



**Chongqing Cummins Engine Corp.  
Construction Engine  
Performance Curve**

ENGINE MODEL  
KTA38-G2A

CURVE NUMBER  
C-621-D

ENGINE FAMILY  
D23

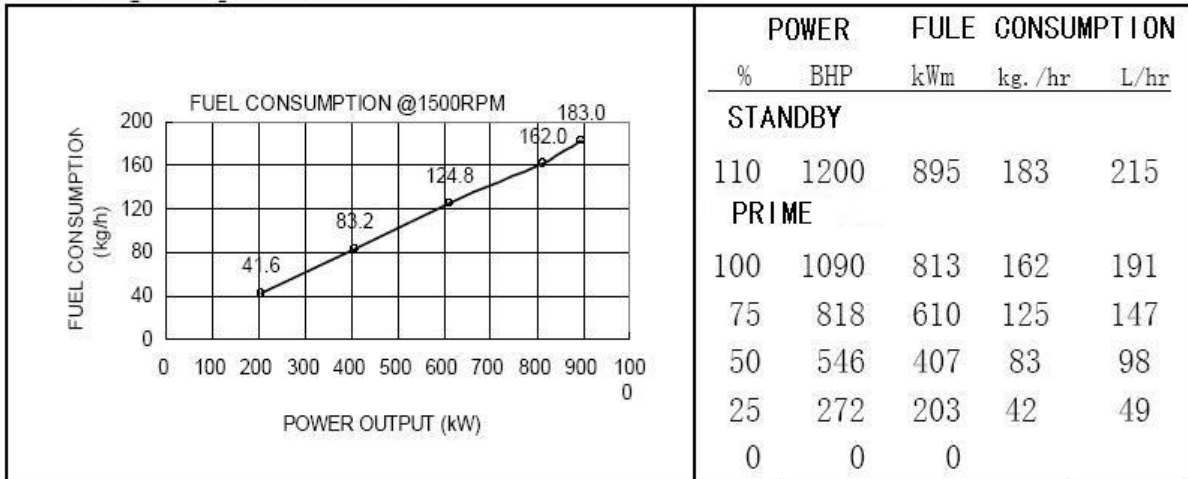
CPL NUMBER  
CQ609

DISPLACEMENT : 38L      ASPIRATION : Turbocharged & Aftercooled      Rating: BHP(KW) @ RPM  
BORE : 159 mm      No.OF CYLINDERS : 12      1350(1007) @ 1800  
STROCK : 159 mm      FUEL SYSTEM : PT-STC      1200 (895 ) @ 1500

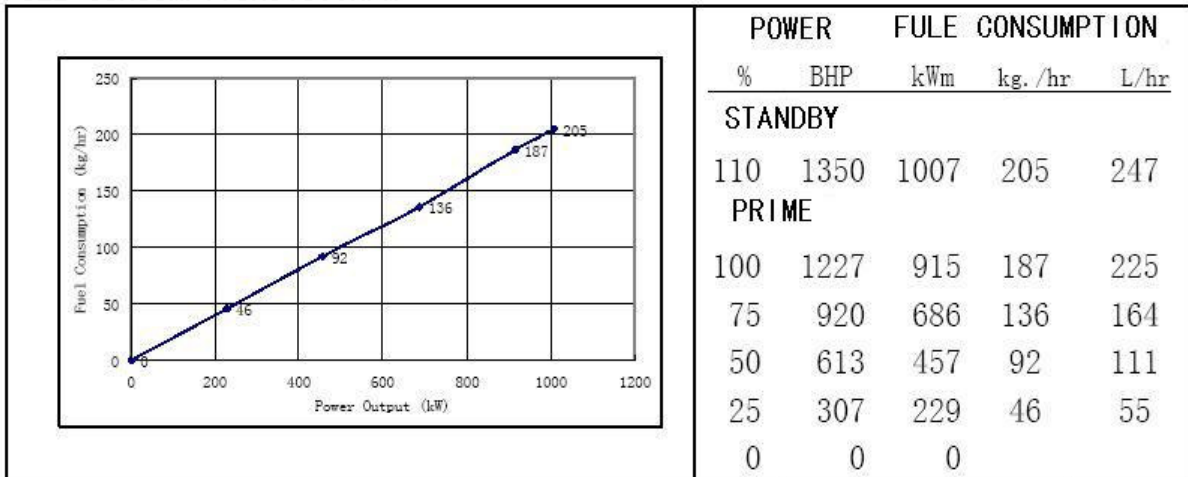
All data is based on the engine operating with fuel system,water pump,lubricating oil pump,and 389 mm H2O (15in. H2O) inlet air restriction and with 50 mm Hg (2.9in.Hg) exhaust restriction; not included are alternator,fan,optional equipment and drive components.

