



# Dongfeng Cummins Technical Operations

Engine Model : QSZ13-G5

Curve and Datasheet : FR20378

Rev03 2016.4



**Generator Engine Performance Data**

Dongfeng Cummins Engine Co.,Ltd  
Xiangyang, Hubei Province, China

Engine Model

**QSZ13-G5**

Curve Number

FR20378

CPL Code

3837

Compression Ratio: 17:1

Cylinders: 6

Bore: 130 mm

Stroke: 163 mm

Displacement: 13.0 L

Engine Configuration: D0C3004GX03

Fuel System: HPCR

Aspiration: Turbocharged & Charge Air Cooled

Governor Regulation: ≤1%

Emission Certification: Euro StageII/EPA Tier II

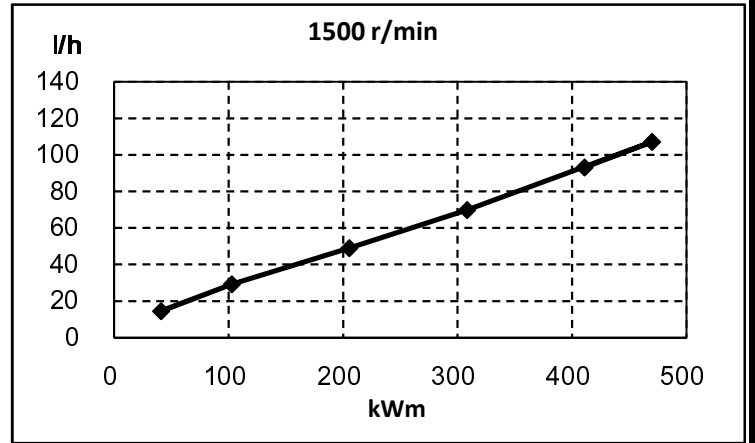
**Engine Ratings\*:**

Engine Speed r/min	Standby Power		Prime Power		Continuous Power	
	bhp	kWm	bhp	kWm	bhp	kWm
1500	629	470	550	411	495	370
1800	670	500	585	437	526	393

\* All ratings refer to AEB26.02.

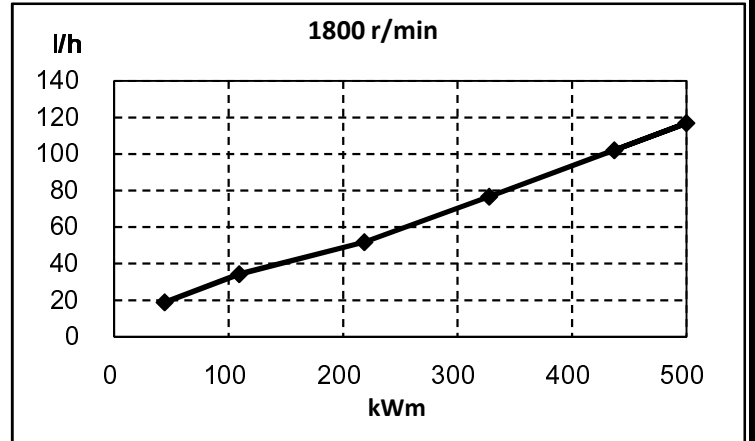
**Engine Fuel Consumption @1500 r/min**

OUTPUT POWER			FUEL CONSUMPTION			
%	bhp	kWm	lb/bhp.h	g/kWm.h	gal/h	l/h
<b>Standby Power</b>						
100	629	470	0.322	196	28.3	107.1
<b>Prime Power</b>						
100	550	411	0.321	195	24.6	93.2
75	413	308	0.321	195	18.4	69.9
50	275	206	0.337	205	12.9	49.0
25	138	103	0.401	244	7.7	29.2
<b>continuous Power</b>						
100	495	370	0.321	195	22.1	83.9



