CUMMINS

PROJECT: LHRx08 House Generator.

TECHNICAL SUBMITTAL – FOR INFORMATION.

WORKS PACKAGE: GENERATORS

TECH SUB: EMISSIONS DATA SHEET

TECH SUB REF: LHRx08HG-TS-CMM-06 - Rev-P02

Issue No.	Date	Prepared by:	Details
P01	30/05/2025	G. Crampton	Tech sub issue 1 for approval.
P02	10/06/2025	G. Crampton	Tech Sub revised with site specific information updated.

Approval Status Key:
A = Approved – No Comments
B = Approved for build / minor comments
C = Rejected

Consultant Name	Approval Status	Date	Signed

The data and specifications described in the following documentation (currently available) may be updated, revised or changed at any time without prior notification, or changed due to revised specification of supplied equipment.

CUMMINS C900D5(e) (QSK23-G9) GENSET
DATA SHEET – D-6551

Generator set data sheet

Model: C900D5E
Frequency: 50 Hz
Fuel type: Diesel

Spec sheet:	**SS12-CPGK**
Sound Data Sheet	**MSP-4050**
Cooling System Data	**MCP-2098**

Fuel consumption

	Standby				Prime			
	kVA (kW)				**kVA (kW)**			
Ratings	900 (720)				820 (656)			
Load	**1/4**	**1/2**	**3/4**	**Full**	**1/4**	**1/2**	**3/4**	**Full**
US gph	15.9	26.3	36.1	48.9	14.7	24.5	33.2	43.6
L/hr	60.2	99.4	136.7	185.1	55.9	92.8	126	165.2

Engine

	Standby rating	**Prime rating**
Engine manufacturer	Cummins	
Engine model	QSK23-G9	
Configuration	Cast iron, in-line 6 cylinder	
Aspiration	Turbocharged and after-cooled	
Gross engine power output, kWm	791	716
BMEP at set rated load, kPa	2732	2474
Bore, mm	170	
Stroke, mm	170	
Rated speed, rpm	1500	
Piston speed, m/s	8.6	
Compression ratio	16:1	
Lube oil capacity, L	103	
Overspeed limit, rpm	1800	
Regenerative power, kW	72	93
Governor type	Electronic	
Starting voltage	24 Volts DC	

Fuel flow

Maximum fuel flow, L/hr	684
Maximum fuel inlet restriction, mm Hg	203
Maximum fuel inlet temperature, °C	70

Air	Standby rating	Prime rating
Combustion air, m^3/min	56.5	51.5
Maximum air cleaner restriction, kPa	6.2	

Exhaust

Exhaust gas flow at set rated load, m^3/min	135.78	121.73
Exhaust gas temperature, °C	486	458
Maximum exhaust back pressure, kPa	10.2	

Standard set-mounted radiator cooling

Ambient design, °C (open genset at 12.7mm H_2O)	40	
Fan load, kW_m	24.9	
Coolant capacity (with radiator), L	136.5	
Cooling system air flow, m^3/sec @ 12.7 mm H_2O	8.2	
Total heat rejection, Btu/min	14977	~~12992~~
Maximum cooling air flow static restriction mm H_2O	25.4	~~25.4~~

~~Optional set-mounted radiator cooling~~

~~Ambient design, °C (open genset at 12.7mm H_2O)~~	~~50~~	
~~Fan load, kW_m~~	~~23.9~~	
~~Coolant capacity (with radiator), L~~	~~109.5~~	
~~Cooling system air flow, m^3/sec @ 12.7 mm H_2O~~	~~15.2~~	
~~Total heat rejection, Btu/min~~	~~14977~~	~~12992~~
~~Maximum cooling air flow static restriction mm H_2O~~	~~25.4~~	~~25.4~~

