Power Generation

Gas Engine Powered Generating Sets
315 kWe 50 Hz
331 kWe 60 Hz
QSK19G Series Engines

Standard Genset Features

Single Source Responsibility
Design, manufacture and testing of engine, alternator, control system and complete generating set are all produced by companies within the Cummins Group

International Integrity
Assurance and strength of a worldwide major corporation backing the product

Global Backing
24 hour spares and service availability in 72 countries

Single Source Warranty
Total product guaranteed by Cummins Power Generation

Packaged Self-Contained Units
Integrated unit with built-in anti-vibration system, control panel, starting system and other accessories

Cummins Engine
- Heavy duty 4 cycle water cooled engine
- MCM700/SGM558 full authority electronic management
- Woodward PROACT actuator to drive throttle valve.
- CENSE engine monitoring system

Ready Filled
Every set comes filled with lube oil

Alternator
- Brushless Group-made machine
- Close voltage regulation
- Rotor and exciter impregnated with oil and acid resisting resin
- 12 lead reconnectable
- Exceptional short circuit capability
- Low waveform distortion with non linear loads

Ratings
All kW Power ratings based on a 32¡C ambient temperature reference. Refer to factory for deration for temperatures above 32¡C.

Chassis
Built-in anti-vibration system
Bonded rubber units fitted as standard eliminate need for rubber mats or spring mountings

PCC PowerCommand Control control system
- Microprocessor control
- Integrated voltage regulation
- Superior alternator and genset protection system
- Accurate battery monitoring system
- Totally reliable and proven system

Quality Assurance
Registered Firm Certificate Number FM509 in accordance with:
BS EN ISO 9001

Quality Assurance Schedule 3420/1

One Source — Engine — Alternator — Controls — Generating Set — One Name

Cummins Power Generation, Cummins Engines and Newage Alternators are all part of the same group

Ratings					
Model	50 Hz 1500 rpm 14 bar(g)		Model	60 Hz 1800 rpm 12.4 bar(g)	
	kWe	kVA @ 0.8pf		kWe	kVA @ 0.8pf
GFBA315	315	394	GFBB331	331	414

A Single Source for all Power System Solutions

Specifications

Generator Set Performance

Voltage Regulation
Maintains voltage output to within –1.0%.
At any power factor between 0.8 lagging and unity.
At any variations from No load to Full load.
At any variations from Cold to Hot.
At speed droop variations up to 4.5%.

Frequency Regulation
Isochronous under varying loads from no load to 100% full load.

Random Frequency Variation
Will not exceed –0.25% of its mean value for constant loads — no load to full load.

Waveform
Total harmonic distortion open circuit voltage waveform in the order of 1.5%. Three-phase balanced load in the order of 5.0%.

Telephone Influence Factor (TIF)
TIF better than 50.
THF to BS4999 Part 40 better than 2%.

Alternator Temperature Rise
Class H insulation. Temperature rise up to 125¡C permitted.

Radio Interference
In compliance with BS800 and VDE levels G and N.

Engine

Cummins QSK19G spark ignited lean burn gas combustion engines. Six-cylinder, in-line.

Type
Water cooled, four cycle, turbo charged and aftercooled.

Construction
Four valves per cylinder, forged steel crankshaft and connecting rods, cast iron block, replaceable wet liners.

Starting
24 volt negative earth.

Battery charging
35 amp alternator. Cranking current 610 amps at 0¡C on K engines.

Fuel System
Safety shutdown solenoid valve, pressure regulator valve, manual shut-off valve, dust filter. Flexible fuel line.

Filters
Dry element air filters with restriction indicator and spin-on full flow paper element co-ordination lube oil filters fitted. Spin-on corrosion resistor filter.

Cooling
Separate LT and HT cooling circuits.
Options of 40¡C or 50¡C ambient radiator.

Ignition
Individual Altronic coils
Options of 40¡C or 50¡C ambient radiator.

Alternator

Type
Brushless, single bearing, revolving field, 4-pole, drip proof, screen protected.
Class H insulation.
Enclosed to IP22 (NEMA 1) standard.
IC 01 cooling system.
Fully interconnected damper winding.
AC exciter and rotating rectifier unit.
Epoxy coated stator winding.
Rotor and exciter impregnated with tropical grade insulating oil and acid resisting polyester resin. Dynamically balanced rotor to BS5625 grade 2.5.
Sealed for life bearings.
Layer wound mechanically wedged rotor.

Exciter
Triple dipped in moisture, oil and acid resisting polyester varnish and coated with anti-tracking varnish.
PMG self-exciting.
Output windings with 2/3 pitch for improved harmonics and paralleling ability.
Close coupled engine/alternator for perfect alignment.