**Engine Fuel Consumption @1800 r/min**

OUTPUT POWER			FUEL CONSUMPTION			
%	bhp	kWm	lb/bhp.h	g/kWm.h	gal/h	l/h
<b>Standby Power</b>						
100	670	500	0.331	201	30.8	116.9
<b>Prime Power</b>						
100	585	437	0.331	201	26.9	102.1
75	439	328	0.331	201	20.2	76.6
50	293	219	0.336	204	13.7	51.8
25	146	109	0.444	270	9.0	34.3
<b>Continuous Power</b>						
100	526	393	0.331	201	24.2	91.9



Curves shown above represent gross engine performance capabilities obtained and corrected in accordance with GB/T18297 conditions of 29.61 in Hg (100 kPa) barometric pressure [263 ft (80 m) altitude], 77 deg F (25 deg C) inlet air temperature, and 0.30 in Hg (1 kPa) water vapor pressure with No. 2 diesel fuel.

All data obtained is based on the engine operating, under the test conditions of 14.9 in H<sub>2</sub>O (3.7kPa) inlet air restriction and 2.95 in Hg (10 kPa) exhaust restriction, not included are alternator, fan, optional equipment and driven components.

The engine may be operated up to 5200 m (17,060 ft.) altitude.



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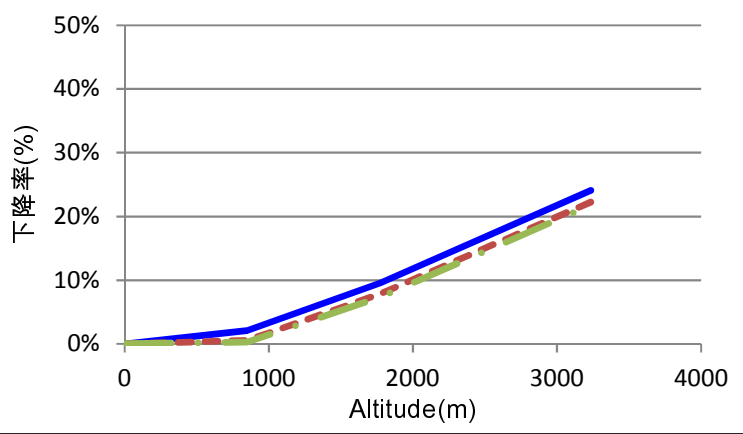
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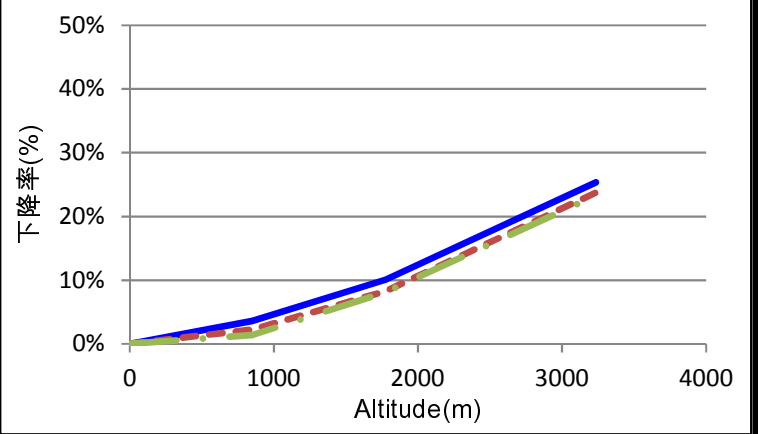
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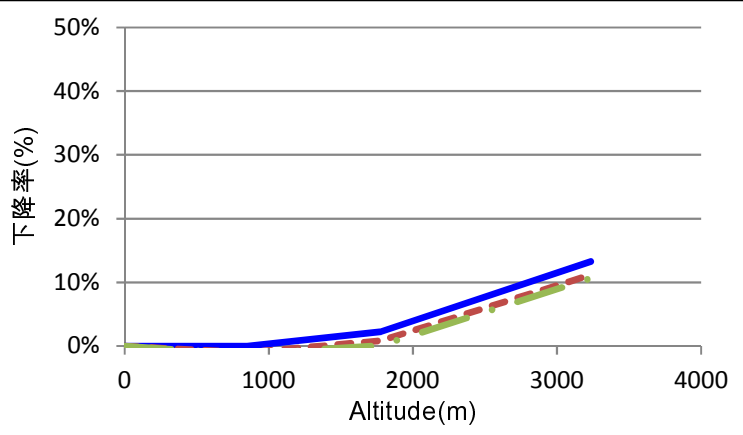
**Power Derate Curves @1500 r/min**  
Standby Power



