

# Albin Ballad handbook



**ALBIN MARIN AB**

S-681 01 KRISTINEHAMN 1 · SWEDEN

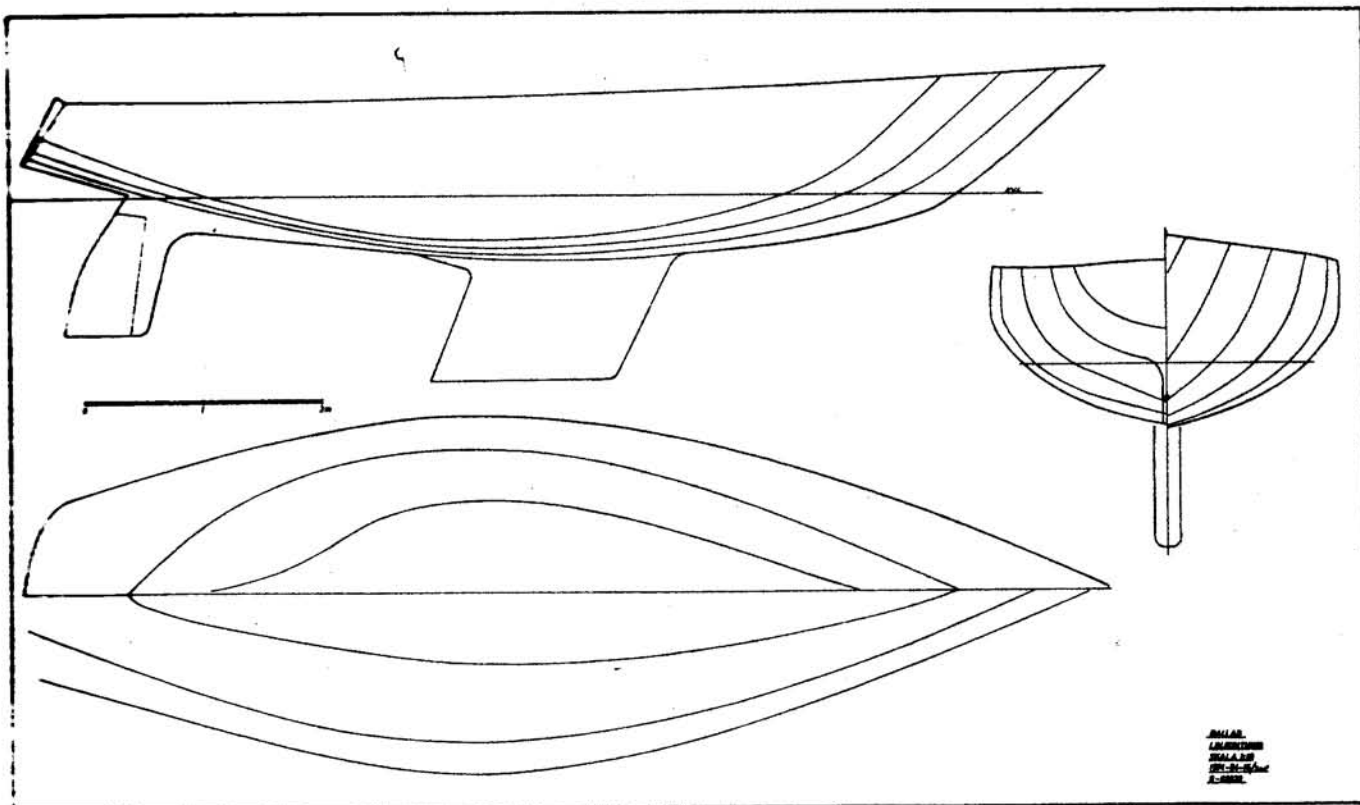
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# Albin Ballad handbook

## Contents

Foreword, line drawings .....	1	Electrical system .....	14
Sail drawing .....	2	Ventilation and heating .....	15
Interior drawing .....	3	Boat maintenance .....	17
Technical data .....	4	Advice on sailing .....	18
First launching .....	5	Yacht-racing tips for the beginner .	19
Rigging .....	6	Measuring according to the IOR-	
Engine installation .....	9	rules .....	20
		Ballad single-type rules .....	20

## Foreword

The purpose of this handbook is to serve as a brief guide on how the Albin Ballad should be used and maintained. Only those features which are particular to the Ballad have been mainly included. Advice and tips of a less specific nature can be found in the general handbook for Albin boats.

Perhaps a number of adjustments may have to be made after delivery and launching. Although the manufacturer naturally does not intend shirking the warranty commitment with regard to this boat, its low price has been calculated on the assumption that minor shortcomings can be put right by the normally handy boatowner himself and that the firm's available capacity for warranty repairs can be utilised rationally in those cases where skilled personnel are required. Should any problem arise which cannot be solved with the help of the simple instructions in this handbook, please do not hesitate to write or telephone Albin Marin AB for advice.

Finally, should you change your address, we would appreciate your informing us of this so that we can be in a position to reach you quickly with information and bulletins. Do not forget to state your boat number in your letter.

A pleasant sailing summer!

	Förlik Luff	Akterlik Leach	Perp.	Vikt gr/m <sup>2</sup> Weight	Yta m <sup>2</sup> Area	Anm. Notes
Storsegel Main	9750 31' 11 1/8"	10140 33' 3 3/4"	—	250	15,9 171	1) 2)
Genoa I Genoa I	11400 37' 5"	11000 36' 1"	5610 18' 4 1/8"	250	32,2 346	1) 2)
Genoa II Genoa II	10450 34' 3 1/2"	10000 32' 9 1/4"	4870 15' 11 1/4"	250	25,2 271	1) 2) 3)
Genoa III Genoa III	9250 30' 4 1/8"	8650 28' 4 1/2"	4170 13' 8 1/4"	250	18,5 199	2)
Genoa IV Genoa IV	8050 26' 5"	7100 23' 3 1/2"	3440 11' 3 1/2"	270	13,5 145	2)
Genoa, resch. Genoa, resch.	11400 37' 5"	10100 33' 1 1/8"	5610 18' 4 1/8"	220	32,2 346	1)
Spinnaker	11305 37' 1"	11305 37' 1"	—	52	70,0 753	2)
Storsegel Staysail	6750 22' 1 3/4"	6850 22' 5 1/4"	4300 14' 1 1/4"	130	14 150	2)
Spinn. stags. Spinn. staysail	10000 32' 9 3/4"	9600 31' 6"	3820 12' 6 1/8"	130	19 204	2)

- 1) Standardsegel  
Gen. purpose sail  
2) Bomlängd=2850  
Boom length=9' 4 1/4"  
3) Wirestropp så att tot. likl.=11300  
Pennant for total luff=37' 1"  
4) Bredd=6732  
With=22' 1"  
5) Sätts flygande utan företag  
Set flying  
6) Förlik mått mellan kauser  
Luff measurement between thimbles  
7) Med "kjo!" i underlik  
With skirt

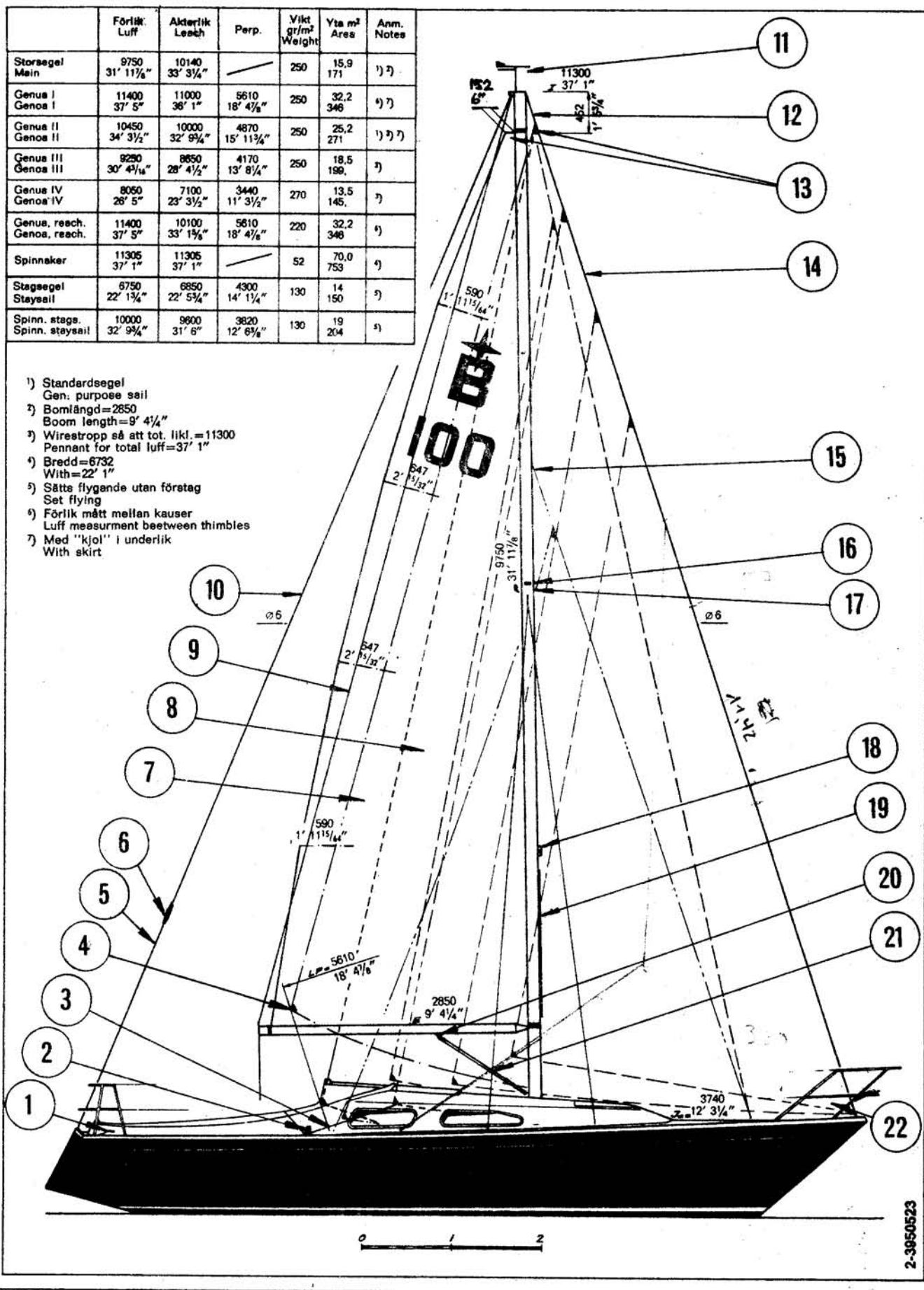


Fig 2

- 1 Spinnaker block fittings  
2 Sheet block  
3 Genoa sheet  
4 Sheet tack  
5 Bridle  
6 Rigging screw

