

N45 SM1A

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

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		kWm	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

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	m³/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