

# DIESEL GENERATOR SET



## DE13.5E3

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

<b>Output Ratings</b>		
<b>Generator Set Model - 3 Phase</b>	<b>Prime*</b>	<b>Standby*</b>
400/230 V, 50 Hz	12.5 kVA 10.0 kW	13.5 kVA 10.8 kW
220/127V, 60 Hz	15.0 kVA 12.0 kW	16.5 kVA 13.2 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® C1.5	
<b>Generator Model:</b>	LC1114D	
<b>Control Panel:</b>	EMCP 4.1	
<b>Base Frame Type:</b>	Heavy Duty Fabricated Steel	
<b>Circuit Breaker Type:</b>	3 Pole MCB	
<b>Frequency:</b>	<b>50 Hz</b>	<b>60 Hz</b>
<b>Engine Speed: RPM</b>	1500	1800
<b>Fuel Tank Capacity: litres (US gal)</b>	62 (16.4)	
<b>Fuel Consumption, Prime: l/hr (US gal/hr)</b>	3.7 (1.0)	4.3 (1.1)
<b>Fuel Consumption, Standby : l/hr (US gal/hr)</b>	4.0 (1.1)	4.9 (1.3)

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## Engine Technical Data

Physical Data	
<b>Manufacturer:</b>	Caterpillar
<b>Model:</b>	C1.5
<b>No. of Cylinders/Alignment:</b>	3 / 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>	22.5:1
<b>Displacement:</b> l(cu.in)	1.5 (91.3)
<b>Bore/Stroke:</b> mm(in)	84.0 (3.3)/90.0 (3.5)
<b>Moment of Inertia:</b> kgm <sup>2</sup> (lb.in <sup>2</sup> )	2.17 (7415)
<b>Engine Electrical System:</b>	
-Voltage/Ground:	12/Negative
-Battery Charger Amps:	65
<b>Weight:</b> kg (lb) - Dry:	197 (434)
- Wet:	202 (445)

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: 1.1 (38)	1.2 (43)
	-Prime: 1.1 (38)	1.2 (43)
<b>Max. Combustion Air Intake</b>		
<b>Restriction:</b> kPa (in H <sub>2</sub> O)	6.4 (25.7)	6.4 (25.7)
<b>Radiator Cooling Air Flow:</b>		
m <sup>3</sup> /min (cfm)	28.8 (1017)	37.2 (1314)
<b>External Restriction to</b>		
<b>Cooling Air Flow:</b> Pa (in H <sub>2</sub> O)	125 (0.5)	125 (0.5)

Cooling System	50 Hz	60 Hz
<b>Cooling System Capacity:</b>		
l (US gal)	6.0 (1.6)	6.0 (1.6)
<b>Water Pump Type:</b>	Centrifugal	
<b>Heat Rejected to Water &amp; Lube Oil:</b> kW (Btu/min)		
	-Standby: 12.9 (734)	15.2 (864)
	-Prime: 11.6 (660)	13.6 (773)
<b>Heat Radiation to Room:</b> Heat radiated from engine and alternator		
kW (Btu/min)	-Standby: 6.0 (341)	7.1 (404)
	-Prime: 5.4 (307)	6.3 (358)
<b>Radiator Fan Load:</b> kW (hp)	0.2 (0.2)	0.3 (0.4)
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:</b> l(US gal):	6.0 (1.6)
<b>Oil Pan l (US gal):</b>	4.5 (1.2)
<b>Oil Type:</b>	API CH4 15W-40
<b>Cooling Method:</b>	N/A

Performance	50 Hz	60 Hz
<b>Engine Speed:</b> RPM	1500	1800
<b>Gross Engine Power:</b> kW (hp)		
-Standby:	13.5 (18.0)	16.2 (22.0)
-Prime:	12.2 (16.0)	14.7 (20.0)
<b>BMEP:</b> kPa (psi)		
-Standby:	722.0 (104.7)	722.0 (104.7)
-Prime:	652.0 (94.6)	655.0 (95.0)
<b>Regenerative Power:</b> kW	4.1	5.3

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	4.0 (1.1)	3.7 (1.0)	2.8 (0.7)	2.0 (0.5)
60 Hz	4.9 (1.3)	4.3 (1.1)	3.2 (0.8)	2.4 (0.6)
<b>Standby</b>				
50 Hz	4.0 (1.1)	3.0 (0.8)	2.1 (0.6)	
60 Hz	4.9 (1.3)	3.5 (0.9)	2.5 (0.7)	
(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)	0.58 (0.171)	0.80 (0.236)
<b>Silencer Noise Reduction</b>		
<b>Level:</b> dB	22.8	10.8
<b>Max. Allowable Back</b>		
<b>Pressure:</b> kPa (in. Hg)	10.2 (3.0)	10.2 (3.0)
<b>Exhaust Gas Flow:</b>		
m <sup>3</sup> /min (cfm)	-Standby: 2.9 (102)	3.4 (119)
	-Prime: 2.7 (95)	3.1 (111)
<b>Exhaust Gas Temperature:</b> °C (°F)		
-Standby:	490 (914)	505 (941)
-Prime:	445 (833)	455 (851)

