FDK ENERGY
SHENZHEN FUDIANKANG ENERGY CO., LTD
GUANGZHOU SANQ DIESEL GENERATOR SET CO., LTD
Tel:86-13729889887 Fax:86-20-84550026
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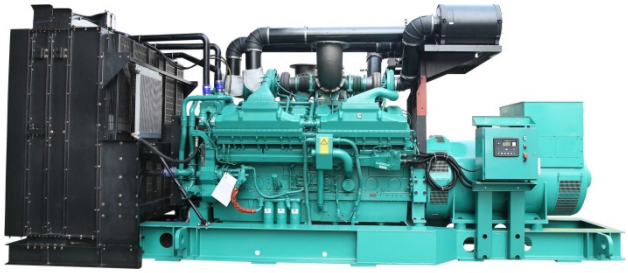
DATA SHEET

DIESEL GENERATOR 800KW
MODEL#FDK-CC800/H2
60HZ/1800RPM
CUMMINS MODEL: KTA38-G2



General Features:

- All qualified generator sets are subjected to a comprehensive performance test which includes 50% load, 70% load, 100% load, 110% load and to check, verify that all control systems, alarm and shut-down protection.
- Equipped with battery charger and 24V high performance maintenance-free lead-acid starting batteries and connecting cables.
- Stainless galvanized zinc plates with strong corrosion-proof.
- Vibration isolators between the engine/alternator and base frame.
- Equipped with industrial silencer and flexible exhaust hose.
- Designed to comply with ISO8528/GB2820.
- Powered by Cummins engine and coupled with Stamford alternator.
- Water jacket preheater, oil heater and double air cleaner, etc. are available.

FDK Diesel Generator Set Data

Genset Model	FDK-CC800/H2	Engine Make	Cummins CHINA
Prime Power	720KW/900KVA	Engine Model	KTA38-G2
Standby Power	800KW/1000KVA	Alternator model	Stamford LVI634C
Output Frequency / Rated speed	60Hz/1800rpm	Control System	DSE7320
Rated Voltage	230V/400V	Phase	Three

(1) **Prime power**: The rating is available for an unlimited of annual operating hours in variable load applications, in accordance with ISO8528-1.A 10% overload is available for a period of 1 hour within 12-hour period of operation, in accordance with ISO 3046-1.

(2) **Standby power**: The rating is applicable for supplying emergency power in variable load applications for up to 200 hours per year in accordance with ISO8528-1. Overload is not allowed.

(3) **Rated voltage**: available with customer requirement.

Engine Specifications (DETAILED in APPENDIX)

Engine Model	KTA38-G2	Aspiration	Turbo-charged
Engine Manufacturer	Cummins CHINA CCEC	Bore x Stroke (mm x mm)	159×159
		Displacement	37.8L
Cylinder quantity	12	Compression Ratio	14.5:1
Cylinder Arrangement	60° Vee;	Prime power / Speed (KW/RPM)	809kw/1800
Cycle	4	Standby power/ Speed (KW/RPM)	895kw/1800

CE ISO9001:2008 FDK reserves the right to change the specifications and designs without noice.

Type Injection System	Direct Injection Cummins PT	Fuel Consumption at 100% load (L/HOUR)	204 at 1800rpm
Piston Speed	9.5m/s	Starter motor	24V
Friction Energy Output	127kw	Low idle	725-775pm
Total Lubrication System Capacity (L)	135	Coolant Capacity (L)	118

Alternator Specifications

Alternator model	LVI634C	Number of phase	3
Alternator manufacturer	STAMFORD	Rated voltage	440V (Available with custom requirements)
Exciter type	Single bearing, Brushless, Self-excited	Power factor	0.8
Rated output prime power	916KVA	Voltage regulation NL-FL	≤±1%
Rated speed	1800 rpm	Insulation grade	H
Rated frequency	60Hz	Protection grade	IP23

Alternator option: Leroy Somer, MECC, Marathon, Engga, Faraday

Control System DSE7320 (DETAILED in INSTRUCTION)

DSE7320 is an advanced control module based on micro-processor, containing all necessary functions for protection of the genset and the breaker control. It can monitor the mains supply, breaker control and automatically start the engine when the mains are abnormal. Accurately measure various operational parameters and display all values and alarms information on the LCD. In addition, the control module can automatically shut down the engine and indicate the engine failure.

FEATURES

- Microprocessor control, with high stability and credibility.
- Monitoring and measuring operational parameters of the mains supply and genset.
- Indicating operation status, fault conditions, all parameters and alarms.
- Multiple protections; multiple parameters display, like pressure, temp. etc.
- Manual, automatic and remote work mode selectable.
- Real time clock for time and date display, overall runtime display, 250 log entries.
- Overall power output display.
- Integral speed/frequency detecting, telling status of start, rated operation, overspeed etc.
- Communication with PC via RS485 OR RS232 interface, using MODBUS protocol.

