Dear Yacht Owner,

Your choice of a DUFOUR boat shows the confidence you place in us. You may rest assured that Michel DUFOUR and the staff of MDSA have all worked together in order to ensure that you obtain maximum satisfaction from your acquisition.

Each DUFOUR boat is made with the highest quality materials. She only needs a little care and attention, as explained in this handbook, and she will certainly live well up to your expectations.

The enclosed brochures give further information regarding optional equipment.

We wish you pleasant sailing.

MICHEL DUFOUR S.A.

TABLE OF CONTENTS

GUARANTEE

DUFOUR boats are carefully checked during production. In the testing pool the water-tightness of the hull is checked and the engine is run for one and a half hour under normal conditions. A final check is made before delivery.
Thanks to the efficiency of this quality control, our guarantee is one of the most tangible in the boating industry.
However, your cooperation and knowledge about your boat and our dealer network will complete our efforts so that our guarantee is expressed by your satisfaction.
Our guarantee is for a duration of one year, as from the date on which all the new material produced by Michel DUFOUR S.A. changes hands, and is against any intrinsic malfunctioning or construction fault. We consequently undertake to repair or replace purely and simply the parts which we recognise to be originally defective, if necessary, after return of the parts to our plant for examination. Any replacement of parts during the guarantee period will not affect a lengthening of the duration of the guarantee. No defect will cause any penalty or damages claim.
Should it be necessary to take the boat out of the water, the cost of this operation will be advanced by the owner.
These charges, as well as cost of transport and launching will be reimbursed by the builder if it is accepted as his responsibility under the garantee.

The following are excluded from the guarantee :

1 - the engine is under the manufacturer's guarantee apart from the installation made by MDSA
2 - the sails are under the sailmaker's guarantee
3 - electronic and navigation equipment are under the guarantee of its manufacturer
4 - varnishes, paint, anti-fouling, and all coatings
5 - products not made by MDSA
6 - second-hand goods
7 - goods supplied by the customer, even if it is installed by MDSA
8 - material transformed, modified or repaired outside workshops recognized by MDSA or without its authorization
9 - material which has deteriorated as a result of misuse or bad servicing, abnormal or abusive use, use by a sailing school, on charter, or racing, knock against a foreign body or damages caused during transport or handling
10 - fair wear and tear of such parts as : stern tube, zinc anode, filter refills, halyards, battens, pump joints...

The Responsibility of your DUFOUR Dealer

The DUFOUR dealer from whom you have purchased your boat is a specialist in the boating industry. He knows our products, understands your needs and manages an organisation centred on service rendered to the customer. His confidence in the quality of the construction of our boats allows him to pledge his reputation when he sells you your boat.
In addition to the production quality control, your dealer inspects the boat on its arrival, goes through the check-list, checks the water-tightness and proper functioning of the engine, water-cocks and apparatus. He then proceeds with stepping the mast and adjusts the standing rigging.

The dealer is responsible for settling any disagreement with the transport agent and for making any necessary reservations within the legal time-limit, should any damage have been incurred during transport.

It is also the dealer's responsibility to help assure the proper functioning of the guarantee. We request that you consult him on whatever problem you may have with your DUFOUR.

Lastly, he is at your disposal to sell you spare parts, make modifications, and adapt material ; he keeps a basic stock allowing him to answer your more usual needs.

LAUNCHING

HANDLING

A lifting gear with a minimum capacity of 6 metric tons must be used.

It is possible to lift the boat by two different methods :

1) Lifting with 2 slings wrapped under the hull together with special spreaders :

It is **essential** that spreaders be used to ensure a minimum transversal gap of 3.30 m between the ends of each sling, otherwise the rubbing strake and upper part of the hull may be seriously damaged. Before lifting, check that the slings do not pass over through-hulls (sea-cocks, inlet valves, propeller shaft) nor external parts of the log or depth finder. Refer to Fig. 1 for positioning of the slings.

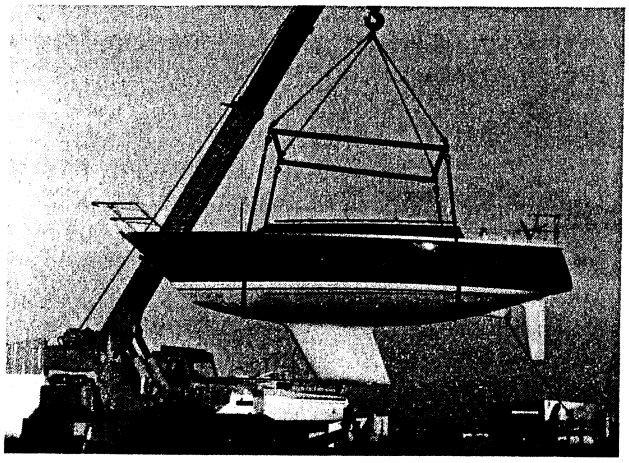


Fig. 1

2) Lifting with ring and single strap

In order to avoid damage to the hull, which is often caused by the slings (amongst the least, scratches in the gel-coat) there is a lifting ring fixed to the top end of the keel. This permits lifting the DUFOUR 31 with a single strap, which passes through the opening of the main cabin Goiot hatch.

A shackle with a dia. of 40 mm (supplied with the boat) is used to attach the strap to the lifting ring after removal of the dining table from its s/s legs (to do this unscrew the nuts).

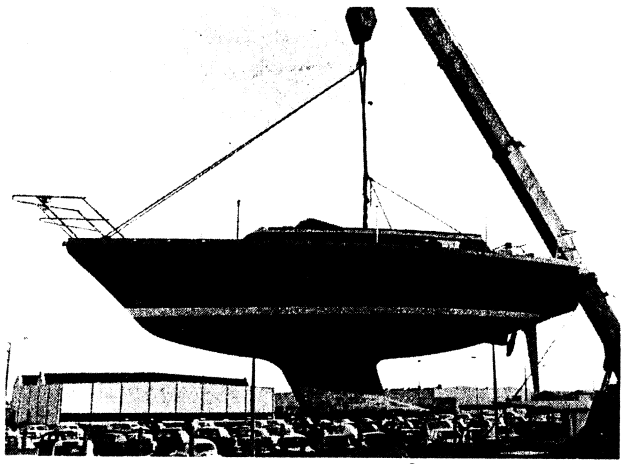


Fig. 2 Ondiepe kiel (1.45m)

Since the centre of gravity of the boat may be slightly displaced according to equipment, keep the boat longitudinally and transversally balanced as follows :

a) attach the top eye of the strap to the stem fitting with a line turned on a bow mooring cleat ;

b) put a protective wrapping round the strap level with the goïot hatch opening ;

c) tie the centre of a line to the strap just above the protective wrapping. Put the ends of the line through the port and starboard jib sheet blocks positioned just forward of the winches and turn each end on a winch.

Thereafter it will be possible to lift the boat without taking down the mast ; it will only be necessary to free the backstay and set the boom at the end of the main sheet track.

Close all sea-cocks before launching. When the boat is afloat open each sea-cock and check that the through-hulls are water-tight.

ARRANGEMENT OF RIGGING

The mast is already equipped with standing and running rigging. The rest of the rigging and life-lines are in numbered bags.

STANCHIONS AND LIFE-LINES

After removing the stoppers, fit the stanchions and life-lines. The end with an insulated sheave fitting is placed at the bows (Fig. 3).

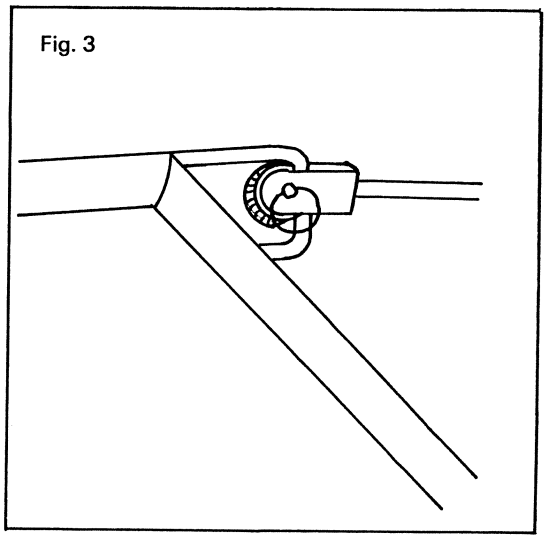


Fig. 3

STEPPING THE MAST

A crane must be used for stepping the mast of the DUFOUR 31. Order of operations :

1. Place the mast face down on wooden supports.
2. put the spreaders in position. Underneath the spreaders are eyes for the flag halyards.
3. put each of the main shrouds through the end-fittings of the spreaders. (fig. 4).
4. install the wind tell-tale at the mast head(f. 5).
5. clear the halyards and shrouds along the mast and tie them to its foot.

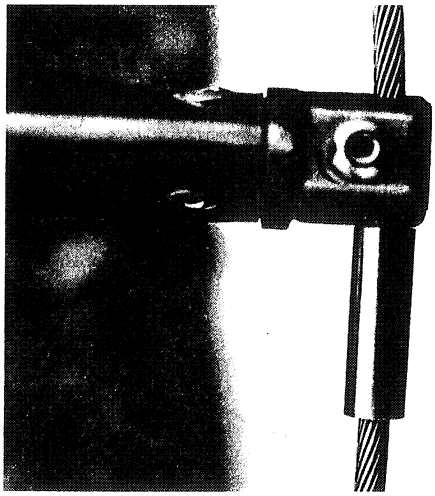


Fig. 4

6. take hold of the mast under the spreaders rigging. Lift and bring the mast to its tabernacle with the crane. (Fig. 6).

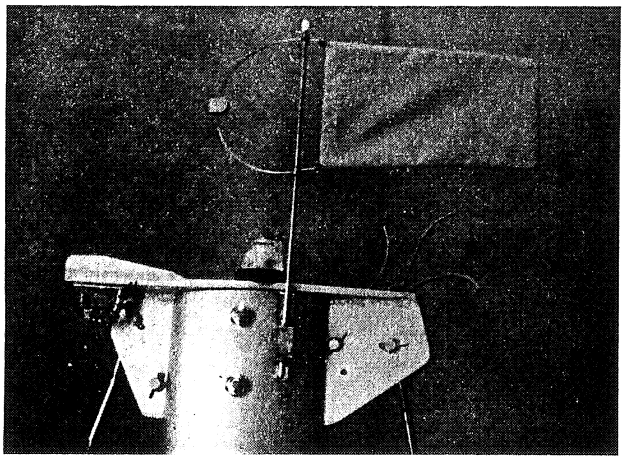


Fig. 5

7. put the 4 lower shrouds and forestay into position. The latter is fixed at the bows to two metal battens with holes ; for initial installation use the first hole (Fig. 7).