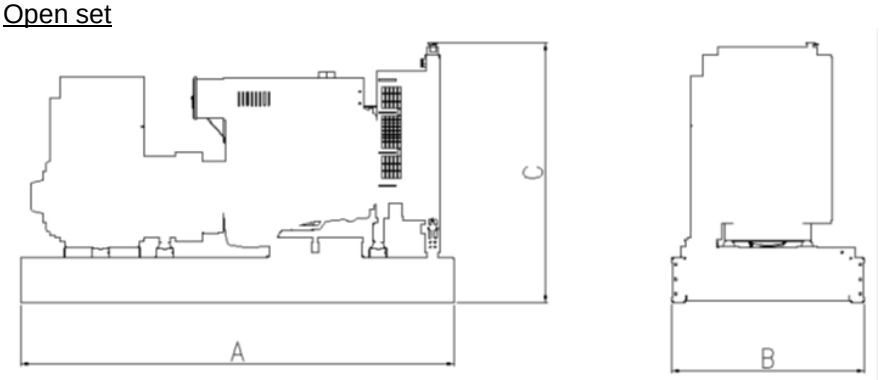
Weights	Open	Enclosed
Unit dry weight kgs	6091	9868
Unit wet weight kgs	6289	9984

Dimensions	Length	Width	Height
Standard open set dimensions mm	4340	1763	2095
Enclosed set standard dimensions mm	5708	2108	2467

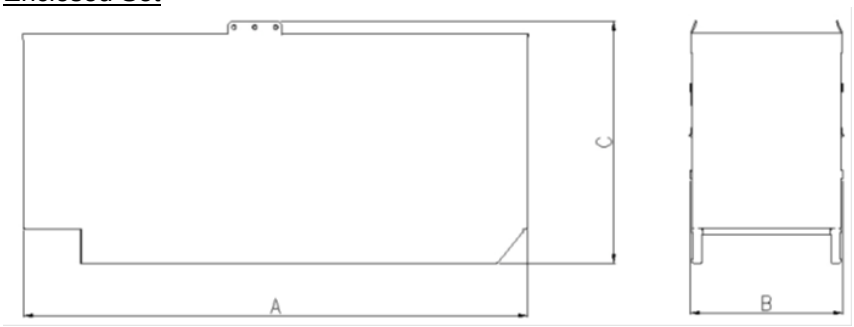
Note: Weights and dimensions represent a set with standard features. See outline drawing for weights of other configurations.

Genset outline

Open set



Enclosed Set



Outlines are for illustrative purposes only. Please refer to the genset outline drawing for an exact representation of this model.

Alternator data

Connection	Temp rise ºC	Duty	Alternator	Voltage
Wye, 3-phase	150	S/P	S6L1D-D4	380-440 V

Ratings definitions

Emergency Standby Power (ESP):	Limited-Time Running Power (LTP):	Prime Power (PRP):	Base Load (Continuous) Power (COP):
Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Fuel stop power in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.	Applicable for supplying power to a constant electrical load for limited hours. Limited Time Running Power (LTP) is in accordance with ISO 8528.	Applicable for supplying power to varying electrical load for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528. Ten percent overload capability is available in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.	Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous Power (COP) is in accordance with ISO 8528, ISO 3046, AS 2789, DIN 6271 and BS 5514.

Formulas for calculating full load currents:

Three phase output

$$\frac{\text{kW} \times 1000}{\text{Voltage} \times 1.73 \times 0.8}$$

Single phase output

$$\frac{\text{kW} \times \text{SinglePhaseFactor} \times 1000}{\text{Voltage}}$$

For more information contact your local Cummins distributor or visit power.cummins.com

Our energy working for you.™

D-6551 (07/21)

CUMMINS C900D5e (QSK23-G9) GENSET

AWS LHRx08HG C900D5e QSK23-G9 Oxfordshire, UK Potential Site Variation Emissions.

Rev 2	10/06/2025	G. Crampton	Revised with site specific information updated.

SSE 2025_075

June 9th, 2025

To Whom It May Concern:

With regards to Cummins Power Systems (CPS) manufactured diesel generator set model **C900D5E** rated for 50 Hz operation and equipped with Cummins **QSK23-G9** engine:

When tested under the following conditions:

Table 1	
Fuel Specification:	ASTM D975 No. 2-D S15 diesel fuel with 0.0015% sulfur content (by weight), and 42-48 cetane number.
Air Inlet Temperature:	77 °F
Fuel Inlet Temperature:	104 °F (at fuel pump inlet)
Barometric Pressure:	29.53 in. Hg
Humidity:	NOx measurement corrected to 75 grains H2O/lb. dry air

Based on engine emissions validation testing, the table below represents the nominal performance and exhaust emissions data for the generator set listed above:

	Standby			
PERFORMANCE DATA	**25%**	**50%**	**75%**	**100%**
Power Output (kWe)	180	360	540	720
Engine Power (BHP @ 1500 RPM/50 Hz)	288	544	799	1065
Fuel Consumption (L/Hr)	62	98	139	185
Exhaust Gas Flow (m3/min)	59	93	119	146
Exhaust Gas Temperature (°C)	394	457	489	527
NOx (Oxides of Nitrogen)	1206	1669	2301	2796
NMHC (Nonmethane Hydrocarbons)	178	97	72	62
CO (Carbon Monoxide)	335	92	70	109
PM (Particulate Matter)	138	11	5	4
All emissions values above are cited as mg/Nm3@5% O2, 0°C and 101.325 kPa				
Wet Exhaust Volume Flow @ 0°C, 101.3 kPa at operating oxygen content	1453	2154	2722	3249
Dry Exhaust Volume Flow @ 0°C, 101.3 kPa at operating oxygen content	1356	2003	2511	2974
Dry Exhaust Volume Flow @ 0°C, 101.3 kPa, 5% O2	666	1215	1730	2281
All values above are cited as m^3/hr				
Oxygen Dry Percent	13.1	11.3	10.0	8.7

Steady-State emissions recorded per ISO8178-1 during operation at rated engine speed (+/-2%) and stated constant load (+/-2%) with engine temperatures, pressures and emission rates stabilized.

The NOx, HC, CO, and PM emission data tabulated here are representative of test data taken from a single engine under the test conditions shown above. Data for the other components are estimated. This data is subject to instrumentation and engine-to-engine variability. Field emissions test data is not guaranteed to these levels. Actual field test results may vary due to test ambient, site conditions, installation, fuel specification, test procedures, instrumentation and ambient correction factors. Engine operation with excessive air intake or exhaust restriction beyond published maximum limits, or with improper maintenance, may result in elevated emission levels.

Values provided in the table below are representative of "Potential Site Variation" for AWS site LHR08 in Didcot, UK. These values account for variances as indicated above without consideration of improper generator set maintenance.

	Standby			
PERFORMANCE DATA	**25%**	**50%**	**75%**	**100%**
Power Output (kWe)	180	360	540	720
Engine Power (BHP @ 1500 RPM/50 Hz)	288	544	799	1065
NOx (Oxides of Nitrogen)	1483	2053	2830	3439
NMHC (Nonmethane Hydrocarbons)	303	165	122	105
CO (Carbon Monoxide)	670	184	140	218
PM (Particulate Matter)	276	22	10	8
All emissions values above are cited as mg/Nm3@5% O2, 0°C and 101.325 kPa				
Potential Site variation values provided above are accounted for Engine, Ambient variation and measurement with no correction factors				

The values in this letter are applicable for engines operating on ASTM D975 DF2 and paraffinic fuels conforming to EN15940, including Hydrotreated Vegetable Oil (HVO). Please consult Fluids for Cummins Engines bulletin # 3379001 for more information on the applicability of HVO.

The data and information provided in this letter is for informational purposes to assist customers in making purchasing decisions appropriate for their site-specific compliance needs. Owners/operators of compression ignition internal combustion engines are responsible for ensuring compliance with applicable local, state, and federal standards when CI engines are installed at the owner/operator site. The data and information contained herein regarding site variation values in particular should be considered as part of a site-specific compliance evaluation.

This letter does not supersede any of the commercial terms of sale, including, but not limited to, warranty coverage and compliance with law obligations. THE INFORMATION IN THIS LETTER IS PROVIDED "AS IS" AND WITH ALL FAULTS AND DEFECTS. CUMMINS DOES NOT WARRANT THE ACCURACY OF THE INFORMATION PROVIDED AND THIS LETTER SHOULD NOT BE SHARED WITH THIRD PARTIES WITHOUT CUMMINS PRIOR WRITTEN CONSENT. For further questions on this product or application, please contact the local Cummins Sales and Service representative.

Best Regards,

Bryan Ramos
Application Engineer – Data Center Market
Cummins Power Generation

CUMMINS C900D5e (QSK23-G9) GENSET.

ENGINE DATA SHEET & EMISSION DATA SHEET.

