

# DIESEL GENERATOR SET



## DE18E3 (B Series)



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	16.5 kVA 13.2 kW	18.0 kVA 14.4 kW
220/127V, 60 Hz	20.0 kVA 16.0 kW	22.0 kVA 17.6 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® C2.2	
<b>Generator Model:</b>	LC1114H	
<b>Control Panel:</b>	TCP 1000	
<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 Consumption, Prime: l/hr (US gal/hr)</b>	4.4 (1.2)	5.2 (1.4)
<b>Fuel Consumption, Standby : l/hr (US gal/hr)</b>	4.8 (1.3)	5.7 (1.5)

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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:</b> l(cu.in)	2.2 (135.2)
<b>Bore/Stroke:</b> mm(in)	84.0 (3.3)/100.0 (3.9)
<b>Moment of Inertia:</b> kgm <sup>2</sup> (lb.in <sup>2</sup> )	2.72 (9308)
<b>Engine Electrical System:</b>	
-Voltage/Ground:	12/Negative
-Battery Charger Amps:	65
<b>Weight:</b> kg (lb) - Dry:	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:</b> kPa (in H <sub>2</sub> O)	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:</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)	6.5 (1.7)	6.5 (1.7)
<b>Water Pump Type:</b>	Centrifugal	
<b>Heat Rejected to Water &amp; Lube Oil:</b> kW (Btu/min)		
	-Standby: 15.2 (864)	17.2 (978)
	-Prime: 13.7 (779)	15.5 (881)
<b>Heat Radiation to Room:</b> Heat radiated from engine and alternator		
kW (Btu/min)	-Standby: 5.8 (330)	6.3 (358)
	-Prime: 4.8 (273)	5.4 (307)
<b>Radiator Fan Load:</b> kW (hp)	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:</b> l (US gal):	10.6 (2.8)
<b>Oil Pan l:</b> (US gal):	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:</b> RPM	1500	1800
<b>Gross Engine Power:</b> kW (hp)		
-Standby:	18.0 (24.0)	21.5 (29.0)
-Prime:	16.2 (22.0)	19.4 (26.0)
<b>BMEP:</b> kPa (psi)		
-Standby:	649.0 (94.2)	647.0 (93.8)
-Prime:	585.0 (84.8)	583.0 (84.6)
<b>Regenerative Power:</b> kW	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:</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	4.8 (1.3)	4.4 (1.2)	3.4 (0.9)	2.6 (0.7)
60 Hz	5.7 (1.5)	5.2 (1.4)	4.0 (1.1)	3.1 (0.8)
<b>Standby</b>				
50 Hz	4.8 (1.3)	3.7 (1.0)	2.7 (0.7)	
60 Hz	5.7 (1.5)	4.4 (1.2)	3.3 (0.9)	
(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)	1.49 (0.440)
<b>Silencer Noise Reduction</b>		
<b>Level:</b> dB	19.6	11.5
<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: 3.2 (114)	4.3 (151)
	-Prime: 3.0 (105)	3.9 (138)
<b>Exhaust Gas Temperature:</b> °C (°F)		
	-Standby: 413 (776)	459 (858)
	-Prime: 364 (687)	396 (745)

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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	38	36	33					36
Reactances: Per Unit								
Xd	2.330	2.510	2.780					3.010
X'd	0.210	0.220	0.250					0.270
X''d	0.103	0.111	0.123					0.134

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:	LC1114H
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:	3.1 (176)

# DIESEL GENERATOR SET



## Technical Data

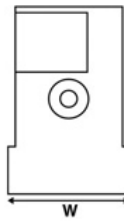
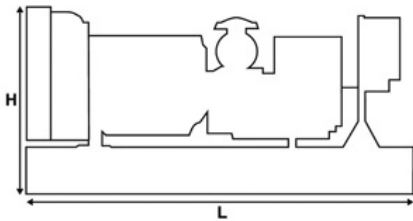
Voltage 50 Hz	Prime		Standby	
	kVA	kW	kVA	kW
415/240V	16.5	13.2	18.0	14.4
400/230V	16.5	13.2	18.0	14.4
380/220V	16.5	13.2	18.0	14.4

Voltage 60 Hz	Prime		Standby	
	kVA	kW	kVA	kW
220/127V	20.0	16.0	22.0	17.6

## Weights & Dimensions

Weights: kg (lb)	
Net (+ lube oil)	369 (814)
Wet (+ lube oil & coolant)	376 (829)

Dimensions: mm (in)	
Length	1500 (59.1)
Width	860 (33.9)
Height	895 (35.2)



**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.**



Picture shown may not represent actual configuration

## Sound Attenuated Enclosures Level 1, Level 2 & Level 3

6.8 – 22 kVA (B Series) Range

The compact design of the 6.8 – 22 kVA SA Level 1, Level 2 and Level 3 enclosures range provides the flexibility of optimum sound attenuation depending on requirements. Designed on modular principles, the enclosures will have lift off doors or vertically hinged doors providing optimal service and maintenance access.

