



## STANDARD SPECIFICATION



**Specifications<sup>(A)</sup>**  
**BRAVO 90 MOTOR YACHT**  
by  
**Cheoy Lee Shipyards**

Length Overall	90' 11"	27.71m
Length Waterline	80' 7"	24.56m
Beam	21' 1"	6.43m
Draft	5' 5"	1.65m
Displacement (full load - est.)	156,000 lbs	70,800 kg
Fuel <sup>(B)</sup>	3,000 USG	11,360 ltr
Water <sup>(B)</sup>	650 USG	2,460 ltr
Holding Tank <sup>(B)</sup>	250 USG	950 ltr
Gray water Tank <sup>(B)</sup>	250 USG	950 ltr
Engines	Twin CATERPILLAR C18 ACERT, 1,136 bhp each	
Generators	Twin KOHLER 32 kW, 60 Hz	
Naval Architect <sup>(D)</sup>	Tom Fexas Yacht Design	

### STANDARD EQUIPMENT

#### Construction

- Hull, deck and superstructure of DIVINYCELL or equivalent cored fiberglass
- Extensive use of bi-axial and multi-axial E-glass reinforcement

- Integral fiberglass fuel, fresh water and holding tanks, with baffles and cleaning manholes
- Fiberglass rub rail with stainless steel capping
- Tinted (except pilothouse), tempered glass windows, utilizing high strength, adhesion style window system
- ALEXSEAL exterior finish (Off White with Black trim)
- ALEXSEAL non-skid exterior decks
- Vinylester hull laminates and epoxy barrier system applied to hull bottom, with five-year structural and anti-osmosis warranty
- Two coats of antifoul bottom paint

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### **Deck**

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- All hardware chrome on brass, 316 stainless steel or anodized/painted aluminum
- Vertical anchor windlass, MAXWELL VWC 4000 (24vDC, 4000 lb.) with  $\frac{3}{8}$ " chain cathead and rope capstan, deck pipe and chain stopper. Local controls with remote at both helm stations
- 175 amp-hour battery, 24vDC, stored in forward stateroom for windlass service
- 110 lb. BRUCE anchor stowed on roller assembly on bow
- 30 fathoms of  $\frac{3}{8}$ " high test galvanized chain
- Walkway lighting on side deck overhangs
- Step lights for moulded stairs
- Fresh water anchor wash down
- Twin trumpet air horn
- Stainless steel bollards (8)
- Stainless steel fairleads
- Stainless steel rails (1.25") with mid rail forward
- Stainless steel burgee flag staff on bow rail
- Navigation lights
- Flag staff
- Boarding gates port and starboard
- Step plates located at deck entrances
- Scuppers draining to boot top
- Painted aluminium foredeck hatch for chain locker access

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### **Electrical Systems**

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- 220/110vAC, 60 cycle and 24/12vDC electrical panels, main panels in engine room and sub-panels throughout vessel
- ACR 100 searchlight with dual station remote control
- LED lighting throughout for interior, exterior, rope, cabinet, navigation, step and engine room lights
- Overhead light fixtures throughout with dimmers in specified areas.
- Valance lights and floor rope lighting with control switches
- Wardrobe lights, automatic
- Emergency lights, automatic at loss of primary lighting system, operating from an independent DC power supply. Removable emergency flashlights in each stateroom
- 110vAC receptacles in galley, heads and exterior are protected with GFI safety breakers

- Two 24vDC 210 amp-hour battery banks for engine starting and ship service
- Emergency engine start battery parallel system, dual station
- Two 12vDC 175 amp-hour battery banks for generator starting
- 12vDC 20 amp battery charger
- One 24vDC 210 amp-hour gel battery bank, with 24vDC 60 amp battery charger and 50 amp VANNER 12vDC power supply. 12 spare 24/12vDC circuit breakers in sub-panel for electronic use.
- GLENDINNING Cablemaster shore power cable retrieval system, for 230vAC 100 amp service, with 100 ft. cable
- Shore telephone inlet, with 100 ft. cable located in transom locker
- Shore cable television inlet, with 100 ft. cable located in transom locker
- Copper bonding system, connecting all through hull fittings and major metal components to exterior hull zinc anodes
- Isolation transformer (25 kVA), for shore power system
- Dynaplate grounding plate and strap to pilothouse and flybridge ground terminal boards
- Voltmeters and ammeters for supply circuits
- Generating set/shore power selector switches and shore power polarity indicator
- LCD touch screen control/alarm monitoring system with audible and visual signals displayed on Programmable Logic Controller (PLC) located in pilothouse for generator low oil pressure, generator high temperature, high bilge level, and smoke detectors (engine room, staterooms, galley, salon). Security alarm sensors on all doors and hatches. Navigation light control and monitoring.

