

VOLVO PENTA D6-370 INB R5 370 hp (272 kW)	Document No	Issue Index
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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	5,50
	in ³	335,6
Firing order		1-5-3-6-2-4
Rotational direction, viewed from the front		Clockwise
Bore	mm	103
	in	4,06
Stroke	mm	110
	in	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
Rated speed R5	rpm	
	rpm	
Propeller selection range R5	rpm	3400-3600
Propeller selection range R5	rpm	
	rpm	
Dry weight engine BT	kg	580
	lb	1279
Dry weight with drive reverse gear: HS80AE	kg	677
	lb	1493
Dry weight with drive reverse gear: HS80VE	kg	721
	lb	1590

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Performance	Rating	rpm	1000	1500	2000	2500	3000	3500				
Crankshaft power 1), 5)	5	kW	48	95	179	230	265	272				
		hp	65	129	243	312	360	370				
Propeller shaft power 1) (At full load) With drive reverse gear: HS80AE	5	kW	48	94	177	227	262	269				
		hp	65	128	241	309	357	366				
Propeller shaft power 1) (At full load) With drive reverse gear: HS80VE	5	kW	48	94	177	228	262	269				
		hp	65	128	241	310	357	366				
Propellershaft power at prop. load $x^{2.5}$ With drive reverse gear: HS80AE	5	kW	12	32	66	116	183	269				
		hp	16	44	90	158	249	366				
Propellershaft power at prop. load $x^{2.5}$ With drive reverse gear: HS80VE	5	kW	12	32	66	116	183	269				
		hp	16	44	90	158	249	366				
Propellershaft power at prop. load x^3 With drive reverse gear: HS80AE	5	kW	6	21	50	98	170	269				
		hp	9	29	68	133	231	366				
Propellershaft power at prop. load x^3 With drive reverse gear: HS80VE	5	kW	6	21	50	98	170	269				
		hp	9	29	68	133	231	366				
Torque at crankshaft 2)	5	Nm	458,4	604,8	854,7	876,6	843,5	742,1				
		lbf ft	338	446	630	647	622	547				
Torque at crankshaft 2)	5	Nm	458,4	604,8	854,7	878,5	843,5	742,1				
		lbf ft	338	446	630	648	622	547				
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	1,05	1,38	1,95	2,00	1,93	1,70				
		psi	151,9	200,4	283,3	290,5	279,6	246,0				
Effective mean pressure 2)	5	MPa	1,05	1,38	1,95	2,01	1,93	1,70				
		psi	151,9	200,4	283,3	291,2	279,6	246,0				
Max combustion pressure 2)	5	MPa	16	18	18	18	17	17				
		psi	2321	2611	2611	2611	2466	2466				
Max combustion pressure 2)	5	MPa	16	18	18	18	17	17				
		psi	2321	2611	2611	2611	2466	2466				

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	
	US gal	
Min. oil volume excluding filters for all allowed installation inclinations:	litres	15
	US gal	3,96

Fuel system	Rating	rpm	1000	1500	2000	2500	3000	3500				
Specific fuel consumption 2)	5	g/kWh	237	233	215	203	216	236				
		lb/hph	0,384	0,377	0,348	0,329	0,35	0,382				
Fuel consumption, Test cycle E5	5	g/kWh	231									
		lb/hph	0,37									
	5	g/kWh	231									
		lb/hph	0,37									
Fuel consumption at prop. load x ^{2,5}	5	l/h	3,6	8,8	17,5	30,3	49,6	76,8				
		US gal/h	1,0	2,3	4,6	8,0	13,1	20,3				
	5	l/h	3,6	8,8	17,5	30,3	49,6	76,8				
		US gal/h	1,0	2,3	4,6	8,0	13,1	20,3				

Fuel system	Rating	rpm	1000	1500	2000	2500	3000	3500				
Fuel consumption at prop. load x ³	5	l/h	2,7	6,3	13,7	26,3	46,1	76,8				
		US gal/h	0,7	1,7	3,6	7,0	12,2	20,3				
	5	l/h	2,7	6,3	13,7	26,3	46,1	76,8				
		US gal/h	0,7	1,7	3,6	7,0	12,2	20,3				
Fuel consumption at full load	5	l/h	13,6	26,5	46,1	55,7	68,5	76,8				
		US gal/h	3,6	7,0	12,2	14,7	18,1	20,3				

Intake and exhaust system	Rating	rpm	1000	1500	2000	2500	3000	3500				
Specific exhaust heating effect in percent of crankshaft power	5	%						64				
	5							64				
Exhaust temperature at the exhaust pipe connecting flange after the turbo charger.	5	°C	165	240	305	320	325	390				
		°F	329	464	581	608	617	734				
Permitted back pressure in the exhaust line at rated speed. (Installed back pressure)	5	°C										
		°F										
		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 cu.ft./min						22,9 808,7				
	5	m³/min cu.ft./min						22,9 808,7				
		m³/min cu.ft./min										
Charge air pressure Inlet manifold	5	kPa psi						206 29,9				
	5	kPa psi						206 29,9				
		kPa psi										
Exhaust gas flow	5	m³/min cu.ft./min						42,7 1508				
	5	m³/min cu.ft./min						42,7 1508				

Cooling system	Rating	rpm	1000	1500	2000	2500	3000	3500				
Radiated heat in percent of crankshaft power.	5							2				
	5	%						2				
Heat rejection to charge air cooler in percent of crankshaft power.	5							28				
	5	%						28				
Coolant heat rejection to HE, incl. engine oil cooler and excl. charge air cooler, in percent of crankshaft power.	5							84				
	5	%						84				
Coolant flow with fully open thermostat and std cooling system		l/min cu.ft./min						360 12,7				
		l/min cu.ft./min						215 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 US gal.						16 4,23				
		litres US gal.						5 1,32				
Maximum coolant flow to cabin heater etc.		l/min cu.ft./min						30 1,06				
		°C						82				
Thermostat, start open at		°F						180				
		°C						92				
Thermostat, fully open at		°F						198				

Raw water circuit	rpm	1000	1500	2000	2500	3000	3500				
Nominal raw water design flow	l/min						215				
	cu.ft./min						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 ^{2,5}	5	*BSU	0,5	0,3	0,2	0,1	0,4	0,7				
	5	*BSU	0,5	0,3	0,2	0,1	0,4	0,7				
		*BSU										
Smoke at prop. load x ³	5	*BSU	0,4	0,3	0,3	0,2	0,4	0,7				
	5	*BSU	0,4	0,3	0,3	0,2	0,4	0,7				

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