VOLVO PENTA	Document No	Issue Index
TAD754GE	**21813920**	**06**

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	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
Wet weight	Engine only	kg lb	780 1720
	Engine incl. cooling system and air filtration system	kg lb	955 2105
	Engine incl. cooling system, air filtration system, and frame	kg lb	

Performance			**rpm**	**1500**	**1800**
Prime Power		without fan	kW hp	228 310	237 322
		with fan	kW hp	219 298	222 301
Standby Power		without fan	kW hp	251 341	260 354
		with fan	kW hp	242 329	245 333
Torque at:	Prime Power		Nm lbft	1451 1070	1256 926
	Standby Power		Nm lbft	1596 1177	1381 1019
Mean piston speed			m/s ft/sec	6,5 21,4	7,8 25,7
Effective mean pressure at:	Prime Power		MPa psi	2,6 370	2,2 320
Effective mean pressure at:	Standby Power		MPa psi	2,8 407	2,4 352
Max combustion pressure at:	Prime Power		MPa psi	17,3 2509	17 2466
Max combustion pressure at:	Standby Power		MPa psi	19,2 2785	19,7 2857
Total mass moment of inertia, J (mR^2)			kgm^2 $lbft^2$	2,60 61,7	
Friction Power			kW hp	17 23,12	23 31,28
Derating see Technical Diagrams					

Engine noise emission

Test Standards: ISO 3744-1981 (E) sound power (without fan, cooler, intake and exhaust noise)

Tolerance ± 0.75 dB(A)			**rpm**	**1500**	**1800**
Measured sound power Lw	No load	dB(A)		101,4	103,3
	Prime Power	dB(A)		104,5	105,7
	Standby Power	dB(A)			
Calculated sound pressure Lp at 1 m	No load	dB(A)		87,5	89,4
	Prime Power	dB(A)		90,6	91,8
	Standby Power	dB(A)			

Unsilenced exhaust noise

Data calculated as sound pressure Lp.

Assumed microphone distance 1 m	**rpm**	**1500**	**1800**
Prime Power	dB(A)	116,7	118,9
Standby Power	dB(A)		

Test conditions for load acceptance data

Warm engine.	**Generator**	**Model**	**Type of AVR**
	mecc alte	ECO 38-2L/4	

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	2,0	2,3	1,1	1,1	20-100	14,5	17,7	3,5	4,0
0-40	3,9	4,4	2,2	2,6	40-100	7,1	8,0	3,0	3,3
0-60	6,7	9,4	2,7	2,5	60-100	4,4	4,4	2,6	3,0
0-80	12,3	16,5	3,4	4,6	80-100	2,6	2,0	2,2	2,7
0-100	20,4	27,1	4,1	4,6					
100-0	9,1	10,0	3,0	3,0					

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	1,4	1,6	1,6	1,7	20-100	8,1	8,8	2,1	3,0
0-40	2,9	3,2	1,3	1,1	40-100	5,1	7,2	2,8	2,3
0-60	4,3	4,7	1,2	1,8	60-100	3,7	4,1	1,9	2,2
0-80	7,1	8,1	2,1	2,8	80-100	2,1	2,4	1,0	1,8
0-100	9,2	12,5	2,7	3,4					
100-0	6,8	7,6	2,2	2,1					

Cold start performance			rpm	1500	1800
Time from start to no load speed at ambient temperature:	°C	20	s	6,6	7,6
		5	s	7,0	8,4
		-15*	s	10,5	12,0
		Min start temp*	s	-30,0	-30,0
Time from start to stay within 0.5% of no load speed at ambient temperature:	°C	20	s	6,0	7,0
		5	s	6,2	7,7
		-15*	s	9,6	11,5

* With manifold heater kW engaged, lubrication oil 15W/40 and block heater.

