

General

4-stroke direct injected, turbocharged and aftercooled diesel engine

Number of cylinders		5
No of valves		20
Displacement, total	litres in ³	2,40 146,5
Firing order		1-2-4-5-3
Rotational direction, viewed from the front		Clockwise
Bore	mm in	81 3,19
Stroke	mm in	93,2 3,67
Compression ratio		16,5
Max. static forward inclination:	°	0
Max. static backward inclination:	°	10
Max. intermittent forward inclination while running:	°	20
Max. intermittent backward inclination while running:	°	10
Max. intermittent side inclination while running:	°	20
Idling speed	rpm	700 + 50
Rated speed R5	rpm	3000
Propeller selection range R5	rpm	2900-3130
Dry weight engine BT	kg lb	260 573

Performance	Rating	rpm	700	1200	1600	2000	2200	2400	2600	2800	3000	3130
Crankshaft power 1), 5)	5	kW	11	25	46	66	73	80	79	81	81	81
		hp	15	34	63	90	99	109	107	110	110	110
Propeller shaft power 1) (At full load) With reverse gear	5	kW	11	24	44	63	70	77	76	78	78	78
		hp	14	33	60	86	95	104	103	106	106	106
Propellershaft power at prop. load x2,5	5	kW	2	8	16	28	36	45	54	65	78	
		hp	3	11	22	38	49	61	74	89	106	
Torque at crankshaft 2)	5	Nm	150,1	198,9	274,5	315,1	316,9	318,3	290,2	276,2	257,8	247,1
		lbf ft	111	147	202	232	234	235	214	204	190	182
Mean piston speed		m/s	2,2	3,7	5,0	6,2	6,8	7,5	8,1	8,7	9,3	9,7
		ft/s	7,1	12,2	16,3	20,4	22,4	24,5	26,5	28,5	30,6	31,9
Effective mean pressure 2)	5	MPa	0,79	1,04	1,44	1,65	1,66	1,67	1,52	1,45	1,35	1,29
		psi	113,9	151,0	208,4	239,2	240,5	241,6	220,2	209,7	195,7	187,6
Max combustion pressure 2)	5	MPa	9,8	10,8	11,9	11,4	11,4	11,4	11,1	10,7	10,4	10,2
		psi	1421	1566	1726	1653	1653	1653	1610	1552	1508	1479

Lubricating system

Specific lubricating oil consumption.	g/kWh	0,29
Max. oil volume including filters for all allowed installation inclinations:	litres	6,3
	US gal	1,66
Max. oil volume excluding filters for all allowed installation inclinations:	litres	5,8
	US gal	1,53
Min. oil volume excluding filters for all allowed installation inclinations:	litres	4,3
	US gal	1,14

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

Fuel system	Rating	rpm	700	1200	1600	2000	2200	2400	2600	2800	3000	3130
Specific fuel consumption 2)	5	g/kWh	361	258	236	215	214	214	216	216	218	221
		lb/hph	0,585	0,418	0,382	0,348	0,347	0,347	0,35	0,35	0,353	0,358
Fuel consumption, Test cycle E5	5	g/kWh	232									
		lb/hph	0,38									
Fuel consumption at prop. load x ^{2,5}	5	l/h	0,9	2,5	4,8	8,1	10,0	12,5	14,8	17,9	21,1	
		US gal/h	0,2	0,7	1,3	2,1	2,7	3,3	3,9	4,7	5,6	
Fuel consumption at full load	5	l/h	4,8	7,7	13,0	17,0	18,7	20,5	20,4	20,9	21,1	21,4
		US gal/h	1,3	2,0	3,4	4,5	4,9	5,4	5,4	5,5	5,6	5,7

