Technical Data Volvo Penta IPS400

Rating 5. 300hp (221kW)

General

4-stroke direct injected, turbocharged and aftercooled diesel engine

Number of cylinders		4
No of valves		16
Displacement, total	litres in³	3,67 223,7
Firing order		1-3-4-2
Rotational direction, viewed from the front		Clockwise
Bore	mm in	103 4,06
Stroke	mm in	110 4,33
Compression ratio		17,5:1
Compression pressure at 240 rpm	MPa psi	
Max. static forward inclination:	°	0
Max. static backward inclination:	°	10
Max. intermittent forward inclination while running:	°	10
Max. intermittent backward inclination while running:	°	20
Max. intermittent side inclination while running:	°	30° for max 30 sec.
Idling speed	rpm	700-750
Rated speed	rpm	3500
Propeller selection range	rpm	3400-3600
Propeller selection range	rpm	
Dry weight with IPS	kg lb	780 incl.prop.

Performance	**Rating**	**r/min**		**1500**	**2000**	**2500**	**3000**	**3500**				
Crankshaft power 1), 5)	5	kW hp		93 126,5	141 191,8	184 250,2	215 292,4	221 300,6				
Propeller shaft power 1) (At full load) With drive IPS	5	kW hp		89,28 121,4	135,4 184,1	176,6 240,2	206,4 280,7	212,2 288,5				
Propellershaft power at prop. load $x^{2,5}$ With drive IPS	5	kW hp		26 35	52 71	91 124	144 196	212 289				
Propellershaft power at prop. load x^{3} With drive IPS	5	kW hp		17 23	40 54	77 105	134 182	212 289				
Torque at crankshaft 2)	5	Nm lbf ft		592,1 437	673,2 497	702,8 518	684,4 505	603 445				
Mean piston speed		m/s ft/s		5,5 18,0	7,3 24,1	9,2 30,1	11,0 36,1	12,8 42,1				
Effective mean pressure 2)	5	MPa psi		2,03 294,3	2,31 334,7	2,41 349,4	2,35 340,2	2,07 299,8				
Max combustion pressure 2)	5	MPa psi		18,4 2669	18,7 2712	18,7 2712	18,8 2727	18,1 2625				

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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Lubricating system

Specific lubricating oil consumption.	g/kWh	0,2
Max. oil volume including filters for all allowed installation inclinations:	litres US gal	12,5 3,30
Max. oil volume excluding filters for all allowed installation inclinations:	litres US gal	11 2,91
Min. oil volume excluding filters for all allowed installation inclinations:	litres US gal	9,5 2,51

Fuel system	**Rating**	**r/min**		**1500**	**2000**	**2500**	**3000**	**3500**				
Specific fuel consumption 2)	5	g/kWh lb/hph		224 0,363	218 0,353	206 0,334	205 0,332	218 0,353				
Fuel consumption at prop. load x ^{2,5}	5	l/h US gal/h		7,029 1,9	13,97 3,7	24,07 6,4	37,24 9,8	57,66 15,2				
Fuel consumption at prop. load x ^{3}	5	l/h US gal/h		4,935 1,3	10,96 2,9	20,63 5,4	34,65 9,2	57,66 15,2				
Fuel consumption at full load	5	l/h US gal/h		24,93 6,6	36,79 9,7	45,37 12,0	52,75 13,9	57,66 15,2				

Intake and exhaust system	**Rating**	**r/min**		**1500**	**2000**	**2500**	**3000**	**3500**				
Exhaust temperature at the exhaust pipe connecting flange after the turbo charger.	5	°C °F						395 743				
Permitted back pressure in the exhaust line at rated speed. (Installed back pressure)		kPa psi							Max	30 4,4		
		kPa psi							Min	40 5,8		
Engine air consumption at 25°C / 77°F atmospheric pressure 100kPA and relative humidity 30%.	5	m³/min cu.ft./min						16,9 596,8				
Turbo charge pressure. Prop. load x 2,5	5	kPa psi		10 1,5	28 4,1	74 10,7	145 21,0	215 31,2				
Prop. load x 3	5	kPa psi		6 0,9	21 3,0	60 8,7	133 19,3	215 31,2				
Exhaust gas flow Prop. load x 2,5	5	m³/min cu.ft./min		5,1 180,1	9,1 321,4	15,8 558	23,8 840,5	32,2 1137				
Prop. load x 3	5	m³/min cu.ft./min		4,3 151,9	8,1 286	14,2 501,5	22,6 798,1	32,2 1137				

Cooling system	**Rating**	**r/min**		**1500**	**2000**	**2500**	**3000**	**3500**				
Sea water pump flow.		l/min cu.ft./min		82 2,9	108 3,8	132 4,7	155 5,5	172 6,1				
Coolant volume engine, including heat exchanger and charge air cooler		litres US gal.		13 3,43								
Max. additional coolant for cabin heater etc. with std. Expansion tank		litres US gal.		5 1,32								
Thermostat, start open at		°C °F		82 180								
Thermostat, fully open at		°C °F		92 198								

Emissions	**Rating**	**r/min**		**1500**	**2000**	**2500**	**3000**	**3500**				
Smoke at prop. load x^{2,5}	5	*BSU		0,3	0,2	0,2	0,1	0,6				
Smoke at prop. load x³	5	*BSU		0,4	0,6	0,3	0,1	0,6				
Noise at prop. load x^{2,5}. 4)	5	dBA		102	104	107	109	111				

***NB.!** BSU are calculated values. Measured values are acc. to ISO 10054 in FSN units

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