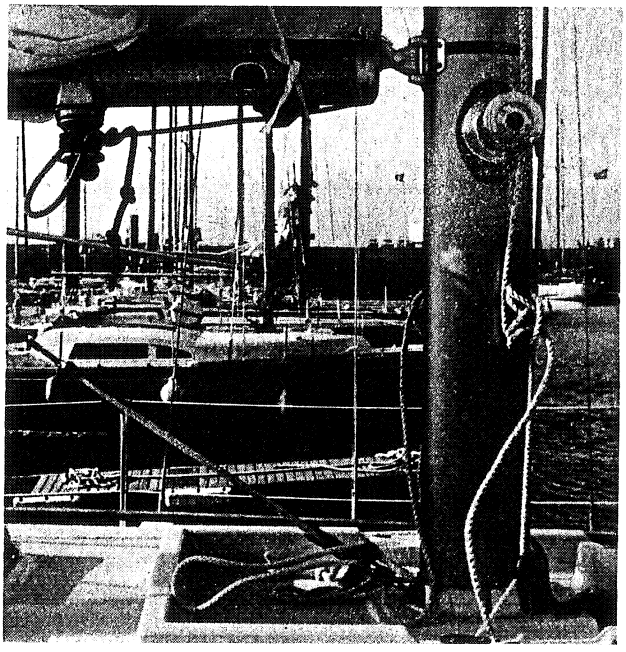


Fig. 6

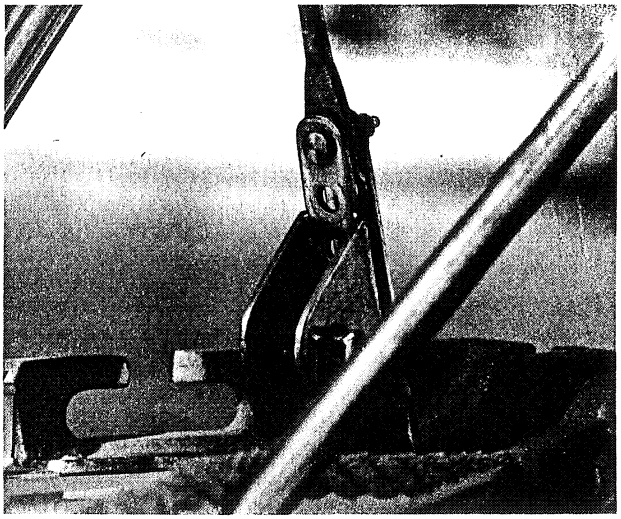


Fig. 7

This arrangement will temporarily hold the mast in position while the crane is freed in order to avoid accidents.

MAST ADJUSTMENT

1. Fix the backstay to its chainplate. Use the adjuster to tighten the backstay to its chainplate. Use the adjuster to tighten the backstay as far as possible without using tools (pincers and adjustable spanner).
2. Tighten the main shrouds manually to the same extent.

As the cables of the standing rigging are of equal length on each side, in order to obtain a vertical position of the mast, it only necessary to check the number of threads showing on each corresponding screw after each adjustment. Check the tension of the stays in the cabin joining the hull to the deck. (Fig. n° 8).

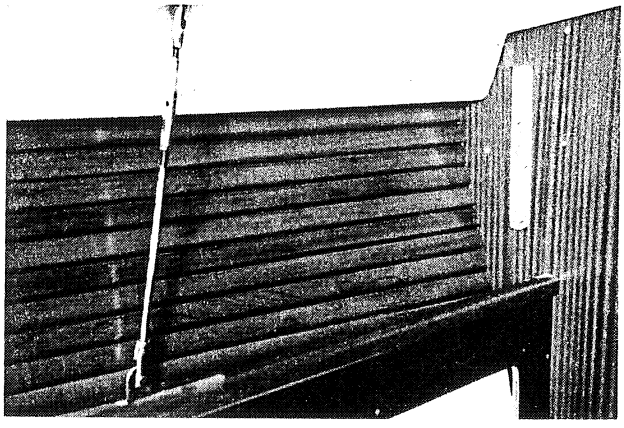


Fig. 8

3. Backstay : tighten the adjuster until the mast head bends slightly backwards (about 8 turns with tools).
4. Main shrouds : these must be very taught. It is necessary to make at least 5 turns with tools to tighten.
5. Fore lower shrouds : 2 turns with tools.
6. Aft lower shrouds : manual tension is sufficient.
7. Check the lateral position and backward curve of the mast by looking up the mast along

the mainsail groove with one eye. Adjust if necessary.
The mast adjustment should be tested in Force 3.
8. Put the blocking pins into position (SARMA rigging screws) and cover with adhesive tape to ensure the sheets do not catch on them. For MARCO POLO rigging screws, put the nuts into place.
9. Check that the after lower shroud chain plate reinforcements are tightened.
10. After stepping the mast, according to equipment of the boat, there may be a slight heel. This must not exceed 1° (i.e. 17 mm per meter), and will not affect the performance of your DUFOUR 31.

BEACHING - LEGS

Accidental grounding must be avoided.

1. Deep keel (1.74 m draught).

Use of legs is impossible. However, it is possible to ground the boat in certain conditions, in order to scrub the bootom or renew the anti-fouling paint, for example.
The ground must be hard, flat and horizontal. It is essential that the side of the boat can rest against the quay-side or against a boat of the same size which is leaning against the quay itself.
In any case, a line is placed round the mast and hoisted to the level of the spreaders with the spinnaker boom topping lift. This line is then taughtened and tied to a bollard or ring on the quay.
In these conditions the crew may move around on board, however, movement should be restricted.

2. Beaching keel (1.45 m draught)

Precise details of the beaching ground must be known. It must be :
— hard, so that neither the legs nor keel sink in
— flat and horizontal so that the boat does not lean to fore or aft.

Each metal leg is composed of two parts, which fit into each other and are held by a pin so that they do not move out of place at high tide.
The legs fit on to s/s chain plates by the rubbing strake. Tighten the falls well by turning them on the fore and aft mooring cleats, so the legs are held in a vertical position.
The crew may move around on board the beached DUFOUR 31 as long as the beaching has been properly carried out.
With the beaching keel, it is possible to winter the boat on legs on very hard flat ground. As a precaution, we suggest using two wooden supports fore and aft too.
Avoid leaving the boat to winter on legs in the water, where as a result of two tides per day there will be beaching without any supervision. The skeg and rudder may be damaged by the repeated blows caused by the movement of the sea just before each grounding of the boat.

ACCOMMODATION

— CHART TABLE :

The lid of the chart table may be held open with the metal rod fitted for this purpose.

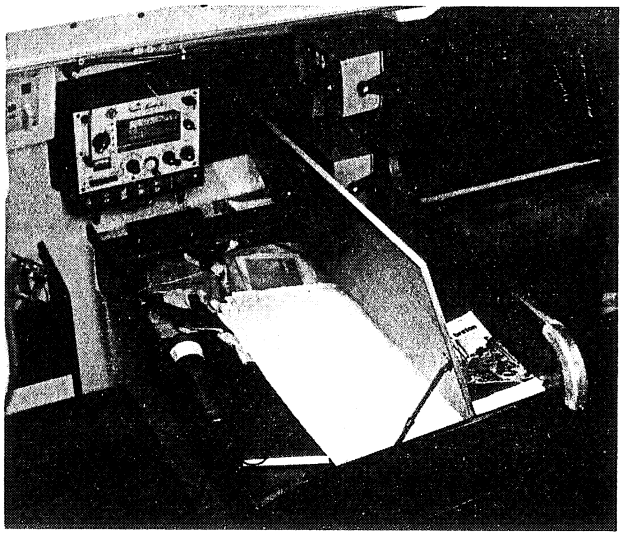


Fig. 9

— ACCESS TO ENGINE FROM THE CABIN

The panel at the companionway may be removed to give access to the front of the engine.

— TOOL BOX

The sole in between the chart table and navigator's seat is also the lid of the tool box.

— OILSKIN LOCKER

Access is from the starboard side of the chart table.

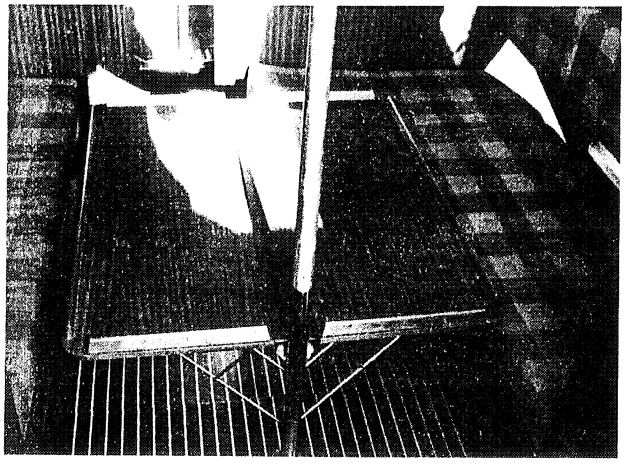


Fig. 10 - Opened dinner table

— MAIN CABIN DOUBLE BERTH

The wooden base of the starboard berth in the salonn may be pulled out as far as the dining table, of which the starboard leaf must first be folded down. The base is then bolted in this position (fig. 11).
An extra mattress completes the double berth.

— FOCS'LE DOUBLE BERTH

A trapeziform mattress and wooden insert are used to convert the two berths into a double berth.

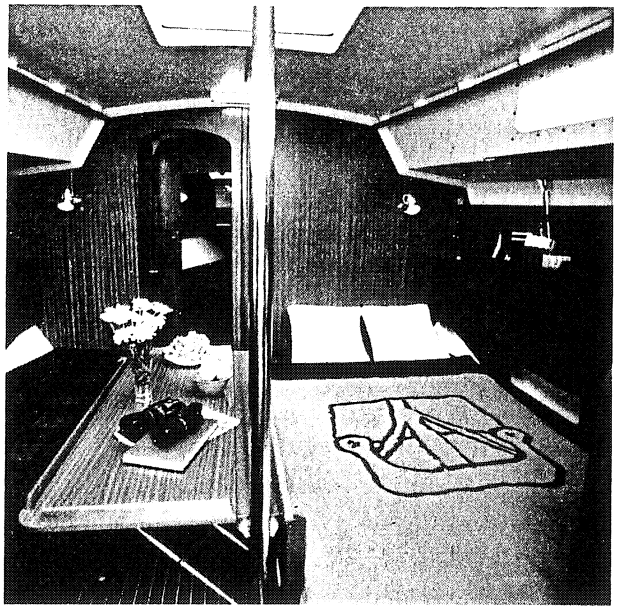


Fig. 11

SAFETY EQUIPMENT

— FIRE EXTINGUISHER

A powder fire extinguisher is fitted on the forward panel of the navigator's berth.

— CHAIN LOCKER

The end of the mooring line must be shackled to the eye provided.
It is advisable to add a bridle to the mooring line, turned on two cleats.

— LIFE-RAFT

A deck moulding before the mast is for stowage of the MP6 in container (or similar).
Read the instructions given with the life-raft.

WATER SYSTEM

— WATER TANK

The filling plate is on deck before the anchor locker. Use a funnel to fill (do not use direct pressure). It may be necessary to release the air accumulated in the tank from time to time by opening the stopper in the upper part of the tank. The tank holds approximately 130 liters.

— DRINKING WATER FILTER

Under the base of the forward seat in the dinette there is a charcoal filter to eliminate any tastes and smells in the water. The refill must be changed every 2 years. This may be obtained from our After Sales Department (fig. 12).

