

SPECIFICATIONS NO. 1973

FOR THE CONSTRUCTION OF A 31' 0" W. L.

RACING SLOOP (FIBERGLASS)

FOR

PALMER JOHNSON INCORPORATED

"THE PALMER JOHNSON 43"

BY

NAUTOR KY of FINLAND

DIMENSIONS

LENGTH OVERALL (Approx.)		43' 0"
DESIGNED WATERLINE	"	31' 0"
BEAM	"	11' 8"
DRAFT	"	6' 11½"

Designed by Sparkman & Stephens

**Note:** These specifications are believed to be correct and we will do our utmost to make sure that the vessel is built to these specifications. However, there may be small alterations and changes on the finished boats, and we reserve the right to make these without notice.

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## GENERAL CONDITIONS

These specifications are intended to supplement the design, of which they become a part. While details may be changed as the result of experience in construction or use of the boats, the standards of quality and completion must be maintained to furnish a yacht ready for service in every respect.

The Owner's authorized agent shall have access to the yacht and everything pertaining to the yacht at all reasonable times. Every facility will be afforded inspectors for the prosecution of their work. All handling of material necessary for purposes of inspection shall be at the expense of the Builder.

All materials and manufactured articles of construction and equipment are to be of the best quality for their respective purposes. References to trade names and catalog numbers are generally intended to be descriptive rather than restrictive and are indicative of the general type and grade of articles that will be satisfactory. The Architect will normally be prepared to approve substitution if satisfied that there will be no sacrifice in quality, or difficulty with procurement of spare parts or replacement. However, in all cases, it is understood that the choice shall rest with the Architect and changes from items listed by trade name or number shall be made only with his approval. This condition is to have effect whether or not such terms as "or equal", "as selected", or "as directed", are used.

It shall be the responsibility of the Builder to carefully check all purchase orders, whether originating with the Architect or with any representative of the Builder, and also to check all material delivered to insure conformity with the details of the specifications and with all normal working requirements, including installation within the available space.

The Builder shall guarantee skilled workmanship, in keeping with the best yacht practice, and in conformity with plans and specifications. During construction, any work or material found defective or unsuitable by the Architect or Owner's representative shall be removed and replaced without extra charge, regardless of the stage of construction.

Except for such items of equipment as are specifically included in the list of articles to be furnished by and at the expense of the Owner, the Builder shall furnish all items which are appropriate or necessary for the proper operation of the vessel.

The equipment and construction of the vessel, except where otherwise specified, shall meet all requirements of the Government of the country where the vessel is built, applicable to a vessel of this type, for operation on inland waterways and on the high seas.

These specifications have been prepared to cover equipment and materials as accurately as possible prior to the full development of building plans. The Builder's attention is called to the fact that all items are subject to alteration during such development, and firm orders for such equipment or material must be

coordinated with the progress of the design. Necessary changes affecting cost will be adjusted according to the Builder's cost.

INSURANCE - The Builder shall maintain insurance on a yacht contracted for by an owner, including all items furnished or delivered by owner, appropriate to the value of the owner's investment until the yacht is delivered and accepted.

DAMAGED WORK - The Builder will protect all work at all time and be responsible and make good any and all damage from whatever cause, to any part of the yacht or its equipment or furnishings, whether supplied by himself, or by the Owner.

CLEANING - The Builder is at all times to keep the yacht reasonably clean throughout. Particular care is to be taken that all chips, shavings and other foreign matter are removed and all parts thoroughly cleaned before application of paint, and that when the yacht is delivered, her bilges and pockets throughout shall be entirely free from such matter.

ACCESS TO COMPARTMENTS - Arrangements for access to and for cleaning out and painting all compartments and all parts of the vessel shall be provided wherever practical. Flooring throughout shall be fitted with suitable hatches.

Access to the engine, steering gear and all other equipment that may require services of any kind shall be provided by developing joiner work, etc., which can be removed for convenient access.

Care shall be taken in locating pipes and other parts to avoid blocking of access. If necessary, removable sections shall be utilized.

GUARANTY PERIOD - If at any time within six months after delivery of the vessel to the Owner, any defect or failure in workmanship or materials shall be discovered, except for the Owner Furnished Items, or unless due to negligence or other improper act of the Owner or any other user of the vessel during such period, the Builder shall accept responsibility therefor. Under such circumstances, the Builder shall make or authorize such repairs as shall be necessary to correct such defect or failure, including replacement of parts or material found to be defective, except for machinery or equipment and component parts thereof, acquired by the Builder for installation in the vessel according to Specifications; in respect of which the Builder shall be responsible only to the extent of the manufacturer's guarantee.

DRAWINGS BY ARCHITECT - The following plans listed with alterations as noted accompany and form part of these Specifications.

The specifications and drawings are intended to cooperate, and any work exhibited in the drawings and not in the specifications, or vice-versa, are to be executed the same as though they were mentioned in both.

The Contract Plans are as follows:

Sail Plan  
Arrangement Plan

In addition the Architect shall furnish the Builder with the following drawings:

1. Lines
2. Offsets
3. Deck Arrangement
4. Joiner Sections (Laminate)
5. Spar Plans
6. Spar Fittings Details
7. S & S Type Plans
8. Elementary Wiring Plan (Attached to these Specifications)

Type Plans and additional typical arrangement or details, which in the opinion of the Architect should be followed in the construction of the yacht, may be submitted by the Architect to the Builder, and it will be the responsibility of the Builder to properly adapt such drawings to the work where applicable.

All plans submitted by the Architect are intended to illustrate the general type of construction to be followed, and basic design arrangement, strength and weight shall be in accordance with such plans. Details and dimensions shown on the plans shall be followed insofar as practicable, but it shall be the sole responsibility of the Builder to check all such dimensions and details and to satisfy himself, by full size layout, if necessary, that interferences are eliminated and that matching or fitting parts are properly installed. It shall be the responsibility of the Builder to make sure that all mechanical components by whomsoever furnished are suitable for the purpose intended and are so installed as to properly function in the systems to which they belong.

