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	TAD1342GE-B	23572229

Important

This Technical Data Sheet and the corresponding Installation Instructions provide important information to ensure the installed engine will operate according to the design specification in the Volvo Penta application for certification.

Requirements marked with  are considered as critical for exhaust emissions compliance according to the design specification in the Volvo Penta application for certification.

Failing to follow and meet these instructions and requirements when installing a certified engine in a piece of nonroad equipment for use in the United States violates U.S. federal law (40 CFR 1068.105(b)), subject to fines or other penalties as described in the Clean

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		12,78
	in ³		779,7
Firing order			1-5-3-6-2-4
Bore	mm		131
	in		5,16
Stroke	mm		158
	in		6,22
Compression ratio			18,1:1
Wet weight (Not including after treatment system)	Engine only	kg	1325
		lb	2921
	Engine incl. cooling system and air filtration system	kg	
	lb		
	Engine incl. cooling system, air filtration system, and frame	kg	1790
		lb	3946

Performance

			rpm	1500	1800
Prime Power	without fan	kW		313	363
		hp		426	494
	with fan	kW		303	345
		hp		412	469
Standby Power	without fan	kW		343	395
		hp		466	537
	with fan	kW		333	377
		hp		453	513
Torque at:	Prime Power	Nm		1993	1926
		lbft		1470	1420
	Standby Power	Nm		2184	2096
		lbft		1610	1545
Power tolerance		%	+4 / -0		
Mean piston speed		m/s		7,9	9,5
		ft/sec		26,0	31,2
Effective mean pressure at:	Prime Power	MPa		2,0	1,9
		psi		284	275
Effective mean pressure at:	Standby Power	MPa		2,1	2,1
		psi		311	299
Max combustion pressure at:	Prime Power	MPa		17,1	17,2
		psi		2480	2495
Max combustion pressure at:	Standby Power	MPa		18,5	17,7
		psi		2683	2567
Total mass moment of inertia, J (mR ²)		kgm ²		3,43	
		lbft ²		81,4	
Friction Power		kW		30	44
		hp		40,8	59,84
Derating due to altitude - see Technical Diagrams					

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Engine noise emission

Test Standards: ISO 3744-1981 (E) sound power

Tolerance ± 0.75 dB(A)

		rpm	1500	1800
Measured sound power Lw	No load	dB(A)	110,3	111
	Prime Power	dB(A)	114,1	116,4
	Standby Power	dB(A)	114,5	116,4
Calculated sound pressure Lp at 1 m	No load	dB(A)	98,3	99
	Prime Power	dB(A)	102,1	104,4
	Standby Power	dB(A)	102,5	104,4

Test conditions for load acceptance data

Warm engine.	Generator		Model		Type of AVR	
	Stamford		HCI 444 F1		SX 440	
AVR Settings	UFRO (Hz):	47/57	DIP (%)*:	0%	DWELL (%)*:	std
	Stability (%)*:	std	Voltage (V):	400V	Load factor:	1.0

Applies to Stamford nomenclature,

(%)* : % of max potentiometer setting range

Load acceptance performance can vary due to actual alternator inertia, voltage regulator, type of load and local ambient conditions.

Abbreviation:	Full name:	Descriptions
AVR	Automatic Voltage Regulator	Generator performance and safety control unit
UFRO	Under Frequency Roll Off	Overheating protection at under frequency
DIP		Controls the slope of voltage drop when the UFRO is active
DWELL		Controls the slope of voltage recovery when the UFRO is active.

Single step load performance at 1500 rpm - PRIME (Resistiv load)

Load (%)	Speed diff (%)	Speed Recovery time (s)	Voltage diff (%)	Voltage Recovery time (s)	Remaining load (%)	Speed diff (%)	Speed Recovery time (s)	Voltage diff (%)	Voltage Recovery time (s)
0-20	1,9	0,7	1,0	0,0	20-100	13,3	2,4	10,5	2,0
0-40	3,5	0,9	1,6	1,2	40-100	6,1	1,8	3,5	0,9
0-50					50-100				
0-60	5,8	1,6	2,3	1,7	60-100	3,1	0,8	2,5	1,4
0-66	7 (G3)	1,6	3,8	1,5	x-100				
0-78	10 (G2)	1,4	7,7	2,1	x-100				
0-80	11,3	1,5	8,6	2,2	80-100	1,6	0,6	1,5	0,7
0-100	20,3	2,4	15,6	2,7					
100-0	6,7	1,5	2,6	0,8					

Single step load performance at 1500 rpm - STAND BY (Resistiv load)

