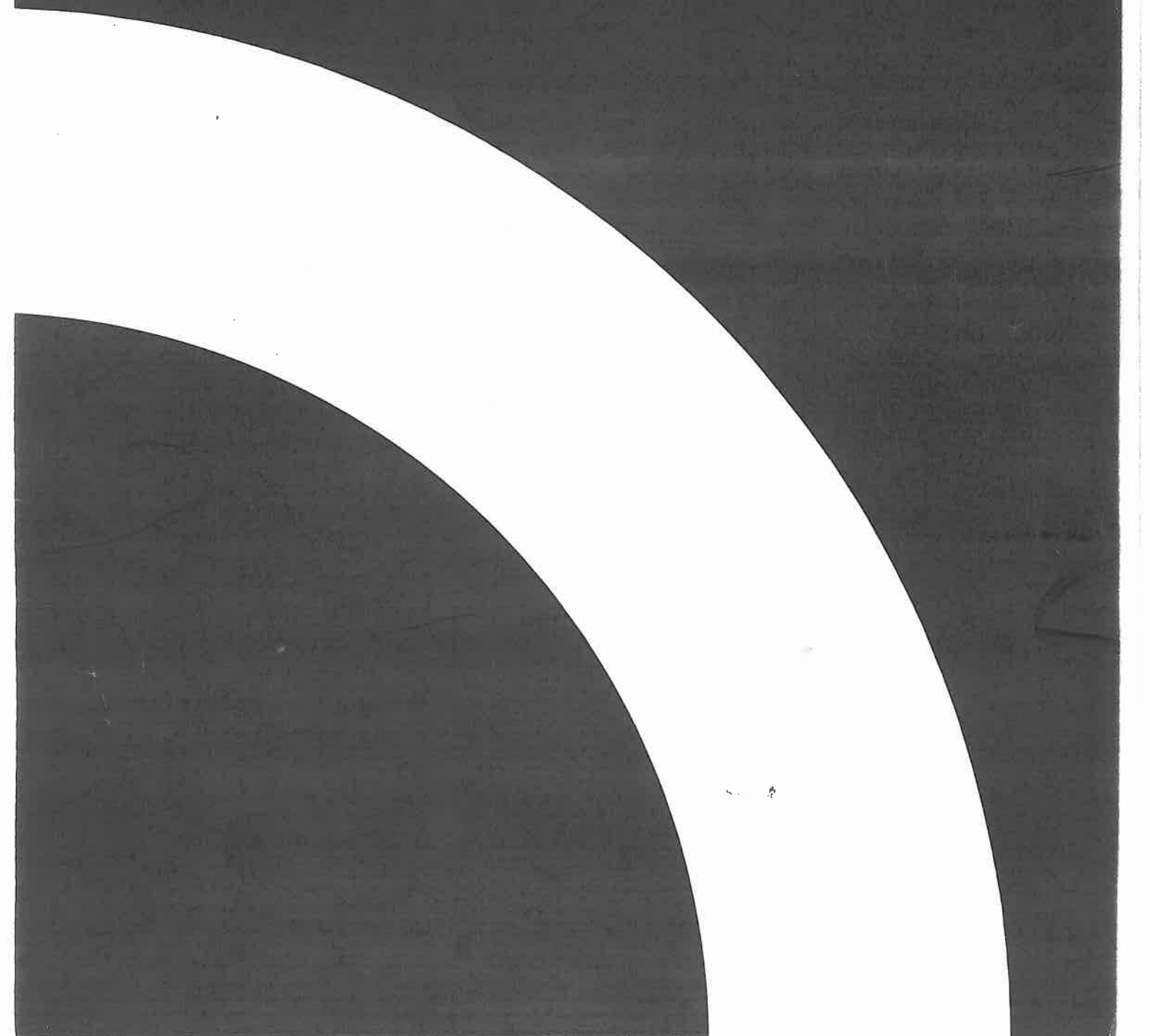


KNARR

INTERNATIONAL CLASS RULES

Rev. Nov. 1989



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Rev. Nov. 1989

Publisher:

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Licensing Add:

- 5.1. The Knarr shall be constructed by a yard with a license to build the Knarr, issued by the Knarr organization. The Knarr organization collects a fee for licensing the yard as well as collecting a fee for every Knarr being built.

Amendment to 5.2 to ensure new KNARRs as equal as possible:

- 5.2 The Knarr shall be constructed over a plug or in a mould approved by a measurer recognized by the International KNARR Committee.

Add:

All GRP parts and keel for the GRP KNARR shall be constructed in the moulds owned by Norwegian Knarr Association or in an approved mould made over a plug constructed from those moulds. The minimum construction basis for the GRP KNARR is hull, the two inner sections (inner cabin and cockpit sections) and keel.

Wooden deck specifications:

6.1.2

Change: The deck....

The deck shall be of Oregon pine or spruce, not less than 16 mm thick, or of **WBP**-mahogany plywood, not less than 12 mm thick and a min. weight of 6,6 kg/m². Deck and cabin top to be covered with painted canvas, vinyl, teak or other waterproof material.
Other material and dimensions as specified on the plan.

GRP Knarr laminate specifications:

- 6.1.3 *Add:* Different numbers of layers of Chopped Strand Mat are permitted as long as the total minimum weights of the laminate are as stated.

New: Wooden cabin on GRP-KNARR:

- 6.1.4 A wooden cabin top, sides and coaming in accordance with the rules for the wooden KNARR, may be permitted for the GRP-KNARR. However the outside width of the cabin and cockpit at deck level shall confirm with the width for the GRP-KNARR. The maximum and minimum dimensions are limited by the drawings of the wooden KNARR and the GRP-KNARR. (cf. plan M)

Wooden deck on GRP-KNARR:

- 6.1.5 A wooden deck, in accordance with the rules for the wooden KNARR, may be permitted for the GRP-KNARR.

GRP-KNARR inner cabin top:

- 6.1.6 The inner shell, of the 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.

Drawers:

- 6.2.3 The weight of the drawers aft shall be min. 20 kg. It is permitted to leave out the drawers, provided that the difference in weight to be made up with lead, fixed 500 mm aft of the coaming and 150 mm below the underside of the deck.

Transversal reinforcement beam incorporated in GRP deck:

6.2.4 Knarrs built with GRP decks, may incorporate the following deck reinforcement:

One deck beam may be fitted to the underside of the deck, immediately aft of the mast collar. The beam shall run transversely and extend sideways, on both sides, to the point where the deck core material ends. The deck beam may be built of wood or glass fiber. The scantlings of the wooden beam shall be as follows, and have a gradual taper:

At center line: width 50 mm, depth 60 mm

At Ends: width 50 mm, depth 40 mm

The glass fiber beam shall be moulded from an approved mould in accordance with set laminate schedule and by a builder approved by the class organization.

Tie-rod at mast

6.2.5. For additional support of deck in way of mast, one tie-rod may be fitted in the centre line, just in front or aft of the mast collar, between the underside of the deck and the mast step.

The tie-rod may be a steel rod, wire or rope and fitted with a tightening device.

Rail:

6.3 *Add:* For the GRP-KNARR, a toe rail of teak or mahogany of a constant height of 40 +- 5 mm is permitted.

Deck benches

6.4.8. Deck benches are permitted parallel to the toerail, athwartships of the cockpit. They must be inboard of the toerail, but by no more than 25 mm (1") from the upper, inboard aspect of the toerail. They may be up to 65 mm (2 1/2") wide and no higher than the straight line from the top of the cockpit coaming to the top of the toerail directly athwartships of the deck bench. They may not be used as a hiking aid.

Rudder: add: plywood

7.1 The rudder shall be constructed of solid wood, plywood or GRP according to laminate specifications.

Security watching windows in new sails, max areas

14.2.2 Windows max area 0.3 m² are permitted. *Add:*

It shall be at least one window of minimum 0.25 m² in each sail positioned for maximum visibility. The upper edge of the window shall be below a line 1 m above and parallel to the lower leach in the main sail and 1.5m in the jib. Maximum total areas of the windows are 0.5 m² in the jib and 1.0 m² in the main sail.

Jib check wire not required: Change:

14.4.4 The jib shall be set without dismounting the forestay. Check wire or other type of reinforcement is not required. The jib shall be fastened to the forestay with hanks or similar. Head foils are not permitted.

Mainsail sheeting:

15.1 *After:* ..., all parts of the sheeting shall run directly between boom and the post.

Add: The tailing end may be led to cleat or jammer. The position of cleat or jammer is free.

Halyards led aft:

15.3.3. *Change:*

Purchase or Highfield lever for adjusting the luff tension of the jib and main while racing, is permitted. Halyards of all sails shall be fastened over deck and may be led aft.

Cunningham in the jib:

15.3.4 Cunningham haul to stretch the luff of the jib is permitted.

Add: The haul may be led aft.

Electronic/digital compass:

16.3 *Change to:*

Devices transmitting and/or correlating data relative to wind direction or speed, or boat speed and location, by means such as, but not limited to electronic, mechanical, hydraulic or pneumatic, are prohibited.

Compasses that are entirely self-contained units giving solely direction, a tacking prompt and have a timer are permitted.

If the sailing instructions requires the use of special electronic means for safety or other reasons the sailing instructions prevail.

Mechanical wind direction indicator is permitted.

INTRODUCTION

These are the class rules for the one design keel boat, the Knarr, and replaces previous rules.

