

Technical data TAD1240GE

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	12,13
	in ³	740,2
Firing order		1-5-3-6-2-4
Bore	mm	131
	in	5,16
Stroke	mm	150
	in	5,91
Compression ratio		18,5:1

Performance

		r/min	1500	1800
Prime Power:	without fan	kW	292	315
		hp	397	428
	with fan	kW	283	300
		hp	385	408
Standby Power:	without fan	kW	320	345
		hp	435	469
	with fan	kW	311	330
		hp	423	449
Torque at:	Prime Power	Nm	1859	1671
		lbft	1371	1232
	Standby Power	Nm	2037	1830
		lbft	1502	1350
Mean piston speed	m/s	7,5	9,0	
	ft/sec	24,7	29,6	
Effective mean pressure at Prime Power	MPa	1,92	1,73	
	psi	278	251	
Max combustion pressure at Prime Power	MPa	14,6	15,7	
	psi	2117	2277	
Total mass moment of inertia, J (mR ²)	kgm ²	3,75		
	lbft ²	89,0		
Degree of irregularity at Prime Power		1:66	1:133	
Residual speed droop at load increase from 0 to 100%	%	0-8		
Friction Power	kW	27	38	

Technical data TAD1240GE

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)	105,4	106,5
	Prime Power	dB(A)	111	112,2
	Standby Power	dB(A)	111	112,2
Calculated sound pressure Lp at 1 m	No load	dB(A)	92,8	94,2
	Prime Power	dB(A)	98,5	99,6
	Standby Power	dB(A)	98,4	99,5

Unsilenced exhaust noise

Data calculated as sound pressure Lp.

Assumed microphone distance 1 m

		r/min	1500	1800
Prime Power		dB(A)	114	117
Standby Power		dB(A)	114	118

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

Load (%)	Speed diff (%)		Recovery time (s)		Remaining load (%)	Speed diff (%)		Recovery time (s)	
	Prime	Standby	Prime	Standby		Prime	Standby	Prime	Standby
0-20	2,5	2,7	1,8	1,9	20-100	22,8	27,0	6,6	6,9
0-40	4,2	4,5	2,5	2,7	40-100	13,3	14,1	2,8	3,0
0-60	6,9	7,7	2,7	2,8	60-100	8,9	9,3	2,3	2,5
0-64		10,0		3,0	64-100		8,5		2,3
0-70	10,0		3,0		70-100	5,5	7,0	2,0	2,0
0-80	15,5	19,7	3,2	3,3	80-100	3,0		1,8	
0-100	25,5	30,5	4,5	4,9					
100-0	7,6	7,8	3,3	3,5					

Single step load performance at 1800 rpm

Load (%)	Speed diff %		Recovery time (s)		Remaining load (%)	Speed diff (%)		Recovery time (s)	
	Prime	Standby	Prime	Standby		Prime	Standby	Prime	Standby
0-20	1,7	1,8	1,8	1,9	20-100	11,2	12,5	3,4	3,5
0-40	2,0	2,1	2,1	2,1	40-100	7,4	7,8	2,9	3,1
0-60	3,2	3,6	2,5	2,6	60-100	5,6	5,9	2,7	4,0
0-80	6,3	7,6	2,7	2,8	80-100	1,6	1,7	2,1	2,2
0-86		10,0		3,0	86-100		0,8		1,7
0-94	10,0		3,0		94-100	0,8		1,5	
0-100	10,3	10,8	3,0	3,0					
100-0	5,5	5,6	3,4	3,5					

Technical data TAD1240GE

Cold start performance

		r/min	1500	1800	
Time from start to no load speed at ambient temperature:	°C	15	s	2,2	2,2
		0	s	1,8	1,8
		-15	s	7,2	7,2
Time from start to stay within 0.8% of no load speed at ambient temperature:	°C	15	s	4,2	4,5
		0	s	4,1	4,3
		-15	s	14,5	14,8

