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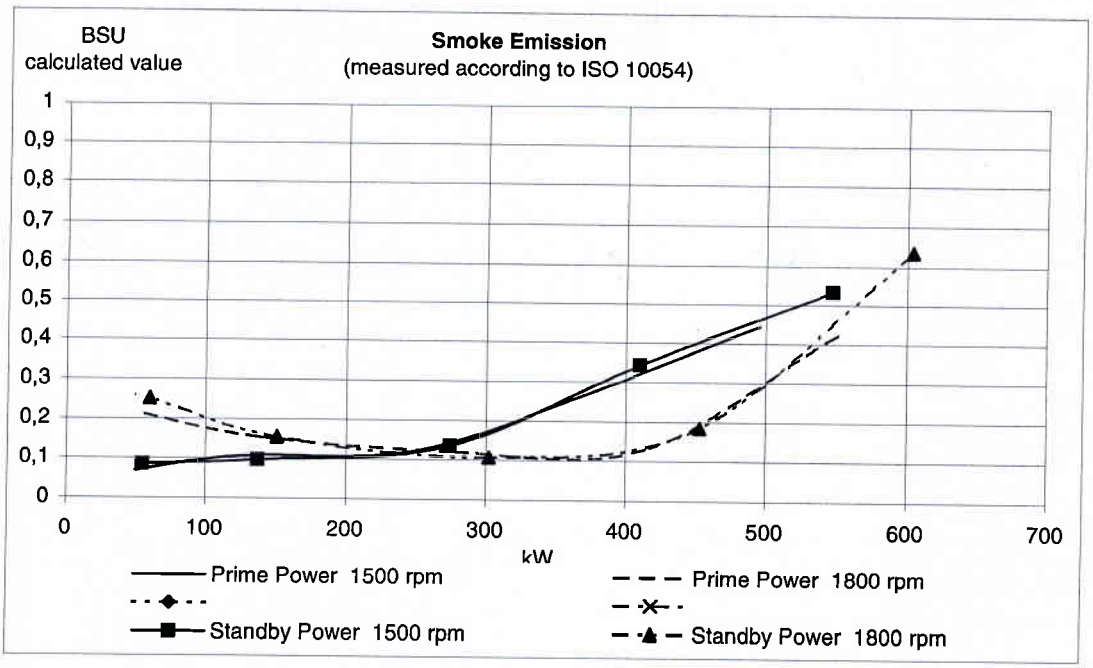