Soundproof Enclosure Specification

FDK silent generator is designed by professional acoustic engineers based on years of experience. Now we can make the noise of the generator less than 80-85dB(A) at 1m, or 70-75dB(A) at 7m, 60-65dB(A) at 15m.

FEATURES

- Multi-way air intake and exhaust guarantee the power performance of the generator.
- Large-scale impedance combined type silencer effectively reduce noise of the generator.
- Internal high performance rubber damper and flexible materials reduce vibration.
- Base mounted fuel tank supports the generator running for 8 hours.

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Optional

Generator set	Alternator	Low environment Temp	ATS
☐ Open generator set	☐ Stamford	☐ Water heater	☐ CHINT
☐ Silent generator set	☐ Marathon	☐ Oil heater	☐ SCHNEIDER
☐ Trailer generator set	☐ Mecc Alte	☐ Battery heater	☐ ABB
☐ ABB MCCB circuit breaker	☐ Leroy Somer		
	☐ Farady		
	☐ Engga		
Fuel system	**Control system**	**Voltage**	**Synchronized system**
☐ 12hrs base tank	☐ AMF function	☐ 415/240V	☐ CHINT Cabinet
☐ 24hrs base tank	☐ ATS control cabinet	☐ 400/230V	☐ SCHNEIDER Cabinet
☐ Dual wall base fuel tank	☐ DSE7320	☐ 380/220V	☐ DSE8610 Module
☐ Outside fuel tank	☐ DSE7510	☐ 220/127V	☐ COMAQ Module
	☐ GU620A	☐ 200/115V	☐ DEIF Module

Dimension & Weight

Open

Overall Size: L×W×H (mm)	4100×1820×2300
Weight (kg)	8000

Soundproof Version

Overall Size: L×W×H (mm)	20FT CONTAINER
Weight (kg)	12000

Sales Promises

- FDK provides a full line of brand new and high quality products. Each and every unit is strictly factory tested before shipment.
- Quality warranty is according to our standard conditions: 12 months from BL date or 1000 running hours, whichever comes first.
- Service and parts are available from FDK or distributors in your location.
- FDK guarantee use **BRAND NEW & GENUINE MACHINE.**

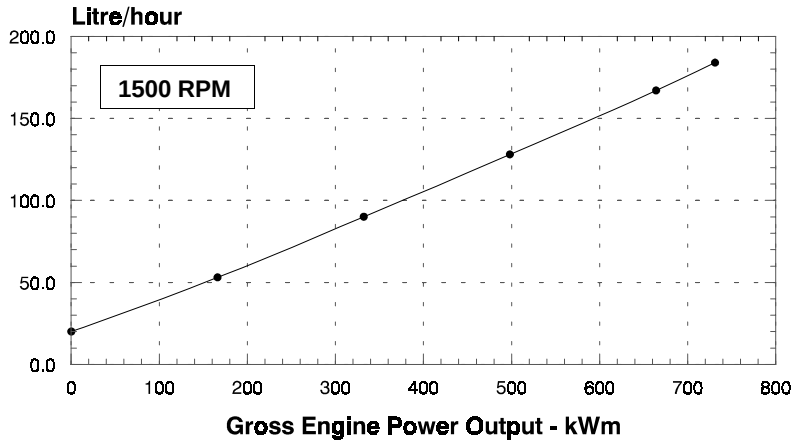
CHONGQING CUMMINS ENGINE COMPANY Ltd.	Basic Engine Model: KTA38-G2	Curve Number: FR-6081	Page No.
ENGINE PERFORMANCE CURVE	Engine Critical Parts List: CPL: 0864	Date: 03JAN2004	

Displacement : **37.8** litre (**2300** in^3)	Bore : **159** mm (**6.25** in.) Stroke : **159** mm (**6.25** in.)
No. of Cylinders : **12**	Aspiration : **Turbocharged and Aftercooled**

Engine Speed	Standby Power		Prime Power		Continuous Power	
RPM	kWm	BHP	kWm	BHP	kWm	BHP
1500	731	980	664	890	604	810
1800	895	1200	809	1085	671	900

