重庆康明斯发动机有限公司
发动机性能曲线

特征编号	发动机型号: K38N-G7	性能曲线号: FR329	CPL号: 684
D363008GX03			日期: 2025/7/22

排量: 38L (2300 in^3)　　进气方式: 废气涡轮增压，水空中冷　　功率标定

缸径X行程: 159X159mm (6.25X6.25 in.)　　燃气系统: 天然气　　持续: 785kW(1053BHP)@1500RPM

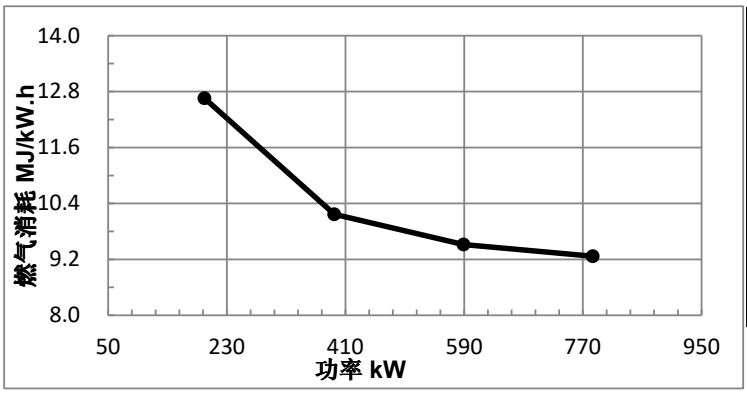
压缩比: 11.5:1　　排放认证: N.A.

所有的数据均是基于发动机带燃气系统、水泵、机油泵、空滤器和消声器运转时获得的，但不包括交流发电机、空压机、风扇、选用设备和被驱动件。冷却液流量和散热量是基于50%乙二醇/50%水获得的。数据如有更改，恕不另行通知。

发动机输出功率

发动机转速	备用功率		常用功率		持续功率	
rpm	BHP	kW	BHP	kW	BHP	kW
1500	-	-	-	-	1053	785
-	-	-	-	-	-	-

燃气消耗



输出功率			燃气消耗量		燃气消耗率	
%	BHP	kW	BTU/min	MJ/h	BTU/BHP.h	MJ/kW.h
持续功率			1500RPM			
100	1053	785	114917	7275	6550	9.3
75	790	589	88561	5606	6726	9.5
50	526	393	63119	3996	7200	10.2
25	263	196	39191	2481	8941	12.7

以上所有的数据都是基于或修正至ISO 3046标准规定的条件——海拔110m（361ft.），大气压力100kPa (29.53in.Hg），进气温度25°C（77°F），相对湿度30%，使用低热值为905BTU/cuft的管道天然气。

CCEC技术部发布　　允差5%　　总工程师

康明斯内部资料

G驱动发动机功率标定使用准则

以下准则阐明了确保G驱动发动机应用于交流发电机组的正确使用规范。G驱动发动机并不是为变速的直流发电机组而设计的，也不是作为变速的直流发电机组的动力来使用。

备用功率标定 是在市电出现异常时作为应急电源使用时的瞬时最大功率。该标定无超负荷能力。且不能与市电并网运行。

此标定的发动机应安装在有效电网覆盖区域内。备用功率标定的发动机按平均负荷率为80%来使用，一年不超过200小时。在备用功率点使用时每年不超过25小时。备用功率标定的发动机只能在断电时作为应急电源使用。电网预先通知的断电不属于应急电源使用范畴。

