

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	945
		lb	2083

Performance

			rpm	1500	1800
Prime Power	without fan	kW		137	158
		hp		187	214
	with fan	kW		132	148
		hp		179	201
Standby Power	without fan	kW		151	174
		hp		205	236
	with fan	kW		146	164
		hp		198	223
Torque at:	Prime Power	Nm		874	837
		lbft		645	617
	Standby Power	Nm		961	920
		lbft		709	679
Mean piston speed		m/s		6,5	7,8
		ft/sec		21,4	25,7
Effective mean pressure at:	Prime Power	MPa		1,5	1,5
		psi		223	213
Effective mean pressure at:	Standby Power	MPa		1,7	1,6
		psi		245	235
Max combustion pressure at:	Prime Power	MPa		13,7	14,5
		psi		1987	2103
Max combustion pressure at:	Standby Power	MPa		17,1	16,4
		psi		2480	2379
Total mass moment of inertia, J (mR ²)		kgm ²		3,09	
		lbft ²		73,3	
Friction Power		kW		19	26
		hp		25,84	35,088
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)	103,5	105,4
	Standby Power	dB(A)		
Calculated sound pressure Lp at 1 m	No load	dB(A)	86,7	88,6
	Prime Power	dB(A)	89,6	91,5
	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)	114,5	117,1
Standby Power	dB(A)		

Test conditions for load acceptance data

Warm engine.	Generator	Model	Type of AVR
	mecc alte	ECP 34-2L/1	

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	1,8	1,9	1,1	1,0	20-100	13,2	15,7	3,4	3,7
0-40	3,5	4,1	2,7	2,6	40-100	5,5	5,4	2,0	1,9
0-60	5,6	6,4	3,0	2,2	60-100	3,6	3,7	1,9	2,2
0-80	10,2	11,1	2,7	2,8	80-100	1,8	2,0	1,9	1,5
0-100	16,1	19,1	3,8	4,2					
100-0	8,7	8,7	2,0	2,0					

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	1,4	1,5	0,6	0,7	20-100	9,1	9,8	3,1	2,9
0-40	2,8	3,1	1,0	1,2	40-100	4,6	4,4	1,6	2,5
0-60	3,9	4,6	1,4	2,7	60-100	3,3	3,0	1,7	2,3
0-80	6,7	8,2	1,9	2,5	80-100	1,6	1,3	1,2	1,4
0-100	12,3	16,5	3,3	3,6					
100-0	6,7	7,2	2,0	2,0					

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		260	288
		lb/hph		0,421	0,467
		g/kWh		249	260
		lb/hph		0,404	0,421
	75%	g/kWh		236	243
		lb/hph		0,383	0,394
	100%	g/kWh		216	223
		lb/hph		0,350	0,361
Standby Power Specific fuel consumption at:	25%	g/kWh		258	282
		lb/hph		0,418	0,457
	50%	g/kWh		250	253
		lb/hph		0,405	0,410
	75%	g/kWh		238	238
		lb/hph		0,386	0,386
	100%	g/kWh		209	214
		lb/hph		0,339	0,347

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	10,0
	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	10 353	11 388
	Standby Power	m ³ /min cfm	10,3 364	11,4 403
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	110 6256	134 7620
	Standby Power	kW BTU/min	116 6597	152 8644
Exhaust gas temperature after turbine at:	Prime Power	°C °F	485 905	511 952
	Standby Power	°C °F	498 928	531 988
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	29,4 1038	34,1 1204
	Standby Power	m ³ /min cfm	30,4 1074	35,2 1243

VOLVO PENTA

Document No

Issue Index

TAD751GE

21813917**04****Cooling system****rpm 1500 1800**

Heat rejection radiation from engine at:	Prime Power	kW	14	16
		BTU/min	796	910
	Standby Power	kW	16	18
		BTU/min	910	1024
Heat rejection to coolant at:	Prime Power	kW	74	73
		BTU/min	4208	4151
	Standby Power	kW	81	76
		BTU/min	4584	4339
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	2,28	2,73
		US gal/s	0,60	0,72
Minimum coolant flow		l/s	1,8	2,2
		US gal/s	0,48	0,58
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		

Charge air cooler system**rpm 1500 1800**

Heat rejection to charge air cooler	Prime Power	kW	23	26
		BTU/min	1297	1484
	Standby Power	kW	25	30
		BTU/min	1393	1717
Charge air mass flow	Prime Power	kg/s	0,19	0,21
	Standby Power	kg/s	0,23	0,25
Charge air inlet temp. (Charge air temp after turbo compressor)	Prime Power	°C	158	162
		°F	316	324
	Standby Power	°C	168	170
		°F	334	338
Charge air outlet temp. (Charge air temp after intercooler)	Prime Power	°C	40	40
		°F	104	104
	Standby Power	°C	38	41
		°F	100	106
Maximum pressure drop over charge air cooler incl. piping		kPa	15	
		psi	2,18	
Charge air pressure (After charge air cooler)		kPa	197	
		psi	28,57	
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	1,4	600	2,1	410
	60	1,9	480	2,7	260
	70	2,6	280	3,7	0
	75	3,2	130		
	78	3,7	0		
1800	60	2,5	640	2,6	610
	70	3,3	370	3,6	280
	75	4,1	140		
	76			4,7	0
	78	4,7	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	Shut down
	1500 rpm	kPa	200	170	Shut down
	1800 rpm	kPa	230	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		mΩ	
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**

Speed ratio direction of rotation viewed from flywheel side	0,91:1/clockwise	
Speed ratio direction of rotation viewed from flywheel side	1,58:1/clockwise	
Speed ratio direction of rotation viewed from flywheel side		
Max allowed bending moment in flywheel housing	Nm lbft	≤ ± 5000





