

**Engine Performance Data**

Xi'an Cummins Engine

<http://www.cummins.com>**QSM11-G6****FR21606**

CPL Code

Date

09-Jul-2022

QSM11-G3A

Compression ratio: 16.2:1

Config: D353020CX03

Fuel System: Celect

Certification: MEP Stage III

Number Cylinders: 6

Aspiration: Turbocharged and Charge Air Cooled

Bore: 125mm

Displacement: 10.8L

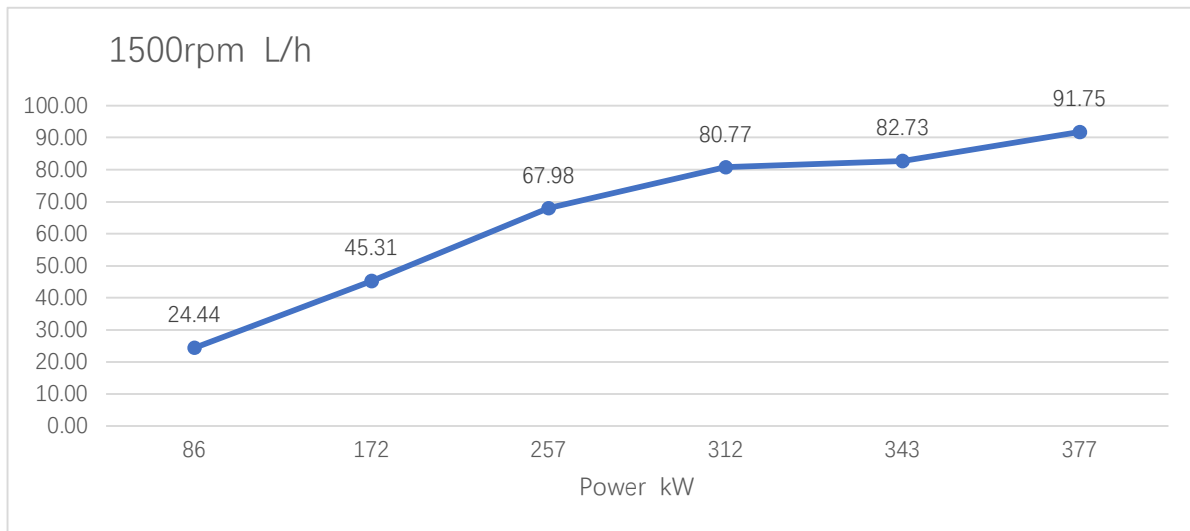
Stroke: 147mm

Genset application

RPM	Standby power		Prime Power		Continuous power	
	kWm	hp	kWm	hp	kWm	hp
1500	377	505	343	460	312	418
1800	377	505	343	460	312	418

Engine Performance Data@1500rpm

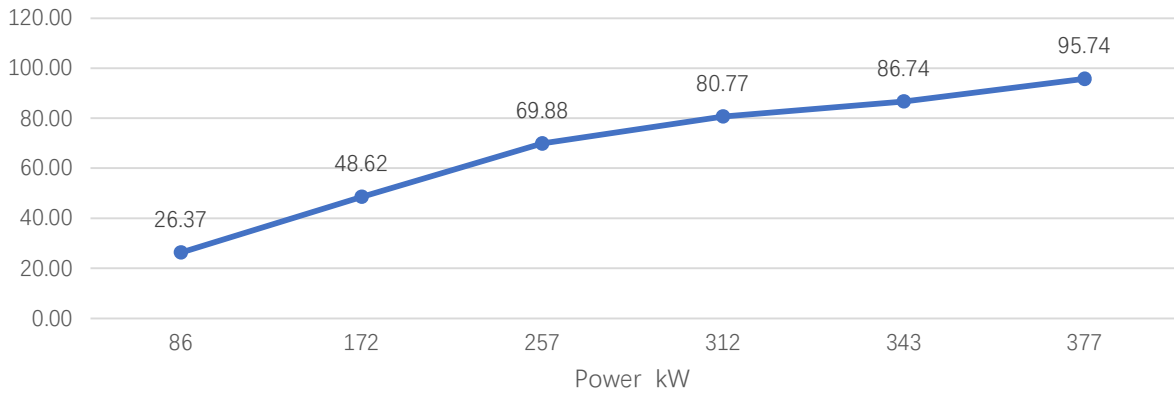
Output Power			Fuel consumption		
%	kWm	hp	g/kWm.h	Liter/hour	US gal/hour
Standby power					
100	377	505	206.87	91.75	24.22
Prime Power					
100	343	460	205.01	82.73	21.84
75	257	345	224.63	67.98	17.95
50	172	230	224.58	45.31	11.96
25	86	115	242.22	24.44	6.45
Continuous power					
100	312	418	220.17	80.77	21.32



