

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

Performance		r/min	1800	2100	2200	2300
IFN Power. 200 kW	without fan	kW	185	194	197	200
Standard		hp	252	264	268	272
ICFN Power. 180 kW	without fan	kW	165	176	178	180
Standard		hp	224	239	242	245
IFN Power. 200 kW	without fan	kW	185	194	197	200
High Torque		hp	252	264	268	272
ICFN Power. 180 kW	without fan	kW	175	178	179	180
High Torque		hp	238	242	243	245
IFN Power. 223 kW	without fan	kW	197	217	220	223
High power		hp	268	295	299	303
IFN Power. 195 kW	without fan	kW	186	195		
High power		hp	253	265		
Torque at:	IFN Power. 200 kW	Nm	981	882	855	830
	Standard	lbf ft	724	651	631	612
	ICFN Power. 180 kW	Nm	875	800	773	747
	Standard	lbf ft	646	590	570	551
	IFN Power. 200 kW	Nm	981	882	855	830
	High Torque	lbf ft	724	651	631	612
	ICFN Power. 180 kW	Nm	928	809	777	747
	High Torque	lbf ft	685	597	573	551
	IFN Power. 223 kW	Nm	1045	987	955	926
	High Power	lbf ft	771	728	704	683
	IFN Power. 195 kW	Nm	987	887		
	High Power	lbf ft	728	654		
Mean piston speed		m/s ft/sec	7.8 25.6	9.1 29.9	9.5 31.3	10.0 32.7
Effective mean pressure at IFN Power 223 kW / 2300 rpm		Mpa psi	1.82 264	1.73 251	1.68 244	1.61 233
Max combustion pressure at IFN Power 223 kW / 2300 rpm		MPa psi	15.5 2248	15.6 2262	15.9 2306	15.9 2306
Total mass moment of inertia, J (mR ²) (w/o flywheel)		kgm ² lbft ²	0.474 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 hp	12 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 US gal/h	0.15 0.04015	0.16 0.04227	0.17 0.043588	0.17 0.045
		IFN Power. 200 kW *High Torque*	liter/h US gal/h	0.16 0.04148	0.16 0.04332	0.17 0.044	0.17 0.04491
		IFN Power. 223 kW *High Power*	liter/h US gal/h	0.17 0.04359	0.17 0.045	0.18 0.046494	0.18 0.04755
Oil system capacity incl. Filters		liter US gal	23 6.08				
Oil sump capacity:		Max	liter US gal	20 5.28			
		Min	liter US gal	16 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*	m³/min cfm	13.5 477	16.2 572	17.7 625	18.5 653
	IFN Power. 200 kW *High Torque*	m³/min cfm	14.4 509	16.4 579	17.1 604	17.4 614
	IFN Power. 223 kW *High Power*	m³/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*	m³/min cfm	40.3 1423	47.7 1685	48.8 1723	51.2 1808
	IFN Power. 200 kW *High Torque*	m³/min cfm	40.3 1423	48.0 1695	49.3 1741	52.0 1836
	IFN Power. 223 kW *High Power*	m³/min cfm	35.0 1236	41.7 1473	44 1554	45.7 1614
Exhaust gas smoke	IFN Power. 200 kW *Standard*	Bosch Units	0.7	0.6	0.6	0.6
COM2/EPA2	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	kW	19	19	20	20
	Standard	BTU/min	1052	1103	1120	1137
	IFN Power. 200 kW	kW	19	21	22	23
	High Torque	BTU/min	1081	1194	1251	1308
Heat rejection to coolant at:	IFN Power. 223 kW	kW	19	22	23	25
	High Power	BTU/min	1081	1251	1308	1422
	IFN Power. 200 kW	kW	80	90	95	98
	Standard	BTU/min	4561	5130	5420	5585
	IFN Power. 200 kW	kW	85	95	99	102
	High Torque	BTU/min	4834	5403	5630	5801
	IFN Power. 223 kW	kW	85	101	107	110
	High Power	BTU/min	4834	5744	6085	6256
Recommended coolant		Volvo coolant together with clean fresh water				
Coolant capacity:	engine	liter US gal	10 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 cu ft/min	2.6 5.5	3.0 6.4	3.2 6.7	3.3 7.0
b) fan mounted on coolant pump, crankshaft		l/s cu ft/min	2.5 5.3	2.9 6.2	3.1 6.5	3.2 6.8
Thermostat:	start to open	°C	87			
		°F	189			
	fully open	°C	102			
		°F	216			
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	105 221			
Max. Permissible cooling down of engine coolant by radiator		°C °F	8 46			
Alarm(lamp) / shutdown setting		°C °F	110 / 113 229 / 235			
Recommended drawdown capacity		10% of total cooling system capacity				
Max pressure drop over watercooler*		kPa psi	15.0 2.2	18.0 2.6	20.0 2.9	21.0 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 BTU/min	36 2047	42 2360	42 2377	46 2633
	IFN Power. 200 kW *High Torque*	kW BTU/min	38 2161	43 2445	45 2559	47 2673
	IFN Power. 223 kW *High Power*	kW BTU/min	37 2104	45 2559	46 2616	51 2900
Combustion air mass flow	IFN Power. 200 kW *Standard*	kg/s	0.26	0.32	0.33	0.34
	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
Combustion air entrance temp.	IFN Power. 200 kW *Standard*	°C °F	163 325	178 352	175 347	185 365
	IFN Power. 200 kW *High Torque*	°C °F	163 325	171 340	173 343	174 345
	IFN Power. 223 kW *High Power*	°C °F	162 324	179 354	183 361	185 365
Combustion air outlet temp.	IFN Power. 200 kW *Standard*	°C °F	50 122	50 122	50 122	50 122
	IFN Power. 200 kW *High Torque*	°C °F	50 122	50 122	50 122	50 122
	IFN Power. 223 kW *High Power*	°C °F	50 122	50 122	50 122	50 122
Maximum pressure drop over intercooler		kPa psi	10 1.5			
Boost pressure		kPa psi	198 28.7			

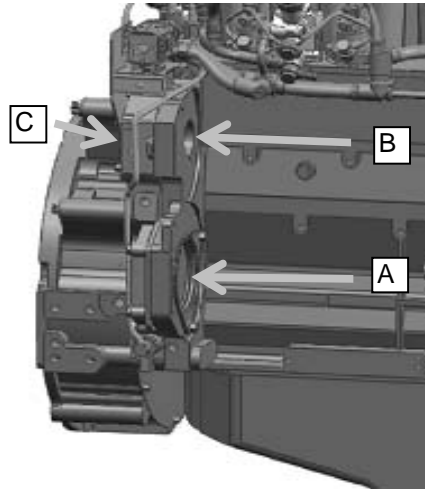
Electrical system

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 lbf ft 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		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 hp	50 68	20 27	20 27
Mdmax	Nm lbf ft	187.5 138.3	64.5 47.6	64.5 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 hp	20 27	50 68	
Mdmax	kW hp	64.5 87.7	187.5 255.0	
Bosch flange and serrated shaft	kW hp			30 41
DIN 5482 - B 17 x 14				
SAE - 9 T 16/32 DP	kW hp			30 41
SAE - 13 T 16/32 DP	kW hp			50 68
Bosch flange and cone	kW hp			20 27