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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	28	27	25					27
Short Circuit Capacity %	-	-	-					-
Reactances: Per Unit								
Xd	1.938	2.086	2.311					2.482
X'd	0.200	0.216	0.239					0.257
X''d	0.100	0.108	0.119					0.128

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

## Generator Technical Data

Physical Data	
<b>LC SERIES</b>	
<b>Model:</b>	LC1114D
<b>No. of Bearings:</b>	1
<b>Insulation Class:</b>	H
<b>Winding Pitch - Code:</b>	2/3 - 6
<b>Wires:</b>	12
<b>Ingress Protection Rating:</b>	IP23
<b>Excitation System:</b>	SHUNT
<b>AVR Model:</b>	R220

Operating Data	
<b>Overspeed: RPM</b>	2250
<b>Voltage Regulation: (steady state)</b>	+/- 1.0%
<b>Wave Form NEMA = TIF:</b>	50
<b>Wave Form IEC = THF:</b>	2.0%
<b>Total Harmonic Content LL/LN:</b>	4.0%
<b>Radio Interference:</b>	Suppression is in line with European Standard EN61000-6
<b>Radiant Heat: kW (Btu/min)</b>	
-50 Hz:	2.5 (142)
-60 Hz:	2.8 (159)

# DIESEL GENERATOR SET



## Technical Data

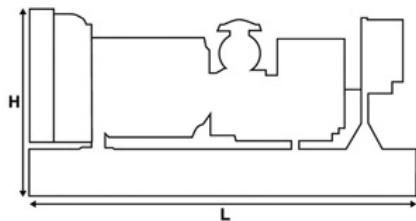
Voltage 50 Hz	Prime		Standby	
	kVA	kW	kVA	kW
415/240V	12.5	10.0	13.5	10.8
400/230V	12.5	10.0	13.5	10.8
380/220V	12.5	10.0	13.5	10.8

Voltage 60 Hz	Prime		Standby	
	kVA	kW	kVA	kW
220/127V	15.0	12.0	16.5	13.2

## Weights & Dimensions

Weights: kg (lb)	
Net (+ lube oil)	371 (818)
Wet (+ lube oil & coolant)	377 (831)
Fuel, lube oil & coolant	430 (947)

Dimensions: mm (in)	
Length	1400 (55.1)
Width	620 (24.4)
Height	1054 (41.5)



**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.**



Enclosure pictured may include optional accessories

## Sound Attenuated Level 2 Enclosure

### 6.8 - 22 kVA Range

The compact modular design of the 6.8 – 22 kVA SA Level 2 enclosure range ensures optimum performance in the harshest of environments. Designed on modular principles, they have interchangeable components permitting on-site repair. Lift off doors and access panels provide optimal service and maintenance access.

Extremely durable and robust, the enclosures are designed to resist corrosion and handling damage with the ability to withstand rough handling common on many construction sites.

Developed through continuing research and development by our specialist engineers, the enclosures are fully weatherproof and incorporate internally mounted exhaust silencers.

The sound attenuated level 2 enclosures reduce sound levels to comply with the stage II levels of the European Community Directive 2000/14/EC, effective from 3 January 2006.

### FEATURES

#### DURABLE AND ROBUST CONSTRUCTION

- Galvanised steel protected by powder coat paint
- Single piece roof structure
- Baseframe extends beyond enclosure protecting against handling damage
- Black finish stainless steel locks and hinges
- Zinc plated / stainless steel fasteners

#### EXCELLENT SERVICE AND MAINTENANCE ACCESS

- Side hinged doors on both sides of the enclosure opening to 180°
- Side hinged doors lift off at 90°
- Removable front and rear access panels
- Coolant drain piped to baseframe, exterior to the enclosure

#### SECURITY AND SAFETY

- Control panel viewing via large viewing window in lockable enclosure door
- Emergency stop push button mounted on enclosure exterior below control panel
- Cooling fan and battery charging alternator fully guarded
- Fuel fill and battery can only be reached via lockable access doors
- Exhaust silencing system totally enclosed for operator safety

