

VOLVO PENTA TAD620VE	Document No	Issue Index
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General

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

Number of cylinders		6
Displacement, total	liters in ³	5,7 348
Firing order		1-5-3-6-2-4
Bore	mm in	98 3,86
Stroke	mm in	126 4,96
Compression ratio		18.4:1
Dry weight	kg/lb	510 / 1120

Performance		r/min	1800	2100	2300	2500
IFN Power. 155 kW	without fan	kW	128	141	148	155
		hp	174	192	202	211
ICFN Power. 140 kW	without fan	kW	115	128	134	140
		hp	156	174	182	190
IFN Power. 145 kW	without fan	kW	127	139	145	
		hp	173	189	197	
ICFN Power. 131 kW	without fan	kW	116	128	131	
		hp	158	174	178	
IFN Power. 135 kW	without fan	kW	129	135		
		hp	175	184		
ICFN Power. 121 kW	without fan	kW	116	121		
		hp	158	165		
Torque at:	IFN Power. 155 kW	Nm	680	642	615	592
		lbf ft	501	474	454	437
	ICFN Power. 140 kW	Nm	610	582	556	535
		lbf ft	450	429	410	394
	IFN Power. 145 kW	Nm	674	632	602	
		lbf ft	497	466	444	
ICFN Power. 131 kW	Nm	615	582	544		
	lbf ft	454	429	401		
IFN Power. 135 kW	Nm	684	614			
	lbf ft	505	453			
ICFN Power. 121 kW	Nm	615	550			
	lbft	454	406			
Mean piston speed		m/s	7,6	8,8	9,7	10,5
		ft/sec	24,8	28,9	31,7	34,4
Effective mean pressure at IFN Power		Mpa	1,51	1,46	1,41	1,31
		psi	219	212	204	190
Residual speed droop (mechanical governor) at load increase from 0 to 100% at:	IFN Power. 155 kW	%				5-7
	IFN Power. 145 kW	%			5-7	
	IFN Power. 135 kW	%		5-7		
Residual speed droop (electronic governor) at load increase from 0 to 100% at:	IFN Power. 155 kW	%				5, adjust./isocron.
	IFN Power. 145 kW	%			5, adjust./isocron.	
	IFN Power. 135 kW	%		5, adjust./isocron.		

General

Derating, mechanical governor

The engine may be operated up to 1000 m altitude and 40 °C ambient air temperature without derating. For operation at higher altitudes and temperatures the power should be derated according to the following factors:

	r/min	1800	2100	2300	2500
Altitude derating factor < 3000 m	% / m	4 / 500			
Altitude derating factor > 3000 m	% / m	6 / 500			
Ambient temperature derating factor	% / °C	2 / 5			
Humidity		No derating			

Derating, electronic governor

For applications 1000 m above the ocean an ECU with automatic derating must be used.

For operations with air ambient temperature over 40 C , see mechanical governor.

Lubrication system

		r/min	1800	2100	2300	2500
Lubricating oil consumption at max rpm at:	IFN Power. 155 kW	liter/h US gal/h				0,06 0,016
	IFN Power. 145 kW	liter/h US gal/h			0,06 0,016	
	IFN Power. 135 kW	liter/h US gal/h		0,05 0,013		
Oil system capacity incl. Filters		liter US gal	16 4,23			
Oil sump capacity:	Max	liter US gal	14 3,70			
	Min	liter US gal	12 3,17			
Oil change max intervals	VDS-2	h	500			
	VDS, ACEA E3	h	300			
	ACEA E2, API CF, CF-4, CG4	h	150			
Engine angularity limits:	front up	°	30			
	front down	°	30			
	side tilt	°	30			
Oil pressure:	at 1800 rpm	kPa	450			
	shut down switch setting	kPa	50			
Lubrication oil temperature:	normal	°C	80			
		°F	176			
	max	°C	125			
		°F	257			
Oil filter micron size		mm	0,012			

