

General

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

Turbocharged

Number of cylinders			6
Displacement, total	litre	7,15	
	in ³	436,0	
Firing order			1-5-3-6-2-4
Bore	mm	108	
	in	4,25	
Stroke	mm	130	
	in	5,12	
Compression ratio			18
Wet weight	Engine only	kg	770
		lb	1698
		Engine incl. cooling system and air filtration system	kg
		lb	2083
	Engine incl. cooling system, air filtration system, and frame	kg	
		lb	

Performance**rpm 1500 1800**

			1500	1800
Prime Power	without fan	kW	119	137
		hp	161	186
	with fan	kW	113	127
		hp	154	173
Standby Power	without fan	kW	131	150
		hp	178	205
	with fan	kW	125	141
		hp	170	191
Torque at:	Prime Power	Nm	756	725
		lbft	557	535
	Standby Power	Nm	831	798
		lbft	613	588
Mean piston speed		m/s	6,5	7,8
		ft/sec	21,4	25,7
Effective mean pressure at:	Prime Power	MPa	1,3	1,3
		psi	193	185
Effective mean pressure at:	Standby Power	MPa	1,5	1,4
		psi	212	204
Max combustion pressure at:	Prime Power	MPa	12,8	14,1
		psi	1856	2045
Max combustion pressure at:	Standby Power	MPa	14,8	14,5
		psi	2147	2103
Total mass moment of inertia, J (mR ²)		kgm ²	3,09	
		lbft ²	73,3	
Friction Power		kW	19	26
		hp	25,84	35,36

Derating see Technical Diagrams

Engine noise emission

Test Standards: ISO 3744-1981 (E) sound power (without fan, cooler, intake and exhaust noise)

Tolerance ± 0.75 dB(A)

		rpm	1500	1800
Measured sound power Lw	No load	dB(A)	100,6	102,5
	Prime Power	dB(A)	103,2	105
	Standby Power	dB(A)		
Calculated sound pressure Lp at 1 m	No load	dB(A)	86,7	88,6
	Prime Power	dB(A)	89,3	91,1
	Standby Power	dB(A)		

Unsilenced exhaust noise

Data calculated as sound pressure Lp.

Assumed microphone distance 1 m

	rpm	1500	1800
Prime Power	dB(A)	113,9	116,5
Standby Power	dB(A)		

Test conditions for load acceptance data

Warm engine.	Generator	Model	Type of AVR
	mecc alte	ECP 34-1L/4	

Load acceptance performance can vary due to actual alternator inertia, voltage regulator, type of load and local ambient conditions.

Single step load performance at 1500 rpm

Load (%)	Speed diff (%)		Recovery time (s)		Remaining load (%)	Speed diff (%)		Recovery time (s)	
	Prime	Standby	Prime	Standby		Prime	Standby	Prime	Standby
0-20	1,6	1,8	2,0	1,4	20-100	8,7	10,8	2,9	3,4
0-40	2,8	3,5	2,1	2,6	40-100	5,0	5,5	2,2	2,0
0-60	4,8	5,4	3,0	3,1	60-100	3,1	4,5	1,6	1,9
0-80	7,5	9,8	2,6	2,6	80-100	1,8	1,8	1,5	2,0
0-100	12,8	13,7	3,3	4,0					
100-0	7,7	8,6	1,9	1,9					

Single step load performance at 1800 rpm

Load (%)	Speed diff %		Recovery time (s)		Remaining load (%)	Speed diff (%)		Recovery time (s)	
	Prime	Standby	Prime	Standby		Prime	Standby	Prime	Standby
0-20	1,3	1,3	0,8	1,1	20-100	5,3	7,1	2,7	2,8
0-40	2,4	2,5	1,2	1,4	40-100	3,9	4,5	1,7	2,5
0-60	3,7	4,0	2,0	1,6	60-100	2,4	2,7	1,4	1,7
0-80	4,8	5,8	1,6	1,9	80-100	1,6	1,6	1,1	1,1
0-100	8,1	11,4	2,4	3,5					
100-0	6,1	6,7	1,9	1,9					

Cold start performance

			rpm	1500	1800
Time from start to no load speed at ambient temperature:	°C	20	s		
		5	s		
		-15*	s		
		Min start temp*	s	-30,0	-30,0
Time from start to stay within 0.5% of no load speed at ambient temperature:	°C	20	s		
		5	s		
		-15*	s		

* With manifold heater 3,6 kW engaged, lubrication oil 15W/40 and block heater.

