



**CHONGQING CUMMINS ENGINE
PERFORMANCE CURVE**

Engine Model
NTA855-G4

Curve No.
C-0810A

Date
2006-9-22

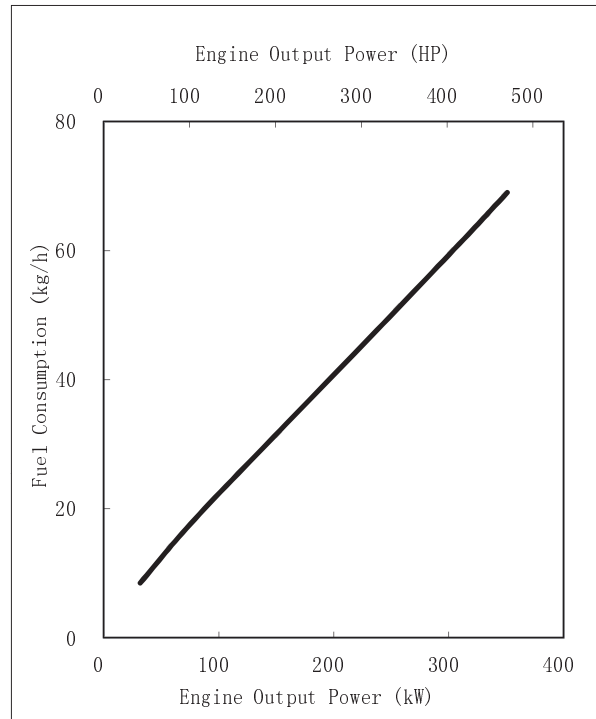
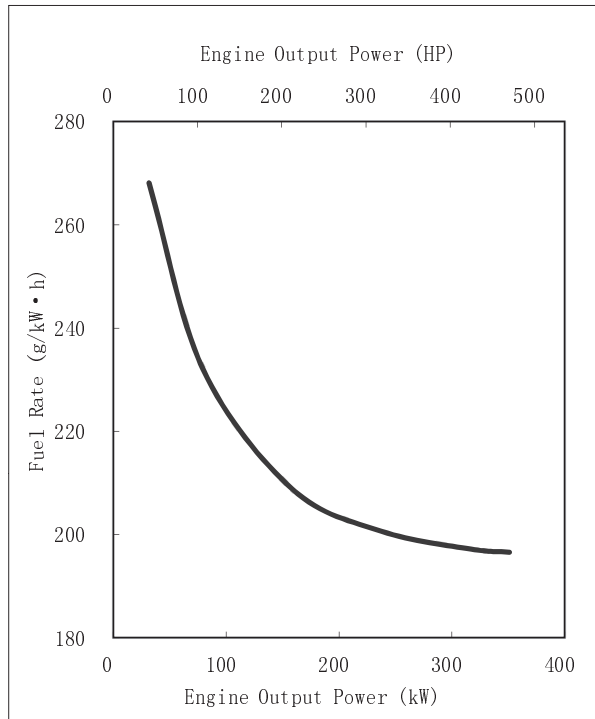
CPL Code
3527

Data Sheet
C-0810A

Emission Level

Displacement: **14L** [855 in.³] Cylinders: **6** Fuel System: **PT**
 Bore: **140mm** [5.50 in.] Speed: **1500 r/min** Cfg. Number: **D093613DX02**
 Stroke: **152mm** [6.00in.] Aspiration: **Turbocharged & Aftercooled**

Standby Power		Prime Power		Continuous Power	
kW	HP	kW	HP	kW	HP
351	470	317	425		



	Output Power		Fuel Consumption		Fuel Rate
	HP	kW	kg/h	L/h	g/kW-h
Standby100%	470	351	69.0	83.1	196.6
Prime100%	425	317	62.5	75.3	197.2
75%	319	238	47.7	57.5	200.6
50%	213	159	33.1	39.9	208.8
25%	106	79	18.4	22.2	232.2
10%	43	32	8.5	10.2	268.1

All data is based on :

--Engine Operating with fuel system, water pump, lubricating oil pump, air cleaner and exhaust silencer, fan, and optional 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% .

