

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			17,6
Dry weight	Engine only, excluding cooling system	kg	780
		lb	1720
	Genset, see dimension drawing	kg	1530
		lb	3373

Performance		rpm load	1500				
			25%	50%	75%	100%	110%
Power setting 116 kW	without fan	kW	29	58	87	116	128
		hp	39	79	118	158	174
	with fan 620 mm	kW	24	53	82	111	123
		hp	33	72	112	151	167
Torque at:	Power setting 116 kW	Nm	185	369	554	738	812
		lbft	136	272	408	545	599
Mean piston speed		m/s	6,5				
		ft/sec	21,4				
Effective mean pressure at:	Power setting 116 kW	MPa	0,3	0,6	1,0	1,3	1,4
		psi	47	94	141	188	207
Max combustion pressure at:	Power setting 116 kW	MPa	7	8	9	11	11
		psi	1030	1175	1363	1552	1624
Total mass moment of inertia, J (mR ²)		kgm ²	3,09				
Engine only		lbft ²	73,3				
Friction Power		kW				9	
		hp				12	
If applicable Derating are described in Technical Diagrams							

Performance		rpm load	1800				
			25%	50%	75%	100%	110%
Power setting 122 kW	without fan	kW	31	61	92	122	134
		hp	41	83	124	166	183
	with fan 620 mm	kW	24	54	85	115	128
		hp	33	74	115	157	174
Torque at:	Power setting 122 kW	Nm	162	324	485	647	712
		lbft	119	239	358	477	525
Mean piston speed		m/s	7,8				
		ft/sec	25,7				
Effective mean pressure at:	Power setting 122 kW	MPa	0,3	0,6	0,9	1,1	1,3
		psi	41	83	124	165	182
Max combustion pressure at:	Power setting 122 kW	MPa	7,1	8,2	9,2	10,5	11,1
		psi	1030	1189	1334	1523	1610
Total mass moment of inertia, J (mR ²)		kgm ²	3,09				
Engine only		lbft ²	73,3				
Friction Power		kW				12	
		hp				16,728	
If applicable Derating are described in Technical Diagrams							

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Engine noise emission

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

Tolerans ± 0.75 dB(A)

		rpm		1500			
		load	25%	50%	75%	100%	110%
Measured sound power Lw	No load	dB(A)					
	Power setting 116 kW	dB(A)				90	
		rpm		1800			
Measured sound power Lw	No load	dB(A)					
	Power setting 122 kW	dB(A)				93	

Unsilenced exhaust noise

Data calculated as sound pressure Lp.

Assumed microphone distance 1 m

		rpm		1500			
		load	25%	50%	75%	100%	110%
Power setting 116 kW		dB(A)				109,5	
		rpm		1800			
Power setting 122 kW		dB(A)				112	

Single step load performance at 1500 rpm

Load (%)	Speed diff (%)		Recovery time (s)		Remaining load (%)	Speed diff (%)		Recovery time (s)	
	Nominal	110% power	Nominal	110% power		Nominal	110% power	Nominal	110% power
0-75	5,5		0,3						
0-100	9,6		104,0						
100-0	6,5		1,1						

Single step load performance at 1800 rpm

Load (%)	Speed diff %		Recovery time (s)		Remaining load (%)	Speed diff (%)		Recovery time (s)	
	Nominal	110% power	Nominal	110% power		Nominal	110% power	Nominal	110% power
0-75	4,5								
0-100	5,8		0,7						
100-0	4,9								

