

ABM's
ENGINE ROOM

Volvo Penta's Forgotten Power Delight

Edited, Notes & A Promise by PW

“An advanced V-6 petrol engine for today's powerboats. With 4.3 litre displacement and six cylinders, this engine provides efficient power and fuel economy combined with smooth operation and driving comfort.

The computer controlled fuel management system produces maximum power, reduced emissions and ultimate reliability, enhancing the entire boating experience. This modern engine is a perfect match for the twin-propeller Duoprop drive.”

So reads the script for the Volvo V6 sterndrive, a forgotten marine power package that is, on a horsepower:dollar ratio, one of the best value engine systems in Australia - and by a big margin, too.

The advanced fuel management system combines sophisticated engine management strategies with proven fuel and control system components to produce better fuel mileage, increased reliability and lower emissions. All contribute to world-class boating performance.

The following notes are really directed at plate and composite one-off and DIY builders, because Whitley Cruisers in Melbourne is the only national boat builder fitting these engines - and even they are struggling to convince their own dealers of the many advantages of an inboard mounted engine unit.

Sadly, today's consumer is getting short shrift in the engine choices department, so here's a promise: in a couple of weeks, we'll complete a major review of alternative engine and drive systems, and this will

include re-visiting the sterndrive option, and identifying the many advantages they offer; advantages that go far beyond the fact that they deliver much cheaper horsepower than almost all the new hi-tech 4-stroke outboards - and that is to ignore the fact that engines like these are themselves sophisticated 4-stroke fuel injected engines.

Volvo's Technical V6 Manifest

The Multi Port Fuel Injection system is monitored and controlled by an engine computer (ECM), giving the following advantages: more responsive and smoother acceleration, excellent turnkey starts in all weather conditions, smooth reliable idling, reduced fuel consumption, and improved control of emissions.

Additional system features include: engine knock control, overspeed protection, rpm reduction to protect the engine during low oil pressure or high engine temperature situations, altitude compensation, and self-diagnostic capabilities.

Robust, Reliable

A 4.3 litre petrol engine in a V-6 configuration, featuring a cast iron block and cylinder heads for durability and corrosion resistance. Critical engine components are designed and constructed for the rigors of the marine environment.

Seawater pump, oil filter, fuel filter, and coolant tank are located on the front of the engine for easy service access. Service points are color coded.

Exhaust system developed for the marine environment, featuring EDP treated manifolds and risers for increased longevity and maximized flow for increased power.

The electrical system features a 12 V corrosion-protected marine electrical system which meets U.S. Coast Guard requirements. The engine is wired for easy plug-in connection to the instrument panel. A 75 Amp alternator is standard.