— TOILET

a) position of the sea-cocks :
— Water intake valve for WC :
under the locker of the starboard berth in the focs'le

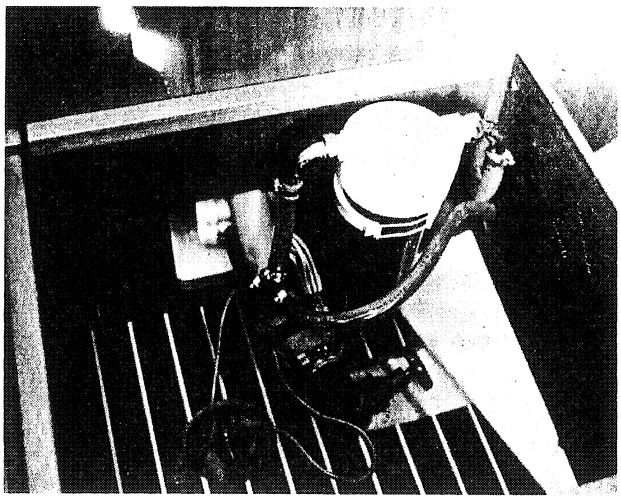


Fig. 12

— outlet valve for WC (with small bar) under the sole by the WC
— washbasin outlet : under the locker of the forward seat in the dinette .

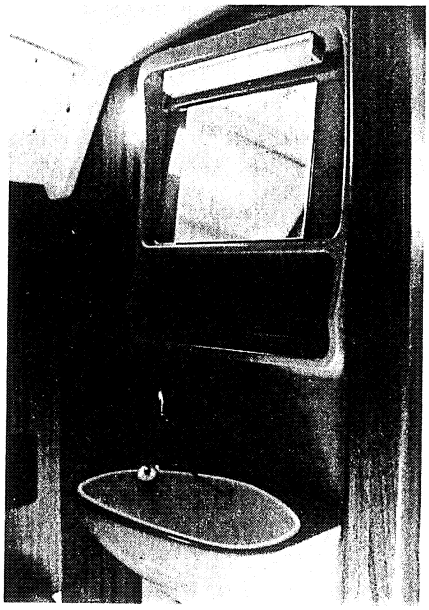


Fig. 13

b) Use of the BRYDON BOY WC
1. Open the intake and outlet valves fully.
2. Turn lever to « flush » and manipulate the pump
3. to empty the bowl turn the lever to « dry bowl » and manipulate the pump
4. when not in use, leave the lever on « dry bowl »
5. when not on board or in rough seas, close the sea-cocks

— ICE-BOX

The ice compartment has a capacity of approximately 20 liters. Load through the starboard cockpit locker. The drain leads directly into the bilges. The front of the ice-box is moulded for bottle stowage.

— BILGE PUMP

The bilge pump is operated from the cockpit. If anything impedes proper functioning of the bilge pump, access to the valves is easily obtai-

ned by unscrewing the pump inspection hatch behind the pump.

— WINTERING OF THE WATER SYSTEM

Drain the water tank and WC by removing the drain stoppers underneath, and operating the pump. The toilet should be thoroughly rinsed with fresh water, so that there are no traces of salt. This will ensure proper functioning the following season. Do not use anti-freeze, acids or corrosive liquids. Leave the ventilators open. If the boat is out of the water, open all the cocks and drain the pumps and piping.

VENTILATION

To stop any sea-spray from going in through the ventilator cowls, turn the deflectors provided so that the slope is in the opposite direction to the opening of the cowl. If necessary the cowls may be replaced by plugs, which either screw or push into place.

GAS

The s/s unit incorporating sink and cooker may be held in a stationary position by a lock bolt when not in use. The butane gas supply is from a 3 kg bottle (90 hours) situated in a self-draining compartment under the starboard cockpit seat.

The supply of gas can be cut off either by turning off the tap on the bottle or by turning the tap situated at the back of the locker under the cutlery drawer.

Fig. 14

ELECTRICAL SYSTEM

— GROUNDING THE RIGGING

The entire rigging is grounded by a metal strap connecting the forestay chain plate to the keel. Under normal conditions this circuit is cut by a lightening conductor fixed on the strap situated on the hull behind the main bulkhead. The lightening conductor bulb may be reached from the fore sole of the main cabin. The circuits is only reestablished if there is an electric discharge of high intensity.

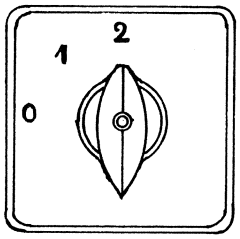
This allows use of the rigging as antenna. The antenna connection to the backstay is made inside the inner lining.

— BATTERY

The battery is 12-Volt, 90 amp. The installation is protected by an independent circuit-breaker situated on the front of the navigator's seat (Fig. n° 15).

Position 0 : battery off
Position 1 : supply to lights and appliances
Position 2 : general supply to lights, appliances and engine ; check that you can hear the engine ventilator working.

Fig. 15



— ELECTRICAL CONTROL PANEL

All switches for the various circuits are assembled on the electrical control panel.

To operate the electric plug, first press the button on the panel controlling the interior lighting system.

The key to the switches is as follows ;

1. Mast head light
2. Steaming light
3. Deck light
4. Navigation lights (pulpit and stern)
5. Ceiling lights and fluorescent lights
6. 12-volt electric plug
7. Steering compass light (option)
8. Spaces for extra switches

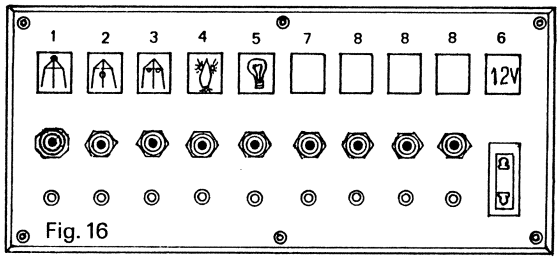


Fig. 16

— SPARE PARTS

In your chart table you will find the following spare parts :

1 bulb BA 15 S-12 V - 4 watt (flexible lamp)
1 bulb BA 9 S-12 V - 6 watt (masthead light)
1 « navette » bulb 10×38 - 12 V - 7 watt (navigation and steaming lights)
1 « navette » bulb 10×38 - 12 V - 4 watt (ceiling lights)
1 RKG 6 amp fuse (bilge fan and fuel gauge)
Battery carrying strap

— CONSUMPTION :

Herebelow is an energy chart, which will allow you to arrange consumption according to your needs. To obtain an idea of consumption of amps. per hour add up the amperage of the various sources of consumption.

	amps.
navigation lights	2
mast head light	0.3
deck light (option)	2.4
steaming light	0.3
fluorescent tube	0.7
ceiling light	0.7
reading light	0.4
wind tell-tale	0.3
depth-finder	0.3
log	0.3
compass light	0.1
electric pump	9 - 11
refrigeration unit	6 - 8
Hot air heater	9 - 15
VHF/FM radio	0.15 - 3
Single side band long distance radio (when transmitting)	40
self-steering gear	4 - 13

FUEL SYSTEM

— TANK

The 50-liter fuel tank is situaded between the navigator's berth and engine compartment. There is an electric fuel gauge with indicator above the companionway.
The vent is through a s/s casing aft of the starboard cockpit coaming near the filling plate marked « fuel ».

— FUEL SHUT-OFF VALVE

This is on the front of the tank. Access is through a trap in the wooden panel between the navigator's berth and engine compartment. Turn this valve off when :
— the engine is out of use for a long period
— for any operation on the pre-filter and engine
— if there is a fire-risk

— DECANTING FILTER

Between the tank and engine filter there is the pre-filter, which must be periodically cleaned. Dismount the filter and clean with fuel. This filter must also be changed approx. once a year.

— PRECAUTIONS FOR RE-FUELLING :

Since the smell of fuel is very disagreeable, re-filling must be effected without any spillage. Since fire is the greatest enemy on board, it is important to follow closely this procedure :
— switch off the battery, ensure that there is no flame on board and do not smoke
— close the hatches
— have all the crew disembark
— clear the fire extinguisher
— fill to 95 % capacity
— avoid spillage
— after filling and replacing the filler cap ensure that there is no fuel in the bilges
— open the hatches and operate the ventilator
— leave the fuel station jetty immediately. It is not the best place to leave your boat.

ENGINE

The engine installed in your boat has already been run in for about 1hr. 30 mins. during testing pool trials.
It is advisable to use the engine at half-power only during the 1st 25 hrs to complete running in, and gradually increase power thereafter.
You will find detailed instructions regarding the engine in the manufacturer's handbook. We would, however, also like to point out the following :

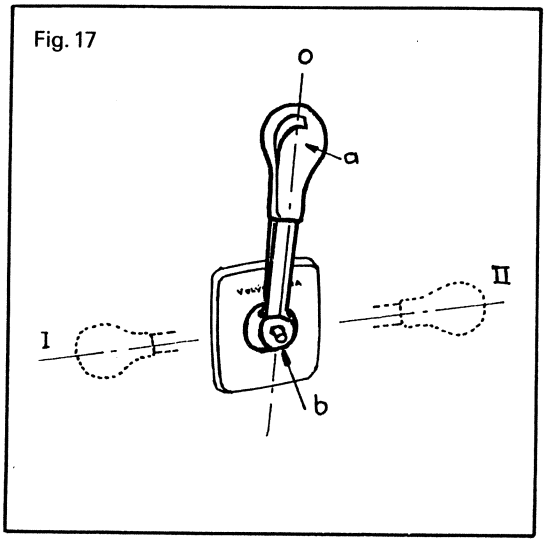
FIRST START :

— read the instruction leaflet for your engine carefully
— check the levels of :
  — battery water
  — fuel
  — reducer oil
  — engine oil : since the engine is installed in a slightly sloping position, please note that the sump is full to maximum when the oil gauge indicates a position between maximum and minimum. Do not fill until the gauge shows absolute maximum.
— check that the decanting filter is clean
— check that the engine water and silencer drains are closed (see manufacturer's instructions)
— check the rotation of the shaft (manually)
— check the circlips of the water, exhaust, and fuel piping.

COLD START

— Open the water intake valve of the cooling system situated at the bottom of the starboard side of the companionway by turning the lever in a direction longitudinal to the boat.
— open the fuel circuit
— turn the battery switch to position 2 (the red light on the engine control panel goes on. Listen for the ventilator).
— ensure that the gear lever is in neutral by bringing it from a vertical position forward through 60°, pressing on the red button at the same time (fig. 17-b).

Fig. 17



— pull the cold start button (MD 2B only).
— turn the decompression levers to top position (MD 2B-only if battery is low).
— turn the engine 10 times holding the ignition key and putting the decompression levers back one by one.
— let the engine warm up at the rate of about 1200 r.p.m.

HOT START

— turn the battery switch to position 2 (listen for ventilator)
— ensure that the gear lever is in neutral
— put the accelerator to 2/3 position
— turn the ignition key and turn down accelerator as soon as engine starts

RUNNING CHEGKS

— the battery charge and oil pressure lights must go off (fig. 18).