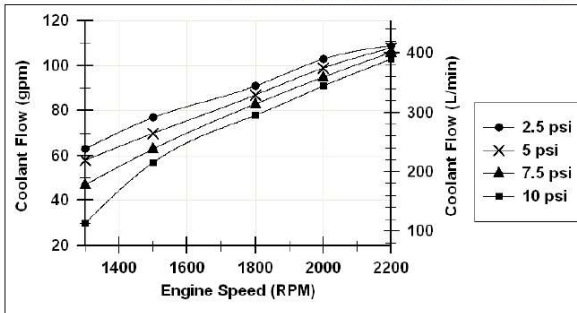
Engine Performance Data @1800rpm

Output Power			Fuel consumption		
%	kWm	hp	g/kWm.h	Liter/hour	US gal/hour
Standby power					
100	377	505	215.86	95.74	25.28
Prime Power					
100	343	460	214.94	86.74	22.9
75	257	345	230.88	69.88	18.45
50	172	230	240.98	48.62	12.84
25	86	115	261.36	26.37	6.96
Continuous power					
100	312	418	220.17	80.77	21.32

1800rpm L/h



Thermostat out coolant flow vs. external restriction for engine system (with open thermostat)

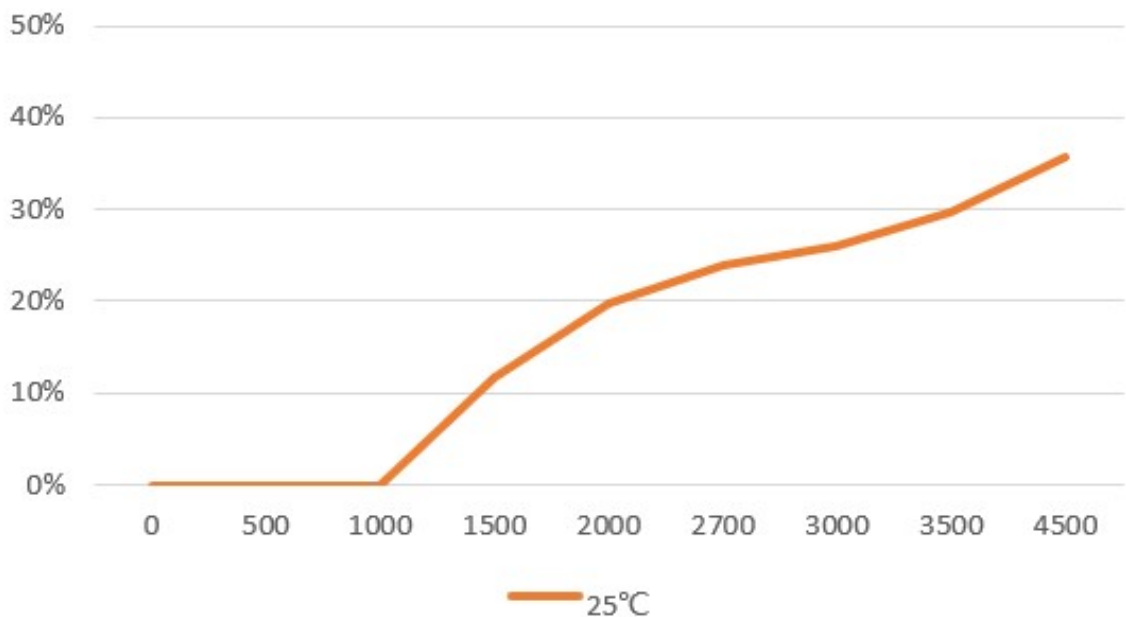


Engine Speed RPM	System Restriction							
	2.5 psi (17 kPa)		5 psi (34 kPa)		7.5 psi (52 kPa)		10 psi (69 kPa)	
	gpm	L/min	gpm	L/min	gpm	L/min	gpm	L/min
1,300	63	238	58	220	47	178	30	114
1,500	77	291	70	265	63	238	57	216
1,800	91	344	87	329	83	314	78	295
2,000	103	390	99	375	95	360	91	344
2,200	109	413	108	409	106	401	103	390