- 7 Reacher  
8 Genoa I  
9 Topping lift  
10 Permanent backstay  
11 Wind indicator or burgee  
12 Foresail halyard  
13 Halyard tack  
14 Forestay

- 15 Staysail halyard (if fitted)  
16 Spreader  
17 Spinnaker lift (if fitted)  
18 Masthead lights  
19 Spinnaker pole track  
20 Kicking strap cam  
21 Kicking strap  
22 Tack

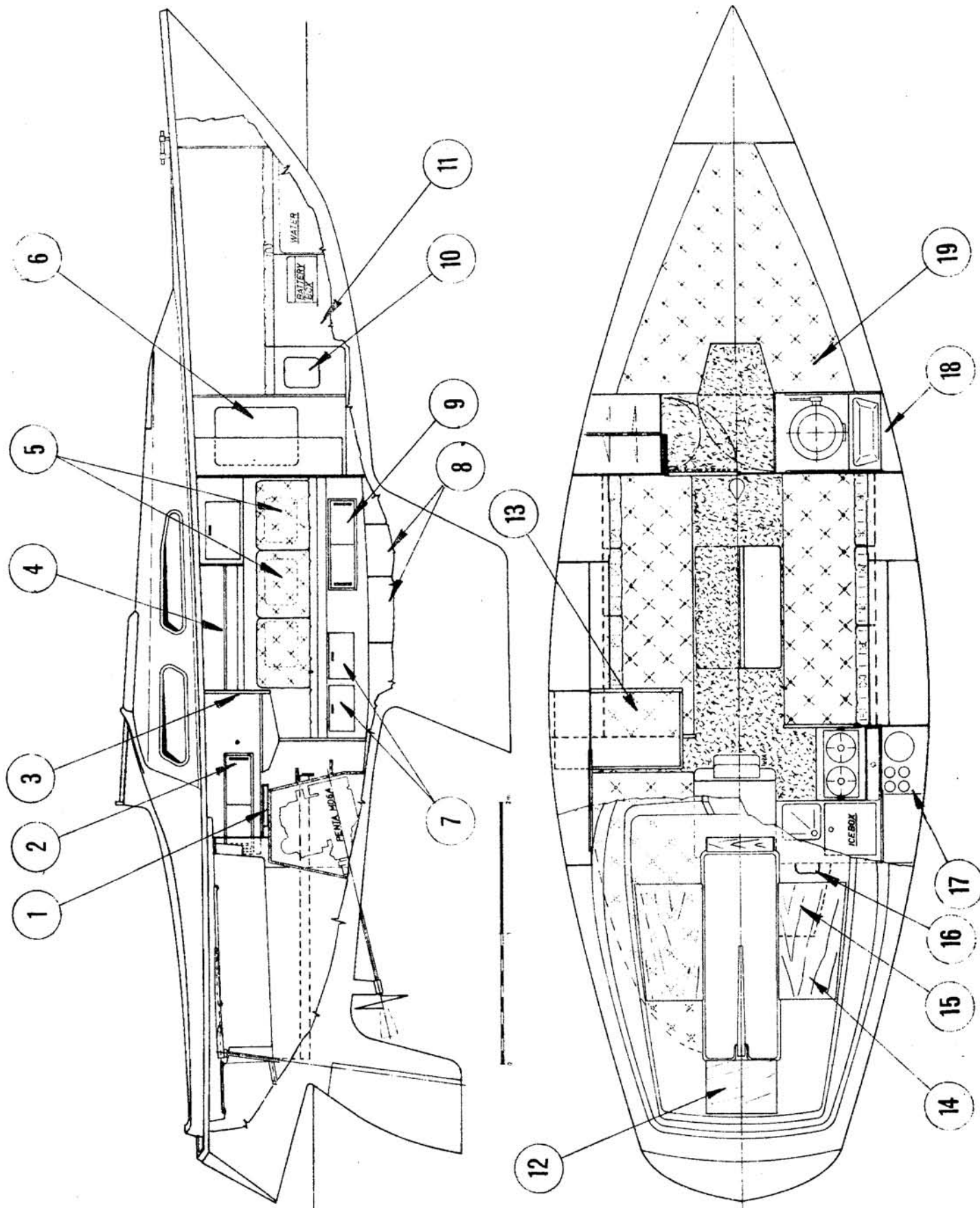


Fig 3 Accommodation with stovage plan (example)

- |   |   |
|---|---|
| 1 Room for winch handle and diverse tools under hatch | 11 Ropes, spares                                    |
| 2 Navigation equipment                                | 12 Anchor, warp, mooring lines, fenders             |
| 3 Navigation instruments                              | 13 Charts   |
| 4 Books, battens                                      | 14 Sails and diverse equipment                      |
| 5 Clothes and sleeping gear                           | 15 Fuel tank  |
| 6 - 7 Clothes   | 16 Basket for waste on bulkhead                     |
| 8 Bottles, etc.                                       | 17 Place for pots and pans etc.                     |
| 9 Shoes or canned provisions                          | 18 Toilet gear                                      |
| 10 Safety equipment                                   | 19 Place under hammock for oilskins, sea boots etc. |

# TECHNICAL DATA

L.o.a. ....	9.14 m	Measured sail area (I.O.R.) ...	44 m <sup>2</sup>
L.w.l. ....	6.09 m	Mainsail .....	15.9 m <sup>2</sup>
Beam .....	2.96 m	Genoa I .....	32.2 m <sup>2</sup>
Draught .....	1.55 m	Genoa II .....	25.2 m <sup>2</sup>
Displacement .....	3.3 tons	Genoa III .....	18.5 m <sup>2</sup>
Ballast .....	1.55 tons	Spinnaker, approx. ....	70.0 m <sup>2</sup>
Auxiliary engine, Volvo		Overall height above	excl.
Penta .....	MD 6A	wind indicator .....	12.3 m
Output (DIN) .....	7.35 kW		
Centre of gravity without		Designer: Rolf Magnusson	
mast, measured from fore-			
stay .....	4.75 m		
1.05 m above lower edge keel			

**HULL.** The thickness of the freeboard lamination is approx. 8-9 mm, below the waterline approx. 10 mm, the keel transition about 25 mm and the keel side approx. 6 mm.

The glassfibre lamination (AP = reinforced plastic) is made according to the spraying method (chalked glassfibre mixed with polyester) combined with two layers of woven rovings. The glassfibre content is approximately 34 %. The hull is stiffened by AP-angles (stringers and ribs) in addition to a fixed, laminated floor. The ballast is bonded in. The free insides of the hull are lined with plastic fabric laminated with polyester foam plastic.

**THE DECK** is sprayed and constructed according to the eye-cell method. The top laminate is approx. 3 mm thick + 15 mm Divynycell (PVC foam plastic) on the horizontal surfaces (deck and the cabin roof), covered with a layer of reinforced plastic and an approx. 3 mm thick liner (the cabin ceiling) provided with looped fabric, pressed and laminated against the Divynycell (not horizontal surfaces against the outer lamination). Surfaces without the sandwich construction have min. 5 mm laminate thickness.

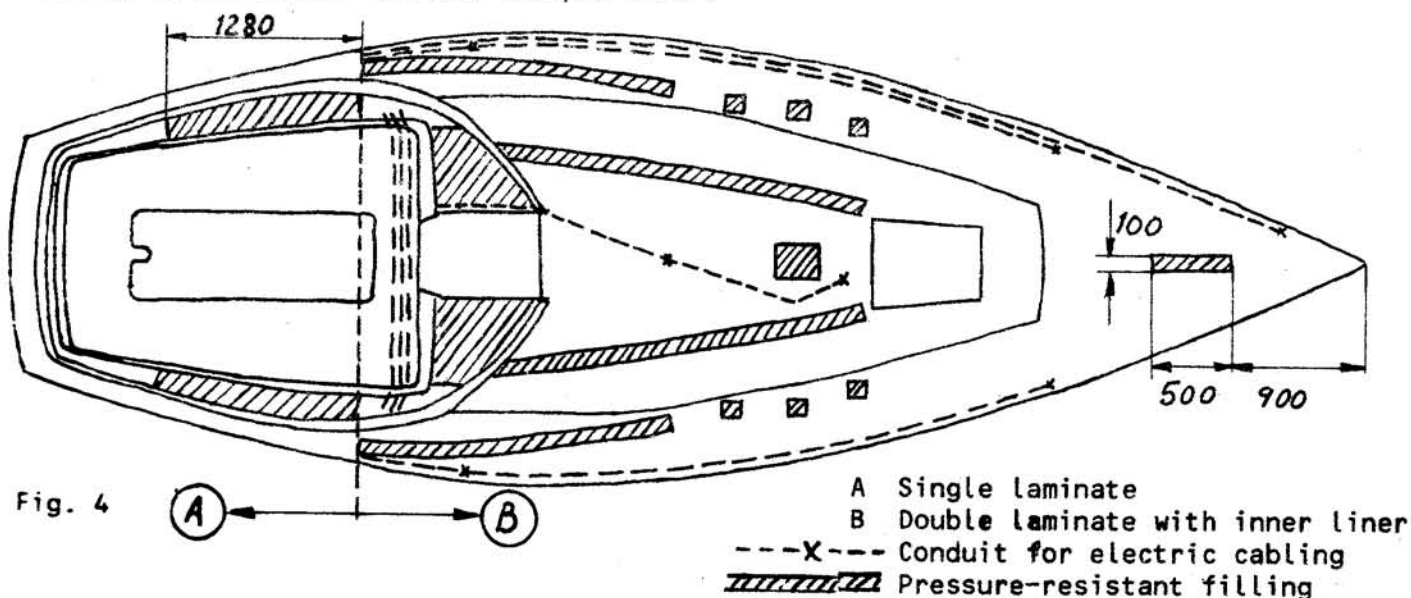
Toe rails, hatch frames, mast step, etc., where through bolts are fitted, are filled with a pressure-resistant filler.