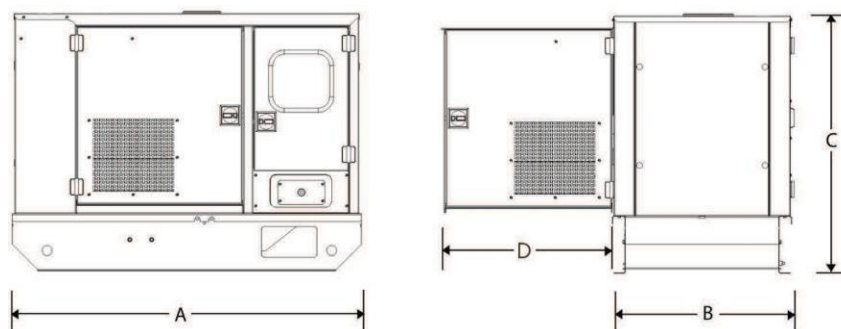
#### TRANSPORTABILITY

- Tested and certified single point lifting facility – Optional
- Drag points on baseframe facilitating handling from both sides
- Optional base feet to aid forklift handling

## SOUND PRESSURE LEVELS (dBA)

Generating Set Model	Duty	LWA	50 Hz						60 Hz					
			15 m		7 m		1 m		15 m		7 m		1 m	
			75% Load	100% Load	75% Load	100% Load	75% Load	100% Load	75% Load	100% Load	75% Load	100% Load	75% Load	100% Load
DE9.5E3	Prime	90	55.5	56.5	61.5	62.5	73.1	74.5	56.9	56.7	62.9	62.7	74.4	74.3
	Standby	90	55.7	56.8	61.7	62.8	73.5	75.0	56.8	56.6	62.8	62.6	74.3	74.3
DE13.5E3	Prime	88	52.7	53.9	58.7	59.9	70.8	71.9	55.0	56.0	61.0	62.0	72.3	74.0
	Standby	88	53.1	54.5	59.1	60.5	71.1	72.4	55.3	56.4	61.3	62.4	72.7	74.6
DE18E3	Prime	91	58.9	59.4	64.9	65.4	75.3	75.9	60.6	61.3	66.6	67.3	77.9	78.7
	Standby	91	59.0	59.6	65.0	65.6	75.5	76.2	60.8	61.6	66.8	67.6	78.1	79.1
DE22E3	Prime	91	59.2	59.9	65.2	65.9	75.7	76.6	61.3	62.7	67.3	68.7	78.7	80.2
	Standby	91	59.4	60.2	65.4	66.2	76.0	77.0	61.7	63.3	67.7	69.3	79.1	81.0
DE7.5E3S	Prime	90	55.5	56.5	61.5	62.5	73.1	74.5	56.9	56.7	62.9	62.7	74.4	74.3
	Standby	90	55.7	56.8	61.7	62.8	73.5	75.0	56.8	56.6	62.8	62.6	74.3	74.3
DE11E3S	Prime	88	52.7	53.9	58.7	59.9	70.8	71.9	55.0	56.0	61.0	62.0	72.3	74.0
	Standby	88	53.1	54.5	59.1	60.5	71.1	72.4	55.3	56.4	61.3	62.4	72.7	74.6
DE14E3S	Prime	91	58.9	59.4	64.9	65.4	75.3	75.9	60.6	61.3	66.6	67.3	77.9	78.7
	Standby	91	59.0	59.6	65.0	65.6	75.5	76.2	60.8	61.6	66.8	67.6	78.1	79.1
DE16E3S	Prime	91	59.2	59.9	65.2	65.9	75.7	76.6	61.3	62.7	67.3	68.7	78.7	80.2
	Standby	91	59.4	60.2	65.4	66.2	76.0	77.0	61.7	63.3	67.7	69.3	79.1	81.0

## DIMENSIONS AND WEIGHTS



Generating Set Model	A: mm (in)	B: mm (in)	C: mm (in)	D*: mm (in)	Weight: kg (lb)	Fuel Tank Fillable Capacity: l (US gal)
DE9.5E3	1704 (67.1)	876 (34.5)	1268 (49.9)	884 (34.8)	575 (1267.7)	55.0 (14.5)
DE13.5E3	1704 (67.1)	876 (34.5)	1268 (49.9)	884 (34.8)	650 (1433.0)	55.0 (14.5)
DE18E3	1704 (67.1)	876 (34.5)	1268 (49.9)	884 (34.8)	706 (1556.5)	55.0 (14.5)
DE22E3	1704 (67.1)	876 (34.5)	1268 (49.9)	884 (34.8)	719 (1585.1)	55.0 (14.5)
DE7.5E3S	1704 (67.1)	876 (34.5)	1268 (49.9)	884 (34.8)	575 (1267.7)	55.0 (14.5)
DE11E3S	1704 (67.1)	876 (34.5)	1268 (49.9)	884 (34.8)	650 (1433.0)	55.0 (14.5)
DE14E3S	1704 (67.1)	876 (34.5)	1268 (49.9)	884 (34.8)	706 (1556.5)	55.0 (14.5)
DE16E3S	1704 (67.1)	876 (34.5)	1268 (49.9)	884 (34.8)	719 (1585.1)	55.0 (14.5)

Net weight with lube oil, and coolant, no fuel. \*Clearance required both sides.

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