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### **Engine Room/Machinery**

- Twin CATERPILLAR C18 ACERT (1,136 bhp each) diesel engines, fresh water cooled, electronic injection/governor, reduction gearboxes, 24vDC starting
- Local mounted start/stop instrument panels for main engines and generators
- Under water exhausts, with bypass and fiberglass mufflers
- Twin KOHLER generators, 32 kW with hydrolastic mounts (one with sound enclosure)
- 220vAC reverse cycle chilled water air conditioning (except engine room)
- CENTEK combo generator mufflers, air/water separator type, with hull side exhaust
- Engineered engine room ventilating system, with intake blowers taking air in via air/water separator filters on hull side
- Fire protection consisting of manually and automatically actuated FM200 fire extinguisher system. Upon system actuation audio/visual alarms sound, blowers are shut down and hull side ventilation dampers are closed
- NAIAD 12", 38 hp hydraulic bow thruster and stabilizer system with 7.5' fins and Multisea dual station controls
- Power hydraulic steering system, including valves for optional autopilot installation
- Engine driven emergency bilge pumping system for engine room bilges
- REVERSO lube oil change system with manifold and hoses to all engines and gearboxes
- RACOR fuel filters for the main engines, manifolded three per engine to allow filter change underway
- RACOR filters for generators, one for each generator

- Two 30 gallon water heaters, dual element, quick recovery type
- HEADHUNTER Mach 5 water pump and accumulator tank for fresh water pressure system
- Cartridge style whole system water filter unit
- Sink with fresh water hose bib
- Automatic sump pumps
- Automatic bilge pumps, for each separate compartment in the vessel
- Fuel management system, consisting of fuel shut-off valves, fuel transfer pump with meter system and selector manifold
- HART Tank Tender gauges for fuel, fresh water, black water and grey water tanks, pneumatic pump type
- Black water tank level indicator and high level alarm
- Black water system with Y-valve selector to allow direct discharge overboard or into holding tank. Macerator pump for pump out of holding tank direct over board, or to vented deck fitting for shore side disposal
- GROCO bronze raw water strainers, all engines and sea water pump intakes
- Seacocks on all through hull fittings below the waterline
- Fiberglass battery boxes
- Battery condition indicator
- Engineered sound vibration and noise attenuation system for engine room spaces consisting of lead tile sound barriers and mylar faced synthetic lead-foam insulation covered with white painted aluminum perforated sheeting. Custom sound mounts for main engines, generators, engine room stanchions, head pumps/motors, air conditioning compressors and sea water cooling pumps
- Drip trays under engines
- SEASHAFT 22 or equal propeller shafts
- Stainless steel rudder blades
- Nibral propeller shaft struts
- Nibral propellers, 5 blade, class S, dynamically balanced
- DURAMAX cutlass rubber stern and rudder bearings
- PYI packless shaft seals
- Overhead lights
- Smoke detectors
- 110vAC outlets (2), GFI type
- Watertight entrance door from aft swim step to crew area
- Watertight emergency escape hatch from engine room to master stateroom

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### **Pilothouse**

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- TELEFLEX/HYNAUTIC hydraulic power steering
- MATHERS MC2000-2 electronic engine controls
- Instrument and electronic console
- Engine instrumentation and alarms
- Custom stainless steel steering wheel
- L-shaped breakfast nook settee and CORIAN topped table
- Programmable Logic Control panel (see Electrical Systems)
- 110vAC duplex outlets (2)
- Remote control for anchor windlass

- Windshield wipers with fresh water wash system
- Weathertight fiberglass pantograph door to port side deck
- Red night light and switch