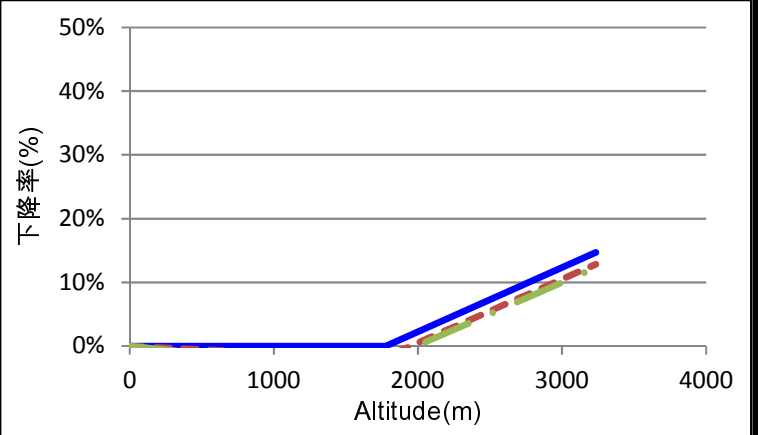
**Power Derate Curves @1800 r/min**  
Standby Power



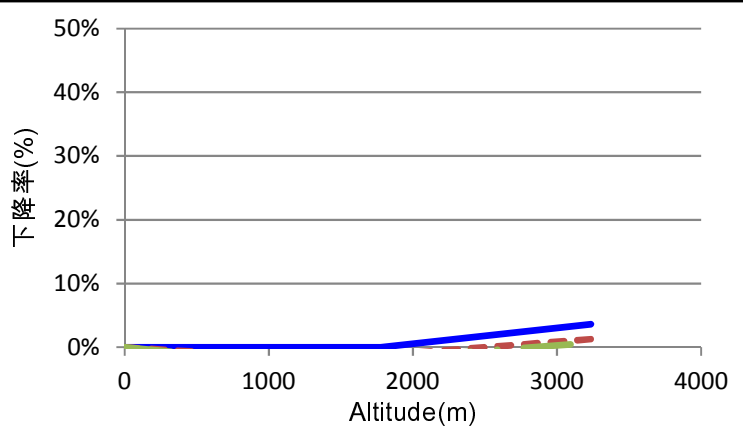
**Prime Power**



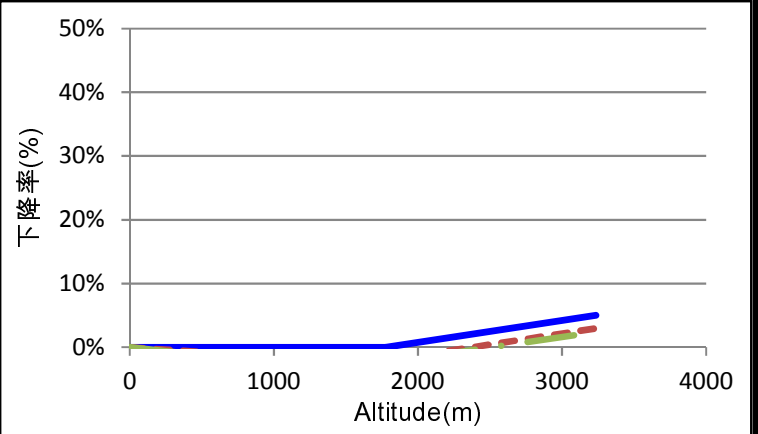
**Prime Power**



**Continuous Power**



**Continuous Power**



— 25 °C (77 °F)    - - - 15 °C (59 °F)    — 5 °C (41 °F)

Engine tested under the ISA conditions of 50 deg C charge temperature, 3.7kPa inlet air restriction and 10 kPa exhaust restriction.



