

VOLVO PENTA D13B-G MP R5 900hp (IPS1200/IB900)	Document No	Issue Index
	21410440	02

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	600 + 50
Rated speed R5	rpm	2300
Propeller selection range R5	rpm	2250-2370
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	87	256	346	380	449	518	600	643	662	662
		hp	118	348	470	517	611	704	816	874	900	900
Propeller shaft power 1) (At full load) With drive	5	kW	84	246	332	365	431	497	576	617	636	636
		hp	114	334	451	496	587	676	783	840	864	864
Propellershaft power at prop. load x ^{2,5}	5	kW	22	45	79	101	153	218	344	448	506	636
		hp	30	62	108	137	208	297	468	609	688	864
Torque at crankshaft 2)	5	Nm	1385	3056	3300	3300	3300	3298	3183	3070	3010	2749
		lbf ft	1021	2254	2434	2434	2434	2432	2348	2264	2220	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	1,36 197,5	3,01 435,9	3,25 470,8	3,25 470,7	3,25 470,8	3,24 470,4	3,13 454,0	3,02 437,9	2,96 429,4	2,70 392,1
Max combustion pressure 2)	5	MPa psi	11,6 1682	20 2901	19 2756	19 2756	19,3 2799	19,5 2828	19,7 2857	19,8 2872	19,9 2886	19,9 2886

Lubricating system

Specific lubricating oil consumption.	g/kWh	0,05
Max. oil volume including filters for all allowed installation inclinations:	litres	45
	US gal	11,89
Max. oil volume excluding filters for all allowed installation inclinations:	litres	40
	US gal	10,57
Min. oil volume excluding filters for all allowed installation inclinations:	litres	32
	US gal	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	232 0,375	202 0,327	196 0,317	197 0,319	198 0,321	201 0,326	204 0,331	206 0,333	207 0,335	210 0,341
Fuel consumption, Test cycle E5	5	g/kWh lb/hph	210 0,34									
Fuel consumption at prop. load x ^{2,5}	5	l/h US gal/h	6,7 1,8	12,4 3,3	20,5 5,4	25,4 6,7	37,3 9,9	53,9 14,2	86,2 22,8	112,6 29,8	128,6 34,0	166,6 44,0
Fuel consumption at full load	5	l/h US gal/h	24,1 6,4	61,8 16,3	80,8 21,3	89,5 23,6	106,5 28,1	124,5 32,9	146,5 38,7	158,2 41,8	163,9 43,3	166,6 44,0

Intake and exhaust system	Rating	rpm	600	800	1000	1100	1300	1500	1800	2000	2100	2300	
Specific exhaust heating effect in percent of crankshaft power	5	%	60	56	60	64	68	71	73	74	75	76	
Exhaust temperature at the exhaust pipe connecting flange after the turbo charger.	5	°C °F °C	480 896	475 887	430 806	445 833	475 887	515 959	525 977	515 959	515 959	500 932	
Permitted back pressure in the exhaust line at rated speed. (Installed back pressure)		kPa psi kPa psi							Max	15 2,2			
Engine air consumption at 25°C / 77°F atmospheric pressure 100kPA and relative humidity 30%.	5	m ³ /min cu.ft./min	4,8 170	14 494	21,8 770	24 848	28,3 999	31,5 1112	37,3 1317	41,8 1476	44 1554	47 1660	
Charge air pressure Inlet manifold	5	kPa psi	40 5,8	215 31,2	299 43,4	301 43,7	301 43,7	302 43,8	312 45,3	325 47,1	330 47,9	335 48,6	
Exhaust gas flow	5	m ³ /min cu.ft./min	13,6 480,3	37,8 1335	54,5 1925	61,1 2158	73,9 2610	85,7 3026	101 3567	109 3849	113 3991	119 4202	

Cooling system	Rating	rpm	600	800	1000	1100	1300	1500	1800	2000	2100	2300
Radiated heat in percent of crankshaft power.	5	%	17	20	6	5	4	5	6	5	5	7
Coolant heat rejection to HE, incl. engine oil cooler and charge air cooler, in percent of crankshaft power.	5	%	102	75	70	67	67	67	67	69	71	72
Coolant flow with fully open thermostat and std cooling system		l/min cu.ft./min	90 3,2	150 5,3	252 8,9	282 10,0	335 11,8	380 13,4	480 17,0	516 18,2	528 18,6	600 21,2
Max. permissible temperature on coolant in engine outlet		°C °F	98 208									
Coolant volume engine, including heat exchanger and charge air cooler		litres US gal.	57 15,06									
Max. additional coolant for cabin heater etc. with std. Expansion tank		litres US gal.	15 3,96									
Maximum coolant flow to cabin heater etc.		l/min cu.ft./min	40 1,41									
Thermostat, start open at		°C °F	82 180									
Thermostat, fully open at		°C °F	92 198									

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Raw water circuit	rpm	600	800	1000	1100	1300	1500	1800	2000	2100	2300
Nominal raw water design flow	l/min	190	230	270	290	342	387	430	438	428	415
	cu.ft/min	6,7	8,1	9,5	10,2	12,1	13,7	15,2	15,5	15,1	14,7
Nominal raw water pump pressure head at design flow. (measured before and after pump)	kPa	18	30	45	65	84	104	123	123	120	113
	psi	2,6	4,4	6,5	9,4	12,2	15,1	17,8	17,8	17,4	16,4
Maximum raw water pump suction head	kPa	30									
	psi	4,4									
Maximum raw water temperature entering heat exchanger	°C	30									
	°F	86									

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	0,2	0,2	0,1	0,2	0,2	0,2	0,2	0,4
Noise at prop. load x ^{2.5} . 4)	5	dBA	98,6	107,5	108,3	107,9	107,8	109,5	111,8	113,9	115	116,1

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

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