Electric wiring moulded into the deck (see Fig. 4).

Windows are of hardened glass housed in anodised frames.

**HULL** and **DECK** are joined together with stainless steel bolts through the toe rail, a flange at the top of the hull and an elastic gasket inbetween.

The **RUDDER** is cast in AP (glassfibre) with an acid proof stainless steel rudder stock laminated in the rudder. It is journalled in lubrication-free bearings mounted in the rudder fin and cockpit floor.





SPAR. The mast and boom are of anodised aluminium. The mast is equipped with through-going roller reefing, with room for five inside halyards.

SAILS are of high class synthetic materials.

STANDING RIGGING. 6 mm 19 stainless wire. Stainless steel rigging screws.

RUNNING RIGGING. 133 stainless steel wire and double braided Terylene rope for the tails and sheets.

FITTINGS and WINCHES of bronze and stainless steel.

TANKS. Petrol tank of stainless steel plating, holds about 33 litres, plastic water tank holds about 65 litres.

#### FIRST LAUNCHING

BALLAD is delivered in a shipping cradle, which has been with the boat throughout its construction. A steel band is fixed through the lower rudder fitting with an ordinary steel bolt to hold the back of the keel to the cradle.

The launching procedure is as follows:

1. Remove the steel band.
2. Wrap a lifting strop in front of the keel (NOTE that a log sender may be fitted) and one immediately at the aft end of the keel, in front of the outgoing propeller shaft.
3. Put fenders on the side of the boat which will be alongside the dock and attach long mooring lines fore and aft. These are used to control the boat when it is lifted.
4. Check that:
  - a) the bottom plug is tight;
  - b) the drain cock on the engine cylinder block is closed;
  - c) if the boat is equipped with an electronic log, that the sender or log is fitted.
5. Close all other sea cocks etc., in order to prevent any risk of leakage when the boat is launched.
6. Lift the boat so that it is well clear of the cradle. Paint those unpainted parts where the boat has been resting on the cradle with the bottom paint provided for this purpose.
7. Lift and launch the boat.
8. Before unhooking the strops: lift up the floor and check to make sure no water has entered.
9. Unhook the lifting strops on the one side of the boat and let the crane lift the strops up onto the quayside.

If the boat cannot be rigged where the launching has taken place, load the mast over the cabin top and pulpit and secure it. Follow the instructions concerning the engine and those given in the chapter "Procedure before starting for first time", before starting the engine.

## RIGGING

The standing and running rigging are packed in the boat and are marked. Do not forget any optional equipment such as a spinnaker halyard lift and Windex.

Suitable rigging is as follows:

1. Place the mast on two stable trestles or boxes.
2. Fix the respective sheet hooks for the fore mounted halyard and pole rope to the spinnaker pole traveller. Stretch up the haul ends and fix to the respective cleats. Do not forget to make a stopper knot on the end of each haul.
3. Fit any extra halyards. There is room for extra jib, stay, sail and spinnaker halyards in addition to a lift. The spinnaker halyard is fitted on the outside. Check that the spinnaker halyard block can move freely in all directions. Reaving of inner halyards is as follows: knot together the rope end with the existing auxiliary line and tape. With the help of the line pull through the halyard (carefully in order not to break up the splice) and stretch up. If the auxiliary line should go off or is not fitted, then proceed as follows:
  - a) Hoist the top end of the mast as much as possible so that the halyard can be run down to the respective recess.
  - b) Check carefully to make sure that the halyard has not come on the wrong side of the through bolts in the mast.
  - c) The simplest way to take out the halyard is with a bent steel wire.
4. The forward and aft lower shrouds are fixed to their respective tangs (immediately under the shroud spreaders).
5. The forestay is attached to the toggle on the forward side of the mast head fitting. The forward strap is for the spinnaker halyard block.
6. The back stay is fixed to the aft toggle.
7. Fit the top shrouds in their respective tangs under the mast top fittings.
8. Fit the rigging screw covers on the shrouds.
9. Screw in the locking pins on the rigging screws. Screw out the rigging screws  $\frac{3}{4}$ rs of the way and fit the rigging screws to their respective shrouds and stays with the right-hand thread facing downwards.
10. Fitting the spreaders.
  - a) The spreaders for the starboard and port side are distinguished through the plate screw which locks the spar end fitting. The plate screw head should be uppermost (the flag line bracket downwards).
  - b) Fit the spreaders to the mast fitting each with two bolts which are locked. The protective rubber is fitted over the spreader tangs. Make sure that nothing can stick.
  - c) The respective spreader spars are loosened from the spreaders.
  - d) Open the spar fitting and insert the shroud. It does not matter if the inside end of the fitting breaks.
  - e) Stretch both main shrouds along the sides of the mast and mark the shrouds (with tape or paint) opposite the mast's spreader tangs.
  - f) Fit the spar fittings to the spreaders, they should cover the marks on the shrouds. Then lock with the plate screws, making sure that the clamp screw is well tightened.
  - g) It is important to check the spreader angles and that the links to the shrouds hold securely. The angles, shrouds/spreaders should be equally great above and below when the mast is rigged up.
  - h) Fit any spreader spar protections.

11. Screw tight the mast top winchle or Windex to the top fitting.
12. Attach electronic wind indicator if supplied.
13. Any flag lines should be fitted to the tange on the spreaders.
14. Check: that all through bolts are riveted or locked, that the rig bolt and block are locked. Use tape as protection where sails and halyards can chafe.
15. Remove the through bolt at the foot of the mast and fit the large hose clamp round the mast hole on the deck.
16. A large rope stop should be put round the mast under the spreaders (under all standing and running rigs). The stop should be big enough for the crane hook. Leave a piece of line hanging from the stop so that both the stop and the crane hook can be pulled down when the mast has been stepped.
17. Fit the crane hook (secure with a figure eight round the hook) and lift the mast so that the foot end comes over the mast hole. Then carefully lower the mast through the hole (make sure not to scrape the main bulkhead) until it stands on the foot of the mast. Fit the through going bolt and tighten up when the mast is vertical.
18. Fit the stays and shrouds to the chain plates. The male foot is fitted to the aft stay, but do not forget forestay stretchers if they are to be fitted. Allow the rig to be slack.
19. Place one of the rubber spacers (approx. 150 x 110 x 25 mm) on the high edge aft of the mast in the mast hole (Fig. 5).

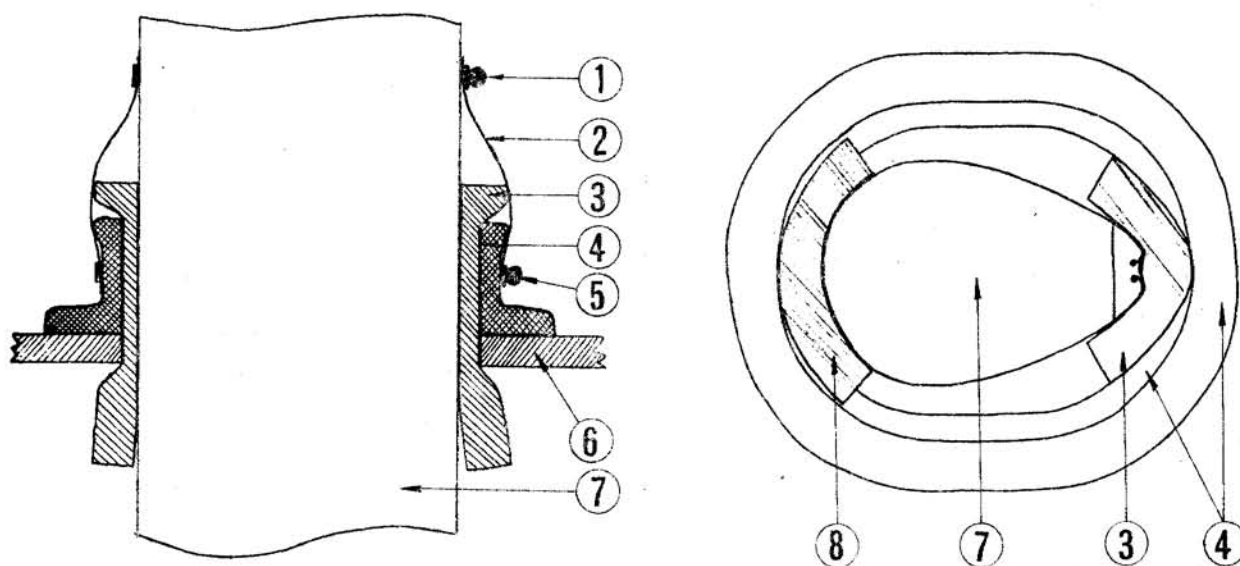


Fig. 5

- |                      |                       |
|----------------------|-----------------------|
| 1 Hose clamp         | 5 Hose clamp          |
| 2 Mast collar        | 6 Deck                |
| 3 Aft rubber spacers | 7 Mast                |
| 4 Mast hole flange   | 8 Fore rubber spacers |



19. b) Plait a rope, suitably 10 - 12 mm, and fix it to the starboard winch and cleat for subsequent winding round the mast approx. 30 cm above deck and then back to the port side winch and cleat.
- c) Draw in on the rope, and note the centering of the mast aft edge and keep an eye on the rubber spacer. Tightening up should be done alternately on the port side and starboard side winches. The rope must be stretched very hard in order to be able to fit the front spacer.



