

<b>VOLVO PENTA</b> D6-435 I WJ R5 435 hp (320 kW)	Document No	Issue Index
	<b>21965381</b>	<b>02</b>

## General

4-stroke direct injected, turbocharged 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 - 650
Rated speed R5	rpm	3500
Propeller selection range R5	rpm	3400-3600
Dry weight engine BT	kg lb	585 1290
Dry weight with drive WJ	kg lb	585 + Water Jet Drive

<b>Performance</b>		<b>Rating</b>	<b>rpm</b>	<b>1000</b>	<b>1500</b>	<b>2000</b>	<b>2500</b>	<b>3000</b>	<b>3500</b>				
Crankshaft power 1), 5)	5	kW	47	93	179	274	308	320					
		hp	64	126	243	373	419	435					
Propeller shaft power 1) (At full load) With drive WJ	5	kW	47	93	179	274	308	320					
		hp	64	126	243	373	419	435					
Propellershaft power at prop. load x <sup>2.5</sup> With drive WJ	5	kW	14	38	79	138	218	320					
		hp	19	52	107	188	296	435					
Propellershaft power at prop. load x <sup>3</sup> With drive WJ	5	kW	7	25	60	117	202	320					
		hp	10	34	81	159	274	435					
Torque at crankshaft 2)	5	Nm	448,8	592,1	854,7	1047	980,4	873,1					
		lbf ft	331	437	630	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	1,03	1,35	1,95	2,39	2,24	2,00					
		psi	148,7	196,2	283,3	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					

## Lubricating system

Specific lubricating oil consumption.	g/kWh	< 0,2
Max. oil volume including filters for all allowed installation inclinations:	litres US gal	20 5,28
Min. oil volume excluding filters for all allowed installation inclinations:	litres US gal	15 3,96

<b>Fuel system</b>	<b>Rating</b>	<b>rpm</b>	<b>1000</b>	<b>1500</b>	<b>2000</b>	<b>2500</b>	<b>3000</b>	<b>3500</b>					
Specific fuel consumption 2)	5	g/kWh lb/hph	221 0,358	222 0,36	222 0,36	201 0,326	206 0,334	220 0,356					
Fuel consumption, Test cycle E5	5	g/kWh lb/hph	221 0,36										
Fuel consumption at prop. load x <sup>2,5</sup>	5	l/h US gal/h	4,0 1,1	10,0 2,7	20,3 5,4	34,8 9,2	55,5 14,7	84,2 22,3					
Fuel consumption at prop. load x <sup>3</sup>	5	l/h US gal/h	2,6 0,7	7,1 1,9	16,1 4,2	29,9 7,9	52,3 13,8	84,2 22,3					
Fuel consumption at full load	5	l/h US gal/h	12,4 3,3	24,7 6,5	47,6 12,6	65,9 17,4	75,9 20,1	84,2 22,3					

<b>Intake and exhaust system</b>	<b>Rating</b>	<b>rpm</b>	<b>1000</b>	<b>1500</b>	<b>2000</b>	<b>2500</b>	<b>3000</b>	<b>3500</b>				
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 °F	199 390	263 505	342 648	350 662	333 631	391 736				
Permitted back pressure in the exhaust line at rated speed. (Installed back pressure)		kPa psi							Max	30 4,4		
		kPa psi							Min	10 1,5		
Engine air consumption at 25°C / 77°F atmospheric pressure 100kPA and relative humidity 30%.	5	m³/min cu.ft./min						24,3 858,1				
Charge air pressure Inlet manifold	5	kPa psi						210 30,5				
Exhaust gas flow	5	m³/min cu.ft./min						46,4 1639				

<b>Cooling system</b>	<b>Rating</b>	<b>rpm</b>	<b>1000</b>	<b>1500</b>	<b>2000</b>	<b>2500</b>	<b>3000</b>	<b>3500</b>				
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			

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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 <sup>2.5</sup>	5	*BSU	0,3	0,3	0,3	0,2	0,2	0,8				
Smoke at prop. load x <sup>3</sup>	5	*BSU	0,3	0,3	0,3	0,2	0,2	0,8				
Noise at prop. load x <sup>2.5</sup> . 4)	5	dBA	95	102	106	108	111	113				

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