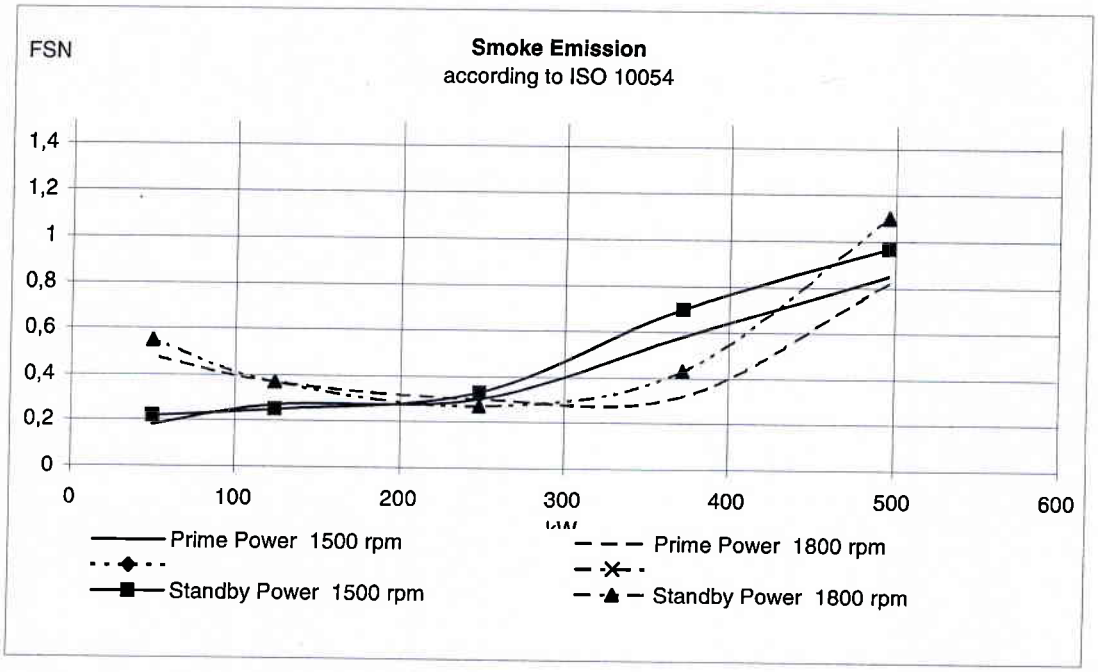

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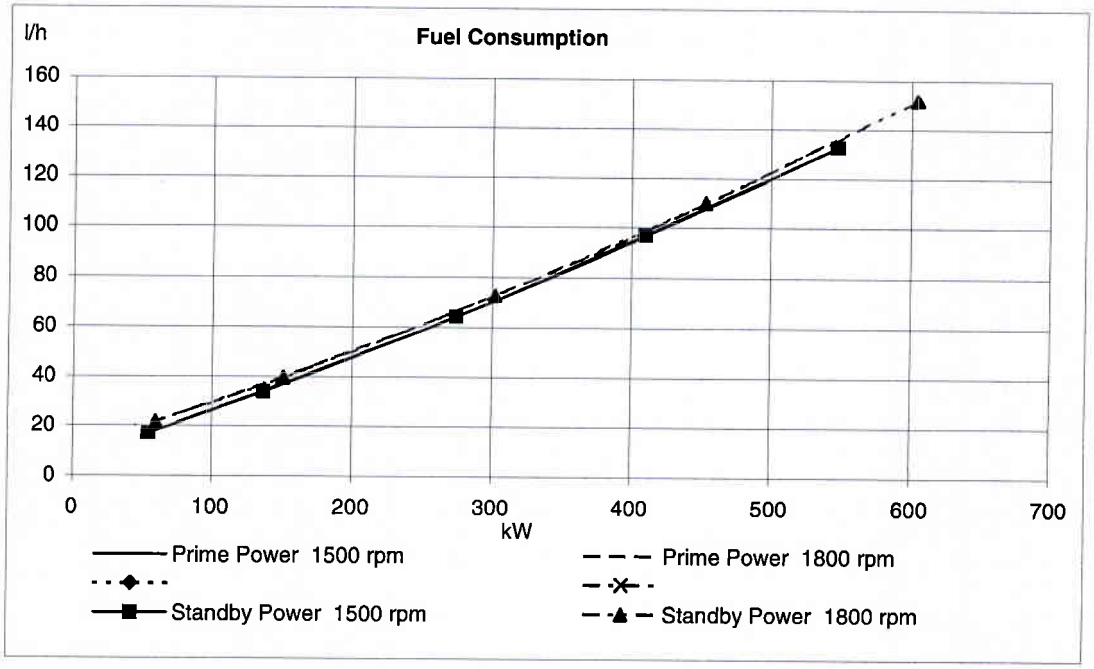