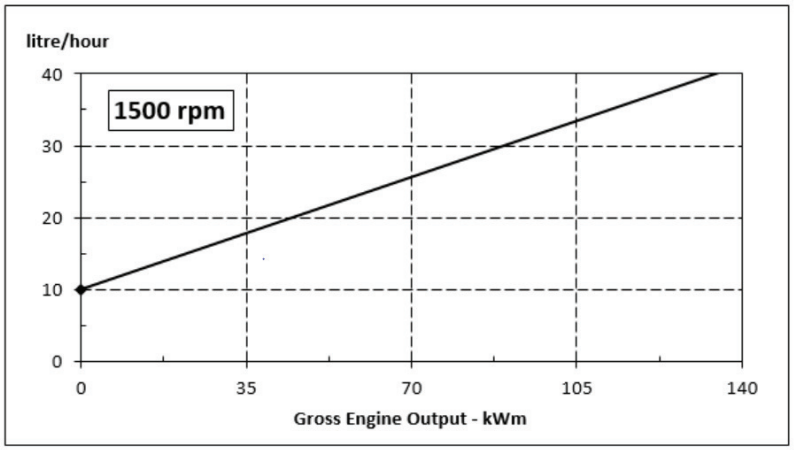
Cummins Inc.	Basic Engine Model:	Curve Number:	G-DRIVE
Columbus, Indiana 47202-3005	**QSK 23-G9**	**FR5345**	**QSK**
ENGINE PERFORMANCE DATASHEET	Engine Critical Parts List: **CPL : 4462**	Date: **2015-09-24**	**1**

Compression Ratio : **16.0 : 1**	Displacement : **1,413** in³ (**23.15** L)
Fuel System : **Cummins HPI-PT**	Aspiration : **Turbocharged and Charge Air Cooled**
Emission Certification : **U.S. EPA Tier 2**	

Engine Speed	Standby Power		Prime Power		Continuous Power	
rpm	kWm	bhp	kWm	bhp	kWm	bhp
1500	791	1060	716	960	537	720

Engine Performance Data @ 1500 rpm

OUTPUT POWER			FUEL CONSUMPTION			
%	kWm	bhp	kg/ kWm·h	lb/ bhp·h	litre/ hour	US gal/ hour
STANDBY POWER						
100	791	1060	0.200	0.329	186	49.1
~~**PRIME POWER**~~						
~~100~~	~~716~~	~~960~~	~~0.193~~	~~0.318~~	~~163~~	~~43.0~~
~~75~~	~~537~~	~~720~~	~~0.200~~	~~0.329~~	~~126~~	~~33.3~~
~~50~~	~~358~~	~~480~~	~~0.211~~	~~0.347~~	~~89~~	~~23.4~~
~~25~~	~~179~~	~~240~~	~~0.238~~	~~0.392~~	~~50~~	~~13.2~~
~~**CONTINUOUS POWER**~~						
~~100~~	~~537~~	~~720~~	~~0.200~~	~~0.329~~	~~126~~	~~33.3~~



CONVERSIONS:(litres = US Gal x 3.785) (US Gal = litres x 0.2642)

Data Subject to Change Without Notice

These guidelines have been formulated to ensure proper application of generator drive engines in A.C. generator set installations. **STANDBY POWER RATING:** Applicable for supplying emergency power for the duration of the utility power outage. No overload capability is available for this rating. Under no condition is an engine allowed to operate in parallel with the public utility at the Standby Power rating. This rating should be applied where reliable utility power is available. A Standby rated engine should be sized for a maximum of an 80% average load factor and 200 hours of operation per year. This includes less than 25 hours per year at the Standby Power rating. Standby ratings should never be applied except in true emergency power outages. Negotiated power outages contracted with a utility company are not considered an emergency. **PRIME POWER RATING:** Applicable for supplying electric power in lieu of commercially purchased power. Prime Power applications must be in the form of one of the following two categories:**UNLIMITED TIME RUNNING PRIME POWER:** Prime Power is available for an unlimited number of hours per year in a variable load application. Variable load should not exceed a 70% average of the Prime Power rating during any operating period of 250 hours. The total operating time at 100% Prime Power shall not exceed 500 hours per year. A 10% overload capability is available for a period of 1 hour within a 12-hour period of operation. Total operating time at the 10% overload power shall not exceed 25 hours per year. **LIMITED TIME RUNNING PRIME POWER:** Limited Time Prime Power is available for a limited number of hours in a non-variable load application. It is intended for use in situations where power outages are contracted, such as in utility power curtailment. Engines may be operated in parallel to the public utility up to 750 hours per year at power levels never to exceed the Prime Power rating. The customer should be aware, however, that the life of any engine will be reduced by this constant high load operation. Any operation exceeding 750 hours per year at the Prime Power rating should use the Continuous Power rating.**CONTINUOUS POWER RATING**: Applicable for supplying utility power at a constant 100% load for an unlimited number of hours per year. No overload capability is available for this rating.