- 19 d) Fit the front spacer, use water as lubricant if necessary. Then slacken the rope equally on the starboard and port side.
20. Fit the mast collar with the help of the hose clamp.
21. Stretch up the rig. The objective with tacking is that the mast should be straight during sailing. The aft lower shrouds should be tightened lightly but the others should be tightened hard. Final trimming is best done during sailing in moderate wind. When trimming in ideal wind, it is a good thing if the top of the mast has a tendency to point somewhat aft and windward. Very often only the aft lower shrouds need to be adjusted.
22. Secure the rigging screws and push on the covering tubes. Tape where necessary.
23. Wire the electric cables at the foot of the mast.
24. Fix the boom, stanchions, lifelines, block and possibly sprayhood, etc. Tape round the lifelines at the stanchions to prevent the cover from being damaged. The lifelines are fixed to the aft pulpit as shown in Fig. 6.

The mast profile is so aerodynamically designed that it can happen that if the boat lies freely to the wind then it can start to swing. If you find this uncomfortable, it can be prevented by fitting a thin self-adhesive window sealing strip (Tesamoll No. 700) on both sides of the mast's aft between the spreaders and the top.

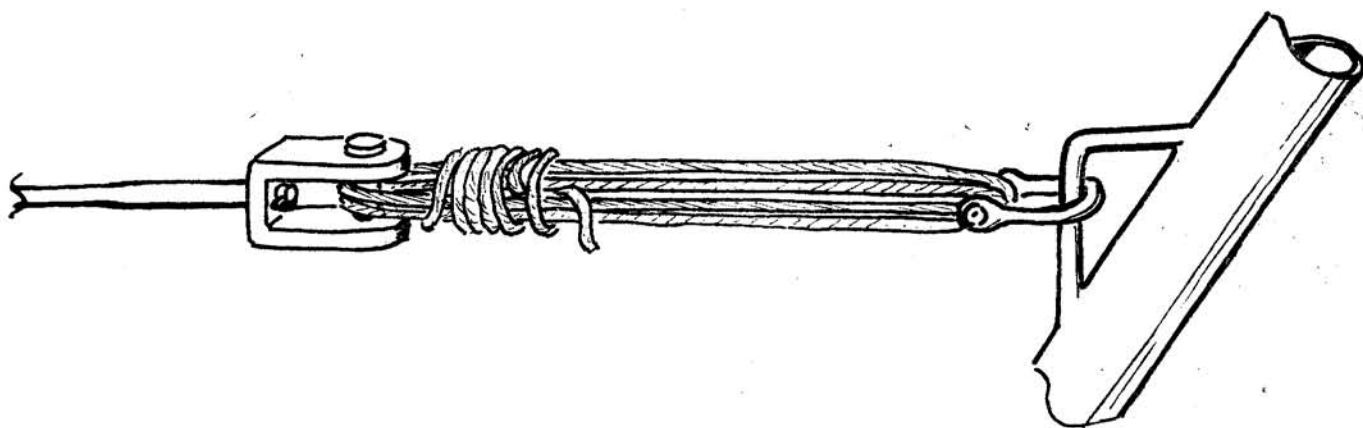


Fig. 6

# ENGINE INSTALLATION

Technical data (for further information, see the engine handbook)

Engine type designation	<del>MD 6A</del> <b>MD 7A</b>
Operation	4-stroke diesel with direct injection and overhead valves
Number of cylinders	2
Output (DIN) at max. speed	<del>7.35 kW (10 hp)</del> <b>13 Ps</b>
Idling speed	530 - 650 rev/min
Engine weight including reverse gear, electrical equipment, rubber mounting and oil	<del>185 kgs.</del> <b>195</b>
Reverse gear with water-cooled reduction gear	Type <del>MS</del> <b>MSB</b>
Oil quantity with oil-change engine	Approx. 2.8 litres
Oil quantity with oil-change reverse gear	Approx. 0.5 litres
Oil quality for engine and reverse gear	CD (DS)
Oil viscosity above + 10° C	SAE <del>30</del> <b>20</b>
below + 10° C	SAE <del>20</del> <b>10W</b>
Fuel quality	"Autodiesel" cet. rating minimum 45
Fuel consumption	Approx. 3 litres/hour
Battery voltage	12 V
Start-generator, starter-motor output	<del>135 W (1 A.p.)</del> <b>400 W (1.1 Ps)</b>
generator output, max.	<del>135 W</del> <b>35 A4 (420 V)</b>
Alternator output max.	<del>450 W</del>

The engine is fitted with an automatic cold-starting device. The engine water cooling is thermostat-regulated, and circulation is taken care of by a water-lubricated impeller-type pump.

Propeller, 2-blade, L-H rotation	13 1/2" x 11 1/2"
Propeller shaft, acid proof steel	Ø 25 mm
length	1005 mm
cone	1/20 Penta
Propeller shaft journalling, inner	Stern bearing with grease pocket and double sealing ring
in support bracket	Cutless bearing

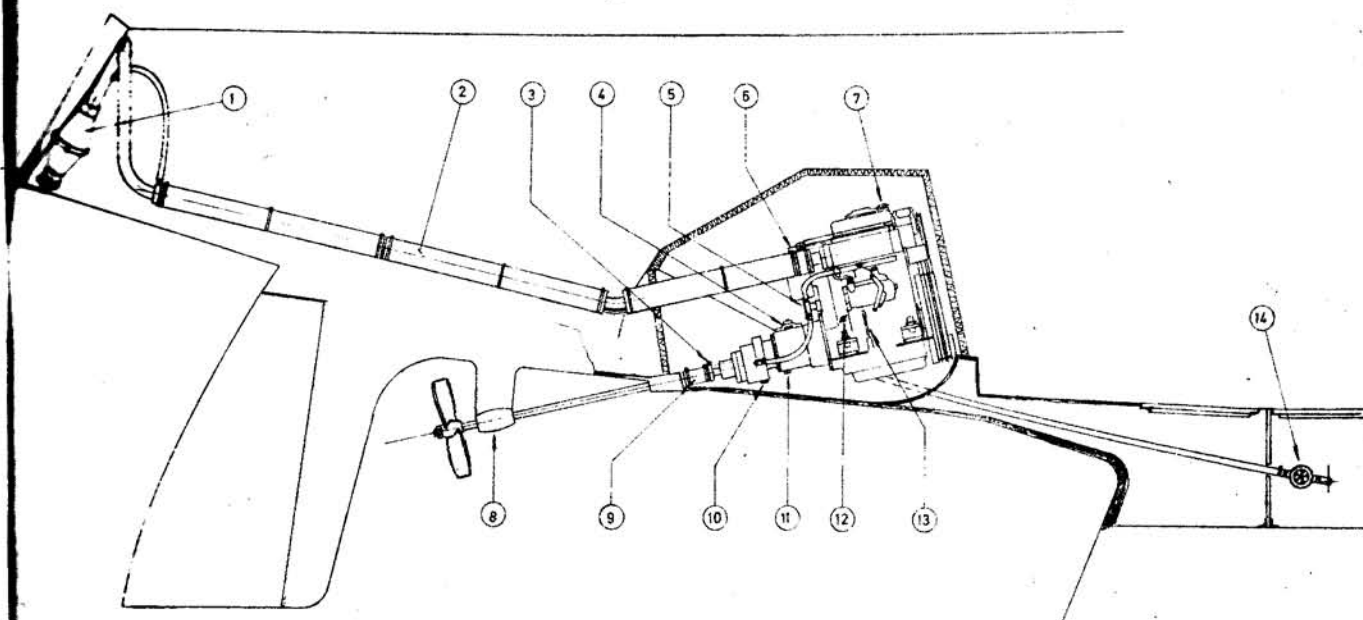


Fig. 7

- |   |  |
|---|--|
| 1 Silencer                                  | 7 Oil filler, engine                   |
| 2 Indirectly cooled exhaust pipe            | 8 Cutless bearing on support bracket   |
| 3 Grease pocket - plug, inner stern bearing | 9 Inner stern bearing                  |
| 4 Oil filling, port side                    | 10 Drain plug for coolant in red. gear |
| Oil dipstick, reverse gear, starboard side  | 11 Drain plug for oil in reverse gear  |
| 5 Cooling water pump                        | 12 Engine cooling water drain cock     |
| 6 Bleeder screw, fuel filter                | 13 Engine oil dipstick                 |
|   | 14 Cooling water intake cock           |

The engine is rubber-mounted on a tight engine bed of glassgibre laminate and is effectively sound-insulated. The combustion air is conveyed via a special channel to the engine room. The fuel tank is located at the bottom on the starboard stowage space in the cockpit. The fuel cock is located above the fuel tank. Fuel filling is on the top side of the starboard cockpit rim. The equipment includes a sediment separator which is placed in the engine room.

