

Technical data TAD532GE

General

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

Number of cylinders			4
Displacement, total	litre		4,76
	in ³		290,7
Firing order			1-3-4-2
Bore	mm		108
	in		4,25
Stroke	mm		130
	in		5,12
Compression ratio			18:1
Dry weight	Engine and cooling package	kg	575
		lb	1268
Wet weight	Engine and cooling package	kg	606
		lb	1336

Performance

		r/min	1500	1800
Standby Power	without fan	kW	129	136
		hp	175	185
	with fan low temp	kW	125	129
		hp	170	176
Prime Power	without fan	kW	116	122
		hp	158	166
	with fan low temp	kW	112	115
		hp	153	157
Torque at:	Standby Power	Nm	821	722
		lbft	606	532
	Prime Power	Nm	738	647
		lbft	545	477
Mean piston speed	m/s	6,5	7,8	
	ft/sec	21,4	25,7	
Effective mean pressure at:	Standby Power	MPa	2,2	1,9
		psi	312	281
Effective mean pressure at:	Prime Power	MPa	2,0	1,7
		psi	283	248
Total mass moment of inertia, J (mR2)	kgm ²	1,43		
	lbft ²	33,9		
Residual speed droop at load increase from 0 to 100%	%	≤ 5		
Friction Power	kW	6,0	8,6	
	hp	8,16	11,696	

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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)	101,3	101,9
	Standby Power	dB(A)	103,5	105,1
	Prime Power	dB(A)	103,5	105,1
Calculated sound pressure Lp at 1 m	No load	dB(A)	87,8	88,4
	Standby Power	dB(A)	90,0	91,6
	Prime Power	dB(A)	90,0	91,6

Unsilenced exhaust noise

Data calculated as sound pressure Lp.

Assumed microphone distance 1 m

	r/min	1500	1800
Standby Power	dB(A)		
Prime Power	dB(A)		

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
0-20	2,6	3,0	0,6	0,6	20-100	17,4	23,5	3,4	6,3
0-40	5,6	6,0	1,4	1,5	40-100	9,5	11,5	2,4	3,5
0-50	6,8	7,7	1,6	1,7	50-100	8,1	9,0	2,0	2,8
0-60	8,5	9,6	1,9	2,0	60-100	6,8	7,6	1,8	2,3
0-70	10,4	13,0	2,1	2,4	70-100	5,5	6,0	1,7	2,3
0-80	13,9	18,7	2,5	3,2	80-100	3,4	4,0	1,4	1,8
0-100	26,0		4,9						
100-0	7,0	7,0	1,2	1,2					
					G3: 0-53	7,0		1,7	
					G2: 0-67	10,0		2,1	
					G3: 0-48		7,0		1,7
					G2: 0-61		10,0		2,1

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
0-20	1,5	1,8	0,3	0,3	20-100	7,3	8,9	1,2	2,6
0-40	3,2	3,5	0,4	0,5	40-100	5,0	5,8	0,8	2
0-50	3,9	4,4	0,5	1,0	50-100	4,4	5,0	0,6	1,7
0-60	4,8	5,2	1,0	1,2	60-100	3,8	4,4	0,5	1,4
0-70	5,5	6,3	1,2	1,4	70-100	2,8	3,5	0,5	0,9
0-80	6,6	8,4	1,4	1,6	80-100	2,0	2,5	0,4	0,7
0-100	10,3	13,4	1,9	3					
100-0	6,0	6,0	0,8	0,8					
					G3: 0-80	7,0		1,4	
					G2: 0-96	10,0		1,7	
					G3: 0-72		7,0		1,4
					G2: 0-86		10,0		1,7

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Cold start performance

1500/1800

Cold start limit temperature	°C	-15
		-30*

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

Derating, electronic governer

The engine may be operated up to 1000 m altitude and 40°C ambient air temperature without derating. For applications above 1000 m an ECU with automatic altitude derating must be used. For operations with air ambient temperature over 40°C, see below.

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	0,08	0,08
		US gal/h	0,021	0,021
Oil system capacity including filters		liter	13	
		US gal	3,4	
Oil sump capacity:	max	liter	11	
		US gal	2,9	
	min	liter	9	
		US gal	2,4	
Oil change intervals/specifications:				
Closed crankcase ventilation	ACEA: E4. API: CH-4, CI-4* full synthetic	h	500	
Open crankcase ventilation	VDS-2. ACEA: E3, E5. API: CG-4, CH-4*	h	500	
Open crankcase ventilation	VDS. ACEA: E2. API: CF, CF-4*	h	250	
Engine angularity limits:	front up	°	10	
	front down	°	10	
	side tilt	°	10	
Engine angularity limits:	front up	°	30	
	front down	°	30	
	side tilt	°	30	
Oil pressure at rated speed		kPa	450 - 480	
		psi	65 - 70	
Oil pressure shut down switch setting		kPa	200	
		psi	29	
Lubrication oil temperature:	normal	°C	110	
		°F	230	
	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
Standby Power Specific fuel consumption at:	25%	g/kWh lb/hph	228 0,370	243 0,393
	50%	g/kWh lb/hph	210 0,340	218 0,354
	75%	g/kWh lb/hph	209 0,339	218 0,353
	100%	g/kWh lb/hph	216 0,350	225 0,365
Prime Power Specific fuel consumption at:	25%	g/kWh lb/hph	239 0,388	261 0,423
	50%	g/kWh lb/hph	213 0,345	224 0,364
	75%	g/kWh lb/hph	210 0,340	218 0,353
	100%	g/kWh lb/hph	214 0,346	222 0,359

