

Technical data TAD722VE

General

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

Number of cylinders		6
Displacement, total	liters	7.15
	in ³	436
Firing order		1-5-3-6-2-4
Bore	mm	108
	in	4.25
Stroke	mm	130
	in	5.12
Compression ratio		19,0:1
Dry weight	kg/lb	680/1496

Performance		r/min	1800	2100	2200	2300
IFN Power. 200 kW *Standard*	without fan	kW	185	194	197	200
		hp	252	264	268	272
ICFN Power. 180 kW *Standard*	without fan	kW	165	176	178	180
		hp	224	239	242	245
IFN Power. 200 kW *High Torque*	without fan	kW	185	194	197	200
		hp	252	264	268	272
ICFN Power. 180 kW *High Torque*	without fan	kW	175	178	179	180
		hp	238	242	243	245
IFN Power. 223 kW *High power*	without fan	kW	197	217	220	223
		hp	268	295	299	303
IFN Power. 195 kW *High power*	without fan	kW	186	195		
		hp	253	265		
Torque at:	IFN Power. 200 kW *Standard*	Nm	981	882	855	830
		lbf ft	724	651	631	612
	ICFN Power. 180 kW *Standard*	Nm	875	800	773	747
		lbf ft	646	590	570	551
	IFN Power. 200 kW *High Torque*	Nm	981	882	855	830
		lbf ft	724	651	631	612
	ICFN Power. 180 kW *High Torque*	Nm	928	809	777	747
	lbf ft	685	597	573	551	
IFN Power. 223 kW *High Power*		Nm	1045	987	955	926
		lbf ft	771	728	704	683
IFN Power. 195 kW *High Power*		Nm	987	887		
		lbf ft	728	654		
Mean piston speed		m/s	7.8	9.1	9.5	10.0
		ft/sec	25.6	29.9	31.3	32.7
Effective mean pressure at IFN Power 223 kW / 2300 rpm		Mpa	1.82	1.73	1.68	1.61
		psi	264	251	244	233
Max combustion pressure at IFN Power 223 kW / 2300 rpm		MPa	15.5	15.6	15.9	15.9
		psi	2248	2262	2306	2306
Total mass moment of inertia, J (mR ²) (w/o flyweel)		kgm ²	0.474			
		lbft ²	11.2			
Residual speed droop at load increase from 0 to 100% at:	IFN Power. 200 kW	%	5,adjustable./ isocron.			
	IFN Power. 200 kW	%	5,adjustable./ isocron.			
	IFN Power. 223 kW	%	5,adjustable./ isocron.			
Friction Power		kW	12			
		hp	17			

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Derating

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

For applications with air ambient temperature up to 40°C no derating is necessary.

	r/min	1800	2100	2200	2300
Ambient temperature derating factor (over 40°C)	% / °C	2 / 5			
Humidity		No derating			

Lubrication system		r/min	1800	2100	2200	2300
Lubricating oil consumption at max rpm at:	IFN Power. 200 kW *Standard*	liter/h	0.15	0.16	0.17	0.17
		US gal/h	0.04015	0.04227	0.043588	0.045
	IFN Power. 200 kW *High Torque*	liter/h	0.16	0.16	0.17	0.17
		US gal/h	0.04148	0.04332	0.044	0.04491
	IFN Power. 223 kW *High Power*	liter/h	0.17	0.17	0.18	0.18
		US gal/h	0.04359	0.045	0.046494	0.04755
Oil system capacity incl. Filters		liter	23			
		US gal	6.08			
Oil sump capacity:	Max	liter	20			
		US gal	5.28			
	Min	liter	16			
		US gal	4.23			
Oil change	P MAX = 200 kW : ACEA: E4	h	500			
	P OVER 200kW : ACEA: E4	h	250			
Engine angularity limits:	front up	°	30			
	front down	°	30			
	side tilt	°	30			
Oil pressure:	at rated speed	kPa	450 at 1800 rpm			
	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	2200	2300
IFN Power. 200 kW STAGE2/TIER2 Specific fuel consumption at: *Standard*	25%	g/kWh lb/hph	242 0.392	265 0.430	275 0.446	282 0.457
	50%	g/kWh lb/hph	212 0.344	225 0.365	232 0.376	238 0.386
	75%	g/kWh lb/hph	209 0.339	219 0.355	225 0.365	230 0.373
	100%	g/kWh lb/hph	211 0.342	223 0.361	229 0.371	233 0.378
IFN Power. 200 kW STAGE2/TIER2 Specific fuel consumption at: *High Torque*	25%	g/kWh lb/hph	243 0.394	273 0.443	282 0.457	292 0.473
	50%	g/kWh lb/hph	213 0.345	228 0.370	236 0.383	253 0.410
	75%	g/kWh lb/hph	211 0.342	224 0.363	230 0.373	236 0.383
	100%	g/kWh lb/hph	218 0.353	228 0.370	233 0.378	237 0.384
IFN Power. 223 kW STAGE2/TIER2 Specific fuel consumption at: *High Power*	25%	g/kWh lb/hph	229 0.371	249 0.404	257 0.417	265 0.430
	50%	g/kWh lb/hph	209 0.339	218 0.353	224 0.363	228 0.370
	75%	g/kWh lb/hph	208 0.337	215 0.349	219 0.355	224 0.363
	100%	g/kWh lb/hph	209 0.339	218 0.353	223 0.361	228 0.370
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, electronic			Heinzmann			
Injection pump type/make			Single pumps / Bosch			