The enclosures are constructed with galvanised steel, designed to resist corrosion and handling damage. Developed through continuing research and development by our specialist engineers, the enclosures are weather protective and incorporate internally mounted exhaust silencers.

All of the sound attenuated 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

- Optional side hinged doors on both sides of the enclosure
- Optional lift off only doors on both sides of the enclosure
- Coolant drain piped to baseframe, exterior to the enclosure

### Security and Safety

- Control panel viewing via large viewing window
- Emergency stop push button mounted on enclosure exterior
- Cooling fan and battery charging alternator fully guarded
- Exhaust silencing system totally enclosed for operator safety

### Transportability

- Drag points on baseframe facilitating handling from both sides

## Sound Pressure Levels (dBA) – SA Level 1

Generating Set Model	Duty	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	65	66	71	72	82	84	68	69	74	75	85	87
	Standby	65	67	71	73	82	85	68	70	74	76	85	87
DE9.5E3 (EUR1)	Prime	65	66	71	72	82	84	68	69	74	75	85	87
	Standby	65	67	71	73	82	85	68	70	74	76	85	87
DE13.5E3	Prime	65	67	71	73	83	84	70	71	76	77	86	88
	Standby	65	68	71	74	83	85	70	72	76	78	87	88
DE16E0	Prime	66	69	72	75	84	85	–	–	–	–	–	–
	Standby	67	70	73	76	84	86	–	–	–	–	–	–
DE18E3	Prime	64	66	70	72	80	82	67	69	73	75	84	85
	Standby	64	66	70	72	81	83	68	69	74	75	84	86
DE22E3	Prime	65	67	71	73	82	84	68	69	74	75	84	86
	Standby	66	69	72	75	82	86	68	70	74	76	85	87
DE7.5E3S	Prime	65	66	71	72	82	84	68	69	74	75	85	87
	Standby	65	67	71	73	82	85	68	70	74	76	85	87
DE11E3S	Prime	65	67	71	73	83	84	70	71	76	77	86	88
	Standby	66	68	72	74	83	85	70	72	76	78	87	88
DE14E3S	Prime	64	66	70	72	80	82	67	68	73	74	84	85
	Standby	64	66	70	72	81	83	68	69	74	75	84	86
DE16E3S	Prime	65	67	71	73	81	84	68	69	74	75	84	86
	Standby	65	68	71	74	82	85	68	70	74	76	85	87

## Sound Pressure Levels (dBA) – SA Level 2

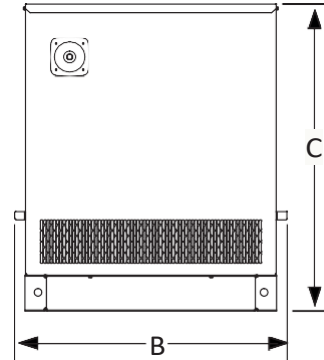
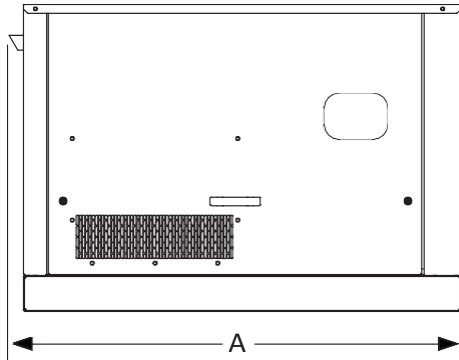
Generating Set Model	Duty	50 Hz						60 Hz					
		15 m		7 m		1 m		15 m		7 m		1 m	
		75% Load	100% Load	75% Load	100% Load	75% Load	100% Load	75% Load	100% Load	75% Load	100% Load	75% Load	100% Load
DE9.5E3	Prime	54	55	60	61	70	71	57	58	63	64	72	73
	Standby	55	56	61	62	70	72	57	58	63	64	72	74
DE9.5E3 (EUR1)	Prime	54	55	60	61	70	71	57	58	63	64	72	73
	Standby	55	56	61	62	70	72	57	58	63	64	72	74
DE13.5E3	Prime	55	56	61	62	71	72	58	59	64	65	73	73
	Standby	55	56	61	62	71	72	58	59	64	65	73	74
DE16E0	Prime	55	57	61	63	71	72	–	–	–	–	–	–
	Standby	56	58	62	64	72	73	–	–	–	–	–	–
DE18E3	Prime	57	58	63	64	74	74	60	61	66	67	76	76
	Standby	57	59	63	65	74	75	60	61	66	67	76	76
DE22E3	Prime	58	60	64	66	74	75	60	61	66	67	76	76
	Standby	58	61	64	67	74	76	61	61	67	67	76	76
DE7.5E3S	Prime	54	55	60	61	70	71	57	58	63	64	72	73
	Standby	55	56	61	62	70	72	57	58	63	64	72	74
DE11E3S	Prime	55	56	61	62	71	72	58	59	64	65	73	73
	Standby	55	57	61	63	71	72	58	59	64	65	73	74
DE14E3S	Prime	57	58	63	64	74	74	60	61	66	67	76	76
	Standby	57	59	63	65	74	75	60	61	66	67	76	76
DE16E3S	Prime	57	59	63	65	74	75	60	61	66	67	76	76
	Standby	58	60	64	66	74	76	61	61	67	67	76	76

