

DATA SHEET

DIESEL GENERATOR 24KW

MODEL#FDK-CD30/H1

50HZ/1500RPM

CUMMINS MODEL: 4B3.9G1



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-CD27/H1 |
| Prime Power | 22KW/27.5KVA |
| Standby Power | 24KW/30KVA |
| Output Frequency / Rated speed | 50Hz/1500rpm |
| Rated Voltage | 230V/400V |

| | |
|------------------|-----------------|
| Engine Make | Cummins |
| Engine Model | 4B3.9G1 |
| Alternator model | Stamford PI144F |
| Control System | DSE6020 |
| 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 | 4B3.9G1 |
| Engine Manufacturer | Cummins (China Dongfeng) |
| Cylinder quantity | 4 |
| Cylinder Arrangement | Vertical in-line |
| Cycle | Four stroke |

| | |
|-------------------------------|-----------|
| Aspiration | Naturally |
| Bore x Stroke (mm x mm) | 102×120 |
| Displacement | 3.9L |
| Compression Ratio | 17.3:1 |
| Prime power / Speed (KW/RPM) | 24/1500 |
| Standby power/ Speed (KW/RPM) | 27/1500 |



| | | | |
|---------------------------------------|------------|---------------------------------------|---------------|
| Speed governor | Mechanical | Fuel Consumption at 100% load (g/KWh) | 245at 1500rpm |
| Piston Speed | 6.0m/s | Starter motor | DC24V |
| Friction Energy Output | 8.2kw | Alternator | DC24V |
| Total Lubrication System Capacity (L) | 10.9 | Low idle | 950-1050rpm |
| Coolant Capacity (L) | 7.2 | | |

Alternator Specifications

| | | | |
|--------------------------|---|--------------------------|---|
| Alternator model | PI144F | Number of phase | 3 |
| Alternator manufacturer | STAMFORD | Rated voltage | 400V (Available with custom requirements) |
| Exciter type | Single bearing, Brushless, Self-excited | Power factor | 0.8 |
| Rated output prime power | 27.5 KVA | Voltage regulation NL-FL | ≤±1% |
| Rated speed | 1500 rpm | Insulation grade | H |
| Rated frequency | 50Hz | Protection grade | IP23 |

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

Control System DSE6020 (DETAILED in INSTRUCTION)

DSE6020 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.



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) | 1800×740×1300 |
| Weight (kg) | 800 |

Soundproof Version

| | |
|-----------------------------|----------------|
| Overall Size: L×W×H (mm) | 2350×1100×1650 |
| Weight (kg) | 1300 |

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.**



Dongfeng Cummins Technical Operations



ENGINE MODEL: 4B3.9-G1
CURVE & DATASHEET: FR92340

REV 00 15APR2009



Generator Engine Performance Data
DONGFENG CUMMINS ENGINE Co.,LTD

Xiangfan, Hubei Province, China
http://www.dcec.com.cn

Basic Engine Model:

4B3.9-G1

FR92340

FR92340 @ 1500 RPM

| Configuration | CPL Code | Revision |
|---------------|-----------|-----------|
| D381004GX02 | CPL: 3114 | 2009-4-15 |

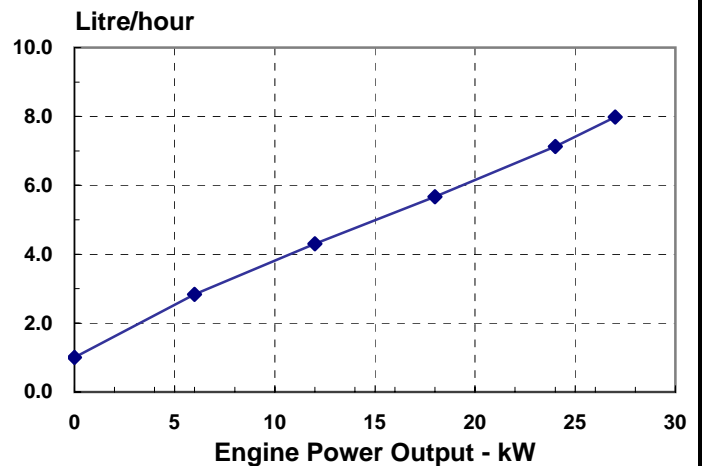
| | | | |
|----------------------|---------------|-------------------|-----------------------------|
| Compression Ratio: | 17.3:1 | Aspiration: | Naturally Aspirated |
| Bore: | 102 mm | Displacement: | 3.9 L |
| Stroke: | 120 mm | No. of Cylinders: | 4 |
| Governor Regulation: | ≤8% | Fuel System: | BYC A/RSV Mechanical |