Reference AEB 10.47 for determining Electrical Output.

Data shown above represent gross engine performance capabilities obtained and corrected in accordance with ISO-3046 conditions of 100 kPa (29.53 in Hg) barometric pressure [110 m (361 ft) altitude], 25 °C (77 °F) air inlet temperature, and relative humidity of 30% with No. 2 diesel or a fuel corresponding to ASTM D2.
Derates shown are based on 15 in H_2O air intake restriction and 2 in Hg exhaust back pressure.

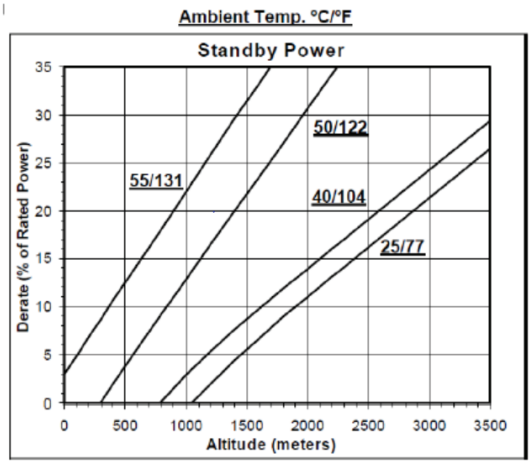
The fuel consumption data is based on No. 2 diesel fuel weight at 0.85 kg/litre (7.1 lbs/US gal). Power output curves are based on the engine operating with fuel system, water pump and lubricating oil pump; not included are battery charging alternator, fan, optional equipment and driven components.

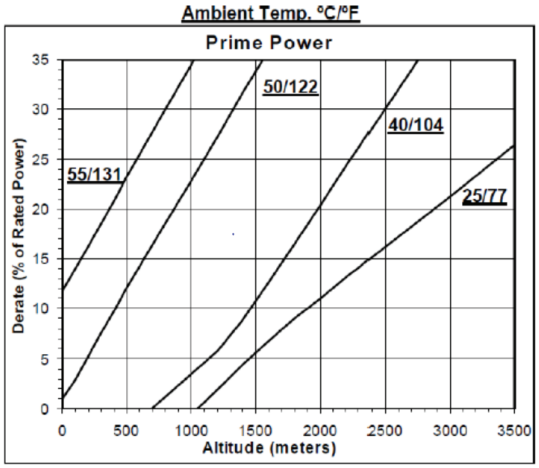
Data Status: --Limited Production--

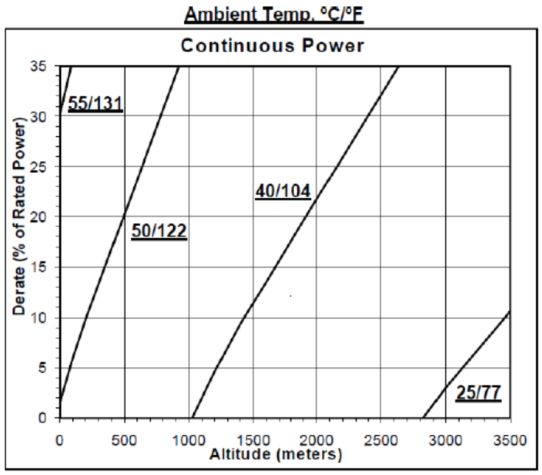
Data Tolerance: ± 5%

Chief Engineer:

QSK23-G9
1500 rpm Derate Curves







Operation at Elevated Temperature and Altitude:

For **Standby Operation** above these conditions, derate by an additional 6% per 300 M (1000 ft), and 24% per 18 delta deg F (10 delta deg C)
For **Prime Operation** above these conditions, derate by an additional 7% per 300 m (1,000 ft), and 28% per 18 delta deg F (10 delta deg C)
For **Continuous Operation** above these conditions, derate by an additional 16% per 300 m (1,000 ft), and 62% per 18 delta deg F (10 delta deg C)