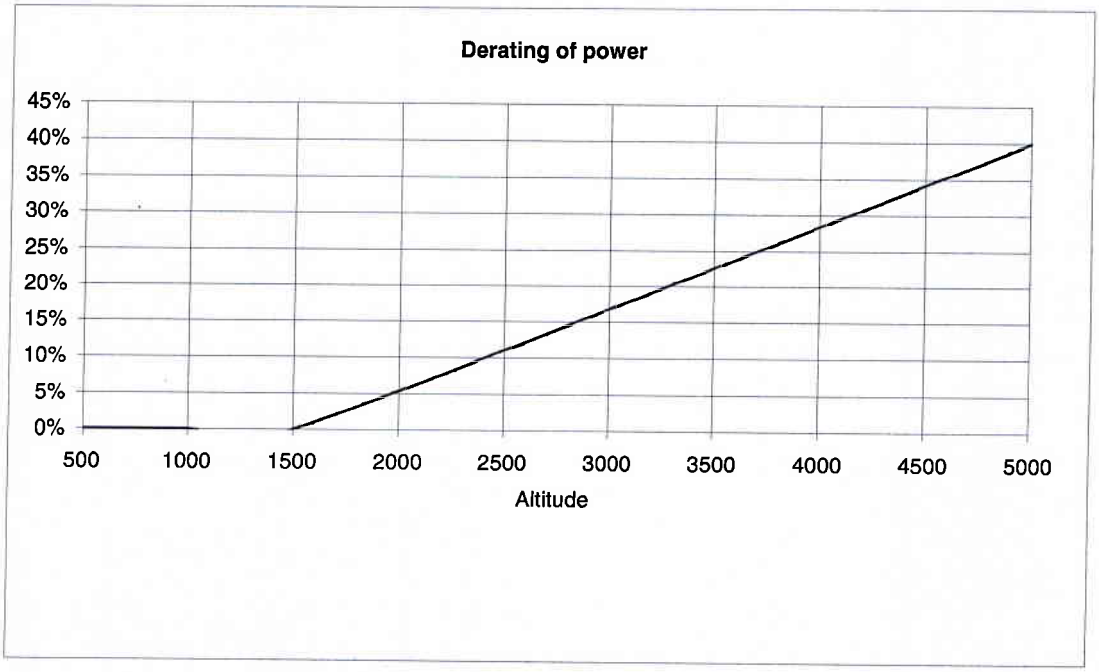

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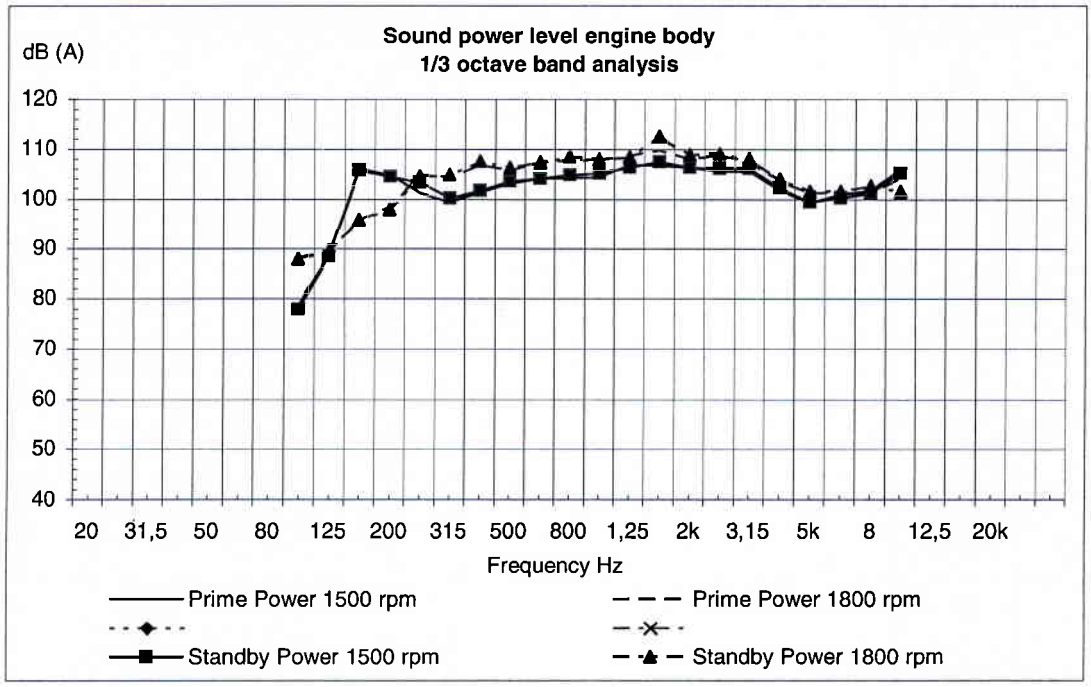

