

## Diesel Powered Generating Sets 690 kW - 925 kW 60 Hz QST30 Series Engines



Model 690 DFHA

### Standard Genset Features

#### Single Source Responsibility

- Design, manufacture and test of all components and accessories are made by Cummins Power Generation and Cummins companies

#### International Integrity

- Assurance and strength of a worldwide, world class corporation

#### Global Backing

- 24 hour spares and service support – in 72 countries

#### Single Source Warranty

- Complete genset covered by Cummins Power Generation comprehensive warranty

#### Packaged Self-Contained Units

- Units with built in antivibration systems with provision for base fuel tank and other accessories

#### Cummins Engine

- Heavy duty 4 cycle water cooled engine
- Electronic governor control

#### Cooling System

- 50°C cooling package

#### Ready Filled

Every set comes filled with lube oil and anti-freeze

#### 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
- Permanent magnet exciter with MX321 AVR fitted as standard

#### Ratings

All kW Power ratings based on a 40°C ambient temperature reference

#### Chassis

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

#### Integrated Control System

- Totally integrated design
- Full AC instrumentation
- Safety shutdowns
- Local or Remote starting
- Emergency stop button (optional)
- CE and non CE options

#### Optional PCC PowerCommand Control System

- Microprocessor control
- Integrates governor and voltage regulation systems
- Superior alternator and genset protection system
- Accurate battery monitoring system
- Totally reliable and proven system



60 Hz Ratings				
Model Prime	Prime kW (kVA)	Model Standby	Standby kW (kVA)	Engine Model
690 DFHA	690 (862)	760 DFHA	760 (950)	QST30G1
736 DFHB	736 (920)	810 DFHB	810 (1012)	QST30G2
835 DFHC	835 (1044)	925 DFHC	925 (1156)	QST30G3

## A Single Source for *all* Power System Solutions

# Specifications

## Generator Set Performance

### Voltage Regulation

Maintains voltage output to within  $\pm 0.5\%$ .  
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  $\pm 0.25\%$  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 3.5%.

### Telephone Influence Factor

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 QST30G1, G2 and G3, twelve-cylinder vee formation, direct injection, four-cycle diesel engines.

### Type

Water cooled, turbocharged and aftercooled.

### Construction

Four valves per cylinder, forged steel crankshaft and connecting rods, cast iron pistons and block, with hardened liners.

### Starting

24 volt negative earth, battery charging 35 amp alternator. Cranking current 1280 amps at 0°C.

### Fuel System

24 volt fail safe solenoid, dual spin-on paper element fuel filters, Cummins electronic fuel injection system with integral electronic governor. Dual flexible fuel lines with connectors.

### Filters

Dry element air filters with restriction indicator and four spin-on paper element full flow and two by pass lube oil filters. Spin on corrosion resistor filter.

### Cooling

High ambient 40°C radiator as standard with 50°C ambient as option. Oil cooler.

## 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 parallelling ability.

Close coupled engine/alternator for perfect alignment.

Permanent magnet exciter with MX321 AVR fitted as standard.

## Compliance Standards

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

## Chassis

Fabricated and welded steel chassis

Built-in anti-vibration mountings

Optional sub-base fuel tank with eight hour capacity, dual flexible fuel lines, dial type

fuel gauge and drain bung

Earthing cables. Lifting points

### 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 with safety element
- 120 volt coolant heater (thermostatically controlled)
- 240 volt coolant heater (thermostatically controlled)
- Low coolant level – warning or shutdown
- Water separator
- Sump evacuation pump
- Exhaust gas temperature monitoring (PCC only)
- Tool kit
- Compliance to TA Luft

### Alternator

- Anti-condensation heater
- 105°C rise alternator

### Control Panel

- Refer to Control Panel literature for details of options
- CE Compliance

### Exhaust System

- Industrial-grade exhaust silencer
- Residential-grade exhaust silencer
- Length of flexible exhaust pipe
- Bellows