持续功率标定

可以恒定按100%标定负荷、无时限连续使用的功率。按此标定的发动机无超负荷能力。

火花点火式燃气发动机常用功率标定 是可以在变负荷应用中替代商业电网电力来使用的功率。

按常用功率标定的发动机，平均输出功率不超过此发动机持续功率标定的额定功率值，如果此发动机没有持续功率标定，平均输出功率不超过所标定常用功率的75%。

一年内，100%常用功率的整个运行时间不超过500小时。

如果此发动机有备用功率标定，在12小时运行周期内，有1小时在备用功率运行的超负荷运行能力。一年内，在超负荷运行的整个时间不超过25小时。

如果此发动机有持续功率标定，可以在持续功率标定下持续运行，如果此发动机无持续功率标定，一年内运行总时间不超过2500小时。

参考标准：

以ISO-3046为基础的BS-5514和DIN-6271标准。

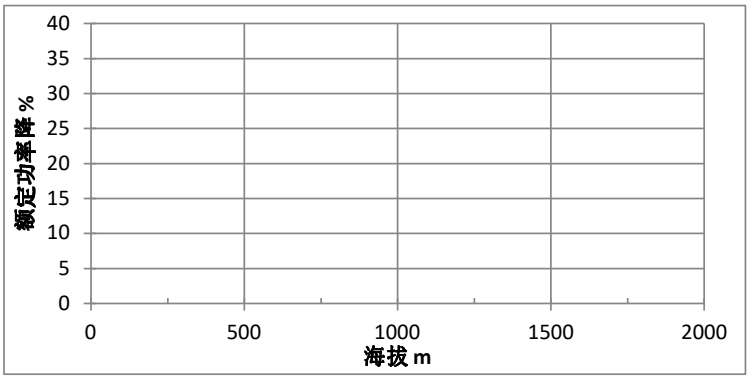
环境温度和海拔变化后的修正：

见下页

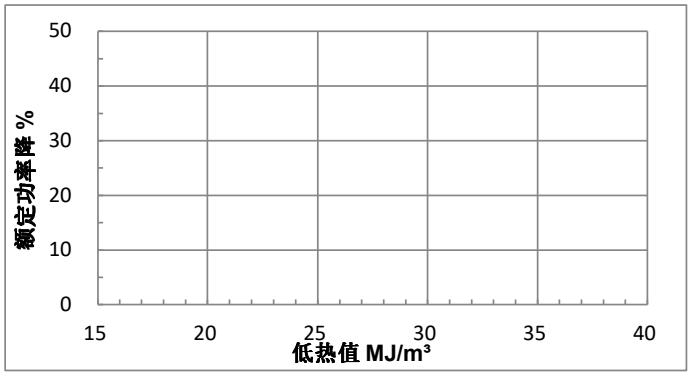
重庆康明斯发动机有限公司
发动机性能曲线

特征编号	发动机型号: K38N-G7	性能曲线号: FR329	CPL号: 684
D363008GX03			日期: 2025/7/22

海拔与环境温度功率降曲线

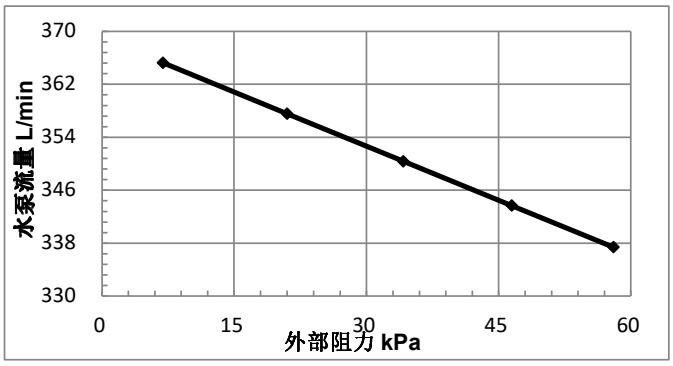


发动机功率随燃料低热值的调整

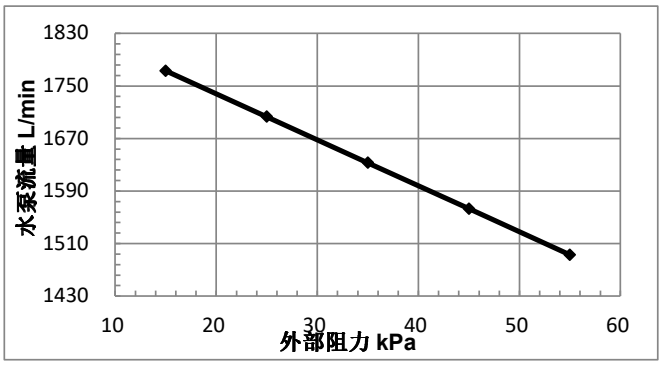


本标定只应用于低热值大于30MJ/m³的管道天然气，在超出此范围的燃气上应用会导致发动机性能变差，并且不被建议。

LTA水泵流量曲线



HTA水泵流量曲线



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CCEC技术部发布　　允差5%　　总工程师

康明斯内部资料

重庆康明斯发动机有限公司
数据单

发动机型号: K38N-G7

参考信息:

持续功率: 785kW(1053BHP)@1500RPM

特征编号 D363008GX03

CPL 684

数据单号 FR329

日期 2025/7/22

整机数据

型式	四冲程、V型、十二缸	
进气方式	废气涡轮增压，水空中冷	
缸径—mm(in.)×行程—mm(in.)	159×159	(6.25×6.25)
排量—L(in^3)	38	(2300)
压缩比	11.5:1	
发动机湿重kg(lb)	5153	(11360)