Previous rules approved by the Rules Committee of the Royal Norwegian Yachtclub (KNS), and later the Norwegian Yachting Association (NSF) are:

15th	October	1948	with amendments and additions of
25th	October	1951	
24th	October	1952	
29th	October	1953	
	October	1955	
16th	March	1956	
24th	October	1958	
26th	October	1962	
28th	October	1964	
12th	March	1965	
27th	October	1966	
27th	October	1967	
2nd	November	1968	
26th	October	1971	
2nd	April	1973	
23rd	January	1974	
21th	October	1974	
15th	December	1975	
1th	December	1978	
30th	April	1984	
2nd	April	1987	

These rules are approved by

The National Class Associations:

San Francisco Bay Knarr
Association

Danish Knarr
Admiralty

Norwegian Knarr
Association

and by the national authorities

Danish Yachting Association
Date 24th January 1990

Norwegian Yachting Association
Date 13th May 1990

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1 PRINCIPAL DIMENSIONS ETC.

1.1 The KNARR was designed in 1943 by Erling L. Kristofersen of Norway.

1.2 Principal dimensions:

Length overall	9,28 m
Length of waterline	6,21 m
Beam	2,12 m
Draft	1,30 m
Freeboard	0,60 m

1.3 The following plans are in force:

A. Entypebåt 1943. Skrogtegning (One Design 1943, Hull plan)	1:10	1943	Erling L. Kristofersen
B. Seil for Entypebåt 1943 (One Design 1943, Sail plan)	1:25	16.10.50	Erling L. Kristofersen
C. Forslag til aptering (Outline for accommodation)	1:10	20.11.54	P.A. Christiansen
D. Knarr, linjetegning (Knarr, lines)	1:10	23.12.58	Sigurd Herbern
E. Lestetegning for Knarr (Knarr, Plug plan)	1:10	10.11.61	Sigurd Herbern
F. Knarr, Traveller post for Main sheeting	1:2	Jan. 1961	Knarr Adm. DK (adj. March 1990)
G. Knarr Rudder	1:4	Nov. 1962	Grimløkilen (adj. March 1990)
H. Glasfiber Knarr I (GRP-Knarr I)	1:10	20.05.73	B. Børresen
J. Glasfiber Knarr II (GRP-Knarr II)	1:25	20.05.73	B. Børresen (adj. March 1990)
K. Knarr Sails	1:25	1978	(rev. Nov. 1989)
L. Knarr Spars	1:4	March 1990	

2 PURPOSE OF THE RULES

2.1 The purpose of these rules is to create a basis for a one design class where - within limits set by economic and technical considerations - all factors affecting boatspeed are as uniform as possible and where the performance achieved is dependent solely on the ability of the crew.

3 RULE IMPLEMENTATION

3.1 Responsibility for implementation of these rules lies with the International KNARR Committee which consists of one member appointed from the KNARR authority of each country.

3.2.1 The official language of the class is English, and in the event of dispute over translation, the English text shall prevail.

3.2.2 The word "shall" is mandatory and the words "may" and "can" are permissive.

3.2.3 In the event of a discrepancy between the rules and the plans, the rules shall have priority.
Plans or details shown on plans shall overrule previous plans.

4 DISPENSATION

4.1 The national class authority can give dispensation for differences due to older rules or differences made when the boat was originally built. Such dispensations shall be stated in the measurement certificate. If parts given dispensation are replaced owing to wear, damages, or the like, the new parts have to respect these rules.

CONSTRUCTION	5
The KNARR shall only be constructed by a yard with a licence.	5.1
The KNARR shall be constructed over a plug or in a mould approved by a measurer recognized by the International KNARR Committee.	5.2
CONSTRUCTION SPECIFICATION	6
The KNARR shall be constructed either of wooden planks or of glass reinforced plastic (GRP).	6.1.1
The wooden KNARR shall have planking of Douglas fir (<i>Pseudotsuga taxifolia</i>) Oregon Pine quality, or of Scots Pine (<i>Pinus sylvestris</i>). The thickness of the planking shall be min. 20 mm after planing. Deck and cabin top to be covered with canvas, vinyl or other waterproof material. Other materials and dimensions as specified on the plan.	6.1.2
The GRP KNARR shall conform to the laminate specifications, page 15.	6.1.3
The accommodation shall provide reasonable berths for min. 2 persons. The wooden KNARR shall follow in principle the Norwegian or Danish outlines, respectively plan A. and C., and the GRP-KNARR shall follow in principle plan H.	6.2.1
Changes in the accommodation may be made as long as weight distribution and the stiffness of the hull is not altered.	6.2.2
A toe rail of min. height forward 55 mm, evenly decreasing to 35 mm aft, shall be fitted, though not on the transom.	6.3
The cabin-top may be fitted with a sliding hatch in any material.	6.4.1
A forehatch is permitted. Size, position and material is free.	6.4.2
A well aft for outboard engine is permitted.	6.4.3
A sprayhood is permitted.	6.4.4
Windows and openings for ventilation are permitted. Positioning is free.	6.4.5
Handrails on the cabin-top are permitted.	6.4.6
In wooden Knarr's materials such as deadwood and pitch, used to fill the cavity between the iron keel and the rudder, may be removed, giving space for a well connected to the cabin.	6.4.7
THE RUDDER	7
The rudder shall be constructed of solid wood or GRP according to the laminate specifications.	7.1
The shape of the rudder shall conform to the rules of 24th October 1952 (plan G.).	7.2
A tiller extension is permitted.	7.3

8 WEIGHT

- 8.1** The total weight of the KNARR excluding spars, standing and running rigging and loose equipment (an installed bilge pump is considered to be loose equipment) but including fitted installations such as berths, floorboards and thwarts aft, shall be min. 2225 kg.
- 8.2** The keel shall be of cast iron and the weight 1280 ± 20 kg excluding keelbolts for the wooden KNARR and 1300 kg ± 20 kg including keelbolts for the GRP KNARR.
- 8.3** If a KNARR is found to weigh too little and the weight wanting is less than 100 kg, approval can be given by compensating with four equal lead weights positioned, for the wooden KNARR in the furthest aft corners of the glove compartments in the cockpit and for the GRP-KNARR aft under the shelves in the cockpit, and immediately under the base of the berths in the forepeak 500 mm forward of the forward chainplates.
In the GRP-KNARR weight compensation with lead may completely or partly be replaced by extra fiber glass laminates immediately forward and aft of the inner section and in an equal layer over the hull in a width of about 200 mm.

9 THE MAST

- 9.1.1** The mast shall be built of spruce (*Picea* or *Abies*) of ordinary commercial quality. Masts shall be supplied by a licensed boatyard or obtained from a mastbuilder approved by the National KNARR Authority.
- 9.1.2** Masts shall be laminated with minimum layers of 20 mm after planing. The same quality and species of wood to be used in each layer. Lamination shall be in one direction only but the direction of lamination is free.
Glue based on resorcinol phenol resin or similar weather resistant glue shall be used.
- 9.2** The dimensions of the mast are shown on plan L.
Tolerances lengthwise ± 10 mm
Tolerances cross sectional ± 2 mm
- 9.3** Protecting the mast, measuring from 0.1 m to max. 2.00 m above the deck, with a thin layer of shock-absorbing material which has no appreciable influence on the characteristics of the mast, is permitted.
- 9.4.1** The position of the mast in the fore and aft plane is free.
- 9.4.2** 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.
- 9.4.3** The mast hole through the deck shall have max. length 120 mm and max. width 105 mm. If the mast is protected by a rubber band, max. 5 mm thick, the length of the hole may be increased by twice the thickness of the band. A larger hole is permitted in the fore and aft plane as long as the above maximum dimension is maintained by means of inserts (of hardwood or similar).
- 9.4.4** Under sail fore and aft movement of the mast-heel must not exceed 5 mm.
- 9.5** Painted measurement bands each not less than 13 mm wide and clearly discernible while racing shall be marked on the mast as follows:
The lower band with its upper edge 800 mm ± 5 mm above the deck.
The upper band with its lower edge max. 9450 mm above the upper edge of the lower band.
- 9.6.1** The jumper strut shall not be less than 250 mm long measured from the fore side of the mast to its outer end.

