

VOLVO PENTA D6-435 I R5 435 hp (320 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 in ³	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 reverse gear HS80AE	kg lb	695 1532
Dry weight with reverse gear HS85AE	kg lb	699 1541
Dry weight with reverse gear HS80VE	kg lb	732 1614
Dry weight with reverse gear HS85VE	kg lb	735 1620

Performance	Rating	rpm	1000	1500	2000	2500	3000	3500				
Crankshaft power 1), 5)	5	kW	77	143	213	274	308	320				
		hp	105	194	290	373	419	435				
Propeller shaft power 1) (At full load) With reverse gear HS80AE	5	kW	75	139	207	266	299	310				
		hp	102	189	281	361	406	422				
Propellershaft power at prop. load x ^{2,5} With reverse gear HS80AE	5	kW	14	37	77	134	211	310				
		hp	18	51	104	182	287	422				
Propellershaft power at prop. load x ³ With reverse gear HS80AE	5	kW	7	24	58	113	195	310				
		hp	10	33	79	154	266	422				
Torque at crankshaft 2)	5	Nm	739,1	910,4	1017	1047	980,4	873,1				
		lbf ft	545	671	750	772	723	644				
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	1,69	2,08	2,32	2,39	2,24	2,00				
		psi	245,0	301,7	337,1	346,9	324,9	289,4				
Max combustion pressure 2)	5	MPa	16,9	18,3	18,6	18,6	17,3	17,2				
		psi	2451	2654	2698	2698	2509	2495				

D6-435 I**R5 435 hp (320 kW)****22030075****02****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
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	221	222	222	201	206	220				
		lb/hph	0,358	0,36	0,36	0,326	0,334	0,356				
Fuel consumption, Test cycle E5	5	g/kWh	221									
		lb/hph	0,36									
Fuel consumption at prop. load x ^{2,5}	5	l/h	4,0	10,0	20,3	34,8	55,5	84,2				
		US gal/h	1,1	2,7	5,4	9,2	14,7	22,3				
Fuel consumption at prop. load x ³	5	l/h	2,6	7,1	16,1	29,9	52,3	84,2				
		US gal/h	0,7	1,9	4,2	7,9	13,8	22,3				
Fuel consumption at full load	5	l/h	20,5	38,0	56,6	65,9	75,9	84,2				
		US gal/h	5,4	10,0	14,9	17,4	20,1	22,3				

Intake and exhaust system

	Rating	rpm	1000	1500	2000	2500	3000	3500				
Specific exhaust heating effect in percent of crankshaft power	5	%						62				
Exhaust temperature at the exhaust pipe connecting flange after the turbo charger.	5	°C	199	263	342	350	333	391				
		°F	390	505	648	662	631	736				
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	m³/min						24,3				
		cu.ft./min						858,1				
Charge air pressure Inlet manifold	5	kPa						210				
		psi						30,5				
Exhaust gas flow	5	m³/min						46,4				
		cu.ft./min						1639				

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

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	0,3	0,3	0,3	0,2	0,2	0,8				
Smoke at prop. load x^3	5	*BSU	0,3	0,3	0,3	0,2	0,2	0,8				
Noise at prop. load $x^{2.5}$. 4)	5	dBA	95	102	106	108	111	113				

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

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