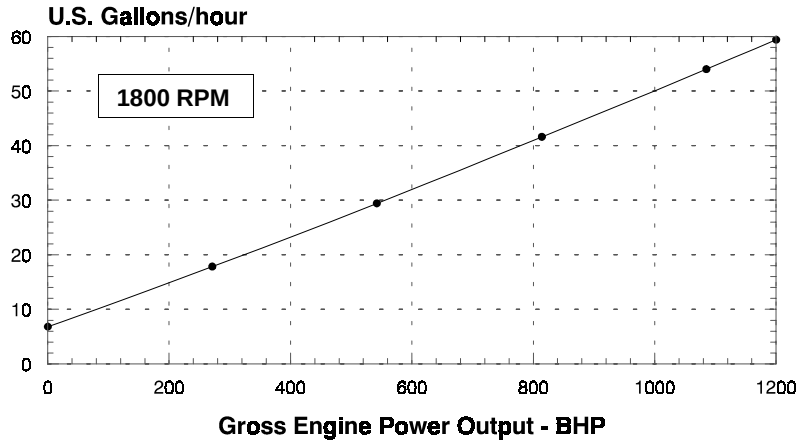
Engine Performance Data @ 1500 RPM

OUTPUT POWER			FUEL CONSUMPTION			
%	kWm	BHP	kg/ kWm·h	lb/ BHP·h	litre/ hour	U.S. Gal/ hour
STANDBY POWER						
100	731	980	0.214	0.351	184	48.5
PRIME POWER						
100	664	890	0.214	0.353	167	44.2
75	498	668	0.218	0.358	128	33.7
50	332	445	0.230	0.380	90	23.8
25	166	222	0.271	0.451	53	14.1
CONTINUOUS POWER						
100	604	810	0.215	0.353	153	40.3



Engine Performance Data @ 1800 RPM

OUTPUT POWER			FUEL CONSUMPTION			
%	kWm	BHP	kg/ kWm·h	lb/ BHP·h	litre/ hour	U.S. Gal/ hour
STANDBY POWER						
100	895	1200	0.214	0.351	225	59.4
PRIME POWER						
100	809	1085	0.214	0.353	204	54.0
75	607	814	0.220	0.363	157	41.6
50	404	542	0.234	0.385	111	29.4
25	202	271	0.282	0.466	67	17.8
CONTINUOUS POWER						
100	671	900	0.216	0.355	170	45.0



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

Data shown above represent 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% 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 0.85 kg/litre (7.1 lbs/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, optional 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^{o} F (40^{o} C) without power deration.

1500 RPM up to 5,000 ft (1525 m) and 104^{o} F (40^{o} C) without power deration.

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

Chongqing Cummins Engine Company Ltd.

Engine Data Sheet

ENGINE MODEL : **KTA38-G2** **CONFIGURATION NUMBER :** D233020DX02

DATA SHEET : DS-4130-E
DATE : 03Jan2004
PERFORMANCE CURVE : FR-6081

INSTALLATION DIAGRAM
- Fan to Flywheel : 3382780
- Heat Exchanger Cooled :

CPL NUMBER
- Engine Critical Parts List : 0864

GENERAL ENGINE DATA

Type		4-Cycle; 60° Vee; 12-Cylinder Diesel
Aspiration		Turbocharged and Aftercooled
Bore x Stroke	— in x in (mm x mm)	6.25 x 6.25 (159 x 159)
Displacement	— in^3 (liter)	2300 (37.8)
Compression Ratio		14.5 : 1
Dry Weight		
Fan to Flywheel Engine	— lb (kg)	8555 (3880)
Heat Exchanger Cooled Engine	— lb (kg)	8996 (4080)
Wet Weight		
Fan to Flywheel Engine	— lb (kg)	9065 (4111)
Heat Exchanger Cooled Engine	— lb (kg)	9667 (4384)
Moment of Inertia of Rotating Components		
• with FW 6001 Flywheel	— $lb_m \cdot ft^2$ (kg • m^2)	248 (10.4)
• with FW 6011 Flywheel	— $lb_m \cdot ft^2$ (kg • m^2)	493 (20.8)
Center of Gravity from Rear Face of Flywheel Housing (FH 6024)	— in (mm)	38.6 (980)
Center of Gravity Above Crankshaft Centerline	— in (mm)	11.0 (279)
Maximum Static Loading at Rear Main Bearing	— lb (kg)	2000 (908)

ENGINE MOUNTING

Maximum Bending Moment at Rear Face of Block	— lb • ft (N • m)	4500 (6100)

EXHAUST SYSTEM

Maximum Back Pressure	— in Hg (mm Hg)	3 (76)

AIR INDUCTION SYSTEM

Maximum Intake Air Restriction		
• with Dirty Filter Element	— in H_2O (mm H_2O)	25 (635)
• with Normal Duty Air Cleaner and Clean Filter Element	— in H_2O (mm H_2O)	10 (254)
• with Heavy Duty Air Cleaner and Clean Filter Element	— in H_2O (mm H_2O)	15 (381)