The diamond struts shall not be less than 400 mm long measured along the centerline from the side of the mast to its outer ends. The angle shall be 150° ± 5°.	9.6.2
The spreaders shall not be less than 640 mm long measured from the side of the mast to its outer ends. The angle shall be 180°. A certain play in the mast fitting is acceptable, however a straight line between the fastening points of the upper strouds to the spreaders shall pass through the mast.	9.6.3
A navigation light in the masthead is permitted. The wire may be drawn in a moulded groove in the mast not wider than the wire and be covered with a wooden list, rubber-sealant or the like.	9.7
THE BOOM	10
The boom shall be built of wood and supplied as specified in 9.1.1.	10.1.1
The boom may be laminated of maximum four layers of wood. Glue as specified in 9.1.2.	10.1.2
The dimensions of the boom are shown on plan L. Tolerances lengthwise ± 5 mm Tolerances cross sectional ± 2 mm	10.2
A painted measurement band not less than 13 mm wide and clearly discernible while racing shall be marked on the boom with its forward edge not more than 3400 mm from the line of the aft edge of the mast, measured with the boom fore and aft and at right angles to the mast.	10.3
The gooseneck shall be fitted with a stop to ensure that the foot of the mainsail when in the fore and aft plane cannot be hauled below the upper edge of the lower band on the mast (cf. 9.5).	10.4
WHISKER POLE	11
The whisker pole shall be built of wood or aluminium.	11.1.1
The whisker pole may be laminated in solid wood. Cross section min. diameter 40 mm in the centre and 28 mm at the ends.	11.1.2
The whisker pole in aluminium shall be min. diameter 35 mm tubular.	11.1.3
The length of the whisker pole shall be such that a measure from the extreme edge of the outboard end-fitting to the fore and aft plane when the pole is hooked on to the mast eye, held towards the mast, beamed out and in a horizontal position, does not exceed 2500 mm.	11.2
STANDING RIGGING	12.
Upper and lower shrouds, forestay and backstay, jumper stay and diamondshrouds shall be of 19 strand stainless wire.	12.1.1
Upper and lower shrouds and forestay shall be min. 5 mm wire (in Denmark 6 mm). Backstay, jumperstay and diamondshrouds shall be min. 4 mm wire (jumper stay and diamondshrouds in Denmark 5 mm).	12.1.2
The backstay may be fixed to the hull in such a manner, that the stay can be hauled and eased under way.	12.2.1

- 12.2.2** Apart from the backstay all stays and shrouds shall be connected to chain plates or to the mast with turnbuckles.
- 12.3.1** 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 or, if the hole is increased because of a protecting rubber band, the free opening minus the increasement (cf. 9.4.3).
- 12.3.2** The lower shrouds shall intersect the deck 350 ± 5 mm aft of the intersection of the upper shrouds.
- 12.3.3** The forestay shall intersect the deck at a distance measured horizontally, of 2000 +0 -20 mm from the fore side of the mast when placed aft in the masthole.

13 FITTINGS

- 13.1** Fittings are optional for all purposes specified on the drawings or mentioned in the rules.

14 SAILS

- 14.1** Where no statement to the contrary is made in these rules, sails shall be constructed and measured in accordance with I.Y.R.U. Sail Measurement Instructions.
- 14.2.1** Sails shall be of woven material of which the weight stated by the sailcloth supplier is not less than 310 gr/m².
- 14.2.2** Windows max. area 0,3 m² of unwoven material in each of the mainsail and jib are permitted.
- 14.3 Mainsail**
- 14.3.1** The mainsail shall not be stretched over the inner edges of the measurement bands on the mast and boom, cf. 9.5 and 10.3. The length of the leech shall not exceed 9700 mm. (cf. plan K.).
- 14.3.2** The total width of the mainsail, including the luffrope shall not exceed 2150 mm at half-height of luff and leech and 1200 mm at three-quarter height.
- 14.3.3** The width of the headboard including luffrope shall not exceed 120 mm measured perpendicular from the luff.
- 14.3.4** The leech may be supported by four battens dividing the leech into five approx. equal parts.
- | | |
|---------------------------------------|--------|
| Length of the uppermost batten max. | 500 mm |
| Length of the two center battens max. | 850 mm |
| Length of the lowermost batten max. | 750 mm |
| Width of battens max. | 50 mm |
- The depth of the battenpockets shall not exceed length of batten plus 50 mm.
- 14.3.5** One or more reefs in the mainsail is permitted. The reef shall be at least 0.9 m above and parallel to the foot.
- 14.3.6** The class emblem - a circular ring, diameter c. 400 mm, thickness c. 65 mm - national letters and registration numbers shall be positioned in the mainsail in accordance with the rules of the National Authority and I.Y.R.U.

Jib	14.4
The maximum measurements of the luff and leech and the center measurement taken from the height where the width of the sail measured perpendicular to the centreline of the sail is 120 mm (cf. plan K) shall be:	14.4.1
Luff	6650 mm
Leech	6450 mm
Center measurement	6600 mm
The width of the jib measured 2700 mm under the above mentioned height shall not exceed 1150 mm.	14.4.2
The foot of the jib shall not exceed 2600 mm.	
The leech of the jib may be stiffened with 3 battens spaced approx. equally from each other and the head and the clew of the sail.	14.4.3
Length of uppermost batten max.	200 mm
Length of the two lower battens max.	300 mm
Width of battens max.	50 mm
The depth of the battenpockets shall not exceed length of battens plus 50 mm.	
The jib shall be set without dismounting the forestay. 7 x 7 strand stainless steel wire min. dimension 4 mm shall be sewn in the luff of the jib for halyard fastening. The jib shall be fastened to the forestay with hanks or similar. Headfoils are not permitted.	14.4.4
SETTING THE SAILS	15
The mainsail shall be sheeted either from a double block from the end of the boom to two blocks on the deck situated equidistant to the fore and aft plane and 900 mm ± 20 mm apart (cf. plan B), or to a traveller post allowing max. 200 mm sideways travel of the sheet fastening point. The height and position of the post shall be according to plan F. The design and the purchase of the sheeting systems is optional and systems with more than one ratio are permitted. However all parts of the sheet shall run directly between the boom and post. 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 blocks furthest from each other shall not exceed 250 mm.	15.1
A kicking strap or a rod-kick is permitted. The rod-kick shall not be provided with built-in springs or other means, which can perform an upward pressure on the boom. When running the kicking strap may be moved out to the rail. The haul may be led aft.	15.2.1
The foot of the mainsail may be stretched by means of either a clew outhaul or a tack inhaul. The inhaul shall not be more than 250 mm from the tack and 30 mm above the foot. The haul may be led aft.	15.2.2
Cunningham haul for stretching the luff of the mainsail is permitted. The haul shall not be placed more than 250 mm above the tack and 30 mm from the luff. The haul may be led aft.	15.2.3
The sheeting of the jib is free.	15.3.1
The jib shall be hauled with the help of winches placed outside the cockpit coaming and crank handles under the deck.	15.3.2
Highfield lever on the mast for adjusting the tension on the luff wire of the jib is permitted. Adjustment may be made while racing.	15.3.3

15.3.4 Cunningham haul to stretch the luff of the jib is permitted.

15.3.5 Barber haulers are permitted.

16 EQUIPMENT

16.1 While racing, accommodations together with all fixed and moveable gear described under 8.1, shall be on board.

16.2 While racing, the following equipment shall be on board:

- a) An anchor of not less than 13.5 kg or, an anchor of not less than 8.0 kg with chain (min. 6 mm) so that the combined weight of anchor and chain is not less than 13.5 kg.
- b) Not less than 30 m of anchor rope.
- c) Two mooring lines each not less than 10 m long.
- d) One bilge pump.
- e) One oar or paddle.
- f) One bucket.
- g) One life jacket per person on board.

16.3 If not otherwise stated in the racing instructions only use of magnetic compass and mechanical wind direction indicator are permitted.

17 CREW

17.1 While racing a minimum of two and a maximum of four persons shall be on board unless the applicable racing instructions allow different.

18 PROHIBITIONS

18.1 Accommodation and gear shall not be used as moveable ballast. An outboard motor may though when racing be stowed on the sole of the cabin irrespective of where it is usually stowed.

18.2 Apart from the backstay it is not permitted to adjust the standing rigging during a race.

18.3 With the exception of the backstay, standing and running rigging shall not be led under the deck. Barber haulers may be led below deck aft of the cabin.

18.4 Trapeze or other form of hanging arrangement, handholds on deck, hanging straps or similar are prohibited.

18.5 Everything not shown on the drawings or directly mentioned in these rules is prohibited.

18.6 Hydraulic equipment is prohibited.

19 REGISTRATION AND MEASUREMENT CERTIFICATE

19.1 Registration numbers are issued by the National Authority. Each nation starts numbering from 1.

19.2 The National Authority issues measurement certificates to each boat constructed by an authorised yard, cf. 5.1, which meets the class rules and is approved by a measurer recognized by the National Authority.

- The boatyard shall produce a weight certificate issued by a public authority proving that the weights prescribed in paragraph 8 have been conformed with. **19.3**
- The measurement certificate is valid as long as no alterations are made which could result in an increase in speed. **19.4**
Questions of doubt concerning this point will be brought before the National Authority by the class organization.
- A copy of the measurement certificate shall be sent to the National Authority. **19.5**
- In wooden KNARR's the registration number shall be cut in the forepart of the inside of the cabin's or be printed on a signboard. In GRP-KNARR's the registration number shall be in the hull aft of the rudder well. The year and the building no. of the yards shall be on a signboard. **19.6**

GRP KNARR LAMINATE SPECIFICATIONS

Unless otherwise specified layers of GRP shall be 450 g glass mat with polyester at a total weight of 1,5 kg pr. m².