STAUS FOR CURVES AND DATA:
TOLERANCE: +/-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

CCEC **MODEL: NTA855-G4** **DATA SHEET: C-0810A**
CONFIGURATION NO.: D093613DX02 **PERFORMANCE CURVE: C-0810A**
CPL NUMBER: 3527 **INSTALLATION DIAGRAM: 4915137**
PRIME POWER: 425 HP (317 kW) at 1500 r/min **DATE: 2006/9/22**
STANDBY POWER: 470 HP (351 kW) at 1500 r/min EMISSION LEVEL:

GENERAL ENGINE DATA

Type..... 4-Cycle;In-line;6-Cylinder
AspirationTurbocharged,Aftercooled
Bore x Stroke - in.×in. (mm×mm)..... 5.5×6 (140×152)
Displacement - in.³(L)..... 855 (14)
Compression Ratio 14.0:1
Firing Order 1-5-3-6-2-4

Dry Weight

--Fan to Flywheel Engine - lb. (kg)..... 2870 (1300)
--Heat Exchanger Cooled Engine - lb. (kg)..... 3095 (1410)

Wet Weight

--Fan to Flywheel Engine - lb. (kg)..... 2970 (1350)
--Heat Exchanger Cooled Engine - lb. (kg)..... 3320 (1510)

Moment of Inertia of Rotating Components - With FW1109 flywheel - lb.·ft.² (kg·m²).. 118.5 (4.99)
Center of Gravity from Rear Face of Flywheel Housing - in.(mm) 27.7 (704)
Center of Gravity Above Crankshaft Centerline - in.(mm) 5.5 (140)

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)
Standard Exhaust Pipe Diameter - in. (mm)..... 5.0 (127)

AIR INDUCTION SYSTEM

Maximum Allowable Intake Air Restriction
--With Clean Filter Element - in. H₂O (kPa)..... 15 (3.74)
--With Dirty Filter Element - in. H₂O (kPa) 25 (6.22)
Minimum Dirt Holding Capacity - g/CFM (g/L/s)..... 25 (53)
Maximum Allowable Intake Air Temperature ΔT - °F (°C)..... 30 (17)

COOLING SYSTEM

Coolant Capacity - Engine Only - U.S. gal (L)..... 5.5 (20.8)
 - With Radiator - U.S. gal (L)..... 16.0 (60.6)
 - With Heat Exchanger - U.S. gal (L)..... 13.0 (49.2)
Maximum Coolant Friction Head External to Engine - PSI (kPa)..... 6 (41)
Maximum Static Head of Coolant (exclusive of Pressure Cap) - PSI (kPa) 40 (276)
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)..... 7.0 (48.2)
Maximum Coolant Temperature - °F (°C)..... 205 (96)
Maximum Top Tank Temperature - °F (°C)..... 212 (100)
Minimum Top Tank Temperature - °F (°C)..... 160 (71)
Maximum Allowable Top Tank Temperature for Standby / Prime Power - °F (°C)..... 220 / 212 (104 / 100)
Minimum Recommended Top Tank Temperature - °F (°C)..... 160 (71)
Minimum Coolant Expansion Space - % of System Capacity 5
Minimum Coolant Makeup Capacity - U.S. gal (L)..... 1.1 (4.2)
Maximum Raw Water Pressure at Engine Outlet -PSI (kPa)..... 15 (103)
Maximum Inlet Restriction at Raw Water Pump - in.Hg (kPa)..... 10 (34)

Maximum Raw Water Pump Initial Suction Lift- ft. (m).....	3.05	(10)
Minimum Raw Water Pipe Size - in. (mm).....	2	(51)
Allowable Pressure Drop Across Keel Cooler -PSI (kPa).....	4	(28)

