

<b>VOLVO PENTA</b> D6-400A R5 400 hp (294 kW)	Document No	Issue Index
	<b>21954805</b>	<b>02</b>

## General

4-stroke direct injected, turbocharged and aftercooled diesel engine

Number of cylinders		6
No of valves		24
Displacement, total	litres in <sup>3</sup>	5,50 335,6
Firing order		1-5-3-6-2-4
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	600 - 650
Rated speed R5	rpm	3500
Propeller selection range R5	rpm	3400-3600
Dry weight engine BT	kg lb	594 1310
Dry weight with drive DPH and Power steering	kg lb	785 1731

Performance		Rating	rpm	1000	1500	2000	2500	3000	3500				
Crankshaft power 1), 5)	5	kW	77	137	205	251	289	294					
		hp	105	186	279	341	393	400					
Propeller shaft power 1) (At full load) With drive DPH	5	kW	74	131	196	240	276	281					
		hp	100	178	266	326	375	382					
Propellershaft power at prop. load x <sup>2.5</sup> With drive DPH	5	kW	12	34	69	121	191	281					
		hp	17	46	94	165	260	382					
Propellershaft power at prop. load x <sup>3</sup> With drive DPH	5	kW	7	22	52	102	177	281					
		hp	9	30	71	139	240	382					
Torque at crankshaft 2)	5	Nm	735,3	872,2	978,8	958,7	919,9	802,1					
		lbf ft	542	643	722	707	678	592					
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	1,68	1,99	2,24	2,19	2,10	1,83					
		psi	243,7	289,1	324,4	317,8	304,9	265,8					
Max combustion pressure 2)	5	MPa	17	18	18	17	16	16					
		psi	2466	2611	2611	2466	2321	2321					

## Lubricating system

Specific lubricating oil consumption.	g/kWh	< 0,2
Max. oil volume including filters for all allowed installation inclinations:	litres US gal	20 5,28
Min. oil volume excluding filters for all allowed installation inclinations:	litres US gal	15 3,96

<b>Fuel system</b>	<b>Rating</b>	<b>rpm</b>	<b>1000</b>	<b>1500</b>	<b>2000</b>	<b>2500</b>	<b>3000</b>	<b>3500</b>				
Specific fuel consumption 2)	5	g/kWh lb/hph	223 0,361	214 0,347	218 0,353	202 0,327	206 0,334	219 0,355				
Fuel consumption, Test cycle E5	5	g/kWh lb/hph	222,6 0,36									
Fuel consumption at prop. load x <sup>2,5</sup>	5	l/h US gal/h	3,7 1,0	9,2 2,4	18,9 5,0	32,3 8,5	51,9 13,7	77,0 20,4				
Fuel consumption at prop. load x <sup>3</sup>	5	l/h US gal/h	2,3 0,6	6,5 1,7	14,8 3,9	27,9 7,4	48,7 12,9	77,0 20,4				
Fuel consumption at full load	5	l/h US gal/h	20,5 5,4	35,1 9,3	53,5 14,1	60,7 16,0	71,2 18,8	77,0 20,4				

<b>Intake and exhaust system</b>	<b>Rating</b>	<b>rpm</b>	<b>1000</b>	<b>1500</b>	<b>2000</b>	<b>2500</b>	<b>3000</b>	<b>3500</b>					
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	200 392	250 482	350 662	350 662	375 707	400 752					
Permitted back pressure in the exhaust line at rated speed. (Installed back pressure)		kPa psi							Max	30			
		kPa psi							Min	10			
										4,4			
										1,5			

<b>Intake and exhaust system</b>	<b>Rating</b>	<b>rpm</b>	<b>1000</b>	<b>1500</b>	<b>2000</b>	<b>2500</b>	<b>3000</b>	<b>3500</b>				
Engine air consumption at 25°C / 77°F atmospheric pressure 100kPA and relative humidity 30%.	5	m³/min cu.ft./min						23,4 826,4				
Charge air pressure Inlet manifold	5	kPa psi						194 28,2				
Exhaust gas flow	5	m³/min cu.ft./min						43 1519				

<b>Cooling system</b>	<b>Rating</b>	<b>rpm</b>	<b>1000</b>	<b>1500</b>	<b>2000</b>	<b>2500</b>	<b>3000</b>	<b>3500</b>				
Radiated heat in percent of crankshaft power.	5	%						2				
Heat rejection to charge air cooler in percent of crankshaft power.	5	%						25				
Coolant heat rejection to HE, incl. engine oil cooler and excl. charge air cooler, in percent of crankshaft power.	5	%						73				
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						215 7,6				
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.							16 4,23			
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						215 7,6				
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 <sup>2.5</sup>	5	*BSU	0,4	0,3	0,5	0,2	0,2	0,6				
Smoke at prop. load x <sup>3</sup>	5	*BSU	0,3	0,4	0,4	0,4	0,3	0,6				

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