1. HULL SHELL		
2 layers of gelcoat		0,6 kg pr. m ²
8 layers of GRP		12,0 kg pr. m ²
1 layer of topcoat		0,3 kg pr. m ²
		12,9 kg pr. m ²
2. KEEL AND STEM REINFORCEMENT		
beginning 0,60 m from the stem and 0,45 m shorter for each layer all with 15 cm overlap on the centerline		
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
3. DECK		
2 layers of gelcoat (uppermost layer with anti-slip pattern can be replaced by teak)		1,0 kg pr. m ²
3 layers of GRP		4,5 kg pr. m ²
12 mm Balsa		2,0 kg pr. m ²
Polyester for Balsa		0,4 kg pr. m ²
3 layers of GRP		4,5 kg pr. m ²
1 layer of topcoat		0,5 kg pr. m ²
		12,9 kg pr. m ²
4. 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 glass mat with polyester at 1,6 kg pr. m ²		
		10,7 kg
5. CABIN SIDES AND TOP		
2 layers of gelcoat		0,6 kg pr. m ²
3 layers of GRP		4,5 kg pr. m ²
12 mm Balsa		2,0 kg pr. m ²
Polyester for Balsa		0,4 kg pr. m ²
3 layers of GRP		4,5 kg pr. m ²
(two of the layers used for casting in the inner shell)		12,0 kg pr. m ²
6. INNER SHELL CABIN TOP		
2 layers of gelcoat		0,6 kg pr. m ²
2 layers of GRP		3,0 kg pr. m ²
		3,6 kg pr. m ²
7. INNER SECTIONS CABIN AND COCKPIT		
2 layers of gelcoat		0,6 kg pr. m ²
5 layers of GRP		7,5 kg pr. m ²
1 layer of topcoat		0,3 kg pr. m ²
		8,4 kg pr. m ²

B.

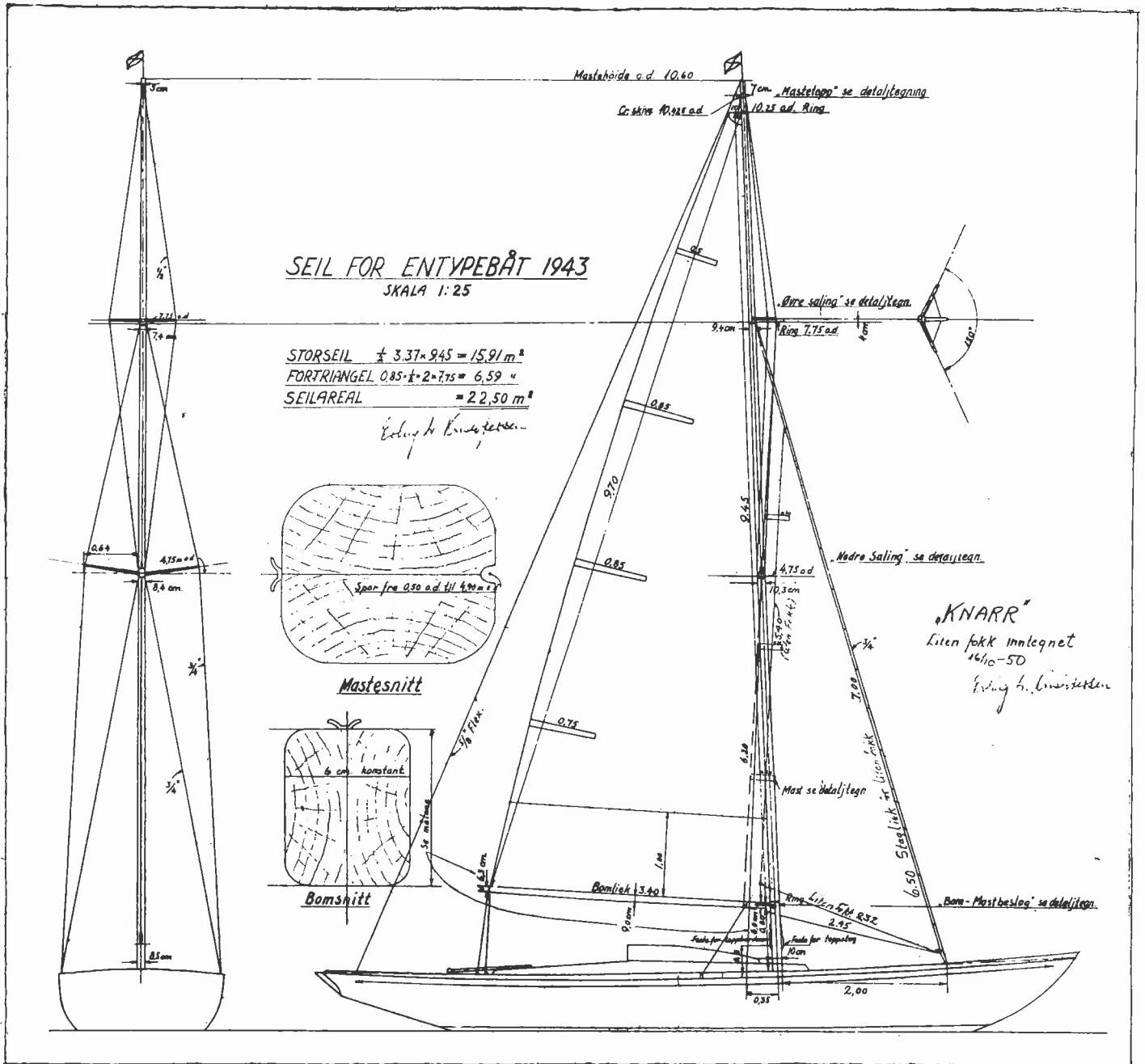
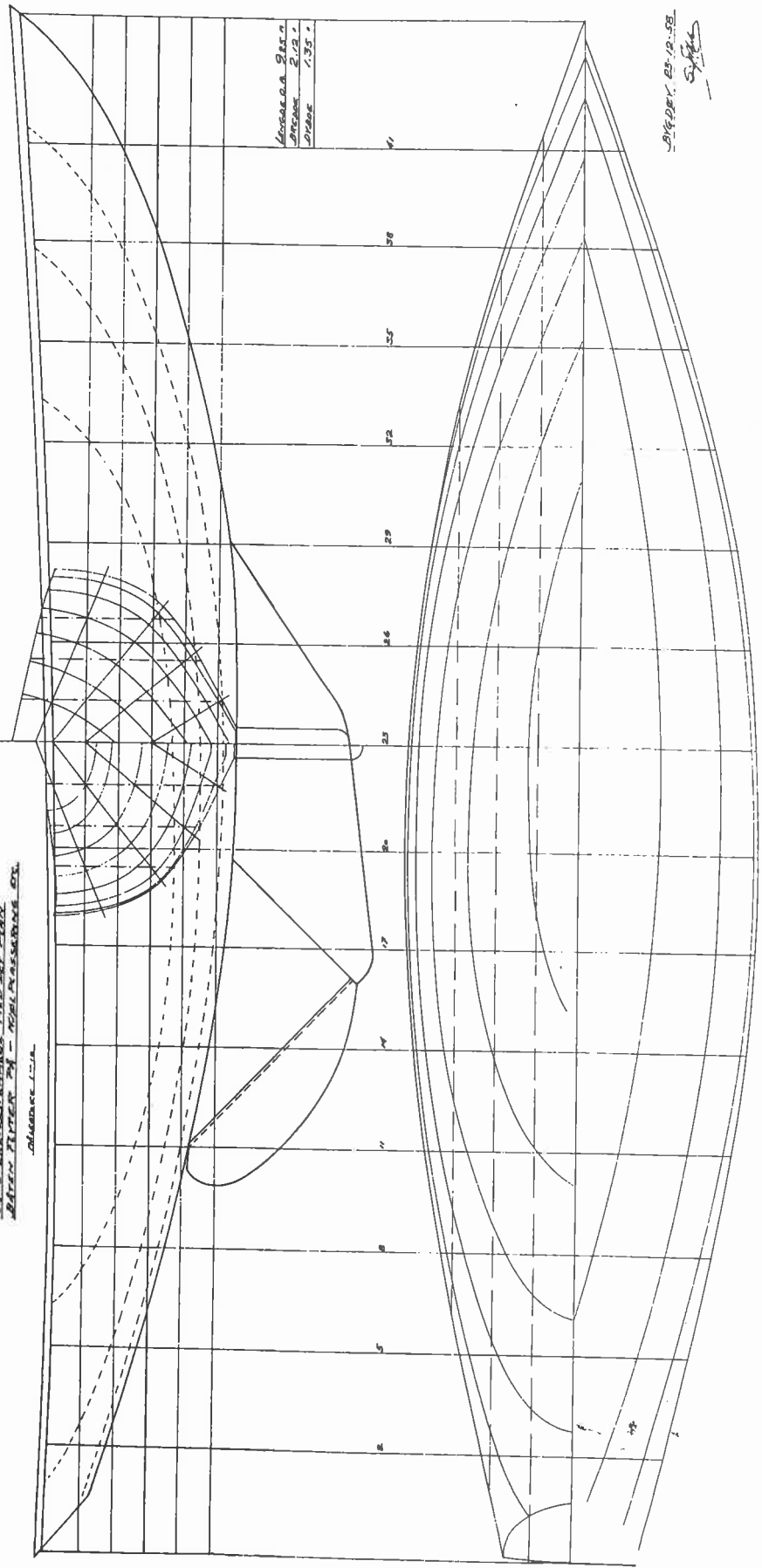


EXHIBIT. DR. LEON NEMEN.
SAPPHIRE - NO. 35.

