Power Generation

Diesel Powered Generating Sets 704 kW - 825 kW 60 Hz QSK23 Series Engine

Standard Genset Features

Cummins¤ Heavy-Duty Engine
- Rugged 4-cycle industrial diesel engine delivers reliable power and low emissions.
- Full authority engine

Alternator
- Low reactance 2/3 pitch
- Class H insulation, IP 23
- 12 Lead Reconnectable
- Low voltage distortion with non-linear loads

Permanent Magnet Generator (pmg)
- Enhanced motor starting
- Fault-clearing short circuit capability
- Excitation system isolated from non-linear loads

Full Load Pick-Up
- PowerCommand¤ Gensets accept 100% of full nameplate standby rating in one step, in compliance with NFPA110

Single-Source Responsibility
- Design, manufacture and test of all major set components and accessories by Cummins Power Generation and affiliated companies

Single-Source Warranty
- All generator set components and systems are covered by one year prime or two year standby warranty
- Optional extended warranty programs available

PowerCommand System Control Features

Integrated Control System
- Microprocessor control system
- Reliable and optimum genset performance
- Integrated governor and voltage regulation system
- RFI/EMI and surge tested and approved

Alarm and Status Message Display
- Information on all critical parameters of the genset

Ampsentry“ Protection
- Power management system that guards the electrical integrity of the alternator and power system from the effects of overcurrent, over/under voltage, under frequency and overload conditions

Battery Monitoring System
- Battery load test each time the engine is started
- Alarm for weak battery condition
- Monitors the battery system for low and high voltage

AC Output Metering
- RMS digital metering
- Analogue metering indication of operating trends

Genset Monitoring
- Monitors status of all engine and alternator functions
- Digitally displays status of all engine and alternator functions
- Monitors and detects engine sender failures

UL508 Listed Control Panel
- Single-membrane panel and gasketed enclosure

Smart Starting Control System
- Multi-functional digital control system integrates fuel ramping and field excitation to minimise frequency and voltage overshoot and limit black smoke

Optional PowerCommand Digital Paralleling Control
- The PowerCommand Control can be equipped to provide digital paralleling controls for synchronising and load sharing on-set

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

60 Hz Ratings				
Model Prime	**Prime kW** (kVA)	**Model Standby**	**Standby kW** (kVA)	**Engine Model**
704 DQCB	**704** (880)	**779 DQCB**	**779** (974)	**QSK23G3**
744 DQCC	**744** (930)	**825 DQCC**	**825** (1031)	**QSK23G3**

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 QSK23G3 direct injection engines. Six-cylinder, in-line. 23.15 litres.

Type
Water cooled, four cycle, turbo charged and air to air 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 900 amps at 0¡C.

Fuel System
24 volt fail safe fuel actuator. Spin-on element fuel filters. Cummins HPI - TP fuel injection system with integral electronic governor. Dual flexible fuel lines and connectors. Fuel/water separator.

Filters
Dry element air filters with restriction indicator and spin-on combination element oil filter with full flow and bypass filteration. Spin on corrosion resistor filter.

Cooling
40¡C radiator as standard with 50¡C ambient as option.

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.
Sealed solid state automatic voltage regulator — self-exciting, self-regulating.
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, ISO 8528

Chassis

Fabricated and welded steel chassis
Anti vibration mounts

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
- Tool kit
- Lead acid batteries, cable and fitted tray
- NiCad batteries
- Sump drain pump
- Oil and water drain taps
- CE Compliance (guarding)
- Exhaust temperature monitoring

Cooling
- Oil temperature indication

Alternator
- Anti-Condensation heater
- Thermistors

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

Fuel System
- Hand fuel transfer pump
- Automatic fuel transfer pump
- Free-standing 450, 900 and 1350 litre fuel tanks with stand
- Fuel tank level switch
- High fuel level warning
- Low fuel level warning
- Low fuel level shutdown