Capacities of Fresh Water and Fuel tanks, as indicated on the final plans, are expected to be obtained by the Builder, and should be checked by him before the tanks themselves or limiting joiner work progresses too far to permit any necessary change to obtain the indicated capacities.

Any and all drawings and specifications prepared by the Architect for the purpose of building this yacht are to remain the property of the Architect.

DETAILED DRAWINGS BY BUILDER - Any additional detail drawings which are required by the Architect or needed to properly construct this yacht will be prepared by the Builder and submitted to the Architect for approval before the work to which they refer is begun. The Architect is to be furnished with one copy of all such approved drawings prepared by the Builder.

## HULL CONSTRUCTION

GENERAL - Scantlings, materials, and workmanship throughout shall be consistent with the construction of a light hull, but without any sacrifice of strength or stability.

MATERIALS - Unless the exact material specified is used, the Builder is to submit to the Architect, well in advance, specifications for any substitutions he may wish to propose as closely as possible equivalent to that specified, giving all pertinent data such as chemical composition, physical properties, glueing specifications and procedures, and such other information as the Architect may require. The Architect reserves the right to require specimens from which chemical or physical properties may be verified by tests. The approval of any and all substitutions for material specified shall rest with the Architect. Care is to be taken not to add weight in the substitution of materials.

All wood used in construction should be sound, clear and free from knots, shakes, checks, or sap, well seasoned and of a kind and quality well suited for the use intended.

All lumber is to be dressed on all sides and ends and to the dimensions given on plans which are for the finished sizes.

Where plywood is referred to herein, it shall be of the hot phenolic resin bonded Marine waterproof type, such as Phenaloid, Weldwood, or equal. Plywood under 3/8" shall be 3-ply and 3" and over shall be 5-ply. All plies shall be of similar thickness. The so-called lumber core (thick core) plywood is not to be used. All plywood to be faced with veneer, plastic, or plastic laminates, as directed. (See "JOINER WORK" or "PAINTING")

FIBERGLASS CONSTRUCTION - The fiberglass reinforced plastic hull to have scantlings as per the drawings approved by Lloyd's Register of Shipping for Class 100 A1 Reinforced Plastic Yacht and the yachts are to be delivered with Lloyd's Register's Hull Moulding Certificate.

RESIN SYSTEM - The resins used shall be suitable for marine use. The catalyst to be methyl/ethyl ketone peroxid and the accelerator cobolt naphthenate and the quantities of the catalyst and accelerator such as to give a setting time not exceeding one hour.

REINFORCEMENTS - The reinforcements are to be free from moisture and from imperfections, discolorations and foreign matter.

FILLERS - Fillers are not to be used except in the skeg where it has to be of an approved type.

COLOR PIGMENTS - The color pigments are to be of an approved type and are to be used only in the gelcoat in the deck, deckhouse, cockpit, topsides and boot top.

LAMINATES - The glass content of the finished laminate to be about 30 per cent by weight and the main lay-up to consist of:

gelcoat 1-1 oz. surface mat, 2-1½ oz. mats, followed by alternate layers of 24 oz. woven roving and 1½ oz. mats until the approved fiberglass weight is achieved. The finished laminate to have approximately the following properties: specific gravity 1.5, tensile strength  $20 \times 10^3$  lbf/in<sup>2</sup>.

The glass contents on the approved drawings are minimums but due consideration is to be given to obtaining stiffness in the hull and flat unstiffened panels are to be avoided. The longitudinal stringers are to be formed over P.V.C. cores by overlapping layers of mats and roving.

The deck/shell connection to be made as a bolted overlapped joint reinforced by fiberglass layers on the underside.

All fittings bolted to the fiberglass laminate to be fitted as necessary with doublers inside the laminate and provided with large washers under the nuts.

All changes in laminate thickness are to be made gradually. Special attention is to be paid to the stiffeners of the hull above the lead keel, in way of the mast step and in the forward part of the hull in the slamming area. All exposed laminate edges to be efficiently sealed.

Matting in connections of bulkheads and floors are to be made using double fiberglass angles as per the approved drawings. No single angle connections to be used. Measures are to be taken to avoid distortion of the shell or deck in way of matting in connections. All surfaces are to be suitably roughened before the matting in connections are made.

Special attention is to be paid to the fitting of the brackets for the chain plates and the matting in of these is to be carried out as wet on wet joints.

The gel coat thickness to be 0.010 - 0.015 in 0.25 - 0.4 mm. Non-slip patterns shall be used on deck and in the cockpit.

All castings, unless otherwise specified, shall be of manganese bronze composition or aluminum.

Galvanizing, if required, shall be by the hot-dipped process for small assemblies, or by the zinc spray process for large assemblies. All galvanizing shall be done after fabrication.

WELDING - The American Bureau of Shipping rules, or Lloyd's Register of Shipping Rules and Regulations For the Construction and Classification of Steel Yachts, in effect as of date of Contract, shall be used as guidance in welding steel and other metals. Builder is also referred to Aluminum Company of America's Handbook for Aluminum Welding; American Brass Company's Publication B-13 for bronze welding; and International Nickel Company's Publication T-2 for welding Monel.

HARDWARE - Above-decks hardware to be stainless steel, light alloy or bronze chrome plated, polished finish; below decks hardware to be bronze, chrome plated, satin finish. Minor items of interior hardware not obtainable in bronze may be made of brass.

FASTENINGS - Fastenings to be stainless steel and shall be size and type as shown on plans. Large size washers shall be used under all nuts. Tapered drills shall be used for holes for all screw fastenings, all bolts shall have good fit.

The size, number and arrangement of fastenings in all cases shall be carefully worked out to maintain maximum joint efficiency of connected parts. Special care shall be taken in fastening plywood and metal parts, e.g. knees, bulkheads, chain plates.

Fastening holes in outside wood surfaces shall be counterbored and filled with boat plugs of similar wood, set in best quality waterproof glue, with grain of plug running in same direction as parent member.