MAP - LINGERING

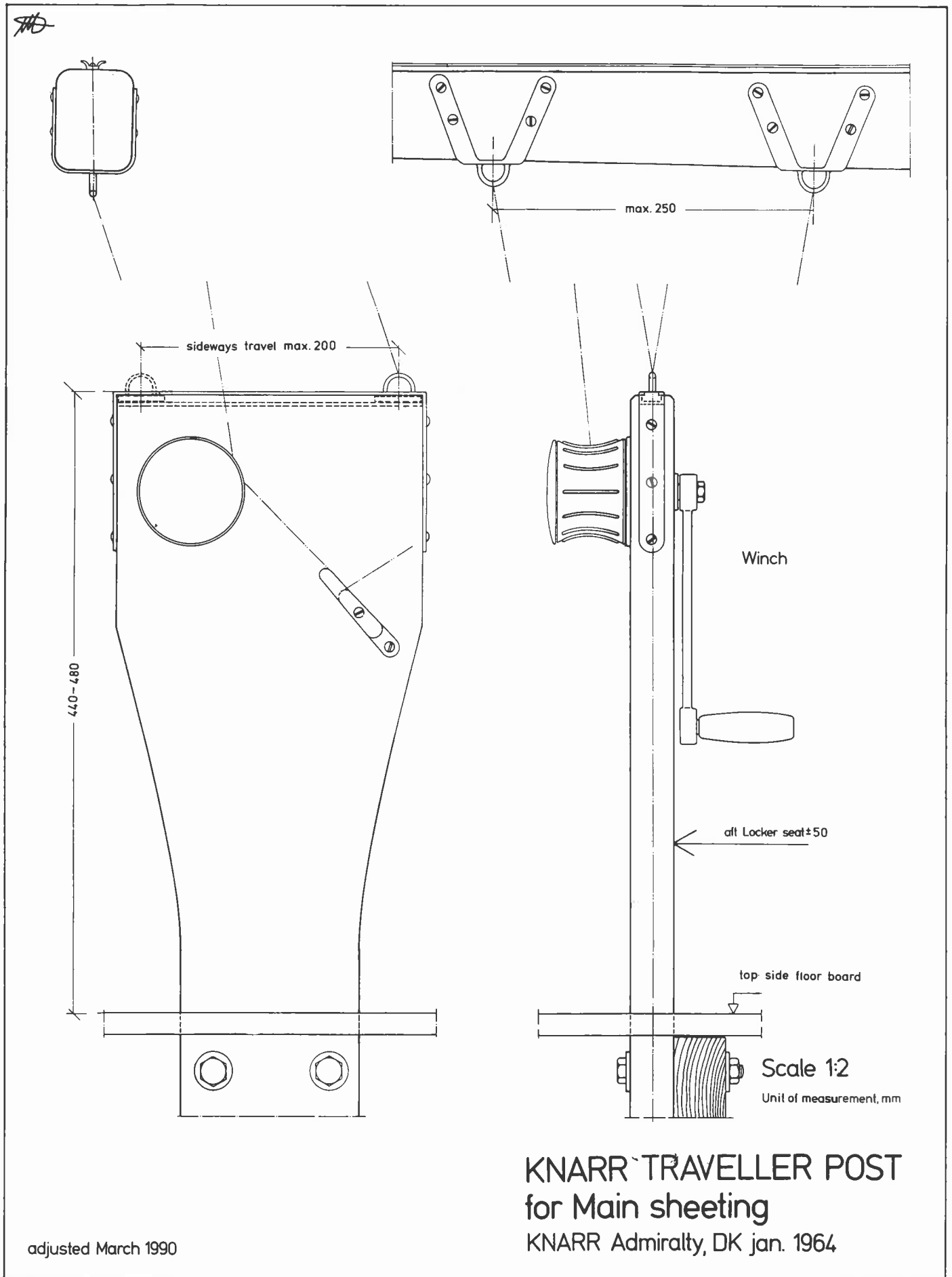
ALL THE PARTS OF THE LESTER I. DOWS EXPLOSIVE FROM
THE OVERSTOCKS AND THE PLAN
BEING FILED IN - THE RECORDS OF
ALBANY, N.Y.



DR. PER. 25-12-58
S. J. S.

Blown down to scale 1:40

F.

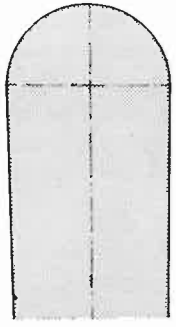


adjusted March 1990

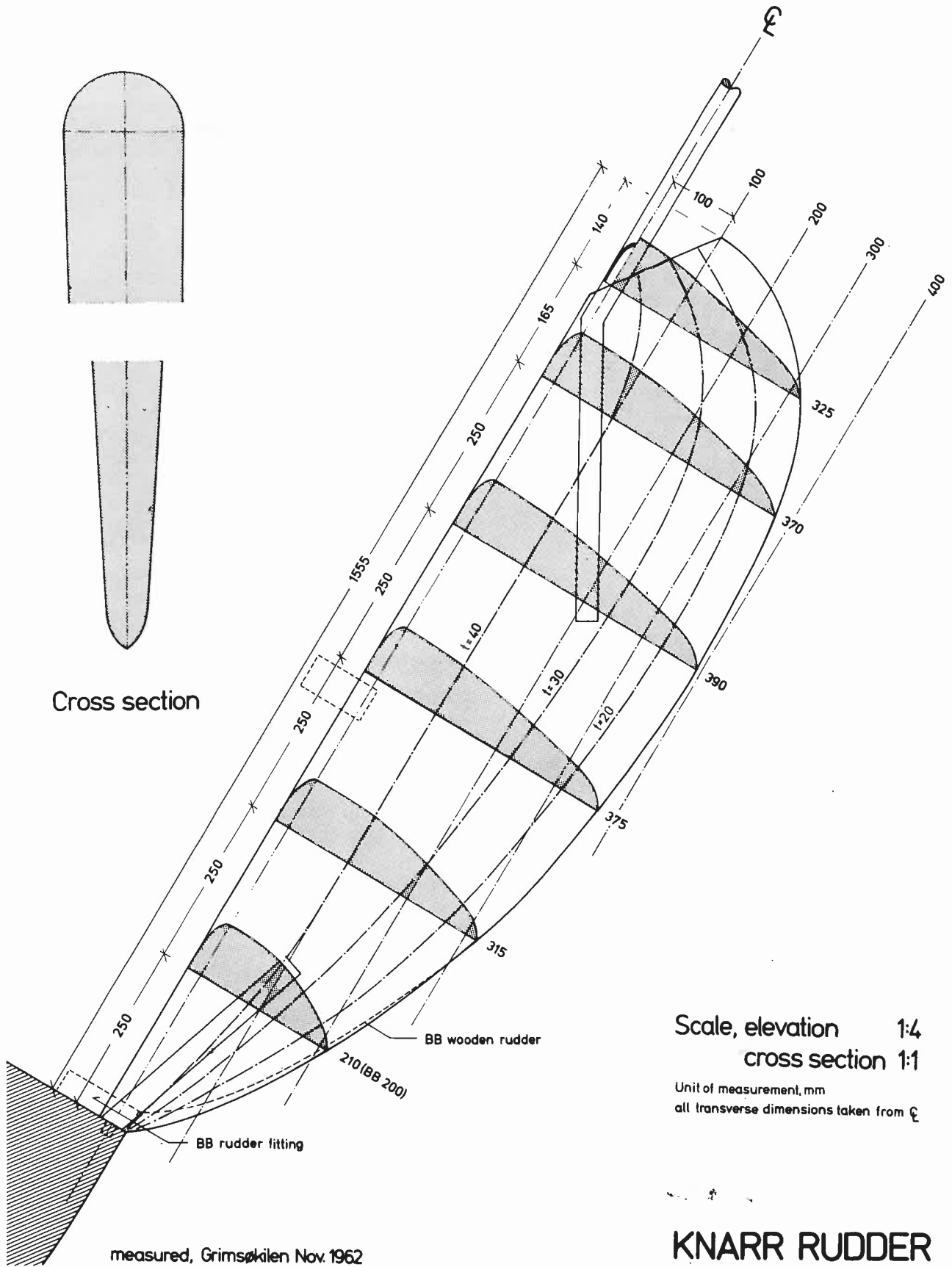
KNARR TRAVELLER POST
for Main sheeting
KNARR Admiralty, DK jan. 1964