COOLING SYSTEM

Coolant Capacity — Engine Only	— US gal (liter)	31.2 (118)
— with HX 6076 Heat Exchanger	— US gal (liter)	51.2 (194)
Maximum Coolant Friction Head External to Engine — 1800 rpm	— psi (kPa)	10 (69)
— 1500 rpm	— psi (kPa)	7 (48)
Maximum Static Head of Coolant Above Engine Crank Centerline	— ft (m)	60 (18.3)
Standard Thermostat (Modulating) Range	— °F (°C)	180 - 200 (82 - 93)
Minimum Pressure Cap	— psi (kPa)	10 (69)
Maximum Top Tank Temperature for Standby / Prime Power	— °F (°C)	220 / 212 (104 / 100)
Minimum Raw Water Flow @ 90°F to HX 6076 Heat Exchanger	— US gpm (liter / min)	108 (409)
Maximum Raw Water Inlet Pressure at HX 6076 Heat Exchanger	— psi (kPa)	50 (345)

LUBRICATION SYSTEM

Oil Pressure @ Idle Speed	— psi (kPa)	20 (138)
@ Governed Speed	— psi (kPa)	45 - 65 (310 - 448)
Maximum Oil Temperature	— °F (°C)	250 (121)
Oil Capacity with OP 6023 Oil Pan : High - Low	— US gal (liter)	30 - 23 (114 - 87)
Total System Capacity (Including Bypass Filter)	— US gal (liter)	35.7 (135)
Angularity of OP 6023 Oil Pan — Front Down		30°
— Front Up		30°
— Side to Side		30°

FUEL SYSTEM

Type Injection System		Direct Injection Cummins PT
Maximum Restriction at PT Fuel Injection Pump — with Clean Fuel Filter	— in Hg (mm Hg)	4.0 (102)
— with Dirty Fuel Filter	— in Hg (mm Hg)	8.0 (203)
Maximum Allowable Head on Injector Return Line (Consisting of Friction Head and Static Head)	— in Hg (mm Hg)	6.5 (165)
Maximum Fuel Flow to Injection Pump	— US gph (liter / hr)	113 (428)

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°F CCA	1200
• Cold Soak @ 32 °F to 50 °F (0 °C to 10 °C)	— 0°F CCA	1280
• Cold Soak @ 0 °F to 32 °F (-18 °C to 0 °C)	— 0°F CCA	1800

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 fuel corresponding to grade No. 2-D per ASTM D975.
- 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 Stability Band at any Constant Load	— %	+/- 0.25
Estimated Free Field Sound Pressure Level of a Typical Generator Set; Excludes Exhaust Noise; at Rated Load and 7.5 m (24.6 ft); 1800 rpm / 1500 rpm	— dBA	N.A.
Exhaust Noise at 1 m Horizontally from Centerline of Exhaust Pipe Outlet Upwards at 45°	— dBA	N.A.

		STANDBY				PRIME POWER			
		60 hz		*50 hz*		*60 hz*		*50 hz*	
Governed Engine Speed	— rpm	1800		1500		1800		1500	
Engine Idle Speed	— rpm	725 - 775		725 - 775		725 - 775		725 - 775	
Gross Engine Power Output	— BHP (kW_m)	1200	(895)	980	(731)	1085	(809)	890	(664)
Brake Mean Effective Pressure	— psi (kPa)	230	(1586)	225	(1551)	208	(1434)	204	(1407)
Piston Speed	— ft / min (m / s)	1875	(9.5)	1562	(7.9)	1875	(9.5)	1562	(7.9)
Friction Horsepower	— HP (kW_m)	170	(127)	115	(86)	170	(127)	115	(86)
Engine Water Flow at Stated Friction Head External to Engine:									
• 4 psi Friction Head	— US gpm (liter / s)	390	(24.6)	310	(19.6)	390	(24.6)	310	(19.6)
• Maximum Friction Head	— US gpm (liter / s)	340	(21.4)	280	(17.7)	340	(21.4)	280	(17.7)
Engine Data with Dry Type Exhaust Manifold									
Intake Air Flow	— cfm (liter / s)	2900	(1369)	1950	(920)	2650	(1251)	1800	(850)
Exhaust Gas Temperature	— °F (°C)	935	(502)	1025	(552)	905	(485)	1005	(541)
Exhaust Gas Flow	— cfm (liter / s)	7795	(3679)	5580	(2634)	6970	(3290)	5080	(2398)
Radiated Heat to Ambient	— BTU / min (kW_m)	7720	(136)	6300	(111)	7015	(123)	5745	(101)
Heat Rejection to Coolant	— BTU / min (kW_m)	31200	(548)	25480	(448)	28210	(496)	23140	(407)
Heat Rejection to Exhaust	— BTU / min (kW_m)	38780	(681)	31655	(556)	35665	(627)	29060	(511)

N.A. - Data is Not Available
N/A - Not Applicable to this Engine
TBD - To Be Determined