

POWERSAIL NEW ZEALAND LTD

High Speed under Power and Sail

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Powersail 15m Pocket Super Yacht SUMMARY SPECIFICATION

BOAT DATA

DIMENSIONS

Length Overall	15.35m	50'4"
Length Waterline	14.83m	48'7"
Maximum Beam	5.20m	17'0"
Max. Waterline Beam	3.73m	12'3"
Max. Freeboard	1.80m	5'11"
Keel Ballast	2300kg	5070lbs
Water Ballast per side	1480kg	3262lbs
Draft – Keel up	1.50m	5'
Draft – Keel down	3.30m	10'10"
Air Draft	24.63m	80'10"
Displacement (Light Ship)	15850kg	34933lbs
Displacement (Heavy Ship)	18250kg	40223lbs
Cabin Headroom (Minimum)	1.88m	6'2"
Genaker Pole extended	1m	3'4"

RIG DIMENSIONS

P	20.5m	67'3"
E	6.6m	21'8"
J	6.37m	20'11"
I	19.65m	64'5"

SAIL AREAS

Mainsail	79 sq.m	830 sq.ft.
Staysail/Storm Jib	35 sq.m.	368 sq.ft.
Outer Jib	65 sq.m.	680 sq.ft.
Gennaker	270 sq.m.	2835 sq.ft.

PREDICTED MOTORING PERFORMANCE

Main Engine Capacity	480hp	
Propeller Diameter	840mm	33 inches
Sprint Speed (Light ship)	18 knots	
Cruise Speed	15 knots	
Fuel Capacity	1470 litres	384 US gal.
Range at 15 Knots	400 Nautical Miles	
Range at 8 Knots	1200 Nautical Miles	



CONSTRUCTION – HULL AND DECKS

Advanced composite sandwich technology, utilising PVC foam core between structural layers of epoxy resin impregnated E-glass, reinforced where necessary with Carbon.

LIFTING KEEL

High Performance 2.3 tonne lead/antimony bulb, bolted to foil shaped composite fin.

The keel is raised and lowered by a 65mm dia. bore, flange mounted hydraulic cylinder hung off the top of the keel case. The cylinder locates down the centre of the keel fin attaching to a pin mounted across the bottom of the fin.

The keel system incorporates a hydraulic locking valve to prevent the keel falling in the event of a hydraulic hose failure. In addition, as an ultimate security backup, a nylon safety stop is incorporated limiting the vertical travel of the keel in the event of a mechanical fracture of the hydraulic cylinder rod. Twin 2.5" bore keel locking hydraulic cylinders operate two wedges between the inside of the vessels longitudinal girder and the centrecase resulting in the specially designed composite centrecase deflecting against the foil shaped fin locking it in any required vertical position.

The keel is operated via a sequential control unit from the starboard helm.

WATER BALLAST

Loading and Transfer valves: Three 50mm 2 port 24v DC electrically actuated glass filled polypropylene ball valves with position indicating switches.

One 50mm 3 port 24v DC electrically actuated polypropylene ball valve c/w position indicating switch.

Four Dwyer F7-HPS-21 polypropylene side mounted level switches.

One EP100 Enduro 230v 50Hz self priming pump and strainer 420 L/m

The loading, transfer and dumping of ballast water is undertaken from helm station via push button switches operating via a programmable logic controller.

Multiple ballast tank breather cowlings are fitted above each tank on vessel's deck edge.

COCKPIT

Twin helm stations with cantilevered outboard helmsman seating on coaming with backrest

Starboard helm station incorporates: 8.4" Radar/Plotter display; Autopilot Control, Max Power Bow Thruster control; Auto-Anchor Control; Main Engine LCD instrument display; Rudder toe out angle display and control; Control switches for Vang, Mainsheet, Anchor wash, Horn, Water ballast operation, Propulsion unit deployment, Propeller wash, waterproof VHF Radio.

Port helm station incorporates: Raymarine 6001 autopilot display Control switches for Vang, Mainsheet, Backstay, Water Ballast operation, Lifting keel, Horn, Generator stop/start, Navigation Lights, Decks Lights, Dodger Lights, Stern Lights, Compass Lights, Stern Arch Lights, Cockpit Lights, Anchor Lights, Propulsion Cavity air pump.

Electronic engine throttle control levers mounted on surface of starboard outboard seating

Engine ignition panel mounted on inside of starboard coaming adjacent to helm station.

Transverse American Walnut cockpit table hinges back on itself to reveal stainless steel grab rail on underside of table leaf

Transverse seat incorporates ventilated storage for twin 5kg LPG gas bottles on starboard side.

