

# N45 SM1X

57 kW (1800 rpm)

Engine N45 SM1X

## 1/ GENERAL

1800 rpm

Engine model			N45 SM1X
Basic engine			F4GE9455B*J600 - 504274128XY
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(in)		104(4,1)
Stroke	mm(in)		132(5,2)
Total displacement	lit(in <sup>3</sup> )		4,5(275)
Mean piston speed	m/s(ft/s)		7,9(25,9)
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 <sup>2</sup> (lbft <sup>2</sup> )		0,19(4,49)
flywheel only	Kgm <sup>2</sup> (lbft <sup>2</sup> )		0,71(16,8)
BMEP			
Prime Power	bar(psi)		7,9(114,6)
Stand-by Power	bar(psi)		8,7(126,18)
Dry weight (including cooling package)	kg(lb)		~450(~992)
Energy to coolant	kcal/kWh		604
Energy to radiation	kcal/kWh		215
Dimensions L x W x H	mm(in)		1180 x 657 x 1016 (46,46 x 25,9 x 40)

## 2/ PERFORMANCES

1800 rpm

Continuous Power	(gross)	kWm(hp)	42,9(57,6)
Prime Power	(gross)	kWm(hp)	53,6(71,9)
Stand-By Power	(gross)	kWm(hp)	59(79,12)
Fan consumption		kWm(hp)	2(2,68)
Continuous Power	(net)	kWm(hp)	42(56,33)
Prime Power	(net)	kWm(hp)	52,5(70,4)
Stand-By Power	(net)	kWm(hp)	57(76,4)
Performance conditions			
temperature	°C(°F)		≤ 40(104)
altitude s.l.m	m(ft)		≤ 1000(3281)
Derating			
temperature > T 40°C	%/5°C		2
altitude >1000 <3000 m	%/500m		2
altitude >3000 m	%/500m		4

3/ COOLING PACKAGE			1800 rpm
Type			liquid
Recommended coolant			water + 50%paraflu 11
Coolant capacity			
motor only	liter(US gal)		8,5(1,9)
radiator and hose	liter(US gal)		10(2,64)
Coolant pump flow	l/min(US gal/min)		123,91(32,73)
Pression cap setting	kPa (bar)		70 (0,7)
Shutdown switch setting	°C (°F)		103(217,4)
maximal additional restriction	Pa(psi)		147(0,02)
Air To Boil	Prime Power	°C (°F)	52(125,6)
Fan			
diameter	mm(in)		450(17,72)
number of pale			8
drive ratio			1,4 : 1
speed	rpm		2538
air flow	m <sup>3</sup> /s		2,3
power consumption	kWm(hp)		2(2,68)

4/ LUBRICATION SYSTEM			1800 rpm
Oil sump capacity			
max	liter(US gal)		8,5(1,9)
min	liter(US gal)		5,5(1,45)
Oil system capacity including filters	liter(US gal)		12,8(3,4)
Oil pressure at rated speed	kPa(psi)		300-500(43,5-72,6)
Oil temperature			
normal	°C (°F)		---
max	°C (°F)		120(248)
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			1800 rpm
Air consumption at 100% of load	m <sup>3</sup> /h (Kg/h)		464 (385)
Air intake restriction clean filter	kPa (mbar)		2 (20)
Air intake restriction dirty filter	kPa (mbar)		5 (50)
Air filter type			dry

6/ EXHAUST SYTEM			1800 rpm
Gas flow at stand by power	kg/h		399
Max temperature at PRP (25°C)	°C		438
Max allowable back pressure	kPa (mbar)		5 (50)
Energy to exhaust	kcal/kWh		721

### 7/ FUEL SYSTEM

1800 rpm

Fuel consumption at

Stand-By	gr/kWh (l/h) [kg/h]	234,3 (16,49) [13,85]
full load	gr/kWh (l/h) [kg/h]	235,7 (15,05) [12,64]
80%	gr/kWh (l/h) [kg/h]	240,7 (12,7) [10,69]
50%	gr/kWh (l/h) [kg/h]	258,1 (8,9) [7,49]
Fuel specifications		EN 590
Fuel pump max suction head	m	-
Injection pump	type STANADYNE	0

### 8/ ELECTRIC SYSTEM

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	Amp	1580
cranking current	Amp	0
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	0
Alternator		
voltage	V	14
charge	Amp	90

### 9/ COLD STARTING

1800 rpm

Without air preheating	°C(°F)	-10(14)
With air preheating	°C(°F)	-25(-13)

### 10/ EMISSION GASEOUS AND PARTICLES

1800 rpm

No <sub>x</sub>	Oxides of nitrogen	gr/kWh	-
HC	Hydrocarbons	gr/kWh	-
NMHC + NO <sub>x</sub>		gr/kWh	4,3
CO	Carbon monoxide	gr/kWh	1,4
PT	Particulate	gr/kWh	0,33