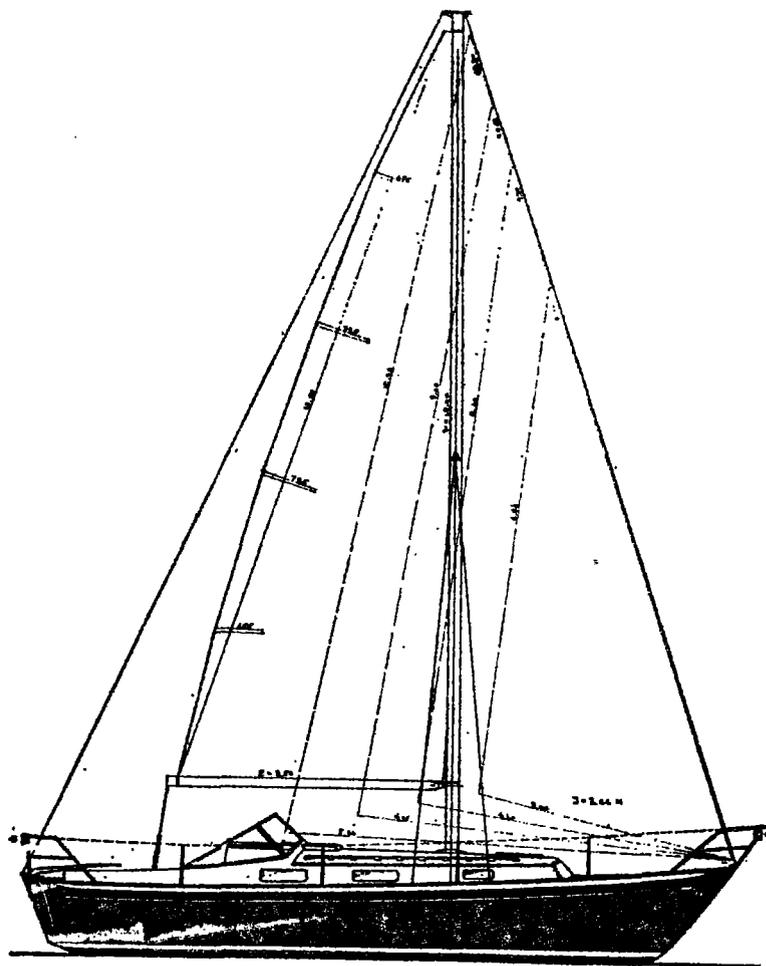


MONSUN 31



R **Hallberg Rassy**

44080 Ellös, Sverige. Telefon 0304/50290
Telex 2445 Rassy S

HALLBERG RASSY BOAT YARD

INSTRUCTIONS FOR BOAT OWNERS

This booklet is intended to give some hints and information regarding the best handling and maintenance of your boat. It does not, however, in any way claim to be complete, but deals with some of the questions, which have been previously answered upon delivery.

This Instruction is not intended as an "Operation Manual", but deals primarily with details, which are specifically related to our boats.

As a rule the new owner always has to dedicate sufficient time in order to get himself acquainted with his new boat and its construction.

The responsibility for the proper maintenance is up to the buyer.

We wish you GOOD LUCK and many HAPPY NAUTICAL MILES!

I N F O R M A T I O N S H E E T

Type of boat: MONSUN 31

Construction No:.....

Year of Manufacture:.....

Colour of the Hull: Gelcoat No:..... Jotun 200

Superstructure Gelcoat No:..... Norpol 332

Motor No:.....

R 31

SPECIFICATION
NOV. 1978

Designer: Olle Enderlein

MAIN DATAS:

Length over all	9.36 m	30'-9"
Length in wl	7.50 m	24'-8"
Beam	2.87 m	9'-5"
Draft	1.40 m	4'-7"
Displacement	abt 4,2 tons	9250 lbs
Keelweight	1,9 tons	4200 lbs
Sail area	39 sqm	430 sqft
Height of mast above wl	abt 12,8 m	42'-0"
Number of berths	6	
Speed under power		7,2 knots

HULL:

Glassfibre reinforced plastic (GRP)

Colour: White

Bottom treated with Antifouling

Hull thickness freeboard	10 mm
" " below wl	15 mm
" " keel	25 mm

Fuel tank and floor moulded in GRP

Ballast keel, iron, moulded in and completely protected in GRP

Main bulkheads laminated to the hull on both sides

Rudder blade in GRP

Rudder main Piece ϕ 35 mm bronze

Heavy cast rudder fittings in bronze

Hull and deck, with rudder and chainplates etc, are built under the supervision of Lloyd's for "Hull Construction Certificate".