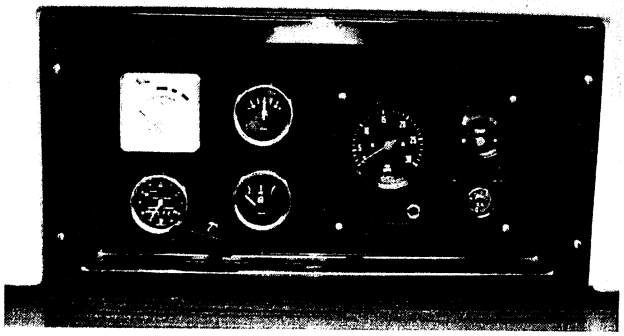


Fig. 18

— check exhaust to make sure water starts being let out within a reasonable amount of time
— ventilator light on
— to put the engine in gear when the engine has warmed up, bring lever a) back to a vertical position while pressing on the red button b), which will pop out when the lever reaches the vertical neutral position. The engine may then be put in gear.

ENGINE STOP

— put the gear lever in neutral
— pull on the stop control situated to port of the companion way steps until the engine stops
— turn off the ignition key and battery switch. Never turn off the ignition key before the engine has stopped (this causes deterioration of the alternator).
On the other hand, do not leave the ignition turned on when the engine has stopped.
— if the engine is not being used over a long period, turn off both fuel supply and water intake valve.

LUBRICATION

● Engine :
Refer to the maintenance drawing in the Volvo instruction book.
The oil in your engine at the time of delivery

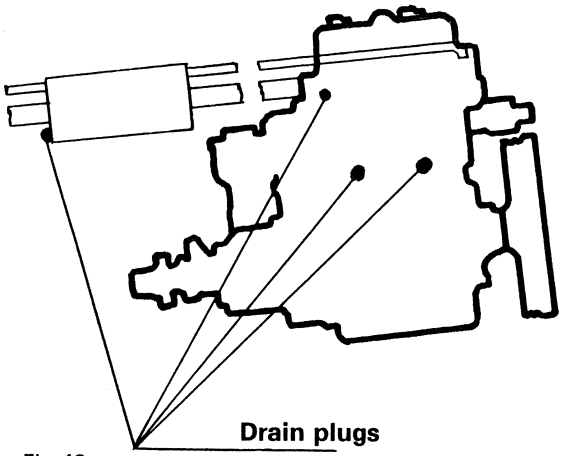


Fig. 19

is S D X (viscosity 20 or 30 according to the season).
● Stern Tube :
After each 5 hours of running, lubricate with graphite grease (grease gun is supplied in engine tool kit) at the point to port of the companion-way steps (Volvo engines only).
● Control levers :
The following procedures must be effected each month :
— lubricate the articulation of the fuel and change-over control levers with silicone grease
— lightly lubricate the control cables.

PRECAUTIONS AGAINST FREEZING :

● Engine :
— refer to instructions in the Volvo handbook
— ensure that no part of the pipe is below the level of the valve outlet. If necessary disconnect the pipe fitted to the water intake valve and turn the engine for 15 sec. to empty.
● Exhaust :
— open the drain plug (screw underneath the lower part, Fig 14).
— stop up the through hull to avoid condensation.

PROTECTION AGAINST ELECTROLYTIC ACTION

The propeller is protected against electrolytic action by a zinc collar fitted onto the front. This must be checked every time the boat is taken out of the water, and must be changed once or twice each year.

HERFORT BATTERY CHARGE INDICATOR

This indicator shows the state of your battery when the engine is not running.
— turn the battery switch to position 2
— leave the ignition key switched off.

SAILS

GENOA :

The standard genoa is a medium 5oz genoa. This sail gives best performance in an apparent wind of between 6 and 17 knots.
In a light wind the sail should be slightly slackened and the sheeting point brought forward along the rail.
In moderate to strong winds the halyard must be very taught and the sheeting point brought back. In this way, the curve in the genoa is moved further forward and this facilitates the air flow.

MAINSAIL :

Setting : it is necessary to equalize the tension between the luff and the foot to avoid wrinkles in the sail.

Foot Outhaul : to taughten the sail on the boom use the winch fitted under the boom and the line next to the gooseneck. A clam-cleat serves to jam the outhaul in place.

Taking in a reef when under sail :

1. To put the quick-reefing line in place, tie it on the s/s eye on the side of the boom near the sheeting point, then put it through the grommet on the sail, then bring it down through the block situated on the other side of the boom, then along the boom to the clam-cleat behind the winch.
2. Secure the topping lift for boom.
3. Pay out the boom vang and main sheet.
4. Bring the mainsail down the mast approx. 1.50 m so that the grommet on the luff may be fixed on to the hook on the goose-neck. Taughten the mainsail luff.
5. Pull on the quick-reefing line, make sure it is as taught as possible, using the winch, and jamming it in the cleat.
6. Sheet in the mainsail and pull in the boom vang.
7. Tie the reefing pennants round the boom.

SPINNAKER :

1. Folding : In order to ensure proper execution of the spinnaker set, it is essential that both luffs of the spinnaker be traced so that there are no twists or hour-glasses in the sail.

2. Rigging the Spinnaker Pole :

Put the spinnaker bag in the pulpit and attach the bag to the pulpit with a tie.
Put the spinnaker pole in position, with one end in the bell-fitting on the mast and the other resting on the pulpit to windward.
Attach the foreguy and topping lift.
Put the windward sheet into position, passing it through the eye in the spinnaker pole. (Fig. 20).
Raise the spinnaker boom to a horizontal position. Fasten the sheets to the spinnaker.
Clip the halyard to the head of the sail.

3. Hoisting :

One of the crew must go to the pulpit and help

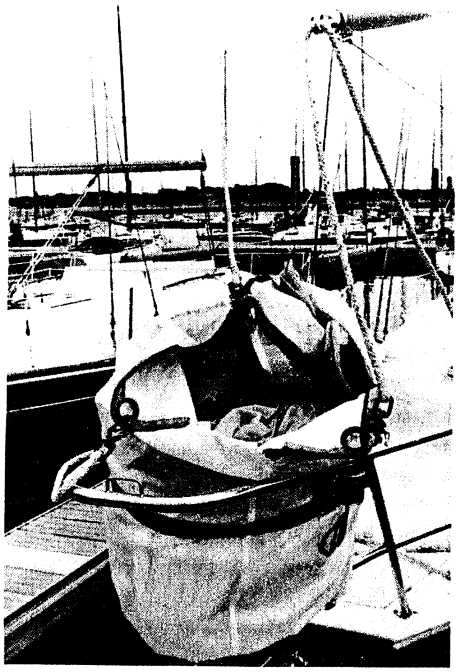


Fig. 20

the spinnaker out of its bag gradually, following the windward luff.
The spinnaker must not be pulling before the halyard has been turned on a cleat.
To cause the spinnaker to pull, pay in the leeward sheet if reaching, and pull in the windward sheet if running.

4. Lowering :

To facilitate this manoeuvre, it is recommended to either run or broad reach. Pay the windward sheet right out. The sheet will run through the eye in the spinnaker pole and the spinnaker will hang behind the mainsail. One of the crew will easily be able to bring in the spinnaker, catching hold of it under the boom, behind the mainsail and spilling out the wind.
Never carry out this manoeuvre before the mast. Do not luff up before the sail has been brought right down.
Unshackle the halyard and sheets.
Shackle the sheets and halyard together and pull the three shackles back to the end of the spinnaker pole by pulling on the windward sheet. Pay out the spinnaker pole topping lift, bring the pole on deck.
This manoeuvre may be completed after the genoa has been hoisted.

SAIL AND MAST ADJUSTMENT IN RELATION TO WIND STRENGTH

The tables on pages 13 and 14 give advice on setting sails in force 1 to 3 with general tips.

SAIL COMBINATIONS IN RELATION TO WIND STRENGTH

The table on page 15 indicates which sails should be set in relation to actual wind speed. Skippers should also bear in mind the cut of his sails and degree of wear and tear. Any boat which has too much sail for the actual conditions she is sailling in will be uncomfortable.

REGULATION OF SAILS AND MAST IN RELATION TO WIND STRENGTH

Light to moderate winds		on the wind	Reaching	Broad Reaching	Running
JIB	Angle of attack	small	nearly back-winding	at 90° to wind	goose-winged or boomed out with spinnaker pole
	Sheet tension	moderate	well eased	well eased	slack
	Fullness	moderate to wide	wide	wide	wide
	Slot	narrow	narrow	wide	———
	Respective tension	even luff, prevent	do not twist the	little tension on	slack leech, slight twist
	Luff-leech-foot	leech from collapse	leech	leech, moderate twist	
	Halyard tension	slight to moderate	light	slack	slack
MAIN	Angle of boom	fore and aft	open	at 90° to wind	at 90° to wind
	Position of traveller	to windward	to lee-side	to lee-side	to lee-side
	Sheet tension	moderate	paid out	well paid out	well paid out
	Siting of max. fullness	aft of original fullness	aft of original fullness	neutral (original fullness)	middle of sail
	Extent of fullness	large to moderate	very large	large	large
	Luff tension	moderate	light	slack	slack
	Foot tension	moderate	light	slack	slack
	Boom vang tension	slack	moderate	moderate	moderate
	Twist	leech straight but with little tension	slight twist (0° to 15°)	no twist	no twist
SPIN-NAKER	Head-board position		Mast top	Mast top	Mast top
	Halyard		taught	taught	taught
	Spinnaker pole angle		0 - 20° of fore-aft position	90° to wind or little more aft	line joining sheeting points to windward
	Spinnaker pole height		low to medium	medium	medium
	Sheet adjustment		pay out until back-winding then pull in slightly	pay out until backwinding top of sail	pay out until backwinding top of sail
	Best position of sheet block		aft or boom end	transom	transom
	Fullness		moderate	moderate	moderate

LIGHT TO MODERATE WINDS		ON THE WIND	REACHING	BROAD REACHING	RUNNING
GENERAL TIPS	Mast rake Mast bending Backstay tension Crew position Max angle of heel Balance	aft slight to none slight to moderate Lee-side/Amidship 5° to 10° little weather helm	aft none slack fore + aft line, amidship 5° to 10° neutral	upright none slack lee-side/slightly aft 5° to 10° neutral or little weather helm	forward none slack Amidship, on the fore and aft line 5° to 10° neutral or little weather helm
STEERING TACTICS		Steer to keep apparent wind at a constant angle. Use pennants on genoa luff as a guide. Luff in gusts, bear away if abating	Do not luff beyond course. If wind strengthens, luff immediately. Use pennants on genoa luff as a guide.	Bear away in gusts, luff if abating. If wind decreases, bear away immediately. Watch wind tell-tale. Light use of tiller.	Luff in lulls, bear away in gusts. Careful luffing and gybing may result in speed increase Watch the wind tell-tale. Light use of tiller.
REMEMBER		Balance is most important Watch for jib lifting Avoid too taught main and genoa leech. In gusts adjust main only.	Shape of sails very important. Watch for jib lifting. It is possible to carry genoa (or reacher) and spinnaker Apparent wind angle 60°	Large sail area. Spinnaker pole 90° to mast. Handle carefully. Avoid excessive rolling.	Maximum sail area. Let the waves guide the boat Avoid excessive rolling. Sheet in the main slightly to allow the spinnaker to set properly.

