

DATA SHEET

DIESEL GENERATOR 1500KW

MODEL#FDK-CC1875/H2

60HZ/1800RPM

CUMMINS MODEL: KTA50-G9



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-CC1875/H2
Prime Power	1260KW/1575KVA
Standby Power	1500KW/1875KVA
Output Frequency / Rated speed	60Hz/1800rpm
Rated Voltage	277V/480V

Engine Make	Cummins CHINA
Engine Model	KTA50-G9
Alternator model	Stamford PI734C
Control System	DSE7320
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	KTA50-G9
Engine Manufacturer	Cummins CHINA CCEC
Cylinder quantity	16
Cylinder Arrangement	60° Vee
Cycle	4

Aspiration	Turbo-charged
Bore x Stroke (mm x mm)	159×159
Displacement	50.3L
Compression Ratio	13.9:1
Prime power / Speed (KW/RPM)	1384kw/1800
Standby power/ Speed (KW/RPM)	1656kw/1800



Type Injection System	Cummins PT Direct Injection	Fuel Consumption at 100% load (L/H)	330L at 1800rpm
Piston Speed	9.5m/s	Starter motor	24V
Friction Energy Output	168kw	Low idle	725-775rpm
Total Lubrication System Capacity	204L	Coolant Capacity (L)	140

Alternator Specifications

Alternator model	PI734C	Number of phase	3
Alternator manufacturer	STAMFORD	Rated voltage	480V (Available with custom requirements)
Exciter type	Single bearing, Brushless, Self-excited	Power factor	0.8
Rated output prime power	1690KVA	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.



ISO9001:2008

FDK reserves the right to change the specifications and designs without notice.

Optional

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

Dimension & Weight

Open

Overall Size: L×W×H (mm)	5100×2255×2565
Weight (kg)	11400

Soundproof Version

Overall Size: L×W×H (mm)	40FT CONTAINER
Weight (kg)	25000

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.**





Cummins Inc.
Columbus, Indiana 47201
ENGINE PERFORMANCE CURVE

Basic Engine Model:
KTA50-G9

Curve Number:
FR-6244 (1P / 2L)
FR-6295 (2P / 2L)

Page No.

Engine Critical Parts List:
CPL: 2527 (1 Pump / 2 Loop)
CPL: 2533 (2 Pump / 2 Loop)

Date:
26Nov01

Displacement : **50.3 litre (3067 in³)**

Bore : **159 mm (6.25 in.)** Stroke : **159 mm (6.25 in.)**

No. of Cylinders : **16**

Aspiration : **Turbocharged and Low Temperature Aftercooled**

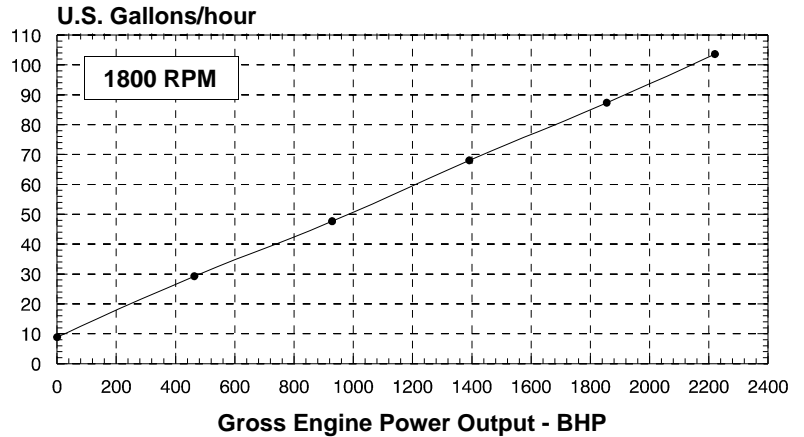
Engine Speed RPM	Standby Power		Prime Power		Continuous Power	
	kWm	BHP	kWm	BHP	kWm	BHP
1800	1656	2220	1384	1855	1224	1640

Emissions Certification

This engine complies with certain emissions requirements established by US EPA/CARB. See Exhaust Emissions Data Sheet for conformance specifics.