Block heater type	Make	Power kW	Engaged hours	Cooling water temp engine block

Lubrication system			rpm	1500	1800
Lubricating oil consumption	Prime Power		litre/h	0,05	0,05
			US gal/h	0,013	0,013
	Standby Power		litre/h	0,05	0,05
			US gal/h	0,013	0,013
Oil system capacity including filters			litre	34	
			US gal	8,9	
Oil sump capacity:		max	litre	31	
			US gal	8,1	
		min	litre	25	
			US gal	6,5	
Oil change intervals/specifications:			h	500	
			h		
			h		
Engine angularity limits:		front up	°	10	
		front down	°	10	
		side tilt	°	10	
Oil pressure at rated speed			kPa	300 - 500	
			psi	44 - 73	
Lubrication oil temperature in oil sump:		max	°C	125	
			°F	257	
Oil filter micron size			µ	17,000	

* See also general section in the sales guide

Fuel system		rpm	1500	1800
Prime Power	25%	g/kWh	253	255
Specific fuel consumption at:		lb/hph	0,410	0,413
	50%	g/kWh	235	234
		lb/hph	0,381	0,379
	75%	g/kWh	225	245
		lb/hph	0,365	0,397
	100%	g/kWh	210	218
		lb/hph	0,340	0,353
Standby Power	25%	g/kWh	241	247
Specific fuel consumption at:		lb/hph	0,391	0,400
	50%	g/kWh	227	227
		lb/hph	0,368	0,368
	75%	g/kWh	221	218
		lb/hph	0,358	0,353
	100%	g/kWh	200	203
		lb/hph	0,324	0,329

Fuel system	rpm	1500	1800
Fuel to conform to		DIN EN590	
System supply flow at:	litre/h	164,0	197,0
	US gal/h	43,3	52,0
Fuel supply line max restriction (Measured at fuel inlet connection)	kPa	35,0	35,0
	psi	5,1	5,1
Fuel supply line max pressure, engine stopped	kPa	35,0	35,0
	psi	5,1	5,1
System return flow	litre/h	102,6	132,0
	US gal/h	27,1	34,9
Fuel return line max restriction (Measured at fuel return connection)	kPa	50,0	50,0
	psi	7,3	7,3
Maximum allowable inlet fuel temp (Measured at fuel inlet connection)	°C	70	70
	°F	158	158
Prefilter / Water separator micron size	µ	10	
Fuel filter micron size	µ	5	
Governor type/make, standard	EMS 2.2		
Injection pump type/make	Bosch PF45		

Intake and exhaust system			rpm	1500	1800
Air consumption at: (+25°C and 100kPa)	Prime Power		m^3/min	12,4	13,9
			cfm	438	491
	Standby Power		m^3/min	12,6	14,3
			cfm	445	505
Max allowable air intake restriction including piping			kPa	5	5
			psi	0,7	0,7
Air filter restriction clean Volvo Penta filter			kPa	3,0	3,0
			psi	0,4	0,4
Heat rejection to exhaust at:		Prime Power	kW	152	158
			BTU/min	8644	8985
		Standby Power	kW	168	182
			BTU/min	9554	10350
Exhaust gas temperature after turbine at:		Prime Power	°C	515	485
			°F	959	905
		Standby Power	°C	550	525
			°F	1022	977
Max allowable back pressure in exhaust line		Prime Power	kPa	7	7
			psi	1,0	1,0
		Standby Power	kPa	7	7
			psi	1,0	1,0
Exhaust gas flow at: (temp and pressure after turbine at the corresponding power setting)		Prime Power	m^3/min	38,4	39,7
			cfm	1356	1402
		Standby Power	m^3/min	40,3	42,1
			cfm	1423	1487

Cooling system		rpm	1500	1800
Heat rejection radiation from engine at:	Prime Power	kW BTU/min	23 1308	24 1365
	Standby Power	kW BTU/min	25 1439	27 1547
Heat rejection to coolant at:	Prime Power	kW BTU/min	133 7564	141 8019
	Standby Power	kW BTU/min	136 7746	146 8326
Coolant	Volvo Penta coolant "ready mix" or Volvo Penta coolant mixed with clean fresh water 40 / 60			
Radiator cooling system type		Closed circuit		
Standard radiator core area		m² foot²	0,65 7,00	
Fan diameter		mm in	870 34,25	
Fan power consumption		kW hp	8,8 12	15,2 21
Fan drive ratio			1,0:1	
Coolant capacity,	engine	litre US gal	10 2,64	
	engine with std radiator and hoses	litre US gal	34 8,98	
Coolant pump		drive/ratio	2,56:1	
Coolant flow with standard system		l/s US gal/s	4,08 1,08	4,92 1,30
Minimum coolant flow		l/s US gal/s	3,3 0,86	3,9 1,04
Maximum outer circuit restriction, including piping		kPa psi	35 5,1	35 5,1
Thermostat	start to open	°C °F	86 187	
	fully open	°C °F	98 208	
Maximum static pressure head (expansion tank height + pressure cap setting)		kPa psi	110 16,0	
Minimum static pressure head (expansion tank height + pressure cap setting)		kPa psi	90 13,1	
Standard pressure cap setting		kPa psi	100 14,5	
Maximum top tank temperature		°C °F	109 228	
Draw down capacity. The difference between min coolant level in the expansion tank and the lowest level where the engine's coolant system still are functioning		litre US gal		