Large storage lockers, with gas stay powered opening lids, located behind port and starboard longitudinal seating.

Polycarbonate washboard for main companionway slides up from vertical recess in top of stairway

Rope storage lockers located beneath primary winches, accessed at rear of longitudinal seating

Removable sun-cover spanning from rear edge of hard dodger to stern arch

One Nilsson CHS800-SPL twin spool electric davit winch mounted under Transom arch for tender launching and retrieval

Waterproof padded squabs and backrests provided for longitudinal and transverse seating.



RUDDERS AND STEERING SYSTEM

Twin 900mm diameter polished stainless steel wheels coupled to Jefa chain sprocket steering head Jefa steering system connects via cable and sheaves to dual wire central quadrant which then connects via rigid aluminium link bars to 275mm long tiller arms mounted on spade rudders supported in Jefa composite self aligning top and bottom bearings

The patented anti-squat system for use when the vessel is motoring above its hull speed is controlled from the starboard helmstation. The toe out angle of the rudders is hydraulically adjusted by the helmsman to obtain the desired longitudinal trim of the vessel.

Toe out angle of rudders displayed on read-out at starboard helm station.

SAILING SYSTEMS

Two Andersen 58STE variable speed 24vDC electric self tailing stainless steel primary winches

Andersen 46ST manual winch mounted on mast for tensioning headsail halyards.

Andersen 10 Snubbing winch for controlling tension on mainsail halyard during furling

One Spinlock XX0812 main halyard rope clutch

Two Spinlock XCS0814/2B twin rope clutches for main furling line and No.1 Port jib sheet

One Spinlock XTS508 14/3B triple rope clutch for self tacking staysail sheet, staysail furling line, and

No.1 starboard Jib sheet

Four Spinlock XCS0814/1B single rope clutches for Genaker sheets and checkstays

Two Harken 1981 crossover blocks to enable interchange of lines to either primary winch.

Two Harken 6053 deck organizers

Four Harken HK1974 75mm standup blocks for checkstay and genaker sheets

Victor Compact Marine 2.5" bore Hydraulic cylinder mainsheet system operated from helm station to control single line mainsheet

One, Harken HK3155-3, 3m long Self-tacking track with twin Harken HK1928 cars fitted for operating either staysail or main jib when inner forestay not fitted.

Two, Harken B206-2, 3m long Main jib sheet tracks with adjustable Harken B1875AE cars to facilitate correct sheeting angle of headsail when partially furled.

One Harken Model HK7413.13 24v Electric headsail furling system for No 1 jib

One Bamar Rollgen 25 soft luff genaker furling system

Retractable 1.8m carbon fibre genaker pole extended by continuous control line operated from foredeck

SPARS AND RIGGING

7/8 fractional cutter rig, keel stepped, aluminium alloy, powder coat painted mast

1/19 ss wire standing rigging supporting 15 degree aft swept double spreader

Leisurefurl furling boom system with internal mainsheet system, aluminium powder coat painted

One Harken Model HYCV075320330 Hydraulic boom vang with air spring adjustable from helm station

Checkstays and staysail with integral flexible wire forestay are included for use on offshore passages.

Two Harken HYCS040160375 hydraulic backstay cylinders adjustable from helm station

SAILS

Mainsail, Doyle Stratis GPC performance cruising Vectran/carbon fibre aligned, with six full-length Blue Streak battens designed to fit Leisure Furl Boom.

Furling Outer Jib, Doyle Stratis Roller furling Vectran/carbon fibre aligned with three vertical leech battens with Acrylic UV Protection and Foam Luff.

Furling Staysail/Storm Jib, Doyle Dacron 9.7oz complete with integral flexible wire luff

Gennaker: Doyle Tri-radial design 1.5oz. to suit Rollgen furling system



SAILING AND NAVIGATIONAL INSTRUMENTATION

Two, Silva 102B/H Steering compasses located on aft facing edge of hard dodger
Two, Raymarine ST6001 Autopilot control with type 2, 24v, electric linear rudder drive
One E15023 Raymarine wireless autopilot remote for internal navigation station
One, M92650S Raymarine 2KW 24 Nautical Mile Radar mounted on radar arch
One, E80 8.4 inch Multi function display chart plotter mounted on starboard helmstation
One E32042 Raystar 125 12 Channel GPS receiver
One, Seatalk 2 Keyboard for operating chart plotter from internal navigation station
One, Raymarine ST60 Wind System, ST60 Speed System, Two ST60 Graphic Display System all mounted under side of spray dodger hardtop above main companionway
One, Interphase Colour Twinscope dual axis, forward looking sonar display located on port helmstation.
One, Raymarine ST60 Multi function repeater located at internal navigation station.

