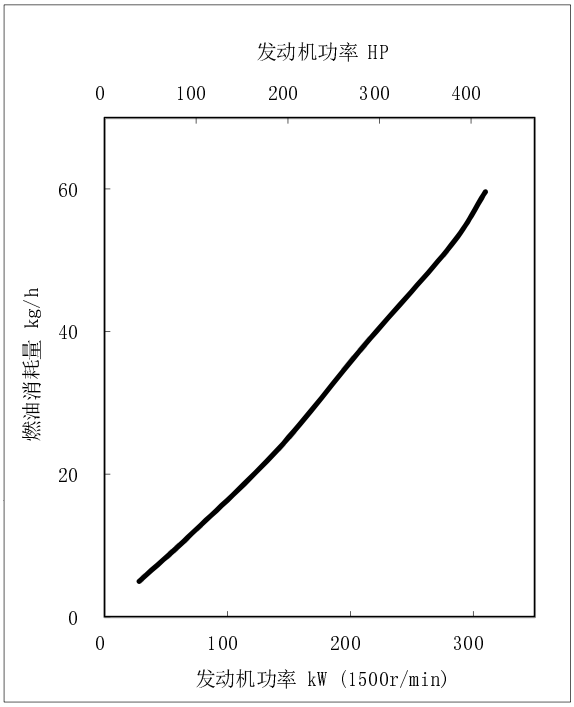
	康明斯发动机有限公司 发动机性能曲线	发动机型号 MTAA11-G3		曲线编号 C-0237A	日期 2008.07
		CPL代号 CQ223	数据单号 C-0237A	排放水平	

排量：	10.8	[661 in.^{3}]	缸数：	6	燃油系统： PT
缸径：	125mm	[4.92 in.]	转速：	1500r/min	特征编号： D353009GX03
冲程：	147mm	[5.79 in.]	吸气方式：	增压，空空中冷	

备用功率		常用功率		持续功率	
kW	HP	kW	HP	kW	HP
310	415	282	378	210	282



工况	功率		燃油消耗量
	HP	kW	kg/h
备用100%	415	310	59.6
常用100%	378	282	52.1
75%	284	212	38.2
50%	189	141	23.5
25%	95	71	11.7
10%	37	28	5.0
持续100%	282	210	40

所有数据基于：

--发动机带燃油系统、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、 选用设备和被驱动的部件。

--发动机运转使用符合ASTM D975标准的2#柴油。

--ISO 3046，第1部分，标准参考条件 :大气压力100kPa(29.5in.Hg)、进气 温度 25°C (77°F) 、 相对湿度30% 。数据的偏差范围为+/-5%。

批准：

G 驱发动机功率标定指导说明

此指导说明是为了确保发电驱动用发动机在装配发电机组时的正确应用。发电驱动用发动机不能用于变速直流发电机组。

备用功率标定

可用于在失去主电源的情况下提供紧急备用电源。在此功率上没有超载能力。在任何情况下发动机都不允许以备用功率与市电并网。

此标定只适用于有可靠市电之处。采用备用功率标定的发动机平均负载不超过 80%备用工况效率，且每年运行时间不超过 200 小时。这包括每年在备用功率下运行时间低于 25 小时。除了确实失去市电的情况外，不应使用备用标定。与供电方发生的协议停电不被认为是紧急情况。

持续功率标定

用于每年不限时的按100%负荷恒定运行的供应公用电力的场合。本功率不能获得超负荷运行能力。

常用功率标定

可用于向商业用电场合提供电能。常用功率应用必须采用于以下两种情形之一：

不限时运行常用功率

常用功率可每年不限时地进行变负载的应用。每个 250 小时运行时间内，可变负载平均值不超过 70%常用功率。

每年 100%常用功率下的运行时间不超过 500 小时。

每 12 小时允许 1 小时超负荷 10%运行。每年总的超负荷 10%运行时间不超过 25 小时。

有限时间运行常用功率

常用功率可在有限时间内用于不变负载应用。适用于协议停电的地区，如电力短缺。发动机每年可以以不超过常用功率并网发电750小时。但是用户应该明白，任何发动机会因为这样高的连续负载而寿命减少。任何超过每年750小时的运行，不应按常用功率运行而应该以持续功率运行。

参考标准：

BS-5514 及 DIN-6271，基于 ISO-3046。

温度、海拔高度修正：

发动机可在以下条件运行：

1800RPM 在 5000 英尺以下(1525m)、104℉(40℃)以下不需进行修正。

1500RPM 在 5000 英尺以下(1525m)、104℉(40℃)以下不需进行修正。

超过这些条件，按高度每上升 1000 英尺(300m)功率减少 4%、温度每上升 10℉降低 1%(每上升 11℃下降 2%)计算。

康明斯发动机有限公司

数据单

发动机型号：MTAA11-G3 | **数据单编号：C-0237A**
特征编号：D353009GX03 | **性能曲线编号：C-0237A**
CPL 号：CQ223 | **参考外形图号：4915163**
常用功率：282kW/1500r/min@50Hz | **发布日期：2008.07**
备用功率：310kW/1500r/min@50Hz | **排放水平：**

