Dongfeng Cummins Techical Operations



ENGINE MODEL: 4BTA3.9-G11

CURVE & DATASHEET: FR94625



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 Re D383030DX02 CPL: 4562 20

Revision 2014/5/20

Compression Ratio: 17.3:1 Aspiration: Turbochanger& Aftercooler

Bore: 102 mm Displacement: 3.9 L Storke: 120 mm No. of Cylinders: 4

Emission Certification: Fuel System: BYC PB/Electronic Governor

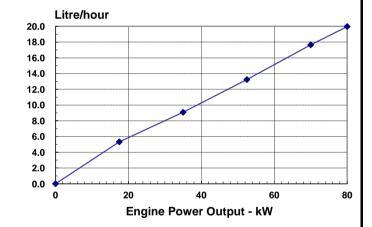
Governor Regulation: ≤5%

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	
RPM	kW	HP	kW	HP	kW	HP
1500	80	107	70	93		
1800	90	120	80	107		

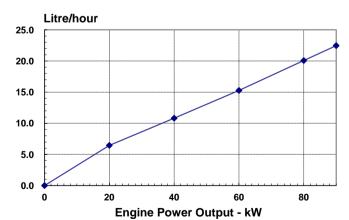
Engine Performance Data @ 1500 RPM

OUTPUT POWER		FUEL CONSUMPTION				
%	kW	HP	g/kW.h	L/h		
STAND	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				
STAND	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

FR94625 (Continued) Page: 2

	FR94625 (Cont	inued)	Page: 2
GENERAL ENGINE DATA			
Approximate Engine Weight (wet)	kg	350	
Mass Moment of Inertia of Rotating Components (No Flywheel)	kg·m²	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	0
Fire Order		1-3-4-2	
ENGINE MOUNTING			
Maximum (Static) Bending Moment at Rear Face of Block	N.m	1356	
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		3.7	
LUBRICATION SYSTEM			
Engine Oil Pressure for Engine Protection Devices:			
— Idle Speed(Minimum)	kPa	207	
— Governed Speed(Maximum)		345	
Maximum Oil Temperature		121	
Minimum Required Lube System Capacity - Sump plus Filters		10.9	
FUEL SYSTEM			
Type Injection System	BYC PB	Direct Ini	iection
Maximum Restriction at Lift Pump		13.6	,
Maximum Fuel Inlet Temperature	℃	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 Engine1800 rpm		35	
-1500 rpm		28	
Maximum Static Head of Coolant Above Engine Crank Centerline	m	14	
Standard Thermostat (Modulating) Range	℃	83 - 95	
Minimum Pressure Cap	kPa	69	
Maximum Top Tank Temperature for Standby / Prime Power	℃	104 / 100)

ELECTRICAL SYSTEM

Cranking Motor (Heavy Duty, Positive Engagement)	12V	24V
Battery Charging System, Negative Groundampere	63	40
Maximum Allowable Resistance of Cranking Circuitohm	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 NOv

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

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

STANDR	Y POWER	PRIME POWER		
STANDBITOWER		I KIML FOWER		
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
All data is subject to change without notice, sorry for inform.
Dongfeng Cummins Engine Co., Ltd.

N.A. = Not Available