BALLAST - The ballast keel shall be a lead casting having a finished weight of approximately 9.200 lbs., and with a center of gravity as per plans. The lead keel shall be checked on the mold loft floor, and by weighing (or otherwise checking) the amount of metal used. The casting shall have 3% antimony by weight, and two pounds of caustic soda per ton shall be added to facilitate skimming off impurities. Keel bolts shall be stainless steel; size, quantity and locations to be as shown on plans.

KEEL PLATES - Stainless steel docking plates to be installed on keel as per plans. To be fastened as shown.

LIMBER HOLES - Limber holes are to be cut where necessary, so that all water will drain to low point. No limbers to be less than 1" on the smallest dimension.

BILGE ACCESS - It is extremely important that maximum possible access be provided to all portions of the bilge.

ENGINE BEDS - To be fiberglass, as per detailed working drawings (to be developed). Special care to be taken to assure rigid foundation and proper adhesion to hull.

BILGE STRINGER - As per plans, tapered at ends as shown.

BULKHEADS (STRUCTURAL) - Structural bulkheads of marine grade water-proof plywood, size and location as shown on plans, to be fitted throughout the boat. Butts and seams to be secured with tong and groove joints.

CHAIN PLATES - To be stainless steel flat bars thru-bolted to brackets matted to hull, as shown on the Construction Plan. Each flat bar to be carefully beveled to angle of rigging and to be caulked and payed with Minnesota Mining & Mfg. Co. Rubber Compound, or equal.

TOE RAIL - To be teak, size and shape as per plans, fastened as shown.

MAST STEP - To be fiberglass and galvanized steel, as per plans.

RUDDER - The rudder is to fiberglass, shaped as per plans, with cast manganese bronze heel fittings, on skeg, stainless steel gudgeons and Pintles with teflon bushings. The trailing edge shall be finished sharp as shown.

The rudder port shall have a stuffing box on stainless steel pipe mated to hull as shown with welded flange, bolted to the hull as shown.

Details to be worked out by the Builder and shall be subject to the Architect's approval.

TRIM TAB - A trim tab of fiberglass shall be installed at aft end of keel. Size, shape and installation to be as shown on plans. To be capable of serving as a rudder, if required. To have stainless steel fittings including keel fittings, gudgeons and pintles. To have sharp trailing edge.

The trim tab port shall have a stuffing box similar to the rudder port but of size as shown on plans.

RUDDER AND TRIM TAB STOCKS - Shall be stainless steel. Diameters to be as per plans.

STEERING - Steering of rudder shall be by a 36" diameter aluminum alloy destroyer type steering wheel mounted on aluminum pedestal steerer, with binnacle, connected with quadrant by cable and sheaves. Steering of trim tab shall be by a 24" dia. aluminum wheel mounted on same steerer as shown on plans. Steerer to have a clutch and brake control as per plans so that both wheels may be locked together or steered independently so that one may be locked while the other is steered.

Steerer to have sprockets and non-magnetic chains leading to steering cables. Cables to be 7 x 19 stainless steel wire rope. Sheaves for cables to have a score diameter of not less than 20 times the diameter of the wire rope, and to have end terminals for replacement.

The quadrants shall have take-up for each cable to center the king spoke with the rudder fore and aft. Steering gear is to have approximately 2-1/2 turns from hard-over to hard-over. Quadrants to have cushioned stops limiting helm angle to 35° each side of center.

Steering gear in general and especially within six (6) feet of the compass shall consist solely of non-magnetic materials. Sheaves and fairleads shall be securely fastened to the hull framing. All sheaves and sprockets are to be fitted with guards to prevent cables or chains from becoming jammed.



Special attention will be given to the elimination of friction in the steering system by careful alignment, lubrication, and use of roller bearings in all steering cable sheaves, using caged stainless steel roller bearings with the primary steering shaft, and using teflon sleeves and washers in the outboard rudder and trim tab bearings and teflon packing in the trim and rudder tab stuffing box.

EMERGENCY TILLER - To be stainless steel pipe, located as shown, foot operated with socket to fit squared head of rudder stock.

CLEATS - MOORING & TOWING - (See "RIGGING LIST" for all other cleats).

All mooring and towing cleats shall be securely thru-bolted to deck blocking as per plans. To be as follows:

Two (2) - 12" light alloy mooring cleats  
mounted on foredeck.

Two (2) - 12" light alloy towing cleats to  
be mounted on after deck.

CHOCKS - Built-in cast light alloy chocks shall be installed in each rail forward and aft, as per plans. Pattern to be as approved by the Architect. All edges to be rounded off to prevent chafing of ropes.

STEM FITTING - To be a stainless steel weldment, with female socket for pulpit stanchion, as per plans.

DRAFT MARKS - Marks of suitable size shall be installed on the centerline of the boat at forward and after ends of the designed waterline. A second set of marks shall be installed at the ends of a waterline 12" above and parallel to the designed waterline.

## EQUIPMENT

COMPASS & BINNACLE - One (1) 5" Cestral Major compass to be mounted in dome type binnacle in steering pedestal, with new low lighting.

LIFE RAIL - Double life lines shall be installed as shown on the plans. Stanchions to be 1" O.D. Monel or stainless steel tubing, with .083" thick wall, fitted with cast bronze heads and sockets securely bolted through deck as per plans. Top life lines to be 1/4" diameter 7 x 7 stainless steel wire, white plastic covered, set up with turnbuckles at after ends. Lower life line to be 1/8" diameter 1 x 19 wire. All life lines to be laid out and rigged as per plans and in accordance with C.C.A. rules. All stanchions to be tight fit in sockets and to stand without wobbling.

Bow and stern pulpits to be installed as shown; to be fabricated of tubing similar to that used for the life rail stanchions. Pulpits shall be fitted with side lights and stern light, as directed. Height of pulpits and stanchions, spacing, distance inboard and splay outboard shall all conform to C.C.A. requirements.