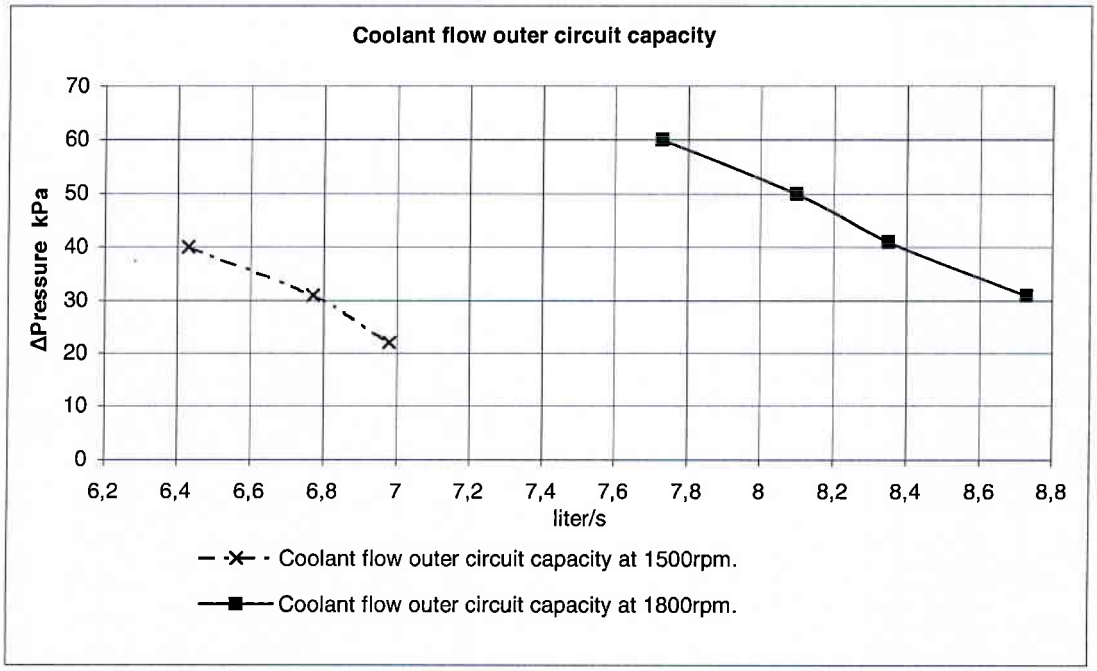

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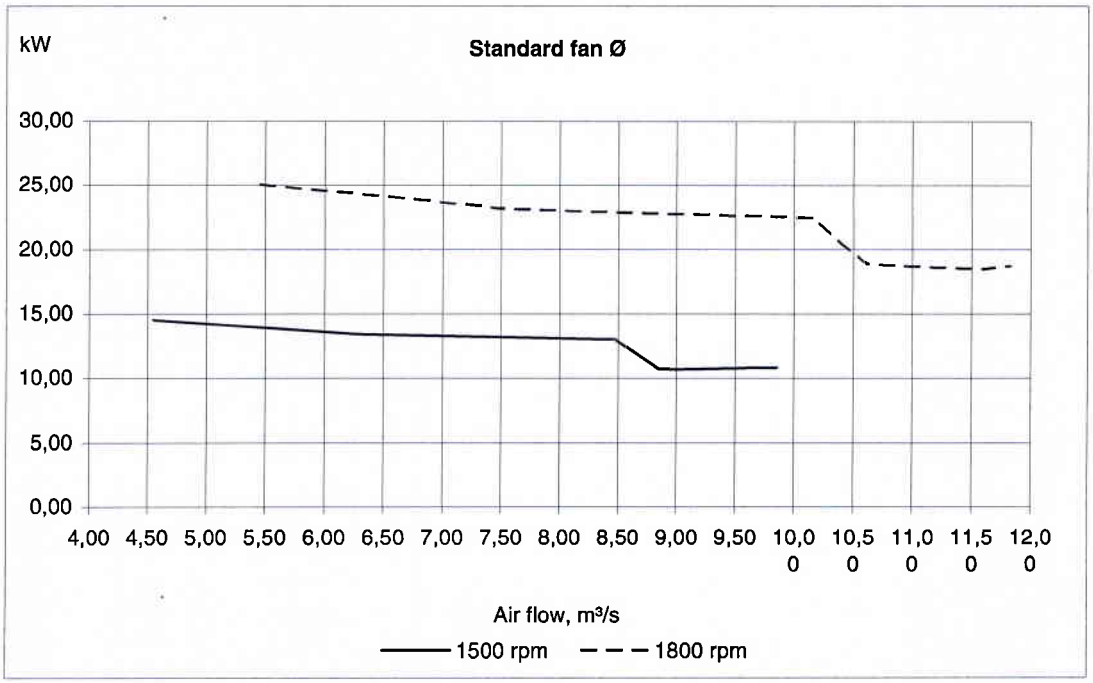
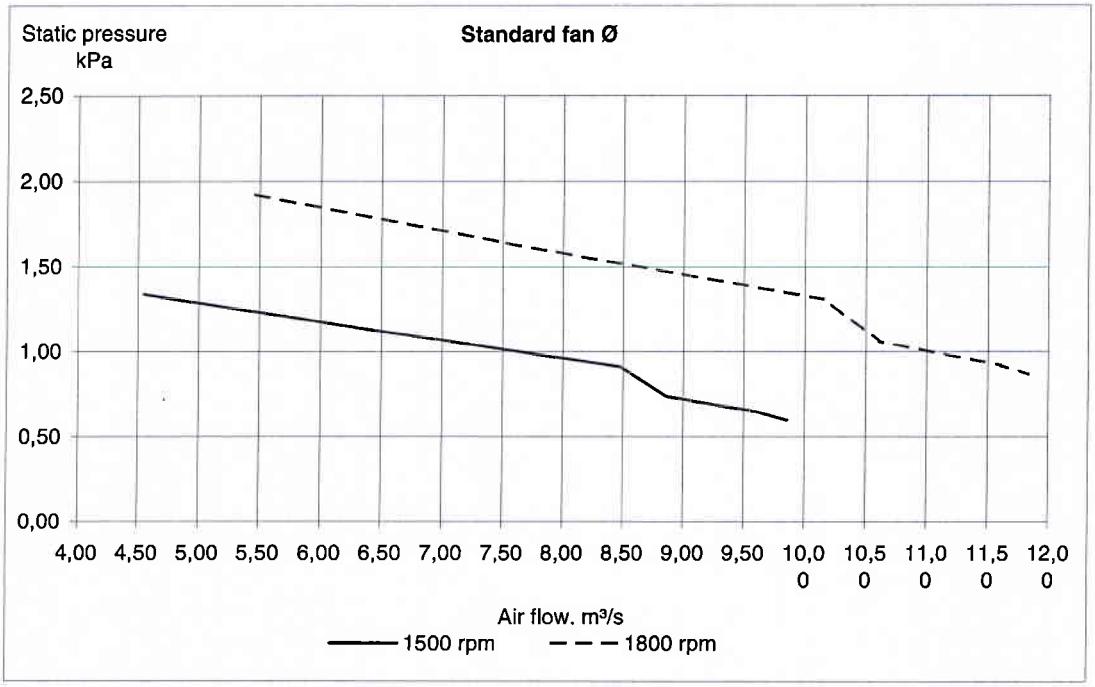




