

# 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 <sup>3</sup>		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
Continuous Power	without fan	kW	104	110
		hp	141	150
	with fan low temp	kW	100	103
		hp	136	141
Torque at:	Standby Power	Nm	821	722
		lbft	606	532
	Prime Power	Nm	738	647
		lbft	545	477
	Continuous Power	Nm	662	584
		lbft	488	430
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
Effective mean pressure at:	Continuous Power	MPa	1,76	1,54
		psi	255	223
Total mass moment of inertia, J (mR2)	kgm <sup>2</sup>		1,43	
	lbft <sup>2</sup>		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

# Technical data TAD532GE

## Engine noise emission

Test Standards: ISO 3744-1981 (E)

sound power (without fan, intake and exhaust noise)

Tolerans  $\pm 0.75$  dB(A)

		r/min	1500	1800
Measured sound power Lw	No load	dB(A)		
	Standby Power	dB(A)		
	Prime Power	dB(A)		
Calculated sound pressure Lp at 1 m	No load	dB(A)		
	Standby Power	dB(A)		
	Prime Power	dB(A)		

## 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

## Technical data TAD532GE

### 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

## Technical data TAD532GE

Fuel system		r/min	1500	1800
<b>Standby Power</b> 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
<b>Prime Power</b> 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
<b>Continuous Power</b> Specific fuel consumption at:	25%	g/kWh lb/hph	250 0,405	275 0,445
	50%	g/kWh lb/hph	216 0,351	228 0,370
	75%	g/kWh lb/hph	210 0,340	218 0,354
	100%	g/kWh lb/hph	211 0,343	219 0,355

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			

## Technical data TAD532GE

Intake and exhaust system		r/min	1500	1800	
Air consumption at:	Standby Power	27°C	m <sup>3</sup> /min	8,03	9,6
		81°F	cfm	284	339
	Prime Power	27°C	m <sup>3</sup> /min	7,55	9
81°F		cfm	267	318	
Continuous Power	27°C	m <sup>3</sup> /min	7,097	8,6	
	81°F	cfm	251	304	
Air intake restriction, clean filter(s)		kPa	1	1	
		in wc	4,0	4,0	
Max allowable air intake restriction		kPa	3,5	3,5	
		in wc	14,1	14,1	
Air filter type		Single stage paper cartridge			
Air filter cleaning efficiency		%	99,85		
Heat rejection to exhaust at:	Standby Power	kW	104	116	
		BTU/min	5914	6597	
	Prime Power	kW	90	99	
BTU/min		5118	5630		
Continuous Power	kW	78	86		
	BTU/min	4436	4891		
Exhaust gas temperature after turbine at:	Standby Power	°C	532	528	
		°F	990	983	
	Prime Power	°C	507	484	
°F		945	904		
Continuous Power	°C	485	452		
	°F	905	846		
Max allowable back pressure in exhaust line	Standby Power	kPa	3	3	
		In wc	12,0	12,0	
	Prime Power	kPa	5	7	
In wc		20,1	28,1		
Continuous Power	kPa	5	7		
	In wc	20,1	28,1		
Exhaust gas flow at:	Standby Power	m <sup>3</sup> /min	23,2	27,6	
		cfm	818	973	
	Prime Power	m <sup>3</sup> /min	21,2	24,3	
cfm		749	857		
Continuous Power	m <sup>3</sup> /min	19,9	22,1		
	cfm	701	781		
Heat rejection to CAC	Standby Power	kW	23,7	30,7	
		BTU/min	1348	1746	
	Prime Power	kW	21,3	27,6	
BTU/min		1211	1570		
Continuous Power	kW	19,2	24,9		
	BTU/min	1092	1416		

## Technical data TAD532GE

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
	Continuous Power	kW BTU/min	11 614	12 665
Heat rejection to coolant at:	Standby Power	kW BTU/min	63 3566	68 3873
	Prime Power	kW BTU/min	56 3207	61 3475
	Continuous Power	kW BTU/min	51 2872	55 3133
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 <sup>2</sup> foot <sup>2</sup>	0,52 5,60	
Radiator core thickness low temp cooling package		mm in	60 2,36	
Radiator core thickness low temp cooling package		mm in	60 2,36	
Fan diameter - low temp cooling system		mm in	546 21,50	
Fan diameter - high temp cooling system		mm in	596 23,46	
Fan power consumption - low temp cooling system		kW hp	3,8 5	6,6 9
Fan power consumption - high temp cooling system & dual speed rating		kW hp	5 7	8,7 12
Fan drive ratio		1,73:1		
Coolant capacity,	engine	liter US gal	7,2 1,90	
	std radiator with hoses	liter US gal	13 3,43	
Coolant pump		drive/ratio	1,73:1	
Coolant flow with low temp cooling system		l/s US gal/s	163 43,06	205 54,16
Maximum external coolant system restriction		kPa in wc	25 100	35 141
Thermostat,	start to open	°C °F	83 181	
	fully open	°C °F	95 203	
Maximum static pressure head		kPa in wc	100 402	
Pressure cap setting on low temp radiator		kPa in wc	60 241	
Maximum top tank temperature		°C °F	105 221	
Shutdown switch setting		°C °F	113 235	
Recommended draw down capacity	10% of total cooling system capacity			

# Technical data TAD532GE

## 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 <sup>3</sup> /s	External restriction Pa	Air flow m <sup>3</sup> /s	External restriction Pa
1500	low temp		0		
			150		
			200		
			300		
			400		
	high temp	3,7	0		
		3,0	150		
		2,8	200		
		2,4	300		
		1,9	400		
	low temp				0
				150	
				200	
				300	
				400	
high temp	55			3,7	0
				3,0	150
				2,8	200
				2,4	300
				1,9	400
1800	low temp		0		
			150		
			200		
			300		
			400		
	high temp	3,6	0		
		3,2	150		
		3,2	200		
		2,9	300		
		2,7	400		
	low temp				0
				150	
				200	
				300	
				400	
high temp	56			3,6	0
				3,2	150
				3,2	200
				2,9	300
				2,7	400

## Technical data TAD532GE

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	
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	