

<b>VOLVO PENTA</b> D6-400 R5 400 hp (294KW)	Document No	Issue Index
	<b>21737529</b>	<b>01</b>

## General

4-stroke direct injected, turbocharged, supercharged 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 + 50
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-C	kg lb	785 1731

Performance	Rating	rpm	1000	1500	2000	2500	3000	3500		
Crankshaft power 1), 5)	5	kW	78	137	205	251	289	294		
		hp	106	186	279	341	393	400		
Propeller shaft power 1) (At full load) With drive DPH-C	5	kW	74	131	196	240	276	281		
		hp	101	178	266	326	375	382		
Propellershaft power at prop. load x <sup>2,5</sup> With drive DPH-C	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-C	5	kW	7	22	52	102	177	281		
		hp	9	30	71	139	240	382		
Torque at crankshaft 2)	5	Nm	744,8	872,2	978,8	958,7	919,9	802,1		
		lbf ft	549	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	1,70	1,99	2,24	2,19	2,10	1,83		
		psi	246,9	289,1	324,4	317,8	304,9	265,8		
Max combustion pressure 2)	5	MPa	18,3	19,2	19,6	18,1	18,3	17,2		
		psi	2654	2785	2843	2625	2654	2495		

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

**Lubricating system**

Specific lubricating oil consumption.	g/kWh	0,2
Max. oil volume including filters for all allowed installation inclinations:	litres	20
	US gal	5,28
Max. oil volume excluding filters for all allowed installation inclinations:	litres	16,5
	US gal	4,36

**Fuel system**

	Rating	rpm	1000	1500	2000	2500	3000	3500
Specific fuel consumption 2)	5	g/kWh	225	216	221	203	204	217,3
		lb/hph	0,365	0,35	0,358	0,329	0,33	0,352
Fuel consumption, Test cycle E5	5	g/kWh	218,1					
		lb/hph	0,35					
Fuel consumption at prop. load x <sup>2,5</sup>	5	l/h	3,8	9,3	18,7	31,7	50,5	76,3
		US gal/h	1,0	2,5	4,9	8,4	13,3	20,2
Fuel consumption at prop. load x <sup>3</sup>	5	l/h	2,6	6,7	14,6	27,3	47,3	76,3
		US gal/h	0,7	1,8	3,8	7,2	12,5	20,2
Fuel consumption at full load	5	l/h	21,0	35,4	54,2	61,0	70,5	76,4
		US gal/h	5,5	9,4	14,3	16,1	18,6	20,2

**Intake and exhaust system**

	Rating	rpm	1000	1500	2000	2500	3000	3500	
Specific exhaust heating effect in percent of crankshaft power	5	%	54,8	57,5	60,7	59,3	60,2	68,3	
Exhaust temperature at the exhaust pipe connecting flange after the turbo charger.	5	°C	366	419	477	426	393	396	
		°F	691	786	891	799	739	745	
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
Engine air consumption at 25°C / 77°F atmospheric pressure 100kPA and relative humidity 30%.	5	m <sup>3</sup> /min							22,4
		cu.ft./min							791
Charge air pressure Inlet manifold	5	kPa	109	128	139	162	185	189	
		psi	15,8	18,6	20,2	23,5	26,8	27,4	
Exhaust gas flow	5	m <sup>3</sup> /min							40,6
		cu.ft./min							1434

**Cooling system**

	Rating	rpm	1000	1500	2000	2500	3000	3500	
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
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							245
	cu.ft./min							8,7

**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	0,5
Smoke at prop. load x <sup>3</sup>	5	*BSU	0,4	0,3	0,6	0,2	0,2	0,5

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

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