

# Dongfeng Cummins Technical Operations



ENGINE MODEL: 6BTAA5.9-G2  
CURVE & DATASHEET: FR93270

REV 00 26OCT2012



**Generator Engine Performance Data**

DONGFENG CUMMINS ENGINE Co.,LTD

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

Basic Engine Model:

**6BTAA5.9-G2**

**FR93270**

**FR93270 @ 1500 RPM & 1800RPM**

Configuration

D403076GX03

CPL Code

CPL: 3289

Revision

2009/4/15

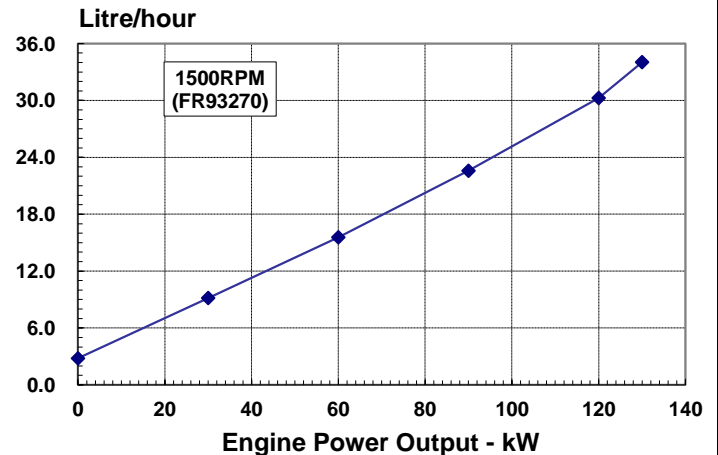
|                         |                    |                   |   |
|-------------------------|--------------------|-------------------|---|
| Compression Ratio:      | <b>17.3:1</b>      | Aspiration:       | <b>Turbocharged and Charge Air Cooled</b> |
| Bore:                   | <b>102 mm</b>      | Displacement:     | <b>5.9 L</b>                              |
| Stroke:                 | <b>120 mm</b>      | No. of Cylinders: | <b>6</b>                                  |
| Emission Certification: | <b>MEP STAGE I</b> | Fuel System:      | <b>BYC PB/Electronic Governor</b>         |
| Governor Regulation:    | <b>≤3%</b>         |                   |   |

All data is based on the engine operating with fuel system, water pump, and 15.2 in H<sub>2</sub>O (3.7 kPa) inlet air restriction with 5.98 in (152mm) inner diameter, and with 3 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         | 130           | 174 | 120         | 161 | 96               | 129 |
| 1800         | 145           | 194 | 132         | 177 | TBD              | TBD |

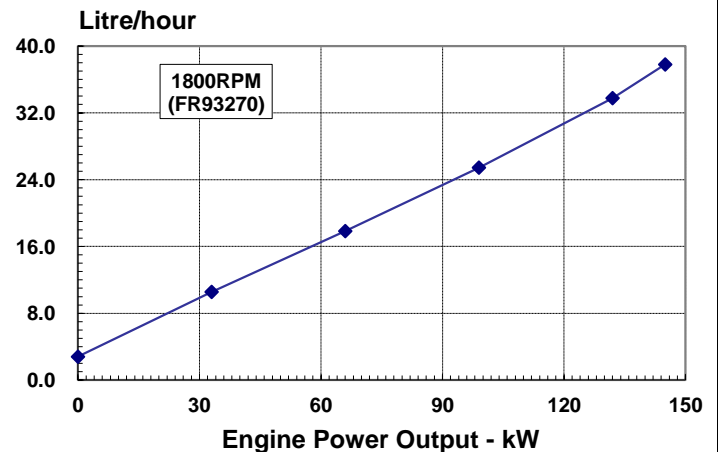
**Engine Performance Data @ 1500 RPM**

| OUTPUT POWER            |     |     | FUEL CONSUMPTION |     |
|-------------------------|-----|-----|------------------|-----|
| %                       | kW  | HP  | g/kW.h           | L/h |
| <b>STANDBY POWER</b>    |     |     |                  |     |
| 100                     | 130 | 174 | 216              | 34  |
| <b>PRIME POWER</b>      |     |     |                  |     |
| 100                     | 120 | 161 | 208              | 30  |
| 75                      | 90  | 121 | 207              | 23  |
| 50                      | 60  | 80  | 214              | 16  |
| 25                      | 30  | 40  | 252              | 9   |
| <b>CONTINUOUS POWER</b> |     |     |                  |     |
| 100                     | 56  | 75  | 208              | 24  |