Technical data TAD1642GE

General

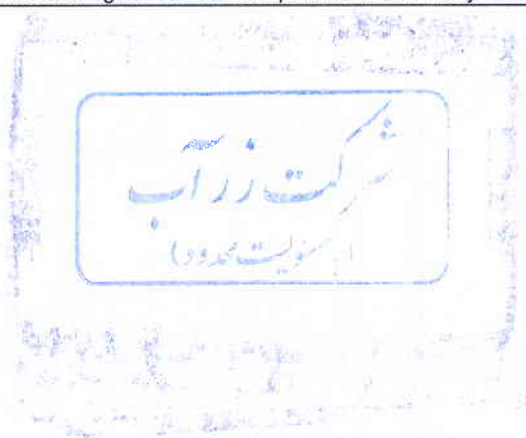
In-line four stroke diesel engine with direct injection. Rotation direction, anti-clockwise viewed towards flywheel.
Turbocharged

Number of cylinders			6
Displacement, total		litre in^3	16,12 983,7
Firing order			1-5-3-6-2-4
Bore		mm in	144 5,67
Stroke		mm in	165 6,50
Compression ratio			16,5:1
Dry weight	Engine only, excluding cooling system	kg lb	1480 3263
	GenPac	kg lb	1910 4211
Wet weight	Engine only, excluding cooling system	kg lb	1550 3417
	GenPac	kg lb	2020 4453

Performance		**r/min**	**1500**	**1800**
Prime Power	without fan	kW hp	496 675	551 749
	with fan	kW hp	485 660	532 724
Standby Power	without fan	kW hp	547 744	604 821
	with fan	kW hp	536 729	585 796
Torque at:	Prime Power	Nm lbft	3158 2329	2923 2156
	Standby Power	Nm lbft	3482 2568	3204 2363
Mean piston speed		m/s ft/sec	8,3 27,1	9,9 32,6
Effective mean pressure at:	Prime Power	MPa psi	2,5 357	2,3 331
Effective mean pressure at:	Standby Power	MPa psi	2,7 394	2,5 362
Max combustion pressure at:	Prime Power	MPa psi	17,5 2538	18 2611
Max combustion pressure at:	Standby Power	MPa psi	18,6 2698	18,9 2741
Total mass moment of inertia, J (mR2)		kgm^2 $lbft^2$	4,20 99,7	
Degree of irregularity at:	Prime Power		1:42	1:78
Friction Power		kW hp	36 48,96	53 72,08

Derating

The engine may be operated up to 1500 m altitude without derating .
For operation at higher altitudes the power will be derated according to the graph in technical diagrams
There is no derating for ambient temperature or humidity.