DECK AND SUPERSTRUCTURE:

GRP-sandwich construction with polyvinyl-cellular plastic as core material for strength and insulation

Colour: Ivory white

Hull and deck completely joined by overlapping GRP laminate

Bulwark formed in the deck and hull mouldings and fitted with a solid capping in teak Handrails, Cappings on cockpit coamings, Companionway, Hatchguides, Sole and Seats in cockpit are all in teak.

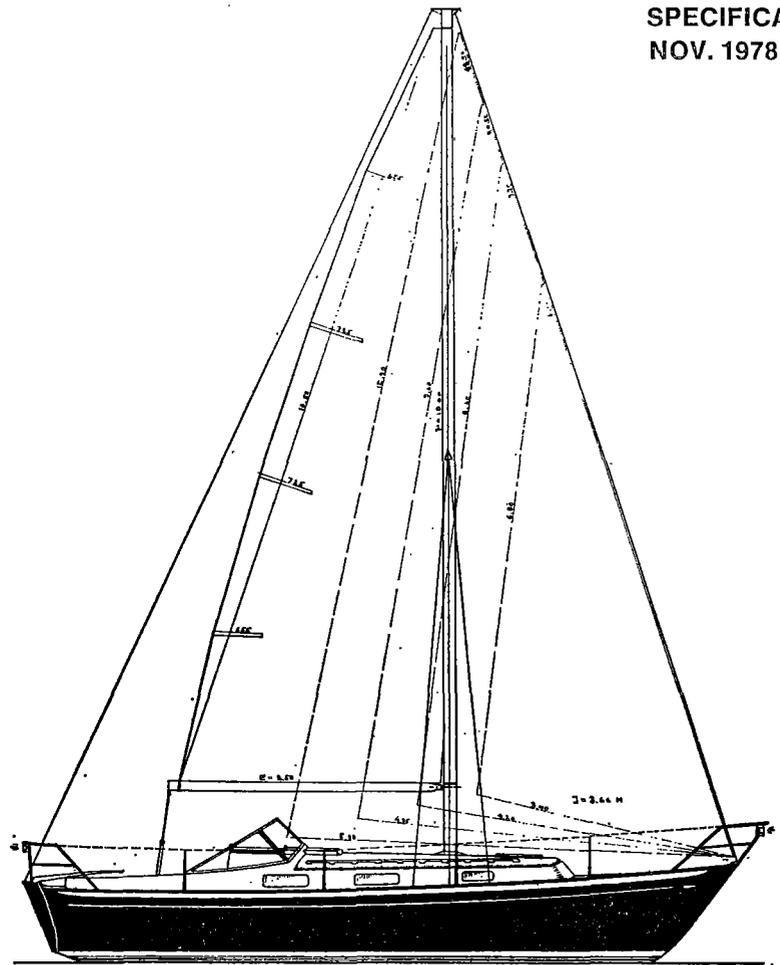
Teak except Sole and Seats are varnished

The deck has a moulded in non-skid surface and is provided with four 1" scuppers draining below water line to avoid discoloured topsides

Two 1 1/2" (38 mm) scuppers from the watertight and selfdraining cockpit

SPARS AND RIGGING:

Mast and Boom in anodized light alloy profiles 146x112 and 111x75.



Scale 1:100

The mast is stepped on the cabin top directly over strengthend bulkhead Stab reef with Winch on mast for reefing lines, outhaul and Cunningham.

Boom vang

Internal halyards

Two Halyard winches.

Decklight in mast

Main sheet, 4 part with clamcleat

Roller car on X-track

Jib sheet, braided terylene

Two adjustable trac cars including Genua blocks

Headstay, top shrouds, double lower shrouds and aft stay in ϕ 6 mm 1x19 stainless steel rigging wire, pressed end terminals and 7/16" stainless turnbuckles.

