

# DIESEL GENERATOR SET



## DE50E0S

Image shown may not reflect actual package

Output Ratings		
Generator Set Model - 1 Phase	Prime*	Standby*
230V, 50Hz	45.0 kVA 45.0 kW	50.0 kVA 50.0 kW
240/120V, 60 Hz	55.0 kVA 55.0 kW	60.0 kVA 60.0 kW

\* Refer to ratings definitions on page 4.  
Ratings at 1.0 power factor.

Technical Data		
Engine Make & Model:	Cat® C3.3	
Generator Model:	LCB3114D	
Control Panel:	EMCP 4.1	
Base Frame Type:	Heavy Duty Fabricated Steel	
Circuit Breaker Type:	3 Pole MCCB	
Frequency:	50 Hz	60 Hz
Engine Speed: RPM	1500	1800
Fuel Tank Capacity: litres (US gal)	219 (57.9)	
Fuel Consumption, Prime: l/hr (US gal/hr)	12.6 (3.3)	15.8 (4.2)
Fuel Consumption, Standby : l/hr (US gal/hr)	14.2 (3.8)	17.3 (4.6)

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## Engine Technical Data

Physical Data		50 Hz		60 Hz	
<b>Manufacturer:</b>	Caterpillar				
<b>Model:</b>	C3.3				
<b>No. of Cylinders/Alignment:</b>	3 / In Line				
<b>Cycle:</b>	4 Stroke				
<b>Induction:</b>	Turbocharged				
<b>Cooling Method:</b>	Water				
<b>Governing Type:</b>	Mechanical				
<b>Governing Class:</b>	ISO 8528 G2				
<b>Compression Ratio:</b>	17.25:1				
<b>Displacement: l (cu.in)</b>	3.3 (201.4)				
<b>Bore/Stroke: mm (in)</b>	105.0 (4.1)/127.0 (5.0)				
<b>Moment of Inertia: kg m<sup>2</sup> (lb. in<sup>2</sup>)</b>	1.14 (3896)				
<b>Engine Electrical System:</b>					
-Voltage/Ground:	12/Negative				
-Battery Charger Amps:	65				
<b>Weight: kg (lb) - Dry:</b>	420 (926)				
- Wet:	438 (966)				

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:	3.9 (138)	4.9 (173)			
-Prime:	3.8 (134)	4.7 (166)			
<b>Max. Combustion Air Intake</b>					
<b>Restriction: kPa (in H<sub>2</sub>O)</b>	8.0 (32.1)	8.0 (32.1)			
<b>Radiator Cooling Air Flow:</b>					
m <sup>3</sup> /min (cfm)	110.4 (3899)	145.8 (5149)			
<b>External Restriction to</b>					
<b>Cooling Air Flow: Pa (in H<sub>2</sub>O)</b>	120 (0.5)	120 (0.5)			

Cooling System		50 Hz		60 Hz	
<b>Cooling System Capacity:</b>					
l (US gal)		10.2 (2.7)	10.2 (2.7)		
<b>Water Pump Type:</b>	Centrifugal				
<b>Heat Rejected to Water &amp; Lube Oil: kW (Btu/min)</b>					
-Standby:	37.7 (2144)	42.8 (2434)			
-Prime:	35.2 (2002)	41.0 (2332)			
<b>Heat Radiation to Room:</b> Heat radiated from engine and alternator					
kW (Btu/min)					
-Standby:	16.1 (916)	17.4 (990)			
-Prime:	14.5 (825)	16.7 (950)			
<b>Radiator Fan Load: kW (hp)</b>	1.0 (1.3)	1.7 (2.3)			

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		50 Hz		60 Hz	
<b>Oil Filter Type:</b>	Spin-On, Full Flow				
<b>Total Oil Capacity l (US gal):</b>	8.3 (2.2)				
<b>Oil Pan l (US gal):</b>	7.8 (2.1)				
<b>Oil Type:</b>	API CG4 / CH4 15W-40				
<b>Cooling Method:</b>	Water				

