SPECIFICATION

NAUTOR's SWAN 65

DIMENSIONS

LENGTH OVERALL SLOOP	19.84 m	65.09'
LENGTH OF WATERLINE	14.33 m	47.00'
BEAM	4.98 m	16.33'
DRAFT	2.9 m	9.6'
DISPLACEMENT	31800 kg	70000 lbs
BALLAST	13900 kg	30600 lbs

For ketch particulars, see last page

Designer:
SPARKMAN & STEPHENS INC.

Builder:
Oy NAUTOR Ab
Box 10
68601 PIETARSAARI, FINLAND
TELEPHONE: 358 67 601111
TELEX: 7547 nauto sf
TELEFAX: 358 67 67364

Note. These specifications are believed to be correct at the time of printing and supersede any translations to other languages. For the sake of continuous improvement, the Builder reserves the right to make alterations without notice, as considered desirable. No such alterations, however, will be considered retroactive for yachts already delivered or under construction. Draft and displacement stated above vary with load condition.

February 1992
Valid from hull No. 041
This specification replaces the January 1990 edition.

GENERAL CONDITIONS

These specifications are intended to supplement the arrangement drawings. While details may be changed as the result of experience in construction or use of the yachts, the standards of quality and completion will be maintained to furnish a yacht ready for service.

The Owner or his authorized agent will have access to the yacht and everything pertaining to the yacht at all reasonable times. The Builder reserves the right to approve or reject any changes in the details of the yacht when these are asked for after the yacht is ordered.
The Builder guarantees skilled workmanship, in keeping with the best yacht practice and in conformity with specifications.

INSURANCE - The Builder will maintain insurance on a yacht contracted for by an Owner, including all items furnished or delivered by Owner, provided that the Owner has delivered such items according to the Rules spelled out in the Contract Appendix following the Sales Contract. The insurance is appropriate to the value of the Owner's investment until the yacht leaves the Builder's premises.

DAMAGED WORK - Except in case of Force Majeure, the Builder will protect and be responsible for all work until date of despatch and make good any damage to the yacht or its equipment or furnishings.

ACCESS TO COMPARTMENTS - Arrangements for access to and for cleaning out and painting all compartments and all parts of the yacht are provided wherever practical.

TESTS - With the yacht in the test pool, the engine is run for one hour, checking all controls. Also, the proper function of the fuel system, sea water, fresh water, gas, and electrical installations is checked.

The water-tightness of deck and hatches is tested.

The mast is stepped and the proper fit of all standing rigging checked.

TRIM - The Builder reserves the right to add internal ballast for trimming purposes.

HULL

Scantlings, materials and workmanship throughout are consistent with the construction of a light hull, but without any sacrifice of strength or stiffness.

Construction

The hull is built of glassfibre reinforced polyester by the hand laying-up method, using alternate layers of mat and roving. Stiffeners are laid up over foam cores and reinforced with unidirectional glass.

Structural bulkheads are of marine grade water-proof plywood laminated to hull and deck. Engine beds are of GRP with steel inserts. Special care is taken to assure rigid foundation and proper adhesion to hull.

Finish

All gelcoat pigments used are of approved type. Standard topside colour is white, boot top and cove stripe blue. Uncoloured gelcoat below waterline. Flotation reference marks are located at bow and stern. Bottom treated with epoxy tar, and primed with antifouling.
Yacht's name and home port is painted on transom when specified.

Keel

Ballast keel is a lead casting with antimony. Cast-in keel bolts are of high-tensile stainless steel.

Rig anchorage

The mast is stepped through the deck onto a galvanized steel mast step with movable shoe for mast rake adjustment. Heavy GRP brackets are laminated to hull for the stainless steel chain plates.

Rudder

Of foam filled GRP with stainless steel stock, supported by two roller bearings plus one plain bearing in skeg.

Steering gear

Cable steering gear, sheaves provided with guards to prevent jamming. Aluminium steering quadrant bolted to rudder stock. Destroyer type wheel with sprocket and friction brake mounted on pedestal. Emergency tiller of stainless steel.

DECK

Construction and finish

Deck is made in GRP sandwich construction. Single laminate with aluminium back-up plates under deck fittings. Deck surface has painted non-slip finish, standard colour light grey.

Woodwork on deck

Teak hatch frames and hand rails, sheet and halyard cleats. Laid teak battens in cockpit and on bridgedeck. Teak lips along sheet tracks.

GRP mouldings on deck

Hoods for entrance hatch, Dorade boxes, lazarette and liferaft hatches.