BOW THRUSTER

One, Max Power Model VPC81024VIP, fully retractable electric bow thruster.

COMMUNICATION AND ENTERTAINMENT EQUIPMENT

VHF Waterproof Radio mounted on starboard helmstation
One 26" LCD Flat screen TV/Chart plotter repeater in saloon
One CD/MP3/DVD Player and AM/FM Radio with dual cone and bi-cubed speakers for saloon with waterproof flush mount speakers for cockpit

DECK EQUIPMENT

Polished stainless steel tapered stanchions 850mm high connected by twin plastic sheathed wires.
Polished stainless steel double rail pulpit, pushpit and handrail down aft boarding stairways
Twin removable safety wires connect handrails across boarding platform and at top of stairways
Seven fairlead/cleats, two located on foredeck, two midships, two aft and one for tender mooring on middle of back of transverse seat.
Tek-dek synthetic teak decking on cockpit floor, boarding platform and stairways.
Recessed pull and fold out telescopic stainless steel swim ladder in pocket beneath boarding platform.
Three Weaver hatches WHO5OS 561mm sq. for forward en suite and saloon.
Two Weaver hatches WHO25S 456mm x 314mm for midships cabin and laundry
Two Weaver Hatches WHO45S 561mm x 431mm for spray dodger
One custom built Weaver hatch accesses forward sail locker for genaker stowage.
Two custom built Weaver opening portlights 800 x 400mm between saloon and cockpit
Four 4255mm x 180mm Weaver WHOO2S opening port lights for master cabin
Custom built opening port lights mounted in rear of saloon.
Stainless Steel grab rails mounted on sides of cabin top and underneath spray dodger

ANCHORING

One 22Kg "Manson Supreme" spade type, rigid shank, self launching stainless steel anchor with swivel and 60 metres of 10mm galvanized chain
One Nilsson V3000 24vDC 1350 kg pull electric powered anchor windlass with 4:1 geared manual backup
Auto anchor 500RCX, auto soft docking, windlass control and chain counter mounted at helm station
Two footswitches for foredeck manual up/down operation of anchor winch.
Polished stainless steel through-bow anchor self-launching assembly, with integral anchor wash nozzle.
Polished stainless steel bow roller assembly mounted on deck for use as anchor stop guide or tow line.



ENGINE INSTALLATION AND PROPULSION UNIT

One Yanmar 6LY3- ETP electronically managed 480hp @ 3300rpm turbo intercooler diesel engine driving through ZF Marine Model 280-1 hydraulic gearbox
Engine electronic instrument panel and controls mounted on starboard helmstation
One Powerflow fibre-glass waterlock silencer coupled to fibreglass under water exhaust outlet foil
One Powersail custom built hydraulically retractable spiral bevel geared Z drive propulsion unit fitted with AIR 840mm diameter carbon three bladed propeller.
Racor 900MA inline fuel filter/water separator for main engine
Engine room sound insulated with Barium rubber/50mm foam.

ANCILLARY MACHINERY

Open Ocean reverse osmosis 150L/hr watermaker system comprising 2hp 230v AC electric motor driven high pressure pump, 12vDC booster feed pump, two membrane filters in fibreglass tubular housings, Auto flush programmable timer and 12v solenoid valve, five micron filter assembly and flush mounted stainless steel control panel with product flow meter, back pressure regulator and gauge and product sample outlet valve.
One Bravo 12vDC air compressor with adjustable 2.2 – 4.4psi pressure control switch for pressurizing water out of propulsion unit hull cavity. This compressor can also be employed to inflate inflatable tender.
3 Dry Powder fire extinguishers mounted in forward stateroom, master staterooms and saloon.

230V AC ELECTRICS

Fischer Panda PMS6000i variable speed 6Kw diesel generator with full sound enclosure and remote stop/start stations located at cockpit helm station and galley
Mastervolt Model 02-40-22500 24v/2500W Inverter
Mastervolt Model 04-40-21000 Chagemaster 24v/100 amp Battery charger Input 90-265v 50/60Hz
230v AC system wired through isolator switches and distribution panels incorporating circuit breakers with indicating lights
Guest 'Shore Power' 50 Amp Galvanic isolator for electrical corrosion system when on shore power
Residual current device on shore power inlet for protecting against accidental electric shock
Flexible 20m 'shore power' cable with 32 amp plug in socket.