Blown down to scale 1:4

786



Cross section

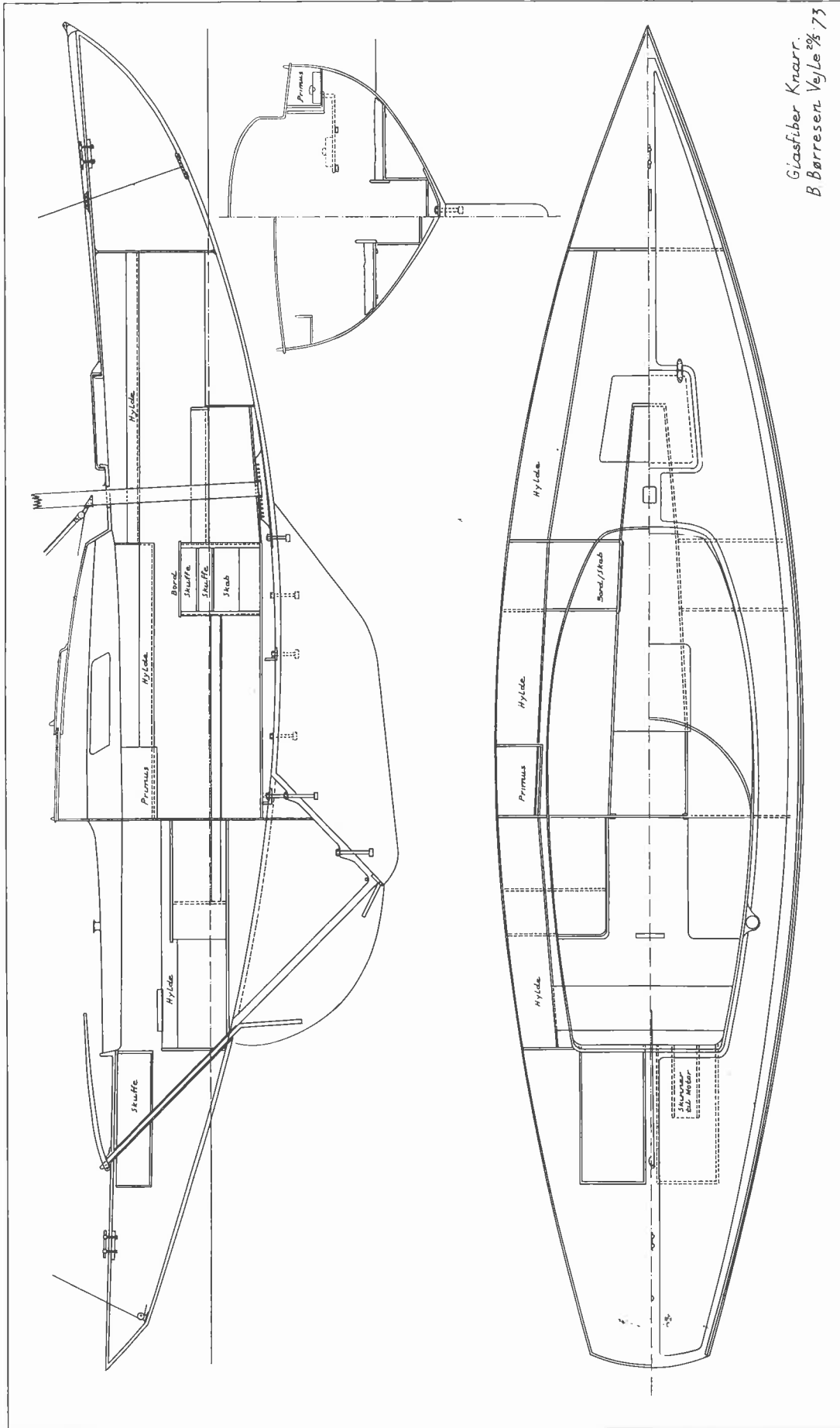


Scale, elevation 1:4
 cross section 1:1

Unit of measurement, mm
 all transverse dimensions taken from €

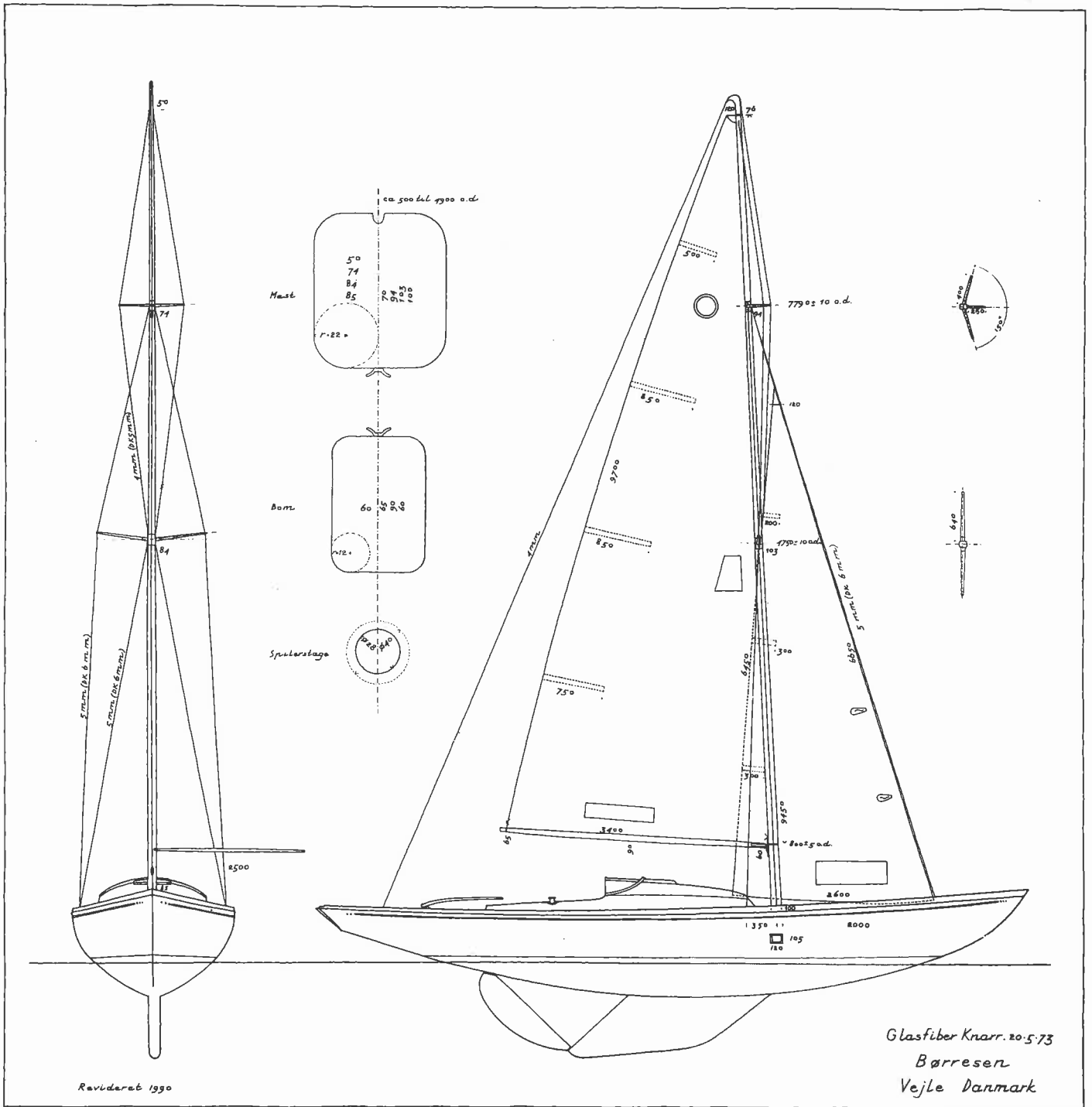
measured, Grimsøskilen Nov. 1962
 adjusted March 1990