旋转部件的转动惯量kg-m^2（in-lbf-s^2）		
带飞轮FW 6074	10.4	(93)
质心至缸体后端的距离—mm(in)	801	(31.5)
质心从曲轴中心线至缸体左侧的距离—mm(in)	0	(0.0)
质心在曲轴中心线上方—mm(in)	173	(6.81)

发动机悬置安装

在缸体后端面处的最大允许弯矩—N•m(lb.ft)	4067	(3000)

排气系统

最大允许排气背压—kPa(in.Hg)	10	(3.0)

进气系统

允许的最大进气阻力		
干净滤芯—kPa(in.H_2O)	3.7	(15)
脏滤芯—kPa(in.H_2O)	6.2	(25)

冷却系统

冷却液容量		
仅发动机—L(U.S.Gal)	131.5	(35)
中冷系统—L(U.S.Gal)	29.2	(8)
海平面高度压力盖允许的最小压力—kPa(PSI)	48	(7)
发动机曲轴中心线上方冷却系统的最大静压头高度—m(ft.)	18.3	(60)
可接受的除气系统类型	正压除气	
缸体水路需求		
外循环水最大阻力 —kPa(PSI)	55	(8)
顶部水箱允许的最高温度—°C(°F)	95	(203)
标准节温器温度调节范围—°C(°F)	82-93	(180-200)
中冷水路需求		
外循环水最大阻力 —kPa(PSI)	55	(8)
允许进入中冷器的最高温度—°C(°F)	54	(130)
节温器温度调节范围—°C(°F)	32-43	(90-110)

润滑系统

机油压力		
低怠速时(最小)—kPa(PSI)	138	(20)
额定转速时—kPa(PSI)	345-485	(50-70)
允许的最高机油温度—°C(°F)	121	(250)
系统总容量（包含复合滤清器）—L(U.S.Gal)	170.3	(45)

燃气系统

燃气流量阀进口处最小燃气进气压力—kPa(PSI)	10	(1.5)
燃气流量阀进口处最大燃气进气压力—kPa(PSI)	35	(5.1)
最大燃气压力变化—kPa(PSI)	+/-1	(+/-0.1)
燃气类型	管道天然气	
最低甲烷值—MN	80	

电气及起动系统

系统电压—V	24	
推荐的电瓶最小容量（在-18°C（0°F））冷透状态或以上时：		
冷起动电流—CCA	1800	
储备容量—min	320	
起动电路允许的最大电阻—Ω	0.002	

重庆康明斯发动机有限公司
数据单

冷起动能力

无辅助冷起动：

最小起动转速—rpm 150

无辅助冷起动的最低环境温度—℃(°F)..... 7.2 (45)

