

# Technical data TD720GE (mech & EDC4)

## Standby & prime ratings

### General

In-line four stroke diesel engine with direct injection. Rotation direction, anti-clockwise viewed towards flywheel.  
Turbocharged

Number of cylinders			6
Displacement, total		litre in <sup>3</sup>	7,15 436,0
Firing order			1-5-3-6-2-4
Bore		mm in	108 4,25
Stroke		mm in	130 5,12
Compression ratio			17.5:1
Dry weight	Engine and cooling package	kg lb	750 1653
Wet weight	Engine and cooling package	kg lb	790 1742
	SAE3	kg lb	-36 -79

Performance		r/min	1500	1800
Standby Power	without fan	kW	128	134
		hp	174	182
	with fan std cool.	kW	126	130
		hp	171	176
Prime Power	without fan	kW	117	123
		hp	159	167
	with fan std cool.	kW	115	119
		hp	156	161
Standby Power	without fan	kW	128	134
		hp	174	182
	with fan trop cool & dual sp	kW	124	127
		hp	168	172
Prime Power	without fan	kW	117	123
		hp	159	167
	with fan trop cool & dual sp	kW	113	116
		hp	153	157
Torque at:	Standby Power	Nm	815	711
		lbft	601	524
	Prime Power	Nm	745	653
		lbft	549	481
Mean piston speed		m/s ft/sec	6,5 21,4	7,8 25,7
Effective mean pressure at:	Standby Power	MPa	1,4	1,3
		psi	208	181
Effective mean pressure at:	Prime Power	MPa	1,3	1,1
		psi	190	166
Max combustion pressure at:	Prime Power	MPa	11,1	10,5
		psi	1610	1523
Total mass moment of inertia, J (mR2)		kgm <sup>2</sup>	3,09	
		lbft <sup>2</sup>	73,3	
Residual speed droop at load increase from 0 to 100%		%	≤ 5	
Friction Power		kW	8,5	12,3
		hp	11,56	16,728

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### Engine noise emission

Test Standards: ISO 3744-1981 (E)

sound power (without fan, intake and exhaust noise)

Tolerans ± 0.75 dB(A)

		r/min	1500	1800
Measured sound power Lw	No load	dB(A)	99,5	101,5
	Standby Power	dB(A)	102,5	104,5
	Prime Power	dB(A)	102,5	104,5
Calculated sound pressure Lp at 1 m	No load	dB(A)	86,5	88,5
	Standby Power	dB(A)	89,5	91,5
	Prime Power	dB(A)	89,5	91,5

### Unsilenced exhaust noise

Data calculated as sound pressure Lp.

Assumed microphone distance 1 m

	r/min	1500	1800
Standby Power	dB(A)	108	108,5
Prime Power	dB(A)	109	109,5

### Load acceptance

Test condition: Warm engine. Load acceptance performance can vary due to actual alternator inertia, voltage regulator, type of load and local ambient conditions.

#### Single step load performance at 1500 rpm - EDC4

Load (%)	Speed diff (%)		Recovery time (s)		Remaining load (%)	Speed diff (%)		Recovery time (s)	
	Prime	Standby	Prime	Standby		Prime	Standby	Prime	Standby

Available later

#### Single step load performance at 1800 rpm - EDC4

Load (%)	Speed diff %		Recovery time (s)		Remaining load (%)	Speed diff (%)		Recovery time (s)	
	Prime	Standby	Prime	Standby		Prime	Standby	Prime	Standby

Available later

#### Single step load performance at 1500 rpm - mech

Load (%)	Speed diff (%)		Recovery time (s)		Remaining load (%)	Speed diff (%)		Recovery time (s)	
	Prime	Standby	Prime	Standby		Prime	Standby	Prime	Standby
0-75	5,5		0,3						
0-100	9,6		1,4						
100-0	6,5		1,1						

#### Single step load performance at 1800 rpm - mech

Load (%)	Speed diff %		Recovery time (s)		Remaining load (%)	Speed diff (%)		Recovery time (s)	
	Prime	Standby	Prime	Standby		Prime	Standby	Prime	Standby
0-75	4,5								
0-100	5,8		0,7						
100-0	4,9								

### Cold start performance

1500/1800

Cold start limit temperature	°C	-15
		-30*

\* With manifold heater engaged, lubrication oil 15W/40

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#### Derating

The engine may be operated up to 1000 m altitude and 40°C ambient air temperature without derating. For operation at higher altitudes and temperatures the power should be derated according to the following factors:

Altitude derating factor < 3000 m	% / m	4 / 500
Altitude derating factor > 3000 m	% / m	6 / 500
Ambient temperature derating factor	% / °C	2 / 5°C
Humidity	%	No derating

Lubrication system		r/min	1500	1800
Lubricating oil consumption	Standby Power	liter/h US gal/h	0,10 0,026	0,10 0,026
Oil system capacity including filters		liter US gal	20 5,3	
Oil sump capacity:	max	liter US gal	17 4,5	
	min	liter US gal	14 3,7	
Oil change intervals/specifications:				
	VDS-2*	h	500	
	VDS, ACEA, E3*	h	500	
	ACEA E2, API CD, CF, CF-4, CG-4*	h	500	
Engine angularity limits:	front up	°	30	
	front down	°	30	
	side tilt	°	30	
Oil pressure at rated speed		kPa psi	420 - 450 61 - 65	
Oil pressure shut down switch setting		kPa psi	200 29	
Lubrication oil temperature:	normal	°C	80	
		°F	176	
	max	°C	125	
		°F	257	
Oil filter micron size		mm	0,040	

