

N45 SM1A

59 kW (1500 rpm) - 65 kW (1800 rpm)

Engine N45 SM1A

1/ GENERAL

		1500 rpm	1800 rpm
Engine model		N45 SM1A	
Basic engine type		F4GE0455C*F650 - 504253544	
Number cylinders		4	
Firing order (N° 1 nearest to fan)		1-3-4-2	
Cylinder arrangement		in line	
Valves per cylinder		2	
Cycle		diesel 4 stroke	
Injection system		direct	
Induction System		Turbocharged	
Bore	mm	104	
Stroke	mm	132	
Total displacement	lit	4,5	
Mean piston speed	m/s	6,6	7,9
Compression ratio		17,5 : 1	
Flywheel rotation		anti clockwise viewed on flywheel	
Housing flywheel		SAE 3	
Flywheel		11"1/2	
Moment of inertia			
	without flywheel	kgm ²	0,14
	flywheel only	kgm ²	0,71
BMEP gross			
	Prime Power	bar/kPa	9,7 / 969,7
	Stand-by Power	bar/kPa	10,7 / 1066,7
Dry weight (including cooling package)		kg	~450
Energy to coolant		kcal/kWh	485,4
Energy to radiation		kcal/kWh	172
Dimensions L x W x H		mm	1259 x 657 x 1016

2/ PERFORMANCES

		1500 rpm	1800 rpm
Continuous Power	(gross)	kWm	43,5
Prime Power	(gross)	kWm	54,5
Stand-By Power	(gross)	kWm	60
Fan consumption		kWm	1,15
Continuous Power	(net)	kWm	42,3
Prime Power	(net)	kWm	53,3
Stand-By Power	(net)	kWm	58,8
Performance condition			
	temperature	°C	≤ 40
	altitude a.s.l	m	≤ 1000
Derating			
	temperature > T 40°C	%/5°C	2%
	altitude >1000 <3000 m	%/500m	2%
	altitude >3000 m	%/500m	4%

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3/ COOLING SYSTEM			1500 rpm	1800 rpm
Type			liquid	
Recommended coolant			water - paraflu 50%	
Coolant capacity				
engine only	liter		8,5	
radiator and hoses	liter		10	
Coolant pump flow	l/min		103,3	123,9
Pressure cap setting	kPa (bar)		70 (0,7)	
Shutdown switch setting	°C		103	
Maximum additional restriction	Pa		147	
Air To Boil	Prime Power	°C	58	60
Fan				
diameter	mm		450	
number of blades			8	
drive ratio			1,41 : 1	
speed	rpm		2115	2538
air flow	m ³ /s		1,86	2,3
power consumption	kWm		1,15	2

4/ LUBRICATION SYSTEM			1500 rpm	1800 rpm
Oil sump capacity				
max	liter		8,5	
min	liter		5,5	
Oil system capacity including filter	liter		12,8	
Oil pressure at rated speed	kPa		300 - 500	
Oil temperature				
normal	°C		---	
max	°C		120	
Engine angularity				
longitudinal	degrees		25°	
transverse	degrees		25°	
Servicing interval	hours		600	
Oil specification			ACEA E3 / E5	
Oil consumption	%fuel		< 0,1	

5/ INTAKE SYSTEM			1500 rpm	1800 rpm
Air consumption at 100 % of load	m ³ /h (Kg/h)		260 (313)	346 (417)
Air intake restriction, clean filter	kPa (mbar)		2 (20)	
Air intake restriction, dirty filter	kPa (mbar)		5 (50)	
Air filter type			dry	

6/ EXHAUST SYSTEM			1500 rpm	1800 rpm
Gas flow at stand-by Power	kg/h		325	431
Max temperature at PRP (25°C)	°C		483	385
Max allowable back pressure	kPa (mbar)		5 (50)	
Energy to exhaust	kcal/kWh		655,3	722,9



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7/ FUEL SYSTEM			1500 rpm	1800 rpm
Fuel consumption at				
Stand-By	gr/kWh (l/h) [kg/h]		210,0 (15,0) [12,6]	211,9 (16,9) [14,2]
Full load	gr/kWh (l/h) [kg/h]		210,8 (13,7) [11,5]	213,4 (15,5) [13,0]
80%	gr/kWh (l/h) [kg/h]		210,2 (10,2) [8,60]	214,5 (11,7) [9,80]
50%	gr/kWh (l/h) [kg/h]		216,30 (7,0) [5,90]	226,6 (8,20) [6,90]
Fuel specifications			EN 590	
Feed pump max suction head	m		---	
Injection pump	type STANADYNE		DB4427-5955	

8/ ELECTRIC SYSTEM			1500 rpm	1800 rpm
Voltage (negative to ground)	V		12	
Starter motor				
make			Bosch	
power	kW		3	
pull current	Amp		60	
hold current	Amp		12	
break away current ^{+20°C}	Amp		1580	
cranking current ^{+20°C}	Amp		---	
Number of teeth on starter motor			10	
Number of teeth on flywheel			125	
Starting batteries				
recommended capacity Ah	1x		100	
discharge current	Amp		650	
(EN 50342)				
Stop solenoid energized to run	Amp		---	
Alternator				
voltage	V		14	
charge	Amp		90	

9/ COLD STARTING			1500 rpm	1800 rpm
Without air preheating	°C		-10	
With air preheating	°C		-25	

10/ EMISSION GASEOUS AND PARTICLES			1500 rpm	1800 rpm
No _x	Oxides of nitrogen	gr/kWh	5,73	5,69
HC	Hydrocarbons	gr/kWh	0,51	0,25
No _x +HC		gr/kWh	6,24	6,6
CO	Carbon monoxide	gr/kWh	0,69	2,1
PT	Particles	gr/kWh	0,145	0,25

Date of update: April 2009
Specifications subject to change without notice
Illustrations may include optional equipment.