Dongfeng Cummins Techical Operations



ENGINE MODEL: 4BTA3.9-G2

CURVE & DATASHEET: FR92541

FR92578

FR93145



Generator Engine Performance Data

DONGFENG CUMMINS ENGINE Co.,LTD

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

Basic Engine Model:

4BTA3.9-G2

FR92541 FR92578 FR93145 FR92541 @ 1500 RPM &1800RPM FR92578 @ 1500 RPM &1800RPM FR93145 @ 1500 RPM &1800RPM

Configuration D383030DX02 **CPL Code** Revision **CPL: 3116** 2013/6/15

17.3:1 Compression Ratio: **Turbochanger& Aftercooler** Aspiration:

Bore: 102 mm Storke:

Displacement: No. of Cylinders: 4

120 mm

Fuel System: **BYC A/Electronic Governor**

3.9 L

Emission Certification:

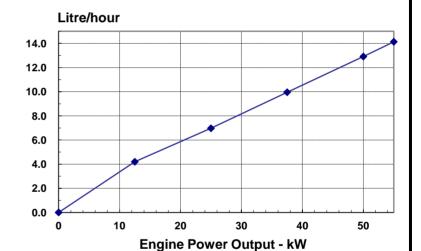
Governor Regulation: ≤5%

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	55	74	50	67		
1800	66	88	60	80		

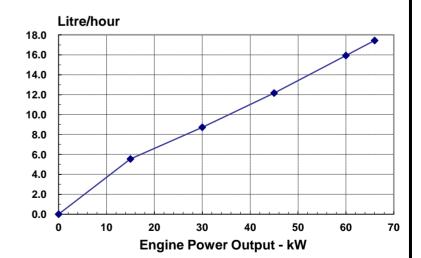
Engine Performance Data @ 1500 RPM

OUTPUT POWER			FUEL CONSUMPTION			
%	kW	HP	g/kW.h	L/h		
STANDE	STANDBY POWER					
100	55	74	212	14.1		
PRIME F	PRIME POWER					
100	50	67	213	12.9		
75	37.5	50.25	219	10.0		
50	25	33.5	230	7.0		
25	12.5	16.75	277	4.2		
CONTINUOUS POWER						



Engine Performance Data @ 1800 RPM

OUTPUT POWER			FUEL CONSUMPTION			
%	kW	HP	g/kW.h	L/h		
STANDBY POWER						
100	66	88	218	17.4		
PRIME F	PRIME POWER					
100	60	80	219	15.9		
75	45	60	223	12.2		
50	30	40	240	8.7		
25	15	20	305	5.5		
CONTINUOUS POWER						



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, 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

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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
Fire Order		. 1-3-4-2
NGINE MOUNTING		
Maximum (Static) Bending Moment at Rear Face of Block	N.m	1356
XHAUST SYSTEM		
Maximum Back Pressure	kPa	10
IR INTAKE SYSTEM		
Maximum Intake Air Restriction with Heavy Duty Air Cleaner		
— Dirty Element	kPa	6.2
— Clean Element	-kPa	3.7
UBRICATION 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
UEL SYSTEM		
Type Injection System	BYC A	Direct Injection
Maximum Restriction at Lift Pump	kPa	13.6
Maximum Fuel Inlet Temperature	℃	70
Total Drain Flow (constant for all loads)	litre/hr	30
OOLING SYSTEM		
Coolant Capacity - Engine Only	litre	8.3
Maximum Coolant Friction Head External to Engine1800 rpm	kPa	35
-1500 rpm	kPa	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

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ELECTRICAL SYSTEM

Cranking Motor (Heavy Duty, Positive Engagement)volt	12V	24V
Battery Charging System, Negative Groundamper	re 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 C0	CA 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	•
—Weight-Specific Particulates	g/kW.h

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

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

Fuel Rating Option used for these Data: FR92541 FR92578 FR93145

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

STANDB	Y POWER	PRIME POWER			
1800	1500	1800	1500		
950-1050	950-1050	950-1050	950-1050		
66	55	60	50		
7.2	6.0	7.2	6.0		
8.2	8.2	8.2	8.2		
2.8	1.6	2.8	1.6		
73	52	66	49		
151	134	134	125		
405	548	393	526		
TBD	17. 1	TBD	16. 2		
TBD	31	TBD	29.1		
TBD	49. 2	TBD	46.6		

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