DC ELECTRICS

Main engine driven 175Amp 24v Large frame Alternator for charging vessels house battery bank
Ships 12v and 24v DC systems system wired through isolator switches and distribution panels incorporating circuit breakers with indicating lights
Four Toyama 12v 210 A/hr hybrid gel sealed batteries. (Total House bank 420 Amp Hours @ 24v)
One Toyama 12v 75 A/Hr hybrid gel sealed battery, (Electronic Bank)
One Endurant Crankmaster type CM1100 main engine and generator starting battery
Electronic and Engine start batteries can be linked for emergencies
Battery State Monitor indicates battery volts, current and amp hours on house and electronics batteries
Cathodic protection with 2Kg anode, mounted inside propulsion unit recess cavity.

PROGRAMMABLE LOGIC CONTROLLERS

3 Omron programmable controllers to sequentially control the operation of the water ballast, lifting keel and propulsion unit lowering and raising.



LIGHTING

External lighting as follows: Motoring and Sailing Navigation, Forward Deck Flood, Motoring, Anchor, Cockpit, Stern arch and dodger.

Lighting for internal areas: stainless steel flush bezel downlights with wall switches, individual reading lights above berths with integral switches,

Two Engine room lights and door actuated lights on hanging lockers

HYDRAULICS

One Brevini, custom built hydraulic power unit comprising:

20 litre hydraulic oil reservoir, complete with filler port, pressurized breather tube, suction and return filters, level gauge with low level switch, and high oil temperature switch.

Mounted on top of reservoir is a 3Kw 24vDC fan ventilated electric motor driven 16trL/m @ 160 bar max gear pump.

A 3Kw three phase electric motor driven pump at 9Ltr/m @ 200 bar max, driven via a single phase to three phase converter module.

Incorporated in the reservoir for manual operation in the event of loss of both AC and DC power is a 12cc/stroke double action hydraulic hand pump.

The DC powered pump operates all the ship's hydraulic functions if quiet ship operation is desired.

The AC powered pump is automatically selected when the genset is operating thus saving battery capacity.

All the hydraulic functions are controlled from the cockpit helmstations.

Mounted separately alongside the power unit are 6 manifold mounted control valves operating the following functions: Lifting keel, Keel lock, Boom vang, Mainsheet, Propeller deploy, Bomb door, Backstay and Rudder trim.

Control valves feature a manual override rotary knob control in case of malfunction of the solenoid.

Included in the above manifold are the following:

3 Solenoid operated check and flow control valves to release vang tension, backstay tension and keel lowering.

High flow solenoid check valve to release mainsheet tension

Separate manifold has pilot check valve and low pressure release valve plus pressure switch for keel lock cylinders.

Double counter-balance valve with pad mounting to bolt directly to propeller cylinder.

Double counter-balance valve line mounted for bomb door cylinder

Double pilot check valve for rudder trim cylinder

AIR CONDITIONING AND VENTILATION

Three Marvair SeaMach 230v 50Hz self contained heating/cooling , marine air conditioning units each with soundproof cover. A digital programmable micro-processor control panel and display provides temperature control, auto, and six manual fan setting as well as a dehumidification mode to control the following individual zones:

Forward stateroom and midship cabin - 7,000 BTU

Saloon and Galley - 16,000 BTU

Aft Master stateroom - 7,000 BTU

REFRIGERATION

One Isotherm CR85ASU 24vDC 85 litre front opening refrigerator with integral freezer compartment

One Isotherm CR130ASU 130 litre front opening refrigerator with integral freezer compartment

One Isotherm CR90 90SP litre front opening freezer with salt water cooled condenser



TANKAGE

One Isotemp 50L Hot fresh water cylinder 230v 50Hz powered and heated by cooling water of genset.
Fresh water: total 523 litres in two integral tanks port and starboard
Black Water: total 120 litres in one integral tank.
Grey water: total 340 litres in one integral tank
Fuel: total 1470 litres in two integral tanks port, starboard.
Five BEP ultrasonic tank level sensors for fuel, water, grey and black tanks with multi input digital read out indicator located on main electrical distribution panel

EN SUITES AND SHOWERS

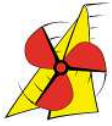
Two, Sanimarine Model 31, 24vDC electrically operated fresh water flushing, macerating marine toilets plumbed to holding tank
Custom built odour elimination extractor fan system connected to the bowl of each toilet
Acrylic laminate topped vanity unit incorporating wash hand basin
Towel rails, toothbrush and glass holder, toilet roll holder, wall mirror
Opening port light and fixed skylight provides light and ventilation
Hot and cold separate shower compartment with hinged door and venting port light in both en suites
Liquid soap dispensers mounted in vanity tops.
Hot and cold shower in recessed locker in transom face for after-swim rinsing on boarding platform