KNARR RUDDER
 Approved 24. Oct. 1952

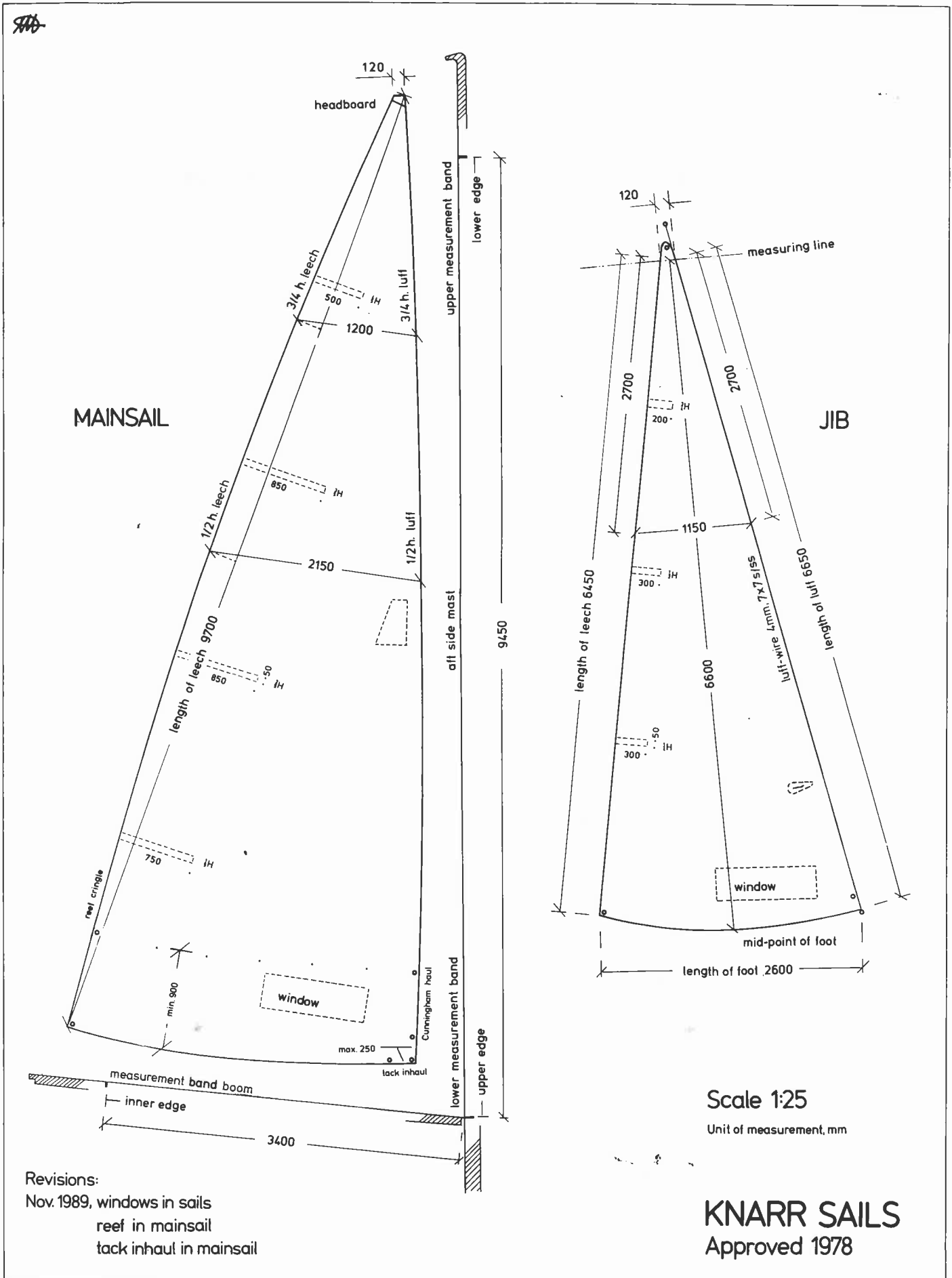


Glasfiber Knarr.
B. Børresen Vej Le 29/3 73

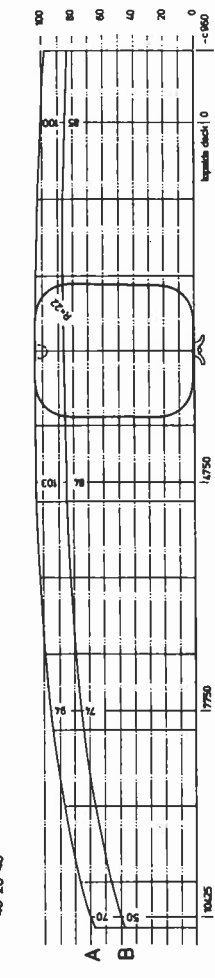
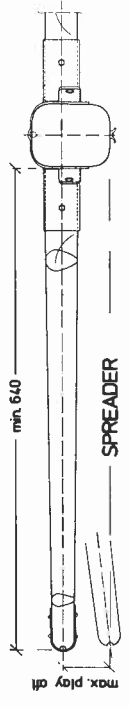
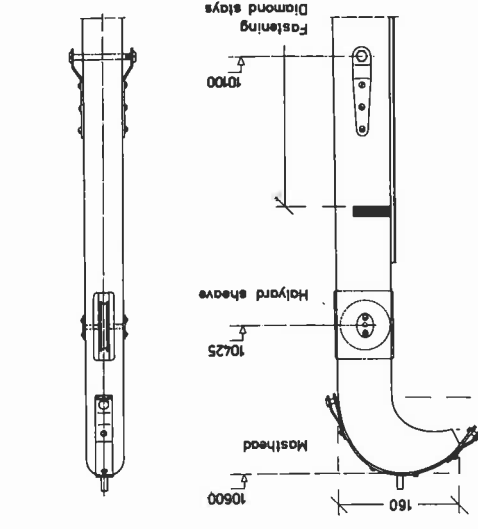
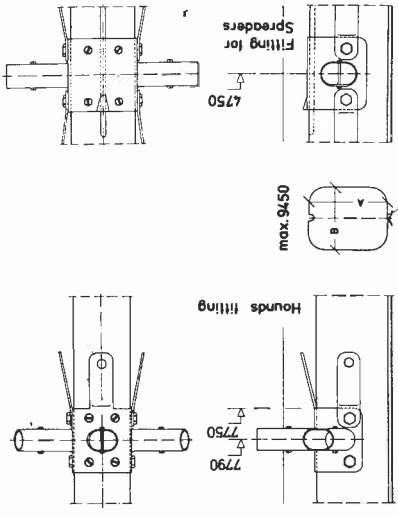
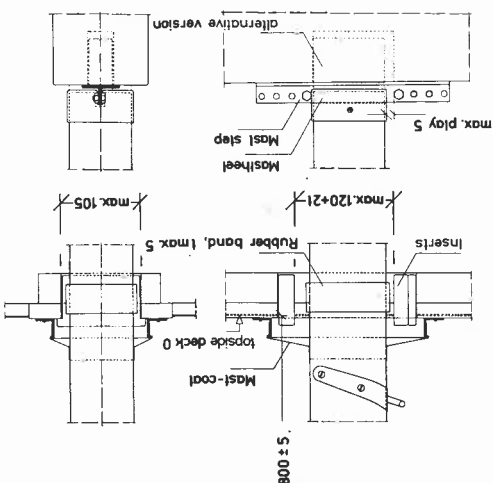
Blown down to scale 1:40



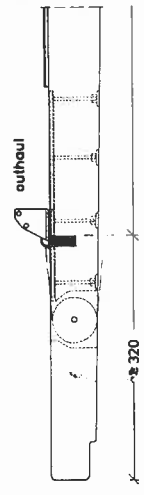
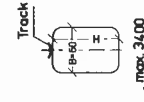
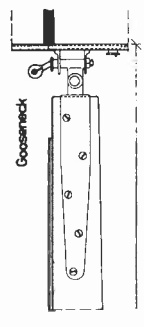
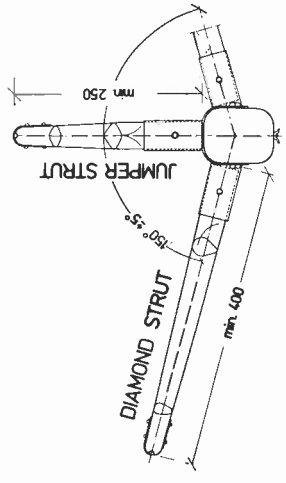
Blown down to scale 1:75



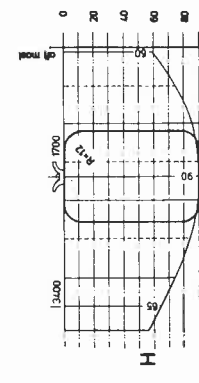
Revisions:
 Nov. 1989, windows in sails
 reef in mainsail
 tack inhaul in mainsail



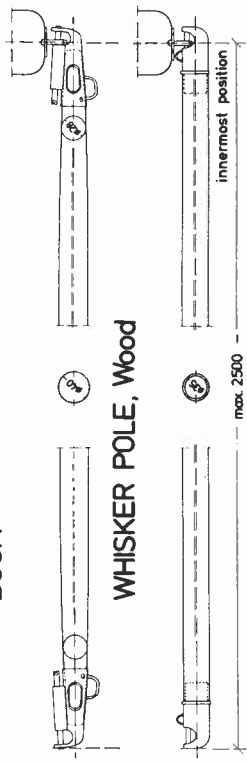
Cross section diagram, Mast



BOOM



Cross section diagram, Boom



Scale:
Spars & struts 1:4
Diagrams:
measure of length 1:40
cross section 1:2

Unit of measurement, mm

KNARR SPARS & STRUTS
March 1990

Tolerance:
measure of length ± 10
cross section ± 2

International Knarr Championship

Deed of Trust

1.

The purpose of the International Knarr Championship is to provide a competition between friends united by their love of the Knarr. While it is a competition, all participants should enter the championships pledging to be the best sportsmen possible in their relations with each other and in the handling of the boats.

The Championship shall be held every year, alternating between the USA, Denmark and Norway. The first Championship will be held in the United States, at San Francisco, California in 1969. In the event the German Knarr fleet achieves a one-design Knarr class with a sufficient number of boats to host the IKC, Germany shall be included into the rotation as a host country every fourth year, beginning in its first year of such eligibility following an IKC hosted by the USA. Following Germany's first hosted IKC, the ordering of host countries will continue in its previously established sequence.

2.

A. **Eligibility**

The host country shall decide the number of skippers with crew. The visiting countries shall each be granted a minimum of five berths for their skippers with crew. The host country may enter up to twice the number of skippers with crew as each of the visiting countries. In the IKC competition at least one member of each qualifying team has to be at least a 1/3 owner in the boat that the team sailed to qualify with. The champion of the previous year shall also be invited to participate provided that he is a Knarr owner of at least 1/3 of a sailing Knarr at the time of the regatta. The ownership requirement may be waived by the Admiralty of the champion's country. If the previous year's champion does not sail in the regatta, the country of the defending champion shall be granted an additional berth in the regatta.

Beginning with the IKC in 2008, and every subsequent year until it achieves host country eligibility status as provided in 1(a), Germany will be entitled to one entry in the Norwegian, USA and Danish hosted IKC's, provided each of the following requirements has first been satisfied: (i) Germany establishes and maintains a one design Knarr class and association, accepting the Knarr International Class rules, and being recognized by the German racing authority; (ii) Germany's established Knarr class association has an IKC qualifying series of at least 4 races with at least 5 boats competing for the entry in the upcoming IKC; and (iii) Germany's established Knarr class association accepts and adopts the IKC Deed of Trust in its entirety. Should one German team enter the total number of IKC-contestants will increase with one berth.

B. **Notice**

At least three weeks before the regatta, the visiting countries shall advise the host country of the names of the skippers that they will send. If a visiting country advises the host country that they will not be filling their quota, then the host shall promptly offer any vacancies to the other visiting country. If there are still unfilled berths after making the offer to the visiting countries, then the said berths may be filled by skippers who raced in their own country's

elimination series. If a vacancy is not filled by a qualified visiting skipper, then it shall be filled by the highest qualifying skipper from the host country.