性能数据

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任意持续负荷下转速稳定能力%..... ＋/－0.75%

额定转速 rpm..... 1500

怠速 rpm..... 900

	持续功率		
	100%负荷	75%负荷	50%负荷
输出总功率kW(BHP)	785 (1053)	589 (789)	393 (526)
平均有效压力kPa(PSI).....	1658 (240)	1243 (180)	829 (120)
进气流量L/s(CFM).....	943 (1998)	700 (1483)	448 (949)
压气机出口压力kPa(in Hg).....	184 (54)	120 (35)	60 (18)
压气机出口温度℃(°F).....	166 (331)	129 (264)	88 (190)
进气歧管压力kPa(in.Hg).....	160 (47)	94 (28)	28 (8)
排气温度 ℃(°F).....	484 (903)	491 (916)	501 (934)
排气流量 L/s(CFM).....	2282 (4835)	1742 (3691)	1149 (2435)
空燃比（质量）.....	25.8:1	24.8:1	22.3:1
对环境的散热量kW(BTU/min).....	75 (4254)	58 (3278)	41 (2339)
对排气的散热量kW(BTU/min).....	588 (33421)	453 (25757)	323 (18376)
对冷却液的散热量 kW(BTU/min).....	580 (32973)	447 (25412)	319 (18130)
发动机外部的压力损失在确定值下水套冷却液的流量L/min(gpm)：			
压力损失为5 psi	1633 (431)	1633 (431)	1633 (431)
压力损失为最大	1493 (394)	1493 (394)	1493 (394)
对中冷器的散热量kW(BTU/min).....	63 (3607)	51 (2922)	37 (2085)
发动机外部的压力损失在确定值下中冷器冷却液的流量L/min(gpm)：			
压力损失为5psi	350 (92)	350 (92)	350 (92)
压力损失为最大	339 (90)	339 (90)	339 (90)

CHONGQING CUMMINS ENGINE COMPANY LTD.
ENGINE PERFORMANCE CURVE

CONFIGURATION	ENGINE MODEL:	CURVE NUMBER:	CPL CODE:
D363008GX03	K38N-G7	FR329	684
			DATE: 2025/7/22

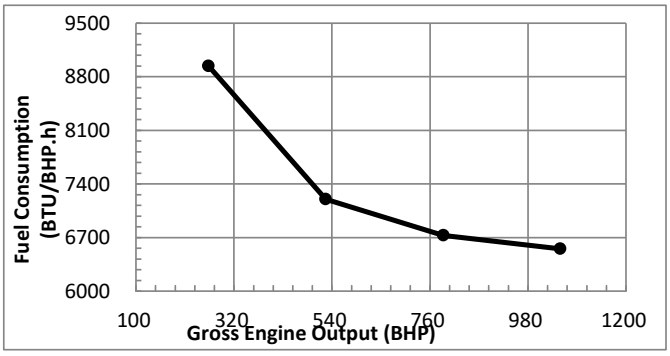
Displacement:	38L	(2300 in3)	Aspiration:	Turbocharged and Aftercooled	RATING
BoreXStroke:	159X159mm	(6.25X6.25 in.)	Fuel System:	Natural Gas	Continuous: 785kW(1053BHP)@1500RPM
Compress Ratio:	11.5:1		Emission：	N.A.	

All data is based on the engine operating with fuel system,water pump, lubricating oil pump, air cleaner, and muffler; not included are alternator, fan, optional equipment and driven components. Coolant flows and heat rejection data based on coolant as 50% ethylene glycol/50% water. All data is subject to change without notice.