SAIL COMBINATIONS

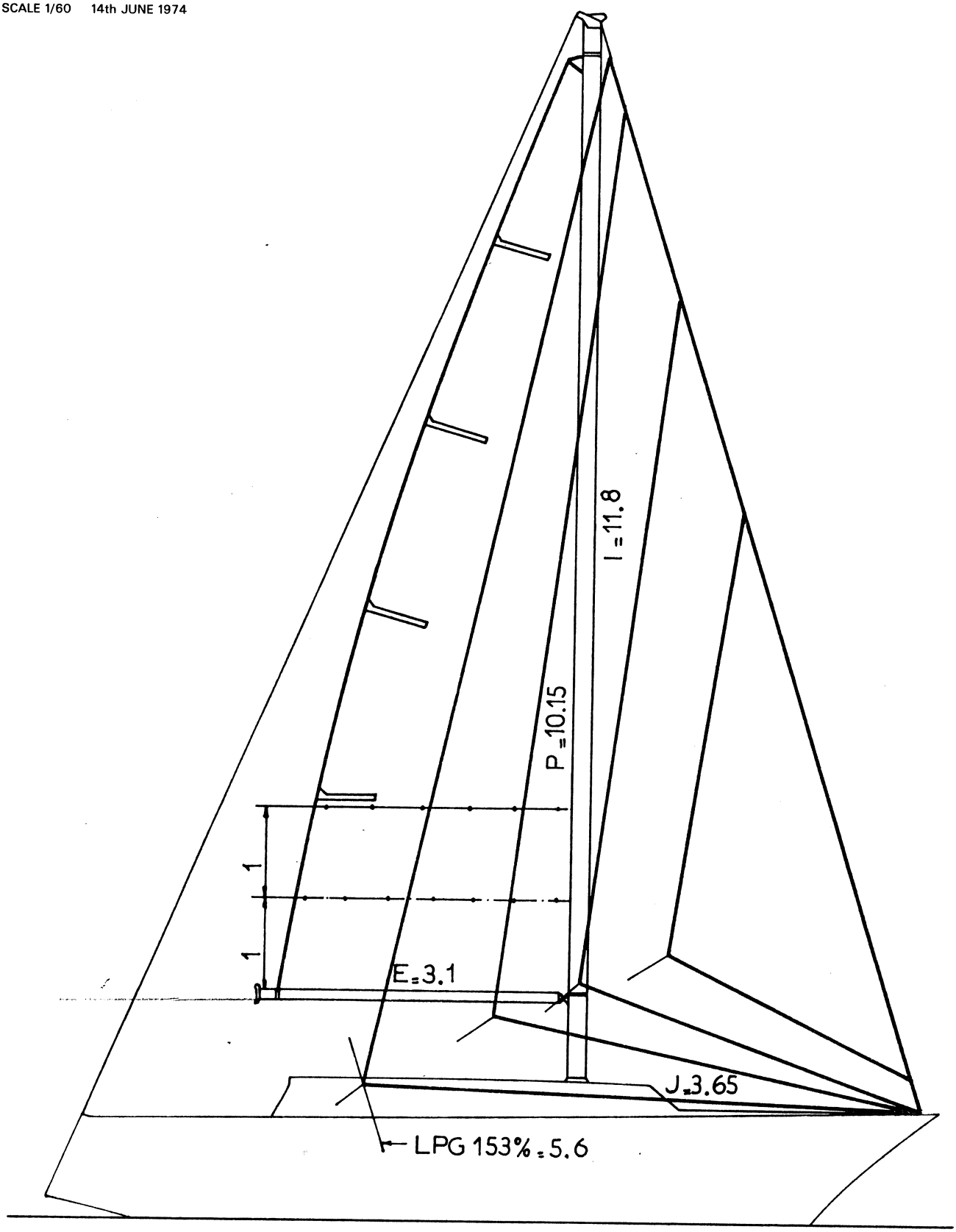
WIND STRENGTH	ON THE WIND	REACHING	BROAD REACHING	RUNNING
Force 0 to 3 0 to 16 knots	Mainsail + light or medium genoa	Mainsail + light genoa or reacher + spinnaker (apparent wind <10 knots angle> 60° to axis).	Mainsail + reacher or genoa + spinnaker	Mainsail + spinnaker
Force 4 to 5 16 to 25 knots	Mainsail (1 reef) + heavy genoa or N° 1 jib	Mainsail + heavy genoa	Mainsail + medium genoa	Mainsail + spinnaker or genoa
Force 6 25 to 30 knots	Mainsail (1 reef) + N° 1 jib	Mainsail (1 reef) + N° 1 jib	Mainsail (1 reef) + heavy genoa	Mainsail + heavy genoa
Force 7 30 to 35 knots	Mainsail (2 reefs) + N° 2 jib	Mainsail (2 reefs) + N° 2 jib	Mainsail (1 reef) + N° 2 jib	Mainsail (1 reef) + N° 2 jib or heavy genoa only
Force 8 to 9 35 to 45 knots	Mainsail (2 reefs) + storm jib	Mainsail (2 reefs) + storm jib	Mainsail (2 reefs) + storm jib	Mainsail (2 reefs) + storm jib or jib N° 1 only

MICHEL DUFOUR SA

DUFOUR 31

SAIL PLAN

SCALE 1/60 14th JUNE 1974

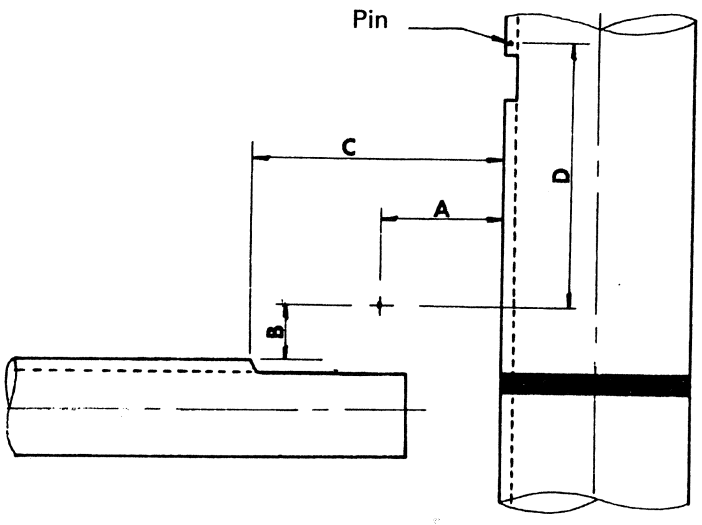


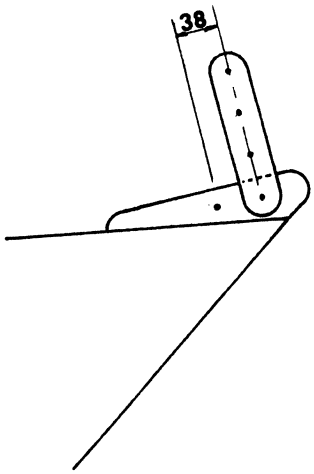
NAME	LUFF	FOOT	LEECH	SURFACE	MATERIAL	
MAINSAIL (275gr)	10,15	3,10	10,55	18,10	Dacron 6 oz 5	
MEDIUM GENOA 210 gr	11,95	5,90 *	11,45	33,40	" 5 oz	LPG 5,60
JIB N° 1	11,40	4,70	10,00	23,30	" 6 oz 5	
JIB N° 2	9,35	3,90	7,60	14,50	Teryl 6 oz 5	
STORM JIB	6,50	2,90	4,90	6,80	" 6 oz 5	
LIGHT GENOA (147gr)	11,95	5,90 *	11,65	33,70	Dacron 3 or 4 oz	LPG 5,60
HEAVY GENOA	11,70	5,50	11,20	30,40	" 6 oz 5	
REACHER (147gr)	11,95	5,90 *	11,65	33,70	" 3 oz 5	LPG 5,60
SWEDISH MAINSAIL	9,20	2,90	9,60	13,30	" 6 oz 5	
SPINNAKER				70 env.	Nylon 38 to 52 gr	

(*) Approx.

NOTES

1 - Dimensions are in meters and millimeters. Weights are in oz (42 gr.) to the sq.m.
2 - Measurements indicated are the maximum within which the sails must remain while sailing under normal conditions. The sailmaker should take stretching of his material into consideration.
3 - Width of the head-board, length of the battens and position of the highest batten must be in accordance with IOR rules.
4 - The jib n° 2 and storm jib have upper pendants making their total luff 11,45 m.
5 - The storm jib has a lower pendant of 0,40 m.
6 - The genoas are set outside the main shrouds.
7 - For spinnaker measurements refer to the rating specifications.
8 - The spinnaker head-board will have a swivel.
9 - The reacher luff is on a cable and the tack has a cunningham hole.
10 - The Swedish mainsail has a reefing line at 1,50 m.





	A	B	C	D
Quick reefing boom	80	30	220	245
Roller reefing boom				

DUFOUR 31

MAINTENANCE

GENERAL CONSTRUCTION PRINCIPLES :

— the hull is in GRP and has a GRP innerlining. Brackets for screws for inside fittings are inside the inner-lining.
— the deck is made in the same way and also has a layer of polyurethane foam or balsa wood. Placed between the deck and innerlining are wooden blocks in various places as shown in diagram 21. Any bolting must be made in these areas only.
— the keel is fixed to the hull by 14 bolts in S/S which are 14 mm thick, with a layer of GRP. A layer of fibreglass completes the joint. It is usual to see a small crack at the keel/hull joint. This is due to the difference in elasticity of the ballast and GRP and can easily be filled in with a layer of anti-fouling paint.
— GRP does not need any special type of maintenance.

REPAIR OF A SCRATCH OR BUBBLE :

1. Clean the damaged area (if necessary remove grease with a solvent), rub 1 cm around this area with sandpaper.
2. Prepare and apply gel-coat. Take the amount of gel-coat necessary for the repair. Add 1 % P 10 solution and mix well. Then add 1 % catalysor and mix. Apply the gel-coat to the damaged area with a spatula to avoid making the layers too thick. Leave the gel-coat to cure for 3 to 4 hours according to the atmosphere temperature (for good results the temperature should be around 12° C and the atmosphere dry).
3. Polish and Finishing :

Using a wet sandpaper (start with 360 and finish with 600), smooth the surface. When the surface is smooth, apply a polish in paste form with a rag, rub the area well, preferably in a circular movement. With an electric polisher the shine appears rapidly. When a shine is obtained, apply a polish (for example a car polish) and rub well.

4. It is advisable to have any GRP repairs made by a specialist.

— ANTI-FOULING PAINT :

The paint used is International Extra Strong Hard Racing anti-fouling paint. The bottom should be brushed every two months if the boat is left in warm dirty water. In normal conditions the anti-fouling paint should be renewed once a year. To be effective the paint should be applied at least 48 hours before launching and not more than 2 months before launching. The solvant which may be used with the paint to facilitate application is V.5000 and no other.

— CLEANING OF SUPERSTRUCTURES :

We suggest a non-foaming detergent.