### Procedure before the first start

Before the engine is started after launching, the following measures should be carried out:

1. The engine is filled with oil at delivery. Check to make sure that the oil levels in the engine and reverse gear are between min. and max. on the respective dipsticks.
2. Check that the electrolytic level is approx. 10 mm above the battery cell plates, and if necessary top up with distilled water.
3. Check to make sure that the battery cables are connected up.
4. Switch on the main switches, two (on the front bulkhead or the cabin). NOTE! The engine may not be run without these switches switched on.
5. Check that the cooling water intake bottom cock is open (accessible under the centre cabin floor). Check that the engine block drain cock is closed (port side next to the oil dipstick mounting.)
6. On delivery, the tank is filled with about 10 litres of preservative fuel. The tank should be filled to the top with autodiesel. It holds about 33 litres.
7. During test running before delivery, the fuel system is bled, but bleeding is also recommended before starting for the first time. It is important to know how to bleed the engine, should it happen that air gets into the system under way and causes the engine to stop. This can happen when there is very little fuel in the tank or during heavy rolling of the boat. In principle, therefore, there should not be less than 10 litres in the fuel tank. Concerning bleeding, see page 19 of the engine handbook.
8. Unscrew the plug on the propeller shaft inner stern bearing (Fig. 7) and check that it is almost filled with grease. Add grease if necessary. A suitable type is a soft, water-tight grease, e.g., Shell Alvania in a tube. The grease is squeezed out of the tube into the hole until the grease pocket is more or less filled. Do not apply excessive pressure. A grease gun may not be used. To do so would run the risk of pressing the sealing rings out of the pack box. If there is too much grease in the pocket, the sealing ring may also be forced out when screwing down the plug.

### Starting

1. Check that the cooling water intake bottom cock is open.
2. Check that the main switches are turned on.
3. Check that the stop control is depressed.
4. Push in the disengaging latch - (see Fig. 8) and move the control lever forwards to the starting position - position 7.

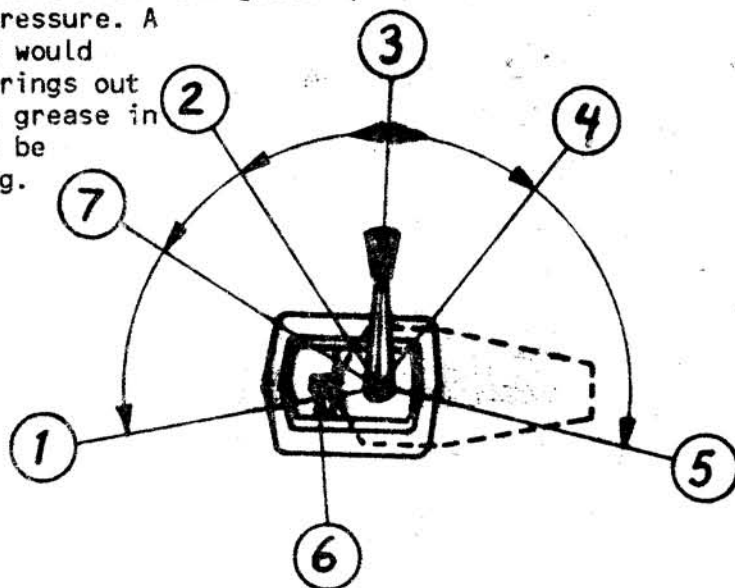
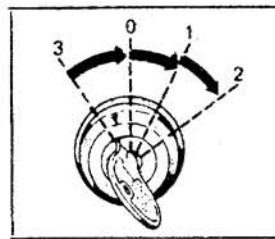


Fig. 8 Single control lever positions

- 1 Ahead - max. speed
- 2 Ahead idle
- 3 Neutral
- 4 Reverse - idle
- 5 Reverse - max. speed
- 6 Disengaging latch
- 7 Starting position



5. Insert the starting key and turn it one notch to position 1 (Fig. 9).
6. Check that the yellow warning light for oil pressure and the red warning lights for battery charging are on (Fig. 10).



0. Neutral position
1. Switched-on position
2. Starting position (starter motor switched on)
3. "Radio" position

Fig. 9 Starting key position.

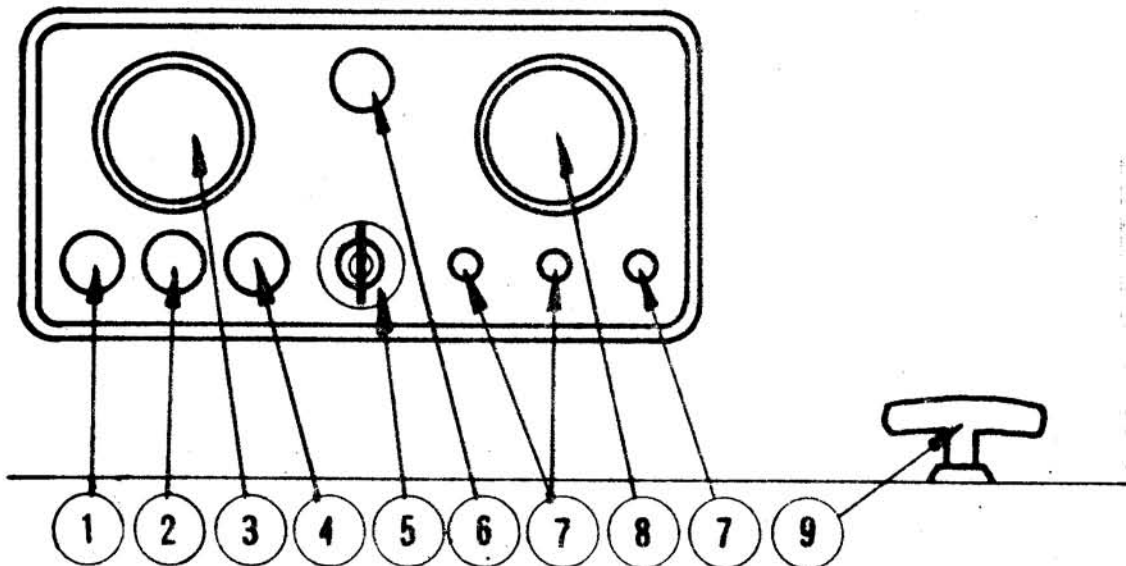


Fig. 10. Instrument panel

- |                                      |  |
|--------------------------------------|--|
| 1 Warning lamp, red, start-generator | 6 Switch for navigation light and mast-head lights |
| 2 Warning lamp, red, alternator      | 7 Place for extra switches                         |
| 3 Cooling water thermometer          | 8 Fuel gauge                                       |
| 4 Warning lamp, yellow, oil pressure | 9 Stop control                                     |
| 5 Starting key                       |  |
7. Push in the starting key and turn it clockwise to position 2 (Fig. 9). This engages the start-generator. Keep the key in this position until the engine starts. Immediately the engine starts release the key (it automatically returns to the switched-on position 1) otherwise the start-generator relay may become damaged.
  8. When the engine has reached normal speed, check that the warning lamps have gone out. This is usually done in the following order: oil pressure, alternator, and finally the start-generator light.
  9. Check that the cooling water is discharged through the exhaust pipe.

**NOTE.** Main switches may not be switched off while the engine is running. To do so would be to damage the alternator diodes. Neither may the battery cable terminals be disconnected while the engine is running.

### Recommended cruising speed

A suitable cruising speed is approx. 200 - 300 rev/min lower than the max. speed recommended. This makes for less wear and lower fuel consumption.

### Stopping

1. Move the control lever to neutral, and allow the engine to idle for a minute or so.
2. Pull out the stop control. As soon as the engine has stopped push it in again.
3. Turn the key back to the stop position and remove it.

### Engine service

The oil in the engine and reverse gear should be changed after every 50 hours of operation or at least once per season. The oil should be changed when the engine is warm since it is light and easy to pump out.

The lubricating oil filter should be changed after every 100 hours of operation or at least once per season.

The fuel filter (fine filter) should be changed after every 100 hours of operation or at least once per season.

The feed pump fine filter should also be cleaned when this is being carried out. The sediment separator container should be drained if it contains any impurities or at least once per season. This is done by opening the drain cock at the bottom.

Otherwise see the engine handbook.

### Running-in period

The engine should not be overloaded during the first 50 hours of operation. The engine speed should be between 300 - 500 rev/min lower than max. speed. The first servicing should be carried out after 20 hours. This involves:

1. Changing the oil in the engine.
2. Changing the lubricating oil filter.
3. Check-tightening the cylinder head. Tightening torque 68 Nm (7.0 kpm = 51 lb.ftf.)
4. Checking the valve clearance. The valve clearance should be 0.30 mm.
5. Checking for oil, water or fuel leakage.
6. Checking that all accessible hose clamps, bolts and nuts are properly tightened.
7. Checking the vee-belt tension. The belt is properly tensioned if it can be depressed 3-4 mm midway with thumb.

### Manoeuvring

When the single operating control lever is at neutral, - position 3 (Fig. 8), the propeller is disengaged and the engine is idling. Moving the lever "Ahead" to the distinct position 2 for speed ahead (idle speed) engages the propeller. Moving the lever "Astern" to position 4 correspondingly idles the engine and engages the propeller. Moving the lever towards full-speed "Ahead" or "Astern" gradually increases both engine and propeller speed. NOTE. When operating the lever from "Ahead" to "Astern" or vice-versa, allow the engine to idle momentarily by holding the lever a little while between positions 2 and 4.