GROSS ENGINE POWER OUTPUT

SPEED	STANDBY POWER		PRIME POWER		CONTINUOUS POWER	
rpm	BHP	kW	BHP	kW	BHP	kW
1500	-	-	-	-	1053	785
-	-	-	-	-	-	-

FUEL CONSUMPTION



OUTPUT POWER			CONSUMPTION		BFSC	
%	BHP	kW	BTU/min	MJ/h	BTU/BHP.h	MJ/kW.h
			1500RPM			
Continuous Power						
100	1053	785	114917	7275	6550	9.3
75	790	589	88561	5606	6726	9.5
50	526	393	63119	3996	7200	10.2
25	263	196	39191	2481	8941	12.7

Data shown above represents 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% using dry processed gas natural gas fuel with 905 BTU per standard cubic foot lower heating value.

TECHNICAL DATA DEPT. **CERTIFIED WITHIN 5%** **CHIEF ENGINEER**

Cummins Confidential

POWER RATING APPLICATION GUIDELINES FOR GENERATOR DRIVE ENGINES

These guidelines have been foumulated to ensure proper application of generator drive engines in A.C. generator set installations. Generator drive engines are not designed for and shall not be used in variable speed D.C. generator set appliacations.

STANDBY POWER RATING is appliable 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

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 – SPARK IGNITED GAS is applicable for supplying electrical power in place of commercially available power in a variable load application.

The average power output of a prime rating should not exceed the rated power of the associated Continuous Power rating for the specific engine. If there is no Continuous Power rating associated with this engine, the average power output of a prime rating should not exceed 75% of the Prime Power rating.

The total operation time at 100% Prime Power should not exceed 500 hours per year.

If a Standby Power rating is available, an overload capability is available at the Standby Power rating for one out of every 12 hours. The total time at the overload power should not exceed 25 hours per year.

If there is a Continuous Power rating associated with this engine, the Gas Prime rating can be run continuously at the Continuous Power rating. If there is no Continuous Power rating associated with this engine, the maximum amount of hours of operation is 2500 hours per year.

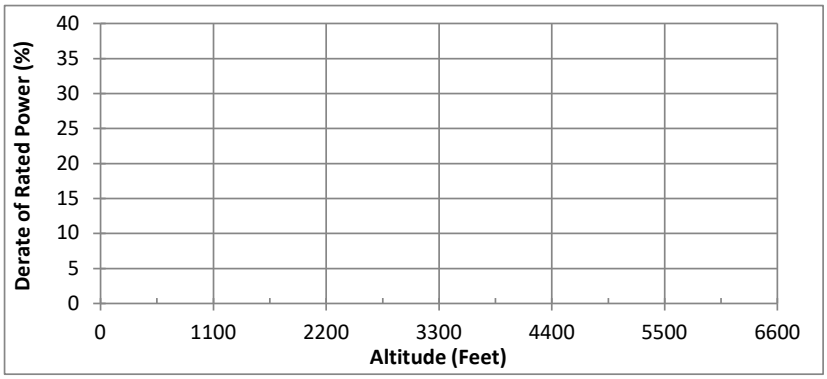
Reference Standards:

BS-5514 and DIN-6271 standards are based on ISO-3046.