Load (%)	Speed diff (%)	Speed Recovery time (s)	Voltage diff (%)	Voltage Recovery time (s)	Remaining load (%)	Speed diff (%)	Speed Recovery time (s)	Voltage diff (%)	Voltage Recovery time (s)
0-20	2,1	0,7	1,1	0,5	20-100	13,7	3,5	11,1	1,7
0-40	3,4	0,9	1,7	1,2	40-100	3,0	3,0	4,1	1,3
0-50					50-100				
0-60	7,4	1,6	3,6	1,9	60-100	3,6	2,3	2,6	0,8
0-60	7 (G3)	1,6	3,8	1,5	x-100				
0-71	10 (G2)	1,4	7,7	2,1	x-100				
0-80	14,3	1,8	11,6	2,5	80-100	1,7	0,6	1,6	0,8
0-100	25,4	4,6	18,3	3,1					
100-0	7,7	1,5	3,3	1,3					

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Single step load performance at 1800 rpm - PRIME (Resistiv load)

Load (%)	Speed diff (%)	Speed Recovery time (s)	Voltage diff (%)	Voltage Recovery time (s)	Remaining load (%)	Speed diff (%)	Speed Recovery time (s)	Voltage diff (%)	Voltage Recovery time (s)
0-20	1,5	0,6	0,4	0,0	20-100	5,9	1,5	7,9	1,8
0-40	2,8	0,9	1,1	0,8	40-100	3,8	1,0	4,7	0,9
0-50					50-100				
0-60	4,3	0,9	4,7	1,0	60-100	2,6	0,8	0,6	0,8
0-87	7 (G3)	1,5	11,3	1,7	x-100				
0-100	10 (G2)	1,8	15,6	2,7	x-100				
0-80	6,0	0,9	8,4	1,3	80-100	1,4	0,6	0,9	0,0
0-100	10,0	1,6	13,4	2,1					
100-0	5,9	1,5	4,6	1,4					

Single step load performance at 1800 rpm - STAND BY (Resistiv load)

Load (%)	Speed diff (%)	Speed Recovery time (s)	Voltage diff (%)	Voltage Recovery time (s)	Remaining load (%)	Speed diff (%)	Speed Recovery time (s)	Voltage diff (%)	Voltage Recovery time (s)
0-20	1,6	0,6	0,5	0,0	20-100	6,7	1,3	11,1	1,6
0-40	3,0	0,9	3,8	1,0	40-100	3,9	1,1	6,8	1,5
0-50					50-100				
0-60	4,5	1,0	6,4	1,0	60-100	2,5	1,0	3,8	0,9
0-79	7 (G3)	1,5	11,3	1,7	x-100				
0-96	10 (G2)	1,8	15,6	2,7	x-100				
0-80	7,1	1,0	11,1	2,1	80-100	1,4	0,6	1,0	0,6
0-100	12,5	2,3	16,0	2,7					
100-0	6,4	1,5	4,8	1,3					

Cold start performance

		rpm	1500	1800
Time from start to stay within 0.5% of no load speed at ambient temperature:	°C			
	-15 *	s	6,6	6,0
	-25 *	s	10,8	
	-25 **	s	5,2	
	Min start temp*	°C		

* With manifold heater 4.0 kW engaged, lubrication oil 10W/30.

** With manifold heater 4.0 kW engaged, lubrication oil 10W/30 and block heater.

Block heater type	Make	Power kW	Engaged hours	Cooling water temp engine block
		2	12	20°C 68°F

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Lubrication system		rpm	1500	1800
Lubricating oil consumption	Prime Power	litre/h US gal/h		
	Standby Power	litre/h US gal/h		
Oil system capacity including filters		litre US gal	36 9,5	
Oil sump capacity:	max	litre US gal	30 7,9	
	min	litre US gal	19 5,0	
Oil change intervals/specifications:	VSD3	h	600	
	VSD2	h	400	
		h		
Engine angularity limits:	front up	°	11	
	front down	°	11	
	side tilt	°	11	
Oil pressure at rated speed		kPa psi	370 - 520 54 - 75	
Lubrication oil temperature in oil sump:	max	°C	130	
		°F	266	
Oil filter		μ	40,000	

* See also general section in the sales guide

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Fuel system		rpm	1500	1800
Prime Power Specific fuel consumption at:	25%	g/kWh lb/hph	228 0,369	240 0,389
	50%	g/kWh lb/hph	199 0,322	206 0,334
	75%	g/kWh lb/hph	193 0,312	200 0,325
	100%	g/kWh lb/hph	192 0,311	204 0,331

Standby Power Specific fuel consumption at:	25%	g/kWh lb/hph	222 0,360	233 0,378
	50%	g/kWh lb/hph	196 0,318	203 0,329
	75%	g/kWh lb/hph	193 0,312	202 0,327
	100%	g/kWh lb/hph	193 0,313	207 0,335