## Running

Always make it a habit of regularly checking the following:

1. That the engine temperature is not excessive. Normally it should be between 60 - 95° C.
2. That the yellow oil-pressure warning light is out.
3. That the red generator lamps are out.
4. That there is sufficient fuel in the tank.
5. That there is adequate oil (right oil level) in the engine. The oil check should be made at the earliest when the engine has been stopped for five minutes.
6. That the electrolyte level in the batteries is correct, approx. 10 mm above the lead plates.
8. That any water that may have collected in the water separator or in the fuel line is drained by opening the bottom screw.

## Inhibiting for the winter

In order for the engine warranty to apply and in order to reduce risk of corrosion and damage from freezing, engine inhibiting must be carried out. As a minimum, we recommend the following, simplified procedure (the engine can also be inhibited according to pages 24 - 26 in the engine handbook):

1. Fit the fuel tank with preservative oil (e.g. Esso Rust Ban 623. Shell Ensio Oil 20 or corresponding) to a mixture of approx. 5% (95% diesel oil). The oil should be mixed with the fuel so that operational disturbances do not occur. A suitable fuel quantity in the tank is approx. 10 litres (approx. 0.5 litres preservative oil and 9.5 litres diesel oil). Then run the engine for about one hour. Any remaining preservative fuel may remain in the tank until the next season.
2. When the engine has been run warm, change the lubricating oil and lubricating oil filter. Ordinary oil can be used, but Volvo Penta engine No. 1.141502 is to be preferred. It can be used the next season.
3. When the boat is taken up on land, open the drain cock at the oil dipstick. If the water does not run out freely, screw out the cock fully and clean the opening with a steel wire. When the water has stopped running out, start the engine and run it max. 1/2 minute in order to expell the rest of the water. Then close the shut-off cock.
4. Mix 6 - 8 litres in a bucket with 50% glycol (with rustproofing additive) and 50% water. Disconnect the hose at the cooling water intake bottom cock (it may have to be cut) and insert the loose end in the contents of the bucket. Start the engine and let the impeller pump suck up the contents of the bucket. Then stop the engine and re-fit the hose. Close the bottom cock.

When about to run the engine on land, disconnect the propeller since the bearing is water-lubricated. Bear in mind splash from the exhaust pipe if there are other boats nearby and also remember that the water pump impeller cannot be run for more than max. 1/2 minute without water.

5. Clean the outside of the engine and reverse gear with white spirit or similar and touch-up any paint damage.
6. Spray the electrical system and unpainted surfaces with protective oil, e.g., CR 666 or similar. Remove the batteries and store them in a heated space at a temperature of approx. 10° C.



### Procedure before the first start next season

1. Re-fit the batteries (vaseline on the pole shoes), fully charged and checked.
2. Change the fuel filter. Check that there is no water in the fuel line water separator.
3. Fill the fuel tank.
4. Bleed any air from the fuel system.
5. Open the cooling water intake bottom cock.
6. Fill the inner stern bearing with grease.

Otherwise see under "Procedure before the first start".

### ELECTRICAL SYSTEM

The electrical system is run on 12 volts. The wiring diagram is shown on the cover 3rd page. The engine electrical system and the boat electrical system have different batteries and generators.

Some electric wires are routed through conduits in the deck. Separate electric sockets for, e.g., vacuum cleaner or inspection lamp are fitted at the navigation bridge. Navigation lights and other boat lights and electric sockets have 8 amps fuses, 25 mm long (Bosch NGS 3/4Z). There is an extra fuse socket for connecting up, e.g. a freeze box or heater unit. (The fusing for the heater unit is 25 amps.) The fuses are located in a box situated on the electrical wiring console behind the dashboard. The fuse box also contains a spare fuse.

Festoon bulbs in navigation lights (Swedish model) and bulkhead lights as well as fo'c'sle roof lights are 12 volt, 10 watts cabin ceiling tube lamps 44 mm long (Osram 6411) have 12 volt, 15 watts bulbs with bayonet base BA 15 b (Osram 7430). Instrument panel light: 12 volt, 2 watts (Osram 3898). Warning lights: 12 volts 2 watts (Osram 3796).

10 W bulbs use about 0.85 A and 15 W bulbs about 1.25 A. When sailing in darkness, 3 running lights and one light inside may be used continuously. This uses up about  $3 \times 0.85 + 1.25 = 3.75$  A. A fully charged battery would provide this current for approx. 15 hours. Naturally this capacity could be increased by having an extra lighting battery connected in parallel with the standard one or if there is a possibility of connection to a spare battery.

The charging time for a discharged lighting battery (60 Ah) is at full speed (approx. 2000 rev/min) approx. 2 hours, and with idling approx. 4 hours. The corresponding time for the starter battery is approx 7 hours at full speed. The starter battery does not charge during idling. If only charging is to be carried out, this should be done with the idling speed increased and the propeller disconnected.

If any lamp or apparatus should not function when turned on, check the fuse. If the fuse is alright, either the fault is in the lamp, etc., or there is a bad connection, very often a switch. Replace a blown fuse with a new one. If the new one should blow, then there must be short circuit in the wiring or the fixture. Should a particular fusing blow repeatedly, this may be due to the fact that some extra apparatus has been connected and that the 8-amp fuse is insufficient for the current required. There is nothing to prevent changing to a 25 A fuse if necessary.

If the starter motor is unable or cannot turn over the engine, then it is an 80% chance that the battery is in poor condition, or is flat, or there is poor contact between the pole and pole shoe or between cable and pole shoe. A good aid for checking the charge in the batteries is an acid tester (for checking the specific gravity). If the starter battery is poorly charged, then the connection cables between starter battery and lighting battery can be changed around (providing that the lighting battery also is not flat) in order to get starting current. The cables cannot be changed when the engine is running as this would ruin the alternator diodes.

If the starter battery is poorly charged, an attempt at starting can be made with the starter motor and by decompressing the engine (see the engine instruction book) at the same time. If this is unsuccessful, try starting the engine with the starting handle. Even in this case the simplest thing to do is to decompress the engine.

#### VENTILATION AND HEATING

In order to provide good heat insulation, minimal condensation and good ventilation, the Ballad is constructed according to the following principle:

Good insulation is provided by the sandwich lamination in the deck and superstructure. The hull sides in the cabin and fo'c'sle above the water line are lined in plastic fabric and 8 mm foam plastic. Proper ventilation is provided thanks to the "used" air being evacuated through two ventilators. Incoming air is taken in through the air intake on the after side of the cockpit.

The Ballad can be supplemented with an Eberspächer boat heater which, even under severe temperature conditions, can keep the boat both warm and dry inboards. The functional principle of the heating system can be seen from Fig. 11. Diesel oil is burnt in the heater's fully enclosed combustion chamber, the oil being pumped from the standard oil tank by means of two special electrically operated pumps. Air necessary for the combustion is taken from the outside straight through the transom and the combustion gases are conveyed out through an exhaust pipe next to the intake for the combustion air. An electrically operated fan in the heater sucks the fresh air from the starboard stowage space. The fresh air is heated up when it passes round the combustion chamber under over pressure. The heated air is conducted through a hose to a distributing shutter under the port side berth and from there to exhaust openings in the cabin and fo'c'sle. With the shutter it is possible to regulate the amount of heated air to be conducted to the respective evacuation points.

The unit is started with a switch on the main bulkhead. Next to it is a thermostat, with which the desired cabin temperature can be adjusted. (The temperature in the fo'c'sle will depend on how much the distributing shutter is adjusted.) Check that the thermostat is adjusted to the desired temperature. In order to maintain the inside temperature 10-15° higher than the outside temperature, the thermostat normally keeps the heater going 25% of the time (approx. 15 minutes every hour). With continuous operation, fuel consumption is approx. 0.3 litres/hour - with thermostat regulation approx. 0.1 litre/hour. During starting, the heater uses approx. 18 A of ignition current during 30 seconds. Operating current is approx. 3 A. The fan continues a little while afterwards in order to cool the burner after it has been stopped.

With a fully charged battery (60 Ah), the heater can be used for approx. 50 hours (thanks to thermostat regulation) before the battery needs to be charged.

Should the heater not function, first check the following:

1. Check the thermostat adjustment, the heater cannot start if the inside temperature is too high.
2. Too low battery voltage, should be at least 11 volts.
3. Fuel shortage.
4. Burnt out 25 A fuse, check fuse box.
5. Glow plug fuse cut out, re-set (with the red button placed on the front of the unit).
6. Check the 6 A glass fuse, can be replaced with an 8 A (placed under the grey cover on top of the unit).
7. Check spark plugs, change if necessary.
8. Check for blockage of the exhaust pipe or air intake.

