



# Cutler-Hammer

## Residential Standby Generators

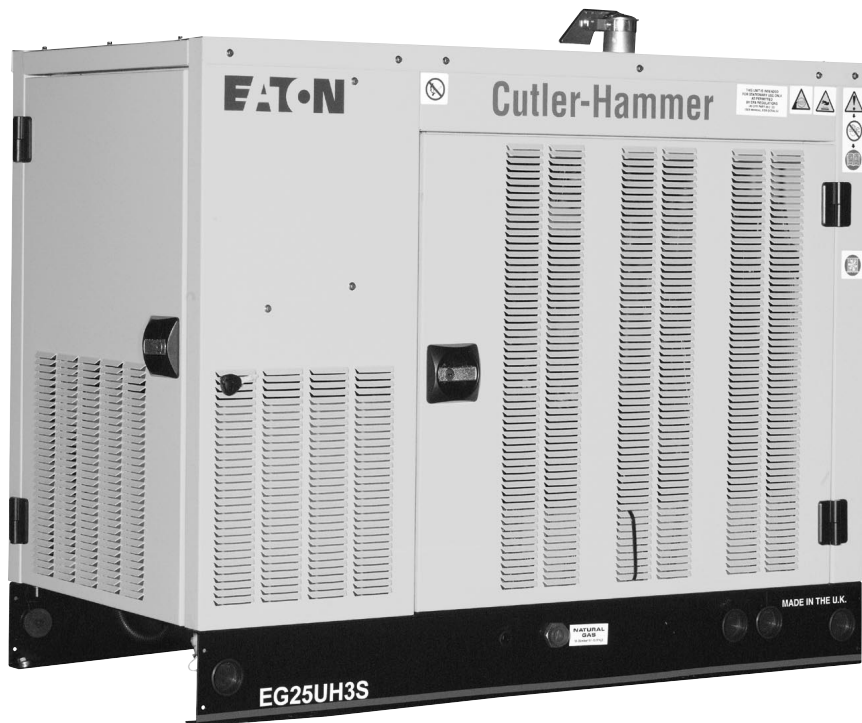
CHGEN10000I (10 kW)

CHGEN15000I (15 kW)

Technical Data

New Information

<i>Description</i>	<i>Page</i>
Product Description . . . . .	2
Features, Functions and Benefits . . . . .	2
Optional Equipment . . . . .	2
Generator Set Dimensions and Weights . . . . .	3
Product Specifications . . . . .	3
Rating Definitions . . . . .	3
Technical Data . . . . .	4



25 kW Shown

## Product Description

LP and Natural Gas Generator Sets from Eaton's electrical business are rated Residential Standby 10 and 15 kW at 60 Hz.

## Features, Functions and Benefits

### Generator Set

- Complete system designed and built at ISO® 9001 certified facilities.
- Factory tested to design specifications at full load conditions.

### Engine

- Governor, Woodward electronic.
- Electrical system, 12 Vdc.
- Cartridge type filters.
- Natural gas fuel system, LP gas options available.
- Gas shutoff valve, solenoid operated.
- Gas pressure regulator.
- Low oil pressure shutdown.

### Generator

- Insulation system, Class H.
- Drip-proof generator air intake (NEMA® Type 2, IP23).
- Electrical design in accordance with BS5000 Part 99, IEC 60034-1, EN61000-6, NEMA MG-1.33, UTE51100.

### Automatic Voltage Regulator

- Voltage within ± 1.0% single-phase at steady state from no load to full load.
- Provides fast recovery from transient load changes.

### Cooling System

- Radiator and cooling fan complete with protective guards.
- Standard ambient temperatures up to 110°F (43°C).
- Coolant heater, 110/120 volts.

### Mounting Arrangement

- Heavy-duty fabricated steel base with lifting points.
- Anti-vibration pads to ensure vibration isolation.
- Coolant and lube oil drains piped to edge of base.
- Complete OSHA guarding.
- Stub-up pipe ready for connection to silencer pipework.

- Fuel line terminated at base with NPT connections.
- Seismic vibration isolators (Zone 4).

### Circuit Breaker

- 2-pole with solid neutral, UL®/CSA® listed.
- NEMA Type 1 steel enclosure, vibration isolated.
- Electrical stub-up area directly below circuit breaker.