Deck fittings for running rigging

Winch notation: A = aluminium
ST = self-tailing

On cockpit coaming:
Two spinnaker sheet winches Lewmar 66 AST or equal.

On bridgedeck coaming:
Two genoa sheet winches Lewmar 66 AST or equal.
Two deck plates for running backstays each side.
Two running backstay winches Lewmar 43 A or equal.

On bridgedeck:
Main sheet track with double slider and tag lines.
Main sheet winch Lewmar 43 A or equal.

On deck:
One pair of double genoa foot blocks on aluminium bases.
Stainless genoa sheet tracks. Screw-in deck fittings for staysail sheeting, and fore and aft guys.
Lugs for spinnaker sheet blocks at each quarter.
Two deck eyes for slab reefing pennants at mast collar.
Two foreguy winches Lewmar 43 A or equal.
Release lever box on foredeck for inner forestay.
Stowage position for removable forestay and runners.

Other deck fittings

Anodized aluminium toe rail with one pair of hawse holes amidships and drain holes where necessary.
16" aluminium mooring cleats, two on fore deck, two midships, two aft.
Pulpit, pushpit and life line stanchions 750 mm high, of stainless steel, with bases bolted through deck. Spacing conforming to ORC requirements.
Insulated and plastic covered lifelines. Gate each side amidships.
Socket for flag pole on pushpit. Aluminium mast collar with eyes for lazy halyards.
Stemhead fitting of stainless steel with double chain roller and headsail tack attachment.
Spinnaker and jockey pole fastenings on deck.
Stowage for two 8-man liferafts in cockpit lockers.
Stowage for two gas bottles in drained cockpit locker.
Four winch handle holders on bridgedeck, two in cockpit, two on main mast
Stainless steel mast pulpits.
Four jib pad eyes, two tallboy eyes.

Hatches and windows

One fore deck tinted acryl sliding hatch to fo'c'sle, lockable from inside.
Deck prism in forward heads.
Hinged hatches Goiot 45.32 or equal in P guest cabins.

Hinged hatch Goiot 80.80.1 or equal in main cabin, large enough for passing engine.
In cabin trunk sides fixed windows forward, one pair of openable portholes Goiot 34.18 or equal aft.
Main companionway sliding hatch of tinted acryl, lockable from inside and outside.
One openable porthole Goiot 34.14 or equal from galley to bridgedeck. One openable porthole Goiot 54.32 or equal from owner's cabin to cockpit.

INTERIOR

General

All joiner work is done in accordance with the best yacht practice, using first-grade materials. Teak with hand rubbed satin finish is used for all visible woodwork.
Floorboards with laid teak and holly veneer, and providing access to the bilge.
Teak grating in heads.
Topsides where visible lined with teak battens.
Overhead lined with removable panelling.
Tables, bureaus, seats, dressers etc. have rounded corners.
Doors, partitions and panelling throughout are plywood.
Door sills have stainless steel chafing pieces. Hooks installed to hold doors in open position. Hanging lockers are equipped with rods and hooks and their doors provided with louvres.
Drawers have to be lifted to open.
Hinged wooden companionway ladders with tool box behind.

Fo'c'sle

Sail bins under folding pipe berths.
Steps below hatch.
Doors to fore peak.

Guest cabins

Fixed berths with stowage lockers and drawers under lower berth.
Hanging lockers at forward end.

Main cabin

Removable drop leaf table with fiddles and condiment rack.
Lockers behind settee backrests each side.
Space for bottles and glasses in locker at forward end.

Galley

Insulated and sheathed space for stove, protected by stainless steel guard.
Stainless steel sinks with waste container below. Drawers for utensils.
260 l top-loaded refrigerator and 160 l top-loaded freezer, insulated with 75 resp. 100 mm thick foam, both lined with GRP, and provided with aluminium shelves and drains.

Counter tops of Formica or equivalent. Racks for plates of 17, 20 and 24 cm diameter behind sliding doors outboard. Cupboard on aft bulkhead.

Navigation area

Chart stowage under table top, bookshelf outboard, if space available after radio installation. Hull and deck behind panels insulated with closed-cell foam. Navigator's seat in front of oilskin locker. Chest of drawers in chart table base.

Heads

GRP wash basin.
Equipped with telephone type shower, mirror, towel, soap and paper holder and waste container.
Lockers with shelves outboard.

Aft cabin

Hanging lockers between berths.
Double berth with undivided mattress.
Dresser with mirror on SB side forward, hanging lockers outboard.
Drawers under forward end of berths.