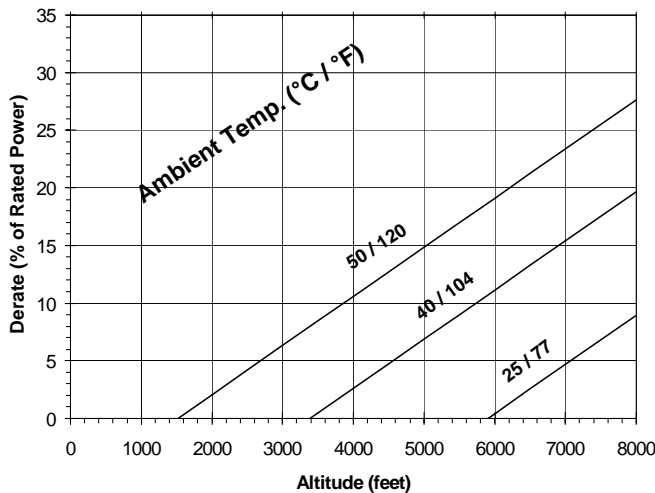
Engine Performance Data @ 1800 RPM

OUTPUT POWER			FUEL CONSUMPTION			
%	kWm	BHP	kg/ kWm-h	lb/ BHP-h	liter/ hour	U.S. Gal/ hour
STANDBY POWER						
100	1656	2220	0.201	0.331	392	103.6
PRIME POWER						
100	1384	1855	0.203	0.334	330	87.3
75	1038	1391	0.211	0.347	257	68.0
50	692	928	0.221	0.364	180	47.6
25	346	463	0.273	0.449	111	29.2
CONTINUOUS POWER						
100	1224	1640	0.208	0.342	299	79.0

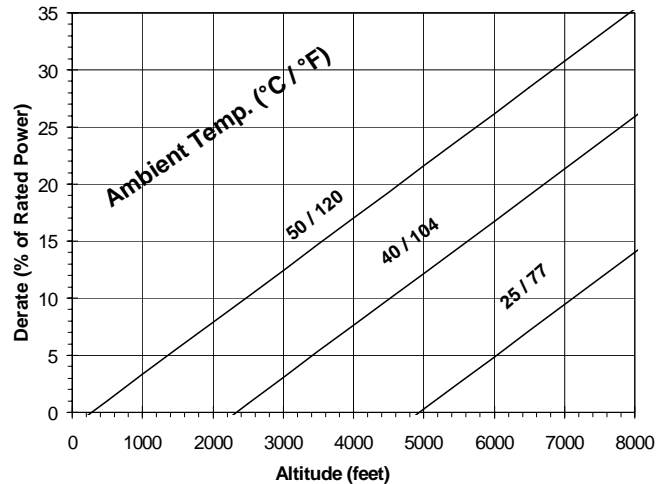


Power Derate Curves:

Standby / Prime Power



Continuous Power



Operation At Elevated Temperature And Altitude:

For sustained operation above these conditions, derate by an additional 4.5% per 300 m (1000 ft), and 10% per 10° C (18° F).

CONVERSIONS:(Liters = U.S. Gal x 3.785) (U.S.Gal = Liters x 0.2642)

Data Subject to Change Without Notice

These guidelines have been formulated to ensure proper application of generator drive engines in A.C. generator set installations. **STANDBY POWER RATING:** 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. **PRIME POWER RATING:** 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:** Limited Time 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. **CONTINUOUS POWER RATING:** 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.

Reference AEB 10.47 for determining Electrical Output.

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. Derates shown are based on 15 in H₂O air intake restriction and 2 in Hg exhaust back pressure.

The fuel consumption data is based on No. 2 diesel fuel weight at 0.85 kg/liter (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.

Data Status: Limited Production

Data Tolerance: ± 5%

Chief Engineer:

D.K. Trueblood

Cummins Engine Company, Inc.