Fuel system		rpm	1500	1800
Fuel to conform to	ASTM-D975-No1 and 2D JIS KK 2204, EN 590			
System supply flow at:	litre/h US gal/h		115,0 30,4	130,0 34,3
Fuel supply line max restriction (Measured at fuel inlet connection)	kPa psi		30,0 4,4	30,0 4,4
Fuel supply line max pressure, engine stopped	kPa psi		20,0 2,9	20,0 2,9
System return flow	litre/h US gal/h		18,0 4,8	18,0 4,8
Fuel return line max restriction (Measured at fuel return connection)	kPa psi		20,0 2,9	20,0 2,9
Maximum allowable inlet fuel temp (Measured at fuel inlet connection)	°C °F		50 122	50 122
Prefilter / Water separator			10,000	
Fuel filter			5,000	
Governor type/make, standard			Volvo / EMS 2.4	
Injection pump type/make			Delphi E3	

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Intake and exhaust system		rpm	1500	1800
Air consumption at: (+25°C and 100kPa)	Prime Power	m ³ /min cfm	24,6 869	28,7 1014
	Standby Power	m ³ /min cfm	25,9 915	28,7 1014
 See front page for important information Max allowable air intake restriction including piping		kPa psi	5 0,7	5 0,7
Air filter restriction clean Volvo Penta filter		kPa psi	0,8 0,1	1,2 0,2
Heat rejection to exhaust at:	Prime Power	kW BTU/min	195 11089	253 14388
	Standby Power	kW BTU/min	213 12113	287 16321
Exhaust gas temperature after turbine at:	Prime Power	°C	395	432
		°F	743	810
	Standby Power	°C	408	481
		°F	766	898
 See front page for important information Max allowable back pressure in exhaust line (after turbine) Pipe dimension Ø: mm		kPa psi	9 1,3	9 1,3
		kPa psi	10 1,5	10 1,5
Exhaust gas flow at: (temp and pressure after turbine at the corresponding power setting)	Prime Power	m ³ /min cfm	53,8 1900	65,0 2295
	Standby Power	m ³ /min cfm	57,0 2013	69,5 2454



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Cooling system		rpm	1500	1800
Heat rejection radiation from engine at:	Prime Power	kW BTU/min		
	Standby Power	kW BTU/min		
Heat rejection to coolant at:	Prime Power	kW BTU/min	134 7620	159 9042
	Standby Power	kW BTU/min	144 8189	172 9781
Radiator cooling system type		Closed circuit		
Standard radiator core area		m ² foot ²	0,8 8,61	
Fan diameter		mm in	890 35,04	
Fan power consumption		kW hp	10 14	18 24
Fan drive ratio		0.99:1		
Coolant capacity,	engine	litre US gal	20 5,28	
	engine with std radiator and hoses	litre US gal	24 6,34	
Coolant pump		drive/ratio	Belt / 1,43:1	
Coolant flow with standard system		l/s US gal/s	5 1,32	5,5 1,45
Minimum coolant flow		l/s US gal/s	4,1 1,08	§
Maximum outer circuit restriction, including piping		kPa psi	40 5,8	55 8,0
Thermostat	start to open	°C	82	
		°F	180	
	fully open	°C	92	
		°F	198	
Maximum static pressure head (expansion tank height + pressure cap setting)		kPa psi	100 14,5	
Minimum static pressure head (expansion tank height + pressure cap setting)		kPa psi	100 14,5	
Standard pressure cap setting		kPa psi	100 14,5	
Maximum top tank temperature		°C °F	107 225	
Draw down capacity. The difference between min coolant level in the expansion tank and the lowest level where the engine's coolant system still is functioning		litre US gal	1,8 0,48	

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Charge air cooler system		rpm	1500	1800
Heat rejection to charge air cooler	Prime Power	kW BTU/min	64 3640	81 4606
	Standby Power	kW BTU/min	72 4095	80 4550
Charge air mass flow	Prime Power	kg/s	0,47	0,55
	Standby Power	kg/s	0,49	0,55
Charge air inlet temp. (Charge air temp after turbo compressor)	Prime Power	°C	181	197
		°F	358	387
	Standby Power	°C	193	197
		°F	379	387
 See front page for important information Max allowable Charge air outlet temp. (Charge air temp after intercooler)	Prime Power	°C	44	44
		°F	111	111
	Standby Power	°C	45	45
		°F	113	113
 See front page for important information Maximum pressure drop over charge air cooler incl. piping		kPa	8	
		psi	1,16	
Charge air pressure (After charge air cooler)		kPa	238	220
		psi	34,52	31,91
Standard charge air cooler core area		m ²	0,89	
		foot ²	9,58	