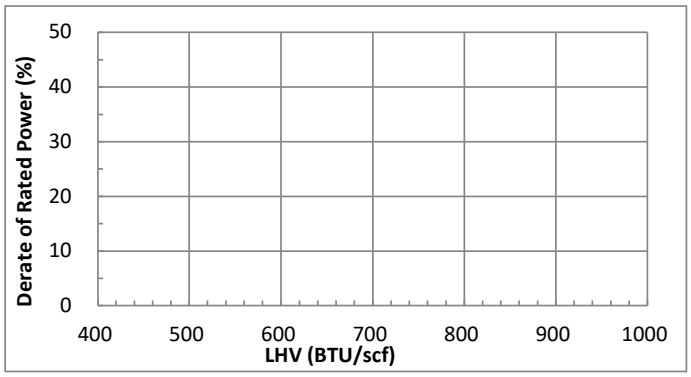
CHONGQING CUMMINS ENGINE COMPANY LTD.
ENGINE PERFORMANCE CURVE

CONFIGURATION	ENGINE MODEL:	CURVE NUMBER:	CPL CODE:
D363008GX03	K38N-G7	FR329	684
			DATE: 2025/7/22

Altitude and Ambient Temperature Derate Curve



Engine Adjustments for Fuel Energy Content

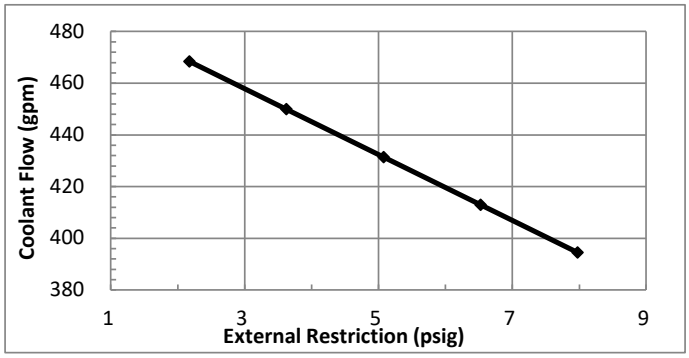


This rating should only be operated on minimum 800 BTU/scf Pipeline Natural Gas. Operation on fuel outside this range will result in poor engine performance, and is not recommended.

Aftercooler Coolant Pump Restriction Curve



Jacket Water Coolant Pump Restriction Curve



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TECHNICAL DATA DEPT. | CERTIFIED WITHIN 5% | CHIEF ENGINEER

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CHONGQING CUMMINS ENGINE COMPANY LTD.
ENGINE DATA SHEET

ENGINE MODEL(S): K38N-G7

CONTINUOUS: 785kW(1053BHP)@1500RPM

CONFIGURATION D363008GX03

REFERENCE INFORMATION:

CPL CODE 684

DATA SHEET NUMBER..... FR329

DATE..... 2025/7/22

GENERAL ENGINE DATA

Type	4 Cycle , 60° Vee , 12 Cylinder	
Aspiration	Turbocharged and Aftercooled	
Bore—in.(mm)×stroke—in.(mm)	6.25×6.25	(159×159)
Displacement—in^3(L)	2300	(38)
Compression Ratio	11.5:1	
Wet Weight—lb(kg)	11360	(5153)
Moment of Inertia of Rotating Components —in-lbf-s^2($kg•m^2$)		
·With FW 6074 Flywheel —$kg•m^2$($lb_m.ft^2$)	93	(10.4)
C.G. Distance From Rear Face of Block—in(mm)	31.5	(801)
C.G. Distance From Engine Centerline to Left Side of Engine—in(mm)	0.0	(0)
C.G. Distance Above Crankshaft Centerline—in(mm)	6.8	(173)

ENGINE MOUNTING

Maximum Bending Moment at Rear Face of Block—lb.ft(N•m)	3000	(4067)
Maximum Crankshaft Thrust Bearing Load—lb.ft(N•m)	750	(3336)

EXHAUST SYSTEM

Maximum Back Pressure —in.Hg(kPa)	3	(10.0)

AIR INDUCTION SYSTEM

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

COOLING SYSTEM

Coolant Capacity		
Engine Only —U.S.Gal(L)	35	(132)
After-cooler Only —U.S.Gal(L)	8	(29)
Minimum Allowable Pressure Cap @ sea level— PSI(kPa)	7	(48)
Maximum Static Head of Coolant Above Engine Crank Centerline —ft.(m)	60	(18.3)
Acceptable Types of Deaeration System	Positive	
Jacket Water Circuit Requirements		
Maximum Coolant Friction Head External to Engine —PSI(kPa)	8	(55)
Maximum Coolant Temperature(Maximum Top Tank Temp) —°F(℃)	203	(95)
Thermostat (Modulating) Range —°F(℃)	(180-200)	82-93
Low Temperature Aftercooler (LTA) Circuit Requirements		
Maximum Coolant Friction Head External to Engine —PSI(kPa)	8	(55)
Maximum Coolant Temperature into the Aftercooler —°F(℃)	130	(54)
Thermostat (Modulating) Range —°F(℃)	(90-110)	32-43

