

# Technical Data D2-40

## Rating

### General

4-stroke in-direct injected, diesel engine

Number of cylinders		4
No of valves		8
Displacement, total	litres in <sup>3</sup>	1,51 92,1
Firing order		1-3-4-2
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	148 326

Performance		Rating	r/min	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200
Crankshaft power 1), 5)		kW	10,8	13	15,5	18,2	20	21,4	23	24,7	26,2	27,7	29,1	
		hp	14,69	17,68	21,08	24,75	27,2	29,1	31,28	33,59	35,63	37,67	39,58	
Propeller shaft power 1) (At full load)		kW	10,37	12,48	14,88	17,47	19,2	20,54	22,08	23,71	25,15	26,59	27,94	
		hp	14,1	16,97	20,24	23,76	26,11	27,94	30,03	32,25	34,21	36,17	37,99	
Propellershaft power at prop.load x <sup>3</sup>		kW	1,5	2,3	3,5	5,0	6,8	9,1	11,8	15,0	18,7	23,0	27,9	
		hp	2,0	3,2	4,7	6,8	9,3	12,3	16,0	20,4	25,4	31,3	37,9	
Torque at crankshaft 2)		Nm	85,94	88,67	92,51	96,55	95,49	92,89	91,51	90,72	89,35	88,17	86,84	
		lbf ft	63	65	68	71	70	69	67	67	66	65	64	
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	0,72	0,74	0,77	0,80	0,80	0,77	0,76	0,76	0,74	0,73	0,72	
		psi	103,8	107,1	111,8	116,6	115,4	112,2	110,6	109,6	107,9	106,5	104,9	

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	6,5										
		US gal	1,72										

### Fuel system

	Rating	r/min	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200
Specific fuel consumption 2)		g/kWh	286	278	272	263	266	266	262	259	262	266	274
		lb/hph	0,463	0,45	0,441	0,426	0,431	0,431	0,424	0,42	0,424	0,431	0,444
Fuel consumption at prop. load x <sup>3</sup>		l/h	0,9	1,1	1,5	1,9	2,4	3,1	3,8	4,8	6,0	7,5	9,5
		US gal/h	0,2	0,3	0,4	0,5	0,6	0,8	1,0	1,3	1,6	2,0	2,5
Fuel consumption at full load		l/h	3,7	4,3	5,0	5,7	6,4	6,8	7,2	7,7	8,2	8,8	9,5
		US gal/h	1,0	1,1	1,3	1,5	1,7	1,8	1,9	2,0	2,2	2,3	2,5

### 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	520	538	563	560	593	604	585	550	568	583	605	
		°F	968	1000	1045	1040	1099	1119	1085	1022	1054	1081	1121	
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	0,733	0,867	0,967	1,133	1,2	1,3	1,45	1,65	1,75	1,85	1,917	
		cu.ft./min	25,9	30,61	34,14	40,02	42,38	45,91	51,21	58,27	61,8	65,33	67,69	
Exhaust gas flow		m³/min	2,083	2,483	2,817	3,217	3,517	3,817	4,117	4,4	4,683	4,967	5,2	
		cu.ft./min	73,57	87,7	99,47	113,6	124,2	134,8	145,4	155,4	165,4	175,4	183,6	

### Cooling system

	Rating	r/min	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200
Radiated heat in percent of crankshaft power.		%	15	15	15	15	17	16	10	10	9	8	9
Coolant heat rejection to HE, excl. oil-and aftercooler, in percent of crankshaft power.		%	127	121	118	113	112	111	110	110	110	113	116
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	38	42	47	44	49	55	59	64	70	74	78
Fresh water circulation pump flow		m³/h	1,6	2,0	2,3	2,6	2,9	3,2	3,6	3,9	4,3	4,6	4,9
		foot³/h	57	70	81	93	104	114	127	138	150	161	174
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	6,4										
		U.S. gal.	1,69										

### Emissions

	Rating	r/min	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200
Smoke at prop. load x <sup>2</sup>		*BSU	0,1	0,1	0,1	0,1	0,1	0,2	0,4	0,8	0,8	1,7	3,1

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

1) ISO 3046, fuel temp 40°C.

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4) Acc. to ISO 3744

5) At installed back pressure