All data is based on the engine operating with fuel system, water pump, and 10 in H₂O (2.488 kPa) inlet air restriction with 5.98 in (152mm) inner diameter, and with 2.01 in Hg (7 kPa) exhaust restriction with 4.02 in (102 mm) inner diameter; not included are alternator, fan, optional equipment and driven components. Coolant flows and heat rejection data based on coolants as 50% ethylene glycol/50% water. All data is subject to change without notice.

| Engine Speed RPM | Standby Power | | Prime Power | | Continuous Power | |
|---------------------|---------------|----|-------------|----|------------------|-----|
| | kW | HP | kW | HP | kW | HP |
| 1500 | 27 | 36 | 24 | 32 | TBD | TBD |

Engine Performance Data @ 1500 RPM

| OUTPUT POWER | | | FUEL CONSUMPTION | |
|-------------------------|-----|-----|------------------|-----|
| % | kW | HP | g/kW.h | L/h |
| STANDBY POWER | | | | |
| 100 | 27 | 36 | 244 | 8.0 |
| PRIME POWER | | | | |
| 100 | 24 | 32 | 245 | 7.1 |
| 75 | 18 | 24 | 260 | 5.7 |
| 50 | 12 | 16 | 296 | 4.3 |
| 25 | 6 | 8 | 390 | 2.8 |
| CONTINUOUS POWER | | | | |
| TBD | TBD | TBD | TBD | TBD |



Engine Performance Data @ 1800 RPM

Not Available at 1800 RPM

Not Available at 1800 RPM

Curves shown above represent gross engine performance capabilities obtained and corrected in accordance with GB/T18297 conditions of 100kPa (29.61 in. Hg) barometric pressure [80 m (263 ft.) altitude], 25°C (77°F) inlet air temperature, and 1 kPa (0.30 in. Hg) water vapor pressure with No.0 diesel fuel. The engine may be operated without changing the fuel setting up to 2200 m (7218ft.) altitude.

GENERAL ENGINE DATA

| | | |
|--|--------------------|-------|
| Approximate Engine Weight (wet)..... | -kg | 308 |
| Mass Moment of Inertia of Rotating Components (No Flywheel)..... | -kg·m ² | 0.143 |
| Center of Gravity from Rear Face of Block..... | -mm | 373 |
| Center of Gravity above Crankshaft Centerline..... | -mm | 163 |
| Crankshaft Thrust Bearing Load Limit | | |
| —Maximum Intermittent..... | -N | 3425 |
| —Maximum Continuous..... | -N | 1112 |

ENGINE MOUNTING

| | | |
|--|--------------------|------|
| Maximum (Static) Bending Moment at Front Support Mounting Surface..... | -N.m | 435 |
| Maximum (Static) Bending Moment at Side Pad Mounting Surface..... | -N.m | TBD |
| Maximum (Static) Bending Moment at Rear Face of Block..... | -N.m | 1356 |
| Moment of Inertia of Complete Engine | | |
| — Roll Axis..... | -kg·m ² | 16.5 |
| — Pitch Axis..... | -kg·m ² | 41.1 |
| — Yaw Axis..... | -kg·m ² | 35.4 |

EXHAUST SYSTEM

| | | |
|--|---------|------|
| Maximum Back Pressure..... | -kPa | 10 |
| Exhaust Pipe Size Normally Acceptable..... | -mm | 75 |
| Maximum Static Supported Weight at the Turbocharger Outlet Flange..... | -N.m | 13.5 |
| Exhaust Manifold Insulation Acceptable..... | -Yes/No | No |
| Turbocharger Insulation Acceptable..... | -Yes/No | No |