Jib and main halyards ϕ 4 mm 133 tr stainless wire

Stainless chainplates.

SAILS:

First class workmanship in dacron or equivalent

Main sail: abt 19 sqm (210 sqft) 280 gr/m²

Working jib: abt 18 sqm (200 sqft) 280 gr/m²

On request is available

Genua jib: abt 31 sqm (340 sqft) 250 gr/m²

Storm jib: abt 12 sqm (130 sqft) 280 gr/m²

Heavy Genua: abt 24 sqm (260 sqft)

280 gr/m²

Spinnaker: abt 71 sqm (780 sqft) 50 gr/m²

All sails are delivered with bags and eventual battens.

EQUIPMENT:

Sheet winches, two Lewmar 40 or equivalent.

Winch handles, two 10"

Four 10" mooring cleats

Two 8" mooring cleats

Pulpits, bow and stern, in stainless steel.

Double lifelines with four pairs of tapered stanchions, height 610 mm.

Windscreens with heat treated glass in light alloy frames protect the forward part of the cockpit.

A canvas canopy with transparent sides covers the forward part of the cockpit.

Six windows of heat treated glass in light alloy frames, two of the windows are opening.



Hallberg-Rassy

HALLBERG-RASSY VARV AB

S-440 80 ELLÖS - SWEDEN

PHONE 0304/502 90

Light alloy fore hatch with translucent acrylic glass panel and heavy framing, type Gebo or equal.

Compass: Suunto, Ritchie SF-60 or equivalent.

Permanent mounted bilge pump, type Whale Gusher 10.

Ancor of light weight type 12 kg (27 lbs). One ancor line 30 m (100 ft), 12 ft chain.

Four mooring lines 10 m (30 ft)

Boat hook, flagstaff.

International navigation lights ϕ 100 mm.

Watertank abt 160 litres.

Four 6" fenders.

Cockpit table.

Bathing ladder on transom.

ENGINE:

Volvo Penta diesel MD 11 C, 17 kW (23 hp).

Rev. gear type No Shift with reduction 19:1. 12 V electrical system with 35 amp alternator.

Two batteries 60 Ah with separate circuits for engine starting and lighting etc.

Instruments comprise Revolution counter. Temp.-gauge and optic and acoustic warning.

Propeller 3-blade, diam 15", pitch 12" (two blade also available) left hand.

Propeller shaft ϕ 25 mm stainless steel.

Engine and shaft carefully aligned and rubber suspended. The engine foundation is made in GRP and forms a spilltray under the engine. The engine compartment is sound insulated for lowest possible sound level. Shaft bearing Cutless waterlubricated rubber bearing. "Wet" exhaust line in rub-

ber with Volvo S^{il}ent Muffler.

Built in fuel tank 120 litre (32 US gallon) with separate pump for draining of eventual water.

ACCOMMODATION:

First class workmanship in selected mahogany, hand rubbed and treated to a silk smooth finish.

The accommodation consists from forward: Water and gastight stowage for ancor and lines and also for eventual liquid gas bottles accessible from deck. The space is drained overboard.

Forward stateroom with two comfortable berths. Length 2,0 m (6'-7"). Filler between berths gives 0.8 m width at shoulder. Below the berths watertank and stowage. The in-

side of the hull is lined with mahogany. Shelves at sides.

A folding door separates the forward stateroom from the toilet compartment. The toilet compartment is fitted with a reliable marine pump toilet and a sliding wash basin with freshwater from footpump. On SB-side is a good sized open hanging locker and space for eventual heater. The walls are covered with light colour linen texture vinyl. Teak grating on drained floor. Head room 1.75 m (5' 9").

Sliding door to main cabin.

The main cabin is built with fair sized sofa-berths P and SB. The port side sofa is made as a L-sofa. Behind the swing up backrests is stowage for bedding. Length of berths 2.0 m (6'-7"). Shelves and lockers outside the sofas. The lowering table together with the L-sofa forms a double berth. The inside of the hull above berths is paneled with mahogany. The ceiling is lined with Somvyl. The glassfibre floor is covered with wall to wall carpet. The cushions are all in heavy polyeter foam, 4" thickness. The upholstery in high quality furniture fabrics.

