FDK ENERGY
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DATA SHEET

DIESEL GENERATOR 35KW
MODEL#FDK-CD45/H1
50HZ/1500RPM
CUMMINS MODEL: 4BT3.9G1

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-CD45/H1	Engine Make	Cummins
Prime Power	32KW/40KVA	Engine Model	4BT3.9G1
Standby Power	35KW/44KVA	Alternator model	Stamford PI144J
Output Frequency / Rated speed	50Hz/1500rpm	Control System	DSE6020
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	4BT3.9G1	Aspiration	Turbo-charged
Engine Manufacturer	Cummins (China Dongfeng)	Bore x Stroke (mm x mm)	102×120
		Displacement	3.9L
Cylinder quantity	4	Compression Ratio	18.0:1
Cylinder Arrangement	Vertical in-line	Prime power / Speed (KW/RPM)	36/1500
Cycle	Four stroke	Standby power/ Speed (KW/RPM)	40/1500

CE ISO9001:2008

Speed governor	Mechnical	Fuel Consumption at 100% load (g/KWh)	214 at 1500rpm
Piston Speed	6.0m/s		
Friction Energy Output	8.2kw	Starter motor	DC24V
Total Lubrication System Capacity (L)	10.9	Alternator	DC24V
Coolant Capacity (L)	7.2	Low idle	950-1050rpm

Alternator Specifications

Alternator model	PI144J	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	40 KVA	Voltage regulation NL-FL	≤±1%
Rated speed	1500 rmp	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
☐ 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)	1900×740×1300
Weight (kg)	806

Soundproof Version

Overall Size: L×W×H (mm)	2600×1000×1450
Weight (kg)	1380

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

Techical Operations

ENGINE MODEL： 4BT3.9-G1

CURVE & DATASHEET： FR92341

REV 00 15APR2009

Generator Engine Performance Data	Basic Engine Model:	FR92341 @ 1500 RPM		
DONGFENG CUMMINS ENGINE Co.,LTD Xiangfan, Hubei Province, China http://www.dcec.com.cn	**4BT3.9-G1** **FR92341**	**Configuration** **D382012GX02**	**CPL Code** **CPL: 3115**	**Revision** **2009-4-15**

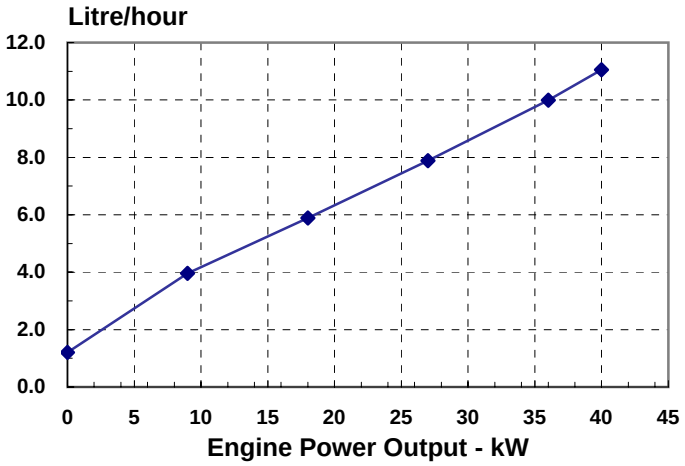
Compression Ratio:	**17.3:1**	Aspiration:	**Turbocharged**
Bore:	**102 mm**	Displacement:	**3.9 L**
Storke:	**120 mm**	No. of Cylinders:	**4**
Governor Regulation:	**≤8%**	Fuel System:	**BYC A/RSV Mechanical**

All data is based on the engine operating with fuel system, water pump, and 10 in H_2O (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	Standby Power		Prime Power		Continuous Power	
RPM	kW	HP	kW	HP	kW	HP
1500	40	54	36	48	TBD	TBD

Engine Performance Data @ 1500 RPM

OUTPUT POWER			FUEL CONSUMPTION	
%	kW	HP	g/kW.h	L/h
STANDBY POWER				
100	40	54	228	11.1
PRIME POWER				
100	36	48	229	10.0
75	27	36	241	7.9
50	18	24	270	5.9
25	9	12	363	4.0
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	321
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	-℃	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	-℃	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	- º	40
— Front Up	- º	40
— Side to Side	- º	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	-℃	82 - 95
Minimum Pressure Cap	-kPa	69
Maximum Top Tank Temperature for Standby / Prime Power	-℃	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: **FR92341**

		STANDBY POWER		PRIME POWER	
		1800	1500	1800	1500
Governed Engine Speed	-rpm				
Engine Idle Speed	-rpm		800 - 1000		800 - 1000
Gross Engine Power Output	-kW		40		36
Piston Speed	-m/s		6		6
Friction Horsepower	-kW		8.2		8.2
Engine Water Flow to Engine:	-litre/sec.		2.2		2.2
Intake Air Flow	-litre/sec.	**N/A**	45	**N/A**	44
Exhaust Gas Temperature	-℃		487		463
Exhaust Gas Flow	-litre/sec.		108		101
Radiated Heat to Ambient	-kW		TBD		TBD
Heat Rejection to Coolant	-kW		29		25.9
Heat Rejection to Exhaust	-kW		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.