

# DIESEL GENERATOR SET



## DE220E0

Image shown may not reflect actual package

<b>Output Ratings</b>		
<b>Generator Set Model - 3 Phase</b>	<b>Prime*</b>	<b>Standby*</b>
400/230 V, 50 Hz	200.0 kVA 160.0 kW	220.0 kVA 176.0 kW
	-	-
	-	-

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

<b>Technical Data</b>		
<b>Engine Make &amp; Model:</b>	Cat® C7.1	
<b>Generator Model:</b>	R2473L4	
<b>Control Panel:</b>	EMCP 4.1	
<b>Base Frame Type:</b>	Heavy Duty Fabricated Steel	
<b>Circuit Breaker Type:</b>	3 Pole MCCB	
<b>Frequency:</b>	<b>50 Hz</b>	<b>60 Hz</b>
<b>Engine Speed: RPM</b>	1500	-
<b>Fuel Tank Capacity: litres (US gal)</b>	418 (110.4)	
<b>Fuel Consumption, Prime: l/hr (US gal/hr)</b>	45.1 (11.9)	-
<b>Fuel Consumption, Standby : l/hr (US gal/hr)</b>	49.0 (12.9)	-

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## Engine Technical Data

Physical Data	
<b>Manufacturer:</b>	Caterpillar
<b>Model:</b>	C7.1
<b>No. of Cylinders/Alignment:</b>	6 / In Line
<b>Cycle:</b>	4 Stroke
<b>Induction:</b>	Turbocharged Air To Air Charge Cooled
<b>Cooling Method:</b>	Water
<b>Governing Type:</b>	Electronic
<b>Governing Class:</b>	ISO 8528 G2
<b>Compression Ratio:</b>	16.0:1
<b>Displacement:</b> l (cu.in)	7.0 (427.8)
<b>Bore/Stroke:</b> mm (in)	105.0 (4.1)/135.0 (5.3)
<b>Moment of Inertia:</b> kg m <sup>2</sup> (lb. in <sup>2</sup> )	1.26 (4306)
<b>Engine Electrical System:</b>	
-Voltage/Ground:	12/Negative
-Battery Charger Amps:	85
<b>Weight:</b> kg (lb) - Dry:	788 (1737)
- Wet:	822 (1812)

Air System	50 Hz	60 Hz
<b>Air Filter Type:</b>	Paper Element	
<b>Combustion Air Flow:</b>		
m <sup>3</sup> /min (cfm)	<b>-Standby:</b> 13.2 (466)	-
	<b>-Prime:</b> 12.6 (445)	-
<b>Max. Combustion Air Intake</b>		
<b>Restriction:</b> kPa (in H <sub>2</sub> O)	8.0 (32.1)	-
<b>Radiator Cooling Air Flow:</b>		
m <sup>3</sup> /min (cfm)	307.2 (10849)	-
<b>External Restriction to</b>		
<b>Cooling Air Flow:</b> Pa (in H <sub>2</sub> O)	125 (0.5)	-

Cooling System	50 Hz	60 Hz
<b>Cooling System Capacity:</b>		
l (US gal)	27.0 (7.1)	-
<b>Water Pump Type:</b>	Centrifugal	
<b>Heat Rejected to Water &amp; Lube Oil:</b> kW (Btu/min)		
<b>-Standby:</b>	81.0 (4606)	-
<b>-Prime:</b>	78.2 (4447)	-
<b>Heat Radiation to Room:</b> Heat radiated from engine and alternator		
kW (Btu/min)	<b>-Standby:</b> 26.0 (1479)	-
	<b>-Prime:</b> 24.3 (1382)	-
<b>Radiator Fan Load:</b> kW (hp)	5.0 (6.7)	-
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 I (US gal):</b>	16.5 (4.4)
<b>Oil Pan I (US gal):</b>	14.9 (3.9)
<b>Oil Type:</b>	API CI4 15W-40
<b>Cooling Method:</b>	Water

Performance	50 Hz	60 Hz
<b>Engine Speed:</b> RPM	1500	-
<b>Gross Engine Power:</b> kW (hp)		
<b>-Standby:</b>	196.3 (263.0)	-
<b>-Prime:</b>	178.9 (240.0)	-
<b>BMEP:</b> kPa (psi)		
<b>-Standby:</b>	2239.0 (324.7)	-
<b>-Prime:</b>	2041.0 (296.0)	-
<b>Regenerative Power:</b> kW	9.3	-

