

VOLVO PENTA D13B-A MP R5 900	Document No 21345284	Issue Index 01
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General

4-stroke direct injected, turbocharged and aftercooled diesel engine

Number of cylinders		6
No of valves		24
Displacement, total	litres in ³	12,78 779,7
Firing order		1-5-3-6-2-4
Rotational direction, viewed from the front		Clockwise
Bore	mm in	131 5,16
Stroke	mm in	158 6,22
Compression ratio		16,5:1
Max. static forward inclination:	°	0
Max. static backward inclination:	°	10
Max. intermittent forward inclination while running:	°	5
Max. intermittent backward inclination while running:	°	17
Max. intermittent side inclination while running:	°	30
Idling speed	rpm	550 - 700
Rated speed R5	rpm	2300
Propeller selection range R5	rpm	2370
Dry weight engine BT	kg lb	1560 3439

Performance	Rating	rpm	600	800	1000	1100	1300	1500	1800	2000	2100	2300
Crankshaft power 1), 5)	5	kW hp	75 102	216 294	323 439	367 499	450 612	519 706	600 816	643 874	662 900	662 900
Propeller shaft power 1) (At full load) With drive	5	kW hp	72 98	207 282	310 422	352 479	432 588	498 678	576 783	617 840	636 864	636 864
Propellershaft power at prop. load x ^{2,5}	5	kW hp	22 30	45 62	79 108	101 137	153 208	218 297	344 468	448 609	506 688	636 864
Torque at crankshaft 2)	5	Nm lbf ft	1194 880	2578 1902	3084 2275	3186 2350	3306 2438	3304 2437	3183 2348	3070 2264	3010 2220	2749 2027
Mean piston speed		m/s ft/s	3,2 10,4	4,2 13,8	5,3 17,3	5,8 19,0	6,8 22,5	7,9 25,9	9,5 31,1	10,5 34,6	11,1 36,3	12,1 39,7
Effective mean pressure 2)	5	MPa psi	1,17 170,3	2,54 367,8	3,03 440,0	3,13 454,5	3,25 471,5	3,25 471,3	3,13 454,0	3,02 437,9	2,96 429,4	2,70 392,1
Max combustion pressure 2)	5	MPa psi	12,5 1813	18,6 2698	19,7 2857	20 2901	20 2901	20 2901	20 2901	20 2901	20 2901	20 2901

Lubricating system

Specific lubricating oil consumption.	g/kWh	0,05
Max. oil volume including filters for all allowed installation inclinations:	litres US gal	45 11,89
Max. oil volume excluding filters for all allowed installation inclinations:	litres US gal	40 10,57
Min. oil volume excluding filters for all allowed installation inclinations:	litres US gal	32 8,45

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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Fuel system	Rating	rpm	600	800	1000	1100	1300	1500	1800	2000	2100	2300
Specific fuel consumption 2)	5	g/kWh lb/hph	231 0,374	216 0,35	195 0,316	191 0,309	197 0,319	200 0,324	201 0,326	204 0,33	205 0,332	209 0,339
Fuel consumption, Test cycle E5	5	g/kWh lb/hph	207 0,34									
Fuel consumption at prop. load x ^{2,5}	5	l/h US gal/h	6,6 1,7	12,7 3,3	21,1 5,6	26,1 6,9	38,0 10,0	53,8 14,2	85,4 22,6	111,6 29,5	127,0 33,6	165,5 43,7
Fuel consumption at full load	5	l/h US gal/h	20,7 5,5	55,8 14,7	75,3 19,9	83,8 22,1	106,0 28,0	124,1 32,8	144,2 38,1	156,9 41,4	162,3 42,9	165,5 43,7

Intake and exhaust system	Rating	rpm	600	800	1000	1100	1300	1500	1800	2000	2100	2300
Exhaust temperature at the exhaust pipe connecting flange after the turbo.	5	°C °F	460 860	550 1022	445 833	405 761	470 878	500 932	495 923	495 923	495 923	500 932
Permitted back pressure in the exhaust line at rated speed. (Installed back pressure)		kPa psi							Max	15 2,2		
Engine air consumption at 25°C / 77°F atmospheric pressure 100kPa and relative humidity 30%.	5	m³/min cu.ft./min	4 141,3	11 388,5	19,5 688,6	25 882,9	28 988,8	32 1130	39,5 1395	43 1519	45 1589	48 1695
		m³/min cu.ft./min										
Charge air pressure Inlet manifold	5	kPa psi	28 4,1	145 21,0	246 35,7	299 43,4	300 43,5	308 44,7	335 48,6	341 49,5	342 49,6	343 49,7
Exhaust gas flow	5	m³/min cu.ft./min	12 423,8	33 1165	49 1730	58 2048	72 2543	85 3002	101 3567	109 3849	112 3955	116 4097

Cooling system	Rating	rpm	600	800	1000	1100	1300	1500	1800	2000	2100	2300
Coolant volume engine, including heat exchanger and charge air cooler		litres US gal.	48 12,68									
Max. additional coolant for cabin heater etc. with std. Expansion tank		litres US gal.	15 3,96									
Maximum coolant flow to cabin heater etc. At 2300 rpm and 35 kPa		l/min cu.ft./min	40 1,41									
Thermostat, start open at		°C °F	82 180									
Thermostat, fully open at		°C °F	92 198									

Raw water circuit	rpm	600	800	1000	1100	1300	1500	1800	2000	2100	2300
Nominal raw water design flow	l/min cu.ft./min	190 6,7	230 8,1	270 9,5	290 10,2	342 12,1	387 13,7	430 15,2	438 15,5	428 15,1	415 14,7
Maximum raw water pump suction head	kPa psi	30 4,4									
Maximum raw water temperature entering heat exchanger	°C °F	32 90									

Emissions	Rating	rpm	600	800	1000	1100	1300	1500	1800	2000	2100	2300
Smoke at prop. load x ^{2,5}	5	*BSU	0,1	0,2	0,3	0,4	0,4	0,2	0,1	0,1	0,2	0,3
Noise at prop. load x ^{2,5} . 4)	5	dBA	106,1	114,7	113,6	111,2	110,4	111,2	113,8	116	116,5	118

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

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- 5) At installed back pressure