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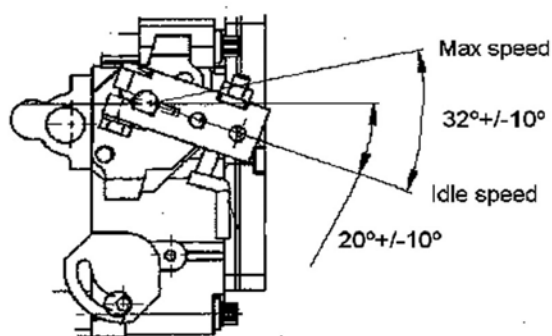
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Fuel system

		r/min	1800	2100	2300	2500	
IFN Power. 155 kW Specific fuel consumption at:	25%	g/kWh lb/hph	248 0,402	248 0,402	268 0,434	283 0,459	
	50%	g/kWh lb/hph	209 0,339	216 0,350	224 0,363	234 0,379	
	75%	g/kWh lb/hph	204 0,331	210 0,340	216 0,350	224 0,363	
	100%	g/kWh lb/hph	208 0,337	218 0,353	224 0,363	230 0,373	
IFN Power. 145 kW Specific fuel consumption at:	25%	g/kWh lb/hph	252 0,408	257 0,417	277 0,449		
	50%	g/kWh lb/hph	213 0,345	220 0,357	229 0,371		
	75%	g/kWh lb/hph	208 0,337	214 0,347	221 0,358		
	100%	g/kWh lb/hph	208 0,337	213 0,345	220 0,357		
IFN Power. 135 kW Specific fuel consumption at:	25%	g/kWh lb/hph	256 0,415	266 0,431			
	50%	g/kWh lb/hph	217 0,352	227 0,368			
	75%	g/kWh lb/hph	212 0,344	219 0,355			
	100%	g/kWh lb/hph	212 0,344	217 0,352			
Recommended fuel to conform to			ASTM-D975-No1 and 2-D JIS KK 2204, EN 590				
Total fuel flow		liter/h US gal/h				600 159	
Feed pump pressure		kPa psi		500 72,5			
Feed pump max suction head		m foot		1,5 4,9			
Fuel filter micron size		mm		0,005			
Prefilter / Waterseparator micron size		mm		0,0063			
Governor type/make, standard				Heinzmann			
Injection pump type/make				Single pumps / Bosch			
Injection pump throttle shaft angular travel: Max speed, mech.gov.		degrees		32+/-10			
Injection pump throttle shaft angular travel: Idle speed, mech.gov.		degrees		20+/-10			



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Intake and exhaust system		r/min	1800	2100	2300	2500
Air consumption at:	IFN Power. 155 kW	m ³ /min cfm	9,3 328	11,7 413	13,3 470	14,1 498
	IFN Power. 145 kW	m ³ /min cfm	9,3 328	11,4 403	12,9 456	
	IFN Power. 135 kW	m ³ /min cfm	9,3 328	11,1 392		
Air intake restriction, clean filter(s)		kPa In wc	2,5 10,0			
Max allowable air intake restriction		kPa In wc	6,5 26,1			
Heat rejection to exhaust at:	IFN Power. 155 kW	kW BTU/min	99 5630	120 6824	134 7620	140 7962
	IFN Power. 145 kW	kW BTU/min	99 5630	116 6597	125 7109	
	IFN Power. 135 kW	kW BTU/min	99 5630	110 6256		
Exhaust gas temperature after turbine at:	IFN Power. 155 kW	°C	485	465	460	455
		°F	905	869	860	851
	IFN Power. 145 kW	°C	485	460	450	
		°F	905	860	842	
	IFN Power. 135 kW	°C	485	450		
		°F	905	842		
Max allowable back pressure in exhaust line		kPa In wc	10,0 40,2			
Exhaust gas flow at:	IFN Power. 155 kW	m ³ /min cfm	26,0 918	32,7 1155	36,8 1300	40,2 1420
	IFN Power. 145 kW	m ³ /min cfm	26,0 918	32,0 1130	35,7 1261	
	IFN Power. 135 kW	m ³ /min cfm	26,0 918	31,3 1105		
Exhaust gas smoke	IFN Power. 155 kW	Bosch Units	0,6	0,4	0,4	0,4
	IFN Power. 145 kW		0,7	0,5	0,4	
	IFN Power. 135 kW		0,8	0,5		

