General

4-stroke direct injected, turbocharged and aftercooled diesel engine

Number of cylinders		6
No of valves		24
Displacement, total	litres in³	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)	5	kW	74	131	196	240	276	281				
With drive DPH		hp	100	178	266	326	375	382				
Propellershaft power at prop. load $x^{2,5}$	5	kW	12	34	69	121	191	281				
With drive DPH		hp	17	46	94	165	260	382				
Propellershaft power at prop. load x^{3}	5	kW	7	22	52	102	177	281				
With drive DPH		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

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

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

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	200	250	350	350	375	400		
		°F	392	482	662	662	707	752		
Permitted back pressure in the exhaust line at rated speed. (Installed back pressure)		kPa							Max	30
		psi								4,4
		kPa							Min	10
		psi								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	m³/min						23,4
		cu.ft./min						826,4
Charge air pressure Inlet manifold	5	kPa						194
		psi						28,2
Exhaust gas flow	5	m³/min						43
		cu.ft./min						1519

Cooling system	Rating	rpm	1000	1500	2000	2500	3000	3500
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						360
		cu.ft./min						12,7
Extra water pump flow through charge air cooler		l/min						215
		cu.ft./min						7,6
Max. permissible temperature on coolant in engine outlet		°C	55					
		°F	131					
Coolant volume engine, including heat exchanger and charge air cooler		litres	16					
		US gal.	4,23					
Max. additional coolant for cabin heater etc. with std. Expansion tank		litres	5					
		US gal.	1,32					
Maximum coolant flow to cabin heater etc.		l/min	30					
		cu.ft./min	1,06					
Thermostat, start open at		°C	82					
		°F	180					
Thermostat, fully open at		°C	92					
		°F	198					

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 °F	30 86									

Emissions	Rating	rpm	1000	1500	2000	2500	3000	3500				
Smoke at prop. load $x^{2,5}$	5	*BSU	0,4	0,3	0,5	0,2	0,2	0,6				
Smoke at prop. load x^3	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