Block heater type	Make	Power kW	Engaged hours	Cooling water temp engine block

Lubrication system

			rpm	1500	1800
Lubricating oil consumption	Prime Power	litre/h		0,05	0,05
		US gal/h		0,013	0,013
	Standby Power	litre/h		0,05	0,05
		US gal/h		0,013	0,013
Oil system capacity including filters		litre		23	
		US gal		6,1	
Oil sump capacity:	max	litre		20	
		US gal		5,3	
	min	litre		16	
		US gal		4,2	
Oil change intervals/specifications:		h		500	
		h			
		h			
Engine angularity limits:	front up	°		30	
	front down	°		30	
	side tilt	°		35	
Oil pressure at rated speed		kPa		300 - 500	
		psi		44 - 73	
Lubrication oil temperature in oil sump:	max	°C		125	
		°F		257	
Oil filter micron size		µ		17	

* See also general section in the sales guide

Fuel system

			rpm	1500	1800
Prime Power Specific fuel consumption at:	25%	g/kWh		280	300
		lb/hph		0,454	0,486
		g/kWh		256	261
		lb/hph		0,415	0,423
	75%	g/kWh		238	241
		lb/hph		0,386	0,391
		g/kWh		219	221
		lb/hph		0,355	0,358
Standby Power Specific fuel consumption at:	25%	g/kWh		270	308
		lb/hph		0,438	0,499
		g/kWh		253	256
		lb/hph		0,410	0,415
	75%	g/kWh		238	240
		lb/hph		0,386	0,389
		g/kWh		210	216
		lb/hph		0,340	0,350

Fuel system	rpm	1500	1800
Fuel to conform to	DIN EN590		
System supply flow at:	litre/h	240	240
	US gal/h	63,4	63,4
Fuel supply line max restriction (Measured at fuel inlet connection)	kPa	35	35
	psi	5,1	5,1
Fuel supply line max pressure, engine stopped	kPa	10	10
	psi	1,5	1,5
System return flow	litre/h	240	240
	US gal/h	63,4	63,4
Fuel return line max restriction (Measured at fuel return connection)	kPa	50	50
	psi	7,3	7,3
Maximum allowable inlet fuel temp (Measured at fuel inlet connection)	°C	70	70
	°F	158	158
Prefilter / Water separator micron size	μ	10	
Fuel filter micron size	μ	5	
Governor type/make, standard	EMS 2.2		
Injection pump type/make	BOSCH PF 45		

Intake and exhaust system		rpm	1500	1800
Air consumption at: (+25°C and 100kPa)	Prime Power	m ³ /min cfm	9,3 328	10,5 371
	Standby Power	m ³ /min cfm	9,8 346	10,9 385
Max allowable air intake restriction including piping		kPa psi	5 0,7	5 0,7
Air filter restriction clean Volvo Penta filter		kPa psi	3 0,4	3 0,4
Heat rejection to exhaust at:	Prime Power	kW BTU/min	106 6028	130 7393
	Standby Power	kW BTU/min	118 6711	153 8701
Exhaust gas temperature after turbine at:	Prime Power	°C °F	450 842	460 860
	Standby Power	°C °F	454 849	481 898
Max allowable back pressure in exhaust line	Prime Power	kPa psi	7 1,0	7 1,0
	Standby Power	kPa psi	7 1,0	7 1,0
Exhaust gas flow at: (temp and pressure after turbine at the corresponding power setting)	Prime Power	m ³ /min cfm	26,2 925	30,4 1074
	Standby Power	m ³ /min cfm	27,0 954	31,3 1105

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TAD750GE**21813916****04****Cooling system****rpm 1500 1800**

Heat rejection radiation from engine at:	Prime Power	kW	12	14
		BTU/min	682	796
	Standby Power	kW	14	18
		BTU/min	796	1024
Heat rejection to coolant at:	Prime Power	kW	55	67
		BTU/min	3105	3799
	Standby Power	kW	59	74
		BTU/min	3355	4208
Coolant	Volvo Penta coolant "ready mix" or Volvo Penta coolant mixed with clean fresh water 40 / 60			
Radiator cooling system type	Closed circuit			
Standard radiator core area	m ²	0,45		
	foot ²	4,84		
Fan diameter	mm	596		
	in	23,46		
Fan power consumption	kW	5,5	9,6	
	hp	7	13	
Fan drive ratio	1,73:1			
Coolant capacity,	engine	litre	9,8	
		US gal	2,59	
	engine with std radiator and hoses	litre	23,1	
		US gal	6,10	
Coolant pump	drive/ratio	1,73:1		
Coolant flow with standard system	l/s	3,03	3,63	
	US gal/s	0,80	0,96	
Minimum coolant flow	l/s	2,4	2,9	
	US gal/s	0,63	0,77	
Maximum outer circuit restriction, including piping	kPa	25	35	
	psi	3,6	5,1	
Thermostat	start to open	°C	87	
		°F	189	
	fully open	°C	102	
		°F	216	
Maximum static pressure head (expansion tank height + pressure cap setting)	kPa	100		
	psi	14,5		
Minimum static pressure head (expansion tank height + pressure cap setting)	kPa	90		
	psi	13,1		
Standard pressure cap setting	kPa	60		
	psi	8,7		
Maximum top tank temperature	°C	105		
	°F	221		
Draw down capacity. The difference between min coolant level in the expansion tank and the lowest level where the engine's coolant system still are functioning	litre			
	US gal			