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Cooling system		r/min	1800	2100	2300	2500
Heat rejection radiation from engine at:	IFN Power. 155 kW	kW	16	17	18	17
		BTU/min	910	967	1024	967
	IFN Power. 145 kW	kW	16	15	16	
		BTU/min	910	853	910	
	IFN Power. 135 kW	kW	16	14		
		BTU/min	910	796		
Heat rejection to coolant at:	IFN Power. 155 kW	kW				73,5
		BTU/min				4180
	IFN Power. 145 kW	kW			68,7	
		BTU/min			3907	
	IFN Power. 135 kW	kW		64		
		BTU/min		3645		
Recommended coolant		Volvo coolant or Volvo anticorrosion additive together with clean fresh water				
Coolant capacity:	engine	liter	6			
		US gal	2			
Coolant pump						
	a) fan mounted on sep. bracket	drive/ratio	1.36:1			
	b) fan mounted on coolant pump	drive/ratio	1.36:1			
Coolant flow						
	a) fan mounted on sep. bracket	l/s	2,3	2,7	2,9	3,2
		cu ft/min	4,8	5,6	6,1	6,7
	b) fan mounted on coolant pump	l/s	2,2	2,5	2,7	3,0
		cu ft/min	4,6	5,3	5,8	6,3
Maximum radiator restriction		kPa	7,0	10,0	12,0	14,0
		psi	1,0	1,5	1,7	2,0
Thermostat:	start to open	°C	83			
		°F	181			
	fully open	°C	95			
		°F	203			
Maximum static pressure head		kPa	100			
		psi	14,5			
Maximum pressure cap setting		kPa	90			
		psi	13,1			
Maximum top tank temperature (IFN / ICFN)		°C	110 / 105			
		°F	230 / 221			
Max. Permissible cooling down of engine coolant by radiator		°C	8			
		°F	46			
Shutdown switch setting (IFN / ICFN)		°C	113			
		°F	235			
Recommended drawdown capacity		10% of total cooling system capacity				
Max pressure drop over watercooler*		kPa	7,0	10,0	12,0	14,0
		psi	1,0	1,5	1,7	2,0

* Resistance over cooling system may not be higher than 1,5 of the watercooler resistance.

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Intercooler system		r/min	1800	2100	2300	2500
Cooling power required	IFN Power. 155 kW	kW BTU/min				34,3 1951
	IFN Power. 145 kW	kW BTU/min			27,3 1553	
	IFN Power. 135 kW	kW BTU/min		20,8 1183		
Combustion air mass flow	IFN Power. 155 kW	kg/s				0,29
	IFN Power. 145 kW	kg/s			0,26	
	IFN Power. 135 kW	kg/s		0,22		
Combustion air entrance temp.	IFN Power. 155 kW	°C				168
		°F				334
	IFN Power. 145 kW	°C			156	
		°F			313	
	IFN Power. 135 kW	°C		139		
		°F		282		
Combustion air outlet temp.	IFN Power. 155 kW	°C				50
		°F				122
	IFN Power. 145 kW	°C			50	
		°F			122	
	IFN Power. 135 kW	°C		46		
		°F		115		
Maximum pressure drop over intercooler		kPa psi	10 1,5			
Boost pressure		kPa psi	155 22,5			

Cooling performance: 0,46 m² radiator and 600 mm suction fan

Radiator kit: Order no. 21456833

Fan: Included in standard specification

Cooling air flow and maximum additional external restriction at different radiator air temperatures based on 110°C TTT and 40% coolant. Valid at 1 atm.