Intake and exhaust system	Rating	rpm	700	1200	1600	2000	2200	2400	2600	2800	3000	3130	
Specific exhaust heating effect in percent of crankshaft power	5	%	65	64	66	64	66	68	69	70	72	74	
Exhaust temperature at the exhaust pipe connecting flange after the turbo charger.	5	°C	380	444	475	448	463	472	463	444	426	416	
			°F	716	831	887	838	865	882	865	831	799	781
Permitted back pressure in the exhaust line at rated speed. (Installed back pressure)		kPa								Max	10		
		psi									1,5		
		kPa								Min	5		
		psi									0,7		
Engine air consumption at 25°C / 77°F atmospheric pressure 100kPA and relative humidity 30%.	5	m³/min	0,8	1,6	2,8	4,2	4,6	5	5,5	5,9	6,3	6,6	
		cu.ft./min	28,25	56,5	98,88	148,3	162,4	176,6	194,2	208,4	222,5	233,1	
Charge air pressure Inlet manifold	5	kPa	106	128	167	200	200	200	200	199	200	200	
		psi	15,4	18,6	24,2	29,0	29,0	29,0	29,0	28,9	29,0	29,0	
Exhaust gas flow	5	m³/min	1,9	4,2	7,5	10,4	11,6	12,8	13,5	14	14,5	14,7	
		cu.ft./min	67,1	148,3	264,9	367,3	409,7	452	476,7	494,4	512,1	519,1	

Cooling system	Rating	rpm	700	1200	1600	2000	2200	2400	2600	2800	3000	3130
Radiated heat in percent of crankshaft power.	5	%				6	7	6	6	7	9	10
Heat rejection to charge air cooler in percent of crankshaft power.	5	%	2	5	9	13	12	12	12	13	14	15
Coolant heat rejection to HE in percent of crankshaft power.	5	%	0	102	84	80	77	75	74	74	74	75
Coolant flow with fully open thermostat and std cooling system		l/min	45	70	94	116	130	140	153	165	176	185
		cu.ft./min	1,6	2,5	3,3	4,1	4,6	4,9	5,4	5,8	6,2	6,5
Max. permissible temperature on coolant in engine outlet		°C	98									
		°F	208									
Coolant volume engine, including heat exchanger		litres	8,7									
		US gal.	2,30									
Max. additional coolant for cabin heater etc. with std. Expansion tank		litres	8									
		US gal.	2,11									
Maximum coolant flow to cabin heater etc.		l/min	20									
		cu.ft./min	0,71									
Thermostat, start open at		°C	80									
		°F	176									
Thermostat, fully open at		°C	94									
		°F	201									

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2) At power according to 1).

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4) Acc. to ISO 3744

5) At installed back pressure

Raw water circuit		rpm	700	1200	1600	2000	2200	2400	2600	2800	3000	3130
Nominal raw water design flow	l/min		27	46	61	76	83	89	96	102	108	112
	cu.ft/min		1,0	1,6	2,2	2,7	2,9	3,1	3,4	3,6	3,8	4,0
Nominal raw water pump pressure head at design flow. (measured before and after pump)	kPa		19	26	36	48	55	62	69	77	85	90
	psi		2,8	3,8	5,2	7,0	8,0	9,0	10,0	11,2	12,3	13,1
Maximum raw water pump suction head	kPa		30									
	psi		4,4									
Maximum additional pressure drop excl. reverse gear oil cooler and riser	kPa		0	1	3	5	7	8	10	12	14	16
	psi			0,1	0,4	0,7	1,0	1,2	1,5	1,7	2,0	2,3
Pressure drop over reverse gear oil cooler (optional equipment)	kPa		2	3	4	5	5	6	6	7	7	7
	psi		0,2	0,4	0,6	0,7	0,8	0,8	0,9	1,0	1,0	1,0
Maximum raw water temperature entering charge air cooler	°C		30									
	°F		86									

Emissions		Rating	rpm	700	1200	1600	2000	2200	2400	2600	2800	3000	3130
Smoke at prop. load x ^{2,5}	5	*BSU		0,0	0,0	0,1	0,3	0,2	0,3	0,1	0,2	0,1	
Noise at prop. load x ^{2,5} . 4)	5	dBA		92	94	99	107	109	111	110	109	110	

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

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