Engine Data Sheet

ENGINE MODEL : KTA50-G9

CONFIGURATION NUMBER : D283022DX02

DATA SHEET : DS-6244

DATE : 26Nov01

PERFORMANCE CURVE : FR-6244 (1P / 2L)

FR-6295 (2P / 2L)

PERFORMANCE CURVE :

INSTALLATION DIAGRAM

- Fan to Flywheel (1P / 2L): 3170289
- Fan to Flywheel (2P / 2L): 3626419

CPL NUMBER

- Engine Critical Parts List : 2527 (1 Pump / 2 Loop)
- Engine Critical Parts List : 2533 (2 Pump / 2 Loop)

GENERAL ENGINE DATA

Type.....	4-Cycle; 60° Vee; 16-Cylinder Diesel	
Aspiration.....	Turbocharged & Low Temp. Aftercooled	
Bore x Stroke	6.25 x 6.25 (159 x 159)	
Displacement	3067 (50.3)	
Compression Ratio	13.9 : 1	
Dry Weight		
Fan to Flywheel Engine	11820	(5360)
Wet Weight		
Fan to Flywheel Engine	12485	(5662)
Moment of Inertia of Rotating Components		
• with FW 6009 Flywheel	301	(12.7)
• with FW 6017 Flywheel.....	515	(21.7)
Center of Gravity from Rear Face of Flywheel Housing (FH 6024).....	47.5	(1206)
Center of Gravity above Crankshaft Centerline	11.0	(279)
Maximum Static Loading at Rear Main Bearing	2000	(908)

ENGINE MOUNTING

Maximum Bending Moment at Rear Face of Block.....	4500	(6100)
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EXHAUST SYSTEM

Maximum Back Pressure @ Standby Power Rating	2	(51)
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AIR INDUCTION SYSTEM

Maximum Intake Air Restriction		
• with Dirty Filter Element @ Standby Power Rating.....	25	(635)
• with Clean Filter Element @ Standby Power Rating.....	15	(381)

COOLING SYSTEM (Low Temperature Aftercooling Required; 1 Pump / 2 Loop or 2 Pump / 2 Loop)

Coolant Capacity — Engine Only.....	37	(140)
— Aftercoolers	9	(34)
Maximum Static Head of Coolant Above Engine Crank Centerline	60	(18.3)
Thermostat Modulating Range — High Flow (Jacket)	180 - 200	(82 - 93)
Maximum Top Tank Temperature for Standby Power / Prime Power	220 / 212	(104 / 100)
Target Coolant Inlet Temperature to Aftercoolers @ 77 °F (25 °C) Ambient—	130	(55)
Maximum Coolant Temperature to Aftercoolers; Standby Power / Prime Power	160 / 150	(71 / 66)

Additional 2 Pump / 2 Loop Requirements

Maximum Coolant Friction Head External to Engine— High Flow (Jacket).....	10	(67)
— Low Flow (Aftercooler).....	7	(48)
Thermostat Modulating Range — Low Flow (Aftercooler) (2P / 2L) w/ HX	N.A.	(N.A.)
Minimum Pressure Cap (for Cooling Systems with less than 2 m [6 ft.] Static Head)...	14	(96)

Additional 1 Pump / 2 Loop Requirements

Maximum Coolant Friction Head External to Engine— High Flow (Jacket)	15	(103)
— Low Flow (Aftercooler).....	5	(35)
Thermostat Modulating Range — Low Flow (Aftercooler).....	150 - 175	(66 - 79)
Minimum Pressure Cap (for Cooling Systems with less than 2 m [6 ft.] Static Head)...	14	(96)

LUBRICATION SYSTEM

Oil Pressure @ Idle Speed.....	20	(138)
@ Governed Speed.....	50 - 70	(345 - 483)
Maximum Oil Temperature	250	(121)
Oil Capacity with OP 6027 Oil Pan : High - Low.....	47 - 39	(178 - 148)
Total System Capacity (Including Bypass Filter)	54	(204)

FUEL SYSTEM

Type Injection System	Direct Injection Cummins PT	
Maximum Restriction at PT Fuel Injection Pump — with Clean Fuel Filter.....	4.0	(102)
— with Dirty Fuel Filter.....	8.0	(203)
Maximum Allowable Head on Injector Return Line (Consisting of Friction Head and Static Head).....	6.5	(165)
Maximum Fuel Flow to Injection Pump	183	(693)

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

COLD START CAPABILITY

Minimum Ambient Temperature for Aided (with Coolant Heater) Cold Start within 10 seconds.....	— °F (°C)	50	(10)
Minimum Ambient Temperature for Unaided Cold Start.....	— °F (°C)	45	(7)