### Fuel System

- 8hr sub-base fuel tank and gauge
- Free-standing 450, 900 or 1350 litre fuel tanks
- High/low/shutdowns and warnings
- Electric fuel transfer
- Manual transfer pump

### Generator Set

- Main line circuit breaker
- Auxiliary contacts
- Shunt trip
- Disconnect switch
- Cable entrance box
- Battery charger, 5 amp and 10 amp
- Batteries lead acid or ni-cad
- Audible DC alarm (loose)
- Export box packaging
- CE compliance

### Enclosures

- Silenced and Supersilenced
- Weather protective enclosure with mounted silencer

# Technical Data

## Generating Sets – 60 Hz

Set output	220-480 V 60 Hz	220-480 V 60 Hz	220-480 V 60 Hz
Prime at 40°C ambient	690 kWe 862 kVA	736 kWe 920 kVA	835 kWe 1044 kVA
Model (Prime)	690 DFHA	736 DFHB	835 DFHC
Standby at 40°C ambient	760 kWe 950 kVA	810 kWe 1012 kVA	925 kWe 1156 kVA
Model (Standby)	760 DFHA	810 DFHB	925 DFHC
Engine Make	Cummins	Cummins	Cummins
Model	QST30G1	QST30G2	QST30G3
Cylinders	Twelve	Twelve	Twelve
Engine build	Vee	Vee	Vee
Governor/Class	Electronic/A1	Electronic/A1	Electronic/A1
Aspiration and cooling	Turbo Aftercooled	Turbo Aftercooled	Turbo Aftercooled
Bore and stroke	140 mm x 165 mm	140 mm x 165 mm	140 mm x 165 mm
Compression ratio	14:1	14:1	14:1
Cubic capacity	30.48 Litres	30.48 Litres	30.48 Litres
Starting/Min °C	Unaided/1°C	Unaided/1°C	Unaided/7°C
Battery capacity	254 Ah	254 Ah	254 Ah
Nett Engine output – Prime	718 kWm	759 kWm	910 kWm
Nett Engine output – Standby	796 kWm	844 kWm	1007 kWm
Speed	1800 rpm	1800 rpm	1800 rpm
Alternator voltage regulation	±0.5%	±0.5%	±0.5%
Alternator insulation class	H	H	H
Single load step to NFPAII0	100%	100%	100%
Fuel consumption (Prime) 100% load	186 l/hr	197 l/hr	207 l/hr
Fuel consumption (Standby) 100% load	207 l/hr	219 l/hr	228 l/hr
Lubrication oil capacity	154 Litres	154 Litres	154 Litres
Base fuel tank capacity – open set	1700 Litres	1700 Litres	1700 Litres
Coolant capacity – radiator and engine	168 Litres	168 Litres	168 Litres
Exhaust temp – full load prime	455°C	467°C	464°C
Exhaust gas flow – full load prime	9432 m <sup>3</sup> /hr	10058 m <sup>3</sup> /hr	10800 m <sup>3</sup> /hr
Exhaust gas back pressure max	76 mm Hg	76 mm Hg	76 mm Hg
Air intake – engine	3679 m <sup>3</sup> /hr	3859 m <sup>3</sup> /hr	4284 m <sup>3</sup> /hr
Air flow 40°C ambient*	19.1 m <sup>3</sup> /s	19.1 m <sup>3</sup> /s	TBA
Air flow – radiator (50°C ambient)*	21.9 m <sup>3</sup> /s	21.9 m <sup>3</sup> /s	21.9 m <sup>3</sup> /s
Pusher fan head (duct allowance) 50°C*	13 mm Wg	13 mm Wg	13 mm Wg
Total heat radiated to ambient (prime)	153 kW	166 kW	152 kW
Engine derating – altitude	4% per 300 m above 1524 m	4% per 300 m above 1524 m	4% per 300 m above 1000 m
Engine derating – temperature	2% per 11°C above 40°C (52°C below 305 m)	2% per 11°C above 40°C (52°C below 305 m)	2% per 11°C above 40°C

In accordance with ISO 8528, BS5514.