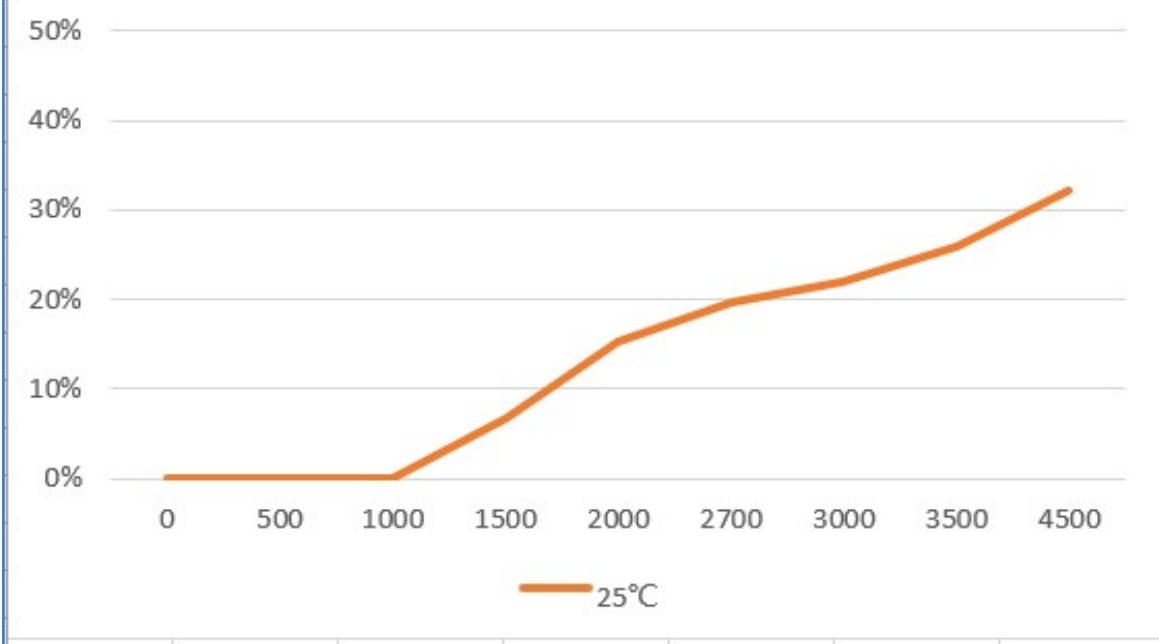
Minimum block coolant pressure at speed (open thermostat without radiator cap)

RPM	psi	kPa
1,300	7	48
1,500	12.5	86
1,800	15.4	106
2,000	19.9	137
2,200	22.8	157

