

Dongfeng Cummins

Technical

Operations



ENGINE MODEL: 4BTA3.9-G11
CURVE & DATASHEET: FR94625

REV 01 MAY2014



Generator Engine Performance Data
DONGFENG CUMMINS ENGINE Co.,LTD
Xiangfan, Hubei Province, China
<http://www.dcec.com.cn>

Basic Engine Model:
4BTA3.9-G11
FR94625

FR94625 @ 1500 RPM & 1800RPM

Configuration	CPL Code	Revision
D383030DX02	CPL: 4562	2014/5/20

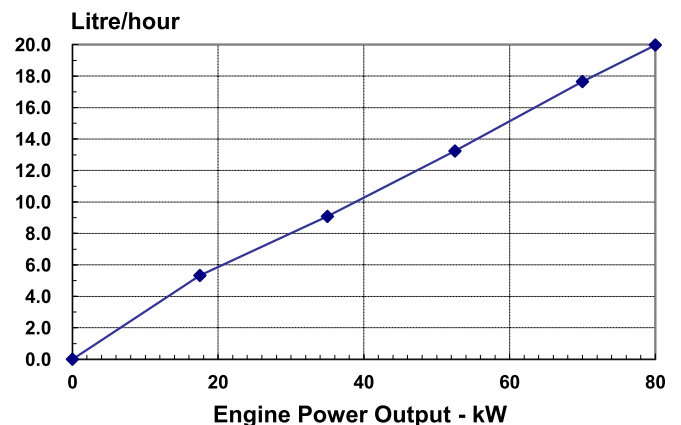
Compression Ratio:	17.3:1	Aspiration:	Turbocharger& Aftercooler
Bore:	102 mm	Displacement:	3.9 L
Stroke:	120 mm	No. of Cylinders:	4
Emission Certification:		Fuel System:	BYC PB/Electronic Governor
Governor Regulation:	≤5%		

All data is based on the engine operating with fuel system, water pump, and 14.8 in H₂O (3.7 kPa) inlet air restriction with 5.98 in (152mm) inner diameter, and with 2.95 in Hg (10 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	
	kW	HP	kW	HP	kW	HP
1500	80	107	70	93		
1800	90	120	80	107		

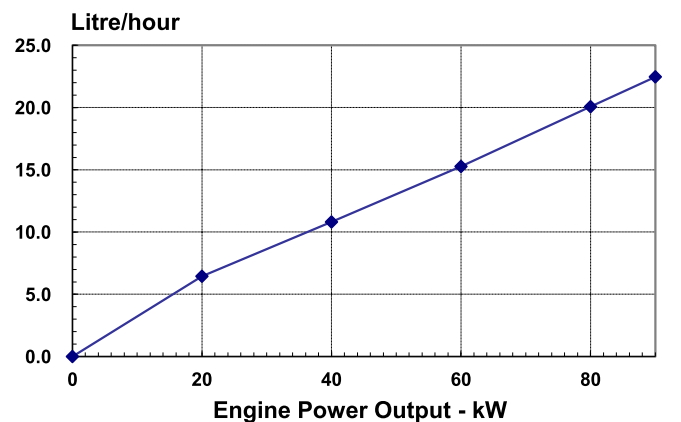
Engine Performance Data @ 1500 RPM

OUTPUT POWER			FUEL CONSUMPTION	
%	kW	HP	g/kW.h	L/h
STANDBY POWER				
100	80	107	206	20.0
PRIME POWER				
100	70	93	208	17.6
75	52.5	70	208	13.2
50	35	47	214	9.1
25	17.5	23	251	5.3
CONTINUOUS POWER				



Engine Performance Data @ 1800 RPM

OUTPUT POWER			FUEL CONSUMPTION	
%	kW	HP	g/kW.h	L/h
STANDBY POWER				
100	90	120	206	22.5
PRIME POWER				
100	80	107	207	20.1
75	60	80	210	15.3
50	40	53	223	10.8
25	20	27	266	6.4
CONTINUOUS POWER				



Curves shown above represent gross engine performance capabilities obtained and corrected in accordance with GB/T18297 conditions of 99kPa (29.61 in. Hg) barometric pressure, 25 °C (77 °F) inlet air temperature, and 1 kPa (0.30 in. Hg) water vapor pressure with No.0 diesel fuel.

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.

Above Source From CUMMINS AEB 26.02

GENERAL ENGINE DATA

Approximate Engine Weight (wet).....	-kg	350
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
Engine Idle Speed.....	-RPM	950-1050
Fire Order.....		1-3-4-2

ENGINE MOUNTING

Maximum (Static) Bending Moment at Rear Face of Block.....	-N.m	1356
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EXHAUST SYSTEM

Maximum Back Pressure.....-kPa 10

AIR INTAKE SYSTEM

Maximum Intake Air Restriction with Heavy Duty Air Cleaner		
— Dirty Element.....	-kPa	6.2
— Clean Element.....	-kPa	3.7

LUBRICATION SYSTEM

Engine Oil Pressure for Engine Protection Devices:		
— Idle Speed(Minimum).....	-kPa	207
— Governed Speed(Maximum).....	-kPa	345
Maximum Oil Temperature.....	- °C	121
Minimum Required Lube System Capacity - Sump plus Filters.....	-litre	10.9

FUEL SYSTEM

Type Injection System.....	BYC PB Direct Injection
Maximum Restriction at Lift Pump.....	-kPa 13.6
Maximum Fuel Inlet Temperature.....	-°C 70
Total Drain Flow (constant for all loads).....	-litre/hr 30

COOLING SYSTEM

Coolant Capacity - Engine Only.....	-litre	8.3
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	83 - 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 @ 0 to 32-F (-18 to 0-C).....	-0 °F CCA	625	312

EMISSIONS

Gaseous Emissions per GB 20891-2007, at 1500rpm:

—Weight-Specific NOx.....	g/kW.h
—Weight-Specific HC.....	g/kW.h
—Weight-Specific CO.....	g/kW.h
—Weight-Specific Particulates.....	g/kW.h

Gaseous Emissions per GB 20891-2007, at 1800rpm:

—Weight-Specific NOx.....	g/kW.h
—Weight-Specific HC.....	g/kW.h
—Weight-Specific CO.....	g/kW.h
—Weight-Specific Particulates.....	g/kW.h

Fuel Rating Option used for these Data: **FR94625**

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 Flow.....	-litre/sec.
Exhaust Gas Temperature.....	-°C
Radiated Heat to Ambient.....	-kW
Heat Rejection to Coolant.....	-kW
Heat Rejection to Fuel.....	-kW

STANDBY POWER		PRIME POWER	
1800	1500	1800	1500
950- 1050	950- 1050	950- 1050	950- 1050
90	80	80	70
7.2	6.0	7.2	6.0
8.2	8.2	8.2	8.2
TBD	TBD	TBD	TBD
101	70	93	64
210	134	188	125
405	548	393	526
TBD	TBD	TBD	TBD
TBD	TBD	TBD	TBD
TBD	TBD	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.