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**GENERAL ENGINE DATA**

Type: .....	Four cycle; Inline; 6 Cylinder
Aspiration: .....	Turbocharged Charge Air Cooled
Compression Ratio: .....	17:1
Fire Order: .....	1-5-3-6-2-4
Bore x Stroke: .....	- mm 130 x 163
Displacement: .....	- L 13.0
Low Idle Speed: .....	- r/min 700
Maximum altitude for continuous operation: .....	- m 5200
Approximate Engine Weight - Dry: .....	- kg 1245
Approximate Engine Weight - Wet: .....	- kg 1310
Center of Gravity from front face of block: .....	- mm 519
Center of Gravity above crankshaft centerline: .....	- mm 201
Rotation inertia of Complete Engine (without flywheel): .....	- kg.m <sup>2</sup> 1.48

**ENGINE MOUNTING**

Maximum static mounting surface bending moment	
Rear face of block: .....	- N.m 1356
Maximum static bending moment of FAN: .....	- N.m 21
Maximum allowable weight on Engine Support: .....	- kg 1500

**AIR INDUCTION SYSTEM**

Whole air intake pipe size (recommendatory): .....	- mm 200
Charge air cooler pipe size (recommendatory): .....	- mm 115
Maximum temperature rise between ambient air and engine air inlet: .....	- °C 11.1
Maximum Temp. Rise Between Engine Air Intake and Intake Manifold: .....	- °C 30
Maximum Intake Manifold Temperature (unable to result in power loss at sea level): .....	- °C 60*
Maximum Intake Manifold Temperature for Engine Protection: .....	- °C 85
Maximum intake air restriction (heavy duty air cleaner):	
clean filter: .....	- kPa 3.2
dirty filter: .....	- kPa 6.2
Maximum allowable pressure drop across charge air cooler and OEM CAC piping (CACDP): .....	- kPa 13

**EXHAUST SYSTEM**

Max. back pressure imposed by complete exhaust system: .....	- kPa 13
Maximum allowable static bending moment at exhaust outlet flange: .....	- N.m 19
Exhaust pipe size (recommendatory): .....	- mm 130

\*When excess the temperature.the durability/reliability/performance of the engine maybe impaired.



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**LUBRICATION SYSTEM**

Oil pressure @ idle - minimum: .....	- kPa	82.7
Typical oil pressure range - warm engine: .....	- kPa	207 - 300
Total system capacity (standard pan): .....	- L	75.33
Maximum lube oil flow to all accessories: .....	- L/min	7.57

**COOLING SYSTEM**

Coolant Capacity (Engine Only): .....	- L	23.1
Engine coolant circuit thermostat opening temperature: .....	- °C	82
Engine coolant circuit thermostat fully open temperature: .....	- °C	94
Maximum coolant temperature - engine out: .....	- °C	102
Minimum operating block coolant temperature: .....	- °C	71
Maximum coolant temperature for engine protection controls: .....	- °C	107
Maximum coolant pressure(exclusive of pressure cap; closed thermostat at maximum no load speed): .....	- kPa	407
Minimum pressure cap rating at sea level: .....	- kPa	103
Maximum Coolant Friction Head External to Engine: .....	- kPa	75
Maximum deaeration time: .....	- min	25
Minimum fill rate (low level alarm required for most engines): .....	- L/min	19
Maximum coolant expansion space (% total system capacity): .....	- %	10
Minimum coolant expansion space (% total system capacity): .....	- %	6

**FUEL SYSTEM**

Maximum allowable restriction @ OEM point with maximum fuel flow: .....	- kPa	13.5
Maximum fuel drain restriction (total head) before (or without) check valve:.....	- kPa	27
Minimum fuel tank venting requirement: .....	- L/s	0.2
Maximum fuel inlet temperature: .....	- °C	71
Maximum heat rejection to return fuel.....	- kW	5.36
Maximum design fuel flow: .....	- kg/h	204