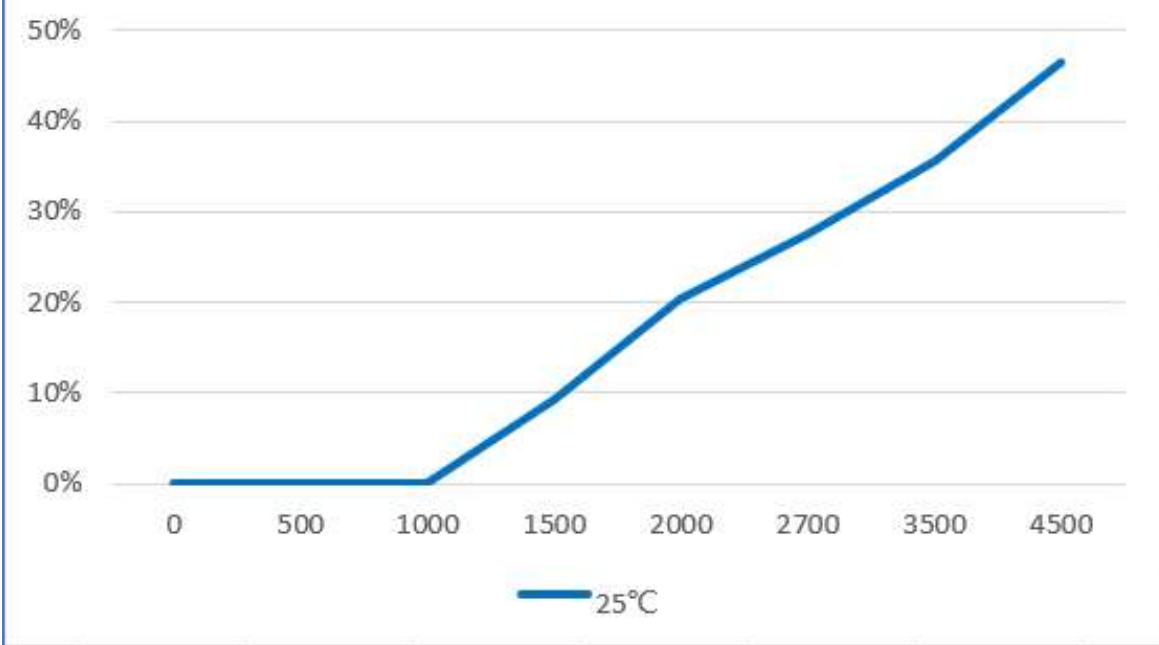
1500rpm Altitude Derate Standby Power

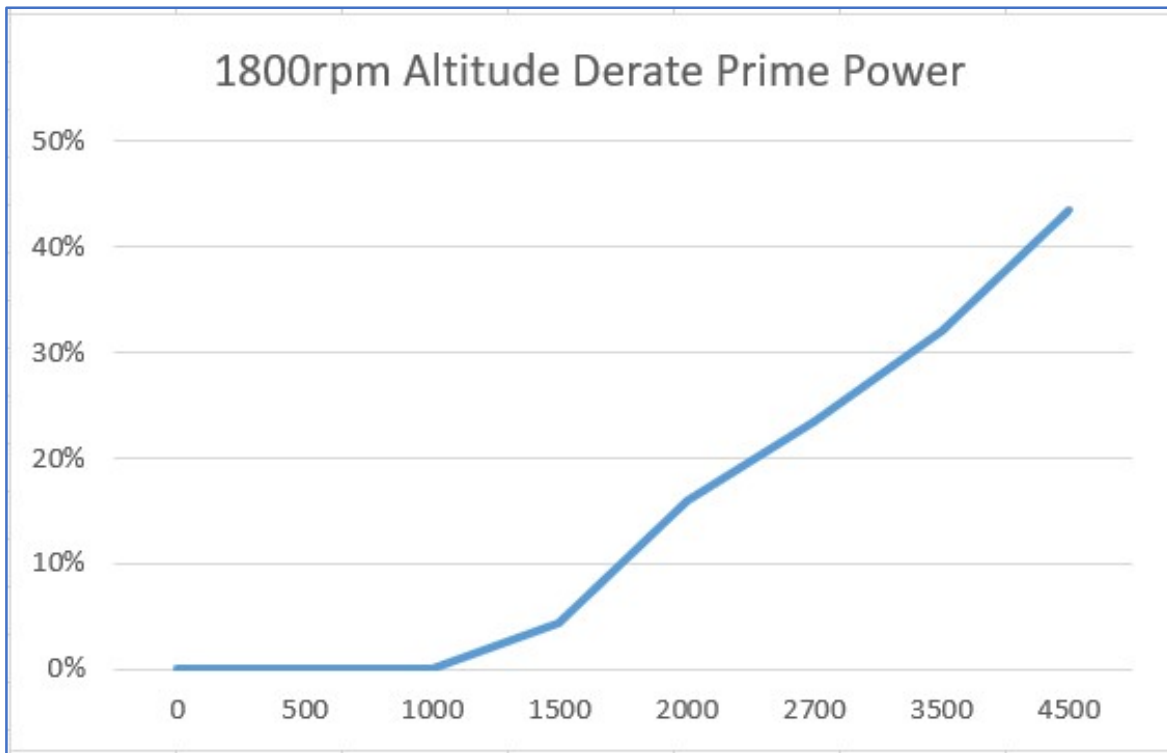


1500rpm Altitude Derate Prime Power



1800rpm Altitude Derate Standby Power





(liters=US gal*3.785) (kWm=hp*0.746) (US Gal=liters*0.2642) (hp=kWm*1.34)

The acquisition and correction of the above engine performance data is based on the requirements of ISO-3046. ISO-3046 requires the atmospheric pressure to be 100kPa, the air inlet temperature to be 25°C, and the relative humidity to be 30%. Diesel oil should be 2# or equivalent to ASTM D2.

The fuel consumption is based on 2# diesel oil with a density of 0.85kg/liter. The output power curve includes the power consumed by the fuel system, water pump, and oil pump, excluding generators, fans, optional equipment and drives for battery charging power consumed by the components.

