

# DIESEL GENERATOR SET



## DE22E3

EU stage IIIA emissions compliant.  
Suitable for Mobile Applications in the European Community.

Image shown may not reflect actual package

Output Ratings		
Generator Set Model - 3 Phase	Prime*	Standby*
400/230 V, 50 Hz	20.0 kVA 16.0 kW	22.0 kVA 17.6 kW
220/127V, 60 Hz	22.5 kVA 18.0 kW	25.0 kVA 20.0 kW

\* Refer to ratings definitions on page 4.  
Ratings at 0.8 power factor.

Technical Data		
Engine Make & Model:	Cat® C2.2	
Generator Model:	LC1114M	
Control Panel:	EMCP 4.1	
Base Frame Type:	Heavy Duty Fabricated Steel	
Circuit Breaker Type:	3 Pole MCB	
Frequency:	50 Hz	60 Hz
Engine Speed: RPM	1500	1800
Fuel Tank Capacity: litres (US gal)	66 (17.4)	
Fuel Consumption, Prime: l/hr (US gal/hr)	5.3 (1.4)	5.8 (1.5)
Fuel Consumption, Standby : l/hr (US gal/hr)	5.9 (1.6)	6.5 (1.7)

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## Engine Technical Data

Physical Data	
<b>Manufacturer:</b>	Caterpillar
<b>Model:</b>	C2.2
<b>No. of Cylinders/Alignment:</b>	4 / In Line
<b>Cycle:</b>	4 Stroke
<b>Induction:</b>	Naturally Aspirated
<b>Cooling Method:</b>	Water
<b>Governing Type:</b>	Mechanical
<b>Governing Class:</b>	ISO 8528
<b>Compression Ratio:</b>	23.3:1
<b>Displacement: l (cu.in)</b>	2.2 (135.2)
<b>Bore/Stroke: mm (in)</b>	84.0 (3.3)/100.0 (3.9)
<b>Moment of Inertia: kg m<sup>2</sup> (lb. in<sup>2</sup>)</b>	2.72 (9308)
<b>Engine Electrical System:</b>	
-Voltage/Ground:	12/Negative
-Battery Charger Amps:	65
<b>Weight: kg (lb) - Dry:</b>	242 (534)
- Wet:	251 (554)

Air System	50 Hz	60 Hz
<b>Air Filter Type:</b>	Replaceable Element	
<b>Combustion Air Flow:</b>		
m <sup>3</sup> /min (cfm)		
-Standby:	1.5 (51)	1.7 (61)
-Prime:	1.5 (51)	1.7 (61)
<b>Max. Combustion Air Intake</b>		
<b>Restriction: kPa (in H<sub>2</sub>O)</b>	3.0 (12.0)	3.0 (12.0)
<b>Radiator Cooling Air Flow:</b>		
m <sup>3</sup> /min (cfm)	33.0 (1165)	41.4 (1462)
<b>External Restriction to</b>		
<b>Cooling Air Flow: Pa (in H<sub>2</sub>O)</b>	125 (0.5)	125 (0.5)

Cooling System	50 Hz	60 Hz
<b>Cooling System Capacity:</b>		
l (US gal)	6.5 (1.7)	6.5 (1.7)
<b>Water Pump Type:</b>	Centrifugal	
<b>Heat Rejected to Water &amp; Lube Oil: kW (Btu/min)</b>		
-Standby:	19.6 (1115)	22.2 (1262)
-Prime:	17.0 (967)	19.9 (1132)
<b>Heat Radiation to Room: Heat radiated from engine and alternator</b>		
kW (Btu/min)		
-Standby:	7.1 (404)	7.4 (421)
-Prime:	5.7 (324)	6.3 (358)
<b>Radiator Fan Load: kW (hp)</b>	0.2 (0.3)	0.4 (0.5)
Cooling system designed to operate in ambient conditions up to 50°C (122°F). Contact your local Cat dealer for power ratings at specific site conditions.		

Lubrication System	
<b>Oil Filter Type:</b>	Spin-On, Full Flow
<b>Total Oil Capacity l (US gal):</b>	10.6 (2.8)
<b>Oil Pan l (US gal):</b>	8.9 (2.4)
<b>Oil Type:</b>	API CH4 15W-40
<b>Cooling Method:</b>	N/A

Performance	50 Hz	60 Hz
<b>Engine Speed: RPM</b>	1500	1800
<b>Gross Engine Power: kW (hp)</b>		
-Standby:	20.6 (28.0)	24.3 (33.0)
-Prime:	18.7 (25.0)	22.0 (30.0)
<b>BMEP: kPa (psi)</b>		
-Standby:	743.0 (107.8)	731.0 (106.0)
-Prime:	675.0 (97.9)	662.0 (96.0)
<b>Regenerative Power: kW</b>	5.6	7.2