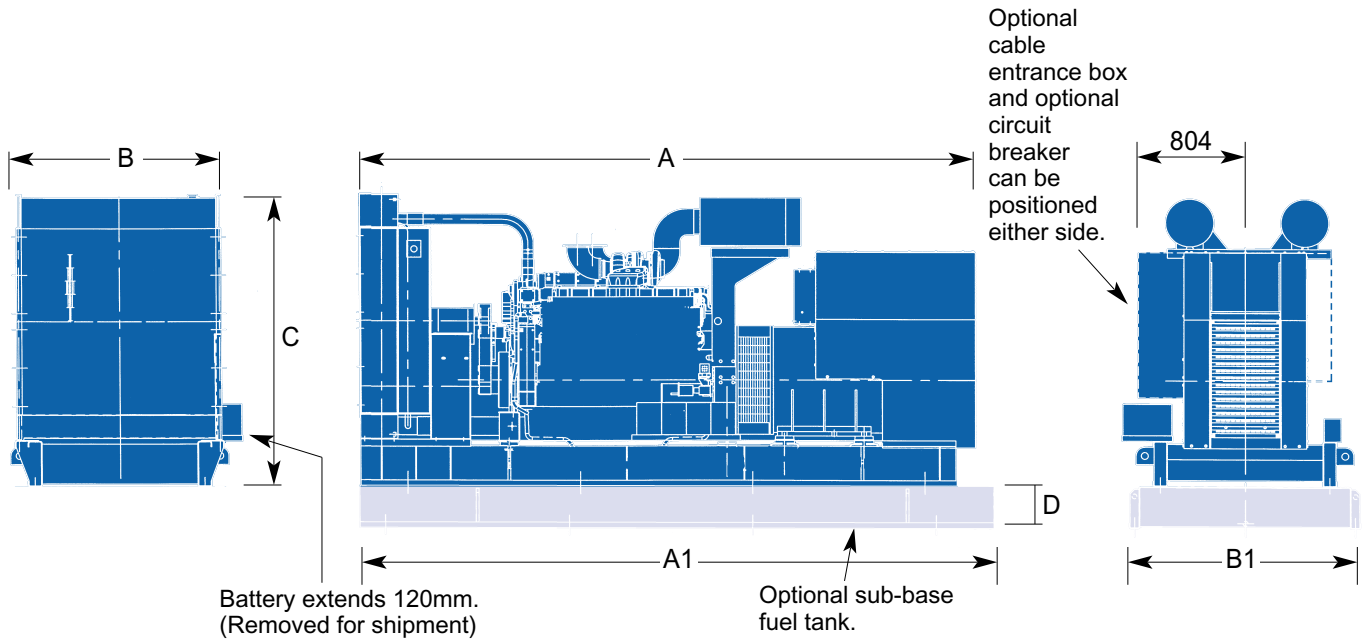
Prime: Continuous running at variable load for unlimited periods with 10% overload available for 1 hour in any 12 hour period.

Standby: Continuous running at variable load for duration of an emergency.

Prime and standby ratings are outputs at 40°C (104°F) ambient temperature.

\*Subject to factory verification.

# Dimensions and Weights – 60 Hz



Model	Engine	Dimensions and Weights (mm/kg)						Set Weight kg Dry	Set Weight kg Wet	Tank Weight kg (dry)	Tank Weight kg (wet)
		A	A1	B	B1	C	D				
DFHA	QST30G1	4297	4460	1442	1640	2092	300	6702	7000	850	2210
DFHB	QST30G2	4297	4460	1442	1640	2092	300	6852	7150	850	2210
DFHC	QST30G3	4391	4460	1442	1640	2092	300	7152	7450	850	2210

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. Specifications may change without notice.



See your distributor for more information.

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