Without manifold heater engaged, lubrication oil 15W/40

Derating

The engine will operate up to 2000 m altitude without derating. For operation at higher altitudes the power will be derated according to the following factors:

	r/min	1500	1800
Altitude derating factor at 2000 m	%	0	4
Altitude derating factor at 5000 m	%	10	18
Ambient temperature derating factor	% / °C	No derating	
Humidity	%	No derating	

Lubrication system

		r/min	1500	1800
Lubricating oil consumption	Prime Power	liter/h	0,10	0,11
		US gal/h	0,026	0,029
	Standby Power	liter/h	0,11	0,12
		US gal/h	0,029	0,032
Oil system capacity including filters		liter	35	
		US gal	9,2	
Oil sump capacity:	max	liter	31	
		US gal	8,2	
	min	liter	19	
		US gal	5,0	
Oil change intervals/specifications:				
	VDS-2*	h	600	
	VDS, ACEA, E3*	h	400	
	ACEA E2, API CD, CF, CF-4, CG-4*	h	200	
Engine angularity limits:	front up	°	11	
	front down	°	11	
	side tilt	°	11	
Oil pressure at rated speed		kPa	400-550	
Oil pressure shut down switch setting		kPa	250	
Lubrication oil temperature:	normal	°C	115	
	max	°C	130	
Oil filter micron size		mm	0,040	

* See also general section in the sales guide

Technical data TAD1240GE

Fuel system		r/min	1500	1800
Prime Power. Specific fuel consumption at:	25%	g/kWh	222	242
		lb/hph	0,360	0,392
	50%	g/kWh	200	209
		lb/hph	0,324	0,339
	75%	g/kWh	197	200
		lb/hph	0,319	0,324
	100%	g/kWh	198	204
		lb/hph	0,321	0,331
Standby Power. Specific fuel consumption at:	25%	g/kWh	218	242
		lb/hph	0,353	0,392
	50%	g/kWh	199	213
		lb/hph	0,323	0,345
	75%	g/kWh	196	200
		lb/hph	0,318	0,324
	100%	g/kWh	199	207
		lb/hph	0,323	0,336
Recommended fuel to conform to		ASTM-D975-No1 and 2-D JIS KK 2204, EN 590		
Total fuel flow		liter/h	110	120
Feed pump pressure		kPa	350	
Feed pump max suction head		m	2	
Fuel filter micron size		mm	0,005	
Governor type/make, standard		Electronic / EDCIII		
Injection pump type/make		-		
Injection timing std.		°B.T.D.C	-	-
Injection timing		°B.T.D.C	-	-

Intake and exhaust system			r/min	1500	1800
Air consumption at:	Prime Power	at 27°C	m³/min	21,4	26,9
			cfm	756	950
	Standby Power	at 27°C	m³/min	23,2	28,7
			cfm	819	1014
Air intake restriction, clean filter(s)			kPa	2	2
			in wc	8,0	8,0
Max allowable air intake restriction			kPa	5	5
			in wc	20,1	20,1
Air filter type			Single stage paper cartridge		
Air filter cleaning efficiency			%	99,85	
Heat rejection to exhaust at:	Prime Power		kW	210	240
			BTU/min	11942	13649
	Standby Power		kW	235	270
			BTU/min	13364	15355

Technical data TAD1240GE

Exhaust gas temperature after turbine at:	Prime Power	°C	480	440
		°F	896	824
	Standby Power	°C	485	465
		°F	905	869
Max allowable back pressure in exhaust line		kPa	10	10
		In wc	40,2	40,2
Exhaust gas flow at:	Prime Power	m³/min	52,9	62,1
		cfm	1868	2193
	Standby Power	m³/min	57,8	68,8
		cfm	2041	2430