**ELECTRICAL SYSTEM**

System voltage: .....	- V	24
Minimum battery capacity-cold soak at -18 C (0 F) or above		
Engine only cold cranking amperes: .....	- CCA	900
Engine only reserve capacity: .....	- min	270

**COLD START CAPABILITY**

Minimum ambient temperature for unaided cold start: .....	- °C	-15
Minimum ambient temperature with Intake Air Heater(engine no load): .....	- °C	-30

**Exhaust Emissions Data**

Gaseous Emissions per GB 20891-2007:	1500 r/min	1800 r/min
- Weight-Specific Nox: .....	- g/kW.h	5.580 5.620
- Weight-Specific HC: .....	- g/kW.h	0.110 0.130
- Weight-Specific CO: .....	- g/kW.h	0.740 0.570
- Weight-Specific Particulates: .....	- g/kW.h	0.020 0.034



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**Performance Data**

All data is based on: Engine operating with fuel system, water pump, lubricating oil pump and air cleaner; not included are alternator, fan, and optional equipment and driven components.

Test Condition:

- GB18297 Engine test code - Performance
- Barometric Pressure : 100 kPa (29.53 in Hg)
- Air Temperature: 25 °C (77 °F)
- Altitude: 80 m (263 ft)
- Relative Humidity: 50%

Steady State Stability Band at any constant load (+/-):

5%

		Standby Power		Prime Power	
		1500	1800	1500	1800
Engine Speed	r/min	1500	1800	1500	1800
Gross Engine PowerOutput	kWm	470	500	411	437
Torque:	N.m	2992	2653	2617	2319
Brake Mean EffectivePressure	kPa	2892	2564	2529	2241
Piston Speed	m/s	8.15	9.78	8.15	9.78
Friction Horsepower	kW	31	45	31	45
Coolant Flow	L/min	405	475	405	475
Fuel Consumption	kg/h	92.1	100.5	80.1	87.8
<b>Engine Data</b>					
Intake Air Flow	m <sup>3</sup> /min.	29.5	35.5	27.8	34.9
Exhaust Gas Temp - DryStack	°C	523	476	485	458
Exhaust Gas Flow	kg/min.	36.4	43.5	34.1	42.6
Air to Fuel ratio		22.7	25.0	24.6	28.1
Heat Rejection to Ambient	kW	76	81	67	71
Heat Rejection to JacketCoolant	kW	171	188	154	172
Heat Rejection to Exhaust	kW	406	432	355	378
Heat Rejection to Fuel*	kW	5	5	5	5
<b>ATA CAC</b>					
Heat Rejection to Aftercooler	kW	99	122	83	110
TurbochargerCompressor Outlet	kPa	282	291	254	275
Charge Air Flow	kg/min	34.9	41.9	32.8	41.2
TurbochargerCompressor Outlet	°C	223	221	203	212

\*This is the maximum heat rejection, not specified to the load listed.