PROPULSION MACHINERY

Engine

Volvo Penta six-cylinder 4-stroke marine diesel, type TMD41B, rated 103 kW (140 HP) at 3250 rpm, on flexible mountings with MS4A mechanical reverse gear, reduction 1.93:1.
Drip tray integral with engine bed.
Engine space internally sound insulated.

Starting system

The engine has its own starting battery, 93 Ah, 24 V, located with the service batteries.

Engine controls

In cockpit:
Engine controls ON/OFF
Start and stop buttons
Battery parallelling button.
Recessed single lever control of throttle and gear shift.
Tachometer
Coolant temperature gauge
Oil pressure gauge
Control light for starting and service battery charging.
Warning light and audible alarm for low oil pressure/high engine temperature.

At chart table:
Warning light and audible alarm for low oil pressure/high engine or exhaust temperature.
Engine space blower switch.
Engine hour meter.

Propeller shaft

Made of corrosion resistant steel with rigid shaft coupling, outboard end supported by strut with rubber bearing. Another rubber bearing in stern tube.
Morse or equal stuffing box flexibly supported by hose connection to stern tube. For locking the shaft during charging, a shear pin is provided. Zinc anode on shaft. Three-blade Max-Prop feathering propeller, diameter 21".

Engine cooling system

Thermostat-controlled fresh water cooling with heat exchanger.
Strainer on seawater intake, discharge through exhaust system.

Fuel system

Fuel capacity 1000 litres (265 US gallons), in four tanks with shut-off cocks, located in main cabin area. Two fillers on deck. Water separator on fuel feed line, return line to each side. Tanks vented to cockpit coaming.

Exhaust system

Wet system exhaust with rubber silencer and cooling water bypass, discharging through topside. Silencer provided with drain tap and temperature alarm.
Raw water loop provided with bleed line, discharging to cockpit drain.

PLUMBING AND VENTILATION

General

Sea cocks of bronze for all through-hull fittings below waterline, finished flush with outside and located in accessible positions. Inboard side of sea cocks fitted with nipple long enough to take two hose clamps.
Sea water piping of reinforced PVC tubing, fresh water piping of nylon or copper tubing. All fuel and water tanks of welded stainless steel, and provided with baffles, inspection covers, sounding plug, and vent pipes.
Shower sump tanks of GRP, integral with the molded floor liner.

Fresh water system

Hot and cold pressure water, heated by engine cooling water.
Water capacity 1500 litres (396 US gallons) in seven tanks of which six in guest cabin area, and one in galley.
One filler line from deck, terminating at valve chest. Tank vent pipes drain into galley sink.
Foot pumps for galley sinks and wash basins.

Sea water system

Foot pump for galley sink spout.
Four inlet sea cocks feeding heads, galley, engine cooling, and refrigeration unit.

Drainage system

Galley sinks drain through sea-cock.
Wash basin and shower trays drain to respective sump tank, capacity about 40 l each. Sump tanks are emptied by hand pump to outlet above waterline.
Two manual bilge pumps, one below, one in cockpit, discharging through outlets above waterline. One electric bilge pump.
Two 2" drains in cockpit discharging above waterline. Refrigerator and freezer drained to translucent plastic tank in bilge.

Toilets

BLAKE VICTORY toilet or equal, discharging through sea cock with seawater pump, shut-off valve, and drainage pump.

Stove

Four-burner gas stove with oven, gimballed and provided with fiddles.
Flame failure protection on burners. Gas shut-off cock adjacent to stove.
Remote controlled shut-off on gas bottle.

Refrigeration

Refrigerator and freezer cooled by engine driven Iceberg compressor unit with hold-over plates.

Ventilation

Dorade ventilators on foredeck, and at main companionway.
Exhaust ventilators in heads and galley.
Engine space air inlet in lazarette, outlet with blower to main mast.
Battery boxes ventilated to cockpit coaming (mizzen mast on ketch).

ELECTRICAL

General

24 V DC two-wire system for lighting, instruments, and battery charging. Care is taken that cables are heavy enough to prevent excessive voltage loss. For lightning protection, headstay, backstay, mast step, and main chain plates are grounded to ballast keel bolts with heavy cable.

Service Power

One battery set 524 Ah, 24 V in GRP box below Owner's cabin floorboards.

Outlets

24 V outlets at main switchboard, in galley and in each head, one watertight in cockpit.

Lighting arrangements

Interior:
One berth light over each berth, necessary dome lights overhead, fluorescent lights over galley counter. Flexible chart light at navigation station. Red night lights at floor level in main and guest cabins.

Outside:
Downward flood light on forward side of mast.
Masthead light.