Fuel System				
<b>Fuel Filter Type:</b>	Replaceable Element			
<b>Recommended Fuel:</b>	Class A2 Diesel or BSEN590			
<b>Fuel Consumption:</b> l/hr (US gal/hr)				
	<b>110% Load</b>	<b>100% Load</b>	<b>75% Load</b>	<b>50% Load</b>
<b>Prime</b>				
50 Hz	49.0 (12.9)	45.1 (11.9)	34.6 (9.1)	23.3 (6.2)
60 Hz	-	-	-	-
<b>Standby</b>				
50 Hz		49.0 (12.9)	37.8 (10.0)	25.6 (6.8)
60 Hz		-	-	-
(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:</b> kPa (in Hg)	3.50 (1.034)	-
<b>Silencer Noise Reduction</b>		
<b>Level:</b> dB	10	-
<b>Max. Allowable Back</b>		
<b>Pressure:</b> kPa (in. Hg)	15.0 (4.4)	-
<b>Exhaust Gas Flow:</b>		
m <sup>3</sup> /min (cfm)	<b>-Standby:</b> 36.8 (1300)	-
	<b>-Prime:</b> 34.9 (1232)	-
<b>Exhaust Gas Temperature:</b> °C (°F)		
<b>-Standby:</b>	580 (1076)	-
<b>-Prime:</b>	527 (981)	-

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## Generator Performance Data

Data Item	50 Hz				60 Hz				
	415/240V	400/230V 230/115V 200/115V	380/220V 220/110V	220/127V					
Motor Starting Capability* kVA	311	290	259	367					
Short Circuit Capacity** %	300	300	300	300					
Reactances: Per Unit									
Xd	2.870	3.090	3.430	2.550					
X'd	0.240	0.260	0.290	0.220					
X''d	0.095	0.102	0.113	0.084					

Reactances shown are applicable to prime ratings.

\*Based on 30% voltage dip at 0 power factor and SHUNT excitation system.

\*\*With optional Auxiliary Winding.

## Generator Technical Data

Physical Data	
R Frame	
Model:	R2473L4
No. of Bearings:	1
Insulation Class:	H
Winding Pitch - Code:	2/3 - M0
Wires:	12
Ingress Protection Rating:	IP23
Excitation System:	SHUNT
AVR Model:	Mark V

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:	2.0%
Radio Interference:	Suppression is in line with European Standard EN61000-6
Radiant Heat: kW (Btu/min)	
-50 Hz:	12.8 (728)
-60 Hz:	-

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## Technical Data

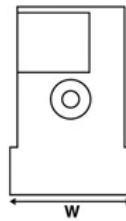
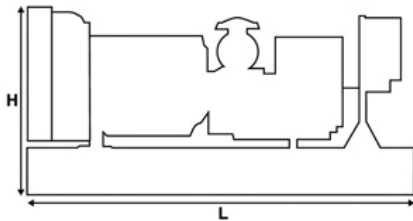
Voltage 50 Hz	Prime		Standby	
	kVA	kW	kVA	kW
415/240V	200.0	160.0	220.0	176.0
400/230V	200.0	160.0	220.0	176.0
380/220V	200.0	160.0	220.0	176.0
230/115V	200.0	160.0	220.0	176.0
220/127V	200.0	160.0	220.0	176.0
220/110V	200.0	160.0	220.0	176.0
200/115V	200.0	160.0	220.0	176.0

Voltage 60 Hz	Prime		Standby	
	kVA	kW	kVA	kW

## Weights & Dimensions

Weights: kg (lb)	
Net (+ lube oil)	1766 (3893)
Wet (+ lube oil & coolant)	1793 (3953)
Fuel, lube oil & coolant	2147 (4733)

Dimensions: mm (in)	
Length	2500 (98.4)
Width	1320 (52.0)
Height	1626 (64.0)



**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.**

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Price List: C7.1PGBI, C7.1PGBT

Gen. Arr. Number: 502-7330

Source: China, Europe

LEHE1151-00 (08/16)

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