### Control System

- Autostart control panel.
- Vibration isolated NEMA Type 1 enclosure with hinged access door.
- Automatic start with three attempts, and Automatic Crank Disconnect with adjustable Start and Stop timers and Fail to Start indication.
- Configurable energize to run function.
- Low oil pressure and high engine temperature shutdown.
- Overspeed and underspeed (frequency) protection.
- Charge fail alarm.
- Two fully configurable auxiliary outputs.

### Enclosure

- Weatherproof enclosure (includes internal silencer system).
- Large cable entry area for installation ease.
- Lockable access doors allow full 180° opening rotation and are removable with 45° opening in confined locations.
- Hinged radiator fill cover.
- Roof outlet exhaust with sealed roof aperture and rain cap.
- Stub-up cover sheets for "rodent proofing."

### Equipment Finish

- All electroplated hardware.
- Anticorrosive protection prior to painting.
- High gloss polyurethane paint for durability and scuff resistance.

### Quality Standards

- UL 2200, BS4999, BS5000, BS5514, IEC60034, EN61000-6, NEMA MG1-33, ISO8528.

## Documentation

- Operation and maintenance manuals provided.
- Wiring diagrams included.
- UL/CSA certification.

## Warranty

- All equipment carries full manufacturer's warranty. Extended warranty terms available.
- One year from date of startup, 18 months from date of shipment.

## Optional Equipment

Some options may not be available on all models. Not all options are listed.

### Silencer System Kit

- Residential exhaust silencer (field installable).

### Engine

- Battery heater.
- Lube oil sump heater, 110/120 volts.
- Battery trickle charger.

### Generator

- Anti-condensation heater.

### Fuel System

- Vaporizer kit.

### Transfer Switches

- 100 ampere NEMA 3R:
  - CHGENLC100ATSR
  - CHGENLC100ATSRSE (Service Entrance)
- 200 ampere NEMA 3R:
  - CHGENLC200ATSR
  - CHGENLC200ATSRSE (Service Entrance)

### Miscellaneous Accessories

- Additional operator's manual pack.

### Extended Warranty

- 24 months:
  - CHGENW2410K (10 kW)
  - CHGENW2415K (15 kW)
- 36 months:
  - CHGENW3610K (10 kW)
  - CHGENW3615K (15 kW)

**Note:** See warranty policy for details of coverage.

## Generator Set Dimensions and Weights

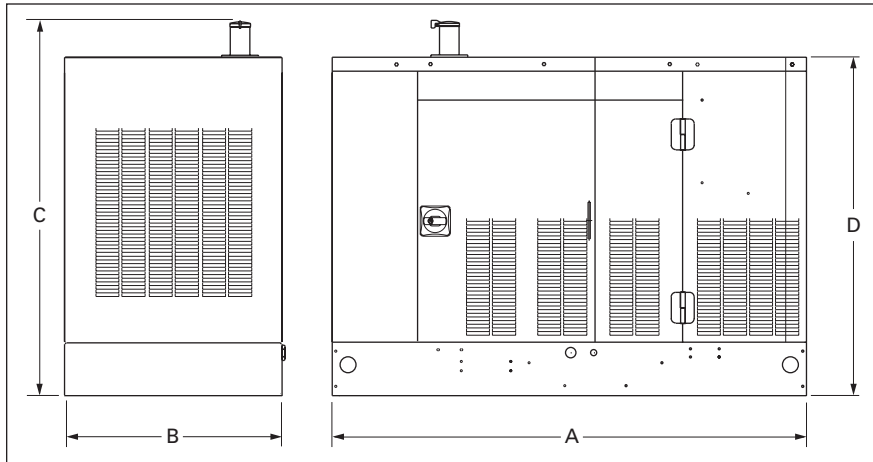


Figure 1. Generator Set Dimensions — see Table 1

Table 1. Generator Set Dimensions in Inches (mm)

A	B	C	D	Weight Lbs. (kg) ①	Catalog Number
53.10 (1348.7)	28.00 (711.2)	46.90 (1191.3)	42.50 (1079.5)	961 (437)	CHGEN10000I
53.10 (1348.7)	28.00 (711.2)	46.90 (1191.3)	42.50 (1079.5)	994 (452)	CHGEN15000I

① Includes oil and coolant.

