

# Technical Data D1-30

## Rating

### General

4-stroke in-direct injected, diesel engine

Number of cylinders		3
No of valves		6
Displacement, total	litres in <sup>3</sup>	1,13 69,1
Firing order		1-2-3
Rotational direction, viewed from the front		Clockwise
Bore	mm in	77 3,03
Stroke	mm in	81 3,19
Compression ratio		23,5:1
Compression pressure at 240 rpm	MPa psi	
Maximum forward inclination:	°	0
Max. intermittent backward tilt while running:	°	25
Max. intermittent side tilt while running:	°	35
Idling speed	rpm	850 ± 25
Rated speed	rpm	3200
Propeller selection range	rpm	2800-3200
Dry weight engine BT	kg lb	127 280

Performance		Rating	r/min	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200
Crankshaft power 1), 5)	kW			7,5	9,5	11,2	12,8	14,7	16,4	17,8	18,5	19,3	20	20,9
	hp			10,2	12,92	15,23	17,41	19,99	22,3	24,21	25,16	26,25	27,2	28,42
Propeller shaft power 1) (At full load)	kW			7,2	9,12	10,75	12,29	14,11	15,74	17,09	17,76	18,53	19,2	20,06
	hp			9,792	12,4	14,62	16,71	19,19	21,41	23,24	24,15	25,2	26,11	27,29
Propellershaft power at prop.load x <sup>3</sup>	kW			1,1	1,7	2,5	3,6	4,9	6,5	8,5	10,8	13,5	16,6	20,1
	hp			1,4	2,3	3,4	4,9	6,7	8,9	11,5	14,7	18,3	22,5	27,3
Torque at crankshaft 2)	Nm			59,68	64,8	66,85	67,91	70,19	71,19	70,82	67,95	65,82	63,66	62,37
	lbf ft			44	48	49	50	52	53	52	50	49	47	46
Mean piston speed	m/s			3,2	3,8	4,3	4,9	5,4	5,9	6,5	7,0	7,6	8,1	8,6
	ft/s			10,6	12,4	14,2	15,9	17,7	19,5	21,3	23,0	24,8	26,6	28,3
Effective mean pressure 2)	MPa			0,66	0,72	0,74	0,75	0,78	0,79	0,79	0,75	0,73	0,71	0,69
	psi			96,1	104,4	107,7	109,4	113,1	114,7	114,1	109,4	106,0	102,5	100,5

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

Max oil volume excl. filters at following inclination:		litres	3,5										
		US gal	0,92										

### Fuel system

	Rating	r/min	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200
Specific fuel consumption 2)		g/kWh	275	266	260	258	257	257	258	260	261	264	270
		lb/hph	0,446	0,431	0,421	0,418	0,416	0,416	0,418	0,421	0,423	0,428	0,437
Fuel consumption at prop. load x <sup>3</sup>		l/h	0,8	1,0	0,9	1,5	1,9	2,4	2,9	3,6	4,4	5,5	6,7
		US gal/h	0,2	0,3	0,2	0,4	0,5	0,6	0,8	0,9	1,2	1,5	1,8
Fuel consumption at full load		l/h	2,5	3,0	3,5	4,0	4,5	5,0	5,5	5,8	6,0	6,3	6,8
		US gal/h	0,7	0,8	0,9	1,0	1,2	1,3	1,5	1,5	1,6	1,7	1,8

### Intake and exhaust system

	Rating	r/min	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200	
Exhaust temperature at the exhaust pipe connecting flange after the turbo charger.		°C	407	441	463	476	507	530	523	540	537	522	511	
		°F	765	826	865	889	945	986	973	1004	999	972	952	
Permitted back pressure in the exhaust line at rated speed. (Installed back pressure)		kPa								Max	20			
		psi									2,9			
		kPa								Min				
		psi												
Engine air consumption at 25°C / 77°F atmospheric pressure 100kPA and relative humidity 30%.		m³/min	0,567	0,667	0,75	0,833	0,917	1	1,117	1,167	1,25	1,35	1,45	
		cu.ft./min	20,01	23,54	26,49	29,43	32,37	35,31	39,43	41,2	44,14	47,67	51,21	
Exhaust gas flow		m³/min	1,45	1,75	2,017	2,267	2,567	2,817	3,067	3,217	3,4	3,55	3,65	
		cu.ft./min	51,21	61,8	71,22	80,05	90,64	99,47	108,3	113,6	120,1	125,4	128,9	

### Cooling system

	Rating	r/min	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200
Radiated heat in percent of crankshaft power.		%	13	12	12	13	14	14	13	12	14	16	16
Coolant heat rejection to HE, excl. oil- and aftercooler, in percent of crankshaft power.		%	138	128	122	116	112	111	110	113	112	113	117
Available pumphead of freshwater circulation pump. At least 70% must be utilized to get turbulent flow.		kPa	27,2	32,1	37	41,8	46,8	51,7	56,6	61,6	66,7	71,7	76,5
		In H <sub>2</sub> O	109	129	149	168	188	208	227	247	268	288	307
Sea water pump flow.		m³/h	1,1	1,2	1,3	1,3	1,4	1,6	1,7	1,8	2,0	2,1	2,2
		foot³/h	39	43	47	46	50	55	60	65	69	73	77
Fresh water circulation pump flow		m³/h	1,6	1,9	2,2	2,5	2,8	3,1	3,4	3,7	4,0	4,3	4,6
		foot³/h	58	68	78	89	99	110	120	131	141	152	162
Max permissible temperature on fresh water circulation outlet from the engine		°C	105										
		°F	221										
Coolant content engine, incl. heat exchangers and air cooler		litres	4,1										
		U.S. gal.	1,08										

### Emissions

	Rating	r/min	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200
Smoke at prop. load x <sup>3</sup>		*BSU	0,2	0,3	0,4	0,3	0,3	0,4	0,6	0,6	1,4	1,5	1,4

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

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