Charge air cooler system		rpm	1500	1800
Heat rejection to charge air cooler	Prime Power	kW	39	46
		BTU/min	2218	2616
	Standby Power	kW	40	47
		BTU/min	2275	2667
Charge air mass flow	Prime Power	kg/s	0,25	0,28
	Standby Power	kg/s	0,27	0,30
Charge air inlet temp. (Charge air temp after turbo compressor)	Prime Power	°C	187	191
		°F	369	376
	Standby Power	°C	195	195
		°F	383	383
Charge air outlet temp. (Charge air temp after intercooler)	Prime Power	°C	40	40
		°F	104	104
	Standby Power	°C	50	50
		°F	122	122
Maximum pressure drop over charge air cooler incl. piping		kPa	15	
		psi	2,18	
Charge air pressure (After charge air cooler)		kPa	233	
		psi	33,79	
Standard charge air cooler core area		m²	0,41	
		foot²	4,41	

Cooling performance

Cooling air flow and external restriction at different radiator air temperatures based on 109°C TTT and 40% coolant. Valid at 1 atm. (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	51	3,6	360	3,8	300
	56	4,1	220	4,3	150
	61	4,7	50	4,9	0
	63	4,9	0		
1800	56	4,2	600	4,5	500
	61	4,7	440	5,2	270
	66	5,5	200	6,1	0
	69	6,1	0		

Note! External restrictions are calculated for values >0 Pa

Engine management system

Functionality	Alternatives	Default setting
Governor mode	Isochronous/droop switchable	Isochronous
Governor droop	1rpm/10Nm - 1rpm/127Nm	1rpm/25Nm
Governor response	N/A	N/A
Dual speed		
Idle speed	550-800 rpm	600 rpm
Fine speed adjustment		
Stop function	Energized to run / stop	Energized to stop
Preheating function	ON/OFF	Option
Lamp test	ON/OFF	ON