## Sound Pressure Levels (dBA) – SA Level 3

Generating Set Model	Duty	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	51	52	57	58	70	71	52	53	58	59	68	72
	Standby	51	53	57	59	70	72	52	54	58	60	69	73
DE9.5E3 (EUR1)	Prime	51	52	57	58	70	71	52	53	58	59	68	72
	Standby	51	53	57	59	70	72	52	54	58	60	69	73
DE13.5E3	Prime	52	53	58	59	70	71	53	54	59	60	69	71
	Standby	52	53	58	59	70	72	53	54	59	60	69	72
DE16E0	Prime	52	54	58	60	71	72	–	–	–	–	–	–
	Standby	53	54	59	60	71	72	–	–	–	–	–	–
DE18E3	Prime	53	54	59	60	71	72	54	55	60	61	71	72
	Standby	53	54	59	60	71	73	54	55	60	61	71	73
DE22E3	Prime	54	55	60	61	72	73	54	55	60	61	71	73
	Standby	54	55	60	61	72	74	55	56	61	62	72	74
DE7.5E3S	Prime	51	52	57	58	70	71	52	53	58	59	68	72
	Standby	51	53	57	59	70	72	52	54	58	60	69	73
DE11E3S	Prime	52	53	58	59	70	71	53	54	59	60	69	71
	Standby	52	53	58	59	70	72	53	54	59	60	69	72
DE14E3S	Prime	53	54	59	60	71	72	54	55	60	61	71	72
	Standby	53	54	59	60	71	72	54	55	60	61	71	72
DE16E3S	Prime	53	54	59	60	71	73	54	55	60	61	71	73
	Standby	54	55	60	61	72	73	55	56	61	62	71	74



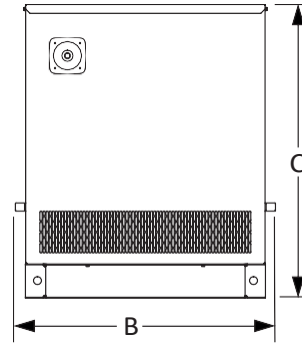
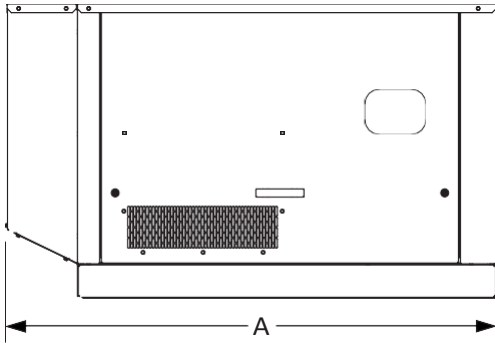
Dimensions and Weights – SA Level 1