GALLEY

Front opening Pantry 1700mm high x 760mm wide with seven slide out storage shelves
Five under bench drawers 300mm wide for general storage
Top opening dinnerware and cup storage compartment built into rear of bench
Sliding door accessed storage compartment at rear of bench for tea and coffee, sugar etc
Two cupboards and four drawers built into rear of saloon seating accessed from galley.
Fisher and Paykel DS603SS single drawer dishwasher with EZKleen brushed stainless steel finish
Sharp stainless steel cased 800watt microwave
Lamet stainless steel gimbale four burner gas cook top complete with integral gas oven with grill
Combination control panel for gas detector and switching gas shut off valve mounted on LPG cylinder
Two Front opening electric refrigerators with freezer compartments mounted one on top of the other
Front opening under bench Freezer with pull out drawers.
Stainless steel 350 x 330mm sink with drainer sink incorporating Whirlaway A391 Waste disposal unit feeding to grey water tank
Under bench rubbish bin
Detergent dispenser mounted in bench top adjacent to sink
Rocksolid Synthetic granite bench top with generous work space and American walnut fiddled edges
Large cutlery Drawer mounted above dishwasher.
Large storage drawer for pots and pans located beneath dishwasher.
Under bench pull-out drinks and glass storage cabinet

LAUNDRY

Full size stainless steel laundry tub fitted into bench top with hot and cold faucet
Fisher and Paykel GW512 top loading domestic washing machine 230v 50Hz
Simpson 39S555I 230v 50Hz front loading tumble clothes dryer
Watermaker stainless steel control panel fitted with product flow meter, back pressure regulator and product sample tap located above laundry tub.



INTERIOR

The interior will be outfitted to industry accepted pleasure yacht standards

In general the following materials and finishes will be used:

Foam cored glass sheathed construction on all interior furniture, partitions, doors, tables, cabinetry, whenever possible to minimise weight

Selected and matched timber and timber veneers, for panel frames and solid moldings

Bulkhead surfaces will be a combination of clear finished timber veneer and upholstered fabric.

All timber or plywood will be appropriately sealed to prevent the ingress of moisture.

Master and forward Staterooms, Saloon and midships cabin will be carpeted

Main companionway stairs are to be finished in timber veneer.

Main companionway landing, stairs, galley and laundry soles are to be high quality non skid vinyl

The head compartments are to be fully faired and finished in semi-gloss lacquer

All systems, appliances, electrical and plumbing connections will be concealed within linings and fixed joinery work maintaining suitable access for maintenance of such items.

All cabinet doors and drawers are to be positively latched to prevent opening when at sea.

Master stateroom berth is to have securely fastened eyebolts above it for the attachment of lee cloths

PUMPS

Four 50880-1100 24vDC Jabsco diaphragm sump pumps (aft and fwd shower, aft en-suite, stern garage)

One 52700-0094 24vDC Jabsco Par-max anchor wash and fire pump

Two 50890-1100 24vDC Jabsco diaphragm waste pumps for black and grey water tank discharge

Two 880-300A 24vDC Jabsco dual pump fresh water pressure system with accumulator tank

Two 3700-16A-24vDC Jabsco Rule 3700gph submersible bilge pumps (engine room and midships)

One 29270-0000 Jabsco Amazon manual bilge pump mounted inside of coaming on port side of cockpit

Three March 230v AC centrifugal pumps for salt water cooling of air conditioning systems

One Model F38B-19 Part No: 10-24727-02 24vDC Johnson flexible impeller diesel transfer pump

STRUCTURAL CLASSIFICATION AND CERTIFICATION

The Powersail 15m's hull and deck structures have been designed using the American Bureau of Shipping guidelines for the building and classing of Offshore race yachts 1987 with additional safety factors included to account for high speed operation of the vessel during motoring.

The Powersail 15m's structural design of hull and deck carries Germanischer Lloyd Certification.

MANUALS

One bound copy A4 size and one electronic set on CD of the as built drawings and documentation are to be supplied to the owner, covering the following:

Detailed circuit and connection diagrams for all electrical systems, showing cable sizes, normal and emergency load fuses and circuit breaker current ratings.

Switchboard and control panel details

Equipment list

Spare parts list

Test and commissioning records

Operating and maintenance instructions.

NOTE: THE DESIGNER RESERVES THE RIGHT TO ALTER THE ABOVE SPECIFICATIONS IF NECESSARY