Cooling system

		r/min	1500	1800
Heat rejection radiation from engine at:	Prime Power	kW	15	16
		BTU/min	853	910
	Standby Power	kW	16	17
		BTU/min	910	967
Heat rejection to coolant at:	Prime Power	kW	124	135
		BTU/min	7052	7677
	Standby Power	kW	133	148
		BTU/min	7564	8417
Recommended coolant		Volvo coolant or Volvo anticorrosion additive together with clean fresh water		
Radiator cooling system type		Closed circuit		
Radiator core area (std. size)		m²	0,8	
		foot²	8,61	
Radiator core thickness (std. size)		mm	50	
		in	1,97	
Intercooler core area (std. Size)		m²	0,89	
		foot²	9,58	
Intercooler core thickness (std. Size)		mm	68	
		in	2,68	
Fan diameter		mm	890	
		in	35,04	
Fan power consumption		kW	9	15
		hp	12	20
Fan drive ratio			1,00:1	
Coolant capacity,	engine	liter	20	
		US gal	5,28	
	std radiator with hoses	liter	24	
		US gal	6,34	
Coolant pump		drive/ratio	gear / 1.41:1	
Coolant flow with standard system		l/s	4,8	6
		US gal/s	1,27	1,59
Minimum coolant flow		l/s	4,6	5,7
		US gal/s	1,22	1,51

Technical data TAD1240GE

Maximum external coolant system restriction		kPa	40	60
		in wc	161	241
Thermostat,	start to open	°C	82	
		°F	180	
	fully open	°C	95	
		°F	203	
Maximum static pressure head		kPa	50	
		in wc	201	
Pressure cap setting on standard radiator		kPa	70	
		in wc	281	
Maximum top tank temperature		°C	103	
		°F	217	
Minimum temperature entering engine		°C	68	
		°F	154	
Shutdown switch setting		°C	103	
		°F	217	
Recommended draw down capacity		10% of total cooling system capacity		

Cooling performance

Cooling air flow and maximum additional external restriction at different radiator air temperatures based on 103°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 m³/s	Max additional external restriction Pa	Air flow m³/s	Max additional ext. restriction Pa
1500	30	3,10	1410	3,10	1410
	40	3,80	1125	3,80	1125
	50	4,85	725	4,85	725
	55	5,60	495	5,60	495
	59	6,60	260	6,60	260
	62	7,20	0	7,20	0
1800	30	3,60	2080	3,60	2080
	40	4,45	1680	4,45	1680
	50	5,75	1120	5,75	1120
	55	6,65	775	6,65	775
	60	7,85	455	7,85	455
	62	8,45	0	8,45	0

Technical data TAD1240GE

Electrical system		r/min	1500	1800
Voltage and type		24V / insulated from earth		
Alternator:	make/output	Amp	Valeo / 60	
	tacho output	Hz/alt. Rev	6	
	drive ratio		3,41:1	
Starter motor	make		Bosch	
	type		GVB	
	kW		6,0	
Starter motor solenoid,	control current	Amp	< 2	
	hold current	Amp	-	
Number of teeth on:	flywheel		153	
	starter motor		12	
Inrush current at +20°C		Amp	1500-1650	
Cranking current at +20°C		Amp	400	
Crank engine speed at 20°C		rpm	200	
Starter motor battery capacity:	max	Ah	2x143 570A DIN	
	min at +5°C	Ah	2x88 400A DIN	
Stop solenoid,	pull current	Amp	-	
	hold current	Amp	-	
Inlet manifold heater (at 20 V)		kW	4,0	
Power relay for the manifold heater		Amp	1	

Power take off		r/min	1500	1800
Front end in line with crank shaft max:		Nm	600	
Front end belt pulley load. Direction of load viewed from flywheel side:	max left	kW	30	50
	max down	kW	19	31
	max right	kW	30	50
Timing gear at compressor PTO max:		Nm	140	
Speed ratio direction of rotation viewed from flywheel side			1,31:1/anti-clockwise	
Timing gear at servo pump PTO max:		Nm	40	
Speed ratio direction of rotation viewed from flywheel side			1.65:1/anti-clockwise	
Timing gear at hydraulic pump PTO max:		Nm	400	
Speed ratio direction of rotation viewed from flywheel side			0,97:1/anti-clockwise	