LUBRICATION SYSTEM

Oil Pressure		
@ Minimum Low Idle —PSI(kPa)	20	(138)
@ Governed Speed —PSI(kPa)	50-70	(345-483)
Maximum Allowable Oil Temperature —°F(℃)	250	(121)
Total System Capacity (Including By-Pass Filter) —U.S.Gal(L)	45.0	(170.3)

FUEL SYSTEM

Minimum Fuel Inlet Pressure @ Inlet of GMF Sensor Housing—PSI(kPa)	1.5	(10)
Maximum Fuel Inlet Pressure @ Inlet of GMF Sensor Housing—PSI(kPa)	5.1	(35)
Maximum Fuel Pressure Variation—PSI(kPa)	+/-1	
Acceptable Fuel	Pipeline Quality Natural Gas	
Minimum Fuel Methane Number—MN	80	

All Data is Subject to Change Without Notice.

CHONGQING CUMMINS ENGINE COMPANY LTD.
ENGINE DATA SHEET

ELECTRICAL SYSTEM AND START SYSTEM

System Voltage—V..... 24

Minimum Recommended Battary Capacity： Cold Soak at -18 °C (0 °F) or Above

·Engine Only Cold Cranking Amps—CCA..... 1800

·Engine Only Reserve Capacity—min..... 320

Maximum Allowable Resistance of Starting Circuit—Ω..... 0.002

Cold Start Capability

Unaided Cold Start

·Minimum Cranking Speed—rpm..... 150

·Minimum Ambient Temperature for Unaided Cold Start—°F(℃)..... 45 (7.2)

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 905 BTU/scf fuel
-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 Speed Stability at Any Constant Load—%..... + / - 0.75%

Governed Engine Speed—rpm..... 1500

Engine Idle Speed—rpm..... 900

	Continuous Power		
	100% Load	75% Load	50% Load
Gross Engine Power Output BHP(kW).....	1053 (785)	789 (589)	526 (393)
Brake Mean Effective Pressure psi (kPa).....	240 (1658)	180 (1243)	120 (829)
Intake Air Flow ft^3/min (L/s).....	1998 (943)	1483 (700)	949 (448)
Turbocharger Compressor Outlet Pressure in.Hg(kPa).....	54 (184)	35 (120)	18 (60)
Turbocharger Compressor Outlet Temperature °F(℃).....	331 (166)	264 (129)	190 (88)
Intake Manifold Pressure in.Hg(kPa).....	47 (160)	28 (94)	8 (28)
Exhaust Gas Temperature °F (°C).....	903 (484)	916 (491)	934 (501)
Exhaust Gas Flow CFM(L/s).....	4835 (2282)	3691 (1742)	2435 (1149)
Air to Fuel Ratio (Mass Basis).....	25.8:1	24.8:1	22.3:1
Heat Rejection to Ambient BTU/min(kW).....	4254 (75)	3278 (58)	2339 (41)
Heat Rejection to Exhaust BTU/min(kW).....	33421 (588)	25757 (453)	18376 (323)
Heat Rejection to Coolant BTU/min(kW).....	32973 (580)	25412 (447)	18130 (319)
Engine Jacket Water Flow at gpm(L/min):			
• 5 psi External Friction Head	431 (1633)	431 (1633)	431 (1633)
• Maximum Friction Head.....	394 (1493)	394 (1493)	394 (1493)
Heat Rejected to Aftercooler coolant BTU/min(kW).....	3607 (63)	2922 (51)	2085 (37)
Engine Aftercooler Water Flow at gpm(L/min):			
• 5 psi External Friction Head	92 (350)	92 (350)	92 (350)
• Maximum Friction Head.....	90 (339)	90 (339)	90 (339)