**Note:** General configuration not to be used for installation. See specific dimensional drawings for detail.

Table 2. Concrete Pad Dimensions in Inches (mm)

Length	Width	Depth	Catalog Number
59.10 (1501.1)	34.00 (863.6)	7.00 (177.8)	CHGEN10000I
59.10 (1501.1)	34.00 (863.6)	7.00 (177.8)	CHGEN15000I

## Product Specifications

Table 3. Generator Specifications

Specification	Description
Voltage Regulation	±1.0% single-phase at steady state from no load to full load
Frequency	±0.25% for constant load, no load to full load
Waveform Distortion	THD less than 4%
Radio Interference	EN61000-6
Telephone Influence Factor	TIF <50, per NEMA MG 1-32.11
Telephone Harmonic Factor	THF <2%
Stator Winding	2/3 Pitch
Type	Brushless, self-excited, self-regulated, drip-proof, 4-pole, sealed bearings, direct coupled by flexible disk
Insulation	Class H per NEMA MG1-1.66
Temperature Rise	Within Class H limits
Overspeed Capability	125%
Available Voltages	Single-Phase — 240/120, 220/110
Deration	Please consult factory for available outputs
Ratings	At 77°F (25°C), 500 ft. (152.4 m), 60% humidity, 1.0 pf (single-phase)

Table 4. Engine Specifications

Specification	Description
Manufacturer Model Type	HM Ltd. 4ZB1 Isuzu 4-Cycle
Aspiration Cylinder Configuration Displacement — cu in (L)	Natural In-line 4 111 (1.82)
Bore — Inches (mm) Stroke — Inches (mm) Compression Ratio	3.30 (84.0) 3.23 (82.0) 8.5:1
Governor Type Class	Electronic A1
Piston Speed — ft./sec (m/sec) Air Cleaner Type	16.1 (4.92) Dry, light duty, disposable
LP Gas: Engine Speed — rpm Maximum Power at Rated rpm — hp (kW) Standby BMEP — psi (kPa) Standby	1800 29.5 (22.0) 118 (815)
Natural Gas: Engine Speed — rpm Maximum Power at Rated rpm — hp (kW) Standby BMEP — psi (kPa) Standby	1800 26.0 (19.4) 104 (717)

Table 5. Control Panel Specifications

Specification/Description
NEMA 1 steel enclosure with hinged access door.
Vibration isolated mounted Autostart control panel.
Single location customer connector point.
Electrical stub-up area directly below control panel.

Table 6. Recommended Battery Specifications

Specification	Description
<b>Minimum Ratings</b>	
Voltage Cold Cranking Amperes	12 V 440 A
<b>Maximum Dimensions in Inches (mm)</b>	
Length	13.90 (353.1)
Width	6.90 (175.3)
Height	7.50 (190.5)

**Note:** Battery is not included with generator. The above specifications are recommended for use in battery procurement.

## Rating Definitions

**Standby** — Applicable for supplying continuous electrical power (at variable load) in the event of a utility power failure. No overload is permitted on these ratings. The generator is peak rated (as defined in ISO8528-3).

Consult your Eaton representative for more information.

Technical Data

Table 7. Standby Generator Sets CHGEN10000I and CHGEN15000I (Single-Phase) — 1800 rpm/60 Hz