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Charge air cooler system		rpm	1500	1800
Heat rejection to charge air cooler	Prime Power	kW	26	30
		BTU/min	1496	1695
	Standby Power	kW	27	31
		BTU/min	1535	1763
Charge air mass flow	Prime Power	kg/s	0,18	0,21
	Standby Power	kg/s	0,21	0,23
Charge air inlet temp. (Charge air temp after turbo compressor)	Prime Power	°C	160	167
		°F	320	333
	Standby Power	°C	162	173
		°F	324	343
Charge air outlet temp. (Charge air temp after intercooler)	Prime Power	°C	40	40
		°F	104	104
	Standby Power	°C	39	41
		°F	102	106
Maximum pressure drop over charge air cooler incl. piping		kPa	15	
		psi	2,18	
Charge air pressure (After charge air cooler)		kPa	188	
		psi	27,27	
Standard charge air cooler core area		m ²	0,37	
		foot ²	3,98	

Cooling performance

Cooling air flow and external restriction at different radiator air temperatures based on 105°C TTT and 40% coolant. Valid at 1 atm. (radiator and cooling fan, see optional equipment)

Engine speed rpm	Air on temp °C	PRIME POWER		STANDBY POWER	
		Air flow m ³ /s	External restriction Pa	Air flow m ³ /s	External restriction Pa
1500	50	1,8	430	1,9	360
	55	2,0	340	2,2	270
	60	2,3	230	2,7	90
	63			2,9	0
	66	2,9	0		
1800	50			2,6	470
	55	2,6	450	2,9	340
	60	3,0	260	3,4	100
	63			3,6	0
	66	3,6	0		

Note! External restrictions are calculated for values >0 Pa

Engine management system

Functionality	Alternatives	Default setting
Governor mode	Isochronous/droop switchable	Isochronous
Governor droop	1rpm/10Nm - 1rpm/127Nm	1rpm/25Nm
Governor response	N/A	N/A
Dual speed		
Idle speed	550-800 rpm	600 rpm
Fine speed adjustment		
Stop function	Energized to run / stop	Energized to stop
Preheating function	ON/OFF	Option
Lamp test	ON/OFF	ON

Engine sensor and switch settings

Parameter	Unit	Warning level	Alarm level	Engine protection		
		Yellow lamp	Red lamp	Level	Action. Default/Alternative	
Oil temp	°C	125	130	130,0	Shut down.	
Oil pressure	Low idle	kPa	90	80	80	Shut down
	1500 rpm	kPa	200	170	170	Shut down
	1800 rpm	kPa	230	200	200	Shut down
Oil level						
Piston cooling pressure >1000 rpm	kPa					
Coolant temp	°C	105	110	110	Shut down.	
Coolant level			On	Low level	Shut down.	
Fuel feed pressure	Low idle	kPa				
	>1400 rpm					
Water in fuel						
Crank case pressure	kPa					
Air filter pressure droop	kPa					
Altitude, above sea	m	Automatic derating, see section derating				
Charge air temp	°C	75	80	80	shut down	
Charge air pressure	kPa	310	320	320	shut down	
Engine speed	rpm	115% of rated speed				

Engine protection can be disabled. For consequences please see VP International Limited Warranty Policy

Electrical system

Voltage and type		24V	
Alternator:	make/output	A	Iskra/55
	tacho output	Hz/alt. Rev	
	drive ratio		
Starter motor	make	Mitsubishi	
	type	M008T62471	
	kW	5.0	
Number of teeth on:	flywheel	129	
	starter motor	10	
Max wiring resistance main circuit		m Ω	
Cranking current at +20°C		A	400
Crank engine speed at 20°C		rpm	200
Starter motor battery capacity:	max	Ah/A	135
	min at +5°C	Ah/A	110
Inlet manifold heater (at 20 V)		kW	3,6
Power relay for the manifold heater		A	120

Power take off**rpm 1500 1800**

Front end in line with crank shaft max:		Nm lbft		
Front end belt pulley load. Direction of load viewed from flywheel side:	max left	kW hp		
	max down	kW hp		
	max right	kW hp		
Timing gear at compressor PTO max:		Nm lbft		
Speed ratio direction of rotation viewed from flywheel side		0,91:1/clockwise		
Timing gear at servo pump PTO max:		Nm lbft		
Speed ratio direction of rotation viewed from flywheel side		1,58:1/clockwise		
Timing gear at hydraulic pump PTO max:		Nm lbft		
Speed ratio direction of rotation viewed from flywheel side				
Max allowed bending moment in flywheel housing		Nm lbft	≤ ± 5000	
Max. rear main bearing load		N lbf		