COVERS - Builder to furnish waterproof white Dacron covers for hatches, binnacle, etc. Hatch covers shall be held in place by grooved sill pieces on three sides, and covers shall be made so that hatches can be opened under covers to permit emergency exit, if necessary. See S&S Type Plan No. 65 for details.

SPRAY HOOD - A folding spray hood shall be installed at the forward end of the cockpit and over the companionway, as shown on plans. Construction shall be similar to that shown on S&S Type Plan No. 67.

MATTRESSES & UPHOLSTERY - Mattresses to be flexible urethane foam, 4" thick throughout. All mattresses to have covers, and to be fitted with finest quality zippers. Builder to take templates of berths and to be responsible for proper size and fit.

FLAG POLE - One (1) Pole for ensign, with flush type socket, at stern.

GARBAGE CONTAINER - One (1) large plastic garbage container to be installed in galley as directed; to be removable type with grip handle.

## JOINER WORK

GENERAL - All joiner work to be done in accordance with the best yacht practice. Finish to be as described under "PAINTING". Where particular sizes are not called out, material shall be as light as is consistent with good practice.

Corners of hatches, bureaus, seats, dressers, etc., to have rounded corners, of small radii. All projecting corners of partitions to be fitted with neatly rounded corner posts. All fastening pieces, rails, door sills, etc., to be screw fastened.

Hooks, lanyards and bumpers to be installed to control the swing of doors, throughout. Suitable catches shall be installed to hold the toilet and stateroom doors part open and full open. Kick plates on steps, chafing pieces on sills, and similar fittings as required, shall be provided.

JOINER HARDWARE - All fittings and hardware to be bronze, of suitable pattern and size consistent with the joiner work. Interior hardware to be chrome-plated, satin finish. Small interior hardware, unobtainable in bronze, may be made of brass.

Mortise locks shall be used for all full length doors; care to be taken that cases of locks are thin enough for housing in door stiles. Hinges for outside doors are to be solid pin type.

Locker doors shall be fitted with surface type latches and hinges, similar to full length doors, but of lighter pattern. Lockers and doors to be amply supplied with coat hooks, hanging rods, drawer pulls, catches, etc., as required.

CABIN SOLE - To be laid Teak, as per plans, finished as described under "PAINTING". Sole to be fitted with traps for complete access to bilge and for dustpan. To be fitted with flush plates with bronze handle keys. Sole bearers, stiffeners, etc., to be as shown.

WINDOWS & PORTS - Windows in sides and forward face of cabin trunk to be fixed type, of 5/16" thick. Size and shape and location to be as per plans.

HATCHES - All hatches to be as per plans, or as noted:

Forecastle Hatch - This hatch shall be large enough to permit passing sails and sail bags. To be sliding type hatch. To have grooved sill pieces on forward and port and starboard sides as shown to take cover. Hatch to be fitted with hold-down bolts.

Main Cabin Companionway Hatch - This hatch shall be large enough to permit passing main engine. To be sliding type with wood top, as per plans. Top to slide on brass-faced runners, under fiberglass hood. Hatch to be fitted with hasp and key type padlock.

Lazarette Hatch - To be box type hatch with fiber-glass frame and top. To have grooved sill pieces. To be hinged to open aft side only, as per plans.

Engine Access - Access to main engine shall be thru removable joiner work in way of engine. Removable joinery shall be such as to allow for complete access to engine top and sides. Companionway steps to be hinged to swing up and out of way for access to engine.

DROP SLIDES - Drop slides shall be supplied for the Main Companionway hatch. Slides to be Mahogany, fitted with louvres and provisions for padlocking. To be stowed as directed.

LADDERS & STAIRS - Wood frame ladders with rubber treads to be installed at Main Companionway Hatch. Ladder to be hinged at top for access to engine, stowage, etc.

JOINER BULKHEAD & PARTITIONS - To be waterproof marine grade plywood, faced as directed, finished as described under "PAINTING". Joiner bulkheads and large partitions to be 5/8" thick; small partitions, lockers and shelves to be 5/16" thick.

SHELVES, DRAWERS & LOCKERS - To be arranged throughout quarters as shown on plans and as directed. Lockers and locker door to have openings for ventilation. Clothes lockers to have rods. All drawer fronts to be rabbeted to cover joints. All drawers to have guides and to be of type that must be lifted to open. Allow extra clearance for swelling. Drawers to have flush finger pulls. Cutler drawer in galley to be divided as required. Layout of lockers, drawers and all stowage to be approved by Owner.

BUILT-IN FURNITURE - All built-in furniture to be of size, shape and arrangement as shown on plans or as directed. Fixed berths and transom berths to be of plywood, as per plans. Built-in berths to have drawers and traps under, as shown. All bunkboards shall be as per S&S Type Plan No. 108.

TABLE - One (1) drop leaf table, shall be located in Main Cabin as shown on plans.

CHART TABLE - A chart table shall be installed as shown on plans, with stowage for charts under top of table.

DOORS - Doors and paneling throughout to be plywood, unless otherwise noted. To be framed as directed, and fitted with locks as required. Locker doors shall have louvres for ventilation of locker spaces. Sliding doors to be installed on dish racks and other stowage spaces, as directed.

HAND RAILS - Grab rails to be installed below decks as directed. They shall be finished to match surrounding woodwork.

MIRROR - To be installed in toilet room.

GALLEY - Galley to be equipped with stove, sink, icebox, etc., as specified in these pages, in addition to built-in items shown on the plans. Dresser tops to be Formica, or equivalent. Galley to be amply provided with racks for glasses and dishes, shelves, bins, drainboard, cutting board, and all necessary items consistent with galley requirements.

STOVE - One (1) gas stove, with 2 burners and oven, to be mounted on gimbals in galley space, as per plans.

Woodwork surrounding galley stove shall be insulated with asbestos and sheathed with stainless steel.

ICE BOX - Shall be built-in type, as per plans, and shall be lined with fiber glass and insulated with Polyurethane foam sealed in fiber glass. Insulation shall be 2" thick. Shelves to be provided, as directed. To have top opening flush hatch with flush lifting hardware. A drain is to be provided.

