

# Technical Data D12D-E MP

Rating 3.

## General

4-stroke direct injected, turbocharged and aftercooled diesel engine

Number of cylinders		6
No of valves		24
Displacement, total	litres in <sup>3</sup>	12,13 740,2
Firing order		1-5-3-6-2-4
Rotational direction, viewed from the front		Clockwise
Bore	mm in	131 5,16
Stroke	mm in	150 5,91
Compression ratio		16,5:1
Compression pressure at 240 rpm	MPa	3,6
Maximum forward inclination:	°	0
Max. intermittent backward tilt while running:	°	13
Max. intermittent side tilt while running:	°	22,5
Idling speed	rpm	525
Rated speed	rpm	2300
Propeller selection range	rpm	2300-2350

<b>Performance</b>		<b>r/min</b>	<b>1000</b>	<b>1200</b>	<b>1400</b>	<b>1600</b>	<b>1800</b>	<b>2000</b>	<b>2200</b>	<b>2300</b>		
Crankshaft power 1), 5)	kW		156	277	386	441	478	478	478	478		
	hp		212	377	525	600	650	650	650	650		
Propeller shaft power 1) at full load	kW		151	269	374	428	464	464	464	464		
	hp		206	365	509	582	631	631	631	631		
Propeller shaft power at calculated prop. load x <sup>2,5</sup>	kW		58	91	134	187	251	327	415	464		
	hp		79	124	182	254	341	445	564	631		
Propeller shaft power at calculated prop. load x <sup>3</sup>	kW		38	66	105	156	222	305	406	464		
	hp		52	90	143	212	302	415	552	631		
Torque at crankshaft 2)	Nm		1490	2204	2633	2632	2536	2282	2075	1985		
	kpm		152	225	269	268	259	233	212	202		
Mean piston speed	m/s		5,0	6,0	7,0	8,0	9,0	10,0	11,0	11,5		
	ft/s		16,4	19,7	23,0	26,2	29,5	32,8	36,1	37,7		
Effective mean pressure 2)	MPa		13,7	23,2	27,4	27,3	26,4	23,9	21,6	20,5		
	kpsi		1,99	3,36	3,97	3,96	3,83	3,47	3,13	2,97		
Max combustion pressure 2)	MPa		150	177	173	178	172	175	176	176		
	kpsi		21,8	25,7	25,1	25,8	24,9	25,4	25,5	25,5		

## Lubricating system

Specific lubricating oil consumption.		g/kWh	0,2
Max oil volume excl. filters at following inclination:	0 °	litres	38
Min oil volume excl. filters at following inclination:	0 °	litres	24
Max oil volume excl. filters at following inclination:	3 °	litres	33
Min oil volume excl. filters at following inclination:	3 °	litres	21
Max oil volume excl. filters at following inclination:	8 °	litres	27
Min oil volume excl. filters at following inclination:	8 °	litres	15

1) ISO 3046, fuel temp 40°C

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 exhaust back pressure 15 kPa

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<b>Fuel system</b>	<b>r/min</b>	<b>1000</b>	<b>1200</b>	<b>1400</b>	<b>1600</b>	<b>1800</b>	<b>2000</b>	<b>2200</b>	<b>2300</b>		
Specific fuel consumption 2)	g/kWh	251	234	212	205	211	212	214	217		
Fuel consumption	L/h	16	25	34	47	61	80	109	124		
at prop. load x <sup>2,5</sup>	US gal/h	4,2	6,6	9,0	12,4	16,1	21,1	28,8	32,8		
Fuel consumption	L/h	12	18	28	40	55	75	107	124		
at prop. load x <sup>3</sup>	US gal/h	3,2	4,8	7,4	10,6	14,5	19,8	28,3	32,8		
Fuel consumption at full load	L/h	47	77	98	108	120	121	122	124		
at full load	US gal/h	12,4	20,3	25,9	28,5	31,8	32	32,3	32,7		

<b>Intake and exhaust system</b>	<b>r/min</b>	<b>1000</b>	<b>1200</b>	<b>1400</b>	<b>1600</b>	<b>1800</b>	<b>2000</b>	<b>2200</b>	<b>2300</b>			
Specific exhaust heating effect in percent of crankshaft power	% *)	77	77	66	63	64	66	68	67			
Exhaust temperature at the exhaust pipe connecting flange after the turbo charger.	°C	566	596	491	424	395	373	363	355			
Permitted back pressure in the exhaust line at rated speed. (Installed back pressure)	kPa								Max	0,15		
	psi								Min	0		
									Max	0,022		
									Min	0		
Engine air consumption at 25°C / 77°F atmospheric pressure 100kPA and relative humidity 30%.	m <sup>3</sup> /h	520	870	1350	1730	2170	2360	2500	2540			
Turbo charge pressure.	kPa	0,5	1,2	2,0	2,4	2,9	2,9	2,8	2,8			
	psi	0,07	0,17	0,29	0,35	0,42	0,42	0,41	0,41			
Exhaust gas flow	m <sup>3</sup> /h	1640	3000	3650	4190	4940	5080	5170	5260			

<b>Cooling system</b>	<b>r/min</b>	<b>1000</b>	<b>1200</b>	<b>1400</b>	<b>1600</b>	<b>1800</b>	<b>2000</b>	<b>2200</b>	<b>2300</b>		
Radiated heat in percent of crankshaft power.	%	19	16	8	2	1	1	1	2		
Heat rejection to after cooler in percent of crankshaft power.	%	5	11	14	20	22	26	29	27		
Heat rejection to engine oil cooler in percent of crankshaft power 3).	%	13	8	7	7	7	7	8	8		
Cooling water heating effect incl. oil and after cooler in percent of crankshaft power.	%	103	83	78	80	83	86	90	90		
Total pumphead freshwater circulation pump.	kPa	1,2	1,4	1,7	1,9	2,2	2,5	2,9	3,0		
Highest permissible pressure drop in outer circuit at keel cooling.	kPa	0,6									
Sea water pump flow.	m <sup>3</sup> /h	11,9	14,4	16,6	18,6	20,6	22,4	24,1	24,7		
Cooling water circulation pump flow	m <sup>3</sup> /h	13,1	16,3	18,0	20,5	22,0	26,0	29,0	31,0		
Extra water pump flow through aftercooler	m <sup>3</sup> /h										
Pump pressure at extra pump pressure side (pressure set system)	kPa										
Max permissible temperature on fresh water circulation outlet from the engine	°C	95									
Coolant content engine, incl. heat exchangers and air cooler	litres	60									
Thermostat, start open at	°C	76									
Thermostat, fully open at	°C	86									

<b>Emissions</b>	<b>r/min</b>	<b>1000</b>	<b>1200</b>	<b>1400</b>	<b>1600</b>	<b>1800</b>	<b>2000</b>	<b>2200</b>	<b>2300</b>	<b>0</b>	<b>0</b>
Smoke at prop. load x2,5	BSU	0,1	0,7	0,8	0,7	0,4	0,4	0,7	0,9		
Noise 4) at prop. load x2,5	dBA	109	110	111	112	113	114	116	117		

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- 5) At exhaust back pressure 15 kPa