| SPEED<br>r/min | STANDBY |      | PRIME |     |
|----------------|---------|------|-------|-----|
|                | BHP     | kWm  | BHP   | kWm |
| 1500           | 1200    | 895  | 1090  | 813 |
| 1800           | 1350    | 1007 | 1227  | 915 |

**FULE CONSUMPTION@1500RPM**



**FULE CONSUMPTION@1800RPM**



**CONVERSIONS:** (Litres=U.S.Gal × 3.785)      (kWm=BHP × 0.746)      (U.S.Gal=Litres × 0.2642)      (BHP=Engine kWm × 1.34)

Data shown above represent gross engine performance capabilities obtained and corrected in accordance with ISO-3046 conditions of 100kPa (29.53 inHg) barometric pressure [110m (361 ft) altitude], 25°C(77° F) air inlet temperature, and relative humidity of 30% with No. 2 diesel or a fuel corresponding to ASTM D2. See reverse side for application rating guidelines.

The fuel consumption data is based on No.2 diesel fuel weight at 0.85kg/litre (7.1lbs/U.S.Gal).

Power output curves are based on the engine operating with fuel system, water pump and lubricating oil pump; not included are battery charging alternator, fan, option equipment and driven components.

**TECHNICAL DATA DEPT.**

**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 5,000 ft (1525 m) and 104° F (40° C) without power deration.

1500 RPM up to 5,000 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 Company Ltd.

## Construction Engine Data Sheet

**ENGINE MODEL : KTA38-G2A**

**REFERENCE INFORMATION :**

**CONFIGURATION: D233020DX02**

**CPL NUMBER: CQ609**

### GENERAL ENGINE DATA

|   |                                     |
|---|-------------------------------------|
| Type.....   | 4 Cycle;V 60°;12 Cylinder           |
| Aspiration .....  | Turbocharged & Aftercooled          |
| Bore - in.(mm) X Stroke - in.(mm).....  | 6.25 (159) X 6.25(159)              |
| Displacement – cu in (litre).....   | 2300 (37.8)                         |
| Compression Ratio .....   | 14.5:1                              |
| <b>Dry Weight</b>   |                                     |
| Fan Hub to Flywheel Engine (Ref. Installation Diagram No. ) - lb.(kg).....  | 8200 (3723)                         |
| Radiator Cooled Engine (Ref. Installation Diagram No. ) - lb.(kg).....  | 8640(3923)                          |
| <b>Wet Weight</b>   |                                     |
| Fan Hub to Flywheel Engine (Ref. Installation Diagram No. ) - lb.(kg).....  | 8365(3798)                          |
| Radiator Cooled Engine (Ref. Installation Diagram No. ) - lb.(kg) .....   | 8805(3997)                          |
| Center of Gravity from Rear Face of flywheel housing FH6017 (Engine Only) – in. (mm) .....                          | 38.6(980)                           |
| Center of Gravity above Crankshaft Centerline (Engine Only) – in. (mm).....   | 11(279)                             |
| Moment of Inertia of Rotating Components (Including Flywheel FW6001) – lb-ft <sup>2</sup> (kg m <sup>2</sup> )..... | 248(10.4)                           |
| Firing Order .....  | 1R-6L-5R-2L-3R-4L-6R-1L-2R-5L-4R-3L |