VENTILATION - Natural air intake vents for living quarters to be 4-inch diameter (nominal) cowl vents on Dorade type watertrap boxes, as per plans. Cowl heights to be as shown on plans. Cowls shall be kept clear of operation of all winches.

#### INSULATION

Sound Insulation - The inside of the joiner work in way of the engine shall be lined with sound insulating lining, or equivalent. Particular care shall be taken to install insulation to the fullest extent to muffle engine noises.

## PAINING

GENERAL - All materials shall be used in accordance with the manufacturer's latest instructions.

FINISHING - All paints and varnish to be rubbed between coats and particular care shall be taken while painting that all workmen are clear of boat; also that it is clean and free of shavings, sawdust and rubbish before final coats are applied.

FAYING SURFACES - All faying surfaces to have preservative treatment as above as well as Dolphinite Fungacidal Bedding Compound, or equal.

BOTTOM - To be primed with, then to receive two additional coats of anti-fouling bottom paint to underside of boot top as directed.

BOOT TOP - Builder to check with Architect for final location. To be between sheered lines above the L.W.L. To be Gel-Coat, color as selected.

TOPSIDES & TRANSOM - To be Gel-Coat, color as selected by Owner.

COVE STRIPE - As shown on Sail Plan. To be Gel-Coat, color as selected.

CABIN SOLE - Teak cabin sole to be left bare.

SPARS - To be anodized.

## PLUMBING

INSTRUCTION BOOKS - See "EQUIPMENT".

SEA COCKS - Bronze sea cocks, to be installed on all thru-hull connections except deck scuppers. All openings to be finished flush with outside of hull. Inboard side of sea cocks to be fitted with hose nipple to take extra-heavy Neoprene hose having two (2) stainless steel hose clamps at each connection. Sea cocks to be accessible and to be combined wherever feasible to minimize the number of thru-hull openings.

SCUPPERS - There shall be three (3) scuppers through the rail, each side, P&S.

Cockpit well to have two (2) scuppers; one each P & S as per plans, of 1-1/2" diameter Neoprene hose connected to cockpit fittings and sea cocks, and with a strainer at upper end.

All scuppers shall drain naturally and shall be laid out so that they can be cleaned by running a wire through. No right-angle bends or angles shall be used. Two (2) stainless steel hose clamps shall be used at each hose connection.

FRESH WATER TANKS - There shall be three (3) fresh water storage tanks of approximately 220 liters total capacity, located as shown on plans. Tanks to be fitted with sufficient handhole plates to allow all parts of tank to be reached for thorough cleaning; to have suitable baffles spaced 18" apart.

Tank shall fill through a single 1-1/2" diameter fill pipe to deck, with fill plate on deck marked "WATER" and located as shown on plans. Vent to be 1/2" tubing, emptying into 3/4" overflow piping underneath the deck, discharging into the cockpit.

PIPING - (FRESH WATER) - All fresh water piping to be plastic tubing. Suction lines to be 1/2" diameter.

The entire fresh water piping system shall be carefully installed and properly tested. System to be laid out for ease of draining.

TOILETS - One (1) Baby Blake toilet, with white seat and cover, to be installed in toilet room as per plans. Discharge to be through a vented loop, located at least 12" above waterline when boat is heeled, and as far inboard as practicable, then through an accessible sea cock. Toilet intake to be located very close to keel to ensure ample submergency even in heavy weather.

TOILET ROOM FIXTURES - Toilet room to be suitably outfitted with medicine cabinets, towel bars, toothbrush-holders, glass holders, soap dishes, and paper holders. Details to be as approved by Architect.

WASH BASINS - One (1) fiberglass wash basin, to be installed in toilet room, as per plans. Basin to be fitted with cup strainer and fresh water supply pump, foot operated. Basin to discharge into toilet.

GALLEY SINK - One (1) double stainless steel galley sink to be installed in galley counter top, as per plans. Sink to be fitted with foot-operated pump with gooseneck spout, a basket type strainer. Sink to discharge directly overboard through a sea cock.

BILGE PUMPS - Two (2) diaphragm type hand pumps to be installed as directed. One pump to be Henderson MK III single action model located in cockpit well; second pump to be Whale single action model located below decks. Suction lines shall terminate in accessible flexible section protected by foot strainer. Discharge above waterline.



## MACHINERY

INSTRUCTION BOOKS - See "EQUIPMENT".

MAIN ENGINE - To be Perkins 108 Marine Diesel Engine, 4 cylinder, 4 cycle, 3.125" bore, 3.5 stroke, 36 HP, at 3,000 RPM. Engine to be equipped with 1.87 to 1 reduction gear, 2-wire 12-volt starting system with starter-generator for charging the starting battery; and a 12-volt 40-amp alternator for charging the lighting battery. (See "ELECTRICAL").

A pulley shall be provided for belt-driving the lighting battery alternator off the main engine. It shall be large enough to provide all charging advantages of the lower RPM range.

Propeller will be a folding, 16" diameter x 10" pitch x 1-1/4" SAE taper bore, left hand rotation.

The engine shall be located as shown on the plans.

INSTRUMENTS - The instrument panel shall be mounted on the forward face of the companion bulkhead.

CONTROLS - Engine to be controlled from the steering station only. The throttle and reverse controls shall be separate throttle and reverse levers, operating through rods and linkage, Morse or equal. Controls to be mounted on the side of the cockpit well, convenient to the helmsman.

FUEL TANK - One (1) tank with a capacity of approximately 80 litres. Fuel fill and sump strainer to be installed (see S&S Type Plan No. 55). Tank shall be removable.

The tank shall have a 2" diameter fill, located in cockpit sole with deck plate marked "FUEL". Fill to have oil-resistant Neoprene hose with two (2) stainless steel hose clamps at each connection. Vent to be 3/4" diameter tubing from highest point of tank to top of the coaming, with gooseneck, recessed screen. Tank to be tested to a head equal to a height two (2) feet above the overflow before installation.

