

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	9,0 / 902,4
	Stand-by Power	bar/kPa	10,7 / 1066,7	9,9 / 992,6
Dry weight (including cooling package)			~450	
Energy to coolant			485,4	588,2
Energy to radiation			172	141
Dimensions L x W x H			1259 x 657 x 1016	

2/ PERFORMANCES			1500 rpm	1800 rpm
Continuous Power	(gross)	kWm	43,5	49
Prime Power	(gross)	kWm	54,5	61
Stand-By Power	(gross)	kWm	60	67
Fan consumption			1,15	2
Continuous Power	(net)	kWm	42,3	47
Prime Power	(net)	kWm	53,3	59
Stand-By Power	(net)	kWm	58,8	65
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