Aft in main cabin is on SB side Navigators table with chart locker, drawers and elpanel. A quarter berth is arranged aft of the navigators table and is used also as the navigators seat. A hanging space for oilskins is arranged against the engine bulkhead.

On the port side is a L-shaped galley with stainless sink and foot operated Fw. pump. The galley is fitted with a stainless two-burner kerosene stove in gimbals. The boat is also available with a liquid gas stove with oven. Lockers for crockery etc. Insulated ice-box. Capacity abt 70 litres. Working surfaces on countertop and navigators table in teak texture plastic laminate.

Headroom in main cabin abt. 6'-0" (1.83 m). The cockpit is selfdraining but with low sill height for easy access to the accommodation.

Seats and floor in cockpit are covered with teak. Length of cockpit abt 6'-7".

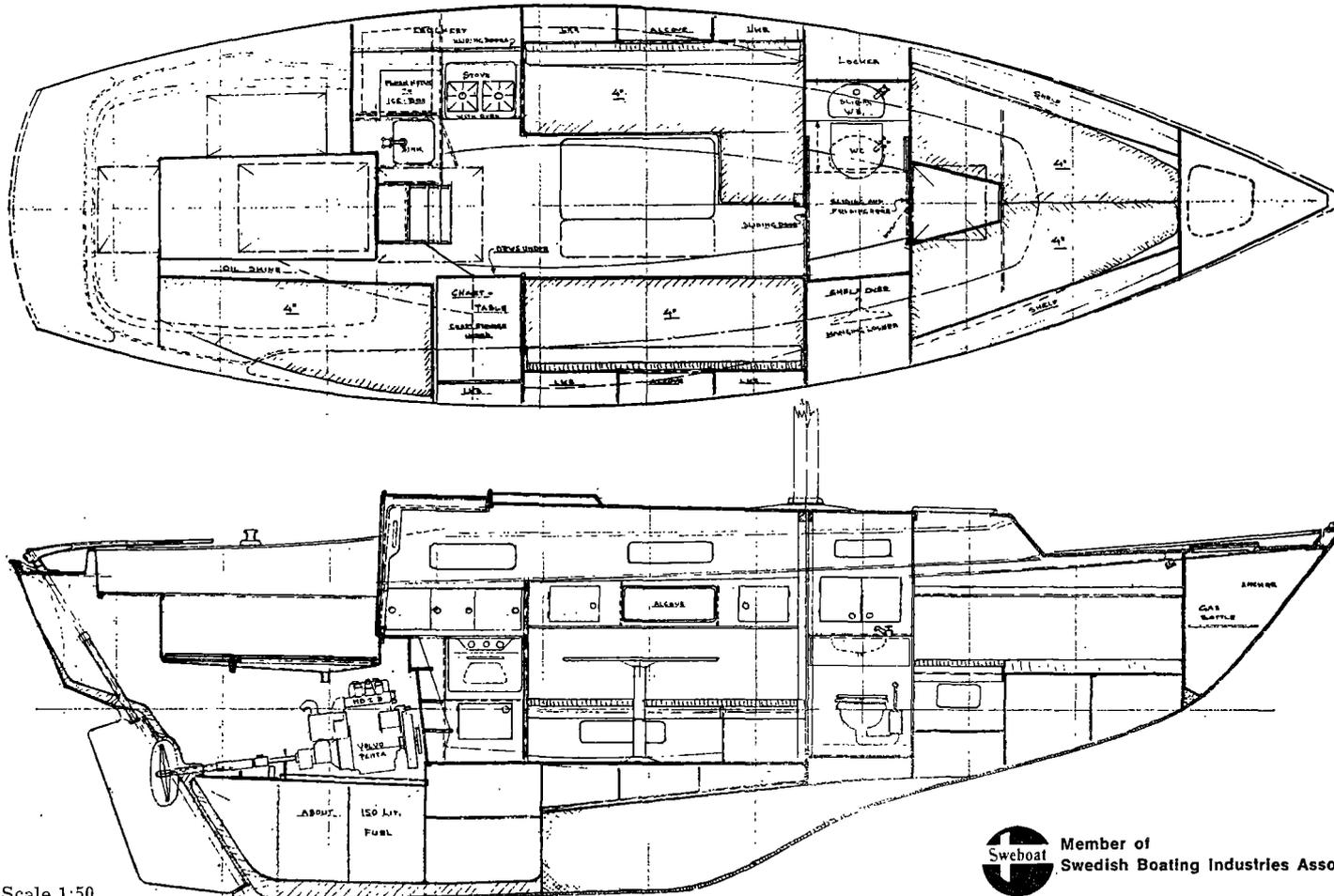
Stowage in afterpeak and port quarter is accessible from cockpit.