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Intake and exhaust system		r/min	1800	2100	2200	2300
Air consumption at:	IFN Power. 200 kW *Standard*	m ³ /min cfm	13.5 477	16.2 572	17.7 625	18.5 653
	IFN Power. 200 kW *High Torque*	m ³ /min cfm	14.4 509	16.4 579	17.1 604	17.4 614
	IFN Power. 223 kW *High Power*	m ³ /min cfm	14.6 516	17.8 629	18.8 664	19.5 689
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. 200 kW *Standard*	kW BTU/min	140 7962	157 8928	166 9440	175 9952
	IFN Power. 200 kW *High Torque*	kW BTU/min	150 8530	167 9497	178 10123	185 10521
	IFN Power. 223 kW *High Power*	kW BTU/min	152 8644	179 10180	186 10578	196 11146
Exhaust gas temperature after turbine at:	IFN Power. 200 kW *Standard*	°C °F	550 1022	570 1058	570 1058	580 1076
	IFN Power. 200 kW *High Torque*	°C °F	520 968	570 1058	570 1058	580 1076
	IFN Power. 223 kW *High Power*	°C °F	520 968	510 950	510 950	510 950
Max allowable back pressure in exhaust line		kPa In wc	7.5 30.1			
Exhaust gas flow at:	IFN Power. 200 kW *Standard*	m ³ /min cfm	40.3 1423	47.7 1685	48.8 1723	51.2 1808
	IFN Power. 200 kW *High Torque*	m ³ /min cfm	40.3 1423	48.0 1695	49.3 1741	52.0 1836
	IFN Power. 223 kW *High Power*	m ³ /min cfm	35.0 1236	41.7 1473	44 1554	45.7 1614
Exhaust gas smoke COM2/EPA2	IFN Power. 200 kW *Standard*	Bosch Units	0.7	0.6	0.6	0.6
	IFN Power. 200 kW *High Torque*	Bosch Units	0.7	0.6	0.6	0.6
	IFN Power. 223 kW *High Power*	Bosch Units	0.7	0.6	0.6	0.6

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Cooling system		r/min	1800	2100	2200	2300
Heat rejection radiation from engine at:	IFN Power. 200 kW *Standard*	kW	19	19	20	20
		BTU/min	1052	1103	1120	1137
	IFN Power. 200 kW *High Torque*	kW	19	21	22	23
		BTU/min	1081	1194	1251	1308
Heat rejection to coolant at:	IFN Power. 223 kW *High Power*	kW	19	22	23	25
		BTU/min	1081	1251	1308	1422
	IFN Power. 200 kW *Standard*	kW	80	90	95	98
		BTU/min	4561	5130	5420	5585
Heat rejection to coolant at:	IFN Power. 200 kW *High Torque*	kW	85	95	99	102
		BTU/min	4834	5403	5630	5801
	IFN Power. 223 kW *High Power*	kW	85	101	107	110
		BTU/min	4834	5744	6085	6256
Recommended coolant		Volvo coolant together with clean fresh water				
Coolant capacity:	engine	liter	10			
		US gal	3			
Coolant pump						
	a) fan mounted on sep. bracket	drive/ratio	1:1,36			
	b) fan mounted on coolant pump, crankshaft	drive/ratio	1:1,22			
Minimum coolant flow						
	a) fan mounted on sep. bracket	l/s	2.6	3.0	3.2	3.3
		cu ft/min	5.5	6.4	6.7	7.0
	b) fan mounted on coolant pump, crankshaft	l/s	2.5	2.9	3.1	3.2
		cu ft/min	5.3	6.2	6.5	6.8
Thermostat:	start to open	°C	87			
		°F	189			
	fully open	°C	102			
		°F	216			
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	105			
		°F	221			
Max. Permissible cooling down of engine coolant by radiator		°C	8			
		°F	46			
Alarm(lamp) / shutdown setting		°C	110 / 113			
		°F	229 / 235			
Recommended drawdown capacity		10% of total cooling system capacity				
Max pressure drop over watercooler*		kPa	15.0	18.0	20.0	21.0
		psi	2.2	2.6	2.9	3.0

