

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 R4	rpm	3500
Propeller selection range R4	rpm	3400-3600
Dry weight engine BT	kg lb	580 1279
Dry weight with drive IPS	kg lb	863 1903

Performance	Rating	rpm	1000	1500	2000	2500	3000	3500				
Crankshaft power 1), 5)	4	kW	47	99	169	212	241	243				
		hp	64	135	230	289	328	330				
Propeller shaft power 1) (At full load) With drive IPS	4	kW	45	94	161	202	229	231				
		hp	61	128	219	274	311	314				
Propellershaft power at prop. load x ^{2.5} With drive IPS	4	kW	10	28	57	100	157	231				
		hp	14	38	77	135	214	314				
Propellershaft power at prop. load x ³ With drive IPS	4	kW	5	18	43	84	145	231				
		hp	7	25	59	114	198	314				
Torque at crankshaft 2)	4	Nm	448,8	630,9	808,3	810,5	767,1	663				
		lbf ft	331	465	596	598	566	489				
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)	4	MPa	1,03	1,44	1,85	1,85	1,75	1,51				
		psi	148,7	209,1	267,9	268,6	254,2	219,7				
Max combustion pressure 2)	4	MPa	11	13	15	16	16	16				
		psi	1595	1885	2176	2321	2321	2321				

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)	4	g/kWh lb/hph	244 0,395	237 0,384	213 0,345	204 0,33	215 0,348	235 0,381				
Fuel consumption, Test cycle E5	4	g/kWh lb/hph	235 0,38									
Fuel consumption at prop. load x ^{2,5}	4	l/h US gal/h	3,4 0,9	8,0 2,1	15,9 4,2	27,5 7,3	44,9 11,9	68,3 18,1				
Fuel consumption at prop. load x ³	4	l/h US gal/h	2,4 0,6	5,8 1,5	12,6 3,3	23,7 6,3	41,4 10,9	68,3 18,1				
Fuel consumption at full load	4	l/h US gal/h	13,7 3,6	28,1 7,4	43,2 11,4	51,8 13,7	62,0 16,4	68,3 18,1				

Intake and exhaust system	Rating	rpm	1000	1500	2000	2500	3000	3500				
Specific exhaust heating effect in percent of crankshaft power	4	%						68				
Exhaust temperature at the exhaust pipe connecting flange after the turbo charger.	4	°C °F	160 320	230 446	310 590	355 671	405 761	495 923				
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%.	4	m ³ /min cu.ft./min						22,5 794,6				
Charge air pressure Inlet manifold	4	kPa psi						190 27,6				
Exhaust gas flow	4	m ³ /min cu.ft./min						41,2 1455				

Cooling system	Rating	rpm	1000	1500	2000	2500	3000	3500				
Radiated heat in percent of crankshaft power.	4	%						2				
Heat rejection to charge air cooler in percent of crankshaft power.	4	%						29				
Coolant heat rejection to HE, incl. engine oil cooler and excl. charge air cooler, in percent of crankshaft power.	4	%						83				
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			

VOLVO PENTA Volvo Penta IPS450 R4 330 hp (243 kW)	Document No	Issue Index
	21954801	02

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							30			
	°F							86			

Emissions	Rating	rpm	1000	1500	2000	2500	3000	3500				
Smoke at prop. load x ^{2.5}	4	*BSU	0,6	0,4	0,3	0,2	0,3	0,6				
Smoke at prop. load x ³	4	*BSU	0,5	0,4	0,3	0,3	0,3	0,6				

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