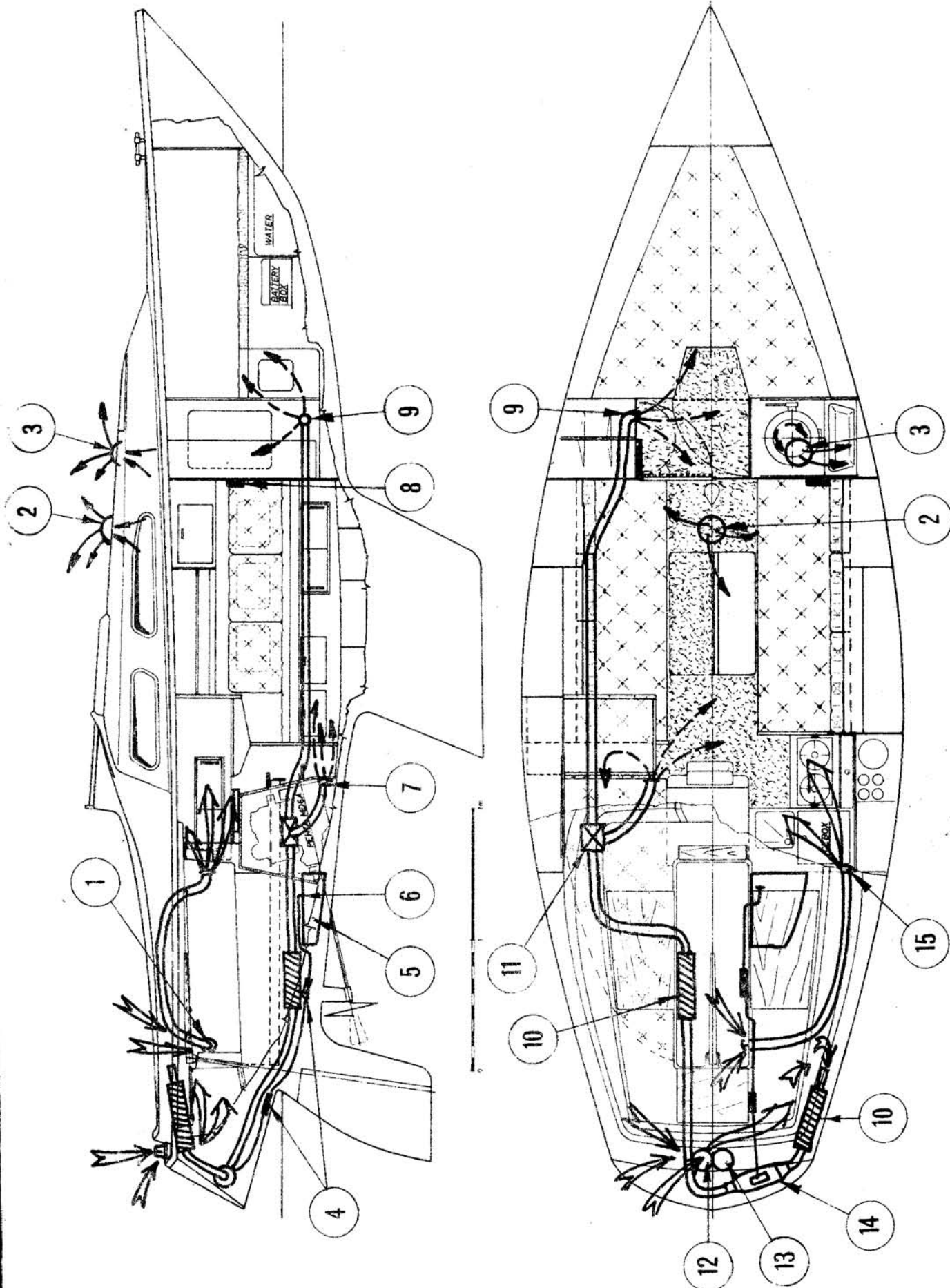


Fig 11

- 1 Air intake, fore cabin
- 2 Air vent, cabin
- 3 Air vent, toilets
- 4 Fuel pump
- 5 Fuel tank
- 6 Fuel cock

- 7 Heat outlet, cabin
- 8 Thermostat and switch, fo'c'sle
- 9 Heat outlet
- 10 Silencer
- 11 Distributing shutter
- 12 Air intake for stowage space and heating

- 13 Air intake for engine
- 14 Heater unit
- 15 Air inlet into cabin

- > Warm air
- ==> Fresh air
- > Used air



## BOAT MAINTENANCE

The boat's standard equipment includes (with effect from 1974): two socket spanners, a 1/2" (for vehicle bolts) and a 10 mm (for man ropes, fore and aft pulpits).

The hull and deck of the Ballad are joined together by means of stainless steel bolts (vehicle bolts) through a footing strip. Even the man rope feet, the fore and aft pulpits are fitted through a footing strip. A flexible packing is fitted between hull and deck and at all through going bolts. After the boat has been used for about one week and the packing has bedded in, all the vehicle bolts and mandrel feet bolts should be check-tightened. This should also be done even in the middle of the season and when laying up for the winter. All this work must be done in order to reduce risk in the future of leakage between hull and deck.

If you have the tools, we also recommend that the chain plate, sheet rails and windows are check-tightened. When working with the windows, remember that the frames are of anodised aluminium so the screws must not be tightened too hard.

We would also like to point out that the above is not included in our warranty commitment.

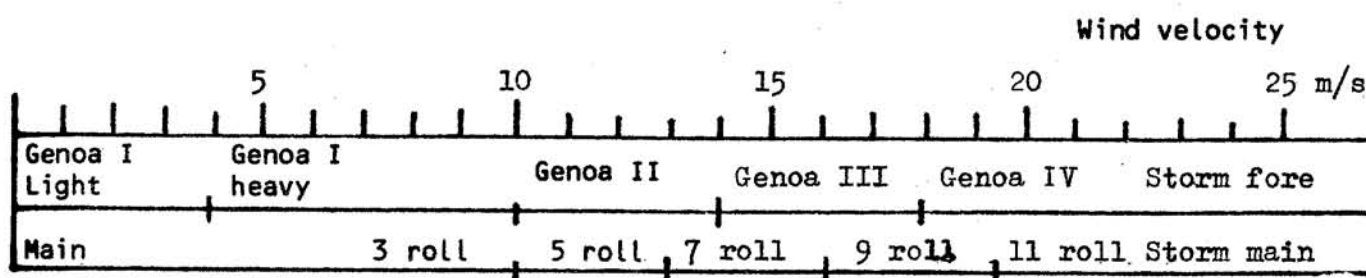
## ADVICE ON SAILING

If you are a beginner on the Ballad, the following advice can be of use.

Prior to all sailing, check to make sure that the boat mast and rig are properly fitted. If you have slackened off the aft stay, tighten it up so that the mast curves slightly aft. A curve of about 50 mm is just about right.

The table given below is intended to assist you in choosing the right sail. Naturally the limits are flexible and should only be looked upon as guides. The wind velocity, which is in metres per second, is an apparant velocity on the boat, that is, the speed of the boat through the water plus the velocity of the wind.

As you see, the Genoa I can be used up to 10 metres per second without any unpleasantness arising, thanks to the relative stability of the boat.



Sheet the mainsail to an even billow from mast to leach. Excessive sheeting can close the sheet leach so that the sail impedes the wind instead of letting it out. Another effect of excessively hard sheeting is that a fold can form in front of the battens. Use instead a sheet track in combination with appropriate sheeting in order to get an effective mainsail. Preferably, if necessary, with the sheet point a bit to windward.

Hoist a Genoa so hard that there are no wrinkles left between the hooks. The sheeting point is correct when the sail is uniform from top to foot. If the sheeting point is too far fore, this will open the sail foot too much and tighten up the leach. The opposite happens if the sheeting point is too far aft. The right sheeting point also needs to be adjusted according to the wind force: more to the fore in light winds, and aft the harder the wind blows. A good position at the first attempt is to allow the sheet to divide the angle between foot and leach. Generally it can be said that the sheeting point is correct when the sail starts to play simultaneously from top to deck when you luff up to the wind. When you have found the correct sheeting point for a sail, mark with tape where the track should be and note how hard you have sheeted.

## YACHT-RACING TIPS for beginners

Do not be afraid to participate in yacht-racing. We have all been beginners at one time or another. Also you do not need all the sails given on the sail drawing. However, the minimum sails should be a heavy Genoa I, Genoa 2, Genoa III and a spinnaker.

In order to achieve good results in yacht racing, two things above all are decisive, namely:

- to take the shortest possible way by selecting the right route.
- to sail the boat as fast as possible.

Those who command or succeed in both these things at the same time will find himself a leading contender in a race. Sailing the right way is not so much a matter of choosing a certain boat or boat type, but simply having the right helmsman and crew. Trimming the boat for maximum possible speed also helps.

For those who are thinking of taking part in yacht-racing, it may often be suitable to arrange certain winches for halyards accessible from the cockpit. At least a Genoa winch should be placed there so that you can easily alter the luffing while sailing. Another advantage with this halyard placing is that the helmsman himself can hoist the foresail, e.g. after a spinnaker setting.

The spinnaker lift and the spinnaker hauler cleats are also good to have at the cockpit. On the other hand, however, it is a matter of taste whether the spinnaker halyard should be drawn to the cockpit. The spinnaker can be run up quicker standing at the mast, but more reliably from the cockpit. In order to be able to trim the mainsail easily, the downhauler can be drawn from the Cunningham hole to the cockpit. There should also be a couple of extra hull winches for the spinnaker ropes, otherwise the Genoa must be hoisted before setting the spinnaker. A suitable quantity is one number less than the standard hull winches.

To prevent the main boom from lifting too much during gybing, a kicking strap should be installed.

Before yacht-racing, check over your list to make sure that you have all the equipment stipulated by the rules, all the necessary equipment for running the boat, and the necessary personal equipment. The rest you can leave on the jetty. Remember that every, unnecessary pound lowers the speed of the boat.

A detail which many people wonder about is how to gybe a spinnaker staysail. We recommend that the staysail drawn on the sail drawing should be placed 1 200 mm aft of the forestay. If the gybing can be arranged with a bar running across the boat, then the sail can be gybed to windward as the wind becomes more and more aft. But the advantages of this are only marginal.

Good luck!