* 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	2200	2300
Cooling power required	IFN Power. 200 kW *Standard*	kW	36	42	42	46
		BTU/min	2047	2360	2377	2633
	IFN Power. 200 kW *High Torque*	kW	38	43	45	47
		BTU/min	2161	2445	2559	2673
Combustion air mass flow	IFN Power. 223 kW *High Power*	kW	37	45	46	51
		BTU/min	2104	2559	2616	2900
	IFN Power. 200 kW *Standard*	kg/s	0.26	0.32	0.33	0.34
Combustion air mass flow	IFN Power. 200 kW *High Torque*	kg/s	0.28	0.32	0.33	0.34
	IFN Power. 223 kW *High Power*	kg/s	0.28	0.35	0.37	0.38
	IFN Power. 200 kW *Standard*	°C	163	178	175	185
Combustion air entrance temp.	IFN Power. 200 kW *High Torque*	°F	325	352	347	365
	IFN Power. 200 kW *High Torque*	°C	163	171	173	174
	IFN Power. 200 kW *High Torque*	°F	325	340	343	345
Combustion air entrance temp.	IFN Power. 223 kW *High Power*	°C	162	179	183	185
	IFN Power. 223 kW *High Power*	°F	324	354	361	365
	IFN Power. 200 kW *Standard*	°C	50	50	50	50
Combustion air outlet temp.	IFN Power. 200 kW *Standard*	°F	122	122	122	122
	IFN Power. 200 kW *High Torque*	°C	50	50	50	50
	IFN Power. 200 kW *High Torque*	°F	122	122	122	122
Combustion air outlet temp.	IFN Power. 223 kW *High Power*	°C	50	50	50	50
	IFN Power. 223 kW *High Power*	°F	122	122	122	122
	Maximum pressure drop over intercooler	kPa	10			
	psi	1.5				
Boost pressure	kPa	198				
	psi	28.7				

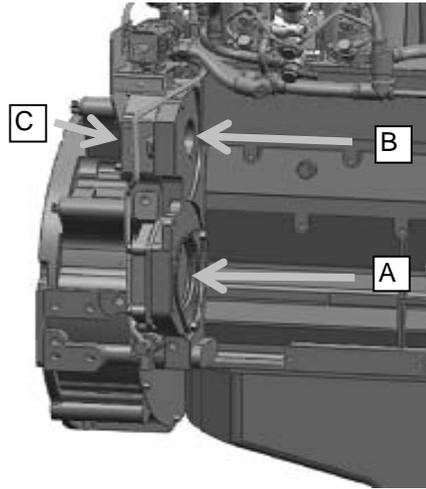
Electrical system

Voltage and type		24V / 1 pole system	
Alternator:	make	Iskra	
	output	Amp	55
	tacho outp	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 x 110
Inlet manifold heater (at 20 V)	kW	3	
Power relay for the manifold heater	Amp	0,8	

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Power take off	r/min	1800	2100	2200	2300
Front end in line with crankshaft max:	Nm lbf ft				
Max. permissible mass moment of inertia with vibraton damper	kgm ² lbft ²				
Front end belt pulley load. Direction of load viewed from flywheel side:	max left	kW hp			
	max down	kW hp			
	max right	kW hp			

Transmission positions



Parameters

Parameters		A	B	C
Gear ratio 722		1:1,116	1:1,297	1:1,297
Direction of rotation when facing the engine		anti-clockwise		clockwise
PTO connection				
Max. output	kW	50	20	20
	hp	68	27	27
Mdmax	Nm	187.5	64.5	64.5
	lbf ft	138.3	47.6	47.6

Note:

Maximale output valid only for single drive.

In case of other driven engaged, it applies as follows:

Parameters		B+C	A+B+C	A without B+C
Max. output	kW	20	50	
	hp	27	68	
Mdmax	kW	64.5	187.5	
	hp	87.7	255.0	
Bosch flange and serrated shaft	kW			30
	hp			41
DIN 5482 - B 17 x 14	kW			30
	hp			41
SAE - 9 T 16/32 DP	kW			50
	hp			68
SAE - 13 T 16/32 DP	kW			20
	hp			27