General

4-stroke direct injected, turbocharged and aftercooled diesel engine

Number of cylinders		4
No of valves		16
Displacement, total	litres in³	3,67 223,7
Firing order		1-3-4-2
Rotational direction, viewed from the front		Clockwise
Bore	mm in	103 4,06
Stroke	mm in	110 4,33
Compression ratio		17.5:1
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	700 - 750
Rated speed R5	rpm	3500
Propeller selection range R5	rpm	3400-3600
Dry weight engine BT	kg lb	482 1063
Dry weight with reverse gear HS63AE	kg lb	558 1230
Dry weight with reverse gear HS63VE	kg lb	594 1310

Performance	**Rating**	**rpm**	**1000**	**1500**	**2000**	**2500**	**3000**	**3500**				
Crankshaft power 1), 5)	5	kW	31	54	113	161	187	191				
		hp	42	73	154	219	254	260				
Propeller shaft power 1) (At full load)	5	kW	31	53	112	159	185	189				
With reverse gear HS63AE		hp	42	73	152	217	252	257				
With reverse gear HS63VE	5	kW	31	53	112	159	185	189				
		hp	42	73	152	217	252	257				
Propellershaft power at prop. load $x^{2,5}$	5	kW	8	23	47	82	129	189				
With reverse gear HS63AE		hp	11	31	63	111	175	257				
With reverse gear HS63VE	5	kW	8	23	47	82	129	189				
		hp	11	31	63	111	175	257				
Propellershaft power at prop. load x^3	5	kW	4	15	35	69	119	189				
With reverse gear HS63AE		hp	6	20	48	94	162	257				
With reverse gear HS63VE	5	kW	4	15	35	69	119	189				
		hp	6	20	48	94	162	257				
Torque at crankshaft 2)	5	Nm	296	343,8	539,5	615	595,2	521,1				
		lbf ft	218	254	398	454	439	384				
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	1,01	1,18	1,85	2,11	2,04	1,79				
		psi	147,2	170,9	268,2	305,7	295,9	259,1				
Max combustion pressure 2)	5	MPa	11	12	17	20	19	19				
		psi	1595	1740	2466	2901	2756	2756				

Lubricating system

Specific lubricating oil consumption.	g/kWh	< 0,2
Max. oil volume including filters for all allowed installation inclinations:	litres US gal	12 3,17
Min. oil volume excluding filters for all allowed installation inclinations:	litres US gal	10,5 2,77

Fuel system	**Rating**	**rpm**	**1000**	**1500**	**2000**	**2500**	**3000**	**3500**				
Specific fuel consumption 2)	5	g/kWh lb/hph	247 0,4	230 0,373	228 0,369	206 0,334	213 0,345	230 0,373				
Fuel consumption, Test cycle E5	5	g/kWh lb/hph	233 0,38									
Fuel consumption at prop. load x ^{2,5}	5	l/h US gal/h	2,6 0,7	6,2 1,6	12,4 3,3	21,3 5,6	34,7 9,2	52,6 13,9				
Fuel consumption at prop. load x ^{3}	5	l/h US gal/h	1,8 0,5	4,5 1,2	9,8 2,6	18,3 4,8	32,5 8,6	52,6 13,9				
Fuel consumption at full load	5	l/h US gal/h	9,2 2,4	14,9 3,9	30,8 8,1	39,7 10,5	47,7 12,6	52,6 13,9				

Intake and exhaust system	**Rating**	**rpm**	**1000**	**1500**	**2000**	**2500**	**3000**	**3500**				
Specific exhaust heating effect in percent of crankshaft power	5	%						69				
Exhaust temperature at the exhaust pipe connecting flange after the turbo charger.	5	°C °F	185 365	280 536	380 716	430 806	480 896	565 1049				
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						15,5 547,4				
Charge air pressure Inlet manifold	5	kPa psi						205 29,7				
Exhaust gas flow	5	m³/min cu.ft./min						30,7 1084				

Cooling system	Rating	rpm	1000	1500	2000	2500	3000	3500
Radiated heat in percent of crankshaft power.	5	%						3
Heat rejection to charge air cooler in percent of crankshaft power.	5	%						23
Coolant heat rejection to HE, incl. engine oil cooler and excl. charge air cooler, in percent of crankshaft power.	5	%						69
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						172 6,1
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.	13 3,43					
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						172 6,1
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	0,4	0,3	0,2	0,2	0,3	0,7
Smoke at prop. load x^3	5	*BSU	0,4	0,2	0,3	0,2	0,3	0,7

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