

# VOLVO PENTA IPS 500G/550G INBOARD PERFORMANCE SYSTEM – GASOLINE

280/298 kW (375/400 hp) crankshaft power acc. to ISO 8665

## A revolutionary marine propulsion system

There is an ever-increasing demand for higher speed, improved handling, enhanced onboard comfort and reduced emissions. Buyers of sports cruisers, sport fishing, flybridge yachts and other craft with traditional inboard propulsion want speeds well above 30 knots. But this is where the efficiency of conventional shaft installations really starts to drop.

Something new is required to combine performance with driving pleasure, onboard comfort and reliability with good environmental properties.



### Overview

The Volvo Penta IPS propulsion system is now available with an 8.1 Liter gasoline engine at either a 500 or 550 hp performance level, suitable for 30 to 45 feet planing hulls. The higher output IPS550G is equipped with catalytic converters and meet the most stringent emission requirements.

Volvo Penta IPS is setting a new standard:

- Much improved efficiency, higher top speed, reduced fuel consumption/extended range, and great acceleration
- Low-speed maneuvering is easier than ever before, and high speed handling is a dream
- Onboard comfort is greatly enhanced thanks to much lower levels of sound and vibrations
- Installation is greatly simplified
- More space available for accommodation
- Improved safety and quality
- Ease of service, and a complete system supported by one supplier
- Improved overall environmental care

All this is combined with the usual benefits of a traditional inboard such as a robust, high strength construction, excellent corrosion resistance and the propellers under the hull.

### Efficiency and performance

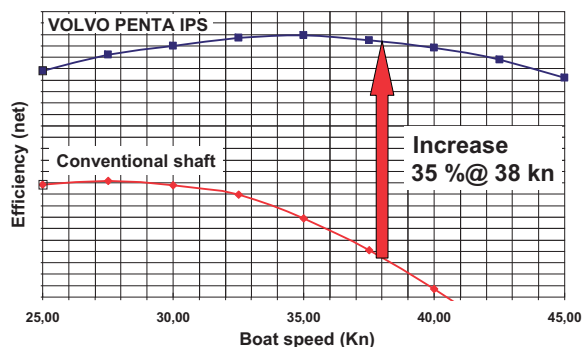
Around 30 knots, the conventional propeller shaft system starts to lose efficiency (see the lower curve in below dia-

gram). Low efficiency means that more installed power is needed, which, in turn, results in increased fuel consumption, reduced cruising range and more exhaust emissions. The Volvo Penta IPS offers a revolutionary solution to this, with outstanding efficiency over the whole speed range 25–45 knots (see the upper curve in below diagram).

Volvo Penta IPS has as much as 35% better efficiency at 38 knots. This means that engine power is transmitted much more efficiently into the water resulting in:

- Increased speed
- Reduced fuel consumption
- Faster acceleration
- Less emissions per nautical mile

Because of this superior efficiency, the product designations 500/550 communicate performance level compared to a conventional shaft installation.



**VOLVO  
PENTA**

# VOLVO PENTA IPS 500G/550G

## Why is Volvo Penta IPS so superior?

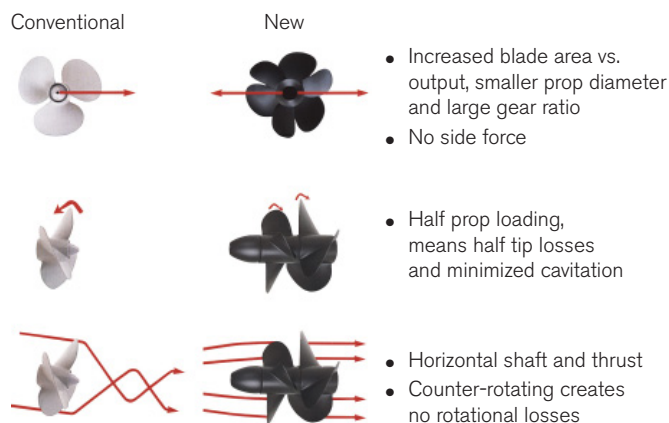
Part of the improvement in efficiency is due to the fact that the system has a modern engine with electronic fuel injection and electronic control for faster engine response and safe starting in all weather, but almost all is due to the propulsion unit. If we look at what happens beneath the surface, we get the explanation:

- Volvo Penta IPS patented propellers means increased blade area, half the load on each propeller, and smaller propeller diameter with minimized tip losses and cavitation.
- Furthermore, the propeller system prevents rotational losses and does not create any side forces.
- The thrust the propellers produce is horizontal with all the force driving the boat forward.
- The propellers are at the front of the propulsion unit, working in undisturbed water with a minimum of pressure pulses affecting the hull.