— TEAK :

Teak wears well without any maintenance, but at the same time changes to a grey colour. If you wish to have the teak stay its original colour, you should apply quick-drying linseed oil. If you have neglected to do this, apply Colorback with a brush, then brush with a wire brush and wash the wood before applying the oil.

— INSIDE VARNISHES :

These are satin polyurethane varnishes, and any re-touches must be done with a product of same type.

— DECK FITTINGS :

Only the winches need to be oiled periodically (use a reasonably thick oil with sulphur of molybdene).
The rotation of the sheaves must be checked. If necessary use a spray to release them. The sheet blocks must be able to slide freely along the rails.

SAILS :

The sails must be well looked after. After use dry and fold them. Check the seams and cables. Remove any oil or rust stains with the appropriate stain remover. Oil the shackles. At the end of the season, rince the sails in fresh water and if necessary have the sailmaker make small repairs.
Avoid bending the steel cables.

— REPLACING AN INTERNAL HALYARD (GENOA OR MAINSAIL)

1. Send one of the crew up the mast on a bosun's chair. He must take a flag halyard with a dia. of approximately 2 mm., weighted at one end with a few screws or a 100 gram. lead. Thread this weighted halyard into the appropriate sheave at the mast head and lower the halyard until its end reaches the bottom sheave.
2. Make a hook, and pull out the end of the halyard.
3. Attach the halyard to be inserted in the mast to the flag halyard, cover the joint with adhesive tape to allow smooth running.
4. The crew at the mast head helps the replacement halyard into the top of the mast until an end appears at the bottom.

DIAGRAM OF REINFORCEMENT WOOD BLOCKS IN DECK

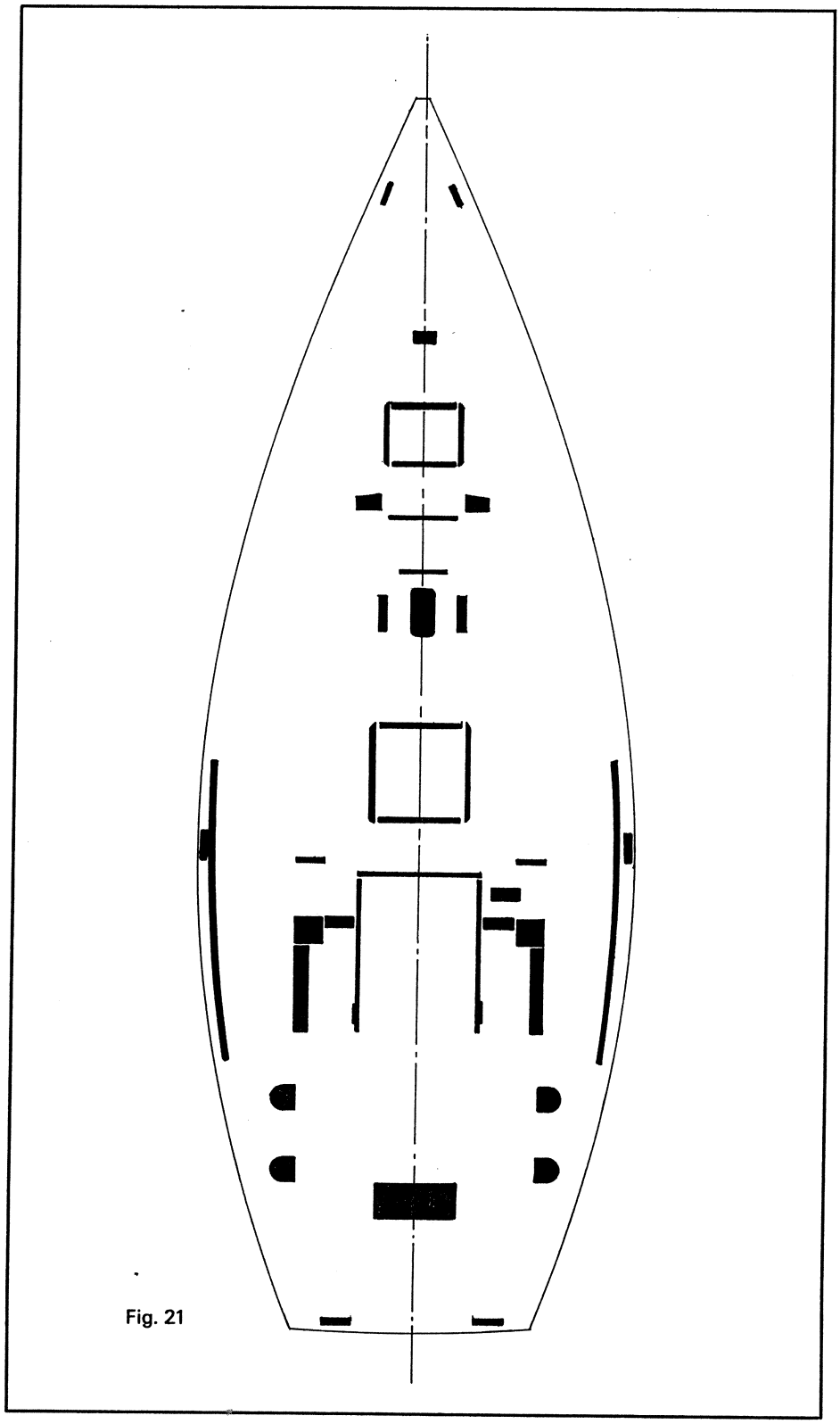


Fig. 21

PERIODIC SERVICING TABLE

	After 1st week	Monthly	Wintering	Remarks
Anti-fouling paint		A N	A N	to be renewed each year
Rudder skeg		A N	A N	check play in socket
Rudder blade		A N	A N	check play in rudder stuffing-box
Propeller shaft rear bearing		A	A	check play in bearing (0,5 to 1 mm)
Zinc anode		A N	A N	check at every opportunity
Propeller		A N	A N	
Interior accommodation			N	
Bilges		V	V N	
Sea-cocks	E A	E	N G	graphite oil
Pumps	E A		N V	
Water tanks	E		N V	
Piping	E		N V	
Lighting	E A	E A	E N	check contacts
Battery charge	A	A	A	monthly in winter
Water filter			A V	change every 2 years the refill
Fuel filter			A V	change every year the refill
Air filter			A	
Exhaust	E A R		V	service after every 20 hrs.
Engine frame bolts	A R		A R	service after every 20 hrs.
Stuffing box	E	E	E	oil every 5 hrs.
Deck fittings	R		R N	
Mast, boom, spinnaker pole	A	A	A N	
Fixed rigging	R	R	A N S	
Running rigging	A	A	A N	splices, cables, shackles
Sheaves and blocks	A	A	A N S	
Winches			G	lubricate with sulphur of molybdene oil
Sails	A	A	A N	

A : check condition – E : check water-tightness – G : lubricate – N : clean with fresh water – R : check screwing – S : grease
V : drain

It is in your interest to draw up a list of maintenance jobs, repairs and parts to send for checking and servicing, which should be given to your DUFOUR dealer when the boat is laid up.

OPTIONAL EQUIPMENT

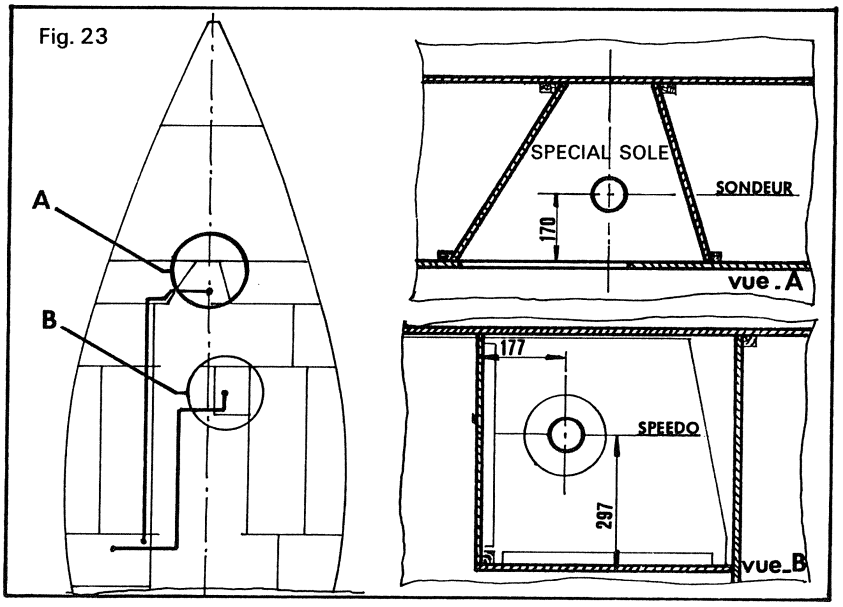
Certain optional equipment may be installed on your boat through your DUFOUR dealer, such as :

— refrigerating unit
— hot air heater
— pressure fresh water supply
— sea-water supply
— second battery with switch-over
— depth finder, speedometer, log, (fig. 22) wind telltale, anemometer
— VHF radio received
— radio compass
— self-steering gear
— spray hood

INSTRUCTIONS FOR INSTALLATION OF SPEEDOMETER AND DEPTH FINDERS

The hull is pierced at the places marked in Fig. 23 for installation of the water speed sensor and transducer. The wiring circuit is also shown.
(measurements in millimeters)

Fig. 23



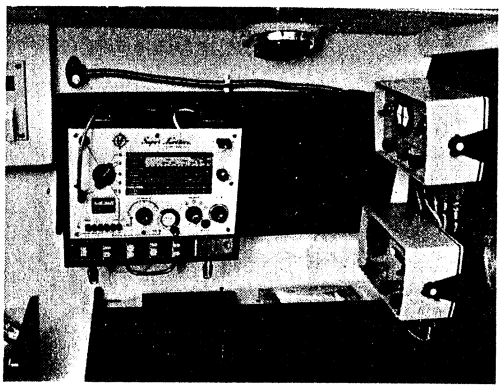
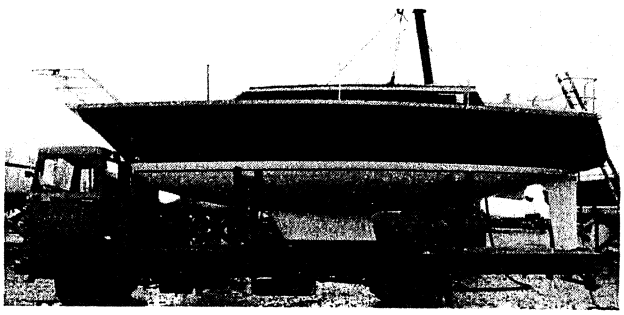


Fig. 22

TRANSPORT

The DUFOUR 31 is in the exceptional load category for transport by road. The height of the boat on a cradle is 3.30 m (beaching keel) or 3.60 m (deep keel).
The lorry platform should not be more than 1 m high.
It is necessary to remove stanchions and life-lines before delivery.
For transport by cargo boat, the approximate cubic area is 90 m3.