FUEL VALVE & PIPING - Valves to be Kerotest R-2403 in or equal feed and return lines at tank and at engine, with reach rod to accessible location. A marine filter for diesel oil, Kraissl, or equal, shall be installed in an accessible location. Feed line shall be heavy copper tubing, with extra heavy flared or compression type fittings of approved type. A short length of flexible metal hose, Flexonics Corp. TW81, or equal, to be installed between strainer and engine with end fittings to mate exactly with those on both engine and strainer. All metal parts to be compatible to minimize corrosions.

PROPELLER & SHAFT - Propeller to be 16 x 10 martec folding type, or equal. To be bronze, two-bladed, approximately 16" diameter. (Final diameter and pitch to be developed by the Architect). Shaft to be stainless steel, or equal, approximately 1" diameter. Coupling shall have two (2) markings to show when propeller is horizontal.

SHAFT BEARING, SHAFT TUBE & STUFFING BOX - Stern bearing to be a Goodrich Cutless rubber bearing inserted in strut. Stuffing box to be Columbian Bronze Fig. 181 or equal, with hose connections to stern tube and with hose clamps of stainless steel at hose connections.

MAIN ENGINE EXHAUST SYSTEM - To consist of a water jacketed section, muffler, exhaust hose and bronze thru-hull fitting with lip to prevent dripping. To discharge high in counter. Cooling water to be connected to water jacket and discharge from water jacket to muffler.

The water jacketed section shall extend from engine to muffler, and shall be sized as follows: Inner tubing to be same I.D. as exhaust outlet on engine x .083" thick wall; outer tubing to be 1" greater I.D. x .083" thick wall. Material for tubing to be stainless steel. Flanged sections to be provided as necessary to permit ready replacement, and material for flanges shall be as similar to main exhaust tubing as possible. Water jumpers shall have hose connections and be somewhat belled at the joint with the jacket pipe. The area of the jumpers shall be approximately double that of the discharge line from the engine salt water cooling pump. Condensate and jacket drains shall be provided at the low point.

The muffler shall be a "standpipe" type, S&S Type Plan #95, sized to suit tubing, installed as shown. The exhaust hose shall be Edson or equal, non-collapsing type, running from muffler to transom, diameter to suit.

The water-jacketed section shall be given a hydrostatic test to a pressure of 50 p.s.i. System to be carefully hung from cushioned supports to minimize noise.

DRIP PAN - An oiltight fiberglass pan with accessible sump shall be installed completely under engine.

ENGINE COOLING - To take water through a sea cock located low down to insure ample submergence when heeled, then to a suitable bronze basket strainer and copper tubing of proper size to engine. A short section of rubber hose to be installed between the piping and engine.

## ELECTRICAL

INSTRUCTION BOOKS - See "EQUIPMENT".

GENERAL - To be a 12-volt D.C., 2-wire, ungrounded system throughout, supplied with power from a separate belt-driven Alternator for the ship's systems and for charging the lighting batteries. The 12-volt main engine starting battery to be charged by the engine alternator (See "MACHINERY").

ALTERNATOR - To be a 40 amp. Alternator-generator, and to be fitted with voltage regulator. Leece-Neville reverse polarity relays shall be provided for each alternator or equivalent.

STARTING BATTERY - One (1) 12-volt battery rated 60 ampere-hours to be mounted in fiberglass-lined tray alongside the engine.

LIGHTING BATTERIES - Two (2) 12-volt batteries rated 105 ampere-hours at 20 hour rate, connected in series. To be mounted in fiberglass-lined tray.

WIRING - To be stranded conductors with Neoprene impervious sheathing similar to Simplex "Tirex" or equal. Cable to be adequately protected from mechanical damage and installed in accordance with good marine practice. Particular care shall be exercised that cables are large enough to prevent excessive voltage drop. A 2-wire system with junction boxes shall be installed throughout. There shall be no wiring in the bilge and no open terminal boxes.

All wires to be in two (2) colors; BLACK for positive and WHITE for negative. All wires are to be numbered with plastic tape. A complete list of numbers shall be provided.

Sufficient circuits shall be provided so that each circuit is conservatively loaded. A minimum of two (2) spare circuit breakers shall be installed. Access shall be provided to the back of the switchboard for servicing and the cable shall be so installed and connected that normal servicing will provide a minimum of flexing of cables and/or wires.

Lighting arrangement to be as follows:

Forecastle	- 2 Berth Lights
Main Cabin	- 1 Dome Light
Galley Area	- 1 Dome Light/ 1 Wall Light
Toilet Room	- 1 Mirror Light
Quarter Berths	- 1 Berth Light
Navigator's Area	- 1 Dome Light
Side Lights	- 1 red and 1 green, located on bow pulpit.
Bow Light	- on Main Mast, spreader height
Stern Light	- 1 on Stern Pulpit
Mast Floodlight	- 2 12-V, DC on Mast
Masthead Light	- 1 Clear lens on masthead as per plans
Binnacle Light	- See "Compass & Binnacle"

LIGHTNING PROTECTION - Main hull strapping connection to chain-plates, backstay fittings, and headstay fittings, shall be grounded to ballast keel bolts by means of 3/8" diameter copper tubes, or equivalent. The aluminum mast shall also be grounded.

### SPARS

GENERAL - Sizes and shapes of all spars shall be as shown on the detail drawings supplied by the Architect.

Aluminum spars to be made of aluminum alloy, Alcoa 6061-T6-51, or equal.

Spars to be finished as described under "PAINTING".

MAIN MAST - To be made of aluminum alloy, hollow, oval section, as per plans. Mast to be fitted with stainless steel tangs for attachment of rigging, as shown.

