

Technical Data D1-13

Rating

General

4-stroke in-direct injected, diesel engine

Number of cylinders		2
No of valves		4
Displacement, total	litres in ³	0,51 31,0
Firing order		1-2
Rotational direction, viewed from the front		Clockwise
Bore	mm in	67 2,64
Stroke	mm in	72 2,83
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	96 212

Performance		Rating	r/min	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200
Crankshaft power 1), 5)		kW		3,3	4	4,8	5,5	6,1	6,7	7,3	8	8,5	8,8	9
		hp		4,488	5,44	6,528	7,48	8,296	9,112	9,928	10,88	11,56	11,97	12,24
Propeller shaft power 1) (At full load) With reverse gear MS 10		kW		3,2	3,8	4,6	5,3	5,9	6,4	7,0	7,7	8,2	8,4	8,6
		hp		4,308	5,222	6,267	7,181	7,964	8,748	9,531	10,44	11,1	11,49	11,75
Propellershaft power at prop.load x ³ With reverse gear MS 10		kW		0,5	0,7	1,1	1,5	2,1	2,8	3,6	4,6	5,8	7,1	8,6
		hp		0,6	1,0	1,5	2,1	2,9	3,8	4,9	6,3	7,8	9,6	11,7
Torque at crankshaft 2)		Nm		26,26	27,28	28,65	29,18	29,13	29,08	29,05	29,38	28,99	28,01	26,86
		lbf ft		19	20	21	22	21	21	21	22	21	21	20
Mean piston speed		m/s		2,9	3,4	3,8	4,3	4,8	5,3	5,8	6,2	6,7	7,2	7,7
		ft/s		9,4	11,0	12,6	14,2	15,7	17,3	18,9	20,5	22,0	23,6	25,2
Effective mean pressure 2)		MPa		0,65	0,68	0,71	0,72	0,72	0,72	0,72	0,73	0,72	0,69	0,66
		psi		94,3	97,9	102,8	104,7	104,6	104,4	104,3	105,5	104,1	100,6	96,4

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	1,9
		US gal	0,50

Fuel system

	Rating	r/min	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200
Specific fuel consumption 2)		g/kWh	305	292	286	283	283	283	282	279	280	288	293
		lb/hph	0,494	0,473	0,463	0,458	0,458	0,458	0,457	0,452	0,454	0,467	0,475
Fuel consumption at prop. load x ³		l/h	0,3	0,5	0,6	0,7	0,9	1,1	1,4	1,6	2,0	2,5	3,1
		US gal/h	0,1	0,1	0,2	0,2	0,2	0,3	0,4	0,4	0,5	0,7	0,8
Fuel consumption at full load		l/h	1,2	1,4	1,6	1,8	2,0	2,2	2,4	2,6	2,8	3,0	3,1
		US gal/h	0,3	0,4	0,4	0,5	0,5	0,6	0,6	0,7	0,7	0,8	0,8

Intake and exhaust system

	Rating	r/min	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200	
Specific exhaust heating effect in percent of crankshaft power		%	78	76	77	78	81	81	82	84	88	91	94	
Exhaust temperature at the exhaust pipe connecting flange after the turbo charger.		°C	444	462	486	483	507	519	523	551	542	561	550	
		°F	831	864	907	901	945	966	973	1024	1008	1042	1022	
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	0,267	0,3	0,35	0,383	0,417	0,467	0,5	0,533	0,583	0,617	0,683	
		cu.ft./min	9,417	10,59	12,36	13,54	14,71	16,48	17,66	18,83	20,6	21,78	24,13	
Exhaust gas flow		m³/min	0,683	0,8	0,917	1,033	1,133	1,25	1,367	1,483	1,55	1,633	1,733	
		cu.ft./min	24,13	28,25	32,37	36,49	40,02	44,14	48,26	52,38	54,74	57,68	61,21	

Cooling system

	Rating	r/min	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200	
Radiated heat in percent of crankshaft power.		%	17	17	17	23	25	20	15	17	17	14	13	
Coolant heat rejection to HE, excl. oil- and aftercooler, in percent of crankshaft power.		%	159	155	146	140	140	140	137	131	131	140	142	
Sea water pump flow.		m³/h	1,2	1,3	1,3	1,4	1,6	1,7	1,8	2,0	2,1	2,3	2,4	
			foot³/h	41	46	46	50	55	60	65	70	75	79	84
Fresh water circulation pump flow		m³/h	1,2	1,4	1,6	1,8	2,0	2,2	2,4	2,6	2,8	3,0	3,2	
			foot³/h	41	49	56	63	71	78	85	92	100	107	114
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								2,7				
		U.S. gal.								0,71				

Emissions

	Rating	r/min	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200
Smoke at prop. load x ³	5	*BSU	0,1	0,1	0,2	0,2	0,3	0,3	0,5	0,7	0,7	1,1	1,8

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

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