Navigation lights:
Red and green side lights on pulpit.
White stern light on pushpit.
White bowlight on forward side of mast.

Main switchboard 24 V DC

Located outboard of navigator's seat, and protected by a Perspex door.
Provided with necessary breakers of trip-free circuit type, four spares included.
One V-meter with two-way switch for checking service and starting battery voltage.
Two Ammeters, one for service, one for starting battery charging control.
Switches for outside and navigation lights.
Main switch and fuses located in navigator's seat.

Charging system

On the engine there is a 55 Amp alternator for charging the engine starting battery and a 100 Amp alternator for charging the service battery.

Cockpit controls

Push button for mast flood light.
Dimmer rheostat for compass light.

INSTRUMENTS

Compass

One 6" SUUNTO steering compass or equivalent, mounted in binnacle on steering pedestal. No magnetic materials within three feet radius.

RIG

Scantlings to Nautor's standards. Spars of extruded aluminium alloy tubing, anodized after welding and hole cutting is completed. Sloop or ketch rig available, for ketch rig see last page.
Sloop rig:
Double spreader rig supported by inner forestay and runners.

I = 24.38 m	(80.00')	Fore triangle	94.2 m^2	(1014 sq ft)
J = 7.73 m	(25.36')	Mainsail	78.0 m^2	(839.5 sq ft)
P = 22.25 m	(73.00')	150% genoa	141.4 m^2	(1522 sq ft)
E = 7.01 m	(23.00')	Spinnaker	339 m^2	(3652 sq ft)

Mast

Of elliptical section, with joint at approximately half length, and stainless steel tangs. Tapered and welded masthead with two spinnaker cranes and four halyard sheaves. Spare halyard messenger provided.
Internal wiring, shielded in a PVC tube secured to mast.
Mainsail track riveted to mast.
Spinnaker gooseneck track with hoist tackle and winch Lewmar 43 A on forward face.
Two toggle pins each side for jockey pole.
Main halyard winch Lewmar 46 A or equal.
Genoa halyard winches two Lewmar 52 A or equal.
Spinnaker halyard winches two Lewmar 52 A or equal.
Tapered spreaders of aluminium alloy.
Neoprene rubber mast boot with Dacron cover.

Main boom

Of oval section with internal outhaul tackle led to a Lewmar 16 A winch, and arrangements for slab reefing with lock-off cams for three reefing lines. Topping lift led forward internally from boom end.

Poles

Two spinnaker poles and one jockey pole. Of round section with Sparcraft fittings.

Standing rigging

Of solid Navtec Alpha rod with Series 500 fittings. Upper and intermediate shrouds linked to main span at spreader ends. Navtec rigging screws of bronze with toggles at lower end. Rigging screw with handles for inner forestay adjustment. Headstay and inner forestay also have toggles at upper end. Rope tail end for running backstays. Shroud rollers on main and forward lower shrouds.

Hydraulics

Navtec hydraulic tensioner with fail-safe turnbuckle on main mast backstay.
Two-function control panel in cockpit (one spare function).

Running rigging

Wires are of 7 x 19 stainless construction, ropes Trevira. Main halyard with screw shackle. All other halyards as well as spinnaker sheets and guys with snap shackles. Internal halyards and topping lifts.

Description	Quantity	Material	Diameter
Main sheet with blocks	one	braid	16 mm (5/8")
Main sheet tag lines	two	braid	10 mm (3/8")
Heavy genoa sheets	two	braid	20 mm (3/4")
Medium genoa sheets	two	braid	16 mm (5/8")
Light genoa sheets	two	braid	12 mm (1/2")
Heavy spinnaker sheets	two	braid	16 mm (5/8")
Medium spinnaker sheets	two	braid	12 mm (1/2")
Light spinnaker sheets	two	braid	8 mm (5/16")
Staysail sheets	two	braid	16 mm (5/8")
Aft guys	two	braid	20 mm (3/4")
Fore guys	two	braid	16 mm (5/8")
Main boom topping lift	one	wire	6 mm (1/4")
Tail end with blocks for above	one	braid	12 mm (1/2")
Foot outhaul	one	wire	6 mm (1/4")
Outhaul tackle with blocks	one	braid	12 mm (1/2")
Cunningham line	one	braid	16 mm (5/8")
Reefing pennants	two	low-stretch rope	14 mm (9/16")
Spinn. pole lift	two	braid	12 mm (1/2")
Spinn.halyard	two	braid	20 mm (3/4")
Genoa halyards	two	wire	8 mm (5/16")
Tail ends for above	two	braid	14 mm (9/16")
Main halyard	one	low-stretch rope	16 mm (5/8")
Staysail halyard	one	wire	6 mm (1/4")
Tail end for above	one	braid	12 mm (1/2")
Heavy boom vang tackle	one	braid	20 mm (3/4")
Lace line for reefing	three	braid	5 mm (7/32")

STANDARD EQUIPMENT

Owner's Manual with directions for use and maintenance, drawings and diagrams for main systems and handbooks for machinery and components.