Technical data TAD1642GE

Engine noise emission

Test Standards: ISO 3744-1981 (E) sound power (With fan & Radiator without intake and exhaust noise)

Tolerans ± 0.75 dB(A)		r/min	1500	1800
Measured sound power Lw	No load	dB(A)	113	117
	Prime Power	dB(A)	117	118
	Standby Power	dB(A)	117	119
Calculated sound pressure Lp at 1 m	No load	dB(A)	101	105
	Prime Power	dB(A)	105	106
	Standby Power	dB(A)	105	107

Unsilenced exhaust noise

Data calculated as sound pressure Lp. (Without fan & radiator)

Assumed microphone distance 1 m	r/min	1500	1800
Prime Power	dB(A)	116	120
Standby Power	dB(A)	116	120

Test conditions for load acceptance data

Warm engine.	Generator	Modell	Type of AVR
	Stamford	HCI 544 E1	SX 440

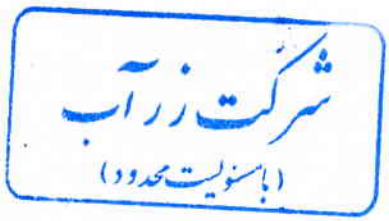
Load acceptance performance can vary due to actual alternator inertia, voltage regulator, type of load and local ambient conditions. UFRO: STD-setting 47 / 57 Hz.

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	3,2	3,5	1,8	1,8	20-100	26,8	32,5	6,3	8,4
0-38		7,0		2,4	38-100		13,3		6,4
0-40	6,8	7,8	2,3	2,5	40-100	11,2	11,7	5,0	6,1
0-41	7,0		2,3		41-100	10,7		4,5	
0-48		10,0		3,9	48-100		9,5		4,0
0-53	10,0		3,2		53-100	8,0		4,1	
0-60	13,5	17,3	3,6	4,4	60-100	6,6	7,4	4,0	3,8
0-80	26,7	32,6	5,8	6,8	80-100	3,2	3,2	1,1	3,5
0-100	42,5	52,5	8,3	9,7					
100-0	9,6	10,4	1,6	1,7					

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	2,2	2,4	1,8	2,0	20-100	9,9	11,4	3,0	3,6
0-40	4,6	5,1	2,0	2,0	40-100	6,3	7,3	2,3	3,0
0-52		7,0		2,0	52-100		6,2		2,7
0-57	7,0		2,0		57-100	4,5		2,1	
0-60	7,7	8,5	2,1	2,2	60-100	4,1	4,8	2,0	2,4
0-67		10,0		2,8	67-100		4,0		2,3
0-73	10		2,6		73-100	2,5		2	
0-80	11,7	15,2	2,8	3,6	80-100	1,9	2,2	1,9	2,0
0-100	19,4	22,9	3,9	5,6					
100-0	6,8	7,4	0,9	1,7					



Technical data TAD1642GE

Cold start performance			r/min	1500	1800
Time from start to stay within 0.5% of no load speed at ambient temperature:	°C	20	s	6,5	8,4
		5	s	6,7	8,7
		-15*	s	7,3	9,8
Time from start to stay within 0.8% of no load speed at ambient temperature:	°C	20	s	5,6	7,5
		5	s	6,2	8,2
		-15*	s	6,7	9,2

* With manifold heater kW engaged, lubrication oil 10W/30, block heater and MK1 fuel.

Usage of manifold heater:	Time preheating, minutes	Time postheating, minutes		
	0,5	1,7		
Ambient temp. °C	Block heater type and Make	Power kW	Engaged hours	Cooling water temp engine block, °C
-15	External Volvo	2	12	17

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	48	
			US gal	12,7	
Oil sump capacity:		max	liter	42	
			US gal	11,1	
		min	liter	32	
			US gal	8,5	
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	°	30	
		front down	°	30	
		side tilt	°	30	
Oil pressure at rated speed			kPa	300 - 650	
			psi	44 - 94	
Lubrication oil temperature in oil sump:		max	°C	130	
			°F	266	
Oil filter micron size			mm	0,040	

* See also general section in the sales guide

Fuel system		r/min	1500	1800
Prime Power Specific fuel consumption at:	25%	g/kWh	213	227
		lb/hph	0,345	0,367
	50%	g/kWh	198	204
		lb/hph	0,321	0,330
	75%	g/kWh	197	202
		lb/hph	0,320	0,328
	100%	g/kWh	201	209
		lb/hph	0,326	0,339
Standby Power Specific fuel consumption at:	25%	g/kWh	208	220
		lb/hph	0,337	0,357
	50%	g/kWh	197	203
		lb/hph	0,320	0,329
	75%	g/kWh	200	204
		lb/hph	0,323	0,330
	100%	g/kWh	204	212
		lb/hph	0,330	0,343

