

Technical Data D4-180

Rating 4 180 hp (132 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	2800
Propeller selection range	rpm	2700-2900
Dry weight engine BT	kg	482
	lb	1063
Dry weight with reverse gear: HS45AE	kg	546
	lb	1204

Performance	Rating	r/min	1000	1500	2000	2500	2800				
Crankshaft power 1), 5)	4	kW	32	60	103	130	132				
		hp	43,52	81,6	140,1	176,8	179,5				
Propellershaft power 1) For HS45AE (At full load)	4	kW	31,04	58,2	99,91	126,1	128				
		hp	42,21	79,15	135,9	171,5	174,1				
Propellershaft power at prop.load x ^{2,5} For HS45AE	4	kW	10	27	55	96	128				
		hp	13	37	75	131	174				
Propellershaft power at prop.load x ³ For HS45AE	4	kW	6	20	47	91	128				
		hp	8	27	64	124	174				
Torque at crankshaft 2)	4	Nm	305,6	382	491,8	496,6	450,2				
		lbf ft	225	282	363	366	332				
Mean piston speed		m/s	3,7	5,5	7,3	9,2	10,3				
		ft/s	12,0	18,0	24,1	30,1	33,7				
Effective mean pressure 2)	4	MPa	1,05	1,31	1,69	1,70	1,54				
		psi	151,9	189,9	244,5	246,9	223,8				
Max combustion pressure 2)	4	MPa	11,1	12,7	15,5	14,9	12,8				
		psi	1610	1842	2248	2161	1856				

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

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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	1000	1500	2000	2500	2800				
Specific fuel consumption 2)	4	g/kWh	260	245	215	207	214,5				
		lb/hph	0,421	0,397	0,348	0,335	0,347				
Fuel consumption at prop. load x ^{2,5}	4	l/h	3	7,2	14,3	24,8	33,7				
		US gal/h	0,8	1,9	3,8	6,6	8,9				
Fuel consumption at prop. load x ³	4	l/h	2	5,4	12,5	23,5	33,7				
		US gal/h	0,5	1,4	3,3	6,2	8,9				
Fuel consumption at full load	4	l/h	9,87	17,44	26,27	31,92	33,59				
		US gal/h	2,6	4,6	6,9	8,4	8,9				

Intake and exhaust system

	Rating	r/min	1000	1500	2000	2500	2800				
Exhaust temperature at the exhaust pipe connecting flange after the turbo charger. At prop.load exp. 2,5	4	°C	191	322	355	358	355				
		°F	376	612	671	676	671				
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					12 423,8				
Turbo charge pressure. At prop.load exp.2,5	4	kPa	3	14	44	107	157				
		psi	0,4	2,0	6,4	15,5	22,8				
Exhaust gas flow	4	m³/min cu.ft./min					22 776,9				

Cooling system

	Rating	r/min	1000	1500	2000	2500	2800				
Sea water pump flow.		m³/h					7,5				
		foot³/h					265				
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	1000	1500	2000	2500	2800				
Smoke at prop. load x ^{2,5}	4	BSU	0,2	0,3	0,1	0,1	0,1				
Smoke at prop. load x ³	4	BSU	0,3	0,2	0,1	0,1	0,1				

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