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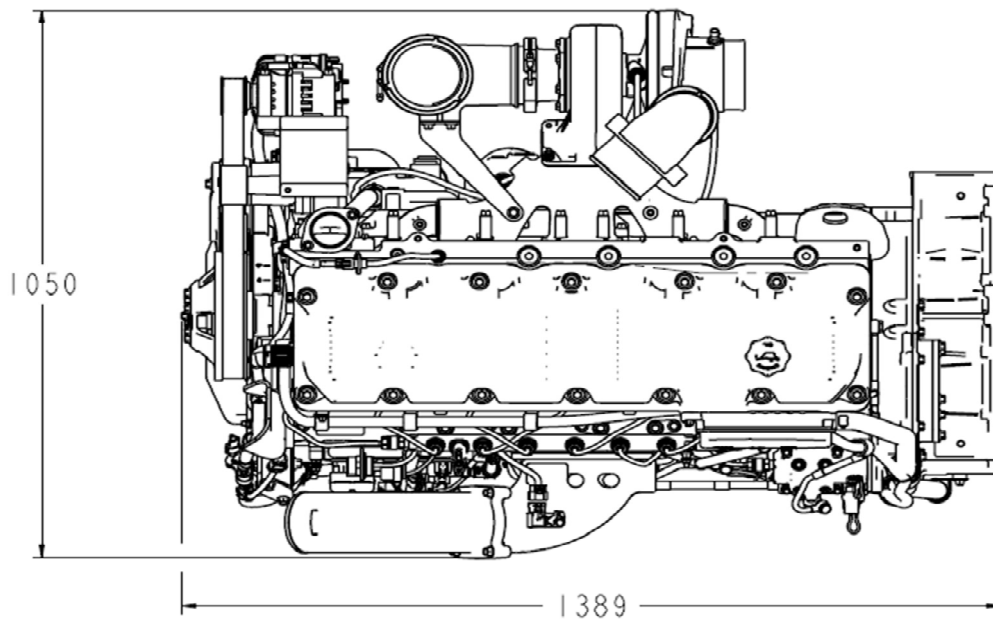
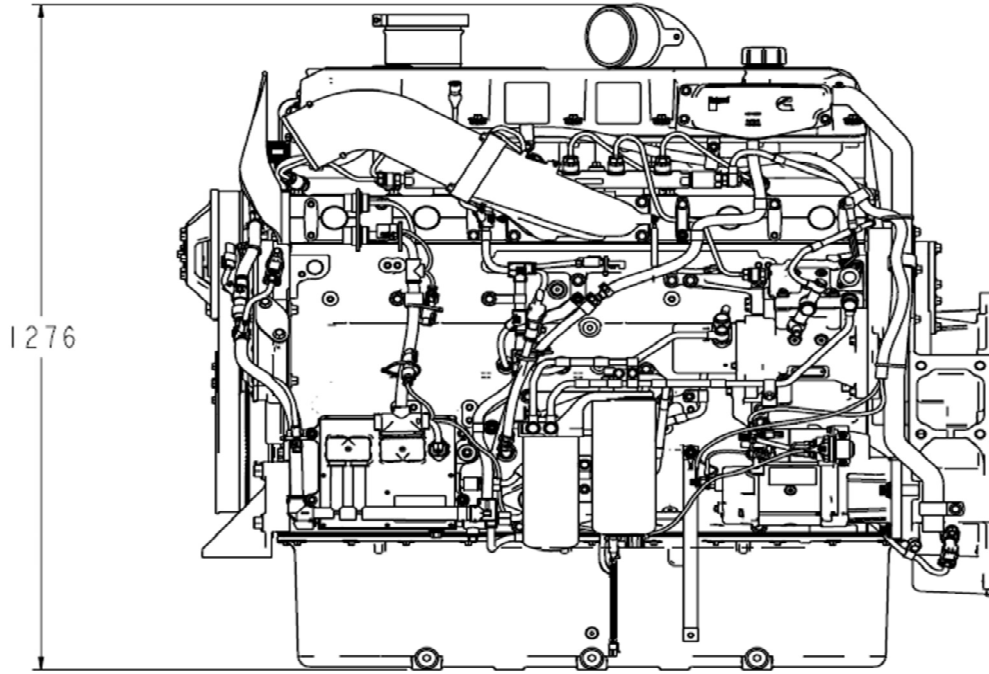
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**STANDBY POWER RATING** is applicable for supplying emergency power for the duration of the utility power outage. No overload capability is available for this rating. Under no condition is an engine allowed to operate in parallel with the public utility 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.

**CONTINUOUS POWER RATING** is 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.

**PRIME POWER RATING** is 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**

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.

Dongfeng Cummins Engine Co.,Ltd  
Automobile Industry Development Zone, Xiangyang, Hubei Province  
China 441004  
Tel: 86-710-3399100  
Fax: 86-710-3392893

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