Anchoring and Mooring

One Danforth 60 H anchor stowed in fo'c'sle.
One 75 lbs CQR mounted on stemhead.
One 40 lbs Danforth stowed as directed.
6 metres anchor chain 1/2".
Two 50 m plaited nylon anchor lines, diameter 25 mm (1").
Two chain links 1/2".
Two chain shackles.
Four mooring lines 20 m each, diameter 20 mm (3/4").
Two mooring lines 20 m each, diameter 16 mm (5/8").
Six airfenders with lines.
One boat hook of divided type, stowed in fo'c'sle.

Sailing gear

Six large snatch blocks
Two genoa fairlead cars.
Two sliders with stops.
Two spreacher blocks
Winch handles: two 10" lock-in, six double grip 10" lock-in
Bosun's chair.
Flag pole
Four cleat guards.
Elkhide cover on steering wheel.

Miscellaneous

One half model of hull.
1/2 litre gelcoat, hull colour.
1/4 litre gelcoat, boot top colour.
Catalyst for above.
Spanner for rudder shaft stuffing box
Safety belts for navigator and cook.
Sounding rods for fuel and water tanks.
Gas bottles delivered only if boat launched in Finland.
Curtains to Owner's choice for side windows and portholes.
Except for pipe berths forward, all berths are equipped with canvas leeboards and 12.5 cm (5") thick mattresses of Aeroflex type.
Textile covers with zippers, colour to owner's choice.
Engine spare parts.
Engine tool kit.
Electric spare parts.
Plumbing spare parts
One wooden cleat of each size.

SWAN 65 KETCH:

Length overall	19.68 m	(64.57')

Ketch rig:

I =	22.83 m	(74.90')	Fore triangle	84.2 m²	(906.3 sq.ft)
J =	7.38 m	(24.20')	Mainsail	57.6 m²	(619.6 sq.ft)
P =	20.64 m	(67.72')	150% genoa	126.3 m²	(1359 sq.ft)
E =	5.58 m	(18.30')	Spinnaker	303 m²	(3263 sq.ft)
PY =	13.73 m	(45.04')	Mizzen	25.3 m²	(272.0 sq.ft)
EY =	3.68 m	(12.08')	Miz. staysail	66.4 m²	(715 sq.ft)

Mizzen rig anchorage

The mast is stepped through deck onto a galvanized mast step. GRP brackets are laminated to hull for the stainless steel chain plates.

Deck fittings

Aluminium mast collar with eyes for lazy halyards.
Mizzen sheet winch Lewmar 40 A or equal.
Mizzen staysail sheet winch Lewmar 40 A or equal.

Mizzen mast

Of elliptical section, with tapered and welded masthead. Jointed at approximately half length, stainless tangs. Sail track riveted to mast. Tapered spreaders of aluminium alloy. Neoprene rubber mast boot with Dacron cover.
Mizzen halyard winch Lewmar 30 A or equal.
Mizzen staysail halyard winch Lewmar 40 A or equal.
One winch handle holder.

Mizzen boom

Of round section with outhaul tackle and topping lift led forward internally. Arrangements for slab reefing with lock-off cams for two reefing lines.

Mizzen standing rigging

Of solid Navtec Alpha rod with Series 500 fittings. Navtec rigging screws of bronze with toggles at lower end.

Mizzen running rigging

Description	Quantity	Material	Diameter
Mizzen halyard	1	Low-stretch rope	10 mm (3/8")
Tail end for above	1	braid	12 mm (1/2")
Mizzen staysail halyard	1	braid	12 mm (1/2")
Mizzen sheet	1	braid	12 mm (1/2")
Heavy mizzen staysail sheet	1	braid	12 mm (1/2")
Light mizzen staysail sheet	1	braid	8 mm (5/16")
Mizzen topping lift	1	wire	4 mm (5/32")

Tail end with blocks for above	1	braid	10 mm (3/8")
Mizzen foot outhaul	1	wire	5 mm (3/16")
Outhaul tackle with blocks	1	braid	12 mm (1/2")
Boom vang tackle	1	braid	10 mm (3/8")

Sailing gear

Bosun's chair
Two small snatch blocks