Generating Set Model	A: mm (in)	B: mm (in)	C: mm (in)	Weight*: kg (lb)
DE9.5E3	1550 (61.0)	935 (36.8)	1055 (41.5)	340 (750)
DE9.5E3 (EUR1)	1550 (61.0)	935 (36.8)	1055 (41.5)	347 (765)
DE13.5E3	1550 (61.0)	935 (36.8)	1055 (41.5)	417 (919)
DE16E0	1550 (61.0)	935 (36.8)	1055 (41.5)	444 (979)
DE18E3	1550 (61.0)	935 (36.8)	1055 (41.5)	481 (1060)
DE22E3	1550 (61.0)	935 (36.8)	1055 (41.5)	494 (1089)
DE7.5E3S	1550 (61.0)	935 (36.8)	1055 (41.5)	347 (766)
DE11E3S	1550 (61.0)	935 (36.8)	1055 (41.5)	424 (935)
DE14E3S	1550 (61.0)	935 (36.8)	1055 (41.5)	486 (1071)
DE16E3S	1550 (61.0)	935 (36.8)	1055 (41.5)	494 (1089)

\*Net weight with lube oil, and coolant, no fuel.

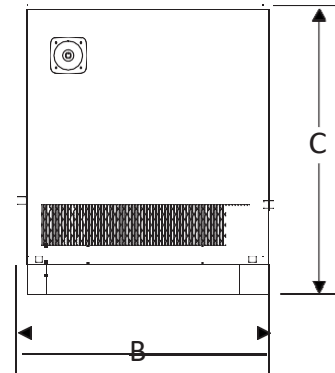
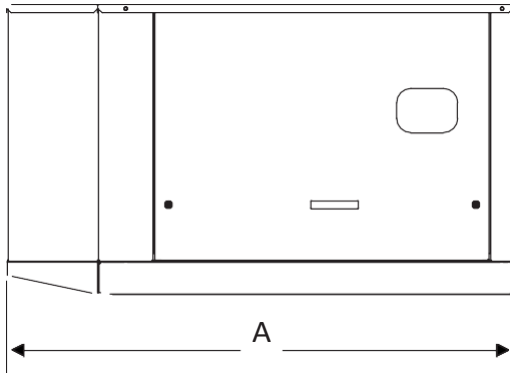
## Dimensions and Weights – SA Level 2



Generating Set Model	A: mm (in)	B: mm (in)	C: mm (in)	Weight*: kg (lb)
DE9.5E3	1755 (69.1)	935 (36.8)	1055 (41.5)	391 (863)
DE9.5E3 (EUR1)	1755 (69.1)	935 (36.8)	1055 (41.5)	398 (877)
DE13.5E3	1755 (69.1)	935 (36.8)	1055 (41.5)	468 (1032)
DE16E0	1755 (69.1)	935 (36.8)	1055 (41.5)	495 (1091)
DE18E3	1755 (69.1)	935 (36.8)	1055 (41.5)	532 (1173)
DE22E3	1755 (69.1)	935 (36.8)	1055 (41.5)	545 (1202)
DE7.5E3S	1755 (69.1)	935 (36.8)	1055 (41.5)	398 (878)
DE11E3S	1755 (69.1)	935 (36.8)	1055 (41.5)	475 (1047)
DE14E3S	1755 (69.1)	935 (36.8)	1055 (41.5)	537 (1184)
DE16E3S	1755 (69.1)	935 (36.8)	1055 (41.5)	545 (1202)

\*Net weight with lube oil, and coolant, no fuel.

### Dimensions and Weights – SA Level 3



Generating Set Model	A: mm (in)	B: mm (in)	C: mm (in)	Weight*: kg (lb)
DE9.5E3	1830 (72.0)	935 (36.8)	1055 (41.5)	401 (885)
DE9.5E3 (EUR1)	1830 (72.0)	935 (36.8)	1055 (41.5)	408 (899)
DE13.5E3	1830 (72.0)	935 (36.8)	1055 (41.5)	478 (1054)
DE16E0	1830 (72.0)	935 (36.8)	1055 (41.5)	505 (1113)
DE18E3	1830 (72.0)	935 (36.8)	1055 (41.5)	542 (1195)
DE22E3	1830 (72.0)	935 (36.8)	1055 (41.5)	555 (1224)
DE7.5E3S	1830 (72.0)	935 (36.8)	1055 (41.5)	408 (900)
DE11E3S	1830 (72.0)	935 (36.8)	1055 (41.5)	485 (1069)
DE14E3S	1830 (72.0)	935 (36.8)	1055 (41.5)	547 (1206)
DE16E3S	1830 (72.0)	935 (36.8)	1055 (41.5)	555 (1224)

\*Net weight with lube oil, and coolant, no fuel.

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