Lubrication system

		rpm		1500			
		load	25%	50%	75%	100%	110%
Lubricating oil consumption	Power setting 116 kW	liter/h				0,07	
		US gal/h				0,018	
			rpm		1800		
	Power setting 122 kW	liter/h				0,07	
		US gal/h				0,018	
Oil system capacity including filters		liter	20				
		US gal	5,3				
Oil sump capacity:		max	liter	17			
			US gal	4,5			
		min	liter	14			
			US gal	3,7			
Oil change intervals/ specifications: (Fuel quality dependent)	VDS-2. ACEA: E3, E5. API: CG-4, CH4		h	500			
	VDS. ACEA: E2. API: CF, CF-4		h	250			
			h				
			h				
Engine angularity limits, dynamic (ref. classification rules, roll and pitch simultaneously)		front up	°	30			
		front down	°	30			
		side tilt	°	30			

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Lubrication system		rpm	1500	1800
Oil pressure at rated speed		kPa	420	450
		psi	60,9	65,3
Oil pressure shut down switch setting		kPa	150	
		psi	21,8	
Lubrication oil temperature in oil sump:	max	°C	125	
		°F	257	
Oil filter micron size		μ	0,040	

* See also general section in the sales guide

Fuel system		rpm	load	25%	50%	1500		
						75%	100%	110%
Specific fuel consumption with: (Power setting without fan)	Power setting 116 kW	g/kWh		245	215	215	219	223
		lb/hph		0,397	0,349	0,349	0,355	0,361
		rpm	1800					
	Power setting 122 kW	g/kWh		275	226	216	215	217
		lb/hph		0,446	0,366	0,350	0,349	0,352
Fuel to conform to		ASTM-D975-No. 1 and 2-D, JIS KK 2204, EN 590 MDO-DMX and MDO-DMA (ISO8217)						

System return flow		rpm	1500				
	Power setting 116 kW	liter/h	365	357	349	339	335
		US gal/h	96,4	94,3	92,2	89,6	88,5
		rpm	1800				
	Power setting 122 kW	liter/h	440	434	427	419	416
		US gal/h	116,2	114,7	112,8	110,7	109,9

System supply flow		rpm	1500				
	Power setting 116 kW	liter/h	375	375	375	375	375
		US gal/h	99,1	99,1	99,1	99,1	99,1
		rpm	1800				
	Power setting 122 kW	liter/h	450	450	450	450	450
		US gal/h	118,9	118,9	118,9	118,9	118,9

Normal fuel pressure (after filter)		rpm	1500				
	Power setting 116 kW	kPa	500	500	500	500	500
		psi	72,5	72,5	72,5	72,5	72,5
		rpm	1800				
	Power setting 122 kW	kPa	500	500	500	500	500
		psi	72,5	72,5	72,5	72,5	72,5

Fuel system

Fuel supply line max restriction (before fuel feed pump)	kPa	35,0
	psi	5,1
Fuel supply max pressure head (day tank, from CL)	m	2,5
	feet	8,2
Fuel supply line max suction head (from CL)	kPa	15,0
	psi	2,2
Fuel return line max restriction	kPa	50,0
	psi	7,3
Maximum allowable inlet fuel temp (continuous)	°C	70
	°F	158
Fuel filter micron size	μ	0,005
	rpm	1500
		1800
Governor type/make, standard	Heinzman or GAC	
Injection pump type/make	PFM1P00S2002/Bosch	
Injection timing std.	°B.T.D.C	
Injection timing	°B.T.D.C	

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Intake system		rpm load	1500				
			25%	50%	75%	100%	110%
Air consumption at: (+25°C and 100kPa)	Power setting 116 kW	m ³ /min	5,6	6,1	6,8	7,7	8,1
		cfm	198	215	240	272	286
		rpm	1800				
	Power setting 122 kW	m ³ /min	6,8	7,6	8,7	9,9	10,3
		cfm	240	268	307	350	364
Max allowable air intake restriction including piping		kPa	2,5				
		psi	0,4				
Air filter type		Single paper cartridge					
Air filter cleaning efficiency		%	99,85				