LUBRICATION SYSTEM

Oil Pressure @ Idle Speed - PSI (kPa).....	15 Min	(103) Min
@ Governed Speed - PSI (kPa).....	35-50	(241 - 345)
Maximum Allowable Oil Temperature - °F (°C).....	250	(121)
Oil Pan Capacity - Low / High - U.S. gal. (L).....	7.5 / 9.5	(28.4 / 36.0)
Total System Capacity - U.S. gal. (L).....	10.2	(38.6)
Angularity of Oil Pan - Front Down/Front Up/Side to Side.....	38°/38°/38°	

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)
Minimum Fuel Supply Line Size - in. (mm).....	0.625	(16)
Minimum Fuel Return Line Size - in. (mm).....	0.5	(13)
Maximum Fuel Pump Supply - U.S.gal/h (L).....	87	(329)
Fuel Rail Pressure - PSI (kPa).....	182	(1254)
Maximum Fuel Temperature °F (°C).....	160	(71)

ELECTRICAL SYSTEM

Minimum Recommended Battery Capacity (24V)		
-- Cold Soak (No Load) - CCA.....	900	
- Minimum Reserved Capacity - CCA.....	320	
-- Cold Soak (With Load) - CCA.....	900	
- Minimum Reserved Capacity - CCA.....	320	
Maximum Allowable Resistance of Cranking Circuit - ohm.....	0.002	
Standard Cranking Motor (Heavy Duty , Positive Engagement) - volt	24	
Standard Battery Charging System , Negative Ground - ampere.....	35	

PERFORMANCE DATA

Idle Speed - r/min	575 - 650	
Maximum No-Load Governed Speed - r/min	1800	
Maximum over Speed Capability - r/min	2700	
Minimum Crankshaft Rotation for unaided Cold Start - r/min.....	150	
Minimum Torque for unaided Cold Start - lb.·ft. (N·m).....	375	(509)
Exhaust Sound Pressure at 1m from Exhaust Outlet -1500r/min -dBA.....	N/A	

All data is based on :

- Engine Operating with fuel system, water pump, lubricating oil pump, air cleaner and exhaust silencer, fan, and optional 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% .
- This Data Sheet includes both air-cooled (Fan/Radiator) & raw water cooled (Heatexchanger/Raw Water Pump) type engine.

	Prime Power		Standby Power	
	50Hz		50Hz	
	1500		1500	
Governed Engine Speed - r/min.....				
Gross Engine Power Output - HP (kW)	425	(317)	470	(351)
Torque lb.·ft. (N·m).....	1488	(2018)	1648	(2235)
Brake Mean Effective Pressure - PSI (kPa)	262	(1811)	291	(2006)
Piston Speed - ft./min (m/s).....	1500	(7.62)	1500	(7.62)
Friction Horsepower - HP (kW).....	30	(22)	30	(22)
Intake Air Flow - CFM (L/s)	865	(408)	920	(434)
Engine Water Flow - GPM (L/min.)	79	(5)	79	(5)
Raw Water Flow - GPM (L/s)	54	(3.4)	54	(3.4)
Fuel Consumption - U.S.gal/h (L/h).....	19.9	(75)	22.0	(83)
Oil Flow - GPM (L/s)	35	(2.2)	35	(2.2)
Exhaust Gas Temperature (After Turbine) - °F (°C)	975	(524)	1005	(541)
Exhaust Gas Flow (After Turbine) - CFM (L/s)....	2390	(1128)	2595	(1225)
Air to Fuel Ratio.....	25.8 : 1		24.8 : 1	
Heat Radiation - BTU (kW).....	2260	(40)	2500	(44)
Heat Rejection to Coolant - BTU (kW).....	13530	(238)	14980	(263)
Heat Rejection to Ambient - BTU (kW).....	11280	(198)	12490	(219)

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Data Sheet: C-0810A
Date: 2006/9/22

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