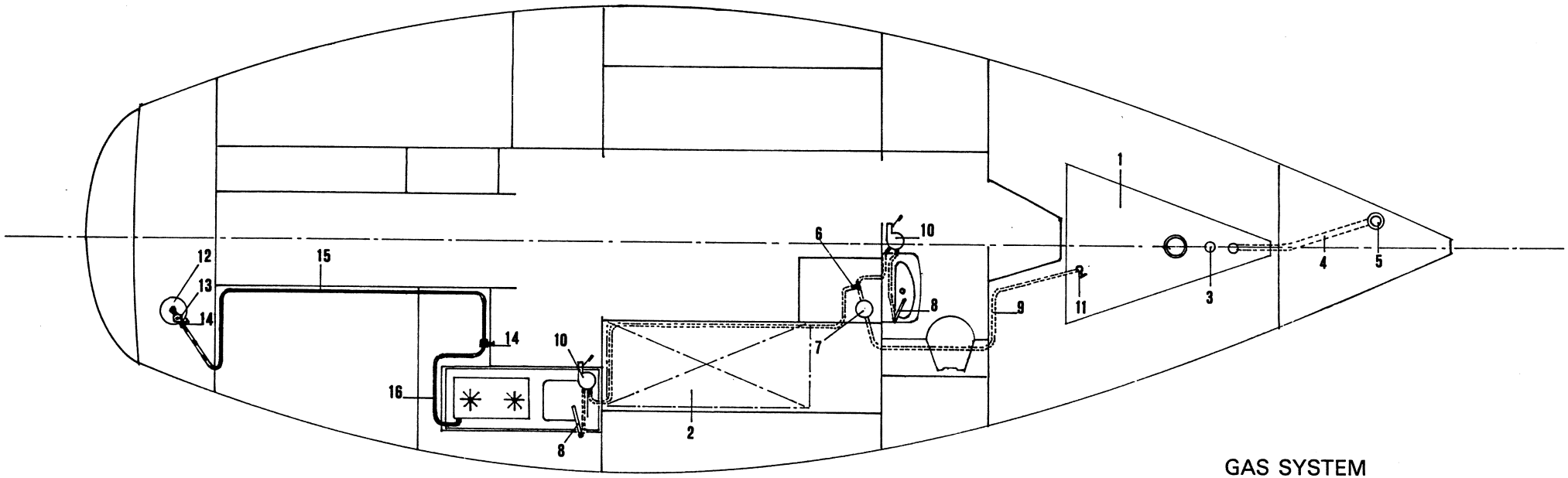
AFTER SALES SERVICE

In spite of the instructions herein, you may come across some troubles. If you do not have a DUFOUR dealer in your region, our After Sales Department is at your service to help you solve any problems you may have with your boat.
We are able to supply you with replacement and additionnal accessories for your boat.
It is important that you indicate the number of your boat in any order or correspondence.
If you need gel-coat do not forget to indicate the exact colour you require.
All details of spare parts required should be given together with the name of the manufacturer if possible.

WATER SYSTEM
GAS SYSTEM

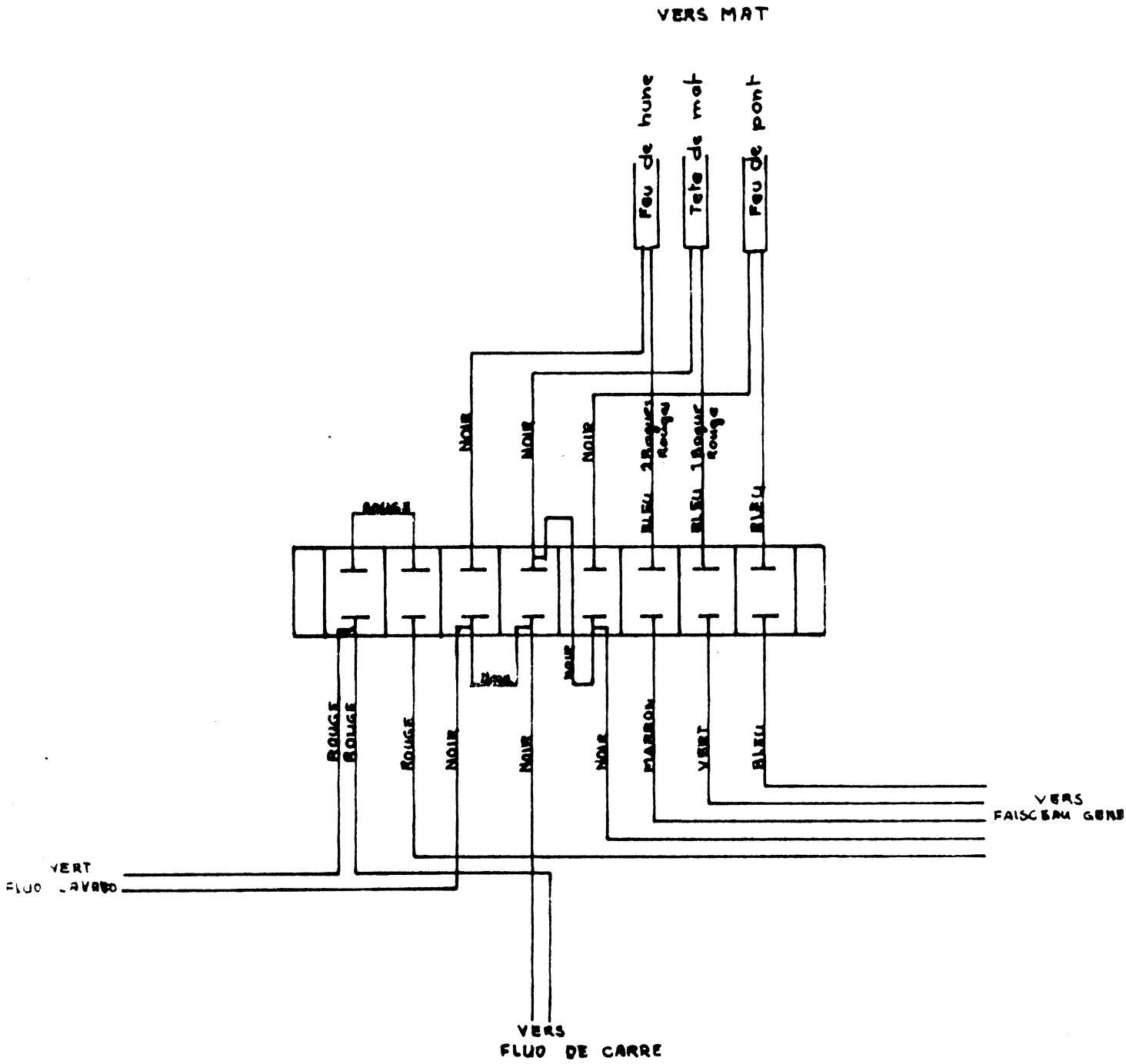
WATER SYSTEM

1 - Tanks
2 - Optional tank
3 - Stopper
4 - Filler piping
5 - Filling plate
6 - T-joint
7 - Filter
8 - Swan-neck
9 - Supply
10 - Foot pump
11 - Stop cock



GAS SYSTEM

12 - Gas bottle
13 - Pressure-reducer
14 - Stop cock
15 - Copper piping
16 - Rubber piping



04 OCT. 1974

BRANCHEMENT PIED DE MAT

MICHEL DUFOUR S.A.
17001 Z.I. PERIGNY B.P.125

Date 4-10-74

Des. Campguilhem

MATIERE

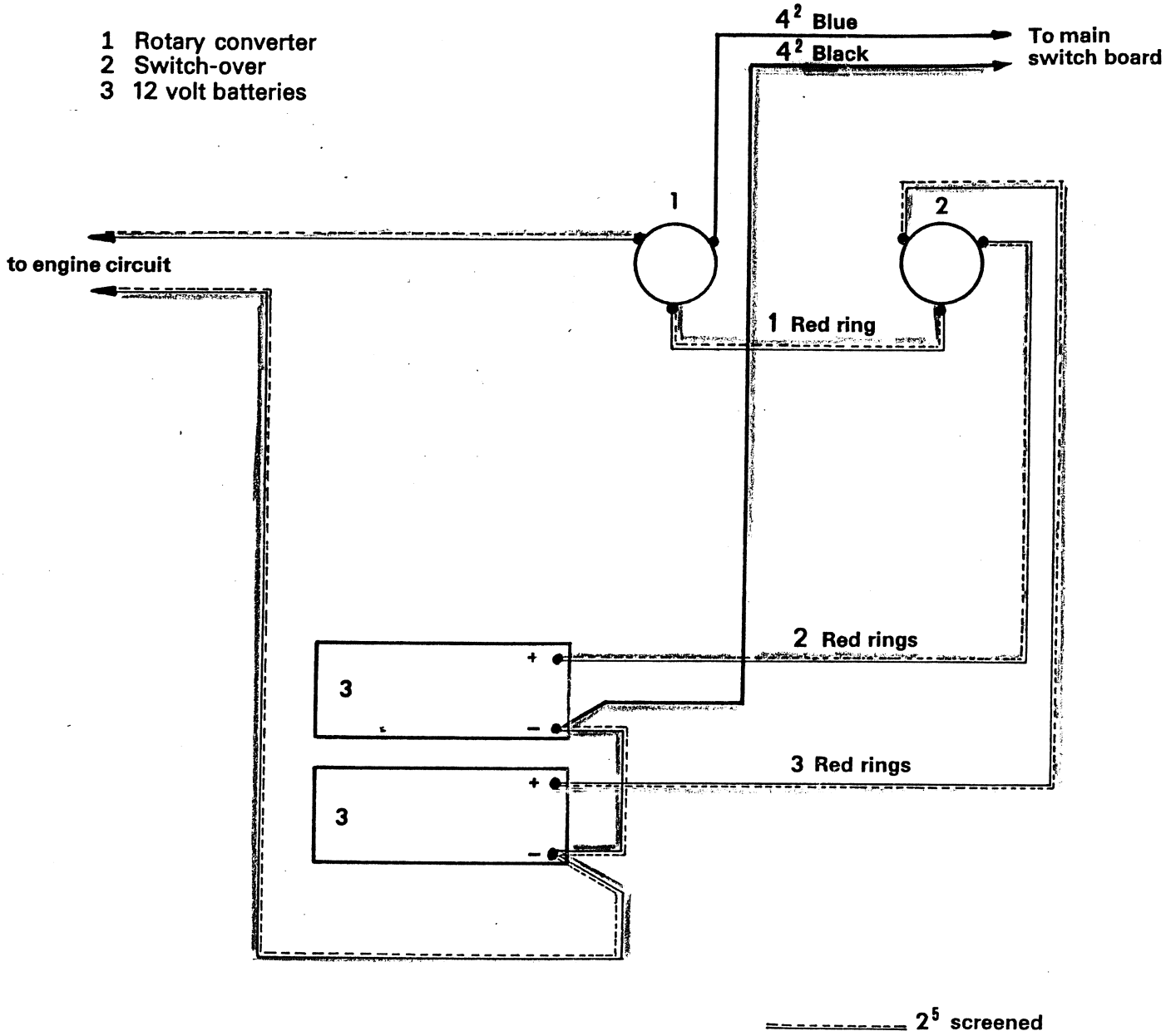
EDUMA

N° 31031

Ech:

2-BATTERY CIRCUIT (option)

1 Rotary converter
2 Switch-over
3 12 volt batteries

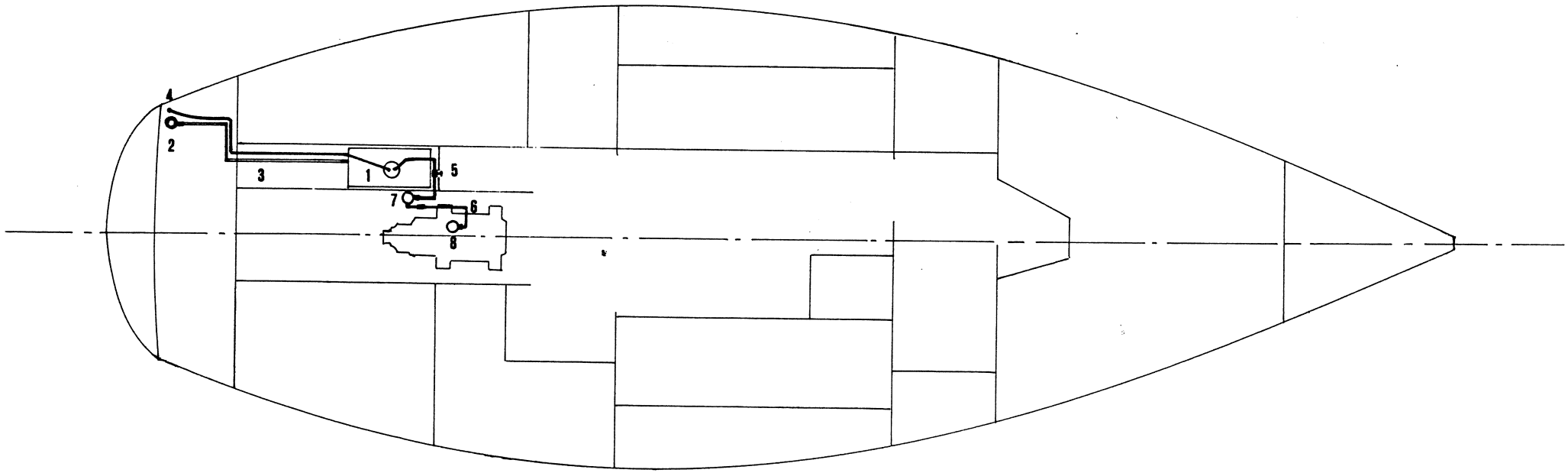


Functioning of Rotary convertor 1
Position 0 circuits cut
" 1 general circuit open
" 2 general circuit and engine open

Functioning of Rotary Convertor 2
Position 0 circuits cut
" 1 battery 1 in use
" 2 battery 2 in use

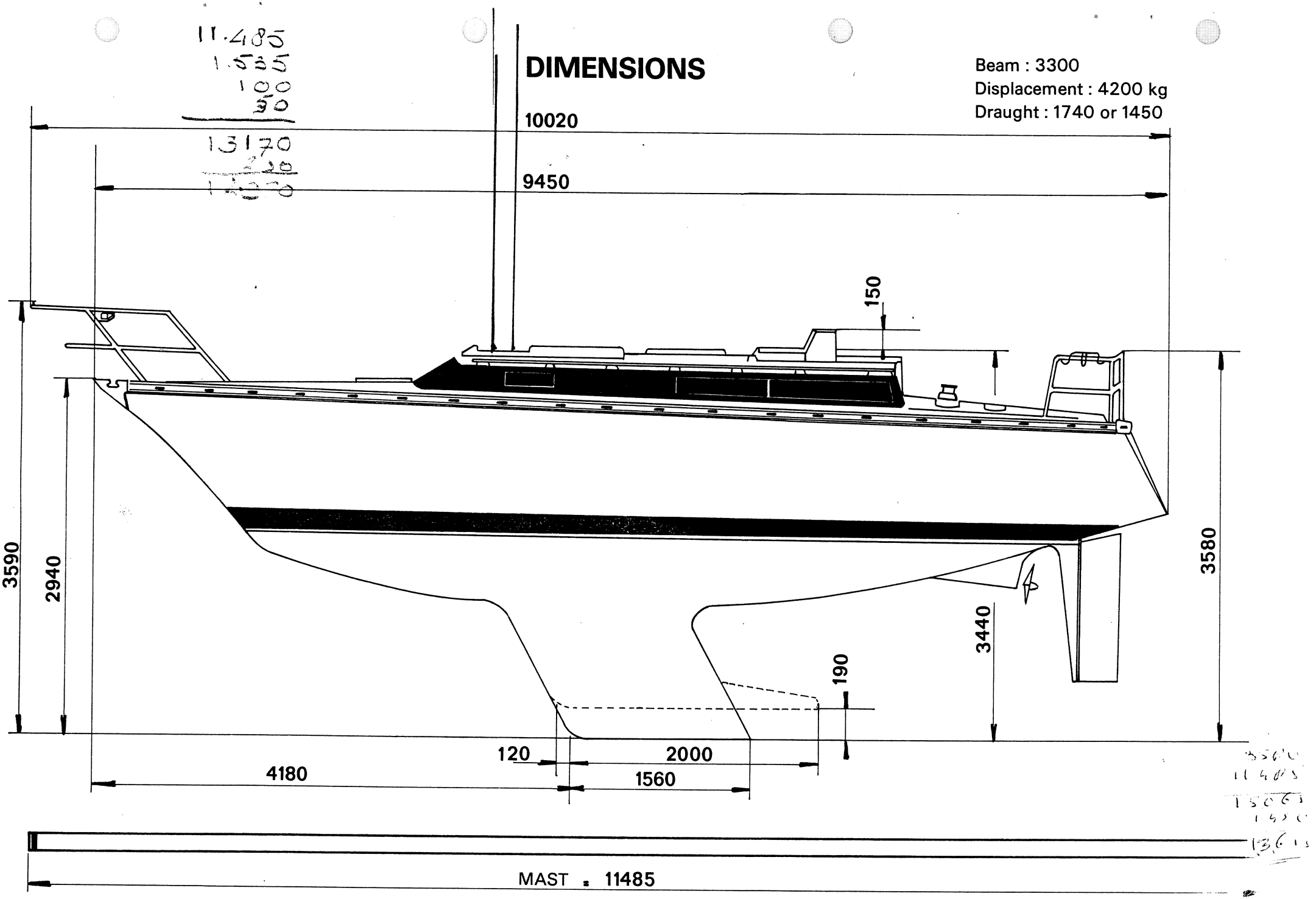
FUEL CIRCUIT

1. tank
2. filling plate
3. filler piping
4. tank vent-hole
5. stop cock
6. supply tube
7. prefilter
8. pump



DIMENSIONS

Beam : 3300
Displacement : 4200 kg
Draught : 1740 or 1450



(all measurements in millimeters)

DELIVERY CHECK LIST

1. **Enter the cabin** and check the inventory of goods in the boxes and indicate use and position required.
2. **Electricity :**
   — use of battery rotary convertor
   — electric panel and use of each button
   — charge percentage control
3. **Engine :**
   — use (control levers in cockpit)
   — water inlet valve
   — ignition after various checks as indicated in engine manufacturer's handbook
   — running in
   — greasing propellor shaft
   — note position of oil gauge
   — note contents of fuel tank and position of filler plate
4. **Fresh water system :**
   — filler plate
   — tank position and air outlet
   — position of filter
   — sea-cocks : water and basin outlets
5. **W.C. :**
   — functioning
   — sea-cocks : water inlet and waste outlet
6. **Gas circuit :**
   — installation of bottle
   — lighting
   — safety precautions
7. **Accessories :**
   — installation of dining table
   — installation of double berth
8. **Bilge pump :**
   — functioning
   — clearing blocage
   — note that 2 - 3 liters of water remain in pump and piping after drainage
9. **Navigation equipment :**
   — speedometer : cleaning of impeller
   — compass : note this has not yet been swung and may be very much out. check light
   — radio and depth finder : check functioning
10. **On deck :**
    — put mooring lines in locker
    — check mast adjustment and note necessity of re-adjustment after 1st few hours of sailing
    — use of winch on boom for foot of mainsail outhaul and reefing.
    — check reefing blocks on boom and go through reefing procedure.
    — note winch handles must be locked into position when in use and removed thereafter
    — use of backstay adjustor if this is installed on the boat.
11. **Engine running and manoeuvring under** engine
12. **Trimming of sails.**
13. **Beaching**

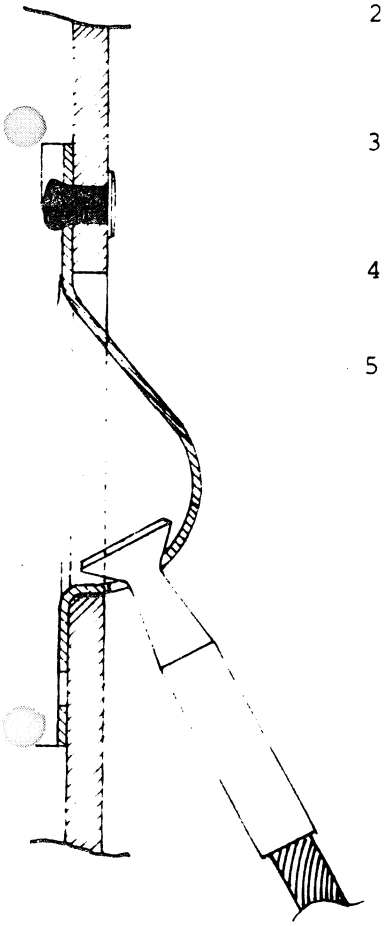
ASS - 2/75

MICHEL DUFOUR S.A.

SERVICE APRES VENTE

OPERATING PROCESS TO EQUIP A MAST WITH ITS STANDING RIGGING

Before stepping the mast, it is necessary to install the standing rigging which is shipped separately to avoid chafin the anodization.



1. Lay the mast down on two or more trestles and unwrap it.

2. Jib and main halyards : their shackles are just popping out of the masthead sheaves. Pull them down to the mast foot.

3. Masthead light : has been disconnected after testing at our plant. Re-connect the black wire to the bigger screw (ground -) and the blue cable to the smaller one (+)

4. Install the wind tell tale in its bracket, on the right side of masthead

5. Standing rigging :

   a) Backstay : fasten it to the stainless steel masthead tang on the rear of the mast (side of the mainsail score)

   b) Forestay : fasten it to the masthead tang on the front of the mast (side of the spinnaker pole track)

   c) Main shrouds :

      - insert the stainless steel shell at the end of the main shroud into the hole on the side of the mast at the top

      - check that it rests on the inner side of the tube by pulling the shroud

      - insert an aluminium rivet (Ø 5mm, length 12 mm) in the upper hole of the shell and squeeze it, while still pulling the shroud towards the foot of the mast

      - both mainshrouds will be fastened that way

   d) Rear lower shrouds : to be fastened in the same way, in the holes closest to the spreaders, either side of mast

   e) FWD lower shrouds : same operation, using the holes situated on each side of the eye for spinnaker boom lift.