Cummins Inc.
Engine Datasheet

ENGINE MODEL : QSK23-G9 **CONFIGURATION NUMBER :** D893007GX03 **DATASHEET : FR5345** **DATE : 2015-09-24**

INSTALLATION DIAGRAM
• Fan to Flywheel: 4360944

CPL NUMBER
• Engine Critical Parts List: 4462

GENERAL ENGINE DATA

Type		Inline 6-Cylinder Diesel	
Aspiration		Turbocharged and Charge Air Cooled	
Bore x Stroke	— in x in (mm x mm)	6.69 x 6.69	(170 x 170)
Displacement	— in^3 (litre)	1413	(23.15)
Compression Ratio		16.0 : 1	
Dry Weight (Approximate), Fan to Flywheel Engine	— lb (kg)	6060	(2750)
Wet Weight (Approximate), Fan to Flywheel Engine	— lb (kg)	6170	(2800)
Moment of Inertia of Rotating Components • with (SAE 0)	— $lb_m \cdot ft^2$ ($kg \cdot m^2$)	275	(11.6)
Center of Gravity from Rear Face of Block	— in (mm)	28.5	(725)
Center of Gravity Above Crankshaft Centerline	— in (mm)	9.5	(241)
Maximum Static Loading at Rear Main Bearing	— lb (kg)	2160	(990)

ENGINE MOUNTING

Maximum Bending Moment at Rear Face of Block	— lb • ft (N • m)	2360	(3205)

EXHAUST SYSTEM

Maximum Back Pressure	— in Hg (kPa)	3	(10.2)

AIR INDUCTION SYSTEM

Maximum Intake Air Restriction			
• with Dirty Filter Element	— in H_2O (kPa)	25	(6.2)
• with Clean Filter Element	— in H_2O (kPa)	15	(3.7)

COOLING SYSTEM

Jacket Water Circuit Requirements

Coolant Capacity — Engine Only	— US gal (litre)	12.3	(46.5)
Maximum Static Head of Coolant Above Engine Crank Centerline	— ft (m)	60	(18.3)
Standard Thermostat (Modulating) Range	— °F (°C)	170 - 194	(76.5 - 90)
Minimum Pressure Cap	— psi (kPa)	10	(69)
Maximum Top Tank Temperature for Standby / Prime Power	— °F (°C)	220 / 212	(104 / 100)
Maximum Coolant Friction Head External to Engine - 1500/1800 rpm	— psi (kPa)	5 / 7	(34 / 48)

Charge Air Cooler Requirements

Maximum Temp. Rise Between Engine Air Intake and Intake Manifold - 1500/1800 rpm	— °F (°C)	63	(35)
Maximum Air Pressure Drop from Turbo Air Outlet to Intake Manifold - 1500/1800 rpm	— in Hg (kPa)	4	(13.5)
Maximum Intake Manifold Temperature @ 77 °F (25 °C) Ambient - 1500/1800 rpm	— °F (°C)	140	(60)
Maximum Intake Manifold Temperature for Engine Protection (Shut Down Threshold)	— °F (°C)	180	(82)

LUBRICATION SYSTEM

Oil Pressure @ Idle Speed	— psi (kPa)	21	(145)
@ Governed Speed	— psi (kPa)	50 - 65	(345 - 448)
Maximum Oil Temperature	— °F (°C)	248	(120)
Oil Capacity with OP 5146 Oil Pan : Low - High	— US gal (litre)	17 - 25	(66 - 95)
Total System Capacity (Including Filter)	— US gal (litre)	19.5 - 27	(74 - 103)

FUEL SYSTEM

Type Injection System		Cummins HPI-PT	
Maximum Restriction at Lift Pump(clean/dirty filter)	— in Hg (kPa)	4.0 / 8.0	(13.5 / 27.1)
Maximum Allowable Head on Injector Return Line (Consisting of Friction Head and Static Head)	— in Hg (kPa)	9.0	(30)
Maximum Fuel Flow to Injector Pump	— US gph (litre/hr)	181	(684)
Maximum Return Fuel Flow	— US gph (litre/hr)	175	(662)
Maximum Fuel Inlet Temperature	— °F (°C)	158	(70)