C. Selections

Each country's national Knarr-organization will decide the system to be used in selecting their participants.

D. Professional competitors

No professional sailor, as defined below, shall be permitted to sail in an IKC as skipper or crew, unless that person has sailed in 75% of the IKC Qualifying races for that year. If the defending champion has not sailed the qualification races of the defending year, the crew he brings along shall meet the requirements of the rule.

A professional sailor is defined according to the "ISAF Sailor Classification Code 3" being in force at the time of the IKC.

(The 2006 definition of "ISAF Sailor Classification Code 3" is:

"A professional Competitor is one who during the last 24 month directly or indirectly:

- a) has been paid for:
 - (i) competing in a race,
 - (ii) training, practicing, tuning, testing, maintaining or otherwise preparing a boat, its crew, sails or equipment for racing, and then competed on that boat, or in a team competition, in a boat of the same team; or
- b) has been *paid* €1,500 or more for allowing his or her name or likeness to be used in connection with his or her sailing performance, sail racing results or sailing reputation, for the advertising or promotion of any product or service; or
- c) has publicly identified himself or herself as a Group 3 competitor or as professional racing sailor.")

Responsibility of Skippers entering the IKC :

"If the team includes a "professional competitor" as either skipper and/or crew, as defined under Rule 2D, a written detailed explanation of each person's activities under 2D (1)-(4) must be provided latest at registration. For such individuals, the Admirals further request that the Skipper provide the dates of qualifying races these competitors crewed and/or skippered – 75% rule. This written response will be shared with the admirals of all three fleets for joint determination on eligibility.

The joint Admirals may at any time before and during the IKC, without any explanation, ask any skippers for a written detailed explanation of competitor qualification under 2D (1) –(4), and a list of the qualifying races the competitor participated in. The written response will be shared with the admirals of all three fleets for joint determination on eligibility and thereby penalty. "

3.

A. Regatta Conditions

The Championship shall be decided by a regatta of four completed races and a maximum of 10 scheduled races. The host country shall determine the number of scheduled races to be sailed with the above limitations. In addition there shall be a tune-up race.

If more than five races are completed then there will be one throw-out, if more than eight races completed there will be two throw-outs.

The Championship shall last 7-8 days include a lay day.

The schedule is decided by the host country. However possible negotiations and special requests are to be considered.

B. Courses

The courses shall, if the racing area permits, be of the "Knarr"-style.

Port courses have preference.

C. Committees

The host country will provide the required committees to conduct the regatta.

D. Yachts

The host country will make available the necessary number of yachts complete with sails. All participating yachts and sails must comply with the host countries national Knarr rules and regulations.

E. Draw of yachts

The yachts will be drawn by lot for each race of the regatta in an equitable manner. A race shall not be given up in such a way that the crew loses the possibility to race that boat. (The consequence is that if all races are not started, the latest scheduled race will not be arranged) The order of the races may be reorganized to accommodate switching of boats in order to reduce the amount of changing during a day.

F. Standing rigging and running rigging

With the exception of the backstay, tuning of the standing rigging during the regatta will not be allowed.

The boats must be raced in the condition provided by the owner and the technical committee. Sheets, sheeting systems, cleats, barber hauls, battens etc. shall not be changed or modified by the competitors. Violation of this will be protested and reported and may result in disqualification from this race or the whole IKC series.

G. Substitution of yachts or sails

Substitution of yachts and sails may not be made except in an emergency.

H. Racing rules

Racing rules shall be the Rules of the International Sailing Federation and the Sailing Instructions.

I. Crew Limits

The crew number shall be no less than three and no more than four, including the skipper.

The crew number and members must be the same in all races. No member of the crew shall be substituted unless a written permission is obtained from the Race Committee the day before the race, or in case of acute illness, as soon as possible

J. Breakdowns

A yacht, disabled through an accident, or failure of supplied equipment, and through no fault of her crew, may request special consideration from the Race Committee. Such yacht must make every effort to finish the race, provided that further damage to the yacht will not be incurred.

To request special consideration, the yacht must display a yellow flag conspicuously in her rigging at the first reasonable opportunity after the breakdown, and shall keep it displayed until acknowledged by the Race Committee. This is a change of RRS 60 + 62. The boat must file a written protest in accordance with RRS 60 after returning to harbor.

K. Scoring

The scoring system shall be of the Low Point system type, except as modified by the paragraphs on breakdown which follows:

In the event of breakdown and when special consideration is requested, as described above in item J, the Protest Committee may, at their sole discretion, at a hearing to take place at the conclusion of the race, take any one of the following actions. This is a change of RRS App A4.

1. Order the race to be re-sailed.
2. Award such yacht a point or points as if it had been unimpaired.
Await the completion of the series, and calculate the number of points according to section A and B. Award the yacht the average number of points of A and B.
3.
 - A. The number of points resulting from adding together the number of points obtained by the skipper of the disabled yacht, in the other races of the regatta, and dividing that number by the number of other races which that skipper completed during the entire series, and for which breakdown points were not awarded.
 - B. The number of points resulting from adding together the points obtained by the disabled yacht in the other races of the regatta, regardless of who sailed it, and which were completed by that yacht, and divide that number by the number of other races so completed by that yacht during the entire series, and for which breakdown points were not awarded. The points under this section shall be in accordance with the actual finish position of the yacht and shall not reflect any disqualification of the skipper sailing the yacht at that time.

L. Protest committee

The members of the protest committee shall be able and qualified people.
The host country can provide a complete protest committee (minimum three members),
The visiting countries may appoint substituting or additional members.

4.

A. Trophy

The winner of the regatta shall be presented the International Knarr Championship Trophy supplied by the host country.

- B.** It shall be the responsibility of the winner to keep the trophy safe and insured for replacement value. He shall also be responsible for delivering the trophy in the next host country in time for the next Championship regatta.

5.

A. Miscellaneous Provisions.

In the event the Knarr class expands to other countries, such countries shall have the right to compete for the Championship.

- B. If the country next in line to hold the Championship declines to sponsor the event, the responsibility for sponsoring it shall pass to the next country in line.
- C. Should the interest in the Knarr class winter, and no race be held for three consecutive years, the trophy shall become the property of the National Knarr Authority of the country whose representatives have won it the most times. If a tie exists, the trophy shall belong to that country, whose representative won it most recently.

6. Deed of Trust.

Amendments or changes to this Deed of Trust may be effected only by two-thirds vote of National Knarr Authorities, each authority casting one vote. In the event Germany becomes eligible to host the IKC as provided in 1(a), changes to this Deed of Trust may be effected by a majority vote of the National Knarr Authorities, each casting one vote, beginning in the first year following an IKC hosted by Germany.

Note!

At the 38Th International Knarr Championship, held in Copenhagen in 2006, the Admirals agreed upon the above revised edition taking effect from IKC 2007.

Earlier revisions of the Deed of Trust are published in programs for the years 1975, 1986, 1987, 1991, 1993, 1995, 1997, 1998, 1999 (Oslo, it was agreed to open for experimenting with number of races and number of days as proposed.), 2000, 2001, 2002, 2006.

International Knarr Champions

1969	San Francisco	The late Robert M. York,	USA
1970	Copenhagen	The late Niels Johannesen,	Denmark
1971	San Francisco	Knud Wibroe,	USA
1972	Bergen	Mads Meisner Jensen,	Denmark
1973	Copenhagen	Louis Schnakenburg,	Denmark
1974	San Francisco	Duane Hines,	USA
1975	Oslo	Lars Solberg,	Norway
1976	Copenhagen	Christian Rasmussen,	Denmark
1977	San Francisco	Lars Storm,	Denmark
1978	Bergen	Lars Storm,	Denmark
1979	Copenhagen	Christian Rasmussen,	Denmark
1980	San Francisco	Lawrence Drew,	USA
1981	Oslo	The late Alf Pehrsson,	Denmark
1982	Copenhagen	David Holm,	Denmark
1983	San Francisco	David Holm,	Denmark
1984	Bergen	David Holm,	Denmark
1985	Copenhagen	Jakob Holm,	Denmark
1986	San Francisco	Frank Berg,	Denmark
1987	Oslo	Frank Berg,	Denmark
1988	Copenhagen	Frank Berg,	Denmark
1989	San Francisco	Troels Bjerg,	Denmark
1990	Bergen	Troels Bjerg,	Denmark
1991	Copenhagen	Claus Hector,	Denmark
1992	San Francisco	Chris Perkins,	USA
1993	Oslo	Jens Pedersen,	Denmark
1994	Copenhagen	Christian Rasmussen,	Denmark
1995	San Francisco	Craig McCabe,	USA
1996	Bergen	Morten Heldal Haugerud,	Norway
1997	Copenhagen	Frank Berg,	Denmark
1998	San Francisco	Jens Christensen,	Denmark
1999	Oslo	Frank Berg,	Denmark
2000	Copenhagen	Kim Bruhn-Petersen,	Denmark
2001	San Francisco	Frank Berg,	Denmark
2002	Bergen	Jon Perkins,	USA
2003	Copenhagen	Kim Bruhn-Petersen,	Denmark
2004	San Francisco	Chris Perkins,	USA
2005	Oslo	Jon Perkins,	USA
2006	Copenhagen	Søren Pehrsson,	Denmark
2007	San Francisco	Chris Perkins,	USA
2008	Bergen	Lars Gottfredsen	Danmark