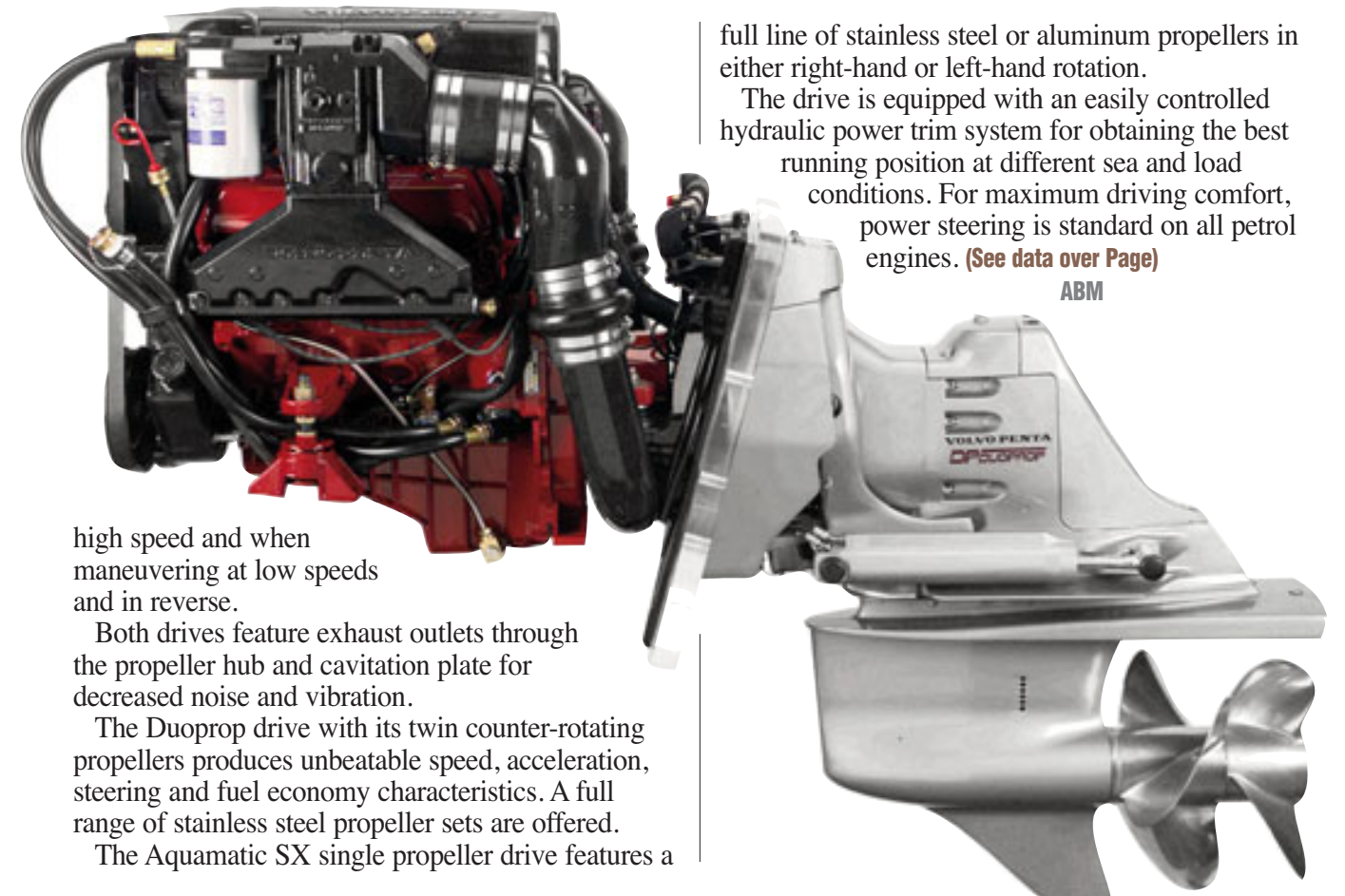
The engine electrical system, power trim system, and other electrical components are protected by conveniently located and labeled circuit breakers or fuses.

Duoprop™ or Aquamatic™ stern-drive

The drives are equipped with a cone clutch for easy, smooth shifting, pattern-matched spiral bevel gears for optimum strength and minimum gear noise, and a break-away shaft coupling to minimize costly drive repairs.

State of the art corrosion protection is achieved with a 23 step paint process, the drive is further protected by sacrificial anodes. Active Corrosion Protection is available as an option.

The hydrodynamic design of the lower drive housing ensures excellent course stability both at



full line of stainless steel or aluminum propellers in either right-hand or left-hand rotation.

The drive is equipped with an easily controlled hydraulic power trim system for obtaining the best running position at different sea and load conditions. For maximum driving comfort, power steering is standard on all petrol engines. (See data over Page)

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high speed and when maneuvering at low speeds and in reverse.

Both drives feature exhaust outlets through the propeller hub and cavitation plate for decreased noise and vibration.

The Duoprop drive with its twin counter-rotating propellers produces unbeatable speed, acceleration, steering and fuel economy characteristics. A full range of stainless steel propeller sets are offered.