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..... — dBA 94.6

Exhaust Noise at 1 m Horizontally from Centerline of Exhaust Pipe Outlet Upwards at 45°..... — dBA 130

Governed Engine Speed.....	— rpm	1800
Engine Idle Speed.....	— rpm	725 - 775
Gross Engine Power Output.....	— BHP (kW _m)	2220 (1656)
Brake Mean Effective Pressure.....	— psi (kPa)	318 (2221)
Piston Speed.....	— ft / min (m / s)	1875 (9.5)
Friction Horsepower.....	— HP (kW _m)	225 (168)

Engine Data with Dry Type Exhaust Manifold

Intake Air Flow.....	— cfm (liter / s)	4400 (2075)
Exhaust Gas Temperature.....	— °F (°C)	960 (515)
Exhaust Gas Flow.....	— cfm (liter / s)	10650 (5025)
Air to Fuel Ratio.....	— air : fuel	25.2 : 1
Radiated Heat to Ambient.....	— BTU / min (kW _m)	11220 (200)
Heat Rejection to Exhaust.....	— BTU / min (kW _m)	58925 (1040)

Additional Engine Aftercooler Data (2 Pump / 2 Loop)

Engine Jacket Coolant Flow at Stated Friction Head External to Engine:

• 4 psi Friction Head.....	— US gpm (liter / s)	430 (27.1)
• Maximum Friction Head.....	— US gpm (liter / s)	376 (23.7)
Heat Rejection to Coolant (Aftercooler).....	— BTU / min (kW _m)	19500 (345)
Heat Rejection to Coolant (Engine).....	— BTU / min (kW _m)	40600 (715)

Aftercooler Coolant Flow at Stated Friction Head External to Engine: .

• 2 psi Friction Head.....	— US gpm (liter / s)	112 (7.1)
• Maximum Friction Head.....	— US gpm (liter / s)	100 (6.3)

Additional Engine Aftercooler Data (1 Pump / 2 Loop)

Engine Jacket Coolant Flow at Stated Friction Head External to Engine:

• 4 psi Friction Head.....	— US gpm (liter / s)	430 (27.1)
• Maximum Friction Head.....	— US gpm (liter / s)	376 (23.7)
Heat to be Rejected by Low Temperature Radiator*.....	— BTU / min (kW _m)	35720 (630)
Heat to be Rejected by Jacket Coolant Radiator*.....	— BTU / min (kW _m)	26110 (460)

Aftercooler Coolant Flow at Stated Friction Head External to Engine: .

• 2 psi Friction Head.....	— US gpm (liter / s)	97 (6.1)
• Maximum Friction Head.....	— US gpm (liter / s)	94 (5.9)

STANDBY POWER		PRIME POWER UNLIMITED TIME	
60 hz	50 hz	60 hz	50 hz
1800		1800	
725 - 775		725 - 775	
2220 (1656)		1855 (1384)	
318 (2221)		266 (1835)	
1875 (9.5)		1875 (9.5)	
225 (168)		225 (168)	
4400 (2075)		4100 (1930)	
960 (515)		880 (470)	
10650 (5025)		9600 (4530)	
25.2 : 1		27.6 : 1	
11220 (200)		9610 (170)	
58925 (1040)	Not Applicable for 1500 RPM Operation	51690 (910)	Not Applicable for 1500 RPM Operation
430 (27.1)		430 (27.1)	
376 (23.7)		376 (23.7)	
19500 (345)		15200 (270)	
40600 (715)		35100 (620)	
112 (7.1)		112 (7.1)	
100 (6.3)		100 (6.3)	
430 (27.1)		430 (27.1)	
376 (23.7)		376 (23.7)	
35720 (630)		36620 (645)	
26110 (460)		15600 (275)	
97 (6.1)		97 (6.1)	
94 (5.9)		94 (5.9)	

* See AEB 90.39 1 Pump / 2 Loop KTA50-G8/9 system.

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

ENGINE MODEL : KTA50-G9
DATA SHEET : DS-6244
DATE : 26Nov01
CURVE NO. : FR-6244 (1P / 2L)
 FR-6295 (2P / 2L)