

# Technical Data D7A TA

Version D7A-B TA

Rating 1, 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 <sup>3</sup>	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

	Rating	r/min	1000	1200	1500	1800	1900	2100	2300			
Crankshaft power 1), 5)	1	kW	60	80	108	127	130	138	148			
		hp	82	109	147	173	177	187,7	201,3			
Propellershaft power 1) (At full load)	1	kW	58	78	105	123	126	134	144			
		hp	79	106	142	168	171	182	195			
Propellershaft power at prop.load x <sup>2,5</sup>	1	kW	18	28	49	78	89	115	144			
		hp	24	38	67	106	121	156	196			
Propellershaft power at prop.load x <sup>3</sup>	1	kW	12	20	40	69	81	110	144			
		hp	16	27	54	94	110	150	196			
Torque at crankshaft 2)	1	Nm	573	636,6	687,5	673,8	653,4	627,5	614,5			
		lbf ft	423	470	507	497	482	463	453			
Mean piston speed		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)	1	MPa	1,01	1,12	1,21	1,18	1,15	1,10	1,08			
		psi	146,1	162,4	175,4	171,9	166,7	160,1	156,7			
Max combustion pressure 2)	1	MPa			11,3	11,5	11,6	11,6	11,7			
		psi			1639	1668	1682	1682	1697			

## 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	

	Rating	r/min	1000	1200	1500	1800	1900	2100	2300			
Specific fuel consumption 2)	1	g/kWh	218	218	211	211	213	219	229			
		lb/hph	0,353	0,353	0,342	0,342	0,345	0,355	0,371			
Fuel consumption at prop. load x <sup>2,5</sup>	1	l/h	5	7	12	20	23	30	39			
		US gal/h	1,2	1,9	3,3	5,2	6,0	7,9	10,4			
Fuel consumption at prop. load x <sup>3</sup>	1	l/h	3	5	10	17	21	29	39			
		US gal/h	0,8	1,4	2,7	4,6	5,4	7,6	10,4			
Fuel consumption at full load	1	l/h	16	21	27	32	33	36	40			
		US gal/h	4,1	5,5	7,2	8,4	8,7	9,5	10,7			

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	1	%			64	64	65	67	70				
Exhaust temperature (at the exhaust pipe connecting flange after the turbo charger)	1	°C			380	335	320	296	300				
		°F			716	635	608	565	572				
Permitted back pressure in the exhaust line at rated speed. (Installed back pressure)		kPa								Max	7,5		
		psi									1,1		
		kPa								Min	0		
		psi									0		
Engine air consumption at 25°C / 77°F atmospheric pressure 100kPa and relative humidity 30%	1	m³/min			8,3	11,6	12,66	14,75	17,33				
		cu.ft./min			293,1	409,7	447,1	520,9	612				
Charge air pressure after aftercooler.	1	kPa			81	127	122	140	160				
		psi			11,7	18,4	17,7	20,3	23,2				
Exhaust gas flow (behind turbine)	1	m³/min			19	26	26	29	34				
		cu.ft./min			667,4	914,6	921,7	1031	1192				

Cooling system	Rating	r/min	1000	1200	1500	1800	1900	2100	2300			
Radiated heat in percent of crankshaft power.	1	%			5,3	5,3	5,3	5,4	5,7			
Heat rejection to after cooler in percent of crankshaft power.	1	%			9	15	17	21	26			
Cooling water heating effect incl. oil cooler in percent of crankshaft power 3).	1	%			81	75	71	76	79			
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 volume 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 <sup>2,5</sup>	1	BSU	0,6	0,6	0,4	0,35	0,3	0,3	0,3			
Smoke at prop. load x <sup>3</sup>	1	BSU	0,5	0,5	0,4	0,35	0,3	0,3	0,3			
Noise at full load	1	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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5) At installed back pressure