AIR INTAKE SYSTEM

| | | |
|---|--------|----|
| Maximum Intake Air Restriction with Heavy Duty Air Cleaner | | |
| — Dirty Element..... | -kPa | 6 |
| — Clean Element..... | -kPa | 4 |
| Minimum Dirt Holding Capacity with Heavy Duty Air Cleaner..... | -g/cfm | 53 |
| Maximum Temperature Rise from Ambient to the Inlet of the Turbocharger..... | -°C | 17 |
| Recommended intake piping size (inner diameter)..... | -mm | 76 |

LUBRICATION SYSTEM

| | | |
|--|--------|-----------|
| Minimum Engine Oil Pressure for Engine Protection Devices: | | |
| —Idle Speed..... | -kPa | 207 |
| —Governed Speed..... | -kPa | 345 |
| Maximum Oil Temperature..... | -°C | 121 |
| Oil Capacity with OP 9006 Oil Pan : High - Low..... | -litre | 9.5 - 8.5 |
| Minimum Required Lube System Capacity - Sump plus Filters..... | -litre | 10.9 |
| Angularity of Standard Oil Pan: (Values stated are for intermittent operation only): | | |
| — Front Down..... | - ° | 40 |
| — Front Up..... | - ° | 40 |
| — Side to Side..... | - ° | 40 |

FUEL SYSTEM

| | | |
|--|-----------|------------------------|
| Type Injection System..... | | BYC A Direct Injection |
| Maximum Restriction at Lift Pump..... | -mmHg | 102 |
| Maximum Allowable Head on Injector Return Line (Consisting of Friction Head and Static Head) | | |
| | -mmHg | 508 |
| Total Drain Flow (constant for all loads)..... | -litre/hr | 30 |

COOLING SYSTEM

| | | |
|--|--------|-----------|
| Coolant Capacity - Engine Only..... | -litre | 7.2 |
| Maximum Coolant Friction Head External to Engine... -1800 rpm..... | -kPa | 35 |
| -1500 rpm..... | -kPa | 28 |
| Maximum Static Head of Coolant Above Engine Crank Centerline..... | -m | 14 |
| Standard Thermostat (Modulating) Range..... | -°C | 82 - 95 |
| Minimum Pressure Cap..... | -kPa | 69 |
| Maximum Top Tank Temperature for Standby / Prime Power..... | -°C | 104 / 100 |

ELECTRICAL SYSTEM

| | | | |
|---|----------|---------|-------|
| Cranking Motor (Heavy Duty, Positive Engagement)..... | -volt | 12V | 24V |
| Battery Charging System, Negative Ground..... | -ampere | 63 | 40 |
| Maximum Allowable Resistance of Cranking Circuit..... | -ohm | 0.00075 | 0.002 |
| Minimum Recommended Battery Capacity | | | |
| • Cold Soak @ 10 °F (-12 °C) and Above..... | -0°F CCA | 625 | (312) |

Fuel Rating Option used for these Data: **FR92340**

| | |
|-----------------------------------|-------------|
| Governed Engine Speed..... | -rpm |
| Engine Idle Speed..... | -rpm |
| Gross Engine Power Output..... | -kW |
| Piston Speed..... | -m/s |
| Friction Horsepower..... | -kW |
| Engine Water Flow to Engine:..... | -litre/sec. |
| Intake Air Flow..... | -litre/sec. |
| Exhaust Gas Temperature..... | -°C |
| Exhaust Gas Flow..... | -litre/sec. |
| Radiated Heat to Ambient..... | -kW |
| Heat Rejection to Coolant..... | -kW |
| Heat Rejection to Exhaust..... | -kW |

| STANDBY POWER | | PRIME POWER | |
|---------------|------------|-------------|------------|
| 1800 | 1500 | 1800 | 1500 |
| N/A | 950 - 1050 | N/A | 950 - 1050 |
| | 27 | | 24 |
| | 6 | | 6 |
| | 8.2 | | 8.2 |
| | 2.2 | | 2.2 |
| | 33 | | 33 |
| | 410 | | 380 |
| | 71 | | 68 |
| | TBD | | TBD |
| | 29 | | 25.9 |
| TBD | TBD | | |

ALL DATA CERTIFIED WITHIN 5%

TBD = To Be Decided

N/A = Not Applicable

N.A. = Not Available

All data is subject to change without notice, sorry for inform.

Dongfeng Cummins Engine Co., Ltd.