Guidelines for the application of power ratings for engines used in generating sets

Standby power: It is used to supply emergency power when the external power supply is interrupted.

Standby power is no overload capability. The engine is not allowed to be connected to the public grid under any conditions when it is running in the reserve power section.

This power rating should be applied where there is a reliable public power supply. The engine is allowed to operate at an average 80% load for no more than 200 hours per year at the standby power level. This includes standby power point conditions of less than 25 hours per year. Standby power levels are generally not recommended except in emergency situations. A public grid outage with prior notice is not considered an emergency.

Prime Power: Used to supply electrical energy where power can be purchased. The prime power class has the following two application categories.

Infinite time running mode

The engine operates at a prime power level under variable loads for an unlimited time per year. The variable load here means that the average load does not exceed 70% of the prime power during any 250-hour period of operation, and the total time of operation at 100% load per year should not exceed 500 hours.

Allow the engine to run at 10% overload for 1 hour in a 12-hour cycle. The total running time of 10% overload per year shall not exceed 25 hours

Time-limited run mode

Prime power levels are applied under non-variable loads that limit run time. This mode is used in the case of

tight power supply. The engine does not exceed the basic power and runs in parallel with the mains at a fixed load for a maximum of 750 hours per year. But users should be aware that any engine used under high load for a long time will affect its life. Continuous power level should be used if operating at base power level for more than 750 hours.

Continuous power: Can be applied to supply electricity at full load for an unlimited time per year. The continuous power rating has no overload capability.

Performance Data

General Engine Data

Approximate engine weight (dry):	973kg
Approximate engine weight (wet):	1007kg

Rotating component inertia

FW2141 Flywheel:	2.63kg.m ²
Distance from the center of gravity to the front face of the cylinder block	190mm
The distance from the centerline of the crankshaft to its upper center of gravity	450mm

Engine Mounting System

Maximum static mounting surface bending moment at rear face of block:	1356N.M
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Exhaust System

Maximum exhaust back pressure:	3.0 in-Hg	10kPa
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Intake Air System

Maximum Intake Manifold Temperature Differential (Ambient to IMT) (IMTD)	35°C
Maximum intake air restriction (heavy duty air cleaner)	
Dirty Filter:	6.2kPa
Clean Filter:	3.7kPa

Cooling System

Maximum radiator temperature Standby Power/Prime Power:	212°F	100°C
Radiator pressure cover minimum pressure:	69kPa	
Thermostat temperature range:	82-93°C	
Maximum allowable pressure drop across charge air cooler and OEM CAC piping (IMPD)@1800rpm:	13 kPa	
Maximum allowable pressure drop across charge air cooler and OEM CAC piping (IMPD)@1500rpm:	8.5 kPa	
Maximum coolant temperature for engine protection controls:	219°F	104°C
Coolant capacity - engine only	9.5L	
Fan Drive Ratio:	1.00:1	

Lubrication System

Nominal operating oil pressure@ minimum low idle:	103kPa
Nominal operating oil pressure@ maximum rated speed:	241kPa
Maximum oil temperature:	135°C
Oil pan volume:	26-34L
Total system volume (including oil filter):	36.7L

Fuel System

Maximum fuel supply resistance:	20kPa
Maximum fuel return resistance:	9kPa
Maximum oil supply temperature:	71°C

Electrical System

System voltage:	24V
Maximum starting circuit resistance:	0.002Ω
Engine only-cold cranking amperes:	1250 CCA
Starter power:	7.5kW

Cold start capability

Minimum ambient temperature with Grid Heater only

-14°C

Minimum ambient temperature for unaided cold start

-4°C

Certification Information

Approval code: CN FC G3 00 0885000023 000001

Performance Data					
Parameter	Unit	Standby Power		Prime Power	
		60Hz	50Hz	60Hz	50Hz
Engine Speed	rpm	1800	1500	1800	1500
Idle Speed	rpm	700	700	700	700
Output Power	kW	377	377	343	343
Turbo Comp.Outlet Pressure(kPa	270	281	270	272
Temperature	°C	217	214	225	221
Inlet air flow	L/s	534	487	519	449
Exhaust gas temperature	°C	490	508	483	507
Exhaust gas flow	L/s	1232	1183	1217	1148
Heat rejection to coolant	kWm	181.28	169.69	173.77	161.39
Heat dissipation to oil return	kWm	5.28	5.59	4.85	4.96
Heat rejection to CAC	kWm	95.59	85.79	91.11	77.35