Engine sensor and switch settings

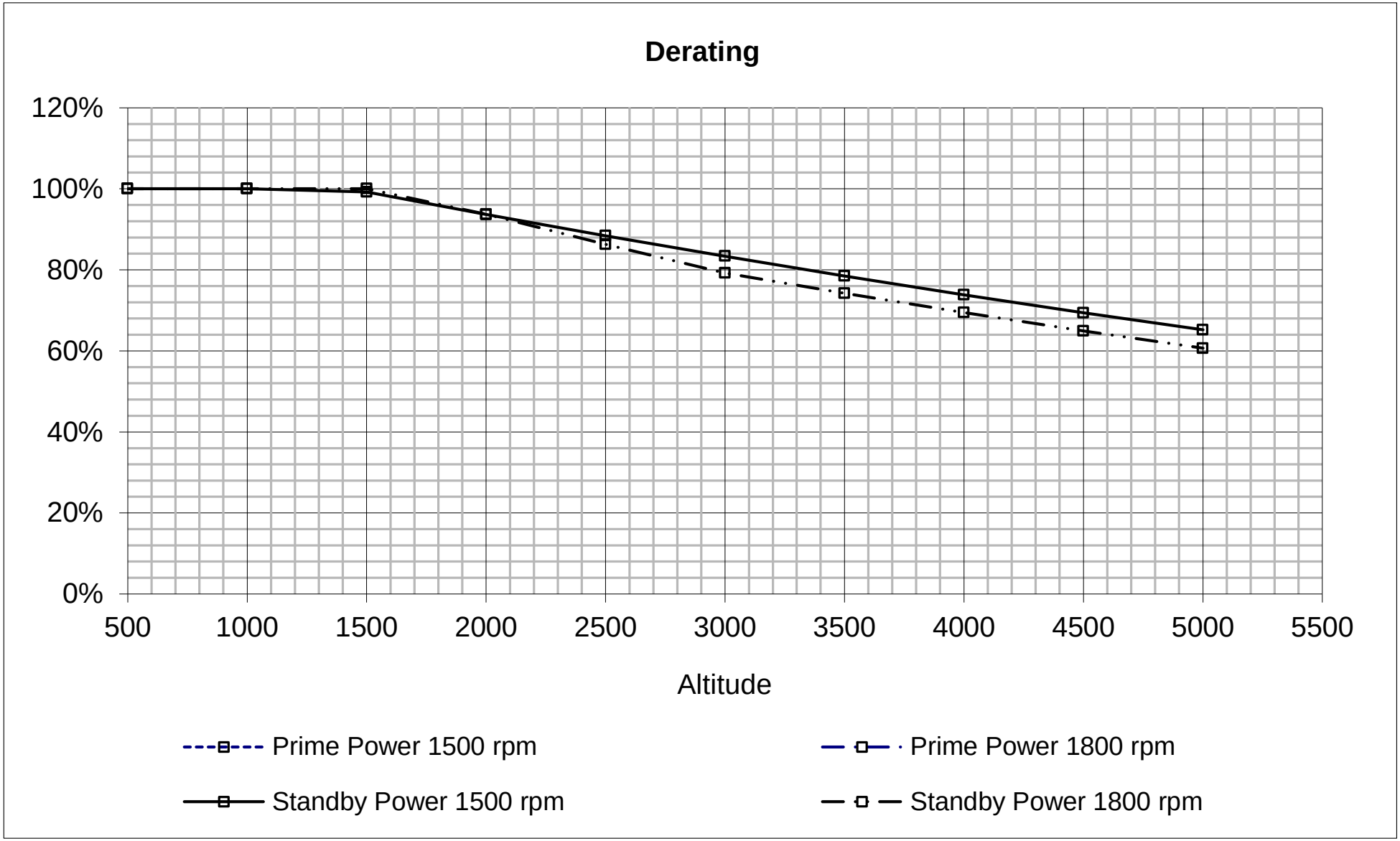
			Warning level Alarm level		Engine protection	
			Default setting			Action. Default/Alternative
Parameter		Unit	Yellow lamp	Red lamp	Level	
Oil temp		°C	125	130	130,0	Shut down.
Oil pressure	Low idle	kPa	90	80	80	Shut down
	1500 rpm	kPa	200	170	170	Shut down
	1800 rpm	kPa	230	200	200	Shut down
Oil level						
Piston cooling pressure >1000 rpm		kPa				
Coolant temp		°C	109	114	114	Shut down.
Coolant level			On		Low level	Shut down.
Fuel feed pressure	Low idle	kPa				
	>1400 rpm					
Water in fuel						
Crank case pressure		kPa				
Air filter pressure droop		kPa				
Altitude, above sea		m	Automatic derating, see section derating			
Charge air temp		°C	75	80	80	shut down
Charge air pressure		kPa	340	350	350	shut down
Engine speed		rpm	115% of rated speed			