Exhaust system		rpm load	1500				
			25%	50%	75%	100%	110%
Heat rejection to exhaust at:	Power setting 116 kW	kW	22	37	56	80	88
		BTU/min	1251	2127	3156	4550	4982
		rpm	1800				
	Power setting 122 kW	kW	29	45	64	85	92
		BTU/min	1638	2559	3611	4817	5232
Exhaust gas temperature after turbine at:	Power setting 116 kW	°C	220	315	405	475	500
		°F	428	599	761	887	932
		rpm	1800				
	Power setting 122 kW	°C	215	290	355	405	420
		°F	419	554	671	761	788
Max allowable back pressure in exhaust line		kPa	3				
		psi	0,4				

Exhaust system		rpm load	1500				
			25%	50%	75%	100%	110%
Exhaust gas flow at: (temp and pressure after turbine at the corresponding power setting)	Power setting 116 kW	m ³ /min	10,1	13,3	17,3	21,8	23,4
		cfm	357	470	611	770	826
		rpm	1800				
	Power setting 122 kW	m ³ /min	12,3	15,6	20,4	25,3	26,8
		cfm	434	551	720	893	946

Cooling system		rpm load	1500				
			25%	50%	75%	100%	110%
Heat rejection radiation from engine to surrounding at:	Power setting 116 kW	kW	3	5	6	9	10
		BTU/min	193	279	353	483	540
		rpm	1800				
	Power setting 122 kW	kW	4	5	6	8	9
		BTU/min	205	279	336	449	495

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		rpm		1500					
Heat rejection to coolant at:	Power setting 116 kW	kW	30	48	74	98	114		
		BTU/min	1706	2730	4208	5573	6483		
			rpm		1800				
	Power setting 122 kW	kW	37	53	74	98	112		
BTU/min		2104	3014	4208	5573	6369			
Coolant (40% coolant / 60% water)	See Operators Manual								
Radiator cooling system type	Closed circuit								
		rpm		1500					
Standard radiator core area	Power setting 116 kW	m ²	0,52						
		foot ²	5,60						
			rpm		1800				
	Power setting 122 kW	m ²	0,52						
foot ²		5,60							
		rpm		1500					
Fan diameter	Power setting 116 kW	mm	620						
		in	24,4						
			rpm		1800				
	Power setting 122 kW	mm	620						
in		24,4							
		rpm		1500					
Fan power consumption			fan Ø 620						
	kW			5					
	hp			7					
			rpm		1800				
			fan Ø 620						
	kW			7					
hp			9						

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		rpm		1500		
Fan drive ratio	fan ø 620			1,73		
		rpm		1800		
	fan ø 620			1,73		
Coolant capacity:	engine	liter	9,8			
		US gal	2,59			
		rpm		1500		
	std radiator with hoses		Power setting	116 kW		Power setting
		liter	12,2			
		US gal	3,22			
		rpm		1800		
			Power setting	122 kW		Power setting
		liter	12,2			
		US gal	3,22			
Coolant pump	drive/ratio			1,73		
		rpm		1500	1800	
Coolant flow with standard system		l/s	2,2	2,6		
		US gal/s	0,58	0,69		
Maximum external coolant system restriction, including piping		kPa	90	90		
		psi	13,1	13,1		
Thermostat	start to open	°C	83			
		°F	181			
	fully open	°C	95			
		°F	203			
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	103			
		psi	14,9			
Standard pressure cap setting		kPa	100			
		psi	14,5			
Maximum temperature entering engine		°C	65			
		°F	149			

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	Nominal POWER		110% power POWER	
		Air flow m ³ /s	External restriction Pa	Air flow m ³ /s	External restriction
1500	46	4,6	0		
1800	51	5,3	0		

Note! Calculated values >0 Pa

Electrical system

		rpm		1500 and 1800	
Voltage and type		24V / 2 pole system (option)			
Number of teeth on:	flywheel			129	
	starter motor			9	
Starter motor battery capacity:	max	Ah	2 x 115		
	min at +5°C	Ah	2 x 66		
Max. g-force		x	m/s ²		
		y	m/s ²		
		z	m/s ²		