Main sheet and compass on low beam.

EXTRA EQUIPMENT:

Heating.
Instruments etc.

The right to changes in specification is reserved.



Scale 1:50

Maintenance of the Gelcoat - Repair of Damages

The outer, colored coating of a fiberglass boat is called the Gelcoat. This is a plain coating, which protects the fiberglass hull and at the same time gives the boat an elegant and easy-to-care exterior. The thickness of the Gelcoat is approximately $1/32 - 1/64$ of an inch and thus considerably thicker than a normal color coat. It is completely homogenous and has the same hardness right through. This is why it is often possible to remove bad scratches through grinding or polishing without having to apply any new plastic. It is not difficult either to repair deeper scratches or damages. Any air bubbles, scratches or ruptures that may occur in this outer coating does not mean that water can penetrate the laminate.

1) Maintenance of plastic surfaces in good condition

The plastic surfaces of the boat should be kept clean and spotless for a nice appearance. Use regular detergents and water but avoid detergents which may cause scratches. Do not use detergents containing ammonia as they may damage fittings, plexiglass, etc. Detergents and solutions should be thoroughly rinsed off. Should the shiny surfaces get dull they can be polished either by hand, using a polishing agent, or by using a low revolution machine. There are several special polishing agents for fiberglass boats on the market.

Waxing is nor normally required, but can do no harm. When waxing notice that the wax has to be worked well. Do not wax any surfaces with pattern, which will make them slippery.

2) Repair of superficial scratches, etc.

Scratches in the gelcoating may often look deeper than they really are and as the scratched surface is different in color than the shiny one, you may think that the colored coating has been penetrated. For reasonably deep scratches use water sanding. Start with a coarse paper and little by little change down to a fine paper (No 800). Rub the surface after sanding, i.e. use polish and an abrasive on the surface as well as on the surrounding undamaged surfaces.

3) Repair of deep scratches and scuffings

If the gelcoating has been damaged and completely removed, the repair is done as follows. Get Gelcoat in the proper color (See Information Sheet) and a hardener from a fiberglass manufacturer or the yard. The damage is then cleaned with the edge of a knife and covered with masking tape very closely on both sides of the hole. Mix the Gelcoat and the hardener (approximately 2% of the hardener). The temperature in the working area should be between 60-80 F.

Use a generous amount of the Gelcoat to fill in the damaged spot and immediately place a piece of tape over the same to avoid the Gelcoat from running. After the plastic has hardened, grind off the surplus and polish the surface.

Scaffings under the waterline are filled with putty epoxy (Interpad) and then painted with a 2-component primer, e.g. International Poly Ground.

Larger scaffings, in case the boat hits bottom hard, have to be cleaned from crushed fiberglass through grinding and are then repaired with fiberglass mat and plastic before final putting (repair sets are available on the market).

Maintenance of Wood - Interior

The interior surfaces of mahogany are thoroughly treated with a synthetic laquer and even after many years of use do not normally need any other maintenance than a cleaning. Should a surface, however, be damaged to the extent that it would be necessary to re-varnish same, the whole damaged surface has to be sanded and then varnished with a mat laquer (International Lagolac or similar). Most of the minor damages are taken care of with a little bit of oil. Interior teak, mouldings, etc. can be oiled once in a while with teak oil.

