

Technical data TAD1242VE ICFN Power

General

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

Number of cylinders		6
Displacement, total	liters	12,13
	in ³	740
Firing order		1-5-3-6-2-4
Bore	mm	131
	in	5,16
Stroke	mm	150
	in	5,91
Compression ratio		17,5:1

Performance		r/min	1200	1500	1600	1800
ICFN Power. 383 kW	without fan	kW	286	354	377	383
		hp	389	481	513	521
	with fan 890 mm	kW	281	345	366	368
		hp	382	469	498	500
Torque at:	ICFN Power. 383 kW	Nm	2276	2254	2250	2032
		lbf ft	1678	1662	1659	1499
Mean piston speed		m/s	6,0	7,5	8,0	9,0
		ft/sec	19,7	24,6	26,2	29,5
Effective mean pressure at ICFN Power		Mpa	2,36	2,33	2,33	2,1
		psi	342	338	338	305
Max combustion pressure at ICFN Power		MPa	15,6	17,5	18,2	16,8
		psi	2262	2538	2639	2436
Total mass moment of inertia, J (mR ²)		kgm ²	3,64			
		lbft ²	86,4			
Degree of irregularity at:	ICFN Power. 383 kW		1:29	1:49	1:58	1:92
Residual speed droop at load increase from 0 to 100% at:		%				
	ICFN Power. 383 kW	%	0-8			
		%				
Friction Power		kW	16,5	24,5	28,0	36,0
		hp	22	33	38	49

Derating

The engine will operate up to 1100m altitude without derating. For operation at higher altitudes the power will be derated according to the following factors: Linear interpolation is active between 1100m and 5000 m

	r/min	1200	1500	1600	1800
Altitude derating factor at 1100 m	% / m	0	0	0	4
Altitude derating factor at at 5000 m	% / m	10	10	10	15
Ambient temperature derating factor	% / °C	No derating		No derating	
Humidity		No derating			

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Lubrication system		r/min	1200	1500	1600	1800
Lubricating oil consumption at max rpm at:	ICFN Power. 383 kW	liter/h	0,13			
		US gal/h	0,034			
Oil system capacity incl. Filters		liter	35			
		US gal	9,25			
Oil sump capacity:	Max	liter	31			
		US gal	8,19			
	Min	liter	19			
		US gal	5,02			
Oil change intervals/specifications	VDS-2	h	600			
	VDS, ACEA, E3*	h	400			
	ACEA E2, API CF, CF-4, CG-4*	h	200			
Engine angularity limits:	front up	°	11			
	front down	°	11			
	side tilt	°	11			
Oil pressure:	at rated speed	kPa	370-520			
	shut down switch setting	kPa	250			
Lubrication oil temperature:	normal	°C	110			
		°F	230			
	max	°C	130			
		°F	266			
Oil filter micron size		mm	0,040			

Fuel system		r/min	1200	1500	1600	1800
ICFN Power. 383 kW	25%	g/kWh	205	208	212	219
Specific fuel consumption at:		lb/hph	0,332	0,337	0,344	0,355
	50%	g/kWh	195	193	194	204
		lb/hph	0,316	0,313	0,314	0,331
	75%	g/kWh	194	190	191	197
		lb/hph	0,314	0,308	0,310	0,319
	100%	g/kWh	194	193	195	206
		lb/hph	0,314	0,313	0,316	0,334
Recommended fuel to conform to			ASTM-D975-No1 and 2-D JIS KK 2204, EN 590			
Total fuel flow		liter/h	105	120	125	130
		US gal/h	28	32	33	34
Feed pump pressure		kPa	350			
		psi				
Feed pump max suction head		m	2			
		foot	6,6			
Fuel filter micron size		mm	0,005			
Prefilter / Waterseparator micron size		mm	0,030			
Governor type/make, standard			Electronic / EDCIII			
Injection pump type/make			-			
Injection pump throttle shaft angular travel: Max speed		degrees	-			
Injection pump throttle shaft angular travel: Idle speed		degrees	-			

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Intake and exhaust system

		r/min	1200	1500	1600	1800
Air consumption at:	ICFN Power. 383 kW	m ³ /min cfm	20,0 706	25,0 883	27,3 964	30,7 1084
Air intake restriction, clean filter(s)		kPa In wc	2 8,0			
Max allowable air intake restriction		kPa In wc	5 20,1			
Heat rejection to exhaust at:	ICFN Power. 383 kW	kW BTU/min	190 10805	232 13194	252 14331	286 16265
Exhaust gas temperature after turbine at:	ICFN Power. 383 kW	°C °F	490 914	450 842	450 842	470 878
Max allowable back pressure in exhaust line		kPa In wc	7,0 28,1	10,0 40,2	13,0 52,2	15,0 60,2
Exhaust gas flow at:	ICFN Power. 383 kW	m ³ /min cfm	49,1 1734	59,8 2112	64,3 2271	71,4 2521
Exhaust gas smoke	ICFN Power. 383 kW		0,25	0,10	0,10	0,21