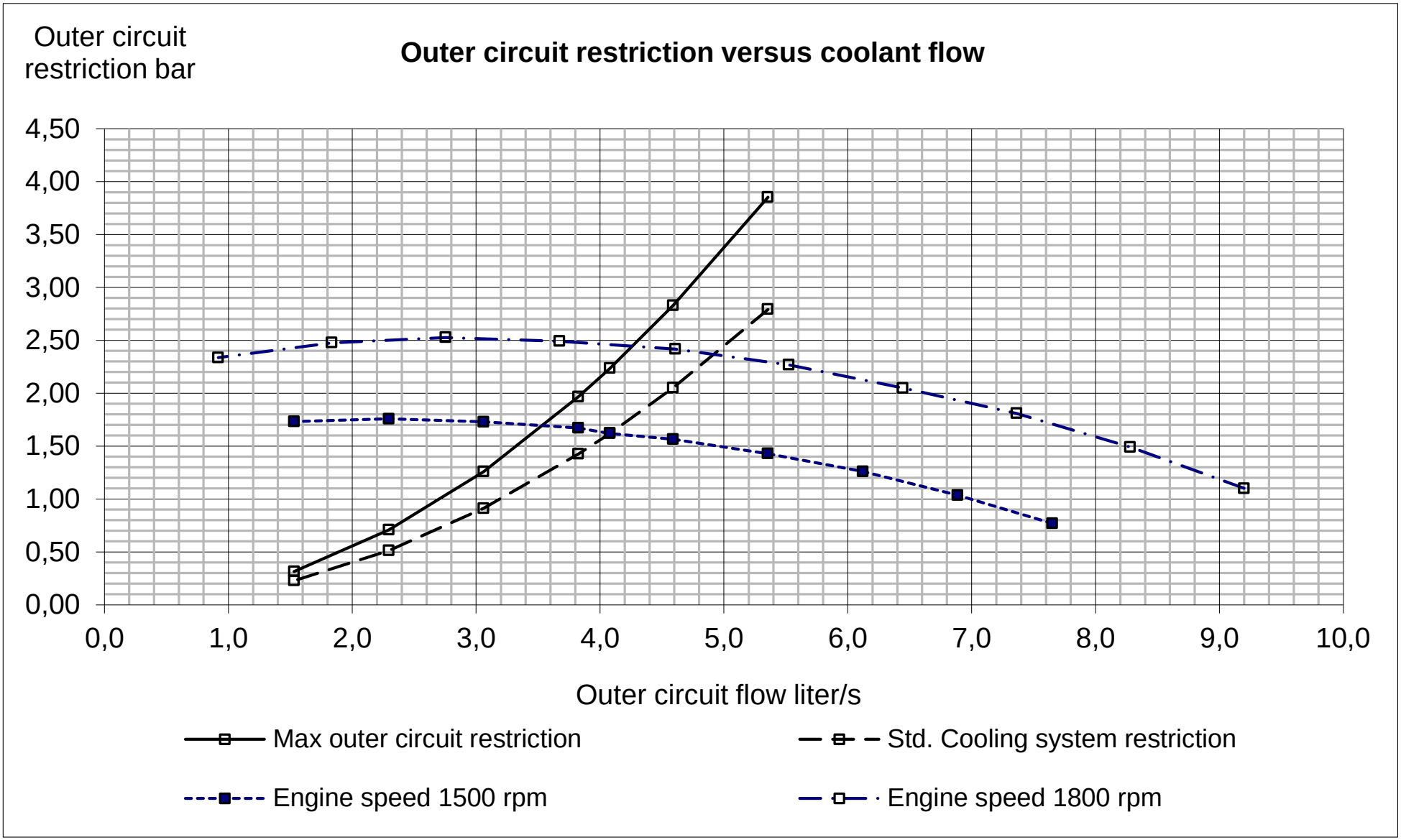
Engine protection can be disabled. For consequences please see VP International Limited Warranty Policy

