

Technical Data D4-225 I

Rating 4 225 hp (165,4 kW)

General

4-stroke direct injected, turbocharged and aftercooled diesel engine

Number of cylinders		4
No of valves		16
Displacement, total	litres	3,67
	in ³	223,7
Firing order		1-3-4-2
Rotational direction, viewed from the front		Clockwise
Bore	mm	103
	in	4,06
Stroke	mm	110
	in	4,33
Compression ratio		17,5:1
Maximum forward inclination installed:	°	0
Maximum backward inclination installed:	°	10
Max. intermittent forward inclination while running:	°	10
Max. intermittent backward inclination while running:	°	20
Max. intermittent side tilt while running:	°	30 for max 30 sec.
Idling speed	rpm	700 - 750
Rated speed	rpm	3500
Propeller selection range	rpm	3400-3600
Dry weight engine BT	kg	482
	lb	1063
Dry weight with reverse gear: HS45AE	kg	546
	lb	1204

Performance	Rating	r/min									
			1500	2000	2500	3000	3500				
Crankshaft power 1), 5)	4	kW	62	105	140,5	160,5	165,4				
		hp	84,32	142,8	191,1	218,3	224,9				
Propellershaft power 1) For HS45AE (At full load)	4	kW	60,14	101,9	136,3	155,7	160,4				
		hp	81,79	138,5	185,3	211,7	218,2				
Propellershaft power at prop.load x ^{2,5} For HS45AE	4	kW	19	40	69	109	160				
		hp	26	54	94	148	218				
Propellershaft power at prop.load x ³ For HS45AE	4	kW	13	30	58	101	160				
		hp	18	41	79	137	218				
Torque at crankshaft 2)	4	Nm	394,7	501,3	536,7	510,9	451,3				
		lbf ft	291	370	396	377	333				
Mean piston speed		m/s	5,5	7,3	9,2	11,0	12,8				
		ft/s	18,0	24,1	30,1	36,1	42,1				
Effective mean pressure 2)	4	MPa	1,35	1,72	1,84	1,75	1,55				
		psi	196,2	249,2	266,8	254,0	224,3				
Max combustion pressure 2)	4	MPa	13	15,6	16,5	16,3	16				
		psi	1885	2263	2393	2364	2321				

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

Technical Data D4-225 I-B

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Lubricating system

Specific lubricating oil consumption.		g/kWh	0,2	
Max oil volume incl. filters at following inclination:	0°	litres	12,5	
		US gal	3,30	
Min oil volume incl. filters at following inclination:	0°	litres	11	
		US gal	2,91	

Fuel system

	Rating	r/min	1500	2000	2500	3000	3500				
Specific fuel consumption 2)	4	g/kWh	245	220	205	212	235				
		lb/hph	0,397	0,356	0,332	0,343	0,381				
Fuel consumption at prop. load x ^{2,5}	4	l/h	5,5	10,6	18,4	29	46,1				
		US gal/h	1,5	2,8	4,9	7,7	12,2				
Fuel consumption at prop. load x ³	4	l/h	4,1	8,3	16,5	27,2	46,1				
		US gal/h	1,1	2,2	4,4	7,2	12,2				
Fuel consumption at full load	4	l/h	18,02	27,4	34,17	40,36	46,11				
		US gal/h	4,8	7,2	9,0	10,7	12,2				

Intake and exhaust system

	Rating	r/min	1500	2000	2500	3000	3500				
Exhaust temperature at the exhaust pipe connecting flange after the turbo charger. At prop.load exp. 2,5	4	°C	238	301	310	305	358				
		°F	460	574	590	581	676				
Permitted back pressure in the exhaust line at rated speed. (Installed back pressure)		kPa						Max	25		
		psi							3,6		
		kPa						Min	10		
		psi							1,5		
Engine air consumption at 25°C / 77°F atmospheric pressure 100kPA and relative humidity 30%.	4	m³/min cu.ft./min					16 565				
Turbo charge pressure. At prop.load exp.2,5	4	kPa	10	31	74	146	210				
		psi	1,5	4,5	10,7	21,2	30,5				
Exhaust gas flow	4	m³/min					29,2				
		cu.ft./min					1031				

Cooling system

	Rating	r/min	1500	2000	2500	3000	3500				
Sea water pump flow.		m³/h					9,0				
		foot³/h					318				
Coolant content engine, incl. heat exchangers and air cooler		litres						13			
		U.S. gal.						3,43			
Thermostat, start open at		°C						82			
		°F						180			
Thermostat, fully open at		°C						92			
		°F						198			

Emissions

	Rating	r/min	1500	2000	2500	3000	3500				
Smoke at prop. load x ^{2,5}	4	BSU	0,2	0,1	0,1	0,1	0,2				
Smoke at prop. load x ³	4	BSU	0,2	0,1	0,1	0,1	0,2				

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