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**Cooling performance**

Standard fan: STD Fan ratio: 1 : 0,99 Fan type: FIX

Cooling air flow and external restriction at different radiator air temperatures based on 107°C TTT and 40% antifreeze. 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	60			5,8	250
	63	5,7	310	6,3	103
	65	6,1	180	6,7	0
	68	6,7	0		
1800	60			7,3	340
	62	7,1	424	7,7	168
	64	7,6	210	8,2	0
	66	8,2	0		

Note! External restrictions are calculated for values >0 Pa

Optional fan: LOW Fan ratio: 1 : 0,84 Fan type: FIX

Cooling air flow and external restriction at different radiator air temperatures based on 107°C TTT and 40% antifreeze. 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	52			4,8	202
	55	4,5	280	5,2	82
	58	4,9	186	5,5	0
	62	5,5	0		
1800	52			6,1	235
	55	6,1	235	6,6	60
	57	6,4	105	68,0	0
	59	6,8	0		

Note! External restrictions are calculated for values >0 Pa

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Engine management system

Functionality	Alternatives	Default setting
Governor mode	Isochronus / Droop	Isochronus
Governor droop	0-8%	0,0
Governor response	Adjustable PID-constants (VODIA)	Standard
Dual speed	YES	1500 or 1800
Idle speed	600-1200	900,0
Fine speed adjustment	± 90	0,0
Stop function	Energized to Run / Stop	Energized to Run / Stop
Preheating function	On / Off	On
Lamp test	On / Off	On

Engine sensor and switch settings

Parameter	Unit	Alarm level		Engine protection		
		Setting range	Default setting	Level	Action. Default/Alternative	
Oil temp	°C	120 - 130	125	Setting +5	Shut down.	
Oil pressure	Low idle	kPa	-	190,0	-30,0	Shut down.
	1500 rpm	kPa	-	250,0	-30,0	Shut down.
	1800 rpm	kPa	-	300,0	-30,0	Shut down.
Oil level		-	Min level	-	Shut down.	
Piston cooling pressure >1000 rpm	kPa	-	150	150,0	-	
Coolant temp	°C	95 - 103	102	Setting +5	Shut down.	
Coolant level		See cooling system	On	Low level	Shut down.	
Fuel feed pressure	Low idle	kPa	-	100	-	-
	>1400 rpm		-	200	-	-
Water in fuel		-	High level	-	-	
Crank case pressure	kPa	-	Increased pressure	Increased pressure	Shut down.	
Air filter pressure droop	kPa	-	5	-	-	
	0,0		Alarm level		Engine protection	
Altitude, above sea	m	-	-	-	Automatic derating, see section derating	
Charge air temp	°C	-	80	85,0	Shut down.	
Charge air pressure 1500	kPa	-	360 / 350	370 / 360	Shut down.	
Engine speed	rpm	100 - 120% of rated speed	115% of rated speed	Alarm level	Shut down.	

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

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Electrical system

Voltage and type		24V / insulated from eath	
Alternator:	make/output	A	Bosch 80 A
	tacho output	Hz/alt. Rev	6
	drive ratio		5,3:1
Starter motor	make	Melco	
	type	105P70	
	kW	7,0	
Number of teeth on:	flywheel	153	
	starter motor	12	
Max wiring resistance main circuit		mΩ	2
Cranking current at +20°C		A	180
Crank engine speed at 20°C		rpm	155
Starter motor battery capacity:	max	Ah/A	2x225
	min at +5°C	Ah/A	-
Inlet manifold heater (at 20 V)		kW	4.0
Power relay for the manifold heater		A	1

Power take off

	rpm	1500	1800
Max allowed bending moment in flywheel housing	Nm	15000	
	lbft	11063	
Max. rear main bearing load	N	4000	
	lbf	899,2	

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Sensors Alarm	Signal	Range	rpm Map					Condition	Derating
			450 rpm	500 rpm	1000 rpm	1450 rpm	2000 rpm		
<i>Oil pressure</i>	0,5-4,5 V	0-700 kPa							
Warning Level			-50	60	210	310	310		
Alarm Level			-85	25	175	275	275		

Remarks

1) <i>Soft derate Coolant temp</i>	Speed / °C				
Remaining torque in %	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A

Derate map R2			
°C			
%	N/A	N/A	N/A

2) <i>Soft derate Oil temp</i>	Speed / °C				
Remaining torque in %	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A

Derate map R2			
°C			
%	N/A	N/A	N/A