Performance		50 Hz		60 Hz	
<b>Engine Speed: RPM</b>		1500	1800		
<b>Gross Engine Power: kW (hp)</b>					
-Standby:	60.5 (81.0)	69.6 (93.0)			
-Prime:	55.0 (74.0)	63.3 (85.0)			
<b>BMEP: kPa (psi)</b>					
-Standby:	1467.0 (212.8)	1407.0 (204.0)			
-Prime:	1333.0 (193.4)	1279.0 (185.5)			
<b>Regenerative Power: kW</b>	7.0	9.0			

Fuel System		50 Hz		60 Hz	
<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>					
		110% Load	100% Load	75% Load	50% Load
<b>Prime</b>					
50 Hz	14.2 (3.8)	12.6 (3.3)	9.6 (2.5)	6.8 (1.8)	
60 Hz	17.3 (4.6)	15.8 (4.2)	12.0 (3.2)	8.5 (2.2)	
<b>Standby</b>					
50 Hz		14.2 (3.8)	10.6 (2.8)	7.4 (2.0)	
60 Hz		17.3 (4.6)	13.0 (3.4)	9.1 (2.4)	

(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>	0.98 (0.289)	1.22 (0.360)			
<b>Silencer Noise Reduction</b>					
<b>Level: dB</b>	19	18			
<b>Max. Allowable Back</b>					
<b>Pressure: kPa (in. Hg)</b>	10.0 (3.0)	15.0 (4.4)			
<b>Exhaust Gas Flow:</b>					
m <sup>3</sup> /min (cfm)					
-Standby:	10.4 (367)	12.5 (441)			
-Prime:	10.1 (357)	11.8 (417)			
<b>Exhaust Gas Temperature: °C (°F)</b>					
-Standby:	571 (1060)	564 (1047)			
-Prime:	557 (1035)	534 (993)			

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## Generator Performance Data

Data Item	50 Hz				60 Hz				
	240V	230V	220V			220V/110V	240V/120V		
Motor Starting Capability* kVA	145	136	128	-	-	111	127	-	-
Short Circuit Capacity** %	300	300	300	-	-	300	300	-	-
Reactances: Per Unit									
Xd	1.440	1.570	1.720	-	-	2.520	2.120	-	-
X'd	0.120	0.130	0.140	-	-	0.210	0.180	-	-
X''d	0.073	0.079	0.087	-	-	0.127	0.107	-	-

Reactances shown are applicable to prime ratings.

\*Based on 30% voltage dip at 0.9 power factor and SHUNT excitation system.

\*\* With optional Permanent Magnet generator

## Generator Technical Data

Physical Data	
LC Series	
Model:	LCB3114D
No. of Bearings:	1
Insulation Class:	H
Winding Pitch - Code:	2/3 - M
Wires:	4
Ingress Protection Rating:	IP23
Excitation System:	SHUNT
AVR Model:	R250

Operating Data	
Overspeed: RPM	2250
Voltage Regulation: (steady state)	+/- 0.5%
Wave Form NEMA = TIF:	50
Wave Form IEC = THF:	2.0%
Total Harmonic Content LL/LN:	2.5%
Radio Interference:	Suppression is in line with European Standard EN61000-6
Radiant Heat: kW (Btu/min)	
-50 Hz:	5.1 (290)
-60 Hz:	6.4 (364)

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## Technical Data

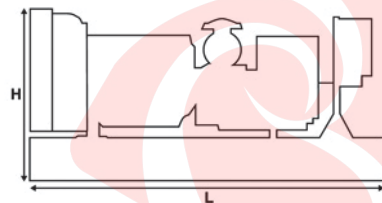
Voltage 50 Hz	Prime		Standby	
	kVA	kW	kVA	kW
240V	45.0	45.0	50.0	50.0
230V	45.0	45.0	50.0	50.0
220V	45.0	45.0	50.0	50.0

Voltage 60 Hz	Prime		Standby	
	kVA	kW	kVA	kW
220V/110V	50.0	50.0	55.0	55.0
240V/120V	55.0	55.0	60.0	60.0

## Weights & Dimensions

Weights: kg (lb)	
Net (+ lube oil)	982 (2164)
Wet (+ lube oil & coolant)	995 (2194)
Fuel, lube oil & coolant	1180 (2603)

Dimensions: mm (in)	
Length	1925 (75.8)
Width	1120 (44.1)
Height	1361 (53.6)



**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.