\* See also general section in the sales guide

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#### Fuel system

		r/min	1500	1800
<b>Prime Power</b> Specific fuel consumption at:	25%	g/kWh lb/hph		
	50%	g/kWh lb/hph	212 0,344	220 0,357
	75%	g/kWh lb/hph	208 0,337	212 0,344
	100%	g/kWh lb/hph	211 0,342	212 0,344

#### Fuel system

		r/min	1500	1800
Recommended fuel to conform to		ASTM-D975-No1 and 2-D JIS KK 2204, EN 590		
Total fuel flow		liter/h US gal/h	360 95	450 119
Feed pump pressure		kPa psi	500 - 500 73 - 73	
Feed pump max suction head		m foot	1,5 4,9	
Fuel filter micron size		mm	0,008	
Prefilter / Water separator		mm		
Governor type/make, standard		Heinzman / EDC4		
Injection pump type/make		PFM1P00S2002 / Bosch		

#### Intake and exhaust system

			r/min	1500	1800
Air consumption at:	Standby Power	27°C 81°F	m <sup>3</sup> /min cfm	485 17128	603 21295
Air intake restriction, clean filter(s)			kPa in wc	1 4,0	1 4,0
Max allowable air intake restriction			kPa in wc	3 12,0	3 12,0
Air filter type			Single stage paper cartridge		
Air filter cleaning efficiency			%	99,85	
Heat rejection to exhaust at:	Standby Power		kW BTU/min	108 6142	116 6597
Exhaust gas temperature after turbine at:	Standby Power		°C °F	560 1040	505 941
Max allowable back pressure in exhaust line			kPa In wc	5 20,1	7 28,1
Exhaust gas flow at:	Standby Power		m <sup>3</sup> /min cfm	22,3 788	26,0 918

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#### Cooling system

		r/min	1500	1800
Heat rejection radiation from engine at:	Standby Power	kW	19	20
		BTU/min	1092	1115
Heat rejection to coolant at:	Standby Power	kW	80	84
		BTU/min	4544	4766
Recommended coolant		Volvo coolant or Volvo anticorrosion additive together with clean fresh water		
Radiator cooling system type		Closed circuit		
Radiator core area (std. size)		m <sup>2</sup>	0,52	
		foot <sup>2</sup>	5,60	
Radiator core thickness (std. size) - standard cooling package		mm	62	
		in	2,44	
Radiator core thickness (std. size) - tropical cooling package		mm	60	
		in	2,36	
Fan diameter - standard cooling system		mm	516	
		in	20,31	
Fan power consumption - standard cooling system		kW	2,5	4,3
		hp	3	6
Fan power consumption - tropical cooling system & dual speed rating		kW	4,2	7,3
		hp	6	10
Fan drive ratio		1,73:1		
Coolant capacity,	engine	liter	9,8	
		US gal	2,59	
	std radiator with hoses	liter	12,2	
		US gal	3,22	
Coolant pump		drive/ratio	1,73:1	
Coolant flow with standard system		l/s	173	218
		US gal/s	45,70	57,59
Maximum external coolant system restriction		kPa	25	35
		in wc	100	141
Thermostat,	start to open	°C	83	
		°F	181	
	fully open	°C	95	
		°F	203	
Maximum static pressure head		kPa	100	
		in wc	402	
Pressure cap setting on standard radiator		kPa	60	
		in wc	241	
Maximum top tank temperature		°C	110	
		°F	230	
Shutdown switch setting		°C	113	
		°F	235	
Recommended draw down capacity		10% of total cooling system capacity		

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#### Cooling performance

Cooling air flow and maximum additional external restriction at different radiator air temperatures based on 105°C TTT and 50% antifreeze (radiator and cooling fan, see optional equipment)

Engine speed rpm	Air on temp °C	110% OF PRIME POWER		STANDBY POWER	
		Air flow m <sup>3</sup> /s	Max additional external restriction Pa	Air flow m <sup>3</sup> /s	Max additional ext. restriction Pa
1500 standard tropical	45			6840	150
	60			10080	150
1800 standard tropical	45			8280	150
	60			12240	150

#### Electrical system

r/min      **1500**      **1800**

Voltage and type		12V / 1 pole system	
Alternator:	make/output	Amp	Bosch/55
	tacho output	Hz/alt. Rev	6
	drive ratio		3,01:1
Starter motor	make		Bosch
	type		EV
	kW		3,1
Starter motor solenoid,	pull current	Amp	60
	hold current	Amp	12
Number of teeth on:	flywheel		129
	cam wheel		96
	starter motor		9
Starter motor battery capacity:	max	Ah	176
	min at +5°C	Ah	110
Stop solenoid,	max	Amp	3
Inlet manifold heater (at 20 V)		kW	
Power relay for the manifold heater		Amp	