Exterior Wood

The exterior wood is made of genuine teak and is not dependent on either laquer or oil for its protection. It is thus a matter of taste whether the teak should be varnished or be left untreated. It is our opinion that the varnished teak has a better appearance and that it sets off a better contrast against the other plastic surfaces. But of course a certain maintenance is required to keep it up from wear and tear. On varnished seats we strongly recommend the use of non-skidding and non-scratching footwear. When the teak is treated at the yard they use a synthetic varnish with a phenolic resin glue base. Varnish with an oil base is not suitable and a 2-component varnish should not be used on top of the old varnish. Untreated teak is scrubbed thoroughly at the same time as the cleaning of the fiberglass surfaces and will after some time take on a silvergry shade. In our experience, the use of teak oil on the exterior may cause bad looking surfaces, which are difficult to maintain. Therefore we do not advise any oiling. It is most important that the maintenance treatment of varnished surfaces is made in time. When you can see that it is needed it is too late. It is a good piece of advice to re-varnish already after one or two months in the first season and than at least once every year. When you re-varnish, the surrounding fiberglass surfaces must be well protected from streaks or drips of varnish, which otherwise leaves spots which are difficult to remove. Should you happen to spill some varnish be careful to remove same immediately as, even if it is practically translucent from the start, it will from the sun turn yellow very quickly on the fiberglass surfaces.

Mast and Rigging

If the boat is not commissioned at delivery and therefore the owner has to take care of the stepping of the mast and the rigging, the following procedure should be followed. The halyards are checked and the shrouds and stays are attached to the mast. If the top navigation light is not yet mounted, it should be done before stepping the mast. The spreaders are mounted and locked on to the mast and top shrouds. In order to make it simple to obtain the correct angle of the spreaders, stretch the top shrouds along the mast and make a mark at the position of the spreader bracket on the mast. This marking indicates the correct position for the outer end of the spreader. Any covers for the turnbuckles should be attached at this stage. When the mast has been stepped and the shrouds and stays have been fastened to their respective chain plates, the rigging is tightened by hand and the mast adjusted into a vertical position.

The Principal Adjustment of the Rigging is made so that the top shroud and the aft stay is tightened to correspond to approximately 10 % of the weight of the boat and the headstay somewhat more, which will give this stay quite a rigid feeling. Next in line come the forward undershrouds, which should make the mast bend slightly forward at the spreaders. Finally the aft undershrouds are not tightened more than is possible by hand. As the various items, such as wires and mast, settle, the rigging should be tightened, but not before some hours of sailing in fresh breeze.

First reset the rigging as done when you first step the mast. A correct stepped mast will assure you to get the best performance of your boat. An incorrectly adjusted mast may give excess weather helm or opposite effect.

To be sure that the mast, when under stress, does not form a S-curve. After final trimming make sure that the turnbuckles are locked with splitpins for protection. It is advisable to use tape over the same.

Inspect the rigging when the mast is taken down, either for winter storage or for other reasons. Special care should be given to halyards. Grease the top and bottom shives. Wash the mast and afterwards hose it thoroughly.

Before stepping, also control all wire connections for running lights and antennas.

The anodized surface can be protected by using a silicone-free wax. The luff of the sail would move easier if the slot is treated with paraffine.

The wind can cause vibrations in the mast and rigging. This happens most often when the boat is moored at the dock and is quite normal and natural. But sometimes you may find it somewhat disturbing. Vibrations seldom occur during sailing.

The most common cause is that the topping lift is too tight. Specially if the boat is moored and the wind is coming in from the side, the mast itself may vibrate alongship. This can be remedied by stretching the spinnaker topping lift to some suitable place aft.

A small change in the tension of the rigging often eliminates the vibrations.

The sails are made of Dacron or Terylene and do not need any special care during the first hours of sailing to obtain optimum shape. They are pretty well water resistant and in an emergency you may stow them away even when moist. At first opportunity they should however be dried, as discolouration by mildew can happen.

General hints about sail handling, etc.

The Monsun's construction assures complete safety and she has been tested during severe conditions during ocean passages and numerous crossings of known rough water as the North Sea and the Baltic Sea.

The largest genua jib (330 sqft) is used in winds up to about 14-16 knots. The sheets are always outside of the double lifelines and stays.

The working jib (200 sqft) can be used in combination with an unreefed mainsail up to 20-25 knots. As Monsun is well balanced, even when heeling excessively, there is no need to reef the mainsail in order to ease pressure on the rudder. The sheets are either outside the double lifelines and stays or between the top stay and the lower stay and inside the lifelines.

The storm jib in combination with reefed mainsail is advisable in forces over 25 knots winds.