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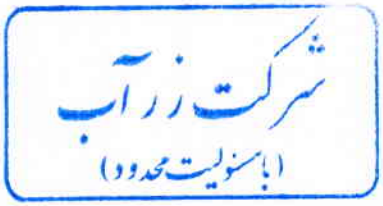
Fuel system			**r/min**	**1500**	**1800**
Fuel to conform to				ASTM-D975-No1 and 2-D JIS KK 2204, EN 590	
System return flow			liter/h US gal/h	25 6,6	
System supply flow at rated speed			liter/h US gal/h	180 48	200 53
Fuel supply line max restriction			kPa psi	10,0 1,5	
Fuel supply line max pressure, engine stopped			kPa psi	0,0 0,0	
Fuel return line max restriction			kPa psi	20,0 2,9	
Maximum allowable inlet fuel temp			°C °F	60 140	
Prefilter / Water separator			mm	0,010	
Governor type/make, standard				Volvo / EMS 2	
Injection pump type/make				Delphi / E1	

Intake and exhaust system			**r/min**	**1500**	**1800**
Air consumption at:	Prime Power	25°C 77°F	m^3/min cfm	38 1342	45,4 1603
	Standby Power	25°C 77°F	m^3/min cfm	40,6 1434	46,6 1646
Air intake restriction, clean filter(s)			kPa in wc	1,5 6,0	2 8,0
Max allowable air intake restriction			kPa in wc	5 20,1	5 20,1
Air filter type				Single stage paper cartridge	
Air filter cleaning efficiency			%	99,85	
Heat rejection to exhaust at:	Prime Power		kW BTU/min	375 21326	439 24965
	Standby Power		kW BTU/min	426 24226	500 28435
Exhaust gas temperature after turbine at:	Prime Power		°C °F	471 880	468 874
	Standby Power		°C °F	494 920	512 954
Max allowable back pressure in exhaust line			kPa In wc	10 40,2	10 40,2
Exhaust gas flow at:	Prime Power		m^3/min cfm	92,6 3270	108,9 3846
	Standby Power		m^3/min cfm	100,7 3556	117,6 4153



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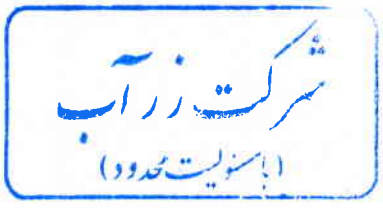
Cooling system			r/min	1500	1800
Heat rejection radiation from engine at:		Prime Power	kW BTU/min	18 1024	20 1137
		Standby Power	kW BTU/min	20 1137	24 1365
Heat rejection to coolant at:		Prime Power	kW BTU/min	187 10635	218 12397
		Standby Power	kW BTU/min	218 12397	248 14104
Coolant		Volvo coolant or Volvo anticorrosion additive together with clean fresh water			
Radiator cooling system type				Closed circuit	
Standard radiator core area			m² foot²	1,32 14,21	
Standard radiator core thickness			mm in	52 2,05	
Fan diameter			mm in	890 35,04	
Fan power consumption			kW hp	11 15	19 26
Fan drive ratio				1,04 : 1	
Coolant capacity,	Engine		liter US gal	33 8,72	
	Engine + std radiator with hoses		liter US gal	60 15,85	
Coolant pump			drive/ratio	Belt / 1,85:1	
Coolant flow with standard system			l/s US gal/s	6,4 1,69	7,7 2,04
Minimum coolant flow			l/s US gal/s	6,4 1,69	7,7 2,03
Maximum external coolant system restriction, including piping			kPa in wc	40 161	60 241
Thermostat		start to open	°C °F	86 187	
		fully open	°C °F	96 205	
Maximum static pressure head (expansion tank height + pressure cap setting)			kPa in wc	100 402	
Minimum static pressure head (expansion tank height + pressure cap setting)			kPa in wc	70 281	
Standard pressure cap setting			kPa in wc	75 301	
Maximum top tank temperature			°C °F	103 217	
Draw down capacity		4% of total cooling system capacity			



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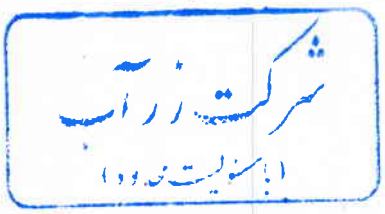
Intercooler system		r/min	1500	1800
Cooling power	Prime Power	kW	112	145
		BTU/min	6369	8246
	Standby Power	kW	131	159
		BTU/min	7450	9042
Combustion air inlet temp. (Charge air temp after turbo compressor)	Prime Power	°C	206	228
		°F	403	442
	Standby Power	°C	226	243
		°F	439	469
Max allowable Comb. Air temp after CAC at 25 degree ambient. (Charge air temp after intercooler)	Standby Power	°C	45	45
		°F	113	113
Maximum pressure droop over intercooler, incl. piping		kPa	11	19
		psi	1,60	2,76
Boost pressure		kPa	268	262
		psi	38,9	38,0
Standard intercooler core area		m²	1,3	
		foot²	13,99	
Standard intercooler core thickness		mm	68	
		in	2,68	