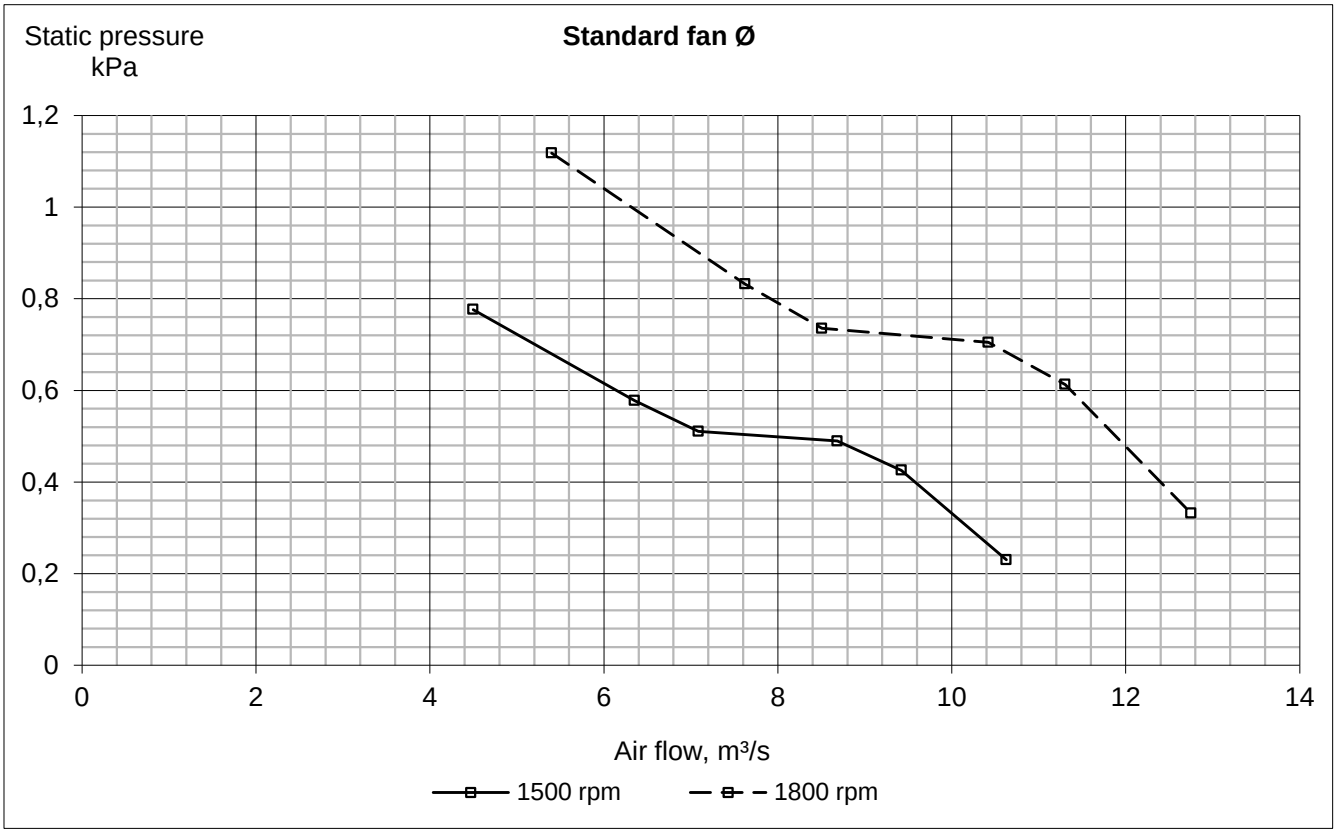
Electrical system

Voltage and type		24V	
Alternator:	make/output	A	Mitsubishi/100
	tacho output	Hz/alt. Rev	
	drive ratio		
Starter motor		make	Mitsubishi
		type	M008T62471
		kW	5,0
Number of teeth on:	flywheel		129
	starter motor		10
Max wiring resistance main circuit		mΩ	
Cranking current at +20°C		A	400
Crank engine speed at +20°C		rpm	200
Starter motor battery capacity:	max	Ah/A	135
	min at +5°C	Ah/A	
Inlet manifold heater (at 20 V)		kW	
Power relay for the manifold heater		A	2

Power take off		**rpm**	**1500**	**1800**
Front end in line with crank shaft max:		Nm lbft	1200 885	
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	187 138	
Speed ratio direction of rotation viewed from flywheel side			1,116 ccw	
Timing gear at servo pump PTO max:		Nm lbft		
Speed ratio direction of rotation viewed from flywheel side				
Timing gear at hydraulic pump PTO max:		Nm lbft		
Speed ratio direction of rotation viewed from flywheel side				
Max allowed bending moment in flywheel housing		Nm lbft	≤ ± 3500	
Max. rear main bearing load		N lbf	5000 1124,0	


Derating
120%
100%
80%
60%
40%
20%
0%
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
Altitude
Prime Power 1500 rpm
Prime Power 1800 rpm
Standby Power 1500 rpm
Standby Power 1800 rpm


Outer circuit restriction bar
Outer circuit restriction versus coolant flow
4,50
4,00
3,50
3,00
2,50
2,00
1,50
1,00
0,50
0,00
0,0
1,0
2,0
3,0
4,0
5,0
6,0
7,0
8,0
9,0
10,0
Outer circuit flow liter/s
Max outer circuit restriction
Std. Cooling system restriction
Engine speed 1500 rpm
Engine speed 1800 rpm


Static pressure
kPa
Standard fan Ø
1,2
1
0,8
0,6
0,4
0,2
0
0
2
4
6
8
10
12
14
Air flow, m³/s
1500 rpm
1800 rpm