A conventional shaft system loses efficiency with the thrust angled downward and the propellers working in water disturbed by the propeller bracket and shaft.

Selecting propellers is also very easy, since Volvo Penta provides optimized gear ratios and a complete and systematic series of propellers developed for the Volvo Penta IPS system.

## Volvo Penta IPS propeller advantages



## Maneuvering and handling

Maneuvering, handling and driving pleasure is where Volvo Penta IPS truly sets a completely new standard. Forget everything you know about complicated docking maneuvers – with Volvo Penta IPS it is easy and safe even with one engine. At higher speeds you will enjoy immediate response to driver commands with safe and predictable handling. Driving the boat is both safe and fun!

The reason for this amazing maneuverability is:

- The propulsion units are steerable, turning and pointing the entire thrust in the desired direction. This results in much higher efficiency and far greater response to driver commands.
- Two counter-rotating propellers on each propulsion unit means that there are no lateral forces to consider and that tracking is completely straight.

- Electronic controls give a distinct and precise feeling, and shifting is immediate. Thanks to the progressive electronic steering, the wheel spins easier at low speed, further reducing driver effort.

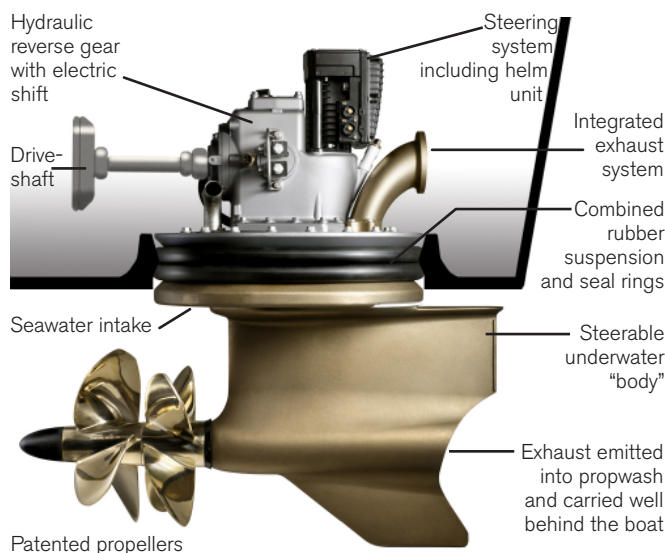
## Comfort

Onboard comfort is one of the main factors for boating enjoyment. Minimal amounts of sound, vibration and exhaust fumes make life aboard that much more pleasant. Volvo Penta IPS new technology leads to major improvements for all comfort enhancing factors.

- The propulsion forces and vibrations are absorbed by the combined rubber suspension and sealing.
- Engine vibrations are reduced thanks to a U-joint drive shaft, which makes it possible to have the engine soft suspended.
- The propellers are working in undisturbed water with no cavitation, and have good clearance from the hull.
- There is an increased number of propeller blades to distribute the forces. This means that the pressure pulses created by the propellers have very little effect on the hull.
- Exhaust fumes are truly minimized. The exhaust is emitted through the propulsion unit into the prop wash and carried well behind the boat.

## Installation

### "All included" in a robust design



The Volvo Penta IPS has been developed and is manufactured as a complete system with everything included – engine, propulsion unit incl. gear box, propellers, exhaust and seawater system, steering, and controls.

Installing the units is easy. Our own tests show reduced installation time by well over 50%.

The system is always installed in a twin engine boat.