Compliance Standards

To BS4999/5000 pt 99,
VDE 0530, UTE5100,
NEMA MG1-22, CEMA,
IEC 34, CSA A22.2,
AS1359, BSS5514,
ISO 3046 and ISO 8528

Chassis

Fabricated and welded steel chassis
Built-in anti-vibration mountings

Finish
Etch undercoated and finished in high gloss durable green

General
Complete set of operating and instruction manuals

Generator Set Options

Engine
- ☐ Heavy duty air cleaner
- ☐ Coolant heater and thermostat
- ☐ Lead acid batteries, cable and fitted tray
- ☐ NiCad batteries
- ☐ Sump drain pump
- ☐ Oil and water drain taps
- ☐ Automatic sump oil make-up valve
- ☐ Flexible engine connections
- ☐ CE Compliance (guarding)
- ☐ Exhaust temperature monitoring
- ☐ Tool kit

Cooling
- ☐ 40¡C ambient radiator
- ☐ 50¡C ambient radiator
- ☐ Remote radiator cooling (built to order)
- ☐ Oil temperature indication
- ☐ Heat recovery equipment (water and exhaust gas)

Fuel System
- ☐ Gas flow meter

Alternator
- ☐ Anti-Condensation heater
- ☐ Thermistors
- ☐ 105¡C rise alternator

Exhaust System
- ☐ Industrial type silencer
- ☐ Residential type silencer
- ☐ Length of flexible exhaust and bellows

Generator Set
- ☐ Weather protective enclosures
- ☐ Silenced enclosures

Control Panel
- ☐ See separate list on Control Panel page
- ☐ 3 or 4 pole circuit breaker
- ☐ Battery charger 5 amp or 10 amp
- ☐ CE Compliance
- ☐ Cable entrance box

PowerCommand Control (PCC)

PCC PowerCommand Control
standard configuration with optional contactor buttons shown

PowerCommand® Control Control with AmpSentry™ Protection

- Integrated automatic voltage regulator
- AmpSentry Protection guards the electrical integrity of the alternator and power system from the effects of overcurrent, over/under voltage, under frequency and overload conditions
- Control components designed to withstand the vibration levels typical in generator sets

Standard Control Description

- Analog % of current meter (amps)
- Analog AC frequency meter
- Analog AC voltage meter
- Analog % of load meter (kW)
- Cycle cranking control
- Digital display panel
- Emergency stop switch
- Idle mode control
- Menu switch
- Panel backlighting
- Remote starting
- Reset switch
- Run-Off-Auto switch
- Sealed front panel, gasketed door
- Self diagnostics
- Separate customer interconnection box
- Voltmeter/Ammeter phase selector switch

Standard Performance Data

AC Alternator Data

- Current by Phase
- Kilowatts
- Kilowatt Hours
- Power Factor
- Voltage Line to Line
- Voltage Line to Neutral

Engine Data

- Battery Voltage
- Coolant Temperature
- Engine Running Hours
- Engine Starts counter
- Oil Pressure
- RPM
- Oil Temperature

EMC Compliance

The PCC control system meets EMC Shield Regulations.

Standard Protection Functions

Warnings

- High Coolant Temperature
- High DC Voltage
- Low Coolant Temperature
- Low DC Voltage
- Low Oil Pressure
- Over Current
- Oil Pressure Sender Fault
- Temperature Sender Fault
- Overload Load Shed Contacts
- Temperature Sender Fault
- Up to Four Customer Fault Inputs
- Weak Battery

Shutdowns

- Emergency Stop
- Fail to Crank
- Low Coolant Level (option for alarm only)
- Low Oil Pressure
- Magnetic Pickup Failure
- Overcrank
- Overcurrent
- Overspeed
- Short Circuit
- Underfrequency
- High/Low AC Voltage

Disconnector Switch*

The addition of a circuit breaker is considered unnecessary when PowerCommand with Amp Sentry protection is fitted. For isolation purposes a switch disconnector can be supplied and mounted in the normal circuit breaker position on either side of the control panel.

Voltage Regulation

–0.5% with PowerCommand fitted.

Options

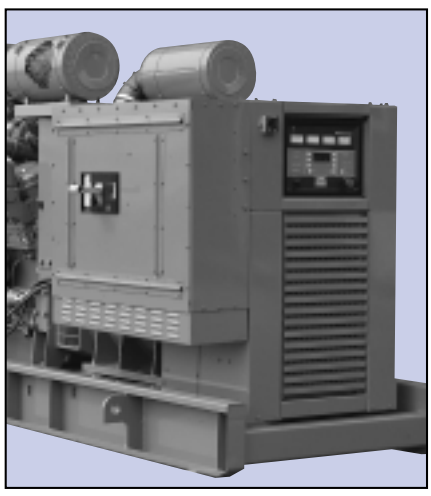
Control panel PowerCommand options

- Audible alarm and shutdown
- Key switch-operating mode
- Shutdown alarm-relay
- Running relays 4 pole D.T.
- Earth fault. Shutdown
- High alternator temperature alarm/shutdown
- PowerCommand Digital Paralleling