ELECTRICAL SYSTEM

Cranking Motor (Heavy Duty, Positive Engagement)	— volt	24	
Battery Charging System, Negative Ground	— ampere	35	
Maximum Allowable Resistance of Cranking Circuit	— ohm	0.002	
Cranking Torque at Minimum Unaided Cold Start Temperature	— lb•ft (N•m)	724	(982)
Minimum Cranking Speed	— rpm	100	
Minimum Recommended Battery Capacity			
• Cold Soak @ 10 °C (50 °F) and above	— CCA	1200	
• Cold Soak @ 0 °C to 10 °C (32 °F to 50 °F)	— CCA	1280	
• Cold Soak @ -18 °C to 0 °C (0 °F to 32 °F)	— CCA	1800	

COLD START CAPABILITY

Minimum Ambient Temperature for Cold Start with 1500 Watt Coolant Heater to Rated Speed	— °F (°C)	-22	(-30)
Minimum Ambient Temperature for Unaided Cold Start to Idle Speed	— °F (°C)	32	(0)
Minimum Ambient Temperature for NFPA 110 Cold Start	— °F (°C)	40	(4)

PERFORMANCE DATA

All data is based on:

- Engine operating with fuel system, water pump, lubricating oil pump, air cleaner and exhaust silencer; not included are battery charging alternator, fan, and optional driven components.
- Engine operating with fuel corresponding to grade No. 2-D per ASTM D975.
- ISO 3046, Part 1, Standard Reference Conditions of:

Barometric Pressure	:	100 kPa (29.53 in Hg)	Air Temperature	:	25 °C (77 °F)
Altitude	:	110 m (361 ft)	Relative Humidity	:	30%

Steady State Stability Band at Any Constant Load	— %	+/-	0.25
Estimated Free Field Sound Pressure Level of a Typical Generator Set; Excludes Exhaust Noise; at Rated Load and 7.5 m (24.6 ft); @1800 rpm	— dBA		TBD
Exhaust Noise at 1 m Horizontal from Centerline of Exhaust Pipe Outlet Upwards at 45°	— dBA		TBD

		STANDBY POWER				PRIME POWER			
		~~60 hz~~		50 hz		60 hz		50 hz	
Governed Engine Speed	rpm	N/A		1500		N/A		1500	
Engine Idle Speed	rpm	N/A		700 - 900		N/A		700 - 900	
Gross Engine Power Output	hp (kW)	N/A	N/A	1060	(791)	N/A	N/A	960	(716)
Brake Mean Effective Pressure	psi (kPa)	N/A	N/A	396	(2732)	N/A	N/A	359	(2474)
Piston Speed	ft/min (m/s)	N/A	N/A	1675	(8.6)	N/A	N/A	2010	(10.3)
Friction Horsepower	hp (kW)	N/A	N/A	96	(72)	N/A	N/A	124	(93)
Engine Water Flow at Stated Friction Head External to Engine:									
• 3 psi Friction Head	US gpm (litre/s)	N/A	N/A	132	(8.3)	N/A	N/A	132	(8.3)
• Maximum Friction Head	US gpm (litre/s)	N/A	N/A	125	(7.9)	N/A	N/A	125	(7.9)
Engine Data									
Intake Air Flow	cfm (litre/s)	N/A	N/A	1994	(942)	N/A	N/A	1817	(858)
Exhaust Gas Temperature	°F (°C)	N/A	N/A	906	(486)	N/A	N/A	856	(458)
Exhaust Gas Flow	cfm (litre/s)	N/A	N/A	4795	(2264)	N/A	N/A	4299	(2029)
Air to Fuel Ratio	air : fuel	N/A		25.4 : 1		N/A		26.4 : 1	
Radiated Heat to Ambient	BTU/min (kW)	N/A	N/A	4250	(75)	N/A	N/A	3723	(66)
Heat Rejection to Jacket Coolant	BTU/min (kW)	N/A	N/A	14977	(264)	N/A	N/A	12992	(229)
Heat Rejection to Exhaust	BTU/min (kW)	N/A	N/A	30944	(544)	N/A	N/A	26400	(464)
Heat Rejected to *Fuel	BTU/min (kW)	N/A	N/A	387	(7)	N/A	N/A	387	(7)
Heat Rejected to Aftercooler	BTU/min (kW)	N/A	N/A	10718	(189)	N/A	N/A	8849	(156)
Charge Air Flow	lb/min (kg/min)	N/A	N/A	147	(67)	N/A	N/A	134	(61)
Turbocharger Compressor Outlet Pressure	psi (kPa)	N/A	N/A	44	(304)	N/A	N/A	38	(262)
Turbocharger Compressor Outlet Temperature	°F (°C)	N/A	N/A	431	(222)	N/A	N/A	391	(200)

* This is the maximum heat rejection to fuel.