Description	Units	CHGEN10000I		CHGEN15000I	
		LP Gas	Natural Gas	LP Gas	Natural Gas
<b>Ratings</b>					
Kilowatt Power	kW (kVA)	10.0 (10.0)	10.0 (10.0)	15.0 (15.0)	15.0 (15.0)
Amperes at 240 Volts	Amperes	42	42	63	63
<b>Lubricating System</b>					
Type: Full Pressure					
Oil Filter: Spin-On, Full Flow					
Oil Type Required: API CF-4					
Total Oil Capacity	U.S. gal. (L)	1.2 (4.5)	1.2 (4.5)	1.2 (4.5)	1.2 (4.5)
Oil Pan	U.S. gal. (L)	1.1 (4.0)	1.1 (4.0)	1.1 (4.0)	1.1 (4.0)
<b>Fuel System — Generator Set Fuel Consumption</b>					
100% Load	Cfh (m <sup>3</sup> /hr)	57.9 (1.64)	160.0 (4.5)	84.6 (2.4)	234.0 (6.6)
75% Load	Cfh (m <sup>3</sup> /hr)	44.5 (1.3)	123.0 (3.5)	64.5 (1.8)	178.5 (5.1)
50% Load	Cfh (m <sup>3</sup> /hr)	31.1 (0.9)	86.0 (2.4)	44.5 (1.3)	123.0 (3.5)
<b>Engine Electrical System</b>					
Ignition System: Electronic, Distributorless					
Voltage/Ground: 12/Negative					
Battery Charging Generator Ampere Rating at 240 V	Amperes	45	45	45	45
<b>Cooling System</b>					
Water Pump Type: Centrifugal					
Radiator System Capacity Incl. Engine	U.S. gal. (L)	1.6 (6.1)	1.6 (6.1)	1.6 (6.1)	1.6 (6.1)
Maximum Coolant Static Head	Ft H <sub>2</sub> O (m H <sub>2</sub> O)	8.9 (2.7)	8.9 (2.7)	8.9 (2.7)	8.9 (2.7)
Coolant Flow Rate	U.S. gal./min. (L/min.)	11.9 (45)	11.9 (45)	11.9 (45)	11.9 (45)
Minimum Temperature to Engine	°F (°C)	169.0 (76)	169.0 (76)	169.0 (76)	169.0 (76)
Temperature Rise Across Engine	°F (°C)	4.3 (2.4)	4.7 (2.6)	5.0 (2.8)	5.0 (2.8)
Heat Rejected to Coolant at Rated Power	Btu/min. (kW)	645.0 (11.3)	645.0 (11)	943.0 (16.6)	943.0 (16.6)
Total Heat Radiated to Room at Rated Power	Btu/min. (kW)	368.5 (6.5)	368.5 (6.5)	539.0 (9.5)	539.0 (9.5)
Radiator Fan Load	hp (kW)	1.2 (0.9)	1.2 (0.9)	1.2 (0.9)	1.2 (0.9)
<b>Air Requirements</b>					
Combustion Air Flow	Cfm (m <sup>3</sup> /min.)	35.3 (1.0)	35.3 (1.0)	57.2 (1.6)	57.2 (1.6)
Maximum Air Cleaner Restriction	In H <sub>2</sub> O (kPa)	5.9 (1.5)	5.9 (1.5)	5.9 (1.5)	5.9 (1.5)
Radiator Cooling Air (Zero Restriction)	Cfm (m <sup>3</sup> /min.)	2670.0 (75.6)	2670.0 (75.6)	2670.0 (75.6)	2670.0 (75.6)
Generator Cooling Air	Cfm (m <sup>3</sup> /min.)	381.0 (10.8)	381.0 (10.8)	381.0 (10.8)	381.0 (10.8)
Allowable Air Flow Restriction (After Radiator)	In H <sub>2</sub> O (kPa)	0.5 (0.125)	0.5 (0.125)	0.5 (0.125)	0.5 (0.125)
Cooling Air Flow (at Rated Speed) Rate with Restriction	Cfm (m <sup>3</sup> /min.)	2224.0 (63)	2224.0 (63)	2224.0 (63)	2224.0 (63)
<b>Exhaust System</b>					
Maximum Allowable Backpressure	In Hg (kPa)	5.1 (17.3)	5.1 (17.3)	5.1 (17.3)	5.1 (17.3)
Exhaust Flow at Rated kW	Cfm (m <sup>3</sup> /min.)	101.5 (2.9)	110.0 (3.1)	170.5 (4.8)	170.5 (4.8)
Exhaust Temperature at Rated kW — Dry Exhaust	°F (°C)	1039.0 (559)	1062.0 (572)	1100.0 (593)	1133.0 (612)
<b>Generator Set Noise Rating</b> ①					
at 7 Meters	dB(A)	76	76	76	76

① dB(A) levels are for guidance only.

Table 8. Generators CHGEN10000I and CHGEN15000I (Single-Phase — 120/240 Volts)

Description	CHGEN10000I	CHGEN15000I	
<b>Motor Starting Capability (kVA):</b>	Self Excited	13	29
<b>Full Load Efficiencies:</b>	Standby	84.6	87.0
<b>Reactances</b> ② (per unit):	X <sub>d</sub>	1.46	1.25
	X' <sub>d</sub>	0.27	0.22
	X'' <sub>d</sub>	0.131	0.104
	X <sub>q</sub>	0.73	0.62
	X'' <sub>q</sub>	0.187	0.147
<b>Time Constants:</b>	t' <sub>d</sub> = 40 ms t'' <sub>d</sub> = 6 ms	t' <sub>d</sub> = 40 ms t'' <sub>d</sub> = 6 ms	

② Reactances shown are applicable to the LPG standby rating.

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