**Engine Performance Data @ 1800 RPM**

| OUTPUT POWER            |     |     | FUEL CONSUMPTION |     |
|-------------------------|-----|-----|------------------|-----|
| %                       | kW  | HP  | g/kW.h           | L/h |
| <b>STANDBY POWER</b>    |     |     |                  |     |
| 100                     | 145 | 194 | 215              | 38  |
| <b>PRIME POWER</b>      |     |     |                  |     |
| 100                     | 132 | 177 | 211              | 34  |
| 75                      | 99  | 133 | 212              | 25  |
| 50                      | 66  | 88  | 223              | 18  |
| 25                      | 33  | 44  | 264              | 11  |
| <b>CONTINUOUS POWER</b> |     |     |                  |     |
| TBD                     | TBD | TBD | TBD              | TBD |



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. The engine may be operated without changing the fuel setting up to 2200 m ( 7218ft.) altitude.

**GENERAL ENGINE DATA**

|  |                    |             |
|--|--------------------|-------------|
| Approximate Engine Weight (wet).....                             | -kg                | 411         |
| Mass Moment of Inertia of Rotating Components (No Flywheel)..... | -kg·m <sup>2</sup> | 0.25        |
| Center of Gravity from Front Face of Block.....                  | -mm                | 391         |
| Center of Gravity above Crankshaft Centerline.....               | -mm                | 140         |
| Fire Order.....  |                    | 1-5-3-6-2-4 |

**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   |
| — Clean Element.....   | -kPa   | 3.7 |
| 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  |

**CHARGE AIR COOLING SYSTEM**

|  |      |    |
|--|------|----|
| Maximum Temp. Rise Between Engine Air Intake and Intake Manifold           | -°C  | 25 |
| Maximum Air Pressure Drop from Turbo Air outlet to Intake Manifold         |      |    |
| — 1500RPM.....   | -kPa | 13 |
| — 1800RPM.....   | -kPa | 13 |
| Maximum Intake Manifold Temperature Differential (Ambient to IMT) (IMTD).. | -°C  | 50 |
| Maximum Intake Manifold Temperature for engine protection (Warning Thresh  | -°C  | 58 |

**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 | 14.2 - 12.3 |
| Minimum Required Lube System Capacity - Sump plus Filters.....                       | -litre | 16.4        |
| 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 PB Direct Injection |
| Maximum Restriction at Lift Pump.....  | -kPa      | 13.6                    |
| Maximum Allowable Head on Injector Return Line (Consisting of Friction Head and Static Head) |           |                         |
| .....  | -kPa      | 67.7                    |
| Total Drain Flow (constant for all loads).....   | -litre/hr | 30                      |

**COOLING SYSTEM**

|   |        |           |
|---|--------|-----------|
| Coolant Capacity - Engine Only.....                               | -litre | 10        |
| 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 | 800     | 400   |

**EMISSIONS**

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

|                                    |        |      |
|------------------------------------|--------|------|
| —Weight-Specific NOx.....          | g/kW.h | 9.2  |
| —Weight-Specific HC.....           | g/kW.h | 1.3  |
| —Weight-Specific CO.....           | g/kW.h | 5.0  |
| —Weight-Specific Particulates..... | g/kW.h | 0.70 |

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

|                                    |        |      |
|------------------------------------|--------|------|
| —Weight-Specific NOx.....          | g/kW.h | 9.2  |
| —Weight-Specific HC.....           | g/kW.h | 1.3  |
| —Weight-Specific CO.....           | g/kW.h | 5.0  |
| —Weight-Specific Particulates..... | g/kW.h | 0.54 |

Fuel Rating Option used for these Data: **FR93270**

|                                   |             |
|-----------------------------------|-------------|
| 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         |
| Air to Fuel Ratio.....            | -air:fuel   |
| Radiated Heat to Ambient.....     | -kW         |
| Heat Rejection to Coolant.....    | -kW         |
| Heat Rejection to Exhaust.....    | -kW         |

| STANDBY POWER |           | PRIME POWER |           |
|---------------|-----------|-------------|-----------|
| 1800          | 1500      | 1800        | 1500      |
| 750 - 850     | 750 - 850 | 750 - 850   | 750 - 850 |
| 145           | 130       | 132         | 120       |
| 7.2           | 6         | 7.2         | 6         |
| 16.4          | 12.7      | 16.4        | 12.7      |
| 2.4           | 2.0       | 2.4         | 2.0       |
| 142           | 120       | 135         | 114       |
| 401           | 328       | 369         | 295       |
| 570           | 540       | 540         | 500       |
| 21.0 : 1      | 20.0 : 1  | 22.5 : 1    | 21.5 : 1  |
| 20            | 18        | 18          | 16        |
| 71            | 66        | 63          | 59        |
| 112           | 94        | 96          | 82        |

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.