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### **Flybridge**

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- TELEFLEX/HYNAUTIC hydraulic dual lever engine controls
- MATHERS MC2000-2 electronic engine controls
- Engine instrumentation and alarms
- Fiberglass instrument and electronics console
- Custom stainless steel steering wheel
- Stainless steel framed acrylic windscreen
- Stainless steel rails around sides of aft deck
- Stainless steel rails around aft hatch/ladder
- Electric davit, 1,700 lb., 110vAC with standpipe and power rotation
- Fiberglass radar arch with integral fiberglass hardtop. Flush mounted lighting, including red night light
- STIDD helmsman's seats (2) with vinyl covers
- Fiberglass L-shaped lounge seat with upholstered cushions
- Painted fiberglass table
- Scuppers and drainage system for water to lower deck
- Lightning arrester system
- Hatch and molded steps to aft deck, with stainless steel rails and gate
- Painted fiberglass locker with bar top, sink with cold water faucet, fresh water wash down hose bib, U-LINE model 29 icemaker/combo refrigerator unit and space for optional JENNAIRE barbecue grill
- 110vAC outlets (3), GFI type
- Stainless steel framed tempered glass sliding hatch covering staircase to salon
- ACR 100 quartz halogen search light, remote dual station control
- Twin trumpet air horn

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### **Salon and Deck Head**

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- Bar with U-LINE model 75 refrigerator/icemaker combo unit and liquor storage
- Circular staircase up to flybridge and down to staterooms
- Telephone jack
- Smoke detector
- Full height entertainment cabinet, no units
- Ceiling lights with control/dimmer switches
- Valance lights and floor lighting
- Emergency lighting
- Settee and cocktail table
- Wooden dining table
- Dining buffet unit with overhead cabinets
- Day head with HEADHUNTER electric head (fresh water flush), faucets and bath accessories, stone<sup>(C)</sup> counter top with sink. Exhaust blower in head, sliding pocket door
- Fixed adhesion style, tinted, tempered windows

- 110vAC duplex outlets (5) in salon, one GFI type in head
- Stainless steel framed, tempered glass sliding door to aft deck

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### **Galley**

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- Stainless steel range/oven unit
- Stainless steel microwave oven with ventilation hood
- Stainless steel side-by-side refrigerator/freezer with ice dispenser
- Stainless steel dishwasher
- Stainless steel double sink
- Garbage disposal
- Faucet with removable sprayer handle
- Cabinets, upper and lower
- Stone<sup>(C)</sup> counter top
- Smoke detector
- Overhead lights
- Under cabinet lights
- 110vAC outlets (4), GFI type

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### **Master Stateroom and Head**

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- King berth, with storage drawers under
- Stainless steel framed opening ports with screens and hold open arms
- Over the berth soffit with indirect lighting on dimmer control
- Two night tables
- Telephone jack
- Smoke detector
- Small safe
- Emergency escape through watertight hatch, from head to engine room spaces
- Walk-in closet, cedar lined on back surfaces
- Settee
- Vanity unit with mirror
- Storage cabinets
- Ceiling lights with control/dimmer switch
- Valance lights and floor lights
- Two reading lights
- Mirror on closet door
- HEADHUNTER electric head (fresh water flush)
- Jacuzzi type tub
- Stall shower with frameless glass enclosure including hinged door
- Faucets and bath accessories
- Stone<sup>(C)</sup> counter top with two sinks
- Mirrored medicine cabinets (2)
- Exhaust blower
- 110vAC duplex outlets (3) in stateroom, two GFI type in head

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### **Port Guest Stateroom and Head**

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- Queen island berth with storage drawers under

- Two night stands
- Telephone jack
- Smoke detector
- Wardrobe, cedar lined on back surface with mirror on door
- Ceiling lights
- Valance and floor lights
- Two reading lights
- Stainless steel framed opening port with screen and hold open arm
- Stall shower
- Mirrored medicine cabinet
- Faucets and bath accessories
- Stone<sup>(C)</sup> counter top with sink
- Exhaust blower
- HEADHUNTER electric head (fresh water flush)
- 110vAC duplex outlets (2) in stateroom, one GFI type in head

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**Starboard Guest Stateroom and Head**