### ENGINE MOUNTING

|  |             |
|--|-------------|
| Maximum Allowable Bending Moment at Rear Face of Block - lb.-ft. (N*m).....                          | 4500 (6100) |
| Moment of Inertia About Roll Axis of Complete Engine – lb-ft <sup>2</sup> (kg m <sup>2</sup> ) ..... |             |

### EXHAUST SYSTEM

|  |           |
|--|-----------|
| Maximum Allowable Back Pressure – in.Hg (kPa)..... | 3.0 (10)  |
| Exhaust Pipe Size Normally Acceptable in.(mm)..... | 6.0 (152) |

### AIR INTAKE SYSTEM

|   |           |
|---|-----------|
| Maximum Allowable Intake Air Restriction with Heavy Duty Air Cleaner                    |           |
| — Clean Element - in. H <sub>2</sub> O(kPa) .....                                       | 15 (3.73) |
| — Dirty Element - in. H <sub>2</sub> O(kPa) .....                                       | 25 (6.25) |
| Minimum Allowable Dirt Holding Capacity with Heavy Duty Air Cleaner - g/cfm(g-L/s)..... | 25 (53)   |

### COOLING SYSTEM

|  |                 |
|--|-----------------|
| Coolant Capacity - Engine Only - U.S. gal (litre).....                         | 31.2 (118)      |
| - With Heat Exchanger [100°F (38°C)] - U.S. quart (litre).....                 | 344 (325)       |
| Maximum Coolant Friction Head External to Engine – PSI(kPa).....               | 5.0 (35)        |
| Maximum Static Head of Coolant Above Engine Crankshaft Centerline ft (m) ..... | 25 (7.6)        |
| Maximum Air Restriction Across Radiator – in.H <sub>2</sub> O (kPa).....       | 0.5 (0.12)      |
| Standard (modulating) Thermostat Range - °F (°C) .....                         | 180-200 (82-93) |
| Maximum Coolant Pressure (Exclusive of Pressure Cap) – PSI (kPa).....          | 35 (241)        |
| Minimum Allowable Pressure Cap –PSI (kPa).....                                 | 10 (69)         |
| Maximum Allowable Top Tank Temperature -°F (°C).....                           | 220 (104)       |
| Minimum Recommended Top Tank Temperature -°F (°C).....                         | 160 (71)        |
| Minimum Allowable Fill Rate –U.S.GPM(L/min).....                               | 5 (18.9)        |
| Maximum Allowable Initial Fill Time –min.....                                  | 5               |
| Minimum Allowable Coolant Expansion Space – % of System Capacity .....         | 5               |
| Maximum Allowable Deaeration Time – min.....                                   | 25              |
| Minimum Allowable Drawdown – U.S.quart(litre).....                             | 22 (21)         |

(Drawdown Must Exceed the Volume Not Filled at Initial Fill & Must Not Include Expansion Space)

**LUBRICATION SYSTEM**

|   |                 |
|---|-----------------|
| Normal Operating Oil Pressure Range @ Idle – PSI(kPa).....        | 28(193) Minimum |
| Rated Speed – PSI(kPa).....                                       | 43-70 (297-483) |
| Oil Flow at Rated Speed – U.S.GPM (L/min).....                    | 124 (469)       |
| Maximum Allowable Oil Temperature - °F(°C).....                   | 250 (121)       |
| Oil Pan Capacity (Option OP6023) High/Low - U.S. gal.(litre)..... | 30-23 (114-87)  |