Cummins Optional Network Communications

- Echelon LonWorks multidrop communication. Communication network up to 5000 feet (1523 m) in length
- Allows for local and remote communications with PowerCommand network products
- Power system monitoring and control using PowerCommand software
- Flexible for interface with other manufacturers control and monitoring systems

Other PowerCommand Control options are available



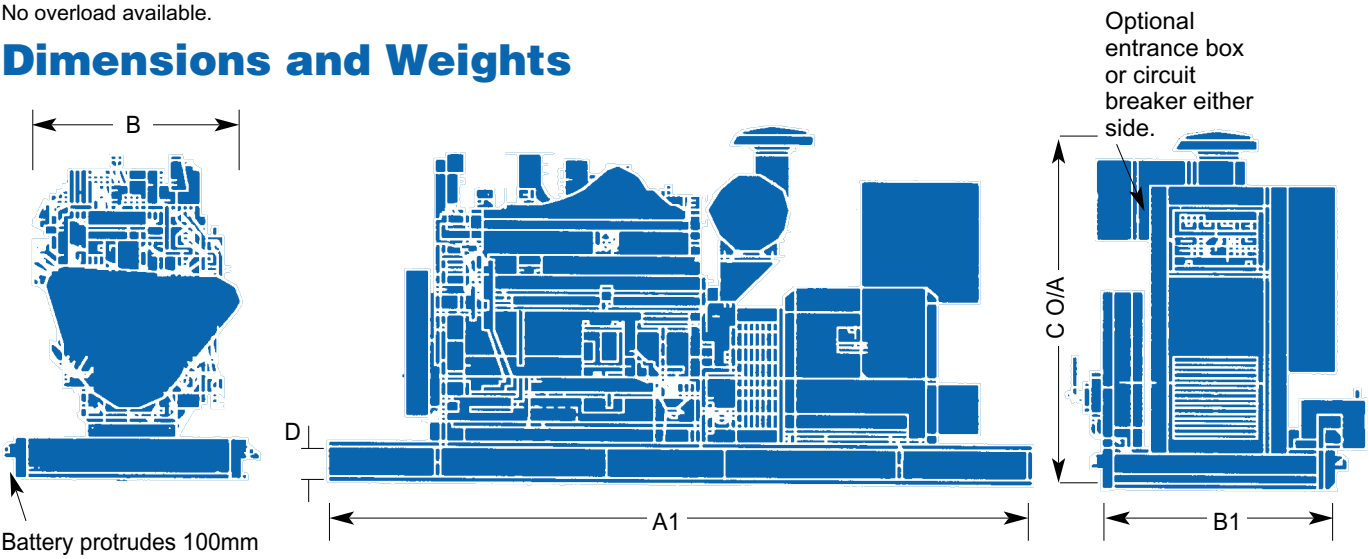
Circuit breaker can be fitted either side of generator set.

Technical Data

Genset Data	50 Hz	60 Hz
Model	GFBA315	GFBB331
Continuous Duty Set Output	315/394 kWe/kVA @ 0.8pf	331/414 kWe/kVA @ 0.8pf
Alternator voltage regulation	+/-1%	+/-1%
Alternator insulation class	IP22	IP22
Total heat rejected to ambient	41 kWth	43 kWth
Alternator insulation/temp rise	H/F	H/F
Battery Capacity	190 A/Hr	190 A/Hr
Engine Data		
Engine Model	QSK 19G	QSK 19G
Bore	159 mm	159 mm
Stroke	159 mm	159 mm
Capacity	19 Litres	19 Litres
Cylinder Configuration	6 in line	6 in line
Aspiration	Turbocharged and Aftercooled	Turbocharged and Aftercooled
RPM	1500	1800
Compression Ratio	11:1	11:1
Brake Mean Effective Pressure	14.0 Bar g	12.4 Bar g
Effective mechanical output with engine driven pumps	335 kWm	350 kWm
Max single step load acceptance	115 kWm	122 kWm
Energy input (measured)	882 kW	1057 kW
Electrical efficiency	35.7%	33.1%
Mechanical efficiency	37.9%	35.1%
Exhaust temp — continuous 100% load	530¡C	530¡C
Exhaust gas flow — continuous 100% load	0.6 kg/sec	0.6 kg/sec
Coolant capacity	91 Litres	91 Litres
Lubricating oil capacity	125 Litres	125 Litres
Aspiration air	0.58 kg/sec	0.58 kg/sec

Ratings in accordance with ISO 8528, BS5514 at a maximum ambient temperature of 32¡C and a methane number above 75.
No overload available.

Dimensions and Weights



	Dimensions and Weights (mm)			Set Weight kg Dry	Set Weight kg Wet
	A	B	C		
Without bed mounted radiator	3490	1266	1792	3856	3990
With bed mounted radiator	3490	1266	1792	4136	4270

Dimensions and weights are for **guidance** only. Do not use for installation design. Ask for certified drawings on your specific application.
Specifications may change without notice.

See your distributor for more information.

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Standard and custom made generating sets from 30 kVA to 2500 kVA