

VOLVO PENTA D4-300 A R5 300 hp (220 kW)	Document No	Issue Index
	21954796	01

General

4-stroke direct injected, turbocharged and aftercooled diesel engine

Number of cylinders		4
No of valves		16
Displacement, total	litres	3,67
	in ³	223,7
Firing order		1-3-4-2
Rotational direction, viewed from the front		Clockwise
Bore	mm	103
	in	4,06
Stroke	mm	110
	in	4,33
Compression ratio		17.5:1
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 R5	rpm	3500
Propeller selection range R5	rpm	3400-3600
Dry weight engine BT	kg	483
	lb	1065
Dry weight with drive DPH	kg	661
	lb	1457
Dry weight with drive DPH with PS	kg	663
	lb	1462

Performance		Rating	rpm	1000	1500	2000	2500	3000	3500				
Crankshaft power 1), 5)	5	kW	50	89	141	184	215	221					
		hp	68	121	192	250	292	301					
Propeller shaft power 1) (At full load) With drive DPH	5	kW	49	87	137	178	209	214					
		hp	66	118	186	243	284	292					
Propellershaft power at prop. load x ^{2,5} With drive DPH	5	kW	9	26	53	92	146	214					
		hp	13	35	72	126	198	292					
Propellershaft power at prop. load x ³ With drive DPH	5	kW	5	17	40	78	135	214					
		hp	7	23	54	106	184	292					
Torque at crankshaft 2)	5	Nm	477,5	568,4	673,2	702,8	684,4	603					
		lbf ft	352	419	497	518	505	445					
Mean piston speed		m/s	3,7	5,5	7,3	9,2	11,0	12,8					
		ft/s	12,0	18,0	24,1	30,1	36,1	42,1					
Effective mean pressure 2)	5	MPa	1,64	1,95	2,31	2,41	2,35	2,07					
		psi	237,4	282,6	334,7	349,4	340,2	299,8					
Max combustion pressure 2)	5	MPa	18	19	19	18	18	18					
		psi	2611	2756	2756	2611	2611	2611					

Lubricating system

Specific lubricating oil consumption.	g/kWh	< 0,2
Max. oil volume including filters for all allowed installation inclinations:	litres	12
	US gal	3,17
Min. oil volume excluding filters for all allowed installation inclinations:	litres	10,5
	US gal	2,77

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Fuel system	Rating	rpm	1000	1500	2000	2500	3000	3500				
Specific fuel consumption 2)	5	g/kWh lb/hph	231 0,374	217 0,352	216 0,35	206 0,334	207 0,335	221 0,358				
Fuel consumption, Test cycle E5	5	g/kWh lb/hph	225 0,36									
Fuel consumption at prop. load x ^{2,5}	5	l/h US gal/h	3,0 0,8	7,1 1,9	14,4 3,8	24,4 6,4	38,7 10,2	58,4 15,4				
Fuel consumption at prop. load x ³	5	l/h US gal/h	2,0 0,5	5,0 1,3	11,2 2,9	21,1 5,6	36,1 9,5	58,4 15,4				
Fuel consumption at full load	5	l/h US gal/h	13,8 3,7	23,2 6,1	36,4 9,6	45,4 12,0	53,3 14,1	58,4 15,4				

Intake and exhaust system	Rating	rpm	1000	1500	2000	2500	3000	3500				
Specific exhaust heating effect in percent of crankshaft power	5	%						64				
Exhaust temperature at the exhaust pipe connecting flange after the turbo charger.	5	°C °F	195 383	300 572	400 752	460 860	485 905	560 1040				
Permitted back pressure in the exhaust line at rated speed. (Installed back pressure)		kPa psi kPa psi							Max Min	30 4,4 10 1,5		

Intake and exhaust system	Rating	rpm	1000	1500	2000	2500	3000	3500				
Engine air consumption at 25°C / 77°F atmospheric pressure 100kPA and relative humidity 30%.	5	m ³ /min cu.ft./min						17,3 610,9				
Charge air pressure Inlet manifold	5	kPa psi						225 32,6				
Exhaust gas flow	5	m ³ /min cu.ft./min						33,3 1176				

Cooling system	Rating	rpm	1000	1500	2000	2500	3000	3500				
Radiated heat in percent of crankshaft power.	5	%						3				
Heat rejection to charge air cooler in percent of crankshaft power.	5	%						26				
Coolant heat rejection to HE, incl. engine oil cooler and excl. charge air cooler, in percent of crankshaft power.	5	%						74				
Coolant flow with fully open thermostat and std cooling system		l/min cu.ft./min						360 12,7				
Extra water pump flow through charge air cooler		l/min cu.ft./min						172 6,1				
Max. permissible temperature on coolant in engine outlet		°C °F						55 131				
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				
Maximum coolant flow to cabin heater etc.		l/min cu.ft./min						30 1,06				
Thermostat, start open at		°C °F						82 180				
Thermostat, fully open at		°C °F						92 198				

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Raw water circuit	rpm	1000	1500	2000	2500	3000	3500				
Nominal raw water design flow	l/min cu.ft/min						172 6,1				
Maximum raw water temperature entering heat exchanger	°C							30			
	°F							86			

Emissions	Rating	rpm	1000	1500	2000	2500	3000	3500				
Smoke at prop. load $x^{2,5}$	5	*BSU	0,3	0,2	0,4	0,3	0,3	0,9				
Smoke at prop. load x^3	5	*BSU	0,5	0,3	0,9	0,4	0,3	0,9				
Noise at prop. load $x^{2,5}$. 4)	5	dBA		101,5	104,2	107	109,4	111				

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