**FUEL SYSTEM**

|   |                             |
|---|-----------------------------|
| Type Injection System.....  | Direct Injection Cummins PT |
| Maximum Restriction at PT Fuel Injection Pump— with clean fuel filter—in.Hg(mmHg).....                        | 4.0 (102)                   |
| — with clean fuel filter—in.Hg(mmHg).....   | 8.0 (203)                   |
| Maximum Allowable Head on Injector Return Line(Consisting of Friction Head and Static Head) —in.Hg(mmHg)..... | 4.0 (102)                   |
| Maximum Fuel Flow to Injection Pump —US gph(liter/hr).....  | 160 (606)                   |

**ELECTRICAL SYSTEM**

|  |       |
|--|-------|
| Cranking Motor (Heavy Duty,Positive Engagement) —volt.....   | 24    |
| Battery Charging System, Negative Ground —ampere.....        | 35    |
| Maximum Allowable Resistance of Cranking Circuit — ohm ..... | 0.002 |
| Minimum Recommended Battery Capacity                         |       |
| - Cold Soak @ 50° F(10°C) and Above – 0°FCCA .....           | 1200  |
| - Cold Soak @ 32° F to 50°F(0°C to 10°C) – 0°FCCA .....      | 1280  |
| - Cold Soak @ 0° F to 32°F(-18°C to 0°C) – 0°FCCA .....      | 1800  |

**PERFORMANCE DATA**

|   |                     |
|---|---------------------|
| Minimum Engine Speed –RPM.....                  | 625                 |
| Maximum No-Load Governed Speed –RPM.....        |                     |
| Maximum Overspeed Capability –RPM.....          |                     |
| Estimum Free Field Sound Pressure Lever.....    | Right Side-dBA..... |
| At 3.3 ft(1m) and Full Load Governed Speed..... | Left Side-dBA.....  |
| (Excludes Noise From intake, Exhaust, .....     | Front-dBA.....      |
| Cooling System and Driven Components).....      | Rear -dBA.....      |

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|  | 50HZ         |              | 60HZ       |            |
|--|--------------|--------------|------------|------------|
|  | standby      | prime        | standby    | prime      |
| Engine Speed –RPM .....                                    | 1500         | 1500         | 1800       | 1800       |
| Gross Power Output –BHP (kW) .....                         | 1200(895)    | 1090(813)    | 1350(1007) | 1227(915)  |
| Brake Mean Effective Pressure –PSI (kPa) .....             | 741(5114)    | 674(4648)    | 695(4795)  | 674(4648)  |
| Piston Speed –ft/min (m/s).....                            | 1562 ( 7.9 ) | 1562 ( 7.9 ) | 1875(9.5)  | 1875(9.5)  |
| Motoring Friction Horsepower –HP (kW).....                 | 115(86)      | 115( 86 )    | 170(127)   | 170(127)   |
| Intake Air Flow –CFM (L/s) .....                           | 2385(1126)   | 2205(1041)   | 2900(1369) | 2650(1251) |
| Exhaust Gas Flow (Dry Manifold) –CFM(L/s).....             | 6831(3225)   | 6218(2936)   | 7795(3679) | 6970(3290) |
| Exhaust Gas Temperature - Dry Manifold °F(°C).....         | 997(536)     | 981(527)     | 935(502)   | 905(485)   |
| Heat Rejection-to-Ambient (Dry Manifold) —BTU/min(kW)..... | 7741(136)    | 7058(124)    | 7720(136)  | 7015(123)  |
| Heat Rejection-to-Coolant (Dry Manifold) —BTU/min(kW)..... | 31249(549)   | 28346(626)   | 31200(548) | 28210(496) |
| Heat Rejection-to-exhaust (Dry Manifold)—BTU/min(kW).....  | 35665(627)   | 35632(626)   | 41969(738) | 38763(681) |
| Engine Coolant Flow –U.S.GPM(L/s) .....                    | 310 ( 19.6 ) | 310 ( 19.6 ) | 390(24.6)  | 390(24.6)  |