

N45 SM1F

60 kW (1500 rpm)

Engine N45 SM1F

1/ GENERAL

1500 rpm

Engine model	N45 SM1F	
Basic engine	F4GE9455E*J - 5801543734	
Number cylinders	4	
Firing order (N°1 nearest to fan)	1-3-4-2	
Cylinder arrangement	in line	
Valves per cylinder	2	
Type	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
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
Degree of irregularity at PRP	0,057	
BMEP		
Prime Power	bar/kPa	11,0 / 1102
Stand-by Power	bar/kPa	10,0 / 1000
Dry weight (including cooling package)	kg	~ 450
Energy to coolant	kcal/kWh	552
Energy to charge cooler	kcal/kWh	-
Energy to radiation	kcal/kWh	553
Dimensions L x W x H	mm	1259 x 657 x 1016

2/ PERFORMANCES

1500 rpm

Continuous Power	(gross)	kWm	45,0
Prime Power	(gross)	kWm	56,3
Stand-By Power	(gross)	kWm	62
Fan consumption		kWm	1,8
Continuous Power	(net)	kWm	43,2
Prime Power	(net)	kWm	54,5
Stand-By Power	(net)	kWm	60
Performance conditions			
temperature	°C	≤ 40	
altitude a.l.m	m	≤ 1000	
Derating			
temperature > T 40°C	%/5°C	2%	
altitude >1000 <3000 m	%/500m	3%	
altitude > 3000 m	%/500m	6%	

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3/ COOLING SYSTEM

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Type		liquid	
Recommended coolant		water + 50%paraflu 11	
Coolant capacity			
motor only	liter	8,5	
radiator and hose	liter	10	
Coolant pump flow	l/min	103,3	
Engine cooling outlet (max power)	°C	91,9	
Engine cooling inlet (max power)	°C	86,2	
Thermostat: start to open	°C	80	
Thermostat: fully open	°C	96	
Pression cap setting	kPa (bar)	75 (0,75)	
Shutdown switch setting	°C	103	
Maximal additional restriction	Pa	n.d.	
Air To Boil	Prime Power	°C	57
Fan			
diameter	mm	500	
number of blades		10	
drive ratio		1,41 : 1	
speed	giri/1'	2115	
air flow	m ³ /s	2,2	
power consumption	kWm	1,8	

4/ LUBRICATION SYSTEM

1500 rpm

Oil sump capacity		
max	liter	8,5
min	liter	5,5
Oil system capacity including filters	liter	12,8
Oil pressure at rated speed	kPa	300-500
Oil temperature		
normal	°C	---
max	°C	120
Engine angularity		
longitudinal	degrees	25°
trasverse	degrees	25°
Servicing intervall	hours	600
Oil specification		ACEA E3 / E5
Oil consumption	%fuel	< 0,1

5/ INTAKE SYSTEM

1500 rpm

Air consumption at 100% of load	m ³ /h (Kg/h)	289 (327)
Air intake restriction clean filter	kPa (mbar)	2 (20)
Air intake restriction dirty filter	kPa (mbar)	5 (50)
Air filter type		dry

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6/ EXHAUST SYTEM

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Gas flow at stand by power	kg/h	340
Max temperature at PRP (25°C)	°C	492
Max allowable back pressure	kPa (mbar)	5 (50)
Energy to exhaust	kcal/kWh	493

7/ FUEL SYSTEM

1500 rpm

Fuel consumption at			
Stand-By	gr/kWh (l/h) [kg/h]	242 (18) [15]	
full load	gr/kWh (l/h) [kg/h]	248,6 (16,7) [14]	
80%	gr/kWh (l/h) [kg/h]	245 (13) [11]	
50%	gr/kWh (l/h) [kg/h]	284 (9,5) [8]	
Fuel specifications		EN 590	
Fuel pump max suction head	m	-	

8/ ELECTRIC SYSTEM

1500 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	1 x 100
discharge current (EN 50342)	Amp	650
Stop solenoid energized to run	Amp	---
Alternator		
voltage	V	14
charge	Amp	90

9/ COLD STARTING

1500 rpm

Without air preheating	°C	-10
With air preheating	°C	-25

10/ EMISSION GASEOUS AND PARTICLES

1500 rpm

No _x	Oxides of nitrogen	gr/kWh	4,1
HC	Hydrocarbons	gr/kWh	0,32
No _x +HC		gr/kWh	4,42
CO	Carbon monoxide	gr/kWh	1,96
PT	Particles	gr/kWh	0,352