



## 重庆康明斯发动机 性能曲线

发动机型号  
**MTA11-G2**

曲线编号  
**C-2487A**

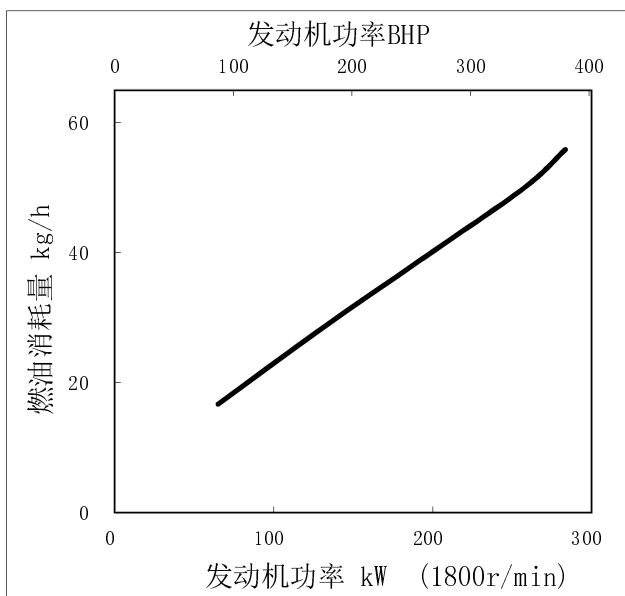
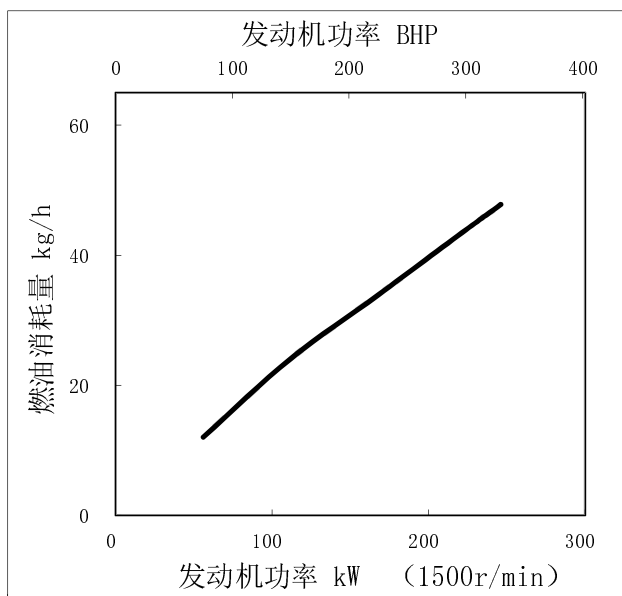
日期  
**2007.12**

CPL代号  
**2165**

数据单号  
**C-2487A**

排放水平

排量: **10.8 [661 in.<sup>3</sup>]**      缸数: **6**      燃油系统: **PT**  
 缸径: **125mm [4.92 in.]**      转速:      特征编号: **D353009GX03**  
 冲程: **147mm [5.79 in.]**      吸气方式: **增压, 水空中冷**



1500r/min主要性能参数

工况	功率		燃油消耗量
	BHP	kW	kg/h
备用功率100%	330	246	47.8
常用功率100%	300	224	43.9
75%	225	168	33.9
50%	150	112	24.1
25%	75	56	12.0
持续功率100%	225	168	33.9

1800r/min主要性能参数

工况	功率		燃油消耗量
	BHP	kW	kg/h
备用功率100%	380	283	55.8
常用功率100%	345	257	49.9
75%	259	193	39.0
50%	172	128	28.0
25%	87	65	16.7
持续功率100%	305	227	44.5

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°F (40°C) 以下不需进行修正。

1500RPM 在 5000 英尺以下(1525m)、104°F (40°C) 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°F 降低 1%(每上升 11°C 下降 2%)计算。



# 重庆康明斯发动机有限公司

## 发动机数据单

发动机型号: MTA11-G2  
 特征编号: D353009GX03  
 CPL 号: 2165  
 常用功率: 224kW/1500r/min@50Hz  
 备用功率: 246kW/1500r/min@50Hz

数据单编号: C-2487A  
 性能曲线编号: C-2487A  
 参考外形图号: 3170249  
 发布日期: 2007.12  
 排放水平:

### 整机数据

型式.....	六缸、直列、四冲程	
进气方式.....	增压, 水空中冷	
缸径×冲程 - mm×mm (in.×in.).....	125×147	4.92 × 5.79
排量 - L (in. <sup>3</sup> ).....	10.8	( 661 )
压缩比.....	16.1:1	
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.).....	940	( 2072 )
发动机湿重		
--仅发动机 - kg (lb.).....	980	( 2160 )
旋转部件转动惯量 - 配备FW2141飞轮 - kg·m <sup>2</sup> (lb.·ft. <sup>2</sup> ).....	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 )
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### 排气系统

允许的最大排气背压 - kPa (in.Hg).....	10	( 3.0 )
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### 进气系统

允许的最大进气阻力		
--滤清器脏时 - kPa (in. H <sub>2</sub> O).....	6.2	( 25 )
--轻型干净滤芯时 - kPa (in. H <sub>2</sub> O).....	2.5	( 10 )
--重型干净滤芯时 - kPa (in. H <sub>2</sub> O).....	3.7	( 15 )

### 冷却系统

冷却液容量 - 单机 - L (U.S. gal).....	12.9	( 3.4 )
- 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	
	60Hz	50Hz	60Hz	50Hz
发动机转速 - r/min.....	1800	1500	1800	1500
发动机怠速 - r/min.....	675-750	675-750	675-750	675-750
总输出功率 - kW .....	283	246	257	224
平均有效压力 - kPa.....	1742	1816	1586	1651
活塞平均速度 - m/s.....	8.8	7.4	8.8	7.4
机械损失功率 - kW .....	30.6	22.4	30.6	22.4
冷却水流量 - L/s .....	5.0	3.8	5.0	3.8
<b>带干式排气管发动机参数</b>				
进气流量 - L/s .....	380	280	362	263
排气温度 - °C.....	440	518	429	510
排气流量 - L/s.....	858	707	802	658
辐射散热量 - kW.....	40	34	35	31
冷却水散热量 - kW.....	148	114	138	106
排气散热量 - kW.....	190	170	162	159

发动机型号: MTA11-G2

数据单号: C-2487A

日期: 2007.12

**重庆康明斯发动机有限公司**

中国, 重庆, 400031

更改记录

C-2487A 2012.07.20 数据单格式更改



**CHONGQING CUMMINS ENGINE  
PERFORMANCE CURVE**

Engine Model  
**MTA11-G2**

Curve No.  
**C-2487A**

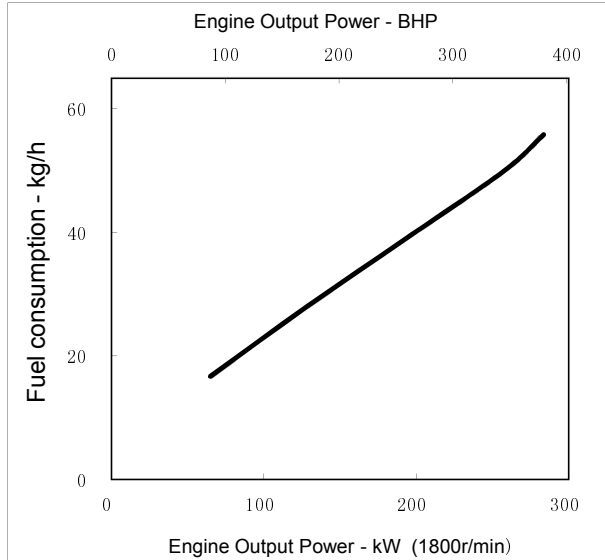
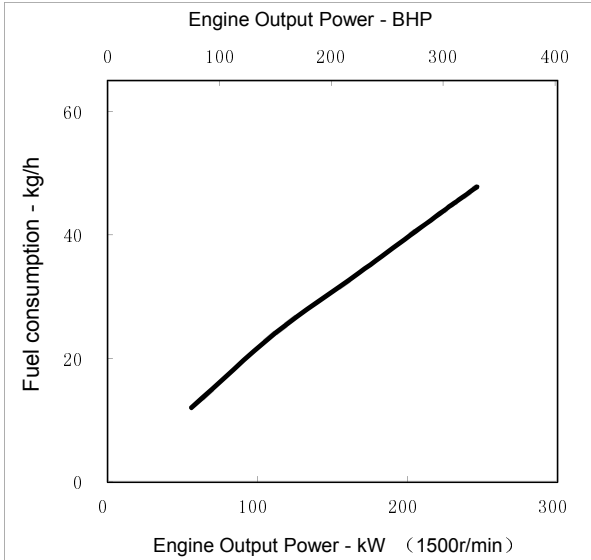
Date  
**2007.12**