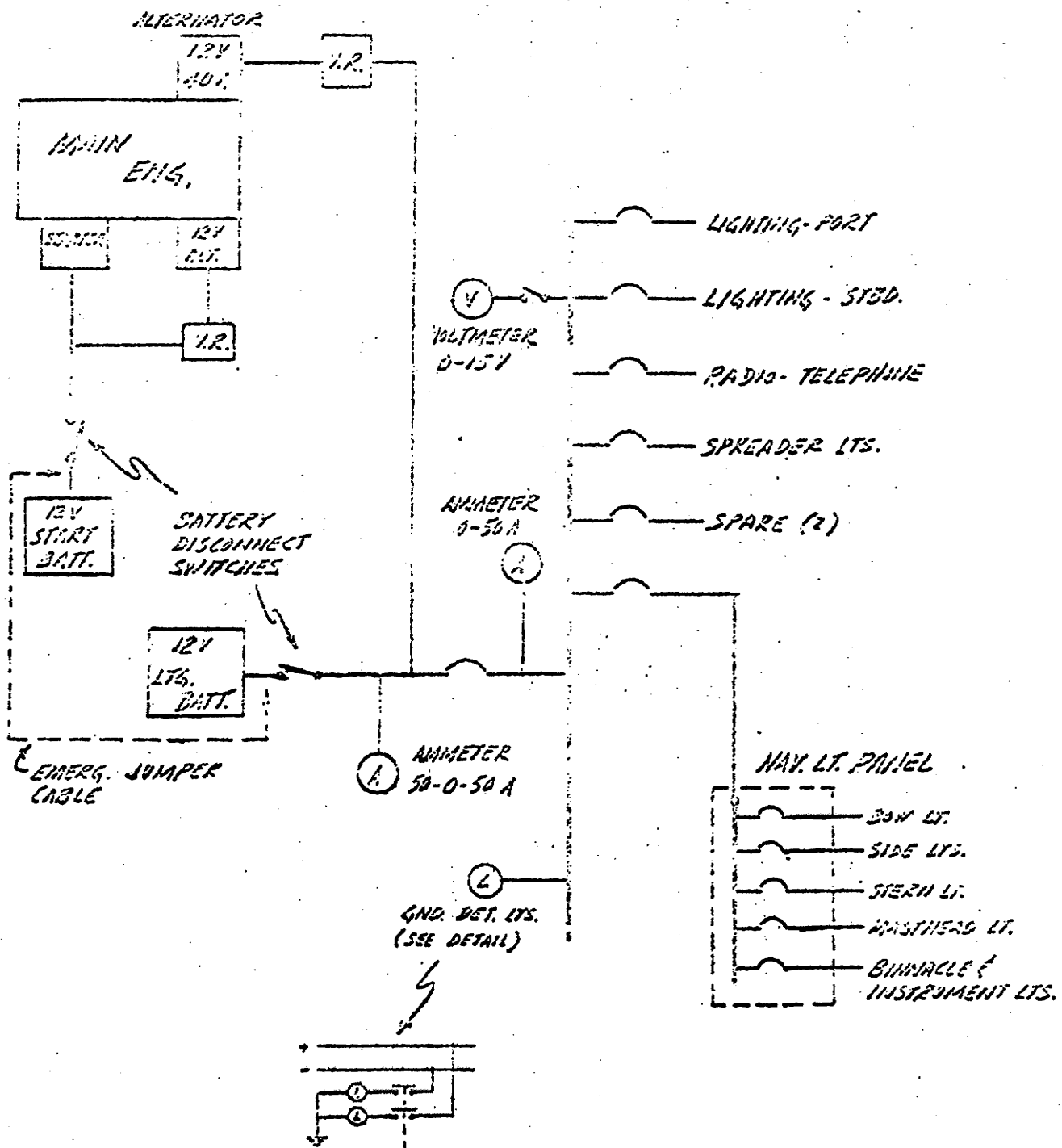
Mast to be wired internally for masthead light, bow light, spreader lights, with wires leading down inside mast and out the forward face of the mast.

MAIN BOOM (ROLLER REEFING) - To be aluminum alloy, hollow, section as per plans. Boom to have fittings as per plans and as called for in "Rigging List".

SPINNAKER POLES - To be aluminum alloy, hollow, section as per plans. To have fittings as per plans and as called for in "Rigging List". Two (2) poles to be made; one to used for spare.

JOCKEY POLE (REACHING STRUT) - To be made of aluminum alloy, round section, as per plans. Pole to have fittings as shown on plans and as called for in "Rigging List".

MAST COLLAR - One (1) mast collar, to be of fiberglass with beaded lip to take lower edge of mast coat.



NOTE:  
 DONT OPEN OR CLOSE  
 BATTERY DISCONNECT  
 SWITCHES WHILE ENGINE  
 IS RUNNING.

1973  
 ELEMENTARY  
 WIRING DIAGRAM

614061

## RIGGING AND FITTING LIST

GENERAL - Unless otherwise noted, all Blocks and Rigging Fittings shall be Lewmar.

All rope to be Dacron Yacht Braid, except where Nylon is specifically called for.

Except where otherwise noted, cleats shall be wood, shape and size as per S&S Type Plan #102. (See also "Mooring Cleats" elsewhere in these Specifications.)

Running rigging is to be 7 x 19 galvanized steel wire rope, except as noted.

Standing rigging is to be stainless steel bars wire with threaded fittings. Sizes to be as per Sail Plan.

Special adjusting handles shall be applied to permanent backstay turnbuckle.

FLAG HALYARD - To be 3/32" diameter braided Nylon, to starboard side of main masthead and to port and starboard main spreaders.

WINCH LIST (All winches bronze, unless otherwise noted).

Main Halyard	- One (1) Barlow #5H on mast
Jib Halyards	- One (1) Barlow #24 geared winch
Spinnaker Halyard	- One (1) Barlow #16 winch on mast
Spare Jib Halyard	- One (1) Barlow #16 winch on mast
Main Sheet	- One (1) Barlow #16
Spinnaker Sheets	- Two (2) Barlow 30 mounted on bases on cockpit coaming as per plans
Jib Sheets, Utility	- Two (2) Barlow 30 mounted on deck-house as per plans
Handles	- Two (2) Barlow plain and one (1) lock-in.