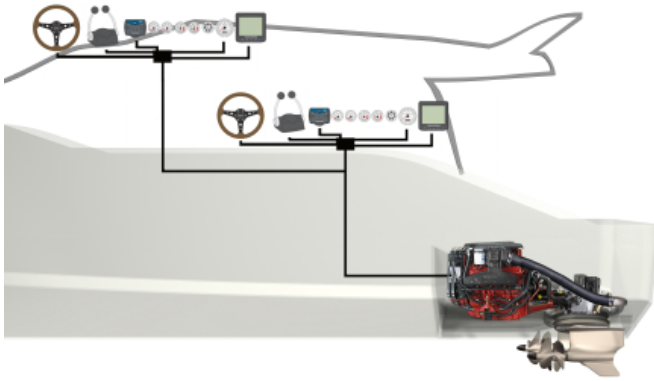
# VOLVO PENTA IPS 500G/550G

A special mounting collar is integrated in the hull construction. The propulsion unit is lifted in place from beneath the hull, with the combined rubber suspension and sealing in place.

The clamp ring is positioned and attached with standard bolts.

No time-consuming alignment is needed.

Steering, shift and throttle plus instrumentation are connected in the simplest way possible.



## Safety and quality

Heavy duty material throughout means excellent corrosion resistance. Everything in contact with seawater is either made from a specially formulated nickel-aluminum-bronze alloy or stainless steel. Propulsion unit, bearings, couplings etc. are all robustly dimensioned to cope with the unexpected and ensure a really long and trouble-free service life.

Volvo Penta EVC, Electronic Vessel Control, links the system components together, as well as being the user interface. This CAN-bus based network has been developed by Volvo Penta for marine use with heavy duty connectors and cables. It is based on the same technology as is used in airplanes, ships and cars today. EVC handles all communication and monitoring including shift, throttle and steering. Several safety functions in the system minimize the risk of damage to engine or propulsion unit.

The Volvo Penta IPS system is designed with redundancy, i.e. even if you have a total breakdown in one driveline, the remaining one will bring you home safely.

## Service

The Volvo Penta IPS has extremely low service requirements; actually, even lower than in the case of a traditional inboard installation – no need for shaft alignment. With the propulsion units placed under the hull, and all components exposed to seawater made of either nickel-aluminum-bronze or stainless steel, excellent corrosion resistance is achieved.

The yearly service only consists of conventional maintenance items, change of anode, and a visual inspection. The oil and filter in the propulsion unit is replaced every year or 400 hrs.

Since the installation is connected to EVC – Electronic Vessel Control – there is no need for cable adjustments. Diagnostics and fault tracing is easily performed by any authorized Volvo Penta service dealer.

## Environmental care

The Volvo Penta IPS has been developed as a complete system with excellent environmental performance as one of the main design targets. The very high efficiency of the Volvo Penta IPS system gives greatly reduced overall emissions.

Volvo Penta's new IPS550G engine has been developed with the latest in gasoline exhaust after-treatment technology. High efficiency three-way catalytic converters based on robust stainless steel metallic substrates drastically reduce the emissions of hydrocarbons, nitrogen oxides and carbon monoxide.

The Volvo Penta IPS550G complies with the CARB 4-star rating for Super Ultra-Low Emissions. Both the IPS500G and IPS550G have emission performance well below the European Recreational Craft Directive emission requirements for small craft.

## Engine technical description:

- Cylinder block and cylinder heads made of cast-iron for good corrosion resistance
  - Pistons with two compression rings and one oil scraper ring
  - Five-bearing crankshaft
  - Valve train consisting of single camshaft, hydraulic valve lifters, push rods and two valves per cylinder
  - Color-coded service points
  - Four adjustable rubber mounts, one on each corner of the engine
  - Pressure lubrication system with remote full-flow oil filter of environmentally friendly replaceable cartridge type
  - Multi Port (MPI) Returnless Fuel System
  - Fuel filter with water separator
  - Two electric fuel feed pumps
  - Flexible fuel lines
  - Marine intake manifold, developed for Multi Port Fuel Injection
  - Flame arrestor
  - Closed crankcase ventilation
  - Seawater-cooled exhaust manifolds and risers made of cast iron (aluminum on 550G)
  - Factory-mounted freshwater cooling system
  - Crankmounted seawater pump
  - Serpentine belt with spring tensioner
  - Flush fitting – hose connection to flush cooling system with freshwater
  - Engine-mounted seawater strainer
  - 12 V corrosion-protected electrical system
  - ECM unit ensures constant optimum performance with diagnostic capability
  - 120 A alternator with internal transistorized voltage regulator and internal fan
  - Breakerless electronic ignition system
  - Double platinum tipped spark plugs
  - One 20 A fuse for protection of the fuel feed pumps and one 15 A fuse for protection of the fuel injection system
  - Starter motor power 1.0 kW
  - Audio alarm kit – engine oil pressure and temperature as well as exhaust overheat. There is also a low voltage audio alarm. Can be mounted at helm.
- In addition to the standard features, the IPS550G engines are equipped with:
- Heated lambda sensors with double protection tube
  - High efficiency stainless steel metallic catalyst substrate
  - Light weight aluminum exhaust manifolds with thermostatic temperature control and ceramic corrosion prevention coating
  - OBD-M diagnostic compliance