Fuel System				
<b>Fuel Filter Type:</b>	Replaceable Element			
<b>Recommended Fuel:</b>	Class A2 Diesel or BSEN590			
<b>Fuel Consumption: l/hr (US gal/hr)</b>				
	<b>110% Load</b>	<b>100% Load</b>	<b>75% Load</b>	<b>50% Load</b>
<b>Prime</b>				
50 Hz	5.9 (1.6)	5.3 (1.4)	3.9 (1.0)	2.9 (0.8)
60 Hz	6.5 (1.7)	5.8 (1.5)	4.5 (1.2)	3.3 (0.9)
<b>Standby</b>				
50 Hz		5.9 (1.6)	4.3 (1.1)	3.1 (0.8)
60 Hz		6.5 (1.7)	4.9 (1.3)	3.6 (1.0)
(based on diesel fuel with a specific gravity of 0.85 and conforming to BS2869, Class A2)				

Exhaust System	50 Hz	60 Hz
<b>Silencer Type:</b>	Industrial	
<b>Silencer Model &amp; Quantity:</b>	EXSY1 (1)	
<b>Pressure Drop Across</b>		
<b>Silencer System: kPa (in Hg)</b>	0.57 (0.168)	1.58 (0.467)
<b>Silencer Noise Reduction</b>		
<b>Level: dB</b>	20	11.2
<b>Max. Allowable Back</b>		
<b>Pressure: kPa (in. Hg)</b>	10.2 (3.0)	10.2 (3.0)
<b>Exhaust Gas Flow:</b>		
m <sup>3</sup> /min (cfm)		
-Standby:	3.9 (139)	4.8 (168)
-Prime:	3.6 (129)	4.3 (153)
<b>Exhaust Gas Temperature: °C (°F)</b>		
-Standby:	505 (941)	510 (950)
-Prime:	445 (833)	440 (824)

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## Generator Performance Data

Data Item	50 Hz				60 Hz				
	415/240V	400/230V	380/220V						220/127V
Motor Starting Capability* kVA	55	52	48	-	-	-	-	-	52
Short Circuit Capacity %	-	-	-	-	-	-	-	-	-
Reactances: Per Unit									
Xd	2.870	3.090	3.420	-	-	-	-	-	3.440
X'd	0.230	0.250	0.270	-	-	-	-	-	0.270
X''d	0.114	0.123	0.136	-	-	-	-	-	0.137

Reactances shown are applicable to prime ratings.  
\*Based on 30% voltage dip at 0.6 power factor.

## Generator Technical Data

Physical Data	
LC SERIES	
Model:	LC1114M
No. of Bearings:	1
Insulation Class:	H
Winding Pitch - Code:	2/3 - 6
Wires:	12
Ingress Protection Rating:	IP23
Excitation System:	SHUNT
AVR Model:	R220

Operating Data	
Overspeed: RPM	2250
Voltage Regulation: (steady state)	+/- 1.0%
Wave Form NEMA = TIF:	50
Wave Form IEC = THF:	2.0%
Total Harmonic Content LL/LN:	4.0%
Radio Interference:	Suppression is in line with European Standard EN61000-6
Radiant Heat: kW (Btu/min)	
-50 Hz:	2.7 (154)
-60 Hz:	2.8 (159)

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## Technical Data

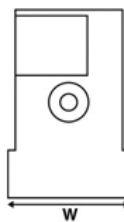
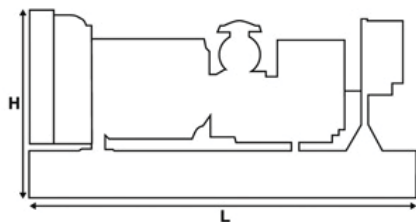
Voltage 50 Hz	Prime		Standby	
	kVA	kW	kVA	kW
415/240V	20.0	16.0	22.0	17.6
400/230V	20.0	16.0	22.0	17.6
380/220V	20.0	16.0	22.0	17.6

Voltage 60 Hz	Prime		Standby	
	kVA	kW	kVA	kW
220/127V	22.5	18.0	25.0	20.0

## Weights & Dimensions

Weights: kg (lb)	
Net (+ lube oil)	447 (985)
Wet (+ lube oil & coolant)	454 (1001)
Fuel, lube oil & coolant	510 (1124)

Dimensions: mm (in)	
Length	1500 (59.1)
Width	620 (24.4)
Height	1115 (43.9)



**Note:** General configuration not to be used for installation. See general dimension drawings for detail.

## Definitions

### Standby Rating

Output available with varying load for the duration of the interruption of the normal source power. Average power output is 70% of the standby power rating. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year.

### Prime Rating

Output available with varying load for an unlimited time. Average power output is 70% of the prime power rating. Typical peak demand is 100% of prime rated kW with 10% overload capability for emergency use for a maximum of 1 hour in 12. Overload operation cannot exceed 25 hours per year.

### Standard Reference Conditions

Note: Standard reference conditions 25°C (77°F) air inlet temp, 100m (328ft) A.S.L. 30% relative humidity. Fuel consumption data at full load with diesel fuel with specific gravity of 0.85 and conforming to BS2869: 1998, Class A2.

## General Data

### Documents

A full set of operation and maintenance manuals and circuit wiring diagrams.

### Quality Standards

The equipment meets the following standards: **IEC60034-1, IEC60034-22, ISO3046, ISO8528, NEMA MG 1-32, NEMA MG 1-33, 2004/108/EC, 2006/42/EC, 2006/95/EC.**