The Aquamatic SX single propeller drive features a

Technical Data Volvo V6 225hp (petrol)

Engine designation	V6-225
Propeller shaft power kW (hp)	168kW (225hp)
Max. engine speed, rpm	4800
Displacement, L (in ³)	4.3 (262)
Number of cylinders	V-6
Fuel system	MPI
Bore/stroke, mm	101.6/88.4mm (4.00/3.48in)
Compression ratio	9.4:1
Volvo Penta Duoprop drive	DPS
Ratio	1.95:1, 2.14:1, 2.32:1
Volvo Penta Aquamatic drive	SX
Ratio	1.60:1, 1.66:1, 1.79:1, 1.89:1*, 1.97:1*
Dry weight engine, transom shield and drive, kg (lb)	417kg (919)
Dimensions (not for installation):	
Engine length, inside transom, mm (in)	825 (32.5)
Engine width, mm (in.)	758 (29.8)
Height above crankshaft, mm (in.)	567 (22.4)
Height below crankshaft, mm (in.)	222 (8.8)

Volvo V6-225hp . . .

Engine and block

- Cylinder block and cylinder heads made of cast iron for good corrosion resistance
- Pistons with two compression rings and one oil scraper ring
- Four-bearing crankshaft
- Valve train consisting of single camshaft, hydraulic valve lifters, push rods and two overhead valves per cylinder
- Color-coded service points

Engine mounting

- Four adjustable rubber mounts, one on each side of the engine, and two between transom shield assembly and engine

Lubrication system

- Pressure lubrication system with full-flow environmentally friendly paper element oil filter
- Remote oil filter for easy service access

Fuel system

- Multi Port Fuel Injection system
- High capacity water separating fuel filter
- Two electric fuel pumps
- Flexible fuel lines

Inlet and exhaust system

- Integral Air Fuel Module intake manifold
- Flame arrester
- Closed crankcase ventilation
- Seawater-cooled exhaust manifolds and risers made of cast iron with EDP coating
- Complete exhaust line with pipe and bellows for exhaust outlet through the drive

Cooling system

- Thermostatically controlled seawater cooling
- Freshwater cooling available as an accessory
- Crank mounted seawater pump
- Serpentine belt with spring tensioner
- Flush fitting - hose connection to flush cooling system with freshwater

Electrical system

- 12V corrosion-protected electrical system
- 14-pin engine to boat connection
- ECM unit ensures constant optimum performance with diagnostic capability
- Audible alarm kit - alerts the operator to low engine oil pressure or high coolant or exhaust temperatures
- Charging regulator with battery sensor for voltage drop compensation
- 75 A alternator with internal transistorized voltage regulator and internal fan
- Electronic Spark Timing ignition system
- Platinum tipped spark plugs
- Sealed electrical distribution center containing all fuses, relays, and circuit breakers
- 40 A resettable trim system circuit breaker
- 20 A fuse for protection of the fuel pumps, 15 A fuse for the fuel injection system

Steering system

- Serpentine belt driving all engine pulleys ensures reliability and provides reduced noise
- Belt driven power steering pump
- Oil cooler for power steering

Instruments and controls

- Supports NMEA 2000 engine communication
- Complete instrument panel available including: tachometer, temperature gauge, oil pressure gauge, voltmeter, key switch, instrument light switch
- Wiring harness from engine to instrument panel
- Digital trim gauge as an accessory
- Full line of modern, ergonomic shift and throttle remote controls specifically designed for Volvo Penta stemdrive engines.

Aquamatic DPS and SX stemdrive

- Latest generation of sterndrives from the company that invented and introduced the concept
- Cone clutch; smooth, easy shifting
- Coolant water intake for the engine located at the lower part of the drive
- Pattern-matched spiral bevel gears
- Exhaust outlets through propeller hub and cavitation plate
- Break-away coupling between the upper and lower driveshafts reduces impact damage
- Standard tilt specification 52° (42° and 32° available as option on engine order)
- The drive can be turned 28° in each direction.
- Built-in kick-up function in trim system to reduce damage if drive impacts an underwater object
- 23 step paint process
- Hydrodynamic lower unit for maximized control and speed
- Active corrosion protection as an option
- Easy to access drive anode placed on the back of the cavitation plate
- Duoprop; twin, counter-rotating propellers for improved performance and handling; helical propeller splines for reduced stress and corrosion (reduces stuck propellers)
- SX with either right-hand or left-hand rotation

Power Trim

- Electrically operated hydraulic system with trim gauge for best driving comfort
- High capacity trim pump integrated with transom shield to ease installation and save space in engine compartment

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