整机数据

型式	六缸、直列、四冲程	
进气方式	增压，空空中冷	
缸径×冲程 - mm×mm (in.×in.)	125×147	(4.92 × 5.79)
排量 - L ($in.^3$)	10.8	(661)
压缩比	15.0:1	
发火顺序	1-5-3-6-2-4	
发动机干重		
--包括飞轮和发电机，但不包括其它电气零件 - kg (lb.)	934	(2059)
发动机湿重		
--仅发动机 - kg (lb.)	971	(2141)
旋转部件转动惯量 - 配备FW2141飞轮 - kg·m^2 (lb.·$ft.^2$)	2.63	(62.4)
发动机重心距缸体前端 - mm (in.)	450	(17.7)
发动机重心在曲轴中心线之上 - mm (in.)	190	(7.5)

发动机安装

允许的最大缸体后端面处弯矩 - N·m (lb.·ft.)	1356	(1000)

排气系统

允许的最大排气背压 - kPa (in.Hg)	10	(3.0)

进气系统

允许的最大进气阻力		
--滤清器脏时 - kPa (in. H_2O)	6.2	(25)
--轻型干净滤芯时 - kPa (in. H_2O)	2.5	(10)
--重型干净滤芯时 - kPa (in. H2O)	3.7	(15)

空空中冷

设计的环境参数		
最大进气管温度 - °C (°F)	55	(131)
增压器出口到进气管之间的压差 - kPa	16.7	
可以接受的进气管直径 - mm	100	

冷却系统

冷却液容量 - 单机 - L (U.S. gal)	9.5	(2.5)
- 带散热器 - L (U.S. gal)	N/A	
发动机外部最大允许冷却液阻力-1800rpm - kPa (PSI)	41	(6)
-1500rpm - kPa (PSI)	34	(5)
最大冷却水静压(高于曲轴中心线以上) -m (ft.)	14.0	(46)
标准节温器温度调节范围 - °C (°F)	82 - 94	(180 - 202)
允许的最小压力盖压力 -kPa (PSI)	50	(7)
散热器上水室允许的最高温度-备用用途 - °C (°F)	104	(220)
-持续用途 - °C (°F)	100	(212)

润滑系统

机油压力 @ 怠速 - kPa (PSI)	69	(10)
@ 额定转速 - kPa (PSI)	207 - 345	(30 - 50)
允许的最高机油温度 - °C (°F)	121	(250)
机油盘容量 低位/高位 - L (U.S. gal.)	26.5 / 34.0	(7 / 9)
系统总容量（带LF9009组合式机油滤清器） - L (U.S. gal.)	36.7	(9.7)

机油盘(OP2152)允许倾角

前仰	45°
后仰	42°
燃油泵侧仰角	45°
排气侧仰角	40°

燃油系统

喷油系统型式 …… 直喷式康明斯PT系统

PT燃油泵进油管路最大允许阻力

-- 干净燃油滤清器 - kPa (in.Hg)	13.5	(4.0)
-- 脏燃油滤清器 - kPa (in.Hg)	27.1	(8.0)

回油管路最大阻力

-- 带单向阀 - kPa (in.Hg)	22.0	(6.5)
-- 不带单向阀 - kPa (in.Hg)	8.5	(2.5)

电气系统

标准起动机(重型、正极啮合） -伏(volt)	24
标准蓄电池充电系统，负极接地 -安培(ampere)	35
起动回路允许最大电阻 - ohm	0.002

最小建议蓄电池容量

- 大于10°C（ 50°F ）-CCA	600
- 0°C-10°C（32°F-50°F）-CCA	640
- -18°C-0°C（0°F-32°F）-CCA	900

启动系统

无辅助冷启动装置时要求的最低平均启动转速 -r/min …… 150

性能数据

所有数据基于：

--发动机带燃油系统、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、 选用设备和被驱动的部件。

--发动机运转使用符合ASTM D975标准的2#柴油。

--ISO 3046，第1部分，标准参考条件 :大气压力100kPa(29.5in.Hg)、进气 温度 25°C (77°F) 、相对湿度30% 。

稳态调速率 -% …… +/-0.25

	备用功率	常用功率
发动机转速 - r/min	1500	1500
发动机怠速 - r/min	675-700	1500
总输出功率 - kW	310	282
机械损失功率 - kW	22	22
冷却水流量 - L/s	3.8	3.8
带干式排气管发动机参数		
进气流量 - L/s	395	365
排气温度 - °C	595	580
排气流量 - L/s	950	850
辐射散热量 - kW	43	40
冷却水散热量 - kW	95	83
排气散热量 - kW	270	234