# VOLVO PENTA IPS 500G/550G

## General Data

Volvo Penta IPS

system designation .....	
Crankshaft power, kW (hp) .....	
Propshaft power, kW (hp) .....	
Max. engine speed, rpm .....	
Engine displacement, l (in <sup>3</sup> ) .....	
Number of cylinders.....	
Fuel system.....	
Bore/stroke mm .....	
in.....	
Compression ratio.....	
IPS ratio.....	
Package weight, kg (lb) .....	

### IPS550G

298 (400)
280 (376)
4800
8.1 (496)
V-8
MPI
108/111
4.25/4.37
9.1:1
2.4:1
833 (1836)

### IPS500G

280 (375)
263 (353)
4600
8.1 (496)
V-8
MPI
108/111
4.25/4.37
9.1:1
2.4:1
834 (1839)

Propshaft power according to ISO 8665

Duty rating: R5 (Pleasure Duty)

Contact your local Volvo Penta dealer for further information.

Not all models, standard equipment and accessories are available in all countries. All specifications are subject to change without notice.

The engine illustrated may not be entirely identical to production standard engines.

## The Joystick Revolution

Crowded marina. Strong side wind. Tight berth. Situations that can make even the most seasoned skipper a little edgy.

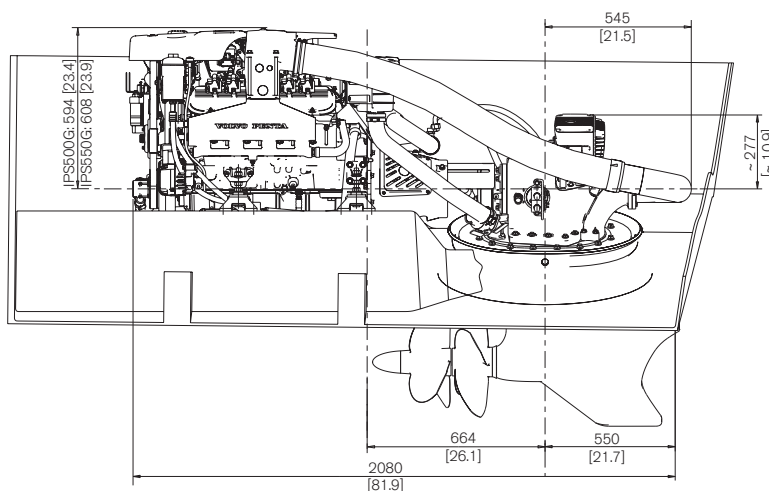
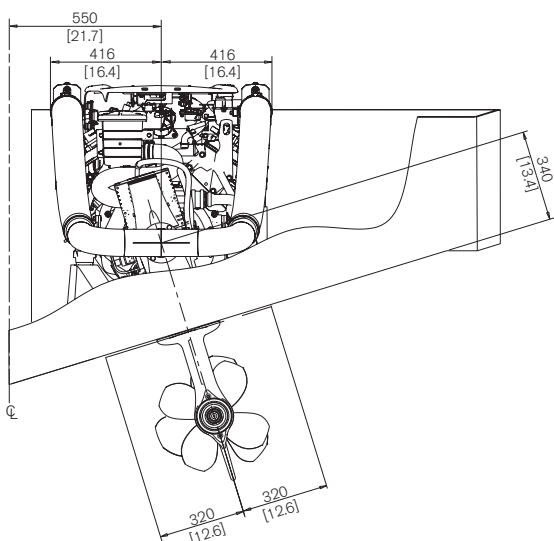
Not anymore. Volvo Penta IPS Joystick puts you in total control and lets you maneuver in any direction – sideways, diagonally, forward, backward or rotate – with just one hand.

Visit [volvopenta.com](http://volvopenta.com) to see for yourself!



## Dimensions

Not for installation



# VOLVO PENTA

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