

Technical data TAD620VE

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
Max combustion pressure at IFN Power			MPa				
			psi				
Total mass moment of inertia, J (mR ²)			kgm ²				
			lbft ²				
Degree of irregularity at:		IFN Power. 155 kW					
		IFN Power. 145 kW					
		IFN Power. 135 kW					

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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.		
Friction Power		kW				
		hp				

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.

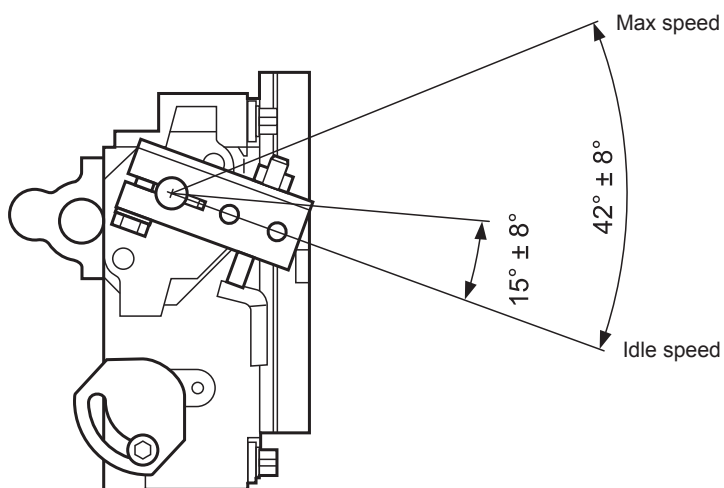
For operations with air ambient temperature over 40 C , see mechanical governor.

Lubrication system

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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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 °F	485 905	465 869	460 860	455 851
	IFN Power. 145 kW	°C °F	485 905	460 860	450 842	
	IFN Power. 135 kW	°C °F	485 905	450 842		
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 BTU/min	16 910	17 967	18 1024	17 967
	IFN Power. 145 kW	kW BTU/min	16 910	15 853	16 910	
	IFN Power. 135 kW	kW BTU/min	16 910	14 796		
Heat rejection to coolant at:	IFN Power. 155 kW	kW BTU/min				73,5 4180
	IFN Power. 145 kW	kW BTU/min			68,7 3907	
	IFN Power. 135 kW	kW BTU/min		64 3645		
Recommended coolant		Volvo coolant or Volvo anticorrosion additive together with clean fresh water				
Coolant capacity:	engine	liter US gal	6 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 cu ft/min	2,3 4,8	2,7 5,6	2,9 6,1	3,2 6,7
b) fan mounted on coolant pump		l/s cu ft/min	2,2 4,6	2,5 5,3	2,7 5,8	3,0 6,3
Maximum radiator restriction		kPa psi	7,0 1,0	10,0 1,5	12,0 1,7	14,0 2,0
Thermostat:	start to open	°C	83			
		°F	181			
	fully open	°C	95			
		°F	203			
Maximum static pressure head		kPa psi	100 14,5			
Maximum pressure cap setting		kPa psi	90 13,1			
Maximum top tank temperature (IFN / ICFN)		°C °F	110 / 105 230 / 221			
Max. Permissible cooling down of engine coolant by radiator		°C °F	8 46			
Shutdown switch setting (IFN / ICFN)		°C °F	113 235			
Recommended drawdown capacity		10% of total cooling system capacity				
Max pressssure drop over watercooler*		kPa psi	7,0 1,0	10,0 1,5	12,0 1,7	14,0 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 °F				168 334
	IFN Power. 145 kW	°C °F			156 313	
	IFN Power. 135 kW	°C °F		139 282		
Combustion air outlet temp.	IFN Power. 155 kW	°C °F				50 122
	IFN Power. 145 kW	°C °F			50 122	
	IFN Power. 135 kW	°C °F		46 115		
Maximum pressure drop over intercooler		kPa psi	10 1,5			
Boost pressure		kPa psi	155 22,5			

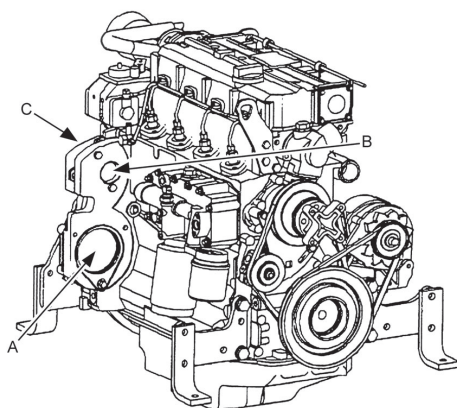
Electrical system

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	

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Power take off

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