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		360	450
	US gal/h		95	119
Feed pump pressure	kPa	500 - 550		
	psi	73 - 80		
Feed pump max suction head	m	1,5		
	foot	4,9		
Fuel filter micron size	mm	0,005		
Prefilter / Water separator	mm	0,063		
Governor type/make, standard	Heinzman / EDC4			
Injection pump type/make	PFM 1 P100 S 2005 / Bosch			

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Intake and exhaust system		r/min	1500	1800	
Air consumption at:	Standby Power	27°C 81°F	m ³ /min cfm	8,03 284	9,6 339
	Prime Power	27°C 81°F	m ³ /min cfm	7,55 267	9 318
Air intake restriction, clean filter(s)		kPa in wc	1 4,0	1 4,0	
Max allowable air intake restriction		kPa in wc	3,5 14,1	3,5 14,1	
Air filter type		Single stage paper cartridge			
Air filter cleaning efficiency		%	99,85		
Heat rejection to exhaust at:	Standby Power	kW BTU/min	104 5914	116 6597	
	Prime Power	kW BTU/min	90 5118	99 5630	
Exhaust gas temperature after turbine at:	Standby Power	°C °F	532 990	528 983	
	Prime Power	°C °F	507 945	484 904	
Max allowable back pressure in exhaust line	Standby Power	kPa In wc	3 12,0	3 12,0	
	Prime Power	kPa In wc	5 20,1	7 28,1	
Exhaust gas flow at:	Standby Power	m ³ /min cfm	23,2 818	27,6 973	
	Prime Power	m ³ /min cfm	21,2 749	24,3 857	
Heat rejection to CAC	Standby Power	kW BTU/min	23,7 1348	30,7 1746	
	Prime Power	kW BTU/min	21,3 1211	27,6 1570	

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Cooling system		r/min	1500	1800
Heat rejection radiation from engine at:	Standby Power	kW BTU/min	13 762	14 15
	Prime Power	kW BTU/min	12 688	13 745
Heat rejection to coolant at:	Standby Power	kW BTU/min	63 3566	68 3873
	Prime Power	kW BTU/min	56 3207	61 3475
Recommended coolant	Volvo coolant or Volvo anticorrosion additive together with clean fresh water			
Radiator cooling system type	Closed circuit			
Radiator core area low temp cooling package	m ²	0,52		
	foot ²	5,60		
Radiator core thickness low temp cooling package	mm	60		
	in	2,36		
Radiator core thickness low temp cooling package	mm	60		
	in	2,36		
Fan diameter - low temp cooling system	mm	546		
	in	21,50		
Fan diameter - high temp cooling system	mm	596		
	in	23,46		
Fan power consumption - low temp cooling system	kW	3,8	6,6	
	hp	5	9	
Fan power consumption - high temp cooling system & dual speed rating	kW	5	8,7	
	hp	7	12	
Fan drive ratio	1,73:1			
Coolant capacity,	engine	liter	7,2	
		US gal	1,90	
	std radiator with hoses	liter	13	
		US gal	3,43	
Coolant pump	drive/ratio	1,73:1		
Coolant flow with low temp cooling system	l/s	163	205	
	US gal/s	43,06	54,16	
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 low temp radiator	kPa	60		
	in wc	241		
Maximum top tank temperature	°C	105		
	°F	221		
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	PRIME POWER		STANDBY POWER		
		Air flow m ³ /s	External restriction Pa	Air flow m ³ /s	External restriction Pa	
1500	58	2,5	0			
	low temp	53	2,1	150		
		50	2,0	200		
		45	1,7	300		
		37	1,5	400		
		62	2,9	0		
	high temp	58	2,5	150		
		57	2,4	200		
		53	2,1	300		
		46	1,8	400		
		55			2,5	0
	low temp	49			2,1	150
		46			2,0	200
		40			1,7	300
		32			1,5	400
59				2,9	0	
high temp	55			2,5	150	
	53			2,4	200	
	49			2,1	300	
	42			1,8	400	
	1800	60	3,1	0		
low temp		57	2,8	150		
		55	2,6	200		
		53	2,4	300		
		49	2,2	400		
		64	3,6	0		
high temp		61	3,3	150		
		60	3,1	200		
		58	2,9	300		
		56	2,7	400		
		57			3,1	0
low temp		53			2,8	150
		52			2,6	200
		48			2,4	300
		45			2,2	400
	60			3,6	0	
high temp	58			3,3	150	
	57			3,1	200	
	55			2,9	300	
	52			2,7	400	

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Electrical system		r/min	1500	1800
Voltage and type		12V / 1 pole system		
Alternator:	make/output	Amp	Iskra/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	
Inrush current at +20°C		Amp	1110	
Cranking current at +20°C		Amp	370	
Crank engine speed at 20°C		rpm	160	
Starter motor battery capacity:	max	Ah	176	
	min at +5°C	Ah	110	
Stop solenoid,	max	Amp	3	
Inlet manifold heater (at 12V/24V)		kW	2 / 3,6	
Power relay for the manifold heater (at 12V/24V)		Amp	150 / 120	