Cooling performance

Cooling air flow and external restriction at different radiator air temperatures based on 103°C TTT and 40% antifreeze (radiator and cooling fan, see optional equipment)

Engine speed	Air on	PRIME POWER		STANDBY POWER	
rpm	temp °C	Air mass flow kg/s	External restriction Pa	Air mass flow kg/s	External restriction Pa
1500	40	5,9	835	6,5	736
	45	6,5	748	7,2	683
	50	7,4	697	8,2	616
	55	8,4	600	9,4	250
	57			10,0	0
	60	9,9	76		
	63	10,0	0		
1800	40	6,8	1313	7,6	1154
	45	7,6	1182	8,5	1055
	50	8,6	1078	9,7	956
	55	9,8	963	11,1	494
	58			12,3	0
	60	11,5	324		
	61	12,3	0		



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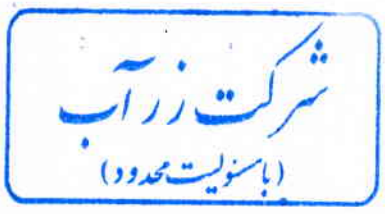
Engine management system

Functionallity		Alternatives	Default setting
Governor mode		Isochronous/droop	Isochronous
Governor droop		0-8%	4%
Dual speed		1500/1800	According to customer
Low Idle speed select		600-1200	900
Stop function		Energized to Run / Stop	Energized to stop
Lamp test		On / Off	On
Pre-heat on ignition		On / Off	Off
Governor characteristic			
Gain			
Stability			

Engine protection	Alarm		Engine protection	
Parameter	Selectable span	Default setting	Protection at	Protective action
Oil temperature C	120 - 130	125	Setting +5	Shut down / off *
Oil pressure kPa				
Low idle 900rpm	-	190	Default -30	Shut down / off *
1500 rpm	-	250	::	::
1800 rpm	-	300	::	::
Oil level	-	Min level	-	-
Piston cooling pressure kPa				
>1000rpm	-	150	150	Shut down / off *
Coolant temp	95 - 101	98	Setting +5	Shut down / off *
Coolant level	-	On	Low level	Shut down / off *
Fuel feed pressure kPa				
Low idle 900rpm	-	150	-	-
> 1400 rpm	-	300	-	-
Water in fuel	-	High level	-	-
Crank case pressure kPa	-	-	-	Shut down
Air filter diff pressure kPa	-	5,0	-	-
Altitude, above sea m	-	-	>1500	Automatic derating, see section derating
Charge air temp after cac	-	80	+5	Shut down
Charge air pressure kPa	-	290	300	Shut down
Overspeed	100 - 120% of rated	120% / off *	Alarm level	Shut down / on
Low voltage V	-	25,5	-	-

*Off means no shutdown , alarm only.



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Electrical system		r/min	1500	1800
Voltage and type		24V / insulated from earth		
Alternator:	make/output	Amp	Bosch / 80	
	tacho output	Hz/alt. Rev	6	
	drive ratio		3,9 : 1	
Starter motor		make	Melco	
		type	105P70	
		kW	7,0	
Starter motor solenoid,	pull current	Amp	-	
	hold current	Amp	2,3	
Number of teeth on:	flywheel		153	
	starter motor		12	
Inrush current at +20°C		Amp	700	
Cranking current at +20°C		Amp	280	
Crank engine speed at 20°C		rpm	150	
Starter motor battery capacity:	max	Ah	2x 225	
	min at +5°C	Ah		
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 lbft	-	
Front end belt pulley load. Direction of load viewed from flywheel side:	max left	kW hp	-	-
	max down	kW hp	-	-
	max right	kW hp	-	-
Timing gear at compressor PTO max:		Nm lbft	160 118	
Speed ratio direction of rotation viewed from flywheel side		1,31:1 / anti-clockwise		
Timing gear at servo pump PTO max:		Nm lbft	100 74	
Max allowed bending moment in flywheel housing		Nm lbft	15000 11063	
Max. rear main bearing load		N lbf	5000 1124,0