SNATCH BLOCKS - As follows:

- 4 - Lewmar Fig. 1214 Size 4 blocks for jib sheets, spinnaker sheets and after guys, balloon jib sheets and boom fore-guys.
- 1 - Lewmar Fig. 1213 Size 3 blocks for spinnaker foreguys

### MAINSAIL

Main Halyard - One-part, 3/16" dia. 7 x 19 galvanized steel wire with Fig. 390 - 7/16" headboard shackle spliced in, to be reeved internally, using Masthead and Exit Sheaves per detail plans and S&S Type Plan No. 60, and having end silver soldered for a length of 1/2" to insure secure attachment to the reel winch. Must be long enough to permit launching dinghy with two (2) turns on drum.

Main Sheet - 7/16" dia. Yacht Braid - 3½" blocks - 4 parts.

- 1 - Fig. 671 single with becket on cockpit traveler, with Lewmar Fig. 1096 slide, Fig. 1010 "X" track, and Fig. 1025 end stops and Fig. 1024 adjustable stops.
- 1 - Fig. 1163 fiddle block on boom end
- 1 - Fig. 811 single, swivel eye block, as per plans
- 2 - 7½" cleats, as per plans.

Main Boom Lift - 1/8" dia. 7 x 19 white plastic coated stainless steel wire with Fig. 498, 1/4" double jaw toggle at masthead, and eye splice on thimble at lower end, with 3/16" dia. Nylon lashing to shackle on end of main boom. Lower end of topping lift to be 16" above boom.

Main Clew Outhaul - Roller reefing to suit boom diameter, with screw type outhaul.

Main Gooseneck - Lewmar roller reefing type to suit diameter of boom. Lower end stopper to hold boom at position shown on Sail Plan. Portable stops on upper end of track.

Main Mast Track & Slides

Alloy track to suit Holt  
Allen 7/8" slides

Main Tack Downhaul & Lift - 3/8" Yacht Braid with 3" blocks.

- 1 - No. 650 single with becket on gooseneck
- 1 - No. 353 single - aft side of mast
- 1 - 6½" cleat on mast

Boom Tackle - 3/8" diameter Nylon - 3" blocks

- 1 - Dacron strop with heavy grommets
- 1 - Lewmar Fig. 274 fiddle block w/becket & swivel snap shackle
- 1 - Lewmar Fig. 274 fiddle block w/swivel snap shackle, and cleat on block.

Main Boom Foreguy - 1/2" diameter Nylon (see Snatch Block List)

- 1 - No. 644 stiff eye snap shackle - end of pennant

HEADSAILS

Jib Halyards - Two (2) (second halyard is optional) single part, 7/32" dia. 7 x 19 galvanized steel wire with 7/16" diameter Dacron rope tails, and thimble splices aloft. Each halyard to be long enough to reach the stemhead with two(2) turns on the winch and enough left over to make fast to a cleat with bitter end knotted through the eye. Halyards will be reeved internally, utilizing masthead sheaves and exit sheaves as per detail plans and S&S Type Plan No. 60.

- 2 - Lewmar Fig. 233, #1 swivel eye snap shackles - halyards & tacks
- 2 - 7-1/2" cleats - mast
- 2 - 3/4" bitter end eyes - below cleats

Genoa Jib Sheets -

- 2 - Single part 1/2" dia. Yacht Braid or equal, tied in clew
- 2 - Lewmar Fig. 999 genoa foot blocks, on toe rail, P & S
- 4 - 7-1/2" cleats

Genoa Tracks

- 2 - Stainless steel tracks, 1-1/4" x 3/16" x 10' long, installed on deck P & S, fastened to deck with 1/4" dia. stainless steel bolts; tracks to be numbered at every fifth hole to facilitate slide location
- 4 - Merriman Fig. 447S, or equal, end stops
- 2 - Lewmar Fig. 1007 roller type genoa fairleads

Working Jib Sheets

- 2 - Single part, 1/2" dia. Yacht Braid or equal, tied in clew  
Use genoa blocks

SPINNAKER GEAR & TRACK - Gooseneck to be Lewmar Fig. 1142 cup and slider type, slider type, stainless steel track 1-1/4" x 3/16", length as per detail plans. Pole end fittings to be Lewmar Fig. 1156 inboard end and Fig. 1001 outboard end to suit pole size.

Sheets & After Guys

- 2 - 1/2" Yacht Braid with Lewmar Fig. 1079 swivel eye snap shackles and one 3/8" x 1-1/2" I.D. stainless steel ring.
- 2 - 1/4" Yacht Braid with Lewmar Fig. 1078 swivel eye snap shackles and one 1/4" x 1-1/4" I.D. stainless steel ring.
- 2 - Special padeyes in extreme quarters.

Foreguys

- 1 - 7/16" diameter Yacht Braid, with Fig. 390 #2 swivel eye snap shackles.

Halyard - One (1) 1/2" diameter Yacht Braid with Lewmar Fig. 233 swivel eye snap shackle.

- 1 - Lewmar No. 392 single - masthead crane
- 1 - Fairlead - at spreaders
- 1 - Bitter end eye - below cleat
- 1 - 8-1/2" cleat - on mast

Outboard Lift

- 1 - 3/8" dia. Yacht Braid
- 1 - No. 233 Snap hook
- 1 - No. 350 Single - Special mast padeye
- 1 - 3/4" bitter end eye - on mast, below cleat
- 1 - 6-1/2" cleat - on mast

Inboard Lift

- 1 - 7/16" dia. Yacht Braid
- 1 - No. 350 Single - special mast padeye
- 1 - 7-1/2" cleat - on mast



SPINNAKER STAYSAIL HALYARD - Use spare jib halyard

JOCKEY POLE HANDLING GEAR - To suit pole (reaching strut) as follows:

- 1 - Gooseneck Lewmar Fig. 1142 cup and slider on Spinnaker Track
- 1 - Special sheave, outboard pole end, Lewmar Fig. 1156 inboard end
- 1 - After guy, 5/16" diameter Dacron - attached to pole as per plans.

END