N.A. - Not Available
N/A - Not Applicable to this Engine
TBD - To Be Determined

ENGINE MODEL : QSK23-G9
DATASHEET : FR5345
DATE : 2015-09-24

	CUMMINS ENGINE COMPANY, INC Columbus, Indiana 47202-3005 **EXHAUST EMISSIONS DATA SHEET**	Basic Engine Model: **QSK23-G9** Engine Critical Parts List: **CPL : 4462**	Curve Number: **FR5345** Date: **23 MAY 14**	*G-DRIVE* **QSK** **1**

Displacement : **23.15** litre (**1413** in^3)	Bore : **170** mm (**6.69** in) Stroke : **170** mm (**6.69** in)
No. of Cylinders : **6**	Aspiration : **Turbocharged and Air to Air Aftercooled**

Engine Speed	Standby Power		Prime Power		Continuous Power	
rpm	kWm	hp	kWm	hp	kWm	hp
1500	791	1060	716	960	537	720

Exhaust Emissions Data @ 1500 rpm

	Standby Power			Prime Power			Continuous Power		
Component	g/hp·h	mg/m^3	PPM	g/hp·h	mg/m^3	PPM	g/hp·h	mg/m^3	PPM
HC (Total Unburned Hydrocarbons)	0.10	46	75	0.12	53	86	0.16	74	120
NOx (Oxides of Nitrogen as NO_2)	5.4	2775	1352	5.2	2639	1286	4.5	2221	1082
CO (Carbon Monoxide)	0.22	105	84	0.21	89	71	0.19	72	58
PM (Particulate Matter)	0.02	10	N/A	0.03	12	N/A	0.04	16	N/A
SO_2 (Sulfur Dioxide)	0.10	43	17	0.10	43	17	0.11	44	17

CONVERSIONS: (g/kWm·h = g/hp·h x 1.34)

Test Methods and Conditions

Steady-State emissions recorded per ISO8179-1 during operation at rated engine speed (± 2%) and stated constant load (± 2%) with engine temperatures, pressures and emission rates stabilized.

Fuel Specifications:
46.5 Cetane Number, 0.035 Wt.% Sulfur: Reference ISO8178-5, 40CFR86.1313-98 Type 2D and ASTM D975 No. 2-D.

Reference Conditions:
25°C (77°F) Air Inlet Temperature, 40°C (104°F) Fuel Inlet Temperature, 100 kPa (29.53 in Hg) Barometric Pressure; 10.7 g/kg (75 grains H20/lb) of dry air Humidity (required for NOx correction); Intake Restriction set to maximum allowable limit for clean filter; Exhaust Back Pressure set to maximum allowable limit.

Data was taken for a single engine test with the Test Method, Fuel Specification and Reference Conditions state above. Field tests using alternate Test Methods, Fuel or Reference Conditions may yield different results.

Data Subject to Change Without Notice.

CUMMINS C900D5e (QSK23-G9) GENSET EXHAUST BACK PRESSURE CALCULATION HOUSE GENERATOR.

Exhaust back pressure calculation for House Generator.
The factors used in this calculation are as follows:

- Generator Model – C900 D5e
- Length of flue – 32.5 m (6.25 m horizontal + 26.25 m vertical)
- No of bends – 1 no 90-degree elbows
- No of bends – 4 no 45-degree elbows
- Exhaust gas flow rate – 137.78 m^3/min
- Exhaust gas temperature – 486 °C
- Flue diameter – 300mm internal diameter

Calculation Results:

Back Pressure*	? kPa
Flue Gas Exit Velocity	32.48 m/s
Generated Noise @ Termination Point	? Ln(dBA)

**Please note the calculated back pressure is for the flue only and does not include the silencer or any auxiliary equipment installed between the engine and flue.*