发动机型号: MTAA11-G3
数据单号: C-0237A
日期: 2008.07

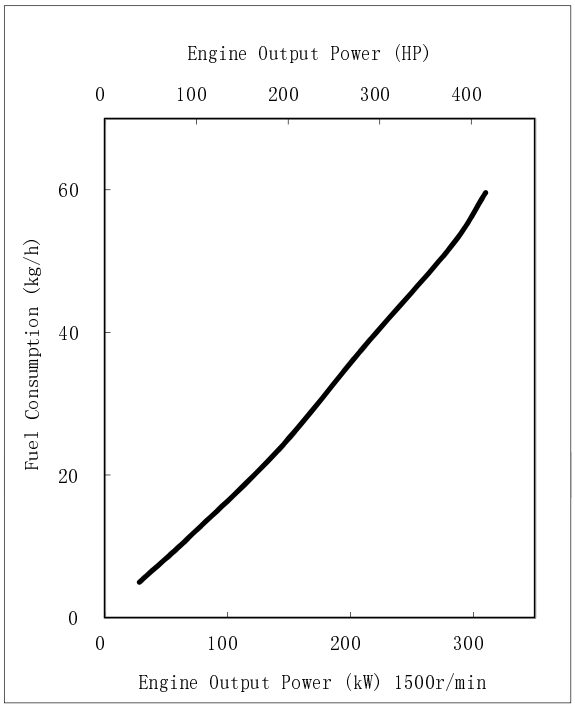
	CCEC CUMMINS ENGINE PERFORMANCE CURVE	Engine Model MTAA11-G3		Curve No. C-0237A	Date 2008.07
		CPL Code CQ223	Data Sheet C-0237A	Emission Level	

Displacement: **14L** **[855 in.^{3}]** Cylinders: **6** Fuel System: **PT**

Bore: **125mm** **[5.50 in.]** Speed: **1500r/min** Cfg. Number: **D353009GX03**

Stroke: **152mm** **[6.00in.]** Aspiration: **Turbocharged and Charged Air Cooled**

Standby Power		Prime Power		Continuous Power	
kW	HP	kW	HP	kW	HP
310	415	282	378	210	282



	Output Power		Fuel Consumption
	HP	kW	kg/h
Standby100%	415	310	59.6
Prime100%	378	282	52.1
75%	284	212	38.2
50%	189	141	23.5
25%	95	71	11.7
10%	37	28	5.0
Cont.100%	282	210	40

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, optional equipment and driven components.

--Engine operating with fuel corresponding to grade No.2-D per ASTM D975.

--ISO 3046, Part1, Standard Reference Conditions of : Barometric Pressure:100kPa(29.5in.Hg); Air Temperature: 25°C (77°F) ; Relative Humidity: 30% .

Tolerance is certified within 5%.

CHIEF ENGINERR：

POWER RATING APPLICATION GUIDELINES FOR GENERATOR DRIVE ENGINES

These guidelines have been formulated 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 applications.

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.

Reference Standards:

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

Operation At Elevated Temperature And Altitude:

The engine may be operated at:

1800 RPM up to 5000 ft. (1525 m) and 104 °F (40 °C) without power deration.

1500 RPM up to 5000 ft. (1525 m) and 104 °F (40 °C) without power deration.

For sustained operation above these conditions, derate by 4% per 1,000 ft. (300 m), and 1% per 10 °F (2% per 11 °C).

CCEC CUMMINS ENGINE COMPANY LTD.
ENGINE DATA SHEET

MODEL:	**MTAA11-G3**	**DATA SHEET:**	**C-237A**
CONFIGURATION NO.:	**D353009GX03**	**PERFORMANCE CURVE:**	**C-237A**
CPL NUMBER:	**CQ223**	**INSTALLATION DIAGRAM:**	**4915163**
PRIME POWER	**282kW/1500r/min@50Hz**	**DATE:**	**2008.07**
STANDBY POWER:	**310kW/1500r/min@50Hz**	**EMISSION LEVEL:**	

GENERAL ENGINE DATA

Type	6-Cylinder;In-line;4-Cycle	
Aspiration	Turbocharged and Charged Air Cooled	
Bore x Stroke - in.×in. (mm×mm)	4.92 ×5.79	(125 × 147)
Displacement - in.^{3}(L)	661	(10.8)
Compression Ratio	15.0:1	
Firing Order	1-5-3-6-2-4	
Dry Weight		
--Including Flywheel and Generator		
Excluding other Electrial Component - lb. (kg)	2059	(934)
Wet Weight		
--Engine Only - lb. (kg)	2141	(971)
Moment of Inertia of Rotating Components		
- With FW2141 flywheel - lb.·ft.^{2} (kg·m^2)	62.4	(2.63)
Center of Gravity from Front Face of Block - in.(mm)	17.7	(450)
Center of Gravity Above Crankshaft Centerline - in.(mm)	7.5	(190)