Engine speed	Engine IFN power	Air on temp		Air flow		External restriction	
		°C	°F	m ³ /s	ft ³ /s	Pa	psi
rpm	kW hp						
2300	145	68	154			0	
1800	127	71	160			0	
1500	115	65	149			0	

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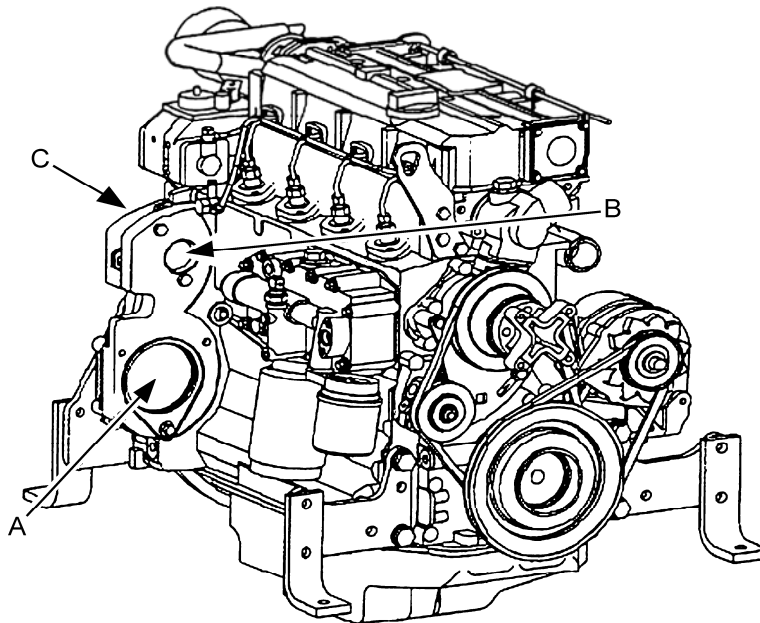
Electrical system

Voltage and type			24V / 1 pole system
Alternator:	make		Iskra
	output	Amp	55
	tacho output	Hz/alternator rev.	6
	drive ratio		3.26:1
Starter motor:	make		Melco
	type		Pre engaged drive
	output	kW	5,5
Starter motor solenoid:	pull current	Amp	2 (Pre-relay)
	hold current	Amp	2 (Pre-relay)
Number of teeth on:	flywheel		129
	starter motor		12
Inrush current at +20°C		Amp	1000
Cranking current at +20°C		Amp	400
Crank engine speed at +20°C		rpm	200
Starter motor battery capacity	max	Ah	2 x 180
	min at +5°C	Ah	2 x110
Inlet manifold heater (at 20 V)		kW	3
Power relay for the manifold heater		Amp	0,8

General

Power take off

r/min 1800 2100 2300 2500

Transmission positions

Parameters

		A	B	C
Gear ratio		1.023:1	1.189:1	1.189:1
Direction of rotation when facing the engine		anti-clockwise		clockwise
PTO connection				
Max output	kW	50	20	20
	hp	68	27	27
Max Torque	Nm	187,5	64,5	64,5
	lbf ft	138,3	47,6	47,6

Note:

Maximum output valid only for single drive.

The output indicated are valid for n = 2500 rpm.

In case of other drives engaged, the following applies:

Parameters		B+C	A+B+C	A without B+C
Max output	kW	20	50	
	hp	27	68	
Max Torque	Nm	64,5	187,5	
	lbf ft	47,6	138,3	
Bosch flange and serrated shaft	kW			30
DIN 5482 - B 17 x 14	hp			41
SAE - 9 T 16/32 DP	kW			30
	hp			41
SAE - 13 T 16/32 DP	kW			50
	hp			68
Bosch flange and cone	kW			20
	hp			27