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

Technical Data

QSK23 Generating Sets – 60 Hz

	Prime	Standby	Prime	Standby
Ratings kW (kVA)	744 (930)	825 (1031)	704 (880)	779 (974)
Model	744 DQCC	825 DQCC	704 DQCB	779 DQCB
Engine Model	QSK23G3	QSK23G3	QSK23G3	QSK23G3
Aspiration	Turbocharged and Air to Air After Cooled	Turbocharged and Air to Air After Cooled	Turbocharged and Air to Air After Cooled	Turbocharged and Air to Air After Cooled
Gross Engine Power Output (kWm)	809	895	768	847
BMEP (kPa)	2350	2600	2227	2465
Bore (mm)	170	170	170	170
Stroke (mm)	170	170	170	170
Displacement (L)	23.15	23.15	23.15	23.15
Cylinder Arrangement	6 In-Line	6 In-Line	6 In-Line	6 In-Line
Piston Speed (m/s)	10.3	10.3	10.3	10.3
Compression Ratio	16:1	16:1	16:1	16:1
Lube Oil Capacity (L)	135	135	135	135
Overspeed Limit RPM	2600	2600	2600	2600
Fuel Consumption Load	1/4 | 1/2 | 3/4 | Full	1/4 | 1/2 | 3/4 | Full	1/4 | 1/2 | 3/4 | Full	1/4 | 1/2 | 3/4 | Full
Fuel Consumption l/hr	56 | 97 | 139 | 189	60 | 106 | 154 | 212	55 | 93 | 133 | 176	59 | 101 | 146 | 194
Maximum Fuel Flow (l/h)	684	684	684	684
Maximum Inlet Restriction mm. Hg	203	203	203	203
Maximum Return Restriction mm, Hg	229	229	229	229
Maximum Fuel Inlet Temperature ¡C	70	70	70	70
Maximum Fuel Return Temperature to tank ¡C	71	71	71	71
Coolant Capacity (With Radiator) litres	95.5	95.5	95.5	95.5
Coolant Flow Rate (Engine Jacket) litres/s	10.1	10.1	10.1	10.1
Heat rejection to Engine Jacket Coolant kWm	235	269	223	243
Heat Rejection to Aftercooler kWm	198	223	184	200
Heat Rejection to Fuel kWm	9.1	9.1	9.1	9.1
Heat Rejection to Exhaust kWm	569	656	513	575
Heat Radiated to Ambient (Engine) kWm	76	85	71	78
Max Coolant Friction Head (JW) kPa	48	48	48	48
Maximum Coolant Static Head above crank centerline m	18.3	18.3	18.3	18.3
Max Top Tank Temp (Jacket) ¡C	100	104	100	104
Max Inlet Temp (Aftercooler) ¡C	73	73	73	73
Combustion Air m^3/min	65.64	67.92	63.6	66.18
Maximum Air Cleaner Restriction with clean filter element in. H_2O	381	381	381	381
Alternator Cooling Air m^3/min	117.66	117.66	117.66	117.66
Radiator Cooling Air m^3/min	1092	1092	1092	1092
Max Static Restriction in. H_2O	0.5	0.5	0.5	0.5
Exhaust Gas Flow (l/s)	2773	3056	2640	2977
Exhaust Gas Temperature ¡C	467	514	453	482
Maximum Back Pressure (mm Hg)	76.2	76.2	76.2	76.2
Derating Factors — Engine	RTF	RTF	RTF	RTF

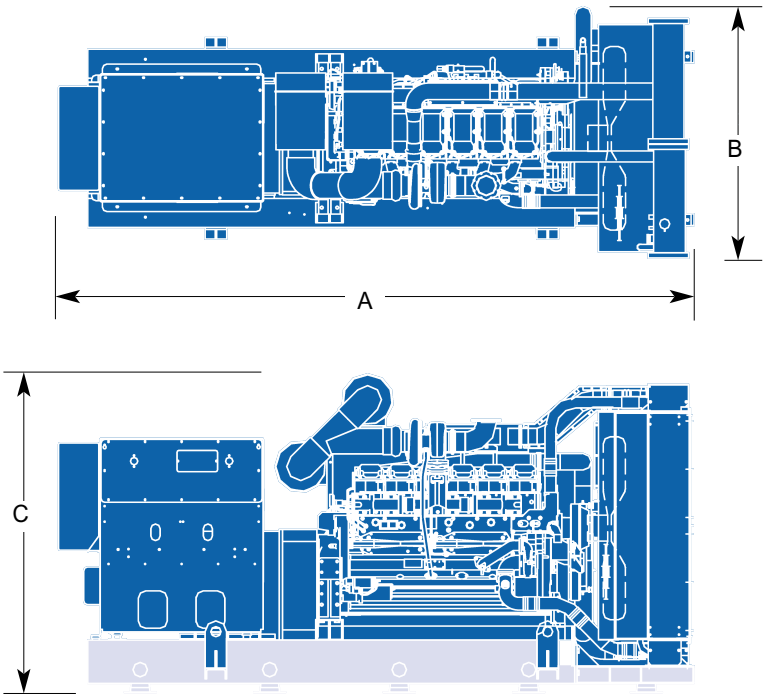
Ratings

Prime: Applicable for supplying power in lieu of commercially purchased power. Prime power is the maximum power available at a variable load for an unlimted number of hours. A 10% overload capability is available for limited time. Nominally rated. (Equivalent to Prime Power in accordance with ISO 8528 and overload power in accordance with ISO3046, AS2789, DIN6271 and BS5514).

Standby: Applicable for supplying emergency power for the duration of normal power interruption. No sustained overload capability is available for this rating. Nominally Rated (equivalent to fuel stop power in accordance with ISO 3046, AS2789, DIN6271 and BS5514).

Prime and standby ratings are outputs at 40…C ambient temperature and 1000 m ASL.

Dimensions and Weights – 60 Hz



Model	Dim A mm (in)	Dim B mm (in)	Dim C mm (in)	Set Weight* dry kg (lbs)	Set Weight* wet kg (lbs)
DQCB	**4414** (173.8)	**1738** (68.4)	**2214** (87.2)	**6527** (14392)	**6668** (14703)
DQCC	**4414** (173.8)	**1738** (68.4)	**2214** (87.2)	**6682** (14734)	**6623** (15045)

*Set weights are **without** sub-base tank. Dimensions and weights are for **guidance** only.
Do not use for installation design. Ask for certified drawings on your specific application.

Power Generation

See your distributor for more information.

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