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- Twin lower berths with storage drawers under
- Entertainment cabinet, no units
- Telephone jack
- Smoke detector
- Wardrobe, cedar lined on back surface with mirror on door
- Ceiling lights
- Valance and floor lights
- Two reading lights
- Stainless steel framed opening port with screen and hold open arm
- HEADHUNTER electric head (fresh water flush)
- Stall shower
- Faucets and bath accessories
- Stone<sup>(C)</sup> counter top with sink
- Mirrored medicine cabinet
- Exhaust blower
- 110vAC duplex outlets (2) in stateroom, one GFI type in head

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**Forward VIP Stateroom and Head**

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- Queen berth with storage drawers under
- Night stand
- Vanity unit with mirror
- Ceiling lights
- Valance and floor lights
- Two reading lights
- Smoke detector
- Wardrobe cedar lined on back surface with mirror on door
- Entertainment cabinet, no units
- Stainless steel framed ventilation/escape hatch
- HEADHUNTER electric head (fresh water flush)

- Telephone jack
- Stall shower
- Faucets and bath accessories
- Stone<sup>(C)</sup> counter top with sink
- Mirrored medicine cabinet
- Exhaust blower
- 110vAC duplex outlet (1) in stateroom, one GFI type in head

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**Crew Stateroom and Head Aft**

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- Upper and lower berths (1 each)
- Smoke detector
- Wardrobe cedar lined on back surface
- Ceiling lights
- Two reading lights
- Telephone jack
- AMTICO flooring
- 110vAC duplex outlet (1) in stateroom, one GFI type in head
- MAYTAG 27” stack up washer/dryer
- Desk with 2 shelves above
- GALLEY MAID electric head (fresh water flush)
- Stall shower
- CORIAN counter top with sink
- Mirrored medicine cabinet
- Faucets and bath accessories
- Exhaust blower

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**Forward Lower Foyer**

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- Storage cabinets
- Stainless steel framed tinted, tempered glass opening port
- Ceiling lights
- AMTICO flooring
- Space for optional washer/dryer

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**Aft Deck**

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- Molded fiberglass steps to flybridge
- Painted non-skid deck
- Fiberglass U-shaped seat with upholstered cushions
- Painted fiberglass pedestal mounted table
- Painted fiberglass storage cabinet with fresh water wash down hose bib inside
- Stainless steel gate to cockpit
- Stairs to cockpit with step lights
- Overhead lights
- Storage cabinet for optional fridge/icemaker

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**Cockpit**

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- Painted non-skid deck and swim platform

- Stainless steel swim ladder
- Fresh water shower, hot and cold
- Watertight door to crew quarters
- Locker for shore services, shore power, TV and telephone inlets
- Transom door for access to built-in swim platform
- Hinged cleats port and starboard (not for towing)
- Under deck storage

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**Owner's Documentation**

- Vessel supplied with list of major equipment, serial numbers and manufacturers' contact details. Manufacturer equipment manuals will be supplied as available. Drawings for major systems, safety and docking plans are supplied on CD

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**Optional Equipment**

- CATERPILLAR C32 ACERT main engines, 1,700bhp each
- Electronics
- RITCHIE 5" compass with light, dimmer and cover
- Telephone/intercom system
- Flybridge barbecue grill
- Dinghy, chocks and backing plates in deck
- Life raft and chocks
- Soft goods decor, such as drapes, valance boards, Roman shades, bed treatments
- Loose furniture, chairs and stools
- Audio/visual systems
- Foredeck sun lounges, canvas covers
- Remote plug-in stations for electronic engine controls
- Full raised pilothouse
- Integral chain counter on windlass controller
- Stern thruster
- Jacuzzi on flybridge
- Second washer/dryer in VIP stateroom foyer

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**NOTES TO SPECIFICATIONS**

- (A) Right is reserved to make changes at any time, without notice, to prices, materials, specifications, and equipment. Drawings may show optional items. Where these specifications differ from drawings, the specifications shall take precedence.
- (B) Capacities are estimated to be the total of all constituent tanks  $\pm 5\%$ . Usable capacities will vary depending upon conditions.
- (C) References to stone include a choice of stone or AVONITE from shipyard's standard range.
- (D) Applicable to hull form only. Cheoy Lee prepared these specifications independent of the naval architect, relying solely on its own marketing data.