

Technical Data D7A TA

Version D7A-B TA

Rating 2, rated speed 2300 rpm

General

In-line four stroke diesel engine with direct injection.

Number of cylinders		6
No of valves		2
Displacement, total	litres in ³	7,15 436,0
Firing order		1-5-3-6-2-4
Rotational direction, viewed towards flywheel		Anti-clockwise
Bore	mm in	108 4,25
Stroke	mm in	130 5,12
Compression ratio		19
Compression pressure at 240 rpm	MPa	3 - 3,8
Maximum forward inclination under duty:	°	10
Max. intermittent backward tilt while running:	°	
Max. intermittent side tilt while running:	°	
Idling speed	rpm	750 ± 25
Rated speed	rpm	2300
Propeller selection range	rpm	2275-2325

Performance	Rating	r/min	1000	1200	1500	1800	1900	2100	2300			
Crankshaft power 1), 5)	2	kW	61	90	127	149	153	162	174			
		hp	83	122	173	203	208	220,3	236,6			
Propellershaft power 1) (At full load)	2	kW	59	87	123	145	148	157	169			
		hp	80	119	168	197	202	214	230			
Propellershaft power at prop.load x ^{2,5}	2	kW	21	33	58	92	105	135	169			
		hp	29	45	79	125	143	184	230			
Propellershaft power at prop.load x ³	2	kW	14	24	47	81	95	129	169			
		hp	19	33	64	110	129	175	230			
Torque at crankshaft 2)	2	Nm	582,5	716,2	808,5	790,5	769	736,7	722,4			
		lbf ft	430	528	596	583	567	543	533			
Mean piston speed	2	m/s	4,3	5,2	6,5	7,8	8,2	9,1	10,0			
		ft/s	14,2	17,1	21,3	25,6	27,0	29,9	32,7			
Effective mean pressure 2)	2	MPa	1,02	1,26	1,42	1,39	1,35	1,30	1,27			
		psi	148,6	182,7	206,2	201,6	196,1	187,9	184,3			
Max combustion pressure 2)	2	MPa			12,4	12,5	12,6	12,6	12,6			
		psi			1798	1813	1827	1827	1827			

Lubricating system

Specific lubricating oil consumption.		g/kWh	Approx 0,3 % of fuel consumption
Max oil volume excl. filters at following inclination:	0 °	litres	16
Min oil volume excl. filters at following inclination:	0 °	litres	13
Max oil volume excl. filters at following inclination:	°	litres	
Min oil volume excl. filters at following inclination:	°	litres	
Max oil volume excl. filters at following inclination:	°	litres	
Min oil volume excl. filters at following inclination:	°	litres	

Fuel system	Rating	r/min	1000	1200	1500	1800	1900	2100	2300			
Specific fuel consumption 2)	2	g/kWh	222	222	212	210	212	218	226			
		lb/hph	0,36	0,36	0,343	0,34	0,343	0,353	0,366			
Fuel consumption at prop. load x ^{2,5}	2	l/h	6	9	15	23	27	35	45			
		US gal/h	1,5	2,3	3,9	6,1	7,0	9,3	12,0			
Fuel consumption at prop. load x ³	2	l/h	4	6	12	20	24	33	45			
		US gal/h	1,0	1,7	3,1	5,3	6,3	8,8	12,0			
Fuel consumption at full load	2	l/h	16	24	32	37	39	42	47			
		US gal/h	4,3	6,3	8,5	9,8	10,2	11,1	12,4			

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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Intake and exhaust system	Rating	r/min	1000	1200	1500	1800	1900	2100	2300				
Specific exhaust heating effect in percent of crankshaft power	2	%			65	64	65	67	73				
Exhaust temperature (at the exhaust pipe connecting flange after the turbo charger)	2	°C			430	365	350	332	330				
		°F			806	689	662	630	626				
Permitted back pressure in the exhaust line at rated speed. (Installed back pressure)	2	kPa								Max	7,5		
		psi									1,1		
Engine air consumption at 25°C / 77°F atmospheric pressure 100kPA and relative humidity 30%	2	m³/min			8,9	12,7	13,5	15,8	18,1				
		cu.ft./min			314,7	447,1	476,7	558	639,2				
Charge air pressure after aftercooler.	2	kPa			92	133	138	159	180				
		psi			13,3	19,3	20,0	23,1	26,1				
Exhaust gas flow (behind turbine)	2	m³/min			22	28	29	33	38				
		cu.ft./min			759,3	978,2	1021	1165	1342				

Cooling system	Rating	r/min	1000	1200	1500	1800	1900	2100	2300				
Radiated heat in percent of crankshaft power.	2	%			5,3	5,3	5,3	5,4	5,7				
Heat rejection to after cooler in percent of of crankshaft power.	2	%			8,8	16,7	18,8	23,1	27				
Cooling water heating effect incl. oil cooler in percent of crankshaft power 3).	2	%			78	73	72	73	77				
Total pumphead freshwater circulation pump.		kPa			59	85	95	116	140				
Highest permissible pressure drop in outer circuit at keel cooling.		kPa			21	31	35	43	51				
Sea water pump flow.		m³/h			5,0	6,8	7,3	8,3	9,0				
		foot³/h			177	240	258	293	318				
Cooling water circulation pump flow		m³/h			9,4	11,3	11,9	13,0	14,5				
		foot³/h			332	399	420	459	512				
Max permissible temperature on fresh water circulation outlet from the engine		°C								105			
		°F								221			
Coolant volyme in engine with raw water.		litres								26			
		U.S. gal.								6,87			
Thermostat, start open at		°C								83			
		°F								181			
Thermostat, fully open at		°C								98			
		°F								208			

Emissions	Rating	r/min	1000	1200	1500	1800	1900	2100	2300			
Smoke at prop. load x ^{2,5}	2	BSU	0,7	0,6	0,5	0,4	0,3	0,3	0,3			
Smoke at prop. load x ³	2	BSU	0,5	0,5	0,45	0,4	0,35	0,3	0,3			
Noise at full load	2	dBA			91	93	94	95	97			

1) ISO 3046, fuel temp 40°C.

ISO 8665 (=SAE J 1228=ICOMIA 28-83)

2) At power according to 1).

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4) Acc. to ISO 3744

5) At installed back pressure