CPL Code  
**2165**

Data Sheet  
**C-2487A**

Emission Level

Displacement: **10.8L** [661 in.<sup>3</sup>]      Cylinders: **6**      Fuel System: **PT**  
 Bore: **125mm** [4.92 in.]      Speed:      Cfg. Number: **D353009GX03**  
 Stroke: **147mm** [5.79 in.]      Aspiration: **Turbocharged and Aftercooled**



Engine Performance Data @ 1500rpm

	Output Power		Fuel Consumption
	BHP	kW	kg/h
Standby100%	330	246	47.8
Prime100%	300	224	43.9
75%	225	168	33.9
50%	150	112	24.1
25%	75	56	12.0
Cont.100%	225	168	33.9

Engine Performance Data @ 1800rpm

	Output Power		Fuel Consumption
	BHP	kW	kg/h
Standby100%	380	283	55.8
Prime100%	345	257	49.9
75%	259	193	39.0
50%	172	128	28.0
25%	87	65	16.7
Cont.100%	305	227	44.5

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 ENGINEER:

# 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).



# Chongqing Cummins Engine Co. Ltd.

## Engine Data Sheet

**MODEL: MTA11-G2** **DATA SHEET: C-2487A**  
**CONFIGURATION NO.: D353009GX03** **PERFORMANCE CURVE: C-2487A**  
**CPL NUMBER: 2165** **INSTALLATION DIAGRAM: 3170249**  
**PRIME POWER 224kW/1500r/min@50Hz** **DATE: 2007.12**  
**STANDBY POWER: 246kW/1500r/min@50Hz** **EMISSION LEVEL:**

### GENERAL ENGINE DATA

Type.....	6-Cylinder;In-line;4-Cycle	
Aspiration .....	Turbocharged and Aftercooled	
Bore x Stroke - in.×in. (mm×mm).....	4.92 ×5.79 ( 125 × 147 )	
Displacement - in. <sup>3</sup> (L).....	661	( 10.8 )
Compression Ratio .....	16.1:1	
Firing Order .....	1-5-3-6-2-4	
Dry Weight		
--Including Flywheel and Generator		
Excluding other Electrical Component - lb. (kg).....	2072	( 940 )
Wet Weight		
--Engine Only - lb. (kg).....	2160	( 980 )
Moment of Inertia of Rotating Components		
- With FW2141 flywheel - lb.·ft. <sup>2</sup> (kg·m <sup>2</sup> ).....	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 )
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### EXHAUST SYSTEM

Maximum Allowable Back Pressure - in.Hg (kPa).....	3.0	( 10 )
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### AIR INDUCTION SYSTEM

Maximum Allowable Intake Air Restriction - in. H <sub>2</sub> O (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)

### COOLING SYSTEM

Coolant Capacity - Engine Only - U.S. gal (L).....	3.4	( 12.9 )
- 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
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## 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	
	60Hz	50Hz	60Hz	50Hz
Governed Engine Speed -rpm .....	1800	1500	1800	1500
Engine Idle Speed -rpm .....	675-750	675-750	675-750	675-750
Gross Engine Power Output - kW .....	283	246	257	224
Brake Mean Effective Pressure - kPa .....	1742	1816	1586	1651
Piston Speed - m/s.....	8.8	7.4	8.8	7.4
Friction Horsepower - kW.....	30.6	22.4	30.6	22.4
Engine Water Flow - L/s .....	5.0	3.8	5.0	3.8
<b>Engine Data with Dry Type Exhaust Manifold</b>				
Intake Air Flow - L/s .....	380	280	362	263
Exhaust Gas Temperature - °C.....	440	518	429	510
Exhaust Gas Flow - L/s.....	858	707	802	658
Heat Rejection to Ambient - kW.....	40	34	35	31
Heat Rejection to Coolant - kW.....	148	114	138	106
Heat Rejection to Exhaust - kW.....	190	170	162	159

Engine Model: MTA11-G2  
Data Sheet: C-2487A  
Date: 2007.12

**CHONGQING CUMMINS ENGINE CO. LTD**, CHONGQING, CHINA, 400031

Change Log

C-2487A 2012.07.20 Modified datasheet format