The mainsail (about 210 sqft) is designed for the modern type of slabreef. The first reef reduces the sail area with 47 sqft and the second with another 45 sqft.

The winch fitted to the aft side of the mast is used for the reef lines as well for the internal outhaul.

When the mainsail has been bent the two reeflines should be pulled through the reinforced eyes in the leach. These lines are usually in different colours. The shorter line is for the first reef and the longer for the second. The lines are to be taken directly from the exit in the aft end of the boom through the eye in the sail and fown to the movable eye on the opposite side of the boom. This eye fitting is adjustable along the boom to a position, where the sail can be well stretched when reefed.

Reefing of the mainsail in the sea is performed as follows:

If there is a free choice, the boat is put on the SB tack. (This makes working with the halyard winch easier and gives right of way). The slack in the boom lift is taken up. The main sheet is eased, but is not let go. The halyard is slacked off until the eye at the luff for the first reef can be hooked at the tack fitting. It is sometimes, specially for the second reef, an advantage to let the slide adjacent to the eye free as it passes the track gate. When the eye has been properly hooked, the halyard is set up hard again. The reef line for the first reef coming out from the underside of the boom tack fitting is laid on the winch on the aft side of the mast and is pulled tight. The reefline is blocked and the winch is released by pushing the lever at the boom exit forward. The sail is now ready to be trimmed to the wind. The loose canvas can be secured with a light line through the eyelets in the sail, if it is flapping around.

The second reef is made in the same way as the first.

Unreefing: Before shaking out a reef, eventual seizings are removed to avoid serious damage to the sail when it is hoisted. The main reef lines are let out. The halyard is released to allow unhooking at the tack. The sail is rehoisted, not forgetting to reenter eventual slides released during reefing as they pass the track gate.

The mainsail is to a very large extent dependent on the right stretching along the foot and luff and the trimming can change its appearance completely. Wrinkles along the line of the battens pockets are most often caused by improper stretching of the luff. The clew must be securely fastened to the boom and the foot stretched firmly.

The jib should be firmly stretched on to the headstay. Use the halyard winch on the mast.

There are always some wrinkles at the corners of the sails, but this does not influence the efficiency of the sail. The sails should be inspected every year in regard to minor damages and worn out seams, which may have to be repaired.

Instructions regarding the Engine, Engine Installation,
Through Hull Fittings, Head, Electric System, etc.

Regarding the engine itself, we refer to Volvo's "Owner's Manual", which should be thoroughly studied before using the boat. This Manual does not comprise the actual installation.

Engine foundation bolts and engine alignment

After twenty hours running and once every year, the engine foundation bolts should be checked and tightened if loose. The alignment of the engine and propeller shaft must be checked by feeler gauge at the flange by a competent mechanic.

The propeller shaft is accessible in the aft of the engine room. For lubrication there is a tube installed to a grease cup with screw top under the hatch to the storage space on the port side. During the first hours of operation the stuffing box should be greased by turning the handle half a turn every hour. During these first hours of operation the packing in the stuffing box is run in and must be carefully checked for overheating. It should never be allowed to reach temperatures higher than 70 centigrades. If, after some hours' use, the stuffing box has the tendency to more leakage than a few drops, it should be adjusted by loosening the locking nut and tightening the stuffing box nut approximately half a turn, but the box should still be dripping but not very much.

The water intake to the engine is located forward of the engine accessible through a hatch in the floor just in the front of the galley.

The fuel oil filter is of a combined water-separating and fine filter type and is mounted on port side in the engine room. This filter should be inspected regularly and after an hour's run with regard to the water collecting in the lower glass part. The water cannot be drained off while running, but it should not be allowed to rise up high in the filter, as this would ruin the paper filter in the upper part.

Drainage pump for fuel oil tank

If you suspect that the fuel tank contains water, this can be drained by using a special pump, which is installed under the hatch on port side of the cockpit. Plunge until you only get fuel. Check in a glass.

