

Technical Data Volvo Penta IPS450

Rating 4 330 hp (243 kW)

General

4-stroke direct injected, turbocharged and aftercooled diesel engine

Number of cylinders		6
No of valves		24
Displacement, total	litres	5,50
	in ³	335,6
Firing order		1-5-3-6-2-4
Rotational direction, viewed from the front		Clockwise
Bore	mm	103
	in	4,06
Stroke	mm	110
	in	4,33
Compression ratio		17,5:1
Compression pressure at 240 rpm	MPa	
	psi	
Maximum forward inclination installed:	°	0
Maximum backward inclination installed:	°	10
Max. intermittent forward inclination while running:	°	10
Max. intermittent backward inclination while running:	°	20
Max. intermittent side tilt while running:	°	30 for max 30 sec.
Idling speed	rpm	600 - 750
Rated speed	rpm	3500
Propeller selection range	rpm	3400-3600
Dry weight with IPS	kg	863
	lb	1903

Performance	Rating	r/min	1500	2000	2500	3000	3500				
Crankshaft power 1), 5)	4	kW	99,1	169,3	212,2	241	243				
		hp	134,8	230,2	288,6	327,8	330,5				
Propellershaft power 1) For IPS (At full load)	4	kW	94,15	160,8	201,6	229	230,9				
		hp	128	218,7	274,2	311,4	314				
Propellershaft power at prop.load x ^{2,5} For IPS	4	kW	28	58	101	159	231				
		hp	38	79	137	217	314				
Torque at crankshaft 2)	4	Nm	630,9	808,3	810,5	767,1	663				
		lbf ft	465	596	598	566	489				
Mean piston speed		m/s	5,5	7,3	9,2	11,0	12,8				
		ft/s	18,0	24,1	30,1	36,1	42,1				
Effective mean pressure 2)	4	MPa	1,44	1,85	1,85	1,75	1,51				
		psi	209,1	267,9	268,6	254,2	219,7				
Max combustion pressure 2)	4	MPa	12,6	15,1	15,3	15,5	15,8				
		psi	1827	2190	2219	2248	2292				

Lubricating system

Specific lubricating oil consumption.		g/kWh	0,2
Max oil volume excl. filters at following inclination:	0°	litres	20
		US gal	5,28
Min oil volume excl. filters at following inclination:	0°	litres	16,5
		US gal	4,36

1) ISO 3046, fuel temp 40°C.

ISO 8665 (=SAE J 1228=ICOMIA 28-83)

2) At power according to 1).

3) If reverse gear is used, 4% in heat rejection will be added for its oil cooler.

4) Acc. to ISO 3744

5) At installed back pressure

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Fuel system	Rating	r/min	1500	2000	2500	3000	3500				
Specific fuel consumption 2)	4	g/kWh lb/hph	234 0,379	210,9 0,342	203,1 0,329	214,6 0,348	230,1 0,373				
Fuel consumption at prop. load x ^{2,5}	4	l/h US gal/h	7,81 2,1	15,49 4,1	27,8 7,3	43,6 11,5	66,9 17,7				
Fuel consumption at prop. load x ³	4	l/h US gal/h	5,71 1,5	12,15 3,2	23,48 6,2	40,68 10,7	66,88 17,7				
Fuel consumption at full load	4	l/h US gal/h	27,51 7,3	42,36 11,2	51,12 13,5	61,35 16,2	66,33 17,5				

Intake and exhaust system	Rating	r/min	1500	2000	2500	3000	3500				
Exhaust temperature at the exhaust pipe connecting flange after the turbo charger. At prop. load exp. 2,5	4	°C	224	288	310	321	366				
		°F	455	565	590	597	716				
Permitted back pressure in the exhaust line at rated speed. (Installed back pressure)		kPa psi						Max	30		
		kPa psi						Min	10 1,5		
Engine air consumption at 25°C / 77°F atmospheric pressure 100kPA and relative humidity 30%.	4	m³/min cu.ft./min					21,5 759,3				
Turbo charge pressure. At prop. load exp. 2,5	4	kPa psi	12 1,7	32 4,6	74 10,7	140 20,3	202 29,3				
Exhaust gas flow	4	m³/min cu.ft./min					39,7 1402				

Cooling system	Rating	r/min	1500	2000	2500	3000	3500				
Sea water pump flow.		m³/h foot³/h					12,9 456				
Coolant content engine, incl. heat exchangers and air cooler		litres						16			
		U.S. gal.						4,23			
Thermostat, start open at		°C						82			
		°F						180			
Thermostat, fully open at		°C						92			
		°F						198			

Emissions	Rating	r/min	1500	2000	2500	3000	3500				
Smoke at prop. load x ^{2,5}	4	BSU	0,2	0,1	0,1	0,2	0,3				
Smoke at prop. load x ³	4	BSU	0,2	0,2	0,1	0,2	0,3				

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