ENGINE MOUNTING

Maximum Allowable Bending Moment at Rear Face of Block - lb.·ft. (N·m)	1000	(1356)

EXHAUST SYSTEM

Maximum Allowable Back Pressure - in.Hg (kPa)	3.0	(10)

AIR INDUCTION SYSTEM

Maximum Allowable Intake Air Restriction - in. H2O (kPa)		
--with Dirty Filter Element	25	(6.2)
--with Normal Duty Air Cleaner and Clean Filter Element	10	(2.5)
--with Heavy Duty Air Cleaner and Clean Filter Element	15	(3.7)

CHARGE AIR COOLING

Design Parameters for Ambients		
Max. Inlet Manifold Temperature - °C (°F)	55	(131)
Max. △P between Turbocharger Outlet and Intake Manifold - kPa	16.7	
Intake Pipe Size Allowable - mm	100	

COOLING SYSTEM

Coolant Capacity - Engine Only - U.S. gal (L)	2.5	(9.5)
- With Radiator - U.S. gal (L)	N/A	
Maximum Coolant Friction Head External to Engine		
-1800rpm - PSI (kPa)	6	(41)
-1500rpm - PSI (kPa)	5	(34)
Maximum Static Head of Coolant Above Engine Crank Centerline -ft. (m)	46	(14.0)
Standard Thermostat (Modulating) Range - °F (°C)	180 - 202	(82 - 94)
Minimum Allowable Pressure Cap -PSI (kPa)	7	(50)
Maximum Top Tank Temperature -for Standby/Prime °F (°C)	220/212	(104/100)

LUBRICATION SYSTEM

Oil Pressure @ Idle Speed - PSI (kPa)	10	(69)
@ Governed Speed - PSI (kPa)	30-50	(207 - 345)
Maximum Allowable Oil Temperature - °F (°C)	250	(121)
Oil Pan Capacity with OP2152 - Low / High - U.S. gal. (L)	7 / 9	(26.5 / 34.0)
Total System Capacity(with LF9009 Combine Filter) - U.S. gal. (L)	9.7	(36.7)

Angularity of OP2152 OIL PAN

Rear Down……	45°
Front Down……	42°
Exhaust Side Down……	45°
Fuel Pump Side Down……	40°

FUEL SYSTEM

Type Injection System……	Direct Injection Cummins PT	
Maximum Allowable Restriction to Fuel Pump		
-- With Clean Fuel Filter - in.Hg (kPa)……	4.0	(13.5)
-- With Dirty Fuel Filter - in.Hg (kPa)……	8.0	(27.1)
Maximum Allowable Head on Injector Return Line		
-- With Check Valve - in.Hg (kPa)……	6.5	(22.0)
-- Without Check Valve - in.Hg (kPa)……	2.5	(8.5)

ELECTRICAL SYSTEM

Standard Cranking Motor (Heavy Duty , Positive Engagement） - volt…	24
Standard Battery Charging System , Negative Ground - ampere……	35
Maximum Allowable Resistance of Cranking Circuit - ohm……	0.002
Minimum Recommended Battery Capacity	
- 50°F (10°C) and Above-CCA……..……	600
- 32°F-50°F（0°C-10°C）-CCA……..……	640
- 0°F-32°F（-18°C-0°C）-CCA……..……	900

CRANKING SYSTEM

-- Minimum Cranking Speed Required for Unaided Cold Start -r/min…	150

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 driven components.

--Engine operating with fuel corresponding to grade No.2-D per ASTM D975.

--ISO 3046, Part1, Standard Reference Conditions of : Barometric Pressure:100kPa(29.5in.Hg); Air Temperature: 25°C (77°F) ; Relative Humidity: 30% .

Steady State Stability Band at any Constant Load -%…… +/-0.25

	Standby Power	Prime Power
Governed Engine Speed -rpm ……	1500	1500
Engine Idle Speed -rpm ……	675-700	675-700
Gross Engine Power Output - kW ……	310	282
Friction Horsepower - kW……	22	22
Engine Water Flow - L/s ……	3.8	3.8
Engine Data with Dry Type Exhaust Manifold		
Intake Air Flow - L/s ……	395	365
Exhaust Gas Temperature - °C……	595	580
Exhaust Gas Flow - L/s……	950	850
Heat Rejection to Ambient - kW……	43	40
Heat Rejection to Coolant - kW……	95	83
Heat Rejection to Exhaust - kW……	270	234

Engine Model: MTAA11-G3
Data Sheet: C-237A
Date: 2008.07