## Ballad Eintyp Regel (Deutsche Übersetzung)

Das Design der Yacht muß in Übereinstimmung mit den nachfolgenden Spezifikationen für Rumpf, Ruder, Propeller, Ballast, Deck, Rigg, Kopfplatte im Großsegel, und auch den Vorschriften für Position des Motors, des Treibstoff- und des Wassertanks, und Batterien entsprechen. Es dürfen keine Änderungen am Unterwasserschiff vorgenommen werden, außer Änderungen die das Finish der Oberfläche betreffen. **Im Zweifel gilt die englische Fassung der Ballad One Design Rule.**

- Rumpf:** In Übereinstimmung mit der Originalzeichnung 0-55122
- LüA.: 9158 +/- 20 mm
- max. Breite: 2960 +/- 10 mm
- Ruder:** In Übereinstimmung mit der Originalzeichnung 0-55122.
- Propeller:** Firmenseitig montierter Standard Festpropeller (13,5" x 11,5") oder Faltpropeller (mindestens 15").
- Kielgewicht:** 1550 kg (Blei: 1470 kg, Kunststoff/Sandfüllung 80 kg).
- Deck:** In Übereinstimmung mit der Originalzeichnung 0-55317 oder 0-58864.
- Die Genuaschiene darf nicht weiter innen platziert werden als im Originaldesign. Sie darf unter Einhaltung der Originalrichtung und Kurve verlängert werden.
- Einrichtung:** In Übereinstimmung mit den Zeichnungen 325 / 290 und 0-55993.
- Maschine:** Das Maschinengewicht darf 185 kg incl. Öl nicht unterschreiten.
- Der Einbau einer leichteren Maschine ist erlaubt, wenn entsprechende Kompensationsgewichte im vorderen Bereich des Ölsumpfes einlaminieren, oder seitlich davon einlaminieren werden. Eine Zusatzbatterie in der selben Position kann Teil des Kompensationsgewichtes sein.
- Tanks:** Treibstoff- und Wassertanks müssen entsprechend der Zeichnung 0-55993 konstruiert und platziert sein.
- Batterien:** Das Minimumgewicht der Batterien beträgt 42 kg. Sie sollten im Vorschiff unter den Vorschiffskoje eingebaut sein (Originalposition).

Wenn die Batterien an eine andere Position verlegt werden oder das Gewicht unterschritten wird, müssen Kompensationsgewichte an der Originalposition in gleicher Höhe einlaminiert werden, die ein Gesamtgewicht von 42 kg an dieser Position wieder herstellen.

**Rigg und Zubehör:** Das Rigg muss topgetakelt mit einer Saling auf jeder Seite sein.

Der Mast muss auf Mitteschiff platziert sein. Mast und Baum müssen aus Aluminium gefertigt sein. Das Mastgewicht muss mindestens 70 kg incl. der Salinge, Wanten und Stage, Umlenkrollen für Fallen, Klemmen und der Spinnakerbaumschiene nebst Schlitten betragen.

Der Gewichtsschwerpunkt des Mast muss mindestens 5700 mm oberhalb des Mastfußes liegen.

Die Länge des Mastes darf 12700 mm nicht überschreiten. Das Profil des Mastes vom Mastfuß bis zu einer Höhe von 2000 mm unterhalb des Masttops muss mindestens 114 x 165 mm betragen.

Die Länge der Saling muss mindestens 820 mm betragen. Die maximale Länge des Spinnakerbaumes ist 3740 mm. Alle Wanten und Stage sollen aus 1 x 19 Draht oder Rod bestehen. Der Minstdurchmesser ist 6 mm für Draht oder 5 mm für Rod.

Das Maß zwischen Vorstagsbefestigung am Rumpf und der Vorderseite des Mastes (J-Maß) ist 3500+/- 25 mm. Doppelte Vorstagen sind nicht erlaubt.

Profilvorstagen sind erlaubt, beim Segelwechsel muss dann jedoch dieselbe Nut und das selbe Fall benutzt werden.

Ein inneres Vorstag (Babystag) ist nicht erlaubt.

Ein Jockey pole ist erlaubt.

Zwei Genuafallen sind erlaubt.

Bug- /Heckkorb und Seereling müssen mit in Übereinstimmung mit dem Design sein, z.B. wie werftseitig geliefert.

**Maße und Marken:** Schwarze Bänder mit einer Breite von 25 mm müssen auf Mast und Baum gemalt sein.

Die Oberkante der unteren Marke am Mast muss auf der gleichen Höhe

wie die Oberkante des Baumes in horizontaler Position liegen.

Die Unterkante der oberen Marke am Mast muss 9750 mm über der Oberkante der unteren Marke am Mast liegen und darf nicht mehr als 452 mm vom Masttop entfernt sein.

Der Abstand zwischen der Vorderkante der Marke am Baum und der Hinterkante des Mastes beträgt 2850 mm.

**Segel:**

Erlaubte Segeltuchmaterialien sind Dacron, gewebtes Polyestersegeltuch, oder laminiertes Material mit Polyesterfilm (Mylar) und Polyester. Segeltücher, die andere hochfeste Materialien wie Kevlar (Aramid), Spectra, Vectra oder Carbon enthalten, sind nicht erlaubt.

Das Gewicht der Tuche ist nicht vorgeschrieben.

Auf dem Internationalen Ballad Cup müssen folgende Segel ein offizielles Vermessungsstempel tragen: Spinnaker und Genuas mit mehr als 27 m'.

**Großsegel:**

Das Großsegel darf nicht über die Messmarken an Mast und Baum gezogen werden. Nur ein Groß-Trysegel darf mit losem Unterliek gesetzt werden.

Die Lattenlänge ist nicht vorgeschrieben. Maximal vier Latten sind erlaubt.

Die Kopfplatte im Großsegel darf nicht breiter sein als 152 mm.

Der Abstand zwischen der Oberkante der Kopfplatte und der Mitte der oberen Lattentasche darf nicht weniger als 1950 mm betragen.

Das MGU-Maß darf 1100 mm nicht überschreiten.

Das MGM-Maß darf 1850 mm nicht überschreiten. Bei der Vermessung müssen Konkavitäten im Achterliek durch eine gedachte gerade Linie überbrückt werden. Die Länge des Achterlieks ist nicht beschränkt.

Das Großsegel muss mit dem Klassenzeichen: einem großem schwarzem "B" mit einem roten Stern gekennzeichnet sein, sofern nationale Vorschriften nichts anderes Vorschreiben.



**Segel (Forts.)**

Fenster im Großsegel dürfen eine Abmessung von 235 x 790 nicht überschreiten.

**Vorsegel:**Genua:

Perpendicular (LP) 5610 mm

Höhe des vorderen Dreiecks (IG/ISP) 11300 mm

Basis des vorderen Dreiecks (J) 3525 mm

Das Vorliek, welches die Basis für die Vermessung ist, muss mit 300 N (30 kg) gestreckt werden.

Die Länge des Achterlieks ist unbeschränkt.

Fenster im Vorsegel dürfen eine Abmessung von 205 x 965 mm nicht überschreiten.

Wird das Vorsegel in einem Profilverstag gefahren so reduziert sich das Maß LP um FSP. FSP wird definiert als die maximale 2-fache Profilverstag-Sehnenlänge – Die Sehnenlänge wird dabei rechtwinklig zur Längsachse des Profilverstages gemessen. Die 2-fache Sehnenlänge ist zur nächstliegenden ganzen Zahl in cm zu runden. Beispiel: Wird eine Profilverstag-Sehnenlänge mit 28 mm gemessen, so reduziert sich das zulässige maximale LP um FSP = 6 cm (2x28 mm = 56 mm und damit gerundet: 6 cm).

Spinnacker:

Maximale Lieklänge (SL) 11300 mm

Maximale Breite (SMW) 6730 mm

Die Breite auf der Hälfte der Liekhöhe darf 75 % der Breite am Fuß nicht unterschreiten (SMG).

**Segelanzahl:**

(Maximale Anzahl, von Segeln die an Bord mitgenommen werden dürfen)

1 Großsegel

1 Groß-Trysegel (Schweres Tuch ohne Latten)

5 Genuas / Focks von denen nur zwei Segel eine Fläche von jeweils 27 m<sup>2</sup> überschreiten dürfen.

1 Sturmfock

2 Spinnacker

Wenn eine Rollgenua verwendet wird, ist nur eine Genua erlaubt.

Wenn der Spinnacker gesetzt ist, darf ein weiteres Vorsegel fliegend gesetzt werden. Dabei muss der Hals des zusätzlichen Vorsegels in etwa Mittschiffs angeschlagen sein.

**Standardausrüstung:** Das gesamte Standard-Equipment, welches mit dem Boot geliefert wurde muss an Bord mitgeführt werden.

Zur Standardausrüstung gehören:

5 Matratzen sowie die Rückenpolster in der Kajüte

Alle Teppiche (oder Holzböden)

Kocher incl. Brennstoff

Tisch (Mindestfläche 0,5 m<sup>2</sup>)

Bootshaken & Festmacherleinen

Alle eingebauten Teile

Beim Internationalen Ballad Cup können Rückenpolster, Teppiche und Tisch an Land bleiben.

**Crew:** Die Crewanzahl ist nicht beschränkt, sofern nicht Regattavorschriften anderes vorschreiben. Auf dem Internationalen Ballad Cup ist die Anzahl der Crewmitglieder auf sechs incl. Steuermann begrenzt.

**Zertifikate:** Das Ballad Klassenzertifikat wird ausgegeben von der nationalen Ballad Klassenvereinigung. Das Klassenzertifikat und die Eintypregeln müssen an Bord mitgeführt werden.

**Regeländerungen:** Änderungen dieser Regeln können von allen nationalen Ballad Klassenvereinigungen auf der jährlichen Hauptversammlung der BODA (Ballad One Design Association) beantragt werden.

Die ursprüngliche Eintypregel wurde verabschiedet auf der Hauptversammlung am 30 Januar 1976 in Kopenhagen und wurde von den Delegierten von Dänemark, Norwegen, England, Deutschland und Schweden in Kristinehamn am 22. Januar 1977 angenommen. Änderungen wurden in den Jahren 1984, 1988, 1989, 1990, 1993, 1994, 1995, 1996 und 2000 auf den Hauptversammlungen beschlossen.

BODA, im Juni 2000