The fuel tank is built in under the engine and has a volume of about 120 litres (35 US gallons). The suction pipe to the engine is however placed approximately 3 inches above the lowest point. In order to avoid that the fuel pump sucks in air, specially while running in a seaway, a further margin should be left. To calculate the Cruising Range under power, the accessible fuel should be reduced to about 20-25 US gallons, which give about 200 miles range at 6 3/4 knots. At full speed the fuel consumption will rise considerably. The level in the fuel tank can be determined with a flexible dipstick in the sounding plug on the fill pipe aft of the engine in the engine department.

The fresh water tank holds about 160 litres (about 45 US gallons) and is built in under the berths in the forepeak. The tank is made in special polyethylene and can be cleaned through a manhole. As the tank is semi transparent, the water level may be checked.

The fresh water pumps are foot operated and do not require any maintenance. You should make sure, however, that the pumps do not contain any water during the winter period if it is a risk for freezing.

The bilge pump is of high capacity membrane type and is mounted in the port cockpit locker.

The Kerosene Stove is of the brand Optimus, directigniting type. Regarding operation and its maintenance, we refer to the maker's instruction sheet.

Through hull fittings

Beside the intake for the engine and the through hull for the head, there are the following:

The self bailing cockpit as well as scuppers from the deck are drained through 2 1¹/₄" through hull valves, placed on each side of the engine room. Sink drain in locker below, wash basin drain behind the head. The latter valve should be closed during sailing to prevent water to enter when heeling.

The electric system is of 12 V and has 2 different circuits. One for the engine start and one for navigation and interior lights, etc. Even if the second battery is completely discharged, the engine will still have a charged battery for starting. Each circuit has, as a standard, one 60 Amp. hour battery. The batteries can be disconnected by the master battery switches, which are placed on the bulkhead in the engine room against the quarter berth. The lighting battery is always connected to the generator. This means that an unintentional switch-off of the master switch does not damage the generator.

The fuse boxes are located at the Navigator's table, same as the electric outlet. Before connecting appliances, which are sensitive to polarity, such as TV sets, plus and minus should be checked.

The head

The boat is equipped with a reliable marine-head of over board discharge type. The bowl is flushed by pumping seawater and pressing out the waste directly into the sea. The discharge is connected with a special bottom valve, which normally should be kept closed and in any case always while sailing.

In an OPEN position the handle points away from the incoming pipe. The valve is open when the handle points along the pipe on either side. Normally the valve for incoming seawater has to be closed only when the boat is not in use for a long time. The valve is placed under the floor in the forepeak. It is important that the flushing valve of the toilet is set completely in the position CLOSED. When in use, the bottom valve shall first be opened. The bowl is then flushed a couple of times. After use, the bowl is emptied through forceful pumping, at the same time as the small valve at the side of the bowl is open = FLUSH. When the water level has risen somewhat in the bowl, the small valve at the side shall be closed and the pumping is continued until the bowl is emptied. Put flush valve back to OPEN position. Never put any foreign matter in the toilet, a match can easily clog the toilet. Close the bottom valve after use. As regards the winter maintenance, flush the toilet with detergent and water and drain through the bottom plug.

NOTE. In some areas the boats are fitted with optional sewage treatment devices or holding tanks to meet the anti pollution laws. For maintenance of optional equipment, see manufacturer's hand book.

The interior light bulbs are generally of a 5 W coil type.

The light bulbs in the lanterns are 25 W, except for the stern navigation light, which is 10 W, Hella, type 8 G A 002600-12 respectively 599-12 or similar. Spare lamps can be purchased from your dealer or directly from the Hella representative in your area.

NOTE: IMPORTANT! Checking up on hose clamps

Hose clamps, specially those positioned below waterline, where a leak means water entering the boat, must be checked up some time after delivery and then annually. The clamps are, where possible, of stainless steel and will not corrode. The hose must be so firmly attached to the fitting that it cannot be turned by hand and must not leak. Extreme tightening should always be avoided, as it may make the threads of the screws to override and the clamp to lose its grip.

Lifting, slipping and winter storage

The Monsun can easily be lifted using a crane with soft lifting strops. The center of gravity is positioned abt 1,5 m aft of the mast. Spreaders on the lifting stops should be used to avoid excessive pressure on the wooden rail cappings.

When lifted on a slipway or placed in winter storage, the weight of the vessel should be supported by woodfaced blocks. One should be placed as far forward as possible under the flat keel and one about 1 meter (3') forward of the rudder.