Cooling system

		r/min	1200	1500	1600	1800
Heat rejection radiation from engine at:	ICFN Power. 383 kW	kW BTU/min	17 967	18 1024	18 1024	19 1081
Heat rejection to coolant at:	ICFN Power. 383 kW	kW BTU/min	124 7052	140 7962	151 8587	162 9213
Recommended coolant	Volvo coolant or Volvo anticorrosion additive together with clean fresh water					
Radiator cooling system type	Closed circuit					
Radiator core area	(std. Size)	m ² foot ²	0,8 8,61			
Radiator core thickness	(std. Size)	mm in	50 1,97			
Intercooler core area	(std. Size)	m ² foot ²	0,8 8,61			
Intercooler core thickness	(std. Size)	mm in	68 2,68			
Fan diameter	890 mm (std. Size)	mm in	890 35,04			
Fan power consumption	890 mm	kW hp	5,0 7	9,0 12	11,0 15	15,0 20
Fan drive ratio	(std. Size)		1,0:1			
Coolant capacity:	engine	liter US gal	20 5			
	std. Radiator with hoses	liter US gal	24 6			
Coolant pump		drive/ratio	gear/1,41:1			
Maximum additional coolant system restriction		kPa psi	60,0 8,7			
Thermostat:	start to open	°C °F	82 180			
	fully open	°C °F	95 203			
Maximum static pressure head		kPa psi	50 7,3			
Maximum pressure cap setting		kPa psi	70 10,2			
Maximum top tank temperature		°C °F	103 217			
Minimum temperature entering engine		°C °F	68 154			
Shutdown switch setting		°C °F	101 214			
Recommended drawdown capacity	10% of total cooling system capacity					

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Cooling performance: 0,8 m² radiator and 890 fan

Cooling air flow and maximum additional external restriction at different radiator air temperatures based on 103°C TTT and 50% antifreeze

Engine speed rpm	Engine power kW hp	Air on temp °C °F		ICFN POWER			
				Air flow		Max additional external restriction	
				m ³ /s	cu ft/s	Pa	psi
1800	383	40	104	5,3	187,2	1050	0,152
	521	45	113	6,1	215,4	840	0,122
		50	122	6,8	240,1	630	0,091
		55	131	8	282,5	420	0,061
		59	138	9,2	324,9	0	
1500	354	40	104	4,3	151,9	725	0,105
	481	45	113	4,9	173,0	580	0,084
		50	122	5,5	194,2	430	0,062
		55	131	6,4	226,0	300	0,044
		60	140	7,6	268,4	0	

Electrical system

Voltage and type			24V / Insulated from earth
Alternator:	make		Valeo
	output	Amp	60
	tacho output	Hz/alternator rev.	6
	drive ratio		3,41:1
Starter motor:	make		Bosch
	type		GVB
	output	kW	6
Starter motor solenoid:	pull current	Amp	< 2
	hold current	Amp	-
Number of teeth on:	flywheel		153
	starter motor		12
Inrush current at +20°C		Amp	1500-1650
Cranking current at +20°C		Amp	400
Crank engine speed at 20°C		rpm	200
Starter motor battery capacity	max	Ah	2x143 570A DIN
	min at +5°C	Ah	2x88 400A DIN
Inlet manifold heater (at 20 V)		kW	4,0
Power relay for the manifold heater		Amp	1

Power take off

	r/min	1200	1500	1600	1800
Front end in line with crank shaft max:	Nm	600			
	lbf ft	443			
Front end belt	max left	kW	30		50
		hp	41		68
	max down	kW	19		31
		hp	26		42
	max right	kW	30		50
		hp	41		68
Timing gear at compressor PTO max:	Nm	140			
	lbf ft	103			
Speed ratio direction of rotation viewed from flywheel side		1,31:1/anti-clockwise			
Timing gear at servo pump PTO max:	Nm	40			
	lbf ft	30			
Speed ratio direction of rotation viewed from flywheel side		1,65:1/anti-clockwise			
Timing gear at hydraulic pump PTO max:	Nm	400			
	lbf ft	295			
Speed ratio direction of rotation viewed from flywheel side		0,97:1 / anti-clockwise			